

## **SURVEY OF THE FISH RESOURCES OF ANGOLA**

**Survey of the demersal resources  
2 March – 30 March 2006**

**Institute of Marine Research  
IMR, Bergen  
Norway**

**Instituto Nacional de Investigação das Pescas  
INIP, Luanda  
Angola**

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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	-	March 2006	(14 surveys)

CRUISE REPORTS "DR. FRIDTJOF NANSEN"

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2 March – 30 March 2006**

by

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**Bergen, 2006**

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## CHAPTER 1 INTRODUCTION

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### 1.1 Objectives

The objectives of the cruise had been previously discussed and agreed upon by the responsible of the Demersal Programme of the Instituto Nacional de Investigação das Pescas (INIP), 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 (Merlucciidae) and shrimps (*Parapenaeus longirostris* and *Aristeus varidens*) on the Angolan shelf and slope (down to 800 m), from Cunene River (17°14'S) to Tombua (15°40'S), and from Benguela (12°35'S) to Congo River (06°00'S) using bottom trawl and the swept-area method.

The Tombua-Benguela region has been excluded in all the demersal surveys as the bottom is very steep and rocky and unsuitable for bottom trawling, however, the abundance of demersal species in the region is low as the shelf and the slope are very narrow. The trends in the time series of the demersal biomass estimates are therefore insignificantly affected by the exclusion of the region.

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 stations and map the temperature, salinity and oxygen along standard INIP hydrographic profiles.

### 1.2 Participation

The scientific staff consisted of:

From INIP, Angola: Maria Esperança P. Santos (2/3-21/3, Local Cruise Leader), Domingos Pedro (2/3-21/3), Mário Rafael (2/3-21/3), Teodoro Camarada (2/3-21/3), Pedro Tchupalanga (2/3-21/3), Nilsa Alves (2/3-21/3), Eusébio dos Santos (2/3-21/3), Pedro Panzo (2/3-30/3), Vanaquissa Jónico (2/3-21/3), Moustapha Diedhiou (22/3-30/3, Local Cruise Leader), António Buco (22/3-30/3), Teodoro Guilherme (22/3-30/3), Tânia Ramos (22/3-30/3), Bernardo Fernandes (22/3-30/3), Tito Milagre (22/3-30/3), Davide Kissungo (22/3-30/3), Domingas Adelino (22/3-30/3)

From IMR, Norway: Espen Johnsen (2/3-30/3, Cruise Leader), Diana Zaera (2/3-30/3), Thor Egil Johansson (2/3-30/3), Ole Sverre Fossheim (2/3-30/3)

From MCM, South Africa: Rob Leslie (2/3-21/3)

### 1.3 Narrative

R/V “Dr Fridtjof Nansen” departed Walvis Bay, Namibia the afternoon of the 2 March 2006 and steamed northwards. The sampling started the morning of the 4 March with trawl and hydrographic stations off Cunene River. A standard geographical allocation of the trawl stations was implemented in 2003, and the station positions in the southern region have been similar in the 2000, 2003, 2004, 2005 and 2006 surveys. The slope off Baía dos Tigres has not been adequately surveyed as the bottom is very steep and rough between 200 and 600 m. In the evening of the 6th the survey of the southern region was finished. Standard hydrographic transects were sampled west off Baía dos Tigres, Pta. Albina, Namibe and Carujamba, and in addition, zoo- and phytoplankton were sampled at Namibe. No trawling was carried out in the Tombua–Benguela area as the shelf and slope are very steep and the bottom conditions are therefore not suitable for trawling.

In the morning of the 8 March, the trawling started 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, which have been used as the standard geographical allocation of the trawl stations for the 2002-2006 surveys. The trawl survey of the central region was completed 16 March and continued in the northern region, however, the Pta. das Palmerinhas hydrographic transect, with plankton sampling and water collection for oxygen and salinity calibration, was carried out during the night to the 17 March. Further five standard hydrographic transects were carried out at in the central region: Lobito (with plankton sampling), Rio Egito, Quicombo, Pta. do Morro and Rio Longa.

The vessel arrived Luanda in the morning of 20 March to change crew and Angolans scientists. It departed on the afternoon of the 22<sup>nd</sup> to continue the survey in the northern region, and the sampling started off Congo River in the morning 23 March, but as it was discovered water in the vessel’s lubrication oil in the evening 23<sup>rd</sup>, it had to return to Luanda.

Two standard hydrographic transects were carried out at Ambriz and Ponta da Moita Seca in the northern region. The survey finished the evening of 30 March when R/V “Dr. Fridtjof Nansen” called port in Luanda.

## CHAPTER 2 METHODS

### 2.1 Survey effort

Table 2.1 presents the survey area by depth strata, allocation of trawl stations, total number of successful swept-area hauls, number of hauls failed, number of CTD stations, and the distance surveyed. Table 2.1 also shows the allocation of effort relative to the stratum size as percentage hauls versus percentage area, by depth, by region, and by the total area. The overall average coverage was 1 valid trawl station per 91 n.mi.<sup>2</sup>. Figures 2.1-2.3 show the cruise tracks in the southern, central and northern regions, respectively, and the locations of bottom trawl, plankton and hydrographic stations.

**Table 2.1** Survey design and effort of the 2006 demersal survey. 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 (in brackets), 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).

Region	Depth strata (m)									Valid	Failures	CTD	Distance
	20-50	50-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800				
<b>Cunene-Tombua</b>													
Area (NM <sup>2</sup> )	507	591	594	100	77	48	39			<b>1956</b>		66	606.6
# hauls (BT)	8(1)	5(2)	7	1	1			2	1	<b>25</b>	3		
%area	25.9	30.2	30.4	5.1	3.9	2.5	2.0	0.0	0.0	14.5			
%hauls	32.0	20.0	28.0	4.0	4.0			8.0	4.0				
<b>Benguela-Luanda</b>													
Area (NM <sup>2</sup> )												141	2167.2
# hauls (BT)	16	18(1)	16	3	6	3	4	4	4	<b>74</b>	1		
%area	17.3	25.6	23.3	6.6	6.0	5.5	5.6	4.3	5.8	41.3			
%hauls	21.6	24.0	21.3	4.0	8.0	4.0	5.3	5.3	5.3				
<b>Luanda-Congo River</b>													
Area (NM <sup>2</sup> )	1379	1969	1940	601	550	437	409	408	702	<b>8395</b>		81	1451.4
# hauls (BT)	14	18(2)	17(2)	6(1)	5	5	4	4(1)	7	<b>80</b>	6		
%area	16.4	23.5	23.1	7.2	6.6	5.2	4.9	4.9	8.4	44.7			
%hauls	17.5	22.5	20.9	7.7	6.2	6.2	4.9	4.9	8.6				
<b>Grand total</b>													
Area (NM <sup>2</sup> )	2954	4146	3973	1108	999	828	794	676	1059	<b>16537</b>			
# hauls (BT)	41(1)	40(5)	40(2)	10(1)	12	8	8	10(1)	12	<b>179</b>	10	288	4225.2
%area	17.9	25.1	24.0	6.7	6.0	5.0	4.8	4.1	6.4				
%hauls	22.7	22.1	22.1	5.5	6.6	4.4	4.4	5.5	6.6	<b>Total hauls: 189</b>			

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

It was decided in a meeting in 2003 that the trawl positions of the 2000 demersal survey should be the standard for future surveys in the southern region as the survey had a reasonable good coverage of the region. Furthermore, it was decided that the trawl positions of the 2002 demersal survey should be used as the standard for future surveys in the central and northern regions, as the survey had a good coverage of the regions. Therefore, the station positions and effort have been similar during the 2000, 2003-2006 surveys in the southern region and during the 2002-2006 surveys in the central and northern regions (see Annex VIII).

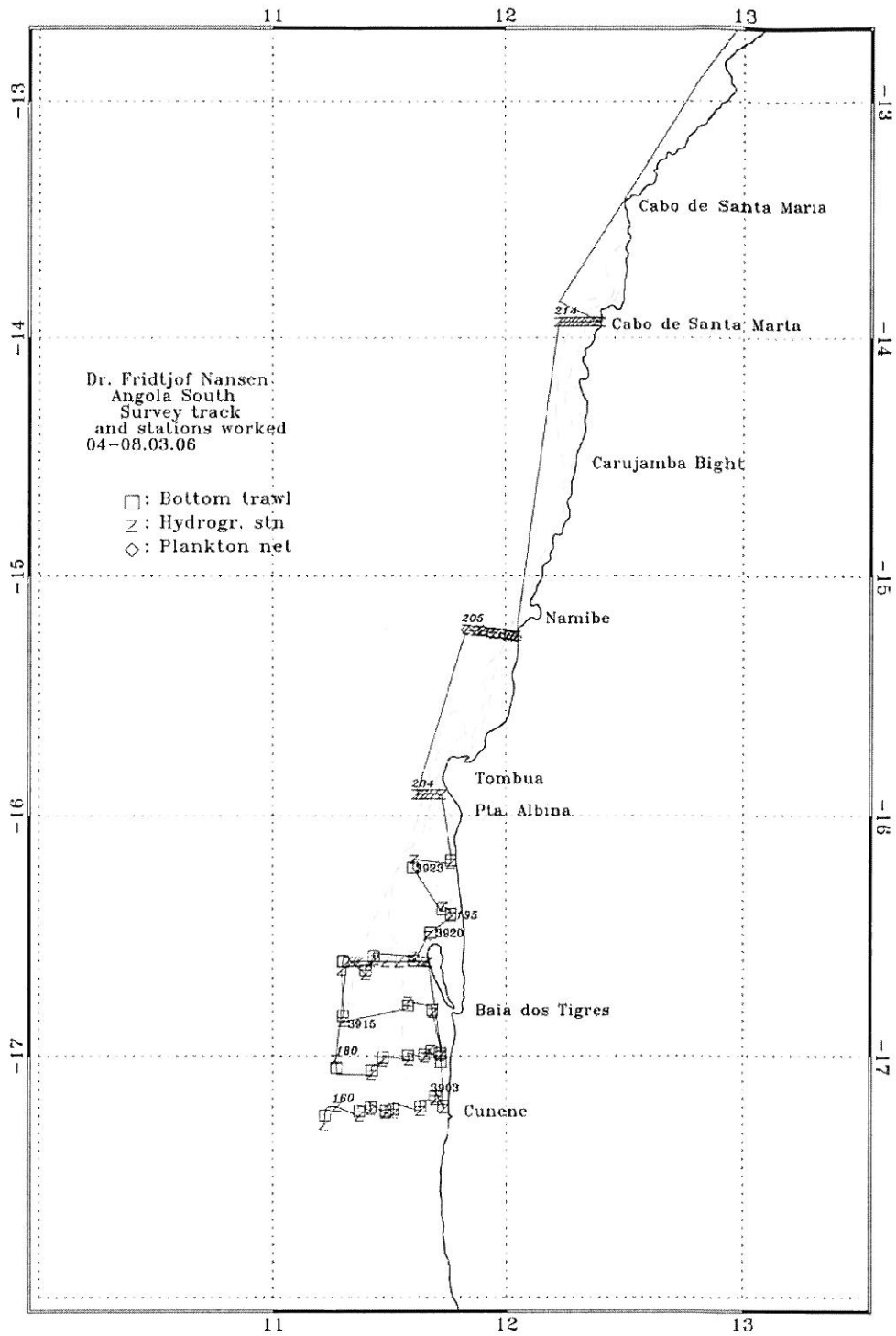


Figure 2.1 Angola south: Cunene to Tombua. Course track with trawl stations, plankton stations and hydrographic transects. Hydrographic stations were also taken at the fishing stations. Depth contours at 20, 50, 100 and 200 m.



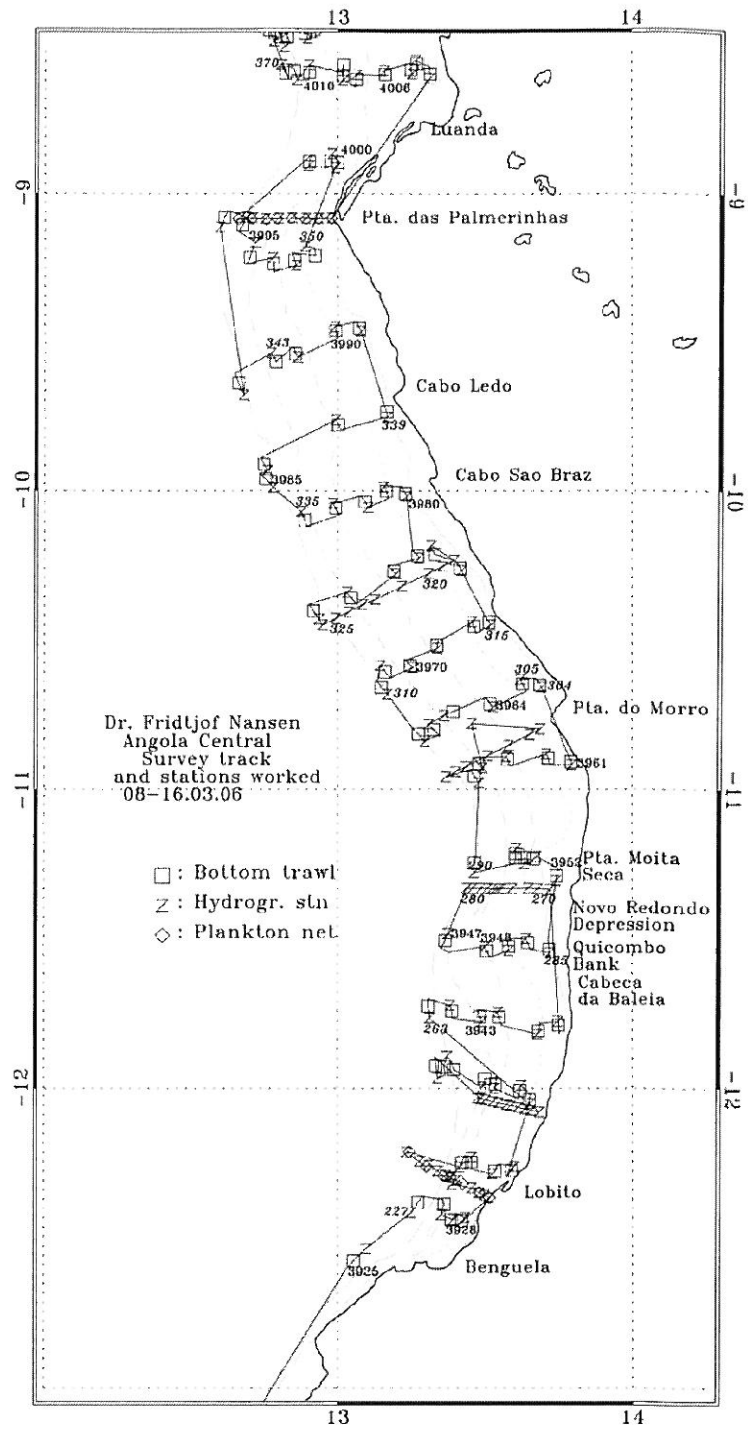


Figure 2.2 Angola central: Benguela to Luanda. Course track with trawl stations, plankton stations and hydrographic transects. Hydrographic stations were also taken at the fishing stations. Depth contours at 20, 50, 100, 200 and 500 m.

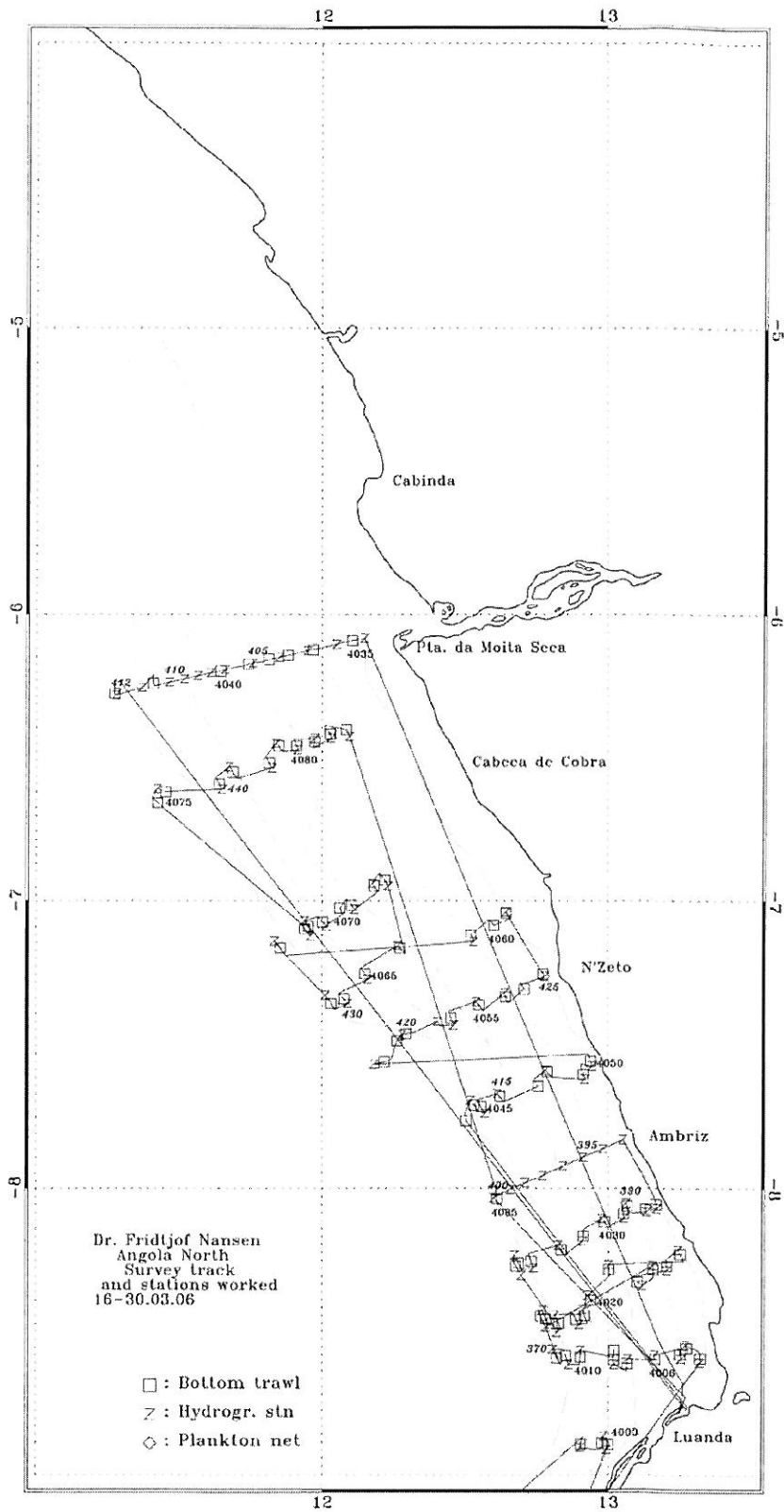


Figure 2.3 Angola north: Luanda to Congo River. Course track with trawl stations, plankton and hydrographic transects. Hydrographic stations were also taken at the fishing stations. Depth contours at 20, 50, 100, 200 and 500 m.

## 2.2 Meteorological and hydrographic sampling

A Seabird 911+ CTD probe was used to obtain vertical profiles of temperature, salinity and oxygen. Real time plotting and logging was done with the customised Seabird Seasave software installed on a PC. Profile data were logged down to a few meters above the bottom at all trawl stations, and down to maximum 700 m in deep stations in the hydrographic transects. At the standard transect Pta. das Palmerinhas two Niskin bottles were triggered for water samples, one near the surface and one near the bottom, in order to calibrate the oxygen sensor using the Winkler method (Carrut and Carpenter, 1966). However, the bottles were not completely tight and leaked water, therefore, the calibration was found not valid.

Meteorological observations including wind direction and speed, air temperature, global radiation and sea surface temperature (SST) were automatically logged using an Aanderaa meteorological station and averaged by every nautical mile distance sailed.

A vessel-mounted Acoustic Doppler Current Profiler (VMADCP) from RD Instruments logged the current profiles continuously, and was set to ping synchronously with the echo sounders. The frequency of the VMADCP is 150 kHz, and data were averaged and stored in 3 m vertical bins.

## 2.3 Biological sampling

### *Sampling gear*

A Gisund Super bottom trawl with a headline height of about 4.5 m was used during the survey, and the doors are of the Thyborøn' combi type. The distance between the front parts of the wings was about 21 m during deployment at a speed of 3 NM h<sup>-1</sup>. These settings have been the standard on all swept area surveys with R/V "Dr. Fridtjof Nansen". As in previous surveys, except during the 2002 survey, a 44 m long tickler chain was attached to the footrope on depth of more than 300 m in order to catch more of the bottom dwelling deep-water shrimps. During all tows deeper than 80 m, a 9 m long constraining rope was attached between the wires 130 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 and depth/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. The trawling start time is controlled by using SCANMAR sensors to detect the landing of the trawl on the bottom, and the stop-time is defined to as the time when the wires starts to haul the net. In some cases the towing was interrupted before 30 minutes either due to poor bottom conditions or too high catches of fish indicated by the installed catch sensors. If the stations were not trusted to reflect the density of fish on the bottom they were recorded as invalid in the NAN-SIS database. Table 2.1 shows the numbers of valid and invalid stations. A detailed description of the fishing gear is given in Annex VII.

### *Sampling the catches*

Catches were sampled (or sub-sampled for large catches) for species composition by weight and numbers. The total body length of the fish (cm) was measured to the nearest 1 cm below

from the tip of the snout to the longest lobe of caudal fin, and carapace length to 1 mm below was recorded for the shrimps. 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.

All sharks were sexed, measured and weighted and some results are presented in Annex X.

## 2.4 Acoustic sampling

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 the EchoLog (SonarData). A detailed description of the acoustic settings is given in Annex VII.

## 2.5 Plankton sampling

### *Zooplankton*

The sampling was conducted by means of HYDROBIOS Multinet, however only one net was used. The net (180  $\mu\text{m}$ ) was remotely opened from the bridge of the vessel when it was about 10 m from the bottom, or in deeper areas at maximum 200 m depth, and thereafter hauled to the surface. A SCANMAR depth sensor gave real-time information of the depth, and a flowmeter inside the net was used to estimate the sampling volume. The samples were preserved in formalin 4%.

### *Phytoplankton*

Phytoplankton was sampled with two Niskin water bottles rigged on the CTD underwater unit. One sample was made above (10 m) and one below (30 m) the thermocline. The samples were preserved in formalin 4%.

## 2.6 Areas and depth strata

Table 2.1 shows the areas ( $\text{NM}^2$ ) of the southern region (Cunene-Tombua: S17°14'-S16°00'), in the central region (Benguela-Luanda: S12°40'-S09°00'), and the northern region (Luanda-Congo River: S09°00'-S06°00') by depth strata. These strata are used to calculate the swept-area biomass estimates. All samples are treated as representative for the relevant depth intervals where the species or group of species were caught.

## 2.7 Calculations

All equations for the calculations are given in Annex IV. The effective fishing width of 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 fishing width multiplied by the towing distance measured by the GPS. It

is assumed that all fish within the trawling path are 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 is seldom known, but because the coefficient is assumed to be constant between surveys the swept-area estimates will reflect any change in population abundances between surveys.

The survey design and effort were previously inconsistent, and made any comparison between surveys difficult. Therefore, it was discussed and agreed upon by the responsible of the Demersal Programme of the Instituto Nacional de Investigação das Pescas 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 procedure.

Data from the projects AN, A2, A3 and A4 in NAN-SIS were exported 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 software R 2.1.1<sup>⊗</sup> was used to calculate stratified density estimates sorted by survey and stratified by depth and latitude. Biomass estimates by species or species groups were obtained from a stratified mean density estimator using the equations in Annex IV.

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<sup>⊗</sup> R Development Core Team (2005). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org>.

## CHAPTER 3 OCEANOGRAPHIC CONDITIONS

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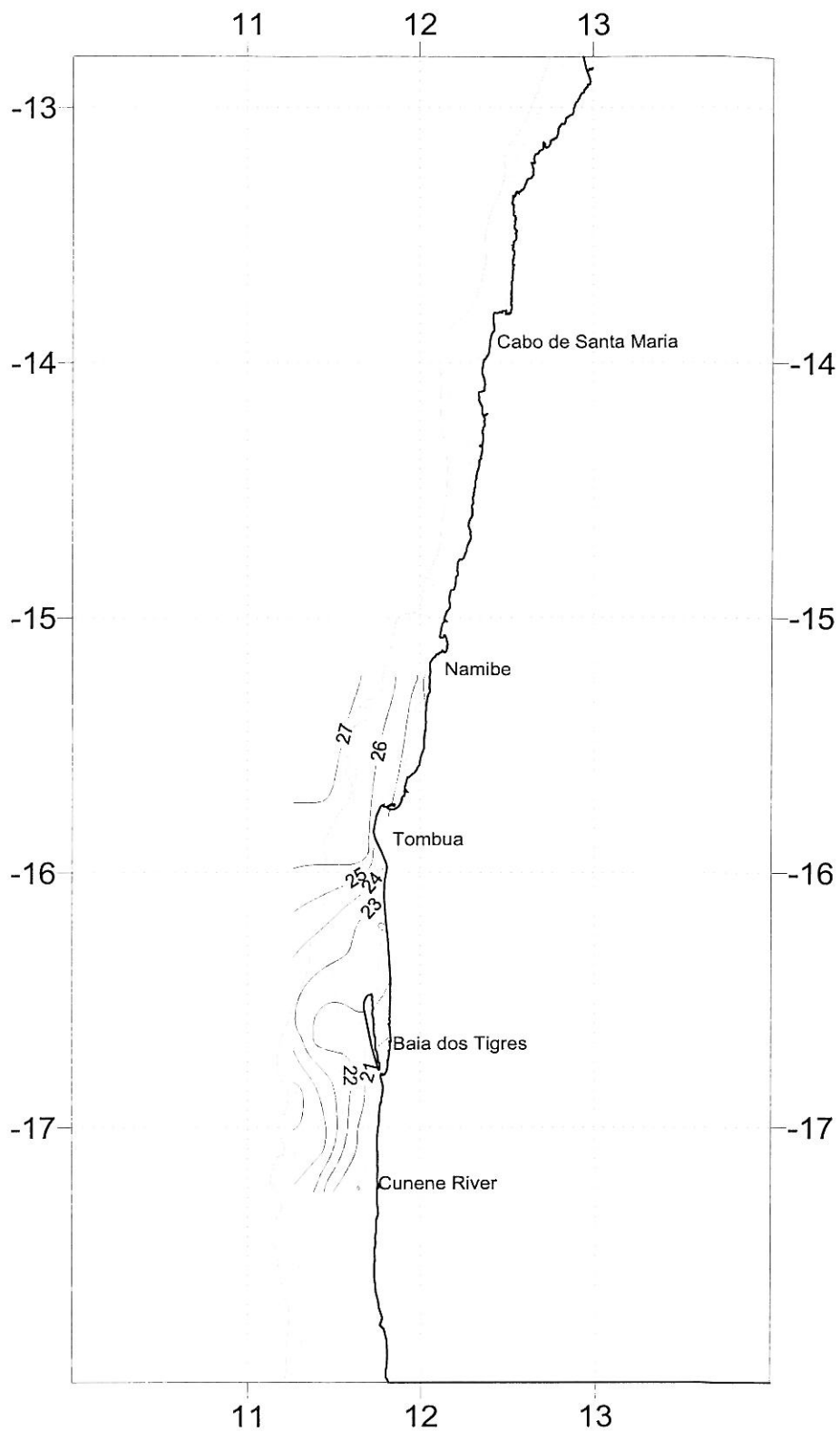
### 3.1 Surface distribution

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 other 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, it is 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 (15-17°S), except of one survey conducted during the anomalous “Benguela Niño” event in February-March 1995.

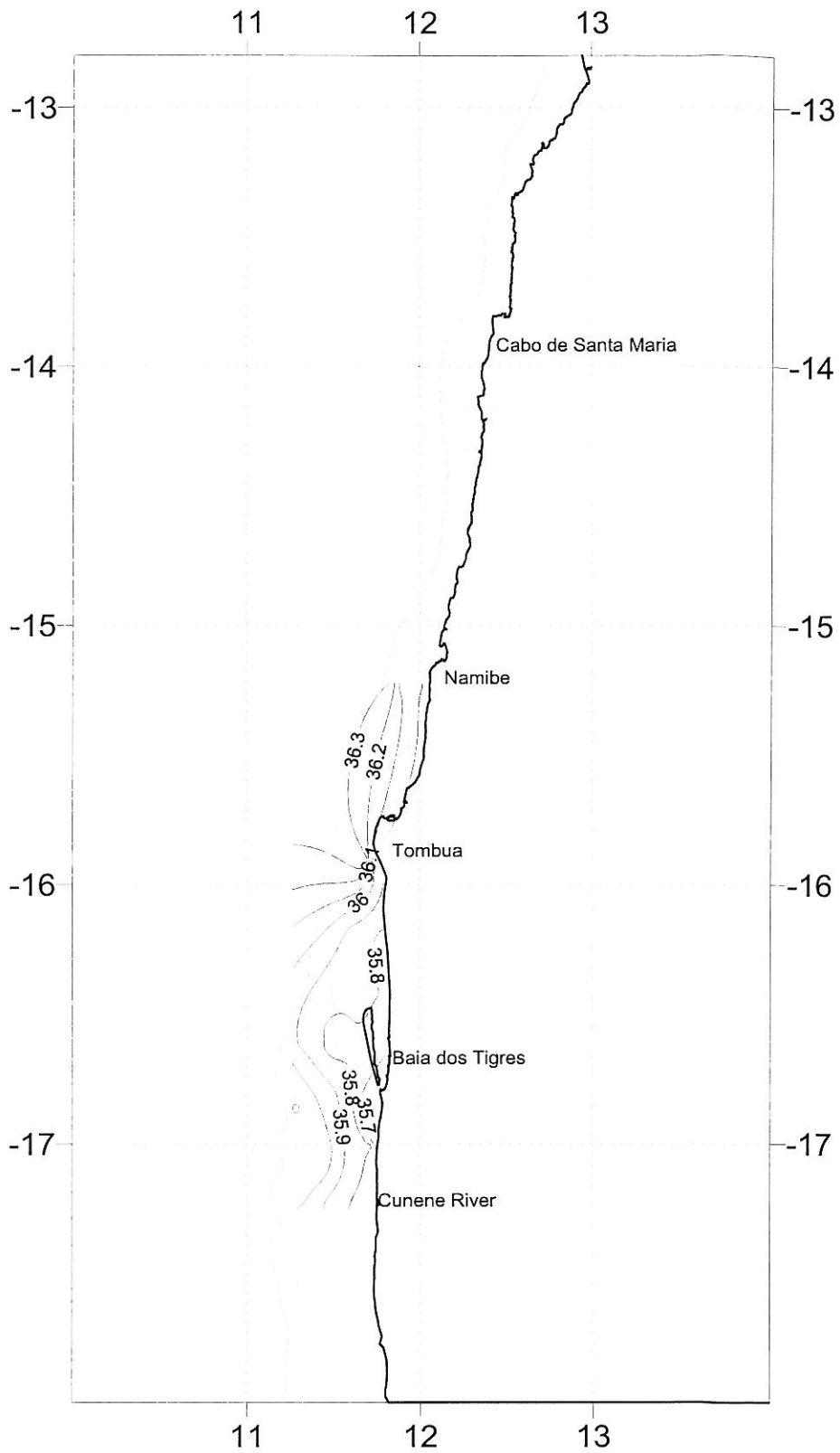
The horizontal distributions of temperature and salinity in the southern region present high values that decrease southwards (Figures 3.1-3.2). The temperature varied between 25–27°C and the salinity was about 36.0–36.3 psu between Namibe and Ponta Albina, and the temperature was of 21–23°C and the salinity about the 35.8–35.9 psu between Ponta Albina and Cunene River. The isolines show a strong horizontal gradient of temperature and salinity between Tombua and Ponta Albina, which indicate the presence of the Angola-Benguela Front. Signals of up welled water are seen in costal areas of Baía dos Tigres, with temperature of 21°C and low salinity of 35.7-35.7 psu.

The horizontal distributions of temperature and salinity in the central area of Angola are presented in Figures 3.3–3.4. Temperatures between 28–29 °C dominate the whole central area. The salinity distribution is less homogenous, and the salinity of 35.5 psu observed between Benguela to Cabo de São Bras is a typical salinity of the ocean. In contrast, the area from Cabo de São Bras to Luanda was clearly influenced by discharges of freshwater from the rivers in this area, as the salinity values were as low as 32.5 psu. Another characteristic of the salinity distribution in the region was northerly orientation of the isolines.

In the northern region the temperature was lowest inshore with about 29°C, while the offshore surface water temperature was between 29 and 30°C (Figure 3.5). In the inshore waters, the salinity was about 34 psu, and the salinity in the offshore area was between 32.5 and 33 psu (Figure 3.6). These conditions are similar to the 2003 condition, but markedly different from the 2004 and 2005 conditions when the sea surface temperatures where about 4°C lower.



**Figure 3.1** Angola south. Horizontal distribution of surface temperatures (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.



**Figure 3.2** Angola south. Horizontal distribution of surface salinity (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.



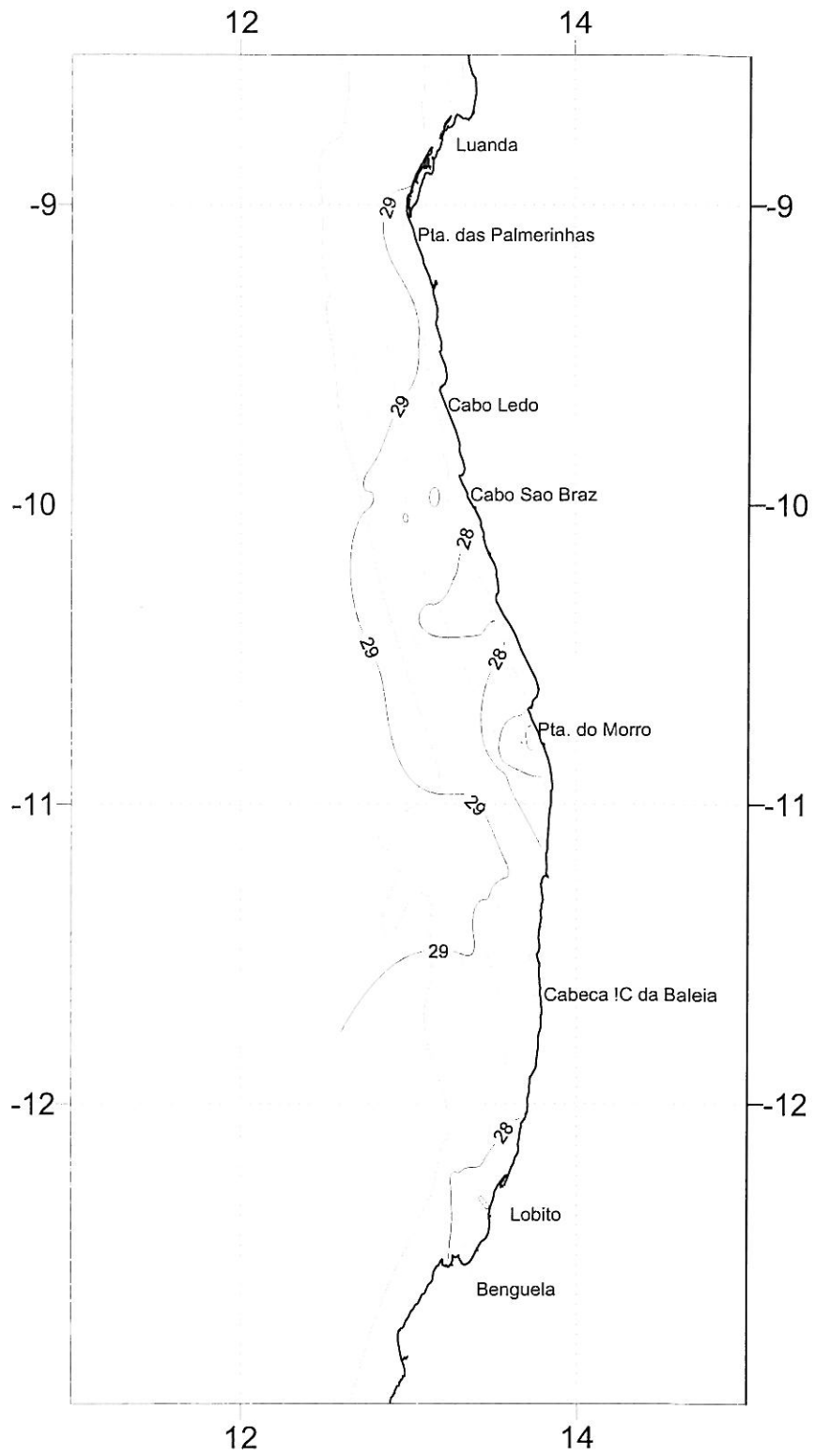


Figure 3.3 Angola central. Horizontal distribution of surface temperatures (5 m depth). ). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

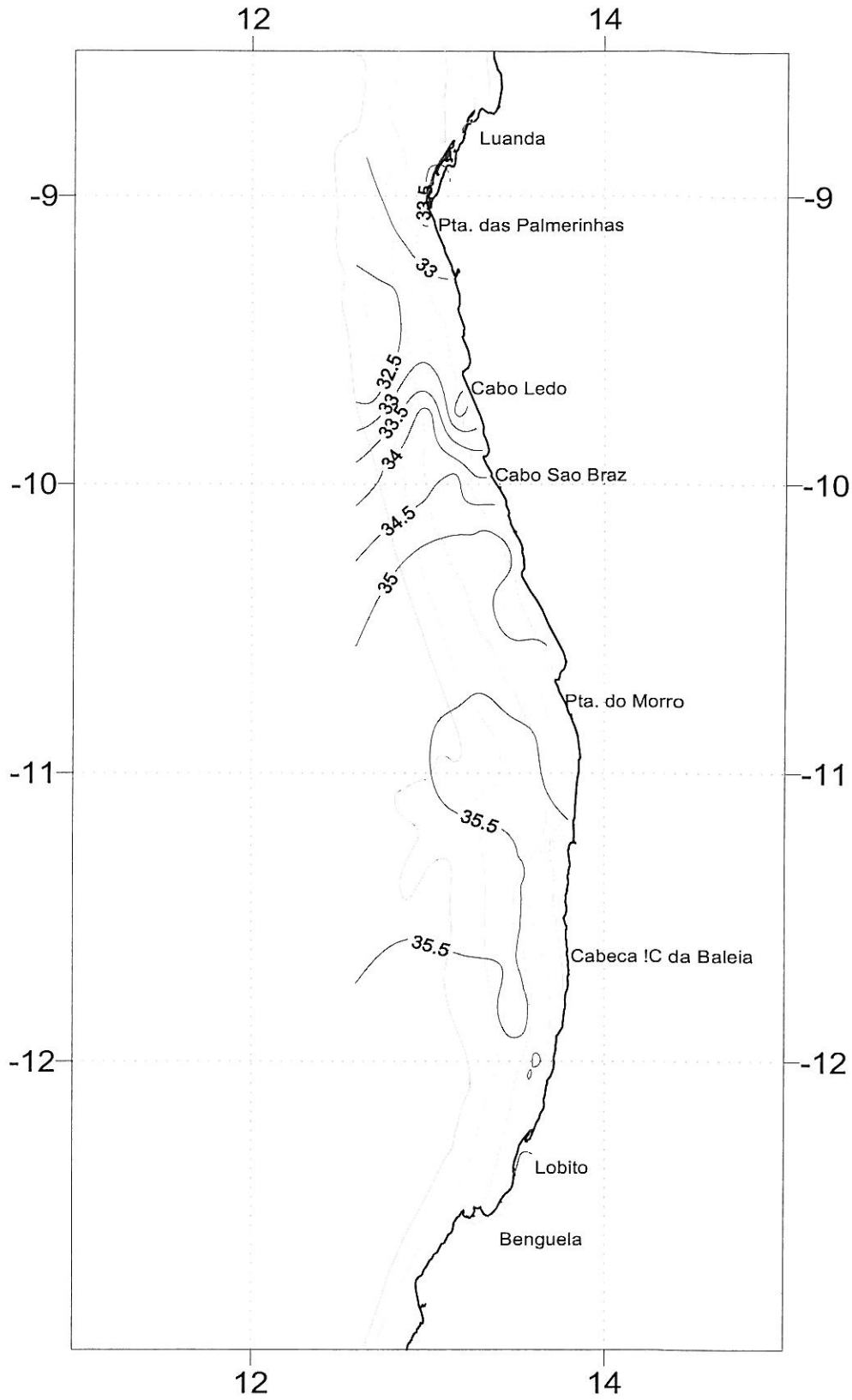


Figure 3.4 Angola central. Horizontal distribution of surface salinity (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

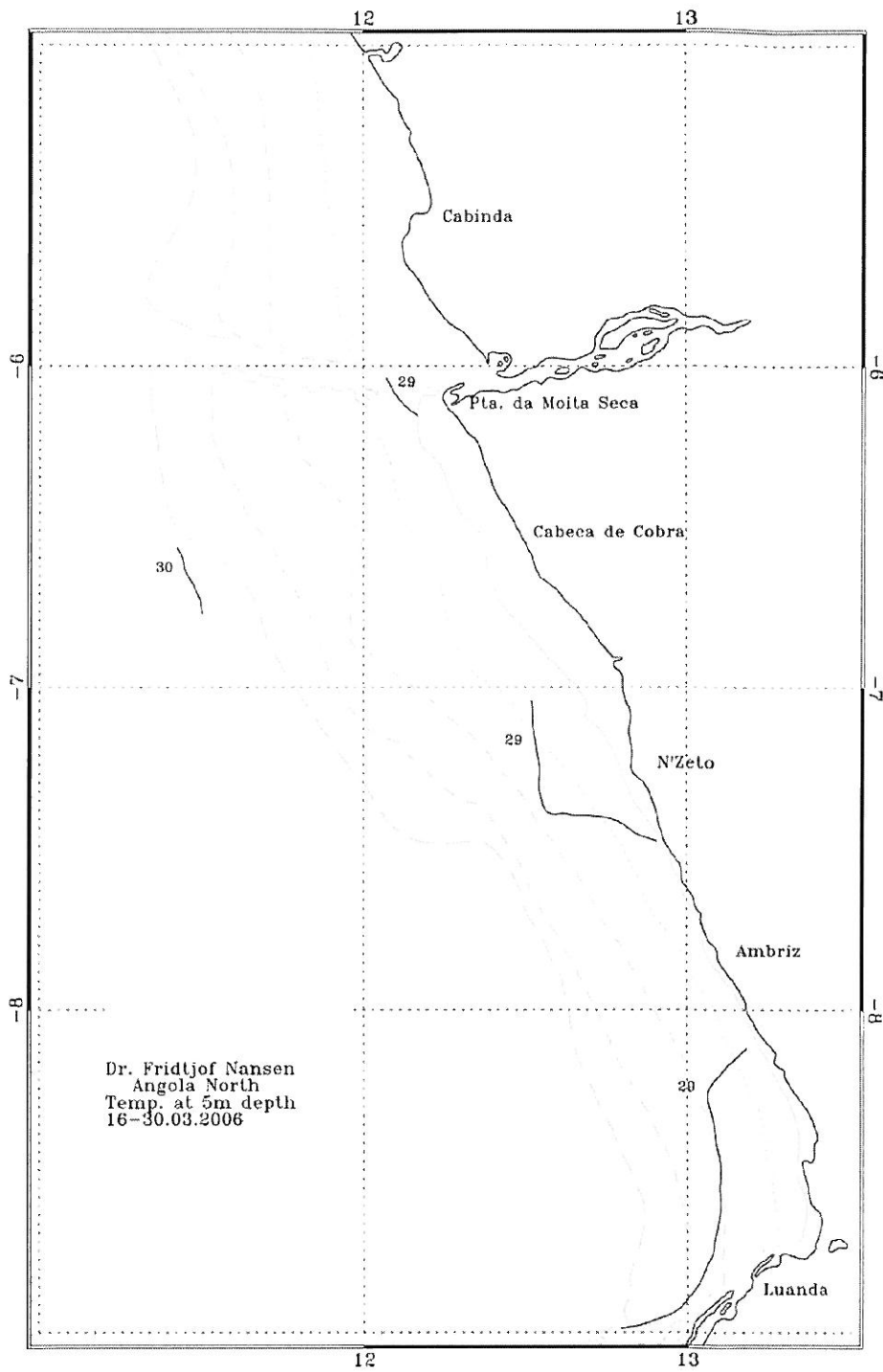
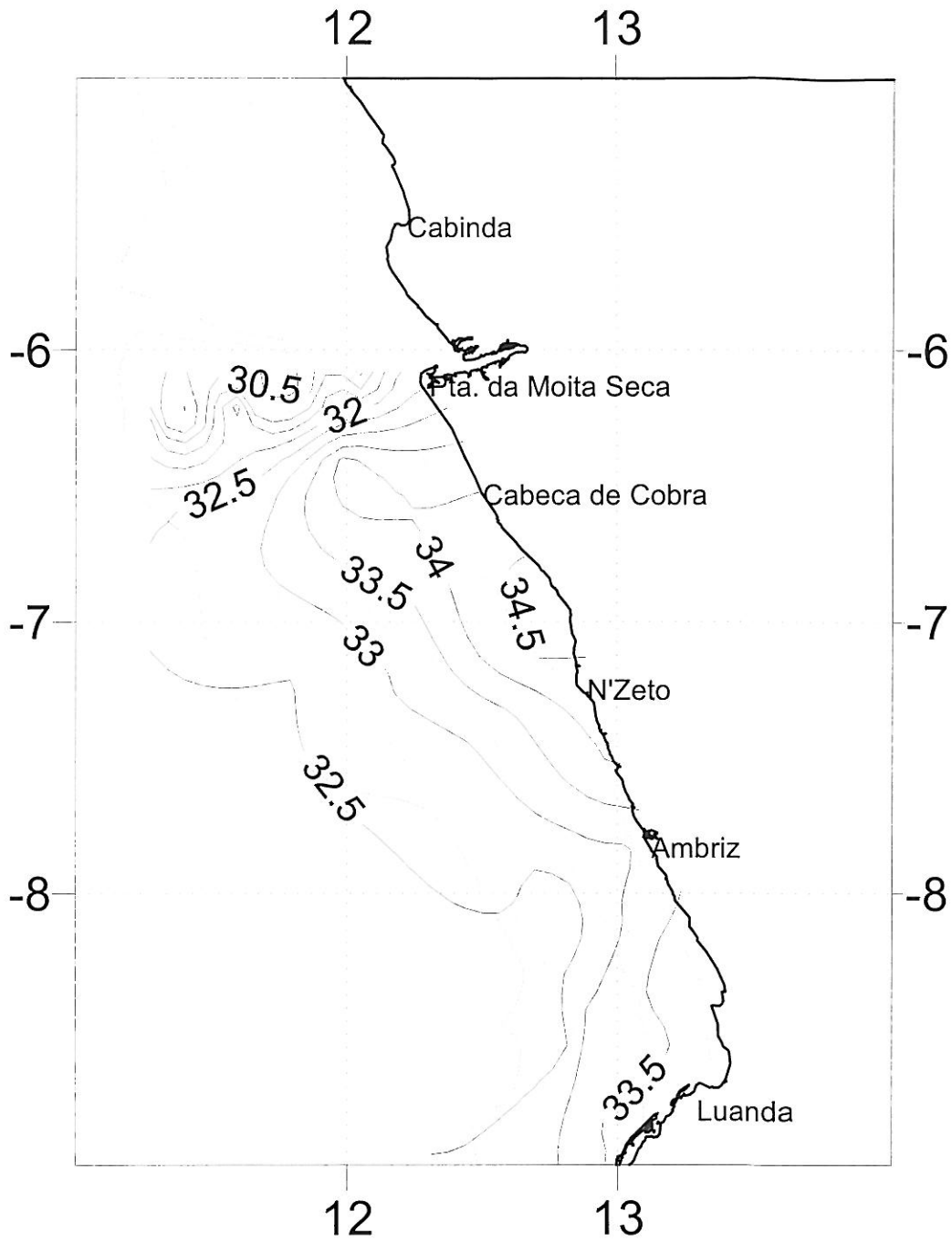


Figure 3.5 Angola north. Horizontal distribution of surface temperature (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.



**Figure 3.6** Angola north. Horizontal distribution of surface salinity (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

## 3.2 Vertical sections

The temperature, salinity and oxygen in the vertical sections off Baía dos Tigres, Ponta Albina, Namibe and Carujamba (Figures 3.7-3.10) increased with distance from coast and decreased with the depth. An upwelling can be seen in the first three sections as indicated by the orientation of the isolines, which point towards the surface in the coastal area. In the section off Baía dos Tigres the surface temperature varied between 21 and 22°C and the salinity was about 35.8 psu. The surface temperatures off Ponta Albina and Namibe varied from 25 to 27°C, and the salinity was between 36.1 and 36.2 psu. The stratification layer, which was from surface to around 60 m, was more pronounced in the Ponta Albina section, and the temperature at 60 m depth was about 18°C. For the other three sections, the isotherms of 18°C were approximately found around 100 m. Despite its northern location, the Carujamba section had lower surface temperature (23-24°C) and salinity (35.7-35.8 psu) than the Namibe and Ponta Albina sections. The oxygen decreased with depth and was similar in all four sections. The surface oxygen value was 4-5 ml/l and the layer of low oxygen (< 1 ml/l) was observed deeper than 100 meters of depth.

Six transects were carried out in the central region (Figures 3.11-3.16), and the temperature, salinity and oxygen in the vertical sections were in general similar for the whole region. The surface temperature varied between 27 and 29°C, and decreased to below 8°C in the depths deeper than 400 m. The salinity varied between 35.2 and 35.6 in the surface, with the lowest surface salinity in the sections to the north. However, the surface water of the section off Ponta das Palmerinhas was dominated by water with low salinity of about 33 psu. The oxygen values in the surface were about 4 ml/l, and the layers with low levels of oxygen (< 1 ml/l) were found below 100 m.

The vertical sections off Ambriz and Pta. da Moita Seca were sampled in the northern region (Figures 3.17-3.18). The hydrographic conditions at Pta. da Moita Seca are markedly influenced by the water flux from the Congo River, and the salinity of the inshore surface water was about 30.1 psu. The temperatures and oxygen levels were similar for both the northern transects, and the inshore surface water was about 29°C and the O<sub>2</sub> 4.0 ml/l.

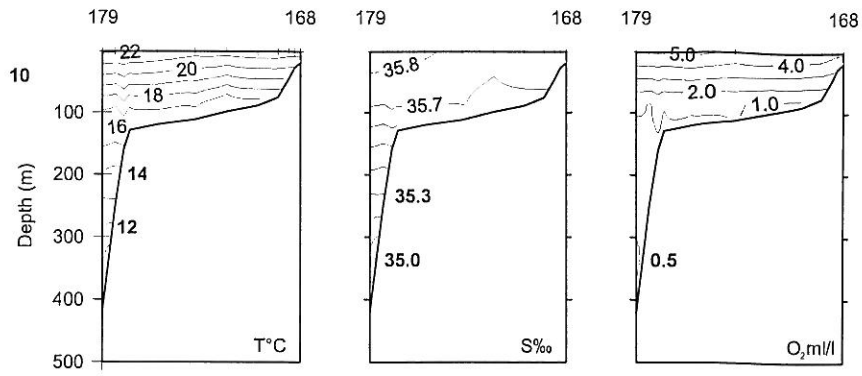


Figure 3.7 Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Baía dos Tigres.

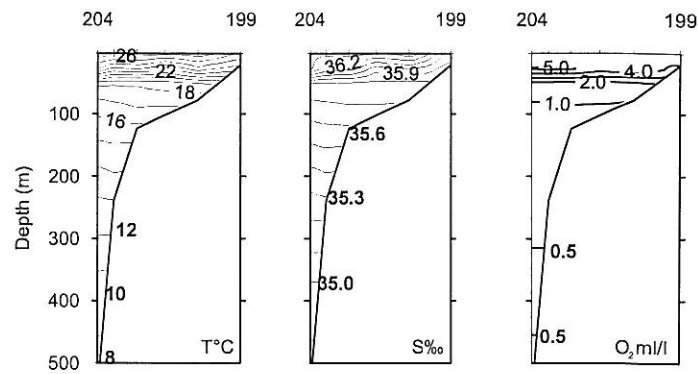


Figure 3.8 Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Tombua.

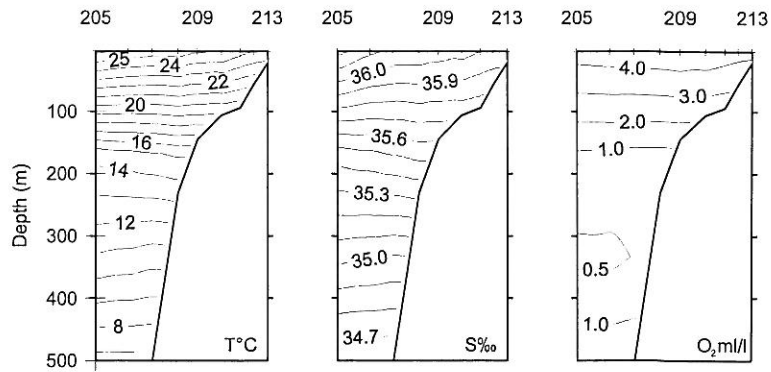
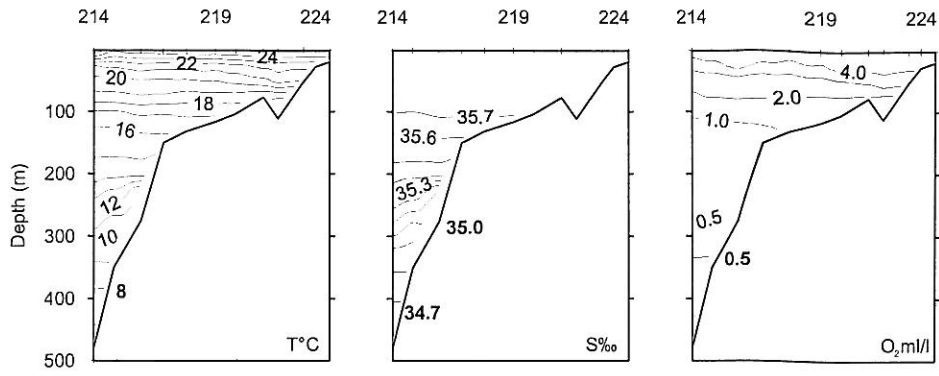
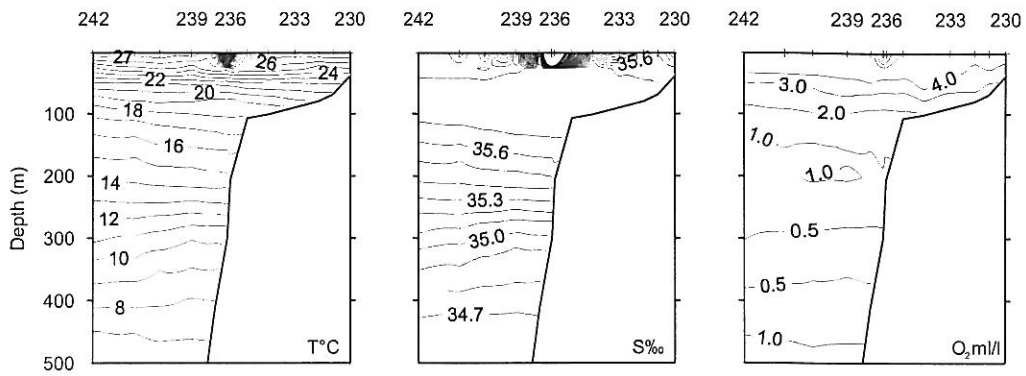


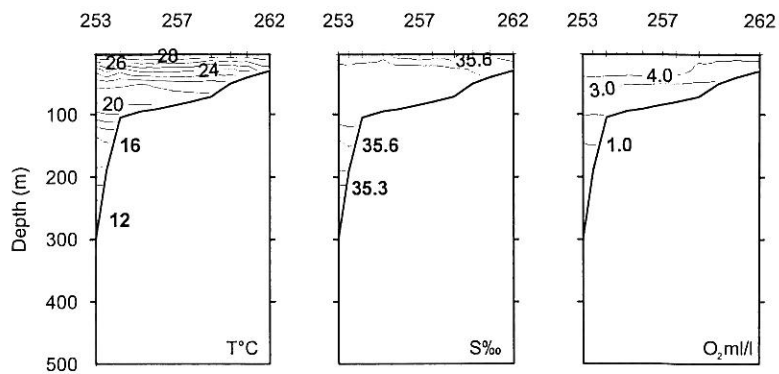
Figure 3.9 Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Namib.



**Figure 3.10** Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Carujamba.



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



**Figure 3.12** Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Rio Egito.

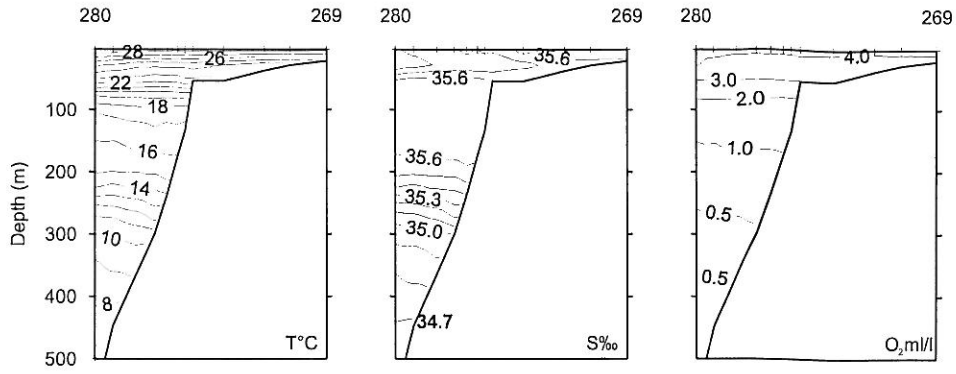


Figure 3.13 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Quicombo.

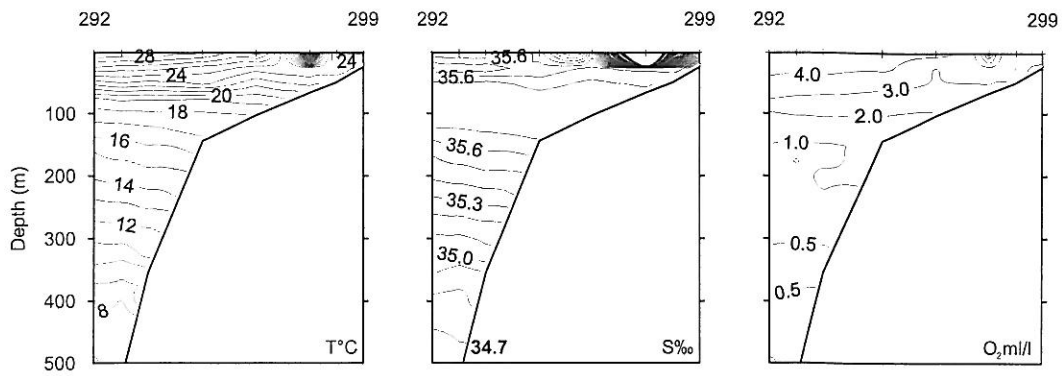


Figure 3.14 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Ponta do Morro.

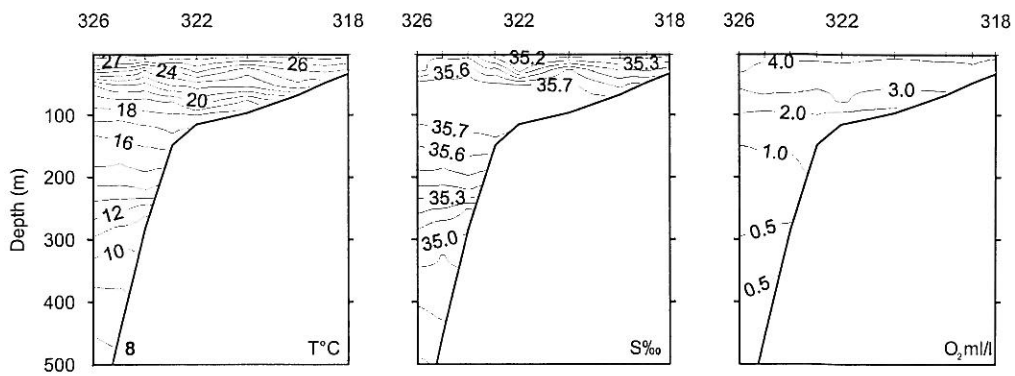


Figure 3.15 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Rio Longa.



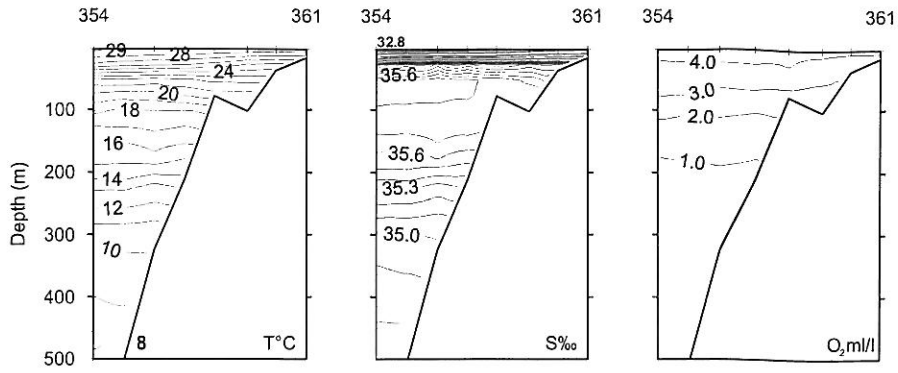


Figure 3.16 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Pta. das Palmerinhas.

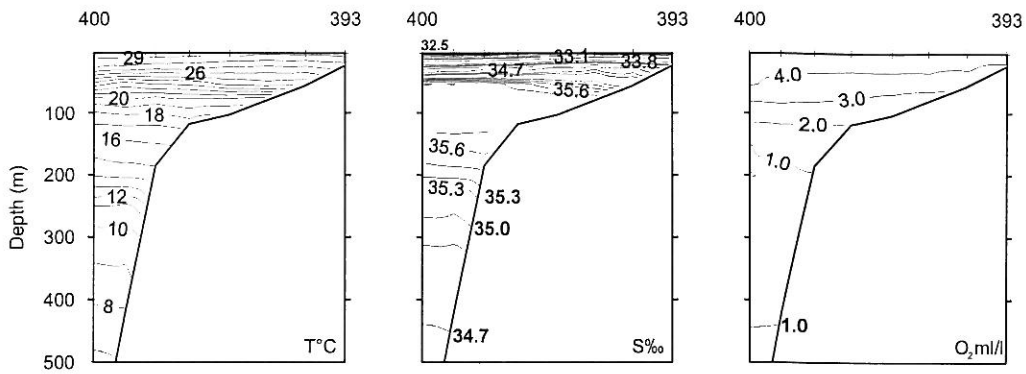


Figure 3.17 Angola north. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Ambriz.

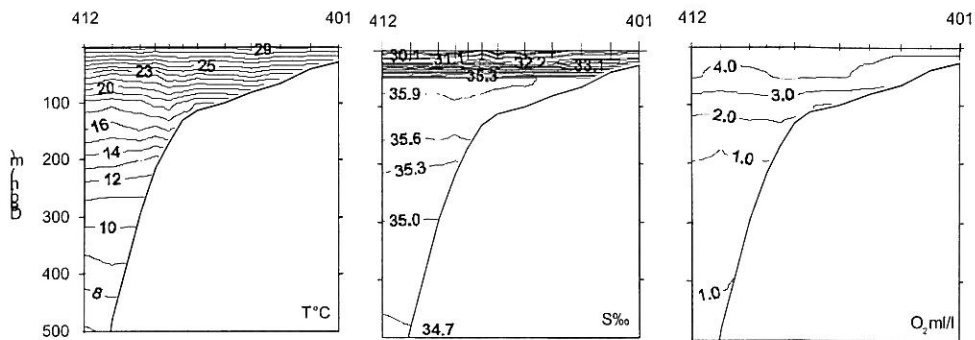


Figure 3.18 Angola north. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Pta. da Moita Seca.

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

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The inner shelf is defined to be the area between 20 and 70 m bottom depth, and the outer shelf to be from 71 to 200 m depth. Several of the species, which inhabit the shelf, particularly the seabreams (Sparidae), are also found in deeper waters, and are presented in Chapter 5.

The trawl positions are mapped in Figures 2.1-2.3, and the station information and catch by species are presented in Annex I. Pooled length distributions weighted by the catch of the main species by sector region are shown in Annex II. Further, the mean densities (tonnes·NM<sup>-2</sup>) and the frequency of occurrence of the most important species are shown in Annex III. Annex V shows the various NAN-SIS species codes used for species and groups of species, and Annex VI presents the catch rates of these species and species groups.

### 4.1 Cunene-Tombua shelf

During 3 days 23 trawl stations were sampled on the southern shelf, where 20 were successfully accomplished. The southern region has not been regularly sampled throughout the years, except for the 2000 and 2003-2006 surveys. Other surveys' results in the time series should therefore be interpreted with caution, as the strategy and design of these surveys were not standardized.

Several trawl stations were interrupted (see Annex I) as high catches of clupeids (mainly sardinella) and horse mackerel affected the trawl performance, and may have prevented an adequate sampling of the catch.

The average catch per hour on the inner shelf was 19 500 kg/hour and 4 200 kg/hour on the outer shelf (Annex VI). The 'pelagic' group dominated on the shelf with 96 and 82% of the mean catch rates on the inner and outer shelf, respectively, and the mean catch rates of the 'demersal' group were respectively 51 and 453 kg/hour on the inner and outer shelf. No shrimps were caught on the shelf, but the average mean catch rates of the cephalopods and sharks were 62 and 177 kg/hour on the inner shelf, and 12 and 9 kg/hour on the outer shelf, respectively. The "other" group contributed to 2% of the average mean catch rate on the inner shelf and 7% on the outer shelf. Seabreams (except *Boops boops*) was the most abundant demersal group, and was caught in all stations in the outer shelf. The average catch rate of seabreams on the inner shelf was 27 kg/hour and 316 kg/hour on the outer shelf, and *D. macrophthalmus* was the dominating seabream. The average catch rates of croakers (mainly *Umbrina canariensis*) on the inner and outer shelf were 9 and 23 kg/hour. *Pomadsys incisus* (a grunt) was only caught in one station on the inner shelf (Annex VI). As previously mentioned, the 'pelagic' group dominated the catches and on the inner shelf, and the clupeids, mainly sardinella, was by far the most abundant group with an average catch rate of 16 000 kg/hour. The average catch rate of the clupeids on the outer shelf was 2 kg/hour; catch rate of horse mackerel (*Trachurus capensis* and *T. trecae*) was 2 700 and 3 400 kg/hour on the inner and outer shelf, respectively.

### *Biomass estimates*

Table 4.1 shows the time series from 1985 to 2006 of swept-area biomass estimates for commercial species and groups of species in the southern region. The biomass estimates were calculated by stratifying by depth (20-49, 50-99 and 100-199 m). The sampling intensity in the southern region has been variable throughout the years and only surveys that have covered each of the strata with at least two stations are included in Table 4.1. The high coefficient of variations (CV) shown in Table 4.1 indicates that the trends in the time series should be interpreted with care.

The biomass estimates of horse mackerel in 2004 and 2005 were 240 000 and 129 000 tonnes, respectively, and the 2006 estimate was 184 000 tonnes, but as the swept-area surveys targeted demersal species the estimates of the pelagic stocks should be considered as inaccurate as the bottom trawl is only catching fish close to the seabed. In 2005, the *T. trecae* contributed to <1% of the horse mackerel biomass estimate on the southern shelf and to 31 and 67% in respectively 2003 and 2004. The contribution of *T. trecae* was 68% in 2006, and small fish (<30 cm) dominated the horse mackerel catches.

The seabream biomass estimate was about 11 500 tonnes and consisted mainly of *Dentex macrophthalmus*. This is a small reduction from last year, and supports the general impressions that the *D. macrophthalmus* stock has been considerably reduced during the last years, as the 2005 and 2006 estimates are the lowest estimates in the time series since 1986.

The biomass estimate of shallow water Cape hake (*Merluccius capensis*) was 3 700 tonnes, and the estimate is considerably lower than the 2003-2005 biomass. The Benguela hake (*M. polli*) was not caught in the southern region during the present survey, whilst the *M. polli* estimate was 3 200 tonnes in 2000. However, it is possible that the high 2000 estimate is an artefact caused by a misidentification of the two hake species, as it seems unlikely that no *M. capensis* was caught in 2000 (Table 4.1).

The biomass estimate of the cephalopods in 2006 was 1 500 tonnes, which is considerably lower than the 2005 estimate of 2 300 tonnes. A marked reduction from 2005 to 2006 in the biomass of the Ommastrephidae (*i.e. Illex coindetii*) contributed to the decrease in the biomass of cephalopods. In contrast, the 2006 estimate of Sepiidae was 200 tonnes and considerably higher than the 2005 estimate of 60 tonnes.

During the last year surveys the biomasses of the croakers have varied considerably between surveys. Therefore, no clear trend in the time series can be seen. However, the 2006 estimate of 900 tonnes is a very large decrease from the very high 2005 estimate of about 6 200 tonnes. The estimates of *Umbrina canariensis*, which is one of the most important croakers, also show large annual variation and no clear trend in the time series.

The biomass of sharks (includes Chimaeriformes) shows a positive trend since 2004, and the 2006 estimate of 3 600 tonnes is the highest observed since 1991.

The biomass estimates of the pelagic species groups should be considered as unreliable, as the bottom trawl is not a very suitable sample tool for these groups. However, the 2006 estimates of clupeids and scombrids were very high compared to all previous surveys, whilst the hairtail estimate was lower than the 2005 estimate. The biomass trend of the carangids is reflected in the horse mackerel time series as no other carangid species was caught in the southern region in 2006.

**Table 4.1** Biomass estimates (tonnes) of important species on the shelf (20-200m) in the southern region. CV values are indicated in brackets.

