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REVIEWER'S REPORT

Manuscript No.: IJAR-51629 Date: May 15, 2025

Title: Comparative study of spawn performance of three wild populations of Oreochromis niloticus (Linnaeus, 1758) from Mono basin in Benin

Recommendation:
Accept as it is .....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		X		
Techn. Quality		X		
Clarity			X	
Significance			X	

Reviewer Name: Dr Lakhdar Guerine **Date:** May 15, 2025

Detailed Reviewer's Report

This study investigates the reproductive capacity of three wild populations of *Oreochromis niloticus*, originating from Sohoumè, Nangbéto, and Togbadji, all located in the Mono River basin of Benin. The evaluation focused on several reproductive parameters: total egg weight, absolute and relative fecundity, gonado-somatic index (GSI), and egg diameter. While most reproductive indicators did not show significant variation among the populations, the Togbadji population produced larger eggs, which may indicate a higher spawn quality.

Strengths

1. Relevant and locally impactful topic: The selection of high-performing strains for aquaculture in West Africa addresses a critical regional need.
2. Methodologically sound: The experimental design is clear, with controlled conditions, and data collection relied on reliable tools (ImageJ, appropriate statistical tests).
3. Original comparative approach: Assessing wild populations from different locations provides valuable insights for genetic selection.

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4. Robust statistical analysis: Based on the data distribution, methods such as ANOVA, Kruskal-Wallis, and Mann-Whitney were applied appropriately.
5. Well-interpreted findings: The discussion links results to genetic, nutritional, and environmental influences.

Weaknesses

1. Limited sample size: There are only seven females per population, and some reproduce only once, so the statistical power is low.
2. Unbalanced sex ratio (1 male to 10 females): This likely reduced spawning frequency and may have skewed results.
3. Lack of data on fish age: Age is a key factor in understanding fertility, but it was not available for the specimens.
4. Cautious conclusion: Although Togbadji shows promise, the conclusion does not strongly assert its superiority across all performance metrics.
5. There are no hatching rates and fry survival data. These are crucial indicators of overall reproductive performance, and they are missing.

Recommendation

Based on data available up to October 2023, this is a solid experimental study on a topic highly relevant to African aquaculture. It is well-written, follows a rigorous methodology, and presents its findings transparently. However, the argumentation could be strengthened by highlighting sample limitations and drawing a more impactful conclusion.

Recommendation: **Minor revision**, clarification of limitations, and expansion of the discussion on practical implications and future applications.