

## **Impact of Dredging on Conservation of Raphia Palm in Etche Local Government Area, Rivers State, Nigeria.**

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### **Abstract**

*This study examined the impact of dredging on Raphia palm at Otamiri River at Chokocho community in Etche Local Government Area of Rivers State, this area was chosen because of the dredging activities going on in that area, Data was collected using well-structured questionnaires and the impact of dredging were assessed using 5-points Likert scale and other impact of dredging were presented using frequency tables, a total of 40 questionnaires were randomly distributed within the four families. The study shows that 86% of respondents agreed that dredging have impact on the environment and that the plant Raphia Palm is endangered and scarcely distributed and if dredging activities is not controlled or fully stopped, the Raphia Palm will go into extinction while 24% agreed that the plant is already extinct. In terms of income generation, 100% agreed that dredging has a negative impact on Revenue generation. Also, 77% agreed that dredging increases flooding thereby impacting on the environment negatively.*

**Keywords:** *Environment Impact, Dredging, Raphia Palm, Etche LGA.*

### **INTRODUCTION**

Dredging is an excavation activity or operation usually carried out at least partly underwater, in shallow seas or fresh water areas with the purpose of gathering up bottom sediments and disposing them at a different location. This technique is often used to keep waterways navigable. Though environmental impact assessment report before the exercise may not be publicly released, both the positive and negative impact of dredging activities on health and environment cannot be over emphasized. Despite the necessity of dredging for industrial development, its potential impacts on the environment are of particular concern to Raphia palm (Sawliner, K and Mucci,p 2008) as multiple potential stressors associated with dredging activities have been well documented. Among these are sediment stress (suspended and deposited), release of

toxic contaminants, hydraulic entrainment and noise pollution (McCook, 2015).

The prevalence of flooding in the environment has been alarming in the past few years. The resultant mortality, morbidity, damage to properties and public infrastructure was pronounced in 2010, to the extent that the National Emergency Management Authority (NEMA) in Nigeria had to come to the aid of the state government and affected residents. Relief measures carried out were essentially in the form of food, drugs, shelter and immediate needs for those affected. The four major rivers transecting the city were observed to be full of debris, with blocked channels, and plants grown on the surface and along the banks of the rivers. These could have caused obstruction to the flow of water and subsequent flooding. Biodiversity, reduced to its minimum, It encompasses all varieties of life forms on earth, which provide the building

blocks for human existence and it makes for a balanced environment. It refers to the life forms on earth and include the millions of plants, animals and micro-organisms, the genes, they contain as well as the intricate ecosystem they help built into the living environments. Biodiversity has three fundamental and related levels of biological organization namely: Genetic Diversity, Species Diversity and Ecosystem. Biodiversity yields many sustainable development benefits, yet, human society continue to undermine this valuable resource base, instigating large scale biodiversity losses and species extinction. Environmentalists, therefore, concede that biodiversity is critical to the maintenance of a healthy environment, since its role in meeting human needs directly, as well as maintaining the ecological process is enormous. They contend that biodiversity not only provides direct benefits such as food, medicines and energy, but also affords human a life support system.

It is also responsible for mitigating pollution, protecting watersheds and combating soil erosion. In addition, some residents are in the habit of dumping refuse at the river bank, and some industries also do discharge their agricultural products and wastes in water. This would automatically have influence on physical and chemical component of the river water, as well as deleterious effect on surrounding flora and fauna. The *Raphia* palm is among the eleven indigenous general of the palms found in Nigeria. The palms include: *Borassus*, *Elaeis*, *Hyphaene*, *Phoenix*, *Raphia*, *Ancistrophyllum*, *Calamus*, *Eremospatha*, *Oncocalamus*, *Podococcus*, *Sclerosperma*. Only the first five of the above palms are tapped for wine (Otedoh, 1981) reported that the *Raphia hookeri* has the highest yield of palm sap or palm wine followed by *Raphia vinifera*. The *Raphia* palm is hapaxanthic, that is, after a period of vegetative growth, it produces flowers and fruits only once and dies. The flower is signaled by the simultaneous appearance in the crown of more than one expanded spear leaves. It is usually at this stage that the palm is tapped for sap/wine. Interference with these habitats, which could be caused by dredging, may impact upon local distribution, abundance and Productivity. It is on this note that the

study tends to ascertain the impact of dredging on the *Raphia* Palm Species at Otamiri River in Etche L.G.A of Rivers State.

