

ASPECTS FROM THE VEGETATION OF THE ACCUMULATION LAKE MURANI-PISCHIA (TIMIS COUNTY)

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Abstract

The accumulation Murani - Pischia was build in 1971, along the Magheruş brook. The initial purpose of the development was to diminish the flood effects. The area was declared Ornithological Natural Reserve (2743) "Murani - Pischia Swamps" (with the mention "Habitat specific for aquatic fauna - Ixobrychus minutus: Little Bittern"), through Law 5/2000, H. C. J. 19/1995. As a type of major habitat, the reserve is situated in the category of fresh water/humid areas habitats, turf moors (from the ecoregion Hungarian Plain). Our research consisted in several field trips in the lake area, at different times, in order to better observe the structure of the phytocoenoses. The data processing implied the identification of the vegetal associations, following the concentration and analysis of the vegetation samples collected on the field, performing the synopsis of the cenotaxonomic units and the analysis of the vegetal associations, considering several points of view. The study is based upon the principles of the Central-European floristic phytocoenologic school. There have been identified and analyzed according to the mentions above 13 vegetal associations, some of which with a high conservative value.

INTRODUCTION

A long time ago, Banat used to be a swampy region. Following the vast hydro-improving works performed in time, a series of natural humid areas disappeared from the Banat territory, and other have considerably diminished their sizes. As these regions diminished, artificial developments have been created on considerable surfaces. In this context, in 1971, by building a dam on the course of the Magherus, the Murani-Pischia accumulation was formed. The accumulation is situated at the altitude of 130 m. The water volume is of 6.240 mil. m³ and the surface of 200 ha. At present, the reserve is administered by the Local Council of Pischia Commune [2].

MATERIAL AND METHODS

The study of the vegetation of the accumulation lake Pischia was performed in the period 2004-2007. The research is based on the principles of the Central-European phytocoenologic school. We took into account the drawing up of the summary of cenotaxonomic units and the analysis of the vegetal associations.

RESULTS AND DISCUSSION

The general aspect of the vegetal carpet with the reserve, is that of herbaceous mosaic, mainly representing aquatic and paludicolous communities [4]. In what follows it is presented the summary of the vegetation units and the vegetal associations, which are then briefly discussed.

Summary of the main cenoetaxonomic units [5, 6]:

Cls. LEMNETEA W. Koch et Tx. 1934

Ord. *Lemnetalia* W. Koch et Tx. 1954

Al. *Lemnion minoris* W. Koch et Tx. 1954

Lemnetum minoris (Oberd. 1957) Müller et Görs 1960

Cls. POTAMETEA Tx. et Prsg. 1942

Ord. *Potametalia* W. Koch 1926

Al. *Potamion* W. Koch 1926 emend. Oberd. 1957

Myriophyllo – Potametum Soó 1934

Al. *Nymphaeion* Oberd. 1957 emend. Neuhäusl 1959

Trapetum natantis Müller et Görs 1960

Cls. PHRAGMITETEA Tx. et Prsg. 1942

Ord. *Phragmitetalia* W. Koch 1926 emend. Pign. 1953

Al. *Phragmition* W. Koch 1926

Scirpo – Phragmitetum W. Koch 1926

Typhaetum angustifoliae (All. 1922) Pign. 1943

Glycerietum maximae Hueck 1931

Schoenoplectetum lacustris Egger 1933

Iretum pseudacori Egger 1933

Al. *Bolboschoenion maritimi continentale* Soó (1945) 1947 emend. Borhidi 1970

Eleocharidetum palustris Schennikow 1919

Ord. *Magnocaricetalia* Pign. 1953

Al. *Magnocaricion elatae* W. Koch 1926

Caricetum ripario-acutiformis Kobenza 1930

Cls. BIDENTETEA TRIPARTITI Tx., Lohm. et Prsg. 1950

Ord. *Bidentetalia tripartiti* Br. – Bl. et Tx. 1943

Al. *Bidention tripartiti* Nordh. 1940

Bidentetum tripartiti W. Koch 1926

Al. *Chenopodion fluviatile (rubri)* Tx. 1960

Echinochloo–Polygonetum lapathifolii (Ujvárosi 1940) Soó et Csűrös (1944) 1947

Cls. MOLINIO – ARRHENATHERETEA Tx. 1937

Ord. *Deschampsietalia caespitosae* Horvatič 1956

Al. *Alopecurion pratensis* Pass. 1964

Festucetum pratensis Soó 1938

The association of duckweed is frequent in Banat, just like in all aquatic pools in our country. This community presents a reduced cenoetaxonomic diversity (our

