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### WASTEWATER REUSE IN LAS TABLAS DE DAIMIEL NATIONAL PARK BY IMPROVING ITS QUALITY THROUGH CONSTRUCTED WETLANDS

The Tablas de Daimiel National Park (TDNP) is a floodplain wetland which covers 1,928 ha, located in the Upper Guadiana Basin (14,000 km<sup>2</sup>) over the West Mancha aquifer (5,500 km<sup>2</sup>) in Central Spain. This aquifer has been subject to intensive pumpage since the late 1970s, resulting in the decrease of the phreatic level. Therefore, wetlands have been disconnected from the regional aquifer, producing serious environmental damage on TDNP. In this work, the efficiency of the reuse of treated sewage effluents (TSE) from 8 Wastewater Treatment Plants in the surroundings of the wetland is analysed. The quality of the TSE would be increased through the formation of several Constructed Wetlands, which would act as transition between the sewage plants and the natural wetland. Management of a freshwater National Park like this, threatened by drought, may be controversial. Although research about environmental management has been wide, there is a lack in terms of knowledge transfer concerning this management practices. A mass balance model for predicting efficiency of water recharge in the TDNP has been developed, considering several scenarios of meteorology, inputs and outputs. The modelling of the water conditions into the Created Wetlands has been also realized, in order to evaluate the viability of this system. The TSE available for the recharge of the TDNP has an approximate volume of 10 Mm<sup>3</sup>. Regarding the biochemical characteristics of these effluents, it is necessary around 150 ha of Constructed Wetlands to guarantee an acceptable water quality for this purpose. The modelling results demonstrated that in this site, with the present volume of reclaimed water, it is difficult to obtain a great inundated surface a cause of the increase of infiltration and evaporation with the inundated area, but this solution allows maintaining a considerable inundated surface throughout the year, with a seasonal comportment.

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### VARIABILITY IN FORAGING BEHAVIOUR OF BROWN TROUT IN ATLANTIC STREAMS: FOOD AVAILABILITY OR DENSITY DEPENDENCE?

Recently, special attention has been focused on the analysis of the interaction between biological and physical factors and fish populations. Among these factors, population density is one of the most influential, having negative effects on growth and survival rates in brown trout. Density effects can be mediated through either exploitation or interference competition mechanisms, and occur at the intraspecific level. Thus, the objective of this study was to analyse whether the foraging behaviour of brown trout varies depending only on food availability or also on the population density. Individuals were collected in three streams located in Galicia (NW Spain) during September 2007. At the moment of sampling, trout density at the three sites was 0.05 ind/m<sup>2</sup> at River Anllóns, 0.22 ind/m<sup>2</sup> at River Furelos and 0.56 ind/m<sup>2</sup> at River Lengüelle. Benthos and drift were sampled in order to study prey availability, and foraging behaviour of brown trout was investigated by direct observation of stomach contents. For the description of the diet we used different indices, and data are offered as frequency of occurrence and relative abundance of preys. The analysis of the feeding strategy of the species using the Shannon diversity index suggests that brown trout has the largest niche breadth in the River Lengüelle (high density) ( $p < 0.001$ ). Surprisingly, despite River Anllóns (low density) showed lower surface drift ratio (336.51 ind/m<sup>2</sup>\*hour) than Rivers Furelos and Lengüelle (887.2 and 764.1 ind/m<sup>2</sup>\*hour respectively), we found that trouts consumed more frequently terrestrial invertebrates in River Anllóns (37.01%  $\pm$  5.355 SE) than in the other two rivers (Furelos: 22.65%  $\pm$  3.620 SE; Lengüelle: 20%  $\pm$  3.409 SE) ( $p = 0.025$ ). Thus, the effects of high population density on foraging behaviour seem to be related to the acquisition a benthic feeding behaviour, probably due to the need of territory defence.

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