

Forest and steppe vegetation of the National Nature park “Karmeliukove Podillya” (Vinnytsia region, Ukraine)

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Introduction

National Nature Park “Karmeliukove Podillya” is one of the youngest national parks in Ukraine and only one NNP in the Vinnytsia region (Fig.1, 3). It was established in 2009 for conservation the forests and steppes, typical of the southeastern part of Podillya. In 2016 it was adopted as the Emerald site UA0000089 (fig. 2). Detailed botanical research in this area has been taking place intermittently for more than 30 years, but a comprehensive study of vegetation by J. Braun-Blanquet method has not been carried out so far.

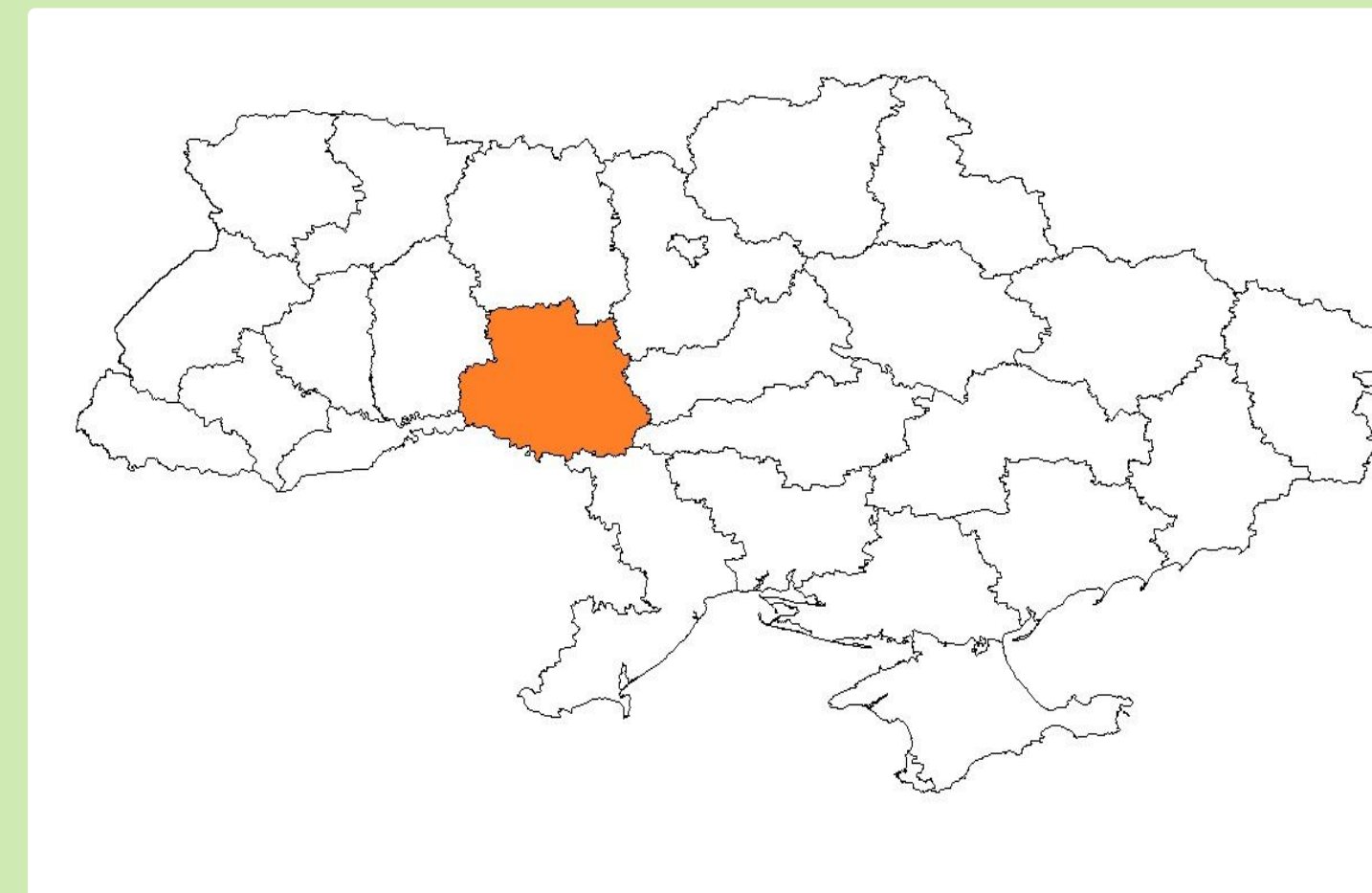


Fig. 1. Vinnytsia region on the map of Ukraine

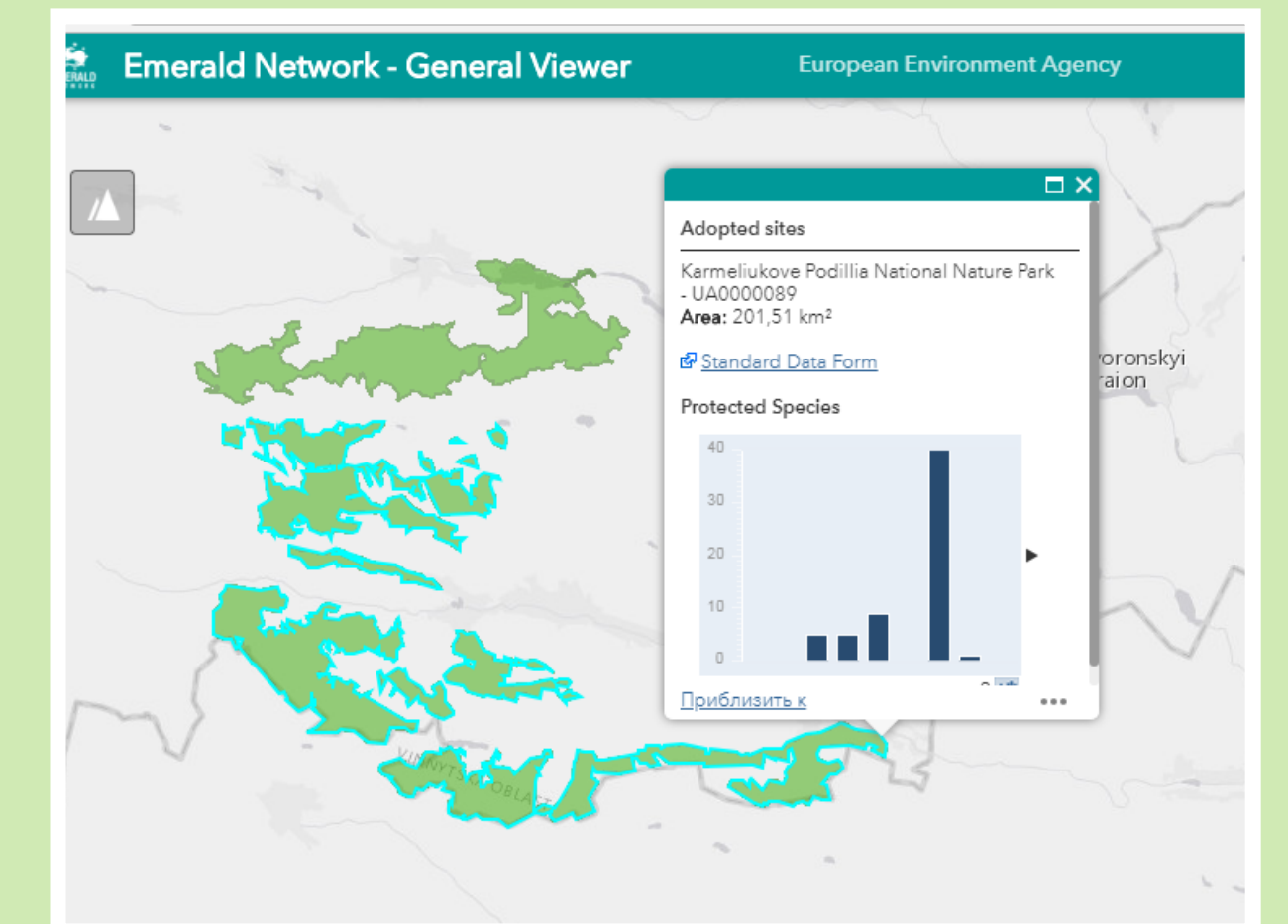


Fig. 2. Emerald site UA0000089 – Karmeliukove Podillya National Nature Park <http://wab.discomap.eea.europa.eu/webappbuilder/apps/27>

