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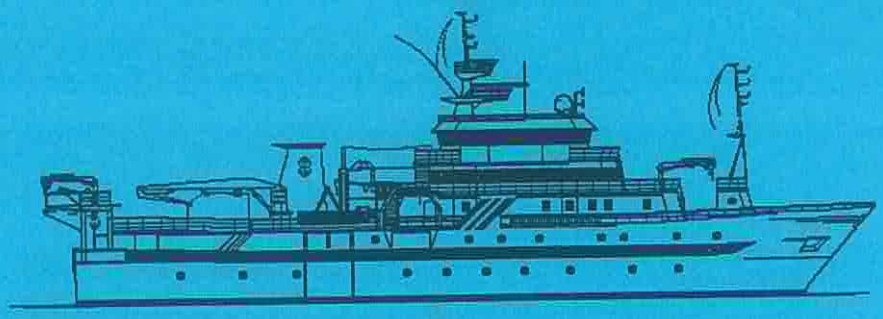

SURVEYS OF THE FISH RESOURCES OF ANGOLA

Cruise Report No. 2/95

PART I

Survey of deep-water shrimp and hake
Gear experiments
27 July - 13 August 1995

PART II

Survey of the pelagic resources
22 August - 22 September 1995

Institute of Fisheries Research
IIP, Luanda

Institute of Marine Research
IMR, Bergen

CRUISE REPORTS 'DR. FRIDTJOF NANSEN'

SURVEYS OF THE FISH RESOURCES OF ANGOLA

Cruise Report No. 2/95

PART I

Survey of deep-water shrimp and hake
Gear experiments
27 July - 13 August 1995

by

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Institute of Marine Research
Bergen, 1995

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CHAPTER 1 INTRODUCTION

1.1 Objectives

The objectives of the survey had been previously agreed upon with the representatives of Instituto de Investigação Pesqueira (IIP).

The objectives of the survey were to:

- Estimate the catch rates of economically important shrimps (*Parapenaeus longirostris* and *Aristeus varidens*) with and without a tickler chain fitted to the footrope of the trawl.
- Describe the distribution, composition and abundance of deep-water shrimp, Benguela hake (*Merluccius polli*) and sparids from Luanda to Benguela by a swept-area trawl programme.
- Collect stomach samples of hake for quantitative laboratory analysis of the contents, with special emphasis on the content of economically important shrimps.
- Map the general hydrographic regime by using a CTD-sonde on all trawl stations and monitor the temperature, salt and oxygen on IIP standard profiles for hydrographical studies.
- Sample the Angola Dome

1.2 Participation

The scientific staff consisted of:

From IIP, Angola:

Domingos Azevedo, Lourenço Constança, Mario Fortunato, Victor Isaias,
Kumbi Kilongo, Lutuba Nsilulu, Quilanda Fidel, Gisela Ramos and Filipe Vianda.

From IMR, Bergen:

Martin Dahl, Tor Gammelsrød (5.8-14.8), Ole Gullaksen, Sigbjørn Mehl and Tore Mørk.

1.3 Narrative

The vessel left Luanda in the morning of 27 July and steamed southwards to Pta. das Palmeirinhas where the sampling programme started. The course tracks were approximately 20 nm apart, covering the outer shelf and the slope from about 150 to 700 m depth. Semi-random swept-area hauls were carried out down to 400 m during daytime and deeper during dark hours. At each trawl station, one haul with tickler chain and another without were made. CTD-stations were taken at all trawl stations in addition to those taken for the standard profiles. Three hydrographic transects were sampled between Luanda and Lobito; Pta. das Palmeirinhas, Pta. do Morro and Lobito. Acoustic registration and integration of main groups were done throughout the survey.

The vessel called at Lobito from 5 to 6 August to pick up a Norwegian scientist and some oceanographic equipment. On the afternoon of 6 August the second part of the survey started with sampling the Angola Dome. An area from 12°S to 09°S and west to 08°E was covered with CTD-stations and ADCP-measurements for each 20-30 nm. The survey was completed 13 August outside Cabeça da Cobra, where a current meter rig was deployed, and the vessel continued to Pointe Noire.

1.4 Survey effort

Figures 1a-c show the cruise tracks with fishing and CTD-stations and Table 1 presents the number of CTD and trawl stations and the distance surveyed.

Table 1 Number of hydrographic (CTD), pelagic (PT), bottom (BT) trawl stations, successful swept-area hauls and distance surveyed (nm) by area.

Area	CTD	PT	BT	Swept-area hauls				Distance surveyed (nm)
				100-400m		400-800m		
				T. chain	No chain	T. chain	No chain	
Luanda-Benguela	59	0	95	24	24	21	22	1 050
Angola Dome	52	1	0	0	0	0	0	1 435
Total	111	1	95	24	24	21	22	2 285

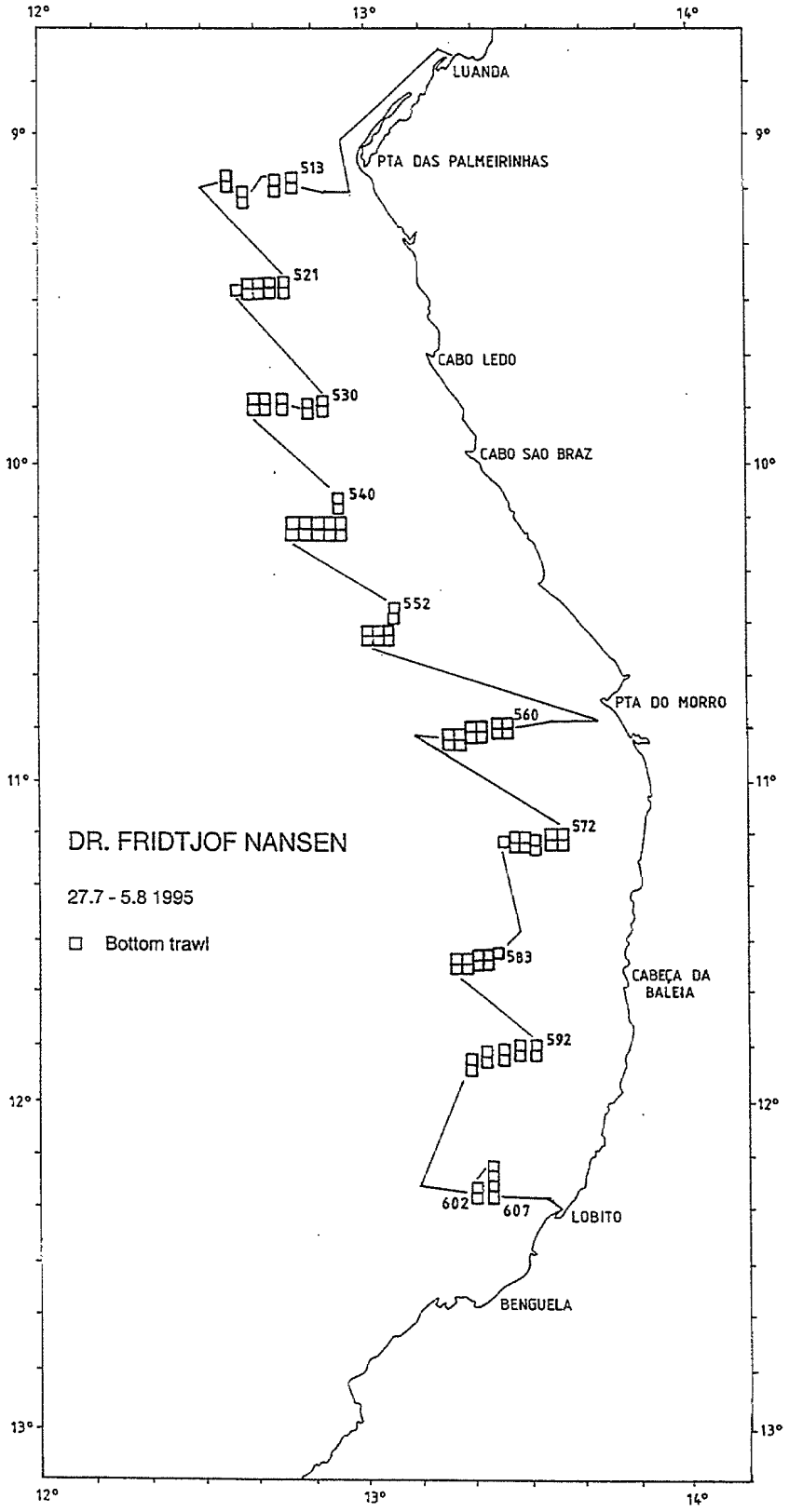


Figure 1a Course tracks with fishing stations. Luanda-Benguela.

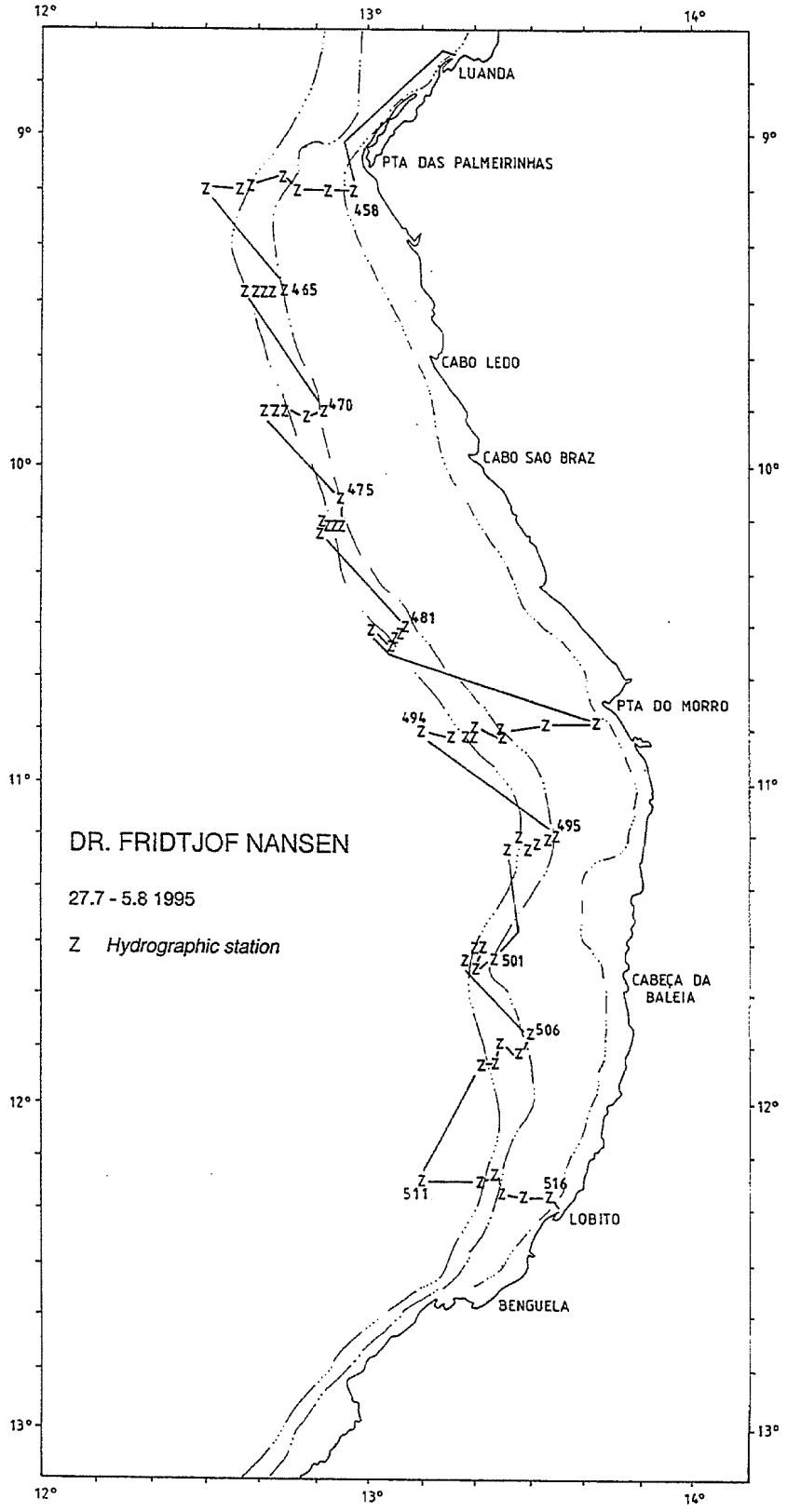


Figure 1b Course tracks with CTD-stations. Luanda-Benguela.

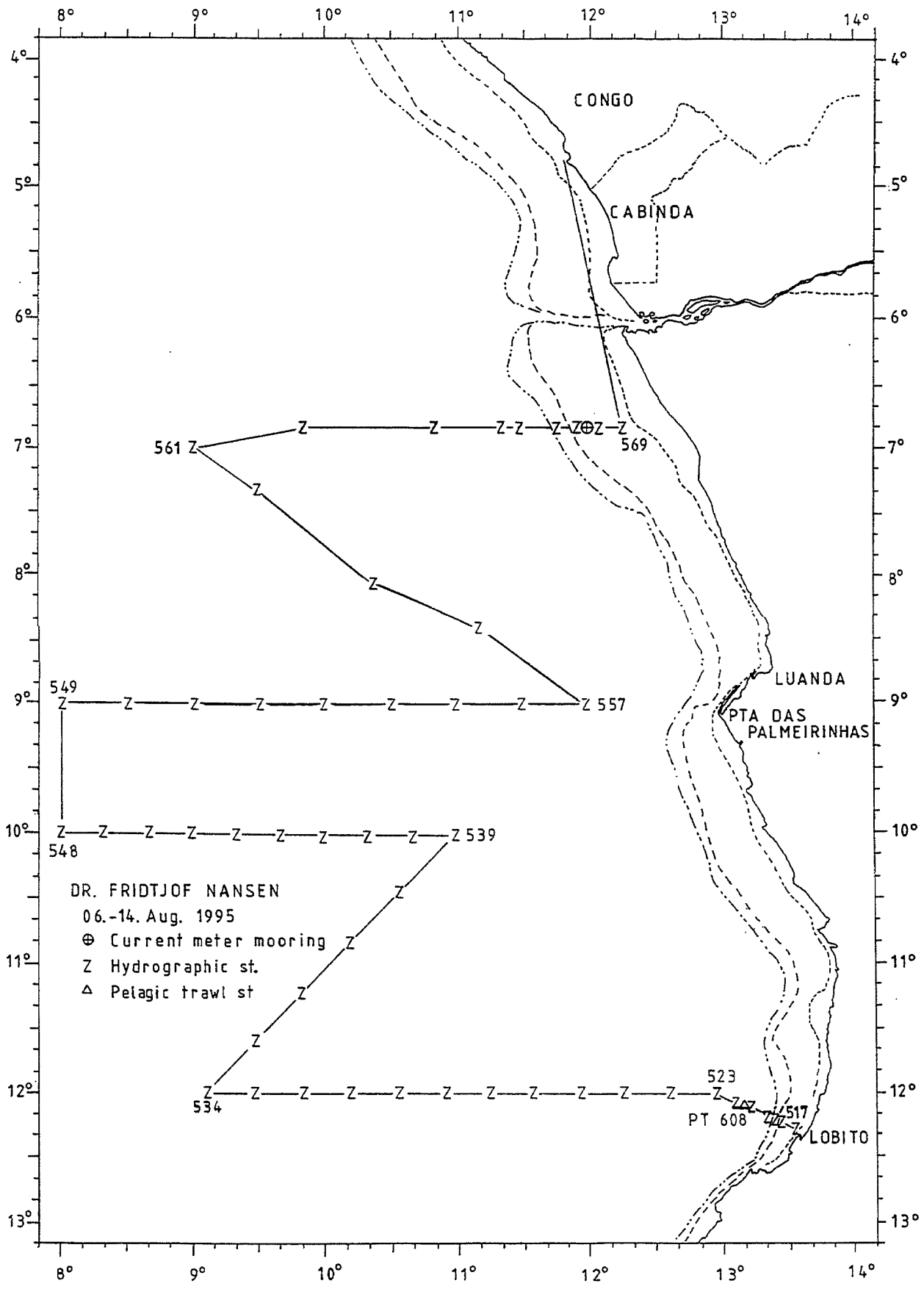


Figure 1c Course tracks with CTD-stations. Angola Dome.

CHAPTER 2 METHODS

2.1 Hydrographic sampling

A Seabird 911CTD plus was used to obtain vertical profiles of temperature, salinity and oxygen. Real time plotting and logging was done using the Seabird Seasave software installed on a PC. The profiles were taken down to a few metres above the bottom. Two Niskin bottles were triggered for water samples on each station, one near the bottom and one near the surface (5 m depth). The samples were analysed for salinity using a Guildline Portasal salinometer, and the oxygen content was determined using the Winkler method. These laboratory values were used for calibration of the CTD after removing obvious outliers.

Using 37 points for the salinity calibration, a standard error of 0.0077 resulted, without any adjustment of the CTD values. This was accepted. It should be noted that a better calibration may be obtained using only the bottom samples, where the gradients in T and S are usually smaller.

Fifteen samples were accepted for oxygen calibration. A linear regression gave the following formula for correcting the oxygen values:

$$O_2 = O_{2ctd} * 1.0143+0.3298$$

When applying this formula, a standard error of 0.184 was obtained.

About 200 water samples for nutrient determination (Silicate, Nitrate and Phosphate) were obtained from most stations during the Angola Dome experiment using 8 Niskin bottles. The samples were filled in plastic bottles (~250ml) and stored in the freezer. These will be analysed at the laboratory in Lobito later.

Current meter mooring

A current meter rig consisting of 2 Aanderaa RCM7 current metres and a WLR8 pressure gauge was deployed at 100 m depth in position 6°50'S, 11°56E. Each current meter was equipped with pressure,

temperature and conductivity sensors, thus salinity may be calculated. The instruments were set to record at 10 minutes intervals.

ADCP current measurements

A ship born Acoustic Doppler Current Profiler (ADCP) from RD Instruments was activated on every CTD station. The ADCP was set to ping every 8 seconds, the depth cell was chosen to 8 m and the number of cells to 50. As a routine the data were averaged over 300 seconds for analyses onboard. Both the raw and averaged data were stored on files. The data were analysed by the PC software UMS (Underway Mapping System), supported by the Sea Fisheries Research Institute, Cape Town, South Africa (Zauner, 1993). During the cruise a software package was developed (by Martin Dahl) for translating RD ADCP ASCII data to the UMS format. Coastal lines were obtained from the GEBCO electronical Atlas.

Meteorological observations

Wind (direction and speed), global radiation and sea surface temperature (5 m depth) were logged automatically every nautical mile using an Anderaa meteorological station. Logging of air temperature did not function during the first part of the survey (27.7 - 6.8).

2.2 Fish sampling

2.2.1 Bottom trawl survey

The catches were sampled for species composition by weight and numbers (and by sex for *Parapenaeus longirostris* and *Aristeus varidens*). Length distributions (total length, also for shrimp) were taken for the main species. Biological samples, i.e. length, weight, sex and maturity stages, were taken for *M. polli* in connection with stomach sampling. The records of fishing stations are presented in Annex I. Pooled length frequency distributions (weighted by the catch) of selected species are shown in Annex II.

Table 2 shows the areas used in the swept-area biomass estimates for the Luanda-Benguela region.

Table 2. Areas used in the swept-area biomass estimates.

Depth stratum	Area (nm^2)
100-200 m	1252
200-300 m	500
300-400 m	350
400-500 m	445
500-600 m	450
600-800 m	900

The bottom trawl headline was 31 m (float line), the footrope 47 m, estimated headline height 6 m and distance between wings during towing about 18 m. During trawling a 9.5 m long rope was fastened between the wires 130 m in front of the doors giving a constant distance between the doors of 49-50 m.

All trawl hauls were monitored by SCANMAR trawl sensors (bottom contact, headline height and distance between the doors) and the actual time the trawl was fishing on the bottom was determined by help of the sensors. For conversion of catch rates to fish densities the area between the wings is assumed to be the effective fishing area and the retention factor q is considered to be 1. The length of a haul, recorded as distance over bottom was measured by Doppler log on the bottom. There was some mid-water occurrence of hake on the slope during dark hours, and this may have affected (reduced) the swept area-estimates for the slope deeper than 400 m.

A more detailed description of the fishing gear, the acoustic instruments and their standard settings is given in Annex IV.

Gear experiments

Since last year, the bottom trawl has been equipped with a tickler chain which is supposed to improve the catchability of bottom living and borrowing species, particularly shrimp. In order to be able to compare catch rates and biomass estimates from later and previous surveys, an experiment was set up to test the differences in shrimp catchability with and without tickler chain. On every second trawl haul the footrope was equipped with a tickler chain. The trawl hauls with and without tickler chain were made at the same position and in the same course. During the first half of the survey the haul without tickler chain was made first, while in the second half the haul with tickler chain came first. Only stations where both trawl hauls had a validity code of 3 or lower are included (i.e. good paired hauls). A Wilcoxon signed-rank test was performed to test whether the presence of the chain had any effect on the catch rates.

CHAPTER 3 OCEANOGRAPHIC CONDITIONS

3.1 Surface distribution

The horizontal distributions of temperature and salinity are shown in Figs. 2 and 3, respectively. Temperatures range from 19°C near the shore to 22°C offshore, typical for the season. Also the salinity distribution was typical for the time of the year, ranging from 35.6‰ near the coast to 35.8‰ further out in the ocean. The fact that both temperature and salinity are increasing with increasing distance from the coast, indicates that the source of the water near the coast is found at subsurface layers, i.e a coastal upwelling has occurred. This is in accordance with the wind observation which showed a prevailing south direction, favourable for upwelling.

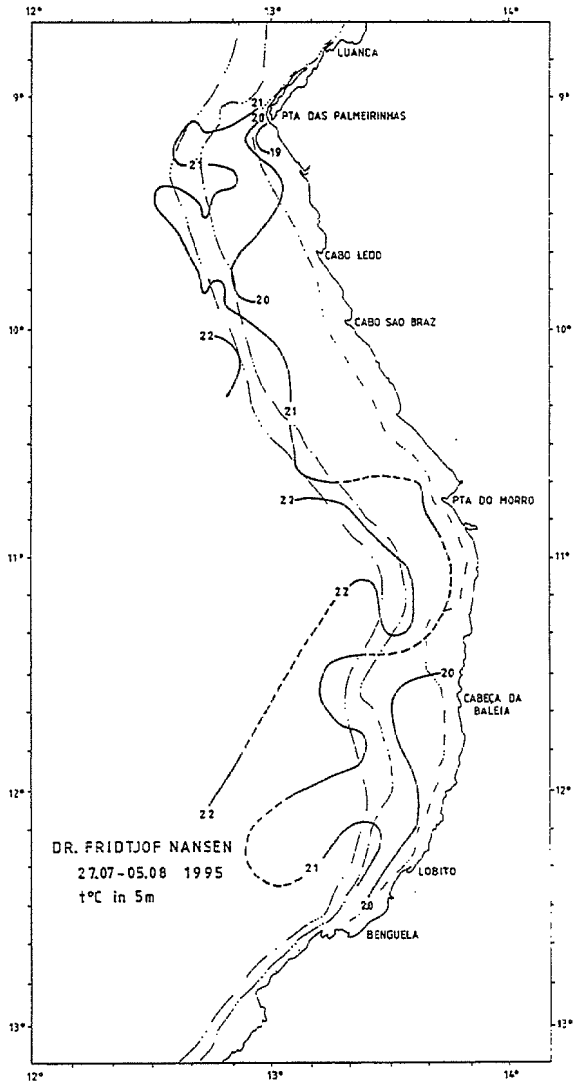


Figure 2 Horizontal distribution of surface (5 m depth) temperature, Luanda - Benguela.

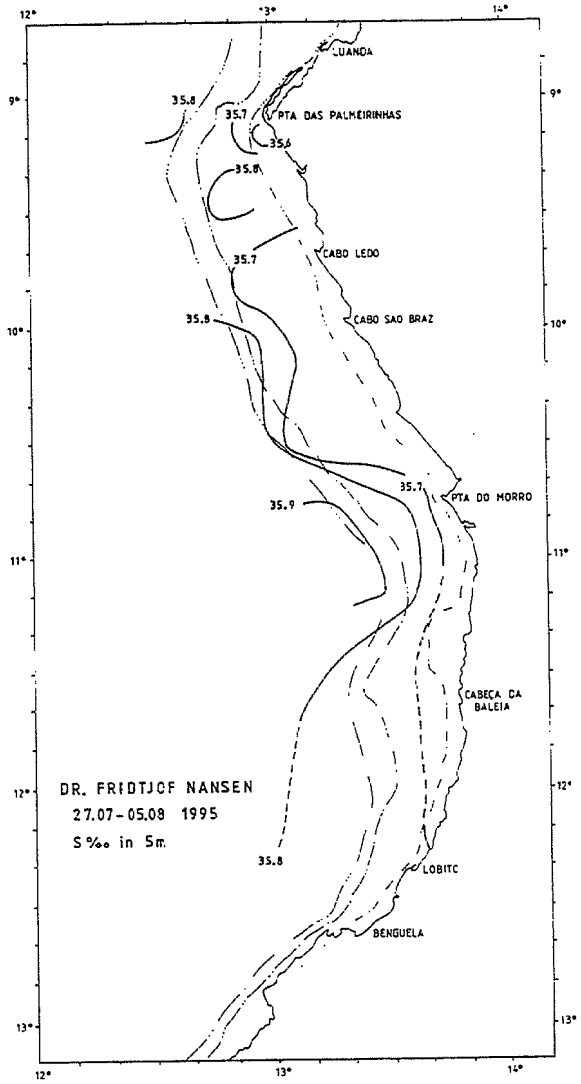


Figure 3 Horizontal distribution of surface (5 m depth) salinity, Luanda - Benguela.

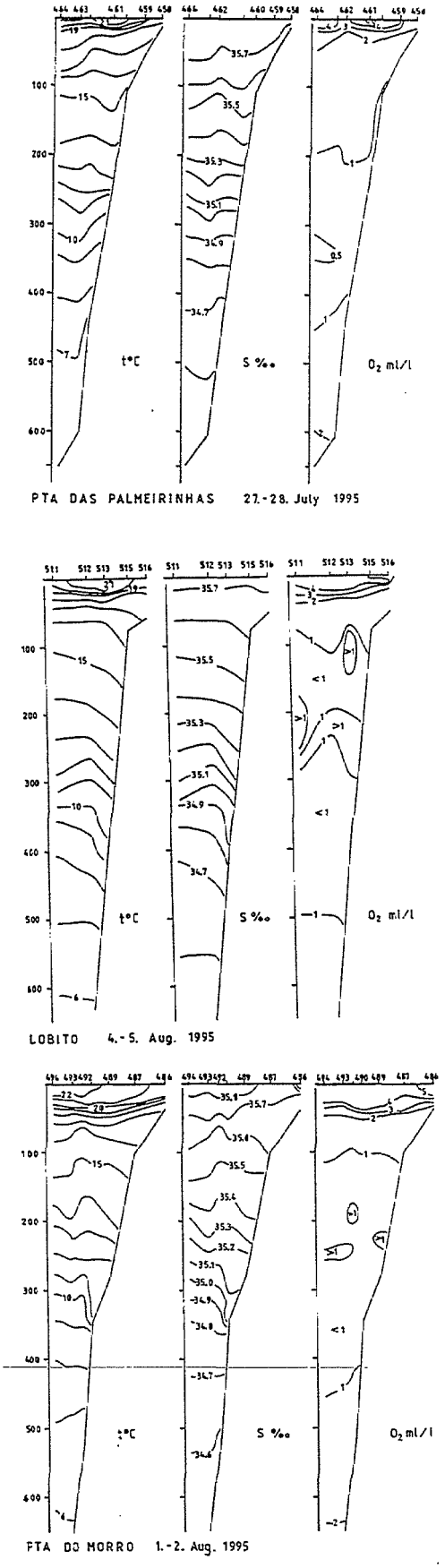


Figure 4 Vertical sections of temperature, salinity and oxygen. Pta. das Palmeirinhas, Pta. do Morro and Lobito.

3.2 Vertical sections

In Fig. 4 the vertical distribution of temperature, salinity and oxygen are shown for the 3 sections worked during the trawl survey. The upwelling tendency is most clearly seen in the two northernmost sections. We note that also the vertical ranges of the parameters were quite typical for the season, thus there is no sign of the extremely warm and fresh water layer observed in the upper layers during our last cruise in the region in March this year. Thus the Benguela "Niño" has disappeared.

3.3 Sampling of the Angola Dome

A large scale experiment was conducted during the last part of the survey to map the Angolan Dome, which is believed to be an important feature in the area, having a large impact of the variability of the water masses in the Angolan economical zone. The station map shows that one of the sections goes through 10°S, 10°E, where the centre of the Dome usually is found. As may be observed from the corresponding temperature section (Fig. 5), the structure is extremely flat, i.e there was no sign of the Angola Dome observed during the present cruise. Although the Angola Dome, as its counterpart, the Guinea Dome north of equator, are observed to be less active during the local winter season, a total disappearance of the Angola Dome has, to our knowledge, not been observed before. One may speculate if the absence of the Angola Dome may be related to the Benguela "Niño" earlier this year, which

obviously was related to anomalous large scale circulation, but a much larger effort is needed to explore this.

3.4 Results from the ADCP current measurements

A subset of the current vectors obtained at 35 m depth is shown in Fig. 6. Here no averaging has been done, except the 5 minutes averaging done in real time. That means that at deep stations lasting more than 10 minutes, several vectors are plotted at the same position. This gives an impression of the performance of the ADCP, and we note that the variability is considerable even during the station time. In most cases though, there is some consistency, and a certain impression of the direction and magnitude of the current may be obtained, although, interpretations should be handled with care.

On a larger scale the variability was also considerable, but note that this may be a variablity in time as well as in space. We do not know how much the tides contribute in the temporal variations. A clue on this will be obtained after the Aanderaa current meter mooring hopefully is safely recovered.

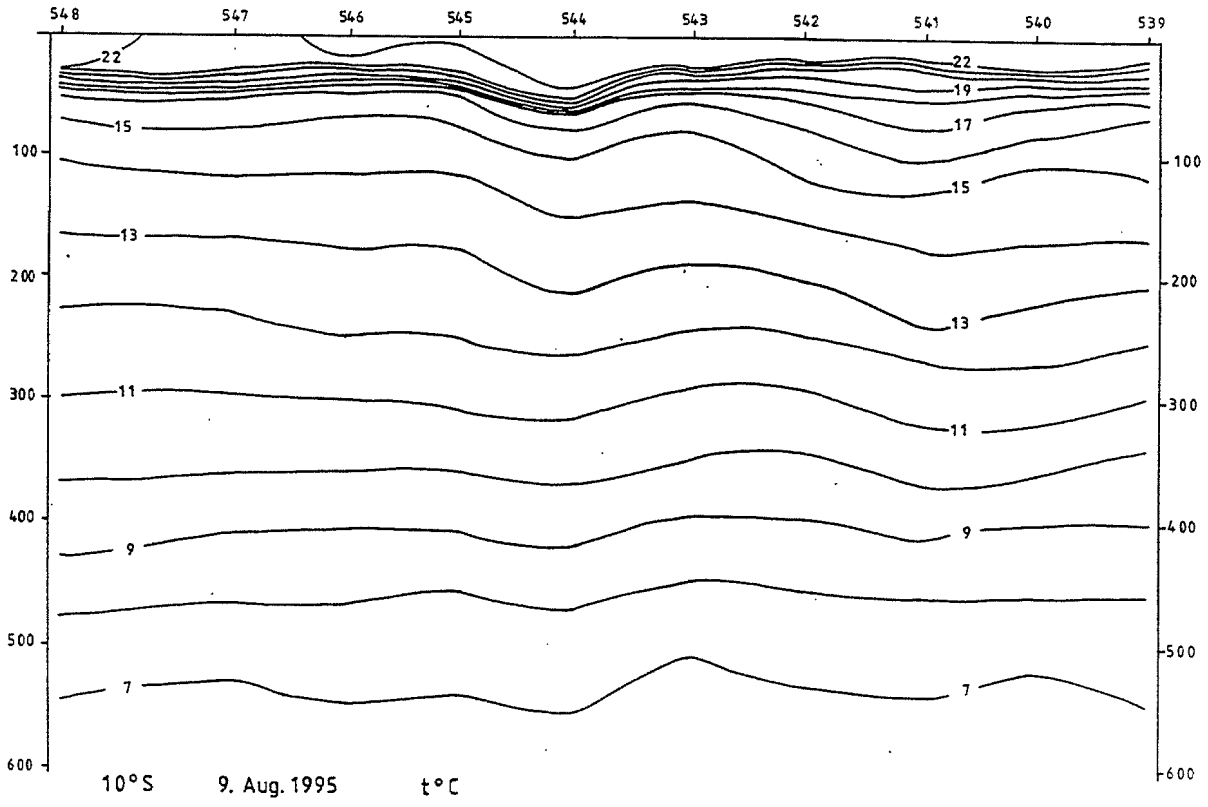


Figure 5 Vertical distribution of temperature in the upper 600 m at 10°S.

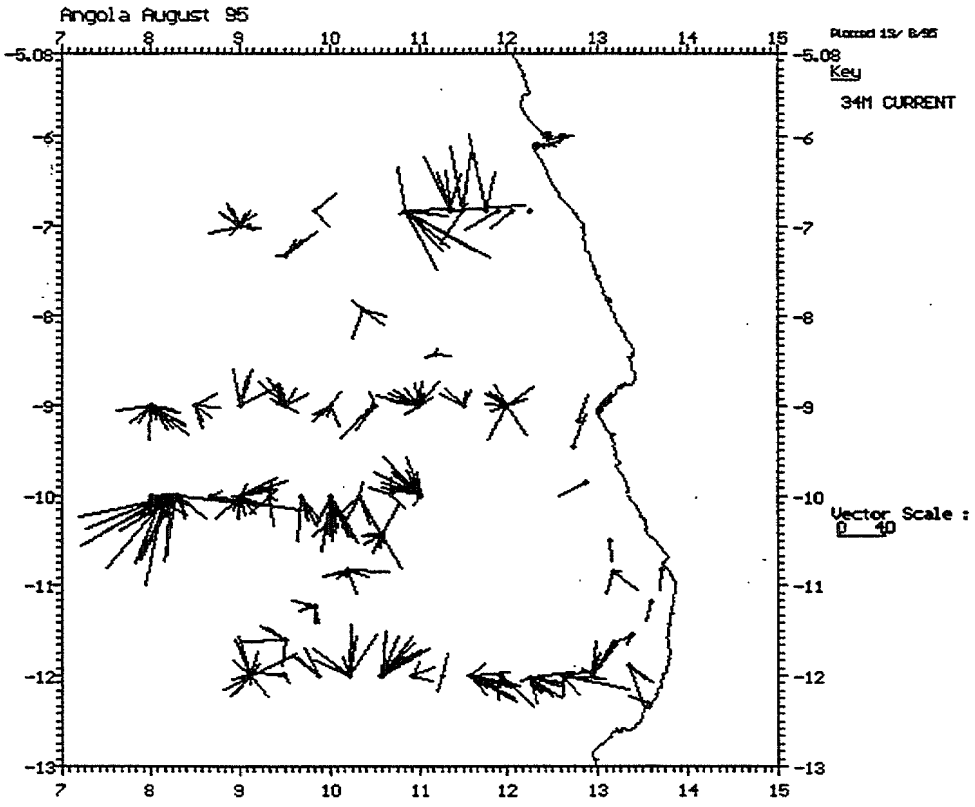


Figure 6 ADCP current vectors at 35 m depth.

CHAPTER 4 CATCH RATES, DISTRIBUTION, COMPOSITION AND BIOMASS ESTIMATES OF SHRIMP AND DEMERSAL FISH

During the present investigation, the main purpose was to estimate the differences in catch rates of economically important shrimps with and without a tickler chain fitted to the footrope of the trawl. Only the outer shelf and slope from about 150 to 700 m depth was covered. Still a brief description of the composition of the fish fauna in the catches is presented and compared with results of previous investigations. The locations of the trawl stations are shown in Fig. 1. Records of fishing stations and catches are presented in Annex I and pooled length distributions (weighted by the catch) of main species are shown in Annex II. Stations without tickler chain on the trawl have area code 1, those with have area code 2.

In the catch rate analysis and swept-area biomass estimates the depth strata 100-200 m, 200-300 m, 300-400 m, 400-500m, 500-600 m and 600-800 m have been applied. Mean densities by depth strata of the main species, the incidence and the catch distributions are shown in Annex III-A.

All together 91 swept-area hauls were made in the Luanda-Benguela area, 45 with and 46 without a tickler chain, see Table 1 for details. In the following brief description all hauls with tickler chain are used, and in Chapter 5 differences in catch rates when trawling with and without a tickler chain are analysed.

Table 3 presents the catch rates by main groups for the slope. To make it comparable with previous results, only stations from 200 to 800 m are included. 'Demersal' comprises families of commercial interest (Sciaenidae, Pomadasyidae, Serranidae, Sparidae, Lutjanidae and Merluccidae), while 'Pelagic' includes Engraulidae, Clupeidae, Carangidae, Scombridae, Sphyraenidae and Trichuridae (not all these families were represented during the present survey). The category 'shrimps' includes all species caught. Like in the two previous surveys (February 1995 and September 1994) the demersal group was the dominating, but the mean catch rate was 30-40% lower now. This difference was mainly due to a few large catches which increased the mean cath rates during the two previous surveys. The most important 'demersal' species were Benguela hake and sparids (*Dentex macrophthalmus* and *D. angolensis*). The mean catch rate of the pelagic group was almost the same as in February this year and less than half of the rate obtained last year. *Trichiurus lepturus* was the dominating species in this group. 'Shrimps' had the second highest catch rates, 10 % higher than in February and 30 % higher than last year. The

catch rates of sharks and cephalopods were similar to those obtained during the previous surveys, but it should be noted that a scalloped hammerhead shark (*Sphyrna lewini*) of 2-3 m length is not included in the catches of the present survey. In the group 'Other' *Chlorophthalmus atlanticus*, *Synagrops microlepis*, *Pterothrissus belloci*, *Hoplostethus cadenati*, Macrouridae and Myctophidae made the highest contributions to the mean catch rate, which was somewhat higher than in the two previous surveys, see Annex III for details.

Table 3. Catch rates (kg/hour) by main groups in swept area bottom trawl hauls with tickler chain on the slope. LUANDA-BENGUELA.

ST.NO.	DEP.	Demersal	Pelagic	Sharks	Shrimps	Cephalopod	Other
516	282	69.0			6.9		349.7
518	442	5.7	2.2	4.9	22.9	0.4	106.0
520	642		1.1	0.5	23.6	9.2	96.2
524	277	48.8	1.0		13.8	0.2	2109.1
526	349	42.0	7.1	52.5	48.9		354.0
528	488	37.7	16.7	9.5	21.3		293.4
535	461	61.3	7.4	11.1	30.7		135.4
537	579	8.4	0.8	14.2	20.0	2.0	131.0
543	274		5.1		6.5	4.7	214.1
545	367	385.5	10.2	120.4	259.4	1.7	142.0
547	453	93.0			116.4		114.8
549	551	29.5	36.4	11.3	47.8		91.2
551	668	12.5	1.3	6.1	38.4		212.0
553	211	99.1	78.6		4.7	5.8	336.7
555	281	21.4			6.9		1562.7
557	426	64.0	26.1	39.9	249.9	5.2	124.8
559	518		9.4	9.6	155.3		219.4
561	210	155.4			51.8	1.3	1986.6
563	284	213.0	106.4		50.1		1135.7
564	347	349.8	48.6	2.7	116.4		210.6
566	407	479.9	8.2	41.0	309.8		687.0
568	527		7.9	28.5	113.1		364.1
570	648		1.7	6.0	5.8	7.2	103.3
574	243	342.7	22.1		8.8	8.8	1792.5
576	349	267.8	17.3	37.1	82.2	14.2	191.2
578	454				92.6		244.1
580	547	12.5			60.2		99.1
583	258	40.5	42.3		12.5	1.0	247.9
584	352	54.4	25.9	13.4	156.2	5.1	160.2
586	436	133.7	18.6	15.7	52.0	17.6	90.6
588	547			8.3	96.1		144.2
590	633	4.3		7.4	51.2		91.7
594	246	461.3	76.8		8.2	0.9	363.4
596	324	331.8	232.8		7.2	1.2	440.0
598	420	217.4		98.6	107.2	3.9	273.1
600	571	2.2			31.4		168.5
602	705		2.7	12.5	38.9		335.1
604	383	66.0		56.0	85.8		91.4
606	286	92.3			66.2		327.3
MEAN		107.8	20.9	15.6	68.6	2.3	413.9

4.1 Deep-water shrimp

Table 4 shows the catch rates of important shrimps and fish on the slope (200-800 m). The overall mean catch rate of rose shrimp was 32 % lower than last year and about the same as what was found earlier this year. The mean catch rate of striped shrimp was similar to that obtained last year and 27 % lower than the rate found in February this year. Since the use of a tickler chain is expected to increase the catches, this might indicate a decrease in abundance of the two most important shrimp species. It should however be noted that all tickler-chain hauls between 100 to

800 m are included here, and this may introduce a bias since these shrimp species are limited to certain depth zones (see below).

Table 4 Catch rates (kg/hour) of main shrimps and bycatch species in swept area bottom trawl hauls with tickler chain on the slope. LUANDA-BENGUELA.

ST.NO.	DEP.	Sparids	Hakes	Rose shr.	Str. shr.	Spid. shr.	Other
516	282		69.0	6.5		0.4	349.7
518	442		5.7		22.4		114.1
520	642				0.7		130.0
524	277		48.8	13.8			2110.3
526	349		42.0		24.6		437.8
528	488		37.7		19.5		321.3
535	461		61.3		28.8		155.8
537	579		8.4		1.1		166.9
543	274			6.4			224.0
545	367		385.5		28.4	231.0	274.3
547	453		93.0		14.4	102.0	114.8
549	551		29.5		2.2	44.4	140.1
551	668		12.5		1.4	36.4	220.1
553	211	89.0	10.2	4.7			421.0
555	281	19.0	2.4	6.9			1562.7
557	426		64.0		44.2	205.0	196.7
559	518				1.0	153.6	239.0
561	210	118.8	36.6	51.8			1988.0
563	284	12.5	200.5	50.1			1242.1
564	347	10.8	339.0	37.2		72.0	269.1
566	407		479.9	0.8	28.4	249.5	767.2
568	527				3.8	109.4	400.6
570	648				2.4	2.5	119.1
574	243	219.0	123.8	8.8			1823.5
576	349	4.4	263.4	0.8		79.2	261.8
578	454				21.2	71.4	244.1
580	547		12.5		1.4	58.8	99.1
583	258	34.2	6.3	11.9			291.8
584	352		54.4	0.2	4.2	105.1	251.4
586	436		133.7		1.5	47.7	145.3
588	547				0.7	95.2	152.7
590	633		4.3		7.2	43.8	99.3
594	246	459.0	2.3	8.2			441.1
596	324	103.8	228.0	7.2			674.0
598	420		217.4		18.0	47.9	416.8
600	571		2.2		16.8	14.5	168.5
602	705				22.2	15.0	352.0
604	383		66.0	47.2	22.8		163.1
606	286	35.0	57.3	66.2			327.3
MEAN		28.4	79.4	8.4	8.7	45.8	458.4

Like in previous investigations spider shrimp (*Nematocarcinus africanus*) had the highest mean catch rate, 2/3 of total shrimp, and the catch rate was higher than in the two previous surveys. Small catches of *Plesiopenaeus edwarsianus* were obtained on some stations from 350 m and downwards in the northern part of the region. The mean catch rate was somewhat higher than those found in the two previous investigations.

Table 5 presents the catch rates of rose shrimp by depth range and year/period of investigation. Like in most previous investigations the catch rates were highest in the 200-300 m depth zone, where also the frequency of occurrence was highest (100 %). The overall mean catch rate in the 100-400 m zone was a little higher than in the two previous investigations. This is in contrast with the result for the whole slope (see above), but probably more correct since it only includes stations

where rose shrimp is normally found. Mean lengths of both sexes were similar to those found in 1994.

Table 5 Rose shrimp. Mean catch rates (kg/hour) by depth range and year/period of investigation.

Depth	Year/period of investigation						
	1985/86	1989	1991/I	1992	1994	1995/I	1995/II
100-200 m			-	2	3	6	6
150-250 m	16	29					
200-300 m			17	26	30	16	21
250-350 m	30	17					
300-400 m			2	1	14	18	13
Mean	22	19			13	12	15

Mean catch rates of striped shrimp by depth are presented in Table 6. Like in 1994 the mean catch rate was highest in the 400-500 m depth zone, where also the frequency of occurrence was highest (100 %). In February this year the highest catch rates were found between 300-400 m and 500-600 m, and also in the present survey it seems as if striped shrimp occurs somewhat shallower than prior to 1995. Mean length of males were 0.5 cm longer than in 1994, while females were 2 cm shorter now.

Table 6 Striped shrimp. Mean catch rates (kg/hour) by depth range and year/period of investigation.

Depth	Year/period of investigation						
	1985/86	1989	1991/I	1992	1994	1995/I	1995/II
300-400 m			2	1	1	17	11
400-500 m			22	2	23	13	22
500-600 m				5	15	17	4
600-800 m				15	10	9	7
Mean	15	7		6	12	14	12

Biomass estimates for deep-water shrimp are given in Table 7. The estimates are obtained by multiplying the densities in the main depth zones (see Annex IIIA) by the area of each depth zone. The biomass of both shrimps is at the same level as in the period 1989-1994. The total biomass of valuable shrimps is only 1/3 of the result obtained in 1986. It appears to have maintained stable

levels in later years, but in both surveys in 1995 the total biomass was lower than in 1994, when no tickler chain was used. Given the positive effect the use of the chain should give on the catch rates, the above results might indicate a larger decline (see Chapter 5).

Table 7 Biomass (tonnes) of commercial deep-water shrimps by year/period of investigation. (Luanda-Benguela).

Species	Year / period of investigation					
	1986/I	1989	1992	1994	1995/I	1995/II
- Rose shrimp	3 400	700	680	710	460	750
- Striped red shr.	1 000	370	570	890	940	730
- Scarlet shrimp	100	+	+	+	+	+
Total	4 500	1 070	1 250	1 600	1 400	1 480

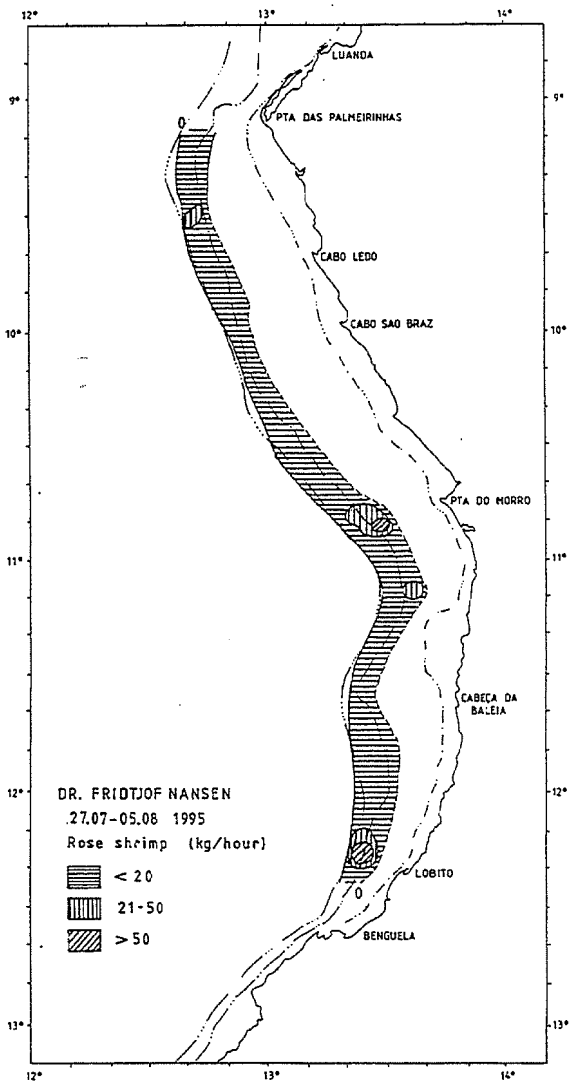


Figure 7 Distribution of rose shrimp (*Parapenaeus longirostris*), Luanda - Benguela.

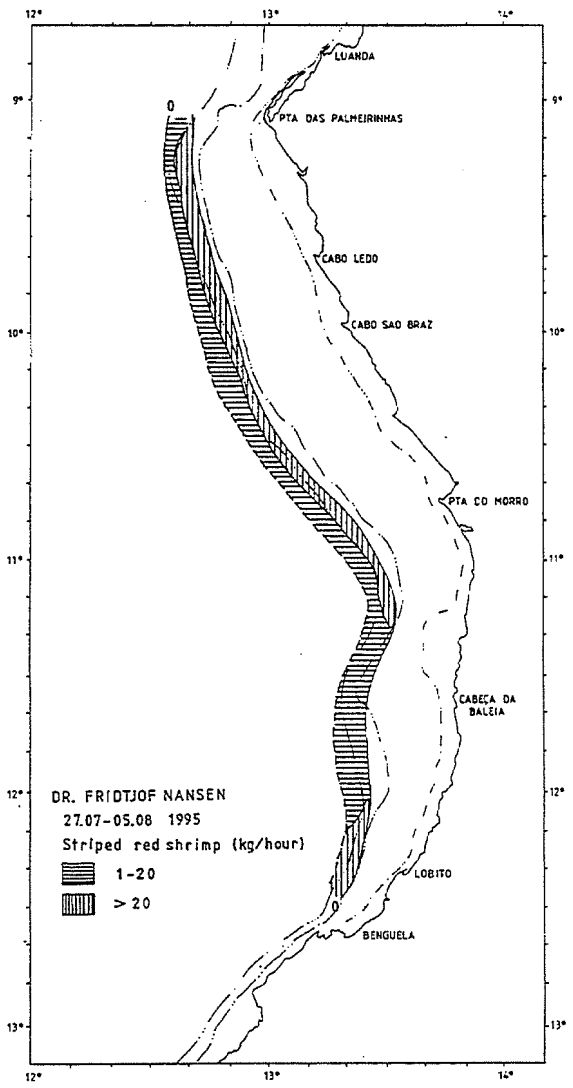


Figure 8 Distribution of striped red shrimp (*Aristeus varidens*), Luanda - Benguela.

Figures 7 and 8 show the distribution of rose shrimp and striped red shrimp respectively in the Luanda-Benguela region. The distribution pattern of rose shrimp was similar to those from the two previous surveys, with a few areas with catch rates > 20 kg/hour. Striped red shrimp also had a quite similar, narrow distribution like before, perhaps slightly more continuous during the present survey.

4.2 Benguela hake and sparids

Mean catch rates by depth and biomass estimates for hake (*Merluccius polli*) are given in Table 8. Like in February this year the highest catch rates were found in the 300-400 m depth zone, while in 1994 the highest rates were found between 200 and 300 m. The overall mean catch rate was about 20 % higher than in the two previous surveys. Compared with the results of the earlier years, there has been a dramatic reduction in catch rates from 300 to 500 m since 1992. The biomass of hake increased by almost 40% compared to result from February this year and is now a little above the 1994-level. This is however very low compared to the estimates from 1985/86.

Table 8 HAKE. Mean catch rates (kg/hour) by depth range and biomass estimates (tonnes) by year/period of investigation.

Depth	Year/period of investigation						
	1985/86	1989	1991/I	1992	1994	1995/I	1995/II
100-200 m	5	51	-	-	49	3	39
200-300 m	177	138	37	96	122	23	51
300-400 m	734	109	374	225	55	196	197
400-500 m	493	112	377	161	64	71	121
500-600 m	66	80	-	29	52	27	8
600-800 m	-	-	-	-	6	26	3
Mean					63	59	74
Biomass	20 000	10 000	11 000	8 100	6 670	4 950	6 830

The mean length (31 cm) was 3 cm longer than in February this year and 5 cm longer than last year. The size of the hake increased gradually with increasing depth. Figure 9 shows the distribution of Benguela hake in the Luanda-Benguela region. The distribution pattern was similar to those from the two previous surveys, with patches of catch rates > 50 kg/hour. The highest catch rates were found outside Pta. do Morro.

During the survey 506 stomachs of hake were collected for quantitative laboratory analysis of the content. About 60 % of the hake examined for stomach sampling had inverted stomachs or they had regurgitated. These specimens were replaced by feeding, non regurgitated fish before the stomachs were taken out.

Sparids (*Dentex macrophthalmus* and *D. angolensis*) occurred in stations shallower than 350 m, which is somewhat deeper (100 m) than in the two previous surveys. The overall mean catch rate for the slope (Table 3) was at about the same level as last year and much lower than in February this year, when a couple of large catches of *D. macrophthalmus* were obtained on the slope. Mean length of *D. macrophthalmus* was similar to the lengths found in the last surveys, while *D. angolensis* was 3-5 cm longer now than in the two previous investigations. The biomass of sparids on the slope was estimated to 9610 and 1330 tonnes for *D. macrophthalmus* and *D. angolensis* respectively. It should be noted that this is only about half of the total biomass of sparids previously found in this region when the shelf was also covered. Figure 14 shows the distribution of sparids on the slope (from about 150 to about 350 m) in the Luanda-Benguela region. Like in the survey in February this year the highest concentrations were found in the southern half of the region.

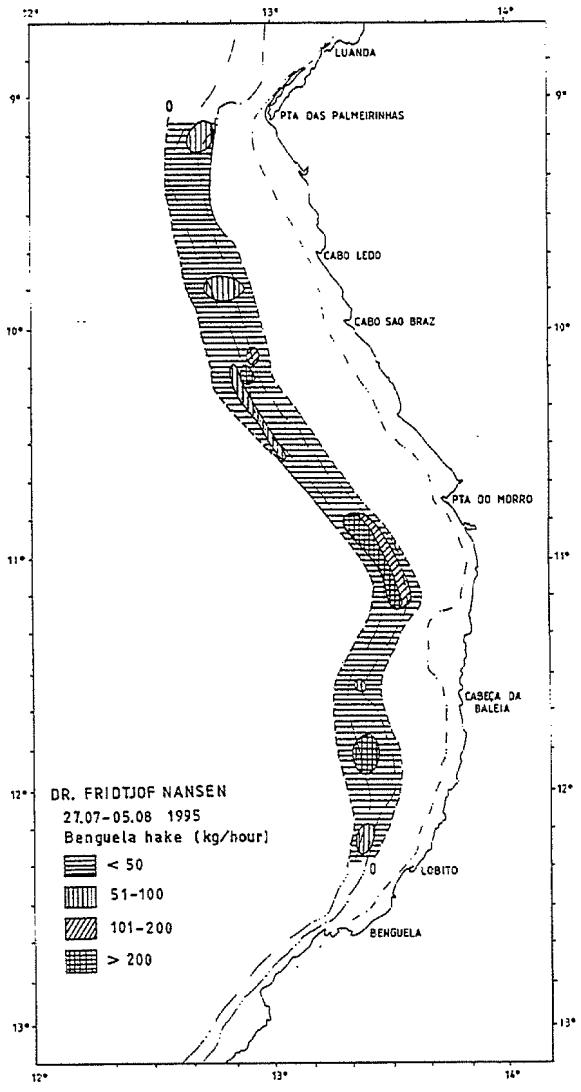


Figure 9 Distribution of Benguela hake (*Merluccius polli*), Luanda - Benguela.

