

Measures to Enhance the Surveillance System and the Situation of Offenses Seen in Maritime Fishing: The National Fisheries Surveillance and Police Center (CNSP) in Guinea

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Abstract: This work's goal was to compile a list of fishing-related violations in order to suggest ways to enhance the surveillance system. In order to accomplish this goal, the following approach was used: Executive consultation and archive exploitation; surveillance agent survey; surveillance system identification and description; identification of offenses and fleet involved in the Guinean exclusive and economic area in recent years; identification and categorization of offense causes; surveillance system evaluation; and suggestion for enhanced surveillance system measures. Monitoring of this strategy showed that: fishing operating zones, administrative paperwork, and fishing gear are all linked to the infractions committed in the Guinean exclusive and economic zone. Records show that there were 308 boardings between 2006 and 2021. IP (Intellectual Property) infringement rates are 59%, Motorized Artisanal Fishing is 25%, and Semi-industrial fishing is 16%. In Motorized Artisanal Fishing, the Guineans have committed 33, the Senegalese have committed 23, and the Leoneese have committed 18. In Semi-industrial fishing, the Chinese have committed 17 and the Senegalese have committed 16. According to the stakeholder survey, Vessel Monitoring System monitored 79 vessels in industrial fishing and 49 in Semi-industrial fishing in 2021. Registration certificates, personnel, rescue gear, gross tonnage, coastal state fishing authority, and maritime radio license are typically the primary documents examined at sea. From 2006 to 2022, a total of 135 fleets—80 demersal trawlers, 7 cephalopod boats, 21 shrimp boats, 22 pelagic trawlers, and 5 cargo ships—were implicated in violations in the Guinean exclusive and economic area. By integrating the automatic identification system and Vessel Monitoring systems for fisheries surveillance, establishing a marking system for fishing gear, investing in highly effective launches, and protecting the privacy of patrol activities, Guinea's surveillance system might be improved more effectively.

Key words: Offenses, marine fishing, surveillance system, boarding.

1. Introduction

The establishment of effective surveillance in order to combat repeated infractions in maritime fishing has become a major concern of all coastal States.

Indeed, illegal fishing causes seven West African countries to lose 170 billion CFA francs. It contributes to the overexploitation of our oceans, the destruction of ecosystems, threatens food security and the economic balance of the seafood market [1].

However, the fight against illegal fishing is difficult, particularly coastal states. The coast guards and all the inspectors are very few in number and the areas to be controlled are immense.

These problems are compounded by insufficient fisheries control and surveillance efforts by African governments, as well as the complicity of foreign fishing companies and ministries responsible for regulating fisheries [2].

In the Republic of Guinea, the fight against fishing offenses worries the authorities, which has prompted the creation of a CNSP (National Fisheries Surveillance and Police Center). However, very unfortunately, this center is not yet effective enough to detect all offenses committed at sea. The problems observed are linked to the insufficiency of the technical and human resources made available to the CNSP. On the other hand, the personnel responsible for contributing to the surveillance of fishing zones are very limited and do not have the necessary means to carry out their tasks successfully.

Furthermore, the lack of an effective communication and data management system limits the control and surveillance capacity of the authorities. To improve the surveillance system, the CNSP should put in place measures to increase surveillance capacity and strengthen controls.

2. Methods and Material

2.1 Material

2.1.1 Presentation of the CNSP

The CNSP is a public administrative establishment,

with legal, financial and management personality. Located in the commune of Matam, on the Niger road at Km10, adjusted to the gendarmerie squadron mobile Pm3 and the health center, as shown in Fig. 1.

2.2 Methods

The objective of this work was to take stock of the offenses recorded in fishing with a view to proposing solutions for improving the surveillance system. To achieve this objective, the following methodology was adopted:

- Consultation of executives and exploitation of archives.
- Survey of surveillance agents.
- Identification and description of the surveillance system.
- Identification of the offenses and fleets in question in the Guinean EEZ in recent years.
- Determination and classification of the causes of offenses.
- Evaluation of the surveillance system.
- Proposal for improved measures of the surveillance system.

