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Livelihood and Resource Interaction of Households in Itu Wetland, Nigeria

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Abstract: The study empirically assessed the interactions between the Itu wetland resource of Akwa Ibom State and the livelihoods of the communities within it. A two-stage sampling method involving purposive sampling of 30% (6 communities) based on proximity to the resource and random selection of 30 households from the selected communities was utilized. In addition, 118 respondents were sampled using a semi-structured questionnaire. The outcome of the samples' demographic characteristics and interaction with the wetland in terms of Level, frequency, time, and quantity of products utilized were presented using non-inferential statistics such as percentages, frequency, tables, and bar charts. Determinants influencing the utilization of the wetland by respondents were estimated with the aid of regression and ordinary least squares. Utilization of the Itu wetland was significantly ($p<0.01$) influenced by age (-0.0000508), educational status (-0.0000103), size of household population (-0.0002766), and distance from the wetland (-0.0001915). The study provides a critical stance for the conservation of the Itu wetland and a long-term plan for the inclusion of its local communities in its management as a critical strategy for ensuring its survival, sustainability, and integrity.

Keywords: Resource Interactions, Livelihood, Itu Wetland, Utilization, Nigeria

Introduction

Owing to their location between two climate variability soaked and typically dry-wetlands exhibit features of both (Abraham, 2004). They host numerous different species (both on land and in the water), provide a wide range of environmental goods and services, and serve as a sort of "biological incubator," all of which contribute to keeping the economy and society afloat. Wetlands are particularly important financial assets because they attract and execute a wide range of ecological services that in turn provide a wide range of biological resources (Gren *et al.*, 1994). Even though wetlands hold a unique place due to their environmental and economic functions and services they render to global societies at large and harbor a remarkable obligation to supply economic opportunities at low levels of productivity and specific skills to the marginalized segments of the people regularly, as they are vigorously harnessed by different users (Abraham, 2004).

Their exploitation has been so extensive that many areas have been lost (Ekong and Akpan, 2014. Wetlands are in danger due to human activity such as industrial agriculture and urbanization. Major dangers include seepage, removing, stuffing, and remediation for high-value crops; roadworks; dam or deluge formation for storing water; flood mitigation; drainage systems and hydropower initiatives; development of waterways and ditches; contamination (particularly from agrochemical waste); grazing of livestock; overharvesting of fishes; and transformation to agro lagoons. In a related manner, numerous inland dams beyond Nigeria's famed Hadejia-Nguru wetlands pose a serious hazard to that same wetland water bodies' stability, leading to the drying up or flooding of vast swaths of agricultural and pasturelands, in addition to significant fish farms, along the water strip networks now dominated by obtrusive typha vegetation (Ekong and Akpan, 2014). Idris (2008) stated that these most important wetlands have shrunk by as much as two-thirds of their size in the last three to four decades due to obstruction from hydro-power construction, drainage networks, and drought.

While wetland environments are highly regarded for their economic significance and complexity in certain countries around the world, this is not the case elsewhere. The aesthetic, secondary, and non-use benefits of marshland are far more highly appreciated in industrialized nations, but in poor nations like Nigeria, the worth of swamps is linked to the supply of means of subsistence, and even the importance of all these

ecosystems is sometimes downplayed or even ignored (Abraham, 2004; Eniang *et al*., 2008; Chukwu *et al*., 2009; Ogban *et al*., 2011). Traditional subsistence exercises such as catching fish, agricultural production, and small-scale commercial pursuits (conditioning of wood, transportation, leisure facilities, etc.) have provided residents of modest neighborhoods, primarily fish farmers as well as other rural societies, with a sustainable income along the coasts of floodplains since ancient times. These wetland communities rely heavily on the hydrology, ecology, plants, and wildlife that are intrinsic to this ecosystem (Abraham, 2004). Because they offer a wider variety of economic opportunities to remote as well as underprivileged members of society, such ecosystems support a far generally higher density than other ecosystems including forests and waterways.

