THE ARTISANAL SARDINELLA FISHERY IN COTE D'IVOIRE

by
KONAN Jacques

Centre de Recherches Océanologiques
(C.R.O.)
B.P. V 18 ABIDJAN 01 (Côte d'Ivoire)

Abstract :

The artisanal Sardinella fishery actually starts at the beginning of the century with our Ghanaian neighbours having a long fishery tradition. These fishermen communities have migrated to Côte d'Ivoire with their own local fishing gears and vessels. The Sardinella is the target among the small pelagic fishes of which the dominant species are round and flat Sardinella. After a noticeable progress accomplished from 1984 to 1986, this fishery is at the present time depressed by the economic crisis and undergoing a very difficult time. As a result, the number of people involved in the fishery activities is declining. Due to the socio-economic interest that it represents, the Sardinella fishery which is not much considered by Autorities should deserve little more attention.

Résumé :

La pêcherie artisanale de Sardinelle en Côte d'Ivoire a réellement débuté avec le siècle, grâce aux populations voisines du Ghana pourvues d'une longue tradition de pêche. Ces communautés de pêcheurs ont émigré en Côte d'Ivoire avec leurs engins de pêche et pirogues particuliers. La Sardinelle est le poisson cible parmi d'autres petits pélagiques ou dominent les sardinelles plate (S. maderensis) et ronde (S. aurita). Apres un remarquable accroissement de 1984 à 1986, cette pêcherie est actuellement en déclin, victime de la crise économique. En conséquence le nombre de personnes impliquées dans cette pêcherie diminue. Malgré l'enjeu socio-économique qu'elle représente la pêcherie de Sardinelle ne recoit pas toute l'attention qu'elle mériterait de la part des Autorités.

1. Introduction

The Ivorian populations living along the littoral include the Nzima at the East, the Alladians in Jacqueville, the Avikams in Grand-lahou, the Godiés in Fresco and Sassandra, the Krous to the West. From the very beginning all these communities practiced only subsistence fishery.

Then, little by little, with the advent of the colonization which introduces profit-earning agriculture, trading and shipping, the indigeneous maritime fishery drastically decreased; and now with 70 percent of children in full-time education, this old fishery is totally given up. However, the small pelagic fishery was not important since these communities preferentially used the harpoons and the fishing lines.

Actually, the small maritime pelagic fishery and especially the Sardinella fishery starts developing at the beginning of the century with the migration of the Ghanaian fishermen. At the beginning, these fishermen communities were few and were established in Tabou, Sassandra and Azuretti. Then, they slowly spreaded along the coastline, towards West.

The completion of the digging of the Vridi canal in 1950 gave a new boost to this fishery. Indeed, the city of Abidjan, with the settlement of the port, grew and welcome more and more people to feed. The Fanti, the main immigrating fishermen community have also intensified their catch effort in order to contribute to the food supply of the population, parallely with with the fishing activities of the semi-industrial «Sardiniers» boats.

Since the Independence in 1960, the Ghanaian communities migrated everywhere on the Ivorian coastline where they became essential. Today this artisanal Sardinella fishery, which developped remarkably in the recent years is declining.

2. Fishery Potential

2. 1. Fishery communities.

Small pelagic artisanal maritime fishery is exclusively used by two Ghanaian ethnic groups: the Fanti and the Ewe. The former group is originate from the littoral of the central region of Ghana from villages such as Assafa, El-Mina, Commenda, Takoradi, etc....The later group is from the eastern region of Ghana, the Keta region close to Togo.

These two ethnic groups are each specialized in one of the following fishing system: the purse seine and the gill nets for the Fanti; the beach seine for the Ewe. However, in Vridi, a large number of the Ewe group uses the seine for fishing; while some Fanti use the beach seine.

These two communities are organized in fishing units, each consisted of a crew of wich the number of the members varies between 8 and 18, and sometimes 20, according to the size of the canoes. The teams wich include a bosco, a motorist and a helmsman are composed of people under work contract lasting 3 to 4 years. After the end of this period of time, the income is shared among the fishermen.

These fishermen are so well organized into a hierarchy that they always have an ethnic chief and a fishermen chief. Sometimes, the same person plays both roles.

The repartition of the fishermen population along the Ivorian coastline is as follows (Figure 1) :

* The Fanti are found along the littoral, from Assinie to Tabou. The larger Fanti groups live in Vridi II and in theSouth-West of Côte d'Ivoire, between Sassandra and Tabou.

