

VEGETATION DESCRIPTION OF REPRESENTATIVE HABITAT COMPLEXES ALONG THE MAROS (MUREȘ) RIVER

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Abstract

Detailed identification and description of still existing natural or semi natural habitat complexes is necessary to planning conservation strategies, or restoration programs of deteriorated riverside habitats. The Maros River with its 768-km length is the most important tributary of the Tisa River. Since 1991 Hungarian and Rumanian non-governmental organisations has started interdisciplinary research to assess the common river's environmental condition. On the base of this pilot research 4 representative and highly natural areas has been selected for more detailed scientific investigations: (1) peat bog at Vasláb/Voşlobeni in Giurgeu (Gyergyói) basin, (2) lower Mureş/Maros pass between Ilia and Deva, (3) Pécska/Pecica-Bezdin forest, (4) Maros section in Hungary. Cenological relevés were made in 5-6 representative and natural or semi natural vegetation stands. A description and comparative evaluation of the river valley vegetation were made on the base of these relevés.

Keywords: habitat complexes, river valley vegetation, Maros/Mureş, conservation evaluation.

Introduction

Eastern and Central European rivers and related habitats play an important role in maintaining the biological diversity of the biogeographical regions, not only because of their corridor function, but because they are rich core areas of ecological networks (Gallé et al. 1995, IUCN 1995).

European policy toward flood control is being revised, and provides major opportunities toward nature development or restoration (PEBLDS, 1996).

Detailed identification and description of still existing natural or semi-natural habitat complexes is necessary to plan conservation strategies, or restoration programs of deteriorated riverside habitats. The Maros River with its 768-km length is the most important tributary of the Tisa River. It crosses several relief features with varying

lithological structures and its valley includes several various habitat complexes with rich flora, fauna and diverse vegetation. Drăgulescu (1995) presents an enumeration of the flora and vegetation of the Mureş River valley. He refers 1846 taxa of plants, 174 plant associations, and points out, that the Maros valley is now moderately degraded by human activity. The rate of degradation increases from the springs to the river mouth.

Since 1991 Hungarian and Romanian non-governmental organisations have started interdisciplinary research to assess the common river's environmental condition (Hamar & Sárkány-Kiss, 1995). On the base of this pilot research 4 representative and highly natural areas have been selected for more detailed scientific investigations.

Materials and methods

Botanical field sampling

Cenological relevés were made in 5-6 representative and natural or semi-natural vegetation stands. The areas of the plots were 5x5 m in grasslands, and 20x20 m in forests. The percent coverage of plant species was detected.

A description and comparative evaluation of the river valley vegetation were made on the base of these relevés. The cenological identification of plant association was made according to of Borhidi & Sánta (1999) and Sanda et al. (1980).

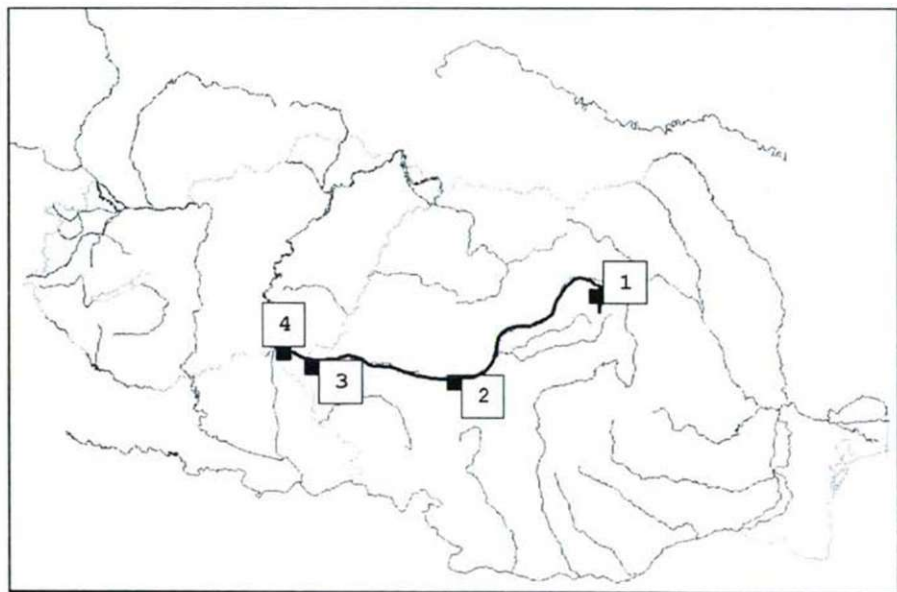


Fig. 1. The study sites along the river Mureş/Maros. 1. Peat bog at Vasláb/Voşlobeni in the Giurgeu (Gyergyói) basin 2. Lower Mureş/Maros pass between Ilia and Deva 3. Pécska/Pecica-Bezdin forest, 4. Maros section in Hungary

Study sites (Fig. 1.)

