



Riparian species and their relationship with the flow regime in the Mijares River (Spain)

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The relationship between flows and riparian vegetation has been described in the Mijares River, one of the most important rivers of the Júcar River basin (Eastern Spain). The three study sites have a flow regime which is regulated by a large dam and several hydropower plants. A hydraulic simulation was done in each site, and the time series of flow and water elevation were calculated for the period 1990-2007. The discharge-elevation curves were calculated in channel cross-sections, based on field data (low flows) and hydraulic simulation of large floods (50, 100 & 500 years intervals). Geo-referenced data of the plants were obtained in such cross-sections for the target species. For each plant we recorded these variables: height, dbh, cover and position (distance and elevation) in relation to the thalweg. The three willows species did not show significant differences, in relation to water table elevations. *Salix purpurea* was usually on the shore line and was considered the most pioneer. *Salix atrocinerea* showed the highest abundances, so it seemed to be the best adapted to the fluctuating flows between the hydropower plants. In the comparison of willows and poplars, *Populus nigra* and *Salix eleagnos* showed a similar elevation and distance from the thalweg. Oleander was located further from the bank than willows and poplars. The tamarisk was very similar to the oleander but the data range was wider. The analyses of the water elevation showed a clear correspondence with the results of the distance from the thalweg. The suitability of the flow regime for recruitment was evaluated

through the evolution of the water elevation during the seeds viability period. We identified a tendency in the flows to increase, not decrease, from the dissemination period to the end of September. The water system needs relevant improvements in the management rules, in order to avoid the high flows and to reduce the hydropeaking effects, during the critical period of the seed establishment. These considerations were communicated to the water administration for the technical studies of environmental flow regimes taking place in the Júcar River Basin, a pilot basin for the WFD.