DELTA AGRICULTURIST 16 (No. 1, 2024)
Published by Faculty of Agriculture, Rivers State University,
P. M. B. 5080, PORT HARCOURT, Nigeria Since 1981
Email: deltaagriculturist@gmail.com www.deltaagriculturist.com ISSN 1115-6813

Research Paper

Pp 105-112

ANTHROPOGENIC IMPACTS ON WETLANDS IN RUKPOKWU, OBIO/AKPOR LOCAL GOVERNMENT AREA, RIVERS STATE

EJIOGWU, C.C., SIMBI-WELLINGTON, W.S., ALERU, K.K.
Department of Forestry and Environment
Rivers State University, Port Harcourt
Chriszeyjames@gmail.com/trinyabel@yahoo.com/alerukennedy@gmail.com

ABSTRACT

This study was conducted to access the anthropogenic effects on wetlands in Rukpokwu, Obio/Akpor Local Government Area of Rivers State. The simple random sampling technique was used for the study. 120 well-structured questionnaires were distributed to civil servants, students, entrepreneurs, and farmers in 3 selected zones in Rukpokwu clan; Rumuapu, Elikpokwu-ordu and Eledo-Nkpo. The questionnaire was structured to obtain information on the demographic characteristic of respondents, identify wetlands, and to determine the anthropogenic impacts on wetlands in the study area. Information collected were analyzed using descriptive statistics such as percentage, means and frequency tables. The results showed that 73.4% of the studied household were males while 26.5% are females. Christians made up 93.9% of the studied population. A higher percentage (45.8%) of the respondents have attained secondary education. Highest age bracket (42.3%) is between ages 26-35 years, married (54.2%), students (31.3%), civil servant (20.5%) and farmer (22.9%). Causes of anthropogenic impacts on wetlands in the study area include pollution (34.9%), habitat destruction (20.5%), building on canals (14.5%), soil erosion (15.7%), flooding (14.5%). wetlands in the study area can be improved if there are adequate government regulatory agencies and traditional laws enforcing strict compliance to wetland protection laws and wetland management policy.

Keywords: Wetland, Anthropogenic, Socio-economic characteristics, urban areas

INTRODUCTION

Wetlands are defined as "areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed 6m" according to the Ramsar definition, which is advocated by the International Union of Conservation of Nature (IUCN) and other international agencies involved in wetland conservation and management. Rural economies rely heavily on wetlands as a source of natural resources. Wetlands are complex ecosystem characterized by flooding or saturation of the soil, which creates low-oxygen environment that favour a specialized assemblage of plants, animals, and microbes, that exhibit adaptations designed to tolerate periods of sluggishly moving or standing water (Crandel, 2023). The worth of wetlands have grown due to its products and services, as well as the inherent

biological value it offers to both the local community and those residing beyond the wetlands' boundaries (Biswas *et al*., 2010). Wetlands support a variety of carnivores, including, alligators, and osprey and maintain biologically diverse communities of ecological and economic value chain to society (Cherry, 2011).Wetlands play a crucial role in the livelihoods of people, with wetland functions significantly impacting annual income, and the conversion of wetlands leading to the destruction of sources of livelihood and natural heritage (Biswas *et al* ., 2010, Leka-Oscar *et al* .,2023).Wetland habitats have occasionally been altered for physical developmental purposes, leading to the degradation of holy sites, modifications to deities, and adjustments to the value systems of the cultures impacted. It has been noted that wetland areas make excellent locations for leisure and tourism pursuits, which give indigenous people a means of subsistence and access to the economy. (Leka-Oscar *et al.*,2023).

The socio-economic benefits on wetlands are significant and multifaceted, however, human activities exert direct pressures on coastal wetlands, affecting the environment, ecology, and ultimately, human welfare. (Newton, 2020, Ostad-Ali-Askari, 2022 and Leka-Oscar *et al.*, 2023). The ecological-economic analysis of wetlands emphasizes the need for a multidisciplinary approach to understand the interactions between economies and wetlands, and to formulate management measures to mitigate the pressures and impacts on wetlands (Turner *et al*.,2000). Therefore, it is essential to consider the complex relationship between anthropogenic impacts, wetland functions, and the resulting socio-economic implications.

