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REVIEWER'S REPORT

Manuscript No.: IJAR-51629 Date: 17-05-2025

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.....YES.....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

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

Reviewer's Name: Tahir Ahmad

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)

Reviewer's Comment / Report

Overall Evaluation:
This study presents a scientifically grounded and regionally significant investigation into the reproductive performance of three wild populations of *Oreochromis niloticus* in the Mono basin. The research is structured clearly and contributes valuable data to the field of aquaculture, particularly in relation to broodstock management and the optimization of fry production. It is empirically rigorous and offers comparative insights that can be utilized for informed decision-making in tilapia breeding programs.

Abstract and Study Objectives:
The abstract succinctly presents the study's objective, methodology, key reproductive parameters, and significant findings. It clearly outlines the sampling locations, spawning process, and measured outcomes including egg weight, fecundity indices, and gonado-somatic index. The statistically significant variation in egg diameter among populations, with the Togbadji population showing superior spawning performance, is effectively highlighted, making the abstract informative and precise.

Introduction and Contextual Background:
The introduction offers a strong rationale for the study by situating it within the broader global context of tilapia aquaculture. It effectively references production statistics and scholarly literature to underscore the importance of high-quality fry production and the need to understand reproductive efficiency. The

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emphasis on the reproductive potential of *O. niloticus* is timely and appropriate, and the linkage to the Mono basin context establishes regional relevance.

Methodological Framework:
The study adopts a straightforward and effective experimental design, with controlled spawning and measurement of key reproductive variables. The use of tagged females and separate sex-specific tanks allows for individual performance tracking, and the regular collection of spawning data contributes to the reliability of the findings. The metrics chosen for comparison—egg weight, absolute and relative fecundity, gonado-somatic index, and egg diameter—are standard and well-justified for assessing reproductive efficiency.

Results and Statistical Validity:
The results are presented with clarity, highlighting the ranges and averages of reproductive traits across the three populations. The observation that most parameters did not differ significantly across populations, except for egg diameter, adds nuance and specificity to the study's findings. The identification of the Togbadji population as having the most favorable performance based on this parameter is a significant insight, especially given the implications for broodstock selection.

Scientific Contribution and Relevance:
The study makes a noteworthy contribution to aquaculture biology by documenting inter-population variability in reproductive performance within a single species in a defined geographic area. It offers practical implications for broodstock improvement and sustainable hatchery practices. Furthermore, the focus on wild populations reinforces the relevance of biodiversity conservation in aquaculture development.

Conclusion:
This is a well-conceived and competently executed scientific study. It provides useful empirical evidence on the spawning performance of *O. niloticus* populations in Benin, with potential applications in improving reproductive efficiency in regional aquaculture systems. The research stands as a valuable addition to the literature on tilapia breeding and reproductive biology.