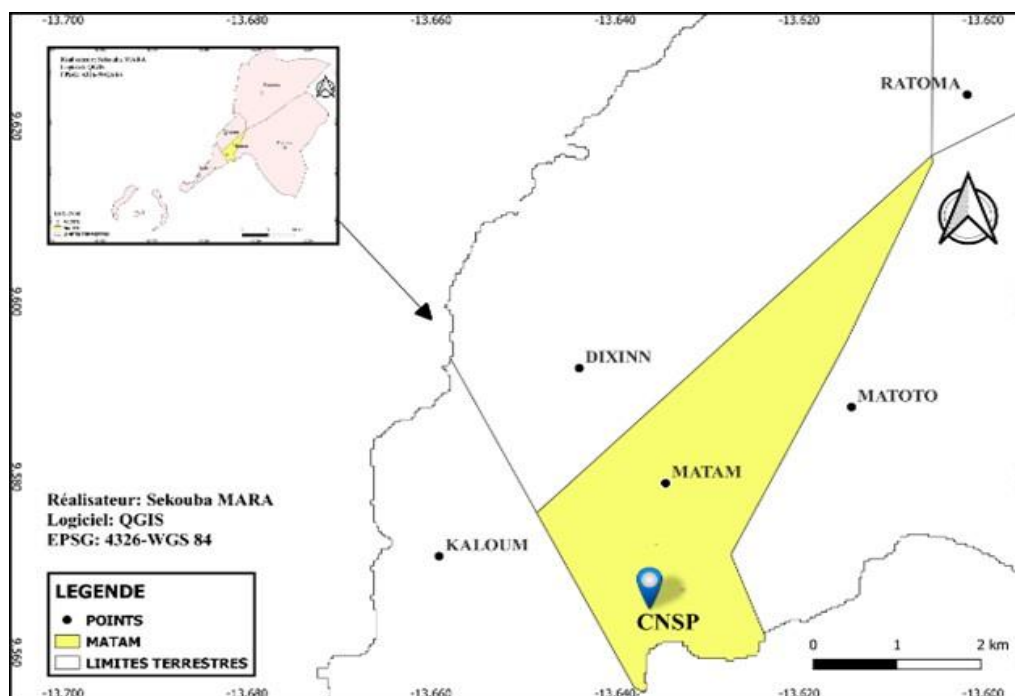


Fig. 1 Map of the Municipality of Matam.

survey sheets were developed with code 1 for notification.

2.2.1 Consultation of Executives and Exploitation of Archives

The consultation of executives from the CNSP in Guinea was marked by series of interviews on pre-established investigation sheets. These interviews focused on the functioning of the various services operating within the framework of the monitoring, control and surveillance system. Existing documents in libraries were searched to better understand the situation of offenses encountered in fishing.

2.2.2 Survey of Surveillance Agents

The surveillance agents composed of the logistics service, communication/VMS service, observer program service, the surveillance/inspection service of the CNSP were investigated using an investigation sheet on the situation of offenses in Guinea, monitoring of catches and operation of the VMS.

2.2.2.1 Survey of Logistics Service Agents

Executives working in the logistics service were investigated individually at the CNSP using pre-established investigation sheets. The questions were focused on knowledge of the conditions of the bases, administrative vehicles and launches, but also on their contributions to the surveillance system practiced in Guinea.

2.2.2.2 Survey of Communication/VMS Service Agents

Executives working in the communication/VMS department were surveyed at the CNSP using pre-established survey sheets. The questions were focused on the operation, communication and shortcomings of the VMS system.

2.2.2.3 Survey of Observer Agents

The observer agents were investigated individually at the CNSP using pre-established investigation sheets. The questions were focused on their activities, the risks and the difficulties linked to this activity.

2.2.2.4 Survey of Agents of the Surveillance/Inspection Service

The executives working in the surveillance/inspector

service were investigated individually at the CNSP using pre-established investigation sheets. The questions were focused on the patrol strategies and methods of the different bases. The risks and difficulties linked to patrolling waters under the sovereignty of the Guinean state.

2.2.3 Identification and Description of the Surveillance System

Through a series of interviews with executives of the different services of the CNSP, the surveillance system applied in Guinea as part of the surveillance of fishing activities was identified and described based on the devices implemented in surveillance.

2.2.4 Identification of Offenses and Fleets in Question in the Guinean EEZ in Recent Years

Through the analysis of the archives on the boardings from 2006 to 2021 and the interviews carried out with the executives and the surveillance agents of the CNSP, the offenses and the fleets in question in the Guinean EEZ during these recent years have been identified based on the offenses and fishing techniques practiced by the boarded vessels.

2.2.5 Determination and Classification of the Causes of Offenses

The causes of the offenses were determined and classified through an interview with agents working on surveillance in the center of Conakry as well as in some secondary surveillance bases.

2.2.6 Evaluation of the Surveillance System

For the evaluation of the CNSP surveillance system, a series of interviews was carried out with all the staff of the different services, which constitute the CNSP using a survey sheet and the findings following their interventions.

2.2.7 Proposal for Measures to Improve the CNSP Surveillance System in Guinea

In light of the results obtained in the field and the observations made, measures to improve the surveillance system have been proposed to guarantee and sustain surveillance at sea in Guinea.

3. Results and Interpretation

3.1 Consultation of Executives and Exploitation of Archives

The consultation of executives was the first activity, a total of 7 cards were consulted including 3 in the surveillance/inspection service, 1 in the catch statistics service, 1 in the observer program, 1 in the logistics service and 1 in the service communication/VMS; all affirmed the presence of offenses committed by Guinean and foreign fishing vessels in waters under the jurisdiction of the Guinean State. According to these executives consulted, bad practices are linked to fishing gear, unauthorized fishing, fishing in the prohibited area and documents. Finally, the archives were used with the aim of knowing the surveillance effort of the CNSP from 2006 to 2021 according to the number of vessels boarded and the number of days spent at sea, the distribution of infractions by type of fishing, classification of offenses committed and the distribution of offenses by flag State. The results obtained can be found in Figs. 2-5 and in Tables 2 and 3.

