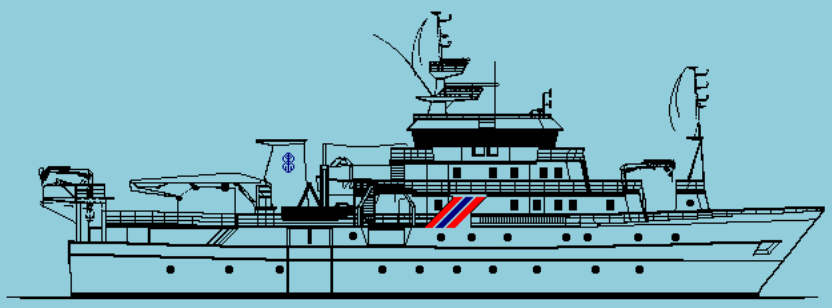

2007 SURVEY OF THE FISH RESOURCES OF ANGOLA

SURVEY OF THE DEMERSAL RESOURCES

Cruise report No 3/2007

24 February – 25 March 2007

Institute of Marine Research – IMR
Luanda
Angola

Instituto Nacional de Investigação Pesqueira – INIP
Bergen
Norway

Bergen September 2007

THE EAF-NANSEN PROJECT

FAO started the implementation of the project "Strengthening the Knowledge Base for and Implementing an Ecosystem Approach to Marine Fisheries in Developing Countries (EAF-Nansen GCP/INT/003/NOR)" in December 2006 with funding from the Norwegian Agency for Development Cooperation (Norad). The EAF-Nansen project is a follow-up to earlier projects/programmes in a partnership involving FAO, Norad and the Institute of Marine Research (IMR), Bergen, Norway on assessment and management of marine fishery resources in developing countries. The project works in partnership with governments and also GEF-supported Large Marine Ecosystem (LME) projects and other projects that have the potential to contribute to some components of the EAF-Nansen project.

The EAF-Nansen project offers an opportunity to coastal countries in sub-Saharan Africa, working in partnership with the project, to receive technical support from FAO for the development of national and regional frameworks for the implementation of Ecosystem Approach to Fisheries management and to acquire additional knowledge on their marine ecosystems for their use in planning and monitoring. The project contributes to building the capacity of national fisheries management administrations in ecological risk assessment methods to identify critical management issues and in the preparation, operationalization and tracking the progress of implementation of fisheries management plans consistent with the ecosystem approach to fisheries.

LE PROJET EAF-NANSEN

La FAO a initié la mise en oeuvre du projet "Renforcement de la base des connaissances pour mettre en œuvre une approche écosystémique des pêcheries marines dans les pays en développement (EAF-Nansen GCP/INT/003/NOR)" en décembre 2006. Le projet est financé par de l'Agence norvégienne de coopération pour le développement (Norad). Le projet EAF-Nansen fait suite aux précédents projets/ programmes dans le cadre du partenariat entre la FAO, Norad et l'Institut de recherche marine (IMR) de Bergen en Norvège, sur l'évaluation et l'aménagement des ressources halieutiques dans les pays en développement. Le projet est mis en oeuvre en partenariat avec les gouvernements et en collaboration avec les projets grands écosystèmes marins (GEM) soutenus par le Fonds pour l'Environnement Mondial (FEM) et d'autres projets régionaux qui ont le potentiel de contribuer à certains éléments du projet EAF-Nansen.

Le projet EAF-Nansen offre l'opportunité aux pays côtiers de l'Afrique subsaharienne partenaires de recevoir un appui technique de la FAO pour le développement de cadres nationaux et régionaux visant une approche écosystémique de l'aménagement des pêches et la possibilité d'acquérir des connaissances complémentaires sur leurs écosystèmes marins. Ces éléments seront utilisés pour la planification et le suivi des pêcheries et de leurs écosystèmes. Le projet contribue à renforcer les capacités des administrations nationales responsables de l'aménagement des pêches en introduisant des méthodes d'évaluation des risques écologiques pour identifier les questions d'aménagement d'importance majeure ainsi que la préparation, la mise en œuvre et le suivi des progrès de la mise en œuvre de plans d'aménagement des ressources marines conformes à l'approche écosystémique des pêches.

CRUISE REPORTS "DR. FRIDTJOF NANSEN"

SURVEYS OF THE FISH RESOURCES OF ANGOLA

Survey of the demersal resources
24 February – 25 March 2007

by

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Bergen, 2007

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

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

January 1985	-	June 1986	(6 surveys)
January 1989	-	December 1989	(3 surveys)
May 1991	-	September 1992	(3 surveys)
January 1994	-	March 2007	(15 surveys)

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CHAPTER 1 INTRODUCTION

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.

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

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

Intercalibration with F/V Atlantico 237: The survey time series of the Angolan demersal surveys is crucial for the assessment of the demersal resources, and it is of major importance to continue these surveys. The Nansen-programme is phasing out off Angola; therefore, it was decided by INIP to investigate through intercalibration experiments if the commercial F/V Atlantico 237 was suitable to carry out these surveys when equipped with the standard survey trawl net used by R/V "Dr Fridtjof Nansen". During the last leg of the 2007 survey the F/V Atlantico 237 and R/V "Dr Fridtjof Nansen" carried out a parallel trawling at the standard survey positions.

*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.

1.2 Participation

The scientific staff consisted of:

From INIP, Kumbi Kilongo (24/2-25/3, Local Cruise Leader), Virgílio Estévão (24/2-25/3), Domingos Pedro (24/2-25/3), Pedro Panzo (24/2-25/3), Pedro Tchipalanga (24/2-15/3), Domingas Adelino (24/2-15/3), Eusébio dos Santos (24/2-15/3), Noémia Nganga (26/2-15/3), Manuel Domingos (24/2-15/3), Arsénio Cudivila (24/2-15/3), Silvi Nsiangango (17/3-25/3), Mario Fortunato (17/3-25/3), Enoque Canganjo (17/3-25/3), Fátima Delicado (17/3-25/3), Mário Rafael (17/3-25/3), Andom Lusevikueno (17/3-25/3).

From IMR, Norway: Espen Johnsen (24/2-25/3, Cruise Leader), Diana Zaera (24/2-25/3), Jan Frode Wilhelmsen (24/2-25/3), Ole Sverre Fossheim (24/2-25/3)

From MCM, USA: Tomio Iwamoto (24/2-25/3)

1.3 Narrative

R/V "Dr Fridtjof Nansen" departed Walvis Bay, Namibia the afternoon 24 February 2007 and steamed northwards. The sampling started the morning 26 February 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 and 2003-2007 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 28th the survey of the southern region was finished. Standard hydrographic transects were sampled west off Baía dos Tigres and Namibe. Zooplanktons were sampled at the Namibe transect. 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 evening 2 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 2002-2007 surveys. The trawl survey of the central region was completed 11 March and continued in the northern region. Four standard hydrographic transects were carried out in the central region: Lobito (with zooplankton sampling), Pta. do Morro, Rio Longa and Pta. das Palmerinhas (with zooplankton sampling).

The vessel arrived Luanda in the afternoon of 14 March to change crew and Angolans scientists. It departed in the morning 17 March to continue the survey in the northern region together with F/V Atlantico 237, which trawled parallel to R/V "Dr Fridtjof Nansen" in an intercalibration experiment. A total of 22 parallel tows were carried out during the experiment. The results of this experiment are presented in a separate report.

Standard hydrographic transects were carried out at Ambriz and Ponta da Moita Seca in the northern region. The survey finished in the afternoon of 25 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 84 NM². 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 2007 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).

	Depth strata (m)												
Region	20-50	50-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	Valid	Failures	CTD	Distance
Cunene-Tombua													
Area (NM^2)	507	591	594	100	77	48	39			**1956**			
# hauls (BT)	5	8(1)	7		1(1)			2	1	**24**	2	67	1735
%area	25.9	30.2	30.4	5.1	3.9	2.5	2	0	0	11.83			
%hauls	20.83	33.33	29.16		4.16			8.33	4.16				
Benguela-Luanda													
Area (NM^2)	1068	1586	1439	407	372	343	346	268	357	**6186**			
# hauls (BT)	15	20	15	2	6	2	5	4	5	**74**	*	98	1004
%area	17.3	25.6	23.3	6.6	6	5.5	5.6	4.3	5.8	37.41			
%hauls	20.3	27.0	20.3	2.7	8.1	2.7	6.8	5.4	6.8				
Luanda-Congo River													
Area (NM^2)	1379	1969	1940	601	550	437	409	408	702	**8395**			
# hauls (BT)	16	22	23(1)	7	5(2)	6	6	7	7(1)	**99**	4	106	1208
%area	16.4	23.5	23.1	7.2	6.6	5.2	4.9	4.9	8.4	50.76			
%hauls	16.2	22.2	23.2	7.1	5.1	6.1	6.1	7.1	7.1				
Grand total													
Area (NM^2)	2954	4146	3973	1108	999	828	794	676	1059	**16537**			
# hauls (BT)	36	50	45	9	12	8	11	13	13	**197**			
%area	17.9	25.1	24	6.7	6	5	4.8	4.1	6.4				
%hauls	18.3	25.4	22.8	4.6	6.1	4.1	5.6	6.6	6.6	**Total hauls: 204**			

***plus one trawl deeper than 800m.**

A stratified semi-random survey design was used with depth and area as stratifying variables. Trawling was 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.

Based on a decision made in 2003 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. 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, 2003-2007 surveys in the southern region, and during the 2002-2007 surveys in the central and northern regions (see Annex VIII).

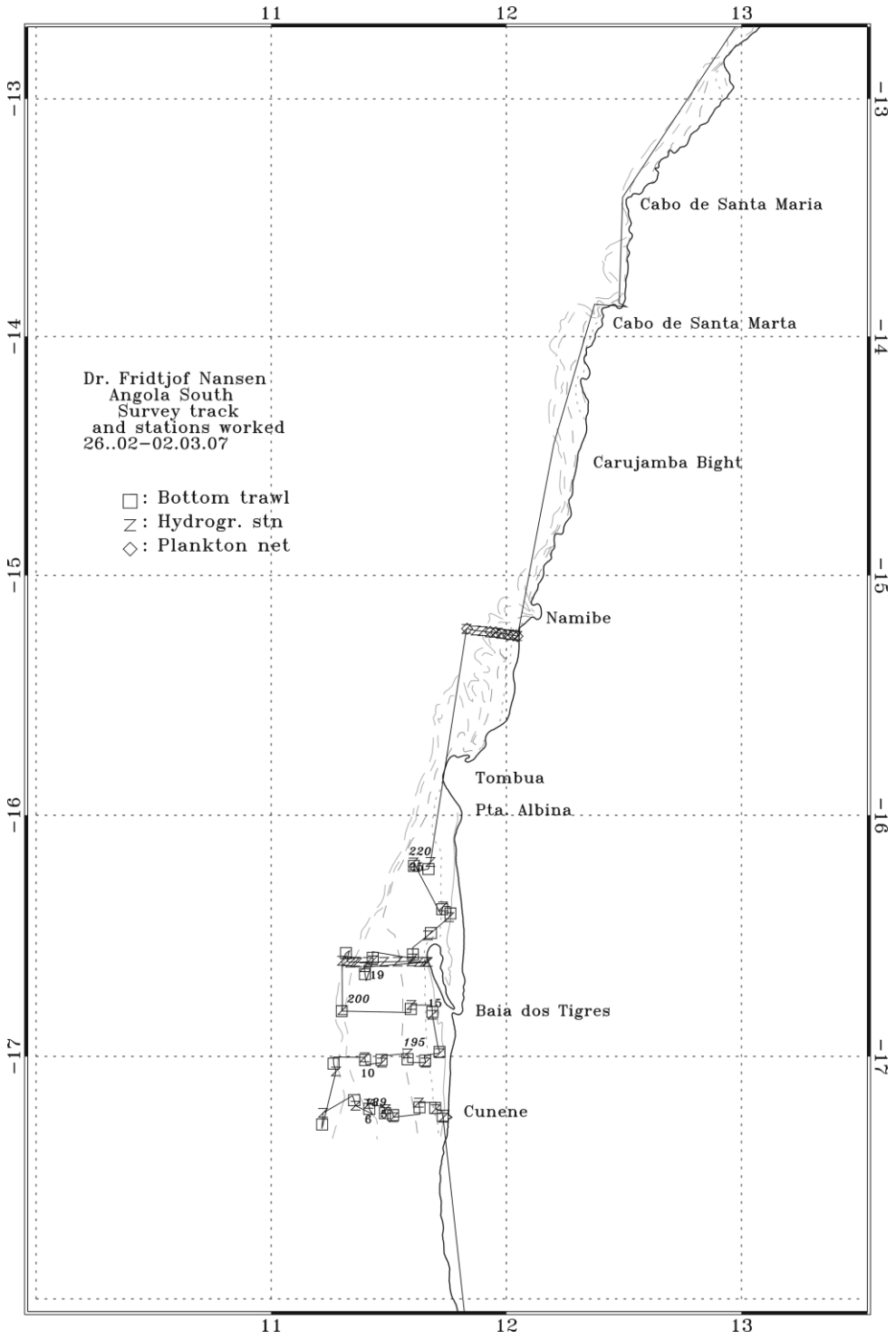


Figure 2.1 Angola south: Cunene to Tombua. Course track with trawl stations, plankton stations and hydrographic transects. Hydrographic stations were also taken at the fishing stations. Depth contours at 20, 50, 100 and 200 m.

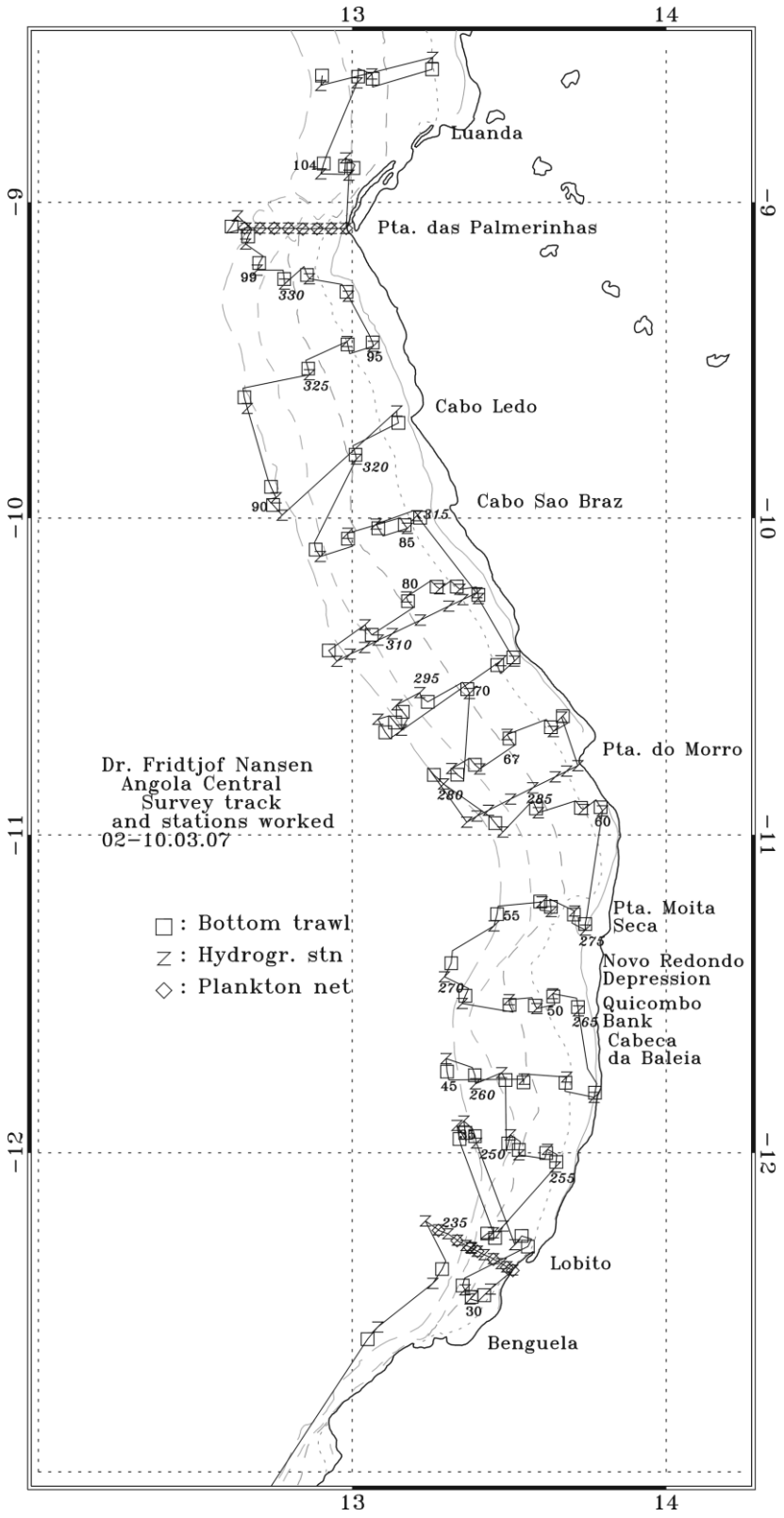


Figure 2.2 Angola central: Benguela to Luanda. Course track with trawl stations, plankton stations and hydrographic transects. Hydrographic stations were also taken at the fishing stations. Depth contours at 20, 50, 100, 200 and 500 m.

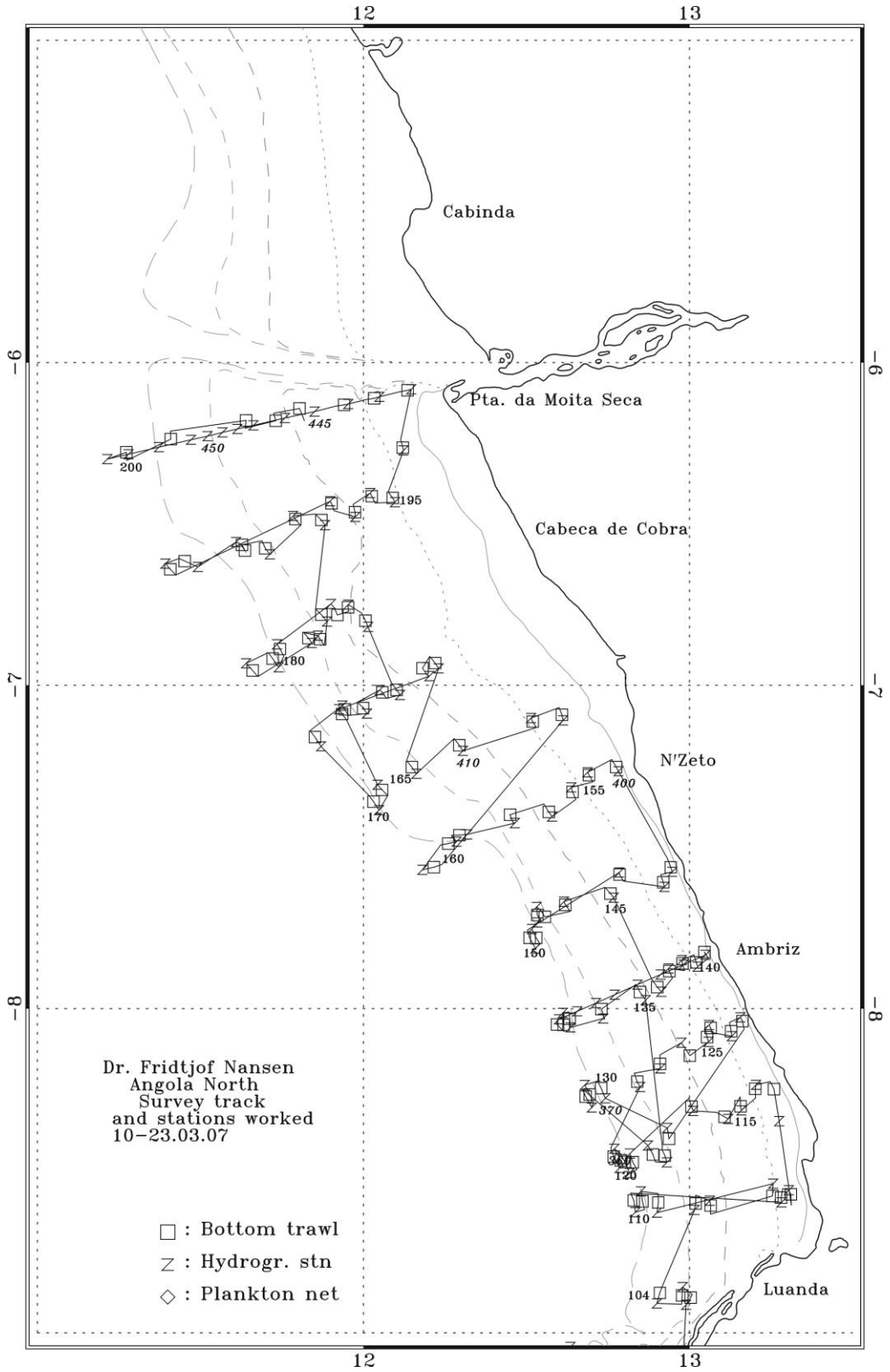


Figure 2.3 Angola north: Luanda to Congo River. Course track with trawl stations, plankton and hydrographic transects. Hydrographic stations were also taken at the fishing stations. Depth contours at 20, 50, 100, 200 and 500 m.

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. No calibration of the oxygen sensor was carried out as the sensor was calibrated one week prior to the start of the 2007 demersal survey (see survey report 2007402). The result of the calibration was:

$$cOx_{winkler} = 1.06 \pm 0.01 cOx_{CTD} + 0.056 \pm 0.03, \quad R^2 = 0.99$$

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 or 4 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^{-1}. 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 depths 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. In shallow stations with depths 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 as the time when the wires start 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.

Sharks were sexed, measured and weighted, but due to time constrictions the data were not introduced in the database during the survey. It will be done during the first months of 2008 (Annex X).

2.4 Acoustic sampling

Acoustic recordings were carried out at four frequencies: 18, 38, 120 and 200 kHz using a SIMRAD ER60 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 μm) 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%.

2.6 Areas and depth strata

Table 2.1 shows the areas (n.mi.^{2}) of the southern region (Cunene-Tombua: S17^{o}14'-S16^{o}00'), in the central region (Benguela-Luanda: S12^{o}40'-S09^{o}00'), and the northern region (Luanda-Congo River: S09^{o}00'-S06^{o}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 NANSIS database were exported to flat ASCII text files. The software R 2.2.1[⊗] 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.

[⊗] 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

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 are depicted in Figures 3.1-3.2. The temperature varied between 25–29ºC and the salinity was about 35.5-35.7 psu. Neither the temperature nor the salinity distribution indicates the typically features of the presence of the Angola-Benguela Front. Furthermore, no signal of upwelled water was observed in the costal areas of Baía dos Tigres.

The horizontal distribution of temperature and salinity in the central region are shown in Figures 3.3 – 3.4. Temperature varies between 27–30 ºC in whole region. The smallest values of temperature (27 ºC) are observed around Cabo Ledo which perhaps is caused by the water from Cuanza River. The salinity values are low in the whole region and ranged between 31 – 34 psu, and decreased offshore. These low salinity values are related to the large discharge of freshwater from the rivers due to the heavy rain inland in 2007.

In the northern region the temperature was lowest inshore with about 28°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 31 and 33 psu (Figure 3.). 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.

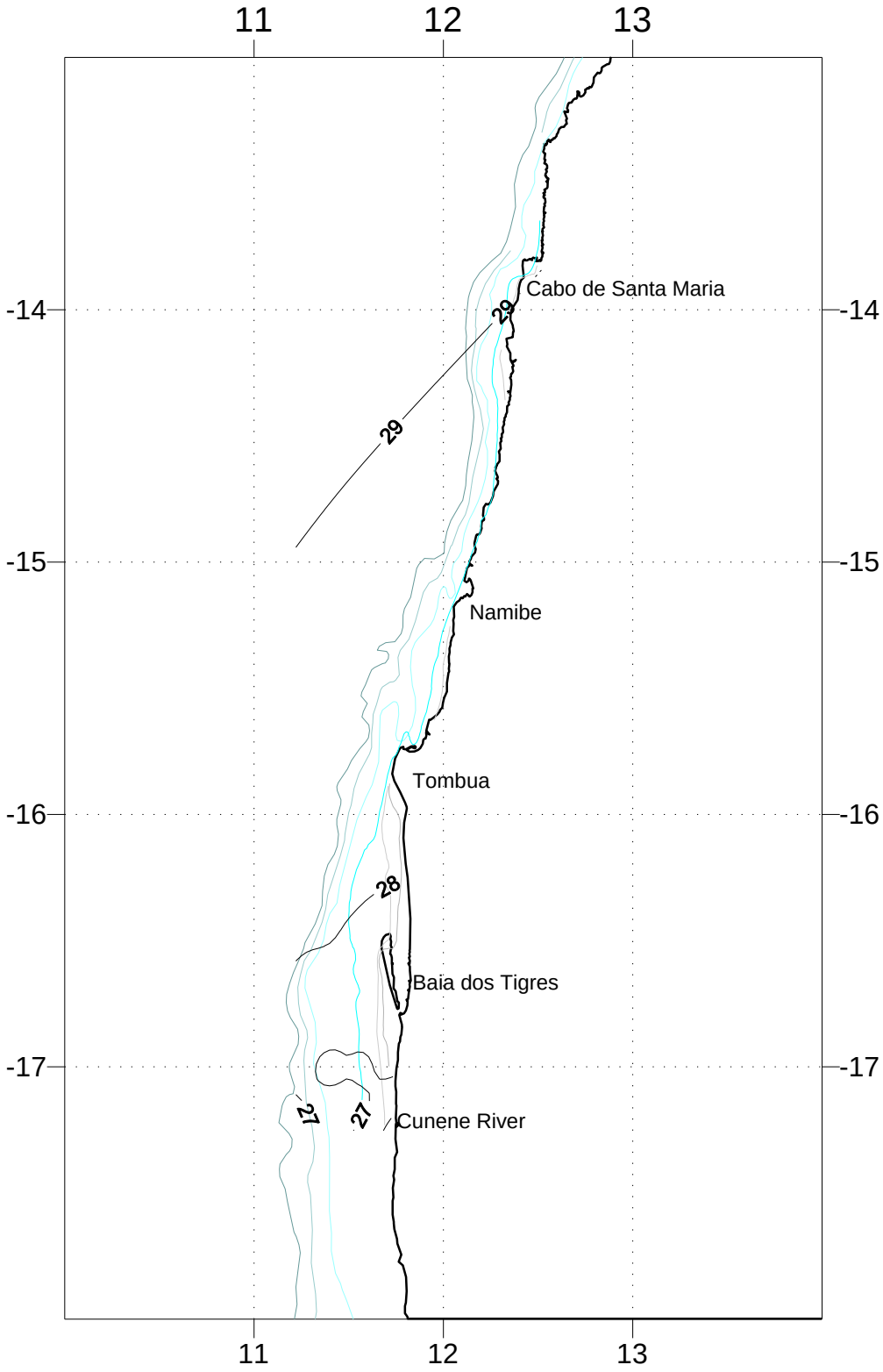


Figure 3.1 Angola south. Horizontal distribution of surface temperatures (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

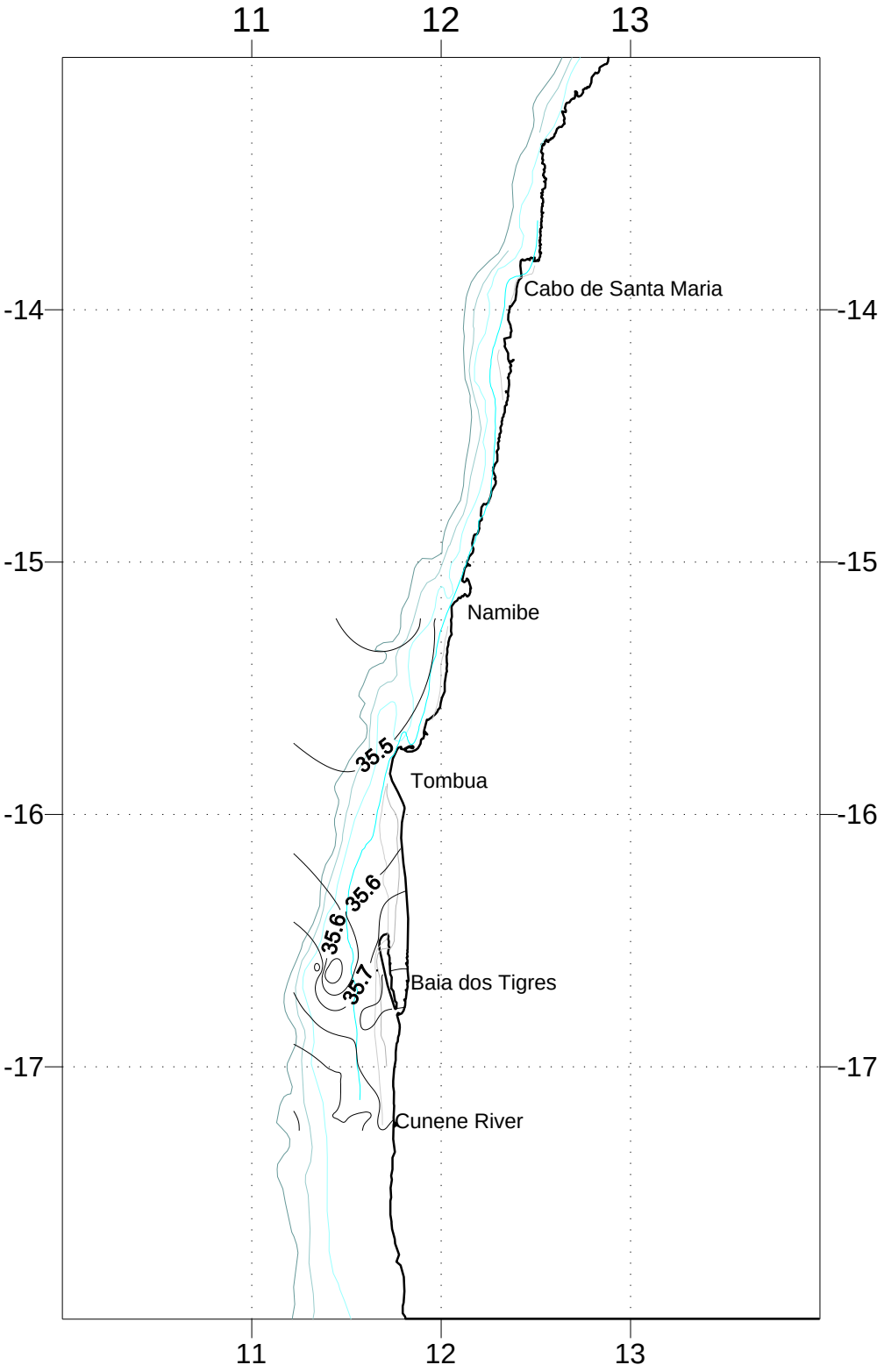


Figure 3.2 Angola south. Horizontal distribution of surface salinity (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

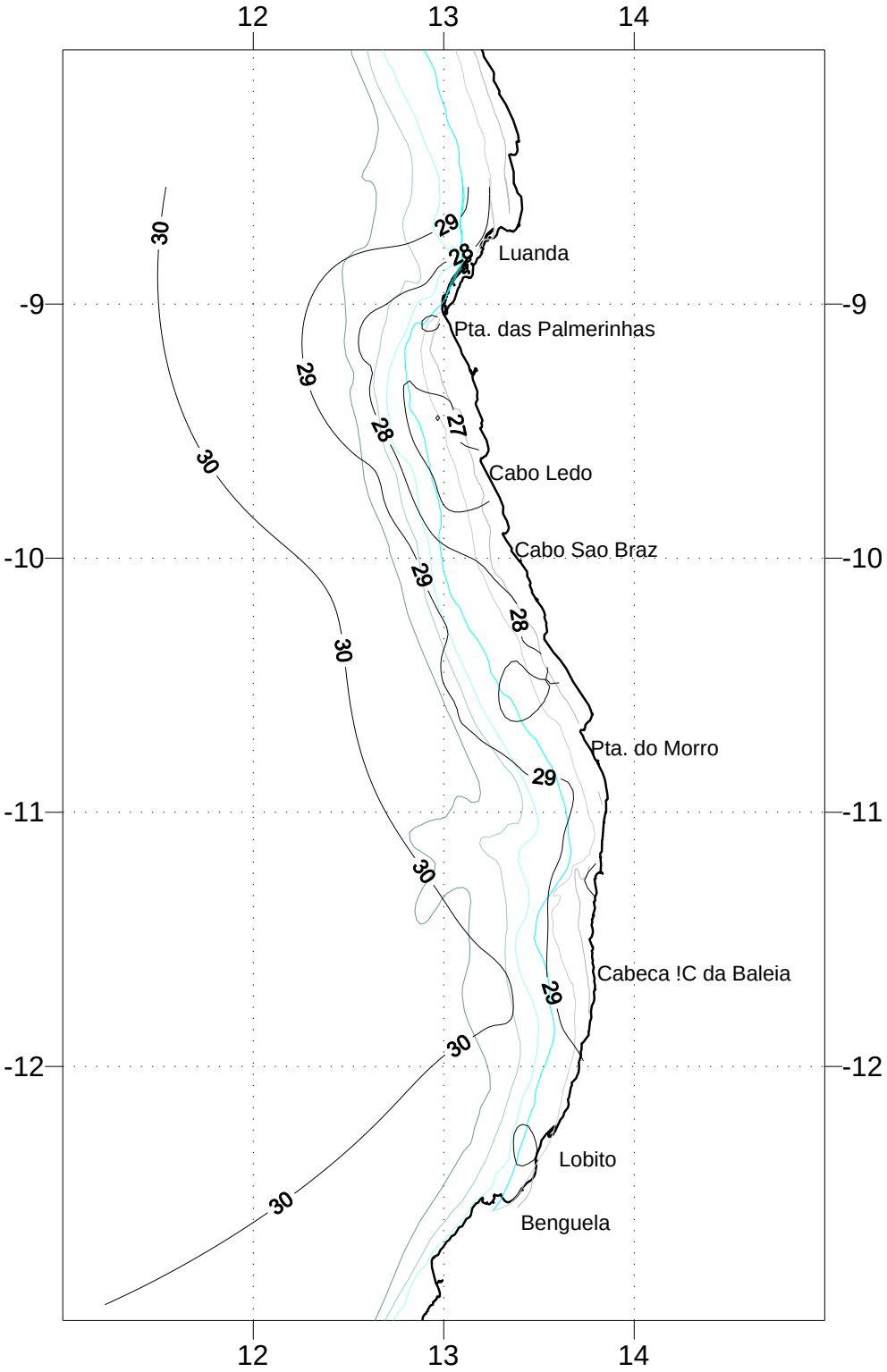


Figure 3.3 Angola central. Horizontal distribution of surface temperatures (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

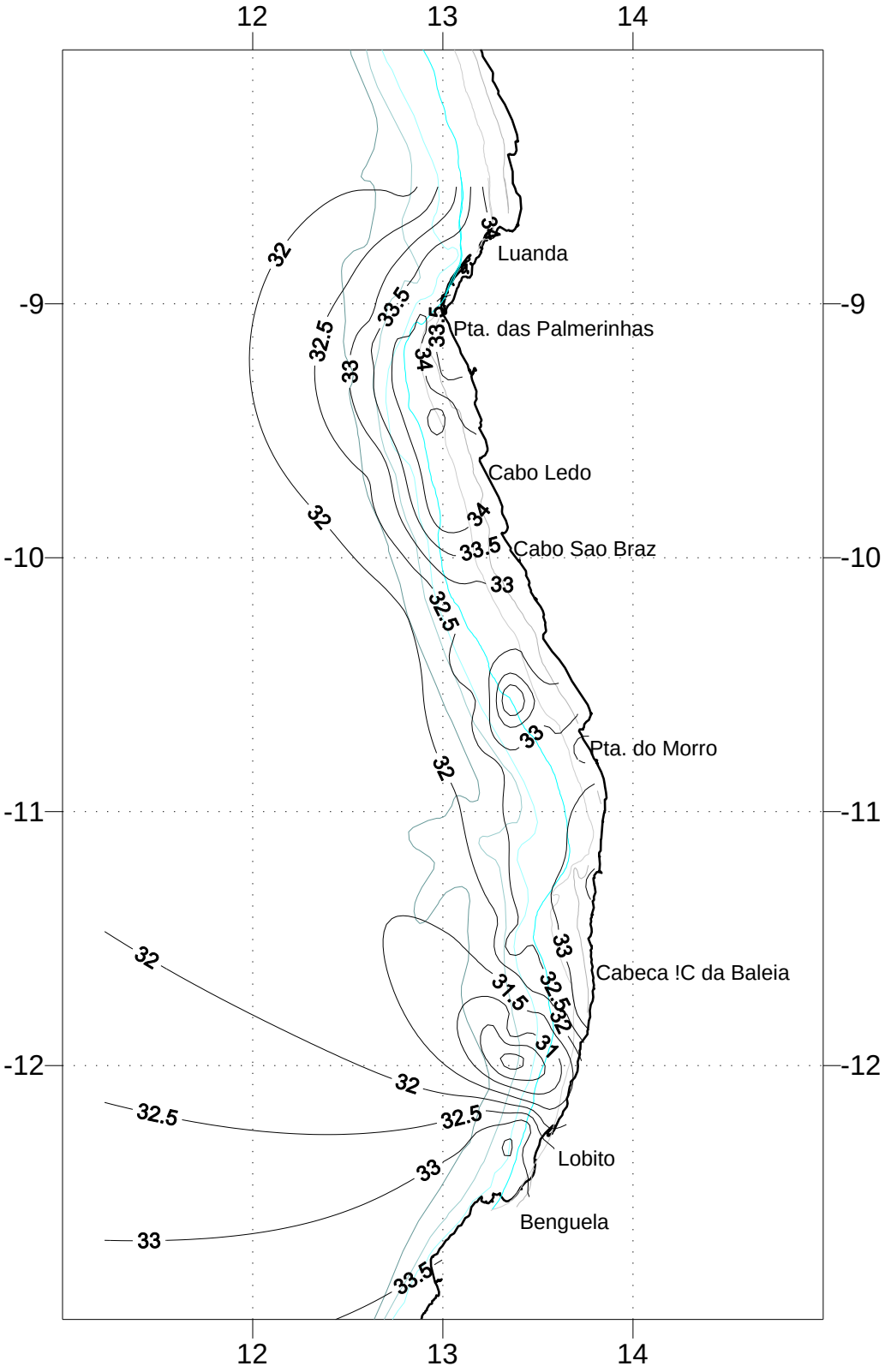


Figure 3.4 Angola central. Horizontal distribution of surface salinity (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

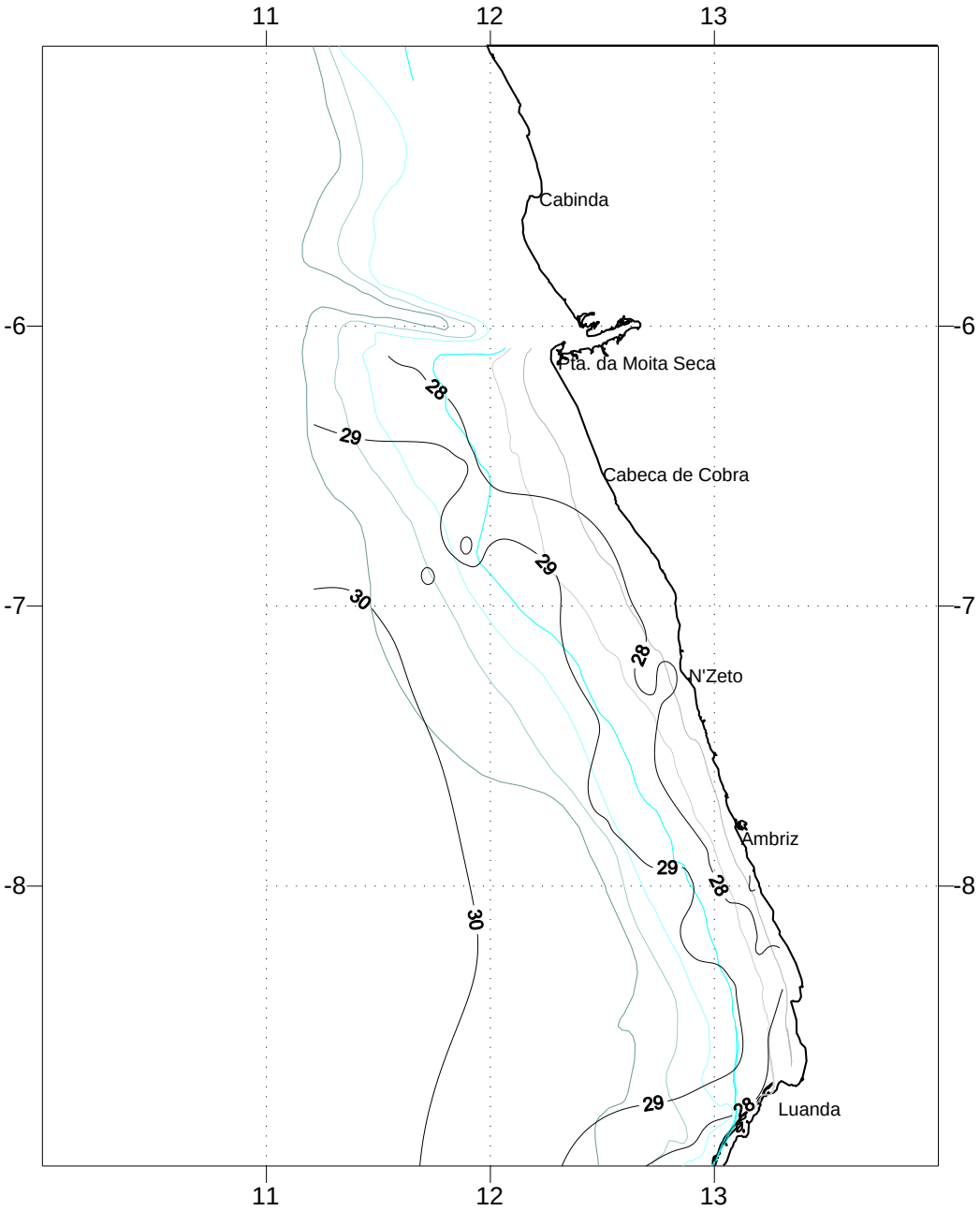


Figure 3.5 Angola north. Horizontal distribution of surface temperature (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

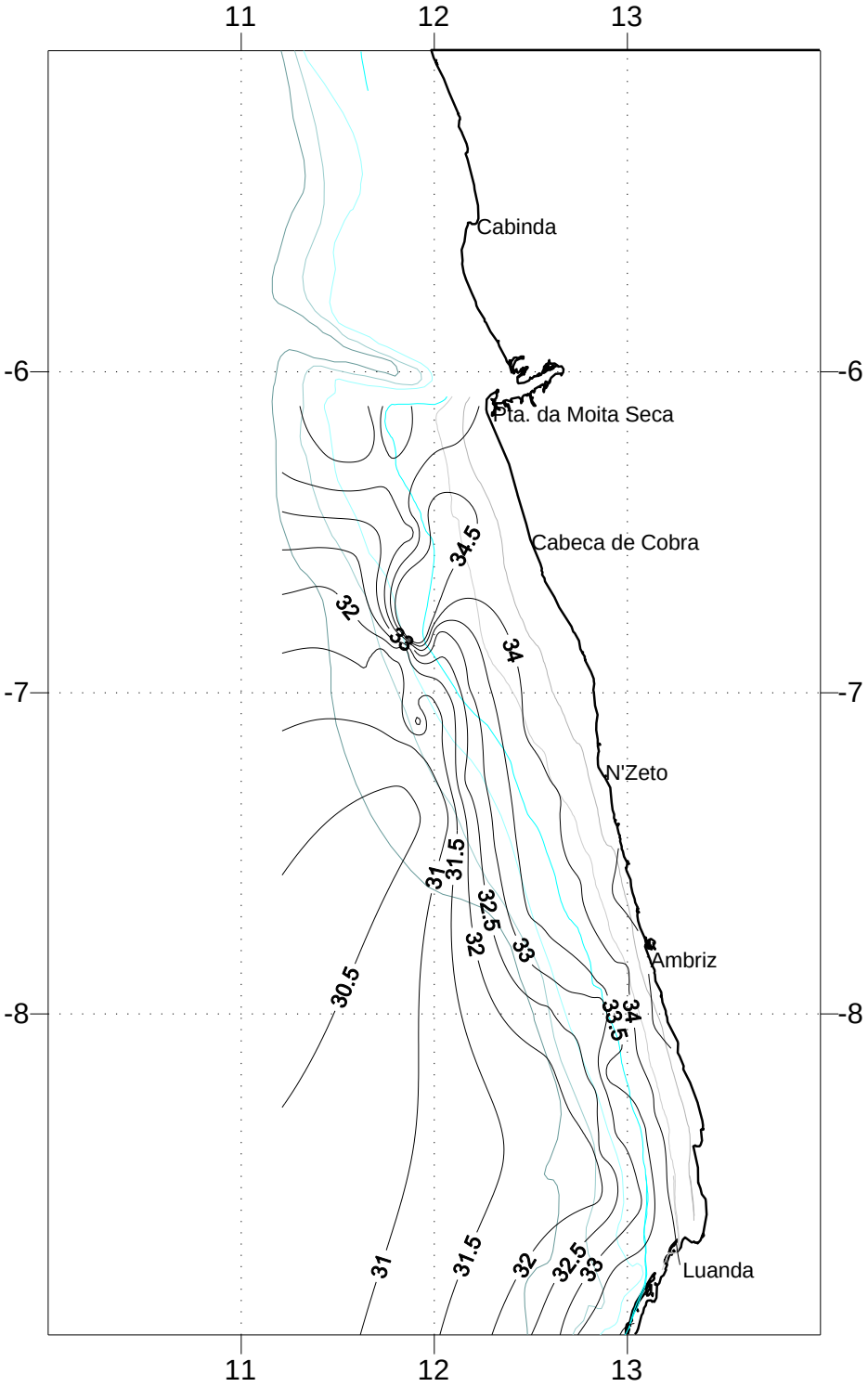


Figure 3.6 Angola north. Horizontal distribution of surface salinity (5 m depth). Depth contours at 20, 50, 100, 200, 500 and 1000 m.

3.2 Vertical sections

The vertical transects of Baía dos Tigres and Namibe were sampled in southern region (Figures 3.7-3.8). Temperature, salinity and oxygen increased with distance from coast and decreased with the depth. The values of surface temperature were 3-5ºC higher than last year. The stratification layer was well pronounced with depth from surface to below 100 m depth. The temperature in this layer varied between 27ºC at surface to 16ºC at edge of layer. The oxygen decreased with depth, the values were 4-5 ml/l at surface and the layer of low oxygen (< 1 ml/l) was observed below 200 m depth.

Five transects were carried out in the central region (Figures 3.9-3.12), and the temperature and oxygen patterns of the vertical sections were similar in the whole region. The salinity in the surface layers at Lobito, Ponta de Morro and Rio Longo were low due to discharge of freshwater from the rivers. Similar, the discharge of freshwater from Cuanza River affected the inshore water at Pta. Das Palmerinhas, which gave very low salinity values in the surface layers close to the coast (Figure 3.12). The surface temperature in all transects was between 27ºC to 28ºC, and decreased to below 8ºC in the depths deeper than 400 m. The surface salinity was generally about 33 psu, however, the surface water near the coast of Pta. das Palmerinhas was only 29 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 3.13-3.14). During the 2007 survey the hydrographic conditions at Pta. da Moita Seca were not markedly influenced by the water flux from the Congo River. The temperatures and oxygen levels were similar for both the northern transects, and the inshore surface water was about 29°C and the O_2 4.0 ml/l, and the salinity of the inshore surface water was about 34 psu.

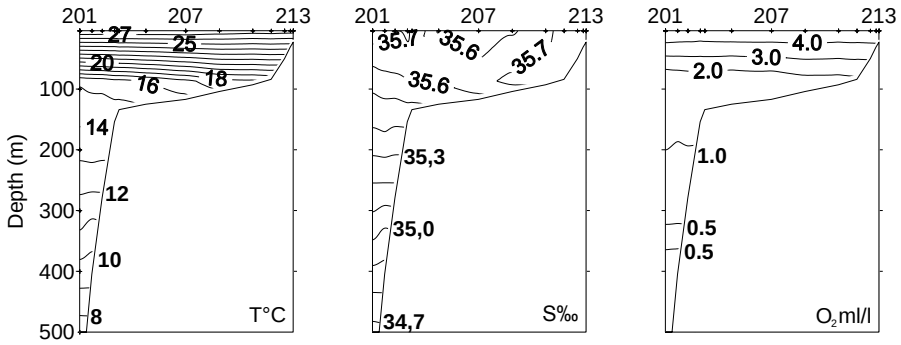


Figure 3.7 Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Baía dos Tigres.

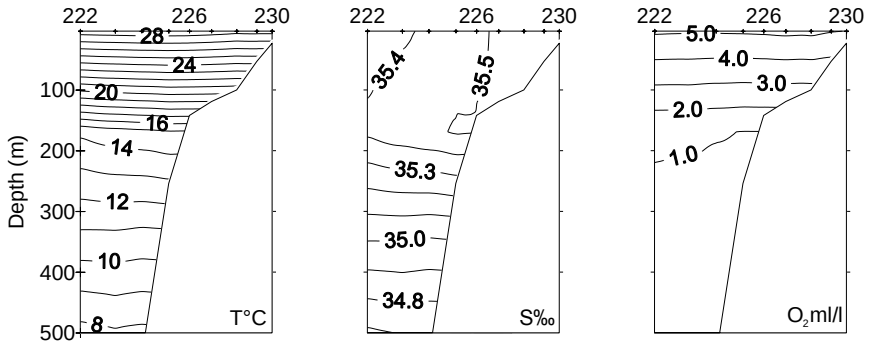


Figure 3.8 Angola south. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Namibe.

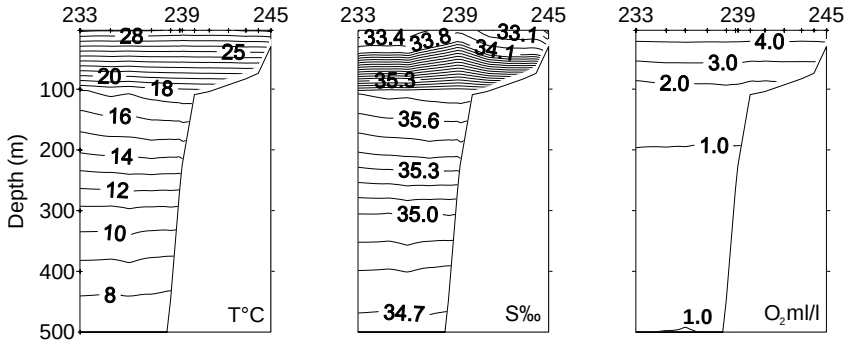


Figure 3.9 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Lobito.

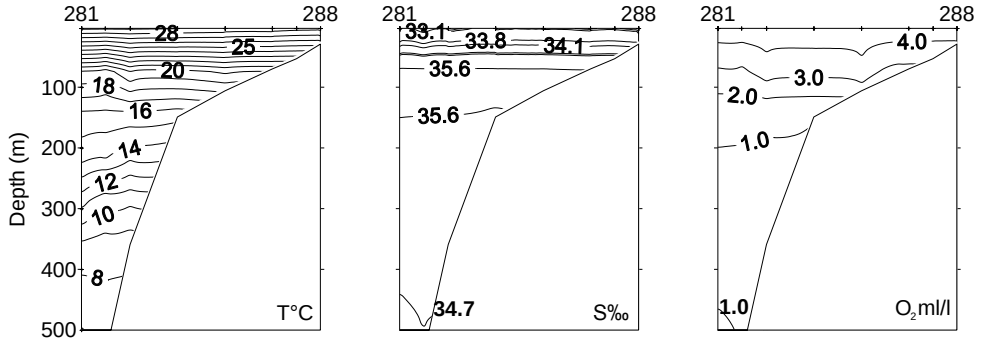


Figure 3.10 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Ponta do Morro.

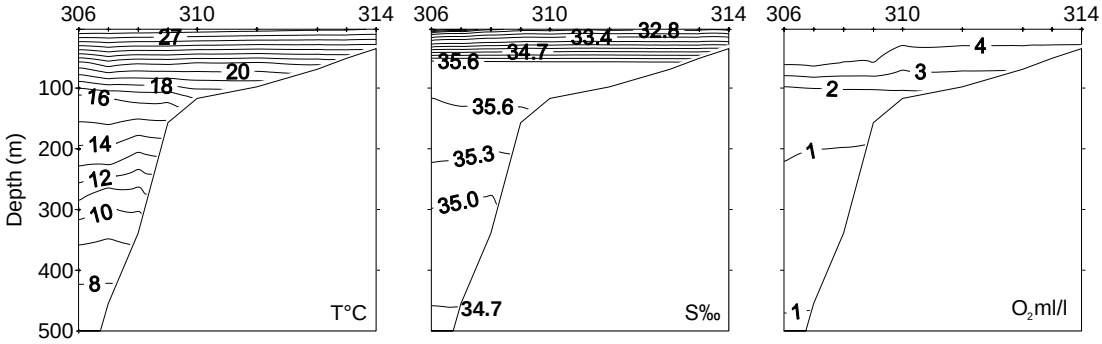


Figure 3.11 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Rio Longa.

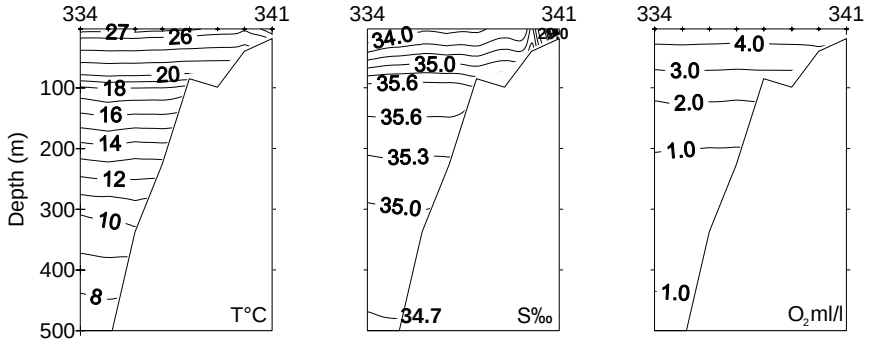


Figure 3.12 Angola central. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Pta. das Palmerinhas.

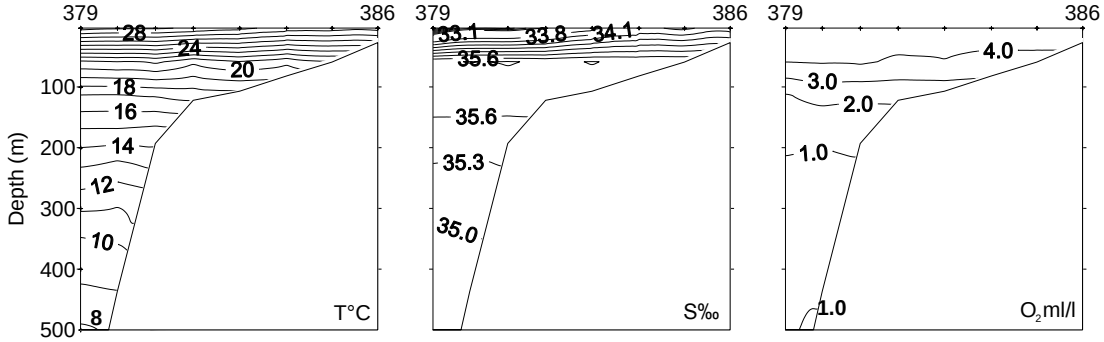


Figure 3.13 Angola north. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Ambriz.

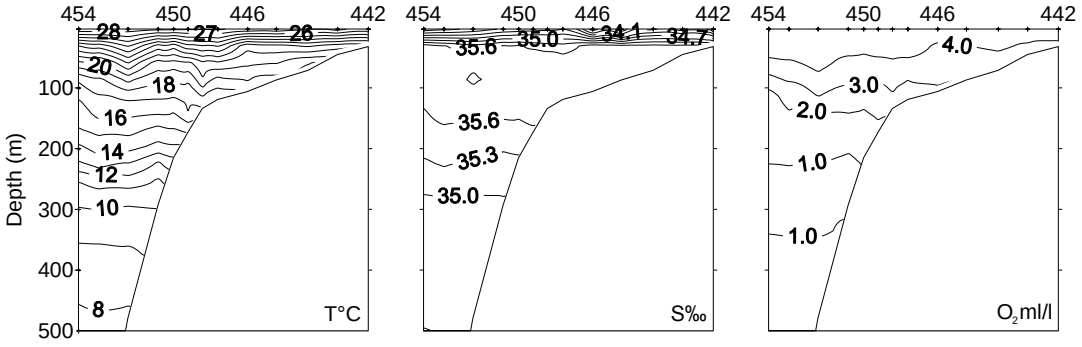


Figure 3.14 Angola north. Vertical sections of a) temperature, b) salinity and c) oxygen on the oceanographic transect at Pta. da Moita Seca.

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

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·n.mi.^{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.

4.1 Cunene-Tombua shelf

During 3 days 20 trawl stations were sampled on the southern shelf, where 19 were successfully accomplish. 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.

Some trawl stations were interrupted (see Annex I) as high catches of 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 825 kg/hour and 4 170 kg/hour on the outer shelf (Annex VI). The 'pelagic' group dominated on the shelf with 66% and 78% of the mean catch rates on the inner and outer shelf, respectively. The mean catch rates of the 'demersal' group were respectively 142 and 649 kg/hour on the inner and outer shelf. Shrimps were only caught in low numbers at one station on the outer shelf, and the average mean catch rates of the cephalopods and sharks were 22 and 31 kg/hour on the inner shelf, and 33 and 45 kg/hour on the outer shelf, respectively. The "other" group and contributed to 11% of the average mean catch rate on the inner shelf and 4% on the outer shelf. Seabreams (except *Boops boops*) was the most abundant demersal group, and was caught in all stations on the shelf. The average catch rate of seabreams on the inner shelf was 20 and 458 kg/hour on the outer shelf, and *Dentex macrophthalmus* was the dominating seabream. The average catch rates of croakers (mainly *Umbrina canariensis*) on the inner and outer shelf were 96 and 52 kg/hour. *Pomadasys jubelini* (a grunt) was only caught in one station on the inner shelf. As previously mentioned, the 'pelagic' group dominated the catches on the inner shelf, and the carangids, mainly horse mackerel (*Trachurus capensis* and *T. trecae*), was by far the most abundant group with an average catch rate of 495 kg/hour. The average catch rate of the carangids on the outer shelf was 3240 kg/hour.

Biomass estimates

Table 4.1 shows the time series from 1985 to 2007 of swept-area biomass estimates for commercial 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 estimate of horse mackerel in 2007 was 108 000 tonnes, which is the lowest estimate since 2000 and is a reason for concern about the state of the horse mackerel stocks. However, the swept-area estimates of the pelagic stocks are unreliable as the bottom trawl is only catching fish close to the seabed. In 2005, the *T. trecae* contributed to less than 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 93% in 2007. Small fish (<30 cm) dominated the horse mackerel catches.

The seabream biomass estimate was about 15 500 tonnes and consisted almost entirely of *Dentex macrophthalmus*. This is a small increase from last year; however, the 2005-2007 estimates are the lowest estimates in the time series since 1986.

The biomass estimate of hake (*Merluccius capensis and M. polli*) was 3 000 tonnes. No Benguela hake (*M. polli*) was caught in the southern region during the 2006 survey, whilst it contributed to about 44% of the biomass in 2007. The hake abundance has declined annually since 2003, and the 2007 estimate is the lowest observed since 2000.

The biomass estimate of the cephalopods in 2007 was 1 450 tonnes, which is similar to the estimate of 1 500 tonnes in 2006. The two most recent estimates are considerable lower than the 2005 estimate of 2 300 tonnes. It is mainly a considerable reduction in the biomass of the Ommastrephidae (*i.e. Illex coindetii*), which contribute to the decrease in the biomass of cephalopods.

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 2007 estimate of 4 200 tonnes is a large increase from last year's estimate of 900 tonnes, however, it is smaller than 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 there is no evident trend in the time series.

The biomass estimate of sharks (includes Chimaeriformes) in 2007 was about 2 000 tonnes which is a considerable reduction from the very high 2006 estimate of 3 600 tonnes in 2007. Still, the 2007 estimate is relatively large compared with the estimate prior to 2006.

The biomass estimates of the pelagic species groups are unreliable, as the bottom trawl is not a very suitable sample tool for these groups. However, the 2007 biomass estimates of clupeids and scombrids are considerably smaller than the very high estimate of 2006, and the large fluctuations in the time series do not reflect the true change of abundance of these stocks. Similar, the fluctuations in the hairtail biomass estimates over time are unlikely to represent a reliable reflection of changes in the stock. 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 2007.

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	Horsemackerel	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	11636	39225	2087	551	0	39225	155
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)	2501 (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)
2007	3006 (0.52)	100468 (0.54)	107896 (0.51)	1459 (0.48)	2016 (0.49)	1747 (0.78)	107918 (0.51)	95 (1.35)

	Hairtails	Croakers	Seabreams	Ommastrephidae	Sepiidae	D.macrophthalamus	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	1746	1443	15594	192	17	15509	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)	305 (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)	15856 (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)
2007	93 (1.25)	4168 (1.21)	15520 (0.36)	555 (1.04)	15 (1.69)	14579 (0.37)	70 (1.69)	563 (0.96)

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 previous surveys.

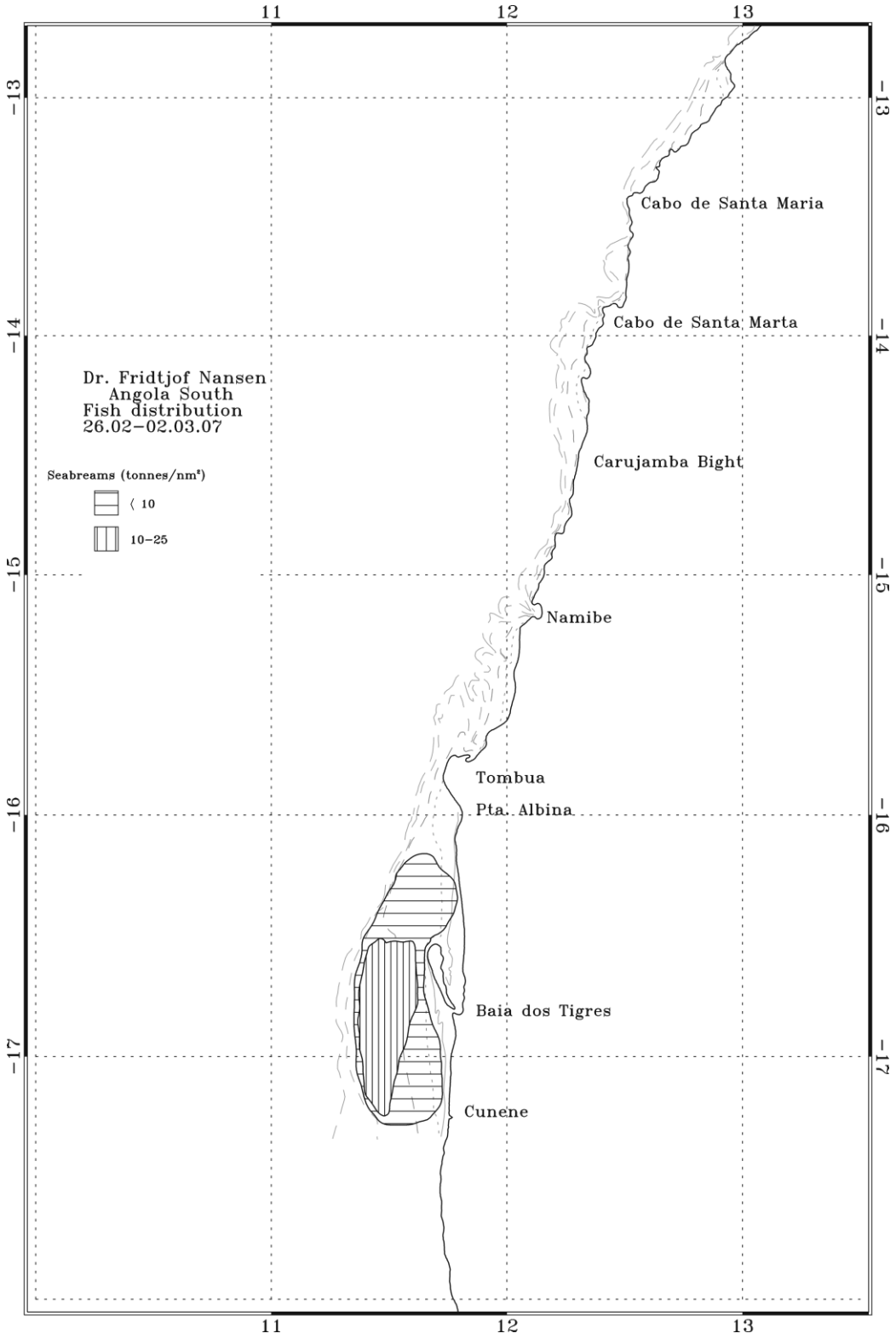


Figure 4.1 Distribution of seabreams (family Sparidae) in the southern region, Cunene-Tombua. Depth contours at 20, 50, 100 and 200 m.

4.2 Benguela - Luanda shelf

The central region of Angolan waters is from Benguela to Luanda. A total of 50 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 1 170 and 950 kg/hour on the outer shelf (Annex VI). The 'demersal' group contributed to 40% of the mean catch rate on the inner shelf and the 'pelagic' group to 39%. Shrimps contributed to 0.4% in the inner shelf, and the cephalopods and the sharks contributed each to 4.6% and 11% of the total average catch rate. Demersal fish were also more abundant than pelagic fish on the outer shelf, and contributed to 54% of the average catch rate, whilst the 'pelagic' group contributed to 2%. Hardly any shrimps were caught on the outer shelf, and sharks and cephalopods contributed to 2 and 0.3%, respectively. Seabreams (except *Boops boops*) were caught in almost every trawl station on the shelf, and the average catch rates were 46 and 73 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 two stations on the inner shelf, but groupers were frequently caught on the inner shelf with an average catch rate of 9 kg/hour. It was caught only in on station on the outer shelf. Similar, the grunts (*Pomadsys incisus* and *P. rogeri*) were often caught on the inner shelf, but only found in the shallow part of the outer shelf. The average catch rate of grunts on the inner shelf was 134 kg/hour. Croakers, mainly *Umbrina canariensis*, were frequently caught on both the inner and outer shelf, and the average catch rates were 40 and 87 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 35, 77, 0.2, 238 and 12 kg/hour, respectively. The average catch rates of the same species groups on the outer shelf were 1.8, 123, 0.1, 101 and 1.2 kg/hour, respectively.

Biomass estimates

Table 4.2 shows the time series from 1985 to 2007 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 swim too 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. The 2006 estimate of 9 600 tonnes showed a small improvement from 2005, however, the 2007 of 7 600 estimate is similar to the 2005 estimate and substantial lower than all estimates from 1999 to 2004.

North of Benguela, *M. polli* was the only hake species caught, and the 2007 estimate of 55 tonnes is similar to the 2005 and 2006 estimates of 44 tonnes. 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 2007 estimate was 8 000 tonnes and is considerably smaller than the 2006 estimate of 11 200 tonnes, and all the recent estimates are markedly lower than the high 2002 estimate of 22 200 tonnes. Previously, the *Dentex macrophthalmus* dominated the seabreams biomass estimate, but in the 2003-2007 survey estimates the *D. macrophthalmus* has contributed to less than 40% of the seabreams biomass. In contrast to *D. macrophthalmus*, the biomass of *D. angolensis* has been relatively stable and fluctuated between 1 000 and 2 000 tonnes in recent years. Nevertheless, the biomass of *D. angolensis* decreased from 1 900 tonnes in 2006 to about 1 300 tonnes in 2007. Other important seabreams, which contributed to the total seabreams biomass, were *Pagellus bellottii*, *D. canariensis* and *D. barnardi*.

The biomass of croakers increased from 4 850 tonnes in 2006 to about 8 000 tonnes in 2007 which is the highest estimate since 1999. *Umbrina canariensis* is the most abundant croaker, and contributed to about 65% of the total croakers biomass.

The 2007 biomass estimate of grunts (*Pomadasys incisus, P. jubelini* and *P. peroteti*) was the highest in the time series, however, 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 do 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. There is no clear trend in the time series as the survey estimates vary largely between years.

The biomass estimate of *Parapenaeus longirostris* in 2007 was 36 tonnes, which is a large decrease from the 2006 estimate of 178 tonnes. *P. longirostris* is mainly distributed in the deeper parts of the shelf and the slope, and the large variance between surveys may illustrate annually changes in the geographical distributions.

The biomass estimate of Sepiidae was 245 tonnes in 2007, which is higher than the 2006 estimate of 123 tonnes, however, the annually variability and the high CVs may indicate that the estimates do not accurately reflect the state of the stock.

The biomass estimate of Ommastrephidae was 43 tonnes in 2007, which is the lowest estimate in the time series since 1996.