phytocoenoses being constituted of only 2 species, *Lemna minor* and *Spirodela polyrhiza*), but an impressive number of individuals forming a compact bed on the surface of the water. It develops well in glades but also under the protection of reed, cane and water manna. It represents a food source for water birds. The locals use the biomass of the association also for feeding household birds.

The association of water milfoil and arrowgrass also has a low floristic diversity. In Pischia, the association is almost entirely comprised of *Potamogeton crispus*, its appearance in large quantity indicating a scarcity in oxygen and significant accumulations of organic matter. From the point of view of its importance, it represents shelter and food source for the fish.

The association of long-horned is well developed on clay substratum (and due to the abundant fructification and the displacement of many individuals), in pools in process of colmation. Due to water pollution and the damming performed, these phytocoenoses are endangered. In dry years, the species survives on swampy lands, facing well the oscillations in water levels. It is also the case of the phytocoenoses in Pischia, when the low water level makes the species to be highly present on the shore. Among the species characteristic for the association, we encounter in our phytocoenoses: *Lemna minor*, *Ceratophyllum demersum*, *Potamogeton crispus*. Concerning the importance, the long-horned seeds are edible, the leaves can be administered as fodder for animals. On the other hand, as an inconvenient, the species makes fishing difficult when it exaggeratedly develops at the surface of water, and the fruit is dangerous due to the fact that the persistent sepals, after blooming they intergrow and turn into thorns. Those who fish in the Pischia waters are often faced with this inconvenient.

The reed plots are present in most stagnant water accumulations in the country. In Banat they used to occupy considerable surfaces, today, due to the hydro-improving works performed in the area, they appear isolated and under greatly changed ecologic conditions [3]. Together with the edifying species, among the species characteristic for the association we have encountered: *Stachys palustris*, *Typha angustifolia*, *Lycopus europaeus*, *Iris pseudacorus*, *Calystegia sepium*. Considering the significance, the reed plots mainly insure the protection and consolidation of aquatic pool shores. It is also well known their capacity to concentrate heavy metals, being successfully used in ecological restoration activities through phytoimprovement. They are also used in the cellulose and paper industry and for some light constructions. In the situation analyzed by us, the reed is not economically exploited, but it represents a well protected shelter and nesting place for birds.

The reeds are very frequent in all country regions, with lush growths on lake and pond shores, along stagnant water channels. In the floristic composition of our phytocoenoses we encounter many species characteristic for the association, like: *Stachys palustris*, *Mentha aquatica*, *Bidens tripartita*, *Glyceria maxima*, *Rorippa*

amphibia, *Lycopus europaeus*, *Calystegia sepium*, *Iris pseudacorus*, *Bolboschoenus maritimus*, which are joined by some coming from the shore vegetation. Considering the importance, the reed is rarely used in household industry, for knitting.

The edified phytocoenoses of manna grass generally grow on soils rich in nutrients, in areas where the water does not exceed 50 cm. They are disposed in the shape of stripes at the edge of reed, representing a bordering association towards the shore vegetation, a reason for which they have a quite heterogeneous structure. Among the characteristic species, there are present in our phytocoenoses: *Mentha aquatica*, *Lycopus europaeus*, *Iris pseudacorus*, *Butomus umbellatus*, *Schoenoplectus lacustris*, *Calystegia sepium*. The value of these phytocoenoses is reduced, sometimes the biomass is used as hay, but it has a low quality.

