

Ref. RFP 31/2010

PREPARATION OF STUDY FOR VALORIZATION OF NATURAL VALUES OF MULTIPURPOSE AREA “JASEN”

-FINAL ASSESSMENT REPORT-



ES “URSUS SPELEOS”-SKOPJE
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Introduction

The final draft-report for “The preparation of the Study for valorization of the multipurpose area Jasen” (Ref. RFP 31/2010 (re-announcement of RFP 24/2010)) contains information for the activities completed up to now by the expert’s team of the Research association “Ursus Speleos” – Skopje. In accordance with the Project-document submitted to the office of UNDP, the Research Association “Ursus Speleos - Skopje” has till now registered all the relevant information published in the scientific literature which refer to the multipurpose area “Jasen”. In the interest of the final results – final quality Study, parallel to the analysis of the literature, terrain research are carried out during the months September-October, by which the condition of the natural values in the multipurpose area ”Jasen” is determined.

The final report is composed of 12 reports submitted by each expert individually. In each of the reports, the preparatory analysis are stated by each expert, as well as the results gained. The final draft-report is submitted both in Macedonian and in English.

What follows are the areas which are subject of research of the expert’s team of the Research Association “Ursus Speleos” – Skopje, which takes part in the research of the multipurpose area “Jasen”:

Algae: Dr. Zlatko Levkov

Mushrooms: Dr. Mitko Karadelev

Flora: Academic Vlado Matevski

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field: ALGAE

expert: Zlatko Levkov, PhD

The region of Jasen is characterized by high diversity of habitats. However, so far there are no published data on composition and distribution of algal assemblages in this region. In the past, few data on broader area of Jakupica mountain and river Treska have been published. During investigations of Stojanov (1982) a total of 78 diatom taxa have been recorded. According to these observations, Stojanov (1982) has recognized following taxa *Eunotia sudetica*, *Achanthes kryophyla*, *Navicula pseudosilicula*, *Pinnularia baulforiana*, *Pinnularia caudata*, *Diatomella balfouriana* as rare and important diatom species for flora of Macedonia. However in later observations on water habitats from different mountains Levkov et al. (2005) have recorded these taxa on several other localities.

Diatom composition of River Treska was analyzed in two occasions. According to floristic and saprobiologic investigation (Stojanovski et al. 1990), based on permanent slides, 53 diatom taxa (40 species and 13 varieties) belonging to 20 genera have been identified. The most common genera are *Navicula* sensu lato and *Cymbella* sensu lato. The most abundant taxa are *Craticula ambigua*, *Navicula tripunctata*, *Hippodonta capitata*, *Luticola mutica*, *Luticola cohnii*, *Navicula radiosa*, *Encyonema silesiacum*, *Cymbella lange-bertalotii*, *Cymbella lanceolata*, *Encyonema minutum*, *Reimeria sinuata*. Other diatom genera that showed greater diversity are *Nitzschia*, *Fragilaria*, *Pinnularia* and *Gomphonema*. According to Stojanovski et al (1990), β -mesosaprobic indicators (18) dominated the waters of River Treska, but characteristic mark of it's flora are 4 oligosaprobic indicators: *Meridion circulare*, *Diatoma hiemalis*, *Hannaea arcus*, *Encyonema neogracile*.



algae in the valley of the river Oca

Later Levkov (2006) have observed 37 diatom taxa with higher abundance than 0.25% in the epilithic diatom communities. The epilithic communities are dominated by *Diatoma vulgare* (57%), whereas *D. moniliformis*, *Gomphonema*

rosenstockianum, *Encyonema minutum* occur in lower abundances. The dominant and subdominant diatom species indicate meso-saprobic and meso-trophic waters with the exception of *D. moniliformis* which occurs in waters with high to moderate electrolyte content.



algae in the valley of the river Oca

For strict area of Jasen only unpublished data can be found (Levkov & Melovski unpubl. data). During July 2000 about 20 samples from river Oča and Treska were collected. Sampling sites were located near village Zdunje (on the mouth of River Oča into River Treska). A total of 70 diatom taxa in both rivers were recorded. The most abundant diatom species *Navicula tripunctata*, *Gomphonema micropus*, *Gomphonema exilissimum*, *Cocconeis placentula* and *Diatoma moniliformis*

References

- Levkov, Z., Krstic, S., Nakov, T. & Melovski, Lj. (2005): Diatom assemblages on Shara and Nidze Mountains, Macedonia. *Nova Hedwigia* 81 (3-4): 501-538.
- Левков З. & Меловски, Љ. (необј. под.). Состав на дијатомејската флора на реката Оча и Треска.
- Стојанов, П. (1982): Дијатомејската микрофлора на некои водени екосистеми на планината Јакупица, Македонија. *Годишен Зборник Биологија* Кн. 35: 115-129.
- Стојановски, П., Крстиќ, С., Кунгуловски Ц. & Сидоровска, В.(1990): Флористичко-сапробиолошки истражувања на некои вливови на реката Вардар, Македонија. *Годишен Зборник Биологија* Кн. 41/42: 235-249.

field: FUNGI

expert: Mitko Karadelev, PhD

Introduction

The Republic of Macedonia is mycologically still not studied enough. There has been little systematic fungi research, and it is only lately that a clear picture of mycobiota in certain regions of the country (Pelister Mt., Jakupica Mt., Galicica Mt., Kozuv Mt., Shar Planina Mt., Juzno Povardarie, etc) has been produced.

The first data on the fungal diversity of Jasen MPA belonging to the Serbian botanist Vojteh Lindtner. In the period between 1936 and 1937 he visited the area and collected many fungal specimens. Today, this material is stored in the Lindtner's collection which belongs to the National History Museum in Belgrade. A part of this material is checked and published by Litschauer (1939), Pilat (1937), Pilat (1936-1942) and Pilat & Lindtner (1939). and Tortich (1988). Dr Milica Tortich, a Croatian mycologist in 1977 has revised some of the genera from Lindtner's collection and published them in 1988. As a result of these researching from the area have been published only 32 fungal species such as: *Antrodia sinuosa*, *Basidioidendron caesiocinerea*, *Byssomerulius corium*, *Cerrena unicolor*, *Coniophora olivacea*, *Coniophora suffocate*, *Dacryobolus karstenii*, *Dichomitus squalens*, *Gyroporus castaneus*, *Gyroporus cyanescens*, *Heterochaetella dubia*, *Hexagonia nitida*, *Hyphodontia arguta*, *Hyphodontia juniperi*, *Irpex lacteus*, *Laeticorticium roseum*, *Lenzites betulina*, *Lindtneria trachyspora*, *Mycoacia uda*, *Parmastomyces krawtze-wianus*, *Peniophora cinerea*, *Peniophora proxima*, *Phlebiopsis roumeguerii*, *Piloderma byssinum*, *Polyporus arcularius*, *Pseudomerulius aureus*, *Pseudotomentella nigra*, *Stromatoscypha fimbriata*, *Tomentella punicea*, *Trametes gibbosa*, *Trametes hirsute*, *Trametes ljubarskyi*, *Trichaptum biforme*.

Number of Species

Based on research to date, 1,200 macromycetes species have been recorded in the Republic of Macedonia. In comparison with data from other European countries, this figure is minor. In view of ecological circumstances, approximately 4,000 macromycetes species are to be found in the Republic of Macedonia. In total there are approximately 160 fungi species known from the area of Jasen MPA, but that is a result of lack of research as it was mentioned before.

The survey which was conducted from the second half of August 2010 to end of October 2010 on more of 10 localites on the territory of Jasen MPA, also includes citation of the unpublished records on species collected on Jasen area up till now, exiccata deposited in the collection of National History Museum in Belgrade (BEO), research notes of the present author, and data from other individual collectors.

All data and exiccata from the present author are included and preserved in the National Collection of Fungi – (MCF), housed at the Institute of Biology, Faculty of Natural Science, Ss Cyril and Methodius University in Skopje.

Short Analysis

There are a total of about 163 fungi species known from Jasen MPA, 69 of which are lignicolous, and 94 are terricolous. As the aspect of macrofungi changes with seasons, many species now missing in one or more localities will certainly be found there during more intensive research.

The largest number of species, 126, belongs to Basidiomycota (10 are from Gasteromycetes), 32 species belong to Ascomycota, and 5 species to Myxomycota.

Of the lignicolous species, the main part was collected on *Quercus* (31), *Fagus* (23), and *Pinus* (10). A few species were collected on *Salix*, *Populus*, *Buxus*, on mushrooms fruiting body, etc. As far as the terricolous species are concerned, the greatest number of them was collected in two oak associations (*Querco-Carpinetum orientalis* and *Quercetum frainetto-cerris macedonicum*), then beech association (*Festuco heterophyllae-Fagetum*), and pine association (*Fageto-Pinetum silvestris*), which are the best investigated forests in the mountain.

The most common species were as follows: *Agaricus campestris*, *A.macrosporus*, *Amanita rubescens*, *Armillaria mellea*, *Boletus aestivalis*, *B.edulis*, *Bovista plumbea*, *Cantharellus cibarius*, *Diatrype disciformis*, *Diatrype stigma*, *Hebeloma sinapizans*, *Laccaria laccata*, *Lactarius piperatus*, *Lepista nuda*, *Lycoperdon perlatum*, *Marasmius oreades*, *Mycena pura*, *Panellus stypticus*, *Peniophora quercina*, *Polyporus arcularius*, *Russula cyanoxantha*, *Schizopora paradoxa*, *Stereum hirsutum*, *Trametes hirsuta*, *Trametes versicolor*, *Vuilleminia comedens* and *Xerula radicata*.

It is particularly important to pinpoint the parasitic species on the most frequent tree representatives in Jasen MPA. These are the following species: *Armillariella mellea*, *Fomes fomentarius*, *Fomitopsis pinicola*, *Ganoderma applanatum*, *Heterobasidion annosum*, *Polyporus squamosus*, *Phellinus igniarius*, *Phellinus pomaceus*, *Laetiporus sulphureus* and *Trametes gibbosa*. The species *Ganoderma applanatum*, *Polyporus squamosus*, *Trametes gibbosa* and *Fomes fomentarius* are established only as parasites on beech trunks, while *Laetiporus sulphureus* and *Phellinus igniarius* are recognised parasites on *Salix*. The species *Armillariella mellea* and *Fomitopsis pinicola* are well-known dangerous parasites and grew equally on pine and beech trees. *Phellinus pomaceus* is very common parasite and grew exclusively on *Prunus*, while *Heterobasidion annosum* is a dangerous parasite on conifers, especially on pine trees.

Important Species

About eighty species of edible fungi grow in Jasen MPA area, comprising an important part of the country's biological resources. In recent years the interest in certain fungi species as a source of economic benefit has greatly increased. Considerable amounts of fungi are collected in the forests and sold for export to Western Europe without any control. The species with the greatest demand and highest prices on the Macedonian "fungi market" are: *Amanita caesarea*, all edible boletes, especially *Boletus edulis*, *B.aestivalis*, *B.aereus* and *B.pinophilus*, *Cantharellus cibarius* and *Morchella* spp. of the class Ascomycetes. Some of these species are rare in Jasen MPA. All of these facts are indicative of the current uncontrolled conditions under which fungal reserves are exploited within the country.

Regarding edibility, that is to say, toxicity of fungi, the following can be ascertained: 23 species can be used for human nutrition, whereas 7 species are poisonous. Part of the edible ones, such as: *Armillaria mellea*, *Boletus edulis*, *Cantharellus cibarius*, *Craterellus cornucopioides*, *Hydnum repandum*, *Marasmius oreades*, *Morchella esculenta* and *Lactarius deliciosus* possess excellent culinary qualities. A great concern is the fact that the species *Boletus aestivalis*, *B. edulis*, *Cantharellus cibarius*, *Craterellus cornucopioides*, *Morchella spp.* and *Lactarius deliciosus* are gathered by the local population and are sold at mushroom-purchase points.

The following species of edible fungi are recommended for special attention. They are the most intensively collected, and their populations should be more carefully managed on an annual basis, with the ultimate aim of initiating stricter management regimes where and when necessary.

Fungi species	Exported species	Potentially commercial species
<i>Agaricus campestris</i>		*
<i>Agaricus macrosporus</i>		*
<i>Amanita caesarea</i>	*	*
<i>Armillaria mellea</i>		*
<i>Boletus aereus</i>	*	
<i>Boletus aestivalis</i>	*	
<i>Boletus edulis</i>	*	
<i>Boletus pinophilus</i>	*	
<i>Cantharellus cibarius</i>	*	
<i>Craterellus cornucopioides</i>	*	
<i>Hydnum repandum</i>	*	
<i>Lactarius deliciosus</i>	*	
<i>Lepista nuda</i>		*
<i>Marasmius oreades</i>	*	
<i>Macrolepiota procera</i>		*
<i>Morchella esculenta</i>	*	
<i>Russula cyanoxatha</i>		*

Tab. List of commercial and potentially commercial mushrooms in Jasen MP area.



Fig. *Boletus aestivalis*, a common edible and commercial species.

Rare species

Certain species must be regarded as rare and interesting findings. A total of 15 rare species may be highlighted as rare species. Thus, the species *Agaricus campestris*, *Agaricus macrosporus*, *Amanita caesarea*, *Auricularia auricula-judae*, *Basidiodendron caesiocinerea*, *Boletus rhodoxanthus*, *Boletus regius*, *Craterellus cornucopioides*, *Exidia pythia*, *Lopharia spadicea*, *Macrolepiota procera*, *Aporoxona nitida* and *Volvariella bombycina* are proposed for protection according to the Preliminary Red List of Fungi of the Republic of Macedonia (Karadelev 2000). The species *Boletus rhodoxanthus*, *Aporoxona nitida*, *Lopharia spadicea* and *Volvariella bombycina* belong to the group of a particularly rare or rare species in Macedonia, *Exidia pythia* is a species existing only in endangered or rare habitat, while *Agaricus campestris*, *Agaricus macrosporus*, *Amanita caesarea*, *Auricularia _entiles_-judae*, *Boletus regius*, *Craterellus cornucopioides* and *Macrolepiota procera* belong to the group of a particularly rare or rare species, endangered due to excessive exploitation. The species *Amanita caesarea*, *Boletus rhodoxanthus*, *Boletus regius* and *Volvariella bombycina* are also part of the Red List of Europe, while *Geastrum pectinatum* is not listed in the Preliminary Red List of Fungi of the Republic of Macedonia, but is protected in European Red List of Fungi (Ing, 1993). The species *Panaeolus semiovatus* is proposed for protection by the European Council for Conservation of Fungi (belong to the list of 33 fungal species according to Appendix I of the Bern Convention).

The species *Lentinellus cochleatus* is very rare and it is necessary to put them under protection in the future.

Five species recorded on Jasen MPA were not published. Thus, the species *Coprinus lagopus*, *Hemimycena gracilis*, *Micromphale brasicolens*, *Mycena metata* and *Aureoboletus _entiles* stand for new species for the Republic of Macedonia.

Fungi species	Rare species (MRL, ERL, BERN)
1. <i>Agaricus campestris</i>	MRL
2. <i>Agaricus macrosporus</i>	MRL
3. <i>Apoxona nitida</i>	MRL
4. <i>Amanita caesarea</i>	MRL, ERL
5. <i>Auricularia auricula-judae</i>	MRL
6. <i>Basidioidendron caesiocinerea</i>	MRL
7. <i>Boletus rhodoxanthus</i>	MRL, ERL
8. <i>Boletus regius</i>	MRL, ERL
9. <i>Craterellus cornucopioides</i>	MRL
10. <i>Exidia pythia</i>	MRL
11. <i>Geastrum pectinatum</i>	ERL
12. <i>Lopharia spadicea</i>	MRL
13. <i>Macrolepiota procera</i>	MRL
14. <i>Panaeolus semiovatus</i>	BERN
15. <i>Volvariella bombycina</i>	MRL, ERL

MRL – Macedonian Red List (Karadelev 2000)

ERL – European Red List (Ing 1993)

BERN –Appendix I of the Bern Convention

Tab. List of rare or protected species on Jasen MPA.



Fig. *Apoxona nitida*, a rare lignicolous species specialized on dry stem of *Quercus trojana*



Fig. *Boletus regius*, a rare species of bolete from oak forest.

References

- Ing, B., 1993. Towards a Red List of endangered European macrofungi. Royal Botanic Gardens, Kew, pp 231-237.
- Karadelev, M., 2000. Preliminary Red List of Macrofungi in the Republic of Macedonia. European Council of Conservation of Fungi, Newsletter 10, 7-11.
- Pilát, A. (1936-42). *Polyporaceae*. Atlas des Champignons de l'Europe, Praha.
- Pilát, A. (1937). Contribution a la connaissance des Basidiomycetes de la peninsule des Balkans. Bull. Soc. mycol. France, 53, 81-104.
- Pilát, A. & Lindtner, V. (1939). Ein Beitrag zur Kenntnis der Basidiomyceten von Südserbien II. Glasn. Skopsk. Naučn. Društva. 20: 1-11.
- Litschauer, V. (1939). Beitrag zur Kenntnis der Resupinaten Phylacteriaceen von Südserbien. Glasn. skop. nauč. Društva. 20: 13-22.
- Tortić, M. (1988). Materials for the Mycoflora of Macedonia (Yugoslavia). Maced. Acad. Sci. Arts. Skopje. 1-64.

field: FLORA

expert: Vlado Matevski, academic

Introduction

The flora-vegetation diversity along the Treska River (including Matka, Jasen. Ocha River, Karadzica Mt., Dautica Mt. e.t.c.) has been a topic of interest for the past 90 years. The more important data have been given by Bornmüller (1925), Soška (1933, 1938; 1939, 1940, 1953), Horvat (1936), Lindtner (1937), Petrović (1913, 1940), Georgiev (1943), Micevski (1962, 1974/75, 1978, 1979, 1982, 1985, 1987, 1993, 1995, 1998, 2001, 2005), Em (1978, 1982), Matvejeva (1968, 1970), Drenkovski (1971, 2000), Mayer et Micevski (1982), Rizovski et al. (1974), Micevski et Matevski (1980), Matevski (1987, 2009) etc.

Later vegetation investigations in this area, with respect to modern application of Braun Blanquet (1952) phytocenological methodology, were conducted by Horvat (1936) where, as part of comprehensive and full-scale typological investigations of the vegetation of the Republic of Macedonia, there is some data concerning this area.

Methodology

Flora-vegetation diversity of Jasen area is represented by the dominant habitats and plant communities (vegetation), and the typical plant species (flora).

Valorization has been made in accordance with a few internationally recognized criteria, such as:

- IUCN Red List of threatened Plant species (Walter and Gillet 1998)
- BERN Convention
- Habitat Directive Annex II b, Annex IV b
- CORINE
- CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora

The taxonomy and nomenclature of plant species are in accordance with *Prodromus florum peninsulae Balcanicae* (Hayek, 1924-1933), *Flora Europaea* (Tutin et al., 1964-1978) and *The flora of the Republic of Macedonia* (Micevski, 1985-2005).

Evaluation took into account the personal available data of the author, as well as the data from the “Country Study for Biodiversity Strategy of the Republic of Macedonia-first National Report”(2003) and Biodiversity Strategy and Action Plan of the Republic of Macedonia(2004).

Throughout (September-October) 2010, there were quite a few field investigations covering some of the localities in the area investigated (Kula, Kapina, Ocha River, Kolomot, Mo;ur, Dautica-Boro Pole, Selište, Kopanje, Šiovec, Jasika, Urnat Kamen etc.).

Flora-vegetation survey of the terrain comprised hilly pastures, limestone rocky areas and forest vegetation (Oak forests, Black pine forests) etc.

Flora-vegetation survey, following the above mentioned criteria, is included in the chapter "Methodology".

The flora and vegetation of the protected area - "Jasen" have been partly investigated.

Assessment of Flora

The analysis of the flora of the Protected Area Matka Canyon shows incredible floral diversity richness, composed of floral complexes of various bio-geographical and genetic origins.

Taxonomic Survey on the Floral Diversity in the Protected Area Jasen

SPHENOPSIDA

EQUISETACEAE

Equisetum ramosissimum Desf.

- Treska (Soška, 1938)
- Kapina (Soška, 1938)

FILICINAE

SINOPTERIDACEAE

Cheilanthes maranthae (L.) Domin

- Kapina (Soška, 1938)
- Oča (Soška, 1938)

Cheilanthes persica (Bory) Mett. ex Kuhn

- Klisura na r. Treska (Matvejeva, 1968)
- Osoj (Matvejeva, 1968)
- Sveti Andrija (Treska)
- Oča (Soška, 1938)

Cheilanthes szowitzii F. M.

- Osoj (Matvejeva, 1968)

ASPIDIACEAE

Dryopteris dilatata (Hoffm.) A. Gray

- Dautica, Močur (Petrovic, 1913, *Aspidium spinulosum* Sw.)

Dryopteris filix-mas (L.) Schott

- Matka (Micevski, 1985)

Polystichum aculeatum Roth.

- Osoj (Matvejeva, 1968)

ATHYRIACEAE

Athyrium filix-femina (L.) Roth

- Klisura na r. Treska (Petrović, 1940)

ASPLENIACEAE

Asplenium ruta-muraria L.

- JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)

Asplenium trichomanes L.

- Klisura na r. Treska (Petrovic, 1940)

Ceterach officinarum DC

- Klisura na r. Treska (Petrovic, 1940)
- Kapina (Soška, 1938)

Phyllitis scolopendrium (L.) Newman (2-5)

- Matka (Micevski, 1985)
- Osoj (Matvejeva, 1968)

HYPOLEPIDACEAE

Pteridium aquilinum (L.) Kuhn.

- Kapina (Soška, 1938)

GYMNOSPERMAE

PINACEAE

Pinus nigra Arnold

- Suva Gora (Micevski, 1985)
- Belica (Petrovic, 1913)
 - JASEN: Kula-Kapina, 41°49'14" N; 21°13'39"E; 938m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

Pinus nigra Arn. f. *pallasiana* (Lamb.) Ant.

- Poreče (Soška, 1938)
- Kapina (Soška, 1938)
- Oča (Soška, 1938)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)

CUPRESSACEAE

Juniperus communis L.

- Kapina, Oča (Soška, 1938)

Juniperus communis L. subsp. *hemisphaerica* (J. & C. Presl.) Nyman (2-5)

- Suva Gora (Em, 1982)

Juniperus communis L. subsp. *nana* Syme

- Dautica (Petrovic, 1913, *Juniperus nana* Willd.)

Juniperus excelsa MB.

- Treska (Soška, 1938; Drenkovski, 2000)

Juniperus foetidissima Willd.

- Šiševo (Soška, 1938)
- Glumovo (Soška, 1938)

- N. Breznica (Soška, 1938)
- Poreče (Soška, 1938)
- Osoj (Matvejeva, 1968)
- Treska (Soška, 1938)
- N. Breznica (Drenkovski, 2000)

Juniperus oxycedrus L.

- Kapina (Soška, 1938)

EPHEDRACEAE

Ephedra fragilis Desf. subsp. *camphylopoda* (C. A. Meyer) Asch. et Graebn.

- Klisura na r. Treska (Micevski, 1985)

Ephedra major Host subsp. *procera* (Fischer & C. A. Meyer) Markgraf

- Klisura na r. Treska (Micevski, 1985)
- Matka (Micevski, 1985)
- Kozjak - N. Breznica (Micevski, 1985)
- Kapina (Micevski, 1985)

Ephedra major Host subsp. *major*

- Klisura na r. Treska (Micevski, 1982, 1985)
- Osoj (Matvejeva, 1968)
- Treska (Drenkovski, 2000)

ANGIOSPERMAE

DICOTYLEDONAE

ACANTHACEAE

Acanthus longifolius Host.

- Osoj (Matvejeva, 1968)

ACERACEAE

Acer campestre L. subsp. *marsicum* (Guss.) Hayek

- Suva Gora (Micevski, 2005)

Acer hyrcanum F. et M. var. *intermedium* (Panč.)

- Kula (Soška, 1938)
- Poreče (Soška, 1938)
- Kapina (Soška, 1938)

Acer monspessulanum L.

- Klisura na r. Treska (Soška, 1938)
- Kapina (Soška, 1938)

Acer obtusatum W&K f. *obtusatum*

- Klisura na r. Treska, (Soška, 1938, 1939)
- Kapina (Soška, 1938, 1939)
- Osoj (Matvejeva, 1968)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)

Acer platanoides L.

- Osoj (Matvejeva, 1968)

Acer pseudoplatanus L.

- Kapina (Soška, 1938)
- Osoj (Matvejeva, 1968)

- JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)

Acer tataricum L.

- Poreče (Soška, 1938)

ANACARDIACEAE

Cotinus coggygria Scop. var. *coggygria*

- Kapina (Soška, 1938, 1939)
- Oča (Soška, 1938, 1939)
- JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Pistacia terebinthus L.

- Matka (Micevski, 2005)
- Kapina (Soška, 1938)
- Oča (Soška, 1938)
- Treska (Drenkovski, 2000)
- Oča (Drenkovski, 2000)
- JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Rhus coriaria L.

- Matka (Micevski, 2005)
- Treska (Soška, 1938; Drenkovski, 2000)
- Osoj (Matvejeva, 1968)

APIACEAE (UMBELLIFERAE)

Aegopodium podagraria L.

- Suva Gora (Micevski, 2005)
- Dautica (Petrovic, 1913)

Angelica silvestris L.

- Dautica (Petrovic, 1913)

Anthriscus caucalis Bieb. (6-10)

- Klisura na r. Treska (Micevski, 2005)

Bupleurum baldense Turra subsp. *gussonei* (Arcan.) Tutin

- Kozjak - N. Breznica (Micevski, 2005)

Bupleurum junceum L.

- Osoj (Matvejeva, 1968)

Bupleurum veronense Turra

- Treska (Soška, 1938)

Chaerophyllum hirsutum L.

- Dautica (Petrovic, 1913)

Chaerophyllum temulum L.

- Dautica (Petrovic, 1913)

Eryngium amethystinum L. var. *tenuifolium* Boiss.

- Kula (Soška, 1938)
- Suva Gora (Drenkovski, 1969)

Eryngium campestre L.

- JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Eryngium multifidum S.S.

- Poreče, (Soška, 1938; Drenkovski, 2000)
- Kula (Soška, 1938; Drenkovski, 2000)

Eryngium palmatum Pan.&Vis.

- Suva Gora, (Soška, 1938; Drenkovski, 2000)
- Kapina, (Soška, 1938; Drenkovski, 2000)
- Kula (Soška, 1938, 1939; Drenkovski, 2000)
- Osoj (Matvejeva, 1968)

Eryngium wiegandii Adam.

- Kozjak - N. Breznica (Soška, 1939; Mayer et Micevski, 1982; Drenkovski, 2000)
- Matka (Soška, 1939; Mayer et Micevski, 1982; Drenkovski, 2000)
- Suva Gora (Soška, 1939; Mayer et Micevski, 1982; Drenkovski, 2000)
- Kapina (Soška, 1939; Mayer et Micevski, 1982; Drenkovski, 2000)
- Kula (Soška, 1939; Mayer et Micevski, 1982; Drenkovski, 2000)
- Klisura na r. Treska (Petrovic, 1940)
- Osoj (Matvejeva, 1968)
- Skopje: Kozjak-nad s. Nova Breznica, na varovnički kamenjar, 41°53'14" N; 21°13'49"E; 1055 m, 8.10.2009 (leg. et det. V.Matevski)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Cachrys alpina Bierb.

