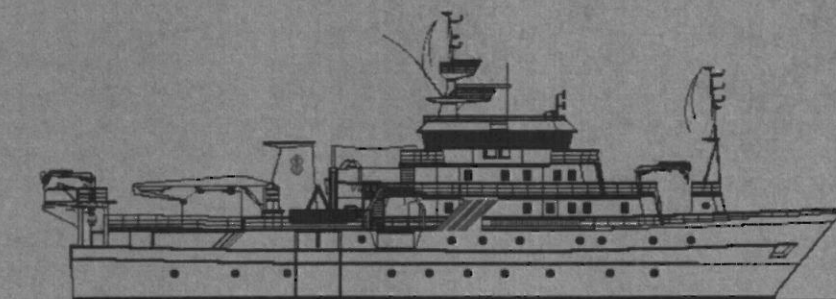




CRUISE REPORTS "DR. FRIDTJOF NANSEN"



**SURVEYS OF THE FISH RESOURCES OF  
THE EASTERN GULF OF GUINEA**

**Nigeria, Cameroon, São Tomé & Príncipe, Gabon and Congo**

**Survey of the pelagic and demersal resources**

**Nigerian Institute for Oceanography and Marine Research  
Nigeria**

**Direcção das Pescas  
São Tomé and Príncipe**

**Institute of Marine Research (IMR)  
Norway**

**Ministry of Livestock, Fisheries and Animal industry  
Cameroon**

**Direction Générale de la Pêche et de l'Aquaculture  
Gabon**

**IRAD - Fisheries and Oceanography Research  
Cameroon**

**Direction Générale de la Pêche et de l'Aquaculture,  
Congo**

**Instituto Investigação Marinha  
Angola**

**Pêcheries Industrielles du Congo  
Democratic Republic of Congo**

**Marine Fisheries Research Division  
Ghana**

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) provide 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 focused on the western Gulf of Guinea, but from 2004 two surveys have covered the complete Gulf of Guinea region, Part I from Côte d'Ivoire to Benin, and Part II from Nigeria to Gabon. The following surveys has been conducted in the Gulf of Guinea:

| <b>Area</b>   | <b>Period</b>                 |
|---|-------------------------------|
| Cape Verga (Rep. of Guinea) to Cape St. Paul (Ghana)              | 02 - 25 June 1981             |
| Togo to Cameroon  | 07 - 20 August 1981           |
| Côte d'Ivoire and Ghana   | 12 - 20 October 1989          |
| Benin, Togo, Ghana and Côte d'Ivoire                              | 19 April - 06 May 1999        |
| Benin, Togo, Ghana and Côte d'Ivoire                              | 29 August - 17 September 2000 |
| Benin, Togo, Ghana and Côte d'Ivoire                              | 6 July - 09 August 2002       |
| Benin, Togo, Ghana and Côte d'Ivoire (Gulf of Guinea Part I)      | 14 May - 08 June 2004         |
| Nigeria, Cameroon, São Tomé and Príncipe (Gulf of Guinea Part II) | 11 June - 13 July 2004        |
| Benin, Togo, Ghana and Côte d'Ivoire (Gulf of Guinea Part I)      | 03 May - 29 May 2005          |

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**Survey of the pelagic and demersal resources  
4 June - 15 July 2005**

By

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Bergen, January 2006**

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## CHAPTER 1 INTRODUCTION

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The survey of the eastern part of Gulf of Guinea was a follow up from the successful survey conducted in the region in 2004 by Institute of Marine Research (IMR) and Food and Agriculture Organisation of the United Nations (FAO). This years survey with the R.V. Dr. Fridtjof Nansen was initiated by the GCLME (Guinea Current Large Marine Ecosystem) and forms part of the cooperation between GCLME, FAO and IMR. The survey will cover Nigeria, Cameroon, São Tomé and Príncipe, Gabon and Congo from the 3<sup>rd</sup> of June to the 15<sup>th</sup> of July 2005. The survey adds to the surveys of the western Gulf of Guinea conducted from Côte d'Ivoire to Benin, 3<sup>rd</sup> May to 29<sup>th</sup> May this year by FAO and IMR under the project GCP/INT/730/NOR. These two surveys together cover the major part of the GCLME region.

The survey was organised by GCLME in cooperation with IMR and FAO under the FAO project GCP/INT/730/NOR: International cooperation with the Nansen Programme: Fisheries Management and Marine Environment, and the agreement between GCLME and IMR. This project is the continuation of a series of projects and agreements between NORAD, IMR and FAO involving surveys with the research vessel "Dr. Fridtjof Nansen". The objectives of the survey was discussed and agreed upon during a pre-survey meeting held in Accra, Ghana, prior to the survey on 3 June 2005 where representatives from GCLME and all countries surveyed were present together with representatives from FAO and IMR.

### 1.1 Objectives

Following the instructions from the GCLME and the recommendations from the pre survey meeting in Accra, Ghana, the main objectives of the survey were:

- to map the distribution and estimate the acoustic abundance of the main pelagic fish species / groups in the region
- to describe the distribution, composition and estimate the abundance of the main demersal fish species on the shelf by a swept-area trawl programme
- to collect bottom sediment samples to map the benthic biodiversity in the region.
- to collect phytoplankton and zooplankton samples for distribution and species identification
- to collect stomach contents and maturity stages of comersiall important fish species in the region to increase knowledge on feeding and reproductive pattern
- to map the general hydrographic regime by using a CTD to monitor the temperature, salinity and oxygen at bottom trawl stations and on hydrographical transects
- on-the-job training on the main survey routines

### 1.2 Participation

Participants for the survey arrived at one of three ports of call, Tema in Ghana, where the vessel departed on the 4<sup>th</sup> June 2005, Douala in Cameroon on the 18<sup>th</sup> June and Pointe Noire

in Gabon on the 3<sup>rd</sup> July. The GCLME experts participating in the survey came from all countries in the region covered by the survey, together with invited experts from other parts of the GCLME region.

From Nigerian Institute for Oceanography and Marine Research, Nigeria:

Catherine Ekaete Ukut-Isebor (4 June –15 July, GCLME representative, Team leader),  
Michael Olaniyi Oyebanji (4 June-3 July), Akanbi Bamikole Williams (4 June-3 July)

From Nigerian Navy Hydrographic Office, Nigeria

Cdr. El Ogalla (4 June-18 June), W.O Ikediashi (4 June-18 June)

From Ministry of Livestock, Fisheries and Animal industry, Service Provincial des Peches du Littoral Douala, SPPLD, Cameroon:

Pierre Nolasque Meke Soung (4 June-3 July)

From Station des Recherches Halieutique et Oceanographique, Limbe, SRHOL, Cameroon:

Chiambeng George Yongbi (4 June-3 July), Charles Emene Gabche (4 June-18 June)

From Marine Fisheries Research Division, Tema, Ghana:

Daniel Ofori-Adu (4 June-3 July)

From The University of Ghana, Department of Oceanography and Fisheries, Legon, Ghana:

Francis Nounoo (4 June-18 June) and Emmanuel Lamptey (4 June-15 July)

From Direcção das Pescas, São Tomé and Príncipe:

José Dias de Sousa Lopes (18 June – 3 July) and Maria Manuela do Nascimento  
Bandeira (18 June – 3 July)

From Direction Générale de la Pêche et de l'Aquaculture, Gabon:

Jean De Dieu Lewembe (18 June – 3 July), Parfait Madoungou-Massala (18 June – 3 July), Jean de Dieu Doumambila B (4 July – 15 July), Jean Gabriel Goussilou (4 July – 15 July) and Marien Létocka Bello (4 July – 15 July)

From Direction Générale de la Pêche et de l'Aquaculture, Congo:

Claude Benoît Atsango (4 July – 15 July), Pierre Mpandou (4 July – 15 July) and Fredric Itoua Niamba (4 July – 15 July)

From Pêcheries Industrielles du Congo, Democratic Republic of Congo:

Manara Kamitenga (4 July – continued on the pelagic survey off Angola)

From Instituto Investigaç o Marinha, Angola:

Bernardo M da silva Fernandes (4 July – 15 July), Enoque Canganjo Vasco (4 July – 15 July)

From Institute of Marine Research, Norway:

Tor Egil Johansson (4 June – 15 July), Terje Hovland (4 June – 3 July), Ole Sverre Fossheim (4 July – 15 July), Oddgeir Alvheim (4 June – 3 July, Cruise leader from Tema to Douala), Jens-Otto Krakstad (18 June – 3 July, Cruise leader from Douala to Pointe Noire), Diana Zaera (4 June – 18 June) and Magne Olsen (4 July – 15 July).

From University of Bergen, Norway

Jon Kongsrud (4 June-18 June).

### 1.3 Narrative

The vessel left Tema (Ghana) at 23:00 on the 4<sup>th</sup> of June 2005 after the “flagging off” ceremony by GCLME in Tema harbour. The survey started at 15:30 the next day when the vessel arrived at the border between Benin and Nigeria at 02°42’ E. The inner shelf was surveyed during daytime (0600 to 1800) by parallel course tracks about 15 NM (nautical miles) apart, while the slope deeper than 100 m was surveyed during the night. Sampling was continues around the clock in the whole region. A break in the survey activities was experienced on the morning of the 16<sup>th</sup> because one of the participants needed medical attention. Medical personnel from one of the oil platforms in the area came to assistance. The survey was resumed the same afternoon, but the vessel turned towards Douala later the same night, for a change of scientists. The vessel arrived in Douala on the 17<sup>th</sup> at 14:00 and departed on the 19<sup>th</sup> of June at 14:00. The vessel then returned to the southeastern end of Nigeria to finish the coverage in Nigerian waters. The border to Cameroon was reached on the 20<sup>th</sup> of June at 16:00, and the coverage of Cameroon was started immediately. The border between Cameroon and Equatorial Guinea at the Campo River estuary (2°20’N) was reached on 25<sup>th</sup> of June in the afternoon, and the vessel continued across to the islands of S o Tom  and Pr ncipe. Pr ncipe was surveyed from 26<sup>th</sup> and 27<sup>th</sup> of June, and S o Tom  was surveyed from the morning of the 28<sup>th</sup> of June until the evening of the 29<sup>th</sup> of June. The vessel thereafter steamed to the border between Equatorial Guinea and Gabon, where the survey was commenced in Gabon the next day. The vessel docked in Port Gentil on the 03<sup>rd</sup> of July at 12:00 after finalising the survey of the northern part of Gabon. Departure from Gabon was initially set to the 4<sup>th</sup> of July, but was moved to 5<sup>th</sup> of July 08:30 because of a late arriving participant from Gabon. The survey of the southern part of Gabon and Congo was commenced immediately after leaving the port. A break in the survey was experienced on the 12<sup>th</sup> of July at the last trawl station in Gabon because we lost the trawl gear to one of the bottom trawls. Several hours were spent searching for the gear, but it was not possible to retrieve it from the bottom. The first transect in Congo was therefore only started midnight on the 13<sup>th</sup> in order to be able to trawl on the shelf during the day. The southern part of Congo at the border with Angola was only partly surveyed because of the delay, and because of the

abundance of oil platforms in the area, which made bottom-trawling operations difficult. The CTD transect off Pointe Noire will be conducted as part of the following survey. The vessel arrived in Pointe Noire on the 14<sup>th</sup> at 15:00. On the 15<sup>th</sup> of July from 13:00 to 15:00 a function was held by GCLME at the vessel to acknowledge that the first GCLME survey in the region was completed.

During the survey semi-random swept-area hauls were carried out on the shelf within the depth zones 20-30 m, 31-50 m, 51-100 m and when possible >100 m depth during daytime. Continuous acoustic registrations were done throughout the survey. Pelagic trawling on registrations and random blind hauls was carried out during dark hours when time permitted.

CTD-stations were taken at the bottom trawl stations. In addition, hydrographical profiles were made with CTD from surface down to the bottom or 500 m depths for approximately each 60 nm coastline sailed. Zooplankton samples were taken irregularly with Hydrobios multinet plankton sampler. Grab samples were taken irregularly but with the aim of covering representative areas of the shelf between 20 and 100 m depth.

The Nigerian shelf was covered from 5<sup>th</sup> of June – 20<sup>th</sup> of June, Cameroon from 20<sup>th</sup> of June – 25<sup>th</sup> of June, and São Tomé and Príncipe from 26<sup>th</sup> of June – 29<sup>th</sup> of June, Gabon from the 30<sup>th</sup> of June – 12<sup>th</sup> of July and Congo from 12<sup>th</sup> of July-14<sup>th</sup> of July.

#### **1.4 Survey effort**

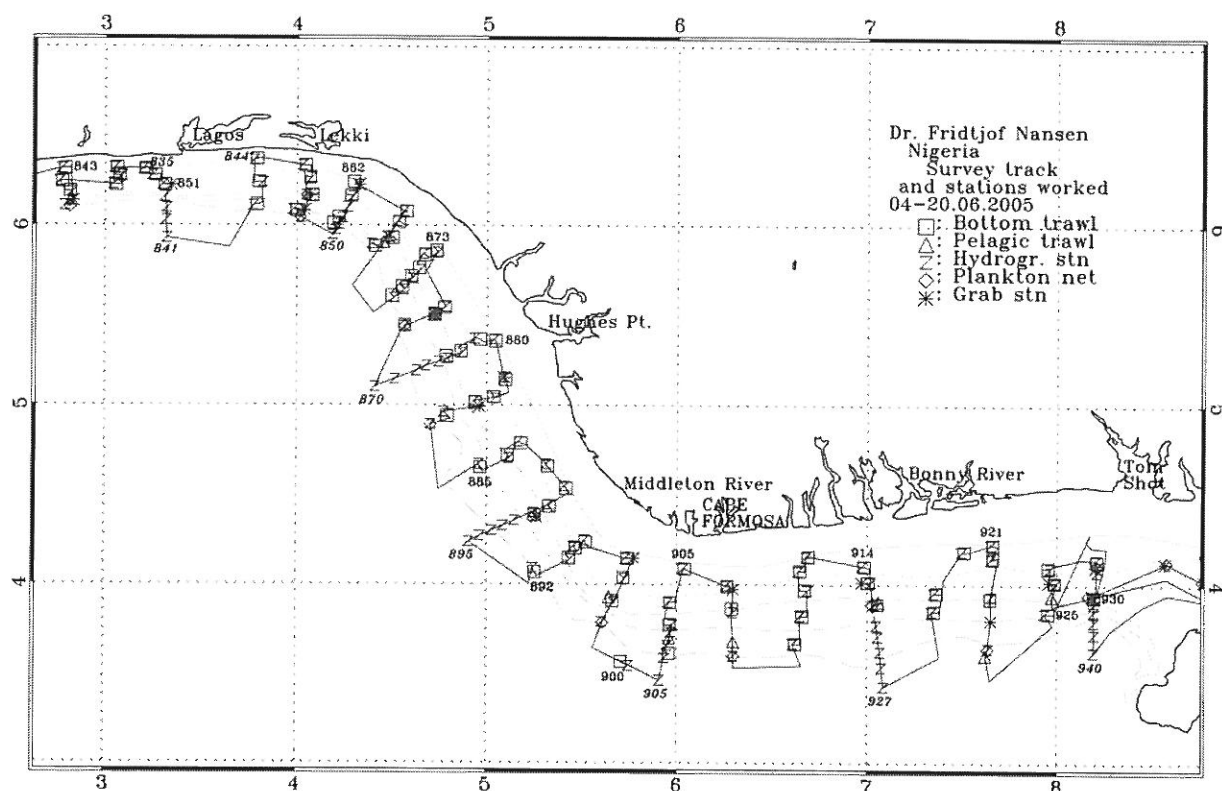
Figure 1. shows the cruise tracks with trawl, hydrographic, benthos and plankton stations. Table 1.1 summarises the survey effort in each sector. The area calculated for São Tomé and Príncipe is the total area for both islands for the depth region surveyed.



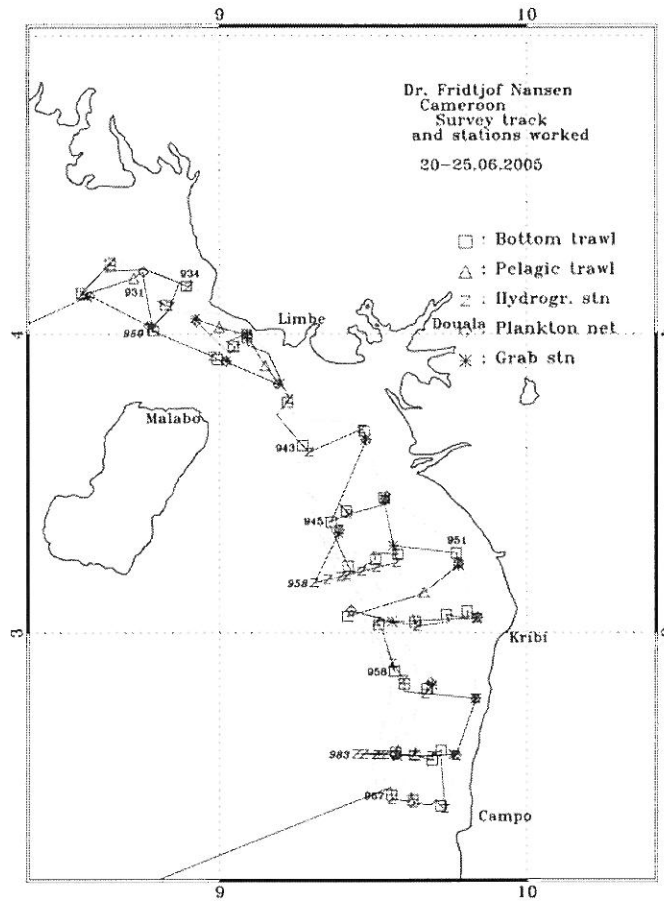
**Table 1.1** Number of hydrographic (CTD), Grab stations (G), plankton (P), pelagic trawl (PT) and bottom trawl (BT) stations, successful swept-area hauls, distance surveyed (NM) and size of survey area (NM<sup>2</sup>).

| Region                  | CTD | G  | P  | PT | BT | Swept-area hauls |        |          |           |           | Distance Surveyed |
|-------------------------|-----|----|----|----|----|------------------|--------|----------|-----------|-----------|-------------------|
|                         |     |    |    |    |    | 0-30 m           | 31-50m | 51-100 m | 100-200 m | 200 500 m | NM                |
| Nigeria                 | 119 | 17 | 13 | 7  | 81 | 11               | 25     | 25       | 12        | 10        | -                 |
| Area (NM <sup>2</sup> ) |     |    |    |    |    | 5220             | 2292   | 3090     | 1848      | 2837      | 1974              |
| Cameroon                | 41  | 17 | 17 | 4  | 33 | 9                | 7      | 10       | 5         | 2         | -                 |
| Area (NM <sup>2</sup> ) |     |    |    |    |    | 1548             | 500    | 618      | 214       | 115       | 680               |
| São Tomé                | 28  | 5  | 4  | 3  | 6  | 1                |        | 5        | -         | -         | -                 |
| Area (NM <sup>2</sup> ) |     |    |    |    |    | 68               |        | 58       | -         | -         | 210               |
| Príncipe &              | 26  | 6  | 4  | 1  | 9  | 3                |        | 6        | -         | -         | -                 |
| Area (NM <sup>2</sup> ) |     |    |    |    |    | 71               |        | 228      | -         | -         | 420               |
| Gabon                   | 100 | 15 | 11 | 2  | 83 | 12               | 19     | 18       | 15        | 11        | -                 |
| Area (NM <sup>2</sup> ) |     |    |    |    |    | 2441             | 2240   | 3715     | 2226      | 1396      | 1631              |
| Congo                   | 8   | 1  | 1  | 2  | 9  | 1                | 2      | 2        | 2         | 2         | -                 |
| Area (NM <sup>2</sup> ) |     |    |    |    |    | 480              | 344    | 830      | 816       | 293       | 224               |

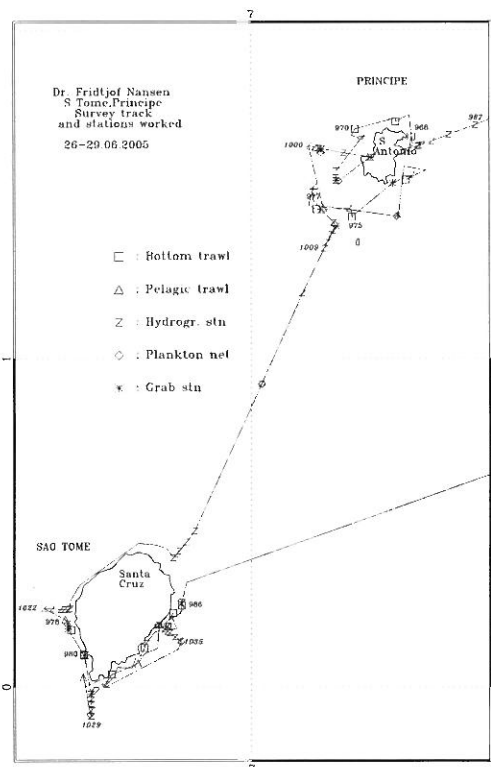
a) **Nigeria – Cameroon**



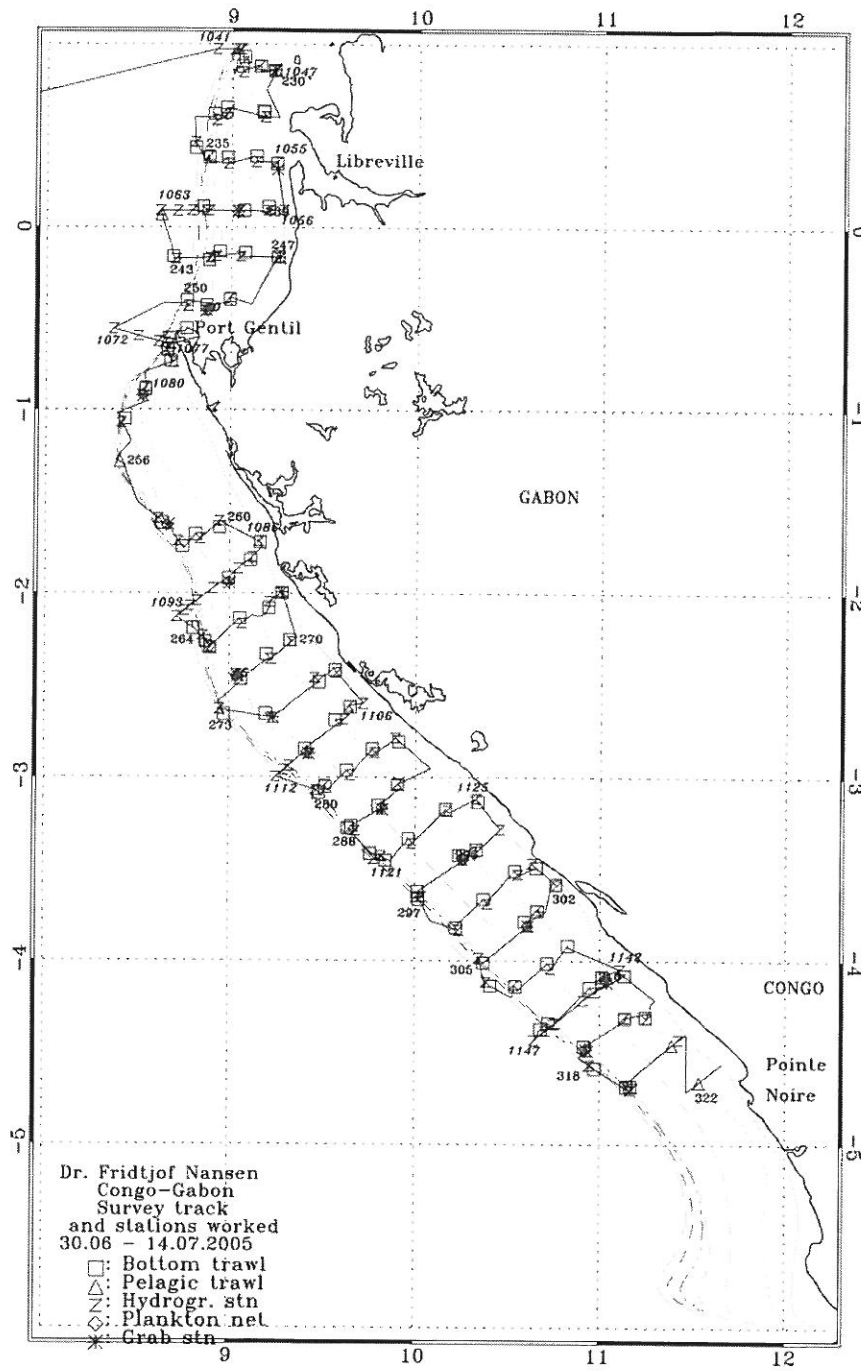
## b) Cameroon – Gabon



## c) São Tomé and Príncipe



## d) Gabon and Congo



**Figure 1.1** Course track with fishing, benthos, plankton and hydrographic stations for a) Nigeria, b) Cameroon and c) São Tomé and Príncipe d) Gabon and Congo. Depth contours are indicated.

## CHAPTER 2 METHODS

---

### 2.1 Meteorological and hydrographical sampling

#### *Temperature, salinity and oxygen*

CTD stations were taken in connection with most bottom trawl stations and at five hydrographic transects. Figure 1 presents positions for the CTD stations taken on the five transects. A Seabird 911 CTD plus was used to obtain vertical profiles of temperature, salinity and oxygen. Real time plotting and logging was done using the Seabird Seasave software installed on a PC. The profiles were usually taken down to a few metres above the bottom, but not deeper than 500 m. The new oxygen sensor has shown to be very stable, and no calibration was conducted during the survey. The calibration constant calculated during the survey off the western Gulf of Guinea was applied for the whole survey.

#### *Thermosalinograph*

The SBE 21 Seacat thermosalinograph was running routinely during the survey. Obtaining samples of sea surface salinity and relative temperature (5 m depth) every 10 sec during the survey.

#### *Current speed and direction measurements (ADCP)*

The ship-born Acoustic Doppler Current Profiler (ADCP) from RD Instruments was running throughout the survey. The ADCP was set to external trigger, triggered by the EK 500 system. The depth cell interval set to 8 m and the number of cells was set to 50.

#### *Meteorological observations*

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

### 2.2 Biological fish sampling

The trawl catches were sampled for species composition by weight and numbers. The deck sampling procedure is described in more detail by Strømme (1992). Length measurements (total length) were taken for target species. The length of each fish was recorded to the nearest 1 cm below. The carapace length was measured to the nearest 0.1 cm below for shrimp. The mantle length was measured to the nearest 1 cm below for *Sepia* spp. In addition biological samples of target species included; total length (mm), body weight (g), sex and reproductive stages, and analyses of stomach content. Reproductive stage were determined by means of macroscopic examination, scoring each fish according to the five-point classification scale first proposed by Holden and Raitt (1974). The stomach content of the fish species were extracted to determine the diet, and for analysis of the various trophic relationships between predators and prey in the food web. Stomach fullness was classified according to the following scale: Full (100%), three-quarters full (75%), half-full (50%), a quarter-full (25%)

and empty, Pillay, (1953). The stomach content samples were stored in 10% formaldehyde solution and the bottle labelled with the station number and fish species code. Other necessary information (e.g. station number, species code, date, sex and gonad stage) was written on a piece of acetate paper and inserted into each sample bottle. The stomach content samples were taken to Instituto Investigação Marinha, Luanda, Angola for further analyses. Basic information recorded at each fishing stations, i.e. trawl hauls, is presented in Annex I. Pooled length frequency distributions, raised to catch per hour, of selected species by area are shown in Annex II. Annex III gives basic information of all biological samples collected during the survey. Target groups for Nigeria and Cameroon are indicated in Annex IV, while the swept-area estimates are presented in Annex V.

A description of the fishing gears used, acoustic instruments and their standard settings is given in Annex VII.

### **2.3 Plankton sampling**

Zooplankton was collected with the Hydrobios multinet zooplankton sampler that takes up to five discrete samples at predefined depths while measuring the water flow through the net. Samples were taken irregularly at opportunity throughout the survey trying to cover both inshore and offshore areas frequently. Samples were fixed in buffered formaldehyde solution and stored for further analyses onshore.

Phytoplankton was collected regularly with the same interval as the zooplankton stations. Samples were taken from the surface (5 m depth) with the ship's seawater pump, fixed in buffered formaldehyde solution and stored for further analyses onshore.

### **2.4 Benthos grab sampling**

The soft-bottom benthic macrofauna sampling was carried out using Peterson grab with a surface area of 0.20m<sup>2</sup>. At each of the stations (Figure 1.1), the Peterson grab was deployed from an operated winch onto the seafloor. Four replicate samples were taken to obtain representative samples at each station, and to assess the patchiness in the distribution of the organisms. Two sediment replicates each were screened through sieves of mesh sizes 0.5 mm and 1.0 mm respectively to obtain adequate samples for both taxonomy and molecular analyses. The residue of the sieved sediment samples were fixed and put into plastic containers. Two of the sediment replicates were fixed in 10% borax pre-buffered formaldehyde while the other two were preserved in 90% ethanol. The ethanol in the samples were decanted and refilled with fresh ethanol solution after two days to avoid sample deterioration.

The containers were labelled according to the station numbers, replicate type, date, mesh size used, and the type of preservation used (e.g. N07A, 12/06/05, 0.5mm, Formaldehyde; C03D, 22/06/05, 1.0 mm, Ethanol). The samples were packed into boxes, for sorting and taxonomic

identification on land. One replicate samples from all the stations were packed and sent to University of Ghana, Department of Oceanography & Fisheries while the three others were sent to Bergen Museum in Norway.

Additional sediment samples were taken at all the stations into zip lock bags, stored in a freezer and sent to Nigerian Institute for Oceanography and Marine Research, Lagos for both granulometric and chemical analyses.

Epifauna samples were also collected from demersal trawls. Some of the samples were fixed in 10% borax pre-buffered formaldehyde and others preserved in 90% ethanol. The samples were labelled following the trawl station numbering. They were packed and sent to both University of Ghana and Bergen Museum.

## 2.5 Biomass estimates

### *Acoustic abundance estimation*

A SIMRAD EK500 Echo sounder was used and the echograms were stored on both paper and files. The acoustic biomass estimates were based on the integration technique. The Bergen Integrator (BEI, see Knudsen 1990) was used for analysis and allocation of the integrated  $s_A$ -values (average area back scattering coefficient in  $m^2/NM^2$ ) The splitting and allocation of the integrator outputs ( $s_A$ -values) was based on a combination of a visual scrutiny of the behaviour pattern as deduced from echo diagrams, the BEI analysis and the catch composition. The mean integrator value in each sampling unit ( $s_A$ -values) was divided between the standard categories/groups of fish, as noted below, on the basis of trawl catches and characteristics of echo traces:

- sardinella (*Sardinella aurita* and *S. maderensis*)
- PEL 1 (other clupeids than sardinella)
- PEL 2 (carangids, scombrids, barracudas, hairtail)
- Mesopelagic fish
- Demersal fish
- Plankton

The following target strength (TS) function was applied to convert  $s_A$ -values (mean integrator value for a given area) to number of fish (sardinella, PEL 2):

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

or in the form

$$C_F = 1.26 \cdot 10^6 \cdot L^{-2} \quad (2)$$

where  $L$  is total length and  $C_F$  is the reciprocal back scattering strength, or the so-called fish conversion factor. In order to split and convert the allocated  $s_A$ -values ( $m^2/NM^2$ ) to fish densities (number per length group per  $NM^2$ ) the following formula was used

where:  $N_i$  = number of fish in length group  $i$

$$N_i = A \cdot s_A \cdot \frac{P_i}{\sum_{i=1}^n \frac{P_i}{C_{Fi}}} \quad (3)$$

$A$  = area ( $NM^2$ ) of fish concentration

$s_A$  = mean integrator value (echo density) in area  $A$  ( $m^2/NM^2$ )

$p_i$  = proportion of fish in length group  $i$  in samples from the area

$C_{Fi}$  = fish conversion factor for length group  $i$

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

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

The length distribution of a given species within an area was computed by simple adding of the length frequencies obtained in the pelagic trawl samples within the area. In the case of co-occurrence of target species, the  $s_A$  value was split in accordance with length distribution and catch rate in numbers in the trawl catches. Biomass per length group ( $B_i$ ) was estimated by applying measured weights by length ( $W_i$ ) when available or theoretical weights (calculated by using condition factors), multiplied with number of fish in the same length group ( $N_i$ ). The total biomass in each area was obtained by summing the biomass of each length group:

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

The number and biomass per length group in each concentration were then added up to obtain totals for each region.

#### *Biomass estimates based on swept-area method*

In the bottom trawl survey, stock biomasses was estimated by the swept-area method with catch per haul as the index of abundance (see Strømme 1992). The general formula to estimate biomass  $B$ , using this method is:

$$B = \frac{A}{a} \cdot \frac{\bar{X}}{q} \quad (6)$$

A is the total area surveyed, a is the swept area of the net per haul,  $\bar{X}$  is the average catch per haul (the index of abundance) and q is the proportion of fish in the path of the net that are actually caught. The density of the resource is estimated as biomass per unit area. In a stratified survey of k non-overlapping strata, if the mean catch per haul in stratum i and its variance are denoted by  $\bar{X}_i$  and  $s_i^2$  respectively, then an unbiased estimate of the population mean  $\bar{X}$  is the stratified mean  $\bar{X}_{st}$ , which is given by:

$$\bar{X}_{st} = \frac{1}{N} \sum_{i=1}^k N_i \bar{X}_i = \sum_{i=1}^k W_i \bar{X}_i \quad (7)$$

where  $W_i = \frac{N_i}{N} = \frac{A_i}{A}$  is the relative size of the i<sup>th</sup> stratum ( $A_i$  is the area of the i<sup>th</sup> stratum and A is the total area surveyed). The variance of the stratified mean is given by

$$\text{var}(\bar{X}_{st}) = \sum_{i=1}^k W_i^2 \text{var} \bar{X}_i = \sum_{i=1}^k W_i^2 \frac{s_i^2}{n_i} \quad (8)$$

where  $n_i$  is number of hauls in the i<sup>th</sup> stratum and n is the total number of hauls in the survey.

Table 1.1 shows the areas used in the swept-area method to estimate biomass for the different regions. A stratified semi-random design was used with depth and country as stratification factors. Estimated total biomass by species/group was obtained by summing estimates for each depth stratum.

For conversion of catch rates (kg/hour) to fish densities (t/NM<sup>2</sup>), the effective fishing area was considered as the product of the wing spread and the haul length, or distance over the bottom, as measured by means of the SCANMAR<sup>®</sup> equipment based on GPS readings. The area swept for each haul was thus 18.5 times the distance trawled, raised to NM<sup>2</sup>/hour. The catchability coefficient (q), i.e. the fraction of the fish encountered by the trawl that was actually caught, was conservatively (and for comparison with previous surveys) assumed equal to 1. Mean fish densities by species and strata, were calculated by the swept-area module in NAN-SIS.

Total biomass estimates by species and their confidence intervals were obtained from a stratified mean density estimator (using equations 1, 2, and 4 in ANNEX VI on a spreadsheet, ANNEX VII) and raised to total area. Since NAN-SIS does not produce variance estimates of the mean densities (ANNEX IV), the 95% confidence limits for the biomass estimates were calculated with the underlying assumption that the coefficient of variation (CV = SD/mean) is constant when catch rates in kg/hour are converted to densities (t/NM<sup>2</sup>). In other words the area swept (normalised per hour) was approximately constant for each haul. Coefficients of variation of the catch rates, by depth strata for each species or group, were obtained using the WinGrafer module of NAN-SIS. Variance of the densities were estimated from the mean and the CV, and equations 2, 3, 6 and 7 in ANNEX V were used to calculate



standard error (SE) on the arithmetic mean and confidence intervals (see the spreadsheet BIOMASS.xls, and example in ANNEX VII). WinGrafer was also used to produce the figures and tables with grouped catch-rates and time-series presented in this report. SE and confidence intervals in the figures are based on the arithmetic mean, but the lognormal based Pennington's estimator can also be calculated (equations 8 to 12 in ANNEX VI).

## CHAPTER 3 OCEANOGRAPHIC CONDITIONS

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### 3.1 Surface distribution

The surface layer temperature (5 m depth) was continuously recorded during the cruise. Figure 3.1 a, b, c and d shows the horizontal distribution of sea surface temperature (SST) for Nigeria, Cameroon, São Tomé and Príncipe, Gabon and Congo respectively.

#### *Nigeria and Cameroon*

The sea surface temperature in Nigeria was similar to last year's survey, with the highest temperature, 28.8 °C, recorded close to the coast east of Lagos. This area was dominated of water masses with temperature >28°C. Gradually cooler water masses was found further east, but the surface temperature generally never dropped below 27°C.

In Cameroon temperature extremes where found in the shallow strait between Cameroon and Equatorial Guinea, with temperatures fluctuating between 27.6°C at the Wouri River entrance to 26.8°C in outside Limbe and to 27.6°C at the southern part of the entrance to Douala. The warmer water masses generally correspond with low salinity water and come from areas with river discharge. Cooler watermasses were also experienced further south towards Campo and offshore.

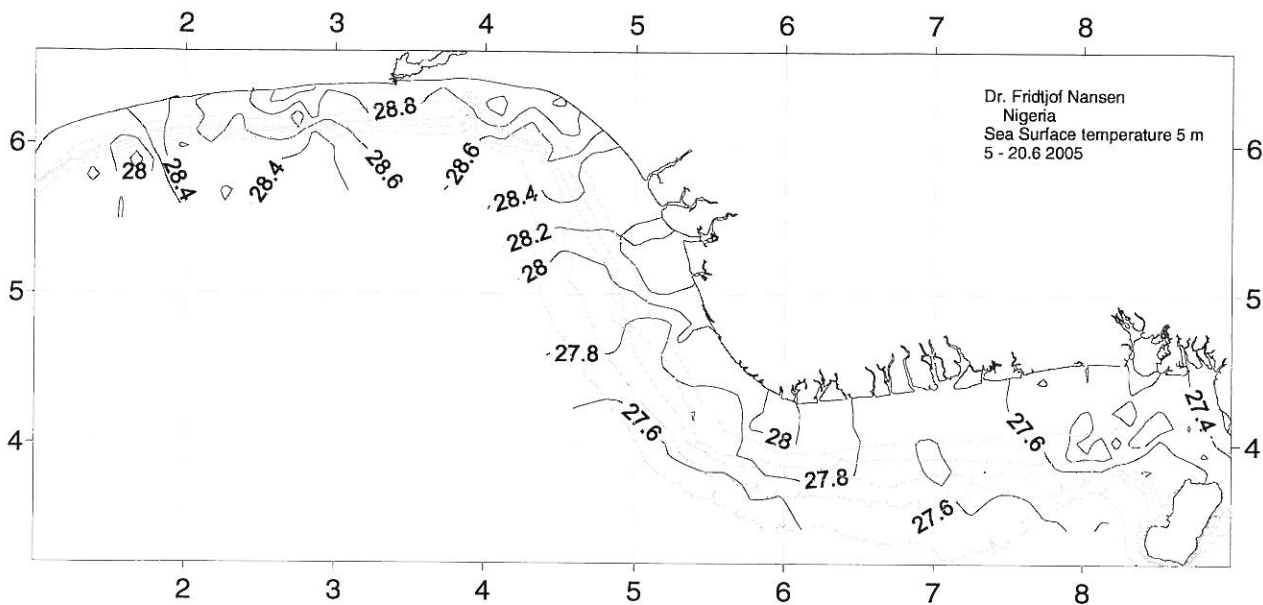
#### *São Tomé and Príncipe*

The sea surface temperature around Príncipe ranged from 27°C on the north-western side to 26.4°C on the south-eastern side. A clear gradient in temperature was experienced across the southern shelf. Lower temperatures corresponded with increasing salinity. The temperature at São Tomé was 26.4°C on the north-west side with decreasing temperatures on both sides of the island southwards. An area with temperatures as low as 24°C was found on the far south-eastern side of the island, indicating upwelling in this area. The surface current seemed to go anti clockwise around both islands, with a strong southerly component.

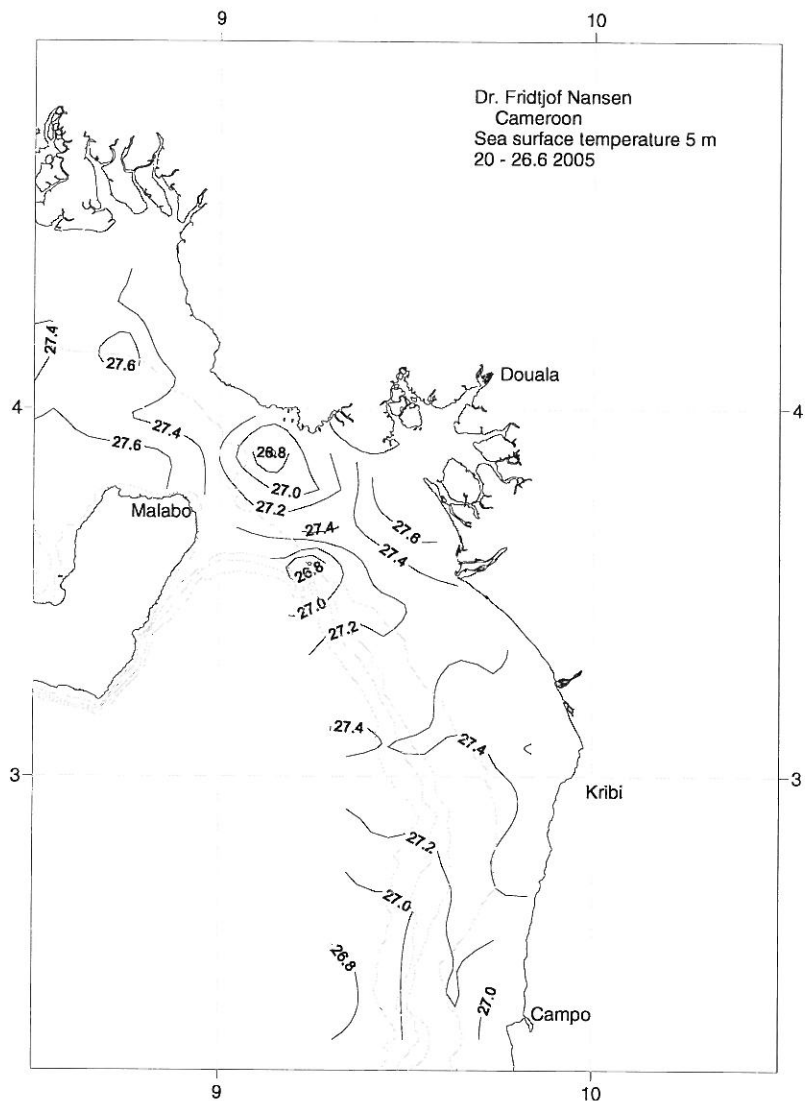
#### *Gabon and Congo*

The sea surface temperature in the northern part of Gabon ranged from 26°C at the border with Equatorial Guinea to 22.5°C at Cape Lopez. Temperature gradient in this region was generally across shelf, but with intrusion of warm water from the north on the inner shelf. A frontal zone was present at Cape Lopez separating warm less saline tropical water from the Gulf of Guinea in the north from colder, saline water masses on the southern shelf of Gabon and Congo. Temperatures on the southern shelf of Gabon and Congo were typically less than 21°C. A large upwelling cell with temperatures down to 18°C was present on the central part of the shelf with increasing temperatures to 20°C offshore and north and south of the cell. Surface temperatures were generally colder, in places >3°C, in the whole region than during the survey conducted last year.