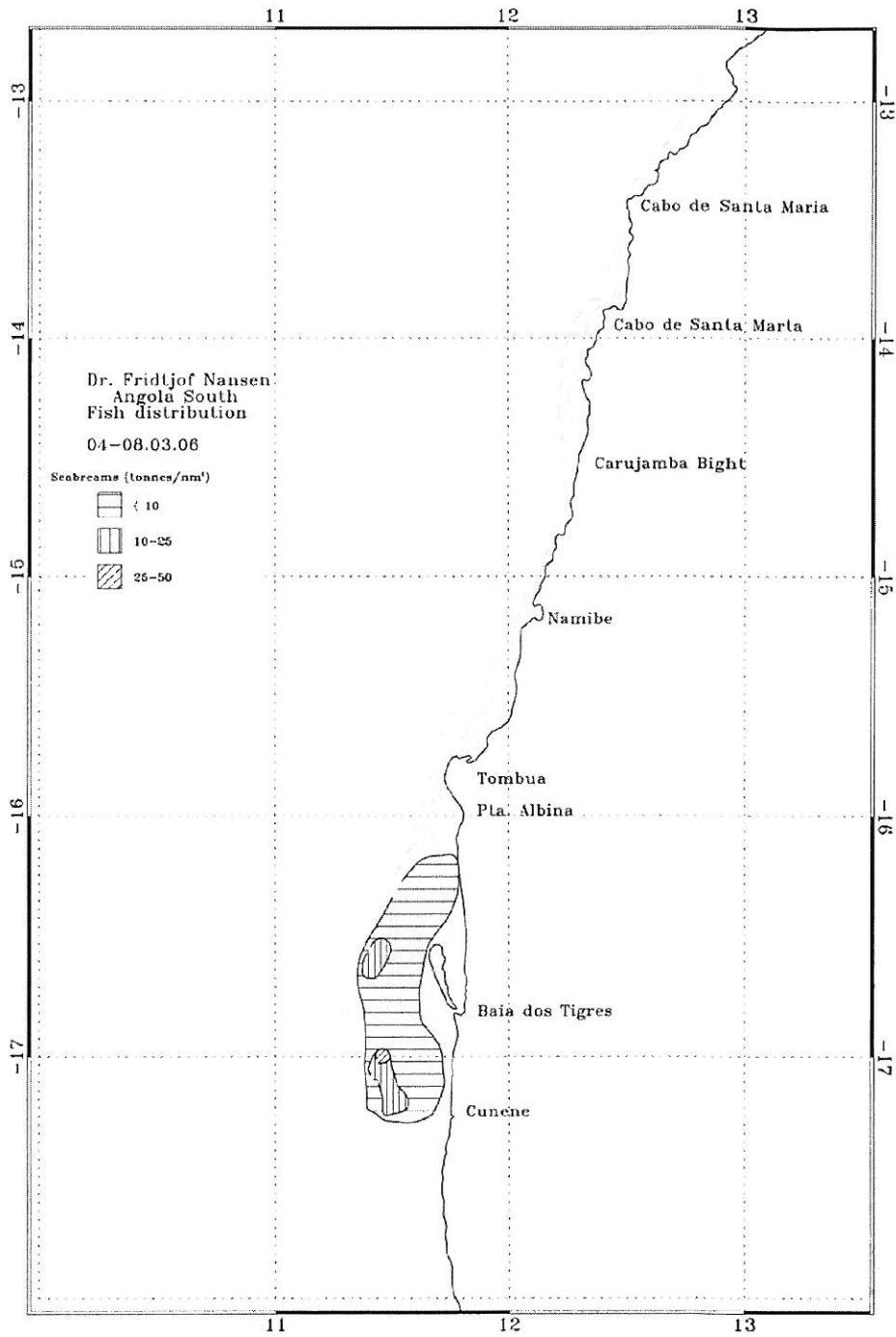
Survey	Hake	T treace	Horse-mackerel	Cephalopod	Sharks	Clupeids	Carangids	Scombrids
1986.1	1099 (0.55)	14235 (0.59)	23059 (0.46)	1188 (1.00)	618 (0.65)	51 (1.83)	23059 (0.46)	43 (1.00)
1986.2	3709 (0.81)	69542 (0.49)	78132 (0.53)	1555 (0.47)	2593 (0.92)	0	78165 (0.53)	173 (0.89)
1989.1	349 (0.88)	2883 (1.09)	15681 (0.90)	776 (0.61)	188 (0.88)	0	15681 (0.90)	60 (0.79)
1989.2	1121 (1.30)	979 (0.94)	13706 (0.75)	6114 (0.83)	12200 (1.37)	0	13706 (0.75)	35 (1.11)
1989.3	6739	9047	36619	1616	602	78	36619	146
1991.1	2920 (1.28)	21429 (0.59)	50458 (0.51)	732 (0.42)	4005 (1.48)	6 (1.69)	50459 (0.51)	106 (1.46)
1991.2	4385 (0.68)	25595 (0.60)	62961 (0.58)	2192 (1.71)	957 (0.53)	444 (1.61)	62961 (0.58)	0
1992	6756 (0.46)	8106 (0.91)	95433 (0.41)	744 (0.63)	2220 (0.65)	70 (1.54)	95436 (0.41)	0
1993	4023 (0.40)	52839 (0.91)	64235 (0.75)	2502 (0.81)	2278 (0.71)	8 (1.55)	64235 (0.75)	347 (1.03)
2000	3559 (0.80)	185345 (1.05)	218410 (0.86)	1934 (0.29)	2051 (0.48)	43 (1.76)	218473 (0.86)	28 (0.87)
2002	3779 (0.81)	116985 (1.30)	237050 (0.63)	1937 (0.96)	69 (0.94)	1217 (1.69)	237058 (0.63)	711 (1.76)
2003	7014 (0.64)	76533 (0.80)	113879 (0.74)	1630 (0.86)	1163 (1.16)	3601 (1.55)	114293 (0.75)	546 (1.83)
2004	11860 (0.64)	72982 (0.56)	237659 (0.80)	2547 (0.71)	348 (0.72)	12998 (1.82)	237659 (0.80)	5 (1.83)
2005	5067 (0.65)	114 (1.83)	129070 (0.52)	2309 (0.61)	1067 (0.38)	2410 (0.74)	129088 (0.52)	1 (1.83)
2006	3713 (0.39)	126892 (0.47)	184129 (0.48)	1545 (0.68)	3630 (1.40)	308909 (1.03)	184129 (0.48)	2221 (1.66)

Survey	Hairtails	Croakers	Seabreams	Ommastrephidae	Sepiidae	D.macrophthalmus	D.angolensis	U.canariensis
1986.1	334 (0.85)	1560 (0.94)	9736 (0.33)	31 (0.64)	138 (0.88)	8304 (0.34)	81 (1.15)	135 (1.26)
1986.2	1694 (1.30)	3960 (0.96)	19201 (0.49)	0	726 (0.74)	17054 (0.54)	5 (1.69)	86 (1.48)
1989.1	965 (1.36)	1492 (0.63)	17853 (0.47)	61 (0.54)	159 (1.08)	17020 (0.47)	139 (1.59)	361 (1.04)
1989.2	510 (0.99)	3601 (0.93)	32669 (0.43)	7 (1.69)	0	31615 (0.44)	16 (1.69)	442 (0.75)
1989.3	1747	1438	15105	192	14	15035	27	86
1991.1	1335 (0.71)	1341 (0.54)	22333 (0.33)	25 (1.09)	20 (1.55)	20180 (0.37)	6 (1.69)	118 (0.93)
1991.2	255 (0.61)	567 (0.51)	22536 (0.43)	25 (0.91)	31 (0.98)	21994 (0.44)	7 (1.69)	102 (1.10)
1992	13 (1.42)	576 (0.91)	32666 (0.54)	428 (1.16)	148 (0.71)	31822 (0.55)	118 (1.69)	30 (0.99)
1993	361 (1.38)	2744 (0.60)	58399 (0.52)	145 (0.40)	126 (1.57)	57722 (0.51)	238 (1.58)	496 (0.87)
2000	1008 (1.45)	3623 (0.61)	61693 (0.95)	9 (1.69)	400 (0.50)	58636 (1.01)	63 (1.29)	308 (0.72)
2002	0	1046 (1.18)	24802 (1.00)	21 (1.69)	1043 (1.64)	23819 (0.98)	0	12 (1.69)
2003	48 (1.16)	1115 (0.39)	15858 (0.39)	397 (0.69)	53 (1.40)	13313 (0.38)	0	172 (0.84)
2004	1 (1.69)	518 (1.18)	26946 (0.69)	549 (0.86)	920 (1.54)	24702 (0.74)	1 (1.69)	8 (1.83)
2005	274 (1.53)	6164 (0.71)	12654 (0.50)	1655 (0.86)	63 (1.43)	12121 (0.50)	221 (1.69)	330 (1.20)
2006	26 (1.74)	923 (0.55)	11470 (0.31)	98 (0.91)	199 (0.90)	11058 (0.32)	0	229 (1.07)

*Distribution*

Figure 4.1 shows the distribution of seabreams in the southern survey area. The seabream distribution covered the whole survey area shallower than 300 m, and the highest concentrations were found on the outer shelf between Cunene River and Baía dos Tigres, as during the 2004 and 2005 survey.



**Figure 4.1** Distribution of seabreams (family Sparidae) in the southern region, Cunene-Tombua. Depth contours at 20, 50, 100 and 200 m.

## 4.2 Benguela - Luanda shelf

The central region of Angolan waters is from Benguela to Luanda. A total of 51 successful swept-area trawl stations were accomplished on the central shelf area (Table 2.1).

The average catch per hour on the inner shelf was 526 and 1 160 kg/hour on the outer shelf (Annex VI). The 'demersal' group contributed to 49% of the mean catch rate on the inner shelf and the 'pelagic' group to 27%. Shrimps were caught in two stations and contributed to less than 0.01% in the inner shelf, and the cephalopods and the sharks contributed each to 3 and 0.2% of the total average catch rate. Demersal fish were also more abundant than pelagic fish on the outer shelf, and contributed to 55% of the average catch rate, whilst the 'pelagic' group contributed to 18%. The cephalopods, shrimps and sharks contributed to less than 1% on the outer shelf. Seabreams (except *Boops boops*) were caught in almost every trawl station on the shelf, and the average catch rates were 73 and 87 kg/hour on the inner and outer shelf, respectively. The most common seabream species were *D. macrophthalmus*, *D. angolensis*, *Pagellus bellottii*, *D. canariensis* and *D. barnardi*. Snappers were only caught in one station on the inner shelf, and groupers were frequently caught on the inner shelf with an average catch rate of 7 kg/hour, but no grouper was found on the outer shelf. Similar, the grunts (*Pomadysus incisus* and *P. rogeri*) were often caught on the inner shelf, and but only found at two stations on the outer shelf. The average catch rate of grunts on the inner shelf was 61 kg/hour. Croakers, mainly *Umbrina canariensis*, were frequently caught on both the inner and outer shelf, and the average catch rates were 17 and 49 kg/hour, respectively. The most common pelagic groups on the inner shelf were clupeids, carangids, scombrids, hairtails and barracudas and the average catch rates of these groups were 36, 78, 1, 12 and 15 kg/hour, respectively. The average catch rates of the same species groups on the outer shelf were 6, 125, 1, 77 and 1 kg/hour, respectively.

### *Biomass estimates*

Table 4.2 shows the time series from 1985 to 2006 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 (20-49, 50-99 and 100-199m). The different strata have been sampled with different intensity throughout the time series and Annex VIII shows the numbers of conducted trawls by strata by survey. Again, it must be noted that the biomass estimates presented for the pelagic species may not reflect the true biomass trends, as pelagic species are often unavailable for the bottom trawl as the fish often swim to high above the seabed. Therefore, the biomass estimates given in for the pelagic species may reflect their availability to the trawl and not only their abundance. Some of the biomass estimates in Table 4.2 have a high coefficient of variations (CV), which indicates that the trends in the time series should be interpreted with care.

*T. trecae* was the only horse mackerel species found in the central and northern regions, and the biomass on the central shelf decreased dramatically from 2002 to 2005, although the 2006 estimate of 9 600 tonnes showed a small improvement from 2005. However, the 2006 estimate is considerable lower than all estimates from 1999 to 2004.

North of Benguela, no other hake species than *M. polli* was caught, and as in 2005 the biomass estimate was only 44 tonnes in the current survey. As recommend in the 2005 survey report, the large decrease from the high 2003 estimate of about 1 800 tonnes needs further investigation.

Seabreams is the most important commercial demersal group in Angola, and the survey biomass estimates for the central shelf have fluctuated largely throughout the years. The 2006 estimate of 11 200 tonnes was 44% higher than the 2005 estimate, but still markedly lower than the high 2002 estimate of 22 200 tonnes. In previous years, the *Dentex macrophthalmus* dominated the seabream biomass estimate, but in recent surveys (2003-2006) *D. macrophthalmus* has contributed to less than 40% of the seabream biomass. In contrast to the biomass of *D. macrophthalmus*, the biomass of *D. angolensis* have been relatively stable and fluctuated around 1000 tonnes from 2002 to 2005, but was estimated to about 2 000 tonnes in 2006. Other important seabreams, which contributed to the seabream biomass, were *Pagellus bellottii*, *D. canariensis* and *D. barnardi*.

The biomass of croakers decreased 16% from 2004 to 2005 and further with 12% from 2005 to 2006. *Umbrina canariensis* was the dominated the catches of croakers in 2006, and contributed to almost 90% of the total biomass.

In 2005, the biomass estimate of grunts (*Pomadasys incisus*, *P. jubelini* and *P. peroteti*) was 6 000 tonnes and 71% larger than the 2004 estimate. The 2006 estimate was reduced to about 4 100 tonnes, and as seen in Table 4.2, the estimates have varied considerably between surveys and no clear trend can be seen in the time series.

The snappers are rare in the catches as they inhabit rocky and often unavailable areas, hence the biomass estimates of snappers may not adequately reflect the state of the stock.

Groupers, mainly *Epinephelus aeneus*, are seldom found on the outer shelf, and as the high CVs indicate, the biomass estimates should be considered with care. Consequently, the large increase in the biomass estimate of groupers in 2005 compared to the 2004 estimate may not reflect a true increase in the grouper stock. Similar, the reduction in biomass from 2005 to 2006 (450 tonnes) should be interpreted with care, as the estimates are relatively imprecise.

The biomass estimate of *P. longirostris* in 2006 was 178 tonnes, which is a large increase from the 2005 estimate of 50 tonnes. However, compared to the high estimate in 2004 of 970 tonnes the 2006 estimate is relatively small.

The biomass estimate of Sepiidae was 120 tonnes in 2006, which is considerably lower than the very 2005 estimate of 570 tonnes, and the increasing trend in biomass that was observed for the 2003-2005 period, seems to have ended.

The biomass estimate of Ommastrephidae was 130 tonnes in 2006, which is considerably lower than the 2002-2005 estimates.

**Table 4.2** Biomass estimates (tonnes) of important species on the shelf (20-200 m) in the central region. CV values are indicated in brackets.

Survey	M.polli	T.treace	Shrimps	Cephalopod	Sharks	Clupeids	Carangids	Scombrids
1985.4	124 (0.93)	74 892 (0.98)	58 (1.61)	5 372 (0.77)	0	423 (1.33)	75 408 (0.98)	0
1986.1	276 (1.02)	17 875 (0.62)	1 632 (0.92)	1 439 (0.47)	228 (1.47)	717 (0.69)	20 440 (0.54)	34 (1.29)
1986.2	207 (0.97)	22 596 (0.79)	371 (1.12)	1 423 (0.78)	0	328 (0.89)	24 625 (0.72)	16 (1.61)
1989.1	121 (1.62)	6 999 (0.41)	237 (1.05)	1 864 (0.59)	148 (0.94)	560 (1.54)	12 736 (0.49)	155 (0.67)
1989.2	1 013 (0.80)	21 473 (0.51)	677 (0.75)	2 206 (0.33)	105 (1.06)	359 (0.94)	26 453 (0.47)	95 (0.50)
1989.3	480 (1.10)	9 579 (0.94)	453 (1.41)	2 015 (0.79)	285 (1.29)	1 707 (0.81)	12 816 (0.90)	310 (1.21)
1991.1	0 (1.69)	86 136 (0.77)	39 (1.11)	850 (0.31)	746 (1.00)	508 (0.94)	87 396 (0.76)	277 (0.81)
1991.2	618 (1.20)	47 927 (0.85)	125 (1.04)	2 021 (0.50)	115 (1.69)	36 (1.61)	48 814 (0.83)	126 (1.30)
1992	1 641 (0.62)	32 878 (0.46)	106 (1.13)	2 597 (0.30)	483 (1.11)	70 (1.16)	35 314 (0.46)	64 (0.89)
1994	2 393 (1.35)	61 886 (0.53)	292 (0.92)	2 696 (0.41)	269 (0.83)	22 (0.96)	63 569 (0.51)	580 (0.80)
1995.1	167 (0.77)	4 875 (0.99)	323 (0.80)	807 (0.42)	121 (0.88)	245 (0.59)	12 635 (0.51)	213 (1.06)
1996	713 (1.09)	51 220 (0.77)	116 (0.98)	2 402 (0.41)	496 (1.08)	589 (0.89)	55 751 (0.71)	53 (1.77)
1997.1	4 557 (1.20)	27 729 (0.74)	1 088 (0.94)	3 268 (0.44)	208 (0.99)	3 442 (1.89)	38 605 (0.59)	46 (1.61)
1997.2	7 395	65 224	1 364	2 391	149	125	67 113	279
1998	375 (1.45)	4 630 (0.89)	365 (0.82)	2 587 (0.34)	310 (0.96)	2 860 (1.57)	7 606 (0.64)	52 (1.35)
1999	15 (1.69)	13 012 (0.53)	14 (0.83)	853 (0.39)	112 (1.17)	2 014 (0.90)	20 579 (0.43)	34 (1.27)
2000	240 (1.53)	19 114 (0.49)	314 (0.91)	1 744 (0.30)	560 (0.82)	1 594 (0.90)	25 052 (0.41)	275 (1.20)
2001	123 (1.15)	16 510 (0.48)	212 (1.28)	1 374 (1.06)	343 (0.78)	80 (1.01)	20 942 (0.42)	97 (0.77)
2002	1 189 (0.83)	78 646 (0.41)	531 (0.74)	2 930 (0.57)	120 (0.81)	1 625 (0.64)	85 797 (0.38)	745 (1.51)
2003	1 774 (0.85)	25 494 (0.54)	515 (0.70)	1 327 (0.44)	266 (0.78)	1 439 (0.64)	29 369 (0.47)	55 (0.85)
2004	174 (1.53)	12 263 (0.58)	974 (1.11)	1 026 (0.34)	586 (0.85)	2 193 (0.79)	15 324 (0.47)	41 (1.03)
2005	44 (1.42)	7 137 (0.52)	84 (0.71)	1 427 (0.16)	201 (0.66)	1 535 (0.84)	9 357 (0.44)	216 (1.30)
2006	44 (1.07)	9 622 (0.37)	188 (1.01)	1 674 (0.27)	475 (0.72)	2 275 (0.84)	13 434 (0.35)	134 (0.69)

Survey	Hairtails	Barracudas	Snappers	Groupers	Grunts	Croakers	Seabreams	P.longirostris
1985.4	2 568 (1.16)	253 (1.26)	0	1 253 (0.95)	5 706 (1.37)	10 235 (1.45)	18 406 (0.72)	58 (1.61)
1986.1	15 125 (0.67)	1 019 (0.62)	36 (1.96)	411 (0.81)	2 237 (0.73)	4 649 (0.50)	9 161 (0.46)	1 483 (1.01)
1986.2	1 089 (0.70)	1 117 (0.77)	0	518 (1.15)	5 301 (0.66)	4 510 (0.77)	13 819 (0.46)	0
1989.1	9 992 (0.60)	1 936 (1.34)	0	580 (0.78)	3 681 (1.02)	1 395 (0.72)	11 443 (0.48)	235 (1.05)
1989.2	2 128 (0.80)	701 (0.60)	20 (1.96)	3 093 (1.55)	1 126 (0.92)	2 972 (0.72)	12 167 (0.36)	667 (0.76)
1989.3	8 488 (1.45)	704 (0.74)	0	659 (1.62)	82 (1.18)	595 (1.38)	4 531 (0.56)	445 (1.43)
1991.1	7 664 (0.72)	583 (0.72)	106 (1.96)	176 (1.12)	425 (0.51)	2 048 (0.85)	9 068 (0.31)	10 (1.19)
1991.2	3 174 (0.45)	82 (0.85)	0	1 021 (0.93)	1 882 (0.87)	20 081 (1.33)	25 675 (0.36)	117 (1.11)
1992	11 105 (0.58)	89 (1.29)	0	1 140 (0.88)	765 (1.13)	1 546 (0.70)	25 033 (0.44)	106 (1.13)
1994	24 185 (1.44)	4 (1.96)	262 (1.96)	417 (0.62)	68 (0.81)	10 292 (0.99)	29 548 (0.37)	168 (0.70)
1995.1	3 885 (0.43)	2 113 (0.65)	113 (1.96)	376 (0.77)	3 105 (1.12)	15 510 (1.05)	14 161 (0.47)	258 (0.95)
1996	3 443 (0.44)	946 (0.87)	109 (1.96)	690 (0.81)	3 095 (0.65)	5 866 (0.51)	18 323 (0.27)	25 (1.34)
1997.1	21 454 (0.60)	496 (1.80)	0	233 (1.10)	1 592 (1.54)	9 033 (0.60)	21 952 (0.58)	1 087 (0.94)
1997.2	13 804	0	0	1 023	293	7 099	31 612	1 238
1998	29 020 (1.52)	454 (0.82)	0	198 (1.24)	9 117 (0.82)	8 609 (0.86)	63 225 (1.22)	186 (0.84)
1999	8 251 (0.66)	1 660 (0.53)	565 (1.87)	643 (0.77)	3 327 (0.86)	9 943 (0.89)	17 483 (0.38)	7 (1.06)
2000	11 002 (0.41)	3 321 (0.58)	98 (1.50)	882 (0.87)	6 824 (0.51)	5 391 (0.44)	19 310 (0.31)	290 (0.98)
2001	5 595 (0.54)	957 (0.41)	3 (1.96)	64 (1.08)	1 329 (0.60)	1 744 (0.70)	12 617 (0.53)	198 (1.36)
2002	8 190 (0.45)	667 (0.63)	0 (1.96)	233 (1.01)	2 982 (0.57)	6 334 (0.42)	22 198 (0.61)	402 (0.88)
2003	12 067 (0.52)	480 (0.61)	44 (1.96)	702 (0.73)	8 649 (1.12)	5 369 (0.41)	5 595 (0.33)	449 (0.80)
2004	12 405 (1.01)	401 (0.85)	42 (1.96)	175 (0.99)	3 494 (0.95)	6 602 (1.08)	9 583 (0.55)	969 (1.11)
2005	31 672 (0.84)	258 (0.75)	6 (1.96)	608 (0.84)	5 980 (0.77)	5 530 (0.55)	7 752 (0.31)	50 (0.87)
2006	6 453 (0.49)	991 (0.93)	35 (1.96)	446 (0.81)	4 082 (0.85)	4 850 (0.58)	11 194 (0.31)	178 (1.07)

Survey	Ommastrephidae	Sepiidae	D.macrophthalmus	D.angolensis	U.canariensis	B.auritus
1985.4	0	0	6 123 (1.31)	2 697 (0.31)	6 271 (1.83)	5 065 (1.03)
1986.1	273 (1.68)	525 (0.64)	220 (1.25)	1 314 (1.16)	2 327 (0.86)	38 045 (0.49)
1986.2	0	1 132 (1.00)	1 268 (1.46)	4 010 (0.39)	2 018 (1.15)	21 342 (0.56)
1989.1	1 236 (0.86)	64 (0.93)	6 498 (0.66)	956 (0.48)	885 (0.88)	15 038 (0.75)
1989.2	750 (0.51)	1 168 (0.41)	1 115 (0.93)	3 628 (0.48)	1 130 (0.82)	50 016 (0.80)
1989.3	1 476 (0.98)	124 (1.12)	1 530 (1.50)	1 667 (0.52)	0	37 091 (0.51)
1991.1	344 (0.63)	235 (0.46)	2 210 (0.88)	1 212 (0.40)	1 160 (1.44)	19 833 (0.57)
1991.2	693 (0.71)	561 (1.00)	17 098 (0.54)	956 (0.39)	18 422 (1.45)	1 862 (0.86)
1992	2 163 (0.35)	159 (1.16)	18 182 (0.58)	1 514 (0.32)	1 023 (0.98)	27 200 (1.32)
1994	1 041 (0.57)	1 192 (0.70)	20 365 (0.52)	2 383 (0.45)	3 280 (1.27)	2 633 (1.10)
1995.1	2 (1.69)	385 (0.70)	7 719 (0.81)	1 877 (0.79)	11 538 (1.16)	27 645 (0.57)
1996	210 (0.52)	28 (1.32)	11 195 (0.43)	1 546 (0.43)	1 077 (0.96)	18 842 (0.70)
1997.1	1 324 (0.47)	1 323 (0.94)	12 220 (1.03)	1 497 (0.37)	4 599 (0.60)	6 964 (0.85)
1997.2	285	1 245	24 314	1 198	4 995	1 953
1998	376 (0.65)	1 293 (0.58)	50 925 (1.50)	1 991 (0.38)	2 239 (0.77)	22 014 (0.95)
1999	201 (1.28)	113 (0.64)	5 178 (0.79)	1 142 (0.41)	7 996 (1.08)	94 449 (0.61)
2000	586 (0.61)	418 (0.71)	6 060 (0.76)	1 639 (0.59)	2 499 (0.51)	56 245 (0.84)
2001	186 (0.96)	178 (0.83)	5 680 (0.72)	1 670 (0.44)	1 076 (1.04)	38 567 (0.69)
2002	2 363 (0.70)	172 (0.91)	11 512 (1.16)	923 (0.47)	3 492 (0.54)	65 977 (0.75)
2003	230 (0.58)	101 (0.82)	557 (0.66)	1 046 (0.50)	1 001 (0.51)	38 261 (0.49)
2004	310 (0.89)	206 (0.65)	3 525 (1.27)	1 015 (0.41)	5 700 (1.21)	22 532 (0.40)
2005	233 (0.61)	565 (0.27)	879 (0.59)	991 (0.39)	2 279 (0.64)	36 355 (0.78)
2006	128 (0.54)	123 (1.00)	2 602 (0.42)	1 982 (0.39)	4 329 (0.65)	33 546 (0.86)



*Distribution*

Figure 4.2 shows the distribution of seabreams in the central region between Benguela and Luanda. The distribution was spread out over the whole central shelf with some higher concentrations north of Lobito.

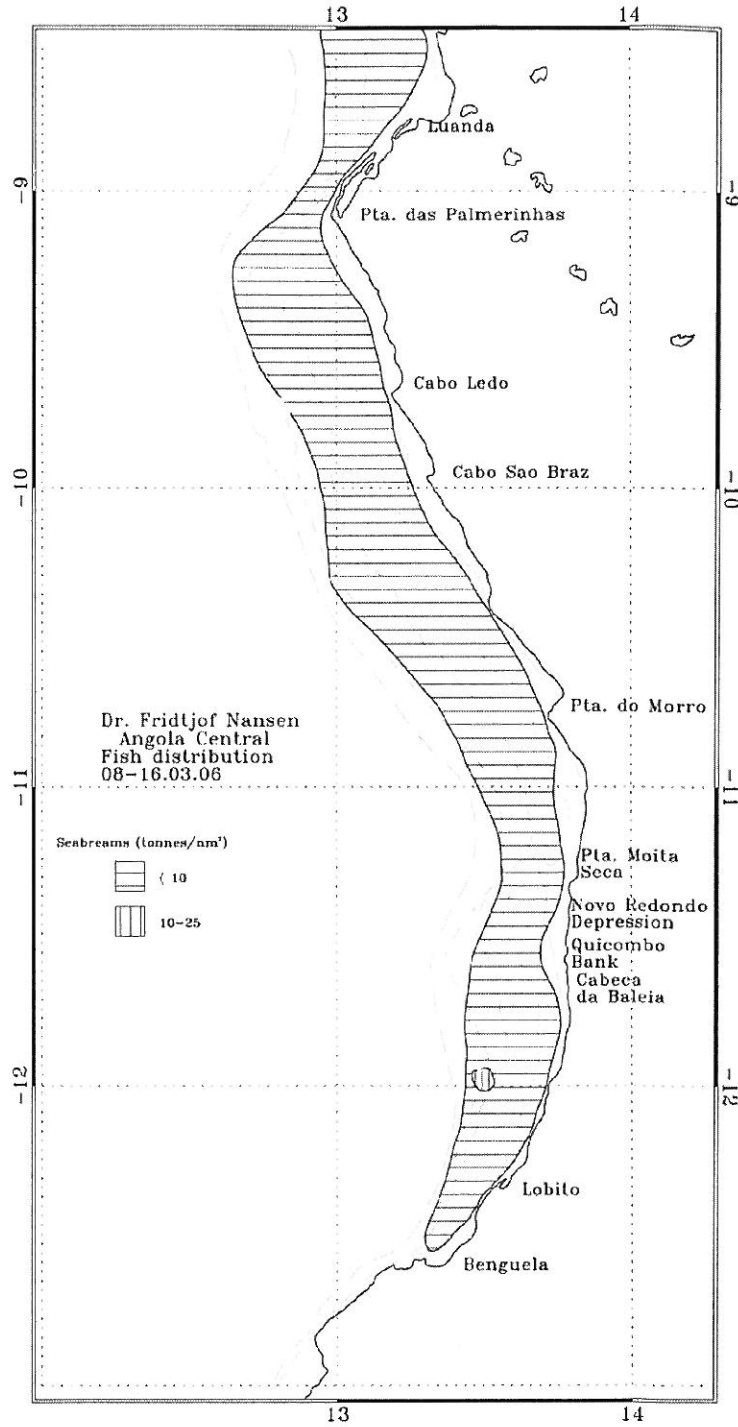


Figure 4.2 Distribution of seabreams (Sparidae) in the central region, Benguela – Luanda. Depth contours at 20, 50, 100, 200 and 500 m.

### 4.3 Luanda – Congo River shelf

The 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 some of the previous surveys the area north of Congo River was covered, but to make plausible comparisons the biomass estimates in Table 4.3 are only including trawl stations south of Congo River. A total of 50 successful swept-area trawl stations were accomplished on the shelf area in 2006 (Table 2.1).

The average catch per hour on the inner shelf was 904 kg/hour and 873 kg/hour on the outer shelf (Annex VI). The ‘demersal’ group dominated on the inner shelf with an average catch rate of 600 kg/hour and a relative contribution of 54%. The ‘pelagic’ group contributed about 26%, while shrimps and cephalopods contributed less than 0.5% and sharks to about 1%. On the outer shelf, the demersal fish contributed to 68% of the mean catch rate and the ‘pelagic’ group to about 18%. Shrimps and sharks each contributed to 0.2% and 0.1%, while the cephalopods to 0.9% of the mean catch rate. Seabreams (except *Boops boops*) were caught in all trawl stations, except two, on the shelf and the average catch rates were 35 and 81 kg/hour on the inner and outer shelf, respectively. Snappers were only caught in two stations on the inner shelf, while groupers were caught in 10 stations on the inner shelf with an average catch rate of 7 kg/hour. Further, the groupers were caught in four stations on the outer shelf. Similar, the grunts (*Pomadysys incisus* and *P. rogeri*) were caught more often on the inner shelf than on the outer shelf. The average catch rate of grunts on the inner shelf was 32 kg/hour, and 8 kg/hour on the outer shelf. Croakers, mainly *Umbrina canariensis*, were frequently caught on both the inner and outer shelf, and the average catch rates were 28 and 21 kg/hour, respectively. The most common pelagic groups on the inner shelf were clupeids, carangids, scombrids, hairtails and barracudas and the average catch rates of these groups were 34, 57, 0.6, 49 and 23 kg/hour, respectively. The average catch rates of the same species groups on the outer shelf were 2, 74, 0.1, 79 and 1 kg/hour, respectively.

#### *Biomass estimates*

Table 4.3 shows swept-area biomass estimates from 1985 to 2006 for the commercial species and groups of species on the shelf off central Angola. The biomass estimates were calculated by stratifying by depth (20-49m, 50-99m and 100-199m). The different strata have been sampled with different intensity throughout the time series and Annex VIII shows the numbers of trawls that have been carried out by strata by survey. Again, it must be noted that the biomass estimates presented for the pelagic species cannot be trusted as a good reflection of the true biomass as the species are often unavailable to the bottom trawl. Some of the biomass estimates in Table 4.3 have a high coefficient of variations (CV), which indicates that the trends in the time series should be interpreted with care.

The biomass of *T. trecae* was estimated to 5 000 tonnes, which is a considerable lower estimate than the estimates (> 9 500 tonnes) from 2002 to 2004. However, the 2006 estimate is higher than the very low 2005 estimate of only 3 800 tonnes.

As in previous surveys, no *M. polli* were caught on the northern shelf.

The 2006 biomass estimate of seabreams on the northern shelf was about 10 800 tonnes, and is considerably lower than the very high 2005 estimate of 18 300 tonnes which was the highest estimate since 1996. Compared to other surveys, the 2006 estimate is more in line

with the 2002-2004 estimates. Again, *Dentex angolensis* is the dominating seabream species in the north and contributes to about 40% of the total seabream estimate. As in previous years, the biomass of *Dentex macropthalmus* is low in the northern region and contributes marginal to the total seabream estimate. Other important seabreams are *Pagellus bellottii*, *D. canariensis* and *D. barnardi*.

The biomass estimate of croakers, mainly *Umbrina canariensis*, *Atractoscion aequidens* and *Pseudotolithus typus*, was 4 050 tonnes in 2006, which is considerably lower than the 2005 estimate of 7 950 tonnes. The recent drop in biomass is of concern as we have seen a long time increase in the biomass of croakers since 2002. Generally, the biomass of *Umbrina canariensis* has contributed to about 30-45% of the total biomass of croakers and has fluctuated in a similar way as the total biomass of croakers.

The biomass estimate of grunts (*Pomadasys incisus*, *P. jubelini* and *P. peroteti*) was 2 840 tonnes in 2006, which is a 50% reduction from 2005. The 2006 estimate is more similar to the 2002-2004 estimates, however, as for the croakers the observed reduction in biomass is of concern.

The snappers are rare in the catch as they inhabit rocky and often unavailable areas, hence the biomass estimates of snappers may not adequately reflect the state of the stock.

Groupers, mainly *Epinephelus aeneus*, are seldom found on the outer shelf, and as the high CVs indicate the biomass estimates should be considered with care. Nevertheless, the biomass estimates since 2000 have been relative stabile, and no trend in the abundance of groupers on the northern shelf can be seen from the estimates in Table 4.3.

The biomass estimate of *P. longirostris* in 2006 was 175 tonnes on the northern shelf, which is much higher than the 2005 estimate of only 5 tonnes. Further investigations are needed to explain the large variation in biomass of *P. longirostris* between surveys.

The 2006 biomass estimate of Sepiidae was 94 tonnes and is considerably smaller than the 2005 estimate of 427 tonnes. Only the estimate of the 2002 survey is lower than the 2006 estimate, and indicates that the abundance of Sepiidae is low on the northern shelf.

The biomass estimate of Ommastrephidae increased to 174 tonnes in 2006 from 146 tonnes in 2005. The annual biomass estimates vary and no clear trend in the abundance of Ommastrephidae can be seen in Table 4.3, but it seems like the biomass estimates on the central and northern shelves follow the same trends.

**Table 4.3** Biomass estimates (tonnes) of important species on the shelf (20-200 m) in the northern region. CV values are indicated in brackets.

Survey	M.poli	T.treace	Shrimps	Cephalopod	Sharks	Clupeids	Carangids	Scombrids
1985.1	9 (1.65)	4 496 (1.11)	302 (0.79)	10 463 (1.25)	498 (0.93)	364 (1.16)	9 986 (0.92)	44 (1.96)
1985.2	0	3 324 (1.17)	139 (1.88)	694 (0.57)	451 (0.64)	3 907 (1.91)	3 740 (1.04)	30 (1.64)
1985.3	3 459 (1.65)	16 486 (1.20)	1 448 (1.38)	2 046 (0.67)	870 (1.23)	205 (1.94)	17 742 (1.09)	146 (1.30)
1985.4	7 415 (1.65)	36 044 (1.14)	107 (1.37)	436 (0.72)	78 (1.55)	483 (1.15)	42 506 (1.02)	88 (1.26)
1986.1	56 (1.64)	13 438 (0.81)	1 445 (0.90)	2 853 (0.87)	496 (0.76)	2 053 (0.73)	17 950 (0.62)	30 (1.96)
1986.2	290 (1.21)	8 053 (0.37)	486 (0.72)	1 179 (0.38)	825 (0.56)	1 365 (0.67)	10 364 (0.32)	210 (0.97)
1989.1	62 (1.46)	12 681 (0.90)	92 (1.08)	931 (0.53)	497 (0.97)	1 578 (1.87)	13 264 (0.86)	97 (1.18)
1989.2	250 (1.65)	11 535 (0.66)	509 (0.61)	549 (0.38)	729 (0.85)	1 924 (0.53)	13 966 (0.57)	220 (0.98)
1989.3	1 029 (1.62)	39 959 (0.58)	256 (1.04)	1 715 (0.90)	15 984 (1.10)	5 043 (0.73)	46 704 (0.59)	208 (0.59)
1991.1	0	21 484 (0.57)	381 (1.69)	935 (0.37)	705 (0.67)	1 841 (0.96)	43 614 (0.68)	96 (1.36)
1991.2	312 (1.14)	14 727 (0.71)	2 554 (1.79)	4 225 (0.60)	107 (0.82)	55 (0.78)	14 928 (0.70)	318 (0.74)
1992	1 304 (1.04)	15 520 (0.65)	79 (1.19)	3 114 (0.38)	298 (1.10)	8 (1.96)	17 942 (0.59)	158 (0.87)
1994	51 (1.21)	14 309 (0.81)	478 (1.40)	3 643 (0.48)	52 (1.09)	184 (1.96)	21 225 (0.62)	337 (0.87)
1995.1	127 (1.17)	305 (0.80)	951 (0.98)	451 (0.40)	679 (0.64)	1 369 (0.79)	7 078 (0.69)	181 (0.81)
1996	0	32 155 (0.54)	347 (0.64)	2 203 (0.33)	256 (0.67)	782 (1.62)	33 700 (0.51)	137 (1.14)
1997.1	25 (1.50)	37 093 (0.51)	474 (0.89)	6 218 (0.50)	758 (0.67)	6 391 (1.14)	130 055 (0.87)	288 (1.18)
1999	6 (1.17)	4 106 (0.47)	326 (0.96)	1 202 (0.35)	1 297 (0.54)	6 392 (0.60)	16 570 (0.54)	36 (1.65)
2000	12 (1.65)	6 583 (0.56)	150 (0.92)	609 (0.65)	3 302 (1.70)	619 (1.54)	22 483 (0.88)	70 (1.20)
2001	6 (1.65)	5 502 (0.87)	212 (0.80)	866 (0.88)	391 (0.74)	517 (0.71)	9 560 (0.71)	37 (0.93)
2002	0	9 765 (0.52)	52 (0.52)	956 (0.51)	178 (0.64)	1 442 (0.57)	13 125 (0.41)	75 (0.61)
2003	0	9 766 (0.53)	497 (0.81)	481 (0.57)	243 (0.51)	2 816 (0.60)	28 286 (0.94)	81 (1.64)
2004	0 (1.65)	9 146 (0.49)	196 (1.14)	1 059 (0.26)	492 (0.44)	1 567 (0.70)	12 764 (0.42)	22 (1.00)
2005	0	3 792 (0.52)	146 (0.66)	1 674 (0.31)	734 (0.31)	599 (0.79)	10 292 (0.63)	116 (1.11)
2006	0	5 078 (0.42)	320 (0.99)	1 024 (0.33)	556 (0.84)	2 388 (0.90)	11 445 (0.37)	50 (0.86)

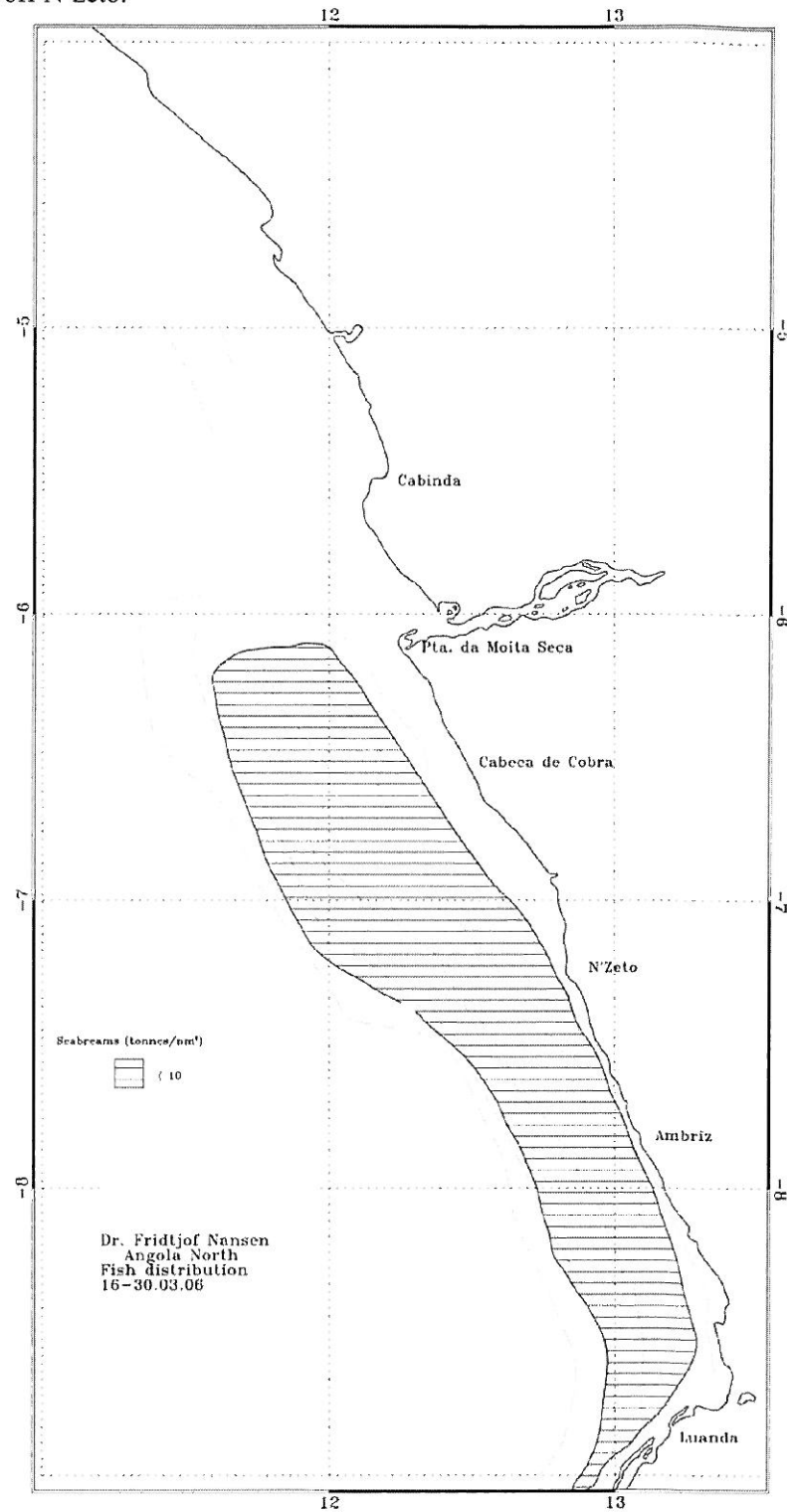
Survey	Hairtails	Barracudas	Snappers	Groupers	Grunts	Croakers	Seabreams	P.longirostris
1985.1	15 711 (0.87)	254 (0.90)	0	479 (1.09)	248 (1.02)	1 519 (1.00)	14 690 (0.57)	117 (1.38)
1985.2	1 200 (1.65)	75 (0.81)	63 (1.26)	1 771 (0.78)	381 (1.31)	1 302 (1.10)	12 881 (0.34)	0
1985.3	2 709 (0.73)	26 (1.65)	62 (1.96)	1 978 (0.84)	3 629 (0.94)	8 695 (0.94)	20 897 (0.67)	0
1985.4	3 608 (0.70)	780 (1.46)	0	3 054 (0.63)	14 806 (1.14)	3 692 (0.93)	31 078 (0.45)	10 (1.65)
1986.1	8 078 (1.11)	2 080 (0.67)	434 (1.96)	676 (0.80)	1 231 (0.98)	2 307 (0.97)	17 193 (0.40)	521 (1.09)
1986.2	8 640 (0.82)	756 (0.51)	0	1 515 (0.51)	1 694 (0.59)	5 049 (0.37)	25 098 (0.28)	0
1989.1	2 277 (0.71)	345 (0.80)	0	989 (1.17)	135 (0.96)	4 469 (0.88)	12 958 (0.37)	60 (1.29)
1989.2	3 712 (0.46)	2 973 (0.89)	33 (1.64)	841 (0.68)	1 102 (0.72)	3 231 (0.34)	7 283 (0.34)	22 (0.90)
1989.3	21 132 (1.13)	364 (1.02)	316 (1.96)	315 (0.73)	1 788 (0.86)	4 214 (0.70)	15 344 (0.58)	31 (1.50)
1991.1	11 448 (0.88)	2 739 (1.40)	0	642 (0.92)	822 (0.85)	3 797 (0.83)	4 826 (0.23)	0
1991.2	4 949 (0.57)	79 (1.27)	0	1 022 (0.69)	860 (1.21)	6 450 (0.93)	15 741 (0.39)	129 (0.94)
1992	4 588 (0.47)	14 (1.29)	0	1 844 (0.80)	932 (0.90)	2 778 (0.59)	14 551 (0.22)	49 (1.65)
1994	4 423 (0.45)	325 (1.03)	0	2 474 (0.75)	612 (0.83)	4 095 (0.80)	19 599 (0.47)	478 (1.40)
1995.1	7 208 (0.58)	2 109 (1.10)	481 (1.50)	807 (0.70)	2 921 (1.08)	2 882 (0.73)	8 341 (0.30)	477 (1.13)
1996	3 939 (0.43)	89 (1.35)	0	2 002 (0.97)	5 161 (0.90)	9 292 (0.49)	19 985 (0.68)	10 (1.60)
1997.1	6 323 (0.41)	57 (1.70)	73 (1.96)	549 (0.76)	4 836 (1.05)	12 451 (0.53)	9 009 (0.28)	124 (1.38)
1999	14 001 (0.39)	2 711 (0.70)	5 (1.64)	1 011 (0.60)	5 600 (0.80)	8 528 (0.91)	13 304 (0.25)	113 (0.79)
2000	4 216 (0.75)	1 231 (1.37)	196 (1.64)	620 (0.48)	388 (0.98)	2 450 (0.66)	13 424 (0.35)	18 (0.91)
2001	17 036 (0.94)	856 (0.86)	723 (1.91)	793 (0.97)	2 271 (1.04)	1 458 (0.80)	8 928 (0.40)	101 (0.86)
2002	19 374 (0.60)	1 651 (0.78)	63 (1.96)	509 (0.88)	241 (0.54)	2 834 (0.53)	9 187 (0.35)	21 (1.00)
2003	6 716 (0.56)	2 344 (1.34)	142 (1.96)	334 (0.68)	1 375 (0.60)	8 078 (0.62)	11 346 (0.33)	62 (1.42)
2004	4 668 (0.47)	1 455 (1.15)	37 (1.87)	502 (0.63)	3 316 (0.86)	5 545 (0.74)	11 924 (0.28)	6 (1.28)
2005	5 632 (0.54)	705 (1.35)	278 (1.27)	568 (0.40)	5 754 (0.96)	7 949 (0.59)	18 282 (0.25)	5 (0.87)
2006	11 299 (0.39)	1 570 (0.61)	16 (1.82)	372 (0.71)	2 839 (0.77)	4 087 (0.57)	10 872 (0.25)	176 (1.42)

Survey	Ommastrephidae	Sepiidae	D.macrophthalmus	D.angolensis	U.canariensis	B.auritus
1985.1	10 273 (1.27)	0	200 (1.65)	2 196 (0.55)	1 132 (1.21)	40 729 (1.15)
1985.2	0	0	0	2 495 (0.57)	521 (1.46)	6 842 (1.40)
1985.3	0	154 (0.97)	0	2 949 (0.69)	602 (1.14)	9 182 (1.20)
1985.4	84 (1.34)	215 (1.28)	125 (1.64)	6 371 (0.97)	2 650 (0.95)	64 007 (1.08)
1986.1	1 531 (1.23)	808 (0.72)	2 058 (0.56)	3 814 (0.54)	279 (0.74)	95 679 (0.32)
1986.2	0	696 (0.60)	1 483 (0.48)	11 220 (0.35)	1 350 (0.48)	15 408 (0.45)
1989.1	506 (0.85)	286 (0.94)	0	1 612 (0.34)	542 (0.80)	5 450 (0.97)
1989.2	161 (0.53)	272 (0.72)	222 (0.87)	2 299 (0.57)	172 (0.54)	14 252 (0.46)
1989.3	1 661 (0.93)	45 (1.08)	100 (0.95)	2 614 (0.46)	1 194 (1.37)	51 225 (0.66)
1991.1	368 (0.53)	261 (0.72)	158 (1.06)	1 317 (0.37)	496 (0.72)	28 701 (0.70)
1991.2	2 092 (1.05)	226 (0.74)	690 (0.95)	3 198 (0.41)	4 375 (1.32)	1 661 (1.75)
1992	1 071 (0.40)	901 (0.64)	1 532 (1.10)	5 112 (0.26)	680 (0.65)	7 599 (1.38)
1994	441 (0.35)	1 910 (0.45)	1 741 (0.78)	3 451 (0.37)	2 740 (1.13)	7 572 (1.14)
1995.1	72 (0.58)	236 (0.48)	197 (1.11)	2 143 (0.38)	342 (1.15)	12 801 (0.74)
1996	589 (0.27)	106 (1.19)	2 169 (0.80)	4 303 (0.40)	2 073 (1.15)	26 804 (1.21)
1997.1	1 017 (0.71)	4 468 (0.68)	323 (0.78)	2 837 (0.41)	1 161 (0.79)	39 107 (0.51)
1999	391 (0.45)	254 (0.55)	146 (0.76)	2 881 (0.19)	3 582 (1.45)	37 727 (0.43)
2000	214 (0.83)	46 (0.66)	65 (0.86)	4 053 (0.77)	1 271 (1.08)	23 205 (0.70)
2001	98 (0.51)	196 (0.63)	417 (0.85)	1 228 (0.39)	188 (1.36)	12 638 (0.64)
2002	660 (0.72)	67 (0.64)	102 (1.18)	2 089 (0.52)	835 (0.83)	15 791 (0.65)
2003	115 (0.80)	198 (1.36)	16 (0.80)	3 491 (0.28)	3 239 (1.27)	65 601 (0.89)
2004	344 (0.42)	185 (0.83)	79 (1.12)	5 214 (0.39)	1 236 (0.53)	21 131 (1.15)
2005	146 (0.33)	427 (0.51)	136 (0.84)	6 727 (0.17)	3 640 (0.76)	51 440 (1.04)
2006	174 (0.77)	94 (0.61)	7 (1.34)	4 630 (0.20)	2 151 (0.93)	61 138 (0.66)

*Distribution*

Seabreams were distributed on the whole northern shelf (Figure 4.3). The highest densities were found off N'zeto.



**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, DISTRIBUTION, COMPOSITION AND BIOMASS ESTIMATES OF DEEP-WATER SHRIMP AND HAKE ON THE SLOPE

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The slope is in the report defined to be between 201 and 800 m bottom depth. The trawl positions are mapped in Figure 2.1-2.3, and station information and catch by species are presented in Annex I.

Pooled length distributions weighted by the catch of the main species by sector region are shown in Annex II. Further, the mean densities (tonnes $\text{NM}^{-2}$ ) and the frequency of occurrence of the most important species are shown in Annex III. Annex V shows the various NAN-SIS species codes used for species and groups of species, and Annex VI presents the catch rates of these species and species groups.

### 5.1 Cunene – Tombua slope

Five trawl stations were sampled on the southern slope (Annex VI), as the slope is very steep and makes trawling difficult. The average catch per hour was 1781 kg/hour, and the 'demersal' and 'pelagic' groups contributed to 12 and 0.4%, respectively. The "other" group (non-commercial species) dominated the catches and contributed to 88% of the mean catch rate. The cephalopods contributed to 2%, and the shrimps and sharks to 0.3 and 1%, respectively. No seabreams were caught on the slope, whilst hake (*Merluccius spp.*) was caught at four stations with an average catch rate of 12 kg/hour. *A. varidens* and *N. africana* were found in respectively one and two catches.

#### *Biomass estimates*

Table 5.1 shows the time series from 1986 to 2006 of the swept-area biomass estimates for different species and species groups on the southern slope. Only stations in the depth range 200-600m were included in the biomass estimates, and as the numbers of trawl stations on the southern slope is very low no stratifying by depth are carried out. This is reflected in the high coefficients of variation (Table 5.1) and indicates that the trends in the time series should be interpreted with care.

The southern slope has not been systematically surveyed during the years, and the low sampling effort makes the estimates imprecise and any biomass comparison difficult. However, as the trawl station positions of the 2000, 2003-2006 surveys are quite similar, the biomass estimates of these surveys may indicate annual changes in the abundance.

The biomass estimates of hake have fluctuated since 2000, and the 2005 estimate was 85% smaller than the 2004 estimate (Table 5.1). In 2006, the survey catches indicated that the hake biomass had improved since 2005, but there is no clear and conclusive trend in the time series. Note that during the 2000 survey all hakes were identified as *M. polli* even though *M. capensis* have dominated the catches in all other surveys. Therefore, it is likely that the hakes were misidentified in 2000.

No seabreams, and no commercial important shrimp species were caught on the southern slope (200-600 m) in 2006. The horse mackerel estimate in 2006 was considerably higher than the previous estimates (except for the 1991.2 survey), but the bottom trawl survey may not reflect the abundance of a pelagic species such as horse mackerel.

Both shark and cephalopods biomass estimates in 2006 were marked lower than the 2005 estimates, however, the high coefficients of variation (Table 5.1) indicate that these estimates are very unreliable.

**Table 5.1** Biomass estimates (tonnes) of important species group on the slope (200-600 m) in the southern region. CV values are indicated in brackets.

Survey	Hake	Horsemackerel	Shrimps	Cephalopod	Sharks	Seabreams	P.longirostris	A.vandens
1986.1	2754 (0.84)	26 (1.00)	182 (0.16)	15 (1.00)	66 (0.40)	1261 (0.95)	0	106 (1.00)
1991.1	3285 (0.52)	62 (0.02)	47 (0.43)	43 (0.14)	463 (0.33)	325 (0.83)	21 (0.77)	0
1991.2	19798 (0.62)	549 (0.48)	0	0	506 (0.68)	2669 (0.08)	0	0
1992	10793 (0.82)	58 (1.00)	235 (0.88)	0	49 (0.19)	2035 (1.00)	15 (1.00)	161 (1.00)
1997.2	3411	13	13	0	917	413	13	0
2000	3358 (0.86)	0	44 (0.84)	0	73 (0.47)	0	44 (0.84)	0
2002	1245	0	20	14	104	0	0	0
2003	454 (1.00)	0	156 (0.91)	0	226 (0.34)	0	79 (1.00)	0
2004	5749 (0.53)	50 (0.62)	97 (0.40)	34 (0.93)	40 (0.97)	579 (0.57)	57 (0.75)	30 (1.00)
2005	882 (0.48)	24 (0.84)	134 (0.71)	15 (1.00)	56 (0.62)	0	3 (0.55)	57 (0.87)
2006	4507 (0.96)	169 (0.66)	72 (1.00)	0	5 (1.00)	0	0	0

*Distribution*

Figure 5.1 shows the distribution of hake (*Merluccius spp.*) in the southern region. The distribution covers large parts of the outer shelf and the slope from Cunene to Baía Dos Tigres. The highest densities were found just north off the mouth of Cunene River, and the distribution is very similar to the 2005 distribution.

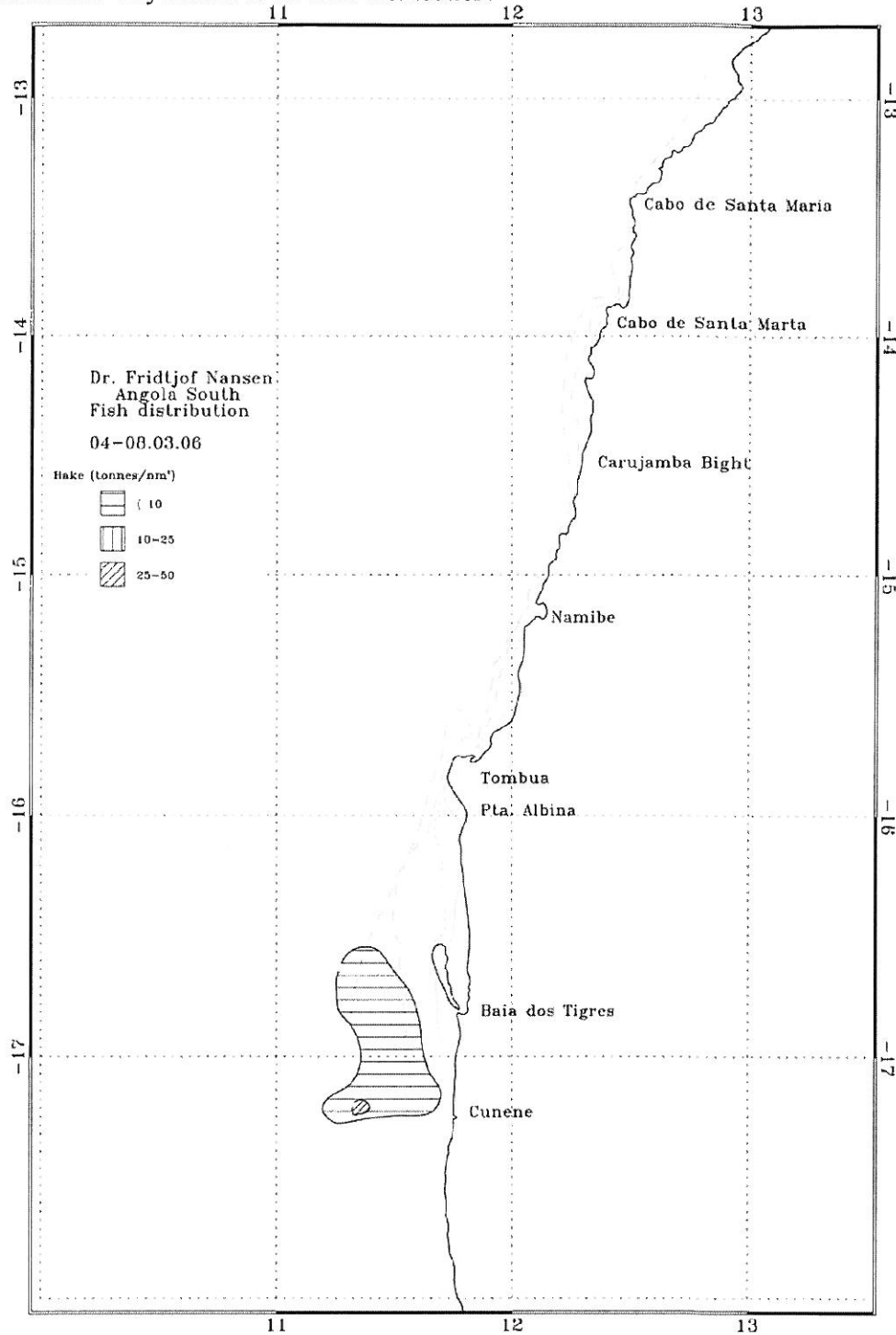


Figure 5.1 Distribution of hake (*Merluccius spp.*) in the southern region, Cunene - Tombua. Depth contours at 20, 50, 100 and 200 m.



## 5.2 Benguela – Luanda slope

The central region of Angolan waters is from Benguela to Luanda, and a total of 24 successful swept-area trawl stations were accomplished on the central slope (Table 2.1).

The average catch rate on the slope was 591 kg/hour (Annex VI). The ‘demersal’ group contributed to 23% of the mean catch rate and the ‘pelagic’ group to 16%, and the shrimps contributed to 18%, and cephalopods and sharks each contributed 1%. The “other” group dominated the catches and contributed to 54% of the total mean catch rate. *M. polli* was caught in almost every station on the central slope and the average catch rate was 108 kg/hour. The average catch rate of seabreams was 20 kg/hour, but the group was only caught at three stations, and only *D. macrophthalmus* and *D. angolensis* of the seabreams were caught on the central slope. The averages catch rates of the three shrimp species *P. longirostris*, *A. varidens* and *N. africana* were respectively 13, 5 and 85 kg/hour.

### *Biomass estimates*

Biomass estimates in tonnes of the most important species groups are presented in Table 5.2. The biomasses were calculated by stratifying by depth (200-299, 300-399, 400-499, 500-599, 600-699 and 700-799m). The CVs are weighted by stratum size.

The various strata have been sampled with different intensity throughout the time series and Annex VIII shows the numbers of trawls that have been done by strata and survey. The biomass estimates of the pelagic species may not reflect the true biomass, as pelagic species are often to high in the water column to be available for the bottom trawl. Some of the biomass estimates in Table 5.2 have a high coefficient of variations (CV), which indicates that the trends in the time series should be interpreted with care.

Seabreams were only found in a few stations in the shallow area of the slope (<280m), and due to the high CVs care should be taken when comparing the biomass estimates of seabreams on the central slope. However, the 2006 estimate was 2 400 tonnes, which is considerably smaller than the 2004 and 2005 estimates of 10 800 and 6 500 tonnes, respectively. As in previous surveys, *D. macrophthalmus* was the most abundant seabream species on the central slope in 2006.

The 2006 biomass estimate of hake was 7 000 tonnes, but a large component of the biomass consists of small and medium sized fish. In 2004, the estimate of *M. polli* was 16 100 tonnes, but decreased with 37% from 2004 to 2005, and further with 30% from 2005 to 2006. The reasons of the reduction in biomass are not clear, but the large decline is of concern.

*P. longirostris* is distributed in depths between 200 and 400 m, and the biomass has increased from 340 tonnes in 2002 to about 1 300 tonnes in 2006 on the central slope. However, the high CV (1.36) indicates that the large 2006 biomass estimate is imprecise.

The 2006 biomass estimate of *A. varidens* was 360 tonnes, which is 55% lower than the 2005 estimate of 790 tonnes. The biomass increased from 2002 to 2005, but the large decline from 2005 to 2006 may indicate a too high mortality.

In contrast to the two previous shrimp species, the *N. africana* is not commercial important, however, the 2006 biomass estimate was 5 300 tonnes and only insignificant smaller than the

2005 estimate. Compared to years previous to 2004, the most recent surveys indicate that the abundance of *N. africana* is relatively large.

The biomass estimate of Ommastrephidae in 2006 was 460 tonnes on the central slope, which is relatively similar to the 2005 estimate of 510 tonnes. The estimates have increased from 2001, and although the CVs are very high, it seems likely that the abundance of Ommastrephidae has improved on the central slope.

Hairtails is mainly caught in the shallower areas of the slope, and the 2006 biomass estimate was 950 tonnes, which is considerable smaller than the 2004 and 2005 estimates (Table 5.2).

The biomass estimate of the sharks in 2006 was 370 tonnes, which is a small increase from the 2005 estimate of 307 tonnes. However, no clear long time trend in the abundance of sharks is seen, as indicated in Table 5.2.

**Table 5.2** Biomass estimates (tonnes) of important species on the slope (200-800 m) in the central region. CV values are indicated in brackets.

Survey	M.poli	Shrimps	Cephalopod	Sharks	Hairtails	Seabreams
1985.4	18 790 (1.03)	2 916 (1.20)	301 (1.10)	17 (2.47)	420 (1.56)	253 (1.25)
1986.1	17 757 (0.74)	6 306 (0.70)	1 003 (0.85)	557 (0.88)	16 (2.27)	972 (2.14)
1986.2	24 611 (0.00)	13 247 (0.00)	57 (0.00)	0	498 917 (0.00)	6 446 (0.00)
1989.1	2 803 (1.26)	1 008 (0.95)	39 (0.76)	65 (0.69)	60 (2.06)	804 (2.17)
1989.2	4 940 (0.81)	1 963 (0.84)	277 (1.34)	263 (1.17)	142 (0.59)	58 (1.64)
1989.3	12 633 (1.00)	1 546 (0.57)	410 (0.76)	3 247 (0.34)	35 703 (0.01)	435 (0.98)
1991.1	11 939 (0.33)	4 950 (0.35)	315 (0.45)	732 (0.54)	2 606 (2.13)	780 (2.05)
1991.2	10 539 (0.52)	3 016 (0.55)	114 (0.82)	1 487 (0.88)	395 (1.25)	488 (1.12)
1992	6 999 (0.28)	4 436 (0.60)	189 (0.51)	2 920 (0.88)	410 (1.28)	496 (1.03)
1994	3 803 (0.71)	3 457 (0.69)	219 (0.60)	707 (0.60)	1 213 (0.82)	1 188 (1.50)
1995.1	4 391 (0.41)	4 480 (0.69)	214 (0.79)	1 216 (0.91)	1 145 (0.53)	6 264 (1.24)
1995.2	4 791 (0.38)	4 323 (0.25)	153 (0.46)	1 068 (0.44)	2 235 (1.21)	1 291 (0.66)
1996	6 440 (0.74)	6 457 (0.59)	97 (0.90)	1 581 (0.89)	244 (0.62)	1 016 (0.47)
1997.1	10 375 (0.59)	6 969 (0.37)	538 (0.64)	1 214 (0.87)	902 (1.01)	1 858 (1.14)
1997.2	8 363 (0.34)	2 690 (0.53)	166 (0.28)	42 (1.23)	1 013 (0.21)	5 045 (1.25)
1998	9 991 (0.50)	9 048 (0.39)	428 (0.76)	812 (0.63)	1 840 (1.46)	1 643 (1.06)
1999	2 995 (0.74)	1 806 (0.49)	343 (0.63)	728 (0.91)	728 (0.61)	2 900 (0.82)
2000	5 482 (0.60)	2 445 (0.45)	717 (0.50)	639 (0.74)	871 (0.91)	2 059 (1.01)
2001	4 763 (0.81)	2 575 (0.72)	623 (0.66)	818 (1.77)	297 (1.05)	767 (1.43)
2002	3 012 (0.65)	3 749 (0.60)	469 (0.64)	212 (0.92)	269 (0.57)	2 418 (1.98)
2003	7 155 (0.90)	4 086 (0.83)	420 (0.64)	104 (1.02)	178 (1.33)	606 (1.55)
2004	16 127 (0.77)	7 350 (0.42)	444 (0.85)	476 (1.51)	1 581 (1.06)	10 840 (2.00)
2005	10 074 (0.58)	7 135 (0.37)	578 (1.03)	307 (0.46)	2 655 (1.55)	6 468 (2.11)
2006	6 967 (0.71)	7 180 (0.38)	623 (1.02)	366 (0.85)	954 (0.86)	2 422 (1.85)

Survey	P.longirostris	A.varidens	N.africanus	Ommastrephidae	D.macrophthalmus	D.angolensis
1985.4	886 (1.47)	942 (2.08)	714 (1.21)	0	39 (2.37)	215 (1.41)
1986.1	653 (0.89)	492 (0.90)	3 173 (1.25)	74 (1.13)	499 (2.10)	474 (2.18)
1986.2	0	0	0	0	6 446 (0.00)	0
1989.1	181 (1.22)	194 (1.13)	592 (1.86)	39 (0.76)	804 (2.17)	0
1989.2	505 (0.84)	228 (0.74)	1 020 (1.45)	240 (1.66)	26 (2.37)	33 (2.27)
1989.3	375 (0.32)	194 (0.68)	958 (1.01)	409 (0.77)	324 (1.14)	110 (2.13)
1991.1	204 (0.75)	653 (0.21)	3 879 (0.45)	195 (0.75)	706 (2.09)	74 (1.79)
1991.2	190 (0.57)	105 (1.53)	2 659 (0.63)	114 (0.82)	249 (1.79)	239 (1.88)
1992	610 (0.95)	366 (0.63)	3 224 (0.79)	141 (0.61)	358 (1.42)	138 (1.87)
1994	579 (0.85)	647 (0.67)	2 199 (1.07)	168 (0.59)	1 113 (1.55)	40 (2.27)
1995.1	425 (0.95)	753 (0.45)	2 460 (1.32)	30 (1.34)	6 037 (1.30)	226 (0.98)
1995.2	479 (0.45)	699 (0.23)	2 790 (0.36)	85 (0.64)	1 196 (0.73)	95 (1.42)
1996	114 (0.53)	671 (0.37)	4 971 (0.71)	41 (0.67)	974 (0.48)	42 (2.27)
1997.1	685 (0.50)	305 (0.54)	4 093 (0.88)	474 (0.65)	1 700 (1.29)	158 (1.61)
1997.2	2 679 (0.54)	0	11 (2.27)	134 (0.24)	4 864 (1.25)	180 (1.10)
1998	556 (0.63)	1 191 (1.10)	7 000 (0.52)	389 (0.84)	1 549 (1.15)	94 (2.23)
1999	214 (0.87)	337 (1.06)	1 206 (0.75)	315 (0.61)	2 806 (0.87)	94 (1.60)
2000	455 (1.05)	379 (0.35)	1 043 (1.02)	426 (0.57)	1 954 (1.01)	105 (1.44)
2001	186 (0.44)	456 (0.63)	517 (2.35)	340 (1.08)	663 (1.70)	102 (2.27)
2002	341 (1.23)	243 (0.52)	3 039 (0.75)	242 (0.77)	2 307 (2.19)	111 (2.27)
2003	223 (0.44)	498 (1.07)	3 284 (1.02)	409 (0.65)	514 (1.97)	92 (2.27)
2004	419 (1.08)	576 (0.44)	6 204 (0.47)	350 (1.04)	10 265 (2.24)	572 (2.27)
2005	574 (0.71)	792 (0.41)	5 640 (0.46)	510 (1.15)	6 260 (2.19)	208 (1.43)
2006	1 330 (1.36)	359 (0.35)	5 351 (0.38)	457 (1.08)	2 138 (2.23)	284 (2.27)

*Distribution*

Figure 5.2 shows the distribution of hake (*Merluccius polli*) in the central region. The distribution covers the whole central slope and is similar to the observations of last year survey. The hake stock mainly covers areas deeper than 200 m, the highest densities were found between Pta. do Morro and Lobito, and north of Pta. das Palmerinhas, in the depths between 300 and 500 m. The distribution is very similar to the 2004 and 2005 distributions.

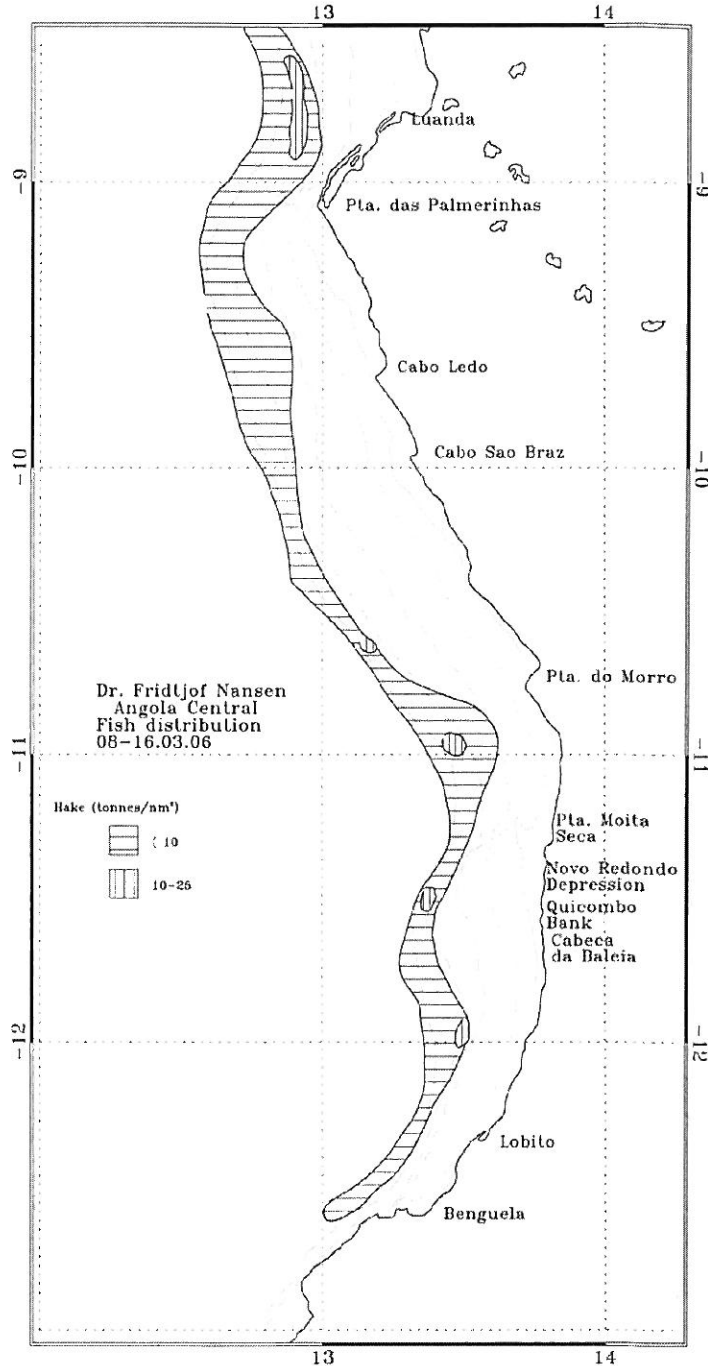


Figure 5.2 Distribution of Benguela hake (*Merluccius polli*) in the central region, Benguela-Luanda. Depth contours at 20, 50, 100, 200 and 500 m.

### 5.3 Luanda – Congo River slope

The survey covered the northern region of Angolan waters from Luanda to Congo River, and a total of 30 successful swept-area trawl stations were accomplished on the northern slope (Table 2.1). The area north of Congo River is inaccessible to fisheries surveys due to the restricted oil exploitation areas. Although the area has been covered in some previous surveys, only stations south of the Congo River were included in the time series of biomass presented in Table 5.3. The various strata have been sampled with variable intensity throughout the time series, and Annex VIII shows the numbers of trawls by strata by survey.

The average catch per hour of all species was 819 kg/hour (Annex VI), and the ‘demersal’ group contributed to 12% of the mean catch rate, the ‘pelagic’ group to 2.7%, and the shrimps, cephalopods and sharks each contributed to 16, 0.5 and 1.2%, respectively. The “other” group dominated the catches and contributed to 68% of the total mean catch rate. *M. polli* was caught in all stations, except two, and the average catch rate was 79 kg/hour. Seabreams was only caught at four stations on the northern slope, and the average catch rate of seabreams (which consisted almost entirely of *D. angolensis*) was 3 kg/hour. The averages catch rates of the three shrimp species *P. longirostris*, *A. varidens* and *N. africana* were respectively 9, 4 and 112 kg/hour.

#### *Biomass estimates*

Biomass estimates in tonnes of the most important species groups are presented in Table 5.3. The biomasses were calculated by stratifying by depth (200-299, 300-399, 400-499, 500-599, 600-699 and 700-799m). The CVs are weighted by stratum size.

Pelagic species are often not available for the bottom trawl as the fish swim to high above the seabed and the biomass estimates of the pelagic species may reflect their availability to the trawl and not only their abundance. Some of the biomass estimates in Table 5.3 have a high coefficient of variations (CV), which indicates that the trends in the time series should be interpreted with care.

Seabreams were only found in four stations in the shallow area of the slope (<270m), and as a result of the large variability in the catch rates the CVs are very high. The biomass estimate of seabreams in 2005 was about 340 tonnes, which is considerably lower than the 2005 estimate of 560 tonnes. The slope is not within the main distribution of seabreams, and there is no clear trend the time series of the biomass estimates. As in previous surveys, the *D. angolensis* was the most abundant seabream on the northern slope.

The biomass estimates of *M. polli* has decreased since 2004, and the 2006 estimate of 7 600 tonnes is considerably smaller than both the 2004 and 2005 estimates of 15 300 and 11 000 tonnes, respectively.

*P. longirostris* is distributed in depths between 200 and 400 m, and the biomass show a small decrease from 800 tonnes in 2002 to about 920 tonnes in 2006 on the northern slope. However, the high CVs indicate that the estimates are not very precise.

The 2006 biomass estimate of *A. varidens* was 391 tonnes, which is 39% lower than the 2005 estimate of 639 tonnes. Still, the 2006 biomass estimate is considerably higher than the 2002 estimate, but the large decrease from to 2005 to 2006 is a reason for concern.

The *N. africana* is not commercial important, however, the 2006 biomass of about 11 000 tonnes estimate is the highest estimate since 1997. Compared to the estimates of 2000-2003, the most recent surveys indicate a high and stable abundance of *N. Africana*.

It is clear that there has been a marked decrease in the biomass of Ommastrephidae as the biomass estimate of Ommastrephidae in 2006 was only 184 tonnes, which is the lowest estimate since the beginning of the 1990s'.

Hairtails is mainly caught in the shallower areas of the slope, and the 2006 biomass estimate of 2140 tonnes, which is higher than the 2003-2005 estimates, but still considerably smaller than the 2002 estimate. The high CVs and the annual variability in the biomass estimates make it difficult to conclude on the trend in biomass in recent years.

The biomass estimate of the sharks in 2006 was 930 tonnes, which is a decrease from the 2005 estimate of 1 180 tonnes. However, no clear long time trend in the abundance of sharks on the northern shelf is evident.