While this was true in the past, things have shifted as capitalism as well as the growth of economies make their way further into ecological environments. For example, several large enterprises have set up shops in coastal marshes, which were long seen as useless waste grounds, to cut operational expenses by making use of cheaper land (Abraham, 2004). In addition, businesses in the logistics and tourist sectors, as well as those operating fishery docking quays and harbors, are making rapid money off of the wetland ecosystem (Ekong and Akpan, 2014).

This diversity of natural assets and ecosystem processes is the starting capital for the people who have made their homes throughout the Itu wetland. Countless irrigation systems are vital to the economies of such remote regions which have already grown up around them (Grimble and Wellard, 1997; Thomson, 2003; Ekong and Akpan; 2014). Another of the most widely known coastal wetland ecosystems in Nigeria is located in Akwa Ibom State and therefore this study evaluates the livelihood and environmental interactions of the people throughout the support zone.

Materials and Methods

Study Area

Itu wetland and swallow roost falls under the administrative region of Akwa Ibom State and is located at coordinates 05° 19N and 07°95E with an undetermined area (Ezealor, 2002). It has an unprotected status. Located in the basin of Cross River and Akwa Ibom State, the region is made up of a variety of riverside forested areas and grasslands wetlands that are prone to flooding during certain times of the year (Ezealor, 2002). Its main feature is the swallow roost and it is a wetland in a low-lying depression near the confluence of the Cross River and its Eyong Creek tributary. Asang hamlet, a compact but densely populated settlement in Akwa Ibom State's Itu Local Government Area, is ravaged by floods (Ezealor, 2002).

The flood plain is crisscrossed by dykes and embankment constructed by the Cross River Development Authority, which had attempted to establish a large-scale irrigation project in the area. The project has since been abandoned (Ezealor, 2002). The dominant vegetation of the area is tall *Vossia cuspidate* grass. There are also sprinklings of *Mimosa pigra* thickets, as well as areas where *Echinochloa pyramidalis, E. stagnina, Ipeoma asarifolia, Nymphea lotus, Phragmites* spp can be found. An admixture of Raphia and broadleaves trees characterizes the vegetation in the seasonally flooded lowland forest swamps, while extensive stretches of *Elaeis guineensis* plantation and degraded secondary forests characterize the vegetation on the higher grounds Population of primates including the rare Cercopithecus nicticans inhabits the lowland forest. Freshwater turtles and manatees *Tricherus senegalensis* (VU) are reported to occur in the area (Ezealor, 2002).

Sampling and Data Collection

A two-phase sampling method was deployed in the selection of participants for the assessment. Firstly, purposive sampling based on ease of access was used to select 30% of the communities (6 communities) out of the 18 communities in the Itu axis of the Itu wetland. This was done on the theory that any conservation programs would have the greatest direct impact on the people living within a three-kilometer radius of the marsh since they are the ones most frequently interacting with and/or coexisting well with the floodplain should incase the areas be considered for protection in the future. The selected villages were; Obot Etim, Obot Itu, Esuk Itu, Ntiat Itam, Odu Itu, and Ikot Uko communities. Second, from the list of selected villages, thirty homes from every community were drawn at random. This was done to guarantee an accurate comparison, variability, and generalizability of the findings of the inhabitants in the communities. These conform with the opinion expressed by Angelsen *et al.* (2012); Jacob *et al.* (2016); (2020ab) which stated that several participants of 25–30 households from every community are suitable for a community with only a home threshold somewhere between 100 and 500 households. This resulted in an overall number of responders that needed to be selected 180. However, only the leaders of homes were questioned since it was presumed that they would be responsible for making daily decisions in the interest of the members of the family (Akwetaireho, 2009).