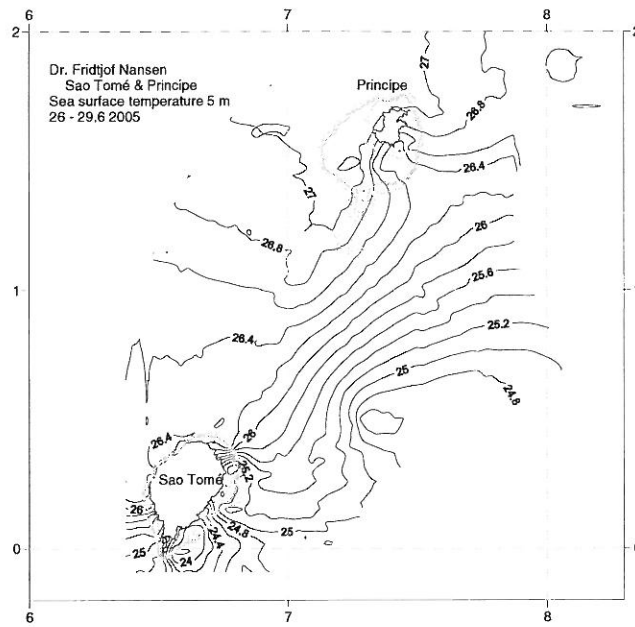
a) Nigeria - Cameroon



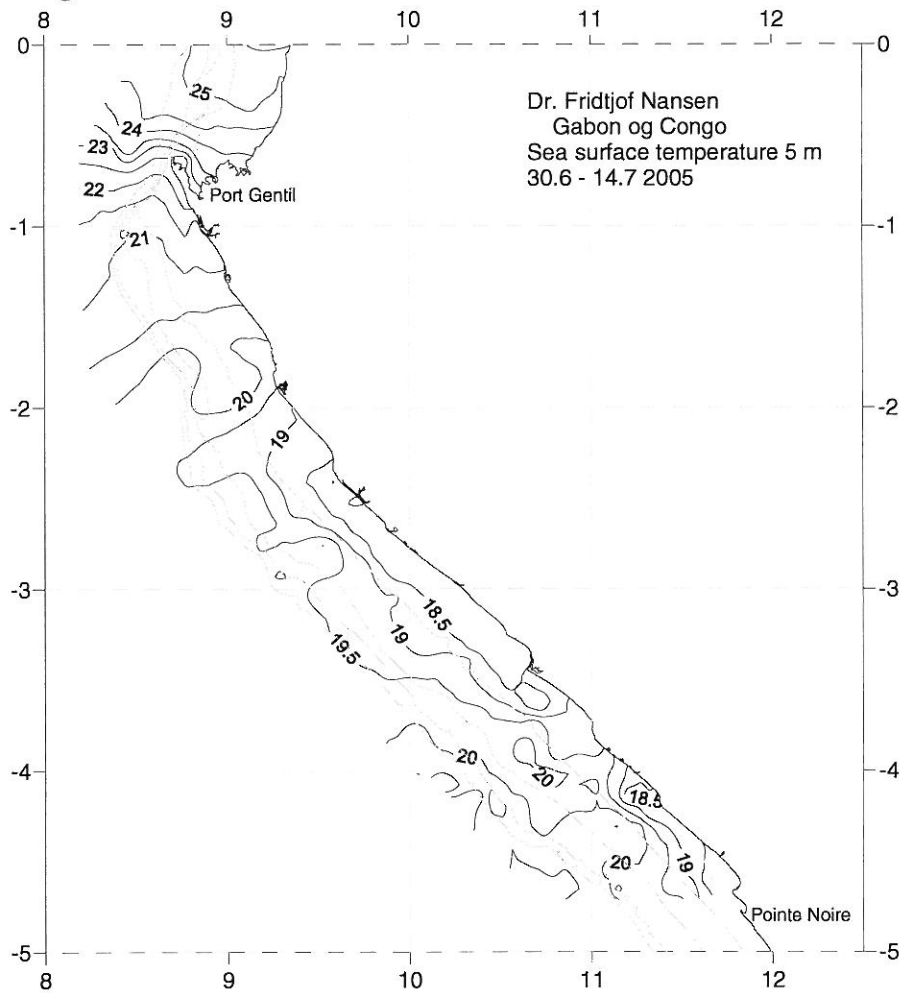
b) Cameroon



## c) São Tomé and Príncipe



## d) Gabon and Congo



**Figure 3.1** Horizontal distribution of surface temperature (5 m depth) at a) Nigeria - Cameroon b) Cameroon – Port Gentil, Gabon, c) São Tomé and Príncipe and d) Gabon and Congo.

The surface salinity (Figure 3.2 a, b, c and d) was recorded from the Thermosalinograph at 5 m depth. The salinity varied dramatically in the survey area due to fresh water influx from the numerous rivers discharging in the region (Especially the Niger delta and Congo River systems), and effects from oceanic surface water masses (São Tomé and Príncipe) and local upwelling and surface currents (Gabon and Congo).

#### *Nigeria and Cameroon*

Generally the salinity was more stable in Nigeria, ranging between 32‰ and 34‰, in all but the south-eastern end. The picture became more complex in this end of Nigeria and the northern part of Cameroon. The surface salinity decreased drastically towards Cameroon and the Bioco Island of Equatorial Guinea with a pocket of salinity around 19‰ outside Malabo on Bioco Island and as low as 17‰ close to the coast of Cameroon. The origin of this less saline water body was probably discharged from the Wouri River delta. An area with more saline waters >27‰ was found outside Limbe, This pocket corresponds with recordings of cooler water temperatures probably indicating upwelling. Another pocket of similar saline water can be seen slightly further south. A less saline water body originating from the Douala entrance divided these two pockets. The sea surface salinity increased further south to 34 ‰ in the southern Cameroon around Campo

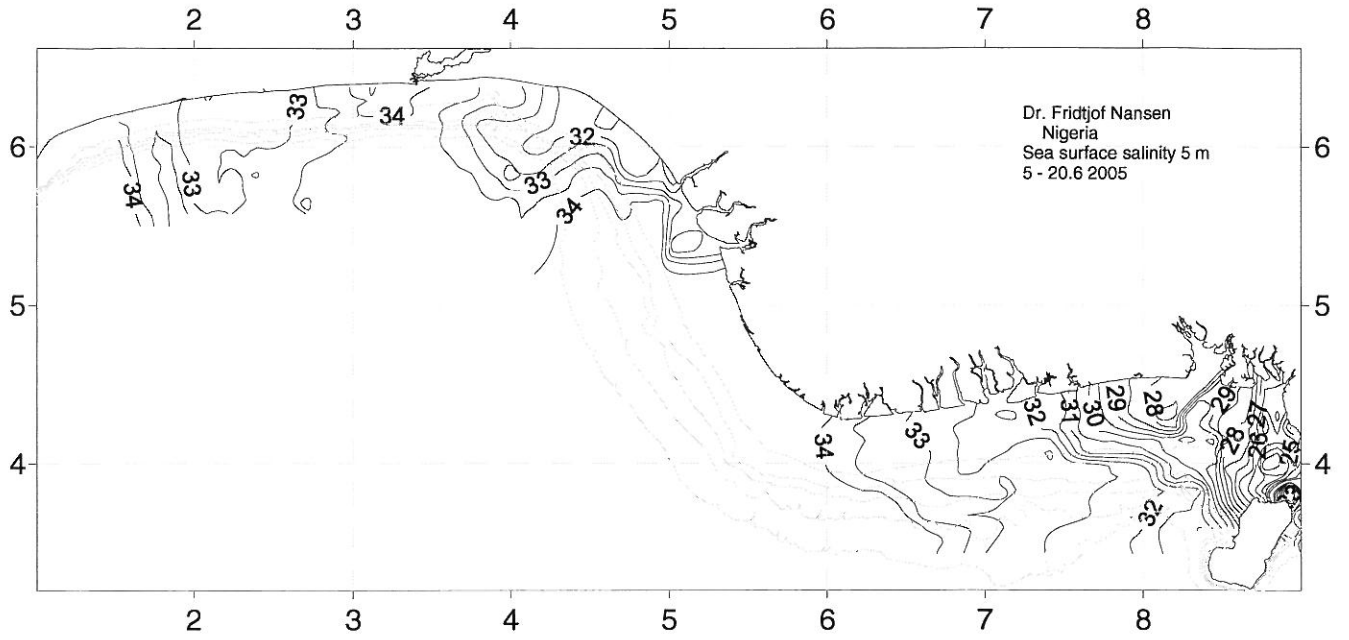
#### *São Tomé and Príncipe*

The sea surface salinity was as expected higher in São Tomé and Príncipe than on the main land. Sea surface salinity at Príncipe ranged from 34.4‰ on the northern end of the island, to 34.6‰ in a small pocket on the south-eastern side, this body of water stretched over to the northern side of São Tomé. There was an increasing salinity gradient southwards on both sides of the island, with a salinity maximum of 35‰ corresponding with the temperature minimum on the south-eastern side.

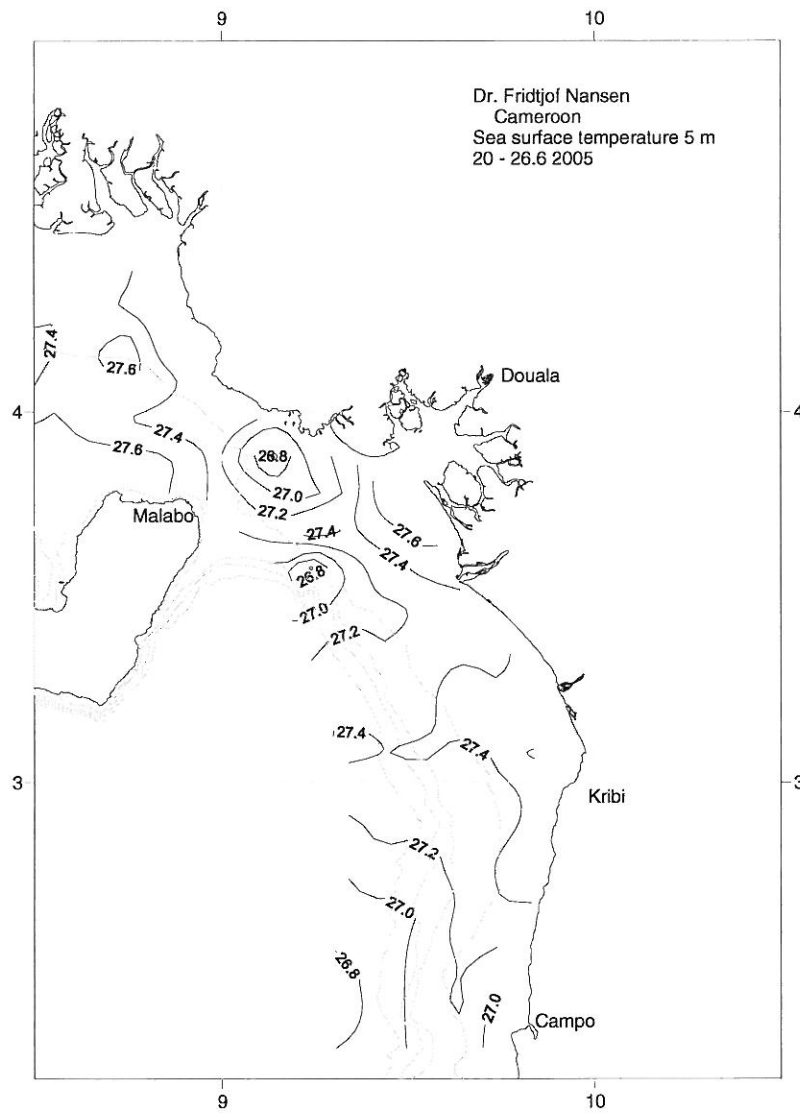
#### *Gabon and Congo*

The salinity on the northern shelf of Gabon varies between 34.8‰ offshore to 34.0‰ inshore. A body of less saline water can be seen at Cape Lopez, extending northwards. The origin of this water is the nearby river “Ogoouè”. The region south of Cape Lopez was characterised with more saline water masses, typically 35.5‰ in the region where the upwelling occurred. The presence of water masses from the Congo River can be seen in offshore water masses in the southern part of the survey area with salinity decreasing below 33.5‰. The salinity was in general similar to the salinity recorded during the survey in the region last year, but possibly with a less pronounced effect of the Congo River.

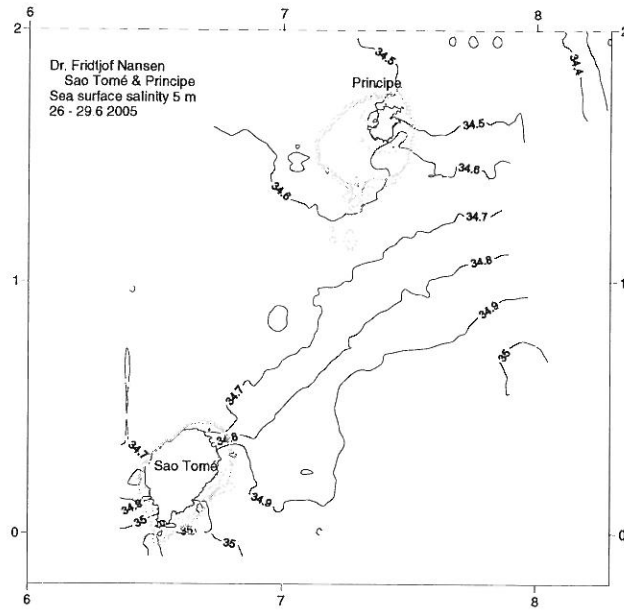
a) Nigeria - Cameroon



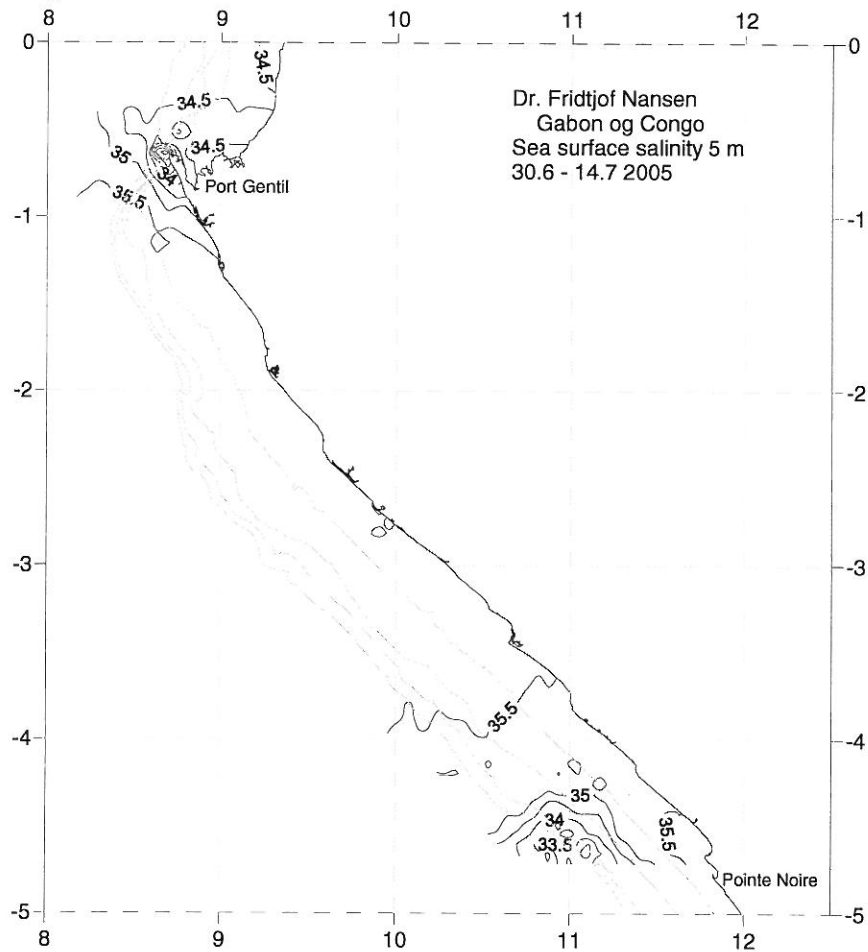
b) Cameroon



## c) São Tomé and Príncipe



## d) Gabon and Congo



**Figure 3.2** Horizontal distribution of surface salinity (5 m depth) at a) Nigeria - Cameroon b) Cameroon – Port Gentil, Gabon, c) São Tomé and Príncipe and d) Gabon and Congo.

### 3.2 Vertical sections

Figures 2.3a-e shows the vertical distribution of temperature, salinity and dissolved oxygen as recorded on the hydrographic transects worked during the survey. There were only small differences between the profiles at different sections and no signs of upwelling in Nigeria. The most prominent feature during the survey was a pronounced thermocline and salinocline around 25 m depth in both in Nigeria and Cameroon. The water was well oxygenated throughout the survey area.

#### *Nigeria and Cameroon*

Surface temperature varied from 28 °C in the south-western part of Nigeria to 27 °C in the south-eastern part with slightly warmer waters inshore. The temperature was approximately 20 °C below the thermocline, and decreased to 8 °C in bottom layers at 500 m depth. The profiles showed very similar trends in Cameroon, but with a lifting of slightly cooler water masses on the shelf especially outside Campo. The surface salinity was around 33 - 34‰ in the south-western part of Nigeria while more variable (28 –32‰) in the south-eastern part due to the large water discharge from the many rivers in the Niger delta and from Wouri river estuary. The salinity maximum between 35.8‰ and 36.0‰ was typically around 50 m depth with a strong salinocline above this. Bottom salinity was typically 34.8‰ at 500 m. The sections in Cameroon showed a salinocline close to the surface at less than 25 m, with a less steep salinocline at the Campo section than outside Kribi. The salinity maximum (35.5‰) was below this. Bottom salinity was typically 34.8‰ at 500 m. Dissolved oxygen values decreased gradually from more than 4 ml/l at the surface to less than 2 ml/l below 200 m depth both in Nigeria and Cameroon.

#### *São Tomé and Príncipe*

Three CTD lines were made on Príncipe, only two are shown in Figure 3.3 as they were all similar in appearance. Temperature profiles showed surface temperature around 26 °C with a thermocline on the shelf to 80 m depth with temperatures < 18 °C below, decreasing to 8 °C on 500 m depth. Salinity profiles showed a salinocline on the shelf with salinity increasing from 34.6‰ at the surface to a salinity maximum of 35.8‰ at 80 m depth. The salinity then declined to 34.8 at 500 m depth. The oxygen profiles showed well oxygenated water with surface values above 4 ml/l gradually declining to < 2ml/l at 500 m depth. Four CTD transects were taken off São Tomé. All four lines showed the same main characteristics. The temperature profiles showed surface temperatures between 26 and 24 °C, and the thermocline was less steep than on Príncipe, with a gradual decrease in temperature to 18 °C around 100 m depth. Bottom temperatures were 8°C at 500 m. The salinity profiles showed gradually decreasing salinity from surface, with a maximum salinity of 35.5‰ at 150 m depth and gradually decreasing salinity to 34.8‰ below this. Only the profile from northern São Tomé showed sign of a surface salinocline. Oxygen profiles were similar to the ones in Príncipe.

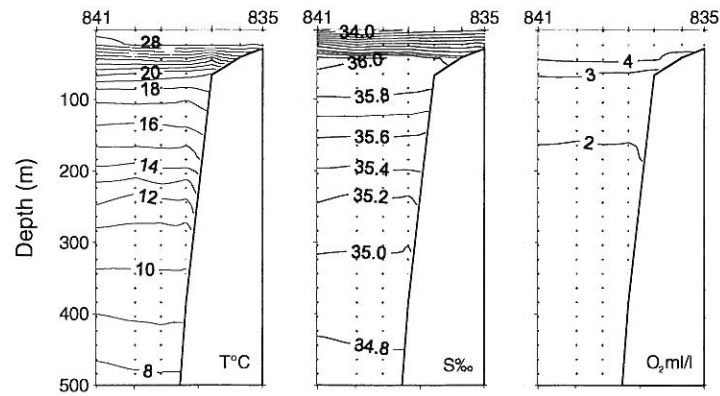


*Gabon and Congo*

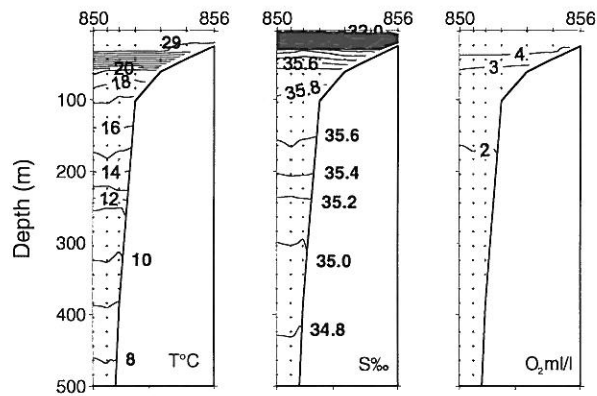
The shelf environment was different in appearance north and south of Cape Lopez. This is depicted by the profiles of temperature salinity and oxygen. In general terms, the northern shelf temperature and salinity profiles showed a clear thermocline and salinocline while the oxygen profile showed a more gradual decrease in oxygen with depth. The southern shelf on the other hand had well mixed water conditions with low surface temperature and high salinity. The high oxygen concentration in the surface waters rapidly decreasing inn the upper 50 m.

