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## GIS-BASED MATHEMATICAL MATRICES METHOD TO IMPACT ASSESSMENT OF STURGEON FARMING. CASE STUDY: SOUTHEAST COASTS OF THE CASPIAN SEA, IRAN

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### Abstract

This study assessed and predicted the environmental impacts of sturgeon farming in three pre-determined spatial sites on the southeastern coasts of the Caspian Sea. In Fact, the present study developed a GIS-based mathematical matrices method to evaluate the environmental impacts of the development project. Initially, effective project activities and important environmental factors were identified. Next, a framework is created for interaction between project activities and their environmental impacts. Then, maps related to project activities and their environmental impacts were prepared. After that, the weighting of interaction effects was determined based on these maps. Finally, the results showed that spatial site number 1 (near the Gomishan Shrimp Farming Center) is the best place to establish a sturgeon farm and will have the least negative impact on the environment. The approach used in this study made the matrix method more complicated and led to more accurate results. The present study also emphasized that GIS is a powerful and effective tool for managing the environment and the decision-making process. This study also predicted that the expansion of aquaculture on the southeastern part of the Caspian Sea will create jobs and reduce poverty in this deprived region.

*Keywords:* aquaculture, coastal management, decision-making, Iran

*Received:* January, 2022; *Revised final:* June, 2022; *Accepted:* July, 2022; *Published in final edited form:* July, 2022

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