The bulrush is disposed in the shape of bands or clumps between reed plots and shore. The analyzed phytocoenoses has a weak composition, due to the stratum of dead stems from the previous years which hinder the development of other species. Only some examples of *Sparganium* and *Glyceria* manage to cross the bulrush thicket. Being very rich in proteins, it is recommended the use of the bulrush as fodder for birds. Due to the high content of NPK of twigs, it is used as fertilizer, as composite, in horticulture. Another use is for cellulose, paper and artificial silk manufacture. In the situation analyzed, the bulrush represents a shelter and nesting place for birds.

The sword flag grows in *Pischia* in pond areas, in clumps. These phytocoenoses are not very frequent in Banat, neither throughout the country (there is some signaling in Danube Delta and Moldova). Regarding the importance, the species is decorative for its flowers and it is cultivated as ornamental plant.

The spike rush phytocoenoses from the resort studied grow on the water shore, arranged in the shape of stripes and are almost exclusively formed of the edifying species. Economically, these pastures have a low quality, with importance only in the vegetation succession.

The sedge are very frequent in the country and in Banat. They grow on the shore, on humid soils, frequently flooded in spring. The floristic composition of the 5 phytocoenoses analyzed is rich and heterogeneous (with many ruderal and segetal species), among the species characteristics for the association, we encountered in our samples only: *Carex acutiformis*, *Scutellaria hastifolia*, *Iris pseudacorus*, *Stachys palustris*, *Mentha aquatica*. In two of the phytocoenoses analyzed, we identified the species *Eriochloa villosa*, a recently signaled invasive weed in our country flora, coming from the soy crops near the lake, which it had invaded. These pastures sometimes represent a refuge and nesting place for birds. From the point of view of its economic importance, the quality of the fodder is low.

The edified association of beggar-ticks in Pischia has a heterogeneous floristic structure, with many weed species characteristic for the humid lands but also with hydrotophytes and very many mesophytes. It appears in the second part of summer, recording an optimal growth in autumn, when the dominant species fructifies. Although it does not present an economic importance, these phytocoenoses have a role in the vegetation succession.

The bristle grass and the smartwort form characteristic phytocoenoses which grow in areas where the water stagnates in spring and dries up in summer, moment when it records the optimal growth. The *Echinochloa* seeds can resist for a long time covered by water, without losing the germinative ability. The association represents a pioneering vegetation, colonizing free lands from the border of aquatic pools and which goes towards mesophilic weeds. Considering the importance, these pastures are valuable being exploited by pasturage and mowing, presenting the advantage of having a rapid recovery.

The fescue phytocoenoses analyzed was identified on dry land, on the side of the road. From this reason it is quite heterogeneous from the point of view of the floristic structure and the species in which it consists are especially xero-mesophilic, except for the edifying species, which is mesophilic. The economic importance of these pastures is related to the high fodder value, both in production and for the quality of the fodder, being mowed several times a year.

The vegetal associations identified and analyzed in the area of the Murani – Pischia accumulation confer this habitat kenotic, descriptive and economic characteristics. Regarding the preservation importance, we mention that the association *Trisetum natantis* has a high preservation value and the associations *Lemnetum minoris*, *Eleocharitetum palustris*, *Glycerietum maximae*, *Scirpo-Phragmitetum* and *Caricetum ripariae* are part of habitats with an average preservation value, with a tendency of becoming high, under the conditions of threat of becoming extinct for many species [1].

The authors can offer to the interested persons the synthetical tabel of the vegetal associations which is not included into the paper because of its dimensions.

CONCLUSIONS

1. The ecologic conditions from the area of the accumulation Pischia have favored the installation of a significant vegetation due to the fact that we encounter here phytocoenoses with a high preservation value and which also represent an island where many species of birds live.
2. The list of the cenotaxonomic comprises 13 vegetal associations, most of which are hydrophilic and mesohydrophilic. We notice within the association *Caricetum ripariae* the presence of the species *Eriochloa villosa*, a new weed for Banat and Romania.

3. Due to the phytocenotic diversity, and the characteristic bird and fish fauna, we consider necessary the drawing up of a adequate management plan and, also, the careful monitoring of anthropic interventions, which endanger the originality of this habitat.

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