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MONITORING OF AQUATIC HABITATS VEGETATION

Danube Monitoring Scientific Conference Publication, Slovak Section, chapter:

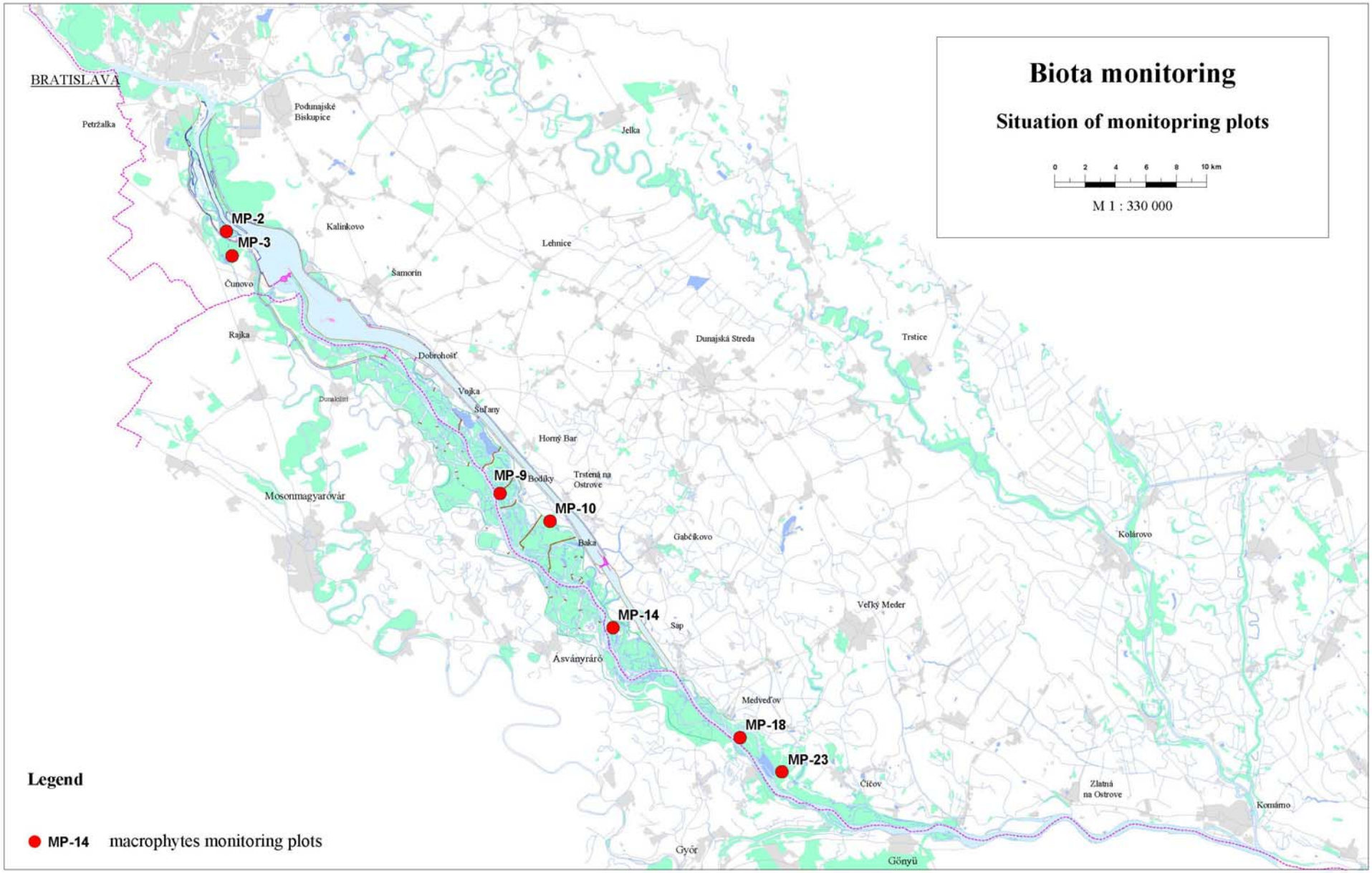
V.2.8. Monitoring the vegetation of aquatic habitats influenced by the Gabčíkovo project