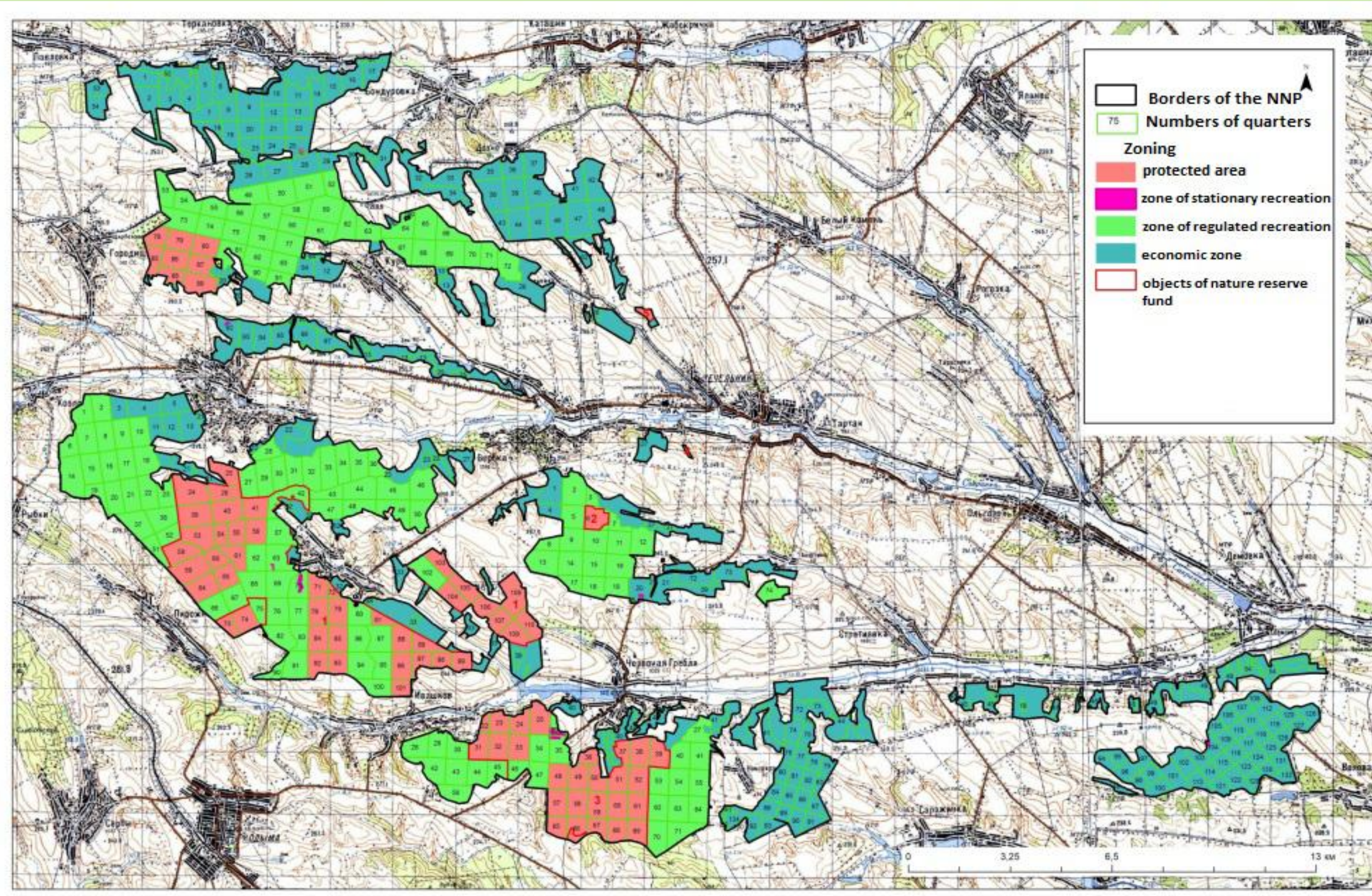
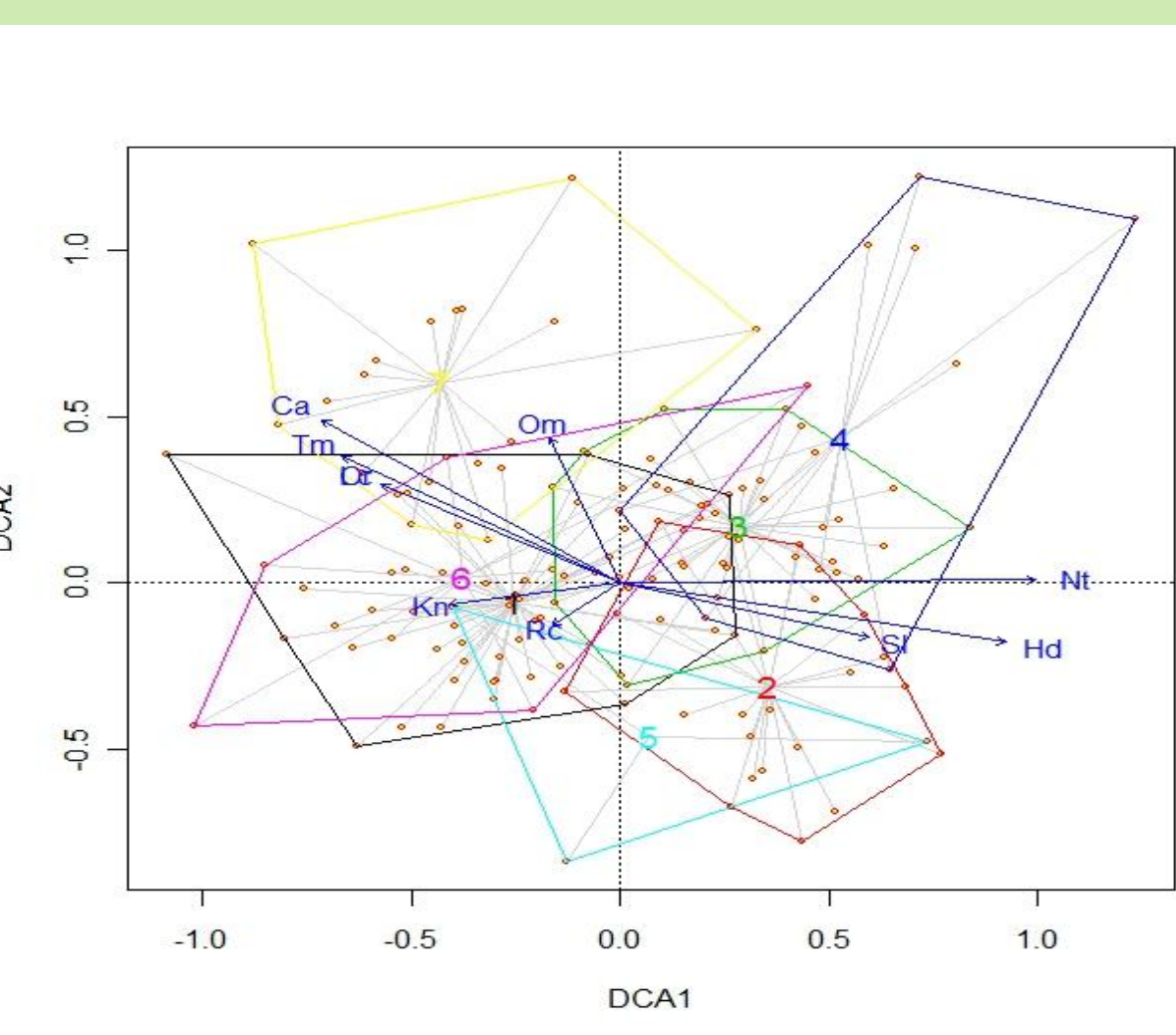
