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Evaluating the Impact of Socio-Economic Factors and Fisheries Legislation on Fisherfolk in Rivers State, Nigeria

Nwokoma U.K.[a]*, Daakae S.N. A.[a], George A.D.I.[a], Chukwu, K.[a], Nwokoma D.B.[b]

[a]Department of Fisheries and Aquatic Environment, Rivers State University, Nigeria.
[b]Department of Chemical Engineering, Rivers State University, Nigeria.

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ABSTRACT

An assessment of socio-economic conditions and fisheries legislation and their impact on fisherfolk in Rivers State, Nigeria, was conducted between June 2021 and May 2023. The study focused on the socio-economic characteristics of the respondents and their awareness of existing fisheries laws. A total of 400 respondents were selected from fifteen fishing communities—five from each of the three senatorial zones that make up Rivers State—using a simple random sampling method. Questionnaires were administered to collect data, which were analyzed using both descriptive and inferential statistics. The results showed that 70.4% of respondents were male; 42% were aged between 36 and 45; 84% were married; 44% had tertiary education; 58% reported fishing as their major occupation; 26% had 11–16 years of fishing experience; 40% practiced aquaculture; and 74% were full-time fishers. Regarding awareness of fisheries laws, the mean awareness scores were, Sea Fisheries Decree of 1971 (2.8±1.07), Sea Licensing Regulation of 1971 (2.8±1.06), Sea Fisheries (Fishing) Regulation of 1992 (2.9±1.08), Exclusive Economic Zone Act (2.7±1.01), and Inland Fisheries Decree of 1992 (3.0±0.88). It is recommended that the following steps be taken to improve and sustain aquatic resources in the study area: the state government should ensure that the Inland Fisheries Law (Decree 108) is formally passed into law; the media should enhance publicity to improve awareness, compliance, and enforcement; and policies should be developed using a bottom-up approach and written in local languages for better understanding.

تقييم تأثير التشريعات الاجتماعية والاقتصادية والتشريعات المتعلقة بالثروة السمكية على الصيادين في ولاية النهر، نيجيريا

نوكوما[a]*، ك. يو.؛ داكي[a]، س. ن.؛ جورج[a]، أ د آ؛ تشوكو، ك.[b]

[a]قسم مصايد الأسماك والبيئة المائية، جامعة ولاية النهر، نيجيريا.
[b]قسم الهندسة الكيميائية، جامعة ولاية ريفرز، نيجيريا.

الكلمات المفتاحية:
الإحصاء الوصفي والاستدلال.
قانون مصايد الأسماك.
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الملخص

تم إجراء تقييم للقوانين الاجتماعية والاقتصادية وقوانين مصايد الأسماك وتأثيرها على الصيادين في ولاية ريفرز، نيجيريا، بين يونيو 2021 ومايو 2023. . تركز هذه الدراسة على الخصائص الاجتماعية والاقتصادية للمستجيبين، والوعي بقوانين مصايد الأسماك الحالية. تم استخدام إجمالي عدد 400 مستجيب للدراسة في مجتمعات الصيد الخمسة عشر، 5 من كل من 3 مناطق مجلس الشيوخ التي تشكل ولاية ريفرز، نيجيريا، باستخدام طريقة أخذ العينات العشوائية البسيطة. تم إعداد الاستبيانات لجمع البيانات للدراسة. تم تحليل البيانات باستخدام الإحصاءات الوصفية والاستدلالية. أظهرت النتائج أن 70.4٪ كانوا من الذكور، و 42٪ كانوا في الفئة العمرية 36-45، و 84٪ متزوجين، و 44٪ لديهم تعليم عالٍ، و 58٪ من الصيادين كمهنة رئيسية، و 26٪ لديهم 11-16 سنة من الخبرة في الصيد، و 40٪ من مصايد الأسماك كانت تربية الأحياء المائية و 74٪ بدوام كامل. فيما يتعلق بالوعي بقوانين مصايد الأسماك، أظهرت النتائج ما يلي: مرسوم

