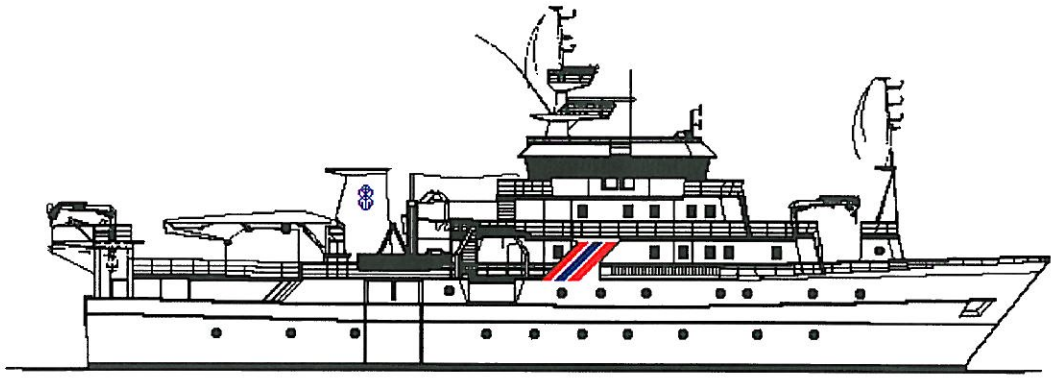


SURVEY OF THE FISH RESOURCES OF ANGOLA

Survey of the Demersal Resources
12 March–13 April 2004

Institute of Marine Research
IMR, Bergen
Norway

Instituto de Investigação Marinha
IIM, Luanda
Angola

CRUISE REPORTS "DR. FRIDTJOF NANSEN"

SURVEYS OF THE FISH RESOURCES OF ANGOLA

Survey of the Demersal Resources
12 March–13 April 2004

by

Espen Johnsen, Diana Zaera,
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 Bergen, NORWAY

Moustapha Diedhiou
Instituto de Investigação Marinha
Luanda, ANGOLA

Bergen, 2004

The DR FRIDTJOF NANSEN RESEARCH PROGRAMME is sponsored by the Norwegian Agency for Development Cooperation (NORAD). The Food and Agriculture Organization of the United Nations (FAO) provides support to the Programme through Project GCP/INT/730/NOR: International Cooperation with the Nansen Programme: Fisheries Management and Marine Environment. This project is the follow-up to the Project NORAD/FAO/UNDP GLO/92/013. The Institute of Marine Research (IMR), Bergen, Norway is responsible for the implementation of the Programme in cooperation with FAO Fisheries Department and the local fisheries administrations. The aim of the Nansen Programme is to assist developing countries in fisheries research, management and institutional strengthening.

The programme has previously conducted the following demersal surveys in the area:

January 1985	-	June 1986	(6 surveys)
January 1989	-	December 1989	(3 surveys)
May 1991	-	September 1992	(3 surveys)
January 1994	-	August 2003	(12 surveys)

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION

1.1 Objectives

The objectives of the cruise have been previously discussed and agreed upon by the responsible of the Demersal Programme of the Instituto de Investigação Marinha (IIM), of Angola, and the responsible from the Institute of Marine Research, Bergen (IMR) for the Angolan Demersal Programme, and were the following:

To survey, map, and describe the distribution, composition and abundance of the main demersal species, with special emphasis on seabreams (Sparidae), croakers (Sciaenidae), grunts (Haemulidae), groupers (Serranidae), hakes (Merluccidae) and shrimps (*Parapenaeus longirostris* and *Aristeus varidens*) on the Angolan shelf and slope (down to 800 m). The regions from Cunene River (17°14'S) to Tombua (15°40'S) and from Benguela (12°35'S) to Congo River (06°00'S) are surveyed by using bottom trawl and the swept-area method.

To collect biological data as length, weight, sex and maturity of *Dentex macrophthalmus*, *D. angolensis*, *Pagellus bellottii*, *Pseudotolithus typus*, *Merluccius polli*, *Aristeus varidens*, *Parapenaeus longirostris*, *Chaceon maritae* and the commercially important flatfish (Citharidae, Soleidae, Cynoglossidae and Bothidae) for future analyses.

To monitor the general hydrographic conditions using a CTD-sonde on each trawl station and map the temperature, salinity and oxygen along standard IIM hydrographic profiles.

1.2 Participation

The scientific staff consisted of:

From IIM, Luanda: Moustapha DIEDHIOU (12/3-13/4, Local cruise leader), Guilherme CAMARADA (12/3-13/4), Pedro PANZO (12/3-1/4), João Eusebio Dias Dos SANTOS (12/3-1/4), Alberto António FILOMENO (12/3-1/4), Virgilio ESTEVÃO (12/3-1/4), Nilsa ALVES (2/4-13/4), Domingos PEDRO (2/4-13/4), Juliana MUAI (2/4-13/4), Andom LUSSEVAKUENO (2/4-13/4).

From IIM, Lobito: Marcelo TCHICULUPITI (12/3-1/4), Enoque CANGANJO (12/3-1/4), António BUCO (2/4-13/4).

From IIM, Namibe: Fernando GOMBO (12/3-1/4).

From IMR, Norway: Espen JOHNSEN (12/3-13/4, Cruise Leader), Diana ZAERA (12/3-13/4), Thor Egil JOHANSSON (12/3-13/4), Jan Frode WILHELMSEN (12/3-13/4).

1.3 Narrative

R/V "Dr Fridtjof Nansen" left Walvis Bay harbour, Namibia, at 16h30 on the 12th of March. The sampling started in the morning of the 14th with trawl and hydrographic stations off the mouth of Cunene River. A standard geographical allocation of the stations was implemented in 2003. Therefore, the station positions in the southern region were similar to the positions used during the demersal surveys in 2000 and 2003. The southern region was finished surveyed in the afternoon of the 17th of March. Standard hydrographic transects were conducted west off Baía dos Tigres and Pta. Albina. The slope off Baía dos Tigres is very steep and has a rough bottom between 200 and 600 m, hence this area was not adequately trawled. The shelf and slope between Tombua and Benguela is very narrow and the bottom conditions are not suitable for trawling.

An acoustic calibration was done on the 18th in Baía dos Elephantes and in the late afternoon of the 19th the vessel reached the first trawl station in the central region. The positions of the trawl stations in the central and northern regions were the same as during the demersal surveys of 2002 and 2003 as a result of the standard station allocation that was implemented in 2003. In the central region, six standard hydrographic transects were conducted at Lobito, Pta. do Morro, Rio Longa, Cabo Ledo and Pta. das Palmerinhas. On the 28th of March the survey of the central was completed and the survey continued into the northern region. The vessel called port in Luanda in the morning of the 1st of April to replace some Angolan scientists, and departed in the morning of the 2nd to continue the survey in the northern region. This region was completed on the 11th of April and R/V "Dr Fridtjof Nansen" called port in Luanda in the late afternoon of the 12th of April. In the northern region, three standard hydrographic transects were conducted at Ambriz, Ambrizete and Ponta da Moita Seca.

CHAPTER 2 METHODS

2.1 Survey effort

Table 2.1 presents the size of strata, allocation of trawl stations, total number of successful swept-area hauls, number of hauls failed, number of CTD stations and the distance surveyed by stratum. It also shows the allocation of effort relative to the stratum size as percentage hauls versus percentage area, by depth, region and total area. The overall average coverage was 1 trawl station per 83 square nautical miles (NM^2). Figure 2.1-2.3 show the cruise tracks, the locations of the bottom trawls and the hydrographic stations in the southern, central and northern regions, respectively.

Table 2.1 Survey design and effort. Size of the survey area by depth stratum, allocation of trawl stations, proportion of stations relative to stratum size, total number of successful swept-area hauls, number of hauls failed, number of CTD stations, and the distance surveyed, divided in to: southern region (Cunene to Tombua), central region (Benguela to Luanda) and northern region (Luanda to Congo River).

	Depth strata (m)												
Region	20-50	50-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	Total	Failures	CTD	Distance
					Cunene-Tombua								
Area (NM^2)	507	591	594	100	77	48	39			1956		44	441
# hauls (BT)	8	7	5	1	2	1	1	3		28	2		
%area	25.9	30.2	30.4	5.1	3.9	2.5	2.0	0.0	0.0	11.8			
%hauls	28.6	25.0	17.8	3.6	7.1	3.6	3.6	10.7		14.0			
					Benguela-Luanda								
Area (NM^2)	1068	1586	1439	407	372	343	346	268	357	6186		116	1127
# hauls (BT)	18	17	14	2	6	3	3	4	4	71*	2		
%area	17.3	25.6	23.3	6.6	6.0	5.5	5.6	4.3	5.8	37.4			
%hauls	25.3	23.9	19.7	2.8	8.4	4.2	4.2	5.6	5.6	35.5			
					Luanda-Congo River								
Area (NM^2)	1379	1969	1940	601	550	437	409	408	702	8395		119	1781
# hauls (BT)	15	24	21	8	6	6	6	7	8	101*			
%area	16.4	23.5	23.1	7.2	6.6	5.2	4.9	4.9	8.4	50.8			
%hauls	14.8	23.7	20.8	7.9	5.9	5.9	5.9	6.9	7.9	50.5			
					Grand total								
Area (NM^2)	2954	4146	3973	1108	999	828	794	676	1059	16537			
# hauls (BT)	41	48	40	11	14	10	10	14	12	200			
%area	17.9	25.1	24.0	6.7	6.0	5.0	4.8	4.1	6.4				
%hauls	20.5	24.0	20.0	5.5	7.0	5.0	5.0	7.0	6.0		206		Total hauls

*Plus one station deeper than 800 m, which is not included in the total

A stratified semi-random survey design was used with depth and region as stratifying variables. Trawls were taken along transects perpendicular to the coast, which were approximately 15 NM apart as shown in Figure 2.1-2.3. Allocation of trawl stations was approximately proportional to stratum size. The planned survey design was sometimes slightly modified due to unsuitable bottom conditions, or non-accessible areas with oil exploitation in the northern region.

A standardized allocation of the trawl positions was implemented in 2003, and was used during the 2004 survey. The station positions in the southern region were similar to the positions of those of the 2000 demersal survey and the station positions in the central and northern regions were the same as during the 2002 demersal survey.

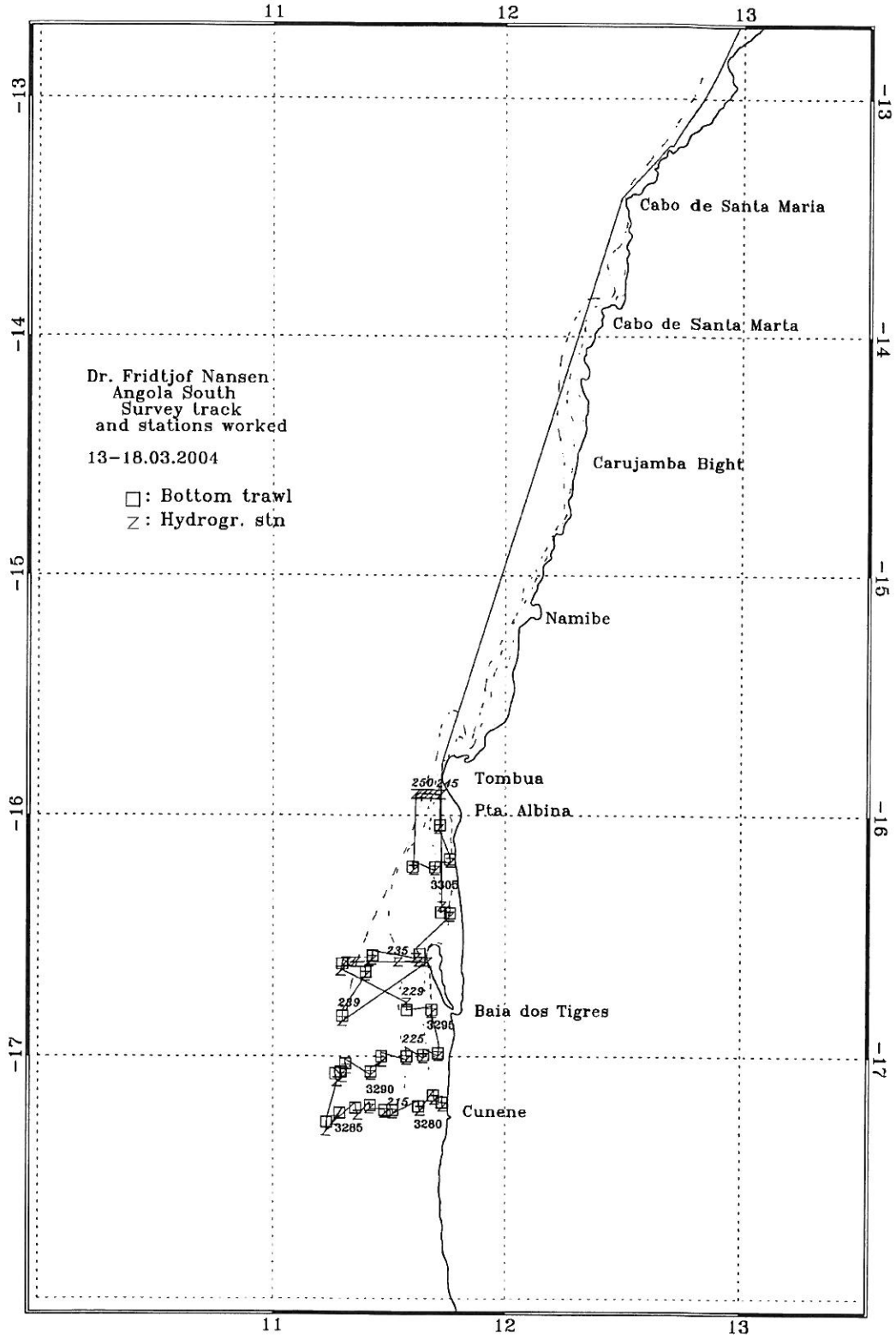


Figure 2.1 Angola south: Cunene to Tombua. Course track with fishing stations and hydrographic transects. Hydrographic stations were also taken at all the fishing stations. Depth contours at 20, 50 and 100 m.

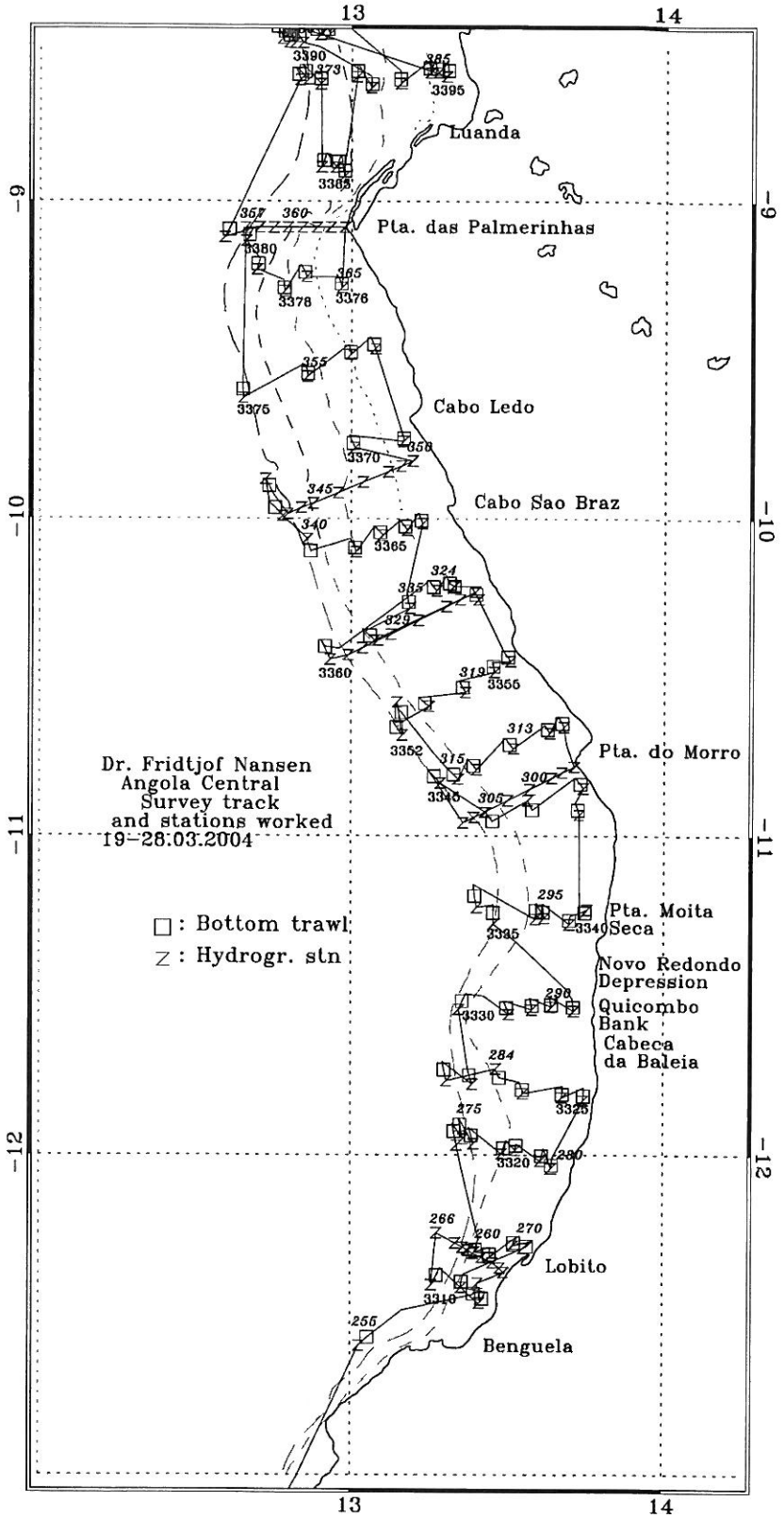


Figure 2.2 Angola central: Benguela to Luanda. Course track with fishing stations and hydrographic transects. Hydrographic stations were also taken at all the fishing stations. Depth contours at 20, 50, 100, 200 and 500 m.

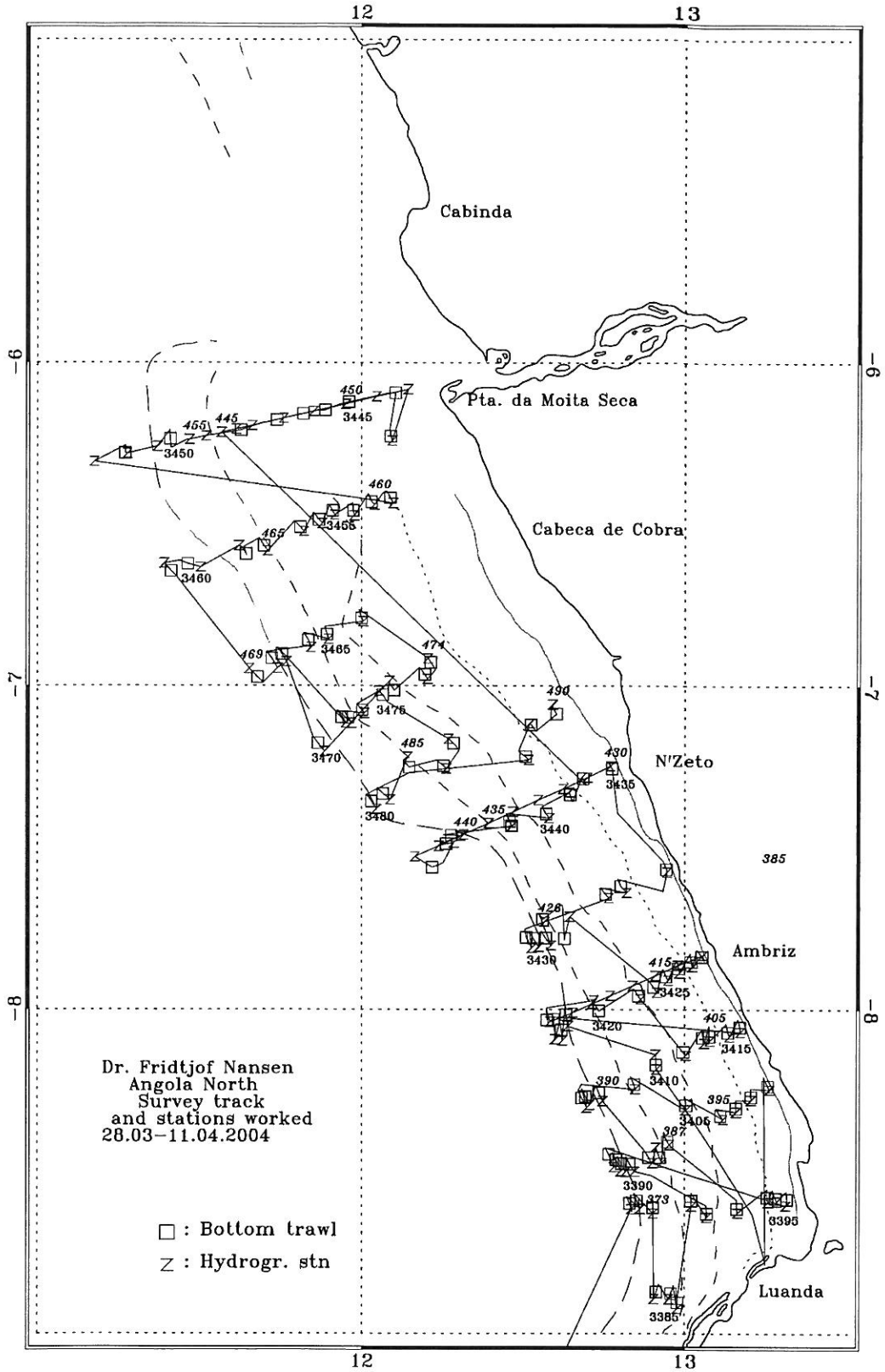


Figure 2.3 Angola north: Luanda to Congo River. Course track with fishing stations and hydrographic transects. Hydrographic stations were also taken at all the fishing stations. Depth contours at 20, 50, 100, 200 and 500 m.

2.2 Meteorological and hydrographic sampling

Meteorological observations including wind speed and direction, air temperature, global radiation and sea surface temperature (SST) were automatically logged every nautical mile using an Aanderaa meteorological station. CTD-stations and current profiles with ADCP were recorded at all trawl stations and at the standard hydrographic transects.

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 4 seconds, the depth cell interval set to 8 m and the number of cells was set to 40. The data were routinely averaged over 300 seconds and averaged data stored on files. The data have not been analyzed in this report, but this can be done by *e.g.* the PC software UMS (Underway Mapping System), supported by Marine and Coastal Management in Cape Town, South Africa.

Conductivity, salinity and oxygen measurements and water sampling

A Seabird 911+ CTD probe was used to obtain vertical profiles of temperature, salinity and oxygen. Real time plotting and logging was done using the customized Seabird Seasave software. Profile data were logged down to a few meters above the bottom or, in deep stations, until maximum 700 m. At selected stations on the standard hydrographic transects two Niskin bottles were triggered for water samples, one near the surface and one near the bottom, in order to calibrate the oxygen sensor. The water samples were analyzed for dissolved oxygen using the Winkler method (Carrit and Carpenter, 1966). A total of 12 samples were taken for oxygen calibration. A linear regression of the Winkler determinations on the CTD values that was done in the central region produced the result shown in Figure 2.4.

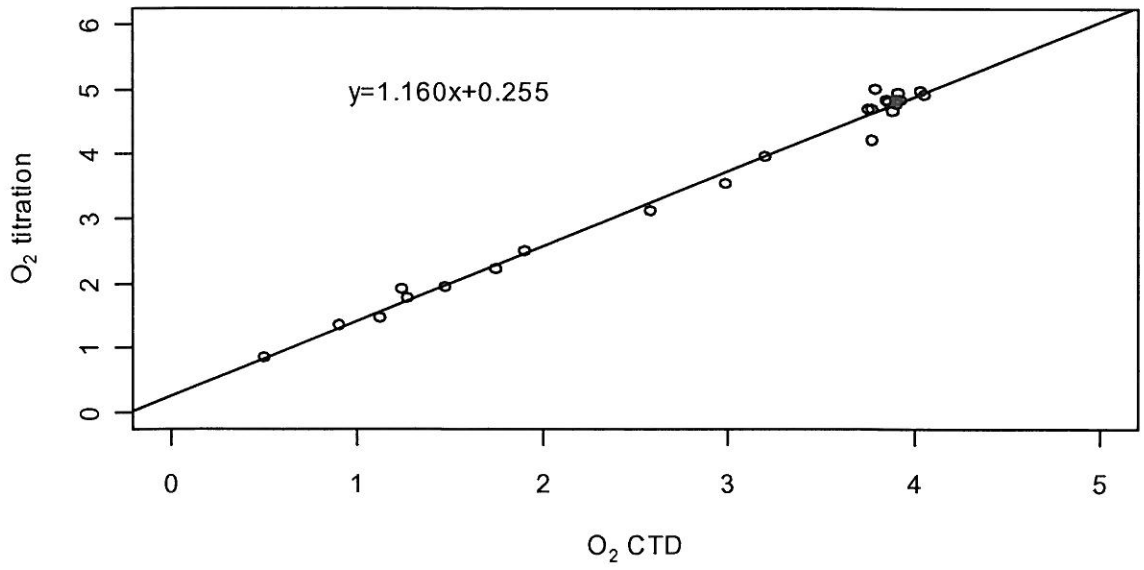


Figure 2.4 A regression of the Winkler determined oxygen concentrations from the Niskin bottles against linear the CTD values obtained from hydrographic stations 325-336.

2.3 Biological sampling

Sampling gear

A Gisund Super bottom trawl with a headline height of 4.5-4.8 m was used. The distance between the front of the wings was about 21 m during deployment at a speed of 3 NM/hour. Thyborøn' Kombi 6.7 m^2 trawl doors weighing 1 670 kg were used throughout the survey. These settings have been the standard on the all swept area surveys conducted with R/V "DR Fridtjof Nansen". As in previous surveys, except during the 2002 survey, a 44 m long tickler chain was routinely attached to the footrope on depth of more than 300 m in order to increase the catch of bottom dwelling deep-water shrimps. During all tows deeper than 80 m, a 10 m long constraining rope was attached between the wires 125 m in front of the trawl doors. This kept a constant distance between the doors of about 50 m during the trawling. For shallow station with depth of less than 80 m the door-to-door distance varied more, depending of bottom type and currents. Data from the door, depth and trawl height sensors were logged for all tows and are stored in files with CMG format, which makes it possible to study the trawl performance in more detail.

Trawl duration was standardized to 30 minutes and trawling speed to 3 NM/h. The trawling start time is controlled by using SCANMAR sensors to detect when the trawl is on the bottom while the end time is defined to be when the wires starts to haul the net. In some cases the towing was terminated early due to either indications of bad trawling performance or because the catch sensor went off. Some of these tows were rejected as valid stations because they were not trusted to reflect the density of fish on the bottom. Table 2.1 shows the numbers of valid and rejected stations. A detailed description of the fishing gear is given in Annex VI.

Acoustic recordings were carried out at four frequencies: 18, 38, 120 and 200 kHz using a SIMRAD EK500 Echosounder. Acoustic data were not processed on board, but all data were stored to files using EchoLog.

Sampling the catches

Catches were sampled (or sub-sampled for large catches) for species composition by weight and numbers. Length measurements were taken as follows: for fish, total body length (cm) was measured to the nearest 1 cm below the longest lobe of caudal fin, and for shrimp carapace length to 1 mm below was recorded. Otoliths samples of *Dentex macrophthalmus* were taken. The records of fishing stations are presented in Annex I. For commercially important species, pooled length frequency distributions, in which individual samples are raised to total catch, are shown by area in Annex II.

The sharks caught were sexed, measured and weighted. Some results as well as the methodology used are presented in Annex VIII.

2.4 Areas and depth strata

Table 2.1 shows the areas (NM^2) in the southern region (Cunene-Tombua: 17°14'S-16°00'S), in the central region (Benguela-Luanda: 12°40'S-09°00'S), and the northern region (Luanda-

Congo River: 09°00'S-06°00'S) by depth strata. All samples are treated as representative for the relevant depth intervals where the species, or species groups, were caught.

2.5 Calculations

All equations for the calculations, including some theoretical background, are given in Annex IV.

The effective fishing width of the trawl gear used by R/V "Dr Fridtjof Nansen" is considered to be 18.5 m. The effective fishing area is the product of the 18.5 meters, which is equal to 0.01 NM, multiplied by the towing distance measured by the GPS. It is assumed that all fish within the trawling path have been caught, which gives a catchability coefficient (q), *i.e.* the fraction of the fish encountered by the trawl that was actually caught, equal to 1.

The catchability coefficient (q) is seldom known. However, because the coefficient is likely to be constant between surveys the swept area estimates are assumed to reflect changes in population abundances between surveys.

The survey design and effort have not been consistent throughout the time series, which makes comparisons between years difficult. Therefore, it was discussed and agreed upon by the responsible of the Demersal Programme of the Instituto de Investigação Marinha of Angola, and the responsible for the Angolan Demersal Programme at the Institute of Marine Research, Norway that all biomass estimates since 1985 should be calculated in a standardized way.

Data from the projects AN, A2, A3 and A4 in NAN-SIS were exported by using the "Export to flat ASCII file" and "Export to Statgraf A" in NAN-SIS. The latter export function was used to get a better accuracy of the log-duration information (two decimals). The free software R 1.7.1 was used to calculate stratified density estimates sorted by survey, depth and latitude. Biomass estimates by species or species groups were obtained from a stratified mean density estimator using equations in Annex IV.

CHAPTER 3 OCEANOGRAPHIC CONDITIONS

3.1 Surface distribution

The salient feature of the hydrographic conditions in Angolan waters between December and March is the drop in the salinity at the surface, associated to the seasonal rise in the precipitation over the continent and the consequent increase in the discharge of freshwater carried to the ocean by the Congo River and by smaller rivers along the Angolan coast. The regular demersal surveys carried out by R/V "Dr. Fridtjof Nansen" in March are coincident with the late phase of the wet season and, typically, observed low salinity in the surface waters in the shelf off the northern and central Angola regions. No salinity decrease has been observed off the southern Angola (15-16°S), except of one survey conducted during the anomalous "Benguela Niño" event in February-March 1995.

During the 2003 survey in March it was observed a warm front of water off Baía dos Tigres, but no such front was observed south off Tombua this year. The offshore temperatures were in the range between 19 and 20°C (Figure 3.1), while the salinity distribution in south, which was similar to the distribution pattern observed during March 2003, ranged from 35.6 to 35.9 psu (Figure 3.2). The surface waters were colder than the typical range for the tropical surface water, and are more typical for the mid-oceanic conditions in the South East Atlantic.

Both the salinity and temperature distribution patterns in the central region were different from those patterns observed last year. The surface salinity range in 2004 was from 35.6 to 36.0 psu, while the range in 2003 was from 30.6 to 34.5 psu (Figure 3.4). The high salinity in 2004 was probably caused by little discharge of freshwater from the rivers to the Atlantic Ocean. The sea surface temperature during the 2004 survey was considerable lower than the temperatures observed last year. The inshore temperature was about 24°C while the temperature offshore was 26 to 27°C in 2004. The temperatures during the 2003 survey were ranging from 28 to 29°C, where the warmest and the least saline surface waters were typically observed offshore. Narrow bands of the cold and saline water (T<26 °C and S>34.1 psu) were observed inshore off Lobito and between Cabo São Braz and Pta. das Palmerinhas in 2004. Since these regions have calm wind conditions with a varying direction it is unlikely that the observed surface upwelling signature was related to a typical wind-inducted coastal upwelling process. It is more likely that the upwelling was coupled to the seasonal intensification of the Equatorial Counter Current (ECC), which during March assumes its southernmost position located off Angola at approximately 9°S.

In the northern region the temperature was lowest inshore with about 24°C, while the offshore surface water temperature was 25 to 26°C. No difference was observed between the salinity values in inshore and offshore waters. As in the central region, the temperature and salinity values observed were significant different from the values observed during the March 2003 demersal survey. The sea surface temperature during the 2004 survey was about 4°C lower than the values of 2003, and the salinity values were about 2.3 psu higher in 2004. Little discharge of freshwater from Congo River and other rivers during 2004 is probably the reason to the high salinity values in 2004.

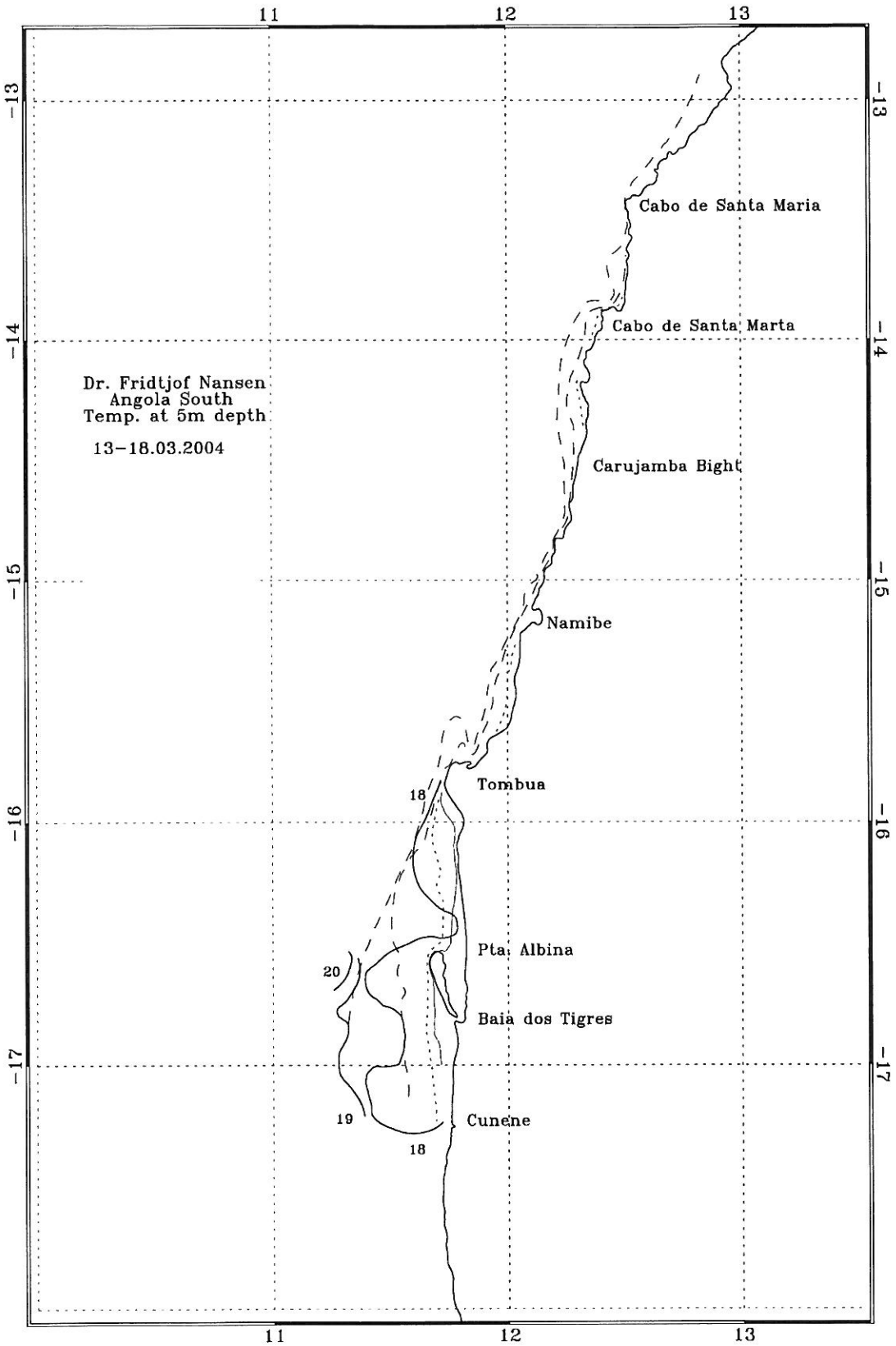


Figure 3.1 Angola south. Horizontal distribution of surface temperatures (5 m depth). Depth contours at 20, 50 and 100 m.

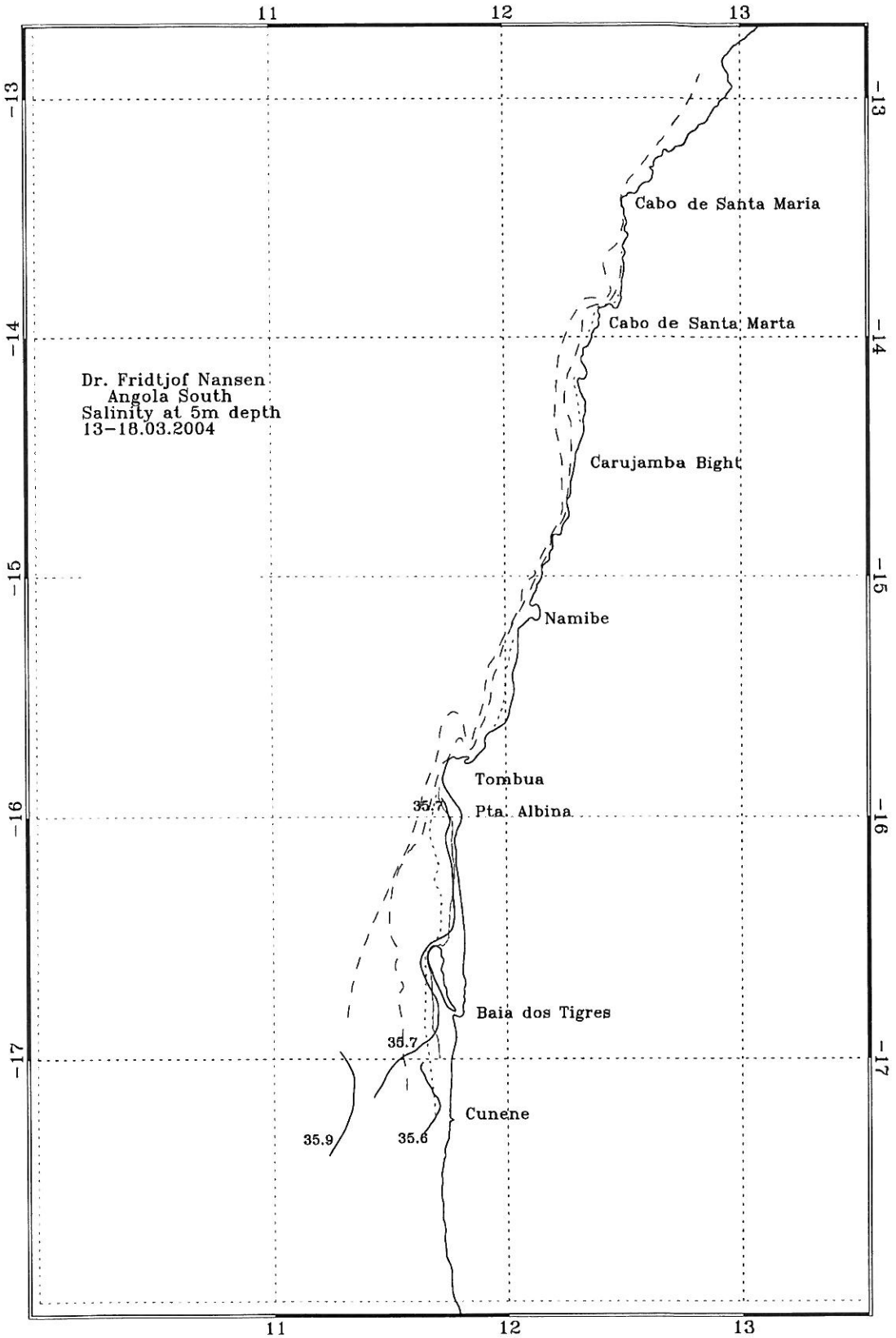


Figure 3.2 Angola south. Horizontal distribution of surface salinity (5m depth). Depth contours at 20, 50 and 100 m.

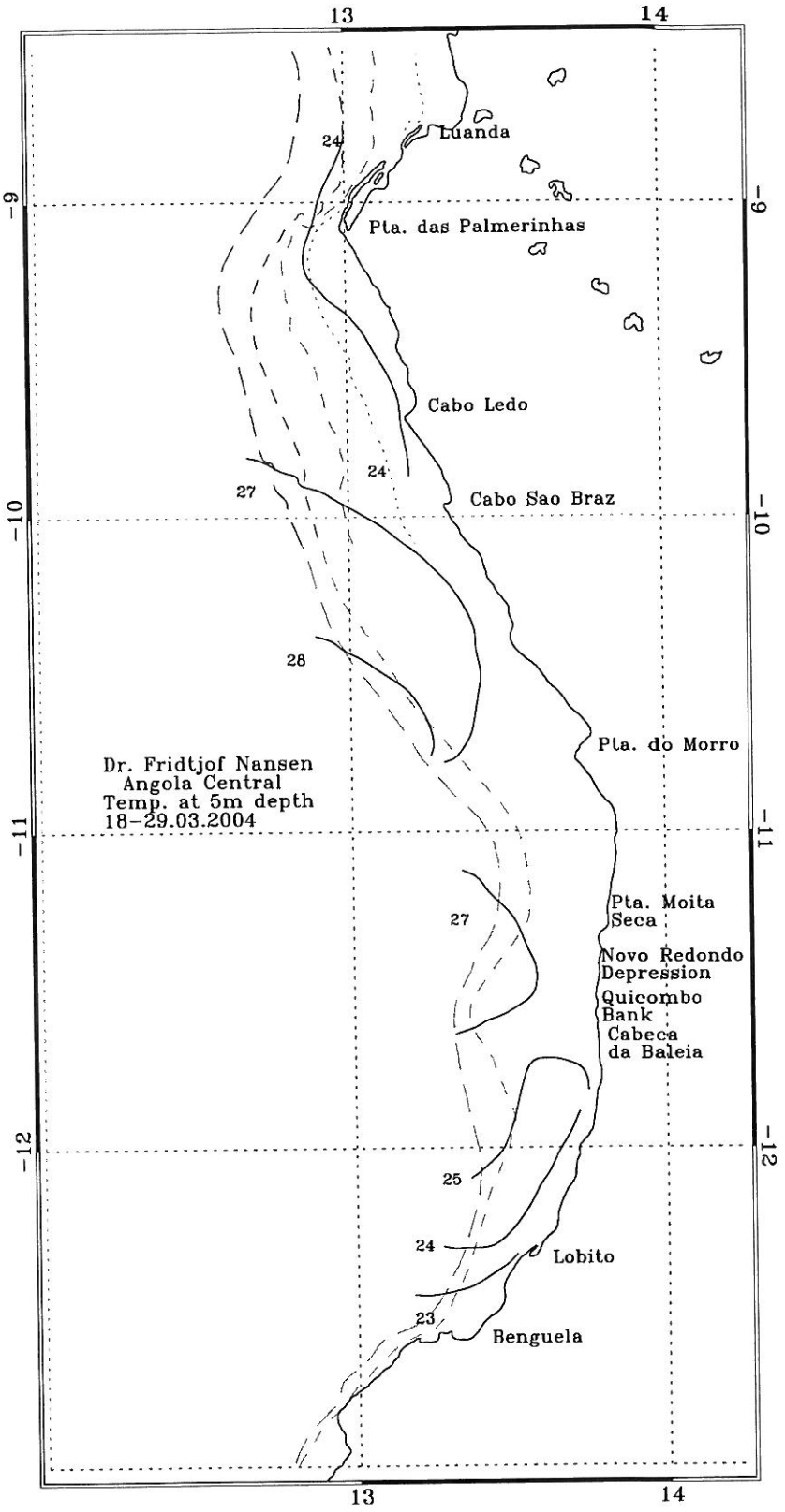


Figure 3.3 Angola central. Horizontal distribution of surface temperatures (5 m depth). Depth contours at 20, 50, 100, 200 and 500 m.

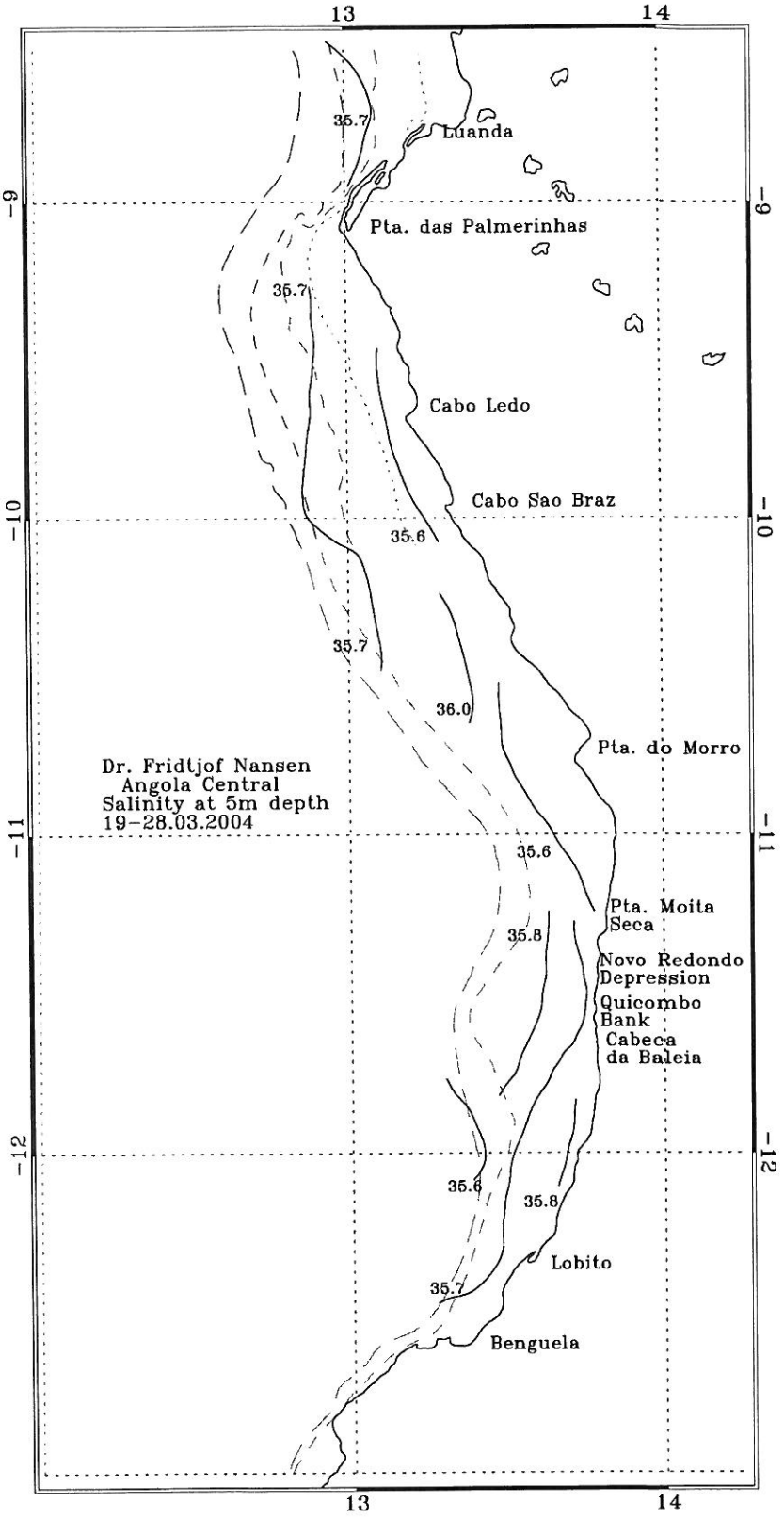


Figure 3.4 Angola central. Horizontal distribution of surface salinity (5m depth). Depth contours at 20, 50, 100, 200 and 500 m.

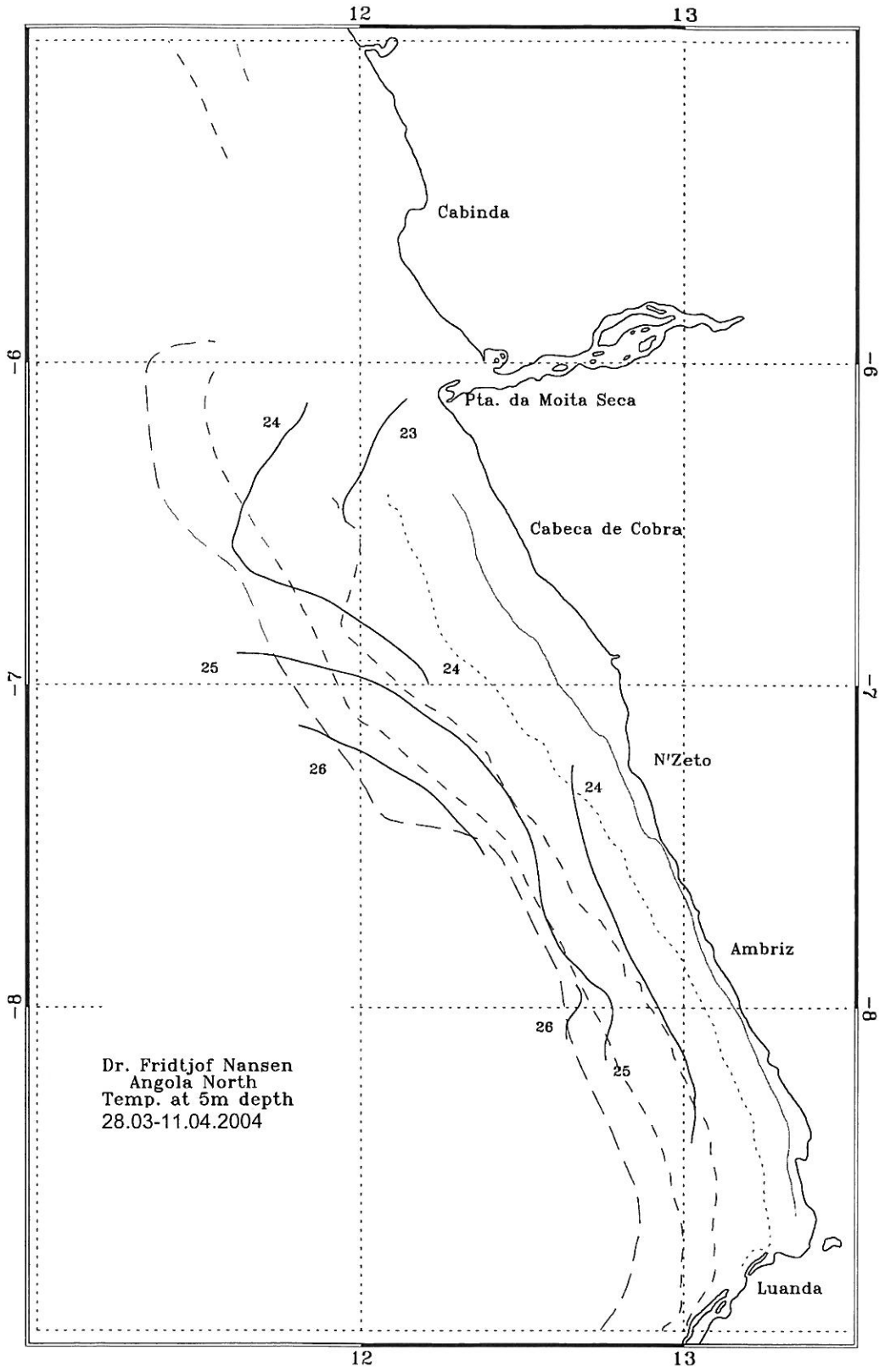


Figure 3.5 Angola north. Horizontal distribution of surface temperature (3m depth). Depth contours at 20, 50, 100 and 200 m.

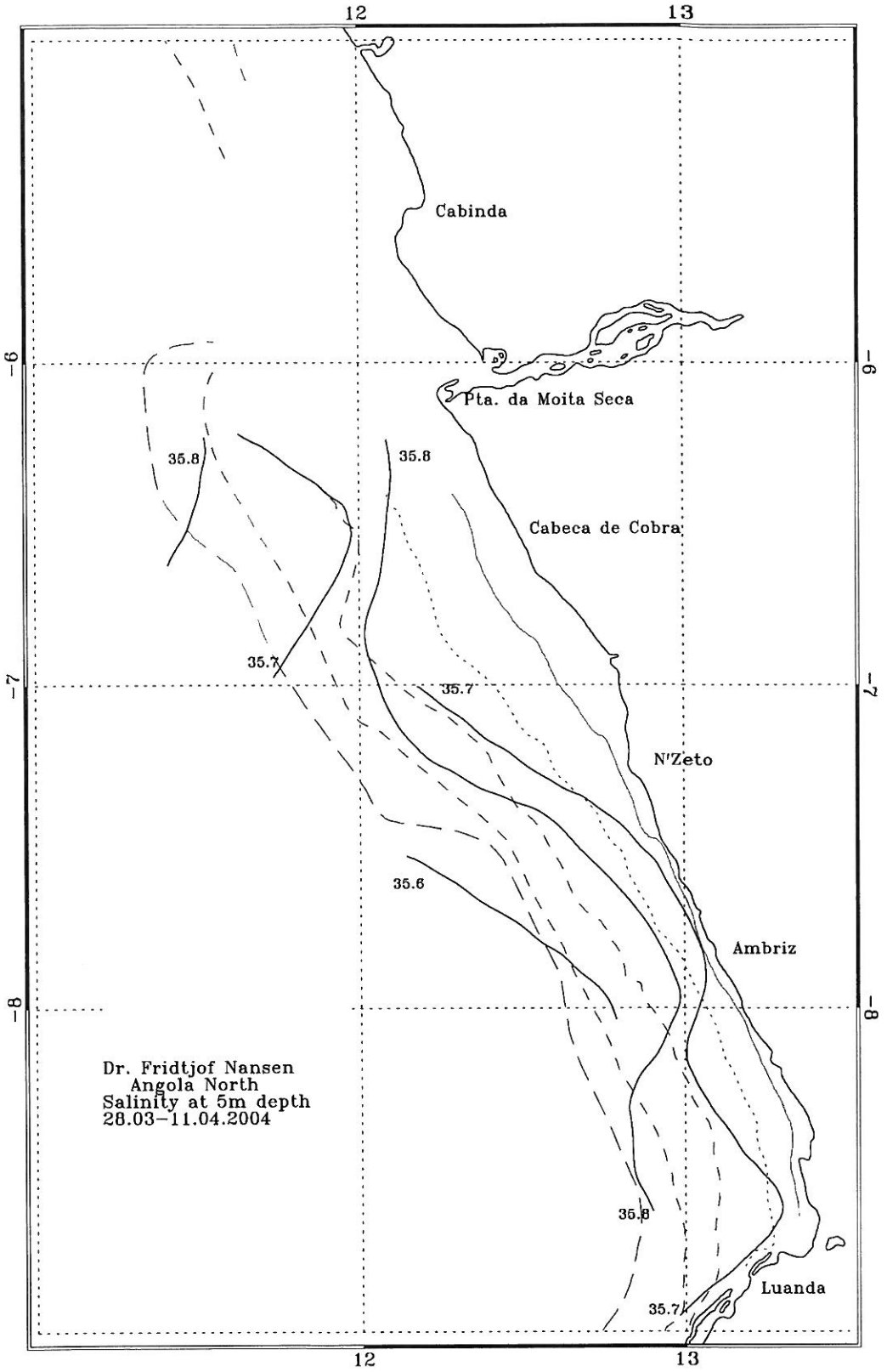


Figure 3.6 Angola north. Horizontal distribution of surface salinity (3m depth). Depth contours at 20, 50, 100 and 200 m.

3.2 Vertical sections

The sections off Baía dos Tigres (Figure 3.7) and Pta. Albina (Figure 3.8) show similar conditions. The inshore surface layers had temperature of about 18°C, salinity of 35.7 psu and O_2 of about 3.0 ml/l. Compared to the 2003 survey the inshore surface water was about 2° colder and with a lower O_2 content. Last year, the core of Tropical Surface Water (TSW), characterized by T>23°C, S >35.8 psu and O_2>5 ml/l, dominated the offshore part north of Baía dos Tigres. This layer is separated from the underlying Central Water Mass, and the warm front was not observed so far south during the 2004 survey. Inshore, the distributions in the surface water were characterized by the up sloping isolines, revealing the coastal upwelling pattern.

The six sections in the central Angola, presented in Figure 3.9-3.15, show the distribution patterns in temperature, salinity and O_2 of the region. The temperature and O_2 values are higher in the central than in the southern region. The surface temperatures observed during the 2004 survey were much lower than the temperatures observed last year. In fact, the surface temperatures observed during this survey are in average 4°C lower than those observed in March 2003. The O_2 observations in 2004 were similar to the values measured in 2003, while both the inshore and offshore surface salinity were higher in 2004 than during the 2003 survey.

Three transects were sampled in the northern region between Luanda and Congo River. The vertical profiles of Ambriz, Ambrizete and Pta. da Moita Seca are shown in Figure 3.13-3.15. The temperature in the surface water was about 26°C, the salinity about 35.7 psu and the O_2 5.0 ml/l in the Ambriz and Ambrizete transects. The salinity and O_2 values in the water column from 5-50 m were higher than the observed values in 2003, while the temperature was about 3°C lower. The transect at Pta. da Moita Seca is often very influenced by the water from the Congo River, but during 2004 it seems that the temperature, salinity and O_2 were less influenced by the water flow from Congo than during the 2003 survey as the values observed in this transect were similar to the two other transects in the northern region.

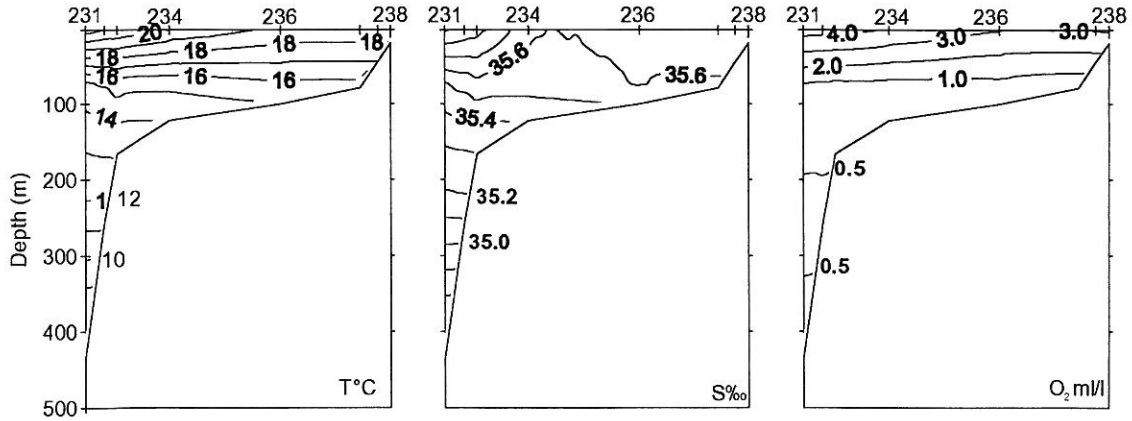


Figure 3.7 Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Baía dos Tigres.

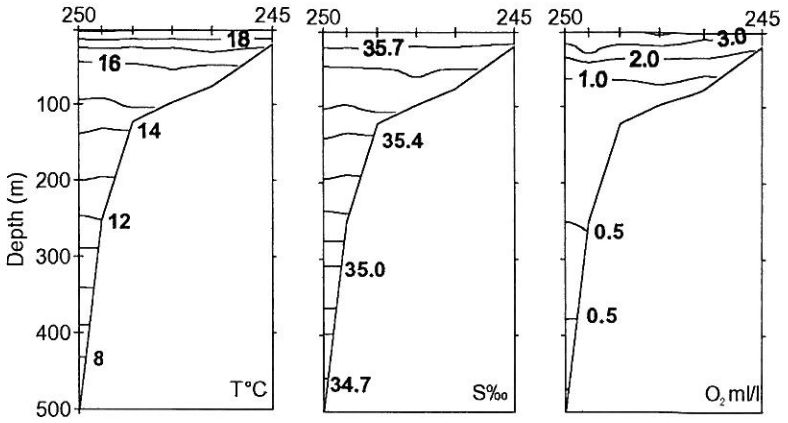


Figure 3.8 Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Pta. Albina.

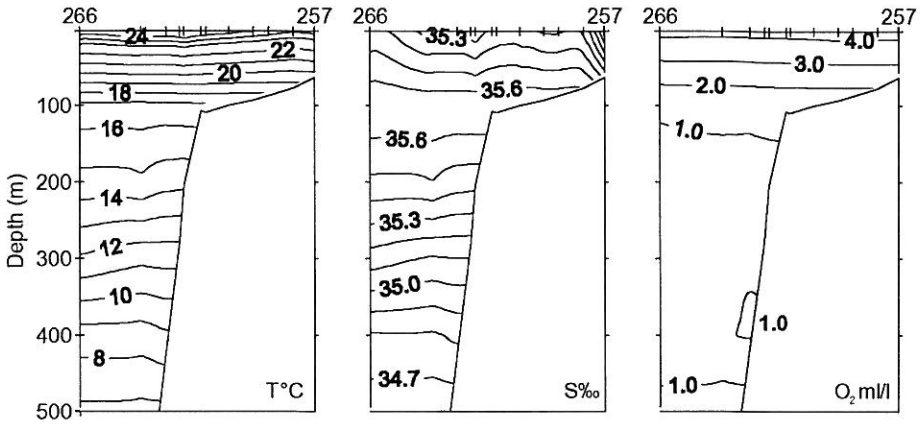


Figure 3.9 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Lobito.

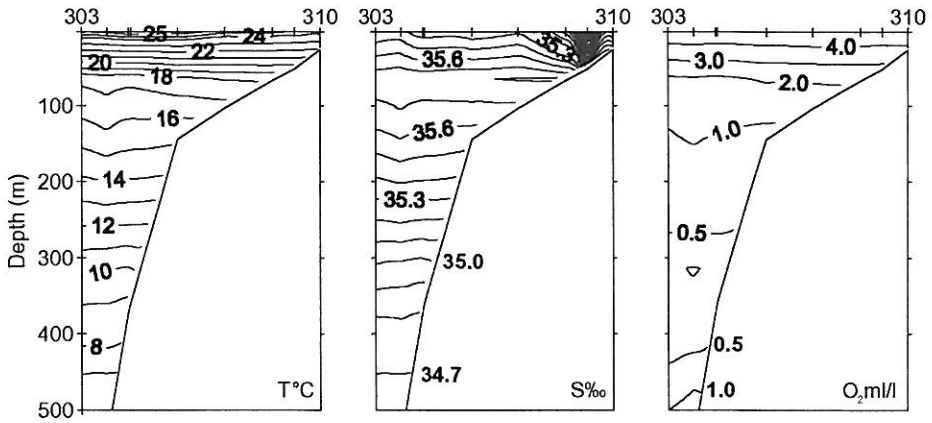


Figure 3.10 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Ponta do Morro.

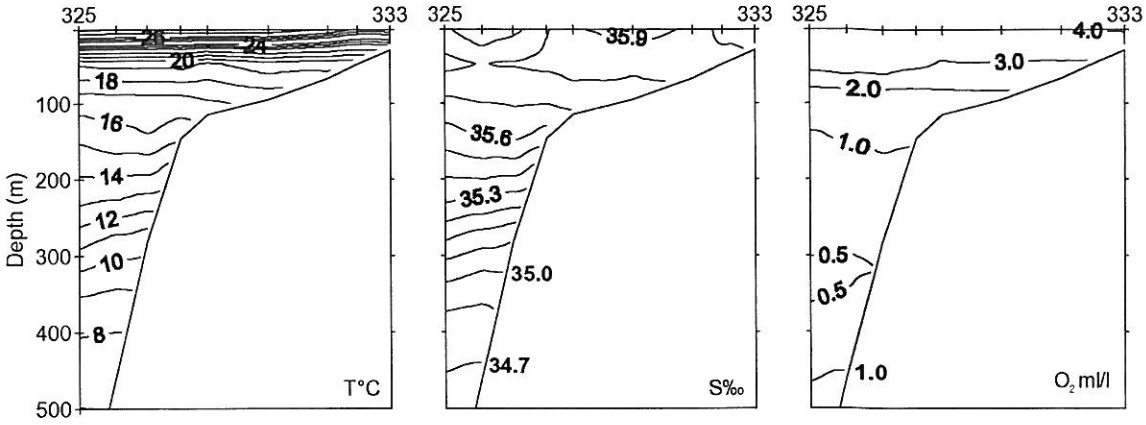


Figure 3.11 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Rio Longa.

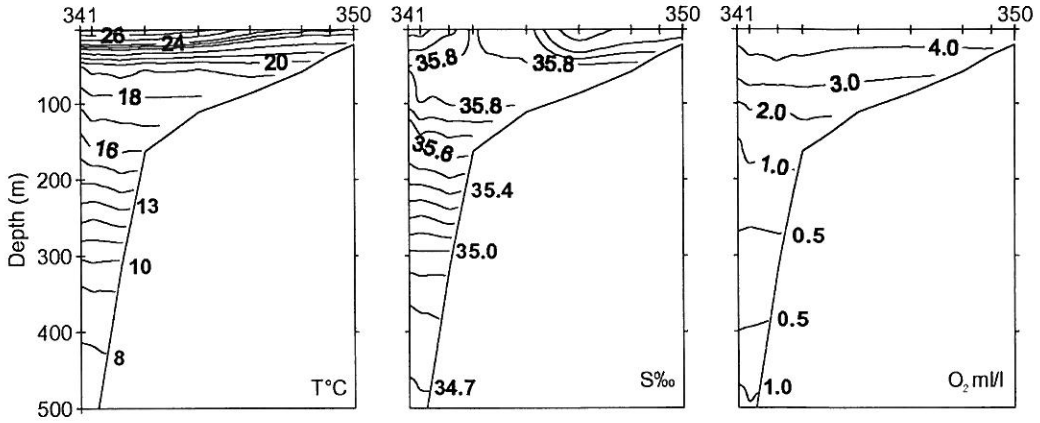


Figure 3.12 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at South of Cabo Ledo.

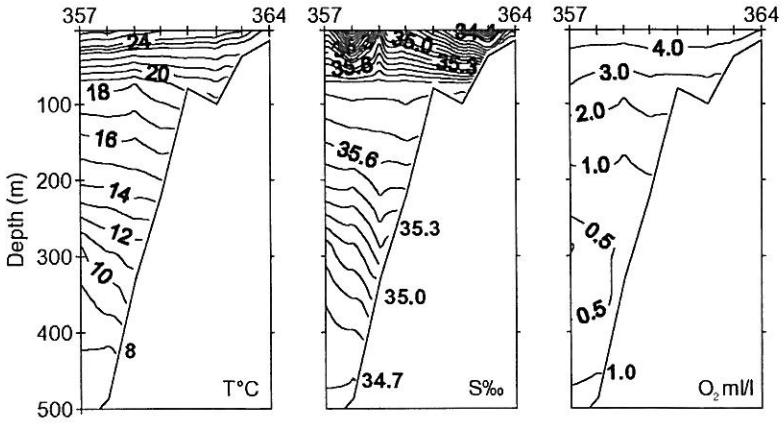


Figure 3.13 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Pta. das Palmerinhas.

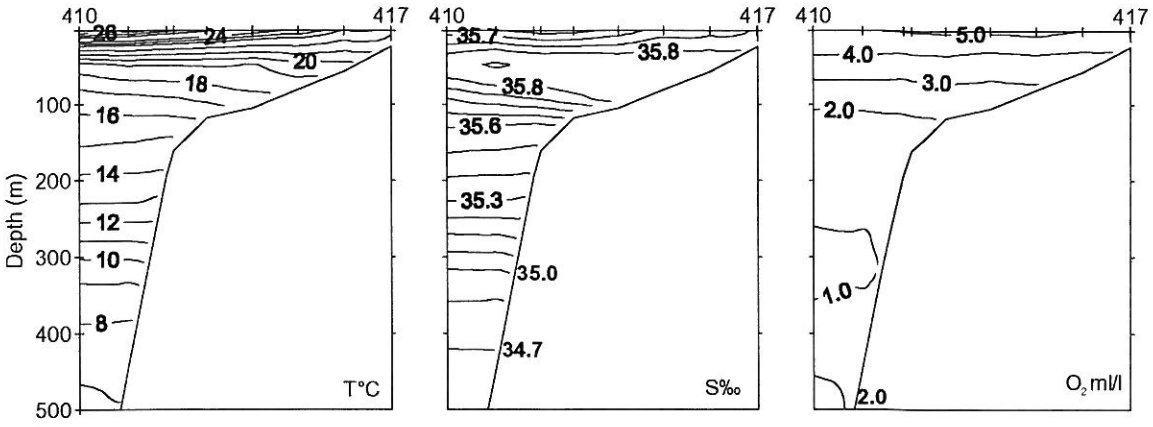


Figure 3.13 Angola north. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Ambriz.

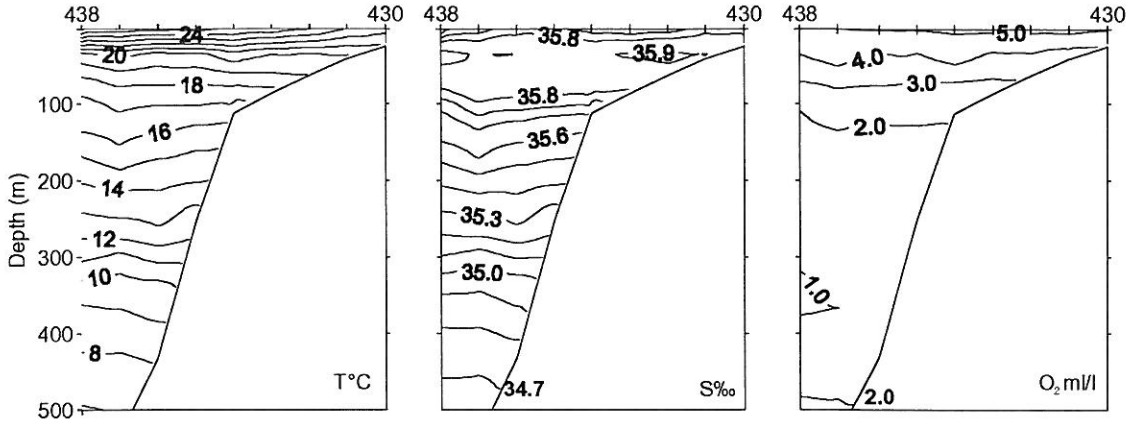


Figure 3.14 Angola north. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Ambrizete.

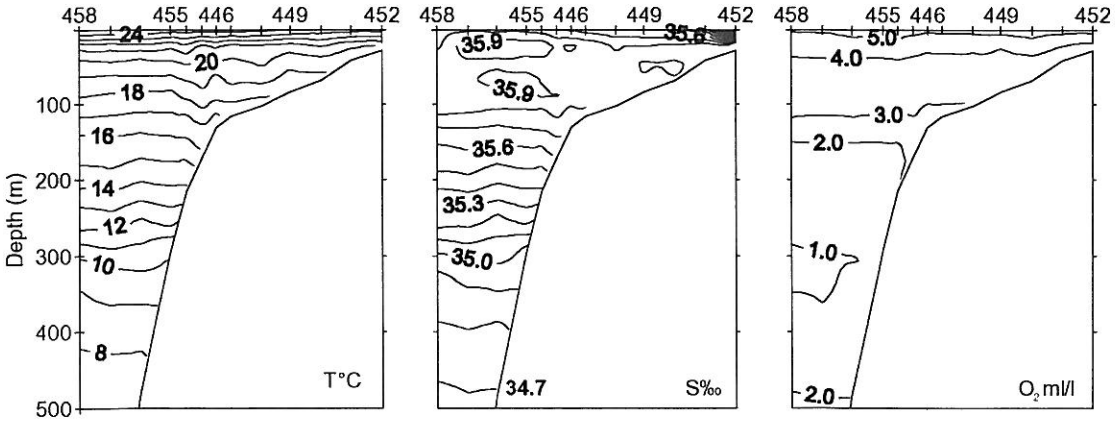


Figure 3.15 Angola north. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Pta. da Moita Seca.