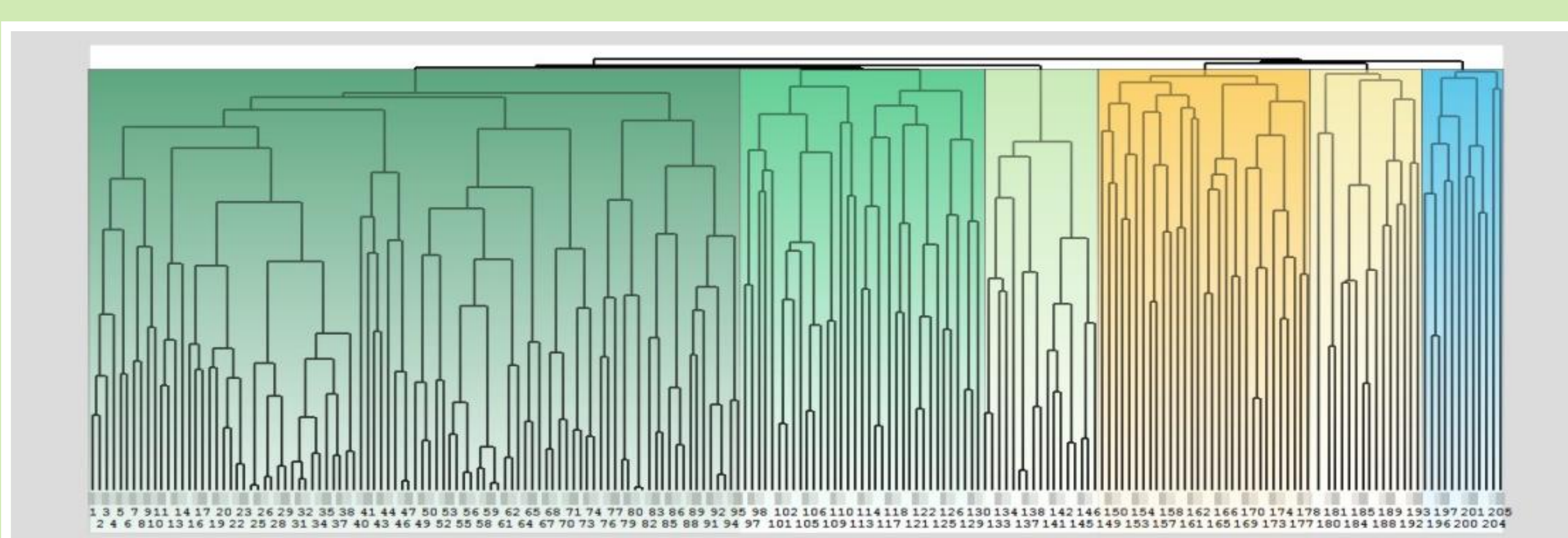