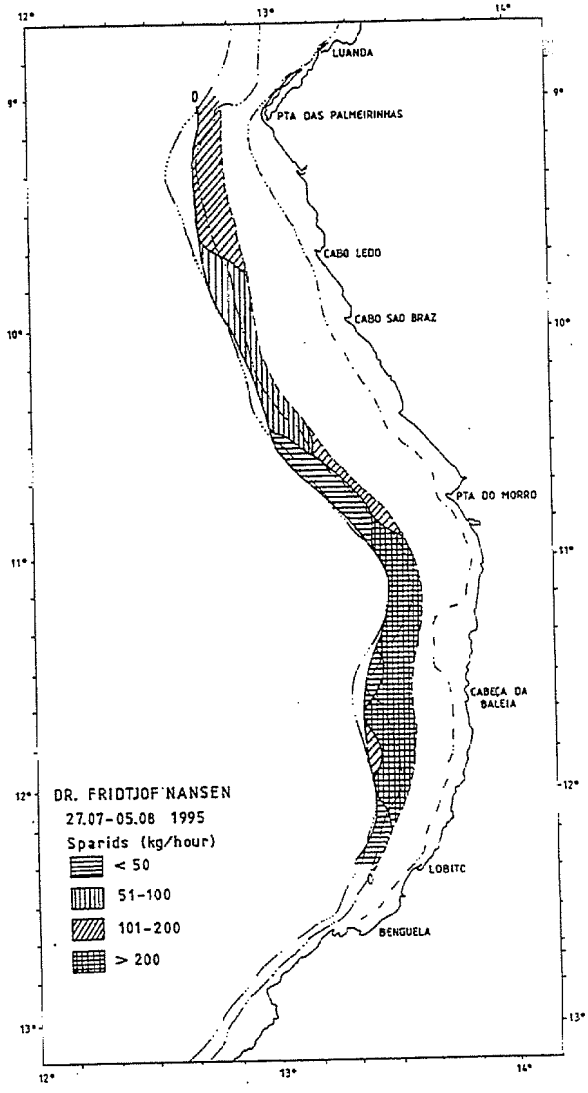


Figure 10 Distribution of seabreams (family Sparidae), Luanda - Benguela.

4.3 Co-occurrence of shrimp and hake

Table 9 presents the co-occurrence of commercially important deep-water shrimps and hake in the Luanda-Benguela region. The main results are quite similar to those from the survey in 1994. 95 % of the rose shrimp occurrence was together with hake, and the density of rose shrimp was on average more than 3 times higher when occurring with hake than when not. 54 % of the hake occurrence was together with rose shrimp, and the density was 40 % higher when occurring with rose shrimp than not.

72 % of the striped red shrimp occurrence was together with hake, and the density was on average 116 % higher when occurring with hake than when not. 51 % of the hake occurrence was together with striped red shrimp, but the density of hake was 7 % higher when not occurring with striped red shrimp than when it was.

Most of the hake occurrence was together with one of the important shrimp species, and hake seems to concentrate more in areas with high densities of rose shrimp than in areas with striped red shrimp. The differences were however smaller than last year, and one explanation to this is that striped red shrimp had a slightly shallower distribution in the present survey, while the highest densities of hake were found 100 m deeper now than in 1994.

Table 9 Co-occurrence of rose shrimp, striped red shrimp and hake in the Luanda-Benguela region.

Present/ not present	No.of stations	Catch			Catch rate		
		Rose	Striped	Hake	Rose	Striped	Hake
Rose	20	362	-	-	18.1	-	-
Rose not hake	1	6	-	-	6.0	-	-
Rose and hake	19	356	-	2 083	18.7	-	109.6
Hake not rose	16	-	-	1 250	-	-	78.1
Hake	35	-	-	3 333	-	-	95.2
Striped	25	-	340	-	-	13.6	-
Strip. not hake	7	-	52	-	-	7.4	-
Strip. and hake	18	-	288	1 710	-	16.0	95.0
Hake not striped	16	-	-	1 623	-	-	101.4

CHAPTER 5 FISHING EXPERIMENTS WITH TICKLER CHAIN

Figure 11 shows the catch rates of rose shrimp by paired hauls trawling with and without tickler chain. The catch rates are very similar and follow the same trends. This is also seen in Fig.12 where the ratio of catches with and without tickler chain is presented. The ratio line varies smoothly around the '1-line' except for one occasion where both catches were small. Table 10 gives the mean catch rates by fishing method and depth range. In the depth zone with the highest catch rates the difference between the mean catch rates is only 1%. The biomass estimates for the region are also quite similar, the one based on hauls with tickler chain is about 9% higher than the other, and this could just be natural sampling variance. In Figs. 13 and 14 the corresponding catch rates and ratios are presented for striped red shrimp. Here the differences are more pronounced, and except 3-4 stations, trawling with tickler chain gave higher catch rates than when trawling without. The differences were largest at the beginning of the survey, when the haul without tickler chain was made first. Table 10 also shows larger differences in mean catch rates by depth range. In all depth zones the catch rates were higher when trawling with tickler chain than when not. The overall mean catch rate and biomass estimate for the region were 23 and 25% higher respectively when using tickler chain.

A Wilcoxon signed-rank test was performed on the paired differences in catch rates with chain and without chain, for both species. The set where trawling took place first without chain and then

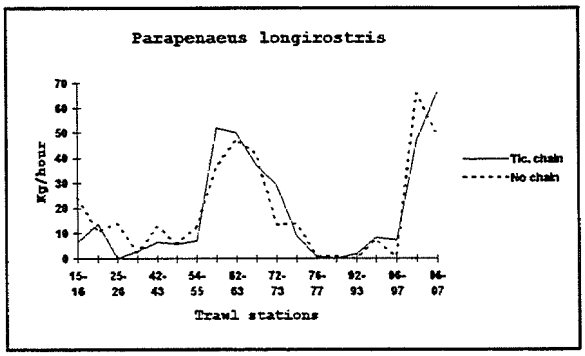


Figure 11 Rose shrimp. Catch rates (kg/hour) in paired trawl hauls with and without tickler chain.

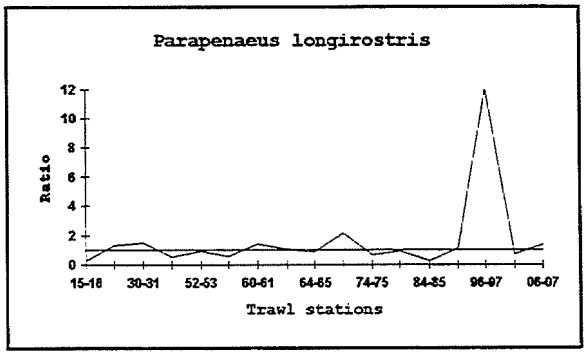


Figure 12 Rose shrimp. Ratio of catches (kg/hour) trawling with and without tickler chain.

with chain was analysed separately from the set where trawling took place first with the chain and then without. Finally, both sets were analysed together. The results confirm the general impression described above: there is no significant difference for rose shrimp while in the case of striped red shrimp the difference is significant ($p=0.05$) for the set where trawling took place first

without the chain and then with the chain. The difference is also significant when analysing the whole set.

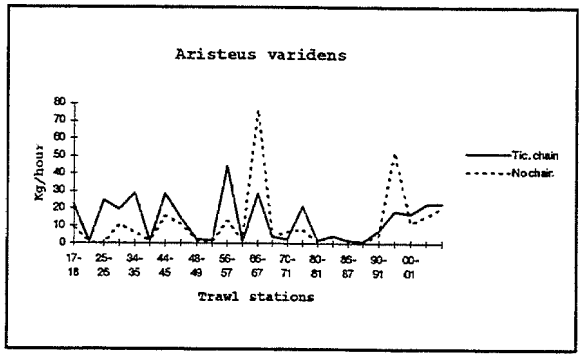


Figure 13 Striped red shrimp. Catch rates (kg/hour) in paired trawl hauls with and without tickler chain.

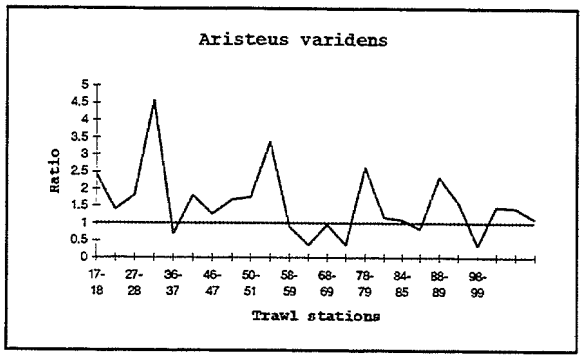


Figure 14 Striped red shrimp. Ratio of catches (kg/hour) trawling with and without tickler chain.

The reason why the difference is not significant when using the chain first is probably because this has a stirring effect on the substrate resulting in higher catches in the subsequent station without chain. From the above we can conclude that the presence of the chain positively affects the catches of *A. aridens*.

Table 10 Deep water shrimp. Mean catch rates (kg/hour) by depth range and biomass estimates (tonnes) by species and fishing method.

Depth	Rose shrimp		Striped red shrimp	
	Tickler chain	No chain	Tickler chain	No chain
100-200 m	5.7	2.6	-	-
200-300 m	22.4	22.1	-	-
300-400 m	13.2	17.7	11.4	5.7
400-500m	-	-	22.1	21.1
500-600m	-	-	3.9	3.0
600-800m	-	-	6.8	5.5
Mean	15.2	15.7	12.2	9.9
Mean if catch	18.5	19.0	13.6	11.1
St. deviation	21.2	19.7	12.3	17.4
Covariance	350.0		95.4	
Biomass	756	696	727	580

Table 11 gives mean catch rates and biomass estimates for hake, with and without tickler chain. There are some differences between the catch rates in the different depth zones, but there does not seem to be any trend in the differences. The overall mean catch rate and biomass estimate are 4 and 8% larger respectively when trawling without tickler chain than with, so if the tickler chain has any effect on hake, it is a small negative one, possibly a scaring-effect. A Wilcoxon sign-rank test was applied also here. No significant difference in the catch rates was found (p=0.05).

The above results suggest that when comparing biomass estimates from recent surveys where tickler chain was used, these should be corrected for the striped red shrimp (*A. varidens)* only. The correction factor should reduce the calculated biomass by 25 % .

Table 11 Benguela hake. Mean catch rates (kg/hour) by depth range and biomass estimates (tonnes) by fishing method.

Depth range	Tickler chain	No chain
100-200 m	39.3	49.4
200-300 m	55.1	59.4
300-400 m	196.9	160.8
400-500m	121.4	153.8
500-600m	7.5	3.7
600-800m	3.4	3.5
Mean	75.6	78.3
Biomass	6 904	7 430

CHAPTER 6 ON-THE-JOB TRAINING

Domingos Azevedo, Lourenço Constança, Mario Fortunato, Kumbi Kilongo, Lutuba Nsilulu and Gisela Ramos performed the daily sampling of catches, species identification and entering of data with NAN-SIS. In addition Kumbi Kilongo collected and recorded stomachs of Benguela hake.

During the sampling of the Angola Dome Kumbi Kilongo analysed some stomachs aboard, and got some practice in how to use the IMR-programmes for storing, analyses and presentation of stomach content data. The other biologists (under the supervision of Lourenço Constança) participated in using NAN-SIS for checking and correcting data, analysing data, printing data reports and entering of data with EXCEL for further analysis and presentation. They also plotted catch rates on maps and drew isolines for the species distribution maps. In addition Lourenço Constança took part in the writing of the cruise report.

Quilanda Fidel learned how to use the software available onboard for the CTD calibration. He and Filipe Vianda were drawing the vertical sections, while the horizontal sections mostly were worked out by Vianda. Victor Isaias learned how to operate the Portasal salinometer. He was also responsible for the titration of the oxygen sampling. Fidel and Vianda also participated in the preparation of the instruments for the current metre mooring, and the practical construction of the rig.

Annex I Records of fishing stations

PROJECT STATION: 513

DATE:27/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 909
start stop duration Long E 1247
TIME :13:55:00 14:25:00 30 (min) Purpose code: 3
LOG : 985.90 987.40 1.50 Area code : 1
FDEPTH: 115 194 GearCond.code:
BDEPTH: 115 194 Validity code:
Towing dir: 360° Wire out: 350 m Speed: 30 kn*10

Sorted: 104 Kg Total catch: 494.80 CATCH/HOUR: 989.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	526.30	35340	53.18	
Trichiurus lepturus	317.30	504	32.06	
Zenopsis conchifer	31.82	66	3.22	
Decapterus rhonchus	27.84	48	2.81	
Raja sp.	24.52	10	2.48	
Scorpaena stephanica	22.14	28	2.24	
Dentex macrophthalmus	14.68	78	1.48	1259
Sarda sarda	14.54	10	1.47	
Dentex angolensis	5.84	22	0.69	1258
Pterothrissus belloci	1.24	10	0.13	
Uranoscopus cadenati	1.14	10	0.12	
Citharus linguatula	0.66	28	0.07	
Illex coindetii	0.58	20	0.06	
Total	989.60		100.01	

PROJECT STATION: 514

DATE:27/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 909
start stop duration Long E 1247
TIME :15:25:00 15:55:00 30 (min) Purpose code: 3
LOG : 992.40 993.70 1.30 Area code : 2
FDEPTH: 119 196 GearCond.code:
BDEPTH: 119 196 Validity code:
Towing dir: 360° Wire out: 400 m Speed: 28 kn*10

Sorted: 205 Kg Total catch: 1050.98 CATCH/HOUR: 2101.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	812.00	47274	38.63	
Erythrocles monodi	338.10	574	16.08	1261
Trachurus trecae	318.50	588	15.15	1260
Trichiurus lepturus	147.00	154	6.99	
Dentex macrophthalmus	120.82	602	5.75	1262
Epinephelus guaza ?	75.30	4	3.58	
Zenopsis conchifer	71.54	154	3.40	
Hyperoglyphe moselii	53.50	10	2.55	
Dentex angolensis	33.46	98	1.59	1263
Raja miraletus	29.26	42	1.39	
Sarda sarda	23.38	14	1.11	
Umbrina canariensis	16.94	42	0.81	
Scorpaena stephanica	10.08	28	0.48	
Lutjanus sp.	9.80	182	0.47	
Scorpaenodes sp.	8.96	14	0.43	
Spicara alta	8.12	56	0.39	
Uranoscopus cadenati	6.30	56	0.30	
Raja clavata	3.22	14	0.15	
Pterothrissus belloci	3.08	28	0.15	
Chaetodon sp.	2.52	14	0.12	
Perulibatrachus rossignoli	2.24	14	0.11	
Illex coindetii	2.24	28	0.11	
Peristedion cataphractum	1.96	14	0.09	
Loligo vulgaris	1.96	14	0.09	
Grammoplites gruveli	1.26	14	0.06	
Citharus linguatula	0.28	42	0.01	
Chlorophthalmus atlanticus	0.14	14	0.01	
Total	2101.96		100.00	

PROJECT STATION: 515

DATE:27/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 908
start stop duration Long E 1244
TIME :17:00:00 17:30:00 30 (min) Purpose code: 3
LOG :9999.90 1.40 1.50 Area code : 1
FDEPTH: 253 288 GearCond.code:
BDEPTH: 253 288 Validity code:
Towing dir: 20° Wire out: 750 m Speed: 30 kn*10

Sorted: 54 Kg Total catch: 347.57 CATCH/HOUR: 695.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	435.60	26430	62.66	
Chlorophthalmus atlanticus	119.02	2126	17.12	
Trichiurus lepturus	28.60	44	4.11	
Merluccius polli	28.20		4.06	
Malacocephalus occidentalis	20.90	176	3.01	
Parapenaeus longirostris, fem.	15.18	1980	2.18	1264
Brotula barbata	14.70	14	2.11	
Scorpaena normani	12.98	110	1.87	
Parapenaeus longirostris, male	9.02	1496	1.30	1265
Dentex angolensis	7.20	16	1.04	
Bembrops heterurus	2.42	22	0.35	
MYCTOPHIDAE	1.32	484	0.19	
Total	695.14		100.00	

PROJECT STATION: 516

DATE:27/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 907
start stop duration Long E 1244
TIME :20:18:00 20:48:00 30 (min) Purpose code: 3
LOG : 13.00 14.50 1.50 Area code : 2
FDEPTH: 264 299 GearCond.code:
BDEPTH: 264 299 Validity code:
Towing dir: 20° Wire out: 750 m Speed: 31 kn*10

Sorted: 33 Kg Total catch: 212.70 CATCH/HOUR: 425.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	111.80		26.28	
Brotula barbata	78.30	58	18.41	
Synagrops microlepis	76.90		18.08	
Merluccius polli	69.00		16.22	
Hoplostethus atlanticus	39.50	40	9.29	
Malacocephalus occidentalis	14.32		3.37	
MYCTOPHIDAE	11.84	8044	2.78	
Scorpaena stephanica	4.80	40	1.13	
Nezumia aequalis	4.68	52	1.10	
Coelorinchus coelorhincus	4.16	168	0.98	
Parapenaeus longirostris, fem.	3.52	480	0.83	1266
Parapenaeus longirostris, male	3.00	468	0.71	1267
OPHIDIIDAE	2.86	12	0.67	
Callinectes amnicola	0.52	12	0.12	
Nematocarcinus africanus	0.40	64	0.09	
Total	425.60		100.06	

PROJECT STATION: 517

DATE:27/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 911
start stop duration Long E 1238
TIME :22:28:00 22:44:00 16 (min) Purpose code: 3
LOG : 25.00 25.90 0.90 Area code : 1
FDEPTH: 458 435 GearCond.code:
BDEPTH: 458 435 Validity code:
Towing dir: 190° Wire out:1200 m Speed: 25 kn*10

Sorted: 22 Kg Total catch: 39.04 CATCH/HOUR: 146.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MACROURIDAE	48.15	4043	32.89	
Nezumia aequalis	39.00	615	26.64	
Merluccius polli	14.44	45	9.86	1270
Brotula barbata	11.25	8	7.68	
Aristeus varidens, female	7.13	383	4.87	1268
Coelorinchus coelorhincus	6.23	120	4.26	
Malacocephalus occidentalis	4.05	53	2.77	
Hoplostethus cadenati	3.60	98	2.46	
Trichiurus lepturus	2.93	60	2.00	
Chlorophthalmus atlanticus	2.40	53	1.64	
Aristeus varidens, male	2.03	300	1.39	1269
Etmopterus spinax	2.03	30	1.39	
Plesiopenaeus edwardsianus	1.54	45	1.05	
Lophiodes sp.	0.83	8	0.57	
Callinectes amnicola	0.83	8	0.57	
Total	146.44		100.04	

PROJECT STATION: 518

DATE:28/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 910
start stop duration Long E 1239
TIME :00:02:00 00:20:00 18 (min) Purpose code: 3
LOG : 31.20 32.10 0.90 Area code : 2
FDEPTH: 443 440 GearCond.code:
BDEPTH: 443 440 Validity code:
Towing dir: 190° Wire out:1200 m Speed: 30 kn*10

Sorted: 22 Kg Total catch: 42.64 CATCH/HOUR: 142.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MACROURIDAE	56.27	5753	39.59	
Nezumia aequalis	23.33	407	16.41	
Aristeus varidens, female	19.13	927	13.46	1271
GONOSTOMATIDAE	9.67	320	6.80	
Coelorinchus coelorhincus	8.40	200	5.91	
Merluccius polli	5.67	10	3.99	1273
Etmopterus spinax	4.93	93	3.47	
Hoplostethus cadenati	3.80	127	2.67	
Aristeus varidens, male	3.27	433	2.30	1272
Malacocephalus occidentalis	3.00	27	2.11	
Trichiurus lepturus	2.20	47	1.55	
Lophiodes sp.	0.87	20	0.61	
Plesiopenaeus edwardsianus	0.53	20	0.37	
Illex coindetii	0.40	7	0.28	
SOLEIDAE	0.33	13	0.23	
Chlorophthalmus atlanticus	0.33	7	0.23	
Total	142.13		99.98	

PROJECT STATION: 519

DATE:28/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 908
start stop duration Long E 1236
TIME :01:35:00 01:55:00 20 (min) Purpose code: 3
LOG : 38.10 39.00 0.90 Area code : 1
FDEPTH: 628 680 GearCond.code:
BDEPTH: 628 680 Validity code:
Towing dir: 30° Wire out:1700 m Speed: 28 kn*10

Sorted: 42 Kg Total catch: 54.85 CATCH/HOUR: 164.55

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
GONOSTOMATIDAE	66.93	939	40.67	
Hoplostethus cadenati	56.55	1575	34.37	
MACROURIDAE	18.21	231	11.07	
Solenocera africana	11.13	3156	6.76	
Talismania sp.	3.60	24	2.19	
Malacocephalus occidentalis	3.48	48	2.11	
Ommastrephes pteropus	1.59	9	0.97	
Coelorinchus coelorhincus	1.47	36	0.89	
Trichiurus lepturus	0.99	21	0.60	
Aristeus varidens, female	0.27	15	0.16	1274
Aristeus varidens, male	0.21	24	0.13	1275
Etmopterus spinax	0.15	3	0.09	
Total	164.58		100.01	

PROJECT STATION: 520

DATE:28/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 908
start stop duration Long E 1236
TIME :03:38:00 03:58:00 20 (min) Purpose code: 3
LOG : 45.50 46.30 0.80 Area code : 2
FDEPTH: 624 659 GearCond.code:
BDEPTH: 624 659 Validity code:
Towing dir: 30° Wire out:1700 m Speed: 26 kn*10

Sorted: 20 Kg Total catch: 43.58 CATCH/HOUR: 130.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	42.60	1191	32.58	
Solenocera africana	22.92		17.53	
GONOSTOMATIDAE	21.00	882	16.06	
Sepia sp.	9.18	12	7.02	
MACROURIDAE	8.76	450	6.70	
Talismania sp.	6.06	84	4.64	
Coelorinchus coelorhincus	5.28	84	4.04	
MURAENIDAE	3.54	84	2.71	
Malacocephalus occidentalis	2.10	24	1.61	
Ebinania costaecanarie	1.80	12	1.38	
Nezumia aequalis	1.62	12	1.24	
Miscellaneous fishes	1.20		0.92	
POLYCHAELIDAE	1.14	138	0.87	
Trichiurus lepturus	1.14	36	0.87	
MACROURIDAE	0.96	396	0.73	
Aristeus varidens, female	0.72	48	0.55	1276
Etmopterus spinax	0.54	12	0.41	
Lophiodes sp.	0.12	12	0.09	
Raja alba	0.06	6	0.05	
Total	130.74		100.00	

PROJECT STATION: 521

DATE:28/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 928
start stop duration Long E 1244
TIME :08:08:00 08:38:00 30 (min) Purpose code: 3
LOG : 80.80 82.30 1.50 Area code : 1
FDEPTH: 150 157 GearCond.code:
BDEPTH: 150 157 Validity code:
Towing dir: 157° Wire out: 500 m Speed: 30 kn*10

Sorted: 54 Kg Total catch: 228.80 CATCH/HOUR: 457.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	125.38	272	27.40	
Zenopsis conchifer	103.70	604	22.66	
Dentex macrophthalmus	73.52	620	16.07	1278
Dentex angolensis	54.82	162	11.98	1277
Todarodes sagittatus	19.90	340	4.35	
Chelidonichthys gabonensis	12.42	94	2.71	
Citharus linguatula	11.82	630	2.58	
Bembrops heterurus	11.56	144	2.53	
Brotula barbata	9.36	8	2.05	
Cranoscopus cadenati	7.74	68	1.69	
Pterothrissus belloci	7.40	42	1.62	
Scorpaena stephanica	5.28	42	1.15	
Pteroscion peli	5.18	8	1.13	
Illex coindetii	3.82	60	0.83	
Peristedion cataphractum	3.14	86	0.69	
Raja straeleni	2.38	8	0.52	
Calappa sp.	0.18	18	0.04	
Total	457.60		100.00	

PROJECT STATION: 522

DATE:28/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 928
start stop duration Long E 1244
TIME :09:42:00 10:12:00 30 (min) Purpose code: 3
LOG : 87.60 89.30 1.70 Area code : 2
FDEPTH: 150 158 GearCond.code:
BDEPTH: 150 158 Validity code:
Towing dir: 157° Wire out: 500 m Speed: 28 kn*10

Sorted: 29 Kg Total catch: 460.64 CATCH/HOUR: 921.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	627.20	1504	68.08	
Dentex macrophthalmus	69.76	640	7.57	1280
Dentex angolensis	65.92	224	7.16	1279
Todarodes sagittatus	46.72	736	5.07	
Sepia sp.	46.72	736	5.07	
Zenopsis conchifer	24.64	224	2.67	
Spicara alta	11.20	64	1.22	
Scomber japonicus	9.92	32	1.08	
Bembrops heterurus	9.28	160	1.01	
Pterothrissus belloci	5.76	32	0.63	
Illex coindetii	4.16	64	0.45	
Total	921.28		100.01	

PROJECT STATION: 523

DATE:28/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 928
start stop duration Long E 1242
TIME :10:58:00 12:28:00 30 (min) Purpose code: 3
LOG : 93.60 95.10 1.50 Area code : 1
FDEPTH: 246 260 GearCond.code:
BDEPTH: 246 260 Validity code:
Towing dir: 345° Wire out: 750 m Speed: 33 kn*10

Sorted: 111 Kg Total catch: 519.28 CATCH/HOUR: 1038.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	629.60	12666	60.62	
Synagrops microlepis	249.52	16834	24.03	
Trachurus trecae	47.80	96	4.60	1285
Zenopsis conchifer	43.70	202	4.21	
Dentex angolensis	12.06	28	1.16	1281
Nezumia aequalis	10.52	380	1.01	
Dentex macrophthalmus	9.40	34	0.91	1282
Illex coindetii	8.72	140	0.84	
Trichiurus lepturus	8.62	12	0.83	
Parapenaeus longirostris, male	5.96	1128	0.57	1284
Parapenaeus longirostris, fem.	4.68	734	0.45	1283
Merluccius polli	4.44	26	0.43	
Epigonus telescopus	3.04	50	0.29	
Malacocephalus occidentalis	0.50	12	0.05	
Total	1038.56		100.00	

PROJECT STATION: 524

DATE:28/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 928
start stop duration Long E 1242
TIME :12:40:00 13:00:00 20 (min) Purpose code: 3
LOG : 100.70 101.70 1.00 Area code : 2
FDEPTH: 274 280 GearCond.code: 8
BDEPTH: 274 280 Validity code:
Towing dir: 345° Wire out: 770 m Speed: 30 kn*10

Sorted: 107 Kg Total catch: 724.29 CATCH/HOUR: 2172.87

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	1805.28	35376	83.08	
Synagrops microlepis	219.72	1176	10.11	
Epigonus telescopus	54.06	546	2.49	
Merluccius polli	48.81	60	2.25	
Nezumia aequalis	16.41	912	0.76	
Parapenaeus longirostris, fem.	8.10	1234	0.37	1286
GONOSTOMATIDAE	6.09	3504	0.28	
Parapenaeus longirostris, male	5.67	1074	0.26	1287
Malacocephalus occidentalis	4.65	42	0.21	
Coelorinchus coelorhincus	2.85	60	0.13	
Trichiurus lepturus	1.02	22	0.05	
Illex coindetii	0.21	22	0.01	
Total	2172.87		100.00	

PROJECT STATION: 525

DATE:28/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 929
start stop duration Long E 1241
TIME :14:55:00 15:25:00 30 (min) Purpose code: 3
LOG : 107.50 108.90 1.40 Area code : 1
FDEPTH: 342 353 GearCond.code:
BDEPTH: 342 353 Validity code:
Towing dir: 345° Wire out:1000 m Speed: 28 kn*10

Sorted: 71 Kg Total catch: 165.36 CATCH/HOUR: 330.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	114.86	406	34.73	1288
Squalus megalops	35.64	14	10.78	
Trichiurus lepturus	25.96	214	7.85	
Pterothrissus belloci	22.46	108	6.79	
Chlorophthalmus atlanticus	16.26	428	4.92	
GONOSTOMATIDAE	14.54	3914	4.40	
Solenocera africana	12.72		3.85	
Malacocephalus occidentalis	12.44	754	3.76	
Parapenaeus longirostris, male	10.30	1142	3.11	1290
MACROURIDAE	9.08	206	2.75	
Nezumia aequalis	7.68	200	2.32	
Coelorinchus coelorhincus	6.84	80	2.07	
Zenopsis conchifer	6.62	10	2.00	
Hoplostethus atlanticus	6.48	4	1.96	
Trachurus trecae	5.60	10	1.69	
Raja sp.	4.20	10	1.27	
Etmopterus spinax	4.20	116	1.27	
LOPHIIDAE	3.86	126	1.17	
Parapenaeus longirostris, fem.	3.58	484	1.08	1289
Illex coindetii	3.36	52	1.02	
Dentex angolensis	1.68	4	0.51	
Geryon sp.	0.96	4	0.29	
Epigonus telescopus	0.56	4	0.17	
Aulopus cadenati	0.46	4	0.14	
Peristedion cataphractum	0.38	10	0.11	
Total	330.72		100.01	

PROJECT STATION: 526

DATE:28/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 929

	start	stop	duration			Long E 1241
TIME	:16:25:00	16:55:00	30 (min)	Purpose code:	3	
LOG	: 114.70	116.10	1.40	Area code :	2	
FDEPTH:	352	345		GearCond.code:		
BDEPTH:	352	345		Validity code:		

Towing dir: 350° Wire out:1000 m Speed: 28 kn*10

Sorted: 48 Kg Total catch: 252.23 CATCH/HOUR: 504.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Malacocephalus laevis	99.40	64	19.70	
Hymenocephalus italicus	70.92	6748	14.06	
Squalus megalops	52.50	14	10.41	
Laemonema laureysi	49.00	580	9.71	
Merluccius polli	42.00	140	8.33	1293
Deepwater fish mixture	25.76		5.11	
Solenocera africana	24.22	9340	4.80	
LOPHIIDAE	19.50	6	3.87	
Chlorophthalmus atlanticus	16.80	490	3.33	
Dibranchus atlanticus	16.32	1768	3.24	
Aristeus varidens, female	15.48	2450	3.07	1291
Nezumia aequalis	15.34	442	3.04	
Pterothrissus belloci	14.08	98	2.79	
MELANOSTOMIATIDAE	12.18		2.41	
Aristeus varidens, male	9.16	1374	1.82	1292
Hoplostethus atlanticus	8.50	6	1.68	
Trichiurus lepturus	7.06	182	1.40	
MYCTOPHIDAE	4.42	1764	0.88	
Raja straeleni	1.82	8	0.36	
Total	504.46		100.01	

PROJECT STATION: 527

DATE:28/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 928

	start	stop	duration			Long E 1239
TIME	:21:45:00	22:15:00	30 (min)	Purpose code:	3	
LOG	: 132.40	133.90	1.50	Area code :	1	
FDEPTH:	470	495		GearCond.code:		
BDEPTH:	470	495		Validity code:		

Towing dir: 180° Wire out:1200 m Speed: 30 kn*10

Sorted: 43 Kg Total catch: 98.75 CATCH/HOUR: 197.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
GONOSTOMATIDAE	39.78	858	20.14	
Merluccius polli	31.60	56	16.00	1295
Hoplostethus cadenati	30.24	894	15.31	
MACROURIDAE	30.00	168	15.19	
Coelorinchus coelorhincus	27.42	228	13.88	
Trichiurus lepturus	9.24	234	4.68	
Aristeus varidens, female	7.20	564	3.65	1294
Raja clavata	5.28	6	2.67	
Illex sp.	3.66	24	1.85	
Aristeus varidens, male	3.54	576	1.79	1295
Plesiopenaeus edwardsianus	2.82	306	1.43	
Etmopterus spinax	2.28	54	1.15	
Dibranchus atlanticus	2.04	174	1.03	
Chlorophthalmus atlanticus	1.56	42	0.79	
Talismania sp.	0.54	60	0.27	
Malacocephalus occidentalis	0.18	6	0.09	
LOPHIIDAE	0.12	6	0.06	
Total	197.50		99.98	

PROJECT STATION: 528

DATE:28/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 929

	start	stop	duration			Long E 1239
TIME	:23:55:00	00:25:00	30 (min)	Purpose code:	3	
LOG	: 140.50	141.80	1.30	Area code :	2	
FDEPTH:	486	489		GearCond.code:		
BDEPTH:	486	489		Validity code:		

Towing dir: 180° Wire out:1200 m Speed: 26 kn*10

Sorted: 64 Kg Total catch: 189.29 CATCH/HOUR: 378.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Coelorinchus coelorhincus	76.58	602	20.23	
GONOSTOMATIDAE	69.72	1232	18.42	
Mola mola	40.00	2	10.57	
Merluccius polli	37.70	66	9.95	1299
MACROURIDAE	34.30	490	9.06	
Nezumia aequalis	22.96	420	6.06	
Hoplostethus cadenati	18.62	518	4.92	
Trichiurus lepturus	16.66	392	4.40	
Aristeus varidens, female	13.38	1002	3.53	1297
Geryon sp.	8.12	28	2.14	
MURAENIDAE	7.28	252	1.92	
Aristeus varidens, male	6.26	932	1.63	1298
Squalus megalops	5.60	2	1.48	
LOPHIIDAE	4.90	336	1.29	
Dibranchus atlanticus	4.62	224	1.22	
Etmopterus spinax	3.92	42	1.04	
Malacocephalus occidentalis	3.50	42	0.92	
Talismania sp.	2.80	308	0.74	
Plesiopenaeus edwardsianus	1.76	36	0.46	
Total	378.58		99.99	

PROJECT STATION: 529

DATE:29/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 928

	start	stop	duration			Long E 1238
TIME	:01:30:00	02:00:00	30 (min)	Purpose code:	3	
LOG	: 145.00	146.30	1.30	Area code :	1	
FDEPTH:	527	568		GearCond.code:		
BDEPTH:	527	568		Validity code:	9	

Towing dir: 320° Wire out:1500 m Speed: 26 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
N C A T C H	0.00			
Total				

PROJECT STATION: 530

DATE:29/ 9/95 GEAR TYPE: BT No: POSITION:Lat S 950

	start	stop	duration			Long E 1251
TIME	:06:12:00	06:42:00	30 (min)	Purpose code:	3	
LOG	: 180.00	181.50	1.50	Area code :	1	
FDEPTH:	178	160		GearCond.code:		
BDEPTH:	178	160		Validity code:		

Towing dir: 346° Wire out: 520 m Speed: 30 kn*10

Sorted: 58 Kg Total catch: 149.54 CATCH/HOUR: 299.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	81.96	472	27.40	1300
Synagrops microlepis	71.10	2762	23.77	
Trichiurus lepturus	57.76	208	19.31	
Pterothrissus belloci	30.68	182	10.26	
Zenopsis conchifer	14.84	34	4.96	
Uranoscopus cadenati	8.48	56	2.84	
Brotula barbata	6.30	8	2.11	
Scorpaena stephanica	4.90	56	1.64	
Dentex angolensis	3.70	14	1.24	
Dentex macrophthalmus	3.46	14	1.16	
Bembrops heterurus	2.70	28	0.90	
Trachurus trecae	2.70	6	0.90	
Todarodes sagittatus	1.98	34	0.66	
Pteroscion peli	1.26	6	0.42	
Citharus linguatula	1.26	66	0.42	
Parapenaeus longirostris, fem.	1.22	276	0.41	1302
Squatina oculata	1.16	6	0.39	
Raja straeleni	1.10	6	0.37	
Parapenaeus longirostris, male	0.78	196	0.26	1301
Peristedion cataphractum	0.50	12	0.17	
Chlorophthalmus atlanticus	0.50	22	0.17	
Dibranchus atlanticus	0.34	16	0.11	
Illex coindetii	0.28	6	0.09	
Sepia sp.	0.12	6	0.04	
Total	299.08		100.00	

PROJECT STATION: 531

DATE:29/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 950

	start	stop	duration			Long E 1251
TIME	:07:45:00	08:15:00	30 (min)	Purpose code:	3	
LOG	: 186.20	187.70	1.50	Area code :	2	
FDEPTH:	175	183		GearCond.code:		
BDEPTH:	175	183		Validity code:		

Towing dir: 350° Wire out: 520 m Speed: 30 kn*10

Sorted: 63 Kg Total catch: 282.82 CATCH/HOUR: 565.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	171.90	9226	30.39	
Pterothrissus belloci	87.86	598	15.53	
Merluccius polli	60.30	404	10.66	1306
Trachurus trecae	53.10	108	9.39	
Dentex macrophthalmus	43.30	154	7.66	1305
Bembrops heterurus	39.24	432	6.94	
Uranoscopus cadenati	24.58	172	4.35	
Dentex angolensis	22.60	82	4.00	
Zenopsis conchifer	18.28	72	3.23	
Brotula barbata	11.44	18	2.02	
Todarodes sagittatus	8.46	144	1.50	
Scorpaena stephanica	4.60	36	0.81	
Chlorophthalmus atlanticus	4.14	244	0.73	
Zeus faber	3.78	10	0.67	
Trichiurus lepturus	3.06	18	0.54	
Trigla lyra	2.70	72	0.48	
Parapenaeus longirostris, fem.	2.16	500	0.38	1303
Illex coindetii	1.26	28	0.22	
Citharus linguatula	1.08	54	0.19	
Parapenaeus longirostris, male	0.82	210	0.14	1304
Scyliorhinus stellaris	0.72	10	0.13	
Sepia sp.	0.72	36	0.13	
Microchirus wittei	0.54	10	0.10	
Total	566.64		100.19	

PROJECT STATION: 532

DATE:29/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 950

	start	stop	duration			Long E 1248
TIME	:10:02:00	10:32:00	30 (min)	Purpose code:	3	
LOG	: 201.30	202.70	1.40	Area code :	1	
FDEPTH:	353	345		GearCond.code:		
BDEPTH:	353	345		Validity code:		

Towing dir: 360° Wire out:1050 m Speed: 25 kn*10

Sorted: 75 Kg Total catch: 235.89 CATCH/HOUR: 471.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	215.80	922	45.74	1307
Squalus megalops	74.00	2	15.69	
Malacocephalus occidentalis	37.06	1126	7.86	
Etmopterus spinax	18.34	300	3.89	
LOPHIIDAE	16.90	170	3.58	
GONOSTOMATIDAE	14.56	716	3.09	
Chlorophthalmus atlanticus	12.10	300	2.56	
Dibranchus atlanticus	10.40	650	2.20	
Coelorinchus coelorhincus	9.88	156	2.09	
Dasyatis margarita	9.60	2	2.03	
Pterothrissus belloci	9.50	52	2.01	
Hoplostethus atlanticus	6.20	4	1.31	
MACROURIDAE	4.56	104	0.97	
Plesiopenaeus edwardsianus	4.42	910	0.94	
Trichiurus lepturus	4.16	78	0.88	
Geryon sp.	3.90	14	0.83	
Aristeus varidens, female	3.90	546	0.83	1308
Illex coindetii	2.86	26	0.61	
Nezumia aequalis	2.74	40	0.58	
CONGRIDAE	2.34	40	0.50	
Epigonus telescopus	1.70	14	0.36	
Callinectes amnicola	1.56	14	0.33	
Hoplostethus cadenati	1.44	40	0.31	
Peristedion cataphractum	1.04	40	0.22	
Aristeus varidens, male	0.98	118	0.21	1309
Citharus linguatula	0.92	14	0.20	
Bembrops heterurus	0.92	14	0.20	
Total	471.78		100.02	

PROJECT STATION: 533

DATE:29/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 950

	start	stop	duration			Long E 1248
TIME	:11:55:00	12:14:00	19 (min)	Purpose code:	3	
LOG	: 208.50	209.10	0.60	Area code	: 2	
FDEPTH:	359	370		GearCond.code:		
BDEPTH:	359	370		Validity code:	4	

Towing dir: 360° Wire out:1050 m Speed: 20 kn*10

Sorted: 23 Kg Total catch: 185.04 CATCH/HOUR: 584.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	147.79	439	25.29	1310
Dibranchus atlanticus	133.89	8271	22.91	
Malacocephalus occidentalis	88.42	1364	15.13	
Nezumia aequalis	75.03	404	12.84	
Coelorinchus coelorhincus	57.09	1314	9.77	
Raja clavata	30.06	25	5.14	
LOPHIIDAE	18.69	126	3.20	
MACROURIDAE	15.16	1339	2.59	
Etmopterus spinax	6.06	75	1.04	
CONGRIDAE	5.05	101	0.86	
Pterothrissus belloci	4.29	25	0.73	
Chlorophthalmus atlanticus	2.02	25	0.35	
SOLEIDAE	0.76	25	0.13	
Total	584.31		99.98	

PROJECT STATION: 534

DATE:29/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 948

	start	stop	duration			Long E 1244
TIME	:17:50:00	18:20:00	30 (min)	Purpose code:	3	
LOG	: 224.30	225.80	1.50	Area code	: 1	
FDEPTH:	466	462		GearCond.code:		
BDEPTH:	466	462		Validity code:		

Towing dir: 350° Wire out:1200 m Speed: 31 kn*10

Sorted: 24 Kg Total catch: 65.87 CATCH/HOUR: 131.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	32.10	66	24.37	1311
Deepwater fish mixture	12.52		9.50	
Lamprogrammus exutus	12.00	40	9.11	
Dibranchus atlanticus	10.96	862	8.32	
Laemonema laureysi	10.00	244	7.59	
LOPHIIDAE	8.12	104	6.16	
Diplophos sp.	7.76	300	5.89	
Centrophorus uyato	7.40	116	5.62	
Trichiurus lepturus	5.24	116	3.98	
Melanostomias sp.	4.88	168	3.70	
Aristeus varidens, female	4.52	232	3.43	1313
Hoplostethus atlanticus	3.08	84	2.34	
Schedophilus huttoni	2.60	4	1.97	
Nezumia aequalis	2.40	44	1.82	
Aristeus varidens, male	1.80	232	1.37	1312
Plesiopenaeus edwardsianus	1.64	48	1.24	
CONGRIDAE	1.36	40	1.03	
Todaropsis eblanae	1.08	8	0.82	
SCYLIORHINIDAE	0.88	16	0.67	
POLYCHAELIDAE	0.52	68	0.39	
Callinectes amnicola	0.44	8	0.33	
Chlorophthalmus atlanticus	0.24	16	0.18	
Malacocephalus laevis	0.20	4	0.15	
Total	131.74		99.98	

PROJECT STATION: 535

DATE:29/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 948

	start	stop	duration			Long E 1244
TIME	:20:05:00	20:35:00	30 (min)	Purpose code:	3	
LOG	: 232.80	234.30	1.50	Area code	: 2	
FDEPTH:	462	460		GearCond.code:		
BDEPTH:	462	460		Validity code:		

Towing dir: 350° Wire out: 120 m Speed: 30 kn*10

Sorted: 45 Kg Total catch: 122.94 CATCH/HOUR: 245 88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	61.32	104	24.94	1316
Laemonema laureysi	26.62	666	10.83	
LOPHIIDAE	22.82	132	9.28	
Aristeus varidens, female	22.34	1358	9.09	1314
Diplophos sp.	19.80	468	8.05	
Lamprogrammus exutus	19.08		7.76	
Hoplostethus cadenati	14.86	448	6.04	
Centrophorus uyato	11.12	144	4.52	
Nezumia aequalis	10.56	198	4.29	
Geryon sp.	8.80	16	3.58	
Trichiurus lepturus	7.42	188	3.02	
Aristeus varidens, male	6.44	856	2.62	1315
CONGRIDAE	6.32	182	2.57	
Dibranchus atlanticus	4.40	248	1.79	
Plesiopenaeus edwardsianus	1.88	50	0.76	
Melanostomias sp.	1.38	28	0.56	
POLYCHAELIDAE	0.72	88	0 29	
Total	245.88		99 99	

PROJECT STATION: 536

DATE:29/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 947

	start	stop	duration			Long E 1242
TIME	:21:55:00	22:25:00	30 (min)	Purpose code:	3	
LOG	: 241.50	243.00	1.50	Area code	: 1	
FDEPTH:	556	579		GearCond.code:		
BDEPTH:	556	579		Validity code:		

Towing dir: 360° Wire out:1500 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 78.06 CATCH/HOUR: 156.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MACROURIDAE	43.00	286	27.54	
GONOSTOMATIDAE	21.50	358	13.77	
Hoplostethus cadenati	18.36	476	11.76	
Illex sp.	11.20	60	7.17	
Etmopterus spinax	8.80	60	5.64	
Squalus megalops	8.40	4	5.38	
Coelorinchus coelorhincus	6.96	136	4.46	
CONGRIDAE	6.00	98	3.84	
Merluccius polli	5.50	10	3.52	
Dibranchus atlanticus	4.50	240	2.88	
Geryon sp.	4.36	16	2.79	
Trichiurus lepturus	3.40	60	2.18	
POLYCHAELIDAE	3.26	254	2.09	
Solenocera africana	2.26	368	1.45	
Ebinania costaecanarie	2.16	10	1.38	
LOPHIIDAE	1.90	36	1.22	
Plesiopenaeus edwardsianus	1.80	210	1.15	
Talismania sp.	1.16	40	0.74	
Aristeus varidens, female	1.10	40	0.70	
Aristeus varidens, male	0.50	16	0.32	
Total	156.12		99.98	

PROJECT STATION: 537

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 948

	start	stop	duration			Long E 1242
TIME	:00:05:00	00:35:00	30 (min)	Purpose code:	3	
LOG	: 249.50	250.60	1.10	Area code	: 2	
FDEPTH:	570	588		GearCond.code:		
BDEPTH:	570	588		Validity code:		

Towing dir: 360° Wire out:1500 m Speed: 22 kn*10

Sorted: 38 Kg Total catch: 88.20 CATCH/HOUR: 176.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
GONOSTOMATIDAE	37.08	634	21.02	
MACROURIDAE	18.60	124	10.54	
Hoplostethus cadenati	14.46	384	8.20	
Solenocera africana	13.20		7.48	
POLYCHAELIDAE	9.90	1040	5.61	
Lophius vaillanti	8.80	2	4.99	
Squalus megalops	8.60	2	4.88	
Geryon sp.	8.58	18	4.86	
Merluccius polli	8.44	24	4.78	1317
CONGRIDAE	7.50	172	4.25	
Melanostomias sp.	6.48	236	3.67	
Plesiopenaeus edwardsianus	5.64		3.20	
Etmopterus spinax	5.58	42	3.16	
Ebinania costaecanarie	4.80	30	2.72	
Coelorinchus coelorhincus	3.84	84	2.18	
Raja alba	3.78	36	2.14	
LOPHIIDAE	2.40	44	1.36	
Talismania sp.	2.34	108	1.33	
Illex coindetii	1.98	12	1.12	
Dibranchus atlanticus	1.80	72	1.02	
Trichiurus lepturus	0.84	12	0.48	
Aristeus varidens, female	0.72	18	0.41	
Citharus linguatula	0.66	6	0.37	
Aristeus varidens, male	0.42	6	0.24	
Total	176.44		100.01	

PROJECT STATION: 538

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 948

	start	stop	duration			Long E 1241
TIME	:02:10:00	02:40:00	30 (min)	Purpose code:	3	
LOG	: 259.70	260.90	1.20	Area code	: 1	
FDEPTH:	693	681		GearCond.code:		
BDEPTH:	693	681		Validity code:		

Towing dir: 345° Wire out:2000 m Speed: 25 kn*10

Sorted: 28 Kg Total catch: 112.64 CATCH/HOUR: 225.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nezumia aequalis	57.60	1106	25.57	
GONOSTOMATIDAE	27.20	352	12.07	
Talismania sp.	20.16	248	8.95	
MACROURIDAE	16.24	174	7.21	
Ebinania costaecanarie	15.28	8	6.78	
Merluccius polli	14.00	16	6.21	
CONGRIDAE	12.40	162	5.50	
Etmopterus spinax	10.48	32	4.65	
Hoplostethus cadenati	9.92	224	4.40	
Todaropsis eblanae	9.20	48	4.08	
POLYCHAELIDAE	7.36	856	3.27	
Solenocera africana	5.20	656	2.31	
Geryon sp.	3.28	8	1.46	
Aristeus varidens, female	3.20	136	1.42	1318
Plesiopenaeus edwardsianus	3.20	204	1.42	
Melanostomias sp.	2.80	24	1.24	
Raja alba	2.32	16	1.03	
Dibranchus atlanticus	2.24	136	0.99	
Trichiurus lepturus	1.68	32	0.75	
Aristeus varidens, male	0.80	32	0.36	1319
Halosaurus ovenii	0.72	8	0.32	
Total	225.28		99.99	

PROJECT STATION: 539

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 948
start stop duration Long E 1241
TIME :04:40:00 05:05:00 25 (min) Purpose code: 3
LOG : 269.00 269.90 0.90 Area code : 2
FDEPTH: 692 688 GearCond.code:
BDEPTH: 692 688 Validity code: 9
Towing dir: 345° Wire out:2000 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
N O C A T C H	0.00			
Total				

PROJECT STATION: 540

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1007
start stop duration Long E 1255
TIME :08:27:00 08:57:00 30 (min) Purpose code: 3
LOG : 299.00 300.50 1.50 Area code : 1
FDEPTH: 166 168 GearCond.code:
BDEPTH: 166 168 Validity code:
Towing dir: 167° Wire out: 520 m Speed: 30 kn*10

Sorted: 51 Kg Total catch: 570.80 CATCH/HOUR: 1141.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	299.20	1254	26.21	1321
Spicara alta	209.00	968	18.31	
Merluccius polli	195.80	1606	17.15	1320
Zenopsis conchifer	154.00	638	13.49	
Hoplostethus atlanticus	72.60	66	6.36	
Dentex angolensis	43.78	132	3.83	
Umbrina canariensis	32.56	44	2.85	
Scorpaena stephanica	31.46	132	2.76	
Todaropsis eblanae	24.42	286	2.14	
Pterothrissus belloci	15.62	110	1.37	
Squatina oculata	15.20	2	1.33	
Uranoscopus cadenati	15.18	110	1.33	
Bembrops heterurus	13.20	154	1.16	
Erythrocles monodi	12.10	22	1.06	
Raja alba	2.42	66	0.21	
Citharus linguatula	2.20	110	0.19	
Illex coindetii	1.98	22	0.17	
Peristedion cataphractum	0.88	22	0.08	
Total	1141.60		100.00	

PROJECT STATION: 541

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1006
start stop duration Long E 1255
TIME :09:58:00 10:28:00 30 (min) Purpose code: 3
LOG : 305.30 306.90 1.60 Area code : 2
FDEPTH: 165 170 GearCond.code:
BDEPTH: 165 170 Validity code:
Towing dir: 167° Wire out: 520 m Speed: 32 kn*10

Sorted: 66 Kg Total catch: 289.93 CATCH/HOUR: 579.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	140.50	540	24.23	1322
Zenopsis conchifer	94.00	380	16.21	
Bembrops heterurus	65.40	810	11.28	
Dentex macrophthalmus	62.00	240	10.69	1323
Spicara alta	51.40	230	8.86	
Uranoscopus cadenati	35.50	290	6.12	
Dentex angolensis	32.20	120	5.55	1324
Squalus megalops	25.70	6	4.43	
Citharus linguatula	25.00	120	4.31	
Illex coindetii	14.30	200	2.47	
Scorpaena stephanica	13.80	90	2.38	
Peristedion cataphractum	8.16	120	1.41	
Raja miraletus	6.80	10	1.17	
Pterothrissus belloci	2.30	30	0.40	
Anthias sp.	1.20	10	0.21	
Solenocera africana	0.90	190	0.16	
Sepia orbignyana	0.50	20	0.09	
CONGRIDAE	0.20	10	0.03	
Total	579.86		100.00	

PROJECT STATION: 542

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1009
start stop duration Long E 1255
TIME :11:35:00 12:05:00 30 (min) Purpose code: 3
LOG : 313.50 314.90 1.40 Area code : 1
FDEPTH: 280 272 GearCond.code:
BDEPTH: 280 272 Validity code:
Towing dir: 345° Wire out: 750 m Speed: 28 kn*10

Sorted: 31 Kg Total catch: 186.84 CATCH/HOUR: 373.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	206.06	4542	55.14	
Synagrops microlepis	116.36	7052	31.14	
MYCTOPHIDAE	12.88	10562	3.45	
Zenopsis conchifer	9.88	26	2.64	
Parapenaeus longirostris, fem.	7.48	1028	2.00	1326
Merluccius polli	5.90	38	1.58	1325
Parapenaeus longirostris, male	5.34	910	1.43	1327
Nezumia aequalis	2.08	40	0.56	
Pterothrissus belloci	2.08	14	0.56	
Scorpaena stephanica	1.56	66	0.42	
Malacocephalus laevis	1.04	78	0.28	
Peristedion cataphractum	0.92	40	0.25	
Bembrops heterurus	0.78	14	0.21	
Bathynectes piperitus	0.66	14	0.18	
POLYCHAELIDAE	0.26	104	0.07	
MURAENIDAE	0.26	14	0.07	
Solenocera africana	0.14	130	0.04	
Total	373.68		100.02	

PROJECT STATION: 543

DATE:30/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 1009
start stop duration Long E 1255
TIME :13:10:00 13:40:00 30 (min) Purpose code: 3
LOG : 319.50 329.90 1.40 Area code : 2
FDEPTH: 282 265 GearCond.code:
BDEPTH: 262 265 Validity code:
Towing dir: 345° Wire out: 750 m Speed: 28 kn*10

Sorted: 29 Kg Total catch: 115.20 CATCH/HOUR: 230.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	117.20	1854	50.87	
Synagrops microlepis	45.60	2456	19.79	
MYCTOPHIDAE	41.04	13432	17.81	
Nezumia aequalis	8.00	96	3.47	
Trichiurus lepturus	5.12	104	2.22	
Illex sp.	4.56	2188	1.98	
Parapenaeus longirostris, fem.	3.68	544	1.60	1328
Parapenaeus longirostris, male	2.72	496	1.18	1329
Pterothrissus belloci	1.68	8	0.73	
Scorpaena stephanica	0.40	8	0.17	
Coelorinchus coelorhincus	0.16	8	0.07	
Sepia officinalis hierredda	0.16	8	0.07	
Solenocera africana	0.08	32	0.03	
Todaropsis eblanae	0.00			
Total	230.40		99.99	

PROJECT STATION: 544

DATE:30/ 7/95 GEAR TYPE: BT No:8 POSITION:Lat S 1010
start stop duration Long E 1254
TIME :15:25:00 15:55:00 30 (min) Purpose code: 3
LOG : 328.00 329.00 1.60 Area code : 1
FDEPTH: 365 367 GearCond.code:
BDEPTH: 365 367 Validity code:
Towing dir: 345° Wire out: 950 m Speed: 32 kn*10