Fig. 2 shows that there is a variation in the number of ships boarded in the Republic of Guinea from 2006 to 2021, with a decrease in the number of ships boarded from 2006 to 2010, an increase from 2010 to 2013, a decrease from 2013 to 2015, growth from 2015 to 2019 and a decrease from 2019 to 2021.

This saw tooth evolution of the number of vessels in violation would be due to the surveillance effort of the Conakry Center as well as the 5 other bases of secondary surveillance which are Kalaya, Koukoudé, Bongolon, Koba and Kamsar which is explained by the combination of monitoring and control means as well as the vigilance of surveillance agents.

It appears from Fig. 4 that the distribution in relation to the offenses committed by the three fishing sub-sectors is as follows: 59% in industrial fishing, 16% in semi-industrial fishing and 25% in motorized artisanal fishing. Industrial fishing is the sub-sector in which fishermen Fig. 4 Distribution of infractions by type of

fishing commit many violations. This could be explained on the one hand by the pressure exerted by powerful foreign fleets in the waters under the sovereignty of the Guinean state and on the other hand by the insufficiency of means of control and adequate surveillance for this type of fishing.

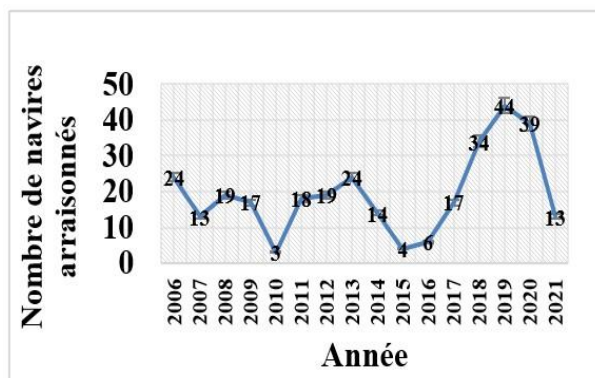


Fig. 2 Surveillance effort from 2006 to 2021 depending on the number of ships boarded.

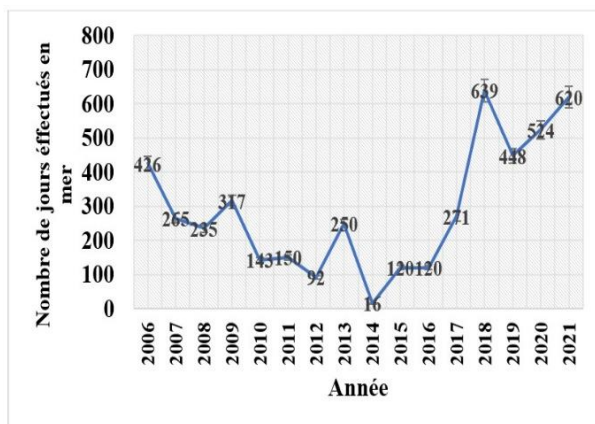


Fig. 3 Monitoring effort from 2006 to 2021 depending on the number of days spent at sea.

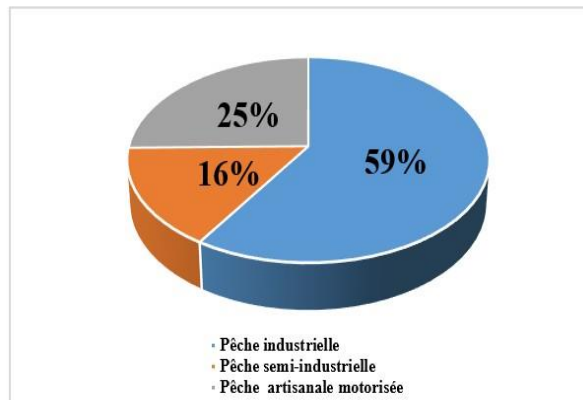


Fig. 4 Distribution of infractions by type of fishing

Table 1 Classification of offenses committed from 2006 to 2015.

Offenses	YEAR										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
PNA	02	02	02	04			01	01			
PZI	09	03	03	05	01	06	10	06	09		
OM	07	03	01	02	00	05	07			01	
PZI/OM	03	04				03	01	05			
CTP	01				01	02				03	
OM/MAR	02										
Q											
PNA/OM				03							
APN/TRA				03							
NSB											
MNR/OM						02			02		
MNR								01			
APN		01									
PZI/MNR								05			
STRANDE								06			
D											

PZI = Fishing in the prohibited zone and;

PNA = Unauthorized fishing;

PZI = 73, PNA = 15.

It appears from Fig. 3 that there is a variation in the number of days spent at sea by the different bases of the CNSP from 2006 to 2021. This variation could be due to the insufficiency of material and economic means deployed for surveillance on the one hand and by a lack of flight personnel on the other hand.

From Table 1, it appears that from the period from 2006 to 2015 a total of 73 fishing offenses were committed of the type “Fishing in the prohibited zone” of which 100% were industrial fishing and 15 offenses of the type “Unauthorized fishing” of which 100% in industrial fishing.

This remark could be explained by the absence of the satellite monitoring system (VMS System) in the fisheries monitoring system in the Republic of Guinea (CNSP) from the date of creation of the center until the advent of the VMS system in end of 2009 and the lack

of control of the VMS system by the central authorities or by the fishermen.

