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The effect of habitat degradation on dragonfly assemblages on the floodplain of the River Tisza

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Einfluss von Habitatdegeneration auf die Libellenfauna im Auenbereich des Tisza-Flusses.

– Die Libellenfauna des Tisza-Flusses wurde 1998/99 in Hinblick auf den Einfluss der Sportfischerei untersucht. Dabei zeigte sich, 1) dass die Libellenartenzahl stärker von der Angelnutzung als von der Habitatstruktur abhängig war, und, 2) dass die Abundanz der seltenen Arten mit Anstieg der Angelstätigkeit zurückging.

The floodplain of River Tisza plays an important role as a core area and also as a green corridor in the conservation of biodiversity. Many backwaters – differing in succession stage – and other various types of water bodies situated in the floodplain of River Tisza are amongst the representatives of the close-to-nature wetlands in Europe. In spite of this fact these water bodies are effected by numerous unfavourable human impacts in connection with intense agricultural, forestry and angling utilisation. The goals of the study were to answer the following questions: (i) how biotope and habitat differences caused by the different intensity of angling are related and (ii) what kind of connection exists between the intensity of angling and some variables of dragonfly assemblages.

During 1998 – 1999 regular faunistic sampling (including imagines, exuviae and larvae of dragonflies) were conducted on the floodplain area of River Tisza between Tiszabercel and Balsa. Our qualitative surveys were concentrated on the 9 stable water bodies of the floodplain section. Four sampling localities in one of these water bodies and three in another were chosen to represent habitats differently effected by the varying intensity of angling utilisation.

The results are based upon analysis of 979 faunistic data. Faunistic relationships of the biotopes and habitats were analysed by using Rogers-Tanimoto similarity index, and the results were displayed as dendrogram after cluster analysis (complete linkage agglomeration schedule). The relations between the intensity of angling and the species number of dragonfly assemblages, the summed data number relative abundance of the 5 most frequent and the 5 rarest species of the study area were analysed by regression analysis.

On the basis of our results the following conclusions can be drawn: (i) the presence-absence data of dragonfly species show that habitat-level differences – caused by the different intensity of angling within a specific water body can exceed biotope-level differences among water bodies of different types, (ii) the species number of dragonfly

assemblages ($n = 7$, $R = 0.79460$, $p < 0.05$) and the summarised data number relative abundance of the 5 rarest species of the floodplain section ($n = 7$, $R = 0.93159$, $p < 0.005$) decrease parallel with the increase in the intensity of angling utilisation according to linear relation, at the same time the summarised data number relative abundance of the 5 most frequent species ($n = 7$, $R = 0.93159$, $p < 0.005$) increases.

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