

# Sigma-syntaxa of the dry grassland vegetation in the Dnister River Canyon



Yuliya Rozenblit<sup>1</sup> ([yuliya.rozenblit@gmail.com](mailto:yuliya.rozenblit@gmail.com))  
Yakiv Didukh<sup>1</sup> ([ya.didukh@gmail.com](mailto:ya.didukh@gmail.com))  
<sup>1</sup>Department of Geobotany and Ecology, M.H. Kholodny Institute of Botany of the NASU, 2 Tereshchenkivska str., Kyiv, Ukraine

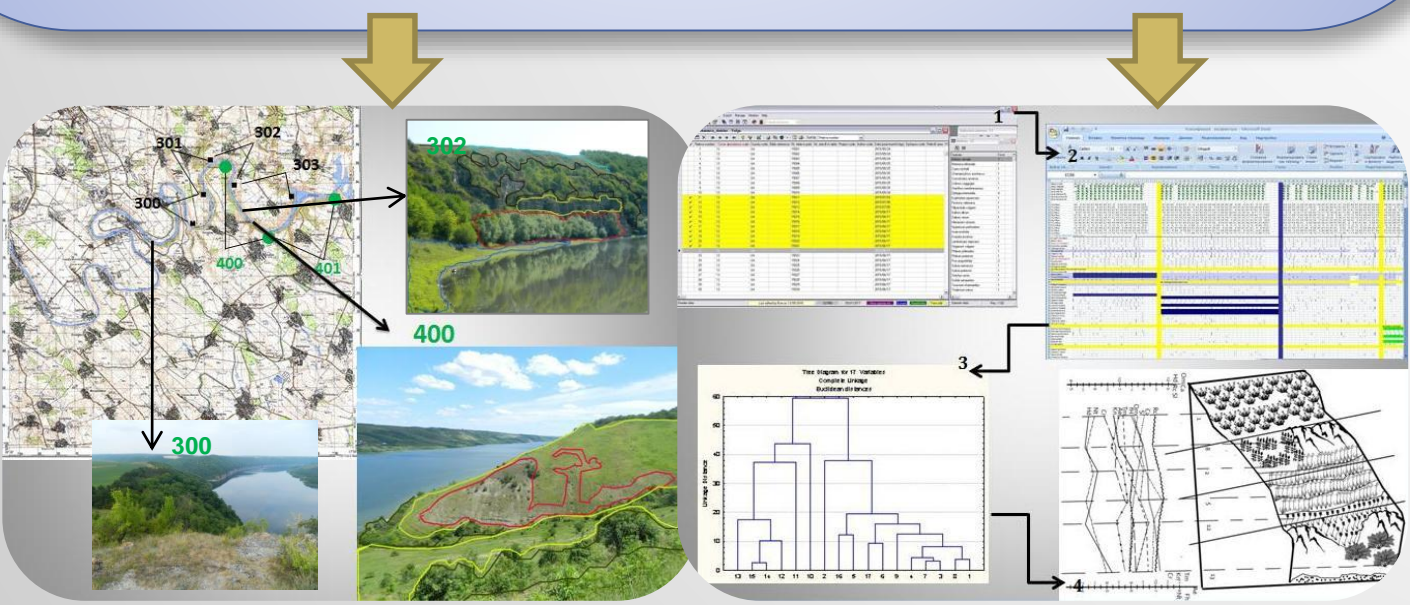


**Introduction:**  
The Dnister River Canyon is a unique natural area with numerous geological, botanical, geomorphological, and hydrological monuments that is located in the middle stream of the Dnister River Valley. It has a length of 250 km. The transverse profile illustrates the upper part (the slopes of moderate ascent, which develop usually on the argillo-arenaceous Quaternary and

