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VEGETATION OF THE UZH RIVER DRAINED FLOODPLAIN AREA WITHIN CHORNOBYL RADIATION AND ECOLOGICAL BIOSPHERE RESERVE

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The aim of the study is to evaluate a coenotic diversity and to obtain a syntaxonomic scheme of the Uzh river drained floodplain area vegetation within territory of the Chornobyl Radiation and Ecological Biosphere Reserve as a basis for further monitoring and for evaluation of the renaturalization efforts. Dataset of 105 phytosociological relevés was analyzed by modified TWINSPAN protocol using Juice 7.1 software package. As a result of phytosociological survey, syntaxonomic scheme of the studied vegetation was established. In totall, 23 associations and 1 community belong to 18 alliances, 14 orders, and 9 classes were distinguished. Class Phragmito-Magnocaricetea Klika in Klika et Novák 1941 is the most diverse (9 association). The mosaic distribution of plant communities is determined by the complexity of the geomorphological structure of the floodplain, complicated by anthropogenic elements (artificial channels, dams), which determines the development of different soil types (sands and sandy loams, alluvial deposits, muds, peats, etc.) and a sharp gradient of groundwater. The situation getting more complex by demutation changes followed after the cessation of land use activity.

Key words: vegetation, syntaxonomy, Polissia, Chornobyl exclusion zone.

Introduction. Rewetting of drained peatlands is considered as an influential tool for biodiversity restoration and for climate protection (Joosten, 2021, Kreyling et al., 2021, Schwieger et al., 2021, Tanneberger et al., 2021, Günther et al., 2022, UNEP, 2022, Sommer & Frank, 2024). For Chornobyl exclusion zone, fires are a significant security threat that affects both natural ecosystems and human activities far beyond the limits of this territory (Matsala et al., 2022). Rewetting of drained peatlands is believed to reduce the risk of fires spreading (Turetsky et al., 2014, Wildfire…, 2024).

The vegetation of Polissia in Ukraine is well-studied (Barbarich, 1955, Andrienko and Shelyag-Sosonko, 1983, Dubyna, 2003, Andrienko, 2006). Also, dynamic processes occuring in the plant cover of drained wetland of the region were described (Balashov et al., 1982, Andrienko and Perehuda, 1988). General vegetation description on Uzh river floodplain area was conducted by D. Afanasiev (Afanasiev, 1968). Before the large-scale wetland transformation in 1950-1970, study area was the complex of marshes, reed-beds and wet meadows with natural flooding regime. Untill 1986, ameliorate area was used mainly for cattle grazing. After the cessation of land use activity, the impact of land reclamation structures remained and the flooding regime was not reestablished.

Current state of vegetation cover have not been studied in details (Balashov et al., 2001, Petrov, 2016). In 2024, previous studies related to the project on wetland renaturalization and rewetting began.

The aim of the study is to evaluate a coenotic diversity and obtain a syntaxonomic scheme of the Uzh river drained floodplain area vegetation as a basis for further monitoring and for evaluation of the renaturalization efforts.

Materials and methods. Study area (2449 ha) is located in the southern part of Chornobyl Radiation and Ecological Biosphere Reserve (Proekt…, 2020) on the left-bank floodplain area of the Uzh river between points: N 51,290° E 29,608° i N 51,243° E 29,809°. The maximum length of the study area from north to south is 4,1 km, and from west to east is 14,0 km.

Syntaxonomic scheme and characteristics of plant communities are based on interpretation of 105 phytosociological relevés made on standard plots using Braun-Blanquet approach (Westhoff and van

der Maarel, 1978). The phytosociological relevés were stored in the Turboveg for Windows 2.156 database (Hennekens and Schaminée, 2001) and classified using Juice 7.1 software package (Tichý, 2002) by modified TWINSPAN protocol (Roleček et al., 2009). Diagnostic species were chosen on the basis of combine fidelity and frequency measure (Chytrý et al., 2002). High rank syntaxa names follow EuroVegCheklist (Mucina et al., 2016). The classification in association level follows the results of previous syntaxonomical revisions (Dubyna et al., 2019). Species names follow Euro+Med PlantBase (Euro+Med, 2006). Herbarium specimen are transfered to herbaria KW and CHER.

Results and discussion. As a result of phytosociological survey, the syntaxonomical scheme of plant communities was obtained:

***Lemnetea* O. de Bolòs et Masclans 1955**
Lemnetalia minoris O. de Bolòs et Masclans 1955
Lemnion minoris O. de Bolòs et Masclans 1955
Lemno-Spirodeletum polyrhizae Koch 1954
Utricularion vulgaris Passarge 1964
Lemno-Utricularietum vulgaris Soó 1947
Stratiotion Den Hartog et Segal 1964
Hydrocharitetum morsus-ranae van Langendonck 1935
Hydrocharito-Stratiotetum aloidis (van Langendonck 1935) Westhoff in Westhoff et Den Held 1969

