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Species diversity, abundance and distribution of fish community of Peretorugbene River, Ekeremor L.G.A, Bayelsa state, Nigeria

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Abstract
A study on diversity and distribution of fish communities were carried out in Peretorugbene river, Ekeremor Local Government Area, Bayelsa State, Nigeria for a period of eight (8) months. Fish samples were obtained at three stations once in a month from November 2017 to June 2018 with the aid of local fishers using gill nets, cast nets, hook and line and local traps for ecological studies of important fish species of Peretorugbene river. The sampling results showed a total composition of 16,575 individuals belonging to 14 orders, 22 families, 29 genera and 32 species. Cichlidae showed the highest diversity with four (4) species, second to the Mormyridae which had three species. The remaining 20 families contained a species or two. Fish diversity was observed to be higher in the month of November 2017 with 29 fish species and lowest in June 2018 with only 12 fish species. Ecological indices indicated a polydiverse community because no single species exhibited true dominance (≥ 50%). The Berger – Parker's dominance (d) ranged from 0.00012 to 0.211 depicting dominance of a few species. Simpson's diversity index ranged from 0.95 to 0.99. The study highlighted seven (7) rare fish species of conservation significance. In terms of Families, Clupeidae, (21.1%) was the most abundant in the river followed by Palaemonidae (16.83%), Physalidae (10.9%), Cichlidae (9.39%), Ampullariidae (7.8%), Mormyridae (6.58%), Mochokidae (5.16%), Schilbeidae (5.2%), Claroteidae (4.91%), Alestidae (4.61%). The least abundant families were the Chanidae (0.01%) and Tetraodontidae (0.01%). It is recommended that Peretorugbene river should be properly managed and protected via fisheries and policies to enhance sustainability of the natural fishery.

Keywords: ecological indices, fish diversity, fish species, local fishers, peretorugbene river

Introduction
Fisheries are an important part of most societies and make significant contributions to economic and social health and well – being in many countries and areas [6]. Approximately 12.5 million people have been estimated to be employed in fishery – related activities [6]. Fish consumption is about 80% protein diet and provides job up to 50% of the populations' resident in the Niger Delta [5]. Despite this great importance and value, the world's fish resources are suffering from the effects of heavy exploitation and, in cases, environmental degradation [6]. Activities which may have contributed to degrading environmental quality and production of fish is over fishing and oil exploration by various companies [5].

Most aquatic systems have witnessed various changes in terms of natural diversity. These changes affect stock diversity and abundance caused by natural changes in habitat, food composition and uncontrolled exploitation. Due to this, the fish resources have been altered [10].

Over the last century, habitat loss and degradation have occurred due to the intense human interventions. The consequence of this is that, many fish species have been highly endangered [12].

Changes in fish diversity occur in the course of development of a lake after impoundment of rivers caused by changes in the physical environment. These changes in turn affect water quality and consequently the type and population of food organisms that evolve. Biomass, number and species composition usually increase due to increase in nutrient and food organisms from decayed materials. Human activities such as pollution, habitat degradation, introduced species and overfishing causes most changes in natural ecosystems. A major tool responsible for the alterations in the diversities of resources in a community is exploitation

(Fishing) fish. This alters food webs; modify trophic structures and species interactions [10].

The conservation of biodiversity and management of aquatic environment in particular has become a major concern in recent years. It was noticed more than a decade ago that anthropogenic activities could lead to the periodic or permanent elimination of freshwater – dependent fish species from individual freshwater systems [1].

Fish diversity and associated habitats management is a great challenge today. Furthermore the ability to evaluate the effects of habitat change which causes impact on the fish population often requires extensive surveying of the fish population before and after the change has occurred which is very tedious [4].

The people of Peretorugbene community are faced with the problem of overfishing in Peretorugbene River. The fishers employ various traditional means of fishing which do not take into account the size of fish and the season of reproduction. There is therefore need to know the composition, diversity and abundance of the fishes in the river. This article therefore, will serve as baseline study to generate data for scientists and also a guide to the fishers who operate in the river for sustainable livelihood.