*Corresponding author.
E-mail addresses: pastorkaine@yahoo.com .
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مصايد الأسماك البحرية لعام 1971 (2.8±1.07)، ولائحة تراخيص البحار لعام 1971 (2.8±1.06)، ولائحة مصايد الأسماك البحرية (الصيد) لعام 1992 (2.9±1.08)، والمنطقة الاقتصادية الخالصة (2.7±1.01)، ومرسوم مصايد الأسماك الداخلية لعام 1992 (3.0±0.88). وأُوصي باتخاذ الخطوات التالية لتحسين الموارد المائية واستدامتها في منطقة الدراسة: ينبغي على حكومة الولاية ضمان إقرار قانون مصايد الأسماك الداخلية (المرسوم 1.8)؛ وينبغي على وسائل الإعلام ضمان وجود دعاية كافية للتوعية والامتثال والتنفيذ والإنفاذ؛ وينبغي أن يكون هناك انهيار كامل لعملية صياغة السياسات من الأعلى إلى الأسفل، وينبغي كتابة القوانين باللغات المحلية لسهولة الفهم.

1. Introduction

The social and economic characteristics of fishing—and the relationship between these two factors—are essential for the future development and sustainability of the fisheries industry [1]. The fisheries sector is highly susceptible to environmental and human-induced stress and can deteriorate rapidly, especially when both factors act concurrently to hinder sustainability [2]. In Nigeria, the fisheries sector faces several challenges, including overfishing, declining yields, harmful fishing practices, multi-species exploitation, and inadequate awareness of fisheries laws [3].

Fisheries law is a developing and specialized area of legal study [2]. It encompasses the analysis of different fisheries management approaches such as catch share systems, e.g., Individual Transferable Quotas (ITQs) and Territorial Use Rights in Fishing (TURFs)—as well as aquaculture legislation. Aquaculture, also referred to as aqua-farming, involves the controlled farming of freshwater or marine organisms such as shellfish, finfish, and aquatic plants. This legal field also includes regulations on animal feed, which are crucial for ensuring food safety and public health. Regulating the diet of aquatic organisms is imperative to avoid health hazards.

According to Raji et al. [2], fisheries laws, edicts, and regulations issued by various legislative bodies at federal, state, and local government levels in Nigeria are intended to promote responsible fisheries management. These legal frameworks aim to improve the sustainable use of fishery resources, enhance the livelihoods of fishing communities, protect consumers, and support conservation efforts [3].

Fisheries policy defines national priorities for the sector—for instance, maximizing profitability, increasing fish production, or preserving fishing employment. Fishery assessments are used to determine sustainable harvest levels, set standards, advocate for appropriate laws and policies, establish protected areas, restore depleted fisheries, account for ecosystem externalities in fishery economics, educate stakeholders and the public, and develop independent certification schemes [3]. The study of fisheries law is thus essential for developing policy guidelines that promote sustainability and ensure legal compliance [4].

This specific legal area has received limited attention in recent years, leaving a gap in research and advocacy. Fisheries law also involves analysis of international treaties and industry standards that shape regulatory practices [5]. Furthermore, it addresses issues such as access to justice for small-scale fishers, coastal and indigenous communities, child labour, employment rights, and family law.

Another important area of fisheries law is seafood safety. Many countries and regions have implemented varying standards and regulations to ensure the safety of seafood products. These often include fisheries management schemes such as quotas or catch-share systems. Studying global seafood safety frameworks is vital for formulating effective national policies and identifying areas where current systems fall short [3].

Fisheries law broadly includes all forms of law—traditional, national, regional, and international—that aim to manage, protect, and sustain aquatic resources, particularly to prevent the overexploitation and extinction of fish populations. It can be defined as a body of ordinances, decrees, edicts, or customary laws that govern the development, management, and exploitation of living aquatic resources [6]. Scholars often describe fisheries law as a unified system of legal instruments, conventions, and regulations established to preserve aquatic life for sustainable use.