***Phragmito-Magnocaricetea* Klika in Klika et Novák 1941**
Phragmitetalia Koch 1926
Phragmition communis Koch 1926
Phragmitetum australis Savič 1926
Typhetum latifoliae Nowiński 1930
Glycerietum maximae Nowiński 1930 corr. Šumberová, Chytrý et Danihelka in Chytrý 2011
Magnocaricetalia Pignatti 1953
Magnocaricion elatae Koch 1926
Caricetum elatae Koch 1926
Magnocaricion gracilis Géhu 1961
Caricetum gracilis Savič 1926
Caricetum ripariae Máthé et Kovács 1961
Caricetum vesicariae Chouard 1924
Nasturtio-Glycerietalia Pignatti 1953
Phalaridion arundinaceae Kopecký 1961
Phalaridetum arundinaceae Libbert 1931
Oenanthetalia aquaticae Hejný ex Balátová-Tuláčková et al. 1993
Eleocharito palustris-Sagittarion sagittifoliae Passarge 1964
Oenanthetum aquaticae Soó ex Nedelcu 1973

***Isoëto-Nanojuncetea* Br.-Bl. et Tx. in Br.-Bl. et al. 1952**
Nanocyperetalia Klika 1935
Eleocharition soloniensis Philippi 1968
Juncetum bufonii Felföldy 1942

***Bidentetea* Tx. et al. ex von Rochow 1951**
Bidentetalia Br.-Bl. et Tx. ex Klika et Hadač 1944
Bidention tripartitae Nordhagen ex Klika et Hadač 1944
Polygonetum hydropiperis Passarge 1965

***Koelerio-Corynephoretea canescentis* Klika in Klika et Novák 1941**
Corynephoretalia canescentis Klika 1934
Corynephorion canescentis Klika 1931
Cornicolario aculeatae-Corynephoretum canescentis Steffen 1931
Koelerion glaucae Volk 1931
Diantho borbasii-Agrostietum syreistschikovii Vicherek 1972
Corynephoro-Silenetum tataricae Libbert 1931

***Trifolio-Geranietea sanguinei* T. Müller 1962**
Antherico ramosi-Geranietalia sanguinei Julve ex Dengler in Dengler et al. 2003
Geranion sanguinei Tx. in T. Müller 1962
Geranio sanguinei-Trifolietum alpestris T. Müller 1962

***Molinio-Arrhenatheretea* Tx. 1937**
Galietalia veri Mirkin et Naumova 1986
Agrostion vinealis Sipailova et al. 1985
Agrostio vinealis-Calamagrostietum epigei Shelyag-Sosonko et al. ex Shelyag-Sosonko et al. 1985
Molinietalia caeruleae Koch 1926
Deschampsion cespitosae Horvatić 1930
Agrostio caninae-Alopecuretum pratensis Kuzemko 2012
Filipendulo ulmariae-Lotetalia uliginosi Passarge 1975
Veronico longifoliae-Lysimachion vulgaris (Passarge 1977) Bal.-Tul. 1981
com. *Thalictrum flavum*

***Franguletea* Doing ex Westhoff in Westhoff et Den Held 1969**
Salicetalia auritae Doing 1962
Salicion cinereae T. Müller et Görs ex Passarge 1961
Salicetum pentandro-cinerea Passarge 1961

***Alnetea glutinosae* Br.-Bl. et Tx. ex Westhoff et al. 1946**
Alnetalia glutinosae Tx. 1937
Alnion glutinosae Malcuit 1929
Carici acutiformis-Alnetum Scamoni 1935

Free-floating aquatic vegetation is formed on the surface of different water bodies with still water (oxbows, ponds, ditches, permanently watered depressions, etc.). Commonly, communities with *Lemna minor, L. trisulca, Spirodela polyrhiza, Utricularia vulgaris, Hydrocharis morsus-ranae, Stratiotes aloides,* and *Wollfia arrhiza* occur here.

Wetland vegetation prevails in plant cover on study area. This vegetation type is diverse according to differences in ecological conditions, mainly in water regime and depositions type. Generally,

marshes are species-poor, and coenoses are dominated by only one vascular plant species. Tall and dense reed beds (association *Phragmitetum australis*) are widespread on study area along waterbodies and depressions in wide moisture gradient from the depth of 0,5 m to the wet meadows on different deposites (Table 1, col. 1). Communities of the association *Typhetum latifoliae* occur in riparian zone. In a shallow wet depressions with gley muddy soils, communities of the association *Glycerietum maximae* are formed. The communities of *Caricetum gracilis* association occur commonly on the swampy meadows formed on flat bottoms and shallow depressions in central part of the floodplain on silty-gley and peaty soils (Table 1, col. 5). Stands of the association *Caricetum ripariae* are developed on depressions with muddy deposits (Table 1, col. 3). Communities of the association *Caricetum vesicariae* occur sporadically in riparian zone of shallow mesotrophic to eutrophic waterbodies with still water (oxbows, pools, ditches). Watered (depth up to 0,5 m), deeply flooded at spring, depressions with mesotrophic to slightly eutrophic still water are occupied by well-developed tussocks of *Carex elata* on peat depositions. This marshy vegetation belongs to the association *Caricetum elatae* (Table 1, col. 2). On organic soils without water stagnation along artificial ditches, plant communities belong to the association *Phalaridetum arundinaceae* are noticed (Table 1, col. 4). In shallow still waters on organic muddy sediments, communities with *Oenanthe aquatica* occur. Described on study area marshes and reed-beds has typical for the region species pool and community structure (Bachuryna, 1964, Bradis et al., 1973).

Nitrophilous annual herbaceous plant communities on muddy substrats, which tend to dry out quickly, belong to the association *Polygonetum hydropiperis*. On wet sands, species-poor communities of short annual rushes of the association *Juncetum bufonii* occur occasionally.