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)	55 750 (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	7 635	68 984	1 391	2 531	149	125	70 873	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)	12 977 (0.53)	15 (0.74)	890 (0.38)	107 (1.15)	1 961 (0.92)	20 379 (0.43)	34 (1.28)
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)
2007	55 (0.84)	7 649 (0.49)	54 (0.59)	1 822 (0.30)	802 (1.19)	2 078 (0.67)	13 485 (0.59)	18 (1.15)

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)	18 407 (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	660 (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	13 839	0	0	1 023	293	7 099	31 763	1 265
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	8 210 (0.66)	1 605 (0.53)	526 (1.86)	631 (0.77)	3 289 (0.87)	9 891 (0.90)	17 435 (0.39)	9 (0.93)
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)	11 187 (0.31)	178 (1.07)
2007	22 472 (0.91)	749 (0.46)	31 (1.73)	491 (0.99)	9 275 (0.86)	8 081 (1.07)	8 013 (0.36)	36 (0.79)

Survey	Ommastrephidae	Sepiidae	D.macrophthalamus	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)	65 (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	418	1 251	24 404	1 260	4 995	1 953
1998	376 (0.65)	1 295 (0.58)	50 924 (1.50)	1 990 (0.38)	2 239 (0.77)	22 014 (0.95)
1999	201 (1.28)	113 (0.64)	5 178 (0.79)	1 163 (0.40)	7 999 (1.08)	93 522 (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)	41 122 (0.69)
2002	2 363 (0.70)	173 (0.91)	11 512 (1.16)	923 (0.47)	3 492 (0.54)	66 053 (0.75)
2003	230 (0.58)	101 (0.82)	557 (0.66)	1 046 (0.50)	1 001 (0.51)	38 312 (0.49)
2004	310 (0.89)	206 (0.65)	3 525 (1.27)	1 015 (0.41)	5 700 (1.21)	26 743 (0.42)
2005	233 (0.61)	565 (0.27)	879 (0.59)	991 (0.39)	2 279 (0.64)	36 621 (0.77)
2006	128 (0.54)	123 (1.00)	2 802 (0.42)	1 982 (0.39)	4 329 (0.65)	33 546 (0.86)
2007	43 (0.53)	245 (1.53)	1 532 (0.86)	1 312 (0.64)	5 224 (1.39)	40 402 (0.53)

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 off Benguela and Lobito.

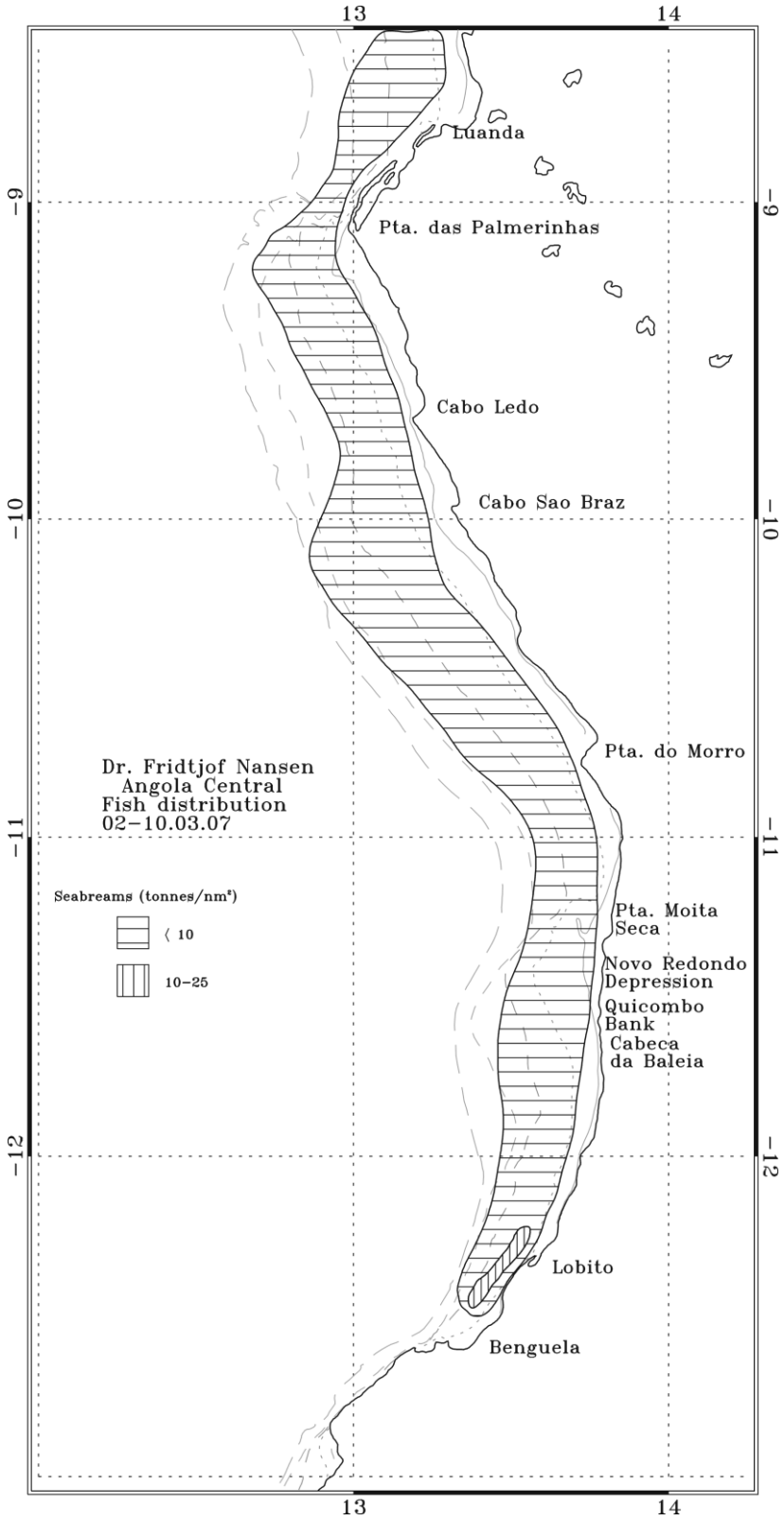


Figure 4.2 Distribution of seabreams (Sparidae) in the central region, Benguela – Luanda. Depth contours at 20, 50, 100, 200 and 500 m.

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 only include trawl stations south of Congo River. A total of 61 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 700 kg/hour and 345 kg/hour on the outer shelf (Annex VI). The 'demersal' group dominated on the inner shelf with an average catch rate of 335 kg/hour and a relative contribution of 48%. The 'pelagic' group contributed about 40%, while shrimps and cephalopods contributed to 1.2 and 2.4%, respectively, and sharks to 1.3%. On the outer shelf, the demersal fish contributed to 49% of the mean catch rate and the 'pelagic' group to about 18%. Shrimps and sharks each contributed to 1.2% and 3.2%, while the cephalopods to 4.6% to the mean catch rate. Seabreams (except *Boops boops*) were caught in all trawl stations at the outer shelf and in about 60% of the stations at the inner shelf, and the average catch rates were 36 and 92 kg/hour on the inner and outer shelf, respectively. Snappers were only caught in two stations on the inner shelf. The catch rates of groupers were 2.6 and 2.5 kg/hour on the inner and outer shelf, respectively. The grunts (*Pomadsys 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 139 kg/hour, and 0.2 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 53 and 5.9 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 30, 106, 2.4, 100 and 24 kg/hour, respectively. The average catch rates of the same species groups on the outer shelf were 0, 30, 0.6, 28 and 0.5 kg/hour, respectively.

Biomass estimates

Table 4.3 shows swept-area biomass estimates from 1985 to 2007 for the commercial species and groups of species on the shelf off northern 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 2 983 tonnes in 2007, which is the lowest estimate of the biomass registered in the time series since 1996. In this interval of time, the highest estimates of 37 094 tonnes was registered in 1997.

In contrast with 0 tonnes registered during the 5 previous surveys, 37 tonnes of *M. polli* were caught on the northern shelf in 2007.

The 2007 biomass estimate of seabreams on the northern shelf has slightly increased to 12758 tonnes, comparing to about 10 800 tonnes registered in 2006, but is still considerably lower

than the very high 2005 estimate of 18 300 tonnes which was the highest estimate since 1996. As in the previous years, *Dentex angolensis* is the dominating seabream species in the north and contributes to about 48% of the total seabream estimate. The biomass of *Dentex macrophthalmus* 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 3 901 tonnes in 2007, 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 the decline of the total biomass of croakers with only 622 tonnes registered in this year, 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 7 966 tonnes in 2007, which is the highest estimate registered since 1996. However, a fluctuating trend is observed during the 4 last years.

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.

As in the previous years, 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 2007 was 135 tonnes on the northern shelf, which is lower in relation to 2006 (176 tonnes), but still 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 2007 biomass estimate of Sepiidae was 190 tonnes and is considerably higher than the 2006 estimate of 94 tonnes. Although the fluctuating trend of the biomass since 1999, the abundance of Sepiidae is low on the northern shelf.

The biomass estimate of Ommastrephidae decreased to 42 tonnes in 2007, which is the lowest estimate of the time series since 1989. 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.polli	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 NA	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 NA	21 484 (0.57)	381 (1.69)	935 (0.37)	705 (0.67)	1 841 (0.96)	43 605 (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 NA	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)	37 094 (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)	69 (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 NA	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 NA	9 995 (0.54)	501 (0.80)	501 (0.57)	250 (0.51)	2 816 (0.60)	28 515 (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 NA	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 NA	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)
2007	37 (1.63)	2 983 (0.38)	243 (0.71)	703 (0.26)	432 (0.47)	1 797 (0.64)	9 442 (0.47)	195 (0.93)

Survey	Hairtails	Barracudas	Snappers	Groupers	Grunts	Croakers	Seabreams	P.longirostris
1985.1	15 711 (0.87)	254 (0.90)	0 NA	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 NA
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 NA
1985.4	3 608 (0.70)	780 (1.46)	0 NA	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 NA	1 515 (0.51)	1 694 (0.59)	5 049 (0.37)	25 098 (0.28)	0 NA
1989.1	2 277 (0.71)	345 (0.80)	0 NA	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 NA	642 (0.92)	822 (0.85)	3 797 (0.83)	4 769 (0.23)	0 NA
1991.2	4 949 (0.57)	79 (1.27)	0 NA	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 NA	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 NA	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 NA	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)	2 712 (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)	8 927 (0.40)	101 (0.86)
2002	19 374 (0.60)	1 651 (0.78)	63 (1.96)	509 (0.88)	241 (0.54)	2 835 (0.53)	9 187 (0.35)	21 (1.00)
2003	6 818 (0.56)	2 345 (1.34)	142 (1.96)	340 (0.68)	1 376 (0.60)	5 571 (0.52)	9 889 (0.29)	65 (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)
2007	9 102 (0.58)	1 587 (1.16)	83 (1.35)	460 (0.47)	7 966 (1.40)	3 901 (0.58)	12 758 (0.25)	135 (1.21)

Survey	Ommastrephidae	Sepiidae	D.macrophthalamus	D.angolensis	U.canariensis	B.auritus
1985.1	10 273 (1.27)	0 NA	200 (1.65)	2 196 (0.55)	1 132 (1.21)	40 729 (1.15)
1985.2	0 NA	0 NA	0 NA	2 495 (0.57)	521 (1.46)	6 842 (1.40)
1985.3	0 NA	154 (0.97)	0 NA	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 NA	696 (0.60)	1 483 (0.48)	11 220 (0.35)	1 350 (0.48)	15 408 (0.45)
1989.1	506 (0.85)	288 (0.93)	0 NA	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)	282 (0.76)	158 (1.06)	1 317 (0.37)	496 (0.72)	28 701 (0.70)
1991.2	2 718 (0.88)	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)	1 740 (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)	324 (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	176 (0.51)	196 (0.63)	417 (0.85)	1 228 (0.39)	188 (1.36)	13 842 (0.59)
2002	660 (0.72)	75 (0.59)	102 (1.18)	2 089 (0.52)	835 (0.83)	15 791 (0.65)
2003	121 (0.80)	206 (1.37)	16 (0.80)	3 201 (0.27)	769 (0.67)	66 412 (0.88)
2004	344 (0.42)	185 (0.83)	79 (1.12)	5 214 (0.39)	1 236 (0.53)	24 512 (1.00)
2005	146 (0.33)	427 (0.51)	136 (0.84)	6 727 (0.17)	3 640 (0.76)	52 045 (1.02)
2006	174 (0.77)	94 (0.61)	7 (1.34)	4 630 (0.20)	2 151 (0.93)	61 138 (0.66)
2007	42 (0.57)	190 (0.70)	11 (1.38)	5 980 (0.24)	622 (0.73)	12 523 (0.61)

Distribution

Seabreams were distributed on the whole northern shelf (Figure 4.3). The densities were <10 tonnes/NM^2 along all the extension.

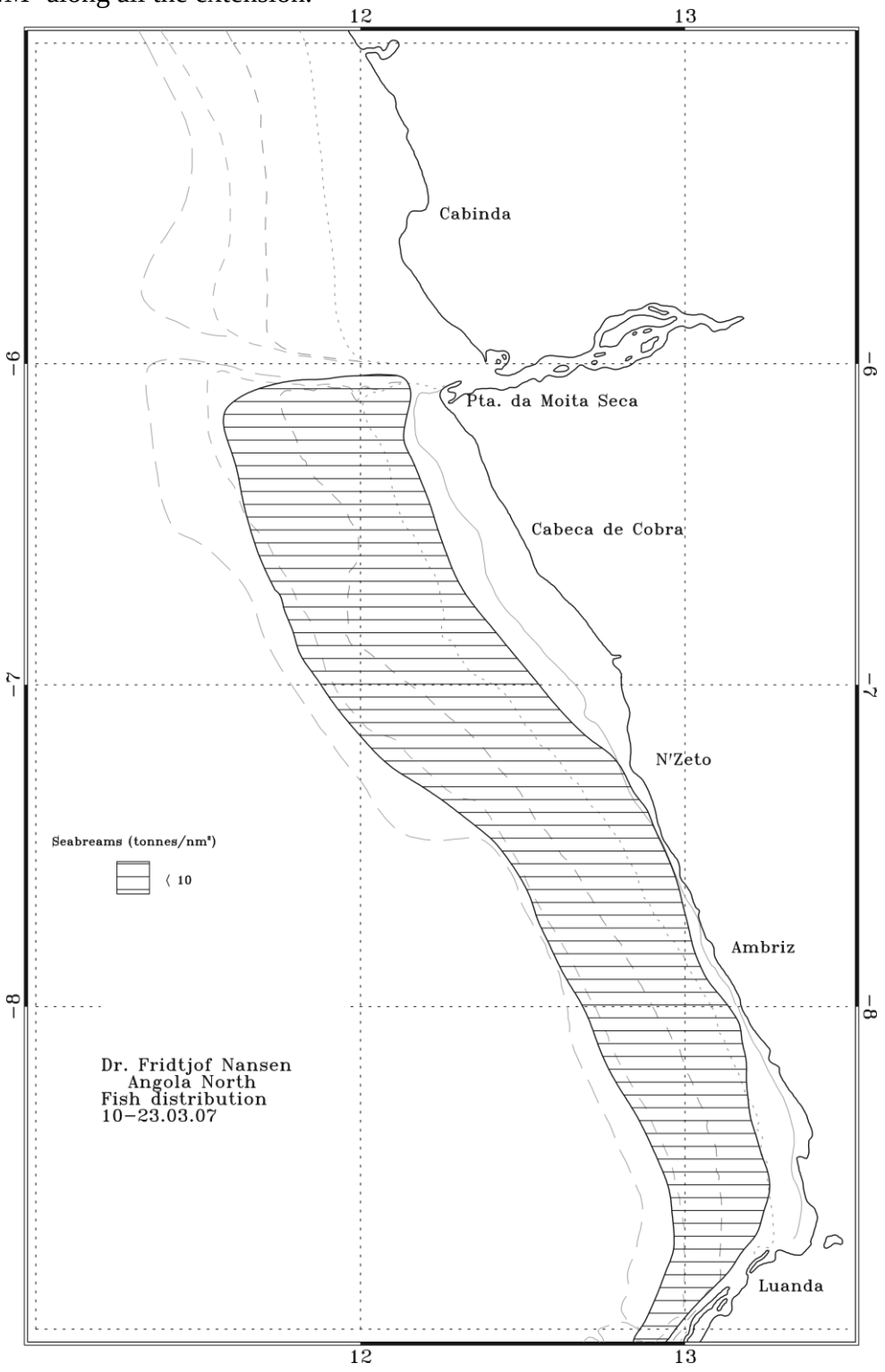


Figure 4.3 Distribution of seabreams (Sparidae) in the northern region, Luanda-Congo River. Depth contours at 20, 50, 100, 200 and 500 m.

CHAPTER 5 CATCH RATES, DISTRIBUTION, COMPOSITION AND BIOMASS ESTIMATES OF DEEP-WATER SHRIMP AND HAKE ON THE SLOPE

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·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

The slope is very steep and rocky in the south and makes trawling difficult. Five trawl stations were sampled on the southern slope in the depths between 200 and 800 meters (Annex VI). The average catch per hour was 1676 kg/hour, and the 'demersal' and 'pelagic' groups contributed to 6.8% and 0.3%, respectively. The "other" group (non-commercial species) dominated the catches and contributed to 82% of the mean catch rate. The cephalopods contributed to 2%, and the shrimps and sharks to 1% and 8%, respectively. No seabreams were caught on the slope, whilst hake (*Merluccius spp.*) was caught at four stations with an average catch rate of 104 kg/hour. *Aristeus varidens* was found in one station.

Table 5.1 shows the time series from 1986 to 2007 of the swept-area biomass estimates for different species and species groups on the southern slope. The numbers of trawl stations on the southern slope is very low due to the difficult trawling conditions. Therefore, no stratifying by depth is done for the data. Further, only stations in the depth range 200-600m are included in the biomass estimates, and in 2007, just one station was successfully carried out between 200 and 600 meters. The 2007 biomass estimates are therefore not reliable.

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 the estimate of 2007 showed a reduction. The lack of any trend in the time series is probably caused by the low sampling effort on the southern slope between 200 and 600 meters. 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, and for instance all hake caught on the slope during the 2007 survey were Benguela hake. Therefore, it seems likely that the hakes were misidentified in 2000.

Seabreams, commercial important shrimp species, horse mackerel, and cephalopods were caught on the southern slope (200-600 m) in 2007.

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	Horse mackerel	Shrimps	Cephalopod	Sharks	Seabreams	P.longirostris	A.varidens
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
2007	1528	0	27	0	4323	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 distribution is similar to the 2005-2006 distributions.

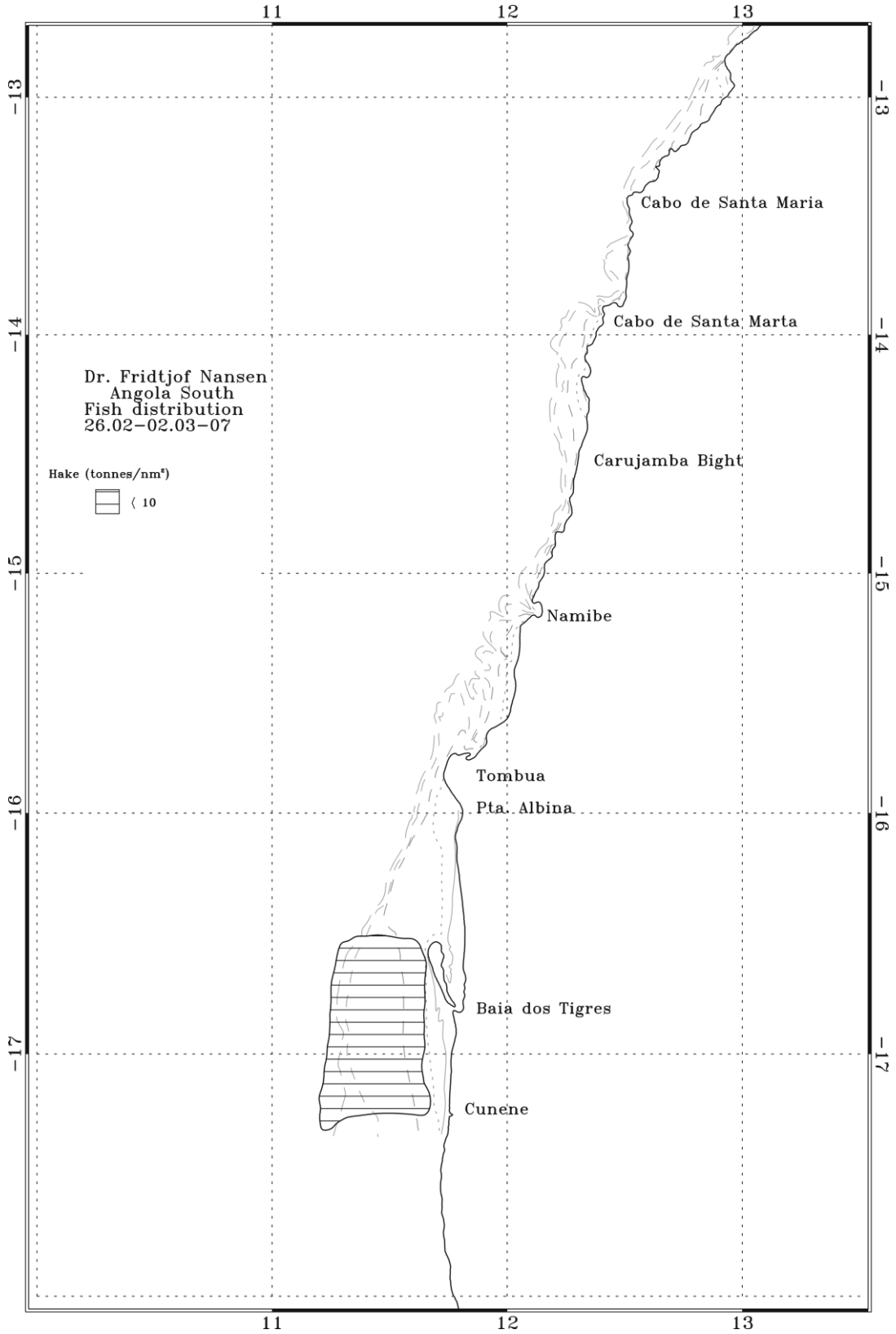


Figure 5.1 Distribution of hake (*Merluccius spp.*) in the southern region, Cunene - Tombua. Depth contours at 20, 50, 100 and 200 m.

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 736 kg/hour (Annex VI). The 'demersal' group contributed to 21% of the mean catch rate and the 'pelagic' group to 0.3%, the shrimps contributed to 20%, while cephalopods and sharks contributed to 1 and 2%, respectively. The "other" group dominated the catches and contributed to 56% of the total mean catch rate. *M. polli* was caught in almost every station on the central slope and the average catch rate was 124 kg/hour. The average catch rate of seabreams was 6.9 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 *Nematocarcinus africana* were respectively 1.4, 10 and 130 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 distributed too 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.

The 2007 biomass estimate of hake was 7 000 tonnes which is almost identical to the 2006 estimate. 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.

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 2007 estimate was only about 800 tonnes which is considerably smaller than the 2004, 2005 and 2006 estimates of 10 800, 6 500 tonnes and 2 400 tonnes, respectively. As in previous surveys, the *D. macrophthalmus* was the most abundant seabream species on the central slope in 2007.

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. In 2007, the biomass estimate was only 191 tonnes and indicates a substantial decrease in the abundance. However, the high CV shows that the estimates are imprecise.

The 2007 biomass estimate of *A. varidens* was 650 tonnes, which considerably larger than the 2006 estimate of 360 tonnes. The 2007 estimate is the second highest since 1999, however, it is still 17% lower than the 2005 estimate of 790 tonnes.

In contrast to the two previous shrimp species, the *N. africana* is not commercial important. Nevertheless, the 2007 biomass estimate of 7 900 tonnes is the highest ever recorded, and the survey time series shows that the abundance has increased during the last years.

The biomass estimate of Ommastrephidae in 2007 was 140 tonnes on the central slope, which is considerably smaller than the 2005 and 2006 estimates of 510 and 460 tonnes, respectively. The estimates increased from 2001 to 2006, but the huge decrease in 2007 suggest that the present abundance is relatively low.

Hairtails were mainly caught in the shallower areas of the slope, and the 2007 biomass estimate was only 185 tonnes, which is considerable smaller than the 2004, 2005 and 2006 estimates

The biomass estimate of the sharks in 2007 was about 1 000 tonnes, which is a large increase from previous surveys. However, the high CV and large variability in biomass between surveys show that there is no clear trend in the abundance of sharks.

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.polli	Shrimps	Cephalopod	Sharks	Hairtails	Seabreams
1985.4	18 790 (1.03)	2 915 (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	13 247	57	0	498 917	6 446
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)
1999.1	11 939 (0.33)	4 950 (0.35)	315 (0.45)	732 (0.54)	2 606 (2.13)	780 (2.05)
1999.2	10 540 (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	4 781 (0.38)	4 295 (0.25)	153 (0.46)	1 064 (0.44)	2 234 (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)	344 (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)	4 087 (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)
2007	6 947 (0.97)	8 939 (0.35)	446 (1.20)	1 054 (0.94)	185 (0.96)	808 (0.42)

Survey	P.longirostris	A.varidens	N.africanus	Ommastrephidae	D.macrophthalamus	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
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)
1999.1	204 (0.75)	653 (0.21)	3 879 (0.45)	195 (0.75)	706 (2.09)	74 (1.79)
1999.2	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)	698 (0.23)	2 763 (0.37)	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 (0.68)	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)	1 192 (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)	339 (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)
2007	191 (1.32)	653 (0.17)	7 913 (0.39)	138 (1.51)	612 (1.09)	196 (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 off Pta. do Morro and Cabeça de Baleia in the depths between 300 and 500 m.

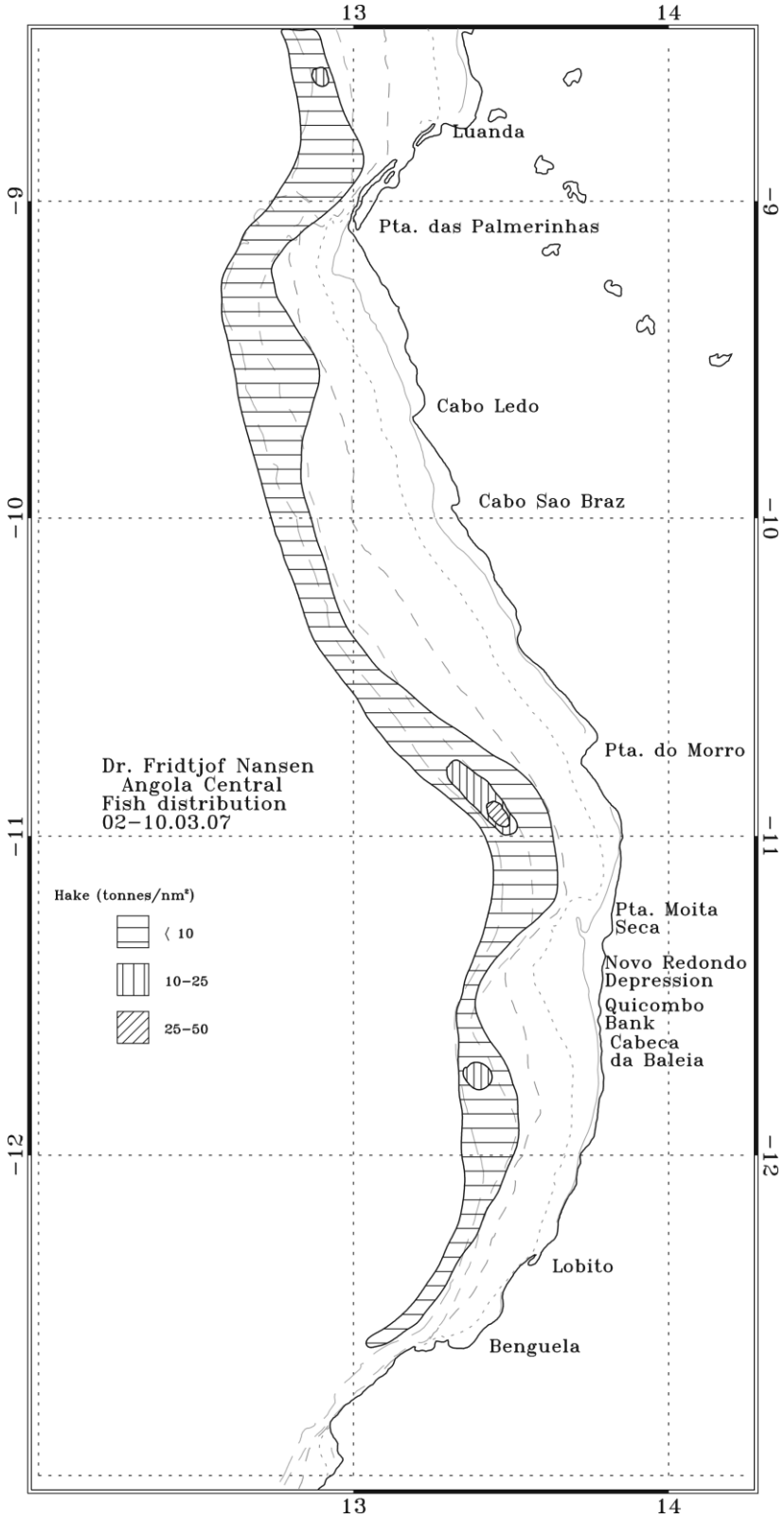


Figure 5.2 Distribution of Benguela hake (*Merluccius polli*) in the central region, Benguela-Luanda. Depth contours at 20, 50, 100, 200 and 500 m.

5.3 Luanda – Congo River slope

The survey covered the northern region of Angolan waters from Luanda to Congo River, and a total of 38 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 this 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 570 kg/hour (Annex VI), and the 'demersal' group contributed 11% to the mean catch rate, the 'pelagic' group 1.2%, and the shrimps, cephalopods and sharks each contributed 27, 0.6 and 0.9%, respectively. The "other" group dominated the catches and contributed 60% to the total mean catch rate. *M. polli* was caught in all stations, except three, and the average catch rate was 41 kg/hour. Seabreams were only caught in seven stations on the northern slope, and the average catch rate (which consisted almost entirely of *D. angolensis*) was 5.5 kg/hour. The averages catch rates of the three shrimp species *P. longirostris*, *A. varidens* and *N. africana* were respectively 7.8, 3.9 and 138 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 too 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 variation (CV), which indicates that the trends in the time series should be interpreted with care.

The biomass estimate of seabreams in 2007 was about 612 tonnes, which is considerably higher than the 2006 estimate of 343 tonnes. The slope is not within the main distribution of seabreams, and there is no clear trend in 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 2007 estimate of 4 117 tonnes is considerably smaller than of 2004 , 2005 and 2006 estimates of 15 300, 11 000 and 7 553 tonnes, respectively.

P. longirostris is distributed in depths between 200 and 400 m, and the biomass shows a small increase from 923 tonnes in 2006 to about 981 tonnes in 2007 on the northern slope. However, the high CVs indicate that the estimates are not very precise.

The 2007 biomass estimate of *A. varidens* was 373 tonnes, which is 36% lower than the 2005 estimate of 639 tonnes. Still, the 2007 biomass estimate is considerably higher than the 2002 estimate, but the large decrease from to 2005 to 2007 is a reason for concern.

The *N. africana* is not commercial important, however, the 2007 biomass of about 13 285 tonnes estimate is the highest estimate since 1997. Compared to the estimates of 2000-2003, the most recent surveys indicate a high and stabile 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 2007 was only 125 tonnes, which is the lowest estimate since 1996.

Hairtails were mainly caught in the shallower areas of the slope, the 2007 biomass estimate of 750 tonnes is the lowest of the time series from 1992 to 2007, and 74% lower than 2006 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 2007 was 500 tonnes, which still is a decrease from the 2005 estimate of 1 180 tonnes. However, there is no clear long time trend in the abundance of sharks.

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.polli	Shrimps	Cephalopod	Sharks	Hairtails	Croakers
1985.1	202 (0.00)	0 (0.00)	976 (0.00)	344 (0.00)	0	0
1985.3	3 065 (0.86)	1 (1.27)	251 (0.68)	209 (1.36)	511 (2.38)	285 (0.87)
1985.4	28 753 (0.95)	0 (0.48)	260 (1.25)	0	1 342 (0.67)	8 (2.38)
1986.1	11 409 (0.39)	0 (0.25)	1 630 (0.81)	3 724 (1.41)	3 383 (0.64)	0
1986.2	27 562 (0.67)	1 (0.56)	277 (0.85)	4 431 (0.75)	3 228 (0.61)	19 (2.27)
1989.1	13 518 (0.78)	1 (1.34)	1 631 (1.23)	2 376 (1.44)	795 (0.81)	0
1989.2	8 168 (0.42)	1 (0.67)	166 (1.11)	375 (1.39)	352 (1.45)	1 624 (1.21)
1989.3	11 265 (0.91)	0 (0.36)	657 (1.05)	2 372 (0.57)	1 579 (1.97)	3 (2.27)
1991.1	19 597 (0.65)	1 (0.68)	135 (1.45)	1 376 (1.25)	65 (1.03)	3 (2.27)
1991.2	19 498 (0.67)	0 (0.34)	991 (1.05)	2 381 (0.80)	699 (0.61)	64 (1.82)
1992	13 290 (0.44)	1 (0.74)	209 (0.69)	1 462 (1.01)	1 148 (0.55)	244 (1.41)
1994	4 096 (0.48)	1 (0.61)	328 (0.48)	841 (0.66)	1 753 (0.37)	134 (1.36)
1995.1	5 892 (1.01)	1 (0.56)	316 (1.55)	1 367 (0.52)	2 284 (0.72)	0
1996	5 065 (0.31)	0 (0.43)	566 (1.03)	307 (0.71)	1 627 (0.69)	34 (1.36)
1997.1	6 954 (0.28)	0 (0.38)	659 (0.35)	824 (1.12)	3 399 (1.26)	0
1997.2	8 101 (0.39)	2 (1.67)	330 (1.80)	10 (2.27)	1 972 (1.37)	35 (2.27)
1999	3 624 (0.52)	1 (0.52)	1 142 (1.49)	1 060 (0.43)	3 088 (0.83)	113 (1.07)
2000	4 385 (0.54)	0 (0.49)	709 (0.47)	597 (0.89)	1 978 (1.04)	0
2001	4 840 (0.71)	1 (0.73)	1 477 (1.55)	1 966 (1.23)	1 531 (0.74)	0
2002	3 479 (0.60)	1 (0.74)	625 (0.87)	118 (0.74)	3 022 (1.01)	27 (1.73)
2003	5 310 (0.76)	0 (0.38)	421 (0.61)	1 305 (1.29)	1 237 (1.15)	27 (1.70)
2004	15 327 (1.33)	0 (0.33)	871 (0.70)	1 571 (0.78)	1 695 (0.57)	49 (1.91)
2005	10 994 (0.60)	0 (0.35)	382 (0.53)	1 180 (1.00)	1 468 (0.44)	19 (1.05)
2006	7 553 (0.51)	0 (0.37)	407 (0.55)	931 (1.59)	2 143 (0.74)	18 (1.79)
2007	4 117 (0.55)	0 (0.45)	316 (0.66)	501 (1.01)	749 (0.49)	9 (2.27)

Survey	Seabreams	P.longirostris	A.varidens	N.africanus	Ommastrephidae	D.angolensis
1985.1	0	21 (0.00)	0	0	976 (0.00)	0
1985.3	1 541 (0.00)	0	0	0	0	1 541 (0.00)
1985.4	0	2 108 (0.88)	6 691 (0.69)	2 864 (0.90)	142 (1.78)	0
1986.1	108 (2.02)	1 166 (1.29)	538 (2.09)	12 631 (0.23)	261 (0.33)	98 (2.27)
1986.2	288 (2.27)	0	1 008 (0.48)	4 643 (0.88)	0	269 (2.27)
1989.1	66 (2.27)	419 (1.15)	204 (0.50)	6 953 (1.48)	1 429 (1.40)	0
1989.2	4 061 (2.24)	366 (1.01)	164 (1.14)	3 682 (0.81)	135 (1.37)	4 038 (2.26)
1989.3	497 (1.79)	243 (0.67)	91 (0.40)	4 699 (0.38)	645 (1.07)	496 (1.80)
1991.1	49 (1.66)	88 (1.00)	70 (1.37)	8 315 (0.72)	129 (1.47)	49 (1.66)
1991.2	527 (0.66)	205 (0.98)	15 (2.67)	2 445 (0.37)	619 (1.11)	510 (0.66)
1992	510 (0.90)	170 (1.05)	272 (0.80)	8 439 (0.80)	143 (0.73)	465 (0.85)
1994	1 045 (0.91)	532 (0.58)	370 (0.75)	6 602 (0.69)	281 (0.55)	1 045 (0.91)
1995.1	506 (0.98)	860 (0.88)	326 (0.67)	7 269 (0.73)	61 (1.16)	449 (1.08)
1996	597 (1.43)	162 (0.62)	267 (0.45)	3 859 (0.50)	228 (0.66)	345 (1.50)
1997.1	871 (1.08)	605 (1.14)	333 (0.35)	13 096 (0.40)	622 (0.37)	826 (1.13)
1997.2	878 (2.27)	1 317 (1.41)	0	4 088 (1.92)	317 (1.85)	876 (2.27)
1999	389 (0.58)	542 (0.43)	237 (0.42)	10 540 (0.58)	1 121 (1.52)	339 (0.69)
2000	1 650 (2.05)	497 (0.44)	222 (0.50)	3 777 (0.63)	509 (0.64)	1 588 (2.14)
2001	494 (2.27)	535 (0.53)	243 (0.47)	6 746 (0.90)	1 001 (2.17)	481 (2.27)
2002	213 (1.45)	800 (1.04)	127 (0.57)	5 337 (0.89)	364 (1.27)	200 (1.54)
2003	141 (1.10)	629 (1.01)	383 (0.83)	6 873 (0.42)	216 (0.83)	135 (1.08)
2004	299 (0.69)	749 (0.98)	359 (0.39)	10 930 (0.37)	316 (0.56)	284 (0.71)
2005	562 (0.81)	984 (0.63)	639 (0.51)	8 535 (0.42)	330 (0.53)	547 (0.85)
2006	343 (0.95)	923 (0.67)	391 (0.39)	11 073 (0.43)	184 (0.49)	340 (0.95)
2007	612 (0.73)	981 (0.78)	373 (0.31)	13 285 (0.52)	125 (0.89)	595 (0.77)

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 densities were <10 NM^2 in all the northern extension of distribution.

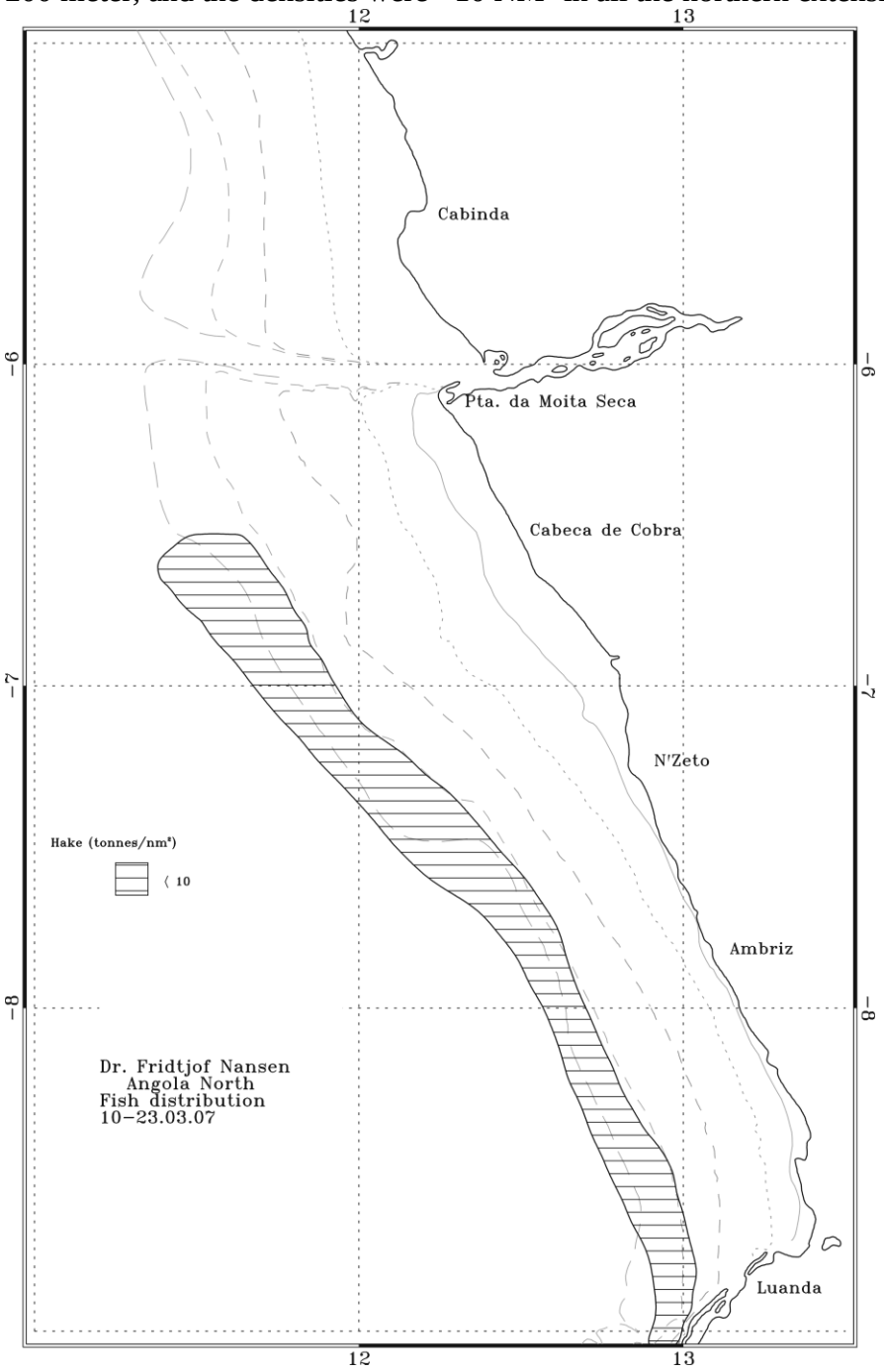


Figure 5.3 Distribution of hake (*Merluccius polli*) in the northern region, Luanda – Congo River. Depth contours at 20, 50, 100, 200 and 500 m.

CHAPTER 6 SUMMARY

From 24 February to 25 March the 2007 demersal resource survey off 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 205 trawl stations were conducted of which 196 were valid and used in biomass estimation of the demersal stocks. To map the oceanographic conditions 271 CTD samples were carried out.

6.1 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 temperature varied between 25–29ºC and the salinity was about 35.5-35.7 psu in the southern region. Neither the temperature nor the salinity distribution indicates the typically features of the presence of the Angola-Benguela Front. Furthermore, no signal of up welled water was observed in the costal areas of Baía dos Tigres. The horizontal distribution of temperature and salinity in the central region are shown in Figures 3.3–3.4. In the central region, the temperature varied between 27–30ºC, and the smallest values of temperature (27ºC) are observed around Cabo Ledo which perhaps is caused by the water from Cuanza River. The salinity values are low in the whole region and ranged between 31 – 34 psu, and decreased offshore. These low salinity values are related to the large discharge of freshwater from the rivers due to the heavy rain inland in 2007. In the northern region the temperature was lowest inshore with about 28°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 31 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 where about 4°C lower.

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

6.2 Biomass estimates

Table 6.1 presents the time series from 1985 to 2007 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 on the southern shelf, is relatively similar from 2000 to 2007 (Annex VIII) and the estimates in this period are comparable. The estimates on the southern slope are very unreliable as the number of tows is very low due to difficult trawling conditions. Table 4.1 and Table 5.1 show the biomass estimates of the important species on the southern shelf and slope, respectively.

Seabreams

The seabream biomass estimate in the southern region was about 15 500 tonnes and consisted almost entirely of *Dentex macrophthalmus*. This is a small increase from last year; however, the 2005-2007 estimates are the lowest estimates in the time series since 1986. In the central and northern regions, the biomass estimate of seabreams in 2007 was about 22 191 tonnes, which is an 11% reduction from 2006. *D. macrophthalmus* and *D. angolensis* comprised 7% and 25%, respectively, of the 2007 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

Merluccius capensis is generally the dominating hake species in the south, and Angola shares this stock with Namibia. However, whilst no Benguela hake (*M. polli*) was caught on the southern shelf during the 2006 survey the species contributed to about 44% of the biomass in 2007. The total biomass estimate of hake (*Merluccius capensis and M. polli*) on the southern shelf and slope in 2007 were 3 000 and 1 500 tonnes, respectively. Only one valid station was carried out on the slope between 200 and 600 meters which make the 2007 estimate for the slope unreliable. On the shelf the hake abundance has declined annually since 2003, and the 2007 estimate is the lowest observed since 2000. The decrease is a reason for concern. In the central and northern regions, *M. polli* is the only hake species. Here, the estimated biomass of hake (*M. polli*) in 2007 was 11 157 tonnes, which is a 19% reduction from the 2006 estimate. Furthermore, the 2007 estimate is about 39% 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, as in 2006, neither *P. longirostris* nor *A. varidens* were caught in the southern region in 2007. In 2007, the biomass estimate of *P. longirostris* for the central and northern regions was 1 342 tonnes, which is a 33% reduction from the 2006 estimate. The high CV indicates 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 2007 estimate of *A. varidens* was 1 026 tonnes, which is a 21% increase from 2006.

Grunts

Commercially important grunt species are *Pomadasys incisus* and *P. rogeri*, and were only caught in one trawl station in the southern region. The biomass estimate of grunts in the central and northern regions in 2007 was 17 242 tonnes, which is a 37% increase from 2006, and the highest biomass estimate registered since 1985.

Croakers

South of Tombua, the biomasses of the croakers have varied considerably between surveys during the last years, therefore, no clear trend in the time series can be seen. However, the 2007 estimate of 4 200 tonnes is a large increase from last year's estimate of 900 tonnes, but, it is smaller than 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 there is no evident trend in the time series. The biomass estimate of croakers, mainly *Umbrina canariensis*, *Atractoscion aequidens* and *Pseudotolithus typus*, in the central and northern regions was about 11 991 tonnes in 2007, which is a 20% increase from 2006. 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.

Groupers and snappers

Groupers and 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 2007 biomass estimates of 950 tonnes and 113 tonnes of snappers and groupers, respectively, were considerably higher than the 2006 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	M.polli	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	31 536 (0.93)	107 626 (1.18)	14 041 (0.97)	2 235 (0.43)	3 559 (1.18)	2 349 (1.31)	131 007 (1.03)	373 (1.28)
1991.2	30 968 (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	6 880 (0.81)	11 258 (1.17)	4 499 (0.65)	979 (1.08)	1 289 (1.01)	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)	335 (1.74)
1997.2	25 581 (0.71)	97 858 (0.58)	9 977 (2.10)	6 260 (0.42)	500 (1.73)	132 (2.45)	99 747 (0.56)	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)	17 083 (0.78)	13 687 (0.97)	3 577 (1.08)	3 192 (0.73)	8 353 (0.87)	36 949 (0.60)	69 (1.84)
2000	10 118 (1.00)	25 701 (0.72)	7 592 (0.76)	3 778 (0.44)	5 098 (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)	4 980 (0.71)	629 (0.97)	3 067 (0.78)	98 922 (0.63)	820 (2.58)
2003	14 240 (1.35)	35 489 (0.77)	13 089 (0.85)	2 668 (0.56)	1 925 (1.92)	4 255 (0.78)	57 888 (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)	2 328 (1.48)	4 663 (1.09)	25 200 (0.45)	183 (1.03)
2007	11 157 (1.66)	10 633 (0.69)	24 723 (0.70)	3 287 (0.56)	2 789 (1.21)	3 875 (0.84)	22 928 (0.73)	214 (1.42)

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)	1 033 (1.93)	0	4 307 (0.91)	20 511 (1.54)	13 935 (2.05)	49 738 (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)	14 666 (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	5 112 (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)	554 (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	23 555 (0.55)	0	0	2 840 (1.33)	500 (0.84)	36 999 (1.82)	49 236 (0.63)	5 481 (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	26 027 (0.57)	4 317 (0.82)	531 (3.49)	1 642 (0.83)	8 888 (1.03)	18 534 (1.14)	34 029 (0.45)	878 (0.82)
2000	18 068 (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)	1 259 (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 (1.41)
2003	20 301 (0.67)	2 825 (1.86)	186 (2.63)	1 043 (0.99)	10 025 (1.83)	10 967 (0.58)	16 230 (0.39)	1 366 (1.14)
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)
2007	32 508 (1.22)	2 336 (1.34)	113 (1.86)	950 (1.04)	17 242 (1.38)	11 991 (1.40)	22 191 (0.35)	1 342 (1.35)

Survey	A.varidens	N.africanus	Ommastrephidae	Sepiidae	B.auritus	D.angolensis	U.canariensis	D.macrophthalamus
1985.1	0	0	11 249 (1.93)	0	40 729 (1.90)	2 196 (0.92)	1 132 (2.01)	200 (2.74)
1985.2	0	0	0	0	6 842 (2.33)	2 495 (0.94)	521 (2.43)	0
1985.3	0	0	0	154 (1.61)	9 182 (1.99)	4 490 (0.75)	602 (1.89)	0
1985.4	7 633 (1.47)	3 578 (1.69)	225 (2.56)	215 (2.12)	69 072 (1.67)	9 283 (1.12)	8 921 (2.47)	6 286 (2.41)
1986.1	1 030 (2.63)	15 804 (0.77)	2 140 (1.52)	1 334 (0.86)	133 723 (0.46)	5 700 (0.92)	2 606 (1.45)	2 787 (1.22)
1986.2	1 485 (0.90)	4 643 (1.90)	0	1 828 (1.23)	36 750 (0.69)	15 499 (0.47)	3 387 (1.33)	9 215 (0.40)
1989.1	397 (1.56)	7 545 (2.98)	3 209 (1.51)	356 (1.29)	20 488 (1.13)	2 568 (0.49)	1 427 (1.14)	7 302 (1.28)
1989.2	400 (1.50)	4 702 (1.61)	1 286 (1.04)	1 440 (0.67)	64 268 (1.18)	9 997 (2.01)	1 302 (1.34)	1 386 (1.44)
1989.3	285 (1.25)	5 657 (0.81)	4 191 (0.98)	169 (1.63)	88 316 (0.76)	4 888 (0.68)	1 194 (2.28)	1 956 (2.27)
1991.1	723 (0.58)	12 194 (1.13)	1 036 (0.74)	522 (0.79)	48 534 (0.82)	2 651 (0.49)	1 657 (1.94)	3 075 (1.74)
1991.2	119 (3.61)	5 104 (0.95)	4 144 (1.05)	793 (1.38)	3 524 (1.62)	4 903 (0.54)	22 849 (2.25)	18 054 (0.97)
1992	638 (1.21)	11 662 (1.38)	3 519 (0.46)	1 074 (0.95)	34 799 (2.01)	7 229 (0.37)	1 719 (1.18)	20 117 (0.99)
1994	1 017 (1.28)	8 801 (1.33)	1 931 (0.63)	3 167 (0.67)	10 205 (1.51)	6 918 (0.52)	6 075 (1.55)	23 219 (0.88)
1995.1	1 078 (0.95)	9 729 (1.47)	164 (1.21)	637 (0.86)	40 468 (0.83)	4 695 (0.71)	11 929 (2.11)	14 010 (1.70)
1995.2	698 (0.62)	2 763 (0.97)	730 (0.84)	219 (2.48)	0	1 280 (0.74)	209 (2.22)	10 083 (0.99)
1996	938 (0.76)	8 830 (1.16)	1 069 (0.45)	143 (1.55)	45 646 (1.30)	6 236 (0.54)	3 150 (1.40)	14 591 (0.66)
1997.1	639 (0.79)	17 189 (0.79)	3 437 (0.56)	5 824 (0.95)	46 071 (0.75)	5 318 (0.57)	5 760 (0.94)	14 289 (1.72)
1997.2	0	4 098 (4.15)	2 491 (0.88)	1 885 (0.33)	1 966 (0.64)	5 712 (0.90)	33 214 (2.03)	31 595 (0.96)
1998	1 192 (2.89)	7 000 (1.37)	765 (1.28)	1 300 (1.09)	22 014 (1.79)	2 084 (0.74)	2 239 (1.46)	52 473 (2.75)
1999	574 (1.68)	11 746 (1.14)	2 028 (1.86)	375 (0.72)	131 249 (0.85)	4 476 (0.32)	11 581 (1.59)	8 181 (1.23)
2000	601 (0.71)	4 820 (1.21)	1 735 (0.69)	501 (1.14)	79 452 (1.18)	7 385 (1.25)	3 771 (0.88)	8 086 (1.25)
2001	699 (1.14)	7 263 (1.87)	1 702 (2.83)	376 (0.92)	54 964 (1.01)	3 482 (0.84)	1 264 (1.70)	6 772 (1.22)
2002	371 (0.99)	8 375 (1.42)	3 629 (0.94)	248 (1.23)	81 844 (1.16)	3 323 (0.66)	4 326 (0.86)	13 935 (2.04)
2003	881 (1.78)	10 157 (1.06)	975 (0.88)	307 (1.61)	104 724 (0.99)	4 474 (0.42)	1 791 (0.72)	1 092 (2.52)
2004	935 (0.78)	17 133 (0.68)	1 319 (0.89)	394 (0.92)	51 255 (0.90)	7 084 (0.69)	6 977 (1.87)	13 884 (4.41)
2005	1 431 (0.77)	14 188 (0.73)	1 219 (1.33)	992 (0.46)	88 667 (1.17)	8 473 (0.29)	5 933 (0.91)	7 290 (4.97)
2006	750 (0.63)	16 424 (0.71)	943 (1.43)	217 (1.16)	94 684 (0.91)	7 236 (0.39)	6 483 (0.96)	4 950 (2.58)
2007	1 026 (0.38)	21 198 (0.81)	347 (1.74)	435 (1.70)	52 925 (0.80)	8 083 (0.41)	5 846 (2.35)	2 157 (1.41)

ANNEX I Records of fishing stations

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 1
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°14.68
start stop duration Lon E 11°43.74
TIME :06:08:45 06:38:46 30.0 (min) Purpose : 3
LOG : 8199.13 8200.51 1.4 Region : 4050
FDEPTH: 28 30 Gear cond.: 1
BDEPTH: 28 30 Validity : 1
Towing dir: 0° Wire out : 140 m Speed : 2.8 kn
Sorted : 357 Total catch: 1085.74 Catch/hour: 2170.03

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	896.60	33686	41.32	1
Argyrosomus hololepidotus	621.59	126	28.64	5
Arius parkii	176.08	704	8.11	
Etrumeus whiteheadi	93.54	21612	4.31	
Stromateus fiatola	91.34	148	4.21	
Umbrina canariensis	62.16	961	2.86	3
Sardinella aurita	45.77	592	2.11	2
Argyrosomus hololepidotus	43.57	148	2.01	
Sepia orbignyana	32.98	148	1.52	
Pomadasys jubelini	30.38	112	1.40	
Engraulis encrasicolus	20.99	3476	0.97	
Dicologoglossa cuneata	14.79	630	0.68	
Spondyliosoma cantharus	8.19	38	0.38	
Myliobatis aquila	8.19	4	0.38	
Trichiurus lepturus	5.60	186	0.26	
Pomatomus saltatrix	5.20	38	0.24	
Atractoscion aequidens	4.40	444	0.20	4
Sardinops ocellatus	4.20	38	0.19	
Pteroscion peli	4.00	110	0.18	9
Argyrosomus hololepidotus	0.32	2	0.01	10
Scyliorhinus sp.	0.16	2	0.01	
Total	2170.03		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 2
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°12.80
start stop duration Lon E 11°41.84
TIME :07:42:47 08:12:25 29.6 (min) Purpose : 3
LOG : 8203.81 8205.25 1.4 Region : 4050
FDEPTH: 49 40 Gear cond.: 1
BDEPTH: 49 40 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 2.9 kn
Sorted : 44 Total catch: 43.55 Catch/hour: 88.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sepia orbignyana	47.17	140	53.50	
Trachurus trecae	19.13	4992	21.70	8
Chelidonichthys capensis	4.05	10	4.59	
Todaropsis eblanae	4.01	18	4.55	
Etrumeus whiteheadi	2.77	221	3.15	
Sarda sarda	1.68	2	1.91	
Engraulis encrasicolus	1.66	294	1.88	
Argyrosomus hololepidotus	1.66	2	1.88	
Sardinella aurita	1.58	28	1.79	6
Sepiella ornata	1.52	4	1.72	
Dicologoglossa cuneata	1.07	34	1.22	
Raja miraletus	0.47	2	0.53	
Thyrsites atun	0.45	2	0.51	
Pagellus bellottii	0.38	10	0.44	7
Lagocephalus laevigatus	0.28	8	0.32	
MYCTOPHIDAE	0.16	8	0.18	
Mustelus mustelus	0.10	6	0.11	
Fistularia petimba	0.02	2	0.02	
Total	88.16		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 3
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°12.65
start stop duration Lon E 11°37.82
TIME :09:10:21 09:40:49 30.5 (min) Purpose : 3
LOG : 8211.24 8212.87 1.6 Region : 4050
FDEPTH: 90 92 Gear cond.: 1
BDEPTH: 90 92 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.2 kn
Sorted : 20 Total catch: 498.60 Catch/hour: 981.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	267.23	1896	27.22	15
Illex coindetii	151.84	910	15.47	
Raja miraletus	98.93	189	10.08	
Atractoscion aequidens	78.57	112	8.00	14
Chelidonichthys capensis	70.87	380	7.22	
Trachurus trecae	66.32	3487	6.75	13
Dasyatis centroura	59.17	2	6.03	
Mustelus mustelus	51.69	18	5.26	
Dentex macrophthalmus	39.03	189	3.98	
Caelorinchus sp.	26.09	22	2.66	
Thyrsites atun	19.71	37	2.01	
Myliobatis aquila	19.00	2	1.94	
Zeus faber	12.88	77	1.31	
Sardinella aurita	9.47	189	0.96	12
Sardinella maderensis	5.67	37	0.58	11
Sepiella ornata	3.37	2	0.34	
Squalus megalops	1.97	6	0.20	
Total	981.82		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 4
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°14.53
start stop duration Lon E 11°31.12
TIME :10:59:08 11:20:28 21.3 (min) Purpose : 3
LOG : 8221.33 8222.37 1.0 Region : 4050
FDEPTH: 138 138 Gear cond.: 1
BDEPTH: 138 138 Validity : 1
Towing dir: 0° Wire out : 400 m Speed : 2.9 kn
Sorted : 64 Total catch: 2324.65 Catch/hour: 6536.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	5195.88	123020	79.50	17
Trachurus capensis	875.82	11710	13.40	18
Dentex macrophthalmus	208.48	14072	3.19	16
Squalus megalops	149.58	394	2.29	
Chelidonichthys capensis	106.28	197	1.63	
Total	6536.04		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 5
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°14.08
start stop duration Lon E 11°29.05
TIME :12:29:36 12:59:01 29.4 (min) Purpose : 3
LOG : 8226.86 8228.42 1.6 Region : 4050
FDEPTH: 154 150 Gear cond.: 1
BDEPTH: 154 150 Validity : 1
Towing dir: 0° Wire out : 440 m Speed : 3.2 kn
Sorted : 121 Total catch: 880.79 Catch/hour: 1796.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	992.88	14313	55.27	19
Dentex macrophthalmus	364.47	3816	20.29	20
Merluccius polli	163.38	1315	9.10	
Trachurus capensis	104.24	1169	5.80	21
Synagrops microlepis	66.38	18412	3.70	
Chelidonichthys capensis	36.08	73	2.01	
Zeus faber	24.84	118	1.38	
Sepia orbignyana	19.66	161	1.09	
Pterothrissus belloci	10.95	177	0.61	
Trigla lyra	5.63	73	0.31	
Dicologoglossa cuneata	2.37	59	0.13	
Brotula barbata	2.08	14	0.12	
Squalus megalops	2.04	4	0.11	
Illex coindetii	1.33	43	0.07	
Total	1796.31		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 6
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°13.00
start stop duration Lon E 11°25.04
TIME :14:09:55 14:37:30 27.6 (min) Purpose : 3
LOG : 8234.42 8235.95 1.5 Region : 4050
FDEPTH: 191 196 Gear cond.: 1
BDEPTH: 191 196 Validity : 1
Towing dir: 0° Wire out : 510 m Speed : 3.3 kn
Sorted : 111 Total catch: 385.57 Catch/hour: 838.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	281.34	2159	33.55	23
Chlorophthalmus atlanticus	219.23	9184	26.15	
Trachurus capensis	177.83	1494	21.21	25
Merluccius polli	62.85	444	7.50	24
Synagrops microlepis	24.77	3371	2.95	
Pterothrissus belloci	14.05	148	1.68	
Trigla lyra	12.11	104	1.44	
Caelorinchus sp.	11.37	7	1.36	
Mustelus mustelus	8.81	2	1.05	
Squalus megalops	6.20	11	0.74	
Scorpaena stephanica	4.72	444	0.56	
Dicologoglossa cuneata	3.70	96	0.44	
Trichiurus lepturus	3.11	22	0.37	
Raja miraletus	2.07	7	0.25	
Todaropsis eblanae	1.63	30	0.19	
Sepia orbignyana	1.54	89	0.18	
Callinectes sp.	1.52	148	0.18	
Illex coindetii	0.89	15	0.11	
Parapenaeus longirostris	0.43	67	0.05	27
Zenopsis conchifer	0.15	7	0.02	
Parapenaeus longirostris, male	0.15	30	0.02	26
Total	838.48		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 7
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°10.84
start stop duration Lon E 11°21.18
TIME :16:08:00 16:31:56 23.9 (min) Purpose : 3
LOG : 8243.90 8245.07 1.2 Region : 4050
FDEPTH: 340 320 Gear cond.: 1
BDEPTH: 340 320 Validity : 1
Towing dir: 0° Wire out : 900 m Speed : 2.9 kn
Sorted : 69 Total catch: 758.78 Catch/hour: 1901.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Galeus polli	479.70	4496	25.22	
Nezumia aequalis	435.59	15729	22.91	
Chlorophthalmus atlanticus	395.74	13835	20.81	
Scorpaena normani	270.18	4674	14.21	
Merluccius capensis	169.55	1682	8.92	28
Bathynectes piperitus	83.71	2123	4.40	
Gadella maraldi	37.49	1048	1.97	
Dicologoglossa cuneata	19.30	28	1.01	
Synagrops microlepis	4.41	165	0.23	
Plesionika martia	3.03	1268	0.16	
Epigonus telescopus	2.76	55	0.14	
Hoplostethus cadenati	0.28	28	0.01	
Total	1901.73		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 8
DATE :26/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°16.86
start stop duration Lon E 11°12.99
TIME :18:54:27 19:15:12 20.8 (min) Purpose : 3
LOG : 8257.30 8258.31 1.0 Region : 4050
FDEPTH: 756 779 Gear cond.: 1
BDEPTH: 756 779 Validity : 1
Towing dir: 0° Wire out : 1850 m Speed : 2.9 kn
Sorted : 103 Total catch: 552.71 Catch/hour: 1598.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Malacocephalus occidentalis	463.23	11772	28.98	
Nezumia aequalis	390.07	14793	24.41	
Trachyrincus scabrus	179.42	714	11.23	
Alepocephalus sp.	109.01	590	6.82	
Raja alba	105.54	26	6.60	0
Merluccius capensis	101.49	124	6.35	29
Lophius sp.	90.80	9	5.68	
Illex coindetii	39.33	124	2.46	
TETRAODONTIDAE	33.54	370	2.10	
Lepidopus caudatus	19.66	26	1.23	
Chaceon maritae, male	17.26	38	1.08	30
Notacanthus sexspinis	12.55	26	0.79	
Triplophos hemingi	9.60	442	0.60	
Raja alba	6.16	49	0.39	
Neocyttus rhomboidalis	4.92	49	0.31	
Hoplostethus cadenati	3.93	75	0.25	
CONGRIDAE	3.67	26	0.23	
Yarrella blackfordi	3.21	98	0.20	
Chaceon maritae, female	3.07	14	0.19	31
Gnathophausia zoea	1.24	26	0.08	
Aristeus varidens	0.49	26	0.03	
Total	1598.20		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 9
DATE :26/02/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 17°1.77
start stop duration Lon E 11°15.93
TIME :22:28:59 22:59:00 30.0 (min) Purpose : 3
LOG : 8277.48 8278.90 1.4 Region : 4050
FDEPTH: 684 693 Gear cond.: 1
BDEPTH: 684 693 Validity : 1
Towing dir: 0° Wire out : 1500 m Speed : 2.9 kn
Sorted : 58 Total catch: 1107.48 Catch/hour: 2214.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	906.20	52522	40.93	
Nezumia micronychodon	508.57	20713	22.97	
Trachyrincus scabrus	497.47	2331	22.47	
Bajacalifornia magalops	117.62	10912	5.31	
Illex coindetii	52.14	112	2.35	
Lamprogrammus exutus	35.87	778	1.62	
Merluccius capensis	34.89	48	1.58	32
Bathyuroconger vicinus	24.79	482	1.12	
Chaceon maritae, male	16.29	32	0.74	33
Shrimps, small, non comm.	4.08	814	0.18	
Phrynichthys wedli	4.06	148	0.18	
Callinectes sp.	3.70	74	0.17	
Dicrolene intronigra	2.96	38	0.13	
Paramola cuvieri	2.44	8	0.11	
Chaceon maritae, female	2.40	12	0.11	34
Raja sp.	0.74	38	0.03	
Total	2214.22		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 10
DATE :27/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°0.90
start stop duration Lon E 11°23.97
TIME :05:30:43 05:51:43 21.0 (min) Purpose : 3
LOG : 8292.12 8293.28 1.2 Region : 4050
FDEPTH: 133 139 Gear cond.: 1
BDEPTH: 133 139 Validity : 1
Towing dir: 0° Wire out : 400 m Speed : 3.3 kn
Sorted : 129 Total catch: 2388.91 Catch/hour: 6825.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	5275.14	51863	77.29	36
Dentex macrophthalmus	1118.00	9669	16.38	37
Chelidonichthys capensis	127.91	160	1.87	
Anthias anthias	123.17	1903	1.80	
Umbrina canariensis	80.89	211	1.19	
Merluccius capensis	25.91	106	0.38	
Pterothrissus belloci	19.46	160	0.29	
Arius heudeloti	15.34	54	0.22	
Trigla lyra	11.11	106	0.16	
Zenopsis conchifer	9.00	54	0.13	
Scorpaena normani	8.46	54	0.12	
Illex coindetii	5.83	54	0.09	
Dicologoglossa cuneata	5.29	106	0.08	
Total	6825.51		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 11
DATE :27/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°0.86
start stop duration Lon E 11°28.15
TIME :07:09:29 07:30:54 21.4 (min) Purpose : 3
LOG : 8299.47 8300.46 1.0 Region : 4050
FDEPTH: 116 115 Gear cond.: 1
BDEPTH: 116 115 Validity : 1
Towing dir: 0° Wire out : 330 m Speed : 2.8 kn
Sorted : 120 Total catch: 902.55 Catch/hour: 2528.15

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	1268.91	16913	50.19	39
Trachurus trecae	578.71	5930	22.89	38
Dentex macrophthalmus	487.39	4602	19.28	40
Etrumeus whiteheadi	40.56	714	1.60	
Zeus faber	40.34	84	1.60	
Dentex angolensis	22.91	64	0.91	41
Umbrina canariensis	20.17	64	0.80	43
Atractoscion aequidens	14.71	22	0.58	
Raja miraletus	14.71	22	0.58	
Chelidonichthys capensis	14.71	22	0.58	
Merluccius capensis	13.25	42	0.52	42
Arius heudeloti	5.04	22	0.20	
Pterothrissus belloci	3.78	22	0.15	
Dicologoglossa cuneata	2.94	22	0.12	
Total	2528.12		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 12
DATE :27/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°0.69
start stop duration Lon E 11°34.77
TIME :08:43:38 08:59:05 15.5 (min) Purpose : 3
LOG : 8308.66 8309.48 0.8 Region : 4050
FDEPTH: 97 97 Gear cond.: 1
BDEPTH: 97 97 Validity : 1
Towing dir: 0° Wire out : 280 m Speed : 3.2 kn
Sorted : 137 Total catch: 3234.23 Catch/hour: 12560.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	11712.43	547946	93.25	44
Dentex macrophthalmus	228.35	5328	1.82	45
Merluccius capensis	207.42	1332	1.65	46
Raja miraletus	124.66	190	0.99	
CHIMAERIDAE	83.73	97	0.67	
Atractoscion aequidens	47.57	97	0.38	
Chelidonichthys capensis	41.55	190	0.33	
Zeus faber	29.51	97	0.23	
Sardinella maderensis	28.54	97	0.23	
Trichiurus lepturus	27.61	190	0.22	
Mustelus mustelus	17.86	4	0.14	
Sardinops ocellatus	5.71	97	0.05	
Squalus megalops	4.19	4	0.03	
Etrumeus whiteheadi	0.97	97	0.01	
Total	12560.12		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 13
DATE :27/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 17°1.01
start stop duration Lon E 11°39.29
TIME :09:59:05 10:26:28 27.4 (min) Purpose : 3
LOG : 8315.17 8316.48 1.3 Region : 4050
FDEPTH: 62 63 Gear cond.: 1
BDEPTH: 62 63 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 2.9 kn
Sorted : 71 Total catch: 1310.07 Catch/hour: 2869.81