- Kapina (Soška, 1938, 1939)
- Suva Gora (Drenkovski, 2000)

Carum graecum Boiss. et Heldr.

- Kapina (Soška, 1938)

Carum multiflorum (Sm.) Boiss. subsp. *strictum* (Griseb.) Tutin

- Klisura na r. Treska (Micevski, 2005)
- Suva Gora (Micevski, 2005)

Chaerophyllum aromaticum L. var. *brevipilum* Murb.

- Kula (Soška, 1938)

Cnidium silaifolium (Jacq.) Simk.

- Kapina (Soška, 1938)

Danaa cornubiensis (Torn.) Burn.

- Kapina (Soška, 1938)

Daucus carota L.

- JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)

Ferulago sylvatica (Besser) Reichenb.

- Klisura na r. Treska (Soška, 1938)
- Suva Gora (Soška, 1938)
- Kapina (Soška, 1938)

Heracleum pollinianum Bert.

- Kula (Drenkovski, 2000)

Laser trilobum (L.) Borkh.

- Klisura na r. Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Osoj (Matvejeva, 1968)

- Laserpitium garganicum* (Ten.) Bertol. var. *balcanicum* Stoj. (2-5)
 - Kapina (Micevski, 2005)
 - Kula (Micevski, 2005)
- Malabaila involucrata* Boiss. & Sprun
 - Klisura na r. Treska (Micevski, 2005)
 - Treska (Drenkovski, 2000)
- Meum athamanticum* Jacq. (6-10)
 - Suva Gora (Micevski, 2005)
- Orlaya grandiflora* (L.) Hoffm.
 - Klisura na r. Treska (Petrovic, 1940)
 - Kapina (Soška, 1938)
- Pastinaca hirsuta* Panč.
 - Osoj (Matvejeva, 1968)
- Pastinaca opaca* Bernh.
 - Klisura na r. Treska (Petrovic, 1940)
- Pimpinella saxifragi* L.
 - Kapina (Soška, 1938)
- Peucedanum aegopodioides* (Boiss.) Vand.
 - Kapina (Micevski, 2005)
 - Poreče (Soška, 1938; Drenkovski, 2000)
- Peucedanum austriacum* (Jacq.) Koch.
 - Kapina (Soška, 1938)
 - Poreče (Soška, 1938)
 - Osoj (Matvejeva, 1968)
- Scandix pecten - veneris* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Scandix pecten - veneris* L. subsp. *macrorhyncha* (C. A. Mayer) R.&C (2-5)
 - Suva Gora (Micevski, 2005)
- Scandix stellata* Banks & Sol. (6-10)
 - Klisura na r. Treska (Micevski, 2005)
- Seseli peucedanoides* (Bieb.) Kos.&Pol.
 - Kapina (Soška, 1938, 1939)
- Seseli pallasii* Besser (2-5)
 - Kozjak - N. Breznica (Micevski, 2005)
- Seseli rigidum* Waldst. & Kit.
 - Kozjak - N. Breznica (Soška, 1938; Drenkovski, 2000)
 - Matka (Soška, 1938; Drenkovski, 2000)
 - Suva Gora (Soška, 1938; Drenkovski, 2000)
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - Osoj Matvejeva, 1968)
 ➤ JASEN: Kula-Kapina, 41°49'14" N; 21°13'39"E; 938m, 8.9.2010 (leg. et det. V.Matevski)
 ➤ JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 ➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Siler trilobum* Crantz.
 - Osoj (Matvejeva, 1968)
 - Kapina - Kapina (Soška, 1938)
- Smyrnum perfoliatum* L.

- Suva Gora (Micevski, 2005)
 - Kula (Soška, 1938)
- Smyrniun perfoliatum* L. var. *rotundifolium* Mill.
- Osoj (Matvejeva, 1968)

APOCYNACEAE

- Vinca herbacea* W. K.
- Treska (Soška, 1938)
- Vinca herbacea* Waldst. & Kit. subsp. *herbacea*
- Klisura na r. Treska (Bornmüller, 1928)
- Vinca major* L. subsp. *major*
- Suva Gora (Matevski, 2009)

ARALIACEAE

- Hedera helix* L.
- JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)

ARISTOLOCHIACEAE

- Aristolochia macedonica* Bornm.
- Treska (Sv.Nikola) (Soška,1938)

ASCLEPIADACEAE

- Cionura erecta* (L.) Griseb.
- Osoj (Matvejeva, 1968)
- Vincetoxicum hirundinaria* Medicus subsp. *hirundinaria*
- Kapina (Matevski, 2009)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
- Vincetoxicum fuscatum* (Hornem.) Reichenb
- Osoj (Matvejeva, 1968)

ASTERACEAE (COMPOSITAE)

- Achillea aizoon* Gris.
- Treska (Soška, 1938; Drenkovski, 2000)
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - Kula (Soška, 1938; Drenkovski, 2000)
- Achillea chrysocoma* Friv.
- Dautica (Petrovic, 1913)
- Achillea coarctata* Poir.
- Kapina (Soška, 1938)
 - Treska (Soška, 1938)
- Achillea fraasii* Sch. Bip
- Treska (Soška, 1938; Drenkovski, 2000)
 - Poreče (Soška, 1938; Drenkovski, 2000)
 - Osoj (Matvejeva, 1968)
- Achillea holosericea* S.S.
- Kapina (Soška, 1938; Drenkovski, 2000)
 - Kula (Soška, 1938; Drenkovski, 2000)
 - Poreče (Soška, 1938; Drenkovski, 2000)

- JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Achillea millefolium* L.
- JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)
- Achillea odorata* L.
- Klisura na r. Treska (Petrovic, 1940)
- Achillea serbica* Petr.
- Treska (Soška, 1938; Drenkovski, 2000)
 - Klisura na r. Treska (Petrovic, 1940)
- Achillea sericea* Jank.
- Klisura na r. Treska (Petrovic, 1940)
- Antennaria dioica* Gaertn.
- Dautica (Petrovic, 1913)
- Anthemis tenuiloba* (DC.) Stoj. et Stef. subsp. *macedonica* (Grsb.) Stoj et Acht. var *delicatula* (Vel.) Stoj. et Acht.
- Osoj (Matvejeva, 1968)
- Artemisia lobelii* All.
- Kapina (Soška, 1938)
 - Oča (Soška, 1938)
 - Poreče (Soška, 1938)
- Artemisia camphorata* Vill.
- Osoj (Matvejeva, 1968)
- Artemisia scoparia* W. K.
- Kapina (Soška, 1938)
- Aster amellus* L.
- Kapina, Kula (Soška, 1938)
- Aster linosyris* L.
- Kapina (Soška, 1938)
- Bellis perennis* L.
- Klisura na r. Treska (Petrovic, 1940)
- Carduus leiophyllus* Petr.
- Kapina (Soška, 1938)
 - Oča (Soška, 1938)
- Carlina acanthifolia* All.
- Kapina (Soška, 1938)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)
- Centaurea atropurpurea* W.K.
- Osoj (Micevski, 1974-1975)
 - Suva Gora (Micevski, 1974-1975)
- Centaurea campylacme* Bornm.
- Treska (Soška, 1938)
- Centaurea concolor* D.C. flore albo
- Kula (Soška, 1938)
- Centaurea cylindrocephala* Bornm.
- Kula (Soška, 1938)
- Centaurea deusta* Ten.

- Oča (Soška, 1938)
- Centaurea grbavacensis (Rohl.) Stoj. et Acht.
 - Kapina (Micevski, 1974-1975)
 - Skopje: Kozjak-nad s. Nova Breznica, na varovnički kamenjar, 41°53'14" N; 21°13'49"E; 1055 m, 8.10.2009 (leg. et det. V.Matevski)
 - JASEN: Kula-Kapina, 41°49'14" N; 21°13'39"E; 938m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Centaurea grbavacensis (Rohl.) Stoj. et Acht. f. spinescens Rohl.
 - Kozjak - N. Breznica (Micevski, 1974-1975)
- Centaurea grbavacensis (Rohl.) Stoj. et Acht. f. lutea (Soška) Micev.
 - Kapina (Micevski, 1974-1975)
- Centaurea grisebachii Nym.
 - Klisura na r. Treska (Petrovic, 1940)
 - Poreče (Soška, 1938)
 - Treska (Soška, 1938)
- Centaurea immanuelis Löwii Dg.
 - Kula (Soška, 1938; Drenkovski, 2000)
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - Poreče (Soška, 1938; Drenkovski, 2000)
- Centaurea immanuelis Löwii Dg. fl. luteo
 - Kapina (Soška, 1938; Drenkovski, 2000)
- Centaurea nyssana Petrov. f. orbatica (Vel.) Gajič
 - Treska (Drenkovski, 2000)
 - Kapina (Drenkovski, 2000)
- Centaurea orbatica Vel. fl. coeruleo
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - Poreče (Soška, 1938)
- Centaurea salonitana Vis. f. subinermis Boiss. et Heldr.
 - Treska (Soška, 1938)
- Centaurea skopjensis Micevski
 - Kozjak - N. Breznica (Micevski, 1987)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Centaurea treskana Micevski
 - Kozjak - N. Breznica (Micevski, 1987)
- Centaurea triumfetti All. subsp. cana (Sibth.&Sm.) Dostal
 - Dautica (Petrovic, 1913, Centaurea cana Sm.)
- Chondrilla juncea L.
 - Kapina (Soška, 1938)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
- Chrysanthemum corymbosum L.
 - Kapina (Soška, 1938)
- Chrysanthemum montanum All.
 - Kapina (Soška, 1938)

- Chrysanthemum trichophyllum* Boiss.
- Dautica (Petrovic, 1913)
- Cichorium inthybus* L.
➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Cirsium creticum* Lam.
- Kapina (Soška, 1938)
- Cirsium montenegrinum* Beck. et Szysz.
- Kula (Soška, 1938)
- Crupina vulgaris* Cass.
- Kapina (Soška, 1938)
- Doronicum columnae* Ten.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Klisura na r. Treska (Petrovic, 1940)
- Doronicum pardalianches* L..
- Dautica (Petrovic, 1913, *Doronicum cordatum* Lam)
- Echinops ritro* L.
- Oča (Soška, 1938)
- Kapina (Soška, 1938)
- Eupatorium cannabinum* L.
- Kapina (Soška, 1938)
➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Hieracium bifidum* Fr.
Kapina (Soška, 1938)
- Hieracium cymosum* L.
- Dautica (Petrovic, 1913)
- Hieracium macranthum* Ten.
- Oča (Soška, 1938)
- Hieracium pannosum* Boiss.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Hieracium proceriforme* N. P.
- Kapina (Soška, 1938)
- Kula (Soška, 1938)
- Hieracium silvaticum* Tsh.
- Dautica (Petrovic, 1913)
- Inula aschersoniana* Jka.
- Treska (Soška, 1938)
- Inula conyza* D.C.
- Kapina (Soška, 1938)
- Inula ensifolia* L.
- Kapina, Oča (Soška, 1938)
- Inula oculus christi* L.
- Kapina (Soška, 1938)
- Kula (Soška, 1938)
- Inula salicina* L.
- Kapina (Soška, 1938)
- Jurinea arachnoidea* Bge.

- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Klisura na r. Treska (Petrovic, 1940)
- Lactuca hispida DC.
 - Osoj (Matvejeva, 1968)
- Lactuca perennis L.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
- Lactuca viminea L.
 - Klisura na r. Treska (Petrovic, 1940)
- Lagoseris sancta (L.) K. Malý
 - Treska (Soška, 1938)
- Lapsana communis L.
 - Osoj (Matvejeva, 1968)
- Leontodon asper W.K.
 - Klisura na r. Treska (Petrovic, 1940)
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - Oča (Soška, 1938)
- Leontodon fasciculatus Nym.
 - Osoj (Matvejeva, 1968)
- Petasites ochroleucus Boiss.
 - Treska (Soška, 1938)
 - Kula (Soška, 1938)
- Scorzonera austriaca Willd.
 - Kapina (Soška, 1938)
 - Skopje: Kozjak-nad s. Nova Breznica, na varovnički kamenjar, 41°53'14" N; 21°13'49"E; 1055 m, 8.10.2009 (leg. et det. V.Matevski)
- Scorzonera mollis M.B.
 - Osoj (Matvejeva, 1968)
- Scorzonera rumelica Vel.
 - Treska (Soška, 1938)
- Scorzonera strictiformis Dom.
 - Kapina (Soška, 1938)
- Solidago virgaurea L.
 - Kapina (Soška, 1938)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
- Taraxacum officinale Web.
 - Dautica (Petrovic, 1913)
- Tragopogon balcanicus Vel.
 - Oča (Soška, 1938)
- Tragopogon crocifolium Gouan var. balcanicum Vel.
 - Osoj (Matvejeva, 1968)
- Tussilago farfara L.
 - Kapina (Soška, 1938)
- Xeranthemum annuum L.
 - Kapina (Soška, 1938)

BERBERIDACEAE

Berberis vulgaris L.

- Kapina (Soška, 1938, 1939, 1940)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)

BETULACEAE

Carpinus orientalis Mill.

- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Poreče (Soška, 1938)

Corylus avellana L.

- Treska, Kapina (Soška, 1938)
- Klisura na r. Treska (Petrovic, 1940)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)

Ostrya carpinifolia Scop.

- Treska (Soška, 1938)
- Oča (Soška, 1938)
- Poreče (Soška, 1938)
 - JASEN: Kula-Kapina, 41°49'14" N; 21°13'39"E; 938m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)

BORAGINACEAE

Alkanna noneiformis Griseb.

- Klisura na r. Treska (Matevski, 2009)
- Treska (Soška, 1938)

Anchusa ochroleuca Boiss.

- Treska (Soška, 1938)
- Kula (Soška, 1938)
- Kapina (Soška, 1938)

Anchusa officinalis L. var. *ochroleuca* Boiss.

- Kapina (Matevski, 2009)
- Kula (Matevski, 2009)

Anchusa stylosa Bieb.

- Klisura na r. Treska (Matevski, 2009)
- Treska (Soška, 1938)

Anchusa italica Retz.

- Matka (Matevski, 2009)

Anchusa officinalis L. var. *officinalis*

- Suva Gora (Matevski, 2009)

Asperugo procumbens L.

- Suva Gora (Matevski, 2009)

Buglossoides purpureocaerulea (L.) I. M. Johnston

- Kapina (Matevski, 2009)
- Klisura na r. Treska (Matevski, 2009)
- Suva Gora (Matevski, 2009)
- Klisura na r. Treska (Petrovic, 1940, *Lithospermum purpureo-coeruleum* L.)
- Kapina, Treska (Soška, 1938; *Lithospermum purpureo-coeruleum* L.)
- Klisura na r. Treska (Petrovic, 1940)
- Kapina, Treska (Soška, 1938)
- Buglossoides arvensis* (L.) I.M. Johnston
 - Suva Gora (Matevski, 2009)
- Buglossoides incrassata* (Guss.) I.M. Johnston
 - Suva Gora (Matevski, 2009)
- Cerintho minor* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Cerintho minor* L. subsp. *minor*
 - Klisura na r. Treska (Matevski, 2009)
 - Osoj (Matevski, 2009)
- Cerintho minor* L. subsp. *auriculata* (Ten.) Domac
 - N. Breznica (Matevski, 2009)
- Cynoglossum creticum* Mill.
 - Dautica (Petrovic, 1913, *Cynoglossum pictum* Ait.)
- Cynoglossum hungaricum* Simonkai
 - Klisura na r. Treska (Matevski, 2009)
 - Suva Gora (Matevski, 2009)
 - Klisura na r. Treska (Petrovic, 1940)
- Cynoglossum officinale* L.
 - Suva Gora (Matevski, 2009)
- Cynoglossum barrelieri* (All.) Vural & Kit Tan. subsp. *barrelieri*
 - Suva Gora (Matevski, 2009)
- Echium italicum* L. subsp. *italicum*
 - Suva Gora (Matevski, 2009)
- Echium vulgare* L.
 - Suva Gora (Matevski, 2009)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V. Matevski)
- Heliotropium europaeum* L.
 - Suva Gora (Matevski, 2009)
- Lappula barbata* (Bieb.) Gürke in Engler & Prantl
 - Matka (Matevski, 2009)
 - Suva Gora (Matevski, 2009)
- Lappula squarrosa* (Retz.) Dumort. subsp. *squarrosa*
 - Suva Gora (Matevski, 2009)
- Myosotis arvensis* (L.) Hill
 - Klisura na r. Treska (Matevski, 2009)
 - Matka (Matevski, 2009)
 - Osoj (Matevski, 2009)
 - Suva Gora (Matevski, 2009)
- Myosotis hispida* Schle.
 - Klisura na r. Treska (Petrovic, 1940)
- Myosotis incrassata* Guss.
 - Suva Gora (Matevski, 2009)

- Myosotis intermedia* Link.
 - Klisura na r. Treska (Petrovic, 1940)
 - Dautica (Petrovic, 1913)
- Myosotis laxa* Lehm. subsp. *caespitosa* (C.F. Schultz) Hyl. ex Nordh
 - Suva Gora (Matevski, 2009)
- Myosotis ramosissima* Rochel in Schultes
 - Klisura na r. Treska (Matevski, 2009)
 - Matka (Matevski, 2009)
 - Osoj (Matevski, 2009)
 - Suva Gora (Matevski, 2009)
- Myosotis refracta* Boiss.
 - Matka (Matevski, 2009)
 - Suva Gora (Matevski, 2009)
- Myosotis sparsiflora* Pohl.
 - Matka (Matevski, 2009)
- Myosotis stricta* Link ex Roemer & Schultes
 - Suva Gora (Matevski, 2009)
- Myosotis suaveolens* Walldst. & Kit.
 - Suva Gora (Matevski, 2009)
 - Osoj (Matevski, 2009)
 - Dautica (Petrovic, 1913)
- Myosotis sylvatica* Hoffm., subsp. *cyanea* (Boiss. & Heldr. ex Hayek) Vester. in Ark.
 - Osoj (Matevski, 2009)
 - Suva Gora (Matevski, 2009)
- Neatostema apulum* (L.) I. M. Johnston
 - Klisura na r. Treska (Matevski, 2009)
- Nonea pulla* (L.) DC. in Lam. & DC.
 - Suva Gora (Matevski, 2009)
- Nonea pallens* Petrović
 - Suva Gora (Matevski, 2009)
- Onosma heterophylla* Griseb
 - Suva Gora (Matevski, 2009)
- Onosma stellulatum* W.K.
 - Klisura na r. Treska (Petrovic, 1940)
- Onosma tubiflorum* Vel.
 - Kapina (Soška, 1938)
- Onosma visianii* G. C. Clementi in Atti Riunione
 - Suva Gora (Matevski, 2009)
- Pulmonaria officinalis* L.
 - Suva Gora (Matevski, 2009)
- Symphytum tuberosum* L. subsp. *angustifolia* (A. Kerner) Nyman
 - Suva Gora (Matevski, 2009)

BRASSICACEAE (CRUCIFERAE)

- Aethionema saxatile* (L.) R. Br. in Ait. subsp. *saxatile*
 - Matka (Soška, 1938, 1939, 1940)
- Alliaria petiolata* (MB) Cavara et Grande
 - Dautica (Petrovic, 1913, *Alliaria officinalis* Andrz.)
- Alyssum corymbosum* (Griseb.) Boiss.
 - Klisura na r. Treska (Petrovic, 1940)

- Alyssum edendulum* W.K.
- Klisura na r. Treska (Petrovic, 1940)
- Alyssum orientale* Ard.
- Treska, Kapina (Soška, 1938)
- Alyssum scardicum* Wet.
- Klisura na r. Treska (Petrovic, 1940)
- Dautica (Petrovic, 1913)
- Alyssum sibirnyi* Vel. var. *mughetorum* Bornm.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Alyssum sibirnyi* Vel. subsp. *strybrnyi* var. *macedonicum* Stoj.
- Matka (Micevski, 1995)
- Alyssum thessalum* Hal.
- Kapina (Soška, 1938; Drenkovski, 2000)
- Kula (Soška, 1938; Drenkovski, 2000)
- Alyssum transilvanicum* Sch.
- Klisura na r. Treska (Petrovic, 1940)
- Arabis turrita* L.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Alyssum vranjanum* Nyárad.
- Kapina (Soška, 1938; Drenkovski, 2000)
- Arabis auriculata* Lam.
- Treska (Soška, 1938)
- Arabis bryoides* Boiss.
- Dautica - Močur (Petrovic, 1913)
- Arabis glabra* (L.) Bernh.
- Kapina (Soška, 1938)
- Arabis hirsuta* L.
- Kapina (Soška, 1938)
- Dautica (Petrovic, 1913)
- Arabis muralis* Bertol.
- Matka (Micevski, 1995)
- Treska (Soška, 1938)
- Arabis stricta* Huds.
- Klisura na r. Treska (Petrovic, 1940)
- Arabis turrita* L.
- Klisura na r. Treska (Petrovic, 1940)
- Capsella bursa-pastoris* (L.) Medic. f. *simplicifolia* Pers.
- Matka (Micevski, 1995)
- Cardamine graeca* L. var. *graeca*
- Matka (Micevski, 1995)
- Treska (Soška, 1938)
- Cardamine pratensis* L.
- Dautica (Petrovic, 1913)
- Clypeola jonthlaspi* L. subsp. *jonthlaspi* var. *jonthlaspi*
- Matka (Micevski, 1995)
- Diplotaxis muralis* (L.) DC (2-5)
- Matka (Micevski, 1995)
- Diplotaxis tenuifolia* (L.) DC

- Matka (Micevski, 1995)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
- Draba elongata* Host. Prol. Balcanica O.E. Schultz
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
- Draba athoa* (Griseb.) Boiss.
 - Matka (Micevski, 1995)
- Erophila verna* (L.) Chevall subsp. *verna*
 - Matka (Micevski, 1995)
- Erysimum cheiranthus* Pers.
 - Poreče (Soška, 1938)
- Erysimum comatum* Panč.
 - Matka (Micevski, 1995)
 - Treska (Soška, 1938; Drenkovski, 2000)
 - Dautica (Petrovic, 1913)
- Erysimum cuspidatum* (M.B.) DC.
 - Kapina (Soška, 1938)
 - Matka (Soška, 1938)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
- Erysimum diffusum* Ehrh.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
- Fibigia clypeata* (L.) Medicus
 - Matka (Soška, 1938)
- Hesperis laciniata* All.
 - Matka (Micevski, 1995)
- Hesperis laciniata* All .f. *montenegrina* Janch.
 - Matka (Micevski, 1995)
- Hornungia petraea* (L.) Reichenb.
 - Matka (Micevski, 1995)
- Isatis tinctoria* L.
 - Matka (Micevski, 1995)
 - Osoj (Matvejeva, 1968)
- Iberis sempervirens* L.
 - Osoj (Matvejeva, 1968)
- Lepidium campestre* (L.) R. Br. In Aiton
 - Matka (Micevski, 1995)
- Lepidium latifolium* L.
 - Osoj (Matvejeva, 1968)
- Lunaria annua* L. subsp. *pachyrhiza* (Borb.) Hay. f. *dalmatica* Beck
 - Matka (Micevski, 1995)
- Peltaria alliacea* Jacq.
 - Osoj (Matvejeva, 1968)
- Matthiola macedonica* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Matthiola fruticulosa* (L.) Maire subsp. *valesiaca* (J. Gav.) P. W. Ball
 - Matka (Micevski, 1995)
- Matthiola thessala* Boiss. var. *pedunculata* (P. Conti)

- Treska (Micevski, 1995; Drenkovski, 2000)
- Kapina (Micevski, 1995; Drenkovski, 2000)
- Oča (Soška, 1938)
- Osoj (Matvejeva, 1968)

Sisymbrium officinale (L.) Scop.

- Matka (Micevski, 1995)

Thlaspi perfoliatum L.

- Matka (Micevski, 1995)

BUXACEAE

Buxus sempervirens L.

- Treska (Soška, 1938; Drenkovski, 2000)
- Kapina (Soška, 1938; Drenkovski, 2000)
- Poreče (Soška, 1938; Drenkovski, 2000)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)

CAMPANULACEAE

Asyneuma canescens (W. K.) Gris. et Schenk

- Kapina (Soška, 1938)

Asyneuma limonifolium (L.) Janch.

- Treska (Soška, 1938)
- Kapina (Soška, 1938)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Campanula bonoinesis L.

- Kapina (Soška, 1938)

Campanula glomerata L.

- Kapina (Soška, 1938)

Campanula lingulata W.K.

- Klisura na r. Treska (Petrovic, 1940)
- Kula (Soška, 1938; Drenkovski, 2000)
- Kapina (Soška, 1938; Drenkovski, 2000)
- Treska (Soška, 1938; Drenkovski, 2000)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

Campanula persicifolia L. var. *latispala* Deg. et Dörfl.

- Osoj (Matvejeva, 1968)

Campanula sphaerotrix Griseb.

- Klisura na r. Treska (Petrovic, 1940)
- Kula (Soška, 1938; Drenkovski, 2000)
- Treska (Soška, 1938; Drenkovski, 2000)

Campanula spruneriana Hpe.

