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Research Article

EFFECT OF FISHERY CRIMES ON ARTISANAL FISHING COMMUNITIES IN THE COASTAL REGION OF ONDO STATE, NIGERIA

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ABSTRACT

Illegal, unreported, and unregulated fishing activities pose significant threats, undermining local economies and depleting marine resources. This study explores the multifaceted effects of fishery crimes on artisanal fishing communities in the coastal region of Ondo State, Nigeria focusing on the interplay between the socioeconomic characteristics of the fishers and the resultant socioeconomic and environmental effects of such crimes. A multistage sampling technique was used in selecting 150 respondents for the study. Primary data were collected with the aid of a well-structured interview schedule. Descriptive statistical tools used to describe the study's variables were frequency counts, percentage, mean, and weighted mean score while Pearson product-moment correlation was used to test the study hypothesis. The finding revealed that the mean age of the artisanal fishers was 44 years, while the mean household size was 5 persons, and 11 years was the mean year spent schooling. The mean monthly income was #84,381 while 11 years was the mean years of experience in artisanal fishing. The common socioeconomic effects of fishery crimes on artisanal fishing communities were unemployment and displacement, food insecurity, economic losses, conflict among fishermen, and health impacts while overfishing, by-catch, impact on artisanal practices, depletion of fish stocks and ghost fishing were the common environmental effects. A significant relationship exists between the fishers' age, household size, years spent schooling, fishing experience, and monthly income and level of effect of fishery crimes on artisanal fishing communities. The study concluded that fishery crimes significantly undermine the sustainability and resilience of artisanal fishing communities with profound socioeconomic and environmental ramifications and recommended engaging artisanal fishing communities in decision-making processes.

Keywords: Effect, Fishery crimes, Artisanal fishing, Fishing communities coastal region.

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BACKGROUND INFORMATION

More than 60% of the world's protein supply is derived from fish, especially in developing countries. Nigeria as a maritime nation with a vast population of over 201 million people and a coastline measuring approximately 853 km, fish production as an enterprise possesses the capacity to contribute significantly to the agricultural sector (Osagie, 2012). With an annual fish demand in the country of about 2.66 million tons and a paltry domestic production of about 780,000 tons, the demand-supply gap stands at a staggering 1.8 million tons. Fish is the major source of readily available protein in Nigeria and the most common in the coastal areas of Ondo State. Fish is an important source of protein, which is highly needed for human beings to experience necessary growth and development (Oparinde and Ojo, 2014). The acceptability of fish in most communities of the world is due to fish tenderness and high digestibility compared to beef, mutton, chicken, and bush meat and its consumption is without taboo associated with most meat products (Adeleke, 2013). Coastal fisheries are important and contribute significantly to fish production. The global capture fisheries production stood at 90.9 million tons in 2016 with fisheries in marine and inland waters provided 87.2% and 12.8% of the global total, respectively (FAO, 2018). In coastal communities where fishing forms the mainstay of the economy, fishing may provide direct or indirect economic opportunities for the coastal dwellers. Artisanal, capture-based aquaculture, fish gear fabrication, fish businesses, boat and fishing vessel mechanics, and fish processing are some of the numerous fishing and allied economic activities providing a source of income for the people.

According to Mesquita and Isaac-Nahum (2015), artisanal fishing is the principal activity practiced in the Amazon basin, where it targets an enormous range of fish species, and provides an essential source of animal protein and economic income for riverside communities. Artisanal fishing practiced by small-scale fishers using traditional methods and equipment and knowledge passed down through generations, plays a crucial role in food security and livelihoods for millions globally, particularly in developing countries, and contributes significantly to local economies. These fishers often rely on a sustainable relationship with the marine ecosystems contributing to coastal communities' economic well-being and cultural heritage. In addition, Takir, (2023) posited that artisanal fishing, also known as traditional or small-scale fishing, is a type of fishing that has been practiced for thousands of years and remains an important part of many coastal communities around the world. It is characterized by low-tech, low-capital, and low-volume methods that use simple fishing gear and vessels, such as nets, hooks, and lines, and small boats or canoes. It is usually carried out by small communities, families, or individuals who fish for subsistence or small-scale commercial purposes. It is a vital source of livelihood for millions of people in developing countries, where it provides a source of income, food security, and cultural identity. However, artisanal fishing communities in coastal regions face numerous challenges with one of the most pressing being fishery crimes.