* The Ewe are only found in areas where the beach seine can easily be hauled, that is to say, mainly on the Alladian littoral, in Mondoukou , Assinie, Abidjan and in Tabou.

Table 1 displays the three stages the evolution of the number of fishermen from 1964 (time during wich de Surgy made the first counting per ethnic group) to 1993. In 30 years, the Fanti population has increased five times; while that of the Ewe has doubled in 15 years.

2. 2. The technical potential

2. 2. 1. The fishing gears

The Ghanaian fishermen use the purse seine, the gill nets and the surface gill nets with small size of mesh. All of these fishing gears are of Ghanaian origin and the names such as Seef, Watsa, Ali and Tenga are often used to designated them. (Table 2).

The encircling purse-seine (ring net) are large sized nets (200 - 500 m length) with wings. These wings either possess bags or not. Their meshes are small (10 to 25-30 mm). As soon as the fish is detected, the purse seine is rapidly spreaded out around the fish school, the ring line hauled and then the wing is pulled and thus, the fish is caught.

The active gill net (with a mesh size of 25 - 30 mm) is also utilized to surrounder the fish, wich is afraid by the net itself. It is not efficient for the round Sardinella (S. aurita) wich can jump to escape.

The surface gill net is a sheet net (50 to 100 m). Many surface gill nets can be set side to side, depending on the uses. It is a delicate fishing gear because of the fine thread wich is utilized. This thread could have been removed if it was not of practical use. Furthermore, it is cheap.

The beach seine is a gear which is not particulary used for Sardinella. However, in certain periods of a year, it can catch many Sardinella fingerlings. It is a small trawl hauled from the beach for 30 or more people. It is a destructive fishing gear because of its small mesh size (10 - 14 mm).

2. 2. 2. The vessels

One basic type of fishing vessel is used. It is the Ghanaian canoe exhibiting the following specifications :

- 7 to 18 meters length
- 1.30 to 2.20 m width
- 0.90 to 1.20 m depth

It is generally a monoxyl canoe, with sides heigtened with planks. Three types of these canoes can be distinguished:

* the «purse seine» type, used for pelagic fishery, is often equiped with a 40 horsepower outboard engine and carries between 12 and 18 persons.

* the «Beninese» type, smaller than the «purse seine», is used to set the beach seine.

* the «gill net» type, the smallest, measures 7 to 8 m length. It is used to set the gill nets.

2. 2. 3. The Evolution of the Technical potential

The table 3 shows the decline of pelagic fishery in Côte d'Ivoire. The most efficient fishing gears decreased. This is due to the fact that many fishing teams went back to Ghana where the economic condition are improving.

3. Fishing Zones and Seasons

The fishermen only catch the small pelagic fishes near the coast, i.e. around the first three nautical miles where they compete with the «Sardiniers» purse seiners. Offshore, the fishermen do not go far beyond 6 nautical miles. However, sometimes, they work around 20 nautical-miles from their base alongside to the coast ; since they always have to work and produce more, they try to fish all year round.

However, there is a slack period from March to June-July, during which many crews leave their pirogues on the beach. Some go back to Ghana with their pirogues to continue their fishing activity. The cold season, starting from July to October, is the highly productive season for Sardinella. As a consequence, Sardinella fishing activity increases.

4. Production and Fishing effort

After the splendour period of 1985, 1986 and 1987, the Sardinella artisanal fishery undergoes a very difficult period. Two major factors may account for this : the economic recession and the inaccessibility of the stock.

– The economic recession: Prices of fuel is prohibitive since the reduction in tax is unfortunately applied in only certains areas. The high cost of the fishing gear, the inaccessibility of the banking credit make life difficult for the fishermen.

– The inaccessibility of the stocks: the fishermen explain that most of the

time the fish stocks are coastal only for a few period of time in a year; so that the stocks are not accessible to them.

Côte d'Ivoire, with a decreasing income, was unable to cover all the landing points of a real survey network. As a consequence, the statistic data imperfectly reflect the reality. The «Direction des pêches» of Ministry of Agriculture, and the Fishery Departement of the Oceanographique Research Center (C.R.O.) collect statistical data in only some landing points, all located between Abidjan and Tabou. (Figure 1). The eastern part of the coastline is not covered. Extrapolated data collected by the Direction des Pêches and the CRO for the whole fishery in years 1990, 1991 and 1992 are displayed jointly in table 4. The year 1991 was not very good for the Sardinella fishing. While the year 1992 was the best although it didn't reach the level of the year 1990.