- Klisura na r. Treska (Petrovic, 1940)

- Treska - Sveti Nikola (Soška, 1938; Drenkovski, 2000)
- Campanula thessala Boiss.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - Oča (Soška, 1938)
 - Poreče (Soška, 1938)
- Campanula thessala Boiss. f. tomentella Hal.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
- Campanula trachelium L.
 - Poreče (Soška, 1938)
 - Kapina (Soška, 1938)
- Campanula versicolor Andrews f. tomentella Hal.
 - Treska (Drenkovski, 2000)
 - Kapina (Drenkovski, 2000)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
- Edraianthus coreuleus Janch. var. subalpinus (Wettst.) Janch.
 - Kapina (Soška, 1938; Drenkovski, 2000)
- Legousia speculum (L.) Fisch.
 - Klisura na r. Treska (Petrovic, 1940)
- Legousia speculum veneris (L.) Fisch.
 - Kapina (Soška, 1938)
 - Treska (Soška, 1938)
- Podanthum limonifolium S. S.
 - Osoj (Matvejeva, 1968)
- Podanthum limonifolium S.S. f. ramosum Hausskn
 - Osoj (Matvejeva, 1968)

CAPRIFOLIACEAE

- Lonicera caprifolium L.
 - Kapina (Soška, 1938)
 - Klisura na r. Treska (Petrovic, 1940)
- Lonicera etrusca Savi
 - Kula (Soška, 1938)
 - Kapina (Soška, 1938)
 - Treska (Drenkovski, 2000)
- Lonicera xylosteum L.
 - Kula (Soška, 1938)
 - Poreče (Soška, 1938)

CARYOPHYLLACEAE

- Arenaria leptoclados Guss
 - Klisura na r. Treska (Petrovic, 1940)
- Arenaria serpyllifolia L.
 - Dautica (Petrovic, 1913)

- Cerastium brachypetalum* Pers. subsp. *tauricum* (Spreng.) Murb.
 - Matka (Micevski, 1993)
- Cerastium decalvans* Schlosser et Vuk. subsp. *dollineri* (Beck) Greuter et Burdet
 - Matka (Micevski, 1993)
 - Kozjak – N. Breznica (Micevski, 1993)
- Cerastium decalvans* Schlosser et Vuk. subsp. *decalvans* var. *oehmii* Niketić
 - Kapina (Niketić, 1998)
- Cerastium grandiflorum* W.K.
 - Klisura na r. Treska (Petrovic, 1940)
- Cerastium lanigerum* Clem. subsp. *nikolovii* Georg. var. *dörflerianum* Georg.
 - Kapina (Soška, 1938; Drenkovski, 2000)
- Dianthus atrorubens* All.
 - Dautica (Petrovic, 1913)
- Dianthus deltoids* L. var. *subalpinus* Adamov.
 - Dautica (Petrovic, 1913)
- Dianthus gracilis* S.S. var. *armerioides* Gris.
 - Treska (Soška, 1938; Drenkovski, 2000)
- Dianthus haematocalyx* Boiss. et Heldr in Boiss.
 - Matka (Micevski, 1993)
- Dianthus kapinaensis* Markgr. et Lindtner ex Lindtner (2-5)
 - Kapina (Lindtner, 1937)
 - Oča (Lindtner, 1937)
 - Kozjak – N. Breznica (Lindtner, 1937)
 - Klisura na r. Treska (Micevski, 1993)
 - Kapina (Soška, 1938)
 - Kula (Soška, 1938)
 - Poreče (Soška, 1938)
 - Kapina-Kula (Drenkovski, 2000)
- Dianthus minutiflorus* Barb.
 - Dautica (Petrovic, 1913)
- Dianthus silvestris* Wulf.
 - Kapina (Soška, 1938)
 - Oča (Soška, 1938)
- Dianthus skopjensis* Micevski 1
 - Kozjak – N. Breznica (Micevski, 1987, 1993)
- Dianthus stenopetalus* Gris.
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - Kula (Soška, 1938; Drenkovski, 2000)
- Dianthus šuškalovićii* Adamov.
 - Kapina (Soška, 1938)
 - Treska (Soška, 1938)
- Holosteum umbellatum* L f. *glandulosum* Vis.
 - Matka (Micevski, 1993)
- Lychnis coronaria* Lam..
 - Klisura na r. Treska (Petrovic, 1940)
- Lychnis viscaria* L.
 - Osoj (Matvejeva, 1968)
 - Dautica (Petrovic, 1913, *Viscaria viscosa* Aschers.)
- Melandryum viscosum* Cel.
 - Klisura na r. Treska (Petrovic, 1940)

- Minuartia glomerata* (Bieb.) Degen subsp. *glomerata*
 - Matka (Micevski, 1993)
 - Treska (Soška, 1938)
- Minuartia setacea* (Thuill.) Hayek var. *athoa* (Griseb.) Mattf.
 - Matka (Micevski, 1993)
- Minuartia setacea* (Thuill.) Hyek var. *setacea*
 - Matka (Micevski, 1993)
- Minuartia verna* (L.) Hiern
 - Dautica (Petrovic, 1913, *Alsine verna* (L.) Hiern.)
- Minuartia verna* (L.) Hiern subsp. *collina* (Neilr.) Domin
 - Kozjak – N. Breznica (Micevski, 1993)
- Minuartia verna* (L.) Hiern subsp. *thessala* (Hal.) Bornm (2-5)
 - Kozjak – N. Breznica (Micevski, 1993)
- Minuartia viscosa* (Schreb.) Schinz et Thell.
 - Kapina (Soška, 1938)
- Moehringia trinervia* Clairv.
 - Dautica, Močur (Petrovic, 1913)
- Paronychia cephalotes* M.B.
 - Klisura na r. Treska (Petrovic, 1940)
- Paronychia chionaea* Boiss.
 - Kozjak – N. Breznica (Micevski, 1993)
- Paronychia kapela* (Hacq.) Kern.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
- Paronychia macedonica* Chaudhri subsp. *macedonica*
 - Matka (Micevski, 1993)
- Saponaria bellidifolia* Sm.
 - Kapina (Soška, 1938);
 - Osoj (Matvejeva, 1968)
 ➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Saponaria glutinosa* Bieb.f. *calvescens* Borb
 - Matka (Matvejeva, 1968)
 - Osoj (Matvejeva, 1968)
- Silene alba* (Miller) Krause in Sturm
 - Močur (Petrovic, 1913, *Melandrium album* (Mill.) Garcke)
- Silene armeria* L.
 - Klisura na r. Treska (Petrovic, 1940);
 - Osoj (Matvejeva, 1968)
- Silene asterias* Grisb.
 - Dautica (Petrovic, 1913)
- Silene commutata* Guss.
 - Kapina (Soška, 1938)
- Silene densiflora* Urv.
 - Klisura na r. Treska (Petrovic, 1940)
- Silene flavescens* Waldst. et Kit.
 - Matka (Micevski, 1993)
 - Kozjak – N. Breznica (Micevski, 1993)
 - Treska (Soška, 1938)
 - Poreče (Soška, 1938)

Silene italica (L.) Pers. subsp. *italica* var. *athoa* Hal.

- Matka (Petrovic, 1940)
- Klisura na r. Treska (Petrovic, 1940)
- Kapina (Soška, 1938)

Silene otites (L.) Wibel

- Matka (Micevski, 1993)
- Kozjak – N. Breznica (Micevski, 1993)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59" E; 518m, 8.9.2010 (leg. et det. V. Matevski)

Silene radicata Boiss. et Heldr. in Boiss. (6-10)

- Kozjak – N. Breznica (Micevski, 1993)

Silene saxifraga L. subsp. *saxifraga*

- Matka (Micevski, 1993)

Silene subconica Friv.

- Klisura na r. Treska (Petrovic, 1940)

Silene triflora Bornm.

- Treska (Soška, 1938)

Silene viridiflora L.

- Kapina (Soška, 1938);
- Osoj (Matvejeva, 1968)

Silene vulgaris (Moench) Garcke subsp. *commutata* (Guss.) Hayek

- Kapina (Micevski, 1993)
 - JASEN: Kapina, 41°49'03" N; 21°13'01" E; 765m, 8.9.2010 (leg. et det. V. Matevski)

Silene venosa (Gilib.) Aschers

- Klisura na r. Treska (Petrovic, 1940)

CELASTRACEAE

Evonymus europaeus L.

- JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56" E; 593m, 8.9.2010 (leg. et det. V. Matevski)

Evonymus latifolia (L.) Mill.

- Poreče (Soška, 1938)

Evonymus verrucosa Scop.

- Kapina (Soška, 1938)

CHENOPODIACEAE

Chenopodium foliosum Aschers.

- Osoj (Matvejeva, 1968)

CISTACEAE

Fumana vulgaris Spch.

- Kapina (Soška, 1938)

Helianthemum canum (L.) Baumg. f. *macedonicum* Bornm.

- Kapina (Soška, 1938; Drenkovski, 2000)
- Poreče (Soška, 1938; Drenkovski, 2000)
- Dautica (Petrovic, 1913)

Helianthemum marmoreum Stev., Matevski & Tan

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Helianthemum hymettium Boiss. Et Heldr.

- Kapina (Soška, 1938)
- Oča (Soška, 1938)
- Helianthemum ledifolium (L.) Mill.
 - Osoj (Matvejeva, 1968)
- Helianthemum nummularium L.
 - Klisura na r. Treska (Petrovic, 1940)
- Helianthemum tomentosum Scop. var. scopolii (Willk.) Janch.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
- Helianthemum vulgare Lam. et D. C. var. discolor (Rchb.) Janch.
 - Kapina (Soška, 1938)

CONVOLVULACEAE

- Convolvus arvensis L.
 - Klisura na r. Treska (Petrovic, 1940)
- Convolvus canthabrica L.
 - Klisura na r. Treska (Petrovic, 1940)
 - Kapina (Soška, 1938)
- Convolvulus cantabrica L var. cantabrica
 - Kapina (Matevski, 2009)
 - N. Breznica (Matevski, 2009)
- Convolvulus elegantissimus Miller
 - Suva Gora (Matevski, 2009)
- Calystegia sepium (L.) R. Br.
 - Klisura na r. Treska (Petrović, 1940)

CORNACEAE

- Cornus mas L.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
- Cornus sanguinea L.
 - Kapina (Soška, 1938)

CRASSULACEAE

- Sedum acre L.
 - Klisura na r. Treska (Petrovic, 1940)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Sedum album L.
 - Klisura na r. Treska (Matvejeva, 1968)
 - Osoj (Matvejeva, 1968)
- Sedum caespitosum (Cav.) DC.
 - Klisura na r. Treska (Micevski, 1998)
- Sedum cepaea L.
 - Treska (Soška, 1938)
- Sedum dasyphyllum L.
 - Klisura na r. Treska (Micevski, 1998)
- Sedum glaucum W.K.

- Klisura na r. Treska (Micevski, 1998)
- Sedum hispanicum* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Sedum ochroleucum* Cha. In Vill
 - Klisura na r. Treska (Micevski, 1998)
 - Kapina (Micevski, 1998)
- Sedum rubens* L.
 - Klisura na r. Treska (Micevski, 1998)
 - Matka (Micevski, 1998)
- Sempervivum schlehianii* Schott.
 - Osoj (Matvejeva, 1968)
- Umbilicus rupestris* (Salisb.) Dandy in Rid.
 - Klisura na r. Treska (Micevski, 1998)

CUCURBITACEAE

- Bryonia alba* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Ecbalium elaterium* (L.) Rich.
 - Osoj (Matvejeva, 1968)

DIPSACACEAE

- Cephalaria flava* (S. S.) Szabo
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - Kula (Soška, 1938; Drenkovski, 2000)
 - Oča (Soška, 1938; Drenkovski, 2000)
 - Poreče (Soška, 1938; Drenkovski, 2000)
- Cephalaria graeca* R. S.
 - Osoj (Matvejeva, 1968)
- Knautia hybrida* All.
 - Kapina (Soška, 1938)
 - Oča (Soška, 1938)
- Knautia macedonica* Gris.
 - Kula (Soška, 1938; Drenkovski, 2000)
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - Osoj (Matvejeva, 1968)
- Scabiosa dubia* Vel.
 - Kapina (Soška, 1938)
 - Poreče (Soška, 1938)
- Scabiosa silaifolia* Vel.
 - Kapina (Soška, 1938)
- Scabiosa triniaefolia* friv.
 - Klisura na r. Treska (Petrovic, 1940)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59" E; 518m, 8.9.2010
(leg. et det. V.Matevski)
- Scabiosa ucranica* L.
 - Oča (Soška, 1938)

ERICACEAE

- Arctostaphylos uva-ursi* (L.) Sprengel (6-10)
 - Suva Gora (Em, 1982)

Bruckenthalia spiculifolia Rchb

- Močur (Petrovic, 1913)

Vaccinium myrtillus L.

- Dautica (Petrovic, 1913)

EUPHORBIACEAE

Euphorbia barrelieri Savi subsp. *hercegovina* (Beck) Kuzmanov (1-2)

- Kozjak - N. Breznica (Micevski, 1998)

Euphorbia chamaesyce L. subsp. *chamaesyce*

- Osoj (Matvejeva, 1968)

Euphorbia cyparissias L.

- Dautica (Petrovic, 1913)

➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m,
8.9.2010 (leg. et det. V.Matevski)

Euphorbia epithymoides L.

- Osoj (Matvejeva, 1968)

Euphorbia gerardiana Jacq.

- Osoj (Matvejeva, 1968)

Euphorbia glabriflora Vis.

- Oča (Soška, 1938; Micevski, 1979)

- Kapina (Soška, 1938; Micevski, 1979)

Euphorbia glabriflora Vis. subsp. *glabriflora*

- Kapina (Matvejeva, 1970)

- Kozjak - N. Breznica (Matvejeva, 1970)

- Klisura na r. Treska (Matvejeva, 1970)

- Suva Gora (Matvejeva, 1970)

Euphorbia graeca Boiss. et Sprun.

- Osoj (Matvejeva, 1968)

Euphorbia myrsinites L.

- Treska (Soška, 1938)

- Poreče (Soška, 1938)

- Dautica (Petrovic, 1913)

➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et
det. V.Matevski)

Euphorbia polychroma Kern.

- Osoj (Matvejeva, 1968)

Euphorbia rupestris Friv.

- Osoj (Matvejeva, 1968)

Euphorbia taurinensis All.

- Klisura na r. Treska (Micevski, 1998)

Euphorbia thessala Form.

- Kapina (Soška, 1938)

FABACEAE (LEGUMINOSAE)

Anthyllis aurea Welden

- Kapina (Soška, 1938)

- Kula (Soška, 1938)

Anthyllis aurea Wel. in Host var. *aurea*

- Klisura na r. Treska (Horvat, 1936),

Anthyllis aurea Wel. in Host var. *multifoliaolata* Mic. & Mat.

- Kozjak – N. Breznica (Micevski, 2001)
 - Suva Gora (Micevski, 2001)
 - Skopje: Kozjak-nad s. Nova Breznica, na varovnički kamenjar, 41°53'14" N; 21°13'49"E; 1055 m, 8.10.2009 (leg. et det. V. Matevski)
- Anthyllis vulneraria* L.
- Klisura na r. Treska (Petrovic, 1940)
 - Dautica (Petrovic, 1913)
- Anthyllis vulneraria* L. subsp. *polyphylla* (DC.) Nyman.
- Kozjak – N. Breznica (Micevski, 2001)
 - Matka (Micevski, 2001)
 - Kapina (Soška, 1938)
 - Oča (Soška, 1938)
- Anthyllis vulneraria* L. var. *spruneri* (Boiss.)
- Osoj (Matvejeva, 1968)
- Astragalus angustifolius* Lam.
- Dautica (Petrovic, 1913)
- Astragalus chlorocarpus* Gris.
- Kapina (Soška, 1938)
- Astragalus glycyphyllos* L.
- Klisura na r. Treska (Micevski, 2001)
- Astragalus pugioniferus* Fisch.
- Osoj (Matvejeva, 1968)
- Astragalus sericophyllus* Griseb. (2-5)
- Klisura na r. Treska (Soška, 1933; Micevski, 2001)
 - Kozjak – N. Breznica (Micevski, 2001)
 - Kapina (Micevski, 2001)
 - Poreče (Soška, 1933)
 - Kapina (Soška, 1938)
- Astragalus spruneri* Boiss.
- Klisura na r. Treska (Micevski, 2001)
 - Osoj (Matvejeva, 1968)
- Astragalus spruneri* Boiss. var. *thessalus* Boiss.
- Treska (Soška, 1938; Drenkovski, 2000)
- Astragalus onobrychis* L. var. *chlorocarpus* (Gris.)
- Osoj (Matvejeva, 1968)
 - Kapina (Soška, 1938; *Astragalus chlorocarpus* Gris.)
- Colutea arborescens* L.
- Treska (Soška, 1938)
 - Klisura na r. Treska (Petrovic, 1940)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59" E; 518m, 8.9.2010 (leg. et det. V. Matevski)
- Colutea arborescens* L. var. *arborescens*
- Klisura na r. Treska (Micevski, 2001)
- Colutea arborescens* L. var. *typica*
- Kapina (Soška, 1938)
 - Kula (Soška, 1938)
- Colutea arborescens* L. var. *macedonica* Bornm.
- Poreče (Soška, 1938)
- Coronilla coronata* L. (2-5)
- Klisura na r. Treska (Soška, 1938; Em, 1978)

- Kozjak – N. Breznica (Soška, 1938)
- Kapina (Soška, 1938)
- Coronilla cretica L.
 - Klisura na r. Treska (Micevski, 2001)
- Coronilla emeroides Boiss.
 - Klisura na r. Treska (Petrovic, 1940)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
- Coronilla varia L.
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Cytisus hirsutus L. ssp. leucotrichus (Schur.) Briq. var. albanicus Degen et Dörfler
 - Osoj (Matvejeva, 1968)
 - Treska (Drenkovski, 2000)
 - Dautica (Petrovic, 1913)
- Cytisus petrovicii (Adam.) Micevski
 - Klisura na r. Treska (Micevski, 1979)
 - Kapina (Micevski, 1979)
- Cytisus rectipilosus Adam.
 - Kozjak – N. Breznica (Micevski, 2001)
- Dorycnium herbaceum Vill.var. herbaceum
 - Klisura na r. Treska (Micevski, 2001)
 - Matka (Micevski, 2001)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
- Dorycnium hirsutum (L.) Ser. in DC.
 - Klisura na r. Treska (Micevski, 2001)
 - Matka (Micevski, 2001)
 - Osoj (Matvejeva, 1968)
- Genista lydia Boiss.
 - Kozjak – N. Breznica (Soška, 1938)
 - Kapina (Soška, 1938)
- Genista nissana Petrović (6-10)
 - Kozjak – N. Breznica (Micevski, 2001)
- Genista sessilifolia DC.
 - Osoj (Matvejeva, 1968)
- Genista trifoliata Jka.
 - Osoj (Matvejeva, 1968)
- Hippocrepis comosa Willd.
 - Osoj (Matvejeva, 1968)
 - Dautica (Petrovic, 1913)
- Hippocrepis glauca Ten.
 - Kozjak – N. Breznica (Micevski, 2001)
- Lathyrus cicera L.
 - Klisura na r. Treska (Micevski, 2001)
- Lathyrus grandiflorus Sibth. & Sm.
 - Klisura na r. Treska (Soška, 1938, 1939, 1941, 1953)
 - Kula (Soška, 1938, 1939, 1941, 1953)

- Lathyrus laxiflorus* (Desf.) O. Kuntze
 - Dautica (Petrovic, 1913, *Orobus hirsutus* L. var. *globratus* Ach.)
- Lathyrus niger* (L.) Bernh
 - Kula (Soška, 1939)
- Lathyrus setifolius* L.
 - Klisura na r. Treska (Micevski, 2001)
- Lathyrus variegatus* G.G.
 - Klisura na r. Treska (Petrovic, 1940)
 - Dautica (Petrovic, 1913)
- Lathyrus venetus* (Miller) Wohlf. in Koch
 - Klisura na r. Treska (Micevski, 2001)
- Lens nigricans* (Bieb.) Godron f. *cirrifera* (Beck) Hayek
 - Klisura na r. Treska (Micevski, 2001)
- Medicago disciformis* DC.
 - Klisura na r. Treska (Petrovic, 1940)
- Medicago falcata* L.
 - Kapina (Soška, 1938)
- Medicago gerardi* Willd.
 - Klisura na r. Treska (Petrovic, 1940)
- Medicago glutinosa* Bieb. var. *glandulosa* Micevski (1-2)
 - Matka (Micevski, 2001)
- Medicago lupulina* L. var. *willdenoviana* Koch
 - Kozjak – N. Breznica (Micevski, 2001)
- Medicago orbicularis* (L.) Bartal.
 - Klisura na r. Treska (Petrovic, 1940)
- Medicago prostrata* Sucq.
 - Klisura na r. Treska (Petrovic, 1940)
- Medicago prostrata* Jacq. subsp. *vukovicii* Mic. var. *matkae* Mic. (2-5)
 - Matka (Micevski, 2001)
 - Klisura na r. Treska (Micevski, 2001)
- Melilotus neapolitana* Ten.
 - Klisura na r. Treska (Micevski, 2001)
- Onobrychis alba* (Wal. & kit.) Desv.
 - Klisura na r. Treska (Petrovic, 1940)
- Onobrychis alba* (Wal. & kit.) Desv. var. *rhodopae* Deg. & Dor.
 - Kozjak – N. Breznica (Micevski, 2001)
- Onobrychis arenaria* (Kit.) DC.
 - Kozjak – N. Breznica (Micevski, 2001)
- Onobrychis lasiostachya* Boiss.
 - Kapina (Soška, 1938)
 - Kula (Soška, 1938)
- Onobrychis montana* DC. subsp. *scardica* (Griseb) Ball
 - Dautica (Petrovic, 1913, *Onobrychis scardica* Griseb)
- Ononis columnae* All.
 - Osoj (Matvejeva, 1968)
- Ononis pusilla* L.
 - Klisura na r. Treska (Soška, 1938, 1939, 1941)
 - Matka (Soška, 1938, 1939, 1941)
 - Kozjak – N. Breznica (Soška, 1938, 1939, 1941)
 - Kapina (Soška, 1938, 1939, 1941)

- Osoj (Matvejeva, 1968)
- Pisum sativum* L. subsp. *arvense* (L.) Poiret
 - Klisura na r. Treska (Petrovic, 1940)
- Podocytisus caramanicus* Boiss. & Heldr.
 - Klisura na r. Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - Osoj (Matvejeva, 1968)
 - Treska (Drenkovski, 2000)
 - Kapina (Drenkovski, 2000)
- Trifolium alpestre* L.
 - Kapina (Soška, 1938)
- Trifolium balcanicum* Vel.
 - Kapina (Soška, 1938; Drenkovski, 2000)
- Trifolium campestre* Sch.
 - Klisura na r. Treska (Petrovic, 1940)
- Trifolium dalmaticum* Vis.
 - Klisura na r. Treska (Bornmüller, 1925)
 - Treska (Soška, 1938)
- Trifolium echinatum* Bieb.
 - Klisura na r. Treska (Micevski, 2001)
- Trifolium ochroleucon* Hudsson
 - Klisura na r. Treska (Petrovic, 1940)
- Trifolium ochroleucon* Hudsson var. *ochroleucon*
 - Kozjak – N. Breznica (Micevski, 2001)
- Trifolium pignanii* Fauché et Chaub.
 - Treska (Soška, 1938; Drenkovski, 2000)
- Trifolium physodes* Steven ex Bieb.
 - Klisura na r. Treska, Matka (Micevski, 2001)
- Trifolium pratense* L.
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Trifolium purpureum* Loes.
 - Kapina (Soška, 1938)
- Trifolium repens* L.
 - Dautica (Petrovic, 1913)
- Vicia cracca* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Vicia villosa* Roth. subsp. *villosa*
 - Kapina (Soška, 1938)
 - Klisura na r. Treska (Petrovic, 1940)

FAGACEAE

- Fagus sylvatica* L. var. *moesiaca* K.Malý
 - Kapina (Soška, 1938)
 - Kula (Soška, 1938)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
- Quercus cerris* L.
 - Kapina (Soška, 1938)
- Quercus lanuginosa* (Lam.) Thuill.

- Kapina (Soška, 1938)

Quercus pubescens Willd.

- JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Quercus trojana Webb

- Kapina (Soška, 1938, *Quercus macedonica* DC.)
- Poreče (Soška, 1938, *Quercus macedonica* DC)
- Osoj (Matvejeva, 1968, *Quercus macedonica* DC)
- Suva Gora (Drenkovski, 2000, *Quercus macedonica* DC)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)

FUMARIACEAE

Corydalis solida (Mill.) Sw. var. *australis* Hausm.

- Treska (Soška, 1938)

Fumaria thuretii Boiss.

- Matka (Micevski, 1993)

Fumaria vaillantii Lois.

- Klisura na r. Treska (Petrovic, 1940)

GENTIANACEAE

Blackstonia perfoliata. (L) Hudson subsp. *perfoliata*

- Oča (Matevski, 2009)
- Kapina (Soška, 1938)

Centaureum erythraea Rafn, subsp. *erythraea*

- Kapina (Matevski, 2009)
- N. Breznica (Matevski, 2009)
- Oča (Matevski, 2009)

Centaureum erythraea Rafn subsp. *turcicum* (Velen.) Melderis

- N. Breznica (Matevski, 2009)
- Matka (Matevski, 2009)

Gentiana angulosa Gris.

- Poreče (Soška, 1938)

Gentiana cruciata L.

- Suva Gora (Matevski, 2009)
 - JASEN: Boropole, 41°43'42" N; 21°18'29"E; 1667m, 8.9.2010 (leg. et det. V.Matevski)

Gentiana verna L.

- Dautica (Petrovic, 1913)

GERANIACEAE

Geranium lanuginosum Lam.

- Dautica (Petrovic, 1913)

Geranium lucidum L.

- Klisura na r. Treska (Petrovic, 1940)
- Treska (Soška, 1938)

- Geranium macrorrhizum* L.
 - Osoj (Matvejeva, 1968)
 - Dautica (Petrovic, 1913)
- Geranium macrostylum* Boiss. (6-10)
 - Kozjak – N. Breznica (Micevski, 2005)
- Geranium molle* L.
 - Klisura na r. Treska (Bornmüller, 1925)
- Geranium purpureum* Vill.
 - Klisura na r. Treska (Micevski, 2005)
 - Dautica (Petrovic, 1913)
- Geranium robertianum* L.
 - Kapina (Soška, 1938, 1939, 1940, 1941)
 - Klisura na r. Treska (Petrovic, 1940)
- Geranium rotundifolium* L.
 - Kapina (Soška, 1938, 1939)
- Geranium sanguineum* L.
 - Kapina (Soška, 1938, 1939)
- Geranium cinereum* Cav. subsp. *subcaulescens* (L'Her.) Hayek
 - Dautica - Močur (Petrovic, 1913, *Geranium subcaulescens* L'Her.)

GESNERIACEAE

- Ramondia nathaliae* Pan. & Pet.
 - Klisura na r. Treska (Petrovic, 1940)
 - Treska (Drenkovski, 2000)
 - Kapina (Drenkovski, 2000)
 - Kula (Drenkovski, 2000)
 - Suva Gora (Drenkovski, 2000)
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - Kula (Soška, 1938)
 - Treska-Manastir Sveti Nikola (Soška, 1938)

GLOBULARIACEAE

- Globularia bellidifolia* Ten.
 - Klisura na r. Treska (Petrovic, 1940)
 - Kapina (Soška, 1938)
 - Poreče (Soška, 1938)
 - Dautica (Petrovic, 1913)
- Globularia willkommii* Nym.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)

HYPERICACEAE (GUTTIGERAE)

- Hypericum annulatum* Moris
 - Matka (Micevski, 1995)
 - Oča (Micevski, 1995)
- Hypericum barbatum* Jacq.
 - Osoj (Matvejeva, 1968)
 - Dautica (Petrovic, 1913)
- Hypericum degenii* Bornm.

- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Osoj (Matvejeva, 1968)

Hypericum perforatum L.

- JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)

Hypericum rumeliacum Boiss.

- Klisura na r. Treska (Petrovic, 1940)
- Kapina (Drenkovski, 2000)
- Poreč (Drenkovski, 2000)
- JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Hypericum rumeliacum Boiss. var. *blepharophyllum* Bornm.

- Kozjak – N. Breznica (Micevski, 1995)
- Matka (Micevski, 1995)
- Treska (Soška, 1938)
- Kapina (Soška, 1938)

JUGLANDACEAE

Juglans regia L.

- JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)

LAMIACEAE (LABIATEAE)

Ajuga laxmanni (Murr.) Benth.

- Treska (Soška, 1938)
- Kula (Soška, 1938)

Ajuga genevensis L.

- Klisura na r. Treska (Petrovic, 1940)
- Dautica (Petrovic, 1913)

Ballota nigra L.

- JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

Calamintha acinos (L.) Clairv.

- Kapina (Soška, 1938)

Calamintha acinos (L.) Clairv. var. *perennans* Vel.

- Osoj (Matvejeva, 1968)

Calamintha alpina (L.) Lam. ssp. *hungarica* Simk. f. *albiflora* K.Maly

- Osoj (Matvejeva, 1968)
- JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

Calamintha granatensis Boiss. et Reut.

- Kapina (Soška, 1938)
- Poreče (Soška, 1938)

Calamintha nepeta (L.) Savi var. *subisodonta* Borb.