Sorted: 22 Kg Total catch: 404.32 CATCH/HOUR: 808.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	317.30	82498	39.24	
Merluccius polli	309.70	1254	38.30	1332
Plesiopenaeus edwardsianus	39.90	16416	4.93	
Etmopterus spinax	35.72	1102	4.42	
Pterothrissus belloci	31.92	152	3.95	
Trichiurus lepturus	21.28	494	2.63	
Chlorophthalmus atlanticus	13.30	266	1.64	
Aristeus varidens, female	11.02	1178	1.36	1330
Nezumia aequalis	5.70	76	0.70	
Aristeus varidens, male	4.56	628	0.56	1331
Malacocephalus occidentalis	4.56	38	0.56	
Coelorinchus coelorhincus	3.80	76	0.47	
Scorpaena stephanica	3.04	38	0.38	
Illex coindetii	2.66	38	0.33	
LOPHIIDAE	2.28	38	0.28	
Halosaurus ovenii	1.14	38	0.14	
Dibranchus atlanticus	0.76	38	0.09	
Total	808.54		99.98	

PROJECT STATION: 545

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1010
start stop duration Long E 1254
TIME :16:50:00 17:20:00 30 (min) Purpose code: 3
LOG : 331.00 333.00 2.50 Area code : 2
FDEPTH: 373 360 GearCond.code:
BDEPTH: 373 360 Validity code:
Towing dir: 160° Wire out: 950 m Speed: 27 kn*10

Sorted: 81 Kg Total catch: 459.54 CATCH/HOUR: 919.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	385.50	1534	41.94	1335
Nematocarcinus africanus	231.00	65450	25.13	
Squalus blainvillei	56.70	1272	6.17	
Echinorhinus brucus	46.60	2	5.07	
Laemonema laureysi	34.80	480	3.79	
Pterothrissus belloci	34.66	156	3.77	
Aristeus varidens, female	18.30	1570	1.99	1333
Squalus megalops	17.10	16	1.86	
LOPHIIDAE	14.40	360	1.57	
Dibranchus atlanticus	12.00	946	1.31	
Malacocephalus laevis	10.94	76	1.19	
Trichiurus lepturus	10.20	270	1.11	
Aristeus varidens, male	10.06	1374	1.09	1334
Talismania sp.	9.76	226	1.06	
Nezumia sp.	5.70	166	0.62	
CONGRIDAE	4.06	76	0.44	
Lamprogrammus exutus	3.96	16	0.43	
Nezumia aequalis	3.30	60	0.36	
Hymenocephalus italicus	2.56	226	0.28	
Epigonus sp.	2.26	30	0.25	
Todaropsis eblanae	1.66	16	0.18	
Callinectes amnicola	1.36	16	0.15	
MELANOSTOMIATIDAE	1.20	60	0.13	
HALOSAURIDAE	1.06	16	0.12	
Total	919.14		100.01	

PROJECT STATION: 546

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1010
start stop duration Long E 1253
TIME :18:31:00 19:01:00 30 (min) Purpose code: 3
LOG : 336.40 337.90 1.50 Area code : 1
FDEPTH: 456 447 GearCond.code:
BDEPTH: 456 447 Validity code:
Towing dir: 341° Wire out:1200 m Speed: 28 kn*10

Sorted: 87 Kg Total catch: 157.40 CATCH/HOUR: 314.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	132.60	36574	42.12	
Merluccius polli	92.40	168	29.35	1338
MELANOSTOMIATIDAE	18.54	2374	5.89	
Squalus blainvillei	15.72	114	4.99	
Centrophorus uyato	10.50	2	3.34	
Laemonema laureysi	7.92	516	2.52	
Aristeus varidens, male	7.50	952	2.38	1337
Trichiurus lepturus	7.14	174	2.27	
Dibranchus atlanticus	4.20	330	1.33	
GONOSTOMATIDAE	3.84	84	1.22	
Aristeus varidens, female	3.84	204	1.22	1336
Hoplostethus cadenati	2.22	60	0.71	
LOPHIIDAE	1.98	30	0.63	
CONGRIDAE	1.68	132	0.53	
HALOSAURIDAE	0.84	48	0.27	
Malacocephalus laevis	0.72	6	0.23	
Callinectes amnicola	0.72	18	0.23	
Nezumia aequalis	0.66	18	0.21	
Talismania sp.	0.60	66	0.19	
MYCTOPHIDAE	0.42	96	0.13	
Total	314.04		99.76	

PROJECT STATION: 547

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1010
start stop duration Long E 1008
TIME :20:31:00 21:01:00 30 (min) Purpose code: 3
LOG : 344.10 345.60 1.50 Area code : 2
FDEPTH: 455 451 GearCond.code:
BDEPTH: 455 451 Validity code:
Towing dir: 340° Wire out:1200 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 162.12 CATCH/HOUR: 324.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	108.24		33.38	
Nematocarcinus africanus	102.00	23504	31.46	
Merluccius polli	92.96	170	28.67	1340
Aristeus varidens, male	8.84	1156	2.73	1339
Geryon sp.	6.60	12	2.04	
Aristeus varidens, female	5.60	306	1.73	1341
Total	324.24		100.01	

PROJECT STATION: 548

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1010
start stop duration Long E 1256
TIME :21:56:00 22:26:00 30 (min) Purpose code: 3
LOG : 349.00 350.10 1.10 Area code : 1
FDEPTH: 552 546 GearCond.code:
BDEPTH: 552 546 Validity code:
Towing dir: 155° Wire out:1400 m Speed: 22 kn*10

Sorted: 29 Kg Total catch: 99.81 CATCH/HOUR: 199.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	81.56	20196	40.86	
Trichiurus lepturus	30.88	420	15.47	
GONOSTOMATIDAE	26.82	294	13.44	
Hoplostethus cadenati	12.46	344	6.24	
Plesiopenaeus edwardsianus	8.06	1994	4.04	
MACROURIDAE	7.98	50	4.00	
CONGRIDAE	7.98	148	4.00	
Merluccius polli	6.30	14	3.16	
Etmopterus spinax	6.24	50	3.13	
MELANOSTOMIATIDAE	2.80	176	1.40	
Malacocephalus occidentalis	2.32	22	1.16	
POLYCHAELIDAE	1.26	140	0.63	
Aristeus varidens, female	1.12	52	0.56	1343
Talismania sp.	0.92	42	0.46	
REGALECIDAE	0.56	8	0.28	
Dibranchus atlanticus	0.50	42	0.25	
Nezumia aequalis	0.50	14	0.25	
LOPHIIDAE	0.42	8	0.21	
Sepia sp.	0.36	8	0.18	
Aristeus varidens, male	0.22	36	0.11	1342
Coelorinchus coelorhincus	0.22	8	0.11	
Chlorophthalmus atlanticus	0.14	8	0.07	
Total	199.62		100.01	

PROJECT STATION: 549

DATE:30/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1010
start stop duration Long E 1252
TIME :23:55:00 00:25:00 30 (min) Purpose code: 3
LOG : 356.00 357.50 1.50 Area code : 2
FDEPTH: 567 534 GearCond.code:
BDEPTH: 567 534 Validity code:
Towing dir: 300° Wire out:1400 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 108.06 CATCH/HOUR: 216.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	44.40	13764	20.54	
Trichiurus lepturus	36.36	898	16.82	
GONOSTOMATIDAE	31.92	490	14.77	
Merluccius polli	29.50	48	13.65	1345
Geryon sp.	18.60	24	8.61	
Hoplostethus cadenati	18.48	552	8.55	
Squalus megalops	10.10	2	4.67	
CONGRIDAE	6.60	156	3.05	
MURAENIDAE	6.00	132	2.78	
MACROURIDAE	5.16	24	2.39	
POLYCHAELIDAE	1.80	324	0.83	
Aristeus varidens, female	1.32	66	0.61	1346
Coelorinchus coelorhincus	1.32	24	0.61	
Plesiopenaeus edwardsianus	1.20	432	0.56	
Etmopterus spinax	1.20	24	0.56	
Talismania sp.	0.96	96	0.44	
Aristeus varidens, male	0.84	114	0.39	1344
Halosaurus ovenii	0.36	12	0.17	
Total	216.12		100.00	

PROJECT STATION: 550

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1010
start stop duration Long E 1251
TIME :01:30:00 02:00:00 30 (min) Purpose code: 3
LOG : 361.20 362.70 1.50 Area code : 1
FDEPTH: 655 667 GearCond.code:
BDEPTH: 655 667 Validity code:
Towing dir: 330° Wire out:1700 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 66.68 CATCH/HOUR: 133.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	30.90	7120	23.17	
Talismania sp.	20.82	282	15.61	
CONGRIDAE	19.56	518	14.67	
GONOSTOMATIDAE	12.30	306	9.22	
Hoplostethus cadenati	9.18	210	6.88	
Coelorinchus coelorhincus	8.76	162	6.57	
Ebinania costaecanarie	6.42	6	4.81	
Trichiurus lepturus	5.28	114	3.96	
POLYCHAELIDAE	4.56	510	3.42	
Etmopterus spinax	4.38	66	3.28	
MELANOSTOMIATIDAE	2.82	120	2.11	
Raja alba	2.46	6	1.84	
Todaropsis eblanae	2.34	12	1.75	
Merluccius polli	1.24	2	0.93	
Plesiopenaeus edwardsianus	0.96	174	0.72	
Aristeus varidens, female	0.66	30	0.49	
REGALECIDAE	0.48	6	0.36	
Dibranchus atlanticus	0.12	6	0.09	
Aristeus varidens, male	0.12	12	0.09	
Total	133.36		99.97	

PROJECT STATION: 551

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1010
start stop duration Long E 1251
TIME :03:45:00 04:15:00 30 (min) Purpose code: 3
LOG :3700.00 371.50 8.50 Area code : 2
FDEPTH: 663 672 GearCond.code:
BDEPTH: 663 672 Validity code:
Towing dir: 330° Wire out:1700 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 135.18 CATCH/HOUR: 270.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nezumia sp.	55.08	1092	20.37	
Talismania sp.	53.52	1310	19.80	
CONGRIDAE	53.04	582	19.62	
Nematocarcinus africanus	36.36	5522	13.45	
POLYCHAELIDAE	15.24	1862	5.64	
Merluccius polli	12.48	24	4.62	
Laemonema laureysi	8.52	662	3.15	
Hoplostethus cadenati	6.96	120	2.57	
Conger conger	6.36	108	2.35	
MELANOSTOMIATIDAE	6.24	180	2.31	
Etmopterus spinax	6.12	84	2.26	
LOPHIIDAE	3.24	24	1.20	
Raja sp.	1.56	12	0.58	
Coloconger cadenati *	1.44	24	0.53	
Trichiurus lepturus	1.32	48	0.49	
Aristeus varidens, female	1.08	60	0.40	
Dibranchus atlanticus	0.84	60	0.31	
Glyphus marsupialis	0.60	108	0.22	
Aristeus varidens, male	0.36	48	0.13	
Total	270.36		100.00	

PROJECT STATION: 552

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1028
start stop duration Long E 13065
TIME :07:34:00 08:04:00 30 (min) Purpose code: 3
LOG : 402.10 403.60 1.50 Area code : 2
FDEPTH: 212 213 GearCond.code:
BDEPTH: 212 213 Validity code:
Towing dir: 337° Wire out 650 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 273.34 CATCH/HOUR: 546.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	208.68	9228	38.17	
Chlorophthalmus atlanticus	159.38	3750	29.15	
Trachurus trecae	73.96	162	13.53	
Dentex angolensis	40.46	110	7.40	1347
Zenopsis conchifer	12.69	26	2.32	
Dentex macrophthalmus	12.16	34	2.22	
Merluccius polli	11.74	86	2.15	1348
Pterothrissus belloci	11.06	60	2.02	
Bembrops heterurus	3.66	34	0.67	
Parapenaeus longirostris, male	3.48	782	0.64	1350
Parapenaeus longirostris, fem.	2.64	552	0.48	1349
Cranoscopus cadenati	2.38	26	0.44	
Raja sp.	1.96	8	0.36	
Citharus linguatula	1.36	102	0.25	
Illex coindetii	0.76	8	0.14	
Todaropsis eblanae	0.34	8	0.06	
Total	546.68		100.00	

PROJECT STATION: 553

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1028
start stop duration Long E 13067
TIME :09:03:00 09:33:00 30 (min) Purpose code: 3
LOG : 408.10 409.60 1.50 Area code : 2
FDEPTH: 212 209 GearCond.code:
BDEPTH: 212 209 Validity code:
Towing dir: 337° Wire out: 650 m Speed: 30 kn*10

Sorted: 66 Kg Total catch: 262.44 CATCH/HOUR: 524.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	202.40		38.56	
Dentex angolensis	85.20	232	16.23	1354
Chlorophthalmus atlanticus	80.40	2020	15.32	
Trachurus trecae	78.00	160	14.86	
Pterothrissus belloci	15.84	112	3.02	
Bembrops heterurus	13.68	168	2.61	
Zenopsis conchifer	12.88	40	2.45	
Merluccius polli	10.16	80	1.94	1353
Trigla lyra	5.68	48	1.08	
Dentex macrophthalmus	3.76	8	0.72	
Todaropsis eblanae	3.60	48	0.69	
Uranoscopus cadenati	3.44	32	0.66	
Parapenaeus longirostris, fem.	2.72	552	0.52	1351
Illex coindetii	2.16	32	0.41	
Parapenaeus longirostris, male	2.00	424	0.38	1352
LOPHIIDAE	1.12	8	0.21	
C R A B S	0.72	8	0.14	
Citharus linguatula	0.56	80	0.11	
Trichiurus lepturus	0.56	8	0.11	
Total	524.88		100.02	

PROJECT STATION: 554

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1031
start stop duration Long E 1306
TIME :11:00:00 11:30:00 30 (min) Purpose code: 3
LOG : 421.00 422.50 1.50 Area code : 1
FDEPTH: 272 290 GearCond.code:
BDEPTH: 272 290 Validity code:
Towing dir: 320° Wire out: 900 m Speed: 30 kn*10

Sorted: 31 Kg Total catch: 1023.55 CATCH/HOUR: 2047.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	1465.20	10616	71.57	
Synagrops microlepis	283.80	15738	13.86	
Zenopsis conchifer	79.86	66	3.90	
Merluccius polli	67.32	264	3.29	
Nezumia sp.	29.04	264	1.42	
Bembrops heterurus	27.06	264	1.32	
Coelorinchus coelorhincus	19.80	660	0.97	
Malacocephalus occidentalis	19.80	660	0.97	
Pterothrissus belloci	19.14	66	0.93	
Scorpaena normani	9.24	66	0.45	
MYCTOPHIDAE	8.58	3168	0.42	
Parapenaeus longirostris, fem.	7.92	1100	0.39	1355
Parapenaeus longirostris, male	4.40	836	0.21	1356
Epigonus telescopus	3.96	66	0.19	
Dibranchus atlanticus	1.32	66	0.06	
POLYCHAELIDAE	0.66	66	0.03	
Total	2047.10		99.98	

PROJECT STATION: 555

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1031
start stop duration Long E 1307
TIME :12:35:00 13:05:00 30 (min) Purpose code: 3
LOG : 427.20 428.60 1.40 Area code : 2
FDEPTH: 269 293 GearCond.code:
BDEPTH: 269 293 Validity code:
Towing dir: 320° Wire out: 900 m Speed: 28 kn*10

Sorted: 62 Kg Total catch: 795.18 CATCH/HOUR: 1590.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	991.50	19830	62.34	
Epigonus telescopus	230.10	1740	14.47	
Synagrops microlepis	202.50	10014	12.73	
Zenopsis conchifer	56.40	30	3.55	
Malacocephalus occidentalis	21.60	480	1.36	
Dentex macrophthalmus	18.96	52	1.19	1357
Hoplostethus atlanticus	16.50	30	1.04	
Coelorinchus coelorhincus	14.10	480	0.89	
MYCTOPHIDAE	7.50	1890	0.47	
Scorpaena normani	7.50	1890	0.47	
Nezumia aequalis	6.00	90	0.38	
Bathynectes piperitus	5.10	60	0.32	
Parapenaeus longirostris, fem.	4.50	660	0.28	1358
Parapenaeus longirostris, male	2.40	480	0.15	1359
Merluccius polli	2.40	30	0.15	
CONGRIDAE	1.20	30	0.08	
Lophius vaillanti	1.20	30	0.08	
Bembrops heterurus	0.90	30	0.06	
Peristedion cataphractum	0.60	30	0.04	
Total	1590.96		100.05	

PROJECT STATION: 556

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1032
start stop duration Long E 1304
TIME :17:46:00 18:16:00 30 (min) Purpose code: 3
LOG : 445.90 447.40 1.50 Area code : 1
FDEPTH: 433 420 GearCond.code:
BDEPTH: 433 420 Validity code:
Towing dir: 330° Wire out:1150 m Speed: 30 kn*10

Sorted: 36 Kg Total catch: 167.25 CATCH/HOUR: 334.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	117.60	23084	35.16	
Merluccius polli	80.40	312	24.04	1362
Laemonema laureysi	44.28	484	13.24	
Malacocephalus occidentalis	23.16	144	6.92	
Etmopterus spinax	19.08	404	5.70	
Trichiurus lepturus	14.64	374	4.38	
Hymenocephalus italicus	12.24	924	3.66	
Aristeus varidens, female	11.40	606	3.41	1360
Nezumia aequalis	3.36	132	1.00	
HALOSAURIDAE	1.80	12	0.54	
MYCTOPHIDAE	1.80	732	0.54	
Aristeus varidens, male	1.74	234	0.52	1361
CONGRIDAE	1.20	24	0.36	
MELANOSTOMIATIDAE	0.96	12	0.29	
Epigonus sp.	0.84	12	0.25	
Total	334.50		100.01	

PROJECT STATION: 557

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1031
start stop duration Long E 1304
TIME :19:40:00 20:10:00 30 (min) Purpose code: 3
LOG : 453.40 454.90 1.50 Area code : 2
FDEPTH: 430 421 GearCond.code:
BDEPTH: 430 421 Validity code:
Towing dir: 315° Wire out:1150 m Speed: 30 kn*10

Sorted: 51 Kg Total catch: 254.95 CATCH/HOUR: 509.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	205.00	48450	40.20	
Merluccius polli	64.00	110	12.55	1365
Laemonema laureysi	45.50	430	8.92	
Aristeus varidens, female	39.60	2060	7.77	1363
Etmopterus spinax	34.50	790	6.77	
Trichiurus lepturus	26.10	520	5.12	
Malacocephalus occidentalis	25.30	150	4.95	
Nezumia sp.	11.50	290	2.26	
GONOSTOMATIDAE	9.40	330	1.84	
Lamprogrammus exutus	6.60	20	1.29	
MELANOSTOMIATIDAE	5.70	90	1.12	
Squalus blainvillei	5.40	50	1.06	
Hymenocephalus italicus	4.60	370	0.90	
Aristeus varidens, male	4.60	630	0.90	1364
Geryon sp.	4.50	20	0.88	
LOPHIIDAE	4.20	30	0.82	
Hoplostethus cadenati	2.90	90	0.57	
Todaropsis eblanae	2.90	20	0.57	
Dibranchus atlanticus	2.60	130	0.51	
HISTIOTEUTHIDAE	2.30	20	0.45	
HALOSAURIDAE	0.90	50	0.18	
Plesiopenaeus edwardsianus	0.70	20	0.14	
POLYCHAELIDAE	0.70	50	0.14	
Ebinania costaecanarie	0.40	10	0.08	
Total	509.90		100.00	

PROJECT STATION: 558

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1032
start stop duration Long E 1303
TIME :21:15:00 21:45:00 30 (min) Purpose code: 3
LOG : 495.90 461.50 1.60 Area code : 1
FDEPTH: 531 538 GearCond.code:
BDEPTH: 531 538 Validity code:
Towing dir: 145° Wire out:1325 m Speed: 32 kn*10

Sorted: 50 Kg Total catch: 222.69 CATCH/HOUR: 445.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	219.16	50958	49.21	
Hoplostethus cadenati	87.30	2700	19.60	
GONOSTOMATIDAE	35.64	828	8.00	
Lamprogrammus exutus	15.76	90	3.54	
Geryon sp.	15.30	36	3.44	
Trichiurus lepturus	14.94	360	3.35	
Laemonema laureysi	12.70	154	2.85	
Etmopterus spinax	9.10	180	2.04	
CONGRIDAE	8.46	216	1.90	
MELANOSTOMIATIDAE	7.84	154	1.76	
Nezumia sp.	5.40	100	1.21	
Merluccius polli	5.22	10	1.17	
Dibranchus atlanticus	3.70	226	0.83	
Talismania sp.	2.88	144	0.65	
Aristeus varidens	1.08	72	0.24	
POLYCHAELIDAE	0.54	72	0.12	
Plesiopenaeus edwardsianus	0.36	90	0.08	
Total	445.38		99.99	

PROJECT STATION: 559

DATE:31/ 7/95 GEAR TYPE: BT No: POSITION:Lat S 1032
start stop duration Long E 1303
TIME :23:17:00 23:47:00 30 (min) Purpose code: 3
LOG : 467.00 468.30 1.30 Area code : 2
FDEPTH: 524 512 GearCond.code:
BDEPTH: 524 512 Validity code:
Towing dir: 145° Wire out:1325 m Speed: 26 kn*10

Sorted: 16 Kg Total catch: 196.80 CATCH/HOUR: 393.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	153.60	45176	39.02	
Nezumia aequalis	66.24	480	16.83	
GONOSTOMATIDAE	44.64	888	11.34	
Coelorinchus coelorhincus	30.24	504	7.68	
Hoplostethus cadenati	28.08	864	7.13	
CONGRIDAE	20.64	456	5.24	
Etmopterus spinax	9.60	96	2.44	
Trichiurus lepturus	9.36	216	2.38	
Dibranchus atlanticus	6.00	240	1.52	
MACROURIDAE	4.80	96	1.22	
SOLEIDAE	4.56	144	1.16	
Geryon sp.	3.12	24	0.79	
MELANOSTOMIATIDAE	2.64	72	0.67	
LOPHIIDAE	2.16	24	0.55	
Talismania sp.	2.16	72	0.55	
Bathynectes piperitus	2.16	24	0.55	
Malacocephalus occidentalis	1.92	24	0.49	
Aristeus varidens, female	0.96	72	0.24	
Plesiopenaeus edwardsianus	0.72	24	0.18	
Total	393.60		99.98	

PROJECT STATION: 560

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1324
TIME :06:33:00 07:03:00 30 (min) Purpose code: 3
LOG : 533.20 534.70 1.50 Area code : 1
FDEPTH: 210 207 GearCond.code:
BDEPTH: 210 207 Validity code:
Towing dir: 135° Wire out: 650 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 842.14 CATCH/HOUR: 1684.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	1071.46	32034	63.62	
Synagrops microlepis	224.90	16260	13.35	
Dentex macrophthalmus	141.18	988	8.38	1369
Merluccius polli	64.48	572	3.83	1368
MYCTOPHIDAE	45.50	16594	2.70	
Trachurus trecae	34.84	78	2.07	
Trichiurus lepturus	26.26	78	1.56	
Nezumia aequalis	24.44	1404	1.45	
Parapenaeus longirostris, male	20.02	4542	1.19	1367
Parapenaeus longirostris, fem.	16.38	3140	0.97	1366
Scorpaena stephanica	7.54	156	0.45	
Pterothrissus belloci	2.86	26	0.17	
Malacocephalus occidentalis	2.08	104	0.12	
Bembrops heterurus	1.04	52	0.06	
Brotula barbata	0.78	52	0.05	
Dibranchus atlanticus	0.52	26	0.03	
Total	1684.28		100.00	

PROJECT STATION: 561

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1324
TIME :08:01:00 08:31:00 30 (min) Purpose code: 3
LOG : 539.10 540.60 1.50 Area code : 2
FDEPTH: 214 205 GearCond.code:
BDEPTH: 214 205 Validity code:
Towing dir: 135° Wire out: 650 m Speed: 30 kn*10

Sorted: 67 Kg Total catch: 1097.61 CATCH/HOUR: 2195.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	1519.66	48708	69.23	
Synagrops microlepis	386.10	25168	17.59	
Dentex macrophthalmus	118.80	760	5.41	1372
MYCTOPHIDAE	48.52	22150	2.21	
Merluccius polli	36.64	330	1.67	1373
Parapenaeus longirostris, fem.	28.72	4084	1.31	1371
Parapenaeus longirostris, male	23.10	4508	1.05	1370
Nezumia aequalis	22.44	1354	1.02	
Pterothrissus belloci	5.62	34	0.26	
Bembrops heterurus	3.64	132	0.17	
Sepia sp.	1.32	100	0.06	
Malacocephalus occidentalis	0.66	66	0.03	
Total	2195.22		100.01	

PROJECT STATION: 562

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1323
TIME :09:29:00 09:59:00 30 (min) Purpose code: 3
LOG : 544.80 546.40 1.60 Area code : 1
FDEPTH: 284 291 GearCond.code:
BDEPTH: 284 291 Validity code:
Towing dir: 310° Wire out: 850 m Speed: 32 kn*10

Sorted: 63 Kg Total catch: 625.50 CATCH/HOUR: 1251.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	935.00	22100	74.74	
Merluccius polli	94.50	580	7.56	1376
MYCTOPHIDAE	59.00	32590	4.72	
Scorpaena stephanica	43.60	60	3.49	
Parapenaeus longirostris, fem.	26.40	3580	2.11	1374
Synagrops microlepis	21.40	1380	1.71	
Pterothrissus belloci	21.00	100	1.68	
Parapenaeus longirostris, male	21.00	3280	1.68	1375
Malacocephalus occidentalis	9.00	160	0.72	
Nezumia aequalis	7.00	340	0.56	
Trichiurus lepturus	4.40	20	0.35	
Dentex macrophthalmus	2.60	20	0.21	
Hymenocephalus italicus	2.00	480	0.16	
Epigonus telescopus	1.80	40	0.14	
POLYCHAELIDAE	1.80	240	0.14	
Solenocera africana	0.40	40	0.03	
Total	1251.00		100.00	

PROJECT STATION: 563

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1323
TIME :11:00:00 11:30:00 30 (min) Purpose code: 3
LOG : 550.30 552.00 1.70 Area code : 2
FDEPTH: 280 288 GearCond.code:
BDEPTH: 280 288 Validity code:
Towing dir: 310° Wire out: 850 m Speed: 34 kn*10

Sorted: 38 Kg Total catch: 752.59 CATCH/HOUR: 1505.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	798.00	17966	53.02	
Merluccius polli	200.48	1344	13.32	1379
MYCTOPHIDAE	166.88	87992	11.09	
Trichiurus lepturus	106.40	224	7.07	
Pterothrissus belloci	76.72	392	5.10	
Malacocephalus occidentalis	36.40	896	2.42	
Parapenaeus longirostris, fem.	28.56	3948	1.90	1377
Parapenaeus longirostris, male	21.56	3836	1.43	1378
Synagrops microlepis	20.16	1288	1.34	
Cynoponticus ferox	14.00	56	0.93	
Dentex macrophthalmus	12.50	48	0.83	1380
Coelorinchus coelorhincus	7.84	504	0.52	
POLYCHAELIDAE	6.72	952	0.45	
MACROURIDAE	4.48	112	0.30	
Scorpaena normani	2.80	56	0.19	
CONGRIDAE	1.68	56	0.11	
Total	1505.18		100.02	

PROJECT STATION: 564

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1321
TIME :12:25:00 12:55:00 30 (min) Purpose code: 3
LOG : 555.50 556.90 1.40 Area code : 2
FDEPTH: 345 349 GearCond.code:
BDEPTH: 345 349 Validity code:
Towing dir: 140° Wire out: 950 m Speed: 28 kn*10

Sorted: 37 Kg Total catch: 364.05 CATCH/HOUR: 728.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	339.00	1726	46.56	1381
Chlorophthalmus atlanticus	74.10	1830	10.18	
Nematocarcinus africanus	72.00	21086	9.89	
Nezumia aequalis	68.10	2850	9.35	
Trichiurus lepturus	48.60	120	6.67	
Malacocephalus occidentalis	36.60	480	5.03	
Parapenaeus longirostris, fem.	30.46	3630	4.18	1382
MYCTOPHIDAE	13.50	6014	1.85	
Dentex macrophthalmus	10.80	30	1.48	
Solenocera africana	7.20	1020	0.99	
Parapenaeus longirostris, male	6.76	1036	0.93	1383
Bathynectes piperitus	5.40	90	0.74	
Coelorinchus coelorhincus	5.40	150	0.74	
CONGRIDAE	4.20	150	0.58	
Etmopterus spinax	2.70	240	0.37	
Epigonus telescopus	2.70	60	0.37	
POLYCHAELIDAE	0.30	60	0.04	
Peristedion cataphractum	0.30	30	0.04	
Total	728.12		99.99	

PROJECT STATION: 565

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1321
TIME :14:05:00 14:35:00 30 (min) Purpose code: 3
LOG : 561.90 563.40 1.50 Area code : 1
FDEPTH: 348 344 GearCond.code:
BDEPTH: 348 344 Validity code:
Towing dir: 140° Wire out: 950 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 273.27 CATCH/HOUR: 546.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	195.30	1066	35.73	1384
Nematocarcinus africanus	92.62	24698	16.95	
Chlorophthalmus atlanticus	64.68	1554	11.83	
Nezumia aequalis	64.06	2332	11.72	
MYCTOPHIDAE	48.30	22702	8.84	
Parapenaeus longirostris, fem.	31.72	3718	5.80	1385
Malacocephalus occidentalis	12.60	148	2.31	
Parapenaeus longirostris, male	10.30	1470	1.88	1386
Lophius vaillanti	8.40	22	1.54	
Coelorinchus coelorhincus	4.84	190	0.89	
Zeus faber	3.36	22	0.61	
CONGRIDAE	2.32	84	0.42	
Synagrops microlepis	1.90	106	0.35	
Trichiurus lepturus	1.90	64	0.35	
Solenocera africana	1.90	316	0.35	
Etmopterus spinax	0.64	42	0.12	
LOPHIIDAE	0.64	22	0.12	
POLYCHAELIDAE	0.42	42	0.08	
MACROURIDAE	0.42	22	0.08	
Peristedion cataphractum	0.22	22	0.04	
Total	546.54		100.01	

PROJECT STATION: 566

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1319
TIME :15:35:00 16:05:00 30 (min) Purpose code: 3
LOG : 568.10 569.60 1.50 Area code : 2
FDEPTH: 404 410 GearCond.code:
BDEPTH: 404 410 Validity code:
Towing dir: 310° Wire out:1050 m Speed: 30 kn*10

Sorted: 73 Kg Total catch: 762.87 CATCH/HOUR: 1525.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	479.86	1962	31.45	1389
Deepwater fish mixture	453.60		29.73	
Nematocarcinus africanus	249.48		16.35	
Nezumia sp.	181.44		11.89	
Etmopterus spinax	40.96	1344	2.68	
Plesionika martia	22.68		1.49	
Chlorophthalmus atlanticus	20.80	526	1.36	
Aristeus varidens, female	19.12	1890	1.25	1387
Coelorinchus coelorhincus	9.46	420	0.62	
Aristeus varidens, male	9.24	2134	0.61	1388
Plesionika martia	8.40	3600	0.55	
Trichiurus lepturus	8.20	190	0.54	
Lamprogrammus exutus	6.30	22	0.41	
Malacocephalus occidentalis	5.68	168	0.37	
Nezumia aequalis	3.78	42	0.25	
Geryon sp.	2.74	22	0.18	
Ebinania costaecanarie	1.90	22	0.12	
CONGRIDAE	1.26	64	0.08	
Parapenaeus longirostris	0.84	84	0.06	
Total	1525.74		99.99	

PROJECT STATION: 567

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1050
start stop duration Long E 1319
TIME :16:50:00 17:20:00 30 (min) Purpose code: 3
LOG : 571.30 572.80 1.50 Area code : 1
FDEPTH: 403 408 GearCond.code:
BDEPTH: 403 408 Validity code:
Towing dir: 130° Wire out:1050 m Speed: 30 kn*10

Sorted: 59 Kg Total catch: 701.88 CATCH/HOUR: 1403.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	914.40	4174	65.14	1392
Nematocarcinus africanus	222.00	68308	15.81	
Aristeus varidens, female	60.00	4944	4.27	1390
Hymenocephalus italicus	32.88	3508	2.34	
Etmopterus spinax	32.64	1088	2.33	
Nezumia aequalis	30.96	2044	2.21	
Lamprogrammus exutus	18.24	96	1.30	
Laemonema laureysi	16.56	624	1.18	
Gonostoma sp.	16.56	2056	1.18	
Aristeus varidens, male	16.32	2688	1.16	1391
Chlorophthalmus atlanticus	12.96	336	0.92	
CONGRIDAE	9.84	152	0.70	
Malacocephalus occidentalis	7.20	96	0.51	
Squatina oculata	4.80	72	0.34	
Hoplostethus cadenati	3.60	96	0.26	
Epigonus telescopus	3.12	24	0.22	
Trichiurus lepturus	1.68	48	0.12	
Total	1403.76		99.99	

PROJECT STATION: 568

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1051
start stop duration Long E 1317
TIME :18:40:00 19:10:00 30 (min) Purpose code: 3
LOG : 577.80 579.30 1.50 Area code : 2
FDEPTH: 526 527 GearCond.code:
BDEPTH: 526 527 Validity code:
Towing dir: 315° Wire out:1300 m Speed: 30 kn*10

Sorted: 59 Kg Total catch: 265.41 CATCH/HOUR: 530.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Lamprogrammus exutus	155.70	650	29.33	
Nematocarcinus africanus	109.36	21638	20.60	
Hoplostethus cadenati	106.22	3150	20.01	
Deepwater fish mixture	29.80		5.61	
Etmopterus spinax	28.54	298	5.38	
CONGRIDAE	15.12	388	2.85	
Nezumia aequalis	15.04	684	2.83	
Chlorophthalmus atlanticus	13.14	324	2.48	
Gonostoma sp.	11.34	262	2.14	
Laemonema laureysi	8.38	82	1.58	
Trichiurus lepturus	7.92	208	1.49	
MELANOSTOMIATIDAE	7.12	136	1.34	
Aristeus varidens	3.78	208	0.71	
POLYCHAELIDAE	1.44	352	0.27	
LOPHIIDAE	0.82	10	0.15	
Total	513.72		96.77	

PROJECT STATION: 569

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1051
start stop duration Long E 1318
TIME :20:36:00 21:06:00 30 (min) Purpose code: 3
LOG : 584.70 586.30 1.60 Area code : 1
FDEPTH: 528 533 GearCond.code:
BDEPTH: 528 533 Validity code:
Towing dir: 315° Wire out:1300 m Speed: 32 kn*10

Sorted: 29 Kg Total catch: 142.65 CATCH/HOUR: 285.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	98.00	2932	34.35	
Nematocarcinus africanus	51.50	11898	18.05	
Deepwater fish mixture	27.20		9.53	
Trichiurus lepturus	26.80	690	9.39	
Lamprogrammus exutus	23.70	100	8.31	
CONGRIDAE	14.40	530	5.05	
Merluccius polli	9.10	20	3.19	
Ebinania costaecanarie	8.30	10	2.91	
Gonostoma sp.	7.50	370	2.63	
Etmopterus spinax	4.40	100	1.54	
Chlorophthalmus atlanticus	4.10	90	1.44	
Aristeus varidens	3.90	220	1.37	
Laemonema laureysi	3.80	40	1.33	
Nezumia aequalis	2.20	30	0.77	
POLYCHAELIDAE	1.40	210	0.49	
Total	286.30		100.35	

PROJECT STATION: 570

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1052
start stop duration Long E 1316
TIME :22:13:00 22:43:00 30 (min) Purpose code: 3
LOG : 590.40 591.90 1.50 Area code : 2
FDEPTH: 644 652 GearCond.code:
BDEPTH: 644 652 Validity code:
Towing dir: 150° Wire out:1625 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 61.98 CATCH/HOUR: 123.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
GONOSTOMATIDAE	25.28	1484	20.39	
Lamprogrammus exutus	19.92	64	16.07	
MELANOSTOMIATIDAE	10.88	216	8.78	
Talismania sp.	10.80	608	8.71	
Hoplostethus cadenati	10.04	2880	8.10	
CONGRIDAE	8.80	208	7.10	
Todaropsis eblanae	7.20	48	5.81	
Etmopterus spinax	6.00	80	4.84	
POLYCHAELIDAE	5.84	560	4.71	
Nezumia aequalis	4.88	88	3.94	
Geryon sp.	4.32	16	3.48	
MACROURIDAE	2.56	56	2.07	
Nematocarcinus africanus	2.48	368	2.00	
Aristeus varidens, female	2.04	108	1.65	1393
Trichiurus lepturus	1.68	32	1.36	
Glyphus marsupialis	0.88	24	0.71	
Aristeus varidens, male	0.36	52	0.29	1394
Total	123.96		100.01	

PROJECT STATION: 571

DATE: 1/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1052
start stop duration Long E 1316
TIME :00:25:00 00:55:00 30 (min) Purpose code: 3
LOG : 598.10 599.50 1.40 Area code : 1
FDEPTH: 651 648 GearCond.code:
BDEPTH: 651 648 Validity code:
Towing dir: 140° Wire out:1625 m Speed: 28 kn*10

Sorted: 26 Kg Total catch: 97.16 CATCH/HOUR: 194.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	97.50	2862	50.17	
GONOSTOMATIDAE	20.30	640	10.45	
Merluccius polli	14.60	22	7.51	1397
Talismania sp.	9.50	530	4.89	
MELANOSTOMIATIDAE	9.20	210	4.73	
Nezumia sp.	8.90	160	4.58	
Trichiurus lepturus	7.60	160	3.91	
Aristeus varidens, female	5.46	266	2.81	1395
Etmopterus spinax	5.40	50	2.78	
Lamprogrammus exutus	5.30	20	2.73	
POLYCHAELIDAE	2.50	280	1.29	
CONGRIDAE	2.20	60	1.13	
Dibranchus atlanticus	1.40	60	0.72	
Sepia sp.	1.30	20	0.67	
Lophius vaillanti	1.30	10	0.67	
Aristeus varidens, male	1.06	136	0.55	1396
Raja alba	0.50	10	0.26	
Total	194.02		99.85	

PROJECT STATION: 572

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1110
start stop duration Long E 1334
TIME :06:15:00 06:45:00 30 (min) Purpose code: 3
LOG : 644.10 645.60 1.50 Area code : 2
FDEPTH: 179 188 GearCond.code:
BDEPTH: 179 188 Validity code:
Towing dir: 352° Wire out: 550 m Speed: 30 kn*10

Sorted: 61 Kg Total catch: 609.20 CATCH/HOUR: 1218.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pterothrissus belloci	464.00	3094	38.08	
Dentex macrophthalmus	223.00	1200	18.30	1400
Synagrops microlepis	150.40	10236	12.34	
Trichiurus lepturus	94.00	460	7.72	
Trachurus trecae	56.00	120	4.60	
Nezumia aequalis	38.80	2022	3.18	
Merluccius polli	30.40	140	2.50	
Peristedion cataphractum	27.40	140	2.25	
Uranoscopus cadenati	24.60	100	2.02	
Parapenaeus longirostris, fem.	18.20	4266	1.49	1399
Scorpaena stephanica	17.60	120	1.44	
Dentex angolensis	15.60	60	1.28	
Parapenaeus longirostris, male	11.00	2934	0.90	1398
MYCTOPHIDAE	10.20	3316	0.84	
Brotula barbata	10.20	20	0.84	
Citharus linguatula	10.20	340	0.84	
Malacocephalus occidentalis	9.80	460	0.80	
Bembrops heterurus	4.20	160	0.34	
Todaropsis eblanae	1.40	20	0.11	
CONGRIDAE	1.40	20	0.11	
Total	1218.40		99.98	

PROJECT STATION: 573

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1110
start stop duration Long E 1335
TIME :07:56:00 08:15:00 19 (min) Purpose code: 3
LOG : 649.40 650.30 0.90 Area code : 1
FDEPTH: 176 181 GearCond.code:
BDEPTH: 176 181 Validity code:
Towing dir: 350° Wire out: 550 m Speed: 30 kn*10

Sorted: 59 Kg Total catch: 265.00 CATCH/HOUR: 836.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pterothrissus belloci	146.70	778	17.53	
Trachurus trecae	139.50	244	16.67	
Synagrops microlepis	72.46	7108	8.66	
Dentex macrophthalmus	60.76	360	7.26	1401
Nezumia aequalis	28.08	4738	3.36	
Merluccius polli	18.64	90	2.23	
Dentex angolensis	10.18	36	1.22	
Bembrops heterurus	9.54	90	1.14	
Parapenaeus longirostris, fem.	7.84	1922	0.94	1402
Dranoscopus cadenati	6.76	28	0.81	
Parapenaeus longirostris, male	5.68	1484	0.68	1403
Brotula barbata	5.32	10	0.64	
Peristedion cataphractum	4.42	82	0.53	
Citharus linguatula	3.70	154	0.44	
Trichiurus lepturus	3.70	18	0.44	
Scorpaena stephanica	3.16	28	0.38	
Todaropsis eblanae	1.72	36	0.21	
MYCTOPHIDAE	1.18	442	0.14	
Zenopsis conchifer	0.54	10	0.06	
Total	529.88		63.34	

PROJECT STATION: 574

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1110
start stop duration Long E 1333
TIME :08:55:00 09:25:00 30 (min) Purpose code: 3
LOG : 653.20 654.70 1.50 Area code : 2
FDEPTH: 244 241 GearCond.code:
BDEPTH: 244 241 Validity code:
Towing dir: 180° Wire out: 550 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 1087.49 CATCH/HOUR: 2174.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	1623.50	885070	74.64	
Dentex macrophthalmus	218.96	782	10.07	1404
Merluccius polli	123.75	544	5.69	1405
Chlorophthalmus atlanticus	123.75	3338	5.69	
Synagrops microlepis	22.78	1632	1.05	
Trichiurus lepturus	22.10	1564	1.02	
Pterothrissus belloci	13.60	34	0.63	
Todaropsis eblanae	8.84	136	0.41	
Parapenaeus longirostris, fem.	5.78	1088	0.27	1406
Nezumia aequalis	3.78	238	0.17	
Parapenaeus longirostris, male	3.06	656	0.14	1407
Peristedion cataphractum	3.06	68	0.14	
Scorpaena stephanica	2.04	68	0.09	
Total	2175.02		100.01	

PROJECT STATION: 575

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1111
start stop duration Long E 1333
TIME :10:31:00 11:01:00 30 (min) Purpose code: 3
LOG : 659.20 660.60 1.40 Area code : 1
FDEPTH: 242 239 GearCond.code:
BDEPTH: 242 239 Validity code:
Towing dir: 175° Wire out: 550 m Speed: 28 kn*10

Sorted: 53 Kg Total catch: 1911.56 CATCH/HOUR: 3823.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	1705.56	8668	44.61	
MYCTOPHIDAE	1451.46	695172	37.97	
Dentex macrophthalmus	254.10	1192	6.65	1408
Chlorophthalmus atlanticus	163.24	3465	4.27	
Merluccius polli	157.86	770	4.13	1409
Pterothrissus belloci	22.34	78	0.58	
Synagrops microlepis	19.26	1000	0.50	
Scorpaena normani	14.64	154	0.38	
Illex coindetii	12.32	154	0.32	
Coelorinchus coelorhincus	8.48	232	0.22	
Parapenaeus longirostris, fem.	7.70	540	0.20	
Parapenaeus longirostris, male	6.16	308	0.16	
Total	3823.12		99.99	

PROJECT STATION: 576

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1111
start stop duration Long E 1331
TIME :12:10:00 12:40:00 30 (min) Purpose code: 3
LOG : 664.80 666.10 1.30 Area code : 2
FDEPTH: 350 347 GearCond.code:
BDEPTH: 350 347 Validity code:
Towing dir: ° Wire out: 950 m Speed: 26 kn*10

Sorted: 51 Kg Total catch: 304.86 CATCH/HOUR: 609.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	263.40	900	43.20	1410
Nematocarcinus africanus	79.20	11632	12.99	
Malacocephalus occidentalis	63.60	852	10.43	
MYCTOPHIDAE	51.48	23424	8.44	
Squalus megalops	34.92	24	5.73	
Chlorophthalmus atlanticus	34.80	828	5.71	
Pterothrissus belloci	17.64	72	2.89	
Trichiurus lepturus	17.28	96	2.83	
Illex coindetii	14.16	192	2.32	
Coelorinchus coelorhincus	6.36	264	1.04	
Synagrops microlepis	5.64	348	0.93	
Dentex macrophthalmus	4.44	12	0.73	
MACROURIDAE	3.72	120	0.61	
CONGRIDAE	2.76	144	0.45	
Etmopterus spinax	2.16	324	0.35	
Bathynectes piperitus	1.80	36	0.30	
Hoplostethus cadenati	1.44	36	0.24	
Plesionika martia	1.32	180	0.22	
Epigonus telescopus	0.96	12	0.16	
Parapenaeus longirostris, fem.	0.84	72	0.14	
Solenocera africana	0.84	72	0.14	
Nezumia aequalis	0.48	12	0.08	
Peristedion cataphractum	0.48	96	0.08	
Total	609.72		100.01	

PROJECT STATION: 577

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1112
start stop duration Long E 1331
TIME :13:50:00 14:20:00 30 (min) Purpose code: 3
LOG : 671.00 672.60 1.60 Area code : 1
FDEPTH: 351 352 GearCond.code:
BDEPTH: 351 352 Validity code:
Towing dir: ° Wire out: 950 m Speed: 32 kn*10

Sorted: 50 Kg Total catch: 173.82 CATCH/HOUR: 347.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	126.36	470	36.35	1411
Trichiurus lepturus	69.66	350	20.04	
Nematocarcinus africanus	39.90	6152	11.48	
MYCTOPHIDAE	25.98	11010	7.47	
Pterothrissus belloci	24.92	126	7.17	
Malacocephalus occidentalis	24.58	336	7.07	
Illex coindetii	10.36	154	2.98	
Chlorophthalmus atlanticus	8.90	210	2.56	
Coelorinchus coelorhincus	5.82	288	1.67	
Zeus faber	2.04	8	0.59	
Bathynectes piperitus	1.48	42	0.43	
Synagrops microlepis	1.40	98	0.40	
Nezumia aequalis	0.92	22	0.26	
Parapenaeus longirostris, fem.	0.84	84	0.24	
Scorpaena stephanica	0.64	8	0.18	
Hoplostethus cadenati	0.64	22	0.18	
Plesionika martia	0.64	92	0.18	
Etmopterus spinax	0.56	112	0.16	
Epigonus telescopus	0.50	8	0.14	
MACROURIDAE	0.42	36	0.12	
Peristedion cataphractum	0.36	98	0.10	
Dibranchus atlanticus	0.28	50	0.08	
Lutjanus dentatus	0.14	8	0.04	
CONGRIDAE	0.14	14	0.04	
Parapenaeus longirostris, male	0.08	14	0.02	
Solenocera africana	0.08	78	0.02	
Total	347.64		99.97	

PROJECT STATION: 578

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1112
start stop duration Long E 1329
TIME :17:47:00 18:07:00 20 (min) Purpose code: 3
LOG : 682.90 683.90 1.00 Area code : 2
FDEPTH: 454 454 GearCond.code:
BDEPTH: 454 454 Validity code:
Towing dir: 345° Wire out:1125 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 112.24 CATCH/HOUR: 336.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	138.60		41.16	
Nematocarcinus africanus	71.40	22983	21.20	
Hoplostethus cadenati	65.76	2112	19.53	
Geryon sp.	21.12	72	6.27	
Laemonema laureysi	12.60	168	3.74	
Aristeus varidens, female	11.40	840	3.39	1412
Aristeus varidens, male	9.84	1437	2.92	1413
Zenopsis conchifer	4.80	3	1.43	
Callinectes amnicola	1.20	48	0.36	
Total	336.72		100.00	

PROJECT STATION: 579

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1112
start stop duration Long E 1329
TIME :19:10:00 19:30:00 20 (min) Purpose code: 3
LOG : 688.70 689.80 1.10 Area code : 1
FDEPTH: 461 461 GearCond.code:
BDEPTH: 461 461 Validity code:
Towing dir: 350° Wire out:1125 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 82.17 CATCH/HOUR: 246.51

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	94.05		38.15	
Hoplostethus cadenati	65.70	1899	26.65	
Nematocarcinus africanus	64.35	21645	26.10	
Lamprogrammus exutus	6.03	54	2.45	
Aristeus varidens, female	5.31	342	2.15	1414
Merluccius polli	3.78	9	1.53	
Laemonema laureysi	3.78	45	1.53	
Aristeus varidens, male	2.79	414	1.13	1415
Callinectes amnicola	0.63	9	0.26	
Plesiopenaeus edwardsianus	0.09	9	0.04	
Total	246.51		99.99	

PROJECT STATION: 580

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1111
start stop duration Long E 1327
TIME :20:27:00 20:57:00 30 (min) Purpose code: 3
LOG : 693.50 695.00 1.50 Area code : 2
FDEPTH: 552 542 GearCond.code:
BDEPTH: 552 542 Validity code:
Towing dir: 185° Wire out:1375 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 85.93 CATCH/HOUR: 171.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	74.40		43.29	
Nematocarcinus africanus	58.80	12740	34.21	
Hoplostethus cadenati	15.96	486	9.29	
Merluccius polli	12.50	18	7.27	
Laemonema laureysi	5.10	48	2.97	
Lamprogrammus exutus	3.66	18	2.13	
Aristeus varidens	1.44	156	0.84	
Total	171.85		100.00	

PROJECT STATION: 581

DATE: 2/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1111
start stop duration Long E 1328
TIME :22:26:00 22:56:00 30 (min) Purpose code: 3
LOG : 700.50 702.00 1.50 Area code : 1
FDEPTH: 547 547 GearCond.code:
BDEPTH: 547 547 Validity code:
Towing dir: 185° Wire out:1375 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 50.94 CATCH/HOUR: 101.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	24.92	3842	24.46	
Hoplostethus cadenati	18.92	624	18.57	
GONOSTOMATIDAE	18.88	414	18.53	
MYCTOPHIDAE	11.16	4730	10.95	
Squalus megalops	8.20	2	8.05	
Etmopterus spinax	5.88	96	5.77	
Lamprogrammus exutus	3.48	48	3.42	
Nezumia aequalis	2.12	76	2.08	
Talismania sp.	2.04	124	2.00	
Todaropsis eblanae	1.12	12	1.10	
Plesionika martia	1.12	162	1.10	
Malacocephalus occidentalis	0.84	8	0.82	
Trichiurus lepturus	0.72	20	0.71	
Aristeus varidens, male	0.68	96	0.67	1417
Aristeus varidens, female	0.48	42	0.47	1416
CONGRIDAE	0.44	28	0.43	
POLYCHAELIDAE	0.40	32	0.39	
Nemichthys scolopaceus	0.24	8	0.24	
Sepia sp.	0.24	4	0.24	
Total	101.88		100.00	

PROJECT STATION: 582

DATE: 3/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1111
start stop duration Long E 1325
TIME :00:10:00 00:40:00 30 (min) Purpose code: 3
LOG : 706.90 708.50 1.60 Area code : 2
FDEPTH: 702 708 GearCond.code:
BDEPTH: 702 708 Validity code: 9
Towing dir: 350° Wire cut:1800 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
N O C A T C H	0.00			
Total				

PROJECT STATION: 583

DATE: 3/ 8/95 GEAR TYPE: BT No: POSITION:Lat S 1132
start stop duration Long E 1323
TIME :05:32:00 07:02:00 30 (min) Purpose code: 3
LOG : 742.10 743.60 1.50 Area code : 2
FDEPTH: 260 256 GearCond.code:
BDEPTH: 260 256 Validity code:
Towing dir: 40° Wire out: 750 m Speed: 30 kn*10

Sorted: 57 Kg Total catch: 172.11 CATCH/HOUR: 344.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	72.36	5806	21.02	
MYCTOPHIDAE	69.00	36530	20.05	
Hoplostethus atlanticus	47.70	102	13.86	
Trichiurus lepturus	42.30	212	12.29	
Dentex macrophthalmus	34.20	186	9.94	1418
Epigonus telescopus	13.56	132	3.94	
Pterothrissus belloci	12.78	72	3.71	
Chlorophthalmus atlanticus	8.94	252	2.60	
Parapenaeus longirostris, fem.	7.44	1218	2.25	1419
Scorpaena stephanica	7.14	84	2.07	
Merluccius polli	6.30	24	1.83	
Brotula barbata	4.62	12	1.34	
Parapenaeus longirostris, male	4.50	900	1.31	1420
Nezumia aequalis	3.24	240	0.94	
Bembrops heterurus	1.80	24	0.52	
Malacocephalus occidentalis	1.68	42	0.49	
Geryon sp.	1.26	6	0.37	
Dibranchus atlanticus	1.08	54	0.31	
Todaropsis eblanae	0.96	12	0.28	
Laemonema laureysi	0.78	12	0.23	
POLYCHAELIDAE	0.78	30	0.23	
Solenocera africana	0.60	6	0.17	
CONGRIDAE	0.48	18	0.14	
Monolene microstoma	0.42	12	0.12	
Callinectes amnicola	0.24	6	0.07	
Citharus linguatula	0.06	6	0.02	
Total	344.22		100.01	

PROJECT STATION: 584

DATE: 3/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1132
start stop duration Long E 1321
TIME :11:25:00 11:55:00 30 (min) Purpose code: 3
LOG : 758.80 560.40 1.60 Area code : 2
FDEPTH: 352 352 GearCond.code:
BDEPTH: 352 352 Validity code:
Towing dir: 40° Wire out: 950 m Speed: 32 kn*10

Sorted: 26 Kg Total catch: 207.64 CATCH/HOUR: 415.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	105.12	16206	25.31	
Nezumia aequalis	60.96	4734	14.68	
Merluccius polli	54.40	208	13.10	1423
Malacocephalus occidentalis	50.40	784	12.14	
Plesionika martia	38.24	15678	9.21	
Trichiurus lepturus	25.92	144	6.24	
Hoplostethus cadenati	16.16	672	3.89	
Etmopterus spinax	11.84	848	2.85	
Solenocera africana	8.48	1386	2.04	
Synagrops microlepis	8.00	752	1.93	
Chlorophthalmus atlanticus	6.88	160	1.66	
Coelorinchus coelorhincus	5.76	224	1.39	
Sepia sp.	5.12	176	1.23	
Nemichthys scolopaceus	3.68	160	0.89	
MACROURIDAE	3.68	80	0.89	
Aristeus varidens, female	2.56	432	0.62	1421
Halosaurus ovenii	1.92	144	0.46	
GONOSTOMATIDAE	1.76	48	0.42	
Aristeus varidens, male	1.68	328	0.40	1422
Squalus megalops	1.60	16	0.39	
CONGRIDAE	0.64	80	0.15	
Talismania sp.	0.32	48	0.08	
Parapenaeus longirostris, fem.	0.16	16	0.04	
Total	415.28		100.01	

PROJECT STATION: 585

DATE: 3/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1132
start stop duration Long E 1321
TIME :13:15:00 13:45:00 30 (min) Purpose code: 3
LOG : 766.00 767.40 1.40 Area code : 1
FDEPTH: 353 342 GearCond.code:
BDEPTH: 353 342 Validity code:
Towing dir: 40° Wire out: 950 m Speed: 28 kn*10