## NIGERIA

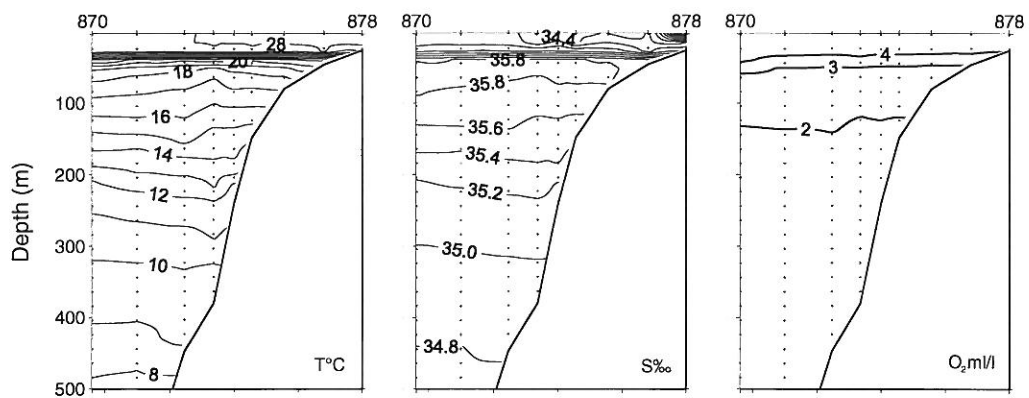
a) Lagos



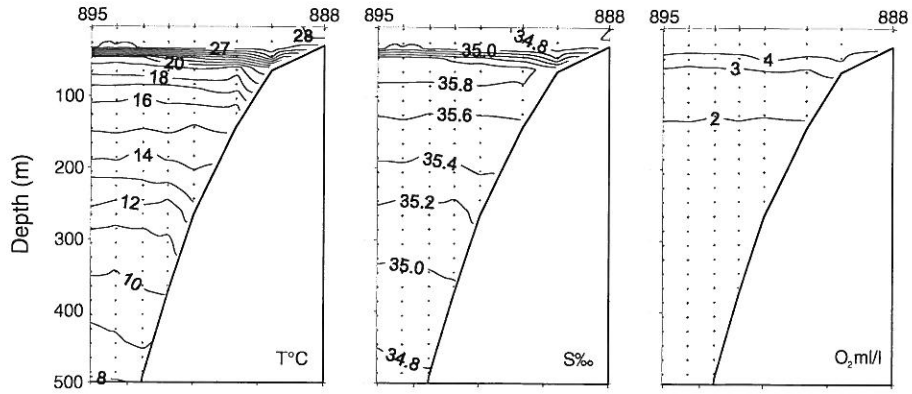
b) Lekki



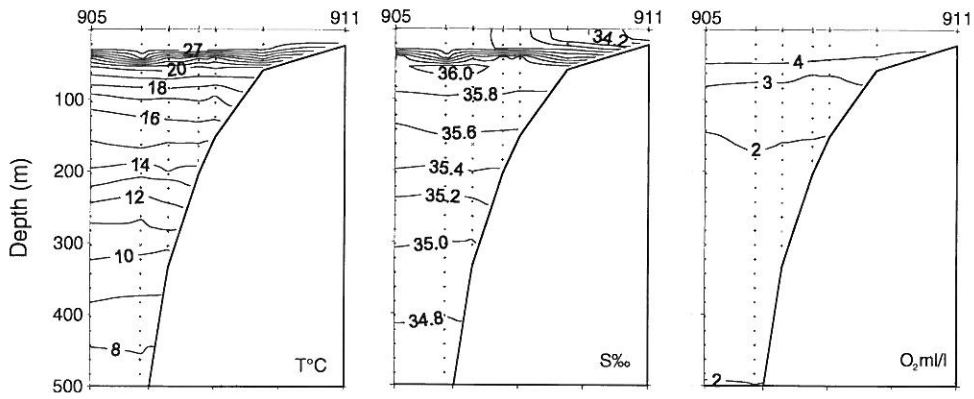
c) Escravos River



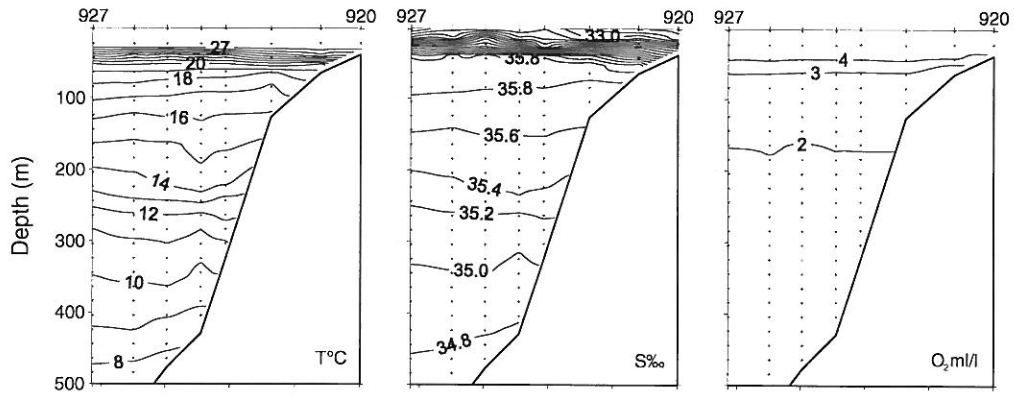
d) Middleton River



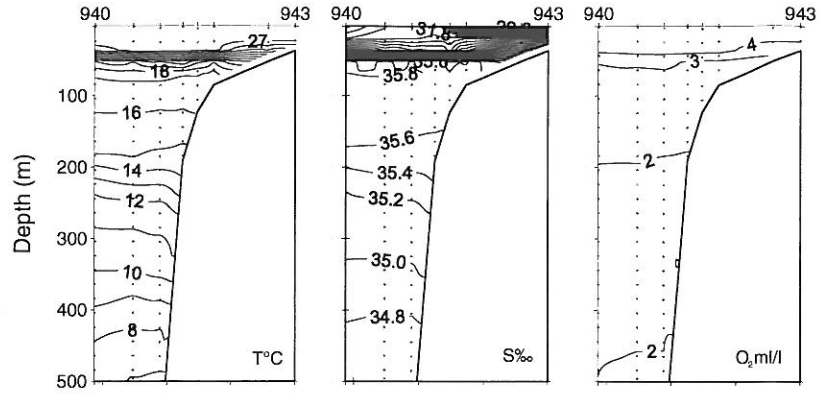
e) Brass River



f) Bonny River

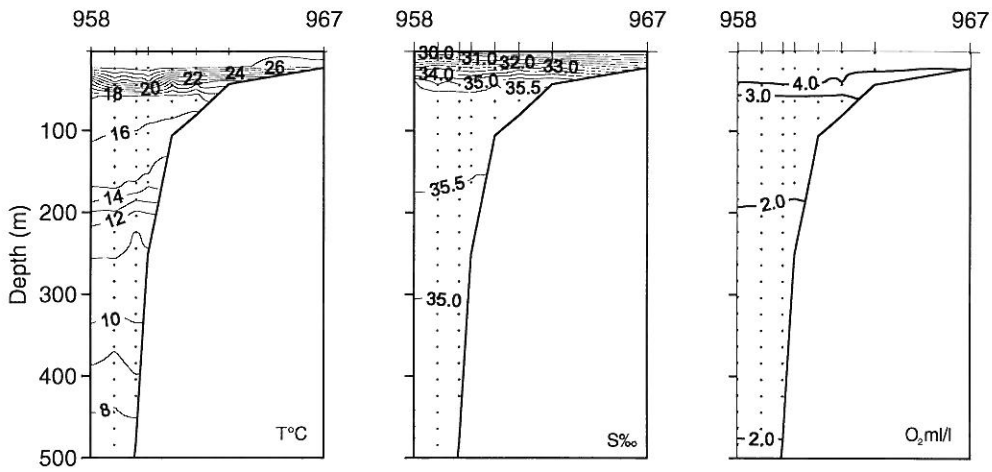


g) Calabar River

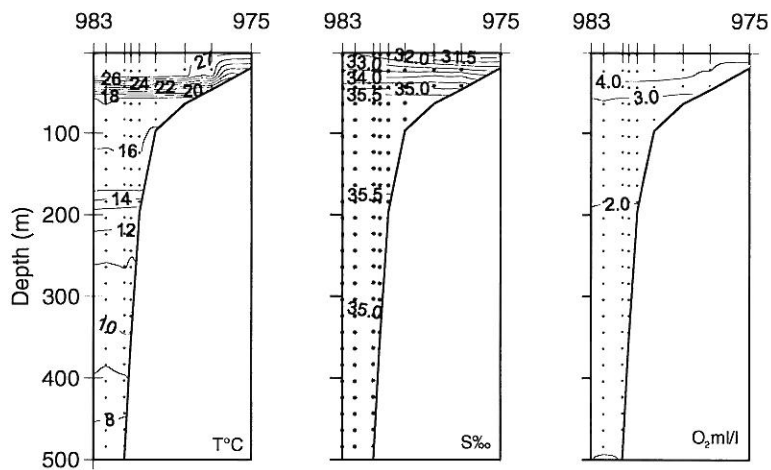


CAMEROON

h) Kribi

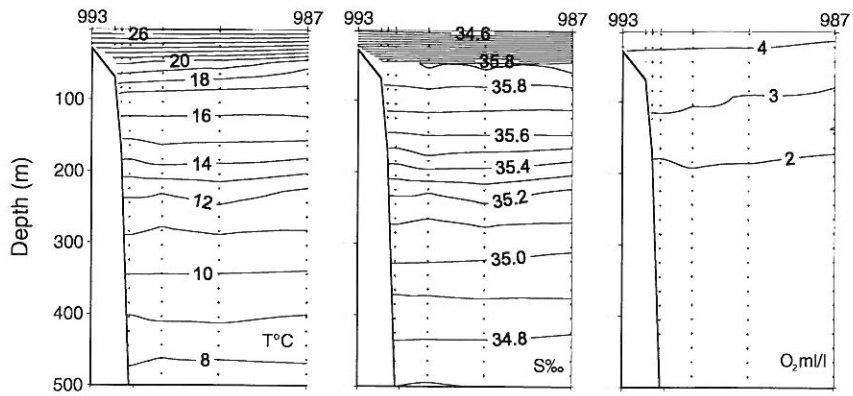


i) Campo River

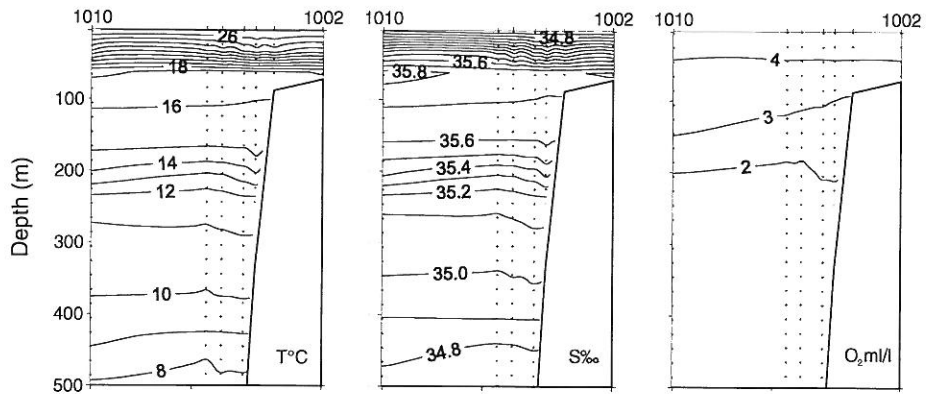


SÃO TOMÉ AND PRINCIPE

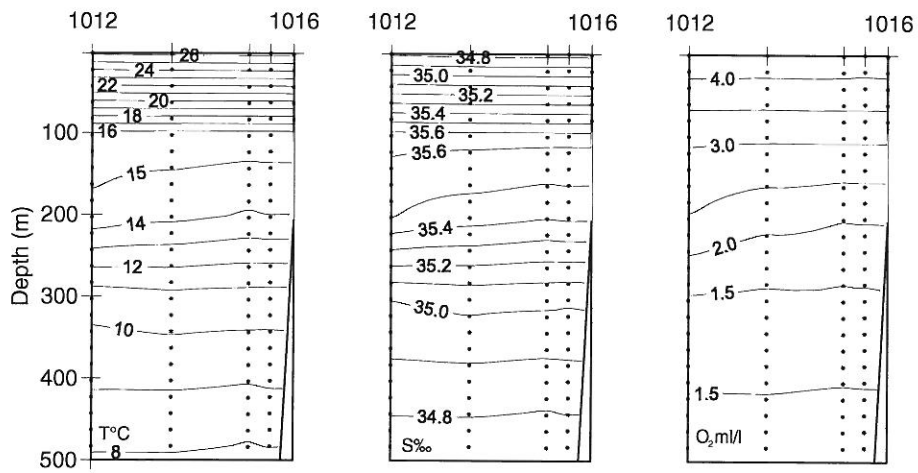
j) Príncipe, North



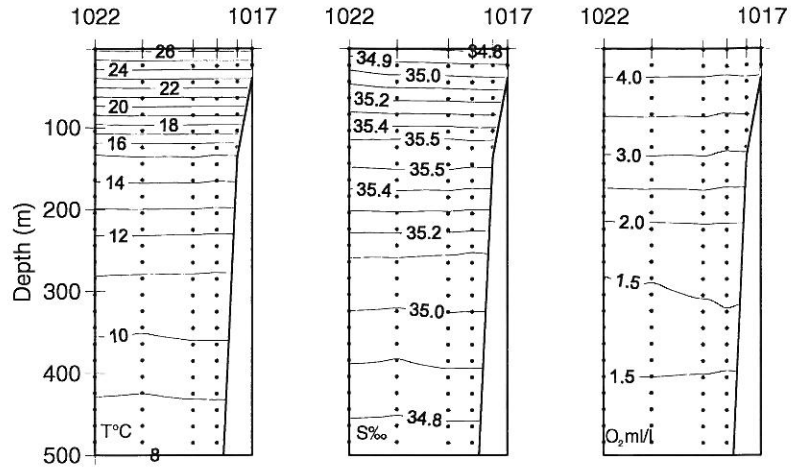
k) Príncipe South



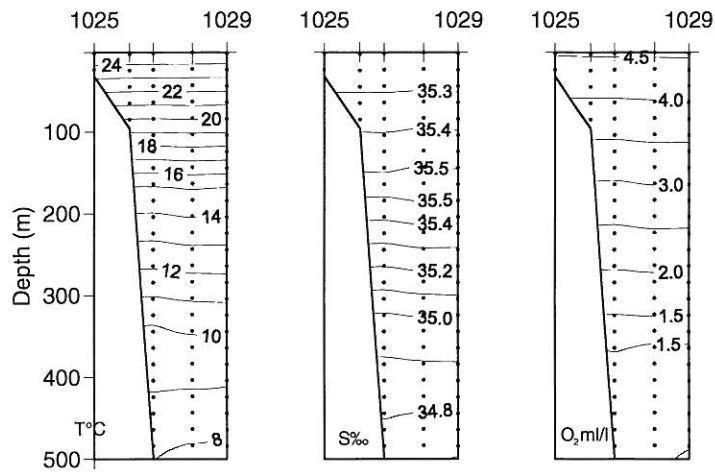
l) São Tomé North



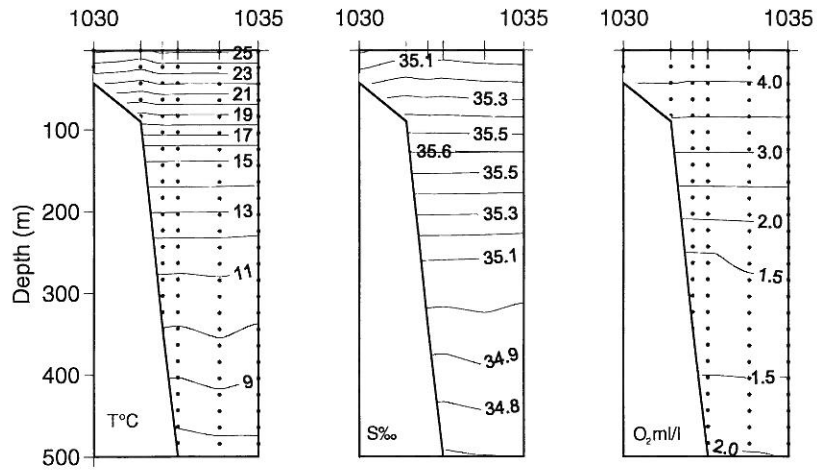
m) São Tomé West



n) São Tomé South

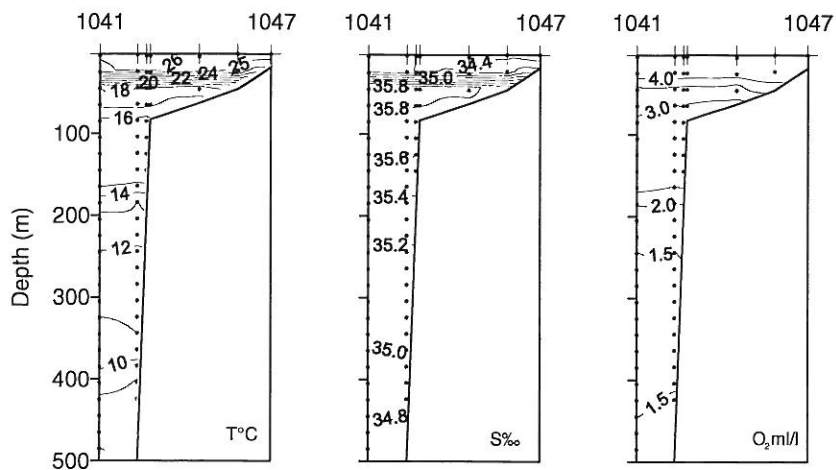


o) São Tomé East

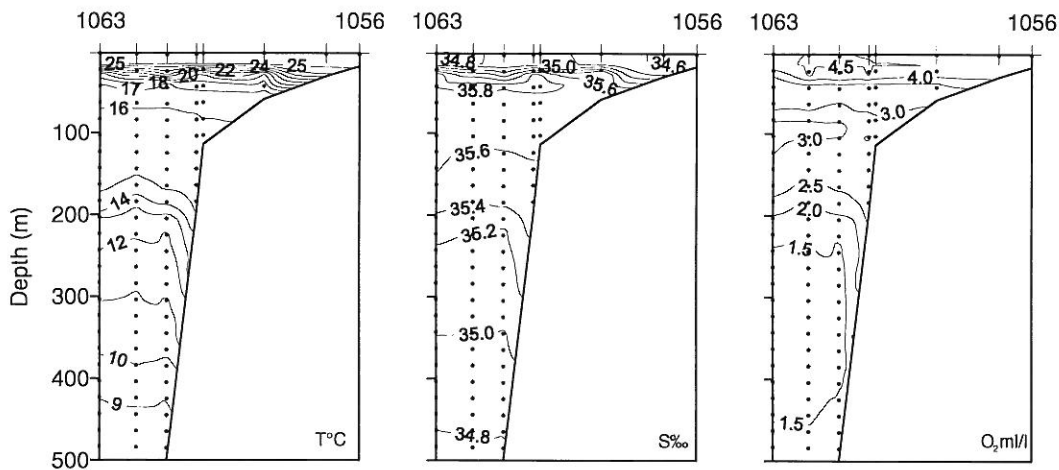


GABON

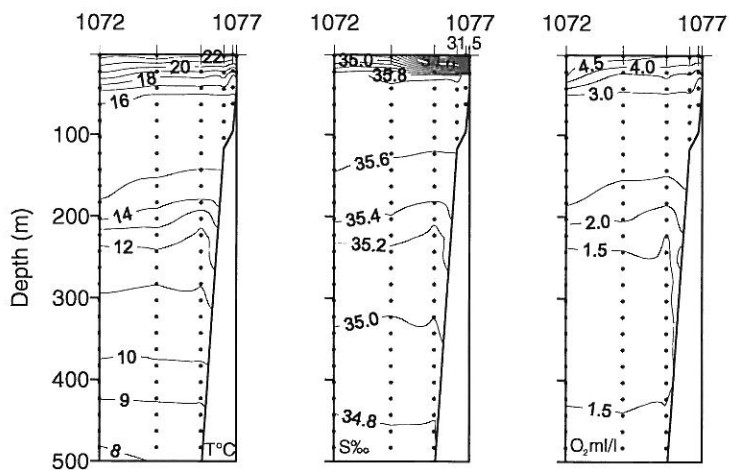
p) Corisco



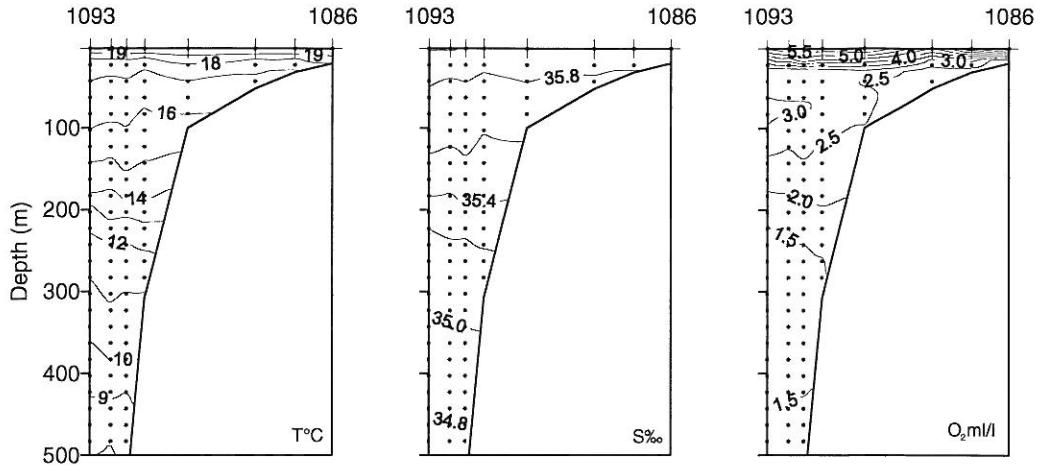
q) Equator



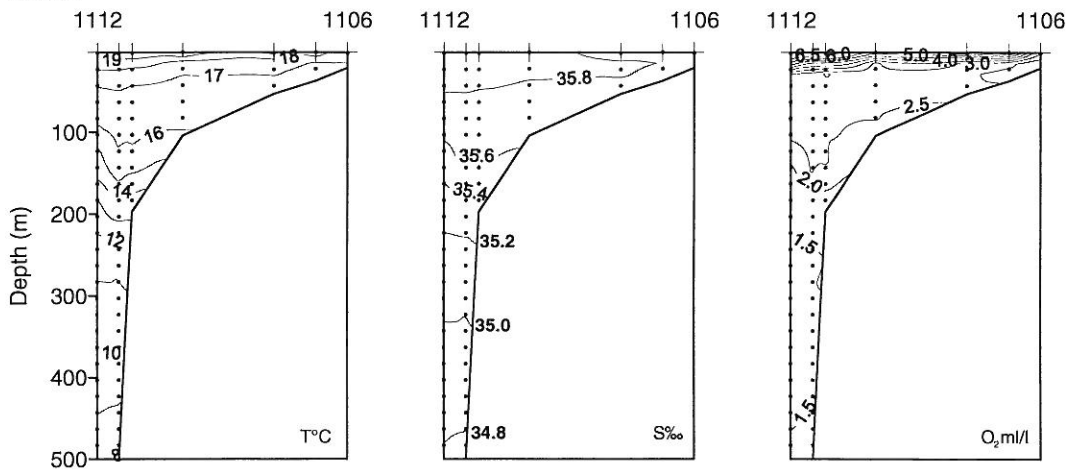
r) Cape Lopez



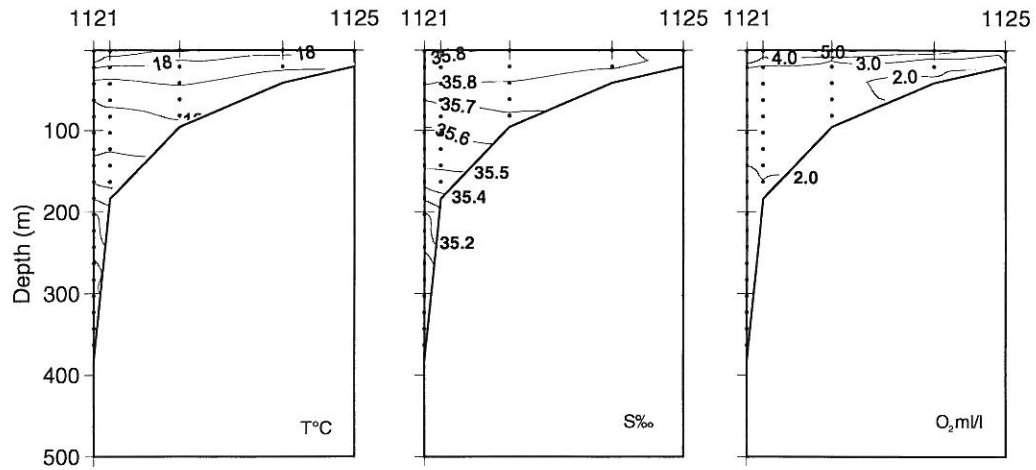
s) Iguela



t) Sette Cama



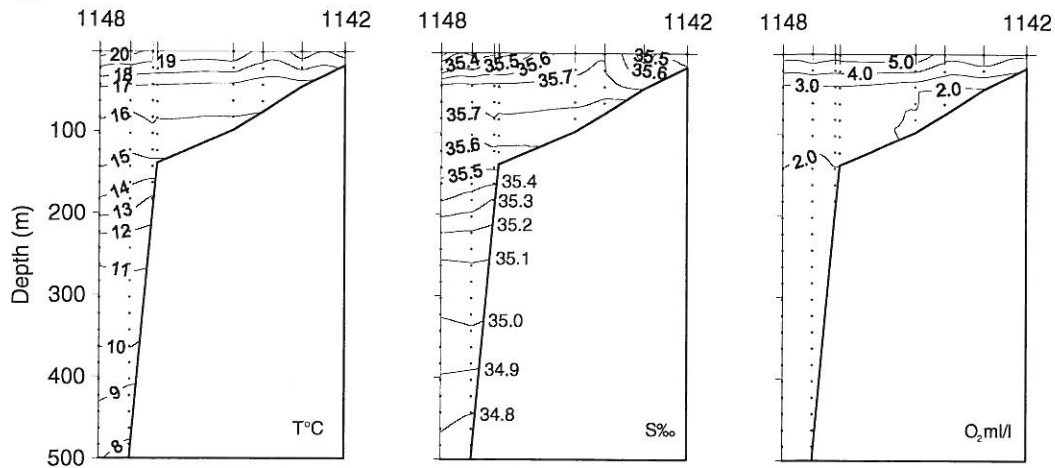
u) Pte. Panga



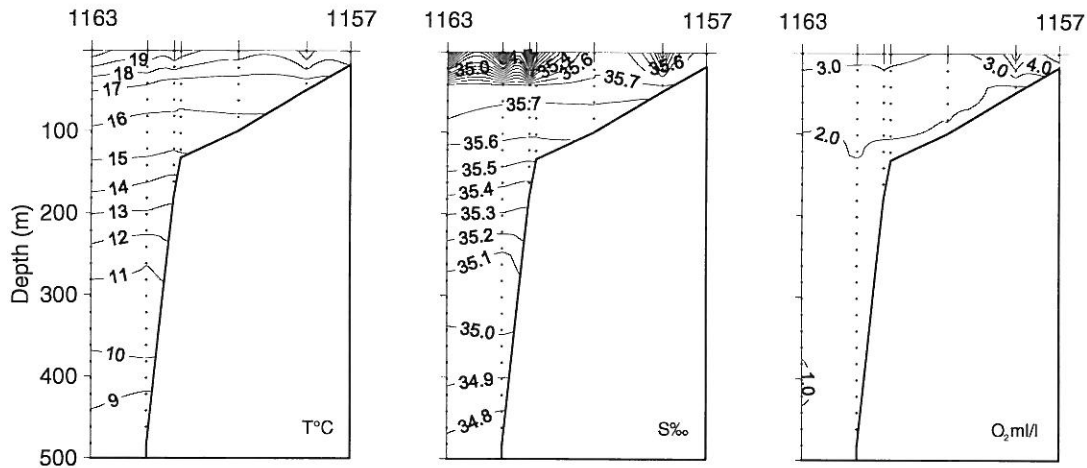


## CONGO

v) Madingo



w) Pointe Noire\*



\*The Pointe Noire transect was conducted as part of the following survey due to time constraints

**Figure 3.3** Vertical sections of temperature, salinity and oxygen in **Nigeria**, at a) Lagos, b) Lekki, c) Escravos River, d) Middleton River, e) Brass River, f) Bonny River and g) Calabar River, **Cameroon** at, h) kribi and i) Campo River, **São Tomé and Príncipe** at j) Príncipe North, k) Príncipe South, l) São Tomé North, m) São Tomé West, n) São Tomé South, and o) São Tomé East, **Gabon** at p) Corisco, q) Equator, r), Cape Lopez, s) Iguèla, t) Sette Cama, and u) Pte. Panga, **Congo** at v) Madingo, and w) Pointe Noire.

## CHAPTER 4 RESULTS FROM THE ACOUSTIC SURVEY

The distribution area of main groups of pelagic fish in the region, i.e. sardinellas, PEL 1 (Clupeids), PEL 2 (mainly carangids) and horse mackerel, are depicted in the following figures using the integrator values from the BEI echo-integration system recorded with the ES38B, 38 kHz transducer connected to the EK500. The acoustic densities (in  $m^2/NM^2$ ) are illustrated by a scale normally used on acoustic surveys with “Dr. Fridtjof Nansen”.

### 4.1 Nigeria

The hydro acoustic survey of Nigeria covered the shelf and slope systematically to 100 m bottom depth during the day, and continued offshore at night, mainly bottom trawl were used for species identification. Generally low to medium acoustic densities were found over most of the shelf and only plankton was found in the water column from the shelf break and further offshore. The bottom channel was scrutinized continuously to 500 m bottom depth, but with only few fish targets seen offshore from the shelf break.

#### *Clupeids*

Some few sardinellas were recorded in four separate areas along the coast, in shallow waters between 20 and 50 m depth, Figure 4.1a. *Sardinella maderensis* dominated the catches while some *S. aurita* were found in deeper waters, the biomass of the two species were estimated to be approximately 5000 tonnes. It is likely that some sardinella was missed inshore of the survey area. During the survey off Nigeria last year sardinella was scarce and no estimate was produced.

*Ilisha africana* was taken in some bottom trawl hauls on the shallow part of the shelf in the same areas as the sardinella, Figure 4.1b. A few low-density schools were allocated to the PEL1 group, but no estimate of abundance was made. Length frequencies from the bottom trawl catches can be found in Annex II. The abundance was also very low during the 2004 survey and no estimate was produced.

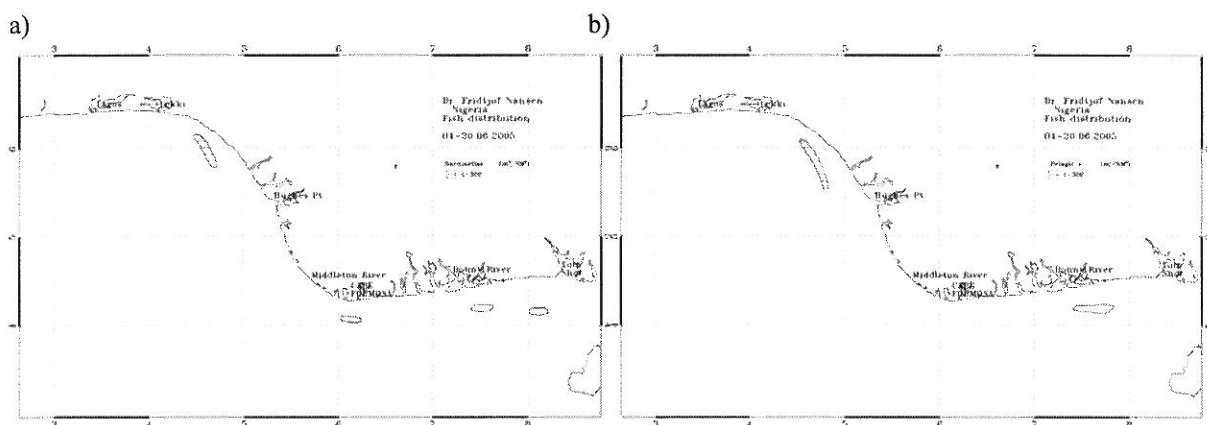
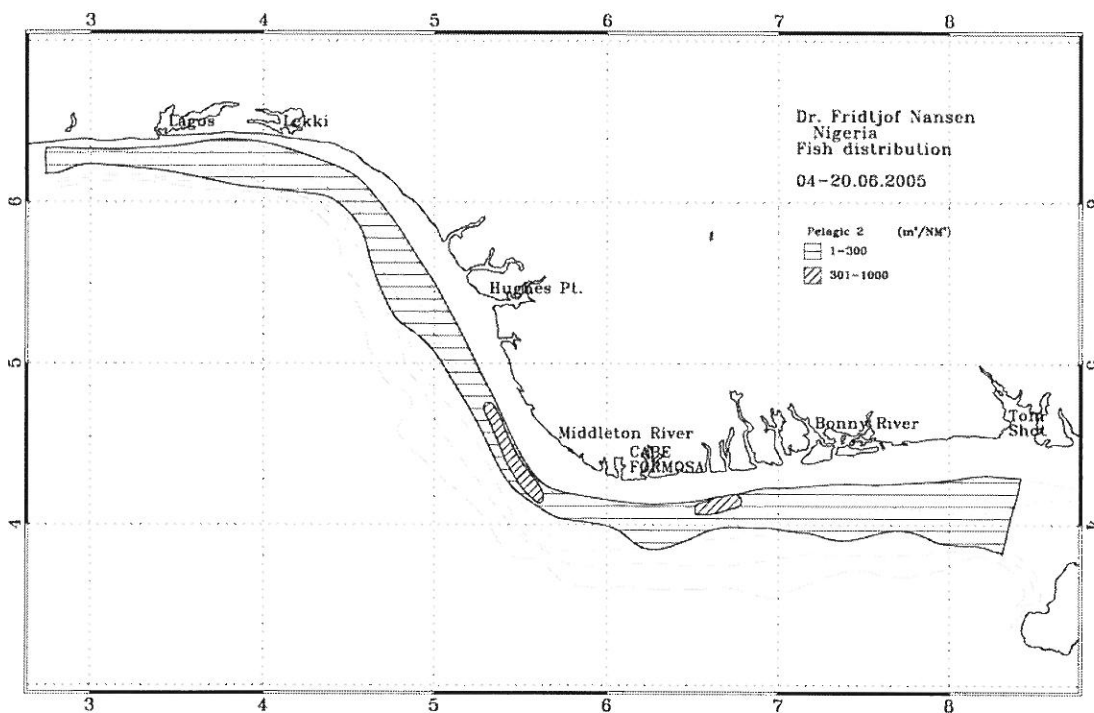


Figure 4.1. Distribution of sardinellas and P1 (*Ilisha africana*) in Nigeria

*PEL 2 (carangids, scombrids, barracudas and hairtail)*

The species category PEL 2 consisted of carangidae, trichiuridae, sphyraenidae and scombridae. Most pelagic fish were found inshore of 50 m depth, and the distribution was narrower than last year. The most abundant species in the trawl catches were, *Chloroscombrus chrysurus*, *Selene dorsalis*, *Trichiurus lepturus* and *Sphyraena guachancho* followed by *Scomberomorus tritor*, which were frequent in the catches but had low abundance. Length frequencies of the species can be found in Annex II.

Schools of PEL 2 species, mainly of low density, were found along the whole coastline, Figure 4.2. The distribution was similar to last year, but somewhat further inshore. Assuming an average total length of 23 cm for all the species and a measured condition factor of 0.88 the biomass of PEL 2 was estimated to about 95 000 tonnes. Last year the biomass was estimated to be considerably higher, 193 thousand tonnes. The large difference between these estimates may be due to several reasons including shift in distribution area including the possibility loss of fish inshore (<20 m depth) during the survey this year, and dense plankton layers in the area, which made species separation difficult both in 2004 and 2005.



**Figure 4.2** Distribution of PEL 2 (Carangids, scombrids, barracudas and hairtail) off Nigeria.

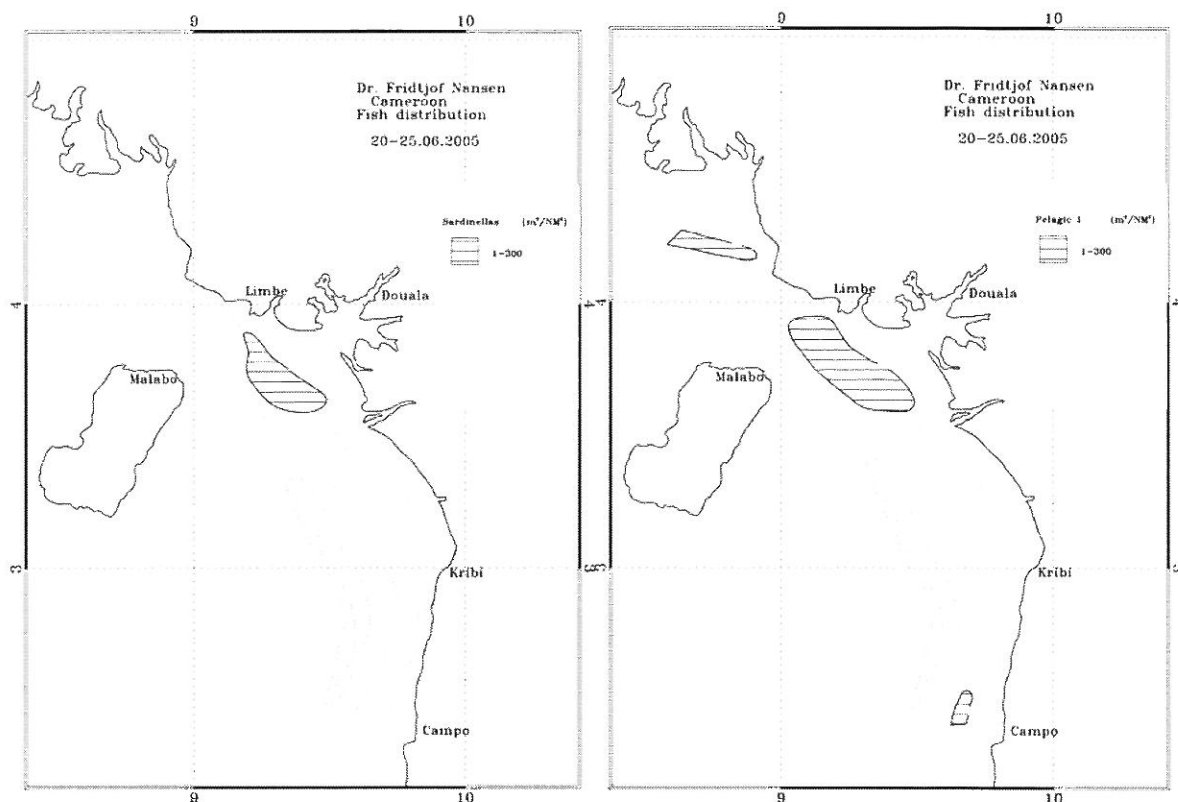
## 4.2 Cameroon

The hydro acoustic survey of Cameroon covered the shelf from the border to Nigeria to the borders with Equatorial Guinea and to 20 m bottom depth on the Cameroonian coast.

### *Clupeids*

*Sardinella maderensis* and *S. aurita* was found in one area along the coast of Cameroon between 20 and 50 m bottom depth, Figure 4.3. The distribution continued inshore of the survey area in shallow waters. *Sardinella maderensis* was caught in 15 trawls along the coast of Cameroon, this illustrates that the distribution was wider than seen on the distribution map. However, catch rates were very low, and no typical sardinella traces were observed on the echo sounder outside the area indicated in Figure 4.3. The average length of *S. maderensis* from trawl catches was 15.5 cm while *S. aurita* had an average length of 21 cm.

The estimated total biomass of sardinella in Cameroon was 5 thousand tonnes. Last year 11 thousand tonnes were found in this area. Both estimates were dominated by *S. maderensis*.

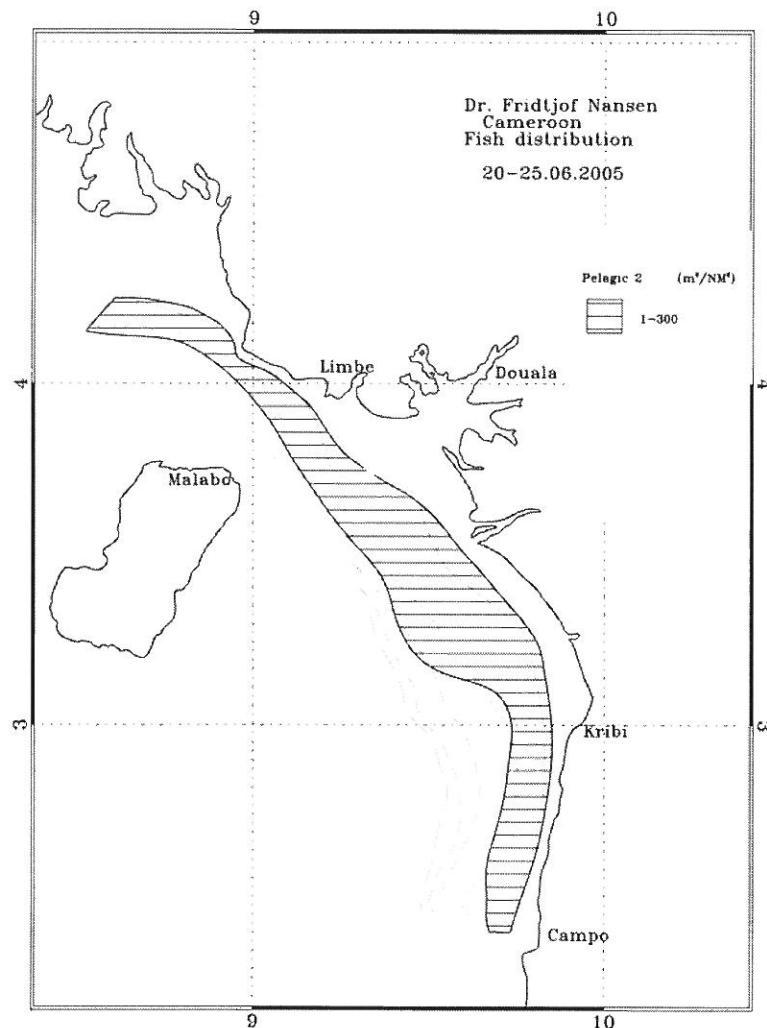


**Figure 4.3** Distribution of sardinellas and pelagic 1 (*Ilisha africana*) off Cameroon.

The pelagic group, PEL 1 consisted mainly of *Ilisha africana*, Figure 4.3. This species were generally found in the same areas as the sardinella, between 20 and 50 m depth, with the highest concentrations in the area outside Douala. The size range was 5 – 23 cm with an average length of 11 cm. The total biomass of *Ilisha africana* was estimated to be 7 thousand tonnes. Last year 2 thousand tonnes of *Ilisha africana* were found in the same area.

*PEL 2 (carangids, scombrids, barracudas and hairtail)*

The Pelagic group PEL 2, consisting of carangids, scombrids, barracudas and hairtails. The distribution of these species were continues in Cameroon extending across the border to Nigeria and in to Equatorial Guinea Figure 4.4. The main distribution extended from inside of the survey area to approximately 50 m depth. The main species in order of abundance in the catches were *Selene dorsalis*, *Chloroscombrus chrysurus*, *Trichiurus lepturus* and *Sphyræna guachancho*. Other species were less abundant. The length distributions of the species are found in Annex II. Assuming an average total length of 23 cm for all the species and a measured condition factor of 0.88 the biomass of PEL 2 was estimated to about 30 000 tonnes. Last year the biomass was estimated to be 14 000. The increased biomass this year may be due to changes in distribution that made more pelagic fish available in the survey area.



**Figure 4.4** Distribution of PEL 2 (Carangids, scombrids, barracudas and hairtail) off Cameroon.

### *Demersal species*

There were consistent acoustic recordings of relatively dense concentrations of demersal fish at the shelf break at approximately 100 m depth. These were mainly *Dentex congoensis*, *Dentex angolensis* and *Ariomma bondi*. These sometimes lifted of the shelf and the swept area survey may consequently have underestimated this resource slightly.

### **4.3 São Tomé and Príncipe**

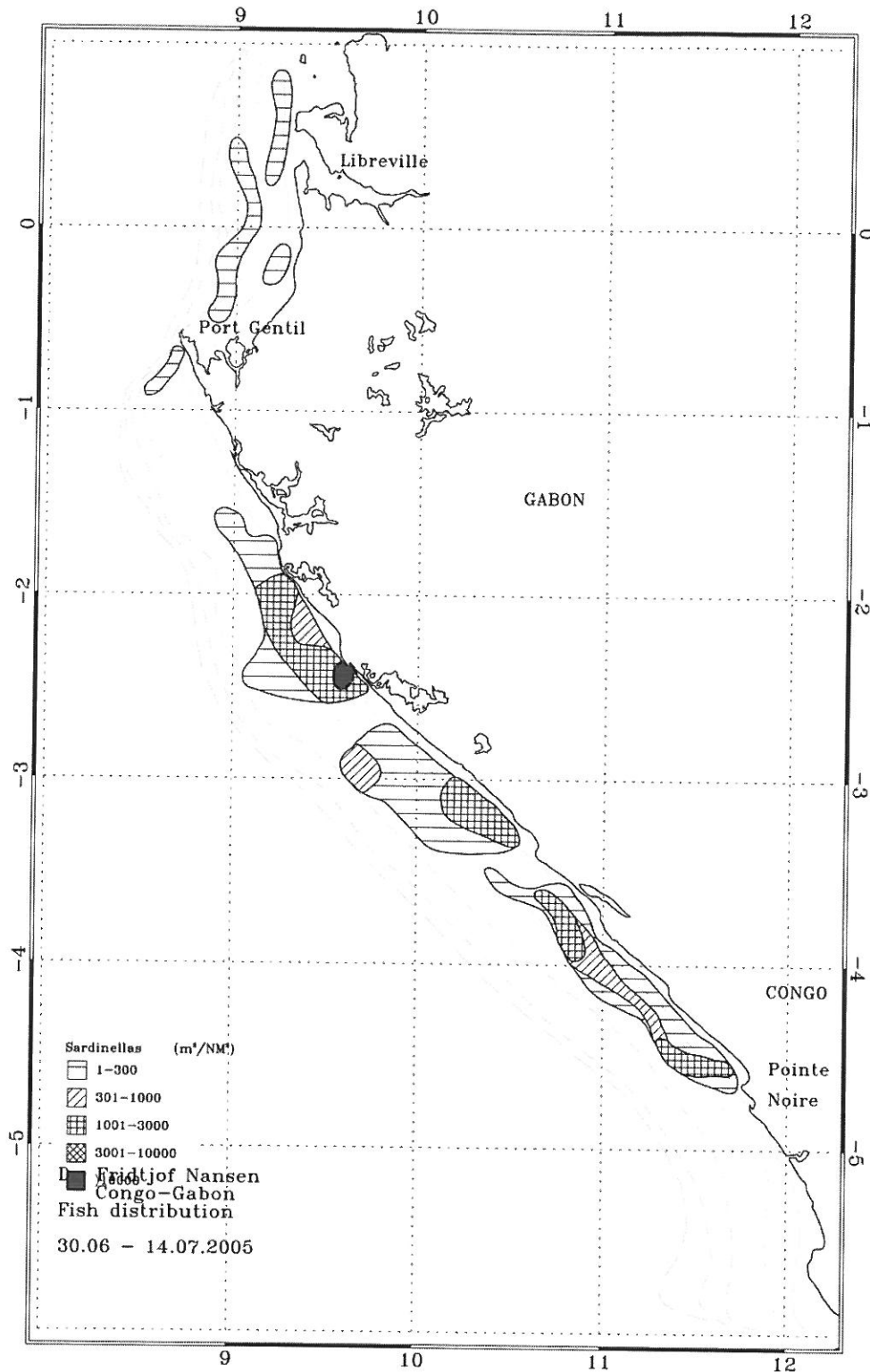
The hydroacoustic survey of São Tomé and Príncipe revealed little pelagic fish. No estimate of abundance was therefore made for these areas. Pelagic fish, mainly flying fish, were observed on the surface both during the night and day, but these were not recorded on the echo sounder. However, there were consistent acoustic recordings of demersal fish over the whole shelf area, also over untrawlable grounds, which support the findings from the trawl survey that the narrow shelf had relatively high abundance of demersal fish.

### **4.4 Gabon and Congo**

The abundance of pelagic species in Gabon, and extending into Congo was so that it requires a more throughout analyses than in Nigeria and Cameroon. The region is treated as one because the two countries share a common shelf. However, biomass estimates are given for each country separately. As previously mentioned, several areas in Congo and Gabon are restricted because of oil exploration activities, and particularly the area outside Olinde is large and can possibly contain high abundance of pelagic fish. The area is omitted from the abundance calculations.

### *Sardinellas*

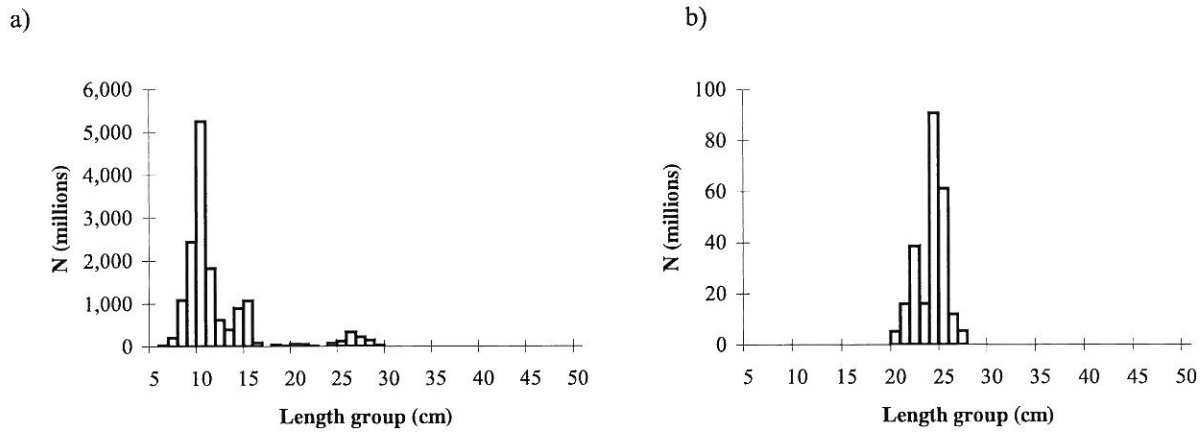
*Sardinellas* was distributed across the entire region of Gabon and Congo. However, only small concentrations were found north of Cape Lopez. The main concentrations were associated with the cooler, more saline water masses on the southern shelf of Gabon and Congo. The entire region was dominated with *S. aurita*. *S. maderensis* were found inshore in shallow waters associated with less saline water. Three small concentrations were found, one in the northern part of Gabon north of Port Gentil, one immediately south of Cape Lopez, and one outside Pointe Noire (Figure 4.5).



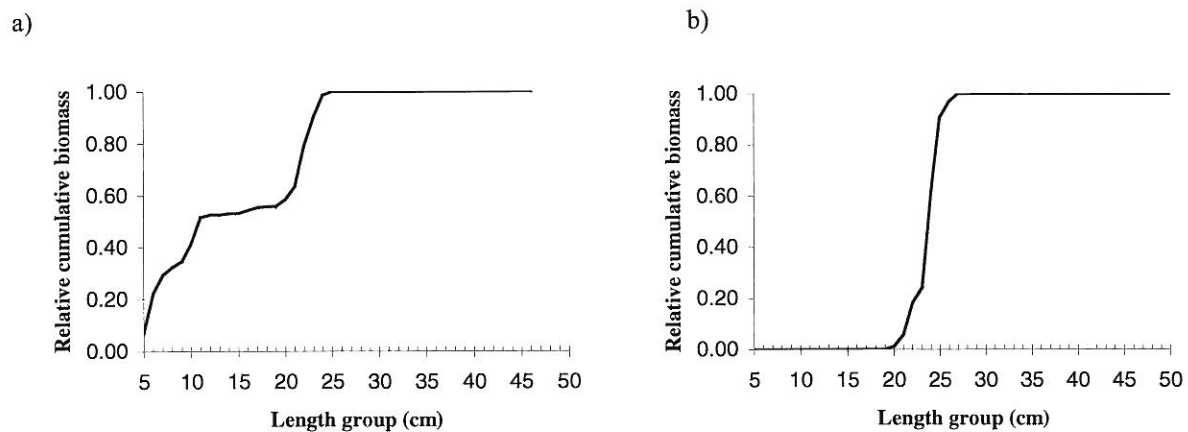
**Figure 4.5** Distribution of sardinellas off Gabon and Congo.

Figure 4.6 a and b shows the length frequency distribution of sardinella. The length distribution of *Sardinella aurita* show a dominance of juvenile fish with the dominant modal peaks visible at 10 cm, another modal peak can be seen at 15 cm, further, one peak is indicated around 20 cm, and finally one peak was observed representing fish of 26 cm length. Juvenile fish were also dominant during the survey last year, with modal peak at 8 and 12 cm

representing the two most dominant cohorts. The length distribution of *S. maderensis* shows two modal peaks at 22 and 24 cm. The most striking with the distribution was the absence of juvenile fish. No fish <20 cm were present in the survey area. Last year a modal peak around 12 cm represented the most dominant cohort and juvenile fish were abundant in the survey area. The relative cumulative biomass of sardinella can be found in Figure 4.7. The graphs shows that approximately 50% of the biomass of *S. aurita* was <15 cm, the rest of the biomass in the survey area was mainly between 25 and 30 cm. The situation was different for *S. maderensis* were the entire biomass consisted of adult fish >20 cm.



**Figure 4.6** Total length distribution of a) *Sardinella aurita* and b) *S. maderensis* off Gabon and Congo



**Figure 4.7** Relative cumulative biomass of a) *Sardinella aurita* and b) *S. maderensis* off Gabon and Congo

The biomass of sardinella in Gabon and Congo was estimated at 416 thousand tonnes all together. This consisted of 382 thousand tonnes of *S. aurita* and 34 thousand tonnes of *S. maderensis*. Last year a total of 360 thousand tonnes of sardinella was found in the region. Of this 165 thousand tonnes of *S. aurita* was found in this area and 195 thousand tonnes of *S. maderensis*. The survey of the pelagic resources in the region last year also covered the



Cabinda region of Angola and no separate estimate was made for Congo and Gabon. However, only a fraction of the biomass was found in Cabinda. The abundance of sardinella has increased slightly in the region from last year, and is presently the highest ever recorded. However, more remarkable is the shift in proportion between the two sardinella species. This year 91% of the biomass consisted of *S. aurita*, compared to 46% last year. The sardinella species are difficult to separate acoustically, however, this is not believed to be the reason for the observed change. The survey last year reported good recruitment for *S. aurita*, and the colder than usual seawater conditions have probably shifted the sardinella biomass northwards and particularly been favourable for, and increased the abundance of *S. aurita*. However, to see the whole picture, one has to compare the present data with the distribution of sardinella recorded during the acoustic survey off Angola.

#### *Other Clupeids*

Anchovy, *Engraulis encrasicolus* was found in the area outside Sette Cama, the distribution extended inshore of the survey area. The abundance estimate is uncertain but the biomass was estimated to be 2 thousand tonnes.

Some *Ilisha africana* was found inshore along the coast associated with brackish water areas. The abundance was low and no abundance estimate or distribution map was produced.

#### *Trachurus trecae*

The horse mackerel *Trachurus trecae* was distributed on the mid shelf mainly between 30 m and 100 m depth off the southern coast of Gabon in three low density ( $S_A < 300$ ) areas (Figure 4.8). The main distribution roughly overlaid the observed upwelling area and was similar to the distribution during last year's survey. The species were mixed with other carangid species in its distribution area and acoustic species separation was difficult at times.

The length distribution (Figure 4.9) shows a new juvenile cohort with <10 cm fish. This cohort is not caught representatively by the sampling trawl because small fish may escape the net. Three additional modal peaks can be observed peaking at 18 cm, 23 cm and 29 cm. At least one cohort representing one-year-old fish is missing. This fish was not found in the distribution area. This situation is opposite the one last year where only the one-year cohort was found in this area and no clear signs of recruitment were visible. It is worth noting the large cohort of juvenile fish <10 cm found during the survey this year indicating good recruitment for the horse mackerel in this region.

The cumulative biomass show that large fish dominates in the biomass, 66% of the biomass is >20 cm and 95% is <30 cm.

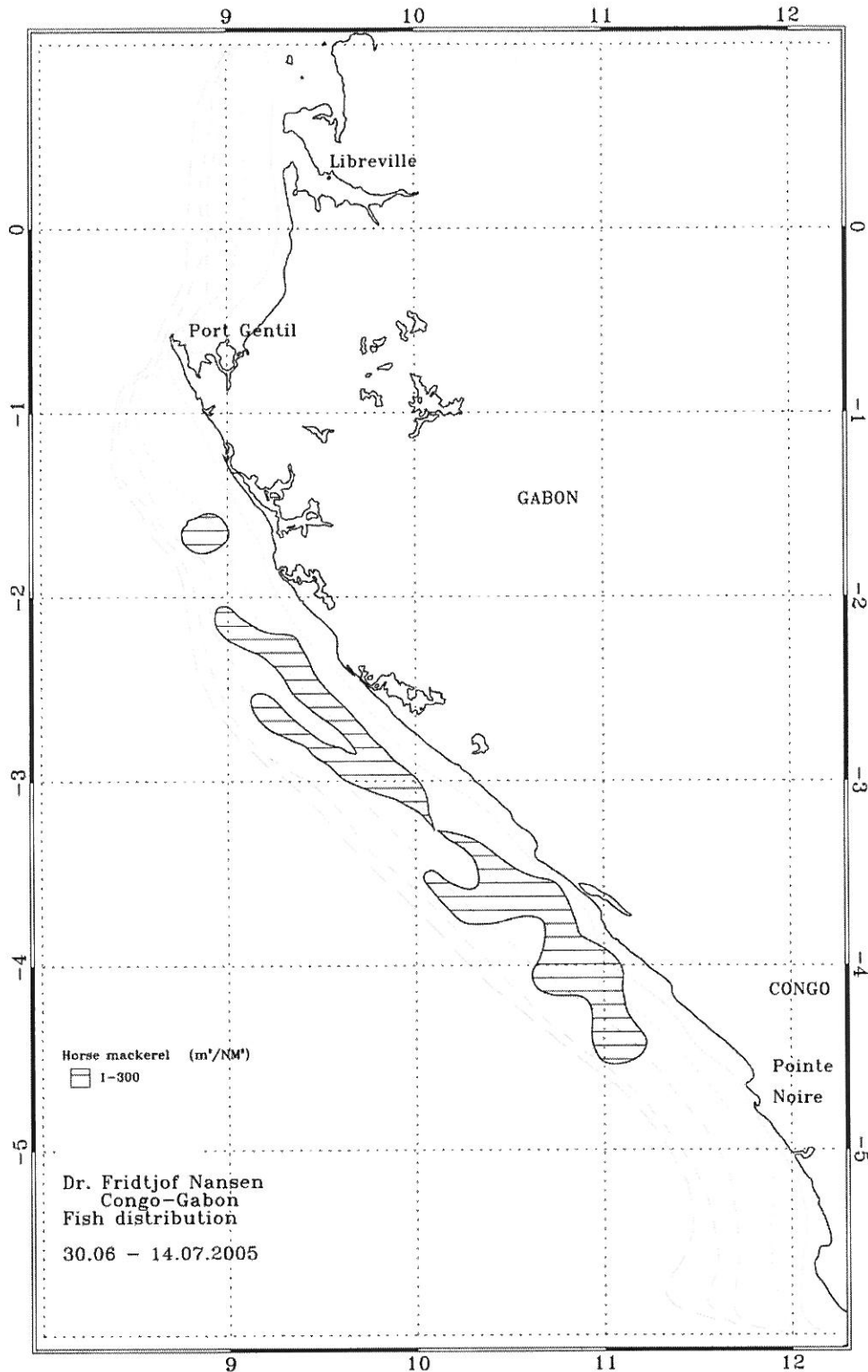
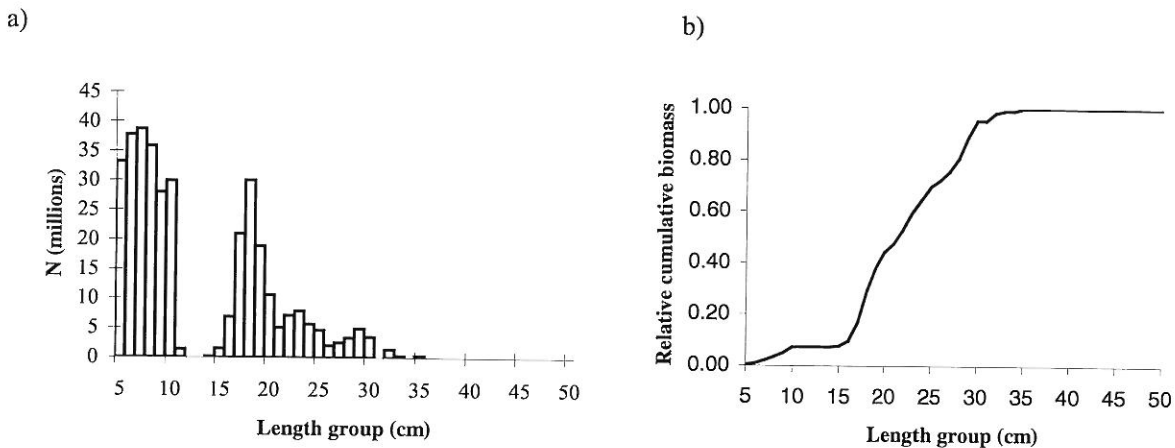


Figure 4.8 Distribution of *Trachurus trecae* off Gabon and Congo.