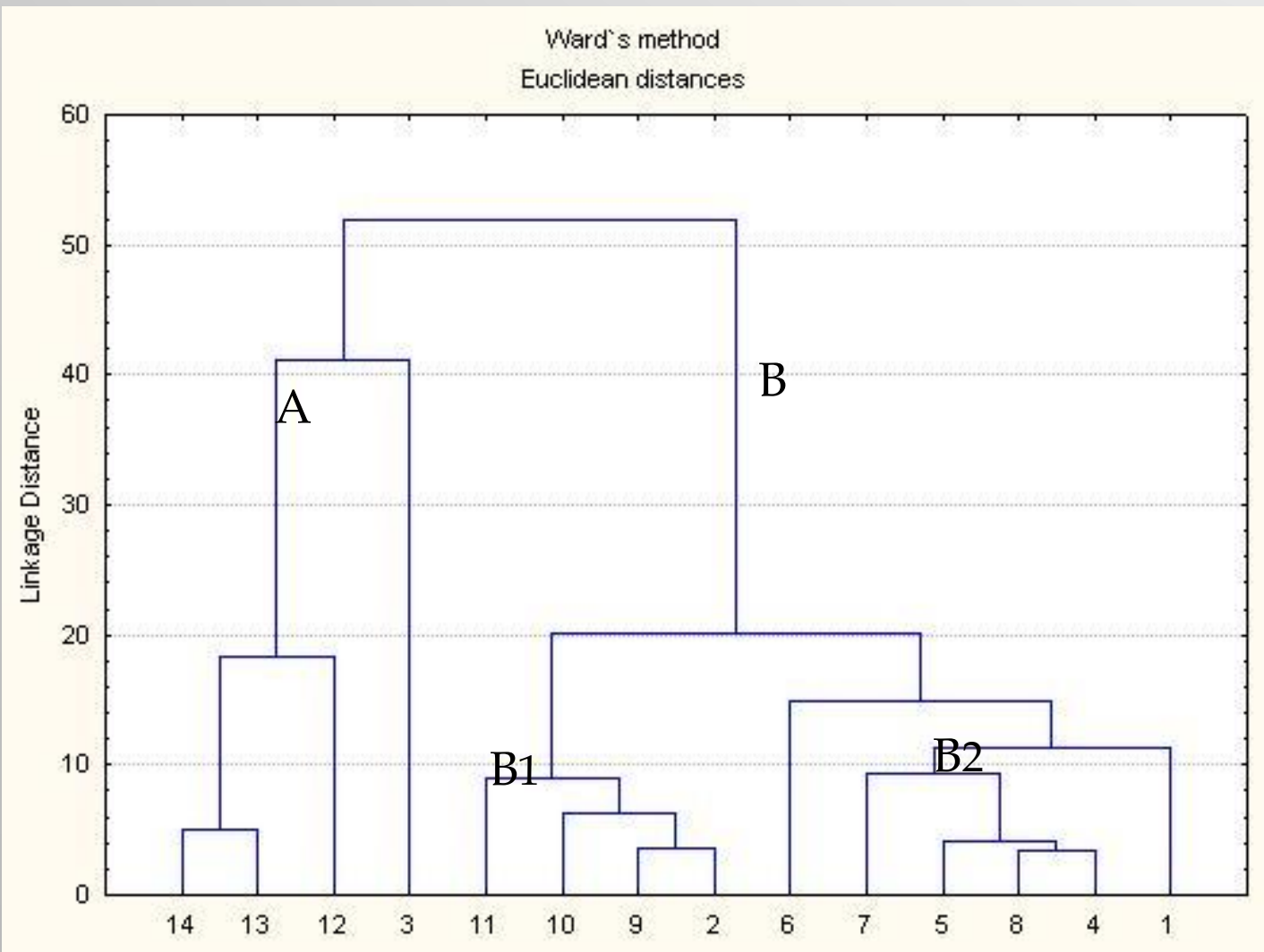
argillous Miocenic deposits), the middle part (characterized by denudation processes and erosion of carbonate cleavages and eluvial deposits from Cretaceous to Devonian period), and the lower part (talus and deposits of different rocks). Widely scattered, there are observed cliffs and precipices of scores of meters height. The riverbed is winding, therefore, the exposition and inclination of slopes change sharply. Such a structure of the valley determines the "thermal effect", where the average temperature is higher than the surrounding territory. Here are formed hermophile coenoses, which are unique for this area. Depending on the exposition and inclination of the slope, there are natural combinations of biotopes that are considered as syngmasyntaxa. On the basis of diagnostic syntaxa of syngmasyntaxa, sigmets are determined.



**Materials & Methods**  
316 relevés were performed in the study area and 14 ecological profiles were established. We conducted a visual separation of the physiognomic boundaries of vegetation on a scale map of 1:10000. The classification was made applying the modified TWINSPLAN Classification (Roleček et al., 2009) (pseudospecies cut levels: 3; values of cut levels: 0, 5, 15; minimal group size: 4; Whittaker's beta-div.). Basing on the analysis of ecological profiles and the spatial combination of communities on the catenium we determined sigma-syntaxa. Each sigma-syntaxon has the ecological characteristics on the Didukh scale (Didukh, 2011). Cluster analysis of the syntaxa is based on environmental factors and built in the program STATISTICA 7.0 (Ward's method, Euclidean distances).