**Table 5.3** Biomass estimates (tonnes) of important species on the slope (200-800 m) in the northern region. CV values are indicated in brackets.

Survey	M.pollii	Shrimps	Cephalopod	Sharks	Hairtails	Seabreams
1985.1	202	21	976	344	0	0
1985.3	3 065 (0.86)	767 (1.27)	251 (0.68)	209 (1.36)	511 (2.38)	1 541
1985.4	26 753 (0.95)	11 989 (0.48)	260 (1.25)	0	1 342 (0.67)	0
1986.1	11 409 (0.39)	14 960 (0.25)	1 630 (0.81)	3 724 (1.41)	3 383 (0.64)	108 (2.02)
1986.2	27 562 (0.67)	7 854 (0.56)	277 (0.85)	4 431 (0.75)	3 228 (0.61)	288 (2.27)
1989.1	13 518 (0.78)	7 772 (1.34)	1 631 (1.23)	2 376 (1.44)	795 (0.81)	66 (2.27)
1989.2	8 168 (0.42)	4 370 (0.67)	166 (1.11)	375 (1.39)	352 (1.45)	4 061 (2.24)
1989.3	11 265 (0.91)	5 137 (0.36)	657 (1.05)	2 372 (0.57)	1 579 (1.97)	497 (1.79)
1991.1	19 540 (0.65)	8 671 (0.68)	135 (1.45)	1 376 (1.25)	65 (1.03)	49 (1.66)
1991.2	19 498 (0.67)	2 732 (0.34)	991 (1.05)	2 381 (0.80)	699 (0.61)	527 (0.66)
1992	13 290 (0.44)	8 992 (0.74)	209 (0.69)	1 462 (1.01)	1 148 (0.55)	510 (0.90)
1994	4 096 (0.48)	7 529 (0.61)	328 (0.48)	841 (0.66)	1 753 (0.37)	1 045 (0.91)
1995.1	5 892 (1.01)	9 641 (0.56)	316 (1.55)	1 367 (0.52)	2 284 (0.72)	506 (0.98)
1996	5 065 (0.31)	4 435 (0.43)	566 (1.03)	307 (0.71)	1 627 (0.69)	597 (1.43)
1997.1	6 954 (0.28)	14 107 (0.38)	659 (0.35)	824 (1.12)	3 399 (1.26)	871 (1.08)
1997.2	8 101 (0.39)	5 676 (1.67)	330 (1.80)	10 (2.27)	1 972 (1.37)	878 (2.27)
1999	3 624 (0.52)	11 539 (0.52)	1 142 (1.49)	1 060 (0.43)	3 088 (0.83)	389 (0.58)
2000	4 386 (0.54)	4 840 (0.48)	713 (0.47)	604 (0.88)	1 887 (1.09)	1 650 (2.05)
2001	4 840 (0.71)	8 283 (0.73)	1 477 (1.55)	1 966 (1.23)	1 531 (0.74)	494 (2.27)
2002	3 479 (0.60)	6 415 (0.74)	625 (0.87)	118 (0.74)	3 022 (1.01)	213 (1.45)
2003	5 310 (0.76)	7 986 (0.38)	421 (0.61)	1 305 (1.29)	1 237 (1.15)	141 (1.10)
2004	15 327 (1.33)	12 343 (0.33)	871 (0.70)	1 571 (0.78)	1 695 (0.57)	299 (0.69)
2005	10 994 (0.60)	10 285 (0.35)	382 (0.53)	1 180 (1.00)	1 468 (0.44)	562 (0.81)
2006	7 553 (0.51)	12 526 (0.37)	407 (0.55)	931 (1.59)	2 143 (0.74)	343 (0.95)

Survey	P.longirostris	A.varidens	N.africanus	Ommastrephidae	D.macrophthalmus	D.angolensis
1985.1	21	0	0	976	0	0
1985.3	0	0	0	0	0	1 541
1985.4	2 108 (0.88)	6 691 (0.69)	2 864 (0.90)	142 (1.78)	0	0
1986.1	1 166 (1.29)	538 (2.09)	12 631 (0.23)	261 (0.33)	10 (2.27)	98 (2.27)
1986.2	0	1 008 (0.48)	4 643 (0.88)	0	19 (2.27)	269 (2.27)
1989.1	419 (1.15)	204 (0.50)	6 953 (1.48)	1 429 (1.40)	0	0
1989.2	366 (1.01)	164 (1.14)	3 682 (0.81)	135 (1.37)	23 (2.27)	4 038 (2.26)
1989.3	243 (0.67)	91 (0.40)	4 699 (0.38)	645 (1.07)	2 (2.27)	496 (1.80)
1991.1	88 (1.00)	70 (1.37)	8 315 (0.72)	129 (1.47)	0	49 (1.66)
1991.2	205 (0.98)	15 (2.67)	2 445 (0.37)	619 (1.11)	16 (1.55)	510 (0.66)
1992	170 (1.05)	272 (0.80)	8 439 (0.80)	143 (0.73)	45 (2.27)	465 (0.85)
1994	532 (0.58)	370 (0.75)	6 602 (0.69)	281 (0.55)	0	1 045 (0.91)
1995.1	860 (0.88)	326 (0.67)	7 269 (0.73)	61 (1.17)	57 (1.29)	449 (1.08)
1996	162 (0.62)	267 (0.45)	3 859 (0.50)	228 (0.66)	252 (1.43)	345 (1.50)
1997.1	605 (1.14)	333 (0.35)	13 096 (0.40)	622 (0.37)	45 (1.26)	826 (1.13)
1997.2	1 317 (1.41)	0	4 088 (1.92)	317 (1.85)	3 (2.27)	876 (2.27)
1999	542 (0.43)	237 (0.42)	10 540 (0.58)	1 121 (1.52)	51 (1.51)	339 (0.69)
2000	505 (0.46)	222 (0.52)	3 925 (0.62)	514 (0.63)	7 (2.27)	1 588 (2.14)
2001	535 (0.53)	243 (0.47)	6 746 (0.90)	1 001 (2.17)	12 (2.27)	481 (2.27)
2002	800 (1.04)	127 (0.57)	5 337 (0.89)	364 (1.27)	13 (2.27)	200 (1.54)
2003	629 (1.01)	383 (0.83)	6 873 (0.42)	216 (0.83)	5 (2.27)	135 (1.08)
2004	749 (0.98)	359 (0.39)	10 930 (0.37)	316 (0.56)	16 (1.54)	284 (0.71)
2005	984 (0.63)	639 (0.51)	8 535 (0.42)	330 (0.53)	16 (2.11)	547 (0.85)
2006	923 (0.67)	391 (0.39)	11 073 (0.43)	184 (0.49)	2 (2.27)	340 (0.95)

*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 deeper than about 200 meter, and the highest densities were found just west and north of Luanda on depths between 200 and 500 m.

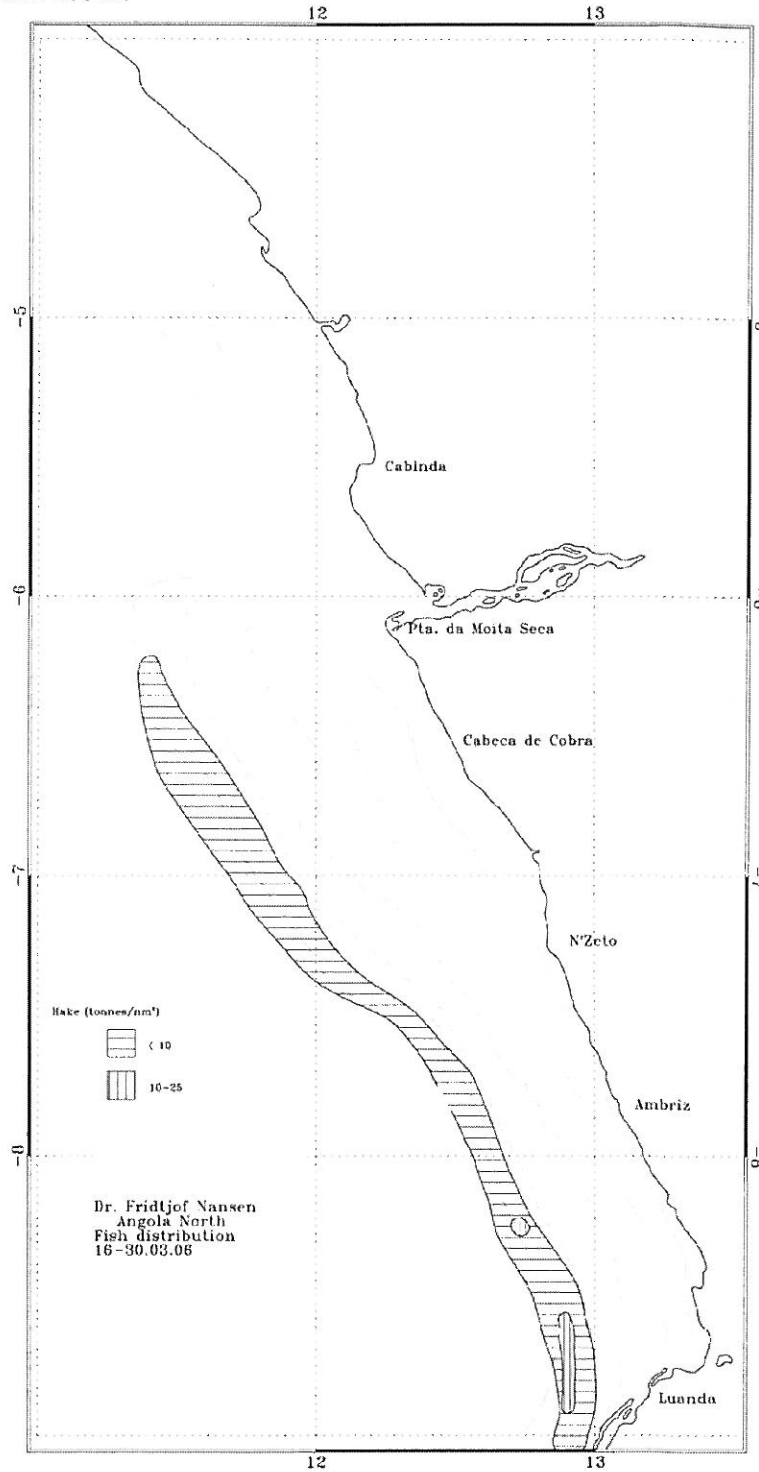


Figure 5.3 Distribution of hake (*Merluccius spp.*) in the northern region, Luanda – Congo River. Depth contours at 20, 50, 100, 200 and 500 m.

## CHAPTER 6 SUMMARY

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From 2 March to 30 March the 2006 demersal resource survey of Angola was successfully carried out using R/V “Dr. Fridtjof Nansen”. Except from the area between Tombua and Benguela, which is unsuitable for trawling due to poor bottom conditions, the shelf and upper slope (20-800 m) from Cunene River to Congo River was covered.

In total 191 trawl stations were conducted of which 181 were valid and used in biomass estimation of the demersal stocks. To map the oceanographic conditions 288 CTD samples were carried out.

### *Hydrographic conditions*

The regular demersal surveys 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 horizontal distributions of temperature and salinity in the southern region present high values that decrease southwards. The temperature varied between 25–27°C and the salinity was about 36.0–36.3 psu between Namibe and Ponta Albina, and the temperature was of 21–23°C and the salinity about the 35.8–35.9 psu between Ponta Albina and Cunene River. The isolines show a strong horizontal gradient of temperature and salinity between Tombua and Ponta Albina, which indicate the presence of the Angola-Benguela Front. Signals of upwelled water are seen in coastal areas of Baía dos Tigres, with temperature of 21°C and low salinity of 35.7-35.7 psu. Temperatures between 28–29°C dominate the whole central area. The salinity distribution is less homogenous, and the salinity of 35.5 psu observed between Benguela to Cabo de São Bras is a typical salinity of the ocean. In contrast, the area from Cabo de São Bras to Luanda was clearly influenced by discharges of freshwater from the rivers in this area, as the salinity values were as low as 32.5 psu. Another characteristic of the salinity distribution in the region was northerly orientation of the isolines. In the northern region the temperature was lowest inshore with about 29°C, while the offshore surface water temperature was between 29 and 30°C. In the inshore waters, the salinity was about 34 psu, and the salinity in the offshore area was between 32.5 and 33 psu. These conditions are similar to the 2003 condition, but markedly different from the 2004 and 2005 conditions when the sea surface temperatures were about 4°C lower.

There is no reason to believe that the abundance estimates of the demersal resources were biased by the oceanographic conditions.

### *Biomass estimates*

Table 6.1 presents the time series from 1985 to 2006 of the 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, as the surveys in this region have not been properly standardized throughout the years. However, the effort, *i.e.* the number of stations by stratum in the southern region, is relatively similar from 2000 to 2005 (Annex VIII) and the estimates in this period are comparable. Table 4.1 and Table 5.1 show the biomass estimates of the important species on the southern shelf and slope, respectively.

### *Seabreams*

The seabreams (*Boops boops* not included) biomass estimate on the southern shelf decreased from 12 700 tonnes in 2005 to 11 500 tonnes in 2006, and consisted mainly of big-eye dentex (*Dentex macrophthalmus*). This reduction supports the general impressions that the

*D. macrophthalmus* stock has been considerably reduced during the last years, as the 2005 and 2006 estimates are the lowest estimates in the time series since 1986. In the central and northern regions, the biomass estimate of seabreams in 2006 was about 25 000 tonnes, which is a 25% reduction from 2005. *D. macrophthalmus* and *D. angolensis* comprised respectively 20% and 29% to the 2006 estimate. Other abundant seabreams are *Pagellus bellottii*, *D. canariensis* and *D. barnardi*. The biomass estimates of seabreams have fluctuated since 2000, and there is no clear long-term trend in the time series.

#### Hakes

*M. capensis* is the dominating hake species in the south, and Angola share this stock with Namibia. The *M. capensis* biomass estimates on the southern shelf and slope in 2006 were 3 700 and 4 500 tonnes, respectively. On the southern shelf, the 2006 biomass of *M. capensis* is markedly lower than the 2004 estimate of 11 900 tonnes and the 2005 estimate of 5 100 tonnes. The annual biomass estimates on the southern slope show a considerable variance, however, the 2006 estimate is markedly higher than the 2005 estimate of about 900 tonnes. Still, the 2004 estimate was 28% higher than the 2006 estimate. In the central and northern regions, *M. polli* is the only hake species. Here, the estimated biomass of hake (*M. polli*) in 2006 was 14 600 tonnes, which is a 31% reduction from the 2005 estimate. Furthermore, the 2006 estimate is about 50% lower than the 2004 estimate.

#### Shrimps

The two commercial important shrimp species *P. longirostris* and *A. varidens* are never found in high densities south of Tombua, and neither *P. longirostris* nor *A. varidens* were caught in the southern region in 2006. In 2006, the biomass estimate of *P. longirostris* for the central and northern regions was 2 600 tonnes, which is the highest estimate since 1997. Although the high CV indicates show that the estimate is relatively uncertain, the biomass trend in the last years seems to support that the stock has increased since the end of the 1990s. The 2006 estimate of *A. varidens* was only 750 tonnes, which is a 48% reduction from the high 2005 estimate of 1 400 tonnes. Until now, the annual biomass estimate had increased each year from 1999 (except for 2002 when the tickler chain in front of the trawl was not used), and the huge decrease in 2006 is a reason for concern.

#### Grunts

Commercially important grunt species are *Pomadasys incisus* and *P. rogeri*, and no grunts were found in the southern region. The biomass estimates of grunts in the central and northern regions in 2006 was 6 900 tonnes, which is a 41% reduction from 2005, but is similar to the 2004 estimate. Next year survey may reveal if the reduction from 2005 is a general decline in the abundance of grunts, or the observed positive trend in the survey estimate from 2001 may continue.

#### Croakers

South of Tombua, the 2006 biomass estimate of croakers was 900 tonnes, which a remarkably large decrease from the high 2005 estimate of 6 200 tonnes. The reason for the huge decline is not known, however the annual estimates show a considerable variability throughout the time series. The biomass estimate of croakers, mainly *Umbrina canariensis*, *Atractoscion aequidens* and *Pseudotolithus typus*, in the central and northern regions was about 9 000 tonnes in 2006. This is the lowest observed estimate since 2002. Generally, the biomass of *U. canariensis* has contributed to about 30-45% of the total biomass of croakers and has fluctuated in a similar way as the total biomass of croakers. However, the 2006 biomass of *U. canariensis* was relatively high and contributed to 72% of the total biomass of croakers.



### *Groupers and snappers*

Groupers or snappers are not distributed in the southern region south of Tombua. In the central and northern regions the biomass estimates of groupers and snappers are relatively imprecise as showed by the high CVs. Further, the estimates show large fluctuation between surveys, and it is therefore difficult to identify any trend in the time series and conclude on the on the current state of these stocks. However, the 2006-biomass estimates of 51 tonnes and 820 tonnes of snappers and groupers, respectively, were considerably smaller than the 2005 estimates.

### *Pelagic species*

For the pelagic species, the estimates of the biomass are characterized by the high variability throughout the years, particularly for horse mackerel, hairtail and barracuda. The bottom trawl is not an adequate sampling gear for the pelagic fish species; therefore no certain conclusion may be drawn for these resources. More adequate results are achieved from the acoustic surveys conducted in July and August.

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

Survey	<i>A.varidens</i>	<i>N.africanus</i>	Ommastrephidae	Sepiidae	<i>D.macrophthalmus</i>	<i>D.angolensis</i>	<i>U.canariensis</i>	<i>B.auritus</i>
1985.1	0	0	11 249 (1.93)	0	200 (2.74)	2 196 (0.92)	1 132 (2.01)	40 729 (1.90)
1985.2	0	0	0	0	0	2 495 (0.94)	521 (2.43)	6 842 (2.33)
1985.3	0	0	0	154 (1.61)	0	4 490 (0.75)	602 (1.89)	9 182 (1.99)
1985.4	7 633 (1.47)	3 578 (1.69)	225 (2.56)	215 (2.12)	6 286 (2.41)	9 283 (1.12)	8 921 (2.47)	69 072 (1.67)
1986.1	1 030 (2.63)	15 804 (0.77)	2 140 (1.52)	1 334 (0.86)	2 787 (1.22)	5 700 (0.92)	2 606 (1.45)	133 723 (0.46)
1986.2	1 485 (0.90)	4 643 (1.90)	0	1 828 (1.23)	9 215 (0.40)	15 499 (0.47)	3 387 (1.33)	36 750 (0.69)
1989.1	397 (1.56)	7 545 (2.98)	3 209 (1.51)	350 (1.31)	7 302 (1.28)	2 568 (0.49)	1 427 (1.14)	20 488 (1.13)
1989.2	400 (1.50)	4 702 (1.61)	1 286 (1.04)	1 440 (0.67)	1 386 (1.44)	9 997 (2.01)	1 302 (1.34)	64 268 (1.18)
1989.3	285 (1.25)	5 657 (0.81)	4 191 (0.98)	169 (1.63)	1 956 (2.27)	4 888 (0.68)	1 194 (2.28)	88 316 (0.76)
1991.1	723 (0.58)	12 194 (1.13)	1 036 (0.74)	500 (0.75)	3 075 (1.74)	2 651 (0.49)	1 656 (1.94)	48 534 (0.82)
1991.2	119 (3.61)	5 104 (0.95)	3 517 (1.15)	793 (1.38)	18 054 (0.97)	4 903 (0.54)	22 849 (2.25)	3 524 (1.62)
1992	638 (1.21)	11 662 (1.38)	3 519 (0.46)	1 074 (0.95)	20 117 (0.99)	7 229 (0.37)	1 719 (1.18)	34 799 (2.01)
1994	1 017 (1.28)	8 801 (1.33)	1 931 (0.63)	3 166 (0.67)	23 219 (0.88)	6 918 (0.52)	6 075 (1.55)	10 205 (1.51)
1995.1	1 078 (0.95)	9 729 (1.47)	164 (1.21)	637 (0.86)	14 010 (1.70)	4 695 (0.71)	11 929 (2.11)	40 468 (0.83)
1995.2	699 (0.61)	2 790 (0.96)	730 (0.84)	219 (2.48)	10 083 (0.99)	1 280 (0.74)	209 (2.22)	0
1996	938 (0.76)	8 830 (1.16)	1 069 (0.45)	143 (1.55)	14 591 (0.66)	6 236 (0.54)	3 150 (1.40)	45 646 (1.30)
1997.1	639 (0.79)	17 189 (0.79)	3 437 (0.56)	5 824 (0.95)	14 289 (1.72)	5 318 (0.57)	5 760 (0.94)	46 071 (0.75)
1997.2	0	4 098 (4.15)	2 358 (0.92)	1 879 (0.33)	31 505 (0.96)	5 651 (0.91)	33 214 (2.03)	1 966 (0.64)
1998	1 191 (2.89)	7 000 (1.37)	765 (1.28)	1 293 (1.10)	52 473 (2.75)	2 084 (0.74)	2 239 (1.46)	22 014 (1.79)
1999	574 (1.68)	11 746 (1.14)	2 028 (1.86)	375 (0.72)	8 181 (1.23)	4 455 (0.32)	11 577 (1.59)	132 176 (0.85)
2000	601 (0.71)	4 988 (1.20)	1 740 (0.69)	501 (1.14)	8 086 (1.25)	7 385 (1.25)	3 771 (0.88)	79 452 (1.18)
2001	699 (1.14)	7 263 (1.87)	1 625 (2.97)	376 (0.92)	6 772 (1.22)	3 482 (0.84)	1 264 (1.70)	51 205 (1.02)
2002	371 (0.99)	8 375 (1.42)	3 629 (0.94)	239 (1.27)	13 935 (2.04)	3 323 (0.66)	4 326 (0.86)	81 768 (1.16)
2003	881 (1.78)	10 157 (1.06)	970 (0.88)	299 (1.58)	1 092 (2.52)	4 765 (0.42)	4 260 (1.62)	103 862 (1.00)
2004	935 (0.78)	17 133 (0.68)	1 320 (0.89)	394 (0.92)	13 884 (4.41)	7 084 (0.69)	6 977 (1.87)	43 663 (1.00)
2005	1 430 (0.77)	14 188 (0.73)	1 219 (1.33)	992 (0.46)	7 290 (4.97)	8 473 (0.29)	5 933 (0.91)	87 795 (1.18)
2006	750 (0.63)	16 424 (0.71)	943 (1.43)	217 (1.16)	4 950 (2.58)	7 236 (0.39)	6 483 (0.96)	94 684 (0.91)

Table 6.2 continues...

Survey	M.poli	T.treace	Shrimps	Cephalopod	Sharks	Clupeids	Carangids	Scombrids
1985.1	211 (0.12)	4 496 (1.85)	323 (1.22)	11 438 (1.90)	841 (0.92)	364 (1.93)	9 986 (1.52)	44 (3.25)
1985.2	0	3 324 (1.94)	139 (3.12)	694 (0.95)	451 (1.06)	3 907 (3.17)	3 740 (1.73)	30 (2.72)
1985.3	6 524 (1.70)	16 486 (1.99)	2 215 (1.77)	2 297 (1.00)	1 079 (1.74)	205 (3.23)	17 742 (1.81)	146 (2.16)
1985.4	55 083 (1.46)	110 950 (1.39)	15 069 (1.04)	6 369 (1.24)	96 (2.42)	906 (1.55)	117 929 (1.33)	88 (2.09)
1986.1	29 498 (1.21)	31 313 (0.88)	24 342 (0.60)	6 925 (0.81)	5 004 (2.30)	2 770 (0.96)	38 390 (0.72)	64 (2.00)
1986.2	52 670 (0.76)	30 649 (1.11)	21 957 (0.43)	2 935 (0.78)	5 256 (1.38)	1 693 (0.95)	34 989 (0.97)	226 (1.51)
1989.1	16 503 (1.50)	19 681 (1.00)	9 110 (2.48)	4 465 (1.10)	3 086 (2.42)	2 137 (2.42)	26 000 (0.85)	252 (1.08)
1989.2	14 371 (0.90)	33 008 (0.74)	7 519 (1.03)	3 198 (0.56)	1 472 (1.18)	2 282 (0.79)	40 419 (0.66)	333 (1.16)
1989.3	25 407 (1.58)	49 538 (0.85)	7 393 (0.65)	4 797 (0.90)	21 887 (1.35)	6 749 (0.99)	59 519 (0.85)	518 (1.43)
1991.1	31 478 (0.93)	107 626 (1.18)	14 041 (0.97)	2 235 (0.43)	3 559 (1.18)	2 349 (1.31)	131 016 (1.03)	373 (1.28)
1991.2	30 966 (1.03)	62 772 (1.25)	8 426 (1.07)	7 351 (0.70)	4 090 (1.31)	91 (1.43)	63 901 (1.23)	444 (1.13)
1992	23 233 (0.60)	48 453 (0.69)	13 613 (1.17)	6 109 (0.41)	5 163 (1.47)	82 (1.92)	53 311 (0.67)	223 (1.14)
1994	10 343 (1.00)	77 944 (0.83)	11 756 (1.00)	6 886 (0.52)	1 869 (0.91)	206 (2.91)	86 549 (0.75)	926 (1.08)
1995.1	10 577 (1.30)	5 224 (1.74)	15 395 (0.93)	1 789 (0.76)	3 382 (1.00)	1 679 (1.09)	19 756 (0.74)	393 (1.24)
1995.2	6 889 (0.81)	11 258 (1.17)	4 527 (0.64)	979 (1.08)	1 294 (1.00)	0	11 370 (1.15)	201 (1.88)
1996	12 219 (1.08)	83 774 (0.95)	11 356 (0.96)	5 268 (0.49)	2 641 (1.47)	1 371 (1.69)	89 864 (0.89)	190 (1.65)
1997.1	21 911 (0.90)	64 832 (0.77)	22 638 (0.60)	10 684 (0.56)	3 004 (1.18)	9 833 (1.75)	168 669 (1.14)	334 (1.74)
1997.2	25 341 (0.72)	94 098 (0.61)	9 950 (2.10)	6 120 (0.43)	500 (1.73)	132 (2.45)	95 987 (0.59)	289 (2.20)
1998	10 366 (1.27)	4 630 (1.67)	9 412 (0.98)	3 016 (0.62)	1 122 (1.30)	2 860 (2.97)	7 606 (1.20)	52 (2.54)
1999	6 640 (1.08)	17 119 (0.78)	13 685 (0.97)	3 540 (1.09)	3 197 (0.73)	8 406 (0.87)	37 149 (0.60)	70 (1.83)
2000	10 119 (1.00)	25 701 (0.72)	7 748 (0.76)	3 783 (0.44)	5 105 (1.86)	2 215 (1.41)	47 540 (0.80)	349 (1.83)
2001	9 732 (1.30)	22 012 (0.77)	11 282 (1.23)	4 340 (1.36)	3 519 (1.85)	598 (1.06)	30 501 (0.66)	139 (1.11)
2002	7 680 (0.93)	88 411 (0.70)	10 747 (1.11)	4 880 (0.71)	629 (0.97)	3 067 (0.78)	98 922 (0.63)	820 (2.58)
2003	14 240 (1.35)	35 260 (0.78)	13 085 (0.85)	2 649 (0.57)	1 917 (1.93)	4 255 (0.78)	57 659 (0.89)	137 (1.75)
2004	31 628 (1.73)	21 409 (0.71)	20 863 (0.59)	3 400 (0.54)	3 125 (1.09)	3 760 (1.00)	28 088 (0.58)	63 (1.39)
2005	21 112 (0.99)	10 931 (0.70)	17 650 (0.59)	4 061 (0.47)	2 421 (1.08)	2 134 (1.19)	20 025 (0.67)	332 (1.72)
2006	14 563 (1.06)	14 925 (0.52)	20 214 (0.61)	3 728 (0.54)	2 329 (1.48)	4 663 (1.09)	25 200 (0.45)	183 (1.03)

Survey	Hairtails	Barracudas	Snappers	Groupers	Grunts	Croakers	Seabreams	P.longirostris
1985.1	15 711 (1.45)	254 (1.50)	0	479 (1.81)	248 (1.69)	1 519 (1.67)	14 690 (0.94)	138 (1.93)
1985.2	1 200 (2.75)	75 (1.35)	63 (2.09)	1 771 (1.30)	381 (2.18)	1 302 (1.82)	12 881 (0.57)	0
1985.3	3 219 (1.31)	26 (2.74)	62 (3.25)	1 978 (1.39)	3 629 (1.56)	8 979 (1.52)	22 438 (1.03)	0
1985.4	7 937 (0.94)	1 034 (1.93)	0	4 307 (0.91)	20 511 (1.54)	13 935 (2.05)	49 737 (0.69)	3 062 (1.72)
1986.1	26 602 (0.92)	3 099 (0.84)	470 (3.02)	1 087 (1.01)	3 468 (1.06)	6 956 (0.82)	27 435 (0.54)	3 823 (1.22)
1986.2	511 874 (0.02)	1 874 (0.93)	0	2 033 (0.84)	6 995 (0.98)	9 578 (0.76)	45 651 (0.36)	0
1989.1	13 125 (0.89)	2 281 (2.15)	0	1 569 (1.34)	3 816 (1.85)	5 864 (1.15)	25 271 (0.55)	895 (1.44)
1989.2	6 333 (0.70)	3 674 (1.21)	53 (2.19)	3 937 (2.31)	2 228 (1.06)	7 826 (0.78)	23 569 (0.92)	1 559 (1.07)
1989.3	66 901 (0.69)	1 068 (1.09)	316 (3.25)	1 107 (1.95)	1 870 (1.37)	4 812 (1.06)	20 807 (0.76)	1 094 (1.18)
1991.1	21 783 (1.13)	3 322 (1.93)	106 (3.69)	817 (1.28)	1 247 (0.99)	5 848 (1.05)	14 722 (0.48)	302 (1.48)
1991.2	9 218 (0.61)	161 (1.32)	0	2 043 (1.05)	2 742 (1.29)	26 595 (1.93)	42 431 (0.47)	640 (0.95)
1992	17 251 (0.74)	103 (2.12)	0	3 359 (1.08)	1 698 (1.27)	4 772 (0.76)	40 589 (0.52)	935 (1.71)
1994	31 574 (2.09)	329 (1.69)	262 (3.69)	2 908 (1.07)	680 (1.25)	18 320 (1.46)	51 379 (0.51)	1 757 (1.05)
1995.1	14 521 (0.59)	4 222 (1.10)	594 (2.14)	1 397 (1.05)	6 027 (1.40)	18 472 (1.67)	29 271 (0.83)	2 020 (1.09)
1995.2	5 113 (1.63)	0	45 (3.18)	348 (3.18)	0	245 (1.89)	11 363 (0.86)	680 (1.02)
1996	9 254 (0.51)	1 035 (1.51)	109 (3.69)	2 692 (1.26)	8 256 (1.04)	15 215 (0.62)	39 921 (0.62)	310 (0.89)
1997.1	32 077 (0.82)	553 (3.05)	73 (3.25)	781 (1.08)	6 427 (1.49)	21 483 (0.69)	33 690 (0.75)	2 501 (1.05)
1997.2	23 519 (0.56)	0	0	2 840 (1.33)	500 (0.84)	36 999 (1.82)	49 085 (0.64)	5 454 (1.07)
1998	30 861 (2.71)	454 (1.54)	0	198 (2.33)	9 117 (1.56)	8 609 (1.62)	64 867 (2.24)	742 (1.32)
1999	26 067 (0.57)	4 371 (0.82)	570 (3.50)	1 654 (0.83)	8 927 (1.03)	18 586 (1.14)	34 076 (0.45)	876 (0.83)
2000	17 976 (0.62)	4 556 (1.00)	294 (2.04)	1 647 (1.01)	7 213 (0.91)	7 842 (0.67)	36 443 (0.45)	1 267 (1.15)
2001	24 459 (1.12)	1 818 (0.79)	726 (3.16)	859 (1.50)	3 600 (1.17)	3 203 (0.94)	22 805 (0.64)	1 020 (0.83)
2002	30 855 (0.70)	2 318 (0.99)	251 (4.74)	742 (1.17)	3 223 (0.99)	9 196 (0.61)	34 016 (0.85)	1 565 (1.42)
2003	20 199 (0.68)	2 824 (1.86)	186 (2.63)	1 037 (1.00)	10 025 (1.83)	13 474 (0.69)	17 687 (0.42)	1 363 (1.15)
2004	20 349 (1.20)	1 856 (1.54)	79 (2.44)	681 (0.91)	6 810 (1.15)	12 196 (1.24)	32 647 (1.79)	2 143 (1.33)
2005	41 427 (1.25)	963 (1.68)	284 (2.07)	1 176 (0.88)	11 735 (1.08)	13 501 (0.72)	33 064 (1.12)	1 613 (1.07)
2006	20 849 (0.49)	2 561 (0.92)	51 (2.69)	819 (0.99)	6 921 (1.09)	8 956 (0.73)	24 824 (0.57)	2 607 (1.92)

# ANNEX I Records of fishing stations

PROJECT STATION:3897  
 DATE: 4/ 3/06 GEAR TYPE: BT No:16 POSITION:Lat S 1715  
 LONG E 1113  
 TIME :03:46:58 04:17:05 30 (min) Purpose code: 3  
 LOG : 422.10 423.69 1.58 Area code : 1  
 FDEPTH: 706 720 GearCond.code: 1  
 BDEPTH: 706 720 Validity code: 1  
 Towing dir: 90 Wire out:1750 m Speed: 30 kn\*10

Sorted: 72 Kg Total catch: 968.60 CATCH/HOUR: 1937.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Nerulia micronephthodes	980.30	40118	49.06
Trachyrhynchus scaber	375.70	1430	19.39
HOLOURURIDAE	204.88	598	10.58
Todarodes sagittatus	107.90	260	5.7
Enirania costaeanae	55.38	104	2.86
Raja confusus	46.28	182	2.39
Lophius vaillanti	39.40	4	2.03
Illex coindetii	37.70	52	1.89
Ropilestes cadonati	17.16	416	0.89
Merluccius paradoxus	16.30	14	0.84
Centroscyllium crepidater	14.88	24	0.77
Chaceon maculata, male	11.70	26	0.60
ALEPOCEPHALUS ROSFRATUS	10.14	754	0.52
Centroscyllium squamosus	10.00	8	0.52
Bathyrocara vicinus	9.10	338	0.47
Octopus sp.	8.58	26	0.44
Phrynorhynchus wedli	7.80	26	0.40
Chaceon maculata, female	4.68	26	0.24
Heterocara grimaldii	3.90	286	0.20
Yareella blackfordi	2.34	78	0.12
Lamprogrammus exilis	1.82	130	0.09
Etmopterus pusillus	1.00	2	0.05
Nemichthys sp.	0.26	26	0.01
Total	1937.20	99.99	

PROJECT STATION:3896  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1714  
 LONG E 1122  
 TIME :06:37:21 07:08:14 31 (min) Purpose code: 3  
 LOG : 434.66 436.19 1.52 Area code : 1  
 FDEPTH: 293 285 GearCond.code: 1  
 BDEPTH: 293 285 Validity code: 1  
 Towing dir: 350 Wire out: 800 m Speed: 31 kn\*10

Sorted: 115 Kg Total catch: 817.71 CATCH/HOUR: 1582.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Merluccius capensis	982.94	5083	62.11
Chirocentrus atlanticus	325.84	20911	20.39
SCORPAENIDAE	44.85	1477	2.43
Zenopsis conchifer	40.78	95	2.58
Trachurus capensis	31.16	135	1.97
HOLOURURIDAE	30.58	108	1.93
Pterotrissus belloni	21.54	108	1.36
Callinectes amnicola	18.29	447	1.16
Trigla lyra	17.07	108	1.08
C A S I R G P O D S	15.99	854	1.01
Dicologlossa cuneata	10.70	190	0.68
Coeleorhynchus denticulatus	8.81	122	0.56
Synagrops microlepis	8.26	325	0.52
Trachyrhynchus scaber	7.99	14	0.50
Parapercopsis atlantica, male	5.55	135	0.35
Parapercopsis atlantica, fem.	5.42	108	0.34
Nematocarcinus africanus	5.15	81	0.33
Calanus polli	1.08	14	0.07
Sufflogobius bibarbatatus	0.27	27	0.02
Gadella maraldi	0.14	14	0.01
Trichurus lepturus	0.14	14	0.01
Lampanyctodes rostratus	0.12	41	0.01
Total	1582.67	100.02	

PROJECT STATION:3899  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1713  
 LONG E 1125  
 TIME :08:19:41 08:49:46 26 (min) Purpose code: 3  
 LOG : 443.90 443.17 1.26 Area code : 1  
 FDEPTH: 183 174 GearCond.code: 1  
 BDEPTH: 183 174 Validity code: 1  
 Towing dir: 350 Wire out: 560 m Speed: 30 kn\*10

Sorted: 102 Kg Total catch: 476.34 CATCH/HOUR: 1099.25

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
HOLOURURIDAE	448.89	2908	40.84
Trachurus capensis	228.46	3462	20.78
Merluccius capensis	110.08	10	10.01
Dentex macrophthalms	90.00	12	8.19
Raja miraletus	32.95	42	3.00
Dicologlossa cuneata	30.60	1869	2.78
Synagrops microlepis	29.77	69189	2.71
Trigla lyra	22.98	249	2.09
Chirocentrus atlanticus	13.71	3060	1.25
Callinectes sp.	13.15	540	1.20
Scorpaenopsis japonicus	11.91	14	1.08
Octopus vulgaris	11.35	42	1.03
Squalus megalops	10.27	23	0.93
G A S I R G P O D S	9.14	678	0.83
C O B S T E R S	8.40	55	0.49
Squilla maritima	5.26	42	0.48
Illex coindetii	4.98	55	0.45
Sepia orbignyana	4.57	55	0.42
Mastellus palumbes	4.38	2	0.40
Atractoscion aegleoides	3.62	2	0.33
Zenopsis conchifer	2.46	111	0.31
Pterotrissus belloni	2.91	28	0.24
Postinus acraensis	1.38	14	0.13
Total	1099.22	99.99	

PROJECT STATION:3900  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1714  
 LONG E 1129  
 TIME :10:04:25 10:29:24 25 (min) Purpose code: 3  
 LOG : 450.21 451.49 1.27 Area code : 1  
 FDEPTH: 149 144 GearCond.code: 1  
 BDEPTH: 149 144 Validity code: 1  
 Towing dir: 340 Wire out: 400 m Speed: 30 kn\*10

Sorted: 95 Kg Total catch: 351.22 CATCH/HOUR: 842.93

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Dentex macrophthalms	385.68	4224	45.75
MISCELLANEOUS	171.94	22138	20.40
Merluccius capensis	106.87	734	12.68
Trachurus capensis	101.09	1286	11.99
Pterotrissus belloni	40.78	751	4.84
Trigla lyra	9.07	60	1.08
Atractoscion aegleoides	5.74	5	0.68
Synagrops microlepis	5.62	362	0.67
Zeus faber	3.89	77	0.46
Dicologlossa cuneata	2.45	74	0.29
Squilla cadonati	1.44	22	0.17
Squalus megalops	1.44	5	0.17
Sepia bertheloti	1.34	2	0.16
Illex coindetii	1.30	10	0.15
Trachurus trerace	1.22	2	0.14
Brotula barbata	1.15	2	0.14
Etrumeus whiteheadi	1.01	2	0.12
Sufflogobius bibarbatatus	0.91	24	0.11
Total	842.94	100.00	

PROJECT STATION:3901  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1713  
 LONG E 1131  
 TIME :11:25:57 11:55:55 30 (min) Purpose code: 3  
 LOG : 456.18 457.77 1.60 Area code : 1  
 FDEPTH: 132 129 GearCond.code: 1  
 BDEPTH: 132 129 Validity code: 1  
 Towing dir: 255 Wire out: 330 m Speed: 30 kn\*10

Sorted: 164 Kg Total catch: 2448.79 CATCH/HOUR: 4897.58

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trachurus capensis	4091.70	103362	83.55
Dentex macrophthalms	460.00	4830	9.39
Merluccius capensis	227.24	1426	4.64
Trigla lyra	29.90	46	0.61
Pterotrissus belloni	25.76	138	0.53
Brotula barbata	23.92	138	0.49
Dicologlossa cuneata	17.48	46	0.36
Squilla sp.	16.56	46	0.34
Atractoscion aegleoides	4.80	4	0.10
Squalus megalops	0.80	2	0.02
Total	4898.16	100.03	

PROJECT STATION:3902  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1713  
 LONG E 1138  
 TIME :13:12:48 13:42:45 30 (min) Purpose code: 3  
 LOG : 466.68 468.37 1.68 Area code : 1  
 FDEPTH: 86 84 GearCond.code: 1  
 BDEPTH: 86 84 Validity code: 1  
 Towing dir: 360 Wire out: 250 m Speed: 30 kn\*10

Sorted: 97 Kg Total catch: 740.33 CATCH/HOUR: 1480.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trachurus trerace	1276.80	13694	86.23
Merluccius capensis	116.40	1230	7.86
S I V A L V E S	70.80	838	4.78
Dentex macrophthalms	10.78	472	0.73
Pterotrissus belloni	3.34	126	0.23
Galeichthys feliceps	0.90	2	0.06
Dicologlossa cuneata	0.90	52	0.06
Sepia officinalis hierredda	0.70	4	0.05
Trichurus lepturus	0.02	2	
Trichurus lepturus	0.02	2	
Sufflogobius bibarbatatus	0.02	6	
Total	1480.68	100.00	

PROJECT STATION:3903  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1710  
 LONG E 1142  
 TIME :14:33:37 15:05:54 32 (min) Purpose code: 3  
 LOG : 473.69 475.55 1.86 Area code : 1  
 FDEPTH: 43 40 GearCond.code: 1  
 BDEPTH: 43 40 Validity code: 1  
 Towing dir: 350 Wire out: 160 m Speed: 30 kn\*10

Sorted: 98 Kg Total catch: 944.81 CATCH/HOUR: 1771.52

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Engraulis encrasicolus	965.70	5130	54.51
Trachurus trerace	557.10	38861	31.45
MISCELLANEOUS	100.80	2303	5.49
Etrumeus whiteheadi	33.83	1746	1.91
Sepia officinalis hierredda	29.70	71	1.68
HOLOURURIDAE	19.43	756	1.10
Dicologlossa cuneata	14.40	701	0.81
C R A S	10.80	1170	0.61
Octopus vulgaris	8.25	15	0.47
Sardinella aurita	7.37	71	0.42
Lagocephalus laevigatus	6.49	107	0.37
Merluccius capensis	6.11	71	0.34
Dentex macrophthalms	4.13	197	0.23
Zeus faber	3.96	126	0.22
Trigla lyra	2.70	19	0.15
Trichurus lepturus	0.53	36	0.03
Loligo vulgaris	0.19	24	0.01
Total	1771.49	100.00	

PROJECT STATION:3904  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1712  
 start stop duration  
 TIME :15:49:50 16:14:49 25 (min) Purpose code: 3  
 LOG : 481.02 482.43 1.41 Area code : 1  
 FDEPTH: 26 27 GearCond.code: 9  
 BDEPTH: 26 27 Validity code: 1  
 Towing dir: 350 Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 110 Kg Total catch: 15034.06 CATCH/HOUR: 36081.74

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sardinella aurita	21285.84	296626	58.99	8299
Trachurus trecae	6011.28	259834	16.66	8298
Sardinops ocellatus	469.28	70951	13.02	8300
Etrumeus whiteheadi	2177.86	160630	6.04	
Engraulis encrasicolus	1120.13	97560	3.10	
Trachurus capensis	282.48	7882	0.78	
Dicologlossa cuneata	266.06	10838	0.74	
Arius parkii	75.35	652	0.21	
Paromola cuvieri	66.98	7882	0.19	
Myllonatis aquila	35.88	12	0.10	
Argyrosomus hololepidotus	22.20	5	0.06	
Trichurus lepturus	13.13	1313	0.04	
Rhinobatos albomaculatus	10.68	5	0.03	
Raja miraletus	7.44	10	0.02	
Callorhynchus capensis	4.18	2	0.01	
Stromateus fiatola	2.78	2	0.01	
Total	36081.75		100.00	

PROJECT STATION:3908  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1700  
 start stop duration  
 TIME :08:05:13 08:16:24 11 (min) Purpose code: 3  
 LOG : 586.93 587.49 0.34 Area code : 1  
 FDEPTH: 114 114 GearCond.code: 9  
 BDEPTH: 114 114 Validity code: 1  
 Towing dir: 360 Wire out: 300 m Speed: 31 kn\*10  
 Sorted: 125 Kg Total catch: 2066.41 CATCH/HOUR: 11271.33

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus capensis	7726.36	249120	68.55	8306
Trachurus trecae	2362.47	19887	20.96	8309
Dentex macrocephalmus	603.00	6027	5.35	8310
Stencher japonicus	477.00	1527	4.23	
G A S T R O P O D S	31.47	3240	0.28	
Merluccius polli	25.20	87	0.22	
Uranoscopus sp.	17.07	87	0.15	
Illex coindetii	11.67	180	0.10	
Anthias anthias	7.20	87	0.06	
Pterotrissus bellioi	7.20	180	0.06	
Dicologlossa cuneata	2.67	87	0.02	
Total	11271.31		99.98	

PROJECT STATION:3905  
 DATE: 4/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1701  
 start stop duration  
 TIME :17:26:56 17:42:02 15 (min) Purpose code: 3  
 LOG : 492.11 492.87 0.76 Area code : 1  
 FDEPTH: 25 23 GearCond.code: 9  
 BDEPTH: 25 23 Validity code: 1  
 Towing dir: 360 Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 147 Kg Total catch: 19475.95 CATCH/HOUR: 61903.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sardinella aurita	59062.00	540960	88.95	8301
Sardinops ocellatus	5859.00	79429	9.46	8302
Trachurus trecae	529.20	23100	0.85	8303
Etrumeus whiteheadi	193.20	2340	0.31	
Lagocephalus laevigatus	126.00	2100	0.20	
Litronathus mormyrus	71.40	420	0.12	
Pomadour incisus	46.20	420	0.07	
Trachinus armatus	16.80	420	0.03	
Total	61903.80		99.99	

PROJECT STATION:3909  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1700  
 start stop duration  
 TIME :09:34:34 09:48:01 13 (min) Purpose code: 3  
 LOG : 596.04 596.74 0.81 Area code : 1  
 FDEPTH: 93 94 GearCond.code: 9  
 BDEPTH: 93 94 Validity code: 1  
 Towing dir: 360 Wire out: 300 m Speed: 30 kn\*10  
 Sorted: 78 Kg Total catch: 396.94 CATCH/HOUR: 1832.03

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
B I V A L V E S	755.54	87462	41.24	
Trachurus trecae	402.49	8515	21.98	8314
Merluccius capensis	221.54	1754	12.09	8311
Dicologlossa cuneata	159.00	13200	8.68	
Trachurus capensis	153.00	3254	8.35	8313
Dentex macrocephalmus	70.38	2308	3.84	8312
Octopus vulgaris	28.85	69	1.57	
Sepia officinalis hierredra	15.97	60	0.81	
G A S T R O P O D S	8.08	1154	0.44	
Trigla lyra	5.31	23	0.29	
C R A B S	3.46	115	0.19	
Galeichthys feliceps	2.45	9	0.13	
Pterotrissus bellioi	2.26	69	0.12	
Sufflogobius bibarbatu	1.62	323	0.09	
Atractoscion aequidens	1.20	5	0.01	
Brotula barbata	0.69	9	0.04	
Total	1832.04		99.99	

PROJECT STATION:3906  
 DATE: 5/ 3/06 GEAR TYPE: BT No:14 POSITION:Lat S 1703  
 start stop duration  
 TIME :04:31:58 05:03:14 31 (min) Purpose code: 3  
 LOG : 569.05 570.59 1.54 Area code : 1  
 FDEPTH: 587 650 GearCond.code: 1  
 BDEPTH: 587 650 Validity code: 1  
 Towing dir: 175 Wire out: 1630 m Speed: 31 kn\*10  
 Sorted: 92 Kg Total catch: 1268.97 CATCH/HOUR: 2456.07

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachyrhynchus scabrus	1547.79	9054	67.09	
Nemuria microgynchodon	464.59	10502	18.92	
ALEPOCEPHALUS ROSFRATIS	111.33	6501	4.53	
Pontinus accraensis	42.64	420	1.74	
Ebinania costaecanarie	38.17	25	1.55	
Guentherus altivelis	35.79	25	1.46	
Heplostethus eagenati	22.37	517	0.91	
Chaceon maritae, male	19.94	31	0.81	
Paromola cuvieri	15.79	132	0.64	
Opisthoneutheis agassizii	13.94	25	0.57	
Toaropsis eblanae	11.75	23	0.48	
Raja confundens	7.63	25	0.31	
Largoproctus exultans	7.37	298	0.30	
Bathyscoptes vicinus	4.67	236	0.18	
Yacrella blackfordi	3.95	209	0.16	
Certroporus granulosus	3.85	4	0.16	
Chaceon maritae, female	3.39	17	0.14	
Stomopterus pusillus	0.54	2	0.02	
Heterocarpus grimaldii	0.52	25	0.02	
Epigonus telescopus	0.25	25	0.01	
Total	2456.07		100.00	

PROJECT STATION:3910  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1700  
 start stop duration  
 TIME :10:53:39 11:04:31 11 (min) Purpose code: 3  
 LOG : 603.14 603.70 0.92 Area code : 1  
 FDEPTH: 61 61 GearCond.code: 9  
 BDEPTH: 61 61 Validity code: 1  
 Towing dir: 360 Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 101 Kg Total catch: 11260.04 CATCH/HOUR: 61418.39

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sardinella aurita	51654.00	524160	84.10	8315
Trachurus trecae	9224.73	15338	15.02	8316
Engraulis encrasicolus	366.55	22604	0.60	
Etrumeus whiteheadi	171.05	3665	0.28	
Zeus faber	2.07	5		
Total	61418.40		100.00	

PROJECT STATION:3907  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1704  
 start stop duration  
 TIME :06:47:39 07:05:02 17 (min) Purpose code: 3  
 LOG : 580.98 581.87 0.88 Area code : 1  
 FDEPTH: 136 133 GearCond.code: 9  
 BDEPTH: 136 133 Validity code: 1  
 Towing dir: 360 Wire out: 350 m Speed: 30 kn\*10  
 Sorted: 132 Kg Total catch: 1450.03 CATCH/HOUR: 5117.75

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus capensis	3298.06	86382	64.44	8304
Dentex macrocephalmus	648.35	5901	12.67	8307
HOLOMURIDAE	417.35	117169	8.15	
Trachurus trecae	397.94	3300	7.78	8305
Merluccius polli	122.29	582	2.39	8306
Pterotrissus bellioi	109.87	2135	2.15	
Atractoscion aequidens	38.05	78	0.74	
Dicologlossa cuneata	24.85	544	0.49	
Gnelidiontheis capensis	24.07	78	0.47	
Zeus faber	19.64	78	0.39	
Brotula barbata	6.21	39	0.12	
Illex coindetii	4.66	78	0.09	
Umorina canariensis	3.88	39	0.08	
Trigla lyra	2.33	39	0.05	
Total	5117.75		100.01	

PROJECT STATION:3911  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1659  
 start stop duration  
 TIME :11:45:09 11:59:58 15 (min) Purpose code: 3  
 LOG : 606.65 607.43 0.75 Area code : 1  
 FDEPTH: 35 36 GearCond.code: 9  
 BDEPTH: 35 36 Validity code: 1  
 Towing dir: 170 Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 179 Kg Total catch: 970.33 CATCH/HOUR: 3881.32

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Callorhynchus capensis	1315.20	928	33.89	
Trachurus trecae	1189.08	36892	30.64	8317
Myllonatis aquila	714.80	324	18.42	
Engraulis encrasicolus	376.92	3494	3.71	
Sardinella aurita	143.64	1296	3.70	8318
MISCELLANEOUS	52.24	1444	1.35	
Mustelus mustelus	18.40	8	0.47	
Lagocephalus laevigatus	15.96	256	0.41	
Umorina canariensis	12.52	172	0.32	
Trigla lyra	12.28	216	0.32	
Dicologlossa cuneata	7.56	324	0.19	
Sepia officinalis hierredra	6.24	216	0.16	
Loligo vulgaris	5.40	84	0.14	
C R A B S	5.16	472	0.13	
MERCULLIDAE	3.24	216	0.08	
Etmopterus pusillus	1.12	60	0.03	
Trachinus araneus	0.84	216	0.02	
Spondylosoma cantharus	0.60	4	0.02	
Atractoscion aequidens	0.04	4		
Total	3881.24		100.00	

PROJECT STATION: 3912  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1659  
 start stop duration Long E 1163  
 TIME :12:40:39 13:10:38 30 (min) Purpose code: 3  
 LOG : 610.60 612.40 1.72 Area code : 1  
 FDEPTH: 22 22 GearCond.code: 1  
 BDEPTH: 22 22 Validity code: 1  
 Towing dir: 360m Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 192 Kg Total catch: 191.90 CATCH/HOUR: 383.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Sepia orbignyana	188.90	376	49.22
J E L Y F I S H	66.10		17.72
Agycosomus kololepidotus	29.10	4	7.58
Sardinella aurata	23.80	154	6.20
Trachurus trecae	17.00	582	4.43
Callinectes sapidus	16.90	10	4.30
Lithognathus mionectes	15.00	84	3.91
Arctosticorion aeguidens	6.96	188	1.81
Lagocephalus laevigatus	6.28	162	1.64
Loligo vulgaris	5.06	20	1.32
Dentex capensis	3.66	32	0.95
Spondylisoma cantharus	1.80	2	0.47
Engraulis encrasicolus	1.58	200	0.41
C R A B S	0.86	6	0.22
Arius parkii	0.72	2	0.19
Scomber japonicus	0.48	10	0.13
Total	383.80	100.00	

PROJECT STATION: 3913  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1641  
 start stop duration Long E 1141  
 TIME :13:20:46 13:21:26 16 (min) Purpose code: 3  
 LOG : 621.65 622.52 0.87 Area code : 1  
 FDEPTH: 25 25 GearCond.code: 9  
 BDEPTH: 25 25 Validity code: 1  
 Towing dir: 355m Wire out: m Speed: kn\*10  
 Sorted: 54 Kg Total catch: 598.61 CATCH/HOUR: 2244.19

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trachurus trecae	1788.19	25410	79.66
MISCELLANEOUS	178.20	13984	7.94
Engraulis encrasicolus	110.95	8333	4.92
Sepia officinalis hierreda	40.43	124	1.80
Etmopterus pusillus	34.24	1238	1.53
Sea urchins (strong spines)	30.53	3671	1.36
Dicologlossa cuneata	19.80	1031	0.88
C R A B S	18.96	619	0.95
Loligo vulgaris	11.74	596	0.90
Lagocephalus laevigatus	9.08	124	0.40
Trachinus araneus	3.68	41	0.16
Total	2244.82	100.00	

PROJECT STATION: 3914  
 DATE: 5/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1641  
 start stop duration Long E 1135  
 TIME :15:40:55 15:56:02 15 (min) Purpose code: 3  
 LOG : 630.17 630.94 0.76 Area code : 1  
 FDEPTH: 95 95 GearCond.code: 9  
 BDEPTH: 95 95 Validity code: 1  
 Towing dir: 180m Wire out: 250 m Speed: 30 kn\*10  
 Sorted: 59 Kg Total catch: 2116.19 CATCH/HOUR: 8464.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trachurus trecae	7952.00	354240	94.41
Dentex macrophthalms	177.12	4896	2.09
Merluccius capensis	146.88	1296	1.74
Trigla lyra	53.28	144	0.63
Dicologlossa cuneata	31.68	1440	0.37
Sepia orbignyana	17.80	24	0.21
Umbrina canariensis	15.84	432	0.19
Sepiella ornata	15.84	144	0.19
Zeus faber	11.52	144	0.14
Squalus megalops	2.80	8	0.03
Total	8464.76	100.00	

PROJECT STATION: 3915  
 DATE: 5/ 3/06 GEAR TYPE: BT No:14 POSITION: Lat S 1650  
 start stop duration Long E 1118  
 TIME :18:11:56 18:42:02 30 (min) Purpose code: 3  
 LOG : 649.63 651.29 1.65 Area code : 1  
 FDEPTH: 342 356 GearCond.code: 1  
 BDEPTH: 342 356 Validity code: 1  
 Towing dir: 360m Wire out: 1000 m Speed: 31 kn\*10  
 Sorted: 96 Kg Total catch: 1070.77 CATCH/HOUR: 2141.54

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
HOLOOURIDAE	1364.00	473600	63.69
Pantinus accraensis	495.00	6072	23.11
Laemonema laureysi	171.60	4158	8.01
Chirocentalmus atlanticus	55.22	1562	2.58
Merluccius capensis	22.90	44	1.93
G A S P R O P O D S	17.38	814	0.81
Trachurus capensis	7.26	110	0.34
Raja alba	5.32	2	0.25
Callinectes sp.	2.86	110	0.13
Total	2141.54	99.99	

PROJECT STATION: 3916  
 DATE: 5/ 3/06 GEAR TYPE: BT No:14 POSITION: Lat S 1636  
 start stop duration Long E 1118  
 TIME :20:59:15 21:29:28 30 (min) Purpose code: 3  
 LOG : 663.79 665.33 1.54 Area code : 1  
 FDEPTH: 616 657 GearCond.code: 1  
 BDEPTH: 616 657 Validity code: 1  
 Towing dir: 20m Wire out: 1600 m Speed: 30 kn\*10  
 Sorted: 83 Kg Total catch: 393.90 CATCH/HOUR: 787.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Nezumia aequalis	258.00	9296	32.75
Trachyrhynchus scabratus	178.02	1056	22.60
Roplostethus cadonati	119.80	2984	15.21
HOLOOURIDAE	54.94	11772	6.97
Hymenocephalus sp.	49.02	1942	6.22
Merluccius capensis	20.20	24	2.58
Lephis vaillanti	19.50	6	2.48
Yarella blackfordi	19.00	808	2.41
Centropomus granulatus	14.40	16	1.83
Todaropsis eblaninae	10.92	24	1.39
Merluccius pollii	9.50	8	1.08
Ethinania costaeacanarie	6.88	102	0.87
Etmopterus pusillus	5.20	16	0.66
Lamprogrammus exutus	4.64	162	0.59
Chaceon maculata, male	2.68	4	0.34
Octopus sp.	2.02	4	0.26
Centrollophus niger	1.88	2	0.24
Bathyroconger vicinus	1.80	86	0.23
Nematocarcinus africanus	1.72	610	0.22
Aristeus varidens, female	1.62	216	0.21
SYNAPHOSRANCIDAE	1.54	8	0.20
Haliastur ovonii	1.46	16	0.19
ALEPOCEPHALUS ROSFRATUS	1.04	2	0.13
Deania calcea	0.80	4	0.10
Laemonema laureysi	0.76	8	0.10
MYCTOPHIDAE	0.60	102	0.08
Trachinus araneus	0.42	34	0.05
Aristeus varidens, male	0.18	34	0.02
Total	787.84	100.01	

PROJECT STATION: 3917  
 DATE: 6/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1639  
 start stop duration Long E 1124  
 TIME :05:32:19 05:45:13 13 (min) Purpose code: 3  
 LOG : 679.75 680.42 0.67 Area code : 1  
 FDEPTH: 126 125 GearCond.code: 9  
 BDEPTH: 126 125 Validity code: 1  
 Towing dir: 100 Wire out: 300 m Speed: 32 kn\*10  
 Sorted: 163 Kg Total catch: 1121.90 CATCH/HOUR: 5178.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trachurus trecae	4285.57	119072	82.76
Dentex macrophthalms	538.25	6042	10.39
Merluccius capensis	39.46	346	1.92
Chelidonichthys capensis	39.46	126	1.92
Arctosticorion aeguidens	57.69	152	1.11
Squalus megalops	37.66	60	0.73
Pterothrissus bellina	34.20	346	0.66
Galeus pollii	12.55	28	0.24
Etmopterus whiteheadi	5.95	88	0.11
Sepia orbignyana	4.98	28	0.10
Trigla lyra	2.22	32	0.04
Total	5177.99	99.98	

PROJECT STATION: 3918  
 DATE: 6/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1635  
 start stop duration Long E 1126  
 TIME :06:39:26 06:54:49 15 (min) Purpose code: 3  
 LOG : 685.06 685.82 0.75 Area code : 1  
 FDEPTH: 117 118 GearCond.code: 9  
 BDEPTH: 117 118 Validity code: 1  
 Towing dir: 350m Wire out: 300 m Speed: 30 kn\*10  
 Sorted: 100 Kg Total catch: 1013.15 CATCH/HOUR: 4052.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trachurus trecae	3284.60	106920	81.05
Dentex macrophthalms	478.00	5360	11.79
Zeus faber	80.40	240	1.98
Chelidonichthys capensis	63.60	120	1.57
Umbrina canariensis	46.00	560	1.14
Arctosticorion aeguidens	38.00	100	0.94
Merluccius capensis	26.00	80	0.64
Pterothrissus bellina	12.80	120	0.32
Etmopterus whiteheadi	9.20	120	0.23
Trigla lyra	5.20	40	0.13
Sepia orbignyana	4.20	4	0.10
Anthias anthias	2.80	40	0.07
Squalus megalops	1.80	4	0.04
Total	4052.60	100.00	

PROJECT STATION: 3919  
 DATE: 6/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1636  
 start stop duration Long E 1136  
 TIME :08:27:09 08:47:00 20 (min) Purpose code: 3  
 LOG : 697.60 698.98 0.97 Area code : 1  
 FDEPTH: 89 90 GearCond.code: 9  
 BDEPTH: 89 90 Validity code: 9  
 Towing dir: 180m Wire out: 250 m Speed: 30 kn\*10  
 Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 3920  
 DATE: 6/ 3/06 GEAR TYPE: BT No:14 POSITION: Lat S 1629  
 start stop duration  
 TIME :10:44:43 10:55:11 11 (min) Purpose code: 3 Long E 1141  
 LOG : 711.01 711.52 0.51 Area code : 1  
 FDEPTH: 69 67 GearCond.code: 8  
 BDEPTH: 69 67 Validity code: 4  
 Towing dir: 50° Wire out: 160 m Speed: 3 kn\*10  
 Sorted: 24 Kg Total catch: 509.02 CATCH/HOUR: 2776.47

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Tracharus trectae	2703.44	132185	97.37	8335
Dentex macrocephalus	30.93	1260	1.11	
Sepia sp.	27.49	344	0.99	
Cynglossus canariensis	10.20	916	0.37	
B I V A L V E S	4.58	3665	0.16	
Total	2776.64	100.00		

PROJECT STATION: 3921  
 DATE: 6/ 3/06 GEAR TYPE: BT No:14 POSITION: Lat S 1625  
 start stop duration  
 TIME :12:47:55 13:07:31 20 (min) Purpose code: 3 Long E 1146  
 LOG : 718.65 719.67 1.01 Area code : 1  
 FDEPTH: 20 21 GearCond.code: 8  
 BDEPTH: 20 21 Validity code: 4  
 Towing dir: 150° Wire out: 100 m Speed: 30 kn\*10  
 Sorted: 103 Kg Total catch: 11561.10 CATCH/HOUR: 34683.30

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Sardinella aurilla	30273.60	32288	87.29	8336
Tracharus trectae	2940.00	11920	8.48	8337
Decapterus rhonemus	1206.24	3360	3.48	
Sepia orbigyana	161.28	336	0.47	
Cyprura micrura	41.70	3	0.12	
Remora japonicus	36.96	336	0.11	
Pagellus bellottii	23.52	336	0.07	
Total	34683.30	100.02		

PROJECT STATION: 3922  
 DATE: 6/ 3/06 GEAR TYPE: BT No:14 POSITION: Lat S 1623  
 start stop duration  
 TIME :15:43:52 15:58:52 15 (min) Purpose code: 3 Long E 1144  
 LOG : 724.34 725.12 0.77 Area code : 1  
 FDEPTH: 48 49 GearCond.code: 9  
 BDEPTH: 48 49 Validity code: 1  
 Towing dir: 185° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 102 Kg Total catch: 1392.08 CATCH/HOUR: 5568.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Tracharus trectae	4879.68	394996	87.76	8339
ECHENEIDAE	329.64	91392	5.83	
Sepia orbigyana	251.94	652	4.83	
Dentex macrocephalus	65.80	4784	1.18	8338
Lophius sp.	24.48	380	0.44	
Pagellus bellottii	7.60	52	0.14	
Raja miraletus	6.08	8	0.11	
Dicologlossa cuneata	1.60	108	0.03	
Sardinella aurilla	1.08	164	0.02	
Arroglossus imperialis	0.52	108	0.01	
Total	5568.32	100.00		

PROJECT STATION: 3923  
 DATE: 6/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1613  
 start stop duration  
 TIME :17:32:28 18:02:46 30 (min) Purpose code: 3 Long E 1136  
 LOG : 739.25 740.81 1.55 Area code : 1  
 FDEPTH: 74 72 GearCond.code: 1  
 BDEPTH: 74 72 Validity code: 1  
 Towing dir: 10° Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 97 Kg Total catch: 814.07 CATCH/HOUR: 1628.14

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Tracharus trectae	1458.40	50016	88.57	8343
Atractoscion aequidens	42.00	50	2.58	8344
Zeus faber	21.60	96	1.33	
Squalus sp.	16.20	22	1.00	
Dicologlossa cuneata	11.56	1536	0.71	
Dentex macrocephalus	10.09	128	0.62	
Etrumeus whiteheadi	9.32	116	0.61	
Arroglossus imperialis	9.60	896	0.59	
Carcharias sp.	7.70	2	0.47	
Pagellus bellottii	5.40	28	0.33	8342
Monaclea microstora	5.12	400	0.31	
Chelidonichthys capensis	5.12	352	0.31	
Spondylitoma cantharus	4.96	16	0.30	
ECHENEIDAE	3.68	1024	0.23	
Illex coindetii	3.52	32	0.22	
Dentex barnardi	3.52	16	0.22	
Brotula barbata	2.56	48	0.16	
Octopus vulgaris	2.06	4	0.13	
Raja miraletus	1.46	2	0.09	
Citharus linguatula	1.44	48	0.09	
GOBIIDAE	1.12	32	0.07	
Sepia orbigyana	0.96	16	0.06	
Callinectes sp.	0.16	32	0.01	
Total	1628.14	100.01		

PROJECT STATION: 3924  
 DATE: 6/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1611  
 start stop duration  
 TIME :19:48:20 20:01:51 14 (min) Purpose code: 3 Long E 1146  
 LOG : 752.02 752.75 0.72 Area code : 1  
 FDEPTH: 36 35 GearCond.code: 9  
 BDEPTH: 36 35 Validity code: 1  
 Towing dir: 10° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 114 Kg Total catch: 456.44 CATCH/HOUR: 1956.17

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
ECHENEIDAE	1394.23	17426	71.27	
Mustelus mustelus	198.86	120	10.17	
Tracharus trectae	119.14	1526	6.09	8346
Dicologlossa cuneata	75.17	8057	3.87	
Pagellus bellottii	72.34	1234	3.70	8345
Myliobatis aquila	40.29	34	2.06	
Raja miraletus	30.86	206	1.58	
Loligo vulgaris	6.69	17	0.34	
Atractoscion aequidens	6.17	51	0.32	
Arius packii	3.77	17	0.19	
Lithognathus mormyrus	3.09	17	0.16	
ECHENEIDAE	3.09	994	0.16	
Sardinella aurilla	1.37	17	0.07	
Etrumeus whiteheadi	0.51	17	0.03	
Total	1956.18	100.01		

PROJECT STATION: 3925  
 DATE: 8/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 1235  
 start stop duration  
 TIME :07:39:06 08:09:51 31 (min) Purpose code: 3 Long E 1303  
 LOG :1027.83 1029.37 1.53 Area code : 2  
 FDEPTH: 750 759 GearCond.code: 1  
 BDEPTH: 750 759 Validity code: 1  
 Towing dir: 50° Wire out: 1680 m Speed: 30 kn\*10  
 Sorted: 52 Kg Total catch: 52.12 CATCH/HOUR: 100.88

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Nezumia micronodon	13.97	362	13.85	
HOLOTURIDAE	11.26	335	11.16	
Yarella blackfordi *	10.18	329	10.09	
Lamproganmus axullus	8.38	21	8.31	
Scyllarides teklotsii	5.46	337	5.41	
OPHRIDIIDAE	5.23	182	5.18	
Hoplostethus cadenati	5.01	85	4.97	
OPISTHOCEPHALIDAE	4.95	2	4.91	
ALEPOCEPHALUS ROSEFRATUS	4.35	85	4.31	
Diatrobranchius capensis	4.24	54	4.20	
Lophius vaillanti	4.14	4	4.10	
Chaceon maritae, female	4.01	14	3.98	
Todaropsis eblanae	3.17	4	3.14	
Ehinania costaeacanarie	2.55	12	2.53	
Alepocephalus sp.	2.01	8	1.99	
MICROTURIDAE	1.57	74	1.56	
Halosaurus ovenii	1.51	33	1.50	
Merluccius polli	1.14	2	1.13	8347
S R I M P S	1.10	387	1.09	
Deania calcea	0.99	10	0.98	
Aristeus varidens, male	0.89	134	0.88	8349
Elmopterus pusillus	0.79	6	0.78	
Aristeus varidens, female	0.70	72	0.69	8348
Bathyraccongrus sp.	0.64	10	0.63	
Glypnus marsupialis	0.64	41	0.63	
Melanocetus johnsoni	0.48	19	0.48	
MORIDAE	0.41	4	0.41	
Oneroides sp.	0.33	2	0.33	
Triplophos hemingi	0.29	41	0.29	
Gephyroberyx darwini	0.14	2	0.14	
Nematocarcinus africanus	0.12	45	0.12	
Stephanolepis hispidus	0.10	14	0.10	
Malacocephalus laevis	0.04	2	0.04	
Dibranchius atlanticus	0.04	8	0.04	
Neimichthys scolopaceus	0.02	2	0.02	
Xenolepinichthys dagileishi	0.02	4	0.02	
Total	100.87	99.99		

PROJECT STATION:3926  
 DATE: 8/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1223 Long E 1316  
 start stop duration  
 TIME :11:07:22 11:33:20 30 (min) Purpose code: 3  
 LOG :1049.66 1044.12 1.46 Area code : 2  
 FDEPTH: 764 738 GearCond.code: 1  
 BDEPTH: 764 738 Validity code: 1  
 Towing dir: 450 Wire out:1600 m Speed: 30 kn\*10  
 Sorted: 65 Kg Total catch: 65.04 CATCH/HOUR: 130.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nezumia sp.	16.90	474	12.99	
Yacarella blackfordi	14.82	306	11.39	
Lamprolaimus exultus	12.66	44	9.73	
OPTISTROTETHIDAE	11.16	6	8.58	
Chaceon maritae, female	5.62	14	4.32	
STOMIIDAE	5.36	120	4.12	
ASEPOCEPHALIDAE	5.20	88	4.00	
Hoplostethus cadenati	5.12	78	3.94	
Aristeus varidens, female	5.04	306	3.87	8350
Ralstonius oweili	4.70	180	3.61	
Bathyracogaster vicinus	4.32	86	3.32	
Aristeus varidens, male	3.46	374	2.66	8351
Vitredonella sp.	3.44	2	2.64	
Merluccius pollii	3.00	2	2.31	8352
Squilla sp.	2.72	206	2.09	
MISCELLANEOUS	2.42	154	1.86	
OPHIIDAE	2.12	404	1.63	
Stomias boa boa	1.72	36	1.32	
Plesiopeneus edwardsianus	1.42	50	1.09	
Danoctopus sp.	1.42	10	1.09	
Chaceon maritae, male	1.40	2	1.08	
Diastocentrus capensis	1.40	10	1.08	
Bassarasp albescentis	1.04	14	0.80	
OMASTREPHIDAE	0.98	2	0.75	
Xenolepisichthys dagleisri	0.94	8	0.72	
Mundopsis sp.	0.92	176	0.71	
Trachipterus sp.	0.88	2	0.68	
Satrygterolis sp.	0.88	28	0.68	
SEPIOLIDAE	0.84	4	0.65	
Nemichthys scolopaceus	0.80	14	0.62	
ONYCHOTEUTHIDAE	0.76	2	0.58	
Dibranchius sp.	0.74	10	0.57	
Scopelogadus sp.	0.72	2	0.55	
HISTIOEUTHIDAE	0.72	2	0.55	
MYCOPHIDAE	0.68	104	0.52	
Cranchia scabra	0.68	2	0.52	
Etmopterus pusillus	0.68	2	0.46	
Etmopterus sp.	0.40	2	0.31	
RAJIDAE	0.40	4	0.31	
Ciccolene latroclera	0.32	8	0.25	
Nematocarcinus africanus	0.30	102	0.23	
Malacosteus niger	0.30	12	0.23	
MALACOSTEIGAE	0.20	6	0.15	
Parapanalpus narval	0.20	78	0.15	
Melanocetus johnsoni	0.20	22	0.15	
Prionichthys weilli	0.08	2	0.06	
Heteracanthus sp.	0.06	8	0.05	
Centrolophus niger	0.02	12	0.02	
Total	130.08		99.99	

PROJECT STATION:3927  
 DATE: 8/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1227 Long E 1322  
 start stop duration  
 TIME :12:46:06 13:16:10 30 (min) Purpose code: 3  
 LOG :1053.21 1054.81 1.60 Area code : 2  
 FDEPTH: 113 110 GearCond.code: 1  
 BDEPTH: 113 110 Validity code: 1  
 Towing dir: 1950 Wire out: 280 m Speed: 30 kn\*10  
 Sorted: 130 Kg Total catch: 130.53 CATCH/HOUR: 261.06