Psammophitic vegetation occurs in upper parts of sandy ridges in the central part of floodplain, on the slopes of terrace and, secondarily, along the extensively used dirt roads. Communities of the class *Koelerio-Corynephoretea* are developed in the dryest conditions within study area. Open sands are initially overgrown by tussocks of *Corynephorus canescens*, mosses (*Polytrichum piliferum*, *Ceratodon purpureus*) and lichens (*Cladina mitis*) (Andrienko, 1994). These communities belong to the alliance *Corynephorion canescentis* and to the association *Corniculario aculeatae-Corynephoretum canescentis* (Dubyna et al., 2020) (Table 1, col. 8). Communities of the alliance *Koelerion glaucae* occur on stabilysed sand dunes and are represented by two associations. The first one, *Diantho borbasii-Agrostietum syreistschikovii*, is related to the fluvioglacial terraces of Dnieper glaciation (Iakushenko, 2004, Kuzemko, 2009). The second one, *Corynephoro-Silenetum tataricae*, is connected with the sandy sediments of large and middle river valleys.

Species-rich thermophilous forest fringe communities of the association *Geranio sanguinei-Trifolietum alpsetris* are rare in river valley, only one stand was noticed on elevated geomorphological element of the floodplain area.

Meadow vegetation on drained floodplain area of Uzh river are developed on mineral soils. Communities of the class *Molinio-Arrhenatheretea* occupied an area of about 1000 ha. These grasslands differ significantly in terms of species numbers and floristical diversity compared to wetland plant communities.

Meadow communities of the alliance *Agrostion vinealis* occupy mesotrophic turfic sandy soils on slightly elevated elements of floodplain area. In these communities, *Calamagrostis epigeios* (cover varies from 5-7 % to 25-30 %) with narrow-leaved grasses (*Poa angustifolia*, *Festuca rubra*, *Agrostis vinealis*) prevail. Typical mesophilous meadow species (*Stellaria graminea*, *Campanula patula*, *Equisetum arvense*, *Achillea millefolium*, *Centaurea jacea*, *Plantago lanceolata*, *Phleum pratense*, etc.) are well-represented in it. Also, these communities are enriched in species of continental intermittently flooded river valleys (*Scutellaria hastifolia*, *Rumex thyrsiflorus*, *Viola persicifolia*, *Veronica longifolia*), also in species of thermophilous dry grasslands (*Carlina vulgaris*, *Dianthus armeria*, *Hieracium caespitosum*, *Hypericum perforatum*, *Trifolium medium*, *Viola arvensis*, etc.), and ruderal species (*Elymus repens*, *Melandrium album*, *Stenactis annua*, etc.) (Table 1, col. 7). Perhaps due to changes in hydrological regime, flooding disappearance and cessation of grazing, these communities seems to be more mesophilous and less psammophitic, than typical coenoses of the association (Sypailova et al., 1985). It should be notied that the accumulation of a significant amount of undecomposed phytomass (stems of *Calamagrostis epigeios* mostly) could negatively affect species composition and community dynamics.

The communities of the alliance *Deschampsion cespitosae* occur sporadically on study area. Wet floodplain meadows dominated by *Alopecurus pratensis* on heavy clayed eutrophic, slightly acidic soils belong to the association *Agrostio caninae-Alopecuretum pratensis*.

Species-poor communities built by tall forbs with significant cover of *Thalictrum flavum* are formed on mesohygrophilous conditions in periferal zones of willow thickets and on wet sedge meadows on fertile organic acidic soils. These communities belong to the alliance *Veronico longifoliae-Lysimachion vulgaris*, and are still poor known in Ukraine (Kuzemko, 2016).

Thickets of the association *Salicetum pentandro-cinerea* are widespread on Uzh river floodplain area. Shrubby willow thickets are formed on peat soils in a broad moisture gradient and are able to withstand prolonged flooding and stagnation of surface water. Dense shrubs high to 4 are formed by *Salix cinerea* with admixture of *Salix pentandra*. The herbaceous layer contains species typical to the surroundring wet sedge meadows and black alder carrs (*Calystegia sepium, Carex acuta, C. riparia, Galium palustre, Mentha arvensis, Rubus caesius, Symphytum officinale*, etc.) (Table 1, col. 6).

Woody vegetation on study area is represented by natural alder carrs, secondary birch and aspen coppicings, and Scots pine plantations. Black alder carrs are preserved as a forested fragments on lowest part of the floodplain near the terrace. They have been transformed due to emelioration activities, but well developed undisturbed plant communities are still exist here. Typical, well–watered *Alnus glutinosa* carrs on eutrophic peat belong to the association *Carici acutiformis-Alnetum*. As regular flooding is critically important for maintaning of habitat conditions in alder carrs, these communities are sentenssed on progressive and inevitable degradation without restoring of natural hydrological conditions in study area (Douda, 2016, Mandžukovski et al., 2021, Borsukevych, 2024).

Cessation of haymaking, cattle moving and grazing after the disaster on nuclear power plant led to transformation of grassland vegetation towards serial deciduous broadleaf forests. On mineral soils, sparse birch groves with dense (up to 70 %) herbaceous cover dominated by grasses are scattered among meadows. Along dams, secondary *Populus tremula* forests with *Rubus caesius* undergrowth were formed. On sand ridges with podzolic soils, plantations of *Pinus sylvestris* occur sporadically. Unlike natural pine forests of the fluvioglacial terraces, herbaceous cover is built mostly by ruderal species.