CHAPTER 4 CATCH RATES, BIOMASS ESTIMATES AND DISTRIBUTION OF DEMERSAL RESOURCES ON THE SHELF

4.1 Cunene-Tombua shelf

The total catches and species compositions on the Angolan shelf are presented in this chapter. The inner shelf is defined to be the area between 20 and 70 m bottom depth while the outer shelf to be from 71 to 200 m depth. Several of the species that inhabit the shelf, particularly the seabreams (Sparidae), are also found in deeper waters.

The trawl positions are mapped in Figure 2.1-2.3, and catch and station information by tow are presented in Annex I. Pooled length distributions weighted by the catch of the main species by sector region are shown in Annex II. Mean densities (t/NM^2) of the main species sorted by abundance and depth strata, the frequency of occurrence and the catch distributions are shown in Annex III. Annex V shows the NAN-SIS species codes used to extract the information in the various tables.

The group 'Demersal' comprises the commercially important families Sparidae, Sciaenidae, Haemulidae (=Pomadasyidae), Serranidae, Lutjanidae, Merluccidae, Ophidiidae, and Ariidae, while the group 'Pelagic' includes the families Engraulidae, Clupeidae, Carangidae, Scombridae, Sphyraenidae, Stromateidae, and the benthopelagic family Trichiuridae.

During 3 days 28 trawl stations were conducted in the southern region, where of 26 were successfully accomplish. The southern region has not been regularly sampled throughout the years, which make biomass comparisons over the years difficult. Therefore, the time series of biomass estimates should be interpreted with caution since the survey strategies have not been standardized.

Table 4.1 shows the catch rates of six different fish groups for the inner and the outer shelf. On the inner shelf (Table 4.1A) the 'Pelagic' group dominated the catches with a contribution of 83% of the total catch, which is more than last year. As last year, horse mackerel *Trachurus trecae* dominated the pelagic group. The 'Demersal' group contributed to 5% and the cephalopods to 2% of the total catch, while 11% of the total catch was the "Other" group.

The 'Pelagic' group also dominated on the outer shelf (Table 4.1B) with a relative contribution of 81%, and is mostly ascribed to high catch rates of the horse mackerel species; *T. capensis* and *T. trecae*. The 'Demersal' group contributed to 17% and cephalopods and sharks contributed less than 1% each. Shrimps were not caught on the shelf in the south.

Table 4.1 Southern region March 2004. Catch rates (kg/hour) by main groups in swept area bottom trawl hauls on the shelf. A: Inner shelf (20-70 m), B: Outer shelf (71-200 m).

A. Inner shelf 20-70 m.

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other*	Total
3278	26	77.52	7 950.36				125.40	8 153.28
3279	44	4.88	3.51		9.68			18.07
3293	60	120.08	2 232.72		25.44		35.04	2 413.28
3294	23		117.50		124.20	3.38	3.40	248.48
3295	25		9 136.80				21.52	9 158.32
3302	21	5.28	41.28		1.60		1.60	49.76
3303	49	677.97	7 230.30		56.37			7 964.64
3305	54	567.64	1 261.42		375.32	11.18	64.74	2 280.30
3306	36	349.00	4 175.43		126.92		3 904.20	8 555.55
3307	43	74.40	303.40		88.80	6.96	19.32	492.88
MEAN	38	187.68	3 245.27		80.83	2.15	417.52	3 933.46
STADEV		253.30	3 617.35		114.92	3.92	1 225.72	
% CATCH		4.77	82.50		2.06	0.05	10.61	

B. Outer shelf 71-200 m

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other*	Total
3280	87	41.40					6.28	47.68
3281	133	4 015.80	28 795.80				181.50	32 993.10
3283	174	1 372.61	813.08			24.56	7.84	2 218.09
3291	114	585.90	9 846.90				63.00	10 495.80
3292	95	12.88						12.88
3296	95	1 303.80	1 586.70		141.45		1.56	3 033.51
3299	126	826.30	1 564.66			38.08	147.58	2 576.62
3300	117	243.79	1 885.78		12.53	9.48	121.08	2 272.66
3301	86	1 144.03	679.63		77.14		47.65	1 948.45
3304	72	209.10	6.78		5.14	5.36	14.66	241.04
MEAN	110	975.56	4 517.93		23.63	7.75	59.12	5 583.98
STADEV		1 184.78	9 016.57		47.80	13.21	67.49	10 092.25
% CATCH		17.47	80.91		0.42	0.14	1.06	

*"Other" includes also non demersal groups

Pelagic groups

Catch rates of the most important pelagic fish families caught are presented in Table 4.2. Carangids, with horse mackerel (*T. trecae* and *T. capensis*) as the dominating species, dominated both the inner (68%) and outer (81%) shelf. Two catches on the inner shelf and only one catch on the outer shelf obtained clupeids. The clupeids contributed to 14% on the inner shelf and only 0.02% on the outer shelf of the total catch. No barracudas, hairtails or scombrids were caught on the shelf in the south.

Table 4.2 Southern region March 2004. Catch rates (kg/hour) of main pelagic families on the shelf obtained with bottom trawl hauls. Other A: Inner shelf (20-70 m), B: Outer shelf (71-200 m).

A. Inner shelf 20-70 m

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other*	Total
3278	26	5 636.16	2 314.20				202.92	8 153.28
3279	44		3.51				14.56	18.07
3293	60		2 232.72				180.56	2 413.28
3294	23		117.50				130.98	248.48
3295	25		9 136.80				21.52	9 158.32
3302	21	0.88	40.40				8.48	49.76
3303	49		7 230.30				734.34	7 964.64
3305	54		1 261.42				1 018.88	2 280.30
3306	36		4 175.43				4 380.12	8 555.55
3307	43		300.80	2.60			189.48	492.88
MEAN	38	563.70	2 681.31	0.26			688.18	3 933.46
STADEV		1 782.28	3 220.35	0.82			1 339.75	
% CATCH		14.33	68.17	0.01			17.50	

B. Outer shelf 71-200 m

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other*	Total
3280	87						47.68	47.68
3281	133		28 795.80				4 197.30	32 993.10
3283	174		812.70		0.38		1 405.01	2218.09
3291	114		9 846.90				648.90	10 495.80
3292	95						12.88	12.88
3296	95		1 586.70				1 446.81	3 033.51
3299	126		1 564.66				1 011.99	2 576.65
3300	117	10.49	1 875.29				386.88	2 272.66
3301	86		679.63				1 268.82	1 948.45
3304	72		6.78				234.26	241.04
MEAN	110	1.05	4 516.85		0.04		1 066.05	5 583.99
STADEV			9 016.93		0.12		1 228.46	
% CATCH		0.02	80.89		0.00		19.09	

* Other includes also non-pelagic groups

Demersal groups

Table 4.3 presents catch rates of the most valuable demersal species grouped into families; seabreams (Sparidae except *Boops boops*), snappers (Lutjanidae), groupers (Serranidae), grunts (Haemulidae except *Brachydeuterus auritus*) and croakers (Sciaenidae). Seabreams and croakers were caught on both the inner and outer shelf, while the other demersal families were not found in the south. Seabreams contributed to 4% of the total on the inner and to 11% on the outer shelf, while croakers contributed to 0.2% and 0.1% on the inner and outer shelf, respectively.

Several species of seabreams were caught on the inner shelf, where *Pagellus bellottii* was the most common seabream. While no *Dentex macrophthalmus* was caught on the inner shelf last year small juveniles were caught on four stations on the inner shelf during this year survey.

Except of one station where *P. bellottii* was observed, *D. macrophthalmus* was the only seabream species caught on the outer shelf. As in previous years, two species of croakers: *Umbrina canariensis* (st. 3304) and *Atractoscion aequidens* (st. 3278, 3293 and 3291) were caught in the south.

Table 4.3 Southern region March 2004. Catch rates (kg/hour) of valuable demersal species grouped by families. A: Inner shelf (20-70 m), B: Outer shelf (71-200 m).

A: Inner shelf (20-70 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other*	Total
3278	26					57.00	8 096.28	8 153.28
3279	44						18.07	18.07
3293	60					22.32	2 390.96	2 413.28
3294	23						248.48	248.48
3295	25						9 158.32	9 158.32
3302	21	4.52					45.24	49.76
3303	49	620.22					7 344.42	7 964.64
3305	54	525.84					1 754.46	2 280.30
3306	36	343.49					8 212.06	8 555.55
3307	43	60.64				3.76	428.48	492.88
MEAN	38	155.47				8.31	3 769.68	3 933.46
STADEV		245.21				18.47	3 912.10	
% CATCH		3.95				0.21	95.84	

B: Outer shelf (71-200 m).

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other*	Total
3280	87						47.68	47.68
3281	133	2 956.80					30 036.30	32 993.10
3283	174	553.61					1 664.48	2 218.09
3291	114	439.95				84.00	9 971.85	10 495.80
3292	95	0.15					12.73	12.88
3296	95	1 008.60					2 024.91	3 033.51
3299	126	652.08					1 924.57	2 576.65
3300	117	202.10					2 070.56	2 272.66
3301	86	527.27					1 421.18	1 948.45
3304	72	16.30				0.30	224.44	241.04
MEAN	110	635.69				8.43	4 939.87	5 583.99
STADEV		879.61				26.55	9 276.78	
% CATCH		11.38				0.15	88.46	

*"Other" includes also non-pelagic groups.

Biomass estimates

Table 4.4 shows the time series from 1986 to 2004 of swept-area biomass estimates for valuable demersal and pelagic groups of the southern region. The biomasses were calculated by stratifying by depth (20-50 m, 51-100 m and 101-200 m). As it has been recommended, the survey estimates in time series were recalculated with a standardized method. The sampling intensity in the southern region has been variable throughout the years, and only surveys which have covered all the three strata with at least two trawl stations in each stratum are included in the time series presented in Table 4.4. The high coefficient of variation (CV) shown in Table 4.4 indicates that the trends in the time series should be interpreted with care.

The 2004 survey used the same trawl positions in the southern region as were used during 2000 and 2003 surveys. Table 4.4 shows that the total biomass of the demersal stocks declined from about 70 000 tones in 2000 to about 30 000 in 2002, and the biomass increased with 40% from 2003 to 2004. However, the 2004 estimate of 40 000 tones is still considerable lower than the estimates of 2000. The total biomass of pelagic species on the southern slope was estimated to be about 250 000 tones, and horse mackerel (*T. capensis* and *T. trecae*) contributed to 95% of this biomass. It should be noted that *T. capensis* had 2.2 times higher abundance than *T. trecae* on the southern slope.

Shallow water Cape hake, *Merluccius capensis*, was frequently caught on the shelf in the southern region, while Benguela hake, *M. polli,* was found in a very low number only at one trawl station. The 2004 biomass estimate of hake on the southern shelf was very high compared to previous surveys. It seems like it has been a large annual increase of the hake on the slope since the 2001 survey. However, as the estimate shows, the total biomass of hake in this area is estimated to be only about 11 800 tones and cannot sustain a large hake fishery.

The seabreams biomass, which mainly consists of *D. macrophthalmus,* increased with 70% from last year's survey and was estimated to about 27 000 tones. Taking the high CVs into consideration, the 2004 estimate is not statistical different from the 2002 estimate of 25 000 tones. Still, the estimated biomass of seabreams in 2004 is significant lower than the high biomass estimate of 2000, which was about 62 000 tones.

The croakers show a 53% reduction from last year that confirm the downward trend in the abundance that have been observed since 2000.

Table 4.4 Biomass estimates (tones) of important species group on the shelf (20-200m) in the southern region.

	Seabreams		Hake		Horse mackerel		Croakers	
1986.1	9 736	(0.33)	1 099	(0.55)	23 059	(0.46)	1 560	(0.94)
1986.2	19 201	(0.49)	3 709	(0.81)	78 132	(0.53)	3 960	(0.96)
1989.1	17 853	(0.47)	349	(0.88)	15 681	(0.90)	1 492	(0.63)
1989.2	32 669	(0.43)	1 121	(1.30)	13 706	(0.75)	3 601	(0.93)
1989.3	15 594		6 739		39 225		1 443	
1991.1	22 333	(0.33)	2 920	(1.28)	50 458	(0.51)	1 341	(0.54)
1991.2	22 536	(0.43)	4 385	(0.68)	62 961	(0.58)	567	(0.51)
1992	32 666	(0.54)	6 756	(0.46)	95 433	(0.41)	576	(0.91)
1993	58 399	(0.52)	4 023	(0.40)	64 235	(0.75)	2 744	(0.60)
2000	61 693	(0.95)	3 559	(0.80)	218 410	(0.86)	3 623	(0.61)
2002	24 802	(1.00)	3 779	(0.81)	237 050	(0.63)	1 046	(1.18)
2003	15 856	(0.39)	7 014	(0.64)	113 879	(0.74)	1 115	(0.39)
2004	26 946	(0.69)	11 860	(0.64)	237 659	(0.80)	518	(1.18)

Distribution

Figure 4.1 shows the distribution of seabreams in the region between Cunene and Tombua. Highest concentrations were found off Cunene River mouth, but the species group was distributed all over the outer shelf from Cunene to Pta. Albina. All seabreams caught deeper than 80 meters bottom depth were *D. macrophthalmus*.

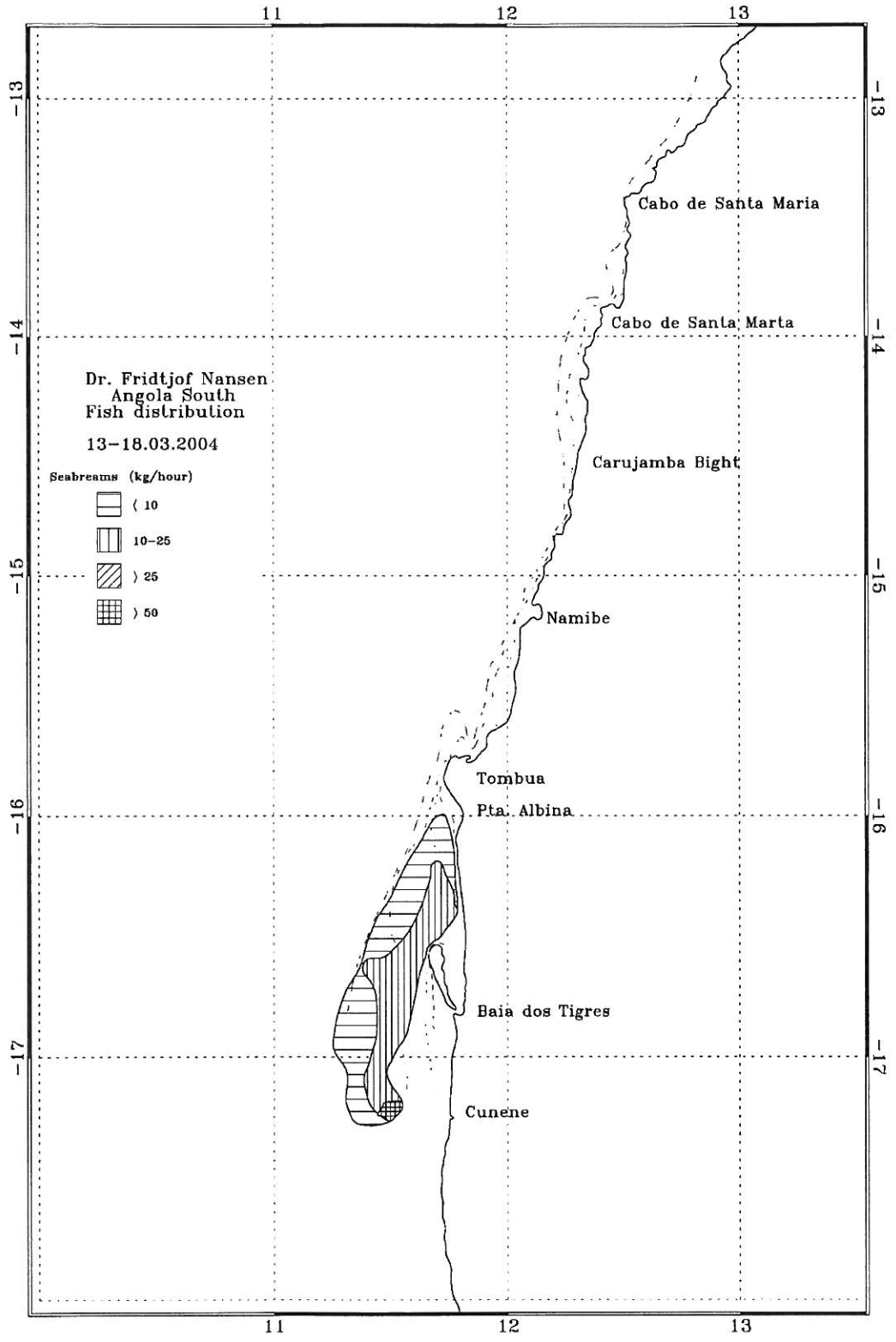


Figure 4.1 Distribution of seabreams (family Sparidae) in the southern region, Cunene-Tombua. Depth contours at 20, 50 and 100 m.

4.2 Benguela - Luanda shelf

A total of 48 successful swept-area trawl stations were accomplished on the shelf area (Table 2.1). Table 4.5 presents the catch rates by main species groups on the inner and outer shelf. The 'demersal' group dominated on the inner shelf with an average catches rate of 542 kg/hour and a relative contribution of 57%. Both the relative contribution and mean catch rate of demersal fish are lower than during last years' surveys. The 'pelagic' group contributed to about 35%, while shrimps, cephalopods and sharks each contributed less than 1% to the relative mean catch rate.

Demersal fish were also more abundant than pelagic fish on the outer shelf, constituting some 38% of the mean catch rate. The catch rate of the demersal species increased from last year, while the mean catch rate of the pelagic fish decreased compared to last year. Shrimps, cephalopods and sharks contributed respectively to 1.8, 1.4 and 0.5% of the total mean catch rate. All these groups show an increase in their mean catch rates compared to 2003.

Table 4.5 Catch rates (kg/hour) by main groups in swept area bottom trawl hauls on the shelf. Central region. A: Inner shelf (20-70 m), B: Outer shelf (71-200 m).

A. Inner shelf (20-70 m)

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3311	63	1 321.24	389.02	3.92			184.50	1 898.68
3313	49	757.20	366.88				196.72	1 320.80
3323	57	1 151.32	840.70		6.20		51.78	2 050.00
3324	29	357.04	95.68		1.28		9.68	463.68
3325	64	1 463.74	1 388.30		17.94		142.14	3 012.12
3332	58	78.76	34.02		3.02		25.68	141.48
3333	42	187.86	42.74		16.64		14.88	262.12
3334	29	90.44	130.08	0.54	32.34		5.58	258.98
3339	20				12.49		11.82	24.31
3340	28	210.52	64.36		2.88	5.10	40.22	323.08
3341	51	1 141.64	199.92		10.52	116.44	14.28	1 482.80
3342	36	469.66	668.16		2.88		84.64	1 225.34
3346	30	500.64	27.50	0.50	2.38		210.78	741.80
3347	46	379.20	2 828.40				161.40	3 369.00
3355	49	674.67	56.15		3.94		26.10	760.86
3356	31	481.78	419.98		2.70		39.58	944.04
3357	31	1 221.39	195.54		0.60		44.75	1 462.28
3358	46	122.06	5.72		0.66		1.00	129.44
3359	68	571.92	110.24		6.72	20.48	188.08	897.44
3363	32	348.46	62.42		0.42		35.76	447.06
3364	61	97.00	26.50		5.94	11.20	12.08	152.72
3371	31	20.26	3.18		4.84		12.58	40.86
3372	26	81.54	275.28		2.54		163.16	522.52
3373	50	0.28	0.06		10.78		8.04	19.16
3376	24	1 823.26	109.44	0.50	1.38		39.58	1 974.16
MEAN	42	542.08	333.61	0.22	5.96	6.13	68.99	956.99
STADEV		522.97	611.70	0.79	7.49	23.44	72.66	927.17
%CATCH		56.64	34.86	0.02	0.62	0.64	7.21	

B. Outer shelf (71-200 m)

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3309	91	1 854.80	47.58	1.02	10.50		299.38	2 213.28
3312	111	1 192.78	170.66				118.68	1 482.12
3314	75	182.30	327.10		34.14		70.10	613.64
3315	97	123.28	703.20		0.54		23.23	850.25
3316	109	388.44	9.72		6.00		20.04	424.20
3322	71	20.30	16.34		13.88		21.92	72.44
3326	110	61.22	3.60	0.34	2.26		25.48	92.90
3327	161	285.72	11.04	137.48	3.96		538.22	976.42
3331	102	9.68	1.84		7.44	9.50	72.90	101.36
3337	151	60.85	43.86	144.00	9.93		1 272.67	1 531.31
3338	120	52.46	10.10		0.76	11.98	21.92	97.22
3343	116	273.30	148.97	0.81	0.35		228.87	652.30
3348	89	15.36	15.80	0.02	12.72		54.04	97.94
3349	148	34.42	27.90	0.04	8.10		24.74	95.20
3353	131	38.78	31.40		5.02	8.20	14.84	98.24
3354	94	124.44	527.88		1.02	5.00	49.98	708.32
3361	174	28.70	5.40		51.84		2 094.72	2 180.66
3362	94	67.42	91.20		2.78	11.72	32.02	205.14
3365	86	6.58	76.92		4.60	4.40	24.60	117.10
3366	103	1.84	266.80		5.38	10.00	18.98	303.00
3370	94	728.30	611.76		17.46	9.56	61.74	1 428.82
3374	113	4.06	35.20	0.20	6.60	5.80	671.36	723.22
3377	81	279.97	184.39	0.64	4.51		14.43	483.94
3378	116	35.50	8.20	1.90	3.72		60.52	109.84
MEAN	110	244.60	140.70	11.94	8.90	3.17	243.14	652.45
STADEV		438.74	204.10	39.69	11.73	4.50	489.63	
%CATCH		37.49	21.57	1.83	1.36	0.49	37.27	

Pelagic groups

Catch rates of the most important pelagic fish groups are presented in Table 4.6. Carangids dominated the catches of pelagic species with a contribution of 17% of the mean catch rate on the inner shelf. The most abundant carangid species was Cunene horse mackerel (*Trachurus trecae*), while both Atlantic bumper (*Chloroscombrus chrysurus*) and African lookdown (*Selene dorsalis*) were caught frequently. The clupeids were mainly found on the inner shelf where they contributed to 4% of the catches and consisted mainly of the two species of sardinella (*Sardinella aurita* and *S. maderensis*) and of *Ilisha africana*. Barracudas were only caught on the inner shelf and in one station on the outer shelf. They contributed to 0.8% of the overall catch on the inner shelf. Hairtails were often caught on both the inner (13%) and outer (12%) shelf.

Table 4.6 Catch rates (Kg/hour) of main pelagic families on the shelf in swept-area bottom trawl hauls. Central region. A: Inner shelf (20–70 m), B: Outer shelf (71-200 m).

A. Inner shelf (20-70 m)

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
3311	63		263.56	4.50	120.96		1 509.66	1 898.68
3313	49	6.16	348.24	8.48	4.00		953.92	1 320.80
3323	57	6.50	829.56			4.64	1 209.30	2 050.00
3324	29	76.88	15.36			3.44	368.00	463.68
3325	64	113.82	1 274.48				1 623.82	3 012.12
3332	58	0.24	23.30			10.48	107.46	141.48
3333	42	12.50	23.70			6.54	219.38	262.12
3334	29	108.30	12.36			9.42	128.90	258.98
3339	20						24.31	24.31
3340	28	2.96	40.48	2.60	1.36	16.96	253.62	317.98
3341	51		199.08		0.84		1 166.44	1 366.36
3342	36	318.24	291.60		58.32		562.28	1 230.44
3346	30	15.80	6.44		2.88	2.38	830.74	858.24
3347	46	6.30	30.45		2 786.40	5.25	540.60	3 369.00
3355	49	37.02	19.13				704.71	760.86
3356	31	286.64	59.40		57.74	16.20	524.06	944.04
3357	31	3.18	178.17			14.19	1 266.74	1 462.28
3358	46		5.72				123.72	129.44
3359	68		109.12			1.12	787.20	897.44
3363	32	0.56	51.58			10.28	384.64	447.06
3364	61	2.02	23.00		0.54	0.94	126.22	152.72
3371	31		3.18				37.68	40.86
3372	26	0.22	275.06				247.24	522.52
3373	50	0.02	0.04				19.10	19.16
3376	24	12.24	13.86	2.02		81.32	1 864.72	1 974.16
MEAN	42	40.38	163.87	0.70	121.32	7.33	623.38	956.99
STADEV		85.47	294.90	1.94	555.93	16.38	548.63	
%CATCH		4.22	17.12	0.07	12.68	0.77	65.14	

B. Outer shelf (71-200 m)

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
3309	91		2.26		45.32		2 165.70	2 213.28
3312	111				170.66		1 311.46	1 482.12
3314	75		15.60		311.50		286.54	613.64
3315	97		54.51		648.69		147.05	850.25
3316	109				9.72		414.48	424.20
3322	71		15.50			0.84	56.10	72.44
3326	110				3.60		89.30	92.90
3327	161				11.04		965.38	976.42
3331	102		1.04		0.80		99.52	101.36
3337	151				43.86		1 487.45	1 531.31
3338	120				10.10		87.12	97.22
3343	116				148.97		503.33	652.30
3348	89				15.80		82.14	97.94
3349	148				27.90		67.30	95.20
3353	131		28.10		3.30		66.84	98.24
3354	94		390.48		137.40		180.44	708.32
3361	174		3.02		2.38		2 175.26	2 180.66
3362	94		91.20				113.94	205.14
3365	86	4.02	72.90				40.18	117.10
3366	103		266.80				36.20	303.00
3370	94		581.68		30.08		817.06	1 428.82
3374	113		0.00		35.20		688.02	723.22
3377	81		17.94		166.45		299.55	483.94
3378	116				8.20		101.64	109.84
MEAN	110	0.17	64.21		76.29	0.04	511.75	652.45
STADEV		0.82	144.65		145.01	0.17	654.87	664.61
%CATCH		0.03	9.84		11.69	0.01	78.43	100.00

Demersal groups

Table 4.7 presents the catch rates of the most valuable demersal species on the shelf down to 200 m grouped into 'families': Seabreams (Sparidae except *Boops boops*), snappers (Lutjanidae), groupers (Serranidae), grunts (Haemulidae except *Brachydeuterus auritus*), and croakers (Sciaenidae).

Seabreams contributed to 6% of the total mean catch rate on the inner shelf, and was in addition to the grunts the main demersal groups on both the inner and outer shelf. The mean catch rates of seabreams had increased by 40 and 45% on the inner and outer shelf, respectively, compared to the 2003 survey. This increase was mainly caused by higher catch rates of *Dentex macrophthalmus* during the 2004 survey. Other seabreams were *Pagellus bellottii, Dentex canariensis, D. angolensis* and *D. barnardi*. Both croakers (mainly *Umbrina canariensis*, *Atractoscion aequidens, Pseudotolithus typus*) and grunts (*Pomadasys incisus*, *P. jubelini* and *P. peroteti*), which only inhabits the inner shelf, showed a large reduction in the their mean catch rates compared to 2003. During the 2004 survey grunts and croakers contributed to about 6 and 2% of the total mean catch rate on the inner central shelf. Like in previous surveys snappers were rare on the shelf, found only in one station on the inner shelf. Groupers, mainly *Epinephelus aeneus*, were found only on the inner shelf and in one station

on the outer shelf, and the relative mean catch rate was 0.3% of the total rate on the inner shelf.

Table 4.7 Catch rates (kg/hour) of commercial demersal species grouped by families in swept-area bottom trawl hauls. Central region. A: Inner shelf (20-70 m), B: Outer shelf (71-200 m).

A. Inner shelf (20-70 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3311	63	282.90			612.04	145.42	858.32	1 898.68
3313	49	217.12		0.32	394.32	22.56	686.48	1 320.80
3323	57	176.38			9.60		1 864.02	2 050.00
3324	29	10.08			14.48	3.68	435.44	463.68
3325	64	46.84					2 965.28	3 012.12
3332	58	61.96			8.30		71.22	141.48
3333	42	126.30		3.96	30.90		100.96	262.12
3334	29	7.56		42.38	2.10		206.94	258.98
3339	20						24.31	24.31
3340	28	2.56			3.44	3.72	308.26	317.98
3341	51	18.90				7.64	1 339.82	1 366.36
3342	36			8.90	9.00	76.16	1 136.38	1 230.44
3346	30						858.24	858.24
3347	46	1.95					3 367.05	3 369.00
3355	49	296.44		16.54	74.36		373.52	760.86
3356	31	34.04					910.00	944.04
3357	31	4.24			10.62	15.18	1 432.24	1 462.28
3358	46	4.00			110.90		14.54	129.44
3359	68	61.36			13.28	6.88	815.92	897.44
3363	32	6.72					440.34	447.06
3364	61	23.66			16.40		112.66	152.72
3371	31	18.12			2.14		20.60	40.86
3372	26	55.02	20.80	5.60			441.10	522.52
3373	50	0.28					18.88	19.16
3376	24					2.58	1 971.58	1 974.16
MEAN	42	58.26	0.83	3.11	52.48	11.35	830.96	956.99
STADEV		89.62	4.16	9.02	141.58	32.02	905.77	
%CATCH		6.09	0.09	0.32	5.48	1.19	86.83	

B. Outer shelf (71-200 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3309	91	416.50				1 412.94	383.84	2 213.28
3312	111	786.60				309.58	385.94	1 482.12
3314	75	84.10		7.10	53.00	24.00	445.44	613.64
3315	97	46.89				57.94	745.42	850.25
3316	109	147.12				4.32	272.76	424.20
3322	71	3.36			12.10	4.30	52.68	72.44
3326	110	53.78				1.50	37.62	92.90
3327	161	18.84					957.58	976.42
3331	102	8.50					92.86	101.36
3337	151	3.33				4.10	1 523.88	1 531.31
3338	120	39.36				4.68	53.18	97.22
3343	116	77.60				2.83	571.87	652.30
3348	89	6.44				0.36	91.14	97.94
3349	148	32.42					62.78	95.20
3353	131	28.20					70.04	98.24
3354	94						708.32	708.32
3361	174	7.10					2 173.56	2 180.66
3362	94	10.62					194.52	205.14
3365	86	6.08					111.02	117.10
3366	103	0.60					302.40	303.00
3370	94	23.40				36.78	1 368.64	1 428.82
3374	113	2.14				1.22	719.86	723.22
3377	81	1.60				13.82	468.52	483.94
3378	116	16.70					93.14	109.84
MEAN	110	75.89		0.30	2.71	78.27	495.29	652.45
STADEV		174.30		1.45	10.99	291.23	544.68	
%CATCH		11.63		0.05	0.42	12.00	75.91	

Biomass estimates

Table 4.8 shows the time series from 1985 to 2004 of swept-area biomass estimates for commercial species and groups of species on the shelf off central Angola. The biomass estimates were calculated by stratifying by depth (20-50 m, 51-100 m and 101-200 m), and the CVs were estimated by equation 5, Annex IV. The different strata have been sampled with different intensity through the years and Annex VII shows the numbers of trawls that have been conducted by strata by survey. It must be stressed that the biomass estimates presented for the pelagic species cannot be trusted as a good reflection of the true biomass of those species. Pelagic fish species are often not available for a commercial trawl because they swim to high above the seabed, therefore the biomass estimates given in Table 4.8 may reflect their availability to the trawl and not only the abundance.

Seabreams, where *Dentex macrophthalmus* is the most abundant species, is the most important commercial demersal species group in Angola. This group shows large biomass fluctuations between surveys, and in 2003 the biomass estimate of seabreams decreased from 2002 with as much as 75% from 22 000 tones to only 5 600 tones. The 2004 survey estimate of 10 200 indicates that seabreams have increased with 100% since last year, however the 2004 estimate is still only the half of the 2002 estimate.

North of Benguela *M. polli* is the only hake species and the survey estimates have varied much during the last 5 surveys. The 2004 biomass estimate of *M. polli* is the second lowest since 2000 and is considerable lower than the previous two years. Snappers inhabits rocky bottom, habitats that are not good covered during the demersal surveys because these areas are impossible to trawl. Therefore, the numbers in Table 4.8 do not reflect the state of the snapper populations. The 2004 biomass estimate of croakers is the highest since 2000 and the biomass has been quite stabile during the three last years. However, by comparing with the surveys in 1994 and 1995 the croakers biomass is considerable lower now. Grunts and groupers are showing similar biomass trends since 2000 where the 2004 estimates are much lower than the 2003 estimates, but higher than the low estimates of 2001.

The commercial valuable shrimp species *P. longirostris* inhabits the slope and deeper part of the shelf. The 2004 estimate of this species is very high compared to all the surveys since 1998, and is on about the same level as the 1997 estimate. As shown in Table 4.8 the biomass is 130 and 160% higher than the estimates of 2003 and 2002, respectively.

Table 4.8 Biomass estimates (tones) of important commercial species groups on the shelf, 20-200 m, in the central region. CVs are in brackets.

	T. trecae		Shrimps		*M. polli*		Cephalopods		Sharks		Scombrids		Clupeids		Carangids		Snappers	
1985.4	74 892	(0.98)	58	(1.61)	124	(0.93)	5 372	(0.77)	0	NA	0	NA	423	(1.33)	75 408	(0.98)	0	NA
1986.1	17 875	(0.62)	1 632	(0.92)	276	(1.02)	1 439	(0.47)	228	(1.47)	34	(1.29)	717	(0.69)	20 440	(0.54)	36	(1.96)
1986.2	22 596	(0.79)	371	(1.12)	207	(0.97)	1 423	(0.78)	0	NA	16	(1.61)	328	(0.89)	24 625	(0.72)	0	NA
1989.1	6 999	(0.41)	237	(1.05)	121	(1.62)	1 864	(0.59)	148	(0.94)	155	(0.67)	560	(1.54)	12 736	(0.49)	0	NA
1989.2	21 473	(0.51)	677	(0.75)	1 013	(0.80)	2 206	(0.33)	105	(1.06)	95	(0.50)	359	(0.94)	26 453	(0.47)	20	(1.96)
1989.3	9 579	(0.94)	453	(1.41)	480	(1.10)	2 015	(0.79)	285	(1.29)	310	(1.21)	1 707	(0.81)	12 816	(0.90)	0	NA
1991.1	86 136	(0.77)	39	(1.11)	0	(1.69)	850	(0.31)	746	(1.00)	277	(0.81)	508	(0.94)	87 396	(0.76)	106	(1.96)
1991.2	47 927	(0.85)	125	(1.04)	618	(1.20)	2 021	(0.50)	115	(1.69)	126	(1.30)	36	(1.61)	48 814	(0.83)	0	NA
1992	32 878	(0.46)	106	(1.13)	1 641	(0.62)	2 597	(0.30)	483	(1.11)	64	(0.89)	70	(1.16)	35 314	(0.46)	0	NA
1994	61 886	(0.53)	292	(0.92)	2 393	(1.35)	2 696	(0.41)	269	(0.83)	580	(0.80)	22	(0.96)	63 569	(0.51)	262	(1.96)
1995.1	4 875	(0.99)	323	(0.80)	167	(0.77)	807	(0.42)	121	(0.88)	213	(1.06)	245	(0.59)	12 635	(0.51)	113	(1.96)
1996	51 220	(0.77)	116	(0.98)	713	(1.09)	2 402	(0.41)	496	(1.08)	53	(1.77)	589	(0.89)	55 751	(0.71)	109	(1.96)
1997	50 907	(0.34)	1 232	(0.56)	6 427	(0.79)	2 830	(0.39)	181	(0.64)	195	(1.10)	3 015	(1.85)	57 622	(0.31)	0	NA
1998	4 630	(0.89)	365	(0.82)	375	(1.45)	2 587	(0.34)	310	(0.96)	52	(1.35)	2 860	(1.57)	7 606	(0.64)	0	NA
1999	13 012	(0.53)	14	(0.83)	15	(1.69)	964	(0.35)	112	(1.17)	34	(1.27)	2 014	(0.90)	20 579	(0.43)	565	(1.87)
2000	19 114	(0.49)	314	(0.91)	240	(1.53)	1 744	(0.30)	560	(0.82)	275	(1.20)	1 594	(0.90)	25 052	(0.41)	98	(1.50)
2001	16 510	(0.48)	212	(1.28)	123	(1.15)	1 374	(1.06)	343	(0.78)	97	(0.77)	80	(1.01)	20 942	(0.42)	3	(1.96)
2002	78 646	(0.41)	531	(0.74)	1 189	(0.83)	2 962	(0.56)	120	(0.81)	745	(1.51)	1 625	(0.64)	85 797	(0.38)	0	(1.96)
2003	25 494	(0.54)	515	(0.70)	1 774	(0.85)	1 327	(0.44)	266	(0.78)	55	(0.85)	1 439	(0.64)	29 369	(0.47)	44	(1.96)
2004	12 969	(0.57)	1 038	(1.12)	187	(1.53)	1 062	(0.35)	625	(0.85)	39	(1.14)	2 300	(0.80)	16 166	(0.47)	45	(1.96)

	Hairtails		Grunts		Groupers		Barracudas		Seabreams		*P.longirostris*		Omnastriphidae		Croakers		Sepiidae	
1985.4	2 568	(1.16)	5 706	(1.37)	1 253	(0.95)	253	(1.26)	18 406	(0.72)	58	(1.61)	0	NA	10 235	(1.45)	0	NA
1986.1	15 125	(0.67)	2 237	(0.73)	411	(0.81)	1 019	(0.62)	9 161	(0.46)	1 483	(1.01)	273	(1.68)	4 649	(0.50)	525	(0.64)
1986.2	1 089	(0.70)	5 301	(0.66)	518	(1.15)	1 117	(0.77)	13 819	(0.46)	0	NA	0	NA	4 510	(0.77)	1 132	(1.00)
1989.1	9 992	(0.60)	3 681	(1.02)	580	(0.78)	1 936	(1.34)	11 443	(0.48)	235	(1.05)	1 236	(0.86)	1 395	(0.72)	64	(0.93)
1989.2	2 128	(0.80)	1 126	(0.92)	3 093	(1.55)	701	(0.60)	12 167	(0.36)	667	(0.76)	750	(0.51)	2 972	(0.72)	1 168	(0.41)
1989.3	8 488	(1.45)	82	(1.18)	659	(1.62)	704	(0.74)	4 531	(0.56)	445	(1.43)	1 476	(0.98)	595	(1.38)	124	(1.12)
1991.1	7 664	(0.72)	425	(0.51)	176	(1.12)	583	(0.72)	9 068	(0.31)	10	(1.19)	344	(0.63)	2 048	(0.85)	235	(0.46)
1991.2	3 174	(0.45)	1 882	(0.87)	1 021	(0.93)	82	(0.85)	25 675	(0.36)	117	(1.11)	693	(0.71)	20 081	(1.33)	561	(1.00)
1992	11 105	(0.58)	765	(1.13)	1 140	(0.88)	89	(1.29)	25 033	(0.44)	106	(1.13)	2 163	(0.35)	1 546	(0.70)	159	(1.16)
1994	24 185	(1.44)	68	(0.81)	417	(0.62)	4	(1.96)	29 548	(0.37)	168	(0.70)	1 041	(0.57)	10 292	(0.99)	1 192	(0.70)
1995.1	3 885	(0.43)	3 105	(1.12)	376	(0.77)	2 113	(0.65)	14 161	(0.47)	258	(0.95)	2	(1.69)	15 510	(1.05)	385	(0.70)
1996	3 443	(0.44)	3 095	(0.65)	690	(0.81)	946	(0.87)	18 323	(0.27)	25	(1.34)	210	(0.52)	5 866	(0.51)	28	(1.32)
1997	16 234	(0.46)	1 387	(1.51)	749	(1.13)	413	(1.85)	27 816	(0.35)	1 171	(0.59)	771	(0.41)	9 085	(0.48)	1 230	(0.82)
1998	29 020	(1.52)	9 117	(0.82)	198	(1.24)	454	(0.82)	63 225	(1.22)	186	(0.84)	376	(0.65)	8 609	(0.86)	1 293	(0.58)
1999	8 251	(0.66)	3 327	(0.86)	643	(0.77)	1 660	(0.53)	17 483	(0.38)	7	(1.06)	201	(1.28)	9 943	(0.89)	113	(0.64)
2000	11 002	(0.41)	6 824	(0.51)	882	(0.87)	3 321	(0.58)	19 310	(0.31)	290	(0.98)	586	(0.61)	5 391	(0.44)	418	(0.71)
2001	5 595	(0.54)	1 329	(0.60)	64	(1.08)	957	(0.41)	12 617	(0.53)	198	(1.36)	186	(0.96)	1 744	(0.70)	178	(0.83)
2002	8 190	(0.45)	2 982	(0.57)	233	(1.01)	667	(0.63)	22 198	(0.61)	402	(0.88)	2 363	(0.70)	6 334	(0.42)	172	(0.91)
2003	12 067	(0.52)	8 649	(1.12)	702	(0.73)	480	(0.61)	5 595	(0.33)	449	(0.80)	230	(0.58)	5 369	(0.41)	101	(0.82)
2004	12 629	(1.05)	3 704	(0.95)	186	(0.98)	241	(0.50)	10 161	(0.56)	1 035	(1.12)	324	(0.91)	6 962	(1.09)	211	(0.68)

Distribution

Figure 4.2 shows the distribution of seabreams in the central region between Benguela and Luanda. The highest concentrations were found off Lobito. This distribution pattern is similar to the pattern observed during previous surveys, but in 2003 high densities were also observed between Pta. do Morro and Cabo São Braz.

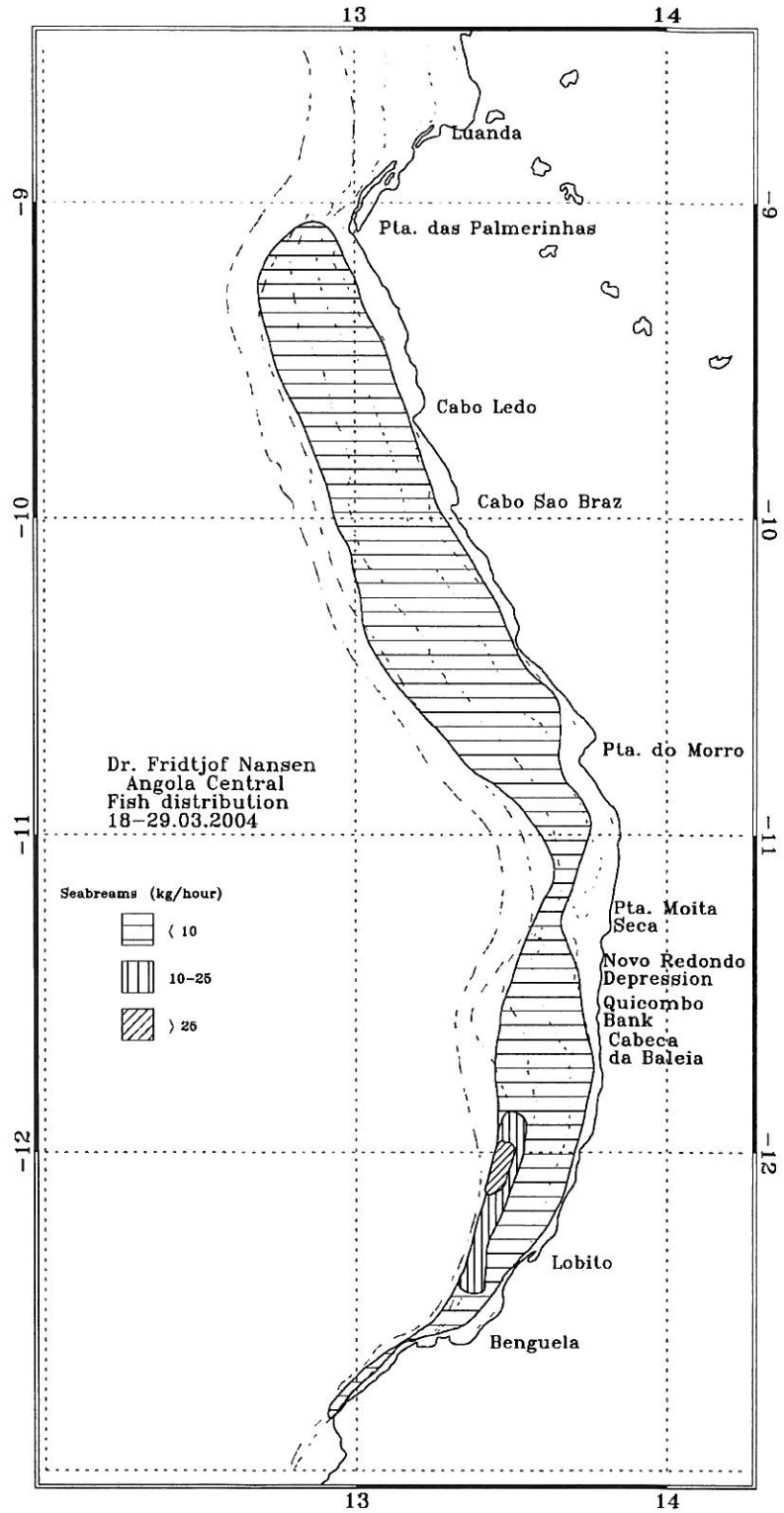


Figure 4.2 Distribution of seabreams (Sparidae) in the central region, Benguela–Luanda. Depth contours at 20, 50, 100, 200 and 500 m.

4.3 Luanda–Congo River shelf

This year survey covered the northern region of Angolan waters from Luanda to Congo River. The area north of Congo River is inaccessible to fisheries surveys due to the restricted oil exploitation areas. During many of the previous surveys this area was covered and thereby making abundance estimates difficult to compare. Hence, the species abundances of the northern region were calculated by excluding stations north of Congo River. A total of 59 successful swept-area trawl stations were accomplished on the shelf area in 2004 (Table 2.1). Table 4.9 presents the catch rates by main species groups on the inner and outer shelf.

The 'demersal' group dominated the inner shelf with an average catch rate of 389 kg/hour and a relative contribution of 58%. Both the relative contribution and the mean catch rate of demersal fish have decreased since 2003 and the mean catch rate is only 33% of the catch rate of last year. The 'pelagic' group contributed about 28%, while shrimps, cephalopods and sharks each contributed less than 1%. The mean catch rate of the pelagic group was about 58% less in 2004 than in 2003. Demersal and pelagic fish contributed to respectively 28 and 26% on outer shelf. The mean catch rate of demersal fish on the outer shelf was 91 kg/h, which is a decrease of 45% from the 2003 survey. The mean catch rate of pelagic fish declined with 28% for the same period. Shrimps contributed to 0.03%, cephalopods with 2% and sharks with 0.7% of the overall mean catch rate.

Table 4.9 Catch rates (kg/h) by main groups caught in valid swept-area hauls. Northern region. A. Inner shelf (20-70 m), B. Outer shelf (71-200 m).

A. Inner shelf (20-70 m)

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3394	30	176.06	45.86		2.64	27.90	63.34	315.80
3395	45	717.88	71.24		21.44	9.60	41.22	861.38
3396	52	1 075.70	114.20				166.48	1 356.38
3407	64	840.90	84.90		0.20		7.70	933.70
3408	45	1 256.78	354.76	17.68		11.00	228.26	1 868.48
3409	27	471.40	304.44				355.68	1 131.52
3414	26	908.02	66.28	4.74			154.94	1 133.98
3415	41	170.04	159.92	0.32	1.88		14.84	347.00
3416	63	655.95	883.51		27.24		47.51	1 614.21
3417	70	245.40	474.12		7.80		15.16	742.48
3422	28	735.88	656.62	37.58	7.88	15.70	279.08	1 732.74
3423	42	482.33	66.57	3.70			7.87	560.47
3424	56	22.88	152.16	0.14	9.12		15.58	199.88
3434	28	317.62	176.40	0.10		10.80	157.38	662.30
3435	26	194.82	11.80				42.62	249.24
3441	63	5.82	8.52		11.30		18.88	44.52
3442	43	82.30			3.98		109.30	195.58
3443	42	2.38	24.00		4.36		16.04	46.78
3444	39	16.94	5.56				12.00	34.50
3445	68	76.08	85.08				0.94	162.10
3452	55	64.20	9.12		6.50		7.86	87.68
3482	48	37.52	368.64		11.40	1.69	9.71	428.96
MEAN	46	388.95	187.44	2.92	5.26	3.49	80.56	668.62
STADEV		387.91	233.22	8.66	7.38	7.21	100.87	
%CATCH		58.17	28.03	0.44	0.79	0.52	12.05	

B. Outer Shelf (71-200 m)

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3388	144	68.36	13.66	0.38	3.04	6.70	339.06	431.20
3389	114	48.28	60.20		5.54	8.00	59.10	181.12
3397	83	45.56	152.80	0.06	15.08		37.52	251.02
3398	163	62.12	49.90	1.44	5.94	1.00	643.06	763.46
3404	142	19.64	11.02		29.32	0.56	27.02	87.56
3405	111	21.77	12.30		4.05		16.10	54.22
3406	85	215.18	368.48		7.14		18.76	609.56
3410	116	101.20	21.38		3.96		22.72	149.26
3418	96	30.72	22.14		6.34		30.60	89.80
3419	206	69.04	28.14		11.78		32.84	141.80
3420	166	48.29	28.37				3 363.30	3 439.96
3425	72	16.60	375.76		10.10		38.62	441.08
3426	88	5.64	76.30		8.90	4.60	25.18	120.62
3427	117	164.30	209.98	0.32	1.38		61.74	437.72
3432	88	21.86	59.08		19.08		33.08	133.10
3433	71	29.28	38.26		32.48		11.72	111.74
3439	115	121.72	251.62	1.24	0.32		52.80	427.70
3440	87	193.18	597.70		12.50	4.90	47.30	855.58
3446	79	190.70	9.20		0.10		2.96	202.96
3447	92	87.38	88.27		1.62		7.57	184.84
3448	107	181.98	8.88		1.96	9.70	4.30	206.82
3449	133	111.92	0.64		1.34		31.46	145.36
3453	81	229.82	96.78		2.54		7.20	336.34
3454	95	57.18	46.20		1.48	3.00	45.12	152.98
3455	108	44.13	8.08		1.33		25.07	78.61
3456	114	130.74	26.14		1.92	4.00	21.72	184.52
3457	124	85.86	162.24		10.94		4.84	263.88
3465	136	177.84	22.00	0.08	1.52		151.72	353.16
3466	89	12.34	5.74		2.34		12.36	32.78
3467	81	325.92	1.10		8.36	4.40	24.70	364.48
3468	87	231.88	204.60		20.16		19.58	476.22
3469	111	57.84	43.04		5.08	6.50	12.26	124.72
3474	152	37.42	1.18		6.52	12.30	12.54	69.96
3475	119	24.98	14.60		6.16	8.68	35.64	90.06
3476	119	11.16	4.62		4.50	14.00	4.82	39.10
3477	154	25.40	16.51	0.02	3.53		19.09	64.55
3481	71	69.50	16.74		4.46	2.46	14.66	107.82
MEAN	111	91.26	85.23	0.11	7.10	2.45	143.73	329.88
STADEV		79.21	129.92	0.31	7.64	3.88	555.96	
%CATCH		27.67	25.84	0.03	2.15	0.74	43.57	

Pelagic groups

Catch rates of the most important pelagic fish families, caught with bottom trawls during this survey, are presented in Table 4.10. Carangids and was the dominating pelagic species group on the inner and outer shelf, and as previous years the most abundant pelagic species was Cunene horse mackerel (*Trachurus trecae*). Atlantic bumper (*Chloroscombrus chrysurus*) and

African lookdown (*Selene dorsalis*) were also often caught on the inner shelf. The clupeids, mainly *Ilisha africana* and sardinella (*Sardinella aurita* and *S. maderensis*) were caught both on the inner and outer shelf where they contributed to about 2.2 and 1.9% of the mean catch rate. Barracudas, mainly *Sphyraena guachancho*, were frequently caught on the inner shelf, but were not found on the outer shelf. They contributed to 3.4% of the overall catch on the inner shelf. Hairtails were found on both the inner (6.9%) and outer (5.4%) shelf.

Table 4.10 Catch rates (kg/h) of main pelagic species grouped by families caught in valid swept-area hauls. Northern region. A. Inner shelf (20-70 m), B. Outer shelf (71-200 m).

A. Inner shelf (20-70 m)

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
3394	30	1.74	15.12		10.00	19.00	269.94	315.80
3395	45	2.70	51.94		5.50	11.10	790.14	861.38
3396	52	6.28	33.80		47.88	26.24	1 242.18	1 356.38
3407	64	0.80	25.00		56.90	2.20	848.80	933.70
3408	45		17.68		45.24	291.84	1 513.72	1 868.48
3409	27	51.72	33.12		150.60	69.00	827.08	1 131.52
3414	26	53.15	0.19		9.77	3.17	1 067.70	1 133.98
3415	41		152.44		3.80	3.68	187.08	347.00
3416	63	17.27	860.07		6.17		730.70	1 614.21
3417	70	0.28	54.24		419.60		268.36	742.48
3422	28	145.14	378.42		117.18	15.88	1 076.12	1 732.74
3423	42	0.27	45.96		15.54	4.80	493.90	560.47
3424	56	0.48	124.40		26.50	0.78	47.72	199.88
3434	28	52.30	80.40			43.70	485.90	662.30
3435	26	0.50	6.82	1.34		3.14	237.44	249.24
3441	63		4.74	2.88	0.90		36.00	44.52
3442	43			0.00			195.58	195.58
3443	42		12.56		11.18	0.26	22.78	46.78
3444	39		2.96			2.60	28.94	34.50
3445	68		9.58		75.50		77.02	162.10
3452	55		1.74		7.38		78.56	87.68
3482	48		368.64				60.32	428.96
MEAN	46	15.12	103.63	0.19	45.89	22.61	481.18	668.62
STADEV		34.24	199.91	0.66	92.79	62.52	456.52	
%CATCH		2.26	15.50	0.03	6.86	3.38	71.97	

B. Outer shelf (71-200 m)

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
3388	144		4.10		9.56		417.54	431.20
3389	114		8.70		51.50		120.92	181.12
3397	83		14.90		137.90		98.22	251.02
3398	163				49.90		713.56	763.46
3404	142				11.02		76.54	87.56
3405	111		8.66		3.64		41.92	54.22
3406	85	6.02	359.10		3.36		241.08	609.56
3410	116		4.28		17.10		127.88	149.26
3418	96		13.14		9.00		67.66	89.80
3419	206		20.40		7.74		113.66	141.80
3420	166				28.37		3 411.59	3 439.96
3425	72	3.50	289.90		82.36		65.32	441.08
3426	88		59.10		17.20		44.32	120.62
3427	117		209.98				227.74	437.72
3432	88	0.48	34.50		24.10		74.02	133.10
3433	71	1.28	15.36	3.28	16.90		73.48	110.30
3439	115		248.53		3.09	1.34	176.08	429.04
3440	87	127.28	470.42				257.88	855.58
3446	79	0.16	3.54		5.50		193.76	202.96
3447	92	0.78	85.33		2.16		96.57	184.84
3448	107	0.28	8.60				197.94	206.82
3449	133				0.64		144.72	145.36
3453	81	2.88	76.20		17.70		239.56	336.34
3454	95		31.80		14.40		106.78	152.98
3455	108		5.85		2.23		70.53	78.61
3456	114		21.80		4.34		158.38	184.52
3457	124		59.64		102.60		101.64	263.88
3465	136		22.00				331.16	353.16
3466	89	0.10	5.64				27.04	32.78
3467	81		0.40		0.70		363.38	364.48
3468	87	91.34	105.70		7.56		271.62	476.22
3469	111	0.32	38.90		3.82		81.68	124.72
3474	152				1.18		68.78	69.96
3475	119		14.10		0.50		75.46	90.06
3476	119		3.60		1.02		34.48	39.10
3477	154		0.74		15.77		48.04	64.55
3481	71	0.12	8.72		7.90		91.08	107.82
MEAN	111	6.34	60.91	0.09	17.86	0.04	244.65	329.88
STADEV		25.34	110.62	0.54	30.41	0.22	551.75	
%CATCH		1.92	18.46	0.03	5.41	0.01	74.16	

Demersal groups

Table 4.11 presents the catch rates of the most valuable demersal species on the shelf down to 200 m grouped into families: seabreams (Sparidae except *Boops boops*), snappers (Lutjanidae), groupers (Serranidae), grunts (Haemulidae except *Brachydeuterus auritus*) and croakers (Sciaenidae). Among the seabreams, *Pagellus bellottii*, *Dentex congoensis*, *D. canariensis*, *D. barnardi* and *D. angolensis* were the dominating species in the north

(Annex III). *Dentex macrophthalmus* was only found in a few locations and in low densities. The mean catch rate of seabreams on the inner shelf was about 80 kg/h, which is about four times higher than the mean of last year's survey. The seabreams contributed to 19% of the total on the outer shelf and the mean catch rate of 64 kg/h was about 34% lower than the mean of last year. The non-commercial bigeye grunt (*Brachydeuterus auritus*) was the overall most abundant species among the grunts. The commercially important grunts (*e.g. Pomadasys spp.)* were caught with a mean catch rate of about 53 kg/h on the inner shelf, which is 178% higher than the catch rate last year. The average density of groupers, mainly *Epinephelus aeneus*, was 4.4 kg/h on the inner shelf and 2.4 kg/h on the outer shelf. Croakers, mainly *Umbrina canariensis* and *Pseudotolithus typus*, had relative high densities on both on the inner (62 kg/h) and outer shelf (16 kg/h). As in the central region, the snappers were rare and were only caught in two stations on the inner shelf.

Table 4.11 Catch rates (kg/h) of commercial demersal fish species grouped by families caught in valid swept-area hauls. Northern region. A: Inner shelf (20-7 0m), B. Outer shelf (71-200 m).

A. Inner shelf (20-70 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3394	30	0.48				0.44	314.88	315.80
3395	45	28.60		0.86	68.60	26.60	736.72	861.38
3396	52	91.90		3.40	2.24	69.92	1 188.92	1 356.38
3407	64	305.00			371.70	58.70	198.30	933.70
3408	45	51.86			374.64	201.74	1 240.24	1 868.48
3409	27				13.14	91.76	1 026.62	1 131.52
3414	26	14.98			200.65	683.39	234.96	1 133.98
3415	41	8.88				1.40	336.72	347.00
3416	63	559.36		9.03	13.62		1 032.20	1 614.21
3417	70	155.30		56.50	27.10	4.24	499.34	742.48
3422	28	15.54		1.80	84.78	147.22	1 483.40	1 732.74
3423	42	116.36			4.65	12.93	426.53	560.47
3424	56	6.44		2.48	4.36	4.52	182.08	199.88
3434	28	68.00			5.40		588.90	662.30
3435	26	166.30	12.10	16.42			54.42	249.24
3441	63	5.82					38.70	44.52
3442	43	71.94	0.52	0.46			122.66	195.58
3443	42	2.38					44.40	46.78
3444	39	8.10		5.92		2.78	17.70	34.50
3445	68	15.28				60.80	86.02	162.10
3452	55	45.40					42.28	87.68
3482	48	37.52					391.44	428.96
MEAN	46	80.70	0.57	4.40	53.22	62.11	467.61	668.62
STADEV		129.85	2.58	12.29	113.29	148.95	452.84	
%CATCH		12.07	0.09	0.66	7.96	9.29	69.94	

B. Outer shelf (71-200 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3388	144	42.10				7.84	381.26	431.20
3389	114	30.60				5.40	145.12	181.12
3397	83	5.50				4.62	240.90	251.02
3398	163	45.14				9.40	708.92	763.46
3404	142	14.34				1.24	71.98	87.56
3405	111	13.03		0.26		6.64	34.29	54.22
3406	85	27.30				187.88	394.38	609.56
3410	116	23.16				74.30	51.80	149.26
3418	96	28.00					61.80	89.80
3419	206	18.62				46.72	76.46	141.80
3420	166	9.29				30.00	3 400.67	3 439.96
3425	72	9.80				6.80	424.48	441.08
3426	88	5.20				0.40	115.02	120.62
3427	117	159.13				4.82	273.78	437.73
3432	88	21.52					111.58	133.10
3433	71	29.16					82.58	111.74
3439	115	53.87				15.83	358.00	427.70
3440	87	141.48		28.10		14.66	671.34	855.58
3446	79	156.16		34.30		0.24	12.26	202.96
3447	92	70.31		17.00			97.53	184.84
3448	107	181.98					24.84	206.82
3449	133	111.92					33.44	145.36
3453	81	72.20		5.06		52.60	206.48	336.34
3454	95	53.40					99.58	152.98
3455	108	44.13					34.48	78.61
3456	114	39.84				90.90	53.78	184.52
3457	124	85.86					178.02	263.88
3465	136	161.68				13.94	177.54	353.16
3466	89	12.34					20.44	32.78
3467	81	322.40		3.52			38.56	364.48
3468	87	231.88					244.34	476.22
3469	111	56.08					68.64	124.72
3474	152	34.88					35.08	69.96
3475	119	24.56					65.50	90.06
3476	119	8.16					30.94	39.10
3477	154	20.50				4.09	39.96	64.55
3481	71	28.66				7.52	71.64	107.82
MEAN	111	64.71		2.38		15.83	246.96	329.88
STADEV		72.00		7.61		36.02	559.92	
%CATCH		19.62		0.72		4.80	74.86	

Biomass estimates

Table 4.12 shows the time series from 1985 to 2004 of swept-area biomass estimates for commercial species and species groups on the shelf off northern Angola. The biomass estimates were calculated by stratifying by depth (20-50 m, 51-100 m and 101-200 m), and the CVs were estimated by equation 5, Annex IV. The different strata have been sampled with different intensity through the years and Annex VII shows the numbers of trawls that have

been conducted by strata by survey. It must be stressed that the biomass estimates presented for the pelagic species cannot be trusted as a good reflection of the true biomass of those species. Pelagic fish species are often not available for a commercial trawl because they swim to high above the seabed, therefore the biomass estimates given in Table 4.12 may reflect their availability to the trawl and not only the abundance.

The biomass estimates of seabreams in the northern shelf show an increase from last year. The biomass show a positive trend since 2001, but is still lower than the estimates in 1999 and 2000. *P. longirostris* were only found in low densities on the northern shelf as in recent years and the high CV indicates that the precision of these estimates are low. The 2004 biomass estimate of croakers is similar to the 2003 estimate, but is about the double of the estimates in the period 2002-2004. However, the 1996, 1997 and 1999 estimates were considerable higher than the estimates of the last two years. The grunts show an increased biomass compared to the estimates of 2000-2003, but the 2004 estimate is significant lower than the estimates for the period 1996-1999. The biomass estimates of the groupers have varied during the last years and reveal no evident trend. The high CVs also indicate that the precisions of these estimates are low.

Table 4.12 Biomass estimates (tones) of important commercial species groups on the shelf, 20-200 m, in the northern region. CVs are in brackets.

	T.treace		Shrimps		*M.polli*		Cephalopod		Sharks		Scombrids		Clupeids		Carangids		Snappers	
1985.1	4 496	(1.11)	302	(0.79)	9	(1.65)	10 463	(1.25)	498	(0.93)	44	(1.96)	364	(1.16)	9 986	(0.92)	0	NA
1985.2	3 324	(1.17)	139	(1.88)	0	NA	694	(0.57)	451	(0.64)	30	(1.64)	3 907	(1.91)	3 740	(1.04)	63	(1.26)
1985.3	16 486	(1.20)	1 448	(1.38)	3 459	(1.65)	2 046	(0.67)	870	(1.23)	146	(1.30)	205	(1.94)	17 742	(1.09)	62	(1.96)
1985.4	36 044	(1.14)	107	(1.37)	7 415	(1.65)	436	(0.72)	78	(1.55)	88	(1.26)	483	(1.15)	42 506	(1.02)	0	NA
1986.1	13 438	(0.81)	1 445	(0.90)	56	(1.64)	2 853	(0.87)	496	(0.76)	30	(1.96)	2 053	(0.73)	17 950	(0.62)	434	(1.96)
1986.2	8 053	(0.37)	486	(0.72)	290	(1.21)	1 179	(0.38)	825	(0.56)	210	(0.97)	1 365	(0.67)	10 364	(0.32)	0	NA
1989.1	12 681	(0.90)	92	(1.08)	62	(1.46)	931	(0.53)	497	(0.97)	97	(1.18)	1 578	(1.87)	13 264	(0.86)	0	NA
1989.2	11 535	(0.66)	509	(0.61)	250	(1.65)	549	(0.38)	729	(0.85)	220	(0.98)	1 924	(0.53)	13 966	(0.57)	33	(1.64)
1989.3	39 959	(0.58)	256	(1.04)	1 029	(1.62)	1 715	(0.90)	15 984	(1.10)	208	(0.59)	5 043	(0.73)	46 704	(0.59)	316	(1.96)
1991.1	21 484	(0.57)	381	(1.69)	0	NA	935	(0.37)	705	(0.67)	96	(1.36)	1 841	(0.96)	43 614	(0.68)	0	NA
1991.2	14 727	(0.71)	2 554	(1.79)	312	(1.14)	4 225	(0.60)	107	(0.82)	318	(0.74)	55	(0.78)	14 928	(0.70)	0	NA
1992	15 520	(0.65)	79	(1.19)	1 304	(1.04)	3 114	(0.38)	298	(1.10)	158	(0.87)	8	(1.96)	17 942	(0.59)	0	NA
1994	14 309	(0.81)	478	(1.40)	51	(1.21)	3 643	(0.48)	52	(1.09)	337	(0.87)	184	(1.96)	21 225	(0.62)	0	NA
1995.1	305	(0.80)	951	(0.98)	127	(1.17)	451	(0.40)	679	(0.64)	181	(0.81)	1 369	(0.79)	7 078	(0.69)	481	(1.50)
1996	32 155	(0.54)	347	(0.64)	0	NA	2 203	(0.33)	256	(0.67)	137	(1.14)	782	(1.62)	33 700	(0.51)	0	NA
1997.1	37 093	(0.51)	474	(0.89)	25	(1.50)	6 218	(0.50)	758	(0.67)	288	(1.18)	6 391	(1.14)	130 055	(0.87)	73	(1.96)
1999	4 106	(0.47)	326	(0.96)	6	(1.17)	1 433	(0.30)	1 297	(0.54)	36	(1.65)	6 392	(0.60)	16 570	(0.54)	5	(1.64)
2000	6 583	(0.56)	150	(0.92)	12	(1.65)	609	(0.65)	3 302	(1.70)	70	(1.20)	619	(1.54)	22 483	(0.88)	196	(1.64)
2001	5 502	(0.87)	212	(0.80)	6	(1.65)	866	(0.88)	391	(0.74)	37	(0.93)	517	(0.71)	9 560	(0.71)	723	(1.91)
2002	9 765	(0.52)	54	(0.50)	0	NA	930	(0.52)	163	(0.72)	72	(0.67)	1 233	(0.62)	13 241	(0.41)	68	(1.96)
2003	9 995	(0.54)	501	(0.80)	0	NA	501	(0.57)	250	(0.51)	81	(1.64)	2 816	(0.60)	28 515	(0.94)	142	(1.96)
2004	9 146	(0.49)	196	(1.14)	0	(1.65)	1 059	(0.26)	492	(0.44)	22	(1.00)	1 567	(0.70)	12 764	(0.42)	37	(1.87)

	Hairtails		Grunts		Groupers		Barracudas		Seabreams		*P.longirostris*		Ommastrephidae		Croakers		Sepiidae	
1985.1	15 711	(0.87)	248	(1.02)	479	(1.09)	254	(0.90)	14 690	(0.57)	117	(1.38)	10 273	(1.27)	1 519	(1.00)	0	NA
1985.2	1 200	(1.65)	381	(1.31)	1 771	(0.78)	75	(0.81)	12 881	(0.34)	0	NA	0	NA	1 302	(1.10)	0	NA
1985.3	2 709	(0.73)	3 629	(0.94)	1 978	(0.84)	26	(1.65)	20 897	(0.67)	0	NA	0	NA	8 695	(0.94)	154	(0.97)
1985.4	3 608	(0.70)	14 806	(1.14)	3 054	(0.63)	780	(1.46)	31 078	(0.45)	10	(1.65)	84	(1.34)	3 692	(0.93)	215	(1.28)
1986.1	8 078	(1.11)	1 231	(0.98)	676	(0.80)	2 080	(0.67)	17 193	(0.40)	521	(1.09)	1 531	(1.23)	2 307	(0.97)	808	(0.72)
1986.2	8 640	(0.82)	1 694	(0.59)	1 515	(0.51)	756	(0.51)	25 098	(0.28)	0	NA	0	NA	5 049	(0.37)	696	(0.60)
1989.1	2 277	(0.71)	135	(0.96)	989	(1.17)	345	(0.80)	12 958	(0.37)	60	(1.29)	506	(0.85)	4 469	(0.88)	286	(0.94)
1989.2	3 712	(0.46)	1 102	(0.72)	841	(0.68)	2 973	(0.89)	7 283	(0.34)	22	(0.90)	161	(0.53)	3 231	(0.34)	272	(0.72)
1989.3	21 132	(1.13)	1 788	(0.86)	315	(0.73)	364	(1.02)	15 344	(0.58)	31	(1.50)	1 661	(0.93)	4 214	(0.70)	45	(1.08)
1991.1	11 448	(0.88)	822	(0.85)	642	(0.92)	2 739	(1.40)	4 826	(0.23)	0	NA	368	(0.53)	3 797	(0.83)	261	(0.72)
1991.2	4 949	(0.57)	860	(1.21)	1 022	(0.69)	79	(1.27)	15 741	(0.39)	129	(0.94)	2 092	(1.05)	6 450	(0.93)	226	(0.74)
1992	4 588	(0.47)	932	(0.90)	1 844	(0.80)	14	(1.29)	14 551	(0.22)	49	(1.65)	1 071	(0.40)	2 778	(0.59)	901	(0.64)
1994	4 423	(0.45)	612	(0.83)	2 474	(0.75)	325	(1.03)	19 599	(0.47)	478	(1.40)	441	(0.35)	4 095	(0.80)	1 910	(0.45)
1995.1	7 208	(0.58)	2 921	(1.08)	807	(0.70)	2 109	(1.10)	8 341	(0.30)	477	(1.13)	72	(0.58)	2 882	(0.73)	236	(0.48)
1996	3 939	(0.43)	5 161	(0.90)	2 002	(0.97)	89	(1.35)	19 985	(0.68)	10	(1.60)	589	(0.27)	9 292	(0.49)	106	(1.19)
1997.1	6 323	(0.41)	4 836	(1.05)	549	(0.76)	57	(1.70)	9 009	(0.28)	124	(1.38)	1 017	(0.71)	12 451	(0.53)	4 468	(0.68)
1999	14 001	(0.39)	5 600	(0.80)	1 011	(0.60)	2 711	(0.70)	13 304	(0.25)	113	(0.79)	391	(0.45)	8 528	(0.91)	254	(0.55)
2000	4 216	(0.75)	388	(0.98)	620	(0.48)	1 231	(1.37)	13 424	(0.35)	18	(0.91)	214	(0.83)	2 450	(0.66)	46	(0.66)
2001	17 036	(0.94)	2 271	(1.04)	793	(0.97)	856	(0.86)	8 928	(0.40)	101	(0.86)	98	(0.51)	1 458	(0.80)	196	(0.63)
2002	19 422	(0.60)	238	(0.58)	512	(0.88)	1 716	(0.79)	9 214	(0.36)	21	(1.00)	660	(0.72)	2 782	(0.54)	64	(0.67)
2003	6 818	(0.56)	1 376	(0.60)	340	(0.68)	2 345	(1.34)	9 889	(0.29)	65	(1.42)	121	(0.80)	5 571	(0.52)	206	(1.37)
2004	4 668	(0.47)	3 316	(0.86)	502	(0.63)	1 455	(1.15)	11 924	(0.28)	6	(1.28)	344	(0.42)	5 545	(0.74)	185	(0.83)

Distribution

Seabreams were distributed on the whole northern shelf. The highest densities were found off Pta. da Moita Seca, west off the area between Cabeça de Cobra and N'zeto and north off Luanda. The main concentrations south of N'zeto were on the inner shelf, while the highest concentration further north were on deeper waters. It seems like the distribution of seabreams was more north during 2004 compared the 2003 survey, and it is possible that some of the seabreams stock was distributed north of the survey area in 2004.

