Review Form 1.6

Journal Name:	**Journal of Applied Life Sciences International**
Manuscript Number:	**Ms_JALSI_84650**
Title of the Manuscript:	**Spatio-temporal Assessment of Phytoplankton and Physicochemical Parameters of Dangana Lake, Lapai, Niger State Nigeria.**
Type of the Article	**Original Research Article**

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
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PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments	The paper should be corrected very carefully especially according to language style. Some typos need to be corrected. The work is impressive, however, some points deserve to be clarified before publication. I recommend the publication with major revisions as follows: **General comments** to provide water for drinking, domestic activities and control flood…. to provide water for drinking, domestic activities, and control floods. Nitrate and Phosphate differs significantly among sampling sites ($p<0.05$)…. Nitrate, and Phosphate differ significantly among sampling sites ($p<0.05$). Seasonally there was significant difference ($p<0.05$)… Seasonally there was a significant difference ($p<0.05$). significantly higher during dry season than in raining season…. significantly higher during the dry season than in the rainy season. The Canonical Correspondence analysis (CCA)…. The Canonical Correspondence Analysis (CCA). medium range… medium-range. In Nigeria, and many part of the world, man-made lakes or reservoir are of great value to man. [1]…. In Nigeria, and many parts of the world, man-made lakes or reservoirs are of great value to man [1]. The assessment of the population of various organism at any particular location and time form basis of understanding the trophic state of that biological environment [7]…. The assessment of the population of various organisms at any particular location and time forms the basis of understanding the trophic state of that biological environment [7]. important indicators in understanding changes in aquatic environment [8]…. important indicators in understanding changes in the aquatic environment [8]. Health status of aquatic ecosystem are dependent on the physico-chemical properties and biological diversity of the water body [9]…. The health status of the aquatic ecosystem is dependent on the physicochemical properties and biological diversity of the water body [9].]. Changes in the physicochemical characteristics of provide valuable information on water quality of an aquatic environment [10,12]….]. Changes in the physicochemical characteristics provide valuable information on the water quality of an aquatic environment [10,12]. In Nigeria, most aquatic ecosystem is threatened by different… In Nigeria, the most aquatic ecosystem is threatened by different. Planktons are sensitive to environment in which they live and any change in environment…. Planktons are sensitive to the environment in which they live and any change in environment. they are also large consumed by fishes and other higher animals in food chains [3]…. they are also largly consumed by fishes and other higher animals in food chains [3]. Phytoplankton are among the most important biotic component influencing all the functional aspect of an aquatic ecosystem such as food web, food chains, energy flow and cycling matter [16]…. Phytoplankton is among the most important biotic component influencing all the functional aspects of an aquatic ecosystem such as the food web, food chains, energy flow, and cycling matter [16]. The used of phytoplankton to evaluate the trophic state status of aquatic environment is becoming a novel practices in water maintenance for both aquaculture and portable water [17,18]….. The use of phytoplankton to evaluate the trophic state status of the aquatic environment is becoming a novel practice in water maintenance for both aquaculture and portable water [17,18]. Phytoplankton in relation to environmental variables of man-made lake in Northcentral Nigeria… Phytoplankton in relation to environmental variables of a man-made lake in Northcentral Nigeria.	

	Niger state, Nigeria…. Niger State, Nigeria. and latitude 9°02′12.02N with elevation of 159m above the sea level…. and latitude 9°02′12.02N with an elevation of 159m above the sea level. vegetation of the area reflects that of Savannah zone, the vegetation are mixed, prominent ones include Malaina (*Gmeilana arborea*) Locust beans (*Parkia biglobosa*)…. vegetation of the area reflects that of the Savannah zone, the vegetation is mixed, prominent ones include Malaina (*Gmeilana Arborea*) Locust beans (*Parkia Biglobosa*). it has few human activities taking place such as fetching of water…. it has few human activities taking places such as fetching of water. This is place with high anthropogenic activities…. This is a place with high anthropogenic activities. it is the quite region of the lake. It has an opening which allows water to move out of the lake… it is the quiet region of the lake. It has an opening that allows water to move out of the lake. between March and October, 2019…. between March and October 2019. Sampling period covers both dry and wet season. On the sampling site physicochemical parameters including Water Temperature, Dissolved oxygen (DO), Conductivity and pH were measured using multipurpose Meter (HANNA model 1910). BOD_5, Nitrate and Phosphate where determined by the methods described by APHA[19]…. The sampling period covers both dry and wet seasons. On the sampling site, physicochemical parameters including Water Temperature, Dissolved Oxygen (DO), Conductivity and pH were measured using a multipurpose Meter (HANNA model 1910). BOD_5, Nitrate, and Phosphate where determined by the methods described by APHA[19]. Phytoplankton samples were collected by horizontal towing using standard plankton net with mesh size of 20.0µm…. Phytoplankton samples were collected by horizontal towing using a standard plankton net with a mesh size of 20.0µm. 4% formalin and transported to laboratory for further analysis….. 4% formalin and transported to a laboratory for further analysis. In the laboratory, phytoplanktons where identified by pipetting 1ml of water sample from field samples and place on a slide which was mounted under light microscope and view under magnification (×40, ×100), counting of planktons was done…. In the laboratory, phytoplanktons, where identified by pipetting 1ml of water sample from field samples and place on a slide which was mounted under light microscope and view under magnification (×40, ×100), counting of planktons, was done. The physicochemical parameters data were subjected by descriptive statistical test…. The physicochemical parameters data were subjected to a descriptive statistical test. using one way analysis of variance (ANOVA)…. using one-way analysis of variance (ANOVA). Dangana lake Lapai Niger state for a period of Eight months (March-October 2019) is presented in Table 1…. Dangana lake Lapai Niger state for eight months (March-October 2019) are presented in Table 1. From the entire sampling site, temperature ranged from 23.5±29.0… From the entire sampling site, the temperature ranged from 23.5±29.0. However, electrical conductivity nitrate and phosphate differs significantly among sampling sites ($p<0.05$)…. However, the electrical conductivity of nitrate and phosphate differs significantly among sampling sites ($p<0.05$). Seasonally there was significant difference ($p<0.05$)…. Seasonally there was a significant difference ($p<0.05$). Spatial distribution of phytoplankton in all sampling sites… The spatial distribution of phytoplankton in all sampling sites. population was significantly higher during dry season than in raining season as shown figure 2…. Phytoplankton population was significantly higher during the dry season than in raining season as shown in figure 2… The results of the diversity indices indicates that the lake varied within study station in term of…. The results of the diversity indices indicate that the lake varied within the study station in terms of. Site A recorded dominance index of 0.078…. Site A recorded a dominance index of 0.078. Shannon and Everest indices operate in similar pattern by recording highest values in site A… Shannon and Everest's indices operate in a similar pattern by recording the highest values in	