It appears from Fig. 5 that the majority of industrial fishing violations are committed by vessels flying the Chinese flag, including 86 vessels with a percentage of 47.78% and 60 Korean vessels with a percentage of 33.33%; in semi-industrial fishing including 17 Chinese vessels with a percentage of 35.41% and 16 Senegalese vessels with a percentage of 33.33%; in motorized artisanal fishing including 33 Guinean vessels with a percentage of 42.86% and 23 Senegalese vessels with a percentage of 29.87%. This could be explained by the aid provided by China from various sources, the fishing agreements between Guinea and China, between Guinea and the maritime countries of West Africa, the targeted resources.

3.2 Survey of Surveillance Agents

During surveys of agents, in total 20 agents were surveyed, namely 1 in the logistics department, 1 in the communication/VMS department, 10 in the observer program and 8 in the surveillance/Inspector department. These surveys allowed us to have information on their strategy and method in surveillance in Guinea.

3.2.1 Survey of Logistics Service Agents

In order to obtain information on the functioning of this service within the framework of surveillance, a survey of managers was carried out and the results obtained can be found in Table 4.

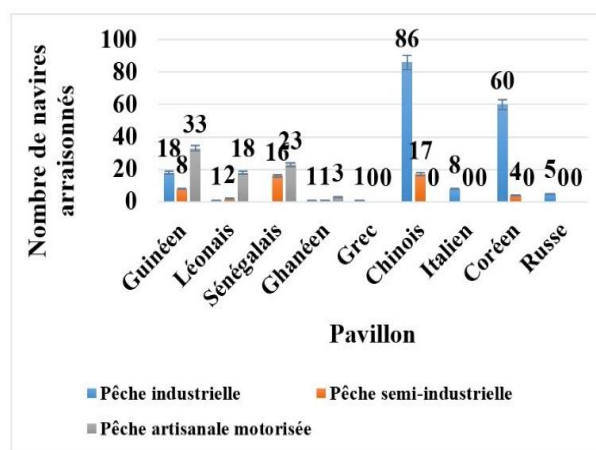


Fig. 5 Distribution of fishing offenses by flag state.

Table 2 Condition of monitoring means.

Activities	Number	Observation
Local development	6	Among the premises, one is currently being fitted out which is the CNSP
Celebrity interviews	6	The six stars are maintained
Maintenance of administrative vehicles	5	Lack of administrative vehicle in the other five bases only that of Conakry
Storage of materials	5	Lack of store in Kalaya base

Table 3 Operation of the VMS monitoring system.

Vessels by type of fishing	Observation by color	Observation
Pelagic trawlers	Blue	VMS
Tuna boats	Black	
Demersal trawlers	Red	
Cephalopodiers		
Gastropodiers		
FMES	Red	
FTPP		
Demersals		

FMES: Surface encircling gillnet, FTTP: Small pelagic rotating net.

Table 4 Living conditions of observers.

Number	Official	Contractual	Documentation
10	None	10	Daily capture sheets Situation reports Travel reports

From these results, it appears that during the investigations in the logistics service it was revealed to us that to ensure good surveillance, it is necessary to ensure the layout of the premises in the different bases, maintain the administrative vehicles of the National Surveillance and Monitoring Center Fisheries Police, surveillance boats in bases and material storage areas.

3.2.2 Survey of Communication/VMS Service Agents

In order to have information on the operation of this service within the framework of the monitoring a survey of executives was conducted and the results obtained can be found in Table 5.

From Table 3, we see that the monitoring of industrial and semi-industrial fishing vessels at the CNSP level is ensured by VMS monitoring software which allows rigorous control. This monitoring is targeted by categorizing vessels visually by color according to their fishing technique and areas of activity. The fishing fleet is classified in the color preference system used: cephalopod trawlers in red, demersal trawlers in red, pelagic trawlers in blue, tuna boats in black. The controlled zones are drawn on the map for specific visual monitoring: fishing zone, fishing prohibited zone,

permitted distances from the coast.

3.2.3 Survey of Observer Agents

In order to have information on the function, the role of an observer, the living conditions on board, the situation of the offenses and as well as on the cooperation between the inspecting agents and the observers during the routine mission, an investigation was carried out with observer agents and the results obtained can be found in Fig. 6 and 7 and in Table 4.

From these results, it appears that during the surveys in the observer program service it was revealed to us that out of 10 observers surveyed, 100% of the observers are contractual and they followed training and passed a test within the National Surveillance Center and of Fisheries Police on how to complete daily catch sheets, situation reports and trip reports at the end of the report.

From Fig. 6, it appears that out of a total of 10 observers surveyed, 70% affirm that fishermen carry out fishing activity in the prohibited zone, unauthorized fishing and transshipment. This could be explained by the fact that the seagoing personnel do not understand the language of the observer or do not want to cooperate

with the observer agent and 30% affirm that fishermen do not practice fishing in the prohibited zone, do not transship; this could be explained by the fact that the seagoing personnel understand the observer's language and cooperate with the agent.