This research makes use of both primary and secondary sources of information. The original data came from questionnaires, whereas the supplementary data came from official papers, pertinent publications, and scientific papers that were particular to that same study topic including phenomena that were being investigated. The primary information was gathered using questionnaires. This was augmented through other

observational and collaborative sampling techniques including site investigation, picture, filmmaking, field survey walk, Interviews, and Group Discussions with pertinent community members who may have sufficient understanding of the topic. The questionnaires developed to help survey the households that had been randomized included both open-ended and closed-ended questions. The support of local officials and local councils was utilized to complete this task. However, out of the 180 questionnaires issued to the respondents, only 118 (65.56%) of the returned questionnaires were considered adequate and suitable to be used for analysis.

Data Analysis

This research employed a variety of methods for analyzing the data, including mixed methods, as well as probabilistic and quasi-analytical techniques. The utilization of percentages, tabular, charts, and inferential analysis are some examples of such. The Ordinary Least Square (OLS) analysis was carried out to estimate the proportion of the reliant variable's variance that might be attributed to the effects of the explanatory variables. The regression equation as described and used by Jacob *et al*. (2016) is given as:

$$Y = a + b_n x_n + \mu \quad (1)$$

where, Y = level of wetland utilization; a = constant; b = regression coefficients; n = 1, 2...8; x = independable variables such as age of respondent, sex, marital status, income level of education, years of residence, distance time, etc.

Results and Discussion

Socioeconomic Characteristics of Respondents

The findings are shown in Table 1 and which shows the demographic characteristics of the whole sample size of 118 people. There was a total of 110 male-headed homes, accounting for 93.22% of the total, while there were only eight female-headed homes, accounting for just 6.78% of the total. This demonstrates that the majority of the families seemed to have an adult male member who was in charge of making decisions for the home. These are in agreement with the results of Jacob *et al.* (2020ab; 2018a), Nelson *et al*. (2018a); Jacob (2017), who observed that the vast majority of homes are headed by men. This conforms to the paternalistic perspective that men are indeed the primary breadwinners for their families because they possess the authority and influence to regulate the day-to-day operations of the home, which include choices (Silver *et al*., 2015; Jacob *et al*., 2020d).

Age classification of the respondents shows that respondents who were in the age class of 41-50 years formed the majority (36.44%, N = 43) of the respondents. This was followed by those aged between 51-61 years and 31-40 years with 28.81% (N = 34) and 18.64% (N = 22) respectively, while those aged 30 years and below had the least respondents (1.69%, N = 2). With a higher proportion of the samples in their active years (31-50 years, N = 77), it is expected that they are economically active and in their productive age to exploit the resources of the wetland (Jacob *et al*., 2013; 2015; 2018b; Nelson *et al*., 2018a, 2018b; Jacob *et al*., 2018d).

The majority of the respondents (85.59%, N = 101) were married while 14.41% (N = 17) were single (not married, divorced, or widowed). This result agrees with Nelson and Jacob's (2018) report that most homes in rural areas in Nigeria are occupied by married couples. This represented a sign that perhaps the majority of those who participated had dependents as a responsibility to provide for; as a result, they had tremendous pressure placed upon them to seek additional income sources so that they could earn cash for the sustenance of their households.

The level of education varied among the households with the majority (55.93%, N = 66) of them having obtained secondary education. This proportion was followed by respondents who had attained primary education, while those who had obtained tertiary education were the least with 31.36 (N = 37) and 5.93% (N = 7) respectively. However, a general assessment of the respondents indicates that more than 93% of the respondents had obtained formal education with only 6.78% not having any formal education. The participants' average number of years spent attending school was 10.24, which places them inside the post-primary schooling category of learning. It is greater than the 6.70 times at school that were documented by Jacob *et al*. (2018c; 2020a) for families in buffer region villages of Nigerian National Parks and the 4.89 school years that were documented for the vast majority of rural homes in Uganda (Uganda Bureau of Statistics, 2002; Balikoowa, 2008). The findings corroborate the findings of Jacob *et al.* (2020c; 2013), who discovered that the vast majority of remote families in Nigeria would have had at least a certain degree of formal education. This may have the possibility of making up a portion of the deficit in non-formal schooling, strongly impacting their adoption of technological innovations and thereby enabling them to participate efficaciously in asset managerial decisions, all of which were needed to guarantee the long-term preservation of resources even while satisfying the requirements of one's families (Emelue *et al*., 2014).