	site A. Site B recorded highest Margalef's index value of 2.94 and site A and C recorded value of 2.86 and 2.85 respectively (Table 3)… Site B recorded the highest Margalef's index value of 2.94 and site A and C recorded values of 2.86 and 2.85 respectively (Table 3). The Canonical Correspondence analysis (CCA) shows strong positive correlation with…. The Canonical Correspondence Analysis (CCA) shows a strong positive correlation with. From the CCA ordination plot organism in Axis 1 where positively influence by nitrate… From the CCA ordination plot organism in Axis 1 were positively influence by nitrate. Organism associated with CCA axis1 are *Oscillatoris* sp, *Nitchia* sp, *Chroccocus Flagillania* sp… Organisms associated with CCA axis1 are *Oscillatoris* sp, *Nitchia* sp, *Chroccocus Flagillania* sp. Table4 . Weighted intraset correlation of engine value parameters with axis of CCA… Table 4 . Weighted intraset correlation of engine value parameters with the axis of CCA. The conservation and management of water ecosystem is critical… The conservation and management of the water ecosystem are critical. significant difference among sampling station ($p>0.05$) except Conductivity…. significant difference among sampling stations ($p>0.05$) except Conductivity. Water temperature of Dangana Lake Lapai Niger state was within the normal temperature range of 20 to 30°C required by aquatic organism for metabolic activities [28]…. The water temperature of Dangana Lake Lapai Niger state was within the normal temperature range of 20 to 30°C required by the aquatic organism for metabolic activities [28]. due to high rainfall and minimum amount of sunlight…. due to high rainfall and the minimum amount of sunlight. The Dissolved oxygen (DO) concentration… The Dissolved Oxygen (DO) concentration. Higher DO value were recorded in raining season… Higher DO values were recorded in raining season. The higher BOD concentration recorded in raining season was as a result of influx of organic matters into the lake though surface run off [15]…. The higher BOD concentration recorded in a rainy season was as a result of the influx of organic matters into the lake through surface runoff [15]. all the sampling sites was closed to neutral in both seasons…. all the sampling sites was close to neutral in both seasons. Electrical conductivity (E.C) value…. The electrical conductivity (E.C) value. electrical conductivity value observed in rainy season could be attributed to high amount of suspended… electrical conductivity value observed in the rainy season could be attributed to the high amount of suspended. Nitrates and Phosphate are among the limiting factors in aquatic environment [30]. This study revealed high value of Nitrate and phosphate in the raining season which could be high anthropogenic activities around the lake and surface run off from the surrounding [6,13]…. Nitrates and Phosphate are among the limiting factors in the aquatic environment [30]. This study revealed a high value of Nitrate and phosphate in the rainy season which could be high anthropogenic activities around the lake and surface runoff from the surrounding [6,13]. High nutrient level such as nitrate and phosphate enhance the growth of Baccillariophyta which forms the major diet of zooplanktons [32]…. High nutrient levels such as nitrate and phosphate enhance the growth of Baccillariophyta which forms the major diet of zooplankton [32]. In this study a significant abundance of some phytoplankton species were observed this could be attributed to increase in the intensity of solar radiation that can be captured by phytoplankton, hence increased photosynthesis and other metabolic activities which lead to subsequent increase in population density of planktons [12,33]…. In this study, a significant abundance of some phytoplankton species was observed this could be attributed to an	

	increase in the intensity of solar radiation that can be captured by phytoplankton, hence increased photosynthesis and other metabolic activities which lead to a subsequent increase in population density of planktons [12,33]. Similarly, high intensity of the light in the tropics favors the development of Chlorophyta [26]. Increase in domestic, agricultural and industrial pollution in lakes accelerate the growth of Chlorophyceae and Cyanophyceae [36]…. Similarly, the high intensity of light in the tropics favors the development of Chlorophyta [26]. An increase in domestic, agricultural, and industrial pollution in lakes accelerates the growth of Chlorophyceae and Cyanophyceae [36]. because this specie is generally, considered to be dominant and tolerant genera of polluted ponds [38]….. because this species is generally, considered to be dominant and tolerant genera of polluted ponds [38]. There is great seasonal influence on abundance of the green algae in Dangana Lake as plankton population increases during the dry season and decreases during wet season…. There is a great seasonal influence on the abundance of the green algae in Dangana Lake as the plankton population increases during the dry season and decreases during the wet season.	
Minor REVISION comments		
Optional/General comments		

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. 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 details)*	

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