Materials and Methods

Study area

The Study Area was Peretorugbene River, located at Peretorugbene Community in Ekeremor Local Government Area of Bayelsa State, Niger Delta, Nigeria. Peretorugbene River lies approximately at latitude 4º57'N and longitude 5º39'E. The length of the river is about 3km which flows from Ojobo Community in Burutu Local Government Area of Delta State and empties at the sea in Amatu in Ekeremor Local Government Area, Bayelsa, Niger Delta [13].

Study design and sampling stations location

The study was designed to have three sampling stations in the Peretorugbene River. The three sample stations were established (S1 – Tamo-ama, S2 – Oturu-ama and S3 – Tubu-ama) along the main course of the river. The experiment lasted from November 2017 to June 2018 (8 months).

Fish samples collection, treatment and preservation

The sample stations were sampled once in every month using a wide range of fishing gears such as gillnet, hook and line, traps and nets of different mesh sizes. The fish samples were collected from the local fishers as they landed their catch. A plastic bucket with a tight fitting lid, and containing 10% formalin was taken to the field for preservation of samples of fish, after which they were taken to the laboratory for identification to the species level.

Determination of physico-chemical parameters

The physicochemical parameters such as temperature was measured in-situ with the sample in the multi-meter water checker, (Ultra Meter II 6PFC). The water transparency was measured in-situ with the Secchi disc (SD, diameter 30-cm) method. The water depth measurement was taken with a long rope attached to a weight at the end and dipped inside the water to the bottom and then measuring the water mark on the rope to the weight at the end. The flow rate reading was taken with a floater which is allowed to flow and using a stopwatch to take the distance and time of flow. The Dissolved Oxygen was measured in-situ with the JPB 607A Dissolved Oxygen Analyzer. The pH was determined in-situ with a multi-mater (Ultra meter II (6PFC). The conductivity measured in-situ with the sample in the multi-meter water checker, (Ultra Meter II 6PFC). Total Dissolved Solid was measured in-situ with the sample in the multi-meter water checker, (Ultra Meter II 6PFC).

Fish identification

Fish Identification were carried out with the aid of Boulenger [3], Wikipedia and according to descriptions contained in Idodo – Umeh [8].

Species dominance

This was calculated usingthe Berger- Parker dominance index given by:

$$d = N_{max}/N_T$$

Where N_T is the proportion of total catch due to the dominant species and N_{max} is maximum number of catch.

Species similarity

This was calculated using the Bellinger's coefficient given as:

$$\text{Bellinger's coefficient} = \frac{(p - q)^2}{P+q}$$

Where,

P = number of occasions on which the species occur in greater number in station 1 than in station 2

Q = number of occasions when the reverse is the case.

Data analysis

Analysis of Variance (ANOVA) was used to test for significant difference of fish caught and the physical – chemical parameters in the different stations. All analysis was carried out using Excel.

Results

Physico - chemistry

The result of the physico-chemical parameters of Peretorugbene River from November 2017 to June 2018 is presented in Table 1and 2. The temperature values recorded during the sampling period ranged between 25ºC and 27ºC throughout the study period sampled. Maximum temperature was 27ºC in the dry season in November from station 1 while the minimum temperature was 25ºC in the wet or rainy season in the June samples from station 1. The mean values per station ranged from 26.38ºC ± 0.018 to 26.67ºC ± 0.017. The highest temperature mean value recorded in the dry season was in station 3 (26.66 ± 0.018) while the wet season recorded 26.67 ± 0.017. There was no significant difference between the dry season and the wet or rainy season in station 3. There was a significant difference between the mean values per station in all the stations in the wet season, that is, station 1 (26.19 ± 0.017), station 3 (26.41 ± 0.017) and station 3 (26.67 ± 0.017). Also, there was a significant difference between all the stations at $\{p < 0.05\}$ in the dry season, that is, station 1 (26.38 ± 0.018), station 2 (26.52 ± 0.018) and station 3 (26.66 ± 0.018).