From these results, it appears that during our investigation in the observer program service it was revealed to us that out of 10 observers surveyed, 90% of observers affirm that they cooperate with the inspectors in their routine mission in the GBS (Gros Common Sense) code and 10% do not cooperate with the inspectors during their mission. These reasons would be due to the fact that the observer wants to ensure his safety on board.

3.2.4 Survey of Agents of the Surveillance/Inspector Service

With the aim of having information on the operation of this service, an investigation was carried out after agents including 8 inspectors were investigated during our investigations into the surveillance effort canceling, the main documents requested during their mission routine, 2021 boardings, on participatory surveillance and the results obtained can be found in Figs. 9 and 10 and in Tables 5 and 6.

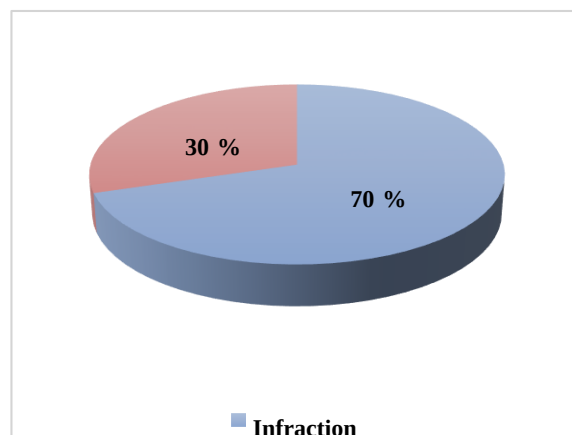


Fig. 6 Situation of offenses.

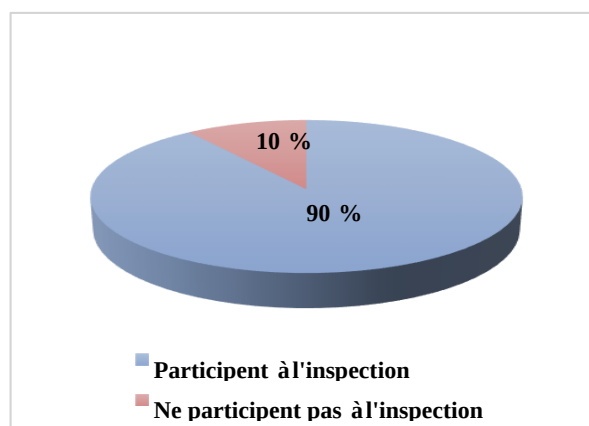


Fig. 7 Cooperation between inspection agents and observers during the routine mission.

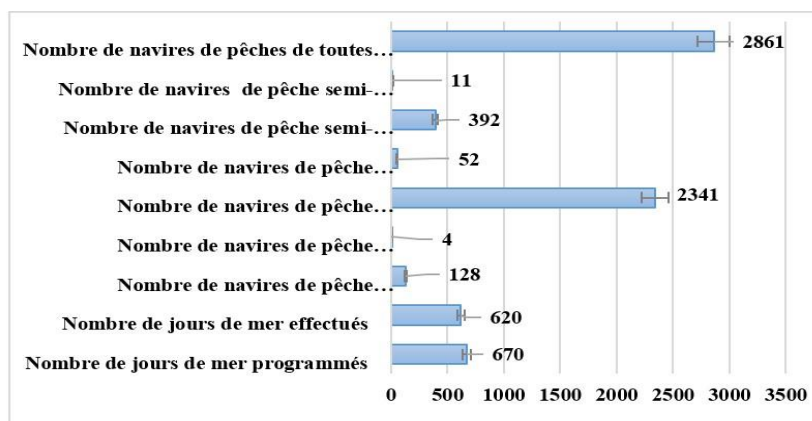


Fig. 8 2021 annual monitoring effort.

Table 5 2021 Baoding.

Type of fishing	Number	Offense	Almond
PSI	9	Fishing in the prohibited area	
		Access to the EEZ without authorizatio n	26,500
		Non-cooperation with surveillance agents, observer	EURO
IP	4	Absence of authorization to access the EEZ	700,000
		Fishing in the prohibited area	EURO

Measures to Enhance the Surveillance System and the Situation of Offenses Seen in Maritime Fishing: The National Fisheries Surveillance and Police Center (CNSP) in Guinea

Table 6 The main documents requested during their routine mission.

Type of documents	Purposes	Issuing authority	Risk factors
Registration certificate	Identification document of the vessel conferring its nationality.	Flag state	This is a basic document often used by illegal operators to obtain (or create) new authorization or security document.
Tonnage certificate	Certifies the dimensions and gross/net tonnage of the vessel as determined by a maritime surveyor.	Flag State or approved certificate body	Tonnage falsification is a common element in fraudulent activities aimed at accessing the resource, carrying out transshipment or reducing costs.
Fishing authorization from the coastal state	A vessel must have authorization to fish in national waters, whether fishing in the EEZ of its flag State or a third country. The type of gear, authorized target species and prohibited areas will appear on the license.	Coastal state	Possibly counterfeited and falsified to conceal illegal fishing activities. Photocopies are often kept on board instead of originals, making verification of their validity difficult.
Maritime radio license	Mandatory for all vessels equipped with a maritime radio and having obtained a radio identifier from their Flag State	Flag State	May be counterfeited or falsified to present a false call sign or MMSI number and legitimize their use in radio communications. Old radio licenses found on board may indicate previously used call signs.
Safety certificate	Examples include: Certificate of conformity for fishing vessel. Radio safety certificate. Safety equipment conformity certificate.	Flag State, issued by a classification authority	Use of false safety certificates is a common element in fishing-related crime cases, with vessel operators seeking to hide their unseaworthiness or unsafe working conditions.