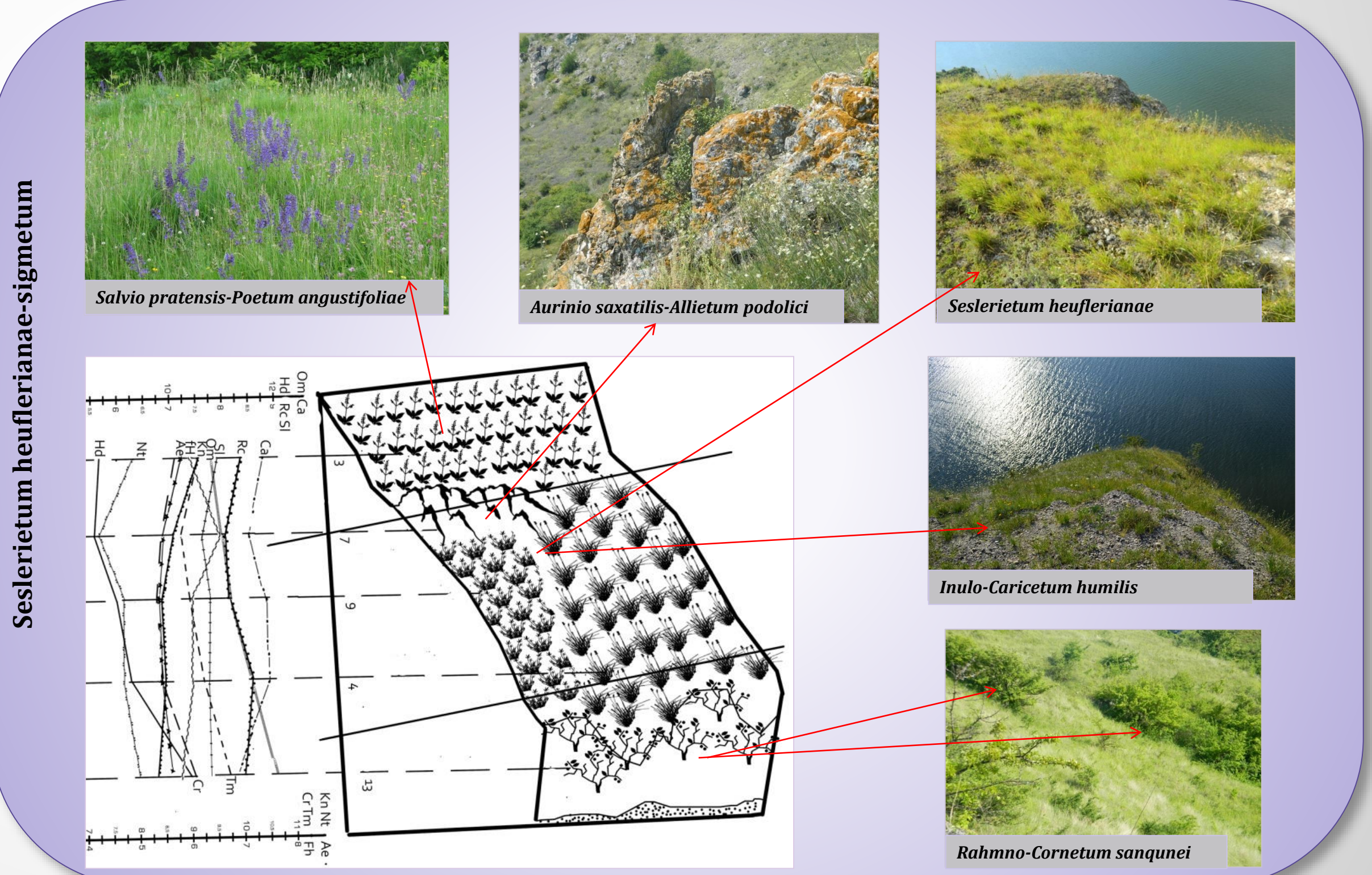