The aim of this research is to assess inland fisheries laws and their effects on fisherfolk in Rivers State, Nigeria. Specifically, it will evaluate the socio-economic impact of existing inland fisheries regulations on fishing activities. The study also seeks to contribute to the limited body of literature on fisheries laws and policies within fishing communities, academic institutions, and the wider fisheries profession.

2- Materials and Methods

2.1 The Study Area

The study was conducted in Rivers State, in the Niger Delta Region of South-South geopolitical zone of Nigeria. Orubo [7] reported that the Rivers State lies approximately between latitude 4030'N and 5o45'N and longitude 6 o30 'E and 7 o30 'L. The State has a land mass of 11,077 square kilometers, almost 4,277m2 with a population density of 468 people per square kilometer. Rivers West, Rivers East and Rivers South-East Senatorial Districts are the three Senatorial Districts that make Rivers State. Rivers State is one of Nigeria's 36 State created from the then Eastern region of Nigeria by degree No. 19,27th May 1967. Before then, the territory was formerly referred to as Oil Rivers protectorate, a name derived from its abundant wealth in oil and gas deposits. The State is the heart of the hydrocarbon industry. It is accountable for over 48% of crude oil produced On-shore in the country and 100% of the liquefied nature gas that Nigerian is currently exporting to several countries of the world [8]. The strategic importance of Rivers State in the economic equation of Nigeria earned the name, 'Treasure Base of the Nation' [9].

Rivers State comprises 23 Local Government Areas and is bounded in the South by the Gulf of Guinea in the Atlantic Ocean, on the north by the states of Anambra and Imo States, on the east by Abia and Akwa Ibom States, and on the west by Bayelsa and Delta States. Rivers State contains mangrove swamps, tropical rainforest, and many rivers. Rivers State's geography is dominated by the numerous rivers that flow through it, including the Bonny River, Imo River, Bodo Creek, Andoni River, New Calabar River, Nun River, Orashi River, Kaa Creek etc. The study area is as shown in Figure 1.

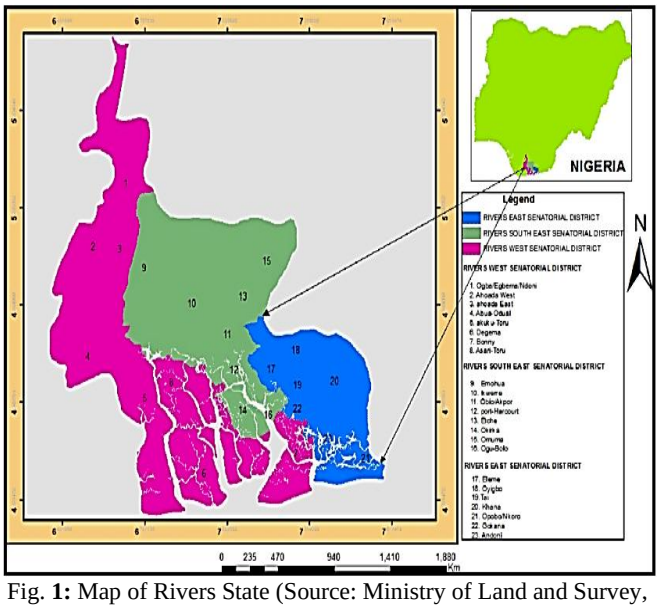

Fig. **1:** Map of Rivers State (Source: Ministry of Land and Survey, Port Harcourt)

2.2 Research Design

The research design that was adopted for this study was the survey design. It used both structured questions and hypotheses to arrive at its results. The descriptive design is one that generates data from a selected population. It studies and describes events as they occur in their natural setting at a particular time. Thus, it is considered appropriate for this study because it investigates the knowledge of fishing laws and policies among fishing /coastal communities in Rivers State and staff of government agencies in charge of fisheries resources of the State.

Further reasons why the descriptive design was used, it is scientific method that involves observing and describing the character of respondents without bias. Descriptive survey design embraces quantitative and qualitative research method [10]. Ary et al [11] opined that simple random sampling gives all members of a population an equality and independency as regards chances of being included in random selection and all members of the selected class possessed similar distinguishing characters. Simple random sampling was used for this work.