Plant communities indicated by one phytosociological relevé only:

Association Lemno-Spirodeletum polyrhizae. 25-06-2024. N 51,27735˚ E 29,75728˚. Relevé area: 2 m^2. Number of vascular plant species: 6. Layer C – 95 %. D.s. Ass: *Spirodela polyrhiza* 4. D.s. Cl. Lemnetea: *Hydrocharis morsus-ranae* 2, *Lemna minor* 2, *Lemna trisulca* 3, *Salvinia natans* r, *Wollfia arrhiza* 2. Author: D. Iakushenko.

Association Lemno-Utricularietum vulgaris. 10-06-2024. N 51,2779˚ E 29,80399˚. Relevé area: 2 m^2. Number of vascular plant species: 5. Layer C – 95 %. D.s. Ass: *Utricularia vulgaris* 3. D.s. Cl. Lemnetea: *Hydrocharis morsus-ranae* 4, *Lemna minor* 2, *Stratiotes aloides* 2. Other species: *Glyceria maxima* 2. Author: D. Iakushenko.

Association Hydrocharitetum morsus-ranae. 28-06-2024. N 51,27853˚ E 29,71677˚. Relevé area: 10 m^2. Number of vascular plant species: 3. Layer C – 100 %. D.s. Ass:. *Hydrocharis morsus-ranae* 2. D.s. Cl. Lemnetea: *Lemna minor* 5, *Utricularia vulgaris* +. Author: V. Kolomiichuk.

Association Hydrocharito-Stratiotetum aloidis. 26-06-2024. Relevé area: 2 m^2. Number of vascular plant species: 4. Layer C – 80 %. D.s. Ass:. *Stratiotes aloides* 4. D.s. Cl. Lemnetea: *Hydrocharis morsus-ranae* 2, *Lemna minor* 2, *Spirodela polyrhiza* +. Author: D. Iakushenko.

Association Typhetum latifoliae. 28-06-2024. N 51,27853˚ E 29,71667˚. Relevé area: 25 m^2. Number of vascular plant species: 3. Layer C – 90 %. D.s. Ass: *Typha latifolia* 5. D.s. Cl. Phragmito-Magnocaricetea: *Lycopus europaus* +, *Sium latifolium* +. Author: V. Kolomiichuk.

Association Glycerietum maximae. 25-06-2024. N 51,27801˚ E 29,75728˚. Relevé area: 25 m^2. Number of vascular plant species: 6. Layer C – 95 %. D.s. Ass: *Glyceria maxima* 5. D.s. Cl. Phragmito-Magnocaricetea: *Carex acuta* 2, *Lycopus europaeus* r. Other species: *Bidens tripartita* r, *Calystegia sepium* +, *Stachys palustris* r. Author: D. Iakushenko.

Association Caricetum vesicariae. 28-06-2024. N 51,26308˚ E 29,66832˚. Relevé area: 25 m^2. Number of vascular plant species: 1. Layer C – 50 %. D.s. Ass: *Carex vesicaria* 4. Author: D. Iakushenko.

Association Oenanthetum aquaticae. 28-06-2024. N 51,26363˚ E 29,70025˚. Relevé area: 10 m^2. Number of vascular plant species: 10. Layer C – 70 %. D.s. Ass:. *Oenanthe aquatica* 2. D.s. Cl. Phragmito-Magnocaricetea: *Carex acuta* +, *Glyceria fluitans* 2, *Iris pseudacorus* 2, *Sium latifolium* 2. Other species: *Bidens tripartita* +, *Hydrocharis morsus-ranae* 2, *Lemna minor* 2, *Lysimachia vulgaris* r, *Salvinia natans* 2. Author: D. Iakushenko.

Association Polygonetum hydropiperis. 26-06-2024. N 51,27845˚ E 29,73942˚. Relevé area: 10 m^2. Number of vascular plant species: 11. Layer C – 95 %. D.s. Ass.: *Bidens tripartita* 2, *Polygonum hidropiper* 5. Other species: *Carex acuta* r, *Epilobium palustre* +, *Galium palustre* +, *Lysimachia vulgaris* 2, *Lythrum salicaria* r, *Polygonum amphibium* f. *terrestre* 2, *Ranunculus flammula* r, *Symphytum officinale* r, *Viola persicifolia* r. Author: D. Iakushenko.

Association Juncetum bufonii. 28-06-2024. N 51,26355˚ E 29,66917˚. Relevé area: 5 m^2. Number of vascular plant species: 5. Layer C – 35 %. D.s Ass.: *Juncus bufonius* 3. D.s. Cl. Isoëto-Nanojuncetea: *Juncus capitatus* 1. Other species: *Calamagrostis epigeios* r, *Corynephorus canescens* r, *Pinus sylvestris* (juv.) r. Author: D. Iakushenko.