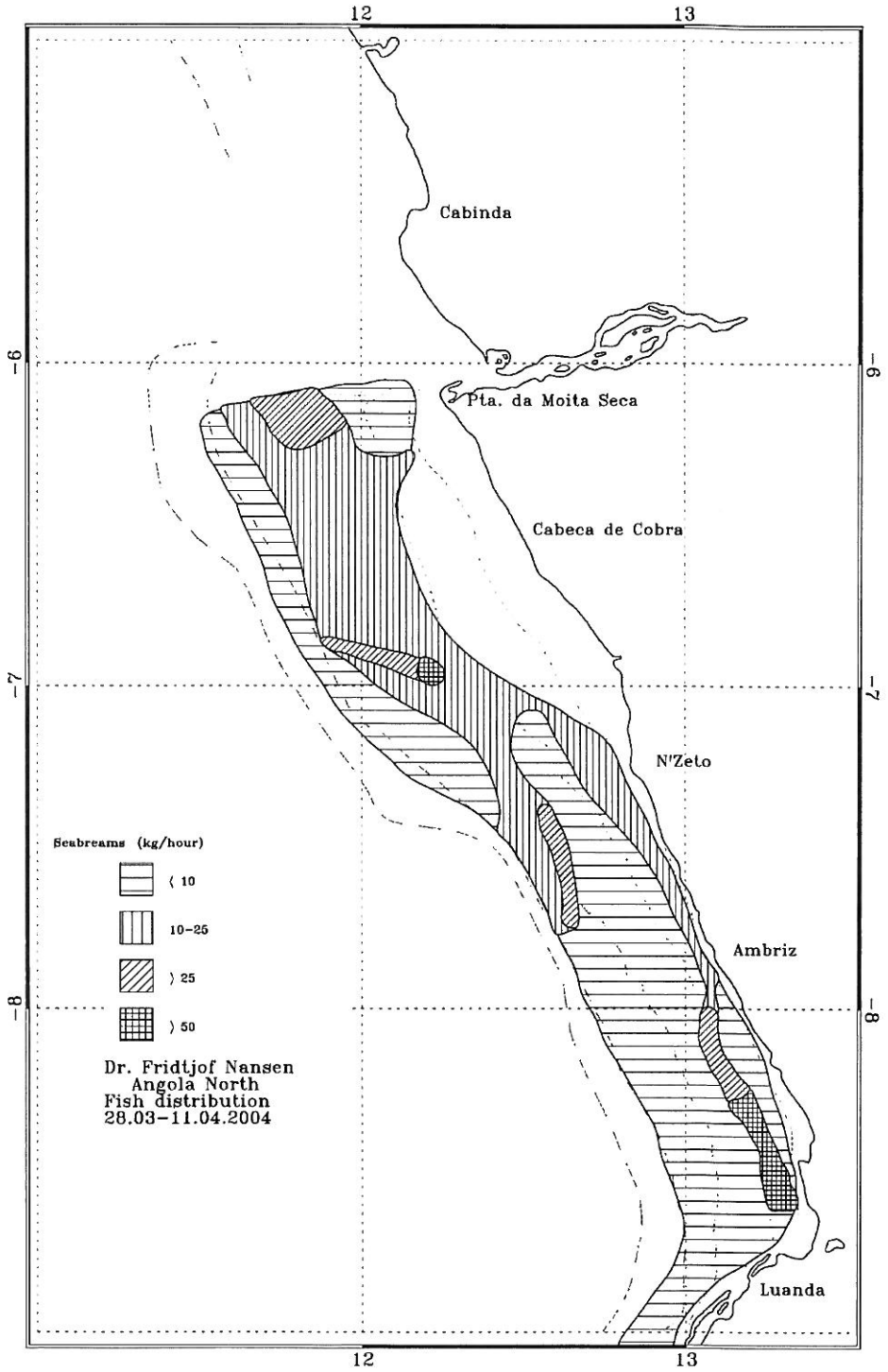


Figure 4.3 Distribution of seabreams (Sparidae) in the northern region, Luanda-Congo River. Depth contours at 20, 50, 100, 200 and 500 m.

CHAPTER 5 CATCH RATES, BIOMASS ESTIMATES AND DISTRIBUTION OF DEEP-WATER SHRIMP AND HAKE (SLOPE)

The slope (from 201 to 800 m) of the southern region (Cunene-Tombua) was covered with 8 trawl stations, while the central region (Benguela-Luanda) was covered with 22 valid swept-area hauls, and the slope of the northern region (Luanda-Congo River) was covered with 40 hauls. The distribution of the hauls by region, position and depth intervals are shown in Table 2.1 and Figure 2.1-2.3. The results from the swept-area analysis by region and depth intervals are presented in Annex III.

5.1 Cunene–Tombua slope

Table 5.1 presents the catch rates by main species groups on the slope off southern Angola. The demersal group contributed to 46% of the average catch rate, while the 'other' group (*i.e.* by-catch) contributed to 51%. The relative contribution of pelagic fish and shrimps was 1% each, while cephalopods contributed to about 0.6% and sharks to 0.3% of the overall catches. The definitions of the species groups are given in Annex V.

Table 5.1 Catch rates (kg/h) by main groups in swept area bottom trawl hauls on the slope (201-800 m) in southern Angola.

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3284	317	1 168.82					538.51	1 707.33
3285	523	9.70		5.76	17.60	0.46	579.14	612.66
3286	657	13.70		1.05	6.29		284.26	305.30
3287	660	21.82	43.56	8.28			462.78	536.44
3288	447	163.92	15.12	16.32			195.54	390.90
3289	268	1 784.28	12.55	6.98			1 284.59	3 088.40
3297	607	6.79	7.20	12.11	18.65	1.69	165.77	212.21
3298	343	366.50		25.64	1.14	22.70	411.56	827.54
MEAN	478	441.94	9.80	9.52	5.46	3.11	490.27	960.10
STADEV		670.75	14.96	8.43	8.11	7.94	355.11	
% CATCH		46.03	1.02	0.99	0.57	0.32	51.06	

Table 5.2 shows the mean catch rates of the main commercial species; hake (*Merluccius polli*), the most important shrimp species (*Parapenaeus longirostris, Aristeus varidens* and *Nematocarcinus africanus*), and by-catch species ('other') on the slope of the southern region. *D. macrophthalmus* was the only seabream species caught on the southern slope, with a mean catch rate of 41 kg/hour. Last year *D. macrophthalmus* was not observed on the slope in this region.

Mean catch rates of hake were 400 kg/h, which is 10 times more than the catch rate of hake last year. The catch rates of the shrimps species *P. longirostris* and *A. varidens* and *N. africanus* were 4.1, 3.7 and 0.8 kg/h, respectively. The catch rates of *A. varidens* and *N. africanus* are higher than those observed during last year survey, while the catch rate of *P. longirostris* was the same as last year. The southern slope is very difficult to survey due to

unsuitable bottom conditions, and the survey design has not been standardized during previous surveys. Therefore, it is difficult to compare the present situation of the species in Table 5.2 with previous surveys.

Table 5.2 Catch rates (kg/h) by main commercial groups in swept area bottom trawl hauls on the slope (201-800 m) in southern Angola.

Station	Depth	Seabreams	Hake	*P.longirostris*	*A.varidens*	*N.africanus*	Other	Total
3284	317	29.56	1139.26				538.51	1 707.33
3285	523		9.70			5.76	597.20	612.66
3286	657		13.70		0.89	0.06	290.65	305.30
3287	660		21.10		5.22	0.18	509.94	536.44
3288	447		163.92		16.32		210.66	390.90
3289	268	100.68	1 683.60	6.98			1 297.14	3 088.40
3297	607		6.63		7.28		198.30	212.21
3298	343	197.50	169.00	25.64			435.40	827.54
MEAN	478	40.97	400.86	4.08	3.71	0.75	509.73	960.10
STADEV		72.30	643.99	9.05	5.82	2.03	352.23	
% CATCH		4.27	41.75	0.42	0.39	0.08	53.09	

Biomass estimates

The biomass estimates presented in Table 5.3 are estimated by calculating the mean density [t/NM^2] of the stations conducted on depths deeper than 200 m and shallower the 600 m. No depth stratification was possible due to the low sampling intensity on the southern slope. The southern region has not been systematic surveyed during the years and due to low sampling effort in this region the estimates are very imprecise as indicated by the very high CVs. Therefore, it makes any biomass comparisons difficult. However, the trawl station positions of the 2000, 2003 and 2004 surveys were similar. Table 5.3 shows that the hake biomass estimate of 2004 is more than 10 times higher than last year. *M. capensis* was the dominating hake species during 2004 and contributed to about 99% of the hake biomass. The *P. longirostris* show some decline from last year but because of the high variation there is not any statistical significant difference between the 2003 and 2004 biomass estimates.

Table 5.3 Biomass estimates (tones) of important species group on the slope (200-600 m) in the southern region. CVs are in brackets.

	Sharks		Hake		Seabreams		*P.longirostris*		*N. Africanus*		*A. Varidens*	
1986.1	66	(0.40)	2 754	(0.84)	1 261	(0.95)	0	NA	0	NA	106	(1.00)
1991.1	463	(0.33)	3 285	(0.52)	325	(0.83)	21	(0.77)	0	NA	0	NA
1991.2	506	(0.68)	19 798	(0.62)	2 669	(0.08)	0	NA	0	NA	0	NA
1992	49	(0.19)	10 793	(0.82)	2 035	(1.00)	15	(1.00)	59	(1.00)	161	(1.00)
1997	917	NA	3 411	NA	413	NA	13	NA	0	NA	0	NA
2000	73	(0.47)	3 358	(0.86)	0	NA	44	(0.84)	0	NA	0	NA
2002	104	NA	1 245	NA	0	NA	0	NA	0	NA	0	NA
2003	226	(0.34)	454	(1.00)	0	NA	79	(1.00)	0	NA	0	NA
2004	40	(0.97)	5 749	(0.53)	579	(0.57)	57	(0.75)	10	(1.00)	30	(1.00)

Distribution

Figure 5.1 show the distribution of the two hake species found in the southern region, *Merluccius polli* and *M. capensis*. The distribution covers large parts of the slope and the shelf. As in 2002 the hake covered the area north of Baia dos Tigres, which was the area where hake was not observed in 2003. The highest densities were found in the shallow part of the slope off Cunene River. Note than 99% of the hake was *M: capensis*.

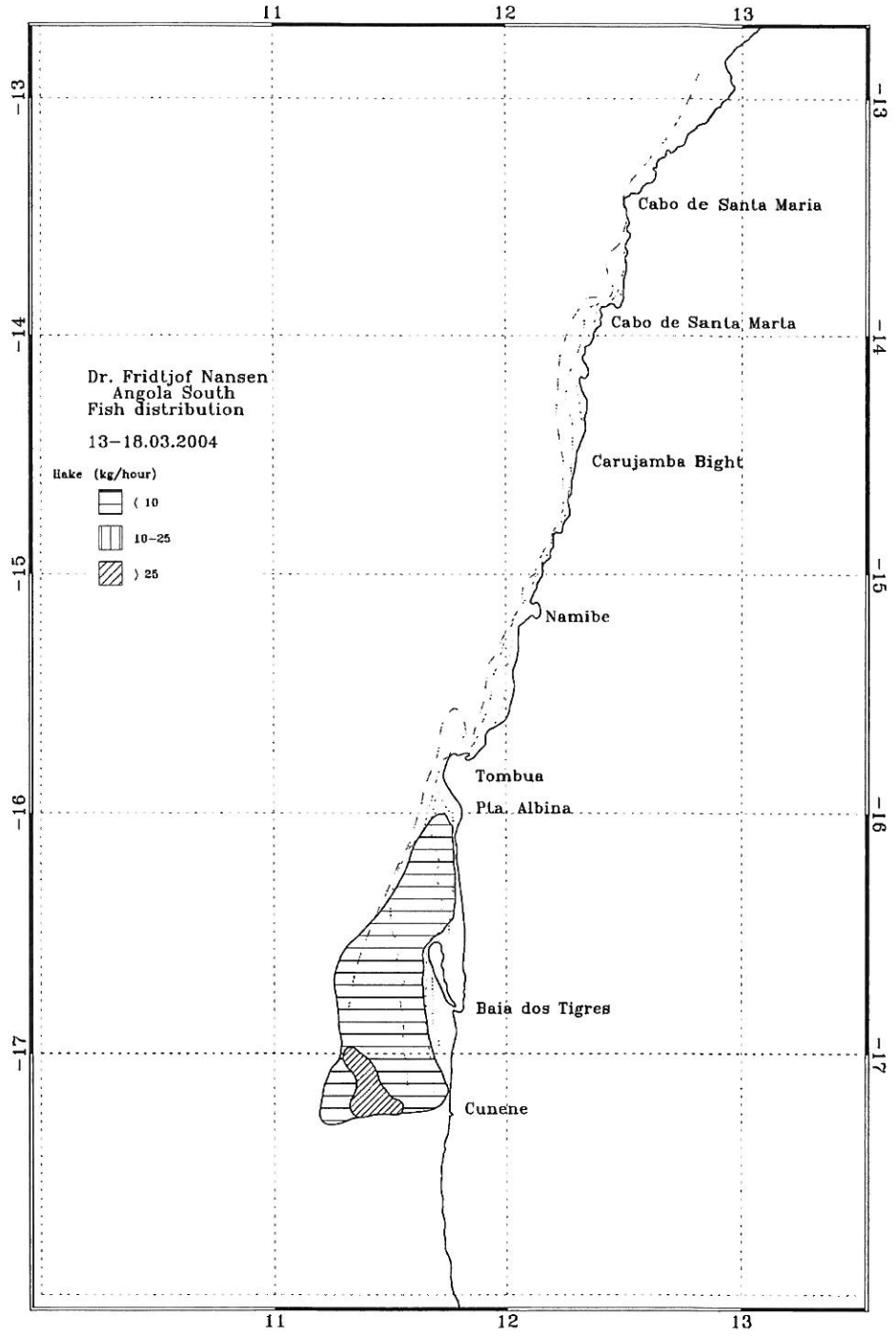


Figure 5.1 Distribution of hake (*Merluccius* spp.) in the southern region, Cunene - Tombua. Depth contours at 20, 50, 100, 200 and 500 m.

5.2 Benguela–Luanda slope

Table 5.4 presents the catch rates by main species groups on the slope off central Angola. The 'demersal' group dominated the catches with an average catch rate of about 400 kg/h and a relative contribution of 48%. The 'other' group (*i.e.* by-catch species) had an average catch rate of 281 kg/hour and a relative contribution of 34%, while 'pelagic' group contributed to 4.9% of the total catch rate. Cephalopods and sharks each contributed to about 1.5 % and shrimps contributed to about 13.5% of the overall catches and had an average catch rate of 107 kg/h. The definitions of the species groups are given in Annex V. The average catches of all the main species presented in Table 5.4 were higher during the 2004 survey than during 2003.

Table 5.4 Catch rates (kg/hour) by main groups in swept-area bottom trawl hauls on the slope (201-800 m). Central region.

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3308	765	9.72		29.50		0.20	112.72	152.14
3310	738	12.54		14.90		2.56	67.76	97.76
3317	662	11.16		33.16	19.18	3.20	62.30	129.00
3318	574	27.48	0.66	54.66		1.26	132.06	216.12
3319	470	8.84	2.72	161.28	10.80	2.74	47.68	234.06
3320	258	1 769.00	21.34	40.10			414.28	2 244.72
3328	683	91.10		40.08	10.32	2.82	142.08	286.40
3329	351	432.00		74.40	12.60	140.10	231.20	890.30
3330	355	2 938.00	3.50	175.00	68.50		332.50	3517.50
3335	536	0.00	27.30	219.70	12.30	8.50	81.70	349.50
3344	360	1 274.00		197.86		1.30	98.80	1 571.96
3345	494	0.70	87.50	117.00		3.60	44.00	252.80
3350	327	747.50	287.60	8.76			399.52	1 443.38
3351	353	562.74					738.98	1 301.72
3352	525	5.44	62.69	210.93	3.73		89.59	372.38
3360	611	63.60	2.52	86.16	7.20	8.52	230.92	398.92
3367	381	329.00	3.36	304.64			68.46	705.46
3368	744	65.32		94.40		0.54	192.52	352.78
3369	623	12.26	7.20	101.18	1.95	3.19	68.22	194.00
3379	262	158.94	7.74	10.28	3.43		1 542.75	1 723.14
3380	435	242.80	12.32	360.78	6.16	2.12	455.22	1 079.40
3381	734	13.50		18.41	13.36	18.74	638.59	702.60
MEAN	511	398.89	23.93	106.96	7.71	9.06	281.45	828.00
STADEV		728.88	62.95	101.07	14.78	29.58	343.72	
%CATCH		48.18	4.89	13.53	1.71	1.61	33.99	

Table 5.5 shows the mean catch rates of the main commercial species Seabreams, hake (*Merluccius polli*), the most important shrimp species (*Parapenaeus longirostris, Aristeus varidens* and *Nematocarcinus africanus*), and other by-catch species on the slope of the central region. Seabreams were only caught on two stations on depths of about 260 m and the mean catch rate was 73 kg/h. This is an increase from last year when the mean catch rate was 6.7 kg/h. On the slope of the central region *M. polli* was the only hake species caught and it was found in 16 out of 22 trawl stations. The catch rates of the shrimp *N. africanus* was

92 kg/h, with a relative contribution of 2%, while the contributions of *P. longirostris* and *A. varidens* were less than 1%.

Table 5.5 Catch rates (kg/hour) by main commercial groups in swept-area bottom trawl hauls on the slope (201-800 m). Central region.

Station	Depth	Seabreams	Hake	*P.longirostris*	*A.varidens*	*N.africanus*	Other	Total
3308	765				26.24		125.90	4 225.14
3310	738		3.02		14.32		80.42	4 145.76
3317	662				26.56	6.60	95.84	4 108.00
3318	574		20.70		4.62	47.28	143.52	4 108.12
3319	470		8.84		8.48	152.80	63.94	4 023.06
3320	258	1 521.92	247.08	40.10			1 957.54	7 344.64
3328	683		29.50		9.84	27.36	219.70	4 297.40
3329	351		432.00	15.00		59.40	383.90	4 570.30
3330	355		2 938.00	15.50		157.00	407.00	7 202.50
3335	536				16.80	195.50	137.20	4 220.50
3344	360		1 274.00	2.08	2.08	193.70	100.10	5 275.96
3345	494				6.40	110.50	135.90	4 091.80
3350	327		747.50	5.08			690.80	5 120.38
3351	353		562.50				739.22	5 005.72
3352	525				13.38	185.11	173.89	4 249.38
3360	611		43.80		2.76	82.20	270.16	4 369.92
3367	381		329.00		4.48	298.20	73.78	4 453.46
3368	744		53.54		6.12	86.40	206.72	4 464.78
3369	623		6.56		1.65	98.63	87.16	4 186.00
3379	262	90.80	31.71	10.28			1 680.66	5 454.45
3380	435		242.80		21.10	335.50	480.00	4 894.40
3381	734				18.41		684.19	4 817.60
MEAN	511	73.31	316.84	4.00	8.33	92.55	406.25	4 755.88
STADEV		324.13	667.03	9.40	8.79	100.89	505.76	
%CATCH		1.54	6.66	0.08	0.18	1.95	8.54	

Biomass estimates

Biomass estimates of the most important species groups on the central slope are presented in Table 5.6. The biomass was calculated by stratifying by depth (201-300, 301-400, 401-500, 501-600, 601-700 and 701-800 m). The CVs (in brackets in the table) are weighted by each stratum's area. The seabreams show a large increase in the biomass from 2003, and the 2004 estimate is the highest ever observed on the shelf, but as indicated by the very high CV the estimate is very imprecise. Seabreams were only caught in two stations on the slope, and the very large catch at station 3320 of *D. macrophthalmus* causes the high biomass estimate. The 2004 biomass estimates of the three shrimp species *P. longirostris*, *A. varidens* and *N. africanus* are higher than the 2003 estimates. The biomass of *A. varidens* is one of the highest observed in the time series showed in Table 5.6 and the 2004 estimate is about 90% higher than the 2003 estimate on the central region. The biomass of *P. longirostris* increased with 88% since 2003, and is one of the highest estimates observed since 1998. *A. varidens* shows a more moderate 15% increase from 2003, but the 2004 estimate is high compared to all estimates since 1999.

The *M. polli* 2004 biomass estimate of the central slope is very high, and it is 123% higher than the estimate of 2003. The time series in Table 5.6 shows that there is a positive trend of the biomass of *M. polli* on the central region during the last few years.

Table 5.6 Biomass estimates (tones) of important species group on the slope (200-800 m) in the central region. CVs are in brackets.

	Sharks		Seabreams		*P. longirostris*		Ommastrephidae		*N. africanus*		*M. polli*		Hairtails		*A. varidens*		Cephalopods	
1985.4	17	(2.47)	253	(1.25)	886	(1.47)	0	NA	714	(1.21)	18 790	(1.03)	420	(1.56)	942	(2.08)	301	(1.10)
1986.1	557	(0.88)	972	(2.14)	653	(0.89)	74	(1.13)	3 173	(1.25)	17 757	(0.74)	16	(2.27)	492	(0.90)	1 003	(0.85)
1986.2	0	NA	6 446	(0.00)	0	NA	0	NA	0	NA	24 611	(0.00)	498 917	(0.00)	0	NA	57	(0.00)
1989.1	65	(0.69)	804	(2.17)	181	(1.22)	39	(0.76)	592	(1.86)	2 803	(1.26)	60	(2.06)	194	(1.13)	39	(0.76)
1989.2	263	(1.17)	58	(1.64)	505	(0.84)	240	(1.66)	1 020	(1.45)	4 940	(0.81)	142	(0.59)	228	(0.74)	277	(1.34)
1989.3	3 247	(0.34)	435	(0.98)	375	(0.32)	409	(0.77)	958	(1.01)	12 633	(1.00)	35 703	(0.01)	194	(0.68)	410	(0.76)
1991.1	732	(0.54)	780	(2.05)	204	(0.75)	195	(0.75)	3 879	(0.45)	11 939	(0.33)	2 606	(2.13)	653	(0.21)	315	(0.45)
1991.2	1 487	(0.88)	488	(1.12)	190	(0.57)	114	(0.82)	2 659	(0.63)	10 539	(0.52)	395	(1.25)	105	(1.53)	114	(0.82)
1992	2 920	(0.88)	496	(1.03)	610	(0.95)	141	(0.61)	3 224	(0.79)	6 999	(0.28)	410	(1.28)	366	(0.63)	189	(0.51)
1994	707	(0.60)	1 188	(1.50)	579	(0.85)	168	(0.59)	2 199	(1.07)	3 803	(0.71)	1 213	(0.82)	647	(0.67)	219	(0.60)
1995.1	1 216	(0.91)	6 264	(1.24)	425	(0.95)	30	(1.34)	2 460	(1.32)	4 391	(0.41)	1 145	(0.53)	753	(0.45)	214	(0.79)
1995.2	1 068	(0.44)	1 291	(0.66)	479	(0.45)	85	(0.64)	2 790	(0.36)	4 791	(0.38)	2 235	(1.21)	699	(0.23)	153	(0.46)
1996	1 581	(0.89)	1 016	(0.47)	114	(0.53)	41	(0.67)	4 971	(0.71)	6 440	(0.74)	244	(0.62)	671	(0.37)	97	(0.90)
1997	1 133	(0.87)	3 809	(1.03)	1 327	(0.73)	404	(0.57)	3 842	(0.69)	9 588	(0.52)	789	(0.54)	295	(0.53)	485	(0.56)
1998	812	(0.63)	1 643	(1.06)	556	(0.63)	389	(0.84)	7 000	(0.52)	9 991	(0.50)	1 840	(1.46)	1 191	(1.10)	428	(0.76)
1999	728	(0.91)	2 900	(0.82)	214	(0.87)	315	(0.61)	1 206	(0.75)	2 995	(0.74)	728	(0.61)	337	(1.06)	343	(0.63)
2000	639	(0.74)	2 059	(1.01)	455	(1.05)	426	(0.57)	1 043	(1.02)	5 482	(0.60)	871	(0.91)	379	(0.35)	717	(0.50)
2001	818	(1.77)	767	(1.43)	186	(0.44)	340	(1.08)	517	(2.35)	4 763	(0.81)	297	(1.05)	456	(0.63)	623	(0.66)
2002	212	(0.92)	2 418	(1.98)	341	(1.23)	242	(0.77)	3 039	(0.75)	3 012	(0.65)	269	(0.57)	243	(0.52)	470	(0.63)
2003	104	(1.02)	606	(1.55)	223	(0.44)	409	(0.65)	3 284	(1.02)	7 155	(0.90)	178	(1.33)	498	(1.07)	420	(0.64)
2004	476	(1.51)	10 840	(2.00)	419	(1.08)	350	(1.04)	6 204	(0.47)	16 008	(0.77)	1 581	(1.06)	576	(0.44)	444	(0.85)

Distribution

Figure 5.2 shows the estimated distribution of *Merluccius polli* in the central region. The distribution covers the whole central slope with a few catches on the deeper part of the shelf. As shown in Figure 5.2 the hake stock mainly covers areas deeper than 200 m, and the highest densities were found in the region between Cabeça da Baleia and Cabo São Braz on depths above 300 m.

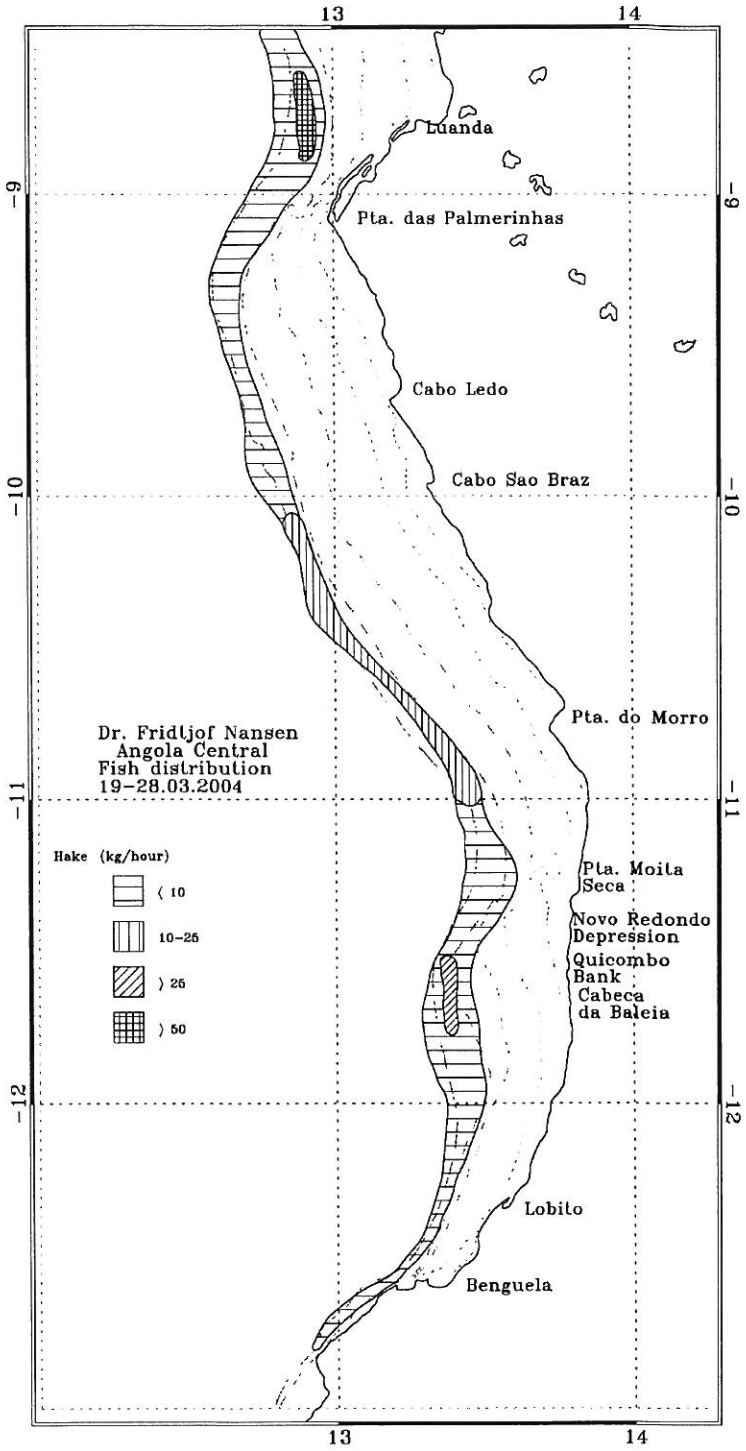


Figure 5.2 Distribution of hake (*Merluccius* spp.) in the central region, Benguela-Luanda. Depth contours at 20, 50, 100, 200 and 500 m.

5.3 Luanda–Congo River slope

Table 5.7 presents the catch rates by main species groups on the slope off central Angola. The other' group (*i.e.* by-catch species) dominated on the slope with an average catch rate of 416.5 kg/hour and a relative contribution of 55.5%. The relative contribution of demersal fish was 22.3%, while pelagic, sharks and cephalopods contributed with low percentages (2.2, 1.9 and 1.3% respectively). In this region shrimps contributed to about 16.9% of the overall catches and had an average catch rate of 126.4 kg/h. The definitions of the species groups are given in Annex V.

Table 5.8 shows the mean catch rates of the main commercial species seabreams, hake (*Merluccius polli*), the most important shrimp species (*Parapenaeus longirostris, Aristeus varidens* and *Nematocarcinus africanus*), and other by-catch species on the northern slope. Seabreams were only caught on relative shallow waters (<310 m) and the mean catch rate was 3.0 kg/h. On the slope of the northern region *M. polli* was the only hake species caught and it was found in 37 out of 40 trawl stations, and the mean catch rate of *M. polli* was 151.1 kg/h which is 3 times higher than the catch rate of the 2003 survey. The catch rates of the shrimp *N. africanus* was 112.5 kg/h, with a relative contribution of 15%, while the contributions of *P. longirostris* and *A. varidens* were less than 1%.

Table 5.7 Catch rates (kg/hour) by main groups in swept-area bottom trawl hauls on the slope (201-800 m). Northern region.

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3382	696	47.72		369.24	99.28	5.02	450.60	971.86
3383	533	13.72	20.30	156.38	6.86	1.80	129.82	328.88
3384	409	3 241.70	2.80	259.42	6.30	2.36	60.62	3 573.20
3385	311	403.88	5.48	7.40	0.70	23.90	339.92	781.28
3386	228	103.30	16.60	7.62	4.66		447.46	579.64
3387	215	104.15	65.36	4.20		12.43	1 305.87	1 492.01
3390	443	232.70	63.42	468.72	18.06	96.18	64.68	943.76
3391	539	3.56	5.84	166.18		3.00	261.44	440.02
3392	605	24.44	2.72	244.48	8.32	10.00	205.44	495.40
3393	712	30.74	1.25	155.98	16.61	7.15	361.57	573.30
3399	233	186.86	7.18	15.54	3.70		1 955.42	2 168.70
3400	308	29.08	2.98	16.36			205.84	254.26
3401	425	422.80	4.96	128.14			46.30	602.20
3402	625	39.37	2.09	227.31	4.18	3.29	211.27	487.51
3403	703	15.58		152.56	1.28	8.20	171.58	349.20
3411	523	15.18		271.92	14.96	2.34	282.30	586.70
3412	626	17.84		231.58	9.58	6.60	88.08	353.68
3413	722	39.22		67.76	6.86		228.20	342.04
3428	267	31.45	27.72	142.53	2.61		313.76	518.07
3429	395	651.60	50.40	363.12	8.16		102.24	1 175.52
3430	622	3.68	5.76	295.68	17.76	9.80	281.90	614.58
3431	730	28.38		135.24	3.36	0.60	217.88	385.46
3436	719	82.84		10.40	5.80	4.20	434.40	537.64
3437	527	113.90	9.80	71.40		43.60	146.98	385.68
3438	429	201.30	7.68	311.04	3.52	16.70	129.60	669.84
3450	386	37.14	113.34	14.98	17.56		248.70	431.72
3451	743	93.82		29.26	4.18	153.12	488.68	769.06
3458	227	42.06	2.34	12.60	50.40	48.60	591.22	747.22
3459	335	8.13	25.06	10.84			477.74	521.77
3461	714	4.50		4.70	2.80	2.70	388.30	403.00
3462	726	9.58		4.08	4.32	49.10	192.72	259.80
3463	528	2.66	1.40	121.66	4.48	13.30	176.52	320.02
3464	273	60.16	11.88	11.98	10.44		527.08	621.54
3470	625	8.98	0.84	96.60	2.88	5.52	129.38	244.20
3471	445	31.80	64.50	45.90		13.90	160.60	316.70
3472	312	38.56	3.52	25.52	5.46		1 286.64	1 359.70
3473	269	77.80	9.70	46.46	9.20		2 829.46	2 972.62
3478	232	32.73	28.50	9.15	12.83	9.76	228.34	321.31
3479	421	109.10	74.62	115.64	12.04	0.40	298.08	609.88
3480	520	37.00	21.12	228.14	4.18	0.86	191.68	482.98
MEAN	483	166.98	16.48	126.44	9.58	13.86	416.46	749.80
STADEV		515.90	26.07	124.04	17.00	29.36	539.57	
%CATCH		22.27	2.20	16.86	1.28	1.85	55.54	

Table 5.8 Catch rates (kg/hour) by main commercial groups in swept-area bottom trawl hauls on the slope (201-800 m). Northern region.

Station	Depth	Seabreams	Hake	*P.longirostris*	*A.varidens*	*N.africanus*	Other	Total
3382	696		19.50		14.28	341.70	596.38	971.86
3383	533		13.02		4.76	149.10	162.00	328.88
3384	409		3 241.70		1.54	256.90	73.06	3 573.20
3385	311	2.88	401.00	7.40			370.00	781.28
3386	228	33.20	49.40	7.62			489.42	579.64
3387	215	21.86	25.07	4.20			1 440.88	1 492.01
3390	443		232.70		15.12	453.60	242.34	943.76
3391	539		2.22		8.84	156.74	272.22	440.02
3392	605		7.00		5.28	236.00	247.12	495.40
3393	712				5.40	147.46	420.44	573.30
3399	233	1.16	181.66	15.54			1 970.34	2 168.70
3400	308		28.10	10.06		6.30	209.80	254.26
3401	425		422.80		1.44	126.28	51.68	602.20
3402	625		5.92		4.70	220.35	256.54	487.51
3403	703		5.34		5.12	141.60	197.14	349.20
3411	523		4.40		3.96	266.20	312.14	586.70
3412	626				3.90	223.50	126.28	353.68
3413	722		5.90		2.38	64.40	269.36	342.04
3428	267		31.45	139.92			346.70	518.07
3429	395		651.60		1.44	361.20	161.28	1 175.52
3430	622		2.48		5.28	290.40	316.42	614.58
3431	730		7.24		4.06	126.00	248.16	385.46
3436	719		14.84		5.40	3.80	513.60	537.64
3437	527		113.80		6.80	63.50	201.58	385.68
3438	429		201.30		9.60	296.00	162.94	669.84
3450	386		37.14	3.12			391.46	431.72
3451	743				13.64		755.42	769.06
3458	227	17.90	21.06	12.60			695.66	747.22
3459	335		8.13	4.88			508.76	521.77
3461	714				1.80		401.20	403.00
3462	726		7.58				252.22	259.80
3463	528		2.66			120.40	196.96	320.02
3464	273	0.66	59.50	11.98			549.40	621.54
3470	625		2.02		3.60	91.80	146.78	244.20
3471	445		29.10		12.30	33.30	242.00	316.70
3472	312		38.56	21.46			1 299.68	1 359.70
3473	269	27.20	50.60	46.46			2 848.36	2 972.62
3478	232	16.31	8.93	9.15			286.92	321.31
3479	421		109.10		2.80	102.90	395.08	609.88
3480	520		1.36		3.74	220.00	257.88	482.98
MEAN	483	3.03	151.10	7.36	3.68	112.49	472.14	749.80
STADEV		8.09	519.57	23.16	4.32	126.24	539.98	
%CATCH		0.40	20.15	0.98	0.49	15.00	62.97	

Biomass

Table 5.9 shows the biomass estimates of the surveys from 1985 to 2004. The biomass estimate of seabreams in 2004 is 112% larger than the 2003 estimate, but the 2004 estimate is significant lower than both the 2000 and 20001 estimates. *P. longirostris* show a higher biomass estimate in 2004 than in 2003, but lower than the estimate of 2002. The sharks show a high variation in the biomass estimates between years, and no clear trend in the state of the sharks is conspicuous. The 2004 biomass estimate of *Nematocarcinus africanus* is very high and in average about the double of the average of the estimates of the years 2000-2003, and is about on the same level of the 1999 estimate. The *M. polli* biomass estimate in 2004 is high compared to the estimates of the last 10 years as shown in Table 5.9. Compared to the 2003 survey the estimate of *A. varidens* in 2004 show an decrease of 6%, but is still higher than the average of the last ten years.

Table 5.9 Biomass estimates (tones) of important species group on the slope (200-800 m) in the northern region. CVs are in brackets.

	Sharks		Seabreams		*P. longirostris*		Ommastrephidae		*N. africanus*		*M. polli*		Hairtails		*A. varidens*		Cephalopod	
1985.1	344	(0.00)	0	NA	21	(0.00)	976	(0.00)	0	NA	202	(0.00)	0	NA	0	NA	976	(0.00)
1985.3	209	(1.36)	1 541	(0.00)	0	NA	0	NA	0	NA	3 065	(0.86)	511	(2.38)	0	NA	251	(0.68)
1985.4	0	NA	0	NA	2 108	(0.88)	142	(1.78)	2 864	(0.90)	28 753	(0.95)	1 342	(0.67)	6 691	(0.69)	260	(1.25)
1986.1	3 724	(1.41)	108	(2.02)	1 166	(1.29)	261	(0.33)	12 631	(0.23)	11 409	(0.39)	3 383	(0.64)	538	(2.09)	1 630	(0.81)
1986.2	4 431	(0.75)	288	(2.27)	0	NA	0	NA	4 643	(0.88)	27 562	(0.67)	3 228	(0.61)	1 008	(0.48)	277	(0.85)
1989.1	2 376	(1.44)	66	(2.27)	419	(1.15)	1 429	(1.40)	6 953	(1.48)	13 518	(0.78)	795	(0.81)	204	(0.50)	1 631	(1.23)
1989.2	375	(1.39)	4 061	(2.24)	366	(1.01)	135	(1.37)	3 682	(0.81)	8 168	(0.42)	352	(1.45)	164	(1.14)	166	(1.11)
1989.3	2 372	(0.57)	497	(1.79)	243	(0.67)	645	(1.07)	4 699	(0.38)	11 265	(0.91)	1 579	(1.97)	91	(0.40)	657	(1.05)
1991.1	1 376	(1.25)	49	(1.66)	88	(1.00)	129	(1.47)	8 315	(0.72)	19 540	(0.65)	65	(1.03)	70	(1.37)	135	(1.45)
1991.2	2 381	(0.80)	527	(0.66)	205	(0.98)	619	(1.11)	2 445	(0.37)	19 498	(0.67)	699	(0.61)	15	(2.67)	991	(1.05)
1992	1 462	(1.01)	510	(0.90)	170	(1.05)	143	(0.73)	8 439	(0.80)	13 290	(0.44)	1 148	(0.55)	272	(0.80)	209	(0.69)
1994	841	(0.66)	1 045	(0.91)	532	(0.58)	281	(0.55)	6 602	(0.69)	4 096	(0.48)	1 753	(0.37)	370	(0.75)	328	(0.48)
1995.1	1 367	(0.52)	506	(0.98)	860	(0.88)	61	(1.17)	7 269	(0.73)	5 892	(1.01)	2 284	(0.72)	326	(0.67)	316	(1.55)
1996	307	(0.71)	597	(1.43)	162	(0.62)	228	(0.66)	3 859	(0.50)	5 065	(0.31)	1 627	(0.69)	267	(0.45)	566	(1.03)
1997.1	824	(1.12)	871	(1.08)	605	(1.14)	622	(0.37)	13 096	(0.40)	6 954	(0.28)	3 399	(1.26)	333	(0.35)	672	(0.34)
1997.2	10	(2.27)	878	(2.27)	1 317	(1.41)	317	(1.85)	4 088	(1.92)	8 101	(0.39)	1 972	(1.37)	0	NA	330	(1.80)
1999	1 060	(0.43)	389	(0.58)	542	(0.43)	1 121	(1.52)	10 540	(0.58)	3 624	(0.52)	3 088	(0.83)	237	(0.42)	1 512	(1.10)
2000	604	(0.88)	1 650	(2.05)	505	(0.46)	514	(0.63)	3 925	(0.62)	4 386	(0.54)	1 887	(1.09)	222	(0.52)	713	(0.47)
2001	1 966	(1.23)	494	(2.27)	535	(0.53)	1 001	(2.17)	6 746	(0.90)	4 840	(0.71)	1 531	(0.74)	243	(0.47)	1 477	(1.55)
2002	118	(0.74)	213	(1.45)	800	(1.04)	364	(1.27)	5 337	(0.89)	3 479	(0.60)	3 022	(1.01)	127	(0.57)	849	(0.63)
2003	1 305	(1.29)	141	(1.10)	629	(1.01)	216	(0.83)	6 873	(0.42)	5 310	(0.76)	1 237	(1.15)	383	(0.83)	421	(0.61)
2004	1 571	(0.78)	299	(0.69)	749	(0.98)	316	(0.56)	10 930	(0.37)	15 327	(1.33)	1 695	(0.57)	359	(0.39)	892	(0.68)

Distribution

Figure 5.3 shows the estimated distribution of hake (*Merluccius polli*) in the northern region. The stock distribution covers the slope from Luanda to the Congo River at depths greater than 200 m. This distribution pattern is similar to those in previous surveys, but the densities were higher during the 2004 survey. Highest densities were found between Ambriz and Cabeça de Cobra on depths between 200 and 500 m.

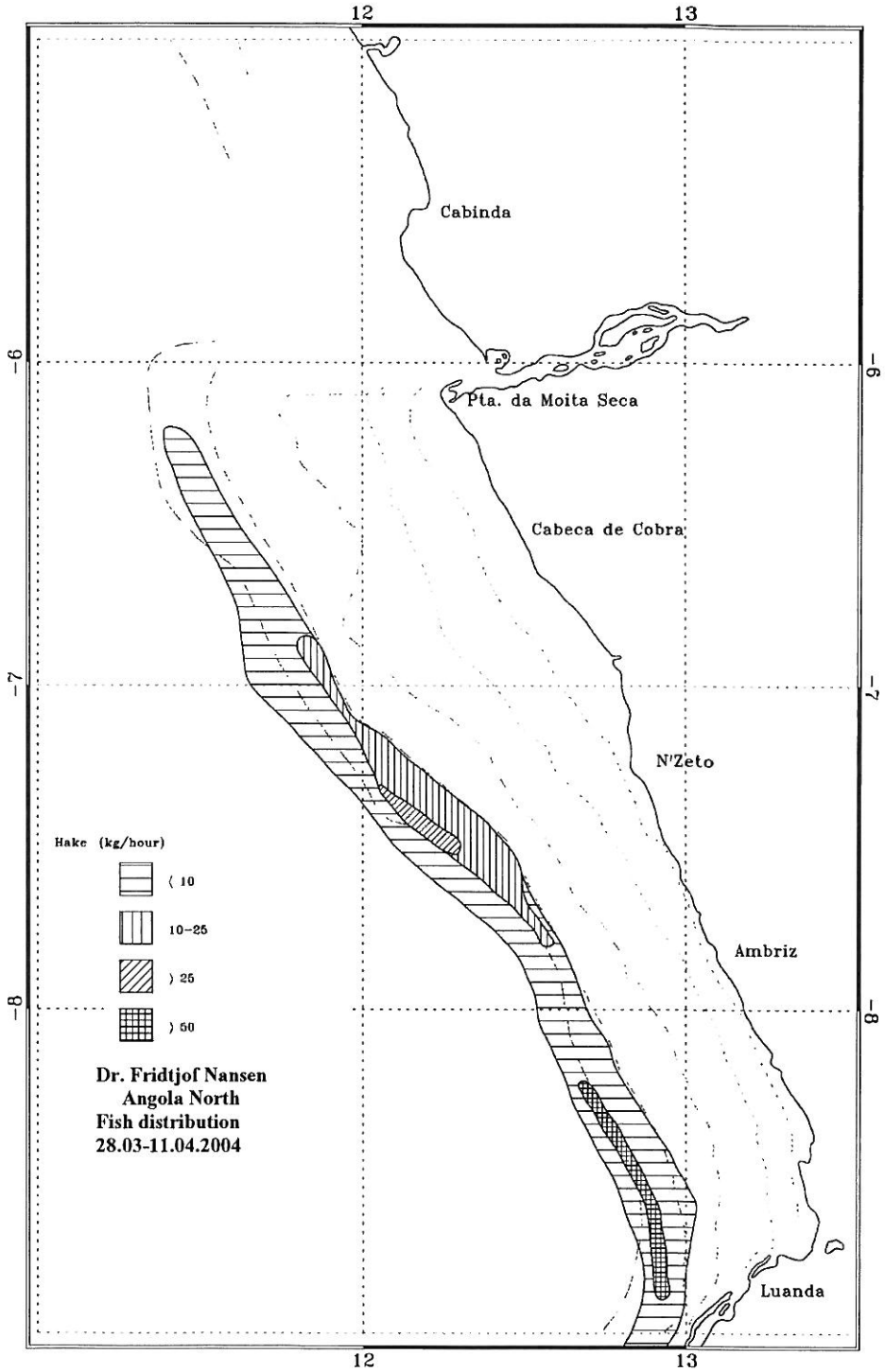


Figure 5.3 Distribution of hake (*Merluccius* spp.) in the northern region, Luanda–Congo River. Depth contours at 20, 50, 100, 200 and 500 m.

CHAPTER 6 SUMMARY

The R/V 'Dr. Fridtjof Nansen' conducted the 2004 demersal resources survey of Angola, and all the objectives of the survey were successfully carried out. The survey, which started on the 12th of March and ended in Luanda on the 12th of April, covered the Angolan coast from Cunene River to Congo River from 20 to 800 m depth. The very narrow shelf and slope between Tombua and Benguela were, as in previous years, not surveyed due to the poor bottom conditions. Out of 205 bottom trawl stations 200 hauls were classified as valid and hence were used to estimate the abundance and length frequencies of the main demersal resources. To map the oceanographic conditions a CTD station was carried out at each trawl stations in addition to 11 standard hydrographic transects. In total 279 CTD stations were carried out.

The regular demersal surveys carried out by R/V 'Dr. Fridtjof Nansen' in March are coincident with the late phase of the wet season, which causes low salinity in the surface waters on the shelf off northern and central Angola. The oceanographic conditions were similar to the conditions of previous years between Cunene River and Tombua, but the warm front of water observed off Baía dos Tigres in March 2003 was not observed during this survey. Both the salinity and temperature distribution patterns in the central region were different from the patterns observed during the 2003 survey. The high surface salinity on the shelf was ranging from 35.6 to 36.0 psu, and was probably caused by little discharge of freshwater from the rivers. The inshore temperature was about 24°C and the temperature offshore was 26 to 27°C during this year survey, while the temperatures during the 2003 survey were ranging from 28 to 29°C. As in the central region, the temperature and salinity values observed were significant different from the values observed during the March 2003 demersal survey. The sea surface temperature during the 2004 survey was about 4°C lower than the values of 2003, and the salinity values were about 2.3 psu higher in 2004. Little discharge of freshwater from Congo River and other rivers is probably the reason to these high salinity values.

Even though rare environmental conditions were observed in the central and northern regions, there is no reason to believe that the abundance estimates of the demersal resources were influenced by these unusual oceanographic conditions.

Table 6.1 presents the time series from 1985 to 2004 of the combined biomass estimates of the most important species on the shelf and slope in the central and northern regions in Angola. The southern region is not included in Table 6.1 because the survey in this region has not been properly standardized throughout the years. Table 4.4 and Table 4.9 show the biomass of the important species in the south.

The seabreams biomass estimate on the southern shelf increased from 15 900 tones in 2003 to about 27 000 tones in 2004, which was mainly caused by a higher abundance of juveniles of the commercial important big-eye Dentex (*D. macrophthalmus*) (Table 4.4). A similar increase of seabreams was observed in the central and northern regions, where the 2004 biomass estimate of about 31 600 tones is about double of the 2003 estimate of 16 200 tones. However, these 2004 estimates are about on the 2002 level, and as seen in Table 6.1 the 2004 estimate for the central and northern regions is the third lowest for the period 1996-2004. A substantial decrease (32%) was observed in the biomass estimates of grunts in the central and

northern regions compared to the last year as result of reduced catch rates of the big-eye grunt *(B. auritus)* (Table 6.1).

It was observed a large increase (222%) in the estimated biomass of hake (*M. polli*) compared to the last year in the central and north. In the southern region, the estimated biomass in 2004 was 13 times higher the estimate of 2003. About 99% of the hake catches in the south were *M. capensis*, which is a stock that is shared with Namibia. The high concentration of *M. capensis* in this region may be linked to the relative far northerly position of the warm front.

The biomass estimates of the other demersal groups have remained relative stable during the four last years.

For the pelagic species, the estimates of the biomass are characterized by the high variability throughout the years, particularly for horse mackerel, hairtails and barracuda. The bottom trawl is not an adequate sampling gear for the pelagic fish species; therefore no certain conclusion may be draw for these resources. More adequate conclusion may be drawn after the forthcoming pelagic survey. Nevertheless, the biomass of *T. trecae* decreased to 21 409 tones in 2004 from 35 489 tones in 2003, and it should be noted that the biomass estimate of 2002 was 88 411 tones.

The biomass estimates of the rose shrimp (*P. longirostris*) were relative stable during the period 2000–2003, while the 2004 biomass estimate increased from 1 366 tones in 2003 to 2 143 tones in 2004. The high 2004 biomass estimate is mainly caused by high catches of juvenile *P. longirostris*. The species is considered as a short-lived species and its abundance is related to a strong dependence on the recruitment. Also the striped shrimp (*A. varidens*) showed some increase in the biomass estimate from 2003 to 2004, but due to low precision in the estimates, this difference is not significant.

Table 6.1 Biomass estimates (tones) of important species group in the central and northern regions. CVs are in brackets.

	M .polli		*T .trecae*		Cephalopod		Sharks		Clupeids		Carangids		Hairtails		Barracudas		Snappers	
1985.1	211	(0.12)	4 496	(1.85)	11 438	(1.90)	841	(0.92)	364	(1.93)	9 986	(1.52)	15 711	(1.45)	254	(1.50)	0	NA
1985.2	0	NA	3 324	(1.94)	694	(0.95)	451	(1.06)	3 907	(3.17)	3 740	(1.73)	1 200	(2.75)	75	(1.35)	63	(2.09)
1985.3	6 524	(1.70)	16 486	(1.99)	2 297	(1.00)	1 079	(1.74)	205	(3.23)	17 742	(1.81)	3 219	(1.31)	26	(2.74)	62	(3.25)
1985.4	55 083	(1.46)	110 950	(1.39)	6 369	(1.24)	96	(2.42)	906	(1.55)	117 929	(1.33)	7 937	(0.94)	1 034	(1.93)	0	NA
1986.1	29 498	(1.21)	31 313	(0.88)	6 925	(0.81)	5 004	(2.30)	2 770	(0.96)	38 390	(0.72)	26 602	(0.92)	3 099	(0.84)	470	(3.02)
1986.2	52 670	(0.76)	30 649	(1.11)	2 935	(0.78)	5 256	(1.38)	1 693	(0.95)	34 989	(0.97)	511 874	(0.02)	1 874	(0.93)	0	NA
1989.1	16 503	(1.50)	19 681	(1.00)	4 465	(1.10)	3 086	(2.42)	2 137	(2.42)	26 000	(0.85)	13 125	(0.89)	2 281	(2.15)	0	NA
1989.2	14 371	(0.90)	33 008	(0.74)	3 198	(0.56)	1 472	(1.18)	2 282	(0.79)	40 419	(0.66)	6 333	(0.70)	3 674	(1.21)	53	(2.19)
1989.3	25 407	(1.58)	49 538	(0.85)	4 797	(0.90)	21 887	(1.35)	6 749	(0.99)	59 519	(0.85)	66 901	(0.69)	1 068	(1.09)	316	(3.25)
1991.1	31 479	(0.93)	107 626	(1.18)	2 235	(0.43)	3 559	(1.18)	2 349	(1.31)	131 016	(1.03)	21 783	(1.13)	3 322	(1.93)	106	(3.69)
1991.2	30 966	(1.03)	62 772	(1.25)	7 351	(0.70)	4 090	(1.31)	91	(1.43)	63 901	(1.23)	9 218	(0.61)	161	(1.32)	0	NA
1992	23 233	(0.60)	48 453	(0.69)	6 109	(0.41)	5 163	(1.47)	82	(1.92)	53 311	(0.67)	17 251	(0.74)	103	(2.12)	0	NA
1994	10 343	(1.00)	77 944	(0.83)	6 886	(0.52)	1 869	(0.91)	206	(2.91)	86 549	(0.75)	31 574	(2.09)	329	(1.69)	262	(3.69)
1995.1	10 577	(1.30)	5 224	(1.74)	1 789	(0.76)	3 382	(1.00)	1 679	(1.09)	19 756	(0.74)	14 521	(0.59)	4 222	(1.10)	594	(2.14)
1995.2	6 889	(0.81)	11 258	(1.17)	979	(1.08)	1 294	(1.00)	0	NA	11 370	(1.15)	5 113	(1.63)	0	NA	45	(3.18)
1996	12 219	(1.08)	83 774	(0.95)	5 268	(0.49)	2 641	(1.47)	1 371	(1.69)	89 864	(0.89)	9 254	(0.51)	1 035	(1.51)	109	(3.69)
1997.1	21 911	(0.90)	64 832	(0.77)	10 715	(0.56)	3 004	(1.18)	9 833	(1.75)	168 670	(1.14)	32 077	(0.82)	553	(3.05)	73	(3.25)
1997.2	25 581	(0.71)	97 858	(0.58)	6 260	(0.42)	500	(1.73)	132	(2.45)	99 747	(0.56)	23 555	(0.55)	0	NA	0	NA
1998	10 366	(1.27)	4 630	(1.67)	3 016	(0.62)	1 122	(1.30)	2 860	(2.97)	7 606	(1.20)	30 861	(2.71)	454	(1.54)	0	NA
1999	6 640	(1.08)	17 119	(0.78)	4 253	(0.88)	3 197	(0.73)	8 406	(0.87)	37 149	(0.60)	26 067	(0.57)	4 371	(0.82)	570	(3.50)
2000	10 119	(1.00)	25 701	(0.72)	3 783	(0.44)	5 105	(1.86)	2 215	(1.41)	47 540	(0.80)	17 976	(0.62)	4 556	(1.00)	294	(2.04)
2001	9 732	(1.30)	22 012	(0.77)	4 340	(1.36)	3 519	(1.85)	598	(1.06)	30 501	(0.66)	24 459	(1.12)	1 818	(0.79)	726	(3.16)
2002	7 680	(0.93)	88 411	(0.70)	5 211	(0.68)	614	(1.00)	2 858	(0.81)	99 038	(0.63)	30 903	(0.70)	2 383	(1.01)	255	(4.67)
2003	14 240	(1.35)	35 489	(0.77)	2 668	(0.56)	1 925	(1.92)	4 255	(0.78)	57 888	(0.89)	20 301	(0.67)	2 825	(1.86)	186	(2.63)
2004	31 628	(1.73)	21 409	(0.71)	3 421	(0.54)	3 125	(1.09)	3 760	(1.00)	28 088	(0.58)	20 349	(1.20)	1 856	(1.54)	79	(2.44)

Table 6.1 ...continues

	Groupers		Grunts		Croakers		Seabreams		*P.longirostris*		*A.varidens*		*N.africanus*		Ommastrephidae		Sepiidae	
1985.1	479	(1.81)	248	(1.69)	1 519	(1.67)	14 690	(0.94)	138	(1.93)	0	NA	0	NA	11 249	(1.93)	0	NA
1985.2	1 771	(1.30)	381	(2.18)	1 302	(1.82)	12 881	(0.57)	0	NA	0	NA	0	NA	0	NA	0	NA
1985.3	1 978	(1.39)	3 629	(1.56)	8 979	(1.52)	22 438	(1.03)	0	NA	0	NA	0	NA	0	NA	154	(1.61)
1985.4	4 307	(0.91)	20 511	(1.54)	13 935	(2.05)	49 737	(0.69)	3 062	(1.72)	7 633	(1.47)	3 578	(1.69)	225	(2.56)	215	(2.12)
1986.1	1 087	(1.01)	3 468	(1.06)	6 956	(0.82)	27 435	(0.54)	3 823	(1.22)	1 030	(2.63)	15 804	(0.77)	2 140	(1.52)	1 334	(0.86)
1986.2	2 033	(0.84)	6 995	(0.98)	9 578	(0.76)	45 651	(0.36)	0	NA	1 485	(0.90)	4 643	(1.90)	0	NA	1 828	(1.23)
1989.1	1 569	(1.34)	3 816	(1.85)	5 864	(1.15)	25 271	(0.55)	895	(1.44)	397	(1.56)	7 545	(2.98)	3 209	(1.51)	350	(1.31)
1989.2	3 937	(2.31)	2 228	(1.06)	7 826	(0.78)	23 569	(0.92)	1 559	(1.07)	400	(1.50)	4 702	(1.61)	1 286	(1.04)	1 440	(0.67)
1989.3	1 107	(1.95)	1 870	(1.37)	4 812	(1.06)	20 807	(0.76)	1 094	(1.18)	285	(1.25)	5 657	(0.81)	4 191	(0.98)	169	(1.63)
1991.1	817	(1.28)	1 247	(0.99)	5 848	(1.05)	14 722	(0.48)	302	(1.48)	723	(0.58)	12 194	(1.13)	1 036	(0.74)	500	(0.75)
1991.2	2 043	(1.05)	2 742	(1.29)	26 595	(1.93)	42 431	(0.47)	640	(0.95)	119	(3.61)	5 104	(0.95)	3 517	(1.15)	793	(1.38)
1992	3 359	(1.08)	1 698	(1.27)	4 772	(0.76)	40 589	(0.52)	935	(1.71)	638	(1.21)	11 662	(1.38)	3 519	(0.46)	1 074	(0.95)
1994	2 908	(1.07)	680	(1.25)	18 320	(1.46)	51 379	(0.51)	1 757	(1.05)	1 017	(1.28)	8 801	(1.33)	1 931	(0.63)	3 166	(0.67)
1995.1	1 397	(1.05)	6 027	(1.40)	18 472	(1.67)	29 271	(0.83)	2 020	(1.09)	1 078	(0.95)	9 729	(1.47)	164	(1.21)	637	(0.86)
1995.2	348	(3.18)	0	NA	245	(1.89)	11 363	(0.86)	680	(1.02)	699	(0.61)	2 790	(0.96)	730	(0.84)	219	(2.48)
1996	2 692	(1.26)	8 256	(1.04)	15 215	(0.62)	39 921	(0.62)	310	(0.89)	938	(0.76)	8 830	(1.16)	1 069	(0.45)	143	(1.55)
1997.1	781	(1.08)	6 427	(1.49)	21 483	(0.69)	33 690	(0.75)	2 501	(1.05)	639	(0.79)	17 189	(0.79)	3 437	(0.56)	5 824	(0.95)
1997.2	2 840	(1.33)	500	(0.84)	36 999	(1.82)	49 236	(0.63)	5 481	(1.07)	0	NA	4 098	(4.15)	2 492	(0.88)	1 885	(0.33)
1998	198	(2.33)	9 117	(1.56)	8 609	(1.62)	64 867	(2.24)	742	(1.32)	1 191	(2.89)	7 000	(1.37)	765	(1.28)	1 293	(1.10)
1999	1 654	(0.83)	8 927	(1.03)	18 586	(1.14)	34 076	(0.45)	876	(0.83)	574	(1.68)	11 746	(1.14)	2 028	(1.86)	375	(0.72)
2000	1 647	(1.01)	7 213	(0.91)	7 842	(0.67)	36 443	(0.45)	1 267	(1.15)	601	(0.71)	4 968	(1.20)	1 740	(0.69)	501	(1.14)
2001	859	(1.50)	3 600	(1.17)	3 203	(0.94)	22 805	(0.64)	1 020	(0.83)	699	(1.14)	7 263	(1.87)	1 625	(2.97)	376	(0.92)
2002	745	(1.16)	3 220	(0.99)	9 143	(0.62)	34 043	(0.85)	1 565	(1.42)	371	(0.99)	8 375	(1.42)	3 629	(0.94)	236	(1.29)
2003	1 043	(0.99)	10 025	(1.83)	10 967	(0.58)	16 230	(0.39)	1 366	(1.14)	881	(1.78)	10 157	(1.06)	975	(0.88)	307	(1.61)
2004	681	(0.91)	6 810	(1.15)	12 196	(1.24)	32 647	(1.79)	2 143	(1.33)	935	(0.78)	17 133	(0.68)	1 320	(0.89)	394	(0.92)

REFERENCES

Carrit, D.E. and Carpenter, J.H. 1966. Comparison and evaluation of currently employed modifications of the Winkler method for determining dissolved oxygen in sea water, NASCO Report J. Mar. Res. 24: 286-310.

Cochran, 1977. Sampling techniques, 3rd edition. John Wiley & Sons, Chichester, pp. 428.

R. 1.7.1 http://cran.r-project.org/

Zar, J.H. 1999. *Biostatistical analysis*, 4th edition. Pretice-Hall International, New Jersey 07458.