The total biomass of *Trachurus trecae* in the distribution area was 15 thousand tonnes. This is slightly more than the 11 thousand tonnes observed last year, and similar to what has been observed in this area during past surveys. It is expected that horse mackerel in similar ways to sardinella migrates across the border between Angola, and Congo-Gabon. However, the

proportion of the biomass reported historically for this species in Congo and Gabon is typically 5% of the regional estimate.



**Figure 4.9** a) Total length distribution and b) Relative cumulative biomass of *Trachurus trecae* off Gabon and Congo

#### *PEL 2 (carangids, scombrids, barracudas and hairtail)*

The Pelagic group PEL 2, consisting of carangids, scombrids, barracudas and hairtails were more or less continuous in Gabon and Congo, Figure 4.10. The main distribution extended from inside of the survey area to approximately 100 m depth north of Cape Lopez, while the distribution in general was slightly shallower south of Cape Lopez. Catch rates were analysed for the regions Gabon, north and south of Cape Lopez, and Congo. The main species in order of abundance in the catches north of Cape Lopez were *Decapterus rhonchus*, *Scomberomorus tritor* and *Sphyraena guachancho*. Catch rates were substantially lower than further south in the region. The catch composition changed south of Cape Lopez, the main PEL 2 species in this region were *Decapterus rhonchus*, *Chloropthalmus atlanticus*, *Scomber japonicus*, *Selene dorsalis*, *Trichiurus lepturus* and *Selar Crumenopthalmus*. Only few catches were made in Congo, and the most abundant of the species in the catches in this region was *Trichiurus lepturus*. The length distributions of the species are found in Annex II. Assuming an average total length of 23 cm for all the species and a measured condition factor of 0.88 the biomass of PEL 2 was estimated to about 37 thousand tonnes in total. Of this 30 thousand tonnes was found in Gabon while 7 thousand tonnes were found in Congo. Last year the biomass was estimated for the region between Cape Lopez and Congo River, and the results cannot be directly compared with this estimate. The biomass of PEL 2 in 2004 was estimated to be 69 000 tonnes.

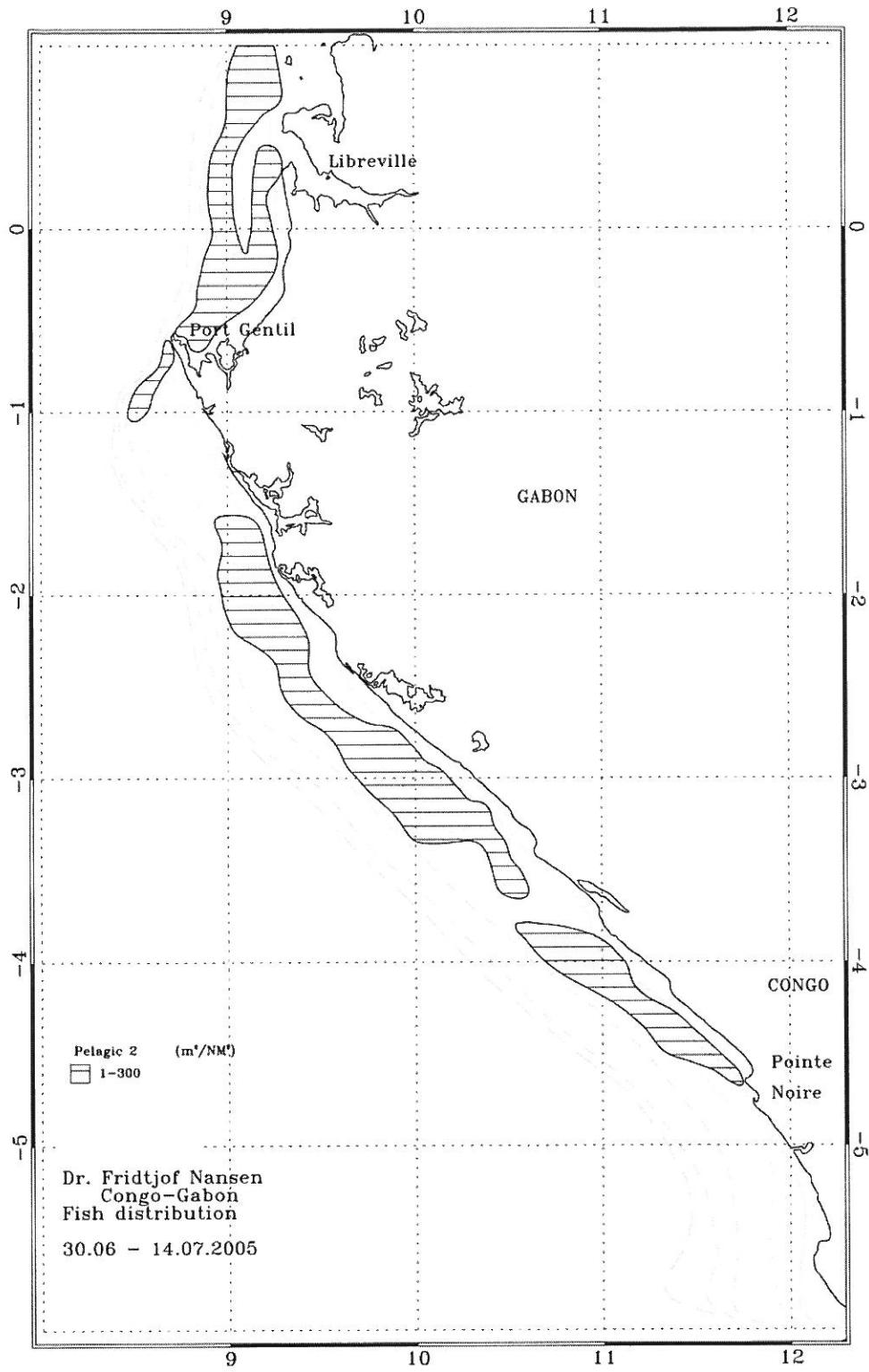


Figure 4.10 Distribution of PEL 2 species off Gabon and Congo.

#### 4.5 Review of results

The survey in 2005 was the second survey covering the pelagic resources in the region of Nigeria, Cameroon and São Tomé and Príncipe, and the second since 1995 covering Congo and Gabon (the first was conducted in 2004). The biomass estimates can be found in Table 4.1. The region covered is highly differentiated regarding the abundance of pelagic species. The shelf of Nigeria and Cameroon is a typical low-density tropical coastal region. A variety of coastal pelagic species exist but during the surveys in 2004 and 2005 no single species have been singled out with particularly high density. São Tomé and Príncipe are typical oceanic islands but to some extent influenced by fresh water from the Gulf of Guinea. No major concentrations of pelagic species were found on the shelf, although both species of flying fish and some sardinella were observed. It is known that tuna is relatively abundant in the region. However these species are mainly off the shelf, and therefore outside the survey area, and very mobile and impossible to survey by traditional survey methods. The northern coast of Gabon has some of the same characteristics as the shelf in Cameroon and Nigeria, although the abundance of pelagic fish is several times higher. The southern shelf of Gabon and the shelf of Congo is a more typical upwelling region. The abundance of pelagic fish and particularly sardinella was high both during the survey in 2004 and 2005.

The distribution of pelagic fish extends inshore of the survey area in the whole survey region and the survey does not cover the fish resources at <20 m depth. Oil exploration areas, particularly in the border area between Nigeria and Cameroon and outside Olinde in Gabon could not be covered by the survey and some pelagic fishes were missed in these areas.

**Table 4.1.** Summary table of biomass estimates for the main species groups and countries for the surveys conducted in 2004 and 2005.

| Species group  | Year | São Tomé & |          |          |         |         |
|----------------|------|------------|----------|----------|---------|---------|
|                |      | Nigeria    | Cameroon | Príncipe | Congo*  | Gabon*  |
| Sardinella     | 2005 | 5 000      | 5 000    | -        | 288 000 | 128 000 |
|                | 2004 | -          | 11 000   | -        | 360 000 |         |
| P1             | 2005 | -          | 7 000    | -        | -       | -       |
|                | 2004 | -          | 2 000    | -        | -       | -       |
| P2             | 2005 | 95 000     | 30 000   | -        | 30 000  | 7 000   |
|                | 2004 | 193 000    | 14 000   | -        | 69 000  |         |
| Horse mackerel | 2005 | -          | -        | -        | 11 000  | 4 000   |
|                | 2004 | -          | -        | -        | 11 000  |         |

- No biomass calculated because of low / no abundance

\*Surveys of Congo and Gabon in 2004 and 2005 are not directly comparable because the surveys covered different geographical areas (see text).

## CHAPTER 5 RESULTS FROM THE SWEEPED AREA TRAWL SURVEY

The composition of the fish fauna on the continental shelf and slope of the Gulf of Guinea changes with depth (Williams 1968). The catch-distribution analyses were therefore performed for three depth strata on the shelf, 0-50 m (inner shelf) and 51-100 m (outer shelf) and 101-250 m depth (slope). Table 5.1 gives the main species groups with common species in the region. For the different analysis the “other” group includes all species not accounted for in the other groups. Therefore, the content of “other” will change from table to table.

The locations of the trawl stations are shown in Figure 1.1. Records of fishing stations and catches are presented in Annex I and pooled length distributions (weighted by catch) of main species by area are shown in Annex II. All in all 260 different species of fish were found in Nigeria, in addition to squids, shrimps and others.

In the swept-area biomass estimates, only the shelf area down to depths of 200 m was included, divided into 0-30 m, 31-50 m 51-100 m and 101-200 m. Mean densities of the main demersal species by depth strata, occurrence and catch distributions are shown in Annex IV.

**Table 5.1** Main groups of species included in the analyses of diversity in the eastern Gulf of Guinea

| Main Groups                     | Main Families                 | Typical Species                  |
|---------------------------------|-------------------------------|----------------------------------|
| Demersal                        | Sciaenidae                    | <i>Pentheroscion mbizi</i>       |
|                                 |                               | <i>Pseudolithus senegalensis</i> |
|                                 |                               | <i>Pseudolithus elongatus</i>    |
|                                 |                               | <i>Pseudolithus typus</i>        |
|                                 | Sparidae                      | <i>Dentex angolensis</i>         |
|                                 |                               | <i>Dentex congoensis</i>         |
|                                 |                               | <i>Pagellus bellottii</i>        |
|                                 |                               | <i>Pagrus caeruleostictus</i>    |
|                                 |                               | <i>Boops boops</i>               |
|                                 | *Ariidae                      | <i>Arius latiscutatus</i>        |
| Serranidae                      | <i>Serranus accraensis</i>    |                                  |
|                                 | <i>Epinephelus aeneus</i>     |                                  |
| *Lutjanidae                     | <i>Lutjanus fulgens</i>       |                                  |
| Polynemidae                     | <i>Galeoides decadactylus</i> |                                  |
| Haemulidae (=Pomadasyidae)      | <i>Brachydeuterus auritus</i> |                                  |
|                                 | <i>Pomadasy jubelini</i>      |                                  |
| Pelagic                         | Ophidiidae                    | <i>Brotula barbata</i>           |
|                                 | *Lethrinidae                  | <i>Lethrinus atlanticus</i>      |
|                                 | Clupeidae                     | <i>Sardinella maderensis</i>     |
|                                 |                               | <i>Sardinella aurita</i>         |
|                                 |                               | <i>Ilisha africana</i>           |
|                                 | Carangidae                    | <i>Selene dorsalis</i>           |
| <i>Chloroscombrus chrysurus</i> |                               |                                  |
| <i>Decapterus punctatus</i>     |                               |                                  |

|                 |                 |                                    |
|-----------------|-----------------|------------------------------------|
|                 |                 | <i>Selar crumenophthalmus</i>      |
|                 |                 | <i>Caranx hippos</i>               |
|                 |                 | <i>Caranx crysos</i>               |
|                 |                 | <i>Alectis alexandrinus</i>        |
|                 | Scombridae      | <i>Scomberomorus tritor</i>        |
|                 | Trichiuridae    | <i>Trichiurus lepturus</i>         |
|                 | Sphyraenidae    | <i>Sphyraena guachancho</i>        |
| Shrimps         |                 | <i>Parapenaeus longirostris</i>    |
|                 |                 | <i>Penaeus notialis</i>            |
| Cephalopods     |                 | <i>Sepia officinalis hierredda</i> |
|                 |                 | <i>Illex coindetii</i>             |
|                 |                 | <i>Alloteuthis africana</i>        |
|                 |                 | <i>Sepiella ornata</i>             |
|                 |                 | <i>Octopus vulgaris</i>            |
| Sharks and Rays |                 | <i>Raja miraletus</i>              |
|                 |                 | <i>Squatina oculata</i>            |
|                 |                 | <i>Mustelus mustelus</i>           |
| Others          | Priacanthidae   | <i>Priacanthus arenatus</i>        |
|                 | Citharidae      | <i>Citharus linguatula</i>         |
|                 | Platycephalidae | <i>Grammoplites gruvelli</i>       |
|                 | Synodontidae    | <i>Saurida brasiliensis</i>        |
|                 | Triglidae       | <i>Lepidotrigla cadmani</i>        |
|                 |                 | <i>Lepidotrigla carolae</i>        |
|                 | Bothidae        | <i>Syacium micrurum</i>            |
|                 | Ariommatidae    | <i>Ariomma bondi</i>               |
|                 | Tetraodontidae  | <i>Lagocephalus laevigatus</i>     |
|                 | Uranoscopidae   | <i>Uranoscopus albesca</i>         |
|                 | Mullidae        | <i>Pseudupeneus prayensis</i>      |
|                 | Fistulariidae   | <i>Fistularia petimba</i>          |
|                 | Cynoglossidae   | <i>Cynoglossus canariensis</i>     |
|                 | Drepanidae      | <i>Drepane africana</i>            |

\* Not included in the swept area estimate because of low abundance

## 5.1 Nigeria

A total of 81 swept-area trawl hauls were made on the Nigerian shelf. Five hauls were aborted early at depths >100 m due to muddy bottom, but all hauls stayed more than 10 min on the bottom and were included in the analyses. Table 5.2 a, b and c show catch rates by main groups for the inner shelf (0-50 m), mid shelf (51-100 m), outer shelf and slope (101-250 m) shelf, and lower slope (>250 m depth) respectively. Catch rates in general were low with average catches around 167 kg/h on the inner shelf, 211 kg on the mid shelf, 429 kg on the outer shelf and 176 kg/h on the lower slope. This is similar to the catch rates recorded last year, 185 kg/h on the inner shelf, 193 kg on the mid shelf and 435 kg on the outer shelf. The pelagic group contributed 52 % of the total catch and an average catch of 87 kg/h on the inner shelf, <50 m depth, while the demersal group accounted for 26 % of the catch. The catch

composition changed at the mid shelf between 50 – 100 m depths. Demersal and pelagic species contributed 37 and 10 % or 78 and 22 kg/h respectively while cephalopods accounted for 11 % of the total catch. On the outer shelf and slope between 100-250 m the ‘other’ group were dominant with 52 % of the catch. The main part of the catch in this group consisted of *Ariomma bondi*. The demersal group contributed 10%, or 41 kg/h. This picture is, however, somewhat distorted by a large catch of 1500 kg/h of *Trichiurus lepturus* in trawl 852. On the lower slope, >250 m depth sharks and rays comprised 10 % of the catch and an average catch of 18 kg/h. However, the most dominant group was the “other” group, with an average catch of 127 kg/h or 72% of the total. This consisted mainly of a variety of deep sea, non-commercial fish species, shrimps, other crustaceans, and echinodermata.

Shrimps are important commercial species in the region. *Penaeus monodon* together with *Penaeus notialis* and *Parapenaeopsis atlantica* were all relatively abundant in shallow waters < 50 m depth, while *Penaeus kerathurus* was found less frequent. *Penaeus longirostris* was most dominant deeper than >50 m depth.

The group of cephalopods was dominated by *Sepia officinalis hierredda* together with *Illex coindetii*, *Allotheutis africana*, *Octopus vulgaris*, and *Todaropsis eblanae*. *Sepia officinalis hierredda* were present at all depths but most dominant on the outer shelf between 50-100 m while *Illex coindetii*, *Octopus vulgaris*, and *Todaropsis eblanae* were mainly found deeper than 100 m depth. Catch rates of all cephalopods were low inshore of 50 m depth, and 23 kg/h and 20 kg/h respectively at 51-100 m and 101 – 250 m depth. The catch rates were similar to last year.

Sharks and rays were also present across the shelf but more dominant on the outer shelf. In total 19 species of sharks was encountered, but only three was found more frequent. Seven species of rays were found, only *Raja miraletus* were caught frequently. Catch rates were the same in the two outer depth regions with average catches of 18 kg/h.

The length frequencies of all main species together with the main length – weight parameters are shown in Annex II and III.



Table 5.2 Nigeria. Catch rates (kg/h) by main groups in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf and slope (101-250).

| a) Inner shelf, 0-50 m |      |          |         |         |             |               |       |       |
|------------------------|------|----------|---------|---------|-------------|---------------|-------|-------|
| ST.NO.                 | DEP. | Demersal | Pelagic | Shrimps | Cephalopods | Sharks & rays | Other | Total |
| 843                    | 22   | 22.6     | 112.3   | 0.1     | 3.3         | 0.0           | 103.6 | 241.9 |
| 845                    | 38   | 59.8     | 315.4   | 0.1     | 1.1         | 0.0           | 15.6  | 391.9 |
| 847                    | 37   | 43.3     | 88.6    | 1.3     | 4.6         | 0.0           | 22.7  | 160.5 |
| 848                    | 24   | 25.6     | 68.7    | 0.0     | 0.2         | 0.0           | 54.7  | 149.2 |
| 849                    | 29   | 207.5    | 43.7    | 1.0     | 0.6         | 0.5           | 10.4  | 263.7 |
| 850                    | 42   | 51.3     | 69.4    | 3.0     | 19.0        | 0.0           | 3.8   | 146.5 |
| 854                    | 24   | 9.7      | 24.5    | 0.0     | 1.2         | 4.0           | 42.9  | 82.3  |
| 855                    | 18   | 33.8     | 38.5    | 2.0     | 0.6         | 0.0           | 88.0  | 162.9 |
| 856                    | 37   | 5.0      | 59.4    | 0.3     | 0.1         | 49.4          | 27.2  | 141.5 |
| 861                    | 43   | 38.9     | 122.7   | 1.6     | 4.4         | 0.0           | 25.6  | 193.2 |
| 862                    | 26   | 36.5     | 106.1   | 1.5     | 0.9         | 0.0           | 31.9  | 176.9 |
| 863                    | 24   | 72.6     | 95.7    | 3.1     | 0.6         | 0.0           | 22.5  | 194.5 |
| 864                    | 39   | 43.7     | 111.7   | 3.1     | 4.2         | 0.0           | 34.5  | 197.2 |
| 872                    | 39   | 76.8     | 151.6   | 3.1     | 5.9         | 0.0           | 34.2  | 271.5 |
| 873                    | 27   | 21.8     | 65.5    | 11.7    | 0.0         | 0.0           | 24.3  | 123.4 |
| 879                    | 39   | 34.1     | 41.3    | 2.0     | 0.1         | 0.0           | 6.0   | 83.6  |
| 880                    | 27   | 10.5     | 38.5    | 2.4     | 0.2         | 0.0           | 26.8  | 78.4  |
| 881                    | 39   | 25.5     | 75.3    | 5.2     | 0.5         | 0.0           | 2.5   | 109.0 |
| 888                    | 37   | 178.2    | 302.4   | 2.0     | 0.0         | 0.0           | 23.3  | 505.8 |
| 889                    | 29   | 37.4     | 117.7   | 0.8     | 0.0         | 1.7           | 40.0  | 197.5 |
| 895                    | 34   | 15.0     | 169.3   | 0.0     | 0.0         | 9.6           | 19.2  | 213.1 |
| 896                    | 26   | 16.0     | 88.7    | 0.5     | 0.0         | 7.9           | 13.7  | 126.9 |
| 897                    | 35   | 90.7     | 40.1    | 0.6     | 0.0         | 12.0          | 35.6  | 179.0 |
| 905                    | 25   | 9.7      | 37.7    | 5.5     | 2.6         | 0.0           | 13.0  | 68.6  |
| 906                    | 43   | 6.2      | 70.9    | 0.4     | 17.0        | 7.6           | 35.4  | 137.5 |
| 912                    | 39   | 14.5     | 32.8    | 0.0     | 0.5         | 6.3           | 8.6   | 62.6  |
| 913                    | 26   | 24.4     | 53.9    | 0.0     | 0.0         | 0.0           | 21.6  | 99.9  |
| 914                    | 40   | 13.1     | 17.4    | 0.0     | 0.1         | 0.0           | 3.3   | 33.9  |
| 920                    | 34   | 28.0     | 103.3   | 1.6     | 0.6         | 0.0           | 17.0  | 150.4 |
| 921                    | 23   | 56.8     | 103.6   | 0.0     | 0.6         | 0.0           | 83.7  | 244.7 |
| 922                    | 39   | 6.7      | 27.0    | 0.5     | 0.8         | 0.0           | 17.5  | 52.6  |
| 928                    | 46   | 83.4     | 25.8    | 7.9     | 2.4         | 1.2           | 21.9  | 142.7 |
| 929                    | 41   | 53.6     | 39.9    | 8.0     | 1.3         | 0.0           | 10.7  | 113.5 |
| MEAN                   | 33   | 44.0     | 86.6    | 2.1     | 2.2         | 3.0           | 28.5  | 166.6 |
| % Catch                |      | 26.4     | 52.0    | 1.3     | 1.3         | 1.8           | 17.1  | 100.0 |

## b) Mid-shelf, 51-100 m

| ST.NO.  | DEP. | Demersal | Pelagic | Shrimps | Cephalopods | Sharks & rays | Other | Total |
|---------|------|----------|---------|---------|-------------|---------------|-------|-------|
| 844     | 65   | 83.0     | 20.7    | 0.0     | 76.0        | 43.2          | 27.9  | 250.9 |
| 846     | 57   | 269.2    | 10.5    | 0.0     | 7.4         | 0.0           | 205.1 | 492.2 |
| 851     | 69   | 270.5    | 21.5    | 6.4     | 116.3       | 8.0           | 311.8 | 734.4 |
| 853     | 78   | 354.2    | 13.4    | 0.0     | 50.0        | 20.3          | 81.8  | 519.7 |
| 857     | 55   | 126.5    | 23.4    | 28.0    | 8.2         | 0.0           | 113.6 | 299.6 |
| 860     | 97   | 39.0     | 4.4     | 0.0     | 34.6        | 22.1          | 56.1  | 156.1 |
| 865     | 70   | 29.9     | 14.6    | 0.0     | 4.9         | 0.0           | 14.3  | 63.7  |
| 871     | 64   | 72.5     | 265.3   | 1.2     | 6.7         | 23.3          | 32.9  | 401.8 |
| 874     | 72   | 91.6     | 13.4    | 0.0     | 14.4        | 10.5          | 27.0  | 156.9 |
| 878     | 82   | 13.9     | 2.6     | 0.2     | 30.6        | 10.4          | 74.9  | 132.5 |
| 882     | 60   | 17.1     | 10.2    | 12.0    | 4.9         | 23.8          | 14.2  | 82.3  |
| 883     | 84   | 4.8      | 32.8    | 0.0     | 9.0         | 14.8          | 34.1  | 95.5  |
| 886     | 97   | 15.7     | 1.8     | 0.1     | 19.6        | 2.7           | 101.7 | 141.6 |
| 887     | 56   | 3.5      | 0.5     | 0.8     | 1.9         | 0.0           | 8.9   | 15.5  |
| 890     | 62   | 246.0    | 54.0    | 0.3     | 12.0        | 0.0           | 11.3  | 323.5 |
| 893     | 78   | 60.0     | 0.6     | 0.4     | 36.2        | 24.5          | 15.1  | 136.7 |
| 894     | 51   | 0.4      | 0.8     | 0.0     | 38.4        | 0.6           | 96.7  | 137.0 |
| 898     | 52   | 6.0      | 3.6     | 0.0     | 0.0         | 0.0           | 135.2 | 144.7 |
| 904     | 61   | 19.7     | 7.0     | 0.2     | 13.6        | 1.9           | 268.4 | 310.7 |
| 907     | 82   | 22.0     | 3.0     | 3.1     | 8.2         | 18.0          | 29.5  | 83.7  |
| 911     | 75   | 25.0     | 8.5     | 0.2     | 17.9        | 15.9          | 15.5  | 83.1  |
| 915     | 66   | 36.4     | 19.6    | 1.4     | 8.9         | 12.0          | 10.1  | 88.4  |
| 919     | 81   | 3.4      | 8.8     | 0.0     | 38.7        | 12.1          | 81.7  | 144.7 |
| 923     | 99   | 7.7      | 0.2     | 1.6     | 12.5        | 0.0           | 43.9  | 65.9  |
| 927     | 65   | 78.4     | 1.0     | 1.4     | 3.3         | 0.0           | 25.2  | 109.2 |
| MEAN    | 71   | 78.1     | 21.7    | 2.3     | 23.3        | 10.8          | 74.9  | 211.0 |
| % Catch |      | 37.0     | 10.3    | 1.1     | 11.0        | 5.1           | 35.5  | 100.0 |

## c) Outer shelf and slope, 101-250 m

| ST.NO.  | DEP. | Demersal | Pelagic | Shrimps | Cephalopods | Sharks & rays | Other | Total  |
|---------|------|----------|---------|---------|-------------|---------------|-------|--------|
| 852     | 249  | 44.7     | 1514.9  | 16.0    | 39.2        | 5.2           | 272.7 | 1892.7 |
| 869     | 228  | 6.9      | 0.5     | 1.8     | 4.2         | 70.8          | 390.1 | 474.3  |
| 870     | 115  | 17.6     | 0.0     | 0.0     | 19.3        | 56.9          | 153.6 | 247.5  |
| 875     | 104  | 41.4     | 0.8     | 0.0     | 46.0        | 3.6           | 148.2 | 240.0  |
| 877     | 144  | 38.7     | 1.4     | 0.0     | 13.7        | 24.7          | 147.0 | 225.4  |
| 885     | 247  | 1.8      | 0.2     | 0.6     | 10.2        | 0.0           | 250.3 | 263.2  |
| 891     | 141  | 25.5     | 2.0     | 0.3     | 13.3        | 24.6          | 64.1  | 129.8  |
| 903     | 152  | 35.4     | 0.0     | 0.2     | 7.3         | 2.9           | 329.2 | 375.0  |
| 910     | 133  | 65.3     | 3.9     | 0.1     | 16.8        | 9.3           | 567.9 | 663.4  |
| 916     | 120  | 86.6     | 0.0     | 3.0     | 36.9        | 9.1           | 115.8 | 251.5  |
| 918     | 132  | 33.8     | 0.6     | 0.0     | 9.9         | 0.0           | 89.3  | 133.7  |
| 925     | 149  | 91.1     | 0.0     | 0.0     | 16.6        | 6.3           | 135.7 | 249.6  |
| MEAN    | 160  | 40.7     | 127.0   | 1.8     | 19.5        | 17.8          | 222.0 | 428.8  |
| % Catch |      | 9.5      | 29.6    | 0.4     | 4.5         | 4.1           | 51.8  | 100.0  |

## d) Lower slope, &gt;250 m

| ST.NO.  | DEP. | Demersal | Pelagic | Shrimps | Cephalopods | Sharks & rays | Other | Total |
|---------|------|----------|---------|---------|-------------|---------------|-------|-------|
| 858     | 275  | 0.4      | 0.9     | 3.4     | 3.6         | 41.4          | 66.8  | 116.5 |
| 859     | 407  | 4.8      | 49.4    | 58.9    | 0.0         | 71.4          | 102.2 | 286.7 |
| 867     | 262  | 0.0      | 0.0     | 6.0     | 4.5         | 25.8          | 13.0  | 49.2  |
| 868     | 419  | 2.6      | 61.5    | 2.4     | 2.3         | 15.2          | 46.8  | 130.7 |
| 876     | 456  | 6.5      | 23.9    | 3.8     | 0.7         | 0.0           | 347.9 | 382.8 |
| 884     | 348  | 0.0      | 0.2     | 1.9     | 1.3         | 0.9           | 80.1  | 84.3  |
| 892     | 507  | 1.9      | 3.9     | 1.7     | 1.2         | 10.9          | 60.0  | 79.7  |
| 900     | 888  | 0.0      | 0.0     | 6.6     | 0.0         | 14.7          | 286.1 | 307.3 |
| 901     | 420  | 0.0      | 0.0     | 2.9     | 4.4         | 0.0           | 146.8 | 154.1 |
| 909     | 287  | 1.5      | 0.0     | 1.4     | 40.8        | 2.9           | 125.1 | 171.8 |
| MEAN    | 427  | 1.8      | 14.0    | 8.9     | 5.9         | 18.3          | 127.5 | 176.3 |
| % Catch |      | 1.0      | 7.9     | 5.0     | 3.3         | 10.4          | 72.3  | 100.0 |

Table 5.3 a and b show the catch rates of the main pelagic families caught in the bottom trawl on the inner and mid shelf respectively. Pelagic species were uncommon in deeper waters except from infrequent catches of *Trichiurus lepturus*. The dominant species at the inner shelf were carangids dominated by *Chloroscombrus chrysurus* and *Selene dorsalis*, with average catch rate of about 47 kg/h, constituting 28% of the total catch. Barracudas, mainly *Sphyraena guachancho*, were second and contributed about 8% to the total, while hairtails (*Trichiurus lepturus*) were less abundant and contributed 7%. The clupeid species that dominates the shallow water pelagic ecosystems in large parts of western Africa were also less common on the inner shelf of Nigeria. Those that occurred most frequently were *Sardinella maderensis* and *Ilisha africana*. In total these species contributed 6% of the total catch.

As expected, the total catch rate of pelagic species was lower at the mid shelf than at the coast. Carangids were most abundant, and contributed 15 kg/h, or 7%, to the total catch. Both *Selene dorsalis* and *Chloroscombrus chrysurus* were frequently caught, but were less abundant than further inshore. Barracudas, clupeids and hairtails were all present at these depths, but in small quantities, while no Scombrids were present.

**Table 5.3** Nigeria. Catch rates (kg/h) by main pelagic families in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf and slope (101-250).

| a) Inner shelf, 0-50 m |       |          |           |           |           |            |       |       |
|------------------------|-------|----------|-----------|-----------|-----------|------------|-------|-------|
| Sta.no.                | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other | Total |
| 843                    | 22    | 46.4     | 18.2      | 9.3       | 0.1       | 38.3       | 129.6 | 241.9 |
| 845                    | 38    | 0.8      | 296.7     | 1.1       | 0.0       | 16.8       | 76.6  | 391.9 |
| 847                    | 37    | 12.0     | 58.6      | 1.8       | 3.2       | 13.0       | 71.9  | 160.5 |
| 848                    | 24    | 6.0      | 29.9      | 11.3      | 0.3       | 21.1       | 80.5  | 149.2 |
| 849                    | 29    | 11.1     | 4.0       | 11.6      | 2.5       | 14.6       | 220.0 | 263.7 |
| 850                    | 42    | 0.9      | 10.7      | 2.3       | 30.0      | 25.5       | 77.1  | 146.5 |
| 854                    | 24    | 0.3      | 18.3      | 3.1       | 0.0       | 2.8        | 57.8  | 82.3  |
| 855                    | 18    | 2.9      | 10.9      | 5.2       | 15.9      | 3.6        | 124.3 | 162.9 |
| 856                    | 37    | 18.3     | 12.7      | 4.6       | 16.8      | 6.9        | 82.1  | 141.5 |
| 861                    | 43    | 13.0     | 63.3      | 0.0       | 37.7      | 8.7        | 70.4  | 193.2 |
| 862                    | 26    | 19.0     | 26.9      | 9.9       | 46.3      | 3.9        | 70.8  | 176.9 |
| 863                    | 24    | 31.3     | 42.6      | 4.0       | 9.3       | 8.6        | 98.8  | 194.5 |
| 864                    | 39    | 18.9     | 55.8      | 2.4       | 23.5      | 11.0       | 85.5  | 197.2 |
| 872                    | 39    | 8.1      | 117.8     | 4.9       | 11.2      | 9.5        | 120.0 | 271.5 |
| 873                    | 27    | 32.4     | 11.1      | 3.2       | 10.4      | 8.4        | 57.9  | 123.4 |
| 879                    | 39    | 0.7      | 16.6      | 3.7       | 0.7       | 19.6       | 42.2  | 83.6  |
| 880                    | 27    | 5.5      | 6.5       | 4.7       | 15.1      | 6.7        | 39.9  | 78.4  |
| 881                    | 39    | 8.7      | 48.0      | 0.0       | 6.8       | 11.7       | 33.7  | 109.0 |
| 888                    | 37    | 3.3      | 279.6     | 13.7      | 0.8       | 5.1        | 203.4 | 505.8 |
| 889                    | 29    | 7.6      | 49.9      | 5.1       | 7.9       | 47.2       | 79.9  | 197.5 |
| 895                    | 34    | 0.5      | 132.3     | 4.6       | 0.0       | 31.9       | 43.8  | 213.1 |
| 896                    | 26    | 4.4      | 47.4      | 6.4       | 24.9      | 5.5        | 38.2  | 126.9 |
| 897                    | 35    | 0.2      | 11.7      | 3.5       | 16.3      | 8.4        | 138.9 | 179.0 |
| 905                    | 25    | 8.3      | 2.2       | 2.0       | 24.6      | 0.6        | 30.9  | 68.6  |
| 906                    | 43    | 0.6      | 24.1      | 0.9       | 1.3       | 44.0       | 66.6  | 137.5 |
| 912                    | 39    | 0.0      | 17.1      | 1.8       | 0.0       | 13.9       | 29.9  | 62.6  |
| 913                    | 26    | 0.0      | 32.5      | 7.2       | 0.1       | 14.1       | 46.0  | 99.9  |
| 914                    | 40    | 0.0      | 16.8      | 0.0       | 0.0       | 0.5        | 16.6  | 33.9  |
| 920                    | 34    | 38.8     | 13.7      | 6.5       | 38.0      | 6.3        | 47.1  | 150.4 |
| 921                    | 23    | 1.6      | 63.5      | 23.8      | 1.9       | 12.8       | 141.1 | 244.7 |
| 922                    | 39    | 0.6      | 20.4      | 1.0       | 0.0       | 4.9        | 25.6  | 52.6  |
| 928                    | 46    | 0.0      | 0.0       | 0.0       | 19.1      | 6.7        | 116.8 | 142.7 |
| 929                    | 41    | 0.7      | 3.0       | 0.4       | 31.4      | 4.4        | 73.6  | 113.5 |
| MEAN                   |       | 9.2      | 47.4      | 4.8       | 12.0      | 13.3       | 79.9  | 166.6 |
| % Catch                |       | 5.5      | 28.4      | 2.9       | 7.2       | 8.0        | 48.0  | 100.0 |

## b) Mid-shelf, 51-100 m

| Sta.no. | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other | Total |
|---------|-------|----------|-----------|-----------|-----------|------------|-------|-------|
| 844     | 65    | 1.4      | 5.9       | 0.0       | 4.5       | 8.9        | 230.2 | 250.9 |
| 846     | 57    | 1.1      | 4.6       | 0.0       | 1.3       | 3.5        | 481.7 | 492.2 |
| 851     | 69    | 0.1      | 0.4       | 0.0       | 15.4      | 5.6        | 712.9 | 734.4 |
| 853     | 78    | 3.5      | 8.5       | 0.0       | 0.0       | 1.4        | 506.3 | 519.7 |
| 857     | 55    | 0.5      | 4.0       | 0.0       | 9.4       | 9.5        | 276.3 | 299.6 |
| 860     | 97    | 4.4      | 0.0       | 0.0       | 0.0       | 0.0        | 151.7 | 156.1 |
| 865     | 70    | 0.0      | 0.0       | 0.0       | 0.0       | 14.6       | 49.2  | 63.7  |
| 871     | 64    | 0.0      | 248.1     | 0.0       | 0.9       | 16.3       | 136.6 | 401.8 |
| 874     | 72    | 0.6      | 0.5       | 0.0       | 1.7       | 10.6       | 143.5 | 156.9 |
| 878     | 82    | 0.0      | 0.2       | 0.0       | 2.4       | 0.0        | 129.9 | 132.5 |
| 882     | 60    | 0.0      | 0.1       | 0.0       | 6.8       | 3.3        | 72.1  | 82.3  |
| 883     | 84    | 0.0      | 32.7      | 0.0       | 0.0       | 0.1        | 62.7  | 95.5  |
| 886     | 97    | 0.0      | 1.1       | 0.0       | 0.7       | 0.0        | 139.8 | 141.6 |
| 887     | 56    | 0.0      | 0.2       | 0.0       | 0.1       | 0.2        | 15.0  | 15.5  |
| 890     | 62    | 0.0      | 51.4      | 0.0       | 0.0       | 2.6        | 269.6 | 323.5 |
| 893     | 78    | 0.0      | 0.6       | 0.0       | 0.0       | 0.0        | 136.1 | 136.7 |
| 894     | 51    | 0.0      | 0.8       | 0.0       | 0.0       | 0.0        | 136.1 | 137.0 |
| 898     | 52    | 0.0      | 3.6       | 0.0       | 0.0       | 0.0        | 141.1 | 144.7 |
| 904     | 61    | 0.0      | 6.3       | 0.0       | 0.0       | 0.7        | 303.7 | 310.7 |
| 907     | 82    | 0.0      | 0.9       | 0.0       | 1.6       | 0.5        | 80.8  | 83.7  |
| 911     | 75    | 0.1      | 1.5       | 0.0       | 6.5       | 0.4        | 74.5  | 83.1  |
| 915     | 66    | 0.1      | 0.6       | 0.0       | 17.9      | 1.0        | 68.8  | 88.4  |
| 919     | 81    | 0.0      | 4.5       | 0.0       | 4.2       | 0.0        | 135.9 | 144.7 |
| 923     | 99    | 0.0      | 0.0       | 0.0       | 0.2       | 0.0        | 65.7  | 65.9  |
| 927     | 65    | 0.5      | 0.0       | 0.0       | 0.0       | 0.5        | 108.2 | 109.2 |
| Mean    |       | 0.5      | 15.1      | 0.0       | 2.9       | 3.2        | 189.3 | 211.0 |
| % Catch |       | 0.2      | 7.1       | 0.0       | 1.4       | 1.5        | 89.7  | 100.0 |

Catch rates of the commercially most important demersal fish groups on the shelf are presented in Table 5.4 a, b and c. The catch rates were in general low on the inner shelf. Seabreams, snappers and groupers were only present in very low numbers. These groups together contributed only 0.7% of the total catch in this area. Grunts, gave an average catch of 32 kg/h or 19% of the total catch in the area, but this group mainly consisted of *Brachydeuterus auritus*. The other species in this group (*Pomadasys jubelini*) gave an average catch of only 1.3 kg/h, 0.8% of the total if *B. auritus* was excluded. Croakers gave an average catch of 11 kg/h, or 6% of the total and were the second most important group in this depth stratum, *Pseudolithus senegalensis* was caught frequently while *Pseudolithus typus* and *P. elongatus* was caught less frequent. None of these species were found in deeper waters.