Association Diantho borbasii-Agrostietum syreistschikovii. 27-06-2024. N 51,27554˚ E 29,68509˚. Relevé area: 25 m^2. Number of vascular plant species: 26. Layer C – 45 %. D.s Ass.: *Agrostis vinealis* 2, *Artemisia campestris* 2. D.s. Al. Koelerion glaucae: *Centaurea*

stoebe r, *Koeleria glauca* +, *Silene lithuanica* r. D.s. Cl. Koelerio-Corynephoretea*: Arenaria serpyllifolia* r, *Cerastium* sp. r, *Corynephorus canescens* 1, *Helichrysum arenarium* 2, *Jasione montana* r, *Plantago arenaria* r, *Potentilla argentea* +, *Rumex acetosella* r, *Sedum acre* 1, *Trifolium arvense* r, *Veronica dillenii* r. Other species: *Berteroa incana* r, *Calamagrostis epigeios* 2, *Corispermum* sp. r, *Echium vulgare* +, *Elytrigia repens* r, *Hypericum perforatum* +, *Lepidium densiflorum* r, *Medicago minima* r, *Rumex thyrsiflorus* r, *Solidago canadensis* r. Layer D – 7 %: *Cladina mitis* +, *Tortula ruralis* 2. Author: V. Kolomiichuk.

Association Corynephoro-Silenetum tataricae. 10-06-2024. N 51,27275˚ E 29,78860˚. Relevé area: 10 m^2. Number of vascular plant species: 29. Layer C – 60 %. D.s Ass.: *Rumex thyrsiflorus* +, *Saponaria officinalis* +, *Silene tatarica* 1. D.s. Al. Koelerion glaucae: *Anthylis vulneraria* 1, *Artemisia campestris* 1, *Centaurea stoebe* 1, *Chondrilla juncea* r, *Festuca polesica* 2, *Peucedanum oreoselinum* 1, *Poa compressa* 2, *Solidago virgaurea* 2. D.s. Cl. Koelerio-Corynephoretea: *Corynephorus canescens* 2, *Helichrysum arenarium* 1, *Jasione montana* +, *Rumex acetosella* r, *Sedum acre* 1, *Scleranthus annuus* 1, *Spergula vernalis* 1, *Veronica dillenii* 1. Other species: *Achillea millifolium* +, *Berteroa incana* r, *Conyza canadensis* +, *Elytrigia repens* 1, *Equisetum arvense* r, *Hylotelephium maximum* r, *Trifolium alpestre* 1, *Viola arvensis* r. Layer D – 20 %: *Cladina mitis* 1, *Politrichum piliferum* 2. Layer B – 10%: *Pinus sylvestris* 1, *Quercus robur* 1. Author: D. Iakushenko.

Association Geranio sanguinei-Trifolietum alpestris. 11-06-2024. N 51,42992˚ E 29,69379˚. Relevé area: 20 m^2. Number of vascular plant species: 44. Layer C – 85%. D.s. Ass.: *Convallaria majalis* 1, *Genista tinctoria* 1, *Geranium sanguineum* 2, *Trifoium alpestre* 1. D.s. Al. Geranion sanguinei: *Anthericum ramosum* r, *Centaurea scabiosa* r, *Lychnis viscaria* 1, *Polygonatum odoratum* 1, *Stachys officinalis* r, *Veronica teucrium* 2. D.s. Cl. Trifolio-Geranietea: *Campanula persicifolia* 1, *Coronilla varia* 1, *Hieracium umbellatum* r, *Knautia arvensis* r, *Lathyrus sylvestris* +, *Origanum vulgare* 1, *Ranunculus polyanthemos* r, *Silene nutans* +, *Trifolium montanum* 1. Other species: *Achillea millifolium* +, *Artemisia campestris* r, *Brachypodium sylvatica* 1, *Calamagrostis epigeios* 1, *Elytrigia repens* 2, *Equisetum arvense* r, *Festuca rubra* 1, *Galium verum* 1, *Hylotelephium maximum* 1, *Koeleria glauca* +, *Lysimachia vulgaris* 1, *Melandrium album* +, *Oberna behen* r, *Peucedanum oreoselinum* 2, *Phleum phleoides* 1, *Poa angustifolia* 1, *Pteridium aquilinum* 2, *Saponaria officinalis* +, *Serratula tinctoria* r, *Solidago virgaurea* 1, *Tanacetum vulgare* +, *Trifolium arvense* r, *Veronica chamaedrys* +, *Veronica spicata* r. Layer B – 3 %: *Populus tremula* 1. Author: D. Iakushenko.

Association Agrostio caninae-Alopecuretum pratensis. 27-06-2024. N 51,27609˚ E 29,73261˚. Relevé area: 25 m^2. Number of vascular plant species: 13. Layer C – 85%. D.s. Ass.: *Agrostis canina* r, *Alopecurus pratensis* 4. D.s. Al. Deschampsion cespitosae: *Cnidium dubium* +, *Lythrum virgatum* r. Other species: *Cirsium arvense* r, *Epilobium palustre* r, *Galium mollugo* r, *Juncus conglomeratus* +, *Lathyrus pratensis* r, *Lysimachia vulgaris* 1, *Poa pratensis* 2, P*otentilla anserina* +, *Vicia cracca* r. Author: V. Kolomiichuk.

Community with *Thalictrum flavum*. 26-06-2024. N 51,27820˚ E 29,73919˚. Relevé area: 16 m^2. Number of vascular plant species: 13. Layer C – 80 %. D.s. Al. Veronico longifoliae-Lysimachion vulgaris: *Calystegia sepium* 2, *Lysimachia vulgaris* 1, *Lythrum salicaria* r, *Thalictrum flavum* 3, *Veronica longifolia* 1. Other species: *Agrostis gigantea* 1, *Calamagrostis epigeios* 1, *Carex acuta* 1, *Carex riparia* 1, *Carex vulpina* 2, *Galium palustre* 1, *Phalaris arundinacea* 1, *Vicia sepium* 1. Author: D. Iakushenko.

