African Heritage and Conservation

Multilevel Regression Analysis to Evaluate and Enhance Field Research Station Systems in Nigeria: A Reliability Assessment

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Abstract

Field research stations in Nigeria have been established to monitor environmental changes and biodiversity conservation efforts. However, their effectiveness varies significantly across different regions. A multilevel regression model was employed to analyse data collected from multiple research stations across various regions in Nigeria. The model accounts for both fixed effects (like station location) and random effects (inter-observer variability). The analysis revealed that observer experience significantly improved the reliability of field measurements, with a $R^2 = 0.75$ indicating substantial explanatory power. This study provides empirical evidence for improving the consistency and accuracy of environmental monitoring in Nigeria by enhancing observer training programmes. Recommendations include developing standardised observation protocols and providing ongoing professional development for observers to maintain high measurement quality. Field research stations, reliability assessment, multilevel regression analysis, Nigeria, Environmental Science

Keywords: *Nigerian, Multilevel, Regression, Reliability, Stratification, Monitoring, Ecosystem*

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