ANNEX I Records of fishing stations

PROJECT STATION:3278
DATE:14/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1711
start stop duration Long E 1144
TIME :05:43:16 06:13:16 30 (min) Purpose code: 3
LOG :5960.95 5962.34 1.38 Area code : 1
FDEPTH: 27 25 GearCond.code:
BDEPTH: 27 25 Validity code:
Towing dir: 360ø Wire out: 120 m Speed: 30 kn*10

Sorted: 72 Kg Total catch: 4076.64 CATCH/HOUR: 8153.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Engraulis encrasicolus	5318.10	276564	65.23	
Trachurus trecae	2314.20	92112	28.38	6829
Sardinops ocellatus	318.06	7638	3.90	6830
Vanstraelenia chirophthalmus	125.40	6384	1.54	
Atractoscion aequidens	57.00	342	0.70	
Merluccius capensis	20.52	342	0.25	
Total	8153.28		100.00	

PROJECT STATION:3279
DATE:14/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1710
start stop duration Long E 1142
TIME :07:16:52 07:48:29 32 (min) Purpose code: 3
LOG :5966.55 5968.07 1.51 Area code : 1
FDEPTH: 45 42 GearCond.code:
BDEPTH: 45 42 Validity code:
Towing dir: 360ø Wire out: 170 m Speed: 30 kn*10

Sorted: 9 Kg Total catch: 9.63 CATCH/HOUR: 18.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sepia officinalis hierredda	9.68	32	53.60	
Merluccius capensis	4.88	71	27.02	6831
Trachurus trecae	3.51	30	19.44	6832
Total	18.07		100.06	

PROJECT STATION:3280
DATE:14/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1712
start stop duration Long E 1138
TIME :09:09:48 09:39:18 30 (min) Purpose code: 3
LOG :5977.14 5978.66 1.51 Area code : 1
FDEPTH: 88 86 GearCond.code:
BDEPTH: 88 86 Validity code:
Towing dir: 355ø Wire out: 280 m Speed: 30 kn*10

Sorted: 24 Kg Total catch: 23.84 CATCH/HOUR: 47.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	41.40	656	86.83	6833
Myliobatis aquila	5.44	2	11.41	
Dicologoglossa cuneata	0.44	18	0.92	
Squilla mantis	0.26	22	0.55	
GOBIIDAE	0.10	22	0.21	
Maja squinado	0.04	4	0.08	
Total	47.68		100.00	

PROJECT STATION:3281
DATE:14/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1713
start stop duration Long E 1131
TIME :11:03:18 11:13:39 10 (min) Purpose code: 3
LOG :5988.40 5988.89 0.48 Area code : 1
FDEPTH: 133 132 GearCond.code:
BDEPTH: 133 132 Validity code:
Towing dir: 360ø Wire out: 430 m Speed: 30 kn*10

Sorted: 106 Kg Total catch: 5498.85 CATCH/HOUR: 32993.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	28795.80	766122	87.28	6834
Dentex macrophthalmus	2956.80	31434	8.96	6836
Merluccius capensis	1059.00	7764	3.21	6835
Pterothrissus belloci	181.50	1848	0.55	
Total	32993.10		100.00	

PROJECT STATION:3282
DATE:14/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1713
start stop duration Long E 1129
TIME :12:18:25 12:23:53 5 (min) Purpose code: 3
LOG :5993.55 5993.82 0.27 Area code : 1
FDEPTH: 149 149 GearCond.code:
BDEPTH: 149 149 Validity code: 3
Towing dir: 360ø Wire out: 470 m Speed: 30 kn*10

Sorted: 100 Kg Total catch: 3198.40 CATCH/HOUR: 38380.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	33715.20	995364	87.84	6837
Dentex macrophthalmus	2169.60	20664	5.65	6838
Merluccius capensis	2012.16	8028	5.24	6839
Pterothrissus belloci	195.84	2256	0.51	
Trigla lyra	161.28	372	0.42	
Squalus megalops	126.72	372	0.33	
Total	38380.80		99.99	

PROJECT STATION:3283
DATE:14/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1712
start stop duration Long E 1125
TIME :13:32:53 13:48:56 16 (min) Purpose code: 3
LOG :6000.28 6001.11 0.82 Area code : 1
FDEPTH: 177 171 GearCond.code:
BDEPTH: 177 171 Validity code:
Towing dir: 360ø Wire out: 570 m Speed: 30 kn*10

Sorted: 109 Kg Total catch: 591.49 CATCH/HOUR: 2218.09

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	819.00	2993	36.92	6840
Dentex macrophthalmus	553.61	4646	24.96	6843
Trachurus capensis	444.94	9371	20.06	6842
Trachurus trecae	367.76	5513	16.58	6841
Squalus megalops	24.56	56	1.11	
Pterothrissus belloci	2.59	26	0.12	
Helicolenus dactylopterus	2.33	128	0.11	
Aulopus cadenati	1.76	15	0.08	
Synagrops microlepis	1.16	510	0.05	
Trichiurus lepturus	0.38	4	0.02	
Total	2218.09		100.01	

PROJECT STATION:3284
DATE:14/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1713
start stop duration Long E 1121
TIME :15:41:15 16:07:45 27 (min) Purpose code: 3
LOG :6013.59 6014.91 1.32 Area code : 1
FDEPTH: 319 315 GearCond.code:
BDEPTH: 319 315 Validity code:
Towing dir: 350ø Wire out: 960 m Speed: 30 kn*10

Sorted: 142 Kg Total catch: 768.30 CATCH/HOUR: 1707.33

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	1138.33	1580	66.67	6844
Helicolenus dactylopterus	246.44	7389	14.43	
Scorpaena normani	204.89	7840	12.00	
Nezumia sp.	32.42	1198	1.90	
Dentex macrophthalmus	29.56	102	1.73	6845
Pterothrissus belloci	21.78	109	1.28	
Myliobatis aquila	17.42	227	1.02	
Laemonema laureysi	8.87	280	0.52	
Raja miraletus	6.69	9	0.39	
Merluccius polli	0.93	24	0.05	
Total	1707.33		99.99	

PROJECT STATION:3285
DATE:14/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1714
start stop duration Long E 1117
TIME :18:08:38 18:38:19 30 (min) Purpose code: 3
LOG :6025.67 6027.13 1.45 Area code : 1
FDEPTH: 525 521 GearCond.code:
BDEPTH: 525 521 Validity code:
Towing dir: 30ø Wire out:1400 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 306.33 CATCH/HOUR: 612.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Malacocephalus laevis	196.80	7280	32.12	
Helicolenus dactylopterus	177.92	576	29.04	
Coelorinchus sp.	136.00	1008	22.20	
Stomias boa boa	32.00	3488	5.22	
Todaropsis sp.	17.60	16	2.87	
Merluccius capensis	9.70	10	1.58	
Chaceon maritae	6.68	28	1.09	
Hoplostethus cadenati	6.08	256	0.99	
Lophius vaillanti	5.90	2	0.96	
Nematocarcinus africanus	5.76	1568	0.94	
Cruriraja parcomaculata	5.22	4	0.85	
Chaceon maritae, male	4.06	12	0.66	6846
Ebinania costaecanarie	3.84	32	0.63	
Chaceon maritae, female	2.56	16	0.42	6847
Laemonema laureysi	1.12	16	0.18	
MYCTOPHIDAE	0.96	352	0.16	
Centrophorus uyato	0.46	2	0.08	
Total	612.66		99.99	

PROJECT STATION:3286
DATE:14/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1716
start stop duration Long E 1114
TIME :20:51:54 21:22:44 31 (min) Purpose code: 3
LOG :6039.49 6041.00 1.50 Area code : 1
FDEPTH: 655 658 GearCond.code:
BDEPTH: 655 658 Validity code:
Towing dir: 5ø Wire out:1720 m Speed: 30 kn*10

Sorted: 20 Kg Total catch: 157.74 CATCH/HOUR: 305.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nezumia milleri	156.35	5257	51.21	
Trachyrincus scabrus	90.64	352	29.69	
Merluccius capensis	13.70	12	4.49	6850
Yarrella blackfordi	8.94	379	2.93	
Hoplostethus cadenati	8.40	257	2.75	
Paromola cuvieri	7.41	6	2.43	
Illex coindetii	6.29	8	2.06	
Bathyuroconger vicinus	2.30	54	0.75	
Chaceon maritae	2.13	8	0.70	
ALEPOCEPHALIDAE	2.03	163	0.66	
Allocyttus verrucosus *	1.90	14	0.62	
LITHODIDAE *	1.88	15	0.62	
Notacanthus sexspinis	1.08	27	0.35	
Aristeus varidens, female	0.74	124	0.24	6849
Raja ravidula	0.66	2	0.22	
MYCTOPHIDAE	0.54	54	0.18	
Aristeus varidens, male	0.15	54	0.05	6848
Nematocarcinus africanus	0.06	15	0.02	
Glyphus marsupialis	0.04	8	0.01	
Plesionika acanthurus	0.04	15	0.01	
Heterocarpus grimaldii	0.02	2	0.01	
Total	305.30		100.00	

PROJECT STATION:3287

DATE:15/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1704
start stop duration Long E 1116
TIME :00:17:49 00:47:23 30 (min) Purpose code: 3
LOG :6061.34 6062.92 1.58 Area code : 1
FDEPTH: 684 636 GearCond.code:
BDEPTH: 684 636 Validity code:
Towing dir: 350ø Wire out:1710 m Speed: 31 kn*10

Sorted: 28 Kg Total catch: 268.22 CATCH/HOUR: 536.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nezumia milleri	214.20	5130	39.93	
Trachyrincus scabrus	121.86	540	22.72	
ALEPOCEPHALIDAE	33.30	1314	6.21	
Yarrella blackfordi	32.76	1692	6.11	
Trachurus capensis	29.52	432	5.50	6851
Hoplostethus cadenati	23.58	684	4.40	
Merluccius capensis	21.10	16	3.93	6854
MELANOSTOMIATIDAE	17.64	738	3.29	
Benthodesmus tenuis	14.04	36	2.62	
Raja ravidula	8.10	18	1.51	
Bathyuroconger vicinus	5.94	72	1.11	
Aristeus varidens, female	5.04	756	0.94	6853
DICERATIIDAE	2.52	36	0.47	
GONOSTOMATIDAE	1.98	324	0.37	
PANDALIDAE	1.44	576	0.27	
Plesiopenaeus edwardsianus	1.08	72	0.20	
Nemichthys scolopaceus	0.90	54	0.17	
Lamprogrammus exutus	0.72	36	0.13	
Aristeus varidens, male	0.18	90	0.03	6852
Plesionika martia	0.18	18	0.03	
Nematocarcinus africanus	0.18	18	0.03	
Heterocarpus ensifer	0.18	18	0.03	
Total	536.44		100.00	

PROJECT STATION:3288

DATE:15/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1704
start stop duration Long E 1118
TIME :02:43:40 03:13:34 30 (min) Purpose code: 3
LOG :6071.79 6073.26 1.46 Area code : 1
FDEPTH: 441 452 GearCond.code:
BDEPTH: 441 452 Validity code:
Towing dir: 340ø Wire out:1200 m Speed: 30 kn*10

Sorted: 15 Kg Total catch: 195.45 CATCH/HOUR: 390.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	163.92	288	41.93	6856
Helicolenus dactylopterus	138.24	960	35.36	
Laemonema laureysi	40.32	144	10.31	
Aristeus varidens, female	15.12	816	3.87	6859
Trachurus trecae	15.12	168	3.87	6855
Nezumia micronychodon	8.34	352	2.13	
Hoplostethus cadenati	3.46	132	0.89	
MYCTOPHIDAE	2.90	106	0.74	
Stomias sp.	1.88	250	0.48	
Aristeus varidens, male	1.20	288	0.31	6858
PARALEPIDIDAE	0.12	4	0.03	
GOBIIDAE	0.12	4	0.03	
Callinectes pallidus	0.08	4	0.02	
Yarrella blackfordi	0.08	4	0.02	
Total	390.90		99.99	

PROJECT STATION:3289

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1702
start stop duration Long E 1119
TIME :05:35:45 06:00:38 25 (min) Purpose code: 3
LOG :6088.00 6089.21 1.20 Area code : 1
FDEPTH: 261 274 GearCond.code:
BDEPTH: 261 274 Validity code:
Towing dir: 350ø Wire out: 750 m Speed: 30 kn*10

Sorted: 230 Kg Total catch: 1286.83 CATCH/HOUR: 3088.39

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	1683.60	14566	54.51	6861
Chlorophthalmus atlanticus	936.48	26774	30.32	
Helicolenus dactylopterus	220.97	5921	7.15	
Dentex macrophthalmus	100.68	350	3.26	6860
Nezumia sp.	47.69	1711	1.54	
Pterothrissus belloci	38.62	247	1.25	
Synagrops microlepis	25.27	2513	0.82	
Trachurus capensis	12.55	38	0.41	6862
Pontinus sp.	7.78	53	0.25	
GALATHEIDAE *	7.78	919	0.25	
Parapenaeus longirostris, fem.	5.04	919	0.16	
Parapenaeus longirostris, male	1.94	389	0.06	
Total	3088.40		99.98	

PROJECT STATION:3290

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1704
start stop duration Long E 1125
TIME :07:52:49 08:14:13 21 (min) Purpose code: 3
LOG :6101.77 6102.83 1.06 Area code : 1
FDEPTH: 137 134 GearCond.code: 7
BDEPTH: 137 134 Validity code: 3
Towing dir: 360ø Wire out: 400 m Speed: 30 kn*10

Sorted: 3 Kg Total catch: 394.28 CATCH/HOUR: 1126.51

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	404.86	4251	35.94	
Merluccius capensis	337.26	3986	29.94	
Trachurus trecae	306.46	5669	27.20	
Pterothrissus belloci	46.06	620	4.09	
Atractoscion aequidens	31.89	266	2.83	
Total	1126.53		100.00	

PROJECT STATION:3291

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1700
start stop duration Long E 1128
TIME :09:20:16 09:40:24 20 (min) Purpose code: 3
LOG :6107.84 6108.84 1.01 Area code : 1
FDEPTH: 111 116 GearCond.code:
BDEPTH: 111 116 Validity code:
Towing dir: 360ø Wire out: 340 m Speed: 30 kn*10

Sorted: 101 Kg Total catch: 3498.60 CATCH/HOUR: 10495.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	9846.90	189207	93.82	6863
Dentex macrophthalmus	439.95	4065	4.19	6864
Atractoscion aequidens	84.00	105	0.80	
Merluccius capensis	61.95	207	0.59	
Zeus faber	42.00	102	0.40	
Trigla lyra	21.00	99	0.20	
Total	10495.80		100.00	

PROJECT STATION:3292

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1700
start stop duration Long E 1135
TIME :11:05:16 11:38:01 33 (min) Purpose code: 3
LOG :6118.18 6119.89 1.73 Area code : 1
FDEPTH: 95 95 GearCond.code:
BDEPTH: 95 95 Validity code:
Towing dir: 360ø Wire out: 320 m Speed: 20 kn*10

Sorted: 7 Kg Total catch: 7.08 CATCH/HOUR: 12.87

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	12.73	211	98.91	6865
Dentex macrophthalmus	0.15	2	1.17	
Total	12.88		100.08	

PROJECT STATION:3293

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1700
start stop duration Long E 1139
TIME :12:44:29 13:14:16 30 (min) Purpose code: 3
LOG :6126.79 6128.38 1.93 Area code : 1
FDEPTH: 60 60 GearCond.code:
BDEPTH: 60 60 Validity code:
Towing dir: 360ø Wire out: 220 m Speed: 30 kn*10

Sorted: 66 Kg Total catch: 1206.64 CATCH/HOUR: 2413.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	1772.64	38868	73.45	6868
Trachurus capensis	460.08	10748	19.06	6866
Merluccius capensis	97.76	1594	4.05	6867
Dicologoglossa cuneata	35.04	1252	1.45	
Sepia officinalis hierredda	25.44	36	1.05	
Atractoscion aequidens	22.32	36	0.92	
Total	2413.28		99.98	

PROJECT STATION:3294

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1659
start stop duration Long E 1143
TIME :14:10:35 14:40:27 30 (min) Purpose code: 3
LOG :6134.45 6136.08 1.62 Area code : 1
FDEPTH: 23 22 GearCond.code:
BDEPTH: 23 22 Validity code:
Towing dir: 360ø Wire out: 120 m Speed: 30 kn*10

Sorted: 6 Kg Total catch: 124.24 CATCH/HOUR: 248.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Illex coindetii	124.20	638	49.98	
Trachurus trecae	117.50	4442	47.29	6869
Callorhinchus capensis	3.38	2	1.36	
Trigla lyra	1.58	4	0.64	
Dicologoglossa cuneata	1.10	28	0.44	
Pistularia petimba	0.72	2	0.29	
Total	248.48		100.00	

PROJECT STATION:3295

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1648
start stop duration Long E 1141
TIME :15:59:38 16:15:02 15 (min) Purpose code: 3
LOG :6146.00 6146.75 0.75 Area code : 1
FDEPTH: 25 25 GearCond.code:
BDEPTH: 25 25 Validity code:
Towing dir: 360ø Wire out: 120 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 2289.60 CATCH/HOUR: 9158.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	9136.80	231408	99.76	6870
Myliobatis aquila	17.80	8	0.19	
Raja miraletus	3.72	4	0.04	
Total	9158.32		99.99	

PROJECT STATION:3296

DATE:15/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1649

	start	stop	duration			Long E 1135
TIME	:17:16:32	17:36:39	20	(min)	Purpose code:	3
LOG	:6154.80	6155.91	1.11		Area code :	1
FDEPTH:	95	95			GearCond.code:	
BDEPTH:	95	95			Validity code:	

Towing dir: 360ø Wire out: 300 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 1011.17 CATCH/HOUR: 3033.51

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	1586.70	25689	52.31	6873
Dentex macrophthalmus	1008.60	18942	33.25	6872
Merluccius capensis	295.20	3690	9.73	6871
Octopus vulgaris	141.45	123	4.66	
Dicologoglossa cuneata	1.56	27	0.05	
Total	3033.51		100.00	

PROJECT STATION:3297

DATE:15/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1637

	start	stop	duration			Long E 1118
TIME	:22:52:48	23:15:12	22	(min)	Purpose code:	3
LOG	:6198.54	6199.67	1.11		Area code :	1
FDEPTH:	604	610			GearCond.code:	
BDEPTH:	604	610			Validity code:	

Towing dir: 10ø Wire out:1600 m Speed: 30 kn*10

Sorted: 26 Kg Total catch: 77.81 CATCH/HOUR: 212.21

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nezumia milleri	65.13	1113	30.69	
Hoplostethus cadenati	40.83	1931	19.24	
Trachyrincus scabrus	40.09	205	18.89	
Illex coindetii	18.65	33	8.79	
Benthodesmus tenuis	7.20	115	3.39	
Merluccius capensis	6.63	8	3.12	
Aristeus varidens, female	6.46	769	3.04	6875
Diplophos sp.	6.46	90	3.04	
PANDALIDAE	4.83	2561	2.28	
ALEPOCEPHALIDAE	4.58	196	2.16	
Ebinania costaecanarie	3.76	16	1.77	
Etmopterus pusillus	1.69	8	0.80	
Helicolenus dactylopterus	1.23	16	0.58	
CHAULIODONTIDAE	1.15	65	0.54	
Aristeus varidens, male	0.82	139	0.39	6874
Laemonema laureysi	0.82	8	0.39	
MYCTOPHIDAE	0.57	344	0.27	
Nemichthys scolopaceus	0.41	41	0.19	
Synaphobranchus kaupii	0.33	16	0.16	
MELANOCETIDAE	0.25	8	0.12	
Raja ravidula	0.16	16	0.08	
Lamprogrammus exutus	0.16	16	0.08	
Total	212.21		100.01	

PROJECT STATION:3298

DATE:16/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1650

	start	stop	duration			Long E 1118
TIME	:08:08:07	08:38:18	30	(min)	Purpose code:	3
LOG	:6256.20	6257.75	1.53		Area code :	1
FDEPTH:	332	353			GearCond.code:	
BDEPTH:	332	353			Validity code:	

Towing dir: 360ø Wire out: 920 m Speed: 30 kn*10

Sorted: 21 Kg Total catch: 413.77 CATCH/HOUR: 827.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	317.76	33060	38.40	
Dentex macrophthalmus	197.50	830	23.87	6877
Merluccius capensis	169.00	1226	20.42	6876
Pterothrissus belloci	53.02	228	6.41	
Heptranchias perlo	22.70	6	2.74	
Laemonema laureysi	20.80	542	2.51	
Nezumia sp.	17.10	598	2.07	
Parapenaeus longirostris, fem.	13.68	712	1.65	6879
Parapenaeus longirostris, male	11.96	570	1.45	6878
Synagrops microlepis	2.88	314	0.35	
Sepia sp.	1.14	28	0.14	
Total	827.54		100.01	

PROJECT STATION:3299

DATE:16/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1639

	start	stop	duration			Long E 1124
TIME	:10:25:24	10:50:55	26	(min)	Purpose code:	3
LOG	:6269.49	6270.81	1.32		Area code :	1
FDEPTH:	126	125			GearCond.code:	
BDEPTH:	126	125			Validity code:	

Towing dir: 355ø Wire out: 410 m Speed: 30 kn*10

Sorted: 94 Kg Total catch: 1116.55 CATCH/HOUR: 2576.65

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	1078.80	9323	41.87	6880
Dentex macrophthalmus	631.75	5675	24.52	6882
Trachurus capensis	485.86	6263	18.86	6881
Merluccius capensis	174.25	669	6.76	6883
Zeus faber	65.31	81	2.53	
Squalus megalops	38.08	30	1.48	
Bathyraya sp.	31.96	2	1.24	
Pterothrissus belloci	29.98	215	1.16	
Trigla lyra	20.33	28	0.79	
Pagellus bellottii	20.33	53	0.79	
Total	2576.65		100.00	

PROJECT STATION:3300

DATE:16/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1635

	start	stop	duration			Long E 1126
TIME	:11:46:54	12:11:33	25	(min)	Purpose code:	3
LOG	:6274.72	6276.00	1.28		Area code :	1
FDEPTH:	118	116			GearCond.code:	
BDEPTH:	118	116			Validity code:	

Towing dir: 360ø Wire out: 390 m Speed: 30 kn*10

Sorted: 87 Kg Total catch: 946.94 CATCH/HOUR: 2272.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	1231.87	9799	54.20	6885
Trachurus capensis	643.42	8033	28.31	6884
Dentex macrophthalmus	202.10	2098	8.89	6886
Zeus faber	54.22	127	2.39	
Merluccius capensis	31.97	154	1.41	
Raja miraletus	30.43	26	1.34	
Bathyraya sp.	29.52	2	1.30	
Illex coindetii	12.53	103	0.55	
Sardinops ocellatus	10.49	127	0.46	
Arius parkii	9.72	26	0.43	
Squalus megalops	9.48	12	0.42	
Trigla lyra	6.91	77	0.30	
Total	2272.66		100.00	

PROJECT STATION:3301

DATE:16/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1635

	start	stop	duration			Long E 1138
TIME	:13:58:10	14:26:14	28	(min)	Purpose code:	3
LOG	:6289.06	6290.57	1.75		Area code :	1
FDEPTH:	86	86			GearCond.code:	
BDEPTH:	86	86			Validity code:	

Towing dir: 360ø Wire out: 300 m Speed: 30 kn*10

Sorted: 95 Kg Total catch: 909.28 CATCH/HOUR: 1948.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	679.63	16213	34.88	6887
Merluccius capensis	616.76	686	31.65	
Dentex macrophthalmus	527.27	13843	27.06	6888
Sepiella ornata	43.78	96	2.25	
Illex coindetii	33.36	617	1.71	
Zeus faber	22.95	58	1.18	
Gymnura altavela	20.46	2	1.05	
Trigla lyra	4.24	19	0.22	
Total	1948.45		100.00	

PROJECT STATION:3302

DATE:16/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1624

	start	stop	duration			Long E 1146
TIME	:16:00:24	16:30:08	30	(min)	Purpose code:	3
LOG	:6303.33	6304.85	1.51		Area code :	1
FDEPTH:	20	21			GearCond.code:	
BDEPTH:	20	21			Validity code:	

Towing dir: 360ø Wire out: 100 m Speed: 30 kn*10

Sorted: Kg Total catch: 24.88 CATCH/HOUR: 49.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	40.40	2058	81.19	6890
Pagellus bellottii	3.60	84	7.23	6889
Illex coindetii	1.60	2	3.22	
Dentex barnardi	0.92	4	1.85	
Sardinops ocellatus	0.88	12	1.77	
Zeus faber	0.84	2	1.69	
Merluccius capensis	0.76	2	1.53	
Pistularia tabacaria	0.76	2	1.53	
Total	49.76		100.01	

PROJECT STATION:3303

DATE:16/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1624

	start	stop	duration			Long E 1143
TIME	:17:08:46	17:28:49	20	(min)	Purpose code:	3
LOG	:6309.58	6310.59	1.02		Area code :	1
FDEPTH:	49	49			GearCond.code:	
BDEPTH:	49	49			Validity code:	

Towing dir: 360ø Wire out: 170 m Speed: 30 kn*10

Sorted: 69 Kg Total catch: 2654.88 CATCH/HOUR: 7964.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	7230.30	172674	90.78	6891
Dentex macrophthalmus Juv.	395.01	17670	4.96	6892
Pagellus bellottii	225.21	2079	2.83	6894
Merluccius capensis	57.75	693	0.73	6893
Illex coindetii	48.51	348	0.61	
Sepia orbignyana	7.86	9	0.10	
Total	7964.64		100.01	

PROJECT STATION:3304

DATE:17/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1613

	start	stop	duration			Long E 1136
TIME	:05:27:12	05:57:20	30	(min)	Purpose code:	3
LOG	:6374.63	6376.12	1.48		Area code :	1
FDEPTH:	73	71			GearCond.code:	
BDEPTH:	73	71			Validity code:	

Towing dir: 360ø Wire out: 240 m Speed: 30 kn*10

Sorted: Kg Total catch: 120.52 CATCH/HOUR: 241.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	192.50	1212	79.86	6895
Dentex macrophthalmus	14.28	590	5.92	6896
Zeus faber	10.22	28	4.24	
Trachurus trecae, juvenile	6.78	132	2.81	6897
Centrophorus uyato	5.36	8	2.22	
Loligo vulgaris	3.04	30	1.26	
Illex coindetii	1.98	92	0.82	
Trigla lyra	1.84	16	0.76	
Pagellus bellottii	1.80	10	0.75	6899
Acanthurus monroviae	1.00	2	0.41	
GOBIIDAE	0.98	338	0.41	
Dicologoglossa cuneata	0.34	46	0.14	
Umbrina ronchus	0.30	2	0.12	
Citharus linguatula	0.28	8	0.12	
Dentex angolensis	0.22	4	0.09	
Todaropsis eblanae	0.12	2	0.05	
Total	241.04		99.98	

PROJECT STATION:3305

DATE:17/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1613
start stop duration Long E 1142
TIME :07:06:15 07:36:04 30 (min) Purpose code: 3
LOG :6383.82 6385.32 1.51 Area code : 1
FDEPTH: 54 54 GearCond.code:
BDEPTH: 54 54 Validity code:
Towing dir: 360ø Wire out: 170 m Speed: 30 kn*10

Sorted: 122 Kg Total catch: 1140.15 CATCH/HOUR: 2280.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	1261.42	37524	55.32	6903
Sepia officinalis hierredda	301.20	522	13.21	
Pagellus bellottii	223.92	4142	9.82	6901
Dentex macrophthalmus	190.34	8808	8.35	6900
Dentex canariensis	100.76	522	4.42	6902
Loligo vulgaris	70.20	504	3.08	
Myliobatis aquila	43.28	18	1.90	
Spondyliosoma cantharus	35.46	280	1.56	
Zeus faber	21.46	38	0.94	
Lithognathus mormyrus	10.82	38	0.47	
Squalus megalops	9.42	14	0.41	
Merluccius capensis	6.34	38	0.28	
Illex coindetii	3.92	38	0.17	
Galeorhinus galeus	1.76	2	0.08	
Total	2280.30		100.01	

PROJECT STATION:3306

DATE:17/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1611
start stop duration Long E 1146
TIME :08:35:39 08:56:47 21 (min) Purpose code: 3
LOG :6390.70 6391.74 1.03 Area code : 1
FDEPTH: 35 36 GearCond.code:
BDEPTH: 35 36 Validity code:
Towing dir: 360ø Wire out: 130 m Speed: 30 kn*10

Sorted: 12 Kg Total catch: 2994.41 CATCH/HOUR: 8555.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	4175.43	34143	48.80	6904
Unidentified fish	3864.00	21291	45.16	
Pagellus bellottii	188.29	4491	2.20	6905
Dentex macrophthalmus	93.71	4491	1.10	6906
Loligo vulgaris	88.29	237	1.03	
Lithognathus mormyrus	61.49	237	0.72	
Dicologoglossa cuneata	38.63	2046	0.45	
Octopus vulgaris	38.63	80	0.45	
Merluccius capensis	5.51	80	0.06	
Trachinus armatus	1.57	80	0.02	
Total	8555.55		99.99	

PROJECT STATION:3307

DATE:17/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1602
start stop duration Long E 1143
TIME :10:06:55 10:36:41 30 (min) Purpose code: 3
LOG :6399.86 6401.37 1.51 Area code : 1
FDEPTH: 44 41 GearCond.code:
BDEPTH: 44 41 Validity code:
Towing dir: 360ø Wire out: 180 m Speed: 30 kn*10

Sorted: 92 Kg Total catch: 246.44 CATCH/HOUR: 492.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	300.80	9626	61.03	6907
Sepiella ornata	59.50	110	12.07	
Illex coindetii	29.30	678	5.94	
Dentex barnardi	29.12	298	5.91	6908
Pagellus bellottii	16.30	210	3.31	6910
Dentex macrophthalmus	15.22	1030	3.09	6909
Myliobatis aquila	15.14	10	3.07	
Squalus megalops	6.96	10	1.41	
Spondyliosoma cantharus	5.12	38	1.04	
Merluccius polli	4.88	46	0.99	6911
Umbrina canariensis	3.76	52	0.76	6912
Pistularia petimba	3.16	4	0.64	
Scomber japonicus	2.60	10	0.53	
Dicologoglossa cuneata	0.56	18	0.11	
Raja miraletus	0.46	4	0.09	
Total	492.88		99.99	

PROJECT STATION:3308

DATE:19/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1234
start stop duration Long E 1303
TIME :13:56:49 14:26:33 30 (min) Purpose code: 3
LOG :6633.71 6635.21 1.50 Area code : 2
FDEPTH: 770 759 GearCond.code:
BDEPTH: 770 759 Validity code:
Towing dir: 50ø Wire out:1850 m Speed: 30 kn*10

Sorted: 44 Kg Total catch: 76.07 CATCH/HOUR: 152.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	27.60	176	18.14	
Nezumia sp.	19.60	356	12.88	
Yarrella blackfordi	18.92	1104	12.44	
ALEPOCEPHALIDAE	13.80	164	9.07	
Aristeus varidens, female	13.12	782	8.62	
Aristeus varidens, male	13.12	1686	8.62	
C R U S T A C E A N S	9.80	188	6.44	
Lamprogrammus exutus	9.72	28	6.39	
CONGRIDAE	9.04	100	5.94	
Bathyuroconger vicinus	3.96	36	2.60	
Laemonema laureysi	3.92	116	2.58	
Stomias affinis	3.80	112	2.50	
S H R I M P S	2.16	824	1.42	
Triplophos hemingi	1.68	192	1.10	
PASIPHAEIDAE	0.80	62	0.53	
Halosaurus ovenii	0.60	40	0.39	
Plesiopenaeus edwardsianus, m.	0.30	16	0.20	
Etmopterus pusillus	0.20	2	0.13	
Total	152.14		99.99	

PROJECT STATION:3309

DATE:19/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1226
start stop duration Long E 1324
TIME :16:40:13 16:41:34 30 (min) Purpose code: 3
LOG :6656.33 6657.78 1.44 Area code : 2
FDEPTH: 91 91 GearCond.code:
BDEPTH: 91 91 Validity code:
Towing dir: 39ø Wire out: 300 m Speed: 30 kn*10

Sorted: 126 Kg Total catch: 1106.61 CATCH/HOUR: 2213.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Umbrina canariensis	1388.62	3290	62.74	6920
Dentex barnardi	235.40	876	10.64	6919
Citharus linguatula	91.00	1558	4.11	
Dentex macrophthalmus	86.62	734	3.91	6918
Trigla lyra	73.50	612	3.32	
Rhinobatos albomaculatus	60.36	18	2.73	
Pagellus bellottii	52.14	542	2.36	6916
Trichiurus lepturus	45.32	140	2.05	
Dentex angolensis	42.34	384	1.91	6917
Branchiostegus semifasciatus	18.72	16	0.85	
Brotula barbata	17.84	52	0.81	
Torpedo torpedo	17.32	70	0.78	
Pontinus kuhlii	14.70	122	0.66	
Pentheroscion mbizi	13.82	70	0.62	
Zeus faber	12.42	106	0.56	
Atractoscion aequidens	10.50	18	0.47	
Octopus vulgaris	10.50	16	0.47	
Pterothrissus belloci	4.72	34	0.21	
Boops boops	4.72	36	0.21	
Synagrops microlepis	3.84	944	0.17	
Merluccius polli	2.80	106	0.13	6915
Trachurus trecae	2.26	52	0.10	
GOBIIDAE	2.10	980	0.09	
Parapenaeus longirostris, fem.	0.86	156	0.04	6922
Saurida brasiliensis	0.70	104	0.03	
Parapenaeus longirostris, male	0.16	128	0.01	6921
Total	2213.28		99.98	

PROJECT STATION:3310

DATE:20/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1223
start stop duration Long E 1317
TIME :00:31:50 01:01:38 30 (min) Purpose code: 3
LOG :6693.89 6695.41 1.51 Area code : 2
FDEPTH: 736 739 GearCond.code:
BDEPTH: 736 739 Validity code:
Towing dir: 30ø Wire out:1810 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 48.88 CATCH/HOUR: 97.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	17.20	296	17.59	
Lamprogrammus exutus	9.52	36	9.74	
Bathyuroconger vicinus	8.56	192	8.76	
Yarrella blackfordi	8.32	212	8.51	
Aristeus varidens, male	7.16	944	7.32	6923
Aristeus varidens, female	7.16	440	7.32	6924
Chaceon maritae	6.24	12	6.38	
Triplophos hemingi	4.84	420	4.95	
Halosaurus ovenii	4.40	164	4.50	
Chauliodus sloani	3.92	96	4.01	
Merluccius polli	3.02	4	3.09	
Laemonema laureysi	2.88	208	2.95	
POLYCHAELIDAE	2.32	208	2.37	
Synaphobranchus kaupii	2.28	28	2.33	
Bajacalifornia magalops	2.08	60	2.13	
Etmopterus pusillus	1.88	16	1.92	
NOMEIDAE	1.44	4	1.47	
Ebinania costaecanarie	1.16	12	1.19	
UNIDENTIFIED FISH	0.92	208	0.94	
Raja miraletus	0.72	4	0.74	
Etmopterus princeps	0.68	6	0.70	
Plesiopenaeus edwardsianus	0.30	16	0.31	
Glyphus marsupialis	0.28	20	0.29	
Trachipterus trachypterus	0.20	4	0.20	
MELANOCETIDAE	0.12	8	0.12	
Lophius vaillanti	0.12	4	0.12	
Nezumia leonis	0.04	448	0.04	
Total	97.76		99.99	

PROJECT STATION:3311

DATE:20/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1227
start stop duration Long E 1326
TIME :05:32:21 06:02:16 30 (min) Purpose code: 3
LOG :6713.21 6714.72 1.50 Area code : 2
FDEPTH: 60 65 GearCond.code:
BDEPTH: 60 65 Validity code:
Towing dir: 20ø Wire out: 200 m Speed: 30 kn*10

Sorted: 125 Kg Total catch: 949.34 CATCH/HOUR: 1898.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys jubelini	579.80	1536	30.54	6927
Trachurus trecae	261.00	950	13.75	6925
Brachydeuterus auritus	171.36	1016	9.03	6928
Lithognathus mormyrus	159.36	402	8.39	6931
Trichiurus lepturus	120.96	7784	6.37	
Pagellus bellottii	111.36	1084	5.87	6929
Umbrina canariensis	108.96	968	5.74	6926
Boops boops	77.56	8	4.08	
Citharus linguatula	76.92	1266	4.05	
Raja miraletus	34.84	48	1.83	
Pomadasys incisus	32.24	230	1.70	
Synagrops microlepis	31.96	8658	1.68	
Brotula barbata	31.96	66	1.68	
Miracorvina angolensis	29.36	38	1.55	
Torpedo torpedo	17.94	144	0.94	
Dentex barnardi	12.18	182	0.64	6930
Pentheroscion mbizi	7.10	48	0.37	
Stromateus fiatola	7.00	8	0.37	
Scomberomorus tritor	4.50	8	0.24	
Zeus faber	3.74	28	0.20	
Chelidonichthys gabonensis	3.54	18	0.19	
Dicologoglossa cuneata	2.58	38	0.14	
Branchiostegus semifasciatus	2.58	58	0.14	
Selene dorsalis	2.56	8	0.13	
Parapenaeus longirostris, fem.	2.48	768	0.13	6933
Bembrops greyi	2.26	144	0.12	
Parapenaeus longirostris, male	1.44	528	0.08	6932
Unidentified fish	1.14	450	0.06	
Total	1898.68		100.01	

PROJECT STATION:3312

DATE:20/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1224
start stop duration Long E 1322
TIME :07:09:42 07:39:27 30 (min) Purpose code: 3
LOG :6721.43 6722.90 1.47 Area code : 2
FDEPTH: 110 111 GearCond.code:
BDEPTH: 110 111 Validity code:
Towing dir: 10ø Wire out: 300 m Speed: 30 kn*10

Sorted: 161 Kg Total catch: 741.06 CATCH/HOUR: 1482.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	759.46	2834	51.24	6935
Umbrina canariensis	185.38	524	12.51	6937
Trichiurus lepturus	170.66	350	11.51	
Atractoscion aequidens	124.20	82	8.38	6934
Boops boops	96.60	1242	6.52	
Raja miraletus	35.24	46	2.38	
Spicara alta	26.12	110	1.76	6936
Anthias anthias	22.44	156	1.51	
Scorpaena stephanica	15.84	28	1.07	
Dentex barnardi	14.44	46	0.97	
Dentex angolensis	12.70	36	0.86	
Erythrocles monodi	5.98	10	0.40	
Zeus faber	5.70	18	0.38	
Hoplostethus mediterraneus	3.04	10	0.21	
Chaetodon hoefleri	2.94	18	0.20	
Chelidonichthys gabonensis	1.38	10	0.09	
Total	1482.12		99.99	

PROJECT STATION:3313

DATE:20/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1217
start stop duration Long E 1334
TIME :09:42:41 10:12:30 30 (min) Purpose code: 3
LOG :6736.52 6738.01 1.48 Area code : 2
FDEPTH: 52 45 GearCond.code:
BDEPTH: 52 45 Validity code:
Towing dir: 50ø Wire out: 170 m Speed: 30 kn*10

Sorted: 165 Kg Total catch: 660.40 CATCH/HOUR: 1320.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys incisus	352.40	6108	26.68	
Trachurus trecae	274.40	8098	20.78	6938
Pagellus bellottii	146.80	1468	11.11	6940
Galeoides decadactylus	145.20	664	10.99	
Brachydeuterus auritus	121.20	3166	9.18	
Dentex barnardi	66.40	488	5.03	6939
Chloroscombrus chrysurus	47.60	416	3.60	
Pomadasys jubelini	36.40	40	2.76	
Selene dorsalis	26.24	592	1.99	
Torpedo torpedo	13.92	16	1.05	
Zeus faber	12.80	24	0.97	
Umbrina canariensis	12.56	96	0.95	
Sarda sarda	8.48	8	0.64	
Lagocephalus laevigatus	7.52	16	0.57	
Argyrosomus hololepidotus	7.12	8	0.54	
Chaetodon hoefleri	5.92	32	0.45	
Sardinella maderensis	5.92	160	0.45	
Plectorhinchus mediterraneus	5.52	16	0.42	
Raja miraletus	4.56	8	0.35	
Trichiurus lepturus	4.00	32	0.30	
Citharus linguatula	3.36	72	0.25	
Pteroscion peli	2.88	32	0.22	
Lithognathus mormyrus	2.40	8	0.18	
Boops boops	1.68	24	0.13	
Dentex macrophthalmus	1.52	8	0.12	
Dicologoglossa cuneata	1.36	24	0.10	
Pseudupeneus prayensis	1.12	8	0.08	
Trigla lyra	0.56	8	0.04	
Bembrops heterurus	0.40	8	0.03	
Epinephelus aeneus	0.32	8	0.02	
Sardinella aurita	0.24	8	0.02	
Total	1320.80		100.00	

PROJECT STATION:3314

DATE:20/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1216
start stop duration Long E 1332
TIME :11:09:58 11:39:38 30 (min) Purpose code: 3
LOG :6743.68 6745.20 1.51 Area code : 2
FDEPTH: 75 74 GearCond.code:
BDEPTH: 75 74 Validity code:
Towing dir: 30ø Wire out: 260 m Speed: 30 kn*10

Sorted: 61 Kg Total catch: 306.82 CATCH/HOUR: 613.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	311.50	1192	50.76	
Pomadasys incisus	53.00	380	8.64	
Chelidonichthys capensis	40.40	150	6.58	
Dentex barnardi	39.70	220	6.47	6943
Pagellus bellottii	36.00	260	5.87	6945
Umbrina canariensis	24.00	240	3.91	6944
Octopus vulgaris	19.70	10	3.21	
Trachurus trecae	13.50	170	2.20	6941
Zeus faber	11.40	50	1.86	
Boops boops	10.50	140	1.71	
Dentex angolensis	8.40	140	1.37	6942
Loligo vulgaris	8.20	3280	1.34	
Stromateus fiatola	7.50	10	1.22	
Epinephelus goreensis	7.10	10	1.16	
Citharus linguatula	6.40	150	1.04	
Sepiella ornata	6.24	6	1.02	
Brachydeuterus auritus	2.80	20	0.46	
Pseudupeneus prayensis	2.30	20	0.37	
Chaetodon hoefleri	2.10	10	0.34	
Selene dorsalis	2.10	10	0.34	
Sarpa salpa	0.80	10	0.13	
Total	613.64		100.00	

PROJECT STATION:3315

DATE:20/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1219
start stop duration Long E 1327
TIME :13:26:04 13:53:37 28 (min) Purpose code: 3
LOG :6755.23 6756.60 1.36 Area code : 2
FDEPTH: 95 98 GearCond.code:
BDEPTH: 95 98 Validity code:
Towing dir: 5ø Wire out: 310 m Speed: 30 kn*10

Sorted: 124 Kg Total catch: 396.78 CATCH/HOUR: 850.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	648.69	1924	76.29	
Umbrina canariensis	57.94	184	6.81	6951
Trachurus trecae	54.51	1502	6.41	6946
Dentex gibbosus	20.23	69	2.38	6950
Boops boops	18.45	234	2.17	
Chelidonichthys capensis	13.37	56	1.57	
Dentex angolensis	12.00	131	1.41	6949
Zeus faber	8.70	28	1.02	
Pagellus bellottii	8.57	81	1.01	6947
Dentex macrophthalmus	6.09	47	0.72	6948
Citharus linguatula	1.16	6	0.14	
Illex coindetii	0.54	34	0.06	
Total	850.25		99.99	

PROJECT STATION:3316

DATE:20/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1218
start stop duration Long E 1324
TIME :15:07:07 15:37:30 30 (min) Purpose code: 3
LOG :6762.38 6763.98 1.58 Area code : 2
FDEPTH: 109 109 GearCond.code:
BDEPTH: 109 109 Validity code:
Towing dir: 20ø Wire out: 340 m Speed: 30 kn*10

Sorted: 71 Kg Total catch: 212.10 CATCH/HOUR: 424.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Boops boops	237.00	2948	55.87	
Dentex macrophthalmus	107.70	848	25.39	6953
Dentex angolensis	13.20	72	3.11	6954
Sparus pagrus africanus *	13.08	18	3.08	
Pagellus bellottii	11.22	72	2.64	6952
Trichiurus lepturus	9.72	18	2.29	
Octopus vulgaris	5.70	6	1.34	
Zeus faber	4.80	12	1.13	
Chelidonichthys capensis	4.56	30	1.07	
Umbrina canariensis	4.32	18	1.02	6955
Branchiostegus semifasciatus	2.94	6	0.69	
Torpedo torpedo	2.52	6	0.59	
Lagocephalus laevigatus	1.98	12	0.47	
Dentex barnardi	1.92	6	0.45	
Pontinus kuhlii	1.32	12	0.31	
Raja miraletus	0.90	6	0.21	
Chaetodon hoefleri	0.78	6	0.18	
Illex coindetii	0.30	18	0.07	
Citharus linguatula	0.24	6	0.06	
Total	424.20		99.97	

PROJECT STATION:3317

DATE:20/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1155
start stop duration Long E 1320
TIME :18:32:03 19:02:15 30 (min) Purpose code: 3
LOG :6785.99 6787.48 1.48 Area code : 2
FDEPTH: 661 662 GearCond.code:
BDEPTH: 661 662 Validity code:
Towing dir: 348ø Wire out:1730 m Speed: 30 kn*10

Sorted: 29 Kg Total catch: 64.50 CATCH/HOUR: 129.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Aristeus varidens, female	24.36	946	18.88	6953
Stereomastis sp.	13.50	338	10.47	
Illex coindetii	12.76	4	9.89	
Lamprogrammus exutus	11.16	30	8.65	
Nematocarcinus africanus	6.60	1302	5.12	
Hoplostethus cadenati	6.16	456	4.78	
Hymenocephalus italicus	4.96	500	3.84	
Thysanoteuthis rhombus	4.62	56	3.58	
Nezumia leonis	4.26	122	3.30	
Chaceon maritae	3.86	4	2.99	
Yarella blackfordi *	3.86	8	2.99	
Stomias sp.	3.52	44	2.73	
CONGRIDAE	3.42	48	2.65	
Laemonema laureysi	3.38	242	2.62	
Etmopterus pusillus	3.20	26	2.48	
MELANOSTOMIATIDAE	2.94	22	2.28	
Aristeus varidens, male	2.20	126	1.71	6957
Xenodermichthys copei	2.10	26	1.63	
Lophius vaillanti	2.06	4	1.60	
Taningia sp.	1.80	8	1.40	
Pentanemus quinquarius	1.80	8	1.40	
Stomias boa boa	1.76	8	1.36	
Epigonus pandionis	1.60	16	1.24	
Dicentrarchus labrax *	1.58	4	1.22	
Ebinania costaecanarie	1.54	8	1.19	
Total	129.00		100.00	

PROJECT STATION:3318

DATE:20/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1154
start stop duration Long E 1321
TIME :21:04:28 21:34:16 30 (min) Purpose code: 3
LOG :6796.32 6797.74 1.40 Area code : 2
FDEPTH: 574 573 GearCond.code:
BDEPTH: 574 573 Validity code:
Towing dir: 348ø Wire out:1520 m Speed: 30 kn*10

Sorted: 36 Kg Total catch: 108.06 CATCH/HOUR: 216.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarella blackfordi *	66.90	2490	30.96	
Nematocarcinus africanus	47.28	19530	21.88	
Hoplostethus cadenati	37.20	1734	17.21	
Merluccius merluccius	20.70	30	9.58	6958
CHAULIODONTIDAE	7.80	732	3.61	
Lamprogrammus exutus	6.54	108	3.03	
POLYCHAELIDAE	5.34	246	2.47	
Aristeus varidens, female	3.78	204	1.75	6960
Nezumia sp.	3.48	246	1.61	
Gonostoma denudata	3.30	96	1.53	
Lophius vaillanti	2.10	6	0.97	
Laemonema laureysi	1.38	42	0.64	
S H R I M P S	1.26	648	0.58	
Glyphus marsupialis	1.26	114	0.58	
Etmopterus princeps	1.26	18	0.58	
MYCTOPHIDAE	1.14	54	0.53	
Bajacalifornia magalops	1.08	114	0.50	
Aristeus varidens, male	0.84	114	0.39	6959
Benthodesmus tenuis	0.66	24	0.31	
Nemichthys scolopaceus	0.60	30	0.28	
Ebinania costaecanarie	0.54	24	0.25	
PANDALIDAE	0.24	42	0.11	
Halosaurus ovenii	0.24	12	0.11	
Stomias boa boa	0.24	36	0.11	
OPHIDIIDAE	0.24	54	0.11	
MELANOCETIDAE	0.24	24	0.11	
BRANCHIOSTEGIDAE	0.18	12	0.08	
Trachyrincus scabrus	0.18	6	0.08	
Callinectes amnicola	0.12	18	0.06	
Total	216.12		100.01	

PROJECT STATION:3319

DATE:21/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1156
start stop duration Long E 1323
TIME :23:36:03 00:06:09 30 (min) Purpose code: 3
LOG :6807.30 6808.83 1.53 Area code : 2
FDEPTH: 468 472 GearCond.code:
BDEPTH: 468 472 Validity code:
Towing dir: 340ø Wire out:1290 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 117.03 CATCH/HOUR: 234.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	152.80	22472	65.28	
Yarella blackfordi *	30.40	1016	12.99	
Illex coindetii	10.80	40	4.61	
Merluccius merluccius	8.84	16	3.78	6961
Stomias boa boa	8.00	208	3.42	
Aristeus varidens, female	7.04	432	3.01	6962
Hoplostethus cadenati	3.52	136	1.50	
Benthodesmus tenuis	2.72	104	1.16	
Centroscymnus crepidater	1.78	24	0.76	
Halosaurus ovenii	1.52	64	0.65	
Aristeus varidens, male	1.44	208	0.62	6963
Chaceon maritae	1.44	8	0.62	
Nezumia sp.	1.36	72	0.58	
Etmopterus spinax	0.52	8	0.22	
Laemonema laureysi	0.48	40	0.21	
Isistius brasiliensis	0.44	2	0.19	
Nemichthys scolopaceus	0.40	24	0.17	
Chlorophthalmus atlanticus	0.32	16	0.14	
Bathyuroconger vicinus	0.24	8	0.10	
Total	234.06		100.01	

PROJECT STATION:3320

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1159
start stop duration Long E 1330
TIME :05:38:50 06:09:02 30 (min) Purpose code: 3
LOG :6826.56 6828.09 1.52 Area code : 2
FDEPTH: 263 252 GearCond.code:
BDEPTH: 263 252 Validity code:
Towing dir: 20ø Wire out: 750 m Speed: 30 kn*10

Sorted: 96 Kg Total catch: 1122.36 CATCH/HOUR: 2244.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	1521.92	6360	67.80	6965
Merluccius polli	247.08	2830	11.01	6964
Chlorophthalmus atlanticus	187.92	5336	8.37	
Synagrops microlepis	159.38	20068	7.10	
Parapenaeus longirostris	30.84	5428	1.37	
Centrolophus niger	29.22	22	1.30	
Zenopsis conchifer	21.34	162	0.95	
Trichiurus lepturus	21.34	22	0.95	
Parapenaeus longirostris, fem.	4.86	1174	0.22	6967
Parapenaeus longirostris, male	4.40	1058	0.20	6966
Hymenocephalus italicus	4.40	162	0.20	
MYCTOPHIDAE	3.94	2968	0.18	
Monolene microstoma	2.78	46	0.12	
Pontinus kuhlii	2.32	92	0.10	
Bembrops heterurus	1.62	22	0.07	
CONGRIDAE	0.68	22	0.03	
Laemonema laureysi	0.46	22	0.02	
Stereomastis sp.	0.22	68	0.01	
Total	2244.72		100.00	

PROJECT STATION:3321

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1158
start stop duration Long E 1332
TIME :07:20:28 07:27:15 7 (min) Purpose code: 3
LOG :6833.32 6833.66 0.33 Area code : 2
FDEPTH: 103 104 GearCond.code:
BDEPTH: 103 104 Validity code: 3
Towing dir: 14ø Wire out: 300 m Speed: 30 kn*10

Sorted: 49 Kg Total catch: 145.46 CATCH/HOUR: 1246.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Umbrina canariensis	740.57	1697	59.40	
Epinephelus aeneus	136.29	26	10.93	
Dentex macrophthalmus	96.69	411	7.76	
Dentex canariensis	93.60	411	7.51	
Dentex barnardi	57.86	51	4.64	
Zenopsis conchifer	56.06	386	4.50	
Dentex angolensis	28.71	154	2.30	
Zeus faber	16.97	51	1.36	
Pagellus bellottii	13.11	77	1.05	
Sparus pagrus africanus *	6.94	26	0.56	
Total	1246.80		100.01	

PROJECT STATION:3322

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1200
start stop duration Long E 1337
TIME :08:39:41 09:09:33 30 (min) Purpose code: 3
LOG :6841.54 6843.05 1.50 Area code : 2
FDEPTH: 71 70 GearCond.code:
BDEPTH: 71 70 Validity code:
Towing dir: 15ø Wire out: 225 m Speed: 30 kn*10

Sorted: 36 Kg Total catch: 36.22 CATCH/HOUR: 72.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	15.50	198	21.40	6968
Pomadasys incisus	12.10	88	16.70	6969
Sepia orbignyana	11.04	10	15.24	
Pseudupeneus prayensis	10.80	100	14.91	
Umbrina canariensis	4.30	14	5.94	
Torpedo torpedo	2.46	6	3.40	
Raja miraletus	2.44	4	3.37	
Octopus vulgaris	2.26	4	3.12	
Dentex barnardi	2.18	12	3.01	
Zeus faber	2.00	6	2.76	
Trigla lyra	1.50	24	2.07	
Fistularia petimba	1.26	4	1.74	
Pagellus bellottii	1.18	14	1.63	
Monolene microstoma	0.88	28	1.21	
Sphyraena guachancho	0.84	2	1.16	
Loligo vulgaris	0.58	196	0.80	
Boops boops	0.44	2	0.61	
Zenopsis conchifer	0.44	2	0.61	
Scorpaena sp.	0.14	2	0.19	
Spondyliosoma cantharus	0.10	2	0.14	
Total	72.44		100.01	

PROJECT STATION:3323

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1202
start stop duration Long E 1339
TIME :10:08:25 10:38:08 30 (min) Purpose code: 3
LOG :6849.11 6850.59 1.47 Area code : 2
FDEPTH: 56 58 GearCond.code:
BDEPTH: 56 58 Validity code:
Towing dir: 10ø Wire out: 180 m Speed: 30 kn*10

Sorted: 66 Kg Total catch: 1024.97 CATCH/HOUR: 2049.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	911.40	16492	44.46	
Trachurus trecae	827.70	25638	40.38	6970
Pagellus bellottii	176.38	1922	8.60	6971
Boops boops	53.94	620	2.63	
Raja miraletus	36.88	94	1.80	
Pomadasys incisus	9.60	94	0.47	
Sardinella aurita	6.50	94	0.32	
Alloteuthis africana	6.20	1582	0.30	
Rhinobatos albomaculatus	5.60	2	0.27	
Pseudupeneus prayensis	4.96	32	0.24	
Sphyraena sphyraena	4.64	32	0.23	
Chelidonichthys sp.	4.34	32	0.21	
Selene dorsalis	1.86	32	0.09	
Total	2050.00		100.00	

PROJECT STATION:3324

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1149
start stop duration Long E 1345
TIME :12:14:29 12:44:13 30 (min) Purpose code: 3
LOG :6863.70 6865.26 1.54 Area code : 2
FDEPTH: 29 28 GearCond.code:
BDEPTH: 29 28 Validity code:
Towing dir: 360ø Wire out: 140 m Speed: 30 kn*10

Sorted: 58 Kg Total catch: 231.84 CATCH/HOUR: 463.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	328.80	31488	70.91	
Sardinella maderensis	58.80	1808	12.68	6973
Sardinella aurita	18.08	288	3.90	6972
Pomadasys jubelini	8.64	8	1.86	
Pagellus bellottii	8.56	208	1.85	6975
Trachurus trecae	8.56	320	1.85	6974
Raja miraletus	8.24	16	1.78	
Selene dorsalis	6.80	144	1.47	
Pomadasys peroteti	5.84	16	1.26	
Pseudotolithus typus	3.68	8	0.79	
Sphyraena sphyraena	3.44	208	0.74	
Lithognathus mormyrus	1.52	8	0.33	
Sepia officinalis hierredda	1.28	8	0.28	
BALISTIDAE	0.96	8	0.21	
Pseudupeneus prayensis	0.48	48	0.10	
Total	463.68		100.01	

PROJECT STATION:3325

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1149
start stop duration Long E 1341
TIME :13:49:02 14:19:07 30 (min) Purpose code: 3
LOG :6872.39 6873.96 1.57 Area code : 2
FDEPTH: 63 64 GearCond.code:
BDEPTH: 63 64 Validity code:
Towing dir: 360ø Wire out: 220 m Speed: 30 kn*10

Sorted: 62 Kg Total catch: 1506.06 CATCH/HOUR: 3012.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	1271.58	18116	42.22	6976
Brachydeuterus auritus	1172.28	14096	38.92	
Boops boops	244.62	3100	8.12	
Sardinella aurita	113.82	1502	3.78	6977
Raja miraletus	86.70	146	2.88	
Torpedo torpedo	47.94	48	1.59	
Pagellus bellottii	41.64	532	1.38	6978
Alloteuthis africana	13.08	3342	0.43	
Rhinobatos albomaculatus	5.10	2	0.17	
Sepiella ornata	4.86	4	0.16	
Selene dorsalis	2.90	48	0.10	
Dentex barnardi	2.90	48	0.10	
Lithognathus mormyrus	2.30	4	0.08	
Citharus linguatula	1.44	48	0.05	
Bembrops greyi	0.48	48	0.02	
Pseudupeneus prayensis	0.48	48	0.02	
Total	3012.12		100.02	

PROJECT STATION:3326

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1148
start stop duration Long E 1333
TIME :15:55:08 16:25:08 30 (min) Purpose code: 3
LOG :6886.11 6887.63 1.52 Area code : 2
FDEPTH: 108 111 GearCond.code:
BDEPTH: 108 111 Validity code:
Towing dir: 345ø Wire out: 340 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 46.45 CATCH/HOUR: 92.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	21.50	116	23.14	6981
Dentex macrophthalmus	17.10	86	18.41	6982
Dentex barnardi	11.60	34	12.49	6979
Raja miraletus	5.82	10	6.26	
Boops boops	5.60	50	6.03	
Lagocephalus laevigatus	3.76	8	4.05	
Trichiurus lepturus	3.60	4	3.88	
Pagellus bellottii	3.58	16	3.85	6980
Saurida brasiliensis	3.34	88	3.60	
Scorpaena sp.	3.32	6	3.57	
Anthias anthias	2.44	18	2.63	
Zeus faber	2.34	20	2.52	
Illex coindetii	1.74	46	1.87	
Uranoscopus polli	1.72	2	1.85	
Chelidonichthys capensis	1.62	16	1.74	
Umbrina canariensis	1.50	4	1.61	
Citharus linguatula	0.88	16	0.95	
Sepia officinalis hierredda	0.42	2	0.45	
Brotula barbata	0.34	2	0.37	
Parapandalus narval	0.34	190	0.37	
Chaetodon hoefleri	0.24	2	0.26	
Alloteuthis africana	0.10	60	0.11	
Total	92.90		100.01	

PROJECT STATION:3327

DATE:21/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1145
start stop duration Long E 1329
TIME :17:11:43 17:41:45 30 (min) Purpose code: 3
LOG :6892.67 6894.16 1.49 Area code : 2
FDEPTH: 161 161 GearCond.code:
BDEPTH: 161 161 Validity code:
Towing dir: 334ø Wire out: 470 m Speed: 30 kn*10

Sorted: 70 Kg Total catch: 488.21 CATCH/HOUR: 976.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	338.40	23964	34.66	
Brotula barbata	264.60	312	27.10	
Parapenaeus longirostris, fem.	93.74	24996	9.60	6984
Pterothrissus belloci	66.36	480	6.80	
Parapenaeus longirostris, male	43.74	13434	4.48	6983
Trigla lyra	33.48	276	3.43	
MYCTOPHIDAE	21.38	14700	2.19	
Zeus faber	19.92	60	2.04	
Dentex angolensis	18.84	48	1.93	
Pontinus accraensis	14.04	72	1.44	
Trichiurus lepturus	11.04	24	1.13	
Raja miraletus	9.00	12	0.92	
Bembrops heterurus	8.28	72	0.85	
Zenopsis conchifer	4.44	72	0.45	
Chlorophthalmus atlanticus	4.44	1464	0.45	
Uranoscopus polli	4.20	12	0.43	
Monolene microstoma	3.48	180	0.36	
Illex coindetii	3.12	48	0.32	
Squilla acuelata calmani	3.00	12	0.31	
Saurida brasiliensis	2.76	360	0.28	
CONGRIDAE	2.76	24	0.28	
Merluccius polli	2.28	24	0.23	
Peristedion cataphractum	1.32	24	0.14	
Dicologoglossa cuneata	0.96	12	0.10	
Sepia officinalis hierredda	0.84	72	0.09	
Total	976.42		100.01	

PROJECT STATION:3328

DATE:21/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1144
start stop duration Long E 1318
TIME :20:03:26 20:33:34 30 (min) Purpose code: 3
LOG :6907.10 6908.65 1.54 Area code : 2
FDEPTH: 679 686 GearCond.code:
BDEPTH: 679 686 Validity code:
Towing dir: 350ø Wire out:1750 m Speed: 30 kn*10

Sorted: 32 Kg Total catch: 143.20 CATCH/HOUR: 286.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Lamprogrammus exutus	61.60	280	21.51	
Hoplostethus cadenati	54.80	2088	19.13	
Yarella blackfordi *	43.76	1008	15.28	
Merluccius polli	29.50	42	10.30	6985
Nematocarcinus africanus	27.36	6368	9.55	
Stomias sp.	12.48	256	4.36	
Aristeus varidens, female	6.08	280	2.12	6987
Thysanoteuthis rhombus	6.00	32	2.09	
Chaceon maritae	5.92	8	2.07	
Triplophos hemingi	4.64	464	1.62	
Hymenocephalus italicus	4.32	216	1.51	
Aristeus varidens, male	3.76	504	1.31	6986
Glyphus marsupialis	2.88	152	1.01	
Talismania sp.	2.88	112	1.01	
Ommastrephes bartrami	2.72	24	0.95	
Bajacalifornia magalops	2.72	40	0.95	
DICERATIIDAE	2.16	16	0.75	
Pentanemus quinquarius	1.92	40	0.67	
CONGRIDAE	1.76	48	0.61	
Sepia officinalis hierredda	1.60	16	0.56	
Etmopterus pusillus	1.54	12	0.54	
POLYCHAELIDAE	1.44	168	0.50	
Etmopterus princeps	1.28	16	0.45	
Laemonema laureysi	1.12	176	0.39	
Bathypterois sp	0.96	24	0.34	
Xenodermichthys copei	0.64	32	0.22	
Ebinania costaecanarie	0.56	8	0.20	
Total	286.40		100.00	

PROJECT STATION:3329

DATE:22/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1145
start stop duration Long E 1323
TIME :05:43:41 06:13:44 30 (min) Purpose code: 3
LOG :6922.22 6923.60 1.47 Area code : 2
FDEPTH: 350 351 GearCond.code:
BDEPTH: 350 351 Validity code:
Towing dir: 340ø Wire out:1000 m Speed: 30 kn*10

Sorted: 17 Kg Total catch: 445.15 CATCH/HOUR: 890.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	432.00	2490	48.52	6988
Etmopterus princeps	140.10	4020	15.74	
Hymenocephalus italicus	102.00	340980	11.46	
Laemonema laureysi	84.60	870	9.50	
Nematocarcinus africanus	59.40	26430	6.67	
Parapenaeus longirostris, fem.	13.50	1710	1.52	6990
Illex coindetii	12.60	120	1.42	
CONGRIDAE	12.00	180	1.35	
Callinectes amnicola	8.10	180	0.91	
Lophius vaillanti	6.60	60	0.74	
Pterothrissus belloci	5.70	30	0.64	
Nezumia aequalis	4.50	120	0.51	
Epigonus telescopus	3.90	120	0.44	
Chlorophthalmus atlanticus	2.40	60	0.27	
Parapenaeus longirostris, male	1.50	240	0.17	6989
PARALEPIDIDAE	0.90	30	0.10	
Synagrops microlepis	0.50	120	0.06	
Total	890.30		100.02	

PROJECT STATION:3330

DATE:22/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1131
start stop duration Long E 1322
TIME :08:23:21 08:53:39 30 (min) Purpose code: 3
LOG :6936.64 6938.17 1.52 Area code : 2
FDEPTH: 351 359 GearCond.code:
BDEPTH: 351 359 Validity code:
Towing dir: 20ø Wire out:1000 m Speed: 30 kn*10

Sorted: 69 Kg Total catch: 1758.75 CATCH/HOUR: 3517.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	2938.00	15750	83.53	6991
Nematocarcinus africanus	157.00	49000	4.46	
Laemonema laureysi	80.00	1450	2.27	
Illex coindetii	59.00	400	1.68	
MYCTOPHIDAE	58.50	3550	1.66	
Chlorophthalmus atlanticus	55.50	1300	1.58	
Zenopsis conchifer	52.50	50	1.49	
Hymenocephalus italicus	26.00	450	0.74	
Helicolenus dactylopterus	15.00	1000	0.43	
Nezumia leonis	13.50	250	0.38	
Parapenaeus longirostris, fem.	13.00	1900	0.37	6992
Synagrops microlepis	12.50	750	0.36	
Pterothrissus belloci	11.00	50	0.31	
Todaropsis eblanae	9.50	2800	0.27	
Bathynectes piperitus	4.50	50	0.13	
Trichiurus lepturus	3.50	200	0.10	
Bathyuroconger vicinus	3.00	50	0.09	
Parapenaeus longirostris, male	2.50	500	0.07	6993
Solenocera africana	2.50	200	0.07	
Peristedion cataphractum	0.50	100	0.01	
Total	3517.50		100.00	

PROJECT STATION:3331

DATE:22/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1132
start stop duration Long E 1330
TIME :10:38:30 11:08:20 30 (min) Purpose code: 3
LOG :6949.93 6951.47 1.53 Area code : 2
FDEPTH: 102 102 GearCond.code:
BDEPTH: 102 102 Validity code:
Towing dir: 340ø Wire out: 310 m Speed: 30 kn*10

Sorted: 50 Kg Total catch: 50.68 CATCH/HOUR: 101.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trigla lyra	34.20	280	33.74	
Squatina aculeata	9.50	2	9.37	
Zeus faber	8.16	68	8.05	
Dentex angolensis	7.22	62	7.12	6995
Lagocephalus laevigatus	7.06	8	6.97	
Citharus linguatula	5.34	70	5.27	
Raja alba	5.10	2	5.03	
Pistularia petimba	4.98	12	4.91	
Sepiella ornata	3.82	2	3.77	
Alloteuthis africana	2.88	1268	2.84	
Priacanthus cruentatus	2.84	2	2.80	
Scorpaena normani	2.26	10	2.23	
Torpedo torpedo	1.78	2	1.76	
Pagellus bellottii	1.28	6	1.26	
Trachurus trecae	1.04	50	1.03	6994
Trichiurus lepturus	0.80	16	0.79	
Brotula barbata	0.80	2	0.79	
Sepia officinalis hierredda	0.74	6	0.73	
Ariomma bondi	0.50	4	0.49	
Brachydeuterus auritus	0.38	2	0.37	
Saurida brasiliensis	0.32	44	0.32	
Chaetodon hoefleri	0.24	2	0.24	
GOBIIDAE	0.12	96	0.12	
Total	101.36		100.00	

PROJECT STATION:3332

DATE:22/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1132
start stop duration Long E 1335
TIME :12:13:07 12:43:10 30 (min) Purpose code: 3
LOG :6958.67 6960.22 1.55 Area code : 2
FDEPTH: 60 56 GearCond.code:
BDEPTH: 60 56 Validity code:
Towing dir: 345ø Wire out: 210 m Speed: 30 kn*10

Sorted: 70 Kg Total catch: 70.75 CATCH/HOUR: 141.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex barnardi	40.40	368	28.55	6997
Trachurus trecae	23.30	868	16.47	6996
Pagellus bellottii	20.60	256	14.56	6998
Pseudupeneus prayensis	11.26	84	7.96	
Sphyraena sphyraena	10.48	74	7.41	
Brachydeuterus auritus	8.50	64	6.01	
Raja miraletus	7.60	12	5.37	
Plectorhinchus mediterraneus	4.58	6	3.24	
Pomadasys incisus	3.72	12	2.63	
Chaetodon hoefleri	2.08	14	1.47	
Sepia officinalis hierredda	1.56	2	1.10	
Zeus faber	1.50	6	1.06	
Alloteuthis africana	1.46	584	1.03	
Priacanthus cruentatus	0.86	2	0.61	
Dentex angolensis	0.66	16	0.47	
Citharus linguatula	0.64	12	0.45	
Pistularia petimba	0.58	4	0.41	
Trigla lyra	0.52	4	0.37	
Sparus pagrus africanus *	0.30	2	0.21	
Sardinella aurita	0.24	4	0.17	
Epigonus telescopus	0.22	2	0.16	
Scorpaena stephanica	0.22	2	0.16	
Lepidotrigla carolae	0.20	2	0.14	
Total	141.48		100.01	

PROJECT STATION:3333

DATE:22/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1132
start stop duration Long E 1339
TIME :13:49:23 14:19:19 30 (min) Purpose code: 3
LOG :6967.24 6968.83 1.59 Area code : 2
FDEPTH: 42 42 GearCond.code:
BDEPTH: 42 42 Validity code:
Towing dir: 340ø Wire out: 160 m Speed: 30 kn*10

Sorted: 87 Kg Total catch: 131.06 CATCH/HOUR: 262.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	69.44	504	26.49	6999
Dentex barnardi	34.20	316	13.05	7000
Pomadasys incisus	30.90	354	11.79	
Boops boops	26.70	432	10.19	
Chloroscombrus chrysurus	15.54	82	5.93	
Sparus auriga *	12.92	18	4.93	
Sardinella aurita	12.50	150	4.77	7002
Sepia officinalis hierredda	12.14	10	4.63	
Raja miraletus	9.80	16	3.74	
Lithognathus mormyrus	9.44	24	3.60	
Trachurus trecae	7.56	64	2.88	7001
Sphyraena sphyraena	6.54	30	2.50	
Epinephelus aeneus	3.96	6	1.51	
Alloteuthis africana	2.42	3598	0.92	
Bodianus speciosus	2.28	6	0.87	
Chaetodon hoefleri	2.10	18	0.80	
Sepia orbignyana	1.46	4	0.56	
Illex coindetii	0.62	4	0.24	
Selene dorsalis	0.60	4	0.23	
Pagrus caeruleostictus	0.30	4	0.11	
Lagocephalus laevigatus	0.20	6	0.08	
Pistularia petimba	0.18	4	0.07	
Citharus linguatula	0.18	10	0.07	
Parakuhlia macrophthalmus	0.14	6	0.05	
Total	262.12		100.01	

PROJECT STATION:3334

DATE:22/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1132
start stop duration Long E 1343
TIME :15:21:38 15:51:29 30 (min) Purpose code: 3
LOG :6976.33 6977.96 1.62 Area code : 2
FDEPTH: 30 28 GearCond.code:
BDEPTH: 30 28 Validity code:
Towing dir: 355ø Wire out: 140 m Speed: 30 kn*10

Sorted: 37 Kg Total catch: 129.49 CATCH/HOUR: 258.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	62.70	1920	24.21	7004
Sardinella aurita	45.60	816	17.61	7003
Epinephelus aeneus	42.38	6	16.36	
Brachydeuterus auritus	38.40	13440	14.83	
Sepia officinalis hierredda	32.34	174	12.49	
Selene dorsalis	10.92	186	4.22	
Sphyraena sphyraena	9.42	126	3.64	
Pagellus bellottii	7.56	114	2.92	7005
Raja miraletus	3.96	6	1.53	
Pomadasys incisus	2.10	6	0.81	
Cynoglossus canariensis	1.44	6	0.56	
Trachurus trecae	1.08	54	0.42	
Penaeus notialis	0.54	6	0.21	
Decapterus rhonchus	0.36	6	0.14	
Pistularia petimba	0.18	12	0.07	
Total	258.98		100.02	

PROJECT STATION:3335

DATE:22/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1114
start stop duration Long E 1328
TIME :18:38:26 19:08:10 30 (min) Purpose code: 3
LOG :7001.03 7002.57 1.53 Area code : 2
FDEPTH: 534 538 GearCond.code:
BDEPTH: 534 538 Validity code:
Towing dir: 5ø Wire out:1450 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 174.75 CATCH/HOUR: 349.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	195.50	23700	55.94	
Benthodesmus tenuis	27.30	710	7.81	
Yarella blackfordi *	23.30	650	6.67	
Illex coindetii	12.30	40	3.52	
Stomias boa boa	10.90	220	3.12	
Triplophos hemingi	10.70	990	3.06	
Hoplostethus cadenati	9.30	290	2.66	
Aristeus varidens, male	8.90	480	2.55	7007
Aristeus varidens, female	7.90	540	2.26	7006
Chlorophthalmus atlanticus	5.20	50	1.49	
Laemonema laureysi	5.00	100	1.43	
Etmopterus pusillus	4.30	10	1.23	
Etmopterus princeps	4.20	30	1.20	
Plesionika martia	4.00	330	1.14	
Nezumia sp.	3.60	10	1.03	
Stereomastis sp.	3.60	90	1.03	
Dicologoglossa cuneata	3.50	10	1.00	
Glyphus marsupialis	3.40	30	0.97	
Callinectes amnicola	3.30	10	0.94	
Xenodermichthys copei	3.30	10	0.94	
Total	349.50		99.99	

PROJECT STATION:3336

DATE:22/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1111
start stop duration Long E 1324
TIME :21:22:29 22:07:15 45 (min) Purpose code: 1
LOG :7014.01 7016.23 2.20 Area code : 2
FDEPTH: 811 811 GearCond.code:
BDEPTH: 811 811 Validity code:
Towing dir: 360ø Wire out:1850 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 85.49 CATCH/HOUR: 113.99

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarella blackfordi *	17.08	576	14.98	
Hoplostethus cadenati	15.80	680	13.86	
Nezumia milleri	14.72	308	12.91	
Laemonema laureysi	13.92	3356	12.21	
Triplophos hemingi	8.36	1044	7.33	
POLYCHAELIDAE	6.72	436	5.90	
Plesiopenaeus edwardsianus	5.00	372	4.39	
Ebinania costaecanarie	3.72	4	3.26	
Gonostoma denudata	3.68	60	3.23	
Stomias boa boa	3.20	88	2.81	
Shrimps, small, non comm.	3.16	1128	2.77	
Talismania sp.	3.00	36	2.63	
Bathyuroconger vicinus	2.72	44	2.39	
Aristeus varidens, female	2.56	172	2.25	7008
Lepidopus caudatus	1.80	88	1.58	
Halosaurus ovenii	1.72	152	1.51	
Merluccius polli	1.51	1	1.32	
Benthodesmus tenuis	1.44	80	1.26	
Synaphobranchus kaupii	1.36	28	1.19	
Aristeus varidens, male	1.16	184	1.02	7009
Lamprogrammus exutus	0.48	4	0.42	
Raja ravidula	0.24	4	0.21	
Bathylagus glacilis	0.20	12	0.18	
MELANOCETIDAE	0.12	12	0.11	
Diplophos sp.	0.12	12	0.11	
Nemichthys scolopaceus	0.12	8	0.11	
MYCTOPHIDAE	0.08	8	0.07	
Total	113.99		100.01	

PROJECT STATION:3337

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1114
start stop duration Long E 1336
TIME :05:33:39 06:03:04 29 (min) Purpose code: 3
LOG :7040.54 7042.07 1.53 Area code : 2
FDEPTH: 152 150 GearCond.code:
BDEPTH: 152 150 Validity code:
Towing dir: 11ø Wire out: 480 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 740.13 CATCH/HOUR: 1531.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1264.14	172510	82.55	
Parapenaeus longirostris, fem.	136.55	31862	8.92	7011
Merluccius polli	48.41	786	3.16	7010
Trichiurus lepturus	43.86	120	2.86	
Illex coindetii	9.93	166	0.65	
Parapenaeus longirostris, male	7.45	2814	0.49	7012
Brotula barbata	5.01	8	0.33	
Pterothrissus belloci	4.55	41	0.30	
Umbrina canariensis	4.10	6	0.27	
Saurida brasiliensis	2.90	869	0.19	
Dentex macrophthalmus	2.07	6	0.14	
Dentex angolensis	1.26	6	0.08	
Zeus faber	0.77	2	0.05	
Pontinus accraensis	0.31	2	0.02	
Total	1531.31		100.01	

PROJECT STATION:3338

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1114
start stop duration Long E 1337
TIME :07:23:09 07:53:01 30 (min) Purpose code: 3
LOG :7048.07 7049.62 1.56 Area code : 2
FDEPTH: 121 119 GearCond.code:
BDEPTH: 121 119 Validity code:
Towing dir: 360ø Wire out: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 48.61 CATCH/HOUR: 97.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	23.70	188	24.38	7014
Dentex angolensis	13.54	76	13.93	7013
Squatina aculeata	11.98	4	12.32	
Zeus faber	10.90	50	11.21	
Trichiurus lepturus	10.10	20	10.39	
Brotula barbata	8.42	12	8.66	
Umbrina canariensis	4.68	12	4.81	
Citharus linguatula	2.16	36	2.22	
Pagellus bellottii	2.12	6	2.18	
Branchiostegus semifasciatus	1.68	2	1.73	
Torpedo torpedo	1.48	2	1.52	
Pontinus kuhlii	1.40	20	1.44	
Trigla lyra	1.26	10	1.30	
Pterothrissus belloci	1.18	10	1.21	
Uranoscopus polli	1.04	4	1.07	
Illex coindetii	0.76	22	0.78	
Scorpaena stephanica	0.38	4	0.39	
Saurida brasiliensis	0.22	40	0.23	
Pontinus accraensis	0.22	2	0.23	
Total	97.22		100.00	

PROJECT STATION:3339

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1116
start stop duration Long E 1342
TIME :09:14:04 09:29:51 16 (min) Purpose code: 3
LOG :7059.53 7060.36 0.82 Area code : 2
FDEPTH: 19 21 GearCond.code:
BDEPTH: 19 21 Validity code:
Towing dir: 360ø Wire out: 120 m Speed: 30 kn*10

Sorted: Kg Total catch: 6.48 CATCH/HOUR: 24.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sepia officinalis hierredda	12.49	41	51.40	
Raja miraletus	6.83	4	28.11	
Trachinus radiatus	2.29	11	9.42	
Chilomycterus spinosus mauret.	0.86	4	3.54	
Balistes capriscus	0.79	8	3.25	
Pistularia tabacaria	0.71	8	2.92	
Citharus linguatula	0.34	4	1.40	
Total	24.31		100.04	

PROJECT STATION:3340

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1114
start stop duration Long E 1345
TIME :10:44:39 11:14:26 30 (min) Purpose code: 3
LOG :7068.91 7070.37 1.45 Area code : 2
FDEPTH: 28 27 GearCond.code:
BDEPTH: 28 27 Validity code:
Towing dir: 200ø Wire out: 140 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 158.99 CATCH/HOUR: 317.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	200.80	39616	63.15	
Selene dorsalis	22.00	568	6.92	
Stromateus fiatola	20.10	38	6.32	
Sphyraena guachancho	16.96	56	5.33	
Chloroscombrus chrysurus	14.16	160	4.45	
Raja miraletus	8.56	16	2.69	
Galeoides decadactylus	6.70	16	2.11	
Trachurus trecae	4.32	168	1.36	
Pseudotolithus typus	3.72	4	1.17	
Pomadasys peroteti	3.44	2	1.08	
Ephippion guttifer	3.26	2	1.03	
Ilisha africana	2.80	56	0.88	
Scomberomorus tritor	2.60	2	0.82	
Lithognathus mormyrus	2.56	8	0.81	
Sepiella ornata	2.48	2	0.78	
Trichiurus lepturus	1.36	48	0.43	
Balistes capriscus	0.96	8	0.30	
Dicologoglossa cuneata	0.48	8	0.15	
Sepia officinalis hierredda	0.40	2	0.13	
Sardinella maderensis	0.16	16	0.05	
Lagocephalus laevigatus	0.16	8	0.05	
Total	317.98		100.01	