Sorted: 27 Kg Total catch: 197.78 CATCH/HOUR: 395.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	66.46	10966	16.80	
Trichiurus lepturus	66.00		16.69	
Malacocephalus occidentalis	65.56		16.57	
Merluccius polli	51.76	240	13.09	1426
Nezumia aequalis	41.70	2602	10.54	
Plesionika martia	33.16	11882	8.38	
Sepia sp.	11.10	210	2.81	
MYCTOPHIDAE	7.80	3230	1.97	
Etmopterus spinax	7.36	540	1.86	
Pterothrissus belloci	6.30	30	1.59	
Chlorophthalmus atlanticus	6.16		1.56	
Synagrops microlepis	4.96	376	1.25	
Hoplostethus cadenati	4.06	150	1.03	
MACROURIDAE	3.90	90	0.99	
Coelorinchus coelorhincus	3.76	120	0.95	
GONOSTOMATIDAE	3.76	106	0.95	
Solenocera africana	3.30	496	0.83	
Epigonus telescopus	3.00	16	0.76	
Aristeus varidens, male	1.96	398	0.50	1425
Aristeus varidens, female	1.80	330	0.46	1424
Squalus sp.	0.60	16	0.15	
Parapenaeus longirostris, male	0.46	60	0.12	
Halosaurus ovenii	0.46	46	0.12	
Parapenaeus longirostris, fem.	0.30	60	0.08	
CONGRIDAE	0.30	30	0.08	
NEMICHTHYIDAE	0.30	30	0.08	
Nemichthys scolopaceus	0.16	16	0.04	
Talismania sp.	0.16	76	0.04	
Peristedion cataphractum	0.16	46	0.04	
Total	396.76		100.33	

PROJECT STATION: 586

DATE: 3/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1132
start stop duration Long E 1320
TIME :14:40:00 15:10:00 30 (min) Purpose code: 3
LOG : 770.20 771.60 1.40 Area code : 2
FDEPTH: 426 446 GearCond.code:
BDEPTH: 426 446 Validity code:
Towing dir: 200° Wire out:1000 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 164.17 CATCH/HOUR: 328.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	133.70	246	40.72	1429
Nematocarcinus africanus	47.74	7958	14.54	
GONOSTOMATIDAE	28.56	1198	8.70	
Trichiurus lepturus	18.62	98	5.67	
Sepia sp.	17.64	322	5.37	
Hoplostethus cadenati	15.96	504	4.86	
Etmopterus spinax	14.98	322	4.56	
Nezumia aequalis	12.46	586	3.79	
MACROURIDAE	7.70	252	2.35	
Lamprogrammus exutus	7.00	686	2.13	
Malacocephalus occidentalis	5.46	252	1.66	
MYCTOPHIDAE	3.50	1526	1.07	
Coelorinchus coelorhincus	2.94	56	0.90	
Plesionika martia	2.80	684	0.85	
Chlorophthalmus atlanticus	1.96	42	0.60	
Talismania sp.	1.68	154	0.51	
Synagrops microlepis	0.98	56	0.30	
CONGRIDAE	0.84	70	0.26	
Aristeus varidens, male	0.84	126	0.26	1428
NEMICHTHYIDAE	0.70	42	0.21	
Squalus megalops	0.70	14	0.21	
Aristeus varidens, female	0.64	42	0.19	1427
Lophius vaillanti	0.42	14	0.13	
Melanocetus johnsoni	0.14	14	0.04	
Bathynectes piperitus	0.14	14	0.04	
Halosaurus ovenii	0.14	14	0.04	
Total	328.24		99.96	

PROJECT STATION: 587

DATE: 3/ 8/95 GEAR TYPE. BT No:8 POSITION:Lat S
start stop duration Long E
TIME :16:10:00 16:25:00 15 (min) Purpose code: 3
LOG : 776.70 777.40 0.70 Area code : 1
FDEPTH: 418 447 GearCond.code:
BDEPTH: 418 447 Validity code:
Towing dir: 200° Wire out:1000 m Speed: 28 kn*10

Sorted: 14 Kg Total catch: 60.09 CATCH/HOUR: 240.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	69.00	132	28.71	1430
Trichiurus lepturus	60.40	768	25.13	
Nematocarcinus africanus	51.20	11316	21.30	
Deepwater fish mixture	38.00		15.81	
Gonostoma sp.	11.36	200	4.73	
Laemonema laureysi	4.56	200	1.90	
Hoplostethus cadenati	3.84	128	1.60	
Aristeus varidens	1.76	192	0.73	
LOPHIIDAE	0.24	8	0.10	
Total	240.36		100.01	

PROJECT STATION: 588

DATE: 3/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1132
start stop duration Long E 1319
TIME :17:57:00 18:27:00 30 (min) Purpose code: 3
LOG : 783.90 785.40 1.50 Area code : 2
FDEPTH: 548 545 GearCond.code:
BDEPTH: 548 545 Validity code:
Towing dir: 190° Wire out:1325 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 124.31 CATCH/HOUR: 248.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	99.20		39.90	
Nematocarcinus africanus	95.20	30064	38.29	
Hoplostethus cadenati	39.12	1118	15.73	
Centrophorus uyato	8.30	2	3.34	
Laemonema laureysi	5.92	56	2.38	
Aristeus varidens	0.72	72	0.29	
Glyphus marsupialis	0.16	24	0.06	
Total	248.62		99.99	

PROJECT STATION: 589

DATE: 3/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1132
start stop duration Long E 1319
TIME :19:57:00 20:27:00 30 (min) Purpose code: 3
LOG : 791.40 792.90 1.50 Area code : 1
FDEPTH: 553 556 GearCond.code:
BDEPTH: 553 556 Validity code:
Towing dir: 190° Wire out:1325 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 99.02 CATCH/HOUR: 198.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	91.00	27626	45.95	
Deepwater fish mixture	77.00		38.88	
Hoplostethus cadenati	29.40	944	14.85	
POLYCHAELIDAE	0.36	8	0.18	
Aristeus varidens	0.28	28	0.14	
Total	198.04		100.00	

PROJECT STATION: 590

DATE: 3/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1132
start stop duration Long E 1318
TIME :21:22:00 22:52:00 30 (min) Purpose code: 3
LOG : 795.60 797.10 1.50 Area code : 2
FDEPTH: 641 625 GearCond.code:
BDEPTH: 641 625 Validity code:
Towing dir: 32° Wire out:1600 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 77.30 CATCH/HOUR: 154.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	86.50		55.95	
Nematocarcinus africanus	43.76	11236	28.31	
Centrophorus uyato	7.40	2	4.79	
Hoplostethus cadenati	5.20	156	3.36	
Aristeus varidens, female	4.46	270	2.88	1431
Merluccius polli	4.32	6	2.79	
Aristeus varidens, male	2.76	366	1.79	1432
Glyphus marsupialis	0.20	10	0.13	
Total	154.60		100.00	

PROJECT STATION: 591

DATE: 3/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1132
start stop duration Long E 1319
TIME :23:25:00 23:55:00 30 (min) Purpose code: 3
LOG : 803.00 804.50 1.50 Area code : 1
FDEPTH: 645 638 GearCond.code:
BDEPTH: 645 638 Validity code:
Towing dir: 30° Wire out:1600 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 101.65 CATCH/HOUR: 203.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MELANOSTOMIATIDAE	81.20	5660	39.94	
GONOSTOMATIDAE	43.62	2182	21.46	
Nematocarcinus africanus	25.62	4228	12.60	
MYCTOPHIDAE	14.42	2920	7.09	
Sepia sp.	9.32	154	4.58	
Talismania sp.	7.36	378	3.62	
Hoplostethus cadenati	5.04	154	2.48	
REGALECIDAE	3.44	14	1.69	
Aristeus varidens, female	3.08	164	1.52	1433
Coelorinchus coelorhincus	1.62	36	0.80	
CONGRIDAE	1.48	22	0.73	
Merluccius polli	1.44	2	0.71	
Aristeus varidens, male	1.40	178	0.69	1434
Trichiurus lepturus	1.20	28	0.59	
Lamprogrammus exutus	0.78	22	0.38	
Halosaurus ovenii	0.70	8	0.34	
Etmopterus spinax	0.50	8	0.25	
POLYCHAELIDAE	0.36	22	0.18	
Squalus sp.	0.28	8	0.14	
OPLOPHORIDAE	0.22	14	0.11	
Glyphus marsupialis	0.22	14	0.11	
Total	203.30		100.01	

PROJECT STATION: 592

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1150
start stop duration Long E 1331
TIME :05:48:00 06:18:00 30 (min) Purpose code: 3
LOG : 835.00 836.50 1.50 Area code : 2
FDEPTH: 167 175 GearCond.code:
BDEPTH: 167 175 Validity code:
Towing dir: 160° Wire out: 480 m Speed: 30 kn*10

Sorted: 88 Kg Total catch: 715.39 CATCH/HOUR: 1430.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	635.20	4482	44.40	1436
Trachurus trecae	464.80	3074	32.49	1435
Synagrops microlepis	132.00	5752	9.23	
Pterothrissus belloci	106.40	684	7.44	
Trichiurus lepturus	24.48	48	1.71	
Todaropsis eblanae	21.28	432	1.49	
Squatina oculata	15.10	4	1.06	
Bembrops heterurus	8.48	96	0.59	
Dentex angolensis	7.52	32	0.53	
Merluccius polli	4.48	32	0.31	
Scorpaena stephanica	4.16	32	0.29	
Parapenaeus longirostris	1.76	416	0.12	
Trigla lyra	1.76	16	0.12	
Chlorophthalmus atlanticus	1.44	64	0.10	
Citharus linguatula	1.44	32	0.10	
Sepia elegans	0.48	48	0.03	
Total	1430.78		100.01	

PROJECT STATION: 593

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1150
start stop duration Long E 1330
TIME :07:25:00 07:55:00 30 (min) Purpose code: 3
LOG : 840.90 842.30 1.40 Area code : 1
FDEPTH: 167 170 GearCond.code:
BDEPTH: 167 170 Validity code:
Towing dir: 160° Wire out: 480 m Speed: 28 kn*10

Sorted: 87 Kg Total catch: 861.00 CATCH/HOUR: 1722.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	875.00	5895	50.81	1438
Dentex macrophthalmus	565.00	4600	32.81	1437
Synagrops microlepis	71.40	2464	4.15	
Pterothrissus belloci	56.80	340	3.30	
Trichiurus lepturus	45.80	80	2.66	
Brotula barbata	43.80	40	2.54	
Raja clavata	33.80	20	1.96	
Scorpaena stephanica	12.20	40	0.71	
Todaropsis eblanae	12.20	200	0.71	
Dentex angolensis	3.20	40	0.19	
Citharus linguatula	2.20	100	0.13	
Peristedion cataphractum	0.60	20	0.03	
Total	1722.00		100.00	

PROJECT STATION: 594

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1150
start stop duration Long E 1328
TIME :08:49:00 09:19:00 30 (min) Purpose code: 3
LOG : 847.40 849.00 1.60 Area code : 2
FDEPTH: 245 246 GearCond.code:
BDEPTH: 245 246 Validity code:
Towing dir: 340° Wire out: 750 m Speed: 32 kn*10

Sorted: 91 Kg Total catch: 455.30 CATCH/HOUR: 910.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	459.00	2612	50.41	1439
Synagrops microlepis	208.50	15852	22.90	
Chlorophthalmus atlanticus	118.80	2492	13.05	
Trachurus trecae	71.40	340	7.84	1440
Brotula barbata	11.50	10	1.26	
Pterothrissus belloci	11.10	50	1.22	
Trichiurus lepturus	5.40	30	0.59	
Parapenaeus longirostris, fem.	4.70	774	0.52	1441
Zenopsis conchifer	4.60	20	0.51	
Parapenaeus longirostris, male	3.50	650	0.38	1442
Nezumia aequalis	2.90	130	0.32	
Malacocephalus laevis	2.30	70	0.25	
Bembrops heterurus	2.30	10	0.25	
Merluccius polli	2.30	10	0.25	
Todaropsis eblanae	0.90	20	0.10	
Scorpaena stephanica	0.50	10	0.05	
Laemonema laureysi	0.50	10	0.05	
Citharus linguatula	0.40	30	0.04	
Total	910.60		99.99	

PROJECT STATION: 595

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1150
start stop duration Long E 1328
TIME :10:21:00 10:51:00 30 (min) Purpose code: 3
LOG : 853.50 855.00 1.50 Area code : 1
FDEPTH: 244 245 GearCond.code:
BDEPTH: 244 245 Validity code:
Towing dir: 340° Wire out: 750 m Speed: 30 kn*10

Sorted: 83 Kg Total catch: 379.76 CATCH/HOUR: 759.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	324.40	1822	42.71	1445
Synagrops microlepis	108.80	8064	14.32	
Trichiurus lepturus	105.84	32	13.94	
Chlorophthalmus atlanticus	92.00	1800	12.11	
Trachurus trecae	67.20	312	8.85	1446
Atractoscion aequidens	15.84	8	2.09	
Pterothrissus belloci	14.08	72	1.85	
Brotula barbata	13.12	8	1.73	
Sepia sp.	4.56	80	0.60	
Parapenaeus longirostris, fem.	4.32	704	0.57	1443
Zenopsis conchifer	3.36	8	0.44	
Parapenaeus longirostris, male	3.28	616	0.43	1444
Scorpaena normani	1.36	16	0.18	
Nezumia aequalis	0.88	24	0.12	
CONGRIDAE	0.40	16	0.05	
Epigonus telescopus	0.08	8	0.01	
Total	759.52		100.00	

PROJECT STATION: 596

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1150
start stop duration Long E 1325
TIME :11:45:00 12:15:00 30 (min) Purpose code: 3
LOG : 858.40 859.80 1.40 Area code : 2
FDEPTH: 323 325 GearCond.code:
BDEPTH: 323 325 Validity code:
Towing dir: 150° Wire out: 900 m Speed: 28 kn*10

Sorted: 84 Kg Total catch: 505.70 CATCH/HOUR: 1011.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	257.40	5220	25.45	
Merluccius polli	228.00	876	22.54	1451
Trachurus trecae	156.60	564	15.48	1449
Synagrops microlepis	114.00	7102	11.27	
Dentex macrophthalmus	103.80	516	10.26	1450
Trichiurus lepturus	76.20	492	7.53	
Pterothrissus belloci	43.32	204	4.28	
MYCTOPHIDAE	12.60	5670	1.25	
Parapenaeus longirostris, fem.	5.76	816	0.57	1447
Malacocephalus occidentalis	5.16	108	0.51	
Zenopsis conchifer	3.24	12	0.32	
Epigonus telescopus	2.16	72	0.21	
Parapenaeus longirostris, male	1.44	180	0.14	1448
Illex coindetii	1.20	12	0.12	
Scorpaena stephanica	1.08	12	0.11	
Coelorinchus coelorhincus	0.84	12	0.08	
Nezumia aequalis	0.24	84	0.02	
Total	1013.04		100.14	

PROJECT STATION: 597

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1150
start stop duration Long E 1325
TIME :13:30:00 14:00:00 30 (min) Purpose code: 3
LOG : 865.60 867.00 1.40 Area code : 1
FDEPTH: 325 324 GearCond.code:
BDEPTH: 325 324 Validity code:
Towing dir: 150° Wire out: 900 m Speed: 28 kn*10

Sorted: 69 Kg Total catch: 168.49 CATCH/HOUR: 336.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	238.00	1426	70.63	
Trachurus trecae	46.50	86	13.80	1455
Chlorophthalmus atlanticus	19.40	406	5.76	
MYCTOPHIDAE	11.70	5266	3.47	
Merluccius polli	11.30	40	3.35	1452
Pterothrissus belloci	3.44	22	1.02	
Nezumia aequalis	1.90	354	0.56	
Synagrops microlepis	1.90	330	0.56	
Illex coindetii	0.56	8	0.17	
Malacocephalus occidentalis	0.50	8	0.15	
Parapenaeus longirostris, fem.	0.46	72	0.14	1453
Dentex macrophthalmus	0.44	2	0.13	
Etmopterus spinax	0.42	42	0.12	
Shrimps, small, non comm.	0.36		0.11	
Parapenaeus longirostris, male	0.10	12	0.03	1454
Total	336.98		100.00	

PROJECT STATION: 598

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1152
start stop duration Long E 1323
TIME :15:00:00 15:13:00 13 (min) Purpose code: 3
LOG : 871.40 872.00 0.60 Area code : 2
FDEPTH: 419 421 GearCond.code:
BDEPTH: 419 421 Validity code:
Towing dir: 340° Wire out:1050 m Speed: 31 kn*10

Sorted: 25 Kg Total catch: 151.68 CATCH/HOUR: 700.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	217.38	1080	31.05	1458
Etmopterus spinax	75.05	1994	10.72	
Coelorinchus coelorhincus	65.08	2963	9.30	
Malacocephalus occidentalis	58.15	1080	8.31	
Nezumia aequalis	47.91	5635	6.84	
Nematocarcinus africanus	47.91	12323	6.84	
Plesionika martia	41.26	13265	5.89	
CONGRIDAE	37.11	692	5.30	
Geryon sp.	30.46	111	4.35	
Lophius sp.	25.75	166	3.68	
Squalus megalops	23.54	60	3.36	
Aristeus varidens, female	14.26	1454	2.04	1456
Todaropsis eblanae	3.88	55	0.55	
Aristeus varidens, male	3.74	523	0.53	1457
SOLEIDAE	3.05	166	0.44	
Dibranchus atlanticus	2.77	166	0.40	
Halosaurus ovenii	2.77	194	0.40	
Total	700.07		100.00	

PROJECT STATION: 599

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1152
start stop duration Long E 1323
TIME :16:13:00 16:26:00 13 (min) Purpose code: 3
LOG : 876.50 877.10 0.60 Area code : 1
FDEPTH: 421 427 GearCond.code:
BDEPTH: 421 427 Validity code:
Towing dir: 340° Wire out:1050 m Speed: 31 kn*10

Sorted: 13 Kg Total catch: 70.31 CATCH/HOUR: 324.51

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	145.62	798	44.87	1459
Deepwater fish mixture	90.00		27.73	
Aristeus varidens, female	34.89	4338	10.75	1460
Laemonema laureysi	29.22	609	9.00	
Aristeus varidens, male	17.72	2963	5.46	1461
Malacocephalus occidentalis	3.60	28	1.11	
Hoplostethus cadenati	3.46	83	1.07	
Total	324.51		99.99	

PROJECT STATION: 600

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1152
start stop duration Long E 1321
TIME :18:25:00 18:55:00 30 (min) Purpose code: 3
LOG : 885.40 886.90 1.50 Area code : 2
FDEPTH: 571 570 GearCond.code:
BDEPTH: 571 570 Validity code:
Towing dir: 350° Wire out:1400 m Speed: 30 kn*10

Sorted: 50 Kg Total catch: 101.04 CATCH/HOUR: 202.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	65.40		32.36	
Hoplostethus cadenati	59.60	1764	29.49	
Lamprogrammus exutus	35.80	146	17.72	
Nematocarcinus africanus	14.52	5234	7.19	
Aristeus varidens, female	11.56	688	5.72	1462
Laemonema laureysi	7.68	80	3.80	
Aristeus varidens, male	5.28	638	2.61	1463
Merluccius polli	2.24	4	1.11	
Total	202.08		100.00	

PROJECT STATION: 601

DATE: 4/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1151
start stop duration Long E 1320
TIME :20:00:00 20:30:00 30 (min) Purpose code: 3
LOG : 892.30 893.90 1.60 Area code : 1
FDEPTH: 572 569 GearCond.code:
BDEPTH: 572 569 Validity code:
Towing dir: 350° Wire out:1400 m Speed: 32 kn*10

Sorted: 25 Kg Total catch: 86.04 CATCH/HOUR: 172.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	87.00	2758	50.56	
Deepwater fish mixture	39.90		23.19	
Nematocarcinus africanus	18.30	7638	10.63	
Lamprogrammus exutus	13.02	126	7.57	
Aristeus varidens, female	7.08	408	4.11	1464
Aristeus varidens, male	4.32	600	2.51	1465
Laemonema laureysi	2.46	24	1.43	
Total	172.08		100.00	

PROJECT STATION: 602

DATE: 5/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1214
start stop duration Long E 1321
TIME :02:05:00 02:35:00 30 (min) Purpose code: 3
LOG : 937.50 939.00 1.50 Area code : 2
FDEPTH: 707 702 GearCond.code:
BDEPTH: 707 702 Validity code:
Towing dir: 20° Wire out:1700 m Speed: 30 kn*10

Sorted: 26 Kg Total catch: 194.58 CATCH/HOUR: 389.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	239.26	9570	61.48	
GONOSTOMATIDAE	53.40	5064	13.72	
Aristeus varidens, female	16.20	916	4.16	1466
Nematocarcinus africanus	15.00	2500	3.85	
MELANOSTOMIATIDAE	13.66	240	3.51	
Etmopterus spinax	12.46	120	3.20	
Lamprogrammus exutus	9.60	76	2.47	
CONGRIDAE	6.16	226	1.58	
Aristeus varidens, male	6.00	616	1.54	1467
Talismania sp.	4.50	196	1.16	
Coelorinchus coelorhincus	4.20	106	1.08	
MYCTOPHIDAE	3.00	1306	0.77	
Trichiurus lepturus	2.70	16	0.69	
Glyphus marsupialis	1.66	46	0.43	
Halosaurus ovenii	0.60	16	0.15	
Phrynichthys wedli	0.46	16	0.12	
POLYCHAELIDAE	0.30	16	0.08	
Total	389.16		99.99	

PROJECT STATION: 603

DATE: 5/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1214
start stop duration Long E 1321
TIME :03:50:00 04:20:00 30 (min) Purpose code: 3
LOG : 945.00 946.70 1.70 Area code : 1
FDEPTH: 709 656 GearCond.code:
BDEPTH: 709 656 Validity code:
Towing dir: 20° Wire out:1700 m Speed: 33 kn*10

Sorted: 28 Kg Total catch: 85.35 CATCH/HOUR: 170.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	91.50		53.60	
Hoplostethus cadenati	44.10	1614	25.83	
Aristeus varidens, female	12.12	700	7.10	1468
MELANOSTOMIATIDAE	6.96	126	4.08	
Etmopterus spinax	6.30	54	3.69	
Lamprogrammus exutus	3.78	30	2.21	
Aristeus varidens, male	3.24	444	1.90	1469
Nematocarcinus africanus	2.70	964	1.58	
Total	170.70		99.99	

PROJECT STATION: 604

DATE: 5/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1215

	start	stop	duration			Long E 1323
TIME	:05:32:00	06:02:00	30 (min)	Purpose code:	3	
LOG	: 949.70	951.20	1.50	Area code :	2	
FDEPTH:	396	370		GearCond.code:		
BDEPTH:	396	370		Validity code:		

Towing dir: 200° Wire out:1000 m Speed: 30 kn*10

Sorted: 85 Kg Total catch: 149.45 CATCH/HOUR: 298.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	65.98	224	22.07	1470
Deepwater fish mixture	55.60		18.60	
Parapenaeus longirostris, fem.	42.84	4410	14.33	1471
Squalus megalops	39.80	24	13.32	
Pterothrissus belloci	35.76	202	11.96	
Neoharriotta pinnata	16.20	6	5.42	
Glyphus marsupialis	15.74	10428	5.27	
Aristeus varidens, female	12.94	1125	4.33	1473
Aristeus varidens, male	9.88	1552	3.31	1474
Parapenaeus longirostris, male	4.36	555	1.46	1472
Total	299.10		100.07	

PROJECT STATION: 605

DATE: 5/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1215

	start	stop	duration			Long E 1323
TIME	:07:00:00	07:25:00	25 (min)	Purpose code:	3	
LOG	: 956.00	957.20	1.20	Area code :	1	
FDEPTH:	393	370		GearCond.code:		
BDEPTH:	393	370		Validity code:		

Towing dir: 20° Wire out:1000 m Speed: 30 kn*10

Sorted: 136 Kg Total catch: 355.40 CATCH/HOUR: 852.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	316.20	1049	37.07	1479
Deepwater fish mixture	221.40		25.96	
Sphyrna lewini	192.00	2	22.51	
Parapenaeus longirostris, fem.	59.04	5866	6.92	1477
Plesionika martia	37.20	20460	4.36	
Aristeus varidens, female	13.44	1044	1.58	1475
Parapenaeus longirostris, male	6.84	792	0.80	1478
Aristeus varidens, male	6.84	1476	0.80	1476
Total	852.96		100.00	

PROJECT STATION: 606

DATE: 5/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1218

	start	stop	duration			Long E 1323
TIME	:08:15:00	08:45:00	30 (min)	Purpose code:	3	
LOG	: 960.30	961.80	1.50	Area code :	2	
FDEPTH:	284	287		GearCond.code:		
BDEPTH:	284	287		Validity code:		

Towing dir: 200° Wire out: 800 m Speed: 30 kn*10

Sorted: 46 Kg Total catch: 242.93 CATCH/HOUR: 485.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	292.00		60.10	
Merluccius polli	57.28	304	11.79	
Parapenaeus longirostris, fem.	36.96	4004	7.61	1480
Dentex macrophthalmus	35.04	126	7.21	
Parapenaeus longirostris, male	29.28	4004	6.03	1481
Zenopsis conchifer	22.80	18	4.69	
Hoplostethus atlanticus	8.10	6	1.67	
Hyperoglyphe moselii	4.40	2	0.91	
Total	485.86		100.01	

PROJECT STATION: 607

DATE: 5/ 8/95 GEAR TYPE: BT No:8 POSITION:Lat S 1218

	start	stop	duration			Long E 1323
TIME	:09:52:00	10:22:00	30 (min)	Purpose code:	3	
LOG	: 966.60	968.00	1.40	Area code :	1	
FDEPTH:	296	280		GearCond.code:		
BDEPTH:	296	280		Validity code:		

Towing dir: 195° Wire out: 800 m Speed: 28 kn*10

Sorted: 27 Kg Total catch: 282.49 CATCH/HOUR: 564.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	159.60	840	28.25	1484
Chlorophthalmus atlanticus	132.30	3616	23.42	
Pterothrissus belloci	101.22	504	17.92	
Dentex macrophthalmus	47.26	148	8.36	
Parapenaeus longirostris, fem.	29.20	3172	5.17	1482
Parapenaeus longirostris, male	20.16	2688	3.57	1483
Trichiurus lepturus	16.80	126	2.97	
Hoplostethus atlanticus	11.56	22	2.05	
Malacocephalus occidentalis	11.56	442	2.05	
MYCTOPHIDAE	10.72	4860	1.90	
Nezumia sp.	8.20	106	1.45	
Zenopsis conchifer	7.56	22	1.34	
Epigonus telescopus	4.84	64	0.86	
Coelorinchus coelorhincus	2.10	84	0.37	
Synagrops microlepis	1.90	252	0.34	
Total	564.98		100.02	

PROJECT STATION: 608

DATE: 6/ 8/95 GEAR TYPE: PT No:5 POSITION:Lat S 1207

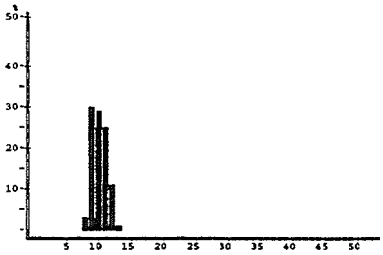
	start	stop	duration			Long E 1311
TIME	:18:32:00	19:02:00	30 (min)	Purpose code:	1	
LOG	:1029.90	1031.50	1.60	Area code :		
FDEPTH:	40	40		GearCond.code:		
BDEPTH:	1000	1000		Validity code:		

Towing dir: 295° Wire out: 100 m Speed: 32 kn*10

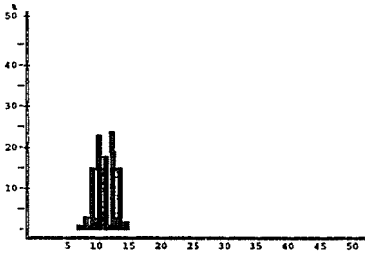
Sorted: 75 Kg Total catch: 75.00 CATCH/HOUR: 150.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	150.00		100.00	
Total	150.00		100.00	

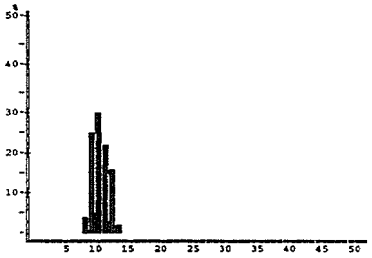
Annex II. Length distributions of main species



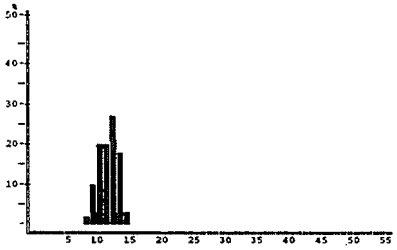
Parapenaeus longirostris, male
Luanda-Benguela, tickler chain
MEAN LENGTH = 10.62cm N= 929
NUMBER OF SUBSAMPLES : 16



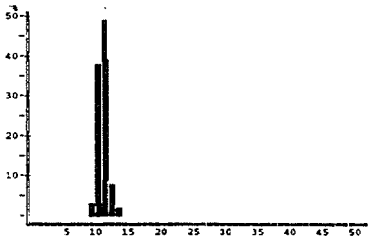
Parapenaeus longirostris, fem.
Luanda-Benguela, tickler chain
MEAN LENGTH = 11.47cm N= 1320
NUMBER OF SUBSAMPLES : 16



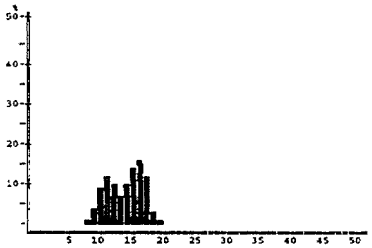
Parapenaeus longirostris, male
Luanda-Benguela, no t. chain
MEAN LENGTH = 10.78cm N= 1228
NUMBER OF SUBSAMPLES : 15



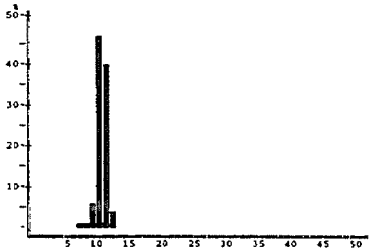
Parapenaeus longirostris, fem.
Luanda-Benguela, no t. chain
MEAN LENGTH = 11.73cm N= 1495
NUMBER OF SUBSAMPLES : 15



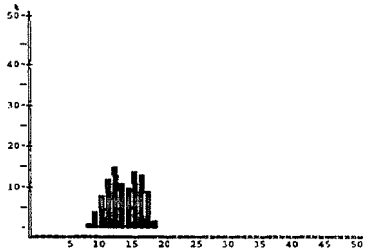
Aristeus varidens, male
Luanda-Benguela, tickler chain
MEAN LENGTH = 11.19cm N= 1113
NUMBER OF SUBSAMPLES : 18



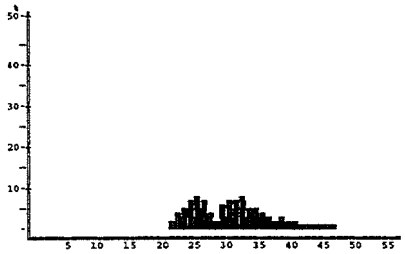
Aristeus varidens, female
Luanda-Benguela, tickler chain
MEAN LENGTH = 14.28cm N= 1404
NUMBER OF SUBSAMPLES : 19



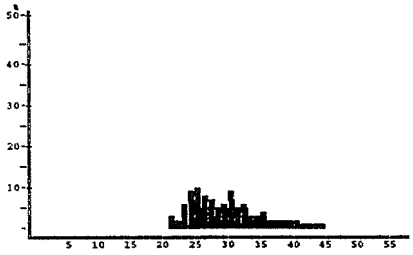
Aristeus varidens, male
Luanda-Benguela, no t. chain
MEAN LENGTH = 10.88cm N= 1077
NUMBER OF SUBSAMPLES : 20



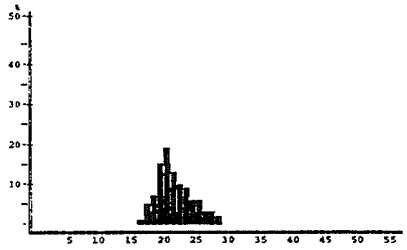
Aristeus varidens, female
Luanda-Benguela, no t. chain
MEAN LENGTH = 13.90cm N= 1285
NUMBER OF SUBSAMPLES : 20



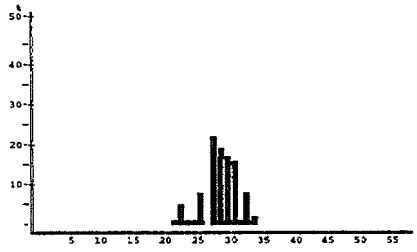
Merluccius polli
Luanda-Benguela, tickler chain
MEAN LENGTH = 30.90cm N= 818
NUMBER OF SUBSAMPLES : 24



Merluccius polli
Luanda-Benguela, no t. chain
MEAN LENGTH = 29.68cm N= 1019
NUMBER OF SUBSAMPLES : 25



Dentex macrophthalmus
Luanda-Benguela
MEAN LENGTH = 21.75cm N= 646
NUMBER OF SUBSAMPLES : 9



Dentex angolensis
Luanda-Benguela
MEAN LENGTH = 28.52cm N= 57
NUMBER OF SUBSAMPLES : 4

Annex III Swept-area estimates

SWEPT AREA ANALYSIS FROM STATION 513 TO STATION 607

A. TICKLER CHAIN. Demersal species slope Luanda-Benguela.

ONLY STATIONS IN SECTOR 2 ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm						% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm²			
	>0	10	30	100	300	1000			100-200m	200-300m	300-400m	400-400m
Chlorophthalmus atlanticus	6	3	5	1	3		71	8.44	0.03	17.13	2.00	
Synagrops microlepis	4	3	8	1	1		71	4.15	7.73	4.42	0.65	
Merluccius polli	5	9	4	3			88	3.08	1.26	1.62	6.95	
Dentex macrophthalmus	5	5	5	2			71	3.00	6.45	2.64	0.61	
Pterothrissus belloci	11	5	1	1			75	1.32	3.72	0.39	0.73	
Nematocarcinus africanus	1	1	3				21	0.69			2.37	
Erythrocles monodi				1			4	0.54	2.17			
Deepwater fish mixture	1	1	1				13	0.52		0.89	0.40	
Epigonus telescopus	4	1	1				25	0.45		0.95	0.03	
Zenopsis conchifer	6	3					38	0.44	1.17	0.30	0.02	
Dentex angolensis	3	4					29	0.36	0.96	0.26		
Nezumia aequalis	12	3					63	0.36	0.22	0.21	0.72	
Malacocephalus occidentalis	7	4					46	0.35	0.06	0.23	0.79	
Parapenaeus longirostris, fem.	15	3					75	0.33	0.11	0.40	0.39	
Squalus megalops	3	3					25	0.25	0.13		0.74	
Bembrops heterurus	8	2					42	0.20	0.68	0.07		
Hoplostethus atlanticus	3	2					21	0.17		0.34	0.04	
Parapenaeus longirostris, male	16						67	0.17	0.07	0.30	0.06	
Malacocephalus laevis	2		1				13	0.17		0.01	0.56	
Brotula barbata	4	1					17	0.16	0.12	0.28		
Uranoscopus cadenati	4	1					21	0.13	0.50	0.01		
Epinephelus guaza ?		1						0.12	0.48			
Laemonema laureysi	2	2					17	0.12			0.42	
Hymenocephalus italicus	1	1					8	0.11			0.37	
Scorpaena stephanica	11						46	0.09	0.28	0.05	0.01	
Spicara alta	2	1					13	0.09	0.38			
Hyperoglyphe moselii	1	1					8	0.09	0.34	0.01		
Squalus blainvillei		1					4	0.08			0.27	
Sepia sp.	3	1					17	0.07	0.23		0.02	
Todarodes sagittatus	1	1					8	0.07	0.28			
Aristeus varidens, female	4						17	0.07			0.24	
Echinorhinus brucus		1					4	0.07			0.22	
Coelorinchus coelorhincus	9						38	0.07		0.09	0.09	
Illex coindetii	8						33	0.06	0.12	0.01	0.08	
Solenocera africana	7						29	0.06	0.01		0.20	
Raja miraletus	1	1					4	0.06	0.22			
Peristedion cataphractum	7						29	0.06	0.21	0.01		
Todaropsis eblanae	8						33	0.05	0.13	0.04	0.01	
Plesionika martia	1	1					8	0.05			0.18	
LOPHIIDAE	3						13	0.05			0.17	
Citharus linguatula	8						33	0.05	0.20			
Aristeus varidens, male	4						17	0.04			0.15	
Glyphus marsupialis	1						4	0.02			0.08	
Parapenaeus longirostris	1						4		0.01			
Other fish								0.40	0.45	0.20	0.77	
Sum all species								27.23	28.72	30.86	20.34	
Sum Snappers								0.02	0.06			
Sum Groupers								0.12	0.48			
Sum Grunts												
Sum Croakers								0.03	0.11			
Sum Seabreams								3.36	7.41	2.90	0.61	
Sum Sharks								0.46	0.21		1.39	
Sum Rays								0.07	0.24		0.01	
Sum Squids								0.26	0.77	0.07	0.11	
Sum commercial shrimps								1.43	0.20	0.70	3.67	
Number of stations included in analysis, total and by depth strata								24	6	11	7	

SWEPT AREA ANALYSIS FROM STATION 513 TO STATION 607

A. TICKLER CHAIN. Demersal species slope cont.

ONLY STATIONS IN SECTOR 2 ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm >0	10	30	100	300	1000	% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm² 400-500m	500-600m	600-800m	800-800m
Nematocarcinus africanus	4	6	6				76	2.06	2.71	2.38	0.45	
Merluccius polli	7	3	3	1			67	1.89	4.17	0.27	0.04	
Deepwater fish mixture	1	3	3	1			38	1.68	2.59	1.28	0.58	
Hoplostethus cadenati	11	5	2				86	1.15	0.47	1.39	2.06	
GONOSTOMATIDAE	4	6					48	0.59	0.48	0.64	0.70	
Lamprogrammus exutus	7	1	1				43	0.42	0.15	0.93	0.20	
Etmopterus spinax	11	3					67	0.40	0.68	0.23	0.14	
Coelorinchus coelorhincus	7	3					48	0.37	0.67	0.20	0.07	
Nezumia aequalis	8	2					48	0.36	0.48	0.44	0.05	
Nezumia sp.	2		1				14	0.32	0.72		0.07	
Aristeus varidens, female	17	1					86	0.30	0.55	0.07	0.16	
MACROURIDAE	7	2					38	0.25	0.39	0.17	0.10	
Geryon sp.	10	1					52	0.20	0.32	0.16	0.03	
CONGRIDAE	10	1					52	0.20	0.18	0.27	0.16	
Laemonema laureysi	7	1					38	0.18	0.31	0.13	0.01	
Malacocephalus occidentalis	7	1					38	0.18	0.40	0.01	0.02	
Plesionika martia	3	1					14	0.13	0.29			
Aristeus varidens, male	16						76	0.11	0.20	0.03	0.06	
Squalus megalops	5						24	0.09	0.12	0.10		
Solenocera africana	2						10	0.07		0.09	0.19	
Mola mola		1					5	0.07	0.17			
MELANOSTOMIATIDAE	6						29	0.07	0.02	0.05	0.17	
Talismania sp.	9						43	0.07	0.02	0.03	0.22	
LOPHIIDAE	7						33	0.06	0.12	0.03		
Chlorophthalmus atlanticus	4						19	0.06	0.09	0.06		
Sepia sp.	2						10	0.05	0.07		0.08	
POLYCHAELIDAE	9						43	0.05	0.01	0.08	0.07	
Plesiopenaeus edwardsianus	7						33	0.02	0.02	0.05		
Glyphus marsupialis	5						24	0.01			0.02	
Aristeus varidens	3						14	0.01		0.03		
Parapenaeus longirostris	1						5					
Other fish								0.35	0.44	0.38	0.17	
Sum all species								11.77	16.84	9.50	5.82	
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers												
Sum Seabreams												
Sum Sharks								0.54	0.86	0.37	0.19	
Sum Rays								0.01		0.03		
Sum Squids								0.08	0.11	0.01	0.13	
Sum												
Sum commercial shrimps								2.71	3.77	2.65	0.88	
Number of stations included in analysis, total and by depth strata								21	9	7	5	

SWEPT AREA ANALYSIS FROM STATION 513 TO STATION 607

B. NO CHAIN. Demersal species slope Luanda-Benguela.

ONLY STATIONS IN SECTOR 1 ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm >0	10	30	100	300	1000	% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm² 100-200m	200-300m	300-400m	400-400m
Chlorophthalmus atlanticus	6	1	6	2	2		74	7.36		16.50	0.62	
Synagrops microlepis	7	3	6	2			78	3.54	4.17	5.60	0.05	
Merluccius polli	6	5	7	1			83	2.95	1.65	2.04	5.35	
Dentex macrophthalmus	6	3	3	2			61	2.72	5.89	2.71		
Pterothrissus belloci	15	2	2				83	0.81	1.50	0.67	0.42	
Nematocarcinus africanus		2	2				17	0.72			2.38	
Zenopsis conchifer	7	3	2				52	0.68	1.69	0.53	0.03	
Parapenaeus longirostris, fem.	15	3					78	0.34	0.05	0.41	0.47	
Deepwater fish mixture			1				4	0.33			1.10	
Spicara alta			1				4	0.30	1.16			
Sphyrna lewini			1				4	0.29			0.95	
Nezumia aequalis	10	2					52	0.29	0.17	0.15	0.60	
Dentex angolensis	7	3					43	0.27	0.69	0.20	0.01	
Malacocephalus occidentalis	11	1					52	0.27		0.21	0.59	
Parapenaeus longirostris, male	18						78	0.20	0.04	0.33	0.14	
Scorpaena stephanica	9	2					48	0.19	0.45	0.17	0.02	
Brotula barbata	6	1					30	0.14	0.38	0.10		
Hoplostethus atlanticus	2	1					13	0.13	0.40	0.04	0.03	
Plesionika martia	1	2					13	0.11			0.36	
Bembrops heterurus	9						39	0.11	0.21	0.12		
Coelorinchus coelorhincus	8						35	0.08		0.10	0.12	
Illex coindetii	11						48	0.07	0.04	0.08	0.08	
Etmopterus spinax	5	1					26	0.07			0.23	
Uranoscopus cadenati	6						26	0.06	0.22	0.01		
Todaropsis eblanae	4						17	0.06	0.22			
Squalus megalops		1					4	0.06			0.18	
Scorpaena normani	4						17	0.06		0.13		
Nezumia sp.	2						9	0.06		0.13		
Plesiopenaeus edwardsianus		1					4	0.05			0.18	
Umbrina canariensis		1					4	0.05	0.18			
Raja clavata		1					4	0.05	0.20			
Raja sp.	3						13	0.05	0.14	0.01	0.02	
Aristeus varidens, female	3						13	0.04			0.13	
Solenocera africana	6						26	0.03			0.09	
Aristeus varidens, male	3						9	0.02			0.06	
Shrimps, small, non comm.	1						4					
Other fish								0.34	0.60	0.16	0.42	
Sum all species								22.90	20.05	30.40	14.63	
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers								0.08	0.22	0.05		
Sum Seabreams								2.99	6.58	2.91	0.01	
Sum Sharks								0.44	0.09		1.36	
Sum Rays								0.11	0.37	0.01	0.02	
Sum Squids								0.18	0.38	0.10	0.14	
Sum commercial shrimps								1.51	0.09	0.74	3.81	
Number of stations included in analysis, total and by depth strata								23	6	10	7	

SWEPT AREA ANALYSIS FROM STATION 513 TO STATION 607

B. NO CHAIN, cont.

ONLY STATIONS IN SECTOR 1 ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm >0	10	30	100	300	1000	% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm² 400-500m	500-600m	600-800m	800-800m
Merluccius polli	9	4	2			1	76	2.29	5.18	0.13	0.12	
Nematocarcinus africanus	4	4	6				67	1.81	2.17	2.37	0.39	
Hoplostethus cadenati	11	6	2				90	1.06	0.40	1.61	1.47	
Deepwater fish mixture	2	5	1				38	0.73	0.88	0.67	0.54	
GONOSTOMATIDAE	5	5					48	0.49	0.16	0.53	1.01	
Aristeus varidens, female	15	2					81	0.26	0.50	0.05	0.14	
MACROURIDAE	3	2					24	0.23	0.27	0.26	0.14	
Laemonema laureysi	8	2					48	0.22	0.44	0.09		
MELANOSTOMIATIDAE	7	1					38	0.21	0.07	0.05	0.67	
Etmopterus spinax	13	1					67	0.17	0.21	0.17	0.11	
Lamprogrammus exutus	10						48	0.16	0.13	0.25	0.07	
Nezumia aequalis	6	2					38	0.12	0.27	0.02		
CONGRIDAE	12						57	0.12	0.05	0.19	0.16	
Aristeus varidens, male	17						81	0.10	0.20	0.03	0.04	
Coelorinchus coelorhincus	7						33	0.08	0.12	0.04	0.08	
Talismania sp.	10						48	0.08		0.03	0.28	
Malacocephalus occidentalis	8						38	0.07	0.14	0.02	0.03	
Hymenocephalus italicus	1	1					10	0.07	0.17			
Gonostoma sp.	3						14	0.06	0.11	0.03		
Plesiopenaeus edwardsianus	8						38	0.03	0.02	0.06	0.01	
Solenocera africana	2						10	0.02		0.01	0.08	
Aristeus varidens	4						19	0.01	0.01	0.02		
Glyphus marsupialis	1						5					
Plesionika martia	1						5			0.01		
OPLOPHORIDAE	1						5					
Other fish								0.44	0.48	0.41	0.33	
Sum all species								8.83	11.98	7.05	5.67	
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers												
Sum Seabreams												
Sum Sharks								0.27	0.36	0.25	0.11	
Sum Rays								0.02	0.02		0.02	
Sum Squids								0.05	0.01	0.06	0.10	
Sum commercial shrimps								2.23	2.90	2.55	0.66	
Number of stations included in analysis, total and by depth strata								21	9	7	5	

Annex IV Instruments and fishing gear used

The Simrad EK-500/38kHz scientific sounder was used during the survey for fish abundance estimation. The Bergen Echo Integrator system (BEI) was used to scrutinize the acoustic records from the 38kHz echo sounder, and to allocate integrator values to fish species.

The details of the settings of the 38kHz echo sounder where as follows:

Tranceiver-1 menu (38 kHz lowering keel)

Transducer depth	0.00 m
Absorbtion coeff.	10 dB/km
Pulse length	medium (1ms)
Bandwidth	wide
Max power	2000 Watt
2-way beam angle	-21.0 dB
SV transducer gain	28.1 dB
TS transducer gain	28.0 dB
Angle sensitivity	21.9
3 dB beamwidth	6.8 dg
Alongship offset	0.00 "
Athwardship offset	0.04 "

Display menu

Echogram	1 (38 kHz)
Bottom range	15 m
Bottom range start	10 m
Sv colour min	-67 dB

Printer- menu

Echogram	1 (38 kHz)
Range	100, 250 and 500 m
Range start	0
Bottom range	12 m
Bottom range start	10 m
Sv colour min	-72 dB
TVG	20 log R

Bottom detection menu Minimum level -50 dB

Fishing gear

The vessel has two different sized "Åkrahamn" pelagic trawls and one "Gisund super bottom trawl". Except for one pelagic haul, only the bottom trawl was used during the survey.

The bottom trawl has a headline of 31 m, footrope 47 m and 20 mm meshsize in the codend with an innernett of 10 mm meshsize. The estimated opening is 6 m (observed 5.7) and distance between wings during towing about 18 m. The sweeps are 40 m long. The trawl is equiped with a 12" rubber bobbins gear. The doors are of 'Thyborøn' combi type, 7.81 m^2, 1670 kg, their distance while trawling about 46 m in average. This distance is kept constant at all depths by the use of a 9.5 m strap between the wires at 130 m distance from the doors (applied at depths greater than 60 m). A tickler chain (44 m in total) was attached at the footrope at every second haul.

The SCANMAR system was used on all trawl hauls. This equipment consists of sensors, a hydrophone, a receiver, a display unit and a battery charger. Communication between sensors and ship is based on acoustic transmission.The doors are fitted with sensors to provide information on their distance and a height sensor is fitted to the bottom trawl to measure the trawl opening and provide information on clearance and bottom contact..

CRUISE REPORTS 'DR. FRIDTJOF NANSEN'

SURVEYS OF THE FISH RESOURCES OF ANGOLA

Cruise Report No 2/95

PART II

Survey of the pelagic resources

22 August to 22 September 1995

by

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Institute of Marine Research
Bergen, 1995

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CHAPTER 1 INTRODUCTION

1.1 Objectives

The objectives of the survey had been previously agreed upon with the Director of the Instituto de Investigação Pesqueira (IIP). These can be summarized as follows:

- To map the distribution and estimate the abundance of the commercially important pelagic and semi-pelagic fish species in Angolan waters, including the two sardinella species *Sardinella aurita* and *S. maderensis*, the Cunene horse mackerel *Trachurus trecae*, the Cape horse mackerel *Trachurus capensis*, the pilchard *Sardinops ocellatus* and other pelagic species, mainly carangids.

- To estimate the biological condition of sardinella and Cunene horse mackerel, length weight- relationships and reproductive stages.

- Collect tissue, liver and blood samples of horse mackerel for electrophoretic analysis, (this study will be carried out by an Angolan student now participating in a M. Phil. course at the University of Bergen).

- Map the general hydrographic regime by using a CTD-sonde all over the survey area and monitor the temperature, salt and oxygen on IIP standard profiles for hydrographical studies.

- Conduct current measurements with ADCP system.

- Carry out on-the-job training for the Angolan participants on the main survey routines would be imparted, including collection and processing of raw data, species identification, utilization of the programme package NAN-SIS and general methodology in acoustic abundance estimation.

1.2 Participation

The scientific staff consisted of:

From IIP, Angola:

Pedro Domingos, Agostinho Duarte (from 14 September), Fernando Gombo, Filomena Vas Valho (to 14 September), Maria Lourdes Sardinha, N'Kosi Luyeye (to 14 September) and David Quissungo (from 14 September).

From IMR, Bergen:

Valentine Anthonypillai, Martin Dahl, Tore Mørk and Reidar Toresen.

1.3 Narrative

The survey started at Point Noire in the afternoon 25 August 1995. The area off Cabinda was not covered because of restrictions due to oil drilling activities. From the Congo river and southward, the entire shelf was covered from close to shore (20 m depth) to beyond the 200 m isobath or to where no pelagic fish were recorded. Also, the region between Benguela and Tombua was covered. The course track consisted of systematic triangular transects, their endpoints about 10 nautical miles apart. This distance was however smaller (to about 5 nautical miles) in correspondence with narrower parts of the shelf. In areas where significant concentrations of pelagic fish were detected, surveying was conducted both during daytime and nighttime. CTD (Conductivity-Temperature-Depth) and ADCP (Acoustic Doppler Current Profiler) measurements were taken regularly and on standard hydrographical sections. A call was made in Lobito on the 14 September to let two Angolan scientists disembark and two others embark. The survey was resumed immediately and ended on 22 September with the arrival in Walvis Bay.

1.4 Survey effort

Figures 1a-c show the cruise tracks with fishing stations and the hydrographic profiles and Table 1 the number of hydrographic, pelagic and bottom trawl stations and distance surveyed in the three regions.

Table 1 Number of bottom (BT) and pelagic (PT) trawl stations, hydrographic stations and distance surveyed (nm) by area.

Area	BT	PT	CTD	Distance surveyed
Cabinda-Luanda	1	64	67	1 610
Luanda-Benguela	3	82	44	2 061
Benguela-Cunene	5	26	27	1 010
Total	9	172	138	4 681

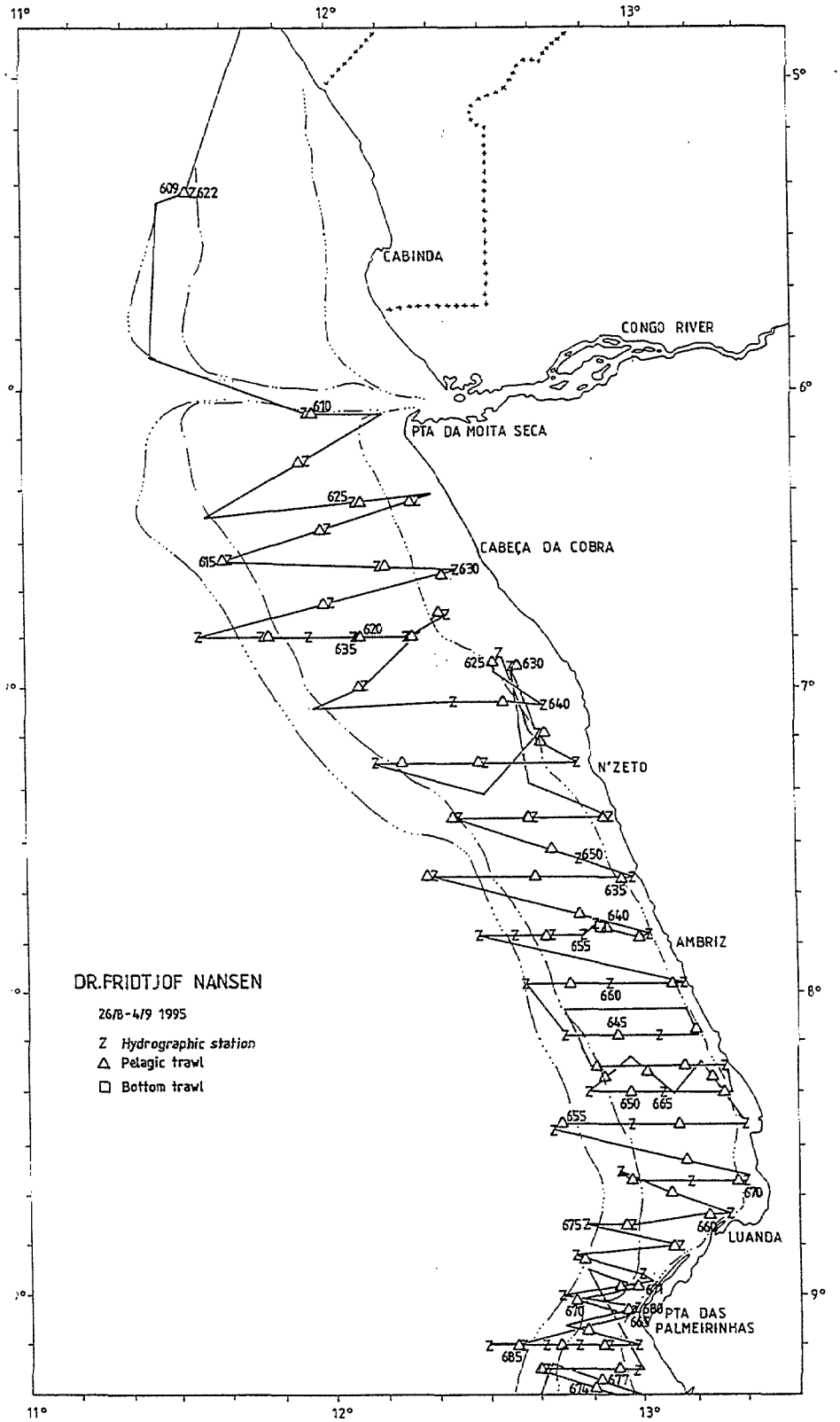


Figure 1a Course track with fishing and hydrographic stations, Cabinda-Luanda.

