

SMALL SCALE FISHERY FOR SARDINELLA IN BENIN

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Abstract :

This document describes the sardinella fishery operating in coastal waters of Benin. Potential of various gears, fishing seasons, monthly catches and sizes of the the two main species (S. aurita and S. maderensis) are reviewed.

Résumé :

Ce document décrit la pêcherie de sardinelles des côtes du Bénin. Le potentiel des différents engins, les saisons de pêche, les captures mensuelles et les tailles des deux espèces principales (S. aurita et S. maderensis) sont détaillés.

1. Introduction

In Bénin, the artisanal marine (small scale) fishery is serviced by about 3200 fishermen, of whom 50% are Ghanaian, 46% Beninois, and 4 % Togolese.

All along the coast, 81 fishing camps are settled and this geographical situation has been subdivided in three strata of small size, corresponding to the three Southern Administrative Departments : Ouémé, Atlantique, Mono, and a larger strata corresponding to the Port of Cotonou (Figure 1).

Fishing for small pelagic is essentially by Ghanaian who are originated from Keta. The others Ghanaian ethnic groups present here use rather set-nets. The few Béninois fishermen fishing for small pelagic are using mostly Ghanaian manpower.

The Sardinella catches amount to 19-24% of the artisanal marine fishery. The fishing fleet is scattered all along the coastline. There is no industrial «Sardiniers», the gears are purse seine, beach seine and Sardinella net (Gill net). The set-nets catch sometimes Sardinella but in very minor quantity.

2. Fishing Potential for Sardinella

A census was carried out in May 1993 for allowing to report the small scale fisheries potential as a whole, and the one for Sardinella particularly.

2. 1 Purse seine

- In the strata of Ouémé there is no centre of operation for such gear.
- In the Atlantique strata, outside of the main port, there is 12 purse seine carried by 10 crafts, all with engine. This number is a 50 % decrease as compared to 1988 data. This a situation could be explained by withdrawal from fishery or migration to others place such as Gabon, Cameroon, Congo, Côte d'Ivoire.
- In the Mono strata 10 purse seine are present, with 10 motorised crafts. The same decrease of 50 % is observed in this strata as compared to 1988. It could be as well explained by migration but also by the destruction of some of the fishing crafts installed by the Pêche Maritime Artisanale Project.
- The main port harbours 34 purse seines used by 21 crafts all with engines, therefore being able to follow the migrations.

As a whole on the entire coastline, it can be observed a decline of 22% of this gear (56 purse seines in 1993 versus 72 in 1988) which requests huge investments.

2. 2 Beach seines

- Unit of beach seine are estimated at 102 in 1993, as compared to 100 in 1988. There have been no change. This gear is mainly used in the Atlantique and Mono strata where the space requested for using them is sufficient. The Port (of Cotonou) is not a suitable place, and due to coastal erosion of Ouémé beach, it is not possible to use it here.

- The Atlantique strata includes 57 beach seines geared by 54 crafts, without engine for the most of them . This considerable number is well explained by the number of Ghanaian people in this strata, often the operators of this gear.

- The Mono strata includes 43 beach seines with 46 crafts. There is here some spare crafts.

2. 3 The Sardinella net

This gear is used in the four coastal strata . From the 215 nets in 1988, the number increased to 363 in 1993. They are settled as follows:

- The Ouémé strata gathers 76 Sardinella nets with 19 crafts nearly all of them with engine, versus 23 in 1988

- The Atlantique strata showed few change in the number of Sardinella net: 77 in 1993 versus 80 in 1988. However , it can be observed that a significant proportion of these net are not used on a regular basis. This irregularity could be attributed to the difficulties for getting fishing gear supplies, at the long season of weak abundance of Sardinella and moreover at the scarcity of canoes for operating the nets.

– In the Mono strata 39 Sardinella nets are registered with 33 crafts as compared to 69 in 1988.

