

ESTIMATES OF C/N STOICHIOMETRY AND N RETENTION OF FOUR MEDITERRANEAN WETLAND SPECIES SUBJECTED TO WATER INPUTS FROM AN EFFLUENT OF A WASTEWATER TREATMENT PLANT.

Esperança Gacia (gacia@ceab.csic.es)¹

Susana Bernal, Ester Carreras, Myrto Nikolakopoulou, Roberta Calvo, Miquel Ribot, Manel Isnard, Eugenia Martí, Francesc Sabater, Albert Sorolla

¹ CEAB-CSIC

Helophytes are aquatic plants adapted to high nitrogen (N) concentrations in water and unstable substrates; therefore, they are used as green filters in waste water treatment and as elements to stabilize river banks in stream restoration. To gain knowledge of the potential N retention capacity from stream water nutrients of helophytes, we studied the carbon (C)/N molar ratio for different helophyte species (*Phragmites australis*, *Typha angustifolia*, *Scirpus holoschoenus* and *Iris pseudoachorus*), considering different compartments of the plants. Plants were grown during 10 months in triplicated 12 m channels under identical conditions in an outdoor mesocosm nursed with the effluent of a WWTP in Catalunya (NE Spain). The species were planted in winter 2015 and where grown with a sub-surface water flow. Results of two-way ANOVA show that plant compartment explained much higher variance than species of observed variation in C/N ratio. Leaves showed the lowest C/N ($18,03 \pm 0,99SE$), as expected from photosynthetically active tissues with high protein content. Differently, all roots had significantly higher C/N ($33,77 \pm 2,49 SE$) as expected from a plant compartments playing a more structural function. In terms of standing stock, N retention was maximum in *I.pseudoachorus* ($0,88 g N m^{-2}$) during the time course of the experiment, a 80 % of it being allocated in the belowground compartment. This figures account for retention of 10 % of the dissolved N flowing through the channels during this period. Our results suggest that the capacity of helophytes to retain dissolved N in highly N enriched environments is moderated and varies depending on the species considered.