The result in Table 1 also shows that fishing was the major (37.29%, N = 44) occupation of the respondents followed by farming (23.73%, N = 28), trading (8.47%, N = 10) and public service (5.08%, N = 6). Some of the respondents also engaged in more than one occupation, as

they combined either farming with fishing (7.63%, N = 9), trading (5.08%, N = 6), or welding (0.85%, N = 1). However, 10.18% (N = 12) of the respondents were also engaged in other livelihood activities such as tailoring, hairdressing, etc. According to Scoones' findings, the large proportion of individuals in the research region who work in agriculture and fishermen is consistent with his findings that wetlands contribute immensely to the livelihoods of millions of people living in its support zone communities as it offers a variety of both tangible and intangible benefits to the people (Jacob *et al*., 2017; Scoones, 1991; 1998).

The annual income distribution of respondents indicates that most (39.83%, N = 47) of the households earn less than ₦50,000.00 annually. This was followed by those who earned between ₦50,001.00-₦100,000.00, ₦150,001.00 - ₦200,000.00 and above ₦200,001.00 with 22.03% (N = 26), 15.25% (N = 18) and 13.57% (N = 16) respectively while those who earn between ₦101,000.00 - ₦150,000.00 were the least (9.32%, N = 11). The low annual income of the respondents agrees with Jacob *et al*. (2016; 2018ab) and Nelson *et al.* (2018b) observation that the income of rural households is usually very insignificant and cannot meet their needs which results in high poverty levels among the respondents.

The size of people in each home in the communities varied between 1 and 18. Nevertheless, most of the homes had a family size of 4-7 members (59.32%, N = 70), followed by those with 8-11 members (20.34%, N = 24), while households with less than 4 members and those with 12 and above members had both 10.17%, N = 12 respectively. The findings corroborate the findings of Javed and Asif (2011), who observed that remote communities are characterized by large extended families ranging anywhere from one to twenty persons for every home. The same results of this study corroborate the findings of Olorunsanya and Omotesho (2012); Oluwatusin and Sekumade (2016). This might very well be because the majority of families in the region under investigation are led by men who practice polygamy (Jacob, 2017).

Years of residents of the respondents indicate that the majority of the respondents (94.92%, N = 112) had lived in their area for more than 10 years and the remaining 5.0%, N = 6 of the respondents were new residents in the communities. Years of residence according to Shackleton and Shackleton (2004) have a significant effect on the resource utilization and dependence of a household on its surrounding resources. Therefore, since most of the participants were staying in the wetland for over a decade, it implies they are more likely to be dependent and actively engaged in the utilization of the resources of the wetland.

Respondents' Level of Interaction with Itu Wetland

Table 2 shows that about 8.51% (N = 95) of the respondents had access to and made use of the resources of the wetland, while 19.49% (N = 23) did not have access to nor make use of the wetland resources. This result implies that the majority of the people had access to and made use of the wetland resources which agrees with Rebelo *et al.* (2010) report that households in Africa are highly dependent on the resources of wetlands due to ease of access to farming, rearing livestock and fishing. The above practices constitute the heart of the economic tactics employed by largely subsistence-based rural folk and they are to blame again for the depletion of the biological assets of the region (Dahwa *et al*., 2013).

The area of the wetland where the respondents mostly access was the open waters (45.24%, N = 76), followed by the fringe riparian forest of the wetland and the shores with 23.81% (N = 40) and 16.67% (N = 28) respectively, while the least accessed part of the wetland was the swamp (14.29%, N = 24). The wide use of open water by most of the respondents could be attributed to the fishing livelihood activities of the people who are mostly fishermen. The people also used the fringe forest to gather firewood, hunt, and trap while the swamps were seasonally used for farming. The shore area was mostly for laundry, fetching water, landing sites, and other activities. This observation is per Bregnballe and Madsen (2004); Trisurat's (2006) reports that the area of accessibility is a determinant factor in the level of utilization of wetland resources.