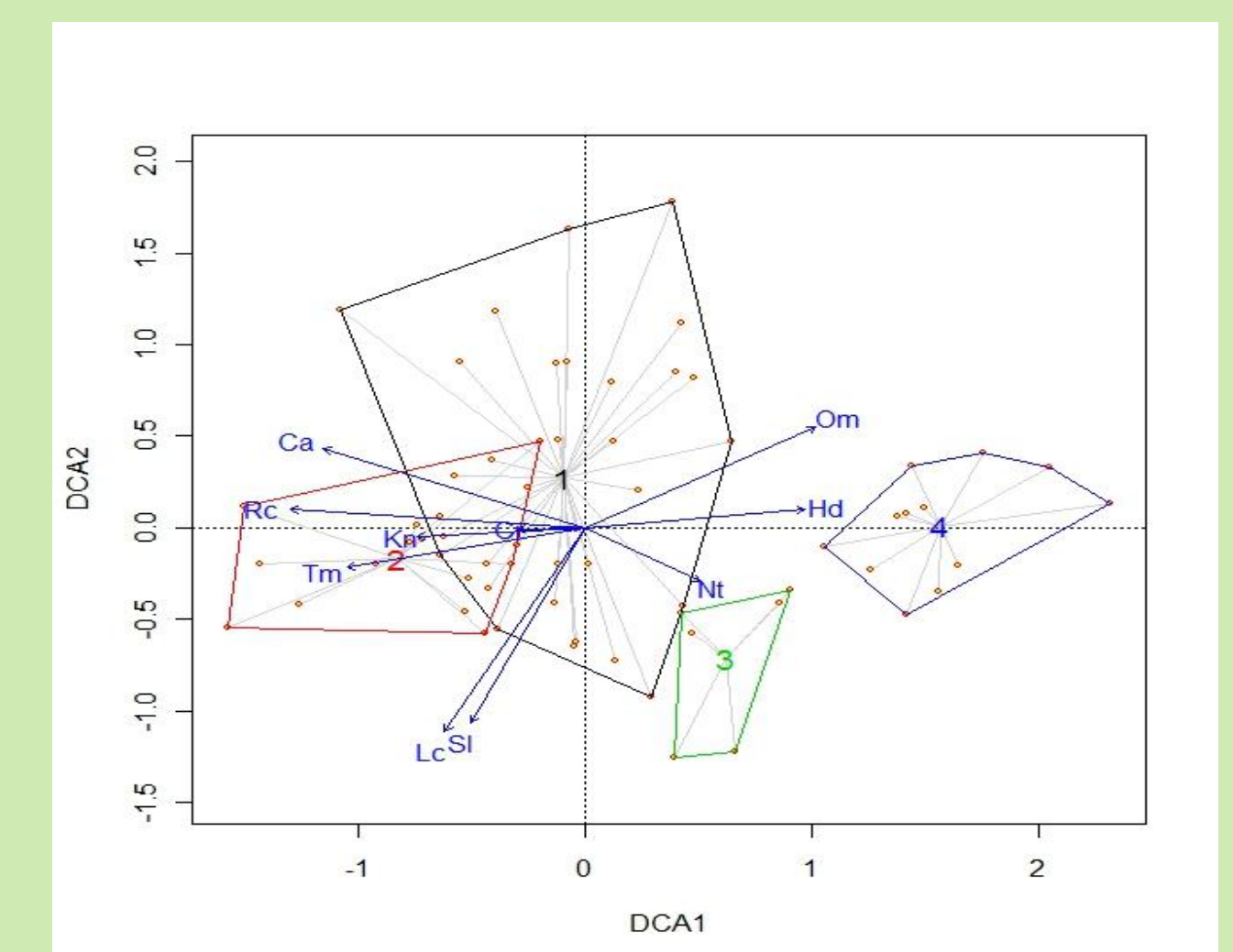
Fig. 3. Functional zoning of the Karmeliukove Podillya Natural Nature Park