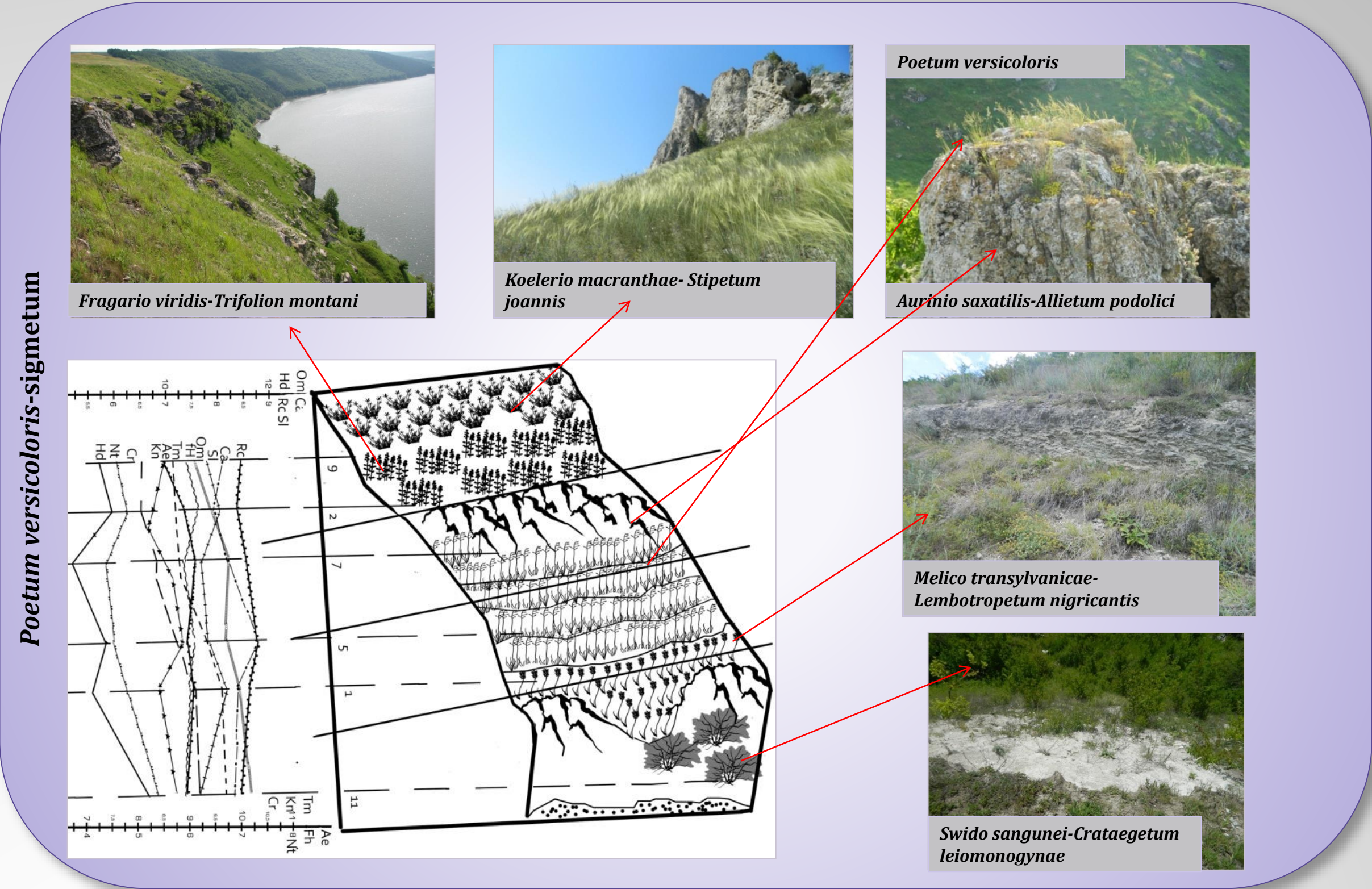