2.3 Population of the Study

According to Rangaswamy [12], population is an aggregate of all units. The population of this study consists of fisher folks from fifteen (15) fishing/coastal communities from three Senatorial Districts of Rivers State. Also, Fish folks selected from the various locations were used as the population size for this study.

2.3.1Sampling Techniques and Sample Size

The sample size used for this study was determined using the Taro Yamane formula. Yamane formula is mathematically expressed as follows:

$$n = \frac{N}{1+N*(e)^2} \qquad (1)$$

where: n = the sample size, N = the population size 1 = theoretical constant, (e) = the acceptable sampling error, * 95% confidence level and p = 0.05 are assumed.

According to the National Bureau of Statistics [13], Rivers State has a total population of 5, 198,716. Substitution it into Equation 1 gives:

$$n = \frac{5,198,716}{1+5,198,716(0.05)^2} = 400.00276$$

A total of 400 respondents were drawn. A Simple random sampling was used to select 300 fishers from 15 fishing communities, out of the 23 LGAs that make up the 3 Senatorial Districts of Rivers State.

2.4 Method of Data Collection and Retrieval of Questionnaires

The primary and secondary data sources were used for this study. A set of structured questionnaires were used to collect the primary data on socio-economic characteristics such as sex, age, marital status, educational qualification, major occupation, fishing experience, sector of fishing and basis of fishing. Equally, awareness of existing fisheries laws. Secondary source of data collection was drawn from extensive document reviews and empirical works published and unpublished by other scholars, journals, and online journals formed bases for this research. Four hundred questionnaire were administered to the respondents as explained in subsection 2.3.

2.5 Analysis of Data

Descriptive Statistical technique such as mean variation, frequency distribution, percentage, mean and standard deviations were used to analyse the data.

3. Results and Discussion

The result of distribution and retrieval of questionnaire is shown in Table 1.

Table 1: Retrieval of Questionnaire

Serial No.	Distributed Questionnaires	Frequency	Non-Retrieved	Retrieved	Useful
1	Rivers South	100	12	88	75
2	Rivers East	100	16	84	74
3	Rivers South	100	15	85	73
4	FDF	20	11	9	5
5	State Fisheries	20	11	9	6
6	ARAC	25	15	10	6
7	FISON	25	13	12	6
8	Fish vendors	10	3	7	5
Total		**400**	**95**	**305**	**250**

The result of the socio-economic characteristics of the respondents in Rivers State is presented in Table 2. The socio-economic characteristics that were examined are sex, age, marital status, level of education, major occupation, years of experience, sector of fisheries, and basis of fisheries.

Table 2: Socio-Economics Characteristics of Respondents (n=250) in Rivers State**.**

Socio-economics characteristics	Frequency	Percent	Mean
SEX			
Male	176	70.4	
Female	74	29.6	
AGE			
16-25 years	5	2	
26-35 years	40	16	
36-45 years	105	42	43 years
46-55 years	70	28	
56 years and above	30	12	
Marital Status			
Married	210	84	
Single	25	10	
Divorced	10	4	
Others	5	2	
Level of Education			
Informal education	15	6	
Primary education	20	8	
Secondary Education	105	42	
Tertiary Education	110	44	
Major Occupation			
Fisher	145	58	
Farmer	10	4	
Civil Servant	60	24	
Public Servant	30	12	
Others	5	2	
Years of Experience			
1-5 yrs.	20	8	
6-10 yrs.	60	24	
11-15 yrs.	65	26	13years
16-20 yrs.	50	20	
21-25 yrs. and Others	55	22	
Sector of Fisheries			
Artisanal	55	22	
Aquaculture	100	40	
Industrial	60	24	
Commercial	25	10	
None	10	2	
Basis of Fisheries			
Full-Time	185	74	
Part-Time	65	26	

Source: Field Survey, 2023.