PROJECT STATION:3341

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1055
start stop duration Long E 1344
TIME :13:33:05 14:03:08 30 (min) Purpose code: 3
LOG :7091.26 7092.81 1.54 Area code : 2
FDEPTH: 51 50 GearCond.code:
BDEPTH: 51 50 Validity code:
Towing dir: 340ø Wire out: 190 m Speed: 30 kn*10

Sorted: 32 Kg Total catch: 683.18 CATCH/HOUR: 1366.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1115.10	78078	81.61	
Trachurus trecae	178.50	4536	13.06	7015
Selene dorsalis	20.58	420	1.51	
Dentex barnardi	18.90	336	1.38	
Zeus faber	13.86	42	1.01	
Alloteuthis africana	6.72	336	0.49	
Pseudotolithus typus	4.70	10	0.34	
Sepia orbignyana	3.40	2	0.25	
Umbrina canariensis	2.94	42	0.22	
Trichiurus lepturus	0.84	42	0.06	
GOBIIDAE	0.42	42	0.03	
Sepia officinalis hierredda	0.40	4	0.03	
Total	1366.36		99.99	

PROJECT STATION:3342

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1050
start stop duration Long E 1344
TIME :14:46:04 15:16:09 30 (min) Purpose code: 3
LOG :7097.09 7098.64 1.53 Area code : 2
FDEPTH: 35 36 GearCond.code:
BDEPTH: 35 36 Validity code:
Towing dir: 320ø Wire out: 145 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 615.22 CATCH/HOUR: 1230.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	359.10	47844	29.18	
Sardinella maderensis	271.80	7020	22.09	7017
Chloroscombrus chrysurus	261.00	2862	21.21	
Galeoides decadactylus	79.74	234	6.48	
Trichiurus lepturus	58.32	2754	4.74	
Pseudotolithus typus	48.80	78	3.97	7019
Sardinella aurita	46.44	684	3.77	7016
Pteroscion peli	27.36	1098	2.22	
Selene dorsalis	16.92	342	1.38	
Arius parkii	16.50	24	1.34	
Trachurus trecae	13.68	468	1.11	7018
Pomadasys incisus	9.00	36	0.73	
Epinephelus aeneus	8.90	2	0.72	
Carcharhinus signatus	5.10	6	0.41	
Gymnura micrura	3.46	2	0.28	
Sepia officinalis hierredda	2.88	18	0.23	
Dicologoglossa cuneata	1.44	18	0.12	
Total	1230.44		99.98	

PROJECT STATION:3343

DATE:23/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1055
start stop duration Long E 1335
TIME :15:01:25 16:40:04 29 (min) Purpose code: 3
LOG :7110.46 7112.02 1.55 Area code : 2
FDEPTH: 116 115 GearCond.code:
BDEPTH: 116 115 Validity code:
Towing dir: 340ø Wire out: 300 m Speed: 30 kn*10

Sorted: 57 Kg Total catch: 315.21 CATCH/HOUR: 652.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brotula barbata	192.87	194	29.57	
Trichiurus lepturus	148.97	534	22.84	
Synagrops microlepis	145.08	22645	22.25	
Dentex angolensis	69.31	466	10.63	7020
Zeus faber	50.11	172	7.68	
Branchiostegus semifasciatus	17.75	12	2.72	
Raja miraletus	10.80	10	1.66	
Pagellus bellottii	4.55	35	0.70	
Dentex macrophthalmus	3.74	12	0.57	
Umbrina canariensis	2.83	23	0.43	
Pontinus accraensis	1.82	33	0.28	
Pontinus kuhlii	1.82	33	0.28	
Citharus linguatula	0.68	12	0.10	
GOBIIDAE	0.58	374	0.09	
Parapenaeus longirostris, fem.	0.46	101	0.07	
Parapenaeus longirostris, male	0.35	147	0.05	
Illex coindetii	0.35	12	0.05	
Saurida brasiliensis	0.23	23	0.04	
Total	652.30		100.01	

PROJECT STATION:3344

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1057
start stop duration Long E 1327
TIME :18:45:55 19:16:15 30 (min) Purpose code: 3
LOG :7121.97 7123.51 1.52 Area code : 2
FDEPTH: 358 361 GearCond.code:
BDEPTH: 358 361 Validity code:
Towing dir: 330ø Wire out: 950 m Speed: 30 kn*10

Sorted: 60 Kg Total catch: 785.98 CATCH/HOUR: 1571.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	1274.00	5642	81.05	7021
Nematocarcinus africanus	193.70	14118	12.32	
Laemonema sp.	48.36	780	3.08	
Hymenocephalus italicus	26.78	3926	1.70	
MYCTOPHIDAE	7.80	8424	0.50	
Chlorophthalmus atlanticus	7.02	156	0.45	
CONGRIDAE	6.76	156	0.43	
Parapenaeus longirostris, fem.	1.56	1690	0.10	7022
Chaunax pictus	1.56	104	0.10	
Aristeus varidens, male	1.56	208	0.10	
Etmopterus princeps	1.30	208	0.08	
Parapenaeus longirostris, male	0.52	78	0.03	7023
Aristeus varidens, female	0.52	26	0.03	
Pontinus accraensis	0.26	26	0.02	
Peristedion cataphractum	0.26	52	0.02	
Total	1571.96		100.01	

PROJECT STATION:3345

DATE:23/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1049
start stop duration Long E 1316
TIME :21:46:35 22:16:20 30 (min) Purpose code: 3
LOG :7137.01 7138.43 1.41 Area code : 2
FDEPTH: 493 494 GearCond.code:
BDEPTH: 493 494 Validity code:
Towing dir: 330ø Wire out:1450 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 126.40 CATCH/HOUR: 252.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	110.50	31360	43.71	
Lepidopus caudatus	87.50	3960	34.61	
Yarrella blackfordi	12.80	410	5.06	
Chauliodus sloani	10.50	210	4.15	
Hoplostethus cadenati	7.80	410	3.09	
Laemonema laureysi	4.20	480	1.66	
MYCTOPHIDAE	3.70	3540	1.46	
Aristeus varidens, female	3.60	240	1.42	7025
Aristeus varidens, male	2.80	450	1.11	7024
Etmopterus spinax	2.00	8	0.79	
Triplophos hemingi	1.60	260	0.63	
Etmopterus pusillus	1.60	2	0.63	
Malacocephalus occidentalis	1.00	100	0.40	
Nezumia milleri	1.00	80	0.40	
Lamprogrammus exutus	0.70	10	0.28	
Chlorophthalmus atlanticus	0.50	10	0.20	
Malacocephalus laevis	0.50	10	0.20	
Halosaurus ovenii	0.20	20	0.08	
C R U S T A C E A N S	0.20	40	0.08	
Solenocera africana	0.10	20	0.04	
Total	252.80		100.00	

PROJECT STATION:3346

DATE:24/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1039
start stop duration Long E 1341
TIME :06:57:20 07:27:24 30 (min) Purpose code: 3
LOG :7187.56 7189.08 1.50 Area code : 2
FDEPTH: 30 30 GearCond.code:
BDEPTH: 30 30 Validity code:
Towing dir: 340ø Wire out: 140 m Speed: 30 kn*10

Sorted: 50 Kg Total catch: 429.12 CATCH/HOUR: 858.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	500.64	8360	58.33	
Rhinobatos albomaculatus	146.20	52	17.03	
Carcharhinus limbatus	116.44	34	13.57	
Gymnura micrura	34.84	18	4.06	
Sardinella aurita	15.80	256	1.84	
Raja miraletus	15.30	18	1.78	
Synagrops microlepis	6.96	494	0.81	
Lagocephalus laevigatus	6.12	18	0.71	
Selene dorsalis	4.08	120	0.48	
Trichiurus lepturus	2.88	68	0.34	
Sepia officinalis hierredda	2.38	34	0.28	
Sphyraena guachancho	2.38	86	0.28	
Chloroscombrus chrysurus	1.52	18	0.18	
Trachurus trecae	0.84	18	0.10	
Pseudupeneus prayensis	0.68	18	0.08	
Torpedo torpedo	0.68	18	0.08	
Penaeus notialis	0.50	18	0.06	
Total	858.24		100.01	

PROJECT STATION:3347

DATE:24/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1040
start stop duration Long E 1338
TIME :08:20:16 08:40:04 20 (min) Purpose code: 3
LOG :7194.26 7195.22 0.95 Area code : 2
FDEPTH: 46 45 GearCond.code:
BDEPTH: 46 45 Validity code:
Towing dir: 340ø Wire out: 160 m Speed: 30 kn*10

Sorted: 60 Kg Total catch: 1123.00 CATCH/HOUR: 3369.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	2786.40	5160	82.71	
Brachydeuterus auritus	377.25	675	11.20	
Ephippion guttifer	78.00	15	2.32	
Galeoides decadactylus	38.10	45	1.13	
Raja miraletus	37.50	75	1.11	
Chloroscombrus chrysurus	18.75	120	0.56	
Trachurus trecae	6.75	285	0.20	
Sardinella maderensis	6.30	45	0.19	
Torpedo torpedo	6.00	15	0.18	
Sphyraena sphyraena	5.25	15	0.16	
Selene dorsalis	4.95	90	0.15	
Pagellus bellottii	1.95	15	0.06	
Zeus faber	1.80	15	0.05	
Total	3369.00		100.02	

PROJECT STATION:3348

DATE:24/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1043
start stop duration Long E 1331
TIME :10:27:51 10:57:59 30 (min) Purpose code: 3
LOG :7204.48 7206.01 1.52 Area code : 2
FDEPTH: 89 89 GearCond.code:
BDEPTH: 89 89 Validity code:
Towing dir: 340ø Wire out: 270 m Speed: 30 kn*10

Sorted: 49 Kg Total catch: 48.97 CATCH/HOUR: 97.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Zeus faber	27.40	274	27.98	
Trichiurus lepturus	15.80	30	16.13	
Alloteuthis africana	11.56	5202	11.80	
Fistularia petimba	7.90	22	8.07	
Trigla lyra	7.56	52	7.72	
Brachydeuterus auritus	6.36	42	6.49	
Raja miraletus	5.66	12	5.78	
Torpedo torpedo	3.74	12	3.82	
Dentex angolensis	3.62	54	3.70	7026
Brotula barbata	2.20	2	2.25	
Dentex macrophthalmus	1.36	4	1.39	
Octopus vulgaris	1.06	2	1.08	
Dentex barnardi	0.82	4	0.84	
Citharus linguatula	0.80	10	0.82	
Pagellus bellottii	0.64	6	0.65	
Pterothrissus belloci	0.36	4	0.37	
Pteroscion peli	0.36	2	0.37	
Scorpaena normani	0.28	2	0.29	
Chaetodon hoefleri	0.22	2	0.22	
Saurida brasiliensis	0.10	40	0.10	
Sepia officinalis hierredda	0.08	2	0.08	
GOBIIDAE	0.02	4	0.02	
Parapenaeus longirostris	0.02	4	0.02	
Illex coindetii	0.02	2	0.02	
Total	97.94		100.01	

PROJECT STATION:3349

DATE:24/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1047
start stop duration Long E 1324
TIME :12:24:55 12:54:39 30 (min) Purpose code: 3
LOG :7216.79 7218.44 1.64 Area code : 2
FDEPTH: 149 146 GearCond.code:
BDEPTH: 149 146 Validity code:
Towing dir: 320ø Wire out: 470 m Speed: 30 kn*10

Sorted: 48 Kg Total catch: 47.60 CATCH/HOUR: 95.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	27.90	94	29.31	
Dentex macrophthalmus	22.40	78	23.53	7027
Raja miraletus	14.60	20	15.34	
Dentex angolensis	10.02	44	10.53	7028
Zenopsis conchifer	4.50	70	4.73	
Loligo vulgaris	3.44	86	3.61	
Illex coindetii	3.08	66	3.24	
Brotula barbata	2.00	4	2.10	
Zeus faber	1.96	22	2.06	
Pterothrissus belloci	1.34	12	1.41	
Alloteuthis africana	1.10	504	1.16	
Trigla lyra	1.08	8	1.13	
Bembrops heterurus	0.54	6	0.57	
Citharus linguatula	0.52	14	0.55	
Sepia officinalis hierredda	0.48	6	0.50	
Torpedo torpedo	0.20	2	0.21	
Parapenaeus longirostris	0.04	8	0.04	
Total	95.20		100.02	

PROJECT STATION:3350

DATE:24/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1048
start stop duration Long E 1320
TIME :14:09:58 14:39:46 30 (min) Purpose code: 3
LOG :7225.60 7227.19 1.56 Area code : 2
FDEPTH: 326 327 GearCond.code:
BDEPTH: 326 327 Validity code:
Towing dir: 315ø Wire out: 950 m Speed: 30 kn*10

Sorted: 63 Kg Total catch: 721.69 CATCH/HOUR: 1443.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	747.50	8326	51.79	7031
Trichiurus lepturus	287.60	712	19.93	
Chlorophthalmus atlanticus	166.76	4048	11.55	
Synagrops microlepis	164.44	11638	11.39	
Laemonema laureysi	41.16	668	2.85	
Hymenocephalus italicus	11.28	2598	0.78	
Pterothrissus belloci	7.12	46	0.49	
MYCTOPHIDAE	5.76	3610	0.40	
Parapenaeus longirostris, fem.	4.84	828	0.34	7030
Epigonus telescopus	2.30	68	0.16	
S H R I M P S	2.06	1656	0.14	
Solenocera africana	1.62	230	0.11	
Malacocephalus laevis	0.70	24	0.05	
Parapenaeus longirostris, male	0.24	168	0.02	7029
Total	1443.38		100.00	

PROJECT STATION:3351

DATE:24/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1037
start stop duration Long E 1310
TIME :16:28:36 16:58:43 30 (min) Purpose code: 3
LOG :7240.99 7242.48 1.48 Area code : 2
FDEPTH: 354 351 GearCond.code:
BDEPTH: 354 351 Validity code:
Towing dir: 312ø Wire out:1000 m Speed: 30 kn*10

Sorted: 52 Kg Total catch: 650.86 CATCH/HOUR: 1301.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	562.50	1800	43.21	7032
Chlorophthalmus atlanticus	517.50	3850	39.76	
Synagrops microlepis	143.50	3150	11.02	
Laemonema laureysi	37.50	5750	2.88	
Pterothrissus belloci	30.24	1750	2.32	
Hymenocephalus italicus	10.24	9250	0.79	
Serranus africana	0.24	50	0.02	
Total	1301.72		100.00	

PROJECT STATION:3352

DATE:24/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1039
start stop duration Long E 1309
TIME :19:31:39 19:58:45 27 (min) Purpose code: 3
LOG :7254.46 7255.75 1.27 Area code : 2
FDEPTH: 524 526 GearCond.code:
BDEPTH: 524 526 Validity code:
Towing dir: 320ø Wire cut:1450 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 167.58 CATCH/HOUR: 372.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	185.11	52562	49.71	
Benthodesmus tenuis	62.69	2007	16.83	
Hoplostethus cadenati	33.60	1400	9.02	
Yarella blackfordi *	29.24	996	7.85	
MYCTOPHIDAE	12.44	1618	3.34	
Plesionika martia	12.44	451	3.34	
Aristeus varidens, male	8.09	1073	2.17	7034
Lamprogrammus exutus	5.44	342	1.46	
Aristeus varidens, female	5.29	249	1.42	7035
Stomias boa boa	5.13	156	1.38	
Illex coindetii	3.73	16	1.00	
Triplophos hemingi	2.64	420	0.71	
CONGRIDAE	2.02	342	0.54	
Hymenocephalus italicus	1.40	264	0.38	
Stereomastis sp.	0.78	109	0.21	
Xenodermichthys copei	0.78	109	0.21	
Laemonema laureysi	0.78	140	0.21	
Chlorophthalmus atlanticus	0.78	31	0.21	
Total	372.38		99.99	

PROJECT STATION:3353

DATE:25/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1035
start stop duration Long E 1314
TIME :05:38:17 06:08:03 30 (min) Purpose code: 3
LOG :7273.48 7274.99 1.48 Area code : 2
FDEPTH: 131 131 GearCond.code:
BDEPTH: 131 131 Validity code:
Towing dir: 340ø Wire cut: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 49.12 CATCH/HOUR: 98.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	28.20	136	28.71	7037
Trachurus trecae, juvenile	28.10	472	28.60	7036
Squatina oculata	8.20	2	8.35	
Boops boops	6.58	144	6.70	
Brotula barbata	4.00	6	4.07	
Trichiurus lepturus	3.30	4	3.36	
Illex coindetii	3.22	52	3.28	
Trigla lyra	3.00	28	3.05	
Zenopsis conchifer	2.58	2	2.63	
Pterothrissus belloci	2.12	20	2.16	
Todaropsis eblanae	1.80	74	1.83	
Zeus faber	1.66	10	1.69	
Uranoscopus cadenati	1.50	10	1.53	
Spicara alta	1.30	26	1.32	
Branchiostegus semifasciatus	1.26	2	1.28	
Citharus linguatula	0.98	30	1.00	
Perulibatrachus elminensis	0.36	2	0.37	
Peristedion cataphractum	0.08	2	0.08	
Total	98.24		100.01	

PROJECT STATION:3354

DATE:25/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1032
start stop duration Long E 1322
TIME :07:48:18 08:18:01 30 (min) Purpose code: 3
LOG :7287.43 7288.94 1.50 Area code : 2
FDEPTH: 94 93 GearCond.code:
BDEPTH: 94 93 Validity code:
Towing dir: 330ø Wire cut: 280 m Speed: 30 kn*10

Sorted: 95 Kg Total catch: 354.16 CATCH/HOUR: 708.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	337.50	378	47.65	7039
Trichiurus lepturus	137.40	198	19.40	
Brachydeuterus auritus	123.30	594	17.41	7038
Trachurus trecae, juvenile	39.00	624	5.51	7041
Zeus faber	19.86	120	2.80	
Trachurus trecae	13.98	42	1.97	7040
Raja miraletus	13.80	12	1.95	
Trigla lyra	7.62	54	1.08	
Fistularia petimba	5.64	18	0.80	
Squatina oculata	5.00	2	0.71	
Lagocephalus laevigatus	1.56	6	0.22	
Boops boops	1.14	18	0.16	
Saurida brasiliensis	0.84	138	0.12	
Illex coindetii	0.72	18	0.10	
Citharus linguatula	0.66	18	0.09	
Sepia officinalis hierredda	0.30	6	0.04	
Total	708.32		100.01	

PROJECT STATION:3355

DATE:25/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1028
start stop duration Long E 1328
TIME :09:33:01 09:49:18 16 (min) Purpose code: 3
LOG :7297.67 7298.49 0.81 Area code : 2
FDEPTH: 49 48 GearCond.code:
BDEPTH: 49 48 Validity code:
Towing dir: 350ø Wire cut: 150 m Speed: 30 kn*10

Sorted: 68 Kg Total catch: 202.89 CATCH/HOUR: 760.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	283.50	1316	37.26	7054
Pagellus bellottii	149.63	968	19.67	7055
Dentex barnardi	146.81	630	19.30	7057
Pomadasys incisus	73.91	304	9.71	7056
Sardinella aurita	20.93	158	2.75	7053
Trachurus trecae	19.13	56	2.51	7048
Pseudupeneus prayensis	18.56	146	2.44	
Sardinella maderensis	16.09	68	2.11	7047
Epinephelus aeneus	8.89	11	1.17	
Epinephelus alexandrinus *	7.65	11	1.01	
Chaetodon hoefleri	7.54	45	0.99	
Alloteuthis africana	3.94	1271	0.52	
Parapristipoma octolineatum	3.83	11	0.50	
Plectorhinchus mediterraneus	0.45	34	0.06	
Total	760.86		100.00	

PROJECT STATION:3356

DATE:25/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1026
start stop duration Long E 1330
TIME :10:00:37 10:00:53 22 (min) Purpose code: 3
LOG :7305.46 7306.54 1.08 Area code : 2
FDEPTH: 30 32 GearCond.code:
BDEPTH: 30 32 Validity code:
Towing dir: 320ø Wire out: 120 m Speed: 30 kn*10

Sorted: 63 Kg Total catch: 346.18 CATCH/HOUR: 944.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	447.74	7366	47.42	
Sardinella maderensis	264.00	4650	27.96	7051
Trichiurus lepturus	57.74	210	6.12	
Trachurus trecae	38.10	706	4.04	7050
Pagellus bellottii	28.94	240	3.07	7049
Sardinella aurita	22.64	330	2.40	7052
Raja miraletus	22.34	30	2.37	
Selene dorsalis	21.30	180	2.26	
Sphyraena sphyraena	16.20	30	1.72	
Galeoides decadactylus	14.70	30	1.56	
Dentex barnardi	5.10	46	0.54	
Sepia officinalis hierredda	2.70	16	0.29	
Pseudupeneus prayensis	2.54	16	0.27	
Total	944.04		100.02	

PROJECT STATION:3357

DATE:25/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1014
start stop duration Long E 1324
TIME :11:40:18 13:21:15 34 (min) Purpose code: 3
LOG :7318.68 7320.49 1.79 Area code : 2
FDEPTH: 31 30 GearCond.code:
BDEPTH: 31 30 Validity code:
Towing dir: 333ø Wire out: 125 m Speed: 30 kn*10

Sorted: 96 Kg Total catch: 828.62 CATCH/HOUR: 1462.27

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	934.87	9379	63.93	
Brachydeuterus auritus Juv.	256.48	59644	17.54	
Chloroscombrus chrysurus	101.98	895	6.97	
Selene dorsalis	66.78	1442	4.57	
Galeoides decadactylus	43.39	122	2.97	
Pseudotolithus typus	15.18	30	1.04	
Sphyraena sphyraena	14.19	501	0.97	
Pomadasys incisus	10.62	30	0.73	
Trachurus trecae	9.41	46	0.64	
Pagellus bellottii	4.24	12	0.29	
Sardinella maderensis	3.18	60	0.22	
Dicologoglossa cuneata	0.76	12	0.05	
Pseudupeneus prayensis	0.60	12	0.04	
Sepia orbignyana	0.60	12	0.04	
Total	1462.28		100.00	

PROJECT STATION:3358

DATE:25/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1013
start stop duration Long E 1319
TIME :14:15:30 14:45:23 30 (min) Purpose code: 3
LOG :7325.08 7326.66 1.58 Area code : 2
FDEPTH: 45 47 GearCond.code:
BDEPTH: 45 47 Validity code:
Towing dir: 330ø Wire out: 175 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 64.72 CATCH/HOUR: 129.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys incisus	110.90	516	85.68	7044
Brachydeuterus auritus	7.16	64	5.53	
Pagellus bellottii	3.82	40	2.95	7046
Trachurus trecae	2.80	24	2.16	7045
Chloroscombrus chrysurus	2.30	18	1.78	
Alloteuthis africana	0.66	210	0.51	
Chelidonichthys capensis	0.50	2	0.39	
Selene dorsalis	0.32	4	0.25	
Decapterus rhonchus	0.30	2	0.23	
Lagocephalus laevigatus	0.30	2	0.23	
Dentex barnardi	0.18	2	0.14	
Citharus linguatula	0.16	4	0.12	
GOBIIDAE	0.02	2	0.02	
Saurida brasiliensis	0.02	16	0.02	
Total	129.44		100.01	

PROJECT STATION:3359

DATE:25/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1013
start stop duration Long E 1316
TIME :15:51:12 16:21:12 30 (min) Purpose code: 3
LOG :7332.93 7334.46 1.61 Area code : 2
FDEPTH: 67 68 GearCond.code:
BDEPTH: 67 68 Validity code:
Towing dir: 320ø Wire out: 220 m Speed: 30 kn*10

Sorted: 92 Kg Total catch: 448.72 CATCH/HOUR: 897.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	479.20	5072	53.40	
Dasyatis centroura	160.00	2	17.83	
Trachurus trecae, juvenile	105.60	5048	11.77	7042
Pagellus bellottii	60.88	616	6.78	7043
Squatina oculata	20.48	8	2.28	
Pomadasys incisus	13.28	56	1.48	
Boops boops	8.32	272	0.93	
Torpedo torpedo	7.68	16	0.86	
Zeus faber	7.36	24	0.82	
Fistularia petimba	5.68	16	0.63	
Chelidonichthys gabonensis	4.64	80	0.52	
Umbrina canariensis	4.24	8	0.47	
Selene dorsalis	3.52	32	0.39	
Sepiella ornata	3.44	2	0.38	
Alloteuthis africana	3.28	1088	0.37	
Brachydeuterus auritus Juv.	2.88	632	0.32	
Pentheroscion mbizi	2.64	8	0.29	
Pseudupeneus prayensis	1.52	56	0.17	
Sphyraena guachancho	1.12	8	0.12	
Raja miraletus	1.12	8	0.12	
Dentex barnardi	0.48	8	0.05	
Saurida brasiliensis	0.08	4	0.01	
Total	897.44		99.99	

PROJECT STATION:3360

DATE:25/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1024
start stop duration Long E 1255
TIME :19:10:11 19:40:15 30 (min) Purpose code: 3
LOG :7360.57 7361.96 1.38 Area code : 2
FDEPTH: 608 613 GearCond.code:
BDEPTH: 608 613 Validity code:
Towing dir: 320ø Wire out:1550 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 199.46 CATCH/HOUR: 398.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Stomias boa boa	106.32	7380	26.65	
Triplophos hemingi	95.52	12072	23.94	
Nematocarcinus africanus	82.20	3300	20.61	
Merluccius polli	43.80	36	10.98	
Lamprogrammus exutus	19.80	360	4.96	
Hoplostethus cadenati	10.80	360	2.71	
Stomias sp.	10.44	252	2.62	
Scymnodon squamulosus	8.52	36	2.14	
Thysanoteuthis rhombus	7.20	24	1.80	
Xenodermichthys copei	3.60	336	0.90	
Trichiurus lepturus	2.52	24	0.63	
Stereomastis sp.	2.16	300	0.54	
Aristeus varidens, female	1.56	60	0.39	
Aristeus varidens, male	1.20	132	0.30	
Nezumia sp.	0.88	48	0.22	
Glyphus marsupialis	0.84	60	0.21	
Laemonema laureysi	0.72	96	0.18	
Plesionika martia	0.36	300	0.09	
Nemichthys scolopaceus	0.36	12	0.09	
MYCTOPHIDAE	0.12	732	0.03	
Total	398.92		99.99	

PROJECT STATION:3361

DATE:26/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1022
start stop duration Long E 1304
TIME :05:32:20 05:57:23 25 (min) Purpose code: 3
LOG :7427.58 7428.85 1.26 Area code : 2
FDEPTH: 172 176 GearCond.code:
BDEPTH: 172 176 Validity code:
Towing dir: 310ø Wire out: 500 m Speed: 30 kn*10

Sorted: 100 Kg Total catch: 908.61 CATCH/HOUR: 2180.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1291.68	190231	59.23	
Zenopsis conchifer	749.52	1526	34.37	
Todaropsis eblanae	34.13	756	1.57	
Brotula barbata	21.60	22	0.99	
Raja miraletus	17.06	22	0.78	
Illex coindetii	14.69	194	0.67	
Torpedo torpedo	11.88	22	0.54	
Lagocephalus laevigatus	11.66	22	0.53	
Uranoscopus cadenati	8.86	43	0.41	
Dentex angolensis	7.10	29	0.33	7058
Zeus faber	3.84	14	0.18	
Sepia officinalis hierredda	3.02	22	0.14	
Trachurus trecae	3.02	22	0.14	
Trichiurus lepturus	2.38	86	0.11	
Cynoglossus capensis	0.22	22	0.01	
Total	2180.66		100.00	

PROJECT STATION:3362

DATE:26/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1016
start stop duration Long E 1311
TIME :07:39:49 08:09:40 30 (min) Purpose code: 3
LOG :7440.63 7442.16 1.52 Area code : 2
FDEPTH: 95 92 GearCond.code:
BDEPTH: 95 92 Validity code:
Towing dir: 310ø Wire out: 300 m Speed: 30 kn*10

Sorted: Kg Total catch: 102.57 CATCH/HOUR: 205.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	91.20	4488	44.46	7060
Brachydeuterus auritus	56.80	340	27.69	7061
Squatina squatina	11.72	8	5.71	
Pagellus bellottii	10.22	156	4.98	7059
Zeus faber	9.00	46	4.39	
Trigla lyra	7.66	6	3.73	
Pistularia petimba	6.52	16	3.18	
Pistularia tabacaria	2.30	2	1.12	
Alloteuthis africana	2.00	536	0.97	
Saurida brasiliensis	1.86	350	0.91	
Lagocephalus laevigatus	1.44	4	0.70	
Citharus linguatula	1.20	28	0.58	
Raja miraletus	1.14	2	0.56	
Zenopsis conchifer	0.90	2	0.44	
Sepia orbignyana	0.34	2	0.17	
Dentex angolensis	0.32	6	0.16	
Todaropsis eblanae	0.28	2	0.14	
Illex coindetii	0.16	2	0.08	
Dentex barnardi	0.08	2	0.04	
Total	205.14		100.01	

PROJECT STATION:3363

DATE:26/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1000
start stop duration Long E 1314
TIME :09:59:21 10:29:19 30 (min) Purpose code: 3
LOG :7457.02 7458.61 1.57 Area code : 2
FDEPTH: 31 32 GearCond.code:
BDEPTH: 31 32 Validity code:
Towing dir: 350ø Wire out: 120 m Speed: 30 kn*10

Sorted: 63 Kg Total catch: 223.53 CATCH/HOUR: 447.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus Juv.	265.30	34762	59.34	
Brachydeuterus auritus	76.30	694	17.07	
Trachurus trecae	34.30	420	7.67	7062
Selene dorsalis	17.28	372	3.87	
Galeoides decadactylus	17.00	70	3.80	
Raja miraletus	13.58	28	3.04	
Sphyraena sphyraena	10.28	288	2.30	
Pagellus bellottii	6.72	42	1.50	
Ephippion guttifer	2.94	2	0.66	
Torpedo marmorata	2.10	8	0.47	
Sardinella maderensis	0.56	50	0.13	
Sepia officinalis hierredda	0.42	8	0.09	
Boops boops	0.14	8	0.03	
Citharus linguatula	0.14	8	0.03	
Total	447.06		100.00	

PROJECT STATION:3364

DATE:26/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1002
start stop duration Long E 1310
TIME :11:26:48 11:56:36 30 (min) Purpose code: 3
LOG :7464.30 7465.83 1.50 Area code : 2
FDEPTH: 59 62 GearCond.code:
BDEPTH: 59 62 Validity code:
Towing dir: 330ø Wire out: 210 m Speed: 30 kn*10

Sorted: 76 Kg Total catch: 76.36 CATCH/HOUR: 152.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	56.90	514	37.26	
Trachurus trecae	21.80	376	14.27	7065
Pagellus bellottii	20.80	214	13.62	7066
Pomadasys incisus	16.40	86	10.74	
Squatina aculeata	11.20	2	7.33	
Alloteuthis africana	4.86	1964	3.18	
Pseudupeneus prayensis	4.08	54	2.67	
Lagocephalus laevigatus	2.34	8	1.53	
Dentex barnardi	2.06	26	1.35	7067
Sardinella aurita	2.02	28	1.32	7063
Raja miraletus	1.74	2	1.14	
Zeus faber	1.60	6	1.05	
Trigla lyra	1.28	14	0.84	
Selene dorsalis	1.20	2	0.79	
Sepiella ornata	0.96	2	0.63	
Sphyraena sphyraena	0.94	14	0.62	
Saurida brasiliensis	0.90	40	0.59	
Dentex angolensis	0.80	36	0.52	7064
Trichiurus lepturus	0.54	2	0.35	
Sepia officinalis hierredda	0.12	2	0.08	
Citharus linguatula	0.12	2	0.08	
Boops boops	0.04	2	0.03	
Monolene microstoma	0.02	2	0.01	
Total	152.72		100.00	

PROJECT STATION:3365

DATE:26/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1003
start stop duration Long E 1306
TIME :13:00:46 13:30:33 30 (min) Purpose code: 3
LOG :7472.87 7474.46 1.56 Area code : 2
FDEPTH: 85 86 GearCond.code:
BDEPTH: 85 86 Validity code:
Towing dir: 315ø Wire out: 210 m Speed: 30 kn*10

Sorted: 58 Kg Total catch: 58.55 CATCH/HOUR: 117.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	72.90	2768	62.25	7068
Raja miraletus	5.50	10	4.70	
Chelidonichthys gabonensis	5.44	46	4.65	
Squatina oculata	4.40	2	3.76	
Zeus faber	4.16	20	3.55	
Sardinella aurita	4.02	74	3.43	7069
Pagellus bellottii	4.00	44	3.42	7070
Sepia orbignyana	2.74	2	2.34	
Pseudupeneus prayensis	2.26	14	1.93	
Fistularia petimba	2.02	6	1.73	
Priacanthus arenatus	1.54	2	1.32	
Lagocephalus laevigatus	1.34	22	1.14	
Torpedo torpedo	1.16	2	0.99	
Dentex angolensis	1.10	4	0.94	
Alloteuthis africana	1.10	444	0.94	
Dentex barnardi	0.96	8	0.82	
Illex coindetii	0.76	10	0.65	
Citharus linguatula	0.74	20	0.63	
Brachydeuterus auritus	0.46	4	0.39	
Ariomma bondi	0.32	6	0.27	
Saurida brasiliensis	0.12	20	0.10	
Boops boops	0.04	2	0.03	
Dentex congoensis	0.02	2	0.02	
Total	117.10		100.00	

PROJECT STATION:3366

DATE:26/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 1006
start stop duration Long E 1301
TIME :14:48:28 15:18:21 30 (min) Purpose code: 3
LOG :7483.28 7484.78 1.48 Area code : 2
FDEPTH: 102 103 GearCond.code:
BDEPTH: 102 103 Validity code:
Towing dir: 330ø Wire out: 320 m Speed: 30 kn*10

Sorted: 151 Kg Total catch: 151.50 CATCH/HOUR: 303.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	266.80	9852	88.05	7071
Squatina oculata	10.00	2	3.30	
Raja miraletus	5.24	8	1.73	
Sepia officinalis hierredda	4.56	44	1.50	
Ariomma bondi	2.90	46	0.96	
Torpedo torpedo	2.84	6	0.94	
Zeus faber	2.76	8	0.91	
Pistularia petimba	2.16	4	0.71	
Trigla lyra	1.42	8	0.47	
Brachydeuterus auritus	1.14	6	0.38	
Saurida brasiliensis	0.90	94	0.30	
Citharus linguatula	0.76	14	0.25	
Illex coindetii	0.68	16	0.22	
Pagellus bellottii	0.34	4	0.11	
Dentex angolensis	0.26	2	0.09	
Alloteuthis africana	0.14	56	0.05	
Boops boops	0.10	2	0.03	
Total	303.00		100.00	

PROJECT STATION:3367

DATE:26/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 1006
start stop duration Long E 1252
TIME :16:43:54 17:13:44 30 (min) Purpose code: 3
LOG :7496.43 7498.00 1.57 Area code : 2
FDEPTH: 379 382 GearCond.code:
BDEPTH: 379 382 Validity code:
Towing dir: 345ø Wire out:1090 m Speed: 30 kn*10

Sorted: 50 Kg Total catch: 352.73 CATCH/HOUR: 705.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merlucclus polli	329.00	994	46.64	7072
Nematocarcinus africanus	298.20	73836	42.27	
Hymenocephalus italicus	24.92	8	3.53	
Laemonema laureysi	17.22	182	2.44	
Chaunax pictus	9.66	350	1.37	
Malacocephalus laevis	5.04	42	0.71	
Chlorophthalmus atlanticus	4.76	112	0.67	
Gadella imberbis	4.20	140	0.60	
Benthodesmus tenuis	3.36	196	0.48	
Aristeus varidens, male	3.08	364	0.44	7073
Aristeus varidens, female	1.40	70	0.20	7074
Solenocera africana	1.12	98	0.16	
Dibranchus atlanticus	0.98	70	0.14	
Glyphus marsupialis	0.84	126	0.12	
CONGRIDAE	0.84	14	0.12	
PARALEPIDIDAE	0.70	28	0.10	
Caelorinchus simorhynchus	0.14	14	0.02	
Total	705.46		100.01	

PROJECT STATION:3368

DATE:26/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 958
start stop duration Long E 1245
TIME :19:29:22 19:59:37 30 (min) Purpose code: 3
LOG :7508.05 7509.55 1.49 Area code : 2
FDEPTH: 738 749 GearCond.code:
BDEPTH: 738 749 Validity code:
Towing dir: 309ø Wire out:1750 m Speed: 30 kn*10

Sorted: 39 Kg Total catch: 176.39 CATCH/HOUR: 352.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	97.64	2340	27.68	
Nematocarcinus africanus	86.40	19592	24.49	
Merluccius polli	53.54	44	15.18	7075
Yarella blackfordi *	30.24	818	8.57	
Nezumia sp.	17.90	360	5.07	
Stereomastis sp.	14.48	558	4.10	
Lamprogrammus exutus	11.78	90	3.34	
Triplophos hemingi	7.74	774	2.19	
Aristeus varidens, female	5.94	242	1.68	7076
Bathypterois sp	4.68	368	1.33	
Stomias sp.	4.50	98	1.28	
CONGRIDAE	3.52	98	1.00	
Laemonema laureysi	3.42	1178	0.97	
Paromola cuvieri	2.30	2	0.65	
MACROURIDAE	2.16	18	0.61	
Glyphus marsupialis	1.88	98	0.53	
RAJIDAE	1.52	90	0.43	
Talismania sp.	0.90	18	0.26	
Xenodermichthys copei	0.64	18	0.18	
DICERATIIDAE	0.62	28	0.18	
Etmopterus pusillus	0.54	8	0.15	
Dibranchus atlanticus	0.26	28	0.07	
Aristeus varidens, male	0.18	18	0.05	7077
Total	352.78		99.99	

PROJECT STATION:3369

DATE:26/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 954
start stop duration Long E 1244
TIME :21:57:04 22:29:20 32 (min) Purpose code: 3
LOG :7517.44 7519.03 1.58 Area code : 2
FDEPTH: 630 615 GearCond.code:
BDEPTH: 630 615 Validity code:
Towing dir: 155ø Wire out:1550 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 103.44 CATCH/HOUR: 193.95

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	98.63	23850	50.85	
Gonostoma denudata	34.50	195	17.79	
Yarella blackfordi *	14.10	375	7.27	
Benthodesmus tenuis	7.20	233	3.71	
Merluccius polli	6.56	11	3.38	
Lamprogrammus exutus	5.70	75	2.94	
Halosaurus ovenil	5.03	15	2.59	
POLYCHAELIDAE	3.00	270	1.55	
Nezumia sp.	2.85	128	1.47	
Etmopterus pusillus	2.81	13	1.45	
Todaropsis eblanae	1.95	8	1.01	
Triplophos hemingi	1.88	270	0.97	
Aristeus varidens	1.65	135	0.85	
Hoplostethus cadenati	1.50	45	0.77	
Raja sp.	1.43	15	0.74	
Bassanago albescens	1.43	68	0.74	
Plesiopenaeus edwardsianus	0.90	60	0.46	
MORIDAE	0.60	15	0.31	
Bathyuroconger vicinus	0.60	15	0.31	
Gadella imberbis	0.53	60	0.27	
MYCTOPHIDAE	0.38	38	0.20	
Etmopterus spinax	0.38	4	0.20	
ALEPOCEPHALIDAE	0.23	38	0.12	
Callinectes sp.	0.08	8	0.04	
Malacocephalus occidentalis	0.08	8	0.04	
Total	194.00		100.03	

PROJECT STATION:3370

DATE:27/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 946
start stop duration Long E 1300
TIME :05:27:55 05:58:12 30 (min) Purpose code: 3
LOG :7568.28 7569.94 1.54 Area code : 2
FDEPTH: 93 95 GearCond.code:
BDEPTH: 93 95 Validity code:
Towing dir: 330ø Wire out: 300 m Speed: 30 kn*10

Sorted: 75 Kg Total catch: 714.37 CATCH/HOUR: 1428.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	581.68	15452	40.71	7079
Brachydeuterus auritus	579.80	3514	40.58	7080
Boops boops	82.26	264	5.76	
Zeus faber	32.90	122	2.30	
Trichiurus lepturus	30.08	34	2.11	
Umbrina canariensis	29.04	122	2.03	
Dentex angolensis	21.12	228	1.48	7078
Saurida brasiliensis	12.32	2552	0.86	
Trigla lyra	10.38	70	0.73	
Squatina aculeata	9.56	8	0.67	
Atractoscion aequidens	7.74	6	0.54	
Illex coindetii	7.56	88	0.53	
Brotula barbata	6.06	6	0.42	
Alloteuthis africana	5.10	1144	0.36	
Sepia officinalis hierredda	4.80	4	0.34	
Pontinus accraensis	2.46	16	0.17	
Dentex barnardi	2.28	16	0.16	
Chaetodon hoefleri	2.10	16	0.15	
Citharus linguatula	1.58	34	0.11	
Total	1428.82		100.01	

PROJECT STATION:3371

DATE:27/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 945
start stop duration Long E 1310
TIME :07:34:22 08:04:22 30 (min) Purpose code: 3
LOG :7581.98 7583.47 1.49 Area code : 2
FDEPTH: 31 31 GearCond.code:
BDEPTH: 31 31 Validity code:
Towing dir: 340ø Wire out: 120 m Speed: 30 kn*10

Sorted: Kg Total catch: 20.43 CATCH/HOUR: 40.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	18.12	90	44.35	7081
Balistes punctatus	5.22	22	12.78	
Sepia officinalis hierredda	4.54	24	11.11	
Raja miraletus	4.16	8	10.18	
Pomadasys jubelini	2.14	2	5.24	
Psettodes belcheri	1.38	10	3.38	
Chloroscombrus chrysurus	1.36	10	3.33	
Decapterus rhonchus	1.08	4	2.64	
Selene dorsalis	0.74	10	1.81	
Lagocephalus laevigatus	0.70	4	1.71	
Fistularia petimba	0.60	12	1.47	
Chaetodon hoefleri	0.52	4	1.27	
Alloteuthis africana	0.30	64	0.73	
Total	40.86		100.00	

PROJECT STATION:3372

DATE:27/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 927
start stop duration Long E 1304
TIME :10:06:55 10:36:34 30 (min) Purpose code: 3
LOG :7600.69 7602.26 1.56 Area code : 2
FDEPTH: 26 26 GearCond.code:
BDEPTH: 26 26 Validity code:
Towing dir: 340ø Wire out: 120 m Speed: 30 kn*10

Sorted: 261 Kg Total catch: 261.26 CATCH/HOUR: 522.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alectis alexandrinus	270.40	400	51.75	
Acanthurus monroviae	120.70	156	23.10	
Pagrus caeruleostictus	23.90	76	4.57	7084
Bodianus speciosus	21.30	20	4.08	
Lutjanus goreensis	20.80	16	3.98	
Dentex barnardi	15.40	50	2.95	7082
Sparus pagrus africanus *	13.94	20	2.67	7083
Balistes vetula	9.14	12	1.75	
Epinephelus aeneus	5.60	4	1.07	
Lagocephalus laevigatus	5.12	8	0.98	
Caranx sp.	4.64	6	0.89	
Sepiella ornata	2.54	2	0.49	
Panulirus regius	2.50	2	0.48	
Fistularia petimba	1.92	6	0.37	
Pagellus bellottii	1.78	4	0.34	
Pseudupeneus prayensis	1.64	12	0.31	
Chaetodon hoefleri	0.82	6	0.16	
Engraulis encrasicolus	0.22	52	0.04	
Boops boops	0.12	4	0.02	
Saurida brasiliensis	0.02	26		
Chloroscombrus chrysurus	0.02	2		
Total	522.52		100.00	

PROJECT STATION:3373

DATE:27/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 929
start stop duration Long E 1300
TIME :11:39:34 12:09:26 30 (min) Purpose code: 3
LOG :7609.23 7610.77 1.48 Area code : 2
FDEPTH: 51 49 GearCond.code:
BDEPTH: 51 49 Validity code:
Towing dir: 345ø Wire out: 175 m Speed: 30 kn*10

Sorted: 9 Kg Total catch: 9.58 CATCH/HOUR: 19.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alloteuthis africana	9.58	2802	50.00	
Raja miraletus	4.18	6	21.82	
Lagocephalus laevigatus	2.08	2	10.86	
Sepiella ornata	1.20	2	6.26	
Pseudupeneus prayensis	0.86	4	4.49	
Chaetodon hoefleri	0.64	4	3.34	
Pagellus bellottii	0.28	4	1.46	
Chelidonichthys gabonensis	0.24	2	1.25	
Bembrops heterurus	0.04	2	0.21	
Engraulis encrasicolus	0.02	2	0.10	
Selene dorsalis	0.02	2	0.10	
Decapterus rhonchus	0.02	2	0.10	
Total	19.16		99.99	

PROJECT STATION:3374

DATE:27/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 933
start stop duration Long E 1252
TIME :13:42:47 14:12:33 30 (min) Purpose code: 3
LOG :7623.52 7625.06 1.53 Area code : 2
FDEPTH: 114 111 GearCond.code:
BDEPTH: 114 111 Validity code:
Towing dir: 340ø Wire out: 361 m Speed: 30 kn*10

Sorted: 32 Kg Total catch: 361.61 CATCH/HOUR: 723.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	617.00	9560	85.31	
Zeus faber	36.90	146	5.10	
Trichiurus lepturus	35.20	98	4.87	
Citharus linguatula	7.40	80	1.02	
Illex coindetii	6.60	8	0.91	
Squatina oculata	5.80	4	0.80	
Torpedo torpedo	2.72	4	0.38	
Dentex angolensis	2.14	6	0.30	
Raja miraletus	1.88	4	0.26	
Fistularia petimba	1.46	2	0.20	
Miracorvina angolensis	1.22	4	0.17	
Pterothrissus belloci	1.12	6	0.15	
Uranoscopus cadenati	1.06	2	0.15	
Brotula barbata	0.70	2	0.10	
Monolene microstoma	0.60	20	0.08	
Zenopsis conchifer	0.50	2	0.07	
Saurida brasiliensis	0.40	60	0.06	
Chelidonichthys gabonensis	0.32	2	0.04	
Parapenaeus longirostris	0.20	40	0.03	
Total	723.22		100.00	

PROJECT STATION:3375

DATE:27/ 3/04 GEAR TYPE: BT No:15 POSITION:Lat S 936
start stop duration Long E 1239
TIME :16:37:34 16:45:56 8 (min) Purpose code: 3
LOG :7643.24 7643.53 0.27 Area code : 2
FDEPTH: 536 531 GearCond.code: 8
BDEPTH: 536 531 Validity code: 9
Towing dir: 355ø Wire out:1450 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP

PROJECT STATION:3376

DATE:28/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 916
start stop duration Long E 1258
TIME :05:24:35 05:54:05 30 (min) Purpose code: 3
LOG :7712.37 7713.81 1.47 Area code : 2
FDEPTH: 26 21 GearCond.code:
BDEPTH: 26 21 Validity code:
Towing dir: 340ø Wire out: 120 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 987.08 CATCH/HOUR: 1974.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus Juv.	1478.00	10962	74.87	
Brachydeuterus auritus	337.40	798	17.09	
Sphyraena guachancho	81.32	174	4.12	
Lagocephalus laevigatus	21.14	84	1.07	
Galeoides decadactylus	14.56	224	0.74	
Ilisha africana	10.70	118	0.54	
Alectis alexandrinus	7.00	6	0.35	
Selene dorsalis	5.32	112	0.27	
Arius parkii	5.28	12	0.27	
Rhinobatos albomaculatus	2.12	2	0.11	
Pentheroscion mbizi	2.10	14	0.11	
Scomberomorus tritor	2.02	2	0.10	
Stromateus fiatola	1.76	2	0.09	
Sardinella maderensis	1.54	42	0.08	
Trachurus trecae, juvenile	1.54	28	0.08	
Sepia officinalis hierredda	1.38	2	0.07	
Penaeus notialis	0.50	10	0.03	
Pseudotolithus typus	0.48	2	0.02	
Total	1974.16		100.01	

PROJECT STATION:3377

DATE:28/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 913
start stop duration Long E 1251
TIME :07:16:02 07:48:40 33 (min) Purpose code: 3
LOG :7721.41 7723.08 1.62 Area code : 2
FDEPTH: 76 85 GearCond.code:
BDEPTH: 76 85 Validity code:
Towing dir: 340ø Wire out: 240 m Speed: 30 kn*10

Sorted: 45 Kg Total catch: 266.17 CATCH/HOUR: 483.95

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	243.73	3564	50.36	
Trichiurus lepturus	166.45	405	34.39	
Arius heudeloti	19.09	5	3.94	
Umbrina canariensis	10.89	107	2.25	
Trachurus trecae, juvenile	9.47	273	1.96	7086
Selene dorsalis	7.05	44	1.46	
Alloteuthis africana	3.62	960	0.75	
Stromateus fiatola	3.24	4	0.67	
Pteroscion peli	2.93	13	0.61	
Remora australis	2.18	4	0.45	
Citharus linguatula	2.16	31	0.45	
Brotula barbata	1.73	2	0.36	
Dentex angolensis	1.60	13	0.33	
Fistularia petimba	1.60	4	0.33	
Saurida brasiliensis	1.58	336	0.33	
Trachurus trecae	1.42	4	0.29	7085
Pterothrissus belloci	1.40	7	0.29	
Erythrocles monodi	1.00	2	0.21	
Sepia officinalis hierredda	0.89	7	0.18	
Synaptura lusitanica	0.51	7	0.11	
Parapenaeus longirostris, fem.	0.44	69	0.09	
Pseudupeneus prayensis	0.38	7	0.08	
Parapenaeus longirostris, male	0.20	82	0.04	
CONOSTOMATIDAE	0.18	165	0.04	
Fistularia tabacaria	0.15	2	0.03	
Echeneis naucrates	0.05	2	0.01	
Total	483.94		100.01	

PROJECT STATION:3378

DATE:28/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 916
start stop duration Long E 1247
TIME :09:05:28 09:35:24 30 (min) Purpose code: 3
LOG :7731.22 7732.71 1.49 Area code : 2
FDEPTH: 116 115 GearCond.code:
BDEPTH: 116 115 Validity code:
Towing dir: 355ø Wire out: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 54.92 CATCH/HOUR: 109.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Arius parkii	18.80	2	17.12	
Zeus faber	18.70	74	17.02	
Dentex angolensis	16.70	68	15.20	7088
Trigla lyra	11.26	72	10.25	
Saurida brasiliensis	9.16	1858	8.34	
Trichiurus lepturus	8.20	12	7.47	
Pterothrissus belloci	7.58	44	6.90	
Lagocephalus laevigatus	4.22	6	3.84	
Torpedo torpedo	3.52	8	3.20	
Raja miraletus	1.94	2	1.77	
Todaropsis eblanae	1.78	56	1.62	
Parapenaeus longirostris, fem.	1.60	84	1.46	7090
Citharus linguatula	0.96	16	0.87	
Fistularia petimba	0.86	2	0.78	
Erythrocles monodi	0.76	2	0.69	
Alloteuthis africana	0.72	210	0.66	
Monolene microstoma	0.64	24	0.58	
Illex coindetii	0.64	28	0.58	
Sepia officinalis hierredda	0.58	4	0.53	
Bembrops heterurus	0.38	2	0.35	
Parapenaeus longirostris, male	0.30	70	0.27	7089
Pontinus kuhlii	0.30	2	0.27	
CONOSTOMATIDAE	0.24	18	0.22	
Total	109.84		99.99	

PROJECT STATION:3379

DATE:28/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 912
start stop duration Long E 1242
TIME :11:00:57 11:21:51 21 (min) Purpose code: 3
LOG :7739.90 7740.92 1.01 Area code : 2
FDEPTH: 261 263 GearCond.code:
BDEPTH: 261 263 Validity code:
Towing dir: 20ø Wire out: 750 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 603.10 CATCH/HOUR: 1723.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1309.29	85286	75.98	
Zenopsis conchifer	94.86	177	5.51	
Dentex angolensis	81.00	186	4.70	7092
Brotula barbata	36.43	23	2.11	
Raja miraletus	35.57	43	2.06	
Coelorinchus coelorhincus	34.29	214	1.99	
Merluccius polli	31.71	129	1.84	7091
Gephyroberyx darwini	27.14	60	1.58	
Chlorophthalmus atlanticus	24.00	557	1.39	
Malacocephalus occidentalis	10.29	214	0.60	
Dentex macrophthalmus	9.31	20	0.54	
Parapenaeus longirostris, fem.	8.14	1414	0.47	7093
Trichiurus lepturus	7.74	14	0.45	
Illex coindetii	3.43	43	0.20	
Bembrops greyi	3.43	43	0.20	
Scorpaena normani	3.31	3	0.19	
Parapenaeus longirostris, male	2.14	471	0.12	7094
Zeus faber	0.57	3	0.03	
Pagellus bellottii	0.49	3	0.03	
Total	1723.14		99.99	

PROJECT STATION:3380

DATE:28/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 906
start stop duration Long E 1241
TIME :13:03:46 13:33:28 30 (min) Purpose code: 3
LOG :7750.17 7751.65 1.47 Area code : 2
FDEPTH: 435 434 GearCond.code:
BDEPTH: 435 434 Validity code:
Towing dir: 30ø Wire out:1205 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 539.70 CATCH/HOUR: 1079.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	335.50	84568	31.08	
Merluccius polli	242.80	764	22.49	7095
Chaunax sp.	148.72	3036	13.78	
Chaceon maritae	105.38	462	9.76	
Dibranchus atlanticus	76.12	5082	7.05	
Torpedo nobiliana	35.10	2	3.25	
Lophius vaillanti	20.60	6	1.91	
B I V A L V E S	18.26	264	1.69	
Aristeus varidens, female	14.38	592	1.33	7097
Lepidopus caudatus	12.32	440	1.14	
Yarella blackfordi *	11.00	330	1.02	
Halosaurus ovenii	7.48	374	0.69	
Aristeus varidens, male	6.72	632	0.62	7096
Callinectes sp.	6.38	352	0.59	
Illex coindetii	6.16	44	0.57	
Laemonema laureysi	5.72	110	0.53	
Coelorinchus sp.	4.62	726	0.43	
Solenocera africana	4.18	242	0.39	
Bathyuroconger vicinus	3.08	22	0.29	
POLYCHAELIDAE	3.08	154	0.29	
Gonostoma denudata	2.20	264	0.20	
Sufflamen fraenatus	2.20	110	0.20	
Etmopterus pusillus	2.02	40	0.19	
Nezumia aequalis	1.76	44	0.16	
Gadella sp.	1.32	44	0.12	
Hoplostethus cadenati	0.88	22	0.08	
Coelorinchus coelorhincus	0.88	22	0.08	
MYCTOPHIDAE	0.44	66	0.04	
Etmopterus polli	0.10	4	0.01	
Total	1079.40		99.98	

PROJECT STATION:3381

DATE:28/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 905
start stop duration Long E 1237
TIME :15:32:17 15:54:26 22 (min) Purpose code: 3
LOG :7761.89 7762.98 1.10 Area code : 2
FDEPTH: 733 735 GearCond.code:
BDEPTH: 733 735 Validity code:
Towing dir: 25ø Wire out:1739 m Speed: 30 kn*10

Sorted: 50 Kg Total catch: 257.62 CATCH/HOUR: 702.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nezumia micronychodon	229.77	4255	32.70	
Nephropsis atlantica	201.14	2932	28.63	
Yarella blackfordi *	83.86	3614	11.94	
Dibranchus atlanticus	35.32	1514	5.03	
Scymnodon obscurus	18.74	55	2.67	
Aristeus varidens, female	18.41	668	2.62	7098
Chaceon maritae, male	16.77	27	2.39	
Lamprogrammus exutus	13.50	27	1.92	
OCTOPOTEUTHIDAE	13.36	82	1.90	
Caelorinchus simorhynchus	13.09	95	1.86	
Stereomastis sp.	11.86	436	1.69	
Lophius vaillanti	10.77	27	1.53	
Bajacalifornia magalops	9.82	123	1.40	
Raja confundens	6.95	27	0.99	
ECHENEIDIDAE	6.14	191	0.87	
Bathyuroconger vicinus	4.23	68	0.60	
Laemonema laureysi	3.00	95	0.43	
Triplophos hemingi	2.32	341	0.33	
Xenodermichthys copei	2.05	95	0.29	
Ebinania costaecanarie	1.50	14	0.21	
Total	702.60		100.00	

PROJECT STATION:3382

DATE:28/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 836
start stop duration Long E 1250
TIME :20:20:53 20:50:51 30 (min) Purpose code: 3
LOG :7796.90 7798.37 1.45 Area code : 3
FDEPTH: 700 692 GearCond.code:
BDEPTH: 700 692 Validity code:
Towing dir: 340ø Wire out:1700 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 485.93 CATCH/HOUR: 971.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	341.70	38454	35.16	
Yarrella blackfordi	238.68	6188	24.56	
Octopus sp.	97.58	34	10.04	
Stereomastis sp.	37.40	2482	3.85	
Triplophos hemingi	30.60	374	3.15	
Lamprogrammus exutus	28.22	680	2.90	
Dibranchus atlanticus	27.20	170	2.80	
Hoplostethus cadenati	27.20	476	2.80	
Bathyraja smithii	20.40	34	2.10	
Merluccius polli	19.50	28	2.01	7099
Glyphus marsupialis	13.26	204	1.36	
CONGRIDAE	13.26	374	1.36	
Chaceon maritae, male	12.90	28	1.33	7101
Callinectes sp.	11.56	68	1.19	
Stomias sp.	9.52	238	0.98	
Aristeus varidens, female	8.84	374	0.91	7103
SCYLLARIDAE	6.80	408	0.70	
Aristeus varidens, male	5.44	578	0.56	7102
Etmopterus pusillus	4.58	14	0.47	
Laemonema laureysi	4.08	408	0.42	
Unidentified fish	3.06	34	0.31	
Xenodermichthys copei	3.06	646	0.31	
Coelorinchus coelorhincus	2.04	34	0.21	
Sepia orbignyana	1.70	34	0.17	
Paromola cuvieri	1.52	2	0.16	
Chaceon maritae, female	1.32	10	0.14	7100
Squalus megalops	0.44	4	0.05	
Total	971.86		100.00	

PROJECT STATION:3383

DATE:28/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 835
start stop duration Long E 1251
TIME :22:54:18 23:24:12 30 (min) Purpose code: 3
LOG :7806.34 7807.84 1.49 Area code : 3
FDEPTH: 535 531 GearCond.code:
BDEPTH: 535 531 Validity code:
Towing dir: 340ø Wire out:1400 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 164.44 CATCH/HOUR: 328.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	149.10	33614	45.34	
Yarella blackfordi *	52.50	1708	15.96	
Lophius vaillanti	28.00	14	8.51	
Benthodesmus tenuis	20.30	756	6.17	
Merluccius polli	13.02	28	3.96	
Hoplostethus cadenati	10.22	448	3.11	
Conostoma denudata	10.22	266	3.11	
Triplophos hemingi	7.98	1148	2.43	
C R U S T A C E A N S	6.86	980	2.09	
OMMASTREPHIDAE	4.48	28	1.36	
Chaceon maritae	3.12	10	0.95	
Aristeus varidens, female	2.80	196	0.85	7104
Shrimps, small, non comm.	2.52	224	0.77	
Bathyuroconger vicinus	2.38	266	0.72	
ONYCHOTEUTHIDAE	2.38	14	0.72	
Nezumia sp.	2.24	560	0.68	
Halosaurus ovenii	2.10	28	0.64	
Aristeus varidens, male	1.96	280	0.60	7105
Laemonema laureysi	1.40	210	0.43	
PLATYTROCTIDAE	1.26	238	0.38	
Scymnodon obscurus	1.00	8	0.30	
Lamprogrammus exutus	0.70	280	0.21	
Etmopterus pusillus	0.60	6	0.18	
Callinectes sp.	0.56	56	0.17	
SOLEIDAE	0.42	28	0.13	
Etmopterus spinax	0.20	2	0.06	
MYCTOPHIDAE	0.14	14	0.04	
COLOCONGRIDAE	0.14	14	0.04	
Trachyrincus scabrus	0.14	14	0.04	
Nemichthys scolopaceus	0.14	28	0.04	
Total	328.88		99.99	

PROJECT STATION:3384

DATE:29/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 837
start stop duration Long E 1254
TIME :01:01:20 01:31:17 30 (min) Purpose code: 3
LOG :7816.56 7818.07 1.51 Area code : 3
FDEPTH: 409 408 GearCond.code:
BDEPTH: 409 408 Validity code:
Towing dir: 360ø Wire out:7818 m Speed: 80 kn*10

Sorted: 255 Kg Total catch: 1786.60 CATCH/HOUR: 3573.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	3241.70	11522	90.72	7106
Nematocarcinus africanus	256.90	69664	7.19	
Laemonema laureysi	30.38	406	0.85	
Dibranchus atlanticus	6.86	476	0.19	
Nezumia sp.	6.86	252	0.19	
Illex coindetii	5.88	28	0.16	
Coelorinchus coelorhincus	5.04	630	0.14	
Chaunax sp.	3.50	168	0.10	
Callinectes sp.	3.36	70	0.09	
Benthodesmus tenuis	2.80	154	0.08	
Etmopterus spinax	1.96	280	0.05	
Halosaurus ovenii	1.40	70	0.04	
Yarella blackfordi *	1.26	28	0.04	
Conostoma denudata	1.26	56	0.04	
Solenocera africana	0.98	42	0.03	
Aristeus varidens, female	0.98	98	0.03	7108
C R U S T A C E A N S	0.56	42	0.02	
Aristeus varidens, male	0.56	70	0.02	7107
OMMASTREPHIDAE	0.42	14	0.01	
Scyliorhinus cervigoni	0.40	2	0.01	
Dicologoglossa cuneata	0.14	14		
Total	3573.20		100.00	

PROJECT STATION:3385

DATE:29/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 852
start stop duration Long E 1255
TIME :05:43:00 06:13:11 30 (min) Purpose code: 3
LOG :7843.60 7845.09 1.50 Area code : 3
FDEPTH: 312 310 GearCond.code:
BDEPTH: 312 310 Validity code:
Towing dir: 20ø Wire out: 850 m Speed: 30 kn*10

Sorted: 74 Kg Total catch: 390.64 CATCH/HOUR: 781.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	401.00	1560	51.33	7087
Chlorophthalmus atlanticus	169.00	4020	21.63	
Laemonema laureysi	60.70	500	7.77	
Synagrops microlepis	43.60	2010	5.58	
Squalus megalops	23.90	4	3.06	
MYCTOPHIDAE	14.10	8030	1.80	
Pontinus accraensis	14.00	120	1.79	
Epigonus telescopus	9.20	330	1.18	
Parapenaeus longirostris, fem.	7.30	1020	0.93	7109
CONGRIDAE	6.80	90	0.87	
Trichiurus lepturus	5.48	14	0.70	
Neomerinthe folgori	4.38	2	0.56	
Dibranchus atlanticus	3.00	290	0.38	
Dentex macrophthalmus	2.88	6	0.37	
Coelorinchus coelorhincus	2.70	120	0.35	
Callinectes amnicola	2.20	70	0.28	
Hoplostethus mediterraneus	1.92	2	0.25	
Pterothrissus belloci	1.90	60	0.24	
Zenopsis conchifer	1.82	2	0.23	
Saurida brasiliensis	1.80	640	0.23	
Chaceon maritae	0.90	2	0.12	
Illex coindetii	0.70	10	0.09	
Bembrops heterurus	0.70	10	0.09	
Lophius vaillanti	0.50	10	0.06	
Hymenocephalus italicus	0.50	10	0.06	
Peristedion cataphractum	0.20	10	0.03	
Parapenaeus longirostris, male	0.10	10	0.01	7033
Total	781.28		99.99	

PROJECT STATION:3386

DATE:29/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 853
start stop duration Long E 1257
TIME :07:51:08 08:21:32 30 (min) Purpose code: 3
LOG :7852.32 7853.86 1.54 Area code : 3
FDEPTH: 230 225 GearCond.code:
BDEPTH: 230 225 Validity code:
Towing dir: 20ø Wire out: 650 m Speed: 30 kn*10

Sorted: 84 Kg Total catch: 289.82 CATCH/HOUR: 579.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	240.04	18158	41.41	
Pterothrissus belloci	94.50	4130	16.30	
Zenopsis conchifer	64.26	200	11.09	
Merluccius polli	49.40	180	8.52	7111
Dentex angolensis	31.00	112	5.35	7110
Brotula barbata	20.70	24	3.57	
Trichiurus lepturus	16.60	18	2.86	
Bembrops heterurus	14.48	98	2.50	
Dicologoglossa cuneata	13.72	210	2.37	
Zeus faber	7.12	16	1.23	
Parapenaeus longirostris, male	6.00	1500	1.04	7113
Coelorinchus coelorhincus	3.82	92	0.66	
Arnoglossus imperialis	3.72	76	0.64	
CONGRIDAE	3.62	26	0.62	
Illex coindetii	2.44	32	0.42	
Todaropsis eblanae	2.22	26	0.38	
Dentex macrophthalmus	2.20	6	0.38	
Parapenaeus longirostris, fem.	1.62	320	0.28	7112
Pontinus accraensis	1.14	6	0.20	
MYCTOPHIDAE	0.60	210	0.10	
Saurida brasiliensis	0.38	26	0.07	
Calappa pelii	0.06	6	0.01	
Total	579.64		100.00	

PROJECT STATION:3387

DATE:29/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 854
start stop duration Long E 1259
TIME :09:43:06 10:11:10 28 (min) Purpose code: 3
LOG :7860.71 7862.09 1.38 Area code : 3
FDEPTH: 215 214 GearCond.code:
BDEPTH: 215 214 Validity code:
Towing dir: 360ø Wire out: 600 m Speed: 30 kn*10

Sorted: 67 Kg Total catch: 696.27 CATCH/HOUR: 1492.01

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1107.43	92788	74.22	
Pterothrissus belloci	115.63	917	7.75	
Trichiurus lepturus	61.50	86	4.12	
Brotula barbata	40.93	47	2.74	
Trigla lyra	27.06	122	1.81	
Merluccius polli	25.07	71	1.68	7114
Dentex angolensis	21.86	88	1.47	7115
Zenopsis conchifer	20.36	41	1.36	
Umbrina canariensis	16.29	21	1.09	
Centrophorus granulosus	12.43	2	0.83	
Uranoscopus polli	8.14	21	0.55	
Zeus faber	6.92	21	0.46	
Bembrops heterurus	6.30	41	0.42	
Coelorinchus coelorhincus	4.89	144	0.33	
Trichiurus lepturus	3.86	204	0.26	
Dicologoglossa cuneata	3.66	81	0.25	
Scorpaena normani	2.85	21	0.19	
Saurida brasiliensis	2.44	244	0.16	
Parapenaeus longirostris, fem.	2.34	585	0.16	7116
Parapenaeus longirostris, male	1.86	641	0.12	7117
GOBIIDAE	0.19	41	0.01	
Total	1492.01		99.98	

PROJECT STATION:3388

DATE:29/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 835
start stop duration Long E 1301
TIME :13:40:36 14:10:30 30 (min) Purpose code: 3
LOG :7891.40 7892.88 1.47 Area code : 3
FDEPTH: 145 143 GearCond.code:
BDEPTH: 145 143 Validity code:
Towing dir: 360ø Wire out: 465 m Speed: 30 kn*10

Sorted: Kg Total catch: 215.60 CATCH/HOUR: 431.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Saurida brasiliensis	308.00	42318	71.43	
Dentex angolensis	42.10	154	9.76	7118
Brotula barbata	18.30	16	4.24	
Pterothrissus belloci	12.72	90	2.95	
Trichiurus lepturus	9.56	48	2.22	
Umbrina canariensis	5.50	26	1.28	7120
Mustelus mustelus	5.30	2	1.23	
Trachurus trecae	4.10	106	0.95	7119
Zeus faber	4.04	16	0.94	
Torpedo torpedo	3.74	6	0.87	
Chelidonichthys gabonensis	2.98	22	0.69	
Zenopsis conchifer	2.36	4	0.55	
Miracorvina angolensis	2.34	2	0.54	
Illex coindetii	1.86	48	0.43	
Cynoponticus ferox	1.48	2	0.34	
Scyliorhinus stellaris	1.40	2	0.32	
Todarodes sagittatus	1.18	52	0.27	
Uranoscopus cadenati	1.08	6	0.25	
Monolene microstoma	0.72	28	0.17	
Bembrops heterurus	0.68	6	0.16	
Scorpaena normani	0.66	2	0.15	
Citharus linguatula	0.44	8	0.10	
Parapenaeus longirostris, fem.	0.34	62	0.08	6967
Spicara alta	0.16	4	0.04	
Merluccius polli	0.12	2	0.03	
Parapenaeus longirostris, male	0.04	24	0.01	6966
Total	431.20		100.00	

PROJECT STATION:3389

DATE:29/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 838
start stop duration Long E 1304
TIME :15:20:40 15:50:38 30 (min) Purpose code: 3
LOG :7900.34 7901.87 1.53 Area code : 3
FDEPTH: 114 113 GearCond.code:
BDEPTH: 114 113 Validity code:
Towing dir: 355ø Wire out: 359 m Speed: 30 kn*10

Sorted: Kg Total catch: 90.56 CATCH/HOUR: 181.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Spicara alta	51.80	1208	28.60	
Trichiurus lepturus	51.50	70	28.43	
Dentex angolensis	26.90	112	14.85	7122
Brotula barbata	11.70	6	6.46	
Trachurus trecae, juvenile	8.70	220	4.80	7121
Mustelus mustelus	8.00	2	4.42	
Atractoscion aequidens	4.38	2	2.42	
Illex coindetii	4.02	182	2.22	
Dentex congoensis	3.70	34	2.04	7123
Zeus faber	3.10	18	1.71	
Chaetodon hoefleri	1.80	4	0.99	
Todaropsis eblanae	1.52	32	0.84	
Umbrina canariensis	1.02	6	0.56	
Pterothrissus belloci	0.96	8	0.53	
Boops boops	0.58	10	0.32	
Citharus linguatula	0.40	4	0.22	
Uranoscopus polli	0.34	2	0.19	
Saurida brasiliensis	0.32	66	0.18	
Pegusa lascaris	0.16	2	0.09	
Monolene microstoma	0.12	4	0.07	
Bembrops greyi	0.10	2	0.06	
Total	181.12		100.00	

PROJECT STATION:3390

DATE:29/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 829
start stop duration Long E 1250
TIME :16:40:12 18:21:25 30 (min) Purpose code: 3
LOG :7919.23 7920.75 1.51 Area code : 3
FDEPTH: 442 443 GearCond.code:
BDEPTH: 442 443 Validity code:
Towing dir: 330ø Wire out:1150 m Speed: 30 kn*10

Sorted: 17 Kg Total catch: 471.88 CATCH/HOUR: 943.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	453.60	13040	48.06	
Merluccius polli	232.70	574	24.66	7126
Centrophorus uyato	90.30	42	9.57	
Benthodesmus tenuis	63.42	2814	6.72	
Hymenocephalus italicus	23.94	2520	2.54	
Laemonema laureysi	21.00	798	2.23	
Todaropsis eblanae	18.06	84	1.91	
Aristeus varidens, female	9.24	756	0.98	7125
Dibranchus atlanticus	6.72	336	0.71	
Aristeus varidens, male	5.88	798	0.62	7124
Scyliorhinus capensis	5.88	210	0.62	
Stereomastis sp.	4.20	126	0.45	
Gadella imberbis	3.78	84	0.40	
PARALEPIDIDAE	1.68	168	0.18	
Lophius vaillanti	1.68	42	0.18	
Malacocephalus laevis	1.26	42	0.13	
Callinectes amnicola	0.42	42	0.04	
Total	943.76		100.00	