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	2383.75	153001	83.06	48
Myliobatis aquila	146.66	64	5.11	
Sardinella aurita	131.94	760	4.60	49
Mustelus mustelus	115.99	59	4.04	
Atractoscion aequidens	21.36	64	0.74	47
Sepia orbignyana	19.82	46	0.69	
Pagellus bellottii	9.77	723	0.34	50
Dasyatis marmorata	9.20	2	0.32	
Illex coindetii	6.88	37	0.24	
Umbrina canariensis	6.16	110	0.21	
Engraulis encrasicolus	6.16	723	0.21	
Chelidonichthys capensis	4.34	37	0.15	
Rhinobatos albomaculatus	4.18	4	0.15	
Dicologoglossa cuneata	3.61	217	0.13	
Total	2869.81		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 14
DATE :27/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°58.84
start stop duration Lon E 11°42.96
TIME :11:17:56 11:48:19 30.4 (min) Purpose : 3
LOG : 8321.31 8322.98 1.7 Region : 4050
FDEPTH: 26 25 Gear cond.: 1
BDEPTH: 26 25 Validity : 1
Towing dir: 0° Wire out : 90 m Speed : 3.3 kn
Sorted : 0 Total catch: 121.68 Catch/hour: 240.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
J E L L Y F I S H	124.46	1596	51.78	
Sphyrna zygaena	89.89	10	37.39	
Sepia orbignyana	8.14	22	3.39	
Rhinobatos albomaculatus	5.04	4	2.10	
Sardinella aurita	4.56	22	1.90	51
Trachurus trecae	3.65	921	1.52	52
Etrumeus whiteheadi	1.72	142	0.71	
Engraulis encrasicolus	0.57	73	0.24	
Dentex barnardi	0.43	10	0.18	
B I V A L V E S	0.43	186	0.18	
Ephippion guttifer	0.43	2	0.18	
Scyliorhinus sp.	0.38	10	0.16	
Calappa rubroguttata	0.36	2	0.15	
SOLEIDAE	0.14	6	0.06	
Pagellus bellottii	0.08	4	0.03	
Fistularia petimba	0.06	2	0.02	
Raja miraletus	0.04	2	0.02	
Total	240.40		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 15
DATE :27/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°48.94
start stop duration Lon E 11°41.11
TIME :13:02:20 13:35:08 32.8 (min) Purpose : 3
LOG : 8331.52 8333.14 1.6 Region : 4050
FDEPTH: 47 50 Gear cond.: 1
BDEPTH: 47 50 Validity : 1
Towing dir: 0° Wire out : 95 m Speed : 3.0 kn
Sorted : 0 Total catch: 37.63 Catch/hour: 68.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
J E L L Y F I S H	37.68	520	54.74	
Trachurus trecae	9.24	66	13.42	53
Sepia orbignyana	8.40	37	12.20	
Pomatomus saltatrix	5.09	7	7.39	
Lagocephalus laevigatus	3.40	101	4.94	
Raja miraletus	1.76	4	2.55	
Sarda sarda	1.72	2	2.50	
Mustelus mustelus	0.73	2	1.06	
Dicologoglossa cuneata	0.55	42	0.80	
Lithognathus mormyrus	0.15	4	0.21	
Trachinocephalus myops	0.13	4	0.19	
Total	68.84		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 16
DATE :27/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°48.21
start stop duration Lon E 11°35.61
TIME :14:35:03 14:51:11 16.1 (min) Purpose : 3
LOG : 8339.37 8340.25 0.9 Region : 4050
FDEPTH: 95 94 Gear cond.: 1
BDEPTH: 95 94 Validity : 1
Towing dir: 0° Wire out : 260 m Speed : 3.3 kn
Sorted : 165 Total catch: 1944.97 Catch/hour: 7230.37

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	6037.17	163651	83.50	56
Dentex macrophthalmus	646.84	11729	8.95	54
Merluccius capensis	185.43	1294	2.56	55
Chelidonichthys capensis	100.04	476	1.38	
Callorhinchus capensis	72.30	45	1.00	
Illex coindetii	43.57	171	0.60	
Zeus faber	32.79	130	0.45	
Sepia orbignyana	20.71	86	0.29	
Arius heudeloti	18.10	45	0.25	
Pagellus bellottii	16.80	86	0.23	
Raja miraletus	16.80	45	0.23	
Mustelus mustelus	15.06	4	0.21	
Atractoscion aequidens	13.79	45	0.19	
Squalus megalops	8.36	7	0.12	
Umbrina canariensis	2.60	45	0.04	
Total	7230.37		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 17
DATE :27/02/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 16°48.74
start stop duration Lon E 11°17.99
TIME :17:07:12 17:28:12 21.0 (min) Purpose : 3
LOG : 8358.69 8359.67 1.0 Region : 4050
FDEPTH: 351 348 Gear cond.: 8
BDEPTH: 351 348 Validity : 8
Towing dir: 0° Wire out : 900 m Speed : 2.8 kn
Sorted : 107 Total catch: 1058.52 Catch/hour: 3024.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Scorpaena normani	1476.57	12306	48.82	
Chlorophthalmus atlanticus	653.71	18509	21.62	
Bathynectes piperitus	248.57	49	8.22	
Sudis sp.	248.57	174	8.22	
Merluccius capensis	191.43	2760	6.33	57
Pterothrissus belloci	74.29	274	2.46	
Gadella maraldi	50.57	1043	1.67	
Synagrops microlepis	50.29	4300	1.66	
Heptranchias perlo	16.57	3	0.55	
Nezumia aequalis	13.43	349	0.44	
Galeus polli	0.34	3	0.01	
Total	3024.34		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 18
DATE :27/02/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 16°34.31
start stop duration Lon E 11°19.09
TIME :20:56:04 21:17:55 21.9 (min) Purpose : 3
LOG : 8377.12 8378.18 1.1 Region : 4050
FDEPTH: 624 740 Gear cond.: 1
BDEPTH: 624 740 Validity : 1
Towing dir: 0° Wire out : 1500 m Speed : 2.9 kn
Sorted : 63 Total catch: 360.77 Catch/hour: 990.67

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	285.01	5259	28.77	
Trachyrincus scabrus	177.64	1233	17.93	
Nezumia aequalis	142.90	5415	14.42	
Illex coindetii	60.47	159	6.10	
Merluccius capensis	60.00	80	6.06	58
Plesiopenaeus edwardsianus	60.00	80	6.06	
Merluccius polli	50.53	47	5.10	59
Stomias sp.	48.33	2622	4.88	
Centrophorus squamosus	41.05	63	4.14	
Raja alba	15.79	16	1.59	
NETTASTOMATIDAE	14.06	96	1.42	
Maja squinado	8.21	16	0.83	
Yarrella blackfordi	5.05	143	0.51	
Centroscymnus crepidater	4.42	16	0.45	
Triplophos hemingi	4.26	395	0.43	
Talismania sp.	3.95	143	0.40	
MACROURIDAE	3.16	16	0.32	
Etmopterus pusillus	3.16	16	0.32	
Aristeus varidens	1.43	63	0.14	
Octopus sp.	1.26	47	0.13	
Total	990.67		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 19
DATE :28/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°39.53
start stop duration Lon E 11°23.93
TIME :05:30:22 06:01:14 30.9 (min) Purpose : 3
LOG : 8421.29 8422.99 1.7 Region : 4050
FDEPTH: 128 128 Gear cond.: 1
BDEPTH: 128 128 Validity : 1
Towing dir: 0° Wire out : 390 m Speed : 3.3 kn
Sorted : 113 Total catch: 1047.18 Catch/hour: 2035.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	1052.28	13477	51.70	60
Trachurus trecae	719.53	3703	35.35	61
Pterothrissus belloci	56.56	416	2.78	
Etrumeus whiteheadi	56.37	1040	2.77	
Merluccius capensis	28.07	84	1.38	62
Zeus faber	25.17	41	1.24	
Atractoscion aequidens	23.91	25	1.17	63
Umbrina canariensis	15.18	41	0.75	
Raja miraletus	14.97	21	0.74	
Trigla lyra	12.26	146	0.60	
Anthias anthias	11.45	124	0.56	
Squalus megalops	8.69	17	0.43	
Illex coindetii	5.62	21	0.28	
Sepiella ornata	2.70	21	0.13	
Scorpaena normani	2.49	21	0.12	
Total	2035.24		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 20
DATE :28/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°35.49
start stop duration Lon E 11°25.92
TIME :07:16:47 07:49:02 32.3 (min) Purpose : 3
LOG : 8430.20 8431.72 1.5 Region : 4050
FDEPTH: 120 120 Gear cond.: 1
BDEPTH: 120 120 Validity : 1
Towing dir: 0° Wire out : 390 m Speed : 2.8 kn
Sorted : 64 Total catch: 732.64 Catch/hour: 1363.05

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	576.74	4586	42.31	64
Dentex macrophthalmus	468.61	6726	34.38	66
Etrumeus whiteheadi	116.99	465	8.58	
Trachurus capensis	87.68	489	6.43	65
Anthias anthias	33.73	396	2.47	
Merluccius polli	19.78	93	1.45	
Zeus faber	16.52	47	1.21	
Atractoscion aequidens	10.88	11	0.80	67
Trigla lyra	9.30	117	0.68	
Arius sp.	7.91	24	0.58	
Scorpaena normani	4.89	24	0.36	
Dentex barnardi	3.03	24	0.22	
Scomber japonicus	2.79	24	0.20	
Sepia orbignyana	2.33	24	0.17	
Illex coindetii	1.86	47	0.14	
Total	1363.05		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 21
DATE :28/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°34.64
start stop duration Lon E 11°36.17
TIME :09:25:09 09:55:12 30.1 (min) Purpose : 3
LOG : 8443.56 8445.22 1.7 Region : 4050
FDEPTH: 91 92 Gear cond.: 1
BDEPTH: 91 92 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.3 kn
Sorted : 139 Total catch: 3584.21 Catch/hour: 7156.49

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	5190.71	159580	72.53	68
Dentex macrophthalmus	774.39	14466	10.82	69
Merluccius capensis	266.32	1841	3.72	70
Atractoscion aequidens	245.35	665	3.43	71
Thyrsites atun	136.47	256	1.91	
Chelidonichthys capensis	107.86	357	1.51	
Pagellus bellottii	96.10	563	1.34	72
Loligo vulgaris	69.00	204	0.96	
Spondyliosoma cantharus	60.82	154	0.85	
Zeus faber	51.11	154	0.71	
Mustelus mustelus	41.23	10	0.58	
Sepia orbignyana	36.80	102	0.51	
Squalus megalops	31.25	50	0.44	
Merluccius polli	28.63	204	0.40	
Illex coindetii	14.32	102	0.20	
Dentex barnardi	4.09	52	0.06	
Umbrina canariensis	2.04	52	0.03	
Total	7156.49		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 22
DATE :28/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°29.33
start stop duration Lon E 11°40.76
TIME :10:50:16 10:55:39 5.4 (min) Purpose : 3
LOG : 8451.13 8451.33 0.2 Region : 4050
FDEPTH: 71 70 Gear cond.: 8
BDEPTH: 71 70 Validity : 8
Towing dir: 0° Wire out : 220 m Speed : 2.3 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
N O C A T C H	0.00	0	0.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 23
DATE :28/02/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 16°24.44
start stop duration Lon E 11°45.73
TIME :12:14:48 12:45:23 30.6 (min) Purpose : 3
LOG : 8458.49 8460.21 1.7 Region : 4050
FDEPTH: 23 25 Gear cond.: 1
BDEPTH: 23 25 Validity : 1
Towing dir: 0° Wire out : 85 m Speed : 3.4 kn
Sorted : 0 Total catch: 40.52 Catch/hour: 79.53

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
J E L L Y F I S H	64.08	540	80.58	
Decapterus rhonchus	7.46	27	9.38	
Sepia orbignyana	2.90	12	3.65	
Pagellus bellottii	2.81	102	3.53	73
Sphyrna zygaena	1.96	2	2.47	
Fistularia petimba	0.27	18	0.35	
Lagocephalus laevigatus	0.02	2	0.02	
Dicologoglossa cuneata	0.02	2	0.02	
Total	79.53		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 24
DATE :28/02/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 16°23.41
start stop duration Lon E 11°43.62
TIME :13:24:01 13:54:19 30.3 (min) Purpose : 3
LOG : 8463.11 8464.64 1.5 Region : 4050
FDEPTH: 51 53 Gear cond.: 1
BDEPTH: 51 53 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.0 kn
Sorted : 17 Total catch: 531.94 Catch/hour: 1053.35

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	625.54	25485	59.39	75
Dasyatis marmorata	132.57	34	12.59	
Pagellus bellottii	117.39	2626	11.14	74
Sepia orbignyana	46.85	154	4.45	
Squalus megalops	30.69	16	2.91	
Pomatomus saltatrix	25.74	51	2.44	
Fistularia petimba	21.11	51	2.00	
Unidentified fish	20.59	51	1.96	
Dentex barnardi	10.30	154	0.98	
Rhinobatos albomaculatus	5.05	4	0.48	
Raja miraletus	4.63	51	0.44	
GOBIIDAE	4.12	1596	0.39	
Trachinus armatus	3.09	51	0.29	
Dicologoglossa cuneata	3.09	412	0.29	
Sardinella aurita	2.57	51	0.24	
Total	1053.35		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 25
DATE :28/02/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 16°12.62
start stop duration Lon E 11°36.40
TIME :16:12:53 16:39:34 26.7 (min) Purpose : 3
LOG : 8481.67 8483.03 1.4 Region : 4050
FDEPTH: 75 77 Gear cond.: 1
BDEPTH: 75 77 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 3.0 kn
Sorted : 0 Total catch: 81.82 Catch/hour: 183.93

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	60.70	1506	33.00	76
Galeorhinus galeus	34.73	38	18.88	
Auxis thazard	30.75	11	16.72	
Atractoscion aequidens	20.79	20	11.31	77
Spondyliosoma cantharus	13.60	34	7.39	
Sepia officinalis hierredda	6.27	25	3.41	
Dentex barnardi	4.59	18	2.49	80
Loligo vulgaris	3.66	70	1.99	
Squalus megalops	2.20	2	1.20	
Pagellus bellottii	1.96	9	1.06	78
Dentex gibbosus	1.93	13	1.05	79
Fistularia petimba	1.84	4	1.00	
Zeus faber	0.72	7	0.39	
Lepidotrigla cadmani	0.18	4	0.10	
Total	183.93		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 26
DATE :28/02/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 16°13.38
start stop duration Lon E 11°40.12
TIME :17:17:30 17:39:18 21.8 (min) Purpose : 3
LOG : 8487.27 8488.46 1.2 Region : 4050
FDEPTH: 62 60 Gear cond.: 1
BDEPTH: 62 60 Validity : 1
Towing dir: 0° Wire out : 195 m Speed : 3.3 kn
Sorted : 0 Total catch: 12.96 Catch/hour: 35.69

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	12.28	229	34.41	81
Mustelus mustelus	7.74	6	21.68	
Pagellus bellottii	4.82	129	13.50	82
Spondyliosoma cantharus	3.52	14	9.88	
Atractoscion aequidens	2.40	3	6.71	
Dentex gibbosus	1.82	19	5.09	84
Dentex barnardi	1.57	14	4.40	83
Lithognathus mormyrus	1.54	6	4.32	
Total	35.69		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 27
DATE :02/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 12°35.10
start stop duration Lon E 13°2.93
TIME :19:14:24 19:45:29 31.1 (min) Purpose : 3
LOG : 8764.94 8766.50 1.6 Region : 4040
FDEPTH: 734 771 Gear cond.: 1
BDEPTH: 734 771 Validity : 1
Towing dir: 0° Wire out : 1800 m Speed : 3.0 kn
Sorted : 186 Total catch: 658.65 Catch/hour: 1271.93

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	1067.24	6353	83.91	
Yarrella blackfordi	82.13	2200	6.46	
Nezumia sp.	29.06	724	2.28	
Talismania sp.	18.06	319	1.42	
Notacanthus sexspinis	15.41	35	1.21	
Monomitopus metriostoma	15.00	35	1.18	
Chaceon maritae, female	7.65	27	0.60	88
Ebinania costaecanarie	6.43	8	0.51	
Merluccius polli	5.70	8	0.45	85
Aristeus varidens, female	5.41	338	0.43	87
Stereomastis sculpta	4.87	419	0.38	
CONGRIDAE	3.32	41	0.26	
Phrynichthys wedli	3.05	8	0.24	
Halosaurus ovenii	2.78	35	0.22	
Raja alba	1.70	8	0.13	
Nezumia aequalis	1.62	14	0.13	
Plesiopenaeus edwardsianus	0.95	54	0.07	
Aristeus varidens, male	0.89	108	0.07	86
Loligo vulgaris	0.54	8	0.04	
Dibranchus atlanticus	0.14	8	0.01	
Total	1271.93		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 28
DATE :02/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 12°21.91
start stop duration Lon E 13°17.16
TIME :23:16:54 23:50:17 33.4 (min) Purpose : 3
LOG : 8784.38 8786.03 1.7 Region : 4040
FDEPTH: 736 744 Gear cond.: 1
BDEPTH: 736 744 Validity : 1
Towing dir: 0° Wire out : 1800 m Speed : 3.0 kn
Sorted : 95 Total catch: 367.78 Catch/hour: 660.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	255.85	10343	38.71	
Yarrella blackfordi	201.83	6412	30.54	
Merluccius polli	32.70	49	4.95	89
Stomias boa boa	32.35	866	4.89	
Malacocephalus occidentalis	22.39	634	3.39	
Bajacalifornia magalops	18.17	433	2.75	
Aristeus varidens, female, female	15.20	1254	2.30	90
Lophius sp.	12.17	7	1.84	
Chaceon maritae, female	10.51	40	1.59	
Lamprogrammus exutus	6.97	25	1.05	
OCTOPODIDAE	6.59	7	1.00	
OMMASTREPHIDAE	6.22	20	0.94	
POLYCHAELIDAE	6.02	724	0.91	
Ophisurus serpens	5.82	90	0.88	
Bathyuroconger vicinus	4.98	65	0.75	
Raja confundens	4.53	7	0.69	
Ebinania costaecanarie	3.23	13	0.49	
Dicrolene intronigra	2.39	58	0.36	
Benthodesmus tenuis	2.34	84	0.35	
Talismania sp.	2.19	155	0.33	
Aristeus varidens, male, male	1.94	259	0.29	91
Heterocarpus grimaldii	1.37	77	0.21	
Triplophos hemingi	1.22	155	0.18	
Halosaurus ovenii	0.97	149	0.15	
Melanonus zugmayeri	0.77	110	0.12	
Dibranchus sp.	0.58	25	0.09	
Glyphus marsupialis	0.40	20	0.06	
Scymnodon squamulosus	0.38	13	0.06	
DICERATIIDAE	0.32	13	0.05	
Etmopterus polli	0.29	7	0.04	
Nemichthys scolopaceus	0.20	13	0.03	
Total	660.88		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 29
DATE :03/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°26.82
start stop duration Lon E 13°25.22
TIME :10:31:30 10:59:18 27.8 (min) Purpose : 3
LOG : 8825.96 8827.57 1.6 Region : 4040
FDEPTH: 69 70 Gear cond.: 1
BDEPTH: 69 70 Validity : 1
Towing dir: 0° Wire out : 210 m Speed : 3.5 kn
Sorted : 0 Total catch: 234.68 Catch/hour: 506.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	161.33	1444	31.85	97
Trichiurus lepturus	102.73	2689	20.28	
Pomadasys jubelini	41.55	84	8.20	96
Pomadasys incisus	36.47	289	7.20	95
Trachurus trecae	30.76	125	6.07	92
Gymnura altavela	24.06	2	4.75	
Selene dorsalis	23.42	104	4.62	
Umbrina canariensis	13.42	192	2.65	94
Rhinobatos albomaculatus	11.98	4	2.36	
Raja miraletus	10.60	15	2.09	
Dentex barnardi	10.12	60	2.00	
Chloroscombrus chrysurus	9.65	47	1.90	
Brachydeuterus auritus	5.63	1273	1.11	0
Torpedo torpedo	4.27	13	0.84	
Argyrosomus hololepidotus	2.76	4	0.55	
Lithognathus mormyrus	2.65	15	0.52	
Pagellus bellottii	2.59	24	0.51	93
Stromateus fiatola	1.83	2	0.36	
Alloteuthis africana	1.49	1014	0.29	
Chaetodon hoefleri	1.49	9	0.29	
Branchiostegus semifasciatus	1.47	2	0.29	
Trichiurus lepturus	1.29	261	0.26	0
Citharus linguatula	1.06	39	0.21	
Zeus faber	0.95	2	0.19	
Torpedo marmorata	0.56	2	0.11	
Dicologoglossa cuneata	0.54	9	0.11	
Sardinella maderensis	0.45	2	0.09	
Galeoides decadactylus	0.30	2	0.06	
Synagrops microlepis	0.26	45	0.05	
Grammoplites gruveli	0.22	2	0.04	
GOBIIDAE	0.15	88	0.03	
Anthias anthias	0.13	2	0.03	
Parapenaeus longirostris	0.13	45	0.03	
Trachurus trecae	0.06	11	0.01	0
Pseudupeneus prayensis	0.06	2	0.01	
Parapenaeus longirostris, male	0.04	22	0.01	
Total	506.50		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 30
DATE :03/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°27.13
start stop duration Lon E 13°22.83
TIME :11:39:35 12:09:26 29.8 (min) Purpose : 3
LOG : 8830.16 8831.70 1.5 Region : 4040
FDEPTH: 95 92 Gear cond.: 1
BDEPTH: 95 92 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.1 kn
Sorted : 306 Total catch: 2201.81 Catch/hour: 4427.23

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Umbrina canariensis	1767.67	3054	39.93	101
Synagrops microlepis	1220.43	5021	27.57	
Dentex macrophthalmus	270.42	2143	6.11	98
Argyrosomus hololepidotus	262.04	261	5.92	103
Pomadasys jubelini	220.05	390	4.97	100
Trichiurus lepturus	174.45	985	3.94	
Zeus faber	123.64	245	2.79	
Pagellus bellottii	70.94	362	1.60	99
Brotula barbata	69.05	72	1.56	
Miracorvina angolensis	56.32	189	1.27	102
Citharus linguatula	37.06	607	0.84	
Lithognathus mormyrus	25.48	58	0.58	
Pontinus leda	24.17	203	0.55	
Raja miraletus	23.45	28	0.53	
Chelidonichthys capensis	22.58	173	0.51	
Pterothrissus belloci	20.11	217	0.45	
Sepia orbignyana	17.96	44	0.41	
Trachurus trecae	7.96	28	0.18	
Brachydeuterus auritus	5.35	28	0.12	
Branchiostegus semifasciatus	2.75	14	0.06	
Torpedo torpedo	2.31	14	0.05	
Spondyliosoma cantharus	1.89	14	0.04	
Octopus vulgaris	1.17	14	0.03	
Total	4427.23		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 31
DATE :03/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°24.98
start stop duration Lon E 13°21.09
TIME :13:22:36 13:49:48 27.2 (min) Purpose : 3
LOG : 8836.72 8838.14 1.4 Region : 4040
FDEPTH: 113 116 Gear cond.: 1
BDEPTH: 113 116 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.1 kn
Sorted : 104 Total catch: 103.66 Catch/hour: 228.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Lepidotrigla cadmani	42.04	249	18.38	
Dentex macrophthalmus	32.55	203	14.23	107
Erythrocles monodi	31.89	55	13.94	
Sepia orbignyana	27.25	55	11.91	
Cynoponticus ferox	26.92	4	11.77	
Anthias anthias	20.74	82	9.07	
Raja miraletus	10.35	18	4.52	
Dentex barnardi	8.21	29	3.59	106
Pagellus bellottii	7.64	55	3.34	105
Zeus faber	5.56	13	2.43	
Dentex angolensis	4.97	22	2.17	104
Scorpaena stephanica	3.46	9	1.51	
Uranoscopus polli	2.14	11	0.94	
Citharus linguatula	1.39	26	0.61	
Fistularia petimba	1.26	2	0.55	
Pomadasys rogeri	1.10	2	0.48	
Torpedo torpedo	0.53	2	0.23	
Chaetodon hoefleri	0.35	2	0.15	
Perulibatrachus rossignoli	0.33	11	0.14	
Loligo vulgaris	0.07	2	0.03	
Total	228.75		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 32
DATE :03/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°17.65
start stop duration Lon E 13°33.57
TIME :16:07:15 16:37:05 29.8 (min) Purpose : 3
LOG : 8852.34 8853.88 1.5 Region : 4040
FDEPTH: 59 57 Gear cond.: 1
BDEPTH: 59 57 Validity : 1
Towing dir: 0° Wire out : 170 m Speed : 3.1 kn
Sorted : 239 Total catch: 725.49 Catch/hour: 1458.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	306.92	8662	21.04	
Pomadasys incisus	281.50	4478	19.30	
Pomadasys jubelini	259.30	257	17.78	111
Trichiurus lepturus	166.33	772	11.40	
Galeoides decadactylus	80.75	444	5.54	
Pagellus bellottii	78.82	444	5.40	110
Lithognathus mormyrus	73.67	199	5.05	
Dentex barnardi	47.61	527	3.26	109
Rhinobatos albomaculatus	36.90	14	2.53	
Selene dorsalis	25.21	167	1.73	
Citharus linguatula	20.53	810	1.41	
Trachurus trecae	12.61	97	0.86	108
Octopus sp.	11.00	12	0.75	
Grammoplites gruveli	8.63	103	0.59	
Umbrina canariensis	7.84	117	0.54	
Pseudupeneus prayensis	6.23	44	0.43	
Torpedo marmorata	5.15	6	0.35	
Raja miraletus	4.77	6	0.33	
Dicologoglossa cuneata	4.56	64	0.31	
Sepia orbignyana	4.44	12	0.30	
Pteroscion peli	3.28	26	0.22	
Sardinella aurita	2.63	44	0.18	
Scorpaena stephanica	2.51	32	0.17	
Chaetodon hoefleri	2.13	12	0.15	
Parapristipoma humile	1.99	44	0.14	
Chilomycterus spinosus mauret.	0.97	6	0.07	
Chloroscombrus chrysurus	0.90	6	0.06	
CONGRIDAE	0.76	6	0.05	
Argyrosomus hololepidotus	0.44	6	0.03	
Sardinella maderensis	0.32	6	0.02	
Total	1458.72		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 33
DATE :03/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°15.67
start stop duration Lon E 13°32.37
TIME :17:13:43 17:43:48 30.1 (min) Purpose : 3
LOG : 8856.78 8858.28 1.5 Region : 4040
FDEPTH: 76 79 Gear cond.: 1
BDEPTH: 76 79 Validity : 1
Towing dir: 0° Wire out : 240 m Speed : 3.1 kn
Sorted : 138 Total catch: 491.69 Catch/hour: 981.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	360.20	2576	36.69	115
Pomadasys incisus	120.56	571	12.28	112
Lithognathus mormyrus	95.84	465	9.76	
Citharus linguatula	79.37	4409	8.08	
Umbrina canariensis	34.74	210	3.54	113
Trichiurus lepturus	30.33	128	3.09	
Sepia orbignyana	27.17	38	2.77	
Torpedo marmorata	26.26	38	2.67	
Trigla lyra	25.24	210	2.57	
Brachydeuterus auritus	23.36	1326	2.38	116
Raja miraletus	15.57	30	1.59	
Dentex barnardi	15.19	142	1.55	114
Rhinobatos albomaculatus	15.07	6	1.54	
Argyrosomus hololepidotus	13.48	16	1.37	
Synagrops microlepis	12.06	2648	1.23	
Chelidonichthys capensis	11.98	112	1.22	
Parapristipoma humile	11.00	210	1.12	
Dasyatis margarita	10.38	2	1.06	
Grammoplites gruveli	8.31	106	0.85	
Octopus macropus	6.97	8	0.71	
Zeus faber	6.81	16	0.69	
Pseudupeneus prayensis	4.79	30	0.49	
Synaptura lusitanica	4.49	30	0.46	
Pomadasys jubelini	3.97	8	0.40	
Sepiella ornata	3.00	8	0.31	
Sardinella aurita	2.86	30	0.29	
CONGRIDAE	2.62	30	0.27	
Dentex macrophthalmus	2.32	16	0.24	
Parapenaeus longirostris	1.88	487	0.19	
Torpedo torpedo	1.80	30	0.18	
Brotula barbata	1.80	22	0.18	
Trachurus trecae	1.36	16	0.14	
Boops boops	0.46	8	0.05	
Scorpaena stephanica	0.30	30	0.03	
Chilomycterus spinosus mauret.	0.22	30	0.02	
Total	981.74		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 34
DATE :03/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°56.87
start stop duration Lon E 13°23.47
TIME :20:58:25 21:29:36 31.2 (min) Purpose : 3
LOG : 8882.01 8883.49 1.5 Region : 4040
FDEPTH: 478 487 Gear cond.: 1
BDEPTH: 478 487 Validity : 1
Towing dir: 0° Wire out : 1180 m Speed : 2.8 kn
Sorted : 46 Total catch: 160.03 Catch/hour: 308.05

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	202.12	46608	65.61	
Yarrella blackfordi	35.25	329	11.44	
Laemonema laureysi	12.61	1207	4.09	
Hoplostethus cadenati	8.16	377	2.65	
Triplophos hemingi	6.33	837	2.06	
Merluccius polli	6.26	12	2.03	117
Aristeus varidens, female, female	5.66	304	1.84	119
Aristeus varidens, male, male	5.52	789	1.79	118
Nezumia aequalis	4.66	196	1.51	
Etmopterus polli	4.18	102	1.36	
Gadella imberbis	3.77	169	1.22	
Halosaurus ovenii	3.50	210	1.14	
Chaceon maritae, female	2.83	12	0.92	
Stomias boa boa	2.29	40	0.74	
Paraconger notialis	1.42	135	0.46	
Trichiurus lepturus	0.94	35	0.31	
Plesionika martia	0.89	243	0.29	
Chlorophthalmus atlanticus	0.75	89	0.24	
Epigonus sp.	0.62	54	0.20	
Xenodermichthys copei	0.21	62	0.07	
Dibranchus atlanticus	0.08	8	0.02	
Total	308.05		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 35
DATE :03/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°56.26
start stop duration Lon E 13°21.61
TIME :22:55:24 23:25:44 30.3 (min) Purpose : 3
LOG : 8888.27 8889.79 1.5 Region : 4040
FDEPTH: 582 592 Gear cond.: 1
BDEPTH: 582 592 Validity : 1
Towing dir: 0° Wire out : 1500 m Speed : 3.0 kn
Sorted : 60 Total catch: 509.23 Catch/hour: 1007.05

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus atlanticus	701.81	26324	69.69	
Lamprogrammus exutus	97.50	3850	9.68	
Nematocarcinus africanus	83.22	24963	8.26	
Yarrella blackfordi	51.44	1849	5.11	
Aristeus varidens, male	11.94	1598	1.19	
Aristeus varidens, female	11.43	690	1.14	
Triplophos hemingi	9.59	1295	0.95	
Stomias boa boa	9.59	235	0.95	
Nezumia aequalis	6.90	471	0.69	
POLYCHAELIDAE	6.05	672	0.60	
Gadella imberbis	4.37	134	0.43	
Chaceon maritae, male	3.16	12	0.31	
Bathyuroconger vicinus	1.68	85	0.17	
Trichiurus lepturus	1.52	51	0.15	
Glyphus marsupialis	1.52	287	0.15	
Xenodermichthys copei	1.19	101	0.12	
Caelorinchus coelorhincus	1.19	18	0.12	
Monomitopus metriostoma	0.85	220	0.08	
Laemonema laureysi	0.67	34	0.07	
Halosaurus ovenii	0.51	18	0.05	
MYCTOPHIDAE	0.34	202	0.03	
Chaceon maritae, male	0.22	2	0.02	
Nemichthys scolopaceus	0.18	18	0.02	
Cataetyx laticeps	0.18	34	0.02	
Total	1007.05		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 36
DATE :04/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°57.41
start stop duration Lon E 13°20.51
TIME :01:23:11 01:53:04 29.9 (min) Purpose : 3
LOG : 8897.78 8899.17 1.4 Region : 4040
FDEPTH: 663 660 Gear cond.: 1
BDEPTH: 663 660 Validity : 1
Towing dir: 0° Wire out : 1620 m Speed : 2.8 kn
Sorted : 75 Total catch: 272.32 Catch/hour: 546.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	184.28	9463	33.71	
Yarrella blackfordi	76.78	2256	14.05	
Nematocarcinus africanus	76.78	21679	14.05	
Lamprogrammus exutus	58.27	325	10.66	
Triplophos hemingi	29.99	3671	5.49	
Nezumia aequalis	20.78	705	3.80	
Chaceon maritae, female	19.37	80	3.54	
Stomias boa boa	14.37	397	2.63	
Bathyuroconger vicinus	10.66	227	1.95	
POLYCHAELIDAE	9.39	1192	1.72	
Laemonema laureysi	7.15	181	1.31	
OMMASTREPHIDAE	7.15	36	1.31	
Merluccius polli	5.56	8	1.02	120
Gadella imberbis	3.79	434	0.69	
Todaropsis eblanae	3.43	18	0.63	
Chaceon maritae, male	3.41	8	0.62	
Benthodesmus tenuis	3.07	82	0.56	
Ebinania costaecanarie	2.47	10	0.45	
Glyphus marsupialis	2.09	173	0.38	
Scymnodon squamulosus	1.61	8	0.29	
Cataetyx laticeps	1.45	209	0.26	
Xenodermichthys copei	1.26	64	0.23	
Dibranchus atlanticus	1.18	64	0.22	
Halosaurus ovenii	1.18	36	0.22	
Etmopterus polli	0.50	10	0.09	
PANDALIDAE	0.46	46	0.08	
Etmopterus spinax	0.20	4	0.04	
Total	546.64		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 37
DATE :04/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°15.22
start stop duration Lon E 13°25.81
TIME :05:24:11 05:54:27 30.3 (min) Purpose : 3
LOG : 8920.81 8922.37 1.6 Region : 4040
FDEPTH: 109 112 Gear cond.: 1
BDEPTH: 109 112 Validity : 1
Towing dir: 0° Wire out : 310 m Speed : 3.1 kn
Sorted : 94 Total catch: 421.29 Catch/hour: 835.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	336.73	17671	40.32	121
Boops boops	163.69	2182	19.60	
Dentex macrophthalmus	117.74	1187	14.10	123
Umbrina canariensis	58.26	178	6.98	122
Sepia orbignyana	45.59	81	5.46	
Zeus faber	29.08	81	3.48	
Sardinella aurita	27.04	571	3.24	
Trigla lyra	18.73	188	2.24	
Branchiostegus semifasciatus	12.49	18	1.50	
Raja miraletus	6.34	18	0.76	
Dentex angolensis	5.35	36	0.64	
Dentex barnardi	4.02	18	0.48	
Trichiurus lepturus	3.85	10	0.46	
Lagocephalus laevigatus	2.42	18	0.29	
Illex coindetii	1.70	36	0.20	
Perulibatrachus rossignoli	1.35	10	0.16	
Citharus linguatula	0.36	10	0.04	
Syacium micrurum	0.28	10	0.03	
Monolene microstoma	0.18	10	0.02	
Total	835.18		100.01	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 38
DATE :04/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°16.07
start stop duration Lon E 13°27.31
TIME :06:32:16 07:02:39 30.4 (min) Purpose : 3
LOG : 8926.28 8927.90 1.6 Region : 4040
FDEPTH: 99 98 Gear cond.: 1
BDEPTH: 99 98 Validity : 1
Towing dir: 0° Wire out : 295 m Speed : 3.2 kn
Sorted : 160 Total catch: 159.80 Catch/hour: 315.71

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	164.18	8288	52.00	127
Sepia orbignyana	31.02	28	9.82	
Dentex barnardi	24.89	0	7.88	128
Chaetodon hoefleri	19.05	34	6.03	
Umbrina canariensis	16.30	47	5.16	126
Dentex angolensis	13.93	113	4.41	124
Zeus faber	10.87	30	3.44	0
Pagellus bellottii	9.48	93	3.00	125
Trigla lyra	5.24	6	1.66	
Dentex macrophthalmus	4.84	41	1.53	129
Sphyraena guachancho	2.53	8	0.80	
Sarda sarda	2.45	2	0.78	
Perulibatrachus rossignoli	2.23	2	0.71	
Trichiurus lepturus	1.96	2	0.62	
Raja miraletus	1.64	8	0.52	
Sardinella aurita	1.24	14	0.39	
Lagocephalus laevigatus	1.11	2	0.35	
Branchiostegus semifasciatus	1.11	2	0.35	
Octopus macropus	0.79	2	0.25	
Citharus linguatula	0.55	12	0.18	
Fistularia petimba	0.22	2	0.07	
Anthias anthias	0.10	4	0.03	
Total	315.71		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 39
DATE :04/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°1.74
start stop duration Lon E 13°38.98
TIME :09:08:03 09:31:57 23.9 (min) Purpose : 3
LOG : 8944.98 8946.39 1.4 Region : 4040
FDEPTH: 58 60 Gear cond.: 1
BDEPTH: 58 60 Validity : 1
Towing dir: 0° Wire out : 200 m Speed : 3.5 kn
Sorted : 177 Total catch: 850.47 Catch/hour: 2135.07

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	857.97	5772	40.18	130
Brachydeuterus auritus	293.42	6459	13.74	138
Pomadasys jubelini	271.13	2217	12.70	136
Rhinobatos albomaculatus	231.97	60	10.86	
Galeoides decadactylus	124.72	688	5.84	
Pomadasys jubelini	66.88	193	3.13	134
Dasyatis margarita	55.56	35	2.60	
Pagellus bellottii	51.56	266	2.42	133
Trichiurus lepturus	27.24	675	1.28	
Lithognathus mormyrus	23.97	85	1.12	
Pteroscion peli	20.49	771	0.96	131
Umbrina canariensis	16.52	228	0.77	132
Gymnura micrura	14.59	13	0.68	
Torpedo marmorata	14.46	25	0.68	
Raja miraletus	10.72	25	0.50	
Pseudotolithus senegalensis	9.16	121	0.43	135
Selene dorsalis	7.10	168	0.33	
Lagocephalus laevigatus	6.28	25	0.29	
Dentex barnardi	5.17	35	0.24	137
Sardinella aurita	5.07	35	0.24	
Grammoplites gruveli	4.69	108	0.22	
Chloroscombrus chrysurus	3.62	25	0.17	
Cynoglossus canariensis	3.36	13	0.16	
Pseudupeneus prayensis	2.89	25	0.14	
Sardinella maderensis	2.54	13	0.12	
Chelidonichthys capensis	1.33	13	0.06	
Ilisha africana	1.33	13	0.06	
Argyrosomus hololepidotus	0.85	13	0.04	
Brotula barbata	0.48	13	0.02	
Total	2135.07		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 40
DATE :04/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 12°0.06
start stop duration Lon E 13°37.06
TIME :11:07:19 11:29:07 21.8 (min) Purpose : 3
LOG : 8953.43 8954.53 1.1 Region : 4040
FDEPTH: 73 73 Gear cond.: 1
BDEPTH: 73 73 Validity : 1
Towing dir: 0° Wire out : 200 m Speed : 3.0 kn
Sorted : 113 Total catch: 113.08 Catch/hour: 311.23

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	101.97	776	32.76	143
Lithognathus mormyrus	38.53	201	12.38	144
Pseudupeneus prayensis	36.61	358	11.76	
Brachydeuterus auritus	33.72	1417	10.83	145
Rhinobatos albomaculatus	28.21	11	9.06	
Dentex barnardi	20.42	171	6.56	139
Raja miraletus	6.91	11	2.22	
Pomadasys incisus	6.66	47	2.14	142
Pagellus bellottii	6.33	69	2.03	140
Zeus faber	5.17	11	1.66	
Pomadasys jubelini	4.32	3	1.39	
Trichiurus lepturus	2.70	157	0.87	
Octopus vulgaris	2.42	3	0.78	
Sphyraena sphyraena	1.73	8	0.56	
Sardinella aurita	1.71	11	0.55	141
Plectorhinchus macrolepis	1.62	3	0.52	
Alloteuthis africana	1.57	650	0.50	
Citharus linguatula	1.51	44	0.49	
Sepia orbignyana	1.29	8	0.42	
Torpedo torpedo	1.02	6	0.33	
Umbrina canariensis	0.96	3	0.31	
Uranoscopus polli	0.88	3	0.28	
Pteroscion peli	0.77	6	0.25	
Lagocephalus laevigatus	0.74	3	0.24	
Serranus accraensis	0.72	8	0.23	
Selene dorsalis	0.61	6	0.19	
Boops boops	0.58	6	0.19	
Chaetodon hoefleri	0.47	3	0.15	
Chaetodon marcellae	0.41	3	0.13	
Arnoglossus imperialis	0.33	8	0.11	
Fistularia petimba	0.33	3	0.11	
Total	311.23		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 41
DATE :04/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°59.48
start stop duration Lon E 13°31.83
TIME :12:33:44 13:03:49 30.1 (min) Purpose : 3
LOG : 8961.16 8962.73 1.6 Region : 4040
FDEPTH: 105 107 Gear cond.: 1
BDEPTH: 105 107 Validity : 1
Towing dir: 0° Wire out : 280 m Speed : 3.1 kn
Sorted : 154 Total catch: 153.53 Catch/hour: 306.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Erythrocles monodi	93.22	144	30.45	
Dentex macrophthalmus	78.17	447	25.53	146
Dentex barnardi	26.32	88	8.60	154
Umbrina canariensis	20.94	72	6.84	149
Sepia orbignyana	20.64	26	6.74	
Dentex angolensis	13.46	74	4.40	148
Raja miraletus	12.78	20	4.18	
Pagellus bellottii	11.67	52	3.81	147
Sparus auriga *	7.48	2	2.44	
Chelidonichthys gabonensis	4.77	40	1.56	
Zeus faber	4.51	10	1.47	
Sepia officinalis hierredda	3.23	4	1.06	
Fistularia petimba	2.57	4	0.84	
Chaetodon hoefleri	1.58	10	0.51	
Trichiurus lepturus	1.44	2	0.47	
Ebinania costaecanarie	0.90	2	0.29	
Pseudupeneus prayensis	0.72	6	0.23	
Uranoscopus polli	0.60	2	0.20	
Anthias anthias	0.44	2	0.14	
Scorpaena normani	0.32	2	0.10	
Illex coindetii	0.16	16	0.05	
Peristedion cataphractum	0.14	2	0.05	
Sardinella aurita	0.12	2	0.04	
Total	306.14		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 42
DATE :04/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°58.24
start stop duration Lon E 13°29.83
TIME :14:02:51 14:31:28 28.6 (min) Purpose : 3
LOG : 8966.72 8968.22 1.5 Region : 4040
FDEPTH: 266 258 Gear cond.: 1
BDEPTH: 266 258 Validity : 1
Towing dir: 0° Wire out : 660 m Speed : 3.2 kn
Sorted : 196 Total catch: 565.35 Catch/hour: 1185.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	492.45	58491	41.55	
Chlorophthalmus atlanticus	310.90	8633	26.23	
Merluccius polli	145.91	1738	12.31	151
Zenopsis conchifer	92.24	509	7.78	
Dentex macrophthalmus	57.44	266	4.85	150
Malacocephalus occidentalis	30.19	308	2.55	
Parapenaeus longirostris	22.41	3277	1.89	
Trichiurus lepturus	9.85	396	0.83	
Scyllarus posteli	8.32	314	0.70	
Illex coindetii	5.77	55	0.49	
MYCTOPHIDAE	2.75	1912	0.23	
Bassanago albescens	2.35	21	0.20	
Laemonema laureysi	1.34	46	0.11	
Pterothrissus belloci	1.07	6	0.09	
Scorpaena normani	0.67	34	0.06	
Alloteuthis africana	0.55	180	0.05	
Epigonus telescopus	0.40	6	0.03	
Lestrolepis intermedia	0.34	13	0.03	
CONGRIDAE	0.34	13	0.03	
Total	1185.28		100.01	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 43
DATE :04/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°46.28
start stop duration Lon E 13°29.29
TIME :16:22:33 16:42:19 19.8 (min) Purpose : 3
LOG : 8982.83 8983.86 1.0 Region : 4040
FDEPTH: 164 165 Gear cond.: 1
BDEPTH: 164 165 Validity : 1
Towing dir: 0° Wire out : 430 m Speed : 3.1 kn
Sorted : 114 Total catch: 612.55 Catch/hour: 1859.03

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1596.97	318364	85.90	
Dentex angolensis	165.71	455	8.91	152
Brotula barbata	37.03	30	1.99	
Pontinus kuhlii	20.39	91	1.10	
Pterothrissus belloci	10.20	109	0.55	
Pterygotrigla guezei	6.92	55	0.37	
Zenopsis conchifer	5.10	91	0.27	
Scyliorhinus cervigoni	3.92	3	0.21	
Merluccius polli	3.82	73	0.21	
Sepia orbignyana	3.10	55	0.17	
Parapenaeus longirostris	2.55	510	0.14	
Dentex macrophthalmus	1.52	12	0.08	
Syacium micrurum	1.27	55	0.07	
MYCTOPHIDAE	0.36	109	0.02	
Illex coindetii	0.18	18	0.01	
Total	1859.03		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 44
DATE :04/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°45.38
start stop duration Lon E 13°23.43
TIME :18:20:47 18:51:24 30.6 (min) Purpose : 3
LOG : 8991.73 8993.25 1.5 Region : 4040
FDEPTH: 342 347 Gear cond.: 1
BDEPTH: 342 347 Validity : 1
Towing dir: 0° Wire out : 950 m Speed : 3.0 kn
Sorted : 74 Total catch: 512.94 Catch/hour: 1005.11

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	391.12	1901	38.91	153
Hymenocephalus italicus	255.52	55305	25.42	
Nematocarcinus africanus	126.98	49944	12.63	
Etmopterus polli	110.52	3157	11.00	
Laemonema laureysi	40.13	486	3.99	
Lophius vaillanti	21.16	14	2.11	
Malacocephalus laevis	17.24	251	1.72	
Aristeus varidens	9.72	1129	0.97	
CONGRIDAE	7.37	157	0.73	
Epigonus telescopus	4.39	157	0.44	
Chlorophthalmus atlanticus	3.92	110	0.39	
MYCTOPHIDAE	3.76	4628	0.37	
Illex coindetii	2.98	16	0.30	
Bathynectes piperitus	2.98	63	0.30	
Scorpaena normani	1.72	63	0.17	
Nezumia aequalis	1.72	47	0.17	
Trichiurus lepturus	1.41	110	0.14	
Chaceon maritae	1.37	4	0.14	
Hoplostethus cadenati	0.63	47	0.06	
Chaunax pictus	0.47	47	0.05	
Total	1005.11		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 45
DATE :04/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°44.72
start stop duration Lon E 13°18.10
TIME :20:42:01 21:12:06 30.1 (min) Purpose : 3
LOG : 9001.97 9003.54 1.6 Region : 4040
FDEPTH: 698 690 Gear cond.: 1
BDEPTH: 698 690 Validity : 1
Towing dir: 0° Wire out : 1800 m Speed : 3.1 kn
Sorted : 64 Total catch: 456.49 Catch/hour: 910.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	345.46	12730	37.95	
Yarrella blackfordi	203.09	5611	22.31	
Nematocarcinus africanus	102.59	46327	11.27	
Etmopterus polli	69.37	98	7.62	
Triplophos hemingi	67.14	10301	7.38	
Todarodes sagittatus	32.52	14	3.57	
Lamprogrammus exutus	22.61	98	2.48	
Aristeus varidens, female	12.56	684	1.38	
Bathyurocongrus sp.	12.28	265	1.35	
Stereomastis sp.	10.05	1452	1.10	
Chaceon maritae, female	9.67	36	1.06	
Etmopterus spinax	5.58	112	0.61	
Aristeus varidens, male	3.21	321	0.35	
Stomias boa boa	2.79	223	0.31	
Talismania longifilis	2.37	84	0.26	
Plesiopenaeus edwardsianus	2.09	265	0.23	
Halosaurus ovenii	1.54	28	0.17	
Xenodermichthys copei	1.54	126	0.17	
Lepidopus sp.	1.26	28	0.14	
Malacocephalus laevis	1.12	28	0.12	
Nemichthys scolopaceus	0.56	28	0.06	
Laemonema laureysi	0.42	98	0.05	
Dibranchus atlanticus	0.42	14	0.05	
Total	910.25		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 46
DATE :05/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°46.74
start stop duration Lon E 13°32.74
TIME :05:32:21 06:04:50 32.5 (min) Purpose : 3
LOG : 9040.63 9042.26 1.6 Region : 4040
FDEPTH: 114 113 Gear cond.: 1
BDEPTH: 114 113 Validity : 1
Towing dir: 0° Wire out : 345 m Speed : 3.0 kn
Sorted : 197 Total catch: 196.76 Catch/hour: 363.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	159.46	2709	43.89	159
Dentex angolensis	55.40	48	15.25	157
Sepia orbignyana	45.43	416	12.50	
Dentex macrophthalmus	26.50	301	7.29	155
Dentex barnardi	14.40	17	3.96	156
Boops boops	14.05	168	3.87	
Trichiurus lepturus	10.90	37	3.00	
Citharus linguatula	7.20	175	1.98	
Raja miraletus	6.45	11	1.77	
Pagellus bellottii	4.56	52	1.26	158
Trigla lyra	4.10	55	1.13	
Lagocephalus laevigatus	3.58	9	0.99	
Brotula barbata	1.64	2	0.45	
Zeus faber	1.61	6	0.44	
Saurida brasiliensis	1.51	524	0.42	
Pterothrissus belloci	1.33	7	0.37	
Sphyraena guachancho	1.27	4	0.35	
Scorpaena normani	0.83	6	0.23	
Microchirus frechkopi	0.78	11	0.21	
Perulibatrachus elminensis	0.61	6	0.17	
Branchiostegus semifasciatus	0.42	2	0.12	
Illex coindetii	0.41	2	0.11	
Umbrina canariensis	0.37	13	0.10	160
Chaetodon hoefleri	0.31	2	0.09	
Scorpaena stephanica	0.22	2	0.06	
Total	363.36		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 47
DATE :05/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°46.80
start stop duration Lon E 13°40.76
TIME :07:34:41 08:04:58 30.3 (min) Purpose : 3
LOG : 9052.68 9054.28 1.6 Region : 4040
FDEPTH: 67 67 Gear cond.: 1
BDEPTH: 67 67 Validity : 1
Towing dir: 0° Wire out : 200 m Speed : 3.2 kn
Sorted : 209 Total catch: 3200.98 Catch/hour: 6344.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	4770.47	22616	75.19	
Brachydeuterus auritus	957.98	22165	15.10	164
Trachurus trecae	142.16	1227	2.24	162
Pagellus bellottii	94.59	872	1.49	161
Lithognathus mormyrus	93.70	614	1.48	
Pseudupeneus prayensis	70.43	581	1.11	
Citharus linguatula	52.98	1810	0.84	
Octopus macropus	31.66	129	0.50	
Umbrina canariensis	30.70	258	0.48	
Rhinobatos albomaculatus	26.26	12	0.41	
Serranus accraensis	17.78	323	0.28	
Galeoides decadactylus	11.32	65	0.18	
Grammoplites gruveli	11.32	194	0.18	
Dentex barnardi	10.98	97	0.17	
Raja miraletus	6.78	65	0.11	
Selene dorsalis	5.49	32	0.09	
Pteroscion peli	5.49	32	0.09	163
Pomadasys incisus	4.78	32	0.08	
Total	6344.86		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 48
DATE :05/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°48.66
start stop duration Lon E 13°46.38
TIME :09:10:18 09:42:57 32.6 (min) Purpose : 3
LOG : 9061.25 9062.98 1.7 Region : 4040
FDEPTH: 22 20 Gear cond.: 1
BDEPTH: 22 20 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.2 kn
Sorted : 65 Total catch: 293.14 Catch/hour: 538.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	171.32	8294	31.79	
Brachydeuterus auritus	152.57	27603	28.31	166
Ephippion guttifer	25.92	20	4.81	
Arius parkii	23.90	88	4.43	
Sphyraena guachancho	19.63	537	3.64	
Sepia orbignyana	19.26	22	3.58	
Sardinella maderensis	16.25	1360	3.02	
Selene dorsalis	14.19	779	2.63	
Raja miraletus	12.72	22	2.36	
Alectis alexandrinus	12.13	44	2.25	
Gymnura altavela	11.12	7	2.06	
Rhinobatos albomaculatus	11.03	9	2.05	
Pseudupeneus prayensis	9.49	132	1.76	
Chloroscombrus chrysurus	9.12	331	1.69	
Galeoides decadactylus	6.91	29	1.28	
Eucinostomus melanopterus	6.54	51	1.21	
Pomadasys jubelini	5.61	6	1.04	165
Pomadasys rogeri	2.50	7	0.46	
Pseudotolithus senegalensis	2.17	7	0.40	
Epinephelus aeneus	2.06	4	0.38	
Decapterus rhonchus	1.84	51	0.34	
Dicologoglossa cuneata	1.25	22	0.23	
Lagocephalus laevigatus	0.81	74	0.15	
Penaeus notialis	0.51	7	0.10	
Total	538.86		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 49
DATE :05/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°32.54
start stop duration Lon E 13°43.12
TIME :11:35:59 12:06:05 30.1 (min) Purpose : 3
LOG : 9078.50 9080.17 1.7 Region : 4040
FDEPTH: 31 29 Gear cond.: 1
BDEPTH: 31 29 Validity : 1
Towing dir: 0° Wire out : 210 m Speed : 3.3 kn
Sorted : 44 Total catch: 43.67 Catch/hour: 87.05

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	32.69	411	37.55	168
Sardinella maderensis	27.41	385	31.49	167
Arius parkii	4.76	20	5.47	
Raja miraletus	4.43	6	5.08	
Aluterus scriptus	3.81	4	4.37	
Lagocephalus laevigatus	3.41	8	3.92	
Rhinobatos albomaculatus	2.35	4	2.70	
Epinephelus aeneus	2.27	4	2.61	
Trichiurus lepturus	1.14	2	1.31	
Lithognathus mormyrus	0.94	2	1.08	
Caranx crysos	0.90	2	1.03	
Sphyraena guachancho	0.72	2	0.82	
Alloteuthis africana	0.54	387	0.62	
Dicologoglossa cuneata	0.52	8	0.60	
Citharus linguatula	0.28	8	0.32	
Pseudupeneus prayensis	0.28	2	0.32	
Brachydeuterus auritus	0.24	112	0.27	169
Chloroscombrus chrysurus	0.20	2	0.23	
Sepia orbignyana	0.18	2	0.21	
Total	87.05		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 50
DATE :05/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°30.53
start stop duration Lon E 13°38.41
TIME :12:59:07 13:29:02 29.9 (min) Purpose : 3
LOG : 9085.81 9087.33 1.5 Region : 4040
FDEPTH: 44 45 Gear cond.: 1
BDEPTH: 44 45 Validity : 1
Towing dir: 0° Wire out : 130 m Speed : 3.1 kn
Sorted : 81 Total catch: 80.52 Catch/hour: 161.47

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pseudupeneus prayensis	48.63	479	30.12	
Epinephelus aeneus	32.89	4	20.37	
Chloroscombrus chrysurus	12.93	72	8.01	
Plectorhinchus macrolepis	12.63	10	7.82	
Rhinobatos albomaculatus	8.62	4	5.34	
Alectis alexandrinus	6.30	6	3.90	
Sparus caeruleostictus *	5.70	4	3.53	
Seriola carpenteri	5.53	4	3.43	
Raja miraletus	5.17	8	3.20	
Scomberomorus tritor	4.03	2	2.50	
Acanthurus monroviae	3.41	4	2.11	
Parapristipoma octolineatum	2.67	6	1.65	
Diplodus sp.	2.53	4	1.56	
Dentex barnardi	1.89	12	1.17	170
Octopus vulgaris	1.82	4	1.13	
Lagocephalus laevigatus	1.82	2	1.13	
Fistularia petimba	1.24	8	0.77	
Alloteuthis africana	0.94	357	0.58	
Arius parkii	0.62	2	0.38	
Chaetodon hoefleri	0.58	4	0.36	
Pagellus bellottii	0.42	6	0.26	
Citharichthys stampflii	0.32	2	0.20	
Sepia sp.	0.30	301	0.19	
Chaetodon marcellae	0.22	2	0.14	
Brachydeuterus auritus	0.06	38	0.04	
Trachurus trecae	0.06	14	0.04	171
Grammoplites gruveli	0.06	2	0.04	
Scorpaena stephanica	0.06	2	0.04	
Total	161.47		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 51
DATE :05/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°32.27
start stop duration Lon E 13°34.94
TIME :14:14:55 14:45:01 30.1 (min) Purpose : 3
LOG : 9091.73 9093.33 1.6 Region : 4040
FDEPTH: 64 64 Gear cond.: 1
BDEPTH: 64 64 Validity : 1
Towing dir: 0° Wire out : 170 m Speed : 3.2 kn
Sorted : 386 Total catch: 1738.83 Catch/hour: 3466.11

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Pomadasys incisus	1965.35	13742	56.70	172
Brachydeuterus auritus	940.07	18973	27.12	173
Lithognathus mormyrus	211.69	700	6.11	175
Trachurus trecae	115.71	4682	3.34	176
Pagellus bellottii	110.79	692	3.20	174
Pseudupeneus prayensis	59.20	548	1.71	
Raja miraletus	11.12	28	0.32	
Sphyraena guachancho	9.69	46	0.28	
Sardinella aurita	8.61	287	0.25	178
Citharus linguatula	6.56	179	0.19	
Dentex barnardi	6.46	64	0.19	177
Octopus vulgaris	5.12	12	0.15	
Trichiurus lepturus	5.02	12	0.14	
Sardinella maderensis	3.87	18	0.11	
Selene dorsalis	3.41	18	0.10	
Chelidonichthys capensis	1.53	12	0.04	
Boops boops	1.18	36	0.03	
Umbrina canariensis	0.72	12	0.02	
Total	3466.11		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 52
DATE :05/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°32.13
start stop duration Lon E 13°30.05
TIME :15:42:28 16:11:58 29.5 (min) Purpose : 3
LOG : 9098.99 9100.53 1.5 Region : 4040
FDEPTH: 106 106 Gear cond.: 1
BDEPTH: 106 106 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.1 kn
Sorted : 238 Total catch: 1772.99 Catch/hour: 3607.30

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Selene dorsalis	1351.78	4834	37.47	
Trichiurus lepturus	1002.81	17514	27.80	
Synagrops microlepis	434.59	129384	12.05	
Brachydeuterus auritus	306.82	2409	8.51	180
Trigla lyra	100.26	716	2.78	
Citharus linguatula	80.08	1188	2.22	
Sepia officinalis hierredda	72.76	114	2.02	
Trachurus trecae	51.27	1579	1.42	179
Raja miraletus	46.88	65	1.30	
Brotula barbata	38.15	41	1.06	
Zeus faber	25.39	65	0.70	
Lagocephalus laevigatus	19.37	33	0.54	
Pterothrissus belloci	19.37	146	0.54	
Sepiella ornata	18.07	33	0.50	
Fistularia petimba	15.30	49	0.42	
Dentex angolensis	9.60	65	0.27	
Scorpaena normani	4.56	33	0.13	
Torpedo torpedo	3.58	16	0.10	
Boops boops	2.28	16	0.06	
Octopus macropus	1.79	16	0.05	
Bembrops heterurus	1.63	16	0.05	
Zenopsis conchifer	0.98	16	0.03	
Total	3607.30		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 53
DATE :05/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°30.39
start stop duration Lon E 13°21.62
TIME :18:05:12 18:36:26 31.2 (min) Purpose : 3
LOG : 9112.72 9114.22 1.5 Region : 4040
FDEPTH: 379 395 Gear cond.: 1
BDEPTH: 379 395 Validity : 1
Towing dir: 0° Wire out : 1000 m Speed : 2.9 kn
Sorted : 66 Total catch: 224.09 Catch/hour: 430.67

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	210.40	65623	48.86	
Merluccius polli	110.10	234	25.57	181
Etmopterus polli	33.13	1541	7.69	
Gadella maraldi	22.27	386	5.17	
Aristeus varidens	12.09	1130	2.81	
Malacocephalus laevis	11.82	136	2.74	
Chlorophthalmus atlanticus	10.72	267	2.49	
Halosaurus ovenii	5.55	438	1.29	
Scyliorhinus cervigoni	4.19	6	0.97	
Chaunax pictus	2.67	471	0.62	
Helicolenus dactylopterus	2.48	38	0.58	
Bathynectes piperitus	1.90	60	0.44	
Schedophilus huttoni	1.83	52	0.42	
Nezumia aequalis	0.60	46	0.14	
Bathyuroconger vicinus	0.60	6	0.14	
Plesionika martia	0.19	52	0.04	
Hymenocephalus italicus	0.06	6	0.01	
MYCTOPHIDAE	0.06	13	0.01	
Total	430.67		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 54
DATE :05/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°24.26
start stop duration Lon E 13°18.92
TIME :20:40:12 21:31:37 51.4 (min) Purpose : 3
LOG : 9122.88 9125.21 2.3 Region : 4040
FDEPTH: 900 881 Gear cond.: 1
BDEPTH: 900 881 Validity : 1
Towing dir: 0° Wire out : 2150 m Speed : 2.7 kn
Sorted : 53 Total catch: 167.29 Catch/hour: 195.20

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Nezumia aequalis	66.74	1092	34.19	
Talismania longifilis	24.15	167	12.37	
Stereomastis sp.	12.05	1191	6.17	
Chaceon maritae, female	12.02	19	6.16	
Synaphobranchus kaupii	10.81	39	5.54	
Dicrolene intronigra	10.70	190	5.48	
Bathyuroconger vicinus	10.05	57	5.15	
Halosaurus ovenii	8.53	342	4.37	
Hoplostethus cadenati	7.92	54	4.06	
Aristeus varidens, female	7.01	64	3.59	
Shrimps, small, non comm.	3.42	485	1.75	
Chaceon maritae, male	3.30	35	1.69	
Ebinania costaecanarie	3.30	4	1.69	
Gadella imberbis	3.07	205	1.57	
Yarrella blackfordi	2.67	137	1.37	
Glyphus marsupialis	2.28	130	1.17	
Scymnodon squamulosus	1.59	6	0.81	
Stomias boa boa	1.40	46	0.72	
Bathypterois sp.	1.21	110	0.62	
Aristeus varidens, male	0.79	130	0.41	
Ommastrephes pteropus	0.76	4	0.39	
Lophius vaillanti	0.68	4	0.35	
Raja alba	0.49	8	0.25	
Dibranchus atlanticus	0.19	19	0.10	
Cataetyx laticeps	0.07	15	0.04	
Total	195.20		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 55
DATE :06/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 11°14.97
start stop duration Lon E 13°27.67
TIME :00:07:42 00:37:54 30.2 (min) Purpose : 3
LOG : 9137.86 9139.37 1.5 Region : 4040
FDEPTH: 526 526 Gear cond.: 1
BDEPTH: 526 526 Validity : 1
Towing dir: 0° Wire out : 1180 m Speed : 3.0 kn
Sorted : 36 Total catch: 262.89 Catch/hour: 522.30

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	203.05	5007	38.88	
Triplophos hemingi	123.50	21330	23.64	
Yarrella blackfordi	67.87	2940	12.99	
Stomias boa boa	54.83	1685	10.50	
Aristeus varidens, female	17.48	652	3.35	
Hoplostethus cadenati	10.33	509	1.98	
Aristeus varidens, male	7.95	1160	1.52	
Centrophorus granulosus	7.35	2	1.41	
Ariomma sp.	6.52	191	1.25	
Lepidopus sp.	5.56	207	1.07	
Nezumia aequalis	3.81	350	0.73	
Stereomastis sp.	3.50	429	0.67	
Ommastrephes pteropus	3.18	16	0.61	
Malacocephalus occidentalis	2.23	16	0.43	
Cataetyx laticeps	1.75	286	0.33	
Chaceon maritae, female	1.57	8	0.30	
Dicologoglossa cuneata	0.64	32	0.12	
Nemichthys scolopaceus	0.48	16	0.09	
Etmopterus polli	0.36	10	0.07	
Merluccius polli	0.36	2	0.07	
Total	522.30		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 56
DATE :06/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°12.62
start stop duration Lon E 13°35.93
TIME :05:25:40 05:57:48 32.1 (min) Purpose : 3
LOG : 9154.20 9155.82 1.6 Region : 4040
FDEPTH: 152 153 Gear cond.: 1
BDEPTH: 152 153 Validity : 1
Towing dir: 0° Wire out : 450 m Speed : 3.0 kn
Sorted : 217 Total catch: 1434.73 Catch/hour: 2680.07

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Synagrops microlepis	1487.80	255796	55.51	
Trichiurus lepturus	1025.66	3738	38.27	
Bembrops heterurus	42.14	519	1.57	
Pterothrissus belloci	40.68	306	1.52	
Brotula barbata	24.56	75	0.92	
Octopus macropus	17.75	13	0.66	
Trigla lyra	9.34	54	0.35	
Merluccius polli	7.60	187	0.28	
Dentex angolensis	5.73	21	0.21	182
Raja clavata	4.71	2	0.18	
Parapenaeus longirostris	4.54	1308	0.17	
Lophiodes kempi	3.87	13	0.14	
Scorpaena normani	2.80	93	0.10	
GOBIIDAE	1.06	106	0.04	
Citharus linguatula	0.80	13	0.03	
Illex coindetii	0.54	13	0.02	
Dentex macrophthalmus	0.50	9	0.02	
Total	2680.11		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 57
DATE :06/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°13.61
start stop duration Lon E 13°37.98
TIME :06:50:50 07:21:08 30.3 (min) Purpose : 3
LOG : 9159.40 9160.89 1.5 Region : 4040
FDEPTH: 116 118 Gear cond.: 1
BDEPTH: 116 118 Validity : 1
Towing dir: 0° Wire out : 330 m Speed : 3.0 kn
Sorted : 78 Total catch: 78.40 Catch/hour: 155.25

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Raja miraletus	29.70	40	19.13	
Trichiurus lepturus	27.23	44	17.54	
Sepia orbignyana	19.21	61	12.37	
Brotula barbata	16.53	38	10.65	
Dentex angolensis	12.38	57	7.97	183
Zeus faber	11.58	46	7.46	
Pterothrissus belloci	11.09	170	7.14	
Raja sp.	5.72	2	3.69	
Scorpaena normani	5.27	40	3.39	
Octopus macropus	4.24	6	2.73	
Umbrina canariensis	2.61	4	1.68	
Trigla lyra	2.57	22	1.66	
Citharus linguatula	2.53	53	1.63	
Trachurus trecae	2.32	145	1.49	184
Uranoscopus polli	1.41	4	0.91	
Dentex macrophthalmus	0.81	4	0.52	
Syacium micrurum	0.04	2	0.03	
Total	155.25		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 58
DATE :06/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°15.05
start stop duration Lon E 13°42.36
TIME :08:25:56 08:57:38 31.7 (min) Purpose : 3
LOG : 9167.87 9169.53 1.7 Region : 4040
FDEPTH: 23 23 Gear cond.: 1
BDEPTH: 23 23 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.2 kn
Sorted : 63 Total catch: 62.97 Catch/hour: 119.19

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Lagocephalus laevigatus	33.31	151	27.95	
Raja miraletus	15.14	23	12.70	
Balistes punctatus	14.86	26	12.47	
Aluterus scriptus	14.48	42	12.15	
Octopus macropus	8.88	6	7.45	
Fistularia petimba	8.42	64	7.07	
Ephippion guttifer	4.28	4	3.59	
Caranx crysos	3.80	4	3.19	
Sepiella ornata	3.01	2	2.53	
Trachinotus ovatus	2.54	8	2.13	
Sepia officinalis hierredda	2.50	4	2.10	
Trachinocephalus myops	2.18	6	1.83	
Chilomycterus spinosus mauret.	2.12	9	1.78	
Caranx senegallus	1.08	2	0.91	
Serranus cabrilla	0.85	11	0.71	
Scorpaena stephanica	0.74	2	0.62	
Sardinella maderensis	0.49	2	0.41	
Xyrichtys novacula	0.32	2	0.27	
Bothus podas africanus	0.19	2	0.16	
Total	119.19		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 59
DATE :06/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 11°16.86
start stop duration Lon E 13°44.51
TIME :09:49:21 10:15:59 26.6 (min) Purpose : 3
LOG : 9173.83 9175.28 1.5 Region : 4040
FDEPTH: 25 26 Gear cond.: 1
BDEPTH: 25 26 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.3 kn
Sorted : 178 Total catch: 852.51 Catch/hour: 1920.07

