

Lakes	Location	Location	Elevation	Length	Width	Dept
Ojii	N6°42'10.7 ¹¹ E7°32'52.9 ¹¹	Ozioko	191m	1km	250m	7.5m
Varavara	N6°45'33.4 ¹¹ E7°29'05.4 ¹¹	Umueze-aguiyi	263m	500m	90m	3m
Ogeleube	N6°45'16.12 ¹¹ E7°29'26.9 ¹¹	Amaogbodo	246m	300m	30m	4m
Iyiuga	N6°44'54.4 ¹¹ E7°29'36.1 ¹¹	Ogbozara	237m	200m	150m	6m
Okpo	N6°44'35.5 ¹¹ E7°29'49.9 ¹¹	Amuda	221m	250m	100m	6m
Iyi-ipka	N6°45'44.5 ¹¹ E7°29'08.8 ¹¹	Amukpa	263m	100m	30.7m	5.4m
Isiogba	N6°44'13.3 ¹¹ E7°29'25.2 ¹¹	Umuille	249m	400.5m	150m	3m
Adekwegbe	N6°43'45.4 ¹¹ E7°29'20.1 ¹¹	Ekwegbe	248m	900m	400m	9m
Orufu	N6°44'05.6 ¹¹ E7°28'54.3 ¹¹	Umuille	249m	700m	150m	7m



Figure 1: Ojii lake N6°42'10.7¹¹ E7°32'52.9¹¹



Figure 4: Varavara lake N6°45'33.4¹¹ E7°29'05.4¹¹
 (note that the water hyacinth on the lake surface).



Figure 2: Orufu lake N6°44'05.6¹¹ E7°28'54.3¹¹



Figure 5: Iyiuga lake N6°44'54.4¹¹ E7°29'36.1¹¹



Figure 3: Okpo lake N6°44'35.5¹¹ E7°29'49.9¹¹
 (note that the lake surface is overgrown with plants).



Figure 6: Ogeleube lake N6°45'16.12¹¹ E7°29'26.9¹¹



Figure 7: Iyiikpa lake N⁶45¹44.5¹¹ E⁷29¹08.8¹¹



Figure 8: Adekwegbe lake N⁶43¹45.4¹¹ E⁷29¹20.1¹¹



Figure 9: Isiogbalake N⁶44¹13.3¹¹ E⁷29¹25.2¹¹

4. Genesis and Classification of Lakes

The origin of lakes Adekwegbe, Orufu and Isiogba is connected with santonian tectonism that gave rise to undulating plains and uplifts. The santonian tectonism was discussed by Popoff (1988), Fairhead and Leach (1996), Obi et al; (2001), and Obi and Okogbue (2004). Lakes Ojii, Varavara, Ogeleube, Iyiuga, Okpo and Iyi-ikpa are oxbow lakes which were formed due to fluvial processes involving meandering of the Uhere River. Table 2 is an attempt to classify the lakes on the basis of their mode of origin.

Table 2: A classification of Opiagu lakes on the basis of mode of formation

S/N	Lake	Geological Formation	Origin	Types
1	Varavara	Ajali	fluvial	Oxbow
2	Iyikpa			
3	Ogeleube			
4	Iyiuga	Mamu	Tectonic	Tectonic
5	Okpo			
6	Orufu			
7	Isiogba			
8	Adekwegbe	Nkporo	Fluvial	Oxbow
9	Ojii			

The lakes may also be classified on the basis of their trophic characteristics. Table 3 shows the trophic classes of the lakes on the basis of their observed biodiversity

Table 3: Trophic classification of the lakes

S/N	Lakes	Trophic State	Nutrient Characteristics
1	Iyi-ikpa	MESOTROPHIC	Increased production, Accumulated organic matter, Occasional algal bloom and Good fishery.
2	Varavara		
3	Ogeleube		
4	Iyiuga		
5	Isiogba		
6	Ojii		
7	Orufu		
8	Adekwegbe		
9	Okpo	EUTROPHIC	Very productive, may

Table 3 indicates that except for Okpo Lake, which is trending towards eutrophication, all the other lakes are mesotrophic.

