

THE PHYTOCOENOTIC STUDY REGARDING THE WET HABITATS FOUND ON THE COPĂNIȚA ISLAND, DOLJ COUNTY, ROMANIA

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Abstract

The territory under study is an island located very close to the flow of the Jiu into the Danube, in the lower course of the Danube, and represents a protected area for important species and habitats of community and priority interest, as well as an important migration area for an impressive number of protected birds.

This territory is part of the ROSCI0045 Coridorul Jiului Protected Area. Considering the extremely varied and rich biodiversity of this area, we started in 2022 the realization of complex studies regarding the flora, vegetation as well as the habitats of community and priority interest found on Copănița Island. In the present work, a study is presented regarding the phytocenology of wet habitats of conservation interest as well as the anthropogenic impact on them. Thus, the following wetland habitats were identified: 3160 - Natural dystrophic lakes and ponds (CLAS. PAL.: 22.14), 3150 - Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation (CLAS. PAL.: 22.13 x (22.41 sau 22.421), 3130 - Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea (CLAS. PAL.: 22.12 x (22.31 și 22.32) and 3270 - Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation (CLAS. PAL.: 24.52). From the phytocoenotic point of view, the following aquatic and palustre plant communities were identified: *Myriophyllo verticillati-Nupharetum luteae* Koch 1926, *Trapo-Nymphoidetum* Oberd. 1957, *Lemno-Spirodeletum* Koch 1954, *Spirodelo-Salvinietum natantis* Slavnič 1965, *Lemno-Salvinietum natantis Miyawaki et Tüxen* 1960, *Cyperetum flavescens* Koch ex Aichinger 1933 and *Bidenti-Polygonetum hydropiperis* Lohm. in Tüxen 1950, *Polygono lapathifolio – Bidentetum Klika* 1935; *Echinochloo – Polygonetum lapathifolii* Soo et Csürs 1974. The climate changes of recent years had a particularly negative effect on these habitats with a particular impact on the surfaces of the habitats but also on the structure and physiognomy of the edifying plant communities.

Key words: Copănița Island, wet habitats, plant communities, phytocoenotic

INTRODUCTION

Wet natural habitats occupy important areas in Romania, the most widespread being found especially in the Danube basin. This paper presents a preliminary study on the wet natural habitats encountered in the period 2022-2023 on the Copănița Island, an integral part of the Jiului Corridor protected area (fig. 1, 2).

From the point of view of phytodiversity and beyond, Copănița Island, located in the Danube basin, in the southern part of Romania, near the towns of Ostroveni and Bechet, has been little studied, especially due to difficult access.

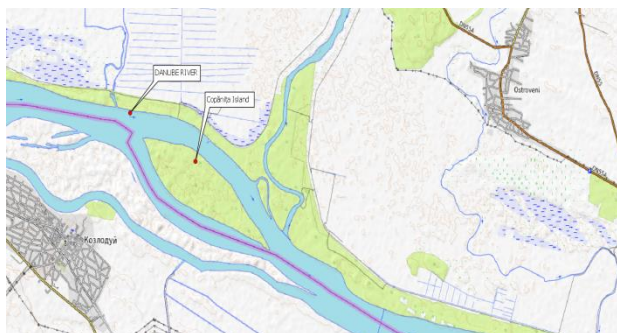


Fig. 1. Map of the Copănița Island



Fig. 2. Aspect of the Copănița Island (foto M. Niculescu)

Following the research I carried out during two growing seasons, I found the presence on this island of an extremely rich and very interesting natural capital.

Taking into account these aspects regarding the biodiversity structure on this island, in conjunction with the climatic, geomorphological and pedological conditions, we consider that maintaining the favorable state of conservation is extremely important.

The phytodiversity of the wet natural habitats in the researched territory and in the entire Danube basin is endangered because the human impact is very high, although these large areas in these areas are integral parts of the protected areas.

MATERIALS AND METHODS

The studied territory is an island located in the Danube basin, very close to the Jiu confluence in the Danube, and represents a protected area for important species and habitats of community and priority interest, as well as an important migration

area for an impressive number of protected birds.