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	724.44	13707	37.73	189
Chloroscombrus chrysurus	143.24	1286	7.46	
Galeoides decadactylus	142.16	1437	7.40	
Pteroscion peli	123.78	2703	6.45	191
Gymnura altavela	118.38	23	6.17	
Epinephelus aeneus	110.27	43	5.74	
Ilisha africana	101.62	1536	5.29	
Lithognathus mormyrus	98.38	302	5.12	190
Sphyraena sphyraena	65.95	270	3.43	
Pomadasys incisus	46.69	842	2.43	186
Pseudotolithus typus	40.11	54	2.09	185
Dasyatis margarita	32.21	32	1.68	
Trichiurus lepturus	30.90	302	1.61	
Pseudupeneus prayensis	27.45	293	1.43	
Drepane africana	20.54	43	1.07	
Sparus caeruleostictus *	14.37	23	0.75	
Selene dorsalis	14.26	444	0.74	
Lagocephalus laevigatus	13.83	11	0.72	
Umbrina canariensis	8.31	108	0.43	188
Sardinella maderensis	7.88	194	0.41	187
Parakuhlia macrophthalmus	4.01	32	0.21	
Pagellus bellottii	3.99	23	0.21	
Scorpaena stephanica	3.56	216	0.19	
Elops lacerta	3.56	11	0.19	
Sardinella aurita	3.36	11	0.17	
Octopus vulgaris	3.13	11	0.16	
Trachinotus ovatus	2.70	11	0.14	
Pomadasys jubelini	2.05	11	0.11	
Sepia orbignyana	1.51	11	0.08	
Chaetodon hoefleri	1.51	32	0.08	
Dasyatis marmorata	1.40	11	0.07	
Trachinocephalus myops	1.19	11	0.06	
Raja miraletus	0.97	11	0.05	
Dicologoglossa cuneata	0.77	11	0.04	
Trachurus trecae	0.54	11	0.03	
Sphoeroides sp.	0.43	23	0.02	
Rypticus saponaceus	0.43	11	0.02	
Bothus podas africanus	0.20	11	0.01	
Total	1920.07		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 60
DATE :06/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°54.78
start stop duration Lon E 13°47.48
TIME :12:25:36 12:55:38 30.0 (min) Purpose : 3
LOG : 9196.41 9198.04 1.6 Region : 4040
FDEPTH: 35 36 Gear cond.: 1
BDEPTH: 35 36 Validity : 1
Towing dir: 0° Wire out : 130 m Speed : 3.3 kn
Sorted : 123 Total catch: 464.12 Catch/hour: 927.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	266.88	9046	28.77	193
Trichiurus lepturus	162.99	204	17.57	
Pseudotolithus senegalensis	153.56	470	16.55	192
Galeoides decadactylus	93.74	378	10.11	
Pteroscion peli	83.60	1777	9.01	194
Gymnura altavela	38.47	12	4.15	
Dicologoglossa cuneata	30.08	610	3.24	
Sphyraena sphyraena	22.17	64	2.39	
Torpedo nobiliana	18.15	32	1.96	
Cynoponticus ferox	9.79	8	1.06	
Sphyraena guachancho	9.23	22	1.00	
Chloroscombrus chrysurus	8.25	56	0.89	
Stromateus fiatola	6.94	14	0.75	
Grammoplites gruveli	5.82	98	0.63	
Dasyatis margarita	4.80	2	0.52	
Raja miraletus	3.24	4	0.35	
Lagocephalus laevigatus	2.38	36	0.26	
Pomadasys jubelini	2.32	8	0.25	
Penaeus notialis	1.76	532	0.19	
Sardinella aurita	1.40	8	0.15	
Dasyatis marmorata	1.22	2	0.13	
Sepiella ornata	0.84	176	0.09	
Total	927.62		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 61
DATE :06/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°54.91
start stop duration Lon E 13°43.71
TIME :13:42:17 14:12:17 30.0 (min) Purpose : 3
LOG : 9202.20 9203.85 1.7 Region : 4040
FDEPTH: 54 55 Gear cond.: 1
BDEPTH: 54 55 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.3 kn
Sorted : 299 Total catch: 299.05 Catch/hour: 598.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Carcharhinus signatus	240.90	80	40.28	
Stromateus fiatola	70.80	116	11.84	
Galeoides decadactylus	60.10	186	10.05	
Pomadasys jubelini	55.30	50	9.25	196
Pseudotolithus senegalensis	43.90	82	7.34	195
Brachydeuterus auritus	41.00	1068	6.86	200
Trichiurus lepturus	25.30	502	4.23	
Torpedo marmorata	12.94	18	2.16	
Raja miraletus	9.88	18	1.65	
Pagellus bellottii	5.66	28	0.95	199
Sepia orbignyana	5.56	48	0.93	
Rhinobatos albomaculatus	4.66	4	0.78	
Argyrosomus hololepidotus	3.66	18	0.61	198
Dicologoglossa cuneata	2.84	48	0.47	
Umbrina canariensis	2.40	40	0.40	197
Pomadasys incisus	2.32	8	0.39	
Sardinella aurita	1.88	8	0.31	
Citharus linguatula	1.68	48	0.28	
Selene dorsalis	1.54	8	0.26	
Cynoponticus ferox	1.00	2	0.17	
Pteroscion peli	0.98	10	0.16	
Sphyraena guachancho	0.86	2	0.14	
Sphyraena guachancho	0.78	2	0.13	
Chaetodon hoefleri	0.68	4	0.11	
Grammoplites gruveli	0.56	8	0.09	
Brotula barbata	0.36	2	0.06	
Scorpaena stephanica	0.16	2	0.03	
Trachurus trecae	0.12	6	0.02	
Scorpaena normani	0.08	6	0.01	
Chelidonichthys capensis	0.08	2	0.01	
Epinephelus aeneus	0.06	2	0.01	
Boops boops	0.04	2	0.01	
GOBIIDAE	0.02	6	0.00	
Total	598.10		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 62
DATE :06/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°55.02
start stop duration Lon E 13°35.12
TIME :15:27:45 15:57:41 29.9 (min) Purpose : 3
LOG : 9212.78 9214.44 1.7 Region : 4040
FDEPTH: 118 116 Gear cond.: 1
BDEPTH: 118 116 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.3 kn
Sorted : 75 Total catch: 326.02 Catch/hour: 653.35

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	281.56	1942	43.10	202
Synagrops microlepis	237.98	5611	36.42	
Sepia orbignyana	25.95	20	3.97	
Torpedo torpedo	19.44	80	2.98	
Brotula barbata	15.93	12	2.44	
Pagellus bellottii	15.43	220	2.36	
Zeus faber	15.33	50	2.35	
Raja miraletus	14.83	20	2.27	
Lepidotrigla cadmani	6.21	40	0.95	
Dentex angolensis	5.65	32	0.86	201
Bembrops heterurus	3.81	40	0.58	
Citharus linguatula	3.41	60	0.52	
Scorpaena normani	2.81	30	0.43	
Merluccius polli	2.51	110	0.38	203
Zenopsis conchifer	1.50	10	0.23	
Trachurus trecae	0.60	60	0.09	
Trichiurus lepturus	0.30	220	0.05	
Parapenaeus longirostris	0.10	40	0.02	
Total	653.35		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 63
DATE :06/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 10°57.78
start stop duration Lon E 13°27.33
TIME :17:42:56 18:12:55 30.0 (min) Purpose : 3
LOG : 9225.70 9227.29 1.6 Region : 4040
FDEPTH: 385 390 Gear cond.: 1
BDEPTH: 385 390 Validity : 1
Towing dir: 0° Wire out : 1050 m Speed : 3.2 kn
Sorted : 184 Total catch: 976.10 Catch/hour: 1952.85

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	1530.71	5756	78.38	204
Nematocarcinus africanus	283.89	78444	14.54	
Chaunax pictus	24.99	1078	1.28	
Laemonema laureysi	21.79	276	1.12	
Etmopterus polli	15.97	1332	0.82	
Malacocephalus occidentalis	15.19	122	0.78	
Hymenocephalus italicus	12.32	1386	0.63	
Centrophorus granulosus	7.80	2	0.40	
Torpedo nobiliana	7.68	2	0.39	
Aristeus varidens	7.16	572	0.37	
Dibranchus atlanticus	5.72	286	0.29	
MYCTOPHIDAE	3.30	264	0.17	
Trichiurus lepturus	3.08	132	0.16	
Nezumia aequalis	2.76	8	0.14	
Bathynectes piperitus	2.54	34	0.13	
Lophiodes kempi	2.54	22	0.13	
Chlorophthalmus atlanticus	1.66	22	0.09	
Bathyuroconger vicinus	1.32	12	0.07	
Gadella imberbis	1.32	12	0.07	
Halosaurus ovenii	1.10	22	0.06	
Total	1952.85		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 64
DATE :06/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 10°48.66
start stop duration Lon E 13°15.62
TIME :20:19:18 20:55:53 36.6 (min) Purpose : 3
LOG : 9240.56 9242.40 1.8 Region : 4040
FDEPTH: 522 510 Gear cond.: 1
BDEPTH: 522 510 Validity : 1
Towing dir: 0° Wire out : 1250 m Speed : 3.0 kn
Sorted : 58 Total catch: 265.70 Catch/hour: 435.81

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	264.24	51530	60.63	
Lamprogrammus exutus	32.48	1831	7.45	
Stomias boa boa	26.47	709	6.07	
Yarrella blackfordi	21.26	1358	4.88	
Aristeus varidens	17.42	1988	4.00	
Triplophos hemingi	16.24	1899	3.73	
Hoplostethus cadenati	13.09	3818	3.00	
Nezumia aequalis	8.27	10	1.90	
Gadella imberbis	6.40	246	1.47	
Laemonema laureysi	6.10	699	1.40	
Merluccius polli	4.56	8	1.05	
Malacocephalus laevis	3.94	20	0.90	
Chaceon maritae	3.44	10	0.79	
Etmopterus polli	2.56	59	0.59	
Bathynectes piperitus	2.46	49	0.56	
Dibranchus atlanticus	2.17	138	0.50	
CONGRIDAE	1.48	49	0.34	
Benthodesmus tenuis	1.28	39	0.29	
Xenodermichthys copei	1.18	108	0.27	
Halosaurus ovenii	0.59	20	0.14	
Nemichthys scolopaceus	0.20	10	0.05	
Total	435.81		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 65
DATE :07/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°37.56
start stop duration Lon E 13°40.25
TIME :05:22:20 05:54:28 32.1 (min) Purpose : 3
LOG : 9294.74 9296.36 1.6 Region : 4040
FDEPTH: 32 32 Gear cond.: 1
BDEPTH: 32 32 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.0 kn
Sorted : 98 Total catch: 573.36 Catch/hour: 1070.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	339.50	9524	31.71	222
Galeoides decadactylus	216.25	1479	20.20	
Trichiurus lepturus	86.27	314	8.06	
Chloroscombrus chrysurus	75.07	605	7.01	
Pteroscion peli	67.79	1087	6.33	
Sardinella aurita	56.25	515	5.25	
Ephippion guttifer	39.22	34	3.66	
Pomadasys incisus	38.10	605	3.56	224
Sphyraena guachancho	26.11	224	2.44	
Pseudotolithus senegalensis	25.32	67	2.37	223
Ilisha africana	16.36	224	1.53	
Bothus podas africanus	14.68	45	1.37	
Cynoglossus senegalensis	11.76	11	1.10	
Pseudupeneus prayensis	8.96	90	0.84	
Raja miraletus	7.96	11	0.74	
Sardinella maderensis	7.84	101	0.73	
Sepia orbignyana	7.51	11	0.70	
Selene dorsalis	7.51	157	0.70	
Lagocephalus laevigatus	5.71	22	0.53	
Rhinobatos albomaculatus	4.48	9	0.42	
Decapterus rhonchus	2.24	11	0.21	
Penaeus notialis	1.79	34	0.17	
Dicologoglossa cuneata	1.68	22	0.16	
Squilla cadenati	1.57	56	0.15	
Penaeus kerathurus	0.78	11	0.07	
Total	1070.70		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 66
DATE :07/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°39.66
start stop duration Lon E 13°37.97
TIME :06:35:18 07:06:22 31.1 (min) Purpose : 3
LOG : 9300.72 9302.41 1.7 Region : 4040
FDEPTH: 49 47 Gear cond.: 1
BDEPTH: 49 47 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 3.3 kn
Sorted : 204 Total catch: 681.99 Catch/hour: 1317.43

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	704.51	19729	53.48	227
Trichiurus lepturus	380.32	1379	28.87	
Galeoides decadactylus	83.16	257	6.31	
Pteroscion peli	45.84	643	3.48	
Pomadasys incisus	26.10	129	1.98	225
Gymnura micrura	22.99	2	1.74	
Raja miraletus	13.46	21	1.02	
Dicologoglossa cuneata	8.65	143	0.66	
Pagellus bellottii	6.08	27	0.46	
Grammoplites gruveli	5.00	89	0.38	
Umbrina canariensis	4.73	54	0.36	226
Citharus linguatula	3.59	95	0.27	
Rhinobatos albomaculatus	2.99	4	0.23	
Chloroscombrus chrysurus	2.11	14	0.16	
Argyrosomus hololepidotus	1.84	14	0.14	
Trachurus trecae	1.76	27	0.13	
Lutjanus goreensis	1.62	8	0.12	
Dentex barnardi	1.43	14	0.11	
Selene dorsalis	0.54	8	0.04	
Torpedo marmorata	0.41	8	0.03	
Boops boops	0.35	8	0.03	
Total	1317.49		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 67
DATE :07/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°41.77
start stop duration Lon E 13°30.05
TIME :08:25:23 08:56:00 30.6 (min) Purpose : 3
LOG : 9311.82 9313.46 1.6 Region : 4040
FDEPTH: 92 92 Gear cond.: 1
BDEPTH: 92 92 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.2 kn
Sorted : 114 Total catch: 114.09 Catch/hour: 223.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Raja miraletus	64.57	92	28.88	
Brachydeuterus auritus	22.14	376	9.90	
Trachurus trecae	20.57	1009	9.20	228
Pagellus bellottii	17.83	114	7.98	230
Pomadasys jubelini	15.87	14	7.10	231
Trichiurus lepturus	12.95	178	5.79	
Stromateus fiatola	11.85	14	5.30	
Dentex barnardi	9.56	57	4.28	229
Zeus faber	9.31	25	4.16	
Sepia orbignyana	8.52	8	3.81	
Sepiella ornata	6.82	4	3.05	
Octopus macropus	3.63	6	1.62	
Dentex angolensis	2.39	24	1.07	232
Scorpaena normani	2.23	22	1.00	
Brotula barbata	2.18	2	0.97	
Umbrina canariensis	2.12	4	0.95	
Citharus linguatula	2.08	53	0.93	
Pterothrissus belloci	2.04	41	0.91	
Alloteuthis africana	1.67	1711	0.75	
Torpedo torpedo	1.55	10	0.69	
Fistularia petimba	1.31	4	0.59	
Galeoides decadactylus	0.92	2	0.41	
Uranoscopus polli	0.67	2	0.30	
Pentheroscion mbizi	0.59	2	0.26	
Saurida brasiliensis	0.20	88	0.09	
Total	223.56		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 68
DATE :07/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°46.74
start stop duration Lon E 13°23.45
TIME :10:15:37 10:45:56 30.3 (min) Purpose : 3
LOG : 9323.36 9324.93 1.6 Region : 4040
FDEPTH: 156 153 Gear cond.: 1
BDEPTH: 156 153 Validity : 1
Towing dir: 0° Wire out : 450 m Speed : 3.1 kn
Sorted : 100 Total catch: 274.90 Catch/hour: 544.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	355.53	56040	65.35	
Trichiurus lepturus	75.12	309	13.81	
Dentex angolensis	24.74	107	4.55	233
Brotula barbata	24.18	16	4.45	
Bembrops heterurus	12.86	154	2.36	
Uranoscopus polli	9.82	47	1.80	
Raja miraletus	7.72	10	1.42	
Pterothrissus belloci	7.56	51	1.39	
Citharus linguatula	6.08	139	1.12	
Dentex macrophthalmus	4.61	16	0.85	234
Merluccius polli	3.60	32	0.66	235
Illex coindetii	3.19	51	0.59	
Sepia orbignyana	2.67	32	0.49	
Scorpaena normani	1.80	6	0.33	
Torpedo marmorata	1.80	10	0.33	
Zenopsis conchifer	1.64	36	0.30	
Parapenaeus longirostris	0.57	148	0.11	237
Peristedion cataphractum	0.26	6	0.05	
Parapenaeus longirostris, male	0.16	67	0.03	236
GOBIIDAE	0.10	6	0.02	
Total	544.00		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 69
DATE :07/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 10°48.62
start stop duration Lon E 13°20.08
TIME :11:58:35 12:28:07 29.5 (min) Purpose : 3
LOG : 9330.81 9332.32 1.5 Region : 4040
FDEPTH: 332 322 Gear cond.: 1
BDEPTH: 332 322 Validity : 1
Towing dir: 0° Wire out : 810 m Speed : 3.1 kn
Sorted : 121 Total catch: 245.73 Catch/hour: 499.45

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius polli	328.90	2114	65.85	238
Chlorophthalmus atlanticus	35.77	801	7.16	
Shrimps, small, non comm.	27.93	12768	5.59	
Trichiurus lepturus	19.88	902	3.98	
Epigonus telescopus	18.33	272	3.67	
MYCTOPHIDAE	14.11	8423	2.82	
Gadella imberbis	11.30	199	2.26	
Synagrops microlepis	10.37	1016	2.08	
Malacocephalus occidentalis	8.46	102	1.69	
Zenopsis conchifer	5.59	8	1.12	
Pterothrissus belloci	5.45	28	1.09	
Nezumia aequalis	5.16	1447	1.03	
Illex coindetii	4.55	49	0.91	
Parapenaeus longirostris	0.93	167	0.19	
Solenocera africana	0.57	110	0.11	
Lophius vaillanti	0.57	8	0.11	
Pontinus accraensis	0.41	4	0.08	
Helicolenus dactylopterus	0.37	16	0.07	
Bathynectes piperitus	0.20	4	0.04	
GALATHEIDAE *	0.20	45	0.04	
Chaunax pictus	0.16	12	0.03	
Bassanago albescens	0.12	4	0.02	
Peristedion cataphractum	0.08	16	0.02	
Lestidiops sp.	0.04	4	0.01	
Total	499.45		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 70
DATE :07/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°32.43
start stop duration Lon E 13°22.00
TIME :14:46:44 15:16:30 29.8 (min) Purpose : 3
LOG : 9350.87 9352.42 1.6 Region : 4040
FDEPTH: 97 96 Gear cond.: 1
BDEPTH: 97 96 Validity : 1
Towing dir: 0° Wire out : 260 m Speed : 3.1 kn
Sorted : 112 Total catch: 285.96 Catch/hour: 576.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	348.43	6697	60.46	242
Trachurus trecae	140.58	8743	24.39	243
Raja miraletus	19.45	36	3.37	
Zeus faber	16.63	46	2.89	
Fistularia petimba	13.20	34	2.29	
Chelidonichthys capensis	10.58	91	1.84	
Octopus sp.	5.91	6	1.02	
Pagellus bellottii	5.50	60	0.95	240
Dentex angolensis	5.24	91	0.91	241
Alloteuthis africana	2.72	2076	0.47	
Dentex barnardi	1.81	10	0.31	239
Uranoscopus polli	1.71	6	0.30	
Citharus linguatula	1.51	77	0.26	
Sepiella ornata	1.17	6	0.20	
Pterothrissus belloci	0.77	16	0.13	
Boops boops	0.60	20	0.10	
Saurida brasiliensis	0.26	56	0.05	
Sardinella maderensis	0.26	10	0.05	
Total	576.34		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 71
DATE :07/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°34.84
start stop duration Lon E 13°14.45
TIME :16:24:48 16:54:16 29.5 (min) Purpose : 3
LOG : 9360.59 9362.20 1.6 Region : 4040
FDEPTH: 133 134 Gear cond.: 1
BDEPTH: 133 134 Validity : 1
Towing dir: 0° Wire out : 340 m Speed : 3.3 kn
Sorted : 115 Total catch: 484.74 Catch/hour: 987.59

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	619.35	83595	62.71	
Trachurus trecae	197.62	9912	20.01	245
Trichiurus lepturus	79.97	214	8.10	
Dentex angolensis	36.06	163	3.65	244
Brotula barbata	7.13	8	0.72	
Spicara alta	6.72	153	0.68	
Boops boops	6.52	163	0.66	
Trigla lyra	5.91	41	0.60	
Raja miraletus	4.89	10	0.50	
Uranoscopus polli	3.57	31	0.36	
Citharus linguatula	3.46	71	0.35	
Zeus faber	3.36	10	0.34	
Branchiostegus semifasciatus	2.30	2	0.23	
Umbrina canariensis	2.14	10	0.22	
Lagocephalus laevigatus	2.04	10	0.21	
Syacium micrurum	2.04	31	0.21	
Brachydeuterus auritus	1.73	10	0.18	
Dentex macrophthalmus	1.32	20	0.13	
Bembrops heterurus	0.84	20	0.08	
Illex coindetii	0.61	10	0.06	
Total	987.59		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 72
DATE :07/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 10°36.73
start stop duration Lon E 13°9.66
TIME :18:40:11 19:09:58 29.8 (min) Purpose : 3
LOG : 9370.30 9371.83 1.5 Region : 4040
FDEPTH: 368 380 Gear cond.: 1
BDEPTH: 368 380 Validity : 1
Towing dir: 0° Wire out : 1000 m Speed : 3.1 kn
Sorted : 91 Total catch: 383.70 Catch/hour: 773.33

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	341.78	78111	44.20	
Merluccius polli	120.52	550	15.59	246
Hymenocephalus italicus	103.69	11534	13.41	
Chaceon maritae	59.46	234	7.69	
Laemonema laureysi	50.59	488	6.54	
Chaunax pictus	31.10	1651	4.02	
Lophiodes kempi	27.73	22	3.59	
Bathynectes piperitus	8.26	149	1.07	
Aristeus varidens	7.20	635	0.93	
Etmopterus sp.	6.57	276	0.85	
Malacocephalus laevis	6.51	42	0.84	
Dibranchus atlanticus	2.96	212	0.38	
Chlorophthalmus atlanticus	1.61	42	0.21	
MYCTOPHIDAE	1.49	1165	0.19	
Yarrella blackfordi	1.27	42	0.16	
Gadella imberbis	1.11	22	0.14	
Bathyuroconger vicinus	1.05	42	0.14	
Nezumia aequalis	0.42	42	0.05	
Total	773.33		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 73
DATE :07/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 10°38.75
start stop duration Lon E 13°8.18
TIME :20:32:56 21:04:25 31.5 (min) Purpose : 3
LOG : 9376.84 9378.48 1.6 Region : 4040
FDEPTH: 537 553 Gear cond.: 1
BDEPTH: 537 553 Validity : 1
Towing dir: 0° Wire out : 1350 m Speed : 3.1 kn
Sorted : 58 Total catch: 290.25 Catch/hour: 553.03

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	242.55	59952	43.86	
Yarrella blackfordi	90.50	2877	16.37	
Hoplostethus cadenati	69.07	3220	12.49	
Lamprogrammus exutus	68.50	705	12.39	
Aristeus varidens	18.10	1439	3.27	
Triplophos hemingi	17.05	2077	3.08	
Stomias boa boa	10.77	305	1.95	
Merluccius polli	6.10	10	1.10	
Hymenocephalus italicus	4.57	486	0.83	
Gadella imberbis	4.10	372	0.74	
Xenodermichthys copei	3.72	362	0.67	
Stereomastis sp.	2.76	343	0.50	
Todaropsis eblanae	2.48	10	0.45	
Chaceon maritae	2.10	10	0.38	
Malacocephalus occidentalis	1.91	29	0.34	
Trichiurus sp.	1.91	57	0.34	
Ebinania costaecanarie	1.52	10	0.28	
Bathyuroconger vicinus	1.05	38	0.19	
Bathynectes piperitus	1.05	19	0.19	
Plesionika martia	0.67	67	0.12	
Nezumia aequalis	0.67	19	0.12	
Dibranchus atlanticus	0.67	48	0.12	
Etmopterus sp.	0.57	10	0.10	
Chlorophthalmus atlanticus	0.57	19	0.10	
Halosaurus ovenii	0.10	10	0.02	
Total	553.03		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 74
DATE :07/03/2007 GEAR TYPE: BT NO: 15 POSITION:Lat S 10°40.59
start stop duration Lon E 13°6.33
TIME :22:49:31 23:20:35 31.1 (min) Purpose : 3
LOG : 9384.84 9386.33 1.5 Region : 4040
FDEPTH: 730 719 Gear cond.: 1
BDEPTH: 730 719 Validity : 1
Towing dir: 0° Wire out : 1800 m Speed : 2.9 kn
Sorted : 58 Total catch: 374.38 Catch/hour: 722.97

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	205.66	51074	28.45	
Yarrella blackfordi	121.66	3928	16.83	
Lamprogrammus exutus	59.56	174	8.24	
Sea cucumbers	55.62	174	7.69	
Stereomastis sp.	50.75	4328	7.02	
Nezumia aequalis	43.45	857	6.01	
Hoplostethus cadenati	37.31	1182	5.16	
Bathyuroconger vicinus	36.50	498	5.05	
Talismania longifilis	17.50	35	2.42	
Dibranchus atlanticus	16.92	660	2.34	
Stomias boa boa	16.57	603	2.29	
Merluccius polli	14.00	25	1.94	247
Chaceon maritae, female	8.01	25	1.11	
Triplophos hemingi	7.42	857	1.03	
Monomitopus metriostoma	7.18	649	0.99	
Aristeus varidens, female	3.94	174	0.54	249
Chaceon maritae, male	3.67	8	0.51	
Luciobrotula bartschi	2.55	4	0.35	
Laemonema laureysi	2.43	406	0.34	
Glyphus marsupialis	1.74	104	0.24	
Xenodermichthys copei	1.62	104	0.22	
Halosaurus ovenii	1.62	70	0.22	
Heterocarpus grimaldii	1.62	139	0.22	
GALATHEIDAE *	1.39	1066	0.19	
Etmopterus polli	1.20	15	0.17	
Epigonus sp.	0.93	35	0.13	
Aristeus varidens, male	0.81	104	0.11	248
Scymnodon obscurus	0.66	2	0.09	
Plesionika martia	0.46	35	0.06	
Ebinania costaecanarie	0.12	23	0.02	
Bathypterois sp.	0.12	12	0.02	
Total	722.97		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 75
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°27.87
start stop duration Lon E 13°27.70
TIME :05:32:23 06:03:48 31.4 (min) Purpose : 3
LOG : 9415.25 9416.97 1.7 Region : 4040
FDEPTH: 52 53 Gear cond.: 1
BDEPTH: 52 53 Validity : 1
Towing dir: 0° Wire out : 200 m Speed : 3.3 kn
Sorted : 58 Total catch: 58.45 Catch/hour: 111.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Raja miraletus	38.19	63	34.22	
Sphyraena guachancho	15.47	46	13.86	
Epinephelus aeneus	12.60	2	11.29	
Decapterus rhonchus	9.19	262	8.23	
Alectis alexandrinus	8.02	11	7.19	
Umbrina canariensis	7.33	11	6.57	250
Caranx sp.	3.00	4	2.69	
Chloroscombrus chrysurus	2.67	13	2.40	
Pseudupeneus prayensis	2.58	25	2.31	
Lagocephalus laevigatus	2.06	4	1.85	
Brachydeuterus auritus	1.97	369	1.76	
Argyrosomus hololepidotus	1.41	2	1.27	
Octopus macropus	1.37	2	1.23	
Alloteuthis africana	0.82	214	0.74	
Chaetodon hoefleri	0.71	2	0.63	
Pagellus bellottii	0.61	4	0.55	
Pomadasys incisus	0.59	4	0.53	
Sepia orbignyana	0.57	2	0.51	
Fistularia petimba	0.52	2	0.46	
Bothus podas africanus	0.31	2	0.27	
Citharus linguatula	0.31	6	0.27	
Torpedo torpedo	0.31	2	0.27	
Dentex barnardi	0.27	8	0.24	
Selene dorsalis	0.23	2	0.21	
Grammoplites gruveli	0.19	4	0.17	
Saurida brasiliensis	0.17	40	0.15	
Serranus cabrilla	0.08	4	0.07	
Sardinella aurita	0.04	2	0.03	
Boops boops	0.04	2	0.03	
Total	111.62		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 76
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°26.43
start stop duration Lon E 13°30.80
TIME :06:56:49 07:29:17 32.5 (min) Purpose : 3
LOG : 9421.75 9423.50 1.8 Region : 4040
FDEPTH: 31 34 Gear cond.: 1
BDEPTH: 31 34 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.2 kn
Sorted : 126 Total catch: 125.64 Catch/hour: 232.17

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	170.83	13519	73.58	251
Sphyraena afra	10.70	266	4.61	
Galeoides decadactylus	10.53	55	4.54	
Selene dorsalis	4.68	50	2.01	
Raja miraletus	4.53	22	1.95	
Caranx crysos	4.38	7	1.89	
Ephippion guttifer	4.08	2	1.76	
Pseudotolithus typus	3.57	9	1.54	253
Eucinostomus melanopterus	3.49	33	1.50	
Pseudupeneus prayensis	2.48	17	1.07	
Lagocephalus laevigatus	2.31	15	0.99	
Ilisha africana	1.98	43	0.85	
Chloroscombrus chrysurus	1.33	6	0.57	
Scomberomorus tritor	1.33	2	0.57	
Sardinella aurita	1.16	18	0.50	
Pteroscion peli	1.09	15	0.47	252
Panulirus regius	0.92	2	0.40	
Chilomycterus spinosus mauret.	0.63	2	0.27	
Decapterus rhonchus	0.57	17	0.25	
Trichiurus lepturus	0.57	6	0.25	
Bothus podas africanus	0.54	6	0.23	
Pomadasys rogeri	0.26	2	0.11	
Sardinella maderensis	0.11	4	0.05	
Dicologoglossa cuneata	0.09	6	0.04	
Total	232.17		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 77
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°14.56
start stop duration Lon E 13°24.10
TIME :11:07:00 11:37:46 30.8 (min) Purpose : 3
LOG : 9437.92 9439.45 1.5 Region : 4040
FDEPTH: 34 31 Gear cond.: 1
BDEPTH: 34 31 Validity : 1
Towing dir: 0° Wire out : 110 m Speed : 3.0 kn
Sorted : 199 Total catch: 1054.78 Catch/hour: 2056.77

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1725.39	36265	83.89	254
Galeoides decadactylus	93.54	435	4.55	
Ilisha africana	80.10	1322	3.89	
Sphyraena guachancho	34.63	238	1.68	
Pomadasys incisus	24.49	185	1.19	256
Raja miraletus	16.32	21	0.79	
Sardinella aurita	14.47	94	0.70	255
Dicologoglossa cuneata	11.15	166	0.54	
Trichiurus lepturus	9.52	53	0.46	
Ephippion guttifer	7.86	10	0.38	
Pseudotolithus typus	6.92	31	0.34	
Arius parkii	6.73	21	0.33	
Lagocephalus laevigatus	5.69	10	0.28	
Selene dorsalis	5.17	72	0.25	
Sardinella maderensis	3.82	53	0.19	
Stromateus fiatola	3.31	10	0.16	
Pteroscion peli	2.89	135	0.14	
Umbrina canariensis	2.38	31	0.12	
Citharus linguatula	1.66	21	0.08	
Penaeus notialis	0.31	31	0.02	
Grammoplites gruveli	0.31	10	0.02	
Sepiella ornata	0.10	10	0.00	
Total	2056.77		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 78
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°13.01
start stop duration Lon E 13°19.99
TIME :12:25:28 12:55:19 29.9 (min) Purpose : 3
LOG : 9443.74 9445.32 1.6 Region : 4040
FDEPTH: 48 49 Gear cond.: 1
BDEPTH: 48 49 Validity : 1
Towing dir: 0° Wire out : 130 m Speed : 3.2 kn
Sorted : 150 Total catch: 602.36 Catch/hour: 1210.77

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1027.14	17055	84.83	257
Trichiurus lepturus	65.13	185	5.38	
Galeoides decadactylus	53.07	145	4.38	
Sphyraena guachancho	15.04	72	1.24	
Pseudotolithus typus	12.38	24	1.02	
Stromateus fiatola	11.58	16	0.96	
Rhinobatos albomaculatus	4.82	4	0.40	
Pomadasys incisus	3.94	16	0.33	
Sardinella aurita	3.46	24	0.29	
Selene dorsalis	3.22	32	0.27	
Trachurus trecae	2.17	16	0.18	
Cynoponticus ferox	2.09	2	0.17	
Ilisha africana	1.93	24	0.16	
Alloteuthis africana	1.29	354	0.11	
Pseudupeneus prayensis	1.05	24	0.09	
Citharus linguatula	0.96	26	0.08	
Dicologoglossa cuneata	0.64	8	0.05	
Torpedo torpedo	0.64	16	0.05	
Penaeus notialis	0.16	8	0.01	
GOBIIDAE	0.08	56	0.01	
Total	1210.77		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 79
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°13.03
start stop duration Lon E 13°16.12
TIME :13:38:45 14:08:31 29.8 (min) Purpose : 3
LOG : 9449.12 9450.67 1.6 Region : 4040
FDEPTH: 69 71 Gear cond.: 1
BDEPTH: 69 71 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 3.1 kn
Sorted : 122 Total catch: 358.83 Catch/hour: 723.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	404.32	4241	55.91	258
Trichiurus lepturus	81.48	228	11.27	
Trachurus trecae	80.92	566	11.19	262
Pomadasys incisus	76.77	389	10.62	261
Pomadasys jubelini	34.97	40	4.84	260
Selene dorsalis	13.81	145	1.91	
Raja miraletus	10.04	28	1.39	
Sphyraena sphyraena	9.31	44	1.29	
Pseudotolithus senegalensis	3.55	4	0.49	
Alectis alexandrinus	3.31	2	0.46	
Argyrosomus hololepidotus	1.25	2	0.17	
Pagellus bellottii	1.17	10	0.16	259
Dentex barnardi	1.03	8	0.14	
Alloteuthis africana	0.73	238	0.10	
Pseudupeneus prayensis	0.50	16	0.07	
Saurida brasiliensis	0.06	12	0.01	
Total	723.20		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 80
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°15.76
start stop duration Lon E 13°10.65
TIME :15:11:32 15:41:40 30.1 (min) Purpose : 3
LOG : 9457.40 9458.99 1.6 Region : 4040
FDEPTH: 98 97 Gear cond.: 1
BDEPTH: 98 97 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.2 kn
Sorted : 123 Total catch: 2480.04 Catch/hour: 4937.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	4758.81	83654	96.39	264
Trachurus trecae	44.75	1652	0.91	263
Chelidonichthys capensis	37.09	645	0.75	
Pagellus bellottii	32.65	524	0.66	267
Raja miraletus	22.57	40	0.46	
Fistularia petimba	13.72	40	0.28	
Zeus faber	10.89	40	0.22	
Dentex angolensis	7.27	121	0.15	
Pseudupeneus prayensis	3.62	40	0.07	
Citharus linguatula	2.43	40	0.05	
Illex sp.	2.43	40	0.05	
Saurida brasiliensis	0.82	82	0.02	
Total	4937.04		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 81
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°22.14
start stop duration Lon E 13°3.73
TIME :17:10:57 17:41:32 30.6 (min) Purpose : 3
LOG : 9470.11 9471.73 1.6 Region : 4040
FDEPTH: 170 159 Gear cond.: 1
BDEPTH: 170 159 Validity : 1
Towing dir: 0° Wire out : 510 m Speed : 3.2 kn
Sorted : 168 Total catch: 167.51 Catch/hour: 328.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	105.13	10637	32.00	
Dentex angolensis	39.72	139	12.09	265
Brotula barbata	34.82	35	10.60	
Zenopsis conchifer	31.48	59	9.58	
Uranoscopus polli	28.05	171	8.54	
Cynoponticus ferox	25.11	2	7.64	
Squatina oculata	19.03	18	5.79	
Citharus linguatula	8.81	82	2.68	
Pterothrissus belloci	8.16	63	2.48	
Bembrops heterurus	6.75	180	2.05	
Trichiurus lepturus	3.39	18	1.03	
Raja miraletus	3.16	8	0.96	
Zeus faber	3.16	10	0.96	
Illex coindetii	2.92	47	0.89	
Umbrina canariensis	1.27	4	0.39	
Trigla lyra	1.22	10	0.37	
Echeneis naucrates	1.06	2	0.32	
Syacium micrurum	0.96	39	0.29	
Dentex macrophthalmus	0.96	6	0.29	
Torpedo torpedo	0.80	2	0.24	
Miracorvina angolensis	0.76	4	0.23	
Sepia orbignyana	0.61	6	0.19	
Scorpaena normani	0.55	4	0.17	
Parapenaeus longirostris	0.29	188	0.09	
CONGRIDAE	0.12	2	0.04	
Peristedion cataphractum	0.12	2	0.04	
Squilla cadenati	0.10	2	0.03	
Ophidion sp.	0.06	2	0.02	
Total	328.56		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 82
DATE :08/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°25.11
start stop duration Lon E 12°55.51
TIME :19:41:18 20:11:56 30.6 (min) Purpose : 3
LOG : 9483.87 9485.44 1.6 Region : 4040
FDEPTH: 614 621 Gear cond.: 1
BDEPTH: 614 621 Validity : 1
Towing dir: 0° Wire out : 1550 m Speed : 3.1 kn
Sorted : 81 Total catch: 284.06 Catch/hour: 556.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	263.19	56554	47.31	
Merluccius polli	92.04	84	16.55	266
Yarrella blackfordi	44.02	1269	7.91	
Hoplostethus cadenati	35.40	1504	6.36	
Etmopterus polli	33.84	251	6.08	
Stereomastis sculpta	17.86	2021	3.21	
Lamprogrammus exutus	14.41	298	2.59	
Malacocephalus occidentalis	12.53	94	2.25	
Aristeus varidens	10.18	689	1.83	
Chaceon maritae	9.60	33	1.72	
Triplophos hemingi	7.68	1050	1.38	
Stomias boa boa	4.70	157	0.84	
Bathyuroconger vicinus	4.07	78	0.73	
Nezumia aequalis	2.98	125	0.54	
Monomitopus metriostoma	1.88	204	0.34	
Ebinania costaecanarie	1.10	31	0.20	
Xenodermichthys copei	0.47	47	0.08	
Dibranchus atlanticus	0.31	31	0.06	
Total	556.25		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 83
DATE :09/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 9°59.93
start stop duration Lon E 13°12.98
TIME :05:23:03 05:55:10 32.1 (min) Purpose : 3
LOG : 9540.71 9542.51 1.8 Region : 4040
FDEPTH: 37 42 Gear cond.: 1
BDEPTH: 37 42 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.4 kn
Sorted : 124 Total catch: 123.76 Catch/hour: 231.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Galeoides decadactylus	120.21	1040	52.00	
Brachydeuterus auritus	33.62	600	14.54	
Selene dorsalis	19.15	275	8.28	
Trichiurus lepturus	11.08	35	4.79	
Pagellus bellottii	6.71	34	2.90	268
CARCHARHINIDAE	5.79	2	2.50	
Sphyraena guachancho	3.94	45	1.70	
Raja miraletus	3.83	7	1.66	
Pomadasys incisus	3.33	26	1.44	269
Eucinostomus melanopterus	3.08	30	1.33	
Bothus podas africanus	2.84	30	1.23	
Decapterus rhonchus	2.26	9	0.98	
Caranx crysos	2.09	4	0.90	
Pseudotolithus typus	2.04	6	0.88	
Rhinobatos albomaculatus	2.02	2	0.87	
Lagocephalus laevigatus	1.89	6	0.82	
Arius parkii	1.89	2	0.82	
Penaeus notialis	1.46	39	0.63	
Pseudupeneus prayensis	1.44	11	0.62	
Callinectes amnicola	0.71	4	0.31	
Sardinella maderensis	0.52	4	0.23	
Dentex barnardi	0.35	2	0.15	
Dicologoglossa cuneata	0.26	4	0.11	
Ilisha africana	0.26	2	0.11	
Bembrops heterurus	0.21	2	0.09	
Grammoplites gruveli	0.11	2	0.05	
GOBIIDAE	0.06	19	0.02	
Torpedo torpedo	0.06	2	0.02	
Total	231.18		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 84
DATE :09/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°1.94
start stop duration Lon E 13°4.96
TIME :07:09:42 07:41:12 31.5 (min) Purpose : 3
LOG : 9551.36 9553.06 1.7 Region : 4040
FDEPTH: 88 89 Gear cond.: 1
BDEPTH: 88 89 Validity : 1
Towing dir: 0° Wire out : 250 m Speed : 3.2 kn
Sorted : 82 Total catch: 530.22 Catch/hour: 1010.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	424.13	3729	41.98	273
Trachurus trecae	250.17	19271	24.76	270
Trigla lyra	124.48	1210	12.32	
Squatina oculata	57.22	13	5.66	
Trichiurus lepturus	15.85	25	1.57	
Zeus faber	15.85	38	1.57	
Selene dorsalis	15.11	137	1.50	
Sphyraena guachancho	15.11	13	1.50	
Uranoscopus polli	14.29	13	1.41	
Sepiella ornata	13.26	13	1.31	
Lagocephalus laevigatus	10.57	13	1.05	
Pseudupeneus prayensis	9.66	74	0.96	
Dentex congoensis	8.67	223	0.86	271
Sardinella aurita	7.68	248	0.76	
Citharus linguatula	6.82	211	0.68	
Raja miraletus	6.46	25	0.64	
Pagellus bellottii	4.95	63	0.49	272
Dentex angolensis	2.11	50	0.21	
Sepia orbignyana	2.11	13	0.21	
Trachinus radiatus	1.62	25	0.16	
Dentex barnardi	1.37	13	0.14	
Galeoides decadactylus	0.99	13	0.10	
Boops boops	0.63	25	0.06	
Grammoplites gruveli	0.63	13	0.06	
Saurida brasiliensis	0.50	99	0.05	
Total	1010.26		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 85
DATE :09/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°1.33
start stop duration Lon E 13°10.05
TIME :08:43:48 09:15:28 31.7 (min) Purpose : 3
LOG : 9559.38 9561.01 1.6 Region : 4040
FDEPTH: 64 66 Gear cond.: 1
BDEPTH: 64 66 Validity : 1
Towing dir: 0° Wire out : 200 m Speed : 3.1 kn
Sorted : 43 Total catch: 43.44 Catch/hour: 82.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pseudupeneus prayensis	27.00	220	32.80	
Trachurus trecae	13.36	1734	16.23	276
Raja miraletus	7.48	13	9.09	
Selene dorsalis	6.80	91	8.26	
Ephippion guttifer	5.30	2	6.45	
Pagellus bellottii	3.58	38	4.35	275
Trichiurus lepturus	3.39	4	4.12	
Caranx crysos	3.22	2	3.91	
Sepia orbignyana	2.14	2	2.60	
Dentex barnardi	2.08	47	2.53	274
Pseudotolithus typus	1.99	2	2.42	
Alloteuthis africana	1.23	616	1.50	
Brachydeuterus auritus	0.72	8	0.87	
Serranus cabrilla	0.57	9	0.69	
Fistularia petimba	0.49	6	0.60	
Grammoplites gruveli	0.45	9	0.55	
Sepiella ornata	0.44	2	0.53	
Dicologoglossa cuneata	0.36	6	0.44	
Torpedo torpedo	0.32	2	0.39	
Chaetodon hoefleri	0.25	2	0.30	
Trigla lyra	0.23	2	0.28	
Sepia officinalis hierredda	0.21	2	0.25	
Citharus linguatula	0.17	6	0.21	
Saurida brasiliensis	0.17	36	0.21	
Sardinella aurita	0.13	4	0.16	
Illex coindetii	0.09	2	0.12	
Syacium micrurum	0.06	8	0.07	
Monomitopus metriostoma	0.06	6	0.07	
Total	82.30		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 86
DATE :09/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°3.93
start stop duration Lon E 12°59.20
TIME :10:41:56 11:11:52 29.9 (min) Purpose : 3
LOG : 9572.69 9574.33 1.6 Region : 4040
FDEPTH: 108 106 Gear cond.: 1
BDEPTH: 108 106 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.3 kn
Sorted : 89 Total catch: 295.50 Catch/hour: 592.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	185.17	493	31.27	280
Brachydeuterus auritus	179.22	204	30.26	281
Sphoeroides sp.	49.54	66	8.37	
Zeus faber	31.98	92	5.40	
Selene dorsalis	31.80	80	5.37	
Chelidonichthys capensis	28.18	345	4.76	
Dentex congoensis	24.67	142	4.17	277
Trichiurus lepturus	12.24	6	2.07	
Pagellus bellottii	9.32	24	1.57	279
Fistularia petimba	9.26	26	1.56	
Raja miraletus	8.20	14	1.38	
Dentex angolensis	4.49	20	0.76	278
Sepia orbignyana	4.49	46	0.76	
Saurida brasiliensis	3.51	635	0.59	
Citharus linguatula	2.91	92	0.49	
Pseudupeneus prayensis	1.84	14	0.31	
Illex coindetii	1.72	26	0.29	
Sardinella maderensis	1.58	6	0.27	
Scorpaena normani	0.66	6	0.11	
Sardinella aurita	0.60	26	0.10	
Boops boops	0.40	6	0.07	
BLENNIIDAE	0.40	14	0.07	
Total	592.18		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 87
DATE :09/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 10°5.97
start stop duration Lon E 12°53.00
TIME :12:35:06 13:00:10 25.1 (min) Purpose : 3
LOG : 9582.73 9584.03 1.3 Region : 4040
FDEPTH: 315 302 Gear cond.: 1
BDEPTH: 315 302 Validity : 1
Towing dir: 0° Wire out : 720 m Speed : 3.1 kn
Sorted : 110 Total catch: 451.10 Catch/hour: 1079.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	484.04	10724	44.83	
Synagrops microlepis	303.81	31125	28.14	
Zenopsis conchifer	71.80	98	6.65	
Dentex macrophthalmus	64.50	127	5.97	282
Merluccius polli	26.30	108	2.44	283
MYCTOPHIDAE	19.48	6086	1.80	
Laemonema laureysi	18.40	349	1.70	
Epigonus telescopus	16.78	98	1.55	
Malacocephalus occidentalis	15.99	242	1.48	
Gephyroberyx darwini	10.79	24	1.00	
Nezumia aequalis	9.79	1338	0.91	
Hyperoglyphe moselii	8.78	17	0.81	
Pterothrissus belloci	7.37	45	0.68	
Scorpaena normani	7.23	5	0.67	
Caelorinchus coelorhincus	6.37	163	0.59	
Pontinus accraensis	3.06	45	0.28	
Parapenaeus longirostris	2.42	385	0.22	285
Plesionika martia	1.08	340	0.10	
Illex coindetii	0.81	10	0.08	
Parapenaeus longirostris, male	0.81	108	0.08	284
Total	1079.62		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 88
DATE :09/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 9°48.00
start stop duration Lon E 13°0.63
TIME :15:30:48 16:02:44 31.9 (min) Purpose : 3
LOG : 9603.25 9604.97 1.7 Region : 4040
FDEPTH: 98 97 Gear cond.: 1
BDEPTH: 98 97 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.2 kn
Sorted : 113 Total catch: 113.40 Catch/hour: 213.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	137.97	314	64.73	291
Trichiurus lepturus	19.55	32	9.17	
Chelidonichthys capensis	11.60	88	5.44	
Dentex angolensis	7.97	100	3.74	286
Raja miraletus	5.28	8	2.48	
Sepia orbignyana	4.14	4	1.94	
Zeus faber	3.25	13	1.53	
Pagellus bellottii	3.10	38	1.46	287
Alloteuthis africana	2.95	1519	1.38	
Sardinella maderensis	2.44	11	1.15	290
Octopus vulgaris	2.35	2	1.10	
Zenopsis conchifer	2.31	2	1.08	
Illex coindetii	2.03	24	0.95	
Dentex congoensis	1.80	39	0.85	289
Trachurus trecae	1.79	70	0.84	292
Dentex barnardi	1.47	8	0.69	288
TETRAODONTIDAE	1.17	2	0.55	
Citharus linguatula	1.02	19	0.48	
Saurida brasiliensis	0.49	90	0.23	
Chaetodon hoefleri	0.24	2	0.11	
Sphyraena sphyraena	0.19	2	0.09	
Boops boops	0.06	2	0.03	
Total	213.16		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 89
DATE :09/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 9°41.95
start stop duration Lon E 13°8.81
TIME :17:20:27 17:49:41 29.2 (min) Purpose : 3
LOG : 9615.52 9617.09 1.6 Region : 4040
FDEPTH: 36 35 Gear cond.: 1
BDEPTH: 36 35 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.2 kn
Sorted : 198 Total catch: 1089.77 Catch/hour: 2236.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1463.15	12220	65.41	294
Galeoides decadactylus	363.30	2586	16.24	
Pagellus bellottii	73.38	396	3.28	293
Sphyraena guachancho	48.44	107	2.17	
Pseudotolithus senegalensis	39.86	23	1.78	295
Pomadasys incisus	39.74	261	1.78	
Pomadasys rogeri	33.32	68	1.49	
Pseudupeneus prayensis	29.80	193	1.33	
Chloroscombrus chrysurus	17.39	148	0.78	
Eucinostomus melanopterus	16.83	193	0.75	
Torpedo marmorata	16.03	12	0.72	
Ilisha africana	15.58	238	0.70	
Epinephelus aeneus	14.90	23	0.67	
Pseudotolithus typus	10.06	12	0.45	
Raja miraletus	8.13	12	0.36	
Lithognathus mormyrus	7.90	35	0.35	
Syacium micrurum	7.35	12	0.33	
Decapterus rhonchus	6.22	23	0.28	
Selene dorsalis	5.09	80	0.23	
Pteroscion peli	4.86	45	0.22	
Trichiurus lepturus	4.74	12	0.21	
Syacium micrurum	3.61	45	0.16	0
Trachinotus ovatus	2.03	12	0.09	
Dentex macrophthalmus	1.81	12	0.08	
Serranus sp.	1.03	12	0.05	
Uranoscopus polli	1.03	12	0.05	
Decapterus rhonchus	0.68	35	0.03	0
Dicologoglossa cuneata	0.45	12	0.02	
Grammoplites gruveli	0.35	12	0.02	
Total	2237.08		100.01	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 90
DATE :09/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°57.54
start stop duration Lon E 12°44.87
TIME :22:59:56 23:30:10 30.2 (min) Purpose : 3
LOG : 9651.94 9653.42 1.5 Region : 4040
FDEPTH: 742 775 Gear cond.: 1
BDEPTH: 742 775 Validity : 1
Towing dir: 0° Wire out : 1800 m Speed : 2.9 kn
Sorted : 81 Total catch: 456.92 Catch/hour: 906.59

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	177.78	7141	19.61	
Yarrella blackfordi	145.65	2639	16.07	
Lamprogrammus exutus	88.33	399	9.74	
OPISTHOTEUTHIDAE	77.92	32	8.59	
Nezumia sp.	65.52	1526	7.23	
Gonostoma denudata	46.69	4879	5.15	
Bathyuroconger vicinus	45.95	736	5.07	
Sea cucumbers	39.44	83	4.35	
Merluccius polli	34.72	58	3.83	296
Talismania longifilis	28.71	1450	3.17	
Stereomastis sp.	24.09	1482	2.66	
Shrimps, small, non comm.	21.45	4605	2.37	
Stomias boa boa	16.31	452	1.80	
Nezumia micronychodon	12.40	399	1.37	
Lophius sp.	11.35	10	1.25	
Xenodermichthys copei	11.15	819	1.23	
OMMASTREPHIDAE	10.93	42	1.21	
Raja sp.	10.62	127	1.17	
Centrophorus granulosus	6.35	2	0.70	
Chaceon maritae, male	6.33	10	0.70	
Aristeus varidens, female	4.74	232	0.52	
Chaceon maritae, female	3.31	14	0.37	
Dicrolene intronigra	2.52	32	0.28	
Scymnodon obscurus	2.38	10	0.26	
Glyphus marsupialis	2.20	190	0.24	
Halosaurus ovenii	2.00	22	0.22	
Cataetyx laticeps	1.69	399	0.19	
MACROURIDAE	1.59	284	0.18	
Dibranchus atlanticus	1.37	73	0.15	
Etmopterus polli	1.09	18	0.12	
Aristeus varidens, male	1.05	127	0.12	
ZOARCIDAE	0.63	10	0.07	
GALATHEIDAE *	0.32	242	0.04	
Total	906.59		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 91
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°54.09
start stop duration Lon E 12°44.47
TIME :01:18:51 01:48:51 30.0 (min) Purpose : 3
LOG : 9659.31 9660.84 1.5 Region : 4040
FDEPTH: 630 620 Gear cond.: 1
BDEPTH: 630 620 Validity : 1
Towing dir: 0° Wire out : 1400 m Speed : 3.1 kn
Sorted : 35 Total catch: 384.45 Catch/hour: 768.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	255.20	66572	33.19	
Stomias affinis	149.82	4290	19.48	
Yarrella blackfordi	126.76	4532	16.49	
Xenodermichthys copei	48.40	4048	6.29	
Gonostoma denudata	41.80	5346	5.44	
Hoplostethus cadenati	38.28	1606	4.98	
Lamprogrammus exutus	16.06	506	2.09	
Stereomastis sp.	15.18	1650	1.97	
Aristeus varidens, female	10.56	484	1.37	
Talismania longifilis	9.24	550	1.20	
OMMASTREPHIDAE	7.92	22	1.03	
Nezumia sp.	7.26	220	0.94	
Bathyuroconger vicinus	6.38	132	0.83	
Plesiopenaeus edwardsianus	6.38	528	0.83	
Trichiurus lepturus	5.72	198	0.74	
Aristeus varidens, male	4.62	264	0.60	
Dicrolene intronigra	3.74	374	0.49	
Merluccius polli	2.24	4	0.29	
Glyphus marsupialis	1.98	286	0.26	
MYCTOPHIDAE	1.98	2442	0.26	
Scymnodon obscurus	1.80	6	0.23	
Halosaurus ovenii	1.54	44	0.20	
GALATHEIDAE *	1.32	1012	0.17	
Coloconger cadenati	1.10	66	0.14	
Chaceon maritae, male	0.96	2	0.12	
Raja sp.	0.88	22	0.11	
Etmopterus polli	0.70	12	0.09	
Dibranchus atlanticus	0.66	44	0.09	
Nemichthys scolopaceus	0.22	22	0.03	
Etmopterus spinax	0.20	4	0.03	
Total	768.90		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 92
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°37.09
start stop duration Lon E 12°39.38
TIME :04:29:37 05:03:30 33.9 (min) Purpose : 3
LOG : 9677.22 9678.98 1.8 Region : 4040
FDEPTH: 546 539 Gear cond.: 1
BDEPTH: 546 539 Validity : 1
Towing dir: 0° Wire out : 1290 m Speed : 3.1 kn
Sorted : 62 Total catch: 161.45 Catch/hour: 285.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	96.49	25600	33.76	
Merluccius polli	54.44	96	19.05	297
Stomias boa boa	18.06	478	6.32	
Aristeus varidens	17.44	1487	6.10	
Gadella imberbis	16.02	336	5.61	
Hoplostethus cadenati	13.01	646	4.55	
Centrophorus granulosus	11.33	4	3.96	
Stereomastis sculpta	10.53	1292	3.69	
Yarrella blackfordi	9.12	283	3.19	
Etmopterus sp.	8.94	115	3.13	
MYCTOPHIDAE	7.70	10083	2.69	
Xenodermichthys copei	6.37	558	2.23	
Nezumia aequalis	3.10	35	1.08	
Triplophos hemingi	2.12	398	0.74	
Lamprogrammus exutus	1.95	27	0.68	
Plesionika martia	1.86	460	0.65	
Chaunax pictus	1.68	35	0.59	
Chaceon maritae	1.68	9	0.59	
Malacocephalus occidentalis	1.33	9	0.46	
Bathyuroconger vicinus	1.24	35	0.43	
Dibranchus atlanticus	0.44	18	0.15	
Bathynectes piperitus	0.35	9	0.12	
Halosaurus ovenii	0.35	9	0.12	
Lophius sp.	0.27	9	0.09	
Total	285.84		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 93
DATE :10/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 9°31.62
start stop duration Lon E 12°51.58
TIME :07:27:14 07:57:14 30.0 (min) Purpose : 3
LOG : 9693.72 9695.33 1.6 Region : 4040
FDEPTH: 115 112 Gear cond.: 1
BDEPTH: 115 112 Validity : 1
Towing dir: 0° Wire out : 345 m Speed : 3.2 kn
Sorted : 68 Total catch: 67.83 Catch/hour: 135.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	46.50	2014	34.28	298
Trichiurus lepturus	43.70	114	32.21	
Zeus faber	7.72	42	5.69	
Torpedo torpedo	5.54	8	4.08	
Dentex congoensis	5.12	28	3.77	299
Sepia orbignyana	5.04	2	3.72	
Octopus macropus	3.64	4	2.68	
Citharus linguatula	3.56	2	2.62	
Stromateus fiatola	2.36	2	1.74	
Trachurus trecae	2.02	98	1.49	300
Sepia officinalis hierredda	1.78	8	1.31	
Saurida brasiliensis	1.66	374	1.22	
Fistularia petimba	1.54	10	1.14	
Dentex barnardi	1.36	2	1.00	
Trigla lyra	1.22	10	0.90	
Raja miraletus	0.88	2	0.65	
Illex coindetii	0.70	12	0.52	
Pagellus bellottii	0.44	2	0.32	
Scorpaena normani	0.28	2	0.21	
GOBIIDAE	0.22	160	0.16	
Alloteuthis africana	0.20	66	0.15	
Merluccius polli	0.18	12	0.13	301
Total	135.66		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 94
DATE :10/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 9°27.04
start stop duration Lon E 12°59.11
TIME :09:15:26 09:49:13 33.8 (min) Purpose : 3
LOG : 9704.74 9706.49 1.8 Region : 4040
FDEPTH: 53 56 Gear cond.: 1
BDEPTH: 53 56 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 3.1 kn
Sorted : 39 Total catch: 38.79 Catch/hour: 68.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alectis alexandrinus	31.71	41	46.02	
Brachydeuterus auritus	9.88	66	14.33	302
Raja miraletus	9.17	57	13.30	
Pagellus bellottii	6.80	67	9.87	303
Alloteuthis africana	2.63	709	3.82	
Sphyraena guachancho	1.78	5	2.58	
Caranx crysos	1.58	2	2.29	
Chelidonichthys capensis	1.24	2	1.80	
Rhinobatos albomaculatus	1.03	2	1.50	
Epinephelus aeneus	0.92	2	1.34	
Torpedo torpedo	0.80	2	1.16	
Octopus vulgaris	0.48	2	0.70	
Syacium micrurum	0.34	2	0.49	
Chaetodon hoefleri	0.34	2	0.49	
Illex coindetii	0.16	2	0.23	
Monolene microstoma	0.05	2	0.08	
Total	68.90		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 95
DATE :10/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 9°26.66
start stop duration Lon E 13°3.89
TIME :10:41:51 11:11:50 30.0 (min) Purpose : 3
LOG : 9713.15 9714.75 1.6 Region : 4040
FDEPTH: 27 27 Gear cond.: 1
BDEPTH: 27 27 Validity : 1
Towing dir: 0° Wire out : 110 m Speed : 3.2 kn
Sorted : 146 Total catch: 145.78 Catch/hour: 291.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alectis alexandrinus	64.42	76	22.09	
Acanthurus monroviae	50.48	72	17.31	
Pagrus caeruleostictus	41.51	88	14.23	305
Bodianus speciosus	40.01	40	13.72	
Balistes punctatus	14.10	20	4.84	
Epinephelus guaza ?	10.90	2	3.74	
Lutjanus fulgens	9.90	2	3.40	
Mycteroperca rubra	9.80	2	3.36	
Caranx senegallus	8.88	10	3.05	
Pomadasys rogeri	8.30	8	2.85	
Dentex gibbosus	6.78	8	2.33	
Dentex barnardi	5.88	16	2.02	304
Sphyraena guachancho	3.80	4	1.30	
Raja miraletus	2.96	4	1.02	
Pagellus bellottii	2.84	6	0.97	
Lutjanus goreensis	2.42	4	0.83	
Panulirus regius	2.02	2	0.69	
Chaetodon marcellae	1.62	22	0.56	
Chaetodon hoefleri	1.54	8	0.53	
Lithognathus mormyrus	1.38	2	0.47	
Fistularia tabacaria	1.10	2	0.38	
Fistularia petimba	0.64	6	0.22	
Citharus linguatula	0.34	4	0.12	
Total	291.66		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 96
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°17.03
start stop duration Lon E 12°58.90
TIME :12:28:32 12:58:38 30.1 (min) Purpose : 3
LOG : 9724.10 9725.73 1.6 Region : 4040
FDEPTH: 27 28 Gear cond.: 1
BDEPTH: 27 28 Validity : 1
Towing dir: 0° Wire out : 110 m Speed : 3.2 kn
Sorted : 146 Total catch: 438.40 Catch/hour: 873.89

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ilisha africana	270.90	5023	31.00	
Brachydeuterus auritus	197.04	3265	22.55	310
Pseudotolithus senegalensis	98.67	514	11.29	306
Pteroscion peli	70.56	1411	8.07	
Arius parkii	57.41	173	6.57	
Galeoides decadactylus	52.33	311	5.99	
Selene dorsalis	24.70	562	2.83	
Pomadasys incisus	16.98	40	1.94	309
Trichiurus lepturus	12.62	287	1.44	
Pseudupeneus prayensis	12.32	78	1.41	
Sphyraena sphyraena	9.09	24	1.04	
Lithognathus mormyrus	8.73	30	1.00	311
Cynoglossus browni	7.59	96	0.87	
Umbrina canariensis	6.64	78	0.76	308
Scorpaena stephanica	5.44	66	0.62	
Portunus validus	4.49	24	0.51	
Pomadasys jubelini	3.53	6	0.40	
Sardinella maderensis	3.23	78	0.37	307
Dasyatis margarita	2.99	12	0.34	
Raja miraletus	2.99	6	0.34	
Argyrosomus hololepidotus	2.27	24	0.26	
Penaeus notialis	1.16	22	0.13	
Chloroscombrus chrysurus	0.96	6	0.11	
Rypticus saponaceus	0.60	12	0.07	
Bothus podas africanus	0.24	12	0.03	
Trachurus trecae	0.24	6	0.03	
Squilla mantis	0.18	6	0.02	
Total	873.89		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 97
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°13.84
start stop duration Lon E 12°51.36
TIME :14:03:34 14:33:19 29.8 (min) Purpose : 3
LOG : 9733.61 9735.32 1.7 Region : 4040
FDEPTH: 75 82 Gear cond.: 1
BDEPTH: 75 82 Validity : 1
Towing dir: 0° Wire out : 200 m Speed : 3.4 kn
Sorted : 32 Total catch: 157.54 Catch/hour: 317.73

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	188.07	2097	59.19	312
Octopus vulgaris	33.68	10	10.60	
Trachurus trecae	22.08	1089	6.95	315
Umbrina canariensis	21.08	242	6.63	313
Selene dorsalis	14.70	222	4.63	
Pagellus bellottii	8.07	91	2.54	314
Raja miraletus	6.66	10	2.09	
Alloteuthis africana	6.55	2198	2.06	
Dentex angolensis	5.14	40	1.62	316
Citharus linguatula	3.63	212	1.14	
Saurida brasiliensis	1.82	464	0.57	
Pegusa lascaris	1.71	10	0.54	
Parapenaeus longirostris, male	1.61	434	0.51	0
Sepia orbignyana	1.11	10	0.35	
GOBIIDAE	0.81	736	0.25	
Parapenaeus longirostris, male	0.50	151	0.16	
Torpedo nobiliana	0.50	10	0.16	
Total	317.73		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 98
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°14.59
start stop duration Lon E 12°47.00
TIME :16:10:18 16:40:40 30.4 (min) Purpose : 3
LOG : 9742.82 9744.50 1.7 Region : 4040
FDEPTH: 116 115 Gear cond.: 1
BDEPTH: 116 115 Validity : 1
Towing dir: 0° Wire out : 310 m Speed : 3.3 kn
Sorted : 12 Total catch: 12.39 Catch/hour: 24.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	9.25	57	37.77	317
Selene dorsalis	3.36	8	13.72	
Octopus vulgaris	3.20	6	13.08	
Brotula barbata	2.05	2	8.39	
Pterothrissus belloci	1.09	8	4.44	
Zeus faber	1.01	8	4.12	
Raja miraletus	0.91	2	3.71	
Uranoscopus polli	0.61	2	2.50	
Alloteuthis africana	0.59	77	2.42	
Boops boops	0.36	10	1.45	
Chaetodon hoefleri	0.34	2	1.37	
Scorpaena normani	0.32	2	1.29	
Citharus linguatula	0.28	6	1.13	
Trigla lyra	0.26	2	1.05	
Bembrops heterurus	0.24	2	0.97	
Brachydeuterus auritus	0.22	4	0.89	
Trachurus trecae	0.16	4	0.65	
Illex coindetii	0.12	4	0.48	
Parapenaeus longirostris	0.06	8	0.24	
GOBIIDAE	0.04	16	0.16	
Saurida brasiliensis	0.04	2	0.16	
Total	24.48		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 99
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°11.57
start stop duration Lon E 12°42.21
TIME :17:56:23 18:26:56 30.5 (min) Purpose : 3
LOG : 9751.45 9752.96 1.5 Region : 4040
FDEPTH: 269 262 Gear cond.: 1
BDEPTH: 269 262 Validity : 1
Towing dir: 0° Wire out : 700 m Speed : 3.0 kn
Sorted : 208 Total catch: 208.37 Catch/hour: 409.37

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus mediterraneus	219.25	305	53.56	318
Brotula barbata	78.39	33	19.15	
Dentex angolensis	28.59	61	6.98	320
Dentex macrophthalmus	16.21	31	3.96	319
Pterothrissus belloci	12.48	90	3.05	
Bembrops heterurus	9.71	104	2.37	
Synagrops microlepis	6.48	407	1.58	
Laemonema laureysi	5.19	53	1.27	
Malacocephalus occidentalis	5.03	57	1.23	
Parapenaeus longirostris	5.01	917	1.22	
Epigonus telescopus	4.46	35	1.09	
Scorpaena normani	3.60	33	0.88	
Nezumia aequalis	3.20	90	0.78	
Merluccius polli	3.10	12	0.76	
Zenopsis conchifer	2.24	4	0.55	
MYCTOPHIDAE	2.18	1949	0.53	
Chlorophthalmus atlanticus	1.61	83	0.39	
Conger conger	1.02	8	0.25	
Ophidion sp.	0.49	18	0.12	
Bothus podas africanus	0.45	14	0.11	
Calappa pelii	0.41	14	0.10	
Gadella imberbis	0.18	2	0.04	
Lestidiops sp.	0.06	2	0.01	
Raja straeleni	0.04	0	0.01	
Total	409.37		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 100
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°6.49
start stop duration Lon E 12°40.10
TIME :19:52:06 20:22:52 30.8 (min) Purpose : 3
LOG : 9759.16 9760.62 1.5 Region : 4040
FDEPTH: 457 460 Gear cond.: 1
BDEPTH: 457 460 Validity : 1
Towing dir: 0° Wire out : 1100 m Speed : 2.8 kn
Sorted : 73 Total catch: 157.38 Catch/hour: 306.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	86.29	39223	28.12	
Merluccius polli	61.42	78	20.02	321
Lophiodes kempi	28.66	12	9.34	
Centrophorus granulosus	23.46	6	7.64	
RHINOCHIMAERIDAE	22.93	6	7.47	
Chaunax pictus	13.10	240	4.27	
Aristeus varidens	9.18	158	2.99	
Chaceon maritae	8.60	18	2.80	
Etmopterus sp.	7.08	146	2.31	
Laemonema laureysi	6.96	129	2.27	
Dibranchus atlanticus	6.14	374	2.00	
Nezumia aequalis	4.39	88	1.43	
Malacocephalus occidentalis	4.21	23	1.37	
Yarrella blackfordi	4.15	135	1.35	
Scorpaena stephanica	3.80	6	1.24	
Stomias boa boa	3.51	6	1.14	
Trichiurus lepturus	2.40	123	0.78	
Xenodermichthys copei	2.05	386	0.67	
Conger conger	1.75	6	0.57	
Gadella imberbis	1.70	117	0.55	
Triplophos hemingi	1.70	363	0.55	
Stereomastis sp.	0.94	88	0.30	
Bembrops heterurus	0.82	6	0.27	
Plesionika martia	0.70	246	0.23	
Halosaurus sp.	0.70	41	0.23	
Hymenocephalus italicus	0.18	23	0.06	
MYCTOPHIDAE	0.06	53	0.02	
Total	306.88		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 101
DATE :10/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 9°4.62
start stop duration Lon E 12°36.94
TIME :22:05:06 22:39:55 34.8 (min) Purpose : 3
LOG : 9767.35 9768.96 1.6 Region : 4040
FDEPTH: 742 758 Gear cond.: 1
BDEPTH: 742 758 Validity : 1
Towing dir: 0° Wire out : 1800 m Speed : 2.8 kn
Sorted : 59 Total catch: 324.71 Catch/hour: 559.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarrella blackfordi	169.69	3859	30.32	
Nezumia micronychodon	109.02	2115	19.48	
Nematocarcinus africanus	62.57	14401	11.18	
Hoplostethus cadenati	46.93	1394	8.39	
Sea cucumbers	32.61	57	5.83	
Lamprogrammus exutus	26.65	95	4.76	
Stereomastis sp.	25.51	1782	4.56	
Talismania longifilis	17.82	190	3.18	
Dicrolene intronigra	13.46	379	2.41	
Dibranchus atlanticus	9.86	455	1.76	
Aristeus varidens, female	8.53	474	1.52	
OMMASTREPHIDAE	5.79	29	1.03	
Triplophos hemingi	4.74	503	0.85	
Xenodermichthys copei	4.55	284	0.81	
Raja sp.	4.17	38	0.75	
Aristeus varidens, male	4.09	522	0.73	
Chaceon maritae	3.96	7	0.71	
Caristius sp	2.76	10	0.49	
STARFISH	2.57	76	0.46	
Bathyuroconger vicinus	2.00	38	0.36	
Stomias boa boa	1.33	29	0.24	
Halosaurus ovenii	0.48	19	0.09	
Cataetyx laticeps	0.29	67	0.05	
LIPARIDAE	0.29	10	0.05	
Total	559.68		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 102
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°53.50
start stop duration Lon E 13°0.21
TIME :07:26:05 07:46:36 20.5 (min) Purpose : 3
LOG : 9809.62 9810.31 0.7 Region : 4054
FDEPTH: 190 187 Gear cond.: 9
BDEPTH: 190 187 Validity : 9
Towing dir: 0° Wire out : 550 m Speed : 2.0 kn
Sorted : 90 Total catch: 226.90 Catch/hour: 663.45