MATERIALS AND METHODS

Study Location

Rukpokwu is a clan in Obio/Akpor Local government area of Rivers State Nigeria. It is made up of 3 villages (Rumuapu Village, Elikpokwu-Ordu Village and Eledo-Nkpo Village). Rukpokwu is situated in the outskirts of Port Harcourt city in Rivers State, Nigeria. It is one of the largest northern neighborhoods of Port Harcourt city. It is a residential area with coordinates 40 54′ 10.4724″ N, 70 0′ 4.5468″ E

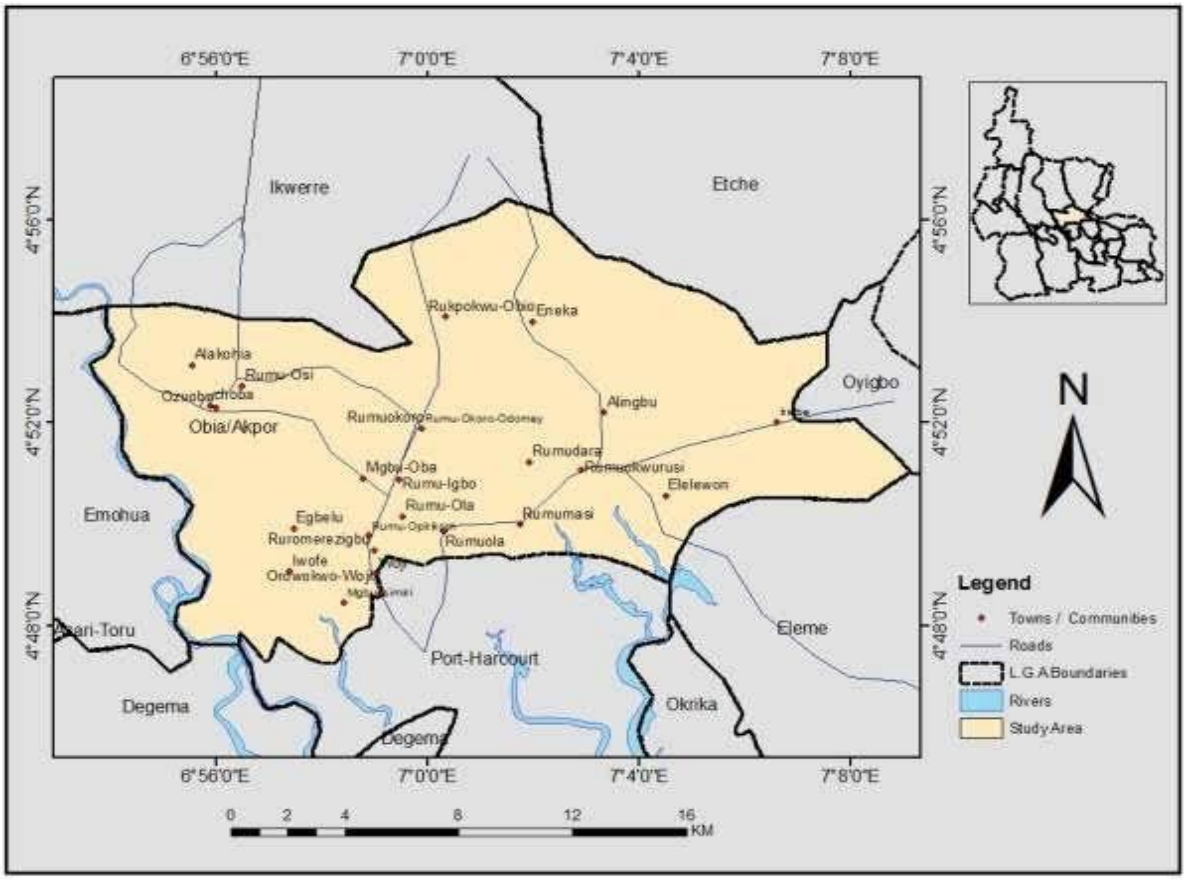

Fig 1: Map showing Obio/Akpor Local Government Area of Rivers State
Source: (Jumbo and Wizor, 2020)