vegetation of water bodies, marshes and the denuded bottom

- vegetation periods 1989-90:
- 14 of 24 monitoring plots (MP)
- record of the so called zero state
- using the Braun-Blanquet's phytocoenological method
- vegatation period 1991:
- reduced number of MP (5)
- 1992-1998
- only sporadic survey

under the 1995 Agreement

- since 1999:
- renewed monitoring of aquatic vegetation
- 7 monitoring plots
- surveying three times a year
- using the Braun-Blanquet‘s phytocoenological method and Kohler‘s macrophyte mapping method


Biota monitoring
Situation of monitopring plots
0 2 4 6 8 10 km
M 1 : 330 000
BRATISLAVA
Petržalka
Podunajské Biskupice
Jelka
MP-2
MP-3
Kalinkovo
Lehnice
Šamorín
Čunovo
Rajka
Dobrohošť
Dunajská Streda
Trstice
Vojka
Šulany
Dunakiliti
Horný Bar
MP-9
Bodíky
Trstená na Ostrove
Mosonmagyaróvár
MP-10
Baka
Gabčíkovo
Kolárovo
Veľký Meder
MP-14
Sap
Ásványráró
Medveďov
MP-18
MP-23
Čičov
Zlatná na Ostrove
Komárno
Győr
Gönyü
Legend
MP-14 macrophytes monitoring plots

MP 2B Rusovské ostrovy

- sporadic macrophytes occurence
- submerged and natant pleustophytes predominate: *Ceratophyllum demersum, Lemna minor, Spirodela polyrhiza*

- situated close to the Čunovo reservoir
- 1989-90: the drying up remnant of the Rusovské rameno arm
- at present: a polder surrounded by deep, permanent flooded arm discharging during floods

MP 3 Čunovo – Ostrovné lúčky

- in 1997 first hydrophyte species *Lemna minor* occured
- in 2005 eight hydrophyte species was recorded
- *Lemna minor* and *Riccia fluitans* predominate
- tree layer (*Salix fragilis, S. alba*) dies out (70% → 25%)

- situated close to the Čunovo reservoir
- 1989-90: the dried up arm covered by a softwood floodplain forest
- since 1996 permanent flooded by stagnant water
- water level height of 30-50 cm

MP 9 Bodíky – Bodícka brána

- the stretch of the Šulianske rameno arm situated in the within-dike zone between the bypass canal and the Danube
- 1989-90: sometimes discharging with the strongly fluctuated water level and rare occurence of macrophytes
- at present: the deep discharging arm with the stable water level during the whole year

- macrophytes occure only in the littoral protected against drifting
- *Ceratophyllum demersum, Elodea nuttallii* and *Myriophyllum spicatum* predominate
- populations are strongly eliminated during floods but relatively fast regenerate

MP 10 Kráľovská lúka

- 1989-90: *Nymphaea alba, Trapa conocarpa, Nuphar lutea, Ceratophyllum demersum* and *Potamogeton perfoliatus* dominated
- at present: only *C. demersum* and *N. alba* are dominant species