The result in Table 2 showed that, in terms of sex of fisherfolks, 70.4% of respondents were males, and 29.6% were females. It indicated that fishing occupation is dominated by male folks. The result with respect to the age of fisherfolks, indicated that 42% of respondents were under the age bracket of 36-45years, 28% were 46-55years, 16% were 26-35years, 12% were 56 and above, while 2% were 16-25 years. The result for marital status showed that 84% of respondents were married, 10% were single, 4% were divorced and 2% were others. This implies that the fisheries sector of Rivers State's economy was for the married. In terms of level of education, the result showed that 44% of the respondents attended tertiary education, 42% attended secondary education, 8% attended primary education and 6% had informal education. The result, with respect to major occupation, showed that 58% of the respondents were core fishers, 24% were civil servants, 12% were public servants, 4% were seasonal farmers and 2% were other occupations. The result for years of experience indicated that 26% of the respondents had 11-15 years fishing experience, 24% had 6-10 years' fishing experience, 22% had 21 and above, 20% had 16-20 years' fishing experience and 8% had of 1-5 years' fishing experience. The result for sector of fisheries showed that 40% of respondents were into Aquaculture, 24% were into Industrial fishing, 22% were into Artisanal fishing, 10% were into commercial fishing, and 2% were into others. The result for basis of fisheries indicated that 74% of respondents were full-timers, while 26% were part-timers. The result of level of awareness of fisheries laws and policies in the study area is presented in Table 3.

Table 3: Level of Awareness of Existing Fisheries Laws and Policies

Fisheries Laws and Regulations	Respondent Frequencies						Total (N)	Mean ± Std. Dev $\bar{X} \pm \sigma$	Remark
	NA	SA	MA	VA	EA				
	1	2	3	4	5				
1. Inland Fisheries Act Decree 108, 1992	25	80	65	70	10		250	2.8±1.07	Rejected
2. Sea Fisheries Decree (Act) of 1971	25	85	65	65	10		250	2.8±1.06	Rejected
3. Sea fisheries (fishing) Regulation of 1992	20	90	60	65	15		250	2.9±1.08	Rejected
4. Exclusive Economic Zone Decree of 1978	31	70	95	45	9		250	2.7±1.01	Rejected
5. The Nigerian inland water Decree 108 of 1992	10	66	100	69	5		250	3.0±0.88	Accepted
Grand mean								**2.8±1.35**	**Rejected**
Standard reference means $\bar{X}$ ***= 3.0***									

Source: Field Survey, 2023.

The mean and standard deviation values for levels of awareness of fisheries laws and policies in the Rivers State, using standard reference mean of 3.00 as decision rule, indicated that the highest mean score of 3.00 (Nigerian Inland Water and River Basin Authority of 1978) was accepted; while others were rejected: 2.80 (Sea Fisheries Act of 1971), 2.80 (Sea licensing Regulation Act of 1971), 2.90 (Sea fisheries (Fishing) Regulation of 1971), 2.7 (Exclusive Economic Zone). Also, the grand mean was 2.80. Thus, the level of awareness of fisheries laws and policies amongst fishersfolk is low.

Table 4 shows the null hypothesis for the effect of existing inland fisheries laws and policies on the optimal fisheries productivity of respondents for the eight variables, namely, sex, age, marital status, level of education, major occupation, years of experience, sector of fisheries, and basis of fisheries.

Regarding to the sex, the calculated sum of square 0.72434 and mean square 0.724339 had strong feeling on the awareness of existing inland fisheries laws and policies It shows that F ratio for sex is 1.3702, > Prob F is 0.2429 at 1 degree of freedom a 0.05 level of significant. For, age, the calculated sum of square 8.77578 and mean square 2.19394 had strong feeling on the awareness of existing inland fisheries laws and policies It shows that F ratio for age is 0.4.3682, > Prob F is 0.0020 at 4 degree of freedom a 0.05 level of significant. For marital status, the calculated sum of square 4.75226and mean square 1.58409 had strong feeling on the awareness of existing inland fisheries laws and policies. It shows that F ratio marital status is 3.0666, > Prob F is 0.0286* at 3 degree of freedom a 0.05 level of significant. For level of education, the calculated sum of square 7.50701and mean square 2.50234 had strong feeling on the awareness of existing inland fisheries laws and policies. It shows that F ratio for level of education is 4.9515, and Prob >F is 0.0023 at 1 degree of freedom a 0.05 level of significant.

