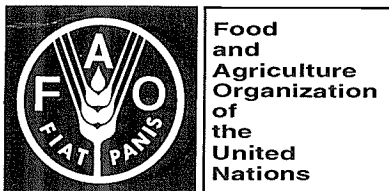


WESTERN CENTRAL ATLANTIC FISHERY COMMISSION

National report and selected papers presented at the fourth meeting of the

**WECAFC AD HOC SHRIMP AND GROUND FISH WORKING
GROUP OF THE GUIANAS-BRAZIL CONTINENTAL SHELF
AND CFRAMP SHRIMP AND GROUND FISH SUBPROJECT
SPECIFICATION WORKSHOP**

Port of Spain, Trinidad and Tobago, 8-12 January 1996



National Report on the Shrimp & Groundfish Fisheries of French Guiana

Anatole Charreau¹

.....

SHRIMP

SHRIMP FISHING ACTIVITIES

Fishing Zones

The entire French Guiana shelf, out to the slope, is harvested by shrimpers using various types of strategies. The seasonality seems to follow a pattern, but it is not exact. Log books are filled with great regularity, but no the data are not analysed.

There are many previous descriptions of the bottom which is primarily mud. The most important factor determining the fishing zones seems to be the migratory behaviour of the shrimps after they have left the rivers. Juveniles are concentrated at the mouths of the rivers and, according to the environmental factors, migrate from littoral waters out onto the shelf. That migration can be slow or quick, according to the salinity of the waters. The most exploited area is between 20 m and 90 m of depth. There is a regulation forbidding trawling inside 30 m.

Species and fishing activities

In the French Guiana EEZ, the main shrimp species exploited on the continental shelf is *Penaeus subtilis*, its landings representing nearly 95% of the total shrimp landings there. The second species exploited, *Penaeus brasiliensis*, is now considered a by-catch. There is no sorting of *P. brasiliensis* which usually constitutes the greater individuals of the shrimps. This fishery is controlled by a TAC system implemented by the EEC since 1985 (Table 1).

Table 1: Breakdown of the TAC and landings (in tonnes) from 1985-95

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
RECOMMENDED TAC											
	a	a	a	a	a	3300	4000	b	4108	4108	4108
TAC											
EEC	1150	2000	2740	3300	4040	3800	4000	4000	4000	4000	4000
USA Japan	?	?	?	?	?	?	0	0	0	0	0
ACP Countries	190	294	238	108	108	108	108	108	108	108	108
Total	4000	3650	4300	4680	4810	4100	4100	4100	4108	4108	4108
LANDINGS											
U.S.A.	1639	1817	1550	1864	928	450	0	0	0	0	-
Japan	874	843	0	0	0	0	0	0	0	0	-
France	599	1073	2685	2392	2776	3477	3314	3987	3275	4125	-
A.C.P.	0	0	0	0	0	0	0	0	0	0	-
Total	3112	3733	4235	4256	3704	3927	3314	3987	3275	4125	-
Recommended TAC: (a) 4000 to 5000t, (b) 3700 to 4800t.											

¹ IFREMER, Cayenne, French Guiana

A fishery for deep water shrimps also exists on the shelf slope for *Solenocera acuminata* (200m depth) and for *Parapenaeus edwardsianus* (700m depth) (Table 2).

Table 2: Fishing effort, landings (tonnes) and catches per unit of effort (kg/day) for the slope of the shelf fishery over the period 1988-94.

	1988	1989	1990	1991	1992	1993	1994
Fishing Effort (days)	365	531	620	1457	1050	735	510
<i>Solenocera acuminata</i>							
Landings (tons)	98.7	142.9	166.9	80.5	73.5	17.3	55.2
CPUE (kg/day)*	267.9	269.1	269.2	55.25	70.0	23.5	108.2
<i>Parapenaeus edwardsianus</i>							
Landings (tonnes)	52.2	41.3	34.3	258.5	159.2	140.3	54.0
CPUE (kg/day)*	143.0	77.7	55.3	177.4	151.6	190.9	105.9
*Average yearly CPUE							

There is no special fishery for seabob (*Xyphopenaeus kroyeri*) although the resource seems to be very important. Only some fixed fisheries exist in the estuaries and their production is sold on the local market.

When the shrimpers are very close to the coast, Catches of seabob are customary, but these shrimps, especially if they are "headless" are considered as *P. subtilis*. The sea-bob is an important potential resource but due to the ban on fishing inside the 30 meter isobath, the resource is currently unexploited.

Fleets

From 1992, the TAC on *P. subtilis* has been complemented by a local licence system fixing the maximum number of trawlers allowed to exploit the stock. These are 72 in 1992, 70 in 1993 and 1994 and 68 in 1995 (Table 3). The nationality of the boats exploiting the shrimps in the waters of the French Guiana is exclusively French.