According to the United Nations Office on Drugs and Crime (2020), the fisheries sector is involved in a wide range of activities, which include taking, culturing, processing, storing, transporting, marketing, and selling fish from marine, coastal or inland areas. These activities may be small-scale or part of larger industrial operations and may be undertaken for subsistence, commercial, or other purposes. Marine and inland capture fisheries, together with aquaculture (fish farming), provide food and nutrition for billions of people worldwide and a source of income for more than 10% of the global population from those harvesting and processing fish to those involved in marketing and distribution. Despite, the crucial role of artisanal fishing in the coastal

communities' livelihoods and food security, several types of fishery crimes directly affect artisanal fishers thus by their nature, scope, and operational synergies, fisheries crime poses a significant threat for maritime security (Beseng, 2021). Fishery crimes refer to a range of illegal activities that exploit and deplete fishery resources beyond sustainable limits. It encompasses a range of illicit activities that undermine sustainable fishing practices and jeopardize the livelihoods of artisanal fishers. These crimes include illegal, unreported, and unregulated (IUU) fishing which involves includes; illegal fishing gear, illegal fishing practices, market manipulation, and enforcement gaps. This illegal activity is often linked to organized crime, exacerbated by weak governance and minimal penalties for offenders which allow these practices to flourish thus, IUU fishing has become a global threat because this crime has occurred in many countries and resulted in enormous losses to the coastal communities (Puspoayu and Setyowati, 2018).

Artisanal fishers face numerous challenges due to fishery crimes, including territorial encroachment by industrial trawlers that destroy nets and threaten livelihoods. In addition, according to the IGO and FAO (2022), IUU fishing activities are responsible for the loss of 11–26 million tons of fish annually which is about a $10–23.5 billion loss (Petrossian, 2015) affecting local economies reliant on sustainable fishing. The impact of fishery crimes on artisanal fishing in coastal regions is multi-faceted and far-reaching. Issacs and Witbooi (2019) reported that for decades IUU fishing is recognized as a major threat not only to the sustainability of fisheries but also to the marine ecology thus, the prevalence of IUU fishing not only threatens food security but also exacerbate social issues, such as forces labor within the fishing sector fishery crimes, particularly IUU fishing, impose significant negative impacts on the sustainability of their operation and the overall economic well-being of the fishers. IUU fishing contributes to marine pollution, leads to a decline in fish populations affecting the availability of seafood for both local consumption and commercial trade and this in turn affects the nutritional intake of coastal communities, forcing artisanal fishers to compete for dwindling resources and disrupt the delicate balance between artisanal fishers and their environment thus, consequences of fishery crimes on artisanal fishing communities are severe and wide-ranging. In view of this, the study assessed the effect of fishery crimes on artisanal fishing communities in the coastal region of Ondo State, Nigeria. Specifically, the study intends to describe the socioeconomic characteristics of the respondents, describe the socioeconomic and environmental effects of fishery crimes on artisanal fishing communities. It was hypothesized that there is no significant relationship between the respondents' socioeconomic and level of effect of fishery crimes on artisanal fishing communities.

METHODOLOGY

Ondo State is a state in southwestern Nigeria. It was created on February 3, 1976, from the former Western State. Ondo State borders Ekiti State to the north, Kogi State to the northeast, Edo State to the east, Delta State to the southeast, Ogun State to the southwest, Osun State to the northwest, and the Atlantic Ocean to the south. The state lies between longitudes 4"30" and 6" East of the Greenwich Meridian, 5"45" and 8"15" North of the equator. The state's capital is Akure, the former capital of the ancient Akure Kingdom. Ondo State includes a mangrove-swamp forest near the Bights of Benin. Ondo State is the 19th most populated state in the country, and the 25th-largest state by landmass. The state is predominantly Yoruba and the Yoruba language is commonly spoken. Ondo State is made up of 18 Local Government Areas (LGAs) located in the South Western Zone of Nigeria. Ondo State is in southwest of Nigeria and it's bounded by the coastal region of the Atlantic Ocean. Being a riverine area, the dwellers are mostly artisanal fishermen. Two LGAs, Ilaje and Ese-Odo, are prominent in the fisheries industry The Ilaje LGAs has the Atlantic Ocean as its neighbor; hence, a lot of artisanal fishing is done in the area. A multistage sampling technique was used in selecting respondents for the study. In the first stage, two LGAs (Ilaje and Ese-odo) were purposively selected based on the predominance of fishing activities in these areas. The second stage involved the use of simple random sampling techniques to select five fishing communities (Igbokoda, Ayetoro, Orioke-Iwamimo, Araromi-seaside and Mahintedo from Ilaje while (Igbekebo, Ipoke, Agadagba-oboh, Igbotu and Kiribo from Ese-odo) in the two selected LGAs making a total of ten fishing communities. Finally, the third stage involved a random selection of fifteen artisanal fishers from each of the selected fishing communities making a sample size of 150 respondents. Both primary and secondary data were used for the study. Primary data were collected with the aid of a well-structured interview schedule. Data collected were analyzed using both descriptive statistics, such as frequency counts, percentage, mean, and weighted mean score (WMS) while inferential statistics for testing the stated hypothesis is Pearson product-moment correlation (PPMC).