The results also indicate the means of transportation used by the respondents to get to the wetland. Accordingly, the majority (66.95%, N = 79) of the respondents trekked from their homes to the wetland. Other means of transportation included bicycle (13.56%, N = 16), boat (13.56%, N = 16), car and motorcycle with 2.45% (N = 3) respectively. Only a single respondent (0.85%) reported using the bus to reach the wetland. The results indicate that most of the respondents were able to reach the wetland by foot as per the opinion of Badmus *et al.* (2009) who contend that wetlands were easily reached by trekking because they are located in rural areas.

Also, the time it took most (57.63%, N = 68) of the respondents to reach the wetland from their homes was less than 11 min. This was followed by 19.49% (N = 23) and 11.02% (N = 13) of the respondents who took between 11-20 min and 21-30 min to reach the wetland from their homes. Only 1.69% (N = 2) of the respondents had to travel more than an hour to reach the wetland from their homes. The study outcome implies that most of the study participants live very close to the wetland and as such have easy access to the wetland, which is in line with the assertion of Bregnballe and Madsen (2004) that the means of transportation determines the time it takes to reach the wetland.

Table 1: Demographic Characteristics of Respondents in Itu wetland, Akwa Ibom State

S/N	Variables	F	%
1.	Gender of Household head		
	Male-Headed	110	93.22
	Female-Headed	8	6.78
	Total	118	100.00
2.	Age class		
	≤ 30	2	1.69
	31 - 40	22	18.64
	41 - 50	43	36.44
	51 - 60	34	28.81
	61 and above	17	14.40
	Total	118	100.00
	Marital Status		
	Single	17	14.41
	Married	101	85.59
	Total	118	100.00
3.	Educational Status		
	Primary	37	31.36
	Secondary	66	55.93
	Tertiary	7	5.93
	Non-formal	8	6.78
	Total	118	100.00
4.	Occupation		
	Farming	28	23.73
	Trading	10	8.47
	Fishing	44	37.29
	Fishing and Farming	9	7.63
	Public service	6	5.08
	Farming and trading	6	5.08
	Welding and farming	1	0.85
	Fishing and trading	2	1.69
	Others	12	10.18
	Total	118	100.00
5.	Yearly Income Level (₦)		
	Less than 50000	47	39.83
	50001 - 100000	26	22.03
	100001 - 150000	11	9.32
	150001 - 200000	18	15.25
	200001 and above	16	13.57
	Total	118	100.00
6.	Household size		
	Less than 4	12	10.17%
	4 - 7	70	59.32%
	8 - 11	24	20.34%
	And above	12	9.17%
	Total	118	100.00%
7.	Years of Residency		
	Less than 6 years	4	3.39%
	6 - 10 years	2	1.69%
	10 years and above	112	94.92%
	Total	118	100.00%

Monthly Interaction and Utilization of Itu Wetland

The result in Fig. 1 shows the monthly utilization schedule for Itu wetland as reported by the respondents. The result shows that the month of November (N = 62, 11.55%) was the most utilized month on the wetland. This was followed by the month of April, October, December, and June with 56 (10.43%), 54 (10.06%), 49 (9.12%), and 45 (8.38%) respectively. September was the least utilized month in the wetland (31, 5.77%).