### Justification

Dredging activities have impact on plants, particularly *Raphia* palm in the study area, hence this study will determine the impact of dredging activities on *Raphia* palm in Otamiri River at Chokocho in Etche Local Government Area of Rivers State.

### Objectives of the study

determine the effect of dredging on the *Raphia* Palm Species distribution. Ascertain the impact of dredging on the environment (flooding and erosion). Examine the Socio-Economic impact on rural dwellers.

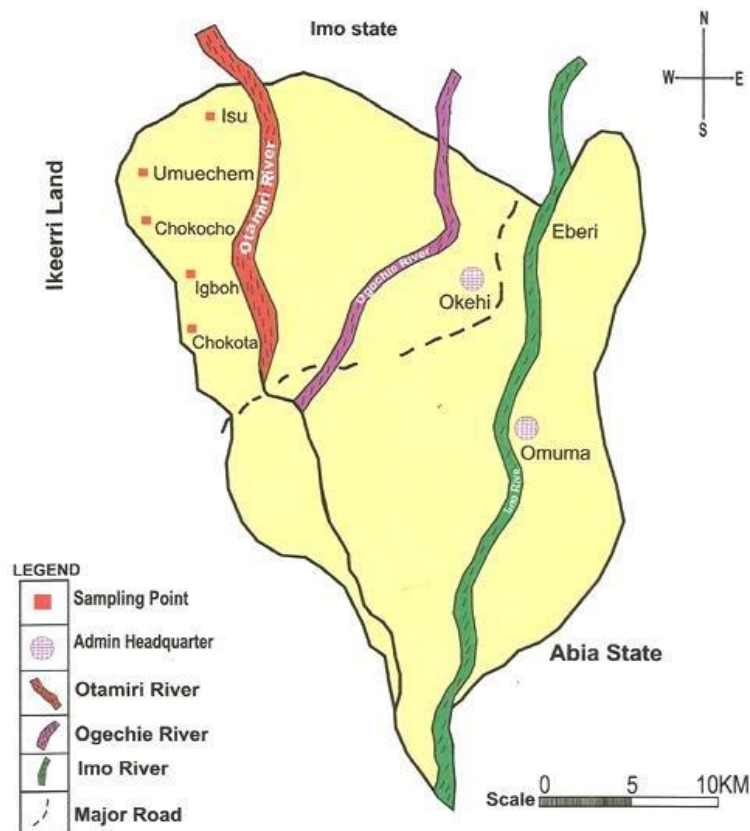
## MATERIALS AND METHODS

### Study area

Etche Local Government Area is located in Rivers State, the Local Government is bounded in the North by Imo State, in the East by Omuma and Abia State, in the South by Oyiibo and Obio/Akpor Local Government Areas and in the West by Ikwerre Local Government Area of Rivers State (Fig. 1). The area is situated between latitude  $04^{\circ} 55' 0''N$  and  $05^{\circ} 12' 0''N$  and longitude  $06^{\circ} 55' 0''E$  and  $07^{\circ} 15' 0''E$  of the State. The Local Government Area have several communities which include Igbo, Ulakwo, Egwi, Odogwa, Ozuzu, Umuaturu, Okehi, Igbodo, Umuechem, Ndashi, Obite, Abara, Okomoko, Afara, Umuola and the study location, Chokocho (Fig. 1). It is an agrarian locality with diverse exploitation for domestic firewood logging, charcoal production (carbon credit) and diverse plantations of agricultural produce for both local consumption and marketing. It is drained by the Otamiri River as a major water source in the locality. The study location (Chokocho community) lies east of the Otamiri River, geo-referenced between Lat.  $4^{\circ} 55' 0''N$  and Lat.  $5^{\circ} 0' 0''N$  and Long.  $7^{\circ} 0' 0''E$  and Long.  $7^{\circ} 5' 0''E$ . The location is characterized by the influence of local sand mining or dredging, unsystematic deposition of dredged spoil at the zone of the study site and agrarian activities, besides the edaphic