The Secchi disc measurements for transparency values ranged between 25.5cm and 32cm. There was no significant difference ($p < 0.05$) in transparency in the dry season months. The maximum transparency was recorded in station 1

in January 2018 while the minimum was recorded in station 3 in March 2018. The highest transparency mean value was recorded in station 1 (29.41 ± 0.020). This was followed by station 2 (27.37 ± 0.020^{b}), the least was recorded in station 3 (26.89 ± 0.020). Transparency was found to be higher in the dry months than the wet months.

The water depth measurement was observed to be higher in the wet months than the dry months. Maximum depth recorded was (10.99m) in station 2 in June 2018 and the minimum depth was (5.30) in station 1 in December 2017. Mean depth values per station ranged 5.86m ± 0.008 to 12.39 ± 0.008. There was a significance difference between station 1 (5.86 ± 0.008), station 2 (8.48 ± 0.008) and station 3 (12.39 ± 0.008).

The flow rate values ranged between 0.1m/s in stations 1 and 2 in February 2018 and in station 1 in March 2018 to 0.25m/s in stations 1, 2 and 3 in April 2018 sampling. Similarly, mean values ranged from 0.35m/s ± 0.012 to 0.16m/s ± 0.07. Flow rate was higher in the dry season months than the wet season. There was no significant difference between station 1 and 2 but there was a significant difference between station 3 with 1 and 2 in the dry season. There was also a significant difference between the three stations in the wet or rainy season.

The DO values ranged between 1.2mg/l in stations 2 and 3 in December 2017 and stations 3 in both May and June 2018 to 7.6mg/l in station 1 in April 2018 sampling. Mean value ranged from 1.86mg/l ± 0.020 to 3.13mg/l ± 0.018). There was a significant difference between station 1 (1.95 ± 0.020) and station 2 (1.86 ± 0.020) in the dry season months. There was also a significant difference ($p < 0.05$) between station 1 (3.13 ± 0.018), station 2 (2.65 ± 0.018) and station 3 (2.65 ± 0.018) in the wet or rainy season.

The BOD values varied between 0.6mg/l in station 2 in November 2017 and 2.4mg/l in station 2 and 3 in April 2018 sampling. Mean values ranged between 1.24mg/l ± 0.018 to 2.06 ± 0.017 There was a significant difference between station 1 (1.51 ± 0.018^{c}), station 2 (1.24 ± 0.018^{a}) and station 3 (1.36 ± 0.018^{b}).

The p^{H} values were not too high and ranged from 7.81 in station 3 in December 2017 and 9.25 in station 2 in November 2017. Mean value ranged from 8.11 ± 0.002 to 8.65 ± 0.002.

Conductivity values ranged from 59.6µs in station 2 in November 2017 to 100.7µs in station 3 in December 2017. The mean values ranged from 64.20µs ± 0.019 to 75µs ± 0.018. The conductivity was higher in the dry season months than the wet or rainy season.

Total Dissolved Solids (TDS) values ranged from 29.1ppm in station 3 in November 2017 to 50.4ppm in December 2017. Mean values varied between 31.50ppm ± 0.017 and 37.59ppm ± 0.019. Salinity values ranged between 0.02ppt in station 3 of February 2018 and 0.03ppm in most stations in both the dry and wet season months. Station 3 of December 2017 recorded 0.05ppt. The mean value varies between 0.030 ± 0.001 and 0.037 ± 0.002.

Table 1: Physico – chemical parameters for the dry season months

	Station 1	Station 2	Station 3
Temperature (ºC)	26.38 ± 0.018^{a}	26.52 ± 0.018^{b}	26.66 ± 0.018^{c}
Transparency (cm)	29.41 ± 0.020^{c}	27.37 ± 0.020^{b}	26.89 ± 0.020^{a}
Water depth (m)	5.86 ± 0.008^{a}	8.48 ± 0.008^{b}	12.39 ± 0.008^{c}
Flow rate(m/s)	0.16 ± 0.007^{b}	0.14 ± 0.007^{b}	0.10 ± 0.007^{a}
Dissolved Oxygen (DO) (mg/L)	1.95 ± 0.020^{b}	1.86 ± 0.020^{a}	1.88 ± 0.020^{a}
BOD (mg/L)	1.51 ± 0.018^{c}	1.24 ± 0.018^{a}	1.36 ± 0.018^{b}
pH	8.56 ± 0.002^{b}	8.65 ± 0.002^{c}	8.23 ± 0.002^{a}
Electrical Conductivity (µs)	74.97 ± 0.018^{b}	67.25 ± 0.018^{a}	75.85 ± 0.018^{c}
Total Dissolved Solid (ppm)	37.48 ± 0.019^{b}	33.50 ± 0.019^{a}	37.59 ± 0.019^{c}
Salinity (ppt)	0.037 ± 0.002^{a}	0.035 ± 0.002^{a}	0.036 ± 0.002^{a}