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dentex macrophthalmus	149.20	666	57.15	8354
Umbria canariensis	23.10	58	8.85	8355
Dentex barnardi	20.30	58	7.78	8353
Trigla lyra	17.00	130	6.51	
Lagocephalus laevis	8.30	12	3.18	
Raja miraletus	6.94	10	2.66	
Raja leopardus	6.30	2	2.41	
Dentex angolensis	4.10	18	1.57	8356
Trachurus trecae	3.90	96	1.49	8359
Cynoponticus ferox	3.34	2	1.28	
Pagellus bellottii	2.32	10	0.89	8357
G A S T R O P O D S	2.22	152	0.85	
Lophius vaillanti	2.06	10	0.79	
Scorpaena normani	1.82	4	0.70	
Pegusa lascaris	1.10	22	0.42	
Spicara alba	1.04	4	0.40	
Fagrus caeruleostictus	0.62	2	0.24	
Lophodes kempi	0.44	2	0.17	
Sardinella aurita	0.20	4	0.08	8358
Anthias anthias	0.02	8	0.01	
Total	261.06		100.01	

PROJECT STATION:3928  
 DATE: 8/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1226 Long E 1323  
 start stop duration  
 TIME :14:33:18 15:02:13 29 (min) Purpose code: 3  
 LOG :1059.92 1061.45 1.52 Area code : 2  
 FDEPTH: 96 93 GearCond.code: 1  
 BDEPTH: 96 93 Validity code: 1  
 Towing dir: 300 Wire out: 250 m Speed: 30 kn\*10  
 Sorted: 152 Kg Total catch: 152.12 CATCH/HOUR: 314.73

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dentex macrophthalmus	102.52	1024	32.57	8361
Trichurus lepturus	78.62	215	24.98	
Umbria canariensis	47.07	103	14.96	8360
Zeus faber	14.90	41	4.73	
Uranoscopus albesca	10.08	31	3.20	
Sepia orbignyana	8.94	14	2.84	
Citharus linguatula	7.94	168	2.52	
Trigla lyra	6.17	48	1.96	
Raja leopardus	6.00	2	1.91	
Pagellus bellottii	4.17	27	1.64	8363
Cynoponticus ferox	4.76	2	1.51	
Boops boops	4.14	46	1.32	
Raja miraletus	3.46	6	1.16	
Dentex barnardi	3.62	14	1.15	8364
Lagocephalus laevis	3.08	6	0.98	
Scorpaena normani	2.44	17	0.78	
Trachurus trecae	1.82	6	0.58	
Trachurus trecae	1.61	21	0.51	8365
Brotula barbata	1.01	4	0.32	
Dentex angolensis	0.81	10	0.26	8362
Dicologlossa cuneata	0.29	4	0.09	
Surriogobius bibransatus	0.08	2	0.03	
Total	314.73		100.00	

PROJECT STATION:3929  
 DATE: 8/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1227 Long E 1325  
 start stop duration  
 TIME :15:09:16 16:00:58 30 (min) Purpose code: 3  
 LOG :1064.62 1066.24 1.61 Area code : 2  
 FDEPTH: 70 70 GearCond.code: 1  
 BDEPTH: 70 70 Validity code: 1  
 Towing dir: 2250 Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 139 Kg Total catch: 507.68 CATCH/HOUR: 1015.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagellus bellottii	193.68	1950	19.08	8368
Umbria canariensis	163.14	416	16.07	8366
Litognathus mormyrus	144.72	368	14.25	
Trichurus lepturus	102.96	252	10.14	
Brachydeuterus auritus	90.72	654	8.93	
Dentex macrophthalmus	62.28	690	6.13	8367
Citharus linguatula	50.32	1230	4.96	
Trachurus trecae	39.80	792	3.92	8370
Brotula barbata	27.36	56	2.65	
Sepia officinalis hierredda	21.28	50	2.69	
Chelidonichthys gabonensis	21.88	164	2.15	
Selene dorsalis	21.44	100	2.11	
Torpedo torpedo	18.78	42	1.85	
Raja miraletus	10.64	14	1.05	
Zeus faber	7.04	14	0.69	
Branchiostegus semifasciatus	5.84	14	0.58	
Pomadasys incisus	5.76	28	0.57	8371
Fistularia petimba	5.60	20	0.55	
Pseudupeneus prayensis	4.10	72	0.40	
Pomadasys jubelini	2.36	8	0.23	8372
Scorpaenopsis	2.16	6	0.21	
Atractoscion aequidens	2.08	6	0.20	
COBIDAE	1.72	20	0.17	
Dentex barnardi	1.08	8	0.11	8369
Boops boops	1.00	6	0.10	
Dentex angolensis	0.64	8	0.06	8373
CONGRIDAE	0.56	6	0.04	
ANTIENNARIIDAE	0.28	6	0.03	
BLENNIIDAE	0.28	6	0.03	
Total	1015.36		99.99	

PROJECT STATION:3930  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1215 Long E 1325  
 start stop duration  
 TIME :05:27:22 05:58:06 31 (min) Purpose code: 3  
 LOG :1116.63 1118.16 1.52 Area code : 2  
 FDEPTH: 108 107 GearCond.code: 1  
 BDEPTH: 108 107 Validity code: 1  
 Towing dir: 180 Wire out: 300 m Speed: 30 kn\*10  
 Sorted: 161 Kg Total catch: 419.04 CATCH/HOUR: 811.05

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Umbria canariensis	280.80	1022	34.62	8374
Trachurus trecae	165.56	4355	20.41	8378
Dentex macrophthalmus	98.88	664	12.19	8375
Sardinella aurita	80.30	1976	9.90	8379
Boops boops	50.57	478	6.24	
Raja miraletus	43.12	95	5.32	
Dentex barnardi	26.01	95	3.21	8377
Zeus faber	17.90	45	2.21	
Dentex angolensis	15.39	81	1.90	8376
Pagellus bellottii	11.17	81	1.38	8380
Fagrus caeruleostictus	8.55	14	1.05	
Branchiostegus semifasciatus	8.06	12	0.39	
Scorpaenopsis	1.65	15	0.20	
Chaetodon haeffleri	1.61	10	0.20	
Trigla lyra	1.57	15	0.19	
Sepia officinalis hierredda	1.51	4	0.19	
Scorpaena normani	1.39	4	0.17	
Illex coindetii	1.05	54	0.13	
Citharus linguatula	0.64	19	0.08	
Anthias anthias	0.25	4	0.03	
Monolepis microstoma	0.10	10	0.01	
Total	811.08		100.01	

PROJECT STATION:3931  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1215  
 start stop duration Purpose code: 3  
 TIME :06:38:50 07:08:11 29 (min) Long E 1327  
 Area code : 2  
 FDEPTH: 99 96 GearCond.code: 1  
 BDEPTH: 99 96 Validity code: 1  
 Towing dir: 180° Wire out: 280 m Speed: 30 kn\*10

Sorted: 173 Kg Total catch: 172.96 CATCH/HOUR: 357.85

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trcae	160.03 4413	44.72	8381
Umbria canariensis	63.21 188	17.66	8382
Dentex macropthalmus	24.00 151	6.71	8384
Dentex barnardi	17.69 66	4.94	8385
Pagellus bellottii	15.33 39	4.28	8386
Raja miraletus	13.45 21	3.76	
Zeus faber	11.15 31	3.12	
Dentex angolensis	10.76 74	3.01	8383
Sardinella aurita	9.31 254	2.60	8387
Octopus vulgaris	6.48 4	1.83	
Chelidontactys capensis	5.94 52	1.66	
Chaetodon hoefleri	3.56 4	0.99	
Perallotrachus elminensis	2.67 19	0.75	
Trichurus lepturus	2.46 4	0.69	
Sepia orbigyana	2.26 6	0.63	
Sphaeroides pacenaster	2.26 2	0.63	
Epigonus telescopus	2.11 4	0.59	
Torpedo torpedo	1.90 2	0.53	
Illex coarctatus	1.08 106	0.30	
Branchiostegus semifasciatus	0.58 2	0.16	
Scorpaena noronhai	0.48 4	0.13	
Boops boops	0.46 19	0.13	
Scorpaen japonicus	0.35 2	0.10	
Citharus linguatula	0.31 6	0.09	
Total	357.83	99.99	

PROJECT STATION:3932  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1217  
 start stop duration Purpose code: 3  
 TIME :08:06:01 08:37:22 31 (min) Long E 1332  
 Area code : 2  
 FDEPTH: 73 73 GearCond.code: 1  
 BDEPTH: 73 73 Validity code: 1  
 Towing dir: 25° Wire out: 200 m Speed: 30 kn\*10

Sorted: 257 Kg Total catch: 609.83 CATCH/HOUR: 1180.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	345.48 8505	29.27	
Trachurus trcae	199.94 5181	16.94	8392
Umbria canariensis	159.31 819	13.50	8391
Pagellus bellottii	64.01 370	5.42	8394
Dentex barnardi	61.12 275	5.20	8390
Zeus faber	52.76 93	4.47	
Pomadasy incisus	40.20 261	3.41	8395
Pomadasy jubelini	35.77 50	3.03	
Trichurus lepturus	34.90 122	2.96	
Sepia orbigyana	33.87 33	2.87	
Selene dorsalis	28.45 209	2.41	
Dentex macropthalmus	18.14 130	1.54	8396
Raja miraletus	15.86 21	1.33	
Pseudupeneus prayensis	12.94 101	1.06	
Citharus linguatula	12.19 341	1.03	
Trigla lyra	10.08 93	0.85	
Dentex angolensis	9.43 159	0.80	8393
Lagocephalus laevis	7.10 6	0.60	
Boops boops	6.82 58	0.57	
Lithognathus mormyrus	5.23 14	0.44	
Microrhina angolensis	4.70 6	0.40	
Atractoscion aequidens	4.16 4	0.35	8389
Bemrops sp.	4.12 50	0.35	
Pseudotolithus senegalensis	3.58 4	0.30	8388
CALCIS	3.41 58	0.29	
Strotula barbata	2.67 21	0.23	
Chlorotocus crassicornis	2.67 14	0.23	
Fistularia petimba	2.46 14	0.21	
Sardinella aurita	1.45 6	0.12	
Total	1180.32	100.01	

PROJECT STATION:3933  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1216  
 start stop duration Purpose code: 3  
 TIME :09:29:20 09:58:29 29 (min) Long E 1335  
 Area code : 2  
 FDEPTH: 44 49 GearCond.code: 1  
 BDEPTH: 44 49 Validity code: 1  
 Towing dir: 222° Wire out: 200 m Speed: 32 kn\*10

Sorted: 85 Kg Total catch: 750.39 CATCH/HOUR: 1552.53

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Pomadasy incisus	481.66 4634	31.02	
Trachurus trcae	387.31 5628	24.95	8400
Brachydeuterus auritus	321.93 5628	20.74	
Pagellus bellottii	15.38 21	2.28	8399
Nycteropera rubra	31.03 6	2.00	
Raja miraletus	26.98 33	1.74	
Sphyræna sphyraena	24.00 17	1.55	
Galeoides decadactylus	23.34 132	1.50	
Lagocephalus laevis	20.86 6	1.34	
Citharus linguatula	16.88 596	1.09	
Trichurus lepturus	16.55 58	1.07	
Grammolites gruvelli	15.89 314	1.02	
Lithognathus mormyrus	15.72 114	1.01	
Anthias anthias	15.39 83	0.99	
Umbria canariensis	13.57 166	0.87	
Selene dorsalis	12.06 90	0.78	
Cynoglossus lerox	12.00 6	0.77	
Atractoscion aequidens	11.42 33	0.74	
Chloroscombrus chrysurus	10.76 33	0.69	
Argyrosomus hololepidotus	8.71 8	0.56	8402
Rhinobatos albomaculatus	7.14 6	0.46	
Pseudotolithus senegalensis	6.74 10	0.43	8401
Chaetodon hoefleri	6.29 33	0.41	
Sepia orbigyana	6.27 8	0.40	
Pomadasy jubelini	5.46 66	0.35	
Pteroscion pelli	4.14 33	0.27	
Dentex barnardi	3.74 6	0.24	8398
Bicelolopglossa coneata	3.14 50	0.20	
Raja striata	2.65 2	0.17	
Chilomycterus spinosus mazel.	2.32 17	0.15	
Torpedo torpedo	1.16 33	0.07	
Strotula barbata	0.66 17	0.04	
Sardinella aurita	0.52 6	0.03	8397
Spongylosoma cantharus	0.50 17	0.03	
Pemaeus notialis	0.33 17	0.02	
Total	1552.52	99.98	

PROJECT STATION:3934  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1202  
 start stop duration Purpose code: 3  
 TIME :12:01:52 12:23:48 22 (min) Long E 1339  
 Area code : 2  
 FDEPTH: 54 57 GearCond.code: 9  
 BDEPTH: 54 57 Validity code: 1  
 Towing dir: 10° Wire out: 200 m Speed: 30 kn\*10

Sorted: 183 Kg Total catch: 931.15 CATCH/HOUR: 2539.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	797.05 12682	31.39	
Pomadasy incisus	514.91 3491	20.28	
Trachurus trcae	304.09 7334	11.97	8404
Pagellus bellottii	297.95 1773	11.73	8403
Pomadasy jubelini	122.73 218	4.83	
Trichurus lepturus	65.18 232	2.45	
Lithognathus mormyrus	62.18 259	2.45	
Umbria canariensis	54.68 559	2.15	8410
Citharus linguatula	47.32 1241	1.86	
Galeoides decadactylus	34.64 82	1.36	
Rhinobatos albomaculatus	30.55 11	1.20	
Pseudupeneus prayensis	26.32 191	1.04	
Raja miraletus	24.55 27	0.97	
Dentex barnardi	24.14 109	0.95	8405
Pseudotolithus senegalensis	15.00 27	0.59	8409
Atractoscion aequidens	11.32 14	0.45	8408
Selene dorsalis	11.32 55	0.45	
Sepia orbigyana	9.55 8	0.38	
Grammolites gruvelli	9.00 123	0.35	
Alloteuthis africana	8.45 1459	0.33	
Chloroscombrus chrysurus	8.32 41	0.33	
Boops boops	8.05 27	0.32	
Octopus sp.	8.05 3	0.32	
Cynoglossus canariensis	7.91 14	0.31	
Trigla lyra	6.68 14	0.26	
Spongylosoma cantharus	6.27 27	0.25	
SOCORRIDAE	6.14 27	0.24	
Argyrosomus hololepidotus	5.73 14	0.23	
Sardinella maderensis	5.73 14	0.23	8407
Sardinella aurita	5.73 14	0.23	8406
Total	2539.54	100.02	

PROJECT STATION:3935  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1200  
 start stop duration Purpose code: 3  
 TIME :13:08:16 13:37:43 29 (min) Long E 1337  
 Area code : 2  
 FDEPTH: 71 70 GearCond.code: 1  
 BDEPTH: 71 70 Validity code: 1  
 Towing dir: 190° Wire out: 210 m Speed: 30 kn\*10

Sorted: 96 Kg Total catch: 336.15 CATCH/HOUR: 695.48

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trichurus lepturus	143.03 457	20.57	
Trachurus trcae	98.86 617	14.21	8412
Pomadasy incisus	82.76 660	11.97	
Brachydeuterus auritus	81.83 1217	11.77	
Dentex barnardi	74.96 356	10.78	8411
Lithognathus mormyrus	34.76 153	5.00	
Atractoscion aequidens	28.53 37	4.10	8416
Pagellus bellottii	25.14 174	3.61	8414
Umbria canariensis	20.57 101	2.95	8413
Boops boops	20.36 159	2.83	
Pomadasy jubelini	13.84 14	1.99	
Pseudupeneus prayensis	12.17 66	1.75	
Raja miraletus	12.02 14	1.73	
Boops boops	9.50 23	1.37	
Strotula barbata	8.83 6	1.27	
Selene dorsalis	5.73 23	0.82	
Citharus linguatula	5.44 66	0.78	
Chaetodon hoefleri	5.36 14	0.77	
Branchiostegus semifasciatus	4.34 8	0.62	
Sepia orbigyana	3.21 2	0.46	
Alloteuthis africana	3.19 377	0.46	
Sardinella aurita	1.16 8	0.17	8415
Total	695.59	100.02	

PROJECT STATION:3936  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1159  
 start stop duration Purpose code: 3  
 TIME :14:50:30 15:21:13 31 (min) Long E 1332  
 Area code : 2  
 FDEPTH: 101 103 GearCond.code: 1  
 BDEPTH: 101 103 Validity code: 1  
 Towing dir: 10° Wire out: 255 m Speed: 30 kn\*10

Sorted: 209 Kg Total catch: 209.18 CATCH/HOUR: 404.86

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Boops boops	145.84 1390	36.02	
Dentex macropthalmus	84.97 497	20.99	8419
Dentex angolensis	27.97 124	6.91	8420
Dentex barnardi	24.39 81	6.02	8421
Pagellus bellottii	21.58 103	5.33	8418
Umbria canariensis	18.87 64	4.66	8417
Raja miraletus	14.17 33	3.50	
Zeus faber	12.64 35	3.12	
Erythrocles monodi	11.83 182	2.92	
Lagocephalus laevis	6.35 10	1.57	
Anthias anthias	5.85 48	1.44	
G A S T R O P O D S	4.99 314	1.23	
Sphyræna sphyraena	4.70 14	1.16	
Chaetodon hoefleri	3.64 12	0.90	
Branchiostegus semifasciatus	2.36 2	0.58	
Saurida brasiliensis	2.34 75	0.58	
Fistularia petimba	1.70 4	0.42	
Trachurus trcae	1.65 15	0.41	8422
Octopus sp.	1.63 2	0.40	
Trigla lyra	1.53 12	0.38	
Cephaloscypha darwini	1.34 2	0.33	
Sesastes capensis	1.24 4	0.31	
Strotula barbata	1.20 2	0.19	
Alloteuthis africana	0.75 85	0.19	
Sepia orbigyana	0.70 15	0.17	
S H R I M P S	0.41 217	0.10	
Citharus linguatula	0.41 10	0.10	
Serranus cabrilla	0.27 2	0.07	
Total	404.86	100.00	



PROJECT STATION:3937  
 DATE: 9/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1158 Long E 1330  
 start stop duration Purpose code: 3  
 TIME :16:02:49 16:23:33 21 (min)  
 LOG :1171.82 1172.91 1.09 Area code : 2  
 FDEPTH: 266 259 GearCond.code: 9  
 BDEPTH: 266 259 Validity code: 1  
 Towing dir: 190a Wire out: 650 m Speed: 30 kn\*10

Sorted: 109 Kg Total catch: 653.45 CATCH/HOUR: 1867.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dentex macrophthalmus	484.29	1766	25.94	8423
Merluccius pollii	392.57	5469	21.03	8424
Zenopsis conchifer	348.00	1989	18.64	
Chlorophthalmus atlanticus	264.86	7406	14.15	
Parapanaeus longirostris, fem.	181.71	32400	9.73	8426
Synagrops microlepis	54.34	4311	2.91	
Trichurus lepturus	50.23	429	2.69	
Parapanaeus longirostris, male	35.83	2691	1.92	8425
Raja micropetrus	26.91	34	1.12	
Todaropsis eblanæ	7.37	120	0.39	
Pterothrissus belloni	6.86	51	0.37	
Epigonus telescopus	4.29	120	0.23	
Erythrocles monodi	3.60	51	0.19	
OPHIURIDAE	3.43	171	0.18	
Foncinus kuhlii	2.74	86	0.15	
Hoplostethus mediterraneus	2.23	34	0.12	
MYCTOPHIDAE	0.86	377	0.05	
Lophius vaillanti	0.83	17	0.04	
Peristedion cataphractum	0.51	69	0.03	
PLATYCEPHALIDAE	0.34	17	0.02	
Semmnops gweyi	0.34	17	0.02	
Coelacanthus coelacanthus	0.34	17	0.02	
Lepidopus sp.	0.34	17	0.02	
Ventrifossa sp.	0.17	17	0.01	
Total	1866.99		100.01	

PROJECT STATION:3940  
 DATE: 9/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1155 Long E 1320  
 start stop duration Purpose code: 3  
 TIME :22:06:36 22:36:29 30 (min)  
 LOG :1191.12 1196.19 1.46 Area code : 2  
 FDEPTH: 662 656 GearCond.code: 1  
 BDEPTH: 662 656 Validity code: 1  
 Towing dir: 340a Wire out:1650 m Speed:30 kn\*10

Sorted: 34 Kg Total catch: 168.85 CATCH/HOUR: 337.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Hoplostethus cadenati	119.00	3170	35.24	
Yareella blackfordi	72.00	1810	21.32	
Triptopos hemingi	28.00	1850	8.29	
Nematocarcinus africanus	24.00	7610	4.11	
STOMIIDAE	15.30	250	4.53	
Lamprogrammus exutus	14.10	120	4.18	
Chaceon maritae, female	12.00	50	3.55	
STERNOPTYCHIDAE	8.60	450	2.55	
Nezumia microgynodon	8.60	190	2.55	
Lophius vaillanti	7.40	10	2.19	
Benthodesmus tenuis	5.50	240	1.63	
Aristeus varidensis, female	4.60	70	1.36	8433
Diastobranchus capensis	4.10	30	1.21	
Gadella imberbis	3.90	180	1.15	
Aristeus varidensis, male	3.50	40	1.04	8434
Etmopterus pollii	2.00	50	0.59	
Etmopterus pusillus	2.00	10	0.59	
CHAULIIONOTIDAE	1.50	140	0.44	
Bathyracconger vicinus	0.60	20	0.18	
ALEPOCEPHALIDAE	0.50	70	0.15	
Nemichthys scolopaceus	0.20	10	0.06	
Lampanyctodes nebulosus	0.10	20	0.03	
Melanurus zugmayeri	0.10	100	0.03	
Parapandalus narval	0.10	20	0.03	
Total	337.70		100.00	

PROJECT STATION:3938  
 DATE: 9/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1156 Long E 1324  
 start stop duration Purpose code: 3  
 TIME :17:54:09 18:25:39 32 (min)  
 LOG :1180.97 1182.51 1.53 Area code : 2  
 FDEPTH: 464 466 GearCond.code: 1  
 BDEPTH: 464 466 Validity code: 1  
 Towing dir: 344a Wire out:1175 m Speed: 30 kn\*10

Sorted: 40 Kg Total catch: 318.10 CATCH/HOUR: 596.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yareella blackfordi	218.16	773	39.93	
Nematocarcinus africanus	128.66	20353	21.57	
GEMPYIDAE	48.17	1971	8.08	
Illex coindetii	42.43	26	7.11	
Hoplostethus cadenati	40.37	1382	6.73	
Triptopos hemingi	20.79	2066	3.49	
OCTOPODIDAE	11.91	13	2.00	
Etmopterus pusillus	10.13	176	1.70	
STOMIIDAE	9.84	218	1.65	
Aristeus varidensis, female	9.17	615	1.54	8429
Merluccius pollii	6.19	13	1.04	8427
Aristeus varidensis, male	4.78	491	0.80	8428
Chaceon maritae, female	4.69	15	0.79	
Etmopterus sp.	4.11	13	0.69	
S R R I M P S	4.11	1245	0.69	
Bathyracconger vicinus	2.44	233	0.41	
HISTIOEUTHRIDAE	2.33	13	0.39	
Nezumia sp.	1.76	54	0.30	
Lamprogrammus exutus	1.37	13	0.23	
ONYCHOTEUTHIDAE	1.37	13	0.23	
Halosaurus oerlii	1.37	54	0.23	
Coelacanthus coelacanthus	1.09	13	0.18	
ALEPOCEPHALIDAE	0.96	68	0.16	
Scyllarides sp.	0.26	13	0.04	
Total	596.46		100.02	

PROJECT STATION:3941  
 DATE:10/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1144 Long E 1318  
 start stop duration Purpose code: 3  
 TIME :06:51:27 07:21:43 30 (min)  
 LOG :1255.97 1257.46 1.48 Area code : 2  
 FDEPTH: 643 627 GearCond.code: 1  
 BDEPTH: 643 627 Validity code: 1  
 Towing dir: 350a Wire out:1650 m Speed: 30 kn\*10

Sorted: 106 Kg Total catch: 227.15 CATCH/HOUR: 454.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yareella blackfordi	80.12	2898	17.64	
CENTROLOPHIDAE	77.86	150	17.14	
Nematocarcinus africanus	73.08	32708	16.09	
Aciomma sp.	67.28	49744	14.81	
Hoplostethus cadenati	67.20	2166	14.79	
Todaropsis eblanæ	16.12	50	3.55	
Triptopos hemingi	11.88	1260	2.55	
Nezumia sp.	9.06	452	1.99	
Illex coindetii	6.80	50	1.50	
MYCTOPHIDAE	6.54	680	1.44	
Scyllarides herklotsii	5.54	630	1.22	
Nemichthys scolopaceus	5.04	226	1.11	
Merluccius pollii	3.90	4	0.44	8435
Chaceon maritae, female	3.80	14	0.84	
Gadella sp.	3.26	100	0.72	
Lamprogrammus exutus	3.26	150	0.72	
Leptostomus sp.	3.26	50	0.72	
Eblanania costaecanarie	3.26	24	0.72	
Hoplostethus sp.	3.02	176	0.66	
CONGRIDAE	2.52	126	0.55	
Chaceon maritae, male	1.10	2	0.24	
RHINOPTERIDAE	0.70	2	0.15	
Total	454.30		100.01	

PROJECT STATION:3939  
 DATE: 9/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1156 Long E 1322  
 start stop duration Purpose code: 3  
 TIME :19:58:02 20:30:33 33 (min)  
 LOG :1187.62 1189.23 1.60 Area code : 2  
 FDEPTH: 572 573 GearCond.code: 1  
 BDEPTH: 572 573 Validity code: 1  
 Towing dir: 170a Wire out:1450 m Speed:30 kn\*10

Sorted: 57 Kg Total catch: 573.65 CATCH/HOUR: 1043.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Hoplostethus cadenati	89.09	22182	63.19	
Yareella blackfordi	107.09	3273	10.27	
Benthodesmus tenuis	96.91	3655	9.29	
Nematocarcinus africanus	77.09	32945	7.39	
STOMIIDAE	32.55	764	3.12	
Triptopos hemingi	19.09	2036	1.83	
Lamprogrammus exutus	12.55	673	1.20	
Aristeus varidensis, female	5.45	273	0.52	8431
Gadella imberbis	5.45	182	0.52	
Laemonema laureysi	5.27	73	0.51	
Centrophorus granulosus	3.64	2	0.35	
Scyllarides herklotsii	3.09	309	0.30	
Chaceon maritae, female	2.73	5	0.26	
Merluccius pollii	2.64	4	0.25	8430
Bathyracconger vicinus	2.36	127	0.23	
Nezumia sp.	2.36	109	0.23	
Stomias sp.	1.45	109	0.14	
Aristeus varidensis, male	1.27	164	0.12	8432
Nemichthys scolopaceus	1.27	145	0.12	
Physiculus sp.	0.73	18	0.07	
Chaceon maritae, male	0.55	2	0.05	
MYCTOPHIDAE	0.36	18	0.03	
Total	1042.99		99.99	

PROJECT STATION:3942  
 DATE:10/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1145 Long E 1323  
 start stop duration Purpose code: 3  
 TIME :09:16:01 09:45:31 30 (min)  
 LOG :1266.57 1268.06 1.47 Area code : 2  
 FDEPTH: 337 349 GearCond.code: 1  
 BDEPTH: 337 349 Validity code: 1  
 Towing dir: 175a Wire out: 900 m Speed: 32 kn\*10

Sorted: 123 Kg Total catch: 371.08 CATCH/HOUR: 742.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Chaxnax pictus	244.00	48	32.88	
Hymenoccephalus italicus	110.00	18332	14.82	
Trachurus trecae	106.40	148	14.34	
Aciomma bondi	55.40	980	7.46	
Nematocarcinus africanus	49.80	620	6.71	
Merluccius pollii	44.80	200	6.04	8436
Lophius vaillanti	36.12	40	4.87	
Etmopterus lucifer	19.48	768	2.62	
Coelacanthus sp.	18.80	200	2.53	
Synagrops microlepis	15.96	872	2.15	
J E L Y F I S H	7.00	648	0.94	
Todaropsis eblanæ	6.44	76	0.87	
Zenopsis conchifer	6.16	4	0.83	
Chlorophthalmus atlanticus	4.80	68	0.65	
Alloteuthis africana	3.68	1480	0.50	
Callinectes sp.	2.92	40	0.39	
Coelacanthus coelacanthus	2.04	36	0.27	
Nesochaxophus ingolfianus	1.96	16	0.26	
Malacocephalus occidentalis	1.88	32	0.25	
Lestidiops sp.	1.36	4	0.18	
Gephyroceryx darwini	1.36	4	0.18	
Nezumia aequalis	1.20	4	0.16	
Coelacanthus elongatum	0.28	8	0.04	
MYCTOPHIDAE	0.24	24	0.03	
Stereonastis sp.	0.08	4	0.01	
Total	742.16		99.98	

PROJECT STATION:3943  
 DATE:10/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1146 Long E 1329  
 start stop duration Purpose code: 3  
 TIME :11:14:58 11:44:58 30 (min) Area code : 2  
 LOG :1276.16 1277.71 1.58 GearCond.code: 1  
 FDEPTH: 165 160 Validity code: 1  
 BDEPTH: 165 160  
 Towing dir: 340m Wire out: 400 m Speed: 30 kn\*10  
 Sorted: 44 Kg Total catch: 5/3.80 CATCH/HOUR: 1147.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trichurus lepturus	500.50	10140	43.61
Syngnathus microlepis	249.60	58708	21.75
Dentex angolensis	128.70	286	11.21
Dentex macrophthalmus	112.00	520	9.76
Brotula barbata	51.22	52	4.46
Pterothrissus bellotti	19.24	104	1.68
Galeus melastomus	13.78	52	1.20
Zeus faber	12.48	78	1.09
Dentex barnardi	10.66	26	0.93
Todaropsis eblanae	10.40	208	0.91
Parapenaeus longirostris, fem.	9.38	182	0.82
Dicologlossa cuneata	8.84	234	0.77
Citharus linguatula	7.02	78	0.61
Scorpaena angolensis	5.20	26	0.45
G A S T R O P O D S	4.94	208	0.43
Zenopsis conchifer	3.38	52	0.29
GOSIIDAE	0.26	26	0.02
Total	1147.60	99.99	

PROJECT STATION:3944  
 DATE:10/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1146 Long E 1333  
 start stop duration Purpose code: 3  
 TIME :12:42:57 13:12:59 30 (min) Area code : 2  
 LOG :1283.54 1285.16 1.61 GearCond.code: 1  
 FDEPTH: 110 109 Validity code: 1  
 BDEPTH: 110 109  
 Towing dir: 164m Wire out: 290 m Speed: 30 kn\*10  
 Sorted: 108 Kg Total catch: 108.10 CATCH/HOUR: 216.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Dentex macrophthalmus	43.34	492	43.17
Dentex angolensis	43.90	188	20.31
Trichurus lepturus	18.50	44	8.56
Trigla lyra	16.20	148	7.49
Citharus linguatula	5.22	138	2.41
Cymara micra	3.76	2	1.74
G A S T R O P O D S	3.60	282	1.67
Todarodes sp.	2.90	194	1.34
Dentex barnardi	2.88	12	1.33
Zeus faber	2.82	8	1.30
Todaropsis eblanae	2.80	72	1.30
Lophius vaillanti	2.66	8	1.23
Octopus sp.	2.66	4	1.23
Raja miraletus	2.38	4	1.10
Boops boops	2.38	12	1.10
Pageillus bellottii	2.22	8	1.03
Brotula macrura	2.12	2	0.98
Lagocephalus laevis	1.96	2	0.91
Lepidion lepagei	1.68	4	0.78
Pterothrissus bellotti	1.34	2	0.62
Sepia orbigyana	0.90	2	0.42
Total	216.20	100.01	

PROJECT STATION:3945  
 DATE:10/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1149 Long E 1341  
 start stop duration Purpose code: 3  
 TIME :14:27:45 14:57:42 30 (min) Area code : 2  
 LOG :1293.83 1295.37 1.53 GearCond.code: 1  
 FDEPTH: 64 62 Validity code: 1  
 BDEPTH: 64 62  
 Towing dir: 160m Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 166 Kg Total catch: 662.88 CATCH/HOUR: 1325.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Lithognathus mormyrus	492.00	2368	37.11
Pomadourus leucurus	200.00	1536	15.09
Brachydeuterus acutus	163.60	2128	12.34
Paradasy roreri	58.80	88	4.44
Urophycis canariensis	55.20	488	4.16
Citharus linguatula	53.68	1744	4.05
Dasyatis macrura	44.80	8	3.38
Pageillus bellottii	42.24	264	3.19
Pseudupeneus prayensis	40.24	368	3.04
Trichurus lepturus	39.20	208	2.96
Trachurus trachurus	23.12	592	1.74
Raja miraletus	22.08	48	1.67
Sepia orbigyana	18.48	16	1.39
Grammolites gruvelli	16.32	312	1.23
Allotretus africana	11.04	1456	0.83
Atractosteus aequidens	9.92	8	0.75
Pseudotolithus senegalensis	8.32	8	0.63
Torpedo torpedo	6.16	16	0.46
Serranus atronotus	5.12	88	0.39
Dentex barnardi	4.32	8	0.33
Arnoglossus imperialis	3.44	24	0.26
G A S T R O P O D S	1.84	264	0.14
Trigla lyra	1.84	16	0.14
Selene dorsalis	1.04	8	0.08
Amphiprion notus	0.96	120	0.07
Saurida gracilirostris	0.88	152	0.07
BLENNIDAE	0.24	8	0.02
Lagocephalus laevis	0.08	8	0.01
Total	1325.76	99.97	

PROJECT STATION:3946  
 DATE:10/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1147 Long E 1345  
 start stop duration Purpose code: 3  
 TIME :15:41:56 16:11:57 30 (min) Area code : 2  
 LOG :1300.02 1301.73 1.71 GearCond.code: 1  
 FDEPTH: 28 28 Validity code: 1  
 BDEPTH: 28 28  
 Towing dir: 180m Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 47 Kg Total catch: 47.13 CATCH/HOUR: 94.26

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Sardinella maderensis	22.40	502	23.76
Sardinella aurita	14.40	346	15.28
Sepia orbigyana	8.94	36	9.48
Lagocephalus laevis	8.30	30	8.81
Raja miraletus	4.76	10	5.05
Chloroscombrus chrysurus	4.68	26	4.96
Ephippion guttifer	3.98	2	4.22
Allotretus africana	3.02	1348	3.20
Pomadourus leucurus	2.70	20	2.86
Ballistes sp.	2.68	6	2.84
Brachydeuterus acutus	2.68	68	2.84
Citharus linguatula	2.14	58	2.27
Lithognathus mormyrus	1.98	8	2.10
Selene dorsalis	1.72	4	1.82
Bemrops heterurus	1.62	38	1.72
Pageillus bellottii	1.52	12	1.61
Pomadourus peroteti	1.14	2	1.21
Rhinobatos albomaculatus	0.98	2	1.04
Epinephelus aeneus	0.98	2	1.04
Trachurus trachurus, juvenile	0.94	228	1.00
Sphyrna sphyraena	0.56	2	0.59
Pseudupeneus prayensis	0.52	12	0.55
Cynoglossus canariensis	0.40	2	0.42
Dicologlossa cuneata	0.38	4	0.40
G A S T R O P O D S	0.30	56	0.32
Dentex barnardi	0.22	2	0.23
Umbra canariensis	0.18	2	0.19
Fistularia petimba	0.14	4	0.15
Total	94.26	99.96	

PROJECT STATION:3946  
 DATE:10/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1147 Long E 1345  
 start stop duration Purpose code: 3  
 TIME :15:41:56 16:11:57 30 (min) Area code : 2  
 LOG :1300.02 1301.73 1.71 GearCond.code: 1  
 FDEPTH: 28 28 Validity code: 1  
 BDEPTH: 28 28  
 Towing dir: 180m Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 47 Kg Total catch: 47.13 CATCH/HOUR: 94.26

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Sardinella maderensis	22.40	502	23.76
Sardinella aurita	14.40	346	15.28
Sepia orbigyana	8.94	36	9.48
Lagocephalus laevis	8.30	30	8.81
Raja miraletus	4.76	10	5.05
Chloroscombrus chrysurus	4.68	26	4.96
Ephippion guttifer	3.98	2	4.22
Allotretus africana	3.02	1348	3.20
Pomadourus leucurus	2.70	20	2.86
Ballistes sp.	2.68	6	2.84
Brachydeuterus acutus	2.68	68	2.84
Citharus linguatula	2.14	58	2.27
Lithognathus mormyrus	1.98	8	2.10
Selene dorsalis	1.72	4	1.82
Bemrops heterurus	1.62	38	1.72
Pageillus bellottii	1.52	12	1.61
Pomadourus peroteti	1.14	2	1.21
Rhinobatos albomaculatus	0.98	2	1.04
Epinephelus aeneus	0.98	2	1.04
Trachurus trachurus, juvenile	0.94	228	1.00
Sphyrna sphyraena	0.56	2	0.59
Pseudupeneus prayensis	0.52	12	0.55
Cynoglossus canariensis	0.40	2	0.42
Dicologlossa cuneata	0.38	4	0.40
G A S T R O P O D S	0.30	56	0.32
Dentex barnardi	0.22	2	0.23
Umbra canariensis	0.18	2	0.19
Fistularia petimba	0.14	4	0.15
Total	94.26	99.96	

PROJECT STATION:3947  
 DATE:11/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1130 Long E 1322  
 start stop duration Purpose code: 3  
 TIME :00:49:55 01:20:00 30 (min) Area code : 2  
 LOG :1362.34 1363.98 1.63 GearCond.code: 1  
 FDEPTH: 363 364 Validity code: 1  
 BDEPTH: 363 364  
 Towing dir: 205m Wire out: 900 m Speed: 30 kn\*10  
 Sorted: 21 Kg Total catch: 463.16 CATCH/HOUR: 926.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Merluccius polli	386.80	844	41.76
Nematocarcinus africanus	266.40	41016	28.76
Limnomema laureysii	65.28	744	7.05
Hymenocephalus italicus	59.28	4320	6.40
Etmopterus polli	30.00	744	1.24
Centropristis granulosa	30.00	8	3.24
Malacocephalus occidentalis	15.36	96	1.68
MYCTOPHIDAE	14.64	3552	1.58
Plesionika martia	12.96	1944	1.40
Chaunax pictus	11.28	144	1.22
Lophius vaillanti	10.80	24	1.17
Sebastes capensis	10.56	72	1.14
Parapenaeus longirostris, fem.	5.28	792	0.57
Ariomma bondi	2.88	72	0.31
Aristeus varidens, male	1.92	288	0.21
Aristeus varidens, female	1.44	96	0.16
Parapandalus narval	0.72	48	0.08
SCYLLARIDAE	0.48	120	0.05
Trigla lyra	0.24	24	0.03
Total	926.32	100.03	

PROJECT STATION: 3948  
 DATE: 11/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1133 Long E 1330  
 start stop duration Purpose code: 3  
 LOG : 1316.07 1377.61 1.53 Area code : 2  
 FDEPTH: 103 102 GearCond.code: 1  
 BDEPTH: 103 102 Validity code: 1  
 Towing dir: 1600 Wire out: 300 m Speed: 31 kn\*10

Sorted: 133 Kg Total catch: 506.32 CATCH/HOUR: 1012.64

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trichurus lepturus	453.30	1602	44.76
Chelidonichthys gabonensis	215.20	324	21.25
Synagrops microlepis	183.60	58368	18.13
Umbra canariensis	52.20	34	5.15 8462
Raja miraletus	26.16	30	2.64
Dentex macrocephalus	15.48	18	1.53 8465
Brotula barbata	14.00	36	1.38
Citharus linguatula	12.54	180	1.24
Lagocephalus laevigatus	11.88	24	1.17
Zeus taurus	8.52	54	0.84
Scorpaena normani	1.26	36	0.12
Dentex argolepis	4.44	24	0.44 8463
Pterothrissus oelloci	3.36	18	0.33
Dentex barnardi	1.86	6	0.18 8464
Tarpedo torpedo	1.20	6	0.12
Brachydeuterus auritus	0.72	6	0.07
Trachurus trecae	0.24	6	0.02
Saureia brasiliensis	0.06	6	0.01
Total	1012.62	99.98	

PROJECT STATION: 3951  
 DATE: 11/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1132 Long E 1343  
 start stop duration Purpose code: 3  
 LOG : 1396.28 1398.22 1.94 Area code : 2  
 FDEPTH: 29 27 GearCond.code: 1  
 BDEPTH: 29 27 Validity code: 1  
 Towing dir: 3500 Wire out: 120 m Speed: 31 kn\*10

Sorted: 105 Kg Total catch: 264.18 CATCH/HOUR: 466.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Sardinella aurita	420.00	10684	90.09 8475
Aleeticus alexandrinus	15.62	11	3.35
Raja miraletus	7.96	14	1.71
Rhinobatos albomaculatus	4.61	5	0.59
Ephippion guttifer	2.98	2	0.64
Trachinotus goreensis	2.88	5	0.62
Trachinotus ovatus	2.05	5	0.44
Octopus macropus	1.92	2	0.41
Bombax greyi	1.84	32	0.39
Scorpaenopsis litlor	1.66	2	0.36
Sphyræna sphyraena	1.34	4	0.29
Citharus linguatula	1.31	26	0.28
Sepia orbigynana	1.24	7	0.27
Lagocephalus laevigatus	0.42	2	0.09
Sardinella maderensis	0.41	12	0.09
Total	466.24	100.02	

PROJECT STATION: 3949  
 DATE: 11/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1132 Long E 1335  
 start stop duration Purpose code: 3  
 LOG : 1382.73 1384.43 1.68 Area code : 2  
 FDEPTH: 61 53 GearCond.code: 1  
 BDEPTH: 61 53 Validity code: 1  
 Towing dir: 3400 Wire out: 180 m Speed: 31 kn\*10

Sorted: 154 Kg Total catch: 154.14 CATCH/HOUR: 298.34

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Sardinella aurita	103.35	2506	34.64 8466
Dentex barnardi	51.10	250	17.13 8467
Trachurus trecae	27.68	681	9.26 8470
Pseudupeneus prayensis	25.84	215	8.66
HOLOOURIDAE	15.39	2578	5.16
Octopus vulgaris	10.20	12	3.42
Raja miraletus	9.21	15	3.09
Trichurus lepturus	8.91	19	2.95
Sepia orbigynana	8.79	14	2.95
Plectrochanna mediterranea	5.62	4	1.89
Parapristipoma sp.	3.74	8	1.25
Citharus linguatula	3.66	120	1.23
Lithognathus morryrus	2.88	6	0.97
Brachydeuterus auritus	2.38	15	0.80
Diplois carvinus carvinus	1.15	2	0.72
Umbra canariensis	1.84	4	0.62 8469
Epinephelus alexandrinus *	1.80	4	0.60
Tarpedo torpedo	1.78	4	0.60
Cratodon sp.	1.68	35	0.56
Spongioloma cantharus	1.45	2	0.49
Cratodon hoefleri	1.32	8	0.44
Pomadasys incisus	1.20	4	0.40
Bombax greyi	1.05	25	0.35
Pageillus bellottii	1.05	12	0.35 8468
Chelidonichthys capensis	1.03	8	0.35
Sphyræna guachancho	0.83	2	0.28
Boops boops	0.77	8	0.26
Sargocentron hastatus	0.84	2	0.18
Scorpaena sp.	0.37	6	0.12
Selene dorsalis	0.35	2	0.12
BALISTIDAE	0.17	6	0.06
Monolepis microstoma	0.12	4	0.04
BLENNIIDAE	0.06	2	0.02
Total	298.24	99.98	

PROJECT STATION: 3952  
 DATE: 11/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1117 Long E 1345  
 start stop duration Purpose code: 3  
 LOG : 1411.19 1412.77 1.58 Area code : 2  
 FDEPTH: 21 23 GearCond.code: 1  
 BDEPTH: 21 23 Validity code: 1  
 Towing dir: 100 Wire out: 12 m Speed: 30 kn\*10

Sorted: 83 Kg Total catch: 418.90 CATCH/HOUR: 837.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	198.00	10450	23.63
Sardinella aurita	184.00	4110	21.96 8477
Pseudupeneus prayensis	127.00	3360	15.16
Decapodus punctatus	66.50	620	7.94
Sardinella maderensis	53.00	2000	6.75 8476
Galeoides decacetylus	40.20	1130	4.80
Ephippion guttifer	27.00	20	3.22
Cymnura altaveia	16.50	10	1.97
Pageillus bellottii	16.40	1580	1.96 8479
Dentex barnardi	16.20	220	1.93 8480
Pomadasys rospeli	14.70	10	1.75
Pagrus caeruleostictus	14.00	20	1.67 8481
Lithognathus morryrus	10.50	20	1.25
Selene dorsalis	7.70	200	0.92
Rhinobatos albomaculatus	7.70	6	0.92
Chlorocentrus chrysurus	6.50	30	0.78
Pseudotolithus typus	6.40	20	0.75 8482
Epinephelus aeneus	4.70	10	0.56
Pteroscion pelli	3.70	220	0.44
Cynoglossus browni	2.90	10	0.35
Pomadasys incisus	2.60	10	0.31
Parapristipoma humile	2.50	10	0.30
Chilomycterus spinosus mauret.	2.10	10	0.25
Calappa rubroguttata	1.90	20	0.23
Lagocephalus laevigatus	1.50	10	0.18
Trachurus trecae	1.40	190	0.17 8478
Fistularia tobacaria	0.80	10	0.10
Scorpaena scrofa	0.60	10	0.07
Citharus linguatula	0.30	10	0.04
Dicologlossa cuneata	0.30	10	0.04
Sphyræna sp.	0.20	50	0.02
Total	837.80	100.01	

PROJECT STATION: 3950  
 DATE: 11/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1131 Long E 1339  
 start stop duration Purpose code: 3  
 LOG : 1389.55 1391.04 1.49 Area code : 2  
 FDEPTH: 41 41 GearCond.code: 1  
 BDEPTH: 41 41 Validity code: 1  
 Towing dir: 1600 Wire out: 120 m Speed: 31 kn\*10

Sorted: 184 Kg Total catch: 184.70 CATCH/HOUR: 369.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Pseudupeneus prayensis	170.50	1624	46.16
Dentex barnardi	35.40	260	9.58 8471
Trachinotus ovatus	25.60	66	6.93
Caranx crysos	19.30	20	5.22 8472
Raja miraletus	14.10	24	3.82
Sepia orbigynana	11.90	20	3.22
Epinephelus aeneus	10.20	12	2.76
Rhinobatos albomaculatus	9.40	4	2.54
Lagocephalus laevigatus	9.24	10	2.50
Plectrochanna mediterranea	9.24	10	2.50
Cratodon hoefleri	6.02	40	1.63
Tarpedo torpedo	5.90	6	1.60
Acetocentrus monroviae	5.90	6	1.60
Allotautis africana	5.82	1936	1.58
Lithognathus morryrus	5.20	10	1.41
Citharus linguatula	4.90	154	1.33
Bodianus speciosus	3.74	6	1.03
Sphyræna guachancho	3.70	12	1.00
Epilodius cervinus cervinus	2.58	4	0.70
Bombax greyi	1.66	34	0.45
Dentex gibbosus	1.46	2	0.40 8474
MYXINIDAE	1.40	360	0.38
Brachydeuterus auritus	1.34	8	0.36
Pomadasys incisus	1.18	4	0.32 8473
Epinephelus alexandrinus *	1.12	2	0.30
Cynoglossus canariensis	0.96	2	0.26
Scorpaena sp.	0.94	16	0.25
POMACENTRIDAE	0.32	4	0.09
Monolepis microstoma	0.20	6	0.05
Fistularia petimma	0.18	6	0.05
Total	369.40	100.00	

PROJECT STATION: 3953  
 DATE: 11/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 1114 Long E 1340  
 start stop duration Purpose code: 3  
 LOG : 1419.06 1419.82 0.75 Area code : 2  
 FDEPTH: 85 74 GearCond.code: 4  
 BDEPTH: 85 74 Validity code: 1  
 Towing dir: 2100 Wire out: 200 m Speed: 30 kn\*10

Sorted: 124 Kg Total catch: 123.82 CATCH/HOUR: 530.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trecae	319.93	9017	60.29 8485
Sardinella aurita	50.14	1243	9.45 8483
Seriola carpenteri	40.29	4	7.59
Atractoscion aequidens	25.50	9	4.81 8489
Lithognathus morryrus	12.64	77	2.38
Dentex argolepis	10.54	99	1.99 8488
Tarpedo torpedo	8.74	13	1.65
Allotautis africana	8.61	129	1.62
Octopus sp.	7.24	4	1.36
Zeus taurus	7.03	17	1.32
Sepia officinalis hierredda	6.39	4	1.20
Dentex barnardi	6.30	13	1.19 8487
Raja miraletus	4.97	9	0.94
Brachydeuterus auritus	3.73	43	0.70
HOLOOURIDAE	3.60	720	0.68
Pterothrissus belloci	3.47	99	0.65
Citharus linguatula	2.91	60	0.55
Scotula barbata	2.23	9	0.42
Umbra canariensis	1.97	26	0.37 8486
Sphyræna guachancho	1.80	4	0.34
Sardinella maderensis	1.71	21	0.32 8484
Pseudupeneus prayensis	0.47	9	0.09
Dicologlossa hexophthalma	0.30	4	0.06
Sepia orbigynana	0.13	4	0.02
Total	530.64	99.95	

PROJECT STATION:3954  
 DATE:11/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1114  
 start stop duration  
 TIME :13:42:32 14:12:32 30 (min) Purpose code: 3  
 LOG :1422.61 1424.27 1.66 Area code : 2  
 FDEPTH: 115 114 GearCond.code: 1  
 BDEPTH: 115 114 Validity code: 1  
 Towing dir: 3600 Wire out: 30 m Speed: 30 kn\*10

Sorted: 44 Kg Total catch: 291.43 CATCH/HOUR: 562.86

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Brachydeuterus auritus	166.00	970	28.48		
Synagrops microlepis	149.50	26880	25.65		
Trichurus lepturus	115.70	270	19.95		
Stromateus fiatola	95.00	80	16.30		
Brotula barbata	15.70	14	2.69		
Zeus faber	11.90	30	2.04		
Pterothrissus bellioi	8.70	200	1.49		
Pagrus caeruleostictus	5.40	10	0.93	8493	
Arctosticion aequidens	5.26	2	0.71	8494	
Ucyrina canariensis	3.02	10	0.52	8491	
Dentex macrocephalus	3.00	10	0.51	8492	
Dentex angolensis	1.66	10	0.28	8490	
Parapenaeus longirostris, fem.	0.90	160	0.15	8496	
Citharus linguatula	0.70	20	0.12		
Parapenaeus longirostris, male	0.40	20	0.07	8495	
<b>Total</b>	<b>582.86</b>		<b>99.99</b>		

PROJECT STATION:3955  
 DATE:11/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1114  
 start stop duration  
 TIME :15:22:19 15:36:53 15 (min) Purpose code: 3  
 LOG :1428.74 1429.49 0.75 Area code : 2  
 FDEPTH: 142 148 GearCond.code: 9  
 BDEPTH: 142 148 Validity code: 1  
 Towing dir: 2550 Wire out: 370 m Speed: 30 kn\*10

Sorted: 41 Kg Total catch: 1115.98 CATCH/HOUR: 4463.92

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Synagrops microlepis	2358.40	39104	57.31		
Lampanyctodes neohoris	811.20	481188	18.17		
Umbra canariensis	463.84	832	10.39	8497	
Brotula barbata	168.40	236	3.77		
Zeus faber	126.88	312	2.84		
Dentex macrocephalus	116.48	728	2.61	8498	
Dentex angolensis	112.32	416	2.52	8499	
Chlorophthalmus atlanticus	43.76	520	1.93		
Trachurus lepturus	38.80	60	0.87		
Bemrops heterurus	10.40	104	0.23		
Parapenaeus longirostris, fem.	7.28	2912	0.16	8501	
Citharus linguatula	3.12	208	0.07		
Parapenaeus longirostris, male	1.04	2288	0.02	8500	
<b>Total</b>	<b>4463.92</b>		<b>99.99</b>		

PROJECT STATION:3956  
 DATE:11/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1328  
 start stop duration  
 TIME :11:39:19 11:09:38 30 (min) Purpose code: 3  
 LOG :1440.98 1442.48 1.49 Area code : 2  
 FDEPTH: 517 513 GearCond.code: 1  
 BDEPTH: 517 513 Validity code: 1  
 Towing dir: 30 Wire out:1300 m Speed: 30 kn\*10

Sorted: 28 Kg Total catch: 112.36 CATCH/HOUR: 224.72

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Nezumacarcinus africanus	90.40	2984	40.23		
Triplophos beringi	28.48	3352	12.67		
Hopllostethus cademaiti	27.12	1080	12.09		
Benthodesmus tenuis	22.32	96	9.93		
Yareella blackfordi	15.12	416	6.73		
STOMIIDAE	11.20	304	4.98		
Chaceon maritae, male	4.00	8	1.78		
Lasporgrammus exultus	3.60	1136	1.60		
Nezumia sp.	3.36	160	1.50		
Chaceon maritae, female	3.20	16	1.42		
Illex coindetii	2.80	16	1.25		
MELANOSTOMIATIDAE	2.16	2080	0.96		
Scymnodon obscurus	1.52	8	0.68		
Bathyrhoconger vicinus	1.52	112	0.68		
Caesella isaberbis	1.28	64	0.59		
Aristeus varians, female	0.96	48	0.43	8502	
CERATODONTIDAE	0.80	24	0.36		
S H R I M P S	0.72	264	0.32		
Callinectes sp.	0.72	24	0.32		
Lophius vaillanti	0.72	8	0.32		
Scotopsis vosmeri	0.72	24	0.32		
Aristeus varians, male	0.56	28	0.28	8503	
Europterus sp.	0.48	16	0.21		
Seyllirides sp.	0.48	24	0.21		
CONGRIDAE	0.40	8	0.18		
Halosaurus ovenii	0.08	8	0.04		
<b>Total</b>	<b>224.72</b>		<b>100.01</b>		

PROJECT STATION:3957  
 DATE:11/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1057  
 start stop duration  
 TIME :20:37:33 21:07:48 30 (min) Purpose code: 3  
 LOG :1439.04 1460.52 1.47 Area code : 2  
 FDEPTH: 343 342 GearCond.code: 1  
 BDEPTH: 343 342 Validity code: 1  
 Towing dir: 3200 Wire out:1025 m Speed: 30 kn\*10

Sorted: 33 Kg Total catch: 592.56 CATCH/HOUR: 1185.12

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Merluccius polli	666.00	2956	56.20	8504	
Nezumacarcinus africanus	387.00	68596	12.65		
Caesella maraldi	42.48	540	3.58		
Hymnencephalus italicus	20.52	2628	1.73		
Malanconotus laevis	15.48	216	1.31		
MYCTOPHIDAE	11.88	11376	1.00		
Chaunax pictus	11.52	504	0.97		
Bathyrhoconger vicinus	9.00	180	0.76		
Lophius vaillanti	6.96	108	0.58		
Aristeus varians, male	3.60	432	0.30	8506	
Synagrops microlepis	2.88	216	0.24		
Dipranchus atlanticus	2.52	108	0.21		
Chlorophthalmus atlanticus	1.80	36	0.15		
Aristeus varians, female	1.44	72	0.12	8505	
Coelorrhinus coelorrhinus	1.08	36	0.09		
Europterus pusillus	0.72	108	0.06		
Lestionops sp.	0.36	36	0.03		
<b>Total</b>	<b>1185.12</b>		<b>99.98</b>		

PROJECT STATION:3958  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1055  
 start stop duration  
 TIME :05:30:11 06:00:08 30 (min) Purpose code: 3  
 LOG :1509.89 1511.47 1.56 Area code : 2  
 FDEPTH: 226 219 GearCond.code: 1  
 BDEPTH: 226 219 Validity code: 1  
 Towing dir: 3200 Wire out: 600 m Speed: 32 kn\*10

Sorted: 72 Kg Total catch: 470.84 CATCH/HOUR: 941.68

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Synagrops microlepis	338.00	23190	35.89		
Merluccius polli	204.10	846	21.67	8507	
Chlorophthalmus atlanticus	130.66	2068	13.88		
Zenopsis conchifer	83.20	156	8.84		
Pterothrissus bellioi	55.38	482	5.88		
Parapenaeus longirostris, fem.	41.74	7268	4.43	8508	
Parapenaeus longirostris, male	17.82	3862	1.89	8509	
Todaropsis eblanae	15.34	196	1.63		
Trichurus lepturus	14.18	378	1.51		
Coelorrhinus coelorrhinus	12.10	494	1.28		
Illex coindetii	9.36	118	0.99		
MYCTOPHIDAE	7.02	5096	0.75		
Cephaloscyphus darwini	6.64	14	0.71		
Dentex macrocephalus	3.00	26	0.32		
Trichurus lepturus	1.04	40	0.11		
Scoyllorhinus steiffaris	0.92	26	0.10		
Squilla mantis	0.52	26	0.06		
Bothus podas africanus	0.52	78	0.06		
Callinectes sp.	0.14	26	0.01		
<b>Total</b>	<b>941.68</b>		<b>100.00</b>		

PROJECT STATION:3959  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1054  
 start stop duration  
 TIME :07:23:18 07:53:23 30 (min) Purpose code: 3  
 LOG :1520.05 1521.56 1.48 Area code : 2  
 FDEPTH: 114 116 GearCond.code: 1  
 BDEPTH: 114 116 Validity code: 1  
 Towing dir: 1600 Wire out: 300 m Speed: 30 kn\*10

Sorted: 133 Kg Total catch: 4424.70 CATCH/HOUR: 8849.40

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Brachydeuterus auritus	5364.50	45888	60.62		
Brotula barbata	2607.40	3664	29.46		
Trichurus lepturus	169.80	334	1.92		
Pterothrissus bellioi	144.60	1466	1.63		
Synagrops microlepis	129.80	20912	1.47		
Uranoscopus sp.	74.00	66	0.64		
Zeus faber	69.20	266	0.78		
Stromateus fiatola	62.60	66	0.71		
Trachurus trecae	58.00	1198	0.66	8510	
Torpedo torpedo	47.20	66	0.53		
Scorpaena notata	32.00	200	0.36		
Bemrops heterurus	29.40	334	0.33		
Chelidonichthys capensis	22.60	134	0.26		
Dentex angolensis	10.78	42	0.12	8513	
Citharus linguatula	8.60	134	0.10		
Merluccius polli	6.00	134	0.07		
Arctosticion aequidens	5.80	6	0.07		
Pagellus bellottii	4.98	20	0.06	8511	
Dentex macrocephalus	1.98	8	0.02	8512	
<b>Total</b>	<b>8849.34</b>		<b>100.01</b>		

PROJECT STATION:3960  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1054  
 start stop duration  
 TIME :09:11:53 09:42:26 31 (min) Purpose code: 3  
 LOG :1531.10 1532.62 1.52 Area code : 2  
 FDEPTH: 52 55 GearCond.code: 1  
 BDEPTH: 52 55 Validity code: 1  
 Towing dir: 1600 Wire out: 150 m Speed: 30 kn\*10

Sorted: 146 Kg Total catch: 146.43 CATCH/HOUR: 283.41

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Raja miraletus	71.42	834	25.20		
Rhinobatos albomaculatus	33.97	25	11.99		
Dicologlossa cuneata	31.24	255	11.02		
Sepia orbignyana	30.10	95	10.62		
Brachydeuterus auritus	29.52	4035	10.42		
Citharus linguatula	26.13	2388	9.22		
Torpedo marmorata	11.44	25	4.04		
Sufflogobius bibarbatatus	11.23	1243	3.96		
Myxtriopsis costellatus	10.35	54	3.65		
Lagocephalus laevis	9.91	15	3.50		
Grammolites gruvelli	4.57	72	1.61		
Torpedo torpedo	3.02	2	1.07		
Brotula barbata	3.02	2	1.07		
Pontinus accraensis	1.94	97	0.68		
Pseudotolithus senegalensis	1.49	2	0.53	8515	
Sepia officinalis hierredda	0.89	23	0.31		
Calappa sp.	0.89	6	0.31		
Pomadasys incisus	0.60	2	0.21		
Chloroscombrus chrysurus	0.41	15	0.14		
Serranus accraensis	0.41	12	0.14		
Pagellus bellottii	0.31	4	0.11	8514	
Selene dorsalis	0.25	6	0.09		
ANTENNAEIDAE	0.17	2	0.06		
Lopholates kempi	0.06	2	0.03		
Tripla lya	0.08	14	0.03		
Bathyrhoconger vicinus	0.02	2	0.01		
<b>Total</b>	<b>283.44</b>		<b>100.02</b>		

PROJECT STATION:3961  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1054  
 start stop duration Longitude E 1347  
 TIME :10:29:36 11:09:39 30 (min) Purpose code: 3  
 LOG :1538.71 1540.28 1.56 Area code : 2  
 FDEPTH: 32 30 GearCond.code: 1  
 BDEPTH: 32 30 Validity code: 1  
 Towing dir: 340° Wire out: 120 m Speed: 30 kn\*10

Sorted: 173 Kg Total catch: 291.37 CATCH/HOUR: 562.74

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	246.60	30876	42.22	
Calooides decadactylus	96.50	330	16.56	
Sphyraena guacanchro	45.20	120	7.16	
Pseudotolithus typus	26.20	46	4.50	8518
Rhinobatus albomaculatus	20.40	10	3.50	
Cynurus micrura	16.00	10	2.75	
Rhizoprionodon acutus	16.00	6	2.75	
Selene dorsalis	12.60	3408	2.16	
Chloroscomorus chrysurus	12.26	114	2.10	
Scomberomorus tritor	10.82	14	1.86	
Ephippion guttifer	10.26	10	1.76	
Raja miraletus	9.54	16	1.64	
Sepia orbigynana	9.44	20	1.62	
Alloteuthis africana	6.24	4260	1.07	
Crampisyllus gruvelli	5.76	72	0.99	
Torpedo marmorata	5.44	22	0.93	
Synagrops microlepis	4.80	72	0.82	
Trichiurus lepturus	4.56	660	0.78	
Rypticus saponaceus	4.20	2	0.72	
Dicologlossa cuneata	3.82	58	0.66	
Dasyatis centroura	3.42	4	0.59	
Lagocephalus laevigatus	2.36	10	0.40	
Cynopterus ferax	1.62	2	0.28	
Pomadourus rogeri	1.56	2	0.27	
Engraulis encrasicolus	1.32	432	0.23	
Paralichthys regalis	1.06	4	0.18	
Trachinotus toxilliosus	1.02	2	0.18	
Sphyraena sp.	0.96	36	0.16	
Sardinella maderensis	0.74	404	0.13	8517
Ilisha africana	0.74	14	0.13	
Pseudoparus prayensis	0.36	12	0.06	
Citharus linguatula	0.34	2	0.06	
CGBIIDAE	0.24	36	0.04	
Sardinella aurita	0.24	8	0.04	8516
Saurida brasiliensis	0.12	24	0.02	
Total	562.74		100.02	

PROJECT STATION:3962  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1039  
 start stop duration Longitude E 1341  
 TIME :13:05:05 13:35:03 30 (min) Purpose code: 3  
 LOG :1555.90 1557.53 1.62 Area code : 2  
 FDEPTH: 31 30 GearCond.code: 1  
 BDEPTH: 31 30 Validity code: 1  
 Towing dir: 328° Wire out: 120 m Speed: 30 kn\*10

Sorted: 168 Kg Total catch: 168.00 CATCH/HOUR: 336.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	239.00	39946	71.13	
Sphyraena guacanchro	33.20	60	9.88	
Dasyatis marmorata	14.40	2	4.29	
Alectis alexandrinus	9.02	20	2.68	
Rhinobatus albomaculatus	8.52	8	2.54	
Sardinella maderensis	5.10	510	1.52	8520
Raja miraletus	4.84	8	1.44	
Calooides decadactylus	3.98	6	1.18	
Drepane africana	3.36	2	1.00	
Torpedo marmorata	3.22	4	0.96	
Chloroscomorus chrysurus	3.22	22	0.96	
Trachinotus gorenensis	2.28	4	0.68	
Epinephelus aeneus	2.26	4	0.67	
Lagocephalus laevigatus	1.76	6	0.52	
Ephippion guttifer	1.28	4	0.38	
Sepia officinalis hierredda	0.36	2	0.11	
Trachurus trachurus	0.20	40	0.06	8519
Total	336.00		100.00	

PROJECT STATION:3963  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1039  
 start stop duration Longitude E 1338  
 TIME :14:17:05 14:46:56 30 (min) Purpose code: 3  
 LOG :1561.81 1563.50 1.68 Area code : 2  
 FDEPTH: 46 47 GearCond.code: 1  
 BDEPTH: 46 47 Validity code: 1  
 Towing dir: 150° Wire out: 150 m Speed: 30 kn\*10

Sorted: 125 Kg Total catch: 747.54 CATCH/HOUR: 1495.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Chloroscomorus chrysurus	597.00	3372	39.93	
Brachydeuterus auritus	246.60	24960	16.49	
Raja miraletus	121.80	312	8.15	
Sepia orbigynana	109.20	120	7.30	
Trachurus trachurus	99.12	18348	6.63	8521
Lagocephalus laevigatus	85.56	192	5.72	
Sphyraena guacanchro	50.76	84	3.40	
Calooides decadactylus	45.60	72	3.05	
Pagellus bellottii	35.40	192	2.37	8524
Sardinella maderensis	22.20	780	1.48	8523
Sardinella aurita	15.96	216	1.07	8522
Citharus linguatula	12.84	156	0.86	
Torpedo marmorata	9.60	36	0.64	
Selene dorsalis	9.60	24	0.64	
Cynoglossus browni	7.44	12	0.30	
Trichiurus lepturus	7.32	12	0.49	
Dicologlossa cuneata	7.08	12	0.47	
Alectis alexandrinus	6.48	1080	0.43	
Dentex barardi	5.52	24	0.37	8526
Total	1495.08		99.99	

PROJECT STATION:3964  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1043  
 start stop duration Longitude E 1331  
 TIME :15:59:37 16:29:39 30 (min) Purpose code: 3  
 LOG :1572.44 1574.07 1.62 Area code : 2  
 FDEPTH: 91 90 GearCond.code: 1  
 BDEPTH: 91 90 Validity code: 1  
 Towing dir: 324° Wire out: 230 m Speed: 30 kn\*10

Sorted: 61 Kg Total catch: 186.68 CATCH/HOUR: 373.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	97.50	3008	26.11	8527
Brachydeuterus auritus	91.50	1136	24.51	
Raja miraletus	38.20	64	10.23	
Dentex angolensis	37.10	100	9.94	8529
Brotula barbata	27.00	24	7.23	
Alloteuthis africana	20.00	700	5.36	
Umbrina canariensis	19.40	56	5.20	8528
Chloroscomorus chrysurus	6.20	6	1.66	
Sepia orbigynana	5.46	6	1.46	
Trichiurus lepturus	5.00	8	1.34	
Pagellus bellottii	4.66	30	1.25	8530
Trigla lyra	4.26	26	1.14	
Uranoscopus polli	4.00	20	1.07	
Chloroscomorus chrysurus	2.96	20	0.79	
Zeus faber	2.36	6	0.63	
Citharus linguatula	2.30	40	0.62	
Scorpaena normani	2.00	26	0.54	
Chelidonichthys capensis	1.96	10	0.52	
Dicologlossa cuneata	0.96	6	0.26	
Illex coindetii	0.60	6	0.16	
Total	373.42		100.02	

PROJECT STATION:3965  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1045  
 start stop duration Longitude E 1323  
 TIME :17:30:27 17:59:12 29 (min) Purpose code: 3  
 LOG :1581.54 1582.95 1.39 Area code : 2  
 FDEPTH: 125 151 GearCond.code: 1  
 BDEPTH: 125 151 Validity code: 1  
 Towing dir: 240° Wire out: 350 m Speed: 30 kn\*10

Sorted: 76 Kg Total catch: 354.80 CATCH/HOUR: 734.07

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	191.17	21281	26.04	
Trachurus trachurus	114.27	3546	15.57	8535
Brachydeuterus auritus	77.34	548	10.54	
Dentex macrophthalmus	63.87	461	8.70	8533
Brotula barbata	47.90	58	6.53	
Pterothrissus belloci	47.09	399	6.41	
Dentex angolensis	37.53	244	5.11	8532
Bemrops heterurus	25.80	478	3.51	
Uranoscopus polli	23.73	190	3.23	
Citharus linguatula	17.90	312	2.44	
Trigla lyra	15.04	244	2.05	
Umbrina canariensis	10.82	29	1.47	8534
Zenopsis conchifer	7.82	35	1.07	
Squatina oculata	6.00	2	0.82	
Illex coindetii	4.86	87	0.66	
Trichiurus lepturus	4.86	14	0.66	
Chelidonichthys capensis	4.51	27	0.61	
Microrhynchus angolensis	3.91	8	0.53	
Scorpaena normani	3.56	35	0.48	
Lagocephalus laevigatus	3.21	8	0.44	
MYCTOPHIDAE	3.12	1355	0.43	
Zeus faber	3.12	27	0.43	
Pagellus bellottii	3.12	17	0.43	8531
Fistularia petimba	2.88	8	0.39	
Raja miraletus	2.44	8	0.33	
Bothus podas africanus	2.44	87	0.33	
Sepia orbigynana	2.26	17	0.31	
Dicologlossa cuneata	1.90	35	0.26	
Conger conger	0.79	27	0.11	
Saurida brasiliensis	0.52	52	0.07	
Boops boops	0.27	8	0.04	
Total	734.05		100.00	

PROJECT STATION:3966  
 DATE:12/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1048  
 start stop duration Longitude E 1320  
 TIME :19:36:49 20:07:52 31 (min) Purpose code: 3  
 LOG :1589.06 1590.57 1.50 Area code : 2  
 FDEPTH: 327 331 GearCond.code: 1  
 BDEPTH: 327 331 Validity code: 1  
 Towing dir: 133° Wire out: 875 m Speed: 30 kn\*10

Sorted: 29 Kg Total catch: 147.05 CATCH/HOUR: 284.61

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	81.00	319	28.46	8536
Nematocarinus africanus	46.84	29061	16.46	
Gadella sp.	39.58	716	13.91	
Hymnocephalus italicus	26.61	3155	9.35	
MYCTOPHIDAE	22.35	33532	7.85	
Chlorophthalmus atlanticus	21.58	426	7.58	
Trichiurus lepturus	9.97	310	3.50	
CGBIIDAE	8.61	252	3.03	
Zenopsis conchifer	7.45	10	2.62	
Gephyroberyx darwini	5.13	10	1.80	
L O B S T E R S	4.84	106	1.70	
Scorpaena sp.	2.90	29	1.02	
Malacocephalus laevis	2.13	29	0.75	
Pterothrissus belloci	2.03	10	0.71	
Callinectes sp.	1.26	39	0.44	
Synagrops microlepis	1.06	68	0.37	
Aristeus varidens, female	0.68	29	0.24	8538
Aristeus varidens, male	0.58	97	0.20	8537
Total	284.60		99.99	

PROJECT STATION:3967  
 DATE:12/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1049  
 start stop duration Long E 1316  
 TIME :21:34:12 22:05:48 32 (min) Purpose code: 3  
 LOG :1596.76 1598.40 1.63 Area code : 2  
 FDEPTH: 489 493 GearCond.code: 1  
 BDEPTH: 489 493 Validity code: 1  
 Towing dir: 318° Wire out: 1290 m Speed: 30 kn\*10

Sorted: 28 Kg Total catch: 165.84 CATCH/HOUR: 310.95

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	186.75	20099	60.06	
Hoplostethus cadenati	34.54	1114	11.11	
Yareella blackfordi	21.83	686	7.02	
Laemonema laureysi	11.48	56	3.69	
Aristeus varidensis, female	8.10	428	2.60	8540
Corostoma sp.	6.08	160	1.96	
Aristeus varidensis, male	5.51	698	1.77	8541
Merluccius polli	5.40	11	1.74	8539
Plesionika sp.	5.40	1361	1.74	
Triplophos heningi	3.60	473	1.16	
Plesionaeus edwardsianus	3.49	450	1.12	
Berthoedemus tenuis	2.81	124	0.90	
Chaunax pictus	2.36	23	0.76	
Gadella maraldi	2.25	34	0.72	
Physiculus sp.	1.98	113	0.51	
Callinectes sp.	1.46	23	0.47	
MYCTOPHIDAE	1.24	416	0.40	
SCYLLARIDAE	1.01	23	0.32	
Peristedion cataphractum	0.90	11	0.29	
Bathyrroconger vicinus	0.90	23	0.29	
Diaphus sp.	0.79	23	0.25	
C R U S T A C E A N S	0.79	96	0.25	
Epigonus telescopus	0.79	90	0.25	
Dicranichthys atlanticus	0.68	11	0.22	
Heterocarpus ensifer	0.68	34	0.22	
Neleporichthys guentheri	0.34	23	0.11	
Phycichthys weldi	0.11	11	0.04	
Nemichthys scolopaceus	0.11	11	0.04	
Total	310.98		100.01	

PROJECT STATION:3970  
 DATE:13/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1035  
 start stop duration Long E 1315  
 TIME :07:17:08 07:45:22 28 (min) Purpose code: 3  
 LOG :1626.71 1628.11 1.39 Area code : 2  
 FDEPTH: 129 129 GearCond.code: 1  
 BDEPTH: 129 129 Validity code: 1  
 Towing dir: 317° Wire out: 350 m Speed: 30 kn\*10

Sorted: 194 Kg Total catch: 193.57 CATCH/HOUR: 414.79

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	311.89	9971	75.19	8547
Dentex angolensis	37.07	240	8.94	8548
Zenopsis conchifer	18.00	47	4.34	
Dentex macrophthalmus	8.63	75	2.13	8549
Centroprichthys granulosa	7.50	2	1.81	
Squatina oculata	5.04	2	1.22	
Lepidotrigla cadmani	3.39	90	0.82	
Scorpaena noronhai	3.06	11	0.74	
Pterothrissus bellotti	3.02	19	0.73	
Citharus linguatula	3.02	47	0.73	
Torpedo torpedo	2.68	4	0.65	
Raja miraletus	1.84	2	0.44	
Illex coindetii	1.78	58	0.43	
Boops boops	1.46	28	0.35	
Uranoscopus polli	1.31	4	0.32	
Echeneis naucrates	1.09	2	0.26	
Brotula barbata	0.96	2	0.23	
Bembrops heterurus	0.69	11	0.17	
Arnoglossus imperialis	0.69	4	0.17	
Zeus faber	0.69	4	0.17	
Todaropsis eblanae	0.26	13	0.06	
Erythrocles monodi	0.24	2	0.06	
Peristedion cataphractum	0.17	4	0.04	
Dicologlossa sp.	0.13	4	0.03	
Total	414.81		100.03	