- Osoj (Matvejeva, 1968)

Calamintha nepeta (L.) Savi

- Kapina (Soška, 1938)

Calamintha patavina Jacq.

- Treska (Soška, 1938)

- Calamintha patavina* Jacq.
- Klisura na r. Treska (Petrovic, 1940)
- Calamintha patavina* Jacq. f. *elatior* Gris.
- Treska (Soška, 1938)
- Clinopodium vulgare* L.
➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Lamium purpureum* L. f. *albiflora* Geidr.
- Osoj (Matvejeva, 1968)
- Lamium maculatum* L.
- Klisura na r. Treska (Petrovic, 1940)
- Lamium scardicum* Wettst.
- Treska (Soška, 1938)
- Melitits melissophyllum* L.
- Kula (Soška, 1938)
- Micromeria cristata* (Hoppe) Gris.
- Osoj (Matvejeva, 1968)
- Micromeria cristata* (Hppe.) Gris. f. *typica*
- Kula (Soška, 1938)
- Micromeria cristata* f. *canescens* Vand.
- Poreče (Soška, 1938)
- Micromeria juliana* (L.) Benth.
- Osoj (Matvejeva, 1968)
- Nepeta cataria* L.
- Kapina (Soška, 1938)
- Poreče (Soška, 1938)
- Origanum vulgare* L.
➤ JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
- Prunella grandiflora* (L.) Jacq.
- Kapina (Soška, 1938)
- Prunella laciniata* L.
- Kapina (Soška, 1938)
- Prunella vulgaris* L.
- Klisura na r. Treska (Petrovic, 1940)
- Salvia amplexicaulis* Lam.
- Kula (Soška, 1938)
- Salvia ringens* S.S. var. *baldacciana* Briq.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Kula (Soška, 1938)
- Poreče (Soška, 1938)
➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
➤ JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
➤ JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
- Salvia ringens* S.S. – flore albo
- Treska (Soška, 1938)

- Salvia ringens* S.S. var. *macedonica* Briq.
- Klisura na r. Treska (Petrovic, 1940)
- Salvia sclarea* L.
- Kapina (Soška, 1938)
- Oča (Soška, 1938)
- Salvia verticillata* L.
- Kapina (Soška, 1938)
- Salvia sclarea* L.
- Klisura na r. Treska (Petrovic, 1940)
- Satureja hortensis* L.
- Osoj (Matvejeva, 1968)
- Scutellaria alpina* L.
➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Scutellaria columnae* All.
- Poreče (Soška, 1938)
- Klisura na r. Treska (Petrovic, 1940)
- Scutellaria pinnatifida* Rchb.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Sideritis montana* L.
- Klisura na r. Treska (Petrovic, 1940)
- Sideritis scardica* Gris.
- Treska (Soška, 1938; Drenkovski, 2000)
- Kapina (Soška, 1938; Drenkovski, 2000)
- Oča (Soška, 1938; Drenkovski, 2000)
➤ JASEN: Boropole, 41°43'42" N; 21°18'29"E; 1667m, 8.9.2010 (leg. et det. V.Matevski)
- Stachys alpina* L.
- Klisura na r. Treska (Petrovic, 1940)
- Stachys germanica* L.
- Dautica (Petrovic, 1913)
- Stachys plumosa* Gris.
- Treska (Soška, 1938)
- Osoj (Matvejeva, 1968)
- Stachys recta* L.
➤ JASEN: Boropole, 41°43'42" N; 21°18'29"E; 1667m, 8.9.2010 (leg. et det. V.Matevski)
- Stachys scardica* Gris.
- Kapina (Soška, 1938; Drenkovski, 2000)
➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
➤ JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)
- Stachys subcrenata* Vis. var. *rhodopaea* (Vel.) Hay.
- Kapina (Soška, 1938; Drenkovski, 2000)
- Oča (Soška, 1938; Drenkovski, 2000)
- Poreče (Soška, 1938; Drenkovski, 2000)
- Stachys viridis* Boiss. et Heldr.
- Matka (Micevski, 1988)

Teucrium chamaedrus L.

- Kapina (Soška, 1938)
- Oča (Soška, 1938)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)

Teucrium montanum L. var. *hirsuta* Boiss.

- Osoj (Matvejeva, 1968)
- Treska (Soška, 1938; *Teucrium hirsutum* Boiss.)
- Kapina (Soška, 1938; *Teucrium hirsutum* Boiss.)
- Poreče (Soška, 1938; *Teucrium hirsutum* Boiss.)
- Osoj (Matvejeva, 1968)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Teucrium polium L.

- Kapina (Soška, 1938)
- Oča (Soška, 1938)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)

Thymus alsarensis Ronn.

- Treska (Soška, 1938; Drenkovski, 2000)

Thymus cherlerioides Vis.

- Dautica (Petrovic, 1913, *Thymus boissieri* Hal.)

Thymus ciliatopubescens Hal.

- Treska (Soška, 1938)
- Kapina (Soška, 1938)

Thymus epiroticus Hal.

- Kapina (Soška, 1938)

Thymus hirsutus M.B.

- Klisura na r. Treska (Petrovic, 1940)

Thymus loevyanus (Opiz.) Roun.

- Klisura na r. Treska (Petrovic, 1940)

Thymus longicaulis Presl.

- Dautica (Petrovic, 1913)

Thymus longidens Vel. var. *lanicaulis* Ronn.

- Kapina (Soška, 1938)
- Oča (Soška, 1938)
- Treska (Soška, 1938)

Thymus moesiacus Vel.

- Kapina (Soška, 1938)

Thymus oehmianus Soška et Ronn.

- Kapina (Soška, 1938; Drenkovski, 2000)

Thymus poliothrix Ronn.

- Treska (Soška, 1938)

Thymus skopjensis Micevski & Matevski

- Skopje: Kozjak-nad s. Nova Breznica, na varovnički kamenjar, 41°53'14" N; 21°13'49"E; 1055 m, 8.10.2009 (leg. et det. V.Matevski)

Thymus striatus Vahl.

- Dautica (Petrovic, 1913)

Thymus stribrnyi Vel.

- Treska (Drenkovski, 2000)

Thymus tosevi Vel.

- Kapina (Soška, 1938; Drenkovski, 2000)
- Poreče (Soška, 1938; Drenkovski, 2000)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

LENTIBULARIACEAE

Pinguicula balcanica Casper

- Močur (Petrovic, 1913, *Pinguicula leptoceras* Rchb.)

LINACEAE

Linum austriacum L.

- Kozjak – N. Breznica, (Micevski, 2005)
- Kapina (Soška, 1938)

Linum capitatum Kit.

- Poreče (Soška, 1938)

Linum hirsutum L.

- Kozjak – N. Breznica (Micevski, 2005)

Linum tauricum Willd.

- Kapina (Soška, 1938)

Linum tenuifolium L.

- Kapina (Soška, 1938, 1939, 1940),
- Klisura na r. Treska (Petrovic, 1940)

LORANTHACEAE

Arceutobium oxycedri (DC.) Bieb.

- Kapina (Soška, 1938, 1953)

MALVACEAE

Althaea officinalis L.

- Klisura na r. Treska (Georgiev, 1943)
- Osoj (Matvejeva, 1968)

Kitaibela vitifolia Willd (6-10)

- Klisura na r. Treska (Micevski, 1998)

Malva neglecta Wallr.

- Osoj (Matvejeva, 1968)

MORACEAE

Ficus carica L.

- Treska (Matka) (Soška, 1938; Drenkovski, 2000)

OLEACEAE

Fraxinus angustifolia Vahl subsp. *oxycarpa* (Bieb. ex Willd.) Franco & Rocha Afonso

- Klisura na r. Treska (Matevski, 2009)

Fraxinus excelsior L.

- Treska (Soška, 1938)
- Poreče (Soška, 1938)
- Klisura na r. Treska (Matevski, 2009)

- Osoj (Matevski, 2009)
- Fraxinus ornus* L
- Kapina (Matevski, 2009)
 - Klisura na r. Treska (Matevski, 2009)
 - Kapina (Soška, 1938)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)
- Fraxinus ornus*. L.var. *ornus*
- Klisura na r. Treska (Matevski, 2009)
- Jasminum fruticans* L.
- Treska (Soška, 1938; Drenkovski, 2000))
 - Klisura na r. Treska (Matevski, 2009)
 - Matka (Matevski, 2009)
- Ligustrum vulgare* L.
- Kapina (Soška, 1938)
 - Kapina (Matevski, 2009)
- Phillyrea latifolia* L.,
- Osoj (Matevski, 2009)
- Syringa vulgaris* L.
- Treska (Soška, 1938; Drenkovski, 2000))
 - Klisura na r. Treska (Matevski, 2009)
 - Matka (Matevski, 2009)

ONAGEACEAE

Chamaenerion angustifolium Scop.

- Osoj (Matvejeva, 1968)
- Kapina (Soška, 1938)

Chamaenerion palustre Scop.

- Oča (Soška, 1938)

Epilobium dodonaei Vill.

- JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
- JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)

Epilobium hirsutum L.

- Osoj (Matvejeva, 1968)

Epilobium parviflorum Schreb.

- Osoj (Matvejeva, 1968)

OROBANCHACEAE

Lathraea squamaria L.

- Osoj (Matvejeva, 1968)

Orobanche alba Steph.

- Klisura na r. Treska (Petrovic, 1940)

- Treska (Soška, 1938)
- Orobanche arenaria Borkh.
 - Osoj (Matvejeva, 1968)
- Orobanche elatior L.
 - Klisura na r. Treska (Petrovic, 1940)
- Orobanche gracilis Sm.
 - Kapina (Soška, 1938)
 - Poreče (Soška, 1938)
 - Osoj (Matvejeva, 1968)
- Orobanche nana Nöe
 - Treska (Soška, 1938)
 - Osoj (Matvejeva, 1968)
- Orobanche ramosa L.
 - Klisura na r. Treska (Petrovic, 1940)
- Phelipaea boissieri (Reut.) Stapf.
 - Klisura na r. Treska (Micevski, 1962)

PHYTOLACCACEAE

- Phytolacca americana L. (2-5)
 - Matka (Micevski, 1993)

PLANTAGINACEAE

- Plantago argentea Chx.
 - Kapina (Soška, 1938)
 - Osoj (Matvejeva, 1968)
- Plantago eriophylla Decne.
 - Kapina (Soška, 1938)
 - Oča (Soška, 1938)
- Plantago gentianoides Sm.
 - Dautica (Petrovic, 1913)
- Plantago holosteum Scop.
 - Dautica (Petrovic, 1913, Plantago carinata Schrad.)
- Plantago lanceolata L.
 - Dautica (Petrovic, 1913)
- Plantago major L.
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
- Plantago scardica Griseb.
 - Dautica (Petrovic, 1913)

PLUMBAGINACEAE

- Goniolimon tataricum (L.) Boiss. in DC. var. macedonicum Stoj. & Stef. (1)
 - Kapina (Slavnic, 1942)
- Plumbago europaea L.
 - Kapina (Soška, 1938)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

POLYGALACEAE

- Polygala amarella Coss.

- Dautica (Petrovic, 1913)
- Polygala bosniaca Murb.
 - Treska (Soška, 1938)
 - Oča (Soška, 1938)
- Polygala major Jacq.
 - Kozjak - N. Breznica (Micevski, 2005)
 - Matka (Micevski, 2005)
 - Treska (Soška, 1938)
 - Oča (Soška, 1938)
- Polygala nicaeensis Ris. ex Koch subsp. mediterranea Chodat
 - Klisura na r. Treska (Micevski, 2005)
 - Osoj (Matvejeva, 1968)
 - Dautica (Petrovic, 1913)
- Polygala supina Schreb. var. bosniaca (Murb.) Hayek
 - Treska (Drenkovski, 2000)
 - Oča (Drenkovski, 2000)
- Polygala vulgaris (L.) Schk.
 - Dautica (Petrovic, 1913)
- Polygala vulgaris f. typica
 - Treska (Soška, 1938)
- Polygala vulgaris f. trichoptera Chod.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)

POLYGONACEAE

Polygonum aviculare L.

- JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)

Rumex acetosa L.

- Dautica (Petrovic, 1913)

Rumex alpinus L.

- Dautica (Petrovic, 1913)

PRIMULACEAE

Androsace villosa L.

- Dautica (Petrovic, 1913)

Cyclamen neapolitanum Ten.

- Treska (Soška, 1938)

Primula columnae Ten.

- Kapina (Soška, 1938)
- Dautica (Petrovic, 1913)

- JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)

Primula vulgaris Huds.

- Treska (Soška, 1938)
- Kapina (Soška, 1938)

Soldanella hungarica Simk.

- Dautica (Petrovic, 1913)

PYROLACEAE

Orthilia secunda (L.) House
- Klisura na r. Treska (Soška, 1938)

RANUNCULACEAE

Anemone blanda Sch. et Ky.

- Osoj (Matvejeva, 1968)

Anemone fulgens J. Gay var. *purpureo-violacea* Boiss.

- Osoj (Matvejeva, 1968)

Anemone nemorosa L.

- Dautica (Petrovic, 1913)

Aquilegia nigricans Baumg.

- Kapina (Soška, 1938, *Aquilegia vulgaris* L.)

➤ JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m,
8.9.2010 (leg. et det. V.Matevski)

Caltha palustris L.

- Dautica (Petrovic, 1913)

Clematis flammula L.

- Klisura na r. Treska (Petrovic, 1940)

Clematis vitalba L.

➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et
det. V.Matevski)

➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m,
8.9.2010 (leg. et det. V.Matevski)

➤ JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et
det. V.Matevski)

Delphinium consolida L.

- Klisura na r. Treska (Petrovic, 1940)

Delphinium fissum Waldst. et Kit. var. *pubescens* Heuff.

- Kapina (Soška, 1938)

- Osoj (Matvejeva, 1968)

Delphinium halteratum S.S.

- Oča (Soška, 1938)

Ficaria pumila Vel.

- Klisura na r. Treska (Petrovic, 1940)

Hepatica nobilis Miller (2-5)

- Suva Gora (Micevski, 1985)

Nigella damascena L.

- Klisura na r. Treska (Petrovic, 1940)

Pulsatilla halleri (All.) Willd. subsp. *macedonica* Krause (6-10)

- Suva Gora (Drenkovski, 2000)

- Kapina (Drenkovski, 2000)

- Osoj (Matvejeva, 1968)

- Kozjak - N. Breznica (Micevski, 1985)

Ranunculus bulbosus L.

- Osoj (Matvejeva, 1968)

Ranunculus ficariiformis F. Schultz

- Treska (Soška, 1938)

Ranunculus garganicus Ten.

- Treska (Soška, 1938)

Ranunculus montanus W.

- Dautica (Petrovic, 1913)
- Ranunculus oreophilus M.B.
 - Poreče (Soška, 1938)
- Ranunculus polyanthemus L.
 - Dautica (Petrovic, 1913)
- Ranunculus psilostachys Griseb.
 - Klisura na r. Treska (Petrovic, 1940)
 - Treska (Soška, 1938)
 - Dautica, (Petrovic, 1913)
- Ranunculus sardous Crantz.
 - Klisura na r. Treska (Petrovic, 1940)
- Ranunculus sartorianus B.H.
 - Dautica, (Petrovic, 1913)
- Ranunculus steveni Andrz.
 - Dautica, (Petrovic, 1913)
- Thalictrum aquilegifolium L. var. aquilegifolium f. niveum (Baumg.) A. Nyárády
 - Matka (Soška, 1938)
- Thalictrum flexuosum Bornm.
 - Kapina (Soška, 1938)
- Thalictrum minus L. subsp. majus (Crantz) Rony et Fouc. var. arpadianum (Borb.) Hay.
 - Matka (Micevski, 1985)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Thalictrum minus L. subsp. majus (Crantz) Rony et Fouc. var. majus f. flexuosum (Bernh.) Trinajs.
 - Kapina (Soška, 1938)
- Thalictrum simplex L.
 - Osoj (Matvejeva, 1968)

RHAMNACEAE

- Frangula alnus
 - JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)
- Frangula rupestris (Scop.) Schur
 - Matka (Soška, 1938)
 - Kozjak - N. Breznica (Soška, 1938)
 - Kapina (Soška, 1938)
 - Suva Gora (Drenkovski, 2000)
- Paliurus spina-christi Mill.
 - Sveti Nikola (Treska) (Soška, 1938; Drenkovski, 2000)
 - Kapina (Soška, 1938; Drenkovski, 2000)
- Rhamnus illyrica Griseb. var. orbiculata (Bornm.) Simonkia (6-10)
 - Suva Gora (Drenkovski, 1971)
- Rhamnus macedonica Diap.
 - Kapina (Soška, 1938)
- Rhamnus pumila L.
 - Poreče (Soška, 1938)

- Rhamnus rupestris* Scop.
- Kapina (Soška, 1938)
Rhamnus saxatilis Jacq. subsp. *saxatilis* (6-10)
- Kapina (Soška, 1938)
Rhamnus saxatilis Jacq. subsp. *tinctorius* (Walds. & Kit.) Nyman (2-5)
- Osoj (Drenkovski, 1969)

ROSACEAE

- Amelanchier ovalis* Medicus
- Kapina (Micevski, 1998)
- Osoj (Matvejeva, 1968)
Aremonia agrimonioides (L.) Neck.
- Kapina (Soška, 1938)
- Močur (Petrovic, 1913)
Cotoneaster tomentosa (Ait.) Lindl.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Poreče (Soška, 1938)
Crataegus monogyna Jacq.
➤ JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010
(leg. et det. V.Matevski)
Fragaria moschata Dchesne.
- Močur (Petrovic, 1913, *Fragaria elatior* Ehrh.)
Fragaria vesca L.
- Klisura na r. Treska (Petrovic, 1940)
- Močur (Petrovic, 1913)
Fragaria viridis Dusesne
- Kozjak - N. Breznica (Matvejeva, 1968)
- Osoj (Matvejeva, 1968)
Geum coccineum Sibth.
- Dautica (Petrovic, 1913)
Geum montanum L.
- Dautica (Petrovic, 1913)
Geum rivale L.
- Klisura na r. Treska (Petrovic, 1940)
Geum urbanum L.
- Klisura na r. Treska (Petrovic, 1940)
- Klisura na r. Treska (Micevski, 1998)
- Močur (Petrovic, 1913)
Potentilla astracana Jacq. var. *astracana*
- Matka (Micevski, 1998)
Potentilla lacionosa Beck.
- Klisura na r. Treska (Petrovic, 1940)
Potentilla micrantha Ram.
- Treska (Soška, 1938)
- Kapina (Soška, 1938)
Potentilla recta L. var. *balcanica* Th. W.
- Kapina (Soška, 1938)
Potentilla velenovskyi Hayek (2-5)
- Kozjak - N. Breznica, (Micevski, 1998)

- Potentilla pedata* Nestler var. *pedata*
- Kapina (Soška, 1938, 1939, 1940, 1941)
- Potentilla pedata* Nestler var. *pinnatifida* (Griseb.) Micevski
- Kozjak - N. Breznica, (Micevski, 1998)
- Potentilla rupestris* L.
- Klisura na r. Treska (Petrovic, 1940)
- Prunus mahaleb* L.
- Oča (Soška, 1938)
- Pyracantha coccinea* Roemer
- Klisura na r. Treska (Em, 1968; Micevski, 1998)
- Pyrus amygdaliformis* Vill.
- Oča (Soška, 1938)
- Rosa arvensis* Hudson
- Klisura na r. Treska (Micevski, 1998)
- Rubus discolor* Weihe & Nees
- Klisura na r. Treska (Micevski, 1998)
➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
➤ JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)
- Rubus canescens* DC
➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
➤ JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
- Rubus sanguineus* Friv. var. *sanguineus*
- Matka (Micevski, 1998)
- Rubus sanguineus* Friv. var. *alnifolius* Markova
- Matka (Micevski, 1998)
➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Rubus saxatilis* L. (2-5)
- Kapina (Rizovski et al., 1974)
- Suva Gora (Rizovski et al., 1974)
- Rubus tomentosus* Borkh.
- Kapina (Soška, 1938)
- Matka (Micevski, 1998)
- Rosa corymbifera* Borkh.
- Kozjak - N. Breznica (Micevski, 1998)
- Matka (Micevski, 1998)
- Rosa dumalis* Bechst.
- Kozjak - N. Breznica, (Micevski, 1998)
- Rosa gallica* L.
- Klisura na r. Treska (Soška, 1938)
- Kapina (Soška, 1938)
- Kula (Soška, 1938)
- Rosa gallica* L. var. *austriaca* (Cr.) H. Br.
- Kapina (Soška, 1938)
- Kula (Soška, 1938)
- Rosa micrantha* Sm. var. *hungarica* (A. Kern.) H. Br.

- Kapina (Soška, 1938)
- Rosa pendulina L.
 - Kozjak - N. Breznica (Matvejeva, 1968)
 - Osoj (Matvejeva, 1968)
 - Kapina (Soška, 1938)
- Rosa pimpinellifolia L.
 - Klisura na r. Treska (Soška, 1939)
 - Kapina (Soška, 1939)
- Rosa spinosissima L. (Soška, 1938)
 - Kapina (Soška, 1938)
- Rosa tomentosa Sm.
 - Kapina (Soška, 1938)
- Sanguisorba minor subsp. minor (6-10)
 - Klisura na r. Treska (Micevski, 1998)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
- Sorbus aria (L.) Cr.
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m, 8.9.2010 (leg. et det. V.Matevski)
- Sorbus torminalis (L.) Cr.
 - Treska (Soška, 1938)
 - Poreče (Soška, 1938)
- Sorbus umbellata Desf.
 - Kapina (Soška, 1938)
 - Poreče (Soška, 1938)

RUBIACEAE

- Asperula aristata L.
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Asperula longiflora W. K. f. puberula Hal. et Sint.
 - Poreče (Soška, 1938)
 - Osoj (Matvejeva, 1968)
- Crucianella angustifolia L. var. oxyloba (Jka.) Hal.
 - Kapina (Soška, 1938)
 - Osoj (Matvejeva, 1968)
- Galium anisophyllum Vill
 - Dautica (Petrovic, 1913)
- Galium laevipes Opiz
 - Močur (Petrovic, 1913, Galium cruciata Scop.)
- Galium lucidum All.
 - Kapina (Soška, 1938)
- Galium mollugo L.
 - Dautica (Petrovic, 1913)
- Galium ochroleucum Kit.
 - Klisura na r. Treska (Petrovic, 1940)
- Galium pseudoaristatum Schur.
 - Kula (Soška, 1938)

- Kapina (Soška, 1938)
- Galium purpureum* L. f. *trichanthum* Vand.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - Kula (Soška, 1938)
 - Oča (Soška, 1938)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Valantia muralis* L.
 - Oča (Soška, 1938)

RUTACEAE

- Dictamnus albus* L. var. *albus*
 - Klisura na r. Treska (Micevski, 2005)
- Dictamnus albus* L. var. *macedonicus* Borbas
 - Kapina (Soška, 1938, 1939)
 - Klisura na r. Treska (Petrovic, 1940)
- Haplophyllum albanicum* (Bald.) Bornm.
 - Kozjak - N. Breznica (Micevski, 2005)
 - Klisura na r. Treska (Micevski, 2005)
- Haplophyllum suaveolens* (DC.) Don fil. f. *suaveolens*
 - Kozjak - N. Breznica (Micevski, 2005)
 - Kapina (Micevski, 2005)
 - Oča (Soška, 1938)

SALICACEAE

- Populus alba* L.
 - Oča (Soška, 1938)
- Salix amplexicaulis* Bory et Chaub.
 - Treska (Drenkovski, 2000)
- Salix elaeagnos* Scop.
 - Oča (Soška, 1938)
 - JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m, 8.9.2010 (leg. et det. V.Matevski)
 - JASEN: Oča-Grnec, dolomit, 41°45'32" N; 21°13'59"E; 602m, 8.9.2010 (leg. et det. V.Matevski)

SANTALACEAE

- Comandra elegans* (Roc. Ex Rei.) Reichenb.
 - Matka (Micevski, 2005)
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
- Thesium divaricatum* Jan. ex Mert. & W.D.J. Koch
 - Kozjak - N. Breznica (Micevski, 2005)
 - Osoj (Matvejeva, 1968)
- Thesium linophyllum* L.
 - Kozjak - N. Breznica (Soška, 1938)
 - Kapina (Soška, 1938)

SAXIFRAGACEAE

Saxifraga adscendens L.

- Dautica (Petrovic, 1913)

Saxifraga aizoon Jacq. var. *brevifolia* Engl.

- Treska (Soška, 1938)

Saxifraga bulbifera L.

- Treska (Soška, 1938)

Saxifraga coryophylla Grsb.

- Dautica (Petrovic, 1913)

Saxifraga grisebachii Dg. et Dfl.

- Treska (Soška, 1938)

- Kapina (Soška, 1938)

- Treska-Matka (Drenkovski, 2000)

- Kapina (Drenkovski, 2000)

Saxifraga grisebachii Deg. & Dorfl. var. *grisebachii*

- Klisura na r. Treska (Mayer et Micev. 1970; Micevski, 1998)

Saxifraga grisebachii Deg. & Dorfl. var. *grisebachii* f. *lindtneri* Mic. & May. (1)

- Klisura na r. Treska (Mayer et Micev. 1970; Micevski, 1998)

Saxifraga rotundifolia L. var. *hirsuta* Sternb.

- Treska (Soška, 1938)

- Dautica (Petrovic, 1913)

Saxifraga rotundifolia L var. *rotundifolia*

- Klisura na r. Treska (Micevski, 1998)

Saxifraga rotundifolia L var. *heucherifolia* (Griseb. & Schenk) Engl.

- Matka (Micevski, 1998)

Saxifraga scardica Griseb. var. *pseudophylla* Engl. & Irm. (2-5)

- Klisura na r. Treska (Micevski, 1998)

Saxifraga sempervivum Koch. (2-5)

- Klisura na r. Treska (Micevski, 1998)

- Močur (Petrovic, 1913, *Saxifraga friederici-augustii* Bias.)

Saxifraga sempervivum Koch. f. *stenophylla* (Boiss.) Hayek (1-2)

- Klisura na r. Treska (Micevski, 1998)

- Kozjak - N. Breznica (Micevski, 1998)

Saxifraga sibirnyi Vel.

- Kapina (Soška, 1938)

Saxifraga tridactylites L.

- Treska (Soška, 1938)

SCROPHULARIACEAE

Digitalis ambigua Murr.

- Kapina (Soška, 1938)

- Kula (Soška, 1938)

Digitalis laevigata W. K.

- Kapina (Soška, 1938)

Linaria macedonica Gris.

- Kapina (Soška, 1938)

- Kula (Soška, 1938)

Linaria parnassica Boiss. et Heldr.

- Treska (Soška, 1938)

Linaria pelisseriana DC.