PROJECT STATION:3391

DATE:29/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 829
start stop duration Long E 1248
TIME :20:40:01 21:10:03 30 (min) Purpose code: 3
LOG :7929.01 7930.52 1.50 Area code : 3
FDEPTH: 538 540 GearCond.code:
BDEPTH: 538 540 Validity code:
Towing dir: 335ø Wire out:1400 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 220.01 CATCH/HOUR: 440.02

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarrella blackfordi	172.50	6390	39.20	
Nematocarcinus africanus	156.74	6960	35.62	
Hoplostethus cadenati	34.50	1216	7.84	
Chaceon maritae, male	9.20	16	2.09	7130
Stereomastis sp.	9.14	1096	2.08	
Stomias sp.	8.40	210	1.91	
Benthodesmus tenuis	5.84	210	1.33	
Triplophos hemingi	5.24	690	1.19	
CONGRIDAE	5.10	30	1.16	
Aristeus varidens, female	4.94	256	1.12	7127
Aristeus varidens, male	3.90	496	0.89	7128
Malacocephalus laevis	3.44	46	0.78	
Scymnodon squamulosus	3.00	14	0.68	
Chaceon maritae, female	2.54	14	0.58	7129
Nezumia sp.	2.54	360	0.58	
Coelorinchus coelorhincus	2.40	60	0.55	
Merluccius polli	2.22	4	0.50	
Hymenocephalus italicus	1.50	106	0.34	
Dibranchus atlanticus	1.34	60	0.30	
Lamprogrammus exutus	1.34	90	0.30	
Callinectes amnicola	1.20	90	0.27	
Nemichthys scolopaceus	0.90	16	0.20	
Talismania sp.	0.90	136	0.20	
Glyphus marsupialis	0.60	76	0.14	
PARALEPIDIDAE	0.60	16	0.14	
Total	440.02		99.99	

PROJECT STATION:3392

DATE:29/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 828
start stop duration Long E 1247
TIME :23:15:32 23:45:17 30 (min) Purpose code: 3
LOG :7938.87 7940.39 1.51 Area code : 3
FDEPTH: 593 617 GearCond.code:
BDEPTH: 593 617 Validity code:
Towing dir: 340ø Wire out:1500 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 247.70 CATCH/HOUR: 495.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	236.00	50096	47.64	
Yarella blackfordi *	79.20	2352	15.99	
Chaceon maritae	67.68	128	13.66	
Lamprogrammus exutus	17.44	544	3.52	
Stomias boa boa	16.32	384	3.29	
Hoplostethus cadenati	10.72	112	2.16	
C R U S T A C E A N S	9.76	1312	1.97	
Scymnodon obscurus	9.00	24	1.82	
Merluccius polli	7.00	16	1.41	7131
Coloconger sp.	5.44	32	1.10	
ONYCHOTEUTHIDAE	5.28	16	1.07	
Aristeus varidens, female	4.16	192	0.84	7132
Bathyuroconger vicinus	4.16	304	0.84	
Plesiopenaeus edwardsianus	3.20	192	0.65	
Illex coindetii	3.04	16	0.61	
Alepocephalus sp.	2.56	352	0.52	
Triplophos hemingi	2.56	336	0.52	
Callinectes sp.	2.08	256	0.42	
Nezumia sp.	1.76	192	0.36	
Lepidopus caudatus	1.76	32	0.36	
Aristeus varidens, male	1.12	144	0.23	7133
Synaphobranchus kaupii	1.12	48	0.23	
Etmopterus spinax	1.00	8	0.20	
Benthodesmus tenuis	0.96	16	0.19	
PLATYTROCTIDAE	0.80	112	0.16	
Lophius vaillanti	0.80	16	0.16	
CONGRIDAE	0.48	128	0.10	
Total	495.40		100.02	

PROJECT STATION:3393

DATE:30/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 827
start stop duration Long E 1246
TIME :02:01:11 02:27:27 26 (min) Purpose code: 3
LOG :7950.51 7951.86 1.32 Area code : 3
FDEPTH: 709 715 GearCond.code:
BDEPTH: 709 715 Validity code:
Towing dir: 340ø Wire out:1717 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 248.44 CATCH/HOUR: 573.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	147.46	15722	25.72	
Chaceon maritae	142.06	436	24.78	
C R U S T A C E A N S	47.35	4195	8.26	
Alepocephalus sp.	37.59	312	6.56	
Nezumia sp.	31.98	644	5.58	
Yarella blackfordi *	26.38	436	4.60	
Hoplostethus sp.	23.88	623	4.17	
Lamprogrammus exutus	22.85	42	3.99	
ONYCHOTEUTHIDAE	13.08	62	2.28	
Bathyuroconger vicinus	11.42	145	1.99	
Dibranchus atlanticus	10.80	685	1.88	
C R A B S	10.38	7020	1.81	
Dicrolene sp.	7.89	602	1.38	
Scymnodon obscurus	6.92	12	1.21	
Conostoma denudata	6.44	291	1.12	
Aristeus varidens, female	4.57	187	0.80	7134
Chauliodus sloani	4.15	582	0.72	
Bassanago albescens	3.74	62	0.65	
Todaropsis eblanae	3.53	21	0.62	
Plesiopenaeus edwardsianus	3.12	312	0.54	
Stomias boa boa	2.28	374	0.40	
Benthodesmus tenuis	1.25	21	0.22	
SOLEIDAE	1.04	83	0.18	
Trachyrincus scabrus	1.04	21	0.18	
Aristeus varidens, male	0.83	83	0.14	7135
Callinectes sp.	0.62	166	0.11	
Etmopterus spinax	0.23	2	0.04	
Synaphobranchus kaupii	0.21	104	0.04	
Nemichthys scolopaceus	0.21	21	0.04	
Total	573.30		100.01	

PROJECT STATION:3394

DATE:30/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 835
start stop duration Long E 1319
TIME :06:58:50 07:28:46 30 (min) Purpose code: 3
LOG :7989.19 7990.71 1.53 Area code : 3
FDEPTH: 30 29 GearCond.code:
BDEPTH: 30 29 Validity code:
Towing dir: 360ø Wire out: 140 m Speed: 30 kn*10

Sorted: Kg Total catch: 157.90 CATCH/HOUR: 315.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	172.90	16476	54.75	
Stromateus fiatola	45.10	56	14.28	
Rhizoprionodon acutus	27.90	6	8.83	
Sphyraena guachancho	19.00	48	6.02	
Galeoides decadactylus	10.58	36	3.35	
Trichiurus lepturus	10.00	76	3.17	
Alectis alexandrinus	9.10	10	2.88	
Rhinobatos albomaculatus	4.42	4	1.40	
Dasyatis marmorata	3.24	4	1.03	
Selene dorsalis	3.16	106	1.00	
Sepia officinalis hierredda	2.64	8	0.84	
Chloroscombrus chrysurus	2.62	18	0.83	
Arius parkii	2.24	2	0.71	
Sardinella maderensis	1.00	56	0.32	
Ilisha africana	0.74	10	0.23	
Pagellus bellottii	0.48	2	0.15	
Pentheroscion mbizi	0.44	6	0.14	
Trachurus trecae	0.24	6	0.08	
Total	315.80		100.01	

PROJECT STATION:3395

DATE:30/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 835
start stop duration Long E 1317
TIME :08:37:28 09:07:48 30 (min) Purpose code: 3
LOG :7995.37 7996.97 1.59 Area code : 3
FDEPTH: 43 46 GearCond.code:
BDEPTH: 43 46 Validity code:
Towing dir: 330ø Wire out: 140 m Speed: 30 kn*10

Sorted: 55 Kg Total catch: 430.69 CATCH/HOUR: 861.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	457.04	4290	53.06	
Brachydeuterus auritus Juv.	125.94	13134	14.62	
Pomadasys jubelini	68.60	154	7.96	7137
Alectis alexandrinus	48.90	18	5.68	
Pagellus bellottii	26.80	190	3.11	7138
Pseudotolithus typus	26.60	30	3.09	7136
Sepia officinalis hierredda	21.44	32	2.49	
Raja miraletus	20.26	22	2.35	
Torpedo torpedo	11.20	160	1.30	
Sphyraena guachancho	11.10	20	1.29	
Arius parkii	9.80	4	1.14	
Rhizoprionodon acutus	9.60	2	1.11	
Rhinobatos albomaculatus	6.20	2	0.72	
Trichiurus lepturus	5.50	6	0.64	
Stromateus fiatola	3.56	4	0.41	
Sardinella aurita	2.20	142	0.26	
Selene dorsalis	2.20	44	0.26	
Lithognathus mormyrus	1.80	4	0.21	
Epinephelus aeneus	0.86	2	0.10	
Trachurus trecae	0.84	16	0.10	
Sardinella maderensis	0.50	2	0.06	
Boops boops	0.44	10	0.05	
Total	861.38		100.01	

PROJECT STATION:3396

DATE:30/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 835
start stop duration Long E 1315
TIME :09:59:37 10:29:07 30 (min) Purpose code: 3
LOG :8001.43 8002.93 1.51 Area code : 3
FDEPTH: 52 52 GearCond.code:
BDEPTH: 52 52 Validity code:
Towing dir: 355ø Wire out: 160 m Speed: 30 kn*10

Sorted: 57 Kg Total catch: 678.19 CATCH/HOUR: 1356.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus Juv.	689.84	95320	50.86	
Brachydeuterus auritus	218.40	3318	16.10	
Galeoides decadactylus	98.90	358	7.29	
Pagellus bellottii	90.70	654	6.69	7139
Pseudotolithus typus	60.90	104	4.49	7140
Trichiurus lepturus	47.88	168	3.53	
Trachurus trecae	33.80	652	2.49	7141
Raja miraletus	31.92	42	2.35	
Sphyraena guachancho	26.24	64	1.93	
Stromateus fiatola	14.70	22	1.08	
Zeus faber	9.02	22	0.67	
Sardinella maderensis	6.08	316	0.45	
Argyrosomus hololepidotus	5.24	16	0.39	
Torpedo torpedo	4.40	22	0.32	
Pistularia petimba	3.98	22	0.29	
Pteroscion peli	3.78	42	0.28	
Chaetodon hoefleri	3.56	22	0.26	
Epinephelus aeneus	3.40	2	0.25	
Pomadasys jubelini	2.24	4	0.17	
Dentex barnardi	1.20	6	0.09	
Sardinella aurita	0.20	22	0.01	
Total	1356.38		99.99	

PROJECT STATION:3397

DATE:30/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 837
start stop duration Long E 1309
TIME :11:54:54 12:24:40 30 (min) Purpose code: 3
LOG :8012.93 8014.57 1.64 Area code : 3
FDEPTH: 83 83 GearCond.code:
BDEPTH: 83 83 Validity code:
Towing dir: 355ø Wire out: 275 m Speed: 30 kn*10

Sorted: 125 Kg Total catch: 125.51 CATCH/HOUR: 251.02

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	137.90	2160	54.94	
Brachydeuterus auritus	35.40	1962	14.10	
Trachurus trecae	14.90	534	5.94	7142
Alloteuthis africana	8.94	2466	3.56	
Stromateus fiatola	8.94	14	3.56	
Raja miraletus	8.08	12	3.22	
Zeus faber	6.34	22	2.53	
Sepia orbignyana	5.52	12	2.20	
Pterothrissus belloci	5.14	88	2.05	
Saurida brasiliensis	4.06	898	1.62	
Pagellus bellottii	3.36	22	1.34	7143
Pistularia petimba	2.52	4	1.00	
Umbrina canariensis	2.46	16	0.98	
Miracorvina angolensis	2.16	16	0.86	
Dentex angolensis	1.86	14	0.74	
Galeoides decadactylus	0.58	2	0.23	
Citharus linguatula	0.56	8	0.22	
Illex coindetii	0.54	6	0.22	
Synagrops microlepis	0.44	66	0.18	
Chelidonichthys gabonensis	0.34	2	0.14	
Scorpaena normani	0.30	4	0.12	
Dentex barnardi	0.28	2	0.11	
Trigla lyra	0.20	2	0.08	
Sepia officinalis hierredda	0.08	6	0.03	
Parapenaeus longirostris	0.06	14	0.02	
Boops boops	0.04	2	0.02	
Monolene microstoma	0.02	2	0.01	
Total	251.02		100.02	

PROJECT STATION:3398

DATE:30/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 825
start stop duration Long E 1257
TIME :14:53:45 15:23:33 30 (min) Purpose code: 3
LOG :8035.33 8036.89 1.54 Area code : 3
FDEPTH: 162 164 GearCond.code:
BDEPTH: 162 164 Validity code:
Towing dir: 335ø Wire out: 509 m Speed: 30 kn*10

Sorted: 31 Kg Total catch: 381.73 CATCH/HOUR: 763.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	525.60	26388	68.84	
Spicara alta	88.30	510	11.57	7145
Trichiurus lepturus	49.90	70	6.54	
Dentex angolensis	38.70	134	5.07	7144
Pterothrissus belloci	13.14	12	1.72	
Brotula barbata	7.58	6	0.99	
Umbrina canariensis	6.70	16	0.88	7147
Anthias anthias	5.76	72	0.75	
Dentex macrophthalmus	5.36	16	0.70	7146
Raja miraletus	4.68	18	0.61	
Illex coindetii	4.14	54	0.54	
Bembrops greyi	3.42	18	0.45	
Pteroscion peli	2.70	18	0.35	
Loligo vulgaris	1.80	90	0.24	
Parapenaeus longirostris, fem.	1.26	216	0.17	
Saurida brasiliensis	1.26	180	0.17	
Sparus pagrus africanus *	1.08	2	0.14	
Scyliorhinus canicula	1.00	2	0.13	
Zenopsis conchifer	0.54	18	0.07	
Monolene microstoma	0.36	18	0.05	
Parapenaeus longirostris, male	0.18	18	0.02	
Total	763.46		100.00	

PROJECT STATION:3399

DATE:30/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 827
start stop duration Long E 1255
TIME :15:00:25 16:40:12 30 (min) Purpose code: 3
LOG :8045.16 8046.67 1.51 Area code : 3
FDEPTH: 235 231 GearCond.code:
BDEPTH: 235 231 Validity code:
Towing dir: 340ø Wire out: 700 m Speed: 30 kn*10

Sorted: 58 Kg Total catch: 1084.35 CATCH/HOUR: 2168.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1711.24	95644	78.91	
Merluccius polli	181.66	2442	8.38	7148
Chlorophthalmus atlanticus	96.56	2516	4.45	
Zenopsis conchifer	81.40	222	3.75	
Pterothrissus belloci	62.52	554	2.88	
Parapenaeus longirostris, fem.	8.14	1406	0.38	7150
Parapenaeus longirostris, male	7.40	1664	0.34	7149
Trichiurus lepturus	7.18	8	0.33	
Brotula barbata	4.04	4	0.19	
Illex coindetii	3.70	36	0.17	
Nezumia sp.	1.84	36	0.08	
MYCTOPHIDAE	1.48	296	0.07	
Dentex angolensis	1.16	4	0.05	
Chaetodon sp.	0.38	36	0.02	
Total	2168.70		100.00	

PROJECT STATION:3400

DATE:30/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 827
start stop duration Long E 1253
TIME :18:38:54 19:08:48 30 (min) Purpose code: 3
LOG :8052.05 8053.58 1.52 Area code : 3
FDEPTH: 305 310 GearCond.code:
BDEPTH: 305 310 Validity code:
Towing dir: 330ø Wire out: 850 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 127.13 CATCH/HOUR: 254.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	71.10	512	27.96	
Synagrops microlepis	57.60	2502	22.65	
Merluccius polli	28.10	202	11.05	7151
Lophius vaillanti	9.98	36	3.93	
Parapenaeus longirostris, fem.	9.44	1062	3.71	7153
Pontinus kuhlii	9.00	290	3.54	
Hoplostethus mediterraneus	8.48	8	3.34	
Laemonema laureysi	6.82	74	2.68	
Hymenocephalus italicus	6.56	1530	2.58	
Nematocarcinus africanus	6.30	2780	2.48	
SQUILLIDAE	5.84	1206	2.30	
Pterothrissus belloci	5.60	44	2.20	
Callinectes amnicola	5.12	44	2.01	
Malacocephalus laevis	5.04	108	1.98	
Gadella imberbis	3.32	108	1.31	
Trichiurus lepturus	2.98	4	1.17	
Coelorinchus coelorhincus	2.60	90	1.02	
Deepwater fish mixture	2.16		0.85	
CONGRIDAE	1.98	62	0.78	
MYCTOPHIDAE	1.80	1134	0.71	
Serranus africana	0.98	216	0.39	
Stereomastis sp.	0.80	44	0.31	
Parapenaeus longirostris, male	0.62	44	0.24	7152
Stomias sp.	0.62	44	0.24	
Dibranchus atlanticus	0.62	36	0.24	
Nezumia leonis	0.54	26	0.21	
Peristedion cataphractum	0.26	8	0.10	
Total	254.26		99.98	

PROJECT STATION:3401

DATE:30/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 816
start stop duration Long E 1244
TIME :21:21:26 21:51:04 30 (min) Purpose code: 3
LOG :8067.46 8068.98 1.52 Area code : 3
FDEPTH: 427 422 GearCond.code:
BDEPTH: 427 422 Validity code:
Towing dir: 345ø Wire out:1150 m Speed: 30 kn*10

Sorted: 12 Kg Total catch: 301.10 CATCH/HOUR: 602.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	422.80	1418	70.21	7154
Nematocarcinus africanus	126.28	33098	20.97	
Hymenocephalus italicus	17.66	1708	2.93	
B I V A L V E S	6.00	20	1.00	
Callinectes sp.	5.54	88	0.92	
Chaunax sp.	4.96	44	0.82	
Benthodesmus tenuis	4.96	190	0.82	
Bathyuroconger vicinus	3.50	44	0.58	
Yarella blackfordi *	2.62	58	0.44	
Dibranchus atlanticus	2.48	336	0.41	
Laemonema laureysi	2.18	102	0.36	
Gadella imberbis	1.02	44	0.17	
Aristeus varidens, female	0.86	44	0.14	7155
Aristeus varidens, male	0.58	102	0.10	7156
Solenocera africana	0.42	44	0.07	
Chaceon maritae	0.34	2	0.06	
Total	602.20		100.00	

PROJECT STATION:3402

DATE:31/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 816
start stop duration Long E 1242
TIME :23:26:25 00:00:47 31 (min) Purpose code: 3
LOG :8077.70 8079.25 1.55 Area code : 3
FDEPTH: 627 622 GearCond.code:
BDEPTH: 627 622 Validity code:
Towing dir: 335ø Wire out:1515 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 251.88 CATCH/HOUR: 487.51

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	220.35	50185	45.20	
Yarella blackfordi *	116.71	2926	23.94	
Hoplostethus cadenati	44.42	1620	9.11	
Lamprogrammus exutus	32.40	836	6.65	
Gonostoma denudata	9.93	279	2.04	
L O B S T E R S	7.49	1289	1.54	
Dibranchus atlanticus	6.45	714	1.32	
Nezumia sp.	5.92	52	1.21	
Merluccius polli	5.92	12	1.21	7157
Triplophos hemingi	4.70	645	0.96	
Alepocephalus sp.	4.35	418	0.89	
Chaceon maritae	4.32	10	0.89	
ONYCHOTEUTHIDAE	4.18	17	0.86	
Bathyuroconger vicinus	4.01	244	0.82	
Aristeus varidens, female	2.96	139	0.61	7159
Scymnodon obscurus	2.32	8	0.48	
Plesiopenaeus edwardsianus	2.26	244	0.46	
Benthodesmus tenuis	2.09	35	0.43	
Aristeus varidens, male	1.74	209	0.36	7158
Hymenocephalus sp.	1.57	157	0.32	
Dicrolene intronigra	1.05	261	0.22	
Etmopterus spinax	0.97	6	0.20	
Gadella imberbis	0.70	105	0.14	
Callinectes sp.	0.70	52	0.14	
Total	487.51		100.00	

PROJECT STATION:3403

DATE:31/ 3/04 GEAR TYPE: BT No:14 POSITION:Lat S 816
start stop duration Long E 1241
TIME :02:09:34 02:39:27 30 (min) Purpose code: 3
LOG :8087.33 8088.86 1.53 Area code : 3
FDEPTH: 702 704 GearCond.code:
BDEPTH: 702 704 Validity code:
Towing dir: 332ø Wire out:1717 m Speed: 30 kn*10

Sorted: 20 Kg Total catch: 174.58 CATCH/HOUR: 349.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	141.60	15664	40.55	
Yarella blackfordi *	28.32	736	8.11	
L O B S T E R S	26.40	2224	7.56	
Hymenocephalus italicus	20.48	544	5.87	
PLATYCEPHALIDAE	18.24	304	5.22	
Chaceon maritae	16.54	40	4.74	
Lamprogrammus exutus	9.76	32	2.80	
Gadella imberbis	9.76	368	2.80	
Stomias boa boa	9.44	1296	2.70	
Scymnodon obscurus	8.20	16	2.35	
Hoplostethus cadenati	8.00	192	2.29	
Gonostoma elongatum	7.84	272	2.25	
Raja sp.	6.72	48	1.92	
C R U S T A C E A N S	6.40	3648	1.83	
Plesiopenaeus edwardsianus	5.84	512	1.67	
Merluccius polli	5.34	6	1.53	
Aristeus varidens, female	4.64	176	1.33	7160
Dibranchus atlanticus	3.36	240	0.96	
Triplophos hemingi	2.88	464	0.82	
Bathygadus melanobranchus	2.08	16	0.60	
Melanostomias sp.	1.60	48	0.46	
ONYCHOTEUTHIDAE	1.28	16	0.37	
Lophius vaillanti	1.28	16	0.37	
Bassanago albescens	0.96	16	0.27	
MELANOSTOMIATIDAE	0.80	96	0.23	
Aristeus varidens, male	0.48	48	0.14	7161
Dicrolene sp.	0.48	96	0.14	
Bathyuroconger vicinus	0.32	32	0.09	
MYCTOPHIDAE	0.16	40	0.05	
Total	349.20		100.02	

PROJECT STATION:3404

DATE:31/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 814
start stop duration Long E 1251
TIME :05:33:15 06:03:04 30 (min) Purpose code: 3
LOG :8104.72 8106.27 1.55 Area code : 3
FDEPTH: 143 140 GearCond.code:
BDEPTH: 143 140 Validity code:
Towing dir: 340ø Wire out: 430 m Speed: 30 kn*10

Sorted: Kg Total catch: 43.78 CATCH/HOUR: 87.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Illex coindetii	27.50	500	31.41	
Pterothrissus belloci	14.20	144	16.22	
Dentex angolensis	12.96	66	14.80	7162
Trichiurus lepturus	11.02	22	12.59	
Zenopsis conchifer	4.92	4	5.62	
Brotula barbata	3.76	6	4.29	
Zeus faber	3.70	18	4.23	
Todaropsis eblanae	1.82	60	2.08	
Torpedo torpedo	1.52	2	1.74	
Dentex macrophthalmus	1.38	10	1.58	
Umbrina canariensis	1.24	6	1.42	
Citharus linguatula	1.22	26	1.39	
Spicara alta	0.86	12	0.98	
Scyliorhinus stellaris	0.56	2	0.64	
Uranoscopus cadenati	0.48	4	0.55	
Brachydeuterus auritus	0.30	2	0.34	
Arnoglossus imperialis	0.12	8	0.14	
Total	87.56		100.02	

PROJECT STATION:3405

DATE:31/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 818
start stop duration Long E 1300
TIME :08:19:54 08:47:32 28 (min) Purpose code: 3
LOG :8120.45 8121.78 1.30 Area code : 3
FDEPTH: 112 110 GearCond.code:
BDEPTH: 112 110 Validity code:
Towing dir: 360ø Wire out: 310 m Speed: 30 kn*10

Sorted: Kg Total catch: 25.30 CATCH/HOUR: 54.21

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	10.24	71	18.89	7164
Trachurus trecae, juvenile	7.89	234	14.55	7163
Zeus faber	6.45	24	11.90	
Umbrina canariensis	5.68	43	10.48	
Trichiurus lepturus	3.64	9	6.71	
Sepia officinalis hierredda	2.49	6	4.59	
Fistularia petimba	1.86	2	3.43	
Brachydeuterus auritus	1.84	11	3.39	
Pterothrissus belloci	1.67	13	3.08	
Zenopsis conchifer	1.67	2	3.08	
Dentex barnardi	1.61	4	2.97	
Trigla lyra	1.61	11	2.97	
Illex coindetii	1.56	73	2.88	
Atractoscion aequidens	0.96	2	1.77	
Uranoscopus cadenati	0.86	6	1.59	
Citharus linguatula	0.86	17	1.59	
Pagellus bellottii	0.79	2	1.46	
Trachurus trecae	0.77	2	1.42	
Saurida brasiliensis	0.58	150	1.07	
Dentex macrophthalmus	0.39	6	0.72	
Pontinus accraensis	0.34	4	0.63	
Epinephelus aeneus	0.26	2	0.48	
Spicara alta	0.11	2	0.20	
Pontinus kuhlii	0.09	9	0.17	
Total	54.22		100.02	

PROJECT STATION:3406

DATE:31/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 820
start stop duration Long E 1306
TIME :10:07:37 10:37:35 30 (min) Purpose code: 3
LOG :8131.61 8133.22 1.59 Area code : 3
FDEPTH: 83 86 GearCond.code:
BDEPTH: 83 86 Validity code:
Towing dir: 324ø Wire out: 250 m Speed: 30 kn*10

Sorted: 44 Kg Total catch: 304.78 CATCH/HOUR: 609.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	359.10	10094	58.91	7165
Pteroscion peli	184.80	938	30.32	7166
Dentex angolensis	27.30	196	4.48	7167
Stromateus fiatola	12.18	14	2.00	
Alloteuthis africana	5.46	1960	0.90	
Sardinella aurita	3.92	70	0.64	
Trichiurus lepturus	3.36	84	0.55	
Atractoscion aequidens	3.08	14	0.51	
Zeus faber	2.66	14	0.44	
Saurida brasiliensis	2.38	448	0.39	
Sardinella maderensis	2.10	70	0.34	
Illex coindetii	1.68	28	0.28	
Pterothrissus belloci	1.54	14	0.25	
Total	609.56		100.01	

PROJECT STATION:3407

DATE:31/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 818
start stop duration Long E 1309
TIME :11:50:48 12:20:32 30 (min) Purpose code: 3
LOG :8139.64 8141.19 1.54 Area code : 3
FDEPTH: 65 62 GearCond.code:
BDEPTH: 65 62 Validity code:
Towing dir: 360ø Wire out: 214 m Speed: 30 kn*10

Sorted: 94 Kg Total catch: 466.85 CATCH/HOUR: 933.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys jubelini	365.00	550	39.09	7172
Dentex angolensis	211.00	1420	22.60	7170
Pagellus bellottii	93.50	1280	10.01	7169
Trichiurus lepturus	56.90	480	6.09	
Brachydeuterus auritus	56.50	530	6.05	
Brachydeuterus auritus Juv.	49.00	4160	5.25	
Umbrina canariensis	26.00	340	2.78	7171
Pteroscion peli	24.50	280	2.62	
Trachurus trecae, juvenile	23.00	710	2.46	7168
Pomadasys incisus	6.70	40	0.72	
Zeus faber	5.60	20	0.60	
Argyrosomus hololepidotus	4.90	10	0.52	
Atractoscion aequidens	3.30	10	0.35	
Sphyraena sphyraena	2.20	50	0.24	
Selene dorsalis	2.00	90	0.21	
Saurida brasiliensis	1.50	310	0.16	
Sardinella maderensis	0.80	50	0.09	
Pseudupeneus prayensis	0.60	20	0.06	
Dentex canariensis	0.50	10	0.05	
Alloteuthis africana	0.20	110	0.02	
Total	933.70		99.97	

PROJECT STATION:3408

DATE:31/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 816
start stop duration Long E 1312
TIME :13:16:48 13:46:35 30 (min) Purpose code: 3
LOG :8146.81 8148.39 1.56 Area code : 3
FDEPTH: 46 43 GearCond.code:
BDEPTH: 46 43 Validity code:
Towing dir: 360ø Wire out: 171 m Speed: 30 kn*10

Sorted: 143 Kg Total catch: 934.24 CATCH/HOUR: 1868.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys jubelini	352.94	872	18.89	7175
Brachydeuterus auritus Juv.	315.90	30434	16.91	
Brachydeuterus auritus	312.64	5876	16.73	
Sphyraena guachancho	291.84	692	15.62	
Galeoides decadactylus	211.24	520	11.31	
Pseudotolithus typus	191.74	272	10.26	7173
Trichiurus lepturus	45.24	196	2.42	
Pagellus bellottii	35.36	222	1.89	7176
Pomadasys incisus	21.70	144	1.16	7174
Penaeus notialis	17.68	364	0.95	
Dentex barnardi	16.50	78	0.88	
Stromateus fiatola	14.56	26	0.78	
Selene dorsalis	12.74	390	0.68	
Carcharhinus signatus	11.00	6	0.59	
Argyrosomus hololepidotus	7.28	14	0.39	
Chloroscombrus chrysurus	4.94	40	0.26	
Pteroscion peli	2.72	52	0.15	
Raja miraletus	2.46	14	0.13	
Total	1868.48		100.00	

PROJECT STATION:3409

DATE:31/ 3/04 GEAR TYPE: BT No: 8 POSITION:Lat S 814
start stop duration Long E 1315
TIME :14:38:41 15:08:27 30 (min) Purpose code: 3
LOG :8153.89 8155.51 1.62 Area code : 3
FDEPTH: 27 27 GearCond.code:
BDEPTH: 27 27 Validity code:
Towing dir: 335ø Wire out: 141 m Speed: 30 kn*10

Sorted: 87 Kg Total catch: 565.76 CATCH/HOUR: 1131.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	355.80	4380	31.44	
Galeoides decadactylus	335.40	720	29.64	
Trichiurus lepturus	150.60	576	13.31	
Sphyraena guachancho	69.00	168	6.10	
Pseudotolithus typus	57.80	108	5.11	7177
Ilisha africana	50.52	1368	4.46	
Pteroscion peli	33.96	1200	3.00	
Chloroscombrus chrysurus	22.32	264	1.97	
Selene dorsalis	10.80	636	0.95	
Arius parkii	10.70	10	0.95	
Cynoglossus senegalensis	10.20	48	0.90	
Pomadasys rogeri	9.22	12	0.81	
Stromateus fiatola	6.72	36	0.59	
Drepane africana	2.88	12	0.25	
Pomadasys jubelini	2.68	8	0.24	
Pomadasys peroteti	1.24	2	0.11	
Sardinella maderensis	1.20	24	0.11	
Dicologoglossa cuneata	0.48	12	0.04	
Total	1131.52		99.98	

PROJECT STATION:3410

DATE: 2/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 810
start stop duration Long E 1255
TIME :16:26:24 16:56:32 30 (min) Purpose code: 3
LOG :8250.87 8252.48 1.60 Area code : 3
FDEPTH: 116 116 GearCond.code:
BDEPTH: 116 116 Validity code:
Towing dir: 360ø Wire out: 361 m Speed: 30 kn*10

Sorted: Kg Total catch: 74.63 CATCH/HOUR: 149.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Umbrina canariensis	74.30	314	49.78	7178
Dentex angolensis	19.20	90	12.86	7180
Trichiurus lepturus	17.10	28	11.46	
Trigla lyra	7.64	56	5.12	
Zeus faber	6.20	32	4.15	
Trachurus trecae, juvenile	4.28	122	2.87	7179
Brotula barbata	3.74	6	2.51	
Illex coindetii	3.64	340	2.44	
Citharus linguatula	2.52	54	1.69	
Dentex canariensis	2.12	8	1.42	
Pagellus bellottii	1.84	16	1.23	7181
Saurida brasiliensis	1.78	580	1.19	
Branchiostegus semifasciatus	1.50	2	1.00	
Spicara alta	1.48	36	0.99	
Chaetodon marcellae	0.72	4	0.48	
Uranoscopus cadenati	0.58	2	0.39	
Sepia officinalis hierredda	0.32	2	0.21	
Pterothrissus belloci	0.30	2	0.20	
Total	149.26		99.99	

PROJECT STATION:3411

DATE: 2/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 801
start stop duration Long E 1238
TIME :19:48:17 20:18:03 30 (min) Purpose code: 3
LOG :8272.51 8274.01 1.49 Area code : 3
FDEPTH: 522 524 GearCond.code:
BDEPTH: 522 524 Validity code:
Towing dir: 360ø Wire out:1430 m Speed: 30 kn*10

Sorted: 26 Kg Total catch: 293.35 CATCH/HOUR: 586.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	266.20	63426	45.37	
Yarrella blackfordi	126.06	3520	21.49	
Chaceon maritae, male	40.26	132	6.86	7185
Triplophos hemingi	28.38	3366	4.84	
Chaceon maritae, female	22.66	110	3.86	7186
Hoplostethus cadenati	20.24	858	3.45	
OCTOPODIDAE	14.96	66	2.55	
Stomias sp.	13.20	308	2.25	
Lamprogrammus exutus	10.78	264	1.84	
Stereomastis sculpta	8.58	990	1.46	
Xenodermichthys copei	4.40	308	0.75	
Merluccius polli	4.40	10	0.75	7182
Lophius vomerinus	3.78	8	0.64	
Laemonema laureysi	3.52	660	0.60	
Callinectes sp.	3.30	132	0.56	
Nezumia sp.	2.86	418	0.49	
Aristeus varidens, female	2.64	132	0.45	7184
Scymnodon obscurus	2.34	6	0.40	
CONGRIDAE	1.98	88	0.34	
Glyphus marsupialis	1.76	836	0.30	
Scopelosaurus sp.	1.32	22	0.22	
Aristeus varidens, male	1.32	176	0.22	7183
PARALEPIDIDAE	1.10	22	0.19	
Dibranchus sp.	0.66	22	0.11	
Total	586.70		99.99	

PROJECT STATION:3412

DATE: 2/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 804
start stop duration Long E 1237
TIME :22:25:58 22:55:43 30 (min) Purpose code: 3
LOG :8284.08 8285.53 1.44 Area code : 3
FDEPTH: 620 631 GearCond.code:
BDEPTH: 620 631 Validity code:
Towing dir: 355ø Wire out:1600 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 176.84 CATCH/HOUR: 353.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	223.50	60660	63.19	
Yarella blackfordi *	47.54	1066	13.44	
Lamprogrammus exutus	15.74	210	4.45	
Stomias boa boa	8.24	270	2.33	
L O B S T E R S	8.24	1260	2.33	
Scymnodon obscurus	6.00	12	1.70	
Hoplostethus cadenati	4.94	180	1.40	
Illex coindetii	4.50	16	1.27	
Chaunax sp.	3.90	16	1.10	
Chaceon maritae	3.72	6	1.05	
Aristeus varidens, female	3.30	150	0.93	7188
Triplophos hemingi	3.14	420	0.89	
Plesiopenaeus edwardsianus	2.84	166	0.80	
PLATYRHINIDAE	2.54	166	0.72	
Bathyuroconger vicinus	2.54	60	0.72	
OPISTHOTEUTHIDAE	2.24	16	0.63	
Dicrolene intronigra	1.80	76	0.51	
LYCOTEUTHIDAE	1.50	16	0.42	
SEPIOLIDAE	1.34	30	0.38	
Glyphus marsupialis	1.34	60	0.38	
Nezumia sp.	0.90	30	0.25	
Callinectes sp.	0.90	30	0.25	
Laemonema laureysi	0.74	30	0.21	
Halosaurus ovenii	0.74	16	0.21	
Aristeus varidens, male	0.60	90	0.17	7187
Etmopterus spinax	0.60	4	0.17	
OPHIDIIDAE	0.30	46	0.08	
Total	353.68		99.98	

PROJECT STATION:3413

DATE: 3/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 802
start stop duration Long E 1236
TIME :00:56:19 01:26:24 30 (min) Purpose code: 3
LOG :8293.80 8295.93 2.13 Area code : 3
FDEPTH: 720 723 GearCond.code:
BDEPTH: 720 723 Validity code:
Towing dir: 98ø Wire out:1729 m Speed: 30 kn*10

Sorted: 24 Kg Total catch: 171.02 CATCH/HOUR: 342.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chaceon maritae, male	66.64	196	19.48	7191
Nematocarcinus africanus	64.40	16380	18.83	
Lamprogrammus exutus	33.32	98	9.74	
Trachyrincus scabrus	21.84	98	6.39	
Bathyuroconger vicinus	20.86	336	6.10	
L O B S T E R S	19.18	896	5.61	
Yarella blackfordi *	12.04	308	3.52	
Dibranchus atlanticus	11.76	518	3.44	
Gadella maraldi	10.36	798	3.03	
Nezumia sp.	10.22	7182	2.99	
Chaceon maritae, female	9.52	28	2.78	7192
Malacocephalus occidentalis	7.84	168	2.29	
Lophius vaillanti	6.30	42	1.84	
Merluccius polli	5.90	6	1.72	
Laemonema laureysi	5.74	70	1.68	
ONYCHOTEUTHIDAE	5.04	14	1.47	
GALATHEIDAE *	4.76	3500	1.39	
Gonostoma denudata	4.62	126	1.35	
PLATYRHINIDAE	4.34	70	1.27	
Halosaurus ovenii	3.64	70	1.06	
Triplophos hemingi	3.50	420	1.02	
Hoplostethus cadenati	3.50	112	1.02	
Aristeus varidens, female	2.24	84	0.65	7189
OPISTHOTEUTHIDAE	1.82	14	0.53	
Synaphobranchus kaupii	1.26	14	0.37	
Plesiopenaeus edwardsianus	0.56	28	0.16	
Glyphus marsupialis	0.42	14	0.12	
MELANOCETIDAE	0.28	14	0.08	
Aristeus varidens, male	0.14	14	0.04	7190
Total	342.04		99.97	

PROJECT STATION:3414

DATE: 3/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 803
start stop duration Long E 1310
TIME :05:38:52 06:07:30 29 (min) Purpose code: 3
LOG :8332.16 8333.69 1.52 Area code : 3
FDEPTH: 27 25 GearCond.code:
BDEPTH: 27 25 Validity code:
Towing dir: 350ø Wire out: 120 m Speed: 30 kn*10

Sorted: 26 Kg Total catch: 548.07 CATCH/HOUR: 1133.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pseudotolithus typus	531.21	817	46.85	7197
Pomadasys rogeri	147.10	277	12.97	7194
Pentheroscion mbizi	103.80	3501	9.15	
Galeoides decadactylus	92.19	308	8.13	
Ilisha africana	44.21	1266	3.90	
Pomadasys incisus	31.10	130	2.74	
Umbrina ronchus	28.14	60	2.48	7195
Cynoponticus ferox	26.28	12	2.32	
Pomadasys jubelini	22.45	99	1.98	7193
Dentex canariensis	14.98	37	1.32	
Umbrina canariensis	14.07	21	1.24	7196
Panulirus regius	13.97	23	1.23	
Trichiurus lepturus	9.77	64	0.86	
Sardinella aurita	8.94	56	0.79	
Arius parkii	8.73	12	0.77	
Dasyatis marmorata	7.16	27	0.63	
Dasyatis margarita	6.79	27	0.60	
Miracorvina angolensis	6.17	2	0.54	
Raja miraletus	6.04	8	0.53	
Penaeus notialis	4.74	670	0.42	
Sphyraena guachancho	3.17	8	0.28	
Stromateus fiatola	2.32	8	0.20	
Brachydeuterus auritus	0.27	56	0.02	
Selene dorsalis	0.19	112	0.02	
Dicologoglossa cuneata	0.19	8	0.02	
Total	1133.98		99.99	

PROJECT STATION:3415

DATE: 3/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 804
start stop duration Long E 1308
TIME :07:14:39 07:44:38 30 (min) Purpose code: 3
LOG :8340.02 8341.59 1.57 Area code : 3
FDEPTH: 41 40 GearCond.code:
BDEPTH: 41 40 Validity code:
Towing dir: 345ø Wire out: 150 m Speed: 30 kn*10

Sorted: 86 Kg Total catch: 173.50 CATCH/HOUR: 347.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	158.00	8364	45.53	
Chloroscombrus chrysurus	75.80	426	21.84	
Trachurus trecae, juvenile	69.80	1596	20.12	7199
Galeoides decadactylus	9.16	16	2.64	
Pagellus bellottii	8.88	92	2.56	7198
Selene dorsalis	6.84	168	1.97	
Trichiurus lepturus	3.80	12	1.10	
Sphyraena guachancho	3.68	8	1.06	
Alloteuthis africana	1.88	480	0.54	
Zeus faber	1.80	4	0.52	
Arius parkii	1.72	4	0.50	
Dicologoglossa cuneata	1.64	8	0.47	
Pseudotolithus typus	1.40	4	0.40	
Panulirus regius	1.04	2	0.30	
Branchiostegus semifasciatus	0.76	4	0.22	
Torpedo torpedo	0.40	8	0.12	
Penaeus notialis	0.32	8	0.09	
Saurida brasiliensis	0.04	8	0.01	
Boops boops	0.04	4	0.01	
Total	347.00		100.00	

PROJECT STATION:3416

DATE: 3/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 805
start stop duration Long E 1304
TIME :08:47:34 09:23:23 36 (min) Purpose code: 3
LOG :8348.57 8350.42 1.84 Area code : 3
FDEPTH: 65 61 GearCond.code:
BDEPTH: 65 61 Validity code:
Towing dir: 360ø Wire out: 195 m Speed: 30 kn*10

Sorted: 102 Kg Total catch: 968.52 CATCH/HOUR: 1614.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	838.37	3825	51.94	7200
Dentex angolensis	381.58	2518	23.64	7201
Dentex canariensis	104.65	523	6.48	7202
Brachydeuterus auritus	72.67	475	4.50	
Pagellus bellottii	65.70	618	4.07	7203
Raja miraletus	21.70	32	1.34	
Selene dorsalis	21.70	158	1.34	
Zeus faber	18.68	47	1.16	
Sardinella maderensis	17.27	602	1.07	
Octopus vulgaris	15.67	17	0.97	
Pomadasys rogeri	13.62	17	0.84	
Epinephelus aeneus	9.03	17	0.56	
Sepia officinalis hierredda	8.40	17	0.52	
Sparus pagrus africanus *	7.43	17	0.46	
Branchiostegus semifasciatus	6.65	32	0.41	
Trichiurus lepturus	6.17	17	0.38	
Alloteuthis africana	3.17	1330	0.20	
Boops boops	1.27	63	0.08	
Pseudupeneus prayensis	0.48	17	0.03	
Total	1614.21		99.99	

PROJECT STATION:3417

DATE: 3/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 805
start stop duration Long E 1303
TIME :10:25:37 10:55:10 30 (min) Purpose code: 3
LOG :8356.25 8357.80 1.54 Area code : 3
FDEPTH: 71 69 GearCond.code:
BDEPTH: 71 69 Validity code:
Towing dir: 360ø Wire out: 210 m Speed: 30 kn*10

Sorted: Kg Total catch: 371.24 CATCH/HOUR: 742.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	419.60	978	56.51	
Dentex angolensis	141.20	844	19.02	7205
Epinephelus aeneus	56.50	8	7.61	
Trachurus trecae, juvenile	53.70	1352	7.23	7206
Pomadasys incisus	27.10	170	3.65	
Pagellus bellottii	11.38	126	1.53	7204
Zeus faber	5.08	14	0.68	
Raja miraletus	4.28	6	0.58	
Umbrina canariensis	4.24	34	0.57	
Alloteuthis africana	4.14	1774	0.56	
Illex coindetii	3.64	2	0.49	
Arius parkii	2.18	2	0.29	
J E L L Y F I S H	1.68	4	0.23	
Dentex canariensis	1.60	16	0.22	
Chelidonichthys gabonensis	1.36	12	0.18	
Chaetodon hoefleri	1.30	12	0.18	
Dentex barnardi	1.12	6	0.15	
Cynoglossus senegalensis	0.54	2	0.07	
Selene dorsalis	0.54	4	0.07	
Citharus linguatula	0.38	8	0.05	
Fistularia petimba	0.36	4	0.05	
Sardinella aurita	0.28	12	0.04	
Pseudupeneus prayensis	0.06	2	0.01	
Branchiostegus semifasciatus	0.06	2	0.01	
Boops boops	0.06	2	0.01	
Saurida brasiliensis	0.04	10	0.01	
Arnoglossus imperialis	0.02	2		
Sepia orbignyana	0.02	2		
Brachydeuterus auritus	0.02	2		
Total	742.48		100.00	

PROJECT STATION:3418

DATE: 3/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 808
start stop duration Long E 1300
TIME :12:14:52 12:44:38 30 (min) Purpose code: 3
LOG :8366.42 8368.09 1.89 Area code : 3
FDEPTH: 95 96 GearCond.code:
BDEPTH: 95 96 Validity code:
Towing dir: 325ø Wire out: 303 m Speed: 30 kn*10

Sorted: Kg Total catch: 44.90 CATCH/HOUR: 89.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	27.40	112	30.51	7207
Raja miraletus	12.72	36	14.16	
Zeus faber	9.30	36	10.36	
Trichiurus lepturus	9.00	14	10.02	
Selene dorsalis	7.04	24	7.84	
Trachurus trecae, juvenile	6.10	142	6.79	7208
Sepia orbignyana	5.40	6	6.01	
Brachydeuterus auritus	2.66	14	2.96	
Saurida brasiliensis	2.56	464	2.85	
Pterothrissus belloci	2.16	18	2.41	
Fistularia petimba	1.60	6	1.78	
Chelidonichthys gabonensis	1.28	8	1.43	
Alloteuthis africana	0.64	90	0.71	
Pagellus bellottii	0.60	4	0.67	
Citharus linguatula	0.48	6	0.53	
Illex coindetii	0.30	10	0.33	
Scorpaena normani	0.26	2	0.29	
Chaetodon hoefleri	0.24	2	0.27	
Boops boops	0.06	2	0.07	
Total	89.80		99.99	

PROJECT STATION:3419

DATE: 3/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 758
start stop duration Long E 1251
TIME :14:44:25 15:14:45 30 (min) Purpose code: 3
LOG :8382.77 8384.44 1.67 Area code : 3
FDEPTH: 105 106 GearCond.code:
BDEPTH: 105 106 Validity code:
Towing dir: 325ø Wire out: 326 m Speed: 30 kn*10

Sorted: Kg Total catch: 70.90 CATCH/HOUR: 141.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Umbrina canariensis	45.20	250	31.88	
Trachurus trecae, juvenile	20.40	558	14.39	7211
Zeus faber	12.80	46	9.03	
Dentex angolensis	11.08	90	7.81	7210
Trichiurus lepturus	7.74	10	5.46	
Illex coindetii	7.02	510	4.95	
Chelidonichthys gabonensis	5.34	34	3.77	
Dentex congoensis	5.08	40	3.58	7209
Sepia orbignyana	4.76	2	3.36	
Saurida brasiliensis	2.24	298	1.58	
Spicara alta	2.02	42	1.42	
Boops boops	1.90	60	1.34	
Citharus linguatula	1.84	26	1.30	
Brotula barbata	1.80	2	1.27	
Raja miraletus	1.64	2	1.16	
Fistularia petimba	1.62	2	1.14	
Torpedo torpedo	1.62	2	1.14	
Atractoscion aequidens	1.52	2	1.07	
Dentex barnardi	1.42	4	1.00	
Uranoscopus cadenati	1.30	4	0.92	
Branchiostegus semifasciatus	1.22	2	0.86	
Pterothrissus belloci	1.20	4	0.85	
Pagellus bellottii	1.04	4	0.73	
Total	141.80		100.01	

PROJECT STATION:3420

DATE: 3/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 800
start stop duration Long E 1244
TIME :16:43:28 17:14:40 31 (min) Purpose code: 3
LOG :8396.36 8398.02 1.66 Area code : 3
FDEPTH: 162 170 GearCond.code:
BDEPTH: 162 170 Validity code:
Towing dir: 325ø Wire out: 500 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 1777.31 CATCH/HOUR: 3439.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	3280.65	185226	95.37	
Zenopsis conchifer	68.81	79	2.00	
Pteroscion peli	30.00	97	0.87	
Trichiurus lepturus	28.37	35	0.82	
Dentex angolensis	9.29	33	0.27	7212
Zeus faber	9.00	27	0.26	
Brotula barbata	9.00	15	0.26	
Monolene microstoma	2.90	97	0.08	
Saurida brasiliensis	1.94	97	0.06	
Total	3439.96		99.99	

PROJECT STATION:3421

DATE: 3/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 802
start stop duration Long E 1234
TIME :20:02:22 20:42:36 40 (min) Purpose code: 1
LOG :8416.58 8418.43 1.84 Area code : 3
FDEPTH: 812 813 GearCond.code:
BDEPTH: 812 813 Validity code:
Towing dir: 360ø Wire out:1800 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 102.02 CATCH/HOUR: 153.03

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nezumia sp.	26.76	558	17.49	
POLYCHAELIDAE	15.06	1428	9.84	
SEPIOLIDAE	15.06	1428	9.84	
HOLOUTURIDAE	13.74	30	8.98	
Yarrella blackfordi	10.98	180	7.18	
Stomias boa boa	10.44	312	6.82	
Bathypterois sp.	8.70	168	5.69	
Triplophos hemingi	8.64	1019	5.65	
Hoplostethus cadenati	8.22	258	5.37	
Bathyuroconger vicinus	6.90	54	4.51	
Nematocarcinus africanus	5.28	1296	3.45	
Dibranchus atlanticus	3.06	168	2.00	
Glyphus marsupialis	2.76	162	1.80	
Laemonema laureysi	2.70	144	1.76	
Coelorinchus sp.	2.52	12	1.65	
Lamprogrammus exutus	2.28	6	1.49	
Scymnodon obscurus	2.25	6	1.47	
SCYLLARIDAE	1.50	1110	0.98	
Xenodermichthys copei	1.14	24	0.74	
PAGURIDAE	1.02	60	0.67	
MORIDAE	1.02	6	0.67	
Aristeus varidens, female	0.90	30	0.59	7213
MELANOCETIDAE	0.60	60	0.39	
NEPHROPIDAE	0.54	36	0.35	
Halosaurus ovenii	0.54	42	0.35	
Glyphocrangon sp.	0.42	30	0.27	
Total	153.03		100.00	

PROJECT STATION:3422

DATE: 4/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 750
start stop duration Long E 1303
TIME :05:22:55 05:52:56 30 (min) Purpose code: 3
LOG :8461.54 8463.16 1.62 Area code : 3
FDEPTH: 26 30 GearCond.code:
BDEPTH: 26 30 Validity code:
Towing dir: 333ø Wire out: 120 m Speed: 30 kn*10

Sorted: 153 Kg Total catch: 866.37 CATCH/HOUR: 1732.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	376.92	16718	21.75	
Chloroscombrus chrysurus	348.72	4416	20.13	
Galeoides decadactylus	256.50	2990	14.80	
Ilisha africana	137.16	3056	7.92	
Trichiurus lepturus	117.18	464	6.76	
Arius parkii	109.62	22	6.33	
Pteroscion peli	89.64	2828	5.17	
Pomadasys rogeri	54.00	486	3.12	
Pseudotolithus typus	44.40	84	2.56	7214
Penaeus notialis	37.58	1868	2.17	
Pomadasys jubelini	30.78	290	1.78	
Selene dorsalis	27.74	960	1.60	
Sphyraena guachancho	15.88	54	0.92	
Carcharhinus signatus	15.70	14	0.91	
Pagellus bellottii	15.54	96	0.90	7215
Atractoscion aequidens	13.18	32	0.76	
Stromateus fiatola	10.30	32	0.59	
Gymnura altavela	8.30	2	0.48	
Sardinella aurita	7.98	76	0.46	
Sepia orbignyana	7.88	64	0.45	
Cynoglossus canariensis	3.98	22	0.23	
Epinephelus aeneus	1.80	2	0.10	
Trachurus trecae, juvenile	1.52	32	0.09	
Alectis alexandrinus	0.44	44	0.03	
Total	1732.74		100.01	

PROJECT STATION:3423

DATE: 4/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 751
start stop duration Long E 1301
TIME :07:05:10 07:35:43 31 (min) Purpose code: 3
LOG :8469.04 8470.63 1.58 Area code : 3
FDEPTH: 43 40 GearCond.code:
BDEPTH: 43 40 Validity code:
Towing dir: 355ø Wire out: 150 m Speed: 30 kn*10

Sorted: 78 Kg Total catch: 289.58 CATCH/HOUR: 560.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	348.39	17537	62.16	
Pagellus bellottii	116.36	1359	20.76	7216
Chloroscombrus chrysurus	25.43	279	4.54	
Trachurus trecae, juvenile	15.68	341	2.80	7217
Trichiurus lepturus	15.54	48	2.77	
Pseudotolithus typus	9.10	15	1.62	
Sphyraena guachancho	4.80	14	0.86	
Pomadasys jubelini	4.65	10	0.83	
Selene dorsalis	4.10	97	0.73	
Penaeus notialis	3.70	91	0.66	
Atractoscion aequidens	3.27	8	0.58	
Raja miraletus	3.27	8	0.58	
Callinectes pallidus	2.30	8	0.41	
Galeoides decadactylus	2.30	14	0.41	
Decapterus rhonchus	0.75	21	0.13	
Pteroscion peli	0.56	21	0.10	
Sardinella aurita	0.27	14	0.05	
Total	560.47		99.99	

PROJECT STATION:3424

DATE: 4/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 752
start stop duration Long E 1259
TIME :08:44:11 09:14:16 30 (min) Purpose code: 3
LOG :8477.63 8479.21 1.58 Area code : 3
FDEPTH: 57 54 GearCond.code:
BDEPTH: 57 54 Validity code:
Towing dir: 355ø Wire out: 180 m Speed: 30 kn*10

Sorted: Kg Total catch: 99.94 CATCH/HOUR: 199.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	63.40	1690	31.72	7218
Chloroscombrus chrysurus	60.00	566	30.02	
Trichiurus lepturus	26.50	52	13.26	
Raja miraletus	10.54	16	5.27	
Alloteuthis africana	7.28	1698	3.64	
Pagellus bellottii	5.38	86	2.69	7219
Brachydeuterus auritus	4.82	98	2.41	
Umbrina canariensis	4.52	4	2.26	
Pomadasys jubelini	3.98	6	1.99	
Epinephelus aeneus	2.48	2	1.24	
Torpedo torpedo	2.02	8	1.01	
Octopus vulgaris	1.84	2	0.92	
Dentex barnardi	1.06	6	0.53	
Zeus faber	1.06	6	0.53	
Pseudupeneus prayensis	1.00	26	0.50	
Selene dorsalis	1.00	16	0.50	
Sphyraena guachancho	0.78	2	0.39	
Sardinella aurita	0.48	16	0.24	
Chaetodon hoefleri	0.42	2	0.21	
Pomadasys incisus	0.38	2	0.19	
Branchiostegus semifasciatus	0.34	2	0.17	
Boops boops	0.26	10	0.13	
Penaeus notialis	0.14	2	0.07	
Saurida brasiliensis	0.10	18	0.05	
Citharus linguatula	0.08	6	0.04	
Monolene microstoma	0.02	4	0.01	
Total	199.88		99.99	

PROJECT STATION:3425

DATE: 4/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 754
start stop duration Long E 1257
TIME :10:19:46 10:49:45 30 (min) Purpose code: 3
LOG :8486.37 8487.91 1.52 Area code : 3
FDEPTH: 72 71 GearCond.code:
BDEPTH: 72 71 Validity code:
Towing dir: 340ø Wire out: 220 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 220.54 CATCH/HOUR: 441.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	288.50	7740	65.41	7220
Trichiurus lepturus	82.36	124	18.67	
Pistularia petimba	29.30	40	6.64	
Pagellus bellottii	7.00	80	1.59	
Umbrina canariensis	6.80	30	1.54	
Alloteuthis africana	6.40	4130	1.45	
Raja miraletus	5.20	8	1.18	
Sepia orbignyana	3.70	10	0.84	
Sardinella aurita	3.50	130	0.79	
Dentex congoensis	2.80	50	0.63	
Chelidonichthys gabonensis	2.20	20	0.50	
Chloroscombrus chrysurus	1.40	10	0.32	
Torpedo torpedo	1.02	2	0.23	
Anthias anthias	0.70	20	0.16	
Saurida brasiliensis	0.20	30	0.05	
Total	441.08		100.00	

PROJECT STATION:3426

DATE: 4/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 756
start stop duration Long E 1254
TIME :11:58:20 12:28:03 30 (min) Purpose code: 3
LOG :8495.40 8497.08 1.66 Area code : 3
FDEPTH: 87 88 GearCond.code:
BDEPTH: 87 88 Validity code:
Towing dir: 325ø Wire out: 291 m Speed: 30 kn*10

Sorted: Kg Total catch: 60.31 CATCH/HOUR: 120.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	59.10	2030	49.00	7221
Trichiurus lepturus	17.20	26	14.26	
Pistularia petimba	8.50	12	7.05	
Sepia orbignyana	6.44	10	5.34	
Zeus faber	5.36	34	4.44	
Raja miraletus	5.04	10	4.18	
Carcharhinus signatus	4.60	2	3.81	
Dentex congoensis	3.70	54	3.07	
Illex coindetii	2.46	356	2.04	
Saurida brasiliensis	1.78	300	1.48	
Chelidonichthys gabonensis	1.52	14	1.26	
Lagocephalus laevigatus	1.50	2	1.24	
Pseudupeneus prayensis	1.16	30	0.96	
Dentex angolensis	1.06	26	0.88	
Dentex barnardi	0.44	2	0.36	
Umbrina canariensis	0.40	2	0.33	
Torpedo torpedo	0.24	2	0.20	
Citharus linguatula	0.08	6	0.07	
Boops boops	0.04	2	0.03	
Total	120.62		100.00	

PROJECT STATION:3427

DATE: 4/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 742
start stop duration Long E 1238
TIME :15:16:25 15:46:11 30 (min) Purpose code: 3
LOG :8523.11 8524.68 1.57 Area code : 3
FDEPTH: 117 116 GearCond.code:
BDEPTH: 117 116 Validity code:
Towing dir: 325ø Wire out: 369 m Speed: 30 kn*10

Sorted: 93 Kg Total catch: 218.86 CATCH/HOUR: 437.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	209.98	6958	47.97	7226
Dentex angolensis	62.56	386	14.29	7222
Dentex congoensis	46.68	326	10.66	7223
Spicara alta	27.92	730	6.38	
Dentex canariensis	20.18	60	4.61	7225
Pagellus bellottii	18.30	70	4.18	7224
Dentex gibbosus	11.40	18	2.60	
Chelidonichthys gabonensis	10.58	88	2.42	
Rhinobatos albomaculatus	8.00	4	1.83	
Zeus faber	6.80	24	1.55	
Raja miraletus	6.30	14	1.44	
Atractoscion aequidens	4.82	4	1.10	
Anthias anthias	1.60	10	0.37	
Sepia orbignyana	0.78	10	0.18	
Illex coindetii	0.60	4	0.14	
Citharus linguatula	0.36	10	0.08	
Boops boops	0.36	14	0.08	
Parapandalus narval	0.32	202	0.07	
Ariomma bondi	0.18	4	0.04	
Total	437.72		99.99	

PROJECT STATION:3428

DATE: 4/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 743
start stop duration Long E 1234
TIME :16:55:39 17:25:08 29 (min) Purpose code: 3
LOG :8533.21 8534.72 1.50 Area code : 3
FDEPTH: 267 267 GearCond.code:
BDEPTH: 267 267 Validity code:
Towing dir: 330ø Wire out: 818 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 250.37 CATCH/HOUR: 518.01

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	256.97	14450	49.61	
Parapenaeus longirostris, fem.	73.01	10343	14.09	7229
Parapenaeus longirostris, male	66.91	13585	12.92	7228
Merluccius polli	31.45	596	6.07	7227
Chlorophthalmus atlanticus	29.05	9410	5.61	
Trichiurus lepturus	27.72	33	5.35	
MYCTOPHIDAE	10.34	10663	2.00	
CONGRIDAE	6.21	37	1.20	
Chlorophthalmus sp.	5.46	422	1.05	
Pterothrissus belloci	3.85	37	0.74	
Parapandalus narval	2.61	1564	0.50	
Loligo sp.	1.99	782	0.38	
PARALEPIDIDAE	0.62	25	0.12	
Todaropsis eblanae	0.62	12	0.12	
Ariomma sp.	0.62	56	0.12	
Peristedion cataphractum	0.25	25	0.05	
SCYLLARIDAE	0.25	37	0.05	
Helicolenus dactylopterus	0.12	12	0.02	
Monolene microstoma	0.02	12		
Total	518.07		100.00	

PROJECT STATION:3429

DATE: 4/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 747

	start	stop	duration			Long E 1234
TIME	:19:20:58	19:50:47	30	(min)	Purpose code:	3
LOG	:8545.70	8547.18	1.48		Area code :	3
FDEPTH:	394	395			GearCond.code:	
BDEPTH:	394	395			Validity code:	

Towing dir: 340ø Wire out:1080 m Speed: 30 kn*10

Sorted: 49 Kg Total catch: 587.76 CATCH/HOUR: 1175.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	651.60	2184	55.43	7230
Nematocarcinus africanus	361.20	93576	30.73	
Benthodesmus tenuis	50.40	2112	4.29	
Laemonema laureysi	33.60	552	2.86	
Chaunax pictus	19.44	168	1.65	
Dibranchus atlanticus	13.68	1536	1.16	
Malacocephalus laevis	6.72	72	0.57	
Lophius vaillanti	5.76	24	0.49	
Stereomastis sculpta	5.04	432	0.43	
Hymenocephalus italicus	3.84	360	0.33	
Todaropsis eblanae	3.60	24	0.31	
Nezumia sp.	3.36	72	0.29	
HISTIOTEUTHIDAE	2.64	24	0.22	
Callinectes sp.	1.92	24	0.16	
SCYLLARIDAE	1.92	240	0.16	
MYCTOPHIDAE	1.92	2352	0.16	
Illex coindetii	1.92	24	0.16	
Aristeus varidens, female	1.44	6	0.12	
Coelorinchus coelorhincus	1.44	168	0.12	
Triplophos hemingi	0.96	336	0.08	
Yarrella blackfordi	0.96	48	0.08	
CONGRIDAE	0.72	24	0.06	
Glyphus marsupialis	0.48	24	0.04	
Gadella imberbis	0.48	24	0.04	
Nemichthys scolopaceus	0.24	24	0.02	
Xenodermichthys copei	0.24	24	0.02	
Total	1175.52		99.98	

PROJECT STATION:3430

DATE: 4/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 747

	start	stop	duration			Long E 1232
TIME	:21:41:08	22:11:19	30	(min)	Purpose code:	3
LOG	:8555.15	8556.64	1.49		Area code :	3
FDEPTH:	617	627			GearCond.code:	
BDEPTH:	617	627			Validity code:	

Towing dir: 340ø Wire out:1650 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 307.29 CATCH/HOUR: 614.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	290.40	68328	47.25	
Yarella blackfordi *	145.20	4104	23.63	
Triplophos hemingi	80.88	10296	13.16	
Loligo vulgaris	16.80	72	2.73	
L O B S T E R S	10.32	1344	1.68	
Stomias sp.	9.84	168	1.60	
Hoplostethus cadenati	8.88	360	1.44	
Trichiurus lepturus	5.76	384	0.94	
Centrophorus granulosus	5.20	2	0.85	
Scymnodon obscurus	4.60	20	0.75	
GONOSTOMATIDAE	4.32	240	0.70	
Dibranchus atlanticus	4.32	576	0.70	
Aristeus varidens, female	3.84	144	0.62	
Malacocephalus laevis	2.88	24	0.47	
PLATYTROCTIDAE	2.64	240	0.43	
Chaceon maritae	2.54	6	0.41	
Merluccius polli	2.48	6	0.40	
Bathyuroconger vicinus	2.16	72	0.35	
Gadella imberbis	1.92	240	0.31	
Halosaurus ovenii	1.68	72	0.27	
Aristeus varidens, male	1.44	120	0.23	
Callinectes sp.	1.44	216	0.23	
Coelorinchus acanthiger	1.44	24	0.23	
Nezumia sp.	1.44	72	0.23	
Lamprogrammus exutus	1.20	96	0.20	
OPISTHOTEUTHIDAE	0.96	24	0.16	
Total	614.58		99.97	

PROJECT STATION:3431

DATE: 5/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 747

	start	stop	duration			Long E 1231
TIME	:00:12:15	00:42:10	30	(min)	Purpose code:	3
LOG	:8563.72	8565.28	1.55		Area code :	3
FDEPTH:	731	729			GearCond.code:	
BDEPTH:	731	729			Validity code:	

Towing dir: 340ø Wire out:1751 m Speed: 30 kn*10

Sorted: 26 Kg Total catch: 192.73 CATCH/HOUR: 385.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	126.00	33082	32.69	
Chauliodus sp.	72.80	1652	18.89	
Nezumia sp.	34.58	686	8.97	
POLYCHAELIDAE	26.88	1974	6.97	
Hoplostethus cadenati	24.64	154	6.39	
Lamprogrammus exutus	14.00	42	3.63	
Triplophos hemingi	12.74	1610	3.31	
Bajacalifornia magalops	11.48	196	2.98	
Bathyuroconger vicinus	8.68	56	2.25	
Chaceon maritae	8.30	26	2.15	
Merluccius polli	7.24	12	1.88	7231
Dicrolene intronigra	7.14	322	1.85	
Plesiopenaeus edwardsianus	5.04	280	1.31	
Dibranchus atlanticus	4.76	350	1.23	
Aristeus varidens, female	3.92	140	1.02	7232
Todaropsis eblanae	3.36	14	0.87	
Stomias affinis	3.22	84	0.84	
GALATHEIDAE *	2.52	1274	0.65	
GONOSTOMATIDAE	2.10	56	0.54	
Yarella blackfordi *	2.10	140	0.54	
Bassanago albescens	1.96	56	0.51	
Deania calcea	0.60	2	0.16	
Raja sp.	0.28	14	0.07	
Callinectes sp.	0.28	70	0.07	
PLATYTROCTIDAE	0.28	32	0.07	
Aristeus varidens, male	0.14	28	0.04	7233
MELANOCETIDAE	0.14	14	0.04	
MYCTOPHIDAE	0.14	28	0.04	
Heterocarpus grimaldii	0.14	14	0.04	
Total	385.46		100.00	

PROJECT STATION:3432

DATE: 5/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 739

	start	stop	duration			Long E 1245
TIME	:05:28:13	05:58:14	30	(min)	Purpose code:	3
LOG	:8591.14	8592.68	1.52		Area code :	3
FDEPTH:	88	88			GearCond.code:	
BDEPTH:	88	88			Validity code:	

Towing dir: 324ø Wire out: 240 m Speed: 30 kn*10

Sorted: Kg Total catch: 66.55 CATCH/HOUR: 133.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	34.50	1334	25.92	7236
Trichiurus lepturus	24.10	46	18.11	
Dentex congoensis	17.50	576	13.15	7234
Sepia officinalis hierredda	15.46	24	11.62	
Zeus faber	13.90	52	10.44	
Pistularia petimba	8.40	18	6.31	
Dentex angolensis	4.02	64	3.02	7235
Branchiostegus semifasciatus	4.00	8	3.01	
Illex coindetii	3.62	276	2.72	
Trigla lyra	2.94	34	2.21	
Pseudupeneus prayensis	1.42	36	1.07	
Raja miraletus	1.32	2	0.99	
Spicara alta	0.76	90	0.57	
Sardinella aurita	0.48	12	0.36	
Boops boops	0.34	14	0.26	
Uranoscopus cadenati	0.20	2	0.15	
Saurida brasiliensis	0.14	30	0.11	
Total	133.10		100.02	

PROJECT STATION:3433

DATE: 5/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 737

	start	stop	duration			Long E 1248
TIME	:10:42:00	11:12:09	30	(min)	Purpose code:	3
LOG	:8607.58	8609.01	1.42		Area code :	3
FDEPTH:	71	71			GearCond.code:	
BDEPTH:	71	71			Validity code:	

Towing dir: 340ø Wire out: 200 m Speed: 30 kn*10

Sorted: Kg Total catch: 55.87 CATCH/HOUR: 111.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	26.60	538	23.81	7238
Sepia orbignyana	26.60	72	23.81	
Trichiurus lepturus	16.90	38	15.12	
Trachurus trecae, juvenile	14.62	534	13.08	7239
Pistularia petimba	5.58	12	4.99	
Alloteuthis africana	4.52	2226	4.05	
Sarda sarda	3.28	2	2.94	
Raja miraletus	1.90	4	1.70	
Dentex congoensis	1.78	56	1.59	7237
Zeus faber	1.56	4	1.40	
Sardinella aurita	1.38	14	1.24	
Sphyraena sphyraena	1.34	6	1.20	
Chelidonichthys capensis	0.96	8	0.86	
Torpedo torpedo	0.84	2	0.75	
Trachinotus ovatus	0.74	2	0.66	
Illex coindetii	0.72	12	0.64	
Lagocephalus laevigatus	0.70	2	0.63	
Sepia officinalis hierredda	0.64	2	0.57	
Dentex angolensis	0.44	34	0.39	
Dentex canariensis	0.34	2	0.30	
Boops boops	0.12	6	0.11	
Saurida brasiliensis	0.10	22	0.09	
Pseudupeneus prayensis	0.08	2	0.07	
Total	111.74		100.00	

PROJECT STATION:3434

DATE: 5/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 734

	start	stop	duration			Long E 1257
TIME	:13:40:50	14:10:35	30	(min)	Purpose code:	3
LOG	:8629.14	8630.71	1.57		Area code :	3
FDEPTH:	28	27			GearCond.code:	
BDEPTH:	28	27			Validity code:	

Towing dir: 340ø Wire out: 150 m Speed: 30 kn*10

Sorted: 65 Kg Total catch: 331.15 CATCH/HOUR: 662.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	215.50	4260	32.54	
Galeoides decadactylus	122.50	1020	18.50	
Pagellus bellottii	52.60	340	7.94	7240
Selene dorsalis	52.40	1000	7.91	
Sardinella maderensis - Juv.	46.80	6030	7.07	
Sphyraena sphyraena	43.70	580	6.60	
Brachydeuterus auritus Juv.	26.60	18140	4.02	
Decapterus rhonchus	20.70	580	3.13	
Stromateus fiatola	17.30	20	2.61	
Chaetodipterus lippei	15.10	30	2.28	
Pagrus caeruleostictus	9.60	20	1.45	
Chloroscombrus chrysurus	7.30	170	1.10	
Carcharhinus signatus	5.80	2	0.88	
Dentex barnardi	5.80	30	0.88	
Pomadasys incisus	5.40	80	0.82	
Sardinella maderensis	5.30	40	0.80	
Leptocharias smithii	5.00	4	0.75	
Arius parkii	2.12	2	0.32	
Pseudupeneus prayensis	2.00	20	0.30	
Raja miraletus	0.48	2	0.07	
Engraulis encrasicolus	0.20	80	0.03	
Penaeus notialis	0.10	10	0.02	
Total	662.30		100.02	