Data Collection

Data were collected through administered questionnaires. A total number 120 questionnaires were distributed for the study, ninety-three questionnaires were returned, ten were discarded due to incomplete information while 27 were not returned. The questionnaires were structured to obtain information on demographic characteristics of the respondents, information on the impact of anthropogenic activities on wetlands within the study area and community participation in wetlands conservation. The questionnaires were distributed to both male and female farmers, transporters, civil servants, students, hunters, and entrepreneurs ranging from the ages of 18 years to 65years. Focused group discussions and interviews were conducted to obtain the required information. Data collected were analyzed using descriptive statistics (percentage, means, charts and frequency tables).

Table 1: Sample Distribution Across Three Zones

Area	**No. of Samples Distributed**	**No. of Samples discarded/ not returned**	**No. of samples Returned**
Rumuapu	40	13	27
Elikpokwu-Ordu	40	15	25
Eledo-Nkpor	40	9	31

RESULTS AND DISCUSSION

Demographic Characteristics of Respondent in the Study area

Results in table 2 indicated that 93.9% of respondents are Christians, 6% are traditionalist, while 0% are Muslims. 73.4% of the studied household are male while 26.5% are female. 21.6% of respondents are aged below 28, 42.2% are aged between 29-38, 24.1% are between 39-48 years of age while 12% are over 49 years. 30.7% are single, 54.2% are married while 12%. are divorce, Civil servant 20.5%, students 31.3% entrepreneurs 25.3%, and farmers 22.9%.

A high percentage of the respondent fall within the age group 29-38years, followed by 39-48 years and below 28 years respectively while the age 49 years and above were the least on the group. These age groups were considered economically active and productive. The result showed more males (74.4%) than females (20.3%). Ukpabi (2021) reported that despite the natural strength of women, as revealed by the census, women are under-represented in almost all aspect of the nation's economy such as politics, education, agriculture, business enterprise etc.

Table 2: Socio-Economic Characteristics of the Respondents

Variable	Frequency	Percentage (%)
RELIGION		
Christian	78	93.9
Islam	0	0
Traditionist	5	6.0
SEX		
Male	61	73.4
Female	22	26.5
AGE		
Below 28	18	21.6
28-38	35	42.2
39-48	20	24.1
Over 49	10	12.0
MARITAL STATUS		
Single	28	33.7
Married	45	54.2
Divorced/separation	10	12.0
LEVEL OF EDUCATION		
Primary Education	16	19.3
Secondary education	38	45.8
Tertiary education	29	34.9
OCCUPATION		
Civil servant	17	20.5
Student	26	31.3
Entrepreneur	21	25.3
Farming	19	22.9

Source: Field Survey, 2023

Wetland in Rukpokwu and Benefits

Wetlands identified in the study area as shown in Figure 2 indicated, Swamp (100%), Freshwater marshes (50%), Flood plain (35%), Lake (50%) Rivers (20%) and mangrove (5%). Benefits derived from wetlands in the study area as revealed in in the results in Table 3 shows that water for domestic use (30.1%), fishing (34.9%), agriculture, (20.4%), Religious activities (9.6%) and Tourism and recreation (4.8%).