PROJECT STATION:3968  
 DATE:13/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1040  
 start stop duration Long E 1309  
 TIME :00:03:35 00:33:48 30 (min) Purpose code: 3  
 LOG :1608.85 1610.42 1.55 Area code : 2  
 FDEPTH: 524 525 GearCond.code: 1  
 BDEPTH: 524 525 Validity code: 1  
 Towing dir: 323° Wire out: 1250 m Speed: 30 kn\*10

Sorted: 27 Kg Total catch: 136.15 CATCH/HOUR: 272.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	165.50	11360	60.78	
Craceon maritae, female	17.90	90	6.57	
Yareella blackfordi	16.60	500	6.10	
Callinectes sp.	11.80	40	4.33	
Hoplostethus cadenati	10.80	410	3.97	
Berthoedemus tenuis	10.50	440	3.86	
MELANUSOMIATIDAE	5.70	140	2.09	
Laemonema laureysi	4.90	310	1.80	
Aristeus varidensis, female	4.00	200	1.47	8543
Craceon maritae, male	3.90	10	1.43	
Aristeus varidensis, male	3.40	360	1.25	8542
Gadella maraldi	3.10	40	1.14	
Coloconger cadenati	2.10	210	0.77	
Triplophos heningi	1.70	180	0.62	
Physiculus sp.	1.60	150	0.58	
Plesionaeus edwardsianus	1.60	170	0.58	
Seymouria obscura	1.50	10	0.55	
Plesionika sp.	1.30	390	0.48	
Nemichthys scolopaceus	0.80	30	0.29	
Simencheilus parasiticus	0.70	10	0.26	
Diaphus sp.	0.70	10	0.26	
Heterocarpus ensifer	0.60	10	0.22	
Dicranichthys atlanticus	0.60	10	0.22	
Diplophos sp.	0.50	10	0.18	
Scopelosaurus herwigii	0.40	10	0.15	
MYCTOPHIDAE	0.10	120	0.04	
Total	272.30		100.01	

PROJECT STATION:3971  
 DATE:13/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1031  
 start stop duration Long E 1320  
 TIME :09:09:18 09:18:30 9 (min) Purpose code: 3  
 LOG :1637.04 1637.51 0.43 Area code : 2  
 FDEPTH: 96 95 GearCond.code: 9  
 BDEPTH: 96 95 Validity code: 4  
 Towing dir: 351° Wire out: 233 m Speed: 30 kn\*10

Sorted: 24 Kg Total catch: 23.88 CATCH/HOUR: 159.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	123.67	3920	77.68	8550
Allotautis africana	15.33	5920	9.63	
Dentex angolensis	9.47	40	5.95	8551
Citharus linguatula	4.07	27	2.56	
Pagellus bellottii	3.27	13	2.05	8552
Boops boops	3.27	40	2.05	
Saurida brasiliensis	0.13	27	0.08	
Total	159.21		100.00	

PROJECT STATION:3969  
 DATE:13/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1037  
 start stop duration Long E 1310  
 TIME :05:34:11 06:04:19 30 (min) Purpose code: 3  
 LOG :1618.68 1620.17 1.47 Area code : 2  
 FDEPTH: 353 358 GearCond.code: 1  
 BDEPTH: 353 358 Validity code: 1  
 Towing dir: 140° Wire out: 100 m Speed: 30 kn\*10

Sorted: 63 Kg Total catch: 533.51 CATCH/HOUR: 1067.02

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	501.80	1208	56.40	8544
Hypoclinemus caninum *	168.30	15896	15.77	
Nematocarcinus africanus	103.70	22576	9.12	
Gadella sp.	78.88	952	7.39	
Chloropthalmus atlanticus	29.92	460	2.80	
Todaropsis eblanae	19.90	120	1.87	
Mallacoccephalus laevis	15.64	170	1.47	
MYCTOPHIDAE	13.60	9520	1.27	
Lopris vallanti	6.30	18	0.59	
Chaunax pictus	5.10	256	0.48	
Trichinurus lepturus	5.10	18	0.48	
Gobiidae	4.76	34	0.45	
Coeloclinemus coeloclinicus	2.38	52	0.22	
C R U S T A C E A N S	2.22	426	0.21	
Gadella imberdis	1.88	18	0.18	
Lestidiops sp.	1.70	154	0.16	
Dicranichthys atlanticus	1.20	18	0.11	
Aristeus varidensis, male	1.20	120	0.11	8545
Callinectes sp.	1.02	18	0.10	
Etmopterus sp.	0.68	34	0.06	
Serranus africana	0.52	34	0.05	
Parapernaes longirostris, fem.	0.52	86	0.05	8546
Scyllarides sp.	0.52	34	0.05	
Peristedion cataphractum	0.18	18	0.02	
Total	1067.02		100.01	

PROJECT STATION:3972  
 DATE:13/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1027  
 start stop duration Long E 1328  
 TIME :10:58:27 11:28:35 30 (min) Purpose code: 3  
 LOG :1648.04 1649.53 1.48 Area code : 2  
 FDEPTH: 48 50 GearCond.code: 1  
 BDEPTH: 48 50 Validity code: 1  
 Towing dir: 165° Wire out: 120 m Speed: 30 kn\*10

Sorted: 63 Kg Total catch: 63.22 CATCH/HOUR: 126.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Raja miraletus	36.00	66	28.47	
Pseudupeneus prayensis	20.50	228	16.21	
Dentex barnardi	14.80	112	11.71	8553
Epinephelus aeneus	11.90	4	9.41	
Allotautis africana	8.56	3398	6.77	
Pagrus caeruleostictus	7.38	10	5.84	8556
Sphyrna guachancho	4.64	6	3.67	
Alectis alexandrinus	2.56	2	2.02	
Citharus linguatula	2.46	66	1.95	
Parapristigaster octolineatus	2.14	4	1.69	
Caranx crysos	2.08	2	1.65	
Sepia orbigynna	2.00	4	1.58	
Plectarhinus mediterraneus	1.92	4	1.52	
Gammoplites gzevelli	1.76	36	1.39	
Pagellus bellottii	1.38	32	1.09	8554
Sepia sp.	1.24	8	0.98	
Laqueophilus laevigatus	0.86	2	0.68	
Chloroscombrus chrysurus	0.86	4	0.68	
Chaetodon boefferi	0.86	6	0.68	
Trachurus trecae	0.74	166	0.59	8555
Torpedo torpedo	0.64	4	0.51	
Chilomycterus splinusus mauret.	0.44	2	0.35	
Fistulacia tabacaria	0.14	8	0.11	
Brachydeuterus auritus	0.14	26	0.11	
Arnoglossus imperialis	0.12	12	0.09	
Chromis limbatus	0.10	4	0.08	
Saurida brasiliensis	0.10	44	0.08	
Chaetodon maculatus	0.08	4	0.06	
Serranus accraensis	0.02	2	0.02	
Epinephelus alexandrinus *	0.02	2	0.02	
Total	126.44		100.01	

PROJECT STATION:3913  
 DATE:13/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1027  
 start stop duration Long E 1331  
 TIME :12:16:06 12:45:52 30 (min) Purpose code: 3  
 LOG :1654.39 1655.97 1.56 Area code : 2  
 FDEPTH: 30 32 GearCond.code: 1  
 BDEPTH: 30 32 Validity code: 1  
 Towing dir: 330a Wire out: 120 m Speed: 30 kn\*10

Sorted: 21 Kg Total catch: 20.77 CATCH/HOUR: 41.54

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
HOLOURURIDAE	18.20	43.81	
Lagocephalus laevigatus	7.32	17.62	
Raja miraletus	3.36	8.09	
Alloteuthis africana	2.88	6.93	
Rhinonotus albomaculatus	2.02	4.86	
Drepane africana	1.94	4.67	
Sepia orbignyana	1.86	4.48	
Citharus linguatula	1.14	2.74	
Graznoplites gruvelli	1.00	2.41	
Dentex barnardi	0.74	1.78	8557
Pseudopeneus prayensis	0.36	0.87	
Chaetodon haefleri	0.30	0.72	
Brachydeuterus auritus	0.30	0.72	
Pseudis notialis, female	0.08	0.19	8558
Antennarius sp.	0.02	0.05	
Sufflogobius sobarbatas	0.02	0.05	
Total	41.54	99.99	

PROJECT STATION:3914  
 DATE:13/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1016  
 start stop duration Long E 1325  
 TIME :15:30:02 16:00:05 30 (min) Purpose code: 3  
 LOG :1666.93 1668.56 1.62 Area code : 2  
 FDEPTH: 34 33 GearCond.code: 1  
 BDEPTH: 34 33 Validity code: 1  
 Towing dir: 330a Wire out: 120 m Speed: 30 kn\*10

Sorted: 21 Kg Total catch: 21.73 CATCH/HOUR: 43.46

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Rhinonotus albomaculatus	9.50	21.86	
Lagocephalus laevigatus	7.70	17.72	
Brachydeuterus auritus	3.62	8.33	
Fistularia petimba	2.48	5.64	
Alectis ciliaris	2.44	5.63	
Sepia cilioides harrissoni	2.10	4.93	
Pomadour jubelini	2.10	4.83	
Sphyrna guachancho	1.64	3.77	
Graznoplites gruvelli	1.56	3.59	
Pseudolithus senegalensis	1.52	3.50	8560
Citharus linguatula	1.42	3.27	
Raja miraletus	1.36	3.13	
Epinephelus aeneus	1.14	2.62	
Galeodes decadactylus	1.12	2.58	
Pagellus bellottii	0.76	1.75	8559
Alloteuthis africana	0.70	1.61	
Balistes punctatus	0.60	1.38	
Cynoglossus canariensis	0.34	0.78	
Pseudopeneus prayensis	0.34	0.78	
C R A B S	0.10	0.23	
Dicologlossa cuneata	0.10	0.23	
Torpedo torpedo	0.04	0.09	
Gobiidae	0.04	0.09	
Antennarius sp.	0.02	0.05	
Torpedo macrura	0.02	0.05	
Total	43.46	100.00	

PROJECT STATION:3975  
 DATE:13/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1015  
 start stop duration Long E 1320  
 TIME :16:41:42 17:12:48 31 (min) Purpose code: 3  
 LOG :1673.34 1674.95 1.59 Area code : 2  
 FDEPTH: 47 46 GearCond.code: 1  
 BDEPTH: 47 46 Validity code: 1  
 Towing dir: 330a Wire out: 150 m Speed: 30 kn\*10

Sorted: 59 Kg Total catch: 59.96 CATCH/HOUR: 116.05

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Galeodes decadactylus	52.94	141	45.62
Sphyrna guachancho	11.07	25	9.34
Alloteuthis africana	9.70	2857	8.36
Brachydeuterus auritus	7.66	3232	6.60
Raja miraletus	6.87	10	5.92
Sepia orbignyana	5.03	15	4.33
Pomadour jubelini	4.57	10	3.94
Pseudolithus senegalensis	3.12	8	3.21
Lagocephalus laevigatus	2.80	4	1.98
Alectis alexandrinus	2.28	2	1.96
Bembrops greyi	1.74	46	1.50
Pomadour incisus	1.65	6	1.42
Cynoglossus canariensis	1.41	6	1.21
Dicologlossa cuneata	1.32	17	1.14
Selar crumenophthalmus	0.77	8	0.66
Citharus linguatula	0.77	8	0.66
Pagellus bellottii	0.68	4	0.59
Calappa sp.	0.43	4	0.37
Gobiidae	0.29	62	0.25
Dentex barnardi	0.25	4	0.22
Torpedo torpedo	0.19	6	0.16
C R A B S	0.17	12	0.15
Perullobatichthys elminensis	0.12	4	0.10
Scorpaena normani	0.12	2	0.10
Total	116.05	99.99	

PROJECT STATION:3976  
 DATE:14/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 1024  
 start stop duration Long E 1255  
 TIME :00:12:01 00:42:06 30 (min) Purpose code: 3  
 LOG :1716.15 1717.33 1.56 Area code : 2  
 FDEPTH: 598 606 GearCond.code: 1  
 BDEPTH: 598 606 Validity code: 1  
 Towing dir: 327a Wire out: 1500 m Speed: 30 kn\*10

Sorted: 29 Kg Total catch: 176.80 CATCH/HOUR: 353.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Nematocarcinus africanus	104.50	28740	29.55
Hopllostethus cadenati	63.20	2490	17.87
C R U S T A C E A N S	50.00	630	14.14
Yarellia blackfordi	49.20	1520	13.91
MELANOSTOMIATIDAE	21.30	80	6.02
Parapandalus narval	10.90	400	3.08
Chaceon maritae, male	8.26	14	2.34
Tripliphos heningi	7.90	1110	2.23
Lamprogammus exultans	7.10	50	2.01
Bathophilus longipinnis	6.80	350	1.92
Chaceon maritae, female	3.42	14	0.97
Nezumia aequalis	3.10	150	0.88
Benthoedermus tenuis	2.50	120	0.71
Merluccius polli	2.34	4	0.66
Todaropsis eblanae	2.00	10	0.57
Aristeus varidensis, female	1.90	110	0.54
Loligo vulgaris	1.50	10	0.42
Ommastrephes pteropus	1.50	10	0.42
ALEPOCEPHALUS ROSFRATUS	1.30	30	0.37
Laemonea lauceyis	1.10	240	0.31
Euthycrogoner vicinus	1.10	50	0.31
Centroscymsus crepidater	1.00	4	0.28
Scopelosaurus hexwigi	0.40	20	0.11
Heterocarpus ensifer	0.30	60	0.08
Nemichthys scolopaceus	0.30	20	0.08
Aristeus varidensis, male	0.30	40	0.08
Euphyas vallanti	0.20	10	0.06
MYCTOPHIDAE	0.10	110	0.03
Etmopterus polli	0.08	2	0.02
Total	353.60	99.97	

PROJECT STATION:3977  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1022  
 start stop duration Long E 1303  
 TIME :05:33:02 06:03:55 31 (min) Purpose code: 3  
 LOG :1738.13 1731.72 1.58 Area code : 2  
 FDEPTH: 185 181 GearCond.code: 1  
 BDEPTH: 185 181 Validity code: 1  
 Towing dir: 140a Wire out: 550 m Speed: 31 kn\*10

Sorted: 138 Kg Total catch: 138.46 CATCH/HOUR: 261.99

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Zenopsis conchifer	66.10	232	24.67
Dentex angolensis	43.84	83	16.36
Scorpaena barbata	41.52	39	15.49
Uranoscopus polli	21.17	101	7.30
Synagrops microlepis	17.40	2626	6.49
Bembrops heterurus	13.57	130	5.06
Raja clavata	11.77	10	4.39
Dentex macrophthalmus	11.71	60	4.37
Pterotoxichus bellotti	11.05	95	4.12
Zeus faber	8.17	23	3.05
Trichurus lepturus	7.34	62	2.74
Illex coindetii	4.86	72	1.81
Torpedo torpedo	1.90	4	0.71
Raja miraletus	1.59	2	0.59
Squatina oculata	1.53	6	0.57
Pegusa lascaris	1.12	56	0.42
CONGRIDAE	0.85	6	0.32
Todaropsis eblanae	0.64	41	0.24
Sepia orbignyana	0.46	2	0.17
Chlorophthalmus atlanticus	0.43	165	0.16
Citharus linguatula	0.31	4	0.12
Parapeneus longirostris, fem.	0.25	130	0.09
Saurida brasiliensis	0.25	37	0.09
Squilla cadenati	0.15	4	0.06
Parapeneus longirostris, male	0.02	14	0.01
Total	268.00	100.00	

PROJECT STATION:3978  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1016  
 start stop duration Long E 1311  
 TIME :07:37:34 08:07:11 30 (min) Purpose code: 3  
 LOG :1742.91 1744.34 1.42 Area code : 2  
 FDEPTH: 93 94 GearCond.code: 1  
 BDEPTH: 93 94 Validity code: 1  
 Towing dir: 316a Wire out: 300 m Speed: 31 kn\*10

Sorted: 78 Kg Total catch: 311.68 CATCH/HOUR: 623.36

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trecae	415.20	15712	66.61
Squatina oculata	62.00	16	9.99
Fistularia petimba	30.40	64	4.88
Chelidonichthys capensis	15.44	104	2.48
Sarda sarda	12.40	16	1.99
Raja miraletus	11.36	16	1.82
Lagocephalus sp.	9.28	16	1.49
Dentex angolensis	8.80	184	1.41
Zeus faber	7.44	32	1.19
Brachydeuterus auritus	7.36	120	1.18
Todaropsis eblanae	6.00	80	0.96
Trichurus lepturus	6.00	8	0.96
Citharus linguatula	5.04	80	0.81
Sepia orbignyana	4.88	56	0.78
Alloteuthis africana	4.64	1504	0.74
Pagellus bellottii	4.08	40	0.65
Illex coindetii	2.16	24	0.35
Scorpaena normani	2.16	24	0.35
Dentex barnardi	2.00	8	0.32
Raja clavata	1.76	8	0.28
Pseudopeneus prayensis	1.76	8	0.28
Uranoscopus polli	1.20	8	0.19
Boops boops	0.88	16	0.14
Saurida brasiliensis	0.56	88	0.09
Sardinella aurita	0.56	16	0.09
Total	623.36	99.99	

PROJECT STATION:3949  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1013  
 start stop duration Long E 1316  
 TIME :09:19:20 09:49:16 30 (min) Purpose code: 3  
 LGC :1752.22 1757.76 1.53 Area code : 2  
 FDEPTH: 66 68 GearCond.code: 1  
 BDEPTH: 66 68 Validity code: 1  
 Towing dir: 321e Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 92 Kg Total catch: 91.74 CATCH/HOUR: 183.48

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Epinephelus aeneus	70.80 26	38.59	
Dentex barnardi	33.70 96	18.33	8580
Stromateus fiatola	13.60 16	7.11	
Chaetodon lineolatus	11.30 68	6.16	
Alloteuthis africana	11.20 3122	6.10	
Raja miraletus	10.84 22	5.91	
Fistularia petimba	7.70 20	4.20	
Pagellus bellottii	6.40 24	3.49	8579
Octopus vulgaris	5.24 4	2.86	
Zeus taber	4.18 14	2.28	
Torpedo torpedo	1.90 8	1.04	
Citharus linguatula	1.88 60	1.02	
Umbria canariensis	1.88 4	1.02	8578
Pagrus caeruleostictus	1.38 2	0.75	
Lagocephalus laevigatus	0.72 2	0.39	
Trichurus lepturus	0.70 2	0.38	
Morone microstoma	0.06 4	0.03	
Total	183.48	100.00	

PROJECT STATION:3982  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1002  
 start stop duration Long E 1306  
 TIME :14:16:05 14:46:01 30 (min) Purpose code: 3  
 LGC :1780.13 1781.64 1.50 Area code : 2  
 FDEPTH: 86 86 GearCond.code: 1  
 BDEPTH: 86 86 Validity code: 1  
 Towing dir: 322e Wire Out: 240 m Speed: 30 kn\*10  
 Sorted: 80 Kg Total catch: 352.97 CATCH/HOUR: 705.94

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trecae	288.54 11146	40.87	8587
Brachydeuterus auritus	214.14 2072	30.33	
Selene dorsalis	59.00 568	8.36	
Squatina oculata	17.60 14	2.49	
Raja miraletus	17.28 34	2.45	
Ephippium guttifer	16.78 8	2.38	
Trigla lyca	16.78 154	2.38	
Sepia orbignyana	14.62 18	2.07	
Pseudupeneus prayensis	14.20 146	2.01	
Zeus taber	13.94 18	1.97	
Trichurus lepturus	10.06 18	1.43	
Pagellus bellottii	6.20 68	0.88	8586
Alloteuthis africana	4.64 1806	0.66	
Sardinella maderensis	4.48 18	0.63	8590
Dentex angolensis	2.66 68	0.38	8588
Citharus linguatula	2.40 60	0.34	
Boops boops	1.80 18	0.25	
Dentex macropthalmus	0.86 44	0.12	8589
Total	705.98	100.00	

PROJECT STATION:3980  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1001  
 start stop duration Long E 1314  
 TIME :11:19:27 11:49:18 30 (min) Purpose code: 3  
 LGC :1765.52 1767.08 1.56 Area code : 2  
 FDEPTH: 30 33 GearCond.code: 1  
 BDEPTH: 30 33 Validity code: 1  
 Towing dir: 322e Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 17 Kg Total catch: 16.99 CATCH/HOUR: 33.98

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Rhinobatos albosaculatus	9.40 6	27.66	
Caranx crysos	8.70 12	25.60	
Trachinotus goreensis	3.86 8	11.36	
Raja miraletus	2.38 6	7.00	
Alloteuthis africana	2.20 758	6.47	
Citharus linguatula	2.06 22	6.06	
Epinephelus aeneus	1.72 2	5.06	
Caspiatis macrotota	1.20 2	3.53	
Pagellus bellottii	0.96 4	2.83	8581
Stromateus fiatola	0.94 2	2.77	
Sepia orbignyana	0.96 7	1.96	
MICROCTURIDAE	0.08 58	0.24	
Torpedo torpedo	0.08 2	0.24	
Antennarius sp.	0.04 2	0.12	
Total	33.98	100.00	

PROJECT STATION:3983  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1004  
 start stop duration Long E 1300  
 TIME :15:55:48 16:25:52 30 (min) Purpose code: 3  
 LGC :1789.08 1790.68 1.46 Area code : 2  
 FDEPTH: 105 104 GearCond.code: 1  
 BDEPTH: 105 104 Validity code: 1  
 Towing dir: 155e Wire out: 260 m Speed: 30 kn\*10  
 Sorted: 114 Kg Total catch: 1041.88 CATCH/HOUR: 2083.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	1709.68 18284	82.05	
Dentex angolensis	57.56 568	2.78	8593
Trichurus lepturus	54.20 106	2.60	
Selene dorsalis	48.60 96	2.33	
Dentex congocensis	36.46 688	1.75	8595
Trachurus trecae	35.94 1050	1.72	8592
Umbria canariensis	31.48 86	1.51	8591
Pagellus bellottii	24.94 190	1.20	8594
Zeus taber	17.38 86	0.83	
Alloteuthis africana	15.48 4748	0.74	
Lagocephalus laevigatus	10.32 18	0.50	
Boops boops	7.40 172	0.36	
Raja clavata	7.40 2	0.36	
Sarda sarda	6.52 6	0.31	
Sepia orbignyana	4.64 52	0.22	
Citharus linguatula	4.64 120	0.22	
Scorpaena sp.	3.62 34	0.17	
Decapterus rronchus	1.94 2	0.09	
Illex colodetii	1.90 34	0.09	
Trigla lyca	1.72 34	0.08	
Saurida brasiliensis	1.54 138	0.07	
Total	2083.76	99.98	

PROJECT STATION:3981  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1000  
 start stop duration Long E 1310  
 TIME :12:39:42 13:09:34 30 (min) Purpose code: 3  
 LGC :1772.06 1773.60 1.54 Area code : 2  
 FDEPTH: 59 60 GearCond.code: 1  
 BDEPTH: 59 60 Validity code: 1  
 Towing dir: 152e Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 78 Kg Total catch: 78.49 CATCH/HOUR: 156.98

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
I U R T L E S	50.30 2	32.04	
Pseudupeneus prayensis	33.60 286	21.40	
Pagellus bellottii	21.20 176	13.50	8582
Rhinobatos albosaculatus	6.30 2	4.01	
Cramnogobius gruvelli	4.62 132	2.94	
Decapterus punctatus	4.34 52	2.76	
Sepia orbignyana	4.04 10	2.57	
Raja miraletus	3.84 8	2.45	
Selene dorsalis	3.70 56	2.36	
Citharus linguatula	2.80 90	1.78	
Sardinella maderensis	2.50 22	1.59	8585
Sphyraena quachancho	2.46 4	1.57	
Galeoides oedactylus	2.26 8	1.44	
Miscellaneous fishes	1.66 1.06		
Trachurus trecae	1.66 56	1.06	8584
Octopus sp.	1.64 4	1.04	
Trichurus lepturus	1.50 4	0.96	
Brachydeuterus auritus	1.34 16	0.85	
Serranus accraensis	1.20 20	0.76	
Dentex barnardi	1.04 22	0.66	8583
Dicologlossa cuneata	0.96 14	0.61	
Myxtriopsis rostellatus	0.82 2	0.52	
Cynoglossus browni	0.70 2	0.45	
Lithognathus microstoma	0.68 2	0.43	
Brotula barbata	0.62 4	0.39	
Laemonema laureysi	0.52 2	0.33	
Antennarius sp.	0.26 2	0.17	
Scorpaena sp.	0.22 2	0.14	
Ephippium guttifer	0.16 2	0.10	
Amoglossus imperialis	0.04 6	0.03	
Total	156.98	99.97	

PROJECT STATION:3984  
 DATE:14/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 1006  
 start stop duration Long E 1253  
 TIME :17:44:49 18:15:05 30 (min) Purpose code: 3  
 LGC :1799.74 1801.16 1.42 Area code : 2  
 FDEPTH: 297 306 GearCond.code: 1  
 BDEPTH: 297 306 Validity code: 1  
 Towing dir: 340e Wire out: 750 m Speed: 30 kn\*10  
 Sorted: 122 Kg Total catch: 579.52 CATCH/HOUR: 1159.04

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Chlorophthalmus atlanticus	855.00 18032	73.77	
Synagrops microlepis	66.98 3060	5.78	
Gadella sp.	65.36 1198	5.64	
Merluccius polli	41.04 200	3.54	8596
Scorpaena normani	40.38 370	3.48	
Parapenaeus longirostris, fem.	16.24 1938	1.40	8597
Nematocarcinus africanus	15.86 4912	1.37	
MYCTOPHIDAE	19.02 14308	1.30	
Trichurus lepturus	9.60 200	0.83	
Nezumia aequalis	8.84 114	0.76	
Ceolorinchus coelorhynchus	6.74 172	0.58	
Pterothrissus bellisci	6.18 38	0.53	
Lophius vaillanti	2.66 38	0.23	
Solerochea africana	2.30 58	0.20	
Callinectes sp.	2.10 48	0.18	
Nephropsis atlantica	1.62 210	0.14	
Gephyroberyx darwini	0.98 2	0.08	
Parapenaeus longirostris, male	0.86 152	0.07	8598
Todaropsis eblanae	0.66 10	0.06	
Gadella imberbis	0.58 10	0.05	
Total	1159.00	99.99	



PROJECT STATION: 3985  
 DATE: 14/3/06 GEAR TYPE: BT No: 15 POSITION: Lat S 958 Long E 1245  
 TIME : 20:52:40 21:22:11 30 (min) Purpose code: 3  
 LCG : 1812.89 1814.42 1.50 Area code : 2  
 FDEPTH: 71 770 GearCond.code: 1  
 BDEPTH: 71 770 Validity code: 1  
 Towing dir: 316° Wire out: 1800 m Speed: 30 kn\*10  
 Sorted: 25 Kg Total catch: 102.68 CATCH/HOUR: 205.36

PROJECT STATION: 3987  
 DATE: 15/3/06 GEAR TYPE: BT No: 18 POSITION: Lat S 947 Long E 1300  
 TIME : 06:26:03 06:45:12 19 (min) Purpose code: 3  
 LCG : 1868.91 1869.90 1.00 Area code : 2  
 FDEPTH: 94 93 GearCond.code: 9  
 BDEPTH: 94 93 Validity code: 1  
 Towing dir: 155° Wire out: 300 m Speed: 31 kn\*10  
 Sorted: 183 Kg Total catch: 183.00 CATCH/HOUR: 577.89

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yareella blackfordi	49.36	1200	24.04	
Scyllaridae sp.	25.04	1200	12.13	
HOLMIGURIDAE	22.96	96	11.18	
Nematocarcinus africanus	21.76	8344	10.60	
Nezumia sp.	15.92	320	7.75	
MISCELLANEOUS	10.56	1048	5.14	
ALEPOCEPHALIDAE	9.92	64	4.83	
Raja sp.	8.24	24	4.01	
Craceon maritae, male	5.60	8	2.73	
Etmopterus pusillus	5.16	16	2.51	
MELANOSTOMIATIDAE	5.12	112	2.49	
Bathyrhynchus vicinus	3.20	64	1.56	
Dibranchius atlanticus	3.04	128	1.48	
Lamprogrammus exultans	2.80	8	1.36	
Etmopterus sp.	2.60	34	1.27	
CONGRIDAE	2.00	48	0.97	
Lepidus vaillanti	1.52	8	0.74	
Opisthotectis sp.	1.44	8	0.70	
Batrachopteryx sp.	1.36	168	0.66	
Histioteutis sp.	1.28	8	0.62	
Aristeus varidensis, female	1.28	56	0.62	8600
Gadella marala	1.20	72	0.58	
Aristeus varidensis, male	0.88	104	0.43	8599
STOMIIDAE	0.72	56	0.35	
Triplophos nemingi	0.64	112	0.31	
MYCTOPHIDAE	0.56	32	0.27	
Chauliodon sloani	0.40	24	0.19	
Glyphis marsepiensis	0.32	24	0.16	
STERNOPTYCHIDAE	0.08	8	0.04	
Melanocetus johnsoni	0.08	8	0.04	
Peristedion catapnactum	0.08	8	0.04	
Halosaurus sp.	0.08	8	0.04	
Neocyttus sp.	0.08	16	0.04	
L O B S T E R S	0.08	144	0.04	
Total	205.36		99.98	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	191.37	6407	33.12	8604
Pagellus bellottii	128.05	897	22.16	8605
Brachydeuterus auritus	89.37	780	15.46	
Squatina oculata	19.74	6	3.42	
Alloteuthis africana	16.32	5037	3.17	
Zeus faber	16.04	60	2.78	
Dentex angolensis	15.03	161	2.60	8606
Trichinus lepturus	14.13	32	2.45	
Raja siraletus	10.77	16	1.86	
Lagocephalus sp.	10.67	19	1.85	
Citharus linguatula	10.29	218	1.78	
Trigla lyra	8.53	164	1.48	
Saurida brasiliensis	5.91	1014	1.02	
Sepia officinalis nereocda	5.62	3	0.97	
Uranoscopus polli	5.53	32	0.56	
Fistularia petimba	5.05	13	0.87	
Dentex barnardi	4.67	19	0.81	8608
E C R I N O D E R M A T A	3.28	265	0.57	
Lagocephalus laevisgatus	3.06	3	0.53	
Octopus vulgaris	2.59	3	0.45	
Sphyrna guanchanao	2.56	6	0.44	
Protula barbata	1.74	3	0.30	
Dentex congocensis	1.20	32	0.21	8607
Boops boops	1.17	28	0.20	
Sepia obignyana	0.98	6	0.17	
Celedonionichthys gabonensis	0.79	6	0.14	
Scorpaena sp.	0.69	6	0.12	
Selene dorsalis	0.35	3	0.06	
Todaropsis eblanae	0.19	3	0.03	
Monolepis microstoma	0.13	3	0.02	
Sardinella maderensis	0.06	3	0.01	8609
Total	577.90		100.01	

PROJECT STATION: 3988  
 DATE: 15/3/06 GEAR TYPE: BT No: 18 POSITION: Lat S 944 Long E 1310  
 TIME : 06:40:10 08:20:44 32 (min) Purpose code: 3  
 LCG : 1881.20 1892.74 1.50 Area code : 2  
 FDEPTH: 30 30 GearCond.code: 1  
 BDEPTH: 30 30 Validity code: 1  
 Towing dir: 350° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 42 Kg Total catch: 41.86 CATCH/HOUR: 78.49

PROJECT STATION: 3986  
 DATE: 14/3/06 GEAR TYPE: BT No: 15 POSITION: Lat S 955 Long E 1245  
 TIME : 23:09:51 23:39:59 30 (min) Purpose code: 3  
 LCG : 1820.49 1822.00 1.49 Area code : 2  
 FDEPTH: 607 614 GearCond.code: 1  
 BDEPTH: 607 614 Validity code: 1  
 Towing dir: 330° Wire out: 1400 m Speed: 30 kn\*10  
 Sorted: 30 Kg Total catch: 186.31 CATCH/HOUR: 372.62

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	113.40	31956	30.43	
Yareella blackfordi	96.84	3036	25.99	
STOMIIDAE	40.68	1008	10.92	
Craceon maritae, female	19.44	84	5.22	
Craceon maritae, male	14.04	48	3.79	
C R U S T A C E A N S	14.04	1224	3.77	
Hoplostethus cadenati	12.96	432	3.48	
Benthodesmus tenuis	9.60	324	2.58	
Lamprogrammus exultans	6.60	144	1.77	
Merluccius polli	5.46	8	1.47	8601
Centropristis striata	4.70	2	1.26	
Centroscymnus crepidater	4.48	22	1.20	
Aristeus varidensis, female	3.24	144	0.87	8603
Ommastrephes pteropus	2.88	12	0.77	
Gadella izberdis	2.28	72	0.61	
Malacocephalus laevis	2.04	12	0.55	
Batrachopteryx sp.	1.92	120	0.52	
Parapandanus narval	1.80	696	0.48	
Laemonema laureysi	1.80	204	0.48	
ALEPOCEPHALUS ROSFRATUS	1.56	96	0.42	
Dioranctus atlanticus	1.44	60	0.39	
Heterocephalus ensifer	1.32	144	0.35	
Raja alba	1.32	24	0.35	
Aristeus varidensis, male	1.20	84	0.32	8602
Lophius vaillanti	1.20	12	0.32	
Etmopterus polli	1.14	16	0.31	
Nezumia aequalis	1.08	12	0.29	
Scopelogadus maeadi	0.84	24	0.23	
Avocettina acuticeps	0.84	48	0.23	
Coeloclinchus sp.	0.72	12	0.19	
Triplophos nemingi	0.72	108	0.19	
MYCTOPHIDAE	0.72	132	0.19	
Etmopterus pusillus	0.72	2	0.05	
Przytyczkys weilli	0.72	12	0.03	
Total	372.62		100.00	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Alectis alexandrinus	20.44	34	26.04	
Lagocephalus laevisgatus	10.78	45	13.73	
Sepia obignyana	8.64	21	11.01	
Alloteuthis africana	7.14	1961	9.10	
Balistes capricornis	6.47	9	8.24	
Raja siraletus	4.93	9	6.28	
Decapterus rhombus	4.59	58	5.85	8610
Sphyrna guanchanao	3.34	6	4.25	
Aluterus scriptus	2.55	6	3.25	
Dactylopterus volitans	2.19	4	2.79	
Epinephelus aeneus	1.97	4	2.51	
Syacium micrurus	1.28	13	1.63	
Trachinus araneus	0.96	4	1.22	
Chilomycterus spinosus mauret.	0.90	4	1.15	
Trachinocephalus myops	0.86	4	1.10	
Pagrus caeruleostictus	0.64	2	0.82	8611
Fistularia petimba	0.47	9	0.60	
Pagellus bellottii	0.34	2	0.43	8612
Total	78.49		100.01	

PROJECT STATION: 3989  
 DATE: 15/3/06 GEAR TYPE: BT No: 18 POSITION: Lat S 927 Long E 1304  
 TIME : 10:40:18 11:00:18 20 (min) Purpose code: 3  
 LCG : 1898.77 1899.77 1.00 Area code : 2  
 FDEPTH: 25 25 GearCond.code: 9  
 BDEPTH: 25 25 Validity code: 1  
 Towing dir: 330° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 88 Kg Total catch: 88.44 CATCH/HOUR: 263.32

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Acanthurus monroviae	46.50	63	17.53	
Pagrus caeruleostictus	45.45	150	17.13	8613
Bodianus speciosus	26.70	15	10.06	
Brepania africana	25.20	39	9.50	
Balistes sp.	24.75	36	9.33	
MISCELLANEOUS	20.52	2106	7.73	
Lutjanus gorensis	13.98	15	5.27	
Dentex barnardi	11.85	33	4.47	8614
Fistularia tabacaria	8.55	15	3.22	
Dasyatis marmorata	5.55	6	2.09	
Ephippium guttifer	4.44	3	1.67	
Raja siraletus	3.78	6	1.42	
Epinephelus alexandrinus	3.69	15	1.39	
Balistes punctatus	3.69	3	1.39	
Plectorhinchus mediterraneus	3.66	6	1.38	
Lagocephalus laevisgatus	3.63	6	1.37	
Pomadourus cooperi	3.54	3	1.33	
Pseudupeneus prayvensis	2.61	24	0.98	
Chaetodon hoefleri	2.10	30	0.79	
Lutjanus fulgens	1.74	3	0.66	
Balistes capricornis	1.50	3	0.57	
Chilomycterus spinosus mauret.	0.54	3	0.20	
Scorpaena stephanica	0.54	6	0.20	
Citharus linguatula	0.42	3	0.16	
Decapterus punctatus	0.24	3	0.09	
Chromis limbatus	0.15	21	0.06	
Total	263.32		99.99	

PROJECT STATION:3990  
 DATE:15/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 928 Long E 1300  
 start stop duration Purpose code: 3  
 TIME :12:28:42 12:58:42 30 (min)  
 LOG :1905.83 1907.36 1.50 Area code : 2  
 FDEPTH: 51 52 GearCond.code: 1  
 BDEPTH: 51 52 Validity code: 1  
 Towing dir: 1660 Wire out: 150 m Speed: 30 kn\*10

Sorted: 165 Kg Total catch: 165.14 CATCH/HOUR: 330.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
<i>Sphyrna guacharcho</i>	185.90	242	56.29	
<i>Trichurus lepturus</i>	28.22	66	8.54	
<i>Epinephelus aeneus</i>	21.20	4	6.42	
<i>Raja miraletus</i>	19.00	30	5.75	
<i>Alloteuthis africana</i>	13.10	3930	3.97	
<i>Brachydeuterus acutus</i>	12.70	76	3.85	
<i>Pagellus bellottii</i>	5.68	22	1.72	8616
<i>Rhizoprionodon acutus</i>	5.00	2	1.51	
<i>Octopus sp.</i>	3.94	6	1.19	
<i>Alektis alexandrinus</i>	3.76	4	1.14	
<i>Hemiramphus ocellator</i>	3.74	6	1.13	
MISCELLANEOUS	2.96		0.90	
<i>Galeoides decadactylus</i>	2.88	4	0.87	
<i>Selene dorsalis</i>	2.38	4	0.72	
<i>Grammolitites gruevii</i>	2.34	44	0.71	
<i>Pomadasys copei</i>	2.24	2	0.68	
<i>Stromateus fiatola</i>	2.14	2	0.65	
<i>Caranx crysos</i>	2.14	2	0.65	
<i>Dentex barnardi</i>	2.10	2	0.64	8617
<i>Acanthopus monroviae</i>	2.06	2	0.62	
<i>Sepia ocapayana</i>	1.28	8	0.39	
<i>Laemonema laureysi</i>	1.06	2	0.32	
<i>Trachinotus ovatus</i>	0.88	2	0.27	
<i>Citharus linguatula</i>	0.74	24	0.22	
<i>Sardinella maderensis</i>	0.68	2	0.21	8618
<i>Fagrus caeruleostictus</i>	0.68	2	0.21	8615
<i>Chactodon hoefleri</i>	0.56	4	0.17	
<i>Chilomycterus spinosus maurer.</i>	0.54	2	0.10	
<i>Trigla lyra</i>	0.26	4	0.08	
<i>Saurida brasiliensis</i>	0.18	12	0.05	
<i>Serranus acraensis</i>	0.14	2	0.04	
Total	330.28		100.01	

PROJECT STATION:3993  
 DATE:15/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 938 Long E 1240  
 start stop duration Purpose code: 3  
 TIME :18:31:38 19:01:59 30 (min)  
 LOG :1841.60 1943.22 1.62 Area code : 2  
 FDEPTH: 546 544 GearCond.code: 1  
 BDEPTH: 546 544 Validity code: 1  
 Towing dir: 1600 Wire out: 1400 m Speed: 30 kn\*10

Sorted: 27 Kg Total catch: 130.89 CATCH/HOUR: 261.78

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
<i>Nematoecarcinus africanus</i>	46.40	12048	17.72	
<i>Yarella blackfordi</i>	40.40	1280	13.43	
<i>Merluccius polli</i>	33.10	58	12.64	8629
<i>Hoplostethus cadenati</i>	32.40	1232	12.38	
<i>Triplphos hemingi</i>	25.36	952	9.69	
<i>Gadella maraldi</i>	15.68	160	5.99	
<i>Centroprorus uyato</i>	8.40	2	3.21	
<i>Echiosstoma barbartum</i>	7.52	160	2.87	
<i>Seyllacides meskiotsii</i>	6.88	664	2.63	
<i>Lamprogrammus exultans</i>	6.72	152	2.57	
<i>Arctiteus varidensis, female</i>	5.60	264	2.14	8631
<i>Arctiteus varidensis, male</i>	3.76	464	1.44	8630
<i>Dibranchius atlanticus</i>	3.20	96	1.22	
<i>Chaceon maritae, female</i>	3.00	12	1.15	
<i>Chaceon maritae, male</i>	2.90	4	1.11	
<i>Bathophilus longispinus</i>	2.72	304	1.04	
<i>Todaropsis eblanae</i>	2.72	16	1.04	
<i>Stromateus fiatola</i>	2.16	336	0.83	
<i>Laemonema laureysi</i>	1.84	264	0.70	
<i>Bathyracoconger vicinus</i>	1.60	64	0.61	
MYCTOPHIDAE	1.52	1704	0.58	
<i>Centroscymnus crepidater</i>	1.36	8	0.52	
<i>Callinectes sp.</i>	1.20	72	0.46	
<i>Nezumia sp.</i>	1.04	56	0.40	
STOMIIDAE	0.88	40	0.34	
<i>Coelecinchus coelrichinus</i>	0.64	8	0.24	
<i>Citharus linguatula</i>	0.64	16	0.24	
<i>Nessorhamphus ingolfianus</i>	0.56	16	0.21	
<i>Nemichthys sp.</i>	0.40	40	0.15	
<i>Halosaurus sp.</i>	0.40	8	0.15	
<i>Glyphis marsupialis</i>	0.32	40	0.12	
<i>Elmopterus spinax</i>	0.30	6	0.11	
<i>Sepiella ornata</i>	0.16	8	0.06	
Total	261.78		99.99	

PROJECT STATION:3991  
 DATE:15/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 932 Long E 1251  
 start stop duration Purpose code: 3  
 TIME :14:26:27 14:56:07 30 (min)  
 LOG :1917.90 1919.43 1.53 Area code : 2  
 FDEPTH: 116 113 GearCond.code: 1  
 BDEPTH: 116 113 Validity code: 1  
 Towing dir: 3400 Wire out: 285 m Speed: 30 kn\*10

Sorted: 22 Kg Total catch: 167.23 CATCH/HOUR: 334.46

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
<i>Trichurus lepturus</i>	138.30	476	41.35	
<i>Botula barbata</i>	30.60	38	9.15	
<i>Synagrops microlepis</i>	28.62	4492	8.56	
<i>Vanolera microstoma</i>	21.78	450	6.51	
<i>Fistularia petimba</i>	11.50	22	3.44	
<i>Raja miraletus</i>	10.62	16	3.18	
<i>Selene dorsalis</i>	9.54	36	2.85	
<i>Trichurus lepturus</i>	8.88	150	2.66	
<i>Merluccius polli</i>	7.80	540	2.33	8622
<i>Pterotrissus bellocci</i>	7.08	42	2.12	
<i>Zeus faber</i>	6.90	48	2.06	
<i>Uranoscopus albesca</i>	6.78	36	2.03	
<i>Torpedo torpedo</i>	6.28	12	1.88	
<i>Gobius sp.</i>	4.80	2166	1.44	
<i>Bembrops heterurus</i>	4.80	48	1.44	
<i>Trachurus trachurus</i>	4.74	24	1.42	8621
<i>Trachurus trachurus</i>	4.38	114	1.31	8619
<i>Bodianus speciosus</i>	3.20	2	0.96	
<i>Sacraea angolensis</i>	3.00	6	0.90	
<i>Stromateus fiatola</i>	2.62	2	0.78	
<i>Sphyrna guacharcho</i>	2.32	6	0.75	
<i>Octopus sp.</i>	2.34	4	0.70	
<i>Parapetanae longirostris, fem.</i>	2.16	108	0.65	8624
<i>Cnelidionichthys capensis</i>	2.04	6	0.61	
<i>Dentex angolensis</i>	1.02	6	0.30	8620
<i>Parapetanae longirostris, male</i>	0.72	300	0.22	8623
<i>Loligo sp.</i>	0.54	6	0.16	
<i>Seyllacides merlotii</i>	0.48	6	0.14	
<i>Saurida brasiliensis</i>	0.42	6	0.13	
Total	334.46		100.03	

PROJECT STATION:3994  
 DATE:16/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 905 Long E 1237  
 start stop duration Purpose code: 3  
 TIME :00:16:25 00:46:27 30 (min)  
 LOG :1981.91 1983.42 1.50 Area code : 2  
 FDEPTH: 733 731 GearCond.code: 1  
 BDEPTH: 733 731 Validity code: 1  
 Towing dir: 270 Wire out: 1700 m Speed: 30 kn\*10

Sorted: 26 Kg Total catch: 162.87 CATCH/HOUR: 325.74

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
<i>Yarella blackfordi</i>	113.40	1560	34.81	
<i>HOLOOURIDAE</i>	78.16	1452	30.13	
<i>Nezumia aequalis</i>	41.52	840	12.75	
<i>ALEPOCEPHALUS ROSFRATUS</i>	16.92	240	5.19	
<i>Lamprogrammus exultans</i>	12.72	12	3.90	
<i>C R U S T A C E A N S</i>	7.08	384	2.17	
<i>Centroprorus uyato</i>	6.80	2	2.09	
STOMIIDAE	4.44	132	1.36	
<i>Dibranchius atlanticus</i>	4.32	180	1.33	
<i>Merluccius polli</i>	4.32	6	1.33	8632
<i>Raja sp.</i>	3.00	12	0.92	
<i>Bathyracoconger vicinus</i>	2.88	48	0.88	
<i>E C H I N O D E R M A T A</i>	2.64	108	0.81	
<i>Loligo sp.</i>	1.68	12	0.52	
<i>Laemonema laureysi</i>	1.56	84	0.48	
<i>Hoplostethus cadenati</i>	1.44	48	0.44	
<i>Centroscymnus crepidater</i>	1.00	4	0.31	
<i>Isistius brasiliensis</i>	0.50	2	0.15	
<i>Chaceon maritae</i>	0.48	36	0.15	
<i>Avocetina acuticeps</i>	0.24	12	0.07	
<i>Elmopterus polli</i>	0.16	2	0.06	
<i>Oncorhynchus sp.</i>	0.12	12	0.04	
<i>Plesiopentopus edwardsianus</i>	0.12	24	0.04	
<i>Scopelosaurus meadi</i>	0.12	60	0.04	
MYCTOPHIDAE	0.12	48	0.04	
Total	325.74		100.00	

PROJECT STATION:3992  
 DATE:15/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 934 Long E 1247  
 start stop duration Purpose code: 3  
 TIME :16:11:24 16:41:04 30 (min)  
 LOG :1928.50 1930.07 1.57 Area code : 2  
 FDEPTH: 169 172 GearCond.code: 1  
 BDEPTH: 169 172 Validity code: 1  
 Towing dir: 3300 Wire out: 450 m Speed: 30 kn\*10

Sorted: 92 Kg Total catch: 433.82 CATCH/HOUR: 867.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
<i>Synagrops microlepis</i>	363.60	37616	41.91	
<i>Trichurus lepturus</i>	127.20	424	14.66	
<i>Pterotrissus bellocci</i>	86.40	536	9.96	
<i>Botula barbata</i>	64.50	68	7.43	
<i>Dentex angolensis</i>	46.90	156	5.41	8625
<i>Bembrops heterurus</i>	40.72	48	4.69	
<i>Arctiteus varidensis, female</i>	33.28	152	3.84	
<i>Parapetanae longirostris, fem.</i>	24.16	3448	2.78	8627
<i>Parapetanae longirostris, male</i>	14.80	2240	1.71	8628
<i>Zeus faber</i>	13.52	56	1.56	
<i>Raja clavata</i>	10.40	6	1.20	
<i>Squalina oculata</i>	9.20	2	1.06	
<i>Torpedo torpedo</i>	7.04	8	0.61	
MYCTOPHIDAE	6.96	3176	0.76	
<i>Uranoscopus polli</i>	5.84	32	0.67	
<i>Illex coindetii</i>	3.20	120	0.37	
<i>Botrus podas africanus</i>	3.12	36	0.36	
<i>Bathyracoconger vicinus</i>	2.48	32	0.29	
<i>Dicelopsyllus cuneata</i>	1.12	24	0.13	
<i>Merluccius polli</i>	1.12	72	0.13	8626
<i>Scorpaena normani</i>	1.04	8	0.12	
<i>Calappa sp.</i>	0.56	24	0.06	
<i>Chlorophthalmus atlanticus</i>	0.40	72	0.05	
GOBIIDAE	0.32	160	0.04	
<i>Squilla xantus</i>	0.16	16	0.02	
Total	867.64		100.02	

PROJECT STATION:3995  
 DATE:16/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 906 Long E 1240  
 start stop duration Purpose code: 3  
 TIME :02:26:14 02:55:47 30 (min)  
 LOG :1990.76 1992.28 1.52 Area code : 2  
 FDEPTH: 429 494 GearCond.code: 1  
 BDEPTH: 429 494 Validity code: 1  
 Towing dir: 2100 Wire out: 1050 m Speed: 30 kn\*10

Sorted: 22 Kg Total catch: 187.41 CATCH/HOUR: 374.82

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
<i>Nematoecarcinus africanus</i>	135.60	46896	36.18	
<i>Merluccius polli</i>	106.50	302	28.41	8633
<i>Yarella blackfordi</i>	40.92	1488	10.92	
<i>Chausax pictus</i>	25.92	360	6.92	
<i>Arctiteus varidensis, female</i>	16.56	816	4.42	8634
<i>Gadella limberbis</i>	13.20	300	3.52	
HOLOOURIDAE	9.60	60	2.56	
<i>Arctiteus varidensis, male</i>	7.32	396	1.93	8635
<i>B I V A L V E S</i>	3.48	12	0.93	
<i>Benthodesmus tenuis</i>	3.36	144	0.90	
<i>E C H I N O D E R M A T A</i>	3.24	156	0.86	
<i>Chaceon maritae</i>	2.40	24	0.66	
<i>Elmopterus polli</i>	1.00	30	0.27	
<i>Triplphos hemingi</i>	0.96	84	0.26	
<i>Laemonema laureysi</i>	0.84	48	0.22	
<i>Ommastrephes bartramii</i>	0.84	12	0.22	
<i>Halosaurus eveni</i>	0.84	72	0.22	
<i>Galeus polli</i>	0.74	10	0.20	
<i>Hymenocephalus italicus</i>	0.48	48	0.13	
<i>Nessorhamphus ingolfianus</i>	0.36	24	0.10	
<i>Elmopterus spinax</i>	0.30	8	0.08	
<i>Plesiopentopus edwardsianus</i>	0.12	12	0.03	
<i>C R U S T A C E A N S</i>	0.12	12	0.03	
<i>Loligo sp.</i>	0.12	24	0.03	
Total	374.82		100.00	

PROJECT STATION:3996  
 DATE:16/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 913  
 start stop duration Long E 1242  
 TIME :05:32:21 06:18:09 23 (min) Purpose code: 3  
 LOG :2002.51 2003.81 1.30 Area code : 2  
 FDEPTH: 251 254 GearCond.code: 1  
 BDEPTH: 251 256 Validity code: 1  
 Towing dir: 200a Wire out: 400 m Speed: 32 kn\*10

Sorted: 61 Kg Total catch: 268.19 CATCH/HOUR: 643.66

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	468.72	36264	72.82	
Dentex angolensis	65.28	130	10.14	8636
Trichiurus lepturus	52.92	96	8.22	
Parapanaeus longirostris, fem.	10.08	194	1.57	8639
Brotula barbata	7.78	10	1.21	
Parapanaeus longirostris, male	6.72	1202	1.04	8640
Zenopsis conchifer	5.30	10	0.82	
Pterothrissus belloci	4.30	43	0.67	
Bembrops heterurus	4.30	34	0.67	
Gomyroberyx dawkinsi	3.41	5	0.53	
Dentex macrophthalmus	3.05	10	0.47	8637
Pontinus accraensis	2.86	17	0.44	
Illex colindetii	2.35	43	0.37	
Epigonus telescopus	2.28	34	0.35	
CONGRIDAE	1.61	10	0.25	
Chlorophthalmus atlanticus	1.51	43	0.23	
Callinectes sp.	0.84	10	0.13	
Merluccius polli	0.43	10	0.07	8638
Total	643.74		100.00	

PROJECT STATION:3997  
 DATE:16/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 914  
 start stop duration Long E 1247  
 TIME :07:36:00 08:06:25 30 (min) Purpose code: 3  
 LOG :2011.86 2013.47 1.60 Area code : 2  
 FDEPTH: 116 117 GearCond.code: 1  
 BDEPTH: 116 117 Validity code: 1  
 Towing dir: 180a Wire out: 310 m Speed: 30 kn\*10

Sorted: 141 Kg Total catch: 141.28 CATCH/HOUR: 282.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	89.60	284	31.71	8643
Synagrops microlepis	68.20	2888	24.14	
Trichiurus lepturus	62.30	202	22.05	
Zeus faber	11.36	62	4.02	
Pterothrissus belloci	8.84	56	3.13	
Scorber japonicus	7.34	18	2.60	
Dentex angolensis	6.00	32	2.12	8646
Allotautis africana	4.86	1314	1.72	
Uranoscopus cadenati	4.06	18	1.44	
Brotula barbata	3.62	6	1.28	
Brachydeuterus auritus	2.68	14	0.95	
Trigla lyra	2.38	16	0.84	
Branchiostegus semifasciatus	2.18	2	0.50	
Illex colindetii	1.22	30	0.43	
Bothus podas africanus	1.18	40	0.42	
Raja miraletus	1.12	2	0.40	
Lagocephalus laevigatus	1.06	2	0.38	
Trachiocephalus myops	0.90	524	0.12	
Bembrops heterurus	0.66	6	0.33	
Parapanaeus longirostris, fem.	0.64	126	0.23	8641
Scorpaena normani	0.52	2	0.18	
Umbra canariensis	0.46	2	0.16	8645
Citharus linguatula	0.38	18	0.13	
Dentex coquoensis	0.38	4	0.13	8644
Bugra bogra	0.12	12	0.11	
Illex colindetii	0.26	86	0.09	
Sepia subigniana	0.14	2	0.05	
Parapanaeus longirostris, male	0.12	26	0.04	8642
Saurida brasiliensis	0.04	6	0.01	
Total	282.56		99.99	

PROJECT STATION:3998  
 DATE:16/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 914  
 start stop duration Long E 1251  
 TIME :09:08:10 09:38:01 30 (min) Purpose code: 3  
 LOG :2020.05 2021.71 1.66 Area code : 2  
 FDEPTH: 74 80 GearCond.code: 1  
 BDEPTH: 74 80 Validity code: 1  
 Towing dir: 340a Wire out: 250 m Speed: 32 kn\*10

Sorted: 132 Kg Total catch: 989.78 CATCH/HOUR: 1979.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	1261.50	17566	63.73	
Selene caralis	448.50	3196	22.66	
Raja miraletus	167.26	330	8.45	
Trachurus trecae	33.46	1020	1.69	8649
Lagocephalus laevigatus	10.06	16	0.51	
Octopus vulgaris	9.60	16	0.48	
Sphyrna guachancho	9.00	16	0.45	
Sardinella aurita	8.26	30	0.42	
Citharus linguatula	8.26	166	0.42	
Zeus faber	6.16	16	0.31	
Fistularia petimba	4.96	16	0.29	
Brotula barbata	4.80	16	0.24	
Sardinella maderensis	3.46	16	0.17	
Pagellus bellottii	1.66	16	0.08	8648
Torpedo torpedo	1.36	16	0.07	
Dentex angolensis	1.36	16	0.07	8647
Total	1979.66		100.00	

PROJECT STATION:3999  
 DATE:16/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 913  
 start stop duration Long E 1255  
 TIME :10:33:58 11:04:22 30 (min) Purpose code: 3  
 LOG :2028.37 2029.87 1.50 Area code : 2  
 FDEPTH: 22 25 GearCond.code: 1  
 BDEPTH: 22 25 Validity code: 1  
 Towing dir: 350a Wire out: 120 m Speed: 30 kn\*10

Sorted: 23 Kg Total catch: 22.74 CATCH/HOUR: 45.48

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Alectis alexandrinus	14.60	54	76.06	
Caranx crysos	3.80	8	8.36	
Dasyatis macrdocata	2.18	2	5.79	
Pagrus caerulescictus	1.00	2	2.30	8650
Raja miraletus	0.84	2	1.85	
Parakania macrophthalmus	0.76	10	1.67	
Chilomycterus spinosus mauret.	0.76	2	1.67	
Citharus linguatula	0.62	8	1.36	
Allotautis africana	0.62	150	1.36	
Dentex angolensis	0.30	2	0.66	8651
Total	45.48		100.00	

PROJECT STATION:4000  
 DATE:16/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 854  
 start stop duration Long E 1300  
 TIME :13:30:34 13:36:24 6 (min) Purpose code: 3  
 LOG :2048.12 2048.41 0.28 Area code : 3  
 FDEPTH: 194 192 GearCond.code: 4  
 BDEPTH: 194 192 Validity code: 4  
 Towing dir: 25a Wire out: 450 m Speed: 30 kn\*10

Sorted: 19 Kg Total catch: 101.80 CATCH/HOUR: 1018.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	232.00	17680	22.79	
G A S T R O P O D S	218.00	100400	21.41	
Brotula barbata	149.50	140	14.69	
Trichiurus lepturus	88.00	350	8.64	
Zeus faber	74.00	200	7.27	
Dentex angolensis	33.30	100	3.27	8652
Trichiurus lepturus	28.80	520	2.83	
Pterothrissus belloci	27.20	680	2.67	
Chlorophthalmus atlanticus	24.80	4880	2.44	
Nezumia aequalis	23.60	960	2.32	
Trigla lyra	19.60	80	1.93	
Zenopsis conchifer	17.20	120	1.69	
Bembrops heterurus	16.00	200	1.57	
Pontinus kuhlii	14.40	120	1.41	
Parapanaeus longirostris, fem.	12.80	6480	1.26	
Parapanaeus longirostris, male	11.20	2480	1.10	8654
Parapanaeus longirostris, male	8.80	3040	0.86	8653
Coelorhynchus coelorhynchus	7.60	80	0.75	
Peristedion cataphractum	6.80	80	0.67	
Hymenocephalus italicus	2.40	120	0.24	
Decapterus punctatus	1.60	40	0.16	
Saurida brasiliensis	0.80	80	0.08	
Total	1018.40		100.05	

PROJECT STATION:4001  
 DATE:16/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 853  
 start stop duration Long E 1259  
 TIME :14:33:45 14:55:32 22 (min) Purpose code: 3  
 LOG :2052.50 2053.60 1.10 Area code : 3  
 FDEPTH: 216 217 GearCond.code: 9  
 BDEPTH: 216 217 Validity code: 4  
 Towing dir: 185a Wire out: 500 m Speed: 30 kn\*10

Sorted: 29 Kg Total catch: 221.05 CATCH/HOUR: 602.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	175.09	10080	29.04	
Trichiurus lepturus	134.45	502	22.30	
Pterothrissus belloci	109.64	720	18.19	
Bembrops heterurus	41.24	425	6.84	
Brotula barbata	21.27	22	3.53	
MYCTOPHIDAE	20.13	12535	3.34	
Dentex angolensis	16.36	60	2.71	8655
G A S T R O P O D S	15.05	7920	2.50	
Pegusa lascaris	13.75	295	2.26	
Trichiurus lepturus	10.20	22	1.69	
Zenopsis conchifer	7.85	16	1.30	
Uranoscopus cadenati	6.87	164	1.14	8657
Merluccius polli	6.05	835	1.00	
Hoplostethus mediterraneus	5.07	131	0.84	
Pegusa lascaris	4.09	65	0.68	
Coelorhynchus coelorhynchus	3.11	131	0.52	
Dentex macrophthalmus	3.05	8	0.51	8656
Parapanaeus longirostris, fem.	2.45	573	0.41	8659
Parapanaeus longirostris, male	2.29	605	0.38	8658
Pterostion peli	2.05	3	0.34	
Calappa sp.	0.98	16	0.16	
Loligo sp.	0.65	33	0.11	
Saurida brasiliensis	0.65	49	0.11	
MYCELLARIIDAE	0.33	16	0.05	
Molonele microstoma	0.16	16	0.03	
Total	602.83		100.00	

PROJECT STATION:4002  
 DATE:16/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 854  
 start stop duration Long E 1254  
 TIME :16:26:07 16:56:04 30 (min) Purpose code: 3  
 LOG :2060.11 2061.65 1.55 Area code : 3  
 FDEPTH: 319 314 GearCond.code: 1  
 BDEPTH: 319 314 Validity code: 1  
 Towing dir: 16a Wire out: 750 m Speed: 30 kn\*10

Sorted: 80 Kg Total catch: 344.09 CATCH/HOUR: 688.18

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	364.64	3148	52.99	8660
Synagrops microlepis	142.34	6974	20.68	
Trichiurus lepturus	83.42	404	12.12	
Gadella sp.	26.48	352	3.88	
Chlorophthalmus atlanticus	23.30	584	3.39	
Malacocephalus laevis	16.78	206	2.44	
Scorpaena normani	14.44	180	2.10	
Nezumia sp.	6.10	224	0.89	
CONGRIDAE	5.34	34	0.78	
Pterothrissus belloci	4.38	26	0.64	
Lophius vaillanti	0.60	18	0.09	
Bathyrocongus vicinus	0.18	8	0.03	
Illex colindetii	0.18	8	0.03	
Total	688.18		100.03	

PROJECT STATION:4003  
 DATE:17/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 836  
 start stop duration  
 TIME :01:02:19 07:31:52 30 (min) Purpose code: 3 Long E 1319  
 LOG :2152.55 2154.07 1.52 Area code: 3  
 FDEPTH: 31 29 GearCond.code: 1  
 BDEPTH: 31 29 Validity code: 1  
 Towing dir: 30 Wire out: 120 m Speed: 30 kn\*10

Sorted: 131 Kg Total catch: 775.39 CATCH/HOUR: 1550.78

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Chloroscombrus chrysurus	384.80	374	24.81	
Brachydeuterus auritus	328.12	7156	21.16	
Ilisha africana	196.04	6854	12.64	
Pseudotolithus senegalensis	114.00	106	7.35	8661
Galeoides decacactylus	97.76	312	6.30	
Cynoponticus ferox	76.96	62	4.96	
Pomadasyus peroteti	62.92	57	4.06	
Trichurus lepturus	59.28	292	3.82	
Sphyræna sphyraena	56.06	166	3.61	
Pomadasyus jubelini	41.08	52	2.65	8662
Selene dorsalis	24.34	822	1.57	
Penaeus notialis, female	23.20	592	1.50	8664
Pomadasyus rogeri	15.08	146	0.97	
Arius parkii	14.66	20	0.95	
Pterothrissus bellotti	13.10	156	0.84	
Penaeus notialis, male	6.86	406	0.44	8665
Stromateus fiatola	6.34	20	0.41	
Dicologlossa cuneata	6.04	198	0.39	
Lithognathus mormyrus	5.10	32	0.33	
KNERIIDAE	5.00	84	0.32	
Torpedo marmorata	3.44	20	0.22	
Sardinella maderensis	3.02	72	0.19	8663
Epinephelus aeneus	2.70	6	0.17	
Rhizophronodon acutus	1.90	2	0.12	
SCORPAENIDAE	1.46	42	0.09	
Ucinia canariensis	0.84	10	0.05	
Pseudopenaeus praxensis	0.72	10	0.05	
Total	1550.82		99.97	

PROJECT STATION:4006  
 DATE:17/ 3/06 GEAR TYPE: 9T No:18 POSITION:Lat S 836  
 start stop duration  
 TIME :10:59:23 11:03:45 4 (min) Purpose code: 3  
 LOG :2171.07 2171.28 0.21 Area code: 3  
 FDEPTH: 81 81 GearCond.code: 9  
 BDEPTH: 81 81 Validity code: 9  
 Towing dir: 180a Wire out: 250 m Speed: 30 kn\*10

Sorted: 27 Kg Total catch: 240.11 CATCH/HOUR: 3601.65

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	1215.00	36000	33.73	
Trichurus lepturus	928.95	2263	25.79	
Chloroscombrus chrysurus	375.00	3150	10.41	
Spondylisoma cantharus	198.75	330	5.12	
Torpedo torpedo	138.75	285	3.85	
Raja miraletus	116.25	210	3.23	
MISCELLANEOUS	106.50		2.96	
Monolepis microstoma	73.50	750	2.04	
Galeoides decacactylus	73.50	165	2.04	
Trachurus trecae	71.25	2100	1.98	
Citharus linguatula	55.50	1125	1.54	8671
Zeus faber	42.75	75	1.19	
Dentex angolensis	34.50	210	0.96	8669
Brotula barbata	25.20	45	0.70	
Mystriophis costellatus	20.25	150	0.56	
Fistularia tabacaria	17.25	75	0.48	
Pomadasyus rogeri	17.25	75	0.48	
GOBIIDAE	14.25	2775	0.40	
Selene dorsalis	13.50	150	0.37	
Sepia orbignyana	12.15	15	0.34	
Pagellus bellottii	11.25	45	0.31	
Saurida brasiliensis	8.25	3150	0.23	
Sphyræna guactancho	7.80	15	0.22	
Uranoscopus albesca	7.50	75	0.21	
Scorpaena stephanica	6.00	150	0.17	
Pagellus bellottii	5.55	30	0.15	8670
Sepia orbignyana	5.25	300	0.15	
Total	3601.65		100.01	

PROJECT STATION:4004  
 DATE:17/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 834  
 start stop duration  
 TIME :08:23:03 08:40:15 17 (min) Purpose code: 3 Long E 1316  
 LOG :2158.51 2159.44 0.93 Area code: 3  
 FDEPTH: 43 43 GearCond.code: 9  
 BDEPTH: 43 43 Validity code: 1  
 Towing dir: 180a Wire out: 120 m Speed: 30 kn\*10

Sorted: 101 Kg Total catch: 1091.40 CATCH/HOUR: 3852.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	2153.12	53068	55.90	
Galeoides decacactylus	578.12	1927	15.01	
Trachurus lepturus	561.46	2114	14.58	
Pomadasyus peroteti	200.12	519	5.20	8666
Chloroscombrus chrysurus	104.51	964	2.71	
Pomadasyus rogeri	104.51	146	2.13	
Ilisha africana	35.22	632	0.91	
Selene dorsalis	35.22	632	0.91	
Pseudotolithus senegalensis	26.65	25	0.69	
Lithognathus mormyrus	15.56	39	0.48	
Dentex angolensis	14.47	39	0.38	8667
Pseudopenaeus praxensis	6.32	39	0.16	
Penaeus notialis, female	5.58	222	0.14	
Penaeus notialis, male	3.71	74	0.10	
Epinephelus aeneus	3.11	4	0.08	
Citharus linguatula	2.22	39	0.06	
Dicologlossa cuneata	2.22	39	0.06	
Total	3852.12		100.00	

PROJECT STATION:4007  
 DATE:17/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 837  
 start stop duration  
 TIME :12:11:54 12:43:59 30 (min) Purpose code: 3 Long E 1304  
 LOG :2178.37 2179.95 1.59 Area code: 3  
 FDEPTH: 113 114 GearCond.code: 1  
 BDEPTH: 113 114 Validity code: 1  
 Towing dir: 180a Wire out: 275 m Speed: 30 kn\*10

Sorted: 59 Kg Total catch: 1073.73 CATCH/HOUR: 2147.46

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	1669.80	13234	77.76	
Trachurus trecae	189.42	8154	8.82	8675
Trichurus lepturus	165.70	400	7.72	
Ucrina canariensis	24.76	166	1.15	8674
Dentex angolensis	24.30	126	1.13	8672
Citharus linguatula	19.80	34	0.92	
Pterothrissus bellotti	11.88	100	0.55	
Zeus faber	11.22	34	0.52	
Trigla lyra	9.58	66	0.45	
Pagellus bellottii	6.28	66	0.29	8676
Boops boops	5.62	34	0.26	
Trichurus lepturus	3.30	34	0.15	
Brotula barbata	2.88	2	0.13	
Seriola carpenteri	2.18	2	0.10	
Dentex barnardi	0.78	2	0.04	8673
Total	2147.50		99.99	

PROJECT STATION:4008  
 DATE:17/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 836  
 start stop duration  
 TIME :09:25:13 09:49:14 24 (min) Purpose code: 3 Long E 1315  
 LOG :2162.44 2163.46 1.32 Area code: 3  
 FDEPTH: 54 53 GearCond.code: 1  
 BDEPTH: 54 53 Validity code: 1  
 Towing dir: 2a Wire out: 160 m Speed: 30 kn\*10

Sorted: 123 Kg Total catch: 758.09 CATCH/HOUR: 1895.23

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	1419.03	20725	74.87	
Trichurus lepturus	209.70	533	11.06	
Chloroscombrus chrysurus	90.28	823	4.76	
Galeoides decacactylus	74.88	213	3.95	
Pseudotolithus senegalensis	23.18	15	1.22	
Lithognathus mormyrus	20.43	213	1.08	
Pomadasyus rogeri	12.05	45	0.64	
Ilisha africana	11.60	153	0.61	
Selene dorsalis	10.83	168	0.57	
Cynoponticus ferox	10.25	5	0.54	
Alectis alexandrinus	6.18	5	0.33	
Pagellus bellottii	3.83	15	0.20	8668
Stromateus fiatola	3.05	15	0.16	
Total	1895.29		99.99	

PROJECT STATION:4008  
 DATE:17/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 836  
 start stop duration  
 TIME :13:41:03 13:53:56 13 (min) Purpose code: 3 Long E 1301  
 LOG :2184.86 2185.54 0.69 Area code: 3  
 FDEPTH: 147 147 GearCond.code: 7  
 BDEPTH: 147 147 Validity code: 9  
 Towing dir: 360a Wire out: 375 m Speed: 30 kn\*10

Sorted: 103 Kg Total catch: 103.11 CATCH/HOUR: 475.89

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trichurus lepturus	409.80	2806	86.11	
Brotula barbata	22.02	14	4.63	
Ucrina canariensis	9.83	28	2.07	8679
Dentex angolensis	8.91	28	1.87	8677
Raja miraletus	3.88	5	0.82	
Spondylisoma cantharus	3.55	5	0.75	
Uranoscopus adenati	3.28	14	0.69	
Erythrocles monodi	3.09	28	0.65	
Zenopsis conchifer	2.63	5	0.55	
Dentex macrophthalmus	2.17	5	0.46	8678
Facapaneus longirostris, fem.	1.48	231	0.31	8681
Synagrops microlepis	1.29	18	0.27	
Pterothrissus bellotti	1.02	5	0.21	
Brempes heterurus	0.97	9	0.20	
Scorpaena normani	0.65	5	0.14	
Loligo sp.	0.42	5	0.09	
Citharus linguatula	0.32	5	0.07	
Facapaneus longirostris, male	0.32	23	0.07	8680
Spicara alta	0.28	5	0.04	
Total	475.91		100.02	

PROJECT STATION:4009  
 DATE:17/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 834  
 start stop duration Purpose code: 3  
 LOG :2189.20 2190.74 1.53 Area code : 3  
 FDEPTH: 143 147 GearCond.code: 1  
 BDEPTH: 143 147 Validity code: 1  
 Towing dir: 1800 Wire out: 275 m Speed: 30 kn\*10

Sorted: 53 Kg Total catch: 429.34 CATCH/HOUR: 858.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	290.26	23958	33.80	
Trichinurus lepturus	230.40	570	26.83	
Lepidionchelys olivacea	80.00	2	9.32	
Spicara alba	69.30	450	8.07	
Trachurus krecae	40.96	1512	4.77	8685
Pterothrissus belloei	30.42	216	3.54	
Dentex angolensis	26.00	102	3.03	8682
Chubina canariensis	23.70	64	2.76	8684
Zenopsis conchifer	12.30	12	1.43	
Trichinurus lepturus	9.36	180	1.09	
Zeus faber	7.12	28	0.83	
Ucanoscopus cadenati	6.12	28	0.71	
Fistularia tabacaria	5.94	10	0.69	
Parapenaeus longirostris, fem.	4.96	676	0.58	8687
Terpses telescopus	4.60	10	0.54	
Zenopsis conchifer	3.70	20	0.43	
Saurida brasiliensis	3.60	558	0.42	
Menclene microstoma	1.98	100	0.23	
Antias antias	1.54	10	0.18	
Dentex macrophthalms	1.52	4	0.18	8683
Deligo vicigais	1.00	10	0.12	
Bemnodermis tenuis	1.00	10	0.12	
Scops scops	1.00	10	0.12	
Trigla lyra	0.82	10	0.10	
Citharus linguatula	0.72	10	0.08	
Parapenaeus longirostris, male	0.46	54	0.05	8686
Total	858.78		100.02	

PROJECT STATION:4012  
 DATE:17/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 836  
 start stop duration Purpose code: 3  
 LOG :2215.28 2216.82 1.51 Area code : 3  
 FDEPTH: 750 680 GearCond.code: 1  
 BDEPTH: 750 680 Validity code: 1  
 Towing dir: 1600 Wire out:1650 m Speed: 30 kn\*10