Table 7 Identification and description of the surveillance system.

Devices	Roles
Technical inspection of ships	The technical inspection of vessels consists of assessing the characteristics of the vessel, its fishing gear, equipment and on-board documents, as a prelude to acquiring a fishing license. In addition, it should be noted that as part of the rationalization of their activities, all ships present at the dock or in the harbor are subject to inspection and control. This control is extended to their fishing equipment and catches on board.
Observer program	The world's major fishing fleets have an on-board observer program. These observers play an indispensable role for the vessel, as they are responsible for certifying and verifying that sustainable fishing practices comply with international standards. The observation program has two objectives: On the one hand, check that fishing boats comply with fishing and environmental regulations and, on the other hand, develop extensive biological sampling.
Satellite monitoring	In Guinea, the CNSP acquired the VMS in 2009, with a view to ensuring optimization of outings and efficiency of missions. The installed system is Argos. However, it receives data provided by the Immersat beacon installed on the authorized vessel. This system operates and is monitored 24 h a day.
Aerial surveillance	It is ensured through aerial coverage of fishing zones by an aircraft specifically equipped for the detection and photography of vessels operating in the Guinean EEZ. The CNSP does not have aircraft, it rents the maritime aviation service.
Nautical surveillance	The CNSP has 5 secondary surveillance bases located along the coast plus central Conakry. To carry out its missions, it has: a deep-sea and coastal surveillance component using 6 surveillance boats.
Participatory monitoring	This program aims to equip artisanal fishermen to enable them to transmit to fisheries surveillance services information on the presence and position of vessels in fishing zones exclusively reserved for artisanal fishing.
Cooperation	It is a very important system, which allows the exchange of information at national and international level around fishing vessels.
Retrospective monitoring of ships	This activity is carried out by the "Cell responsible for offenses noted subsequently". It aims to elucidate that the activities of the vessel that completed its fishing trip took place according to the standards prescribed in the fisheries development and management plan as well as in the main reference documents.

Analysis of Fig. 7 shows that in the year 2021, the surveillance effort by the six bases is: out of 670 days scheduled for patrol missions, 620 days were carried out. During these 620 days at sea, 2,861 vessels of all categories were inspected: out of 128 industrial fishing

vessels inspected, including 4 vessels boarded, 2,341 motorized artisanal fishing vessels inspected, including 52 diverted, and 392 semi-industrial fishing vessels inspected, including 11 vessels boarded. This monitoring effort is insufficient compared to the number of days.

This could be explained by the metrological conditions (wind and heavy rain), the power of the launches and by the cost of monitoring.

It appears from Table 7 that the greatest number of boardings took place in the field of semi-industrial fishing with a number of 9 vessels boarded and a fine of 26,500 EURO, followed by industrial fishing with 4 vessels boarded, and 700,000 EURO. This high number of vessels boarded in semi-industrial fishing can be explained by the fact that the fines for semi-industrial fishing are lower than the fine for industrial fishing, this increase in fine fees in the field of fishing industrial is due to the size of the vessel used and the fishing zone where the offense was committed.

From Table 7, it emerges during the investigations in the base and patrol operation program that it was revealed to us that before all other inspections, the main documents to be inspected are: Fishing authorization from the coastal State, Tonnage certificate, Certificate registration, maritime radio license, safety certificate delivered by the flag State. This could be explained by the fact that fishermen like to carry out fishing activities with false documents.

It appears from Fig. 9 that out of 5 managers of the bases surveyed affirm that out of 100% of artisanal fishermen, 95% do not participate in participatory monitoring and 5% participate. This predominance of the rate of artisanal anglers who do not participate in participatory monitoring could be explained by the fact that most artisanal anglers have relationships with certain fishing companies or they work for the companies on the one hand and they are not in the standards during fishing activities on the other hand.

3.3 Identification and Description of the Surveillance System

Through the results obtained in the field, the identification and description of the fishing activities monitoring system implemented in the Republic of Guinea were listed in Table 9.

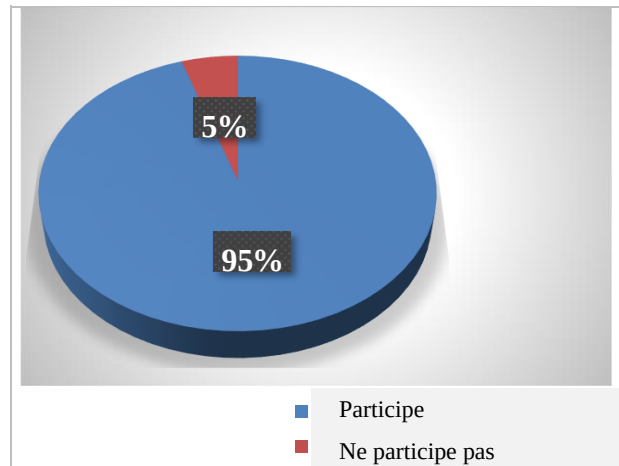


Fig. 9 Distribution of fishermen participating in participatory monitoring.