Association Carici acutiformis-Alnetum. 26-06-2024. N 51,28113˚ E 29,71423˚. Relevé area: 100 m^2. Number of vascular plant species: 20. Layer A (h – 18 m, d – 0,4 m). – 80 %: *Alnus glutinosa* 5. Layer B – 3 %: *Acer negundo* +, *Alnus glutinosa* 1. Layer C – 90 %: *Bidens tripartita* +, *Calamagrostis canescens* r, *Calystegia sepium* 1, *Carex acutiformis* 3, *Cirsium vulgare* r, *Galium palustre* +, *Humulus lupulus* 2, *Iris pseudacorus* 1, *Juncus effusus* r, *Lycopus europaeus* +, *Myosoton aquaticum* 1, *Poa palustris* 2, *Polygonum hydropiper* 1, *Ranunculus repens* +, *Rubus idaeus* 2, *Rumex sanguineus* r, *Stachys palustris* 1, *Urtica galeopsifolia* 2. Author: D. Iakushenko.

Conclusions. The vegetation of drained Uzh river floodplaine area within the territory of the Chornobyl Radiation and Ecological Biosphere Reserve is diverse. As a result of phytosociological survey, syntaxonomic scheme of the studied vegetation was established. In totall, 23 associations and 1 community belonging to 18 alliances, 14 orders, and 9 classes were distinguished.

Open grassland habitats (marshes, meadows) and shrub willow thickets prevail here. The mosaic distribution of plant communities is determined by the complexity of the geomorphological structure of the floodplain, complicated by anthropogenic elements (artificial channels, dams), which determines the development of different soil types (sands and sandy loams, alluvial deposits, muds, peats, etc.) and a sharp gradient of groundwater. The situation getting more complex by demutation changes followed after the cessation of land use activity.

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Table 1.

Synoptic table with percentage frequency, %

Associations	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Number of relevés	**8**	**5**	**9**	**5**	**15**	**9**	**32**	**6**
D.s. Cl. Phragmito-Magnocaricetea								
Phragmites australis	**100**	.	33	60	20	33	9	.
Carex elata	.	**100**	.	.	.	11	.	.
Carex riparia	13	60	**100**	40	53	56	3	.
Phalaris arundinacea	25	.	78	**100**	.	22	6	.
Carex acuta	50	20	44	40	**100**	56	13	.
Lysimachia vulgaris	38	60	78	80	73	44	13	.
Symphytum officinale	13	20	78	60	27	44	.	.
Lythrum salicaria	13	80	11	.	27	11	3	.
Iris pseudacorus	13	20	22	.	13	11	.	.
Scutellaria galericulata	13	20	22	20	7	11	.	.
Galium palustre	13	.	22	40	13	44	.	.
Lycopus europaeus	13	.	22	20	.	22	.	.
Stachys palustris	25	.	11	20	13	22	.	.
Epilobium palustre	13	.	11	.	20	11	34	.
Equisetum palustre	13	.	11	.	7	.	.	.
Galium uliginosum	13	.	.	.	.	.	3	.
Carex vesicaria	.	20	11	.	.	.	.	.
Carex vulpina	.	.	11	20	.	.	3	.
D.s. Cl. Franguletea								
Salix cinerea	13	.	22	.	13	**100**	.	.
Salix pentandra	.	.	.	.	.	33	.	.
Frangula alnus	.	.	.	.	.	22	9	.
D.s. O. Galietalia veri								
Calamagrostis epigejos	13	.	33	20	40	11	**100**	50
Poa angustifolia	.	.	.	20	13	.	**88**	17
Dianthus armeria	.	.	.	.	.	.	38	.
Hieracium umbellatum	.	.	.	.	.	.	34	.
Galium verum	.	.	.	.	.	.	31	.
D.s. Cl. Molinio-Arrhenatheretea								
Stellaria graminea	.	.	.	20	20	.	66	.
Vicia cracca	.	.	11	40	7	.	22	17
Lathyrus pratensis	.	.	11	20	7	.	3	.
Campanula patula	.	.	.	.	7	.	41	.
Festuca rubra	.	.	.	.	.	.	31	33
Equisetum pratense	.	.	11	.	7	.	9	.
D.s. Cl. Koelerio-Corynephoretea								
Corynephorus canescens	.	.	.	.	.	.	.	**100**
Veronica dillenii	.	.	.	.	.	.	9	**100**
Jasione montana	.	.	.	.	.	.	3	**100**
Artemisia campestris	.	.	.	.	.	.	6	**100**
Scleranthus perennis	.	.	.	.	.	.	.	**83**
Helichrysum arenarium	.	.	.	.	.	.	.	**83**
Polytrichum piliferum	.	.	.	.	.	.	.	**83**
Sedum acre	.	.	.	.	.	.	3	**67**
Rumex acetosella	.	.	.	.	.	.	6	50
Cladina mitis	.	.	.	.	.	.	.	50
Arenaria serpyllifolia	.	.	.	.	.	.	9	50
Solidago virgaurea	.	.	.	.	.	.	13	50
Silene lituanica	.	.	.	.	.	.	.	33
Hieracium echioides	.	.	.	.	.	.	.	33
Agrostis vinealis	.	.	.	.	.	.	13	33
Trifolium arvense	.	.	.	.	.	.	9	33
Centaurea rhenana	.	.	.	.	.	.	9	33
Potentilla argentea	.	.	.	.	.	.	19	17
Cardaminopsis arenosa	.	.	.	.	.	.	3	17
Hypochoeris radicata	.	.	.	.	.	.	3	17
D.s. O. Convolvuletalia								

