



Evaluation of direct anthropic effects over riparian vegetation zonation in five stretches of Mediterranean rivers in Spain.

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The Júcar River Basin District is one of the most important in the Mediterranean region of Spain both for its size and for the regulation which is subjected to. The scarce water resources and the high water demand for urban (~20%) and agricultural (~80%) uses involve a tight balance between available water resources and demands near to 3,200 hm³/year (CHJ, 2010). This fact implies a general limitation to the development of future anthropic or natural demands. Half of the hydrologic available resources are extracted from groundwater, while surface reservoirs make possible the regulation near to 1,200 hm³/year. The district system includes Mijares, Serpis, and Cabriel rivers as three of the most relevant ones. In this work, five stretches from those rivers have been selected in order to be a representative sample of the River Basin District.

The objective of this work is to evaluate how hydrological regulation and agricultural irrigation are affecting riparian vegetation compared with the results obtained by simulating the estimated natural conditions. Thus, both dam regulation and agricultural irrigation impacts over the riparian vegetation are analyzed in the selected stretches located in the rivers previously mentioned.

The model employed is called RibAV. It is a useful tool based on a transpiration index that does not take into account another factors as can be the effect of destruction by floods. The model simulates a certain number of riparian vegetation functional types and can be applied in a wide range of conditions across semiarid environments. By means of this technique an evaluation of several anthropic impacts can be done considering changes in hydrological regimes or changes in the contour climatic conditions.

Results show that direct anthropic impacts cause a greater presence of terrestrial vegetation against the riparian trees or adult shrubs. In a parallel way, hydrologic regulation by dams is unfavorable for herbaceous riparian plants, restricting the riparian vegetation presence to some immature plants. Agricultural irrigated areas around the stretch emphasize these effects. To conclude, it has been established that hydrological regulation and agricultural irrigation not only cause changes in the functional types of riparian vegetation, but also modify the riparian forest structure and consequently its quality.