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| Journal Name: | [Asian Journal of Geological Research](https://journalajoger.com/) |
| Manuscript Number: | **Ms\_** **AJOGER \_139362** |
| Title of the Manuscript: | **FAUNAL ASSEMBLAGES AND BIOTA-SUBSTRATE INTERACTIONS IN TROPICAL NIGERIAN TIDAL FLATS: INFLUENCE OF SEDIMENT GRAIN SIZE AND PHYSICOCHEMICAL PARAMETERS** |
| Type of the Article | **Original Research article** |

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | This manuscript is of considerable significance to the scientific community, as it offers one of the first exhaustive, integrative ecological assessments of benthic faunal assemblages in the tropical tidal flats of southeastern Nigeria. It addresses critical knowledge gaps in West African intertidal ecology—a region that remains underrepresented in global marine research—by systematically linking faunal diversity to sediment grain size and important physicochemical parameters. The study provides valuable baseline data for future monitoring, informs conservation and habitat management strategies, and contributes to a broader understanding of how tropical coastal ecosystems respond to both natural variability and anthropogenic pressures. Its results are pertinent to comparative global studies on tidal flat biodiversity and resilience, in addition to regional environmental planning. | We thank the reviewer for the positive assessment of the article. |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | Yes | Noted with thanks. |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | No needs little revisions  Sampling Timeline: Kindly specify the year or period in which seasonal sampling was conducted. This will offer a critical temporal context for the interpretation of faunal responses and environmental variability.  The abstract should also briefly mention the methodological approach, such as the use of quadrat/core sampling and environmental parameter measurement, to enlighten readers how data were obtained, despite the fact that the findings are well described. | The study was conducted from July 2011 to March 2012, spanning both the wet and dry seasons. The temporal context helps to interpret the faunal responses and environmental variability. The abstract has been modified thus:  ***“****This study investigates benthic faunal assemblages and their relationships with sediment grain size and physicochemical parameters in the tropical tidal flats of the Calabar and Great Kwa Rivers, southeastern Nigeria. Systematic seasonal sampling was carried out from July 2011 to March 2012, encompassing both the wet (April-November) and dry (December-March) seasons. This seasonal variation allowed for an examination of how temporal environmental shifts affect benthic faunal assemblages. The study employed quadrat and core sampling techniques to collect benthic fauna, with environmental parameters such as dissolved oxygen, salinity, and temperature measured in situ using portable multi-parameter probes. These methods provided a robust dataset for analyzing faunal distribution with sediment characteristics and physicochemical conditions. Results revealed that sediment texture is a key determinant of faunal community composition, with coarser sediments favouring burrowing crabs (Afruca tangeri, Cardisoma armatum) and finer sediments supporting polychaetes and bivalves. The two dominant species in the study, Uca tangeri and Cardisoma armatum, exhibited different distribution patterns related to sediment grain size and environmental conditions. In addition to the macrofauna, the study also identified meiofauna (organisms between 0.1 and 0.5 mm) and microfauna (organisms smaller than 0.1 mm) in sediment samples. These organisms were most abundant in fine sediments. Dissolved oxygen was identified as a critical environmental variable influencing species diversity and abundance. Spatial and temporal variations highlight the dynamic nature of these intertidal ecosystems, with anthropogenic activities such as dredging and urban runoff negatively impacting faunal diversity and sediment quality. This multidisciplinary approach fills significant knowledge gaps in West African tropical tidal flat ecology and provides essential baseline data to guide coastal habitat conservation and sustainable management under environmental change.”* |
| Is the manuscript scientifically, correct? Please write here. | Yes, Certainly, the manuscript is primarily scientifically accurate and methodologically sound. It provides a coherent examination of benthic faunal assemblages in tropical tidal flats of southeastern Nigeria in relation to sediment particle size and physicochemical parameters. The ecological patterns that are being discussed, such as the influence of dissolved oxygen and sediment texture on species composition, are in accordance with the established literature and are substantiated by relevant field observations.  Nevertheless, there are a few areas that require consideration in order to enhance the robustness of scientific research:  Statistical Validation Deficit: Although the results are informative, the manuscript would be substantially enhanced by the inclusion of statistical analyses (e.g., ANOVA, PCA) to objectively validate observed patterns and relationships.  Quantitative Interpretation: The scientific rigor of certain conclusions is compromised by the absence of supporting p-values, confidence intervals, or variance measures, which are derived from descriptive data.  Absence of Indicator Species Discussion: The manuscript should adequately identify or interpret any species as potential bioindicators of sediment or water quality, which would have improved its ecological relevance in the field.  Environmental Generalization: There is a limited amount of comparative discussion with other marine or intertidal ecosystems. The provision of such context would enhance the interpretation of ecological phenomena.  