PROJECT STATION:3435

DATE: 5/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 715
start stop duration Long E 1247
TIME :16:13:45 16:43:37 30 (min) Purpose code: 3
LOG :8651.53 8653.10 1.56 Area code : 3
FDEPTH: 25 27 GearCond.code:
BDEPTH: 25 27 Validity code:
Towing dir: 325ø Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 124.62 CATCH/HOUR: 249.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagrus caeruleostictus	131.10	128	52.60	7243
Bodianus speciosus	19.78	8	7.94	
Dentex gibbosus	14.70	30	5.90	7241
Sparus pagrus africanus *	12.60	10	5.06	
Lutjanus fulgens	12.10	4	4.85	
Epinephelus aeneus	10.30	2	4.13	
Pagellus bellottii	7.90	34	3.17	7242
Decapterus rhonchus	6.82	20	2.74	
Rhinobatos albomaculatus	6.30	2	2.53	
Epinephelus alexandrinus *	6.12	6	2.46	
Balistes capriscus	4.50	4	1.81	
BALISTIDAE	3.74	4	1.50	
Sphyraena guachancho	3.14	10	1.26	
Fistularia tabacaria	2.70	8	1.08	
Pseudupeneus prayensis	2.08	38	0.83	
Scomberomorus tritor	1.34	2	0.54	
Trachinus araneus	1.10	4	0.44	
Zeus faber	1.04	2	0.42	
Fistularia petimba	0.58	4	0.23	
Sardinella aurita	0.50	72	0.20	
Chaetodon hoefleri	0.32	6	0.13	
Rypticus saponaceus	0.26	2	0.10	
Scorpaena stephanica	0.22	2	0.09	
Total	249.24		100.01	

PROJECT STATION:3436

DATE: 6/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 734
start stop duration Long E 1213
TIME :00:07:54 00:37:42 30 (min) Purpose code: 3
LOG :8701.99 8703.50 1.51 Area code : 3
FDEPTH: 717 720 GearCond.code:
BDEPTH: 717 720 Validity code:
Towing dir: 75ø Wire out:1750 m Speed: 30 kn*10

Sorted: 26 Kg Total catch: 268.82 CATCH/HOUR: 537.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarella blackfordi *	153.00	4160	28.46	
Malacocephalus laevis	67.20	1540	12.50	
Hoplostethus cadenati	53.00	1920	9.86	
L O B S T E R S	50.60	4640	9.41	
Lamprogrammus exutus	49.00	360	9.11	
Triplophos hemingi	21.60	2760	4.02	
Dicrolene intronigra	19.00	1000	3.53	
Halosaurus ovenii	18.00	180	3.35	
Merluccius polli	14.84	22	2.76	7244
Bathyuroconger vicinus	13.40	240	2.49	
Chaceon maritae	10.80	40	2.01	
Stomias boa boa	10.40	400	1.93	
Dibranchus atlanticus	6.00	360	1.12	
PLATYTROCTIDAE	5.40	320	1.00	
Bajacalifornia magalops	5.20	360	0.97	
Ebinania costaecanarie	5.20	40	0.97	
Raja sp.	4.00	40	0.74	
Nematocarcinus africanus	3.80	880	0.71	
Aristeus varidens, female	3.80	140	0.71	7245
OPISTHOTEUTHIDAE	3.60	40	0.67	
GALATHEIDAE *	3.40	2940	0.63	
Scymnodon obscurus	3.00	8	0.56	
Bassanago albescens	2.60	80	0.48	
SEPIOLIDAE	2.20	20	0.41	
Nemichthys scolopaceus	1.80	40	0.33	
Aristeus varidens, male	1.60	200	0.30	7246
MELANOCETIDAE	1.40	40	0.26	
MYCTOPHIDAE	1.20	240	0.22	
Etmopterus pusillus	1.20	6	0.22	
Shrimps, small, non comm.	1.00	560	0.19	
CANPP00	0.20	20	0.04	
Glyphus marsupialis	0.20	20	0.04	
Total	537.64		100.00	

PROJECT STATION:3437

DATE: 6/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 729
start stop duration Long E 1216
TIME :02:34:11 03:04:09 30 (min) Purpose code: 3
LOG :8712.86 8714.37 1.48 Area code : 3
FDEPTH: 526 528 GearCond.code:
BDEPTH: 526 528 Validity code:
Towing dir: 265ø Wire out:1400 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 192.84 CATCH/HOUR: 385.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	113.80	266	29.51	7247
Nematocarcinus africanus	63.50	22010	16.46	
Triplophos hemingi	56.30	10880	14.60	
Carcharhinus signatus	38.20	2	9.90	
Yarella blackfordi *	20.20	680	5.24	
Lophius vaillanti	15.10	10	3.92	
Malacocephalus laevis	14.90	70	3.86	
L O B S T E R S	12.90	1250	3.34	
Stomias boa boa	11.90	80	3.09	
Trichiurus lepturus	9.80	340	2.54	
Centroscyllium fabricii	5.00	2	1.30	
Aristeus varidens, female	4.80	270	1.24	7249
Chaceon maritae	4.60	20	1.19	
Malacocephalus occidentalis	3.10	140	0.80	
Halosaurus ovenii	2.20	60	0.57	
Aristeus varidens, male	2.00	190	0.52	7248
Callinectes sp.	1.70	540	0.44	
Dibranchus atlanticus	1.10	60	0.29	
S H R I M P S	1.10	3200	0.29	
Bathyuroconger vicinus	1.00	160	0.26	
Laemonema laureysi	0.60	70	0.16	
Gadella imberbis	0.40	20	0.10	
Scymnodon obscurus	0.40	2	0.10	
Synaphobranchus kaupii	0.30	20	0.08	
Coloconger sp.	0.20	40	0.05	
Chaunax sp.	0.20	10	0.05	
Lamprogrammus exutus	0.10	10	0.03	
Nemichthys scolopaceus	0.10	10	0.03	
OPHICHTHIDAE	0.10	10	0.03	
Hoplostethus cadenati	0.08	30	0.02	
Total	385.68		100.01	

PROJECT STATION:3438

DATE: 6/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 728
start stop duration Long E 1217
TIME :04:50:10 05:20:02 30 (min) Purpose code: 3
LOG :8722.86 8724.48 1.60 Area code : 3
FDEPTH: 423 435 GearCond.code:
BDEPTH: 423 435 Validity code:
Towing dir: 270ø Wire out:1150 m Speed: 30 kn*10

Sorted: 14 Kg Total catch: 334.92 CATCH/HOUR: 669.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	296.00	83462	44.19	
Merluccius polli	201.30	624	30.05	7250
Lophius vaillanti	46.08	32	6.88	
Centrophorus granulosus	16.70	4	2.49	
Laemonema laureysi	15.36	224	2.29	
Chaceon maritae	14.40	32	2.15	
Chaunax sp.	13.44	224	2.01	
Dibranchus atlanticus	10.88	224	1.62	
Aristeus varidens, female	7.68	576	1.15	7251
Benthodesmus tenuis	7.68	320	1.15	
Malacocephalus laevis	5.44	32	0.81	
Hymenocephalus italicus	4.48	384	0.67	
Plesiopenaeus edwardsianus	3.52	96	0.53	
Stereomastis sculpta	3.52	512	0.53	
Illex coindetii	3.52	32	0.53	
Callinectes sp.	3.20	160	0.48	
Nezumia sp.	2.88	128	0.43	
Halosaurus ovenii	2.88	160	0.43	
Yarrella blackfordi	2.88	96	0.43	
Aristeus varidens, male	1.92	288	0.29	7252
Gadella imberbis	1.92	96	0.29	
Glyphus marsupialis	1.60	864	0.24	
CONGRIDAE	0.96	32	0.14	
Triplophos hemingi	0.64	288	0.10	
PARALEPIDIDAE	0.64	32	0.10	
Solenocera africana	0.32	32	0.05	
Total	669.84		100.03	

PROJECT STATION:3439

DATE: 6/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 725
start stop duration Long E 1227
TIME :07:44:01 08:15:41 32 (min) Purpose code: 3
LOG :8741.58 8743.24 1.66 Area code : 3
FDEPTH: 116 114 GearCond.code:
BDEPTH: 116 114 Validity code:
Towing dir: 350ø Wire out: 350 m Speed: 30 kn*10

Sorted: 104 Kg Total catch: 228.10 CATCH/HOUR: 427.69

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	248.53	5996	58.11	7253
Boops boops	47.44	6154	11.09	
Dentex angolensis	44.96	189	10.51	7254
Spicara alta	39.81	2693	9.31	
Umbrina canariensis	15.83	79	3.70	7256
Zeus faber	5.98	15	1.40	
Dentex congoensis	5.64	79	1.32	7255
Brotula barbata	4.58	4	1.07	
Raja miraletus	4.29	8	1.00	
Trichiurus lepturus	3.09	4	0.72	
Dentex canariensis	1.86	4	0.43	
Trigla lyra	1.69	15	0.40	
Pagellus bellottii	1.41	11	0.33	
Parapandalus narval	1.24	1376	0.29	
Chaetodon hoefleri	1.03	8	0.24	
Sepia officinalis hierredda	0.28	4	0.07	
Todaropsis eblanae	0.04	4	0.01	
Total	427.70		100.00	

PROJECT STATION:3440

DATE: 6/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 724
start stop duration Long E 1234
TIME :08:20:47 10:00:54 30 (min) Purpose code: 3
LOG :8755.09 8756.63 1.54 Area code : 3
FDEPTH: 87 87 GearCond.code:
BDEPTH: 87 87 Validity code:
Towing dir: 330ø Wire out: 250 m Speed: 30 kn*10

Sorted: 92 Kg Total catch: 427.79 CATCH/HOUR: 855.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	470.42	16418	54.98	7261
Sardinella aurita	127.28	2846	14.88	7259
Dentex congoensis	84.72	2710	9.90	7260
Pagellus bellottii	35.86	198	4.19	7258
Spicara alta	32.76	4016	3.83	
Epinephelus aeneus	28.10	10	3.28	
Dentex barnardi	15.74	26	1.84	
Atractoscion aequidens	12.50	18	1.46	
Sepia orbignyana	10.60	16	1.24	
Boops boops	8.94	404	1.04	
Chelidonichthys gabonensis	7.40	60	0.86	
Dentex angolensis	5.16	104	0.60	7257
Squatina oculata	4.90	2	0.57	
Fistularia petimba	4.12	8	0.48	
Zeus faber	3.02	8	0.35	
Umbrina canariensis	2.16	8	0.25	
Illex coindetii	1.90	172	0.22	
Total	855.58		99.97	

PROJECT STATION:3441

DATE: 6/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 720
start stop duration Long E 1239
TIME :11:50:57 12:20:41 30 (min) Purpose code: 3
LOG :8765.85 8767.30 1.45 Area code : 3
FDEPTH: 61 65 GearCond.code:
BDEPTH: 61 65 Validity code:
Towing dir: 165ø Wire out: 200 m Speed: 30 kn*10

Sorted: Kg Total catch: 22.26 CATCH/HOUR: 44.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Lagocephalus laevigatus	10.20	34	22.91	
Sepia orbignyana	8.54	20	19.18	
Pagellus bellottii	5.40	64	12.13	7262
Decapterus rhonchus	3.94	4	8.85	
Spicara alta	3.52	490	7.91	
Scomberomorus tritor	2.88	2	6.47	
Chelidonichthys gabonensis	1.92	14	4.31	
Fistularia petimba	1.74	14	3.91	
Alloteuthis africana	1.50	796	3.37	
Sepia officinalis hierredda	1.24	4	2.79	
Trichiurus lepturus	0.90	2	2.02	
Trachurus trecae, juvenile	0.80	28	1.80	
Raja miraletus	0.64	2	1.44	
Chaetodon hoefleri	0.64	4	1.44	
Pagrus caeruleostictus	0.42	2	0.94	
Pseudupeneus prayensis	0.22	4	0.49	
Illex coindetii	0.02	2	0.04	
Total	44.52		100.00	

PROJECT STATION:3442

DATE: 6/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 717
start stop duration Long E 1241
TIME :14:22:23 14:52:14 30 (min) Purpose code: 3
LOG :8783.44 8785.02 1.56 Area code : 3
FDEPTH: 42 43 GearCond.code:
BDEPTH: 42 43 Validity code:
Towing dir: 150ø Wire out: 160 m Speed: 30 kn*10

Sorted: Kg Total catch: 97.79 CATCH/HOUR: 195.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dasyatis centroura	60.00	2	30.68	
Pagrus caeruleostictus	45.30	376	23.16	7264
Pseudupeneus prayensis	12.12	212	6.20	
Sparus auriga *	11.40	8	5.83	
Rhinobatos albomaculatus	10.60	4	5.42	
BALISTIDAE	10.14	10	5.18	
Dentex gibbosus	9.74	68	4.98	7263
Boops boops	9.38	746	4.80	
Bodianus speciosus	7.74	10	3.96	
Sepia orbignyana	3.98	8	2.03	
Chaetodon hoefleri	3.46	40	1.77	
Dentex canariensis	3.32	6	1.70	
Raja miraletus	2.40	4	1.23	
Pagellus bellottii	2.18	16	1.11	
Zeus faber	1.50	4	0.77	
Fistularia petimba	0.84	18	0.43	
Apsilus fuscus	0.52	20	0.27	
Cephalopholis taeniops	0.46	2	0.24	
Chelidonichthys gabonensis	0.32	2	0.16	
HOLOCENTRIDAE	0.18	4	0.09	
Total	195.58		100.01	

PROJECT STATION:3443

DATE: 7/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 614
start stop duration Long E 1206
TIME :06:01:23 06:31:41 30 (min) Purpose code: 3
LOG :8928.77 8930.33 1.56 Area code : 3
FDEPTH: 43 41 GearCond.code:
BDEPTH: 43 41 Validity code:
Towing dir: 360ø Wire out: 200 m Speed: 30 kn*10

Sorted: Kg Total catch: 23.39 CATCH/HOUR: 46.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Branchiostegus semifasciatus	15.30	46	32.71	
Trichiurus lepturus	11.18	18	23.90	
Selene dorsalis	10.24	20	21.89	
Alloteuthis africana	2.74	1668	5.86	
Pagellus bellottii	2.38	18	5.09	
Seriola carpenteri	1.78	8	3.81	
Alloteuthis sp.	1.62	386	3.46	
Zeus faber	0.60	2	1.28	
Decapterus rhonchus	0.40	6	0.86	
Sphyraena guachancho	0.26	2	0.56	
Squilla mantis	0.14	2	0.30	
Decapterus punctatus	0.14	2	0.30	
Total	46.78		100.02	

PROJECT STATION:3444

DATE: 7/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 606
start stop duration Long E 1206
TIME :07:35:59 08:06:14 30 (min) Purpose code: 3
LOG :8938.25 8939.80 1.53 Area code : 3
FDEPTH: 35 42 GearCond.code:
BDEPTH: 35 42 Validity code:
Towing dir: 260ø Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 17.25 CATCH/HOUR: 34.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Galeoides decadactylus	8.62	14	24.99	
Pagrus caeruleostictus	8.10	16	23.48	7265
Epinephelus aeneus	5.92	4	17.16	
Selene dorsalis	2.64	6	7.65	
Sphyraena guachancho	2.60	4	7.54	
Panulirus regius	1.52	4	4.41	
Zeus faber	1.52	4	4.41	
Pseudotolithus senegalensis	1.46	2	4.23	
Umbrina canariensis	1.32	2	3.83	
Dasyatis marmorata	0.28	2	0.81	
Selene dorsalis, juveniles	0.18	14	0.52	
Brachydeuterus auritus	0.14	20	0.41	
Decapterus punctatus	0.14	2	0.41	
Pseudupeneus prayensis	0.06	2	0.17	
Total	34.50		100.02	

PROJECT STATION:3445

DATE: 7/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 607
start stop duration Long E 1158
TIME :09:00:03 09:30:04 30 (min) Purpose code: 3
LOG :8947.19 8948.75 1.53 Area code : 3
FDEPTH: 67 69 GearCond.code:
BDEPTH: 67 69 Validity code:
Towing dir: 260ø Wire out: 200 m Speed: 30 kn*10

Sorted: Kg Total catch: 81.05 CATCH/HOUR: 162.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	75.50	136	46.58	
Umbrina canariensis	60.80	462	37.51	7266
Dentex angolensis	10.20	46	6.29	7268
Trachurus trecae	9.58	340	5.91	7267
Sparus auriga *	3.08	2	1.90	
Pagellus bellottii	1.12	10	0.69	
Panulirus argus	0.64	2	0.39	
Dentex barnardi	0.54	2	0.33	
Dentex congoensis	0.34	4	0.21	
Fistularia petimba	0.24	2	0.15	
Conger conger	0.06	2	0.04	
Total	162.10		100.00	

PROJECT STATION:3446

DATE: 7/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 609
start stop duration Long E 1153
TIME :10:11:55 10:41:43 30 (min) Purpose code: 3
LOG :8952.06 8953.55 1.48 Area code : 3
FDEPTH: 77 81 GearCond.code:
BDEPTH: 77 81 Validity code:
Towing dir: 260ø Wire out: 250 m Speed: 30 kn*10

Sorted: Kg Total catch: 101.48 CATCH/HOUR: 202.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	133.30	654	65.68	7269
Epinephelus aeneus	34.30	12	16.90	
Dentex congoensis	13.54	154	6.67	7271
Pagellus bellottii	9.32	96	4.59	7270
Trichiurus lepturus	5.50	12	2.71	
Trachurus trecae, juvenile	3.54	116	1.74	7272
Zeus faber	2.68	8	1.32	
Umbrina canariensis	0.24	2	0.12	
Pseudupeneus prayensis	0.24	4	0.12	
Sardinella aurita	0.16	4	0.08	
Alloteuthis africana	0.10	18	0.05	
Saurida brasiliensis	0.04	10	0.02	
Total	202.96		100.00	

PROJECT STATION:3447

DATE: 7/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 610
start stop duration Long E 1149
TIME :11:12:30 11:39:04 27 (min) Purpose code: 3
LOG :8956.36 8957.82 1.45 Area code : 3
FDEPTH: 89 95 GearCond.code:
BDEPTH: 89 95 Validity code:
Towing dir: 260ø Wire out: 300 m Speed: 30 kn*10

Sorted: Kg Total catch: 83.18 CATCH/HOUR: 184.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	85.33	1607	46.16	7274
Dentex angolensis	64.33	329	34.80	7273
Epinephelus aeneus	17.00	4	9.20	
Zeus faber	3.89	9	2.10	
Chelidonichthys gabonensis	2.49	20	1.35	
Dentex gibbosus	2.24	4	1.21	
Trichiurus lepturus	2.16	4	1.17	
Pagellus bellottii	1.89	13	1.02	
Dentex barnardi	1.69	9	0.91	
Illex coindetii	1.62	120	0.88	
Raja miraletus	0.84	2	0.45	
Sardinella aurita	0.78	16	0.42	
Chaetodon hoefleri	0.33	2	0.18	
Dentex congoensis	0.16	2	0.09	
Boops boops	0.07	2	0.04	
Saurida brasiliensis	0.02	2	0.01	
Total	184.84		99.99	

PROJECT STATION:3448

DATE: 7/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 611
start stop duration Long E 1144
TIME :12:16:05 12:46:06 30 (min) Purpose code: 3
LOG :8961.48 8963.19 1.68 Area code : 3
FDEPTH: 106 108 GearCond.code:
BDEPTH: 106 108 Validity code:
Towing dir: 260ø Wire out: 300 m Speed: 30 kn*10

Sorted: Kg Total catch: 103.41 CATCH/HOUR: 206.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	93.20	488	45.06	7277
Dentex congoensis	74.70	932	36.12	7276
Dentex gibbosus	12.48	16	6.03	
Squatina oculata	9.70	4	4.69	
Trachurus trecae, juvenile	8.60	212	4.16	7275
Illex coindetii	1.96	122	0.95	
Zeus faber	1.34	4	0.65	
Chelidonichthys gabonensis	1.12	12	0.54	
Pagellus bellottii	0.90	8	0.44	
Scorpaena normani	0.82	2	0.40	
Raja miraletus	0.78	2	0.38	
Dentex barnardi	0.70	2	0.34	
Sardinella aurita	0.28	6	0.14	
Ariomma bondi	0.24	6	0.12	
Total	206.82		100.02	

PROJECT STATION:3449

DATE: 7/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 613
start stop duration Long E 1138
TIME :13:34:58 14:04:46 30 (min) Purpose code: 3
LOG :8968.44 8970.04 1.58 Area code : 3
FDEPTH: 126 139 GearCond.code:
BDEPTH: 126 139 Validity code:
Towing dir: 260ø Wire out: 400 m Speed: 30 kn*10

Sorted: Kg Total catch: 72.68 CATCH/HOUR: 145.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	60.30	314	41.48	7278
Dentex congoensis	29.60	372	20.36	7279
Spicara alta	28.60	302	19.68	
Sparus pagrus africanus *	16.22	24	11.16	
Dentex canariensis	3.76	2	2.59	
Dentex gibbosus	2.04	4	1.40	
Chelidonichthys gabonensis	1.42	18	0.98	
Illex coindetii	1.34	56	0.92	
Ariomma bondi	1.08	22	0.74	
Trichiurus lepturus	0.64	2	0.44	
Chaetodon hoefleri	0.36	2	0.25	
Total	145.36		100.00	

PROJECT STATION:3450

DATE: 7/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 614
start stop duration Long E 1125
TIME :16:36:05 17:06:01 30 (min) Purpose code: 3
LOG :8986.78 8988.43 1.65 Area code : 3
FDEPTH: 388 384 GearCond.code:
BDEPTH: 388 384 Validity code:
Towing dir: 360ø Wire out:1050 m Speed: 30 kn*10

Sorted: 44 Kg Total catch: 215.86 CATCH/HOUR: 431.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Benthodesmus tenuis	95.00	17052	22.01	
Hymenocephalus italicus	57.94	43822	13.42	
Merluccius polli	37.14	134	8.60	7280
Hypoclydonia bella ?	36.28	418	8.40	
Laemonema laureysi	23.76	1690	5.50	
Malacocephalus laevis	20.72	162	4.80	
Trichiurus lepturus	18.34	28	4.25	
Setarches guentheri	17.76	4654	4.11	
Illex coindetii	17.56	162	4.07	
Pterothrissus belloci	17.50	94	4.05	
PARALEPIDIDAE	15.20	692	3.52	
Torpedo nobiliana	10.90	2	2.52	
Chaunax pictus	10.44	104	2.42	
Glyphocrangon sp.	9.02	6506	2.09	
Nezumia sp.	5.98	124	1.39	
Chlorophthalmus sp.	5.98	104	1.39	
Dibranchus atlanticus	4.66	418	1.08	
Chaceon maritae	3.30	8	0.76	
Gadella imberbis	3.14	94	0.73	
Parapenaeus longirostris, fem.	3.12	304	0.72	7281
Torpedo sp.	3.10	2	0.72	
Lophius vaillanti	3.04	10	0.70	
MYCTOPHIDAE	2.94	1224	0.68	
Solenocera africana	2.84	284	0.66	
Stereomastis sculpta	2.84	208	0.66	
Halosaurus ovenii	1.90	66	0.44	
Chascanopsetta lugubris	0.76	10	0.18	
Callinectes sp.	0.56	10	0.13	
Total	431.72		100.00	

PROJECT STATION:3451

DATE: 7/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 617
start stop duration Long E 1116
TIME :20:03:40 20:33:35 30 (min) Purpose code: 3
LOG :9003.37 9004.83 1.46 Area code : 3
FDEPTH: 743 742 GearCond.code:
BDEPTH: 743 742 Validity code:
Towing dir: 360ø Wire out:1700 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 384.53 CATCH/HOUR: 769.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Miscellaneous fishes	194.18	132	25.25	
Nezumia sp.	140.08	330	18.21	
Brotula sp.	73.70	44	9.58	
Centroscymnus crepidater	67.10	22	8.72	
Etmopterus pusillus	55.44	198	7.21	
Stereomastis sculpta	33.88	1650	4.41	
Nessorhamphus ingolfianus	33.44	242	4.35	
Yarrella blackfordi	31.90	946	4.15	
Deania calcea	30.58	66	3.98	
Bathyraja smithii	28.38	176	3.69	
Selachophidium guentheri	16.16	968	2.10	
Glyphus marsupialis	15.62	572	2.03	
Aristeus varidens, female	12.32	484	1.60	7282
Halosaurus ovenii	11.88	374	1.54	
OCTOPODIDAE	4.18	44	0.54	
Lamprogrammus exutus	3.96	66	0.51	
MORIDAE	2.86	22	0.37	
SCYLLARIDAE	2.64	1452	0.34	
Dibranchus atlanticus	2.64	198	0.34	
Bathyuroconger vicinus	2.42	22	0.31	
ALEPOCEPHALUS ROSFRATUS	1.54	22	0.20	
Stomias boa boa	1.52	22	0.20	
Aristeus varidens, male	1.32	66	0.17	7283
Bathypterois sp	0.88	66	0.11	
PARALEPIDIDAE	0.44	22	0.06	
Total	769.06		99.97	

PROJECT STATION:3452

DATE: 8/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 625
start stop duration Long E 1205
TIME :05:29:27 05:59:05 30 (min) Purpose code: 3
LOG :9071.43 9072.90 1.47 Area code : 3
FDEPTH: 54 56 GearCond.code:
BDEPTH: 54 56 Validity code:
Towing dir: 333ø Wire out: 200 m Speed: 30 kn*10

Sorted: Kg Total catch: 43.84 CATCH/HOUR: 87.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	45.40	304	51.78	7284
Brachydeuterus auritus	18.80	142	21.44	
Trichiurus lepturus	7.38	18	8.42	
Alloteuthis africana	4.56	2670	5.20	
Pseudupeneus prayensis	4.22	62	4.81	
Caranx crysos	1.74	2	1.98	
Sepia orbignyana	1.24	6	1.41	
Branchiostegus semifasciatus	1.10	2	1.25	
Chelidonichthys capensis	0.80	2	0.91	
Zeus faber	0.78	2	0.89	
Alloteuthis sp.	0.70	192	0.80	
Fistularia petimba	0.44	6	0.50	
Uranoscopus polli	0.42	2	0.48	
Saurida brasiliensis	0.10	20	0.11	
Total	87.68		99.98	

PROJECT STATION:3453

DATE: 8/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 626
start stop duration Long E 1202
TIME :07:00:02 07:30:22 30 (min) Purpose code: 3
LOG :9077.54 9079.12 1.58 Area code : 3
FDEPTH: 81 80 GearCond.code:
BDEPTH: 81 80 Validity code:
Towing dir: 330ø Wire out: 250 m Speed: 30 kn*10

Sorted: Kg Total catch: 168.17 CATCH/HOUR: 336.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	99.70	1994	29.64	
Trachurus trecae, juvenile	76.20	2522	22.66	7290
Umbrina canariensis	52.60	218	15.64	7289
Dentex angolensis	32.30	130	9.60	7285
Dentex macrophthalmus	19.70	58	5.86	7287
Trichiurus lepturus	17.70	44	5.26	
Pagellus bellottii	12.20	52	3.63	7288
Dentex congoensis	8.00	90	2.38	7286
Epinephelus aeneus	5.06	2	1.50	
Sardinella aurita	2.88	92	0.86	7291
Zeus faber	2.00	6	0.59	
Priacanthus arenatus	1.88	4	0.56	
Illex coindetii	1.14	68	0.34	
Scorpaena stephanica	1.10	2	0.33	
Alloteuthis africana	1.04	168	0.31	
Fistularia petimba	0.80	2	0.24	
Saurida brasiliensis	0.60	62	0.18	
Torpedo torpedo	0.44	2	0.13	
Alloteuthis sp.	0.36	78	0.11	
Ariomma bondi	0.30	4	0.09	
Boops boops	0.26	2	0.08	
Uranoscopus polli	0.06	2	0.02	
GOBIIDAE	0.02	6	0.01	
Total	336.34		100.02	

PROJECT STATION:3454

DATE: 8/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 628
start stop duration Long E 1158
TIME :08:48:18 09:18:18 30 (min) Purpose code: 3
LOG :9086.41 9087.93 1.50 Area code : 3
FDEPTH: 96 93 GearCond.code:
BDEPTH: 96 93 Validity code:
Towing dir: 350ø Wire out: 300 m Speed: 30 kn*10

Sorted: Kg Total catch: 76.49 CATCH/HOUR: 152.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	31.80	948	20.79	7294
Dentex angolensis	29.30	104	19.15	7292
Fistularia petimba	26.20	14	17.13	
Dentex congoensis	24.10	234	15.75	7293
Trichiurus lepturus	14.40	28	9.41	
Zeus faber	7.80	24	5.10	
Saurida brasiliensis	5.82	1190	3.80	
Brachydeuterus auritus	3.78	24	2.47	
Carcharhinus sp.	3.00	2	1.96	
Priacanthus arenatus	1.68	4	1.10	
Illex coindetii	1.48	44	0.97	
Scorpaena stephanica	0.92	2	0.60	
Uranoscopus cadenati	0.86	2	0.56	
Pontinus accraensis	0.72	2	0.47	
Citharus linguatula	0.68	6	0.44	
Monolene microstoma	0.44	2	0.29	
Total	152.98		99.99	

PROJECT STATION:3455

DATE: 8/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 628
start stop duration Long E 1155
TIME :10:27:00 10:51:16 24 (min) Purpose code: 3
LOG :9095.67 9096.90 1.22 Area code : 3
FDEPTH: 108 107 GearCond.code:
BDEPTH: 108 107 Validity code:
Towing dir: 330ø Wire out: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 31.43 CATCH/HOUR: 78.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	33.63	128	42.80	7295
Saurida brasiliensis	10.75	1630	13.68	
Dentex congoensis	10.50	90	13.36	7296
Trachurus trecae, juvenile	5.85	163	7.44	7297
Zeus faber	3.35	10	4.26	
Priacanthus arenatus	3.05	5	3.88	
Trichiurus lepturus	2.23	3	2.84	
Fistularia petimba	1.93	3	2.46	
Torpedo torpedo	1.50	3	1.91	
Chelidonichthys gabonensis	1.38	10	1.76	
Illex coindetii	1.33	23	1.69	
Pterothrissus belloci	1.13	3	1.44	
Citharus linguatula	1.03	8	1.31	
Scorpaena stephanica	0.95	3	1.21	
Total	78.61		100.04	

PROJECT STATION:3456

DATE: 8/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 629
start stop duration Long E 1152
TIME :11:55:29 12:25:14 30 (min) Purpose code: 3
LOG :9103.77 9105.43 1.65 Area code : 3
FDEPTH: 115 113 GearCond.code:
BDEPTH: 115 113 Validity code:
Towing dir: 323ø Wire out: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 92.26 CATCH/HOUR: 184.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Umbrina canariensis	90.90	358	49.26	7300
Trachurus trecae, juvenile	21.80	686	11.81	7298
Dentex angolensis	20.80	100	11.27	7299
Priacanthus arenatus	11.98	88	6.49	
Dentex congoensis	11.60	122	6.29	7301
Ariomma bondi	7.14	154	3.87	
Dentex barnardi	5.74	14	3.11	
Trichiurus lepturus	4.34	8	2.35	
Carcharhinus obscurus	4.00	2	2.17	
Illex coindetii	1.92	86	1.04	
Pagellus bellottii	1.70	6	0.92	
Zeus faber	1.10	2	0.60	
Chelidonichthys gabonensis	0.52	4	0.28	
Chelidonichthys lastoviza	0.46	2	0.25	
Chelidonichthys capensis	0.36	2	0.20	
Saurida brasiliensis	0.16	40	0.09	
Total	184.52		100.00	

PROJECT STATION:3457

DATE: 8/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 631
start stop duration Long E 1149
TIME :13:33:51 14:03:42 30 (min) Purpose code: 3
LOG :9112.67 9114.27 1.58 Area code : 3
FDEPTH: 124 124 GearCond.code:
BDEPTH: 124 124 Validity code:
Towing dir: 320ø Wire out: 400 m Speed: 30 kn*10

Sorted: 72 Kg Total catch: 131.94 CATCH/HOUR: 263.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	102.60	702	38.88	
Trachurus trecae, juvenile	59.64	1660	22.60	7302
Dentex congoensis	59.40	698	22.51	7303
Dentex angolensis	25.56	136	9.69	7304
Illex coindetii	10.94	568	4.15	
Priacanthus arenatus	2.80	8	1.06	
Spicara alta	1.00	46	0.38	
Pagellus bellottii	0.90	8	0.34	
Pterothrissus belloci	0.82	8	0.31	
Ariomma bondi	0.22	4	0.08	
Total	263.88		100.00	

PROJECT STATION:3458

DATE: 8/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 634
start stop duration Long E 1142
TIME :15:37:29 16:07:26 30 (min) Purpose code: 3
LOG :9125.25 9126.85 1.61 Area code : 3
FDEPTH: 229 225 GearCond.code:
BDEPTH: 229 225 Validity code:
Towing dir: 330ø Wire out: 650 m Speed: 30 kn*10

Sorted: 40 Kg Total catch: 373.61 CATCH/HOUR: 747.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	474.30	23292	63.48	
Squatina oculata	48.60	18	6.50	
Alloteuthis africana	41.94	18522	5.61	
Pterothrissus belloci	32.40	342	4.34	
Chlorophthalmus sp.	31.86	1944	4.26	
Zeus faber	28.50	64	3.81	
Merluccius polli, juveniles	21.06	54	2.82	
Dentex angolensis	17.90	50	2.40	7306
Ariomma bondi	8.64	180	1.16	
Illex coindetii	8.46	126	1.13	
Parapenaeus longirostris, male	6.48	1134	0.87	7307
Parapenaeus longirostris, fem.	6.12	918	0.82	7308
Chlorophthalmus atlanticus	4.14	630	0.55	
Brotula barbata	3.10	4	0.41	
MYCTOPHIDAE	2.88	1332	0.39	
Cubiceps sp.	2.70	90	0.36	
Trichiurus lepturus	2.34	8	0.31	
Uranoscopus cadenati	2.16	18	0.29	
Torpedo torpedo	1.66	2	0.22	
Nezumia sp.	1.44	18	0.19	
Bembrops heterurus	0.54	18	0.07	
Total	747.22		99.99	

PROJECT STATION:3459

DATE: 8/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 636
start stop duration Long E 1139
TIME :17:22:03 17:53:17 31 (min) Purpose code: 3
LOG :9135.34 9136.86 1.51 Area code : 3
FDEPTH: 346 324 GearCond.code:
BDEPTH: 346 324 Validity code:
Towing dir: 340ø Wire out: 950 m Speed: 30 kn*10

Sorted: 39 Kg Total catch: 269.57 CATCH/HOUR: 521.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	174.10	3631	33.37	
Paromola cuvieri	157.16	95	30.12	
Laemonema laureysi	32.11	867	6.15	
Benthodesmus tenuis	25.06	1206	4.80	
Hymenocephalus italicus	24.93	3956	4.78	
Chlorophthalmus sp.	19.24	352	3.69	
SCYLLARIDAE	18.02	2073	3.45	
Malacocephalus laevis	17.61	135	3.38	
Chaceon maritae	10.57	27	2.03	
Merluccius polli	8.13	54	1.56	
Nezumia sp.	7.05	203	1.35	
Parapenaeus longirostris, fem.	4.88	596	0.94	7309
Glyphocrangon sp.	4.61	1138	0.88	
Callinectes sp.	3.93	27	0.75	
Alepocephalus sp.	2.85	68	0.55	
Dibranchus atlanticus	2.85	379	0.55	
Chascanopsetta lugubris	2.44	41	0.47	
Chaunax pictus	1.63	108	0.31	
Solenocera africana	1.35	271	0.26	
Bembrops sp.	0.81	14	0.16	
Lophius vaillanti	0.68	27	0.13	
Syacium micrurum	0.54	27	0.10	
Peristedion cataphractum	0.54	68	0.10	
Synagrops microlepis	0.41	14	0.08	
GALATHEIDAE *	0.27	203	0.05	
Total	521.77		100.01	

PROJECT STATION:3460

DATE: 8/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 637
start stop duration Long E 1128
TIME :20:23:07 20:53:57 31 (min) Purpose code: 3
LOG :9148.13 9149.68 1.53 Area code : 3
FDEPTH: 651 647 GearCond.code:
BDEPTH: 651 647 Validity code:
Towing dir: 280ø Wire out:1600 m Speed: 30 kn*10

Sorted: 20 Kg Total catch: 203.35 CATCH/HOUR: 393.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	228.39	40703	58.03	
Etmopterus pusillus	49.35	213	12.54	
Stereomastis sculpta	27.48	2187	6.98	
Nezumia sp.	20.52	465	5.21	
Laemonema laureysi	12.58	774	3.20	
Hoplostethus cadenati	8.71	135	2.21	
Chaceon maritae	7.06	14	1.79	
Deania calcea	5.81	39	1.48	
Halosaurus ovenii	4.45	58	1.13	
Dibranchus atlanticus	4.26	290	1.08	
MORIDAE	3.87	58	0.98	
Etmopterus spinax	3.48	39	0.88	
Aristeus varidens, female	2.90	97	0.74	
Callinectes sp.	2.71	58	0.69	
Yarella blackfordi *	2.52	19	0.64	
Benthodesmus tenuis	2.32	290	0.59	
S H R I M P S	1.94	271	0.49	
Stomias sp.	1.94	39	0.49	
Stomias boa boa	1.74	155	0.44	
C R U S T A C E A N S	0.77	252	0.20	
Triplophos hemingi	0.58	58	0.15	
Aristeus varidens, male	0.19	19	0.05	
Total	393.57		99.99	

PROJECT STATION:3461

DATE: 8/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 639
start stop duration Long E 1125
TIME :22:42:12 23:12:21 30 (min) Purpose code: 3
LOG :9154.90 9156.33 1.43 Area code : 3
FDEPTH: 710 717 GearCond.code:
BDEPTH: 710 717 Validity code:
Towing dir: 135ø Wire out:1750 m Speed: 30 kn*10

Sorted: 40 Kg Total catch: 201.50 CATCH/HOUR: 403.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
HOLOUTURIDAE	111.50	180	27.67	
Dibranchus atlanticus	95.00	80	23.57	
Malacocephalus laevis	62.50	1290	15.51	
Hoplostethus cadenati	34.40	190	8.54	
L O B S T E R S	15.90	1070	3.95	
Yarella blackfordi *	8.40	170	2.08	
Raja sp.	8.00	30	1.99	
Conostoma denudata	6.70	560	1.66	
Synaphobranchus kaupii	6.40	70	1.59	
Halosaurus ovenii	6.00	180	1.49	
Chaceon maritae	5.60	20	1.39	
Malacocephalus occidentalis	5.20	20	1.29	
Dicrolene intronigra	4.50	280	1.12	
Talismania bifurcata	4.50	120	1.12	
PALINURIDAE	4.00	30	0.99	
Trachyrincus scabrus	3.10	20	0.77	
Shrimps, small, non comm.	2.30	410	0.57	
GALATHEIDAE *	2.30	80	0.57	
Stomias boa boa	2.00	50	0.50	
Deania calcea	2.00	10	0.50	
ONYCHOTEUTHIDAE	1.90	10	0.47	
Bathyuroconger vicinus	1.90	10	0.47	
Triplophos hemingi	1.90	280	0.47	
Aristeus varidens	1.80	260	0.45	
Lophius vaillanti	1.00	10	0.25	
SEPIOLIDAE	0.90	10	0.22	
Bajacalifornia magalops	0.90	20	0.22	
NETNE02	0.80	10	0.20	
Etmopterus polli	0.70	10	0.17	
Heterocarpus grimaldii	0.40	10	0.10	
MYCTOPHIDAE	0.30	60	0.07	
Glyphus marsupialis	0.20	10	0.05	
Total	403.00		100.01	

PROJECT STATION:3462

DATE: 9/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 658
start stop duration Long E 1141
TIME :02:43:49 03:13:42 30 (min) Purpose code: 3
LOG :9180.47 9181.93 1.45 Area code : 3
FDEPTH: 723 729 GearCond.code:
BDEPTH: 723 729 Validity code:
Towing dir: 141ø Wire out:1750 m Speed: 30 kn*10

Sorted: 31 Kg Total catch: 129.90 CATCH/HOUR: 259.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
HOLOUTURIDAE	61.20	72	23.56	
Yarella blackfordi *	43.04	848	16.57	
Hydrolagus sp.	32.00	8	12.32	
Nezumia sp.	25.04	512	9.64	
L O B S T E R S	21.92	2232	8.44	
CHIMAERIDAE	12.00	24	4.62	
Merluccius polli	7.58	12	2.92	
Chaceon maritae	5.28	8	2.03	
Hoplostethus cadenati	5.20	104	2.00	
Lophius vaillanti	4.96	8	1.91	
Stomias boa boa	4.96	168	1.91	
OCTOPOTEUTHIDAE	4.32	16	1.66	
Triplophos hemingi	4.32	616	1.66	
Bajacalifornia magalops	3.36	104	1.29	
Shrimps, small, non comm.	3.12	544	1.20	
Etmopterus pusillus	3.00	14	1.15	
GALATHEIDAE *	2.72	1400	1.05	
CONOSTOMATIDAE	2.48	288	0.95	
Deania calcea	2.00	4	0.77	
Raja sp.	2.00	16	0.77	
Dicrolene intronigra	1.84	128	0.71	
Talismania bifurcata	1.60	56	0.62	
Dibranchus atlanticus	1.36	56	0.52	
Glyphus marsupialis	0.80	24	0.31	
Halosaurus ovenii	0.72	8	0.28	
Gadella imberbis	0.64	16	0.25	
PLATYTROCTIDAE	0.56	16	0.22	
PALINURIDAE	0.56	24	0.22	
SCORPAENIDAE	0.48	8	0.18	
Nemichthys scolopaceus	0.24	16	0.09	
Lamprogrammus exutus	0.16	40	0.06	
Plesiopenaeus edwardsianus	0.16	8	0.06	
Etmopterus polli	0.10	2	0.04	
MYCTOPHIDAE	0.08	16	0.03	
Total	259.80		100.01	

PROJECT STATION:3463

DATE: 9/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 655
start stop duration Long E 1143
TIME :04:53:28 05:23:01 30 (min) Purpose code: 3
LOG :9188.52 9190.04 1.52 Area code : 3
FDEPTH: 524 531 GearCond.code:
BDEPTH: 524 531 Validity code:
Towing dir: 330ø Wire out:1450 m Speed: 30 kn*10

Sorted: 21 Kg Total catch: 160.10 CATCH/HOUR: 320.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	120.40	41538	37.60	
Yarrella blackfordi	47.32	1624	14.78	
Stereomastis sculpta	34.16	2884	10.67	
Triplophos hemingi	17.92	3234	5.60	
Lophius vaillanti	14.28	14	4.46	
Gadella imberbis	11.06	714	3.45	
Chaunax pictus	10.08	168	3.15	
Stomias boa boa	8.54	210	2.67	
Chaceon maritae	8.10	8	2.53	
Chlamydoselachus anguineus	7.90	2	2.47	
Xenodermichthys copei	5.88	616	1.84	
CENTROLOPHIDAE	5.60	14	1.75	
Centrophorus sp.	5.40	2	1.69	
OMMASTREPHIDAE	4.48	154	1.40	
Halosaurus ovenii	3.78	84	1.18	
Laemonema laureysi	2.66	490	0.83	
Merluccius polli	2.66	6	0.83	
SCYLLARIDAE	2.52	2072	0.79	
Benthodesmus tenuis	1.40	70	0.44	
Malacocephalus sp.	1.12	126	0.35	
Hoplostethus cadenati	0.70	42	0.22	
Dibranchus atlanticus	0.70	70	0.22	
Callinectes sp.	0.70	126	0.22	
S H R I M P S	0.56	126	0.17	
Plesiopenaeus edwardsianus	0.56	14	0.17	
Malacocephalus laevis	0.56	14	0.17	
CONGRIDAE	0.56	14	0.17	
Nezumia sp.	0.28	14	0.09	
Glyphus marsupialis	0.14	42	0.04	
Total	320.02		99.95	

PROJECT STATION:3464

DATE: 9/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 652
start stop duration Long E 1150
TIME :07:30:20 08:00:06 30 (min) Purpose code: 3
LOG :9202.04 9203.63 1.58 Area code : 3
FDEPTH: 271 275 GearCond.code:
BDEPTH: 271 275 Validity code:
Towing dir: 335ø Wire out: 800 m Speed: 30 kn*10

Sorted: 57 Kg Total catch: 310.77 CATCH/HOUR: 621.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	412.50	20482	66.37	
Merluccius polli	59.50	582	9.57	7310
Chlorophthalmus sp.	44.88	1000	7.22	
Zenopsis conchifer	18.70	32	3.01	
Chlorophthalmus atlanticus	17.80	484	2.86	
Pterothrissus belloci	15.62	132	2.51	
Trichiurus lepturus	11.88	22	1.91	
SCYLLARIDAE	9.68	660	1.56	
Todaropsis eblanae	9.46	132	1.52	
Parapenaeus longirostris, fem.	7.70	1110	1.24	7311
Chascanopsetta lugubris	4.50	76	0.72	
Parapenaeus longirostris, male	4.28	728	0.69	7312
Nezumia sp.	1.86	54	0.30	
Alloteuthis sp.	0.98	802	0.16	
Malacocephalus laevis	0.88	10	0.14	
Dentex macrophthalmus	0.66	2	0.11	
GOBIIDAE	0.44	32	0.07	
Pontinus sp.	0.22	10	0.04	
Total	621.54		100.00	

PROJECT STATION:3465

DATE: 9/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 651
start stop duration Long E 1154
TIME :09:16:54 09:46:52 30 (min) Purpose code: 3
LOG :9210.66 9212.19 1.52 Area code : 3
FDEPTH: 134 138 GearCond.code:
BDEPTH: 134 138 Validity code:
Towing dir: 355ø Wire out: 400 m Speed: 30 kn*10

Sorted: Kg Total catch: 176.58 CATCH/HOUR: 353.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Spicara alta	140.40	1326	39.76	
Dentex angolensis	111.40	436	31.54	7315
Dentex congoensis	49.60	324	14.04	7316
Trachurus trecae, juvenile	22.00	358	6.23	7314
Umbrina canariensis	13.94	50	3.95	7313
Trigla lyra	3.32	36	0.94	
Ariomma bondi	2.70	46	0.76	
Brotula barbata	2.22	2	0.63	
Raja miraletus	1.54	2	0.44	
Zeus faber	1.40	4	0.40	
Citharus linguatula	1.10	20	0.31	
Illex coindetii	0.98	26	0.28	
Scorpaena stephanica	0.72	2	0.20	
Dentex macrophthalmus	0.68	2	0.19	
Todaropsis eblanae	0.54	20	0.15	
Zenopsis conchifer	0.48	2	0.14	
S H R I M P S	0.08	42	0.02	
Peristedion cataphractum	0.06	2	0.02	
Total	353.16		100.00	

PROJECT STATION:3466

DATE: 9/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 647
start stop duration Long E 1200
TIME :11:25:33 11:55:23 30 (min) Purpose code: 3
LOG :9224.79 9226.44 1.57 Area code : 3
FDEPTH: 90 88 GearCond.code:
BDEPTH: 90 88 Validity code:
Towing dir: 330ø Wire out: 300 m Speed: 30 kn*10

Sorted: Kg Total catch: 16.39 CATCH/HOUR: 32.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	11.40	318	34.78	7318
Pistularia petimba	6.50	24	19.83	
Trachurus trecae, juvenile	5.64	134	17.21	7317
Raja miraletus	3.26	6	9.95	
Alloteuthis africana	1.98	292	6.04	
Spicara alta	1.60	12	4.88	
Chelidonichthys capensis	0.84	6	2.56	
Dentex congoensis	0.48	6	1.46	
Dentex angolensis	0.46	2	1.40	
Loligo vulgaris	0.36	18	1.10	
Ariomma bondi	0.14	2	0.43	
Sardinella aurita - Juveniles	0.10	2	0.31	
Saurida brasiliensis	0.02	2	0.06	
Total	32.78		100.01	

PROJECT STATION:3467

DATE: 9/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 656
start stop duration Long E 1213
TIME :14:01:08 14:31:14 30 (min) Purpose code: 3
LOG :9244.19 9245.77 1.57 Area code : 3
FDEPTH: 81 81 GearCond.code:
BDEPTH: 81 81 Validity code:
Towing dir: 145ø Wire out: 250 m Speed: 30 kn*10

Sorted: Kg Total catch: 182.24 CATCH/HOUR: 364.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	226.50	1452	62.14	7322
Dentex congoensis	46.10	560	12.65	7321
Dentex angolensis	39.50	220	10.84	7320
Priacanthus arenatus	10.40	24	2.85	
Fistularia petimba	7.00	32	1.92	
Dentex barnardi	6.76	32	1.85	7319
Sepia orbignyana	4.64	2	1.27	
Carcharhinus signatus	4.40	2	1.21	
Alloteuthis africana	3.72	1220	1.02	
Epinephelus aeneus	3.52	2	0.97	
Chaetodon hoefleri	3.22	20	0.88	
Dentex gibbosus	2.94	4	0.81	
Zeus faber	2.48	8	0.68	
Raja miraletus	1.24	2	0.34	
Trichiurus lepturus	0.70	2	0.19	
Sparus pagrus africamus *	0.60	2	0.16	
Trachurus trecae, juvenile	0.40	10	0.11	
Chelidonichthys gabonensis	0.26	2	0.07	
Pseudupeneus prayensis	0.08	2	0.02	
Arnoglossus imperialis	0.02	2	0.01	
Total	364.48		99.99	

PROJECT STATION:3468

DATE: 9/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 658
start stop duration Long E 1212
TIME :15:15:50 15:45:37 30 (min) Purpose code: 3
LOG :9249.36 9250.97 1.60 Area code : 3
FDEPTH: 87 87 GearCond.code:
BDEPTH: 87 87 Validity code:
Towing dir: 330ø Wire out: 300 m Speed: 30 kn*10

Sorted: 68 Kg Total catch: 238.11 CATCH/HOUR: 476.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	113.76	832	23.89	7326
Trachurus trecae, juvenile	105.70	2050	22.20	7323
Sardinella aurita - Juveniles	91.34	2302	19.18	7324
Dentex congoensis	36.04	630	7.57	7325
Dentex barnardi	28.06	78	5.89	7328
Sepia orbignyana	18.76	34	3.94	
Dentex angolensis	16.72	126	3.51	7327
Pagrus caeruleostictus	15.20	20	3.19	
Dentex gibbosus	11.68	20	2.45	
Dentex canariensis	10.42	20	2.19	
Trichiurus lepturus	7.56	14	1.59	
Zeus faber	4.90	14	1.03	
Priacanthus arenatus	3.92	8	0.82	
Fistularia petimba	3.84	14	0.81	
Pseudupeneus prayensis	3.14	62	0.66	
Alloteuthis africana	1.40	308	0.29	
Chelidonichthys capensis	1.32	8	0.28	
Chaetodon hoefleri	1.20	8	0.25	
Chelidonichthys gabonensis	0.84	8	0.18	
Spicara alta	0.42	48	0.09	
Total	476.22		100.01	

PROJECT STATION:3469

DATE: 9/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 701
start stop duration Long E 1206
TIME :16:50:38 17:20:09 30 (min) Purpose code: 3
LOG :9259.39 9260.92 1.24 Area code : 3
FDEPTH: 111 110 GearCond.code:
BDEPTH: 111 110 Validity code:
Towing dir: 330ø Wire out: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 62.36 CATCH/HOUR: 124.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	41.50	456	33.27	7330
Trachurus trecae, juvenile	38.90	872	31.19	7329
Dentex congoensis	13.58	192	10.89	7331
Squatina oculata	6.50	6	5.21	
Zeus faber	5.18	14	4.15	
Illex coindetii	5.08	240	4.07	
Trichiurus lepturus	3.82	6	3.06	
Priacanthus arenatus	3.40	8	2.73	
Boops boops	1.76	78	1.41	
Chelidonichthys capensis	1.04	10	0.83	
Pagellus bellottii	1.00	6	0.80	
Spicara alta	0.94	36	0.75	
Torpedo torpedo	0.72	2	0.58	
Fistularia petimba	0.40	2	0.32	
Uranoscopus cadenati	0.40	2	0.32	
Sardinella aurita	0.32	8	0.26	
Citharus linguatula	0.14	6	0.11	
Saurida brasiliensis	0.04	6	0.03	
Total	124.72		99.98	

PROJECT STATION:3470

DATE: 9/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 711
start stop duration Long E 1152
TIME :20:33:43 21:03:52 30 (min) Purpose code: 3
LOG :9284.03 9285.53 1.49 Area code : 3
FDEPTH: 621 628 GearCond.code:
BDEPTH: 621 628 Validity code:
Towing dir: 323ø Wire out:1650 m Speed: 30 kn*10

Sorted: 20 Kg Total catch: 122.10 CATCH/HOUR: 244.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	91.80	25032	37.59	
Stereomastis sculpta	42.12	3708	17.25	
Triplophos hemingi	21.96	3252	8.99	
Yarrella blackfordi	19.20	468	7.86	
Nezumia sp.	8.88	192	3.64	
Chaceon maritae	7.70	20	3.15	
Lamprogrammus exutus	6.96	132	2.85	
Laemonema sp.	6.00	516	2.46	
Hoplostethus atlanticus	5.04	300	2.06	
MORIDAE	4.68	96	1.92	
Stomias sp.	3.84	72	1.57	
Aristeus varidens, female	3.36	132	1.38	7332
CONGRIDAE	3.36	60	1.38	
Octopus sp.	2.88	12	1.18	
Etmopterus polli	2.88	60	1.18	
Stomias boa boa	2.52	132	1.03	
Raja sp.	2.04	72	0.84	
Merluccius polli	2.02	4	0.83	
Etmopterus pusillus	1.68	12	0.69	
Heterocarpus laevigatus	1.08	48	0.44	
Etmopterus princeps	0.96	12	0.39	
Benthodesmus tenuis	0.84	24	0.34	
Dibranchus atlanticus	0.72	48	0.29	
Chelidonichthys gabonensis	0.48	24	0.20	
Callinectes sp.	0.36	72	0.15	
MYCTOPHIDAE	0.24	24	0.10	
Aristeus varidens, male	0.24	12	0.10	7333
Laemonema laureysi	0.24	72	0.10	
S H R I M P S	0.12	120	0.05	
Total	244.20		100.01	

PROJECT STATION:3471

DATE:10/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 654
start stop duration Long E 1145
TIME :23:56:01 00:26:07 30 (min) Purpose code: 3
LOG :9303.19 9304.70 1.51 Area code : 3
FDEPTH: 443 446 GearCond.code:
BDEPTH: 443 446 Validity code:
Towing dir: 330ø Wire out:1200 m Speed: 30 kn*10

Sorted: 29 Kg Total catch: 158.35 CATCH/HOUR: 316.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	64.50	2200	20.37	
Hymenocephalus italicus	36.80	3740	11.62	
Nematocarcinus africanus	33.30	8260	10.51	
Chaceon maritae	31.20	100	9.85	
Laemonema laureysi	31.00	840	9.79	
Merluccius polli	29.10	90	9.19	7334
Hydrolagus sp.	13.90	10	4.39	
L O B S T E R S	13.70	1210	4.33	
Chaunax sp.	13.30	220	4.20	
Aristeus varidens, female	9.60	600	3.03	7336
Dibranchus atlanticus	7.90	690	2.49	
Gadella imberbis	7.60	250	2.40	
Callinectes sp.	4.00	150	1.26	
Dicrolene intronigra	2.70	170	0.85	
Aristeus varidens, male	2.70	440	0.85	7335
COLOCONGRIDAE	1.90	60	0.60	
Pterothrissus belloci	1.90	10	0.60	
Raja sp.	1.80	10	0.57	
Malacocephalus occidentalis	1.60	90	0.51	
Malacocephalus laevis	1.20	10	0.38	
Nezumia sp.	1.10	30	0.35	
Stomias boa boa	1.10	50	0.35	
Dicologoglossa cuneata	0.90	20	0.28	
Halosaurus ovenii	0.90	40	0.28	
Nettastoma sp.	0.80	40	0.25	
Bassanago albescens	0.70	20	0.22	
Triplophos hemingi	0.70	90	0.22	
Lophius vaillanti	0.30	10	0.09	
Glyphus marsupialis	0.20	10	0.06	
MYCTOPHIDAE	0.10	70	0.03	
Solenocera africana	0.10	10	0.03	
Nemichthys scolopaceus	0.10	10	0.03	
Total	316.70		99.98	

PROJECT STATION:3472

DATE:10/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 706
start stop duration Long E 1156
TIME :05:40:29 06:10:06 30 (min) Purpose code: 3
LOG :9339.14 9340.62 1.47 Area code : 3
FDEPTH: 313 311 GearCond.code:
BDEPTH: 313 311 Validity code:
Towing dir: 322ø Wire out: 950 m Speed: 30 kn*10

Sorted: 47 Kg Total catch: 679.85 CATCH/HOUR: 1359.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1059.80	56346	77.94	
Chlorophthalmus atlanticus	85.84	1914	6.31	
SCYLLARIDAE	41.76	3682	3.07	
Merluccius polli	38.56	522	2.84	7337
Paromola cuvieri	20.88	28	1.54	
Parapenaeus longirostris, fem.	19.14	2638	1.41	7339
Laemonema laureysi	18.56	348	1.37	
Chlorophthalmus sp.	9.56	376	0.70	
Pontinus accraensis	8.98	58	0.66	
Nezumia sp.	8.40	144	0.62	
MYCTOPHIDAE	7.54	4466	0.55	
Alloteuthis sp.	4.64	1856	0.34	
Pterothrissus belloci	4.34	28	0.32	
Dibranchus atlanticus	4.06	406	0.30	
Zenopsis conchifer	3.58	4	0.26	
Trichiurus lepturus	3.52	4	0.26	
Callinectes sp.	3.18	86	0.23	
Gadella imberbis	3.18	86	0.23	
Lophius vaillanti	2.90	58	0.21	
Parapenaeus longirostris, male	2.32	406	0.17	7338
S H R I M P S	2.32	724	0.17	
Calappa sp.	2.04	28	0.15	
Chaceon maritae	2.04	6	0.15	
Solenocera africana	1.74	58	0.13	
Todaropsis eblanae	0.82	4	0.06	
Total	1359.70		99.99	

PROJECT STATION:3473

DATE:10/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 706
start stop duration Long E 1158
TIME :07:40:06 08:10:05 30 (min) Purpose code: 3
LOG :9346.81 9348.29 1.47 Area code : 3
FDEPTH: 271 267 GearCond.code:
BDEPTH: 271 267 Validity code:
Towing dir: 325ø Wire out: 800 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 1486.31 CATCH/HOUR: 2972.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	2534.60	140070	85.26	
Zenopsis conchifer	100.74	184	3.39	
Chlorophthalmus atlanticus	77.74	2300	2.62	
Merluccius polli	50.60	690	1.70	7341
Parapenaeus longirostris, fem.	28.52	3542	0.96	7343
Chlorophthalmus sp.	28.52	506	0.96	
Dentex angolensis	27.20	68	0.92	7340
Priacanthus arenatus	21.62	46	0.73	
Ariomma bondi	20.70	460	0.70	
Parapenaeus longirostris, male	17.94	3220	0.60	7342
Pterothrissus belloci	17.02	138	0.57	
Spicara alta	11.04	46	0.37	
Trichiurus lepturus	9.70	12	0.33	
Illex coindetii	9.20	92	0.31	
Pontinus accraensis	9.20	46	0.31	
SCYLLARIDAE	5.06	276	0.17	
Chascanopsetta lugubris	3.22	46	0.11	
Total	2972.62		100.01	

PROJECT STATION:3474

DATE:10/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 705
start stop duration Long E 1200
TIME :09:27:12 09:57:25 30 (min) Purpose code: 3
LOG :9354.12 9355.61 1.48 Area code : 3
FDEPTH: 153 151 GearCond.code:
BDEPTH: 153 151 Validity code:
Towing dir: 340ø Wire out: 450 m Speed: 30 kn*10

Sorted: Kg Total catch: 34.98 CATCH/HOUR: 69.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	34.20	108	48.89	7344
Carcharhinus signatus	12.30	2	17.58	
Todaropsis eblanae	5.88	172	8.40	
Chelidonichthys capensis	3.50	30	5.00	
Pterothrissus belloci	2.78	20	3.97	
Zenopsis conchifer	2.78	16	3.97	
Brotula barbata	2.54	2	3.63	
Spicara alta	1.38	20	1.97	
Zeus faber	1.36	4	1.94	
Trichiurus lepturus	1.18	2	1.69	
Dentex congoensis	0.68	10	0.97	
Illex coindetii	0.64	30	0.91	
Raja clavata	0.36	2	0.51	
Peristedion cataphractum	0.20	4	0.29	
Saurida brasiliensis	0.18	30	0.26	
Total	69.96		99.98	

PROJECT STATION:3475

DATE:10/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 702
start stop duration Long E 1204
TIME :11:00:26 11:30:31 30 (min) Purpose code: 3
LOG :9362.07 9363.67 1.59 Area code : 3
FDEPTH: 117 120 GearCond.code:
BDEPTH: 117 120 Validity code:
Towing dir: 140ø Wire out: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 45.03 CATCH/HOUR: 90.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ariomma bondi	23.40	390	25.98	
Trachurus trecae, juvenile	14.10	410	15.66	7347
Dentex angolensis	13.72	106	15.23	7345
Dentex congoensis	10.72	108	11.90	7346
Squatina oculata	8.68	4	9.64	
Priacanthus arenatus	5.86	12	6.51	
Illex coindetii	5.76	352	6.40	
Torpedo torpedo	2.64	4	2.93	
Chelidonichthys gabonensis	1.98	20	2.20	
Zeus faber	1.08	4	1.20	
Trichiurus lepturus	0.50	4	0.56	
Boops boops	0.42	22	0.47	
Todaropsis eblanae	0.40	6	0.44	
Citharus linguatula	0.40	10	0.44	
Pterothrissus belloci	0.24	2	0.27	
Pagellus bellottii	0.12	2	0.13	
Spicara alta	0.04	2	0.04	
Total	90.06		100.00	

PROJECT STATION:3476

DATE:10/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 711
start stop duration Long E 1217
TIME :13:13:56 13:43:45 30 (min) Purpose code: 3
LOG :9378.31 9379.92 1.61 Area code : 3
FDEPTH: 118 120 GearCond.code:
BDEPTH: 118 120 Validity code:
Towing dir: 135ø Wire out: 350 m Speed: 30 kn*10

Sorted: Kg Total catch: 19.55 CATCH/HOUR: 39.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Carcharhinus signatus	14.00	2	35.81	
Dentex angolensis	7.74	42	19.80	7348
Trachurus trecae, juvenile	3.60	110	9.21	7349
Brotula barbata	2.84	2	7.26	
Zeus faber	2.10	6	5.37	
Todaropsis eblanae	1.96	70	5.01	
Chelidonichthys gabonensis	1.70	16	4.35	
Sepia orbignyana	1.46	2	3.73	
Trichiurus lepturus	1.02	2	2.61	
Pterothrissus belloci	0.72	6	1.84	
Illex coindetii	0.62	18	1.59	
Sepia officinalis hierredda	0.46	2	1.18	
Dentex congoensis	0.42	4	1.07	
Spicara alta	0.18	10	0.46	
Boops boops	0.16	8	0.41	
Citharus linguatula	0.12	4	0.31	
Total	39.10		100.01	

PROJECT STATION:3477

DATE:10/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 715
start stop duration Long E 1215
TIME :15:18:31 15:49:05 31 (min) Purpose code: 3
LOG :9391.71 9393.34 1.62 Area code : 3
FDEPTH: 154 153 GearCond.code:
BDEPTH: 154 153 Validity code:
Towing dir: 310ø Wire out: 450 m Speed: 30 kn*10

Sorted: Kg Total catch: 33.34 CATCH/HOUR: 64.53

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	18.00	91	27.89	7350
Trichiurus lepturus	15.77	70	24.44	
Zenopsis conchifer	7.94	15	12.30	
Raja clavata	3.37	2	5.22	
Spicara alta	2.26	35	3.50	
Umbrina canariensis	2.21	4	3.42	
Pterothrissus belloci	2.09	19	3.24	
Illex coindetii	1.94	39	3.01	
Pentheroscion mbizi	1.88	27	2.91	
Todaropsis eblanae	1.59	54	2.46	
Zeus faber	1.57	6	2.43	
Dentex macrophthalmus	1.45	10	2.25	
Scorpaena stephanica	1.16	2	1.80	
Dentex congoensis	1.05	10	1.63	
Boops boops	0.81	31	1.26	
Trachurus trecae, juvenile	0.72	15	1.12	
Pontinus accraensis	0.35	4	0.54	
Chelidonichthys gabonensis	0.21	2	0.33	
Bembrops greyi	0.06	2	0.09	
Chrysaora sp.	0.04	4	0.06	
Citharus linguatula	0.04	2	0.06	
Selene dorsalis	0.02	4	0.03	
Parapenaeus longirostris	0.02	8	0.03	
Total	64.55		100.02	

PROJECT STATION:3478

DATE:10/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 715
start stop duration Long E 1209
TIME :16:50:12 17:22:05 32 (min) Purpose code: 3
LOG :9400.33 9402.05 1.72 Area code : 3
FDEPTH: 233 230 GearCond.code:
BDEPTH: 233 230 Validity code:
Towing dir: 315ø Wire out: 700 m Speed: 30 kn*10

Sorted: 39 Kg Total catch: 171.33 CATCH/HOUR: 321.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	132.30	5205	41.18	
Trichiurus lepturus	28.50	60	8.87	
Pterothrissus belloci	23.03	188	7.17	
Chlorophthalmus atlanticus	21.38	2850	6.66	
Dentex angolensis	16.31	38	5.08	7351
Zenopsis conchifer	11.93	68	3.71	
Torpedo torpedo	8.25	8	2.57	
Illex coindetii	7.13	68	2.22	
Ariomma bondi	7.05	75	2.19	
Parapenaeus longirostris, fem.	6.15	623	1.91	7353
Todaropsis eblanae	5.70	68	1.77	
MYCTOPHIDAE	5.03	2213	1.57	
Merluccius sp.	4.88	83	1.52	
Bembrops heterurus	4.88	15	1.52	
Squatina aculeata	4.88	2	1.52	
Chlamydoselachus anguineus	4.88	2	1.52	
Brotula barbata	4.26	4	1.33	
Merluccius polli	4.05	23	1.26	
Pteroscion peli	3.23	8	1.01	
CONGRIDAE	3.15	38	0.98	
Pontinus accraensis	3.08	15	0.96	
Parapenaeus longirostris, male	3.00	180	0.93	7352
Pegusa lascaris	2.78	38	0.87	
Dicologoglossa cuneata	2.70	8	0.84	
APOGONIDAE	2.70	23	0.84	
Cyttopsis roseus	0.08	15	0.02	
Total	321.31		100.02	

PROJECT STATION:3479

DATE:10/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 720
start stop duration Long E 1204
TIME :19:36:11 20:06:00 30 (min) Purpose code: 3
LOG :9413.98 9415.47 1.48 Area code : 3
FDEPTH: 415 427 GearCond.code:
BDEPTH: 415 427 Validity code:
Towing dir: 310ø Wire out:1150 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 304.94 CATCH/HOUR: 609.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	109.10	332	17.89	7354
Nematocarcinus africanus	102.90	11382	16.87	
Hymenocephalus italicus	86.38	5460	14.16	
Benthodesmus tenuis	74.62	56	12.24	
Laemonema laureysi	39.06	224	6.40	
Chaunax pictus	33.74	1246	5.53	
Dibranchus atlanticus	29.26	2058	4.80	
Stereomastis sculpta	19.88	1204	3.26	
Callinectes sp.	11.48	154	1.88	
Malacocephalus laevis	11.06	70	1.81	
MORIDAE	10.22	28	1.68	
SCYLLARIDAE	9.80	616	1.61	
Nezumia sp.	8.82	210	1.45	
CONGRIDAE	7.56	84	1.24	
Chaceon maritae	7.30	16	1.20	
Todaropsis eblanae	7.14	14	1.17	
Halosaurus ovenii	6.30	56	1.03	
Bathyuroconger vicinus	6.30	28	1.03	
Gadella imberbis	5.60	28	0.92	
Plesionika martia	5.46	154	0.90	
GOBIIDAE	5.32	14	0.87	
OCTOPODIDAE	4.90	14	0.80	
Solenocera africana	4.48	42	0.73	
Aristeus varidens, female	1.54	84	0.25	7356
Aristeus varidens, male	1.26	126	0.21	7355
Galeus polli	0.40	6	0.07	
Total	609.88		100.00	

PROJECT STATION:3480

DATE:10/ 4/04 GEAR TYPE: BT No:14 POSITION:Lat S 721
start stop duration Long E 1202
TIME :21:55:10 22:25:09 30 (min) Purpose code: 3
LOG :9424.27 9425.84 1.55 Area code : 3
FDEPTH: 515 524 GearCond.code:
BDEPTH: 515 524 Validity code:
Towing dir: 320ø Wire out:1350 m Speed: 30 kn*10

Sorted: 21 Kg Total catch: 241.49 CATCH/HOUR: 482.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	220.00	41250	45.55	
Yarrella blackfordi	36.30	1144	7.52	
Stomias boa boa	35.20	726	7.29	
L O B S T E R S	34.32	2376	7.11	
Lamprogrammus exutus	31.90	110	6.60	
Triplophos hemingi	26.40	3674	5.47	
Benthodesmus tenuis	21.12	748	4.37	
Chaceon maritae	14.80	52	3.06	
Dibranchus atlanticus	12.76	1584	2.64	
Chaunax sp.	8.58	88	1.78	
Illex coindetii	4.18	22	0.87	
Coloconger sp.	3.96	22	0.82	
Nezumia milleri	3.74	66	0.77	
Callinectes sp.	3.30	132	0.68	
Aristeus varidens, female	2.86	154	0.59	7358
OPHIDIIDAE	2.42	308	0.50	
Laemonema laureysi	2.20	110	0.46	
Glyphus marsupialis	2.20	44	0.46	
S H R I M P S	2.20	110	0.46	
Malacocephalus laevis	2.20	44	0.46	
Bathyuroconger vicinus	2.20	286	0.46	
Hoplostethus cadenati	2.20	110	0.46	
Hymenocephalus italicus	1.98	198	0.41	
Merluccius polli	1.36	4	0.28	
Dicrolene intronigra	1.32	308	0.27	
Aristeus varidens, male	0.88	132	0.18	7357
Bassanago albescens	0.88	66	0.18	
Scymnodon obscurus	0.60	4	0.12	
Dicologoglossa cuneata	0.22	22	0.05	
Coelorinchus coelorhincus	0.22	2	0.05	
Raja sp.	0.22	22	0.05	
Etmopterus pusillus	0.20	2	0.04	
Etmopterus polli	0.06	2	0.01	
Total	482.98		100.02	

PROJECT STATION:3481

DATE:11/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 713
start stop duration Long E 1230
TIME :05:20:32 05:50:34 30 (min) Purpose code: 3
LOG :9470.04 9471.62 1.56 Area code : 3
FDEPTH: 69 73 GearCond.code:
BDEPTH: 69 73 Validity code:
Towing dir: 320ø Wire out: 200 m Speed: 30 kn*10

Sorted: Kg Total catch: 53.91 CATCH/HOUR: 107.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	28.10	470	26.06	7360
Boops boops	23.80	200	22.07	
Brachydeuterus auritus	9.52	70	8.83	
Trachurus trecae	8.72	242	8.09	7359
Trichiurus lepturus	7.90	16	7.33	
Fistularia petimba	6.10	22	5.66	
Umbrina canariensis	4.80	16	4.45	
Sepia orbignyana	4.16	12	3.86	
Pseudupeneus prayensis	3.16	32	2.93	
Atractoscion aequidens	2.72	4	2.52	
Carcharhinus sp.	2.46	4	2.28	
Raja miraletus	2.42	4	2.24	
Priacanthus arenatus	1.76	4	1.63	
Chelidonichthys capensis	0.60	6	0.56	
Pagrus caeruleostictus	0.56	2	0.52	
Monolene microstoma	0.44	2	0.41	
Alloteuthis africana	0.30	76	0.28	
Pontinus accraensis	0.18	2	0.17	
Sardinella aurita	0.12	2	0.11	
Total	107.82		100.00	

PROJECT STATION:3482

DATE:11/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 707
start stop duration Long E 1231
TIME :07:00:45 07:29:06 28 (min) Purpose code: 3
LOG :9479.57 9481.07 1.46 Area code : 3
FDEPTH: 48 48 GearCond.code:
BDEPTH: 48 48 Validity code:
Towing dir: 150ø Wire out: 150 m Speed: 30 kn*10

Sorted: Kg Total catch: 200.18 CATCH/HOUR: 428.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	366.09	452	85.34	7361
Pagrus caeruleostictus	22.39	58	5.22	7362
Sepia officinalis hierredda	11.40	6	2.66	
Dentex canariensis	9.26	19	2.16	7364
Pagellus bellottii	5.87	19	1.37	7363
Bodianus speciosus	3.75	2	0.87	
Fistularia petimba	3.69	15	0.86	
Caranx crysos	2.55	2	0.59	
Raja miraletus	1.69	2	0.39	
Mustelus mustelus	1.69	2	0.39	
Pseudupeneus prayensis	0.58	9	0.14	
Total	428.96		99.99	

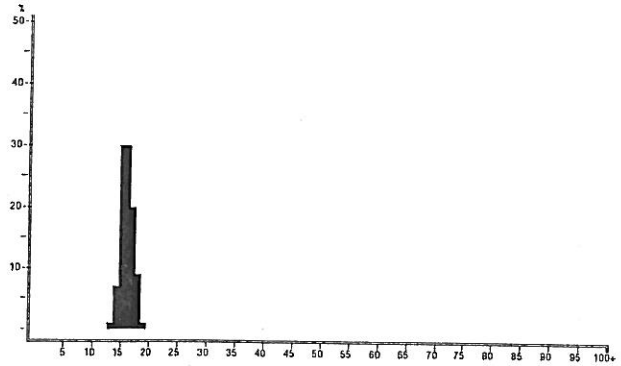
PROJECT STATION:3483

DATE:11/ 4/04 GEAR TYPE: BT No: 8 POSITION:Lat S 705
start stop duration Long E 1236
TIME :08:10:38 08:40:40 30 (min) Purpose code: 3
LOG :9486.74 9488.24 1.47 Area code : 3
FDEPTH: 37 37 GearCond.code:
BDEPTH: 37 37 Validity code:
Towing dir: 325ø Wire out: 150 m Speed: 30 kn*10

Sorted: 119 Kg Total catch: 2153.16 CATCH/HOUR: 4306.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	4069.80	43992	94.51	
Pagellus bellottii	94.32	828	2.19	7365
Caranx crysos	29.52	36	0.69	
Raja miraletus	28.08	36	0.65	
Chloroscombrus chrysurus	26.64	108	0.62	
Trichiurus lepturus	20.16	36	0.47	
Selene dorsalis	15.12	180	0.35	
Priacanthus arenatus	14.76	72	0.34	
Pseudupeneus prayensis	6.48	108	0.15	
Decapterus rhonchus	1.44	36	0.03	
Total	4306.32		100.00	

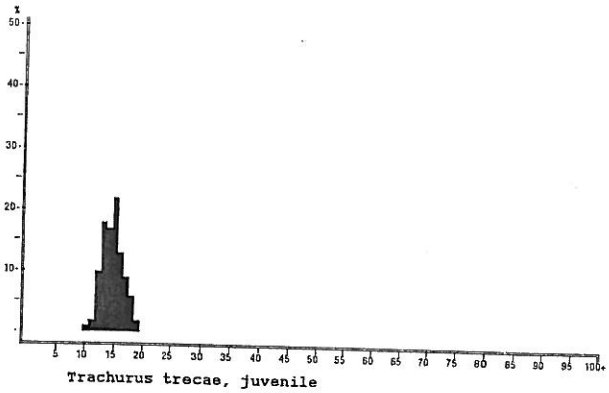
ANNEX II. Length distribution of main species.