3.4 Identification of Offenses and Fleets in Question in the Guinean EEZ in Recent Years

Through the results obtained from the archives and interviews with executives and surveillance agents of the CNSP, the offenses and fleets in question in the Guinean EEZ during recent years have been listed and are mentioned in Figs. 10 and 11.

It appears from Fig. 10, the most frequent offenses in the Guinean exclusive economic zone are often linked to documents of which 123 vessels were boarded because of the documents by either fishing without authorization, by absence of the original navigation

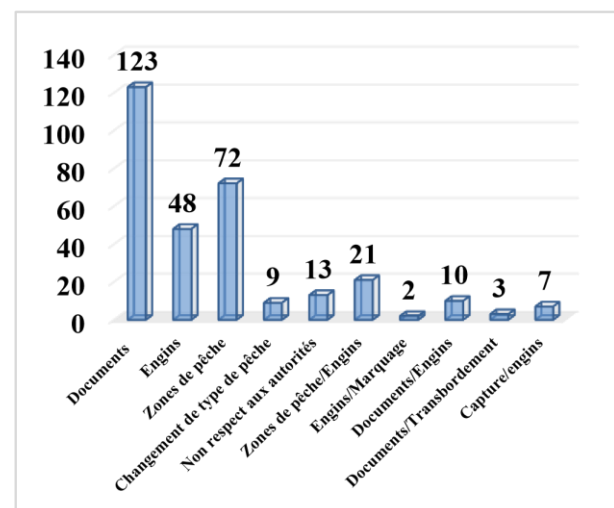


Fig. 10 Inventory of offenses committed in the Guinean EEZ.

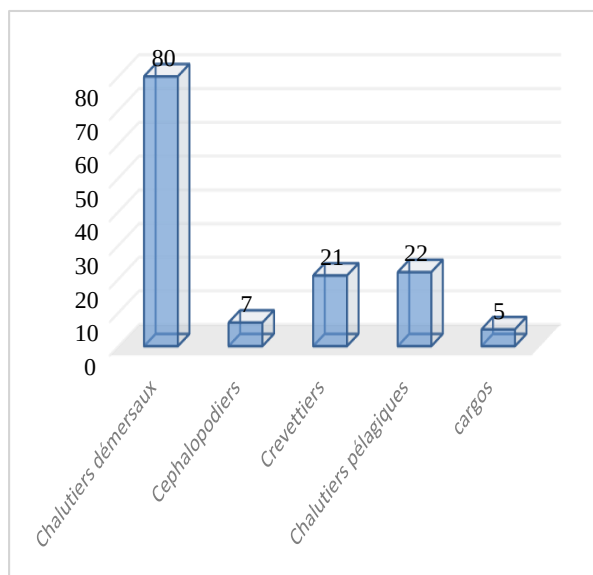


Fig. 11 Classification of fleets causing infringements.

permit, absence documents on board and 72 vessels boarded because of fishing in prohibited areas. The least frequent infractions are often double or triple which are linked to gear/markings including 2 vessels boarded due to the use of non-regulatory gear and at the same time the marking on the vessel was hidden or did not comply. This superiority of offenses linked to documents could be explained on the one hand by the lack of application of Guinean legislation and on the other hand by the weakness of our means of surveillance.

The analysis of Fig. 10 shows that among the offenses committed in the Guinean maritime area including 80 offenses caused by demersal trawlers, 22 offenses caused by pelagic trawlers, 21 offenses by shrimp boats, 7 offenses by cephalopod boats and 5 offenses by cargo ships. This variation could be explained on the one hand by the high richness of the demersal zone and on the other hand by the number of licenses issued to vessels fishing for demersal species.

3.5 Determination and Classification of the Causes of Violations

Through the results obtained and observations made in the field through interviews, the causes of fishing violations in exclusive economic zones have been listed in Table 10.

3.6 Evaluation of the Surveillance System

Through the results obtained and observations made in the field through interviews, the means of monitoring and their limits were listed in Tables 11 and 12.

The CNSP's mission is to manage the fishery resources of the Guinean maritime zone, control, monitor the fishing effort, and monitor the activities of vessels operating in the said zone.

Its headquarters is located in Conakry and its geographical area of intervention covers the entire maritime zone under sovereignty or jurisdiction of the Republic of Guinea. It has five secondary surveillance bases located along the coast.

The CNSP is a public administrative establishment, with legal, financial and management personality. Located in the commune of Matam, on the Niger road at Km10, adjacent to the Pm3 mobile gendarmerie squadron and the Matam municipal health center.

It is made up of four buildings, which are occupied by the following services:

- The building to the east at the start of the course is occupied by the administrative and financial department;
- The building to the west at the back is occupied by the inspection/surveillance service and the resource management service;
- The building to the north is occupied by the communication/VMS service, the training service and the library;
- And the last building adjacent to the library building is occupied by the observer program.

