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Kopački rit – a Wetland Enclave

Ne'er water nor land – let us begin with a riddle. And the answer can only be one thing: the swamp, or wetland. The wetland is the official name for an eco-system where water in the ground prevails. The main role of the wetland in the environment is not completely understood, but its evident effect is retaining of water and waterborne matter. And today's man – can he see, understand, and appreciate that? Can we survive without wetland?

The World Wetland Protection Day, which is marked every February the 2nd, aims at answering this question. Wetlands are natural treasuries of their own kind. However, these most productive eco-systems on Earth are exposed to destruction, degradation, and disturbance of the animal world, as declared at the Conference on Managing Mediterranean Wetlands (and their Birds) in Grado in 1991. Even though the importance of wetlands and problems threatening their existence are well known, the situation worldwide is not getting any better. Declaratively, everything has been mapped out, but in real life, things are obviously different.

There are more than 30 marshland habitats (1) and four of those are significant at the international level and listed on the Ramsar Convention List (2). This is the Convention on wetlands of international importance, especially as waterbirds' habitats. Wetland habitats in Croatia are most developed in river valley areas (3). Kopački rit is one worldwide known wetland in the County of Baranja (Fig. 1). Hunting ground, zoological reserve, fish-farming, the Park of Nature, birds' paradise, are key words describing this controversial watery eco-system.

Kopački rit is a fluvial, inundated plain, covering the area of 14,000 hectares of the most diverse geo-hydrological formations. Annual water regime of the Danube and Drava, developing for centuries, has created this unique eco-system which it still mantains: inundates in the spring, and lowers the water level in summer. The frequency and rhythm of the floods in ecological terms make Kopački rit a wetland of the marsh-type (Croatian: *rit*, pronounced 'reet').

Croato-Hungarian king Leopold I founded the Belje farm, and in 1699 presented it as a gift to Prince Eugen F. Savoy. Members of the Habsburg-Teschen family took turns as owners of Kopački rit. The last landlord was Friedrich, and his wife was the first photographer of the natural beauties of this area (4). Her photographic works were the first promotions of Kopački rit.

Figure 1. The map of Croatia with the location of Kopački rit (north-east of Osijek, marked black).

Some forty plant communities, indicate great diversity and the richness of the flora in this area. The largest areas of the wetland are covered with white willow and black poplar forests. Common oak forests and green weeds extend into the lower grounds, during long periods of flood. Meadows on embankments and pasture lands represent the grassland vegetation.

The biological diversity of the fauna covers 284 species of insects, 44 species of fish, 11 species of amphibians, 10 species of reptiles, 285 bird species, and 55 mammal species. These impressive numbers also include the rare and endangered species; otter, ferruginous duck, and white-tailed eagel. Significant contribution to the rare fish fauna was the finding of a beluga sturgeon (4). There is also a relatively large number of European pond turtles, now considered an endangered species on the European scale. Particularly interesting are findings of a new form of shell species *Unio tumidus kopaciensis* and the new species of horsefly.

The bird fauna of 285 bird species forms the basic ecological recognizability of Kopački rit. Majority of them are wetland birds that find their food and breeding conditions only in water biotopes (5). The breeding birds include 141 species. Some of those bird species nest in big colonies: cormorants, whiskered terns, black-headed gulls, and common and purple herons. Among numerous authors shaping the

ornithological bibliography of this area, we mention only a few from the period after 1950 (6-9): Renata and Dragutin Rucner, Joszef Mikuška, and Darko Getz.

Four animal species have disappeared from the area: European ground squirrel, black rat, grey wolf, and golden jackal. In 1997, the presence of the European beaver was registered in Kopački rit, for the first time in 200 years (10). This animal was practically extinct until its re-introduction into the area of the Žutica forest in the Sava river basin (11), and in Drava backwaters (12).

According to A. Habsburg Tescheni the area of Kopački rit is preserved. However, the first conservationist of Kopački rit is said to be Szecheny, who proposed the actual protection and the name: Belje National Park (4).

Due to its outstanding biological and ecological values, Kopački rit was protected in 1967 by the decision of the Croatian Parliament, in times of former Yugoslavia. With the 1976 Law on the Protection of Nature, the proper preserved area of 7,220 hectares became a Special Zoological Reserve and the wide area of 10,510 hectares got the status of the Nature Park. A new Law on the Protection of the Nature was passed in 1994, upon the establishment of the independent State of Croatia, and the Special Zoological Preserve was renamed into the Special Zoological Reserve of Kopački rit.

Kopački rit received the status of an Important Bird Area in Europe, (IBA) in 1989 (13) and continued to enjoy this privilege after it was revised in accordance with the latest standards (14). The total of 23 IBA areas have been established in Croatia.

Kopački rit mostly uses the Danube River water. The average length of flood is 90 days; high water levels are most frequent in May and June, while from August to October, Kopački rit is almost without water (15). Today, when half the world suffers considerably from the recent floodings, the word flood as a life prerequisite inevitably causes disbelief and wonder. Still, there are areas where the meaning of marginal values can best be understood through flooded wetlands; having Kopački rit as an eloquent example. May flood occur in areas where flood means life?

In August 2002, the swollen Danube threatened the ecological balance of Kopački rit. For numerous species of mammals, rising waters have been disastrous. According to estimates, 10% of the deer population got injured in this flood. It is not known how these excessive waters harmed water animals. The flood wave may have changed the configuration of Kopački rit, like in the 1926 flood, when the lake Sakadaš has been formed (16).

The natural area of flooding, as it has been proven, can be inundated as well. Since nothing in nature occurs without reason, we ask ourselves whether floods are useful in maintaining the wetland eco-systems? Overgrown with thick vegetation and shallowed by mud sedimentation, the part of Kopački rit exposed to the floods is smaller every year, the inundated areas shrink. This causes eutrophication and Kopački rit welcomes occasional and hasty outbursts of high waters that remove sediment mud.

Kopački rit is the only wetland eco-system of its kind in Central Europe. What is its lifespan? It is bound by embankments and the regulations of the Drava and Danube disabled the natural mechanisms that create backwaters and marshlands. Financial investments in the waterways and the intensifying of the agriculture in Baranja are mightier than the efforts toward protection and revitalisation of the local nature. What can be salvaged along the principles of the so-called sustainable development? The answer we cannot hope to predict even theoretically, let alone the subsequent implementation.

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