The result shows that there is a monthly variation in the use of the wetland by respondents. This variation in wetland utilization may be caused by the seasonal variation in water level in the wetland (Ogban *et al*., 2011). During the peak of the wet season (May-September), the soils are saturated with water from rainfall and overland flow, as the water table at this period is at or close to the surface of the soil causing overflowing at various depths from few centimeters to several meters depth. However, in the dry season (November-March), a higher thermal gradient is reported to develop (Ogban *et al*., 2011) which forces the evaporation zone to move deeper into layers in the soil profile. This seasonal fluctuation in water table depth causes variations in the monthly utilization of the wetland by respondents for various livelihood activities. The dry season farming starts immediately after the rains, as the water considerably reduces with various cultural operations and the sequence of cropping and crop combination including land preparation (Nov-Dec) i.e., bush clearing, packing and burning of the trash and mounding in some of the communities (Umoh, 2008). Seeding follows immediately after land preparation depending on how safe it is adjudged by the level of water in the field by the farmer and the crops planted in mixtures. The prominent crops planted include fluted pumpkin, pepper, okra, cassava, cocoyam, maize, and water yam. Weeding is done once or twice before harvest depending on the crop and intensity of the weed. Harvesting of crops usually happens between March-May before the rains set in and flood the field. The wet season farming in the area usually lasts between June-November and the major crop cultivated during this period is swamp rice. The cultural operation begins with pre-planting activities such as nursery preparation and preparation of the farmland preparation, seeding, transplantation, application of manure, weeding, bird scaring, and harvesting of mature crops.

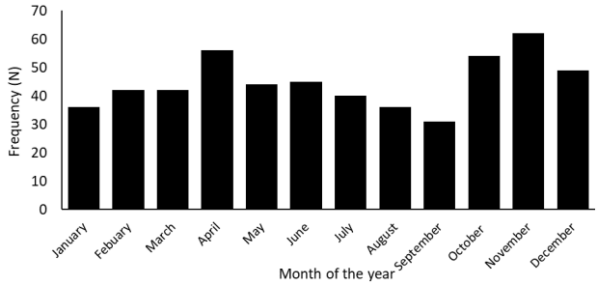

Fig. 1: Monthly interaction and utilization of Itu wetland, Akwa Ibom State, Nigeria

Table 2: Respondents' interaction with Itu Wetland, Akwa Ibom State

S/N	Variables	Frequency	Percentage (%)
1.	Access to wetland		
	Yes	95	80.51
	No	23	19.49
	Total	118	100.00
2	Wetland parts accessible		
	Forest	40	23.81
	Open waters	76	45.24
	Swamp	24	14.29
	Shores	28	16.67
	Total	168*	100.00
	Means of getting to the wetland		
	Foot	79	66.95
	Bicycle	16	13.56
	Car	3	2.54
	Bus	1	0.85
	Boat	16	13.56
	Motorcycle	3	2.54
	Total	118	100.00
	Time to reach the wetland (Minutes)		
	Less than 11	68	57.63
	11 - 20	23	19.49
	21 - 30	13	11.02
	31 - 40	3	2.54
	41 - 50	4	3.39
	51 - 60	5	4.24
	> 60 min	2	1.69
	Total	118	100.00

Quantities of Products Harvested from the Wetland

Table 3 shows that all the households sampled in the study area used varying quantities of water from the wetland for their domestic use with the highest (54.24%, N = 59) quantity used being in the range of 5 – 10 gallons of water daily. Among the yam farmers, 47.83% (N = 11) harvested more than 60 tubers of yam annually, while 79.17% (N = 19) and 57.41% (N = 31) of farmers harvested the highest quantities of less than 21 bags of cocoyam and cassava respectively. Also, the majority of the farmers harvested less than 21 bunches of plantain and bundles of fluted pumpkin with 45.71% (N = 16) and 34.38% (N = 11) respectively. However, 46.00% (N = 23) of fishermen harvested between 21-40 baskets of fish annually, while 60% of the respondents harvested less than 41 bundles of firewood annually. The result agrees with the observation of Umoh (2008); Ogban *et al*. (2011); Ekong and Akpan (2014) who reported that the wetland plays an important part in the sustenance of rural households in the state and the country in general. The farmers cultivate the wetland to satisfy their household food needs and to sell the excess produce to make income. Also, the relatively high quantity of baskets of fish obtained by fishermen in the study area authenticates that the wetland is a productive area for fisheries, wildlife, and numerous plant resources in Akwa Ibom State (Onyekwere *et al*., 2001). Thus, exploitation of the fisheries resources in the area is a major livelihood activity in the wetland. However, the people were also engaged in other livelihood activities to earn more money for their households.