Table 3: Shrimp fishing activity over the period 1985-94.

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Registered trawlers*	74	78	69	73	79	77	69	71	70	68
Average monthly active trawlers	74	78	69	73	79	60	53	54	54	46
Landings (tonnes)	3112	3733	4235	4256	3704	3927	3314	3987	3275	4125
Fishing effort (days)	22846	23553	20551	21430	22494	18854	14524	15783	15421	14694
CPUE (Kg/days)**	136.2	158.5	206.0	188.6	164.6	208.3	228.2	252.6	212.4	281.9
* Number of trawlers registered by the French Maritimes Affairs in Cayenne. ** Average yearly CPUE of <i>P. subtilis</i> and <i>P. brasiliensis</i> .										

From 1979 to 1990, that fishery was exploited by French, US and Japanese companies. Production of the various species of shrimps was exported headless to the USA and Japan. After the implementation of the fishery under the French flag due to the extension of the EEC area, new trends were observed in the markets and a demand was registered from European countries for whole shrimps of small sizes (Figure 1), in addition to big sizes, but always whole.

That market induced a change in the habits of shrimp-trawlers and during the second half of the year, the juveniles are exploited in the shallow waters (Figure 2). Due to the recent fluctuations on the international market a decrease of the demand was observed with a correlative decrease of the effort of the French fleets from 1990 (Table 3), from 22500 days at sea in 1989 to 15700 in 1994.

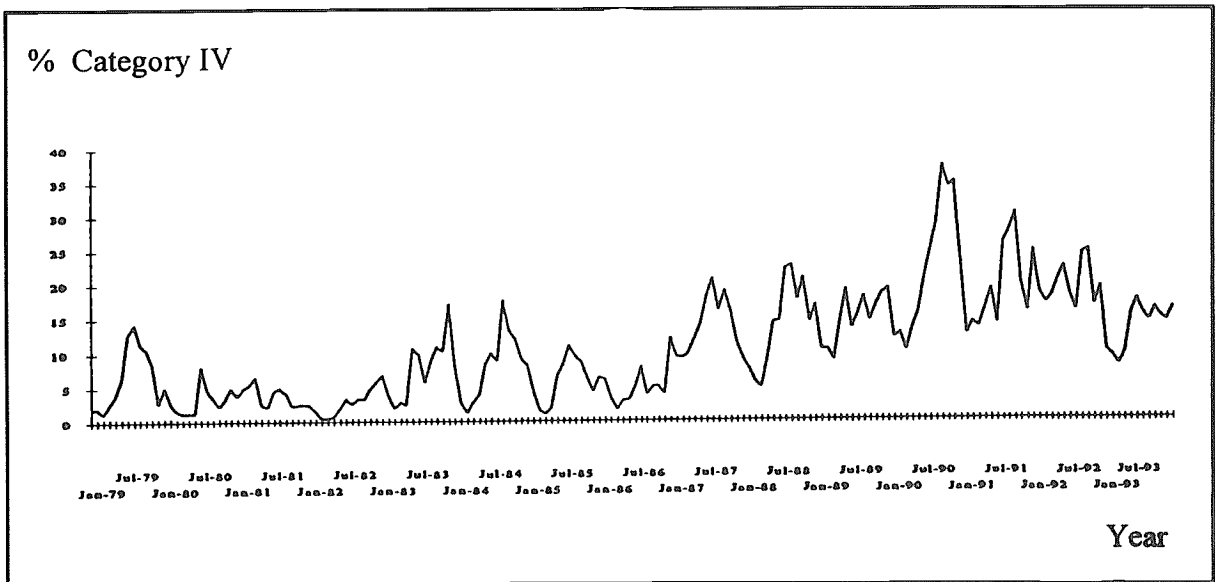


Figure 1: Percentage of the smallest commercial category in the monthly catches over the period 1979-93.