Trachurus capensis

Pooled sample (weighted by catch).

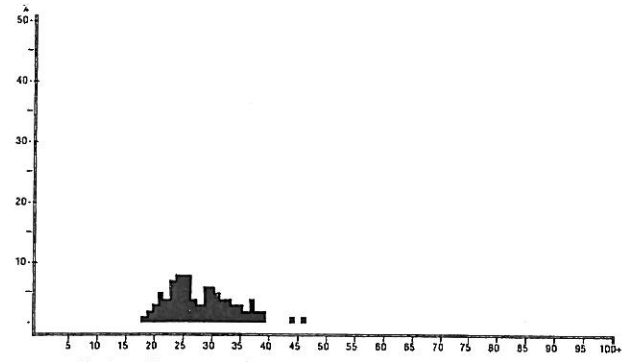
MEAN LENGTH = 15.50cm N= 731
NUMBER OF SUBSAMPLES : 9
SAMPLES FOUND BETWEEN ST. NO.3281 AND 3300.
SAMPLES SEARCHED BETWEEN ST. NO.3278 AND 3307 .



Trachurus trecae, juvenile

Pooled sample (weighted by catch).

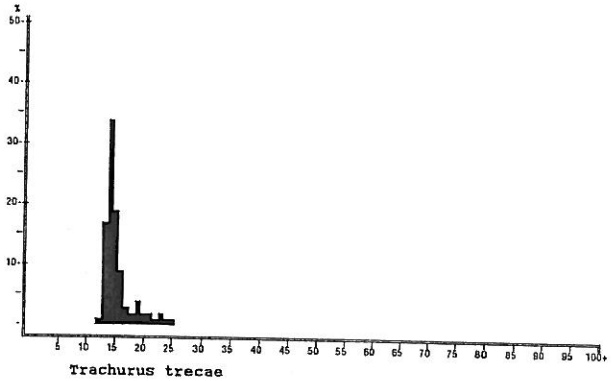
MEAN LENGTH = 15.15cm N= 978
NUMBER OF SUBSAMPLES : 7
SAMPLES FOUND BETWEEN ST. NO.3322 AND 3377.
SAMPLES SEARCHED BETWEEN ST. NO.3308 AND 3381 .



Merluccius capensis

Pooled sample (weighted by catch).

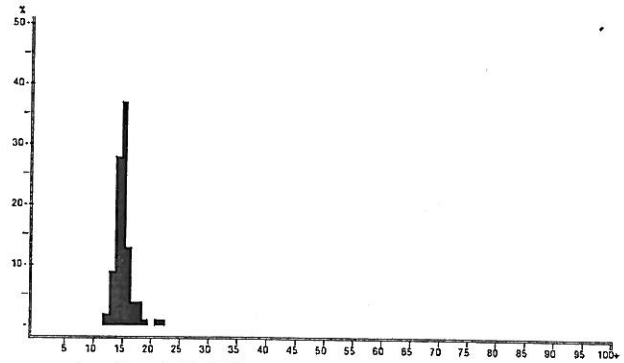
MEAN LENGTH = 29.05cm N= 1004
NUMBER OF SUBSAMPLES : 17
SAMPLES FOUND BETWEEN ST. NO.3279 AND 3304.
SAMPLES SEARCHED BETWEEN ST. NO.3278 AND 3307 .



Trachurus trecae

Pooled sample (weighted by catch).

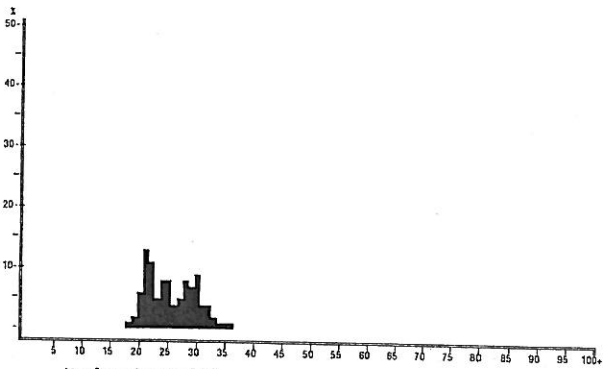
MEAN LENGTH = 15.89cm N= 1288
NUMBER OF SUBSAMPLES : 21
SAMPLES FOUND BETWEEN ST. NO.3311 AND 3377.
SAMPLES SEARCHED BETWEEN ST. NO.3308 AND 3381 .



Pagellus bellottii

Pooled sample (weighted by catch).

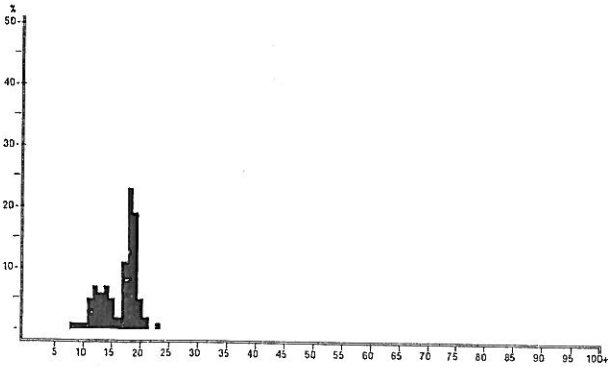
MEAN LENGTH = 15.47cm N= 255
NUMBER OF SUBSAMPLES : 6
SAMPLES FOUND BETWEEN ST. NO.3302 AND 3307.
SAMPLES SEARCHED BETWEEN ST. NO.3278 AND 3307 .



Merluccius polli

Pooled sample (weighted by catch).

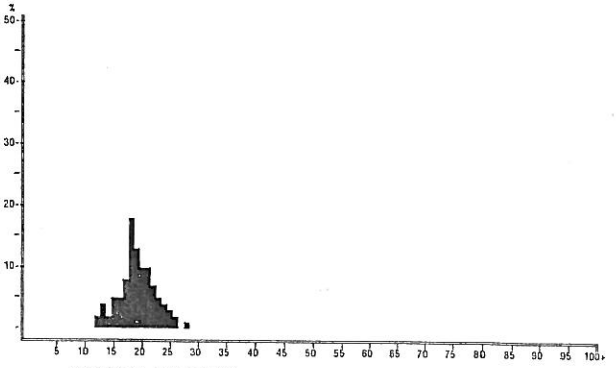
MEAN LENGTH = 26.17cm N= 735
NUMBER OF SUBSAMPLES : 13
SAMPLES FOUND BETWEEN ST. NO.3309 AND 3380.
SAMPLES SEARCHED BETWEEN ST. NO.3308 AND 3381 .



Dentex macrophthalmus

Pooled sample (weighted by catch).

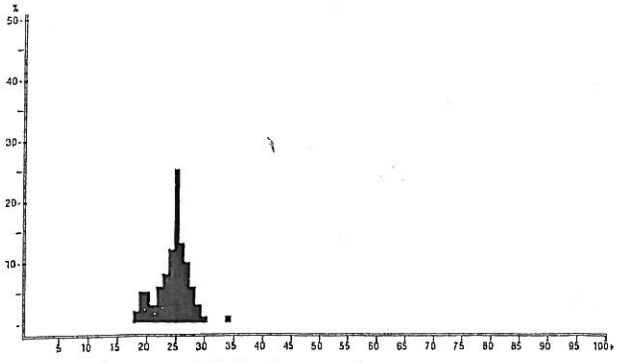
MEAN LENGTH = 16.98cm N= 1242
NUMBER OF SUBSAMPLES : 15
SAMPLES FOUND BETWEEN ST. NO.3281 AND 3307.
SAMPLES SEARCHED BETWEEN ST. NO.3278 AND 3307 .



Pagellus bellottii

Pooled sample (weighted by catch).

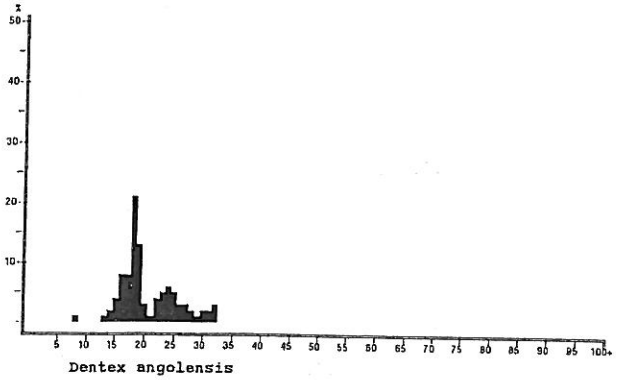
MEAN LENGTH = 19.59cm N= 855
NUMBER OF SUBSAMPLES : 21
SAMPLES FOUND BETWEEN ST. NO.3309 AND 3371.



Dentex macrophthalmus

Pooled sample (weighted by catch).

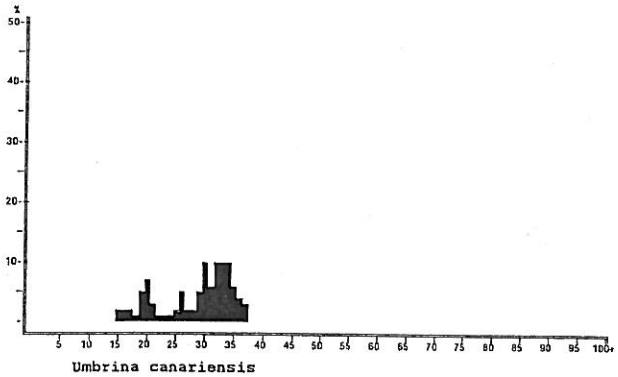
MEAN LENGTH = 24.85cm N= 39
NUMBER OF SUBSAMPLES : 7
SAMPLES FOUND BETWEEN ST. NO.3309 AND 3349.
SAMPLES SEARCHED BETWEEN ST. NO.3308 AND 3381 .



Dentex angolensis

Pooled sample (weighted by catch).

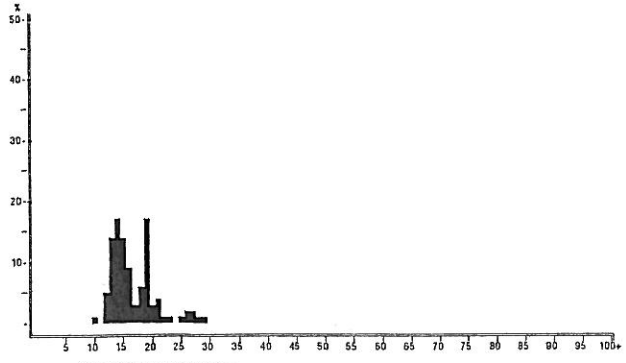
MEAN LENGTH = 21.35cm N= 494
NUMBER OF SUBSAMPLES : 16
SAMPLES FOUND BETWEEN ST. NO.3309 AND 3379.
SAMPLES SEARCHED BETWEEN ST. NO.3308 AND 3381 .



Umbrina canariensis

Pooled sample (weighted by catch).

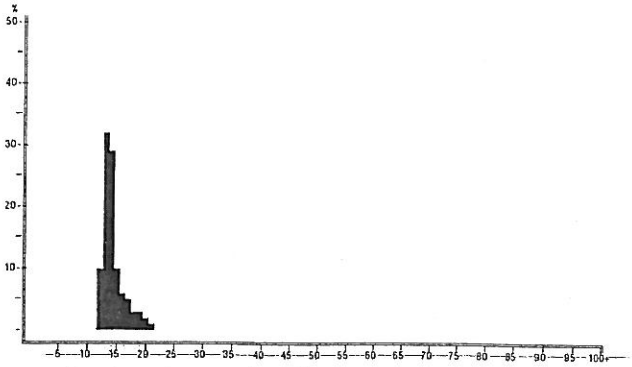
MEAN LENGTH = 29.17cm N= 289
NUMBER OF SUBSAMPLES : 8
SAMPLES FOUND BETWEEN ST. NO.3309 AND 3316.
SAMPLES SEARCHED BETWEEN ST. NO.3308 AND 3381 .



Trachurus trecae

Pooled sample (weighted by catch).

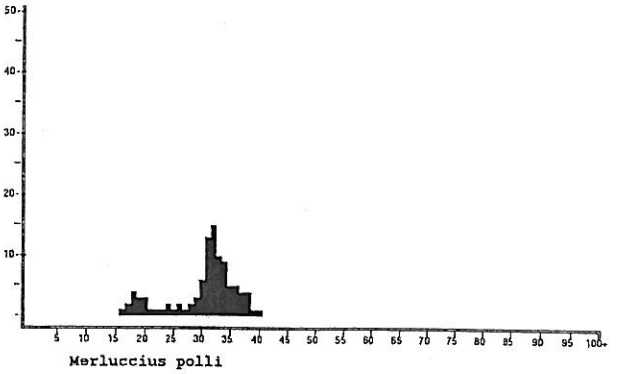
MEAN LENGTH = 17.19cm N= 778
NUMBER OF SUBSAMPLES : 8
SAMPLES FOUND BETWEEN ST. NO.3388 AND 3481.
SAMPLES SEARCHED BETWEEN ST. NO.3382 AND 3483 .



Trachurus trecae, juvenile

Pooled sample (weighted by catch).

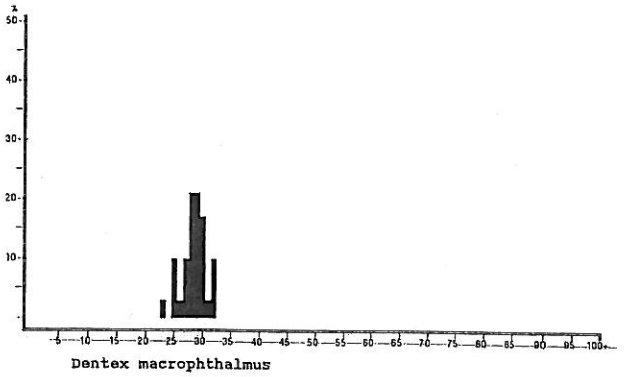
MEAN LENGTH = 14.78cm N= 3321
NUMBER OF SUBSAMPLES : 30
SAMPLES FOUND BETWEEN ST. NO.3405 AND 3476.
SAMPLES SEARCHED BETWEEN ST. NO.3382 AND 3483 .



Merluccius polli

Pooled sample (weighted by catch).

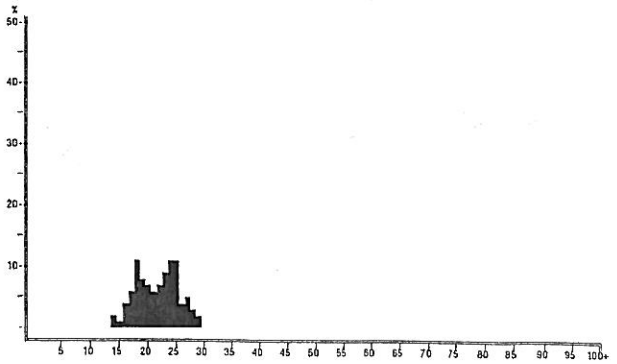
MEAN LENGTH = 30.83cm N= 908
NUMBER OF SUBSAMPLES : 24
SAMPLES FOUND BETWEEN ST. NO.3382 AND 3478.
SAMPLES SEARCHED BETWEEN ST. NO.3382 AND 3483 .



Dentex macrophthalmus

Pooled sample (weighted by catch).

MEAN LENGTH = 28.91cm N= 29
NUMBER OF SUBSAMPLES : 1
SAMPLES FOUND BETWEEN ST. NO.3453 AND 3453.
SAMPLES SEARCHED BETWEEN ST. NO.3382 AND 3483 .



Dentex angolensis

Pooled sample (weighted by catch).

MEAN LENGTH = 22.20cm N= 2047
NUMBER OF SUBSAMPLES : 40
SAMPLES FOUND BETWEEN ST. NO.3388 AND 3478.
SAMPLES SEARCHED BETWEEN ST. NO.3382 AND 3483 .

ANNEX III. Swept area estimates.

SWEPT AREA ANALYSIS FROM STATION 3278 TO STATION 3307

A. Cunene - Tombua (shelf)

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			20- 50m	50-100m	100-200m	200-300m
Trachurus capensis	1			4		2	33	66.12		1.70	275.24	0.44
Trachurus trecae, juvenile	1	1				2	19	25.83	67.77	0.03		
Trachurus trecae	1		2	2	6	1	57	22.88	29.93	21.92	17.50	
Dentex macrophthalmus	3		4	4	1	1	62	10.52	0.46	7.31	32.50	3.50
Engraulis encrasicolus						1	5	9.18	24.09			
Merluccius capensis	6	5	3	2	2		86	8.10	0.38	5.19	14.44	58.46
Unidentified fish						1	5	6.25	16.41			
Chlorophthalmus atlanticus					1		5	1.55				32.52
Pagellus bellottii	4		3				33	1.07	1.80	1.07	0.13	
Dentex macrophthalmus Juv.				1			5	0.62	1.61			
Sardinops ocellatus	2			1			14	0.57	1.44		0.07	
Sepia officinalis hierredda	2		1				14	0.52	0.04	1.52		
Pterothrissus belloci	2	1	1				19	0.42			1.47	1.34
Illex coindetii	6	1	1				38	0.38	0.81	0.16	0.08	
Helicolenus dactylopterus	1		1				10	0.37			0.02	7.67
Zeus faber	4	3					33	0.33		0.24	1.06	
Octopus vulgaris		1	1				10	0.27	0.16	0.61		
Loligo vulgaris	1	2					14	0.26	0.38	0.35		
Atractoscion aequidens	1	2					14	0.26	0.26	0.08	0.55	
Vanstraelenia chirophthalmus			1				5	0.22	0.57			
Dentex canariensis			1				5	0.16		0.48		
Sepiella ornata		2					10	0.15	0.25	0.17		
Squalus megalops	4	1					24	0.14	0.03	0.05	0.47	
Myliobatis aquila	3	1					19	0.13	0.14	0.23		
Lithognathus mormyrus	1	1					10	0.12	0.26	0.05		
Dicologoglossa cuneata	6	1					33	0.11	0.17	0.14		
Bathyraya sp.	1	1					10	0.10			0.40	
Trigla lyra	6						29	0.09	0.01	0.03	0.32	
Nezumia sp.		1						0.08				1.66
Spondyliosoma cantharus	1	1					10	0.06	0.02	0.17		
Dentex barnardi	2						10	0.05	0.12			
Raja miraletus	3						14	0.05	0.02		0.20	
Parapenaeus longirostris, fem.	1							0.01				0.18
Parapenaeus longirostris, male	1						5					0.07
Other fish								0.17	0.12	0.14	0.08	1.42
Sum all species								157.14	147.25	41.64	344.53	107.26
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers								0.27	0.28	0.08	0.55	
Sum Seabreams								12.60	4.27	9.08	32.63	3.50
Sum Sharks								0.16	0.04	0.09	0.47	
Sum Rays								0.31	0.16	0.31	0.60	
Sum Squids								1.59	1.67	2.81	0.08	
Sum												
Number of stations included in analysis, total and by depth strata								21	8	7	5	1

SWEPT AREA ANALYSIS FROM STATION 3278 TO STATION 3307

B. Cunene - Tombua (slope)

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 200-300m	300-400m	400-500m	500-600m
Merluccius capensis	1	1	1		2		100	20.90	58.46	22.17	1.38	0.33
Chlorophthalmus atlanticus				1	1		20	8.58	32.52	5.19		
Helicolenus dactylopterus			4				80	5.39	7.67	4.20	4.73	6.14
Dentex macrophthalmus		1	2				60	2.19	3.50	3.73		
Scorpaena normani			1				20	1.40		3.49		
Malacocephalus laevis			1					1.36				6.79
Coelorinchus sp.			1					0.94				4.69
Merluccius polli	1		1				40	0.85		0.02	4.23	
Pterothrissus belloci	1	2					60	0.76	1.34	1.24		
Nezumia sp.	1	2					60	0.66	1.66	0.83		
Laemonema laureysi	3	1					80	0.48		0.49	1.38	0.04
Stomias boa boa		1					20	0.22				1.10
Synagrops microlepis	2						40	0.19	0.88	0.05		
Heptranchias perlo	1						20	0.15		0.37		
Todaropsis sp.	1						20	0.12				0.61
Parapenaeus longirostris, fem.	2						40	0.12	0.18	0.22		
Myliobatis aquila	1						20	0.12		0.30		
Aristeus varidens, female	1							0.10			0.52	
Trachurus trecae	1						20	0.10			0.52	
Parapenaeus longirostris, male	2						40	0.09	0.07	0.20		
Trachurus capensis	1						20	0.09	0.44			
Hoplostethus cadenati	2						20	0.07			0.12	0.21
Nezumia micronychodon	1						20	0.06			0.29	
Pontinus sp.	1							0.05	0.27			
Raja miraletus	1							0.05		0.11		
GALATHEIDAE *	1						20	0.05	0.27			
Chaceon maritae	1						20	0.05				0.23
Nematocarcinus africanus	1						20	0.04				0.20
Aristeus varidens, male	1						20	0.01			0.04	
Other fish								0.21		0.02	0.16	0.79
Sum all species								45.40	107.26	42.63	13.37	21.13
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers												
Sum Seabreams								2.19	3.50	3.73		
Sum Sharks								0.15		0.37		0.02
Sum Rays								0.21		0.41		0.18
Sum Squids								0.13		0.02		0.61
Sum 0.42												
Number of stations included in analysis, total and by depth strata								5	1	2	1	1

SWEPT AREA ANALYSIS FROM STATION 3278 TO STATION 3307

C. Cunene - Tombua (slope)

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 600-700m	700-800m	800-800m	800-800m
Nezumia milleri		1	2				100	4.77	4.77			
Trachyrincus scabrus		1	2				100	2.77	2.77			
Hoplostethus cadenati	2	1					100	0.80	0.80			
Yarrella blackfordi	1	1					67	0.45	0.45			
Merluccius capensis	3						100	0.45	0.45			
ALEPOCEPHALIDAE	2	1					67	0.43	0.43			
Trachurus capensis	1						33	0.31	0.31			
Illex coindetii	2						33	0.28	0.28			
Benthodesmus tenuis	2						67	0.23	0.23			
MELANOSTOMIATIDAE	1						33	0.19	0.19			
Aristeus varidens, female	3						100	0.13	0.13			
Raja ravidula	3						100	0.10	0.10			
Paromola cuvieri	1							0.09	0.09			
Bathyuroconger vicinus	2						67	0.09	0.09			
PANDALIDAE	2						33	0.07	0.07			
Diplophos sp.	1						33	0.07	0.07			
Aristeus varidens, male	3						100	0.01	0.01			
Plesiopenaeus edwardsianus	1						33	0.01	0.01			
Glyphus marsupialis	1											
Plesionika acanthurus	1						33					
Plesionika martia	1						33					
Heterocarpus grimaldii	1						33					
Heterocarpus ensifer	1						33					
Nematocarcinus africanus	2						67					
Other fish								0.24	0.24			
Sum all species								11.49	11.49			
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers												
Sum Seabreams												
Sum Sharks								0.02	0.02			
Sum Rays								0.10	0.10			
Sum Squids								0.28	0.28			
Sum												

Number of stations included in analysis, total and by depth strata 3 3

SWEPT AREA ANALYSIS FROM STATION 3208 TO STATION 3381

A. Benguela - Luanda (shelf)

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			20- 50m	50-100m	100-200m	200-300m
Trachurus capensis	1			4		2	10	19.29		0.48	72.43	0.15
Trachurus trecae	19	4	6	3	7	1	56	8.24	10.14	9.73	5.09	
Trachurus trecae, juvenile	5	3	1	1		2	17	7.93	21.69	1.10	0.05	
Dentex macrophthalmus	12		6	5	2	1	36	4.25	0.15	2.18	10.21	17.96
Brachydeuterus auritus	7	4	6	9	3		40	4.08	5.31	6.43		
Engraulis encrasicolus	2					1	4	2.68	7.71			
Synagrops microlepis	4	1	2	2	3		17	2.38	0.01	0.05	6.25	17.16
Merluccius capensis	6	5	3	2	2		25	2.36	0.12	1.45	3.80	19.49
Trichiurus lepturus	19	5	5	2	1		44	2.34	4.08	2.00	0.81	0.32
Unidentified fish	1					1	3	1.82	5.25			
Brachydeuterus auritus Juv.	1		2		1		6	0.93	2.67			
Umbrina canariensis	13	1	2		1		24	0.89	0.02	2.25	0.36	
Pagellus bellottii	28	5	7				56	0.78	1.17	1.02	0.07	0.01
Chlorophthalmus atlanticus	2		1		1		6	0.55			0.01	13.18
Zenopsis conchifer	7		1	1			13	0.41			1.33	1.33
Boops boops	15	3	3				29	0.40	0.04	0.65	0.59	
Pomadasys incisus	9	3	1	1			19	0.34	0.78	0.19		
Dentex barnardi	18	4	2				33	0.32	0.39	0.49	0.05	
Sardinella maderensis	7	2	2				15	0.32	0.91			
Pomadasys jubelini	2	1		1			6	0.29	0.06	0.77		
Brotula barbata	12	2	2				22	0.27		0.08	0.86	0.42
Selene dorsalis	22	1		1			33	0.27	0.27	0.51		
Zeus faber	32	6					53	0.25	0.02	0.27	0.57	0.01
Raja miraletus	31	6					51	0.23	0.19	0.26	0.23	0.41
Chloroscombrus chrysurus	7	1	2				14	0.21	0.61			
Sepia officinalis hierredda	27		1				39	0.19	0.11	0.44	0.02	
Dentex macrophthalmus Juv.				1			1	0.18	0.52			
Dentex angolensis	23	3					36	0.18		0.13	0.38	0.94
Galeoides decadactylus	4	3	1				11	0.17	0.48			
Sardinops ocellatus	2			1			4	0.17	0.46		0.02	
Pterothrissus belloci	11	2	1				19	0.16		0.01	0.54	0.45
Merluccius polli	3	2	1				8	0.15	0.01		0.09	3.08
Illex coindetii	26	1	1				39	0.14	0.26	0.06	0.10	0.04
Atractoscion aequidens	3	2	1				8	0.14	0.08	0.05	0.37	
Sardinella aurita	10	2	1				18	0.14	0.24	0.16		
Trigla lyra	19	3					31	0.12		0.16	0.23	
Lithognathus mormyrus	6	1	1				11	0.12	0.10	0.23		
Parapenaeus longirostris, fem.	8		2				14	0.12		0.01	0.40	0.21
Alectis alexandrinus	1		1				3	0.12	0.36			
Helicolenus dactylopterus	1		1				3	0.11				2.56
Octopus vulgaris	5	1	1				10	0.10	0.05	0.22	0.01	
Rhinobatos albomaculatus	3	1	1				7	0.10	0.20	0.10		
Citharus linguatula	27	1	1				40	0.10	0.01	0.25	0.03	
Loligo vulgaris	4	2					8	0.08	0.12	0.11	0.01	
Torpedo torpedo	17	1					25	0.07	0.03	0.13	0.05	
Dasyatis centroura			1				1	0.07		0.20		
Sepiella ornata	8	2					14	0.06	0.09	0.07	0.01	
Vanstraelenia chirophthalmus			1				1	0.06	0.18			
Sphyraena guachancho	4	1					6	0.05	0.14			
Dentex canariensis			1				1	0.05		0.13		
Carcharhinus limbatus			1				1	0.05	0.16			
Acanthurus monroviae	1		1				3	0.05	0.16			
Parapenaeus longirostris, male	9	1					14	0.03			0.09	0.10
Parapenaeus longirostris	3	1					6	0.01				0.34
Penaeus notialis	3						4					
Parapandalus narval	1						1					
Other fish								0.97	1.06	0.90	0.97	2.15
Sum all species								65.89	66.41	33.27	106.03	80.31
Sum Snappers								0.01	0.03			
Sum Groupers								0.03	0.10	0.01		

Sum Grunts	5.65	8.85	7.40		
Sum Croakers	1.11	0.24	2.38	0.73	
Sum Seabreams	6.34	2.45	4.91	11.32	18.91
Sum Sharks	0.14	0.18	0.11	0.20	
Sum Rays	0.57	0.51	0.78	0.40	0.41
Sum Squids	0.64	0.65	1.01	0.23	0.04
Sum 0.01					
Number of stations included in analysis, total and by depth strata	72	25	25	19	3

SWEPT AREA ANALYSIS FROM STATION 3208 TO STATION 3381

B. Benguela - Luanda (slope)

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 200-300m	300-400m	400-500m	500-600m
Merluccius polli	1	1	2	4	2		53	11.80	3.08	25.84	2.07	
Merluccius capensis	1		2		2		26	5.72	19.49	5.54	1.40	0.08
Chlorophthalmus atlanticus	8	1	2	2	1		74	3.96	13.18	4.44	0.01	0.05
Synagrops microlepis	4		3		1		42	3.27	17.16	1.33		
Dentex macrophthalmus	1	1	2		1		26	3.23	17.96	0.93		
Nematocarcinus africanus	1	2	7	1			58	3.06		2.88	5.08	3.71
Helicolenus dactylopterus	1		4				26	1.44	2.56	1.11	1.18	1.53
Laemonema laureysi	11	5					84	0.61	0.01	1.20	0.44	0.07
Trichiurus lepturus	3		1				21	0.54	0.32	1.17		
Scorpaena normani	1		1				11	0.37	0.04	0.87		
Malacocephalus laevis	3		1				21	0.37		0.02	0.01	1.70
Hymenocephalus italicus	7		1				42	0.36	0.05	0.84		0.01
Zenopsis conchifer	1	1	1				16	0.30	1.33	0.22		
Pterothrissus belloci	4	3					37	0.30	0.45	0.54		
Yarella blackfordi *	3	2					26	0.29			0.34	1.05
Chaunax sp.			1				5	0.27			1.27	
Etmopterus princeps	3		1				21	0.26		0.60		0.05
Coelorinchus sp.	1		1				11	0.26			0.04	1.17
Chaceon maritae	2		1				16	0.20			0.91	0.06
Lepidopus caudatus	1		1				11	0.19			0.88	
Hoplostethus cadenati	6	2					42	0.19			0.14	0.76
Illex coindetii	6	1					37	0.19	0.04	0.30	0.14	0.13
Nezumia sp.	4	2					32	0.19	0.55	0.21	0.01	0.06
Benthodesmus tenuis	4	1					26	0.18		0.01	0.02	0.78
MYCTOPHIDAE	9	1					53	0.17	0.04	0.30	0.06	0.13
Dentex angolensis		1					5	0.15	0.94			
Dibranchus atlanticus	1	1					11	0.14			0.65	
Parapenaeus longirostris, fem.	8						42	0.11	0.21	0.19		
Aristeus varidens, female	9						47	0.11		0.01	0.34	0.15
Stomias boa boa	4	1					26	0.10			0.07	0.41
Raja miraletus	1	1					5	0.08	0.41	0.03		
Laemonema sp.		1					5	0.08		0.20		
Brotula barbata		1					5	0.07	0.42			
Aristeus varidens, male	9						47	0.06		0.02	0.10	0.15
Torpedo nobiliana		1					5	0.06			0.30	
Coelorinchus coelorhincus	1	1					11	0.06	0.40		0.01	
Lophius vaillanti	4						21	0.06		0.03	0.18	0.07
Gephyroberyx darwini	1						5	0.05	0.31			
Parapenaeus longirostris		1					5	0.05	0.34			
Merluccius merluccius	2						5	0.05			0.07	0.19
Centrolophus niger	1						5	0.05	0.32			
Parapenaeus longirostris, male	8						42	0.04	0.10	0.07		
Plesionika martia	2						11	0.03				0.14
Solenocera africana	5						26	0.02		0.02	0.04	
Glyphus marsupialis	3						16	0.01				0.04
S H R I M P S	2						11	0.01		0.01		0.01
PANDALIDAE	1						5					
Other fish								0.69	0.60	0.55	0.95	0.88
Sum all species								39.80	80.31	49.48	16.71	13.38
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers												
Sum Seabreams								3.38	18.91	0.93		
Sum Sharks								0.32		0.69	0.07	0.09
Sum Rays								0.18	0.41	0.10	0.30	0.05
Sum Squids								0.24	0.04	0.35	0.14	0.28
Sum 3.20												
Number of stations included in analysis, total and by depth strata								19	3	8	4	4

SWEPT AREA ANALYSIS FROM STATION 3208 TO STATION 3381

C. Benguela - Luanda (slope)

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 600-700m	700-800m	800-800m	800-800m
Nezumia milleri		1	2				27	1.30	2.05			
Nematocarcinus africanus	4	2	1				64	0.94	1.06	0.73		
Hoplostethus cadenati	7	2	1				91	0.87	0.69	1.19		
Trachyrincus scabrus		1	2				27	0.76	1.19			
Nezumia micronychodon			1				9	0.70		1.92		
Nephropsis atlantica			1				9	0.61		1.68		
Yarella blackfordi *	2	3					45	0.53	0.29	0.95		
Lamprogrammus exutus	9	1					91	0.44	0.47	0.37		
Merluccius polli	3	2					45	0.42	0.40	0.47		
Triplophos hemingi	5		1				55	0.38	0.53	0.12		
Stomias boa boa	1		1				18	0.36	0.56			
Aristeus varidens, female	10						91	0.27	0.21	0.37		
Yarrella blackfordi	3	1					36	0.21	0.19	0.23		
ALEPOCEPHALIDAE	4	1					36	0.16	0.18	0.12		
Nezumia sp.	4						36	0.13	0.02	0.31		
Stereomastis sp.	4						36	0.13	0.08	0.22		
Illex coindetii	3						27	0.12	0.18			
Merluccius capensis	3						27	0.12	0.19			
Dibranchus atlanticus	1	1					18	0.11		0.30		
Gonostoma denudata		1					9	0.11	0.17			
Stomias sp.	4						36	0.10	0.13	0.04		
Aristeus varidens, male	9						82	0.09	0.04	0.17		
Trachurus capensis	1						9	0.09	0.13			
Benthodesmus tenuis	3						27	0.08	0.13			
Bathyuroconger vicinus	6						55	0.08	0.04	0.14		
Thysanoteuthis rhombus	3						27	0.06	0.09			
Scymnodon obscurus	1						9	0.06		0.16		
Laemonema laureysi	8						73	0.06	0.03	0.11		
MELANOSTOMIATIDAE	2						18	0.06	0.09			
Chaceon maritae	4						36	0.06	0.06	0.05		
Chaceon maritae, male	1						9	0.05		0.14		
CONGRIDAE	4						36	0.05	0.03	0.11		
Glyphus marsupialis	5						45	0.02	0.02	0.02		
PANDALIDAE	2						18	0.02	0.03			
Plesiopenaeus edwardsianus	3						27	0.01	0.01			
Aristeus varidens	1						9	0.01	0.01			
S H R I M P S	1						9	0.01		0.02		
PASIPHAEIDAE	1						9			0.01		
Plesionika acanthurus	1						9					
Plesionika martia	2						18					
Heterocarpus grimaldii	1						9					
Heterocarpus ensifer	1						9					
Plesiopenaeus edwardsianus, m.	1						9					
Other fish								0.78	0.60	0.96		
Sum all species								10.36	9.90	10.91		

SWEPT AREA ANALYSIS FROM STATION 3382 TO STATION 3483

A. Luanda - Congo River (shelf)

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			20- 50m	50-100m	100-200m	200-300m
Synagrops microlepis	1		3	3	3	1	16	5.11			5.68	28.54
Brachydeuterus auritus	10	3	5	5		1	35	3.40	14.29	0.71		
Trachurus trecae, juvenile	19	10	3	2			50	1.05	0.19	2.25	0.71	
Dentex angolensis	27	13	4	1			66	0.95		1.52	1.14	0.47
Trichiurus lepturus	46	8	4	1			85	0.88	0.81	1.33	0.48	0.69
Brachydeuterus auritus Juv.	1	1	1	2			7	0.58	1.00	1.02		
Pagellus bellottii	31	5	6				62	0.57	0.80	1.07	0.04	
Trachurus trecae	8	1	1	1			16	0.54		1.23	0.34	
Galeoides decadactylus	5	1	4	1			16	0.53	2.19	0.14		
Pseudotolithus typus	3	3	1	1			12	0.43	1.83	0.08		
Pomadasys jubelini	6	1		2			13	0.40	1.03	0.50		
Dentex congoensis	21	7					41	0.27		0.32	0.49	
Chloroscombrus chrysurus	7	2		1			15	0.27	1.07	0.08		
Sphyraena guachancho	11	1	1				19	0.21	0.90	0.04		
Umbrina canariensis	20	5					37	0.21	0.03	0.22	0.39	0.07
Spicara alta	18	4	1				34	0.21		0.05	0.60	0.05
Pterothrissus belloci	20	2	2				35	0.21		0.01	0.08	1.50
Zenopsis conchifer	10	3	1				21	0.19			0.13	1.23
Merluccius polli	3	4	1				12	0.19				1.65
Decapterus rhonchus	6			1			10	0.19	0.84	0.01		
Saurida brasiliensis	29			1			44	0.17		0.03	0.53	0.01
Pteroscion peli	7	2	1				15	0.17	0.26	0.28	0.05	0.01
Chlorophthalmus atlanticus	4	1	1				9	0.12				1.02
Zeus faber	45						66	0.11	0.01	0.14	0.12	0.17
Pagrus caeruleostictus	6	1	1				12	0.11	0.46	0.02		
Ilisha africana	1	2	1				6	0.11	0.48			
Pomadasys rogeri	2	1	1				4	0.10	0.44	0.02		
Epinephelus aeneus	12	2					21	0.09	0.04	0.22		
Raja miraletus	28	1					43	0.09	0.14	0.15	0.03	
Dentex canariensis	11		1				18	0.08	0.06	0.16	0.04	
Sardinella aurita	18		1				28	0.08	0.04	0.19		
Selene dorsalis	17	1					26	0.08	0.32	0.04		
Parapenaeus longirostris, fem.	9	1					15	0.07				0.54
Brotula barbata	15	1					24	0.07			0.11	0.30
Arius parkii	7		1				12	0.07	0.30			
Stromateus fiatola	9	1					15	0.06	0.21	0.05		
Illex coindetii	36						53	0.06		0.03	0.13	0.13
Fistularia petimba	25						37	0.06	0.01	0.16	0.01	
Sepia orbignyana	17						25	0.05	0.03	0.13	0.01	
Alloteuthis africana	19	1					29	0.05	0.01	0.07		0.16
Boops boops	22	1					34	0.05	0.02	0.05	0.08	
Parapenaeus longirostris, male	9	1					15	0.05				0.46
Pentheroscion mbizi	2		1				4	0.05	0.22			
Chlorophthalmus sp.	3	1					6	0.05				0.44
Penaeus notialis	6	1					10	0.03	0.13			
Parapenaeus longirostris	2						3					
Parapandalus narval	3						4					0.01
S H R I M P S	1						1					
Other fish								0.95	1.76	0.66	0.52	1.49
Sum all species								19.37	29.92	12.98	11.71	38.94
Sum Snappers								0.01	0.03			
Sum Groupers								0.09	0.05	0.22		
Sum Grunts								4.52	16.88	2.30		
Sum Croakers								0.91	2.46	0.62	0.46	0.08
Sum Seabreams												

SWEPT AREA ANALYSIS FROM STATION 3382 TO STATION 3483

A. Luanda - Congo River (slope)

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 200-300m	300-400m	400-500m	500-600m
Synagrops microlepis	1	2	3	2	4		46	10.30	28.54	6.57		
Merluccius polli	10	6	5	3		1	96	7.57	1.65	6.50	23.32	0.77
Nematocarcinus africanus	1	2	9	2			54	3.32		2.07	6.92	5.39
Chlorophthalmus atlanticus	4	3	3				38	0.96	1.02	2.81		
Pterothrissus belloci	9	2	2				50	0.50	1.50	0.15	0.01	
Yarrella blackfordi	2	2	2				23	0.49		0.01	0.02	2.12
Benthodesmus tenuis	8	4					46	0.47		0.91	0.85	0.27
Laemonema laureysi	11	6					65	0.41		0.97	0.77	0.06
Zenopsis conchifer	5	2	1				31	0.39	1.23	0.03		
Trichiurus lepturus	13	2					54	0.35	0.69	0.16	0.36	0.06
Hymenocephalus italicus	9	3					46	0.34		0.50	0.94	0.02
Paromola cuvieri	1		1				8	0.23		1.02		
Parapenaeus longirostris, fem.	12	1					50	0.22	0.54	0.25		
Chlorophthalmus sp.	6	1					27	0.18	0.44	0.19		
Lophius vaillanti	11	1					46	0.16		0.13	0.25	0.32
Dentex angolensis	5	1					23	0.15	0.47			
Parapenaeus longirostris, male	10	1					42	0.15	0.46	0.02		
Dibranchus atlanticus	16						62	0.14		0.16	0.35	0.09
Chaceon maritae	11	1					46	0.13		0.09	0.29	0.17
Centrophorus uyato		1					4	0.12			0.50	
Malacocephalus laevis	13						50	0.12		0.27	0.10	0.12
SCYLLARIDAE	7	1					31	0.12	0.06	0.35	0.06	0.01
Triplophos hemingi	7						23	0.11		0.01		0.47
Yarella blackfordi *	3	1					15	0.10			0.02	0.41
Chaunax pictus	4	1					19	0.10		0.17	0.19	0.06
Hoplostethus cadenati	5	1					23	0.09				0.38
Brotula barbata	4	1					19	0.09	0.30			
Stereomastis sculpta	5	1					23	0.09		0.04	0.13	0.24
Illex coindetii	11						42	0.08	0.13	0.10	0.05	0.02
L O B S T E R S	2	1					12	0.08			0.08	0.26
Stomias boa boa	3	1					15	0.07			0.01	0.30
Nezumia sp.	15						58	0.07	0.02	0.14	0.11	0.04
Triplophos hemingi	1	1					8	0.07				0.32
Todaropsis eblanae	8						31	0.06	0.07	0.03	0.14	
Aristeus varidens, female	12						46	0.06		0.01	0.16	0.10
Squatina oculata		1					4	0.06	0.19			
Lamprogrammus exutus	4	1					19	0.06				0.24
MYCTOPHIDAE	12						46	0.06	0.08	0.16		
Callinectes sp.	14						54	0.06		0.05	0.15	0.05
Chaceon maritae, male	1	1					8	0.06				0.28
Chaunax sp.	6						23	0.06			0.19	0.05
Zeus faber	3						12	0.05	0.17			
Alloteuthis africana		1					4	0.05	0.16			
Carcharhinus signatus		1					4	0.05				0.22
Pontinus accraensis	5						19	0.05	0.06	0.13		
Gadella imberbis	11						42	0.05		0.06	0.11	0.06
CONGRIDAE	11						42	0.05	0.05	0.05	0.05	0.04
Ariomma bondi	3						12	0.05	0.15			
Aristeus varidens, male	11						42	0.03			0.07	0.06
Solenocera africana	8						31	0.02		0.03	0.04	
Glyphocrangon sp.	2						8	0.02		0.07		
Glyphus marsupialis	7						27	0.01			0.01	0.03
Plesionika martia	1						4	0.01			0.03	
Plesiopenaeus edwardsianus	2						8	0.01			0.02	
S H R I M P S	4						15	0.01		0.01		0.02
Parapandalus narval	1						4		0.01			
Shrimps, small, non comm.	1						4					0.01
Other fish								0.91	0.95	1.03	0.61	1.06
Sum all species								29.62	38.94	25.25	36.91	14.12
Sum Snappers												

Sum Groupers			0.01		
Sum Grunts					
Sum Croakers	0.02	0.08			
Sum Seabreams	0.16	0.48	0.02		
Sum Sharks	0.39	0.28	0.13	0.71	0.36
Sum Rays	0.02	0.04	0.08	0.01	
Sum Squids	0.24	0.37	0.18	0.22	0.16
Sum 2.46					
Number of stations included in analysis, total and by depth strata	26	8	6	6	6

SWEPT AREA ANALYSIS FROM STATION 3382 TO STATION 3483

A. Luanda - Congo River (slope)

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 600-700m	700-800m	800-800m	800-800m
Nematocarcinus africanus	1	1	8	1			79	4.48	7.92	1.90		
Yarella blackfordi *	5	3	3				79	1.57	2.17	1.12		
Yarrella blackfordi	1	1	1				21	0.71	1.48	0.14		
Chaceon maritae	9	1	1				79	0.65	0.48	0.78		
Nezumia sp.	7	2	1				71	0.62	0.11	1.01		
Hoplostethus cadenati	8	3					79	0.54	0.54	0.53		
Lamprogrammus exutus	11	2					93	0.54	0.58	0.51		
Miscellaneous fishes			1				7	0.48		0.83		
HOLOUTURIDAE		1	1				14	0.43		0.75		
Dibranchus atlanticus	11		1				86	0.42	0.22	0.57		
L O B S T E R S	7	1					57	0.37	0.15	0.54		
Triplophos hemingi	6	2					57	0.36	0.79	0.04		
Malacocephalus laevis	1	2					21	0.32	0.02	0.55		
Octopus sp.	1		1				14	0.25	0.58			
Brotula sp.		1					7	0.18		0.32		
Merluccius polli	10						71	0.18	0.21	0.16		
Stereomastis sculpta		2					14	0.18	0.24	0.15		
Chauliodus sp.		1					7	0.17		0.29		
Centroscymnus crepidater		1					7	0.16		0.29		
Etmopterus pusillus	4	1					36	0.16	0.04	0.26		
Bathyuroconger vicinus	11						79	0.16	0.07	0.22		
C R U S T A C E A N S	2	1					21	0.15	0.05	0.22		
Stomias boa boa	9						64	0.14	0.15	0.13		
Aristeus varidens, female	12						86	0.14	0.15	0.13		
Chaceon maritae, male	1	1					14	0.14	0.07	0.20		
Bathyraja smithii	2						14	0.12	0.12	0.12		
Alepocephalus sp.	2	1					21	0.11	0.04	0.15		
Scymnodon obscurus	7						50	0.10	0.12	0.07		
Halosaurus ovenii	7						50	0.10	0.01	0.17		
Deania calcea	3	1					29	0.09		0.15		
Stereomastis sp.		1					7	0.09	0.22			
Triplophos hemingi	4						29	0.09	0.02	0.15		
Glyphus marsupialis	7						50	0.08	0.08	0.07		
Hydrolagus sp.		1						0.08		0.14		
Dicrolene intronigra	6						43	0.08	0.02	0.14		
Nessorhamphus ingolfianus		1					7	0.08		0.14		
ONYCHOTEUTHIDAE	6						43	0.07	0.05	0.08		
Hoplostethus sp.	1						7	0.06		0.10		
Stomias sp.	3						21	0.06	0.13			
Raja sp.	6						43	0.06	0.01	0.09		
POLYCHAELIDAE	1						7	0.06		0.11		
Gonostoma denudata	4						29	0.06	0.06	0.07		
Plesiopenaeus edwardsianus	8						57	0.05	0.05	0.06		
Trachyrincus scabrus	3						21	0.05		0.08		
Hymenocephalus italicus	1						7	0.05		0.08		
Bajacalifornia magalops	4						29	0.05		0.09		
Aristeus varidens, male	12						86	0.04	0.06	0.02		
Shrimps, small, non comm.	3						21	0.02		0.03		
Aristeus varidens	1						7	0.01		0.01		
Heterocarpus grimaldii	2						14					
Heterocarpus laevigatus	1								0.01			
S H R I M P S	1						7					
Other fish								0.90	0.90	1.00		
Sum all species								16.06	17.92	14.76		
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers												
Sum Seabreams												
Sum Sharks								0.65	0.23	0.96		

Sum Rays	0.19	0.15	0.22		
Sum Squids	0.45	0.81	0.18		
Sum					
2.19					
Number of stations included in analysis, total and by depth strata	14	6	8		

ANNEX IV

1. Biomass estimates

The stratified estimator of mean density in the entire area is calculated as (Cochran, 1977)

$$\overline{y}_{st} = \sum_{i=1}^{L} W_i \overline{y}_i , \tag{1}$$

where

L is the number of strata,

$W_i = \dfrac{area_i}{total\ area}$ is the proportion of the i^{th} stratum of the total survey area,

$\overline{y}_i = \dfrac{\sum_{k=1}^{n_i} y_{i,k}}{n_i}$ is the average density in the i^{th} stratum

$y_{i,k}$ is the density [tonnes/NM^2] by the k^{th} tow in stratum i

n_i is the number of tows in the i^{th} stratum.

The total biomass in the area is calculated by

$$B = \overline{y}_{st} \cdot total\ area \tag{2}$$

The estimated variance of the biomass (var(biomass)) was calculated by:

$$\text{var}(biomass) = \left(\sum \frac{W_i^2 s_i^2}{n_i} \right) A^2 \tag{3}$$

where

$s_i^2 = \dfrac{\sum_{k=1}^{n_i} (y_{i,k} - \overline{y}_i)^2}{n_i - 1}$, and A is total area

The standard error (SE) of the stratified mean was calculated as (Cochran, 1977):

$$SE = \sqrt{\text{var}(biomass)} \tag{4}$$

The precision for the estimates (CV) was calculated by (Zar, 1999):

$$CV = \frac{SE}{biomass} \tag{5}$$

If the sample size is "large" enough, then the Central Limit Theorem states that each time a survey is conducted there is a 95% chance that the true mean is in the interval (see Cochran, 1977)

$$biomass \pm t_{(n-1)} SE \tag{6}$$

where t is from Students t-table with (n-1) degrees of freedom and $\alpha = 0.025$.

Annex V

NAN-SIS species codes used in defining the 'grouped species' tables

MAIN GROUP	Demersal	Pelagic	Shrimp	Cephalopod	Sharks
	SPA0000	ENG0000	SHR0000	SQU0000	SHA0000
	POD0000	CLU0000			
	SCI0000	CAR0000			
	ARD0000	SCM0000			
	SER0000	SPH0000			
	LUT0000	TRI0000			
	OPDAA00	STRAA00			
	MERME00				

PELAGIC	Clupeids	Carangids	Scombrids	Hairtails	Barracudas
	ENG0000	CAR0000	SCM0000	TRI0000	SPH0000
	CLU0000				

DEMERSAL	Seabream	Snappers	Groupers	Grunts	Croakers
	SPADE00	LUT0000	SER0000	PODPO00	SCI0000
	SPADI00				
	SPALI00				
	SPAPA00				
	SPAPR00				
	SPASP00				

DEEP 1	Seabream	Hake	*P.longirostris*	*A.varidens*	*N.africanus*
	SPADE00	MERME03	SHRPE31	SHRAR22	SHRNE21
	SPADI00	MERME04	SHRPEP1	SHRARA1	
	SPALI00	MERME12	SHRPEP2	SHRARA2	
	SPAPA00	MERME13			
	SPAPR00	MERME92			
	SPASA00				
	SPASP00				

DEEP 2	Hake	Ommastrephidae	Sepiidae	*A.varidens*	*P.longirostris*
	MERME03	SQUOM21	SQUSE10	SHRAR22	SHRPE31
	MERME12	SQUOM31	SQUSE11	SHRARA1	SHRPEP1
	MERME13	SQUOM51	SQUSE12	SHRARA2	SHRPEP2
	MERME92		SQUSE13		
			SQUSE15		

NAN-SIS sectors in Angola

Latitude	Sector	Region
17°14-13°S	1	Cunene River–Benguela*
13°-9°S	2	Benguela–Pta. das Palmerinhas
9°-6°S	3	Pta. das Palmerinhas–Congo River

* The area covered goes form Cunene River to Tombua

Annex VI Instruments and fishing gear used

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

Transceiver-1 menu (38 kHz lowering keel)

Transducer depth	5.50 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	27.39 dB
TS transducer gain	27.52 dB
Angle sensitivity	21.9
3 dB beamwidth	6.8 dg along / athwardship: 6.7 dg
Alongship offset	-0.03 "
Athwardship offset	0.06 "

Display menu

Echogram	1 (38 kHz)
Sv colour min	-67 dB

Printer- menu

Echogram	1 (38 kHz)
Range	50, 100, 250, 500, 750 and 1000 m
Range start	0
Bottom range	15 m
Bottom range start	10 m
Sv colour min	-67 dB
TVG	20 log R

Bottom detection menu Minimum level -40 dB

Fishing gear

The vessel has two different sized "Åkrahamn" pelagic trawls and one "Gisund super bottom trawl". During the present survey only the bottom trawl was used.

The bottom trawl has a headline of 31 m, footrope 47 m and 20 mm meshsize in the codend with an inner net of 10 mm meshsize. The estimated opening is 6 m (observed 5.7) and the distance between wings during towing about 21 m. The sweeps are 40 m long. The trawl is equipped with a 12" rubber bobbins gear. The doors are of 'Thyborøn' combi type, 6.7 m^2, 1 670 kg, their distance while trawling about 45 - 55 m in average, depending on the depth (least distance at low depths). During the present survey this distance was kept nearly constant (about 50 m) at all depths by the use of a 10 m strap between the wires at 125 m distance from the doors (normally applied at depths greater than 80 m). At depths greater than 300 m the trawl was equipped with a tickler chain, which is supposed to improve the catchability of bottom living and borrowing species, particularly shrimps.

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.

ANNEX VII Number of trawl stations by stratum and survey

Number of valid bottom trawl station conducted by stratum by Angolan demersal survey

	Survey																								
strata	1985.1	1985.2	1985.3	1985.4	1986.1	1986.2	1989.1	1989.2	1989.3	1991.1	1991.2	1992	1993	1994	1995.1	1995.2	1996	1997	1998	1999	2000	2001	2002	2003	2004	Grand Total
Outside strata	11	13	13	11	28	24	31	23	10	30	56	55	1	17	16		5	63		1	1			1		410
20-50south		2			6	3	5	2	3	6	2	4	3								8		2	4	8	58
50-100south		1			8	6	8	8	1	14	12	20	11					4			9		5	7	7	121
100-200south					8	3	9	8	6	10	12	7	9					6			7		3	7	5	100
200-300south					1					1	2										1				1	6
300-400south					1					2		1						1			1		1	2	2	11
400-500south																									1	1
500-600south												1													1	2
600-700south																					2		1	2	3	8
700-800south																					1					1
20-50central				3	8	11	17	24	5	17	13	15		9	14		10	7	9	13	23	12	16	16	17	259
50-100central				4	15	14	21	29	4	26	13	16		12	13		12	19	17	19	27	18	18	19	18	334
100-200central				2	2	4	13	11	3	15	10	12		14	15	12	12	21	12	14	22	16	15	13	14	252
200-300central				4	3	1	4	3	3	10	6	8		8	9	21	9	18	8	8	12	4	2	3	2	146
300-400central				2	4	1		7	1	7	3	9		9	11	15	10	8	6	6	10	4	6	4	6	129
400-500central				4	5		3	4	3	6	3	7		8	9	18	9	7	4	6	8	6	2	3	3	118
500-600central				1	2		1	2	4	1		9		5	7	14	8	7	7	5	9	3	5	3	3	96
600-700central												6		1	3	10	3		5	1	6	3	4	4	4	50
700-800central												4		2	4	1	4		3		7	4	4	4	4	41
20-50north	5	4	7	6	14	13	3	14	3	7	8	12		9	9		9	8		14	11	11	15	13		195
50-100north	9	8	7	7	25	28	19	33	14	20	19	17		9	12		12	14		24	24	14	23	20		358
100-200north	5	5	3	6	5	20	6	6	4	11	12	10		11	11		12	19		29	24	18	23	20		260
200-300north	1		1	5	5	6	8	6	4	4	14	9		8	7		10	12		12	11	7	7	7		144
300-400north			5	6	15	4	2	4	4	6	6	5		9	8		9	10		12	10	11	6	6	1	139
400-500north			1	2	3	6	5	4	4	6	2	6		6	4		8	7		7	8	5	6	6	1	97
500-600north			3	3	3	3	3	6		1		5		5	5		10	8		6	6	8	6	6	1	88
600-700north						1			1			3		2	3					1	7	5	6	6	1	36
700-800north							1					4		3	2		5	5			8	3	9	9		49
Grand Total	31	33	40	66	161	148	159	194	77	200	193	245	24	147	162	91	157	244	71	178	263	152	185	185	103	3509

Annex VIII

Diana Zaera

Shark sampling

In order to improve the available information on biology and bathymetric distribution of deep-water sharks in Angolan waters, several samplings have being taken during the demersal surveys in 2002, 2003 and 2004.

We have included some preliminary results for those species most frequently caught.

Methodology

Identification. The sharks caught were identified using Compagno (1984a and b; 1989; 2001), Elst (1981), Bianchi (1986) and Fischer *et. al.* (1981). A total of 1 167 individuals have been caught belonging to 31 different species grouped in 10 families: Chlamydoselachidae (frilled sharks), Hexanchidae (sevengill sharks), Squalidae (dogfish sharks), Squatinidae (angelsharks), Alopiidae (thresher sharks), Scyliorhinidae (catsharks), Leptochariidae (barbeled houndsharks), Carcharhinidae (requiem sharks), and Sphyrnidae (hammerhead sharks). Table 1 presents a list of the species caught.

Morphometry. All specimens caught were measured (total length, TL, in cm), weighed (g) and sexed. For the purpose of morphometric analyses we followed Compagno (1984a, 2001) criteria. Total length data presented include maximum size for both sexes together, although sexual dimorphism in size is common among sharks. Table 2 shows some morphometric parameters.

Table 2. Morphometry: minimum, maximum and average total length (TL) in cm

Species	min TL	max TL	Mean TL
Galeus polli	20	27	29.41
Mustelus mustelus	22	145	66.83
Etmopterus spinax	4	30	18.77
Etmopterus polli	9	29	14.36
Etmopterus princeps	19	47	23.46
Etmopterus pusillus	14	60	31.30
Squalus megalops	18	113	43.25
Centrophorus granulosus	38	99	76.75
Scymnodon obscurus	20	84	38.09
Galeorhinus galeus	43	84	63.47

In some few stations we found large quantities of new free swimmers of both *E. spinax* and *E. polli*, with the umbilical scar still visible, suggesting a nursery area.

Information related to feeding habits. The determination of stomach content was made macroscopically on board the vessel. The prey was identified to the lowest taxa possible. Table 3 shows the percentage of the different prey categories found in the stomachs of the most common shark species caught. The stomach fullness and degree of digestion was also recorded.

Table 3. Stomach content (in percentage) for main shark species caught in Angolan waters.

Species	Teleostei	Cephalopods	Crustaceans
Galeus polli	38	30	32
Mustelus mustelus	58	20	22
Etmopterus spinax	4	63	33
Etmopterus polli	19	45	36
Etmopterus princeps	35	6	59
Etmopterus pusillus	35	43	22
Squalus megalops	75	10	15
Centrophorus granulosus	75	20	5
Scymnodon obscurus	70	20	10
Carcharhinus signatus	100		
Galeorhinus galeus	90	5	5

Among the most frequent commercial species found in the stomachs we can mention:
Teleostei: *Trachurus trecae*, *Brachydeuterus aurita*, *Dentex spp.*, *Sardinops ocellatus*.
Cephalopods: Ommastrephidae, Sepiidae, *Illex coindetii*, *Todaropsis eblanae*.
Crustaceans: Euphasidae, *Aristeus varidens*, *Glyphus marsupialis*, *Nematocarcinus africanus*, *Parapenaeus longirostris*, *Solenocera africana*.

Reproductive information related to fecundity and size at maturity. Maturity was assessed using the scale suggested by Stehmann (1987). In order to calculate the gonadosomatic index (GSI) the ovaries were weighted. For the most common species we have tested the sex ratio and the results are presented in Table 4.

Liver weight was recorded to calculate hepatosomatic index (HSI) (Table 4).

Table 4. Sex ratio (male:female), minimum mature size for males (mM) and females (mF) (in cm), maximum number of embryos found, gonadosomatic (GSI), and hepatosomatic index (HSI), both expressed as percentage of total weight.

Species	M:F	mM	mF	No. embryos	GSI	HSI
Galeus polli	0.82:1	23.00	22.00	6	3.84	5.48
Mustelus mustelus	1.25:1	99.00		7	6.24	9.30
Etmopterus spinax	1.12:1	15.00	19.00	4	2.36	8.26
Etmopterus polli	0.80:1	15.00	18.00		3.71	6.84
Etmopterus princeps	1.06:1	21.00	22.00		17.72	17.72
Etmopterus pusillus	0.63:1	21.00	25.00	1	5.42	16.78
Squalus megalops	1.18:1	35.00	35.00	2	34.44	9.80
Centrophorus granulosus	1.85:1	80.00	50.00		41.47	22.81
Scymnodon obscurus	1.38:1	29.00	28.00		1.97	11.20
Carcharhinus signatus	0.94:1	60.00	52.00	3		7.37
Galeorhinus galeus	0.46:1	68.00	45.00		8.88	5.14

Only *E. pusillus* and *S. obscurus* differ significantly from the 1:1 ratio ($\chi^2 = 3.841$, d.f. =1, $\alpha = 0.05$).

About their distribution, bathymetry and ecology. To get a better understanding of the shark's ecology, data on depth, salinity, oxygen content and specific temperature of the water in which they occur, will be used together with data on catch rates and frequency of occurrence with other species. Table 5 shows the depth range of distribution for the most common sharks, together with the frequency of presence (expressed as percentage of hauls where caught in relation with total hauls of depth interval where distributed), and length-weight equation of the form $W = a \times TL^b$ (a and b are constants while W represents total weight and TL total length). The number of specimens included is shown parentheses

Table 5. Depth range (in meters), frequency of occurrence, and length-weight equation (both sexes) for the most common shark species off Angola.

Species	Depth	% Occurrence	W=ax^TL	
Galeus polli	300-700	8.60	$W = 24 \times 10^{-4} TL^{3.049}$	(n = 52)
Mustelus mustelus	50-200	5.00	$W = 38 \times 10^{-4} TL^{2.956}$	(n = 29)
Etmopterus spinax	100-900	12.40	$W = 10 \times 10^{-4} TL^{2.675}$	(n = 233)
Etmopterus polli	400-900	11.90	$W = 31 \times 10^{-4} TL^{3.053}$	(n = 132)
Etmopterus princeps	500-800	14.00	$W = 6 \times 10^{-4} TL^{3.638}$	(n =58)
Etmopterus pusillus	300-800	24.40	$W = 14 \times 10^{-4} TL^{3.299}$	(n = 144)
Squalus megalops	50-200	7.30	$W = 86 \times 10^{-4} TL^{2.860}$	(n = 100)
Centrophorus granulosus	200-800	4.20	$W = 11 \times 10^{-4} TL^{2.372}$	(n = 23)
Scymnodon obscurus	400-900	21.10	$W = 13 \times 10^{-4} TL^{2.742}$	(n = 123)
Galeorhinus galeus	50-100	4.30	$W = 25 \times 10^{-4} TL^{3.093}$	(n = 19)

In its distribution some species showed a segregation by sex and size.

The percentage of occurrence can give an indication of the relative abundance of the different species, but due to the small size to most of the common deep-water species, their contribution to the total catch is not significantly important (Table 6).

Table 6. Mean catch rates (kg/hour) in swept area bottom trawl hauls on the shelf and slope, for all sharks pulled. All regions: south, central, and north. Inner shelf (20-70 m), outer shelf (71-200 m), and slope (201-800 m)

South

	2002			2003			2004		
	Inner	Outer	Slope	Inner	Outer	Slope	Inner	Outer	Slope
Mean	2.00	1.30	5.76	25.40	25.10	15.01	2.15	7.75	3.11
%Catch	0.00	0.00	0.53	2.00	0.90	2.28	0.05	0.14	0.32

Central

	2002			2003			2004		
	Inner	Outer	Slope	Inner	Outer	Slope	Inner	Outer	Slope
Mean	0.10	1.40	3.03	1.90	2.30	1.78	6.13	3.17	9.06
%Catch	0.00	0.10	0.70	0.20	0.10	0.26	0.64	0.49	1.09

North

	2002			2003			2004		
	Inner	Outer	Slope	Inner	Outer	Slope	Inner	Outer	Slope
Mean	2.40	0.10	1.04	1.10	2.90	12.15	4.57	5.16	11.50
%Catch	0.50	0.00	0.19	0.10	1.00	0.01	0.30	0.17	1.48

Table 1. List of species caught and measured during the demersal surveys in Angola.

Species	**2002**	**2003**	**2004**	**TOTAL**
Galeus polli	3	27	33	63
Mustelus mustelus	6	21	5	32
Etmopterus spinax	6	65	162	233
Etmopterus polli	1	5	127	133
Etmopterus princeps	23	7	28	58
Etmopterus pusillus	18	41	86	145
Deania profundorum	4	2	2	8
Deania calcea	6	12	10	28
Scyliorhinus cervigoni	10	3	1	14
Scyliorhinus canicula	0	1	2	3
Scyliorhinus stellaris	0	0	1	1
Squalus megalops	3	27	70	100
Squalus acanthias	0	2	13	15
Rhizoprionodon acutus	21	1	0	22
Isistius brasiliensis	1	3	2	6
Squatina oculata	10	0	0	10
Centroscyllium fabricii	5	0	0	5
Centrophorus granulosus	1	11	11	23
Centrophorus uyato	2	1	2	5
Centrophorus squamosus	1	10	2	13
Centroscymnus crepidater	4	3	12	19
Centroscymnus cryptacanthus	1	1	0	2
Scymnodon obscurus	4	30	91	125
Leptocharias smithii	4	9	2	15
Carcharhinus signatus	1	19	32	52
Galeorhinus galeus	0	12	7	19
Heptranchias perlo	0	0	3	3
Carcharhinus sp.	0	0	1	1
Sphyrna lewini	0	1	0	1
Sphyrna zygaena	0	4	0	4
Apristurus sp.	0	1	0	1
Alopias vulpinus	0	2	0	2
Chlamydoselachus anguineus	0	2	2	4
TOTAL	**135**	**323**	**709**	**1167**

References

Bianchi, G. (1986). Fichas FAO de indentificação de espécies comerciais marinhas e de águas salobras de Angola. Preparado com o apoio da NORAD e da FAO (FIRM) Programa Regular. Roma, FAO. 184 p.

Compagno, L.J.V.(1984)a. FAO Species Catalogue Vol. 4. Sharks of the World. An Annotated and Illustrated Catalogue of Shark Species Known to Date. Part 1 Hexanchiformes to Lamniformes. *FAO Fish. Synop.*,(125) Vol.4,Pt.1:229 p.

Compagno, L.J.V.(1984)b. FAO Species Catalogue Vol. 4. Sharks of the World. An Annotated and Illustrated Catalogue of Shark Species Known to Date. Part 2 Carcharhiniformes. *FAO Fish. Synop.*,(125) Vol.4,Pt.2:251-655.

Compagno, L.J.V., D.A: Ebert, E.J. Smale.(1989) Guide to the sharks and rays of Southern Africa. Struik Pub., Cape town, South Africa. 106 p.

Compagno, L.J.V. (2001). Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Volume 2. Bullhead, mackerel and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes). *FAO Species Catalogue for Fishery Purposes*. No. 1, Vol. 2. Rome, FAO. 269 p.

Elst, R. van der (1981). A guide to the common sea fishes of southern Africa. Struik Pub., Cape town, South Africa. 398 p.

Fischer, W., G. Bianchi and W.B. Scott (eds.).(1981). FAO Species Identification Sheets for Fishery Purposes. Eastern Central Atlantic; fishing areas 34, 47 (in part). Canada Funds-in-Trust. Ottawa, Dept. of Fisheries and Oceans Canada by arrangement with the Food and Agriculture Organization of the United Nations, vols. IV-V: pag. var.

Stehmann, M.(1987). Quick tabulation of stomach contents and maturity stages for skates (Rajidae), squaloid and other ovoviviparous and viviparous species of sharks. *Am. Elasmobranch Soc. Newslett.* 3, pp. 5-9.