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	226.32	23711	34.11	
Pterothrissus belloci	77.89	646	11.74	
Dentex angolensis	75.15	228	11.33	322
Brotula barbata	72.37	58	10.91	
Zenopsis conchifer	56.58	173	8.53	
Zeus faber	51.32	79	7.73	
Bembrops heterurus	26.46	462	3.99	
Parapenaeus longirostris	23.16	8041	3.49	
Trigla lyra	16.73	94	2.52	
Octopus macropus	11.40	15	1.72	
GOBIIDAE	10.00	1778	1.51	
Merluccius polli	8.83	105	1.33	323
Trichiurus lepturus	3.04	3	0.46	0
Trichiurus lepturus	2.25	79	0.34	
Peristedion cataphractum	1.46	26	0.22	
Dibranchus atlanticus	0.53	79	0.08	
Total	663.48		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 103
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°53.09
start stop duration Lon E 12°58.64
TIME :08:55:06 09:25:45 30.7 (min) Purpose : 3
LOG : 9814.86 9816.46 1.6 Region : 4054
FDEPTH: 218 216 Gear cond.: 1
BDEPTH: 218 216 Validity : 1
Towing dir: 0° Wire out : 550 m Speed : 3.1 kn
Sorted : 144 Total catch: 523.47 Catch/hour: 1024.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	512.72	56751	50.05	
Pterothrissus belloci	150.29	861	14.67	
Zenopsis conchifer	111.15	219	10.85	
Merluccius polli	61.15	149	5.97	325
Brotula barbata	60.57	47	5.91	
Dentex angolensis	40.14	121	3.92	324
Bembrops heterurus	28.18	282	2.75	
Nezumia aequalis	22.86	767	2.23	
Trichiurus lepturus	13.07	23	1.28	
Parapenaeus longirostris	12.52	4415	1.22	
Hoplostethus mediterraneus	3.29	110	0.32	
Dicologoglossa cuneata	2.97	31	0.29	
GOBIIDAE	2.66	282	0.26	
Todaropsis eblanae	1.10	31	0.11	
Syacium micrurum	0.94	16	0.09	
CONGRIDAE	0.78	16	0.08	
Total	1024.40		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 104
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°52.62
start stop duration Lon E 12°54.54
TIME :10:54:01 11:26:10 30.1 (min) Purpose : 3
LOG : 9823.58 9825.15 1.6 Region : 4054
FDEPTH: 316 311 Gear cond.: 9
BDEPTH: 316 311 Validity : 9
Towing dir: 0° Wire out : 820 m Speed : 2.3 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
N O C A T C H	0.00	0	0.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 105
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°36.08
start stop duration Lon E 13°1.12
TIME :14:03:21 14:32:03 28.7 (min) Purpose : 3
LOG : 9842.96 9844.47 1.5 Region : 4054
FDEPTH: 148 145 Gear cond.: 1
BDEPTH: 148 145 Validity : 1
Towing dir: 0° Wire out : 400 m Speed : 3.2 kn
Sorted : 142 Total catch: 489.82 Catch/hour: 1024.01

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	480.00	2849	46.87	
Synagrops microlepis	403.74	74479	39.43	
Dentex angolensis	33.66	119	3.29	326
Mustelus mustelus	21.95	6	2.14	
Trachurus trecae	17.33	1031	1.69	327
Pterothrissus belloci	11.31	67	1.10	
Brotula barbata	10.91	8	1.07	
Octopus vulgaris	8.70	13	0.85	
Lophius vaillanti	6.29	6	0.61	
Uranoscopus polli	5.29	13	0.52	
Umbrina canariensis	4.81	21	0.47	
Spicara alta	4.45	29	0.43	
Zeus faber	4.35	27	0.42	
Chelidonichthys capensis	3.01	21	0.29	
Scorpaena normani	2.61	6	0.26	
Boops boops	1.21	13	0.12	
Parapenaeus longirostris	1.07	274	0.10	
Bembrops heterurus	1.00	6	0.10	
Illex coindetii	0.79	13	0.08	
Todaropsis eblanae	0.54	27	0.05	
Citharus linguatula	0.46	6	0.04	
Zenopsis conchifer	0.40	6	0.04	
Parapenaeus longirostris, male	0.13	54	0.01	
Total	1024.01		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 106
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°36.47
start stop duration Lon E 13°3.89
TIME :15:26:05 15:56:10 30.1 (min) Purpose : 3
LOG : 9848.67 9850.26 1.6 Region : 4054
FDEPTH: 115 117 Gear cond.: 1
BDEPTH: 115 117 Validity : 1
Towing dir: 0° Wire out : 320 m Speed : 3.2 kn
Sorted : 216 Total catch: 799.16 Catch/hour: 1594.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	1165.00	7744	73.06	329
Trichiurus lepturus	235.89	1173	14.79	
Dentex angolensis	111.12	509	6.97	330
Zeus faber	32.62	156	2.05	
Brotula barbata	10.71	8	0.67	
Sarda sarda	10.12	8	0.63	
Dentex congoensis	7.60	66	0.48	328
Raja miraletus	5.99	8	0.38	
Pterothrissus belloci	4.87	30	0.31	
Sepia orbignyana	4.35	8	0.27	
Chelidonichthys capensis	2.00	14	0.13	
Umbrina canariensis	1.40	14	0.09	
Pontinus accraensis	1.18	8	0.07	
Trachurus trecae	0.74	44	0.05	
Chaetodon hoefleri	0.74	8	0.05	
Citharus linguatula	0.30	8	0.02	
Total	1594.62		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 107
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°34.70
start stop duration Lon E 13°15.26
TIME :17:27:55 17:48:32 20.6 (min) Purpose : 3
LOG : 9863.05 9864.17 1.1 Region : 4054
FDEPTH: 54 53 Gear cond.: 1
BDEPTH: 54 53 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.3 kn
Sorted : 241 Total catch: 603.18 Catch/hour: 1755.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	342.63	9102	19.52	334
Pomadasys rogeri	327.35	1202	18.65	335
Pseudotolithus typus	296.45	780	16.89	336
Trichiurus lepturus	152.76	480	8.70	
Galeoides decadactylus	151.31	451	8.62	
Trachurus trecae	105.48	765	6.01	331
Dicologoglossa cuneata	65.03	1542	3.71	
Pomadasys incisus	53.63	262	3.06	333
Lithognathus mormyrus	49.18	169	2.80	
Pteroscion peli	46.27	524	2.64	338
Stromateus fiatola	45.10	67	2.57	
Chloroscombrus chrysurus	33.11	358	1.89	
Rhizoprionodon acutus	24.85	9	1.42	
Pagellus bellottii	13.91	52	0.79	332
Raja miraletus	12.45	29	0.71	
Ilisha africana	9.54	154	0.54	
Argyrosomus hololepidotus	7.22	38	0.41	337
Zeus faber	4.89	15	0.28	
Penaeus notialis	4.02	314	0.23	
Citharus linguatula	3.29	116	0.19	
Grammoplites gruveli	1.40	44	0.08	
Sardinella aurita	1.02	9	0.06	0
Brotula barbata	0.96	23	0.05	
Sardinella aurita	0.96	23	0.05	
Umbrina canariensis	0.73	9	0.04	
GOBIIDAE	0.73	140	0.04	
Octopus macropus	0.44	29	0.02	
Selene dorsalis	0.29	9	0.02	
Scorpaena normani	0.15	15	0.01	
Total	1755.13		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 108
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°35.89
start stop duration Lon E 12°54.25
TIME :21:11:25 21:43:23 32.0 (min) Purpose : 3
LOG : 9889.41 9891.05 1.6 Region : 4054
FDEPTH: 415 405 Gear cond.: 1
BDEPTH: 415 405 Validity : 1
Towing dir: 0° Wire out : 1000 m Speed : 3.1 kn
Sorted : 81 Total catch: 488.04 Catch/hour: 915.93

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	538.82	144011	58.83	
Merluccius polli	314.17	1126	34.30	339
Chaunax pictus	19.14	473	2.09	
Bathyuroconger vicinus	6.53	45	0.71	
Laemonema laureysi	5.74	79	0.63	
Dibranchus atlanticus	4.95	417	0.54	
Aristeus varidens	4.62	417	0.50	
Todaropsis eblanae	4.50	34	0.49	
Trichiurus lepturus	4.28	79	0.47	
Nezumia aequalis	2.82	79	0.31	
Malacocephalus occidentalis	2.82	23	0.31	
Etmopterus polli	2.70	180	0.30	
Bathynectes piperitus	1.46	34	0.16	
Plesionika martia	1.13	90	0.12	
Hymenocephalus italicus	0.79	259	0.09	
Halosaurus ovenii	0.56	34	0.06	
Lophiodes sp.	0.45	11	0.05	
MYCTOPHIDAE	0.23	225	0.02	
Stereomastis sculpta	0.11	11	0.01	
Parapenaeus longirostris	0.11	23	0.01	
Total	915.93		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 109
DATE :11/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°35.69
start stop duration Lon E 12°51.34
TIME :23:19:50 23:49:52 30.0 (min) Purpose : 3
LOG : 9897.82 9899.37 1.6 Region : 4054
FDEPTH: 531 522 Gear cond.: 1
BDEPTH: 531 522 Validity : 1
Towing dir: 0° Wire out : 1220 m Speed : 3.1 kn
Sorted : 52 Total catch: 274.85 Catch/hour: 548.97

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	385.99	111821	70.31	
Yarrella blackfordi	30.06	849	5.48	
Merluccius polli	28.96	72	5.28	340
Hoplostethus cadenati	24.07	629	4.38	
Stomias boa boa	14.08	320	2.57	
Triplophos hemingi	12.58	2157	2.29	
OMMASTREPHIDAE	12.08	40	2.20	
Aristeus varidens, female	7.89	419	1.44	
Gadella imberbis	7.59	260	1.38	
Aristeus varidens, male	3.89	449	0.71	
Chaunax pictus	3.60	30	0.65	
Malacocephalus occidentalis	2.70	20	0.49	
Illex coindetii	2.00	10	0.36	
Dibranchus atlanticus	1.68	250	0.31	
Cataetyx laticeps	1.60	270	0.29	
Stereomastis sp.	1.50	270	0.27	
Etmopterus polli	1.32	44	0.24	
Laemonema laureysi	1.00	10	0.18	
Xenodermichthys copei	1.00	260	0.18	
Hymenocephalus italicus	0.90	110	0.16	
Galeus polli	0.80	4	0.15	
Bathynectes piperitus	0.70	20	0.13	
MYCTOPHIDAE	0.60	559	0.11	
Trichiurus lepturus	0.60	30	0.11	
Bathyuroconger vicinus	0.40	70	0.07	
GOBIIDAE	0.40	30	0.07	
Lamprogrammus exutus	0.40	60	0.07	
Trachyrincus scabrus	0.30	10	0.05	
Acanthephyra sp.	0.20	100	0.04	
Plesionika sp.	0.10	20	0.02	
Total	548.97		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 110
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°35.52
start stop duration Lon E 12°49.72
TIME :01:30:30 02:00:05 29.6 (min) Purpose : 3
LOG : 9904.87 9906.33 1.5 Region : 4054
FDEPTH: 704 688 Gear cond.: 1
BDEPTH: 704 688 Validity : 1
Towing dir: 0° Wire out : 1600 m Speed : 3.0 kn
Sorted : 31 Total catch: 413.04 Catch/hour: 837.53

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	237.24	72886	28.33	
Hoplostethus cadenati	167.91	7565	20.05	
Yarrella blackfordi	119.15	4429	14.23	
Lamprogrammus exutus	62.74	633	7.49	
Stereomastis sp.	52.19	3295	6.23	
Triplophos hemingi	40.07	4982	4.78	
Stomias boa boa	37.43	844	4.47	
Talismania longifilis	28.21	422	3.37	
Nezumia micronychodon	25.04	712	2.99	
Merluccius polli	15.92	26	1.90	341
Bathyuroconger vicinus	12.92	237	1.54	
Xenodermichthys copei	9.75	606	1.16	
Gadella imberbis	5.54	211	0.66	
Chaceon maritae	4.95	12	0.59	
Monomitopus metriostoma	4.48	237	0.54	
Acanthephyra sp.	3.16	264	0.38	
Cataetyx laticeps	2.64	316	0.31	
Trichiurus lepturus	2.11	53	0.25	
Dibranchus atlanticus	2.11	105	0.25	
Aristeus varidens, female	1.32	53	0.16	
Scymnodon squamulosus	0.81	12	0.10	
Diceratias pileatus	0.79	53	0.09	
Aristeus varidens, male	0.53	53	0.06	
MYCTOPHIDAE	0.53	343	0.06	
Total	837.53		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 111
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°34.99
start stop duration Lon E 13°16.85
TIME :05:48:49 06:19:26 30.6 (min) Purpose : 3
LOG : 9935.81 9937.52 1.7 Region : 4054
FDEPTH: 44 40 Gear cond.: 1
BDEPTH: 44 40 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.4 kn
Sorted : 292 Total catch: 1839.85 Catch/hour: 3605.19

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys jubelini	2301.05	53685	63.83	342
Trichiurus lepturus	649.97	2395	18.03	
Chloroscombrus chrysurus	176.53	1863	4.90	
Galeoides decadactylus	146.30	433	4.06	
Pseudotolithus typus	87.04	172	2.41	343
Ilisha africana	42.46	815	1.18	
Scomberomorus tritor	32.59	12	0.90	
Stromateus fiatola	31.23	74	0.87	
Pteroscion peli	26.79	370	0.74	344
Pomadasys rogeri	22.22	63	0.62	
Cynoponticus ferox	13.95	12	0.39	
Pomadasys incisus	10.62	49	0.29	
Selene dorsalis	10.50	123	0.29	
Dicologoglossa cuneata	9.27	259	0.26	
Raja miraletus	9.27	12	0.26	
Arius parkii	6.43	12	0.18	
Sphyraena guachancho	6.29	37	0.17	
Lithognathus mormyrus	6.17	25	0.17	
Sardinella maderensis	5.68	49	0.16	
Citharus linguatula	4.19	112	0.12	
Penaeus notialis	2.96	161	0.08	
Trachurus trecae	2.10	37	0.06	
Argyrosomus hololepidotus	1.61	12	0.04	
Total	3605.21		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 112
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°34.39
start stop duration Lon E 13°18.62
TIME :07:40:13 08:16:02 35.8 (min) Purpose : 3
LOG : 9940.59 9942.61 2.0 Region : 4054
FDEPTH: 32 35 Gear cond.: 1
BDEPTH: 32 35 Validity : 1
Towing dir: 0° Wire out : 130 m Speed : 3.4 kn
Sorted : 210 Total catch: 986.36 Catch/hour: 1652.19

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	762.58	8797	46.16	
Pomadasys jubelini	314.87	11280	19.06	347
Sphyraena guachancho	191.19	487	11.57	
Ilisha africana	138.93	4363	8.41	
Trichiurus lepturus	65.33	487	3.95	
Pteroscion peli	64.89	854	3.93	345
Galeoides decadactylus	41.29	147	2.50	
Pseudotolithus typus	38.36	87	2.32	346
Selene dorsalis	6.45	122	0.39	
Stromateus fiatola	5.83	35	0.35	
Pomadasys rogeri	5.23	8	0.32	
Sardinella maderensis	3.57	35	0.22	
Arius parkii	3.57	8	0.22	
Penaeus notialis	2.88	70	0.17	
Dicologoglossa cuneata	2.53	95	0.15	
Sardinella aurita	2.01	17	0.12	
Eucinostomus melanopterus	1.83	17	0.11	
Grammoplites gruveli	0.79	17	0.05	
Torpedo torpedo	0.08	8	0.01	
Total	1652.19		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 113
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°14.90
start stop duration Lon E 13°15.53
TIME :11:38:51 12:09:10 30.3 (min) Purpose : 3
LOG : 9968.97 9970.48 1.5 Region : 4054
FDEPTH: 30 30 Gear cond.: 1
BDEPTH: 30 30 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.3 kn
Sorted : 102 Total catch: 363.63 Catch/hour: 720.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	122.08	1580	16.95	
Galeoides decadactylus	113.47	339	15.76	
Ilisha africana	109.90	3065	15.26	
Brachydeuterus auritus	80.50	2899	11.18	352
Pseudotolithus senegalensis	73.66	194	10.23	351
Pteroscion peli	52.28	1972	7.26	350
Pomadasys jubelini	38.32	63	5.32	348
Sphyraena sphyraena	36.42	113	5.06	
Trichiurus lepturus	33.86	380	4.70	
Arius parkii	14.14	18	1.96	
Dasyatis margarita	13.37	12	1.86	
Gymnura micrura	12.00	6	1.67	
Selene dorsalis	6.30	101	0.87	
Cynoglossus canariensis	4.04	24	0.56	
Dicologoglossa cuneata	2.67	48	0.37	
Sardinella maderensis	2.38	30	0.33	349
Penaeus notialis	1.31	208	0.18	
Pentanemus quinquarius	1.07	12	0.15	
Stromateus fiatola	1.03	2	0.14	
Sardinella aurita	0.53	12	0.07	
Torpedo torpedo	0.48	6	0.07	
Panulirus regius	0.28	4	0.04	
Total	720.06		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 114
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°14.85
start stop duration Lon E 13°12.09
TIME :12:49:57 13:20:08 30.2 (min) Purpose : 3
LOG : 9974.20 9975.87 1.7 Region : 4054
FDEPTH: 45 48 Gear cond.: 1
BDEPTH: 45 48 Validity : 1
Towing dir: 0° Wire out : 140 m Speed : 3.3 kn
Sorted : 99 Total catch: 326.93 Catch/hour: 649.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	150.19	4249	23.12	354
Chloroscombrus chrysurus	98.38	2301	15.14	
Trichiurus lepturus	86.91	859	13.38	
Pseudotolithus senegalensis	78.70	137	12.11	355
Galeoides decadactylus	76.08	328	11.71	
Ilisha africana	51.16	1423	7.87	
Pteroscion peli	30.69	1292	4.72	353
Selene dorsalis	12.52	137	1.93	
Dasyatis margarita	12.52	20	1.93	
Raja miraletus	11.94	40	1.84	
Penaeus notialis	9.38	465	1.44	
GOBIIDAE	6.04	20	0.93	
Stromateus fiatola	5.51	14	0.85	
Dicologoglossa cuneata	3.80	40	0.58	
Sepia orbignyana	2.48	24	0.38	
Scomberomorus tritor	2.37	2	0.36	
Citharus linguatula	2.23	66	0.34	
Pomadasys incisus	1.65	14	0.25	
Eucinostomus melanopterus	1.51	20	0.23	
Sardinella aurita	1.51	14	0.23	
Sphyraena guachancho	1.45	40	0.22	
Umbrina canariensis	1.25	20	0.19	
Grammoplites gruveli	0.52	6	0.08	
Alloteuthis africana	0.34	79	0.05	
Brotula barbata	0.26	6	0.04	
Pseudupeneus prayensis	0.18	6	0.03	
Boops boops	0.14	6	0.02	
Trachurus trecae	0.06	6	0.01	
Total	649.74		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 115
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°18.11
start stop duration Lon E 13°9.39
TIME :14:09:07 14:39:31 30.4 (min) Purpose : 3
LOG : 9980.52 9982.27 1.8 Region : 4054
FDEPTH: 66 63 Gear cond.: 1
BDEPTH: 66 63 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 3.5 kn
Sorted : 195 Total catch: 603.31 Catch/hour: 1191.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	735.68	4308	61.76	
Brachydeuterus auritus	332.66	7577	27.93	360
Stromateus fiatola	28.15	49	2.36	
Pagellus bellottii	21.13	105	1.77	356
Sphyraena guachancho	11.63	79	0.98	
Dentex angolensis	11.14	61	0.93	358
Selene dorsalis	11.08	140	0.93	
Pomadasys incisus	9.67	61	0.81	359
Pseudotolithus senegalensis	6.85	12	0.58	
Ilisha africana	6.50	116	0.55	
Chloroscombrus chrysurus	3.91	32	0.33	
Galeoides decadactylus	3.79	12	0.32	
Trachurus trecae	2.76	61	0.23	357
Raja miraletus	2.07	12	0.17	
Chaetodon hoefleri	1.16	6	0.10	
Citharus linguatula	0.99	32	0.08	
Sardinella aurita	0.93	6	0.08	
Sepia orbignyana	0.61	6	0.05	
Decapterus rhonchus	0.43	6	0.04	
Total	1191.14		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 116
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°20.04
start stop duration Lon E 13°6.45
TIME :15:43:28 16:13:13 29.8 (min) Purpose : 3
LOG : 9988.75 9990.41 1.7 Region : 4054
FDEPTH: 85 92 Gear cond.: 1
BDEPTH: 85 92 Validity : 1
Towing dir: 0° Wire out : 240 m Speed : 3.3 kn
Sorted : 151 Total catch: 150.89 Catch/hour: 304.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	158.32	2035	52.02	363
Trichiurus lepturus	91.56	212	30.09	
Stromateus fiatola	29.85	54	9.81	
Trachurus trecae	6.09	359	2.00	362
Dentex angolensis	2.90	18	0.95	361
Torpedo torpedo	2.72	10	0.89	
Alloteuthis africana	1.94	637	0.64	
Pseudotolithus senegalensis	1.77	2	0.58	
Saurida brasiliensis	1.67	428	0.55	
Pterothrissus belloci	1.01	26	0.33	
Synagrops microlepis	0.97	133	0.32	
Zeus faber	0.95	4	0.31	
Brotula barbata	0.79	2	0.26	
Sphyraena sphyraena	0.73	4	0.24	
Citharus linguatula	0.65	12	0.21	
Umbrina canariensis	0.54	6	0.18	
Parapenaeus longirostris	0.46	123	0.15	
Dentex congoensis	0.38	6	0.13	
Chelidonichthys capensis	0.24	2	0.08	
Pagellus bellottii	0.22	2	0.07	
GOBIIDAE	0.20	129	0.07	
Parapenaeus longirostris, male	0.16	71	0.05	
Selene dorsalis	0.14	2	0.05	
Sardinella aurita	0.04	2	0.01	
Total	304.32		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 117
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°18.16
start stop duration Lon E 13°0.35
TIME :17:12:34 17:43:38 31.1 (min) Purpose : 3
LOG : 9996.04 9997.66 1.6 Region : 4054
FDEPTH: 115 114 Gear cond.: 1
BDEPTH: 115 114 Validity : 1
Towing dir: 0° Wire out : 320 m Speed : 3.1 kn
Sorted : 145 Total catch: 145.03 Catch/hour: 280.07

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	75.02	483	26.79	368
Scorpaena normani	25.30	305	9.03	
Uranoscopus cadenati	25.30	164	9.03	
Brotula barbata	24.53	21	8.76	
Citharus linguatula	22.88	622	8.17	
Dentex angolensis	15.55	147	5.55	364
Pterothrissus belloci	13.90	172	4.96	
Trichiurus lepturus	13.23	19	4.72	
Chelidonichthys capensis	10.41	52	3.72	
Pagellus bellottii	7.65	110	2.73	365
Saurida brasiliensis	6.80	1188	2.43	
Trachurus trecae	6.45	348	2.30	366
Umbrina canariensis	6.12	27	2.19	367
Raja miraletus	5.39	8	1.92	
Trigla lyra	4.98	41	1.78	
Parapandalus narval	4.85	1323	1.73	
Zeus faber	2.22	12	0.79	
Bembrops heterurus	1.43	29	0.51	
Alloteuthis africana	1.08	355	0.39	
Torpedo marmorata	0.93	2	0.33	
Sepia officinalis hierredda	0.87	12	0.31	
Dicologoglossa cuneata	0.83	4	0.30	
Parapenaeus longirostris	0.79	158	0.28	
Torpedo torpedo	0.66	2	0.23	
Miracorvina angolensis	0.66	2	0.23	
Sepia officinalis hierredda	0.52	4	0.19	0
Dentex barnardi	0.39	2	0.14	
Serranus cabrilla	0.35	2	0.12	
Dentex congoensis	0.21	4	0.08	
Illex coindetii	0.21	4	0.08	
Ophidion sp.	0.19	2	0.07	
Merluccius polli	0.17	2	0.06	
Octopus macropus	0.12	2	0.04	
Parapenaeus longirostris, male	0.10	15	0.03	
Total	280.07		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 118
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°28.43
start stop duration Lon E 12°49.55
TIME :20:19:49 20:51:41 31.9 (min) Purpose : 3
LOG :10015.38 10016.99 1.6 Region : 4054
FDEPTH: 459 452 Gear cond.: 1
BDEPTH: 459 452 Validity : 1
Towing dir: 0° Wire out : 1100 m Speed : 3.0 kn
Sorted : 24 Total catch: 283.02 Catch/hour: 532.83

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	345.65	17486	64.87	
Merluccius polli	130.56	446	24.50	369
Yarrella blackfordi	18.47	1186	3.47	
Stomias boa boa	5.93	119	1.11	
Gadella imberbis	5.42	203	1.02	
Gadella maraldi	5.08	102	0.95	
Chaunax pictus	5.08	152	0.95	
Aristeus varidens, female	3.56	373	0.67	
Triplophos hemingi	3.22	593	0.60	
Aristeus varidens, male	1.86	254	0.35	
Stereomastis sculpta	1.69	237	0.32	
Trichiurus lepturus	1.02	51	0.19	
Halosaurus ovenii	1.02	68	0.19	
Hymenocephalus italicus	1.02	152	0.19	
MYCTOPHIDAE	0.68	813	0.13	
Dibranchus atlanticus	0.68	51	0.13	
Hoplostethus cadenati	0.51	34	0.10	
Plesiopenaeus edwardsianus	0.51	17	0.10	
Nezumia aequalis	0.34	17	0.06	
Etmopterus polli	0.28	21	0.05	
Xenodermichthys copei	0.17	17	0.03	
Galeus polli	0.08	4	0.01	
Total	532.83		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 119
DATE :12/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°28.37
start stop duration Lon E 12°48.06
TIME :22:29:14 22:59:38 30.4 (min) Purpose : 3
LOG :10023.01 10024.61 1.6 Region : 4054
FDEPTH: 554 557 Gear cond.: 1
BDEPTH: 554 557 Validity : 1
Towing dir: 0° Wire out : 1350 m Speed : 3.1 kn
Sorted : 65 Total catch: 297.45 Catch/hour: 587.07

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	233.59	9930	39.79	
Nematocarcinus africanus	187.86	40989	32.00	
Yarrella blackfordi	47.61	1431	8.11	
Stomias boa boa	19.54	444	3.33	
Triplophos hemingi	19.36	2337	3.30	
Xenodermichthys copei	18.65	1386	3.18	
Lamprogrammus exutus	14.66	568	2.50	
Gadella imberbis	8.70	355	1.48	
Merluccius polli	8.09	28	1.38	370
Stereomastis sp.	7.38	827	1.26	
Todaropsis eblanae	5.15	28	0.88	
Aristeus varidens, male	3.02	373	0.51	
Aristeus varidens, female	2.49	116	0.42	
OMMASTREPHIDAE	2.13	18	0.36	
Bathyuroconger vicinus	1.60	142	0.27	
Trichiurus lepturus	1.42	89	0.24	
Chaceon maritae	1.30	4	0.22	
Centrophorus squamosus	0.99	2	0.17	
Diceratias pileatus	0.89	71	0.15	
Dibranchus atlanticus	0.81	36	0.14	
Callinectes sp.	0.71	10	0.12	
MYCTOPHIDAE	0.36	294	0.06	
Plesionika sp.	0.28	10	0.05	
Cataetyx laticeps	0.28	36	0.05	
Galeus polli	0.16	2	0.03	
Etmopterus polli	0.06	2	0.01	
Total	587.07		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 120
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°28.11
start stop duration Lon E 12°47.37
TIME :00:43:01 01:13:35 30.6 (min) Purpose : 3
LOG : 28.99 30.48 1.5 Region : 4054
FDEPTH: 606 628 Gear cond.: 1
BDEPTH: 606 628 Validity : 1
Towing dir: 0° Wire out : 1400 m Speed : 2.9 kn
Sorted : 30 Total catch: 592.83 Catch/hour: 1163.55

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	454.96	17191	39.10	
Nematocarcinus africanus	238.67	62165	20.51	
Yarrella blackfordi	180.86	4512	15.54	
Lamprogrammus exutus	80.55	1007	6.92	
Stomias boa boa	45.12	895	3.88	
Merluccius polli	42.20	82	3.63	371
Xenodermichthys copei	29.09	1753	2.50	
Triplophos hemingi	25.73	2983	2.21	
OMMASTREPHIDAE	17.90	112	1.54	
Todaropsis eblanae	12.68	75	1.09	
Stereomastis sp.	8.20	1454	0.71	
Bathyuroconger vicinus	5.97	149	0.51	
Nezumia sp.	5.59	149	0.48	
Gadella imberbis	4.85	186	0.42	
Phrynichthys wedli	4.10	112	0.35	
MYCTOPHIDAE	2.61	3170	0.22	
Trichiurus lepturus	2.61	75	0.22	
Raja sp.	0.75	37	0.06	
Chaceon maritae	0.63	2	0.05	
Etmopterus polli	0.24	8	0.02	
Centrophorus granulosus	0.20	2	0.02	
Scymnodon obscurus	0.06	2	0.01	
Total	1163.55		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 121
DATE :13/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°27.40
start stop duration Lon E 12°46.05
TIME :02:56:22 03:28:11 31.8 (min) Purpose : 3
LOG : 34.83 36.50 1.7 Region : 4054
FDEPTH: 727 714 Gear cond.: 1
BDEPTH: 727 714 Validity : 1
Towing dir: 0° Wire out : 1650 m Speed : 3.1 kn
Sorted : 44 Total catch: 627.60 Catch/hour: 1183.41

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	614.71	20591	51.94	
Nematocarcinus africanus	231.93	114645	19.60	
Stereomastis sp.	70.90	3507	5.99	
Lamprogrammus exutus	53.55	453	4.53	
Triplophos hemingi	30.92	3281	2.61	
Xenodermichthys copei	28.66	1471	2.42	
Yarrella blackfordi	27.91	830	2.36	
Merluccius polli	23.85	40	2.02	372
Nezumia sp.	18.86	490	1.59	
Lophius sp.	15.84	38	1.34	
Talismania longifilis	15.46	415	1.31	
Bathyuroconger vicinus	11.69	302	0.99	
Dicrolene intronigra	9.43	113	0.80	
Monomitopus metriostoma	8.67	641	0.73	
Aristeus varidens	7.54	339	0.64	
Stomias boa boa	4.15	113	0.35	
Dibranchus atlanticus	1.89	151	0.16	
Gadella imberbis	1.89	38	0.16	
Chaceon maritae	1.83	6	0.15	
Diceratias pileatus	1.51	226	0.13	
Trichiurus lepturus	1.13	38	0.10	
Raja miraletus	0.75	38	0.06	
Etmopterus polli	0.28	4	0.02	
Etmopterus pusillus	0.06	2	0.00	
Total	1183.41		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 122
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°13.51
start stop duration Lon E 12°50.38
TIME :05:48:19 06:18:46 30.4 (min) Purpose : 3
LOG : 51.44 53.06 1.6 Region : 4054
FDEPTH: 147 137 Gear cond.: 1
BDEPTH: 147 137 Validity : 1
Towing dir: 0° Wire out : 400 m Speed : 3.2 kn
Sorted : 107 Total catch: 339.16 Catch/hour: 668.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	167.17	2681	25.01	
Boops boops	166.52	4754	24.91	
Trachurus trecae	151.56	7811	22.67	374
Spicara alta	57.58	982	8.61	
Citharus linguatula	47.48	45	7.10	
Zenopsis conchifer	28.42	39	4.25	
Dentex angolensis	16.77	85	2.51	373
Trichiurus lepturus	5.81	4	0.87	
Lophiodes kempi	5.46	6	0.82	
Zeus faber	5.46	34	0.82	
Brotula barbata	4.79	4	0.72	
Uranoscopus polli	3.59	26	0.54	
Trigla lyra	3.15	71	0.47	
Illex coindetii	1.30	20	0.19	
Dentex congoensis	1.24	39	0.19	
Pterothrissus belloci	0.99	6	0.15	
Sepia officinalis hierredda	0.71	6	0.11	
Scorpaena normani	0.45	6	0.07	
Saurida brasiliensis	0.06	20	0.01	
Total	668.52		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 123
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°10.24
start stop duration Lon E 12°54.57
TIME :07:22:10 07:55:01 32.9 (min) Purpose : 3
LOG : 59.45 61.11 1.7 Region : 4054
FDEPTH: 118 118 Gear cond.: 1
BDEPTH: 118 118 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.0 kn
Sorted : 201 Total catch: 201.10 Catch/hour: 367.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Umbrina canariensis	94.70	358	25.78	377
Dentex angolensis	89.59	420	24.39	375
Brachydeuterus auritus	76.35	477	20.79	379
Trachurus trecae	37.26	444	10.14	378
Trichiurus lepturus	27.21	66	7.41	
Trigla lyra	9.10	73	2.48	
Dentex barnardi	8.58	15	2.34	376
Zeus faber	7.78	42	2.12	
Chaetodon hoefleri	6.01	5	1.64	
Dentex macrophthalmus	3.11	7	0.85	
Sepia orbignyana	2.94	0	0.80	
Raja miraletus	1.46	2	0.40	
Pagellus bellottii	1.35	5	0.37	
Citharus linguatula	0.80	26	0.22	
Illex coindetii	0.46	7	0.12	
Sepia officinalis hierredda	0.26	2	0.07	
Uranoscopus polli	0.13	2	0.03	
Saurida brasiliensis	0.13	13	0.03	
Dentex congoensis	0.09	2	0.02	
Total	367.31		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 124
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°6.84
start stop duration Lon E 12°58.89
TIME :09:01:03 09:31:13 30.1 (min) Purpose : 3
LOG : 67.41 68.91 1.5 Region : 4054
FDEPTH: 97 97 Gear cond.: 1
BDEPTH: 97 97 Validity : 1
Towing dir: 0° Wire out : 250 m Speed : 3.1 kn
Sorted : 86 Total catch: 85.85 Catch/hour: 171.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	100.66	801	58.82	381
Trachurus trecae	28.31	1848	16.54	380
Dentex angolensis	10.39	64	6.07	382
Trichiurus lepturus	7.65	24	4.47	
Octopus sp.	5.94	4	3.47	
Stromateus fiatola	4.98	6	2.91	
Alloteuthis africana	3.99	1401	2.33	
Miracorvina angolensis	1.55	4	0.91	
Torpedo torpedo	1.51	6	0.89	
Zeus faber	1.50	8	0.87	
Fistularia petimba	1.10	8	0.64	
Scorpaena normani	0.58	2	0.34	
Dentex barnardi	0.48	2	0.28	
Trigla lyra	0.46	4	0.27	
Umbrina canariensis	0.44	4	0.26	
Chelidonichthys capensis	0.36	2	0.21	
Pterothrissus belloci	0.32	6	0.19	
Chaetodon hoefleri	0.30	2	0.17	
Saurida brasiliensis	0.20	52	0.12	
Boops boops	0.14	6	0.08	
Uranoscopus polli	0.14	2	0.08	
Citharus linguatula	0.10	2	0.06	
Monolene microstoma	0.04	2	0.02	
Total	171.13		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 125
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°5.29
start stop duration Lon E 13°3.21
TIME :10:39:30 11:09:35 30.1 (min) Purpose : 3
LOG : 75.10 76.79 1.7 Region : 4054
FDEPTH: 73 72 Gear cond.: 1
BDEPTH: 73 72 Validity : 1
Towing dir: 0° Wire out : 200 m Speed : 3.4 kn
Sorted : 159 Total catch: 159.12 Catch/hour: 317.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	113.93	1489	35.88	384
Stromateus fiatola	93.38	283	29.41	
Trichiurus lepturus	40.01	652	12.60	
Galeoides decadactylus	23.25	64	7.32	
Dentex angolensis	10.46	52	3.29	383
Selene dorsalis	8.50	66	2.68	
Raja miraletus	5.07	6	1.60	
Pagellus bellottii	4.67	32	1.47	385
Pseudotolithus senegalensis	4.19	4	1.32	
Pomadasys incisus	3.21	18	1.01	387
Umbrina canariensis	1.84	2	0.58	
Chloroscombrus chrysurus	1.84	12	0.58	
Cynoponticus ferox	1.36	2	0.43	
Trachurus trecae	1.00	12	0.31	386
Zeus faber	0.98	2	0.31	
Brotula barbata	0.84	2	0.26	
Cynoglossus canariensis	0.82	4	0.26	
Chaetodon hoefleri	0.60	4	0.19	
Torpedo torpedo	0.54	4	0.17	
Citharus linguatula	0.36	6	0.11	
Alloteuthis africana	0.32	162	0.10	
Sardinella aurita	0.16	4	0.05	
Grammoplites gruveli	0.16	2	0.05	
GOBIIDAE	0.04	14	0.01	
Total	317.50		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 126
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°3.60
start stop duration Lon E 13°3.88
TIME :11:44:57 12:01:19 16.4 (min) Purpose : 3
LOG : 78.81 79.66 0.9 Region : 4054
FDEPTH: 66 67 Gear cond.: 9
BDEPTH: 66 67 Validity : 9
Towing dir: 0° Wire out : 170 m Speed : 3.1 kn
Sorted : 116 Total catch: 256.95 Catch/hour: 941.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	630.42	13100	66.94	390
Trichiurus lepturus	135.25	1114	14.36	
Pseudotolithus senegalensis	42.88	55	4.55	388
Dentex angolensis	24.85	121	2.64	389
Galeoides decadactylus	23.38	103	2.48	
Stromateus fiatola	18.18	37	1.93	
Pomadasys incisus	14.95	132	1.59	391
Epinephelus aeneus	6.05	4	0.64	
Umbrina canariensis	5.64	7	0.60	
Raja miraletus	4.84	7	0.51	
Pagellus bellottii	4.36	18	0.46	392
Torpedo torpedo	4.03	51	0.43	
Miracorvina angolensis	3.96	18	0.42	
Branchiostegus semifasciatus	3.59	7	0.38	
Grammoplites gruveli	2.93	59	0.31	
Chaetodon hoefleri	2.49	15	0.26	
Argyrosomus hololepidotus	2.38	7	0.25	
Brotula barbata	2.20	15	0.23	
Dicologoglossa cuneata	2.05	15	0.22	
Selene dorsalis	2.05	22	0.22	
Penaeus notialis	1.98	66	0.21	
Citharus linguatula	1.32	37	0.14	
CONGRIDAE	1.03	7	0.11	
Synagrops microlepis	0.44	59	0.05	
Arnoglossus imperialis	0.29	15	0.03	
Sphyraena guachancho	0.22	15	0.02	
Total	941.78		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 127
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°4.20
start stop duration Lon E 13°7.66
TIME :12:56:18 13:26:08 29.8 (min) Purpose : 3
LOG : 84.90 86.54 1.6 Region : 4054
FDEPTH: 45 43 Gear cond.: 1
BDEPTH: 45 43 Validity : 1
Towing dir: 0° Wire out : 140 m Speed : 3.3 kn
Sorted : 182 Total catch: 181.90 Catch/hour: 366.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pseudotolithus senegalensis	76.06	147	20.78	393
Ilisha africana	73.34	2115	20.04	
Galeoides decadactylus	73.14	139	19.98	
Trichiurus lepturus	52.62	141	14.38	
Brachydeuterus auritus	25.45	410	6.95	395
Sphyraena guachancho	16.30	62	4.45	
Pteroscion peli	16.10	596	4.40	394
Dasyatis marmorata	10.34	14	2.83	
Cynoponticus ferox	5.84	12	1.59	
Stromateus fiatola	5.09	10	1.39	
Arius parkii	3.24	4	0.89	
Chloroscombrus chrysurus	2.29	16	0.63	
Selene dorsalis	1.95	32	0.53	
Cynoglossus canariensis	1.05	6	0.29	
Pomadasys jubelini	0.99	2	0.27	
Pentanemus quinquarius	0.58	4	0.16	
Dicologoglossa cuneata	0.54	8	0.15	
Grammoplites gruveli	0.46	8	0.13	
penaeus notialis,female	0.30	12	0.08	
penaeus notialis,female	0.28	10	0.08	
GOBIIDAE	0.04	22	0.01	
Total	366.00		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 128
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°2.31
start stop duration Lon E 13°9.73
TIME :14:08:50 14:38:00 29.2 (min) Purpose : 3
LOG : 89.94 91.46 1.5 Region : 4054
FDEPTH: 28 31 Gear cond.: 1
BDEPTH: 28 31 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.1 kn
Sorted : 210 Total catch: 352.57 Catch/hour: 725.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ilisha africana	160.13	7973	22.08	
Pseudotolithus typus	124.85	66	17.22	396
Galeoides decadactylus	109.53	259	15.10	
Pseudotolithus senegalensis	104.70	245	14.44	398
Trichiurus lepturus	53.69	852	7.40	
Pomadasys peroteti	42.31	72	5.83	397
Arius parkii	27.15	80	3.74	
Pteroscion peli	15.74	518	2.17	400
Gymnura altavela	14.93	12	2.06	
Panulirus regius	14.60	70	2.01	
Pentanemus quinquarius	13.70	228	1.89	
Drepane africana	8.76	6	1.21	
Brachydeuterus auritus	7.47	142	1.03	399
Cynoglossus canariensis	5.92	31	0.82	
Pomadasys incisus	5.00	31	0.69	
Chloroscombrus chrysurus	3.21	31	0.44	
Torpedo torpedo	2.90	12	0.40	
Selene dorsalis	2.78	37	0.38	
Centrarchops chapini	2.72	6	0.37	
Penaeus notialis	1.85	370	0.26	
Umbrina canariensis	0.93	6	0.13	
Sphyraena sphyraena	0.86	6	0.12	
Pisodonophis semicinctus	0.68	6	0.09	
Argyrosomus hololepidotus	0.56	6	0.08	
Chaetodon hoefleri	0.25	6	0.03	
Total	725.20		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 129
DATE :13/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°24.13
start stop duration Lon E 12°56.21
TIME :17:34:00 18:08:24 34.4 (min) Purpose : 3
LOG : 118.38 119.83 1.5 Region : 4054
FDEPTH: 175 165 Gear cond.: 1
BDEPTH: 175 165 Validity : 1
Towing dir: 0° Wire out : 450 m Speed : 2.5 kn
Sorted : 104 Total catch: 449.30 Catch/hour: 783.89

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	557.39	69449	71.11	
Pterothrissus belloci	86.64	703	11.05	
Trichiurus lepturus	33.15	58	4.23	
Bembrops heterurus	29.15	352	3.72	
Brotula barbata	28.61	31	3.65	
Dentex angolensis	7.68	37	0.98	401
Parapenaeus longirostris	7.48	1849	0.95	
Umbrina canariensis	4.89	12	0.62	
Citharus linguatula	4.01	45	0.51	
Scorpaena normani	3.75	58	0.48	
Zeus faber	3.30	35	0.42	
Uranoscopus cadenati	2.62	12	0.33	
Bothus podas africanus	2.46	239	0.31	
Spicara alta	2.27	12	0.29	
Cynoponticus ferox	1.59	2	0.20	
Todaropsis eblanae	1.36	12	0.17	
Trigla lyra	1.36	12	0.17	
CONGRIDAE	1.13	12	0.14	
Zenopsis conchifer	1.13	23	0.14	
Peristedion cataphractum	0.80	12	0.10	
MYCTOPHIDAE	0.80	454	0.10	
Illex coindetii	0.68	12	0.09	
Parapenaeus longirostris, male	0.58	307	0.07	
Panulirus regius	0.45	12	0.06	
GOBIIDAE	0.35	249	0.04	
Chlorophthalmus atlanticus	0.23	45	0.03	
Total	783.87		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 130
DATE :13/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°14.74
start stop duration Lon E 12°43.73
TIME :20:38:57 21:09:09 30.2 (min) Purpose : 3
LOG : 135.53 136.98 1.5 Region : 4054
FDEPTH: 432 435 Gear cond.: 1
BDEPTH: 432 435 Validity : 1
Towing dir: 0° Wire out : 1050 m Speed : 2.9 kn
Sorted : 24 Total catch: 364.36 Catch/hour: 723.89

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	391.15	118740	54.03	
Merluccius polli	216.66	1011	29.93	402
Hymenocephalus italicus	37.55	5321	5.19	
Chaunax pictus	27.12	314	3.75	
Gadella maraldi	16.49	314	2.28	
Dibranchus atlanticus	13.57	626	1.87	
Malacocephalus occidentalis	7.31	64	1.01	
Trichiurus lepturus	4.39	189	0.61	
Aristeus varidens	2.30	230	0.32	
Plesiopenaeus edwardsianus	2.09	125	0.29	
Stereomastis sp.	1.47	167	0.20	
Halosaurus ovenii	1.05	64	0.15	
MYCTOPHIDAE	1.05	1168	0.15	
Parapandalus narval	0.64	64	0.09	
Nezumia aequalis	0.64	42	0.09	
Bathynectes piperitus	0.42	22	0.06	
Total	723.89		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 131
DATE :13/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°15.93
start stop duration Lon E 12°41.61
TIME :22:44:20 23:15:50 31.5 (min) Purpose : 3
LOG : 142.71 144.25 1.5 Region : 4054
FDEPTH: 619 618 Gear cond.: 1
BDEPTH: 619 618 Validity : 1
Towing dir: 0° Wire out : 1500 m Speed : 2.9 kn
Sorted : 28 Total catch: 208.04 Catch/hour: 396.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	169.95	45652	42.90	
Hoplostethus cadenati	67.85	2226	17.13	
Yarrella blackfordi	47.32	1146	11.94	
Lamprogrammus exutus	24.26	93	6.12	
Stomias boa boa	17.06	427	4.31	
Merluccius polli	16.95	30	4.28	403
Triplophos hemingi	12.40	1306	3.13	
OMMASTREPHIDAE	10.53	53	2.66	
Stereomastis sp.	8.40	1253	2.12	
Aristeus varidens, male	4.13	507	1.04	
Chaceon maritae	2.99	8	0.75	
Dibranchus atlanticus	2.27	187	0.57	
Nezumia sp.	2.13	53	0.54	
Bathyuroconger vicinus	2.00	67	0.50	
Scymnodon squamulosus	1.52	4	0.38	
Xenodermichthys copei	1.33	93	0.34	
Aristeus varidens, female	1.20	53	0.30	
Trichiurus lepturus	1.20	40	0.30	
Dicrolene intronigra	0.67	147	0.17	
Etmopterus polli	0.57	8	0.14	
MYXINIDAE	0.40	13	0.10	
Phrynichthys wedli	0.40	13	0.10	
Cataetyx laticeps	0.27	120	0.07	
MYCTOPHIDAE	0.13	280	0.03	
Glyphus marsupialis	0.13	27	0.03	
Etmopterus spinax	0.10	4	0.02	
Total	396.14		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 132
DATE :14/03/2007 GEAR TYPE: BT NO: 14 POSITION:Lat S 8°16.31
start stop duration Lon E 12°40.90
TIME :00:59:15 01:30:12 31.0 (min) Purpose : 3
LOG : 149.01 150.57 1.6 Region : 4054
FDEPTH: 703 692 Gear cond.: 1
BDEPTH: 703 692 Validity : 1
Towing dir: 0° Wire out : 1650 m Speed : 3.0 kn
Sorted : 27 Total catch: 279.97 Catch/hour: 542.75

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	224.88	102397	41.43	
Hoplostethus cadenati	85.30	3024	15.72	
Stereomastis sp.	64.94	5137	11.97	
Lamprogrammus exutus	28.69	78	5.29	
OMMASTREPHIDAE	20.55	39	3.79	
Bathyuroconger vicinus	18.03	349	3.32	
Yarrella blackfordi	14.54	349	2.68	
Stomias boa boa	13.76	407	2.54	
Nezumia sp.	13.76	291	2.54	
Merluccius polli	13.67	25	2.52	404
Triplophos hemingi	11.44	1357	2.11	
Sea cucumbers	10.66	39	1.96	
Dicrolene intronigra	7.95	601	1.46	
Dibranchus atlanticus	3.10	291	0.57	
Talismania longifilis	2.71	78	0.50	
Aristeus varidens, female	2.71	136	0.50	
Chaceon maritae	2.04	6	0.38	
Cataetyx laticeps	1.36	213	0.25	
Xenodermichthys copei	1.16	58	0.21	
Aristeus varidens, male	0.97	116	0.18	
GALATHEIDAE *	0.39	310	0.07	
Etmopterus pusillus	0.08	2	0.01	
Deania calcea	0.06	2	0.01	
Total	542.75		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 133
DATE :14/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°27.01
start stop duration Lon E 12°53.25
TIME :05:59:10 06:30:13 31.1 (min) Purpose : 3
LOG : 175.40 176.90 1.5 Region : 4054
FDEPTH: 306 310 Gear cond.: 1
BDEPTH: 306 310 Validity : 1
Towing dir: 0° Wire out : 750 m Speed : 2.9 kn
Sorted : 78 Total catch: 444.59 Catch/hour: 859.11

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Synagrops microlepis	493.72	42000	57.47	
Chlorophthalmus atlanticus	120.39	2421	14.01	
Merluccius polli	46.67	987	5.43	405
Nematocarcinus africanus	37.87	28406	4.41	
Torpedo nobiliana	33.04	2	3.85	
Gadella maraldi	30.43	555	3.54	
Parapenaeus longirostris	25.29	3733	2.94	
Scorpaena normani	21.51	230	2.50	
MYCTOPHIDAE	16.79	17003	1.95	
Pterothrissus belloci	15.83	108	1.84	
Zenopsis conchifer	7.44	14	0.87	
Malacocephalus occidentalis	3.52	68	0.41	
Gadella imberbis	2.03	108	0.24	
Nezumia aequalis	1.62	41	0.19	
Lophiodes kempi	0.95	14	0.11	
Bathynectes piperitus	0.81	14	0.09	
Parapandalus narval	0.68	108	0.08	
Syacium micrurum	0.54	14	0.06	
Total	859.13		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 134
DATE :14/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°27.23
start stop duration Lon E 12°55.44
TIME :07:38:26 08:06:50 28.4 (min) Purpose : 3
LOG : 180.76 182.11 1.4 Region : 4054
FDEPTH: 231 231 Gear cond.: 1
BDEPTH: 231 231 Validity : 1
Towing dir: 0° Wire out : 550 m Speed : 2.9 kn
Sorted : 86 Total catch: 668.63 Catch/hour: 1413.10

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Synagrops microlepis	903.17	64233	63.91	
Merluccius polli	172.03	4487	12.17	407
Chlorophthalmus atlanticus	112.75	3906	7.98	
Zeus faber	39.75	93	2.81	
Parapenaeus longirostris	34.41	5114	2.43	
Trichiurus lepturus	34.34	46	2.43	
Pterothrissus belloci	29.52	256	2.09	
Nezumia aequalis	22.78	767	1.61	
MYCTOPHIDAE	17.44	15367	1.23	
Bembrops heterurus	16.27	302	1.15	
Brotula barbata	16.06	11	1.14	
Dentex angolensis	8.98	27	0.64	406
Malacocephalus occidentalis	2.09	93	0.15	
Illex coindetii	1.63	23	0.12	
Conger conger	0.93	23	0.07	
Bothus podas africanus	0.93	70	0.07	
Total	1413.10		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 135
DATE :17/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°56.95
start stop duration Lon E 12°50.86
TIME :15:26:57 15:57:11 30.2 (min) Purpose : 3
LOG : 273.95 275.54 1.6 Region : 4054
FDEPTH: 108 108 Gear cond.: 1
BDEPTH: 108 108 Validity : 1
Towing dir: 0° Wire out : 315 m Speed : 3.2 kn
Sorted : 130 Total catch: 130.10 Catch/hour: 258.13

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachurus trecae	131.94	708	51.11	411
Brachydeuterus auritus	44.23	379	17.13	412
Dentex angolensis	16.07	327	6.23	410
Fistularia petimba	11.31	30	4.38	
Pagellus bellottii	10.52	230	4.07	409
Trigla lyra	9.07	54	3.51	
Saurida brasiliensis	6.96	433	2.70	
Dentex congoensis	6.51	147	2.52	408
Sepia orbignyana	5.65	6	2.19	
Raja miraletus	3.13	4	1.21	
Auxis thazard	1.94	2	0.75	
Citharus linguatula	1.92	63	0.75	
Pontinus accraensis	1.85	14	0.71	
Umbrina canariensis	1.63	2	0.63	
Octopus macropus	1.05	2	0.41	
Zeus faber	0.99	6	0.38	
Brotula barbata	0.89	2	0.35	
Parapandalus narval	0.79	446	0.31	
Torpedo torpedo	0.54	6	0.21	
Dentex barnardi	0.34	2	0.13	
Chelidonichthys capensis	0.28	2	0.11	
Pterothrissus belloci	0.26	2	0.10	
Sepia officinalis hierredda	0.26	2	0.10	
Total	258.13		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 136
DATE :17/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°1.41
start stop duration Lon E 12°43.80
TIME :17:15:59 17:46:00 30.0 (min) Purpose : 3
LOG : 284.56 286.05 1.5 Region : 4054
FDEPTH: 170 182 Gear cond.: 1
BDEPTH: 170 182 Validity : 1
Towing dir: 0° Wire out : 480 m Speed : 2.9 kn
Sorted : 92 Total catch: 333.27 Catch/hour: 666.54

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Synagrops microlepis	525.60	36244	78.85	
Pterothrissus belloci	36.18	316	5.43	
Uranoscopus polli	24.04	190	3.61	
Brotula barbata	17.40	12	2.61	
Trichiurus lepturus	15.40	26	2.31	
Dentex angolensis	13.60	54	2.04	413
Citharus linguatula	11.34	280	1.70	
Bembrops heterurus	9.54	108	1.43	
Illex coindetii	4.32	90	0.65	
Lepidotrigla cadmani	4.24	72	0.64	
Parapenaeus longirostris	1.26	360	0.19	
Microchirus wittei	1.18	36	0.18	
Ophidion sp.	0.64	18	0.10	
Saurida brasiliensis	0.54	108	0.08	
Bothus podas africanus	0.46	72	0.07	
Pentheroscion mbizi	0.40	4	0.06	
Squilla mantis	0.28	28	0.04	
Zenopsis conchifer	0.14	10	0.02	
Total	666.56		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 137
DATE :17/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°1.89
start stop duration Lon E 12°37.94
TIME :19:40:26 20:10:20 29.9 (min) Purpose : 3
LOG : 295.63 296.90 1.3 Region : 4054
FDEPTH: 531 529 Gear cond.: 1
BDEPTH: 531 529 Validity : 1
Towing dir: 0° Wire out : 1400 m Speed : 2.5 kn
Sorted : 64 Total catch: 232.02 Catch/hour: 465.59

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	400.72	95653	86.07	
Yarrella blackfordi	18.46	518	3.97	
Trichiurus lepturus	7.79	251	1.67	
Merluccius polli	7.22	18	1.55	414
Hoplostethus cadenati	5.56	207	1.19	
Stomias boa boa	5.12	259	1.10	
Triplophos hemingi	3.81	594	0.82	
Todaropsis eblanae	3.51	16	0.75	
Aristeus varidens	2.51	191	0.54	
Etmopterus spinax	2.51	16	0.54	
Stereomastis sp.	1.83	161	0.39	
Etmopterus polli	1.61	46	0.34	
Chaunax pictus	1.22	16	0.26	
Bathyuroconger vicinus	1.06	106	0.23	
Coloconger cadenati	0.68	16	0.15	
Gadella maraldi	0.60	98	0.13	
Bathynectes piperitus	0.54	8	0.12	
Gadella imberbis	0.38	16	0.08	
Dibranchus atlanticus	0.22	8	0.05	
Nezumia aequalis	0.22	30	0.05	
Total	465.57		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 138
DATE :17/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°3.01
start stop duration Lon E 12°36.84
TIME :21:36:11 22:06:12 30.0 (min) Purpose : 3
LOG : 300.62 301.87 1.3 Region : 4054
FDEPTH: 637 646 Gear cond.: 1
BDEPTH: 637 646 Validity : 1
Towing dir: 0° Wire out : 1575 m Speed : 2.5 kn
Sorted : 57 Total catch: 321.46 Catch/hour: 642.49

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	220.41	55975	34.31	
Hoplostethus cadenati	153.10	5530	23.83	
Yarrella blackfordi	109.93	4837	17.11	
Triplophos hemingi	80.25	11608	12.49	
Lamprogrammus exutus	20.23	88	3.15	
Merluccius polli	12.89	22	2.01	415
Xenodermichthys copei	10.99	726	1.71	
Stereomastis sp.	9.67	1363	1.51	
Stomias boa boa	7.26	264	1.13	
Aristeus varidens, male	6.16	748	0.96	
Bathyuroconger vicinus	4.18	44	0.65	
Trichiurus lepturus	2.86	78	0.44	
Aristeus varidens, female	2.42	122	0.38	
Melanonus zugmayeri	0.56	12	0.09	
Cataetyx laticeps	0.34	56	0.05	
Glyphus marsupialis	0.34	66	0.05	
Etmopterus spinax	0.34	12	0.05	
Monomitopus metriostoma	0.22	56	0.03	
Nezumia sp.	0.12	12	0.02	
Nemichthys scolopaceus	0.12	12	0.02	
MYCTOPHIDAE	0.12	166	0.02	
Total	642.49		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 139
DATE :17/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 8°2.94
start stop duration Lon E 12°35.60
TIME :23:39:00 23:53:22 14.4 (min) Purpose : 3
LOG : 306.59 307.24 0.7 Region : 4054
FDEPTH: 737 734 Gear cond.: 9
BDEPTH: 737 734 Validity : 3
Towing dir: 0° Wire out : 1769 m Speed : 2.7 kn
Sorted : 37 Total catch: 224.06 Catch/hour: 935.53

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	194.15	2255	20.75	
Nematocarcinus africanus	159.08	64359	17.00	
Triplophos hemingi	86.43	7841	9.24	
Bathyuroconger vicinus	84.43	601	9.02	
Stereomastis sp.	78.41	3332	8.38	
Yarrella blackfordi	69.39	1528	7.42	
Lamprogrammus exutus	64.38	175	6.88	
Caelorinchus sp.	46.35	200	4.95	
Lophius sp.	28.31	50	3.03	
Dibranchus atlanticus	25.55	952	2.73	
Stomias boa boa	18.79	802	2.01	
Talismania longifilis	17.29	150	1.85	
STARFISH	12.03	526	1.29	
OPHIDIIDAE	10.77	50	1.15	
Xenodermichthys copei	8.77	200	0.94	
GALATHEIDAE *	7.27	3808	0.78	
Chaceon maritae	7.10	17	0.76	
Monomitopus metriostoma	4.76	301	0.51	
Merluccius polli	2.46	4	0.26	
Deania calcea	2.30	13	0.25	
Aristeus varidens	2.25	125	0.24	
NEPHROPIDAE	1.25	50	0.13	
MYCTOPHIDAE	1.00	100	0.11	
Glyphus marsupialis	0.75	75	0.08	
APOGONIDAE	0.75	50	0.08	
Cataetyx laticeps	0.50	75	0.05	
NOTOSUDIDAE	0.50	25	0.05	
Plesiopenaeus edwardsianus	0.50	50	0.05	
Total	935.53		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 140
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°49.53
start stop duration Lon E 13°2.73
TIME :06:01:54 06:31:50 29.9 (min) Purpose : 3
LOG : 342.49 343.80 1.3 Region : 4054
FDEPTH: 27 25 Gear cond.: 1
BDEPTH: 27 25 Validity : 1
Towing dir: 0° Wire out : 170 m Speed : 2.6 kn
Sorted : 128 Total catch: 1136.42 Catch/hour: 2277.39

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	713.81	18806	31.34	418
Galeoides decadactylus	314.45	3523	13.81	
Trichiurus lepturus	307.52	802	13.50	
Sphyraena guachancho	277.70	727	12.19	
Stromateus fiatola	254.41	653	11.17	
Chloroscombrus chrysurus	218.06	3242	9.57	
Selene dorsalis	87.21	1733	3.83	
Ilisha africana	72.51	2721	3.18	
Trachinotus ovatus	5.77	38	0.25	
Pseudotolithus typus	5.75	4	0.25	416
Trachurus trecae	5.21	38	0.23	
Pseudotolithus senegalensis	4.83	10	0.21	417
Pteroscion peli	3.55	56	0.16	
Penaeus notialis	3.55	56	0.16	
Rhizoprionodon acutus	1.82	2	0.08	
Sardinella maderensis	1.20	56	0.05	
Total	2277.33		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 141
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°51.45
start stop duration Lon E 13°1.22
TIME :07:23:21 07:52:37 29.3 (min) Purpose : 3
LOG : 347.70 349.17 1.5 Region : 4054
FDEPTH: 45 44 Gear cond.: 1
BDEPTH: 45 44 Validity : 1
Towing dir: 0° Wire out : 170 m Speed : 3.0 kn
Sorted : 166 Total catch: 166.16 Catch/hour: 340.61

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	241.27	2722	70.84	
Alectis alexandrinus	41.10	70	12.07	
Selene dorsalis	9.10	82	2.67	
Pagellus bellottii	8.36	61	2.46	419
Pomadasys rogeri	7.87	6	2.31	
Raja miraletus	7.71	12	2.26	
Sepia orbignyana	6.42	4	1.88	
Caranx crysos	4.59	4	1.35	
Lagocephalus laevigatus	4.12	14	1.21	
Brachydeuterus auritus	2.54	4	0.75	
Cynoglossus canariensis	1.68	8	0.49	
Sphyraena guachancho	1.15	6	0.34	
Fistularia petimba	0.90	2	0.26	
Sepia officinalis hierredda	0.88	6	0.26	
Syacium micrurum	0.82	6	0.24	
Sparus caeruleostictus *	0.70	2	0.20	
Sardinella maderensis	0.43	4	0.13	
Aluterus scriptus	0.27	2	0.08	
Grammoplites gruveli	0.16	18	0.05	
Decapterus rhonchus	0.14	2	0.04	
Galeoides decadactylus	0.14	6	0.04	
Citharus linguatula	0.10	4	0.03	
Trachurus trecae	0.10	6	0.03	
Dentex barnardi	0.04	2	0.01	
Total	340.61		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 142
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°51.61
start stop duration Lon E 12°58.69
TIME :08:39:16 09:10:04 30.8 (min) Purpose : 3
LOG : 353.24 354.65 1.4 Region : 4054
FDEPTH: 58 60 Gear cond.: 1
BDEPTH: 58 60 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 2.7 kn
Sorted : 106 Total catch: 106.48 Catch/hour: 207.43

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Galeoides decadactylus	70.62	177	34.04	
Pagellus bellottii	41.40	397	19.96	420
Raja miraletus	36.82	113	17.75	
Pomadasys jubelini	8.40	18	4.05	
Sepia orbignyana	6.33	4	3.05	
Pseudupeneus prayensis	6.18	19	2.98	
Epinephelus goreensis	4.97	6	2.39	
Umbrina canariensis	3.90	27	1.88	421
Sparus caeruleostictus *	3.64	10	1.76	
Alectis alexandrinus	3.16	2	1.52	
Torpedo torpedo	2.40	4	1.16	
Sepia officinalis hierredda	2.28	16	1.10	
Chelidonichthys capensis	2.12	12	1.02	
Dentex barnardi	1.95	6	0.94	
Dasyatis margarita	1.87	2	0.90	
Plectorhinchus mediterraneus	1.75	2	0.85	
Seriola carpenteri	1.60	2	0.77	
Trachurus trecae	1.60	18	0.77	
Epinephelus aeneus	1.50	4	0.72	
Sphyraena guachancho	1.34	4	0.65	
Cynoglossus canariensis	0.94	4	0.45	
Chaetodon hoefleri	0.66	4	0.32	
Pomadasys incisus	0.66	6	0.32	
Lagocephalus laevigatus	0.51	2	0.24	
Seriola carpenteri	0.33	8	0.16	0
Grammoplites gruveli	0.33	8	0.16	
Citharus linguatula	0.14	6	0.07	
Sardinella aurita	0.04	2	0.02	
Monomitopus metriostoma	0.02	2	0.01	
Total	207.43		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 143
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°53.06
start stop duration Lon E 12°56.27
TIME :09:57:38 10:27:01 29.4 (min) Purpose : 3
LOG : 358.70 360.11 1.4 Region : 4054
FDEPTH: 73 74 Gear cond.: 1
BDEPTH: 73 74 Validity : 1
Towing dir: 0° Wire out : 220 m Speed : 2.9 kn
Sorted : 23 Total catch: 22.59 Catch/hour: 46.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	17.86	517	38.73	422
Raja miraletus	12.15	33	26.34	
Sepia orbignyana	3.80	4	8.23	
Dentex congoensis	2.78	49	6.02	423
Chelidonichthys capensis	1.88	10	4.07	
Trigla lyra	1.12	8	2.43	
Alloteuthis africana	1.08	776	2.35	
Dasyatis margarita	1.04	2	2.26	
Fistularia petimba	0.96	2	2.08	
Citharus linguatula	0.80	24	1.73	
Uranoscopus polli	0.69	4	1.51	
Lagocephalus laevigatus	0.67	2	1.46	
Trachurus trecae	0.35	29	0.75	424
Cynoglossus canariensis	0.27	2	0.58	
Dentex barnardi	0.18	2	0.40	
Grammoplites gruveli	0.14	4	0.31	
Torpedo torpedo	0.12	2	0.27	
Pseudupeneus prayensis	0.08	2	0.18	
Anthias anthias	0.06	2	0.13	
Lepidotrigla carolae	0.04	0	0.09	
Saurida brasiliensis	0.04	16	0.09	
Total	46.12		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 144
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°56.03
start stop duration Lon E 12°54.06
TIME :11:23:19 11:53:54 31.0 (min) Purpose : 3
LOG : 364.59 366.28 1.7 Region : 4054
FDEPTH: 90 91 Gear cond.: 1
BDEPTH: 90 91 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 2.9 kn
Sorted : 59 Total catch: 59.09 Catch/hour: 114.37

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	38.32	956	33.51	427
Sepia officinalis hierredda	14.23	14	12.44	
Dentex angolensis	10.65	302	9.31	425
Chelidonichthys capensis	10.45	93	9.14	
Zeus faber	9.77	41	8.55	
Raja miraletus	8.23	14	7.19	
Pagellus bellottii	5.17	116	4.52	426
Fistularia petimba	4.90	10	4.28	
Trachurus trecae	2.96	192	2.59	428
Brachydeuterus auritus	1.43	15	1.25	429
Sphyraena guachancho	1.39	6	1.22	
Alloteuthis africana	1.24	631	1.08	
Dentex barnardi	1.08	6	0.95	
Pseudupeneus prayensis	0.85	10	0.74	
Trigla lyra	0.81	4	0.71	
Citharus linguatula	0.70	41	0.61	
Trichiurus lepturus	0.68	2	0.59	
Saurida brasiliensis	0.66	155	0.58	
Chaetodon hoefleri	0.27	2	0.24	
Serranus accraensis	0.23	4	0.20	
Uranoscopus polli	0.15	2	0.14	
Chaetodon marcellae	0.10	2	0.08	
BELONIDAE	0.10	6	0.08	
Total	114.37		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 145
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°38.67
start stop duration Lon E 12°45.45
TIME :13:59:20 14:29:34 30.2 (min) Purpose : 3
LOG : 383.94 385.47 1.5 Region : 4054
FDEPTH: 91 91 Gear cond.: 1
BDEPTH: 91 91 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.0 kn
Sorted : 127 Total catch: 126.83 Catch/hour: 251.65

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	127.58	1915	50.70	432
Lepidotrigla cadmani	47.72	321	18.96	
Raja miraletus	24.80	89	9.86	
Sepia officinalis hierredda	13.29	12	5.28	
Pagellus bellottii	11.71	167	4.65	431
Zeus faber	11.51	42	4.57	
Brachydeuterus auritus	4.11	28	1.63	
Fistularia petimba	3.93	10	1.56	
Alloteuthis africana	2.46	675	0.98	
Lagocephalus laevigatus	2.12	2	0.84	
Citharus linguatula	0.52	18	0.20	
Saurida brasiliensis	0.44	87	0.17	
Dentex angolensis	0.44	16	0.17	430
Trigla lyra	0.38	2	0.15	
Sphyraena sphyraena	0.36	2	0.14	
Trachurus trecae	0.16	8	0.06	
TRACHINIDAE	0.10	2	0.04	
Arnoglossus imperialis	0.04	2	0.02	
Total	251.65		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 146
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°40.75
start stop duration Lon E 12°37.16
TIME :15:51:16 16:21:53 30.6 (min) Purpose : 3
LOG : 394.61 396.10 1.5 Region : 4054
FDEPTH: 118 119 Gear cond.: 1
BDEPTH: 118 119 Validity : 1
Towing dir: 0° Wire out : 345 m Speed : 2.9 kn
Sorted : 143 Total catch: 142.61 Catch/hour: 279.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	90.82	433	32.50	434
Dentex barnardi	56.24	100	20.12	433
Pagellus bellottii	34.49	131	12.34	436
Dentex congoensis	25.96	357	9.29	435
Trigla lyra	18.91	110	6.77	
Dasyatis margarita	11.76	4	4.21	
Rhinobatos albomaculatus	10.97	4	3.93	
Zeus faber	5.53	18	1.98	
Dentex gibbosus	3.86	4	1.38	
Branchiostegus semifasciatus	3.06	4	1.09	
Brotula barbata	2.08	2	0.74	
Octopus vulgaris	2.02	2	0.72	
Trichiurus lepturus	1.96	2	0.70	
Erythrocles monodi	1.90	2	0.68	
Fistularia petimba	1.90	4	0.68	
Anthias anthias	1.70	6	0.61	
Chelidonichthys capensis	1.57	10	0.56	
Citharus linguatula	1.55	37	0.55	
Chaetodon hoefleri	1.35	10	0.48	
Sphyraena guachancho	0.57	2	0.20	
Lagocephalus laevigatus	0.45	2	0.16	
Sepia officinalis hierredda	0.24	2	0.08	
Ariomma bondi	0.18	2	0.06	
Monolene microstoma	0.16	14	0.06	
Saurida brasiliensis	0.14	31	0.05	
Bothus podas africanus	0.10	12	0.04	
Total	279.44		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 147
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°43.00
start stop duration Lon E 12°33.37
TIME :17:21:37 17:51:12 29.6 (min) Purpose : 3
LOG : 402.62 404.17 1.6 Region : 4054
FDEPTH: 266 273 Gear cond.: 1
BDEPTH: 266 273 Validity : 1
Towing dir: 0° Wire out : 810 m Speed : 3.1 kn
Sorted : 107 Total catch: 548.14 Catch/hour: 1111.47

