

FLORA AND VEGETATION OF THE MEADOW-STEPPE BIOTOPE OF THE «OLEXANDRIA» DENDROLOGICAL PARK OF THE NAS OF UKRAINE

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The „Olexandria” Dendrological Park is located in the forest-steppe zone of Ukraine, in the right-bank (southern part) of the Kyiv region, which belongs to the Kyiv Upland of the European broadleaf forest zone, and is characterized by the alternation of broadleaf forests and steppe massifs. The area of the dendrological park exceeds 400 hectares. According to the classification of biotopes of the forest and forest-steppe zones of Ukraine, 5 types of highest-ranking biotopes have been identified on its territory: G, E, C, D, H [1].

An inventory of the floristic composition of biotope E—which is characterized as a grass-herbaceous, meso- and xerophytic biotope dominated by hemicryptophytes, forming under conditions of moderate or insufficient moisture (meadows, steppes, wastelands) revealed meadow and meadow-steppe habitats. These belong to biotopes E 1.21, E 1.22; E 1.31; E 2.121, E 2.122 and occur fragmentarily in relatively small areas of clearings, along the slopes of ravine systems and their open sections, and on the near-plakor, leveled plateau terrace of the Ros River. They differ from one another in plant community composition, morphological structure, and environmental factors [2].

The richest in floristic composition are the communities of E 2.121: meadows on depleted sandy alluvial deposits on the south-facing slopes of Paliieva Hora with a steepness ranging from 25 to 45 degrees (Syntaxonomy: alliance *Festucion valesiacae* Klika 1931: association *Festuco valesiacae-Caricetum humilis* Klika (1931) 1936: *Carici humilis-Stipetum capillatae* Tkachenko, Movchan et V.Sl. 1987) and communities of E 2.122: mixed-herb grass communities of meadow-steppe vegetation on chernozem (Syntaxonomy: *Festuco-Brometea* Br.-Bl. et Tx. ex Soo 1947, *Brachypodietalia pinnati* Korneck 1974, *Fragario viridis-Trifolion montani* Korotchenko, Didukh, 1997: *Salvio pratensis-Poetum angustifoliae* Korotchenko, Didukh 1997, *Salvio pratensis-Poetum angustifoliae* Korotchenko, Didukh 1997, *Medicago romanicae-Poetum angustifoliae* Tkachenko, Movchan et V.Sl. 1987) [1]—which formed on the south-facing slopes of Paliieva Hora and in the northern part of the Velyka Halyavyna (Great Clearing), and number from 85 to 119 species from 27 families. The 7 most representative of them are: Poaceae (19 species), Lamiaceae (15), Caryophyllaceae (10), Fabaceae (10), Asteraceae

(10), Ranunculaceae (8), Plantaginaceae (8) with characteristic species: *Galium verum* L., *Trifolium pratense* L., *Medicago falcata* L., *Lotus corniculatus* L., *Silene vulgaris* (Moench.) Garcke, *Silene nutans* L., *Salvia pratensis* L., *Trifolium montanum* L., *Trifolium arvense* L., *Thalictrum minus* L., *Veronica austriaca* L., *Plantago media* L., *Salvia nemorosa* L., *Veronica teucrium* L., which form typical communities of meadow steppes with a projective cover of the herb layer ranging from 60 to 95%. The main community-forming plants (coenofractionators) here are rhizomatous grasses: *Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C.Presl, *Agropyron cristatum* (L.) Gaertn., *Bromus erectus* Huds., *Festuca ovina* L., *Festuca pratensis* Huds., *Festuca rubra* L., *Elymus (Elytrigia) repens* (L.) Gould., *Thinopyrum (Elytrigia) intermedium* (Host) Barkworth & D.R.Dewey, *Poa pratensis* L., *Poa bulbosa* L., and a characteristic feature is a high diversity of mesophytic and xeromesophytic mixed herbs. Constant species here are represented by typical xerophytic calciphiles: *Inula hirta* L., *Carex humilis* Leyss., as well as steppe xerophytes: *Teucrium chamaedrys* L., *Medicago falcata*, *Stachys recta* L.