sequence of alternating sands, sandstones and

clay-shales (Uma and Kehinde, 2009).



**Fig 1:** Map of Etche Local Government Area

## DATA COLLECTION

The data for this study was collected through questionnaire and a total of 40 questionnaire were distributed to the respondents within the dredging area at Chokocho River in Etche Local Government Area of Rivers State and this work in June, 2020.

A total of forty (40) questionnaire were administered and retrieved.

## RESULTS

### Demographic Analysis

The Demographic analysis used frequencies and percentages in the distribution of the demographic characteristic of the sample employ for this study. These characteristics include; gender, marital status, qualification and position of respondents.

Table 1:

## DATA ANALYSIS

### Data Analysis

The data collected were subjected to a 5-point Likert scale analysis, and descriptive statistics (frequency and percentage) were also used.

### Showing Respondent Gender

Gender	Frequency	Percentage
Male	32	80%
Female	8	20%
<b>Total</b>	<b>40</b>	<b>100%</b>

From table 1 above, it's indicated that 80% of the respondents were male, while 20% were Female. This implies that, there are more male respondent than female respondents in the study area.

**Table 2: Showing age of the respondents**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
30-40	14	35%
41-60	26	65%
61 and above	0	0%
<b>Total</b>	<b>75</b>	<b>100</b>

From Table 2 above, it's indicated that 30 – 40 years of the respondents represents 35%, 41 – 60 years of the respondents represents 65% and 61 and above years of the respondents are 0%. This implies that, there are more respondent with the age 41 – 60 years in the study as shown on the table.

**Table 3 :Showing Religion of Respondents**

<b>Religion</b>	<b>Frequency</b>	<b>Percentage</b>
Christian	24	60
Traditional Worshipper	16	39
Muslim	-	-
<b>Total</b>	<b>40</b>	<b>100</b>

Table 3, shows the religion of the respondents, 60% of the respondents are Christian, 39% of the respondents are traditional worshipper and no Muslim in the study area.

**Table 4: Showing Marital Status of Respondents**

<b>Marital Status</b>	<b>Frequency</b>	<b>Percentage</b>
Single	0	0
Married	40	100
Widowed	0	0
Divorced	0	0
<b>Total</b>	<b>40</b>	<b>100</b>

Table 4: shows the marital status of the respondents, 100% of the respondents are married, 0% are single and 0% are widowed and 0% are divorced which indicated that there are more married respondents in the study area

**Table 5: Showing Respondents of Educational Qualification**

<b>Education</b>	<b>Frequency</b>	<b>Percent</b>
FSLC	0	0

SSCE	37	93
OND/HND	2	5
B.Sc.	1	2
Others	0	0
<b>TOTAL</b>	<b>40</b>	<b>100</b>

Table 5, shows the educational qualification of the respondents FSLC have 0%, SSCE have 93%, OND/HND have 5%, B.Sc have 2% and others are 0%. This shows that majority of the respondents are SSCE holders.

**Table 6: Showing Occupation**

Occupation	Frequency	Percent
Dredgers/Contractors	28	70%
Farmers	0	0%
Self-employed	12	30%
Civil Servant	0	0%
<b>Total</b>	<b>40</b>	<b>100%</b>

The table 6 shows the occupation of the respondents 70% of the respondents are dredgers/contractors, 0% of the respondents are farmers, 30% of the respondents are self-employed and 0% of the respondents are civil servant. This implies that majority of the respondents in the study area are dredgers/contractors.