RESULTS AND DISCUSSION

Respondents' socioeconomic characteristics

Results presented in Table 1 show that 38% of the artisanal fishers were between the age range of 40–49 years while 34.7% were between the age range of 50–59 years and 23.3% of them were between 30 and 39 years. Furthermore, 1.3% were below 30 years and 2.7% were 60 years and above with a mean age of 44 years. The majority of the respondents were <50 years of age which implies that they were

Table 1: Distribution of respondents by socioeconomic characteristics (n=150)

Characteristics	Frequency	Percentage	Mean
Age (years)			
<30	2	1.3	44 years
30–39	35	23.3	
40–49	57	38	
50–59	52	34.7	
60>	4	2.7	
Sex			
Male	105	70	
Female	45	30	
Marital status			
Single	11	7.3	
Married	136	90.7	
Divorced	3	2	
Household size			
1–2	14	9.3	5
3–4	54	36	
5–6	58	38.7	
7>	24	16	
Years spent schooling			
No formal education	2	1.3	11 years
1–6	50	33.3	
7–12	88	58.7	
13>	10	6.7	
Monthly income (#,000)			
<50,000	45	30	#84,318
50,000–99,000	73	48.7	
100,000–149,000	15	10	
150,000–199,000	12	8	
200,000>	5	3.3	
Fishing experience (years)			
<10	17	11.3	13 years
10–14	73	48.7	
15–19	45	30	
20>	15	10	
Secondary occupation			
Farming	61	40.7	
Livestock rearing	19	12.6	
Forestry	28	18.7	
Seasonal labor	5	3.3	
Fishing-related crafts	33	22	
Informal labor	4	2.7	