Study site	Year of field investigations
Peat bog at Vasláb/Voşlobeni in Giurgeu (Gyergyói) basin	1999
Lower Mureş/Maros pass between Ilia and Deva	2001
Pécska/Pecica-Bezdin forest	2000
Maros section in Hungary	2001

Results

Description of the study areas

Peat bog at Vasláb/Voşlobeni in the Giurgeu (Gyergyói) basin

The several streams coming in to the basin formed a fen area with two peat bog patches. A thick *Sphagnum* layer covers these two patches and a sparse stand of *Picea abies*, and *Betula pubescens* trees grows here. The peat bog patches are surrounded by large sedges, which are rich in typical fen plant species. The next zone in a slightly higher elevation is the fen meadow, used mainly by mowing. There are dry pastures in the relatively highest areas of the basin. The vegetation of the studied area is very rich and diverse. The composition and pattern of plant associations seems to be rather undisturbed.

Investigated habitats: peat bog and fen (mainly *Carici stellulatae* and *rostratae-Sphagnetum*, *Caricetum rostratae*, *Caricetum flavae juncosum subnodulosi*, and *Filipendulo-Geranium palustris*), wet meadows (*Molinietum coeruleae* and *Agrostio - Deschampsietum caespitosae*), and a dry pasture (*Agrostio - Festucetum rubrae*).

(1) Lower Mureş/Maros pass between Ilia and Deva

The river valley is very narrow, a main road and a railway line are driven here. Most of the area is under agricultural use; the rate of natural habitats is very low. Several plant species of mountain habitats occur occasionally in the river valley.

Investigated habitats: riverside, species rich willow forest (*Salicetum albae-fragilis*), a wet meadow with furze willow (*Salix cinerea*, *Lythrum salicaria*, *Inula helenium*) an abandoned arable land, revegetated mainly with non-weed, native species, a rather degraded pasture, and a mountain pasture.

(2) Pécska/Pecica-Bezdin forest

The river is only slightly channelled; it builds and destroys shoals and banks. Different successional stages of natural habitat types are well developed. Most of the forests grow up in natural way after cutting, the forest management is not intensive.

Investigated habitats: the oak-ash-elm forests (*Fraxino pannonicae-Ulmetum*) have high natural value, with species rich, natural undergrowth. The willow and poplar forests (*Salicetum albae-fragilis*) are valuable as well. The sodic oak forest and its

glade (*Peucedano officinalis-Asteretum sedifolii*) are such a habitat, which is highly protected in Hungary.

(3) Maros section in Hungary

The river is artificially channelled; the dikes separate the inundation area. There are no forests outside the dikes. The planted forests in the inundation area are intensively managed, the natural undergrowth is eliminated at plantation of the forests. The rate of hybrid poplar plantation is rather high. The rate of really old oak, white poplar and willow forest is rather low. The invasive tree species are abundant. Some native and protected plant species occur sporadically. Most of the inundation area is under protection, and habitat reconstruction is planned.

Investigated habitats: old poplar-willow forests (*Salicetum albae-fragilis*), several planted forests (*Populus canescens*, *Populus x hybrida*, *Quercus robur*), foxtail meadow (*Alopecuretum pratensis*), grassland on the dike, forest belt.

Discussion

These 4 study sites do not represent all of the habitat types and the whole flora and vegetation of the Mureş valley, but they give a certain picture about the long and very diverse river from the upper section till the estuary.

The peat bog and fen area at Voşlobeni is a highly natural, rich and diverse. Detailed botanical description of occurring habitats is presented by Margóczy et al. (2000). The present human uses of the grasslands, that is moderate grazing and mowing, do not endanger considerably the natural values, but the nature protection and detailed mapping of this very important natural habitat is necessary and urgent! A similar peat bog basin has been drained 50 years ago near to this place. The agricultural use of the area is not very successful, but the unique natural values have disappeared.

In the narrow river valley in the lower Mureş pass most of the area is under agriculture, or serving the big traffic, so the few semi-natural habitats are very important for maintaining regional biodiversity. The investigated secondary habitats seemed to be rather rich in natural plant species, the mountain species often occur, the corridor function of the river seems to be working.

Comparison of the two study sites in the Romanian and Hungarian part of the Mureş floodplain clearly demonstrate the effect of human use on riverine habitats. The river is highly channelled in the Hungarian part, flows in a straight, artificial bed, so the natural habitat dynamics of the building and falling banks does not work. In the Romanian section a lot of different natural, successional stages of riverine habitats develop. The other big difference is in the management of forests. In the Hungarian part the forests are artificially planted and intensively managed. The main tree species is the exotic hybrid poplar. There are native oak, poplar and willow forests, but their grass layer is very poor. The unnatural inundation regime inside the dikes does not allow the survival of several natural species. In the Rumanian part the forests regrow

in a natural way after cutting, and the hydrological situation is much more natural. The species rich and highly natural forests in the Romanian part could be the reference sites for habitat restoration experiments in Hungary.

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