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Sustainable aquaculture management model for estuarine waters

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The use of estuarine resources needs a sustainable management of the different economic activities carried out inside the estuary. The aquaculture is one of the activities with high economic, social and environment potential developed in estuarine and coastal areas. Many countries are promoting the aquaculture production taking to account the preservation of the wild live and natural media. To keep the preservation of the natural media, integrated management models for aquaculture should be carried out. For that purpose, integrated coastal management models should be proposed to ensure the preservation of the natural resources. In this work we develop an integrated coastal management model based on the mapping all the aquaculture and other economic activities that uses the estuarine waters. It will be presented a Portuguese case study with all the most important activities related with the water uses, such as fish farm, oyster production and rice production. To establish the management model, information about the aquaculture production densities, type of production, influent and effluent water of each activity and the potential interaction between the different aquacultures, by monitoring the water quality and quantifying the organic load, as shown in Figure 1. The model is also able to determine the potential to increase production in the existing aquaculture and to identify new areas for aquaculture. The results show that to increase the aquaculture production capacity, it is important to develop integrated management models for each estuarine and coastal region by planning the interactions of all the economic activities with the environment. Only with the integrated management models it can be possible to achieve sustainable aquaculture.



Recent Publications

1. Vianna L and Filho J (2018) Spatial analysis for site selection in marine aquaculture: An ecosystem approach applied to Baía Sul, Santa Catarina, Brazil. *Aquaculture* 489:162-174.
2. Pallero C, Barragána J M and Scherer M (2018) Management international estuarine systems: The case of the Guadiana River (Spain-Portugal). *Environmental Science and Policy* 80:82-94.
3. Wu Z, Yu Z, Song X, Li Y, Cao X and Yuan Y (2016) A methodology for assessing and mapping pressure of human activities on coastal region based on stepwise logic decision process and GIS technology. *Ocean & Coastal Management* 120:80-87.

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4. Aura C M, Musa S, Osore K M, Kimani E, Alati V M, Wambiji N, Main G W and Charo-Karisa H (2017) Quantification of climate change implications for water-based management: A case study of oyster suitability sites occurrence model along the Kenya coast. *Journal of Marine Systems* 165:27-35.
5. Tsani S and Koundouri P (2018) A methodological note for the development of integrated aquaculture production models. *Frontiers in Marine Science* 4:406:1-13.

Biography

Ricardo M Salgado has his expertise in Environment Engineering, Biotechnology, and Aquaculture Production. He is an Assistant Professor and Researcher on CINEA and LAQV/REQUIMTE. His research is on water and wastewater treatment, aquaculture production and water monitoring. He is responsible for a research project OSTRQUAL which intends to map the economic activities in the Sado and Mira River and to study the oyster production growth and reproduction by establishing the relationship with the water quality.

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