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	901.16	68399	81.08	
Merluccius polli	94.29	2287	8.48	437
Chlorophthalmus atlanticus	38.08	1119	3.43	
Trichiurus lepturus	27.98	45	2.52	
Parapenaeus longirostris	16.18	2944	1.46	
GALATHEIDAE *	11.80	4051	1.06	
Pagellus bellottii	5.45	10	0.49	
MYCTOPHIDAE	3.65	1326	0.33	
Lophiodes kempi	2.86	14	0.26	
Bembrops heterurus	2.55	85	0.23	
Erythrocles monodi	1.87	2	0.17	
Pterothrissus belloci	1.70	12	0.15	
PARALEPIDIDAE	1.46	73	0.13	
Zenopsis conchifer	0.73	12	0.07	
Chascanopsetta lugubris	0.61	49	0.05	
Illex coindetii	0.49	12	0.04	
Gephyroberyx darwini	0.36	12	0.03	
Scorpaena sp.	0.16	0	0.01	
Malacocephalus occidentalis	0.12	12	0.01	
Total	1111.51		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 148
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°42.66
start stop duration Lon E 12°31.99
TIME :18:55:53 19:26:00 30.1 (min) Purpose : 3
LOG : 407.41 408.81 1.4 Region : 4054
FDEPTH: 377 406 Gear cond.: 1
BDEPTH: 377 406 Validity : 1
Towing dir: 0° Wire out : 1000 m Speed : 2.8 kn
Sorted : 49 Total catch: 418.29 Catch/hour: 833.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	546.07	14343	65.53	
Hymenocephalus italicus	65.19	1169	7.82	
Merluccius polli	33.36	271	4.00	438
Lophiodes kempi	30.48	34	3.66	
Gadella maraldi	27.43	594	3.29	
Chaunax pictus	27.26	1305	3.27	
Dibranchus atlanticus	16.42	1847	1.97	
Gadella imberbis	15.07	610	1.81	
Bathyuroconger vicinus	11.18	86	1.34	
Malacocephalus occidentalis	10.50	86	1.26	
Pontinus accraensis	8.64	18	1.04	
Todaropsis eblanae	8.13	1102	0.98	
Parapenaeus longirostris	8.13	1102	0.98	
Epigonus telescopus	4.91	153	0.59	
Synagrops microlepis	4.23	2930	0.51	
Chlorophthalmus atlanticus	4.06	86	0.49	
Nezumia aequalis	3.73	86	0.45	
Pterothrissus belloci	2.71	18	0.33	
MYCTOPHIDAE	2.03	2151	0.24	
Aristeus varidens	2.03	68	0.24	
Bathynectes piperitus	1.35	18	0.16	
PARALEPIDIDAE	0.34	18	0.04	
Total	833.24		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 149
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°46.87
start stop duration Lon E 12°31.78
TIME :21:16:11 21:44:02 27.9 (min) Purpose : 3
LOG : 413.84 415.13 1.3 Region : 4054
FDEPTH: 629 659 Gear cond.: 1
BDEPTH: 629 659 Validity : 1
Towing dir: 0° Wire out : 1530 m Speed : 2.8 kn
Sorted : 52 Total catch: 196.30 Catch/hour: 422.91

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	160.99	50213	38.07	
Hoplostethus cadenati	60.70	2111	14.35	
Yarrella blackfordi	54.67	1443	12.93	
Lamprogrammus exutus	37.48	468	8.86	
Merluccius polli	34.47	62	8.15	439
Stomias boa boa	19.91	567	4.71	
Stereomastis sp.	6.94	929	1.64	
Xenodermichthys copei	6.59	573	1.56	
Trichiurus lepturus	6.57	69	1.55	
Triplophos hemingi	6.48	687	1.53	
Dibranchus atlanticus	5.73	664	1.36	
Chaceon maritae	3.45	9	0.82	
Aristeus varidens, male	3.24	407	0.77	
Aristeus varidens, female	2.49	136	0.59	
MYCTOPHIDAE	2.19	60	0.52	
OMMASTREPHIDAE	1.81	9	0.43	
Bathyuroconger vicinus	1.58	60	0.37	
Gadella imberbis	1.36	45	0.32	
CARISTIIDAE	1.36	9	0.32	
SQUALIDAE	1.16	13	0.28	
Monomitopus metriostoma	0.98	90	0.23	
Malacocephalus occidentalis	0.75	15	0.18	
Laemonema laureysi	0.60	9	0.14	
Nemichthys scolopaceus	0.58	15	0.14	
Glyphus marsupialis	0.30	54	0.07	
Talismania longifilis	0.30	9	0.07	
Nezumia sp.	0.15	15	0.04	
Peristedion cataphractum	0.08	9	0.02	
Total	422.91		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 150
DATE :18/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°46.87
start stop duration Lon E 12°30.56
TIME :23:28:51 23:59:06 30.3 (min) Purpose : 3
LOG : 419.63 421.13 1.5 Region : 4054
FDEPTH: 751 743 Gear cond.: 1
BDEPTH: 751 743 Validity : 1
Towing dir: 0° Wire out : 1700 m Speed : 3.0 kn
Sorted : 41 Total catch: 150.56 Catch/hour: 298.63

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	115.24	31601	38.59	
Sea cucumbers	58.67	111	19.65	
Stereomastis sp.	39.57	2563	13.25	
Talismania longifilis	18.25	69	6.11	
Yarrella blackfordi	14.52	292	4.86	
MACROURIDAE	14.02	278	4.70	
Stomias boa boa	7.72	180	2.58	
Hoplostethus cadenati	5.77	56	1.93	
Aristeus varidens, female	4.17	175	1.39	
Bathyuroconger vicinus	3.75	36	1.26	
Gadella imberbis	3.27	133	1.10	
Dibranchus atlanticus	3.19	286	1.07	
SQUALIDAE	2.32	12	0.78	
Merluccius polli	1.51	2	0.50	
Melanonus zugmayeri	1.19	8	0.40	
Triplophos hemingi	1.19	133	0.40	
SYNAPHOBRANCHIDAE	1.11	22	0.37	
Halosaurus ovenii	0.63	8	0.21	
GEMPYLIDAE	0.63	14	0.21	
GALATHEIDAE *	0.42	222	0.14	
Aristeus varidens, male	0.42	36	0.14	
MYCTOPHIDAE	0.42	264	0.14	
Nemichthys scolopaceus	0.36	8	0.12	
Cataetyx laticeps	0.22	42	0.07	
S H R I M P S	0.08	50	0.03	
Total	298.63		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 151
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°35.15
start stop duration Lon E 12°47.15
TIME :05:40:39 06:10:53 30.2 (min) Purpose : 3
LOG : 443.12 444.51 1.4 Region : 4054
FDEPTH: 74 73 Gear cond.: 1
BDEPTH: 74 73 Validity : 1
Towing dir: 0° Wire out : 220 m Speed : 2.8 kn
Sorted : 138 Total catch: 137.84 Catch/hour: 273.49

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	170.34	5708	62.28	442
Pagellus bellottii	27.08	573	9.90	440
Raja miraletus	15.58	28	5.70	
Sphyraena sphyraena	12.70	60	4.64	
Trichiurus lepturus	7.78	4	2.84	
Sepia orbignyana	4.84	16	1.77	
Caranx crysos	4.60	4	1.68	
Lagocephalus laevigatus	3.73	6	1.36	
Galeoides decadactylus	3.49	10	1.28	
Rhinobatos albomaculatus	3.15	4	1.15	
Trachurus trecae	3.15	115	1.15	441
Trigla lyra	2.98	32	1.09	
Zeus faber	2.66	2	0.97	
Torpedo torpedo	2.46	4	0.90	
Dasyatis margarita	1.57	4	0.57	
Fistularia petimba	1.27	4	0.46	
Chelidonichthys capensis	1.25	0	0.46	
Sepia officinalis hierredda	1.07	4	0.39	
Dentex barnardi	0.75	6	0.28	
Octopus sp.	0.62	2	0.22	
Cynoglossus canariensis	0.56	2	0.20	
Pseudupeneus prayensis	0.52	2	0.19	
Decapterus rhonchus	0.48	8	0.17	
Pteroscion peli	0.36	2	0.13	
Sardinella aurita	0.20	6	0.07	
Saurida brasiliensis	0.10	26	0.04	
Serranus accraensis	0.10	2	0.04	
Citharus linguatula	0.08	2	0.03	
Monolene microstoma	0.04	4	0.01	
Total	273.49		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 152
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°36.58
start stop duration Lon E 12°55.17
TIME :07:26:45 07:55:51 29.1 (min) Purpose : 3
LOG : 453.21 454.67 1.5 Region : 4054
FDEPTH: 40 39 Gear cond.: 1
BDEPTH: 40 39 Validity : 1
Towing dir: 0° Wire out : 130 m Speed : 3.0 kn
Sorted : 142 Total catch: 141.73 Catch/hour: 292.33

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Seriola carpenteri	52.90	10	18.10	
Pagellus bellottii	48.26	268	16.51	443
Dentex barnardi	29.91	118	10.23	447
Pagrus caeruleostictus	25.37	60	8.68	446
Lutjanus goreensis	17.02	2	5.82	
Dasyatis margarita	16.71	41	5.72	
Rhinobatos albomaculatus	16.71	10	5.72	
Lithognathus mormyrus	14.95	33	5.12	
Pomadasys incisus	11.03	99	3.77	444
Pseudupeneus prayensis	10.44	120	3.57	
Raja miraletus	10.40	21	3.56	
Balistes sp.	9.96	14	3.41	
Pomadasys peroteti	8.37	12	2.86	445
Epinephelus aeneus	6.81	12	2.33	
Cynoglossus canariensis	3.30	12	1.13	
Brachydeuterus auritus	2.62	23	0.90	
Fistularia petimba	2.27	14	0.78	
Chilomycterus spinosus mauret.	2.10	8	0.72	
Chaetodon hoefleri	1.61	2	0.55	
Chaetodon robustus	0.58	10	0.20	
Syacium micrurum	0.47	6	0.16	
Sepia officinalis hierredda	0.35	2	0.12	
Sepia orbignyana	0.19	2	0.06	
Total	292.33		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 153
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°33.80
start stop duration Lon E 12°56.53
TIME :08:36:38 09:06:53 30.3 (min) Purpose : 3
LOG : 458.27 459.96 1.7 Region : 4054
FDEPTH: 29 28 Gear cond.: 1
BDEPTH: 29 28 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.4 kn
Sorted : 270 Total catch: 270.03 Catch/hour: 535.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	276.69	2261	51.66	
Lichia amia	61.88	4	11.55	
Pagrus caeruleostictus	46.12	115	8.61	448
Pagellus bellottii	27.87	153	5.20	449
Drepane africana	14.78	34	2.76	
Pagrus africanus	14.78	18	2.76	
Selene dorsalis	11.60	99	2.17	
Brachydeuterus auritus	9.90	89	1.85	
Galeoides decadactylus	9.62	28	1.80	
Pseudupeneus prayensis	5.79	42	1.08	
Pomadasys incisus	5.73	87	1.07	
Plectorhinchus mediterraneus	5.65	4	1.06	
Sardinella maderensis	5.59	10	1.04	
Lithognathus mormyrus	4.24	10	0.79	
Decapterus rhonchus	4.03	93	0.75	
Rhizoprionodon acutus	3.77	2	0.70	
Epinephelus aeneus	3.27	2	0.61	
Pomadasys peroteti	3.19	6	0.60	
Raja miraletus	2.72	6	0.51	
Dentex barnardi	2.62	12	0.49	
Caranx crysos	2.26	2	0.42	
Bodianus speciosus	1.90	2	0.36	
Dasyatis margarita	1.79	2	0.33	
Rhinobatos albomaculatus	1.57	2	0.29	
Alectis alexandrinus	1.21	4	0.23	
Panulirus regius	1.09	2	0.20	
Callinectes amnicola	0.99	4	0.19	
Balistes sp.	0.95	2	0.18	
Balistes punctatus	0.93	2	0.17	
Arius parkii	0.87	2	0.16	
Centrarchops chapini	0.87	2	0.16	
Pomadasys rogeri	0.63	2	0.12	
Trichiurus lepturus	0.36	2	0.07	
Chaetodon robustus	0.32	2	0.06	
Total	535.60		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 154
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°15.20
start stop duration Lon E 12°46.49
TIME :12:01:02 12:30:32 29.5 (min) Purpose : 3
LOG : 479.97 481.56 1.6 Region : 4054
FDEPTH: 27 28 Gear cond.: 1
BDEPTH: 27 28 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.2 kn
Sorted : 96 Total catch: 96.05 Catch/hour: 195.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagrus caeruleostictus	58.29	161	29.83	451
Dentex barnardi	25.03	26	12.81	450
Pagellus bellottii	23.50	96	12.02	452
Balistes punctatus	19.63	22	10.05	
Scomberomorus tritor	17.50	8	8.95	
Rhinobatos albomaculatus	12.21	2	6.25	
Fistularia petimba	5.94	28	3.04	
Pomadasys peroteti	5.57	4	2.85	
Aluterus scriptus	5.57	6	2.85	
Zanobatus shoenleinii	4.33	6	2.22	
Epinephelus aeneus	4.29	4	2.20	
Bodianus speciosus	3.87	6	1.98	
Albula vulpes	1.75	2	0.90	
Chaetodon marcellae	1.38	18	0.71	
Pseudupeneus prayensis	1.32	8	0.68	
Scyllarides herklotsii	1.16	2	0.59	
Lethrinus atlanticus	1.14	2	0.58	
Chilomycterus spinosus mauret.	0.81	2	0.42	
Arius parkii	0.73	2	0.37	
Panulirus regius	0.59	2	0.30	
Chloroscombrus chrysurus	0.55	4	0.28	
Scorpaena stephanica	0.24	4	0.12	
Total	195.42		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 155
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°16.68
start stop duration Lon E 12°41.48
TIME :13:26:01 13:56:08 30.1 (min) Purpose : 3
LOG : 487.80 489.27 1.5 Region : 4054
FDEPTH: 45 45 Gear cond.: 1
BDEPTH: 45 45 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 2.9 kn
Sorted : 101 Total catch: 101.19 Catch/hour: 201.57

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex barnardi	68.33	92	33.90	454
Pagrus caeruleostictus	67.33	197	33.40	455
Lutjanus agennes	13.35	0	6.62	
Pagellus bellottii	8.57	52	4.25	453
Aluterus scriptus	7.11	8	3.53	
Epinephelus aeneus	5.30	2	2.63	
Pagrus auriga	3.47	2	1.72	
Rhinobatos albomaculatus	3.11	2	1.54	
Balistes punctatus	2.95	2	1.46	
Chaetodon hoefleri	2.81	14	1.39	
Bodianus speciosus	2.61	4	1.29	
Scomberomorus tritor	2.17	2	1.08	
Raja miraletus	1.81	4	0.90	
Pseudupeneus prayensis	1.63	12	0.81	
Epinephelus goreensis	1.57	6	0.78	
Trachinus radiatus	1.53	6	0.76	
Chaetodon robustus	1.39	20	0.69	
Panulirus regius	1.25	2	0.62	
Boops boops	1.22	237	0.60	
Acanthurus monroviae	1.12	2	0.55	
Fistularia petimba	1.04	6	0.51	
Uranoscopus polli	0.58	2	0.29	
Chelidonichthys lastoviza	0.46	2	0.23	
Xyrichtys novacula	0.36	4	0.18	
Cephalopholis taeniops	0.22	2	0.11	
Bothus podas africanus	0.18	2	0.09	
Chromis limbatus	0.08	4	0.04	
Chromis cadenati	0.04	2	0.02	
Total	201.57		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 156
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°19.81
start stop duration Lon E 12°38.47
TIME :14:56:16 15:26:12 29.9 (min) Purpose : 3
LOG : 494.66 496.17 1.5 Region : 4054
FDEPTH: 63 66 Gear cond.: 1
BDEPTH: 63 66 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 3.0 kn
Sorted : 68 Total catch: 67.68 Catch/hour: 135.63

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	56.91	703	41.96	456
Trichiurus lepturus	24.55	54	18.10	
Alloteuthis africana	8.16	5429	6.01	
Raja miraletus	7.37	16	5.44	
Fistularia petimba	5.09	18	3.75	
Dactylopterus volitans	4.85	14	3.58	
Pagrus caeruleostictus	4.19	12	3.09	
Caranx crysos	4.03	4	2.97	
Seriola carpenteri	2.79	4	2.05	
Dentex barnardi	2.12	14	1.57	457
Chelidonichthys gabonensis	1.94	10	1.43	
Dentex gibbosus	1.80	2	1.33	
Rhinobatos albomaculatus	1.74	2	1.29	
Pseudupeneus prayensis	1.58	16	1.17	
Zeus faber	1.50	4	1.11	
Sepia orbignyana	1.24	4	0.92	
Epinephelus aeneus	1.08	2	0.80	
Anthias anthias	0.80	66	0.59	
Trachinus radiatus	0.62	2	0.46	
Chaetodon hoefleri	0.60	4	0.44	
Cephalopholis taeniops	0.52	2	0.38	
Trachurus trecae	0.46	2	0.34	
Lagocephalus laevigatus	0.44	2	0.33	
Chilomycterus spinosus mauret.	0.42	2	0.31	
Pagrus auriga	0.40	2	0.30	
Citharus linguatula	0.38	2	0.28	
Arnoglossus imperialis	0.02	6	0.01	
Total	135.63		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 157
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°23.53
start stop duration Lon E 12°34.10
TIME :16:33:54 17:07:36 33.7 (min) Purpose : 3
LOG : 503.22 504.95 1.7 Region : 4054
FDEPTH: 91 91 Gear cond.: 1
BDEPTH: 91 91 Validity : 1
Towing dir: 0° Wire out : 240 m Speed : 3.1 kn
Sorted : 68 Total catch: 67.18 Catch/hour: 119.61

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	31.51	420	26.35	458
Epinephelus goreensis	19.41	2	16.23	
Dentex angolensis	15.04	132	12.58	459
Squatina oculata	13.26	5	11.09	
Zeus faber	12.82	43	10.72	
Trigla lyra	6.37	41	5.33	
Sepia orbignyana	4.81	5	4.02	
Raja miraletus	4.38	7	3.66	
Fistularia petimba	3.03	7	2.53	
Rhinobatos albomaculatus	2.05	2	1.71	
Pagellus bellottii	1.44	16	1.21	460
Rhizoprionodon acutus	1.34	2	1.12	
Trichiurus lepturus	0.82	2	0.68	
Dentex barnardi	0.69	4	0.58	
Chaetodon hoefleri	0.57	5	0.48	
Brachydeuterus auritus	0.53	5	0.45	
Chelidonichthys capensis	0.39	12	0.33	
Saurida brasiliensis	0.37	132	0.31	
Citharus linguatula	0.32	9	0.27	
Pseudupeneus prayensis	0.25	2	0.21	
Trachurus trecae	0.20	9	0.16	
Total	119.61		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 158
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°24.04
start stop duration Lon E 12°26.97
TIME :18:13:04 18:43:04 30.0 (min) Purpose : 3
LOG : 512.91 514.43 1.5 Region : 4054
FDEPTH: 119 119 Gear cond.: 1
BDEPTH: 119 119 Validity : 1
Towing dir: 0° Wire out : 330 m Speed : 3.0 kn
Sorted : 137 Total catch: 137.38 Catch/hour: 274.67

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brotula barbata	44.49	46	16.20	
Trachurus trecae	39.59	2217	14.41	462
Trigla lyra	38.09	366	13.87	
Dentex angolensis	37.59	164	13.68	461
Umbrina canariensis	28.99	118	10.55	463
Dentex congoensis	13.40	252	4.88	464
Chelidonichthys capensis	13.00	84	4.73	
Raja miraletus	12.30	16	4.48	
Citharus linguatula	11.14	376	4.05	
Parapandalus narval	6.46	1835	2.35	
NETTASTOMATIDAE	5.24	388	1.91	
Scorpaena angolensis	4.70	12	1.71	
Spicara alta	4.04	146	1.47	
Scyliorhinus cervigoni	3.70	2	1.35	
Zeus faber	2.16	6	0.79	
CONGRIDAE	2.16	22	0.79	
Squatina oculata	2.02	2	0.74	
Monolene microstoma	1.28	124	0.47	
Chaetodon hoefleri	1.04	8	0.38	
Uranoscopus polli	0.92	8	0.33	
Brotula sp.	0.66	4	0.24	
Octopus vulgaris	0.48	4	0.17	
Brachydeuterus auritus	0.40	2	0.15	
Boops boops	0.36	10	0.13	
Physiculus huloti	0.34	46	0.12	
Saurida brasiliensis	0.10	18	0.04	
Ophidion sp.	0.06	12	0.02	
Total	274.67		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 159
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°27.83
start stop duration Lon E 12°17.67
TIME :20:41:29 21:11:26 30.0 (min) Purpose : 3
LOG : 526.10 527.57 1.5 Region : 4054
FDEPTH: 427 435 Gear cond.: 1
BDEPTH: 427 435 Validity : 1
Towing dir: 0° Wire out : 1200 m Speed : 2.9 kn
Sorted : 51 Total catch: 300.43 Catch/hour: 601.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	317.03	100397	52.67	
Squatina oculata	66.11	2	10.98	
Hymenocephalus italicus	53.19	5639	8.84	
Merluccius polli	25.04	130	4.16	465
Dibranchus atlanticus	19.53	1553	3.25	
Trichiurus lepturus	18.03	571	3.00	
Malacocephalus occidentalis	15.73	150	2.61	
Gadella maraldi	13.82	501	2.30	
Chaunax pictus	10.82	100	1.80	
Halosaurus ovenii	8.01	100	1.33	
Nezumia aequalis	7.11	150	1.18	
Gadella imberbis	6.51	220	1.08	
Chaceon maritae	6.01	30	1.00	
Pterothrissus belloci	5.71	30	0.95	
Aristeus varidens, female	4.51	501	0.75	
Plesiopenaeus edwardsianus	4.41	190	0.73	
Maja squinado	4.07	2	0.68	
Bathyuroconger vicinus	2.80	40	0.47	
Stereomastis sp.	2.30	210	0.38	
Parapenaeus longirostris	2.10	230	0.35	
Bathynectes piperitus	2.00	30	0.33	
Stomias boa boa	1.80	40	0.30	
Chlorophthalmus atlanticus	1.30	30	0.22	
Yarrella blackfordi	1.20	40	0.20	
Aristeus varidens, male	1.10	130	0.18	
Epigonus telescopus	0.80	10	0.13	
Todaropsis eblanae	0.50	10	0.08	
NETTASTOMATIDAE	0.30	10	0.05	
Total	601.86		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 160
DATE :19/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°29.41
start stop duration Lon E 12°15.62
TIME :22:32:57 23:03:15 30.3 (min) Purpose : 3
LOG : 532.48 533.89 1.4 Region : 4054
FDEPTH: 534 533 Gear cond.: 1
BDEPTH: 534 533 Validity : 1
Towing dir: 0° Wire out : 1400 m Speed : 2.8 kn
Sorted : 49 Total catch: 224.13 Catch/hour: 443.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	261.39	41497	58.89	
Merluccius polli	58.42	125	13.16	466
Yarrella blackfordi	29.39	752	6.62	
Stereomastis sp.	21.47	1537	4.84	
Triplophos hemingi	16.79	3160	3.78	
Lamprogrammus exutus	9.98	40	2.25	
Aristeus varidens, female	8.55	570	1.93	
OMMASTREPHIDAE	6.10	40	1.37	
Dibranchus atlanticus	5.39	554	1.21	
Gadella imberbis	3.96	150	0.89	
Trichiurus lepturus	3.41	127	0.77	
Stomias boa boa	2.93	71	0.66	
Hoplostethus cadenati	2.77	103	0.62	
Laemonema laureysi	2.14	24	0.48	
Chaunax sp.	1.82	8	0.41	
Bathyuroconger vicinus	1.58	190	0.36	
SQUALIDAE	1.25	8	0.28	
Aristeus varidens, male	0.95	111	0.21	
Malacocephalus occidentalis	0.71	8	0.16	
Cataetyx laticeps	0.63	135	0.14	
Coloconger cadenati	0.63	8	0.14	
Luciobrotula bartschi	0.55	8	0.12	
Cubiceps sp.	0.48	16	0.11	
Malacocephalus sp.	0.48	48	0.11	
S H R I M P S	0.48	127	0.11	
Halosaurus ovenii	0.48	16	0.11	
SOLEIDAE	0.32	8	0.07	
Synaphobranchus kaupii	0.24	24	0.05	
Xenodermichthys copei	0.16	24	0.04	
Callinectes sp.	0.16	8	0.04	
MYCTOPHIDAE	0.08	8	0.02	
Diceratias pileatus	0.08	8	0.02	
Ophidion sp.	0.08	8	0.02	
Total	443.82		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 161
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°33.77
start stop duration Lon E 12°12.95
TIME :01:07:18 01:37:10 29.9 (min) Purpose : 3
LOG : 543.43 544.92 1.5 Region : 4054
FDEPTH: 727 731 Gear cond.: 1
BDEPTH: 727 731 Validity : 1
Towing dir: 0° Wire out : 1800 m Speed : 3.0 kn
Sorted : 40 Total catch: 161.95 Catch/hour: 325.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarrella blackfordi	69.10	1687	21.24	
Stereomastis sp.	51.02	3680	15.68	
Lamprogrammus exutus	50.62	161	15.56	
MACROURIDAE	44.59	980	13.71	
Nematocarcinus africanus	29.73	8284	9.14	
Hoplostethus cadenati	20.09	522	6.17	
Talismania longifilis	10.93	112	3.36	
Stomias boa boa	8.28	185	2.54	
Triplophos hemingi	7.39	884	2.27	
Aristeus varidens, female	6.91	265	2.12	
Xenodermichthys copei	6.19	249	1.90	
Gadella imberbis	3.54	241	1.09	
Bathyuroconger vicinus	3.45	56	1.06	
Merluccius polli	3.21	4	0.99	
Chaceon maritae	2.03	4	0.62	
SQUALIDAE	1.97	8	0.61	
Dibranchus atlanticus	1.77	96	0.54	
Glyphus marsupialis	1.21	96	0.37	
Malacocephalus occidentalis	0.88	8	0.27	
Raja sp.	0.56	40	0.17	
Halosaurus ovenii	0.56	8	0.17	
Diceratias pileatus	0.48	56	0.15	
Aristeus varidens, male	0.48	48	0.15	
GALATHEIDAE *	0.24	129	0.07	
NEPHROPIDAE	0.08	8	0.02	
Total	325.31		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 162
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°5.48
start stop duration Lon E 12°36.51
TIME :05:40:59 06:11:02 30.1 (min) Purpose : 3
LOG : 580.85 582.26 1.4 Region : 4054
FDEPTH: 40 39 Gear cond.: 1
BDEPTH: 40 39 Validity : 1
Towing dir: 0° Wire out : 140 m Speed : 2.8 kn
Sorted : 47 Total catch: 46.86 Catch/hour: 93.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	54.91	240	58.69	467
Pseudupeneus prayensis	12.94	56	13.83	
Lagocephalus laevigatus	9.78	24	10.46	
Pagrus caeruleostictus	7.51	24	8.02	468
Trachinocephalus myops	3.69	10	3.95	
Xyrichtys novacula	2.58	18	2.75	
Syacium micrurum	0.98	8	1.05	
Chelidonichthys capensis	0.90	4	0.96	
Trachinus armatus	0.28	2	0.30	
Total	93.56		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 163
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°6.76
start stop duration Lon E 12°31.13
TIME :07:22:16 07:52:14 30.0 (min) Purpose : 3
LOG : 589.30 590.59 1.3 Region : 4054
FDEPTH: 50 49 Gear cond.: 1
BDEPTH: 50 49 Validity : 1
Towing dir: 0° Wire out : 160 m Speed : 2.6 kn
Sorted : 38 Total catch: 38.08 Catch/hour: 76.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Aluterus scriptus	15.42	18	20.22	
Sepia officinalis hierredda	11.47	6	15.05	
Epinephelus goreensis	10.11	2	13.26	
Pagrus caeruleostictus	5.61	14	7.35	470
Dentex barnardi	4.74	10	6.22	469
Rhinobatos albomaculatus	4.56	4	5.99	
Fistularia petimba	3.28	20	4.31	
Dactylopterus volitans	3.10	4	4.07	
Pagrus caeruleostictus	2.74	4	3.60	
Helicolenus dactylopterus	2.12	16	2.78	
Rypticus saponaceus	2.06	22	2.70	
Chilomycterus spinosus mauret.	1.76	8	2.31	
Trachinus arenatus	1.64	8	2.15	
Epinephelus aeneus	1.54	2	2.02	
Pseudupeneus prayensis	1.32	10	1.73	
Chelidonichthys lastoviza	1.20	6	1.58	
Zeus faber	1.14	2	1.50	
Syacium micrurum	0.68	4	0.89	
Chaetodon hoefleri	0.66	4	0.87	
Cephalopholis taeniops	0.60	2	0.79	
Uranoscopus polli	0.36	2	0.47	
Parakuhlia macrophthalmus	0.10	2	0.13	
Total	76.24		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 164
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°11.15
start stop duration Lon E 12°17.63
TIME :09:53:03 10:23:13 30.2 (min) Purpose : 3
LOG : 607.35 608.91 1.6 Region : 4054
FDEPTH: 120 119 Gear cond.: 1
BDEPTH: 120 119 Validity : 1
Towing dir: 0° Wire out : 360 m Speed : 3.1 kn
Sorted : 111 Total catch: 111.05 Catch/hour: 220.85

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	140.40	7020	63.57	471
Dentex angolensis	19.69	123	8.91	473
Trigla lyra	17.80	131	8.06	
Euthynnus alletteratus	9.05	8	4.10	
Squatina aculeata	8.85	6	4.01	
Trichiurus lepturus	4.87	10	2.21	
Sepia orbignyana	4.63	4	2.10	
Fistularia petimba	2.88	10	1.31	
Zeus faber	2.27	8	1.03	
Brotula barbata	2.09	2	0.95	
Sarda sarda	1.61	2	0.73	
Pterothrissus belloci	1.45	10	0.66	
Raja miraletus	1.41	2	0.64	
Brachydeuterus auritus	1.31	10	0.59	
Dentex congoensis	0.82	26	0.37	472
Citharus linguatula	0.76	14	0.34	
Saurida brasiliensis	0.34	89	0.15	
Illex coindetii	0.24	20	0.11	
Chaetodon marcellae	0.20	2	0.09	
Cynoglossus canariensis	0.18	10	0.08	
Total	220.85		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 165
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°15.20
start stop duration Lon E 12°8.91
TIME :12:09:22 12:39:15 29.9 (min) Purpose : 3
LOG : 620.80 622.32 1.5 Region : 4054
FDEPTH: 236 233 Gear cond.: 1
BDEPTH: 236 233 Validity : 1
Towing dir: 0° Wire out : 580 m Speed : 3.1 kn
Sorted : 52 Total catch: 187.98 Catch/hour: 377.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	203.75	12646	54.00	
Dentex angolensis	66.44	187	17.61	474
Brotula barbata	29.91	26	7.93	
Zenopsis conchifer	21.78	58	5.77	
Pterothrissus belloci	14.01	137	3.71	
Trichiurus lepturus	8.83	66	2.34	
Caelorinchus coelorhincus	6.22	167	1.65	
Parapenaeus longirostris,femal	4.32	719	1.14	
Todaropsis eblanae	3.67	36	0.97	
Bembrops heterurus	3.31	40	0.88	
Parapenaeus longirostris, male	3.27	849	0.87	
Raja miraletus	2.81	6	0.74	
Torpedo torpedo	2.37	6	0.63	
Zeus faber	2.21	6	0.59	
Illex coindetii	1.67	26	0.44	
Chlorophthalmus atlanticus	1.30	151	0.35	
Citharus linguatula	0.80	80	0.21	
Trachurus trecae	0.40	20	0.11	
Merluccius polli	0.26	10	0.07	
Total	377.34		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 166
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°55.89
start stop duration Lon E 12°13.19
TIME :14:50:31 15:20:11 29.7 (min) Purpose : 3
LOG : 641.60 643.19 1.6 Region : 4054
FDEPTH: 84 84 Gear cond.: 1
BDEPTH: 84 84 Validity : 1
Towing dir: 0° Wire out : 240 m Speed : 3.2 kn
Sorted : 100 Total catch: 99.79 Catch/hour: 201.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	64.21	267	31.82	475
Dentex congoensis	35.45	340	17.57	499
Pagellus bellottii	33.16	279	16.43	476
Raja miraletus	18.10	32	8.97	
Priacanthus arenatus	9.65	16	4.78	
Epinephelus aeneus	7.79	2	3.86	
Pagrus caeruleostictus	5.48	14	2.72	
Zeus faber	4.29	14	2.12	
Sepia orbignyana	3.76	2	1.86	
Sphyraena guachancho	3.09	12	1.53	
Trigla lyra	2.73	22	1.35	
Pomadasys incisus	2.61	14	1.29	
Torpedo torpedo	2.37	4	1.17	
Fistularia petimba	2.29	10	1.13	
Trichiurus lepturus	1.09	2	0.54	
Cynoglossus canariensis	0.97	4	0.48	
Zenopsis conchifer	0.87	2	0.43	
Illex coindetii	0.83	8	0.41	
Dentex barnardi	0.79	2	0.39	
Chelidonichthys capensis	0.77	4	0.38	
Chaetodon hoefleri	0.67	4	0.33	
Pseudupeneus prayensis	0.40	2	0.20	
Trachurus trecae	0.38	2	0.19	
Citharus linguatula	0.06	2	0.03	
Total	201.80		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 167
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°56.84
start stop duration Lon E 12°10.87
TIME :16:04:09 16:34:19 30.2 (min) Purpose : 3
LOG : 647.27 648.83 1.6 Region : 4054
FDEPTH: 90 90 Gear cond.: 1
BDEPTH: 90 90 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.1 kn
Sorted : 36 Total catch: 35.94 Catch/hour: 71.47

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	18.50	310	25.88	479
Dentex angolensis	8.87	86	12.41	477
Raja miraletus	8.37	16	11.71	
Sepia orbignyana	5.13	4	7.18	
Trichiurus lepturus	4.41	8	6.18	
Chelidonichthys capensis	3.90	24	5.45	
Priacanthus arenatus	3.16	6	4.42	
Pagellus bellottii	3.08	22	4.31	478
Rhizoprionodon acutus	3.02	2	4.23	
Fistularia petimba	2.74	8	3.84	
Squatina oculata	2.45	2	3.42	
Zeus faber	2.17	16	3.03	
Brotula barbata	1.89	12	2.64	
Rhinobatos albomaculatus	1.37	2	1.92	
Dentex barnardi	0.93	4	1.31	
Pagrus caeruleostictus	0.64	2	0.89	
Pseudupeneus prayensis	0.42	4	0.58	
Trigla lyra	0.42	4	0.58	
Total	71.47		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 168
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°5.35
start stop duration Lon E 11°56.08
TIME :19:09:54 19:37:30 27.6 (min) Purpose : 3
LOG : 668.53 669.83 1.3 Region : 4054
FDEPTH: 314 313 Gear cond.: 1
BDEPTH: 314 313 Validity : 1
Towing dir: 0° Wire out : 900 m Speed : 2.8 kn
Sorted : 66 Total catch: 178.85 Catch/hour: 388.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	192.72	4115	49.57	
Synagrops microlepis	46.30	1937	11.91	
Squatina oculata	20.00	2	5.14	
Merluccius polli	19.04	307	4.90	480
Pterothrissus belloci	17.22	130	4.43	
Pontinus accraensis	16.63	189	4.28	
Parasudis sp.	13.37	241	3.44	
Gadella maraldi	10.50	261	2.70	
Malacocephalus occidentalis	9.59	98	2.47	
GALATHEIDAE *	8.28	867	2.13	
Gadella imberbis	7.30	202	1.88	
Nezumia aequalis	4.17	91	1.07	
Parapenaeus longirostris,femal	4.04	580	1.04	
MYCTOPHIDAE	3.07	3293	0.79	
Trichiurus lepturus	3.00	143	0.77	
Bathynectes piperitus	2.22	26	0.57	
Lepidotrigla cadmani	2.22	20	0.57	
Peristedion cataphractum	2.15	143	0.55	
Chaceon maritae	1.76	7	0.45	
Parapenaeus longirostris, male	1.70	163	0.44	
Chascanopsetta lugubris	1.57	13	0.40	
Lophius sp.	0.78	26	0.20	
NETTASTOMATIDAE	0.52	7	0.13	
Dibranchus atlanticus	0.46	39	0.12	
Raja alba	0.20	13	0.05	
Total	388.80		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 169
DATE :20/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°19.44
start stop duration Lon E 12°3.42
TIME :21:57:29 22:27:26 30.0 (min) Purpose : 3
LOG : 685.22 686.71 1.5 Region : 4054
FDEPTH: 426 416 Gear cond.: 1
BDEPTH: 426 416 Validity : 1
Towing dir: 0° Wire out : 1200 m Speed : 3.0 kn
Sorted : 48 Total catch: 120.90 Catch/hour: 242.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hymenocephalus italicus	34.06	3862	14.06	
Nematocarcinus africanus	32.05	12130	13.23	
Merluccius polli	24.84	110	10.26	481
Laemonema laureysi	22.64	2019	9.35	
Calappa sp.	22.30	1683	9.21	
Trichiurus lepturus	21.44	811	8.85	
Chaunax pictus	21.04	411	8.68	
Dibranchus atlanticus	11.78	1442	4.86	
Aristeus varidens, female	6.81	647	2.81	
Malacocephalus occidentalis	6.51	46	2.69	
Parapenaeus longirostris,femal	6.31	731	2.61	
Callinectes sp.	4.81	110	1.99	
OMMASTREPHIDAE	3.81	20	1.57	
Lophius sp.	3.51	10	1.45	
Parapandalus narval	2.76	461	1.14	
Aristeus varidens, male	2.70	341	1.12	
Bathyuroconger vicinus	2.26	30	0.93	
Ophisurus serpens	1.86	96	0.77	
Gadella imberbis	1.60	60	0.66	
Halosaurus ovenii	1.50	66	0.62	
Chaceon maritae	1.44	4	0.60	
MYCTOPHIDAE	1.26	1008	0.52	
Chlorophthalmus atlanticus	1.20	26	0.50	
Peristedion cataphractum	0.96	50	0.40	
Nezumia micronychodon	0.70	6	0.29	
Coloconger cadenati *	0.50	16	0.21	
SQUALIDAE	0.40	4	0.17	
Caelorinchus coelorhincus	0.30	10	0.12	
Pontinus leda	0.26	6	0.11	
Nezumia aequalis	0.16	10	0.07	
Solenocera africana	0.16	16	0.07	
Setarches guentheri	0.10	6	0.04	
GALATHEIDAE *	0.10	16	0.04	
Parapenaeus longirostris, male	0.06	6	0.02	
Total	242.20		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 170
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°21.60
start stop duration Lon E 12°1.84
TIME :00:06:51 00:36:52 30.0 (min) Purpose : 3
LOG : 694.01 695.51 1.5 Region : 4054
FDEPTH: 525 536 Gear cond.: 1
BDEPTH: 525 536 Validity : 1
Towing dir: 0° Wire out : 1300 m Speed : 3.0 kn
Sorted : 22 Total catch: 78.37 Catch/hour: 156.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Nematocarcinus africanus	45.57	9684	29.09	
Lamprogrammus exutus	25.72	60	16.42	
Merluccius polli	23.88	52	15.25	482
Yarrella blackfordi	18.17	438	11.60	
Stereomastis sp.	13.79	1037	8.80	
Raja sp.	5.76	4	3.67	
Aristeus varidens, female	3.78	168	2.41	
Stomias boa boa	3.12	66	1.99	
Cryptopsaras couesii	2.22	6	1.42	
Triplophos hemingi	1.98	252	1.26	
Hoplostethus cadenati	1.68	66	1.07	
Dibranchus atlanticus	1.44	216	0.92	
Gadella imberbis	1.38	102	0.88	
Trichiurus lepturus	1.26	60	0.80	
OMMASTREPHIDAE	1.08	6	0.69	
Chaunax sp.	0.84	6	0.54	
SQUALIDAE	0.78	12	0.50	
Caelorinchus coelorhincus	0.72	12	0.46	
Conger conger	0.54	36	0.34	
Laemonema laureysi	0.54	6	0.34	
Aristeus varidens, male	0.54	72	0.34	
Halosaurus ovenii	0.48	18	0.31	
Xenodermichthys copei	0.36	60	0.23	
Callinectes sp.	0.36	6	0.23	
SERGESTIDAE	0.24	42	0.15	
SOLEIDAE	0.18	6	0.11	
MYCTOPHIDAE	0.12	84	0.08	
CARAPIDAE	0.12	6	0.08	
Total	156.64		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 171
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°9.64
start stop duration Lon E 11°51.07
TIME :02:58:26 03:28:26 30.0 (min) Purpose : 3
LOG : 710.33 711.81 1.5 Region : 4054
FDEPTH: 636 643 Gear cond.: 1
BDEPTH: 636 643 Validity : 1
Towing dir: 0° Wire out : 1550 m Speed : 3.0 kn
Sorted : 40 Total catch: 119.11 Catch/hour: 238.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarrella blackfordi	50.00	1240	20.99	
Lamprogrammus exutus	42.96	232	18.03	
Triplophos hemingi	33.12	4448	13.90	
Hoplostethus cadenati	29.20	1104	12.26	
Nematocarcinus africanus	28.48	5016	11.96	
SQUALIDAE	10.40	26	4.37	
Chlamydoselachus anguineus	8.90	2	3.74	
Nezumia aequalis	5.44	104	2.28	
Chaceon maritae	4.34	10	1.82	
Aristeus varidens	4.24	328	1.78	
Stomias affinis	4.16	88	1.75	
Gadella imberbis	3.52	216	1.48	
Merluccius polli	3.30	6	1.39	
Synaphobranchus kaupii	1.68	32	0.71	
Trichiurus lepturus	1.60	32	0.67	
Malacocephalus occidentalis	1.52	16	0.64	
Chaunax pictus	1.36	8	0.57	
Xenodermichthys copei	1.20	88	0.50	
Raja sp.	1.20	16	0.50	
Bathyuroconger vicinus	0.64	32	0.27	
Coloconger cadenati	0.48	16	0.20	
Halosaurus ovenii	0.48	8	0.20	
Total	238.22		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 172
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°4.48
start stop duration Lon E 11°56.57
TIME :05:45:37 06:15:55 30.3 (min) Purpose : 3
LOG : 722.08 723.35 1.3 Region : 4054
FDEPTH: 267 273 Gear cond.: 1
BDEPTH: 267 273 Validity : 1
Towing dir: 0° Wire out : 780 m Speed : 2.5 kn
Sorted : 157 Total catch: 843.97 Catch/hour: 1671.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	1288.21	71279	77.06	
Parapenaeus longirostris	99.14	16764	5.93	
Chlorophthalmus atlanticus	62.97	2498	3.77	
Dentex angolensis	46.85	111	2.80	484
Merluccius polli	44.69	1353	2.67	485
Zenopsis conchifer	25.91	40	1.55	
Pterothrissus belloci	24.60	77	1.47	
Bembrops greyi	20.60	438	1.23	
MYCTOPHIDAE	11.85	1416	0.71	
Pontinus accraensis	11.33	155	0.68	
Brotula barbata	10.16	12	0.61	
GALATHEIDAE *	6.95	1147	0.42	
Bembrops heterurus	4.12	103	0.25	
Trichiurus lepturus	4.04	6	0.24	
CONGRIDAE	2.71	40	0.16	
Nezumia aequalis	2.71	103	0.16	
Miracorvina angolensis	2.54	2	0.15	
Peristedion cataphractum	1.94	65	0.12	
Dentex macrophthalmus	0.53	2	0.03	
Total	1671.86		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 173
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°4.25
start stop duration Lon E 11°59.94
TIME :07:27:55 07:57:37 29.7 (min) Purpose : 3
LOG : 728.62 730.11 1.5 Region : 4054
FDEPTH: 153 151 Gear cond.: 1
BDEPTH: 153 151 Validity : 1
Towing dir: 0° Wire out : 450 m Speed : 3.0 kn
Sorted : 51 Total catch: 50.69 Catch/hour: 102.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	51.52	210	50.31	486
Brotula barbata	11.31	8	11.05	
Oxynotus centrina	10.00	2	9.77	
Trigla lyra	7.47	65	7.30	
Trichiurus lepturus	6.44	8	6.29	
Zenopsis conchifer	3.96	6	3.87	
Citharus linguatula	2.06	40	2.01	
Illex coindetii	1.92	44	1.87	
Priacanthus arenatus	1.41	2	1.38	
Raja miraletus	1.33	2	1.30	
Zeus faber	1.07	6	1.05	
Dentex congoensis	0.93	14	0.91	
Saurida brasiliensis	0.75	202	0.73	
Uranoscopus polli	0.63	4	0.61	
Peristedion cataphractum	0.55	12	0.53	
Pterothrissus belloci	0.48	4	0.47	
Sepia officinalis hierredda	0.32	2	0.32	
Raja alba	0.24	2	0.24	
Total	102.40		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 174
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°1.31
start stop duration Lon E 12°3.48
TIME :08:59:44 09:29:32 29.8 (min) Purpose : 3
LOG : 736.21 737.54 1.3 Region : 4054
FDEPTH: 119 121 Gear cond.: 1
BDEPTH: 119 121 Validity : 1
Towing dir: 0° Wire out : 360 m Speed : 2.7 kn
Sorted : 104 Total catch: 327.96 Catch/hour: 660.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	223.39	2454	33.83	487
Dentex angolensis	212.11	1395	32.12	489
Trigla lyra	91.97	874	13.93	
Trachurus trecae	64.83	3960	9.82	488
Squatina oculata	20.74	6	3.14	
Torpedo marmorata	9.24	8	1.40	
Umbrina canariensis	7.27	22	1.10	
Citharus linguatula	6.34	121	0.96	
Brotula barbata	5.13	4	0.78	
Raja miraletus	4.73	8	0.72	
Pterothrissus belloci	3.18	22	0.48	
Zeus faber	2.96	14	0.45	
Spicara alta	2.90	149	0.44	
Trichiurus lepturus	2.46	4	0.37	
Uranoscopus polli	1.83	8	0.28	
Ariomma bondi	0.64	8	0.10	
Boops boops	0.36	8	0.05	
Saurida brasiliensis	0.22	79	0.03	
Total	660.32		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 175
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 7°0.86
start stop duration Lon E 12°6.10
TIME :10:17:18 10:47:02 29.7 (min) Purpose : 3
LOG : 741.65 743.36 1.7 Region : 4054
FDEPTH: 112 110 Gear cond.: 1
BDEPTH: 112 110 Validity : 1
Towing dir: 0° Wire out : 330 m Speed : 3.5 kn
Sorted : 136 Total catch: 136.10 Catch/hour: 274.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	70.43	345	25.65	491
Trachurus trecae	59.72	3123	21.75	492
Brachydeuterus auritus	39.54	226	14.40	493
Dentex congoensis	33.69	539	12.27	490
Trigla lyra	33.39	278	12.16	
Squatina oculata	8.17	8	2.98	
Zeus faber	7.79	26	2.84	
Sepia orbignyana	6.19	4	2.26	
Brotula barbata	5.47	4	1.99	
Mustelus mustelus	2.24	4	0.82	
Fistularia petimba	2.16	4	0.79	
Pterothrissus belloci	2.16	10	0.79	
Citharus linguatula	1.51	20	0.55	
Chaetodon hoefleri	0.91	2	0.33	
Arnoglossus imperialis	0.63	10	0.23	
Saurida brasiliensis	0.59	8	0.21	
Total	274.58		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 176
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°48.00
start stop duration Lon E 12°0.37
TIME :12:12:30 12:42:14 29.7 (min) Purpose : 3
LOG : 755.70 757.23 1.5 Region : 4054
FDEPTH: 92 92 Gear cond.: 1
BDEPTH: 92 92 Validity : 1
Towing dir: 0° Wire out : 270 m Speed : 3.1 kn
Sorted : 69 Total catch: 68.53 Catch/hour: 138.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chelidonichthys capensis	32.08	159	23.20	
Pagellus bellottii	21.69	176	15.69	494
Dentex barnardi	19.49	34	14.10	498
Raja miraletus	18.76	22	13.57	
Caranx crysos	10.89	6	7.88	
Umbrina canariensis	7.75	14	5.60	
Sepia orbignyana	6.84	6	4.95	
Brachydeuterus auritus	6.78	38	4.90	497
Fistularia petimba	5.85	12	4.23	
Lepidotrigla cadmani	1.41	10	1.02	
Chelidonichthys lastoviza	1.31	6	0.95	
Pagrus caeruleostictus	1.25	2	0.90	
Trachurus trecae	0.77	46	0.55	496
Zeus faber	0.75	2	0.54	
Dentex angolensis	0.65	4	0.47	
Chaetodon hoefleri	0.65	4	0.47	
Dentex congoensis	0.63	52	0.45	495
Saurida brasiliensis	0.32	93	0.23	
Sepia officinalis hierredda	0.22	10	0.16	
Citharus linguatula	0.18	10	0.13	
Total	138.26		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 177
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°45.52
start stop duration Lon E 11°57.16
TIME :15:52:41 16:08:57 16.3 (min) Purpose : 3
LOG : 765.06 765.84 0.8 Region : 4054
FDEPTH: 107 105 Gear cond.: 9
BDEPTH: 107 105 Validity : 9
Towing dir: 0° Wire out : 300 m Speed : 2.9 kn
Sorted : 66 Total catch: 66.17 Catch/hour: 244.02

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex barnardi	135.71	251	55.61	501
Mustelus mustelus	25.08	11	10.28	
Pagellus bellottii	16.04	41	6.57	503
Raja miraletus	15.01	26	6.15	
Octopus vulgaris	14.23	4	5.83	
Dentex angolensis	12.72	41	5.21	500
Dentex congoensis	9.33	48	3.82	502
Zeus faber	7.34	22	3.01	
Scorpaena normani	2.62	4	1.07	
Fistularia petimba	2.18	7	0.89	
Torpedo marmorata	1.70	4	0.70	
Chelidonichthys capensis	0.81	4	0.33	
CONGRIDAE	0.52	4	0.21	
Lepidotrigla cadmani	0.48	4	0.20	
Alloteuthis africana	0.26	33	0.11	
Total	244.02		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 178
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°46.95
start stop duration Lon E 11°55.20
TIME :16:48:17 17:18:11 29.9 (min) Purpose : 3
LOG : 769.51 771.00 1.5 Region : 4054
FDEPTH: 116 121 Gear cond.: 1
BDEPTH: 116 121 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.0 kn
Sorted : 88 Total catch: 148.91 Catch/hour: 298.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	100.33	401	33.58	506
Dentex congoensis	63.81	654	21.36	505
Trachurus trecae	49.16	2344	16.45	507
Umbrina canariensis	22.58	62	7.55	504
Raja miraletus	17.46	32	5.84	
Mustelus mustelus	9.13	4	3.06	
Brotula barbata	6.44	6	2.16	
Scorpaena normani	6.18	10	2.07	
Trigla lyra	5.62	44	1.88	
Torpedo sp.	4.82	2	1.61	
Raja sp.	4.33	2	1.45	
Dentex barnardi	3.65	8	1.22	
Citharus linguatula	1.65	64	0.55	
Fistularia petimba	1.24	4	0.42	
Zeus faber	1.04	8	0.35	
Chaetodon hoefleri	0.52	4	0.17	
Sepia orbignyana	0.44	8	0.15	
Saurida brasiliensis	0.24	44	0.08	
Monolene microstoma	0.16	20	0.05	
Total	298.82		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 179
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°53.27
start stop duration Lon E 11°44.64
TIME :19:37:15 20:07:49 30.6 (min) Purpose : 3
LOG : 786.48 788.01 1.5 Region : 4054
FDEPTH: 451 451 Gear cond.: 1
BDEPTH: 451 451 Validity : 1
Towing dir: 0° Wire out : 1250 m Speed : 3.0 kn
Sorted : 87 Total catch: 87.33 Catch/hour: 171.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Gadella maraldi	27.59	493	16.09	
Merluccius polli	23.76	57	13.86	508
Chaunax pictus	19.73	126	11.51	
Hymenocephalus italicus	16.30	1779	9.50	
Aristeus varidens	14.39	1182	8.39	
Stereomastis sculpta	13.25	112	7.73	
Trichiurus lepturus	10.72	338	6.25	
Galeus polli	8.84	132	5.15	
Malacocephalus occidentalis	6.52	37	3.80	
Lophiodes kempi	5.99	14	3.49	
Dibranchus atlanticus	4.34	363	2.53	
Monomitopus metriostoma	2.93	190	1.71	
Malacocephalus laevis	2.59	26	1.51	
Gadella imberbis	2.40	77	1.40	
Nezumia sp.	2.02	43	1.18	
Todaropsis eblanae	1.77	8	1.03	
Halosaurus ovenii	1.41	51	0.82	
Coloconger cadenati	1.26	31	0.73	
Yarrella blackfordi	1.12	27	0.65	
Bathynectes piperitus	1.06	18	0.62	
Nezumia aequalis	0.98	61	0.57	
Plesiopenaeus edwardsianus	0.61	16	0.35	
Loligo vulgaris	0.61	2	0.35	
Bathyuroconger vicinus	0.41	6	0.24	
Chaceon maritae	0.41	2	0.24	
Dicologoglossa cuneata	0.18	8	0.10	
MYCTOPHIDAE	0.16	104	0.09	
Hoplostethus cadenati	0.10	2	0.06	
Nemichthys scolopaceus	0.04	2	0.02	
Total	171.46		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 180
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°55.04
start stop duration Lon E 11°43.30
TIME :21:35:45 22:05:20 29.6 (min) Purpose : 3
LOG : 793.42 794.78 1.4 Region : 4054
FDEPTH: 534 540 Gear cond.: 1
BDEPTH: 534 540 Validity : 1
Towing dir: 0° Wire out : 1350 m Speed : 2.8 kn
Sorted : 80 Total catch: 80.40 Catch/hour: 163.03

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarrella blackfordi	32.04	892	19.65	
Lamprogrammus exutus	26.77	73	16.42	
Nematocarcinus africanus	19.47	3530	11.94	
Stereomastis sp.	18.65	1336	11.44	
Chaunax pictus	8.86	47	5.44	
Aristeus varidens, female	8.58	452	5.26	
Triplophos hemingi	6.16	726	3.78	
Stomias boa boa	5.25	91	3.22	
Malacocephalus occidentalis	5.19	43	3.18	
Merluccius polli	4.26	8	2.61	
Laemonema laureysi	3.35	99	2.05	
Galeus polli	3.33	34	2.04	
Hoplostethus cadenati	2.90	79	1.78	
Benthodesmus sp.	2.37	73	1.46	
Gadella imberbis	2.19	114	1.34	
Dibranchus atlanticus	2.17	130	1.33	
Trichiurus lepturus	2.13	4	1.31	
Aristeus varidens, male	2.07	262	1.27	
Nezumia sp.	1.66	30	1.02	
Halosaurus ovenii	1.20	24	0.73	
Chaceon maritae	0.97	2	0.60	
Xenodermichthys copei	0.77	75	0.47	
Bathygadus macrops	0.77	18	0.47	
Bathyuroconger vicinus	0.65	45	0.40	
Synaphobranchus kaupii	0.28	18	0.17	
MYCTOPHIDAE	0.24	128	0.15	
Calappa sp.	0.20	4	0.12	
Etmopterus spinax	0.12	4	0.07	
SOLEIDAE	0.10	2	0.06	
Setarches guentheri	0.10	2	0.06	
Nezumia aequalis	0.06	2	0.04	
Conger conger	0.04	2	0.02	
Parasudis sp.	0.04	2	0.02	
UNIDENTIFIED FISH	0.04	2	0.02	
Cynoglossus sp.	0.04	4	0.02	
Total	163.03		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 181
DATE :21/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°57.26
start stop duration Lon E 11°39.61
TIME :23:54:34 00:24:34 30.0 (min) Purpose : 3
LOG : 802.26 803.75 1.5 Region : 4054
FDEPTH: 729 734 Gear cond.: 1
BDEPTH: 729 734 Validity : 1
Towing dir: 0° Wire out : 1700 m Speed : 3.0 kn
Sorted : 27 Total catch: 113.90 Catch/hour: 227.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Yarrella blackfordi	41.84	1056	18.37	
Hoplostethus cadenati	38.48	808	16.89	
Shrimps, small, non comm.	30.32	6064	13.31	
Stereomastis sp.	26.80	2416	11.76	
MACROURIDAE	26.00	520	11.41	
Bathyuroconger vicinus	9.92	48	4.35	
Triplophos hemingi	9.68	1248	4.25	
Octopus sp.	8.96	8	3.93	
Xenodermichthys copei	7.68	224	3.37	
Dicrolene intronigra	4.72	176	2.07	
Nezumia micronychodon	3.04	64	1.33	
SQUALIDAE	3.04	14	1.33	
Aristeus varidens, female	2.88	104	1.26	
Merluccius polli	2.68	4	1.18	
Stomias boa boa	2.40	40	1.05	
Halosaurus ovenii	2.00	24	0.88	
Chaceon maritae	1.76	4	0.77	
ATELEOPODIDAE	1.20	2	0.53	
Dibranchus atlanticus	0.96	56	0.42	
Nezumia sp.	0.88	8	0.39	
Synaphobranchus kaupii	0.64	8	0.28	
GALATHEIDAE *	0.56	328	0.25	
Glyphus marsupialis	0.48	16	0.21	
Aristeus varidens, male	0.32	40	0.14	
Bajacalifornia magalops	0.24	16	0.11	
MYCTOPHIDAE	0.16	80	0.07	
Talismania sp.	0.16	16	0.07	
Total	227.80		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 182
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°51.25
start stop duration Lon E 11°49.88
TIME :05:38:00 06:08:00 30.0 (min) Purpose : 3
LOG : 819.01 820.31 1.3 Region : 4054
FDEPTH: 273 284 Gear cond.: 1
BDEPTH: 273 284 Validity : 1
Towing dir: 0° Wire out : 750 m Speed : 2.2 kn
Sorted : 59 Total catch: 344.47 Catch/hour: 688.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	283.80	14280	41.19	
Chlorophthalmus atlanticus	104.40	2412	15.15	
Bembrops sp.	93.60	1644	13.59	
Parapenaeus longirostris	65.40	10272	9.49	
GALATHEIDAE *	39.48	3528	5.73	
Merluccius polli	35.40	828	5.14	509
Pontinus accraensis	13.08	84	1.90	
Brotula barbata	12.84	12	1.86	
Nezumia aequalis	9.00	240	1.31	
Bembrops greyi	7.20	192	1.05	
Zeus faber	5.04	24	0.73	
Malacocephalus occidentalis	4.68	72	0.68	
MYCTOPHIDAE	4.08	4260	0.59	
Gadella maraldi	3.84	72	0.56	
Trichiurus lepturus	3.12	4	0.45	
Pterothrissus belloci	2.16	24	0.31	
Gadella imberbis	0.72	36	0.10	
Peristedion cataphractum	0.60	24	0.09	
Dentex angolensis	0.50	2	0.07	
Total	688.94		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 183
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°51.47
start stop duration Lon E 11°52.04
TIME :07:23:19 07:53:57 30.6 (min) Purpose : 3
LOG : 825.12 826.53 1.4 Region : 4054
FDEPTH: 192 179 Gear cond.: 1
BDEPTH: 192 179 Validity : 1
Towing dir: 0° Wire out : 600 m Speed : 2.8 kn
Sorted : 216 Total catch: 215.92 Catch/hour: 422.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	118.28	399	27.97	510
Synagrops microlepis	115.83	1167	27.39	
Zenopsis conchifer	43.18	98	10.21	
Trichiurus lepturus	33.29	55	7.87	
Brotula barbata	25.26	23	5.97	
Zeus faber	18.41	104	4.35	
Torpedo torpedo	10.40	14	2.46	
Pentheroscion mbizi	9.89	12	2.34	
Spicara alta	9.60	53	2.27	
Umbrina canariensis	7.25	20	1.71	511
Pterothrissus belloci	6.74	47	1.59	
Bembrops greyi	4.76	65	1.13	
Aulopus cadenati	3.35	20	0.79	
Fistularia petimba	2.62	6	0.62	
Pontinus accraensis	2.33	14	0.55	
Miracorvina angolensis	2.00	2	0.47	
Squatina oculata	1.86	4	0.44	
Uranoscopus polli	1.74	8	0.41	
Octopus vulgaris	1.59	4	0.38	
Bothus podas africanus	1.49	86	0.35	
Illex coindetii	0.76	14	0.18	
Peristedion cataphractum	0.76	20	0.18	
Trigla lyra	0.74	6	0.18	
Dentex macrophthalmus	0.61	2	0.14	
Galeus polli	0.06	2	0.01	
Saurida brasiliensis	0.04	6	0.01	
Total	422.82		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 184
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°46.89
start stop duration Lon E 11°52.26
TIME :09:09:09 09:39:01 29.9 (min) Purpose : 3
LOG : 833.89 835.36 1.5 Region : 4054
FDEPTH: 148 161 Gear cond.: 1
BDEPTH: 148 161 Validity : 1
Towing dir: 0° Wire out : 400 m Speed : 3.0 kn
Sorted : 47 Total catch: 46.71 Catch/hour: 93.83

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	63.58	179	67.76	512
Trigla lyra	12.05	123	12.85	
Brotula barbata	6.37	4	6.79	
Zeus faber	2.01	10	2.14	
Mustelus mustelus	1.83	2	1.95	
Citharus linguatula	1.65	34	1.76	
Bembrops greyi	1.33	20	1.41	
Ariomma bondi	1.08	32	1.16	
Sepia officinalis hierredda	0.64	4	0.69	
Peristedion cataphractum	0.62	14	0.66	
Illex coindetii	0.56	12	0.60	
Dentex congoensis	0.48	10	0.51	
Sepia orbignyana	0.42	4	0.45	
Pontinus accraensis	0.38	4	0.41	
Pterothrissus belloci	0.34	2	0.36	
Spicara alta	0.30	2	0.32	
Saurida brasiliensis	0.10	26	0.11	
Bothus podas africanus	0.04	4	0.04	
Seriola carpenteri	0.04	2	0.04	
Total	93.83		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 185
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°29.30
start stop duration Lon E 11°52.26
TIME :11:41:58 12:11:57 30.0 (min) Purpose : 3
LOG : 852.88 854.43 1.6 Region : 4054
FDEPTH: 116 115 Gear cond.: 1
BDEPTH: 116 115 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.1 kn
Sorted : 220 Total catch: 220.49 Catch/hour: 441.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	140.15	84	31.77	
Dentex angolensis	127.64	592	28.94	515
Trachurus trecae	85.33	3457	19.34	513
Chelidonichthys gabonensis	35.81	276	8.12	
Dentex congoensis	29.43	252	6.67	514
Brotula barbata	7.14	6	1.62	
Epinephelus aeneus	6.00	2	1.36	
Trichiurus lepturus	1.38	2	0.31	
Pterothrissus belloci	1.28	8	0.29	
Raja miraletus	1.18	2	0.27	
Zeus faber	1.14	4	0.26	
Pagellus bellottii	1.00	4	0.23	
Umbrina canariensis	0.80	2	0.18	
Dentex barnardi	0.70	2	0.16	
Chaetodon hoefleri	0.64	4	0.15	
Citharus linguatula	0.40	10	0.09	
Brachydeuterus auritus	0.40	2	0.09	
Octopus vulgaris	0.28	2	0.06	
Sepia orbignyana	0.24	2	0.05	
Peristedion cataphractum	0.16	2	0.04	
Arnoglossus imperialis	0.02	2	0.00	
Total	441.13		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 186
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°29.13
start stop duration Lon E 11°47.48
TIME :13:12:19 13:42:19 30.0 (min) Purpose : 3
LOG : 859.69 861.16 1.5 Region : 4054
FDEPTH: 126 126 Gear cond.: 1
BDEPTH: 126 126 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.0 kn
Sorted : 78 Total catch: 170.62 Catch/hour: 341.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	183.48	1932	53.77	518
Dentex angolensis	110.66	510	32.43	517
Trachurus trecae	19.06	180	5.59	516
Spicara alta	17.02	374	4.99	
Lepidotrigla cadmani	4.66	66	1.37	
Trichiurus lepturus	3.70	4	1.08	
Pagellus bellottii	0.92	4	0.27	
Pterothrissus belloci	0.70	4	0.21	
Boops boops	0.66	14	0.19	
Citharus linguatula	0.30	4	0.09	
Saurida brasiliensis	0.08	14	0.02	
Total	341.24		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 187
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°34.56
start stop duration Lon E 11°41.95
TIME :15:11:02 15:41:01 30.0 (min) Purpose : 3
LOG : 870.86 872.39 1.5 Region : 4054
FDEPTH: 237 226 Gear cond.: 1
BDEPTH: 237 226 Validity : 1
Towing dir: 0° Wire out : 600 m Speed : 3.1 kn
Sorted : 64 Total catch: 192.51 Catch/hour: 385.15

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	245.78	18992	63.81	
Trichiurus lepturus	48.22	162	12.52	
Dentex angolensis	38.91	102	10.10	519
Zenopsis conchifer	21.79	50	5.66	
Pterothrissus belloci	10.76	94	2.79	
Brotula barbata	8.00	6	2.08	
Bembrops heterurus	2.38	36	0.62	
Illex coindetii	1.90	22	0.49	
Chlorophthalmus atlanticus	1.48	244	0.38	
Nezumia micronychodon	1.40	32	0.36	
Nezumia aequalis	1.12	36	0.29	
Pontinus accraensis	0.86	4	0.22	
Parapenaeus longirostris,femal	0.86	118	0.22	
Uranoscopus polli	0.86	4	0.22	
Parapenaeus longirostris, male	0.46	104	0.12	
Citharus linguatula	0.18	14	0.05	
Peristedion cataphractum	0.14	4	0.04	
Antigonia capros	0.04	4	0.01	
Total	385.15		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 188
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°33.91
start stop duration Lon E 11°37.65
TIME :16:36:22 16:38:40 2.3 (min) Purpose : 3
LOG : 877.90 878.02 0.1 Region : 4054
FDEPTH: 324 325 Gear cond.: 9
BDEPTH: 324 325 Validity : 9
Towing dir: 0° Wire out : 850 m Speed : 3.3 kn
Sorted : 19 Total catch: 19.21 Catch/hour: 501.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trichiurus lepturus	148.96	10565	29.72	
Synagrops microlepis	120.00	2609	23.95	
Chlorophthalmus atlanticus	68.09	1591	13.59	
Parapenaeus longirostris	31.57	4200	6.30	
Hymenocephalus italicus	29.48	652	5.88	
Torpedo torpedo	19.04	52	3.80	
Bembrops heterurus	14.61	339	2.92	
GALATHEIDAE *	14.09	1591	2.81	
Hypoclydonia bella ?	8.35	130	1.67	
Merluccius polli	7.83	130	1.56	
Todaropsis eblanae	7.57	78	1.51	
CONGRIDAE	6.00	52	1.20	
Gadella maraldi	4.96	104	0.99	
Malacocephalus occidentalis	3.91	78	0.78	
Nezumia aequalis	3.39	130	0.68	
Pontinus accraensis	3.39	52	0.68	
Dibranchus atlanticus	3.13	339	0.62	
Pagellus bellottii	3.13	26	0.62	
MYCTOPHIDAE	1.04	783	0.21	
Gadella imberbis	1.04	52	0.21	
Scorpaena sp.	0.52	26	0.10	
Peristedion cataphractum	0.52	26	0.10	
Epigonus telescopus	0.26	26	0.05	
PARALEPIDIDAE	0.26	26	0.05	
Total	501.13		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 189
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°34.96
start stop duration Lon E 11°38.19
TIME :17:38:33 18:08:02 29.5 (min) Purpose : 3
LOG : 882.58 884.05 1.5 Region : 4054
FDEPTH: 345 327 Gear cond.: 1
BDEPTH: 345 327 Validity : 1
Towing dir: 0° Wire out : 950 m Speed : 3.0 kn
Sorted : 49 Total catch: 97.46 Catch/hour: 198.29

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	102.14	1123	51.51	
Bembrops sp.	25.43	757	12.83	
Trichiurus lepturus	20.02	785	10.10	
Malacocephalus occidentalis	8.55	85	4.31	
Parapenaeus longirostris	8.14	989	4.10	
Hymenocephalus italicus	6.19	822	3.12	
Synagrops microlepis	6.10	61	3.08	
Gadella maraldi	5.17	110	2.61	
Nezumia aequalis	3.46	73	1.74	
GALATHEIDAE *	2.81	313	1.42	
Merluccius polli	2.48	20	1.25	
Dibranchus atlanticus	1.46	187	0.74	
Bathynectes piperitus	1.26	16	0.64	
Chascanopsetta lugubris	1.14	28	0.57	
Epigonus telescopus	0.98	20	0.49	
Hypoclydonia bella ?	0.85	12	0.43	
Bembrops heterurus	0.61	12	0.31	
Lophius vaillanti	0.45	8	0.23	
Scorpaena sp.	0.33	12	0.16	
Chaunax pictus	0.33	33	0.16	
Gadella imberbis	0.16	8	0.08	
Peristedion sp.	0.12	24	0.06	
Solenocera africana	0.12	8	0.06	
Total	198.29		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 190
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°36.93
start stop duration Lon E 11°27.12
TIME :20:31:38 20:59:58 28.3 (min) Purpose : 3
LOG : 896.52 897.70 1.2 Region : 4054
FDEPTH: 656 651 Gear cond.: 1
BDEPTH: 656 651 Validity : 1
Towing dir: 0° Wire out : 1650 m Speed : 2.5 kn
Sorted : 25 Total catch: 156.80 Catch/hour: 331.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Aristeus varidens	1.48	129	3.14	
Hoplostethus cadenati	98.38	944	15.31	
Nematocarcinus africanus	59.96	13531	9.33	
Xenodermichthys copei	35.27	1084	5.49	
Merluccius polli	22.34	36	3.47	520
Stereomastis sp.	17.57	1025	2.73	
Gadella sp.	14.08	781	2.19	
Yarrella blackfordi	12.58	256	1.96	
Nezumia aequalis	12.55	256	1.95	
Plesiopenaeus edwardsianus	9.55	93	1.49	
Hydrolagus sp.	7.94	13	1.24	
Bathyuroconger vicinus	6.99	59	1.09	
Deania calcea	6.35	15	0.99	
Triplophos hemingi	4.76	582	0.74	
Trichiurus lepturus	3.96	186	0.62	
Halosaurus ovenii	3.60	47	0.56	
Etmopterus pusillus	3.60	19	0.56	
Paramola cuvieri	2.54	2	0.40	
Chaceon maritae	1.67	4	0.26	
Centrophorus squamosus	1.65	2	0.26	
Stomias boa boa	1.63	47	0.25	
Dibranchus atlanticus	0.80	47	0.13	
Nemichthys scolopaceus	0.57	13	0.09	
Total	642.75		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 191
DATE :22/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°38.46
start stop duration Lon E 11°24.47
TIME :22:45:52 23:15:54 30.0 (min) Purpose : 3
LOG : 903.32 904.80 1.5 Region : 4054
FDEPTH: 721 726 Gear cond.: 1
BDEPTH: 721 726 Validity : 1
Towing dir: 0° Wire out : 1750 m Speed : 3.0 kn
Sorted : 32 Total catch: 110.69 Catch/hour: 221.09