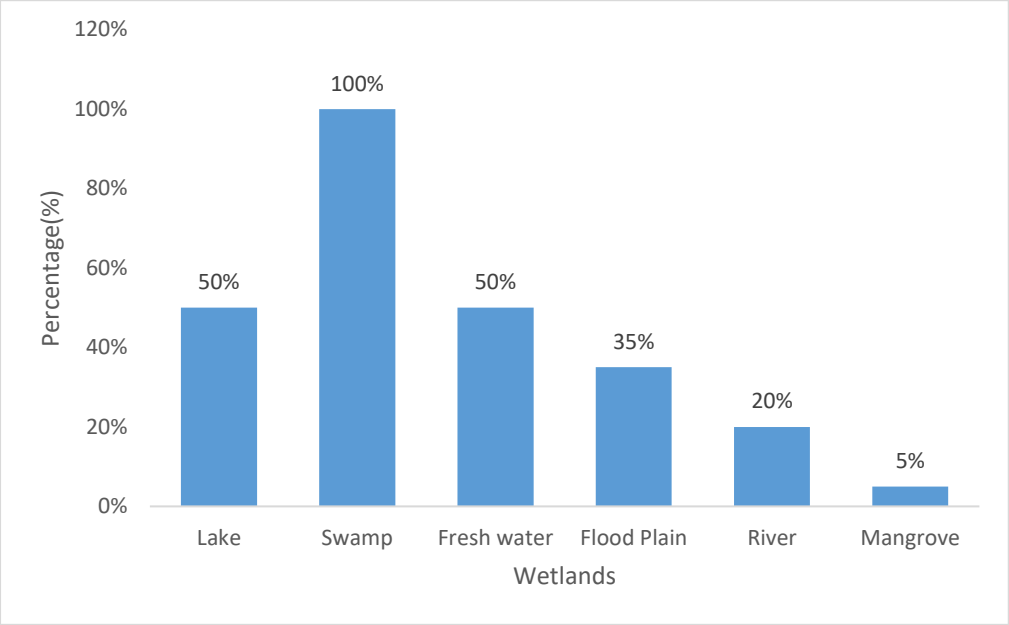

Figure 2: Wetlands Identified in the Study Area

Table 3: Benefit of wetlands in Rukpokwu

Variable	Frequency	Percentage (%)
Fishing	29	34.9
Water for domestic use	25	30.1
Agriculture	17	20.4
Religious activity	8	9.6
Tourism and recreation	4	4.8

Source: Field Survey, 2023

Anthropogenic Effects on Wetlands in Rukpokwu Community

Higher percentage of respondents indicated Pollution (34.9%) and habitat destruction (20.5%) as causes of anthropogenic impacts on wetlands while a lower percentage of the respondents indicated soil erosion (15.7%) and flooding (14.5%) as causes of anthropogenic impact on wetlands in the study area. From the study, 81% of respondents indicated that there is an observed impact of degradation on life forms in the study area. 76% of respondents indicated that there are anthropogenic effects on wetlands in the study area, while 24% indicated that no observed anthropogenic effect on wetlands in the study area. (Table 4).

A higher percentage of respondents indicated that there are anthropogenic effects on wetlands in the study area, this can be affirmed by the high level of degradation of life forms in the study area. This finding concurs with the findings by

Nick (2014) which states that human activities such as draining, in-filling and conversion of both coastal and inlands wetlands have been occurring for centuries. Result from this research revealed that pollution and habitat destruction are the major causes of wetland degradation, this is an agreement with the report by Finlayson *et al.*, (2015) and Van Asselen *et al.*, (2013) which states that the conversion and degradation of wetlands continues, with the underline drivers being economic and human population growth, and proximate causes being conversion at first to extensive and then intensive agriculture, changes in water use and availability, increasing urbanization, infrastructure development and industrial developments. This result also agrees with the report by the Maine Department of Environmental Protection (2019) which state that human activates threaten wetlands in several different ways and the stressors to wetlands could be chemical, physical, or biological. The result further revealed a decline in wetland dependent life form such as birds, fishes, antelope, and alligators. This might be due to habit destruction and other forms of wetland degradation caused by anthropogenic activities. This finding also agrees with the report by Gardner and Finlayson (2018) on the assessment of extinction threat of plant and animal species stating that out of over 19,500 wetland dependent species assessed globally, about one-quarter (25%) are threatened with extinction. UNIDO, (2009) reported that increased human activities such as industrialization coupled with over population and increased ambient temperature amongst other factors have become major environmental issues in recent years.