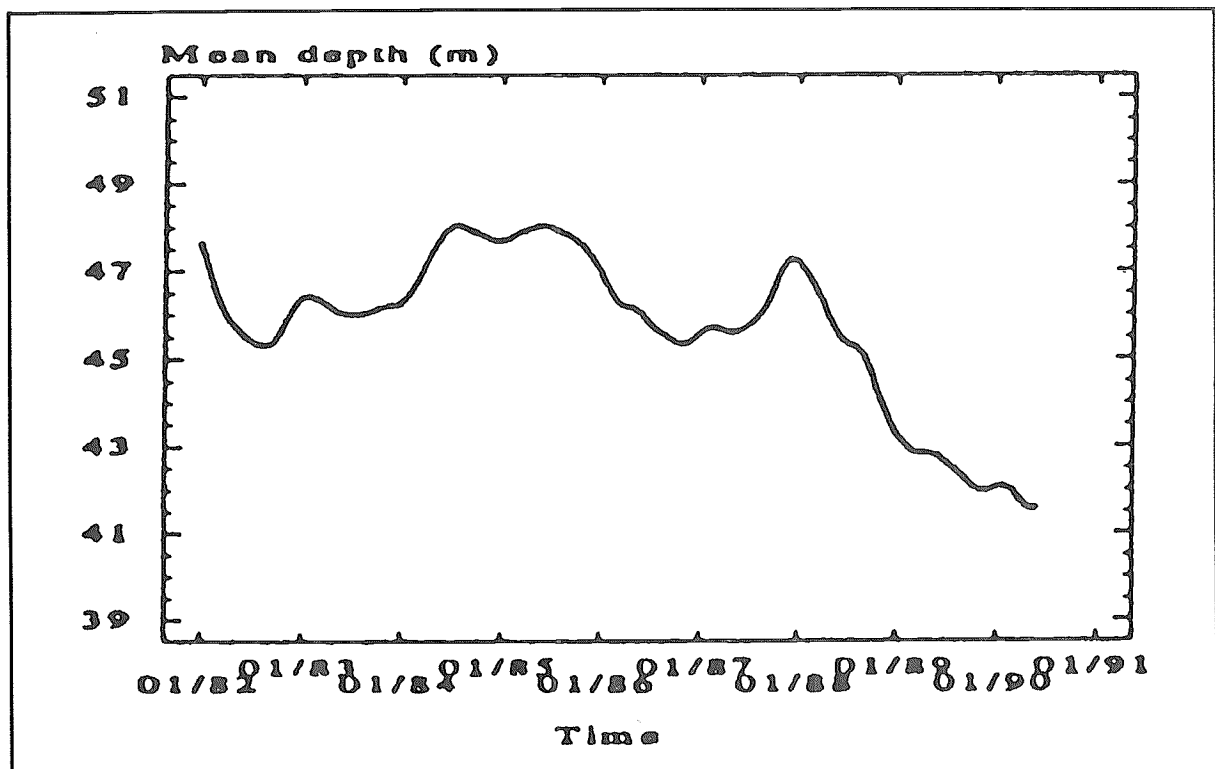


Figure 2: Annual tendency of the depth in the fleet activity.

Fishing strategies

From 1983, the fishery statistics are not reliable and cannot be used to analyse the fishery. This is mainly due to a change in the habits towards the size of the researched shrimps. Fishing is forbidden in the coastal waters, however many skippers do not observe that ban. Instead they do not enter all the details of their trips into the log books.

There are no data on the by-catch caught with the shrimps. And even if a part is frozen on board, the quantities landed are not known, because they are not registered but go directly into the local market.

The problem of fisheries statistics is due mainly to the will of the fishermen organizations, and has important consequences. All the shrimps are processed at sea and packaged frozen. Biological samples are made only on the boats which process in the port. Only two companies process in a factory, so the sample program covers only those boats. As the log book data for the other boats is unreliable, it is very difficult to extrapolate the basic sampling to the total fleet.

Market

There is no local market for the shrimps. They are exported in their entirety to Europe. Only seabob is sold very rapidly locally after being caught in the fixed fisheries. But as there is an interdiction on the use of these gears with no possibility to transmit them to the lineage, it is likely that they will disappear in the next years

ASSESSMENT OF THE SHRIMP RESOURCE

No assessment of the resource is available. Many trials were made in the past with global modelling, taking into account the activities of the trawlers on the whole Guyana-Brazil shelf, and analytical models were tested on length-compositions. The assessment of *P. subtilis* is currently impossible due to lack of knowledge about the biological parameters. Growth and natural mortality are not known, and even if they were known, annual estimates would remain an important parameter.

The duration of the life of the shrimp is very short, probably 18 to 24 months, and new recruits predominate in the water in the following months. Many attempts have been made to develop a reliable recruitment index.

The first way to have a *qualitative view of the phenomena* to describe the biological event. The second way to try to give a *description and a quantification of the numbers of larvae occurring in the estuaries of the rivers*. The third way to *model recruitment using environmental factors*. These attempts are summarized in the paper on recruitment (this volume).

The TAC applied in the fishery is a precautionary TAC and has no scientific basis. However, it is likely that the assistance of UE within the framework of the plan for ultra-peripheral regions is an important incentive to fish the whole TAC, even if the target is small shrimps. At the moment, the most important problem for that fishery is the absence of reliable statistics. Also, it is impossible to carry out a fleet analysis according to the categories of shrimps targeted and areas harvested.