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sea cucumbers	103.96	108	47.02	
SQUALIDAE	21.37	30	9.67	
Nezumia leonis	20.61	377	9.32	
Hoplostethus cadenati	15.04	228	6.80	
Stereomastis sp.	9.41	539	4.26	
Caelorinchus sp.	8.39	36	3.79	
Triplophos hemingi	5.27	587	2.39	
Halosaurus ovenii	4.61	120	2.09	
Bassanago albescens	4.61	24	2.09	
Dicrolene intronigra	3.89	192	1.76	
Chaceon maritae, female	3.04	8	1.37	
Bathygadus macrops	2.82	6	1.27	
Xenodermichthys copei	2.82	66	1.27	
Yarrella blackfordi	2.46	54	1.11	
OMMASTREPHIDAE	2.28	12	1.03	
Gempylus serpens	1.66	2	0.75	
Synaphobranchus kaupii	1.56	18	0.70	
Aristeus varidens	1.32	54	0.60	
Stomias boa boa	1.14	18	0.51	
Shrimps, small, non comm.	1.14	36	0.51	
Merluccius polli	1.04	2	0.47	
Plesiopenaeus edwardsianus	0.84	36	0.38	
Lithodes ferox	0.74	2	0.33	
CONGRIDAE	0.30	6	0.14	
Bajacalifornia magalops	0.24	6	0.11	
Raja sp.	0.24	6	0.11	
Dibranchus atlanticus	0.18	12	0.08	
GALATHEIDAE *	0.12	60	0.05	
Total	221.09		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 192
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°26.21
start stop duration Lon E 11°54.12
TIME :05:38:22 06:08:22 30.0 (min) Purpose : 3
LOG : 941.04 942.47 1.4 Region : 4054
FDEPTH: 111 112 Gear cond.: 1
BDEPTH: 111 112 Validity : 1
Towing dir: 0° Wire out : 330 m Speed : 2.7 kn
Sorted : 82 Total catch: 82.49 Catch/hour: 164.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	63.60	248	38.55	521
Brachydeuterus auritus	37.20	294	22.55	525
Trachurus trecae	21.90	1148	13.27	524
Squatina oculata	7.00	4	4.24	
Dentex congoensis	4.96	48	3.01	522
Raja miraletus	4.74	8	2.87	
Brotula barbata	4.42	4	2.68	
Torpedo torpedo	3.88	10	2.35	
Zeus faber	3.54	20	2.15	
Umbrina canariensis	3.36	8	2.04	523
Scorpaena normani	2.40	4	1.45	
Uranoscopus cadenati	1.60	10	0.97	
Trichiurus lepturus	1.32	4	0.80	
Trigla lyra	1.30	30	0.79	
Fistularia petimba	1.08	2	0.65	
Pterothrissus belloci	0.94	6	0.57	
Saurida brasiliensis	0.66	188	0.40	
Citharus linguatula	0.46	14	0.28	
Chaetodon hoefleri	0.38	2	0.23	
Boops boops	0.14	4	0.08	
Microchirus frechkopi	0.10	2	0.06	
Total	164.98		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 193
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°27.84
start stop duration Lon E 11°58.44
TIME :07:12:54 07:42:56 30.0 (min) Purpose : 3
LOG : 948.37 949.86 1.5 Region : 4054
FDEPTH: 100 98 Gear cond.: 1
BDEPTH: 100 98 Validity : 1
Towing dir: 0° Wire out : 300 m Speed : 3.0 kn
Sorted : 65 Total catch: 64.86 Catch/hour: 129.63

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	65.36	586	50.42	529
Dentex angolensis	20.99	88	16.19	526
Trachurus trecae	9.61	536	7.42	528
Raja miraletus	6.46	10	4.98	
Rhinobatos albomaculatus	4.50	2	3.47	
Dentex congoensis	4.24	52	3.27	527
Fistularia petimba	4.02	10	3.10	
Trigla lyra	2.26	18	1.74	
Epinephelus aeneus	2.12	2	1.63	
Torpedo torpedo	1.98	8	1.53	
Scorpaena normani	1.92	6	1.48	
Trichiurus lepturus	1.52	4	1.17	
Uranoscopus albesca	1.38	12	1.06	
Citharus linguatula	1.32	36	1.02	
Umbrina canariensis	0.82	8	0.63	
Pterothrissus belloci	0.78	4	0.60	
Saurida brasiliensis	0.22	64	0.17	
Illex coindetii	0.16	4	0.12	
Total	129.63		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 194
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°24.87
start stop duration Lon E 12°1.53
TIME :08:39:50 09:09:35 29.8 (min) Purpose : 3
LOG : 955.21 956.62 1.4 Region : 4054
FDEPTH: 82 83 Gear cond.: 1
BDEPTH: 82 83 Validity : 1
Towing dir: 0° Wire out : 240 m Speed : 2.8 kn
Sorted : 107 Total catch: 106.78 Catch/hour: 215.35

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	119.19	438	55.35	532
Pagellus bellottii	25.71	97	11.94	530
Epinephelus goreensis	18.96	4	8.80	
Dentex barnardi	14.32	30	6.65	533
Brotula barbata	7.46	8	3.47	
Octopus sp.	7.32	4	3.40	
Fistularia petimba	4.42	12	2.05	
Dentex congoensis	4.32	85	2.00	531
Selene dorsalis	2.94	10	1.37	
Lagocephalus laevigatus	2.42	4	1.12	
Chaetodon hoefleri	2.38	14	1.11	
Sepia orbignyana	2.18	2	1.01	
Cynoglossus canariensis	1.09	4	0.51	
Saurida brasiliensis	0.67	190	0.31	
Trigla lyra	0.63	8	0.29	
Citharus linguatula	0.44	16	0.21	
Uranoscopus albesca	0.28	2	0.13	
GOBIIDAE	0.20	109	0.09	
Scorpaena normani	0.20	2	0.09	
Zeus faber	0.14	2	0.07	
Monolene microstoma	0.08	14	0.04	
Total	215.35		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 195
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°25.20
start stop duration Lon E 12°5.39
TIME :10:05:10 10:35:07 30.0 (min) Purpose : 3
LOG : 962.17 963.52 1.4 Region : 4054
FDEPTH: 56 59 Gear cond.: 1
BDEPTH: 56 59 Validity : 1
Towing dir: 0° Wire out : 180 m Speed : 2.7 kn
Sorted : 9 Total catch: 8.56 Catch/hour: 17.15

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Caranx crysos	4.69	4	27.34	
Sepia orbignyana	3.37	6	19.63	
Pagellus bellottii	2.98	28	17.41	534
Raja miraletus	1.58	4	9.23	
Trachinocephalus myops	0.98	2	5.72	
Trichiurus lepturus	0.90	2	5.26	
Lagocephalus laevigatus	0.88	2	5.14	
SOLEIDAE	0.66	4	3.86	
Trachinus radiatus	0.58	2	3.39	
Alloteuthis africana	0.40	18	2.34	
Trachinus armatus	0.12	2	0.70	
Total	17.15		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 196
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°15.82
start stop duration Lon E 12°7.23
TIME :11:49:25 12:19:27 30.0 (min) Purpose : 3
LOG : 972.67 974.22 1.6 Region : 4054
FDEPTH: 41 42 Gear cond.: 1
BDEPTH: 41 42 Validity : 1
Towing dir: 0° Wire out : 120 m Speed : 3.1 kn
Sorted : 38 Total catch: 37.68 Catch/hour: 75.31

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Alectis alexandrinus	24.38	30	32.38	
Rhinobatos albomaculatus	16.35	4	21.71	
Pagellus bellottii	15.69	108	20.83	536
Lagocephalus laevigatus	9.55	16	12.69	
Sphyraena guachancho	2.36	10	3.13	
Alloteuthis africana	2.24	1023	2.97	
Raja miraletus	1.60	4	2.12	
Epinephelus aeneus	1.02	2	1.35	
Zeus faber	0.80	2	1.06	
Selene dorsalis	0.52	4	0.69	
Fistularia petimba	0.28	2	0.37	
Seriola carpenteri	0.28	2	0.37	
Citharus linguatula	0.24	2	0.32	
Total	75.31		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 197
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°5.16
start stop duration Lon E 12°8.12
TIME :13:38:33 14:08:34 30.0 (min) Purpose : 3
LOG : 984.42 985.99 1.6 Region : 4054
FDEPTH: 32 37 Gear cond.: 1
BDEPTH: 32 37 Validity : 1
Towing dir: 0° Wire out : 140 m Speed : 3.1 kn
Sorted : 18 Total catch: 17.67 Catch/hour: 35.32

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Lagocephalus laevigatus	21.69	34	61.40	
Epinephelus aeneus	6.20	4	17.54	
Sepia orbignyana	4.36	2	12.34	
Raja miraletus	1.04	2	2.94	
Alloteuthis africana	1.02	252	2.89	
Fistularia petimba	0.40	2	1.13	
Pagellus bellottii	0.28	2	0.79	
Selene dorsalis	0.20	2	0.57	
Brachydeuterus auritus	0.12	36	0.34	
Saurida brasiliensis	0.02	4	0.06	
Total	35.32		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 198
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°6.66
start stop duration Lon E 12°1.96
TIME :14:55:04 15:25:07 30.1 (min) Purpose : 3
LOG : 990.79 992.28 1.5 Region : 4054
FDEPTH: 46 53 Gear cond.: 1
BDEPTH: 46 53 Validity : 1
Towing dir: 0° Wire out : 150 m Speed : 3.0 kn
Sorted : 14 Total catch: 13.50 Catch/hour: 26.96

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Pagrus caeruleostictus	8.31	16	30.81	538
Pagellus bellottii	6.95	20	25.78	537
Lagocephalus laevigatus	2.72	4	10.07	
Rhinobatos albomaculatus	2.50	2	9.26	
Raja miraletus	1.78	2	6.59	
Alloteuthis africana	1.70	106	6.30	
Epinephelus aeneus	1.28	2	4.74	
Chelidonichthys capensis	0.70	2	2.59	
Sepia orbignyana	0.52	4	1.93	
Citharus linguatula	0.38	2	1.41	
Trachinocephalus myops	0.12	2	0.44	
Fistularia petimba	0.02	2	0.07	
Total	26.96		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 199
DATE :23/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°7.86
start stop duration Lon E 11°56.44
TIME :16:09:06 16:39:22 30.3 (min) Purpose : 3
LOG : 996.47 998.00 1.5 Region : 4054
FDEPTH: 72 75 Gear cond.: 1
BDEPTH: 72 75 Validity : 1
Towing dir: 0° Wire out : 210 m Speed : 3.0 kn
Sorted : 87 Total catch: 87.28 Catch/hour: 173.00

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Dentex angolensis	62.14	309	35.92	541
Trachurus trecae	27.55	1417	15.93	542
Dentex congoensis	20.42	246	11.80	540
Brachydeuterus auritus	15.46	414	8.94	543
Sepia officinalis hierredda	14.39	2	8.32	
Epinephelus aeneus	12.09	4	6.99	
Octopus vulgaris	3.67	2	2.12	
Alloteuthis africana	3.23	1292	1.87	
Trichiurus lepturus	3.01	6	1.74	
Umbrina canariensis	2.89	24	1.67	539
Pagellus bellottii	2.14	2	1.24	
Epinephelus guaza ?	1.43	2	0.82	
Raja miraletus	1.33	2	0.77	
Zeus faber	0.75	2	0.44	
Cynoglossus canariensis	0.73	2	0.42	
Chaetodon hoefleri	0.57	4	0.33	
Fistularia petimba	0.54	2	0.31	
Trigla lyra	0.22	4	0.13	
Citharus linguatula	0.18	10	0.10	
Saurida brasiliensis	0.16	50	0.09	
Grammoplites gruveli	0.10	2	0.06	
Total	173.00		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 200
DATE :24/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°16.68
start stop duration Lon E 11°16.39
TIME :00:20:16 00:50:05 29.8 (min) Purpose : 3
LOG : 1050.52 1052.05 1.5 Region : 4054
FDEPTH: 749 744 Gear cond.: 1
BDEPTH: 749 744 Validity : 1
Towing dir: 0° Wire out : 1750 m Speed : 3.1 kn
Sorted : 27 Total catch: 111.34 Catch/hour: 224.02

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Sea cucumbers	84.10	80	37.54	
Xenodermichthys copei	27.04	765	12.07	
Yarrella blackfordi	16.82	338	7.51	
MACROURIDAE	16.58	249	7.40	
Stomias boa boa	11.43	298	5.10	
Stereomastis sp.	11.35	620	5.07	
Triplophos hemingi	8.77	1127	3.92	
Nezumia sp.	7.40	89	3.31	
Chaceon maritae	6.24	20	2.78	
Hoplostethus cadenati	5.47	121	2.44	
Bathyuroconger vicinus	4.59	8	2.05	
Dicrolene intronigra	4.51	338	2.01	
Bajacalifornia magalops	3.54	16	1.58	
Shrimps, small, non comm.	3.38	676	1.51	
Halosaurus ovenii	3.14	137	1.40	
CONGRIDAE	2.33	8	1.04	
Lamprogrammus sp.	1.45	8	0.65	
Aristeus varidens	1.29	48	0.57	
Synaphobranchus kaupii	1.13	8	0.50	
Glyphus marsupialis	0.89	89	0.40	
MALACOSTEIDAE	0.72	72	0.32	
Dibranchus sp.	0.64	8	0.29	
MACROURIDAE	0.48	8	0.22	0
Etmopterus pusillus	0.48	2	0.22	
MYCTOPHIDAE	0.24	8	0.11	
Total	224.02		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 201
DATE :24/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°14.24
start stop duration Lon E 11°24.54
TIME :02:59:12 03:29:04 29.9 (min) Purpose : 3
LOG : 1065.39 1066.85 1.5 Region : 4054
FDEPTH: 391 386 Gear cond.: 1
BDEPTH: 391 386 Validity : 1
Towing dir: 0° Wire out : 850 m Speed : 2.9 kn
Sorted : 21 Total catch: 62.22 Catch/hour: 124.98

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Chlorophthalmus atlanticus	23.62	452	18.90	
Nematocarcinus africanus	18.38	4212	14.71	
Laemonema laureysi	18.02	410	14.42	
Chaunax pictus	14.04	157	11.23	
Raja clavata	9.22	6	7.38	
Trichiurus lepturus	6.93	350	5.54	
Malacocephalus occidentalis	6.03	48	4.82	
Epigonus telescopus	5.36	66	4.29	
Parapenaeus longirostris,femal	4.58	476	3.66	
Nezumia aequalis	3.86	90	3.09	
Hymenocephalus italicus	3.13	313	2.51	
Stereomastis sp.	3.01	199	2.41	
Dibranchus atlanticus	1.87	145	1.49	
Gadella imberbis	1.02	30	0.82	
Chascanopsetta lugubris	0.90	12	0.72	
Parapandalus narval	0.90	157	0.72	
Callinectes sp.	0.90	18	0.72	
CONGRIDAE	0.78	12	0.63	
GALATHEIDAE *	0.66	524	0.53	
Pterothrissus belloci	0.66	6	0.53	
Peristedion cataphractum	0.48	66	0.39	
Aristeus varidens	0.36	36	0.29	
Solenocera africana	0.24	24	0.19	
Total	124.98		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 202
DATE :24/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°10.78
start stop duration Lon E 11°38.42
TIME :05:36:17 06:06:01 29.7 (min) Purpose : 3
LOG : 1083.30 1084.76 1.5 Region : 4054
FDEPTH: 123 125 Gear cond.: 1
BDEPTH: 123 125 Validity : 1
Towing dir: 0° Wire out : 380 m Speed : 2.9 kn
Sorted : 53 Total catch: 53.41 Catch/hour: 107.75

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Dentex angolensis	42.06	198	39.04	544
Dentex congoensis	33.49	403	31.08	545
Trichiurus lepturus	13.82	28	12.83	
Trigla lyra	5.10	69	4.74	
Brotula barbata	4.78	6	4.44	
Trachurus trecae	2.20	22	2.04	546
Ariomma bondi	1.84	26	1.70	
Torpedo torpedo	1.61	2	1.50	
Spicara alta	1.37	20	1.27	
Pagellus bellottii	0.63	2	0.58	
Sepia officinalis hierredda	0.34	2	0.32	
Uranoscopus polli	0.30	2	0.28	
Citharus linguatula	0.20	6	0.19	
Total	107.75		100.00	

R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 203
DATE :24/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°10.84
start stop duration Lon E 11°43.87
TIME :07:08:12 07:38:02 29.8 (min) Purpose : 3
LOG : 1092.06 1093.52 1.5 Region : 4054
FDEPTH: 111 111 Gear cond.: 1
BDEPTH: 111 111 Validity : 1
Towing dir: 0° Wire out : 330 m Speed : 2.9 kn
Sorted : 71 Total catch: 141.34 Catch/hour: 284.39

SPECIES	CATCH/HOUR weight	% OF TOT. C numbers	SAMP
Dentex congoensis	102.62	1602	36.08	549
Dentex angolensis	64.99	161	22.85	
Trachurus trecae	45.67	1489	16.06	548
Epinephelus aeneus	26.56	8	9.34	
Trichiurus lepturus	14.57	28	5.12	
Brachydeuterus auritus	9.62	68	3.38	547
Raja miraletus	8.57	16	3.01	
Brotula barbata	4.39	4	1.54	
Ariomma bondi	3.14	68	1.10	
Zeus faber	1.37	0	0.48	
Trigla lyra	1.21	12	0.42	
Boops boops	0.93	16	0.33	
Illex coindetii	0.40	8	0.14	
Spicara alta	0.32	8	0.11	
Microchirus frechkopi	0.04	2	0.01	
Total	284.39		100.00	

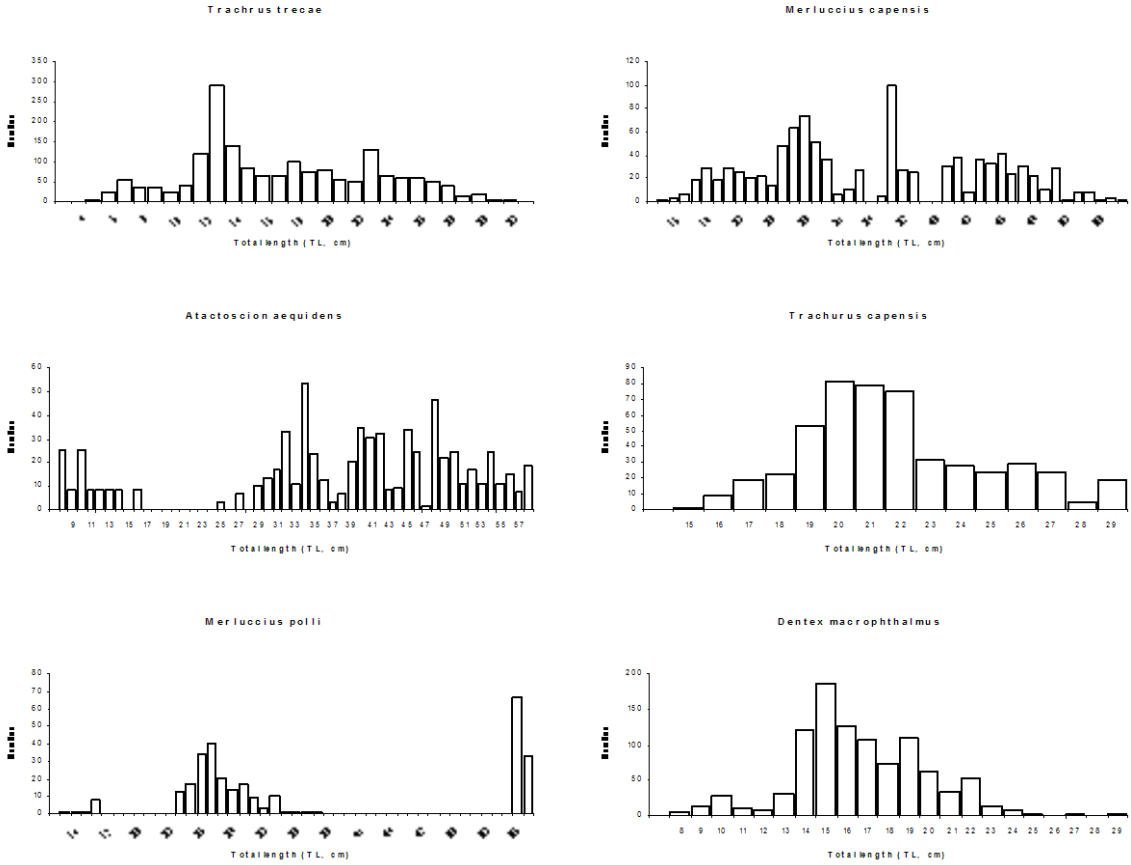
R/V "DR. FRIDTJOF NANSEN" SURVEY:2007403 STATION: 204
DATE :24/03/2007 GEAR TYPE: BT NO: 20 POSITION:Lat S 6°8.54
start stop duration Lon E 11°48.24
TIME :08:33:14 09:03:06 29.9 (min) Purpose : 3
LOG : 1099.78 1101.17 1.4 Region : 4054
FDEPTH: 94 94 Gear cond.: 1
BDEPTH: 94 94 Validity : 1
Towing dir: 0° Wire out : 280 m Speed : 2.8 kn
Sorted : 90 Total catch: 150.69 Catch/hour: 302.69

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	156.86	1615	51.82	553
Dentex angolensis	95.80	468	31.65	554
Trigla lyra	9.90	96	3.27	
Pagellus bellottii	7.35	30	2.43	551
Dentex barnardi	6.33	18	2.09	
Umbrina canariensis	5.87	14	1.94	550
Raja miraletus	4.72	10	1.56	
Trichiurus lepturus	4.30	6	1.42	
Brotula barbata	3.21	6	1.06	
Mustelus mustelus	3.01	2	1.00	
Zeus faber	2.83	6	0.94	
Brachydeuterus auritus	0.78	6	0.26	
Trachurus trecae	0.68	74	0.23	552
Chaetodon hoefleri	0.52	4	0.17	
Citharus linguatula	0.38	6	0.13	
Ariomma bondi	0.14	4	0.05	
Total	302.69		100.00	

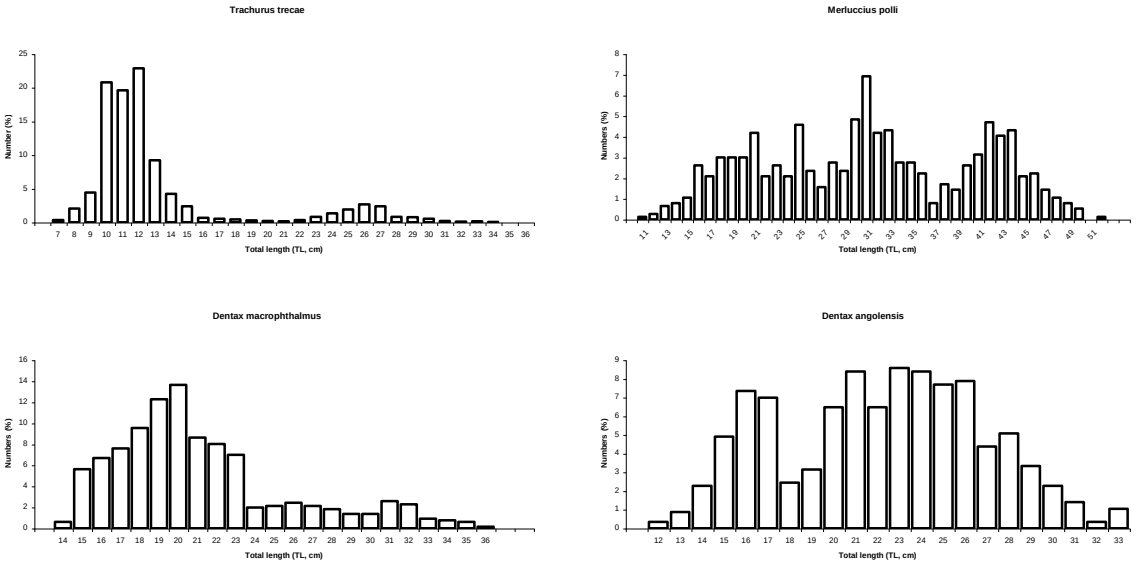
ANNEX II. Length distribution of main species.

Southern Angola

Pooled length frequency distribution of the main species weighted by the catch

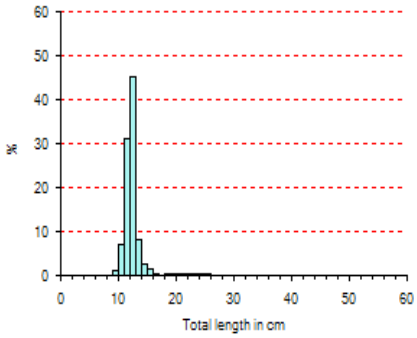


Central Angola

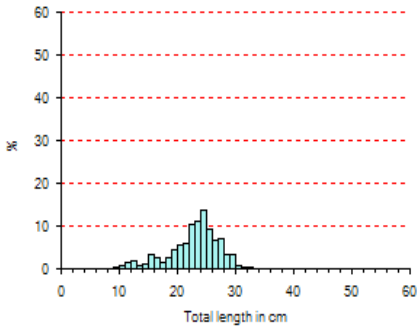


Northern Angola

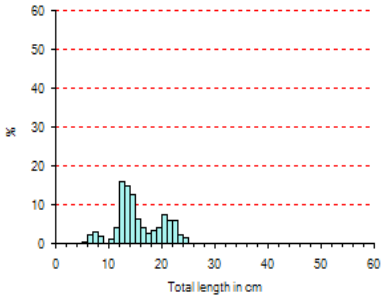
Trachurus trecae



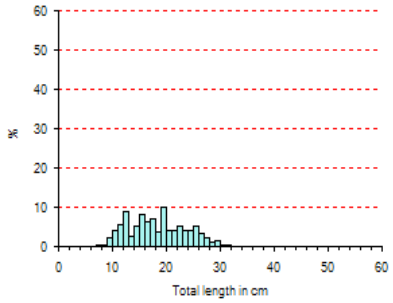
Dentex angolensis



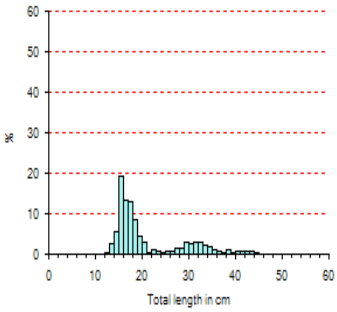
Brachydeuterus auritus



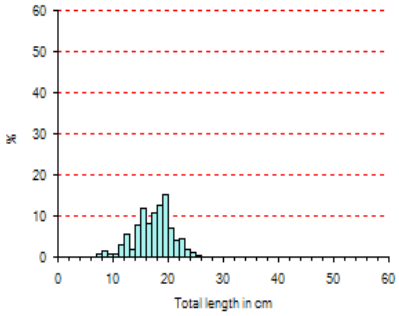
Pagellus bellottii



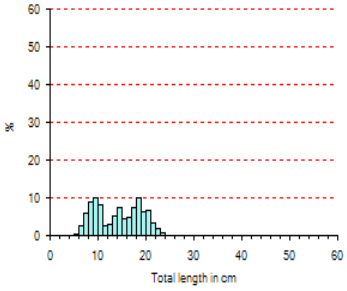
Merluccius polli



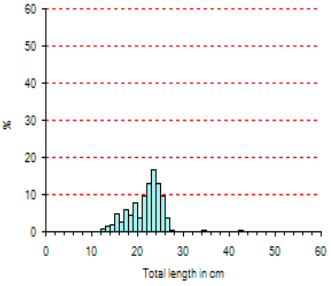
Dentex congoensis



Pteroscion pelli



Pomadasys incisus



ANNEX III. Swept area estimates

A.Luanda-Congo River. Shelf

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES								% inci-	Mean	Mean densities
by bottom depth strata t/nm²											
	Lower limits, Kg/nm						dence	dens. t/nm²	20-50m	50-100m	100-200m
	>0	10	30	100	300	1000					
Trachurus trecae	48	12	13	6	3	5	66.41	10.738	0.919	18.035	10.867
Brachydeuterus auritus	27	11	18	10	5	1	54.96	5.104	6.807	7.053	1.58
Trichiurus lepturus	53	17	6	5	2	1	64.12	2.874	1.728	4.274	2.291
Synagrops microlepis	5	1	4	7	3		15.27	2.064		0.814	5.122
Dentex macrophthalmus	12	3	5	5	2		20.61	1.496	0.002	1.234	3.009
Pomadasys jubelini	9	6	4		1		15.27	0.844	2.175	0.615	
Pomadasys incisus	19	6	2		1		21.37	0.677	0.199	1.66	
Trachurus capensis			3	1	1		3.82	0.667			1.943
Galeoides decadactylus	12	10	9	2			25.19	0.653	1.847	0.352	
Dentex angolensis	35	14	11				45.8	0.64		0.342	1.49
Umbrina canariensis	48	4	1		1		41.22	0.601	0.081	1.291	0.279
Chloroscombrus chrysurus		17	3	6	1			20.61	0.533	1.844	0.034
Selene dorsalis	40		2		1		32.82	0.469	0.224	0.089	1.083
Pagellus bellottii	60	12	3	1			58.02	0.45	0.254	0.942	0.076
Dentex congoensis	24	5	5				25.95	0.316		0.309	0.582
Ilisha africana	8	5	5				13.74	0.279	0.974	0.011	
Raja miraletus	89	5	2				73.28	0.277	0.13	0.474	0.182
Argyrosomus hololepidotus		15	1	1	1			13.74	0.259	0.659	0.194
Zeus faber	62	5	1				51.91	0.201	0.002	0.25	0.312
Chelidonichthys capensis	29	5	4				29.01	0.199	0.005	0.302	0.244
Stromateus fiatola	15	3	2				15.27	0.186	0.409	0.187	0.002
Sphyraena guachancho	25	2	1	1			22.14	0.185	0.601	0.04	0.001
Pseudotolithus senegalensis		8	6	3				12.98	0.183	0.556	0.07
Lithognathus mormyrus	12	4	3				14.5	0.183	0.119	0.4	
Merluccius capensis	3		3				4.58	0.17		0.413	0.047
Trigla lyra	44	1	3				36.64	0.166		0.119	0.354
Sepia orbignyana	57	6					48.09	0.165	0.129	0.18	0.177
Pteroscion peli	15	7	1				17.56	0.164	0.517	0.048	
Brotula barbata	38	6	1				34.35	0.159		0.061	0.397
Pseudotolithus typus	7	3	2				9.16	0.148	0.278	0.185	
Sardinella aurita	32	2	2				27.48	0.137	0.297	0.124	0.02
Merluccius polli	9	1	2				9.16	0.136		0.187	0.194
Pterothrissus belloci	31	3	2				27.48	0.132		0.016	0.367
Dentex barnardi	51	3					41.22	0.124	0.126	0.151	0.094
Citharus linguatula	74	5					60.31	0.119	0.012	0.153	0.17
Atractoscion aequidens	8	2	1				8.4	0.115	0.004	0.27	0.036
Rhinobatos albomaculatus		29	1	1				23.66	0.113	0.086	0.231
Pseudupeneus prayensis	35	4					29.77	0.101	0.152	0.153	0.002
Pomadasys rogeri	8	1	1				7.63	0.095	0.067	0.203	0.001
Arius parkii	12	1	1				10.69	0.085	0.301		
Etrumeus whiteheadi	3	2	2				5.34	0.083	0.096	0.001	0.162
Mustelus mustelus	11	2	1				10.69	0.074	0.001	0.168	0.031
Pagrus caeruleostictus	10	4					10.69	0.069	0.23	0.01	
Epinephelus aeneus	22	1	1				18.32	0.065	0.162	0.029	0.024
Squalus megalops	8	1	1				7.63	0.062		0.051	0.125
Illex coindetii	34	1	1				27.48	0.062		0.139	0.028
Carcharhinus signatus			1				0.76	0.056		0.149	
Zenopsis conchifer	14	2					12.21	0.054		0.002	0.156
J E L L Y F I S H		2	1				2.29	0.053	0.188		
Chlorophthalmus atlanticus		1		1			1.53	0.05		0.147	
Gymnura altavela	3	1	1				3.82	0.048	0.152	0.014	
Alectis alexandrinus	7	3					7.63	0.048	0.129	0.03	
Anthias anthias	8	1	1				7.63	0.046		0.001	0.133
Myliobatis aquila	2		1				2.29	0.046	0.008	0.116	
Dicologoglossa cuneata	32	1					25.19	0.045	0.078	0.052	0.011
Lagocephalus laevigatus	34	1					26.72	0.045	0.107	0.021	0.02
Fistularia petimba	48						36.64	0.042	0.022	0.062	0.038
Dasyatis margarita	12	1					9.92	0.039	0.072	0.042	0.009
Dasyatis marmorata	4		1				3.82	0.039	0.011	0.096	
Sphyraena sphyraena	9	2					8.4	0.039	0.114	0.017	
Bembrops heterurus	10	3					9.92	0.039			0.113
Sepia officinalis hierredda		22	1				17.56	0.037	0.015	0.035	0.058
Thyrsites atun	2		1				2.29	0.036		0.096	
Squatina oculata	8	1					6.87	0.033		0.046	0.044
Sardinella maderensis	24						18.32	0.031	0.072	0.028	0.001
Erythrocles monodi	1	2					2.29	0.031			0.09
Spicara alta	10	1					8.4	0.026			0.077
Lepidotrigla cadmani	5	2					5.34	0.026		0.033	0.041
Uranoscopus polli	26						19.85	0.026	0.002	0.012	0.061
Octopus macropus	13	1					10.69	0.024	0.008	0.029	0.033
Ephippion guttifer	6	1					5.34	0.022	0.072	0.003	
Torpedo marmorata	10						7.63	0.021	0.014	0.038	0.01
Sphyrna zygaena	1	1					1.53	0.021	0.075		
Spondyliosoma cantharus	4	1					3.82	0.021	0.008	0.05	
Cynoponticus ferox	9						6.87	0.021	0.026	0.001	0.038
Scorpaena normani	26						19.85	0.02		0.003	0.056
Torpedo torpedo	32						24.43	0.02	0.004	0.02	0.034
CHIMAERIDAE	1					0.76	0.02		0.054		
Callorhinchus capensis		1					0.76	0.017		0.045	
Loligo vulgaris	2	1					2.29	0.017		0.045	
Octopus vulgaris	15						11.45	0.016	0.004	0.03	0.012
Miracorvina angolensis	5	1					4.58	0.016		0.041	0.003
Seriola carpenteri	5	1					4.58	0.016	0.052	0.003	
Chaetodon hoefleri	41						31.3	0.015	0.008	0.024	0.01
Epinephelus goreensis	5						3.82	0.015	0.012	0.03	
Pomadasys peroteti	3	1					3.05	0.015	0.052		
Lichia amia	1					0.76	0.014	0.05			
Dasyatis centroura		1					0.76	0.014		0.037	
Scomberomorus tritor	6						4.58	0.014	0.049		
Alloteuthis africana	29						22.14	0.013	0.007	0.029	0.001
Acanthurus monroviae	2	1					2.29	0.013	0.046		
Sepiella ornata	12						9.16	0.013	0.005	0.018	0.015
Grammoplites gruveli	25						19.08	0.013	0.011	0.026	
Balistes punctatus	5						3.82	0.013	0.044		
Aluterus scriptus	6						4.58	0.012	0.043		
Caranx crysos	12						9.16	0.012	0.015	0.02	
Sphoeroides sp.	1	1					1.53	0.012			0.033
Gymnura micrura	3						2.29	0.012	0.03	0.008	
Bodianus speciosus	3	1					3.05	0.012	0.041		
Parapenaeus longirostris	7	1					6.11	0.011		0.001	0.032
Chelidonichthys gabonensis	2	1					2.29	0.01		0.001	0.029
Drepane africana	3						2.29	0.01	0.037		
Penaeus notialis	15						11.45	0.008	0.025	0.004	
Parapenaeus longirostris,femal		7					5.34	0.003	0.009		
Parapandalus narval	3						2.29	0.003			0.009
Parapenaeus longirostris, male		8					6.11	0.001		0.001	0.001
Penaeus kerathurus	1						0.76		0.001		
penaeus notialis,female	1						0.76				
penaeus notialis,male	1						0.76				
Other fish							0.308	0.438	0.261	0.251	0
Sum all species								34.397	24.139	43.544	32.872 0
Sum SNAPPERS, JOBFISHES								0.011	0.039		
Sum GROUPERS, SEABASSES								0.091	0.197	0.073	0.025
Sum GRUNTS, SWEETLIPS								6.744	9.316	9.543	1.581
Sum CROAKERS, DRUMS, KOBS								1.489	2.095	2.1	0.326

Sum PANDORAS, PORGIES, SEABREAMS,							3.314	0.778	3.443	5.259
Sum SHARKS, CHIMAERAS							0.307	0.086	0.555	0.219
Sum BATOID FISHES, RAYS							0.64	0.524	1.078	0.258
Sum CEPHALOPODS							0.358	0.172	0.528	0.326
Numbers of stations included in analysis, total and by depth strata						131	37	49	45	0

B.Luanda-Congo River. Slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES							% inci-	Mean	Mean densities
by bottom depth strata t/nm²	Lower limits, Kg/nm					dence	dens.			
	>0	10	30	100	300	1000	t/nm²	200-300m	300-400m	400-500m	500-500m
Synagrops microlepis	5	1	3	5	2		55.17	6.851	18.823	2.44	
Merluccius polli	9	6	7	3	1		89.66	4.477	2.097	7.006	3.361
Nematocarcinus africanus	1	2	5	6			48.28	4.046		4.406	8.057
Chlorophthalmus atlanticus	12	3	6	2			79.31	2.344	2.413	3.847	0.014
Hymenocephalus italicus	8	4	2				48.28	0.683		1.245	0.607
Nezumia aequalis	25			1			89.66	0.653	0.236	1.342	0.09
Galeus polli	2			1			10.34	0.574		1.363	0.037
Zenopsis conchifer	6	3	1				34.48	0.406	1.004	0.229	
Parapenaeus longirostris	9	2	1				41.38	0.378	1.051	0.12	0.009
Scorpaena normani	5		1				20.69	0.358	0.016	0.854	
Pterothrissus belloci	14	1	1				55.17	0.348	0.913	0.141	0.024
Trichiurus lepturus	20	2					75.86	0.307	0.552	0.15	0.266
Dentex angolensis	3	4					24.14	0.272	0.877		
Hoplostethus mediterraneus		1		1				6.9	0.258	0.833	
Chaunax pictus	14	1					51.72	0.251		0.28	0.49
Brotula barbata	5	2					24.14	0.251	0.809		
Gadella maraldi	9	2					37.93	0.238	0.016	0.385	0.266
Laemonema laureysi	9	2					37.93	0.232	0.024	0.406	0.204
Merluccius capensis				1			3.45	0.199		0.482	
Etmopterus polli	4	1	1				20.69	0.193		0.447	0.03
Malacocephalus occidentalis	19						65.52	0.188	0.154	0.216	0.183
Dentex macrophthalmus	2	2					13.79	0.154	0.266	0.173	
Bembrops sp.	1		1				6.9	0.153	0.4	0.071	
MYCTOPHIDAE	21						72.41	0.13	0.168	0.177	0.014
Bathynectes piperitus	13	1					48.28	0.129		0.298	0.021
Lophiodes kempi	5	2					24.14	0.117	0.01	0.174	0.151
Dibranchus atlanticus	14						48.28	0.106		0.082	0.259
Chaceon maritae	6	1					24.14	0.089		0.169	0.071
GALATHEIDAE *	7	1					27.59	0.089	0.241	0.035	
Bembrops heterurus	9						31.03	0.079	0.248	0.002	0.004
Squatina aculeata		1					3.45	0.077			0.281
Yarrella blackfordi	5	1					20.69	0.073		0.003	0.259
Gadella imberbis	16						55.17	0.073	0.004	0.113	0.091
Pontinus accraensis	7						24.14	0.069	0.109	0.084	
Epigonus telescopus	10						34.48	0.068	0.018	0.147	0.003
Zeus faber	2	1					10.34	0.057	0.184		
Aristeus varidens	8						27.59	0.054		0.045	0.129
Torpedo nobiliana	1	1					6.9	0.048		0.115	
Malacocephalus laevis	4						13.79	0.044		0.1	0.011
Bembrops greyi	2						6.9	0.038	0.122		
Centrophorus granulosus	2						6.9	0.037		0.02	0.103
Aristeus varidens, female	6						20.69	0.036		0.03	0.087
Shrimps, small, non comm.		1						3.45	0.031		0.076
Bathyuroconger vicinus	8						27.59	0.031		0.041	0.05
Parapenaeus longirostris,femal	8						27.59	0.029	0.019	0.038	0.026
Halosaurus ovenii	9						31.03	0.028		0.019	0.073
RHINOCHIMAERIDAE	1						3.45	0.028			0.101
Dicologoglossa cuneata	3						10.34	0.026	0.011	0.055	0.001
Calappa sp.	1						3.45	0.026			0.093
Lophius vaillanti	3						10.34	0.026		0.062	
Squatina oculata	1						3.45	0.024		0.059	
Aristeus varidens, male	6						20.69	0.024		0.026	0.048
Todaropsis eblanae	6						20.69	0.023	0.017	0.024	0.028
Illex coindetii	8						27.59	0.022	0.041	0.023	
Stereomastis sculpta	3						10.34	0.017			0.063
Parasudis sp.	1						3.45	0.016		0.039	
Stomias boa boa	4						13.79	0.016			0.058
Etmopterus sp.	2						6.9	0.016		0.018	0.031
Caelorinchus coelorhincus	3						10.34	0.014	0.023	0.017	0.001
CONGRIDAE	5						17.24	0.014	0.016	0.023	
Triplophos hemingi	3						10.34	0.013			0.049
Gephyroberyx darwini	2						6.9	0.012	0.001	0.029	
Hoplostethus cadenati	5						17.24	0.012		0.003	0.038
Raja clavata	1						3.45	0.011		0.026	
Plesiopenaeus edwardsianus	4						13.79	0.009		0.032	
Plesionika martia	6						20.69	0.008		0.012	0.012
Parapenaeus longirostris, male		5						17.24	0.007	0.014	0.007
Parapandalus narval	4						13.79	0.006		0.005	0.014
Solenocera africana	4						13.79	0.001		0.003	0.001
Other fish							0.139	0.159	0.084	0.199	0
Sum all species								25.859	31.89	27.883	16.04	0
Sum SNAPPERS, JOBFISHES												
Sum GROUPERS, SEABASSES												
Sum GRUNTS, SWEETLIPS												
Sum CROAKERS, DRUMS, KOBS									0.003	0.011		
Sum PANDORAS, PORGIES, SEABREAMS,									0.432	1.162	0.173	
Sum SHARKS, CHIMAERAS								0.95		1.907	0.585	
Sum BATOID FISHES, RAYS								0.065	0.019	0.142		
Sum CEPHALOPODS								0.051	0.061	0.047	0.046	
Numbers of stations included in analysis, total and by depth strata							29	9	12	8	0	

C. Luanda-Congo River. Slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES							% inci-	Mean	Mean densities
by bottom depth strata t/nm²	Lower limits, Kg/nm					dence	dens.			
	>0	10	30	100	300	1000	t/nm²	500-600m	600-700m	700-800m	800-800m
Hoplostethus cadenati	14	9	8	3	2		97.3	5.109	1.1	7.23	6.309
Nematocarcinus africanus	3	5	18	2			75.68	4.503	6.798	5.012	1.806
Yarrella blackfordi	13	14	9				97.3	2.171	1.261	2.556	2.554
Lamprogrammus exutus	14	11	2				72.97	0.924	0.838	1.092	0.805
Trachyrincus scabrus	1		1	1			8.11	0.64	0.001	1.252	0.512
Nezumia micronychodon	3		1	1			13.51	0.627		1.34	0.371
Hoplostethus atlanticus				1			2.7	0.627	2.109		
Nezumia aequalis	12	1	1	1			40.54	0.597	0.069	0.459	1.243
Merluccius polli	23	8					83.78	0.578	0.602	0.767	0.334
Stereomastis sp.	20	6					70.27	0.526	0.224	0.473	0.865
Triplophos hemingi	23	4	1				75.68	0.478	0.659	0.584	0.19
Malacocephalus occidentalis	11					1	32.43	0.476	0.043	0.035	1.387
Aristeus varidens	11			1			32.43	0.41	0.165	0.929	0.029
Stomias boa boa	27	4					83.78	0.397	0.51	0.404	0.286
Sea cucumbers	1	5	1				18.92	0.352		0.025	1.056
Xenodermichthys copei	27	2					78.38	0.25	0.098	0.372	0.246
Bathyuroconger vicinus	27	2					78.38	0.214	0.029	0.244	0.347
Merluccius capensis		2	1				8.11	0.183		0.235	0.29

Trachyrincus scabrus			1			2.7	0.165		0.436	
Illex coindetii	1	3				10.81	0.144	0.006	0.28	0.112
Aristeus varidens, female	23					62.16	0.141	0.185	0.101	0.147
Talismania longifilis	11					29.73	0.138		0.102	0.308
Nezumia sp.	11	1				32.43	0.138	0.005	0.069	0.339
Stomias affinis	1		1			5.41	0.136		0.36	
Bajacalifornia magalops	4		1			13.51	0.132		0.296	0.062
Raja alba	3		1			10.81	0.12		0.039	0.323
Lophius sp.	4		1			13.51	0.119	0.001		0.368
Triplophos hemingi	4		1			13.51	0.113	0.034	0.229	0.049
OMMASTREPHIDAE	14					37.84	0.103	0.065	0.159	0.072
Alepocephalus sp.			1			2.7	0.101			0.311
Etmopterus polli	13	2				40.54	0.099	0.019	0.241	0.008
MACROURIDAE	5	1				16.22	0.096		0.008	0.286
Gonostoma denudata		2				5.41	0.08		0.098	0.132
Plesiopenaeus edwardsianus		5	1			16.22	0.075		0.194	0.005
Gadella imberbis	18					48.65	0.074	0.164	0.047	0.024
OPISTHOTEUTHIDAE		1				2.7	0.072			0.221
Dibranchus atlanticus	27					72.97	0.064	0.047	0.041	0.105
Chaceon maritae, female	10					27.03	0.063	0.005	0.077	0.101
Aristeus varidens, male	23					62.16	0.061	0.091	0.064	0.029
Shrimps, small, non comm.	4	1				13.51	0.055		0.01	0.158
Dicrolene intronigra	11					29.73	0.051		0.037	0.116
Chaceon maritae	18					48.65	0.05	0.028	0.072	0.044
Chaceon maritae, male	7					18.92	0.048	0.01	0.052	0.078
Stomias sp.	1				2.7	0.045		0.119		
Trichiurus lepturus	16					43.24	0.045	0.06	0.068	0.003
Centrophorus squamosus	2	1				8.11	0.041	0.003	0.105	
SQUALIDAE	8					21.62	0.039	0.006	0.028	0.081
Monomitopus metriostoma	8					21.62	0.035	0.003	0.018	0.085
TETRAODONTIDAE		1				2.7	0.031			0.096
Stereomastis sculpta	3					8.11	0.029	0.031	0.041	0.013
Halosaurus ovenii	22					59.46	0.029	0.012	0.021	0.053
Todarodes sagittatus		1				2.7	0.028		0.074	
Notacanthus sexspinis	2					5.41	0.025			0.078
Todaropsis eblanae	5					13.51	0.025	0.035	0.04	
Raja sp.	9					24.32	0.023	0.017	0.009	0.045
Laemonema laureysi	10					27.03	0.023	0.043	0.021	0.007
Centrophorus granulosus	4					10.81	0.022	0.055		0.018
Talismania sp.	4					10.81	0.022		0.01	0.057
POLYCHAELIDAE	3					8.11	0.02	0.018	0.024	0.017
Nezumia leonis	1					2.7	0.019			0.058
Lepidopus caudatus	1					2.7	0.018			0.056
MYCTOPHIDAE	16					43.24	0.016	0.028	0.019	0.002
Chaunax pictus	5					13.51	0.016	0.049	0.003	
Gadella sp.	1					2.7	0.015		0.04	
Ebinania costaecanarie	6					16.22	0.013	0.004	0.009	0.027
NETTASTOMATIDAE	1					2.7	0.013		0.035	
Glyphus marsupialis	12					32.43	0.012	0.005	0.012	0.019
Cataetyx laticeps	13					35.14	0.012	0.013	0.015	0.006
Phrynichthys wedli	4					10.81	0.011		0.021	0.008
Bathyurocongrus sp.	1					2.7	0.011		0.028	
CONGRIDAE	5					13.51	0.01	0.004		0.027
Acanthephyra sp.	2					5.41	0.003	0.001	0.008	
Heterocarpus grimaldii	2					5.41	0.003			0.009
Plesionika martia	3					8.11	0.003	0.007		0.001
S H R I M P S	2					5.41	0.001	0.002		
PANDALIDAE	1				2.7			0.001		
Plesionika sp.	2					5.41		0.001		
SERGESTIDAE	1				2.7		0.001			
Other fish						0.219	0.214	0.204	0.241	0
Sum all species							22.374	15.774	26.992	23.037 0
Sum SNAPPERS, JOBFISHES										
Sum GROUPERS, SEABASSES										
Sum GRUNTS, SWEETLIPS										
Sum CROAKERS, DRUMS, KOBS										
Sum PANDORAS, PORGIES, SEABREAMS,										
Sum SHARKS, CHIMAERAS							0.266	0.134	0.495	0.118
Sum BATOID FISHES, RAYS							0.147	0.017	0.047	0.383
Sum CEPHALOPODS							0.391	0.115	0.556	0.451
Numbers of stations included in analysis, total and by depth strata						37	11	14	12	0

A. Benguela-Luanda. Shelf

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES							% inci-	Mean	Mean densities
by bottom depth strata t/nm²	Lower limits, Kg/nm						dence	dens.			
	>0	10	30	100	300	1000	t/nm²	20-50m	50-100m	100-200m	200-200m
Trachurus trecae	48	12	13	6	3	5	66.41	10.738	0.919	18.035	10.867
Brachydeuterus auritus	27	11	18	10	5	1	54.96	5.104	6.807	7.053	1.58
Trichiurus lepturus	53	17	6	5	2	1	64.12	2.874	1.728	4.274	2.291
Synagrops microlepis	5	1	4	7	3		15.27	2.064		0.814	5.122
Dentex macrophthalmus	12	3	5	5	2		20.61	1.496	0.002	1.234	3.009
Pomadasys jubelini	9	6	4		1		15.27	0.844	2.175	0.615	
Pomadasys incisus	19	6	2		1		21.37	0.677	0.199	1.66	
Trachurus capensis			3	1	1		3.82	0.667			1.943
Galeoides decadactylus	12	10	9	2			25.19	0.653	1.847	0.352	
Dentex angolensis	35	14	11				45.8	0.64		0.342	1.49
Umbrina canariensis	48	4	1		1		41.22	0.601	0.081	1.291	0.279
Chloroscombrus chrysurus		17	3	6	1			20.61	0.533	1.844	0.034
Selene dorsalis	40		2		1		32.82	0.469	0.224	0.089	1.083
Pagellus bellottii	60	12	3	1			58.02	0.45	0.254	0.942	0.076
Dentex congoensis	24	5	5				25.95	0.316		0.309	0.582
Ilisha africana	8	5	5				13.74	0.279	0.974	0.011	
Raja miraletus	89	5	2				73.28	0.277	0.13	0.474	0.182
Argyrosomus hololepidotus		15	1	1	1			13.74	0.259	0.659	0.194
Zeus faber	62	5	1			51	8.91	0.201	0.002	0.25	0.312
Chelidonichthys capensis		29	5	4			29.01	0.199	0.005	0.302	0.244
Stromateus fiatola	15	3	2				15.27	0.186	0.409	0.187	0.002
Sphyraena guachancho	25	2	1	1			22.14	0.185	0.601	0.04	0.001
Pseudotolithus senegalensis		8	6	3				12.98	0.183	0.556	0.07
Lithognathus mormyrus	12	4	3				14.5	0.183	0.119	0.4	
Merluccius capensis	3		3				4.58	0.17		0.413	0.047
Trigla lyra	44	1	3				36.64	0.166		0.119	0.354
Sepia orbignyana	57	6					48.09	0.165	0.129	0.18	0.177
Pteroscion peli	15	7	1				17.56	0.164	0.517	0.048	
Brotula barbata	38	6	1				34.35	0.159		0.061	0.397
Pseudotolithus typus	7	3	2				9.16	0.148	0.278	0.185	
Sardinella aurita	32	2	2				27.48	0.137	0.297	0.124	0.02
Merluccius polli	9	1	2				9.16	0.136		0.187	0.194
Pterothrissus belloci	31	3	2				27.48	0.132		0.016	0.367
Dentex barnardi	51	3					41.22	0.124	0.126	0.151	0.094
Citharus linguatula	74	5					60.31	0.119	0.012	0.153	0.17
Atractoscion aequidens	8	2	1				8.4	0.115	0.004	0.27	0.036
Rhinobatos albomaculatus	29	1	1				23.66	0.113	0.086	0.231	0.008
Pseudupeneus prayensis	35	4					29.77	0.101	0.152	0.153	0.002
Pomadasys rogeri	8	1	1				7.63	0.095	0.067	0.203	0.001
Arius parkii	12	1	1				10.69	0.085	0.301		
Etrumeus whiteheadi	3	2	2				5.34	0.083	0.096	0.001	0.162
Mustelus mustelus	11	2	1				10.69	0.074	0.001	0.168	0.031
Pagrus caeruleostictus	10	4					10.69	0.069	0.23	0.01	
Epinephelus aeneus	22	1	1				18.32	0.065	0.162	0.029	0.024
Squalus megalops	8	1	1				7.63	0.062		0.051	0.125
Illex coindetii	34	1	1				27.48	0.062		0.139	0.028
Carcharhinus signatus			1				0.76	0.056		0.149	
Zenopsis conchifer	14	2					12.21	0.054		0.002	0.156
J E L L Y F I S H		2	1				2.29	0.053	0.188		
Chlorophthalmus atlanticus		1	1				1.53	0.05			0.147
Gymnura altavela	3	1	1				3.82	0.048	0.152	0.014	
Alectis alexandrinus	7	3					7.63	0.048	0.129	0.03	
Anthias anthias	8	1	1				7.63	0.046		0.001	0.133
Myliobatis aquila	2		1				2.29	0.046	0.008	0.116	
Dicologoglossa cuneata	32	1					25.19	0.045	0.078	0.052	0.011
Lagocephalus laevigatus	34	1					26.72	0.045	0.107	0.021	0.02
Fistularia petimba	48						36.64	0.042	0.022	0.062	0.038
Dasyatis margarita	12	1					9.92	0.039	0.072	0.042	0.009
Dasyatis marmorata	4		1				3.82	0.039	0.011	0.096	
Sphyraena sphyraena	9	2					8.4	0.039	0.114	0.017	
Bembrops heterurus	10	3					9.92	0.039			0.113
Sepia officinalis hierredda	22	1					17.56	0.037	0.015	0.035	0.058
Thyrsites atun	2		1				2.29	0.036		0.096	
Squatina oculata	8	1					6.87	0.033		0.046	0.044
Sardinella maderensis	24						18.32	0.031	0.072	0.028	0.001
Erythrocles monodi	1	2					2.29	0.031			0.09
Spicara alta	10	1					8.4	0.026			0.077
Lepidotrigla cadmani	5	2					5.34	0.026		0.033	0.041
Uranoscopus polli	26						19.85	0.026	0.002	0.012	0.061
Octopus macropus	13	1					10.69	0.024	0.008	0.029	0.033
Ephippion guttifer	6	1					5.34	0.022	0.072	0.003	
Torpedo marmorata	10						7.63	0.021	0.014	0.038	0.01
Sphyrna zygaena	1	1					1.53	0.021	0.075		
Spondyliosoma cantharus	4	1					3.82	0.021	0.008	0.05	
Cynoponticus ferox	9						6.87	0.021	0.026	0.001	0.038
Scorpaena normani	26						19.85	0.02		0.003	0.056
Torpedo torpedo	32						24.43	0.02	0.004	0.02	0.034
CHIMAERIDAE	1					0.76	0.02		0.054		
Callorhinchus capensis		1					0.76	0.017		0.045	
Loligo vulgaris	2	1					2.29	0.017		0.045	
Octopus vulgaris	15						11.45	0.016	0.004	0.03	0.012
Miracorvina angolensis	5	1					4.58	0.016		0.041	0.003
Seriola carpenteri	5	1					4.58	0.016	0.052	0.003	
Chaetodon hoefleri	41						31.3	0.015	0.008	0.024	0.01
Epinephelus goreensis	5						3.82	0.015	0.012	0.03	
Pomadasys peroteti	3	1					3.05	0.015	0.052		
Lichia amia	1					0.76	0.014	0.05			
Dasyatis centroura		1					0.76	0.014		0.037	
Scomberomorus tritor	6						4.58	0.014	0.049		
Alloteuthis africana	29						22.14	0.013	0.007	0.029	0.001
Acanthurus monroviae	2	1					2.29	0.013	0.046		
Sepiella ornata	12						9.16	0.013	0.005	0.018	0.015
Grammoplites gruveli	25						19.08	0.013	0.011	0.026	
Balistes punctatus	5						3.82	0.013	0.044		
Aluterus scriptus	6						4.58	0.012	0.043		
Caranx crysos	12						9.16	0.012	0.015	0.02	
Sphoeroides sp.	1	1					1.53	0.012			0.033
Gymnura micrura	3						2.29	0.012	0.03	0.008	
Bodianus speciosus	3	1					3.05	0.012	0.041		
Parapenaeus longirostris	7	1					6.11	0.011		0.001	0.032
Chelidonichthys gabonensis	2	1					2.29	0.01		0.001	0.029
Drepane africana	3						2.29	0.01	0.037		
Penaeus notialis	15						11.45	0.008	0.025	0.004	
Parapenaeus longirostris,femal	7						5.34	0.003			0.009
Parapandalus narval	3						2.29	0.003			0.009
Parapenaeus longirostris, male	8							6.11	0.001		0.0
Penaeus kerathurus	1						0.76		0.001	0.001	
penaeus notialis,female	1						0.76				
penaeus notialis,male	1						0.76				
Other fish							0.308	0.438	0.261	0.251	0
Sum all species							34.397	24.139	43.544	32.872	0
Sum SNAPPERS, JOBFISHES								0.011	0.039		
Sum GROUPERS, SEABASSES								0.091	0.197	0.073	0.025
Sum GRUNTS, SWEETLIPS								6.744	9.316	9.543	1.581
Sum CROAKERS, DRUMS, KOBS								1.489	2.095	2.1	0.326
Sum PANDORAS, PORGIES, SEABREAMS,								3.314	0.778	3.443	5.259
Sum SHARKS, CHIMAERAS								0.307	0.086	0.555	0.219
Sum BATOID FISHES, RAYS								0.64	0.524	1.078	0.258
Sum CEPHALOPODS								0.358	0.172	0.528	0.326
Numbers of stations included in analysis, total and by depth strata							131	37	49	45	0

B. Benguela-Luanda. Slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES						% inci-	Mean	Mean densities
by bottom depth strata t/nm²	Lower limits, Kg/nm								
	>0	10	30	100	300	1000	dence	dens.			
							t/nm²	200-300m	300-400m	400-500m	500-500m
Synagrops microlepis	5	1	3	5	2		55.17	6.851	18.823	2.44	
Merluccius polli	9	6	7	3	1		89.66	4.477	2.097	7.006	3.361
Nematocarcinus africanus	1	2	5	6			48.28	4.046		4.406	8.057
Chlorophthalmus atlanticus	12	3	6	2			79.31	2.344	2.413	3.847	0.014
Hymenocephalus italicus	8	4	2				48.28	0.683		1.245	0.607
Nezumia aequalis	25			1			89.66	0.653	0.236	1.342	0.09
Galeus polli	2			1			10.34	0.574		1.363	0.037
Zenopsis conchifer	6	3	1				34.48	0.406	1.004	0.229	
Parapenaeus longirostris	9	2	1				41.38	0.378	1.051	0.12	0.009
Scorpaena normani	5		1				20.69	0.358	0.016	0.854	
Pterothrissus belloci	14	1	1				55.17	0.348	0.913	0.141	0.024
Trichiurus lepturus	20	2					75.86	0.307	0.552	0.15	0.266
Dentex angolensis	3	4					24.14	0.272	0.877		
Hoplostethus mediterraneus		1		1				6.9	0.258	0.833	
Chaunax pictus	14	1					51.72	0.251		0.28	0.49
Brotula barbata	5	2					24.14	0.251	0.809		
Gadella maraldi	9	2					37.93	0.238	0.016	0.385	0.266
Laemonema laureysi	9	2					37.93	0.232	0.024	0.406	0.204
Merluccius capensis			1				3.45	0.199		0.482	
Etmopterus polli	4	1	1				20.69	0.193		0.447	0.03
Malacocephalus occidentalis	19						65.52	0.188	0.154	0.216	0.183
Dentex macrophthalmus	2	2					13.79	0.154	0.266	0.173	
Bembrops sp.	1		1				6.9	0.153	0.4	0.071	
MYCTOPHIDAE	21						72.41	0.13	0.168	0.177	0.014
Bathynectes piperitus	13	1					48.28	0.129		0.298	0.021
Lophiodes kempi	5	2					24.14	0.117	0.01	0.174	0.151
Dibranchus atlanticus	14						48.28	0.106		0.082	0.259
Chaceon maritae	6	1					24.14	0.089		0.169	0.071
GALATHEIDAE *	7	1					27.59	0.089	0.241	0.035	
Bembrops heterurus	9						31.03	0.079	0.248	0.002	0.004
Squatina aculeata		1					3.45	0.077			0.281
Yarrella blackfordi	5	1					20.69	0.073		0.003	0.259
Gadella imberbis	16						55.17	0.073	0.004	0.113	0.091
Pontinus accraensis	7						24.14	0.069	0.109	0.084	
Epigonus telescopus	10						34.48	0.068	0.018	0.147	0.003
Zeus faber	2	1					10.34	0.057	0.184		
Aristeus varidens	8						27.59	0.054		0.045	0.129
Torpedo nobiliana	1	1					6.9	0.048		0.115	
Malacocephalus laevis	4						13.79	0.044		0.1	0.011
Bembrops greyi	2						6.9	0.038	0.122		
Centrophorus granulosus	2						6.9	0.037		0.02	0.103
Aristeus varidens, female	6						20.69	0.036		0.03	0.087
Shrimps, small, non comm.		1						3.45	0.031		0.076
Bathyuroconger vicinus	8						27.59	0.031		0.041	0.05
Parapenaeus longirostris,femal	8						27.59	0.029	0.019	0.038	0.026
Halosaurus ovenii	9						31.03	0.028		0.019	0.073
RHINOCHIMAERIDAE	1						3.45	0.028			0.101
Dicologoglossa cuneata	3						10.34	0.026	0.011	0.055	0.001
Calappa sp.	1						3.45	0.026			0.093
Lophius vaillanti	3						10.34	0.026		0.062	
Squatina oculata	1						3.45	0.024		0.059	
Aristeus varidens, male	6						20.69	0.024		0.026	0.048
Todaropsis eblanae	6						20.69	0.023	0.017	0.024	0.028
Illex coindetii	8						27.59	0.022	0.041	0.023	
Stereomastis sculpta	3						10.34	0.017			0.063
Parasudis sp.	1						3.45	0.016		0.039	
Stomias boa boa	4						13.79	0.016			0.058
Etmopterus sp.	2						6.9	0.016		0.018	0.031
Caelorinchus coelorhincus		3					10.34	0.014	0.023	0.017	0.001
CONGRIDAE	5						17.24	0.014	0.016	0.023	
Triplophos hemingi	3						10.34	0.013			0.049
Gephyroberyx darwini	2						6.9	0.012	0.001	0.029	
Hoplostethus cadenati	5						17.24	0.012		0.003	0.038
Raja clavata	1						3.45	0.011		0.026	
Plesiopenaeus edwardsianus		4					13.79	0.009			0.032
Plesionika martia	6						20.69	0.008		0.012	0.012
Parapenaeus longirostris, male		5						17.24	0.007	0.014	0.007
Parapandalus narval	4						13.79	0.006		0.005	0.014
Solenocera africana	4						13.79	0.001		0.003	0.001
Other fish							0.139	0.159	0.084	0.199	0
Sum all species							25.859	31.89	27.883	16.04	0
Sum SNAPPERS, JOBFISHES											
Sum GROUPERS, SEABASSES											
Sum GRUNTS, SWEETLIPS											
Sum CROAKERS, DRUMS, WEAKF., KOBS									0.003	0.011	
Sum PANDORAS, PORGIES, SEABREAMS,									0.432	1.162	0.173
Sum SHARKS, CHIMAERAS								0.95		1.907	0.585
Sum BATOID FISHES, RAYS								0.065	0.019	0.142	
Sum CEPHALOPODS								0.051	0.061	0.047	0.046
Numbers of stations included in analysis, total and by depth strata							29	9	12	8	0

C. Benguela-Luanda. Slope

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES						% inci-	Mean	Mean densities
by bottom depth strata t/nm²	Lower limits, Kg/nm					dence	dens.		
	>0	10	30	100	300	1000	t/nm²	500-600m	600-700m	700-800m	800-800m
Hoplostethus cadenati	14	9	8	3	2		97.3	5.109	1.1	7.23	6.309
Nematocarcinus africanus	3	5	18	2			75.68	4.503	6.798	5.012	1.806
Yarrella blackfordi	13	14	9				97.3	2.171	1.261	2.556	2.554
Lamprogrammus exutus	14	11	2				72.97	0.924	0.838	1.092	0.805
Trachyrincus scabrus	1		1	1			8.11	0.64	0.001	1.252	0.512
Nezumia micronychodon	3		1	1			13.51	0.627		1.34	0.371
Hoplostethus atlanticus				1			2.7	0.627	2.109		
Nezumia aequalis	12	1	1	1			40.54	0.597	0.069	0.459	1.243
Merluccius polli	23	8					83.78	0.578	0.602	0.767	0.334
Stereomastis sp.	20	6					70.27	0.526	0.224	0.473	0.865
Triplophos hemingi	23	4	1				75.68	0.478	0.659	0.584	0.19
Malacocephalus occidentalis	11			1			32.43	0.476	0.043	0.035	1.387
Aristeus varidens	11			1			32.43	0.41	0.165	0.929	0.029
Stomias boa boa	27	4					83.78	0.397	0.51	0.404	0.286
Sea cucumbers	1	5	1				18.92	0.352		0.025	1.056
Xenodermichthys copei	27	2					78.38	0.25	0.098	0.372	0.246
Bathyuroconger vicinus	27	2					78.38	0.214	0.029	0.244	0.347
Merluccius capensis		2	1				8.11	0.183		0.235	0.29
Trachyrincus scabrus			1				2.7	0.165		0.436	
Illex coindetii	1	3					10.81	0.144	0.006	0.28	0.112
Aristeus varidens, female	23						62.16	0.141	0.185	0.101	0.147
Talismania longifilis	11						29.73	0.138		0.102	0.308
Nezumia sp.	11	1					32.43	0.138	0.005	0.069	0.339
Stomias affinis	1		1				5.41	0.136		0.36	
Bajacalifornia magalops	4		1				13.51	0.132		0.296	0.062
Raja alba	3		1				10.81	0.12		0.039	0.323
Lophius sp.	4		1				13.51	0.119	0.001		0.368
Triplophos hemingi	4		1				13.51	0.113	0.034	0.229	0.049
OMMASTREPHIDAE	14						37.84	0.103	0.065	0.159	0.072
Alepocephalus sp.			1				2.7	0.101			0.311
Etmopterus polli	13	2					40.54	0.099	0.019	0.241	0.008
MACROURIDAE	5	1					16.22	0.096		0.008	0.286
Gonostoma denudata	5	1	2				5.41	0.08		0.098	0.132
Plesiopenaeus edwardsianus							16.22	0.075		0.194	0.005
Gadella imberbis	18						48.65	0.074	0.164	0.047	0.024
OPISTHOTEUTHIDAE		1					2.7	0.072			0.221
Dibranchus atlanticus	27						72.97	0.064	0.047	0.041	0.105
Chaceon maritae, female	10						27.03	0.063	0.005	0.077	0.101
Aristeus varidens, male	23						62.16	0.061	0.091	0.064	0.029
Shrimps, small, non comm.	4	1					13.51	0.055		0.01	0.158
Dicrolene intronigra	11						29.73	0.051		0.037	0.116
Chaceon maritae	18						48.65	0.05	0.028	0.072	0.044
Chaceon maritae, male	7						18.92	0.048	0.01	0.052	0.078
Stomias sp.	1						2.7	0.045		0.119	
Trichiurus lepturus	16						43.24	0.045	0.06	0.068	0.003
Centrophorus squamosus	2	1					8.11	0.041	0.003	0.105	
SQUALIDAE	8						21.62	0.039	0.006	0.028	0.081
Monomitopus metriostoma	8						21.62	0.035	0.003	0.018	0.085
TETRAODONTIDAE		1					2.7	0.031			0.096
Stereomastis sculpta	3						8.11	0.029	0.031	0.041	0.013
Halosaurus ovenii	22						59.46	0.029	0.012	0.021	0.053
Todarodes sagittatus		1					2.7	0.028		0.074	
Notacanthus sexspinis	2						5.41	0.025			0.078
Todaropsis eblanae	5						13.51	0.025	0.035	0.04	
Raja sp.	9						24.32	0.023	0.017	0.009	0.045
Laemonema laureysi	10						27.03	0.023	0.043	0.021	0.007
Centrophorus granulosus	4						10.81	0.022	0.055		0.018
Talismania sp.	4						10.81	0.022		0.01	0.057
POLYCHAELIDAE	3						8.11	0.02	0.018	0.024	0.017
Nezumia leonis	1						2.7	0.019			0.058
Lepidopus caudatus	1						2.7	0.018			0.056
MYCTOPHIDAE	16						43.24	0.016	0.028	0.019	0.002
Chaunax pictus	5						13.51	0.016	0.049	0.003	
Gadella sp.	1						2.7	0.015		0.04	
Ebinania costaecanarie	6						16.22	0.013	0.004	0.009	0.027
NETTASTOMATIDAE	1						2.7	0.013		0.035	
Glyphus marsupialis	12						32.43	0.012	0.005	0.012	0.019
Cataetyx laticeps	13						35.14	0.012	0.013	0.015	0.006
Phrynichthys wedli	4						10.81	0.011		0.021	0.008
Bathyurocongrus sp.	1						2.7	0.011		0.028	
CONGRIDAE	5						13.51	0.01	0.004		0.027
Acanthephyra sp.	2						5.41	0.003	0.001	0.008	
Heterocarpus grimaldii	2						5.41	0.003			0.009
Plesionika martia	3						8.11	0.003	0.007		0.001
S H R I M P S	2						5.41	0.001	0.002		
PANDALIDAE							2.7			0.001	
Plesionika sp.	2						5.41		0.001		
SERGESTIDAE	1						2.7		0.001		
Other fish							0.219	0.214	0.204	0.241	0
Sum all species							22.374	15.774	26.992	23.037	0
Sum SNAPPERS, JOBFISHES											
Sum GROUPERS, SEABASSES											
Sum GRUNTS, SWEETLIPS											
Sum CROAKERS, DRUMS, KOBS											
Sum PANDORAS, PORGIES, SEABREAMS,											
Sum SHARKS, CHIMAERAS								0.266	0.134	0.495	0.118
Sum BATOID FISHES, RAYS								0.147	0.017	0.047	0.383
Sum CEPHALOPODS								0.391	0.115	0.556	0.451
Numbers of stations included in analysis, total and by depth strata							11	14	12	0	37