Sorted: 18 Kg Total catch: 153.78 CATCH/HOUR: 307.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	98.08	35808	31.89	
Scyllarides sp.	35.52	2640	11.55	
Yarella blackfordi	34.88	832	11.34	
Hoplostethus cadenati	32.00	640	10.40	
Merluccius polli	15.00	30	4.88	8694
Nezumia sp.	13.76	256	4.47	
Laemonema laureysi	12.80	944	4.16	
Lamprogrammus exutus	11.36	32	3.69	
Lophius vaillanti	10.16	6	3.30	
ALEPOCEPHALIDAE	9.12	144	2.97	
ONYCHOTEUTHIDAE	8.48	32	2.76	
STOMIIDAE	7.68	192	2.80	
Triplophos heningi	5.76	640	1.57	
Bathyrcooconger vicinus	5.60	80	1.82	
Chaceon maritiae, male	1.12	4	0.36	
Dibranchius sp.	0.96	32	0.31	
Etmopterus sp.	0.96	48	0.31	
Dibranchius atlanticus	0.80	112	0.26	
Dicrolene sp.	0.80	32	0.26	
Bathypterois sp.	0.64	112	0.21	
Synagrops microlepis	0.48	16	0.16	
Glyphus macsupialis	0.32	64	0.10	
C R U S T A C E A N S	0.32	256	0.10	
Nemichthys scolopaceus	0.32	32	0.10	
CONGRIDAE	0.16	16	0.05	
PROTICHTHYIDAE	0.16	16	0.05	
MYCTOPHIDAE	0.16	32	0.05	
Callinectes sp.	0.16	16	0.05	
Total	307.56		99.97	

PROJECT STATION:4010  
 DATE:17/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 835  
 start stop duration Purpose code: 3  
 LOG :2200.34 2201.89 1.54 Area code : 3  
 FDEPTH: 410 410 GearCond.code: 1  
 BDEPTH: 410 410 Validity code: 1  
 Towing dir: 1800 Wire out:1000 m Speed: 30 kn\*10

Sorted: 57 Kg Total catch: 367.45 CATCH/HOUR: 711.19

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	349.74	1208	49.18	8688
Nematocarcinus africanus	252.87	74175	35.56	
Laemonema laureysi	23.40	416	3.29	
Etmopterus sp.	20.38	1208	2.87	
Trichinurus lepturus	12.99	14	1.82	
Bemnodermis tenuis	12.91	466	1.82	
Synagrops microlepis	8.30	592	1.17	
Gadella imberbis	4.53	151	0.64	
Dibranchius atlanticus	4.41	302	0.62	
Chaunax pictus	3.91	165	0.55	
Triplophos heningi	3.15	1157	0.44	
Aristeus varidens, male	2.65	341	0.67	8690
Aristeus varidens, female	2.01	129	0.28	8689
Etmopterus pusillus	1.90	30	0.27	
Malacocephalus occidentalis	1.90	25	0.27	
Coeloclinus coeloclinus	1.65	25	0.23	
Solenocera africana	1.26	75	0.18	
MYCTOPHIDAE	1.01	377	0.14	
Bathyrcooconger vicinus	0.64	14	0.09	
Callinectes sp.	0.50	14	0.07	
Lophius vaillanti	0.39	14	0.05	
Haloaenus oventi	0.25	39	0.04	
L O B S T E R S	0.14	39	0.02	
Nezumia sp.	0.14	14	0.02	
Hypococephalus italicus	0.14	25	0.02	
S H R I M P S	0.14	139	0.02	
Total	711.35		100.03	

PROJECT STATION:4013  
 DATE:18/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 827  
 start stop duration Purpose code: 3  
 LOG :2231.18 2232.70 1.49 Area code : 3  
 FDEPTH: 704 710 GearCond.code: 1  
 BDEPTH: 704 710 Validity code: 1  
 Towing dir: 3350 Wire out:1650 m Speed: 30 kn\*10

Sorted: 26 Kg Total catch: 479.08 CATCH/HOUR: 958.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yarella blackfordi	354.60	10008	37.01	
Nematocarcinus africanus	171.00	44172	17.85	
Lamprogrammus exutus	123.84	504	12.92	
Hoplostethus cadenati	114.12	3456	11.91	
C R U S T A C E A N S	47.88	4392	5.00	
Nezumia aequalis	33.84	828	3.53	
Triplophos heningi	23.76	3312	2.48	
Laemonema laureysi	20.52	1404	2.14	
Bathyrcooconger vicinus	15.84	288	1.65	
Merluccius polli	12.40	24	1.29	8695
STOMIIDAE	11.16	288	1.15	
Xenodermichthys copei	7.92	488	0.83	
Chaceon maritiae, female	7.20	20	0.75	
ALEPOCEPHALUS ROSFRATUS	6.12	288	0.64	
Dibranchius atlanticus	3.60	252	0.38	
Bemnodermis tenuis	2.16	36	0.23	
Centroscymnus crepidater	1.00	6	0.10	
Parapandalus narval	0.36	72	0.04	
Avocettina acuticeps	0.36	36	0.04	
Etmopterus polli	0.24	4	0.03	
Aristeus varidens, female	0.20	10	0.02	8696
Aristeus varidens, male	0.04	6	0.02	8697
Total	958.16		100.00	

PROJECT STATION:4011  
 DATE:17/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 835  
 start stop duration Purpose code: 3  
 LOG :2208.15 2209.62 1.46 Area code : 3  
 FDEPTH: 527 520 GearCond.code: 1  
 BDEPTH: 527 520 Validity code: 1  
 Towing dir: 3330 Wire out:1275 m Speed: 30 kn\*10

Sorted: 30 Kg Total catch: 267.03 CATCH/HOUR: 534.06

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	289.80	75978	54.26	
Hoplostethus cadenati	60.48	2466	11.32	
Yarella blackfordi	37.44	1170	7.01	
Chaceon maritiae, male	33.48	54	6.27	
Bemnodermis tenuis	21.78	828	4.08	
Lamprogrammus exutus	19.98	828	3.74	
STROMATEIDAE	13.86	306	2.60	
Merluccius polli	9.90	18	1.85	8691
Chaceon maritiae, female	9.18	36	1.72	
Aristeus varidens, female	8.82	450	1.65	8692
Xenodermichthys copei	5.58	954	1.04	
Chaunax pictus	4.68	36	0.88	
Triplophos heningi	4.50	846	0.84	
Scyllarides sp.	4.14	378	0.78	
Laemonema laureysi	1.52	18	0.30	
CONGRIDAE	1.44	144	0.27	
Nezumia sp.	1.44	36	0.27	
ONYCHOTEUTHIDAE	1.26	18	0.24	
Glyphus macsupialis	1.26	180	0.24	
CHTLODIPTERIDAE	1.26	54	0.24	
Dibranchius atlanticus	0.54	54	0.10	
Aristeus varidens, male	0.54	180	0.10	8693
STOMIIDAE	0.54	54	0.10	
Callinectes sp.	0.36	18	0.07	
Bathyrcooconger vicinus	0.18	72	0.03	
Total	534.06		100.00	

PROJECT STATION:4014  
 DATE:18/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 827  
 start stop duration Purpose code: 3  
 LOG :2237.91 2239.41 1.49 Area code : 3  
 FDEPTH: 597 612 GearCond.code: 1  
 BDEPTH: 597 612 Validity code: 1  
 Towing dir: 1560 Wire out:1450 m Speed: 30 kn\*10

Sorted: 33 Kg Total catch: 371.83 CATCH/HOUR: 743.66

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yarella blackfordi	265.10	7436	35.65	
Nematocarcinus africanus	133.54	42922	17.96	
Merluccius polli	113.30	198	15.24	8698
Hoplostethus sp.	66.44	1540	8.93	
Chaceon maritiae, male	27.50	66	3.70	
Lamprogrammus exutus	25.96	242	3.49	
Chaceon maritiae, female	22.22	88	2.99	
C R U S T A C E A N S	16.50	1650	2.22	
Gadella imberbis	15.62	66	2.10	
Xenodermichthys copei	10.34	880	1.39	
Bathyrcooconger vicinus	8.36	308	1.12	
STOMIIDAE	7.48	242	1.01	
Triplophos heningi	6.82	880	0.92	
Centroscymnus crepidater	5.00	2	0.67	
Aristeus varidens, female	3.74	154	0.50	8699
Centroscymnus crepidater	3.40	16	0.46	
Haloaenus oventi	2.85	44	0.38	
Laemonema laureysi	2.42	286	0.33	
Nezumia aequalis	1.54	44	0.21	
Ijimaiella leppe	1.20	2	0.16	
Aristeus varidens, male	1.10	132	0.15	8700
Etmopterus polli	0.80	2	0.11	
Phycichthys wedli	0.66	88	0.09	
ALEPOCEPHALUS ROSFRATUS	0.66	44	0.09	
Parapandalus narval	0.44	44	0.06	
Avocettina acuticeps	0.44	22	0.06	
MYCTOPHIDAE	0.22	22	0.03	
Total	743.66		100.02	

PROJECT STATION:4015  
 DATE:18/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 817  
 start stop duration Long E 1309  
 TIME :06:48:54 07:18:51 30 (min) Purpose code: 3  
 LOG :2266.92 2268.50 1.56 Area code : 3  
 FDEPTH: 62 65 GearCond.code: 1  
 BDEPTH: 62 65 Validity code: 1  
 Towing dir: 180° Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 48 Kg Total catch: 48.05 CATCH/HOUR: 96.10

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Torpedo torpedo	21.70	50	22.58
Stromateus fiatola	14.66	28	15.25
Brachydeuterus auritus	12.26	384	12.95
Dentex angolensis	11.44	72	11.90
Sphyræna sphyræna	6.10	16	6.35
Lagocephalus laevigatus	4.60	8	4.79
Citharus linguatula	3.62	42	3.77
Octopus vulgaris	3.30	4	3.43
Raja miraletus	3.04	14	3.16
Galeoides decadactylus	2.70	8	2.81
Pseudotolithus senegalensis	2.50	4	2.60
Pagellus bellottii	1.86	8	1.94
Caranx crysos	1.72	2	1.79
Selene dorsalis	1.54	26	1.60
Semirops greyi	1.18	20	1.23
Spinipolius senesus	0.96	2	1.00
Zeus faber	0.94	2	0.98
Pseudapeneus prayensis	0.78	4	0.81
Sepia ornigiana	0.66	2	0.69
Dicologlossa cuneata	0.22	2	0.23
Peneaus notialis, female	0.14	2	0.13
Decapterus rhomboides	0.08	2	0.08
Ergeaulis encrasidolus	0.06	16	0.06
Saurida brasiliensis	0.04	6	0.04
Total	96.10	100.00	

PROJECT STATION:4018  
 DATE:18/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 814  
 start stop duration Long E 1315  
 TIME :11:10:02 11:40:12 30 (min) Purpose code: 3  
 LOG :2289.4 2291.09 1.66 Area code : 3  
 FDEPTH: 27 27 GearCond.code: 1  
 BDEPTH: 27 27 Validity code: 1  
 Towing dir: 155° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 564.38 CATCH/HOUR: 1128.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Ilisha africana	296.40	15262	26.26
Chloroscombrus chrysurus	192.40	2080	17.05
Drepane africana	134.56	274	11.92
Brachydeuterus auritus	119.60	5044	10.60
Sphyræna guacrancho	94.40	220	8.36
Pseudotolithus typus	91.00	226	8.06
Galeoides decadactylus	87.60	284	7.78
Trichurus lepturus	44.80	134	3.97
Pteroscion pelli	34.20	456	3.03
Cynoponticus ferox	8.10	6	0.72
Atius packii	6.24	14	0.55
Pomadasy s rogeri	3.48	4	0.31
Cynoglossus senegalensis	3.38	78	0.30
Todarodes sp.	3.08	6	0.27
Peneaus notialis, female	2.68	46	0.24
Selene dorsalis	2.34	52	0.21
Umbriina canariensis	1.44	14	0.13
Sardinella maderensis	1.30	14	0.12
Dicologlossa cuneata	1.18	14	0.10
Gammoplites gruweli	0.26	14	0.02
Peneaus notialis, male	0.16	10	0.01
Total	1128.80	100.01	

PROJECT STATION:4016  
 DATE:18/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 820  
 start stop duration Long E 1306  
 TIME :08:12:02 08:42:24 30 (min) Purpose code: 3  
 LOG :2273.08 2274.65 1.56 Area code : 3  
 FDEPTH: 85 90 GearCond.code: 1  
 BDEPTH: 85 90 Validity code: 1  
 Towing dir: 311° Wire out: 240 m Speed: 30 kn\*10  
 Sorted: 166 Kg Total catch: 3353.60 CATCH/HOUR: 6707.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	5930.72	96718	88.42
Trichurus lepturus	216.14	444	3.22
Trachurus trecae	208.46	7676	3.11
Stromateus fiatola	94.94	242	1.42
Galeoides decadactylus	98.98	162	0.88
Selene dorsalis	49.70	606	0.99
Octopus vulgaris	40.00	40	0.60
Sphyræna sphyræna	23.02	40	0.34
Pomadasy jubelini	18.98	40	0.28
Torpedo torpedo	18.18	80	0.27
Chloroscombrus chrysurus	14.94	162	0.22
Dentex angolensis	8.88	80	0.13
Uranoscopus pelli	6.86	80	0.10
Raja miraletus	6.06	40	0.09
Craetodon noefleri	4.44	40	0.07
Scorpaena normani	3.64	40	0.05
Citharus linguatula	3.64	80	0.05
Total	6707.18	99.99	

PROJECT STATION:4019  
 DATE:18/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 817  
 start stop duration Long E 1300  
 TIME :13:42:05 14:06:44 25 (min) Purpose code: 3  
 LOG :2308.11 2309.38 1.27 Area code : 3  
 FDEPTH: 112 113 GearCond.code: 1  
 BDEPTH: 112 113 Validity code: 1  
 Towing dir: 175° Wire out: 275 m Speed: 30 kn\*10  
 Sorted: 58 Kg Total catch: 171.39 CATCH/HOUR: 411.34

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trichurus lepturus	192.48	463	46.79
Brachydeuterus auritus	131.23	1073	31.90
Trachurus trecae	21.67	941	5.27
Umbriina canariensis	16.20	137	3.94
Chloroscombrus chrysurus	14.66	156	3.56
Pterothrissus bellotti	11.66	50	2.83
Dentex angolensis	10.56	79	2.57
Fistularia petimba	4.18	7	1.02
Allotretis africana	3.50	1231	0.85
Uranoscopus cadenati	1.92	12	0.47
Pagellus bellottii	0.77	7	0.19
Branchiostegus semifasciatus	0.72	5	0.15
Torpedo torpedo	0.62	5	0.15
Monolepis microstoma	0.41	7	0.10
Loligo sp.	0.34	5	0.08
Dentex congensis	0.29	7	0.07
Saurida brasiliensis	0.12	12	0.03
Spicara alta	0.12	5	0.03
Total	411.45	100.03	

PROJECT STATION:4017  
 DATE:18/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 816  
 start stop duration Long E 1312  
 TIME :09:55:59 10:26:02 30 (min) Purpose code: 3  
 LOG :2283.84 2285.41 1.56 Area code : 3  
 FDEPTH: 45 42 GearCond.code: 1  
 BDEPTH: 45 42 Validity code: 1  
 Towing dir: 160° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 158 Kg Total catch: 157.63 CATCH/HOUR: 315.26

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Galeoides decadactylus	79.70	190	25.28
Sphyræna guacrancho	42.60	150	13.51
Selene dorsalis	31.50	498	9.99
Pomadasy rogeri	29.60	122	9.39
Rhizoprionodon acutus	26.20	10	8.31
Pseudotolithus typus	23.40	40	7.42
Brachydeuterus auritus	16.00	1396	5.08
Trichurus lepturus	10.84	30	3.44
Chloroscombrus chrysurus	10.50	88	3.33
Pagellus bellottii	9.26	28	2.94
Pomadasy jubelini	7.66	26	2.43
Raja miraletus	5.76	8	1.83
Pagrus caeruleostictus	5.46	16	1.73
Stromateus fiatola	2.72	12	0.86
Lagocephalus laevigatus	2.00	2	0.63
Pomadasy incisus	1.66	10	0.53
COBIIDAE	1.30	46	0.41
Sepia officinalis bierredda	1.26	2	0.40
Parakuhlia macropptnainus	1.26	16	0.40
Sardinella aurita	1.04	6	0.33
Alectis alexandrinus	0.78	2	0.32
Decapterus punctatus	0.84	20	0.27
Pseudapeneus prayensis	0.80	4	0.25
Allotretis africana	0.78	190	0.25
Trachurus trecae	0.78	36	0.25
Citharus linguatula	0.28	6	0.09
Torpedo torpedo	0.28	6	0.09
Peneaus notialis, male	0.28	20	0.08
Peneaus notialis, female	0.26	6	0.08
Ilisha africana	0.14	10	0.04
Sphyræna sp.	0.10	10	0.03
Total	315.26	100.00	

PROJECT STATION:4020  
 DATE:18/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 823  
 start stop duration Long E 1256  
 TIME :15:17:45 15:37:57 20 (min) Purpose code: 3  
 LOG :2316.71 2317.75 1.03 Area code : 3  
 FDEPTH: 164 163 GearCond.code: 1  
 BDEPTH: 164 163 Validity code: 1  
 Towing dir: 155° Wire out: 400 m Speed: 30 kn\*10  
 Sorted: 33 Kg Total catch: 599.75 CATCH/HOUR: 1799.25

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Synagrops microlepis	717.75	52110	39.89
MYCTOPHIDAE	560.25	324945	31.14
Trichurus lepturus	108.75	306	6.04
Zenopsis corchifer	95.25	174	9.29
Brotula barbata	64.05	63	3.56
Zeus faber	54.45	180	3.03
Parapeneus longirostris, fem.	40.05	3690	2.23
Bemrops heterurus	36.00	90	2.00
Dentex angolensis	34.65	120	1.93
Scorpaena stephanica	24.30	90	1.35
Brachydeuterus auritus	17.10	135	0.85
Pterothrissus bellotti	14.85	180	0.83
Pteroscion pelli	13.50	90	0.75
Raja miraletus	6.60	6	0.31
Loligo sp.	6.30	180	0.35
Saurida brasiliensis	4.30	340	0.25
Parapeneus longirostris, male	0.90	270	0.05
Total	1799.25	100.01	

PROJECT STATION: 4021  
DATE: 18/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 827  
Long E 1255  
TIME : 16:35:08 17:08:21 33 (min) Purpose code: 3  
LOG : 2322.22 2323.92 1.70 Area code : 3  
FDEPTH: 233 238 GearCond.code: 1  
BDEPTH: 233 238 Validity code: 1  
Towing dir: 165º Wire out: 575 m Speed: 30 km/h

Sorted: 93 Kg Total catch: 1328.47 CATCH/HOUR: 2415.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	1167.40	66015	48.33	
Chlorophthalmus atlanticus	808.60	22673	33.48	
Trachurus lepturus	150.80	495	6.24	
Merluccius polli	100.11	1482	4.14	8724
Pterothrissus bellotti	69.16	598	2.86	
Parapenaeus longirostris, male	43.16	8035	1.79	8725
Parapenaeus longirostris, fem.	28.60	4316	1.18	8726
Dentex angolensis	13.00	53	0.54	8723
Chlorophthalmus sp.	8.84	207	0.33	
Bembrops heterurus	8.58	235	0.36	
Scorpaena normani	6.51	53	0.27	
MYCTOPHIDAE	4.16	1924	0.17	
Illex eschscholtzii	3.91	53	0.16	
Bothus pedas africanus	1.95	25	0.04	
PARALICHTHIDAE	0.78	25	0.03	
Peristodion catapraectum	0.78	104	0.03	
Total	2415.43	99.99		

PROJECT STATION: 4022  
DATE: 18/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 828  
Long E 1253  
TIME : 18:11:43 18:41:36 30 (min) Purpose code: 3  
LOG : 2328.26 2329.77 1.51 Area code : 3  
FDEPTH: 310 311 GearCond.code: 1  
BDEPTH: 310 311 Validity code: 1  
Towing dir: 335º Wire out: 800 m Speed: 30 km/h

Sorted: 29 Kg Total catch: 114.20 CATCH/HOUR: 228.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	79.20	424	34.68	8727
Chlorophthalmus atlanticus	62.40	1424	27.32	
Nematocarcinus africanus	33.52	20272	14.68	
Scorpaena normani	17.44	96	7.64	
Gephyroberyx darwini	5.68	8	2.49	
Malacocephalus laevis	5.44	80	2.38	
Hymenoceraeus italicus	5.28	936	2.31	
Laemonema laureysi	4.72	80	2.07	
MYCTOPHIDAE	4.32	3264	1.89	
GOSTIDEA	2.88	168	1.26	
Callinectes sp.	2.56	32	1.12	
Parapenaeus longirostris, fem.	1.20	120	0.53	8728
Toadopsis eblanae	1.04	16	0.46	
Gadella sp.	0.56	16	0.25	
Bembrops heterurus	0.48	16	0.21	
Solenocera africana	0.32	40	0.14	
Peristodion catapraectum	0.32	16	0.14	
S M R I M P S	0.24	8	0.11	
L O B S T E R S	0.24	40	0.11	
Lophius vaillanti	0.24	8	0.11	
Aristeus varidens	0.16	8	0.07	
Raja sp.	0.08	8	0.04	
Parapenaeus longirostris, male	0.08	8	0.04	8729
Total	228.40	100.05		

PROJECT STATION: 4023  
DATE: 18/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 828  
Long E 1250  
TIME : 20:07:12 20:37:12 30 (min) Purpose code: 3  
LOG : 2336.30 2337.76 1.46 Area code : 3  
FDEPTH: 442 445 GearCond.code: 1  
BDEPTH: 442 445 Validity code: 1  
Towing dir: 160º Wire out: 1100 m Speed: 30 km/h

Sorted: 44 Kg Total catch: 266.04 CATCH/HOUR: 532.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	237.60	50580	44.65	
Merluccius polli	142.20	336	26.73	8730
G A S T R O P O D S	76.80	300	14.43	
Triplophus hewingi	16.20	248	3.04	
Yarella blackfordi	9.72	312	1.83	
Benthodesmus tenuis	9.60	408	1.80	
Hoplostethus cadonati	6.84	276	1.29	
Aristeus varidens, female	6.00	240	1.13	8732
Gadella sp.	5.76	120	1.08	
Chaunax pictus	4.80	60	0.90	
Dibranchius atlanticus	3.96	192	0.74	
Toadopsis eblanae	2.52	12	0.47	
Scyllarides sp.	2.28	204	0.43	
Halosaurus ovenii	1.68	96	0.32	
Etmopterus sp.	1.56	72	0.29	
Aristeus varidens, male	1.20	84	0.23	8731
Callinectes sp.	0.96	12	0.18	
Solenocera africana	0.84	12	0.16	
Glynnus marsupialis	0.72	84	0.14	
Gadella sp.	0.48	12	0.09	
Nericythys scolopaceus	0.36	12	0.07	
Total	532.08	100.00		

PROJECT STATION: 4024  
DATE: 18/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 828  
Long E 1248  
TIME : 22:03:18 22:38:57 36 (min) Purpose code: 3  
LOG : 2342.64 2344.55 1.90 Area code : 3  
FDEPTH: 522 508 GearCond.code: 1  
BDEPTH: 522 508 Validity code: 1  
Towing dir: 335º Wire out: 1350 m Speed: 30 km/h

Sorted: 23 Kg Total catch: 282.08 CATCH/HOUR: 470.13

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	224.00	56000	47.65	
Hoplostethus cadonati	65.00	2700	13.83	
Yarella blackfordi	60.00	1820	12.76	
Lamprogrammus exultus	28.20	740	6.00	
Triplophus hewingi	17.80	2840	3.79	
Benthodesmus tenuis	15.80	580	3.36	
Ommastrephes pteropus	15.20	60	3.23	
STOMIIDAE	13.20	340	2.81	
Xenodermichthys copei	6.40	740	1.36	
Aristeus varidens, female	6.20	380	1.32	8734
C R U S T A C E A N S	5.20	520	1.11	
Merluccius polli	3.38	5	0.72	8733
Gadella imberbis	3.00	180	0.64	
Aristeus varidens, male	2.80	420	0.60	8735
C R A B S	0.80	20	0.17	
Bathyrhoconger vicinus	0.80	60	0.11	
Centroscyamus crepidater	0.42	3	0.09	
Phrynichthys wedli	0.40	20	0.09	
Dibranchius atlanticus	0.40	60	0.09	
Laemonema laureysi	0.20	20	0.04	
Gonostoma elongatum	0.20	20	0.04	
Scopelosaurus aequalis	0.20	20	0.04	
MYCTOPHIDAE	0.20	60	0.04	
Etmopterus spinax	0.17	2	0.04	
Etmopterus polli	0.17	5	0.04	
Total	470.14	100.03		

PROJECT STATION: 4025  
DATE: 19/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 816  
Long E 1241  
TIME : 00:52:14 01:22:17 30 (min) Purpose code: 3  
LOG : 2357.02 2358.58 1.54 Area code : 3  
FDEPTH: 659 704 GearCond.code: 1  
BDEPTH: 659 704 Validity code: 1  
Towing dir: 330º Wire out: 1700 m Speed: 30 km/h

Sorted: 26 Kg Total catch: 400.20 CATCH/HOUR: 800.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yarella blackfordi	218.10	2910	27.25	
Nematocarcinus africanus	187.50	49770	23.43	
Hoplostethus cadonati	116.10	3450	14.51	
Lamprogrammus exultus	63.00	270	7.87	
Nezumia aequalis	51.60	1440	6.45	
C R U S T A C E A N S	42.30	3530	5.28	
Merluccius polli	26.30	46	3.29	8736
Chaceon maritae, male	21.00	150	2.62	
Bathyrhoconger vicinus	19.20	390	2.40	
ALEPOCEPHALUS ROSFRATUS	14.10	660	1.76	
Laemonema laureysi	11.10	1020	1.39	
Xenodermichthys copei	7.50	630	0.94	
Triplophus hewingi	7.20	1260	0.90	
Aristeus varidens, female	3.60	210	0.45	8737
STOMIIDAE	2.70	60	0.34	
Benthodesmus tenuis	2.10	60	0.26	
Centroscyamus crepidater	2.00	4	0.25	
Malacocephalus laevis	1.50	30	0.19	
Sicyonia galeata	0.90	30	0.11	
Dibranchius atlanticus	0.90	180	0.11	
Bathylagus glacialis	0.30	90	0.04	
Aristeus varidens, male	0.30	30	0.04	8738
Phrynichthys wedli	0.30	90	0.04	
Avocettina aculeiceps	0.30	30	0.04	
Etmopterus polli	0.30	4	0.04	
Etmopterus spinax	0.20	2	0.02	
Total	800.40	100.02		

PROJECT STATION: 4026  
DATE: 19/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 816  
Long E 1241  
TIME : 02:53:06 03:22:55 30 (min) Purpose code: 3  
LOG : 2362.61 2364.13 1.52 Area code : 3  
FDEPTH: 622 633 GearCond.code: 1  
BDEPTH: 622 633 Validity code: 1  
Towing dir: 155º Wire out: 1450 m Speed: 30 km/h

Sorted: 26 Kg Total catch: 434.39 CATCH/HOUR: 868.78

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yarella blackfordi	316.80	5664	36.46	
Nematocarcinus africanus	246.40	67520	28.36	
Hoplostethus cadonati	109.44	3968	12.60	
Lamprogrammus exultus	64.64	416	7.45	
Xenodermichthys copei	29.44	2592	3.39	
ALEPOCEPHALUS ROSFRATUS	16.36	1248	1.95	
C R U S T A C E A N S	14.08	1728	1.62	
Merluccius polli	11.30	20	1.30	8739
Gadella imberbis	8.32	576	0.96	
Nezumia aequalis	8.32	352	0.96	
Triplophus hewingi	8.00	1408	0.92	
Ommastrephes pteropus	7.04	32	0.81	
Lophius vaillanti	5.24	2	0.60	
Aristeus varidens, female	4.80	224	0.55	8740
Bathyrhoconger vicinus	4.80	192	0.55	
Chaceon maritae, male	3.04	10	0.35	
STOMIIDAE	2.56	160	0.29	
Laemonema laureysi	2.56	96	0.29	
Aristeus varidens, male	1.92	256	0.22	8741
Chaceon maritae, female	1.60	8	0.18	
Plesionenaeus edwardsianus	0.96	160	0.11	
Benthodesmus tenuis	0.32	32	0.04	
Etmopterus polli	0.24	6	0.03	
Total	868.78	99.98		

PROJECT STATION:4027  
 DATE:19/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 815  
 start stop duration Long E 1244  
 TIME :04:43:43 05:10:16 31 (min) Purpose code: 3  
 LOG :2368.94 2310.61 1.68 Area code : 3  
 FDEPTH: 428 423 GearCond.code: 1  
 BDEPTH: 428 423 Validity code: 1  
 Towing dir: 338ø Wire out:1000 m Speed: 30 kn\*10  
 Sorted: 38 Kg Total catch: 500.24 CATCH/HOUR: 989.53

PROJECT STATION:4030  
 DATE:19/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 807  
 start stop duration Long E 1259  
 TIME :10:14:07 10:39:44 26 (min) Purpose code: 3  
 LOG :2395.53 2396.91 1.37 Area code : 3  
 FDEPTH: 93 92 GearCond.code: 1  
 BDEPTH: 93 92 Validity code: 1  
 Towing dir: 151ø Wire out: 300 m Speed: 30 kn\*10  
 Sorted: 91 Kg Total catch: 1491.76 CATCH/HOUR: 3442.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius pellii	347.45	1205	38.20	8742
Nezumia africana	263.55	67884	28.98	
Centrolophus sp.	154.29	47	21.36	
Trichurus lepturus	27.18	47	2.99	
Laemonea laureysi	26.47	756	2.91	
Benthoecaenus tenuis	15.13	544	1.66	
Chaurax pictus	8.27	118	0.91	
Triphopus beringi	5.91	1205	0.65	
Malacocephalus laevis	3.55	24	0.39	
Gadella imberbis	3.55	213	0.39	
STOMIIDEA	2.84	95	0.31	
Yarella blackfordi	2.36	95	0.26	
Coelocarcinus coelocarcinus	1.89	71	0.21	
Hymenocephalus italicus	1.18	165	0.13	
Phrynoichthys weedi	0.95	24	0.10	
Aristeus varidensis, male	0.95	95	0.10	8743
Plesioneopus edwardsianus	0.95	24	0.10	
Halosaurus oventii	0.95	71	0.10	
Clocanichthys atlanticus	0.71	95	0.08	
S H R I M P S	0.47	1678	0.05	
Scyllarides sp.	0.47	47	0.05	
Nezumia sp.	0.47	71	0.05	
Total	989.54		99.98	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	2850.58	15785	82.81	8762
Pomadoury rogeri	201.69	332	5.86	
Trachurus trecae	117.00	2596	3.40	8761
Selene dorsalis	46.38	381	1.35	
Sardinella aurita	39.81	173	1.16	8759
Dentex angolensis	38.42	205	1.12	8756
Umbrina canariensis	32.88	138	0.96	8760
Pontinus kuhlii	21.81	35	0.63	
Trichurus lepturus	19.38	48	0.56	
Raja miraletus	17.65	35	0.51	
Atractosteon aegulidensis	13.36	30	0.39	8757
Pagellus bellottii	12.46	138	0.36	8758
Zeus faber	11.42	69	0.33	
Sepla officinalis hierredda	5.08	5	0.15	
Torpedo barbatata	3.95	2	0.11	
Torpedo mammarata	3.81	2	0.11	
Ruvettus pretiosus	3.14	5	0.09	
Loligo sp.	2.08	69	0.06	
Torpedo torpedo	1.62	7	0.05	
Total	3442.52		100.01	

PROJECT STATION:4028  
 DATE:19/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 813  
 start stop duration Long E 1250  
 TIME :04:05:10 07:32:01 27 (min) Purpose code: 3  
 LOG :2379.90 2381.26 1.34 Area code : 3  
 FDEPTH: 136 136 GearCond.code: 1  
 BDEPTH: 136 136 Validity code: 1  
 Towing dir: 160ø Wire out: 350 m Speed: 30 kn\*10  
 Sorted: 90 Kg Total catch: 90.28 CATCH/HOUR: 200.62

PROJECT STATION:4031  
 DATE:19/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 805  
 start stop duration Long E 1303  
 TIME :11:31:42 12:01:42 30 (min) Purpose code: 3  
 LOG :2402.02 2403.57 1.54 Area code : 3  
 FDEPTH: 71 69 GearCond.code: 1  
 BDEPTH: 71 69 Validity code: 1  
 Towing dir: 250ø Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 152 Kg Total catch: 151.67 CATCH/HOUR: 303.34

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trichurus lepturus	16.22	123	37.99	
Spicara alta	30.22	484	15.06	
Zenopsis conchifer	26.56	24	13.24	
Dentex angolensis	21.00	136	10.47	8745
Trachurus trecae	18.67	776	9.31	8744
Pterotrissus bellotti	7.71	53	3.84	
Umbrina canariensis	4.04	11	2.03	8746
Zeus faber	2.82	11	1.41	
Scops oops	2.67	47	1.33	
Brotula barbata	2.07	2	1.03	
Illex coarctatus	1.69	69	0.84	
Lophius vaillanti	1.27	2	0.63	
Craniolepis eximati	1.07	1	0.53	
Octopus vulgaris	0.96	2	0.48	
Dentex congoensis	0.91	18	0.45	8747
Saurida brasiliensis	0.84	149	0.42	
Umbrina canariensis	0.60	2	0.30	
Citharus linguatula	0.49	11	0.24	
Dentex macrophthalmus	0.38	2	0.19	8748
Dicologlossa cuneata	0.16	2	0.08	
Callinectes sp.	0.13	2	0.06	
Chelodactylus gabonensis	0.07	2	0.03	
Paristiodon cataphractum	0.07	2	0.03	
Total	200.65		99.99	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dentex angolensis	60.20	276	19.85	8763
Trichurus lepturus	52.00	148	17.14	
Pomadoury rogeri	50.30	80	16.58	
Brachydeuterus auritus	28.10	2148	9.26	8768
Pseudolithus senegalensis	18.32	28	6.04	
Raja miraletus	14.30	22	4.71	
Galeoides decadactylus	12.70	66	4.19	
Dentex barnardi	12.42	32	4.09	8764
Pagellus bellottii	10.66	66	3.51	8766
Sarpa salpa	10.40	12	3.43	
Torpedo torpedo	7.02	14	2.31	
Sphyræna guanchancho	7.00	14	2.31	
Trachurus trecae	2.92	84	0.96	8767
Citharus linguatula	2.86	74	0.94	
Pagrus caeruleostictus	2.68	6	0.88	8765
Decapterus punctatus	1.86	46	0.61	
Epinephelus aeneus	1.62	2	0.53	
Zeus faber	1.44	6	0.47	
Brotula barbata	1.24	2	0.41	
Gammoplites gruvelli	1.02	16	0.34	
Branchediostegus semifasciatus	0.90	2	0.30	
Cynoglossus canariensis	0.84	6	0.28	
Selene dorsalis	0.50	4	0.16	
B I V A L V E S	0.48	50	0.16	
Pseudupeneus prayensis	0.46	6	0.15	
Chaetodon hoefleri	0.44	4	0.15	
Alloteuthis africana	0.44	116	0.15	
Saurida brasiliensis	0.16	36	0.05	
E C H I N O D E R M A T A	0.06	2	0.02	
Total	303.34		99.98	

PROJECT STATION:4029  
 DATE:19/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 810  
 start stop duration Long E 1255  
 TIME :08:46:33 09:15:03 28 (min) Purpose code: 3  
 LOG :2388.63 2390.06 1.43 Area code : 3  
 FDEPTH: 115 114 GearCond.code: 1  
 BDEPTH: 115 114 Validity code: 1  
 Towing dir: 360ø Wire out: 300 m Speed: 30 kn\*10  
 Sorted: 177 Kg Total catch: 177.00 CATCH/HOUR: 379.29

PROJECT STATION:4032  
 DATE:19/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 804  
 start stop duration Long E 1304  
 TIME :12:33:30 13:03:31 30 (min) Purpose code: 3  
 LOG :2405.54 2407.09 1.54 Area code : 3  
 FDEPTH: 63 65 GearCond.code: 1  
 BDEPTH: 63 65 Validity code: 1  
 Towing dir: 175ø Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 7 Kg Total catch: 108.08 CATCH/HOUR: 216.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	93.00	619	24.52	8751
Trachurus trecae	84.32	3486	22.23	8750
Umbrina canariensis	54.54	210	14.38	8752
Dentex angolensis	35.57	180	9.38	8749
Trichurus lepturus	31.71	43	8.36	
Zeus faber	12.13	51	3.20	
Pagrus caeruleostictus	11.83	2	3.12	
Trigla lyra	11.83	99	3.12	
Dentex congoensis	8.87	15	2.34	8754
Dentex barnardi	5.74	17	1.51	8755
Octopus vulgaris	4.93	2	1.30	
Mustelus mustelus	4.01	2	1.06	
Pagellus bellottii	3.92	26	1.03	8753
Raja miraletus	3.75	6	0.99	
R A Y S	3.60	2	0.95	
Brotula barbata	2.64	2	0.70	
Citharus linguatula	2.21	69	0.58	
Scorpaena sp.	2.21	9	0.58	
Alloteuthis africana	1.20	236	0.32	
Chaetodon hoefleri	0.99	9	0.26	
Parapristigaster octolineatus	0.30	2	0.08	
Total	379.30		100.01	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sarpa salpa	104.90	166	48.53	
Dentex angolensis	27.10	136	12.54	8769
Dentex barnardi	17.90	54	8.28	8771
Pagellus bellottii	12.24	56	5.66	8772
Galeoides decadactylus	8.80	36	4.07	
Trichurus lepturus	8.80	26	4.07	
Pseudolithus senegalensis	8.40	8	3.89	8770
Epinephelus aeneus	7.30	4	3.38	
Scomberomorus tritor	3.28	4	1.52	
Raja miraletus	3.12	6	1.44	
Pagrus caeruleostictus	2.90	4	1.34	8774
Pomadoury rogeri	1.90	4	0.88	
Brachydeuterus auritus	1.80	60	0.83	8773
Decapterus punctatus	1.48	36	0.68	
Cynoglossus canariensis	1.00	8	0.46	
Citharus linguatula	0.96	24	0.44	
Brotula barbata	0.86	2	0.40	
Sphyræna guanchancho	0.86	2	0.40	
Gammoplites gruvelli	0.80	20	0.37	
Torpedo torpedo	0.72	6	0.33	
Chaetodon hoefleri	0.56	4	0.26	
Alloteuthis africana	0.48	140	0.22	
Total	216.16		99.99	



PROJECT STATION: 4033  
 DATE: 19/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 804 Long E 1308  
 start stop duration  
 TIME :13:48:55 14:09:51 20 (min) Purpose code: 3  
 LOG :2411.64 2412.71 1.07 Area code : 3  
 FDEPTH: 42 41 GearCond.code: 1  
 BDEPTH: 42 41 Validity code: 1  
 Towing dir: 345e Wire out: 140 m Speed: 30 kn\*10  
 Sorted: 209 Kg Total catch: 209.07 CATCH/HOUR: 621.21

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Galeoides decadactylus	152.25	432	24.24	
Pseudoclitellus typus	119.40	324	19.04	8776
Sphyrna quachancho	117.15	294	18.68	
Dasyatis marmorata	92.70	111	14.78	
Carcharias limbatus	71.10	3	11.34	
Brachydeuterus auritus	28.20	480	4.50	8775
Raja miraletus	10.77	24	1.72	
Trachurus lepturus	8.10	18	1.29	
Sarpa salpa	7.83	9	1.25	
Ilisha africana	7.50	261	1.20	
Sepia orbignyana	4.20	12	0.67	
Selene dorsalis	1.44	9	0.23	
Chloroscomrus chrysurus	1.32	51	0.21	
Pteroscia pelli	1.08	15	0.17	
Pagrus caeruleostictus	0.96	3	0.15	8777
Alloctenias africana	0.63	276	0.10	
Cynoglossus canariensis	0.60	3	0.10	
Gompholites gruvelli	0.54	9	0.09	
Monolene microstoma	0.48	6	0.08	
Dicologlossa cuneata	0.42	3	0.07	
Decapterus punctatus	0.27	3	0.04	
Sardinella aurita	0.09	3	0.01	8779
Penaeus notialis	0.06	3	0.01	
Torpedo torpedo	0.06	3	0.01	
Sardinella maderensis	0.06	3	0.01	8778
Total		627.21	100.02	

PROJECT STATION: 4036  
 DATE: 23/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 608 Long E 1158  
 start stop duration  
 TIME :06:41:17 08:20:46 31 (min) Purpose code: 3  
 LOG :2720.77 2722.43 1.62 Area code : 3  
 FDEPTH: 66 68 GearCond.code: 1  
 BDEPTH: 66 68 Validity code: 1  
 Towing dir: 256e Wire out: 210 m Speed: 30 kn\*10  
 Sorted: 32 Kg Total catch: 227.62 CATCH/HOUR: 440.55

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus Juv.	256.49	4041	58.22	8782
Selene dorsalis	48.10	128	10.92	
Trichilurus lepturus	44.57	120	10.12	
Dentex congoensis	31.74	168	1.20	8786
Brotula barbata	12.77	19	2.90	
Miracorvina angolensis	5.40	35	1.23	
Trachurus trecae, juvenile	4.35	132	0.99	8781
Raja miraletus	3.64	54	0.83	8789
Octopus vulgaris	3.54	2	0.80	
Sepia orbignyana	3.48	10	0.79	
Pagellus bellottii	3.43	17	0.78	8788
Pagrus caeruleostictus	3.10	4	0.70	
Trichilurus lepturus	2.79	358	0.63	
Raja miraletus	2.79	4	0.63	
Umbra canariensis	2.19	12	0.50	8787
Sphyrna quachancho	2.13	2	0.48	
Epinephelus aeneus	1.35	2	0.31	
B I V A L V E S	1.22	166	0.28	
Pomadoury incisus	1.05	2	0.24	
Lagocephalus laevigatus	0.99	2	0.22	
Loligo vulgaris	0.87	166	0.20	
Zeus faber	0.87	2	0.20	
Seiar crumenophthalmus	0.83	2	0.19	
Bembrops heterurus	0.70	17	0.16	
Fistularia petimba	0.58	2	0.13	
Parapenaeus longirostris, fem.	0.52	62	0.12	8793
Sardinella maderensis	0.41	2	0.09	8790
Scomberomorus tritor	0.37	2	0.08	
Saurida brasiliensis	0.17	17	0.04	
Parapenaeus longirostris, male	0.10	17	0.02	8794
Total		440.54	100.00	

PROJECT STATION: 4034  
 DATE: 19/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 803 Long E 1310  
 start stop duration  
 TIME :15:20:22 15:50:07 30 (min) Purpose code: 3  
 LOG :2417.03 2418.61 1.57 Area code : 3  
 FDEPTH: 28 26 GearCond.code: 1  
 BDEPTH: 28 26 Validity code: 1  
 Towing dir: 347e Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 63 Kg Total catch: 401.68 CATCH/HOUR: 803.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Galeoides decadactylus	309.00	540	38.46	
Ilisha africana	147.50	1380	18.36	
Sphyrna quachancho	93.20	204	11.60	
Brachydeuterus auritus	85.50	7430	10.64	8781
Pseudoclitellus typus	49.30	116	6.14	8780
Chloroscomrus chrysurus	30.20	580	3.76	
Pomadoury rogeri	21.40	120	2.66	
Dregane africana	16.50	20	2.05	
Pteroscia pelli	13.00	400	1.62	
Cynoponticus ferox	12.62	2	1.57	
Arius parkii	9.70	12	1.21	
Ranallius regius	5.02	12	0.38	
Sardinella aurita	2.80	10	0.35	8782
Dasyatis marmorata	2.72	2	0.34	
Adulyx hastatus *	1.90	20	0.24	
Alectis alexandrinus	0.90	90	0.11	
Sphyrna sp.	0.90	30	0.11	
Dicologlossa cuneata	0.80	10	0.10	
Cynoglossus canariensis	0.80	10	0.10	
Umbra canariensis	0.60	10	0.07	8784
Sardinella maderensis	0.60	100	0.07	8783
Trichilurus lepturus	0.40	60	0.05	
Total		803.36	99.99	

PROJECT STATION: 4037  
 DATE: 23/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 609 Long E 1153  
 start stop duration  
 TIME :09:24:46 09:48:20 24 (min) Purpose code: 3  
 LOG :2728.98 2730.21 1.23 Area code : 3  
 FDEPTH: 77 81 GearCond.code: 1  
 BDEPTH: 77 81 Validity code: 1  
 Towing dir: 256e Wire out: 240 m Speed: 30 kn\*10  
 Sorted: 70 Kg Total catch: 294.88 CATCH/HOUR: 737.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Selene dorsalis	363.38	1598	49.29	
Brachydeuterus auritus	207.20	3185	28.11	8798
Dentex angolensis	74.75	370	10.14	8795
Trichilurus lepturus	29.75	115	4.04	
Dentex congoensis	24.13	288	3.27	8801
Trachurus trecae	15.13	508	2.05	8797
Sardinella aurita	9.18	36	1.25	8800
Pagellus bellottii	3.08	20	0.42	
Raja miraletus	2.93	5	0.40	
Seiar crumenophthalmus	2.70	8	0.37	
Pomadoury incisus	1.23	10	0.17	
Illex coindetii	1.13	395	0.15	
Zeus faber	0.88	3	0.12	
Chaetodon rosenleri	0.70	18	0.09	
Cynoglossus canariensis	0.58	3	0.05	
Umbra canariensis	0.33	3	0.04	8799
Monolene microstoma	0.18	18	0.02	
Saurida brasiliensis	0.18	35	0.02	
Total		737.44	100.03	

PROJECT STATION: 4035  
 DATE: 23/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 606 Long E 1206  
 start stop duration  
 TIME :05:59:45 06:29:43 30 (min) Purpose code: 3  
 LOG :2711.83 2713.48 1.61 Area code : 3  
 FDEPTH: 35 43 GearCond.code: 1  
 BDEPTH: 35 43 Validity code: 1  
 Towing dir: 256e Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 40 Kg Total catch: 48.04 CATCH/HOUR: 96.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sphyrna quachancho	45.30	52	47.15	
Carcharias signatus	29.80	10	31.02	
Ranallius regius	8.84	30	9.20	
Rhinobatos rhinobatos	2.90	2	3.02	
Pagrus pagrus	2.64	4	2.75	
Scomberomorus tritor	2.10	2	2.19	
Selene dorsalis	1.90	10	1.98	
Lagocephalus laevigatus	1.60	2	1.67	
Sepia orbignyana	0.80	2	0.83	
Brachydeuterus auritus Juv.	0.20	20	0.21	
Total		96.08	100.02	

PROJECT STATION: 4038  
 DATE: 23/ 3/06 GEAR TYPE: BT No:18 POSITION: Lat S 609 Long E 1149  
 start stop duration  
 TIME :10:45:28 11:15:17 30 (min) Purpose code: 3  
 LOG :2733.88 2735.32 1.43 Area code : 3  
 FDEPTH: 89 94 GearCond.code: 1  
 BDEPTH: 89 94 Validity code: 1  
 Towing dir: 256e Wire out: 270 m Speed: 30 kn\*10  
 Sorted: 204 Kg Total catch: 203.71 CATCH/HOUR: 407.42

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Selene dorsalis	220.90	726	54.22	
Dentex angolensis	37.50	280	14.11	8810
TRITRO2	35.00	82	8.59	
Brachydeuterus auritus	29.60	230	1.21	8808
Trachurus trecae	21.90	700	5.38	8802
Dentex congoensis	13.18	176	3.23	8803
Umbra canariensis	12.60	40	3.09	8809
Zeus faber	3.85	12	0.95	
Pagellus bellottii	2.90	14	0.71	8805
Sepia officinalis hierredda	2.22	2	0.54	
Brotula barbata	1.64	4	0.40	
Cheilodichthys capensis	1.30	12	0.32	
Raja miraletus	1.12	4	0.27	
Dentex barbassus	1.10	2	0.27	8804
Saurida brasiliensis	0.74	178	0.18	
Sardinella aurita	0.54	2	0.13	8807
Illex coindetii	0.48	8	0.12	
Sardinella maderensis	0.40	2	0.10	8806
Sepia orbignyana	0.28	10	0.07	
Enops boops	0.08	2	0.02	
Citharus linguatula	0.08	2	0.02	
Total		407.42	99.99	

PROJECT STATION:4039  
 DATE:23/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 611 Long E 1145  
 start stop duration Purpose code: 3  
 TIME :12:11:38 12:41:18 30 (min) Area code : 3  
 LOG :2738.94 2740.58 1.61 GearCond.code: 1  
 FDEPTH: 104 107 Validity code: 1  
 BDEPTH: 104 107  
 Towing dir: 2560 Wire out: 355 m Speed: 30 km\*10  
 Sorted: 188 Kg Total catch: 187.90 CATCH/HOUR: 375.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
TRITR02	188.30	604	50.11
Dentex angolensis	92.50	478	24.61 8811
Dentex coquensis	86.50	842	17.70 8812
Tracharus treciae	12.18	392	3.24 8813
Onchichthys gabonensis	8.92	114	2.37
Brotula barbata	2.40	4	0.64
Zeus faber	1.42	4	0.38
Illex coindetii	1.24	34	0.33
Raja miralestus	0.90	2	0.24
Pagellus bellottii	0.64	4	0.17 8814
Citharus linguatula	0.40	8	0.11
Sepia orbignyana	0.28	6	0.07
Boops boops	0.12	4	0.03
Total	375.80	100.00	

PROJECT STATION:4042  
 DATE:23/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 617 Long E 1116  
 start stop duration Purpose code: 3  
 TIME :20:44:18 21:14:02 30 (min) Area code : 3  
 LOG :2781.26 2782.70 1.42 GearCond.code: 1  
 FDEPTH: 734 741 Validity code: 1  
 BDEPTH: 734 741  
 Towing dir: 3600 Wire out:1800 m Speed:30 km\*10  
 Sorted: 23 Kg Total catch: 191.88 CATCH/HOUR: 383.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
HOLOUTURIDAE	199.20	200	51.91
Nezumia sp.	67.60	1360	17.62
C E F H A C O P O D A	16.24	24	4.23
Stereomastis sp.	12.08	808	3.15
Yarellia blackfordi	10.40	272	2.71
Halosaurus ovenii	8.40	240	2.19
Raja alba	8.24	104	2.15
Bathyrcoonger vicinus	7.04	32	1.83
Dibranchius capensis	6.40	40	1.67
ACEPCEPHALUS ROSTRATUS	6.24	24	1.63
Malacocephalus occidentalis	6.24	56	1.63
Etmopterus pusillus	6.16	48	1.61
Lophius vaillanti	4.88	8	1.27
Gadella imberbis	4.24	232	1.10
Ceolorhynchus sp.	3.68	16	0.96
Dibranchius atlanticus	3.04	240	0.79
Aristeus varidens, female	2.72	120	0.71 8824
Chaceon maritae, male	2.60	6	0.68
Hoplostethus cadenati	2.40	8	0.63
S H R I M P S	2.16	288	0.56
Chaceon maritae, female	1.24	4	0.32
STOPIIDAE	1.04	24	0.27
L O B S T E R S	0.64	352	0.17
Setarches quentheri	0.40	8	0.10
Glyphus marsupialis	0.24	24	0.06
Bathyrcoonger vicinus	0.24	8	0.06
Total	383.76	100.01	

PROJECT STATION:4040  
 DATE:23/ 3/06 GEAR TYPE: BT No:18 POSITION:Lat S 612 Long E 1139  
 start stop duration Purpose code: 3  
 TIME :13:43:18 14:13:12 30 (min) Area code : 3  
 LOG :2745.26 2746.82 1.53 GearCond.code: 1  
 FDEPTH: 120 128 Validity code: 1  
 BDEPTH: 120 128  
 Towing dir: 2560 Wire out: 414 m Speed: 30 km\*10  
 Sorted: 231 Kg Total catch: 230.98 CATCH/HOUR: 461.96

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Dentex coquensis	198.30	2080	42.93 8816
Trichurus lepturus	117.40	166	25.41
Dentex angolensis	66.10	318	14.31 8815
Spicara alba	28.80	348	6.23
Tracharus treciae	20.90	658	4.52 8817
Brotula barbata	12.66	12	2.74
Boops boops	4.98	92	1.08
Illex coindetii	2.42	78	0.52
Pterotriscus bellucci	1.96	12	0.42
Branchiostegus semifasciatus	1.72	2	0.37
Trigla lyra	1.50	24	0.32
Saurida brasiliensis	1.42	294	0.31
Citharus linguatula	1.06	26	0.23
Raja miralestus	0.88	2	0.19
Zeus faber	0.70	2	0.15
Pagellus bellottii	0.30	2	0.06 8818
Ariomma bonoi	0.26	4	0.06
Chaetodon noefleri	0.26	2	0.06
Uranoscopus polli	0.20	2	0.04
Peristior cataphractus	0.10	2	0.02
Parapenaeus longirostris, fem.	0.04	6	0.01 8819
Total	461.96	99.98	

PROJECT STATION:4043  
 DATE:26/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 746 Long E 1230  
 start stop duration Purpose code: 3  
 TIME :04:14:50 04:45:40 31 (min) Area code : 3  
 LOG :3058.00 3059.58 1.56 GearCond.code: 1  
 FDEPTH: 729 751 Validity code: 1  
 BDEPTH: 729 751  
 Towing dir: 3450 Wire out: 810 m Speed: 30 km\*10  
 Sorted: 27 Kg Total catch: 150.09 CATCH/HOUR: 280.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Nematocarcinus africanus	125.81	37132	43.31
Stereomastis sp.	47.42	2071	16.32
Yarellia blackfordi	18.97	513	7.43
Merluccius polli	16.45	31	5.65 8825
Hoplostethus cadenati	13.35	242	4.60
Aristeus varidens, female	10.94	358	3.77 8826
Gadella imberbis	7.06	300	2.43
Triplophos hemingi	6.48	1742	2.23
Tilismania sp.	6.04	58	2.91
Lamprogrammus exultans	4.84	19	1.67
Dibranchius atlanticus	3.87	184	1.33
Chaceon maritae, male	3.77	12	1.30
Malacocephalus occidentalis	3.58	19	1.23
Scombrus boa	2.52	126	0.87
CONGRIDAE	2.52	16	0.87
Lophius vaillanti	2.52	10	0.87
Ebinania costaecanarie	2.03	10	0.70
Illex coindetii	1.55	2	0.53
Bathyrcoonger vicinus	1.26	10	0.43
Deania calcea	1.16	2	0.40
Christus oregonlandicus	1.06	10	0.36
Setarches quentheri	1.06	10	0.36
Emunidia squamifera *	0.97	581	0.33
Ariomma bonoi	0.97	19	0.33
ECHENEIDIDAE	0.87	29	0.30
Centroscyllium crepidater	0.83	4	0.29
Nematopalaemon hastatus	0.66	97	0.23
Etmopterus polli	0.50	8	0.17
Lampadena sp.	0.39	10	0.13
Raja alba	0.39	2	0.13
Aristeus varidens, male	0.29	39	0.10 8827
Bathyrcoonger vicinus	0.19	19	0.07
MYXOCEPHALIDAE	0.10	10	0.03
MYCTOPHIDAE	0.10	87	0.03
Total	290.50	99.98	

PROJECT STATION:4041  
 DATE:23/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 615 Long E 1125  
 start stop duration Purpose code: 3  
 TIME :17:09:46 17:43:43 36 (min) Area code : 3  
 LOG :2764.02 2765.81 1.80 GearCond.code: 1  
 FDEPTH: 387 382 Validity code: 1  
 BDEPTH: 387 382  
 Towing dir: 3550 Wire out:1060 m Speed: 30 km\*10  
 Sorted: 21 Kg Total catch: 152.19 CATCH/HOUR: 253.65

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Merluccius polli	84.83	252	33.44 8820
Gadella maraldi	44.48	990	17.54
Hymenocephalus italicus	33.75	3690	13.31
Chamaea pictus	23.78	255	9.38
Malacocephalus occidentalis	9.75	53	3.84
Tocarpopsis eblanae	6.60	45	2.60
Etmopterus pusillus	4.92	107	1.94
Setarches quentheri	4.50	105	1.89
Gadella imberbis	3.75	128	1.48
Parapenaeus longirostris, fem.	3.58	330	1.33 8821
Nematocarcinus africanus	3.00	525	1.18
Epigonus telescopus	2.93	23	1.16
Dibranchius atlanticus	2.70	143	1.06
Bathyrcoonger vicinus	2.63	45	1.04
Illex coindetii	2.55	23	1.01
Aristeus varidens, male	2.33	248	0.92 8821
Aristeus varidens, female	2.33	210	0.92 8822
Galeus polli	1.98	22	0.78
NETTASTONATIDAE	1.95	158	0.77
Stereomastis sp.	1.95	158	0.77
Nezumia sp.	1.65	60	0.65
Hoplostethus cadenati	1.35	23	0.53
Halosaurus ovenii	1.20	75	0.47
Chaceon maritae, male	1.20	3	0.47
Bathyrcoonger vicinus	1.05	30	0.41
Chascanopsetta lugubris	1.05	8	0.41
Chaceon maritae, female	1.03	3	0.41
Scyliorhinus cervignoni	0.38	2	0.15
Salenneria africana	0.23	30	0.09
MYCTOPHIDAE	0.15	225	0.06
Total	253.68	100.01	

PROJECT STATION:4044  
 DATE:26/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 743 Long E 1233  
 start stop duration Purpose code: 3  
 TIME :06:40:04 08:20:20 30 (min) Area code : 3  
 LOG :3069.72 3071.27 1.54 GearCond.code: 1  
 FDEPTH: 261 258 Validity code: 1  
 BDEPTH: 261 258  
 Towing dir: 3300 Wire out: 750 m Speed: 30 km\*10  
 Sorted: 92 Kg Total catch: 461.25 CATCH/HOUR: 922.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Nematocarcinus africanus	394.00	51890	42.71
Trichurus lepturus	161.00	460	17.45
Merluccius polli	99.50	412	10.79 8828
Gadella imberbis	87.50	230	9.49
Gadella maraldi	41.80	1040	4.53
Malacocephalus occidentalis	32.00	512	2.38
Setarches quentheri	18.40	620	1.99
Synagrops microlepis	14.60	530	1.58
Dibranchius atlanticus	11.10	970	1.20
Nezumia sp.	10.20	140	1.11
Hymenocephalus italicus	9.00	710	0.98
Chamaea pictus	8.40	210	0.91
Stereomastis sp.	7.60	220	0.82
Illex coindetii	6.90	40	0.75
Lophius vaillanti	6.30	30	0.68
MYCTOPHIDAE	5.80	1660	0.63
Peristior cataphractus	5.40	110	0.59
Pterotriscus bellucci	5.40	10	0.41
Bathyrcoonger vicinus	4.50	20	0.49
B I V A L V E S	1.40	10	0.15
Chloroscombrus chrysurus	0.90	30	0.10
Parapenaeus longirostris, fem.	0.50	50	0.05 8820
Solenocera africana	0.30	30	0.03
Parapenaeus longirostris, male	0.30	30	0.03 8829
Total	922.50	99.99	

PROJECT STATION: 4045  
 DATE: 26/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 743 Long E 1233  
 start stop duration  
 TIME :06:40:04 08:20:10 30 (min) Purpose code: 3  
 LOG :3069.12 3041.27 1.54 Area code : 3  
 FDEPTH: 261 258 GearCond.code: 1  
 BDEPTH: 261 258 Validity code: 1  
 Towing dir: 330e Wire out: 750 m Speed: 30 kn\*10  
 Sorted: 91 Kg Total catch: 3732.58 CATCH/HOUR: 7465.16

SPECIES	weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	7129.38	397482	95.50	
Merluccius polli	191.64	3526	2.57	8831
Centropristis striata	43.70	1764	0.39	
Parapenaeus longirostris, male	42.16	3754	0.56	8832
Parapenaeus longirostris, fem.	25.30	3754	0.34	8833
Parasudis sp.	18.40	76	0.25	
Pterotrissus belloci	10.74	76	0.14	
Illex coindetii	3.84	76	0.05	
Total	7465.16		100.00	

PROJECT STATION: 4046  
 DATE: 26/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 741 Long E 1237  
 start stop duration  
 TIME :08:20:15 10:00:16 30 (min) Purpose code: 3  
 LOG :3077.35 3078.78 1.42 Area code : 3  
 FDEPTH: 116 116 GearCond.code: 1  
 BDEPTH: 116 116 Validity code: 1  
 Towing dir: 150e Wire out: 340 m Speed: 30 kn\*10  
 Sorted: 86 Kg Total catch: 85.99 CATCH/HOUR: 171.98

SPECIES	weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	49.68	234	28.89	8835
Ubrina canariensis	38.60	136	22.44	8838
Pagellus bellottii	23.60	218	13.72	8834
Trigla lyra	19.90	150	11.57	
Dentex barnardi	14.10	38	8.20	8837
Plectorhynchus mediterraneus	5.42	2	3.15	
Raja miraletus	4.48	6	2.58	
Dentex coenoensis	2.80	24	1.63	8836
Fistularia petimba	2.24	2	1.30	
Stotula barbata	1.62	2	0.94	
Dentex gibbosus	1.60	2	0.93	
Anthias anthias	1.58	26	0.92	
Scorpaena sp.	1.24	2	0.72	
Plesionika martia	1.14	405	0.66	
Uranoscopus polli	0.84	4	0.49	
Citharus linguatula	0.82	32	0.48	
Zeus faber	0.48	2	0.28	
Holocentrus ascensionis	0.46	4	0.27	
Illex coindetii	0.36	4	0.21	
Sepia officinalis hierredda	0.34	4	0.20	
Saurida brasiliensis	0.30	58	0.17	
Chaetodon hoefleri	0.26	2	0.15	
Morone microstoma	0.16	2	0.09	
Total	171.98		99.99	

PROJECT STATION: 4047  
 DATE: 26/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 739 Long E 1245  
 start stop duration  
 TIME :10:00:59 11:40:43 30 (min) Purpose code: 3  
 LOG :3088.34 3090.00 1.65 Area code : 3  
 FDEPTH: 88 88 GearCond.code: 1  
 BDEPTH: 88 88 Validity code: 1  
 Towing dir: 315e Wire out: 313 m Speed: 30 kn\*10  
 Sorted: 70 Kg Total catch: 69.99 CATCH/HOUR: 139.98

SPECIES	weight	numbers	% OF TOT. C	SAMP
Dentex coenoensis	33.50	486	23.93	8842
Trigla lyra	26.20	220	18.72	
Brachydeuterus auritus	13.90	128	9.93	8840
Dentex angolensis	10.90	114	7.75	8841
Pagellus bellottii	9.44	94	6.74	8839
Zeus faber	7.60	26	5.43	
Trachurus lepturus	7.00	10	5.00	
Raja miraletus	5.60	8	4.00	
Citharus linguatula	5.12	172	3.66	
Squatina oculata	5.00	2	3.57	
Sepia officinalis hierredda	4.50	8	3.21	
Caranx crysos	2.08	2	1.49	
Pomadourus jubelini	1.92	2	1.37	
Torpedo torpedo	1.74	4	1.24	
Juanes polli	1.30	6	0.93	
Trachurus trachurus	1.22	2	0.87	
Chaetodon hoefleri	0.94	6	0.67	
Fistularia petimba	0.84	2	0.60	
Octopus vulgaris	0.52	2	0.37	
Alloleutis africana	0.36	162	0.26	
Morone microstoma	0.26	18	0.19	
Saurida brasiliensis	0.04	14	0.03	
Total	139.98		100.00	

PROJECT STATION: 4048  
 DATE: 26/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 736 Long E 1247  
 start stop duration  
 TIME :12:37:41 13:07:30 30 (min) Purpose code: 3  
 LOG :3094.39 3095.79 1.40 Area code : 3  
 FDEPTH: 73 71 GearCond.code: 1  
 BDEPTH: 73 71 Validity code: 1  
 Towing dir: 145e Wire out: 266 m Speed: 30 kn\*10  
 Sorted: 31 Kg Total catch: 31.16 CATCH/HOUR: 62.32

SPECIES	weight	numbers	% OF TOT. C	SAMP
Raja miraletus	24.80	44	39.79	
Sepia orbignyana	7.04	18	11.30	
Pagellus bellottii	5.46	96	8.76	8844
Zeus faber	3.46	12	4.55	
Lagocephalus laevigatus	2.94	6	4.72	
Octopus vulgaris	2.86	4	4.59	
Citharus linguatula	1.94	80	3.11	
Mustelus mustelus	1.88	2	3.02	
Alectis alexandrinus	1.80	2	2.89	
Epinephelus aeneus	1.42	2	2.28	
Sepia officinalis hierredda	1.38	4	2.21	
Pagrus caeruleostictus	1.30	4	2.09	
Fistularia petimba	1.20	2	1.93	
Chelidonichthys gabonensis	1.02	8	1.64	
CONGRUAE	0.92	2	1.48	
Bemrops greyi	0.86	22	1.38	
Dentex barnardi	0.66	6	1.06	8843
Decapterus rhonchus	0.48	10	0.77	
Trigla lyra	0.42	4	0.67	
Juanes polli	0.20	2	0.32	
Morone microstoma	0.18	18	0.29	
Saurida brasiliensis	0.10	36	0.16	
Total	62.32		100.01	

PROJECT STATION: 4049  
 DATE: 26/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 736 Long E 1255  
 start stop duration  
 TIME :14:16:53 14:44:18 27 (min) Purpose code: 3  
 LOG :3103.91 3105.46 1.53 Area code : 3  
 FDEPTH: 38 38 GearCond.code: 1  
 BDEPTH: 38 38 Validity code: 1  
 Towing dir: 340e Wire out: 170 m Speed: 30 kn\*10  
 Sorted: 117 Kg Total catch: 116.92 CATCH/HOUR: 259.82

SPECIES	weight	numbers	% OF TOT. C	SAMP
Dentex barnardi	86.78	276	33.40	8845
Pagrus caeruleostictus	55.44	124	21.34	8847
Pagrus auriga	27.89	24	10.73	
Drepane africana	17.22	38	6.63	
Raja miraletus	16.53	36	6.36	
Ballistes sp.	12.33	11	4.75	
Pomadourus peroteti	10.00	9	3.65	
Epinephelus aeneus	8.44	7	3.25	
Alectis alexandrinus	7.22	2	2.78	
Plectorhynchus mediterraneus	3.64	4	1.40	
Pseudupeneus prayensis	2.93	16	1.13	
Bodianus speciosus	2.38	4	0.92	
Pagellus bellottii	1.64	4	0.63	8846
Fistularia petimba	1.53	7	0.59	
Chilomycterus spinosus mauret.	1.38	7	0.53	
Zeus faber	1.11	2	0.43	
Liza ramada	1.07	2	0.41	
Pomadourus incisus	0.82	4	0.32	
AROCIDAE	0.80	180	0.31	
Lutjanus fulgens	0.38	2	0.15	
Boops boops	0.20	2	0.08	
SERGESTIDAE	0.07	2	0.03	
Total	259.80		100.02	

PROJECT STATION: 4050  
 DATE: 26/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 734 Long E 1256  
 start stop duration  
 TIME :15:46:19 16:05:01 19 (min) Purpose code: 3  
 LOG :3109.92 3111.02 1.09 Area code : 3  
 FDEPTH: 27 27 GearCond.code: 1  
 BDEPTH: 27 27 Validity code: 1  
 Towing dir: 340e Wire out: 135 m Speed: 30 kn\*10  
 Sorted: 84 Kg Total catch: 257.08 CATCH/HOUR: 811.83

SPECIES	weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	323.24	13386	39.82	8848
Chloroscombus chrysurus	110.37	834	13.60	
Pomadourus incisus	89.53	843	11.03	
Pteromyia bovinus	69.16	9	8.52	
Galeoides decadactylus	60.06	332	7.40	
Arius parkii	40.64	76	5.01	
Pseudotolithus senegalensis	36.37	57	4.73	8850
SPHYRAENA GUACHANCHO	10.89	66	1.34	
Rhicepionodon acutus	10.11	9	1.25	
Pseudupeneus prayensis	9.95	66	1.23	
Panulirus regius	7.39	19	0.91	
Pagrus caeruleostictus	7.29	28	0.90	
Sardinella maderensis	7.07	28	0.87	8849
Selene dorsalis	5.02	199	0.62	
Illich africana	3.98	9	0.49	
Leptocharias smithii	3.79	3	0.47	
Pomadourus peroteti	3.69	9	0.45	
Pteroscion pelli	2.75	19	0.34	
Decapterus rhonchus	2.56	85	0.32	
Sepia orbignyana	2.18	9	0.27	
Trichurus lepturus	1.80	9	0.22	
Syacium micrum	1.04	9	0.13	
Penaeus notialis, female	0.95	19	0.12	8851
Total	811.83		100.04	

PROJECT STATION:4051  
 DATE:26/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 734 Long E 1213  
 start stop duration  
 TIME :22:22:45 22:52:22 30 (min) Purpose code: 3  
 LOG :3166.83 3168.25 1.42 Area code : 3  
 FDEPTH: 717 721 GearCond.code: 1  
 BDEPTH: 717 721 Validity code: 1  
 Towing dir: 80e Wire out:1800 m Speed: 30 kn\*10  
 Sorted: 27 Kg Total catch: 195.58 CATCH/HOUR: 391.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yareella blackfordi	106.40	2520	27.20	
Lamprogrammus exultus	78.40	154	20.04	
Nezumia sp.	56.28	1344	14.39	
Scyllarides sp.	24.78	1904	6.34	
Bathyroconger vicinus	23.38	140	5.98	
OPHIIDAE	17.64	882	4.51	
Enicacia costaeacanthie	12.46	14	3.19	
Talismania longifallis	11.20	380	2.86	
Triplophos hemingi	9.38	1092	2.40	
Lophius vaillanti	7.56	14	1.93	
Halosaurus ovenii	6.86	154	1.75	
Hoplostethus cadenati	6.86	154	1.75	
Chaceon maritae, male	6.18	14	1.58	
E C H I N O D E R M A T A MORIIDAE	4.34	112	1.11	
Glyphus macsupialis	3.64	224	0.93	
S H R I M P S	3.50	294	0.89	
OCYROPHEALIDAE	3.50	658	0.89	
OCYROPHEALIDAE	2.66	154	0.68	
STOMIIDAE	2.38	70	0.61	
OPHIIDAE	0.98	14	0.25	
L O B S T E R S	0.84	420	0.21	
Aristeus varioides, female	0.70	28	0.18	8852
Chaceon maritae, female	0.54	2	0.14	
Raja cantianensis	0.42	28	0.11	
MYCTOPHIDAE	0.28	28	0.07	
Total	391.16		99.99	

PROJECT STATION:4054  
 DATE:27/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 725 Long E 1227  
 start stop duration  
 TIME :05:34:16 06:04:08 30 (min) Purpose code: 3  
 LOG :3194.03 3195.52 1.49 Area code : 3  
 FDEPTH: 116 114 GearCond.code: 1  
 BDEPTH: 116 114 Validity code: 1  
 Towing dir: 340e Wire out: 330 m Speed: 30 kn\*10  
 Sorted: 172 Kg Total catch: 172.29 CATCH/HOUR: 344.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trichurus lepturus	136.10	254	39.50	
Trachurus trcae	57.50	2562	16.63	8862
Brachydeuterus auritus	42.50	246	12.33	8859
Dentex angolensis	33.52	54	9.84	8861
Dentex congoensis	28.50	420	8.27	8860
Raja miraletus	10.02	18	2.91	
Trigla lyra	8.86	74	2.57	
Sepia orbignyana	8.36	4	2.43	
Protula barbata	5.32	6	1.54	
Umrina canaciensis	4.50	18	1.31	8863
Spicara alta	2.26	92	0.66	
Saurida brasiliensis	2.24	194	0.65	
Pagellus bellottii	1.52	6	0.44	8864
Zeus faber	1.00	4	0.29	
Illex coindetii	0.52	32	0.15	
Scorpaena normani	0.50	2	0.15	
Chaetodon boefferi	0.40	4	0.12	
Citharus linguatula	0.26	14	0.08	
Lagocephalus laevigatus	0.20	2	0.06	
Anthias anthias	0.10	2	0.03	
Total	344.58		100.02	

PROJECT STATION:4055  
 DATE:27/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 722 Long E 1233  
 start stop duration  
 TIME :07:21:26 07:51:05 30 (min) Purpose code: 3  
 LOG :3203.26 3204.78 1.50 Area code : 3  
 FDEPTH: 86 86 GearCond.code: 1  
 BDEPTH: 86 86 Validity code: 1  
 Towing dir: 141e Wire out: 280 m Speed: 30 kn\*10  
 Sorted: 63 Kg Total catch: 220.13 CATCH/HOUR: 440.26

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	146.70	978	33.32	8865
Trachurus trcae	101.70	4110	23.10	8867
Dentex congoensis	84.30	1164	19.15	8869
Pagellus bellottii	39.90	270	9.06	8868
Dentex angolensis	18.54	138	4.21	8866
Trichurus lepturus	14.20	24	3.23	
Loligo vulgaris	5.98	4120	1.27	
Fistularia petimba	5.10	14	1.16	
Sepia orbignyana	3.10	6	0.70	
Lagocephalus laevigatus	2.64	6	0.60	
Zeus faber	2.34	6	0.53	
Trigla lyra	2.10	12	0.48	
Pseudupeneus prayensis	2.04	12	0.46	
Cheilodactylus capensis	1.98	12	0.45	
Epiplatys lewini	1.90	2	0.43	
Protula barbata	1.56	4	0.35	
Euthynnus aletteratus	1.50	2	0.34	
Illex coindetii	1.14	12	0.26	
Raja miraletus	1.08	8	0.25	
Chaetodon boefferi	0.82	18	0.19	
Sphyrna guacrancho	0.78	2	0.18	
Saurida brasiliensis	0.66	204	0.15	
Citharus linguatula	0.54	12	0.12	
Monolepis microstoma	0.06	6	0.01	
Total	440.26		100.00	

PROJECT STATION:4056  
 DATE:27/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 720 Long E 1239  
 start stop duration  
 TIME :09:06:11 09:36:12 30 (min) Purpose code: 3  
 LOG :3212.28 3213.75 1.47 Area code : 3  
 FDEPTH: 60 63 GearCond.code: 1  
 BDEPTH: 60 63 Validity code: 1  
 Towing dir: 160e Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 14 Kg Total catch: 14.21 CATCH/HOUR: 28.42