At $p<0.05$

* Values with same superscript means there is no significant difference while the values with different superscript means there is a significant difference

Table 2: Physico - chemical parameters for the wet or rainy season months.

	Station 1	Station 2	Station 3
Temperature (ºC)	26.19 ± 0.017^{a}	26.41 ± 0.017^{b}	26.67 ± 0.017^{c}
Transparency (cm)	28.12 ± 0.018^{c}	27.18 ± 0.018^{b}	26.99 ± 0.018^{a}
Water depth (m)	6.28 ± 0.005^{a}	10.14 ± 0.005^{c}	6.59 ± 0.005^{b}
Flow rate(m/s)	0.355 ± 0.012^{a}	0.358 ± 0.012^{a}	0.351 ± 0.012^{a}
Dissolved Oxygen (DO) (mg/L)	3.13 ± 0.018^{c}	2.65 ± 0.018^{b}	2.58 ± 0.018^{a}
BOD (mg/L)	1.70 ± 0.017^{a}	1.99 ± 0.017^{b}	2.06 ± 0.017^{c}
pH	8.42 ± 0.002^{c}	8.19 ± 0.002^{b}	8.11 ± 0.002^{a}
Electrical Conductivity (µs)	67.36 ± 0.019^{c}	64.20 ± 0.019^{a}	64.92 ± 0.019^{b}
Total Dissolved Solid (ppm)	32.06 ± 0.017^{b}	31.50 ± 0.017^{a}	33.08 ± 0.017^{c}
Salinity (ppt)	0.035 ± 0.001^{b}	0.032 ± 0.001^{a}	0.030 ± 0.001^{a}

At $p<0.05$ * Values with same superscript means there is no significant difference while the values with different superscript means there is a significant difference

Species diversity

Figure 1 provides a broad overview of the ecological indices and ichthyofaunal composition of the Peretorugbene River in Ekeremor Local Government Area of Bayelsa State, Niger Delta, Nigeria. Diversity indices calculated indicated a polydiverse ecosystem comprising of 32 both fin and shell fish species, 29 genera, 22 families and 14 orders of freshwater species. The different genera contained one to two species. The Berger – Parker's dominance (d) ranged from 0.00012 to 0.211. Simpson's index of diversity ranged from 0.95 to 0.99. The Similarity coefficient ranged from 1641.1 to 16560 (Table 3).

In terms of orders, Siluriformes comprised of four families (Claroteidae, Clariidae, Mochokiidae, Schilbeidae and Malapteruridae), followed by the Characiformes (Alestidae, Citharinidae and Hepsetidae), Perciformes (Cichlidae, Gobidae and Haemulidae) and Osteoglossiformes (Gymnarchidae, Arapaimidae and Mormyridae) with three families each. The least occurring orders were the Decapoda (Palaemonidae), Siphonophorae (Physalidae), Gonorynchiformes (Chanidae), Cypriniformes (Cyprinidae), Mugiliformes (Mugilidae), Tetraodontiformes (Tetraodontidae), Architaenioglossa (Ampullariidae) and Clupeiformes (Clupeidae) with one family each.

Cichlidae (9.39%) was the most diverse family contributing four species, *Tilapia zill>Sarotherodon galilaeus>Pelmatolapia mariae>Thysia ansorgi* in a descending order. The second most diverse family was the Mormyridae (6.58%) with three species, *Mormyrus rume>Mormyrus tapirus>Petrocephalus sp* in a descending order. In terms of Families, Clupeidae, 21.1% was the most abundant in the river followed by Palaemonidae (16.83%), Physalidae (10.9%), Cichlidae (9.39%), Ampullariidae (7.8%), Mormyridae (6.58%), Mochokidae (5.16%), Schilbeidae (5.2%), Claroteidae (4.91%), Alestidae (4.61%). The least abundant families were the Chanidae (0.01%) and Tetraodontidae (0.01%).