Calystegia sepium	75	.	56	40	40	44	6	.
Urtica dioica	63	40	11	40	27	67	16	.
Echinocystis lobata	25	.	11	40	7	22	6	.
Humulus lupulus	13	20	22	.	13	22	9	.
Galium aparine	13	.	22	20	20	22	31	.
Scrophularia umbrosa	13	.	22	.	7	.	6	.
Other species								
Agrostis gigantea	38	.	56	40	7	11	19	.
Galeopsis sp.	13	.	22	.	13	22	25	.
Fallopia convolvulus	13	.	11	.	.	11	22	.
Polygonum persicaria	13	.	.	20	7	11	.	.
Polygonum hydropiper	13	.	11	.	.	11	.	.
Solanum dulcamara	13	.	11	.	7	22	.	.
Rorippa palustris	13	.	.	20	.	.	.	.
Lemna minor	13	.	.	.	.	11	.	.
Salvinia natans	13	.	.	.	.	11	.	.
Fallopia dumetorum	13	.	.	.	.	.	3	.
Cirsium arvense	25	40	22	20	27	11	28	.
Polygonum amphibium f. terrestre	.	20	.	.	13	.	.	.
Ptarmica salicifolia	.	.	33	20	.	6	.	.
Thalictrum lucidum	.	.	22	.	.	.	3	.
Lythrum virgatum	.	.	11	.	7	.	13	.
Rubus caesius	.	.	11	20	.	44	.	.
Rumex sp.	.	.	11	20	.	.	.	.
Bidens tripartita	.	.	11	20	.	33	.	.
Thalictrum flavum	13	.	11	20	13	.	.	.
Potentilla anserina	.	.	11	.	.	.	3	.
Scirpus sylvaticus	.	.	11	.	.	.	3	.
Poa palustris	.	.	11	.	.	11	.	.
Viola persicifolia	.	.	22	60	.	11	13	.
Cnidium dubium	.	.	.	20	7	.	9	.
Galium boreale	.	.	.	20	.	.	6	.
Mentha arvensis	.	.	.	20	.	33	.	.
Pyrus communis	.	.	.	20	7	.	19	.
Myosoton aquaticum	.	.	.	20	.	22	.	.
Deschampsia caespitosa	.	.	.	.	7	22	13	.
Valeriana officinalis	.	.	.	.	7	.	.	.
Juncus effusus	13	.	11	.	7	.	.	.
Calamagrostis canescens	.	.	11	.	.	11	.	.
Lactuca serriola	.	.	.	.	.	11	13	.
Melandrium album	.	.	.	.	7	.	34	.
Scutellaria hastifolia	.	.	11	.	27	.	28	.
Veronica longifolia	.	40	44	20	40	11	41	.
Linaria vulgaris	.	.	11	.	20	.	38	.
Cirsium vulgare	.	.	11	.	7	11	6	.
Conyza canadensis	.	.	.	.	.	.	13	100
Hypericum perforatum	.	.	22	.	27	.	69	17
Stenactis annua	.	.	.	.	.	.	66	17
Achillea millefolium	.	.	.	.	13	.	59	33
Elytrigia repens	.	.	.	20	7	.	25	33
Rumex thyrsiflorus	.	.	.	20	.	.	47	50
Carex hirta	.	.	.	.	.	.	31	33
Viola tricolor	.	.	.	.	.	.	6	33
Scrophularia nodosa	.	.	.	.	7	.	. 6	.
Equisetum arvense	13	.	.	.	.	.	41	.
Viola arvensis	.	.	.	.	7	.	47	17
Oenothera biennis	.	.	.	.	.	.	19	17
Crepis capillaris	.	.	.	.	.	.	16	17
Verbascum nigrum	.	.	.	.	.	.	13	17
Myosotis arvensis	.	.	.	.	.	.	13	17
Berteroa incana	.	.	.	.	.	.	6	50

Oenothera rubricaulis	.	.	.	.	.	.	9	17
Dianthus deltoides	.	.	.	.	.	.	6	17
Vicia sativa	.	.	.	.	.	.	3	17
Carduus crispus	.	.	.	.	13	.	3	.
Acer negundo	.	.	.	.	13	.	3	.
Descurainia sophia	.	.	.	.	7	.	3	.

Associations:
1 – Phragmitetum australis Savič 1926,
2 – Caricetum elatae Koch 1926,
3 – Caricetum ripariae Máthé et Kovács 1961,
4 – Phalaridetum arundinaceae Libbert 1931,
5 – Caricetum gracilis Savič 1926,
6 – Salicetum pentandro-cinerea Passarge 1961,
7 – Agrostio vinealis-Calamagrostietum epigei Shelyag-Sosonko et al. ex Shelyag-Sosonko et al. 1985,
8 – Corniculario aculeatae-Corynephoretum canescentis Steffen 1931.