Factors Affecting Wetland Utilization in Itu Wetland, Nigeria

The outcomes of the analyses are displayed in Table 4, as well as the magnitude of the coefficient of multiple determination (R2) appears to be 0.6063. This indicates that every one of the explanatory variables that made up the simulation was responsible for explaining approximately 60.63% of the variability in wetland utilization that occurred amongst some of the region's households that were being researched. The fact that the F-statistic was 2.84, which was highly significant at a level of $p<0.01$, suggested that perhaps the explanatory variables that were incorporated into the simulation seemed to have a beneficial influence mostly on homes' level of wetland exploitation. The age of respondents, educational status, size of people in the house, and time interval time is taken to reach the wetland were all significant at $p<0.01$.

The age of the leader of the household, which had a coefficient of -0.0000508, proved significant when p was less than 0.10. The minus sign suggests that a rise in the maturity of the participant will indeed result in a reduction in the quantity of time spent in wetland areas. This exploration is in agreement with both the conclusion of Lepetu *et al*. (2009); Jacob *et al*. (2018a), which state that younger generations are much more reliant on the services provided by wetlands and forests than elderly individuals are. This may be related to the fact that younger folks have numerous demands of the wetlands while also being more active than older folks, which is beneficial given that the mining of goods requires a lot of manual effort. Also, older individuals may not always want to face the danger of traveling into the marsh to participate in exercises, including those that require a lot of effort as well as a lengthy amount of time to finish (Köhlin *et al*., 2001).

Level of education significantly and negatively (-0.0000103, $p<0.01$) influenced wetland utilization in the study area. This could be attributed to the potential of education in enhancing a person's acquisition and utilization of information to diversify his/her income sources. This suggests that families possessing higher educational attainments have a greater propensity to look for non-farming or exploitative professions in remote regions, particularly given the fact that such occupations are typically challenging and time-consuming. According to Babatunde and Qaim (2010); Anyanwu (2014); Jacob *et al*. (2016; 2020a) revealed that somehow a more advanced educational attainment may result in improved livelihood opportunities, Thus, the study outcome is in conformance with their findings. These researchers stated that literate homes are more likely to obtain data conveniently and employ it to start making well-informed choices that will improve their livelihood conditions.

The epochal negative contribution of the number of people in a household (-0.0002766, $p<0.01$) to wetland utilization in the study area implies that an increase in the income of the household by a unit, will result in a corresponding decrease in 0.00027 units of the utilization of wetland by the households. This estimate is per the report of Babatunde (2008); Jacob *et al*. (2019; 2020ab) who all argued that household size is a significant contributor to the overall household revenue in rural areas; thus, influencing their level of dependence, utilization or exploitation of forest or wetland resources. Therefore, homes that have a significant number of residents who are employed can combine their salaries to achieve higher revenue, which will enhance their standing in terms of economic welfare and overall degree of destitution.

Distance time is taken to reach the wetland also negatively and significantly (-0.0001915, $p<0.01$) affected wetland utilization. This is an indication that a unit increase in time taken to reach the wetland will inversely reduce the level of wetland utilization by almost 0. 0002 units, thus portraying that those who live closer to the wetland have a greater tendency of exploiting the wetland than those living afar off from it. This observation agrees with Bregnballe and Madsen's (2004); Trisurat's (2006) observations that time and area of accessibility is a determinant factor in the level of utilization of wetland resources.