Results and Discussion

According to the classification results the forest vegetation of the park is represented by two associations of the class *Carpino-Fagetea sylvaticae*: *Galeobdolon lutei-Carpinetum* with 3 variants and *Isopyro thalictroidis-Carpinetum* as well as one association of the class *Quercetea pubescentis* — *Quercetum pubescenti-roboris* with 2 variants. Steppe vegetation is represented by one association of the class *Trifolio-Geranietea sanguinei* — *Trifolio medii-Agrimonetum eupatoriae* and three association of the class *Festuco-Brometea*: *Festuco valesiaca-Stipetum capillatae*, *Salvio pratensis-Poëtum angustifoliae*, *Scabioso ochroleuca-Brachypodietum pinnati*. Водойми та водотоки на території парку майже відсутні, незначна кількість наявних описів не дозволяє здійснити повноцінний аналіз рослинності, тому нами виявлено на даний момент лише 4 асоціації та 2 безрангових угруповання. The leading factors of ecological differentiation for both types of vegetation are edaphic — soil humidity, carbonate and nitrogen content; from climatic factors leading are thermal climate and continentality (Fig. 5)



Forest vegetation



Steppe vegetation

Fig. 5. Results of DCA-ordination of the syntaxa of zonal vegetation of the NNP «Karmeliukove Podillya» (numbers of syntaxa correspond to the numbers in the classification scheme; symbols of the environmental vectors are listed in the section "Materials and methods").