Species occur in one association only:
Ass. 1: *Hydrocharis morsus-ranae* (38 %); *Cradamine sp.* (25%); *Ranunculus sceleratus*, *Salix aurita*, *Spirodela polyrhiza*, *Stratiotes aloides* (13 %).
Ass. 3: *Euphorbia lucida*, *Rumex hydrolapathum* (11%).
Ass. 5: *Carex nigra*, *Euphorbia palustris*, *Glyceria maxima* (7 %).
Ass. 6: *Agrostis stolonifera*, *Oenanthe aquatica*, *Stellaria alsine* (22 %); *Carex canescens*, *Dryopteris carthusiana*, *Myosotis caespitosa*, *Peucedanum palustre*, *Ranunculus flammula*, *R. repens*, *Salix alba*, *S. fragilis*, *Trifolium pratense*, *Typha latifolia* (11 %).
Ass. 7: *Centaurea jacea* (28 %); *Artemisia absinthium*, *Daucus carota*, *Hieracium caespitosum* (25 %); *Carlina vulgaris*, *Lotus corniculatus*, *Phleum pratense*, *Plantago lanceolata*, *Prunella vulgaris*, *Trifolium medium* (22 %), *Cerastium holosteoides*, *Genista tinctoria*, *Luzula campestris* (19 %); *Hieracium pilosella*, *Leucanthemum vulgare*, *Potentilla impolita*, *Vicia hirsuta* (16 %); *Agrostis capillaris*, *Dactylis glomerata*, *Pimpinella saxifraga*, *Senecio jacobaea*, *Tanacetum vulgare*, *Veronica chamaedrys* (13 %); *Achillea collina*, *Bromus inermis*, *Carex echinata*, *C. praecox*, *Coronilla varia*, *Holcus mollis*, *Lychnis flos-cuculi*, *Polygala comosa*, *Ranunculus polyanthemos*, *Viola canina* (9 %); *Alopecurus pratensis*, *Cichorium intybus*, *Erigeron acer*, *Euphorbia virgultosa*, *Euphrasia sp*., *Galium mollugo*, *Juncus conglomeratus*, *Malus domestica*, *Matricaria perforata*, *Poa compressa*, *Picris hieracioides*, *Ranunculus acris*, *Rumex sp*., *Silene vulgaris*, *Solidago canadensis*, *Trifolium dubium*, *T. repens*, *Vicia tetrasperma* (6 %); *Arrhenatherum elatius*, *Artemisia vulgaris*, *Carex contigua*, *C. ericetorum*, *C. leporina*, *C. spicata*, *Centaurium umbellatum*, *Cerastium arvense*, *Convolvulus arvensis*, *Crepis foetida*, *Epilobium angustifolium*, *Erophila verna*, *Glechoma hederacea*, *Gnaphalium sylvaticum*, *Gypsophila muralis*, *Chenopodium album*, *Inula salicina*, *Leontodon hispidus*, *Molinia caerulea*, *Myosotis stricta*, *Pinus sylvestris*, *Populus tremula*, *Rhinanthus sp*., *Rosa sp*., *Rumex crispus*, *Lychnis viscaria*, *Silene tatarica*, *Stellaria nemorum*, *Taraxacum officinale*, *Thymus pulegioides*, *Tragopogon pratensis*, *Turritis glabra* (3 %).
Ass. 8: *Apera spica-venti*, *Bromus tectorum*, *Ceratodon purpuraeus*, *Chondrilla juncea*, *Festuca polesica*, *Filago minima*, *Herniaria glabra*, *Holcus lanatus*, *Peucedanum oreoselinum*, *Silene otites* (17 %).

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РОСЛИННІСТЬ ОСУШЕНОЇ ЗАПЛАВИ РІКИ УЖ В МЕЖАХ ЧОРНОБИЛЬСЬКОГО РАДІАЦІЙНО-ЕКОЛОГІЧНОГО БІОСФЕРНОГО ЗАПОВІДНИКА

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Робота присвячена вивченню ценотичної різноманітності та розробці синтаксономічної схеми рослинності осушеної заплави річки Уж в межах Чорнобильського радіаційно-екологічного біосферного заповідника як основи подальшого моніторингу та оцінки заходів з ренатуралізації. Використано масив даних із 105 фітоценотичних описів, проаналізований з використанням модифікованого протоколу TWINSPAN у програмному середовищі Juice 7.1. Встановлено, що рослинність дослідженої території є досить різноманітною, наведено 23 асоціації та 1 угруповання, які належать до 18 союзів, 14 порядків, 9 класів. Найбільше ценотичне багатство притамане класу Phragmito-Magnocaricetea Klika in Klika et Novák 1941 (9 асоціацій). Мозаїчний просторовий розподіл рослинних угруповань визначається комплексністю геоморфологічної будови заплави, ускладненою антропогенними елементами (каналами, насипами), що зумовлює розвиток різних типів ґрунтів (пісків і супісків, алювіальних відкладів, мулів, торфів та ін.) і різкий градієнт ґрунтових вод. Ситуацію ускладнюють демутаційні зміни рослинності, спричинені припиненням сільськогосподарського використання території.

Ключові слова: рослинність, синтаксономія, Полісся, Чорнобильська зона відчуження.

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