– For Port strata itself, 171 Sardinella nets are present, with 49 crafts (versus 69 in 1988). In fact there is an increase of 69 %, as settling in the Port allows to avoid the problem of the surf on the beaches. It can be too noted that in the Port many channels of commercialisation are available.

3. Fishing Season for Sardinella

The fishing season for Sardinella differs among the gears. (See tables 1, 2 and the synoptic figure 2)

– The purse seine is generally operating from mid-July to December with a peak period between mid-August and November. But statistics of the three recent years show that for this Sardinella fishery the peak season remained until December in 1990.

– The beach seines operate all the year round. Peak season is between September and January.

– The Sardinella nets operate generally during the season of July to October with a peak in August-September. During the last years, they have been operating in November-December.

On the Benin coast, months of October - November then December constitutes a good fishing seasons, as it is a peak season for nearly all the gears, time during which they are the most productive. It is effectively during this period that Sardinella and particularly the S. maderensis are also caught in the set nets.

4. Catches, Effort and Catch Per Unit Effort

Within every strata, sampling centres have been selected for the registration of the catches. The collection of the data, at the level of the sampling centres allows, after extrapolation, to estimate the total of the catches in the strata and to study the distribution and abundance of each species.

Therefore monthly catches of the two species of Sardinella, efforts and CPUE are available for the last three years.

It is worth to notice that the Sardinella maderensis represent respectively for the last three years (1990-1992) 76%, 80%, and 94 % of the total production of Sardinella. S. maderensis is more frequent in the catches than S aurita.

The statistics of the previous years have already submitted to previous Working Groups.

5. Sizes Frequences

The available size frequencies relate essentially to S. maderensis (commonly named «herring») landed by artisanal purse seine and Sardinella nets in the port of Cotonou, from August 1990 to May 1991. The submitted data are the original ones, not weighted nor extrapolated. (Figure 3 and 4).

When considering the sizes frequencies distribution, it appears that :

– For purse seine catches it appears two close modes (23 and 26 cm) for the whole period. In the bimonthly samples the main mode shift progressively from middle sizes (21 cm) in August-September 1990, to larger sizes (26 cm) in January February 1991.

– For catches by Sardinella net it appears a unique mode (27 cm) for the whole period. In the bimonthly samples, as for the other gear, the mode shift from middle sizes (21-22 cm) in November-December to larger sizes (27-28 cm) during the following months.

– Original size data of S. aurita and anchovy (E. encrasicolus) caught by beach seine and purse seine during 1989-1990 have been already reported in document WP/PMB/17 (Senouvo and Gbaguidi, 1991).

6. Conclusion

The gears fishing Sardinella request considerable investments for operation. Often that is Ghanaian fishermen which own these gears and use Ghanaian manpower. During the Sardinella season these people immigrate along the Benin coast. Sardinella resource has a well known value from the socio-economic standpoint. It is therefore desirable that a particular interest would be directed to these species and that facilities would be given to Benin's fishermen for allowing them to exploit these resources.

TABLES AND FIGURES

Table 1: Monthly catches in metric tons of Sardinella aurita for years 1990-1992 by three gears (from up to down) : beach seine, purse seine, Sardinella net.

Table 2 : Monthly catches in metric tons of Sardinella maderensis for years 1990-1992 by three gears (from up to down): beach seine, purse seine, Sardinella net.

Figure 1: Map of the Benin coastline with fishing camps and strata used.

Figure 2 : Scheme of the fishing seasons for various gears according to the data recorded from fishermen during a frame survey conducted in April-May 1993.

Figure 3 : General size frequencies of S. maderensis fished by purse seine. Port of Cotonou 1990-1991.