- Osoj (Matvejeva, 1968)
- Euphrasia kernerii* Wettst.
 - Osoj (Matvejeva, 1968)
- Euphrasia latifolia* Grsb.
 - Osoj (Matvejeva, 1968)
- Euphrasia pactinata* Ten.
 - Kapina, Oča (Soška, 1938)
- Euphrasia rostkoviana* Hayne subsp. *montana* (Jord.) Wettst.
 - Dautica (Petrovic, 1913, *Euphrasia montana* Jord.)
- Melampyrum heracleoticum* Boiss. et Orph.
 - Kapina (Soška, 1938; Drenkovski, 2000)
 - Kula (Soška, 1938; Drenkovski, 2000)
 - Poreče (Soška, 1938; Drenkovski, 2000)
- Odontites lutea* (L.) Rchb.
 - Kapina (Soška, 1938)
 - JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Odontites glutinosa* (M.B.) Benth.
 - Kapina (Soška, 1938)
 - Oča (Soška, 1938)
- Odontites rubra* Gilb.
 - Kapina (Soška, 1938)
 - JASEN: Oča-Kolomot, 41°47'46" N; 21°11'59"E; 518m, 8.9.2010 (leg. et det. V.Matevski)
- Odontites rubra* Pers. var. *serotina* (Lam.) Wettst.
 - Osoj (Matvejeva, 1968)
- Orphantha lutea* Wettst.
 - Osoj (Matvejeva, 1968)
- Pedicularis orphantha* Griseb.
 - Dautica (Petrovic, 1913)
- Rhinanthus angustifolius* C.C. Gmelion subsp. *angustifolius*
 - Kapina (Soška, 1938, *Alectorolophus montanus* Wettst.)
- Verbascum banaticum* Roch.
 - Kapina (Soška, 1938)
- Verbascum baldaccii* Dg.
 - Treska (Soška, 1938; Drenkovski, 2000)
- Verbascum bornmülleri* Vel.
 - Kapina (Soška, 1938; Drenkovski, 2000)
- Verbascum bosnense* K. Maly
 - Osoj (Matvejeva, 1968)
- Verbascum eriophorum* Godr.
 - Osoj (Matvejeva, 1968)
- Verbascum floccosum* W.K.
 - Klisura na r. Treska (Petrovic, 1940)
- Verbascum herzogii* Bornm.
 - Treska (Soška, 1938; Drenkovski, 2000)
 - Kapina (Soška, 1938; Drenkovski, 2000)
- Verbascum lanatum* Schrad.
 - Kapina (Soška, 1938)
- Verbascum longifolium* DC.

- Dautica (Petrovic, 1913)
- Verbascum phlomoides L.
 - Kapina (Soška, 1938)
- Verbascum speciosum Schrad.
 - Kula (Soška, 1938)
- Veronica austriaca L.
 - Klisura na r. Treska (Petrovic, 1940)
 - Dautica (Petrovic, 1913)
- Veronica austriaca L. var. teucroides Boiss. et Heldr.
 - Dautica (Petrovic, 1913)
- Veronica chamaedrys L.
 - Dautica (Petrovic, 1913)
- Veronica dentata Schm.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
 - Kula (Soška, 1938)
- Veronica jacquinii Baumg.
 - Poreče (Soška, 1938)
- Veronica rhodopaea (Vel.) Hay. var. macedonica (Adamov.)
 - Kapina (Soška, 1938)
 - Poreče (Soška, 1938)
- Veronica urticifolia Jacq.
 - Dautica (Petrovic, 1913)

SOLANACEAE

- Atropa belladonna L.
 - Osoj (Matvejeva, 1968)
- Hyosiamus albus L.
 - Klisura na r. Treska (Petrovic, 1940)

STAPHYLEACEAE

- Staphylea pinnata L.
 - Klisura na r. Treska (Drenkovski, 1971)
 - Osoj (Matvejeva, 1968)

TILIACEAE

- Tilia tomentosa Moench
 - Klisura na r. Treska (Micevski, 1998)
 - Matka (Micevski, 1998)

MALVACEAE

- Kitaibela vitifolia Wild.
 - Klisura na r. Treska (Černjavski, 1943)

THYMELAEACEAE

- Daphne cneorum L.
 - Poreče (Soška, 1938)
 - Suva Gora (Em, 1982)
- Daphne kosanini Stojanov
 - Suva Gora (Drenkovski, 2000)

Daphne oleoides Schreber var. *kosanini* Stoj. (1)
Thymelaea passerina (L.) Cos. & Germ. f. *pillifera* (Rohl.) Hay (6-10)
- Kozjak - N. Breznica (Micevski, 1998)

ULMACEAE

Celtis australis L.

- Osoj (Micevski, 1993)
- Klisura na r. Treska (Micevski, 1993)
- Treska (Soška, 1938)

URTICACEAE

Parietaria officinalis L.

- JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)

Urtica dioica L.

- JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)

VALERIANACEAE

Valeriana tuberosa L.

- Osoj (Matvejeva, 1968)

Varenianella rimosa Bost.

- Klisura na r. Treska (Petrovic, 1940)

VIOLACEAE

Viola aetolica B. H.

- Dautica (Petrovic, 1913)

Viola alba Besser

- Osoj (Matvejeva, 1968)

Viola alchariensis G. Beck var. *herzogii* G. Beck

- Osoj (Matvejeva, 1968)

Viola arvensis Murray

- Matka (Micevski, 1995)

Viola eletior Gris.

- Osoj (Matvejeva, 1968)

Viola herzogii (W. Becker) Bornm.

- Kapina (Soška, 1938)

Viola herzogii fl. *coeruleo*

- Kapina (Soška, 1938)

Viola hymettia Boiss. et Heldr. in Boiss.

- Matka (Micevski, 1995)

Viola kitaibeliana R. S.

- Kapina (Soška, 1938)

Viola kosaninii (Degen) Hayek (1-2)

- Kozjak - N. Breznica (Micevski, 1995)
- Oča (Lindtner, 1937)
- Kapina (Soška, 1938; Drenkovski, 2000)

Viola odorata L.

- Treska (Soška, 1938)

Viola orphanidis Boiss

- Dautica (Petrovic, 1913)
- Viola pontica W. Beck.
 - Kapina (Soška, 1938)
- Viola riviniana Rchb.
 - Treska, Kapina (Soška, 1938)
 - Dautica (Petrovic, 1913)
- Viola silvestris Rchb.
 - Osoj (Matvejeva, 1968)
 - Dautica (Petrovic, 1913)
- Viola suavis Bieb. (6-10)
 - Kapina (Soška, 1938)
 - Treska (Soška, 1938)

VITACEAE

- Vitis vinifera L. subsp. silvestris (C.C. Gmelin) Hegi
 - Kapina (Micevski, 2005)

MONOCOTYLEDONAE

AMARYLLIDACEAE

- Sternbergia colchiciflora W. K.
 - Osoj (Matvejeva, 1968)

CYPERACEAE

- Carex halleriana Asso.
 - Treska (Soška, 1938)
- Carex digitata L.
 - Kapina (Soška, 1938; Drenkovski, 2000))
- Carex divulsa Good.
 - Treska (Soška, 1938)
- Carex gracilis Curt.
 - Kapina (Soška, 1938)
- Carex humilis Leyss.
 - Kapina (Soška, 1938)
- Carex laevis Kit.
 - Kapina (Soška, 1938)
- Carex verna Chx.
 - Treska (Soška, 1938)

DIOSCOREACEAE

- Tamus communis L.
 - Kapina (Soška, 1938)

IRIDACEAE

- Iris attica Boiss. et Heldr.
 - Treska (Soška, 1938; Drenkovski, 2000)
- Iris reichenbachii Heuff.
 - Klisura na r. Treska (Petrovic, 1940)
 - Osoj (Matvejeva, 1968)
 - Kapina (Soška, 1938)

Iris sintenisii Jka.

- Poreče (Soška, 1938)

LILIACEAE

Allium cupanii Raf.

- Osoj (Matvejeva, 1968)

Allium flavum L.

- Kapina (Soška, 1938)

- Oča (Soška, 1938)

➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

Allium meteoricum Heldr. et Haussk.

- Treska (Soška, 1938)

Allium moschatum L.

- Treska (Soška, 1938)

- Kapina (Soška, 1938)

Allium rotundum L.

- Kapina (Soška, 1938)

Anthericum ramosum L.

- Osoj (Matvejeva, 1968)

- Kapina (Soška, 1938)

➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)

Anthericum liliago L.

- Kapina (Soška, 1938)

Asparagus officinalis L.

- Kapina (Soška, 1938)

- Oča (Soška, 1938)

Asparagus tenuifolius Lam.

- Kapina (Soška, 1938)

Asphodeline liburnica (Scop.) Rchb.

- Kula (Drenkovski, 2000)

- Kula (Soška, 1938)

Asphodeline lutea (L.) Rchb.

- Kula (Soška, 1938)

Asphodeline taurica Kunth.

- Osoj (Matvejeva, 1968)

Asphodelus albus L.

- Kula (Soška, 1938)

- Kapina (Soška, 1938)

- Dautica, (Petrovic, 1913)

Convallaria maialis L.

- Kapina (Soška, 1938)

Colchicum autumnale

➤ JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)

Colchicum dorfleri Hab.

- Klisura na r. Treska (Petrovic, 1940)

- Treska (Soška, 1938; Drenkovski, 2000)

- Kapina (Soška, 1938; Drenkovski, 2000)

- Fritillaria graeca* Boiss. et Spr. subsp. *gussichiae* Dg. et Dfl.
 - Treska (Soška, 1938; Drenkovski, 2000)
- Fritillaria montana* Hop.
 - Klisura na r. Treska (Petrovic, 1940)
- Lilium martagon* L. subsp. *cattaniae* Vis.
 - Kapina (Soška, 1938)
- Muscari botryoides* DC
 - Klisura na r. Treska (Petrovic, 1940)
- Muscari comosum* L.
 - Kapina (Soška, 1938)
- Ornithogalum bouchéanum* (Kth.) Aschers.
 - Treska (Soška, 1938)
- Ornithogalum pyrenaicum* L.
 - Osoj (Matvejeva, 1968)
- Ornithogalum refractum* Kit.
 - Osoj (Matvejeva, 1968)
- Polygonatum latifolium* (Jacq.) Desf.
 ➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m,
 8.9.2010 (leg. et det. V.Matevski)
- Polygonatum odoratum* (Miller) Druce
 ➤ JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m,
 8.9.2010 (leg. et det. V.Matevski)
- Polygonatum officinale* All.
 - Kapina (Soška, 1938)
- Polygonatum pruinatum* Boiss.
 - Kapina (Soška, 1938)
- Ruscus aculeatus* L.
 - Treska (Soška, 1938)
- Scilla bifolia* L.
 - Klisura na r. Treska (Petrovic, 1940)
 - Dautica - Močur (Petrovic, 1913)
- Tulipa australis* Hal.
 - Kapina (Soška, 1938)
 - Dautica - Močur (Petrovic, 1913)
- Tulipa scardica* Bornm.
 - Osoj (Matvejeva, 1968)

ORCHIDACEAE

- Anacamptis pyramidalis* C. Rich.
 - Klisura na r. Treska (Petrovic, 1940)
 - Osoj (Matvejeva, 1968)
 - Kapina (Soška, 1938)
- Centrosis abortiva* (L.) Sw.
 - Kapina (Soška, 1938)
- Cephalathera ensifolia* Rich.
 - Osoj (Matvejeva, 1968)
- Dactylorhiza baltica* (Klinge) Orlova in Min.
 - Dautica (Petrovic, 1913, *Orchis latifolia* L.)
- Dactylorhiza cordigera* (Fries) Soo. subsp. *cordigera*
 - Močur (Petrovic, 1913, *Orchis cordigera* Fr.)

- Dactylorhiza iberica* (Bieb.) Soo.subsp *sambucina*
 - Močur (Petrovic, 1913, *Orchis sambucina* L)
- Epipactis latifolia* (L.) All.
 - Kapina (Soška, 1938)
- Gymnadenia conopsea* (L.) R.Br.
 - Kapina (Soška, 1938)
- Orchis coriophora* L.
 - Kapina (Soška, 1938)
- Orchis maculata* L.
 - Kapina (Soška, 1938)
- Orchis sambucina* L. var. *typica* i var. *purpurea* Koch.
 - Osoj (Matvejeva, 1968)
- Orchis tridentata* Scop.
 - Treska (Soška, 1938)

POACEAE (GRAMINEAE)

- Agropyrum cristatum* Bess.
 - Klisura na r. Treska (Petrovic, 1940)
- Andropogon ischaemum* L.
 - Kapina (Soška, 1938)
- Calamagrostis arundinacea* (L.) Rth.
 - Kapina (Soška, 1938)
 ➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m,
 8.9.2010 (leg. et det. V.Matevski)
- Chrysopogon gryllus* Trin.
 - Kapina (Soška, 1938)
- Cynodon dactylon* (L.) Pers.
 ➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et
 det. V.Matevski)
- Bellardiochloa violaceae* (Bellardi) Chiov.
 - Dautica, (Petrovic, 1913, *Poa violacea* Bess.)
- Brachypodium pinnatum* (L.) Beauv.
 - Kapina (Soška, 1938)
- Brachypodium sylvaticum* (Hudson) Beauv.
 ➤ JASEN: Oča-Grnec, dolomit, 41°45'48" N; 21°13'51"E; 624m,
 8.9.2010 (leg. et det. V.Matevski)
- Bromus erectus* Huds.
 - Kapina (Soška, 1938)
- Bromus racemosus* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Bromus squarrosus* L.
 - Treska (Soška, 1938)
 - Kapina (Soška, 1938)
- Bromus sterilis* L.
 - Klisura na r. Treska (Petrovic, 1940)
- Dactylis glomerata* L.
 ➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et
 det. V.Matevski)
 ➤ JASEN: Oča-Grnec, dolomit, 41°45'38" N; 21°13'56"E; 593m,
 8.9.2010 (leg. et det. V.Matevski)

- Festuca duriuscula* L.
- Treska (Soška, 1938)
- Kula (Soška, 1938)
- Kapina (Soška, 1938)
- Festuca ovina* L.
- Dautica (Petrovic, 1913)
- Festuca paniculata* (L.) Schinz.&Thell. *spadicea* L.
- Dautica (Petrovic, 1913, *Festuca spadicea* L.)
- Festuca vallesiaca* Schl.
- Kapina (Soška, 1938)
➤ JASEN: Kapina, 41°49'03" N; 21°13'01"E; 765m, 8.9.2010 (leg. et det. V.Matevski)
- Lasiagrostis calamagrostis* (L.) Lk.
- Kapina (Soška, 1938)
- Lolium perenne* L.
➤ JASEN: Selište, 41°45'22" N; 21°15'43"E; 1005m, 8.9.2010 (leg. et det. V.Matevski)
- Luzula luzuloides* (Lam.) Dandy&Wilmott
- Dautica (Petrovic, 1913, *Luzula albida* DC.)
- Luzula rubella* Hpc.
- Dautica (Petrovic, 1913)
- Koeleria splendens* Presl.
- Kapina (Soška, 1938)
- Koeleria glauca* Presl.
- Dautica, (Petrovic, 1913)
- Koeleria glaucovirens* Dom.
- Kapina (Soška, 1938)
- Melica transilvanica* Schur. var. *flavescens* (Schur) Asch. Gr.
- Kapina (Soška, 1938)
- Molinia coerulea* (L.) Mch.
- Kapina (Soška, 1938)
- Phleum alpinum* L.
- Dautica, (Petrovic, 1913)
- Phleum graecum* Boiss. et Heldr.
- Treska (Soška, 1938)
- Phleum montanum* C. Koch.
- Kapina (Soška, 1938)
- Poa alpina* L.
- Dautica, (Petrovic, 1913)
- Poa bulbosa* L.
- Kapina (Soška, 1938)
- Poa nemoralis* L.
- Kapina (Soška, 1938)
- Sesleria tenuifolia* Schrad.
- Treska (Soška, 1938)
- Stipa capillata* L.
- Kapina (Soška, 1938)

IMPORTANT PLANT SPECIES

▪ IUCN WORLD RED LIST (Walter & Gillet, 1998)

- Thymus oehmianus* Ronninger & Soška (local endemic species)
- Alkanna noneiformis* Griseb.
- Centaurea grbavacensis* (Rohl.) Stoj. & Acht.
- Genista nissana* Petrović (local endemic species)
- Ramonda nathaliae* Pančić & Petrović
- Viola kosaninii* (Degen) Hay.
- Fritillaria graeca* Boiss. et Spr. subsp. *gussichiae* Deg. et Dörfl.

▪ PLANT SPECIES WICH LOCUS CLASSICUS IS Treska River NM AND LOCAL ENDEMICS SPECIES:

- *Thymus oehmianus* Ronninger & Soška (local endemic species)
- *Dianthus kapinaensis* Markg. et Lindtn. (local endemic species)
- *Thymus karadzicensis* Matevski & Micevski (local endemic species)
- *Thymus skopjensis* Micev. & Matev. (local endemic species)
- *Eryngium wiegandii* Adam.
- *Centaurea campylacme* Bornm. (MK lokalen endemit)
- *Centaurea treskana* Micev. (MK lokalen endemit)
- *Centaurea skopjensis* Micev. (MK lokalen endemit)
- *Dianthus skopjensis* Micev. (MK lokalen endemit)
- *Saxifraga grisebachii* Degen & Dörfler
- *Festuca treskana* Micev. & Kost. (MK lokalen endemit)
- *Crocus pallidus* Kit. & Drenk. (Istočnomeziski endem)
- *Pulsatilla haleri* (All.) Willd. subsp. *macedonica* Krause

▪ MACEDONIAN ENDEMIC SPECIES

- *Astragalus sericophyllus* Griseb
- *Viola herzogii* Becker
- *Potentilla velenovskyi* Hayek
- *Verbascum herzogii* Bornm.
- *Veronica kindlii* Adamović
- *Helianthemum marmoreum* Stev., Matevski & Tan
- *Potentilla macedonica* Micev.

▪ RETKE RASTITELNI VIDOVI (RARE PLANT SPECIES):

- *Phyllitis scolopendrium* (L.) Nenjman
- *Cheilanthes persica* (Bory) Mett. ex Kuhn
- *Ephedra fragilis* Desf. subsp. *camphylopoda* (C. A. Mey.) Asch. et Graebn.
- *Ephedra major* Host subsp. *major*
- *Juniperus foetidissima* Willd.
- *Juniperus excelsa* MB.
- *Buxus sempervirens* L.
- *Quercus trojana* Webb.
- *Cachrys alpina* Bierb.
- *Haplophyllum albanicum* (Bald.) Bornm.

- *Galium rhodopeum* Velen.
- *Blackstonia perfoliata* (L) Hudson
- *Sideritis scardica* Gris.
- *Convolvulus elegantissimus* Miller
- *Coronilla coronata* L.
- *Phelipaea boissieri* (Reut.) Stapf.
- *Staphylea pinnata* L.
- *Onosma visianii* G. C. Clementi

▪ **CITES CONVENTION**
(fam. *Orchidaceae*)

- *Anacamptis pyramidalis* C. Rich.
- *Cephalathera longifolia* (L.) Fritsch
- *Limodorum abortivum* (L.) Swartz
- *Orchis coriophora* L.
- *Dactylorhiza maculata* (L.) Soo.
- *Dactylorhiza sambucina* (L.) Soo.
- *Orchis tridentata* Scop.
- *Epipactis helleborine* (L.) Crantz
- *Gymnadenia conopsea* (L.) R.Br.

BERN CONVENTION – Annex 1:

- *Fritillaria gussichiae*
- *Galium rhodopeum*

Europaean CORINE List:

- *Ramonda nathaliae*
- *Silene vulgaris*

National CORINE list of Macedonia:

- *Thymus oehmianus*
- *Viola kosaninii*

References

- Bornmuller, J. (1925). Beitrage zur Flora Mazedoniens I. Engl. Bot. Jahrb., 59: 294-504, Leipzig.
- Bornmuller, J. (1926). Beitrage zur Flora Mazedoniens II. Engl. Bot. Jahrb., 60: 1-125, Leipzig.
- Bornmuller, J. (1928). Beitrage zur Flora Mazedoniens III. Engl. Bot. Jahrb., 61: 1-195, Leipzig.
- Drenkovski, R.(1968). Neuer Fundorg der Gemeinen Pimperuss (*Staphylea pinnata* L.) in Mazedonien. Fragmenta balcanica Mac. Mus. Sci. Nat. 6, 13 (148): 129-135, Skopje.
- Drenkovski, R.(1969). Pregled na florata na Vodnjanska planina. Godishen zbornik PMF. 21:135-163, Skopje
- Drenkovski, R.(1969). Beitrage zur Kenntnis der Flora der westlichen Randebirge des Kessels von Skopje. Acta Mac. Mus. Sci. Nat. 11, 3 (93): 41-59, Skopje.
- Drenkovski, R., (1971): Neue Beitrage zur Horologie einiger sippen der Flora Mazedoniens. Fragmenta Balcanica, 8, 15 (193), 129-133.

- Drenkovski, R., (2000). Rastitelniot svet i sumite na planinskiot masiv Jakupica-vrednosti i znacenje.-in Hadzi Pecova, S. Et al.: Planinskiot masiv Jakupica, Studentski Zbor Skopje.
- Em, H., 1978. O nekim osobenostima borovih šuma Makedonije. I. Reliktne crnoborove zajednice.-Mitt.Ostalp.-din.Ges.f.Veget.-Innsbruck.
- Em, H., 1981. O nekim osobenostima borovih šuma Makedonije. II.Prilozi, MANU, Odd.za biol. i medic. nauki, 2(1-2):5-16, Skopje.
- Georgiev, T. (1943). Prinos km florata na Zapadna Makedonija. Bull. De la Soc.Botanique de Bulgarie, 9, Sofija.
- Hayek, A., (1924-1927): Prodromus Florae peninsulae Balcanicae, I. Feddes Repert., Beih., 30. Dahlem bei Berlin.
- Hayek, A., (1928-1931): Prodromus Florae peninsulae Balcanicae, II. Feddes Repert., Beih., 30. Dahlem bei Berlin.
- Hayek, A., (1933): Prodromus Florae peninsulae Balcanicae, III. Feddes Repert., Beih., 30. Dahlem bei Berlin.
- Horvat, I., (1936/37): Istraživanje vegetacije planina Vardarske banovine. IV. Ljet.Jug.Akad., Zagreb, 50:136-142.
- Jurishic, J.Z. (1923). Prilog flori Juzhne Srbije. Spomenik SKA 60, Beograd.
- Koshanin, N. (1911). Vegetacija planine Jakupice u Makedoniji. Glasnik SKA 85, Beograd.
- Košanin, N., (1921): La distribution géographique des deux especes de *Ramondia* du Balkan. Glas. SKA, 101 (43):44-49.
- Lindtner, V., 1937 (1938). Notizen zur Flora von Südserbien. BSS Sk. 20(7):137-140.
- Matevski, V., (1987): "Taksonomija i horologija na Sect. MARGINATI (A. Kerner) A. Kerner od rodot THYMUS L. vo florata na SR Makedonija". Doktorska disertacija, PMF-Skopje.
- Matevski, V., (2010): Flora na Republika Makedonija. MANU, 2(1): 1-190.
- Matvejeva, J., (1968). Floristicka karakteristika na Osoj. Fragn.Balc.Prirodnauč.muz., 6(15), Skopje.
- Matvejeva, J., (1982). Ruderalnata vegetacijata na SR Makedonija. Odd.biol.nauki, MANU, 1-70, Skopje.
- Mayer, E., Micevski, K., (1982). Zur taxonomischen bewertung von *Eryngium wiegandii* Adamovic. Acta Bot. Croat., 41:181-186.
- Micevski, K., (1962). Beitrag zur Kenntnis der Flora Mazedoniens II. God.zb.Prir.matem.fak, biologija, Skopje, 13: 165-174.
- Micevski, K., (1975). Prilog kon poznavanje na neкои taksoni od Sect. *ACROCENTRON* Cass. (Gen. *Centaurea*) vo florata na Makedonija. God.zb. PMF-biol., Skopje, 27-28: 175-185
- Micevski, K., (1978). Retki i nepoznati vidovi za florata na Makedonija. God.zb. PMF-biol., Skopje, 31: 151-165.
- Micevski, K., (1978). Reliktност i endemizam vo florata i vegetacijata na Makedonija. Prilozi, Odd. za prir.mat.nauki, MANU, 79-93.
- Micevski, K., (1978). Polimorfizam kaj vidovite od Sect. *Phalolepis* (Cass.)DC na rodot *Centaurea* (*Asteraceae*) vo Makedonija. Prilozi, Odd. za prir.mat.nauki, MANU, 10(2): 55-65.
- Micevski, K., 1979. Sect. *Coroathamnus* (Koch) Nyman od rodot *Cytisus* L. (*Fabaceae*) vo florata na Makedonija. Prilozi, Odd. za prir.mat.nauki, MANU, 11(1): 65-77.
- Micevski, K., (1982). *Ephedra major* Host. u flori Makedonije. Glas. Rep. Zavoda zašt. prirode, Titograd, 15: 55-62.

- Micevski, K., (1985). Flora na Republika Makedonija. MANU, 1(1): 1-152
- Micevski, K., (1987). Prilog za zapoznavawe florata na Makedonija. VIII. God. zb. PMF-biol., Skopje, 39-40: 193-202.
- Micevski, K., (1990). Beitrag zur Kenntnis der Gattung *Centaurea* L. (*Asteraceae*) in SR Makedonien. Prilozi, Odd. biol.med.nauki, MANU, 8(1-2): 47-56.
- Micevski, K., (1990). Noviteti od rodot *Dianthus* L. (*Caryophyllaceae*) vo florata na SR Makedonija. Prilozi, Odd. biol.med.nauki, MANU, 7(1-2): 31-46.
- Micevski, K., (1991). Noviteti vo familijata *Caryophyllaceae* vo florata na Makedonija. Prilozi, Odd. biol.med.nauki, MANU, 9(1-2): 39-50.
- Micevski, K., (1991). Prilog za zapoznavawe na rodot *Centaurea* L. (*Asteraceae*) vo SR Makedonija. Prilozi, Odd. biol.med.nauki, MANU, 7(1-2): 47-56.
- Micevski, K., (1993). Flora na Republika Makedonija. MANU, 1(2): 153-391.
- Micevski, K., (1995). Flora na Republika Makedonija. MANU, 1(3): 503-548
- Micevski, K., (1998). Flora na Republika Makedonija. MANU, 1(4): 781-1113.
- Micevski, K., (2001). Flora na Republika Makedonija. MANU, 1(5): 1121-1430.
- Micevski, K., (2005). Flora na Republika Makedonija. MANU, 1(6): 1433-1715.
- Micevski, K., Matevski, V., 1980. *Thymus skopjensis* Micevski & Matevski spec. nov. vo florata na Republika Makedonija. MANU, Prilozi, 1(2):35-38, Skopje
- Petrović, J., (1913). Prilog flori planine Dautice i okoline manastira Treskavca. Izd. Muz. Srp. Zemlje, No.11.
- Petrović, J., (1940). Prilog flori Skopske Kotline. Glasnik SND, 228:79-89.
- Rizovski, R., Cvetkovic, D. (1974). Rodot *Rubus* L. – kapini. God.Zb.ZSF-Skopje, 21-26.
- Soška, Th., (1938): Beitrag zur Kenntnis der Schluchtenfloren von Südserbien. I. Glas. SND, 18(6):223-238.
- Soška, Th., (1939): Beitrag zur Kenntnis der Schluchtenfloren von Südserbien, III. Glasnik SND, 20(7):167-191.

field: INVERTEBRATE

expert: Slavco Hristovski, PhD

The research on the fauna of invertebrates started according to the anticipated activities despite the considerable time delay due to the belated start of the project.