The manuscript is scientifically accurate in its field data and foundational concepts. Nevertheless, it is advisable to incorporate comparative ecological context, indicator species insights, and statistical support to enhance the scientific depth and publication preparedness of the work. | Statistical Validation Deficit:We appreciate the suggestion to include statistical validation for the observed patterns. We have now incorporated a 2-way ANOVA (Analysis of Variance) to evaluate significant differences in faunal abundance and diversity across seasons the tidal flats of Adiabo (Calabar River) and Atu (Great Kwa River). Additionally, Principal Component Analysis (PCA) has been applied to examine the relationship between environmental factors (dissolved oxygen, water temperature, pH and conductivity) and faunal numerical abundance and diversity index. We have reported p-values to assess statistical significance and confidence intervals to enhance the scientific rigor of the study.Absence of Indicator Species Discussion:We have expanded the discussion of Uca (Afruca) tangeri and Cardisoma armatum as bioindicators of environmental health in tidal flat ecosystems. Further discussion explores how their abundance reflects changes in water quality and sediment conditions.Comparative Context:We have included a brief comparison of the ecological findings from the Calabar and Great Kwa rivers tidal flats to those from other tropical West African and temperate tidal flats globally. This comparative analysis helps to contextualize our findings and place the study within the broader ecological and conservation framework, especially considering anthropogenic pressures in tropical coastal zones. |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | Yes reference are sufficient even though authors can add as per suggested comments if needed | Noted with thanks |
| Is the language/English quality of the article suitable for scholarly communications? | Yes | Noted with thanks |
| Optional/General comments | The "Study Area" section would be enhanced by the incorporation of latitude and longitude coordinates to provide a more precise geographic context. This is particularly crucial for future comparative studies, as it facilitates spatial referencing and reproducibility.  Please provide the precise timeline (e.g., months and year) for the rainy and dry season sampling in the "Materials and Methods" section. This would improve the understanding of the temporal extent of environmental and faunal variability.  According to scientific writing conventions, genus and species names (such as Uca tangeri and Cardisoma armatum) must be italicized, including in figure captions and graph labels.  Also cross-check with latest nomenclature for the species name *Uca (Afruca) tangeri* (Eydoux, 1835) is currently accepted as *Afruca tangeri* (Eydoux, 1835) on World register of marine species website  To better understand the influence of environmental variables on faunal assemblages, **Principal Component Analysis (PCA)** was conducted using sediment grain size, dissolved oxygen, salinity, and other physicochemical parameters. The first two principal components explained XX% of the total variance, with PC1 strongly associated with sediment grain size and DO, and PC2 with salinity and pH. Sites like Adiabo and Atu clustered along PC1, reflecting their coarse sediment and high DO levels, while Marina and Idundu clustered separately, indicating finer sediments and lower oxygen. Additionally, **one-way ANOVA** results showed significant differences (p < 0.05) in faunal abundance and Shannon diversity across sites, confirming that environmental heterogeneity significantly shapes community composition.  Photo Plates of Macrobenthic Groups: It is recommended that a photo plate be included, which should be labeled with taxonomic names and scale bars, and should display representative macrobenthic taxa (e.g*., Uca tangeri*, *Cardisoma armatum*, polychaetes, bivalves). This will assist readers, particularly those who are not familiar with the region, in gaining a more comprehensive understanding of the diversity of organisms that have been examined.  Photographs of Tidal Flat Sampling Sites: The ecological setting described in the "Study Area" and "Materials and Methods" sections would be significantly improved by the inclusion of images of the tidal flats (e.g., Adiabo, Marina, Atu, Idundu) that illustrate habitat characteristics or sampling activity. This would provide valuable context.  Incorporate a checklist of identified benthic fauna, either as a supplementary table or an appendix, to provide taxonomic transparency and facilitate future comparative studies  The current section effectively highlights the importance of benthic communities and sediment characteristics in shaping tidal flat ecosystem function. However, I suggest the following additions to strengthen the ecological relevance and applied value of the findings:  Long-Term Monitoring: Please emphasize the need for long-term ecological monitoring to track temporal trends, assess resilience to anthropogenic pressures, and understand climate-driven changes in faunal assemblages and environmental conditions.  Indicator Species: Consider discussing whether any indicator species were identified (e.g., *Uca tangeri* or *Cardisoma armatum*) that could serve as bioindicators of habitat quality, oxygen availability, or sediment condition in these tropical tidal flats.  Comparative Context: It would be beneficial to include a brief comparison of how these West African tidal flats differ ecologically from other marine habitats (e.g., mangroves, estuaries, coral reef lagoons). This could help situate the study within a broader ecological and conservation framework. | Study Area has been enhanced to read:*"The study was conducted in the tidal flats of the Calabar River (Lat. 5˚ 05' 17N, Long. 8˚ 15' 08N) and Great Kwa River (Lat. 4˚ 58' 45N, Long. 8˚ 18' 27N), Southeastern Nigeria."* The Materials and Methods section has been updated to include:  *“The study was conducted from July 2011 to March 2012, spanning both the wet and dry seasons.”*  The manuscript has been updated to include genus and species names (such as Uca tangeri and Cardisoma armatum) in italics including in figure captions and graph labels.Uca tangeri has been updated to the recent adoption (Afruca tangeri), as per standard scientific conventions.  A paragraph for PCA has been included in the results. Photographs of the sampling sites and macrobenthic groups have been added in the manuscript. |

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| **PART 2:** | | |
|  | Reviewer’s comment | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in detail)*  No | We confirm that there are no ethical issues with the manuscript. All necessary permissions were obtained for the fieldwork conducted, and proper environmental considerations were made during the study. There are no conflicts of interest or ethical concerns associated with this research |