The most abundant species was the *Pellonula* spp., (21.1%) followed by *Macrobrachium volenhovenii* (13.5%), *Physaila pellucida* (10.9%), *Pila ovata* (7.8%), *Schilbe intermedius* (5.2%), *Mormyrus rume* (5.1%), *Clarotes laticeps* (3.7%), *Tilapia zilli* (3.4%), *Synodontis nigritta* (3.4%), *Macrobrachium felicinum* (3.3%), *Sarotherodon galilaeus* (3.2%), *Brycinus nurse* (2.8%) and *Pelmatolapia mariae* (2.7%). The least abundant species were *Brycinus macrolepidotus*, *Synodontis budgetti*, *Pomadasys jubelini*, *Citharinus citharus*, *Mormyrus tapirus* and *chrysichthys nigrodigitatus* (1.8 – 1.2%) and *Heterobranchus bidorsalis*, *Gymnarchus niloticus*, *Heterotis niloticus*, *Clarias anguillaris*, *Malapterus electricus*, *Hepsetus odoe*, *Petrocephalus* sp, *Thysia ansorgi*, *Periophthalmus babarus*, *Labeo senegalensis*, *Mugil cuerma*, *Tetradon lineatus* and *Chanos chanos* (0.9 – 0.01).

Species of conservation importance in Peretorugbene River include two polyspecific fish families namely: the Family Cichlidae – *Thysia ansorgi*; Mormyridae – *Petrocephalus sp*, and five monospecific fish families namely: Hepsetidae – *Hepsetus odoe*; Malapteruridae – *Malapterus electricus*; Mugilidae – *Mugil curema*; Chanidae – *Chanos chanos* and Tetraodontidae – *Tetradon lineatus*.

Species of ecological significance is *Chanos chanos* (Chanidae) and *Mugil curema* (Mugilidae), euryhaline fish species that occurred in the river from other adjacent African rivers.

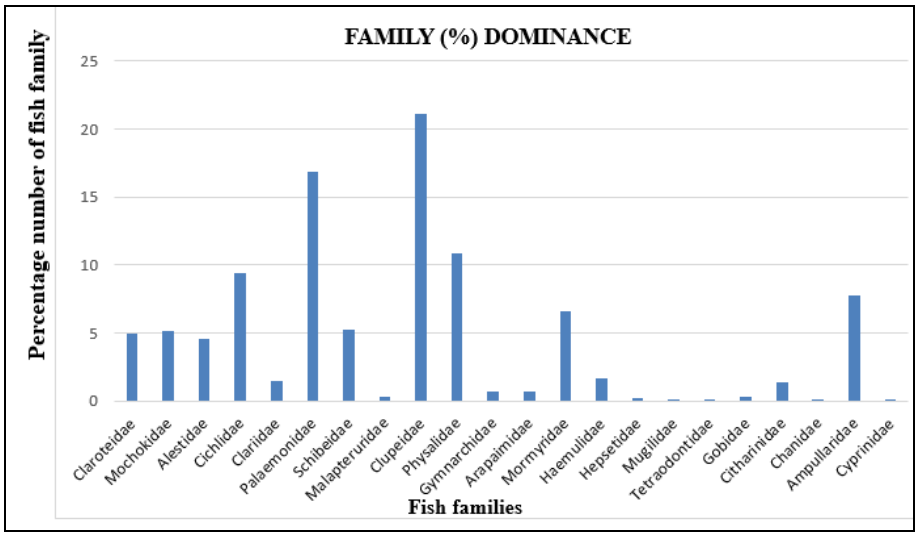

Fig 1: A column graph showing the percentage dominance of the different fish families in Peretorugbene river.

Table 3: A Table showing Berger-Parker dominance index, Simpson's diversity index and Bellinger similarity coefficient.