As a result of the impaired time dynamics, a priority was given to the terrain research. At the same time, analysis on the accessible literature and identification of the target groups of invertebrates was conducted.

As it was stated in the plan for the activities, three primary target groups were determined: 1) Coleoptera, highlighting the family Carabidae, 2) Gastropoda terrestrial and 3) Rhopalocera. Besides the extensive research conducted on these three groups, considerable attention was also paid to some other groups of invertebrates: Orthoptera and Odonata. It must be stated that the research on these two groups was opportunistic.

Terrain research

The terrain research was conducted by the coordinator and the project office and in the most cases it was realized in the presence of more researchers. In the first 40 days of the project's duration, for the purpose of valorization of the fauna and of invertebrates, the following regions were visited:

- The area between Kula and Urnat Kamen
- Kopanje
- Ivanje
- Boropole
- The valley of the river Oca
- The area above Patiska river
- Rudine
- Matka
- Artificial accumulation "Kozjak"

The following habitats were included:

- Termophile forests of the climate zone of *Querco-Carpinetum orientalis*
 - Degraded oaken forests
 - Areas with *Buxus sempervirens*
- *Quercetum frainetto-cerris*
- Zone with foothills beech woods (cf. *Festuco heterophyllae-Fagetum*)
 - Beech wood areas
 - Areas with beechwoods
- Forest beech woods (cf. *Calamintho grandiflorae-Fagetum*)
- Black-beech woods (*Pulsatillo-Pinetum nigrae*)
- Hilly pastures
- Mountainous pastures

- Mountainous meadows
- Rocky terrains
- Riparian habitats
 - Alder and willow zones
 - Sandy and pebbly riverside habitats
- Caves and pits
- Ruderal habitats

Methods of work

The material was gathered manually in different regions and habitats, depending on the ecological preferences of the analyzed groups of invertebrates. For the purpose of collecting the edaphon, barber pitfall traps were placed in more than 10 localities. This was preceded by selection of the barber pitfall traps for the purpose of comprising the whole height range of the researched area, and especially to cover the whole diversity of habitats.

The material is preserved in 70% alcohol and is kept in adequate plastic dishes (test-tubes).

Preparatory results

The results gained are preliminary and in the forthcoming phases they will undergo critical elaboration. In the current form, they should be considered as terrain observations and superficial taxonomic identification.



Hipparchia statilinus – a photography of Urnat Kamen

From the analysis of the materials and the terrain research, the potential composition of the fauna of the day butterflies was identified. Here follows the list of day butterflies:

Aglais urticae (L.)	Hamearis lucina (L.)	Nymphalis antiopa (L.)
Agrodiaetus admetus (Esp.)	Hipparchia fagi (Scop.)	Nymphalis polychloros (L.)
Agrodiaetus ripartii (Frr)	Hipparchia fatua (Frr)	Nymphalis xanthomelas (D&S)
Agrodiaetus thersites (Cantener)	Hipparchia statilinus (Hufn)	Ochlodes venatus (Brem & Grey)
Allancastris cerisyi (God.)	Hipparchia syriaca (Stgr)	Pandoriana pandora (D&S)
Anthocharis cardamines (L.)	Hipparchia volgensis (Mazochin-Porchnjakow)	Papilio alexanor (Esp.)
Anthocharis damone (Bsd.)	Hyponephele lycaon (Kuhn)	Papilio machaon (L.)
Anthocharis gruneri (HS)	Inachis io (L.)	Pararge aegeria (L.)
Apatura ilia (D&S)	Iolana iolas (O.)	Parnassius mnemosyne (L.)
Aphantopus hyperantus (L.)	Iphiclides podalirius (L.)	Pieris balcana (Lorkovic)
Aporia crataegi (L.)	Issoria lathonia (L.)	Pieris brassicae (L.)
Argynnis paphia (L.)	Kirinia climene (Esp.)	Pieris ergane (Geyer)
Aricia agestis (D&S)	Kirinia roxelana (Cr.)	Pieris krueperi (Stgr.)
Aricia anteros (Frr)	Lasiommata maera (L.)	Pieris mannii (Mayer)
Brenthis daphne (D&S)	Lasiommata megera (L.)	Pieris napi (L.)
Brenthis hecate (D&S)	Lasiommata petropolitana (F.)	Pieris rapae (L.)
Brintesia circe (F.)	Lepidea duponcheli (Stgr.)	Pirgus armoricanus (Obrth.)
Carcharodus alcaeae (Esp.)	Leptidea sinapis (L.)	Pirgus cinarae (Rbr.)
Carcharodus lavatherae (Esp.)	Libythea celtis (Laich)	Pirgus malvae (L.)
Celastrina argiolus (L.)	Limenitis populi (L.)	Pirgus serratulae (Rmbr.)
Chazara briseis (L.)	Limenitis reducta (Stgr.)	Pirgus sidae (Esp)
Coenonympha arcania (L.)	Lycaena dispar (Haw.)	Plebejus argus (L.)
Coenonympha pamphilus (L.)	Lycaena hippothoe (L.)	Plebejus argyrognomon (Bergsträsser)
Coenonympha rhodopensis (Elwes.)	Lycaena phaeas (L.)	Plebejus pylaon (F.d.W.)
Colias alfacariensis	Lycaena thersamon (Esp.)	Plebicula dorylas (D&S)
Colias crocea (Geoffroy)	Lycaena tityrus (Poda.)	Polygonia c-album (L.)
Cupido minimus (Fuessl)	Lycaena virgaureae (L.)	Polygonia egea (Cr.)
Erebia epiphron (knoch)	Lysandra bellargus (Rott.)	Polyommatus icarus (Rott)
Erebia euryace (Esp.)	Lysandra coridon (Poda)	Pontia daplidice (L.)
Erebia ligea (L.)	Maniola jurtina (L.)	Pseudochazara anthelea (Hb.)
Erebia medusa (D&S)	Melanargia alatheia (L.)	Pseudophilotes schiffmulleri (Hemming)
Erebia oeme (Hb.)	Melanargia larissa (Geyer)	Satyrium spini (D&S)
Erebia pandrose (Bkn.)	Meleageria daphnis (D&S)	Scolitantides bavius (Ev.)
Erymnis marloyi (B.)	Melitaea athalia (Rott.)	Scolitantides orion (Pall)
Erymnis tages (L.)	Melitaea cinxia (L.)	Spialia orbifer (Hb.)
Euchloe ausonia (Hb.)	Melitaea didyma (Esp.)	Spialia phlomidis (HS.)
Euchloe penia (Freyer)	Melitaea phoebe (D&S)	Syrictus cribellum (Ev.)
Everes decoloratus (Stgr.)	Melitaea trivia (D&S)	Thecula quercus (L.)
Fabriciana niobe (L.)	Mesoacidalija aglaja (L.)	
Gonepteryx rhamni (L.)	Neptis rivularis (Scop)	
	Neptis sappho (Pall)	
	Nordmannia ilicis (Esp.)	

Thymelicus flavus (Brünnich)	Vanessa cardui (L.) Vanessa atalanta (L.)	Zerynthia polyxena (D&S)
Thymelicus lineolus (O.)		

According to the preliminary results of the terrain research, the following species are identified:

<i>Abax carinatus</i>	<i>Carabus intricatus</i>	<i>Molops rufipes</i>
<i>Amara aenea</i>	<i>Carabus violaceus ssp. ?</i>	<i>jakupicaensis</i>
<i>Amara apricaria</i>	<i>Cychrus semigranosus</i>	<i>Myas chalybaeus</i>
<i>Anchomenus dorsalis</i>	<i>albanicus</i>	<i>Nebria brevicollis</i>
<i>Aptinus meriditanus</i>	<i>Harpalus affinis</i>	<i>Platynus assimilis</i>
<i>Bembidion spp.</i>	<i>Harpalus dimidiatus</i>	<i>Stomis pumicatus</i>
<i>Calathus cf. jakupicaensis</i>	<i>Harpalus distinguendus</i>	<i>Tapinopterus miridita</i>
<i>Calathus fuscipes</i>	<i>Harpalus honestus</i>	<i>jakupicaensis</i>
<i>Calathus melanocephalus</i>	<i>Harpalus rufipalpis</i>	<i>Trechus goebli matchai</i>
<i>Carabus convexus</i>	<i>Harpalus rufipes</i>	<i>Trechus quadristriatus</i>
<i>dilatatus</i>	<i>Harpalus serripes</i>	<i>Zabrus albanicus</i>
<i>Carabus coriaceus ssp. ?</i>	<i>Licinus cassideus</i>	<i>jakupicaensis</i>
<i>Carabus hortensis</i>	<i>Licinus oerzeni</i>	

It can be noticed from the list, the presence of certain interesting types. This refers to the species described from Jakupica: *Tapinopterus miridita jakupicaensis*, *Molops rufipes jakupicaensis*, *Zabrus albanicus jakupicaensis*, *Calathus cf. jakupicaensis*, *Trechus goebli matchai*. The above stated species are endemic in the mountain Jakupica, or in this case they are also known from the nearest mountains (Vodno and Kitka). Balkan endemic species are: *oerzeni*, *Myas chalybaeus*, *Cychrus semigranosus albanicus* и *Aptinus meriditanus*. It is obvious that this list is not complete and identification of other endemic and untypical ones might be expected.



Carabus intricatus (locality Jasika) – endemic species according to the Global red list of IUCN

As far as the fauna of snails is concerned, it can be stated that determination of numerous non-typical species is expected. This results partly from the huge surface that the carbonate rocks take in the locality Jasen. The shallow analysis of the material gathered and the terrain observations point to the presence of certain species: *Xerulenta obvia*, *Helix lucorum*, *Helix pomatio*, some species from the family Clausiliidae, Zonitidae etc. We hope that in Jasen, the presence of the endemic species described from Jakupica will be also determined: *Chilostoma (Josephinella) phocaea jakupicae* (Urbanski 1979) and *Montenegrina janinensis jakupicensis* Fauer 1993.

Future activities

In the forthcoming period within the project's duration, the following activities are anticipated:

1. Completion of the terrain research
2. Gathering the material from the barber traps and its selection
3. Determination of the material, paying special attention to the three target groups
4. Preparation of lists of species
5. Valorisation of the fauna of the invertebrates through the target (model) groups by:
 - Identification of the rare species
 - Identification of the endemic species
 - Identification of the species from national documents (National strategy for biological diversity)
 - Identification of species from the Global Red List of IUCN
 - Identification of species which are internationally important according to the Directive of habitats and the Bern Convention.
6. Mapping the circulation and expansion of certain important species
7. Defining the threats to the fauna of invertebrates
8. Identification of the most important areas and habitats for the diversity of the invertebrates

field: VERTEBRATE

expert: Metodija Veleviski
Aleksandar Stojanov
Bogoljub Sterijovski
Robert Janevski

Survey of the vertebrate fauna in "Jasen" MPPA took place in the period September-October 2010, with different intensity for different groups. Best surveyed were the birds, while least the mammals. Besides the field survey, desk research on the available literature data was done. Lack of data for the territory of the protected area is obvious, with exception of the Canyon Matka, but, still, there are few sources presenting (insufficiently precise) data. The period for field surveying is most inappropriate from phenological point of view (most significant results can be gathered in the breeding period, mostly April-August), and, with exception for the bats where thanks to formation of wintering colonies good field results are expected in the forthcoming period, in the other groups there is objective obstacle for creation of complete check-lists basing only on this project. This obstacle has been partially overcome by use of literature data from the nearest surrounding of the protected area (taking care that the rare or characteristic species are not automatically included in the lists, i.e., confirmed data from field results have been used in such cases), and by use of recent, mostly unpublished data of the authors (period 2004-2009) gathered within or around the protected area. Therefore, compiled lists are quite complete, and their further improvement in the forthcoming period is expected.

Former studies

Due to the hardly accessible terrain, and the limited access "Jasen", the researches have focused their work on the more accessible terrains in the areas' surrounding. For the fish fauna data exist for r. Treska, Matka reservoir and partially Kozjak reservoir. Only available data for "Jasen" (the region apart from Treska river canyon) are found in Trpkov et al. (1997). However, it is often impossible to conclude whether the data are presented basing on direct observations, or are compiled from the literature the authors list. Following the precautionary principle, all these data will be considered in the final analyses, pointing out insufficiently precise or doubtful data. Dimovski (1967) gives very complete lists of vertebrate fauna species in Skopje Basin, part of which are developed basing on research in "Jasen's" surrounding. They will be used for enlisting presently common and widespread species. Veleviski et al. (2002) also provide quite precise data on the bird fauna of Jakupica Mt. Massif. most numerous data, often very precise, are found for Matka Canyon (Petkovski, 2009). In the final data analyses, data found in hunting management plans of "Jasen" will be also used.

Results

Fishes

First serious survey of the Treska river ichthyofauna originate from 1970's by Dimovski and Grupche, published in the paper "Treska River ichthyofauna". According to these authors, the following species are found in Treska river and its tributaries:

1. Речна (Македонска) пастрмка– *Salmo trutta macedonicus* (now *Salmo macedonicus*)
2. Клен – *Leuciscus cephalus vardarensis* (now *Squalius vardarensis*)
3. Бојник, скобуст- *Chondrostoma nasus vardarensis* (now *Chondrostoma vardarensis*)
4. Мрена - *Barbus barbus macedonicus* (now *Barbus macedonicus*)
5. Црна мрена – *Barbus meridionalis* (now *Barbus balcanicus*)
6. Кркушка - *Gobio gobio* (now *Gobio bulgaricus*)
7. Пиор - *Phoxinus phoxinus*
8. Вардарка - *Alburnoides bipunctatus*
9. Тенкопашеста кркушка - *Gobio uranoscopus* (now *Gobio elimeius*)
10. Попадика – *Vimba vimba melanops* (cega *Vimba melanops*)
11. Вардарска вретенушка – *Noemacheilus barbatulus* (now *Barbatula barbatula*)
12. Штипалка, Цијак– *Cobitis aurata* (cega *Cobitis vardarensis*)
13. Вретенар, Бабино вретено – *Aspro streber balcanicus* (now *Zingel balcanicus*)

In the period 2004-2009, The Fishery department within the PE Institute for animal breeding undertook extensive survey of the ichthyofauna of river Treska and its tributaries.

The fish community in Treska river is presently comprised of 20 species. When compared to Dimovski and Grupche's data, eight new species are found. Four of them are autochthonous for Vardar river catchments (Carp – *Cyprinus carpio*, Bleak – *Alburnus sp.*, European eel – *Anguilla anguilla* и Balkan golden loach – *Sabanajewia balcanica*), and four are allochthonous species (Rainbow trout - *Oncorhynchus mykiss*, Struma stone loach - *Oxinoemacheilus bureschy*, Prussian carp - *Carassius gibelio* и Pseudoraspora – *Pseudoraspora parva*). The Prussian carp and the Pseudoraspora are in the group of invasive species with increasing population trend and significant negative impact on the autochthonous species.

It is important to note that the endemic species *Zingel balcanicus*, has not been registered in Treska's waters, nor its tributaries, or in Matka and Kozjak reservoirs. It is species on the verge of extinction (if not already extinct) from the Macedonia's ichthyofauna.

The check-list of the Treska river ichthyofauna with its tributaries (within "Jasen" MPPA) and Matka and Kozjak reservoirs follows:

Petromyzontidae

1. *Eudontomyzon mariae* Ukrainian brook lamprey

Cyprinidae

2. <i>Alburnoides bipunctatus</i>	Spirlin
3. <i>Alburnus thessalicus</i>	Thessally bleak
4. <i>Barbus macedonicus</i>	Macedonian barbel
5. <i>Barbus balcanicus</i>	Large spot barbel
6. <i>Carassius gibelio</i>	Prussian carp
7. <i>Chondrostoma vardarense</i>	Vardar nase
8. <i>Cyprinus carpio</i>	Carp
9. <i>Gobio elimeius</i>	Greek stone gudgeon
10. <i>Gobio bulgaricus</i> ;	Aegean gudgeon
11. <i>Squalius vardarensis</i>	Vardar chub
12. <i>Phoxinus phoxinus</i>	Minnow
13. <i>Pseudorasbora parva</i>	Pseudoraspora
14. <i>Vimba melanops</i> ;	Dark vimba

Cobitidae

15. <i>Cobitis vardarensis</i>	Vardar spined loach
16. <i>Sabanajewia balcanica</i>	Balkan golden loach

Namacheilidae

17. <i>Barbatula barbatula</i>	Stone loach
18. <i>Oxynoemacheilus bureschi</i>	Struma stone loach

Salmonidae

19. <i>Salmo macedonicus</i>	Macedonian trout
20. <i>Oncorhynchus mykiss</i>	Rainbow trout

Anguillidae

21. <i>Anguilla anguilla</i>	European eel
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Amphibians and reptilians

No data for the batracho- and herpethofauna have been found in the relevant literature, although Ocha's watershed has been protected since 1958. The data presented here are result of the work undertaken within this project and are first of its kind. During the two visits, 28 exemplars were captured (and released), and we have established the presence of:

- 6 species of amphibians: *Bombina variegata* (Yellow-bellied Toad), *Pseudepidalea viridis* (Green Toad), *Bufo bufo* (Common Toad), *Rana dalmatina* (Agile Frog), *Rana graeca* (Balkan Stream Frog) and *Rana ridibunda* (Marsh Frog).
- 9 species of reptiles: *Podarcis muralis* (Common Wall Lizard), *Podarcis erhardii* (Erhard's Wall Lizard), *Lacerta trilineata* (Balkan Green Lizard), *Lacerta viridis* (Green Lizard), *Anguis fragilis* (Slow Worm), *Coronella*

austriaca (Smooth Snake), *Zamenis longissimus* (Aesculapian Snake) *Vipera ammodytes* (Nose-horned Viper) and *Vipera berus* (Adder).

Due to the adverse weather conditions during the surveys, both amphibians and reptiles were poorly active. According the habitat and climate characteristic, four more amphibian species are expected: *Hyla arborea* (Common Tree Frog), *Rana temporaria* (Common Frog), *Salamadra salamadra* (Fire Salamander) and *Triturus vulgaris* (Common Newt). For the reptiles, presence of the following species should be checked: *Lacerta agilis* (Sand Lizard), *Dolichophis caspius* (Large Whip Snake), *Platyceps najadum* (Dahl's Whip Snake), *Elaphe quatuorlineata* (Four-lined Snake), *Malpolon monspessullanus* (Montpellier's Snake), *Telescopus fallax* (European Cat Snake).

Birds

The avifauna of Matka Canyon (mostly overlapping with the territory of the Monument of Nature "Canyon Matka" has been thoroughly studied and valorised (Velevski 2008, Petkovski 2009), and therefore it will not be considered in this preliminary report. Regarding the rest of "Jasen's" territory, data on 130 species exists so far:

1.	<i>Ciconia nigra</i>	Black Stork
2.	<i>Pernis apivorus</i>	European Honey Buzzard
3.	<i>Circaetus gallicus</i>	Short-toed Snake-eagle
4.	<i>Circus aeruginosus</i>	Western Marsh Harrier
5.	<i>Circus cyaneus</i>	Northern Harrier
6.	<i>Circus pygargus</i>	Montagu's Harrier
7.	<i>Accipiter gentilis</i>	Northern Goshawk
8.	<i>Accipiter nisus</i>	Eurasian Sparrowhawk
9.	<i>Accipiter brevipes</i>	Levant Sparrowhawk
10.	<i>Buteo buteo</i>	Common Buzzard
11.	<i>Aquila chrysaetos</i>	Golden Eagle
12.	<i>Hieraaetus pennatus</i>	Booted Eagle
13.	<i>Falco tinnunculus</i>	Common Kestrel
14.	<i>Falco vespertinus</i>	Red-footed Falcon
15.	<i>Falco subbuteo</i>	Eurasian Hobby
16.	<i>Falco peregrinus</i>	Peregrine Falcon
17.	<i>Bonasa bonasia</i>	Hazel Grouse
18.	<i>Alectoris graeca</i>	Rock Partridge
19.	<i>Perdix perdix</i>	Grey Partridge
20.	<i>Coturnix coturnix</i>	Common Quail
21.	<i>Crex crex</i>	Corncrake
22.	<i>Columba livia</i>	Rock Pigeon
23.	<i>Columba oenas</i>	Stock Dove
24.	<i>Columba palumbus</i>	Common Wood Pigeon
25.	<i>Streptopelia decaocto</i>	Eurasian Collared Dove
26.	<i>Streptopelia turtur</i>	European Turtle Dove

27.	<i>Cuculus canorus</i>	Common Cuckoo
28.	<i>Otus scops</i>	Common Scops Owl
29.	<i>Bubo bubo</i>	Eurasian Eagle Owl
30.	<i>Athene noctua</i>	Little Owl
31.	<i>Strix aluco</i>	Tawny Owl
32.	<i>Asio otus</i>	Long-eared Owl
33.	<i>Caprimulgus europaeus</i>	Eurasian Nightjar
34.	<i>Apus apus</i>	Common Swift
35.	<i>Merops apiaster</i>	European Bee-eater
36.	<i>Upupa epops</i>	Eurasian Hoopoe
37.	<i>Picus viridis</i>	Eurasian Green Woodpecker
38.	<i>Dryocopus martius</i>	Black Woodpecker
39.	<i>Dendrocopos major</i>	Great Spotted Woodpecker
40.	<i>Dendrocopos syriacus</i>	Syrian Woodpecker
41.	<i>Dendrocopos medius</i>	Middle Spotted Woodpecker
42.	<i>Dendrocopos leucutos</i>	White-backed Woodpecker
43.	<i>Dendrocopos minor</i>	Lesser Spotted Woodpecker
44.	<i>Galerida cristata</i>	Crested Lark
45.	<i>Lullula arborea</i>	Wood Lark
46.	<i>Alauda arvensis</i>	Eurasian Skylark
47.	<i>Eremophila alpestris</i>	Horned Lark
48.	<i>Riparia riparia</i>	Sand Martin
49.	<i>Ptyonoprogne rupestris</i>	Eurasian Crag Martin
50.	<i>Hirundo rustica</i>	Barn Swallow
51.	<i>Hirundo daurica</i>	Red-rumped Swallow
52.	<i>Delichon urbica</i>	Northern House Martin
53.	<i>Anthus campestris</i>	Tawny Pipit
54.	<i>Anthus trivialis</i>	Tree Pipit
55.	<i>Anthus spinoletta</i>	Water Pipit
56.	<i>Motacilla cinerea</i>	Grey Wagtail
57.	<i>Motacilla alba</i>	White Wagtail
58.	<i>Cinclus cinclus</i>	White-throated Dipper
59.	<i>Troglodytes troglodytes</i>	Winter Wren
60.	<i>Prunella modularis</i>	Hedge Accentor
61.	<i>Prunella collaris</i>	Alpine Accentor
62.	<i>Erithacus rubecula</i>	European Robin
63.	<i>Luscinia megarhynchos</i>	Common Nightingale
64.	<i>Phoenicurus ochruros</i>	Black Redstart
65.	<i>Phoenicurus phoenicurus</i>	Common Redstart
66.	<i>Saxicola rubetra</i>	Whinchat
67.	<i>Saxicola torquata</i>	Common Stonechat
68.	<i>Oenanthe oenanthe</i>	Northern Wheatear
69.	<i>Monticola saxatilis</i>	Rufous-tailed Rock Thrush
70.	<i>Turdus torquatus</i>	Ring Ouzel
71.	<i>Turdus merula</i>	Eurasian Blackbird
72.	<i>Turdus pilaris</i>	Fieldfare

73.	<i>Turdus philomelos</i>	Song Thrush
74.	<i>Turdus iliacus</i>	Redwing
75.	<i>Turdus viscivorus</i>	Mistle Thrush
76.	<i>Hippolais pallida</i>	Eastern Olivaceous Warbler
77.	<i>Hippolais icterina</i>	Icterine Warbler
78.	<i>Sylvia cantillans</i>	Subalpine Warbler
79.	<i>Sylvia hortensis</i>	Orphean Warbler
80.	<i>Sylvia curruca</i>	Lesser Whitethroat
81.	<i>Sylvia communis</i>	Common Whitethroat
82.	<i>Sylvia atricapilla</i>	Blackcap
83.	<i>Phylloscopus sibilatrix</i>	Wood Warbler
84.	<i>Phylloscopus collybita</i>	Common Chiffchaff
85.	<i>Phylloscopus trochilus</i>	Willow Warbler
86.	<i>Regulus regulus</i>	Goldcrest
87.	<i>Regulus ignicapilla</i>	Firecrest
88.	<i>Muscicapa striata</i>	Spotted Flycatcher
89.	<i>Ficedula hypoleuca</i>	European Pied Flycatcher
90.	<i>Aegithalos caudatus</i>	Long-tailed Tit
91.	<i>Parus palustris</i>	Marsh Tit
92.	<i>Parus lugubris</i>	Sombre Tit
93.	<i>Parus cristatus</i>	Crested Tit
94.	<i>Parus ater</i>	Coal Tit
95.	<i>Parus caeruleus</i>	Blue Tit
96.	<i>Parus major</i>	Great Tit
97.	<i>Sitta europea</i>	Wood Nuthatch
98.	<i>Tichodroma muraria</i>	Wallcreeper
99.	<i>Certhia familiaris</i>	Eurasian Treecreeper
100.	<i>Oriolus oriolus</i>	Eurasian Golden Oriole
101.	<i>Lanius collurio</i>	Red-backed Shrike
102.	<i>Lanius minor</i>	Lesser Grey Shrike
103.	<i>Lanius excubitor</i>	Great Grey Shrike
104.	<i>Lanius senator</i>	Woodchat Shrike
105.	<i>Garrulus glandarius</i>	Eurasian Jay
106.	<i>Pica pica</i>	Black-billed Magpie
107.	<i>Nucifraga caryocatactes</i>	Spotted Nutcracker
108.	<i>Pyrrhocorax graculus</i>	Yellow-billed Chough
109.	<i>Pyrrhocorax pyrrhocorax</i>	Red-billed Chough
110.	<i>Corvus monedula</i>	Eurasian Jackdaw
111.	<i>Corvus frugilegus</i>	Rook
112.	<i>Corvus cornix</i>	Hooded Crow
113.	<i>Corvus corax</i>	Common Raven
114.	<i>Sturnus vulgaris</i>	Common Starling
115.	<i>Passer domesticus</i>	House Sparrow
116.	<i>Passer montanus</i>	Eurasian Tree Sparrow
117.	<i>Fringilla coelebs</i>	Eurasian Chaffinch
118.	<i>Fringilla montifringilla</i>	Brambling

119.	<i>Carduelis chloris</i>	European Greenfinch
120.	<i>Carduelis carduelis</i>	European Goldfinch
121.	<i>Carduelis cannabina</i>	Eurasian Linnet
122.	<i>Loxia curvirostra</i>	Red Crossbill
123.	<i>Pyrrhula pyrrhula</i>	Eurasian Bullfinch
124.	<i>Coccothraustes coccothraustes</i>	Hawfinch
125.	<i>Emberiza citrinella</i>	Yellowhammer
126.	<i>Emberiza cirrus</i>	Cirl Bunting
127.	<i>Emberiza cia</i>	Rock Bunting
128.	<i>Emberiza hortulana</i>	Ortolan Bunting
129.	<i>Emberiza melanocephala</i>	Black-headed Bunting
130.	<i>Miliaria calandra</i>	Corn Bunting

Mammals

According to the literature data, 42 mammalian species belonging to 6 orders, 16 families and 34 genera are found on the territory of Multy-purpose Area Jasen. Complete checklist of the species is presented in the table below.