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sepia orbignyana	6.46	14	22.73	
Loligo vulgaris	4.24	2632	14.92	
Lagocephalus laevigatus	4.00	6	14.07	
Trichurus lepturus	3.40	6	11.96	
Alectis alexandrinus	2.20	2	7.74	
Citharus linguatula	1.98	10	6.97	
Fistularia petimba	1.84	6	6.47	
Dactylopterus volitans	1.32	4	4.64	
Trachurus trcae	1.02	32	3.59	8873
Pagellus bellottii	0.98	8	3.45	8872
Trigla lyra	0.66	4	2.32	
Dentex congoensis	0.28	6	0.95	8871
Saurida brasiliensis	0.04	8	0.14	
Total	28.42		99.99	

PROJECT STATION:4053  
 DATE:27/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 728 Long E 1218  
 start stop duration  
 TIME :02:15:01 02:45:08 30 (min) Purpose code: 3  
 LOG :3179.46 3181.01 1.53 Area code : 3  
 FDEPTH: 425 430 GearCond.code: 1  
 BDEPTH: 425 430 Validity code: 1  
 Towing dir: 85e Wire out:1212 m Speed: 30 kn\*10  
 Sorted: 72 Kg Total catch: 86.89 CATCH/HOUR: 173.78

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius pollii	90.00	256	51.79	8856
Dibranchius atlanticus	12.08	868	6.95	
Plesiopegnaeus edwardsianus	11.50	246	6.62	
Paromola cuvieri	10.20	2	5.87	
Chaunax pictus	8.88	24	5.11	
Caemopsis laueysi	8.68	132	4.99	
Scyllarides sp.	6.92	320	3.98	
Illex coindetii	5.56	44	3.20	
Benthoedon tenuis	5.20	252	2.99	
Coelocinchus coelocinchus	3.40	104	1.96	
Aristeus varioides, female	3.18	232	1.82	8858
MYCTOPHIDAE	2.12	204	1.57	
Aristeus varioides, male	2.04	252	1.17	8857
Callinectes sp.	1.92	68	1.10	
Halosaurus ovenii	0.64	32	0.37	
Bathyroconger vicinus	0.44	12	0.25	
Hymenocephalus italicus	0.32	12	0.18	
L O B S T E R S	0.12	32	0.07	
Total	173.78		99.99	

PROJECT STATION:4057  
 DATE:27/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 719 Long E 1243  
 start stop duration  
 TIME :10:25:34 10:46:47 21 (min) Purpose code: 3  
 LOG :3219.62 3220.11 1.08 Area code : 3  
 FDEPTH: 42 41 GearCond.code: 1  
 BDEPTH: 42 41 Validity code: 1  
 Towing dir: 327e Wire out: 140 m Speed: 30 kn\*10  
 Sorted: 8 Kg Total catch: 7.45 CATCH/HOUR: 21.29

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Lagocephalus laevigatus	5.40	6	25.36	
DIODONTIDAE	3.46	3	16.25	
Sepia orbignyana	2.40	3	11.27	
MYCTOPHIDAE	2.26	3	10.62	
Caranx crysos	1.77	3	8.31	
Fistularia petimba	1.34	6	6.29	
Citharichthys stampflii	1.17	6	5.50	
Dactylopterus volitans	0.97	3	4.56	
Raja miraletus	0.91	3	4.27	
Allobotheus africana	0.69	629	3.24	
Pagellus bellottii	0.51	3	2.40	8874
Xyrichtys novacula	0.40	3	1.88	
Total	21.28		99.95	

PROJECT STATION: 4058  
 DATE: 27/ 3/06 GEAR TYPE: BT No:19 POSITION: Lat S 715 Long E 1247  
 start stop duration  
 TIME :11:45:41 12:15:25 30 (min) Purpose code: 3  
 LOG :3227.09 3228.11 1.61 Area code : 3  
 FDEPTH: 25 27 GearCond.code: 1  
 BDEPTH: 25 27 Validity code: 1  
 Towing dir: 330e Wire out: 135 m Speed: 30 kn\*10  
 Sorted: 135 Kg Total catch: 134.61 CATCH/HOUR: 269.22

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagrus caeruleostictus	89.50	216	33.24	8877
Epinephelus aeneus	37.00	2	13.74	
Dentex barnardi	29.20	68	10.85	8876
Balistes punctatus	27.50	26	10.21	
Pagrus auriga	26.90	28	9.99	
Bodianus speciosus	10.70	12	3.97	
Acanthurus monroviae	9.12	14	3.39	
Scorpaenopsis tritor	2.80	2	1.20	
Torpedo macroura	5.72	10	2.12	
Lutjanus goreensis	5.00	2	1.86	
Fistularia petimba	4.20	12	1.56	
Fistularia tobaccaria	4.20	2	1.56	
Pseudupeneus prayensis	3.30	70	1.25	
Sphyrna sphyraena	3.22	4	1.20	
Raja sp.	2.98	2	1.11	
Raja miraletus	1.48	2	0.55	
Alectis alexandrinus	1.10	2	0.41	
Pagellus bellottii	0.96	4	0.36	8875
Orepane africana	0.82	2	0.30	
Chaetodon hoefleri	0.52	8	0.19	
Total	269.22		99.99	

PROJECT STATION: 4061  
 DATE: 27/ 3/06 GEAR TYPE: BT No:19 POSITION: Lat S 707 Long E 1231  
 start stop duration  
 TIME :16:28:59 16:53:42 25 (min) Purpose code: 3  
 LOG :3256.77 3257.98 1.19 Area code : 3  
 FDEPTH: 47 48 GearCond.code: 1  
 BDEPTH: 47 48 Validity code: 1  
 Towing dir: 140e Wire out: 189 m Speed: 30 kn\*10  
 Sorted: 57 Kg Total catch: 57.13 CATCH/HOUR: 137.11

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagrus caeruleostictus	28.56		20.83	
Sepiella ornata	24.84	17	18.12	
Epinephelus aeneus	14.76	5	10.77	
Pagellus bellottii	14.42		10.52	
Boops boops	12.96	4404	9.45	
Dentex barnardi	11.16		8.14	
Pagrus pagrus	9.12	2	6.65	
Lycodonis sp.	5.30	2	3.87	
Chelidonichthys gabonensis	4.13	22	3.01	
Syacium microrum	2.59	14	1.89	
Fistularia petimba	1.68	10	1.23	
Alloteuthis africana	1.58	1646	1.15	
Trachinus radiatus	1.44	2	1.05	
Decapterus rhonchus	1.22	2	0.89	
Rypticus saponaceus	1.10	7	0.80	
Chilomycterus spinosus mauret.	0.70	2	0.51	
Scorpaena sp.	0.60	7	0.44	
Chaetodon hoefleri	0.55	5	0.40	
Xyrichtys novacula	0.38	2	0.28	
Total	137.09		100.00	

PROJECT STATION: 4059  
 DATE: 27/ 3/06 GEAR TYPE: BT No:19 POSITION: Lat S 703 Long E 1239  
 start stop duration  
 TIME :13:59:01 14:26:04 28 (min) Purpose code: 3  
 LOG :3243.01 3244.46 1.45 Area code : 3  
 FDEPTH: 27 26 GearCond.code: 1  
 BDEPTH: 27 26 Validity code: 1  
 Towing dir: 145e Wire out: 145 m Speed: 30 kn\*10  
 Sorted: 38 Kg Total catch: 38.20 CATCH/HOUR: 81.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pseudupeneus prayensis	47.79	450	58.38	
Pagellus bellottii	12.26	66	14.98	8878
Trachinocephalus myops	4.91	24	6.00	
Epinephelus aeneus	4.44	6	5.42	
Xyrichtys novacula	3.77	34	4.61	
Pagrus caeruleostictus	2.89	13	3.53	8879
Parulirus regius	2.68	2	3.27	
Sepia orbignyana	1.65	2	2.02	
Rhinobatos alboracalalus	1.14	2	1.39	
Decapterus punctatus	0.26	6	0.32	
Chaetodon hoefleri	0.04	2	0.05	
BALISTIDAE	0.04	2	0.05	
Total	81.87		100.02	

PROJECT STATION: 4062  
 DATE: 27/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 710 Long E 1151  
 start stop duration  
 TIME :12:40:15 23:10:10 30 (min) Purpose code: 3  
 LOG :3305.71 3307.98 1.27 Area code : 3  
 FDEPTH: 622 623 GearCond.code: 1  
 BDEPTH: 622 623 Validity code: 1  
 Towing dir: 150e Wire out: 1620 m Speed: 30 kn\*10  
 Sorted: 23 Kg Total catch: 125.03 CATCH/HOUR: 250.06

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Yarella blackfordi	50.60	1254	20.24	
Hoplostethus cadenati	31.24	1540	12.49	
Merluccius polli	24.96	352	9.98	
Lamprogrammus exutus	22.44	66	8.97	
Benthodesmus tenuis	22.00	726	8.80	
Chaceon maritae, male	18.10		7.24	
Scyllarides sp.	18.04	1166	7.21	
Nematocarcinus africanus	13.42	3168	5.37	
OPHIDIIDAE	11.66	770	4.66	
Triplophos hemingi	8.36	880	3.24	
Diastobranchius capensis	5.94	66	2.38	
Chaceon maritae, female	4.04	18	1.62	
Bathyroconger vicinus	3.52	110	1.41	
Dibranchius atlanticus	3.30	44	1.32	
STOMIIDE	3.30	88	1.32	
Xenodermichthys copei	2.20	154	0.88	
Merluccius polli	1.46	2	0.58	
Aristeus varidens, female	1.32	44	0.53	8882
Deania profundorum	1.20	2	0.48	
Nemichthys scolopaceus	0.88	22	0.35	
Haloaenus ovoides	0.88	22	0.35	
Isistius brasiliensis	0.80	2	0.32	
Centroporus granulosus	0.40	2	0.16	
Total	250.06		100.00	

PROJECT STATION: 4060  
 DATE: 27/ 3/06 GEAR TYPE: BT No:19 POSITION: Lat S 705 Long E 1236  
 start stop duration  
 TIME :15:09:06 15:39:08 30 (min) Purpose code: 3  
 LOG :3249.14 3250.73 1.58 Area code : 3  
 FDEPTH: 37 37 GearCond.code: 1  
 BDEPTH: 37 37 Validity code: 1  
 Towing dir: 328e Wire out: 166 m Speed: 30 kn\*10  
 Sorted: 48 Kg Total catch: 47.99 CATCH/HOUR: 95.98

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Decapterus rhonchus	45.00	85	46.88	8881
Alectis alexandrinus	14.10	20	14.69	
Pagellus bellottii	9.78	48	10.19	8880
Trachinocephalus myops	7.06	24	7.36	
Xyrichtys novacula	4.36	32	4.94	
Lapogcephalus laevigatus	3.94	8	3.69	
Sepia orbignyana	3.26	4	3.40	
Pagrus caeruleostictus	2.68	8	2.78	
Pegusa lascaris	1.68	8	1.75	
Pseudupeneus prayensis	1.52	12	1.56	
Chelidonichthys gabonensis	1.48	6	1.54	
Balistes capricornis	1.04	2	1.06	
Fistularia petimba	0.48	4	0.50	
Total	95.98		99.99	

PROJECT STATION: 4063  
 DATE: 28/ 3/06 GEAR TYPE: BT No:15 POSITION: Lat S 722 Long E 1202  
 start stop duration  
 TIME :01:31:22 02:01:14 30 (min) Purpose code: 3  
 LOG :3322.72 3324.19 1.47 Area code : 3  
 FDEPTH: 516 514 GearCond.code: 1  
 BDEPTH: 516 514 Validity code: 1  
 Towing dir: 145e Wire out: 1444 m Speed: 30 kn\*10  
 Sorted: 40 Kg Total catch: 256.22 CATCH/HOUR: 512.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	301.50	57978	58.84	
Lamprogrammus exutus	37.62	108	7.34	
Triplophos hemingi	32.22	3978	6.29	
Scyllarides sp.	21.06	1908	4.11	
Yarella blackfordi	20.34	612	3.97	
Benthodesmus tenuis	15.30	540	2.99	
Octopus sp.	14.94	18	2.92	
Hoplostethus cadenati	12.24	558	2.39	
Merluccius polli	11.40	24	2.22	8883
Aristeus varidens, female	8.82	360	1.72	8885
Malacocephalus laevis	8.10	72	1.58	
Chaceon maritae, male	6.80	12	1.33	
Chaurax pictus	5.22	36	1.02	
Chaceon maritae, female	3.70	16	0.72	
OPHIDIIDAE	2.34	288	0.46	
STOMIIDE	2.16	36	0.42	
Aristeus varidens, male	1.98	252	0.39	8884
Dibranchius atlanticus	1.80	252	0.35	
Etmepterus sp.	1.60	4	0.31	
Centroscyllium crepidater	1.40	8	0.27	
Plesioipeneus edwardsianus	1.00	12	0.20	
Haloaenus ovoides	0.72	18	0.14	
Bathyroconger vicinus	0.18	36	0.04	
Total	512.44		100.02	

PROJECT STATION: 4061  
 DATE: 27/ 3/06 GEAR TYPE: BT No:19 POSITION: Lat S 707 Long E 1231  
 start stop duration  
 TIME :16:28:59 16:53:42 25 (min) Purpose code: 3  
 LOG :3256.77 3257.98 1.19 Area code : 3  
 FDEPTH: 47 48 GearCond.code: 1  
 BDEPTH: 47 48 Validity code: 1  
 Towing dir: 140e Wire out: 189 m Speed: 30 kn\*10  
 Sorted: 57 Kg Total catch: 57.13 CATCH/HOUR: 137.11

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagrus caeruleostictus	28.56		20.83	
Sepiella ornata	24.84	17	18.12	
Epinephelus aeneus	14.76	5	10.77	
Pagellus bellottii	14.42		10.52	
Boops boops	12.96	4404	9.45	
Dentex barnardi	11.16		8.14	
Pagrus pagrus	9.12	2	6.65	
Lycodonis sp.	5.30	2	3.87	
Chelidonichthys gabonensis	4.13	22	3.01	
Syacium microrum	2.59	14	1.89	
Fistularia petimba	1.68	10	1.23	
Loligo vulgaris	1.58	1646	1.15	
Trachinus radiatus	1.44	2	1.05	
Decapterus rhonchus	1.22	2	0.89	
Rypticus saponaceus	1.10	7	0.80	
Chilomycterus spinosus mauret.	0.70	2	0.51	
Scorpaena sp.	0.60	7	0.44	
Chaetodon hoefleri	0.55	5	0.40	
Xyrichtys novacula	0.38	2	0.28	
Total	137.09		100.00	

PROJECT STATION:4064  
DATE:28/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 721  
start stop duration  
TIME :01:25:50 01:55:41 30 (min) Purpose code: 3  
LOG :3329.24 3330.79 1.53 Area code : 3  
FDEPTH: 410 417 GearCond.code: 1  
BDEPTH: 410 417 Validity code: 1  
Towing dir: 310° Wire out:1151 m Speed:300 km\*10  
Sorted: 96 Kg Total catch: 207.07 CATCH/HOUR: 414.14

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	151.70	704	36.63	8886
Hymnocephalus italicus	64.56	4728	15.59	
Gadella macralli	41.40	508	10.00	
Nematocarcinus africanus	31.80	6660	7.68	
Dibranchius sp.	24.84	3240	6.00	
Chaunax pictus	24.48	648	5.91	
Stereosthis sp.	12.24	1248	2.96	
Berlodesmus tenuis	10.20	408	2.46	
Balynectes piperitus	8.28	168	2.00	
Aristeus varidens, male	7.80	912	1.88	8888
Gaussia imberbis	6.24	228	1.51	
Aristeus varidens, female	6.00	288	1.45	8887
Malacocephalus occidentalis	6.00	60	1.45	
Colapogon cadonati	4.80	60	1.16	
MYCTOPHIDAE	4.44	2568	1.07	
Nezumia sp.	2.64	144	0.64	
Eumunida squamifera *	1.92	276	0.46	
Halosaurus oerlii	1.80	108	0.43	
NETASTOMATIDAE	1.20	72	0.29	
Lepidus vaillanti	0.72	12	0.17	
Balhysoconger vicinus	0.72	12	0.17	
Solenoscyra africana	0.36	36	0.09	
Total	414.14		100.00	

PROJECT STATION:4065  
DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 715  
start stop duration  
TIME :05:39:13 06:09:02 30 (min) Purpose code: 3  
LOG :3339.67 3341.15 1.48 Area code : 3  
FDEPTH: 232 227 GearCond.code: 1  
BDEPTH: 232 227 Validity code: 1  
Towing dir: 330° Wire out: 700 m Speed: 30 km\*10  
Sorted: 80 Kg Total catch: 165.90 CATCH/HOUR: 331.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	96.80	5520	29.13	
Dentex angolensis	38.80	110	11.69	8889
Pterotrissus bellocci	36.32	328	10.95	
Parapneaus longirostris, fem.	29.20	4192	8.80	8892
Brotula barbata	28.90	28	8.71	
MYCTOPHIDAE	21.80	18720	6.57	
Zeus faber	20.40	46	6.15	
Parapneaus longirostris, male	13.20	2968	3.98	8891
Trichurus lepturus	12.60	24	3.80	
Berxops heterurus	9.20	264	2.77	
Nezumia sp.	7.60	424	2.29	
Illex coindetii	3.92	96	1.18	
Urophycis atlanticus	3.60	240	1.08	
Zeus faber	2.56	8	0.77	
Todaropsis eblanae	2.32	24	0.70	
Epigonus telescopus	1.76	264	0.93	
Bothus podas africanus	1.76	176	0.53	8890
Umrina canariensis	1.06	2	0.32	
Total	331.80		99.99	

PROJECT STATION:4066  
DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 710  
start stop duration  
TIME :07:44:20 08:14:38 30 (min) Purpose code: 3  
LOG :3351.80 3353.41 1.60 Area code : 3  
FDEPTH: 117 119 GearCond.code: 1  
BDEPTH: 117 119 Validity code: 1  
Towing dir: 145° Wire out: 350 m Speed: 30 km\*10  
Sorted: 79 Kg Total catch: 78.71 CATCH/HOUR: 157.42

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	45.40	1896	28.84	8893
Trigla lyra	32.70	218	20.77	
Sepia orbignyana	17.10	12	10.86	
Carcharias signatus	13.90	2	8.83	
Dentex angolensis	13.70	92	8.70	8895
Trichurus lepturus	8.06	20	5.12	
Fistularia petimba	5.40	10	3.43	
Pterotrissus bellocci	4.72	32	3.00	
Saurida brasiliensis	3.16	578	2.01	
Brachydeuterus auritus	2.82	14	1.79	8894
Brotula barbata	1.90	2	1.21	
Illex coindetii	1.82	60	1.16	
Zeus faber	1.76	8	1.12	
Citharus linguatula	1.66	20	1.05	
Squatina oculata	1.56	2	0.99	
Cranoscopus polli	0.54	2	0.34	
Dentex congoensis	0.50	8	0.32	8896
Bothus podas africanus	0.38	20	0.24	
Pectisledion cataphractum	0.18	2	0.11	
COBIIDAE	0.16	148	0.10	
Total	157.42		99.99	

PROJECT STATION:4067  
DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 696  
start stop duration  
TIME :10:23:47 10:51:27 29 (min) Purpose code: 3  
LOG :3370.35 3371.63 1.46 Area code : 3  
FDEPTH: 80 80 GearCond.code: 1  
BDEPTH: 80 80 Validity code: 1  
Towing dir: 322° Wire out: 240 m Speed: 30 km\*10  
Sorted: 136 Kg Total catch: 135.76 CATCH/HOUR: 280.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagellus bellottii	183.00	1103	65.15	8897
Dentex angolensis	31.55	199	11.23	8898
Dentex congoensis	12.31	137	4.38	8899
Piscacanthus arenatus	9.56	23	3.40	
Epinephelus aeneus	9.52	4	3.39	
Trichurus lepturus	7.34	12	2.61	
Alloteuthis africana	5.40	3240	1.92	
Sepia orbignyana	3.97	4	1.41	
Decapterus rhonchus	3.72	37	1.52	8902
Trigla lyra	2.96	25	1.05	
Raja miraletus	2.73	4	0.97	
Pagrus caeruleostictus	1.53	4	0.54	8900
Pseudupeneus prayensis	1.41	6	0.50	
Chaetodon noefleri	1.30	8	0.46	
Fistularia petimba	1.10	4	0.39	
Trachurus trecae	0.99	41	0.35	8901
Illex coindetii	0.87	50	0.31	
Zeus faber	0.87	2	0.31	
Brachydeuterus auritus	0.58	4	0.21	
Dentex barnardi	0.17	2	0.06	
Total	280.88		99.96	

PROJECT STATION:4068  
DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 657  
start stop duration  
TIME :11:40:55 12:10:39 30 (min) Purpose code: 3  
LOG :3375.69 3377.12 1.41 Area code : 3  
FDEPTH: 87 87 GearCond.code: 1  
BDEPTH: 87 87 Validity code: 1  
Towing dir: 145° Wire out: 299 m Speed: 30 km\*10  
Sorted: 62 Kg Total catch: 62.39 CATCH/HOUR: 124.78

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	39.80	1280	31.90	8904
Dentex congoensis	37.00	130	29.65	8903
Chelidonichthys gabonensis	14.10	72	11.30	
Raja miraletus	7.00	10	5.61	
Pseudupeneus prayensis	5.54	74	4.44	
Trichurus lepturus	4.44	8	3.56	
Fistularia petimba	3.98	12	3.19	
Dentex angolensis	3.70	46	2.97	8907
Sepia orbignyana	2.58	10	2.07	
Alloteuthis africana	1.74	678	1.39	
Trigla lyra	1.58	14	1.21	
Pagellus bellottii	1.22	10	0.98	8906
Illex coindetii	1.00	36	0.80	
Sardinella aurita	0.54	18	0.43	8905
Citharus linguatula	0.32	14	0.26	
Saurida brasiliensis	0.24	84	0.19	
Total	124.78		100.01	

PROJECT STATION:4069  
DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 701  
start stop duration  
TIME :13:23:45 13:53:28 30 (min) Purpose code: 3  
LOG :3384.77 3386.40 1.35 Area code : 3  
FDEPTH: 112 110 GearCond.code: 1  
BDEPTH: 112 110 Validity code: 1  
Towing dir: 328° Wire out: 366 m Speed: 30 km\*10  
Sorted: 83 Kg Total catch: 230.61 CATCH/HOUR: 461.22

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	189.36	6888	41.06	8910
Dentex angolensis	98.76	1302	21.41	8909
Dentex congoensis	41.30	834	8.95	8908
Zeus faber	36.68	22	7.95	
Trigla lyra	29.40	274	6.37	
Sepia orbignyana	17.10	24	3.71	
Reinhardtus albomaculatus	15.10	8	3.27	
Pterotrissus bellocci	6.30	22	1.37	
Raja miraletus	4.78	8	1.04	
Cranoscopus polli	4.34	8	0.94	
Illex coindetii	4.20	64	0.91	
Lagocephalus laevis	3.42	2	0.74	
Squatina oculata	3.32	2	0.72	
Citharus linguatula	3.08	64	0.67	
Torpedo torpedo	2.58	4	0.56	
Fistularia petimba	1.50	2	0.33	
Total	461.22		100.00	

PROJECT STATION:4070  
DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 702  
start stop duration  
TIME :14:35:39 15:05:29 30 (min) Purpose code: 3  
LOG :3389.96 3391.38 1.41 Area code : 3  
FDEPTH: 119 121 GearCond.code: 1  
BDEPTH: 119 121 Validity code: 1  
Towing dir: 145° Wire out: 376 m Speed: 30 km\*10  
Sorted: 105 Kg Total catch: 105.16 CATCH/HOUR: 210.32

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	81.10	5048	38.56	8914
Dentex angolensis	39.30	244	18.69	8912
Trigla lyra	38.30	152	18.21	
Dentex congoensis	13.60	174	8.47	8911
Trichurus lepturus	12.10	12	5.75	
Brotula barbata	10.20	8	4.85	
Illex coindetii	5.14	248	2.44	
Umrina canariensis	2.24	8	1.07	8913
Citharus linguatula	1.62	30	0.77	
Pterotrissus bellocci	1.24	8	0.59	
Zeus faber	1.18	4	0.56	
Lepidus vaillanti	1.14	2	0.54	
Torpedo torpedo	1.10	2	0.52	
Fistularia petimba	1.10	2	0.52	
Pagellus bellottii	0.40	2	0.19	8915
Aciomma bondi	0.30	4	0.14	
Sepia officinalis hlerredda	0.24	2	0.11	
Spicara alta	0.02	2	0.01	
Total	210.32		99.99	

PROJECT STATION:4071  
 DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 704  
 start stop duration Long E 1200  
 TIME :16:08:49 16:38:36 30 (min) Purpose code: 3  
 LOG :3397.10 3398.69 1.58 Area code : 3  
 FDEPTH: 152 153 GearCond.code: 1  
 BDEPTH: 152 153 Validity code: 1  
 Towing dir: 318a Wire out: 484 m Speed: 30 kn\*10

Sorted: 252 Kg Total catch: 350.19 CATCH/HOUR: 700.38

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Trichurus lepturus	353.10	634	50.42	
Synagrops microlepis	204.80	13104	29.24	
Brotula barbata	39.60	44	5.65	
Dentex angolensis	37.80	140	5.40	8916
Illex coindetii	22.44	616	3.23	
Saurida brasiliensis	20.80	3832	2.97	
Zenopsis conchifer	5.22	8	0.75	
Pterotrissus bellotti	4.40	48	0.63	
Spicara sitta	3.28	96	0.47	
Squatina oculata	1.90	6	0.27	
Citarnus linguatula	1.68	24	0.24	
Microrvina angolensis	1.28	8	0.18	
Dentex congolensis	1.20	24	0.17	8917
Zeus faoensis	1.12	4	0.16	
Raja marulius	0.74	2	0.11	
Parapenaeus longirostris, fem.	0.56	88	0.08	8918
Bopps oopsis	0.24	8	0.03	
Total	700.38	100.00		

PROJECT STATION:4074  
 DATE:29/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 640  
 start stop duration Long E 1126  
 TIME :00:06:02 00:36:18 30 (min) Purpose code: 3  
 LOG :3448.83 3450.42 1.56 Area code : 3  
 FDEPTH: 714 711 GearCond.code: 1  
 BDEPTH: 714 711 Validity code: 1  
 Towing dir: 315a Wire out:1799 m Speed:30 kn\*10

Sorted: 172 Kg Total catch: 202.76 CATCH/HOUR: 405.52

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
HOLOURIDAE	311.30	524	76.77
Nezumia sp.	32.10	690	7.92
Hoplostethus cadenati	13.38	60	3.30
Chaceon maritae, male	11.40	12	2.61
Lophius vaillanti	8.88	24	2.19
Diastobranchus capensis	5.76	60	1.42
Nezumia milleri	3.96	18	0.98
Scyllarides sp.	3.12	228	0.77
Yareella blackfordi	2.88	78	0.71
Chaceon maritae, female	2.52	12	0.62
Trachyrhynchus scabrus	2.16	6	0.53
Elmopterus pusillus	2.00	8	0.49
Raja confundens	1.56	12	0.38
Bathyrcocongier vicinus	1.38	6	0.34
OPHIIDAE	1.08	66	0.27
Halosaurus ovenii	1.08	48	0.27
Deania calcea	0.60	2	0.15
Aristeus varidens, female	0.18	6	0.04
Glyphus marsupialis	0.18	6	0.04
Total	405.52	100.00	

PROJECT STATION:4072  
 DATE:28/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 705  
 start stop duration Long E 1157  
 TIME :17:40:49 18:10:52 30 (min) Purpose code: 3  
 LOG :3403.42 3404.90 1.46 Area code : 3  
 FDEPTH: 264 268 GearCond.code: 1  
 BDEPTH: 264 268 Validity code: 1  
 Towing dir: 153a Wire out: 750 m Speed: 30 kn\*10

Sorted: 57 Kg Total catch: 214.11 CATCH/HOUR: 428.22

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Chlorophthalmus atlanticus	205.00	4340	47.87	
Merluccius polli	53.00	770	12.38	8919
Synagrops microlepis	34.50	1420	8.06	
Parapenaeus longirostris, fem.	21.00	2390	4.90	8924
Malacocephalus occidentalis	17.00	210	3.97	
Portinus kunlii	16.50	220	3.88	
Peristodion cataphractum	13.10	860	3.06	
Dentex angolensis	12.40	32	2.90	8921
Bembrops heterurus	9.90	200	2.31	
Brotula barbata	9.70	10	2.27	
Illex coindetii	7.00	80	1.63	
Gadella imberbis	6.10	230	1.47	
Pentacodon moidi	4.30	2	1.00	8920
Trichurus lepturus	3.46	8	0.81	
Pterotrissus bellotti	2.60	20	0.61	
Zenopsis conchifer	2.48	2	0.58	
Parapenaeus longirostris, male	2.38	158	0.56	8923
Chloroscombrus chrysurus	1.50	40	0.35	
Raja marulius	1.26	6	0.29	
S H R I M P S	1.20	260	0.28	
Epigonus telescopus	1.10	40	0.26	
Solenocera africana	0.80	100	0.19	
Dentex macropthalmus	0.70	2	0.16	8922
Chascanopsetta lugubris	0.60	10	0.14	
Nezumia sp.	0.40	20	0.09	
MYCTOPHIDAE	0.20	130	0.05	
Total	428.22	100.02		

PROJECT STATION:4075  
 DATE:29/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 637  
 start stop duration Long E 1127  
 TIME :02:11:32 02:19:03 8 (min) Purpose code: 3  
 LOG :3455.15 3455.45 0.25 Area code : 3  
 FDEPTH: 653 652 GearCond.code: 9  
 BDEPTH: 653 652 Validity code: 9  
 Towing dir: 115a Wire out:1666 m Speed: 30 kn\*10

Sorted: 18 Kg Total catch: 37.56 CATCH/HOUR: 281.70

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Hoplostethus cadenati	37.25	750	21.03	
Nezumia sp.	43.95	990	15.60	
Yareella blackfordi	27.90	705	9.90	
B I V A L V E S	26.85	75	9.53	
Scyllarides sp.	12.90	705	4.58	
Trachyrhynchus scabrus	12.00	210	4.26	
Merluccius polli	11.70	15	4.15	8926
Bathyrcocongier vicinus	8.65	75	3.14	
Elmopterus pusillus	6.75	30	2.40	
Dibranchius atlanticus	6.60	150	2.34	
Trichurus lepturus	6.60	30	2.34	
Halosaurus ovenii	6.45	75	2.29	
Tripturus hemingi	6.30	675	2.24	
Paromola cuvieri	6.30	15	2.24	
Chaceon maritae, female	6.00	30	2.13	
Raja confundens	5.63	75	2.00	
SEPIOLIDAE	4.80	30	1.70	
Lophius vaillanti	4.50	30	1.60	
Xenodermichthys copei	4.20	75	1.49	
Chaceon maritae, male	3.50	15	1.38	
Centropronus squamosus	3.75	8	1.33	
OPHIIDAE	3.30	180	1.17	
Aristeus varidens, female	2.10	60	0.75	8929
Glyphus marsupialis	1.20	30	0.43	
Total	281.78	100.02		

PROJECT STATION:4073  
 DATE:28/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 706  
 start stop duration Long E 1156  
 TIME :19:17:03 19:47:04 30 (min) Purpose code: 3  
 LOG :3408.16 3409.59 1.43 Area code : 3  
 FDEPTH: 310 309 GearCond.code: 1  
 BDEPTH: 310 309 Validity code: 1  
 Towing dir: 330a Wire out: 930 m Speed: 30 kn\*10

Sorted: 54 Kg Total catch: 145.02 CATCH/HOUR: 290.04

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Chlorophthalmus atlanticus	130.80	2582	45.10	
Portinus kunlii	23.46	276	8.09	
Bentnodesmus sp.	23.22	1002	8.01	
Merluccius polli	22.20	126	7.65	8925
Gadella maraldi	19.68	384	6.79	
Chloroscombrus chrysurus	12.78	1464	4.41	
Raja squainod	11.70	10	4.03	
Malacocephalus occidentalis	7.38	54	2.54	
Parapenaeus longirostris, male	5.76	576	1.99	8927
Synagrops microlepis	5.40	198	1.86	
Lophius vaillanti	4.08	60	1.41	
Hymenocephalus italicus	3.72	654	1.28	
Peristodion cataphractum	3.48	96	1.20	
Illex coindetii	2.58	30	0.89	
Nezumia sp.	2.34	54	0.81	
Chaceon maritae	2.28	6	0.79	
Chascanopsetta lugubris	1.92	42	0.66	
Dibranchius atlanticus	1.86	312	0.64	
Pterotrissus bellotti	1.62	12	0.36	
Gadella imberbis	1.38	36	0.48	
CONGRIDAE	1.38	18	0.48	
Parapenaeus longirostris, fem.	0.54	66	0.19	8926
Dicologlossa cuneata	0.18	6	0.06	
Solenocera africana	0.18	36	0.06	
MYCTOPHIDAE	0.12	90	0.04	
Total	290.04	100.02		

PROJECT STATION:4076  
 DATE:29/ 3/06 GEAR TYPE: BT No:15 POSITION:Lat S 636  
 start stop duration Long E 1139  
 TIME :04:25:06 04:55:10 30 (min) Purpose code: 3  
 LOG :3468.76 3470.34 1.57 Area code : 3  
 FDEPTH: 344 319 GearCond.code: 1  
 BDEPTH: 344 319 Validity code: 1  
 Towing dir: 333a Wire out: 999 m Speed: 30 kn\*10

Sorted: 53 Kg Total catch: 157.14 CATCH/HOUR: 314.28

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP	
	weight numbers			
Chlorophthalmus atlanticus	77.10	1602	24.53	
Synagrops microlepis	44.40	1302	14.13	
Parapenaeus longirostris, fem.	39.54	4122	12.58	8932
Bembrops sp.	32.70	648	10.40	
Gadella maraldi	21.24	462	6.76	
Malacocephalus occidentalis	18.24	168	5.80	
Merluccius polli	16.98	198	5.40	
Chloroscombrus chrysurus	11.16	1008	3.55	
Hymenocephalus italicus	7.50	1146	2.39	
S H R I M P S	6.66	1158	2.12	
Chaunax pictus	5.34	174	1.70	
Parapenaeus longirostris, male	4.08	528	1.30	8931
Lophius vaillanti	3.12	30	0.99	
Stereomastis sp.	3.00	24	0.95	
Nezumia sp.	2.82	18	0.90	
Chascanopsetta lugubris	2.82	36	0.90	
Trichurus lepturus	2.56	6	0.81	
Pterotrissus bellotti	2.40	12	0.76	
Raja straeleni	2.10	30	0.67	
Maja squinado	1.46	2	0.46	
MYCTOPHIDAE	1.20	126	0.38	
Gadella imberbis	1.08	30	0.34	
Bembrops sp.	1.02	30	0.32	
Raja alba	0.90	30	0.29	
Bentnodesmus sp.	0.78	66	0.25	
Dibranchius atlanticus	0.78	174	0.25	
Peristodion cataphractum	0.72	96	0.23	
Bathynectes piperitus	0.66	6	0.21	
Epigonus telescopus	0.54	18	0.17	
Solenocera africana	0.42	48	0.13	
Illex coindetii	0.30	18	0.10	
FORTUNIDAE	0.24	6	0.08	
Hoplostethus cadenati	0.18	6	0.06	
Zeus capensis	0.12	18	0.04	
Nephropsis atlantica	0.12	6	0.04	
Total	314.28	99.99		

PROJECT STATION:4077  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 633  
 start stop duration Long E 1141  
 TIME :06:13:41 06:47:29 34 (min) Purpose code: 3  
 LOG :3475.13 3477.34 1.59 Area code : 3  
 FDEPTH: 222 225 GearCond.code: 1  
 BDEPTH: 222 225 Validity code: 1  
 Towing dir: 1560 Wire out: 650 m Speed: 30 kn\*10  
 Sorted: 96 Kg Total catch: 544.08 CATCH/HOUR: 960.14

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Synagrops microlepis	780.88	50956	81.33
Dentex angolensis	34.76	34	3.62
Garcharias signatus	32.03	2	3.34
Bemdrops heterurus	18.53	26	1.93
Zenopsis conchifer	17.74	28	1.85
Brotula barbata	14.82	16	1.54
Trachurus lepturus	12.53	35	1.31
Chlorophthalmus atlanticus	11.65	1668	1.21
Uranoscopus scyllium	11.12	53	1.16
Parapenaeus longirostris, fem.	10.55	1588	1.10
Todaropsis eulanae	3.71	26	0.39
Parapenaeus longirostris, male	3.44	662	0.36
Pterotrissus bellioi	3.18	26	0.33
Peristodion cataphractum	2.12	53	0.22
Nezumia sp.	1.99	26	0.17
Bothus podas africanus	1.06	79	0.11
Squatina oculata	0.41	2	0.04
Total	360.16	100.01	

PROJECT STATION:4081  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 627  
 start stop duration Long E 1158  
 TIME :12:53:13 13:23:11 30 (min) Purpose code: 3  
 LOG :3507.92 3507.94 1.36 Area code : 3  
 FDEPTH: 95 98 GearCond.code: 1  
 BDEPTH: 95 98 Validity code: 1  
 Towing dir: 1720 Wire out: 323 m Speed: 30 kn\*10  
 Sorted: 107 Kg Total catch: 106.66 CATCH/HOUR: 213.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Trachurus lepturus	79.80	136	37.41
Trachurus trecae	42.50	1390	19.92
Dentex angolensis	31.90	136	14.95
Umbriina canariensis	17.30	48	8.39
Dentex congoensis	11.68	128	5.48
Sepia officinalis hierreda	6.74	10	3.16
Raja miraletus	5.00	10	2.34
Brachydeuterus auritus	3.46	38	1.62
Fistularia petimba	3.24	8	1.52
Scopaeina nocmani	2.52	4	1.16
Priacanthus arenatus	2.32	4	1.09
Pagellus bellottii	2.28	14	1.07
Saurida brasiliensis	1.18	264	0.55
Pterotrissus bellioi	0.96	8	0.45
Brotula barbata	0.96	2	0.45
Illex coindetii	0.46	10	0.22
Citharus linguatula	0.42	4	0.20
Total	213.32	100.00	

PROJECT STATION:4078  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 631  
 start stop duration Long E 1149  
 TIME :08:18:14 08:48:28 30 (min) Purpose code: 3  
 LOG :3486.65 3488.16 1.91 Area code : 3  
 FDEPTH: 123 122 GearCond.code: 1  
 BDEPTH: 123 122 Validity code: 1  
 Towing dir: 1300 Wire out: 350 m Speed: 30 kn\*10  
 Sorted: 60 Kg Total catch: 170.68 CATCH/HOUR: 341.36

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Dentex congoensis	187.52	1896	54.93
Dentex angolensis	75.40	384	22.09
Trachurus lepturus	20.10	28	5.89
Trigla lyra	10.34	136	3.03
Raja miraletus	8.46	6	2.48
Brotula barbata	8.38	6	2.45
Trachurus trecae	7.20	234	2.11
Zenopsis conchifer	7.14	6	2.09
Pagellus bellottii	6.50	32	1.90
Zeus faber	3.00	8	0.88
Ariomma bonoi	11.38	40	0.37
Pterotrissus bellioi	2.72	14	0.80
Boops boops	0.84	20	0.25
Illex coindetii	0.78	20	0.23
Total	341.36	100.00	

PROJECT STATION:4082  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 625  
 start stop duration Long E 1202  
 TIME :14:25:43 14:33:24 8 (min) Purpose code: 3  
 LOG :3513.85 3514.28 0.42 Area code : 3  
 FDEPTH: 81 81 GearCond.code: 9  
 BDEPTH: 81 81 Validity code: 9  
 Towing dir: 3300 Wire out: 274 m Speed: 30 kn\*10  
 Sorted: 110 Kg Total catch: 109.78 CATCH/HOUR: 823.35

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Brachydeuterus auritus	619.50	7470	75.24
Trachurus lepturus	126.38	210	15.35
Dentex angolensis	37.58	173	4.56
Trachurus trecae	16.20	488	1.97
Umbriina canariensis	6.38	23	0.77
Epinephelus aeneus	4.80	8	0.58
Fistularia petimba	3.23	8	0.39
Cynoglossus canariensis	3.15	8	0.38
Dentex congoensis	2.78	23	0.34
Chaetodon hoefleri	1.88	15	0.97
Torpedo torpedo	0.75	8	0.09
Illex coindetii	0.75	23	0.09
Total	823.38	99.99	

PROJECT STATION:4079  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 628  
 start stop duration Long E 1151  
 TIME :09:40:26 10:19:51 29 (min) Purpose code: 3  
 LOG :3493.12 3494.53 1.40 Area code : 3  
 FDEPTH: 112 114 GearCond.code: 1  
 BDEPTH: 112 114 Validity code: 1  
 Towing dir: 1400 Wire out: 330 m Speed: 30 kn\*10  
 Sorted: 70 Kg Total catch: 210.57 CATCH/HOUR: 435.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Umbriina canariensis	309.72	850	71.09
Dentex congoensis	40.03	691	9.19
Dentex angolensis	38.42	279	8.82
Dasyatis macrorata	16.08	6	3.69
Trachurus lepturus	12.17	25	2.79
Trigla lyra	5.03	56	1.15
Dentex barnardi	3.10	12	0.71
Zeus faber	2.98	12	0.68
Fistularia petimba	2.67	6	0.61
Branchiostegus semifasciatus	2.11	6	0.48
Torpedo torpedo	1.43	6	0.33
Raja miraletus	1.06	6	0.24
Chaetodon hoefleri	0.50	6	0.11
Peristodion cataphractum	0.37	12	0.08
Total	435.67	99.97	

PROJECT STATION:4083  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 625  
 start stop duration Long E 1202  
 TIME :15:13:39 15:43:18 30 (min) Purpose code: 3  
 LOG :3517.26 3518.94 1.65 Area code : 3  
 FDEPTH: 81 82 GearCond.code: 1  
 BDEPTH: 81 82 Validity code: 1  
 Towing dir: 3300 Wire out: 274 m Speed: 30 kn\*10  
 Sorted: 122 Kg Total catch: 1026.81 CATCH/HOUR: 2053.62

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Brachydeuterus auritus	1927.20	20724	93.84
Dentex angolensis	62.40	242	3.04
Trachurus lepturus	41.70	102	2.03
Sepia officinalis hierreda	4.12	2	0.20
Brotula barbata	3.36	6	0.16
Pagellus bellottii	2.46	12	0.12
Dentex congoensis	2.22	28	0.11
Stromateus fiatola	2.18	2	0.11
Sarda sarda	2.14	2	0.10
Zeus faber	2.14	6	0.10
Brachydeuterus auritus	1.52	2	0.07
Raja miraletus	0.96	2	0.05
Selene dorsalis	0.76	2	0.04
Sardinella aurita	0.46	2	0.02
Total	2053.62	99.99	

PROJECT STATION:4080  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 624  
 start stop duration Long E 1155  
 TIME :11:17:36 11:47:30 30 (min) Purpose code: 3  
 LOG :3498.93 3500.56 1.63 Area code : 3  
 FDEPTH: 109 107 GearCond.code: 1  
 BDEPTH: 109 107 Validity code: 1  
 Towing dir: 3370 Wire out: 359 m Speed: 30 kn\*10  
 Sorted: 191 Kg Total catch: 191.44 CATCH/HOUR: 382.88

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Brachydeuterus auritus	154.50	1202	40.35
Trachurus lepturus	78.40	144	20.48
Dentex angolensis	67.50	266	17.63
Trachurus trecae	30.50	1032	7.97
Epinephelus aeneus	18.30	4	4.78
Umbriina canariensis	10.50	30	2.74
Zeus faber	5.06	12	1.32
Dentex congoensis	4.44	54	1.16
Sepia orbignyana	3.12	6	0.81
Pterotrissus bellioi	2.60	16	0.68
Priacanthus acenatus	2.26	4	0.59
Fistularia petimba	1.90	4	0.50
Pagrus caucasicus	1.14	2	0.30
Saurida brasiliensis	1.12	330	0.29
Illex coindetii	0.58	20	0.15
Citharus linguatula	0.36	10	0.09
Trigla lyra	0.26	2	0.07
Chaetodon hoefleri	0.24	2	0.06
Torpedo torpedo	0.10	2	0.03
Total	382.88	100.00	

PROJECT STATION:4084  
 DATE:29/ 3/06 GEAR TYPE: BT No:19 POSITION:Lat S 624  
 start stop duration Long E 1205  
 TIME :16:38:07 17:08:01 30 (min) Purpose code: 3  
 LOG :3524.33 3525.69 1.35 Area code : 3  
 FDEPTH: 95 94 GearCond.code: 1  
 BDEPTH: 95 94 Validity code: 1  
 Towing dir: 1520 Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 41 Kg Total catch: 41.63 CATCH/HOUR: 83.26

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Pagellus bellottii	38.10	448	45.76
Trachurus lepturus	17.10	28	20.54
Decapterus rhonchus	10.46	310	12.56
Lagocephalus laevis	6.30	8	7.57
Pagrus caucasicus	3.82	10	4.59
Brachydeuterus auritus	3.04	10	3.65
Alloteuthis africana	2.44	22	2.93
Syacium micrum	0.56	398	0.67
Sardinella aurita	0.32	2	0.38
Saurida brasiliensis	0.30	2	0.36
Trachurus arnatus	0.28	4	0.34
Pseudupeneus prayensis	0.26	2	0.31
Trachinocephalus myops	0.20	2	0.24
Bothus guibel	0.06	2	0.07
Monolepis microstoma	0.02	4	0.02
Total	83.26	99.99	

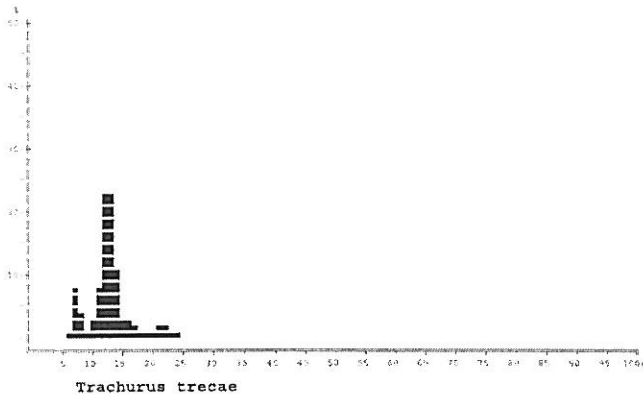


PROJECT STATION: 4085  
 DATE: 30/3/06 GEAR TYPE: BT No: 19 POSITION: Lat S 802  
 start stop Duration Purpose code: 3  
 TIME : 04:53:18 05:23:00 30 (min) Area code : 3  
 LOG : 13628.33 3629.73 1.39 GearCond.code: 1  
 FDEPTH: 626 628 Validity code: 1  
 BDEPTH: 626 628  
 Towing dir: 1750 Wire out: 1666 m Speed: 30 kn\*10  
 Sorted: 36 Kg Total catch: 199.89 CATCH/HOUR: 399.78

SPECIES	CATCH/ROCK		% OF TCT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	235.50	55230	58.91	
Lamprogrammus exultus	30.00	60	7.50	
Hoplustethus cadenati	28.80	166	7.20	
Triplaphos hexingli	20.26	1920	5.01	
Stereomastis sp.	13.80	1950	3.45	
Yarella blackfordi	13.20	346	3.30	
CENTROLOPHIDAE	9.00	30	2.25	
Gadella imberois	8.56	510	2.14	
Aristeus varidens, male	8.40	976	2.10	8971
Lophiodes kempfi	4.54	10	1.14	
Aristeus varidens, female	4.20	196	1.05	8970
Chaceon maritae, male	3.54	8	0.89	
Stonias boa boa	3.46	150	0.87	
Centroscymsus crepidater	2.64	6	0.66	
Opisthoteuthis agassizii	2.34	4	0.59	
Etmopterus pelli	2.16	30	0.54	
Bathyraja smitnii	2.10	14	0.53	
Selachophidium guentheri	1.36	346	0.34	
Malacocephalus occidentalis	1.20	16	0.30	
CONGRIDAE	1.06	30	0.27	
Dibranchius atlanticus	0.76	30	0.19	
Merluccius polli	0.56	2	0.14	8969
Chaceon maritae, female	0.56	2	0.14	
Etmopterus spinax	0.40	6	0.10	
Deania calcea	0.34	2	0.09	
Xenodermichthys copei	0.30	30	0.08	
MYCTOPHIDAE	0.30	166	0.08	
LOPHIIDAE	0.28	2	0.07	
CYNOGLOSSIDAE	0.16	16	0.04	
Total	399.78		100.03	

# ANNEX II. Length distribution of main species.

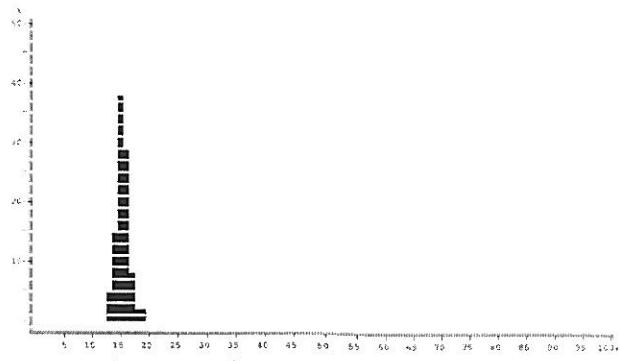
## Southern Angola



**Trachurus trecae**

Pooled sample ( weighted by catch).

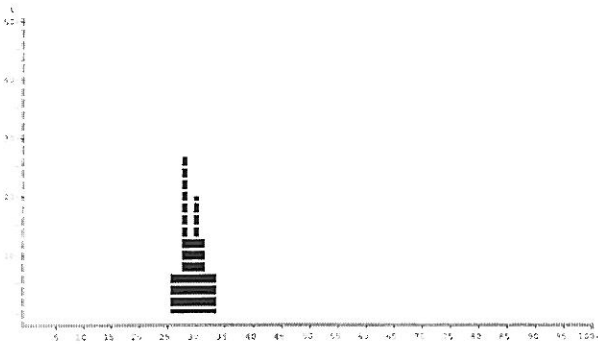
MEAN LENGTH = 13.74cm N= 2639  
 NUMBER OF SUBSAMPLES = 19  
 SAMPLES FOUND BETWEEN ST. NO. 3862 AND 3924  
 SAMPLES SEARCHED BETWEEN ST. NO. 3897 AND 3924



**Trachurus capensis**

Pooled sample ( weighted by catch).

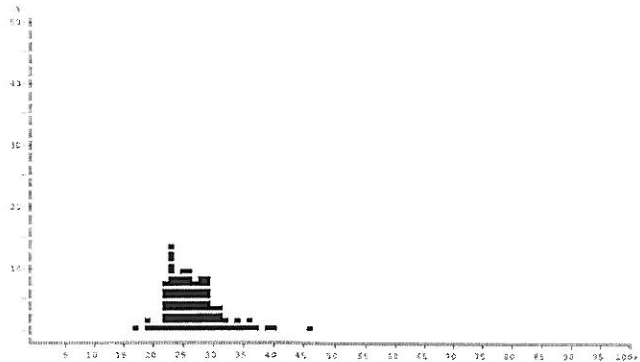
MEAN LENGTH = 15.88cm N= 859  
 NUMBER OF SUBSAMPLES = 7  
 SAMPLES FOUND BETWEEN ST. NO. 3499 AND 3874  
 SAMPLES SEARCHED BETWEEN ST. NO. 3637 AND 3924



**Merluccius polli**

Pooled sample ( weighted by catch).

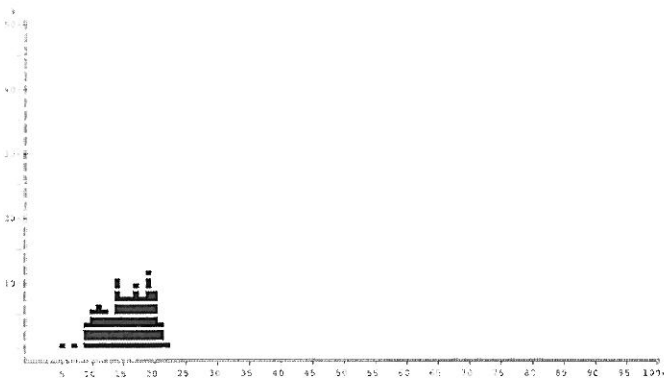
MEAN LENGTH = 29.82cm N= 15  
 NUMBER OF SUBSAMPLES = 1  
 SAMPLES FOUND BETWEEN ST. NO. 3927 AND 3961  
 SAMPLES SEARCHED BETWEEN ST. NO. 3897 AND 3924



**Merluccius capensis**

Pooled sample ( weighted by catch).

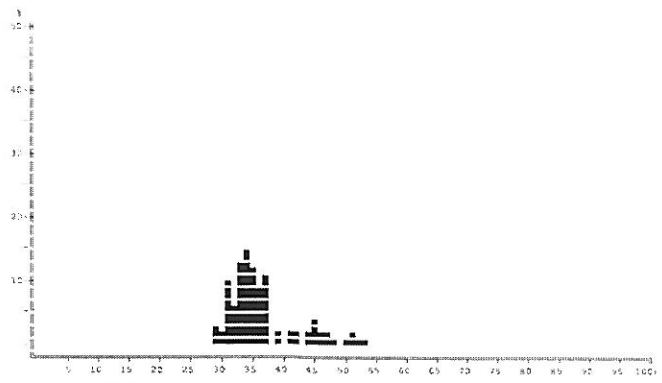
MEAN LENGTH = 21.75cm N= 184  
 NUMBER OF SUBSAMPLES = 10  
 SAMPLES FOUND BETWEEN ST. NO. 3849 AND 3917  
 SAMPLES SEARCHED BETWEEN ST. NO. 3857 AND 3924



**Dentex macrophthalmus**

Pooled sample ( weighted by catch).

MEAN LENGTH = 15.93cm N= 112  
 NUMBER OF SUBSAMPLES = 10  
 SAMPLES FOUND BETWEEN ST. NO. 3800 AND 3924  
 SAMPLES SEARCHED BETWEEN ST. NO. 3897 AND 3924

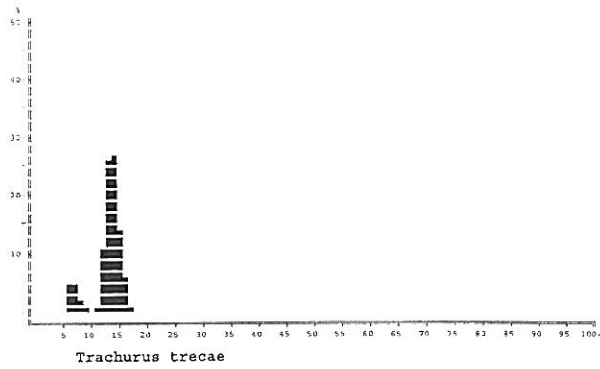


**Atractoscion aequidens**

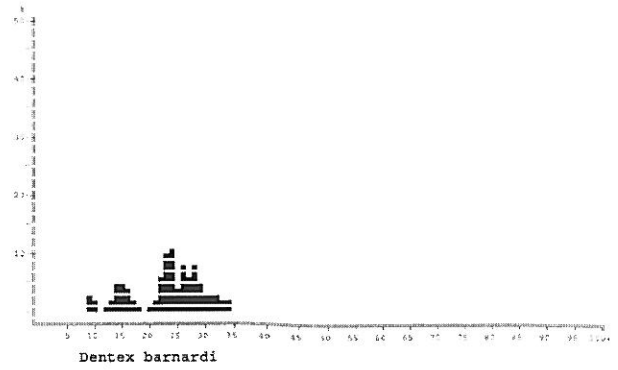
Pooled sample ( weighted by catch).

MEAN LENGTH = 36.97cm N= 83  
 NUMBER OF SUBSAMPLES = 3  
 SAMPLES FOUND BETWEEN ST. NO. 3917 AND 3921  
 SAMPLES SEARCHED BETWEEN ST. NO. 3897 AND 3924

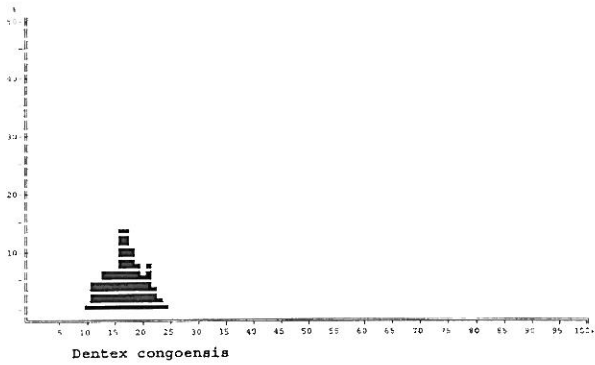
# Central and northern Angola



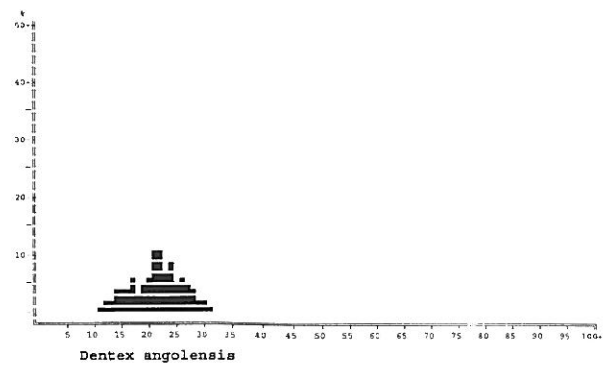
Pooled sample ( weighted by catch).  
 MEAN LENGTH = 13.56cm N= 5678  
 NUMBER OF SUBSAMPLES = 55  
 SAMPLES FOUND BETWEEN ST. NO 3927 AND 4083  
 SAMPLES SEARCHED BETWEEN ST. NO 3925 AND 4085



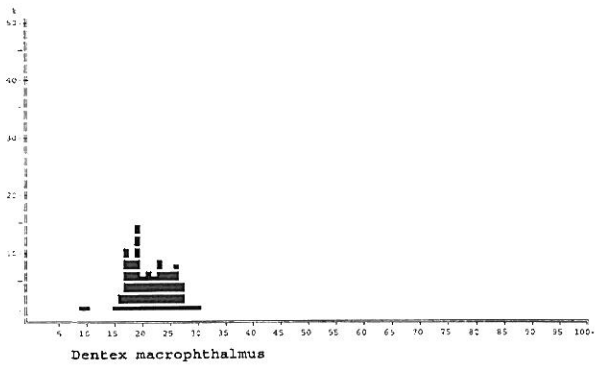
Pooled sample ( weighted by catch).  
 MEAN LENGTH = 23.74cm N= 810  
 NUMBER OF SUBSAMPLES = 33  
 SAMPLES FOUND BETWEEN ST. NO 3927 AND 4083  
 SAMPLES SEARCHED BETWEEN ST. NO 3925 AND 4085



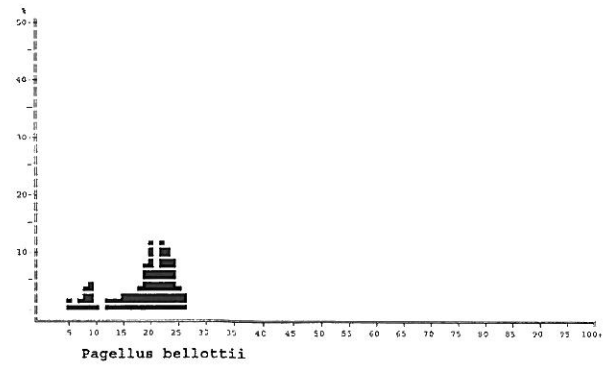
Pooled sample ( weighted by catch).  
 MEAN LENGTH = 17.18cm N= 7286  
 NUMBER OF SUBSAMPLES = 33  
 SAMPLES FOUND BETWEEN ST. NO 3983 AND 4083  
 SAMPLES SEARCHED BETWEEN ST. NO 3975 AND 4085



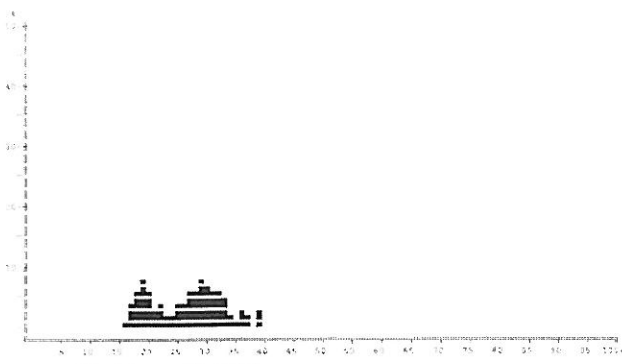
Pooled sample ( weighted by catch).  
 MEAN LENGTH = 21.98cm N= 2575  
 NUMBER OF SUBSAMPLES = 70  
 SAMPLES FOUND BETWEEN ST. NO 3927 AND 4083  
 SAMPLES SEARCHED BETWEEN ST. NO 3925 AND 4085



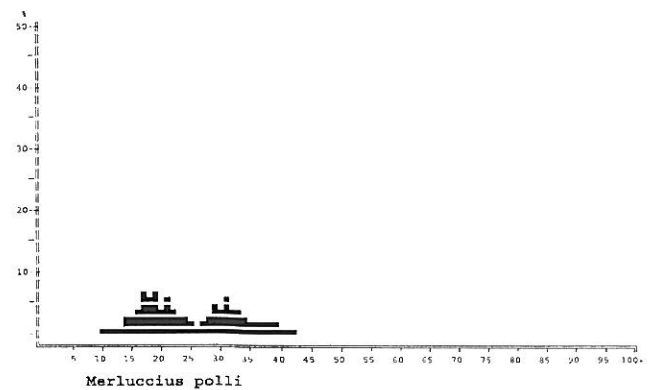
Pooled sample ( weighted by catch).  
 MEAN LENGTH = 21.55cm N= 305  
 NUMBER OF SUBSAMPLES = 24  
 SAMPLES FOUND BETWEEN ST. NO 3927 AND 4072  
 SAMPLES SEARCHED BETWEEN ST. NO 3925 AND 4085



Pooled sample ( weighted by catch).  
 MEAN LENGTH = 19.16cm N= 1412  
 NUMBER OF SUBSAMPLES = 69  
 SAMPLES FOUND BETWEEN ST. NO 3927 AND 4084  
 SAMPLES SEARCHED BETWEEN ST. NO 3925 AND 4085



Pooled sample ( weighted by catch).  
 MEAN LENGTH = 27.19cm N= 1479  
 NUMBER OF SUBSAMPLES = 40  
 SAMPLES FOUND BETWEEN ST. NO 3927 AND 4082  
 SAMPLES SEARCHED BETWEEN ST. NO 3925 AND 4085



Pooled sample ( weighted by catch).  
 MEAN LENGTH = 26.68cm N= 1692  
 NUMBER OF SUBSAMPLES = 49  
 SAMPLES FOUND BETWEEN ST. NO 3925 AND 4085  
 SAMPLES SEARCHED BETWEEN ST. NO 3925 AND 4085

## ANNEX III. Swept area estimates.

SWEPT AREA ANALYSIS FROM STATION 3897 TO STATION 3924

A. Cunene - Tombua shelf

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES					% inci- dence	Mean dens. t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>				
	Lower limits, Kg/nm							20- 50m	50-100m	100-200m	200-200m	
	>0	10	30	100	300	1000						
<i>Sardinella aurita</i>	3		1			3	35	173.77	305.75	205.87		
<i>Trachurus trecae</i>	2		1	4	4	7	90	69.96	58.53	108.51	55.47	
<i>Trachurus capensis</i>			4			3	35	33.71	1.04	0.82	94.55	
<i>Sardinops ocellatus</i>						2	10	16.58	41.44			
<i>Dentex macrophthalmus</i>	3	2	2	5		1	65	6.37	0.28	1.67	16.69	
<i>Engraulis encrasicolus</i>	1		2	2		1	30	4.21	9.60	1.46		
<i>Etrumeus whiteheadi</i>	5	1	2			1	45	3.89	9.20	0.75	0.08	
ECHENEIDIDAE	2			1		1	15	2.81	7.00	0.02		
<i>Callorhynchus capensis</i>	2					1	15	2.22	5.56			
<i>Merluccius capensis</i>	2		7				45	1.64	0.02	2.84	2.64	
HOLOUTURIDAE	1			2			15	1.47	0.07		4.13	
<i>Scomber japonicus</i>	2			1			15	1.31			3.73	
<i>Myliobatis aquila</i>		2		1			15	1.31	3.27			
B I V A L V E S		1		1			10	1.12		4.46		
<i>Dicologlossa cuneata</i>	10	3	2				70	1.00	1.46	1.14	0.38	
<i>Sepia orbignyana</i>	5		2				35	0.74	1.71	0.12	0.07	
MISCELLANEOUS	1	1	2				20	0.69	1.02		0.81	
<i>Pterothrissus belloci</i>	6	2	1				45	0.39		0.03	1.10	
<i>Mustelus mustelus</i>	1		1				10	0.35	0.88			
<i>Atractoscion aequidens</i>	7	4					55	0.33	0.05	0.28	0.69	
<i>Chelidonichthys capensis</i>	2	1	1				20	0.31		0.03	0.87	
<i>Lagocephalus laevigatus</i>	4		1				25	0.27	0.67			
<i>Merluccius polli</i>		1	1				10	0.27			0.76	
<i>Trigla lyra</i>	9	1					50	0.24	0.06	0.38	0.34	
<i>Zeus faber</i>	6	1					35	0.23	0.01	0.22	0.49	
<i>Sepia officinalis hierredda</i>	4	1					25	0.14	0.29	0.09		
<i>Pagellus bellottii</i>	2	1					15	0.14	0.32	0.04		
<i>Lithognathus mormyrus</i>	2	1					15	0.14	0.36			
<i>Umbrina canariensis</i>	3	1					20	0.13	0.05	0.10	0.24	
<i>Raja miraletus</i>	4	1					25	0.13	0.18	0.01	0.16	
<i>Arius parkii</i>	2	1					15	0.12	0.30			
G A S T R O P O D S	2	1					15	0.11		0.04	0.29	
<i>Paromola cuvieri</i>		1					5	0.10	0.26			
<i>Squalus megalops</i>	5	1					30	0.09		0.02	0.24	
<i>Argyrosomus hololepidotus</i>	2						5	0.08	0.19			
<i>Pomadourys incisus</i>		1					5	0.08	0.19			
<i>Octopus vulgaris</i>	4						20	0.07	0.03	0.17	0.06	
<i>Illex coindetii</i>	5						25	0.06		0.02	0.14	
C R A B S	5						25	0.06	0.14	0.02		
<i>Synagrops microlepis</i>	1	1					10	0.06			0.17	
<i>Uranoscopus sp.</i>	1						5	0.05			0.13	
<i>Loligo vulgaris</i>	5						25	0.05	0.11			
<i>Etmopterus pusillus</i>	1	1					10	0.05	0.14			
<i>Brotula barbata</i>	5						25	0.05		0.02	0.14	
Sea urchins (strong spines)	1						5	0.05	0.12			
Other fish								0.43	0.32	0.45	0.47	
Sum all species								327.38	450.62	329.58	184.84	
Sum Snappers												
Sum Groupers												
Sum Grunts								0.08	0.19			
Sum Croakers								0.54	0.29	0.38	0.93	
Sum Seabreams								6.68	0.98	1.76	16.69	
Sum Sharks								2.78	6.58	0.18	0.32	
Sum Rays								1.46	3.49	0.01	0.16	
Sum Squids								1.09	2.14	0.50	0.28	
Sum												

Number of stations included in analysis, total and by depth strata

20                    8                    5                    7

SWEPT AREA ANALYSIS FROM STATION 3897 TO STATION 3924

B. Cunene - Tombua slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES					% inci- dence	Mean dens. t/nm <sup>3</sup>	Mean densities by bottom depth strata t/nm <sup>3</sup>			
	Lower limits, Kg/nm							200-300m	300-400m	400-500m	500-500m
	>0	10	30	100	300	1000					
<b>HOLOUTURIDAE</b>											
Merluccius capensis	1				1		50	21.19	1.04	41.33	
Pontinus accraensis						1	50	17.05	33.41	0.69	
Chlorophthalmus atlanticus					1		50	7.50		15.00	
Laemonema laureysi	1				1		100	6.38	11.08	1.67	
			1				50	2.60		5.20	
<b>SCORPAENIDAE</b>											
Zenopsis conchifer						1	50	0.76	1.53		
Trachurus capensis	1	1					50	0.64	1.06	0.22	
<b>G A S T R O P O D S</b>											
Pterothrissus bellocci	1						100	0.54	0.54	0.53	
								0.37	0.73		
Callinectes amnicola	1						50	0.31	0.62		
Trigla lyra	1							0.29	0.58		
Dicologlossa cuneata	1							0.18	0.36		
Coelorinchus denticulatus	1							0.15	0.30		
Trachyrincus scabrus	1							0.14	0.27		
Synagrops microlepis	1						50	0.14	0.28		
Parapenaeopsis atlantica, male	1							0.10	0.19		
Parapenaeopsis atlantica, fem.	1							0.09	0.18		
Nematocarcinus africanus	1							0.09	0.18		
Raja alba	1						50	0.08		0.16	
Other fish								0.07	0.07	0.09	
Sum all species								59.36	53.81	64.89	
Sum Snappers											
Sum Groupers											
Sum Grunts											
Sum Croakers											
Sum Seabreams											
Sum Sharks								0.02	0.04		
Sum Rays								0.08		0.16	
Sum Squids											
Sum											

Number of stations included in analysis, total and by depth strata

2 1 1

SWEPT AREA ANALYSIS FROM STATION 3897 TO STATION 3924

C. Cunene - Tombua slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES						% inci- dence	Mean dens. t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>			
	Lower limits, Kg/nm								500-600m	600-700m	700-800m	800-800m
	>0	10	30	100	300	1000						
Trachyrincus scabrus			1	1	1		100	24.32		30.53	11.89	
Nezumia micronychodon				1	1		67	15.22		7.79	30.07	
Nezumia aequalis			1					2.79		4.19		
HOLOUTURIDAE		1	1				33	2.76		0.89	6.48	
Hoplostethus cadenati	2		1				100	1.73		2.32	0.54	
ALEPOCEPHALUS ROSFRATUS	2		1				100	1.36		1.89	0.32	
Todarodes sagittatus			1					1.14			3.42	
Ebinania costaecanarie	1	2					100	1.09		0.75	1.75	
Lophius vaillanti	1	1					67	0.63		0.32	1.25	
Raja confundens	1	1					67	0.57		0.13	1.47	
Hymenocephalus sp.		1						0.53		0.80		
Pontinus accraensis		1						0.48		0.72		
Illex coindetii		1					33	0.40			1.19	
Guentherus altivelis		1						0.40		0.60		
Chaceon maritae, male	3						100	0.38		0.38	0.37	
Yarrella blackfordi	3						100	0.28		0.38	0.07	
Todaropsis eblanae	2						67	0.25		0.38		
Merluccius capensis	1							0.22		0.33		
Centrophorus granulosus	2						33	0.20		0.30		
Paromola cuvieri	1							0.18		0.27		
Merluccius paradoxus	1						33	0.17			0.52	
Bathyrcongus vicinus	3						100	0.17		0.10	0.29	
Opisthoteuthis agassizi	1						33	0.16		0.23		
Centroscymnus crepidater	1						33	0.16			0.47	
Lamprogrammus exutus	3						67	0.15		0.20	0.06	
Octopus sp.	2						67	0.11		0.03	0.27	
Centrophorus squamosus	1						33	0.11			0.32	
Merluccius polli	1							0.09		0.14		
Chaceon maritae, female	2						67	0.09		0.06	0.15	
Phrynichthys wedli	1						33	0.08			0.25	
Etmopterus pusillus	3						100	0.07		0.09	0.03	
Heterocarpus grimaldii	2						67	0.05		0.01	0.12	
Nematocarcinus africanus	1							0.02		0.03		
Aristeus varidens, female	1							0.02		0.03		
Aristeus varidens, male	1						33					
Other fish								0.10		0.12	0.01	
Sum all species								56.48		54.01	61.31	
Sum Snappers												
Sum Groupers												
Sum Grunts												
Sum Croakers												
Sum Seabreams												
Sum Sharks								0.95		1.00	0.82	
Sum Rays								0.57		0.13	1.47	
Sum Squids								2.06		0.64	4.88	
Sum												
0.07												