**Table 5.4** Nigeria. Catch rates (kg/h) of valuable demersal species grouped by families in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf and slope (101-250).

| a) Inner shelf, 0-50 m |       |           |          |          |        |          |       |       |
|------------------------|-------|-----------|----------|----------|--------|----------|-------|-------|
| Sta. no.               | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other | Total |
| 843                    | 22    | 0.0       | 0.0      | 0.0      | 8.2    | 14.4     | 219.3 | 241.9 |
| 845                    | 38    | 9.2       | 0.0      | 0.0      | 50.6   | 0.0      | 332.1 | 391.9 |
| 847                    | 37    | 0.0       | 0.0      | 0.2      | 43.2   | 0.0      | 117.2 | 160.5 |
| 848                    | 24    | 0.0       | 1.8      | 0.0      | 13.8   | 10.1     | 123.5 | 149.2 |
| 849                    | 29    | 0.0       | 0.0      | 0.0      | 205.9  | 1.7      | 56.2  | 263.7 |
| 850                    | 42    | 0.0       | 0.0      | 0.0      | 48.6   | 2.7      | 95.2  | 146.5 |
| 854                    | 24    | 4.1       | 5.5      | 0.0      | 0.2    | 0.0      | 72.6  | 82.3  |
| 855                    | 18    | 0.0       | 0.0      | 0.0      | 3.9    | 29.8     | 129.1 | 162.9 |
| 856                    | 37    | 0.0       | 0.0      | 0.0      | 1.1    | 4.0      | 136.4 | 141.5 |
| 861                    | 43    | 0.0       | 0.0      | 0.1      | 13.2   | 25.5     | 154.3 | 193.2 |
| 862                    | 26    | 0.0       | 3.2      | 0.0      | 9.6    | 23.7     | 140.4 | 176.9 |
| 863                    | 24    | 0.0       | 0.0      | 0.0      | 0.9    | 71.7     | 121.9 | 194.5 |
| 864                    | 39    | 0.0       | 0.0      | 0.1      | 20.9   | 22.7     | 153.5 | 197.2 |
| 872                    | 39    | 0.0       | 0.0      | 0.0      | 59.4   | 17.0     | 195.1 | 271.5 |
| 873                    | 27    | 0.0       | 0.0      | 0.1      | 1.2    | 20.6     | 101.5 | 123.4 |
| 879                    | 39    | 0.0       | 0.0      | 2.0      | 31.8   | 0.4      | 49.4  | 83.6  |
| 880                    | 27    | 0.0       | 0.0      | 0.0      | 2.3    | 8.2      | 67.9  | 78.4  |
| 881                    | 39    | 0.0       | 0.0      | 0.0      | 10.6   | 14.9     | 83.5  | 109.0 |
| 888                    | 37    | 0.0       | 0.0      | 0.0      | 163.8  | 14.4     | 327.6 | 505.8 |
| 889                    | 29    | 0.0       | 0.0      | 0.4      | 34.4   | 2.6      | 160.2 | 197.5 |
| 895                    | 34    | 5.0       | 0.0      | 3.0      | 7.1    | 0.0      | 198.1 | 213.1 |
| 896                    | 26    | 0.0       | 0.0      | 0.0      | 8.8    | 7.2      | 110.9 | 126.9 |
| 897                    | 35    | 1.6       | 0.0      | 0.6      | 78.0   | 10.4     | 88.3  | 179.0 |
| 905                    | 25    | 0.0       | 0.0      | 1.3      | 2.8    | 5.7      | 58.9  | 68.6  |
| 906                    | 43    | 5.6       | 0.0      | 0.0      | 0.6    | 0.0      | 131.3 | 137.5 |
| 912                    | 39    | 3.3       | 0.0      | 0.5      | 10.7   | 0.0      | 48.1  | 62.6  |
| 913                    | 26    | 0.5       | 0.0      | 0.0      | 23.9   | 0.0      | 75.5  | 99.9  |
| 914                    | 40    | 0.0       | 0.0      | 0.0      | 13.1   | 0.0      | 20.8  | 33.9  |
| 920                    | 34    | 0.0       | 0.0      | 0.6      | 8.2    | 19.1     | 122.4 | 150.4 |
| 921                    | 23    | 0.0       | 0.0      | 1.0      | 51.0   | 4.8      | 187.9 | 244.7 |
| 922                    | 39    | 0.0       | 0.0      | 0.3      | 6.5    | 0.0      | 45.8  | 52.6  |
| 928                    | 46    | 0.0       | 0.0      | 1.7      | 63.4   | 16.7     | 60.8  | 142.7 |
| 929                    | 41    | 0.0       | 0.0      | 0.0      | 48.8   | 4.8      | 59.9  | 113.5 |
| Mean                   | 33    | 0.9       | 0.3      | 0.4      | 31.7   | 10.7     | 122.6 | 166.6 |
| % Catch                |       | 0.5       | 0.2      | 0.2      | 19.0   | 6.4      | 73.6  | 100.0 |

b) Mid-shelf, 51-100 m

| Sta. no. | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other | Total |
|----------|-------|-----------|----------|----------|--------|----------|-------|-------|
| 844      | 65    | 70.3      | 0.0      | 0.7      | 6.1    | 6.0      | 167.8 | 250.9 |
| 846      | 57    | 25.8      | 0.0      | 0.0      | 243.4  | 0.0      | 223.0 | 492.2 |
| 851      | 69    | 55.2      | 0.0      | 0.4      | 12.5   | 200.9    | 465.4 | 734.4 |
| 853      | 78    | 334.9     | 0.0      | 18.4     | 1.0    | 0.0      | 165.5 | 519.7 |
| 857      | 55    | 0.8       | 0.0      | 0.6      | 59.1   | 60.8     | 178.5 | 299.6 |
| 860      | 97    | 39.0      | 0.0      | 0.0      | 0.0    | 0.0      | 117.1 | 156.1 |
| 865      | 70    | 5.3       | 0.0      | 2.8      | 16.0   | 5.9      | 33.8  | 63.7  |
| 871      | 64    | 0.9       | 0.0      | 10.2     | 23.9   | 35.4     | 331.4 | 401.8 |
| 874      | 72    | 2.3       | 0.0      | 3.2      | 77.5   | 8.6      | 65.3  | 156.9 |
| 878      | 82    | 4.1       | 0.0      | 5.1      | 0.0    | 4.1      | 119.2 | 132.5 |
| 882      | 60    | 0.0       | 0.0      | 1.2      | 14.9   | 0.3      | 65.9  | 82.3  |
| 883      | 84    | 1.6       | 0.0      | 2.8      | 0.4    | 0.0      | 90.7  | 95.5  |
| 886      | 97    | 15.7      | 0.0      | 0.0      | 0.0    | 0.0      | 125.8 | 141.6 |
| 887      | 56    | 0.6       | 0.0      | 0.3      | 2.6    | 0.0      | 12.0  | 15.5  |
| 890      | 62    | 210.4     | 0.1      | 0.0      | 32.9   | 2.6      | 77.5  | 323.5 |
| 893      | 78    | 57.2      | 0.0      | 0.8      | 0.0    | 2.0      | 76.7  | 136.7 |
| 894      | 51    | 0.4       | 0.0      | 0.0      | 0.0    | 0.0      | 136.5 | 137.0 |
| 898      | 52    | 6.0       | 0.0      | 0.0      | 0.0    | 0.0      | 138.8 | 144.7 |
| 904      | 61    | 10.0      | 0.4      | 0.9      | 8.4    | 0.0      | 291.1 | 310.7 |
| 907      | 82    | 19.6      | 0.0      | 0.1      | 0.0    | 0.7      | 63.3  | 83.7  |
| 911      | 75    | 2.0       | 0.0      | 0.6      | 0.0    | 22.4     | 58.0  | 83.1  |
| 915      | 66    | 0.3       | 0.0      | 0.3      | 34.5   | 1.3      | 52.0  | 88.4  |
| 919      | 81    | 0.0       | 0.0      | 2.9      | 0.0    | 0.5      | 141.3 | 144.7 |
| 923      | 99    | 4.9       | 0.0      | 0.5      | 0.2    | 0.1      | 60.2  | 65.9  |
| 927      | 65    | 5.0       | 0.0      | 0.8      | 69.4   | 0.8      | 33.3  | 109.2 |
| Mean     | 71    | 37.1      | 0.0      | 2.1      | 24.1   | 14.1     | 133.6 | 211.0 |
| % Catch  |       | 17.6      | 0.0      | 1.0      | 11.4   | 6.7      | 63.3  | 100.0 |

The most important demersal group on the mid shelf was the sea breams, mainly *Dentex congoensis*, *D. angolensis* and some few *Boops boops*, who together had average catches of 37 kg/h, or 18% of the total catch. *Brachydeuterus auritus* was also abundant on the mid shelf, and with 24 kg/h, or 11% of the total catch it made up the entire group of grunts at this depth. The third most important group was the croakers with average catches of 14 kg/h or 7% of the total while groupers gave low catches, 1% of the total, and no snappers were found.

On the outer shelf and slope, sea breams dominated the important demersal species with a relative contribution of 6 % and an average catch rate of 26 kg/h. *Dentex congoensis* and *D. angolensis* were dominant in catches at these depths. The second most dominant group was croakers with 12 kg/h, or 3% of the total catch. The only specie in this group, at this depth, was *Pentheroscion mbizi*. Groupers contributed 0.7% to the total catch, while no grunts and snappers were caught. The most abundant off all demersal species at the outer shelf and slope



was *Ariomma bondi* who gave average catch rates of 125 kg/h compared with 110 kg/h last year. *A. bondi* is not considered a commercial species.

c) Outer shelf and slope, 100-250 m

| Sta. no. | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other  | Total  |
|----------|-------|-----------|----------|----------|--------|----------|--------|--------|
| 852      | 249   | 35.4      | 0.0      | 0.0      | 0.0    | 4.1      | 1853.2 | 1892.7 |
| 869      | 228   | 3.2       | 0.0      | 0.0      | 0.0    | 0.0      | 471.1  | 474.3  |
| 870      | 115   | 17.6      | 0.0      | 0.0      | 0.0    | 0.0      | 229.8  | 247.5  |
| 875      | 104   | 41.2      | 0.0      | 0.0      | 0.0    | 0.0      | 198.8  | 240.0  |
| 877      | 144   | 15.7      | 0.0      | 0.0      | 0.0    | 17.5     | 192.3  | 225.4  |
| 885      | 247   | 1.8       | 0.0      | 0.0      | 0.0    | 0.0      | 261.4  | 263.2  |
| 891      | 141   | 12.9      | 0.0      | 2.6      | 0.0    | 9.4      | 104.8  | 129.8  |
| 903      | 152   | 22.6      | 0.0      | 0.0      | 0.0    | 12.8     | 339.6  | 375.0  |
| 910      | 133   | 27.0      | 0.0      | 0.0      | 0.0    | 37.4     | 599.0  | 663.4  |
| 916      | 120   | 23.2      | 0.0      | 0.0      | 0.0    | 59.2     | 169.1  | 251.5  |
| 918      | 132   | 27.0      | 0.0      | 5.6      | 0.0    | 1.3      | 99.9   | 133.7  |
| 925      | 149   | 88.2      | 0.0      | 0.0      | 0.0    | 2.9      | 158.6  | 249.6  |
| Mean     | 160   | 26.3      | 0.0      | 0.7      | 0.0    | 12.0     | 389.8  | 428.8  |
| % Catch  |       | 6.1       | 0.0      | 0.2      | 0.0    | 2.8      | 90.9   | 100.0  |

## 5.2 Cameroon

A total of 32 swept-area trawl hauls were made on the shelf off Cameroon. The shelf was mainly even, with mud and sandy substrate, and suited for bottom trawling except in the southern parts, around Campo, were corrals and hard bottom made bottom trawling difficult in some localities. The shelf had variable hardness, while the slope was steep and very muddy, which made trawling difficult.

Table 5.5 a, b and c shows catch rates by main groups for the inner (0-50 m), mid (51-100 m) and outer shelf and slope (101-250 m) respectively. The catch rates were generally higher than in Nigeria, but slightly lower on average than catches in Cameroon last year. The mean catch rates of pelagic species from 0-50 m depth were 93 kg/h or 33% of the total catch while demersal species contributed 58 kg/h or 20% of the total catch, while shrimp, cephalopods and sharks and rays contributed only marginally to the total catch in this depth region, with 0.6%, 1.6% and 0.6% respectively. The group of other species had a mean catch rate of 126 kg/h or 44% of the total.

The average catch rate at mid shelf, 51-100 m depth, was 343 kg/h. While the inner shelf showed a lower fish density than last year, this part of the shelf was more abundant with fish than last year.

Table 5.4 b show that pelagic fish was the most abundant group with 68% of the average catch. However it is also seen that this was mainly due to the contribution from one single catch of pelagic fish, excluding this catch gave pelagic fish an average contribution of 9% to the overall catch. Demersal species had an average catch rate of 57 kg/h or 47% of the total (excluding the one large pelagic catch). Shrimps contributed with average catches of 0.8 kg/h while cephalopods gave average catches of 9.2 kg/h and sharks and rays had average catches of 7.5 kg/h.

The deeper stations at the outer shelf and slope were all collected in the southern parts of Cameroon, approximately from the latitude of the Sanaga river system (3°30'N). Several areas on the outer shelf and shelf break gave good acoustic registrations of demersal fish. The average total catch was 340 kg/h. The group of demersal species contributed 31% to the total catch while the group of other species, mainly *Ariomma bondi*, contributed with 61% of the total catch in this region. However, *Ariomma bondi*, was a lot less abundant on the shelf edge than last year.

Shrimps are important commercial species in the Gulf of Guinea region, and abundant on the inner shelf and the estuaries. Shrimps were a lot less common on the shelf than last year. No major catches were made. The most abundant shrimp was *Penaeus notialis*, which had an average catch of 1.4 kg/h and was frequent in the trawl catches on the inner, and mid shelf. *Parapenaeus longirostris* dominated at depths deeper than 50 m with catches of 0.7 kg/h.

Squids are also important in the fishery. Three species dominated in Cameroon. *Sepia officinalis hierradda* was found over the entire shelf, with dominance on the mid shelf, and the outer shelf and slope, catch rates were on average 5.6 kg/h on station were it was caught. *Alloteuthis africana* dominated on the inner shelf with catch rates of 2 kg/h while *Illex coindetii* were mainly found at depths deeper than 100 m, with average catch rates of 1.9 kg/h.

**Table 5.5** Cameroon. Catch rates (kg/h) by main groups in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf and slope (101-250).

a) Inner shelf, 0-50 m

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other  | Total  |
|---------|-------|----------|---------|---------|------------|--------|--------|--------|
| 933     | 27    | 76.2     | 109.1   | 4.9     | 0.1        | 1.2    | 52.4   | 243.9  |
| 934     | 21    | 54.2     | 157.3   | 0.0     | 0.4        | 0.0    | 74.7   | 286.6  |
| 940     | 50    | 54.7     | 21.1    | 0.7     | 14.9       | 0.0    | 9.9    | 101.2  |
| 941     | 32    | 22.7     | 114.4   | 1.4     | 0.4        | 10.9   | 21.0   | 170.8  |
| 942     | 22    | 16.7     | 150.5   | 3.4     | 0.0        | 4.6    | 17.6   | 192.9  |
| 943     | 35    | 84.9     | 211.6   | 2.5     | 1.8        | 0.0    | 118.2  | 419.0  |
| 944     | 20    | 122.5    | 304.9   | 1.0     | 0.2        | 0.0    | 27.2   | 455.7  |
| 946     | 24    | 23.8     | 38.6    | 0.5     | 2.7        | 0.0    | 26.5   | 92.0   |
| 950     | 37    | 3.8      | 13.0    | 0.0     | 43.4       | 0.0    | 8.1    | 68.3   |
| 951     | 22    | 79.0     | 104.1   | 4.0     | 0.1        | 0.0    | 35.0   | 222.3  |
| 954     | 24    | 79.4     | 41.5    | 0.0     | 1.8        | 0.0    | 112.5  | 235.3  |
| 955     | 38    | 68.9     | 83.4    | 0.5     | 4.9        | 9.8    | 93.0   | 260.4  |
| 963     | 47    | 103.2    | 8.6     | 3.3     | 1.6        | 0.0    | 34.4   | 151.2  |
| 964     | 25    | 114.6    | 54.0    | 0.0     | 0.0        | 0.0    | 1266.8 | 1435.5 |
| 965     | 26    | 22.2     | 77.8    | 6.7     | 0.7        | 0.0    | 10.8   | 118.0  |
| 966     | 47    | 5.8      | 0.3     | 0.0     | 2.2        | 0.0    | 106.0  | 114.4  |
| MEAN    | 31.1  | 58.3     | 93.1    | 1.8     | 4.7        | 1.7    | 125.9  | 285.5  |
| % Catch |       | 20.4     | 32.6    | 0.6     | 1.6        | 0.6    | 44.1   | 100.0  |

b) Mid-shelf, 51-100 m

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total  |
|---------|-------|----------|---------|---------|------------|--------|-------|--------|
| 932     | 56    | 19.4     | 60.9    | 4.6     | 3.1        | 6.5    | 50.0  | 144.5  |
| 935     | 54    | 24.9     | 13.8    | 0.9     | 0.7        | 6.6    | 4.2   | 51.1   |
| 936     | 69    | 310.6    | 0.1     | 0.8     | 10.0       | 15.2   | 48.1  | 384.7  |
| 937     | 59    | 65.0     | 19.5    | 1.3     | 8.0        | 0.0    | 27.7  | 121.4  |
| 947     | 54    | 8.2      | 2220.5  | 0.0     | 16.3       | 0.0    | 16.9  | 2261.9 |
| 949     | 66    | 19.8     | 1.1     | 0.0     | 12.5       | 22.8   | 18.0  | 74.1   |
| 956     | 72    | 11.1     | 4.2     | 0.0     | 8.9        | 11.1   | 10.3  | 45.5   |
| 960     | 90    | 49.0     | 0.9     | 0.2     | 11.2       | 0.0    | 52.9  | 114.2  |
| 962     | 66    | 34.6     | 2.4     | 0.0     | 14.1       | 13.3   | 29.1  | 93.5   |
| 967     | 83    | 27.4     | 2.6     | 0.0     | 7.6        | 0.0    | 100.6 | 138.2  |
| MEAN    | 66.9  | 57.0     | 232.6   | 0.8     | 9.2        | 7.5    | 35.8  | 342.9  |
| % Catch |       | 16.6     | 67.8    | 0.2     | 2.7        | 2.2    | 10.4  | 100.0  |

## c) Outer shelf and slope, 101-250 m

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
|---------|-------|----------|---------|---------|------------|--------|-------|-------|
| 945     | 105   | 41.0     | 0.0     | 0.0     | 5.2        | 15.1   | 127.6 | 188.8 |
| 948     | 121   | 237.7    | 24.5    | 0.0     | 5.2        | 0.0    | 182.4 | 449.8 |
| 957     | 119   | 138.8    | 36.5    | 2.2     | 0.6        | 19.8   | 181.1 | 379.1 |
| 958     | 233   | 3.9      | 0.0     | 0.1     | 9.9        | 13.0   | 358.4 | 385.3 |
| 959     | 126   | 132.1    | 0.0     | 0.0     | 0.2        | 0.0    | 127.0 | 259.3 |
| 961     | 103   | 76.3     | 0.0     | 0.1     | 16.3       | 14.2   | 271.1 | 377.9 |
| MEAN    | 134.5 | 105.0    | 10.2    | 0.4     | 6.2        | 10.3   | 207.9 | 340.0 |
| % Catch |       | 30.9     | 3.0     | 0.1     | 1.8        | 3.0    | 61.2  | 100.0 |

The catches of the different pelagic groups in the bottom trawl survey off Cameroon is described in Table 5.6. As expected, and similar to last year, most pelagic species had higher catch rates in the northern part of Cameroon, and in the Campo River estuary. However, the main concentrations were slightly deeper than last year. Carangids dominated the pelagic part of the catches on the inner shelf and on the mid shelf. Catches of carangids comprised 14%, of the total catch on the inner shelf, with an average catch of 40 kg/h. The catches declined to 10 kg/h on the mid shelf (if you exclude on catch with a carangid catch rate of 1884 kg/h). Clupeids had an average catch rate of 20 kg/h on the inner shelf and one large catch on the mid shelf. Hairtails, barracudas and scombrids had catch rates on the inner shelf of 11, 19 and 4 kg/h respectively while catches were insignificant on the midshelf. The dominating carangids in this depth region were *Selene dorsalis* and *Chloroscombrus chrysurus*. *Caranx hippos* and *Selar crumenophthalmus* were also frequent in the catches but gave low catch rates.

Very few pelagic species were found on the outer shelf and shelf break. Carangids had catch rates of 7.2 kg/h. Catches of all other pelagic species at these depths were insignificant. The carangid that dominated below 50 m depth was *Decapterus punctatus* who was found on 8 stations and gave an average catch of 0.9 kg/h.

**Table 5.6** Cameroon. Catch rates (kg/h) by main pelagic families in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m).

## a) Inner shelf, 0-50 m

| Sta. No | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other  | Total  |
|---------|-------|----------|-----------|-----------|-----------|------------|--------|--------|
| 933     | 27    | 33.7     | 39.0      | 0.8       | 28.8      | 6.9        | 134.7  | 243.9  |
| 934     | 21    | 13.0     | 27.2      | 28.8      | 86.0      | 2.3        | 129.3  | 286.6  |
| 940     | 50    | 0.0      | 11.3      | 3.9       | 0.0       | 5.9        | 80.2   | 101.2  |
| 941     | 32    | 29.9     | 65.9      | 1.5       | 11.0      | 6.0        | 56.4   | 170.8  |
| 942     | 22    | 37.0     | 106.7     | 0.0       | 5.5       | 1.3        | 42.3   | 192.9  |
| 943     | 35    | 8.7      | 62.4      | 0.3       | 1.6       | 138.6      | 207.4  | 419.0  |
| 944     | 20    | 95.7     | 162.0     | 3.2       | 14.2      | 29.7       | 150.8  | 455.7  |
| 946     | 24    | 10.0     | 13.2      | 2.3       | 1.0       | 12.1       | 53.5   | 92.0   |
| 950     | 37    | 0.0      | 7.7       | 0.0       | 0.0       | 5.3        | 55.3   | 68.3   |
| 951     | 22    | 32.4     | 9.5       | 4.5       | 33.6      | 24.1       | 118.2  | 222.3  |
| 954     | 24    | 0.1      | 23.3      | 12.9      | 0.0       | 5.2        | 193.8  | 235.3  |
| 955     | 38    | 1.2      | 34.6      | 2.3       | 0.0       | 45.3       | 177.0  | 260.4  |
| 963     | 47    | 0.0      | 6.0       | 1.2       | 0.0       | 1.4        | 142.6  | 151.2  |
| 964     | 25    | 0.0      | 54.0      | 0.0       | 0.0       | 0.0        | 1381.4 | 1435.5 |
| 965     | 26    | 53.7     | 9.0       | 2.5       | 1.4       | 11.2       | 40.3   | 118.0  |
| 966     | 47    | 0.0      | 0.3       | 0.0       | 0.0       | 0.0        | 114.0  | 114.4  |
| MEAN    | 31.1  | 19.7     | 39.5      | 4.0       | 11.4      | 18.5       | 192.3  | 285.5  |
| % Catch |       | 6.9      | 13.8      | 1.4       | 4.0       | 6.5        | 67.4   | 100.0  |

## b) Mid-shelf, 51-100 m

| Sta. No | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other | Total  |
|---------|-------|----------|-----------|-----------|-----------|------------|-------|--------|
| 932     | 56    | 0.0      | 51.4      | 0.0       | 0.0       | 9.5        | 83.6  | 144.5  |
| 935     | 54    | 0.0      | 11.3      | 0.3       | 2.2       | 0.0        | 37.3  | 51.1   |
| 936     | 69    | 0.0      | 0.1       | 0.0       | 0.0       | 0.0        | 384.6 | 384.7  |
| 937     | 59    | 0.0      | 17.3      | 0.0       | 0.0       | 2.2        | 101.9 | 121.4  |
| 947     | 54    | 319.3    | 1883.9    | 17.3      | 0.0       | 0.0        | 41.3  | 2261.8 |
| 949     | 66    | 0.0      | 1.1       | 0.0       | 0.0       | 0.0        | 73.0  | 74.1   |
| 956     | 72    | 0.0      | 3.1       | 0.0       | 0.0       | 1.0        | 41.4  | 45.5   |
| 960     | 90    | 0.0      | 0.9       | 0.0       | 0.0       | 0.0        | 113.3 | 114.2  |
| 962     | 66    | 0.0      | 2.4       | 0.0       | 0.0       | 0.0        | 91.2  | 93.5   |
| 967     | 83    | 0.0      | 1.1       | 1.6       | 0.0       | 0.0        | 135.6 | 138.2  |
| MEAN    | 66.9  | 31.9     | 197.3     | 1.9       | 0.2       | 1.3        | 110.3 | 342.9  |
| % Catch |       | 9.3      | 57.5      | 0.6       | 0.1       | 0.4        | 32.2  | 100.0  |

Catch rates of the commercially most important demersal fish groups in Cameroon are presented in Table 5.7 a, b and c. *Brachydeuterus auritus* was the most dominant of any single species on the inner shelf, this grunt had a catch rate of 20 kg/h, while other grunts in this region had an average catch rate of 2 kg/h. The group contributed 8% of the average catch between 0-50 m depth. However grunts were a lot less important on the shelf than last year. Croakers, especially *Pseudotolithus elongates* and *Pseudotolithus typus* were also abundant

with catch rates of 18.9 kg/h, or 7% of the catch. Seabreams, snappers and groupers were less abundant with 1.7, 2.8 and 0.4 kg/h.

*Brachydeuterus auritus* was dominant also on the midshelf with catch rates of 32 kg/h or 9% of the total catch. No other grunts were caught in this region. The second most dominant group was seabreams with mean catches of 21 kg/h. The two most dominant species in this group were *Dentex congolensis* and *D. angolensis*. Other groups were less important. Groupers contributed 3% of the total catch. The only frequently found species in this group was *Epinephelus aeneus*. Croakers contributed less than 1% and no snappers were found in this depth region.

On the outer shelf and shelf break seabreams were, with average catches of 104 kg/h or 31 % of the total catch, the only dominant group of the important commercial species. Groupers had insignificant catches while no catches were made of snappers, grunts and croakers. These findings are similar to last year. The dominant species of seabreams, *Dentex congolensis* and *D. angolensis*, were the same as between 50-100 m. The group of other species contributed 70% of the total catch. This group mainly consisted of *Ariomma bondi*, a presently non-commercial species that were abundant on the shelf break with average catch rates of 125 kg/h or 38% of the total.

**Table 5.7** Cameroon. Catch rates (kg/h) of valuable demersal species grouped by families in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf and slope (101-250).

| a) Inner shelf, 0-50 m |       |           |          |          |        |          |         |        |
|------------------------|-------|-----------|----------|----------|--------|----------|---------|--------|
| Sta. No                | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other   | Total  |
| 944                    | 20    | 0         | 0        | 0        | 33.8   | 88.68    | 333.18  | 455.7  |
| 934                    | 21    | 0         | 0        | 0        | 7.1    | 47.1     | 232.4   | 286.6  |
| 942                    | 22    | 0         | 0        | 0        | 8.22   | 2.04     | 182.6   | 192.9  |
| 951                    | 22    | 0.12      | 1.12     | 0        | 13.14  | 58.1     | 149.82  | 222.3  |
| 946                    | 24    | 0         | 0        | 0.08     | 11.54  | 12.2     | 68.21   | 92.0   |
| 954                    | 24    | 15.64     | 31.36    | 0        | 6.6    | 0.22     | 181.48  | 235.3  |
| 964                    | 25    | 15.57     | 92.23    | 2.14     | 0.74   | 0        | 1324.77 | 1435.5 |
| 965                    | 26    | 0         | 0        | 0        | 6.06   | 16.09    | 95.89   | 118.0  |
| 933                    | 27    | 0         | 0        | 0        | 37.92  | 38.24    | 167.7   | 243.9  |
| 941                    | 32    | 1.78      | 0        | 0        | 7.68   | 13.28    | 148.08  | 170.8  |
| 943                    | 35    | 0         | 0        | 0.26     | 58.04  | 26.6     | 334.14  | 419.0  |
| 950                    | 37    | 2.86      | 0        | 0.86     | 0.1    | 0        | 64.46   | 68.3   |
| 955                    | 38    | 29.64     | 5.12     | 11.92    | 21.26  | 0        | 192.48  | 260.4  |
| 963                    | 47    | 0         | 0        | 0.14     | 102.48 | 0        | 48.56   | 151.2  |
| 966                    | 47    | 2.08      | 0        | 2.2      | 0.22   | 0        | 109.86  | 114.4  |
| 940                    | 50    | 10.56     | 0        | 0.14     | 43.96  | 0        | 46.58   | 101.2  |
| MEAN                   | 31.1  | 4.9       | 8.1      | 1.1      | 22.4   | 18.9     | 230.0   | 285.5  |
| % Catch                |       | 1.7       | 2.8      | 0.4      | 7.9    | 6.6      | 80.6    | 100.0  |

## b) Mid-shelf, 51-100 m

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other   | Total  |
|---------|-------|-----------|----------|----------|--------|----------|---------|--------|
| 935     | 54    | 4.48      | 0        | 17.34    | 0.12   | 0        | 29.16   | 51.1   |
| 947     | 54    | 5.1       | 0        | 0        | 0      | 3.06     | 2253.72 | 2261.9 |
| 932     | 56    | 0         | 0        | 2.6      | 15.52  | 0.72     | 125.66  | 144.5  |
| 937     | 59    | 56.64     | 0        | 0.27     | 8.04   | 0        | 56.49   | 121.4  |
| 949     | 66    | 17.44     | 0        | 2.34     | 0      | 0        | 54.34   | 74.1   |
| 962     | 66    | 31.78     | 0        | 1.76     | 0      | 0        | 59.98   | 93.5   |
| 936     | 69    | 14.8      | 0        | 0        | 295.8  | 0        | 74.08   | 384.7  |
| 956     | 72    | 6.48      | 0        | 1.2      | 0.76   | 0        | 37.08   | 45.5   |
| 967     | 83    | 27.42     | 0        | 0        | 0      | 0        | 110.8   | 138.2  |
| 960     | 90    | 48.98     | 0        | 0.02     | 0      | 0        | 65.16   | 114.2  |
| MEAN    | 66.9  | 21.3      | 0.0      | 2.6      | 32.0   | 0.4      | 286.6   | 342.9  |
| % Catch |       | 6.2       | 0.0      | 0.7      | 9.3    | 0.1      | 83.6    | 100.0  |

## c) Outer shelf and slope, 101-250 m

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other  | Total |
|---------|-------|-----------|----------|----------|--------|----------|--------|-------|
| 961     | 103   | 68.14     | 0        | 7.96     | 0      | 0        | 301.82 | 377.9 |
| 945     | 105   | 40.97     | 0        | 0.02     | 0      | 0        | 147.85 | 188.8 |
| 957     | 119   | 138.8     | 0        | 0        | 0      | 0        | 240.26 | 379.1 |
| 948     | 121   | 237.68    | 0        | 0        | 0      | 0        | 212.16 | 449.8 |
| 959     | 126   | 132.1     | 0        | 0        | 0      | 0        | 127.22 | 259.3 |
| 958     | 233   | 3.87      | 0        | 0        | 0      | 0        | 381.42 | 385.3 |
| MEAN    | 134.5 | 103.6     | 0.0      | 1.3      | 0.0    | 0.0      | 235.1  | 340.0 |
| % Catch |       | 30.5      | 0.0      | 0.4      | 0.0    | 0.0      | 69.1   | 100.0 |

One trawl station was attempted at 610 m depth. The trawl was aborted after few minutes due to difficult trawling ground. The species richness in this trawl was anyway large and new attempts should be made to map the species diversity in the deeper waters.

### 5.3 São Tomé and Príncipe

São Tomé and Príncipe are volcanic islands generally characterized by narrow rocky shelves, and steep shelf breaks. Demersal fish were seen frequently on the echo sounder on the shelf break, but the rough bottom made trawling difficult. The area, and especially the island of São Tomé were also characterized with abundant seabirds and dolphins. Predators like these were almost absent off the mainland of Nigeria and Cameroon during the survey. The analyses are done for each island separately.

#### *Príncipe*

Demersal fish were seen frequently on the narrow shelf off Príncipe. Trawling was difficult because of the uneven bottom. Nine bottom trawl station was conducted, three at depths <50 m and 6 stations deeper than 50 m bottom depth. The species composition was similar in all trawls, and catch rates on the nine stations were relatively good compared with catch rates in Nigeria and Cameroon. The total average catch from all stations at Príncipe was 286 kg/h

Table 5.8. The main groups of species comprised of seabreams (Sparidae), the flying gurnards (Dactylopteridae), the red cornet fish (Fistulariidae), jackfish (Carangidae) and the cuttle fish (Sepiidae). On the inner shelf the flying gurnards, *Dactylopterus volitans* dominated the catch with a mean of 38 kg/h or 9% followed by the cuttle fish (*Sepia officinalis*) with 29 kg/hr or 7%. The mean depth of the catches was 42 m. The average trawl depth on the outer shelf was 72 meters, and the main groups of species encountered were similar to those obtained from the inner shelf apart from that the dominant species differed. The most dominant group in this depth region was sea bream (Sparidae) with a mean of 165 kg/hr or 79% of the total catch. The next in dominance was the flying gurnard with a mean of 13 kg/hr or 6%. The biomass was calculated in two stratum from 0 –50 m and from 50 –100 m based on the trawls within each stratum.

**Table 5.8** The main groups and species caught on the inner a) and outer shelf of Principe (0-50 m), catches in kg/h.

a) 0-50 m depth

| Sta. No | Depth | Flying   |          |            |           |        | Total  |        |
|---------|-------|----------|----------|------------|-----------|--------|--------|--------|
|         |       | Seabream | Gurnards | Red Cornet | Carangids | Squids |        | Others |
| 968     | 49    | 0.8      | 85.3     | 3.2        | 4.1       | 23.9   | 51.4   | 168.7  |
| 969     | 36    | 0        | 18.9     | 4.7        | 0         | 58.4   | 1019.3 | 1101.3 |
| 971     | 41    | 0.6      | 9.1      | 17.7       | 0         | 5.23   | 9.52   | 42.1   |
| MEAN    | 42    | 0.45     | 37.8     | 8.52       | 1.4       | 29.2   | 360    | 437.3  |
| % Catch |       | 0.1      | 8.6      | 1.9        | 0.3       | 6.7    | 82.3   | 100    |

b) 51 –100 m depth

| Sta. No | Depth | Flying   |          |            |           |        | Total |        |
|---------|-------|----------|----------|------------|-----------|--------|-------|--------|
|         |       | Seabream | Gurnards | Red Cornet | Carangids | Squids |       | Others |
| 970     | 62    | 13.9     | 5.7      | 1.7        | 4.6       | 19.7   | 13.2  | 120.8  |
| 972     | 77    | 378.2    | 41.0     | 1.5        | 0.2       | 2.9    | 24.1  | 524.8  |
| 974     | 51    | 1.9      | 6.9      | 5.6        | 0         | 10.7   | 13.4  | 89.5   |
| 975     | 75    | 120.6    | 5.2      | 1          | 6.2       | 9.0    | 15.5  | 232.4  |
| 976     | 86    | 287.3    | 7.4      | 4.1        | 0         | 3.1    | 46.1  | 433.9  |
| 977     | 83    | 189.6    | 9.2      | 2.8        | 0         | 1.2    | 6.9   | 292.6  |
| MEAN    | 72    | 165.2    | 12.6     | 2.8        | 1.8       | 7.7    | 19.9  | 210    |
| % Catch |       | 78.7     | 6        | 1.3        | 0.9       | 3.7    | 9.4   | 100    |

### São Tomé

Pelagic fish were seen only in small quantities on the echo sounder but some observations were made of surface schools. Two pelagic night hauls gave relatively large quantities of juvenile *Sardinella maderensis*, which most probably was spawned in the vicinity of the island earlier this year. Some flying fish of the species *Parexocetus brachypterus* was also observed on the surface while no tuna was observed during the survey of São Tomé. A total of six swept area trawl stations was carried out, two on the south – western side, and the four others on the east coast. No trawls were conducted on the steep northwestern side of the



island, as this is generally untrawlable. All trawl stations were between 50-100 m as the shelf generally is very steep and no trawl stations were possible either deeper or shallower than this.

The overall catch rate was on average 1065 kg/h. However, the variance is high due to one large catch 4400 kg of the snapper *Lutjanus fulgens*. Overall, the snappers dominated with 69% of the average catch 733 kg/h, while flying gurnard, *Dactylopterus volitans* had an average catch rate of 118 kg/h and 11% of the catch. Seabreams contributed with catch rates of 63 kg/h or 6% of the total catch. The most abundant seabreams were *Pagellus bellottii*, *Pagrus caeruleostictus* and *Boops boops*. Squid, and especially *Sepia officinalis hierredda* comprised 1 % of the catch, with average catch rates of 10 kg/h.

**Table 5.9** São Tomé. Catch rates (kg/h) of main demersal species grouped by families in swept-area bottom-trawl hauls on the shelf (0-100 m).

| Sta. No | Depth | Seabream | Snappers | Carangids | Flying Gurnards | Squids | Others | Total |
|---------|-------|----------|----------|-----------|-----------------|--------|--------|-------|
| 979     | 68    | 100      | 0        | 0         | 35              | 12     | 199    | 347   |
| 980     | 49    | 93       | 0        | 10        | 38              | 8      | 75     | 224   |
| 983     | 70    | 40       | 0        | 1         | 55              | 10     | 242    | 347   |
| 984     | 55    | 22       | 4393     | 4         | 16              | 14     | 93     | 4542  |
| 985     | 52    | 77       | 9        | 0         | 524             | 12     | 143    | 765   |
| 986     | 73    | 45       | 0        | 0         | 39              | 2      | 81     | 166   |
| MEAN    | 61.2  | 63       | 734      | 3         | 118             | 10     | 139    | 1065  |
| % Catch |       | 5.9      | 68.9     | 0.2       | 11              | 0.9    | 13     | 100   |

## 5.4 Gabon

The coast of Gabon is generally characterised by a relatively wide shelf with a shelf that breaks at around 100 m depth in the north and approximately 200 m depth in the south of the country. Cape Lopez divides the shelf into two separate shelf zones, which are separated by a strong temperature front during the winter. Because of this, fish communities are different between these regions and swept area analyses have consequently been carried out for each region separately.

### *North of Cape Lopez*

A total of 21 swept-area trawl hauls were made on the northern shelf of Gabon. Some trawl hauls were aborted after <30 min trawling because of either very uneven, hard bottom, or very soft bottom. However all bottom trawl hauls were of more than 10 min duration and accepted for swept area analyses.

Table 5.10 a, b, c and d shows catch rates by main groups for the inner (0-50 m), mid (51-100 m) and outer shelf (101-200 m) and slope (200-500 m) respectively. Pelagic species dominated in the inshore region with 78 kg/h or 34% of the catches. The second most

important group was demersal species which contributed with 59 kg/h and 23% of the catches. Cephalopods contributed with 15 kg/h (6.4%) while shrimps and sharks contributed with 3.8 kg/h and 1.1 kg/h respectively. The group of other species had a mean catch rate of 78 kg/h or 34% of the total. Overall catches were highest between 50 and 100 m depth with catch rates of 700 kg/h. Pelagic species contributed most to the catch with 311 kg/h and 45%, while demersal species contributed with 174 kg/h and 25%. The group of other species gave 201 kg/h and 29% of the catches. Cephalopods, mainly *Sepia officinalis hierredda* had catch rates of 11 kg/h while no shrimps, and no sharks and rays were caught. The catch between 101 –200 m was dominated by demersal species with catch rates of 66 kg/h or 13%. Cephalopods increased in abundance to 21 kg/h or 4% of the catch while shrimps and sharks contributed little to the overall catch. Shrimps became far more important in deeper waters, >200 m depth where they contributed with 22 kg/h and 10% of the overall catch. The most dominant species were *Parapenaeus longirostris* and *Nematocarcinus africanus*, which contributed the main part of the shrimps in deep waters. Catches of sharks also increased in deeper waters to 13 kg/h, and contributed 6% to the overall catch, while squids, mainly *Illex coindetii* and *Todarodes sagittatus* had the same catch rate as sharks, but declined in abundance compared to catches between 100-200 m. Catch rates of all other species groups decreased.

**Table 5.10** Gabon, north of Cape Lopez. Catch rates (kg/h) by main groups in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf (101-200 m) and slope (201-500 m).

a) Inner shelf (0-50 m)

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other  | Total |
|---------|-------|----------|---------|---------|------------|--------|--------|-------|
| 229     | 46    | 27.72    | 0       | 14.72   | 12.84      | 0      | 61.92  | 117.2 |
| 230     | 22    | 1.62     | 14.34   | 0       | 8.08       | 0      | 26.78  | 50.8  |
| 231     | 34    | 95.35    | 18.02   | 0.7     | 20.38      | 0      | 82.14  | 216.6 |
| 237     | 45    | 20.02    | 17.78   | 16.13   | 12.19      | 0      | 54.88  | 121.0 |
| 238     | 23    | 21.18    | 21.52   | 0.32    | 16.22      | 0      | 42.66  | 101.9 |
| 239     | 29    | 32.46    | 0.26    | 1.12    | 1.5        | 0      | 17.04  | 52.4  |
| 246     | 48    | 85.8     | 316.4   | 2.32    | 22         | 11.48  | 68.5   | 506.5 |
| 247     | 21    | 34.26    | 56.58   | 2.64    | 4.08       | 0      | 161.28 | 258.8 |
| 248     | 33    | 90.67    | 0.42    | 0.42    | 11.94      | 0      | 105.93 | 209.4 |
| 249     | 41    | 120.06   | 329.83  | 0       | 37.2       | 0      | 157.82 | 644.9 |
| MEAN    | 34.2  | 52.9     | 77.5    | 3.8     | 14.6       | 1.1    | 77.9   | 228.0 |
| % Catch |       | 23.2     | 34.0    | 1.7     | 6.4        | 0.5    | 34.2   | 100.0 |

## b) Mid-shelf 51-100

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total  |
|---------|-------|----------|---------|---------|------------|--------|-------|--------|
| 227     | 62    | 114.5    | 117.5   | 0.0     | 1.7        | 0.0    | 277.9 | 511.5  |
| 228     | 66    | 167.3    | 50.8    | 0.0     | 5.2        | 0.7    | 174.4 | 398.3  |
| 236     | 69    | 131.3    | 971.1   | 0.0     | 14.7       | 0.0    | 414.9 | 1532.1 |
| 240     | 55    | 109.2    | 81.4    | 1.0     | 29.0       | 0.0    | 104.8 | 325.5  |
| 245     | 73    | 347.0    | 335.0   | 0.0     | 6.2        | 0.0    | 34.7  | 722.9  |
| MEAN    | 65    | 173.9    | 311.2   | 0.2     | 11.4       | 0.1    | 201.4 | 698.1  |
| % Catch |       | 24.9     | 44.6    | 0.0     | 1.6        | 0.0    | 28.8  | 100.0  |

## c) Outer shelf (101-200 m)

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
|---------|-------|----------|---------|---------|------------|--------|-------|-------|
| 232     | 123   | 94.8     | 0.0     | 3.5     | 18.2       | 6.5    | 129.6 | 252.5 |
| 244     | 130   | 37.3     | 0.0     | 0.0     | 22.8       | 0.0    | 682.2 | 742.3 |
| MEAN    | 127   | 66.1     | 0.0     | 1.7     | 20.5       | 3.2    | 405.9 | 497.4 |
| % Catch |       | 13.3     | 0.0     | 0.3     | 4.1        | 0.7    | 81.6  | 100.0 |

## d) Slope (201-500 m)

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
|---------|-------|----------|---------|---------|------------|--------|-------|-------|
| 233     | 259   | 61.0     | 0.0     | 10.5    | 7.8        | 3.4    | 106.9 | 189.6 |
| 235     | 232   | 0.4      | 0.0     | 0.6     | 25.9       | 37.6   | 238.6 | 303.1 |
| 241     | 318   | 0.0      | 0.0     | 39.8    | 10.4       | 12.1   | 169.1 | 231.4 |
| 250     | 262   | 21.9     | 0.0     | 36.0    | 8.3        | 0.2    | 93.9  | 160.3 |
| MEAN    | 268   | 20.8     | 0.0     | 21.7    | 13.1       | 13.3   | 152.1 | 221.1 |
| % Catch |       | 9.4      | 0.0     | 9.8     | 5.9        | 6.0    | 68.8  | 100.0 |

Pelagic species were only abundant on the shelf between 0-100 m depth. Clupeids and carangids were equally important with catch rates of 37 kg/h (16%) and 35 kg/h (15%) respectively between 0-50 m depth and 153 kg/h (22%) and 156 kg/h (22%) respectively at 51-100 m depth. The dominant clupeids were *Sardinella aurita* and *S. maderensis*. Only two catches of *S. maderensis* were made, both in shallow waters, while *S. aurita* were caught in nine trawls, all deeper than >30 m depth. The carangids were separated in two different communities, one in shallow water, and one in deeper water mainly >50 m depth. The inshore region was dominated by *Selene dorsalis*, *Caranx crysos* and *Caranx senegallus* while the deeper region was dominated by *Decapterus punctatus* and to a lesser extent *Selar crumenophthalmus*.