Order Insectivora Insectivores

family Erinaceidae

- | | | |
|---|-----------------------------|----------------------------------|
| 1 | <i>Erinaceus roumanicus</i> | Northern white-breasted hedgehog |
|---|-----------------------------|----------------------------------|

family Soricidae

- | | | |
|---|-----------------------|--------------|
| 2 | <i>Sorex minutus</i> | Pigmy shrew |
| 3 | <i>Sorex araneus</i> | Common shrew |
| 4 | <i>Neomys fodiens</i> | Water shrew |

family Talpidae

- | | | |
|---|-------------------------|-------------|
| 5 | <i>Talpa caeca</i> | Blind mole |
| 6 | <i>Talpa stankovici</i> | Balkan mole |

Order Chiroptera Bats

family Rhinolophidae

- | | | |
|---|----------------------------------|-----------------------------|
| 7 | <i>Rhinolophus ferrumequinum</i> | Greater Horseshoe bat |
| 8 | <i>Rhinolophus hipposiderus</i> | Lesser Horseshoe bat |
| 9 | <i>Rhinolophus euryale</i> | Mediterranean Horseshoe bat |

family Vespertilionidae

- | | | |
|----|--------------------------------|-------------------|
| 10 | <i>Myotis capaccinii</i> | Long-fingered bat |
| 11 | <i>Miniopterus schreibersi</i> | Schreiber's bat |

Order Lagomorpha Lagomorphs

family Leporidae

- | | | |
|----|-----------------------|------------|
| 12 | <i>Lepus europeus</i> | Brown hare |
|----|-----------------------|------------|

Order Rodentia Rodents

family Sciuridae

- | | | |
|----|--|------------------|
| 13 | <i>Sciurus vulgaris</i> | Red squirrel |
| 14 | <i>Spermophilus citellus</i> (ssp. <i>karamani</i>) | European souslik |

family Muridae

15	<i>Dinaromys bogdanovi</i>	Balkan snow vole
16	<i>Arvicola terrestris</i>	Water vole
17	<i>Myodes glareolus</i>	Bank vole
18	<i>Microtus subterraneus</i>	Common pine vole
19	<i>Mycrotus felteni</i>	Balkan pine vole
20	<i>Apodemus sylvaticus</i>	Wood mouse
21	<i>Apodemus flavicollis</i>	Yellow-necked mouse
22	<i>Apodemus epimelas</i>	Rock mouse
family Myoxidae		
23	<i>Glis glis</i>	Fat dormouse
24	<i>Dryomys nitedula</i>	Forest dormouse
25	<i>Muscardinus avellanarius</i>	Common dormouse
26	<i>Nannospalax leucodon</i>	Lesser mole-rat
Order Carnivora Carnivores		
family Canidae		
27	<i>Canis lupus</i>	Wolf
28	<i>Vulpes vulpes</i>	Red fox
family Mustelidae		
29	<i>Mustela nivalis</i>	Weasel
30	<i>Mustela putorius</i>	Western polecat
31	<i>Martes foina</i>	Stone marten
32	<i>Martes martes</i>	Pine marten
33	<i>Meles meles</i>	Badger
family Felidae		
34	<i>Felis silvestris</i>	Wild cat
35	<i>Lynx lynx</i>	Eurasian lynx
family Ursidae		
36	<i>Ursus arctos</i>	Brown bear
Order Artiodactyla Even-toed ungulates		
family Suidae		
37	<i>Sus scrofa</i>	Wild boar
family Cervidae		
38	<i>Cervus elaphus</i>	Red deer
39	<i>Dama dama</i>	Fallow deer
40	<i>Capreolus capreolus</i>	Roe deer
family Bovidae		
41	<i>Ovis aries</i>	Mouflon
42	<i>Rupicapra rupicapra</i>	Alpine chamois

Survey of the mammals will continue in the forthcoming period, especially by snow-tracking, visit of caves for hibernating bats and camera traps, in cooperation with the Macedonian Ecological Society.

References

- Arcturos. 1997. *The Brown bear in the south Balkans – A Compendium*. 141 pp, Thessaloniki.
- Arnold, N. & Oviden, D. (2002): *Reptiles and Amphibians of Britain and Europe*. Collins, London.
- Dimovski, A. (1959a): I prilog kon herpetofaunata na Makedonija (Beitrag zur Herpetofauna Mazedoniens). *Fragmenta Balcanica* 3: 1-4. (in Macedonian, with German summary).
- Dimovski, A. (1964): II Prilog kon herpetofaunata na Makedonija (II Beitrag zur herpetofauna Mazedoniens). *Fragmenta Balcanica* 5: 19-22.
- Doflein, F. (1921): *Mazedonien, Erlebnisse und beobachtungen eines Naturforschers im gefolge des Deutschen heeres*. Verlag von Gustav Fischer, Jena.
- Doflein, F., (1921): *Mazedonien. Erlebnisse und Beobachtungen eines Naturforschers im gefolge des Deutschen Heeres*. Jena. Verlag von Gustav Fischer, 592 p.
- Džukić, G. (1972): *Herpetološka zbirka Prirodnjačkog muzeja u Beogradu*. Glasnik Prirodnjačkog muzeja Beograd, Ser. B 27: 165-180.
- Džukić, G., Kalezić, M. L., Petkovski, S., Sidorovska, V. (2001): General remarks on Batracho- and Herpetofauna of the Balkan Peninsula. In: *75 years Maced. Mus. of Nat. Hist.*, p. 195-204. Boškova, T. Ed., Prirodonaučni Muzej na Makedonija, Skopje.
- Gasc, J.-P., Cabela, A., Crnobrnja-Isailović, J., Dolmen, D., Grossenbacher, K., Haffner, P., Lescure, J., Martens, H., Martinez Rica, J. P., Maurin, H., Oliveira, M.E., Sofianidou, T.S., Veith, M., Zuiderwijk, A. (1997). *Atlas of Amphibians and Reptiles in Europe*.
- Georgiev, S., (2000): Stanje ihtiofaune rijeke Vardara u razdoblju od 1996 do 1999, *Ribarstvo*, 58, (3), 85-100
- Georgiev, S., (2003a): Length-weight relationship of six cyprinid fish in the river Vardar (Republic of Macedonia), *Ribarstvo*, 61, (3), 89-102
- Georgiev, S., (2003b): Succession and structure of the fish in the Mavrovo reservoir (The Republic of Macedonia), *Ribarstvo*, 61, (2), 35-54.
- Ivanov, Gj., A. Stojanov, D. Melovski, E. Keçi, A. Trajce, O. Qazimi, G. Schwaderer, A. Spangenberg, J. Linnell, U. Breitenmoser and M. von Arx. 2007. Conservation status of the critically endangered Balkan lynx in Albania and Macedonia. *Proceedings of 3rd Congress of ecologists of the Republic of Macedonia with international participation [06.-09.10.2007, Struga.]* - Macedonian Ecological Society, Skopje, 2008.
- Joger, U., Stümpel, N. (2005): *Handbuch der Reptilien und Amphibien Europas*, Vol. 3/IIB Schlangen (Serpentes) III. Aula-Verlag, Wiebelsheim.
- Karaman, M., (1962): Prilog poznavanju ihtiofaune Makedonije. *Bioloski glasnik* 15. pp. 187 – 192.
- Karaman, S. (1922): Beiträge zur Herpetologie von Mazedonien. *Glasnik Hrvatskog Prirodoslovnog društva, Zagreb* 34: 278-299.
- Karaman, S. (1928): III Prilog herpetologiji Jugoslavije. *Glasnik Skopskog Naučnog Društva, Skopje* 4: 129-143.

- Karaman, S. (1937): Fauna južne Srbije. Spomenica, Skoplje: 161-179.
- Karaman, S. (1939): Über die Verbreitung der Reptilien in Jugoslawien. *Annales Musei Serbiae Meridionalis*, Skoplje 1: 1-20.
- Karaman, S. 1930. Зоолошке прилике Скопске Котлине. Гласник Скопског Научног Друштва, књига X св.4, Skopje: 214-241.
- Karaman, S., (1924): Pisces Macedoniae, Derzeit am Institut Z. Enforschung und Bekämpfung D. Malaria, Trogir (Dalmatien) Hrvatska stamparija, Split. pp. 1-90.Split
- Keçi, E., A. Trajce, O. Qazimi, Gj. Ivanov, D. Melovski, A. Stojanov, U. Breitenmoser, M. von Arx, G. Schwaderer, A. Spangenberg and J. Linnell. 2007. Conflicts with lynx and other large carnivores in Macedonia and Albania. *Proceedings of 3rd Congress of ecologists of the Republic of Macedonia with international participation [06.-09.10.2007, Struga.]* - Macedonian Ecological Society, Skopje, 2008.
- Kottelat, M., Freyhof, J., (2007): Handbook of european freshwater fishes, Kottelat, Cornol, and Freyhof Berlin, 660pp
- Kryštufek, B. and S. Petkovski, 1990. New Records of Mammals from Macedonia (Mammalia). *Fragm. Balc. Mus. Maced. Sci. nat.* Vol.14, Skopje 1990: 117-129.
- Kryštufek, B. and S. Petkovski, 2003. Annotated Checklist of the Mammals of the Republic of Macedonia. *Bonnerzoologische Beiträge*, heft 4, Bonn 2003: 229-254.
- Melovski, D., Gj. Ivanov, A. Stojanov, A. Trajce, M. von Arx, J. Linnell and U. Breitenmoser. 2008. *Technical report on Lynx Baseline Survey*. Balkan Lynx Recovery Programme 2006-2009.
- MoEPP, (2003): Country study for biodiversity of the Republic of Macedonia: (first national report), Skopje, 217pp
- Naumovski, M., (1995): Ribite vo Makedonija. Zaki, Skopje. pp. 1-162.
- Petkovski, S., Matevski, V., Melovski, Lj., Andonov, S., Spirkovski, Z., (2004): Capacity self assessment within the thematic area of biodiversity in Republic of Macedonia, UNDP, Skopje 1-80pp
- Petkovski, S., Sidorovska, V., Džukić, G. (2000/2001): Biodiverzitetot na faunata na zmiite (Reptilia: Serpentes) vo Makedonia. *Ekologija i Zaštita na Životnata Sredina*, Skopje. 7: 41-54.
- Petrov, B. M. (1992). Mammals of Yugoslavia. Insectivores and Rodents. Natural History Museum in Belgrade, Suppl.37: 1-186.
- Radovanović, M. (1941): Zur Kenntnis der Herpetofauna des Balkans. *Zool. Anzeiger* 136: 145-159.
- Radovanović, M. (1951): Vodozemci i gmizavci naše zemlje. Naučna knjiga, Beograd.
- Radovanović, M. (1957): Einige Beobachtungen an Amphibien und Reptilien in Jugoslawien. *Zool. Anzeiger* 159: 130-137.
- Radovanović, M. (1964): Die Verbreitung der Amphibien und Reptilien in Jugoslawien. *Senckenbergiana. biol.*, Frankfurt a. Main 45: 553-561.
- Savič, I. & Soldatovič, B. (1984). Karyotype evolution and taxonomy of the genus *Nannospalax* Palmer, 1903, Mammalia, in Europe. *Serbian Academy of*

- Sciences and Arts, Separate ed. Vol. 560, Department of Natural and Mathematical Sciences 59: 5-104.
- Todorovič, M., Soldatovič, B. & Dunderski, Z. (1972). Characteristics of the karyotype of the population of the genus *Talpa* from Macedonia and Montenegro. *Arhiv biloških nauka* 24: 131-139 (in Serbian with English summary).
- Velevski, M. Dimitrovska E. Bo`i~ L. Kar~icki V. i Pop-Trajkov M. 2002. Prilog kon ornitofaunata na masivot Jakupica. *Bilt. Istra`. druf. stud. biol.* 2:161-169.
- Velevski, M. Evaluation of bird fauna at Matka Canyon, Macedonia. *Natura Montenegrina* 7[2], 369-380. 2008.
- Апостолски, К., Петровски, Н., Поповска, О., Сидоровски, М., (1956): Рибите во Македонија, Завод за рибарство на СРМ, Скопје.
- Георгиев, С., (1998): Клуч за одредување на рибите (Osteichthyes) и змиорките (Cephalaspidomorpha) од Р.Македонија, Институт за сточарство, Скопје, 178 стр.
- Групче, Р., Димовски, А. (1973): Ихтиофауната на реката Вардар, Год.зборник, на биол. Инст.на Прир.мат.фак.на уни. Во Скопје, Кн.25, 59-99, Скопје
- Димовски, А. С. 1967. Биогеографска и еколошка карактеристика на Скопска котлина. *Год. Збор. Прир. Мат. Фак. Унив. Скопје* 20:5-70.
- Димовски, А., Групче, Р., (1971): Некои проблеми со систематиката на беловицата (*Alburnus*) во Македонија, *Acta.Mus.Mac.sc.nat.* Том. XII, No 4 (105), Скопје
- Димовски, А., Групче, Р., (1972): Ихтиофауната на реката Треска. *Acta Mus. Nat.* Том. XII, No 9 (110). Скопје
- Караман, С., (1928): Салмониди Балкана, *Глас.Скопск.науч.друштва*, Књ. 4., Скопје
- Петковски, С. (2009) Завршен извештај: Прелиминарна студија за Пилот-заштитеното подрачје Кањонот Матка.
- Петковски, С., (2009): Финален извештај: Анализа и валоризација на биодиверзитетот на национално ниво, UNDP, Скопје 1-96
- Петровски, Н., Сидоровски, М., Апостолски, К., (1970): Стање рибљих популација у неким притокама Вардара, III Симпозиум „Савремена ихтиолошка истраживања“, Котор
- Трпков, Б., Ризовски, Р. и Здравковски, Т. (1997). Шумски резерват Јасен. Шумски резерват „Јасен“ Скопје, 115 стр.

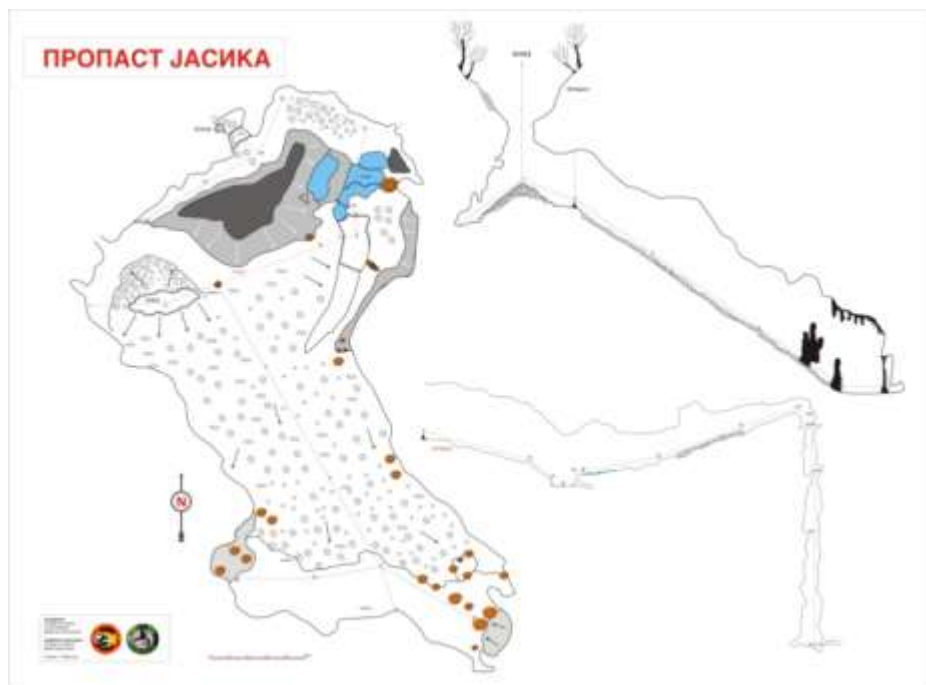
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expertes: Dragan Kolcakovski, PhD
Biljana Gichevski, McS

With the review of the literature of published papers of the scientific research where the territory of the protected area Jasen is also comprised, the following facts can be concluded:

1. There has much been done in the sphere of geology, i.e. in the sphere of geology-petrographic as well as tectonic knowledge. These kinds of facts and information are a good basis for the forthcoming research, especially in the field of geomorphology, botanics and pedology.

2. The facts about the geomorphological characteristics in the protected area Jasen are however not sufficient. Actually, there is a great number of published papers in the field of geomorphology. All of them take into consideration a larger territorial scope, where the area Jasen is considered with its general geomorphological characteristics (Manakovic, 1968 and others). Thus, from the aspect of geomorphology, especially for the underground carst forms of the canyon Matka, the situation is completely different. (Pavlov 1981, Kolcakovski 1992 and others). Concrete information on the underground carst forms in Jasen are announced by the Research society "Ursus Speleos"- Skopje in 2009, which refer to the morphometric characteristics and the usage value of the ruins Srt and Jasika.



plan of hole Jasika

The terrain research conducted during September and October 2010 resulted in important information and facts not only for the surface, but also for the underground karst forms. Numerous karst surface forms have been recorded and researched (mostly shaped depressions and shkrapi) in the areas: Kopanje, Boro Pole, Rudine, Rada, Shiovec and others.



shaped depression on Jakupica

Important knowledge has also been gained for the speleological objects (mostly the ruins), i.e. numerous ruins have been recorded: Dupka (area Rada), Shiovec I, Shiovec II (area Shiovec), At Kashkal (area Rudine), Peoni I, Peoni III (area Kopanje). Rock shelters are recorded in the area Ivanje and the valley of the river Oca, while the caves are numerous in Suva Gora.



small cave in Ivanje

The forthcoming observations in the the area of geomorphology need to be directed towards Suva Planina and the other parts of the territory of the protected area, the valley of the river Oca, Boro Pole etc.

References

- Andonovski T.** (1981): Review of the underground carst forms in SR Macedonia, Eighth Yugoslvenian speleological congress, 207-213, Belgrade.
- Arsovski M.** (1962): Paleozoic shales in Osoj and Vodno and their tectonic position within the basic structural units in Macedonia, Papers of GZ, sv. 9, 25-35, Skopje.
- Gichevski B.** (2009) The edge Jasika and its application. Bulletin on Physical Geography, no.6, p.91-97, Skopje.
- ID “Ursus Speleos”-Skopje** (2010): The edge “Jasika”, Phisical-Geographic characteristis, Biospeleological research, Usable value of the edge, Skopje.
- Jancevski J.** Interpreter of the leaf Skopje, 34-79 (Basic geologic map 1: 100 000), 1-57, Belgrade.
- Jovanovic P.S.** (1927): Abrasive and fluvial elements in the Poreche Basin. Glas. SGD, 13, 169-194, Belgrade.
- Jovanovic P.S.** (1928): Casrts areas in Poreche Basin. Glas. SND. Book 4. 1, 1-4b, Skopje.
- Jovanovic P.S.** (1931): Relief of the valley Skopje, Glas, SND, Book XI, 4, b2-11b, Skopje.
- Kolcakovski D.** (1987): Opportunities for cave tourism in the tourist site Matka and protection of the speleological objects. Nas Krs, Vol. XIII, no. 22, p. 95-103, Sarajevo.
- Kolcakovski D.** (1988): Caves in the high mountaneous part of Jakupice. Speleo Bosnia and Herzegovina, no. 1-2, 45-57, Sarajevo.
- Kolcakovski D.** (1988): High mountains carst on Karadzica, book 2b, 95-113, Skopje.
- Kolcakovski D.** (1989): Historical riview of the speleological analysis on the territory of SR Macedonia with nibliographical representation. Geog. Book 27, 133-144, Skopje.
- Kolcakovski D.** (1990): High mountains carst on the territory of SR Macedonia and the need of its analysis, Fourth conference of geomorphologists in Jugoslslavia, GF PMF, 65-70, Belgrade.
- Kolcakovski D.** (1990-1991): Basic characteristics of the carst on Suva Planina, Book 25, 229-237, Skopje.
- Kolcakovski D.** (1992): Protection of the nature around the Matka canyon and creation of artificial accumulation. Anthology: “Energetics in Macedonia, today and tomorrow”. I Counselling of ZEMAK, 556-562, Skopje.
- Kolcakovski D.** (1992): Carst relief in the Skopje basin – geomorphological study, Last edition of the Faculty of Natural Sciences and Mathematics, 1-47, Skopje.
- Kolcakovski D.** (1992): Categorization of some of the most important caves in the Republic of Macedonia, Ecological protection of the natural environment., T.1, no. 1-2, 43-51, Skopje.

- Kolcakovski D.** (1999): Cave “Alena” – Jakupica. Geographical reviews, Book 34, p. 171-17b, Skopje.
- Kolcakovski D.** (2001): Speleomorphological characteristics of the carst relief in the Republic of Macedonia. Book 3b, 23-34, Skopje.
- Kolcakovski D.** (2004): Geotectonic basis of the relief in the Republic of Macedonia. Bulletin of ZFG, no. 1, p 7-23, Skopje.
- Kolcakovski D.** (2006): Basic hydrogeographic characteristics of the carst springheads in the Republic of Macedonia. Geographical reviews, book 40, p. 5-17, Skopje.
- Kolcakovski D., Hristovski S., Karaman I., Komnenov M.** (2009): Threats and measures for protection of the caves in the canyon Matka. Bulletin of ZFG, no.6, p. 5-35, Skopje.
- Kenik A.** (1967/68): Results gained from the research of the bank “Skopje I”, Scientific papers of GZ, 13, 165-189, Skopje.
- Lukoik M.** (1931): Geological composition and tectonics of the valley Skopje and its surroundings. Paper SND, Book X, Department of natural sciences, 4, 4-62, Skopje.
- Markoski B., Lolcakovski D., Vasileski D., Mateski V., Kostadinovski M., Meloski Lj., Hristovski S.** (2004): Map of the natural resources of the Republic of Macedonia (1:200.000). Anthology of scientific papers, II Congress of the ecologists in R. Macedonia, p. 412-414, Skopje.
- Manakovik D.** (1962): Nivation processes and forms of the mountain Jakupica. Annual proceeding of the Faculty of Natural Sciences and Mathematics, Book 13, 47-57, Skopje.
- Manakovik D.** (1968): Geomorphology of Suva Gora, Suva mountain and their northsubsidiaries. Annual proceeding of the Faculty of Natural Sciences and Mathematics, Book 16, 4, 129-177, Skopje.
- Manakovik D.** (1973): Caves and ruins in the Skopje valley, book no. 4, 23-34, Skopje.
- Manakovik D.** (1980): Oasis type carst hydrography in Macedonia. Seventh Jugoslevanian speleological congress, 293-309, Titograd.
- Manakovik D.** (1984): Underground circulation of the water depending on the location of the limestone masses compared to rocks, with examples from SR Macedonia. Ninth Jugoslevanian speleological congress, 269-278, Zagreb.
- Pavlov B.,** (1981): Underground carst forms in the canyon Matka. Eight Jugoslevanian speleological congress, 91-94, Belgrade.
- Petkovski P.** (1985): Interpreter of Kacan, Book 34-67 (Basic geologica map 1: 100 000), 1-72, Belgrade.
- Petreska B.** (2008) Underground carst forms in the Porece Basin and their valorisation for the needs of the Spatial Planning, master’s thesis, Faculty of Natural Sciences and Mathematics, Skopje, in writing.
- Strackov M., Gjuzelkovski D., Ivanovski T., Pendzerkovski J., Rakocevic T., Hristov S.** (1964): Geology of the valley Skopje. Scientific papers of GZ, 11, 11-137, Skopje.
- Strackov M.** (1967/68): Engineering-geological forms of the terrain of the right side of the future accumulation of the river Treska between Matka and Susica. Scientific papers of GZ, 13, 141-164, Skopje.

Cvijic J. (1906): Fundamentals of geography and geology in Macedonia and Old Serbia. SKA, Book 1, Belgrade.

Cvijic J. (1906): Fundamentals of geography and geology in Macedonia and Old Serbia. SKA, Book III, 689-1272, Belgrade.

field: HIDROLOGY

expert: Josif Milevski

For the purpose of preparation of the hydrological foundations, the following content is anticipated.

Physical-Geographical characteristics

The needed materials for this point will be supplied from topographic maps 1:25 000 GIS maps and partially by searching Google. All these tools will be used for defining the above stated characteristics of the catchment area in the locality “Jasen”, including the integral curve for the arrangement of the surfaces depending on the altitude above the sea level.

Climate characteristics of the locality “Jasen”

Original data for the climate parameters will be used, which will be published by the Administration for Hydro meteorological Service, which refer to the wider area around the locality “Jasen”, including the meteorological stations Skopje and Solunska Glava. The rainfalls, temperature and humidity are considered to be the main climate parameters, whereupon some studies and scientific papers for this region will be used and which will be written for the purpose of constructing the bank “Kozjak”.



lake Kozjak

This study elaborates the hydrological characteristics which define the water regime and potential of the river Treska, essential for dimensioning of the banka "Kozjak". It is of great importance the fact that the hydrological station "Zdunje" on the river Treska is taken as a benchmark station and each hydrological research was conducted on the river Treska, between Zdunje and the bank "Kozjak". It will enable defining the accretion of the waters of the river "Treska" between these two measuring points, for which it can be stated that are created from the surfaces of Jasen, as springs and underground waters.

This study also defines the rainfalls in this region, which are basic indicators for the overflow of the surface waters, as well as for the capacity of the springs.

By using the rainfalls and the available flows of the river Treska, the coefficients of overflow i.e. the percentage of rainfalls which seeps on the surface and underground in the junction of the river Treska, including the bank Kozjak, whose part is the junction of Jasen.

Hydrological characteristics

Defining these characteristics will be made through the results gained from some anticipated terrain research and measurement of the flowing quantities of the river Osa, particularly, as well as the numerous research conducted on Patiska river. During the preparation of these documents if a need arises for additional measurements on the flow of certain parts of Patiska river, those would be conducted during the spring months for the purpose of defining the occurrence of the so called "bifurkacija", i.e. flow of the waters of Patiska river in two different junction areas.

The results from the studies prepared and gained by Administration for Hydrometeorological Service will also be analyzed and presented on the water potential of Patiska river, which are analyzed for the purpose of using the waters of this river for water supply, as well as for construction of small hydroelectric powerplant.

In the cases referring to Patiska river the methods for defining the surface waters of Patiska river and its right confluent Vlaska Pila are given, at the same time being used direct, simultaneous measurements of the flows of these two rivers together with the flows of Markova river and Kadina river, for the purpose of creating a correlation between these flows and thus enabling formation of historical chain of hydrological results for the period between 1961-2000.

This chain portrays the typical waters of Patiska river and Vlaska Pila for the stated period, expressed as minimum, average and maximum monthly and yearly flows. The module of inflating M (l/sec/km²) is also calculated, which actually shows the junction areas of these two rivers.

Materials for the Draft Spatial Plan for the junction of the river Treska will also be used and the public hearing, which was held at the Parliamentary club two years ago, will also be taken into consideration, as well as other expert studies and elaborates referring to this problem from the aspect of hydrology.

The Draft Spatial Plan for the junction of the river Treska contains much information from different areas, among which are the information referring to the climate and hydrology of the junction, while partially they refer to the locality "Jasen" too.