This territory is part of the Protected Area ROSCI0045 Jiu Corridor. To identify the habitats we used the Romanian Manual for interpretation of Eu habitats and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, Annex I (Habitats Directive). The plant communities that edify the wet natural habitats from this area have been described by personal observations and on the base of the synthesis book Coenotic structure and ecological characterization of the phytocoenosis of Romania (V. Sanda et al 2001).

As for the classification of the vegetal associations, we have used synthesis papers by J.S. Rodwell, J. H. J. Schaminée, L. Mucina, S. Pignatti, J. Dring, D. Mos.

RESULTS AND DISCUSSIONS

Considering the extremely varied and rich biodiversity of this area, we started in 2022 the realization of complex studies regarding the flora, vegetation as well as the habitats of community and priority interest found on Copănița Island.

In the present work, a study is presented regarding the phytocoenology of wet habitats of conservation interest as well as the anthropogenic impact on them. Thus, the following wetland habitats were identified: 3160 - Natural dystrophic lakes and ponds (CLAS. PAL.: 22.14), 3150 - Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation (CLAS. PAL.: 22.13 x (22.41 sau 22.421), 3130 - Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea (CLAS. PAL.: 22.12 x (22.31 and 22.32) and 3270 - Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation (CLAS. PAL.: 24.52).

The structure and distribution of habitats in the studied territory:

➤ 3160 Habitat - Natural dystrophic lakes and ponds (CLAS. PAL.: 22.14)

This habitat is characteristic of aquatic pools, smooth flowing waters, meeting also in the south of the country in the Danube meadow (Gafta & Mountford, coord, 2008). On the Copănița Island, this habitat is found right in the central part of the island, in the Bocul Mare and occupies a fairly large area. In the studied area, the habitat is built up by the plant communities: *Myriophyllo verticillati-Nupharetum luteae* Koch 1926 and *Trapo-Nymphoidetum* Oberd. 1957.

The maximum number of species that build the phytocoenoses is directly proportional to the increased level of humidity. This habitat has its maximum development in the spring and early summer when the level of the Danube is high, then during the hot and dry months the habitat declines, the water level dropping a lot, the procession of species within the habitat suffering a lot, some drying up or having an extremely low physiological state.

It is often invaded by other undesirable species, some of which are invasive, such as *Xanthium orientale* L. ssp. *italicum* (Moretti) Greuter. (fig. 3), which practically replaces more areas within the fence.



Fig.3. *Xanthium orientale* L. ssp. *italicum* (foto M. Niculescu)

➤ 3150 Habitat- Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation (CLAS. PAL.: 22.13 x (22.41 sau 22.421) it is a

habitat that characterizes the basins with eutrophic waters, lakes, ponds, gullies, roofs, dead arms, irrigation canals, drainage canals located on the lower and middle course of most rivers in the country, as well as in the Danube Delta (Gafta & Mountford, coord, 2008).

The habitat is found in several places on Copanita Island, well-built plant communities are found at Bocul Mare and Bocul Mic. In the studied territory the edifying plant communities of the habitat are: *Lemno-Spirodeletum* Koch 1954, *Lemno-Salvinietum natantis* Miyawaki et J. Tx. 1960, *Spirodelo-Salvinietum natantis* Slavnic 1965.

Also this habitat is affected by the drop in the level of the Danube and the recent prolonged drought, especially the plant community *Spirodelo-Salvinietum natantis* Slavnic 1965 (fig. 4, 5).



Fig. 4. Aspect with phytocoenoses of *Salvinia natans* during the drought period of August 2023



Fig. 5. Aspect with the degraded 3150 habitat (foto M. Niculescu)

➤ 3130 Habitat - Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea (CLAS. PAL.: 22.12 x (22.31 and 22.32). It is a habitat of hygrophilous and mesohygrophilous meadows growing on alluvial, sandy, sandy-loamy, unconsolidated, often beaten, sometimes slightly saline soils, around lakes, on the edge of puddles, in floodplains of rivers (Gafta & Mountford, coord., 2008).

On the Copănița Island, this habitat is edified by the following plant communities: *Cyperetum flavescenti* Koch ex. Aichinger 1933, *Juncetum bufonii* Felfoldi 1942.

