Project Update: December 2018

With the aim to collect all relevant information on plant life (both native and alien flora), vegetation and habitat types in the area of Dinaric arid karst fields in Montenegro, in the end of May 2018 we started with project "**Semi natural dry grasslands in Montenegro as potential NATURA 2000 sites – Vegetation diversity, habitat typology, conservation**".

Dinaric arid karst fields are extremely sensitive ecosystems, shaped throughout centuries by human activities. These ecosystems have unquestionable economic, biological, landscape and cultural value. Detailed research in this will provide better basis for conservation efforts, raising of awareness of possible biodiversity loss, monitoring of vegetation changes and creation of management plans for sustainable use.

All activities planned within the project in the period of September 2018 - November 2018 are divided into two parts: fieldwork and promotion. Time scale of the activities is presented in **Table 1**.

Activities	Time scale
Field activities	
Flora-vegetation-habitat mapping	May-September 2018
Plant identification /data processing/	June 2018- November 2018
habitat mapping (ArcView Gis)	
Promotion	
Workshop for pupils of Primary and	October 2018
Secondary schools at the manifestation	
"Days of Biology and Science"	

 Table 1. Project activities in the period September 2018 – November 2018

FLORA-VEGETATION-HABITAT MAPPING

Due to the fact that there are no existing data on the flora of Dragalj polje, we focussed on floristic investigation in this area. During the fieldwork we collect plant material for identification from all aspects of flora (spring, summer and autumn). All herbarium specimens (**Picture 1 & Picture 2.**) is deposited in herbarium collection in University of Montenegro (TGU!).



Picture 1 & Picture 2. Herbarium specimens of endemic species Hyacinthella dalmatica and Trifolium dalmaticum (©Milica Stanišić)

So far, in the area of Dragalj polje we collected ca. 300 taxa of rank species and subspecies. Compared with the data from Grahovsko polje and karst fields in Piperi (Gostilje, Kopilje and Radovče), the number of reported taxa for this area is quite low. Such results can be for several reasons:

- 1. Land abandonment in the investigated area is visible.
- 2. Due to fact, that there is no urbanisation and intensive agricultural development, the spreading of invasive species is minimised.
- 3. Fieldwork in the area of Dragalj polje was done during only one vegetation season. In order to avoid the influence of climate extremes on the development of vegetation and to get deeper insight in floristic characteristics, it is recommended to do research on flora for at least two vegetation seasons. Although this project lasts for a year, we will continue floristic research in the area of Dragalj polje in order to get more precise data.

Activities included in the fieldwork is carried out by national experts in the field of floristics, vegetation and habitat mapping. On the fieldwork participation is taken by Milica Stanišić and Danijela Stešević.

PLANT IDENTIFICATION/DATA PROCESSING/HABITAT MAPPING (ARCVIEW GIS)

After collecting plant material in all aspects of flora (spring, summer and autumn), we also finished a plant identification. For identification of species in floristic analysis we have used standard botanical determination keys (Tutin et al. (eds.) 1964-1980,

Pignati, 1982, Josifović, M. (Ed.) (1970-1976). Nomenclature is accorded to Euro+Med Plantbase (2006-) and The Plant List.

Floristic analyses resulted with ca. 300 taxa of rank species and subspecies. During the identification of plant material we have problems with complicated genus (Festuca, Hieracium...) and we need to check this taxa and compare it with the herbarium specimens. Also, the collected plant material was analysed in terms of ecology and chorology. The results of the analysis of the flora show a significant presence of plant species from families Asteraceae and Poaceae. In the biological spectrum hemicryptophytic and therophytic life forms are dominant, while in terms of chorological structure, the most frequent appearance have species of Eurasian and Mediterranean/Sub-Mediterranean chorological type. In the total spectrum of flora of Dragalj polje, significant presence have endemic species and species protected by law, while the number of alien species is negligible.

After identification of plant material, the vegetation releves (ca. 80 vegetation releves) which are made during fieldwork in June 2018 is stored in Turboveg database (**Picture 3**) and further processed with specialized software statistical program Juice.

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Picture 3. Turboveg database for dry grasslands (©Milica Stanišić)

According to preliminary analyses in the area of dry karst fields in Montenegro, we can distinguish eight orders which belongs to three classes:

A. Class Festuco-Brometea Br.-Bl. et Tx. ex Soó 1947:

- 1. Scorzoneretalia villosae Kovačević 1959
- 2. Festucetalia valesiacae Br.-Bl. et Tx. ex Br.-Bl.
- 3. Astragalo onobrychidis-Potentilletalia Micevski 1971
- 4. Brachypodietalia pinnati Korneck 1974 nom. conserv. propos.
- 5. Stipo pulcherrimae-Festucetalia pallentis Pop 1968 nom. conserv. propos.
- 6. Artemisio albae-Brometalia erecti Ubaldi ex Dengler et Mucina in Mucina et al. 2009

- B. <u>Class Arrhenatheretea elatioris Br.-Bl. 1949 nom. nud.:</u>
 - 7. Arrhenatheretalia elatioris Tüxen 1931
- C. <u>Class Sisymbrietea officinalis Gutte & Hilbig 1975:</u>
 - 8. Brometalia rubenti-tectorum Rivas-Martínez & Izco 1977

In terms of habitat types, in the investigated area we can distinguished two NATURA 2000 habitat types: 6210* Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) and 62A0 East Sub Mediterranena dry grasslands (Scorzoneretalia villosae).

In this activities participation is taken by Milica Stanišić, Danijela Stešević, Urban Šilc, Filip Kuzmič and Danka Caković.

WORKSHOP FOR PUPILS OF PRIMARY AND SECONDARY SCHOOLS AT THE MANIFESTATION "DAYS OF BIOLOGY AND SCIENCE"

At the beginning of October 2018 Biology Department of Faculty of Maths and Natural Sciences in Podgorica organised the meeting "Days of Biology and Science". The part of this meeting was an exhibition and lectures for pupils of primary and secondary schools about dry meadows and grasslands ecosystems of arid karst fields, its biological value and promotion of its conservation. After lectures, herbarium specimens, photographs, posters, and drawings about plant life of arid carst fields was presented. In this activities participation is taken by Milica Stanišić and student volunteers (**Picture 4 & Picture 5**).



Picture 4 & Picture 5. Pupils from primary school and student volunteers at the Manifestation "Days of Biology and Science"