Source: Field Survey, 2024

considered physically and economically active, productive, and agile. This implies that active and productive fishers contribute significantly to local and national food security, especially in coastal communities that rely heavily on fish as a primary source of protein while their agility allows them to adapt to changing fish stocks and environmental conditions ensuring a more consistent supply. The study finding is in line with the report of Oose *et al*. (2015) that active artisanal fishers were mostly below the age of 50 years. Table 1 further shows that 70% of the artisanal fishers were males while 30% were females. This indicates that artisanal fishing in the study area is male-dominated, which implies that there is a significant gender disparity in artisanal fishing which reinforces the existing gender roles and power imbalances limiting women's economic opportunities and participation in decision-making processes related to fisheries management thus women may be relegated to secondary roles in fish processing or selling despite often contributing significantly to the entire fishing operation. This finding is in tandem with the report of Mohammed *et al*. (2023) that artisanal fishing in the study area was dominated by males. The majority of the respondents (90.7%) were married while 7.3% were single and 2% were divorced. This indicates that married respondents engaged in artisanal fishing in the study area, which implies that collaboration between spouses involved in artisanal fishing can result in a higher overall household income and greater economic security thereby leading to improve living standards and reduce poverty as married fishers can easily pass down fishing skills and knowledge across generations within the families. This finding is consistent with the report of Bawa *et al*. (2019) and Aminu *et al*. (2017) that artisanal fishers were majorly married. Results presented in Table 1 further shows that 38.7% of the artisanal fishers had a household size of between 5 and 6 people, while 36% of them had a household size of between 3 and 4 people, 16% had a household size of 7 people and above, and 9.3% had a household size of between 1 and 2 people with the mean household size of 5 persons. This implies that the respondents in the study area had a medium-size household, thus, a medium-size household potentially provides a larger labor pool for fishing activities as more hands can participate in various stages from boat maintenance and net mending to processing and selling the catch which lead to increased efficiency and potentially higher yields. This finding is in tandem with the report of Falola *et al*. (2022) that artisanal fishermen had a mean household size of about 5 persons. Table 1 further shows that 58.7% of the artisanal fishers spent between 7 and 12 years of schooling, 33.3% spent between 1 and 6 years in schooling, while 6.7% spent between 13 years and above schooling, and 1.3% had no formal education with 11 years as the mean year spent schooling. This implies that the majority of the respondents spent a significant number of years having formal education. The fishers' level of education may enhance their fishing techniques and business practices leading to improved catch and income and as well open pathways to alternative livelihoods or diversification within the fishing industry. This finding negates the report of Nlerum and Bagshaw (2015) that most of the artisanal fishers had at least primary education. Results presented in Table 1 reveal that 48.7% of the artisanal fishers earned between #50,000 and #99,000 monthly from their fishing activities, 30% earned <#50,000 while 10% of them earned between #100,000 and #149,000, 8% earned between #150,000 and #199,000, and <5% of the fishers earned #200,000 and above with a mean monthly income of #84,381. This implies that artisanal fishing in the study area is not a profitable enterprise as this income level is likely to place these fishers and their families below the poverty line which contributes to the overall income inequality thereby limiting their ability to improve their living standards. This finding is in tandem with the report of Opaluwa *et al*. (2023) that the fishers' average monthly income is <50,000 naira. As shown in Table 1, 48.7% of the fishers had between 10 and 14 years of fishing experience, 30% had between 15 and 19 years of fishing experience while 11.3% of them had <10 years of fishing experience in artisanal fishing and 10% of the respondents had 20 years of fishing experience and above with 11 years as the mean years of fishing experience in artisanal fishing. This implies that with the respondents' years of fishing experience is quite encouraging as most of them have been in the business for a long time hence, they should have good skills and better approaches to the artisanal fishing business. The finding of the study is in line with the report of Oose *et al*. (2017) that the respondents had substantial fishing experience. Table 1 shows that 40.7% of the artisanal fishers engaged in farming as their other income-generating activity, while 12.6% of them engaged in livestock rearing and 18.7% engaged in forestry. Similarly, 3.3% of the artisanal fishers engaged in seasonal labor while 22% of them engaged in fishing-related crafts, and 2.7% of the artisanal fishers engaged in informal labor as their other income-generating activity. This implies that the artisanal fishers engaged in other income-generating activities of which many of farming and fishing-related crafts were the most common secondary occupations engaged in to supplement their low fishing incomes. This implies that diversification reduces the reliance of the fishers on a single income source (fishing), making the households less vulnerable to fluctuations in fish stocks, market prices, or environmental events, such as storms or climate change thereby leading to a greater food security and overall stability. This finding corroborates the report of Mohammed *et al*. (2023) that the artisanal fishers had alternative source of income and do not rely on fishing as the only source of income to meet the daily demands of their households.

Socioeconomic effects of fishery crimes on artisanal fishing communities

The result presented in Table 2 reveals that in the study area, the common socioeconomic effects of fishery crimes on artisanal fishing communities were unemployment and displacement ranked 1st with a WMS of 2.67, food insecurity ranked 2nd with a WMS of 2.63, economic losses ranked 3rd with a WMS of 2.55, conflict among fishermen ranked 4th with a WMS of 2.47 and health impacts ranked 5th with a WMS of 2.35. This implies that artisanal fishers often rely on local fish stocks for their income thus overfishing can deplete these stocks leading to unemployment for the local fishers. Furthermore, as local fisheries collapse, fishermen may be forced to migrate in search of opportunities elsewhere thereby disrupting family structures and community ties. Similarly, fish is a crucial source of protein for many coastal communities so IUU fishing reduces the availability of fish, leading to higher prices and limited access for local consumers thus with less fish available, communities may experience increased malnutrition, particularly among the vulnerable populations such as children and elderly. Depletion of the fish stocks diminishes the earnings of local fishers which may have a cascading effect on the local economy affecting businesses and services reliant on fisheries therefore; the need to travel farther for fishing or buy more expensive fish can put an additional financial strain on the communities already facing economic challenges. As fish become scarcer due to IUU fishing, competition among artisanal fishers can intensify leading to conflict over fishing rights and territories and the dispute can cause rifts within communities, undermining social cohesion and triggering violence. Economic instability, loss of livelihood,

Table 2: Distribution of respondents by socioeconomic effects of fishery crimes on artisanal fishing communities (n=150)