Table 3: Quantity of resources harvested within Itu Wetland, Akwa Ibom State

S/N	Goods	Quantity	Frequency	Percentage
1.	Water	Less than 5	30	25.420
	Gallons/day	5-10	59	54.240
		11-15	26	17.800
		Above 15	3	2.540
		Total	118	100.000
	Yam Tubers/year	Less than 21	1	4.350
		21-40	8	34.780
		41-60	3	13.040
		Above 60	11	47.830
		Total	23	100.000%
	Cocoyam	Less than 21	19	79.170%
	Bags/year	21-40	5	20.830%
		Total	24	100.000%
	Cassava	Less than 21	31	57.410
	Bags/year	(ii) 21-40	18	33.330
		Above 40	5	9.260
		Total	54	100.000%
	Plantain	Less than 21	16	45.710
	Bunch/ year	21-40	8	22.860
		41-60	6	17.140
		Above 60	5	14.290
		Total	35	100.000
	Fluted pumpkin	Less than 21	11	34.380
	Bundle/year	21-40	6	18.750
		41-60	9	28.130
		Above 60	6	18.760
		Total	32	100.000
	Fish	Less than 21	22	44.000
	Basket/ year	21-40	23	46.000
		Above 40	5	10.000
		Total	50	100.000
	Firewood	Less than 21	3	30.000
	Bundle/ year	21-40	3	30.000
		Above 40	4	40.000
		Total	10	100.000

Table 4: Determinants of wetland utilization in Itu Wetland, Nigeria

Variables	Coefficient	Std. Err.	t	P>t
Age	-0.0000508	0.0000153	-3.32	***
Gender	0.0003337	0.0002433	1.37	NS
Marital status	0.0147573	0.0149020	0.99	NS
Level of education	-0.0000103	2.13e-060	-4.83	***
Years of residence	-8.87e-070	2.03e-060	-0.44	NS
Income level	4.21e-080	9.35e-080	0.45	NS
Household size	-0.0002766	0.0000655	-4.22	***
Distance time	-0.0001915	0.0000328	-5.83	***
Constant	0.9657076	0.0301405	32.04	***

F-stat = 2.84***, R2 = 0.6063, Adj R2 = 0.5631

Other variables such as the sexual orientation of the head of the house, marital status, period of residency, and income level of the household that were not significant do not indicate they did not affect the household utilization of the wetland but that their contribution was only marginal. As an example, the positive coefficient of gender implied that homes that were headed by a man had more propensity to use the wetland than the homes headed by a woman, while the negative coefficient of years of residence suggest that household heads who had resided in the proximity of the wetland for a longer time were more likely to seek alternative livelihood sources, thus reducing their level of utilization of the wetland resources.

Conclusion

The study has determined that there is a high level of interdependence among the local communities within the Itu wetland for their socio-economic needs. And that this interaction is influenced by demographic and other prevailing factors.

The study has thus beamed its light on the relevance of the Itu wetland as a natural resource to the livelihoods of the communities around it. All natural resources including wetlands are supposed to have a positive and long-term relationship with the economic growth of any country including Nigeria. Most wetlands have been neglected in this aspect especially the Itu wetland, as it is known to have an unprotected status and stands the chance to be

degraded or converted for other uses. Therefore, the government and national planners need to step up their effort toward the development of effective policies geared toward wetland conservation to protect and preserve this resource. It is of the utmost importance to put into action appropriate education and outreach initiatives, as well as effective governance, to ensure that those responsible for converting wetland areas are subjected to sanctions and that these sanctions are constantly implemented.

Recognition of the dependence of adjacent communities on wetlands in this study stresses the importance of collaborative management to enhance biodiversity conservation which is critical for the survival of the wetland. Establishing and maintaining wetlands demands both political and financial commitment in the long term which is lacking in Nigeria. Because of this, partnering with local communities and instituting wetland authorities could promote a successful outcome.

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Author's Contributions

Daniel Etim Jacob: Designed the research plan and organized the study, coordinated the data analysis, and contributed to the writing of the manuscript.

Imaobong Ufot Nelson and Juliet Oluwaseun Dickson: Contributed to the writing of the manuscript.

Ethics

Relevant ethical standards, including institutional and governmental policies relating to conducting the study were obeyed before and during the study.

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