Floodplain hay meadows along the river Tisza in Hungary

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Grassland replaced riverine woodland
For thousands of years, the basic character of the floodplain meadows along the river Tisza was determined by the slowly meandering river, which flooded them several times a year, together with the influence of the human inhabitants, living seemingly in harmony with nature and harnessing its capacities. Based on historical vegetation data, it is presumed that most of today’s floodplain meadows are the result of riverine woodland clearance, a process which was continuous – and sometimes intensive – since the Neolithic. The last large-scale reduction of the riverine oak woodlands along the Tisza occurred in the early medieval ages (Sümegi, 2005, Magyari, 2002). When the quickly twisting river, which originates in the Carpathian Mountains, reaches the Great Hungarian Plain, its flow slows down, very near to the Hungarian border. Floodplain meadows used to flood twice a year, in early spring and again after the summer rainfalls. At inundation, the majority of the Great Plain was traversed by the water of Tisza, even the meadows of some country towns lying 40-50 kilometres from the riverbed were regularly flooded. Under natural circumstances, the river deposited its quite fine-grained clay sediment during its slow meandering through this region. The river, which here forms more than a hundred large loops, descends only 2-4 cm in each kilometre (Dunka et al., 1996).

However, the fluctuation in its water level is quite extreme: at flooding it may transport sixty times more water than at average flows. The river, originating from the mountains and running through the forest climate of the Great Plain, eventually reaches the driest and warmest area of the Carpathian Basin, the so-called forest steppe region. Here the annual precipitation is below 550 mm, the summer is hot and the winter is quite cold (continental), yet the number of sunshine hours is extremely high, with more than 2100 hours annually. The actual floodway is covered by alluvium, whereas the drained floodplains have hydro- and mesomorphic meadow or alkali (e.g. solonetz) soils.

Human settlement between floodplain and steppe
Though humankind settled on the edges of the vast floodplains of the river during the Neolithic, management of the landscape only began in the late Copper Age (3000-4000 years BC) (Sümegi et al., 2005, Magyari, 2002). Presumably, by the Bronze Age (2000-3000 years BC) the land use on the different parts of the landscape had diverged. The floodplain meadows and marshes along the river were utilized for floodplain management (extensive animal husbandry and pisciculture), while at higher elevations, the former steppes were replaced by arable fields (Sümegi et al., 2005, Molnár, 2007). The major medieval country towns were established on the border of these two regions (Frisnyák, 1990). Animal husbandry was unambiguously the basis for their economies (Bellon, 2003).

The Tisza was the most important route for transport of the ores, timber and salt from Transylvania. Major Salt Roads departed from its harbours and its ports were the most important nodes of the post roads and the routes of the cattle herds. This area, which had became the most important agricultural region of the Carpathian Basin, became almost totally depopulated during the 150 years of the Turkish regime during the 16th and 17th centuries, when only the major towns remained inhabited (Frisnyák, 1990). The settlements started to be repopulated in the early 18th century. In addition to farming and tillage, their inhabitants also restored the floodplain management on the riverine areas.

Connected dynamics in farming and biodiversity

Traditional farming practices
The basis for water level control was allowing the floodwater to inundate the lower-lying marshes and meadows (floodplain management, from the Bronze Age to the river control period). This was achieved by making gaps in the sediment ridges running along the river. After the flood, the water was allowed to gradually drain away from the meadows. Subsequently, the drained meadows were grazed by herds of grey cattle, horses, sheep or pigs. Pigs were also driven into the vast riverine oak woodlands to let them feed on the acorns. Meadows covered by shallow water served as important spawning sites for the fish, and these were only grazed after the fish had spawned. The inhabitants achieved a high level of fish production by construction of interconnected systems of these temporary ponds. Local people earned their living from this so-called floodplain management by