Socioeconomic effects	WMS	Rank
Economic losses	2.55	3rd
Food insecurity	2.63	2nd
Unemployment and displacement	2.67	1st
Threat to cultural heritage	2.04	9th
Increased vulnerability	2.05	8th
Environmental damage	1.98	10th
Illegal competition	2.07	7th
Sociocultural disruption	1.93	11th
Resource depletion	1.91	12th
Regulatory burdens	1.85	14th
Health impacts	2.35	5th
Rural poverty	2.11	6th
Conflict among fishermen	2.47	4th
Degradation of marine ecosystem	1.87	13th

WMS: Weighted mean score
Source: Field Survey, 2024

and conflicts can lead to increased stress, anxiety, and mental health issues among the fishers and their families as economic loss may also impede access to healthcare services exacerbating the health problems within the communities. The aforementioned socioeconomic effects can contribute to a cycle of poverty and vulnerability in artisanal fishing communities. This finding is in tandem with the report of Owusu and Abakah (2022) that Illegal fishing activities threaten the sustainability of coastal fisheries and the livelihoods of fishing households. Furthermore, Sumaila *et al*., (2020) reported that Illegal fishing results in food and nutritional insecurity, loss of jobs, and loss of income to local fishers and national economies. Similarly, DCDC (2018) reported that the socioeconomic effects of illegal fishing may lead to social impacts, loss of cohesion, and migration away from the coast toward urban areas, ultimately even stretching to conflict over resources. More likely is local disorder among fishers as a consequence of a decrease in household income due to reduced catch opportunities and reduced employment.

Environmental effects of fishery crimes on artisanal fishing communities

Table 3 shows that overfishing ranked 1st with a WMS of 2.32, by-catch ranked 2nd with a WMS of 2.31, impact on artisanal practices and depletion of fish stocks ranked 3rd with a WMS of 2.19 and ghost fishing ranked 5th with a WMS of 2.15 were the common environmental effects of fishery crimes on artisanal fishing communities in the study area. This implies that overfishing leads to the depletion of fish populations making it increasingly difficult for artisanal fishers to catch enough fish to sustain their livelihoods which can result in economic hardship and food insecurity for communities that rely on fishing as their primary source of income and nutrition. The removal of certain species can also disrupt the marine ecosystem leading to imbalances that can affect other species including those that the artisanal fishers rely on. By-catch refers to the unintentional capture of non-target species which can lead to a decline in those populations thereby disrupting ecological balance as the loss of species that play crucial roles in the ecosystem can have cascading effects on the marine environment. By-catch also often results in the waste of valuable resources as many of the caught species are discarded dead or dying which is particularly detrimental for artisanal fishers who depend on diverse fish stocks Furthermore, artisanal fishers often find themselves competing with larger industrial fishing operations that can deplete fish stocks at a much faster rate and this competition can threaten their traditional practices and cultural identity. As fish stocks decline, the traditional knowledge passed down through generations becomes less relevant, potentially leading to a loss of cultural heritage and practices associated with sustainable fishing. The depletion of fish stocks can lead to reduced catches which directly affects the income of the fishers thereby creating economic instability within communities that rely heavily on fishing. Economic hardship can also lead to increased poverty, migration to urban areas for alternative employment, and social unrest within the fishing communities. Similarly, ghost fishing occurs when lost or abandoned fishing gears continues to catch fish and other marine animals which can lead to the unnecessary death of marine life and further deplete fish stocks. Ghost fishing can hinder the recovery of depleted fish stocks thus disrupting marine ecosystems and affecting the long-term viability of artisanal fishing practices. The combination of these factors can create a challenging environment for the artisanal fishing communities. This finding is in tandem with the report of Fillie (2019) that IUU fishing severely impacts the artisanal fishers' practices, fish stock is being depleted, and there are not enough alternative employments to absorb those fishers pulling out of fishing. Similarly, Desai and Shambaugh (2021) reported that the incidence of piracy in a particular location is associated with higher catch volumes from high-by-catch and habitat-destroying fishing and Owusu and Abakah (2022) also reported that illegal fishing activities have resulted in overfishing, decline in fish catch and the destruction of the marine ecosystem.