FISHES

SNAPPERS

It is likely that the shrimp fishery and the demersal fishery are related. Previous observations show that small snappers are caught in the shrimp fishery. Due to the difficulties experienced in freezing these fishes, most are discarded at sea. No data are available on these discards. There are three main species: lane snapper (*Lutjanus synagris*), vermilion snapper (*Rhomboplites aurorubens*) and red snapper (*Lutjanus purpureus*). Only the latter is of real commercial interest. It is the target for Venezuelan hand-liners. As for shrimp-trawlers, a license system has existed for Venezuelan boats since 1985, with a reserve for ACP countries (Table 4). They are obliged to land 75% of their catch in French Guiana. Licences are only

issued however if the shipowner has a contract with a processor in French Guiana. For that fishery, only lines and pots are authorized.

The fishing effort (Table 5) which was reduced in 1991, seemed to be stable from 1991 to 1994; close to 35,000 hours per year. The landings which also seemed to fall in 1991 and 1992 are now increasing slowly. Moreover, an analysis of the yields by stratum of depth shows that the fleet is now optimizing its strategy and is fishing now in the eastern part of the fishery and towards deeper areas (90-120 m). In 1993, the yields obtained in the usual area increased.

Table 4: Numbers of licences granted every year, from 1985 to 1994

	VENEZUELA	ACP COUNTRY: (BARBADOS)
1985	25	5
1986	20	5
1987	25	5
1988	25	5
1989	35	5
1990	35	5
1991	35	5
1992	41	5
1993	41	5
1994	41	5

Table 5: Activity of the Venezuelan fleet in the EEZ of the French Guiana from 1989 to 1993.

YEAR	MEAN MONTHLY NUMBERS OF			TOTAL FISHING EFFORT IN HOURS	LANDINGS (tonnes) IN FRENCH GUIANA	CPUE IN KG/HOUR
	BOATS	TRIPS	FISHING DAYS			
1985	7	8	102		295	
1986	9	12	230	12508	490	45.8
1987	10	15	238	27077	519	21.2
1988	13	19	378	24761	808	33.1
1989	20	33	330	42587	989	22.4
1990	18	24	337	39118	925	23.1
1991	20	29	337	36703	807	22.1
1992	18	27	390	35760	867	23.8
1993	19	30	328	35075	1001	26.6
1994	20	31	360	35664	1063	28.3

The fleet seems to be well adapted to the fishery. In 1993 and 1994 levels of effort decreased slightly while production and CPUE increased.

COASTAL FISHERIES

The artisanal system, in contrast to the companies system on the shrimp fishery, is developed to exploit the inshore resources. The structure of the fleet is heterogenous, complex and adapted to the variability of the environment. The diversity of the species and the variations of their seasonal abundances, access to resources, costs of production and adaptability to the markets are the main factors which are conditioning the activities of these fleets. Nowadays, it is easy to collect the physical characteristics of the boats (Table 6) but difficult to have even a small idea of the species composition of the catch and the level of discards. A fleet analysis is now in progress and will indicate homogeneous groups of boats within which sample the catch.

These boats are fishing inside the 10 metre bathymetric zone, but it is likely that there are, even in these very coastal areas, interactions with the industrial shrimpers. In the coastal zones, the activities are seasonal and exclusively target fishes with gill-nets. These fleets operate within areas with relative low salinity and in the estuaries. The problem with this fishery is that there is no real abundant stock or the size of the fishes is too small to be used by the fish processors

It is likely that present production is not representative of the real potentialities of the area and in many cases fishing is a subsistence activity. The fishermen operating in the small-scale fishery are always foreigners; Brazilians, Surinamese and Haitians.

Table 6: Characteristics of the boats, of the gears and of the activity in the coastal fishery.

	CANOT CRÉOLE	C. CRÉOLE AMÉLIORÉ	CANOT INDIEN	PIROGUE	TAPOUILLE	BARGE	AUTRES
CHARACTERISTICS OF THE BOATS							
Number	79	11	15	16	9	5	9
Mean length in m	8	10	8.5	8	11.5	6	6.5
Mean age in years	7	8	6	8	8	2	7
Mean width (m3)	3.5	14	5	1.5	15	2	5
Power (ch)	50	75	30	30	90	90	45
GEARS							
Mean Sounding (m)	8	5	4	4	8	8	6
Mean length of the gill-net (m)	2600	850	350	550	2500	1250	450
ACTIVITY							
Activity (month)	8	6	8	6	7	5	4
Number of trips per day	3	3	3	3	3	3	2
Duration of trips (hours)	6	5	4	5	5	2	5