



# Aquaculture Dynamics and Food Security in Coastal West Africa: An Intervention Study

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**Published:** 06 March 2010 | **Received:** 13 November 2009 | **Accepted:** 18 February 2010

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**DOI:** [10.5281/zenodo.18906580](https://doi.org/10.5281/zenodo.18906580)

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## Abstract

Aquaculture in coastal West Africa is crucial for food security, yet it faces challenges such as climate variability and market fluctuations. The intervention design includes structured surveys, econometric models, and participatory workshops targeting small-scale farmers. An econometric model predicting fish yield per hectare showed a significant increase ( $p < 0.05$ ) from baseline to post-intervention period. Aquaculture development interventions have positively influenced food security outcomes in Eritrea's coastal areas, with notable improvements observed in fish yield and farmer incomes. Further research should focus on scaling up successful models and addressing socio-economic barriers to aquaculture expansion. aquaculture, food security, West Africa, intervention study The empirical specification follows  $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African coastal, aquaculture development, food security, intervention study, sustainable practices, climate resilience, livelihoods enhancement*

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