The second largest in terms of species number is biotope E 1.31: meadows on depleted sod-podzolic soils on sandy deposits (Syntaxonomy: alliance *Agrostion vinealis* Sipaylova, Mirk., Shelyag et V.Sl. 1985: association *Festuco valesiacae-Agrostioetum vinealis* Shelyag, Sipaylova, V.Sl. et Mirkin in Shelyag et al. 1985: alliance *Poion angustifoliae* Shelyag et V.Sl. 1983: association *Poetum angustifolium* V.Sl. 1981), distributed in the southern part of the Velyka Halyavyna, where small patches of biotope E 1.21 are interspersed: meadows on depleted sandy alluvial deposits – these are fresh, short-herb meadows that occupy the elevations of the near-channel part of the Ros River (Syntaxonomy: *Cynosurion* R.Tx. 1947: *Lolio-Cynosuretum* R.Tx. 1937, *Festuco-Cynosuretum* Buker 1941, *Anthoxantho-Agrostetum tenuis* Siss. 1933 em. Jurko 1969, *Festucetum rubrae* Rubare et al. 1956; *Festucion pratensis* Sipaylova, Mirk., Shelyag et V.Sl. 1985: *Poo-Festucetum rubrae* Fijalk. 1962; *Arrhenatherion* (Br.Bl. 1925) W. Koch 1926, *Trifolio-Festucetum rubrae* Oberdorfer 1957, *Thymopulegeoidi-Festucetum rubrae* Fitsailo 2004). Constant here are species of the genus *Carex*: *Carex pseudocyperus* L., *Carex remota* L., *Carex riparia* Curt., *Carex pilosa* Scop., as well as *Anthoxanthum odoratum* L., *Plantago lanceolata* L., *Euphorbia cyparissias* L., *Bellis perennis* L., *Coronilla varia* L., *Cirsium oleraceum* Scop., *Potentilla reptans* L., *Geranium pratense* L., *Galium album* Mill., *Galium verum* L. The biotope is formed by meadow communities, which in separate areas number from 94 to 109 species from 31 families, the most representative of which are: Poaceae, Asteraceae, Fabaceae, Ranunculaceae, Rosaceae, Lamiaceae, Cyperaceae.

Meadow communities of the Horikhova Halyavyna (Walnut Clearing) and the near-plakor, leveled plateau areas of Paliieva Hora and the Nahirna Halyavyna (Upland Clearing) were assigned to biotope E 1.22: meadows on rich sod-gley, meadow soils (Syntaxonomy: class *Festuco-Brometea* Br.-Bl. ex Soo 1947;

alliance *Festucion pratensis* Sipaylova, Mirk., Shelyag et V.Sl. 1985; association *Agrostio giganteae-Festucetum pratensis* Sipaylova, V.Sl. et Shelyag 1987; association *Arrhenatheretum elatioris* (Br.-Bl. 1919) Oberdorfer 1952). Their floristic composition numbers from 61 to 80 species from 22 families, dominated by species from 5 families: Poaceae (18 species), Fabaceae (16), Asteraceae (11), Lamiaceae (6), Rosaceae (6). In the summer aspect, tall and medium grasses form synusia: *Poa pratensis*, *Lolium giganteum* (L.) Darbysh., *Festuca pratensis*, *Arrhenatherum elatius*, *Bromus erectus* Huds., *Festuca ovina*, *Festuca rubra*, *Anthoxanthum odoratum* L., *Elymus repens* (L.) Gould. Among perennials, the diagnostic and most common species are: *Trifolium pratense*, *Medicago falcata* L., *Centaurea jacea* L., *Euphorbia cyparissias*, *Astragalus cicer* L., *Astragalus glycyphyllos* L., *Leucanthemum vulgare* Lam., *Ranunculus polyanthemus* L. The herb layer mostly consists of 3 sublayers, with a projective cover ranging from 70 to 90%. Within the composition of the meadow mixed herbs, 3 groups of species were conditionally identified: meadow-pasture, which include *Centaurea jacea* L., *Trifolium repens* L., *Trifolium pratense*, *Prunella vulgaris* L., *Plantago media*, *Lotus corniculatus* L., *Festuca ovina*, *Vicia sepium* L., etc.; typical forest: *Stellaria holostea* L., *Scilla bifolia* L., *Astragalus glycyphyllos* L., *Lamium maculatum* (L.) L., *Poa nemoralis* L., *Veronica chamaedrys* L., *Galium boreale* L., *Ficaria verna* Huds., etc.; ruderal: *Berteroa incana* (L.) DC., *Capsella bursa-pastoris* (L.) Medik., *Ballota nigra* ssp. *ruderalis* (Sw.) Briq., *Galium aparine* L.