Fig. 4. Dendrogram of the 1st stage of the PC-Ord cluster analysis of 224 relevés from the NNP "Karmeliukove Podillya" (green – forest vegetation, orange – grassland vegetation, blue – wetland vegetation)

Classification scheme of the NNP “Karmeliukove Podillya” vegetation:

Carpino-Fagetea sylvaticae Jakucs ex Passarge 1968
Carpinetalia betuli P. Fukarek 1968
Carpinion betuli Issler 1931
Galeobdolon lutei-Carpinetum Shevchyk et al. 1996 em. Onyshchenko et Sidenko 2002
Galeobdolon lutei-Carpinetum sambucetosum nigrae Shevchyk et al. 1996
 1. *Galeobdolon lutei-Carpinetum sambucetosum nigrae* var. *Carex brevicollis*
 2. *Galeobdolon lutei-Carpinetum sambucetosum nigrae* var. *Alliaria petiolata*
 3. *Galeobdolon lutei-Carpinetum sambucetosum nigrae* var. *Dentaria bulbifera*
Isopyro thalictroidis-Carpinetum Onyshchenko 1998
 4. *Isopyro thalictroidis-Carpinetum corydaletosum cavae* Onyshchenko 1998
 5. Com. *Fragaria viridis*+*Carpinus betulus*

Quercetea pubescentis Doing-Kraft ex Scamoni et Passarge 1959
Quercetalia pubescenti-petraeae Klika 1933
Aceri tatarici-Quercion Zolyomi 1957
Quercetum pubescenti-roboris (Zolyomi 1957) Michalko et Džatko 1965
Quercetum pubescenti-roboris quercetosum petraeae subass. nova
 6. *Quercetum pubescenti-roboris quercetosum petraeae* var. *Aegonychon purpureocaeruleum*
 7. *Quercetum pubescenti-roboris quercetosum petraeae* var. *Sorbus torminalis*