Number of stations included in analysis, total and by depth strata

3

2

1

SWEPT AREA ANALYSIS FROM STATION 3925 TO STATION 3999

A. Benguela - Luanda Shelf

SPECIES NAME	SAMPLE DISTRIB BY CATCH CLASSES						% inci- dence	Mean dens. t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>			
	Lower limits, Kg/nm								20- 50m	50-100m	100-200m	200-200m
	>0	10	30	100	300	1000						
Brachydeuterus auritus	13	6	7	3	2	1	64	7.70	2.48	5.42	15.47	
Synagrops microlepis	3	1	5	1	1		22	2.60	0.01		8.12	
Trachurus trecae	11	7	9	3			60	2.25	0.96	3.91	1.65	
Brotula barbata	18	4	1		1		48	2.10		0.14	6.41	
Trichiurus lepturus	16	7	6	2			60	1.45	0.06	0.92	3.42	
Umbrina canariensis	13	6	3	1			46	0.97	0.03	1.02	1.86	
Pomadasya incisus	7	2	1	2			24	0.83	0.98	1.42		
Dentex macrophthalmus	8	4	5				34	0.63		0.37	1.54	
Pagellus bellottii	26	4	3				66	0.61	0.18	1.41	0.15	
Sardinella aurita	11	2	2	1			32	0.55	1.19	0.31	0.17	
Lampanyctodes hectoris				1			2	0.54			1.69	
Raja miraletus	37	4	2				86	0.52	0.49	0.81	0.23	
Lithognathus mormyrus	9	1	1	1			24	0.50	0.07	1.34		
Dentex angolensis	18	7	2				54	0.44		0.17	1.19	
Selene dorsalis	16	2		1			38	0.42	0.09	0.99	0.12	
Chloroscombrus chrysurus	9			1			20	0.39	1.19	0.02		
Pseudupeneus prayensis	14	2	2				36	0.32	0.66	0.30		
Zeus faber	24	2	1				54	0.31		0.25	0.68	
Dentex barnardi	24	5					58	0.29	0.18	0.49	0.18	
Sphyræna quachancho	11	3	1				30	0.23	0.30	0.37	0.01	
Citharus linguatula	42	3					90	0.23	0.09	0.43	0.13	
Pterothrissus belloci	9	2	1				24	0.23		0.01	0.70	
Sepia orbignyana	29	2	1				64	0.20	0.32	0.26	0.02	
Galeoides decadactylus	5	4	1				20	0.19	0.52	0.07		
Boops boops	16	1	1				34	0.17		0.09	0.43	
Chelidonichthys gabonensis	2		1				6	0.16		0.04	0.44	
Lagocephalus laevigatus	27	1					56	0.15	0.32	0.06	0.09	
Stromateus fiatola	5	2					14	0.12		0.04	0.32	
Alloteuthis africana	23						46	0.11	0.10	0.18	0.04	
Pomadasya jubelini	5	1	1				14	0.11	0.02	0.29		
Rhinobatos albomaculatus	12	1					26	0.10	0.16	0.13		
Bembrops heterurus	8	1					18	0.09			0.26	
Zenopsis conchifer	3	2					10	0.08			0.26	
Squatina oculata	6	1					14	0.08		0.19	0.05	
Epinephelus aeneus	9	1					20	0.08	0.07	0.17		
Torpedo torpedo	20	1					42	0.08	0.02	0.08	0.14	
Sardinella maderensis	12	1					26	0.08	0.20	0.03		
Trigla lyra	16						32	0.07		0.10	0.11	
Pagrus caeruleostictus	9	1					20	0.06	0.14		0.03	
Atractoscion aequidens	9						18	0.06	0.02	0.14	0.02	
Alectis alexandrinus	7	1					16	0.06	0.19	0.01		
Uranoscopus sp.		1					2	0.05			0.16	
Pomadasya rogeri	4	1					10	0.05	0.04	0.11		
Fistularia petimba	12	1					26	0.05	0.01	0.11	0.03	
Decapterus punctatus	2	1					6	0.05	0.13	0.01		
Parapenaeus longirostris, fem.	7						14	0.03			0.09	
Parapenaeus longirostris, male	6						12	0.01			0.03	
Penaeus notialis, female	1						2					
Penaeus notialis	1						2					
Chlorotocus crassicornis	1						2			0.01		
S H R I M P S	1						2					
Other fish								1.21	1.52	1.14	1.06	
Sum all species								27.61	12.74	23.36	47.30	
Sum Snappers								0.01	0.01			
Sum Groupers								0.11	0.14			
Sum Grunts								8.70	3.57	7.26	15.47	
Sum Croakers								1.11	0.19	1.23	1.89	
Sum Seabreams								2.74	0.58	3.88	3.60	
Sum Sharks								0.11	0.03	0.20	0.10	
Sum Rays								0.81	0.84	1.13	0.48	
Sum Squids								0.11	0.43	0.63	0.15	

Number of stations included in analysis, total and by depth strata 50 16 18 16

SWEPT AREA ANALYSIS FROM STATION 3925 TO STATION 3999

B. Benguela - Luanda. Slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES					t incidence	Mean dens. t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>			
	Lower limits, Kg/nm							200-300m	300-400m	400-500m	500-500m
	>0	10	30	100	300	1000					
Merluccius polli	3	3	2	4			92	6.98	6.39	10.12	1.30
Chlorophthalmus atlanticus	4	1	2	1			67	3.74	4.25	5.35	
Nematocarcinus africanus	1	2	5	1			75	3.65		4.79	5.02
Synagrops microlepis	3	2		2			58	2.55	9.20	0.51	
Dentex macrophthalmus	2			1			25	1.31	5.25		
Zenopsis conchifer	3	1		1			42	1.21	4.67	0.08	
Yarella blackfordi	1	1	1				25	0.86			3.45
Chaunax pictus	5		1				50	0.85		1.54	0.31
Parapenaeus longirostris, fem.	4	1	1				50	0.69	2.50	0.13	
Hymenocephalus italicus	3	1	1				42	0.60		1.20	0.01
Gadella sp.			3				25	0.53		1.06	
Hypopleuron caninum *				1			8	0.48		0.95	
Trichurus lepturus	4	2					42	0.35	1.11	0.14	
Trachurus trecae				1			8	0.30		0.60	
MYCTOPHIDAE	3						75	0.24	0.08	0.44	0.01
Hoplostethus cadenati			2				17	0.21			0.85
Laemonema laureysi	2	1					25	0.20		0.33	0.14
Pterothrissus belloci	4	1					42	0.20	0.71	0.05	
Lophius vaillanti	5	1					50	0.18	0.01	0.35	
Dentex angolensis			1				8	0.17	0.70		
Illex coindetii	2	1					17	0.16	0.13		0.49
Parapenaeus longirostris, male	3	1					33	0.16	0.65	0.01	
Ariomma bondi	1	1					17	0.16		0.33	
Todaropsis eblanae	5						42	0.14	0.24	0.15	
Etmopterus polli	3						25	0.14		0.26	0.01
GEMPYLIDAE			1				8	0.14			0.56
Gadella maraldi	1	1					17	0.13		0.24	0.03
Scorpaena normani			1				8	0.12		0.24	
Aristeus varidens, female	6						50	0.10		0.02	0.38
Malacocephalus laevis	3						25	0.09		0.19	
Centrophorus granulosus	1						8	0.08		0.15	
Aristeus varidens, male	7						58	0.07		0.04	0.20
Coelorinchus coelorhincus	7						58	0.07	0.13	0.07	0.01
Triplophos hemingi	3						25	0.07			0.29
Raja miraletus	1							0.06	0.22		
Gephyroberyx darwini	5						42	0.05	0.11	0.04	
Bembrops heterurus	2						17	0.05	0.20		
Malacocephalus occidentalis	2						17	0.05		0.09	
Coelorinchus sp.	1						8	0.05		0.11	
Plesionika martia	1						8	0.03		0.07	
Plesionika sp.	1						8	0.02			0.06
Solenocera africana	1						8	0.01		0.01	
Plesiopenaeus edwardsianus	2						17	0.01			0.04
S H R I M P S	1						8	0.01			0.05
Parapandalus narval	1						8				
Heterocarpus ensifer	1						8				0.01
Other fish								0.63	0.38	0.43	1.27
Sum all species								27.90	36.93	30.09	14.49
Sum Snappers											
Sum Groupers											
Sum Grunts											
Sum Croakers											
Sum Seabraema								1.48	5.95		
Sum Sharks								0.26	0.01	0.41	0.19
Sum Rays								0.06	0.22		
Sum Squids								0.36	0.37	0.17	0.69
Sum											
5.07											

Number of stations included in analysis, total and by depth strata

12

3

6

3



SWEPT AREA ANALYSIS FROM STATION 3925 TO STATION 3999

C. Benguela - Luanda. Slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES					% inci- dence	Mean dens. t/nm <sup>3</sup>	Mean densities by bottom depth strata t/nm <sup>3</sup>			
	Lower limits, Kg/nm							500-600m	600-700m	700-800m	800-800m
	>0	10	30	100	300	1000					
Hoplostethus cadenati	7	2	1	1			92	2.84	6.23	2.20	0.10
Nematocarcinus africanus	4	3	4				92	1.97	3.11	2.61	0.19
Yarrella blackfordi	3	5	3				92	1.83	1.49	2.50	1.48
Benthodesmus tenuis	5		1				50	0.42	1.11	0.15	
HOLOUTURIDAE	2		1				25	0.37			1.10
Triplophos hemingi	10						83	0.34	0.61	0.41	0.01
STOMIIDAE	6	2					67	0.31	0.38	0.47	0.09
Lamprogrammus exutus	11						92	0.25	0.19	0.26	0.31
CENTROLOPHIDAE			1				8	0.22		0.66	
Chaceon maritae, female	10						83	0.21	0.22	0.33	0.08
C R U S T A C E A N S	2	1					25	0.19		0.52	0.06
Arionma sp.			1				8	0.19		0.57	
Merluccius polli	7	1					67	0.15	0.28	0.10	0.07
Nezumia sp.	6						50	0.14	0.06	0.08	0.28
Nezumia aequalis	2	1					25	0.13		0.03	0.35
Chaceon maritae, male	9						75	0.12	0.09	0.19	0.06
Aristeus varidens, female	10						83	0.09	0.13	0.08	0.06
MELANOSTOMIATIDAE	4						33	0.09	0.06	0.17	0.04
Todaropsis eblanae	4						33	0.07	0.02	0.15	0.03
Scyllarides sp.	2						17	0.07			0.21
ALEPOCEPHALUS ROSFRATUS	4						25	0.07		0.02	0.18
Nezumia micronychodon	2						17	0.06		0.07	0.12
Scyllarides herklotsii	4						33	0.06	0.08	0.05	0.05
OPISTHOTEUTHIDAE	2						17	0.05			0.14
Aristeus varidens, male	10						83	0.05	0.07	0.04	0.04
Centrophorus uyato	3						25	0.05	0.07	0.04	0.06
Laemonema laureysi	6						50	0.05	0.10	0.02	0.01
Gadella maraldi	3						25	0.05	0.15		0.01
Bathyroconger vicinus	8						67	0.05	0.05	0.01	0.09
Parapandalus narval	4						33	0.04		0.10	
Heterocarpus ensifer	3						25	0.01	0.01	0.01	
Plesiopeneaeus edwardsianus	3						25	0.01	0.01		0.01
S H R I M P S	2						17	0.01	0.01		0.01
Glyphus marsupialis	3						25				0.01
Plesionika sp.	1						8		0.01		
Heterocarpus sp.	1						8				
Other fish								0.80	0.55	0.85	1.18
Sum all species								11.36	15.09	12.69	6.43
Sum Snappers											
Sum Groupers											
Sum Grunts											
Sum Croakers											
Sum Seabreams											
Sum Sharks								0.14	0.14	0.14	0.17
Sum Rays								0.03		0.02	0.09
Sum Squids								0.17	0.04	0.26	0.26
Sum											
2.84											

Number of stations included in analysis, total and by depth strata

12 4 4 4





SWEPT AREA ANALYSIS FROM STATION 4000 TO STATION 4085

C. Luanda - Congo River. Slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES					% inci- dence	Mean dens. t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>			
	Lower limits, Kg/nm							500-600m	600-700m	700-800m	800-800m
	>0	10	30	100	300	1000					
Nematocarcinus africanus	1		10	1			80	4.82	7.87	5.40	2.75
Yarella blackfordi	5	5	3	2			100	3.56	1.67	5.45	3.57
Hoplostethus cadenati	5	6	3				93	1.44	1.46	1.47	1.41
Lamprogrammus exutus	7	5	1				87	1.18	0.81	1.24	1.36
HOLOUTURIDAE						2	13	1.13			2.43
Merluccius polli	10	1	1				80	0.60	0.62	1.06	0.33
Nezumia sp.	3	3					40	0.46	0.01	0.25	0.84
Triplophos hemingi	12	1					87	0.40	0.67	0.39	0.25
Chaceon maritae, male	12	1					87	0.32	0.37	0.47	0.22
Scyllarides sp.	6	1					47	0.28	0.35	0.18	0.31
C R U S T A C E A N S						2	33	0.28	0.04	0.25	0.43
Bathuroconger vicinus	14						93	0.22	0.06	0.15	0.36
Benthodesmus tenuis	8						53	0.21	0.53	0.22	0.02
Nezumia aequalis	2	2					27	0.21		0.08	0.40
Stereomastis sp.	2	1					20	0.17		0.12	0.29
STOMIIDAE							80	0.16	0.29	0.12	0.12
Hoplostethus sp.			1				7	0.15		0.56	
Xenodermichthys copei	8						53	0.15	0.10	0.35	0.07
Aristeus varidens, female	14						93	0.14	0.25	0.12	0.09
Chaceon maritae, female	10						67	0.12	0.11	0.25	0.06
Laemonema laureysi	7						47	0.11	0.02	0.04	0.21
Gadella imberbis	6						40	0.11	0.02	0.28	0.06
ALEPOCEPHALUS ROSFRATUS							33	0.10		0.15	0.13
Lophius vaillanti	6						40	0.09		0.04	0.16
OPHIDIIDAE						5	27	0.08	0.02	0.12	0.10
Halosaurus ovenii	7						47	0.06	0.06	0.03	0.08
Ommastrephes pteropus	2						13	0.05	0.12	0.06	
Aristeus varidens, male	10						67	0.05	0.06	0.10	
Dibranchius atlanticus	11						73	0.05	0.04	0.04	0.06
Glyphus marsupialis	5						33	0.01	0.01		0.02
Plesiopenaeus edwardsianus	3						20	0.01	0.02	0.01	
S H R I M P S							13	0.01			0.03
Sicyonia galeata	1						7				
Nematopalaemon hastatus	1						7				
Parapandalus narval	2						13				
Other fish								0.66	0.80	0.46	0.77
Sum all species								17.39	16.38	19.46	16.93
Sum Snappers											
Sum Groupers											
Sum Grunts											
Sum Croakers											
Sum Seabreams											
Sum Sharks								0.11	0.11	0.14	0.09
Sum Rays								0.03		0.02	0.05
Sum Squids								0.15	0.26	0.08	0.13
Sum											
5.63											

Number of stations included in analysis, total and by depth strata

15

4

4

7

## ANNEX IV Equations

### 1. Biomass estimates

The stratified estimator of mean density in the entire area is calculated as (Cochran, 1977)

$$\bar{y}_{st} = \sum_{i=1}^L W_i \bar{y}_i, \quad (1)$$

where

$L$  is the number of strata,

$W_i = \frac{area_i}{total\ area}$  is the proportion of the  $i^{\text{th}}$  stratum of the total survey area,

$\bar{y}_i = \frac{\sum_{k=1}^{n_i} y_{i,k}}{n_i}$  is the average density in the  $i^{\text{th}}$  stratum

$y_{i,k}$  is the density [tonnes/NM<sup>2</sup>] by the  $k^{\text{th}}$  tow in stratum  $i$

$n_i$  is the number of tows in the  $i^{\text{th}}$  stratum.

The total biomass in the area is calculated by

$$B = \bar{y}_{st} \cdot total\ area \quad (2)$$

The estimated variance of the biomass (var(biomass)) was calculated by:

$$\text{var}(biomass) = \left( \sum \frac{W_i^2 s_i^2}{n_i} \right) A^2 \quad (3)$$

where

$$s_i^2 = \frac{\sum_{k=1}^{n_i} (y_{i,k} - \bar{y}_i)^2}{n_i - 1}, \text{ and } A \text{ is total area}$$

The standard error (SE) of the stratified mean was calculated as (Cochran 1977):

$$SE = \sqrt{\text{var}(biomass)} \quad (4)$$

The precision for the estimates (CV) was calculated by (Zar 1999<sup>1</sup>):

$$CV = \frac{SE}{biomass} \quad (5)$$

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<sup>2</sup>, 1977)

$$biomass \pm t_{(n-1)}SE \quad (6)$$

where  $t$  is from Students t-table with (n-1) degrees of freedom and  $\alpha = 0.025$ .

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<sup>1</sup> Zar JH, 1999, Biostatistical analysis. Prentice Hall, New Jersey, 4. ed., 663 pp.

<sup>2</sup> Cochran, W.G.1977. Sampling Techniques, 3<sup>rd</sup> ed. John Wiley and Sons, N.Y. 228 pp.

## ANNEX V Species codes

### 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	<i>P.longirostris</i>	<i>A.varidens</i>	<i>N.africanus</i>
	SPADE00	MERME03	SHRPE31	SHRAR22	SHRNE21
	SPADI00	MERME04	SHRPEP1	SHRARA1	
	SPALI00	MERME12	SHRPEP2	SHRARA2	
	SPAPA00	MERME13			
	SPAPR00	MERME92			
	SPASA00				
	SPASP00				
DEEP 2	Hake	Ommastrephidae	Sepiidae	<i>A.varidens</i>	<i>P.longirostris</i>
	MERME03	SQUOM21	SQUSE10	SHRAR22	SHRPE31
	MERME12	SQUOM31	SQUSE11	SHRARA1	SHRPEP1
	MERME13	SQUOM51	SQUSE12	SHRARA2	SHRPEP2
	MERME92		SQUSE13		
		SQUSE15			

## ANNEX VI. Catch rates

Families included under each group:

Demersal: Sciaenidae, Sparidae, Pomadasyidae, Ariidae, Serranidae, Lutjanidae, Merlucciidae, Ophidiidae, Lethrinidae.

Pelagic: Scombridae, Sphyrnidae, Trichiuridae, Clupeidae, Engraulidae, Carangidae.

Cephalopods: squids and octopuses.

Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls on the shelf. Southern region. A: Inner shelf (20-70 m), B: Outer shelf (71-200 m), C: Slope (201-800 m).

### A. Inner shelf (20-70 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3903	42	10.2	1 631.5		38.1		91.6	1 771.5
3904	27	97.8	35 588.0			4.2	391.8	36 081.8
3905	24	117.6	61 643.4				142.8	61 903.8
3910	61		61 416.3				2.1	61 418.4
3911	36	16.4	1 709.6		11.6	1 334.7	808.8	3 881.2
3912	22	57.2	42.9		194.0	16.5	73.2	383.8
3913	25		1 898.7		51.6	34.2	260.3	2 244.9
3922	49	73.4	4 879.7		251.8		363.4	5 568.3
3924	36	85.4	121.0		6.7	198.9	1 544.2	1 956.2
MEAN	35.8	50.9	18 770.1		61.5	176.5	408.7	19 467.8
SD		45.3	26 694.0		94.4	439.0	490.3	26 347.4
%CATCH		0.3	96.4		0.3	0.9	2.1	

### B. Outer shelf (71-200 m)

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3899	179	203.7	240.4		20.9	14.7	619.6	1 099.2
3900	147	499.4	103.3		2.6	1.4	236.1	842.9
3901	131	716.0	4 091.7			0.8	89.7	4 898.2
3902	85	128.1	1 276.8		0.7		75.1	1 480.7
3907	135	818.8	3 696.0		4.7		598.3	5 117.8
3908	114	628.2	10 565.8		11.7		65.6	11 271.3
3909	94	292.3	555.7		44.8		935.3	1 828.0
3914	95	339.8	7 992.0		33.6	2.8	96.5	8 464.8
3917	126	695.4	4 291.5		5.0	50.2	135.9	5 178.0
3918	118	588.0	3 293.8		4.2	1.8	164.8	4 052.6
3923	73	68.5	1 468.3		6.5	23.9	60.9	1 628.1
MEAN	117.9	452.6	3 415.9		12.3	8.7	279.8	4 169.2
SD		258.3	3 331.5		14.8	15.8	298.0	3 331.8
%CATCH		10.9	81.9		0.3	0.2	6.7	



C. Slope (201-800 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3897	713	18.1		3.9	154.2	25.9	1 735.1	1 937.2
3898	289	982.9	31.3	16.1		1.1	551.2	1 582.7
3906	619	7.4		0.5	25.7	40.2	2 382.3	2 456.1
3915	349	22.9	7.3				2 111.4	2 141.5
3916	637	33.4		3.9	12.9	20.4	717.34	788.1
MEAN	521.4	213.0	7.7	4.9	38.6	17.5	1 499.5	1 781.1
SD		430.5	13.6	6.5	65.5	17.1	824.7	639.4
%CATCH		12.0	0.4	0.3	2.2	1.0	84.2	

Catch rates (kg/hour) by main demersal groups caught in valid swept area bottom trawl hauls on the shelf. Southern 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
3903	42	4.1					1 767.4	1 771.5
3904	27					22.2	36 059.6	36 081.8
3905	24	71.4			46.2		61 786.2	61 903.8
3910	61						61 418.4	61 418.4
3911	36					12.6	3 868.7	3 881.2
3912	22	18.7				36.1	329.1	383.8
3913	25						2 244.8	2 244.8
3922	49	73.4					5 494.9	5 568.3
3924	36	75.4				6.2	1 874.6	1 956.2
MEAN	35.8	27.0			5.1	8.6	19 427.1	19 467.8
SD		35.3			15.4	12.9	26 339.8	26 347.4
%CATCH		0.1					99.8	

B. Outer shelf (71-200 m).

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3899	179	90.0				3.6	1 005.6	1 099.2
3900	147	385.7				5.7	451.5	842.9
3901	131	460.0				4.8	4 433.4	4 898.2
3902	85	10.8					1 469.9	1 480.7
3907	135	648.4				41.9	4 427.5	5 117.8
3908	114	603.0					10 668.3	11 271.3
3909	94	70.4				1.2	1 760.5	1 832.0
3914	95	177.1				15.8	8 271.8	8 464.8
3917	126	538.3				57.7	4 582.1	5 178.0
3918	118	478.0				84.0	3 490.6	4 052.6
3923	73	19.0				42.0	1 567.1	1 628.1
MEAN	117.9	316.4				23.3	3 829.8	4 169.6
SD		246.2				28.7	3 197.8	3 331.5
%CATCH		7.6				0.6	91.9	

Catch rates (kg/hour) by main pelagic groups caught in valid swept area bottom trawl hauls on the shelf. Southern 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
3903	42	1 073.9	557.1		0.5		140.0	1 771.5
3904	27	29 281.1	6 293.8		13.1		493.8	36 081.8
3905	24	61 114.2	529.2				260.4	61 903.8
3910	61	52 191.6	9 224.7				2.1	61 418.4
3911	36	520.6	1 189.1				2 171.6	3 881.2
3912	22	25.4	17.0	0.5			340.9	383.8
3913	25	110.6	1 788.2				346.1	2 244.8
3922	49		4 879.7				688.6	5 568.3
3924	36	1.9	119.1				1 835.2	1 956.2
MEAN	35.8	16 035.5	2 733.1	0.1	1.5		697.6	19 467.8
SD		25 008.8	3 288.4	0.2	4.4		770.1	26 347.4
%CATCH		82.4	14.0				3.6	

B. Outer shelf (71-200 m).

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
3899	179		228.5	11.9			858.9	1 099.2
3900	147	1.0	102.3				739.6	842.9
3901	131		4 091.7				806.5	4 898.2
3902	85		1 276.8				203.8	1 480.7
3907	135		3 696.0				1 421.8	5 117.8
3908	114		10 088.8	477.0			705.5	11 271.3
3909	94		555.7				1 276.4	1 832.0
3914	95		7 992.0				472.8	8 464.8
3917	126	6.0	4 285.6				886.5	5 178.0
3918	118	9.2	3 284.6				758.8	4 052.6
3923	73	9.9	1 458.4				159.8	1 628.1
MEAN	117.9	2.4	3 369.1	44.4			753.7	4 169.6
SD		4.0	3 232.4	143.5			385.7	3 331.5
%CATCH		0.1	80.8	1.1			18.1	

Catch rates (kg/hour) by main deep-water groups caught in valid swept area bottom trawl hauls on the shelf. Southern region. Slope (201-800 m).

Slope (201-800 m)

Station	Depth	Seabreams	Hake	<i>P.longirostris</i>	<i>A.varidens</i>	<i>N.africana</i>	Other	Total
3897	713		16.3				1 920.9	1 937.2
3898	289		982.9			5.2	594.6	1 582.7
3906	619						2 456.1	2 456.1
3915	349		22.9				2 118.6	2 141.5
3916	637		28.8		1.8	1.7	755.3	787.6
MEAN	521.4		210.2		0.4	1.4	1 569.1	1 781.0
SD			432.1		0.8	2.2	840.3	639.6
%CATCH			11.8			0.1	88.1	

Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls on the shelf. Central region. A: Inner shelf (20-70 m), B: Outer shelf (71-200 m), C: Slope (201-800 m).

A. Inner shells (20-70 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3929	70	694.8	166.4		27.3		126.9	1 015.4
3933	47	940.7	451.2	0.3	6.3		154.0	1 552.5
3934	56	1 920.0	406.5		26.1		187.0	2 539.5
3945	63	1 039.5	63.4		29.5		192.6	1 325.0
3946	28	11.4	44.7		12.0		26.2	94.3
3949	57	76.0	141.0		19.0		62.2	298.2
3950	41	67.7	48.6		17.7		235.4	369.4
3951	28		444.0		3.2		19.1	466.2
3952	22	289.7	319.3				228.8	837.8
3960	54	35.4	0.7		31.0		216.4	283.4
3961	31	274.4	90.5		15.7	16.0	186.2	582.7
3962	31	241.3	53.0		0.4		41.4	336.0
3963	47	287.3	808.4		109.2		289.9	1 494.8
3972	49	39.7	10.9		11.8		64.1	126.4
3973	31	1.0		0.1	4.7		35.7	41.5
3974	34	9.1	4.1		2.8		27.4	43.5
3975	47	18.5	14.1		14.7		68.7	116.1
3979	67	114.2	0.7		16.4		52.2	183.5
3980	32	2.7	12.6		2.6		16.2	34.0
3981	60	26.1	16.2		5.7		109.1	157.0
3988	30	3.0	23.4		15.8		31.4	73.5
3989	25	83.9	0.2				181.2	265.3
3990	52	44.7	227.7		18.3	5.0	34.5	330.3
3999	24	1.3	38.4		0.6		5.2	45.5
MEAN	42.8	259.3	141.1	0.0	16.3	0.9	108.0	525.5
SD		459.6	204.9	0.1	22.1	3.4	86.7	633.1
%CATCH		49.3	26.8	0.0	3.1	0.2	20.5	

B. Outer shelf (71-200 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3927	112	199.6	4.1				57.3	261.1
3928	95	164.3	80.2		8.9		61.2	314.7
3930	108	491.4	247.5		2.6		69.6	811.1
3931	98	131.5	172.2		9.8		44.4	357.8
3932	73	759.5	264.7	2.7	33.9		119.5	1 180.3
3935	71	401.1	248.8		6.4		39.3	695.6
3936	102	324.7	6.4	0.4	3.1		70.4	404.9
3943	163	302.6	500.5	9.4	10.4	13.8	311.0	1 147.6
3944	110	146.8	18.5		9.2		41.6	216.2
3948	103	88.7	453.5				470.4	1 012.6
3953	80	62.9	413.9		22.4		31.5	530.6
3954	115	200.1	115.7	1.3			265.8	582.9
3955	145	861.0	38.8	8.3			3 555.8	4 463.9
3959	115	8 001.5	227.8				620.0	8 849.3
3964	91	179.7	105.5		26.1		62.2	373.4
3965	138	244.8	119.1		7.1	6.0	357.0	734.1
3970	129	48.3	311.9		2.0	12.5	40.0	414.8
3977	183	97.1	7.3	0.3	6.0	1.5	155.8	268.0
3978	94	23.1	434.2		17.7	62.0	86.4	623.4
3982	86	225.7	362.1		19.3	17.6	81.4	706.0
3983	105	1 867.9	147.2		22.0		46.6	2 083.8
3987	94	241.2	208.5		27.7	19.7	80.7	577.9
3991	115	44.2	163.6	2.9	2.9		120.9	334.5
3992	171	112.5	127.2	39.0	3.2	9.2	576.6	867.6
3997	117	13.5	159.2	0.8	6.5		102.6	282.5
3998	77	1 269.3	502.7		9.6		198.1	1 979.7
MEAN	111.2	634.7	209.3	2.5	9.9	5.5	294.9	1 156.7
SD		1 561.5	156.7	7.8	9.8	13.0	686.2	1 797.8
%CATCH		54.9	18.1	0.2	0.9	0.5	25.5	

C. Slope (201-800 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
3925	755	14.8		3.5	8.1	1.8	72.8	100.9
3926	751	18.1		10.5	16.6	1.0	83.9	130.1
3937	263	880.3	50.6	217.5	7.4		711.2	1 867.0
3938	465	7.6	0.0	146.7	58.0	14.2	369.9	596.5
3939	573	15.2	96.9	83.8		3.6	843.4	1 043.0
3940	659	14.1	5.5	32.2		4.0	281.9	337.7
3941	635	7.2		73.1	22.9		351.1	454.3
3942	343	44.8	106.4	49.8	10.1	19.5	511.6	742.2
3947	364	386.8		288.7		60.0	190.8	926.3
3956	515	3.6	22.3	92.6	2.8	2.0	101.4	224.7
3957	343	666.0		392.0	0.0	0.7	126.4	1 185.1
3958	223	207.1	1.0	59.6	24.7	0.9	648.4	941.7
3966	329	81.0	10.0	48.1			145.5	284.6
3967	491	5.7	2.8	209.9			92.5	311.0
3968	525		10.5	176.4		1.0	83.9	271.8
3969	356	602.3	5.1	105.4	19.9	0.7	333.6	1 067.0
3976	602	9.4	2.5	117.9	5.0	1.1	217.7	353.6
3984	302	41.0	9.6	35.3	0.7		1 072.4	1 159.0
3985	744	2.8		24.2	2.7	7.8	167.8	205.4
3986	611	12.1	9.6	121.0	2.9	10.5	216.6	372.6
3993	545	39.8		56.1	2.9	10.1	152.9	261.8
3994	732	17.0		0.1	1.7	8.5	298.4	325.7
3995	462	106.5	3.4	159.6	1.0	2.0	102.4	374.8
3996	254	76.5	52.9	16.8	2.4		495.1	643.7
MEAN	493.4	135.8	16.2	105.0	7.9	6.2	319.7	590.9
SD		243.3	30.0	97.2	13.1	12.6	267.9	438.3
%CATCH		23.0	2.7	17.8	1.3	1.1	54.1	

Catch rates (kg/hour) by main demersal groups caught in valid 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	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3929	70	402.4			8.1	165.2	439.6	1 015.4
3933	47	54.8		31.0	487.1	44.6	935.0	1 552.5
3934	56	384.3			637.6	86.7	1 430.9	2 539.5
3945	63	538.6		5.1	258.8	73.4	449.0	1 325.0
3946	28	3.7		1.0	3.8	0.2	85.5	94.3
3949	57	57.2		1.8	6.9	1.8	230.6	298.2
3950	41	44.6		11.3	10.4		303.0	369.4
3951	28						466.2	466.2
3952	22	57.1		4.7	17.3	10.1	748.6	837.8
3960	54	0.3		0.4	0.6	1.4	280.6	283.3
3961	31				1.6	26.2	555.0	582.7
3962	31			2.3			333.7	336.0
3963	47	40.9					1 454.2	1 495.1
3972	49	23.6		11.9	1.9		89.0	126.4
3973	31	0.7					40.8	41.5
3974	34	0.8		1.1	2.1	1.5	37.9	43.5
3975	47	0.9			6.2	3.7	105.2	116.0
3979	67	41.5		70.8		1.9	69.3	183.5
3980	32	1.0		1.7			31.3	34.0
3981	60	22.9		1.2			132.9	157.0
3988	30	1.0		2.0			75.5	78.5
3989	25	57.3	15.7	3.7	7.2		181.4	265.3
3990	52	8.5		21.3	2.2		298.2	330.3
3999	24	1.3					44.2	45.5
MEAN	42.8	72.6	0.7	7.1	60.5	17.4	367.4	525.7
SD		146.3	3.2	15.5	164.7	39.4	406.2	633.0
%CATCH		13.8	0.1	1.4	11.5	3.3	69.9	

B. Outer shelf (71-200 m).

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3927	112	176.5				23.1	61.4	261.1
3928	95	112.1				47.1	155.5	314.7
3930	108	160.0				280.8	370.3	811.1
3931	98	67.8				63.2	226.8	357.8
3932	73	158.1			76.0	171.8	774.5	1 180.3
3935	71	134.9			96.6	49.1	415.0	695.6
3936	102	158.9		0.3		18.9	226.8	404.9
3943	163	251.4					896.2	1 147.6
3944	110	142.3					73.9	216.2
3948	103	21.8				52.2	938.6	1 012.6
3953	80	29.5				27.5	473.7	530.6
3954	115	10.1				8.3	564.5	582.9
3955	145	228.6				463.8	3 771.3	4 463.7
3959	115	17.7				5.8	8 825.8	8 849.3
3964	91	41.8				19.4	312.3	373.4
3965	138	104.5				14.7	614.8	734.1
3970	129	45.9					368.9	414.8
3977	183	55.6					212.5	268.0
3978	94	14.9					608.5	623.4
3982	86	9.7					696.3	706.0
3983	105	119.4				31.5	1 932.9	2 083.8
3987	94	149.0					429.0	577.9
3991	115	1.0				4.7	328.7	334.5
3992	171	46.9					820.7	867.6
3997	117	6.4				0.5	275.7	282.6
3998	77	3.0					1 976.6	1 979.7
MEAN	111.2	87.2		0.0	6.6	49.3	1 013.5	1 156.7
SD		74.5		0.1	23.6	104.9	1 776.3	1 797.8
%CATCH		7.5		0.0	0.6	4.3	87.6	

Catch rates (kg/hour) by main pelagic groups caught in valid 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	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
3929	70		61.2	2.2	103.0		849.0	1 015.4
3933	47	0.5	410.2		16.6	24.0	1 101.3	1 552.5
3934	56	11.5	323.7	6.1	65.2		2 133.0	2 539.5
3945	63		24.2		39.2		1 261.6	1 325.0
3946	28	36.8	7.3			0.6	49.6	94.3
3949	57	103.4	28.0		8.8	0.8	157.2	298.2
3950	41	0.0	44.9			3.7	320.8	369.4
3951	28	420.4	20.6	1.7		1.3	22.3	466.2
3952	22	237.0	82.1			0.2	518.5	837.8
3960	54		0.7				282.8	283.4
3961	31	3.0	25.9	10.8	4.6	46.2	492.3	582.7
3962	31	5.1	14.7			33.2	283.0	336.0
3963	47	38.2	712.2		7.3	50.8	686.6	1 495.1
3972	49		6.2			4.6	115.6	126.4
3973	31						41.5	41.5
3974	34		2.4			1.6	39.4	43.5
3975	47		3.1			11.1	101.9	116.1
3979	67				0.7		182.8	183.5
3980	32		12.6				21.4	34.0
3981	60	2.5	9.7		1.5	2.5	140.8	157.0
3988	30		25.0			3.3	50.1	78.5
3989	25		0.2				265.1	265.3
3990	52	0.7	12.9		28.2	185.9	102.6	330.3
3999	24		38.4				7.1	45.5
MEAN	42.8	35.8	77.8	0.9	11.5	15.4	384.4	525.7
SD		96.9	168.5	2.5	25.1	39.2	509.3	633.0
%CATCH		6.8	14.8	0.2	2.2	2.9	73.1	



B. Outer shelf (71-200 m).

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
3927	112	0.2	3.9				257.0	261.1
3928	95		1.6		78.6		234.0	314.2
3930	108	80.3	165.6	1.7			563.6	811.1
3931	98	9.3	160.0	0.4	2.5		185.7	357.8
3932	73	1.5	228.4		34.9		915.6	1 180.3
3935	71	1.2	104.6		143.0		446.8	695.6
3936	102		1.7			4.7	398.5	404.9
3943	163				500.5		647.1	1 147.6
3944	110				18.5		197.7	216.2
3948	103		0.2		453.5		559.1	1 012.8
3953	80	51.9	360.2			1.8	116.8	530.6
3954	115				115.7		467.2	582.9
3955	145				38.8		4 425.1	4 463.9
3959	115		58.0		169.8		8 621.5	8 849.3
3964	91		100.5		5.0		268.0	373.4
3965	138		114.3		4.9		614.9	734.1
3970	129		311.9				102.9	414.8
3977	183				7.3		260.7	268.0
3978	94	0.6	415.2	12.4	6.0		189.2	623.4
3982	86	4.5	347.5		10.1		343.9	706.0
3983	105		86.5	6.5	54.2		1 936.6	2 083.8
3987	94	0.1	191.7		14.2	2.6	369.4	577.9
3991	115		13.9		147.2	2.5	170.8	334.5
3992	171				127.2		740.4	867.6
3997	117		89.6	7.3	62.3		123.3	282.6
3998	77	11.7	482.0			9.0	1 477.0	1 979.7
MEAN	111.2	6.2	124.5	1.1	76.7	0.8	947.4	1 156.7
SD		18.3	147.6	3.0	129.7	2.0	1 795.4	1 797.8
%CATCH		0.5	10.8	0.1	6.6	0.1	81.9	

Catch rates (kg/hour) by main deep-water groups caught in valid swept area bottom trawl hauls on the shelf. Central region. Slope (201-800 m).

Slope (201-800 m).

Station	Depth	Seabreams	Hake	<i>P.longirostris</i>	<i>A.varidens</i>	<i>N.africana</i>	Other	Total
3925	755		1.1		1.6		98.0	100.8
3926	751		3.0		8.5	0.3	118.3	130.1
3937	263	484.3	392.6	217.5			772.6	1 867.0
3938	465		6.2		14.0	128.7	447.7	596.5
3939	573		2.6		6.7	77.1	956.5	1 043.0
3940	659				8.1	24.0	305.6	337.7
3941	635		3.9			73.1	377.3	454.3
3942	343		44.8			49.8	647.6	742.2
3947	364		386.8	5.3	3.4	266.4	264.5	926.3
3956	515				1.5	90.4	132.8	224.7
3957	343		666.0		5.0	387.0	127.1	1 185.1
3958	223	3.0	204.1	59.6			675.0	941.7
3966	329		81.0		1.3	46.8	155.5	284.6
3967	491		5.4		13.6	186.8	105.2	311.0
3968	525				7.4	165.5	99.4	272.3
3969	356		601.8	0.5	1.2	103.7	359.8	1 067.0
3976	602		2.3		2.2	104.5	244.6	353.6
3984	302		41.0	17.1		15.9	1 085.0	1 159.0
3985	744				2.2	21.8	181.4	205.4
3986	611		5.5		4.4	113.4	249.3	372.6
3993	545		33.1		9.4	46.4	172.9	261.8
3994	732		4.3			0.0	321.4	325.7
3995	462		106.5		23.9	135.6	108.8	374.8
3996	254	3.1	0.4	16.8			623.5	643.7
MEAN	493.4	20.4	108.0	13.2	4.8	84.9	359.6	590.9
SD		98.8	197.1	45.3	5.9	94.9	286.5	438.3
%CATCH		3.5	18.3	2.2	0.8	14.4	60.9	

Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls on the shelf. Northern region. A: Inner shelf (20-70 m), B: Outer shelf (71-200 m), C: Slope (201-800 m).

A. Inner shelf (20-70 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
4003	30	597.6	723.5	30.1		1.9	197.7	1 550.8
4004	43	2 517.5	736.4	9.3			588.9	3 852.1
4005	54	1 478.5	328.6				88.2	1 895.3
4015	64	29.0	9.5	0.1	4.0		53.5	96.1
4017	44	93.0	99.3	0.5	2.0	26.2	94.1	315.3
4018	27	256.0	631.6	2.8	3.1		235.3	1 128.8
4031	70	195.9	64.3		0.4		42.7	303.3
4032	64	185.3	14.4		0.5		16.0	216.2
4033	42	157.5	135.9	0.1	4.8	71.1	257.8	627.2
4034	27	179.5	275.6			0.9	347.4	803.4
4035	39	2.8	49.3		0.8	29.8	13.3	96.1
4036	67	321.2	103.6	0.6	7.9		7.3	440.5
4049	38	195.2	7.2	0.1			57.3	259.8
4050	27	505.5	141.7	1.0	2.2	13.9	147.6	811.8
4056	62	1.3	6.6		10.7		9.8	28.4
4057	42	0.5	1.8		3.1		15.9	21.3
4058	26	188.6	10.1				70.5	269.2
4059	27	19.6	0.3		1.7		60.4	81.9
4060	37	12.5	59.1		3.3		21.2	96.0
4061	48	91.0	1.2		26.4		18.5	137.1
4084	55	43.6	27.9		0.6		11.3	0.0
MEAN	44.4	336.7	163.2	2.1	3.4	6.8	112.1	620.5
SD		597.8	240.8	6.7	6.0	17.1	145.1	904.1
%CATCH		54.3	26.3	0.3	0.5	1.1	18.1	

B. Outer shelf (71-200 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
4007	114	1 734.4	360.6				52.5	2 147.5
4009	145	55.9	280.7	5.4	1.0		515.7	858.8
4016	88	5 958.6	511.9		40.0		196.7	6 707.2
4019	113	159.1	228.8		3.8		19.8	411.5
4020	164	129.3	108.8	41.0	6.3		1 514.0	1 799.3
4028	136	31.7	94.9		2.7		71.4	200.7
4029	115	216.4	116.0		6.1	7.6	33.1	379.3
4030	93	3 153.3	222.6		7.2		59.5	3 442.5
4037	79	310.7	420.1		1.1		5.5	737.4
4038	92	118.6	278.7		3.0		7.1	407.4
4039	106	162.2	200.5		1.5		11.6	375.8
4040	124	282.3	138.3		2.4		38.9	462.0
4046	116	137.4		1.1	0.7		32.7	172.0
4047	88	69.7	10.3		5.4	5.0	49.6	140.0
4048	72	8.8	2.3		11.3	1.9	38.0	62.3
4054	115	116.3	193.6		8.9		25.8	344.6
4055	86	292.9	118.2		9.8		19.4	440.3
4066	118	18.9	53.5		18.9	15.5	50.7	157.4
4067	80	238.7	12.1		10.2		19.9	280.9
4068	87	41.9	44.8		5.3		32.8	124.8
4069	111	140.1	189.4		21.3	3.3	107.2	461.2
4070	120	65.7	93.2		5.4		46.0	210.3
4071	153	80.1	353.1	0.6	22.6	1.9	242.0	700.4
4078	123	278.6	27.3		0.8		34.6	341.4
4079	113	391.3	12.2				32.2	435.7
4080	108	256.4	108.9		3.7		13.9	382.9
4081	97	68.2	122.3		7.2		15.6	213.3
4083	82	1 999.2	45.1		4.1		5.3	2 053.6
MEAN	108.5	589.9	155.3	1.7	7.5	1.3	117.6	873.2
SD		1 269.8	136.2	7.8	8.8	3.3	292.5	1 380.3
%CATCH		67.6	17.8	0.2	0.9	0.1	13.5	

C. Slope (201-800 m).

Station	Depth	Demersal	Pelagic	Shrimps	Cephalopods	Sharks	Other	Total
4002	317	364.6	83.4		0.2		239.9	688.2
4010	410	349.7	25.9	258.9		22.3	54.5	711.4
4011	524	29.9	21.8	300.4	1.3		180.7	534.1
4012	715	27.2		98.4	8.5	1.0	172.6	307.6
4013	707	136.2	2.2	171.6		1.2	646.9	958.2
4014	605	139.3		138.8		9.2	456.4	743.7
4021	236	113.1	150.8	71.8	3.9		2 075.9	2 415.4
4022	311	79.2		35.5	1.0		112.6	228.4
4023	444	142.2	9.6	246.4	2.5	1.6	129.8	532.1
4024	515	31.6	15.8	233.0	15.2	0.8	173.8	470.1
4025	702	89.3	2.1	192.3		2.5	514.2	800.4
4026	628	75.9	0.3	254.1	7.0	0.2	531.2	868.8
4027	426	347.5	42.3	265.9		194.3	59.6	909.5
4041	385	84.8		11.3	9.2	7.3	141.2	253.7
4042	738			5.1	16.2	6.2	356.2	383.8
4043	740	21.3		137.7	1.6	2.5	127.5	290.5
4044	260	99.5	161.9	395.1	6.9		259.1	922.5
4045	260	191.6		67.5	3.8		7 202.2	7 465.2
4051	719	97.0		7.7			286.4	391.2
4052	517	63.1	24.0	140.4		9.8	224.5	461.9
4053	428	90.0	5.2	16.7	5.6		56.3	173.8
4063	515	51.4	15.3	313.3	14.9	3.0	114.5	512.4
4064	414	151.7	10.2	46.0			206.3	414.1
4065	230	68.8	12.6	42.4	6.2		201.8	331.8
4072	266	80.1	5.0	25.4	7.0		310.8	428.3
4073	310	22.2	36.0	6.5	2.6		222.8	290.0
4074	713	1.1		0.4		2.6	401.5	405.5
4076	332	17.0	14.5	50.7	0.3		231.8	314.3
4077	224	49.6	12.5	14.0	3.7	32.4	847.9	960.2
4085	627	31.0	0.0	248.0	2.0	5.0	111.0	397.0
MEAN	473.9	101.5	21.7	126.5	4.0	10.1	555.0	818.8
SD		97.8	40.6	116.9	4.8	35.5	1 311.2	1 323.0
%CATCH		12.4	2.7	15.5	0.5	1.2	67.8	

Catch rates (kg/hour) by main demersal groups caught in valid swept area bottom trawl hauls on the shelf. Northern 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
4003	30	5.1		2.7	119.1	127.9	1 296.0	1 550.8
4004	43	30.0		3.1	304.6	26.7	3 487.7	3 852.1
4005	54	24.3			12.1	23.2	1 835.8	1 895.3
4015	64	13.3		1.0		2.5	79.3	96.1
4017	44	14.7			38.9	23.4	238.2	315.3
4018	27				3.5	126.6	998.7	1 128.8
4031	70	86.0		1.6	50.3	18.3	147.1	303.3
4032	64	60.1		7.3	1.9	8.4	138.4	216.2
4033	42	1.0				120.5	505.8	627.2
4034	27				21.4	62.9	719.1	803.4
4035	39	2.6					93.4	96.1
4036	67	41.9		1.4	1.1	7.6	388.6	440.5
4049	38	171.8	0.4	8.4	14.5		64.8	259.8
4050	27	7.3			93.2	41.1	670.2	811.8
4056	62	1.3					27.2	28.4
4057	42	0.5					20.8	21.3
4058	26	146.6	5.0	37.0			80.7	269.2
4059	27	15.2		4.4			62.3	81.9
4060	37	12.5					83.5	96.0
4061	48	63.3		14.8			59.1	137.1
4084	55	41.1					42.1	83.3
MEAN	44.4	35.2	0.3	3.9	31.5	28.1	525.7	624.5
SD		47.9	1.1	8.5	70.6	43.8	834.3	901.5
%CATCH		5.6	0.0	0.6	5.0	4.5	84.2	

B. Outer shelf (71-200 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
4007	114	31.4				24.8	2 091.4	2 147.5
4009	145	27.5				27.4	803.9	858.8
4016	88	8.9			19.0		6 679.3	6 707.2
4019	113	11.6				16.2	383.6	411.5
4020	164	34.7				13.5	1 751.1	1 799.3
4028	136	22.3				4.7	173.7	200.7
4029	115	65.9				54.5	258.8	379.3
4030	93	50.9			201.7	46.2	3 143.7	3 442.5
4037	79	102.0			1.2	0.3	633.9	737.4
4038	92	74.7				12.6	320.1	407.4
4039	106	159.6					216.2	375.8
4040	124	264.7					197.3	462.0
4046	116	91.8			5.4	38.6	36.2	172.0
4047	88	53.8			1.9		84.2	140.0
4048	72	7.4		1.4			53.5	62.3
4054	115	63.9				4.5	276.1	344.6
4055	86	142.7		1.9			295.6	440.3
4066	118	14.2					143.2	157.4
4067	80	228.6		9.5			42.8	280.9
4068	87	41.9					82.9	124.8
4069	111	140.1					321.2	461.2
4070	120	53.3				2.2	154.8	210.3
4071	153	39.0				1.3	660.1	700.4
4078	123	269.4					71.9	341.4
4079	113	81.6				309.7	44.4	435.7
4080	108	73.1		18.3		10.5	281.0	382.9
4081	97	45.9				17.9	149.6	213.3
4083	82	67.1					1 986.5	2 053.6
MEAN	108.5	81.0		1.1	8.2	20.9	762.0	873.2
SD		72.9		3.8	38.1	58.6	1 387.5	1 380.3
%CATCH		9.3		0.1	0.9	2.4	87.3	

Catch rates (kg/hour) by main pelagic groups caught in valid swept area bottom trawl hauls on the shelf. 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
4003	30	199.1	409.1		59.3	56.1	827.3	1 550.8
4004	43	35.2	139.7		561.5		3 115.7	3 852.1
4005	54	11.6	107.3		209.7		1 566.7	1 895.3
4015	64	0.1	3.3			6.1	86.6	96.1
4017	44	1.2	44.6		10.8	42.7	215.9	315.3
4018	27	297.7	194.7		44.8	94.4	497.2	1 128.8
4031	70		5.3		52.0	7.0	239.1	303.3
4032	64		1.5	3.3	8.8	0.9	201.7	216.2
4033	42	7.7	3.0		8.1	117.2	491.3	627.2
4034	27	150.9	31.1		0.4	93.2	527.8	803.4
4035	39		1.9	2.1		45.3	46.8	96.1
4036	67	0.4	52.9	0.4	47.4	2.1	337.0	440.2
4049	38		7.2				252.6	259.8
4050	27	11.1	118.0		1.8	10.9	670.1	811.8
4056	62		3.2		3.4		21.8	28.4
4057	42		1.8				19.5	21.3
4058	26		1.1	5.8		3.2	259.1	269.2
4059	27		0.3				81.6	81.9
4060	37		59.1				36.9	96.0
4061	48		1.2				135.9	137.1
4084	55	0.3	10.5		17.1		55.4	83.3
MEAN	44.4	34.1	57.0	0.6	48.8	22.8	461.2	624.5
SD		80.1	97.9	1.5	126.5	37.2	708.0	901.5
%CATCH		5.5	9.1	0.1	7.8	3.7	73.9	



B: Outer shelf (71-200 m).

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
4007	114		191.6		169.0		1 786.9	2 147.5
4009	145		41.0		239.8		578.1	858.8
4016	88		272.7		216.1	23.0	6 195.3	6 707.2
4019	113		36.3		192.5		182.6	411.5
4020	164				108.8		1 690.5	1 799.3
4028	136		18.7		76.2		105.8	200.7
4029	115		84.3		31.7		263.3	379.3
4030	93	39.8	163.4		19.4		3 220.0	3 442.5
4037	79	9.2	381.2		29.8		317.3	737.4
4038	92	0.9	242.8		35.0		128.7	407.4
4039	106		12.2		188.3		175.3	375.8
4040	124		20.9		117.4		323.7	462.0
4046	116						172.0	172.0
4047	88		3.3		7.0		129.7	140.0
4048	72		2.3				60.0	62.3
4054	115		57.5		136.1		151.0	344.6
4055	86		101.7	1.5	14.2	0.8	322.1	440.3
4066	118		45.4		8.1		104.0	157.4
4067	80		4.7		7.3		268.8	280.9
4068	87	0.5	39.8		4.4		80.0	124.8
4069	111		189.4				271.9	461.2
4070	120		81.1		12.1		117.1	210.3
4071	153				353.1		347.3	700.4
4078	123		7.2		20.1		314.1	341.4
4079	113				12.2		423.5	435.7
4080	108		30.5		78.4		274.0	382.9
4081	97		42.5		79.8		91.0	213.3
4083	82	0.5	0.8	2.1	41.7		2 008.6	2 053.6
MEAN	108.5	1.8	74.0	0.1	78.5	0.9	717.9	873.2
SD		7.6	98.6	0.5	91.5	4.3	1 304.4	1 380.3
%CATCH		0.2	8.5	0.0	9.0	0.1	82.2	

Catch rates (kg/hour) by main deep-water groups caught in valid swept area bottom trawl hauls on the shelf. Northern region. Slope (201-800 m).

Station	Depth	Seabreams	Hake	<i>P.longirostris</i>	<i>A.varidens</i>	<i>N.africana</i>	Other	Total
4002	317		364.6				323.5	688.2
4010	410		349.7		4.7	252.9	104.1	711.4
4011	524		9.9		9.4	289.8	225.0	534.1
4012	715		15.0			98.1	194.5	307.6
4013	707		12.4		0.2	171.0	774.5	958.2
4014	605		113.3		4.8	133.5	492.0	743.7
4021	236	13.0	100.1	71.8			2 230.6	2 415.4
4022	311		79.2	1.3	0.2	33.5	114.2	228.4
4023	444		142.2		7.2	237.6	145.1	532.1
4024	515		3.4		9.0	224.0	233.8	470.1
4025	702		26.3		3.9	187.5	582.7	800.4
4026	628		11.3		6.7	246.4	604.4	868.8
4027	426		347.5		1.0	263.6	297.6	909.5
4041	385		84.8	3.4	4.7	3.0	157.8	253.7
4042	738				2.7		381.0	383.8
4043	740		16.5		11.2	125.8	137.0	290.5
4044	260		99.5	0.8		394.0	428.2	922.5
4045	260		191.6	67.5			7 206.1	7 465.2
4051	719				0.7		390.5	391.2
4052	517		50.9		8.2	131.4	271.4	461.9
4053	428		90.0		5.2		78.6	173.8
4063	515		11.4		10.8	301.5	188.7	512.4
4064	414		151.7		13.8	31.8	216.8	414.1
4065	230	38.8		42.4			250.6	331.8
4072	266	13.1	53.0	23.4			338.8	428.3
4073	310		22.2	6.3			261.5	290.0
4074	713			0.0	0.2		405.3	405.5
4076	332		17.0	43.6			253.7	314.3
4077	224	34.8		14.0			911.4	960.2
4085	627				12.0	235.0	151.0	398.0
MEAN	473.9	3.3	78.8	9.5	3.9	112.0	611.7	818.8
SD		9.7	107.0	20.4	4.5	122.7	1 308.1	1 323.0
%CATCH		0.4	9.6	1.2	0.5	13.7	74.7	

## ANNEX VII Instruments and fishing gear used

The Simrad EK-500/38kHz scientific sounder was run during the survey only for observation of fish and bottom conditions.

The details<sup>1</sup> of the settings of the 38kHz echo sounder were as follows:

### Transceiver-1 menu (38 kHz lowering keel)

Transducer depth	5.50 m
Absorbion coeff.	10 dB/km
Pulse length	medium (1ms)
Bandwidth	wide
Max power	2000 Watt
2-way beam angle	-21.0 dB
SV transducer gain	26.96 dB
TS transducer gain	27.07 dB
Angle sensitivity	21.9
3 dB beamwidth	6.9° along ship 6.8° athwardship
Alongship offset	-0.07°
Athwardship offset	0.08°

### Display menu

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

### Printer- menu

Echogram	1 (38 kHz)
Range	50, 100, 250, 500, 750 and 1000 m
Range start	0
Bottom range	12 m
Bottom range start	10 m
Sv colour min	-67 dB
TVG	20 log R

**Bottom detection menu**     Minimum level -50 dB

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<sup>1</sup>Driftsjournal I. Kalibrering av referansekule, 11.01.2006

## **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 innernet of 10 mm meshsize. The trawl height was about 4.5 m and 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, 7.81 m<sup>2</sup>, 1670 kg. During the present survey the door distance was kept nearly constant at about 50 m at all depths by the use of a 9.5 m strap between the wires at 130 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 improves 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 the trawl was equipped with a trawl eye that provides information about the trawl opening. A catch sensor on the cod-end indicated the size of the catch.

### ANNEX VIII Station allocation by survey and depth strata

Numbers of valid bottom trawl stations by depth strata. Demersal surveys off Angola 1985-2006.

	1985.1	1985.2	1985.3	1985.4	1986.1	1986.2	1988.1	1988.2	1989.3	1991.1	1991.2	1992	1993	1994	1995.1	1995.2	1996	1997.1	1997.2	1998	1999	2000	2001	2002	2003	2004	2005	2006		
OUTSIDE	11	13	13	11	28	24	31	23	10	30	57	55	1	19	16	0	5	1	62	0	1	1	0	0	0	1	0	3	0	
20-50south	0	2	0	0	6	3	5	2	4	6	2	4	3	0	0	0	0	0	0	0	0	0	8	0	2	4	8	7	8	
50-100south	0	1	0	0	8	6	8	8	1	14	12	20	11	0	0	0	0	0	4	0	0	9	0	5	7	7	5	5		
100-200south	0	0	0	0	8	3	9	8	6	10	12	7	9	0	0	0	0	0	6	0	0	7	0	3	7	5	7	7		
200-300south	0	0	0	0	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1		
300-400south	0	0	0	0	1	0	0	0	0	2	0	1	0	0	0	0	0	0	1	0	0	1	0	1	2	2	1	1		
400-500south	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		
500-600south	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
600-700south	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	
700-800south	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2	3	1	2	1	2
20-50central	0	0	0	3	8	11	17	24	5	17	13	15	0	9	14	0	10	6	1	9	13	23	12	16	16	17	16	16	16	
50-100central	0	0	0	4	15	14	21	29	4	26	13	16	0	12	13	0	12	9	10	17	19	27	18	18	19	18	20	18	18	
100-200central	0	0	0	2	2	4	13	11	3	15	10	12	0	14	15	12	12	8	13	12	14	22	16	15	13	14	14	16	16	
200-300central	0	0	0	4	3	1	4	3	3	10	6	8	0	8	9	21	9	7	11	8	8	12	4	2	3	2	6	3	3	
300-400central	0	0	0	2	4	1	0	7	1	7	3	9	0	9	11	15	10	7	7	6	6	10	4	6	4	6	6	6	6	
400-500central	0	0	0	4	5	0	3	4	3	6	3	7	0	8	9	18	9	7	0	4	6	8	6	2	3	3	4	3	4	
500-600central	0	0	0	1	2	0	1	2	4	1	0	9	0	5	7	14	8	7	0	7	5	9	3	5	3	3	5	4	4	
600-700central	0	0	0	0	0	0	0	0	0	0	0	6	0	1	3	10	3	0	0	5	1	6	3	4	4	4	6	4	4	
700-800central	0	0	0	0	0	0	0	0	0	0	0	4	0	2	4	1	4	0	0	3	0	7	4	4	4	4	6	4	4	
20-50north	5	4	7	6	14	13	3	14	3	7	8	12	0	9	9	0	9	8	0	0	14	11	11	16	13	15	14	14	14	
50-100north	9	8	7	7	25	28	19	33	14	20	19	17	0	9	12	0	12	10	4	0	24	24	14	23	20	24	20	18	18	
100-200north	5	5	3	6	5	20	6	6	4	11	12	10	0	11	11	0	12	11	8	0	29	24	18	23	21	21	21	17	17	
200-300north	1	0	1	5	5	6	8	6	4	4	14	9	0	8	7	0	10	9	3	0	12	11	7	7	7	8	7	6	6	
300-400north	0	0	5	6	15	4	2	4	4	6	6	5	0	9	8	0	9	8	2	0	12	10	11	6	6	6	6	5	5	
400-500north	0	0	1	2	3	6	5	4	4	6	2	6	0	6	4	0	8	7	0	0	7	8	5	6	6	6	6	5	5	
500-600north	0	0	3	3	3	3	3	6	0	1	0	5	0	5	5	0	10	8	0	0	6	6	8	6	6	6	6	7	4	
600-700north	0	0	0	0	0	1	0	0	1	0	0	3	0	2	3	0	0	0	0	0	1	7	5	6	6	6	7	8	4	
700-800north	0	0	0	0	0	0	1	0	0	0	0	4	0	3	2	0	5	5	0	0	0	8	3	9	9	8	9	7	7	
TOTAL	31	33	40	66	161	148	159	194	78	200	194	245	24	149	162	91	157	118	126	71	178	263	152	186	186	200	208	179	179	

## ANNEX IX Trip Report

by Rob Leslie

### General

Although the R/V 'Dr. Fridtjof Nansen' has undertaken surveys of the demersal resources off Angola for a number of years, this is the first survey conducted under the auspices of BENEFIT. In the interests of fostering further co-operation between Angola and South Africa, BENEFIT sponsored the participation of one South African scientist on this voyage. The shallow water fauna of Angola is tropical and vastly different to the cold-temperate fauna off South Africa. On the other hand, the deepwater fauna off the continental shelf is more cosmopolitan with many species shared with South Africa.

The primary objectives were to:

Foster further co-operation between MCM and IIP

Gain exposure to and experience of tropical fish fauna

Assist with the identification of especially deepwater species of chondrichthyans and teleosts

Extend sampling of the current BENEFIT genetic work on the Cape hakes (*Merluccius capensis* and *M. paradoxus*) northwards

In addition, I took the opportunity to collect material for a number of other projects, and undertook bird and cetacean watches.

Results (Title of the project – end users and their affiliations)

Cape hakes – BENEFIT and Sophie van der Heyden (Univ. of Stellenbosch, RSA)

Although there are subtle morphological differences (mainly colour patterns) between the shallow water Cape hake (*Merluccius capensis*) populations off Namibia and South Africa, genetic studies undertaken in the 1980s using analysis of allozymes did not find any genetic differentiation between these two subpopulations. In view of the advances in molecular genetic techniques since that work was completed, BENEFIT has commissioned a population genetic study of the Cape hakes (*Merluccius capensis* and *M. paradoxus*) off South Africa and Namibia using more sensitive techniques. One of the aims of the project is to determine if there are genetically distinguishable subpopulations of Cape hakes in the region; the extent of gene flow between hake populations and the extent to which the Cape hake resource is shared between South Africa and Namibia. I collected tissue samples from *M. capensis* and *M. paradoxus* encountered during the survey, as well as a small sample of *M. pollii* for comparison.

Anchovy (Engraulis) – Stewart Grant (Alaska, USA) and Rob Leslie (MCM, RSA)

A population genetic study of the anchovy (*Engraulis capensis*) resource off South Africa and Namibia was completed in the 1980s. This study was extended into a global phylogenetic study of the genus *Engraulis* in the 1990s, which found very little genetic differentiation between *E. capensis* and the European anchovy (*E. encrasicolus*) and as a result *E. capensis* has been designated as a junior synonym of *E. encrasicolus*. However, those studies were based on samples taken off South Africa, Namibia and Spain. The distribution of *Engraulis* down the west coast of Africa is disjunct, so it will be interesting to see if the anchovy off Angola share closer affinities with the southern African or Mediterranean populations. I collected tissue samples of anchovy for genetic analysis.

Horse Mackerel (*Trachurus*) – Stewart Grant (Alaska, USA), Kerry Naish (Univ. of Washington, USA) and Rob Leslie (MCM, RSA)

Kerry Naish undertook a population genetic study of the Cape horse mackerel (*Trachurus capensis*) as an MSc project at Rhodes University, RSA (completed in 1990). She found a small difference in gene frequency between a sample of 7 horse mackerel collected off Namibia between Luderitz and Walvis Bay and samples collected off South Africa. Subsequent reanalysis of her data in 2004 revealed that haplotype divergence of five of the seven fish collected off Namibia was at a species rather than population level from the rest of the specimens analysed. The most parsimonious explanation is that those five fish were in fact *Trachurus* trecae. However, *T. trecae* has never been recorded off southern Namibia, so this hypothesis cannot be accepted without testing. I collected tissue samples from 50 *T. capensis* and 50 *T. trecae* to undertake genetic analyses to resolve this question.

Monogonian gill parasites on chondrichthyans – David Vaughn (Two Oceans Aquarium, RSA)

David Vaughn started this year on an MSc project at the Univ. of the Western Cape on the monogonian parasites found in the gills of chondrichthyans, especially chimera. He participated on the January/February biomass survey off the west coast of South Africa to collect parasites. I offered to collect gill tissue from sharks and chimera caught during this survey off Angola to extend his sampling range both geographically and by covering more species. The chimerian St. Josef shark (*Callorhynchus capensis*) off South Africa carries a very high parasite load, which includes a large monogonian easily visible with the naked eye. I collected the gills from 6 St. Josef sharks and did not find a single occurrence of the large monogonian (I did not examine the gills under a microscope to ascertain if any of the smaller species were present). It may be that the St. Josef sharks off Angola are in marginal habitat and cannot carry the additional pressure of parasites. I noted a small monogonian gill parasite in the gills of a Rhizoprionodon acutus, a species not previously known as a host of monogonian gill parasites, so it is likely that this monogonian could be new to science.

In addition, I collected all external copepod parasites that I saw (a total of 3). One, attached to the dorsal fin of a shark *Mustelus mustelus* is previously undescribed.

The southern African otolith atlas – Malcolm Smales (Port Elizabeth Museum, RSA)

Malcolm Smale is the initiator and manager of the southern African otolith atlas designed to aid researchers in identifying prey species from stomach contents from the otoliths. He is currently concentrating on collecting otoliths from all species that have been recorded in the southern African sub-region (south of 20°S latitude). The collection currently contains 18 863 otoliths from 1 948 species. There are still 895 species that have been recorded in the sub-region that are not represented in the otolith collection. Many of these species are only rarely recorded in the sub-region and are much commoner north of its borders. The sampling protocol for the otolith collection requires that the otolith is removed with minimal damage to the fish and that the fish is then preserved and lodged at a museum as a voucher for the identification of the otolith. Therefore I was restricted by the number of specimens that I could preserve as vouchers and collected less otoliths than I could have. In all I collected 59 otoliths from 25 species.

*Collection of museum specimens – Butch Hulley and Len Compagno (South African Museum)*  
I collected an assortment of fish, chondrichthyan and invertebrate specimens for the South African Museum in Cape Town. I was restricted in the amount of preservative, sampling jars, and in the amount that I could pack and carry with me back to Cape Town. Consequently I concentrated on groups of specific interest.

Chondrichthyans: In 2005 Dr Len Compagno completed a revision his FAO species catalogue of the sharks of the World and produced a Collins field guide based on that work. He says that there is a taxonomic problem with the *Centrophorus* sharks off Angola and requested that I collect material for comparison. His global revision recognises only one species of *Centrophorus* off Angola, *C. squamosus*, but there is another taxon present that looks somewhat like *C. uyato*. However these sharks are large and I did not have the capacity to preserve and material. I did freeze 1 specimen of the supposed *C. uyato*, which I left onboard and hope that it will be delivered later in 2006 when the R/V 'Dr. Fridtjof Nansen' next visits Cape Town.

Myctophids: In 2005 Dr Butch Hulley completed a revision of the myctophid fauna of the north Atlantic (to 8° S latitude) as his contribution to the revision of "C/ofnam" (the multi-volume species catalogue and identification guide to the north east Atlantic and Mediterranean). During this work he found that the myctophid fauna off Angola is poorly known. I collected a sample of myctophids from each trawl station when I was on duty. Diana has continued collection of myctophids off northern Angola.

Ceratoides: The deep-sea angler fish are a particular interest of mine and I preserved all ceratoids that we caught.

*Genetic studies on Skates and Rays – Chiara Ragazzini (Italy) and Agnes Post (New Zealand)*

Chiara Ragazzini is an Italian geneticist currently in South Africa to collect material for her project. She is doing a population study on the skates of the genus *Raja* in the Mediterranean Sea with special reference to *Raja miraletus*, *R. leopardus* and the *R. clavata/straeleni*

complex, all species supposedly with distribution ranges extending from the Mediterranean to South Africa. She has ample samples from the Mediterranean and will collect sufficient samples from South Africa, thus giving her samples from the two extremes of the distribution, but nothing from the middle. I therefore collected tissue samples from off Angola to provide a data somewhere between the Mediterranean and South Africa.

*R. miraletus* supposedly occurs from the Mediterranean all down the African coast to Angola. It is absent from the cold waters of the Benguela current, but is again found in the warm waters of the Agulhas current on the South African southeast coast. The specimens off Angola looked identical to those that I have seen off South Africa (and to pictures of the Mediterranean population) nevertheless, it will be interesting to see if these two populations are still genetically linked. The general shape of *R. leopardus* off Angola was similar to those off South Africa and in the Mediterranean, but the colour was quite different to both South African and Mediterranean specimens (incidentally the latter two are fairly similar). Unfortunately we did not catch any specimens in the *R. clavata/straeleni* complex.

Agnes Post is a New Zealand geneticist working on the genus *Dasyatis*. She has contacted MCM with a request to collect material from rays of the genus *Dasyatis* and she plans to visit South Africa in September to collect additional material. I took this opportunity to collect genetic tissue samples from *Dasyatis* species caught off Angola to extend this project.

#### *Bird and cetacean observations*

I have a keen interest in both birds and cetaceans and kept a watch when I was not busy with fish samples. Unfortunately, as the bird and citation observations were not dedicated they are not of a comparable quality to those data collected by J-P Roux during the pelagic surveys, I shall offer J-P my records. The pelagic surveys do offer a better coverage of the Angolan shelf and therefore give a better mapping of bird and cetacean distribution as the demersal surveys do not cover the coast between Namibe and Benguela, and have the annoying propensity to do the offshore work mainly at night (very bad for bird and cetacean sighting). Nevertheless, it would be valuable to extend J-P's work to the demersal surveys (not necessarily every demersal survey) as these surveys cover a different season and, therefore, reflect a different pattern particularly of bird distribution. There are obvious differences in the migratory species - J-P recorded albatrosses (winter migrants) but not phalaropes (summer visitors) whereas I recorded the opposite. Of more importance is the local movement of resident species such as White Pelican and Royal Tern.

**Table 1: Genetic samples collected per species**

Species	Number	End User
<i>Dasyatis centrura</i>	2	Agnes Post
<i>Dasyatis marmorata</i>	2	Agnes Post
<i>Gymnura micrura</i>	1	Agnes Post
<i>Myliobatis aquila</i>	5	Agnes Post
<i>Merluccius capensis</i>	50	BENEFIT
<i>Merluccius paradoxus</i>	6	BENEFIT
<i>Merluccius polli</i>	4	BENEFIT
<i>Merluccius sp</i>	12	BENEFIT
<i>Raja confundens</i>	1	Chiara Ragazzini
<i>Raja leopardus</i>	7	Chiara Ragazzini
<i>Raja miraletus</i>	22	Chiara Ragazzini
<i>Raja sp</i>	6	Chiara Ragazzini
<i>Engraulis encrasicolus</i>	84	Stewart Grant
<i>Lophiodes kemp</i>	1	Stewart Grant
<i>Trachurus capensis</i>	20	Stewart Grant
<i>Trachurus trecae</i>	20	Stewart Grant

**Table 2: number of sets of gills collected per species.**

Species	Number
<i>Callorhynchus capensis</i>	6
<i>Centrophorus granulosus</i>	6
<i>Deania calcea</i>	1
<i>Galeus polli</i>	5
<i>Gymnura micrura</i>	1
<i>Heptanchus perlo</i>	1
<i>Mustelus mustelus</i>	8
<i>Neoharriotta pinnata</i>	1
<i>Rhizoprionodon acutus</i>	5
<i>Scyliorhinus cervigoni</i>	2
<i>Squalus megalops</i>	5

**Table 3: Otoliths collected per family and species**

Family	Species	Specimens
Gonostomatidae	<i>Triplophos hemingi</i>	2
Photichthyidae	<i>Yarella blackfordi</i>	3
Stomiidae	<i>Stomias sp</i>	1
Chlorophthalmidae	<i>Bathyterois sp.</i>	1
Chlorophthalmidae	<i>Chlorophthalmus atlanticus</i>	2
Notosudidae	<i>Scopelosaurus sp.</i>	2
Paralepididae	<i>Lestidiops sp.</i>	1
Myctophidae	<i>Neosopellus sp</i>	2
Merlucciidae	<i>Merluccius polli</i>	12
Macrouridae	<i>Hymenocephala italicus</i>	1
Macrouridae	<i>Malacocephalus occidentalis</i>	4
Ophidiidae	<i>Lamprogrammus exutus</i>	6
Lophiidae	<i>Lophius vailanti</i>	1
Trachichthyidae	<i>Hoplostethus cadenati</i>	2
Trachichthyidae	<i>Gephyroberyx darwini</i>	2
Holocentridae	<i>Sargocentron hastatus</i>	1
Carangidae	<i>Trachurus trecae</i>	2
Haemulidae	<i>Pomadasyx incisus</i>	2
Mullidae	<i>Pseudupeneus prayensis</i>	1
Blenniidae	<i>Blennius normani</i>	1
Nomeidae	<i>Ariomma melanum</i>	2
Stromateidae	<i>Centrolophus niger</i>	1
Citharidae	<i>Citharus linguatula</i>	2
Cynoglossidae	<i>Cynoglossus canariensis</i>	2
Soleidae	<i>Dicologlossa cuneata</i>	3



## ANNEX X. Sharks

Diana Zaera

This year we concentrate our efforts studying some biological aspects of the African sawtail catshark, *Galeus polli* (Cadenat).

The African sawtail catshark, *Galeus polli*, belongs to the order Carcharhiniformes, family Scyliorhinidae, and it is characterized by being a relatively small shark with a dark mouth lining and usually eleven or less well-defined dark grey saddle blotches on a light background. It lives in tropical and cold-temperate waters. In the eastern Atlantic it is found from southern Morocco to South Africa (west coast).

The information on biology and bathymetric distribution of deep-sea sharks in Angolan waters is scarce, and therefore with this kind of studies we try to contribute to a better knowledge of the species in the area.

During the survey, length, sex, maturity stages, total body weight, liver weight and data on stomach content were collected.

*G. polli* was caught throughout the entire survey area, with a mean length of 28.8 cm TL ( $n = 248$ , SD = 11.1, range 14-37 cm TL) with the bigger fish in deeper waters. The length-weight relationship for each sex was significantly different; females reached greater size than males and were slightly more numerous at lengths greater than 30 cm TL. The average total body weight was 83.7 g for females and 63.7 g for males.

The majority of both females (56.2%) and males (70.5%) were mature (stages 1 to 3 for females and 1-2 for males). Length where 50% of the individuals were mature was 28.2 cm TL for males and 30.5 cm TL for females.

The average hepatosomatic index was 5.7% for both sexes.

From the two hundred and eighty-three stomachs examined, 78 were empty (27.6%). The stomach content consisted of 11 different identifiable prey species belonging to three main groups: Cephalopods, Crustaceans and Teleostei. Crustaceans were the most important ingested prey groups, contributing with 20.4% to the total index of relative importance (IRI), followed by Cephalopods (19.7%) and teleosts (9.5%). At the species level, *Nematocarcinus africanus* (9.6%), Euphasidae (7%), *Solenocera africana* (4.3%) and Myctophidae (3.5%) were the most frequent prey.