Family	Family abundance	Family (%) Dominance	Berger parker dominance index	Simpsons index	Bellinger coefficient
Claroteidae	814	4.91	0.046	0.98	16123.3
Mochokidae	855	5.16	0.052	0.99	15764.1
Alestidae	765	4.61	0.056	0.99	15698.1
Cichlidae	1576	9.39	0.094	0.99	15165.1
Clariidae	247	1.49	0.015	0.99	14254.6
Palaemonidae	2790	16.83	0.168	0.97	15759.6
Schibeidae	860	5.2	0.052	0.99	16527.1
Malapteruridae	48	0.3	0.003	0.99	13814.1
Clupeidae	3500	21.1	0.211	0.95	14970.5
Physalidae	1800	10.9	0.109	0.99	16454.9

Gymnarchidae	121	0.7	0.007	0.99	16457.8
Arapaimidae	118	0.7	0.007	0.99	15546.3
Mormyridae	1102	6.58	0.066	0.99	16290.1
Haemulidae	290	1.7	0.017	0.99	16539.1
Hepsetidae	36	0.2	0.002	0.99	16560
Mugilidae	5	0.03	0.0003	0.99	1641.1
Tetraodontidae	2	0.01	0.00012	0.99	16560
Gobidae	5	0.3	0.0003	0.99	16339.4
Citharinidae	239	1.4	0.014	0.99	1641.1
Chanidae	2	0.01	0.003	0.99	13053.2
Ampullaridae	1300	7.8	0.078	0.99	16560
Cyprinidae	5	0.03	0.0003	0.99	16560
Total	16575				

Discussion

Several factors determine the quality of water in natural aquatic system which is either chemical, physical or biological. These variables give indication of water pollution [11]. The difference in temperature throughout the study period sampled was between 25^{O}C and 27^{O}C. This was within the temperature range of most freshwater bodies [5]. The mean temperature range of 26.19^{O}C ± 0.017 to 26.66 ± 0.018 was similar to the reported by Edoghotu [5] in Kugbo Creek. The minimum temperature was recorded in June 2018 during the wet season.

The Secchi disc transparency varied between 25.5cm in station 3 to 32cm in station 1. The difference in range was slight. The mean transparency per station ranged from 26.89cm ± 0.020 to 29.41 ± 0.0020. Transparency was higher in the dry season month than the wet months. In the dry months, there is a great or high amount of penetration of sunlight into the river which causes increase in transparency but in the wet months, great sunlight penetration is reduced as a result of high level of suspended matter from land erosion. Low transparency affects primary production in the wet or rainy season months.

Water depth values were observed to be higher in the wet months than the dry months. The mean depth range per station was 5.86m ± 0.008 to 12.39m ± 0.008. The water depths recorded was high in the river due to the absence of excessive silt and debris condition as a result of dredging activities carried out in the river during the period of sampling. The water depth values recorded in this study were higher than that recorded by Edoghotu [5].

Flow rate values ranged from 0.01m/s in stations 1 and 2 of February 2018 sampling and station 1 of March 2018 sampling to 0.25m/s in stations a, 2 and 3 in April 2018. The mean values per station ranged between 0.35m/s ± 0.012 and 0.16m/s ± 0.007. flow rate measurement in this study agreed with the one reported by Ikhuoriah and Oronsaye [9] which had a significant faster current in the wet or rainy season (0.25m/s) than in the dry season (0.01m/s).

Dissolved Oxygen (DO) is important to aquatic life, as it is required for the optimum survival of these organisms. DO values in the study ranged from 1.2mg/l in stations 2 and 3 during the dry season to 7.6mg/l in station 1 during the rainy season. Mean values per station ranged from 1.86mg/l ± 0.020 to 3.13mg/l ± 0.018. The values agreed with ones reported by Ikhuoriah and Oronsaye [9] which was higher in the wet or rainy season than the dry season. There was rather a low values of DO measured in stations 2 and 3 in the dry season. Coastal waters require a minimum of 4.0 mg/l and 5.0mg/l of oxygen to provide optimum functioning of the ecosystem [1]. Concentrations lower than 5mg/l may affect the functioning and survival of biological communities adversely, and death of most fishes when below 2mg/l [9].