## Syntaxa evaluation for leading ecofactors

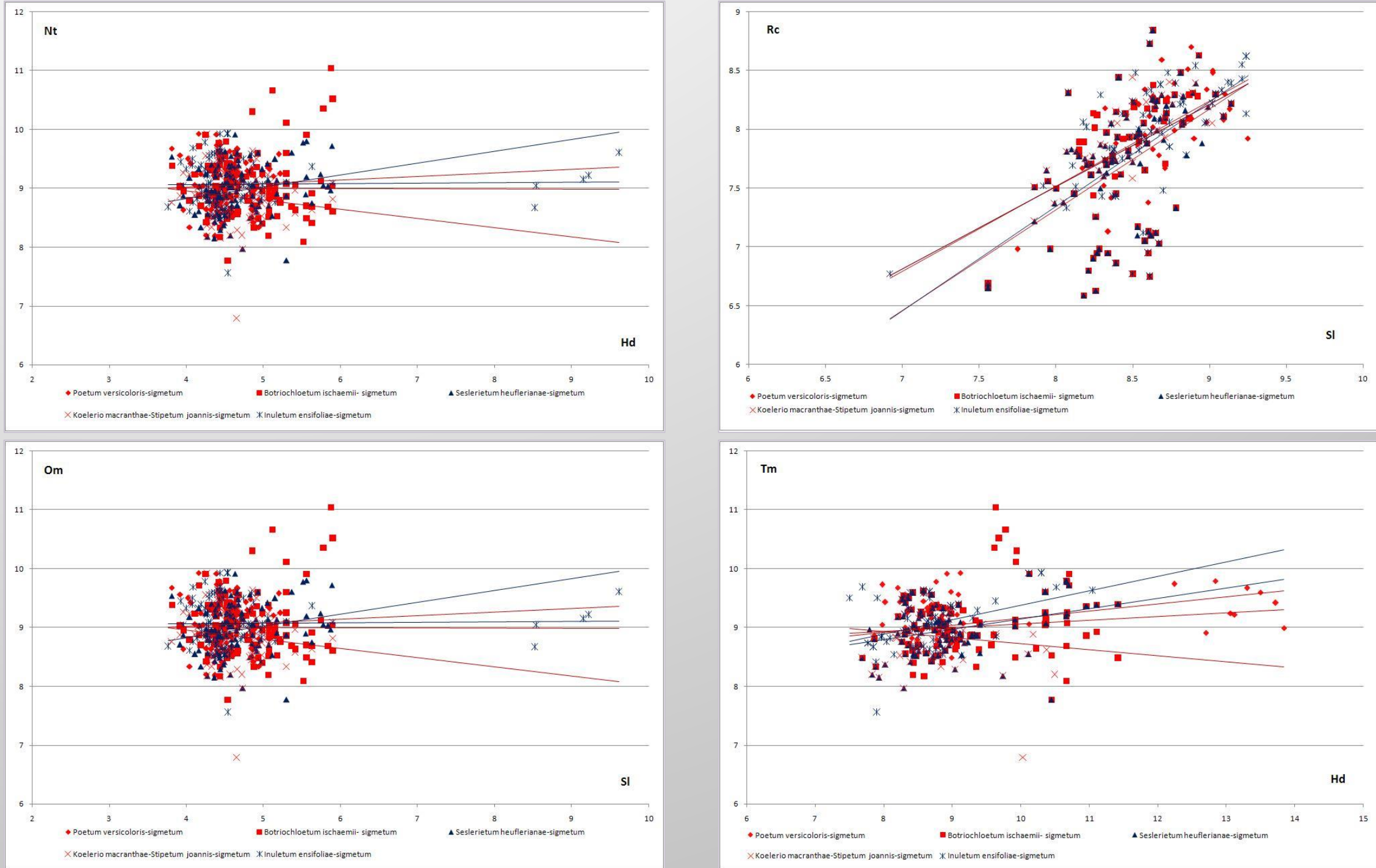


1 — *Melico transylvanicae-Lembotropetum nigricantis*; 2 — *Carici praecocis-Thymetum marschalliani*; 3 — *Salvio pratensis-Poetum angustifoliae*; 4 — *Seslerietum heuflerianae*; 5 — *Poetum versicoloris*; 6 — *Schivereckio podolici-Seslerietum libanotis*; 7 — *Aurinio saxatilis-Allietum podolici*; 8 — *Asplenietum trichomano-rutae-murariae*; 9 — *Botriochloetum ischaemii*; 10 — *Koelerio macranthae-Stipetum joannis*; 11 — *Prunetum spinosae*; 12 — *Swido sanguinei-Crataegetum leiomonogynae*; 13 — *Rahmno-Cornetum sanquenei*; 14 — *Inuletum ensifoliae*

**Results:**  
There were established 5 sigma-syntaxa dry grassland Dnister canyon (*Poetum versicoloris*-sigmetum, *Seslerietum heuflerianae*-sigmetum, *Botriochloetum ischaemii*-sigmetum, *Koelerio macranthae-Stipetum joannis*-sigmetum, *Inuletum ensifoliae*-sigmetum).



## Distribution of syigma-syntaxa in the along the main factors



**Conclusions**  
Distribution patterns of syntaxa were determined depending on the leading ecological factors (mesic steppe and shrubs (A), steppe (B1) and rocky grasslands (B2)). It was established that the parameters of temperature conditions and ombroregime that are changing in dependence of the inclination, affects the change of the humidity of soil and edaphic parameters. More humid soils are more sensitive to climatic changes. The most sensitive are mesic communities. In a case of steppe communities the most sensitive are those which are distributed on the northern slopes (*Seslerietum heuflerianae*). Climatic changes might have an essential influence on the state and the distribution of syntaxa and can cause the loss of some elements of syngmasyntaxa.