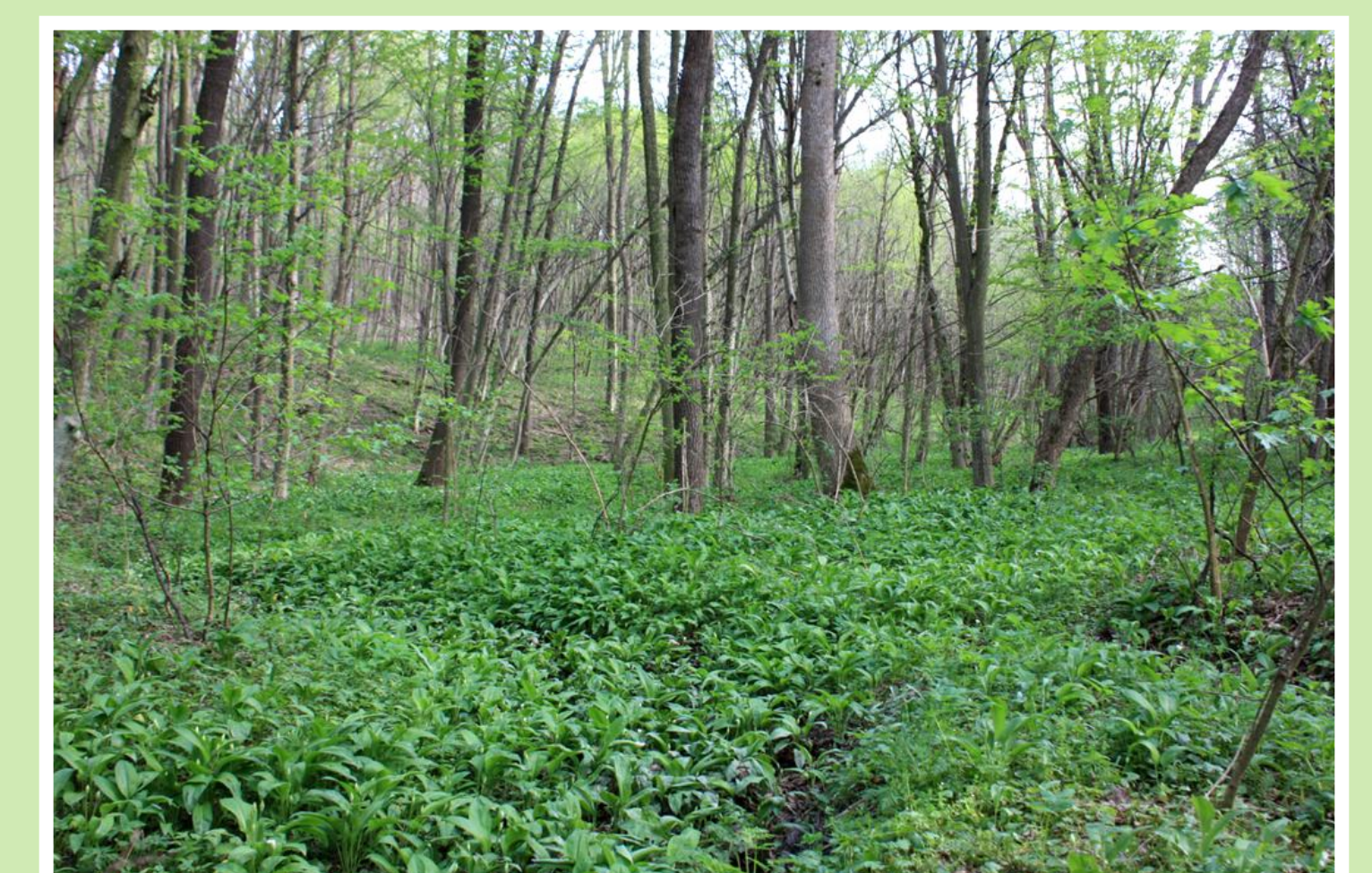
Trifolio-Geranietea sanguinei T. Muller 1962
Origanetalia vulgaris T. Muller 1962
Trifolion medii T. Muller 1962
 1. *Trifolio medii-Agrimonetum eupatoriae* Müller 1962

Festuco-Brometea Br.-Bl. et Tx. ex Soo 1947
Festucetalia valesiaca Soo 1947
Festucion valesiaca Klika 1931
 2. *Festuco valesiaca-Stipetum capillatae* Sillinger 1930
Brachypodietalia pinnati Korneck 1974
Cirsio-Brachypodion pinnati Hada c et Klika in Klika et Hada c 1944
 3. *Salvio pratensis-Poëtum angustifoliae* Korotchenko, Didukh, 1997
 4. *Scabioso ochroleuca-Brachypodietum pinnati* Klika 1933

Molinio-Arrhenatheretea Tx. 1937
Molinietalia caeruleae Koch 1926
Calthion palustris Tx. 1937
Scirpetum sylvatici Ralski 1931
 Com. *Equisetum palustre*

Potamogetonetea Klika in Klika et Novak 1941
Callitricho hamulatae-Ranunculetalia aquatilis Passarge ex Theurillat in Theurillat et al. 2015
Ranunculion aquatilis Passarge ex Theurillat in Theurillat et al. 2015
 Com. *Callitriche cophocarpa*

Phragmito-Magnocaricetea Klika in Klika et Novak 1941
Phragmitetalia Koch 1926
Phragmition communis Koch 1926
Phragmitetum australis Savič 1926
Magnocaricetalia Pignatti 1953
Magnocaricion gracilis Gehu 1961
Caricetum acutiformis Eggler 1933
Caricetum ripariae Máthé et Kovács 1959



Forest vegetation of the Chervonogreblinsky department.



Steppe vegetation of the Romashkovo site