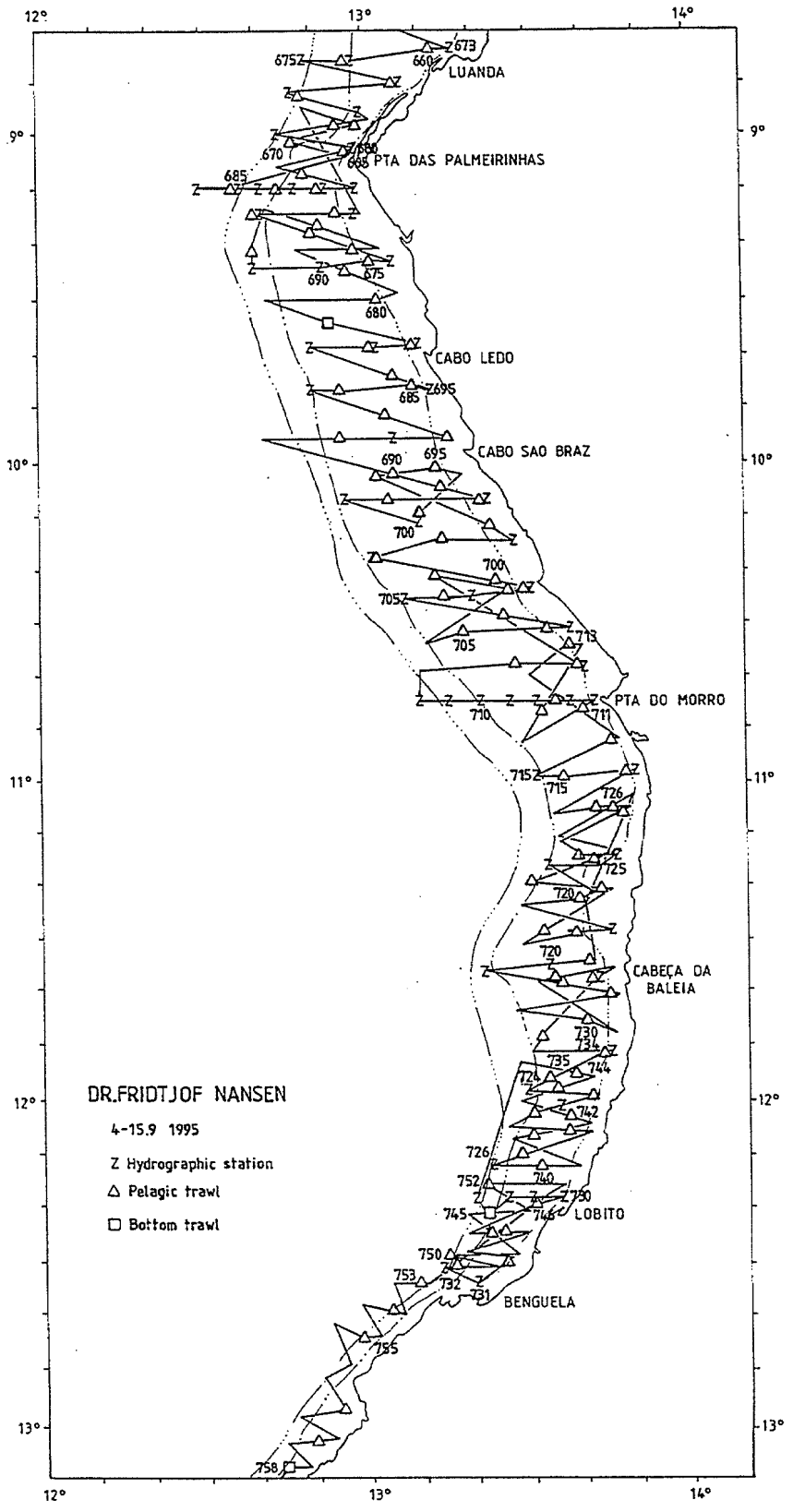


Figure 1b Course track with fishing and hydrographic stations, Luanda-Benguela.

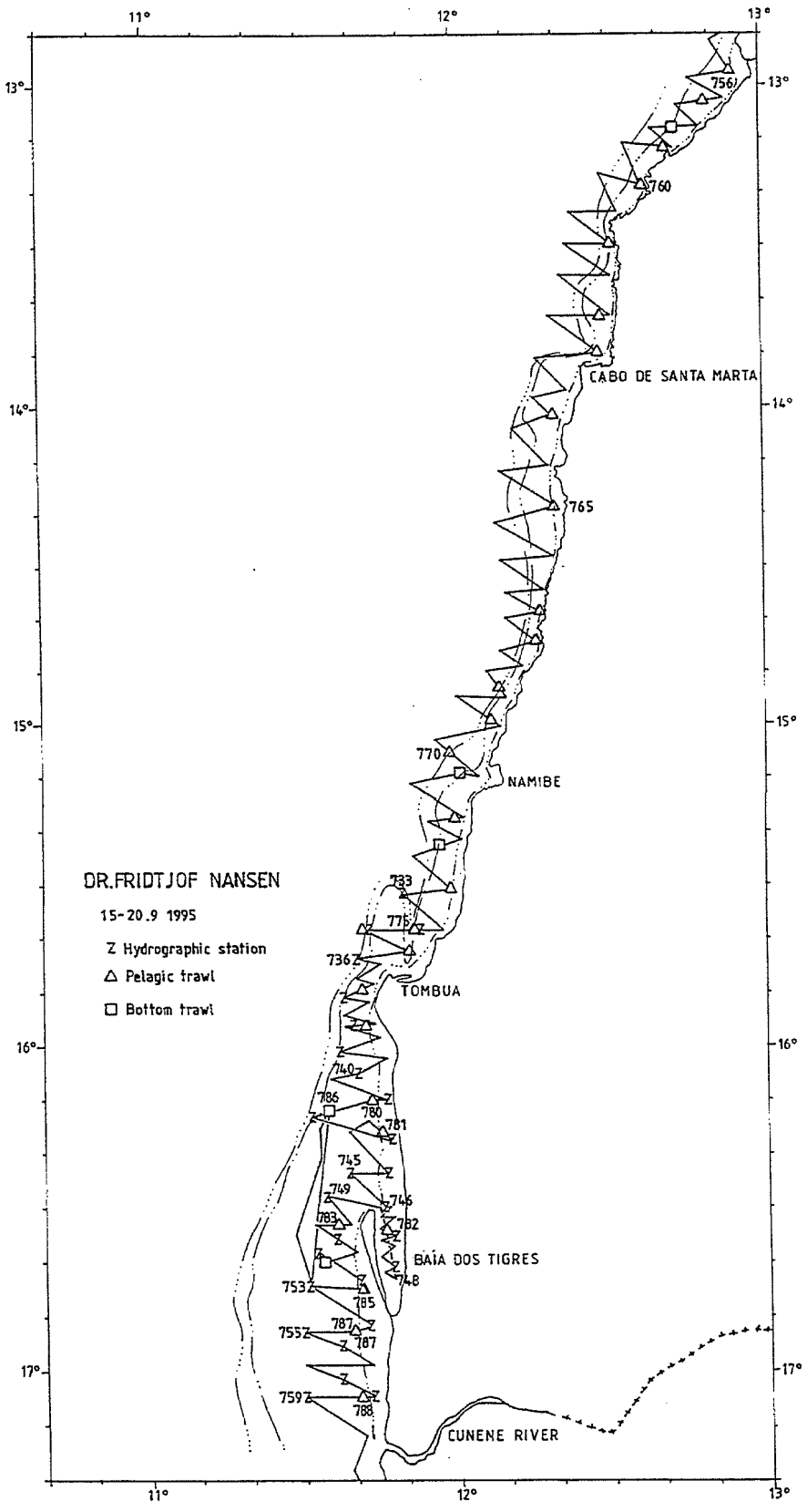


Figure 1c Course track with fishing and hydrographic stations, Benguela-Cunene.

CHAPTER 2 METHODS

2.1 Hydrographic sampling

A Seabird 911 CTD plus was used to obtain a general overview and standard vertical profiles of temperature, salinity and oxygen. Real time plotting and logging was done using the Seabird Seasave software installed on a PC. The profiles were taken down to a few meters above the bottom.

ADCP current measurements

A ship born Acoustic Doppler Current Profiler (ADCP) from RD Instruments was activated on every CTD station with depth greater than 20 m and where bottom tracking was obtained, i.e. bottom depths less than about 350 m. The ADCP was set to ping every 8 seconds, the depth cell was chosen to 8 m and the number of cells to 50. As a routine the data were averaged over 300 seconds for analysis onboard. Both the raw and averaged data were stored on files. The data were analysed by the PC software UMS (Underway Mapping System), supported by the Sea Fisheries Research Institute, Cape Town, South Africa (Zauner, 1993).

Meteorological observations

Wind (direction and speed), air temperature, global radiation and sea surface temperature (5 m depth) were logged automatically every nautical mile using an Aanderaa meteorological station.

2.2 Fish sampling

2.2.1 Acoustic survey

Abundance estimation

The catches were sampled for species composition, by weight and numbers. Biological samples, i.e. length and weight compositions were taken for the target species. Records of fishing stations are presented in Annex I.

A description of the acoustic instruments and their standard settings is given in Annex III. This also includes a description of the fishing gear used.

The following target strength (TS) function was applied to convert S_A-values (mean integrator value for a given area) to number of fish (pilchard, sardinella and Cunene horse mackerel):

$$TS = 20 \log L - 72 \text{ dB} \qquad (1)$$

or in the form $$C_F = 1.26 \cdot 10^6 \cdot L^{-2} \qquad (2)$$

where L is total length and C_F is the fish conversion factor. The following formula was used to calculate the number of fish in length groups (cm) for each fish concentration:

$$N_i = A \cdot S_A \cdot \frac{p_i}{\sum_{i=1}^{n} \frac{p_i}{C_{Fi}}} \qquad (3)$$

where

N_i = number of fish in length group I
A = area (naut.miles^2) of fish concentration
S_A = mean integrator value in area (A)
p_i = proportion of fish in length group I in samples from the area
C_{Fi} = fish conversion factor for length group I

The number per length group (N_i) was then summed and the total number of fish obtained:

$$N = \sum_{i=1}^{n} N_i \qquad (4)$$

The length distribution of a given species within an area was computed by weighting the length frequencies obtained in each trawl sample within the area by the average S_A value attributed to that species in the 5 mile where the sample was taken.

In the case of cooccurrence of *Sardinella aurita* and *S. maderensis* (these species cannot be separated in the echotraces), the respective contribution to the S_A value attributed to the 'sardinella' category was split in accordance with their presence in weight in the trawl catches.

The biomass of fish per length group (B_i) was calculated by applying observed mean weights per length group (W_i) multiplied by number of fish in the same length groups (N_i). The total biomass in each area was obtained by summing the biomass of each length group:

$$B=\sum_{i=1}^{n} N_i \bar{W}_i \qquad (5)$$

The number and biomass per length group in each concentration were at last summed to obtain the totals for each region.

The mean integrator values in each sampling unit (S_A-values) were divided between the following categories of fish on the basis of trawl catches and characteristics of the echo traces:

- sardinella (*S. aurita* and *S. maderensis*)
- horse mackerel (*T. trecae and T. capensis*)
- pilchard (*Sardinops ocellata*)
- round herring (*Etrumeus whiteheadi*)
- anchovy (*Engraulis encrasicolus*)
- P2 (carangids, scombrids, barracudas and hairtails)
- big eye grunt (*Brachydeuterus auritus*)
- other demersal fish
- plankton

Biological sampling

Total length and body weight were recorded for sardinella and horse mackerel to the nearest 1 cm or 1 g below, respectively. Sex and reproductive stages were described by macroscopic examination, scoring each individually sampled fish according to the following categories:

1 Juvenile
2 Inactive
3 Active
4 Ripe
5 Running/ Spent

The records of fishing stations are presented in Annex I. Pooled length frequency distributions (weighted by the catch) of selected species by area, are shown in Annex II.

CHAPTER 3 OCEANOGRAPHIC CONDITIONS

In February this year, anomalous oceanographic conditions were found along the whole Angolan coast. The upper 10 to 50 m were dominated by a warm (T~29°C) and brackish (S~30psu) water mass. These conditions were not recorded on the present survey. The surface temperatures were 'normal' at about 20-22°C over most of the surveyed area and the salinity values (also in surface) were recorded to be around 35psu.

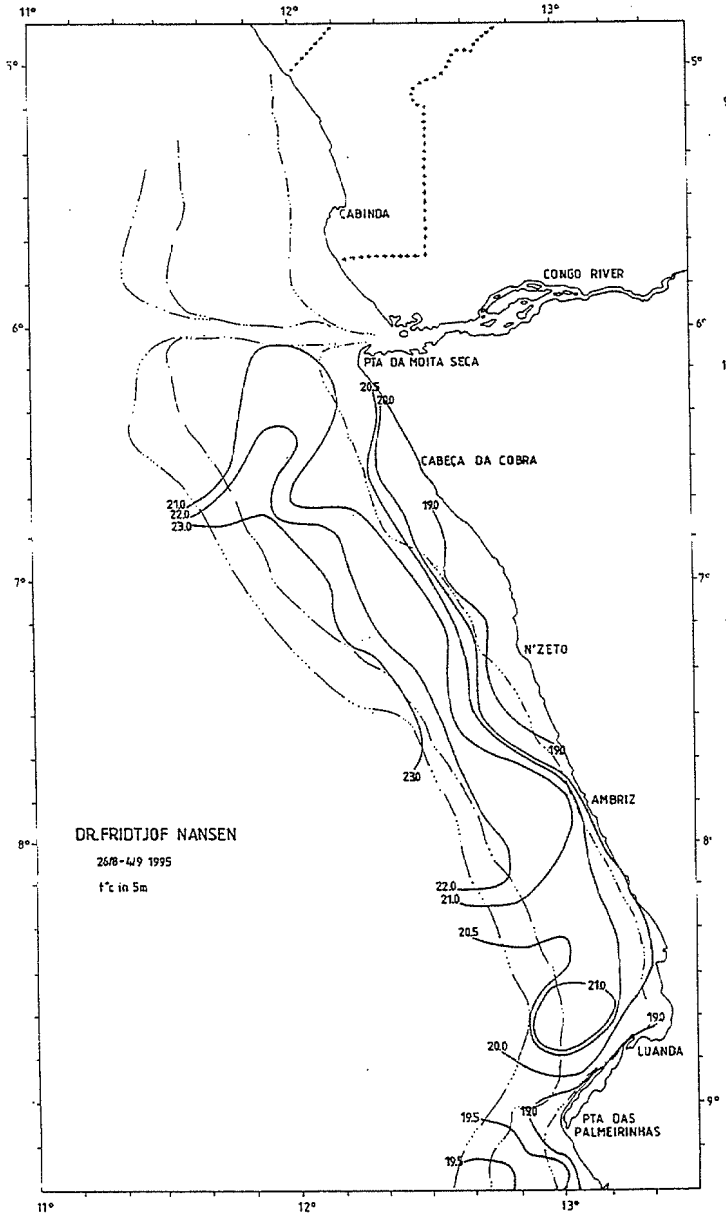


Fig. 2a Horizontal distribution of surface (5m) temperature. Cabinda-Luanda.

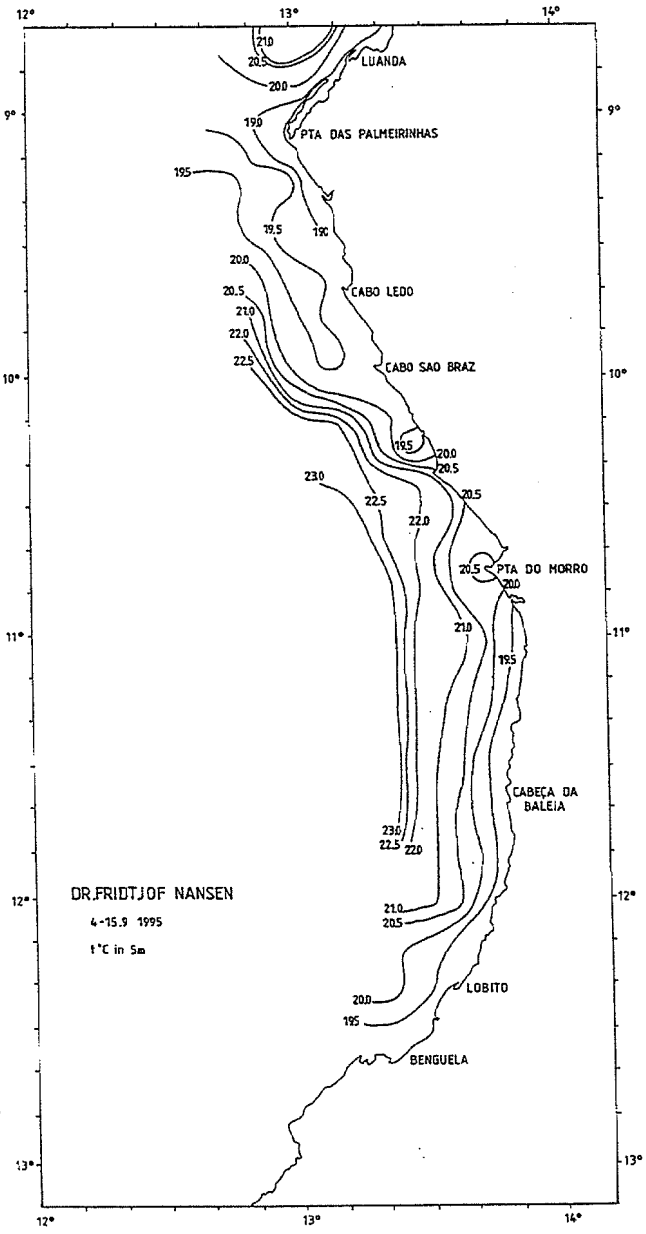


Fig. 2b Horizontal distribution of surface (5m) temperature. Luanda-Benguela.

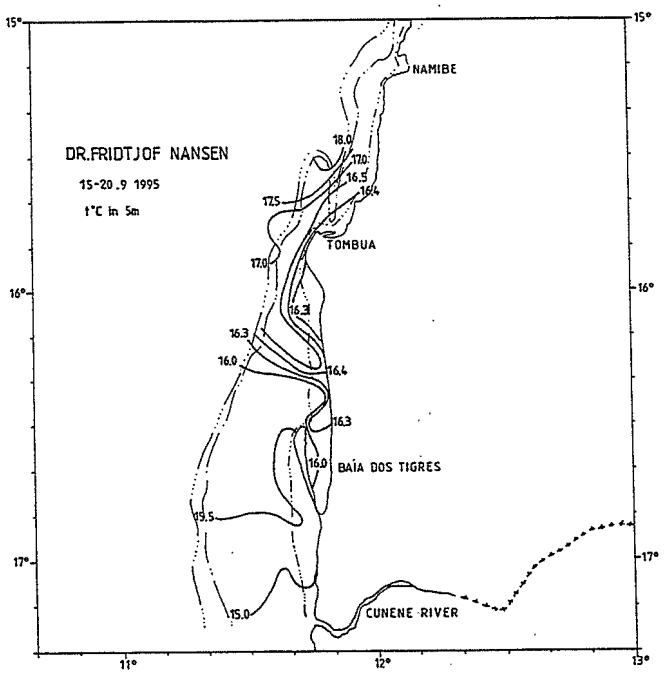


Fig. 2c Horizontal distribution of surface (5m) temperature. Tombua-Cunene.

Surface distribution

The temperature at the surface (5 m depth) is shown in Figure 2 (a, b and c), and the salinity distribution in Figure 3 (a, b and c). The temperature at the surface is in the range of 19° to 24° C. The temperature is somewhat lower closer to the coast. The salinity distribution is flat ranging from 35,5 to 35,8 psu except for the obvious influence from the Congo River. Usually there is a weak upwelling along the coast at this time of the year evidenced by lower temperatures or higher salinities adjacent to the coast. However, the higher salinities are found somewhat off the coast and from the hydrographic sections, which are presented on the next few pages, there is no evidence of any upwelling taking place.

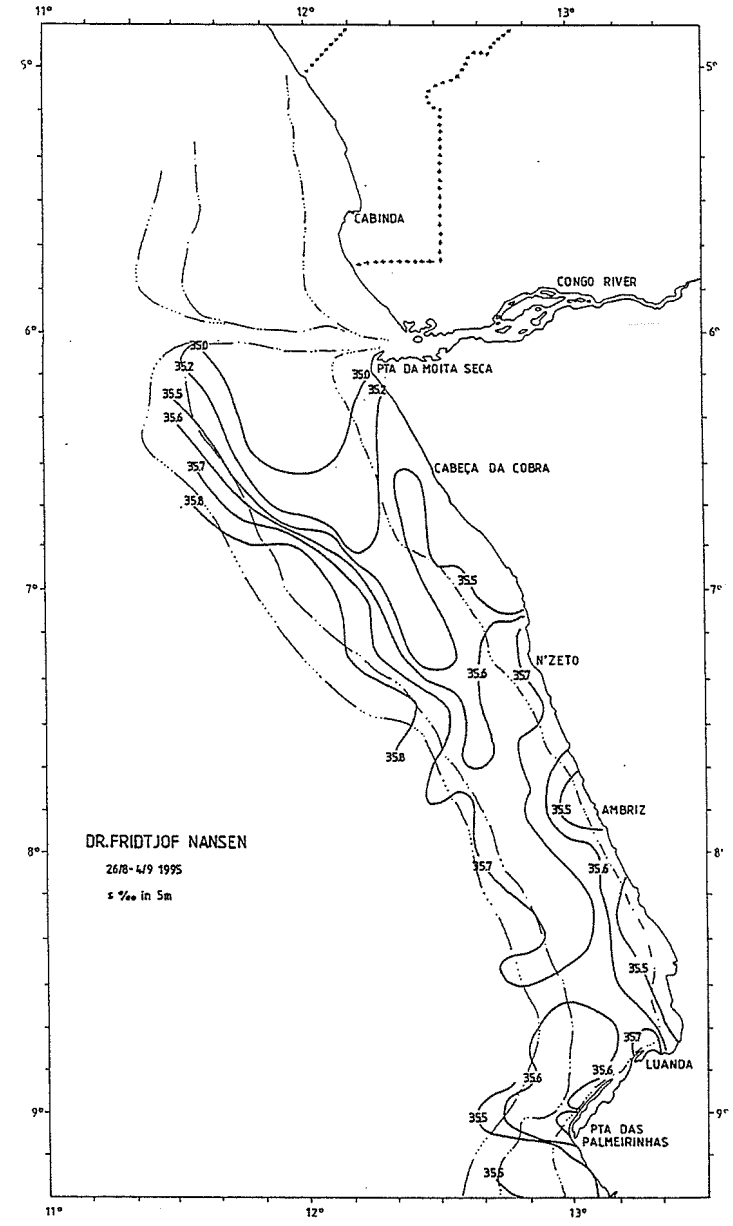


Fig 3a Horizontal distribution of surface (5m) salinity. Cabinda-Luanda

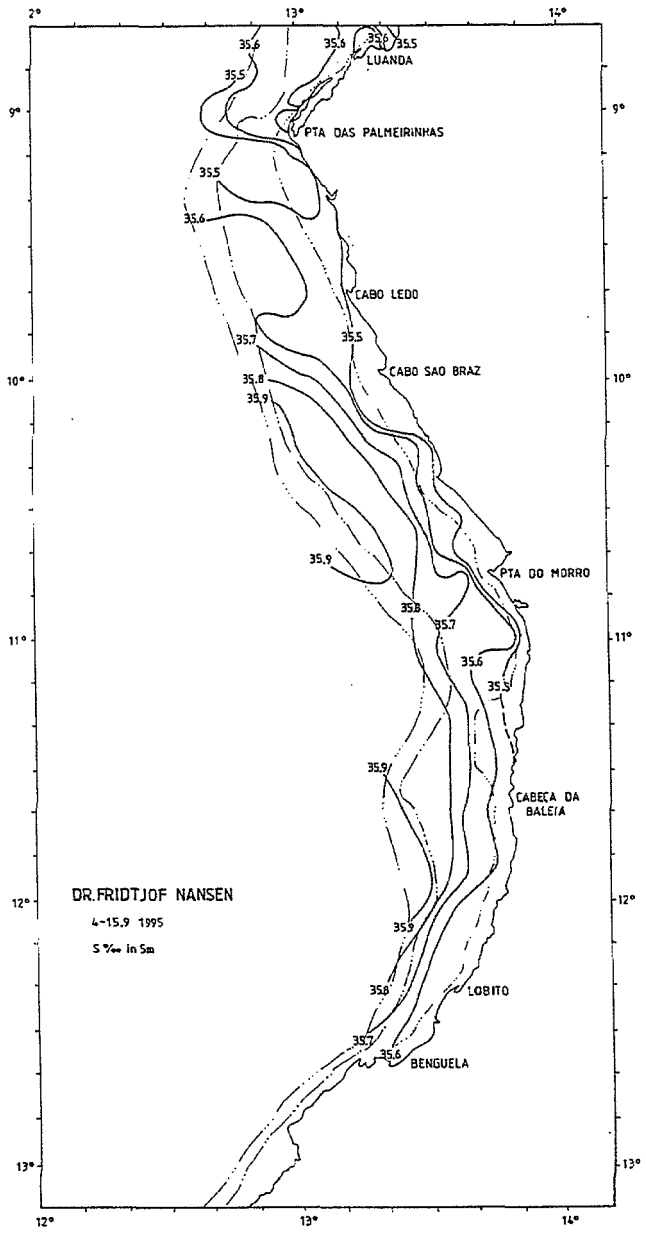


Fig. 3b Horizontal distribution of surface (5m) salinity. Luanda-Benguela.

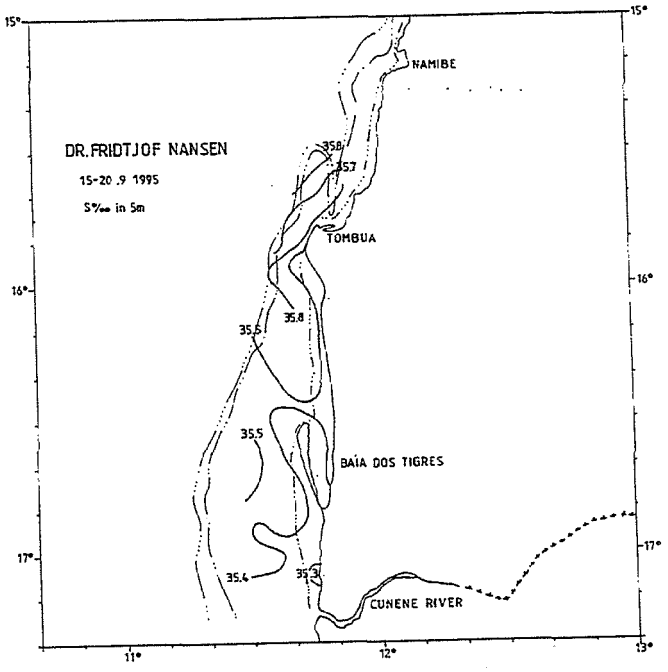


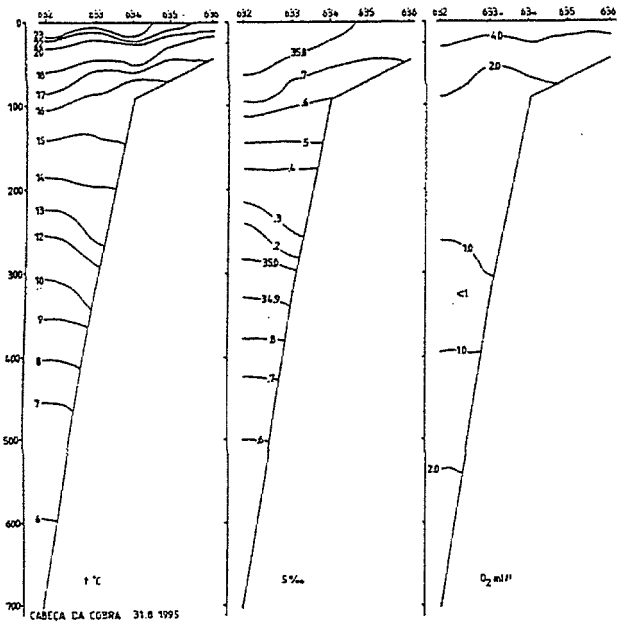
Fig. 3c Horizontal distribution of surface (5m) salinity. Tombua-Cunene.

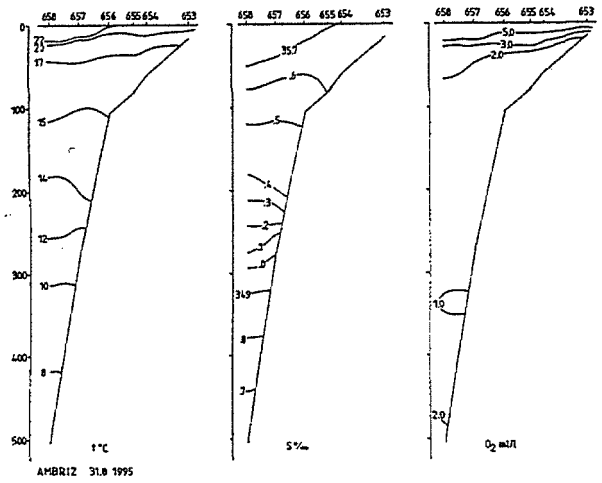
Vertical sections

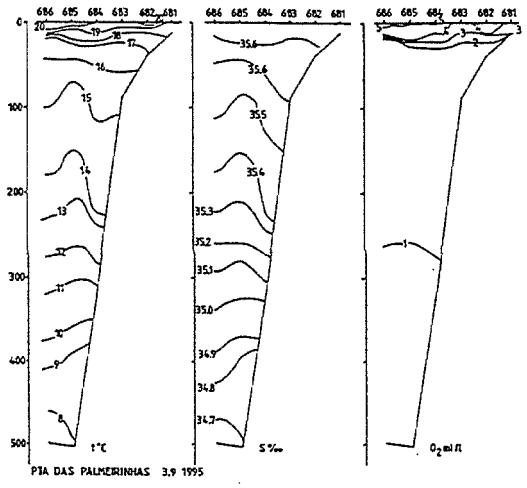
The vertical distributions of temperature, salinity and oxygen along the standard sections are shown in Figures 4 a-e. As the surface temperature is some 7-9° lower than what was observed in March, and there is no longer a shield of high temperature-low salinity water in the upper layers, the thermocline is also much less profound.

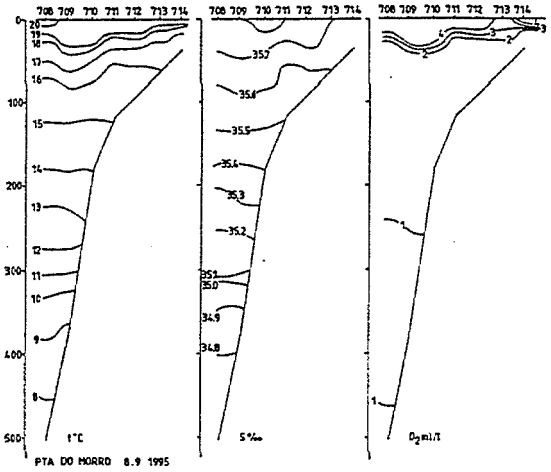
The oxygen distribution is more or less as usually observed, with surface values of 4-5 ml/l.

The hydrographic regime is back to normal and comparable to observations done at the same time earlier years.









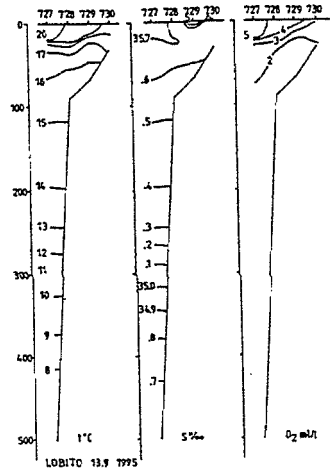


Fig. 4a-e Vertical sections of temperature, salinity and oxygen.

CHAPTER 4 DISTRIBUTION, COMPOSITION AND BIOMASS ESTIMATES OF PELAGIC FISH

Generally, the distribution of the pelagic fish is very dynamic. We are studying fast swimming fish with significant changes in behaviour during the day. The most striking feature, common to most pelagic species in this region, is the concentration in schools at daytime, often close to the surface. At night the schools tend to dissolve and the fish is spread in a somewhat deeper layer, however, still in the upper part of the water masses. This is the case for the clupeoids and most carangids, while the horsemackerel do not concentrate in schools near the surface at daytime. Instead, the shoals seek to the bottom. The schools, which may be quite dense, tend to stick close to the bottom on the shelf. Large schools of horsemackerel were often recorded at the edge of the shelf at depths around 100 m. In the evening the shoals dissolve and the fish ascend to a near surface position where it mingles with other pelagic fish. The vertical distribution of horsemackerel is shown in Figure 5. With a general situation like that, a picture of the horizontal distribution of almost any pelagic fish in an area may vary significantly depending on whether the coverage is done during day or night. A daytime picture will tend to be patchy while a picture based on nighttime observations will be more contagious. It was therefore decided to cover as much as possible of the potential distribution area of the target species both day and night. The figures which show the horizontal distribution of the main species in this report are based on both day and night observations.

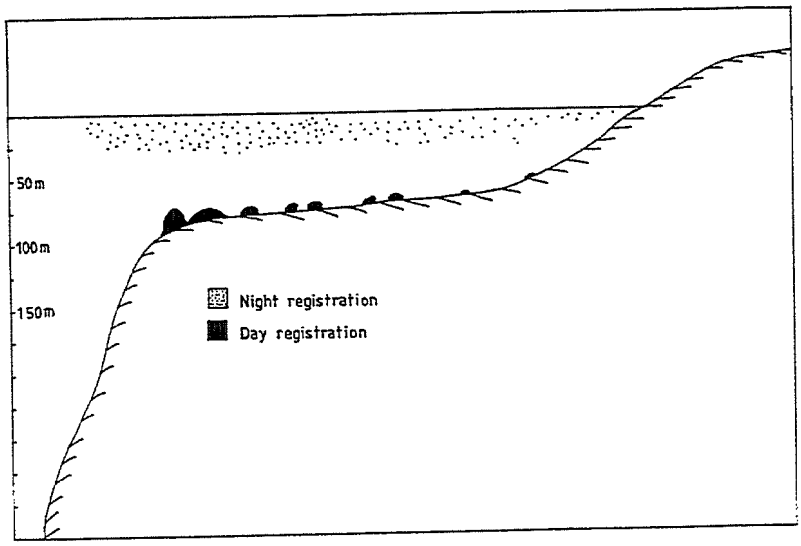


Figure 5 Vertical distribution of horse mackerel along the shelf, day and night.

4.1 Cabinda-Luanda

4.1.1 Sardinella

Figure 6 shows the distribution of both sardinellas in the northern region, including the varying degree of their concentrations as average acoustic integrator values for each area. Sardinella was found in shelf waters from the Congo river to Luanda. Both *Sardinella maderensis* and *S. aurita* were recorded as a continuous belt on the shelf. *S. maderensis* was dominating and had a widespread distribution, while *S. aurita* appeared in smaller amounts with higher concentrations only in a small area off Ambriz.

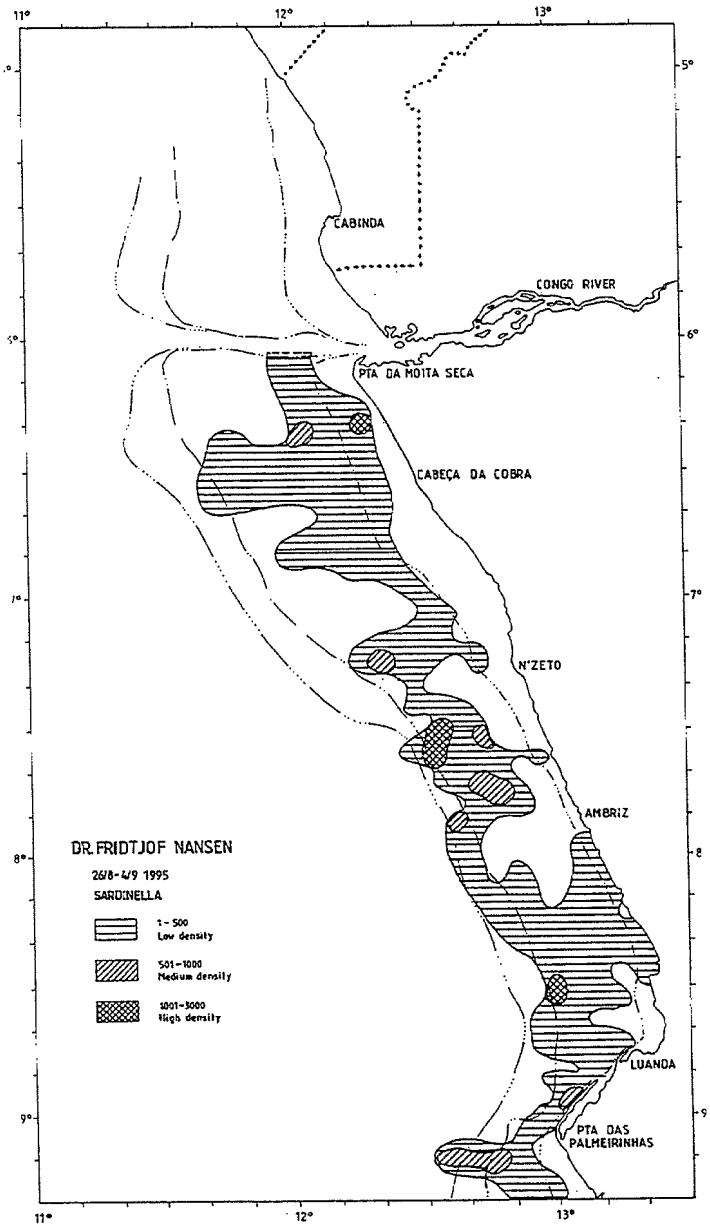


Figure 6 Distribution of *Sardinella* spp. Cabinda-Luanda.

The length frequency distribution of the sardinellas (Figure 7) shows the dominance of large individuals, mainly at length about 33 cm. A few younger cohorts are also present but these are very few in number. Even fewer small specimens of *S. aurita* were represented in the catches which were dominated by large individuals of 35 cm.

The biomass estimate for the two species combined totalled about 297 000 tonnes, of which about one third is *S. aurita.* Some 52% of the total estimated biomass of sardinella in Angolan waters are found north of Luanda.

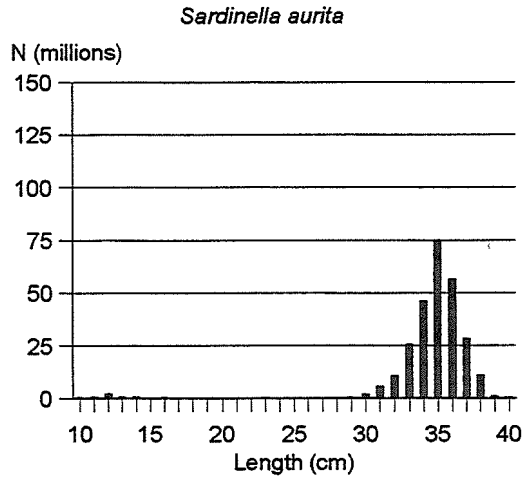


Fig. 7a Total length distribution of round sardinella (*S. aurita*). Cabinda-Luanda.

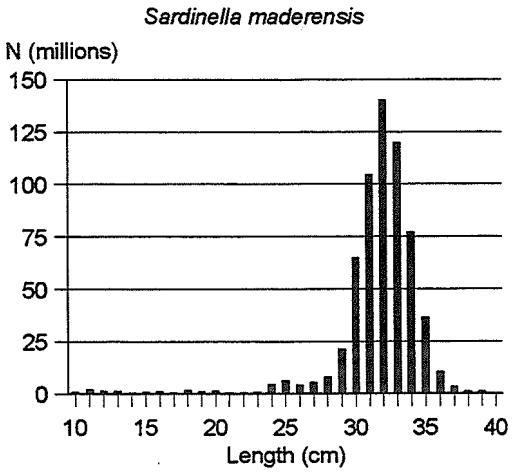


Fig. 7b Total length distribution of flat sardinella (*S. maderensis*). Cabinda-Luanda.

4.1.2 Cunene horse mackerel

Figure 8 shows the distribution of horsemackerel for the region Cabinda-Luanda. No acoustic recordings were attributed to this species in the northernmost part of this region. Two main concentrations were identified, one between Cabeça da Cobra and N'Zeto and the other one from somewhat north of Ambriz extending as a continuing distribution pass Luanda. Figure 9 shows the length distribution of horse mackerel for the whole region. Also for horsemackerel, the larger individuals at 38 cm dominate, but a few younger cohorts may be seen in the length frequency diagram, one at 17 cm

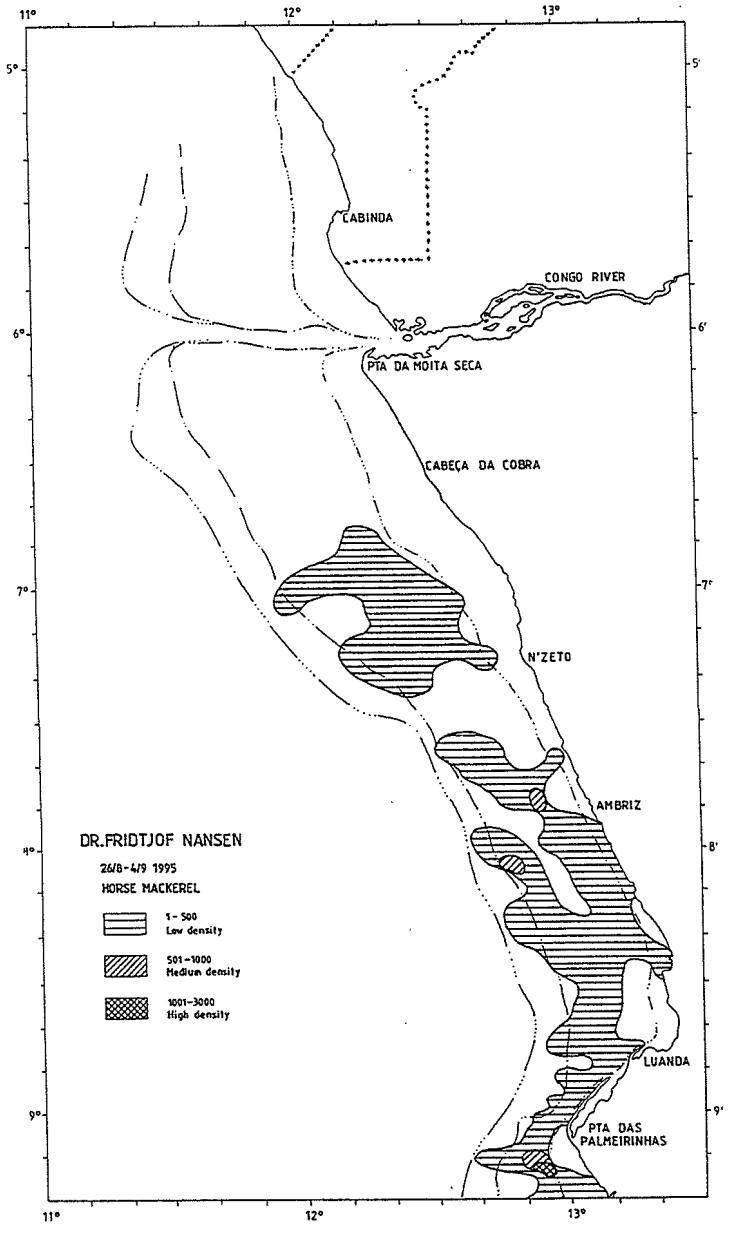


Figure 8 The distribution of horse mackerel (*Trachurus trecae*), Cabinda-Luanda.

and another at 27 cm. The total biomass of horsemackerel in this region was estimated to 110 000 tonnes. The vertical distribution pattern of this species was a striking feature during the survey with relatively dense schools close to bottom at daytime and a dispersion of the fish at night closer to the surface.

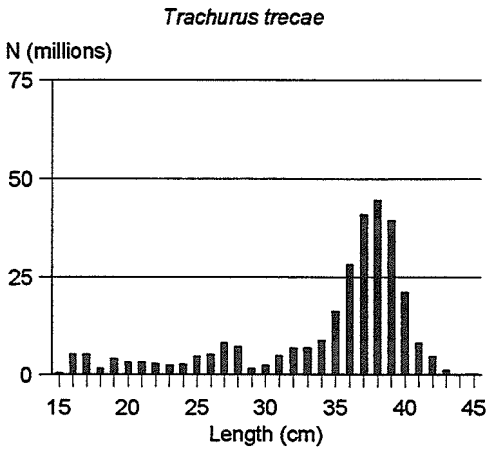


Figure 9 Estimated abundance of Cunene horse mackerel (*Trachurus trecae*) divided in length groups, Cabinda - Luanda.

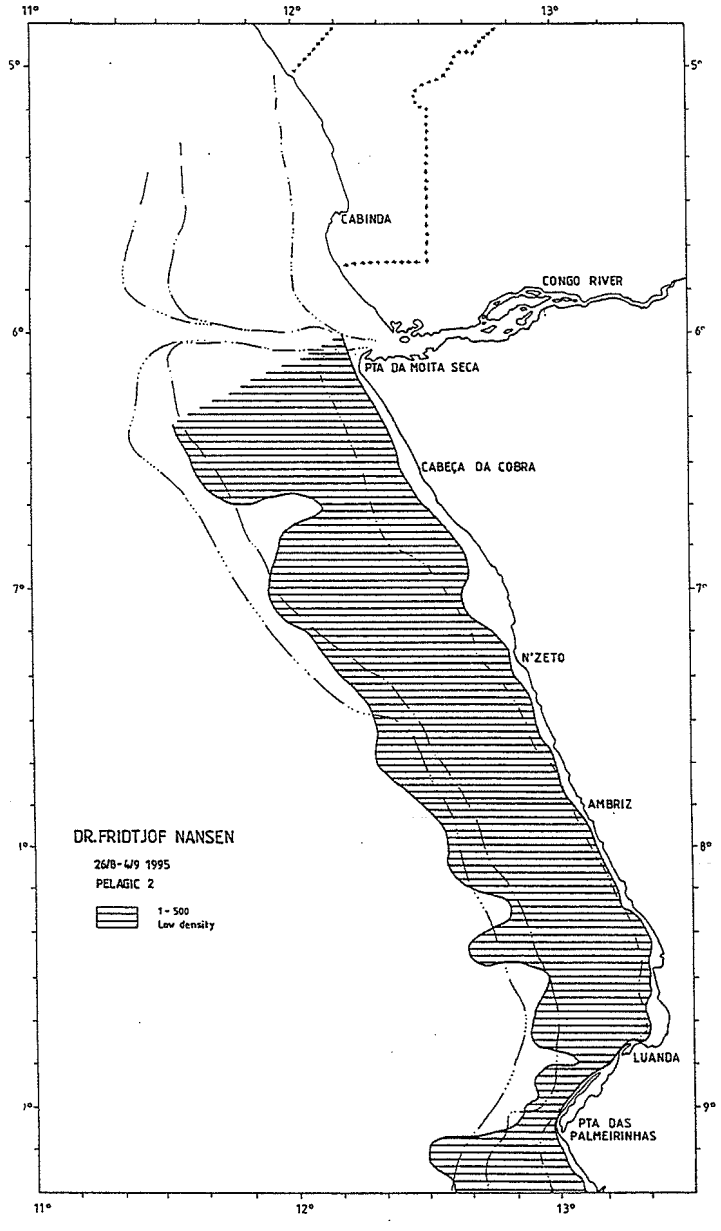


Figure 10 Distribution of pelagic fish type 2. Cabinda-Luanda.

4.1.3 Other pelagic species

Figure 10 shows the distribution of pelagic fish type 2 for the region Cabinda-Luanda. This category includes various pelagic groups: carangids (other than horse mackerel), barracudas, scombrids and hairtail. Medium concentrations were detected in the whole region from the Congo river to Luanda. The biomass estimate was obtained by using an overall average length (about 31 cm) for this area and resulted in a value of about 105 000 tonnes. The composition in the catches shows a dominance of carangidae (74%) (*Chloroscombrus chrysurus* and *Selene dorsalis*), followed by Trichiuridae (hairtails) (12%). The above estimate and relative abundance of the various groups are obviously very rough but still useful to give an idea of the order of magnitude of the resources and to indicate whether important changes have occurred. As compared with

earlier surveys with the RV 'Dr. Fridtjof Nansen', the value obtained for this area is somewhat higher than the average values obtained in 1985-86 (65 000 tonnes) .

4.2 Luanda-Benguela

4.2.1 Sardinella

The distribution of the two sardinella species in this region is shown in Figure 11. They are found throughout the region from close to the shore to about 10-15 nm off the shore. During night, pelagic trawling close to the surface usually yielded sardinella together with hairtails and small tunas or carangids (i.e. *Trachinotus*) almost anywhere along this part of the coast. During daytime, the sardinellas would form schools often seen in contact with the surface. In these instances the fish could not be recorded by the echo sounder or be caught by trawling.

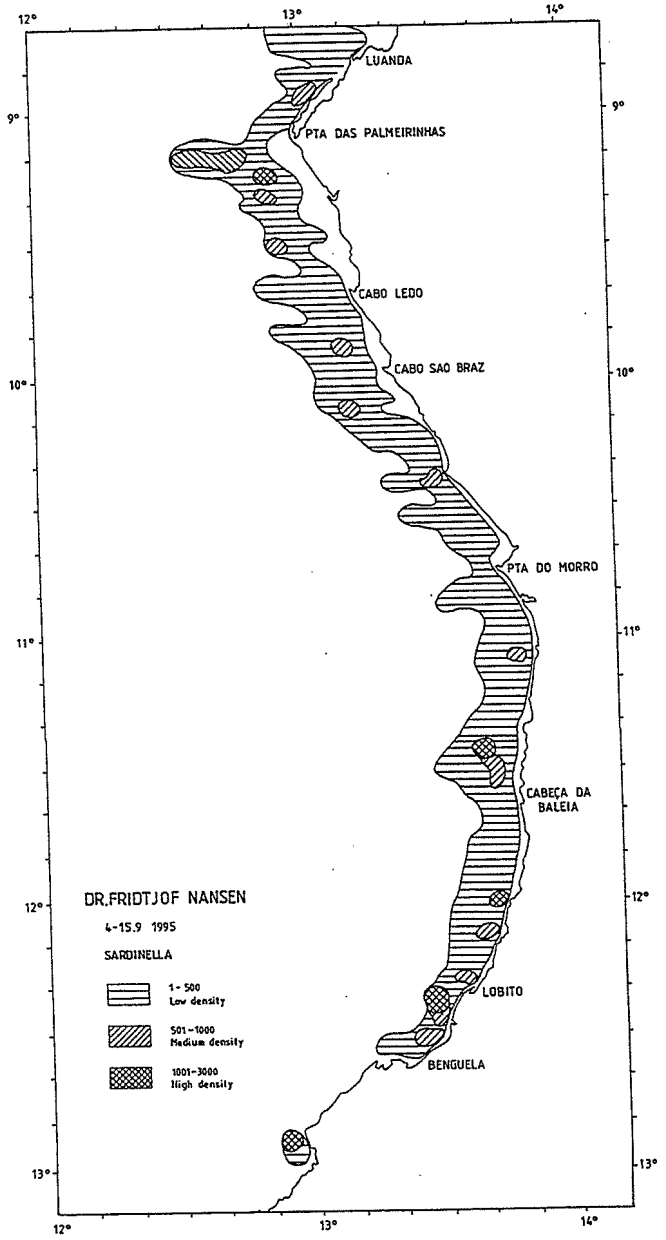


Figure 11 Distribution of *Sardinella* spp. Luanda-Benguela.

Most of the samples included large sardinella (modal length 32 cm) (Fig. 12a and b). As in the region north of Luanda, the element of young fish is almost negligible. In areas like Pta. do Morro and Cabeça da. Baleia which are looked upon as nursery areas, no small fish were caught. The biomass on the shelf was estimated to about 277 000

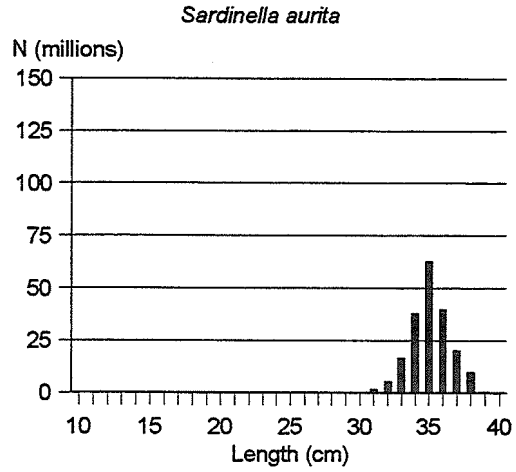


Fig.12a Total length distribution of round sardinella (*S. aurita*). Luanda-Benguela.

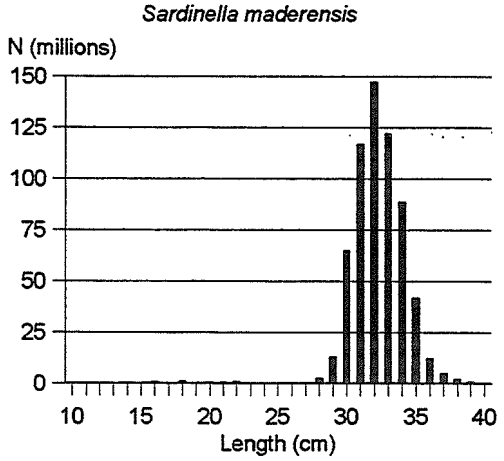


Fig. 12b Total length distribution of flat sardinella (*S. maderensis*). Luanda-Benguela.

tonnes which constitutes 48% of the total estimate. Also in this region, the *S. aurita* was somewhat larger than the *S. maderensis*. The former represents about 30% of the biomass.

