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Analysis of Photic Zone's Summer Period-Dissolved Oxygen and Temperature as an Early Warning System of Fish Mass Mortality in Sampaloc Lake in San Pablo, Laguna

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Abstract : The decline in water quality is a major factor in aquatic disease outbreaks and can lead to significant mortality among aquatic organisms. Understanding the relationship between dissolved oxygen (DO) and water temperature is crucial, as these variables directly impact the health, behavior, and survival of fish populations. This study investigated how DO levels, water temperature, and atmospheric temperature interact in Sampaloc Lake to assess the risk of fish mortality. By employing a combination of linear regression models and machine learning techniques, researchers developed predictive models to forecast DO concentrations at various depths. The results indicate that while DO levels generally decrease with depth, the predicted concentrations are sufficient to support the survival of common fish species in Sampaloc Lake during March, April, and May 2025.

Keywords : aquaculture, dissolved oxygen, water temperature, regression analysis, machine learning, fish mass mortality, early warning system
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