Microclimate and transpiration of reedbeds at changing water level on lake Balaton

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Reeds are known to be extremely sensitive to changes in the environment and to exhibit morphological deviations depending on the habitat *(Chen et al. 2004)* and transpiration *(Sanchez-Carrillo et al. 2004)*. The aim of this study is thus to detect microclimatic changes caused by differences in the water levels of the reedbeds and to quantify the changes in transpiration.

Observations were made in the growing season of 2003 and 2005 on two natural reedbeds *(Phragmites australis)* near Fenékpuszta on the shores of Keszthely Bay, Lake Balaton (Hungary), one of them was standing in 30–50 cm of water, the other was at 30–40 metres distance from the waterline under dryer conditions. The shoot mass loss method was used to calculate the transpiration values. The area of the cut shoot sections and the leaf area in the different treatments were recorded using a LI-COR LI-3000A planimeter. Daily changes in the components of the microclimate were recorded using combined sensors capable of measuring global radiation, relative air humidity and air temperature, linked to meteorological data collectors of the LI-COR 1000 type.

The diurnal changes in air temperature exhibited a slight difference for the two habitats. During the night and early morning the air temperature was higher in the aquatic plant stand in both years. The air temperature was higher in the dry-standing reedbed under high radiation. The difference may be as great as 1.5–2.0˚C in 2003, but this difference became balanced in 2005. The relative air humidity was always greater in the wet stands in 2003. In July the mean daily relative humidity of the dry stand was 13–18% lower than that of the wet stand, while this difference was considerably smaller in August (5–8%). Both reedbeds were grown with water cover in 2005, for this reason we registrated similar RH values in both treatment. The daily transpiration sum was 5-6 mm m^{-2} in July 2003 and the difference between the two stand reached 16%. In August the plant transpiration values were even higher, but the difference between the two reedbeds decreased to 10.9%. The transpiration graph for plants standing in water was a regular curve with a single peak, exhibiting a maximum between noon and 3 pm *(Anda and Boldizsar 2005)*. In the dry stand the intensity of transpiration fluctuated greatly and there were two peaks in 2003. But we registrated only one peak in the transpiration graph in both treatments, in 2005. We could estimate depression in the

transpiration during the noon period in 2003, but this phenomenon did not manifest in 2005, because this stand was flooded and the transpiration was not limited by water deficit.