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Abstract

Modeling Long-Term Changes in Atlantic Salmon Abundance in the Ulla River (Galicia—Spain) through Multivariate Time-Series Analysis †

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Abstract: Due to the decline in catches of Atlantic salmon at the end of the 1980s, the Natural Heritage Service of the Xunta de Galicia has been obtaining data on the returning adults and the downstream migration of juvenile at the Ximonde fish-trap station since the year 1992 to 2021, as well as on the recapture of marked specimens from artificial restocking. At the same time, and during the same period, catches made by the fishing industry and the recruitment obtained through population censuses of different areas of the basin have been analyzed. A first exploratory analysis of the data indicates that the distribution area and flow regimes did not vary significantly during the study period. Throughout the time series, the number of juveniles stocked in the river changed, and even in some years none were stocked. The multivariate analysis of the time series indicates that the observed variations in the abundance of the population can be predicted based on the type of management carried out during the period studied, and that the methodology used in the Ulla river can potentially be used in other rivers with similar characteristics, especially those located in the southern areas of its natural distribution, affected by dams and with a reduced spawning habitat.

Keywords: multivariate time series; Atlantic salmon; fisheries management; sustainability; population ecology and structure

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Data Availability Statement: This data can be found at https://cmatv.xunta.gal (accessed on 31 March 2022).

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