**Table 5.11** Gabon, north of Cape Lopez. Catch rates (kg/h) by main pelagic families in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m).

a) inner shelf (0-50 m)

| Sta. No | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other  | Total |
|---------|-------|----------|-----------|-----------|-----------|------------|--------|-------|
| 229     | 46    | 0        | 0         | 0         | 0         | 0          | 117.2  | 117.2 |
| 230     | 22    | 0        | 0.02      | 12.84     | 0         | 1.48       | 36.48  | 50.8  |
| 231     | 34    | 0        | 2.24      | 0         | 0         | 15.78      | 198.57 | 216.6 |
| 237     | 45    | 6.04     | 11.74     | 0         | 0         | 0          | 103.22 | 121.0 |
| 238     | 23    | 1.48     | 15.9      | 0         | 0         | 4.14       | 80.38  | 101.9 |
| 239     | 29    | 0        | 0.26      | 0         | 0         | 0          | 52.12  | 52.4  |
| 246     | 48    | 183.4    | 133       | 0         | 0         | 0          | 190.1  | 506.5 |
| 247     | 21    | 1.38     | 36.06     | 7.5       | 0         | 11.64      | 202.26 | 258.8 |
| 248     | 33    | 0.05     | 0.37      | 0         | 0         | 0          | 208.96 | 209.4 |
| 249     | 41    | 176.74   | 148.63    | 4.46      | 0         | 0          | 315.08 | 644.9 |
| MEAN    | 34.2  | 36.9     | 34.8      | 2.5       | 0.0       | 3.3        | 150.4  | 228.0 |
| % Catch |       | 16.2     | 15.3      | 1.1       | 0.0       | 1.4        | 66.0   | 100.0 |

b) mid shelf (51-100 m)

| Sta. No | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other  | Total  |
|---------|-------|----------|-----------|-----------|-----------|------------|--------|--------|
| 227     | 62    | 6.81     | 110.66    | 0         | 0         | 0          | 394.05 | 511.5  |
| 228     | 66    | 36.02    | 14.74     | 0         | 0         | 0          | 347.58 | 398.3  |
| 236     | 69    | 482.68   | 476.52    | 11.88     | 0         | 0          | 561    | 1532.1 |
| 240     | 55    | 4.14     | 77.3      | 0         | 0         | 0          | 244.04 | 325.5  |
| 245     | 73    | 233.22   | 101.78    | 0         | 0         | 0          | 387.93 | 722.9  |
| MEAN    | 65.0  | 152.6    | 156.2     | 2.4       | 0.0       | 0.0        | 386.9  | 698.1  |
| % Catch |       | 21.9     | 22.4      | 0.3       | 0.0       | 0.0        | 55.4   | 100.0  |

The valuable demersal species, Seabreams, exclusive *Boops boops*, Snappers, Groupers, Grunts (exclusive *Brachydeuterus auritus*) and Croakers were caught in low abundance on the inner shelf (48 kg/h) and outer shelf (65 kg/h), and medium abundance at mid shelf (144 kg/h). Seabreams dominated in all depth regions. On the inner shelf seabreams contributed 13% to the total catch with average catch rates of 29 kg/h, the most important species were *Pagellus bellottii* and *Pagrus caeruleostictus*. Snappers, represented by *Lutjanus fulgens*, contributed with 5% of the total catch and 11 kg/h while groupers, mainly *Epinephelus aeneus* and *Serranus accraensis* had average catches of 8 kg/h (3%). The seabreams on the midshelf was dominated by *Dentex angolensis* and *Dentex congoensis*. The average catches of this group was 128 kg/h and 18% of the total. Only one catch of Snappers was made, and this gave average catches of 4 kg/h while groupers, mainly *Epinephelus aeneus*, *Epinephelus goreensis*, *Serranus accraensis* and *Serranus cabrilla* had average catches of 12 kg/h or 2% of the total catch. Only seabreams, *Dentex angolensis* and *Dentex congoensis*, were found deeper than 100 m. Catch rates were 65 kg/h or 13% of the catch.

**Table 5.12** Gabon, north of Cape Lopez. Catch rates (kg/h) of valuable demersal species grouped by families in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf and slope (101-250).

a) inner shelf (0-50 m)

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other  | Total |
|---------|-------|-----------|----------|----------|--------|----------|--------|-------|
| 229     | 46    | 15.4      | 0        | 11.72    | 0      | 0        | 90.08  | 117.2 |
| 230     | 22    | 1.3       | 0        | 0.32     | 0      | 0        | 49.2   | 50.8  |
| 231     | 34    | 91.93     | 0        | 1.36     | 0      | 0        | 123.3  | 216.6 |
| 237     | 45    | 9.71      | 0        | 9.41     | 0      | 0        | 101.88 | 121.0 |
| 238     | 23    | 1.46      | 0        | 2.52     | 0      | 0        | 97.92  | 101.9 |
| 239     | 29    | 19.72     | 4.18     | 1.46     | 0      | 0        | 27.02  | 52.4  |
| 246     | 48    | 28.3      | 0        | 40.28    | 0      | 0        | 437.92 | 506.5 |
| 247     | 21    | 16.68     | 6.12     | 5.46     | 0      | 0        | 230.58 | 258.8 |
| 248     | 33    | 85.83     | 0        | 3.54     | 0      | 0        | 120.01 | 209.4 |
| 249     | 41    | 17.23     | 102.4    | 0.34     | 0      | 0        | 524.94 | 644.9 |
| MEAN    | 34.2  | 28.8      | 11.3     | 7.6      | 0.0    | 0.0      | 180.3  | 228.0 |
| % Catch |       | 12.6      | 4.9      | 3.4      | 0.0    | 0.0      | 79.1   | 100.0 |

b) mid shelf (51-100 m)

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other   | Total  |
|---------|-------|-----------|----------|----------|--------|----------|---------|--------|
| 245     | 73    | 152.11    | 18.56    | 32.11    | 0      | 0        | 520.15  | 722.9  |
| 240     | 55    | 87.14     | 0        | 20.62    | 0      | 0        | 217.72  | 325.5  |
| 236     | 69    | 127.82    | 0        | 0        | 0      | 0        | 1404.26 | 1532.1 |
| 228     | 66    | 167.26    | 0        | 0        | 0      | 0        | 231.08  | 398.3  |
| 227     | 62    | 105.03    | 0        | 8.09     | 0      | 0        | 398.4   | 511.5  |
| MEAN    | 65.0  | 127.9     | 3.7      | 12.2     | 0.0    | 0.0      | 554.3   | 698.1  |
| % Catch |       | 18.3      | 0.5      | 1.7      | 0.0    | 0.0      | 79.4    | 100.0  |

c) outer shelf and slope (101-200)

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other | Total |
|---------|-------|-----------|----------|----------|--------|----------|-------|-------|
| 232     | 123   | 92.84     | 0        | 0.08     | 0      | 0        | 159.6 | 252.5 |
| 244     | 130   | 36.96     | 0        | 0.36     | 0      | 0        | 705   | 742.3 |
| MEAN    | 126.5 | 64.9      | 0.0      | 0.2      | 0.0    | 0.0      | 432.3 | 497.4 |
| % Catch |       | 13.0      | 0.0      | 0.0      | 0.0    | 0.0      | 86.9  | 100.0 |

*South of Cape Lopez*

A total of 56 swept-area trawl hauls were accepted on the southern shelf of Gabon. One trawl where the trawl gear was damaged, were excluded from the analyses.

Table 5.13 a, b, c and d shows catch rates by main groups for the inner (0-50 m), mid (51-100 m) and outer shelf (101-200 m) and slope (200 –500 m) respectively. The overall catch rates were highest on the inner shelf between 0-50 m depth with 2876 kg/h. This was a tenfold increase compared to the inner shelf in the northern part of Gabon. Pelagic species contributed most of this catch with 1649 kg/h 56% of the total. Of this *Sardinella aurita* was by far the most dominant species. Other parts of the shelf and slope had similar catch rates to what was found in the north. The overall catch rates per depth region were 470 kg/h (51-100 m), 376 kg/h (101-200 m) and 356 kg/h (201-500 m). Demersal species were, with catches of 761 kg/h and 27% of the catch in this depth region, second to the pelagic species on the inner shelf. Shrimps, cephalopods and sharks were insignificant in the catches. Demersal species were most dominant between 51 –100 m with catch rates of 144 kg/ and 31% of the catches. Pelagic species had catch rates of 129 kg/h and 28% of the overall catch. Cephalopods (*Sepia officinalis hierredda* and *Alloteuthis Africana*) and sharks contributed with 61 kg/h (13%) and 11 kg/h (2%) respectively. No shrimps were found in the region while the group of other species had a mean catch rate of 124 kg/h and 26% of the catch. The outer shelf and slope was dominated by the group of other species with 192 kg/h and 51% of the catch, followed by the group of demersal species with mean catch rates of 128 kg/h and 34% of the catch. Pelagic species contributed with 30 kg/h or 8% of the catch while Cephalopods and sharks, with catch rates of 13 and 12 kg/h respectively, contributed 3% to the catches in this region. No significant quantities of shrimps were found in this depth region. The catch rate stayed the same in the region between 201-500 m as between 101-200 m, but the catch composition changed. The group of the species were still the most abundant with 240 kg/h and 67% of the overall catch, but shrimps became the most important group with catches of 49 kg/h or 14% of the catch. This group was dominated by *Nematocarcinus africanus*, *Plesionika martia* and *Parapenaeus longirostris* other species were insignificant in the catches. Catches of sharks were 14 kg/h (4%) while cephalopods mainly *Illex coindetii* gave catches of 8 kg/h (2%). Two trawl stations deeper than 500 m bottom depth gave lower catch rates than in the other depth zones. Catches were mainly dominated by shrimps with mean catch rates of 90 kg/h and 60% of the catch. One catch consisted of *Nematocarcinus africanus*, while the other catch was *Plesionika martia*. The group of other species contributed with 45 kg/h and 30% of the catch. Other species were insignificant in the catches.

**Table 5.13** Gabon, south of Cape Lopez. Catch rates (kg/h) by main pelagic families in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf (101-200 m), slope (201-500 m) and e) Deep water (>500 m).

| a) Inner shelf (0-50 m) |       |          |         |         |            |        |       |       |
|-------------------------|-------|----------|---------|---------|------------|--------|-------|-------|
| Sta. No                 | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
| 253                     | 26    | 1988     | 745     | 15      | 9          | 0      | 46    | 2802  |
| 254                     | 45    | 50       | 170     | 0       | 6          | 0      | 72    | 297   |
| 260                     | 45    | 817      | 50      | 0       | 15         | 21     | 58    | 961   |
| 261                     | 20    | 576      | 48      | 0       | 24         | 0      | 50    | 698   |
| 262                     | 37    | 265      | 25      | 1       | 197        | 0      | 49    | 536   |
| 268                     | 38    | 2333     | 13891   | 22      | 0          | 0      | 8920  | 25165 |
| 269                     | 19    | 1757     | 1431    | 9       | 0          | 0      | 24    | 3221  |
| 270                     | 39    | 348      | 44      | 0       | 22         | 0      | 60    | 475   |
| 275                     | 40    | 557      | 40      | 1       | 13         | 0      | 29    | 640   |
| 276                     | 20    | 1138     | 233     | 2       | 0          | 0      | 14    | 1387  |
| 277                     | 38    | 308      | 343     | 0       | 114        | 0      | 68    | 834   |
| 283                     | 47    | 1274     | 2405    | 0       | 44         | 0      | 100   | 3824  |
| 284                     | 20    | 1510     | 343     | 0       | 24         | 26     | 19    | 1922  |
| 292                     | 42    | 569      | 11690   | 0       | 0          | 0      | 0     | 12259 |
| 293                     | 23    | 593      | 580     | 0       | 0          | 10     | 44    | 1227  |
| 294                     | 46    | 335      | 243     | 0       | 24         | 0      | 9     | 611   |
| 300                     | 40    | 378      | 23      | 0       | 9          | 0      | 11    | 420   |
| 301                     | 26    | 59       | 146     | 22      | 25         | 0      | 19    | 270   |
| 302                     | 28    | 201      | 67      | 7       | 0          | 0      | 18    | 293   |
| 303                     | 47    | 131      | 458     | 0       | 20         | 7      | 91    | 706   |
| 285                     | 50    | 790      | 904     | 0       | 19         | 15     | 116   | 1844  |
| MEAN                    | 35    | 761      | 1613    | 4       | 27         | 4      | 467   | 2876  |
| % Catch                 |       | 26.5     | 56.1    | 0.1     | 0.9        | 0.1    | 16.3  | 100   |

| b) Mid-shelf (51-100 m) |       |          |         |         |            |        |       |       |
|-------------------------|-------|----------|---------|---------|------------|--------|-------|-------|
| Sta. No                 | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
| 259                     | 70    | 36       | 62      | 0       | 50         | 7      | 43    | 197   |
| 263                     | 62    | 10       | 1       | 0       | 16         | 0      | 189   | 217   |
| 267                     | 69    | 444      | 31      | 0       | 245        | 26     | 286   | 1033  |
| 271                     | 56    | 230      | 7       | 0       | 14         | 15     | 126   | 392   |
| 274                     | 92    | 63       | 0       | 0       | 8          | 7      | 69    | 148   |
| 278                     | 53    | 370      | 672     | 0       | 38         | 6      | 70    | 1156  |
| 282                     | 90    | 57       | 41      | 0       | 42         | 11     | 47    | 197   |
| 286                     | 92    | 10       | 52      | 0       | 71         | 5      | 106   | 245   |
| 291                     | 96    | 23       | 0       | 0       | 20         | 14     | 163   | 220   |
| 295                     | 64    | 158      | 6       | 0       | 72         | 4      | 229   | 469   |
| 299                     | 84    | 26       | 25      | 0       | 22         | 11     | 61    | 145   |
| 304                     | 68    | 245      | 7       | 0       | 61         | 19     | 113   | 445   |
| 308                     | 90    | 203      | 774     | 0       | 141        | 19     | 108   | 1246  |
| MEAN                    | 76    | 144      | 129     | 0       | 61         | 11     | 124   | 470   |
| % Catch                 |       | 30.7     | 27.5    | 0.0     | 13.1       | 2.4    | 26.4  | 100   |

## c) Outer shelf and slope (101-200)

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
|---------|-------|----------|---------|---------|------------|--------|-------|-------|
| 252     | 113   | 244      | 294     | 1       | 4          | 26     | 101   | 672   |
| 255     | 121   | 32       | 4       | 3       | 10         | 0      | 75    | 123   |
| 257     | 103   | 6        | 3       | 5       | 10         | 0      | 35    | 59    |
| 258     | 110   | 331      | 17      | 0       | 7          | 21     | 257   | 634   |
| 266     | 155   | 19       | 31      | 0       | 4          | 16     | 243   | 312   |
| 272     | 108   | 71       | 11      | 0       | 27         | 0      | 62    | 171   |
| 279     | 103   | 28       | 7       | 0       | 28         | 39     | 279   | 381   |
| 281     | 160   | 85       | 0       | 0       | 34         | 30     | 321   | 470   |
| 287     | 175   | 255      | 0       | 2       | 2          | 19     | 467   | 745   |
| 290     | 182   | 154      | 4       | 0       | 2          | 0      | 233   | 392   |
| 296     | 176   | 267      | 3       | 2       | 26         | 0      | 232   | 531   |
| 298     | 165   | 29       | 14      | 0       | 5          | 0      | 62    | 110   |
| 307     | 176   | 149      | 2       | 0       | 5          | 0      | 131   | 286   |
| MEAN    | 142   | 128      | 30      | 1       | 13         | 12     | 192   | 376   |
| % Catch |       | 34       | 8       | 0       | 3          | 3      | 51    | 100   |

## d) Slope (201-500 m)

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
|---------|-------|----------|---------|---------|------------|--------|-------|-------|
| 265     | 283   | 3.0      | 5.9     | 4.0     | 4.5        | 6.7    | 219.8 | 244.0 |
| 273     | 485   | 43.1     | 6.5     | 234.4   | 0.0        | 0.0    | 143.8 | 427.8 |
| 280     | 304   | 7.1      | 2.6     | 13.1    | 6.8        | 8.9    | 172.9 | 211.4 |
| 288     | 338   | 26.6     | 13.0    | 16.2    | 6.9        | 5.6    | 314.0 | 382.3 |
| 289     | 367   | 42.1     | 20.3    | 30.6    | 2.9        | 49.8   | 191.4 | 337.1 |
| 297     | 345   | 64.7     | 6.7     | 16.5    | 8.2        | 13.2   | 246.4 | 355.7 |
| 305     | 315   | 72.8     | 1.1     | 30.7    | 24.9       | 16.5   | 390.6 | 536.6 |
| MEAN    | 348   | 37       | 8       | 49      | 8          | 14     | 240   | 356   |
| % Catch |       | 10       | 2       | 14      | 2          | 4      | 67    | 100   |

## e) Deep water &gt;500 m

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
|---------|-------|----------|---------|---------|------------|--------|-------|-------|
| 264     | 559   | 2        | 0       | 74      | 5          | 0      | 37    | 118   |
| 306     | 571   | 6        | 5       | 106     | 1          | 8      | 54    | 180   |
| MEAN    | 565   | 4        | 3       | 90      | 3          | 4      | 45    | 149   |
| % Catch |       | 3        | 2       | 60      | 2          | 3      | 30    | 100   |

Pelagic species were frequent in the catches (Table 5.14) in the two depth zones inshore of 100 m depth. Clupeids were most abundant on the inner shelf with mean catch rate of 1069 kg/h contributing 37% to the catches in this depth region, and *Sardinella aurita* was the only dominant species in the catches but some *S. maderensis* were found close to Cape Lopez and some *Ilisia africana* near a river outlet in the southern part of the survey area. Carangids was the second most important group with a mean catch of 500 kg/h or 17% of the catches the dominant species, in order of abundance, were *Decapterus punctatus*, *Trachurus trecae*, *Selene dorsalis* and *Selar crumenophthalmus*. Barracudas, scombrids and hairtails were not



important in the catches with 20, 14, and 9 kg/h respectively. Catches of pelagic species changed between 50 and 100 m depth, and clupeids, that dominated further inshore, became insignificant in the catches. The dominating group here was carangids (63 kg/h, 14%), followed by scombrids (54 kg/h, 12%) and hairtails (11 kg/h, 2%). Barracudas were not caught in this depth region.

**Table 5.14** Gabon, south of Cape Lopez. Catch rates (kg/h) by main pelagic groups in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf (101-200 m) and slope (201-500 m).

| a) Inner shelf (0-50 m) |       |          |           |           |           |            |       |       |
|-------------------------|-------|----------|-----------|-----------|-----------|------------|-------|-------|
| Sta. No                 | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other | Total |
| 253                     | 26    | 165      | 579       | 0         | 0         | 0          | 2057  | 2802  |
| 254                     | 45    | 4        | 166       | 1         | 0         | 0          | 127   | 297   |
| 260                     | 45    | 23       | 27        | 0         | 0         | 0          | 910   | 961   |
| 261                     | 20    | 0        | 24        | 0         | 9         | 14         | 650   | 698   |
| 262                     | 37    | 8        | 13        | 4         | 0         | 0          | 511   | 536   |
| 268                     | 38    | 5350     | 8494      | 25        | 0         | 22         | 11274 | 25165 |
| 269                     | 19    | 1134     | 138       | 0         | 0         | 159        | 1790  | 3221  |
| 270                     | 39    | 1        | 31        | 0         | 0         | 12         | 431   | 475   |
| 275                     | 40    | 0        | 1         | 5         | 0         | 34         | 599   | 640   |
| 276                     | 20    | 1        | 104       | 24        | 0         | 104        | 1154  | 1387  |
| 277                     | 38    | 319      | 1         | 22        | 0         | 0          | 491   | 834   |
| 283                     | 47    | 2143     | 118       | 144       | 0         | 0          | 1419  | 3824  |
| 284                     | 20    | 132      | 76        | 0         | 65        | 70         | 1579  | 1922  |
| 292                     | 42    | 11613    | 45        | 32        | 0         | 0          | 569   | 12259 |
| 293                     | 23    | 556      | 1         | 0         | 18        | 5          | 647   | 1227  |
| 294                     | 46    | 229      | 14        | 1         | 0         | 0          | 368   | 611   |
| 300                     | 40    | 0        | 20        | 0         | 3         | 0          | 398   | 420   |
| 301                     | 26    | 114      | 1         | 0         | 30        | 0          | 124   | 270   |
| 302                     | 28    | 47       | 0         | 0         | 16        | 3          | 227   | 293   |
| 303                     | 47    | 281      | 121       | 2         | 54        | 1          | 248   | 706   |
| 285                     | 50    | 334      | 535       | 36        | 0         | 0          | 939   | 1844  |
| MEAN                    | 35    | 1069     | 500       | 14        | 9         | 20         | 1262  | 2876  |
| % Catch                 |       | 37.2     | 17.4      | 0.5       | 0.3       | 0.7        | 43.9  | 100   |

## b) Mid shelf (51-100 m)

| Sta. No | Depth | Clupeids | Carangids | Scombrids | Hairtails | Barracudas | Other | Total |
|---------|-------|----------|-----------|-----------|-----------|------------|-------|-------|
| 259     | 70    | 0        | 62        | 0         | 0         | 0          | 135   | 197   |
| 263     | 62    | 1        | 0         | 0         | 0         | 0          | 215   | 217   |
| 267     | 69    | 0        | 31        | 0         | 0         | 0          | 1002  | 1033  |
| 271     | 56    | 0        | 2         | 0         | 0         | 5          | 385   | 392   |
| 274     | 92    | 0        | 0         | 0         | 0         | 0          | 148   | 148   |
| 278     | 53    | 0        | 6         | 666       | 0         | 0          | 484   | 1156  |
| 282     | 90    | 0        | 6         | 0         | 35        | 0          | 156   | 197   |
| 286     | 92    | 0        | 14        | 0         | 38        | 0          | 192   | 245   |
| 291     | 96    | 0        | 0         | 0         | 0         | 0          | 220   | 220   |
| 295     | 64    | 0        | 6         | 0         | 0         | 0          | 464   | 469   |
| 299     | 84    | 0        | 15        | 8         | 1         | 0          | 121   | 145   |
| 304     | 68    | 0        | 7         | 0         | 0         | 0          | 438   | 445   |
| 308     | 90    | 0        | 675       | 29        | 70        | 0          | 471   | 1246  |
| MEAN    | 76    | 0        | 63        | 54        | 11        | 0          | 341   | 470   |
| % Catch |       | 0.0      | 13.5      | 11.5      | 2.4       | 0.1        | 72.5  | 100   |

The valuable demersal species, seabreams, exclusive *Boops boops*, snappers, groupers, grunts (exclusive *Brachydeuterus auritus*) and croakers were more frequent in the catches south of Cape Lopez (Table 5.15), than in the northern region. In general catches on the inner shelf were the highest with 761 kg/h while the mid shelf and outer shelf had medium abundance (144 kg/h, and 128 kg/h respectively), while a catch rate of 37 kg/h of valuable demersal species was found on the slope. Seabreams dominated in all depth regions. On the inner shelf seabreams gave average catch rates of 188 kg/h, 6.5% of the total catch. The percentage was low due to very high catches of pelagic species in this depth region. The most important species were the same as in the northern region of Gabon, namely *Pagellus bellottii* and *Pagrus caeruleostictus*. Snappers, mainly *Lutjanus fulgens*, contributed with 1% of the total catch and 30 kg/h while groupers, mainly *Epinephelus aeneus*, had average catches of 21 kg/h (1%), Croakers had average catches of 20 kg/ and 1% of the average catch while grunts contributed with 12 kg/h. The seabreams on the midshelf was dominated by *Pagellus bellottii* together with *Dentex angolensis* and *Dentex congoensis*. The average catches of this group was 120 kg/h and 26% of the total. Other groups were insignificant in the catches. Catches on the outer shelf and shelf break between 100 and 200 m depth were also dominated by Seabreams. *Dentex congoensis* and *Dentex angolensis*, were the most abundant species.

**Table 5.15** Gabon, South of Cape Lopez. Catch rates (kg/h) by valuable demersal species swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf (101-200 m) and slope (201-500 m).

a) inner shelf (0-50 m)

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other | Total |
|---------|-------|-----------|----------|----------|--------|----------|-------|-------|
| 301     | 26    | 1         | 0        | 0        | 1      | 50       | 217   | 270   |
| 302     | 28    | 14        | 0        | 6        | 6      | 36       | 231   | 293   |
| 254     | 45    | 50        | 0        | 0        | 0      | 0        | 247   | 297   |
| 300     | 40    | 43        | 0        | 0        | 14     | 25       | 338   | 420   |
| 270     | 39    | 186       | 30       | 2        | 90     | 40       | 128   | 475   |
| 262     | 37    | 263       | 0        | 0        | 0      | 0        | 274   | 536   |
| 294     | 46    | 154       | 16       | 17       | 62     | 55       | 308   | 611   |
| 275     | 40    | 278       | 0        | 0        | 1      | 0        | 360   | 640   |
| 261     | 20    | 17        | 0        | 0        | 0      | 9        | 672   | 698   |
| 303     | 47    | 9         | 0        | 0        | 7      | 13       | 677   | 706   |
| 277     | 38    | 260       | 0        | 0        | 7      | 4        | 563   | 834   |
| 260     | 45    | 215       | 483      | 0        | 8      | 0        | 255   | 961   |
| 293     | 23    | 83        | 10       | 0        | 35     | 33       | 1066  | 1227  |
| 276     | 20    | 45        | 0        | 0        | 0      | 0        | 1341  | 1387  |
| 284     | 20    | 37        | 0        | 0        | 11     | 144      | 1731  | 1922  |
| 253     | 26    | 89        | 0        | 11       | 0      | 0        | 2701  | 2802  |
| 269     | 19    | 21        | 16       | 0        | 0      | 0        | 3184  | 3221  |
| 283     | 47    | 1248      | 0        | 0        | 0      | 0        | 2575  | 3824  |
| 292     | 42    | 45        | 0        | 16       | 0      | 0        | 12197 | 12259 |
| 268     | 38    | 378       | 69       | 397      | 0      | 0        | 24320 | 25165 |
| 285     | 53    | 513       | 0        | 0        | 17     | 7        | 1307  | 1844  |
| MEAN    | 35    | 188       | 30       | 21       | 12     | 20       | 2604  | 2876  |
| % Catch |       | 6.5       | 1.0      | 0.7      | 0.4    | 0.7      | 90.6  | 100   |

## b) mid shelf (51-100 m)

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other | Total |
|---------|-------|-----------|----------|----------|--------|----------|-------|-------|
| 259     | 70    | 36        | 0        | 0        | 0      | 0        | 162   | 197   |
| 263     | 62    | 10        | 0        | 0        | 0      | 0        | 206   | 217   |
| 267     | 69    | 296       | 0        | 0        | 0      | 0        | 737   | 1033  |
| 271     | 56    | 214       | 0        | 0        | 0      | 11       | 168   | 392   |
| 274     | 92    | 60        | 0        | 0        | 0      | 2        | 86    | 148   |
| 278     | 53    | 334       | 0        | 35       | 0      | 1        | 786   | 1156  |
| 282     | 90    | 45        | 0        | 0        | 0      | 0        | 151   | 197   |
| 286     | 92    | 10        | 0        | 0        | 0      | 0        | 235   | 245   |
| 291     | 96    | 21        | 0        | 0        | 0      | 0        | 199   | 220   |
| 295     | 64    | 130       | 11       | 4        | 2      | 10       | 312   | 469   |
| 299     | 84    | 24        | 0        | 1        | 0      | 0        | 120   | 145   |
| 304     | 68    | 205       | 0        | 28       | 0      | 7        | 204   | 445   |
| 308     | 90    | 172       | 0        | 0        | 0      | 14       | 1060  | 1246  |
| MEAN    | 76    | 120       | 1        | 5        | 0      | 3        | 340   | 470   |
| % Catch |       | 25.5      | 0.2      | 1.1      | 0.0    | 0.7      | 72.5  | 100   |

## c) outer shelf and slope (101-200 m)

| Sta. No | Depth | Seabreams | Snappers | Groupers | Grunts | Croakers | Other | Total |
|---------|-------|-----------|----------|----------|--------|----------|-------|-------|
| 252     | 113   | 115       | 0        | 33       | 0      | 30       | 493   | 672   |
| 255     | 121   | 31        | 0        | 0        | 0      | 1        | 91    | 123   |
| 257     | 103   | 5         | 0        | 0        | 0      | 1        | 53    | 59    |
| 258     | 110   | 115       | 0        | 0        | 0      | 9        | 510   | 634   |
| 266     | 155   | 10        | 0        | 0        | 0      | 7        | 295   | 312   |
| 272     | 108   | 57        | 0        | 0        | 0      | 13       | 100   | 171   |
| 279     | 103   | 19        | 0        | 0        | 0      | 7        | 356   | 381   |
| 281     | 160   | 43        | 0        | 0        | 0      | 14       | 413   | 470   |
| 287     | 175   | 76        | 0        | 0        | 0      | 0        | 669   | 745   |
| 290     | 182   | 33        | 0        | 0        | 0      | 0        | 359   | 392   |
| 296     | 176   | 38        | 0        | 0        | 0      | 31       | 462   | 531   |
| 298     | 165   | 0         | 0        | 0        | 0      | 20       | 91    | 110   |
| 307     | 176   | 94        | 0        | 0        | 0      | 5        | 187   | 286   |
| MEAN    | 142   | 49        | 0        | 3        | 0      | 10       | 314   | 376   |
| % Catch |       | 13        | 0        | 1        | 0      | 3        | 84    | 100   |

## 5.5 Congo

The shelf of Congo is similar in character to the southern shelf of Gabon. The southern part, bordering Angola, is at times heavily influenced by the Congo River freshwater plume. Sediments are fine grained on the midshelf and harder and more uneven on the shelf break and inshore. Oil platforms and pipelines in the area make demersal trawling operation

difficult. One trawl was lost, probably due to metal debris lying on the bottom. The southern part of Congo at the border with Angola was not covered completely due to time constraints and the problems mentioned above. The average catch rate per region is sensitive to the low number of trawl stations in each stratum, but these catch rates are still used for all biomass estimates in Congo since it is the best available information.

Table 5.16a, b, c, d and e shows catch rates by main groups for the inner (0-50 m), mid (51-100 m) and outer shelf (101-200 m) and slope (200 –500 m) and deep water (>500 m) respectively. The overall catch rates were highest on the mid shelf between 51-100 m depth with 3652 kg/h, the inner shelf had second highest catch rates with 541 kg/h. Catch rates decreased further offshore but increased again in the deep water due to one large catch of shrimps. Demersal species were the most dominant in the catches from the three inshore stations with an average catch rate of 322 kg/h and 60% of the catch. *Brachydeuterus auritus* and *Pseudolithus senegalensis* were the most dominant species. Pelagic species contributed with 53 kg/h and 10 % of the catch, and consisted of *S. aurita*, *S maderensis* and *Ilisha africana*, while shrimps, mainly *Parapenaeopsis atlantica*, contributed with 34 kg/h and 6% of the catch. Cephalopods and sharks were not found in this depth region. The highest catch rates were found between 51 –100 m depth and 49% (1797 kg/h) of the catch in this depth region consisted of demersal species. The dominating species were *Brachydeuterus auritus* and *Dicologlossa cuneata*. Pelagic species were the second most abundant group with 42% of the average catch and a catch rate of 1523 kg/h. The most dominant species in this group was *Trachurus trecae* and *Trichiurus lepturus*. 3% (123 kg/h) of the average catch consisted of cephalopods. *Sepia officinalis hierredda* and *Octopus vulgaris* were the most common species in the catch. Catches of shrimps and sharks were low in the region. Demersal species were also the dominant species group in the depth region between 101-200 m, with catch rates of 145 kg/h and 58% of the catch. The dominant species were *Dentex angolensis* and *Merluccius polli*. Pelagic species had a mean catch rate of 15 kg/h and 6% of the catch. The group was dominated by *Trichiurus lepturus*. Cephalopods had average catch rates of 11 kg/h and 5% of the catch. *Illex coindetii* and *Todaropsis eblanae* were the main species. Catches of shrimps and sharks were also low in this depth region. The catches increased slightly on the slope between 201 - 500 m. Demersal species were also in this depth region the most abundant group with average catches of 103 kg/h and 48% of the catch. The dominant species were *Atractoscion aequidens* and *Merluccius polli*. Shrimps became more important in this depth region with a catch rate of 27 kg/h and 13% of the total catch. *Parapenaeus longirostris* was the dominant species. Cephalopods, represented by *Illex coindetii*, contributed with 11 kg/h and 5% of the catch, while sharks, represented by *Centrophorus uyato*, contributed with 10 kg/h and 5% of the catch. Pelagic species were not important in the catches. Catches in deep waters >500 m depth was dominated by shrimps, which made up 58% of the catch (222 kg/h). The main species in this group was *Nematocarcinus africanus*.

Sharks were the second most abundant group with catch rates of 45 kg/h and 12% of the total catch. The group consisted of several species with *Chlamydoselachus anguineus* and *Rhizoprionodon acutus* been the most important. Other species were not important in the catches.

Further analyses of the catch rates of different species groups in Congo was not conducted as the low number of stations in each depth stratum makes the data material less precise.

**Table 5.16** Congo. Catch rates (kg/h) by main groups in swept-area bottom-trawl hauls on the a) inner shelf (0-50 m), b) mid shelf (51-100 m) and c) outer shelf (101-200 m), d) slope (201-500 m) and e) deep water (>500 m).

| a) Inner shelf (0-50 m) |       |          |         |         |            |        |       |       |
|-------------------------|-------|----------|---------|---------|------------|--------|-------|-------|
| Sta. No                 | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
| 310                     | 47    | 385.7    | 58.1    | 6.8     | 0.0        | 0.0    | 98.2  | 548.9 |
| 314                     | 24    | 206.2    | 68.2    | 93.5    | 0.0        | 0.0    | 134.3 | 502.2 |
| 315                     | 49    | 375.3    | 32.6    | 0.4     | 0.4        | 0.0    | 163.4 | 572.0 |
| MEAN                    | 40    | 322      | 53      | 34      | 0          | 0      | 132   | 541   |
| % Catch                 |       | 60       | 10      | 6       | 0          | 0      | 24    | 100   |

| b) Mid shelf (51-100 m) |       |          |         |         |            |        |       |        |
|-------------------------|-------|----------|---------|---------|------------|--------|-------|--------|
| Sta. No                 | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total  |
| 313                     | 76    | 3384.3   | 2116.7  | 0.0     | 97.7       | 25.4   | 53.9  | 5678.0 |
| 316                     | 74    | 210.4    | 928.8   | 4.3     | 149.0      | 7.4    | 326.2 | 1626.1 |
| MEAN                    | 75    | 1797     | 1523    | 2       | 123        | 16     | 190   | 3652   |
| % Catch                 |       | 49       | 42      | 0       | 3          | 0      | 5     | 100    |

| c) Outer shelf (101-200 m) |       |          |         |         |            |        |       |       |
|----------------------------|-------|----------|---------|---------|------------|--------|-------|-------|
| Sta. No                    | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
| 317                        | 137   | 147.8    | 29.9    | 0.0     | 33.6       | 0.0    | 97.0  | 308.3 |
| 320                        | 153   | 142.7    | 0.7     | 8.5     | 3.7        | 0.0    | 35.1  | 190.8 |
| MEAN                       | 145   | 145      | 15      | 4       | 19         | 0      | 66    | 250   |
| % Catch                    |       | 58       | 6       | 2       | 7          | 0      | 26    | 100   |

| d) Slope (200-500 m) |       |          |         |         |            |        |       |       |
|----------------------|-------|----------|---------|---------|------------|--------|-------|-------|
| Sta. No              | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
| 312                  | 256   | 63.1     | 1.9     | 24.7    | 17.7       | 0.7    | 65.9  | 174.0 |
| 319                  | 298   | 143.3    | 3.1     | 28.9    | 4.4        | 20.1   | 53.8  | 253.5 |
| MEAN                 | 277   | 103      | 3       | 27      | 11         | 10     | 60    | 214   |
| % Catch              |       | 48       | 1       | 13      | 5          | 5      | 28    | 100   |

## e) Deep water (&gt;500 m)

| Sta. No | Depth | Demersal | Pelagic | Shrimps | Cephalopod | Sharks | Other | Total |
|---------|-------|----------|---------|---------|------------|--------|-------|-------|
| 311     | 543   | 9.5      | 4.2     | 10.3    | 0.0        | 14.8   | 78.9  | 117.8 |
| 318     | 510   | 7.3      | 1.0     | 434.4   | 1.4        | 74.9   | 129.5 | 648.5 |
| MEAN    | 527   | 8        | 3       | 222     | 1          | 45     | 104   | 383   |
| % Catch |       | 2        | 1       | 58      | 0          | 12     | 27    | 100   |

## 5.6 Review of results

The survey was conducted in the middle of the rainy season, and the weather was generally overcast and calm, with occasional heavy rainfall associated with strong winds north of equator. Sea surface temperature was typically  $>25^{\circ}\text{C}$  in the northern part of the survey area. A clear frontal zone was observed at Cape Lopez, where the temperature dropped rapidly, sea surface temperatures of  $<20^{\circ}\text{C}$  was common in the southern part of the survey area.

### *Nigeria and Cameroon*

The Nigerian coastline is about 853 km long. The literature describes four distinct geomorphological zones; the barrier islands outside Lagos, the mud coast, the delta area and the strand coast. Two canyons (Avon and Mahin) present off Lagos separates the mud coast and the Niger delta area. The Nigerian continental shelf becomes progressively wider from west to east. The sediment distribution on the shelf will be analysed from samples collected during this survey. Generally coarse to fine sand are found from 0 to about 30 m except on the mud coast zone and some estuarine areas around the delta. The shelf becomes gradually muddier with sediments containing more fine sand and higher silt and clay content in deeper areas. The wider shelf length around the Niger delta is a result of the alluvial input and deposition from the Niger River. The Niger delta is also the third largest mangrove area in the world and mangroves line the creeks and river systems from the edge of the sea to upper reaches of the seawater.

The coastline of Cameroon is approximately 420 km long. The northern part of the shelf, bordering Nigeria is characterised by shallow water soft sandy to muddy bottom habitat. The bottom becomes sandier further south on the inner shelf, with several patches of coral and hard bottom substrate. The shelf break and slope is irregular and in places very soft and untrawlable.

The survey off Nigeria and Cameroon and the observations made in the area were similar to last year. Oil platforms and pipelines hampered, in places, trawling in the most shallow and reportedly more productive parts of the coast, mainly  $< 30$  m depth. The shelf generally had a lack of seabirds and marine mammal predators, otherwise frequently observed along most of West Africa. Some terns and gulls were observed especially in the area outside Limbe and the southern end of Cameroon. The total fish biomass is low and has declined from last year in both countries with a total of 56 000 tonnes in Nigeria and 15 000 in Cameroon estimated

for selected groups in 2005 compared with 65 000 tonnes and 20 000 tonnes for the same groups in 2004. Average total catch rates for catches between 0 –200 m depth were 6.39 t/nm<sup>2</sup> in Nigeria and 9.91 t/nm<sup>2</sup> in Cameroon in 2005, compared with 7.3 t/nm<sup>2</sup> and 12.10 t/nm<sup>2</sup> in Nigeria and Cameroon respectively in 2004).