Table 4: Anthropogenic Impact on Wetlands

Variable	Frequency	Percentage (%)
Pollution	29	34.9
Habitat Destruction	17	20.5
Unreliable water source	12	14.5
Soil erosion	13	15.7
Flooding	12	14.5
Impact on life forms		
Water birds	29	34.9
Fish	25	30.1
Antelope	16	19.3
Alligator	13	15.7

Source: Field Survey, 2023

Figure 3: Anthropogenic Impacts on Wetlands in the Study Area

CONCLUSION

Rukpokwu community have wetlands such as Swarm, Freshwater marshes, Flood plain, Lake, rivers, and mangrove Though wetlands provide several ecosystem and provisional benefits such as recreation, ecotourism, provision of food, raw materials, genetic resources, and water supply, among others. The wetlands of Rukpokwu community have suffered a steady decline over the years due to anthropogenic activities in the form of pollution, habitat destruction, flooding, and erosion. The degradation of wetlands in the community have affected the incidence and occurrence of wetland dependent species such as water birds, antelopes, alligators etc. the degradation of wetlands in the community might be due to the low participation of indigenes in wetland conservation practices.

RECOMMENDATIONS

1. Government and traditional rulers should encourage participatory wetland management policy.
2. Regulatory agencies should ensure strict compliance to wetland protection laws and enforce disciplinary measures to defaulters.
3. Community leaders and stake holders should organize regular awareness programs on the benefits of wetlands and the dangers of wetland destruction.

REFERENCES

Asselen, S.V., Verburg, P.H., Vermaat, J.E., & Janse, J.H. (2013). Drivers of wetland Conversion: A Global Meta-Analysis. *PLOS ONE 8* (11):1-13.

Biswas, M., Samal, N.R., Roy, P. K., & Mazumdar, A. (2010). Human wetland dependency and socio-economic evaluation of wetland functions throughparticipatory approach in

rural India. *Water Science and Engineering*, 3(4):467-479.

Cherry, J.A. (2011). Ecology of Wetland Ecosystems: Water, Substrate, and Life. *Nature Education Knowledge*. 3(10):16–21.

Finlayson, C.M., Horwitz, P., & Weinstein, P. (2015). Wetlands and human health. Dordrecht, Netherlands: Springer. 275pp

Gardner, R. C., & Finlayson, M. (2018). Global wetland outlook: State of the world's wetlands and their services to people 2018. Secretariat of the Ramsar Convention.

Jumbo, S.E & Wizor, C. H (2020). Critical Assessment of Urban Residents'Perception of Disaster Risk Management in Obio/Akpor Local Government Area of Rivers State, Nigeria. *International Journal of Research and Scientific Innovation (IJRSI).* Volume VII, Issue II,

Leka-Oscar A., Innocent, W.I & Brown, I. (2023). Socio-economic impacts ofwetland conversion on residents of Port Harcourt municipality, Rivers state, Nigeria. *International Journal of Hydrology*.7(3):143–149.

Maine department of Environmental Protection (2019). Threats to Wetlands. https://www.maine.gov/dep/water/wetlands/threats.htm

Newton, A., Icely, J., Cristina, S., Perillo, G.M.E., Turner, R.E., Ashan, D., Cragg, S., Luo, Y., Tu, C., Li, Y., Zhang, H., Ramesh, R., Forbes, D.L., Solidoro, C., Béjaoui, B., Gao S, Pastres R, Kelsey H, Taillie D, Nhan N, Brito AC, de Lima R and Kuenzer C (2020). Anthropogenic, Direct Pressures on Coastal Wetlands. *Frontiers in Ecology and Evolution*, 8:144.

Nick, C.D. (2014). How much wetland has the world lost? Long-term and recent trends in global wetland area. *Marine and Fresh water Research*,65(10):936-941.

Ostad-Ali-Askari, K. (2022). Review of the effects of the anthropogenic on thewetland environment. *Applied Water Science* 12(260):1-18.

Turner, R.K., van den Bergh, J.C.J.M., Barendregt, A.& Maltby, E. (2000).Ecological Economic Analysis of Wetlands: Science and Social ScienceIntegration. Global Wetlands Economics Network (GWEN). p32

Ukpabi, M. (2021). Gender and Involvement in Community Development. A study of Ihioma in Orlu L.G.A., Imo State, Nigeria: *International Journal of Engineering Applied Sciences and Technology*, 5(10):238-24.

UNIDO (2009). Industrial Development Report: Breaking In and Moving Up: New Industrial Challenges for the Bottom Billion and the Middle-Income Countries, New York, United Nations.