Biochemical Oxygen Demand (BOD_5) values ranged from 0.6mg/l in station 2 in the dry season to 2.4mg/l in station 2 and 3 in the wet or rainy season. Mean values per stations ranged between 1.24mg/l ± 0.018 to 2.06mg/l ± 0.017. Peretorugbene River could be considered not to be organically polluted because the DO values fell below 6mg/l which is a water of medium to good quality and unpolluted in river classification [9].

The p^{H} values were more than 7 in all the stations in both the dry and the wet seasons during the study period. The maximum p^{H} recorded was 9.25 while the minimum was 7.81. The mean values per station ranged from 8.11 ± 0.002 to 8.65 ± 0.002. The p^{H} was slightly above neutral in station 3 and alkaline in station. These values fall within the accepted range of 6.0 – 8.5 indicative of good water quality [11].

Electrical Conductivity ranged from 59.6 µs in station 2 to 100.7µs in station 3. The mean values per station ranged from 64.20µs ± 0.019 to 75.8µs ± 0.018. The values of conductivity are in the range of WHO maximum limit of 100µs.

Total Dissolved Solids (TDS) values ranged from 29.1ppm to 50.4ppm. The highest was recorded in December 2017 (5o.4ppm). TDS is indicative of materials carried in solid and significantly a high total dissolved solid (TDS) is a pointer of a high level of pollution in a river [11]. The values recorded in Peretorugbene River fell within the WHO standard limit for good water quality which is 1,000pmm or mg/l.

Salinity values that ranged between 0.02ppt to 0.03ppm in the dry and wet seasons is indicative of the fact that the river is more or less a freshwater body. The mean values per stations ranged from 0.030 ± 0.001 to 0.037 ± 0.002.

The fish Families recorded in the study were Alestidae, Citharinidae, Hepsetidae, Cichlidae, Gobidae, Claroteidae, Clariidae, Mochokidae, Schilbeidae, Malapteruridae, Palaemonidae, Physalidae, Gymnarchidae. Arapaimidae, Mormyridae, Chanidae, Cyprinidae, Mugilidae, Tetraodontidae, Ampullariidae, Clupeidae and Haemulidae. Ten (10) families constituted over 81% of catches in number; the order of descending dominance being Clupeidae, Palmonidae, Physalidae, Cichlidae, Ampullariidae, Mormyridae, Mochokidae, Schilbeidae, Claroteidae and Alestidae.

Edoghotu [5] reported fish families such as Chanidae, Clariidae, Gymnarchidae, Nandidae, Notopteridae, Osteoglossidae, Polypteridae, Malapteruridae and Phractolemidae in freahwater which is similar to the families recorded in this study except Nandidae, Notopteridae, Polypteridae and Phractolemidae.

The most dominant fish family was the Clupeidae which is in constrast with the results of Ibim and Owhonda [7]. The dominant fish family in their study was the Cichlidae.

Although, Cichlidae are commonly found in the Niger Delta area, it was not a dominant fish family in Peretorugbene River, rather it was the Clupeidae.

Fish diversity in this study showed Cichlidae as the most diverse with four species belonging to 4 genera. This agreed with the diversity reported by Adaka *et al.* [2] and Ibim and Owhonda [7]. A similar report of high Cichlid diversity was reported in the New Calabar River.

Conclusion

The study highlighted two polyspecific fish families and five monospecific fish families of conservation importance and also two sp ecies of ecological significance in Peretorugbene River. The two species are *Chanos chanos* (Chanidae) and *Mugiil curema* (Mugilidae) which are euryhaline. It can therefore be concluded that, Peretorugbene River is a viable and important water body in Ekeremor Local Government Area of Bayelsa State, Niger Delta, Nigeria and can sustain a good fishery if adequate attention is paid to it. The river contributes significantly to the commercial fishery of the community indigenes. Diversity was high in few species/families which may be due to lack of good managerial practices employed in the management of Peretorugbene fisheries. Therefore, it is recommended that, Peretorugbene River should be properly managed and protected via fisheries management strategies and policies to enhance sustainability of the natural fishery.

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