

ABSTRACTS

20: Abonyi A, M. Leitão, A. M. Lançon, J. Padisák, 2012. Phytoplankton functional groups as indicators of human impacts along the River Loire (France). *Hydrobiologia* 698 (2012) 233-249

The phytoplankton functional group concept is successfully used to assess ecological status in lakes (Q index), and also provides a method for lotic ecosystems ($Q_{(r)}$ index). Here, we examine the $Q_{(r)}$ composition metric to demonstrate local to regional scale human effects on natural distribution of phytoplankton along the River Loire. Distribution of phytoplankton functional groups coupled with chemical and physical parameters are described at whole river scale (19 stations, between March and November 2009). Natural longitudinal changes were reflected by the switch from benthic Pennales (**T_B**) towards meroplanktic greens (**J**) via unicellular centric diatoms (**D/C**). While upstream human pressure was mostly associated to species indicating eutrophic, stagnant environments (coda **P, M, H1, Y**), downstream attenuation of the $Q_{(r)}$ reflected enriched, shallow environments with prolonged residence time (coda **J, X2, X1**). Occurrence of minimum $Q_{(r)}$ index values were synchronized to late summer, but the longer was the distance from the source, the earlier was the seasonal decrease of $Q_{(r)}$. Increasing downstream co-dominance of codon **F** evidenced an ascending light availability in summer. The longitudinal distribution of functional groups allowed us to conclude that functional diversity might be able to sign human-affected richness, while simply species diversity does not.