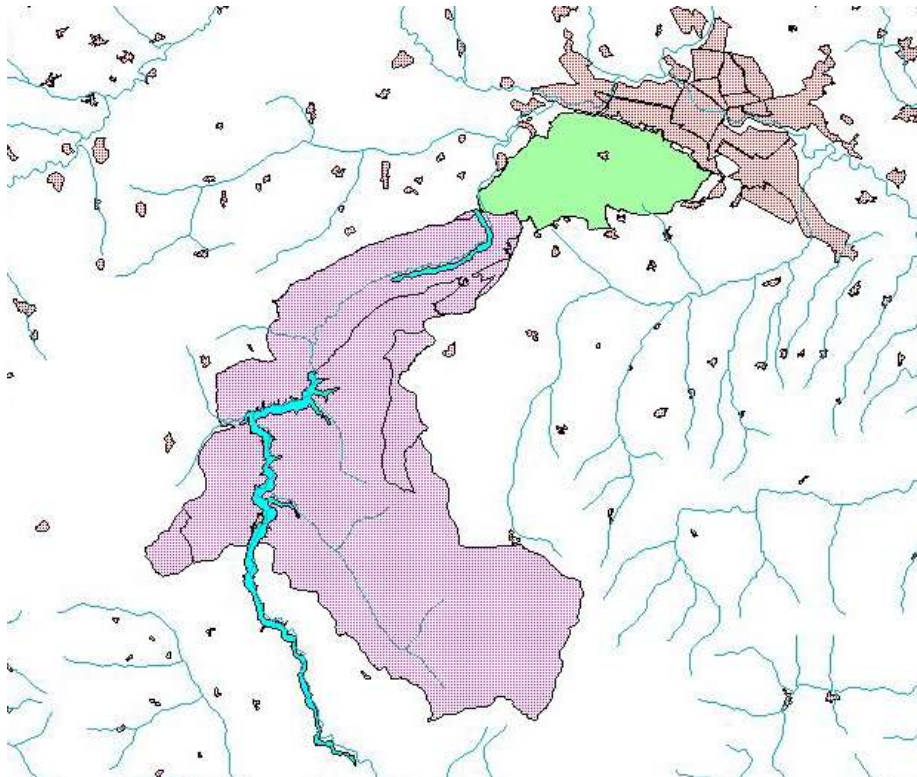
Besides the quoted studies in the field of hydrology and meteorology, some anticipations by the Administration for Hydrometeorological Service will also be used and which refer to the river Oca, especially referring to flows before the junction of the river Treska, as well as for the provision of waters for dimensioning of the shortcomings under the road which cuts off the river Oca.

field: EROSION

experts: Ivan Blinkov, PhD
Aleksandar Trendafilov, PhD

Form, type, location and intensity/potential of present erosion processes in the protected area “Jasen” is important even essential role in evolution and sustainability of some natural resources especially soil, water as well as biological and geological diversity.

Erosion processes and forms are important factor in spatial planning as well as preparation strategic plans and final designs for various infrastructure as follow: hydro ameliorative systems, urban areas, above ground and ground infrastructure etc.



geographical position of the study area in the region

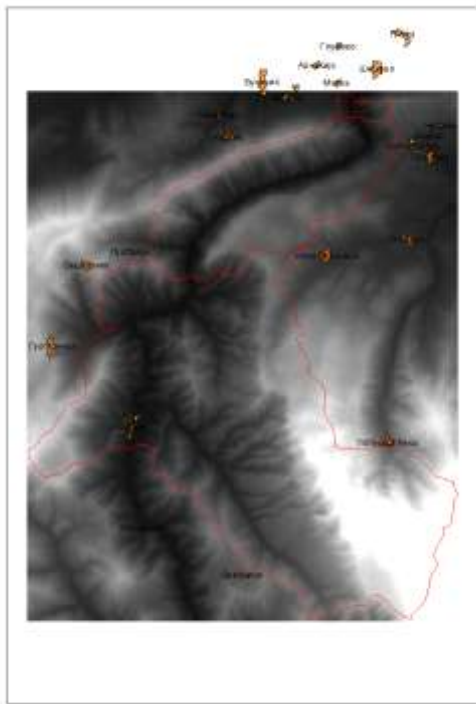
Having in mind, study area dimension, available time and finances, study for erosion in a PA “Jasen” will be based on the previous verified documentation, projects, studies.

Basic documents that will be used for preparation of this study are as follow:

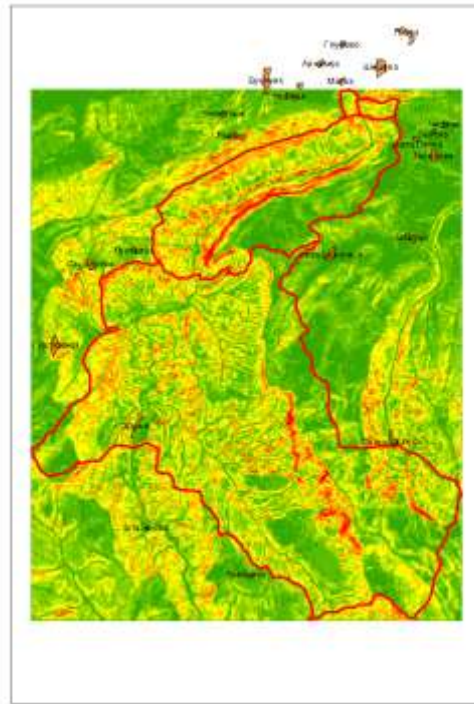
- Gorgevic M., et al (1993) – Erosion map of Macedonia, textual part, *Water development institute* , Skopje, 1993

- Gorgevic M., et al (1993) – Erosion map of Macedonia, maps, *Water development institute , Skopje, 1993*
- *Elaborates for monitoring sedimentation in Matka reservoir (1991, 1994, 2008), Water development institute, Skopje*
- Trendafilov A., Blinkov I., (2001): Study for erosion potential and erosion controlo measures in the Kozjak reservoir catchment, *ESM – HEP, Skopje*
- Blinkov I., Trendafilov A., (2004): Exeprt report: Forest and erosion, spatial Plan for the Porecje region, ASUP, Skopje
- Blinkov I., Trendafilov A., Rizovska J., Trendafilov B., Mincev I., (2008): Expert report: Forest and erosion, Spatial Plan for the Skopje region, *ASUP, Skopje*
- *Blinkov I., Trendafilov A., Trendafilov B, (2009): Preliminary research for preparation of scientific paper : Forest fires and erosion (2009)*
- *PI Jasen: Forest management plans*
- *Personal photo documentation*

Beside above mentioned documentation will be used other cartographic or numerical data related to erosion processes as follow: geological data, pedological data, topographic maps, climatic data, land cover data etc.



DEM of the study area



slope map

Radical land cover changes as a consequence of forest fires are very important and it will be analyzed too.

First activity in the future period will be reclassifying of already georeferenced basic GIS data according to the erosion need. It will result in maps that show influence of various factor on erosion processes and forms.



exposure map



hillshade map



geological map



soil type

The best period for erosion mapping is no-vegetation period because of visibility and fact that in November is a rain maximum. Main erosion factor is rain and a only one intensive rainfalls can creat extreme damages much more then hundred low intensity rainfalls. Taking in consideration this fact, main field research will be carry out in above mention period.

Next activity will be erosion coefficient estimation and will be create erosion map, map of erosion risk.

Finally will be present concept for erosion control works.

As attach of this report is presented part of already georeferenced and digitized basic data related to erosion processes that will be analyzed later in the future period.

field: GIS

experts: Ivan Mincev, McS
Bozin Trendafilov

Introduction

The Multipurpose area Jasen is located in the North West part of the country. The largest part of the area is part of the catchment of the Treska River. The area of interest covers 27,338 ha. This area is going to be the focus of our study. The study area is consisted of several diverse ecosystems distributed in altitudinal and spatial extent. This study is covering several aspects and therefore the multidisciplinary approach is the most suitable for covering the full extent. Consequently, the use of GIS tools is the most suitable approach for covering all the aspects.

Development of data infrastructure

The development of data infrastructure is a process which encompasses several stages for developing a good common data structure. Several prerequisites should be satisfied in order to develop an integrated solution. When speaking of data structure it is not just the software included but all the supporting stages are included.

A good common data structure encompasses the following elements:

- Software
- Hardware
- People
- Expert background
- Procedures

The software is a crucial part of the problem and is the base for good data management. As a good starting point is to have in mind to chose software which is available for the general public and easy to use (user friendly). Firstly, all the retrieved data is stored in some data format (txt, dbase, xls, doc) and this can be done in office environment (Microsoft, Open office). This is the first step where simple databases are created, stored and updated. The second step takes care of the spatial management of the data. Here a GIS software is implemented where the spatial information are created, stored, managed and updated. The final step is creating an integrated database which can be used by the general public and it will be easy to handle, view, update from remote locations. This is usually done by implementing some database management software (Oracle, SQL) which is placed on a server. The hardware is also important, because without a good hardware profile it wouldn't be feasible to have a sustainable database. To begin with, PC's are the first acquisition which should be acquired for the job which should be connected into a network. For the functioning of this system also a server is required to solve the problem of data

integration. These two elements take care of the element of data storage and data management and updating of the data and can be considered as basic equipment. Besides these also some other additional hardware equipment should be accounted for: scanner, GPS receiver, total station (data retrieval), printer and plotter (data visualization, presentation, hard copy storage).

For the functioning of the aforementioned elements, people should undergo training for the specific use of the equipment. Basic education/training does not account for this because only simple matters are discussed there. For more specific tasks a special training should be done to enable the users of the equipment to operationally use it in every day purposes.

The expert background should be always taken into account. The science is accounted here and all the theoretical and practical experience which is stored and refined over the past is implemented in the procedures. Also, on the end, the final results should be interpreted by the experts.

The procedures implement all the previous elements. Usually, for our purpose, they can be implemented in the GIS software as separate procedures which store the data on the server and the GIS is managing and analyzing the data.

Case study Jasen

Preparatory work for establishing and developing proper data infrastructure

The first step of the establishing the GIS database is gathering the existing data from previous studies from the region. First of all, on the first meetings with the experts which are working on the project was concluded that the scope of work requires usage of detailed datasets (1:25,000) in order to obtain better dataset. Because this project is considered as a continuation of the previous project of UNDP for Matka, some GIS data was already available in the MOEPP. Therefore this data was provided by the UNDP office in Skopje. This provided the GIS team a good starting point. The rest of the available data was either in hardcopy or in raster digital format which will be used later in the further work.

The preparatory work comprises of acquiring several base layers which will be essential for the further work. This part was consisted of acquiring topographic maps, aerial and satellite images. For the development of the topographic maps and aerial images the State Authority for Geodetic Works (SAGW) is in charge. The most recent maps were produced according the 2004 aerial imagery financed by the JICA project. The several thematic layers of the topographic maps were developed by the State Authority for Geodetic Works. After careful reviewing of the newly developed topographic maps several thematic inconsistencies were apparent. Most importantly, the hydrological network and the land cover had several inconsistencies. Consequently, it was decided that for the analysis a combination of topographic maps with different dates of production (1971 and 2004) will be used. The area covers the extent of 7 topographic maps (Gorna Belica, Gurgurnica, Patista reka, Samokov, Zdunje, Matka, Grupcin) with scale of 1:25,000. The acquired maps depending on the format were first scanned (1971 maps), then georeferenced (all the maps)

according to the official state reference system of RM (Ellipsoid: Bessel 1941, datum: Gauss Krüger). The aerial images (7) were already with proper reference from the SAGW.

The satellite image (Landsat ETM+) was downloaded from USGS (US Geological Survey). The image was already partly pre-processed, orthorectified. Further on several other pre-processing activities were undertaken: atmospheric corrections and registration to the official state reference system.

The next step of the work was to establish the terrain. There are several sources for obtaining proper DEM data. There was already one DEM available in our archives with spatial resolution of 80m. Also one DEM was downloaded from the archives of NASA. This DEM was the newest version of the processed Aster stereo pairs and was available for free with spatial resolution of 30m. These two products should later be tested for accuracy and it should be decided which one will be used. This product is the starting point for many analyses. Furthermore, some spatial analyses were done: development of slope model and aspect model of the study area and also the contours were derived from the DEM. This concluded the topography part, which was essential for the future work.

The next step of the preparatory work was to establish the borders of the working area. A hard copy of the border was obtained from MOEPP.

Every study includes socioeconomic part. The starting point of this part is delineation of the inhabited areas. These were also extracted from the topographic maps. Because of the extent of the study area, the best for representation of the inhabited areas were chosen polygons which have not only spatial position but also extent. For the land cover, as a starting point, was used the Corine land cover / land use map which was developed by the EEA (European Environmental Agency) in scale 1:100,000. This map will be used for general and zoning purposes. In the following period a more detailed map will be developed together with the experts for the most important sites.

field: SOCIO-ECONOMIC CHARACTERISTICS

experts: Mirjanka Mazevic, PhD

For the needs of the project for developing a study for evaluation of the multipurpose protected area Jasen during September and October 2010 many activities have been implemented.

At first, a plan with issues to be covered, which are related to the socio – economic characteristics, was developed in several subheads. The part about the socio – geographical characteristics is related to the features of the population and settlements and covers the following contents:

1. Population characteristics
 - Number and size of the population and households
 - Demo – geographic features

2. Socio – geographical characteristics of the settlements
 - Number and size of settlements
 - Structure of the areas
 - The presence of historical, cultural, archaeological and other values
 - Other features of the settlements.

The previously established concept involves familiarization with previous research in this area and its complementing with knowledge of the contemporary state and also future directions of development. To this end, an approach for detailed collecting and studying the professional literature where parts of this area are elaborated was undertaken. The review of many titles directly provide information on settlements which together with its surrounding are in Jasen or in its immediate proximity. Based on the documentation and certain legal acts published in the Official Gazette of the Republic of Macedonia, the process of the formation of Jasen as a multipurpose area and specific activities that were undertaken came to the realization. During the formation, some parts of the villages were included in the composition of Jasen.

A number of different maps such as topographic maps of different scale, several thematic maps of the watershed of the river Treska, satellite imagery and more were analyzed. From these the location or geographic position of the settlements was determined, borders of the area of settlements, the spread and structure of the area, some peculiarities of Jasen and the alike. From the maps on which the administrative and territorial settlements which are established with a smaller or greater portion of their area entered into the composition of the area or touching its borders are determined. It was come to the realization that it was about fifteen of those settlements belonging to several municipalities. Some research on their geographic features was conducted. For purposes of the project, data is consulted by settlements of the completed census of 1948, 1953, 1961 and 1971.

Included is the data on population, number of households and the number of apartments. In the future it is planned to be upgraded by data for demo – geographic features from the mentioned censuses, inclusive the census in 2002.

Based on the statistics for these settlements, it's in the process of preparation of a database of population characteristics as part of the study which includes: number and size of the population and households in 1948, 1953, 1961 and 1971. Demo – geographic and other features are explored. The base in the coming period will be replenished with new data. It is the basis for preparation of spreadsheets and graphics. Research shows that in essence it comes to settlements that have fewer residents and are included with the population group of small villages. In the past period they were engaged with strong processes of depopulation and de – agriculture contributing to featuring an extremely unfavourable demo – geographic structure. Exceptions from this situation are several major population areas that have significant demographic potential.

Of particular importance is the knowing of the structure of the area of the settlements on the studied space. From there the available surfaces and their utilization can be considered, opportunities for management and other. That is partly developed on the basis of information provided in the work of RGU Macedonia through land registry records. Of course it is necessary to update the data because of the occurred changes. That information is an integral part of the database. While studying the settlements, buildings and locations which have specific meaning should be taken into account, such as the presence of historical, cultural, archaeological and other values. In the vicinity of Jasen there are many objects that are of inestimable importance, we can only mention the many religious objects. They can engage in the potentials for development offered by the area. When planning the future development, other features of the settlements should also be taken into account. From our research, we have some knowledge about the socio – economic and cultural values:

- Presence of commercial facilities
- Existing infrastructure (roads and other facilities)
- Spaces where there is likelihood for construction and infrastructure development (dams, roads, bridges, etc.)
- Spaces with present or future value for recreation (trails, places with beautiful views, etc.)
- Locations for educational or research purposes, and more.

The abovementioned socio – geographical features are invaluable for evaluation of the studied area. Also, they are the basis for preparation of thematic maps that will contribute to getting a fuller picture of the research area. Given the resources there are, significant economic benefits are being achieved. The fact is that the activities within the multipurpose area Jasen and the surrounding area have important social and economic effects. There is a concept of the issues that will be worked out. For purposes of the project only partially have been developed social and economic effects from the current activities. They include:

- Exploitation of forests
- Hunting and fishing
- Current and potential value for recreation (activities, facilities, visitors)

- Characteristics of formal and informal structures
- Other activities
- Limiting factors
- Contribution of the protected area and its resources in larger economies (local, regional, national).

Based on the consulted literature we have only partial knowledge and information on this issue. Further studies are necessary for the completed activities. In the next period it is provided that economic aspects are investigated and completed. In the last period many materials in the printed and electronic media were analyzed for some socio - geographical specifics that can find its place within the framework of this research. For the project of developing a study for valorisation of the multipurpose area Jasen, the implementation of field studies is inevitable through applying various methods and techniques. In early October 2010 direct field tests were conducted on the area of the settlement Nova Breznica that is located in the immediate proximity of Jasen.

During the survey the attention was mainly devoted to the socio – geographical characteristics of the settlements. To get to certain information, a survey was conducted with the residents of Nova Breznica. Thus came to authentic data to meaningful moments and events from the past and the present of this township. Their statements are especially valuable for getting a picture of the contemporary problems this population encounters and location of the priority issues that should be taken into account in plans for future development of the village and its surroundings.



village Nova Breznica

The main highlighted problems are: traffic isolation, unresolved water supply, lack of ambulance and other. In terms of population characteristics it is a small rural settlement, with significant participation of elder people. From physiognomy point of

view, the presence of many homes with specific architectural features is noticeable, but they are in very bad condition. Also, a substantial photographic material of the parts of the village that will serve as photo documentation for the studied area was made. Also, in the recent period field studies were conducted in the village of Jabolci whose edge touches Jasen. This is a small rural settlement with a specific geographic location and unresolved infrastructure issues. A survey was conducted with some of the locals, the use of agricultural land was determined, the religious and other objects were inspected, and photographic material was made for this settlement.



church in village Jabolci

A researched of Kozjak and its surroundings was made, studying a part of the area of the village of Sveta Petka and other localities. The implemented field studies contribute to more wholesome comprehension of the situation and problems in the settlements. Also, they are supplemented with other analysis and studies on this issue.

References

1. Даскаловски В.(1993): Мигарциони процеси во руралната средина во Скопската Котлина. Годишен зборник. ПМФ ИГ, кн.31-32. Скопје.
2. Димитровска О. (2005): Влијание на географските фактори врз загадувањето на водите во сливот на река Треска и предлог мерки за заштита. Докторска дисертација, Одбранета на ПМФ ИГ.Скопје (во ракопис)
3. Димитровска О. (2009): Населби во сливот на река Треска и нивното влијание врз квалитетот на водите. Географски разгледи. Кн.43. Скопје.

4. ЗСРМ (1996): Попис на населението, домаќинствата .. 1994. Население според виталните, етничките, образовните и економските белези. Документација од Пописот 1994. кн. I, Скопје.
5. ЗСРМ (1996): Попис на населението, домаќинствата .. 1994. Податоци за населението во Република Македонија. Дефинитивни резултати. кн. VII, Скопје.
6. ЗСРМ (2004): Попис на населението, домаќинствата .. 2002. Податоци за населението во Република Македонија. кн. IX, Скопје.
7. ЗСРМ (2004): Попис на населението, домаќинствата .. 2002. Податоци за населението во Република Македонија. Дефинитивни резултати. кн. X. Скопје.
8. Костадиноски К:С: (1998): Селото Здуње, Порече- историја, култура и традиција. Скопје.
9. Костов В. , Панов Н. и др. (2010): Риболовна основа за “Слив на Треска“-период 2011-2016. МЗШВ на РМ Скопје
10. Манаковиќ Д. (1968): Геоморфологија на Сува Гора, Сува Планина и нивните северни ограноци. Годишен зборник. ПМФ ГИ, кн.16. Скопје.
11. МЗШВ на РМ (2006): Стратегија за одржлив развој на шумарството во Република Македонија. Скопје.
12. Панов М. (1968): Туристички вредности на поедини подрачја во СР Македонија. Годишен зборник. ПМФ ГИ, кн.16. Скопје.
13. Панов М. (1971): Разместеност на населбите и демографска структура на населението во Скопската котлина. Годишен зборник. ПМФ ГИ, кн.19. Скопје.
14. Панов М. (1993): Селата во Република Македонија. Кн.1, 2. Скопје.
15. Петрушевски И. и Петрушевска Н. (2001): Географски топонимски речник на Република Македонија. Скопје.
16. РГУ (1984): Македонија низ катастарската евиденција. Скопје.
17. РЗС (1973): Население по народност во СР Македонија-по општини, градови и населби. Статистички преглед. Бр. 42. Скопје.
18. Стојмилов А. (1977): Туристички вредности на Пелистерскиот и Јакупичкиот планински туристички регион. Годишен зборник на ГФ, кн 23. Скопје.
19. СЗС (1975): Попис на населението и становите во 1971. Население и домаќинства во 1948, 1953, 1961 и 1971 и становите во 1971. Белград.
20. СЗС (1973): Попис на населението и становите во 1971. Население, миграциони обележја, резултати по населби и општини. Белград.
21. Службен весник на Р М бр. 67/2004: Закон за заштита на природата. Скопје.
22. Службен весник на Р М бр. 25/2007: Просторен план на регионот на сливот на реката Треска. Скопје.
23. Хаџи Пецова, С., Зиков М. и Пенев П. (1999): Планинскиот масив Јакупица - истражување и вреднување на природното богатство. НИП Студентски збор. Скопје.

field: TOURISM

experts: Naume Marinoski, PhD

In the period of approval of making this project until today (20.10.2010) as a touristic evaluator of the location I took over this activities:

1. I determined time and location framework for realization of projected aims
2. I determined methodology for science research activities and I established research in cabinets and fieldwork



natural beauties as tourist motives, area Rada

3. I gathered literature and data resource

In this framework I have decided for this references:

- Map for location ambit in touristic evaluation on protected area Jasen
- Spatial plan of Republic of Macedonia, Agency for spatial and urban plans in Republic of Macedonia, Skopje 2000
- Spatial plan for Skopje Valley, Agency for spatial and urban plans in Republic of Macedonia, Skopje 2009
- N. Marinoski Touristic geography of Republic of Macedonia, FTH – Ohrid, 2008
- N. Marinoski Touristic geography, FTH – Ohrid, 2009
- N. Marinoski, Selective types of tourism, FTH – Ohrid, 2010
- Alternative types of tourism in Jablanica, project UNDP
- A. Tomic, Selective types of tourism, Novi Sad, 2008
- P. Piha, Spatial planning, Novinska Ustanova, official gazette of SFRJ, Beograd 1973

- Urban Institute Slovenia, Osnove regionalnega in urbanisticnega planiranja, Ljubljana
- Research society Ursus Speleos – Skopje, Hole Jasika, Physical and geographic research, Bio speleological research, Skopje 2010
- B. Gicevski, Hole Jasika and It's intend, Skopje 2010



use value of the shapped depressions in the carst areas

4. All the data I systematized in the literature and statistic yearbooks of R. Macedonia in field of tourism in Skopje and Makedonski Brod.

field: LANDSCAPE TYPES

experts: Vasil Anastasovski

One of the general provisions from the Law on the Protection of Nature, Revised text (67/04; 14/06 and 84/07) is regulation of protection of the biological and environmental diversity and protection of the natural heritage, both in and outside the protected area.

According to the law, the term “area” refers to a district (topographically defined territory) which is experienced by its people and whose characteristics are a result from the activities and interaction of the natural and/or human factors, or a zone that the local people and the visitors experience in accordance with the visual characteristics which result from natural or cultural factors. The area reflects the changes which have occurred and/or are occurring as a result of the natural forces or human activities, which comprise both the cultural and the natural components. The Law also defines the types of areas and their traditional characteristics. Thus, the term “area type” refers to close areas which are united as a result of the similar relief, hydrological and climate-vegetation characteristics, while “the traditional characteristics of the area” are the modified natural characteristics of the area as a result of the traditional method of exhaustion of the land. The processes in these areas are close to the natural ones.

The protection of the area’s diversity is realized through establishing and implementing numerous measures and activities for the purpose of keeping and protecting the characteristic values of the area, which arise from its natural configuration and/or the type of human activity.

Thence, the need for protection of the area is one of the logical steps and consequences of its evaluation.

The attractive areas, depending on their location and accessibility, are particularly interesting as places for recreation, thus making a good requirement for the development of tourism in these areas. Hence, it is understandable the desire for protection of one such area, although its implementation is so hard in the spatial targets of the politics for protection of nature, and what is even more difficult, in the specific regimes of management and exploitation of the area.

The analysis and study of the areas and their valorization, together with the valorization of the other components of nature, represents every important aspect in the whole process of protection of the nature and the natural heritage.

According to the World strategy for conservation (IUCN, 1980), three specific goals for conservation of the area are defined:

- 1) Maintenance of the essential ecological processes and animals and the other systems dependant on the human existence and development;
- 2) Preserving the genetic diversity and,
- 3) Ensuring the species, as well as the ecosystems to be used in appropriate manner.

Conservation of the area refers to protection of the area from damage and its devastation.

There is no generally accepted methodology for identification of the types of areas, since their categorization largely depends on human's perception.

However, the natural characteristics (such as the geological composition, relief structure, hydrography) are taken as a starting point for identification of the areas. One of the main reasons for the existence of different types of areas is the influence of the relief on the climate and the vegetation. It represents the basic precondition for the way the natural resources are used, and which also determines people's way of life. Furthermore, the general physiognomy of the area, as well as the dominant element can be taken as indicators.

Taking into consideration the above stated indicators, the following types of areas can be identified in the multipurpose area "Jasen":

1. Riverside area
2. Woodland area
 - Area with deciduous woods
 - Area with mountainous coniferous woods
3. Area with high mountain pastures
4. Limestone rocky area

References

- Drenkovski, R. (1981): Areas within geographical-territorial entirety and the importance of their protection. Council for human environment and spatial planning, 61-66, Sarajevo.
- Gjorgjevik, D. (1993/94) Conservation of the areas as part of their planning. Protection of nature, no. 46-47, 183-188, Belgrade.
- Elaborate on the protection of the canyon Matka as a natural monument (1993): Republican Institute for the protection of the natural rarities, Skopje
- Colic, D. (1975): Ecological approaches of planning and protection of areas in Yugoslavia. Report on the creative maintenance and protection of areas, Republican institute for protection of nature of R. Serbia, Special edition, book 10.
- Melovski Lj. (2008) Valorisation of the natural beauties of Sar Planina and estimation of their market value. Ministry of natural environment and spatial planning (in writing)
- Zikov, M. (2000): The landscape as an important geographical element in the spatial planning, according to the example of R. Macedonia. Geographical reviews, book 35, 65-78, Skopje.
- Manakovik, D., Drenkovski, R., Drozdovski, I. (1983): Proposal for proclamation of the national park Jakupica. Institute of spatial planning, Ohrid.