The fishing effort is regularly surveyed in the only one center of Vridi II. Fishing effort data have been collected during some years in certain areas (Figure 2). These data are expressed in number of fishing trip representing the easiest units to collect.

By comparing the effort data collected in Vridi from 1989 to 1992 (table 5), representing 4526, 4166, 5061 and 7272 fishing trips respectively to those gathered between 1982 and 1985 (Ecoutin, 1992), and varying from 10999 fishing to 18812 fishing trips, it can be easily observed that the fishery is seriously declining. It is also noteworthy to mention that the number of pirogues is now around 90 compared to 120 some time ago.

5. Problems Related to Pelagic Artisanal Fishery

Many problems account for pelagic artisanal fishery. Among them, one can cite the followings:

i) The lack of real support to this type of fishery. The fuel and the fishing gear are expensive. This situation has forced the fishermen to stock up with fuel and materials in their original counry (Ghana) when they are in transit.

ii) The banking credit is limited to the «Groupement à Vocation Coopérative» (standing for cooperative organization); it is noteworthy to note that these cooperative organization have difficulties to obtain this banking credit. This hinders the acquisition or the renewal of the fishing gears such as pirogues and engines.

iii) The lack of interest of Ivorians with regard to fishing. The question that arises from this situation is how can Côte d'Ivoire compensate the departures of the foreigners.

iv) The damage caused by industrial ships to the gill nets generate conflits wich are sometimes solved to the prejudice of fishermen.

v) The strechtching of the coastline has led the Gouvernment to cover only a portion of the littoral. Although it is possible to choose representative sampling camps and to cover them.

vi) The survey system must be renewed and standardized and the surveyors well trained.

vii) Eventually the uses of multiple fishing gears make the collection of reliable statistic data not easy.

6. Conclusion

Although the small pelagic resource seems abudant, that is demonstrated by the very good catches of the «Sardiniers» vessels, the maritime artisanal fishery, is in stagnation and particulary the pelagic fishery. As a result, the fishermen either go back to Ghana or switch to other type of fishery such as hand-line or set-net. Furthermore, the non circulation of the CFA currency between Ghana and Côte d'Ivoire stops inciting the fishermen; as a consequence, the fishery may be seriously reduced if not collapsing.

Profits of the progress made between 1984 and 1986 has been lost and only good economic condition will give a boost to our fishery. Finally, it is time to restore the Ivorian courage and confidence for fishery.

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CAPTIONS OF FIGURES

Table 1 : Evolution of the manpower of marine artesenal fishermen according to three census.

Table 2 : Fishing gears with characteristics as used by marine artesanal fishermen for fishing small pelagics.

Table 3 : Evolution of the nominal fishing potential, by gears.

Table 4 : Estimations of catches of main species by artesanal maritime fishery. 1990 - 1992 in Metric Tons.

Table 5 : Production and annual effort in Vridi II (1989-1991).

Figure 1: Landings sites of artesanal marine fishermen on Ivorian coast line, with indication of sampled sites.

Figure 2 : Number of trips by months in selected sampled landing sites, 1993.

	FANTI	EWE
1964 (de Surgy, 1969	835	— —
1979 (Boubéry, 1983	2078	939
1993	4237	2009

Table 1 : Evolution dof the manpower of marine artesenal fishermen according to three census.

PURSE (de Surgy, 1969)	CIRCLING GILL NETS
Seef – 10 à 12 mm Toutes espèce de petits pélagiques	**Hadi ou ali** – 25 à 30 mm petits pélagiques
	FILLET MAILLANTS DE SURFACE
Watcha – 10 – 14 – 20 – 25 mm Tous les petits pélagiques	**Tenga** – 20 à 45 mm petits pélagiques

Table 2 : Fishing gears with characteristics as used by marine artesanal fishermen for fishing small pelagics.

Year	**1979**	**1989**	**1993**
Ouboard engines	NA	668	489
Purse seines	209	474	290
Circling gill nets	63	382	39
Encircling nets	3340	5051	5154
Beach seines	47	78	76

Table 3 : Evolution of the nominal fishing potential, by gears.