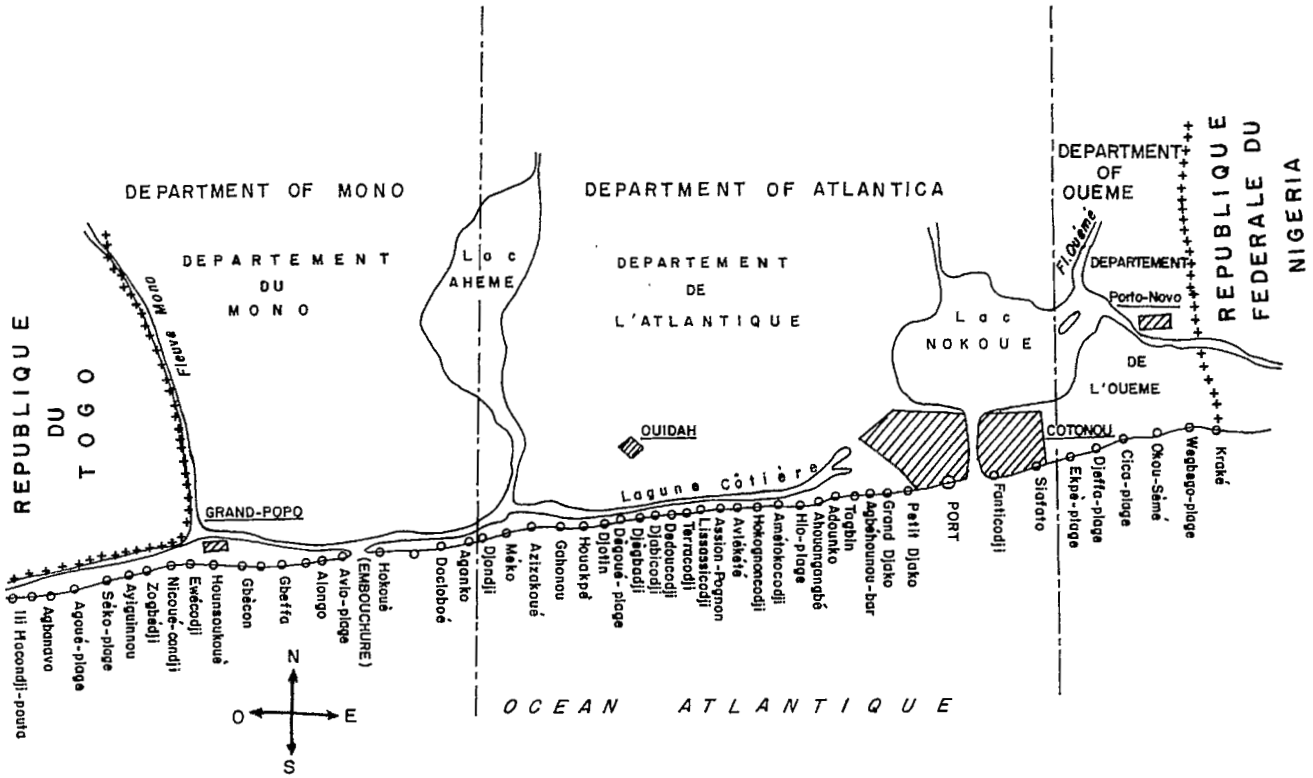
Figure 4 : General size frequencies of S. maderensis fished by Sardinella net. Port of Cotonou 1990-91.

Table 1 : Sardinella aurita**Prises mensuelles artisanales de Sardinella aurita par la Senne de plage de 1990 à 1992 (tonnes)**

