



Abstract

Restoration of Coastal Ecological Processes versus Fish Conservation: To Be or Not to Be ... [†]

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[†] Presented at the IX Iberian Congress of Ichthyology, Porto, Portugal, 20–23 June 2022.

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Abstract: The H2020 project REST-COAST will build a framework for large-scale coastal restoration, encompassing the development of adequate monitoring plans and accurate assessment methods to evaluate the performance of restoration actions in terms of ecosystem-service delivery and bio-diversity enhancement. Hands-on restoration actions will be implemented in nine pilot sites representative of the European coastal archetype's variability. In many of these cases, the restoration actions imply the enhancement of the connectivity between coastal and marine habitats. In such cases, although the ecological processes are restored, the loss of coastal habitat isolation may affect fish species. The Ebro delta is one of the main REST-COAST pilot sites, and in a previous restoration project, abandoned commercial aquaculture ponds holding an abundant population of the endangered Spanish toothcarp (*Aphanius iberus*) were transformed into natural coastal wetlands. Moreover, the connectivity of the restored habitats with the sea was improved. The fish community was monitored following a before–after restoration design. Here, we use the Ebro delta as a REST-COAST case study to evaluate the effect of enhanced habitat connectivity on the fish community, with emphasis on the Spanish toothcarp. We analyzed the relationship between species richness, diversity and abundance, and the environmental variables affected by the restoration works. While species richness and diversity increased, Spanish toothcarp abundance decreased. This opens the debate on whether species conservation should be prioritized over ecosystem process restoration, even if it means maintaining a degraded habitat. Moreover, the adequacy of using fish as indicators of coastal ecosystem restoration performance is discussed. It is expected that the results will assist in establishing suitable criteria for coastal ecosystem restoration.

Keywords: coastal restoration; coastal wetlands; habitat connectivity; fish community; endangered Spanish toothcarp



Citation: Caiola, N.; Ibáñez, C. Restoration of Coastal Ecological Processes versus Fish Conservation: To Be or Not to Be ... *Biol. Life Sci. Forum* **2022**, *13*, 51. <https://doi.org/10.3390/blsf2022013051>

Academic Editor: Alberto Teodorico Correia

Published: 2 June 2022

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Funding: Funding was provided by the European Union's Horizon 2020 research and innovation programme under grant agreement number 101037097 (project REST-COAST).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.