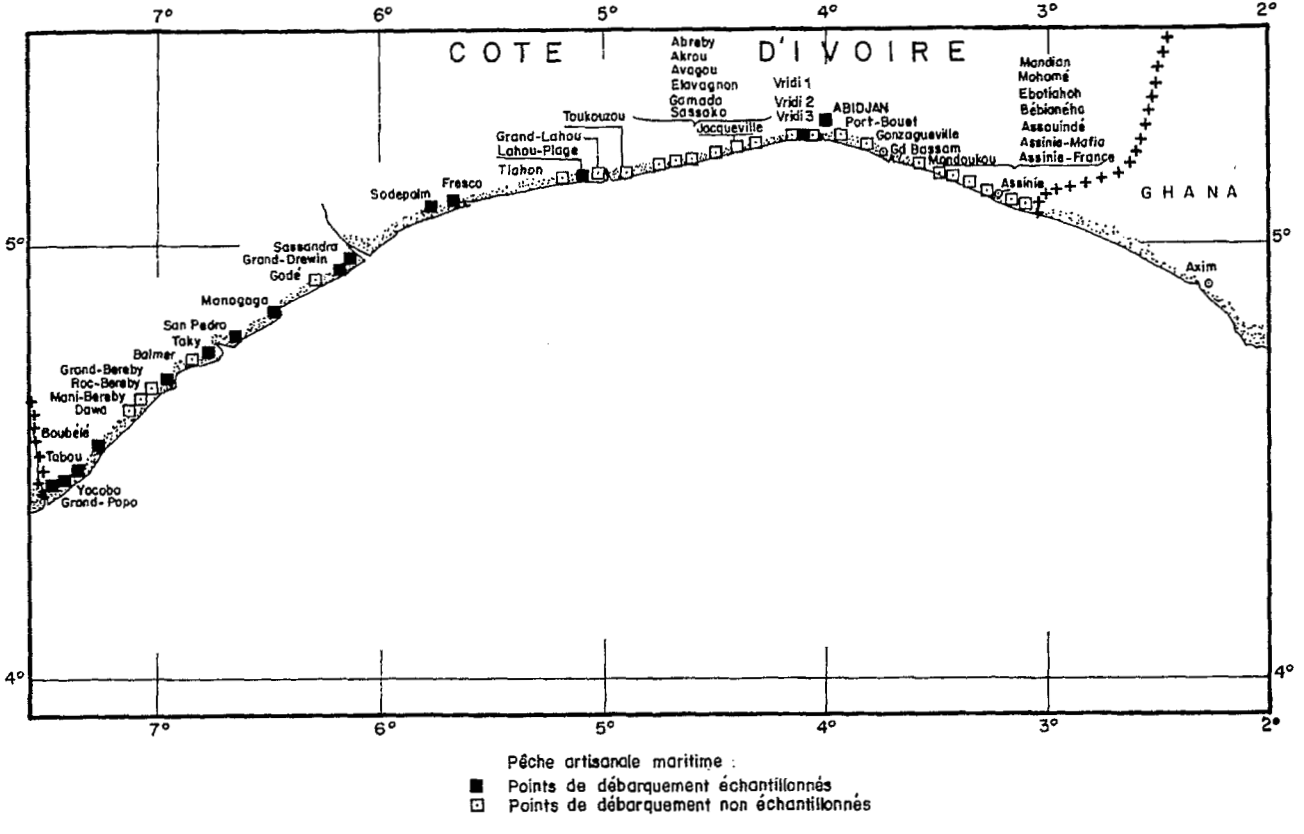
YEARS	1990	1991	1992
SAU	3613	3472	4773
SMA	4905	2143	2388
SJA	316	765	256
EEN	871	1057	910
P.PLAT	1682	1076	1200
BAU	971	923	746
RASOIRS	505	735	812
BONITE	424	769	941
DIVERS	3713	3829	4973
TOTAL	**17000**	**14769**	**16999**

Table : 4 Estimations of catches of main species by artesanal maritime fishery. 1990 - 1992 in Metric Tons. Note: SAU: S.aurita, SMA: S. maderensis, SJA: S.japonicus, EEN: E.encrasicholus. P.PLAT: Chloroscombrus sp . BAU: B. auritus, RASOIRS: Ilisha africana BONITE: Euthynnus and Auxis.