Table 3: Distribution of respondents by environmental consequences of fishery crimes on artisanal fishing communities (n=150)

Environmental consequences	WMS	Rank
Overfishing	2.32	1st
By-catch	2.31	2nd
Habitat destruction and loss of biodiversity	2.09	10th
Disruption of the food chain	2.09	10th
Spread of diseases and invasive species	2.13	6th
Destruction of ecosystem balance	2.05	12th
Water pollution	2.13	6th
Climate change vulnerability	1.85	13th
Alteration in migration pattern	2.11	8th
Reduced marine productivity	1.77	14th
Impact on artisanal practices	2.19	3rd
Depletion of fish stocks	2.19	3rd
Ghost fishing	2.15	5th
Reduced resilience of fisheries	2.10	9th

WMS: Weighted mean score
Source: Field Survey, 2024

Hypothesis testing

- There is no significant relationship between the respondents' socioeconomic and the level of effect of fishery crimes on artisanal fishing communities.
- Relationship between the respondents' socioeconomic and level of effect of fishery crimes on artisanal fishing communities.

The PPMC analysis result presented in Table 4 shows that a significant relationship exists between the fishers' age (r=0.310; p=0.000), household size (r=0.409; p=0.000), years spent schooling (r=0.395; p=0.000), years of fishing experience (r=0.505; p=0.000) and monthly income (r=0.491; p=0.000) and level of effect of fishery crimes on artisanal fishing communities. This implies that older fishers may have less physical capacity to adapt to or mitigate the effects of fishery crimes, such as gear theft or illegal fishing depleting fish stocks while the younger fishers might be more adaptable but lack the experience to effectively navigate these challenges as they may be more likely to take risks making them susceptible to exploitation. Furthermore, larger households are more vulnerable to income loss from fishery crimes as a single incident can have a more devastating effect on a larger family dependent on fishing income while smaller households might be more resilient but could still face hardship. Higher education levels might correlate with a better understanding of legal frameworks and avenues for reporting and combating fishery crimes while lower educational levels could increase vulnerability to exploitation or misinformation about fishing regulations. Similarly, experienced fishers might have established networks and strategies for mitigating risks associated with fishery crimes; however, they may also be more likely to engage in risky behaviors if struggling economically. Fishers with lower monthly incomes are disproportionately affected by fishery crimes, a small loss of income can represent a much larger percentage of their total earnings compared to higher-income fishers, which can lead to a vicious cycle of poverty and vulnerability. This finding is in tandem with the repost of Aminu *et al*. (2017).

Table 4: Summary of correlation analysis showing the relationship between the respondents' socioeconomic and the level of effect of fishery crimes on artisanal fishing communities

Characteristics	r-value	p-value	Decision
Age (years)	0.310	0.000	Significant
Household size	0.409	0.000	Significant
Years spent schooling	0.395	0.000	Significant
Years of fishing experience (years)	0.505	0.000	Significant
Monthly income (#0.000)	0.491	0.000	

Significant at a 5% level of significance

CONCLUSION AND RECOMMENDATIONS

Fishery crimes significantly undermine the sustainability and resilience of artisanal fishing communities with profound socioeconomic and environmental ramifications. The prevalence of IUU fishing disrupts local economies leading to increased poverty, food insecurity, and diminished livelihoods for the fishers. As marine resources become depleted, the environmental degradation further compounds these socioeconomic effects creating a vicious cycle of poverty that threatens the very fabric of these fishing communities. The interplay between socioeconomic vulnerabilities and the environmental effects of fishery crimes highlights the urgent need for integrated approaches that address both immediate and long-term issues faced by artisanal fishers. Hence, the following recommendations are made based on the findings of the study;

1. Governments should enhance legal frameworks and enforcement mechanisms to combat fishery crimes effectively thus, implementing stricter penalties for IUU fishing can deter illegal activities and safeguard marine resources
2. Engage artisanal fishing communities in decision-making processes by empowering local fishers through education, training and access to resources can enhance their capacity to combat fishery crimes and promote sustainable practices
3. Promoting the adoption of sustainable fishing techniques to ensure long-term viability of fish stocks through community-led initiatives and partnerships with NGOs that focused on environmental conservation
4. Encourage economic diversification within artisanal fishing communities to reduce dependency on fishing alone as supporting alternative livelihoods can enhance resilience against the socioeconomic effects of fishery crimes
5. Conduct awareness campaigns to educate fishers about the consequences of fishery crimes on their communities and the environment as increasing awareness can foster a sense of responsibility and collective action against illegal practices.
6. Foster collaboration among government agencies, NGOs, local communities, and the private sectors to create a unified front against fishery crimes as joint efforts can amplify resources and effectiveness in addressing the issue.
7. Implementing robust monitoring and surveillance systems to track fishing activities and identify illegal operations as utilizing technology, such as satellite tracking and drone surveillance can enhance enforcement efforts.

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