A. Cunene-Tombua. Shelf

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES							% inci-	Mean	Mean densities
by bottom depth strata t/nm²	Lower limits, Kg/nm						dence	dens.		
	>0	10	30	100	300	1000		t/nm²	20-50m	50-100m	100-200m	200-200m
Trachurus trecae	48	12	13	6	3		5	66.41	10.738	0.919	18.035	10.867
Brachydeuterus auritus	27	11	18	10	5		1	54.96	5.104	6.807	7.053	1.58
Trichiurus lepturus	53	17	6	5	2		1	64.12	2.874	1.728	4.274	2.291
Synagrops microlepis	5	1	4	7	3			15.27	2.064		0.814	5.122
Dentex macrophthalmus	12	3	5	5	2			20.61	1.496	0.002	1.234	3.009
Pomadasys jubelini	9	6	4		1			15.27	0.844	2.175	0.615	
Pomadasys incisus	19	6	2		1			21.37	0.677	0.199	1.66	
Trachurus capensis			3	1	1			3.82	0.667			1.943
Galeoides decadactylus	12	10	9	2				25.19	0.653	1.847	0.352	
Dentex angolensis	35	14	11					45.8	0.64		0.342	1.49
Umbrina canariensis	48	4	1		1			41.22	0.601	0.081	1.291	0.279
Chloroscombrus chrysurus		17	3	6	1				20.61	0.533	1.844	0.034
Selene dorsalis	40		2		1			32.82	0.469	0.224	0.089	1.083
Pagellus bellottii	60	12	3	1				58.02	0.45	0.254	0.942	0.076
Dentex congoensis	24	5	5					25.95	0.316		0.309	0.582
Ilisha africana	8	5	5					13.74	0.279	0.974	0.011	
Raja miraletus	89	5	2					73.28	0.277	0.13	0.474	0.182
Argyrosomus hololepidotus		15	1	1	1			13.74	0.259	0.659	0.194	
Zeus faber	62	5	1					51.91	0.201	0.002	0.25	0.312
Chelidonichthys capensis	29	5	4					29.01	0.199	0.005	0.302	0.244

Stromateus fiatola	15	3	2		15.27	0.186	0.409	0.187	0.002
Sphyraena guachancho	25	2	1	1	22.14	0.185	0.601	0.04	0.001
Pseudotolithus senegalensis		8	6	3	12.98	0.183	0.556	0.07	
Lithognathus mormyrus	12	4	3		14.5	0.183	0.119	0.4	
Merluccius capensis	3		3		4.58	0.17		0.413	0.047
Trigla lyra	44	1	3		36.64	0.166		0.119	0.354
Sepia orbignyana	57	6			48.09	0.165	0.129	0.18	0.177
Pteroscion peli	15	7	1		17.56	0.164	0.517	0.048	
Brotula barbata	38	6	1		34.35	0.159		0.061	0.397
Pseudotolithus typus	7	3	2		9.16	0.148	0.278	0.185	
Sardinella aurita	32	2	2		27.48	0.137	0.297	0.124	0.02
Merluccius polli	9	1	2		9.16	0.136		0.187	0.194
Pterothrissus belloci	31	3	2		27.48	0.132		0.016	0.367
Dentex barnardi	51	3			41.22	0.124	0.126	0.151	0.094
Citharus linguatula	74	5			60.31	0.119	0.012	0.153	0.17
Atractoscion aequidens	8	2	1		8.4	0.115	0.004	0.27	0.036
Rhinobatos albomaculatus	29	1	1		23.66	0.113	0.086	0.231	0.008
Pseudupeneus prayensis	35	4			29.77	0.101	0.152	0.153	0.002
Pomadasys rogeri	8	1	1		7.63	0.095	0.067	0.203	0.001
Arius parkii	12	1	1		10.69	0.085	0.301		
Etrumeus whiteheadi	3	2	2		5.34	0.083	0.096	0.001	0.162
Mustelus mustelus	11	2	1		10.69	0.074	0.001	0.168	0.031
Pagrus caeruleostictus	10	4			10.69	0.069	0.23	0.01	
Epinephelus aeneus	22	1	1		18.32	0.065	0.162	0.029	0.024
Squalus megalops	8	1	1		7.63	0.062		0.051	0.125
Illex coindetii	34	1	1		27.48	0.062		0.139	0.028
Carcharhinus signatus			1		0.76	0.056		0.149	
Zenopsis conchifer	14	2			12.21	0.054		0.002	0.156
J E L L Y F I S H		2	1		2.29	0.053	0.188		
Chlorophthalmus atlanticus	1		1		1.53	0.05			0.147
Gymnura altavela	3	1	1		3.82	0.048	0.152	0.014	
Alectis alexandrinus	7	3			7.63	0.048	0.129	0.03	
Anthias anthias	8	1	1		7.63	0.046		0.001	0.133
Myliobatis aquila	2		1		2.29	0.046	0.008	0.116	
Dicologoglossa cuneata	32	1			25.19	0.045	0.078	0.052	0.011
Lagocephalus laevigatus	34	1			26.72	0.045	0.107	0.021	0.02
Fistularia petimba	48				36.64	0.042	0.022	0.062	0.038
Dasyatis margarita	12	1			9.92	0.039	0.072	0.042	0.009
Dasyatis marmorata	4		1		3.82	0.039	0.011	0.096	
Sphyraena sphyraena	9	2			8.4	0.039	0.114	0.017	
Bembrops heterurus	10	3			9.92	0.039			0.113
Sepia officinalis hierredda	22	1			17.56	0.037	0.015	0.035	0.058
Thyrsites atun	2		1		2.29	0.036		0.096	
Squatina oculata	8	1			6.87	0.033		0.046	0.044
Sardinella maderensis	24				18.32	0.031	0.072	0.028	0.001
Erythrocles monodi	1	2			2.29	0.031			0.09
Spicara alta	10	1			8.4	0.026			0.077
Lepidotrigla cadmani	5	2			5.34	0.026		0.033	0.041
Uranoscopus polli	26				19.85	0.026	0.002	0.012	0.061
Octopus macropus	13	1			10.69	0.024	0.008	0.029	0.033
Ephippion guttifer	6	1			5.34	0.022	0.072	0.003	
Torpedo marmorata	10				7.63	0.021	0.014	0.038	0.01
Sphyrna zygaena	1	1			1.53	0.021	0.075		
Spondyliosoma cantharus	4	1			3.82	0.021	0.008	0.05	
Cynoponticus ferox	9				6.87	0.021	0.026	0.001	0.038
Scorpaena normani	26				19.85	0.02		0.003	0.056
Torpedo torpedo	32				24.43	0.02	0.004	0.02	0.034
CHIMAERIDAE		1			0.76	0.02		0.054	
Callorhinchus capensis		1			0.76	0.017		0.045	
Loligo vulgaris	2	1			2.29	0.017		0.045	
Octopus vulgaris	15				11.45	0.016	0.004	0.03	0.012
Miracorvina angolensis	5	1			4.58	0.016		0.041	0.003
Seriola carpenteri	5	1			4.58	0.016	0.052	0.003	
Chaetodon hoefleri	41				31.3	0.015	0.008	0.024	0.01
Epinephelus goreensis	5				3.82	0.015	0.012	0.03	
Pomadasys peroteti	3	1			3.05	0.015	0.052		
Lichia amia		1			0.76	0.014	0.05		
Dasyatis centroura		1			0.76	0.014		0.037	
Scomberomorus tritor	6				4.58	0.014	0.049		
Alloteuthis africana	29				22.14	0.013	0.007	0.029	0.001
Acanthurus monroviae	2	1			2.29	0.013	0.046		
Sepiella ornata	12				9.16	0.013	0.005	0.018	0.015
Grammoplites gruveli	25				19.08	0.013	0.011	0.026	
Balistes punctatus	5				3.82	0.013	0.044		
Aluterus scriptus	6				4.58	0.012	0.043		
Caranx crysos	12				9.16	0.012	0.015	0.02	
Sphoeroides sp.	1	1			1.53	0.012			0.033
Gymnura micrura	3				2.29	0.012	0.03	0.008	
Bodianus speciosus	3	1			3.05	0.012	0.041		
Parapenaeus longirostris	7	1			6.11	0.011		0.001	0.032
Chelidonichthys gabonensis	2	1			2.29	0.01		0.001	0.029
Drepane africana	3				2.29	0.01	0.037		
Penaeus notialis	15				11.45	0.008	0.025	0.004	
Parapenaeus longirostris,femal	7				5.34	0.003			0.009
Parapandalus narval	3				2.29	0.003			0.009
Parapenaeus longirostris, male	8				6.11	0.001		0.001	0.001
Penaeus kerathurus	1				0.76		0.001		
penaeus notialis,female	1				0.76				
penaeus notialis,male	1				0.76				
Other fish					0.308	0.438	0.261	0.251	0
Sum all species					34.397	24.139	43.544	32.872	0
Sum SNAPPERS, JOBFISHES						0.011	0.039		
Sum GROUPERS, SEABASSES						0.091	0.197	0.073	0.025
Sum GRUNTS, SWEETLIPS						6.744	9.316	9.543	1.581
Sum CROAKERS, DRUMS, KOBS						1.489	2.095	2.1	0.326
Sum PANDORAS, PORGIES, SEABREAMS,						3.314	0.778	3.443	5.259
Sum SHARKS, CHIMAERAS						0.307	0.086	0.555	0.219
Sum BATOID FISHES, RAYS						0.64	0.524	1.078	0.258
Sum CEPHALOPODS						0.358	0.172	0.528	0.326
Numbers of stations included in analysis, total and by depth strata					131	37	49	45	0

B. Cunene-Tombua. Slope

SPECIES NAME by bottom depth strata t/nm²	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm						% inci-	Mean	Mean densities		
	>0	10	30	100	300	1000	dence t/nm²	dens. 200-300m	300-400m	400-500m	500-500m
Synagrops microlepis		5	1	3	5	2	55.17	6.851	18.823	2.44	
Merluccius polli		9	6	7	3	1	89.66	4.477	2.097	7.006	3.361
Nematocarcinus africanus		1	2	5	6		48.28	4.046		4.406	8.057
Chlorophthalmus atlanticus		12	3	6	2		79.31	2.344	2.413	3.847	0.014
Hymenocephalus italicus		8	4	2			48.28	0.683		1.245	0.607
Nezumia aequalis		25			1		89.66	0.653	0.236	1.342	0.09
Galeus polli		2			1		10.34	0.574		1.363	0.037
Zenopsis conchifer		6	3	1			34.48	0.406	1.004	0.229	
Parapenaeus longirostris		9	2	1			41.38	0.378	1.051	0.12	0.009
Scorpaena normani		5		1			20.69	0.358	0.016	0.854	
Pterothrissus belloci		14	1	1			55.17	0.348	0.913	0.141	0.024
Trichiurus lepturus		20	2				75.86	0.307	0.552	0.15	0.266
Dentex angolensis		3	4				24.14	0.272	0.877		
Hoplostethus mediterraneus			1		1			6.9	0.258	0.833	
Chaunax pictus		14	1				51.72	0.251		0.28	0.49
Brotula barbata		5	2				24.14	0.251	0.809		
Gadella maraldi		9	2				37.93	0.238	0.016	0.385	0.266
Laemonema laureysi		9	2				37.93	0.232	0.024	0.406	0.204
Merluccius capensis				1			3.45	0.199		0.482	
Etmopterus polli		4	1	1			20.69	0.193		0.447	0.03
Malacocephalus occidentalis		19					65.52	0.188	0.154	0.216	0.183
Dentex macrophthalmus		2	2				13.79	0.154	0.266	0.173	
Bembrops sp.		1		1			6.9	0.153	0.4	0.071	
MYCTOPHIDAE		21					72.41	0.13	0.168	0.177	0.014
Bathynectes piperitus		13	1				48.28	0.129		0.298	0.021
Lophiodes kempi		5	2				24.14	0.117	0.01	0.174	0.151
Dibranchus atlanticus		14					48.28	0.106		0.082	0.259
Chaceon maritae		6	1				24.14	0.089		0.169	0.071
GALATHEIDAE *		7	1				27.59	0.089	0.241	0.035	
Bembrops heterurus		9					31.03	0.079	0.248	0.002	0.004
Squatina aculeata			1				3.45	0.077			0.281
Yarrella blackfordi		5	1				20.69	0.073		0.003	0.259
Gadella imberbis		16					55.17	0.073	0.004	0.113	0.091
Pontinus accraensis		7					24.14	0.069	0.109	0.084	
Epigonus telescopus		10					34.48	0.068	0.018	0.147	0.003
Zeus faber		2	1				10.34	0.057	0.184		
Aristeus varidens		8					27.59	0.054		0.045	0.129
Torpedo nobiliana		1	1				6.9	0.048		0.115	
Malacocephalus laevis		4					13.79	0.044		0.1	0.011
Bembrops greyi		2					6.9	0.038	0.122		
Centrophorus granulosus		2					6.9	0.037		0.02	0.103
Aristeus varidens, female		6					20.69	0.036		0.03	0.087
Shrimps, small, non comm.			1					3.45	0.031		0.076
Bathyuroconger vicinus		8					27.59	0.031		0.041	0.05
Parapenaeus longirostris,femal		8					27.59	0.029	0.019	0.038	0.026
Halosaurus ovenii		9					31.03	0.028		0.019	0.073
RHINOCHIMAERIDAE		1					3.45	0.028			0.101
Dicologoglossa cuneata		3					10.34	0.026	0.011	0.055	0.001
Calappa sp.		1					3.45	0.026			0.093
Lophius vaillanti		3					10.34	0.026		0.062	
Squatina oculata		1					3.45	0.024		0.059	
Aristeus varidens, male		6					20.69	0.024		0.026	0.048
Todaropsis eblanae		6					20.69	0.023	0.017	0.024	0.028
Illex coindetii		8					27.59	0.022	0.041	0.023	
Stereomastis sculpta		3					10.34	0.017			0.063
Parasudis sp.		1					3.45	0.016		0.039	
Stomias boa boa		4					13.79	0.016			0.058
Etmopterus sp.		2					6.9	0.016		0.018	0.031
Caelorinchus coelorhincus		3					10.34	0.014	0.023	0.017	0.001
CONGRIDAE		5					17.24	0.014	0.016	0.023	
Triplophos hemingi		3					10.34	0.013			0.049
Gephyroberyx darwini		2					6.9	0.012	0.001	0.029	
Hoplostethus cadenati		5					17.24	0.012		0.003	0.038
Raja clavata		1					3.45	0.011		0.026	
Plesiopenaeus edwardsianus		4					13.79	0.009			0.032
Plesionika martia		6					20.69	0.008		0.012	0.012
Parapenaeus longirostris, male			5					17.24	0.007	0.014	0.007
Parapandalus narval		4					13.79	0.006		0.005	0.014
Solenocera africana		4					13.79	0.001		0.003	0.001
Other fish							0.139	0.159	0.084	0.199	0
Sum all species							25.859	31.89	27.883	16.04	0
Sum SNAPPERS, JOBFISHES											
Sum GROUPERS, SEABASSES											
Sum GRUNTS, SWEETLIPS											
Sum CROAKERS, DRUMS, KOBS									0.003	0.011	
Sum PANDORAS, PORGIES, SEABREAMS,									0.432	1.162	0.173
Sum SHARKS, CHIMAERAS								0.95		1.907	0.585
Sum BATOID FISHES, RAYS								0.065	0.019	0.142	
Sum CEPHALOPODS								0.051	0.061	0.047	0.046
Numbers of stations included in analysis, total and by depth strata							9	12	8	0	29

C. Cunene-Tombua.Slope

SPECIES NAME by bottom depth strata t/nm²	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm						% inci-	Mean	Mean densities		
	>0	10	30	100	300	1000	dence t/nm²	dens. 500-600m	600-700m	700-800m	800-800m
Hoplostethus cadenati		14	9	8	3	2	97.3	5.109	1.1	7.23	6.309
Nematocarcinus africanus		3	5	18	2		75.68	4.503	6.798	5.012	1.806
Yarrella blackfordi		13	14	9			97.3	2.171	1.261	2.556	2.554
Lamprogrammus exutus		14	11	2			72.97	0.924	0.838	1.092	0.805
Trachyrincus scabrus		1		1	1		8.11	0.64	0.001	1.252	0.512
Nezumia micronychodon		3		1	1		13.51	0.627		1.34	0.371
Hoplostethus atlanticus					1		2.7	0.627	2.109		
Nezumia aequalis		12	1	1	1		40.54	0.597	0.069	0.459	1.243
Merluccius polli		23	8				83.78	0.578	0.602	0.767	0.334
Stereomastis sp.		20	6				70.27	0.526	0.224	0.473	0.865
Triplophos hemingi		23	4	1			75.68	0.478	0.659	0.584	0.19
Malacocephalus occidentalis		11			1		32.43	0.476	0.043	0.035	1.387
Aristeus varidens		11			1		32.43	0.41	0.165	0.929	0.029
Stomias boa boa		27	4				83.78	0.397	0.51	0.404	0.286
Sea cucumbers		1	5	1			18.92	0.352		0.025	1.056
Xenodermichthys copei		27	2				78.38	0.25	0.098	0.372	0.246
Bathyuroconger vicinus		27	2				78.38	0.214	0.029	0.244	0.347
Merluccius capensis			2	1			8.11	0.183		0.235	0.29
Trachyrincus scabrus				1			2.7	0.165		0.436	
Illex coindetii		1	3				10.81	0.144	0.006	0.28	0.112
Aristeus varidens, female		23					62.16	0.141	0.185	0.101	0.147
Talismania longifilis		11					29.73	0.138		0.102	0.308
Nezumia sp.		11	1				32.43	0.138	0.005	0.069	0.339
Stomias affinis		1		1			5.41	0.136		0.36	
Bajacalifornia magalops		4		1			13.51	0.132		0.296	0.062
Raja alba		3		1			10.81	0.12		0.039	0.323
Lophius sp.		4		1			13.51	0.119	0.001		0.368
Triplophos hemingi		4		1			13.51	0.113	0.034	0.229	0.049
OMMASTREPHIDAE		14					37.84	0.103	0.065	0.159	0.072
Alepocephalus sp.				1			2.7	0.101			0.311

Etmopterus polli	13	2	40.54	0.099	0.019	0.241	0.008
MACROURIDAE	5	1	16.22	0.096		0.008	0.286
Gonostoma denudata		2	5.41	0.08		0.098	0.132
Plesiopenaeus edwardsianus	5	1	16.22	0.075		0.194	0.005
Gadella imberbis	18		48.65	0.074	0.164	0.047	0.024
OPISTHOTEUTHIDAE		1	2.7	0.072			0.221
Dibranchus atlanticus	27		72.97	0.064	0.047	0.041	0.105
Chaceon maritae, female	10		27.03	0.063	0.005	0.077	0.101
Aristeus varidens, male	23		62.16	0.061	0.091	0.064	0.029
Shrimps, small, non comm.	4	1	13.51	0.055		0.01	0.158
Dicrolene intronigra	11		29.73	0.051		0.037	0.116
Chaceon maritae	18		48.65	0.05	0.028	0.072	0.044
Chaceon maritae, male	7		18.92	0.048	0.01	0.052	0.078
Stomias sp.		1	2.7	0.045		0.119	
Trichiurus lepturus	16		43.24	0.045	0.06	0.068	0.003
Centrophorus squamosus	2	1	8.11	0.041	0.003	0.105	
SQUALIDAE	8		21.62	0.039	0.006	0.028	0.081
Monomitopus metriostoma	8		21.62	0.035	0.003	0.018	0.085
TETRAODONTIDAE		1	2.7	0.031			0.096
Stereomastis sculpta	3		8.11	0.029	0.031	0.041	0.013
Halosaurus ovenii	22		59.46	0.029	0.012	0.021	0.053
Todarodes sagittatus		1	2.7	0.028		0.074	
Notacanthus sexspinis	2		5.41	0.025			0.078
Todaropsis eblanae	5		13.51	0.025	0.035	0.04	
Raja sp.	9		24.32	0.023	0.017	0.009	0.045
Laemonema laureysi	10		27.03	0.023	0.043	0.021	0.007
Centrophorus granulosus	4		10.81	0.022	0.055		0.018
Talismania sp.	4		10.81	0.022		0.01	0.057
POLYCHAELIDAE	3		8.11	0.02	0.018	0.024	0.017
Nezumia leonis	1		2.7	0.019			0.058
Lepidopus caudatus	1		2.7	0.018			0.056
MYCTOPHIDAE			43.24	0.016	0.028	0.019	0.002
Chaunax pictus	5		13.51	0.016	0.049	0.003	
Gadella sp.	1		2.7	0.015		0.04	
Ebinania costaecanarie	6		16.22	0.013	0.004	0.009	0.027
NETTASTOMATIDAE	1		2.7	0.013		0.035	
Glyphus marsupialis	12		32.43	0.012	0.005	0.012	0.019
Cataetyx laticeps	13		35.14	0.012	0.013	0.015	0.006
Phrynichthys wedli	4		10.81	0.011		0.021	0.008
Bathyurocongrus sp.	1		2.7	0.011		0.028	
CONGRIDAE	5		13.51	0.01	0.004		0.027
Acanthephyra sp.	2		5.41	0.003	0.001	0.008	
Heterocarpus grimaldii	2		5.41	0.003			0.009
Plesionika martia	3		8.11	0.003	0.007		0.001
S H R I M P S	2		5.41	0.001	0.002		
PANDALIDAE	1		2.7			0.001	
Plesionika sp.	2		5.41		0.001		
SERGESTIDAE	1		2.7		0.001		
Other fish			0.219	0.214	0.204	0.241	0
Sum all species			22.374	15.774	26.992	23.037	0
Sum SNAPPERS, JOBFISHES							
Sum GROUPERS, SEABASSES							
Sum GRUNTS, SWEETLIPS							
Sum CROAKERS, DRUMS, KOBS							
Sum PANDORAS, PORGIES, SEABREAMS,							
Sum SHARKS, CHIMAERAS				0.266	0.134	0.495	0.118
Sum BATOID FISHES, RAYS				0.147	0.017	0.047	0.383
Sum CEPHALOPODS				0.391	0.115	0.556	0.451
Numbers of stations included in analysis, total and by depth strata			11	14	12	0	37

ANNEX IV Equations

1. Biomass estimates

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

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

where

L is the number of strata,

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

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

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

The total biomass in the area is calculated by

$$B = \bar{y}_{st} \cdot total\ area \tag{2}$$

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

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

where

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

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

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

The precision for the estimates (CV) was calculated by (Zar 1999[1]):

$$CV = \frac{SE}{biomass} \tag{5}$$

If the sample size is "large" enough, then the Central Limit Theorem states that each time a survey is conducted there is a 95% chance that the true mean is in the interval (see Cochran[2], 1977)

$$biomass = t_{(n-1)} SE \tag{6}$$

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

[1] Zar JH, 1999, Biostatistical analysis. Prentice Hall, New Jersey, 4. ed., 663 pp.
[2] Cochran, W.G.1977. Sampling Techniques, 3rd 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	*P.longirostris*	*A.varidens*	*N.africanus*
	SPADE00	MERME03	SHRPE31	SHRAR22	SHRNE21
	SPADI00	MERME04	SHRPEP1	SHRARA1	
	SPALI00	MERME12	SHRPEP2	SHRARA2	
	SPAPA00	MERME13			
	SPAPR00	MERME92			
	SPASA00				
	SPASP00				

DEEP 2	Hake	Ommastrephidae	Sepiidae	*A.varidens*	*P.longirostris*
	MERME03	SQUOM21	SQUSE10	SHRAR22	SHRPE31
	MERME12	SQUOM31	SQUSE11	SHRARA1	SHRPEP1
	MERME13	SQUOM51	SQUSE12	SHRARA2	SHRPEP2
	MERME92		SQUSE13		
			SQUSE15		

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 demersal 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	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
1	29	8.2			30.4	736	1395.4	2170
2	45	0.4				1.7	86.1	88.2
13	63	9.8				27.5	2832.5	2869.8
14	26	0.5					239.9	240.4
15	49	0.1					68.7	68.8
23	24	2.8					76.7	79.5
24	52	127.7					925.7	1053.3
26	61	13.3				2.4	20	35.7
Mean	43	20.4				96.0	705.6	825.7
SD		43.7				258.8	994.3	1113.4
%Catch		2.5				11.6	85.5	

B. Outer shelf (71-200 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
3	91	39.0				78.6	864.2	981.8
4	138	2 8.5					6327.6	6536
5	152	364.5					1431.8	1796.3
6	194	281.3					557.1	838.5
1	136	1118.0				8 .9	5626.6	6825.5
11	116	51 .3				34.9	1982.9	2528.1
12	97	228.3				47.6	12284.2	12560.1
16	95	663.6				16.4	655 .3	7230.4
19	128	1 52.3				39.1	943.9	2035.2
2	12	471.6				1 .9	88 .5	1363.1
21	92	935.4				247.4	5973.7	7156.5
25	76	22.1				2 .8	141.1	183.9
Mean	110	458.2				51.6	3613.3	4169.6
SD		381.5				78.1	3882.6	3804.9
%Catch		11.0				1.2	86.7	

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).

A. Inner shelf (20-70 m).

Station	Depth	Demersal	Pelagic	Shrimp	Cephalopod	Sharks	Other	Total
1	29	950.7	1137.0		33.0	0.2	49.2	2170.0
2	45	2.0	25.2		52.7	0.1	8.2	88.2
13	63	37.3	2515.7		26.7	116.0	174.2	2869.8
14	26	0.5	9.9		8.1	90.3	131.5	240.4
15	49	0.1	11.0		8.4	0.7	48.6	68.8
23	24	2.8	7.5		2.9	2.0	64.4	79.5
24	52	127.7	628.1		46.9	30.7	220.0	1053.3
26	61	15.7	12.3			7.7		35.7
Mean	43.4	142.1	543.3		22.3	31.0	87.0	825.7
SD		329.6	898.8		20.5	46.2	79.7	1113.4
%Catch		17.2	65.8		2.7	3.7	10.5	

B. Outer shelf (71-200 m).

Station	Depth	Demersal	Pelagic	Shrimp	Cephalopod	Sharks	Other	Total
3	91	384.8	81.5		155.2	53.7	306.7	981.8
4	138	208.5	6071.7			149.6	106.3	6536.0
5	152	529.9	1097.1		21.0	2.0	146.2	1796.3
6	194	344.2	180.9	0.6	4.1	15.0	293.7	838.5
10	136	1240.1	5275.1		5.8		304.4	6825.5
11	116	563.5	1888.2				76.5	2528.1
12	97	483.3	11775.3			105.8	195.7	12560.1
16	95	883.6	6037.2		64.3	95.7	149.6	7230.4
19	128	1119.4	775.9		8.3	8.7	122.9	2035.2
20	120	510.2	784.2		4.2		64.4	1363.1
21	92	1477.7	5190.7		120.1	72.5	295.4	7156.5
25	76	42.9	91.4		9.9	36.9	2.7	183.9
Mean	119.4	649.0	3270.8	0.1	32.7	45.0	172.0	4169.6
SD		437.4	3623.2	0.2	52.6	50.7	106.0	3804.9
%Catch		15.6	78.4		0.8	1.1	4.1	

C. Slope (201-800 m).

Station	Depth	Demersal	Pelagic	Shrimp	Cephalopod	Sharks	Other	Total
7	330	169.5		3.0		479.7	1249.4	1901.7
8	768	101.5	19.7	0.5	39.3		1437.2	1598.2
9	689	73.7		4.1	52.1		2084.3	2214.2
18	682	110.5		61.4	61.7	48.6	708.4	990.7
Mean	617.0	113.8	4.9	17.3	38.3	132.1	1369.8	1676.2
SD		40.3	9.9	29.5	27.1	232.9	567.7	521.6
%Catch		6.8	0.3	1.0	2.3	7.9	81.7	

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	Barracuda	Other	Total
1	29	143.5	896.6		5.6		1124.3	2170
2	44.5	4.4	19.1	1.7			63	88.2
13	62.5	131.9	2383.7				354.1	2869.8
14	25.5	6.3	3.7				230.5	240.4
15	48.5		9.2	1.7			57.9	68.8
23	24		7.5				72.1	79.5
24	52	2.6	625.5				425.2	1053.3
26	61		12.3				23.4	35.7
Mean	43.4	36.1	494.7	0.4	0.7		293.8	825.7
SD		62.9	838.4	0.8	2		367.6	1113.4
%Catch		4.4	59.9		0.1		35.6	100.0

B. Outer shelf (71-200 m).

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracuda	Other	Total
3	91	15.1	66.3				900.4	981.8
4	138		6071.7				464.3	6536
5	152		1097.1				699.2	1796.3
6	193.5		177.8		3.1		657.5	838.5
10	136		5275.1				1550.4	6825.5
11	115.5	40.6	1847.6				639.9	2528.1
12	97	35.2	11712.4		27.6		784.9	12560.1
16	94.5		6037.2				1193.2	7230.4
19	128	56.4	719.5				1259.3	2035.2
20	120	117	664.4	2.8			578.8	1363.1
21	91.5		5190.7				1965.8	7156.5
25	76		60.7	30.8			92.5	183.9
Mean	119.4	22	3243.4	2.8	2.6		898.9	4169.6
SD		35.9	3626.2	8.8	7.9		513.4	3804.9
%Catch		0.5	77.8	0.1	0.1		21.6	

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	*P.longirostris*	*A.varidens*	*N.africana*	Other	Total
7	330		169.5				1732.2	1901.7
8	768		101.5		0.5		1496.2	1598.2
9	689		34.9				2179.3	2214.2
18	682		110.5		1.4		878.7	990.7
Mean	617		104.1		0.5		1571.6	1676.2
SD			55.1		0.7		541.9	521.7
%Catch			6.2				93.8	

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	Shrimp	Cephalopod	Sharks	Other	Total
29	70	276.5	170.2	0.2	1.5		58.1	506.5
32	58	1061.4	208.0		15.4		173.9	1458.7
39	59	759.6	904.9				470.6	2135.1
47	67	1216.0	4918.1		31.7		179.1	6344.9
48	21	188.8	244.5	0.5	19.3		85.8	538.9
49	30	8.2	63.0		0.7		15.1	87.0
50	45	59.4	28.9		3.1		70.1	161.5
51	64	3236.3	146.3		5.1		78.4	3466.1
58	23	0.9	7.9		14.4		96.0	119.2
59	26	1172.4	370.5		4.6		372.6	1920.1
60	36	506.4	211.0	1.8	0.8		207.7	927.6
61	55	155.7	101.3		5.6	240.9	94.7	598.1
65	32	470.7	277.6	2.6	7.5		312.3	1070.7
66	48	792.5	384.7				140.3	1317.5
75	53	24.9	38.6		2.8		45.3	111.6
76	33	175.7	26.8				29.6	232.2
77	33	1768.8	151.0	0.3	0.1		136.5	2056.8
78	49	1043.5	102.5	0.2	1.3		63.4	1210.8
79	70	523.1	188.8		0.7		10.6	723.2
83	40	47.9	39.3	1.5			136.7	231.2
85	65	9.0	26.9		4.1		42.3	82.3
89	36	1690.0	100.2				446.9	2237.1
94	55	17.6	35.1		3.3		13.0	68.9
95	27	99.7	77.1				114.8	291.7
96	28	461.8	321.7	1.2			89.2	873.9
Mean	44.7	630.7	365.8	0.3	4.9	9.9	139.3	1150.9
SD		762.0	966.8	0.7	7.7	48.1	129.9	1390.9
%Catch		54.8	31.8		0.4	0.9	12.1	

B. Outer shelf (71-200 m).

Station	Depth	Demersal	Pelagic	Shrimp	Cephalopod	Sharks	Other	Total
30	94	2749.2	182.4		19.1		1476.5	4427.2
31	115	54.5			27.3		147.0	228.7
33	78	682.9	34.5	1.9	37.1		225.3	981.7
37	111	349.1	367.6		47.3		71.2	835.2
38	99	69.4	172.4		31.8		42.1	315.7
40	73	114.6	108.7		5.3		82.6	311.2
41	106	158.0	1.6		24.0		122.5	306.1
43	165	208.1		2.5	3.3	3.9	1641.2	1859.0
46	114	116.9	171.6		45.8		29.0	363.4
52	106	356.8	2405.9		92.6		752.0	3607.3
56	153	38.4	1025.7	4.5	18.3		1593.2	2680.1
57	117	32.3	29.5		23.4		69.9	155.2
62	117	321.1	0.9	0.1	26.0		305.3	653.3
67	92	72.7	45.4		20.6		84.9	223.6
68	155	57.1	75.1	0.7	5.9		405.2	544.0
70	97	361.6	140.8		9.8		64.1	576.3
71	134	54.9	277.6		0.6		654.5	987.6
79	70	523.1	188.8		0.7		10.6	723.2
80	98	4798.7	44.8		2.4		91.1	4937.0
81	165	77.6	3.4	0.3	3.5	19.0	224.7	328.6
84	89	441.9	303.9		15.4	57.2	191.9	1010.3
86	107	218.1	231.4		6.2		136.5	592.2
88	98	152.4	24.0		11.5		25.4	213.2
93	114	53.6	48.1		11.4		22.6	135.7
97	79	222.4	36.8	2.1	41.3		15.1	317.7
98	116	11.9	3.5	0.1	3.9		5.1	24.5
Mean	109.7	473.0	227.9	0.5	20.6	3.1	326.5	1051.5
SD		1028.3	490.9	1.1	20.4	11.7	495.0	1345.9
%Catch		45.0	21.7	0.0	2.0	0.3	31.1	

C. Slope (201-800 m).

Station	Depth	Demersal	Pelagic	Shrimp	Cephalopod	Sharks	Other	Total
27	753	20.7		7.2	0.5		1243.5	1271.9
28	740	42.1	2.3	18.9	12.8	0.7	584.1	660.9
34	483	6.3	0.9	214.2		4.2	82.5	308.0
35	587	98.3	1.5	108.1			799.1	1007.0
36	662	63.8	3.1	90.3	10.6	2.3	387.5	557.6
42	262	203.4	9.9	22.4	6.3		943.4	1185.3
44	345	391.1	1.4	136.7	3.0	110.5	362.4	1005.1
45	694	22.6	1.3	120.5	32.5	75.0	658.4	910.2
53	387	110.1	0.0	221.8		33.1	60.6	425.6
55	526	0.4	5.6	228.5	3.2	7.7	277.0	522.3
63	388	1530.7	3.1	291.1		23.8	104.2	1952.9
64	516	37.0	1.3	281.7		2.6	113.3	435.8
69	327	328.9	19.9	29.4	4.6		116.7	499.5
72	374	120.5		349.0		6.6	297.3	773.3
73	545	74.6	1.9	261.3	2.5	0.6	212.2	553.0
74	725	83.3		214.2		1.9	423.6	723.0
82	618	108.3		273.4		33.8	140.7	556.3
87	309	90.8		4.3	0.8		983.7	1079.6
90	759	125.6		29.4	88.8	9.8	652.9	906.6
91	625	22.0	5.7	278.7	7.9	2.7	451.8	768.9
92	543	56.4		115.8		20.3	93.4	285.8
99	266	126.8		5.0			277.6	409.4
100	459	61.4	2.4	96.2		53.5	93.4	306.9
101	750	40.1		75.2	5.8		438.6	559.7
Mean	526.5	156.9	2.5	144.7	7.5	16.2	408.2	736.0
SD		307.4	4.4	110.6	18.7	27.9	327.9	384.2
%Catch		21.3	0.3	19.7	1.0	2.2	55.5	

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), C. Slope (201-800 m).

A. Inner shelf (20-70 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
29	70	15.4			78	16.2	396.9	506.5
32	58	200.1			540.8	11.6	706.2	1458.7
39	59	80.7			338	47	1669.3	2135.1
47	67	199.3		17.8	4.8	36.2	6086.8	6344.9
48	21			2.1	8.1	2.2	526.5	538.9
49	30	0.9		2.3			83.8	87
50	45	10.5		32.9			118.1	161.5
51	64	328.9			1965.3	0.7	1171.1	3466.1
58	23			0.9			118.3	119.2
59	26	116.7		110.3	48.7	172.2	1472.1	1920.1
60	36				2.3	237.2	688.1	927.6
61	55	5.7		0.1	57.6	50.9	483.8	598.1
65	32				38.1	93.1	939.5	1070.7
66	48	7.5	1.6		26.1	52.4	1229.8	1317.5
75	53	0.9		12.7	0.6	8.7	88.7	111.6
76	33				0.3	4.7	227.2	232.2
77	33				24.5	12.2	2020.1	2056.8
78	49				3.9	12.4	1194.5	1210.8
79	70	2.2			111.7	4.8	604.5	723.2
83	40	7.1			3.3	2	218.8	231.2
85	65	5.7		0.6		2	74.1	82.3
89	36	83.1		15.9	73.1	54.8	2010.2	2237.1
94	55	6.8		0.9			61.2	68.9
95	27	58.4	12.3	20.7	8.3		191.9	291.7
96	28	8.7			20.5	178.1	666.5	873.9
Mean	44.7	45.5	0.6	8.7	134.2	40	921.9	1150.9
SD		83.5	2.5	22.8	400.6	64.2	1236.7	1390.9
%Catch		4.0	0.1	0.8	11.7	3.5	80.1	

B. Outer shelf (71-200 m).

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
30	94	368.7			220.1	2086	1752.4	4427.2
31	115	53.4			1.1		174.3	228.7
33	78	473.6			124.5	48.2	335.4	981.7
37	111	127.1				58.3	649.8	835.2
38	99	53.1				16.3	246.3	315.7
40	73	65.3		0.7	11	1.7	232.5	311.2
41	106	137.1				20.9	148.1	306.1
43	165	167.2					1691.8	1859
46	114	100.9				0.4	262.1	363.4
52	106	9.6					3597.7	3607.3
56	153	6.2					2673.9	2680.1
57	117	13.2				2.6	139.4	155.2
62	117	21.1					632.3	653.3
67	92	29.8			15.9	2.7	175.2	223.6
68	155	29.3					514.7	544
70	97	12.6					563.8	576.3
71	134	37.4				2.1	948.1	987.6
79	70	2.2			111.7	4.8	604.5	723.2
80	98	39.9					4897.1	4937
81	165	40.7				2	285.8	328.6
84	89	17.1					993.2	1010.3
86	107	38.5					553.7	592.2
88	98	14.3					198.8	213.2
93	114	6.9					128.7	135.7
97	79	13.2				21.1	283.4	317.7
98	116	9.2					15.2	24.5
Mean	109.7	72.6		0	18.6	87.2	873	1051.5
SD		112.4		0.1	52.1	408	1179.3	1345.9
%Catch		6.9			1.8	8.3	83.0	100.0

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	Barracuda	Other	Total
29	70	0.5	63.9		104.0		338.1	506.5
32	58	3.0	38.7		166.3		1250.7	1458.7
39	59	8.9	868.7		27.2		1230.2	2135.1
47	67		147.7		4770.5		1426.7	6344.9
48	21	187.6	37.3			19.6	294.4	538.9
49	30	60.1	1.1		1.1	0.7	24.0	87.0
50	45		24.8	4.0			132.6	161.5
51	64	12.5	119.1		5.0	9.7	3319.8	3466.1
58	23	0.5	7.4				111.3	119.2
59	26	112.9	160.7		30.9	65.9	1549.6	1920.1
60	36	1.4	8.3		163.0	31.4	723.6	927.6
61	55	1.9	1.7		25.3	1.6	567.6	598.1
65	32	80.4	84.8		86.3	26.1	793.1	1070.7
66	48		4.4		380.3		932.8	1317.5
75	53		23.1			15.5	73.0	111.6
76	33	3.3	11.0	1.3	0.6	10.7	205.4	232.2
77	33	98.4	5.2		9.5	34.6	1909.1	2056.8
78	49	5.4	5.4		65.1	15.0	1119.8	1210.8
79	70		98.0		81.5	9.3	534.4	723.2
83	40	0.8	23.5		11.1	3.9	191.9	231.2
85	65	0.1	23.4		3.4		55.4	82.3
89	36	15.6	31.4		4.7	48.4	2136.9	2237.1
94	55		33.3			1.8	33.8	68.9
95	27		73.3			3.8	214.6	291.7
96	28	274.1	25.9		12.6	9.1	552.2	873.9
Mean	44.7	34.7	76.9	0.2	237.9	12.3	788.8	1150.9
SD		68.7	171.2	0.8	948.1	17.1	810.0	1390.9
%Catch		3.0	6.7		20.7	1.1	68.5	

B. Outer shelf (71-200 m).

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracuda	Other	Total
30	94		8.0		174.5		4244.8	4427.2
31	115						228.7	228.7
33	78	2.9	1.4		30.3		947.2	981.7
37	111	27.0	336.7		3.8		467.6	835.2
38	99	1.2	164.2	2.4	2.0	2.5	143.4	315.7
40	73	1.7	102.6		2.7	1.7	202.5	311.2
41	106	0.1			1.4		304.6	306.1
43	165						1859.0	1859.0
46	114		159.5		10.9	1.3	191.7	363.4
52	106		1403.1		1002.8		1201.4	3607.3
56	153				1025.7		1654.4	2680.1
57	117		2.3		27.2		125.7	155.2
62	117		0.6		0.3		652.4	653.3
67	92		20.6		13.0		190.0	223.6
68	155				75.1		468.9	544.0
70	97	0.3	140.6				435.5	576.3
71	134		197.6		80.0		710.0	987.6
79	70		98.0		81.5	9.3	534.4	723.2
80	98		44.8				4892.3	4937.0
81	165				3.4		325.2	328.6
84	89	7.7	265.3		15.9	15.1	706.3	1010.3
86	107	2.2	217.0		12.2		360.8	592.2
88	98	2.4	1.8		19.5	0.2	189.2	213.2
93	114		2.0		43.7		89.9	135.7
97	79		36.8				280.9	317.7
98	116		3.5				21.0	24.5
Mean	109.7	1.8	123.3	0.1	101.0	1.2	824.2	1051.5
SD		5.4	278.5	0.5	271.7	3.4	1197.1	1345.9
%Catch		0.2	11.7		9.6	0.1	78.4	

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	*P.longirostris*	*A.varidens*	*N.africana*	Other	Total
27	753		5.7		6.3		1259.9	1271.9
28	740		32.7		17.1		611.0	660.9
34	483		6.3		11.2	202.1	88.5	308.0
35	587				23.4	83.2	900.5	1007.0
36	662		5.6		10.9	76.8	464.3	557.6
42	262	57.4	145.9	22.4			959.5	1185.3
44	345		391.1	1.4	8.3	127.0	477.3	1005.1
45	694				15.8	102.6	791.9	910.2
53	387		110.1		11.2	210.4	93.9	425.6
55	526		0.4		25.4	203.0	293.5	522.3
63	388		1530.7		7.2	283.9	131.1	1952.9
64	516		4.6		17.4	264.2	149.6	435.8
69	327		328.9	0.9			169.6	499.5
72	374		120.5		7.2	341.8	303.8	773.3
73	545		6.1		18.1	242.6	286.3	553.0
74	725		14.0		4.8	205.7	498.6	723.0
82	618		92.0		10.2	263.2	190.8	556.3
87	309	64.5	26.3	3.2			985.6	1079.6
90	759		34.7		5.8		866.1	906.6
91	625		2.2		15.2	255.2	496.3	768.9
92	543		54.4		17.4	96.5	117.5	285.8
99	266	44.8	3.1	5.0			356.5	409.4
100	459		61.4		9.2	86.3	150.0	306.9
101	750				12.6	62.6	484.5	559.7
Mean	526.5	6.9	124.0	1.4	10.6	129.5	463.6	736.0
SD		19.0	316.3	4.6	7.2	111.7	336.3	384.2
%Catch		0.9	16.8	0.2	1.4	17.6	63.0	

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	Shrimp	Cephalopod	Sharks	Other	Total
107	54	1138.3	348.3	4.0	0.4	24.8	239.2	1755.1
111	42	2461.9	957.4	3.0			183.0	3605.2
112	34	426.9	1175.9	2.9			46.5	1652.2
113	30	258.9	312.5	1.3			147.4	720.1
114	47	262.9	259.9	9.4	2.8		114.8	649.7
115	65	381.4	801.1		0.6		8.0	1191.1
126	67	737.7	155.7	2.0			46.4	941.8
127	44	121.8	151.6	0.6			92.0	366.0
128	30	331.4	220.7	1.9			171.3	725.2
140	26	727.9	1229.6	3.5		1.8	314.4	2277.3
141	45	19.5	297.9		7.3		15.9	340.6
142	59	68.2	8.1		8.6		122.6	207.4
152	40	164.3	52.9		0.5		74.5	292.3
153	29	125.8	363.6			3.8	42.4	535.6
154	28	117.4	18.0				60.0	195.4
155	45	169.3	2.2				30.1	201.6
156	65	67.0	31.8		9.4		27.4	135.6
162	40	62.4					31.1	93.6
163	50	25.3			11.5		39.4	76.2
195	58	3.0	5.6		3.8		4.8	17.1
196	42	16.7	27.5		2.2		28.8	75.3
197	35	6.6	0.2		5.4		23.1	35.3
198	49.5	16.5			2.2		8.2	27.0
Mean	44.2	335.3	279.1	1.2	2.4	1.3	81.4	700.7
SD		545.0	385.5	2.2	3.6	5.2	81.5	885.7
%Catch		47.9	39.8	0.2	0.3	0.2	11.6	

B. Outer shelf (71-200 m).

Station	Depth	Demersal	Pelagic	Shrimp	Cephalopod	Sharks	Other	Total
102	189	156.3	5.3	23.2	11.4		467.3	663.5
105	147	50.6	497.3	1.2	10.0	22.0	442.9	1024.0
106	116	1295.8	246.7		4.3		47.7	1594.6
116	89	164.9	128.4	0.6	1.9		8.4	304.3
117	115	130.8	19.7	5.7	2.8		121.0	280.1
122	142	189.3	157.4		2.0		319.8	668.5
123	118	273.8	64.5		3.7		25.4	367.3
124	97	113.7	40.9		9.9		6.6	171.1
125	73	139.1	144.9		0.3		33.2	317.5
129	170	41.2	33.1	8.1	2.0		699.4	783.9
135	108	80.2	133.9	0.8	7.0		36.3	258.1
136	176	32.0	15.4	1.3	4.3		613.5	666.6
143	74	20.8	0.3		4.9		20.1	46.1
144	91	56.9	5.0		15.5		37.0	114.4
145	91	143.8	0.5		15.8		91.5	251.6
146	119	213.4	2.5		2.3		61.2	279.4
151	74	198.6	28.9		6.5		39.4	273.5
157	91	68.6	1.0		4.8	14.6	30.6	119.6
158	119	125.9	39.6	6.5	0.5	5.7	96.5	274.7
164	120	23.9	155.9		4.9	8.8	27.3	220.8
166	84	149.5	4.6		4.6		43.2	201.8
167	90	33.9	4.4		5.1	5.5	22.6	71.5
173	152	63.8	6.4		2.2	10.0	20.0	102.4
174	120	448.3	67.3			20.7	124.0	660.3
175	111	149.1	59.7		6.2	10.4	49.1	274.6
176	92	58.2	11.7		7.1		61.3	138.3
178	119	196.8	49.2		0.4	9.1	43.3	298.8
183	186	163.3	33.3		2.3	1.9	222.0	422.8
184	155	70.4	0.0		1.6	1.8	19.9	93.8
185	116	173.1	226.9		0.5		40.6	441.1
186	126	295.7	22.8				22.8	341.2
192	112	113.7	23.2			7.0	21.1	165.0
193	99	93.5	11.1		0.2		24.8	129.6
194	83	190.0	2.9		9.5		12.9	215.4
199	74	116.6	30.6		21.3		4.6	173.0
202	124	81.0	16.0		0.3		10.4	107.8
203	111	209.1	60.2		0.4		14.6	284.4
204	94	276.2	5.0			3.0	18.5	302.7
Mean	114.7	168.5	62.0	1.2	4.6	3.2	105.3	344.8
SD		207.6	96.7	4.1	5.0	5.8	171.5	301.8
%Catch		48.9	18.0	0.3	1.3	0.9	30.5	

C. Slope (201-800 m).

Station	Depth	Demersal	Pelagic	Shrimp	Cephalopod	Sharks	Other	Total
103	217	161.9	13.1	12.5	1.1		835.9	1024.4
108	410	314.2	4.3	544.7	4.5	2.7	45.6	915.9
109	527	29.4	0.6	398.1	14.1	2.1	104.7	549.0
110	696	83.1	2.1	242.3		0.8	509.2	837.5
118	456	130.6	1.0	351.6		0.4	49.3	532.8
119	556	22.8	1.4	193.6	7.3	1.2	360.8	587.1
120	617	122.7	2.6	238.7	30.6	0.5	768.5	1163.6
121	721	95.5	1.1	239.5		0.3	847.0	1183.4
130	434	216.7	4.4	396.2			106.7	723.9
131	619	41.9	1.2	175.4	10.5	2.2	164.9	396.1
132	698	50.3		228.6	20.5	0.1	243.2	542.8
133	308	46.7		63.8			748.6	859.1
134	231	197.1	34.3	34.4	1.6		1145.6	1413.1
137	530	7.2	7.8	403.2	3.5	4.1	39.7	465.6
138	642	33.3	2.9	229.3		0.3	376.6	642.5
147	270	99.7	28.0	16.2	0.5		967.1	1111.5
148	392	33.4		556.2	8.1		235.5	833.2
149	644	72.9	6.6	167.0	1.8	1.2	173.4	422.9
150	747	1.5		119.9		2.3	174.9	298.6
159	431	25.0	18.0	329.1	0.5	66.1	163.0	601.9
160	534	69.0	3.4	271.4	6.1	1.2	92.7	443.8
161	729	53.8		38.3		2.0	231.2	325.3
165	235	96.6	9.2	7.6	5.3		258.6	377.3
168	314	19.0	3.0	5.7		20.0	341.0	388.8
169	421	24.8	21.4	50.9	3.8	0.4	140.9	242.2
170	531	49.6	1.3	50.1	1.1	0.8	53.8	156.6
171	640	46.3	1.6	32.7		19.3	138.3	238.2
172	270	104.8	4.0	99.1			1463.9	1671.9
179	451	26.7	10.7	15.0	2.4	8.8	107.8	171.5
180	537	31.0	4.5	30.1		3.4	93.9	163.0
181	732	7.4		34.0	9.0	3.0	174.4	227.8
182	279	48.7	3.1	65.4			571.7	688.9
187	232	46.9	48.2	1.3	1.9		286.8	385.1
189	336	2.5	20.0	8.3			167.5	198.3
190	654	22.3	4.0	72.6		19.5	213.0	331.5
191	724	4.9		3.3	2.3	21.4	189.2	221.1
200	747	6.0		5.6		0.5	212.0	224.0
201	389	0.0	6.9	24.5			93.6	125.0
Mean	497.1	64.4	7.1	151.5	3.6	4.9	339.2	570.7
SD		67.3	10.7	159.5	6.4	11.9	340.3	379.4
%Catch		11.3	1.2	26.5	0.6	0.9	59.4	

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
107	54	63.1			381.0	350.7	960.4	1755.1
111	42	6.2			2333.9	115.4	1149.7	3605.2
112	34				320.1	103.2	1228.8	1652.2
113	30				38.3	125.9	555.8	720.1
114	47				1.6	110.6	537.5	649.7
115	65	32.3			9.7	6.9	1142.3	1191.1
126	67	29.2		6.0	15.0	54.9	836.7	941.8
127	44				1.0	92.2	272.9	366.0
128	30			2.7	47.3	246.8	428.4	725.2
140	26					14.1	2263.2	2277.3
141	45	9.1			7.9		323.6	340.6
142	59	47.0		6.5	9.1	3.9	141.0	207.4
152	40	118.5	17.0	6.8	19.4		130.6	292.3
153	29	95.6		4.1	9.6		426.3	535.6
154	28	106.8		4.3	5.6		78.7	195.4
155	45	147.7	13.3	7.1			33.4	201.6
156	65	65.4		1.6			68.6	135.6
162	40	62.4					31.1	93.6
163	50	13.1		12.3			50.9	76.2
195	58	3.0					14.2	17.1
196	42	15.7		1.0			58.6	75.3
197	35	0.3		6.2			28.8	35.3
198	50	15.3		1.3			10.4	27.0
Mean	44.2	36.1	1.3	2.6	139.1	53.2	468.4	700.7
SD		44.4	4.4	3.4	488.7	91.1	565.5	885.7
%Catch		5.2	0.2	0.4	19.9	7.6	66.8	

B. Outer shelf (71-200 m)

Station	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
102	189	75.1					588.3	663.5
105	147	33.7				4.8	985.5	1024.0
106	116	118.7				1.4	1474.5	1594.6
116	89	3.5				2.3	298.5	304.3
117	115	23.8		0.3		6.8	249.2	280.1
122	142	18.0					650.5	668.5
123	118	102.7				94.7	169.9	367.3
124	97	10.9				2.0	158.3	171.1
125	73	15.1			3.2	6.0	293.1	317.5
129	170	7.7				4.9	771.3	783.9
135	108	33.4				1.6	223.1	258.1
136	176	13.6				0.4	652.6	666.6
143	74	20.8					25.3	46.1
144	91	55.2		0.2			58.9	114.4
145	91	139.7					111.9	251.6
146	119	211.4					68.1	279.4
151	74	27.8		0.1		0.4	245.2	273.5
157	91	48.7		19.4			51.5	119.6
158	119	51.0				29.0	194.7	274.7
164	120	20.5					200.3	220.8
166	84	139.1		7.8	2.6		52.3	201.8
167	90	32.0					39.5	71.5
173	152	52.4					50.0	102.4
174	120	435.5				7.3	217.6	660.3
175	111	104.1					170.5	274.6
176	92	43.7				7.7	86.8	138.3
178	119	167.8				22.6	108.4	298.8
183	186	118.9				19.1	284.8	422.8
184	155	64.1					29.8	93.8
185	116	158.8		6.0		0.8	275.6	441.1
186	126	295.1					46.2	341.2
192	112	68.6				3.4	93.1	165.0
193	99	25.2		2.1		0.8	101.5	129.6
194	83	163.5		19.0			32.9	215.4
199	74	84.7		13.5		2.9	71.9	173.0
202	124	76.2					31.6	107.8
203	111	167.6		26.6			90.2	284.4
204	94	266.3				5.9	30.5	302.7
Mean	114.7	92.0		2.5	0.2	5.9	244.3	344.8
SD		92.2		6.3	0.7	16.2	306.2	301.8
%Catch		26.7		0.7	0.1	1.7	70.9	

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	Barracuda	Other	Total
107	54	11.5	138.9		152.8		1452.0	1755.1
111	42	48.1	189.1	32.6	650.0	6.3	2679.1	3605.2
112	34	144.5	769.0		65.3	191.2	482.1	1652.2
113	30	112.8	128.4		33.9	36.4	408.6	720.1
114	47	52.7	111.0	2.4	86.9	1.5	395.4	649.7
115	65	7.4	18.2		735.7	11.6	418.2	1191.1
126	67		2.1		135.2	0.2	804.3	941.8
127	44	73.3	4.2		52.6	16.3	219.5	366.0
128	30	160.1	6.0		53.7	0.9	504.5	725.2
140	26	73.7	316.3		307.5	277.7	1302.2	2277.3
141	45	0.4	296.3			1.1	42.7	340.6
142	59		6.7			1.3	199.4	207.4
152	40		52.9				239.4	292.3
153	29	5.6	357.7				172.0	535.6
154	28		0.5	17.5			177.4	195.4
155	45			2.2			199.4	201.6
156	65		7.3		24.5		103.8	135.6
162	40						93.6	93.6
163	50						76.2	76.2
195	58		4.7		0.9		11.6	17.1
196	42		25.2			2.4	47.8	75.3
197	35		0.2				35.1	35.3
198	50						27.0	27.0
Mean	44.2	30.0	105.9	2.4	100.0	23.8	438.7	700.7
SD		49.8	183.1	7.5	201.0	68.2	620.2	885.7
%Catch		4.3	15.1	0.3	14.3	3.4	62.6	

B: Outer shelf (71-200 m).

Station	Depth	Clupeids	Carangids	Scombrids	Hairtails	Barracuda	Other	Total
102	189				5.3		658.2	663.5
105	147		17.3		480.0		526.7	1024.0
106	116		0.7	10.1	235.9		1347.9	1594.6
116	89		6.2		91.6	0.7	205.8	304.3
117	115		6.4		13.2		260.4	280.1
122	142		151.6		5.8		511.1	668.5
123	118		37.3		27.2		302.8	367.3
124	97		28.3		7.7		135.2	171.1
125	73	0.2	11.3		40.0		266.0	317.5
129	170				33.1		750.7	783.9
135	108		131.9	1.9			124.2	258.1
136	176				15.4		651.2	666.6
143	74		0.3				45.8	46.1
144	91		3.0		0.7	1.4	109.3	114.4
145	91		0.2			0.4	251.1	251.6
146	119				2.0	0.6	276.9	279.4
151	74	0.2	8.2		7.8	12.7	244.6	273.5
157	91		0.2		0.8		118.6	119.6
158	119		39.6				235.1	274.7
164	120		140.4	10.7	4.9		64.9	220.8
166	84		0.4		1.1	3.1	197.2	201.8
167	90				4.4		67.1	71.5
173	152				6.4		96.0	102.4
174	120		64.8		2.5		593.0	660.3
175	111		59.7				214.9	274.6
176	92		11.7				126.6	138.3
178	119		49.2				249.7	298.8
183	186				33.3		389.5	422.8
184	155						93.8	93.8
185	116		225.5		1.4		214.3	441.1
186	126		19.1		3.7		318.5	341.2
192	112		21.9		1.3		141.8	165.0
193	99		9.6		1.5		118.5	129.6
194	83		2.9				212.4	215.4
199	74		27.6		3.0		142.4	173.0
202	124		2.2		13.8		91.7	107.8
203	111		45.7		14.6		224.1	284.4
204	94		0.7		4.3		297.7	302.7
Mean	114.7	0.0	29.6	0.6	28.0	0.5	286.2	344.8
SD	31.1	0.0	51.0	2.4	85.5	2.1	251.5	301.8
%Catch			8.6	0.2	8.1	0.1	83.0	

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	*P.longirostris*	*A.varidens*	*N.africana*	Other	Total
103	217	40.1	61.2	12.5			910.6	1024.4
108	410		314.2	0.1	4.6	538.8	58.2	915.9
109	527		29.0		11.8	386.0	122.2	549.0
110	696		15.9		1.8	237.2	582.5	837.5
118	456		130.6		5.4	345.7	51.2	532.8
119	556		8.1		5.5	187.9	385.6	587.1
120	617		42.2			238.7	882.7	1163.6
121	721		23.9		7.5	231.9	920.1	1183.4
130	434		216.7		2.3	391.2	113.8	723.9
131	619		16.9		5.3	169.9	203.9	396.1
132	698		13.7		3.7	224.9	300.5	542.8
133	308		46.7	25.3		37.9	749.3	859.1
134	231	9.0	172.0	34.4			1197.7	1413.1
137	530		7.2		2.5	400.7	55.1	465.6
138	642		12.9		8.6	220.4	400.6	642.5
147	270	5.5	94.3	16.2			995.6	1111.5
148	392		33.4	8.1	2.0	546.1	243.7	833.2
149	644		34.5		5.7	161.0	221.7	422.9
150	747		1.5		4.6	115.2	177.3	298.6
159	431		25.0	2.1	5.6	317.0	252.1	601.9
160	534		58.4		9.5	261.4	114.5	443.8
161	729		3.2		7.4	29.7	285.0	325.3
165	235	66.4	0.3	7.6			303.1	377.3
168	314		19.0	5.7			364.0	388.8
169	421		24.8	6.4	9.5	32.1	169.4	242.2
170	531		23.9		4.3	45.6	82.9	156.6
171	640		3.3		4.2	28.5	202.2	238.2
172	270	47.4	44.7	99.1			1480.6	1671.9
179	451		23.8		14.4		133.3	171.5
180	537		4.3		10.6	19.5	128.7	163.0
181	732		2.7		3.2		221.9	227.8
182	279	0.5	35.4	65.4			587.6	688.9
187	232	38.9		1.3			344.9	385.1
189	336		2.5	8.1			187.7	198.3
190	654		22.3		3.1	60.0	246.1	331.5
191	724		1.0		1.3		218.7	221.1
200	747				1.3		222.7	224.0
201	389			4.6	0.4	18.4	101.7	125.0
Mean	497.1	5.5	41.3	7.8	3.9	138.0	374.2	570.7
SD		15.4	65.5	19.7	3.9	164.0	348.0	379.4
%Catch		1.0	7.2	1.4	0.7	24.2	65.6	

ANNEX VII Instruments and fishing gear used

The Simrad EK-60/38kHz scientific sounder was run during the survey only for observation of fish and bottom conditions.

The details of the settings of the 38kHz echo sounder where as follows (Driftjournal 1. Kalibrering av referansekule, 06.10):

Transceiver-1 menu (38 kHz lowering keel)

Transducer depth	5.50 m
Absorbtion coeff.	8,7 dB/km
Pulse length	medium (1,02ms)
Bandwidth	wide
Max power	2000 Watt
2-way beam angle	-20,6dB
SV transducer gain	25,87 dB
TS transducer gain	26,5 dB
Angle sensitivity	21.9
3 dB beamwidth	6.9º along ship
	6.9º athwardship
Alongship offset	-0.11º
Athwardship offset	0.08º

Display menu

Echogram	1 (38 kHz)
Bottom range	15 m
Bottom range start	10 m
Sv colour min	-70 dB

Bottom detection menu Minimum level -40 dB

Fishing gear

The vessel has two different sized "Åkrahamn" pelagic trawls and one "Gisund super bottom trawl". During the present survey only the bottom trawl was used.

The bottom trawl has a headline of 31 m, footrope 47 m and 20 mm meshsize in the codend with an 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 equiped with a 12" rubber bobbins gear. The doors are of 'Thyborøn' combi type, 7.81 m^2, 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. Angolan demersal surveys 1985-2007.

	1985.1	1985.2	1985.3	1985.4	1986.1	1986.2	1989.1	1989.2	1989.3	1991.1	1991.2	1992	1993	1994	1995.1	1995.2	1996	1997.1	1997.2	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
OUTSIDE	11	13	13	11	28	24	31	23	10	30	56	55	1	17	16	0	5	1	62	0	0	1	0	0	1	0	3	0	1
20-50south	0	2	0	0	6	3	5	2	3	6	2	4	3	0	0	0	0	0	0	0	0	8	0	2	4	8	7	8	5
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	8
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	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	0
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	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	0
500-600south	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	2	0	1	2	3	1	2	2
700-800south	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1
20-50central	0	0	0	3	8	11	17	24	5	17	13	15	0	9	14	0	10	6	1	9	14	23	12	16	16	17	16	16	15
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	20
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	15
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	2
300-400central	0	0	0	2	4	1	0	7	1	7	3	9	0	9	11	15	10	7	1	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	2
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	5
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	5
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	17
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	21
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	20	21	21	17	23
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	7
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	6
500-600north	0	0	3	3	3	3	3	6	0	1	0	5	0	5	5	0	10	8	0	0	6	7	8	6	6	6	7	4	6
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
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	7	8	4	8
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	6
TOTAL	31	33	40	66	161	148	159	194	77	200	193	245	24	147	162	91	157	118	126	71	178	264	152	186	185	200	208	179	198

Annex IX

REPORT ON COLLECTING DURING "R/V DR FRIDTJOF NANSEN" DEMERSAL TRAWL SURVEY OFF ANGOLA, 24 Feb. - 25 Mar 2007

I was a participant on a previous demersal trawl survey of the *Nansen* in 2005. The collections I made on that cruise and the knowledge I acquired about the fishes of the Angolan shelf and slope have stimulated my interest in the region and prompted me to return. The 2007 cruise was quite successful on my end, in providing the opportunity to collect more specimens of Angolan fishes and allowing me to become more familiar with the fauna and to learn how to identify the different species. Despite limitations on my ability to carry specimens back with me, I managed to return home with more than 700 specimens representing more than 160 species, many of which are rare or poorly represented in museums. In addition, I collected a drum-full of duplicate specimens for deposit in INIP. If I had the container space and adequate funds to ship more specimens, I certainly would have preserved more, especially larger specimens and size series of the commercially important species. For some of the species, I took tissue samples for other ichthyologists to use in determining relationships based on molecular DNA analysis. I already have calls on some of the species by experts in each group, and these will be sent out shortly (the specimens are currently being processed for accessioning into the ichthyological collections of the Department of Ichthyology, California Academy of Sciences). A Frilled shark, *Chlamydoselachus* sp., was left on board the ship to be picked up in CapeTown by Dr. Leonard Compagno, the world's leading shark expert. He suspects that the specimen represents an undescribed species and the *Nansen* specimen is a new range record. Frilled sharks have been taken on several occasions off Angola and Namibia, including a few previously by the *Nansen*, however, they have probably never been kept for deposit in a museum by biologists aboard the ship.

My experience during the 2005 cruise made me realize that the currently available field guides to the marine fishes of Angola were grossly inadequate to properly identify many of the species captured by the demersal trawls. Most of the commercially important fishes and many of the more common ones are generally well known to the biologists aboard the ship. However, I noted a distressing number of important species that were either improperly identified or were being mixed with similar-looking species. I was pleased to see that some of the more difficult groups such as the *Dentex* and *Pagrus* complex and many of the sciaenids were being correctly identified, despite the presence of several closely similar species, often together in each catch. Some glaring errors were made, however, in groups such as the searobins, Triglidae, where most were being identified as *Trigla lyra*, even though three genera and five or more species were commonly taken. Similarly, the deeper-water eels were usually identified as *Bathyuroconger vicinus* even though several different genera and species were involved. Likewise the soles, where most of the non-descript species were being identified as *Dicologlossa cuneata* [the spelling *Dicologoglossa* used on the ship is apparently an

unjustified emendation of the name, according to Eschmeyer's *Catalog of Fishes*] even though that species drops out in deeper waters where other species show up. For the most part, these errors will not affect the catch data for the commercially more-important species. However, if more detailed analyses of the catch data are of concern (such as for species richness, correlation between species composition and depth, major groupings, species associations, size relationships with depth, depth and geographic ranges), erroneous results may be the product. One particular species pair that concerned me involved the macrourids *Nezumia micronychodon* and *N. duodecim*, which were often combined as either *N. aequalis* or *N. micronychodon*. *Nezumia micronychodon* and *N. aequalis* were treated in the FAO *Field Guide to the Living Marine Resources of Namibia* but not in the companion guide to Angola, and neither guide treated *N. duodecim*. The three species often occurred commonly together in depths beyond about 500 m, and in depths beyond 600 m or so, *N. micronychodon* and *N. duodecim* together often composed the dominant (by weight and numbers) fishes in the catches but were usually treated as one species.

It is with these problems in mind that I have undertaken a project, sponsored by FAO, to revise the FAO guide to the commercial marine and brackish water species of Angola (*Guia de campo espécies comerciais marinhas e de águas salobras de Angola*). Among the several co-authors involved are Diana Zaera-Perez and Oddgeir Alvheim of IMR (both with extensive experience in Angola), a currently unidentified biologist from Angola, and Nicoletta DeAngelis of FAO. Other experts will be engaged to treat marine algae, crustaceans, cephalopods, bivalves, gastropods, and marine mammals.

It is with special gratitude that I acknowledge the friendly help and assistance received on board the ship by Espen Johnsen (IMR, cruise leader), Diana Zaera-Perez (IMR), Kumbi Kolongi (INIP, and leader of the Angolan group), and the officers and crew of the *Nansen*. They all contributed towards making my participation on the cruise a pleasant, memorable, and successful endeavor.

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ANNEX X. Sharks

This is the continuation of a sampling programme presented to the direction of the INIP in Luanda, which started in 2002. We have followed the same methodology and pursuing the same objectives described in previous reports: improve the available information on biology and bathymetric distribution of sharks in Angolan waters, with especial emphasis on deep-water sharks.

Due to time constraints, not all specimens caught were measured and data were not introduced in the data base, therefore they have not been analyzed yet.