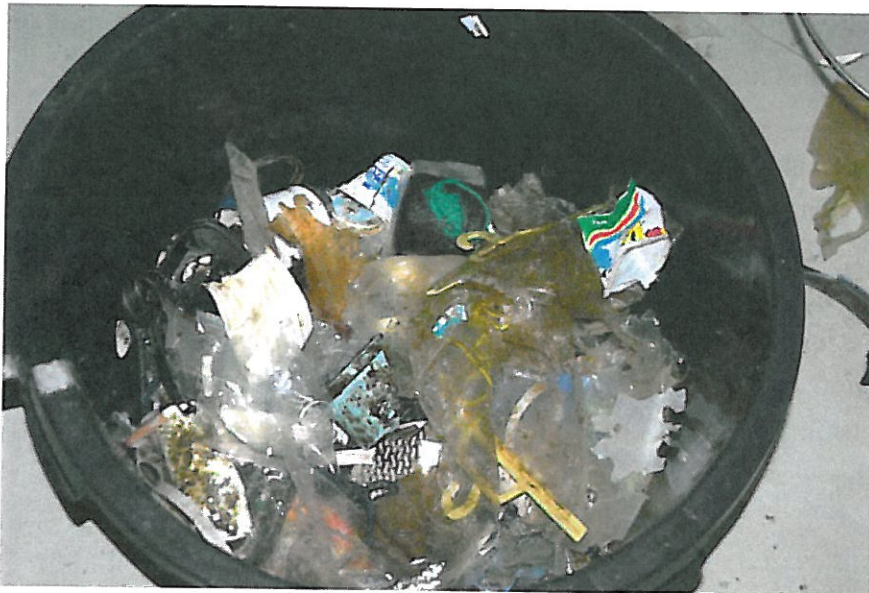
The biomass of the major demersal groups is listed in Table 5.17 together with other important species groups in the region. The most abundant group in Nigeria was the ariommas. These are not caught for commercial purposes, but are abundant on the shelf from approximately 100 m depth. The total biomass of the two species was 12 000 tonnes compared with 8 000 tonnes last year. Seabreams was the most abundant of the commercial species with a total biomass for all depth strata of 6 000 tonnes, compared with 6 500 tonnes last year. The second most abundant of the commercial important groups were the croakers with a biomass of 5 300 tonnes, this is the same level as found during the survey last year. Grunts, groupers and snappers were less abundant with an estimated biomass of 400 tonnes, 400 tonnes and 100 tonnes respectively. *Brachydeuterus auritus* was excluded from the biomass estimate of grunts, and the abundance was calculated separately. The biomass of this species was estimated to be 9 000 tonnes. No direct comparison could be made with the abundance last year but comparing with the biomass of grunts, a large increase in abundance could still be observed. The biomass of sharks and rays was estimated to be 3 000 tonnes and 900 tonnes respectively compared with 1 700 tonnes and 500 tonnes last year. Swept area estimates were also produced for several species that are not truly demersal, and estimates using this method will therefore underestimate the biomass. These were Carangids, Barracuda and cephalopods. The biomass of these groups calculated by the swept area method gave 11 000 tonnes, 3 500 tonnes and 4 800 tonnes respectively. Last year these groups gave an estimated biomass of 24 500 tonnes, 4 600 tonnes and 6 300 tonnes respectively. Particularly the abundance of Carangid species has declined drastically in the survey area. This is also reflected in the acoustic biomass estimate, Figure 4.11.

The most abundant species group in Cameroon was the carangid species, this group showed a large increase in abundance with an estimated biomass of 6 700 tonnes compared with 1 800 tonnes last year. This group consist of pelagic species and the swept area method underestimates the abundance. *Brachydeuterus auritus* was second most abundant with 1 700 tonnes. No biomass estimate exist from 2004 but catch rates show that the abundance has declined from last year. The seabreams were the most abundant of the commercial species groups in Cameroon with a total biomass of 1 500 tonnes compared with 1 000 tonnes last year. The second most important of the commercial important groups was the croakers with 1 500 tonnes compared with 1 600 tonnes last year. Snappers, Grunts and Groupers were less important with 700 tonnes, 150 tonnes and 100 tonnes respectively. The abundance of these species was also low last year. Sharks and rays showed increased biomass with 280 tonnes and 200 tonnes respectively compared with 100 tonnes per group in 2004.



### *Plastic refuse*

A special observation from this and the survey in 2004 is worth attention. Discarded plastic packaging materials has become common on the shelf and off Nigeria and Cameroon. Without quantifying, more waste is probably found in this area than any other place on the west coast of Africa. During the survey one haul of only plastic materials were encountered, Figure 5.1, and almost no hauls were without any plastic waste. Plastic was also abundant far offshore, in the deep part of the shelf. These packaging materials lies on the bottom and floats in the water and filters into gill nets and drifting nets, litters the beaches, covers large areas of the seafloor and occupy the space meant for living resources. Passing ships, oil platforms and discarded rubbish from the rivers may all be the source of the large quantities of plastic refuse at sea.



**Figure 5.1.** Plastic waste collected from a trawl haul. Plastic waste has become abundant in the Gulf of Guinea waters.

### *São Tomé and Príncipe*

São Tomé and Príncipe are volcanic islands approximately 200 km from the coast of the mainland of Africa, and as such are characterised by an oceanic environment with higher salinity and lower temperatures than along the coast of Nigeria and Cameroon. The bottom topography and substrate differs greatly from that on the mainland. The coast is rocky and very steep, with a shelf break on both islands around 80 – 100 m depth and bottom depths typically >1000 m off the shelf. Demersal species dominates on the islands, but also pelagic species like sardinella were found this year. Several species are found on the islands that are otherwise not found in the Gulf of Guinea, as example, the *Dentex*. While the biomass estimate for Nigeria and Cameroon was calculated from 0 – 500 m depth, the biomass estimate for São Tomé and Príncipe was only calculated for the area between 0 – 100 m depth, because no trawls were possible off the shelf break. The abundance of selected species groups has increased from last year, both on Príncipe and São Tomé. The total catch of these species groups were 1 400 tonnes and 5 700 tonnes respectively in 2005 compared with 1 200

tonnes and 800 tonnes in 2004. Average total catch rates for catches between 30 –100 m depth were 9.14 t/nm<sup>2</sup> in Principe and 50.28 t/nm<sup>2</sup> in São Tomé in 2005, compared with 4.5 t/nm<sup>2</sup> and 6.22 t/nm<sup>2</sup> in Principe and São Tomé respectively in 2004). Please note that the very high catch rate in São Tomé is only due to one high catch of snappers. In general, the biomass on these islands, like on the main land, are low, but catch rates of some demersal species of seabreams, gurnards and snappers are relatively higher. The fish resources on the island support an important artisanal fishery employing 20% of the nations workforce, and large changes in fish biomass will have huge consequences on the islands.

The species composition on Principe consisted mainly of gurnards, the species *Dactylopterus volitans* and Seabreams. No biomass estimate was calculated for the first group, while the biomass for seabreams was estimated to be 1 200 tonnes compared with 1 100 tonnes in 2004. It was also estimated 130 tonnes of cephalopods and 23 tonnes of carangids compared with 75 tonnes and 18 tonnes in 2004.

Snappers were estimated to be the most abundant group in São Tomé with a biomass 4 900 tonnes, although one catch only of this group make the estimate very uncertain. The estimated biomass in 2004 was 150 tonnes. The second most abundant species group on São Tomé was the gurnards, species *Dactylopterus volitans*, this species has little commercial importance and no estimate was produced. Seabreams was second in importance of the commercial species with 460 tonnes estimated, compared with 400 tonnes in 2004. The biomass of groupers was estimated to be 130 tonnes, the same as in 2004. Other species groups were of less importance.

#### *Gabon and Congo*

Gabon has a long coastline and a relatively long shelf with steep shelf break between 100 and 200 m depth. Bottom substrate is variable with hard rocky patches between softer substrates. The midshelf immediately north of Cape Lopez is very soft. The shelf is narrow and steep at Cape Lopez and divides Gabon into two separate systems divided by a frontal zone with a steep temperature gradient. Sea surface temperatures were typically >25°C north of Cape Lopez and <21°C south of Cape Lopez. The shelf is relatively abundant with life, compared with the rest of the area covered by the survey. Whale and dolphin sightings are daily. Of particular importance are maybe the observations of juvenile pelagic fish, *Sardinella maderensis*, *sardinella aurita*, *trachurus trecae*, *Scomber japonicus* and other more demersal species, e.g. *Brachydeuterus auritus* and *Pagellus bellottii*. These were found south of Cape Lopez, and underline the importance of the shelf of Gabon and Congo as a nursery area for fish. Biomass is presented for the whole region of Gabon but separate catch rates for the region north and south of Cape Lopez can be found in Annex V. Total catch rates for the northern shelf of Gabon, the southern shelf of Gabon and Congo was 11.99 t/ nm<sup>2</sup>, 52.46 t/nm<sup>2</sup> and 43.92 t/ nm<sup>2</sup> respectively. No swept area abundance estimates were calculated in 2004 and therefore, no comparisons are made.

The most abundant group off Gabon was the pelagic carangid species, with an estimated abundance from the swept area survey of 55 000 tonnes. Seabreams were the second most abundant species group in Gabon with an estimated biomass of 36 000 tonnes. Third was the *Brachydeuterus auritus*, with an estimated biomass of 33 000 tonnes. The other commercial important species, groupers, croakers, snappers and grunts had estimated biomasses of 3 200 tonnes, 3 200 tonnes, 3 100 tonnes and 1 100 tonnes each. Sharks and Rays had estimated biomasses of 2 100 tonnes and 3 800 tonnes each while barracudas, cephalopods and ariommas had biomass estimates of 3 000 tonnes, 11 000 tonnes and 8 500 tonnes respectively.

*Brachydeuterus auritus* was the most abundant species in Congo with an estimated biomass of 47 000 tonnes. Second was the carangid species with 26 000 tonnes while seabreams, croakers, grunts and groupers had estimated abundance of 5 000 tonnes, 3 000 tonnes, 400 tonnes and 95 tonnes. No snappers were found. Sharks and rays had estimated biomasses of 2 000 tonnes and 3 800 tonnes while the biomass of cephalopods and ariomma was estimated to be 4 000 tonnes and 33 tonnes.



# Annex I Records of fishing stations

PROJECT STATION: 843  
 DATE: 5/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 619 Long E 248  
 start stop duration  
 TIME :16:54:36 17:25:12 31 (min) Purpose code: 3  
 LOG :4809.90 4811.53 1.61 Area code : 5  
 FDEPTH: 22 22 GearCond.code:  
 BDEPTH: 22 22 Validity code:  
 Towing dir: 90ø Wire out: 121 m Speed: 30 kn\*10  
 Sorted: 63 Kg Total catch: 124.96 CATCH/HOUR: 241.86

| SPECIES                     | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|-----------------------------|------------------------------|-------------|------|
| Galeoides decadactylus      | 50.67 441                    | 20.95       | 3560 |
| Ilisha africana             | 42.77 4512                   | 17.68       | 3547 |
| Sphyræna guachancho         | 35.61 221                    | 14.72       | 3551 |
| Polydactylus quadrifilis    | 17.23 2                      | 7.12        | 3557 |
| J E L Y F I S H             | 14.83                        | 6.13        |      |
| Drepane africana            | 11.85 101                    | 4.90        | 3549 |
| Pseudotolithus senegalensis | 10.61 37                     | 4.39        | 3559 |
| Scomberomorus tritor        | 9.29 46                      | 3.84        | 3544 |
| Caranx senegalus            | 9.10 41                      | 3.76        | 3550 |
| Selene dorsalis             | 4.84 70                      | 2.00        | 3545 |
| Elops lacerta               | 4.34 21                      | 1.79        | 3553 |
| Brachydeuterus auritus      | 4.30 132                     | 1.78        | 3554 |
| Pteroscion peii             | 3.75 83                      | 1.55        | 3556 |
| Sardinella maderensis       | 3.58 283                     | 1.48        | 3548 |
| Pomadasy jubelini           | 2.96 15                      | 1.22        | 3555 |
| Sphyræna afro               | 2.71 4                       | 1.12        | 3552 |
| Chloroscombrus chrysurus    | 2.32 66                      | 0.96        | 3546 |
| Caranx hippos               | 1.92 10                      | 0.79        | 3558 |
| Sepia officinalis hierredda | 1.72 2                       | 0.71        | 3561 |
| Portunus validus            | 1.10 4                       | 0.45        |      |
| Chaetodipterus lippei       | 1.01 2                       | 0.42        |      |
| Pomadasy peroteti           | 0.95 6                       | 0.39        |      |
| Todaropsis eblanae          | 0.81 105                     | 0.33        |      |
| Sepiella ornata             | 0.77 25                      | 0.32        |      |
| Uranoscopus polli           | 0.77 4                       | 0.32        |      |
| Cronius ruber               | 0.75 2                       | 0.31        |      |
| Callinectes pallidus        | 0.43 10                      | 0.18        |      |
| Liza grandisquamis          | 0.33 2                       | 0.14        |      |
| Chaetodipterus goreensis    | 0.15 2                       | 0.06        |      |
| Trichiurus lepturus         | 0.10 4                       | 0.04        |      |
| Trachinocephalus myops      | 0.10 2                       | 0.04        |      |
| Eucinostomus melanopterus   | 0.08 2                       | 0.03        |      |
| Alectis alexandrinus        | 0.06 2                       | 0.02        |      |
| Parapenaeopsis atlantica    | 0.04 15                      | 0.02        |      |
| Penaeus kerathurus          | 0.02 2                       | 0.01        |      |
| Total                       | 241.87                       | 99.97       |      |

PROJECT STATION: 845  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 615 Long E 247  
 start stop duration  
 TIME :07:48:37 08:19:42 31 (min) Purpose code: 3  
 LOG :4877.24 4878.92 1.66 Area code : 5  
 FDEPTH: 38 38 GearCond.code:  
 BDEPTH: 38 38 Validity code:  
 Towing dir: 80ø Wire out: 180 m Speed: 32 kn\*10  
 Sorted: 68 Kg Total catch: 202.47 CATCH/HOUR: 391.88

| SPECIES                     | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|-----------------------------|------------------------------|-------------|------|
| Selene dorsalis             | 296.13 1173                  | 75.57       | 3570 |
| Brachydeuterus auritus      | 50.63 1051                   | 12.92       | 3573 |
| Sphyræna guachancho         | 16.78 87                     | 4.28        | 3571 |
| Galeoides decadactylus      | 10.16 41                     | 2.59        | 3572 |
| Pagellus bellottii          | 9.06 99                      | 2.31        | 3574 |
| J E L Y F I S H             | 3.60                         | 0.92        |      |
| Raja miraletus              | 1.51 6                       | 0.39        |      |
| Scomberomorus tritor        | 1.10 6                       | 0.28        |      |
| Sepia officinalis hierredda | 0.99 12                      | 0.25        |      |
| Sardinella maderensis       | 0.70 12                      | 0.18        | 3575 |
| Chloroscombrus chrysurus    | 0.52 6                       | 0.13        |      |
| Pagrus caeruleostictus      | 0.12 12                      | 0.03        | 3577 |
| Alloteuthis africana        | 0.12 12                      | 0.03        |      |
| Priacanthus arenatus        | 0.12 6                       | 0.03        |      |
| Lepidotrigla cadmani        | 0.12 6                       | 0.03        |      |
| Sicyonia galeata            | 0.06 6                       | 0.02        |      |
| Selar crumenophthalmus      | 0.06 6                       | 0.02        |      |
| Sardinella aurita           | 0.06 6                       | 0.02        | 3576 |
| Scyllarides herklotsii      | 0.06 29                      | 0.02        |      |
| Total                       | 391.90                       | 100.02      |      |

PROJECT STATION: 846  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 614 Long E 303  
 start stop duration  
 TIME :09:56:34 10:26:06 30 (min) Purpose code: 3  
 LOG :4894.22 4895.73 1.49 Area code : 5  
 FDEPTH: 57 57 GearCond.code:  
 BDEPTH: 57 57 Validity code:  
 Towing dir: 90ø Wire out: 220 m Speed: 31 kn\*10  
 Sorted: 32 Kg Total catch: 246.09 CATCH/HOUR: 492.18

| SPECIES                     | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|-----------------------------|------------------------------|-------------|------|
| Brachydeuterus auritus      | 243.40 4070                  | 49.45       | 3578 |
| J E L Y F I S H             | 185.12                       | 37.61       |      |
| Pagellus bellottii          | 21.30 270                    | 4.33        | 3579 |
| Raja miraletus              | 6.40 30                      | 1.30        |      |
| Sepia officinalis hierredda | 6.40 10                      | 1.30        |      |
| Pagrus caeruleostictus      | 4.50 118                     | 0.91        | 3580 |
| Cymbium cymbium             | 4.26 4                       | 0.87        |      |
| Sphyræna guachancho         | 3.50 10                      | 0.71        |      |
| Lepidotrigla carolae        | 3.00 70                      | 0.61        |      |
| Aluterus blankerti          | 2.60 10                      | 0.53        |      |
| Decapterus punctatus        | 1.90 40                      | 0.39        |      |
| Selene dorsalis             | 1.70 20                      | 0.35        |      |
| Lagocephalus laevigatus     | 1.60 10                      | 0.33        |      |
| Trichiurus lepturus         | 1.30 20                      | 0.26        |      |
| Sardinella aurita           | 1.10 80                      | 0.22        |      |
| Alloteuthis africana        | 1.00 280                     | 0.20        |      |
| Uranoscopus sibbesca        | 1.00 10                      | 0.20        |      |
| Selar crumenophthalmus      | 1.00 10                      | 0.20        |      |
| Grammolites gruvelli        | 0.90 40                      | 0.18        |      |
| Syacium micrurum            | 0.20 30                      | 0.04        |      |
| Total                       | 492.18                       | 99.99       |      |

PROJECT STATION: 844  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 611 Long E 249  
 start stop duration  
 TIME :06:22:45 06:52:56 30 (min) Purpose code: 3  
 LOG :4870.15 4871.71 1.53 Area code : 5  
 FDEPTH: 64 65 GearCond.code:  
 BDEPTH: 64 65 Validity code:  
 Towing dir: 260ø Wire out: 220 m Speed: 31 kn\*10  
 Sorted: 92 Kg Total catch: 125.44 CATCH/HOUR: 250.88

| SPECIES                        | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|--------------------------------|------------------------------|-------------|------|
| Sepia officinalis hierredda    | 73.20 158                    | 29.18       |      |
| Pagellus bellottii             | 69.52 1176                   | 27.71       | 3569 |
| Squatina oculata               | 43.20 14                     | 17.22       |      |
| Sphyræna guachancho            | 8.92 72                      | 3.56        | 3564 |
| Ariomma bondi                  | 8.80 144                     | 3.51        | 3563 |
| Brachydeuterus auritus         | 6.08 216                     | 2.42        | 3566 |
| Pentheroscion mbizi            | 5.96 48                      | 2.38        | 3568 |
| Decapterus punctatus           | 4.84 256                     | 1.93        | 3562 |
| Lagocephalus laevigatus        | 4.64 24                      | 1.85        |      |
| Trichiurus lepturus            | 4.48 88                      | 1.79        | 3565 |
| Priacanthus arenatus           | 4.00 48                      | 1.59        |      |
| Pistularia petimba             | 3.00 20                      | 1.20        |      |
| Alloteuthis africana           | 2.80 796                     | 1.12        |      |
| Raja miraletus                 | 2.56 12                      | 1.02        |      |
| Lepidotrigla carolae           | 2.40 68                      | 0.96        |      |
| Sardinella aurita              | 1.40 100                     | 0.56        | 3567 |
| Grammolites gruvelli           | 0.80 44                      | 0.32        |      |
| Selar crumenophthalmus         | 0.76 8                       | 0.30        |      |
| Pseudupeneus prayensis         | 0.72 20                      | 0.29        |      |
| Serranus accraensis            | 0.68 24                      | 0.27        |      |
| Chilomycterus spinosus mauret. | 0.64 4                       | 0.26        |      |
| Pagrus caeruleostictus         | 0.44 20                      | 0.18        |      |
| Boops boops                    | 0.36 8                       | 0.14        |      |
| Chloroscombrus chrysurus       | 0.32 4                       | 0.13        |      |
| Syacium micrurum               | 0.12 20                      | 0.05        |      |
| Microchirus frechkopi          | 0.12 4                       | 0.05        |      |
| Gobioideus sp                  | 0.04 4                       | 0.02        |      |
| J E L Y F I S H                | 0.04                         | 0.02        |      |
| Citharus linguatula            | 0.04 4                       | 0.02        |      |
| Total                          | 250.88                       | 100.05      |      |

PROJECT STATION: 847  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 617 Long E 304  
 start stop duration  
 TIME :11:13:06 11:43:23 30 (min) Purpose code: 3  
 LOG :4899.95 4901.44 1.47 Area code : 5  
 FDEPTH: 37 37 GearCond.code:  
 BDEPTH: 37 37 Validity code:  
 Towing dir: 270ø Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 80 Kg Total catch: 80.24 CATCH/HOUR: 160.48

| SPECIES                     | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|-----------------------------|------------------------------|-------------|------|
| Selene dorsalis             | 50.20 264                    | 31.28       | 3586 |
| Brachydeuterus auritus      | 34.32 1008                   | 21.39       | 3583 |
| Sphyræna guachancho         | 13.04 232                    | 8.13        | 3581 |
| Ilisha africana             | 11.82 698                    | 7.37        | 3582 |
| Pomadasy jubelini           | 8.84 30                      | 5.51        | 3585 |
| Raja miraletus              | 8.04 18                      | 5.01        |      |
| Galeoides decadactylus      | 7.72 44                      | 4.81        | 3584 |
| Seriola carpenteri          | 6.22 12                      | 3.88        |      |
| Portunus validus            | 6.14 22                      | 3.83        |      |
| Sepia orbignyana            | 4.08 14                      | 2.54        |      |
| Trichiurus lepturus         | 3.20 80                      | 1.99        | 3587 |
| Scomberomorus tritor        | 1.78 4                       | 1.11        |      |
| Parapenaeus longirostris    | 1.26 148                     | 0.79        |      |
| Caranx hippos               | 1.24 2                       | 0.77        |      |
| Trachurus traciae           | 0.50 8                       | 0.31        |      |
| Decapterus punctatus        | 0.40 12                      | 0.25        |      |
| Sepia officinalis hierredda | 0.30 54                      | 0.19        |      |
| Alloteuthis africana        | 0.26 58                      | 0.16        |      |
| Antennarius sp.             | 0.22 14                      | 0.14        |      |
| Grammolites gruvelli        | 0.22 8                       | 0.14        |      |
| Lagocephalus laevigatus     | 0.20 6                       | 0.12        |      |
| Sardinella aurita           | 0.18 8                       | 0.11        |      |
| Epinephelus aeneus          | 0.16 2                       | 0.10        |      |
| Trigla lyra                 | 0.14 2                       | 0.09        |      |
| Total                       | 160.48                       | 100.02      |      |

PROJECT STATION: 848  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 619  
 start stop duration Long E 304  
 TIME :12:23:05 12:53:08 30 (min) Purpose code: 3  
 LOG :4905.05 4906.68 1.61 Area code : 5  
 FDEPTH: 23 24 GearCond.code: 5  
 BDEPTH: 23 24 Validity code:  
 Towing dir: 90ø Wire out: 122 m Speed: 30 kn\*10  
 Sorted: 75 Kg Total catch: 74.58 CATCH/HOUR: 149.16

PROJECT STATION: 851  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 614  
 start stop duration Long E 319  
 TIME :16:37:15 17:07:10 30 (min) Purpose code: 3  
 LOG :4925.58 4927.09 1.49 Area code : 5  
 FDEPTH: 68 69 GearCond.code:  
 BDEPTH: 68 69 Validity code:  
 Towing dir: 90ø Wire out: 225 m Speed: 30 kn\*10  
 Sorted: 64 Kg Total catch: 367.18 CATCH/HOUR: 734.36

| SPECIES                     | CATCH/HOUR weight | % OF TOT. C numbers | SAMP       |
|-----------------------------|-------------------|---------------------|------------|
| Galeoides decadactylus      | 27.32             | 244                 | 18.32 3595 |
| Sphyræna guachancho         | 21.12             | 140                 | 14.16 3598 |
| Albula vulpes               | 14.26             |                     | 9.56       |
| Brachydeuterus auritus      | 12.42             | 316                 | 8.33 3590  |
| Scomberomorus tritor        | 11.28             | 36                  | 7.56 3596  |
| Chloroscombrus chrysurus    | 10.76             | 190                 | 7.21 3591  |
| Selene dorsalis             | 8.04              | 62                  | 5.39 3594  |
| J E L Y F I S H             | 7.88              | 48                  | 5.28       |
| Alectis alexandrinus        | 5.80              | 10                  | 3.89       |
| Caranx hippos               | 5.32              | 18                  | 3.27       |
| Tilisha africana            | 4.46              | 476                 | 2.99 3593  |
| Pseudolithus senegalensis   | 3.42              | 16                  | 2.29       |
| Drepane africana            | 3.04              | 32                  | 2.04       |
| Pteroscion pelli            | 2.62              | 96                  | 1.76 3589  |
| Pentheroscion mbizi         | 2.60              |                     | 1.74       |
| Lutjanus dentatus           | 1.80              | 4                   | 1.21       |
| Sardinella maderensis       | 1.58              | 52                  | 1.06 3588  |
| Pseudolithus brachygnathus  | 1.42              | 2                   | 0.95       |
| Pomadasy jubelini           | 1.36              | 12                  | 0.91 3592  |
| Portunus validus            | 0.88              | 4                   | 0.59       |
| Eucinostomus melanopterus   | 0.50              | 4                   | 0.34       |
| Cynoglossus senegalensis    | 0.42              | 4                   | 0.28       |
| Trichiurus lepturus         | 0.30              | 76                  | 0.20 3597  |
| Lagocephalus laevigatus     | 0.26              | 2                   | 0.17       |
| Sepia officinalis hierredda | 0.20              | 88                  | 0.13       |
| Pseudupeneus prayensis      | 0.10              | 2                   | 0.07       |
| Total                       | 149.16            |                     | 100.00     |

| SPECIES                     | CATCH/HOUR weight | % OF TOT. C numbers | SAMP       |
|-----------------------------|-------------------|---------------------|------------|
| Pentheroscion mbizi         | 200.88            | 1990                | 27.35 3617 |
| Ariomma bondi               | 154.08            | 2808                | 20.98 3619 |
| J E L Y F I S H             | 129.36            | 180                 | 17.62      |
| Sepia officinalis hierredda | 110.52            | 216                 | 15.05      |
| Pagellus bellottii          | 44.88             | 696                 | 6.11 3618  |
| Trichiurus lepturus         | 15.36             | 420                 | 2.09 3621  |
| Priacanthus arenatus        | 14.64             | 156                 | 1.99       |
| Brachydeuterus auritus      | 12.48             | 1344                | 1.70 3620  |
| Boops boops                 | 10.32             | 228                 | 1.41       |
| Squatina oculata            | 8.00              | 4                   | 1.09       |
| Penaeus notialis            | 6.36              | 468                 | 0.87       |
| Sphyræna guachancho         | 5.64              | 48                  | 0.77       |
| Alloteuthis africana        | 5.28              | 1560                | 0.72       |
| Fistularia petimba          | 4.44              | 36                  | 0.60       |
| Pseudupeneus prayensis      | 3.00              | 36                  | 0.41       |
| Grammolites gruvelli        | 2.16              | 84                  | 0.29       |
| Cymbium cymbium             | 1.80              | 204                 | 0.25       |
| Brotula barbata             | 1.56              | 12                  | 0.21       |
| Lepidotrigla cadmani        | 1.56              | 48                  | 0.21       |
| Sepia officinalis hierredda | 0.48              | 144                 | 0.07       |
| Gobius sp                   | 0.48              | 12                  | 0.07       |
| Decapterus punctatus        | 0.36              | 12                  | 0.05       |
| Serranus accraensis         | 0.36              | 12                  | 0.05       |
| Citharus linguatula         | 0.24              | 24                  | 0.03       |
| Sardinella aurita           | 0.12              | 24                  | 0.02       |
| Total                       | 734.36            |                     | 100.01     |

PROJECT STATION: 852  
 DATE: 7/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 607  
 start stop duration Long E 347  
 TIME :05:54:03 06:25:01 31 (min) Purpose code: 3  
 LOG :4985.97 4987.58 1.58 Area code : 5  
 FDEPTH: 246 251 GearCond.code:  
 BDEPTH: 246 251 Validity code:  
 Towing dir: 85ø Wire out: 750 m Speed: 30 kn\*10  
 Sorted: 67 Kg Total catch: 1002.41 CATCH/HOUR: 1940.15

PROJECT STATION: 849  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 619  
 start stop duration Long E 313  
 TIME :13:58:07 14:28:14 30 (min) Purpose code: 3  
 LOG :4914.04 4915.66 1.60 Area code : 5  
 FDEPTH: 29 29 GearCond.code:  
 BDEPTH: 29 29 Validity code:  
 Towing dir: 90ø Wire out: 145 m Speed: 30 kn\*10  
 Sorted: 131 Kg Total catch: 131.84 CATCH/HOUR: 263.68

| SPECIES                     | CATCH/HOUR weight | % OF TOT. C numbers | SAMP       |
|-----------------------------|-------------------|---------------------|------------|
| Trichiurus lepturus         | 1514.90           | 9958                | 78.08 3622 |
| Epigonus telescopus         | 100.45            | 5371                | 5.18       |
| Squatina oculata            | 50.81             | 174                 | 2.62       |
| Zenion longipinnis          | 44.42             | 12048               | 2.29       |
| Illex coindetii             | 38.61             | 513                 | 1.99       |
| Dentex angolensis           | 35.42             | 174                 | 1.83 3624  |
| Chlorophthalmus atlanticus  | 26.71             | 3629                | 1.38       |
| Synagrops microlepis        | 26.13             | 5081                | 1.35       |
| Parasudus fraser-bruenneri  | 23.81             | 755                 | 1.23       |
| Uranoscopus polli           | 20.03             | 145                 | 1.03       |
| Ariomma melanum             | 18.00             | 465                 | 0.93 3623  |
| Parapenaeus longirostris    | 15.97             | 4181                | 0.82       |
| Zenopsis conchifer          | 5.23              | 2                   | 0.27       |
| Brotula barbata             | 5.23              | 29                  | 0.27       |
| Pentheroscion mbizi         | 4.06              | 29                  | 0.21       |
| Cyttopsis roseus            | 2.32              | 145                 | 0.12       |
| Lepidotrigla carolae        | 1.74              | 29                  | 0.09       |
| Cynoponticus ferrox         | 1.74              | 29                  | 0.09       |
| Squalus megalops            | 1.74              | 29                  | 0.09       |
| Spherooides pachgaster      | 0.93              | 2                   | 0.05       |
| Antigonia capros            | 0.58              | 58                  | 0.03       |
| Sepia officinalis hierredda | 0.58              | 58                  | 0.03       |
| Nezumia aequalis            | 0.58              | 58                  | 0.03       |
| Scyliorhinus cervigoni      | 0.15              | 2                   | 0.01       |
| Total                       | 1940.14           |                     | 100.02     |

PROJECT STATION: 853  
 DATE: 7/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 615  
 start stop duration Long E 348  
 TIME :07:56:12 08:27:30 31 (min) Purpose code: 3  
 LOG :4996.53 4998.11 1.54 Area code : 5  
 FDEPTH: 79 77 GearCond.code:  
 BDEPTH: 79 77 Validity code:  
 Towing dir: 260ø Wire out: 250 m Speed: 30 kn\*10  
 Sorted: 35 Kg Total catch: 268.51 CATCH/HOUR: 519.70

PROJECT STATION: 850  
 DATE: 6/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 617  
 start stop duration Long E 313  
 TIME :15:15:09 15:45:07 30 (min) Purpose code: 3  
 LOG :4919.37 4920.91 1.51 Area code : 5  
 FDEPTH: 42 42 GearCond.code:  
 BDEPTH: 42 42 Validity code:  
 Towing dir: 90ø Wire out: 175 m Speed: 30 kn\*10  
 Sorted: 24 Kg Total catch: 73.23 CATCH/HOUR: 146.46

| SPECIES                        | CATCH/HOUR weight | % OF TOT. C numbers | SAMP       |
|--------------------------------|-------------------|---------------------|------------|
| Dentex angolensis              | 163.39            | 1639                | 31.44 3625 |
| Dentex congensis               | 149.57            | 3225                | 28.78 3626 |
| Sepia officinalis hierredda    | 48.91             | 163                 | 9.41       |
| Ariomma bondi                  | 39.70             | 705                 | 7.64 3628  |
| Priacanthus arenatus           | 25.06             | 352                 | 4.82       |
| Squatina oculata               | 20.32             | 17                  | 3.91       |
| Epinephelus aeneus             | 18.35             | 10                  | 3.53       |
| Dentex canariensis             | 11.52             | 14                  | 2.22       |
| Decapterus punctatus           | 7.99              | 569                 | 1.54 3631  |
| Pagellus bellottii             | 5.96              | 149                 | 1.15 3627  |
| Lepidotrigla cadmani           | 5.01              | 163                 | 0.96       |
| Boops boops                    | 4.47              | 108                 | 0.86 3629  |
| Sardinella aurita              | 3.52              | 190                 | 0.68 3630  |
| Fistularia petimba             | 2.55              | 10                  | 0.49       |
| Echeneis naucrates             | 1.76              | 2                   | 0.34       |
| Pseudupeneus prayensis         | 1.76              | 54                  | 0.34       |
| Chilomycterus spinosus mauret. | 1.49              | 14                  | 0.29       |
| Sphyræna guachancho            | 1.35              | 4                   | 0.26       |
| Scorpaena scrofa               | 1.18              | 2                   | 0.23       |
| Illex coindetii                | 1.08              | 95                  | 0.21       |
| Raja miraletus                 | 0.95              | 4                   | 0.18       |
| Brachydeuterus auritus         | 0.95              | 14                  | 0.18       |
| Citharus linguatula            | 0.68              | 41                  | 0.13       |
| Selar crumenophthalmus         | 0.54              | 14                  | 0.10       |
| Raja straeleni                 | 0.50              | 2                   | 0.10       |
| Uranoscopus albesca            | 0.35              | 2                   | 0.07       |
| Torpedo sp.                    | 0.35              | 2                   | 0.07       |
| Antigonia capros               | 0.27              | 41                  | 0.05       |
| Syacium micrurum               | 0.14              | 14                  | 0.03       |
| Total                          | 519.67            |                     | 100.01     |

| SPECIES                     | CATCH/HOUR weight | % OF TOT. C numbers | SAMP       |
|-----------------------------|-------------------|---------------------|------------|
| Brachydeuterus auritus      | 48.60             | 10446               | 33.18 3616 |
| Trichiurus lepturus         | 30.00             | 2176                | 20.48 3611 |
| Sphyræna guachancho         | 25.50             | 774                 | 17.41 3612 |
| Sepia officinalis hierredda | 18.96             | 60                  | 12.95      |
| Selene dorsalis             | 6.60              | 792                 | 4.51 3613  |
| Penaeus notialis            | 3.00              | 246                 | 2.05       |
| Hemicaranx bicolor          | 2.82              | 24                  | 1.93       |
| Pteroscion pelli            | 2.70              | 162                 | 1.84 3615  |
| Scomberomorus tritor        | 2.28              | 18                  | 1.56       |
| Stromateus fiatola          | 1.44              | 6                   | 0.98       |
| Aluterus monoceros          | 0.90              | 6                   | 0.61       |
| Ilisha africana             | 0.90              | 60                  | 0.61 3614  |
| Antennarius sp.             | 0.78              | 24                  | 0.53       |
| Chloroscombrus chrysurus    | 0.72              | 24                  | 0.49       |
| Alectis alexandrinus        | 0.48              | 48                  | 0.33       |
| Syacium micrurum            | 0.36              | 18                  | 0.25       |
| Citharus linguatula         | 0.36              | 18                  | 0.25       |
| Selar crumenophthalmus      | 0.06              | 6                   | 0.04       |
| Total                       | 146.46            |                     | 100.00     |

PROJECT STATION: 854  
 DATE: 7/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 622 Long E 347  
 start stop duration  
 TIME :09:37:21 10:07:09 30 (min) Purpose code: 3  
 LOG :5006.99 5008.51 1.50 Area code : 5  
 FDEPTH: 24 24 GearCond.code:  
 BDEPTH: 24 24 Validity code:  
 Towing dir: 90° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 41 Kg Total catch: 41.14 CATCH/HOUR: 82.28

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Alectis alexandrinus      | 13.34      | 16      | 16.21       | 3633 |
| Drepane africana          | 8.88       | 72      | 10.79       | 3634 |
| Chaetodipterus gorenensis | 7.06       | 28      | 8.58        | 3640 |
| Galeoides decadactylus    | 6.32       | 96      | 7.68        | 3639 |
| Ephippion guttifer        | 6.08       | 2       | 7.39        |      |
| Aibula vulpess            | 5.56       | 10      | 6.76        |      |
| Lutjanus gorenensis       | 5.46       | 4       | 6.64        | 3636 |
| Selene dorsalis           | 4.60       | 26      | 5.59        | 3638 |
| Squatina oculata          | 4.02       | 2       | 4.89        |      |
| Scomberomorus tritor      | 3.12       | 6       | 3.79        | 3637 |
| Pagrus caeruleostictus    | 2.92       | 4       | 3.55        | 3635 |
| Balistes punctatus        | 2.66       | 4       | 3.23        |      |
| Sphyræna affra            | 1.82       | 2       | 2.21        |      |
| Dasyatis margarita        | 1.56       | 2       | 1.90        |      |
| Lagocephalus laevigatus   | 1.42       | 2       | 1.73        |      |
| Raja miraletus            | 1.08       | 4       | 1.31        |      |
| Sphyræna guanchancho      | 1.00       | 6       | 1.22        |      |
| Priacanthus arenatus      | 0.88       | 8       | 1.07        |      |
| Ilex coindetii            | 0.80       | 22      | 0.97        |      |
| Boops boops               | 0.78       | 16      | 0.95        |      |
| Ariomma bondi             | 0.62       | 16      | 0.75        |      |
| Elops lacerta             | 0.52       | 2       | 0.63        |      |
| Octopus vulgaris          | 0.40       | 2       | 0.49        |      |
| Pagellus bellottii        | 0.38       | 6       | 0.46        |      |
| Sardinella aurita         | 0.30       | 10      | 0.36        | 3641 |
| Decapterus punctatus      | 0.18       | 34      | 0.22        |      |
| Brachydeuterus auritus    | 0.16       | 2       | 0.19        |      |
| Chloroscombrus chrysurus  | 0.14       | 2       | 0.17        | 3642 |
| Citharus linguatula       | 0.10       | 10      | 0.12        |      |
| Eucinostomus melanopterus | 0.10       | 2       | 0.12        |      |
| Syacium micrurum          | 0.02       | 2       | 0.02        |      |
| Total                     | 82.28      |         | 99.99       |      |

PROJECT STATION: 855  
 DATE: 7/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 620 Long E 403  
 start stop duration  
 TIME :11:59:08 12:29:14 30 (min) Purpose code: 3  
 LOG :5022.59 5024.16 1.55 Area code : 5  
 FDEPTH: 18 18 GearCond.code:  
 BDEPTH: 18 18 Validity code:  
 Towing dir: 90° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 81 Kg Total catch: 81.43 CATCH/HOUR: 162.86

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Polydactylus quadrifilis    | 62.76      | 4       | 38.54       |      |
| Trichiurus lepturus         | 15.92      | 1130    | 9.78        |      |
| Galeoides decadactylus      | 11.34      | 168     | 6.96        |      |
| Pseudotolithus typus        | 9.60       | 78      | 5.89        | 3652 |
| Pseudotolithus senegalensis | 8.16       | 64      | 5.01        | 3645 |
| Pseudotolithus elongatus    | 7.20       | 44      | 4.42        | 3647 |
| Chloroscombrus chrysurus    | 6.18       | 218     | 3.79        |      |
| Scomberomorus tritor        | 5.16       | 28      | 3.17        |      |
| Pentaneus quinquevittatus   | 4.82       | 110     | 2.96        | 3650 |
| J E L Y F I S H             | 4.32       |         | 2.65        |      |
| Sphyræna guanchancho        | 3.64       | 40      | 2.24        | 3643 |
| Pteroscion pelli            | 3.48       | 72      | 2.14        | 3649 |
| Brachydeuterus auritus      | 3.46       | 64      | 2.12        | 3648 |
| Selene dorsalis             | 2.86       | 66      | 1.76        | 3644 |
| Tilisha africana            | 2.42       | 218     | 1.49        |      |
| Caranx hippos               | 1.58       | 12      | 0.97        |      |
| Elops lacerta               | 1.46       | 8       | 0.90        |      |
| Pseudotolithus moorii       | 1.14       | 18      | 0.70        | 3651 |
| Drepane africana            | 1.10       | 22      | 0.68        |      |
| Nematopalaemon hastatus     | 0.98       | 388     | 0.60        |      |
| Lagocephalus lagocephalus   | 0.88       | 4       | 0.54        |      |
| Parapenaeopsis atlantica    | 0.64       | 86      | 0.39        |      |
| Sepiella ornata             | 0.56       | 352     | 0.34        |      |
| Callinectes pallidus        | 0.52       | 20      | 0.32        |      |
| Sardinella maderensis       | 0.48       | 4       | 0.27        | 3646 |
| Pomadourus jubelinii        | 0.44       | 4       | 0.29        |      |
| Chaetodipterus gorenensis   | 0.44       | 2       | 0.27        |      |
| Trachinotus maxilloso       | 0.26       | 2       | 0.16        |      |
| Penaeus monodon             | 0.26       | 2       | 0.16        |      |
| Pseudotolithus epiperucus   | 0.24       | 2       | 0.15        |      |
| Squilla mantis              | 0.24       | 14      | 0.15        |      |
| Fortunus validus            | 0.08       | 2       | 0.05        |      |
| Calappa rubroquattata       | 0.08       | 2       | 0.05        |      |
| Penaeus kerathurus          | 0.08       | 2       | 0.05        |      |
| Total                       | 162.86     |         | 100.01      |      |