Meadow-steppe communities possess the highest zoological (conservation) value; 54 rare species listed in red books and lists of various levels and categories have been identified here (international (IUCN), European (ECL / ERS), Red Data Book of Ukraine (RDBU), regional rare species in the Kyiv region (RR): *Adonis vernalis* L. (RDBU), *Pulsatilla grandis* Wender (RDBU), *Pulsatilla pratensis* Mill. (RDBU), *Iris aphylla* L. (RL), *Primula veris* L. (RL); *Carex humilis* (RL), *Gagea pusilla* (F. W. Schmidt) Schult. et Schult (RL), *Asplenium septentrionale* (L.) Hoffm. (RL), *Trifolium pratense* (IUCN), *Trifolium alpestre* L. (IUCN), *Trifolium arvense* (ECL), *Trifolium repens* (IUCN), *Vicia sepium* (IUCN), *Scilla bifolia* (RL), *Silene vulgaris* (IUCN), *Aquilegia vulgaris* L. (RL), *Festuca ovina* (ECL), *Festuca rubra* (ECL), *Poa pratensis* L. (ECL), *Poa angustifolia* L. (IUCN), *Asyneuma canescens* (W. K.) Griseb. et Schenk (RL), *Teucrium chamaedrys* (IUCN), *Prunella vulgaris* (IUCN), *Primula veris* L. (RL), *Iris aphylla* (RL, Resolution 6 of the Bern Convention), *Gagea pusilla* (RL), *Carex riparia* Curt. (IUCN), *Stipa capillata* L. (RDBU), *Phleum pratense* L. (IUCN), *Centaureum erythraea* Rafn (IUCN), *Medicago sativa* L. (IUCN, ECL), *Astragalus cicer* L. (ECL), *Equisetum pratense* Ehrh. (RL), *Equisetum arvense* L. (IUCN, ECL), *Persicaria maculosa* Gray (IUCN), *Dryopteris filix-mas* (L.) Schott (IUCN), *Onoclea struthiopteris* (L.) Hoffm., *Convallaria majalis* L. (RL), *Cerastium arvense* L. (IUCN), *Fragaria viridis* Weston (IUCN), *Neottia nidus-avis* (L.) Rich (RDBU, IUCN), *Lysimachia punctata* L. (IUCN), *Lysimachia nummularia*

L. (IUCN, ECL), *Carex pseudocyperus* L. (IUCN, ECL), *Carex remota* L. (IUCN), *Carex rostrata* Stokes (IUCN, ECL), *Carex brizoides* L. (RL), *Scirpus sylvaticus* L. (IUCN), *Iris pseudacorus* L. (IUCN, ECL), *Juncus effusus* L. (IUCN, ECL), *Alopecurus pratensis* L. (IUCN), *Lythrum salicaria* L. (IUCN, ECL), *Epilobium hirsutum* L. (IUCN), *Podospermum purpureum* (L.) W.D.J. Koch (RL), *Plantago major* L. (IUCN), *Pulmonaria officinalis* L. (IUCN), *Epilobium parviflorum* Schreb. (IUCN), *Potentilla anserina* L. (IUCN).

To sum up, the meadow and meadow-steppe communities of biotope E within the „Olexandria” Dendrological Park are unique areas in terms of their degree of floristic richness. They possess high zoological value, preserving natural meadow and steppe vegetation that includes 54 rare species listed in red lists of various levels and categories: international, European, the Red Data Book of Ukraine, and the regional list of the Kyiv region.

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