Mois	JAN	FEV	MAR	AVR	MAI	JUI	JUL	AOU	SEP	OCT	NOV	DEC	TOTAUX
Espèces													
1990	15	6,6	7,2	11,2	15,4	3,4	3,7		27,7	5		5	100,2
1991	1,7	2,2	1,3		0,1			9,3	14,1	3,1	14,9	1,8	48,5
1992	9,23	4,03	4,43	6,89	9,47	2,09	2,33		17,04	3,08		3,08	61,67
Prises mensuelles artisanales de Sardinella aurita par la Senne tournante de 1990 à 1992 (tonnes)													
Mois	JAN	FEV	MAR	AVR	MAI	JUI	JUL	AOU	SEP	OCT	NOV	DEC	TOTAUX
Espèces													
1990	0,3	1,8	0,3	1,4	1,9	1,5	1,5	6,6	10,6		4,6	10,2	40,7
1991	8,7	3,2	3,1	0,8	0,6	1,1	0,7	5	7,1		3,8	8,4	42,5
1992											2,57	5,4	7,97
Prises mensuelles artisanales de Sardinella aurita par le filet à sardinelle de 1990 à 1992 (tonnes)													
Mois	JAN	FEV	MAR	AVR	MAI	JUI	JUL	AOU	SEP	OCT	NOV	DEC	TOTAUX
Espèces													
1990	0,2	10,4	2,6	4,8	6,7	0,8	1,2				119,4	34,6	180,7
1991	14,8	26,23	14,4	7,11	14,19	3,36	17,46	4,52			13,27	103,6	218,94
1992													0

Table : 2 Prises mensuelles artisanales de *Sardinella maderensis* par la Senne de plage de 1990 à 1992 (tonnes)

Mois	JAN	FEV	MAR	AVR	MAI	JUI	JUL	AOU	SEP	OCT	NOV	DEC	TOTAUX
Prises mensuelles artisanales de <i>Sardinella maderensis</i> par la Senne de plage de 1990 à 1992 (tonnes)													
Espèces													
1990								28,3	36	14,4	44,6	6,1	129,4
1991		1,5				1,2	0,4		8,6	3,3		1,8	16,8
1992								17,21	21,89	8,76	27,14	3,71	78,71
Prises mensuelles artisanales de <i>Sardinella madinelle</i> par la Senne tournante de 1990 à 1992 (tonnes)													
Mois	JAN	FEV	MAR	AVR	MAI	JUI	JUL	AOU	SEP	OCT	NOV	DEC	TOTAUX
Espèces													
1990	5,9	5,9		1,97	10,87	6,43		60,02	40,45		100,83	460,61	692,98
1991	145,73	18,32	25,09		17,52	1,73	8,11	60,02	40,45		100,83	459,51	877,31
1992	13,47	7,52	3,22	1,26	2,01	1,35	55,55	24,46	9,54	56,08	182,31	92,04	448,81
Prises mensuelles artisanales de <i>Sardinella madinelle</i> par la filet sardinelle de 1990 à 1992 (tonnes)													
Mois	JAN	FEV	MAR	AVR	MAI	JUI	JUL	AOU	SEP	OCT	NOV	DEC	TOTAUX
Espèces													
1990	26,7	26,7						4,52			13,27	103,6	174,79
1991	90,5	4,7	12,8	12,8	0,7	0,6				34,8	156,9	76	389,8
1992	39,96	48,93	86	141,24	14,1	1,92	12,99	1,1	17,76	52,03	204,18	59,51	679,72



CARTE TOPOGRAPHIQUE DU LITTORAL BENOIS

Figure 1 : Map of the Benin coastline with fishing camps and strata used.

SAISONS DE PECHE PAR TYPE D'ENGIN DE PECHE -

Sources: Enquête-cadre pêche maritime Avril-Mai 93

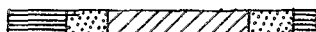
MOIS : Mai-Juin-Juil.-Août- Sept.-Oct.-Nov.-Déc.-Jan.-Fév.-Mars-Avril

ENGIN DE
PECHE

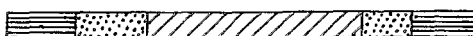
Filet dormant
(sovi, gana,
agblavi)



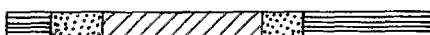
Filet à sardinelles
(maundo)



Senne tournante
(watcha/ witchi)



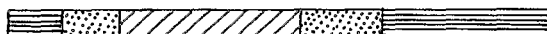
Filet à requin
(nifan - nifan)



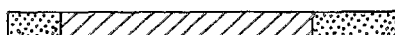
Senne de plage
(aguéné/yovodo)



Ligne à main/palangre
(kpom)



Filet flottant
(aviondo)



Légende : période de pointe saison normale

Figure 2 : Scheme of the fishing seasons for various gears according to the data recorded from fishermen during a frame survey conducted in April-May 1993.

