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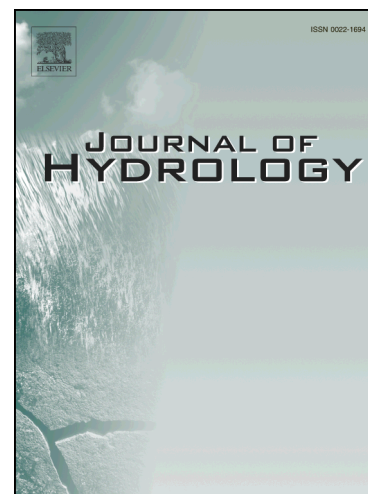
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Mathematical modelling for ecohydrological management of an endangered
endorheic salt lake in the semiarid Pampean region, Argentina

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Abstract

In this work, we propose a mathematical model within a dynamic optimization framework to address the management of a salt lake in a semiarid region in Argentina (Chasicó Lake). The main objective is to elaborate strategies to control recurrent floods and keep salinity values around the physiological optimum for the high-commercial value fish silverside. The model comprises dynamic mass balances for water and salt, as well as evaporation calculation based on energy and momentum balances on a daily basis. A collection of meteorological and hydraulic data in the basin for several decades and bathymetric information is included. The simulation of different scenarios with historical data provide a deeper insight into the ecohydrological dynamics of Chasicó Lake basin. Model predictions under moderate drought conditions, with rainfall about 70% of the historic average, show a large increase in salinity after three years under that

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