4.2.2 Cunene horsemackerel

Horsemackerel were evenly distributed over most of the inner shelf in this region (Figure 13). A few spots of higher concentrations were found between Pta. do Morro and Cabeça da Baleia. Somewhat higher concentrations were also found off Benguela, off Pta. das Palmeirinhas and off Cabo Ledo. In a smaller area outside Cabeça da Baleia no horse mackerel were recorded. The vertical distribution was very much the same as was observed north of Luanda,

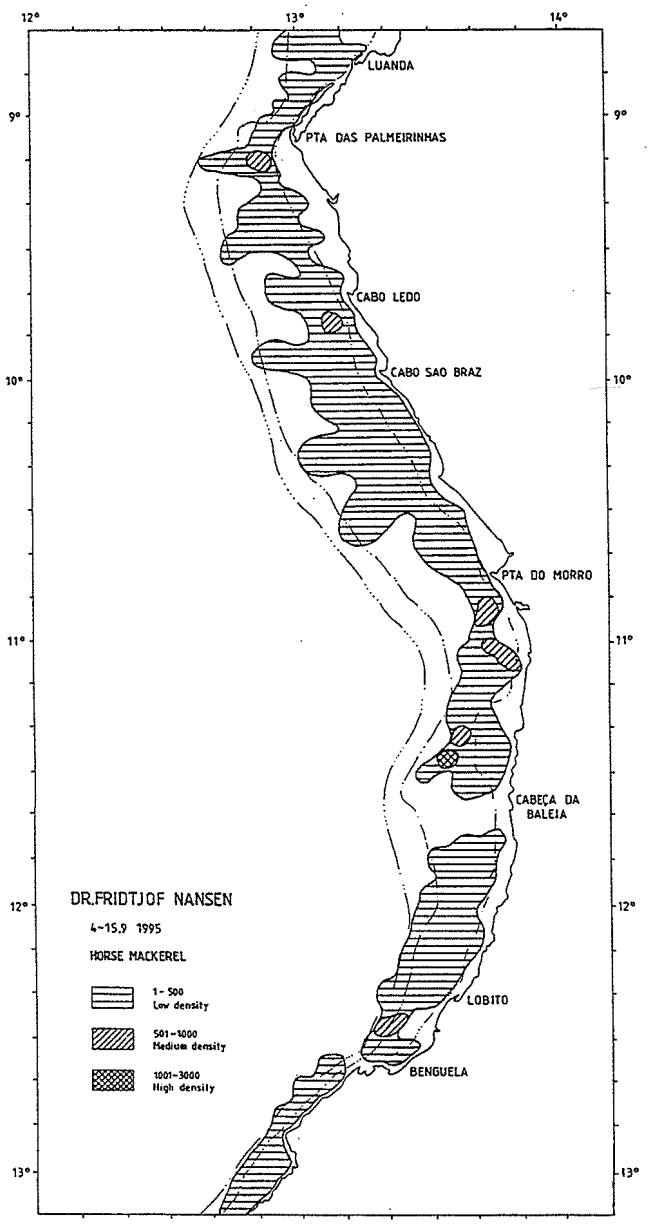


Figure 13 Distribution of horse mackerel (*Trachurus trecae*), Luanda-Benguela.

dense schools close to bottom at daytime and dispersal and concentration of single fish near the surface during night. The length distribution (Fig. 14) shows that large fish dominate, but a cohort at 17 cm is clearly visible. The larger fish may be divided in two cohorts, one with modal length at 25 cm and the other one at 32 cm. The estimated biomass in the region amounts to 160 000 tonnes which is well above last year August value (130 000 tonnes).

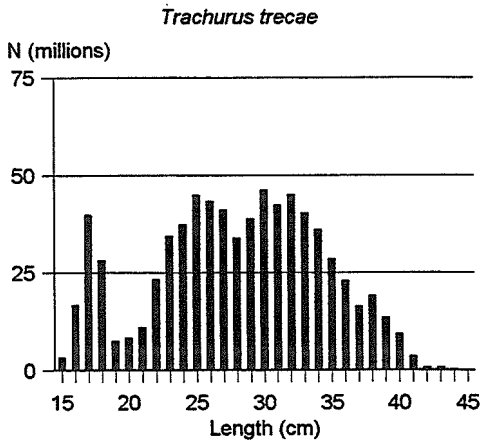


Figure 14 Total length distribution of Cunene horse mackerel (*Trachurus trecae*), Cabinda - Luanda.

4.2.3 Other pelagic species

Figure 15 shows that pelagic species type 2 were widely distributed in this region from shallow coastal waters to beyond the edge of the continental shelf. Also here the carangids were dominating with the lookdown (*Selene dorsalis*) as the most common species. The carangids constituted 58% of the pel 2 group while the scombrids (10%) and hairtails (12%) were also quite common. The fish was rather evenly distributed with no places of dense concentrations. The estimated biomass totalled about 108 000 tonnes.

4.3. Benguela - Cunene

4.3.1 Sardinella

Only very few specimens of sardinella were caught in the trawl catches in this

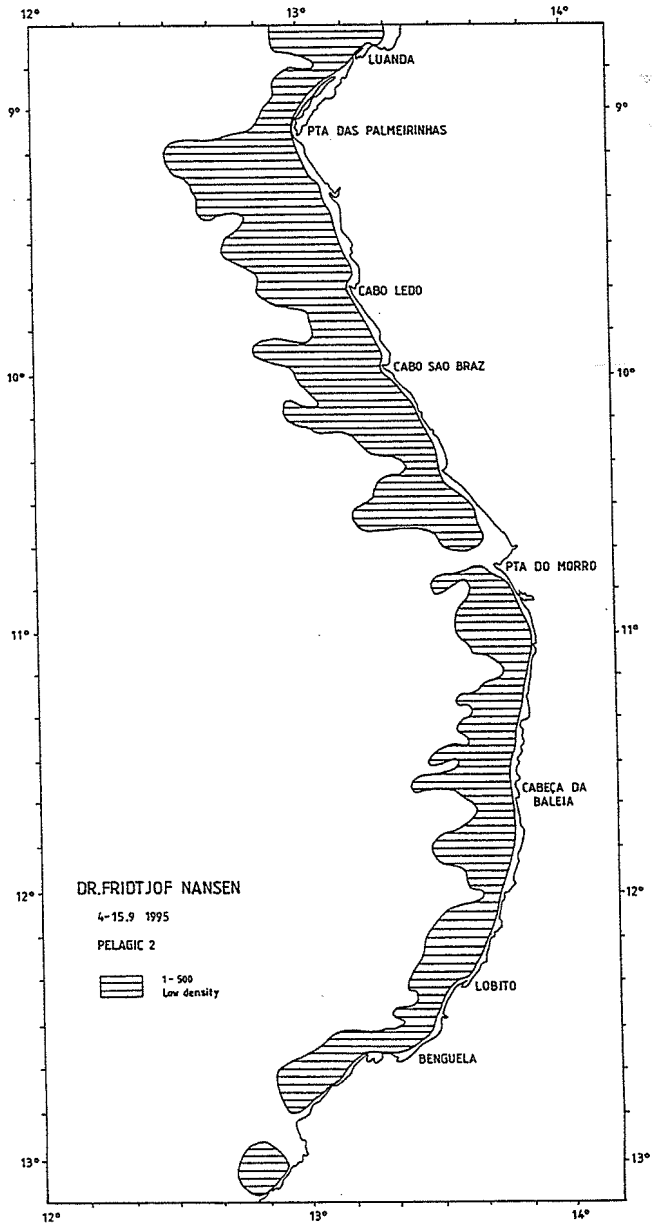


Figure 15 Distribution of pelagic fish type 2. Luanda-Benguela.

region. No sardinella was recorded by the echo sounder, and there is no acoustic estimate of these species here.

4.3.2 Horsemackerel

The horsemackerel in this region consists of two species, the Cunene horsemackerel (*Trachurus trecae*) and the Cape horsemackerel (*Trachurus capensis*). The horsemackerel found north of Tombua were all Cunene horse mackerel. In the area between Tombua and Cunene, the two species mix, but the distribution in the catches shows that the Cape horsemackerel dominate by about 90%. All horse mackerel north of Tombua is therefore estimated as Cunene and all south of Tombua as Cape horsemackerel.

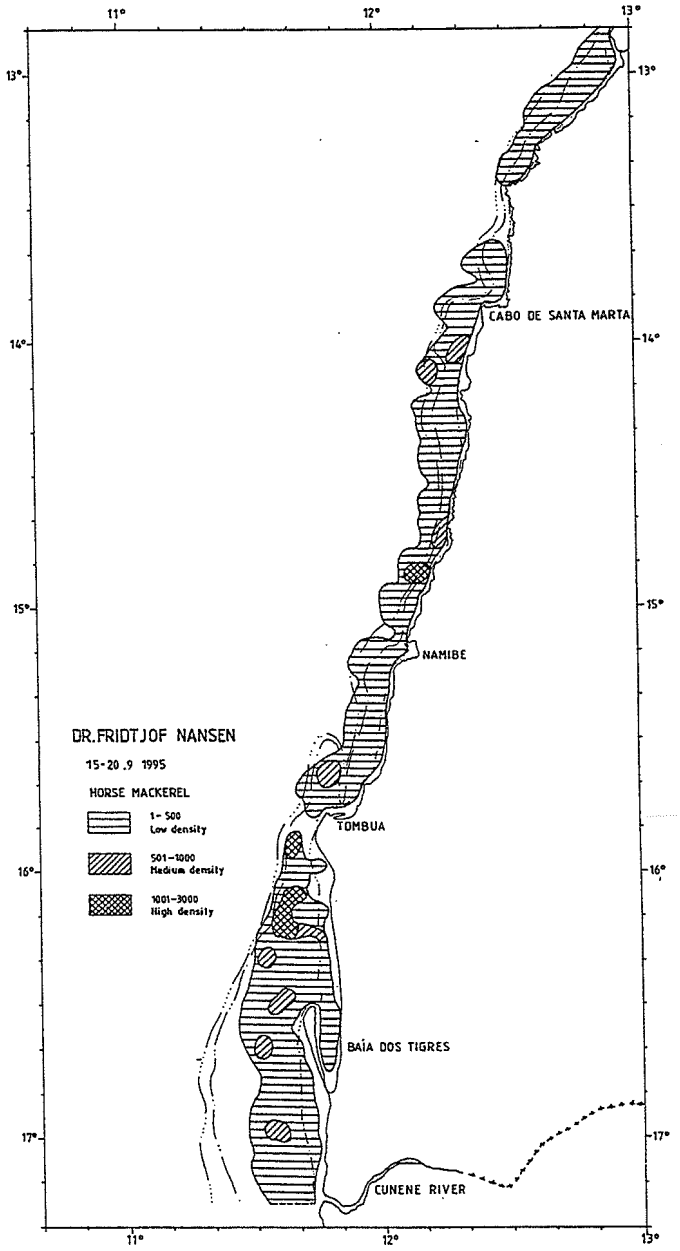


Figure 16. Distribution of *Trachurus trecae* (north of Tombua) and *Trachurus capensis* (south of Tombua.

The distribution of horsemackerel (both species) between Benguela and Cunene is shown in Figure 16. The shelf north of Tombua is very narrow and therefore the distribution of fish here is found to be very close to shore. The horse mackerel were found to be distributed more or less all along the coast, except for a smaller area some 15 nm north of Cabo de Santa Marta. It is difficult to pick out any cohorts from the length distribution of *Trachurus trecae,* shown in Figure 17, which to a large degree consists of fish with a length range between 15 and 25 cm. The estimated biomass is 68 000 tonnes. This is a rather low figure compared with earlier estimates of the biomass in the area, which in the early nineties was around 100 000 tonnes.

The distribution of horsemackerel south of Tombua (*Trachurus capensis*) is also shown in Figure 16. The fish weas found over the whole area covered by the vessel and a high concentration area was detected about 20 nm north of Baía dos Tigres. The size range is limited to fish from 15 to 23 cm with a modal length of 18. The estimated biomass is 63 000 tonnes.

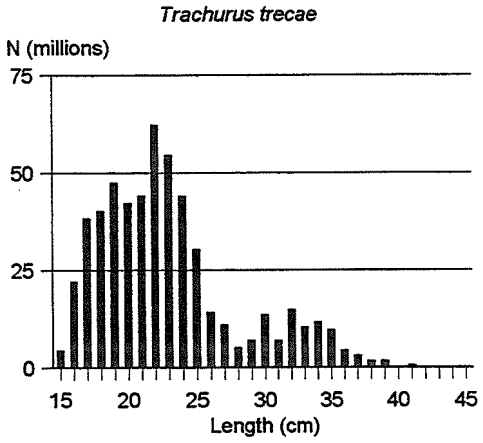


Figure 17 Total length distribution of Cunene horse mackerel (*Trachurus trecae*), Cabinda - Luanda.

4.3.3 Pilchard

The distribution of pilchard (*Sardinops ocellata*) is shown in Figure 18. This species had a very limited distribution in Baía dos Tigres. The coverage, which was done during night, revealed low concentrations of pilchard mixed with bigeye grunt (*Brachydeuterus auritus*). In the bay, the bigeye grunt dominated and the biomass of pilchard was estimated to only 12 000 tonnes. The size of the fish ranged from 20 to 28 cm with a modal length of 24. The abundance must be rated as very low compared to earlier estimates in the area of more than 100 000 tonnes.

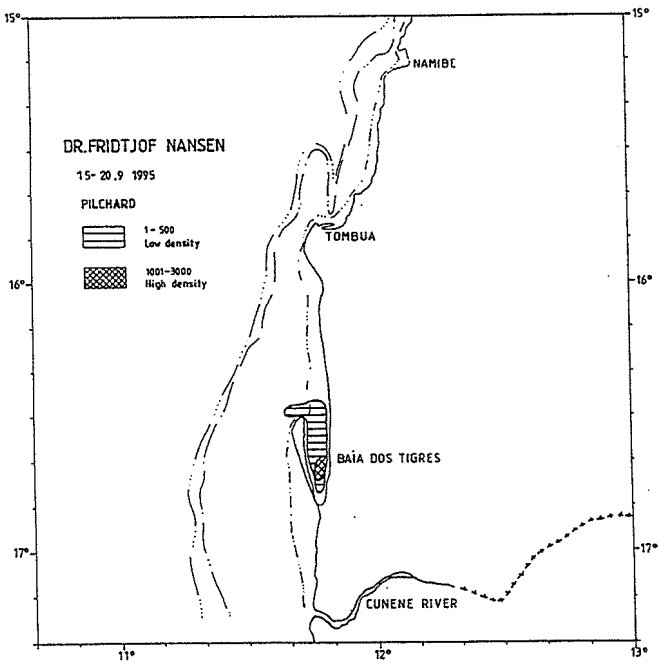


Figure 18 Distribution of pilchard (*Sardinops ocellatus*), Tombua-Cunene.

4.3.4 Other pelagic species

Of other pelagic species in the area south of Benguela, only round herring (*Etrumeus whiteheadi*) is worth mentioning. Other groups of species, like carangids or scombrids were virtually absent in the whole area.

Figure 19 shows the distribution of the round herring. The main concentration is found outside the Baía dos Tigres and quite dense schools were detected here. Two smaller aggregations were

recorded further north, one about 20 nm south of Tombua and another about 20 nm north of Baía dos Tigres. This species tended to form shoals in rather shallow waters (20-40 m) and the shoals were almost as dense during night as during daytime. The size distribution was from 12 to 21 cm with a modal length of 19 cm. The biomass was estimated to 86 000 tonnes which is higher than earlier estimates.

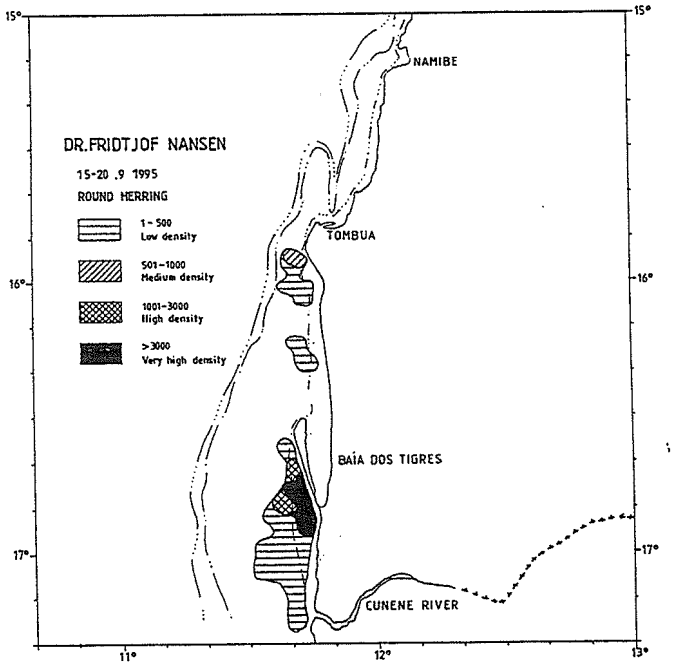


Figure 19 Distribution of round herring (*Etrumeus whiteheadi*), Tombua-Cunene.

CHAPTER 5 BIOLOGICAL SAMPLING

5.1 Sardinella maderensis

Figure 20 shows the results of the sampling for determining the maturity stages of this species, for the northern and central region, respectively.

In the region Cabinda-Luanda, 3903 specimens were sampled, with a size range of 5 to 39 cm. Almost all sardinella above 27 cm was either spawning or ready to spawn. Also fish at length down to 20 cm had varying proportion of maturation.

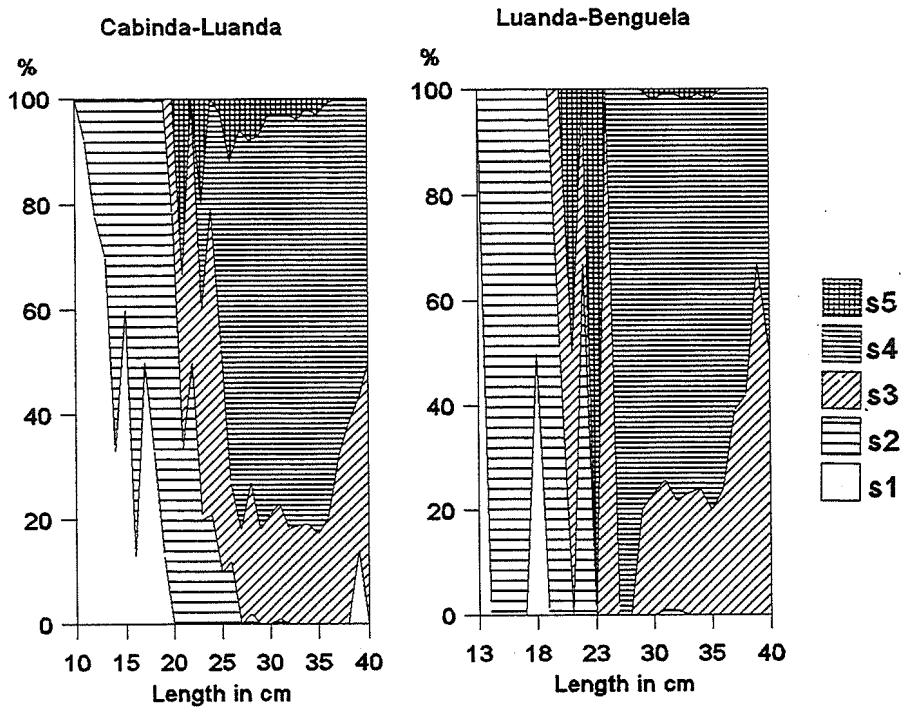


Figure 20. Proportions of maturity stages per length group for *Sardinella maderensis* in the northern and central regions.

In the region Luanda-Benguela, 2103 specimens were sampled, with a size range of 13 to 44 cm. Here the size of 100% maturation was 23 cm. Also here the length groups down to 20 cm had proportions with active gonads.

Only large and mature *S. aurita* were caught.

5.2 Trachurus trecae

Figure 21 shows the relative proportions of the six maturity stages for the northern, central and southern regions respectively.

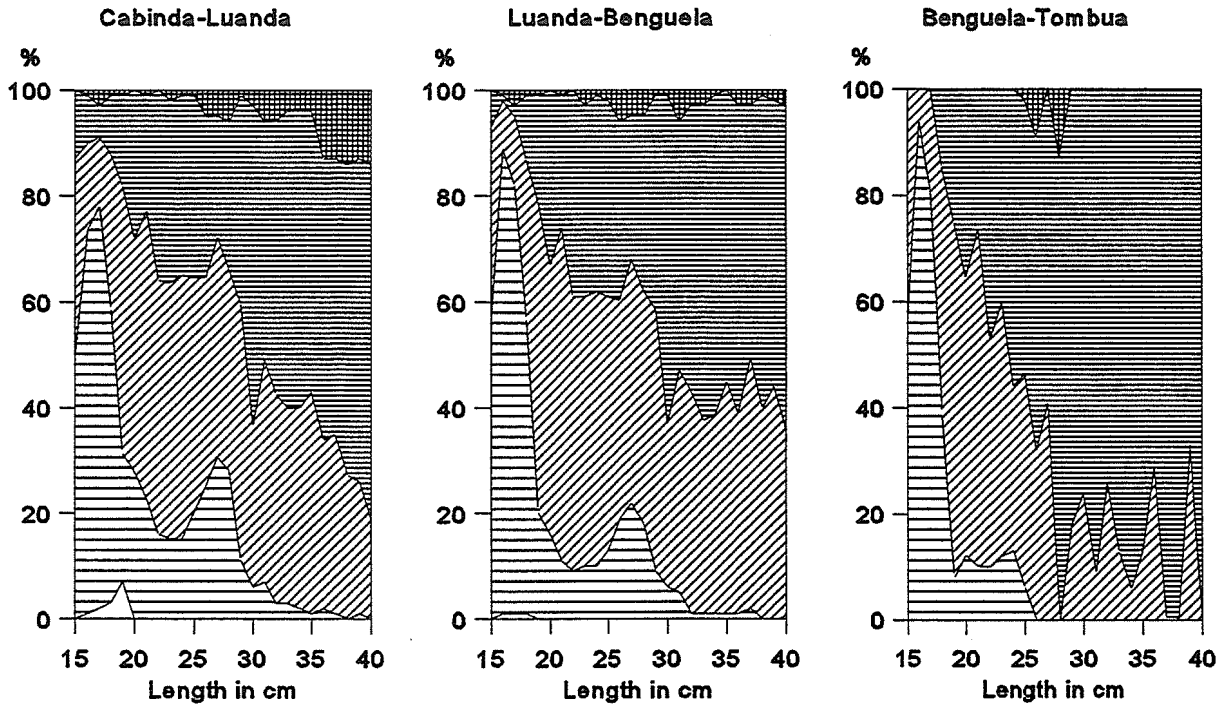


Figure 21 Proportions of maturity stages per length group for *Trachurus trecae* in the northern, central and southern regions. (Legend as Fig. 20).

The sampled specimens in the northern region were 1063, from 9 to 49 cm. Figure 17 a shows that some 80% of the fish at 22 cm has a higher maturity stage than 3, which means that these fish have active gonads. A group of fish with modal length at 28 cm has, however, a lower percentage of active gonads. The number of fish sampled is rather high so these results may indicate that there exists subgroups in the stock maturing to spawn at different length.

In the central region (Luanda-Benguela), 2815 specimens were sampled, from 15 to 44 cm. Also here a group of fish with modal length at 22 cm had a high (80%) proportion of fish with active gonads while a larger group had a somewhat lower degree of maturation.

In the southern region, 844 specimens were sampled, with a size range of 15 to 41 cm. Of the fish larger than 19 cm, about 90% had active gonads.

CHAPTER 6 REVIEW OF SURVEY RESULTS AND AVAILABILITY FOR FISHERY

6.1 Sardinella and horse mackerel

The last survey of the pelagic stocks in Angola, in March 1995, resulted in unexpectedly low estimates of both sardinella and horse mackerel (Tables 2 and 3). This was surprising considering the consistent increase in the biomass of both species observed since 1989. The low estimates were explained by a possible large migration away from an area with exceptional climatic conditions i.e. an upper water layer about 30 m thick, with very low salinity and high temperatures. This situation may also have led to greater methodical problems for the acoustic abundance estimate, such as spreading of fish over larger areas. During the present survey, the climatic conditions seem to be 'normal' and more in line with the conditions described at this time of the year in earlier reports. The present estimates are in line with or somewhat higher than the recent ones if the estimates of last spring are disregarded.

Table 2 Estimates of biomass of sardinellas by regions and surveys (1 000 tonnes)

Survey	Cunene-Benguela	Benguela-Luanda	Luanda-Cabinda	Benguela-Cabinda	TOTAL
1/85	25	220	80	300	325
2/85	110	190	180	370	480
3/85	0	70	190	260	260
4/85	0	200	110	310	310
1/86	10	140	110	250	260
2/86	10	130	130	260	270
1/89	40	200	60	260	300
2/89	20	40	130	170	190
3/89	40	100	60	160	200
1/91	+	180	120	300	300
2/91	+	68	154	222	222
1/92	+	119	161	280	280
1/94	*	410	100	510	510
2/94	*	245	290	535	535
1/95	*	140	24	164	
2/95	+	277	297	574	574

* not surveyed

Table 3 Estimates of Cunene horse mackerel by regions and surveys (1 000 tonnes)

Survey	Cunene-Benguela	Benguela-Luanda	Luanda-Cabinda	Benguela-Cabinda	TOTAL
1/85	30	195	40	235	265
3/85	50	90	40	130	180
4/851/86	100	125	20	145	245
1/89	35	55	40	95	130
3/89	170	40	35	75	245
1/91	100	80	20	100	200
2/91	100	70	30	100	200
1/92	98	86	80	166	264
1/94	*	238	1	239	
2/94	*	130	120	250	
1/95	*	*	84	84	
2/95	70	160	110	270	340

* not surveyed

The results of the present survey indicate substantial biomasses of pelagic fish. The question is whether these resources are accessible to the fishing fleet.

Sardinella has a distribution rather close to the surface throughout the day in the northern and central regions and should be accessible for both pelagic trawling, during nighttime and purse seining during daytime. Best catches for trawlers are done by hauling the trawl with floats at surface. In the northern region, the area between N'Zeto and Ambriz is the most likely to give high catch quantities at present while in the central region localities with higher concentrations are off Pta. das Palmeirinhas, Cabeça da Baleia and in the Lobito-Benguela area.

Horsemackerel has a different distribution than sardinella, - close to the bottom during daytime and dispersed and close to the surface during night (see Figure 5). This species is therefore not well available for purse seiners as the concentrations at the surface during night are too low. For trawlers, however, it be possible to get good catches, with pelagic trawling at the surface during the night, and bottom trawling during daytime.

6.2 Pilchard

Table 4 shows all estimates from the Dr. Fridtjof Nansen surveys. The present value of 12 000 tonnes represents the lowest for the winter season (quarter 3). This sharply declining trend is

consistent with the reports of a greatly reduced stock in Namibian waters.

Table 4. Estimates of pilchard (by 1000 tonnes)

Quarter of the year	1985	1986	1989	1991	1992	1995
1	25	0	50	-	-	-
2	0	0	10	26	50	-
3	120	-	-	131	210	12
4	10	-	5	127	-	-

Annex I Records of fishing stations

PROJECT STATION: 609

DATE:26/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 521
start stop duration Long E 1132
TIME :21:08:00 21:38:00 30 (min) Purpose code: 1
LOG :4181.80 4183.30 1.50 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 372 433 Validity code: 1
Towing dir: 250° Wire out: 100 m Speed: 3 kn*10

Sorted: 12 Kg Total catch: 28.05 CATCH/HOUR: 56.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	20.70	64	36.90	
MYCTOPHIDAE	17.00	35062	30.30	
PENAEIDAE	17.00	8652	30.30	
Echeneis naucrates	1.00	2	1.78	
Trachipterus trachypterus	0.20	6	0.36	
Promethichthys prometheus	0.20	2	0.36	
Total	56.10		100.00	

PROJECT STATION: 610

DATE:27/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 604
start stop duration Long E 1157
TIME :05:04:00 05:35:50 32 (min) Purpose code: 1
LOG :4253.50 4255.40 1.90 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 89 418 Validity code: 1
Towing dir: ° Wire out: 100 m Speed: 4 kn*10

Sorted: 49 Kg Total catch: 52.31 CATCH/HOUR: 98.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	83.81	253	85.45	
Caranx crysos	5.91	6	6.03	
Sardinella maderensis	5.83	19	5.94	1485
Trichiurus lepturus	1.52	11	1.55	
Sardinella aurita	0.83	4	0.85	
Trachurus trecae	0.19	2	0.19	
Total	98.09		100.01	

PROJECT STATION: 611

DATE:27/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 614
start stop duration Long E 1155
TIME :09:05:00 09:35:00 30 (min) Purpose code: 1
LOG :4287.10 4288.80 1.70 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 71 73 Validity code: 1
Towing dir: 240° Wire out: 140 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 612

DATE:27/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 622
start stop duration Long E 1206
TIME :14:45:00 15:15:00 30 (min) Purpose code: 1
LOG :4339.80 4341.40 1.60 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 42 38 Validity code: 1
Towing dir: 120° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 4.17 CATCH/HOUR: 8.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	7.60	22	91.13	1486
Sepia bertheloti	0.74	2	8.87	
Total	8.34		100.00	

PROJECT STATION: 613

DATE:27/ 8/95 GEAR TYPE: PT No:7 POSITION:Lat S 622
start stop duration Long E 1216
TIME :17:31:00 17:53:00 22 (min) Purpose code: 1
LOG :4359.10 4361.00 1.90 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 18 21 Validity code:
Towing dir: 252° Wire out: 100 m Speed: 3 kn*10

Sorted: 39 Kg Total catch: 337.06 CATCH/HOUR: 919.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	497.18	6431	54.09	
Brachydeuterus auritus	257.73	3191	28.04	1488
Sardinella maderensis	49.88	442	5.43	1487
Sphyraena guachancho	30.52	68	3.32	
Galeoides decadactylus	30.05	125	3.27	
Trichiurus lepturus	25.34	166	2.76	
Sardinella aurita	12.16	49	1.32	
Ilisha africana	8.84	76	0.96	
SHACA27	4.16	2	0.45	
Total	915.86		99.64	

PROJECT STATION: 614

DATE:27/ 8/95 GEAR TYPE: No:2 POSITION:Lat S 627
start stop duration Long E 1159
TIME :19:47:00 20:17:00 30 (min) Purpose code: 1
LOG :4376.80 4378.40 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 88 92 Validity code:
Towing dir: 252° Wire out: 150 m Speed: 3 kn*10

Sorted: 36 Kg Total catch: 273.56 CATCH/HOUR: 547.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	217.60	948	39.77	
Trachurus trecae	165.00	744	30.16	1489
Sardinella maderensis	75.00	276	13.71	1490
Trichiurus lepturus	68.20	82	12.47	
Saurida brasiliensis	10.92	4554	2.00	
Sepia officinalis hierredda	2.64	66	0.48	
Sepiella ornata	2.16	666	0.39	
Lagocephalus laevigatus	0.20	2	0.04	
Total	541.72		99.02	

PROJECT STATION: 615

DATE:27/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 633
start stop duration Long E 1141
TIME :22:34:00 23:04:00 30 (min) Purpose code: 1
LOG :4397.60 4399.00 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 210 180 Validity code:
Towing dir: 95° Wire out: 150 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 117.52 CATCH/HOUR: 235.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	92.60	120	39.40	
Sardinella aurita	59.30	150	25.23	1492
Sardinella maderensis	59.00	21[illegible]	25.10	1491
MYCTOPHIDAE	13.08	46648	5.57	
Scomber japonicus	6.60	34	2.81	1494
Echeneis naucrates	1.78	2	0.76	
Trachurus trecae	1.44	4	0.61	
Trachinotus ovatus	1.24	4	0.53	
Total	235.04		100.0[illegible]	

PROJECT STATION: 616

DATE:27/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 635
start stop duration Long E 1211
TIME :02:22:00 02:50:00 28 (min) Purpose code: 1
LOG :4427.00 4428.40 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 46 43 Validity code:
Towing dir: 95° Wire out: 150 m Speed: 3 kn*10

Sorted: 105 Kg Total catch: 365.01 CATCH/HOUR: 782.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	299.12	1181	38.24	1494
Selene dorsalis	180.32	673	23.05	1496
Trachurus trecae	93.71	229	11.98	1495
Caranx senegallus	88.24	212	11.28	
Sphyraena sphyraena	41.57	2	5.31	
Decapterus rhonchus	27.94	36	3.57	
Auxis thazard	14.51	15	1.86	
Sardinella aurita	9.04	36	1.16	
Scomber japonicus	7.35	6	0.94	
Sepia officinalis hierredda	5.44	21	0.70	
Trachinotus goreensis	5.10	6	0.65	
Trichiurus lepturus	4.52	15	0.58	
Trachurus trecae, juvenile	2.83	1414	0.36	
Alloteuthis africana	1.97	990	0.25	
Saurida brasiliensis	0.36	99	0.05	
MYCTOPHIDAE	0.06	92	0.01	
Boops boops	0.06	6	0.01	
Total	782.14		100.00	

PROJECT STATION: 617

DATE:28/ 8/95 GEAR TYPE: PT No:7 POSITION:Lat S 636
start stop duration Long E 1122
TIME :04:45:00 05:15:00 30 (min) Purpose code: 1
LOG :4443.50 4445.00 1.50 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 16 20 Validity code:
Towing dir: 253° Wire out: 150 m Speed: 3 kn*10

Sorted: 36 Kg Total catch: 700.47 CATCH/HOUR: 1400.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	1124.04	12768	80.23	
Sardinella maderensis	120.84	1064	8.63	1498
Sphyraena guachancho	48.80	196	3.48	
Brachydeuterus auritus	40.74	820	2.91	1497
Trichiurus lepturus	33.90	258	2.42	
Ilisha africana	16.12	714	1.15	
Selene dorsalis	6.38	44	0.46	
SHACA27	5.28	4	0.38	
Galeoides decadactylus	3.80	30	0.27	
Sepia officinalis hierredda	1.36	30	0.10	
Total	1401.26		100.03	

PROJECT STATION: 618

DATE:28/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 643
start stop duration Long E 1159
TIME :07:50:00 08:20:00 30 (min) Purpose code: 1
LOG :4468.50 4470.00 1.50 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 83 100 Validity code:
Towing dir: 253° Wire out: 150 m Speed:350 kn*10

Sorted: Kg Total catch: 0.21 CATCH/HOUR: 0.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Echeneis naucrates	0.42	2	100.00	
Total	0.42		100.00	

PROJECT STATION: 619

DATE:11/ 6/57 GEAR TYPE: PT No:2 POSITION:Lat S 650
start stop duration Long E 1147
TIME :12:45:00 13:15:00 30 (min) Purpose code: 1
LOG :4507.60 4509.30 1.70 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 311 273 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 0.66 CATCH/HOUR: 1.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Echeneis naucrates	1.00	2	75.76	
Selene dorsalis	0.28	20	21.21	
POMACENTRIDAE	0.04	4	3.03	
Total	1.32		100.00	

PROJECT STATION: 620

DATE:28/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 650
start stop duration Long E 1205
TIME :19:57:00 20:27:00 30 (min) Purpose code: 1
LOG :4536.90 4538.60 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 80 77 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: 37 Kg Total catch: 49.78 CATCH/HOUR: 99.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	28.40	96	28.53	1500
Selene dorsalis	24.00	90	24.11	1501
Sardinella aurita	23.10	62	23.20	1499
Trichiurus lepturus	8.88	10	8.92	
Saurida brasiliensis	4.64	1996	4.66	
Sepiella ornata	4.44	2326	4.46	
Trachinotus ovatus	2.36	8	2.37	
Trachurus trecae, juvenile	1.28	326	1.29	
Scomber japonicus	1.20	6	1.21	
Echeneis naucrates	0.64	2	0.64	
Boops boops	0.32	66	0.32	
Sepia officinalis hierredda	0.30	8	0.30	
Total	99.56		100.01	

PROJECT STATION: 621

DATE:28/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 650
start stop duration Long E 1215
TIME :21:02:00 21:32:00 30 (min) Purpose code: 1
LOG :4549.20 4550.90 1.70 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 41 57 Validity code:
Towing dir: 270° Wire out: 15 m Speed: 3 kn*10

Sorted: 56 Kg Total catch: 908.80 CATCH/HOUR: 1817.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	1014.40	3528	55.81	1502
Trachurus trecae	706.60	2898	38.88	1503
Scomber japonicus	39.06	42	2.15	
Sepia officinalis hierredda	17.44	42	0.96	
Sphyraena guachancho	13.68	12	0.75	
Boops boops	7.98	1764	0.44	
Sardinella aurita	7.78	20	0.43	
Scomberomorus tritor	2.68	2	0.15	
Caranx crysos	2.64	2	0.15	
Sepiella ornata	2.52	1092	0.14	
Euthynnus alletteratus	1.98	2	0.11	
Saurida brasiliensis	0.84	504	0.05	
Total	1817.60		100.02	

PROJECT STATION: 622

DATE:28/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 646
start stop duration Long E 1223
TIME :23:30:00 00:00:00 30 (min) Purpose code: 1
LOG :4563.40 4564.90 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 21 21 Validity code:
Towing dir: 340° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 35.10 CATCH/HOUR: 70.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	31.30	332	44.59	
Sardinella maderensis	18.20	66	25.93	1504
Sphyraena guachancho	6.76	12	9.63	
Decapterus rhonchus	5.96	32	8.49	
Sardinella aurita	1.58	6	2.25	
Sepia officinalis hierredda	1.10	4	1.57	
Galeoides decadactylus	1.04	2	1.48	
Boops boops	1.00	294	1.42	
Engraulis sp.	0.82	316	1.17	
Engraulis encrasicolus	0.76	608	1.08	
Alloteuthis africana	0.54	732	0.77	
Trichiurus lepturus	0.40	2	0.57	
Sepia bertheloti	0.30	2	0.43	
Trachurus trecae	0.26	2	0.37	
Trichiurus lepturus	0.12	318	0.17	
Trachurus trecae, juvenile	0.12	36	0.17	
Total	70.26		100.09	

PROJECT STATION: 623

DATE:28/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 700
start stop duration Long E 1206
TIME :02:45:00 03:15:00 30 (min) Purpose code: 1
LOG :4589.60 4591.10 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 103 107 Validity code:
Towing dir: 251° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 34.69 CATCH/HOUR: 69.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	33.20	290	47.85	1505
Auxis thazard	17.90	64	25.80	1506
Trichiurus lepturus	14.80	44	21.33	
Selene dorsalis	2.08	6	3.00	
Saurida brasiliensis	0.80	114	1.15	
BREGMACEROTIDAE	0.60	64	0.86	
Total	69.38		99.99	

PROJECT STATION: 624

DATE:28/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 703
start stop duration Long E 1234
TIME :08:12:00 08:42:00 30 (min) Purpose code: 1
LOG :4638.40 4640.10 1.70 Area code : 1
FDEPTH: 35 31 GearCond.code:
BDEPTH: 35 31 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: 64 Kg Total catch: 620.37 CATCH/HOUR: 1240.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	494.20	1532	39.83	1507
Trachurus trecae	255.50	524	20.59	1508
Spondyliosoma cantharus	226.30	262	18.24	
Decapterus rhonchus	189.08	262	15.24	
Trachinotus ovatus	47.80	116	3.85	
Scomberomorus tritor	11.90	4	0.96	
Sardinella maderensis	7.30	14	0.59	
Trachinotus goreensis	4.68	14	0.38	
Auxis thazard	2.22	2	0.18	
Sphyraena guachancho	1.76	2	0.14	
Total	1240.74		100.00	

PROJECT STATION: 625

DATE:28/ 8/95 GEAR TYPE: PT No:7 POSITION:Lat S 656
start stop duration Long E 1233
TIME :11:12:00 11:42:00 30 (min) Purpose code: 1
LOG :4662.20 4663.60 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 19 16 Validity code:
Towing dir: 42° Wire out: 120 m Speed: 3 kn*10

Sorted: Kg Total catch: 35.92 CATCH/HOUR: 71.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	27.20	36	37.86	
Trachinotus ovatus	11.92	24	16.59	
Stromateus fiatola	9.26	12	12.89	
Scomberomorus tritor	7.08	4	9.86	
Caranx crysos	6.50	8	9.05	
Alectis alexandrinus	5.60	6	7.80	
Total	67.56		94.05	

PROJECT STATION: 626

DATE:28/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 711
start stop duration Long E 1241
TIME :14:05:00 14:35:00 30 (min) Purpose code: 1
LOG :4685.80 4687.20 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 28 32 Validity code:
Towing dir: 270° Wire out: 120 m Speed:320 kn*10

Sorted: Kg Total catch: 122.08 CATCH/HOUR: 244.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyraena guachancho	90.50	106	37.07	1510
Selene dorsalis	57.20	158	23.43	1509
Sphyraena afra	46.60	4	19.09	
Stromateus fiatola	27.40	38	11.22	
Scomberomorus tritor	8.80	2	3.60	
Trachinotus ovatus	4.74	10	1.94	
Decapterus rhonchus	3.52	4	1.44	
Sepia bertheloti	3.30	2	1.35	
Trachinotus goreensis	2.10	4	0.86	
Total	244.16		100.00	

PROJECT STATION: 627

DATE:29/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 715
start stop duration Long E 1229
TIME :17:46:00 18:16:00 30 (min) Purpose code: 1
LOG :4716.10 4717.60 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 76 82 Validity code:
Towing dir: 270° Wire out: 150 m Speed:350 kn*10

Sorted: 69 Kg Total catch: 733.00 CATCH/HOUR: 1466.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	677.40	1692	46.21	1512
Selene dorsalis	478.80	1488	32.66	1513
Sardinella maderensis	97.20	312	6.63	1511
Decapterus rhonchus	93.60	96	6.38	
Sphyraena guachancho	57.84	48	3.95	
Sepia officinalis hierredda	24.00	36	1.64	
Trichiurus lepturus	23.52	24	1.60	
Sepiella ornata	8.00	3264	0.55	
Trachinotus ovatus	4.32	12	0.29	
Saurida brasiliensis	1.32	420	0.09	
Total	1466.00		100.00	

PROJECT STATION: 628

DATE:29/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 715
start stop duration Long E 1214
TIME :19:54:00 20:24:00 30 (min) Purpose code: 1
LOG :4730.30 4731.80 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 152 161 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 47 Kg Total catch: 117.31 CATCH/HOUR: 234.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	197.50	370	84.18	
Auxis thazard	22.20	90	9.46	
Trachurus trecae	12.90	24	5.50	
MYCTOPHIDAE	1.86	820	0.79	
Sepiella ornata	0.16	40	0.07	
Total	234.62		100.00	

PROJECT STATION: 629

DATE:30/ 8/95 GEAR TYPE: PT No:7 POSITION:Lat S 710
start stop duration Long E 1242
TIME :34:10:40 34:10:40 30 (min) Purpose code: 1
LOG :4775.70 4777.20 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 24 18 Validity code:
Towing dir: 47° Wire out: 150 m Speed: 3 kn*10

Sorted: 62 Kg Total catch: 245.59 CATCH/HOUR: 491.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	204.60	442	41.65	
Selene dorsalis	130.68	370	26.61	
Brachydeuterus auritus	66.00	482	13.44	
Trachurus trecae	27.90	58	5.68	1516
Sardinella aurita	13.54	44	2.76	1515
Sardinella maderensis	11.78	48	2.40	1514
Stromateus fiatola	11.68	18	2.38	
Trachinotus ovatus	10.08	22	2.05	
Trichiurus lepturus	3.04	6	0.62	
Caranx crysos	2.76	2	0.56	
Caranx senegallus	2.46	4	0.50	
Sphyraena guachancho	1.70	2	0.35	
Sepia orbignyana	1.32	6	0.27	
Alectis alexandrinus	1.22	2	0.25	
Engraulis encrasicolus	1.12	546	0.23	
Galeoides decadactylus	0.70	2	0.14	
Brachydeuterus auritus	0.60	118	0.12	
Total	491.18		100.01	

PROJECT STATION: 630

DATE:30/ 8/95 GEAR TYPE: PT No:7 POSITION:Lat S 657
start stop duration Long E 1230
TIME :24:45:20 24:45:20 (min) Purpose code: 1
LOG :4793.40 4795.00 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 17 18 Validity code:
Towing dir: 170° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 47.93 CATCH/HOUR: 2875.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hemicaranx bicolor	912.00	3120	31.71	
Decapterus rhonchus	651.00	2040	22.64	
Selene dorsalis	495.00	1080	17.21	
Scomberomorus tritor	291.00	300	10.12	
Trichiurus lepturus	156.60	240	5.45	
Stromateus fiatola	156.00	180	5.42	
Alectis alexandrinus	89.40	120	3.11	
Sphyraena guachancho	40.80	60	1.42	
Trachinotus ovatus	30.00	60	1.04	
Elops lacerta	25.80	60	0.90	
Alloteuthis africana	13.20	8460	0.46	
Brachydeuterus auritus	7.80	60	0.27	
Boops boops	4.20	1020	0.15	
Pagellus bellottii	3.00	360	0.10	
Total	2875.80		100.00	

PROJECT STATION: 631

DATE:30/ 8/95 GEAR TYPE: PT No:7 POSITION:Lat S 726
start stop duration Long E 1253
TIME :07:53:00 08:23:00 30 (min) Purpose code: 1
LOG :4834.30 4836.10 1.80 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 18 23 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 4 kn*10

Sorted: Kg Total catch: 33.67 CATCH/HOUR: 67.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chaetodipterus lippei	23.50	42	34.90	
Sphyraena guachancho	20.90	22	31.04	
Scomberomorus tritor	8.50	4	12.62	
Trachinotus ovatus	4.64	10	6.89	
Alectis alexandrinus	4.22	4	6.27	
Spondyliosoma cantharus	2.04	4	3.03	
Decapterus rhonchus	1.34	6	1.99	
Caranx hippos	1.30	2	1.93	
Selene dorsalis	0.90	2	1.34	
Total	67.34		100.01	

PROJECT STATION: 632

DATE:30/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 726
start stop duration Long E 1240
TIME :09:54:00 10:24:00 30 (min) Purpose code: 1
LOG :4848.00 4849.70 1.70 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 68 71 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 8.61 CATCH/HOUR: 17.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	5.52	18	32.06	
Trachinotus ovatus	4.80	14	27.87	
Auxis thazard	3.96	6	23.00	
Sphyraena guachancho	2.02	2	11.73	
Trichiurus lepturus	0.92	2	5.34	
Total	17.22		100.00	

PROJECT STATION: 633

DATE:30/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 726
start stop duration Long E 1226
TIME :12:17:00 12:47:00 30 (min) Purpose code: 1
LOG :4863.60 4865.30 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 134 115 Validity code:
Towing dir: 120° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 0.27 CATCH/HOUR: 0.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	0.50	2	92.59	
Selene dorsalis	0.04	32	7.41	
Total	0.54		100.00	

PROJECT STATION: 634

DATE:30/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 731
start stop duration Long E 1243
TIME :14:50:00 15:20:00 30 (min) Purpose code: 1
LOG :4883.00 4884.50 1.50 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 72 66 Validity code:
Towing dir: 110° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 635

DATE:30/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 737
start stop duration Long E 1256
TIME :17:41:00 18:11:00 30 (min) Purpose code: 1
LOG :4903.80 4905.60 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 30 35 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 4 kn*10

Sorted: 84 Kg Total catch: 393.56 CATCH/HOUR: 787.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	240.70	600	30 58	1517
Trachurus trecae	119.32	242	15.16	1520
Sphyraena guachancho	110 58	114	14.05	
Decapterus rhonchus	95.80	196	12.17	
Sardinella maderensis	79.04	196	10.04	1518
Trachinotus ovatus	54.34	144	6 90	
Spondyliosoma cantharus	46.36	52	5 89	
Caranx hippos	10.20	8	1.30	
Scomberomorus tritor	9.20	6	1.17	
Caranx crysos	7.60	8	0.97	
Trichiurus lepturus	4.86	6	0.62	
Engraulis encrasicolus	3.18	576	0.40	1519
Sepia officinalis hierredda	3.04	14	0.39	
Chloroscombrus chrysurus	2.12	6	0.27	
Euthynnus alletteratus	0.78	2	0.10	
Total	787.12		100.01	

PROJECT STATION: 636

DATE:30/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 736
start stop duration Long E 1240
TIME :20:06:00 20:36:00 30 (min) Purpose code: 1
LOG :4921.80 4923.40 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 95 91 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: 86 Kg Total catch: 323.60 CATCH/HOUR: 647.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	319.80	998	49.41	1521
Trachurus trecae	150.00	366	23.18	1522
SHALA31	95.00	2	14.68	
Euthynnus alletteratus	28.80	18	4.45	
Trichiurus lepturus	16.32	48	2.52	
Scomber japonicus	14.52	18	2.24	
Sardinella aurita	7.86	18	1.21	
Selene dorsalis	6.18	18	0.95	
Trachinotus ovatus	4.86	12	0.75	
Saurida brasiliensis	1.20	372	0.19	
Sepia officinalis hierredda	1.08	30	0.17	
Echeneis naucrates	0.78	2	0.12	
Sepiella ornata	0.30	108	0.05	
Total	646.70		99.92	

PROJECT STATION: 637

DATE:30/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 737
start stop duration Long E 1221
TIME :23:30:00 24:00:00 30 (min) Purpose code: 1
LOG :4946.80 4948.30 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 846 860 Validity code:
Towing dir: 107° Wire out: 105 m Speed: 3 kn*10

Sorted: Kg Total catch: 33.41 CATCH/HOUR: 66.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	27.00	46	40.41	
MYCTOPHIDAE	16.92	10920	25.32	
GEMTH00	15.50	302	23.20	
Cubiceps sp.	3.40	220	5.09	
Trachipterus sp.	2.02	34	3.02	
Sardinella maderensis	1.28	4	1.92	
Todarodes sagittatus	0.70	2	1.05	
Total	66.82		100.01	

PROJECT STATION: 638

DATE:31/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 744
start stop duration Long E 1249
TIME :03:05:00 03:35:00 30 (min) Purpose code: 1
LOG :4977.20 4978.80 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 81 76 Validity code: 1
Towing dir: 106° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 136.49 CATCH/HOUR: 272.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	120.50	352	44.14	1524
Trachurus trecae	78.00	188	28.57	1523
Trachinotus ovatus	36.30	128	13.30	
Scomberomorus tritor	27.30	10	10.00	
Sardinella aurita	4.00	10	1.47	
Auxis thazard	3.94	6	1.44	
Trichiurus lepturus	2.40	8	0.88	
Saurida brasiliensis	0.26	74	0.10	
Todaropsis eblanae	0.20	6	0.07	
MYCTOPHIDAE	0.02	74	0.01	
Total	272.92		99.98	

PROJECT STATION: 639

DATE:31/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 748
start stop duration Long E 1301
TIME :05:34:00 06:04:00 30 (min) Purpose code: 1
LOG :4994.70 4996.30 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 32 40 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 66 Kg Total catch: 427.75 CATCH/HOUR: 855.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	322.00	1022	37.64	1525
Decapterus rhonchus	170.28	232	19.90	1526
Sphyraena guachancho	134.56	154	15.73	
Spondyliosoma cantharus	119.54	188	13.97	
Sphyrna lewini	58.40	10	6.83	
Scomberomorus tritor	19.80	8	2.31	
Caranx crysos	16.42	50	1.92	
Caranx hippos	9.30	2	1.09	
Alectis alexandrinus	4.76	4	0.56	
Total	855.06		99.95	

PROJECT STATION: 640

DATE:31/ 8/95 GEAR TYPE: PT No:1 POSITION:Lat S 747
start stop duration Long E 1254
TIME :07:53:00 08:13:00 20 (min) Purpose code: 1
LOG :5007.90 5009.30 1.40 Area code : 1
FDEPTH: 16 16 GearCond.code: 1
BDEPTH: 61 63 Validity code: 1
Towing dir: 150° Wire out: 100 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 641

DATE:31/ 8/95 GEAR TYPE: BT No:9 POSITION:Lat S 748
start stop duration Long E 1253
TIME :08:47:00 09:17:00 30 (min) Purpose code: 1
LOG :5010.50 5012.00 1.50 Area code : 1
FDEPTH: 65 67 GearCond.code:
BDEPTH: 65 67 Validity code:
Towing dir: 330° Wire out: 250 m Speed: 3 kn*10

Sorted: 71 Kg Total catch: 421.00 CATCH/HOUR: 842.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	469.50	1210	55.76	1527
Pagellus bellottii	139.00	560	16.51	
Selene dorsalis	93.00	460	11.05	1528
Dentex barnardi	41.00	140	4.87	
Dentex gibbosus	27.20	40	3.23	
Epinephelus aeneus	17.40	2	2.07	
Sparus caeruleostictus *	11.40	20	1.35	
Sepia officinalis hierredda	9.00	10	1.07	
Trichiurus lepturus	6.70	10	0.80	
Sepiella ornata	5.00	1780	0.59	
Atractoscion aequidens	4.34	6	0.52	
Dasyatis marmorata	4.30	2	0.51	
Pseudotolithus senegalensis	4.08	2	0.48	
Dentex macrophthalmus	3.60	10	0.43	
Raja miraletus	3.40	6	0.40	
Leptocharias smithii	1.88	2	0.22	
Dentex angolensis	1.20	10	0.14	
Total	842.00		100.00	

PROJECT STATION: 642

DATE:31/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 748
start stop duration Long E 1242
TIME :11:20:00 11:50:00 30 (min) Purpose code: 1
LOG :5022.90 5024.40 1.50 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 109 115 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 7.78 CATCH/HOUR: 15.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	13.20	44	84.83	1529
Sardinella aurita	1.40	4	9.00	
Selene dorsalis	0.96	2	6.17	
Total	15.56		100.00	

PROJECT STATION: 643

DATE:31/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 758
start stop duration Long E 1306
TIME :17:56:00 18:26:00 30 (min) Purpose code: 1
LOG :5082.20 5083.40 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 28 38 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 84 Kg Total catch: 1624.44 CATCH/HOUR: 3248.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1335.60	12124	41.11	1530
Selene dorsalis	676.20	2688	20.81	1533
Trachurus trecae	443.80	1092	13.66	1531
Sardinella maderensis	299.60	1764	9.22	1532
Spondyliosoma cantharus	267.12	420	8.22	
Trichiurus lepturus	93.24	1232	2.87	
Pomadasys peroteti	68.04	112	2.09	
Decapterus rhonchus	44.80	56	1.38	
Trachinotus ovatus	5.60	28	0.17	
Alectis alexandrinus	5.00	6	0.15	
Scomberomorus tritor	4.56	4	0.14	
Sardinella aurita	3.08	28	0.09	
Synagrops microlepis	2.24	28	0.07	
Total	3248.88		99.98	

PROJECT STATION: 644

DATE:31/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 758
start stop duration Long E 1246
TIME :20:44:00 21:14:00 30 (min) Purpose code: 1
LOG :5101.80 5103.60 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 112 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 11.76 CATCH/HOUR: 23.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	7.66	4626	32.57	
Trichiurus lepturus	7.18	42	30.53	
Trachinotus ovatus	4.08	12	17.35	
Trachurus trecae	3.32	6	14.12	
Sepia officinalis hierredda	0.74	18	3.15	
Brachydeuterus auritus	0.50	4	2.13	
Trachurus trecae, juvenile	0.04	8	0.17	
Lagocephalus laevigatus	0.02	2	0.09	
Total	23.54		100.11	