Compared to the other habitats, it is less affected by drought, but the physiognomy and floristic composition is disturbed by the presence of invasive species that have a great development: *Cyperus glomeratus* (fig. 6) and *Symphotrichum lanceolatum* (fig. 7).



Fig. 6. *Cyperus glomeratus*
(foto M. Niculescu)



Fig. 7. *Symphotrichum lanceolatum*
(foto M. Niculescu)

➤ 3270 Habitat - Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidentium* p.p. vegetation (CLAS. PAL.: 24.52). This habitat includes plant communities of *Chenopodium rubri* and *Bidentium* that develop in the summer on the banks of the rivers, but in certain ecological conditions the development of these communities can be strongly affected. It is less widespread on Copănița Island and is built by the plant communities: *Bidentium* – *Polygonetum hydropiperis* Lohm in R. Tx. 1950; *Polygonum lapathifolium* – *Bidentium* Klika 1935; *Echinochloa* – *Polygonetum lapathifolium* Soo et Csurrs 1974 (including subass. *Chlorocyperetosum glomerati* Burescu 1999). The species frequently encountered in the phytocoenoses built on the island of Copănița are: *Persicaria lapathifolia*, *P. hydropiper*, *Bidens tripartita*, *Echinochloa crus-galli*, *Rorippa austriaca*, *Persicaria maculosa* (*Polygonum persicaria*) (fig. 8), *Chenopodium polyspermum*, *Cyperus glomeratus*, *Ranunculus sceleratus*, *Agrostis stolonifera*, *Juncus inflexus*, *Bidens frondosa* (fig. 9).



Fig. 8. *Persicaria maculosa*
(foto M. Niculescu)

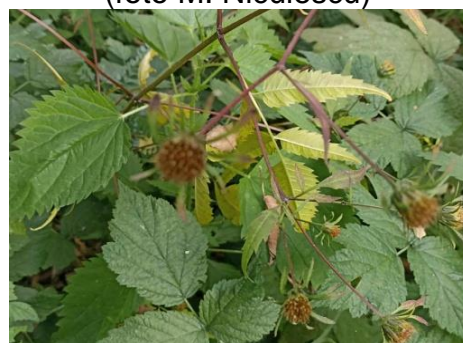


Fig. 9. *Bidens frondosa*
(foto M. Niculescu)

On the Copanița Island, the area of wet habitats has decreased in recent years, being influenced by climate changes, especially in the last advance in view of the prolonged drought. During the drought period, a sustained drop in the level of underground water in the floodplain was observed, which led to a mosaic aspect in the habitats, but led to the degradation of the habitats and at the same time of the edifying plant communities and of the key, edifying and dominant species. Thus we can draw the following conclusions, in recent years due to climate changes, the humid ecosystems in the Danube basin, in the south of Oltenia, are characterized by large fluctuations in the water level and implicitly large variations in soil moisture. The climate changes that led to the end of the summer drought along the Danube had negative effects on the physiognomy and floristic structure of the wetlands. This has a strong impact on plant species after strong climate changes and water availability, from early stages of life, affecting seed germination. At the same time, this imbalance at the level of the wetland habitats also affects the fauna of their invertebrates.

CONCLUSIONS

In the researched area, for wetland habitats were identified. The plant communities that edify the wetland natural habitats from this area have been analyzed and characterized from the chorological, ecological point of views. They were also examined according to their floristic composition and physiognomy, after the conservation status and human impact. Of the rare, vulnerable and sporadic species we can mention: *Marsilea quadrifolia*, *Nymphoides peltata*, *Stratiotes aloides*, *Azolla filiculoides*, *Typha minima*, *Trapa natans*, *Stratiotes aloides*, *Potamogeton nodosus*, *P. pectinatus*, *P. perfoliatus*, *Ceratophyllum submersum*, *Cyperus glomeratus*, *C. longus*. The climate changes of recent years had a particularly negative effect on these habitats with a particular impact on the surfaces of the

habitats but also on the structure and physiognomy of the edifying plant communities. A large part of these habitats have good development during the spring and early summer when the flow of the Danube is increased, then with the decrease of the river level or with the onset of drought, they suffer a lot, changing their physiognomy or being invaded by other species some of them invasive such as *Xanthium orientale* L. ssp. *italicum* (Moretti) Greuter.

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