5. Lake Water Chemistry

Table 4. shows selected physico- chemical and nutrient characteristics of the lake waters. The pH varies from 5.1 to 6.6 which represent a slightly acidic geochemical environment. The temperature range (at noon) goes from 26⁰C to 31⁰C while electrical conductivity goes from 12μS/cm to 33μS/cm. The value of total dissolved solids shows very low solute concentrations.

Values of NO₃ and PO₄ reflect the nutrient characteristics of the lakes. The nitrate levels range from 3.88mg/l to 80.17mg/l while the phosphate levels go from 0.015mg/l to 90.00mg/l. High levels of NO₃ and PO₄ suggest a system with moderately high nutrient loading. Some of the lakes have black bottoms thereby indicating dead organic matter. These lakes display stratification of their water layers which may be due to temperature or density differences. The black bottom suggests possible anoxic geochemical conditions.

Table 4: Selected physico- chemical parameters for the lakes

LAKES	pH	TEMP °C	EC μs/cm	TDS Mg/l	PO ₄ ²⁻ Mg/l	HCO ₃ ⁻ Mg/l	NO ₃ ⁻ Mg/l
Ojii	5.6	26 ⁰ c	19	1.9	0.020	15.25	25.43
Orufu	6.4	29 ⁰ c	33	3.3	0.282	15.25	36.64
Ade-ekwegbe	6.6	29 ⁰ c	29	2.9	90.00	41.41	12.07
Isiogba	5.8	25 ⁰ c	29	2.9	0.015	91.50	23.71
Okpo	6.0	29 ⁰ c	30	3.0	0.042	30.50	4.74
Iyiuga	6.0	29 ⁰ c	12	1.2	0.020	15.25	23.47
Iyi-Ipka	6.2	28 ⁰ c	12	1.2	0.028	30.50	80.17
Ogeleube	6.5	31 ⁰ c	13	1.3	0.037	15.25	3.88
Varavara	5.1	30 ⁰ c	16	1.6	0.026	30.50	23.71

All the lakes listed in this inventory are full of biodiversity in terms of plants and animals. All of them have animals like fishes, crocodiles, pythons and amphibians. Fourteen species of plants (Table 5) were easily identifiable in the lakes but the diversity is far greater.

Table 5: Plants diversity in the lakes of the area

Family	Species
Commelinaceae	Commelinadiffusa
Cabombaceae	Braseniaschreberi
Azollaceae	Azollafiliculoides
Apiaceae	Centellaasiatica
Nymphaeales	Nymphaea alba

Typhaceae	Typhalatifolia
Araceae	Lemna minor
Verbenaceae	Lantana camara
Poaceae	Paspalumdimidiatum
Dioscoreales	Dioscoreabulbifera
Polypodiaceae	Fern
Cyperaceae	Rhynchospora alba
Chlorophyceae	Green algae
Poaceae	Chrysopogonzanioides

At least 50 types of invertebrates were sampled. About 16 of them were identified to species level. See Table 6.

Table 6: Animal diversity in the lakes

<i>Insects</i>	<i>Animals</i>
Species	Species
Arctocoriixinterrupta	Buttikoferi cichlid
Damselfly	Kribensis cichlid
Ranatrafusca	Cobra
Aeshnabrevistyla	Crocodile
Nepa species	Peacock cichlid
Helobatalarvalis	Python
Coccinell species	Perch
Water penny	Percafluviatillis
Argyronta aquatic	Cat fish
Water strider	Moorei cichlid
Lethocerusamericannus	Cobalt zebra cichlid
Leech	Borleyi cichlid
Water mite	Venustus cichlid
Antipodochlorabraueri	
Orectochilusorbisonorum	
Acroneuriacycorias	

6. Conclusion

This inventory demonstrates the need for all the lakes and rivers in Opiagu to be studied in greater detail particularly in the area of biodiversity. This would help in formulating policies that would protect the plants and animal species in these lakes and develop these lakes for tourism purposes.

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