PROJECT STATION: 645

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 809
start stop duration Long E 1255
TIME :01:00:00 01:30:00 30 (min) Purpose code: 1
LOG :5133.90 5135.50 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 109 106 Validity code: 1
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 65.46 CATCH/HOUR: 130.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	91.20	294	69.66	1534
Trichiurus lepturus	21.02	58	16.06	
Auxis thazard	8.64	14	6.60	
Trachurus trecae	8.24	22	6.29	1535
Trachinotus ovatus	0.84	2	0.64	
Sepia bertheloti	0.36	12	0.27	
MYCTOPHIDAE	0.22	88	0.17	
Alloteuthis africana	0.18	50	0.14	
Saurida brasiliensis	0.12	28	0.09	
BREGMACEROTIDAE	0.06	60	0.05	
Synagrops microlepis	0.04	16	0.03	
Total	130.92		100.00	

PROJECT STATION: 646

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 809
start stop duration Long E 1311
TIME :03:30:00 04:00:00 30 (min) Purpose code: 1
LOG :5151.40 5152.80 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 31 43 Validity code:
Towing dir: 320° Wire out: 150 m Speed: 3 kn*10

Sorted: 192 Kg Total catch: 10849.16 CATCH/HOUR: 21698.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	15503.60	206676	71.45	
Trachurus trecae	2282.60	12882	10.52	1538
Selene dorsalis	1909.80	14238	8.80	
Ilisha africana	870.00	24972	4.01	
Sardinella maderensis	471.22	5764	2.17	1536
Stromateus fiatola	385.40	564	1.78	
Sardinella aurita	117.52	2938	0.54	1537
Sphyraena guachancho	74.60	112	0.34	
Pomadasys jubelini	67.80	226	0.31	
Trichiurus lepturus	14.70	338	0.07	
Auxis thazard	1.16	2	0.01	
Total	21698.40		100.00	

PROJECT STATION: 647

DATE: 1/ 8/95 GEAR TYPE: PT No:2 POSITION:Lat S 815
start stop duration Long E 1251
TIME :08:14:00 08:44:00 30 (min) Purpose code: 1
LOG :5194.90 5196.70 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 131 111 Validity code: 1
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 648

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 814
start stop duration Long E 1308
TIME :10:38:00 11:08:00 30 (min) Purpose code: 1
LOG :5213.20 5215.00 1.80 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 55 48 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 4 kn*10

Sorted: 61 Kg Total catch: 168.28 CATCH/HOUR: 336.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	328.90	1310	97.72	1539
Sardinella aurita	6.66	16	1.98	
Lagocephalus laevigatus	1.00	2	0.30	
Total	336.56		100.00	

PROJECT STATION: 649

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 820
start stop duration Long E 1316
TIME :12:55:00 13:25:00 30 (min) Purpose code: 1
LOG :5229.00 5230.50 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 31 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 41.91 CATCH/HOUR: 83.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Euthynnus alletteratus	63.10	14	75.28	
Sardinella aurita	9.12	26	10.88	1540
Sardinella maderensis	4.50	26	5.37	1541
Sarda sarda	2.96	2	3.53	
Trichiurus lepturus	1.40	2	1.67	
Selene dorsalis	1.00	2	1.19	
Echeneis naucrates	0.94	2	1.12	
Sphyraena guachancho	0.74	2	0.88	
Sepia elegans	0.06	2	0.07	
Total	83.82		99.99	

PROJECT STATION: 650

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 820
start stop duration Long E 1258
TIME :15:20:00 15:50:00 30 (min) Purpose code: 1
LOG :5246.10 5247.60 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 112 115 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 2.09 CATCH/HOUR: 4.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	2.56	8	61.24	
Sepia elegans	1.00	68	23.92	
Sardinella aurita	0.62	2	14.83	
Total	4.18		99.99	

PROJECT STATION: 651

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 818
start stop duration Long E 1252
TIME :17:53:00 18:23:00 30 (min) Purpose code: 1
LOG :5258.00 5259.80 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 177 115 Validity code:
Towing dir: 51° Wire out: 150 m Speed: 4 kn*10

Sorted: 72 Kg Total catch: 513.15 CATCH/HOUR: 1026.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	540.00	1760	52.62	1542
Sardinella aurita	238.50	510	23.24	1543
Trichiurus lepturus	192.00	990	18.71	
Trachurus trecae	41.30	110	4.02	1544
MYCTOPHIDAE	4.90	650	0.48	
Atractoscion aequidens	4.80	2	0.47	
Sepia officinalis hierredda	3.90	160	0.38	
Scomberomorus tritor	0.90	10	0.09	
Total	1026.30		100.01	

PROJECT STATION: 652

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 816
start stop duration Long E 1302
TIME :19:47:00 20:17:00 30 (min) Purpose code: 1
LOG :5270.30 5272.00 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 96 91 Validity code:
Towing dir: 126° Wire out: 150 m Speed: 3 kn*10

Sorted: 32 Kg Total catch: 51.08 CATCH/HOUR: 102.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	52.80	158	51.68	1546
Trichiurus lepturus	17.40	36	17.03	
Sarda sarda	11.20	4	10.96	
Trachurus trecae	10.60	32	10.38	1545
Sardinella aurita	3.64	8	3.56	
Trachinotus ovatus	3.24	10	3.17	
BREGMACEROTIDAE	2.50	3534	2.45	
Sepia officinalis hierredda	0.72	30	0.70	
Illex coindetii	0.06	112	0.06	
Total	102.16		99.99	

PROJECT STATION: 653

DATE: 1/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 817
start stop duration Long E 1314
TIME :22:22:00 22:52:00 30 (min) Purpose code: 1
LOG :5289.60 5291.30 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 36 34 Validity code:
Towing dir: 142° Wire out: 150 m Speed: 3 kn*10

Sorted: 119 Kg Total catch: 2118.52 CATCH/HOUR: 4237.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1911.00	15158	45.10	
Sardinella aurita	1407.00	3408	33.21	1547
Trachurus trecae	402.50	1456	9.50	1549
Sardinella maderensis	386.96	1562	9.13	1548
Sphyraena afra	49.00	2	1.16	
Caranx crysos	36.56	36	0.86	
Selene dorsalis	25.20	72	0.59	
Sepia orbignyana	16.34	72	0.39	
Trichiurus lepturus	2.48	72	0.06	
Total	4237.04		100.00	

PROJECT STATION: 654

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 827
start stop duration Long E 1307
TIME :01:20:00 01:50:00 30 (min) Purpose code: 1
LOG :5313.00 5315.00 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 82 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 86.77 CATCH/HOUR: 173.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Prionace glauca	54.60	2	31.46	
Sardinella aurita	35.00	92	20.17	1551
Trachurus trecae	30.10	76	17.34	1550
Trichiurus lepturus	17.50	46	10.08	
Brachydeuterus auritus	16.10	96	9.28	
Sardinella maderensis	9.30	36	5.36	1552
Sarda sarda	5.50	2	3.17	
Trachinotus ovatus	3.84	10	2.21	
Synagrops microlepis	0.48	174	0.28	
BREGMACEROTIDAE	0.44	192	0.25	
Merluccius polli	0.32	10	0.18	
Alioteuthis africana	0.24	40	0.14	
Saurida brasiliensis	0.12	8	0.07	
Total	173.54		99.99	

PROJECT STATION: 655

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 827
start stop duration Long E 1245
TIME :04:25:00 04:55:00 30 (min) Purpose code: 1
LOG :5336.90 5338.70 3.50 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 773 832 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 27.54 CATCH/HOUR: 55.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	44.90	114	81.52	
Trichiurus lepturus	7.82	64	14.20	
Sarda sarda	1.30	2	2.36	
Sardinella maderensis	1.06	4	1.92	
Total	55.08		100.00	

PROJECT STATION: 656

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 833
start stop duration Long E 1309
TIME :08:15:00 08:45:00 30 (min) Purpose code: 1
LOG :5367.80 5369.40 1.60 Area code : 1
FDEPTH: 5 5 GearCond.code: 1
BDEPTH: 80 88 Validity code: 1
Towing dir: 290° Wire out: 150 m Speed: 3 kn*10

Sorted: 17 Kg Total catch: 60.03 CATCH/HOUR: 120.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	83.10	240	69.22	1553
Trachinotus ovatus	31.70	98	26.40	
Sepia officinalis hierredda	3.04	100	2.53	
Sardinella aurita	2.22	6	1.85	
Total	120.06		100.00	

PROJECT STATION: 657

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 837
start stop duration Long E 1318
TIME :11:45:00 12:15:00 30 (min) Purpose code: 1
LOG :5388.80 5390.40 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 31 40 Validity code:
Towing dir: 280° Wire out: 150 m Speed: 32 kn*10

Sorted: Kg Total catch: 13.37 CATCH/HOUR: 26.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	18.30	58	68.44	1554
Sardinella aurita	3.10	8	11.59	
Selene dorsalis	2.14	6	8.00	
Trachinotus ovatus	1.24	4	4.64	
Chloroscombrus chrysurus	0.32	2	1.20	
Sepia elegans	0.06	2	0.22	
Total	25.16		94.09	

PROJECT STATION: 658

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 837
start stop duration Long E 1258
TIME :14:25:00 14:55:00 30 (min) Purpose code: 1
LOG :5408.70 5410.40 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 225 312 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 0.05 CATCH/HOUR: 0.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sepia officinalis hierredda	0.10	42	100.00	
Total	0.10		100.00	

PROJECT STATION: 659

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 840
start stop duration Long E 1306
TIME :16:35:00 17:05:00 30 (min) Purpose code: 1
LOG :5420.90 5422.50 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 99 91 Validity code:
Towing dir: 110° Wire out: 150 m Speed: 32 kn*10

Sorted: Kg Total catch: 7.98 CATCH/HOUR: 15.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sarda sarda	6.52	4	40.85	
Sepia officinalis hierredda	4.62	152	28.95	
Sardinella maderensis	3.36	10	21.05	
Trachinotus ovatus	1.70	6	10.65	
Lagocephalus laevigatus	0.12	4	0.75	
Total	16.32		102.25	

PROJECT STATION: 660

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 844
start stop duration Long E 1313
TIME :18:42:00 19:12:00 30 (min) Purpose code: 1
LOG :5434.90 5436.70 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 55 72 Validity code: 1
Towing dir: 262° Wire out: 150 m Speed: 3 kn*10

Sorted: 69 Kg Total catch: 262.37 CATCH/HOUR: 524.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	162.24	514	30.92	1556
Trachurus trecae	145.86	452	27.80	1686
Brachydeuterus auritus	63.96	312	12.19	
Selene dorsalis	33.16	92	6.32	
Sardinella aurita	31.46	78	6.00	1555
Trichiurus lepturus	29.90	130	5.70	
Chloroscombrus chrysurus	27.14	160	5.17	
Scomberomorus tritor	13.00	4	2.48	
Sepiella ornata	9.20	5522	1.75	
Trachinotus ovatus	3.22	10	0.61	
Sepia officinalis hierredda	2.80	20	0.53	
Scomber japonicus	2.80	4	0.53	
Total	524.74		100.00	

PROJECT STATION: 661

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 846
start stop duration Long E 1259
TIME :21:11:00 21:26:00 15 (min) Purpose code: 1
LOG :5451.30 5452.10 0.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 214 198 Validity code: 1
Towing dir: 105° Wire out: 150 m Speed: 3 kn*10

Sorted: 51 Kg Total catch: 223.89 CATCH/HOUR: 895.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	408.20	1428	45.58	1557
Sardinella aurita	239.84	596	26.78	1558
Trichiurus lepturus	100.12	780	11.18	
Trachurus trecae	57.84	116	6.46	
LAMNIDAE	56.60	4	6.32	
MYCTOPHIDAE	9.00	15600	1.00	
Auxis thazard	6.96	12	0.78	
Trachinotus ovatus	5.48	12	0.61	
Sarda sarda	5.16	4	0.58	
Euthynnus alletteratus	4.80	8	0.54	
Chloroscombrus chrysurus	1.56	12	0.17	
Total	895.56		100.00	

PROJECT STATION: 662

DATE: 2/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 851
start stop duration Long E 1307
TIME :01:25:00 01:55:00 30 (min) Purpose code: 1
LOG :5482.50 5484.20 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 92 100 Validity code: 1
Towing dir: 260° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 123.29 CATCH/HOUR: 246.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	143.68	402	58.27	1560
Trachurus trecae	60.10	146	24.37	1559
Brachydeuterus auritus	18.10	156	7.34	
Trichiurus lepturus	16.60	58	6.73	
Synagrops microlepis	3.76	4070	1.52	
BREGMACEROTIDAE	1.68	672	0.68	
Sardinella aurita	0.80	4	0.32	
Sphyraena guachancho	0.74	2	0.30	
MYCTOPHIDAE	0.70	70	0.28	
Merluccius polli	0.28	126	0.11	
Alloteuthis africana	0.14	154	0.06	
Total	246.58		99.98	

PROJECT STATION: 663

DATE: 3/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 853
start stop duration Long E 1242
TIME :04:20:00 04:50:00 30 (min) Purpose code: 1
LOG :5502.80 5504.40 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 541 476 Validity code: 1
Towing dir: 105° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 20.97 CATCH/HOUR: 41.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	21.70	46	51.74	
Trichiurus lepturus	14.12	186	33.67	
MYCTOPHIDAE	5.82	2576	13.88	
Illex coindetii	0.20	2	0.48	
Sudis sp.	0.10	38	0.24	
Total	41.94		100.01	

PROJECT STATION: 664

DATE: 3/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 858
start stop duration Long E 1255
TIME :07:16:00 07:46:00 30 (min) Purpose code: 1
LOG :5525.20 5526.90 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 229 244 Validity code:
Towing dir: 262° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 8.90 CATCH/HOUR: 17.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	17.80	44	100.00	
Total	17.80		100.00	

PROJECT STATION: 665

DATE: 3/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 904
start stop duration Long E 1230
TIME :11:35:00 12:05:00 30 (min) Purpose code: 1
LOG :5552.30 5553.90 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 45 46 Validity code:
Towing dir: 260° Wire out: 150 m Speed: kn*10

Sorted: Kg Total catch: 179.09 CATCH/HOUR: 358.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	130.20	412	36.35	1561
Trachinotus ovatus	108.60	320	30.32	
Chloroscombrus chrysurus	34.80	196	9.72	
Sphyraena guachancho	30.30	34	8.46	
Galeichthys feliceps	15.70	2	4.38	
Stromateus fiatola	15.00	28	4.19	
Selene dorsalis	10.38	32	2.90	
Sarda sarda	4.14	2	1.16	
Caranx senegallus	4.12	4	1.15	
Sardinella aurita	2.62	6	0.73	
Lagocephalus laevigatus	2.04	2	0.57	
Sepiella ornata	0.28	6	0.08	
Total	358.18		100.01	

PROJECT STATION: 666

DATE: 3/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 908
start stop duration Long E 1249
TIME :14:05:00 14:35:00 30 (min) Purpose code: 1
LOG :5571.60 5573.30 1.07 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 207 70 Validity code:
Towing dir: 105° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 93.30 CATCH/HOUR: 186.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	90.60	266	48.55	
Sardinella maderensis	87.20	250	46.73	1562
Sarda sarda	3.76	2	2.02	
Sepiella ornata	3.64	118	1.95	
Stromateus fiatola	1.40	2	0.75	
Total	186.60		100.00	

PROJECT STATION: 667

DATE: 3/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 910
start stop duration Long E 1252
TIME :16:30:00 17:00:00 30 (min) Purpose code: 1
LOG :5587.50 5589.90 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 63 73 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 32 kn*10

Sorted: Kg Total catch: 91.63 CATCH/HOUR: 183.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	57.80	140	31.54	1564
Mobula rochebrunei	50.00	2	27.28	
Sardinella maderensis	49.00	152	26.74	1563
Trachinotus ovatus	21.70	62	11.84	
Selene dorsalis	3.50	16	1.91	
Echeneis naucrates	0.14	2	0.08	
Sepia officinalis hierredda	0.12	4	0.07	
Total	182.26		99.46	

PROJECT STATION: 668

DATE: 3/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 910
start stop duration Long E 1244
TIME :18:13:00 18:43:00 30 (min) Purpose code: 1
LOG :5594.90 5596.50 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 219 271 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 32 kn*10

Sorted: 55 Kg Total catch: 427.56 CATCH/HOUR: 855.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	432.46	1268	50.57	1566
Sardinella aurita	151.66	378	17.74	1565
Trachurus trecae	85.06	170	9.95	1567
MYCTOPHIDAE	55.08	16676	6.44	
Euthynnus alletteratus	33.20	48	3.88	
Sarda sarda	30.80	16	3.60	
Trichiurus lepturus	29.88	170	3.49	
Selene dorsalis	22.50	72	2.63	
Scomber japonicus	6.38	8	0.75	
Trachinotus ovatus	5.58	18	0.65	
Sepia officinalis hierredda	2.60	80	0.30	
Total	855.20		100.00	

PROJECT STATION: 669

DATE: 3/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 910
start stop duration Long E 1237
TIME :21:23:00 21:53:00 30 (min) Purpose code: 1
LOG :5609.80 5611.40 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 887 813 Validity code:
Towing dir: 80° Wire out: 150 m Speed: 32 kn*10

Sorted: Kg Total catch: 51.01 CATCH/HOUR: 102.02

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Isurus oxyrinchus	51.00	2	49.99	
Trichiurus lepturus	21.30	166	20.88	
Euthynnus alletteratus	13.42	16	13.15	
MYCTOPHIDAE	10.44	6480	10.23	
Sardinella aurita	2.38	6	2.33	
Trachinotus ovatus	1.78	4	1.74	
Auxis thazard	1.16	2	1.14	
Sardinella maderensis	0.54	2	0.53	
Total	102.02		99.99	

PROJECT STATION: 670

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 901
start stop duration Long E 1246
TIME :01:55:00 02:25:00 30 (min) Purpose code: 1
LOG :5651.40 5653.00 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 386 Validity code:
Towing dir: 80° Wire out: 150 m Speed: 32 kn*10

Sorted: Kg Total catch: 21.36 CATCH/HOUR: 42.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	16.90	586	39.56	
Euthynnus alletteratus	14.00	16	32.77	
Naucrates ductor	4.02	34	9.41	
Centrolophus niger	2.66	2	6.23	
MYCTOPHIDAE	2.62	1456	6.13	
Trachinotus ovatus	2.52	6	5.90	
Total	42.72		100.00	

PROJECT STATION: 671

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 859
start stop duration Long E 1259
TIME :04:02:00 04:32:00 30 (min) Purpose code: 1
LOG :5666.70 5668.40 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 133 193 Validity code: 1
Towing dir: 288° Wire out: 150 m Speed: 3 kn*10

Sorted: 66 Kg Total catch: 302.75 CATCH/HOUR: 605.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	220.00	478	36.33	1569
Sardinella maderensis	188.66	566	31.16	1568
Trichiurus lepturus	65.46	588	10.81	
Trachinotus ovatus	48.12	136	7.95	
Sarda sarda	26.60	12	4.39	
Euthynnus alletteratus	14.02	22	2.32	
MYCTOPHIDAE	11.66	5026	1.93	
Scomber japonicus	9.90	16	1.64	
Sphyraena guachancho	8.26	22	1.36	
Sardinella aurita	4.90	10	0.81	
Sepia officinalis hierredda	3.86	120	0.64	
Selene dorsalis	2.32	4	0.38	
Auxis thazard	1.68	2	0.28	
ATHAA00	0.06	10	0.01	
Total	605.50		100.01	

PROJECT STATION: 672

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 915
start stop duration Long E 1255
TIME :08:20:00 08:50:00 30 (min) Purpose code: 1
LOG :5705.30 5707.00 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 29 45 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 34 kn*10

Sorted: 121 Kg Total catch: 1134.43 CATCH/HOUR: 2268.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	975.60	2386	43.00	1571
Sardinella maderensis	549.44	1646	24.22	1572
Selene dorsalis	465.28	1480	20.51	1570
Spondyliosoma cantharus	108.60	130	4.79	
Sphyraena guachancho	37.74	54	1.66	
Sphyraena afra	27.00	2	1.19	
Chloroscombrus chrysurus	23.86	112	1.05	
Decapterus rhonchus	18.12	18	0.80	
Galeoides decadactylus	12.96	18	0.57	
Arius parkii	12.70	2	0.56	
Trichiurus lepturus	8.70	18	0.38	
Euthynnus alletteratus	8.50	2	0.37	
Alectis alexandrinus	8.36	10	0.37	
Rhizoprionodon acutus	6.44	2	0.28	
Trachinotus ovatus	3.34	18	0.15	
Caranx crysos	2.22	2	0.10	
Total	2268.86		100.00	

PROJECT STATION: 673

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 916
start stop duration Long E 1242
TIME :10:38:00 11:08:00 30 (min) Purpose code: 1
LOG :5720.10 5721.80 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 247 Validity code:
Towing dir: 107° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 6.59 CATCH/HOUR: 13.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	11.60	30	88.01	
Sardinella aurita	0.80	2	6.07	
Selene dorsalis	0.68	2	5.16	
Sepia orbignyana	0.10		0.76	
Total	13.18		100.00	

PROJECT STATION: 674

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 919
start stop duration Long E 1250
TIME :12:15:00 12:45:00 30 (min) Purpose code: 1
LOG :5730.20 5732.00 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 89 74 Validity code:
Towing dir: 108° Wire out: 150 m Speed: 36 kn*10

Sorted: Kg Total catch: 3.59 CATCH/HOUR: 7.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sarda sarda	5.70	2	79.39	
Auxis thazard	1.48	2	20.61	
Total	7.18		100.00	

PROJECT STATION: 675

DATE: 4/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 924
start stop duration Long E 1302
TIME :14:50:00 15:20:00 30 (min) Purpose code: 1
LOG :5750.00 5751.30 1.30 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 21 24 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 26 kn*10

Sorted: Kg Total catch: 8.77 CATCH/HOUR: 17.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyraena afra	12.90	2	73.55	
Caranx senegallus	3.66	4	20.87	
Trachinotus ovatus	0.98	2	5.59	
Total	17.54		100.01	

PROJECT STATION: 676

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 921
start stop duration Long E 1241
TIME :18:25:00 18:55:00 30 (min) Purpose code: 1
LOG :5774.40 5776.20 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 244 240 Validity code: 1
Towing dir: 13° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 54.34 CATCH/HOUR: 108.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	50.20	132	46.19	
MYCTOPHIDAE	36.10	33424	33.22	
Euthynnus alletteratus	16.06	22	14.78	
Sarda sarda	2.82	2	2.59	
Trachurus trecae	1.18	2	1.09	
Auxis thazard	1.18	2	1.09	
Trichiurus lepturus	1.14	6	1.05	
Total	108.68		100.01	

PROJECT STATION: 677

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 917
start stop duration Long E 1251
TIME :20:46:00 21:16:00 30 (min) Purpose code: 1
LOG :6792.10 6794.00 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 77 61 Validity code: 1
Towing dir: 108° Wire out: 150 m Speed: 3 kn*10

Sorted: 85 Kg Total catch: 474.02 CATCH/HOUR: 948.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	311.60	936	32.87	1573
Sardinella maderensis	213.20	664	22.49	1688
Sardinella aurita	143.20	368	15.10	1689
Brachydeuterus auritus	137.20	912	14.47	1687
Selene dorsalis	66.08	656	6.97	
Trichiurus lepturus	35.60	288	3.76	
Euthynnus alletteratus	14.00	14	1.48	
Caranx crysos	12.28	10	1.30	
Trachinotus ovatus	9.92	24	1.05	
Alloteuthis africana	4.96	1432	0.52	
Total	948.04		100.01	

PROJECT STATION: 678

DATE: 4/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 921
start stop duration Long E 1259
TIME :23:05:00 23:35:00 30 (min) Purpose code: 1
LOG :5809.40 5810.90 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 29 38 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 8 Kg Total catch: 146.48 CATCH/HOUR: 292.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	124.80	402	42.60	
Trachurus trecae	50.50	140	17.24	1574
Sardinella maderensis	26.20	80	8.94	1575
Galeus polli	14.00	6	4.78	
Sepia bertheloti	13.18	4	4.50	
Decapterus rhonchus	12.70	18	4.34	
Sphyraena guachancho	10.34	12	3.53	
Stromateus fiatola	9.30	10	3.17	
Caranx crysos	9.20	10	3.14	
Trichiurus lepturus	3.98	8	1.36	
Galeoides decadactylus	3.92	8	1.34	
Sardinella aurita	3.70	10	1.26	
Pagellus bellottii	2.84	10	0.97	
Engraulis encrasicolus	2.20	300	0.75	
Brachydeuterus auritus	1.82	12	0.62	
Trachinotus ovatus	1.58	4	0.54	
Pomadasys incisus	1.22	4	0.42	
Alloteuthis africana	0.84	148	0.29	
Boops boops	0.40	6	0.14	
Sepiella ornata	0.22	2	0.08	
BREGMACEROTIDAE	0.02	4	0.01	
Total	292.96		100.02	

PROJECT STATION: 679

DATE: 5/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 925
start stop duration Long E 1256
TIME :01:40:00 02:10:00 30 (min) Purpose code: 1
LOG :5830.10 5831.80 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 56 49 Validity code: 1
Towing dir: 114° Wire out: 150 m Speed: 3 kn*10

Sorted: 91 Kg Total catch: 473.40 CATCH/HOUR: 946.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	808.90	2346	85.44	1576
Sardinella aurita	67.40	170	7.12	1577
Sphyraena afra	24.90	2	2.63	
Alloteuthis africana	12.30	2610	1.30	
Selene dorsalis	9.40	30	0.99	
Trachurus trecae	8.30	40	0.88	
Brachydeuterus auritus	6.50	90	0.69	
Euthynnus alletteratus	6.20	10	0.65	
Sepia bertheloti	3.66	2	0.39	
Trachurus trecae, juvenile	0.24	320	0.03	
Total	947.80		100.12	

PROJECT STATION: 680

DATE: 5/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 930
start stop duration Long E 1303
TIME :03:50:00 04:20:00 30 (min) Purpose code: 1
LOG :5486.10 5487.70 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 35 41 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 40 Kg Total catch: 261.61 CATCH/HOUR: 523.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	381.60	1154	72.93	1579
Prionace glauca	70.52	2	13.48	
Sardinella aurita	38.64	98	7.39	1578
Selene dorsalis	12.12	30	2.32	
Trachurus trecae	9.68	26	1.85	
Alloteuthis africana	4.16	1622	0.80	
Sphyraena guachancho	3.12	4	0.60	
Trachinotus ovatus	1.92	4	0.37	
Pagellus bellottii	1.46	4	0.28	
Total	523.22		100.02	

PROJECT STATION: 681

DATE: 5/ 9/95 GEAR TYPE: BT No:9 POSITION:Lat S 936
start stop duration Long E 1253
TIME :07:47:00 08:17:00 30 (min) Purpose code: 1
LOG :5882.40 5883.90 1.50 Area code : 1
FDEPTH: 104 104 GearCond.code:
BDEPTH: 104 104 Validity code:
Towing dir: 160° Wire out: 300 m Speed: 30 kn*10

Sorted: 21 Kg Total catch: 105.83 CATCH/HOUR: 211.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	95.10	472	44.93	
Trichiurus lepturus	44.50	80	21.02	
Dentex angolensis	17.50	104	8.27	
Dasyatis centroura	13.14	2	6.21	
Branchiostegus semifasciatus	8.62	8	4.07	
Trachurus trecae	6.46	54	3.05	1580
Illex coindetii	4.50	116	2.13	
Umbrina canariensis	3.42	6	1.62	
Zenopsis conchifer	3.28	2	1.55	
Zeus faber	2.38	8	1.12	
Saurida brasiliensis	1.40	390	0.66	
Lutjanus fulgens	1.38	2	0.65	
Squatina oculata	1.30	2	0.61	
Bembrops heterurus	1.24	6	0.59	
Pontinus accraensis	1.18	6	0.56	
Lepidotrigla carolae	0.84	6	0.40	
Lagocephalus laevigatus	0.80	2	0.38	
Synagrops microlepis	0.80	420	0.38	
Raja miraletus	0.76	2	0.36	
Cynoglossus browni	0.74	28	0.35	
Grammoplites gruveli	0.72	4	0.34	
Dentex barnardi	0.52	2	0.25	
Chaetodon hoefleri	0.32	2	0.15	
Pagellus bellottii	0.24	2	0.11	
Pterothrissus belloci	0.24	2	0.11	
Citharus linguatula	0.20	4	0.09	
Alloteuthis africana	0.08	22	0.04	
Total	211.66		100.00	

PROJECT STATION: 682

DATE: 5/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 938
start stop duration Long E 1310
TIME :10:33:00 11:03:00 30 (min) Purpose code: 1
LOG :5902.80 5904.60 1.80 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 17 25 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 35 kn*10

Sorted: Kg Total catch: 7.26 CATCH/HOUR: 14.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyraena guachancho	3.78	4	26.03	
Raja miraletus	3.40	6	23.42	
Chloroscombrus chrysurus	1.78	10	12.26	
Todarodes sagittatus	1.60	52	11.02	
Trachurus trecae	1.48	12	10.19	
Dentex macrophthalmus	1.40	4	9.64	
Sardinella maderensis	0.52	2	3.58	
Dentex angolensis	0.44	2	3.03	
Synagrops microlepis	0.12	60	0.83	
Total	14.52		100.00	

PROJECT STATION: 683

DATE: 5/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 938
start stop duration Long E 1302
TIME :12:00:00 12:30:00 30 (min) Purpose code: 1
LOG :5911.00 5912.50 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 69 78 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 8.29 CATCH/HOUR: 16.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	5.88	16	35.46	1581
Sardinella aurita	5.10	12	30.76	1582
Trachinotus ovatus	1.94	6	11.70	
Trichiurus lepturus	1.78	2	10.74	
Auxis thazard	1.50	2	9.05	
Alloteuthis africana	0.38	136	2.29	
Total	16.58		100.00	

PROJECT STATION: 684

DATE: 5/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 944
start stop duration Long E 1306
TIME :15:35:00 16:05:00 30 (min) Purpose code: 1
LOG :5140.20 5941.70 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 51 41 Validity code:
Towing dir: 112° Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 39.21 CATCH/HOUR: 78.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	48.00	110	61.21	1583
Trachinotus ovatus	13.60	46	17.34	
Stromateus fiatola	7.58	8	9.67	
Sardinella maderensis	3.08	8	3.93	
Decapterus rhonchus	2.66	4	3.39	
Euthynnus alletteratus	2.56	2	3.26	
Trachurus trecae	0.94	2	1.20	
Total	78.42		100.00	

PROJECT STATION: 685

DATE: 5/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 947
start stop duration Long E 1310
TIME :17:50:00 18:20:00 30 (min) Purpose code: 1
LOG :5951.20 5952.90 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 29 38 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 84 Kg Total catch: 3486.56 CATCH/HOUR: 6973.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	2432.80	18306	34.89	1585
Sardinella maderensis	1922.40	5886	27.57	1586
Trachurus trecae	1387.80	4536	19.90	1587
Decapterus rhonchus	540.00	1080	7.74	1584
Selene dorsalis	184.14	540	2.64	
Sphyraena guachancho	171.72	162	2.46	
Sardinella aurita	145.80	324	2.09	
Spondyliosoma cantharus	94.50	108	1.36	
Galeoides decadactylus	72.36	162	1.04	
Trachinotus ovatus	19.98	54	0.29	
Engraulis encrasicolus	1.62	216	0.02	
Total	6973.12		100.00	

PROJECT STATION: 686

DATE: 5/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 947
start stop duration Long E 1256
TIME :19:55:00 20:25:00 30 (min) Purpose code: 1
LOG :5965.50 5967.30 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 108 116 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 62.60 CATCH/HOUR: 125.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Isurus oxyrinchus	79.00	2	63.10	
Trachinotus ovatus	18.30	48	14.62	
Trachurus trecae	17.00	116	13.58	1588
Trichiurus lepturus	3.40	8	2.72	
Euthynnus alletteratus	3.02	6	2.41	
MYCTOPHIDAE	2.38	1006	1.90	
Auxis thazard	1.50	2	1.20	
Sardinella maderensis	0.60	2	0.48	
Total	125.20		100.01	

PROJECT STATION: 687

DATE: 5/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 952
start stop duration Long E 1304
TIME :22:45:00 23:15:00 30 (min) Purpose code: 1
LOG :5986.00 5987.90 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 77 66 Validity code: 1
Towing dir: 108° Wire out: 150 m Speed: 3 kn*10

Sorted: 60 Kg Total catch: 227.94 CATCH/HOUR: 455.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	147.00	458	32.25	1589
Brachydeuterus auritus	141.60	856	31.06	
Trachurus trecae	123.38	480	27.06	1590
Alloteuthis africana	18.68	9338	4.10	
Trachinotus ovatus	13.72	46	3.01	
Euthynnus alletteratus	5.70	10	1.25	
Selene dorsalis	3.98	8	0.87	
Sepiella ornata	1.50	38	0.33	
Saurida brasiliensis	0.16	38	0.04	
MYCTOPHIDAE	0.14	46	0.03	
Total	455.86		100.00	

PROJECT STATION: 688

DATE: 6/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 957
start stop duration Long E 1315
TIME :00:40:00 01:10:00 30 (min) Purpose code: 1
LOG :6000.10 6001.80 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 15 24 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 53 Kg Total catch: 142.54 CATCH/HOUR: 285.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Myliobatis aquila	46.00	4	16.14	
Brachydeuterus auritus	45.22	946	15.86	
Trachurus trecae	37.80	86	13.26	1591
Pomadasys jubelini	37.58	72	13.18	
Galeoides decadactylus	33.34	90	11.69	
Stromateus fiatola	33.06	46	11.60	
Pomadasys rogeri	23.62	54	8.29	
Sphyraena guachancho	14.00	22	4.91	
Sardinella maderensis	4.90	40	1.72	1592
Parapenaeopsis atlantica	1.08	208	0.38	
Ilisha africana	0.82	10	0.29	
Chloroscombrus chrysurus	0.72	4	0.25	
Sepia officinalis hierredda	0.28	4	0.10	
Trachurus trecae, juvenile	0.22	126	0.08	
Alloteuthis africana	0.14	40	0.05	
Total	278.78		97.80	

PROJECT STATION: 689

DATE: 6/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 956
start stop duration Long E 1255
TIME :03:10:00 03:40:00 30 (min) Purpose code: 1
LOG :6019.50 6021.20 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 116 124 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 121.04 CATCH/HOUR: 242.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Auxis thazard	73.28	184	30.27	
Trachurus trecae	15.12	1560	6.25	1593
Scomber japonicus	11.36	16	4.69	
Saurida brasiliensis	3.20	1096	1.32	
Alloteuthis africana	2.24	496	0.93	
Sepia officinalis hierredda	0.48	8	0.20	
Synagrops microlepis	0.16	72	0.07	
BREGMACEROTIDAE	0.16	40	0.07	
Total	106.00		43.80	

PROJECT STATION: 690

DATE: 6/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1002
start stop duration Long E 1305
TIME :08:48:00 09:18:00 30 (min) Purpose code: 1
LOG :6063.60 6065.50 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 80 78 Validity code:
Towing dir: 103° Wire out: 150 m Speed: 38 kn*10

Sorted: Kg Total catch: 15.56 CATCH/HOUR: 31.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	16.90	56	54.31	1594
Trachinotus ovatus	11.24	26	36.12	
Trachurus trecae	1.62	10	5.21	
Trichiurus lepturus	1.28	2	4.11	
Saurida brasiliensis	0.06	18	0.19	
Lagocephalus laevigatus	0.02	2	0.06	
Total	31.12		100.00	

PROJECT STATION: 691

DATE: 6/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1005
start stop duration Long E 1113
TIME :10:43:00 11:13:00 30 (min) Purpose code: 1
LOG :5067.10 6077.90 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 40 40 Validity code:
Towing dir: 160° Wire out: 150 m Speed: 36 kn*10

Sorted: 82 Kg Total catch: 1086.70 CATCH/HOUR: 2173.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1631.50	15444	75.07	
Trachurus trecae	278.20	962	12.80	1595
Selene dorsalis	201.24	676	9.26	
Sphyraena guachancho	49.92	52	2.30	
Sardinella maderensis	15.86	52	0.73	
Trichiurus lepturus	9.10	52	0.42	
Arius parkii	3.96	2	0.18	
Total	2189.78		100.76	

PROJECT STATION: 692

DATE: 6/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1007
start stop duration Long E 1322
TIME :12:30:00 13:00:00 30 (min) Purpose code: 1
LOG :6087.10 6088.80 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 14 14 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 25.57 CATCH/HOUR: 51.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT C	SAMP
Sphyraena guachancho	33.40	52	65.31	
Pteromylaeus bovinus	6.00	2	11.73	
Galeoides decadactylus	4.48	2	8.76	
Trichiurus lepturus	3.28	4	6.41	
Stromateus fiatola	2.30	4	4.50	
Pomadasys rogeri	1.04	2	2.03	
Sardinella maderensis	0.64	2	1.25	
Total	51.14		99.99	

PROJECT STATION: 693

DATE: 6/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1007
start stop duration Long E 1304
TIME :14:40:00 15:10:00 30 (min) Purpose code: 1
LOG :6103.80 6105.30 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 92 96 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 694

DATE: 6/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1010
start stop duration Long E 1311
TIME :17:49:00 18:19:00 30 (min) Purpose code: 1
LOG :6127.20 6129.00 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 78 71 Validity code: 1
Towing dir: 40° Wire out: 150 m Speed: 3 kn*10

Sorted: 38 Kg Total catch: 319.75 CATCH/HOUR: 639.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	250.40	928	39.16	1597
Trachurus trecae	195.60	904	30.59	1596
ALOPIIDAE	81.00	2	12.67	
Sphyrna lewini	41.00	2	6.41	
Euthynnus alletteratus	40.20	34	6.29	
Trachinotus ovatus	9.68	24	1.51	
Scomber japonicus	9.60	16	1.50	
Brachydeuterus auritus	5.36	40	0.84	
Sarda sarda	3.62	2	0.57	
Trichiurus lepturus	1.68	8	0.26	
Alloteuthis africana	1.36	416	0.21	
Total	639.50		100.01	

PROJECT STATION: 695

DATE: 6/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1002
start stop duration Long E 1313
TIME :20:20:00 20:50:00 30 (min) Purpose code: 1
LOG :6142.80 6144.70 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 32 40 Validity code: 1
Towing dir: 305° Wire out: 150 m Speed: 3 kn*10

Sorted: 65 Kg Total catch: 1239.88 CATCH/HOUR: 2479.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1105.66	10002	44.59	1599
Trachurus trecae	679.60	1968	27.41	1598
Selene dorsalis	255.46	798	10.30	1601
Sphyraena guachancho	125.58	178	5.06	
Spondyliosoma cantharus	91.66	96	3.70	
Trichiurus lepturus	78.18	468	3.15	
Sardinella maderensis	69.22	370	2.79	1600
Trachinotus ovatus	28.86	96	1.16	
Sepia officinalis hierredda	15.00	18	0.60	
Galeoides decadactylus	13.26	18	0.53	
Pagellus bellottii	7.60	18	0.31	
Galeorhinus galeus	6.36	4	0.26	
Sardinella maderensis	2.34	18	0.09	
Engraulis encrasicolus	0.98	78	0.04	
Total	2479.76		99.99	

PROJECT STATION: 696

DATE: 6/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1002
start stop duration Long E 1303
TIME :22:20:00 22:50:00 30 (min) Purpose code: 1
LOG :6155.50 6157.50 2.00 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 88 83 Validity code: 1
Towing dir: 119° Wire out: 150 m Speed: 4 kn*10

Sorted: 57 Kg Total catch: 548.50 CATCH/HOUR: 1097.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	519.60	1188	47.37	1604
Sardinella aurita	497.40	888	45.34	1603
Trachurus trecae	70.80	252	6.45	1602
Sphyraena guachancho	5.00	6	0.46	
Trachinotus ovatus	4.20	12	0.38	
Total	1097.00		100.00	

PROJECT STATION: 697

DATE: 7/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1013
start stop duration Long E 1322
TIME :01:20:00 01:50:00 30 (min) Purpose code: 1
LOG :6180.20 6182.00 1.90 Area code : 1
FDEPTH: 5 5 GearCond.code: 1
BDEPTH: 29 26 Validity code: 1
Towing dir: 119° Wire out: 150 m Speed: 3 kn*10

Sorted: 67 Kg Total catch: 674.50 CATCH/HOUR: 1349.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1188.20	12020	88.08	
Trachurus trecae	95.00	160	7.04	
Galeoides decadactylus	40.40	60	2.99	
Sardinella aurita	12.80	40	0.95	
Sardinella maderensis	8.40	60	0.62	
Selene dorsalis	4.20	20	0.31	
Total	1349.00		99.99	

PROJECT STATION: 698

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1016
start stop duration Long E 1315
TIME :03:40:00 04:10:00 30 (min) Purpose code: 1
LOG :6197.50 6199.30 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 78 85 Validity code: 1
Towing dir: 264° Wire out: 150 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 78.49 CATCH/HOUR: 156.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	61.68	264	39.29	1606
Brachydeuterus auritus	38.80	338	24.72	
Sardinella maderensis	20.06	80	12.78	1605
Euthynnus alletteratus	10.00	8	6.37	
Trachinotus ovatus	5.88	12	3.75	
Saurida brasiliensis	5.84	3308	3.72	
Alloteuthis africana	5.84	620	3.72	
Trichiurus lepturus	3.96	24	2.52	
Selene dorsalis	3.60	14	2.29	
Scomber japonicus	1.30	2	0.83	
Sepiella ornata	0.02	2	0.01	
Total	156.98		100.00	

PROJECT STATION: 699

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1017
start stop duration Long E 1302
TIME :05:44:00 06:14:00 30 (min) Purpose code: 1
LOG :6211.10 6212.90 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 114 112 Validity code: 1
Towing dir: 120° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 0.02 CATCH/HOUR: 0.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Octopus macropus	0.04	2	100.00	
Total	0.04		100.00	

PROJECT STATION: 700

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1023
start stop duration Long E 1326
TIME :08:42:00 09:12:00 30 (min) Purpose code: 1
LOG :6236.00 6237.90 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 49 38 Validity code:
Towing dir: 110° Wire out: 130 m Speed: 38 kn*10

Sorted: Kg Total catch: 69.48 CATCH/HOUR: 138.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
SHAAL10	120.00	2	86.36	
Isurus oxyrinchus	18.10	2	13.03	
Spondyliosoma cantharus	12.14	14	8.74	
Selene dorsalis	0.86	2	0.62	
Total	151.10		108.75	

PROJECT STATION: 701

DATE: 7/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1024
start stop duration Long E 1328
TIME :10:13:00 10:43:00 30 (min) Purpose code: 1
LOG :6243.30 6245.10 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 24 34 Validity code:
Towing dir: 263° Wire out: 150 m Speed: 36 kn*10

Sorted: 48 Kg Total catch: 103.17 CATCH/HOUR: 206.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyraena guachancho	86.98	64	42.15	
Chloroscombrus chrysurus	72.80	430	35.28	
Sardinella maderensis	37.70	120	18.27	1607
Sardinella aurita	4.30	10	2.08	
Trachinotus ovatus	3.44	10	1.67	
Trachurus trecae	1.12	4	0.54	
Total	206.34		99.99	

PROJECT STATION: 702

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1025
start stop duration Long E 1315
TIME :12:20:00 12:50:00 30 (min) Purpose code: 1
LOG :6258.00 6259.60 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 97 104 Validity code:
Towing dir: 260° Wire out: 150 m Speed: 32 kn*10

Sorted: Kg Total catch: 35.00 CATCH/HOUR: 70.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyrna lewini	70.00	2	100.00	
Total	70.00		100.00	

PROJECT STATION: 703

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1029
start stop duration Long E 1325
TIME :15:45:00 16:15:00 30 (min) Purpose code: 1
LOG :6285.50 6287.20 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 55 51 Validity code:
Towing dir: 110° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 40.00 CATCH/HOUR: 80.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyrna lewini	80.00	2	100.00	
Total	80.00		100.00	

PROJECT STATION: 704

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1031
start stop duration Long E 1332
TIME :18:00:00 18:30:00 30 (min) Purpose code: 1
LOG :6301.00 6302.80 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 27 33 Validity code: 1
Towing dir: 265° Wire out: 150 m Speed: 3 kn*10

Sorted: 78 Kg Total catch: 1961.85 CATCH/HOUR: 3923.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1545.60	12736	39.39	1608
Chloroscombrus chrysurus	563.20	3488	14.35	1609
Trachurus trecae	465.60	1440	11.87	1610
Sardinella maderensis	456.00	1496	11.62	1611
Sphyraena guachancho	361.60	288	9.22	
Pomadasys jubelini	134.40	160	3.43	
Selene dorsalis	73.60	256	1.88	
Sardinella aurita	72.32	192	1.84	
Galeoides decadactylus	58.88	64	1.50	
Spondyliosoma cantharus	58.24	96	1.48	
Arius parkii	41.60	32	1.06	
Trachinotus ovatus	35.20	96	0.90	
Sepia officinalis hierredda	27.84	32	0.71	
Decapterus rhonchus	21.76	32	0.55	
Sarda sarda	7.86	4	0.20	
Total	3923.70		100.00	

PROJECT STATION: 705

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1033
start stop duration Long E 1318
TIME :20:11:00 20:41:00 30 (min) Purpose code: 1
LOG :6316.60 6318.40 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 103 109 Validity code: 1
Towing dir: 265° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 26.03 CATCH/HOUR: 52.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyrna lewini	41.00	2	78.76	
Auxis thazard	6.90	8	13.25	
Scomber japonicus	2.66	4	5.11	
Trachurus trecae	1.36	2	2.61	
Trichiurus lepturus	0.14	2	0.27	
Total	52.06		100.00	

PROJECT STATION: 706

DATE: 7/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1024
start stop duration Long E 1327
TIME :23:15:00 23:45:00 30 (min) Purpose code: 1
LOG :6342.30 6343.80 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 42 33 Validity code: 1
Towing dir: 60° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 53.23 CATCH/HOUR: 106.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	44.60	142	41.89	1612
Brachydeuterus auritus	39.00	268	36.63	
Decapterus rhonchus	9.68	10	9.09	
Scomber japonicus	3.90	10	3.66	
Trichiurus lepturus	2.68	34	2.52	
Galeoides decadactylus	1.82	2	1.71	
Sphyraena guachancho	1.46	2	1.37	
Auxis thazard	1.24	2	1.16	
Alloteuthis africana	0.12	60	0.11	
Total	104.50		98.14	

PROJECT STATION: 707

DATE: 8/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1022
start stop duration Long E 1312
TIME :01:40:00 02:10:00 30 (min) Purpose code: 1
LOG :6360.20 6362.10 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 98 94 Validity code: 1
Towing dir: 110° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 66.39 CATCH/HOUR: 132.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	107.60	438	81.04	1613
Trichiurus lepturus	21.06	126	15.86	
Scomber japonicus	2.80	6	2.11	
Alloteuthis africana	0.88	272	0.66	
Brachydeuterus auritus	0.28	2	0.21	
Todaropsis eblanae	0.06	4	0.05	
Sepiella ornata	0.06	8	0.05	
OCTOPODIDAE	0.04	4	0.03	
Total	132.78		100.01	

PROJECT STATION: 708

DATE: 8/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1039
start stop duration Long E 1340
TIME :05:50:00 06:20:00 30 (min) Purpose code: 1
LOG :6396.70 6398.40 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 31 38 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 106 Kg Total catch: 181.14 CATCH/HOUR: 362.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	63.60	284	17.56	1614
Trachurus trecae	60.90	170	16.81	1615
Sardinella maderensis	54.00	174	14.91	1616
Sphyraena guachancho	52.06	42	14.37	
Trachinotus ovatus	45.60	150	12.59	
Spondyliosoma cantharus	43.50	60	12.01	
Sardinella aurita	30.90	72	8.53	1617
Caranx crysos	4.12	2	1.14	
Sarda sarda	3.52	2	0.97	
Pomadasys jubelini	2.68	2	0.74	
Chloroscombrus chrysurus	1.40	6	0.39	
Total	362.28		100.02	

PROJECT STATION: 709

DATE: 8/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1039
start stop duration Long E 1328
TIME :07:40:00 08:10:00 30 (min) Purpose code: 1
LOG :6408.10 6409.80 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 85 93 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 710

DATE: 8/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1045
start stop duration Long E 1334
TIME :14:30:00 15:00:00 30 (min) Purpose code: 1
LOG :6457.20 6458.80 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 81 72 Validity code: 1
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 711

DATE: 8/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1047
start stop duration Long E 1340
TIME :17:45:00 18:15:00 30 (min) Purpose code: 1
LOG :6474.60 6476.40 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 50 61 Validity code: 1
Towing dir: 241° Wire out: 150 m Speed: 3 kn*10

Sorted: 36 Kg Total catch: 233.54 CATCH/HOUR: 467.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	267.76	854	57.33	1618
Trachurus trecae	139.00	570	29.76	1619
Sarda sarda	30.00	16	6.42	
Trachinotus ovatus	11.16	34	2.39	
Sphyraena guachancho	5.50	10	1.18	
Brachydeuterus auritus	4.90	30	1.05	
Sardinella aurita	3.76	10	0.81	
Sepia officinalis hierredda	3.30	14	0.71	
Trichiurus lepturus	1.40	24	0.30	
Alloteuthis africana	0.30	60	0.06	
Total	467.08		100.01	

PROJECT STATION: 712

DATE: 8/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1047
start stop duration Long E 1332
TIME :20:28:00 20:58:00 30 (min) Purpose code: 1
LOG :6494.70 6496.60 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 95 82 Validity code: 1
Towing dir: 35° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 27.75 CATCH/HOUR: 55.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Prionace glauca	38.30	2	69.01	
Sarda sarda	10.44	6	18.81	
Auxis thazard	3.16	6	5.69	
Trachinotus ovatus	1.40	4	2.52	
Euthynnus alletteratus	1.12	2	2.02	
Sardinella maderensis	0.56	2	1.01	
Alloteuthis africana	0.52	250	0.94	
Sepia officinalis hierredda	0.08	?	0.14	
Total	55.58		100.14	

PROJECT STATION: 713

DATE: 8/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1036
start stop duration Long E 1338
TIME :22:42:00 23:12:00 30 (min) Purpose code: 1
LOG :6511.00 6512.70 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 29 37 Validity code: 1
Towing dir: 240° Wire out: 150 m Speed: 3 kn*10

Sorted: 87 Kg Total catch: 906.19 CATCH/HOUR: 1812.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1259.28	10300	69.48	
Trachurus trecae	264.72	1010	14.61	1620
Sphyraena guachancho	82.60	62	4.56	
Selene dorsalis	55.62	186	3.07	
Engraulis encrasicolus	48.82	6840	2.69	
Sardinella maderensis	35.22	124	1.94	
Galeoides decadactylus	23.08	42	1.27	
Pomadasys jubelini	14.22	20	0.78	
Sarda sarda	14.16	8	0.78	
Stromateus fiatola	12.56	20	0.69	
MUGILIDAE	2.10	2	0.12	
Total	1812.38		99.99	

PROJECT STATION: 714

DATE: 9/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1052
start stop duration Long E 1345
TIME :02:20:00 02:50:00 30 (min) Purpose code: 1
LOG :6542.10 6543.60 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 32 Validity code: 1
Towing dir: 244° Wire out: 150 m Speed: 3 kn*10

Sorted: 96 Kg Total catch: 628.81 CATCH/HOUR: 1257.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	713.80	2306	56.76	1623
Trachurus trecae	139.86	428	11.12	1621
Sardinella aurita	110.26	240	8.77	1622
Pomadasys jubelini	55.70	64	4.43	
Sepia orbignyana	49.40	26	3.93	
Selene dorsalis	45.48	114	3.62	
Brachydeuterus auritus	45.36	26	3.61	
Sphyraena guachancho	35.78	26	2.85	
Atractoscion aequidens	23.06	12	1.83	
Stromateus fiatola	20.42	26	1.62	
Euthynnus alletteratus	9.96	12	0.79	
Arius latiscutatus	5.26	2	0.42	
Engraulis encrasicolus	3.28	454	0.26	
Total	1257.62		100.01	

PROJECT STATION: 715

DATE: 9/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1059
start stop duration Long E 1059
TIME :05:04:00 05:34:00 30 (min) Purpose code: 1
LOG :6563.20 6565.10 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 113 98 Validity code: 1
Towing dir: 87° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 2.52 CATCH/HOUR: 5.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sepia officinalis hierredda	5.04	328	100.00	
Total	5.04		100.00	

PROJECT STATION: 716

DATE: 9/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1059
start stop duration Long E 1349
TIME :07:16:00 07:46:00 30 (min) Purpose code: 1
LOG :6577.40 6579.20 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 29 40 Validity code: 1
Towing dir: 240° Wire out: 150 m Speed: 3 kn*10

Sorted: 46 Kg Total catch: 123.15 CATCH/HOUR: 246.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	94.66	150	38.43	1626
Selene dorsalis	64.38	160	26.14	1625
Sphyraena guachancho	38.10	34	15.47	
Pomadasys jubelini	15.00	20	6.09	
Sardinella maderensis	11.40	34	4.63	1624
Spondyliosoma cantharus	8.24	10	3.35	
Trachinotus ovatus	8.06	22	3.27	
Lagocephalus laevigatus	2.50	4	1.02	
MUGLIOI	2.06	2	0.84	
Sardinella aurita	0.98	2	0.40	
Galeoides decadactylus	0.92	2	0.37	
Total	246.30		100.01	

PROJECT STATION: 717

DATE: 9/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1106
start stop duration Long E 1243
TIME :10:21:00 10:51:00 30 (min) Purpose code: 1
LOG :6602.50 6604.30 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 71 62 Validity code:
Towing dir: 86° Wire out: 150 m Speed: 36 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 718

DATE: 9/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1107
start stop duration Long E 1347
TIME :11:45:00 12:15:00 30 (min) Purpose code: 1
LOG :6610.80 6612.10 1.30 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 46 55 Validity code:
Towing dir: 242° Wire out: 150 m Speed: 26 kn*10

Sorted: Kg Total catch: 111.80 CATCH/HOUR: 223.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alopias superciliosus	130.00	2	58.14	
Sardinella maderensis	50.60	166	22.63	1627
Trachinotus ovatus	26.50	78	11.85	
Sarda sarda	15.70	8	7.02	
Sphyraena guachancho	0.72	2	0.32	
Lagocephalus laevigatus	0.08	2	0.04	
Total	223.60		100.00	

PROJECT STATION: 719

DATE:10/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1115
start stop duration Long E 1339
TIME :07:33:00 08:03:00 30 (min) Purpose code: 1
LOG :6636.90 6638.70 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 59 109 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 36 kn*10

Sorted: Kg Total catch: 63.12 CATCH/HOUR: 126.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	102.64	326	81.31	
Sardinella maderensis	23.60	66	18.69	1628
Total	126.24		100.00	

PROJECT STATION: 720

DATE:10/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1123
start stop duration Long E 1339
TIME :12:15:00 12:45:00 30 (min) Purpose code: 1
LOG :6675.20 6676.70 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 30 35 Validity code:
Towing dir: 262° Wire out: 150 m Speed: kn*10