3.7 Proposal for Measures to Improve the Surveillance System

To the authorities of the Ministry of Fisheries and Maritime Economy:

- Review the fines;
- Apply agreements to combat illegal fishing;
- Buy the very powerful stars;
- Recruit a lot of inspectors (over a 300 mile zone if 15 people are responsible for monitoring this space);
- Release funds to sustain surveillance;

- Create a fishing gear marking system.
- Put the stations (to ensure the fuel problem) in the bases;
- Recruit observers into the public service.
- To the CNSP authorities:
- Search for financial partners;
- Recruit at the flight crew level: captains, mechanics;
- Maintain the confidentiality of patrol operations;
- Provide observers with a means to collect data;
- Recruit qualified people into the statistical service;
- Recruit qualified IT specialists in the statistical service;
- Conduct surveillance using drones;
- Decentralize logistics in the bases;
- Insert the AIS system into surveillance;
- Raise awareness and train all fishermen participating in surveillance;
- Review a method of monitoring artisanal motorized fishing at night.

Table 8 Identification of the causes of infractions.

Causes	Consequences
Lack of human resources	Driving sinners carried out illegal activities
Lack of adequate materials and equipment for monitoring	Weak surveillance in the areas concerned
Weak enforcement of laws and rules	Violation of laws, use of very small mesh gear and falsification of documents by fishermen
The weak involvement of the authorities in respecting the laws	Fishing using prohibited gear and circumventing security to fish in prohibited areas
Insufficient information on sustainable management	Violation of the rules due to ignorance of the existence of the limits of prohibited areas
The weak application of the Monitoring, Control, Surveillance system	Leading actors to practice fishing activities in prohibited areas and illegal capture

Table 9 Available surveillance means and their effectiveness in the CNSP.

Means of monitoring	Efficiencies
Featured	The CNSP has six launches which are in the different secondary surveillance bases. These speedboats serve as means of rapid propulsion.
Communication room/VMS	The CNSP has a communication room/VMS which monitors all the activities of licensed industrial and semi-industrial fishing vessels which practice fishing in waters under State jurisdiction and even outside.
Camera	The CNSP provides services such as the inspectors/surveillance service and the observer program with cameras to take images as evidence.
Administrative vehicle	The CNSP has administrative vehicles which are managed by the heads of services which facilitate missions in ports, landing stages as well as in bases.
WiFi connection	The CNSP is covered with a 24-h WiFi connection for easy monitoring of ships by the VMS system and communication with ships as well as the passage of information between services.
Group or private engine	The CNSP has different power sources to better maintain satellite vision.
The maritime gendarmerie service	The CNSP praises the service of the maritime gendarmerie in their patrol mission to ensure the protection of the inspection agents.

Table 10 Identification of monitoring system limits.

Means of monitoring	Observation
Featured	The CNSP has six launches, which are in the different secondary surveillance bases. These speedboats are very efficient in terms of power because the number of people on board is small and access to certain areas is difficult.
Communication Room/VMS	The communication/VMS room has limits: Impossible to spot unmarked vessels; Impossible to follow a ship after disconnecting the beacon;
Lack of adequate and efficient equipment for inspectors	At the CNSP, fisheries inspectors are not equipped with efficient logistical means such as long-range cameras, GPS with tape recorder to inspect vessels, or equipment to determine the history of vessels.
Lack of human resources	With the opening of 350 nautical miles, the national monitoring center does not have significant human resources to monitor this space.

4. Conclusion

At the end of the study, interesting results were obtained both from the analysis of the offenses observed and from that of the effects induced by the different services in the CNSP in Guinea.

The objectives initially set are achieved with the assessment of the situation and the evaluation of the offenses but also the level of performance of the means and strategies implemented in surveillance. The situation of boardings revealed a consistency of offenses linked to documents, fishing in prohibited areas, unauthorized fishing, offenses linked to fishing gear and technique, the human factor and to a lesser extent administrative shortcomings.

This constancy denotes an average level of performance, control methods and strategies at least until the advent of VMS.

The combination of control means remains a serious option to achieve this performance. The satisfactory results obtained from 2019 via the competence of the new authority can support this assertion.

Although efforts have been made in terms of MCS (Monitoring, Control and Surveillance) with low-power surveillance boats and the VMS system, progress remains to be made to effectively combat bad practices linked to fishing which is prevalent in the Guinean exclusive economic zone.

Furthermore, a better organization of the MCS system could have more convincing results in perpetuating the surveillance mission at sea with the increase in the presence time at sea, and in defining the role and responsibility of all the people involved in surveillance. Surveillance would also become more effective by implementing a fishing gear marking system. This marking would simplify the inspector's task and avoid the repeated inspection of gear, which, especially at sea, leads to the interruption of fishing activities and a lot of loss.

To tell the truth, current generations have a moral duty to ensure every day the supply of seafood does

not decrease in the future due to exploitation and excessive use of stocks, responsible behavior in accordance with FAO (Food and Agriculture Organization) recommendations must prevail for the safeguarding and preservation of global fisheries. The concerted application of adequate monitoring measures at various levels (national, subregional and especially global) will undoubtedly make it possible to achieve these results.

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