**Table 7: Forms of Land Ownership**

Forms of Land ownership	Frequency	Percent
Hire/Rent	38	95%
Inherited	2	5%
<b>Total</b>	<b>40</b>	<b>100%</b>

The table 7 above shows the forms of land ownership, 95% represents hire/rent and 5% represent inherited.

**Table 8: Responses on if respondents knows the plant**

RESPONSE	YES	%	NO
Do you know the plant?	40	100%	0

From the table 8 above ,all the respondents were able to identify the plant and that account for 100%.

**Table 9:**Response on the impact of dredging on the raphia palm

<b>Item</b>	<b>Response</b>	<b>%</b>
Extinction		14
Scarce		86
Abundance		0
<b>Total</b>	<b>40</b>	<b>100</b>

The table 9 above shows that majority of the respondents agreed that raphia palm is Sparsely distributed as a result of dredging, this accounts for 86% of the respondents. While the remaining 14% is of the opinion that raphia palm is going extinct.

**Table 10:**Responses on if dredging affect the income generation of raphia palm

<b>RESPONSE</b>	<b>YES</b>	<b>%</b>	<b>NO</b>
<b>Does dredging affect the income generation of raphia palm?</b>	40	100%	0

**Table 11:**Responses on if dredging increase flood and erosion in the area

<b>RESPONSE</b>	<b>YES</b>	<b>%</b>	<b>NO</b>	<b>%</b>
<b>Does dredging increase flood and erosion in the area</b>	31	77%	9	23%

From the 11 table, 77% of the respondents is of the opinion that dredging is the main cause of flood and erosion in the study area. While 23% of the respondents have a different opinion.

**Table 12:** Responses on if dredging be encouraged or discouraged

<b>RESPONSE</b>	<b>YES</b>	<b>%</b>	<b>NO</b>	<b>%</b>
<b>Should dredging be encouraged or discouraged</b>	37	93%	3	7%

From table 12 above , 93% of the respondents agreed that dredging should be discouraged in Otamiri River. While only 7% of the respondents disagreed.

**Table 13:**Responses on the impact of dredging

<b>RESPONSE</b>	<b>YES</b>	<b>%</b>	<b>NO</b>	<b>%</b>
<b>Does dredging have negative impact to the environment</b>	40	100%	0	0%

From the 13 table, all the respondents are of the opinion that dredging has negative impact on the environment

as shown by the respondents who totally agree that dredging has impacted severely on the conservation of the plant, and this agrees with (Ressell and Tulley, 1965) and Hartley (1967) who stated that dredging activities has impact on the growth and density of *Raphia* species, It has contributed to the sparsely distribution of the plant, and this has enormous Socio-economic negative impact since it is a source of employment for most persons in their active age as shown by the respondents which have a direct impact on the income generation of *raphia* palm tappers and the rural dwellers who generally depends directly and indirectly on the palm wine gotten from the plant and other natural resources that are sold to generate income to care for their basic need since it is a source of occupation for some rural dwellers within that community and the density of the species have direct impact on the income generation, it also shows that dredging is the major cause of flood and erosion in the study area and this is in line with the finding of (Ohimain, 2008) and (Obahiagbon and Osagie, 2007) who stated that dredging have a holistic impact on the environment.

## CONCLUSION

The study have shown that dredging if not properly managed will impact negatively on the distribution of the *raphia* palm species which could endanger the species and subsequently over time lead to extinction of the species, also the Socio-economic impact since it is a source of revenue generation for most of rural dwellers who depend on it as a source of income generation and the environmental impact in terms of flooding and erosion within the community where the activities of this dredging takes place leading to destruction of properties, Agricultural lands and sometimes loss of life.

## RECOMMENDATION

Environmental impact assessment should be carried out and government should ensure the sensitization and implementation of those

## DISCUSSION

The study shows that dredging has negative impact on the distribution of *raphia* palm tree

environmental impact statement and laws through appropriate government agencies on dredging.

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