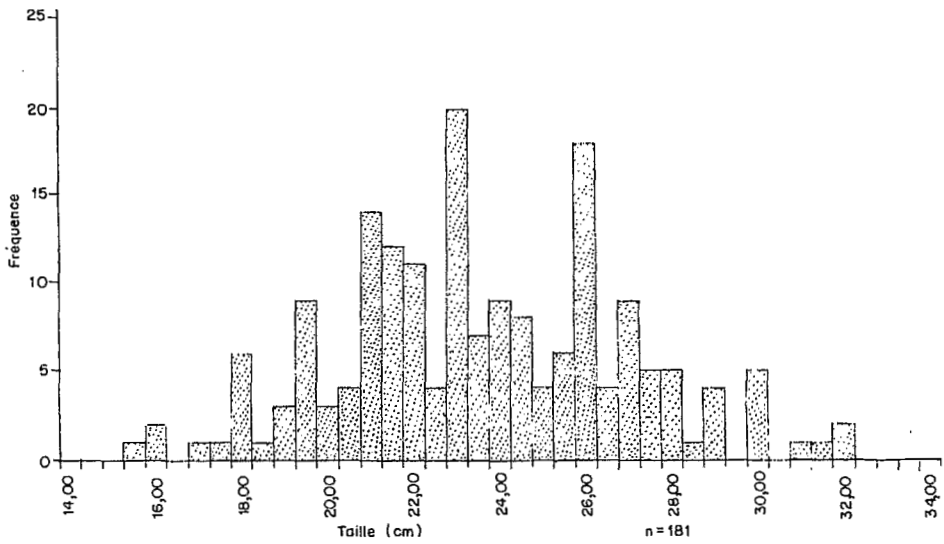


Figure 3 : General size frequencies of *S. maderensis* fished by purse seine. Port of Cotonou 1990-1991.

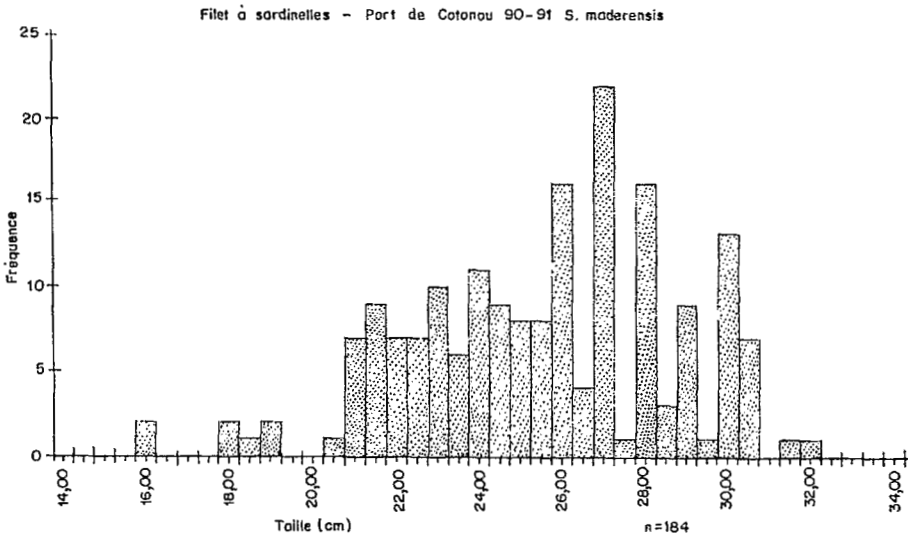


Figure 4 : General size frequencies of *S. maderensis* fished by Sardinella net. Port of Cotonou 1990-91.