Table 4: Result of Effect of Existing Fisheries Laws and Policies on Fishersfolk in Rivers Sate

Source	DF	Sum of Square	Mean Square	F Ratio	Prob > F
Sex					
	1	0.72434	0.724339	1.3702	0.2429
Error	248	131.1041	0.528645		
C. Total	249	131.8284			
Age					
	4	8.77578	2.19394	4.3682	0.0020*
Error	245	123.0526	0.50226		
C. Total	249	131.8284			
Marital Status					
	3	4.75226	1.58409	3.0666	0.0286*
Error	246	127.0761	0.51657		
C. Total	249	131.8284			
Level of Education					
	3	7.50701	2.50234	4.9515	0.0023*
Error	246	124.3214	0.50537		
C. Total	249	131.8284			
Major Occupation					
	4	3.07591	0.768978	1.4633	0.214
Error	245	128.7525	0.52552		
C. Total	249	131.8284			
Years of Fishing Experience					
	4	31.30821	7.82705	19.077	<.0001*
Error	245	100.5202	0.41029		
C. Total	249	131.8284			
Sector of Fisheries					
	3	3.22634	1.07545	2.1755	0.0915
Error	241	119.1345	0.49433		
C. Total	244	122.3608			
Basis for Fishing					
	1	0.78082	0.780815	1.5606	0.2128
Error	243	121.58	0.500329		
C. Total	244	122.3608			

For major occupation, the calculated sum of square 3.07591 and mean square 0.768978 had strong feeling on the awareness of existing inland fisheries laws and policies It shows that F ratio for sex is 1.4633, and Prob >F is 0.214 at 4 degree of freedom a 0.05 level of significant. For years of fishing experience, the calculated sum of square 31.30821and mean square 7.82705 had strong feeling on the awareness of existing inland fisheries laws and policies It shows that F ratio for years of fishing experience is 19.077, and Prob >F is <.0001 at 3 degree of freedom a 0.05 level of significant. For sector of fisheries, the calculated sum of square 3.22634 and mean square 1.07545 had strong feeling on the awareness of existing inland fisheries laws and policies It shows that F ratio for sector of fisheries is 2.1755 > Prob F is 0.0915 at 1 degree of freedom a 0.05 level of significant. For basis of fisheries, the calculated sum of square 0.78082 and mean square 0.780815 had strong feeling on the awareness of existing inland fisheries laws and policies It shows that F ratio for sex is 1.5606 > Prob >F is 0.2128 at 1 degree of freedom a 0.05 level of significant. Thus, the null hypothesis is rejected, which means low perception of the benefits of the fisheries laws in Rivers State. Descriptive Statistical technique such as mean variation, frequency distribution, percentage, mean and standard deviations were used to analyse the data.

4. Conclusion and Suggestions

The findings from the assessment of existing fisheries laws and policies in Rivers State, Nigeria, indicate a low level of awareness of socio-economic variables and fisheries laws in the State. Fifty-eight per cent of fisherfolk reported fishing as their major occupation, with 70.4% male and 29.6% female participants. The study also demonstrated beneficial impacts on target species when laws are obeyed, including the creation of employment opportunities and the maintenance of a healthy aquatic environment. Based on these findings, the following suggestions are made:

i. The government should intensify efforts to ensure that inland fisheries laws and policies are implemented effectively to promote optimal fisheries productivity in the State.

ii. The media should provide adequate publicity for existing inland fisheries laws and policies to enhance their implementation, enforcement, and compliance.

iii. Stakeholders and institutions should organize seminars and workshops to raise awareness about the benefits of fisheries laws and policies.

5. Conflict of Interest:

The authors declare no conflict of interest relevant to this article.

6. Research and Publication Ethics Statement:

The authors declare that this study complies with research and publication ethics.

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