Scientifics names	1989	1990	1991	1992
Sardine Sardinella aurita	627,8	600,3	663,9	1736,0
Harengs Sardinella Maderensis	89,0	124,8	152,6	206,7
Friture Brachydeuterus auritus	3,2	39,5	21,7	14,5
Carangidae	131,5	441,5	351,5	560,1
Maquereau Scomber japonicus	56,0	84,3	210,7	87,8
Ceinture Trichiurus lepturus	44,4	24,9	29,4	34,5
Anchois Engraulis encrasicolus	56,0	84,3	210,7	87,8
Thonidae	284,2	137,8	532,9	544,9
Divers	18,2	53,9	51,6	257,6
Nbre de sortie	4526	4166	5061	7272
Prises totales	1470	1796,2	2688	3583

Table 5 : Production and annual effort in Vridi II (1989-1991).

Figure : 1 Landing sites on Ivorian ceast line with indication of sampled sites



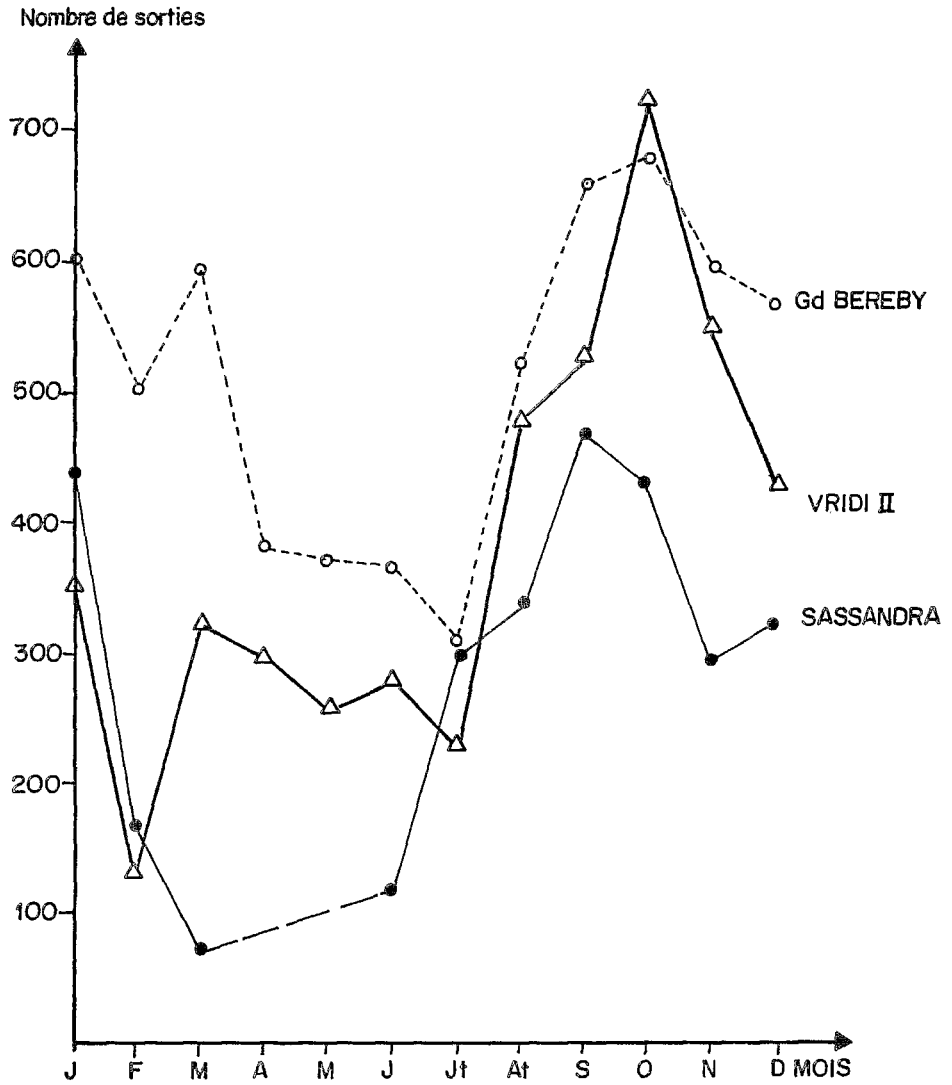


Figure : 2 Number of trips by months in selected landing sites, 1993.