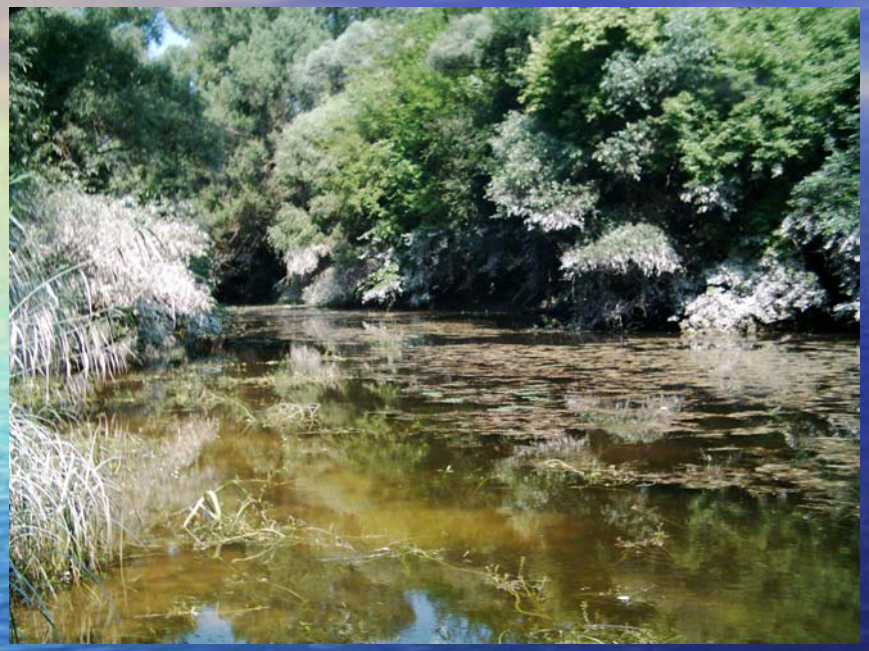
- the relic of the Danube arm situated in the within-dike zone between the bypass canal and the Danube
- 1989-90: flooded and overgrown with macrophyte spieces
- at present: the similar status

MP 14 Istragov

- hydrophytes don't occure in this MP
- *Phalaris arundinacea, Agrostis stolonifera, Polygonum* spp., *Carex* spp. predominate
- also the wildings of trees appear (especially *Acer negundo*)

- the peripheral arm of the island situated in the within-dike zone between the bypass canal and the Danube
- 1989-90: flooded
- at present: the water level decline under the surface

MP 18 Kľúčovec – Sporná sihoť



- *Ceratophyllum demersum, Batrachium circinatum, Elodea nuttallii, Trapa natans* are dominant species
- the large growths of rare species *Hippuris vulgaris* and *Scirpus radicans* was recorded

- the cut-off branches of the Opátske (Kľúčovské) rameno arm situated in the within-dike zone, downstream of the confluence of the tailrace canal with Danube
- 1989-90: flooded and overgrown with many macrophyte species
- at present: the same status

MP 23 Číčov – Starý les

- the relic of the Danube oxbow situated in the within-dike zone, downstream of the confluence of the tailrace canal with Danube
- 1989-90: the locality was influenced by the water level decreasing
- at present: flooded and overgrown with many aquatic plant communities

• the dominant species are: *Potamogeton lucens, P. pectinatus, P. pussillus, Salvinia natans, Lemna minor, Spirodela polyrhiza, Batrachium trichophyllum, Nymphoides peltata, Carex gracilis, Rorippa amphibia, Oenanthe aquatica, Glyceria maxima*

the area of the Čunovo reservoir (MP 2B, 3):
influenced by the high water level increase – water appeared in dried out arms – good conditions for macrophytes

the within-dike zone between the bypass canal and the Danube (MP 9, 10, 14):
water regime modified by existing water-management structures – the posibility to create good conditions for macrophytes

the within-dike zone downstream of the confluence of the tailrace canal with Danube (MP 18, 23 – control reference plots):
the water regime influenced directly by Danube river, the high species diversity and occurence of rare species

proposals for better interpretation of the monitoring data

1. Prior to realization of revitalization measures, to revise aquatic and wetland vegetation at all existing monitoring plots that are not monitored at present. Further plots for monitoring the influence of applied measures on wetland habitats should be selected during field reconnaissance. At least one plot should be in each current cascade line (A-J).
2. More reference plots should be selected outside the directly influenced area, downstream of the the tailrace canal confluence with the Danube.

proposals for better interpretation of the monitoring data

3. In selected monitoring plots it would also be desirable to record the chemical and physical parameters of the abiotic environment, which are determining for wetland communities, i.e. surface and ground water level, water temperature, pH, nutrients level.

4. It would be wise to ensure long-term and continual monitoring in order to obtain a sufficient amount of data for assessment of the influence of applied measures, for proposing further measures, for estimating the impact of climatic changes (years 2002, 2003 winter 2005/6 could be examples), and for general planning of the implementation of EU Directives related to nature and environmental protection, water quality, the sustainable use and development of the area.