Sorted: 54 Kg Total catch: 195.05 CATCH/HOUR: 390.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	149.46	358	38.31	1629
Trachinotus ovatus	95.56	322	24.50	
Selene dorsalis	75.60	260	19.38	
Sardinella maderensis	18.42	56	4.72	
Pomadasys rogeri	15.82	28	4.06	
Stromateus fiatola	11.62	14	2.98	
Caranx senegallus	7.66	6	1.96	
Pomatomus saltatrix	7.66	6	1.96	
Pomadasys incisus	4.62	8	1.18	
Mugil cephalus	2.58	2	0.66	
Total	389.00		99.71	

PROJECT STATION: 721

DATE:10/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1129
start stop duration Long E 1339
TIME :16:30:00 17:00:00 30 (min) Purpose code: 1
LOG :6710.90 6712.40 1.50 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 36 31 Validity code:
Towing dir: 79° Wire out: 150 m Speed: 30 kn*10

Sorted: 50 Kg Total catch: 593.18 CATCH/HOUR: 1186.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	842.58	2698	71.02	1630
Sardinella aurita	251.76	624	21.22	1631
Sphyraena guachancho	24.28	22	2.05	
Trachurus trecae	21.32	44	1.80	
Sepia officinalis hierredda	17.92	10	1.51	
Pomatomus saltatrix	14.76	10	1.24	
Selene dorsalis	9.76	44	0.82	
Trachinotus ovatus	3.98	10	0.34	
Total	1186.36		100.00	

PROJECT STATION: 722

DATE:10/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1128
start stop duration Long E 1334
TIME :19:05:00 19:35:00 30 (min) Purpose code: 1
LOG :6730.50 6732.20 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 72 49 Validity code: 1
Towing dir: 56° Wire out: 150 m Speed: 3 kn*10

Sorted: 52 Kg Total catch: 446.52 CATCH/HOUR: 893.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	594.00	1990	66.51	1632
Trachurus trecae	192.00	820	21.50	1633
Sardinella aurita	29.40	80	3.29	
Trichiurus lepturus	24.40	130	2.73	
Trachinotus ovatus	17.00	50	1.90	
Sphyraena guachancho	11.40	10	1.28	
Selene dorsalis	6.60	20	0.74	
Sepia officinalis hierredda	3.80	2	0.43	
Euthynnus alletteratus	3.58	4	0.40	
Sarda sarda	3.48	2	0.39	
Brachydeuterus auritus	3.30	20	0.37	
Auxis thazard	2.06	6	0.23	
Alloteuthis africana	2.00	800	0.22	
Total	893.04		99.99	

PROJECT STATION: 723

DATE:10/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1121
start stop duration Long E 1343
TIME :21:26:00 21:56:00 30 (min) Purpose code: 1
LOG :6747.80 6749.40 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 17 23 Validity code: 1
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 86.53 CATCH/HOUR: 173.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	59.10	216	34.15	1634
Selene dorsalis	30.30	102	17.51	1636
Brachydeuterus auritus	24.00	444	13.87	1637
Trachurus trecae	18.20	56	10.52	1635
Trachinotus ovatus	8.46	24	4.89	
Galeoides decadactylus	8.16	52	4.72	
Pomatomus saltatrix	6.08	4	3.51	
Sphyraena guachancho	4.64	4	2.68	
Ilisha africana	4.02	66	2.32	
Chloroscombrus chrysurus	2.94	14	1.70	
Pomadasys jubelini	2.06	2	1.19	
Sardinella aurita	1.86	4	1.07	
Decapterus rhonchus	1.54	4	0.89	
Engraulis encrasicolus	1.10	364	0.64	
Trichiurus lepturus	0.60	10	0.35	
Total	173.06		100.01	

PROJECT STATION: 724

DATE:10/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1121
start stop duration Long E 1331
TIME :23:15:00 23:45:00 30 (min) Purpose code: 1
LOG :6760.80 6762.40 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 214 176 Validity code: 1
Towing dir: 69° Wire out: 150 m Speed: 3 kn*10

Sorted: 34 Kg Total catch: 97.88 CATCH/HOUR: 195.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	70.00	72500	35.76	
Isurus oxyrinchus	58.00	2	29.63	
Trachurus trecae	37.00	148	18.90	1638
Euthynnus alletteratus	12.20	20	6.23	
Sarda sarda	10.96	8	5.60	
Trichiurus lepturus	3.56	48	1.82	
Selene dorsalis	1.52	4	0.78	
Sphyraena guachancho	1.40	4	0.72	
Sardinella maderensis	1.12	4	0.57	
Total	195.76		100.01	

PROJECT STATION: 725

DATE:11/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1116
start stop duration Long E 1341
TIME :01:05:00 01:35:00 30 (min) Purpose code: 1
LOG :6772.40 6774.10 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 18 14 Validity code: 1
Towing dir: 69° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 75.97 CATCH/HOUR: 151.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	62.80	506	41.33	1639
Sardinella maderensis	38.90	132	25.60	1640
Sardinella aurita	23.20	54	15.27	1641
Trachinotus ovatus	10.60	36	6.98	
Trachurus trecae	8.38	100	5.52	1642
Sphyrna lewini	6.60	2	4.34	
Alectis alexandrinus	1.08	4	0.71	
Sepia orbignyana	0.38	2	0.25	
Total	151.94		100.00	

PROJECT STATION: 726

DATE:11/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1106
start stop duration Long E 1345
TIME :04:15:00 04:45:00 30 (min) Purpose code: 1
LOG :6799.90 6801.30 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 58 Validity code: 1
Towing dir: 57° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 143.53 CATCH/HOUR: 287.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alopias superciliosus	120.00	4	41.80	
Trachurus trecae	77.40	252	26.96	1643
Sardinella maderensis	39.30	108	13.69	1645
Trachinotus ovatus	29.20	86	10.17	
Brachydeuterus auritus	12.14	84	4.23	1644
Sarda sarda	6.78	4	2.36	
Trichiurus lepturus	1.48	40	0.52	
Selene dorsalis	0.76	2	0.26	
Total	287.06		99.99	

PROJECT STATION: 727

DATE:11/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1134
start stop duration Long E 1341
TIME :08:36:00 09:06:00 30 (min) Purpose code: 1
LOG :6839.40 6841.10 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 31 37 Validity code: 1
Towing dir: 260° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 79.20 CATCH/HOUR: 158.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	80.10	226	50.57	
Sardinella maderensis	37.20	120	23.48	1648
Selene dorsalis	15.20	36	9.60	1649
Trachurus trecae	9.58	28	6.05	1646
Sardinella aurita	9.38	24	5.92	1647
Sarda sarda	3.46	2	2.18	
Pomadasys jubelini	1.44	2	0.91	
Spondyliosoma cantharus	1.32	2	0.83	
Sphyraena guachancho	0.72	2	0.45	
Total	158.40		99.99	

PROJECT STATION: 728

DATE:11/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1139
start stop duration Long E 1335
TIME :12:30:00 13:00:00 30 (min) Purpose code: 1
LOG :6870.60 6872.00 1.40 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 79 69 Validity code: 1
Towing dir: 100° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 5.15 CATCH/HOUR: 10.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Auxis thazard	10.30	12	100.00	
Total	10.30		100.00	

PROJECT STATION: 729

DATE:11/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1142
start stop duration Long E 1342
TIME :14:15:00 14:45:00 30 (min) Purpose code: 1
LOG :6882.50 6884.20 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 23 31 Validity code: 1
Towing dir: 261° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 2.52 CATCH/HOUR: 5.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	2.22	6	44.05	
Decapterus rhonchus	1.22	4	24.21	
Sardinella aurita	0.82	2	16.27	
Sardinella maderensis	0.78	2	15.48	
Total	5.04		100.01	

PROJECT STATION: 730

DATE:11/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1147
start stop duration Long E 1342
TIME :17:45:00 18:15:00 30 (min) Purpose code: 1
LOG :6914.10 6915.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 60 36 Validity code: 1
Towing dir: 103° Wire out: 150 m Speed: 3 kn*10

Sorted: 58 Kg Total catch: 1737.07 CATCH/HOUR: 3474.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	2496.00	7566	71.85	1653
Sardinella aurita	592.80	1430	17.06	1652
Trachinotus ovatus	189.80	858	5.46	
Trachurus trecae	86.84	286	2.50	1651
Trichiurus lepturus	31.20	78	0.90	
Sphyraena guachancho	21.58	26	0.62	
Selene dorsalis	17.94	52	0.52	
Trachurus trecae, juvenile	17.42	858	0.50	1650
Euthynnus alletteratus	13.40	6	0.39	
Sarda sarda	7.16	4	0.21	
Total	3474.14		100.01	

PROJECT STATION: 731

DATE:11/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1139
start stop duration Long E 1334
TIME :20:33:00 21:03:00 30 (min) Purpose code: 1
LOG :6936.90 6938.50 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 84 73 Validity code: 1
Towing dir: 76° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 75.65 CATCH/HOUR: 151.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	71.80	230	47.46	1655
Trachurus trecae	59.00	272	39.00	1656
Sardinella aurita	6.10	16	4.03	1654
Trachinotus ovatus	3.60	12	2.38	
Trichiurus lepturus	2.88	10	1.90	
Sepia officinalis hierredda	2.76	4	1.82	
Sarda sarda	2.72	2	1.80	
Sphyraena guachancho	1.22	2	0.81	
Saurida brasiliensis	0.62	224	0.41	
Alloteuthis africana	0.60	270	0.40	
Total	151.30		100.01	

PROJECT STATION: 732

DATE:11/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1138
start stop duration Long E 1343
TIME :22:41:00 23:11:00 30 (min) Purpose code: 1
LOG :6950.50 6952.20 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 31 34 Validity code: 1
Towing dir: 225° Wire out: 150 m Speed: 3 kn*10

Sorted: 58 Kg Total catch: 212.20 CATCH/HOUR: 424.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	145.96	728	34.39	1657
Sardinella maderensis	98.70	330	23.26	1659
Brachydeuterus auritus	98.36	764	23.18	
Sardinella aurita	32.48	78	7.65	1658
Sphyraena guachancho	14.42	28	3.40	
Sepia bertheloti	8.28	8	1.95	
Trachinotus ovatus	6.44	28	1.52	
Selene dorsalis	6.02	14	1.42	
Sarda sarda	4.90	2	1.15	
Pomadasys jubelini	3.86	8	0.91	
Engraulis encrasicolus	3.50	180	0.82	
Trichiurus lepturus	1.12	42	0.26	
Alloteuthis africana	0.36	230	0.08	
Total	424.40		99.99	

PROJECT STATION: 733

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1149
start stop duration Long E 1332
TIME :01:05:00 01:35:00 30 (min) Purpose code: 1
LOG :6966.70 6968.50 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 112 147 Validity code: 1
Towing dir: 206° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 52.92 CATCH/HOUR: 105.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT C	SAMP
Trachurus trecae	65.10	420	61.51	1660
Euthynnus alletteratus	23.90	38	22.58	
Auxis thazard	14.56	20	13.76	
Trichiurus lepturus	1.40	6	1.32	
Sardinella aurita	0.76	2	0.72	
Todarodes sagittatus	0.22	4	0.21	
Total	105.94		100.10	

PROJECT STATION: 734

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1153
start stop duration Long E 1343
TIME :03:45:00 04:15:00 30 (min) Purpose code: 1
LOG :6987.10 6988.70 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code: 1
BDEPTH: 33 48 Validity code: 1
Towing dir: 249° Wire out: 150 m Speed: 3 kn*10

Sorted: 45 Kg Total catch: 304.97 CATCH/HOUR: 609.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	296.16	942	48.56	1661
Brachydeuterus auritus	84.40	496	13.84	
Trachurus trecae	78.00	304	12.79	1662
Pomadasys jubelini	32.10	18	5.26	
Selene dorsalis	29.52	72	4.84	
Pomatomus saltatrix	23.20	8	3.80	
Sepia bertheloti	14.64	24	2.40	
Sardinella aurita	10.24	24	1.68	
Sarda sarda	8.40	4	1.38	
Stromateus fiatola	7.28	8	1.19	
Trachinotus ovatus	7.20	24	1.18	
Sphyraena guachancho	6.72	16	1.10	
Caleoides decadactylus	4.56	32	0.75	
Lithognathus mormyrus	4.16	8	0.68	
Trichiurus lepturus	3.36	56	0.55	
Total	609.94		100.00	

PROJECT STATION: 735

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1156
start stop duration Long E 1333
TIME :05:24:00 05:54:00 30 (min) Purpose code: 1
LOG :6997.10 6998.90 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 95 111 Validity code:
Towing dir: 279° Wire out: 150 m Speed: 36 kn*10

Sorted: Kg Total catch: 45.00 CATCH/HOUR: 90.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Isurus oxyrinchus	90.00	2	100.00	
Total	90.00		100.00	

PROJECT STATION: 736

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 12
start stop duration Long E 1340
TIME :08:10:00 08:40:00 30 (min) Purpose code: 1
LOG :7017.50 7019.20 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 32 49 Validity code:
Towing dir: 250° Wire out: 150 m Speed: 34 kn*10

Sorted: 44 Kg Total catch: 78.19 CATCH/HOUR: 156.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	74.10	218	47.38	1664
Sardinella aurita	69.40	172	44.38	1663
Euthynnus alletteratus	11.46	6	7.33	
Trachinotus ovatus	1.42	2	0.91	
Total	156.38		100.00	

PROJECT STATION: 737

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1204
start stop duration Long E 1330
TIME :11:12:00 11:42:00 30 (min) Purpose code: 1
LOG :7029.30 7031.00 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 95 100 Validity code:
Towing dir: 250° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Total				

PROJECT STATION: 738

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1206
start stop duration Long E 1337
TIME :13:25:00 13:55:00 30 (min) Purpose code: 1
LOG :7045.70 7047.30 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 59 36 Validity code:
Towing dir: 93° Wire out: 150 m Speed: 32 kn*10

Sorted: Kg Total catch: 14.05 CATCH/HOUR: 28.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Isurus oxyrinchus	28.10	2	100.00	
Total	28.10		100.00	

PROJECT STATION: 739

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1210
start stop duration Long E 1328
TIME :15:38:00 16:08:00 30 (min) Purpose code: 1
LOG :7062.50 7064.20 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 95 Validity code:
Towing dir: 247° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 15.65 CATCH/HOUR: 31.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Isurus oxyrinchus	31.30	2	100.00	
Total	31.30		100.00	

PROJECT STATION: 740

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1212
start stop duration Long E 1331
TIME :17:44:00 18:14:00 30 (min) Purpose code: 1
LOG :7074.90 7076.60 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 84 70 Validity code:
Towing dir: 92° Wire out: 150 m Speed: 34 kn*10

Sorted: 41 Kg Total catch: 473.05 CATCH/HOUR: 946.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	461.50	1080	48.78	1665
Trachurus trecae	434.00	1980	45.87	1666
Sardinella aurita	15.20	50	1.61	
Sphyraena guachancho	15.20	40	1.61	
Auxis thazard	5.88	16	0.62	
Mugil cephalus	5.56	2	0.59	
Euthynnus alletteratus	3.48	4	0.37	
Sarda sarda	3.38	2	0.36	
Alloteuthis africana	1.10	460	0.12	
Sepia officinalis hierredda	0.50	10	0.05	
Saurida brasiliensis	0.20	100	0.02	
Total	946.00		100.00	

PROJECT STATION: 741

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1207
start stop duration Long E 1330
TIME :20:36:00 21:06:00 30 (min) Purpose code: 1
LOG :7097.80 7099.60 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 93 85 Validity code:
Towing dir: 80° Wire out: 150 m Speed: 36 kn*10

Sorted: 57 Kg Total catch: 433.43 CATCH/HOUR: 866.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	551.18	1432	63.58	1667
Trachurus trecae	169.26	980	19.53	1669
Sardinella aurita	114.58	242	13.22	1668
Trachinotus ovatus	19.02	42	2.19	
Sarda sarda	11.08	8	1.28	
Saurida brasiliensis	1.74	806	0.20	
Total	866.86		100.00	

PROJECT STATION: 742

DATE:12/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1204
start stop duration Long E 1339
TIME :22:30:00 23:00:00 30 (min) Purpose code: 1
LOG :7110.00 7111.80 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 35 35 Validity code:
Towing dir: 285° Wire out: 150 m Speed: 35 kn*10

Sorted: 53 Kg Total catch: 126.53 CATCH/HOUR: 253.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	177.30	666	70.06	1670
Trachurus trecae	17.56	68	6.94	1671
Sardinella aurita	13.68	32	5.41	
Trachinotus ovatus	12.96	32	5.12	
Sarda sarda	10.72	4	4.24	
Engraulis encrasicolus	8.20	1368	3.24	
Sphyraena guachancho	7.62	14	3.01	
Caleoides decadactylus	2.16	4	0.85	
Sepia elegans	1.80	2	0.71	
Brachydeuterus auritus	0.68	4	0.27	
Trichiurus lepturus	0.28	4	0.11	
Alloteuthis africana	0.10	28	0.04	
Total	253.06		100.00	

PROJECT STATION: 743

DATE:13/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1159
start stop duration Long E 1334
TIME :00:45:00 01:15:00 30 (min) Purpose code: 1
LOG :7228.10 7129.60 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 86 76 Validity code:
Towing dir: 73° Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 149.21 CATCH/HOUR: 298.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alopias superciliosus	240.00	4	80.42	
Isurus oxyrinchus	29.00	2	9.72	
Trachurus trecae	16.60	76	5.56	1672
Sardinella aurita	9.26	28	3.10	1673
Sardinella maderensis	9.26	28	3.10	1673
Trichiurus lepturus	1.04	4	0.35	
Sepiella ornata	0.02	2	0.01	
Total	305.18		102.26	

PROJECT STATION: 744

DATE:13/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1155
start stop duration Long E 1339
TIME :02:35:00 03:05:00 30 (min) Purpose code: 1
LOG :7141.00 7142.70 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 66 77 Validity code:
Towing dir: 281° Wire out: 150 m Speed: 34 kn*10

Sorted: 55 Kg Total catch: 174.16 CATCH/HOUR: 348.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	136.16	330	39.09	1674
Alopias superciliosus	120.00	2	34.45	
Sardinella maderensis	34.30	116	9.85	1675
Isurus oxyrinchus	32.00	2	9.19	
Trachurus trecae	19.26	90	5.53	1676
Sarda sarda	3.78	2	1.09	
Trachinotus ovatus	1.72	4	0.49	
Saurida brasiliensis	0.70	134	0.20	
Naucrates ductor	0.28	4	0.08	
Sepiella ornata	0.12	8	0.03	
Total	348.32		100.00	

PROJECT STATION: 745

DATE:13/ 9/95 GEAR TYPE: BT No:9 POSITION:Lat S 1221
start stop duration Long E 1322
TIME :08:00:00 08:20:00 20 (min) Purpose code: 1
LOG :7187.20 7188.20 1.00 Area code : 1
FDEPTH: 106 105 GearCond.code:
BDEPTH: 106 105 Validity code:
Towing dir: 10° Wire out: 330 m Speed: 30 kn*10

Sorted: 20 Kg Total catch: 716.37 CATCH/HOUR: 2149.11

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	2057.94	11592	95.76	1677
Pseudupeneus prayensis	75.21	654	3.50	
Dentex angolensis	10.35	33	0.48	
Zeus faber	4.56	3	0.21	
Illex coindetii	1.05	33	0.05	
Total	2149.11		100.00	

PROJECT STATION: 746

DATE:13/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1220
start stop duration Long E 1330
TIME :10:51:00 11:21:00 30 (min) Purpose code: 1
LOG :7206.00 7207.70 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 67 75 Validity code:
Towing dir: 250° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 29.16 CATCH/HOUR: 58.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	38.60	100	66.19	1678
Trachinotus ovatus	15.76	32	27.02	
Sardinella aurita	3.42	8	5.86	
Trachurus trecae	0.48	2	0.82	
Lagocephalus laevigatus	0.06	2	0.10	
Total	58.32		99.99	

PROJECT STATION: 747

DATE:13/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1224
start stop duration Long E 1325
TIME :13:20:00 13:50:00 30 (min) Purpose code: 1
LOG :7225.30 7227.80 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 90 80 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 8.50 CATCH/HOUR: 17.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachinotus ovatus	15.90	36	93.53	
Lagocephalus laevigatus	1.10	24	6.47	
Total	17.00		100.00	

PROJECT STATION: 748

DATE:13/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1230
start stop duration Long E 1325
TIME :16:38:00 17:08:00 30 (min) Purpose code: 1
LOG :7253.50 7255.20 1.70 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 27 42 Validity code:
Towing dir: 235° Wire out: 150 m Speed: 34 kn*10

Sorted: 47 Kg Total catch: 3331.99 CATCH/HOUR: 6663.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	3182.40	7072	47.76	1679
Sardinella maderensis	2825.40	7412	42.40	1681
Trachurus trecae	334.56	1850	5.02	1680
Diplodus cervinus cervinus	217.60	204	3.27	
Lithognathus mormyrus	32.64	68	0.49	
Chaetodon hoefleri	20.40	136	0.31	
Plectorhinchus mediterraneus	20.40	68	0.31	
Pomadasys incisus	14.96	68	0.22	
Pomatomus saltatrix	11.72	4	0.18	
Sarda sarda	3.90	2	0.06	
Total	6663.98		100.02	

PROJECT STATION: 749

DATE:13/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1231
start stop duration Long E 1316
TIME :19:28:00 19:58:00 30 (min) Purpose code: 1
LOG :7269.60 7271.30 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 355 106 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 34 kn*10

Sorted: 39 Kg Total catch: 3854.68 CATCH/HOUR: 7709.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	5878.60	41090	76.25	1683
Sardinella maderensis	1475.84	3636	19.14	1682
Sardinella aurita	244.74	578	3.17	
MYCTOPHIDAE	59.54	23398	0.77	
Scomber japonicus	34.74	82	0.45	
Trichiurus lepturus	9.92	164	0.13	
Engraulis encrasicolus	3.32	412	0.04	
Mugil cephalus	2.66	2	0.03	
Total	7709.36		99.98	

PROJECT STATION: 750

DATE:13/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1228
start stop duration Long E 1315
TIME :22:05:00 22:35:00 30 (min) Purpose code: 1
LOG :7289.80 7291.40 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 626 498 Validity code:
Towing dir: 89° Wire out: 150 m Speed: 32 kn*10

Sorted: 104 Kg Total catch: 104.30 CATCH/HOUR: 208.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alopias superciliosus	120.00	2	57.53	
MYCTOPHIDAE	88.60	40884	42.47	
Total	208.60		100.00	

PROJECT STATION: 751

DATE:14/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1225
start stop duration Long E 1323
TIME :00:25:00 00:55:00 30 (min) Purpose code: 1
LOG :7307.20 7308.80 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 94 103 Validity code:
Towing dir: 305° Wire out: 150 m Speed: 32 kn*10

Sorted: 107 Kg Total catch: 107.09 CATCH/HOUR: 214.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	194.20	920	90.67	1684
Sarda sarda	9.38	6	4.38	
Trachinotus ovatus	6.36	16	2.97	
Sphyraena guachancho	2.96	8	1.38	
Scomber japonicus	1.28	4	0.60	
Total	214.18		100.00	

PROJECT STATION: 752

DATE:14/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1216
start stop duration Long E 1323
TIME :03:30:00 04:00:00 30 (min) Purpose code: 1
LOG :7333.00 7334.70 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 360 564 Validity code:
Towing dir: 305° Wire out: 150 m Speed: 34 kn*10

Sorted: 19 Kg Total catch: 19.38 CATCH/HOUR: 38.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	28.98	17750	74.77	
Euthynnus alletteratus	6.64	6	17.13	
Trachurus trecae	2.88	16	7.43	
Macroparalepis macrogeneion	0.26	32	0.67	
Total	38.76		100.00	

PROJECT STATION: 753

DATE:14/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1234
start stop duration Long E 1311
TIME :18:59:00 19:29:00 30 (min) Purpose code: 1
LOG :7389.00 7391.00 2.00 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 457 624 Validity code:
Towing dir: 268° Wire out: 150 m Speed: 40 kn*10

Sorted: 86 Kg Total catch: 173.16 CATCH/HOUR: 346.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	179.00	2544	51.69	
Mola mola	92.00	4	26.57	
MYCTOPHIDAE	32.80	15032	9.47	
Taractes rubescens	30.40	8	8.78	
Cubiceps sp.	5.16	16	1.49	
Trachurus trecae	3.08	12	0.89	
Euthynnus alletteratus	2.76	4	0.80	
Lepidopus caudatus	0.40	4	0.12	
Illex coindetii	0.36	4	0.10	
Echeneis naucrates	0.36	4	0.10	
Total	346.32		100.01	

PROJECT STATION: 754

DATE:14/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1240
start stop duration Long E 1305
TIME :20:58:00 21:28:00 30 (min) Purpose code: 1
LOG :7402.10 7403.80 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 214 384 Validity code:
Towing dir: 280° Wire out: 150 m Speed: 34 kn*10

Sorted: 62 Kg Total catch: 525.06 CATCH/HOUR: 1050.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	879.76	13022	83.78	
Trachurus trecae	102.00	696	9.71	1685
MYCTOPHIDAE	43.18	12496	4.11	
Auxis thazard	9.52	16	0.91	
Sphyraena guachancho	7.32	16	0.70	
Cubiceps sp.	4.26	16	0.41	
Illex coindetii	4.08	16	0.39	
Total	1050.12		100.01	

PROJECT STATION: 755

DATE:14/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1244
start stop duration Long E 1258
TIME :25:15:00 23:45:00 30 (min) Purpose code: 1
LOG :7418.50 7420.00 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 341 490 Validity code:
Towing dir: 275° Wire out: 150 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 174.80 CATCH/HOUR: 349.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	188.80	2776	54.00	
Mobula rochebrunei	80.00	2	22.88	
Trachurus trecae	58.80	504	16.82	1690
Myctophum sp.	20.72	8120	5.93	
Schedophilus huttoni	1.24	2	0.35	
Total	349.56		100.00	

PROJECT STATION: 756

DATE:15/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1258
start stop duration Long E 1255
TIME :02:25:00 02:55:00 30 (min) Purpose code: 1
LOG :7445.40 7447.00 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 39 62 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 32 kn*10

Sorted: 65 Kg Total catch: 228.48 CATCH/HOUR: 456.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	317.40	756	69.46	1692
Trachurus trecae	84.70	246	18.54	1691
Trachurus trecae, juvenile	44.88	2674	9.82	
Saurida brasiliensis	2.88	1268	0.63	
Alloteuthis africana	2.88	1218	0.63	
Sarda sarda	2.68	2	0.59	
Sardinella aurita	1.54	8	0.34	
Total	456.96		100.01	

PROJECT STATION: 757

DATE:15/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1303
start stop duration Long E 1248
TIME :05:13:00 05:43:00 30 (min) Purpose code: 1
LOG :7466.90 7468.60 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 95 110 Validity code:
Towing dir: 262° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 0.16 CATCH/HOUR: 0.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Lagocephalus laevigatus	0.24	2	75.00	
Sepia sp.	0.08	2	25.00	
Total	0.32		100.00	

PROJECT STATION: 758

DATE:15/ 9/95 GEAR TYPE: BT No:9 POSITION:Lat S 1309
start stop duration Long E 1245
TIME :07:35:00 07:55:00 20 (min) Purpose code: 1
LOG :7483.60 7484.60 1.00 Area code : 1
FDEPTH: 99 99 GearCond.code:
BDEPTH: 99 99 Validity code:
Towing dir: 22° Wire out: 300 m Speed: 30 kn*10

Sorted: 59 Kg Total catch: 198.52 CATCH/HOUR: 595.56

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachurus trecae	328.65	1314	55.18	1693
Dentex macrophthalmus	216.84	1050	36.41	1694
Dentex angolensis	12.81	63	2.15	
Pagrus africanus	10.92	12	1.83	
Atractoscion aequidens	9.84	9	1.65	
Scorpaena stephanica	8.10	12	1.36	
Dentex barnardi	6.09	21	1.02	
Scorpaena normani	2.31	12	0.39	
Total	595.56		99.99	

PROJECT STATION: 759

DATE:15/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1312
start stop duration Long E 1242
TIME :09:35:00 10:11:00 36 (min) Purpose code: 1
LOG :7498.50 7500.60 2.10 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 96 135 Validity code:
Towing dir: 272° Wire out: 150 m Speed: 36 kn*10

Sorted: 1 Kg Total catch: 1.47 CATCH/HOUR: 2.45

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Sarda sarda	2.22	2	90.61	
Lagocephalus laevigatus	0.13	5	5.31	
Sepia sp.	0.08	3	3.27	
Selene dorsalis, juveniles	0.02	7	0.82	
Total	2.45		100.01	

PROJECT STATION: 760

DATE:15/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1319
start stop duration Long E 1237
TIME :11:55:00 12:25:00 30 (min) Purpose code: 1
LOG :7515.00 7516.70 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 94 110 Validity code:
Towing dir: 283° Wire out: 150 m Speed: 34 kn*10

Sorted: 25 Kg Total catch: 25.10 CATCH/HOUR: 50.20

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Auxis thazard	49.20	80	98.01	
Trichiurus lepturus	0.70	2	1.39	
Lagocephalus laevigatus	0.30	2	0.60	
Total	50.20		100.00	

PROJECT STATION: 761

DATE:15/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1330
start stop duration Long E 1231
TIME :16:03:00 16:33:00 30 (min) Purpose code: 1
LOG :7552.00 7553.70 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 471 850 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: 0.04 CATCH/HOUR: 0.08

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Illex coindetii	0.04	4	50.00	
Selene dorsalis, juveniles	0.04	12	50.00	
Total	0.08		100.00	

PROJECT STATION: 762

DATE:15/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1343
start stop duration Long E 1230
TIME :20:34:00 21:04:00 30 (min) Purpose code: 1
LOG :7593.00 7594.60 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 105 114 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 32 kn*10

Sorted: 35 Kg Total catch: 35.42 CATCH/HOUR: 70.84

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachurus trecae	70.30	868	99.24	1695
Illex coindetii	0.34	26	0.48	
Saurida brasiliensis	0.20	58	0.28	
Total	70.84		100.00	

PROJECT STATION: 763

DATE:15/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1351
start stop duration Long E 1228
TIME :23:30:00 24:00:00 30 (min) Purpose code: 1
LOG :7616.90 7618.40 1.50 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 692 777 Validity code:
Towing dir: 267° Wire out: 150 m Speed:302 kn*10

Sorted: 9 Kg Total catch: 88.37 CATCH/HOUR: 176.74

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachurus trecae	132.00	1194	74.69	1696
Trichiurus lepturus	27.00	1290	15.28	
MYCTOPHIDAE	15.48	7050	8.76	
Centrolophus niger	2.26	6	1.28	
Total	176.74		100.01	

PROJECT STATION: 764

DATE:16/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1403
start stop duration Long E 1217
TIME :03:30:00 04:00:00 30 (min) Purpose code: 1
LOG :7652.70 7654.40 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 100 118 Validity code:
Towing dir: 258° Wire out: 150 m Speed: 34 kn*10

Sorted: 35 Kg Total catch: 34.64 CATCH/HOUR: 69.28

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachurus trecae	43.50	892	62.79	1697
Sphyrna zygaena	24.60	2	35.51	
Saurida brasiliensis	1.18	318	1.70	
Total	69.28		100.00	

PROJECT STATION: 765

DATE:16/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1420
start stop duration Long E 1212
TIME :07:44:00 08:14:00 30 (min) Purpose code: 1
LOG :7691.70 7693.60 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 49 85 Validity code:
Towing dir: 258° Wire out: 150 m Speed: 38 kn*10

Sorted: 9 Kg Total catch: 8.60 CATCH/HOUR: 17.20

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Sarda sarda	16.30	6	94.77	
Sardinella maderensis	0.90	2	5.23	
Total	17.20		100.00	

PROJECT STATION: 766

DATE:16/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1440
start stop duration Long E 1216
TIME :14:38:00 15:08:00 30 (min) Purpose code: 1
LOG :7757.60 7759.40 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 75 491 Validity code:
Towing dir: 257° Wire out: 150 m Speed: 36 kn*10

Sorted: Kg Total catch: 0.05 CATCH/HOUR: 0.10

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Illex coindetii	0.04	10	40.00	
Lagocephalus laevigatus	0.04	8	40.00	
Trachurus trecae	0.02	14	20.00	
Total	0.10		100.00	

PROJECT STATION: 767

DATE:16/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1445
start stop duration Long E 1216
TIME :17:47:00 18:17:00 30 (min) Purpose code: 1
LOG :7772.00 7773.70 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 100 121 Validity code:
Towing dir: 256° Wire out: 150 m Speed: 34 kn*10

Sorted: 72 Kg Total catch: 615.40 CATCH/HOUR: 1230.80

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachurus trecae	982.60	8160	79.83	1698
MYCTOPHIDAE	248.20	153578	20.17	
Total	1230.80		100.00	

PROJECT STATION: 768

DATE:16/ 9/95 GEAR TYPE: PT No:1 POSITION:Lat S 1453
start stop duration Long E 1209
TIME :21:31:00 23:00:00 89 (min) Purpose code: 1
LOG :7802.30 7806.20 3.90 Area code : 1
FDEPTH: 80 80 GearCond.code:
BDEPTH: 349 101 Validity code:
Towing dir: 10° Wire out: 200 m Speed: 25 kn*10

Sorted: 59 Kg Total catch: 358.69 CATCH/HOUR: 241.81

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	122.76	817	50.77	
Trachurus capensis	96.88	748	40.06	1699
Branchiostegus semifasciatus	11.16	2427	4.62	
Shrimps, small, non comm.	4.37	5339	1.81	
Heptranchias perlo	2.70	1	1.12	
Trigla lyra	1.86	24	0.77	
Raja alba	1.01	1	0.42	
MELANOSTOMIATIDAE	0.40	7	0.17	
Zeus faber	0.40	4	0.17	
Synagrops microlepis	0.28	16	0.12	
Total	241.82		100.03	

PROJECT STATION: 769

DATE:17/ 9/95 GEAR TYPE: PT No:1 POSITION:Lat S 1459
start stop duration Long E 1207
TIME :02:00:00 02:50:00 50 (min) Purpose code: 1
LOG :7833.30 7835.90 2.60 Area code : 1
FDEPTH: 75 105 GearCond.code:
BDEPTH: 133 368 Validity code:
Towing dir: 30° Wire out: 330 m Speed: 32 kn*10

Sorted: 37 Kg Total catch: 51.96 CATCH/HOUR: 62.35

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachurus capensis	27.12	169	43.50	1700
Heptranchias perlo	18.26	10	29.29	
Dentex macrophthalmus	15.60	85	25.02	
Myctophum sp.	0.83	331	1.33	
Synagrops microlepis	0.54	48	0.87	
Total	62.35		100.01	

PROJECT STATION: 770

DATE:17/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1506
start stop duration Long E 1200
TIME :05:22:00 05:52:00 30 (min) Purpose code: 1
LOG :7859.10 7860.90 1.80 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 340 246 Validity code:
Towing dir: 136° Wire out: 150 m Speed: 36 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
N O C A T C H	0.00			
Total				

PROJECT STATION: 771

DATE:17/ 9/95 GEAR TYPE: BT No:9 POSITION:Lat S 1510
start stop duration Long E 1202
TIME :08:03:00 08:30:00 27 (min) Purpose code: 1
LOG :7880.80 7882.20 1.40 Area code : 1
FDEPTH: 110 122 GearCond.code:
BDEPTH: 110 122 Validity code:
Towing dir: 236° Wire out: 350 m Speed: 30 kn*10

Sorted: 83 Kg Total catch: 420.41 CATCH/HOUR: 934.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	382.64	1996	40.96	1701
Trachurus capensis	254.93	3504	27.29	1703
Atractoscion aequidens	49.00	38	5.24	
Dentex barnardi	41.38	138	4.43	
Dentex angolensis	37.58	138	4.02	
Trachurus trecae	35.89	391	3.84	1702
Pseudupeneus prayensis	33.47	369	3.58	
Carcharhinus falciformis	22.49	11	2.41	
Pagellus bellottii	16.80	96	1.80	
Plectorhinchus mediterraneus	14.09	11	1.51	
Zeus faber	12.24	22	1.31	
Raja miraletus	7.82	11	0.84	
SPARIDAE	7.42	2	0.79	
Scyliorhinus stellaris	6.98	11	0.75	
Spondyliosoma cantharus	5.91	22	0.63	
Scorpaena normani	4.98	11	0.53	
Illex coindetii	0.84	42	0.09	
Total	934.46		100.02	

PROJECT STATION: 772

DATE:17/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1517
start stop duration Long E 1200
TIME :10:25:00 10:55:00 30 (min) Purpose code: 1
LOG :7898.80 7900.50 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 70 106 Validity code:
Towing dir: 256° Wire out: 150 m Speed: 34 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
N O C A T C H	0.00			
Total				

PROJECT STATION: 773

DATE:17/ 9/95 GEAR TYPE: BT No:9 POSITION:Lat S 1523
start stop duration Long E 1158
TIME :13:48:00 14:18:00 30 (min) Purpose code: 1
LOG :7927.40 7928.90 1.50 Area code : 1
FDEPTH: 94 88 GearCond.code:
BDEPTH: 94 88 Validity code:
Towing dir: 187° Wire out: 300 m Speed: 30 kn*10

Sorted: 51 Kg Total catch: 445.32 CATCH/HOUR: 890.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	354.50	2700	39.80	1704
Hyperoglyphe moselii	325.20	92	36.51	
Pagellus bellottii	62.00	370	6.96	
Dentex angolensis	39.00	250	4.38	
Dentex canariensis	21.60	100	2.43	
Pagrus auriga	20.50	4	2.30	
Spondyliosoma cantharus	17.60	30	1.98	
Trachurus capensis	14.50	200	1.63	
Squalus megalops	11.00	10	1.24	
Atractoscion aequidens	9.14	6	1.03	
Zeus faber	7.12	12	0.80	
Pagrus caeruleostictus	4.02	8	0.45	
Raja miraletus	2.40	2	0.27	
Umbrina canariensis	1.70	10	0.19	
Anthias anthias	0.36	2	0.04	
Total	890.64		100.01	

PROJECT STATION: 774

DATE:17/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1531
start stop duration Long E 1159
TIME :17:45:00 18:15:00 30 (min) Purpose code: 1
LOG :7948.20 7950.20 2.00 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 38 72 Validity code:
Towing dir: 261° Wire out: 150 m Speed: 40 kn*10

Sorted: 69 Kg Total catch: 586.85 CATCH/HOUR: 1173.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	957.10	7804	81.55	1705
Sardinella maderensis	154.70	324	13.18	1706
Pomatomus saltatrix	23.46	18	2.00	
Sarda sarda	20.40	18	1.74	
Sepia officinalis hierredda	8.16	18	0.70	
Spondyliosoma cantharus	4.76	34	0.41	
Boops boops	1.88	18	0.16	
Trachurus capensis	1.88	18	0.16	
Illex coindetii	1.36	918	0.12	
Total	1173.70		100.02	

PROJECT STATION: 775

DATE:17/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1538
start stop duration Long E 1152
TIME :21:10:00 21:40:00 30 (min) Purpose code: 1
LOG :7973.70 7975.60 1.90 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 102 399 Validity code:
Towing dir: 272° Wire out: 150 m Speed: 38 kn*10

Sorted: 58 Kg Total catch: 116.40 CATCH/HOUR: 232.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	148.76	2696	63.90	1707
Trichiurus lepturus	48.80	1128	20.96	
Trachurus capensis	21.28	384	9.14	1708
Scyliorhinus stellaris	9.32	4	4.00	
Scomber japonicus	3.04	4	1.31	
Illex coindetii	1.60	4	0.69	
Total	232.80		100.00	

PROJECT STATION: 776

DATE:17/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1539
start stop duration Long E 1144
TIME :23:10:00 23:40:00 30 (min) Purpose code: 1
LOG :7984.60 7986.30 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 125 118 Validity code:
Towing dir: 123° Wire out: 150 m Speed: 34 kn*10

Sorted: 32 Kg Total catch: 49.15 CATCH/HOUR: 98.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	94.84	1734	96.48	1709
Trichiurus lepturus	1.86	32	1.89	
Trachurus trecae	0.78	8	0.79	
Scomber japonicus	0.68	2	0.69	
Illex coindetii	0.14	4	0.14	
Total	98.30		99.99	

PROJECT STATION: 777

DATE:18/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1543
start stop duration Long E 1151
TIME :01:00:00 01:30:00 30 (min) Purpose code: 1
LOG :7996.40 7998.10 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 97 128 Validity code:
Towing dir: 315° Wire out: 150 m Speed: 34 kn*10

Sorted: 36 Kg Total catch: 183.88 CATCH/HOUR: 367.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	341.00	4210	92.72	1710
Trichiurus lepturus	14.90	80	4.05	
Etrumeus whiteheadi	4.30	70	1.17	
Sphyrna lewini	4.14	2	1.13	
Sarda sarda	3.42	2	0.93	
Total	367.76		100.00	

PROJECT STATION: 778

DATE:18/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1550
start stop duration Long E 1142
TIME :04:45:00 05:15:00 30 (min) Purpose code: 1
LOG :8023.30 8025.00 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 68 93 Validity code:
Towing dir: 248° Wire out: 150 m Speed: 34 kn*10

Sorted: 15 Kg Total catch: 15.50 CATCH/HOUR: 31.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alopias superciliosus	31.00	2	100.00	
Total	31.00		100.00	

PROJECT STATION: 779

DATE:18/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1556
start stop duration Long E 1143
TIME :07:48:00 08:18:00 30 (min) Purpose code: 1
LOG :8045.00 8046.60 1.60 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 16 62 Validity code:
Towing dir: 263° Wire out: 150 m Speed: 32 kn*10

Sorted: 11 Kg Total catch: 225.33 CATCH/HOUR: 450.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Etrumeus whiteheadi	449.40	14826	99.72	1711
Trachurus, Juveniles	1.26	462	0.28	
Total	450.66		100.00	

PROJECT STATION: 780

DATE:18/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1610
start stop duration Long E 1144
TIME :14:10:00 14:30:00 20 (min) Purpose code: 1
LOG :8098.40 8099.30 0.90 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 37 43 Validity code:
Towing dir: 254° Wire out: 150 m Speed: 27 kn*10

Sorted: Kg Total catch: 2.30 CATCH/HOUR: 6.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	6.90	2715	100.00	1712
Total	6.90		100.00	

PROJECT STATION: 781

DATE:18/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1617
start stop duration Long E 1145
TIME :17:50:00 17:51:00 1 (min) Purpose code: 1
LOG :8128.10 8128.20 0.10 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 32 35 Validity code:
Towing dir: 321° Wire out: 150 m Speed: 35 kn*10

Sorted: 5 Kg Total catch: 112.47 CATCH/HOUR: 6748.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	5078.40	436080	75.26	1714
Trachurus capensis	1449.00	131100	21.47	1713
Etrumeus whiteheadi	193.20	4140	2.86	
SOLEIDAE	27.60	1380	0.41	
Total	6748.20		100.00	

PROJECT STATION: 782

DATE:19/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1634
start stop duration Long E 1146
TIME :01:55:00 02:00:00 5 (min) Purpose code: 1
LOG :8199.10 8199.30 0.20 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 13 14 Validity code:
Towing dir: 355° Wire out: 150 m Speed: 24 kn*10

Sorted: 52 Kg Total catch: 2000.00 CATCH/HOUR: 24000.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	19531.92	2698200	81.38	
Sardinops ocellatus	3577.08	27408	14.90	1715
Trachurus, Juveniles	580.20	47964	2.42	
Arius latiscutatus	205.68	456	0.86	
Sepia orbignyana	105.12	1368	0.44	
Total	24000.00		100.00	

PROJECT STATION: 783

DATE:19/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1633
start stop duration Long E 1136
TIME :04:42:00 05:12:00 30 (min) Purpose code: 1
LOG :8824.00 8825.60 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 85 88 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 32 kn*10

Sorted: 1 Kg Total catch: 1.15 CATCH/HOUR: 2.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sepiella ornata	1.62	52	70.43	1717
Etrumeus whiteheadi	0.36	16	15.65	1716
Trachurus, Juveniles	0.24	4	10.43	
Illex coindetii	0.08	4	3.48	
Total	2.30		99.99	

PROJECT STATION: 784

DATE:19/ 9/95 GEAR TYPE: BT No: POSITION:Lat S 1640
start stop duration Long E 1134
TIME :07:43:00 07:58:00 15 (min) Purpose code: 1
LOG :8244.50 8245.20 0.70 Area code : 1
FDEPTH: 91 91 GearCond.code:
BDEPTH: 91 91 Validity code:
Towing dir: 180° Wire out: 150 m Speed: 30 kn*10

Sorted: 63 Kg Total catch: 442.82 CATCH/HOUR: 1771.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	1054.20	27972	59.52	1719
Trachurus capensis	572.60	11340	32.33	1718
Sepia officinalis hierredda	68.88	420	3.89	
Atractoscion aequidens	34.44	196	1.94	
Merluccius polli	15.40	280	0.87	
Illex coindetii	11.76	196	0.66	
Pterothrissus belloci	9.80	112	0.55	
Umbrina canariensis	2.52	56	0.14	
Trachurus trecae	1.68	28	0.09	
Total	1771.28		99.99	

PROJECT STATION: 785

DATE:19/ 9/95 GEAR TYPE: PT No:7 POSITION:Lat S 1645
start stop duration Long E 1141
TIME :10:04:00 10:07:00 3 (min) Purpose code: 1
LOG :8260.70 8260.90 0.20 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 18 18 Validity code:
Towing dir: 170° Wire out: 150 m Speed: 30 kn*10

Sorted: 72 Kg Total catch: 3669.96 CATCH/HOUR: 73399.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Etrumeus whiteheadi	72420.00	186660	98.67	1720
Diplodus sargus *	540.60	3060	0.74	
Trachurus, Juveniles	397.80	15300	0.54	1721
Sardinops ocellatus	40.80	1020	0.06	
Total	73399.20		100.01	

PROJECT STATION: 786

DATE:19/ 9/95 GEAR TYPE: BT No: POSITION:Lat S 1612
start stop duration Long E 1134
TIME :14:35:00 14:55:00 20 (min) Purpose code: 1
LOG :8306.60 8307.50 0.90 Area code : 1
FDEPTH: 77 77 GearCond.code:
BDEPTH: 77 77 Validity code:
Towing dir: 200° Wire out: 280 m Speed: 27 kn*10

Sorted: 65 Kg Total catch: 997.12 CATCH/HOUR: 2991.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	2558.76	74826	85.54	1723
Dentex macrophthalmus	292.56	60	9.78	1724
Trachurus trecae	66.09	1095	2.21	1722
Sphyrna lewini	39.30	6	1.31	
Sepia orbignyana	15.51	45	0.52	
Illex coindetii	12.33	138	0.41	
Todarodes sagittatus	3.60	12	0.12	
Dentex barnardi	3.21	45	0.11	
Total	2991.36		100.00	

PROJECT STATION: 787

DATE:19/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1653
start stop duration Long E 1140
TIME :19:55:00 20:00:00 5 (min) Purpose code: 1
LOG :8359.20 8359.50 0.30 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 37 42 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 30 kn*10

Sorted: 36 Kg Total catch: 794.64 CATCH/HOUR: 9535.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Etrumeus whiteheadi	8395.20	535656	88.04	1725
Engraulis encrasicolus	887.04	85536	9.30	1726
Trachurus, Juveniles	163.68	11616	1.72	1728
Sardinops ocellatus	79.20	2376	0.83	1727
Illex coindetii	10.56	1056	0.11	
Total	9535.68		100.00	

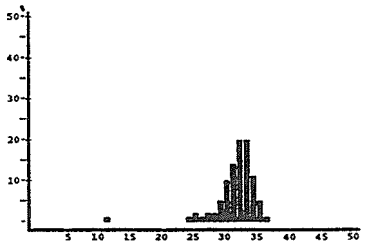
PROJECT STATION: 788

DATE:20/ 9/95 GEAR TYPE: PT No:2 POSITION:Lat S 1705
start stop duration Long E 1141
TIME :01:15:00 01:45:00 30 (min) Purpose code: 1
LOG :8410.60 8412.20 1.60 Area code : 1
FDEPTH: 0 0 GearCond.code:
BDEPTH: 39 60 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 32 kn*10

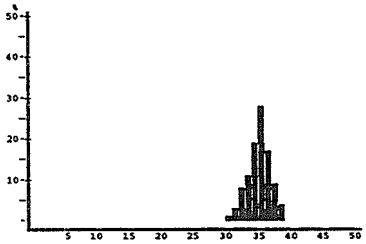
Sorted: 20 Kg Total catch: 19.70 CATCH/HOUR: 39.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Seriola dumerili	16.30	2	41.37	
Etrumeus whiteheadi	6.82	2274	17.31	
Sepia orbignyana	5.80	62	14.72	
Etrumeus whiteheadi	4.20	114	10.66	1729
Trachurus capensis	3.34	166	8.48	1730
Diplodus bellottii	2.56	2	6.50	
Illex coindetii	0.32	6	0.81	
Trichiurus lepturus	0.06	2	0.15	
Total	39.40		100.00	

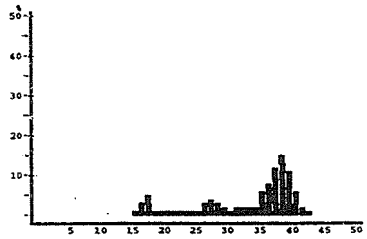
Annex II. Length distributions of main species



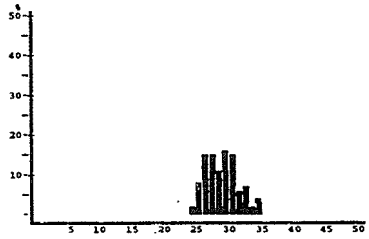
Sardinella maderensis
Cabinda - Luanda
MEAN LENGTH = 31.51cm N= 2039
NUMBER OF SUBSAMPLES : 35



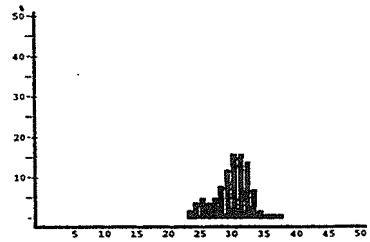
Sardinella aurita
Luanda - Benguela
MEAN LENGTH = 35.14cm N= 631
NUMBER OF SUBSAMPLES : 18



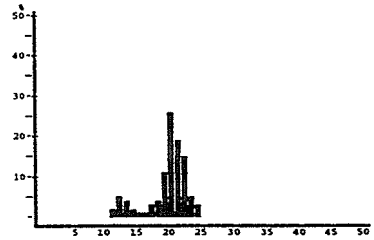
Trachurus trecae
Cabinda - Luanda
MEAN LENGTH = 33.41cm N= 1241
NUMBER OF SUBSAMPLES : 22



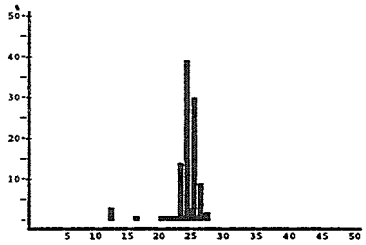
Chloroscombrus chrysurus
Luanda - Benguela
MEAN LENGTH = 28.93cm N= 122
NUMBER OF SUBSAMPLES : 2



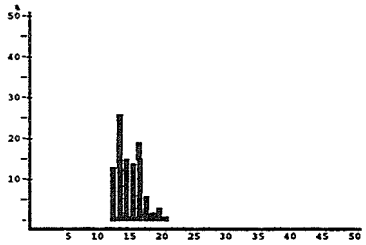
Selene dorsalis
Cabinda - Luanda
MEAN LENGTH = 30.15cm N= 588
NUMBER OF SUBSAMPLES : 11



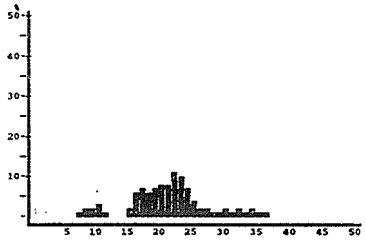
Brachydeuterus auritus
Luanda - Benguela
MEAN LENGTH = 19.93cm N= 586
NUMBER OF SUBSAMPLES : 6



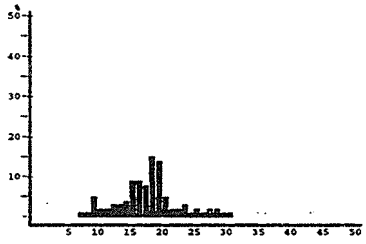
Sardinops ocellatus
Benguela - Cunene
MEAN LENGTH = 24.39cm N= 161
NUMBER OF SUBSAMPLES : 2



Etrumeus whiteheadi
Benguela - Cunene
MEAN LENGTH = 15.01cm N= 546
NUMBER OF SUBSAMPLES : 5



Trachurus trecae
Benguela - Cunene
MEAN LENGTH = 21.70cm N= 1189
NUMBER OF SUBSAMPLES : 13



Trachurus capensis
Benguela - Cunene
MEAN LENGTH = 18.11cm N= 836
NUMBER OF SUBSAMPLES : 9

Annex III Instruments and fishing gear used

The Simrad EK-500/38kHz scientific sounder was used during the survey for fish abundance estimation. The Bergen Echo Integrator system (BEI) was used to scrutinize the acoustic records from the 38kHz echo sounder, and to allocate integrator values to fish species.

The details of the settings of the 38kHz echo sounder where as follows:

Tranceiver-1 menu (38 kHz lowering keel)

Transducer depth	0.00 m
Absorbtion coeff.	10 dB/km
Pulse length	medium (1ms)
Bandwidth	wide
Max power	2000 Watt
2-way beam angle	-21.0 dB
SV transducer gain	28.1 dB
TS transducer gain	28.0 dB
Angle sensitivity	21.9
3 dB beamwidth	6.8 dg
Alongship offset	0.00 "
Athwardship offset	0.04 "

Display menu

Echogram	1 (38 kHz)
Bottom range	15 m
Bottom range start	10 m
Sv colour min	-67 dB

Printer- menu

Echogram	1 (38 kHz)
Range	100, 250 and 500 m
Range start	0
Bottom range	12 m
Bottom range start	10 m
Sv colour min	-67 dB
TVG	20 log R

Bottom detection menu Minimum level -50 dB

Fishing gear

The vessel has two different sized "Åkrahamn" pelagic trawls and one "Gisund super bottom trawl". Both the bottom trawl and the smallest pelagic trawl were used during the survey.

The bottom trawl has a headline of 31 m, footrope 47 m and 20 mm meshsize in the codend with an innernett of 10 mm meshsize. The estimated opening is 6 m (observed 5.7) and distance between wings during towing about 18 m. The sweeps are 40 m long. The trawl is equiped with a 12" rubber bobbins gear. The doors are of 'Thyborøn' combi type, 7.81 m^2, 1670 kg, their distance while trawling about 46 m in average. This distance is kept constant at all depths by the use of a 9.5 m strap between the wires at 130 m distance from the doors (applied at depths greater than 60 m).

The SCANMAR system was used on all trawl hauls. This equipment consists of sensors, a hydrophone, a receiver, a display unit and a battery charger. Communication between sensors and ship is based on acoustic transmission.The doors are fitted with sensors to provide information on their distance and a height sensor is fitted to the bottom trawl to measure the trawl opening and provide information on clearance and bottom contact..

The pelagic trawl is equipped with a trawleye that provides information on the trawl opening and the distance of the footrope to the bottom.