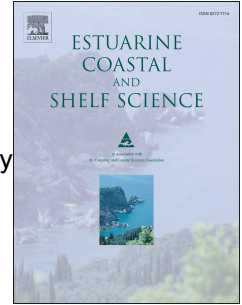


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Evaluation of effects of shellfish aquaculture and capture fishery on a semi-closed bay ecosystem

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1 **Evaluation of effects of shellfish aquaculture and capture**
2 **fishery on a semi-closed bay ecosystem**

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10 **Abstract**

11 Coastal waters in the world are suffering from multiple anthropogenic
12 disturbances, including capture fisheries and aquaculture. Ignoring possible
13 interactions between multiple disturbances may cause serious consequences in our
14 understanding of ecosystem dynamics. This study simulates individual and combined
15 effects of fishing activities and shellfish cultivation on a semi-closed bay ecosystem
16 using Ecopath with Ecosim (EwE). The changes of biomass and ecosystem structure
17 were examined for three scenarios of having fishing alone, shellfish cultivation alone
18 and both fishing and aquaculture. We found considerable impacts of shellfish
19 aquaculture but minor impacts from fishing, suggesting shellfish aquaculture had
20 dominated impacts on the study ecosystem. In addition, the effects of fishing and
21 shellfish aquaculture were not additive on species biomass, rather showing a
22 combined effect with synergy. Given the same loss in fisheries yield, controlling
23 fishing and shellfish aquaculture simultaneously was more efficient for increasing
24 nekton biomass compared to the control of either activity. We highlight the necessity

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