PROJECT STATION: 856  
 DATE: 7/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 616 Long E 404  
 start stop duration  
 TIME :13:19:16 13:49:19 30 (min) Purpose code: 3  
 LOG :5029.27 5030.83 1.53 Area code : 5  
 FDEPTH: 36 37 GearCond.code:  
 BDEPTH: 36 37 Validity code:  
 Towing dir: 280° Wire out: 145 m Speed: 30 kn\*10  
 Sorted: 70 Kg Total catch: 70.73 CATCH/HOUR: 141.46

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Rhizoprionodon acutus       | 49.40      | 10      | 34.92       | 3653 |
| Fortunus validus            | 20.84      | 84      | 14.73       |      |
| Tilisha africana            | 17.76      | 1560    | 12.55       |      |
| Trichiurus lepturus         | 16.84      | 940     | 11.90       |      |
| Chloroscombrus chrysurus    | 9.56       | 126     | 6.76        |      |
| Sphyræna guanchancho        | 6.88       | 114     | 4.86        |      |
| Scomberomorus tritor        | 4.62       | 26      | 3.27        |      |
| Selene dorsalis             | 3.12       | 42      | 2.21        |      |
| Galeoides decadactylus      | 2.66       | 178     | 1.88        |      |
| Pseudotolithus senegalensis | 2.06       | 14      | 1.46        |      |
| Elops lacerta               | 1.46       | 8       | 1.03        |      |
| Pteroscion pelli            | 1.36       | 34      | 0.96        |      |
| Lagocephalus lagocephalus   | 1.20       | 8       | 0.85        |      |
| Brachydeuterus auritus      | 1.06       | 26      | 0.75        |      |
| Sardinella maderensis       | 0.56       | 16      | 0.41        |      |
| J E L Y F I S H             | 0.54       |         | 0.38        |      |
| Pseudotolithus typus        | 0.34       | 6       | 0.24        |      |
| Pseudotolithus elongatus    | 0.22       | 2       | 0.16        |      |
| Penaeus notialis            | 0.18       | 10      | 0.13        |      |
| Sepiella ornata             | 0.14       | 46      | 0.10        |      |
| Squilla mantis              | 0.12       | 6       | 0.08        |      |
| Parapenaeopsis atlantica    | 0.12       | 20      | 0.08        |      |
| Chaetodipterus gorenensis   | 0.08       | 4       | 0.06        |      |
| Antennarius sp.             | 0.06       | 4       | 0.04        |      |
| Callinectes marginatus      | 0.06       | 2       | 0.04        |      |
| Cynoglossus senegalensis    | 0.06       | 6       | 0.04        |      |
| Callinectes pallidus        | 0.04       | 12      | 0.03        |      |
| Citharus linguatula         | 0.04       | 4       | 0.03        |      |
| Spherooides pachgaster      | 0.04       | 6       | 0.03        |      |
| Drepane africana            | 0.02       | 2       | 0.01        |      |
| Total                       | 141.46     |         | 99.99       |      |

PROJECT STATION: 857  
 DATE: 7/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 610 Long E 405  
 start stop duration  
 TIME :16:14:14 16:46:15 32 (min) Purpose code: 3  
 LOG :5040.01 5041.61 1.57 Area code : 5  
 FDEPTH: 57 53 GearCond.code:  
 BDEPTH: 57 53 Validity code:  
 Towing dir: 90° Wire out: 202 m Speed: 30 kn\*10  
 Sorted: 28 Kg Total catch: 159.80 CATCH/HOUR: 299.63

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Brachydeuterus auritus         | 59.06      | 3553    | 19.71       | 3656 |
| Pentaneus quinquevittatus      | 53.63      | 731     | 17.90       | 3655 |
| Raja miraletus                 | 47.25      | 450     | 15.77       | 3654 |
| Lepidochelys olivacea          | 37.50      | 2       | 12.82       |      |
| Parapenaeus longirostris       | 24.75      | 5160    | 8.26        |      |
| Sphyræna guanchancho           | 9.47       | 131     | 3.16        | 3657 |
| Trichiurus lepturus            | 9.38       | 909     | 3.13        |      |
| Grammolites gruvelli           | 7.69       | 253     | 2.57        |      |
| Citharus linguatula            | 7.31       | 413     | 2.44        |      |
| Pteroscion pelli               | 7.13       | 141     | 2.38        | 3664 |
| Sepia officinalis hierredda    | 7.03       | 38      | 2.35        |      |
| Brotula barbata                | 5.34       | 28      | 1.78        |      |
| Chilomycterus spinosus mauret. | 4.50       | 19      | 1.50        |      |
| Cymbium pepo                   | 4.22       | 9       | 1.41        |      |
| Chloroscombrus chrysurus       | 4.03       | 47      | 1.34        |      |
| Penaeus notialis               | 3.28       | 122     | 1.09        |      |
| Cynoglossus senegalensis       | 1.97       | 9       | 0.66        |      |
| Microchirus frechkopi          | 1.69       | 47      | 0.56        |      |
| Scyllarides herklotsii         | 1.31       | 150     | 0.44        |      |
| Octopus vulgaris               | 1.13       | 9       | 0.38        |      |
| Pagrus caeruleostictus         | 0.75       | 9       | 0.25        |      |
| Serranus accraensis            | 0.56       | 47      | 0.19        |      |
| Sardinella maderensis          | 0.47       | 19      | 0.16        |      |
| Uranoscopus albesca            | 0.19       | 19      | 0.06        |      |
| Total                          | 299.64     |         | 100.01      |      |

PROJECT STATION: 858  
 DATE: 7/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 605 Long E 400  
 start stop duration  
 TIME :20:37:25 21:07:23 30 (min) Purpose code: 3  
 LOG :5058.17 5059.58 1.38 Area code : 5  
 FDEPTH: 281 269 GearCond.code:  
 BDEPTH: 281 269 Validity code:  
 Towing dir: 115° Wire out: 840 m Speed: 30 kn\*10  
 Sorted: 58 Kg Total catch: 58.23 CATCH/HOUR: 116.46

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Centrophorus granulosus     | 18.80      | 8       | 16.14       |      |
| Bathygadus macrops          | 14.64      | 86      | 12.57       |      |
| Squalus megalops            | 12.20      | 24      | 10.48       |      |
| Malacocephalus laevis       | 9.62       | 254     | 8.26        |      |
| Centrophorus uyato          | 7.44       | 2       | 6.39        |      |
| Parasudis fraser-bruenneri  | 7.14       | 756     | 6.13        |      |
| Epigonus telescopus         | 6.42       | 74      | 5.51        |      |
| Cynopterus ferox            | 5.98       | 76      | 5.13        |      |
| Stereomastis sp.            | 4.32       | 496     | 3.71        |      |
| Raja miraletus              | 4.06       | 26      | 3.49        |      |
| Todaropsis eblanæ           | 3.42       | 40      | 2.94        |      |
| Laemonema laureysi          | 2.84       | 26      | 2.44        |      |
| Aristeus variidens          | 2.36       | 78      | 2.03        | 3665 |
| Unidentified fish           | 1.92       | 74      | 1.65        |      |
| Scyllorhinus cervigoni      | 1.60       | 4       | 1.37        |      |
| Ijimaia loppei              | 1.48       | 10      | 1.27        |      |
| Ruvettus pretiosus          | 1.30       | 2       | 1.12        |      |
| Galeus polli                | 1.20       | 12      | 1.03        |      |
| Polymetno corythaola        | 1.18       | 34      | 1.01        |      |
| Helicolenus dactylopterus   | 1.02       | 30      | 0.88        |      |
| Parapenaeus longirostris    | 0.98       | 76      | 0.84        | 3658 |
| Portunus validus            | 0.96       | 2       | 0.82        |      |
| Trichiurus lepturus         | 0.90       | 8       | 0.77        |      |
| Cyttopsis roseus            | 0.62       | 52      | 0.53        |      |
| Syacium micrurum            | 0.48       | 26      | 0.41        |      |
| Coelorrhinus coelorrhinus   | 0.48       | 28      | 0.41        |      |
| Erotia barbata              | 0.44       | 2       | 0.38        |      |
| MYCTOPHIDAE                 | 0.42       | 72      | 0.36        |      |
| Peristodion cataphractum    | 0.40       | 8       | 0.34        |      |
| Dibranchus atlanticus       | 0.40       | 36      | 0.34        |      |
| Physiculus huloti           | 0.36       | 54      | 0.31        |      |
| Malacocephalus occidentalis | 0.18       | 4       | 0.15        |      |
| MELANOSTOMIATIDAE           | 0.16       | 2       | 0.14        |      |
| Octopus vulgaris            | 0.14       | 2       | 0.12        |      |
| Gephyroberyx darwini        | 0.14       | 2       | 0.12        |      |
| Oxynotus centrina           | 0.12       | 2       | 0.10        |      |
| Grammolites gruvelli        | 0.12       | 6       | 0.10        |      |
| Shrimps, small, non comm.   | 0.10       | 12      | 0.09        |      |
| Chascanopsetta lugubris     | 0.04       | 2       | 0.03        |      |
| Setarches quentheri         | 0.04       | 2       | 0.03        |      |
| Synagrops microlepis        | 0.04       | 2       | 0.03        |      |
| Total                       | 116.46     |         | 99.97       |      |

PROJECT STATION: 859  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 612 Long E 401  
 start stop duration  
 TIME :02:42:41 03:12:26 30 (min) Purpose code: 3  
 LOG :5088.69 5090.21 1.51 Area code : 5  
 FDEPTH: 405 409 GearCond.code:  
 BDEPTH: 405 409 Validity code:  
 Towing dir: 110° Wire out: 1135 m Speed: 30 kn\*10  
 Sorted: 39 Kg Total catch: 143.36 CATCH/HOUR: 286.72

| SPECIES                  | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------|------------|---------|-------------|------|
|                          | weight     | numbers |             |      |
| Echinocardium sp.        | 77.86      | 1144    | 27.16       |      |
| Centrophorus granulosus  | 64.00      | 16      | 22.32       |      |
| Nematocarcinus africanus | 57.88      | 4558    | 20.19       |      |
| Benthodesmus tenuis      | 49.40      | 1106    | 17.23       |      |
| Epigonus telescopus      | 9.02       | 102     | 3.15        |      |
| Squalus megalops         | 6.20       | 10      | 2.16        |      |
| Chauanax pictus          | 4.54       | 16      | 1.58        |      |
| Merluccius polli         | 4.36       | 8       | 1.52        | 3659 |
| Stereomastis sp.         | 4.22       | 458     | 1.47        |      |
| Malacocephalus laevis    | 2.40       | 44      | 0.84        |      |
| Etmopterus pusillus      | 1.20       | 8       | 0.42        |      |
| Aristeus variidens       | 0.98       | 44      | 0.34        |      |
| Cyttopsis roseus         | 0.82       | 22      | 0.29        |      |
| Hymenocephalus italicus  | 0.70       | 48      | 0.24        |      |
| Laemonema laureysi       | 0.60       | 6       | 0.21        |      |
| Brotula barbata          | 0.44       | 6       | 0.15        |      |
| Nezumia aequalis         | 0.38       | 22      | 0.13        |      |
| Dibranchus atlanticus    | 0.38       | 44      | 0.13        |      |
| GONOSTOMIATIDAE          | 0.32       | 60      | 0.11        |      |
| Bathyrongconger vicinus  | 0.28       | 10      | 0.10        |      |
| Halosaurus ovenii        | 0.28       | 6       | 0.10        |      |
| Gephyroberyx darwini     | 0.22       | 6       | 0.08        |      |
| S H R I M P S            | 0.06       | 22      | 0.02        |      |
| MALACOSTEIDAE            | 0.06       | 6       | 0.02        |      |
| Stomias boa boa          | 0.06       | 6       | 0.02        |      |
| MYCTOPHIDAE              | 0.06       | 6       | 0.02        |      |
| Zenion hololepis         | 0.00       | 6       |             |      |
| Solenocera africana      | 0.00       | 16      |             |      |
| Total                    | 286.72     |         | 100.00      |      |

PROJECT STATION: 860  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 603  
 start stop duration Long E 413  
 TIME :05:45:02 06:18:06 33 (min) Purpose code: 3  
 LOG :5096.82 5098.48 1.64 Area code : 5  
 FDEPTH: 96 96 GearCond.code:  
 BDEPTH: 98 96 Validity code:  
 Towing dir: 100s Wire out: 317 m Speed: 30 kn\*10

Sorted: 37 Kg Total catch: 85.84 CATCH/HOUR: 156.07

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Ariomma bondi                  | 37.38      | 687     | 23.95       | 3663 |
| Pagellus bellottii             | 22.76      | 415     | 14.58       | 3661 |
| Sepia officinalis hierredda    | 19.64      | 102     | 12.58       |      |
| Dentex canariensis             | 16.22      | 185     | 10.39       | 3660 |
| Illex coindetii                | 11.42      | 1247    | 7.32        |      |
| Heptranchias perlo             | 9.64       | 2       | 6.18        |      |
| Squatina oculata               | 7.96       | 4       | 5.10        |      |
| Citharus linguatula            | 4.55       | 240     | 2.92        |      |
| Mustelus mustelus              | 4.47       | 2       | 2.86        |      |
| Sardinella aurita              | 4.36       | 76      | 2.79        | 3662 |
| Uranoscopus albesca            | 3.78       | 44      | 2.42        |      |
| Octopus vulgaris               | 3.53       | 4       | 2.26        |      |
| Priacanthus arenatus           | 2.98       | 29      | 1.91        |      |
| Raja miraletus                 | 2.91       | 11      | 1.86        |      |
| Lepidotrigla cadmani           | 2.15       | 44      | 1.38        |      |
| Setarches guentheri            | 0.58       | 11      | 0.37        |      |
| Fistularia petimba             | 0.45       | 2       | 0.29        |      |
| Dibranchius atlanticus         | 0.29       | 44      | 0.19        |      |
| Chilomycterus spinosus mauret. | 0.27       | 2       | 0.17        |      |
| Pequsa lascaris                | 0.22       | 4       | 0.14        |      |
| Syacium micrum                 | 0.22       | 33      | 0.14        |      |
| Microchirus frechkopi          | 0.15       | 4       | 0.10        |      |
| Bathygobius paganelius         | 0.11       | 18      | 0.07        |      |
| Saurida brasiliensis           | 0.04       | 11      | 0.03        |      |
| Total                          | 156.08     |         | 100.00      |      |

PROJECT STATION: 861  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 610  
 start stop duration Long E 417  
 TIME :07:48:09 08:20:07 32 (min) Purpose code: 3  
 LOG :5107.67 5109.27 1.58 Area code : 5  
 FDEPTH: 42 43 GearCond.code:  
 BDEPTH: 42 43 Validity code:  
 Towing dir: 280s Wire out: 180 m Speed: 30 kn\*10

Sorted: 50 Kg Total catch: 103.00 CATCH/HOUR: 193.13

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Chloroscombrus chrysurus    | 58.13      | 690     | 30.10       |      |
| Trichurus lepturus          | 37.73      | 2081    | 19.54       |      |
| Portunus validus            | 20.44      | 83      | 10.58       |      |
| Pteroscion pelli            | 19.31      | 878     | 10.00       |      |
| Brachydeuterus auritus      | 13.24      | 559     | 6.86        |      |
| Ilisha africana             | 12.83      | 2464    | 6.64        |      |
| Sphyræna guanchancho        | 8.70       | 158     | 4.50        |      |
| Pseudotolithus senegalensis | 6.23       | 60      | 3.23        | 3666 |
| Selene dorsalis             | 5.14       | 75      | 2.66        |      |
| Sepia officinalis hierredda | 4.43       | 23      | 2.29        |      |
| Penaeus notialis            | 1.35       | 53      | 0.70        |      |
| Raja miraletus              | 0.98       | 4       | 0.51        |      |
| Bathygobius paganelius      | 0.90       | 11      | 0.47        |      |
| Drepane africana            | 0.64       | 19      | 0.33        |      |
| Galeoides decadactylus      | 0.60       | 38      | 0.31        |      |
| Cynoponticus ferox          | 0.53       | 4       | 0.27        |      |
| Pisodonophis semicinctus    | 0.45       | 4       | 0.23        |      |
| Lagocephalus laevigatus     | 0.41       | 8       | 0.21        |      |
| Cynoglossus senegalensis    | 0.41       | 4       | 0.21        |      |
| Sardinella aurita           | 0.15       | 4       | 0.08        |      |
| Parapenaeopsis atlantica    | 0.15       | 19      | 0.08        |      |
| Citharus linguatula         | 0.11       | 4       | 0.06        |      |
| Sicyonia galeata            | 0.08       | 8       | 0.04        |      |
| Epinephelus aeneus          | 0.08       | 4       | 0.04        |      |
| Ephippion guttifer          | 0.04       | 8       | 0.02        |      |
| Batrachoides liberiensis    | 0.04       | 4       | 0.02        |      |
| Alectis alexandrinus juv.   | 0.04       | 8       | 0.02        |      |
| Unidentified fish           | 0.02       | 2       | 0.01        |      |
| Total                       | 193.16     |         | 100.01      |      |

PROJECT STATION: 862  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 615  
 start stop duration Long E 418  
 TIME :10:29:49 11:01:13 31 (min) Purpose code: 3  
 LOG :5121.50 5123.17 1.65 Area code : 5  
 FDEPTH: 24 27 GearCond.code:  
 BDEPTH: 24 27 Validity code:  
 Towing dir: 130s Wire out: 120 m Speed: 30 kn\*10

Sorted: 30 Kg Total catch: 91.41 CATCH/HOUR: 176.92

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trichurus lepturus          | 46.34      | 2868    | 26.19       |      |
| Pseudotolithus senegalensis | 19.97      | 209     | 11.29       |      |
| Ilisha africana             | 18.23      | 1800    | 10.30       |      |
| Caranx senegalensis         | 13.53      | 64      | 7.65        | 3668 |
| Scomberomorus tritor        | 9.93       | 46      | 5.61        |      |
| Elops lacerta               | 9.70       | 46      | 5.48        |      |
| Chloroscombrus chrysurus    | 9.58       | 263     | 5.41        |      |
| Brachydeuterus auritus      | 9.00       | 145     | 5.09        |      |
| Galeoides decadactylus      | 5.75       | 110     | 3.25        |      |
| Lagocephalus laevigatus     | 5.17       | 17      | 2.92        |      |
| Sphyræna guanchancho        | 3.89       | 35      | 2.20        |      |
| Pteroscion pelli            | 3.77       | 93      | 2.13        |      |
| Lutjanus goroensis          | 3.19       | 6       | 1.80        |      |
| Pentaneus quinquequarius    | 2.73       | 81      | 1.54        |      |
| Selene dorsalis             | 2.44       | 93      | 1.38        |      |
| Albula vulpes               | 2.26       | 6       | 1.28        |      |
| Raja miraletus              | 1.86       | 6       | 1.05        |      |
| Portunus validus            | 1.63       | 6       | 0.92        |      |
| Drepane africana            | 1.39       | 81      | 0.79        |      |
| Callinectes pallidus        | 1.28       | 52      | 0.72        |      |
| Octopus vulgaris            | 0.93       | 12      | 0.53        |      |
| Ethmalosa fimbriata         | 0.81       | 29      | 0.46        | 3667 |
| Parapenaeopsis atlantica    | 0.75       | 99      | 0.42        |      |
| Trachinotus maxillosus      | 0.75       | 6       | 0.42        |      |
| Penaeus monodon             | 0.70       | 6       | 0.40        |      |
| Caranx hippos               | 0.58       | 6       | 0.33        |      |
| Pomadasyd jubelini          | 0.58       | 6       | 0.33        |      |
| Ephippion guttifer          | 0.17       | 12      | 0.10        |      |
| Total                       | 176.91     |         | 99.99       |      |

PROJECT STATION: 863  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 607  
 start stop duration Long E 435  
 TIME :13:13:00 13:43:00 30 (min) Purpose code: 3  
 LOG :5141.10 5142.80 1.70 Area code : 5  
 FDEPTH: 24 24 GearCond.code:  
 BDEPTH: 24 24 Validity code:  
 Towing dir: 290s Wire out: 125 m Speed: 30 kn\*10

Sorted: 48 Kg Total catch: 97.24 CATCH/HOUR: 194.48

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Chloroscombrus chrysurus    | 39.28      | 1224    | 20.20       | 3675 |
| Pseudotolithus elongatus    | 35.84      | 356     | 18.43       | 3680 |
| Ilisha africana             | 28.92      | 3876    | 14.87       | 3671 |
| Pseudotolithus typus        | 19.84      | 440     | 10.20       | 3672 |
| Galeoides decadactylus      | 10.88      | 272     | 5.59        |      |
| Pseudotolithus senegalensis | 10.16      | 256     | 5.22        | 3679 |
| Trichurus lepturus          | 9.28       | 548     | 4.77        | 3678 |
| Sphyræna guanchancho        | 8.56       | 72      | 4.40        | 3673 |
| Albula vulpes               | 6.96       | 40      | 3.58        |      |
| Pteroscion pelli            | 5.68       | 40      | 2.92        | 3677 |
| Scomberomorus tritor        | 4.00       | 16      | 2.06        | 3674 |
| Callinectes pallidus        | 3.64       | 144     | 1.87        |      |
| Selene dorsalis             | 3.00       | 52      | 1.54        | 3676 |
| Sardinella maderensis       | 2.36       | 176     | 1.21        | 3670 |
| Penaeus notialis            | 1.76       | 268     | 0.90        |      |
| Penaeus monodon             | 1.32       | 8       | 0.68        |      |
| Brachydeuterus auritus      | 0.92       | 20      | 0.47        |      |
| Lagocephalus laevigatus     | 0.76       | 20      | 0.39        |      |
| Octopus vulgaris            | 0.48       | 4       | 0.25        |      |
| Caranx hippos               | 0.32       | 4       | 0.16        |      |
| Pseudotolithus moorii       | 0.16       | 4       | 0.08        |      |
| Sepia officinalis hierredda | 0.12       | 52      | 0.06        |      |
| Drepane africana            | 0.12       | 8       | 0.06        |      |
| Antennarius sp.             | 0.12       | 12      | 0.06        |      |
| Nematopalaemon hastatus     | 0.00       | 24      |             |      |
| Brotula barbata             | 0.00       | 4       |             |      |
| Total                       | 194.48     |         | 99.97       |      |

PROJECT STATION: 864  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 601  
 start stop duration Long E 432  
 TIME :14:55:05 15:25:15 30 (min) Purpose code: 3  
 LOG :5150.47 5152.03 1.55 Area code : 5  
 FDEPTH: 40 37 GearCond.code:  
 BDEPTH: 40 37 Validity code:  
 Towing dir: 120s Wire out: 165 m Speed: 30 kn\*10

Sorted: 49 Kg Total catch: 98.60 CATCH/HOUR: 197.20

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Selene dorsalis             | 33.00      | 484     | 16.73       | 3687 |
| Portunus validus            | 30.40      | 212     | 15.42       |      |
| Trichurus lepturus          | 23.52      | 2924    | 11.93       |      |
| Brachydeuterus auritus      | 20.88      | 652     | 10.59       | 3689 |
| Ilisha africana             | 18.84      | 844     | 9.55        | 3682 |
| Pteroscion pelli            | 16.68      | 876     | 8.46        | 3688 |
| Chloroscombrus chrysurus    | 13.12      | 208     | 6.65        | 3681 |
| Sphyræna guanchancho        | 11.04      | 72      | 5.60        | 3683 |
| Selar crumenophthalmus      | 8.40       | 36      | 4.26        | 3685 |
| Pseudotolithus senegalensis | 4.76       | 76      | 2.41        | 3684 |
| Scomberomorus tritor        | 2.44       | 20      | 1.24        | 3686 |
| Octopus vulgaris            | 2.20       | 20      | 1.12        |      |
| Sepia officinalis hierredda | 1.96       | 8       | 0.99        |      |
| Penaeus notialis            | 1.60       | 96      | 0.81        |      |
| Parapenaeopsis atlantica    | 1.48       | 416     | 0.75        |      |
| Caranx hippos               | 1.28       | 8       | 0.65        |      |
| Pseudotolithus elongatus    | 1.24       | 8       | 0.63        |      |
| Stromateus fiatola          | 1.20       | 4       | 0.61        |      |
| Eucinostomus melanopterus   | 1.16       | 8       | 0.59        |      |
| Galeoides decadactylus      | 1.16       | 36      | 0.59        |      |
| Grammolites gruvelli        | 0.16       | 36      | 0.08        |      |
| Pentaneus quinquequarius    | 0.12       | 8       | 0.06        |      |
| Antennarius sp.             | 0.12       | 16      | 0.06        |      |
| Epinephelus aeneus          | 0.12       | 4       | 0.06        |      |
| Callinectes pallidus        | 0.08       | 4       | 0.04        |      |
| Bathygobius paganelius      | 0.08       | 4       | 0.04        |      |
| Sicyonia galeata            | 0.04       | 8       | 0.02        |      |
| Squilla mantis              | 0.04       | 4       | 0.02        |      |
| Alectis alexandrinus        | 0.04       | 4       | 0.02        |      |
| Sardinella maderensis       | 0.04       | 4       | 0.02        |      |
| Total                       | 197.20     |         | 100.00      |      |

PROJECT STATION: 865  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 556  
 start stop duration Long E 430  
 TIME :17:29:12 17:59:53 31 (min) Purpose code: 3  
 LOG :5162.75 5164.40 1.62 Area code : 5  
 FDEPTH: 72 67 GearCond.code:  
 BDEPTH: 72 67 Validity code:  
 Towing dir: 120s Wire out: 260 m Speed:300 kn\*10

Sorted: 32 Kg Total catch: 32.92 CATCH/HOUR: 63.72

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Brachydeuterus auritus         | 15.95      | 1517    | 25.03       | 3692 |
| Sphyræna guanchancho           | 14.55      | 166     | 22.83       | 3694 |
| Pentheroscion mbizi            | 5.88       | 46      | 9.23        | 3690 |
| Saurida brasiliensis           | 3.31       | 960     | 5.19        |      |
| Pseudupeneus prayensis         | 3.23       | 52      | 5.07        |      |
| Uranoscopus albesca            | 2.88       | 45      | 4.52        |      |
| Pagellus bellottii             | 2.65       | 31      | 4.16        | 3693 |
| Alloteuthis africana           | 2.21       | 1279    | 3.47        |      |
| Serranus accraensis            | 1.88       | 60      | 2.95        |      |
| Dentex canariensis             | 1.70       | 15      | 2.67        | 3691 |
| Illex coindetii                | 1.68       | 19      | 2.64        |      |
| Citharus linguatula            | 1.43       | 10      | 2.24        |      |
| Sepia officinalis hierredda    | 1.05       | 48      | 1.65        |      |
| Pagrus caeruleostictus         | 0.97       | 10      | 1.52        | 3695 |
| Priacanthus arenatus           | 0.95       | 6       | 1.49        |      |
| Epinephelus aeneus             | 0.91       | 2       | 1.43        |      |
| Chilomycterus spinosus mauret. | 0.91       | 4       | 1.43        |      |
| Lepidotrigla cadmani           | 0.62       | 21      | 0.97        |      |
| Grammolites gruvelli           | 0.37       | 15      | 0.58        |      |
| Syacium micrum                 | 0.21       | 43      | 0.33        |      |
| Microchirus frechkopi          | 0.10       | 6       | 0.16        |      |
| Bathygobius paganelius         | 0.10       | 14      | 0.16        |      |
| Setarches guentheri            | 0.08       | 15      | 0.13        |      |
| Fistularia petimba             | 0.06       | 2       | 0.09        |      |
| Dibranchius atlanticus         | 0.04       | 2       | 0.06        |      |
| Total                          | 63.72      |         | 100.00      |      |



PROJECT STATION: 866  
 DATE: 8/ 6/05 GEAR TYPE: PT No:1 POSITION:Lat N 554  
 start stop duration Long E 427

TIME :19:08:41 19:37:32 29 (min) Purpose code: 1  
 LOG :5171.46 5173.22 1.74 Area code : 5  
 FDEPTH: 60 50 GearCond.code:  
 BDEPTH: 135 200 Validity code:  
 Towing dir: 206° Wire out: 130 m Speed: 35 kn\*10

Sorted: 18 Kg Total catch: 18.18 CATCH/HOUR: 37.61

| SPECIES               | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------|------------|---------|-------------|------|
|                       | weight     | numbers |             |      |
| MYCTOPHIDAE           | 28.97      | 12068   | 77.03       |      |
| Hypoclydonia bella    | 4.76       | 581     | 12.66       |      |
| Synagrops microlepis  | 1.32       | 550     | 3.51        |      |
| Todarodes sagittatus  | 0.83       | 2       | 2.21        |      |
| Ariomma bondi         | 0.54       | 14      | 1.44        |      |
| Illex coindetii       | 0.39       | 52      | 1.04        |      |
| Saurida brasiliensis  | 0.31       | 110     | 0.82        |      |
| Ommastrephes pteropus | 0.17       | 2       | 0.45        |      |
| C E P H A L O P O D A | 0.10       | 31      | 0.27        |      |
| PARALEPIDIDAE         | 0.06       | 10      | 0.16        |      |
| Sphyraena guachancho  | 0.06       | 2       | 0.16        |      |
| Grammolites gruvelli  | 0.04       | 2       | 0.11        |      |
| Leptocephalus         | 0.04       | 2       | 0.11        |      |
| ASTRONESPHIDAE        | 0.02       | 2       | 0.05        |      |
| Total                 | 37.61      |         | 100.02      |      |

PROJECT STATION: 867  
 DATE: 8/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 553  
 start stop duration Long E 425

TIME :20:54:42 21:25:42 31 (min) Purpose code: 3  
 LOG :5179.55 5181.07 1.50 Area code : 5  
 FDEPTH: 264 259 GearCond.code:  
 BDEPTH: 264 259 Validity code:  
 Towing dir: 140° Wire out: 750 m Speed: 30 kn\*10

Sorted: 25 Kg Total catch: 25.42 CATCH/HOUR: 49.20

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Centrophorus granulosus     | 24.00      | 4       | 48.78       |      |
| Parasudis fraser-bruenneri  | 7.47       | 954     | 15.18       |      |
| Parapenaeus longirostris    | 4.22       | 660     | 8.58        |      |
| Todaropsis eblanae          | 3.00       | 45      | 6.10        |      |
| Cynoponticus ferox          | 1.84       | 46      | 3.74        |      |
| Galeus polli                | 1.41       | 17      | 2.87        |      |
| Octopus vulgaris            | 1.12       | 8       | 2.28        |      |
| Solenocera africana         | 1.03       | 165     | 2.09        |      |
| Chaceon maritae             | 0.95       | 2       | 1.93        |      |
| Aristeus varidens           | 0.66       | 46      | 1.34        |      |
| Physiculus sp.              | 0.56       | 2       | 1.14        |      |
| Malacocephalus laevis       | 0.50       | 19      | 1.02        |      |
| Illex coindetii             | 0.39       | 4       | 0.79        |      |
| Oxynotus centrina           | 0.35       | 2       | 0.71        |      |
| Chascanopsetta lugubris     | 0.35       | 23      | 0.71        |      |
| MYCTOPHIDAE                 | 0.29       | 87      | 0.59        |      |
| Chlorophthalmus atlanticus  | 0.21       | 14      | 0.43        |      |
| Priacanthus arenatus        | 0.14       | 2       | 0.28        |      |
| Grammolites gruvelli        | 0.10       | 2       | 0.20        |      |
| Polymetme corythaeola       | 0.10       | 15      | 0.20        |      |
| Malacocephalus occidentalis | 0.10       | 14      | 0.20        |      |
| Setarches guentheri         | 0.08       | 4       | 0.16        |      |
| S H R I M P S               | 0.08       | 89      | 0.16        |      |
| Epigonus sp.                | 0.06       | 6       | 0.12        |      |
| Stereomastis sp.            | 0.04       | 4       | 0.08        |      |
| Hypoclydonia bella          | 0.04       | 2       | 0.08        |      |
| Peristedion cataphractum    | 0.04       | 2       | 0.08        |      |
| Citharus linguatula         | 0.04       | 4       | 0.08        |      |
| Zenion hololepis            | 0.02       | 2       | 0.04        |      |
| Synagrops microlepis        | 0.02       | 2       | 0.04        |      |
| Coelorinchus coelorhincus   | 0.02       | 2       | 0.04        |      |
| Total                       | 49.23      |         | 100.04      |      |

PROJECT STATION: 868  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 537  
 start stop duration Long E 430

TIME :03:10:11 03:23:26 13 (min) Purpose code: 3  
 LOG :5227.05 5227.71 0.65 Area code : 5  
 FDEPTH: 413 424 GearCond.code:  
 BDEPTH: 413 424 Validity code:  
 Towing dir: 315° Wire out: 1150 m Speed: 30 kn\*10

Sorted: 28 Kg Total catch: 28.32 CATCH/HOUR: 130.71

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Benthodesmus tenuis         | 61.48      | 2202    | 47.04       |      |
| Hymenocephalus italicus     | 19.52      | 1542    | 14.93       |      |
| Centrophorus granulosus     | 13.85      | 5       | 10.60       |      |
| Epigonus sp.                | 4.80       | 102     | 3.67        |      |
| C R U S E A C E A N S       | 3.88       | 346     | 2.97        |      |
| Malacocephalus laevis       | 3.09       | 42      | 2.36        |      |
| Chaunax pictus              | 3.00       | 74      | 2.30        |      |
| Capros aper                 | 2.68       | 60      | 2.05        |      |
| Chlorophthalmus atlanticus  | 1.80       | 37      | 1.38        |      |
| Illex coindetii             | 1.75       | 32      | 1.34        |      |
| Merluccius polli            | 1.71       | 5       | 1.31        |      |
| Coelorinchus coelorhincus   | 1.25       | 14      | 0.96        |      |
| PASIPHAIDAE                 | 1.15       | 272     | 0.88        |      |
| Aristeus varidens           | 1.11       | 88      | 0.85        |      |
| Etmopterus pusillus         | 1.11       | 5       | 0.85        |      |
| Calappa sp.                 | 1.06       | 23      | 0.81        |      |
| Malacocephalus occidentalis | 1.06       | 46      | 0.81        |      |
| Bembrops greyi              | 0.97       | 23      | 0.74        |      |
| Dicrolene intronigra        | 0.88       | 5       | 0.67        |      |
| Chascanopsetta lugubris     | 0.65       | 23      | 0.50        |      |
| Zenion hololepis            | 0.55       | 69      | 0.42        |      |
| Octopus vulgaris            | 0.51       | 5       | 0.39        |      |
| Unidentified fish           | 0.42       | 28      | 0.32        |      |
| Gephyroberyx darwini        | 0.37       | 9       | 0.28        |      |
| Dibranchius atlanticus      | 0.37       | 42      | 0.28        |      |
| Laemonema laureysi          | 0.28       | 5       | 0.21        |      |
| Peristedion cataphractum    | 0.28       | 37      | 0.21        |      |
| Galeus polli                | 0.28       | 5       | 0.21        |      |
| MYCTOPHIDAE                 | 0.23       | 88      | 0.18        |      |
| Cynoponticus ferox          | 0.18       | 28      | 0.14        |      |
| Bathyrocongler vicinus      | 0.14       | 14      | 0.11        |      |
| GALATHEIDAE *               | 0.14       | 65      | 0.11        |      |
| Solenocera africana         | 0.09       | 5       | 0.07        |      |
| Decapterus punctatus        | 0.05       | 5       | 0.04        |      |
| Hypoclydonia bella          | 0.05       | 5       | 0.04        |      |
| Total                       | 130.74     |         | 100.03      |      |

PROJECT STATION: 869  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 540  
 start stop duration Long E 433

TIME :05:05:43 05:35:34 30 (min) Purpose code: 3  
 LOG :5236.35 5237.87 1.50 Area code : 5  
 FDEPTH: 217 238 GearCond.code:  
 BDEPTH: 217 238 Validity code:  
 Towing dir: 325° Wire out: 650 m Speed: 30 kn\*10

Sorted: 85 Kg Total catch: 237.15 CATCH/HOUR: 474.30

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Ariomma bondi              | 192.24     | 5460    | 40.53       |      |
| Epigonus telescopus        | 114.48     | 5904    | 24.14       |      |
| Squatina aculeata          | 70.16      | 2       | 14.79       |      |
| Dasyatis centroura         | 20.32      | 2       | 4.28        |      |
| Synagrops microlepis       | 16.20      | 1572    | 3.42        |      |
| Bembrops greyi             | 11.52      | 204     | 2.43        |      |
| Pterothrissus belloci      | 9.60       | 48      | 2.02        |      |
| Zenopsis conchifer         | 9.00       | 4       | 1.90        |      |
| Uranoscopus albesca        | 7.68       | 84      | 1.62        |      |
| Chlorophthalmus atlanticus | 6.12       | 528     | 1.29        |      |
| Illex coindetii            | 3.96       | 48      | 0.83        |      |
| Brotula barbata            | 3.72       | 6       | 0.78        |      |
| Dentex angolensis          | 3.16       | 26      | 0.67        | 3697 |
| Parapenaeopsis atlantica   | 1.80       | 420     | 0.38        |      |
| Lepidotrigla cadmani       | 0.84       | 12      | 0.18        |      |
| Raja miraletus             | 0.80       | 4       | 0.17        |      |
| Syacium micrurum           | 0.72       | 60      | 0.15        |      |
| Squatina oculata           | 0.66       | 2       | 0.14        |      |
| Peristedion cataphractum   | 0.48       | 12      | 0.10        |      |
| Evxymetopon taeniatus      | 0.46       | 2       | 0.10        |      |
| Octopus vulgaris           | 0.26       | 2       | 0.05        |      |
| Promethichthys prometheus  | 0.12       | 12      | 0.03        |      |
| Total                      | 474.30     |         | 100.00      |      |

PROJECT STATION: 870  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 543  
 start stop duration Long E 436

TIME :06:58:00 07:29:26 31 (min) Purpose code: 3  
 LOG :5246.31 5247.88 1.56 Area code : 5  
 FDEPTH: 116 114 GearCond.code:  
 BDEPTH: 116 114 Validity code:  
 Towing dir: 280° Wire out: 354 m Speed: 30 kn\*10

Sorted: 58 Kg Total catch: 127.85 CATCH/HOUR: 247.45

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 129.39     | 4097    | 52.29       | 3669 |
| Squatina oculata            | 28.76      | 17      | 11.62       |      |
| Mustelus mustelus           | 28.18      | 4       | 11.39       |      |
| Dentex canariensis          | 15.25      | 143     | 6.16        | 3726 |
| Illex coindetii             | 10.30      | 501     | 4.16        |      |
| Sepia officinalis hierredda | 7.94       | 176     | 3.21        |      |
| Lepidotrigla cadmani        | 5.36       | 81      | 2.17        |      |
| Citharus linguatula         | 4.74       | 225     | 1.92        |      |
| Priacanthus arenatus        | 3.87       | 75      | 1.56        |      |
| Uranoscopus albesca         | 2.44       | 48      | 0.99        |      |
| Pagellus bellottii          | 2.38       | 41      | 0.96        | 3696 |
| Pterothrissus belloci       | 2.11       | 14      | 0.85        |      |
| Raja miraletus              | 1.57       | 10      | 0.63        |      |
| Todaropsis eblanae          | 1.08       | 19      | 0.44        |      |
| Zeus faber                  | 0.95       | 8       | 0.38        |      |
| Bembrops greyi              | 0.68       | 14      | 0.27        |      |
| Fistularia petimba          | 0.60       | 4       | 0.24        |      |
| Setarches guentheri         | 0.54       | 14      | 0.22        |      |
| Peristedion cataphractum    | 0.48       | 14      | 0.19        |      |
| Lepidotrigla carolae        | 0.41       | 21      | 0.17        |      |
| Ephippium guttifer          | 0.35       | 8       | 0.14        |      |
| Syacium micrurum            | 0.08       | 8       | 0.03        |      |
| Total                       | 247.46     |         | 99.99       |      |

PROJECT STATION: 871  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 546  
 start stop duration Long E 439

TIME :08:42:05 09:12:47 31 (min) Purpose code: 3  
 LOG :5255.57 5257.07 1.49 Area code : 5  
 FDEPTH: 64 64 GearCond.code:  
 BDEPTH: 64 64 Validity code:  
 Towing dir: 330° Wire out: 200 m Speed: 30 kn\*10

Sorted: 49 Kg Total catch: 207.61 CATCH/HOUR: 401.83

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Selene dorsalis             | 246.43     | 2433    | 61.33       | 3700 |
| Pentheroscion mbizi         | 35.42      | 453     | 8.81        | 3698 |
| Brachydeuterus auritus      | 23.92      | 1231    | 5.95        | 3699 |
| Squatina oculata            | 23.26      | 10      | 5.79        |      |
| Saurida brasiliensis        | 21.25      | 4877    | 5.29        |      |
| Sphyraena guachancho        | 16.26      | 116     | 4.05        | 3727 |
| Epinephelus aeneus          | 8.09       | 6       | 2.01        |      |
| Pseudupeneus prayensis      | 4.65       | 58      | 1.16        |      |
| Todaropsis eblanae          | 3.95       | 279     | 0.98        |      |
| Brotula barbata             | 2.09       | 23      | 0.52        |      |
| Priacanthus arenatus        | 2.09       | 12      | 0.52        |      |
| Serranus accraensis         | 2.09       | 70      | 0.52        |      |
| Selar crumenophthalmus      | 1.65       | 8       | 0.41        |      |
| Sepia officinalis hierredda | 1.28       | 46      | 0.32        |      |
| Parapenaeus longirostris    | 1.16       | 151     | 0.29        |      |
| Citharus linguatula         | 1.05       | 70      | 0.26        |      |
| Pagrus caeruleostictus      | 0.93       | 12      | 0.23        |      |
| Trichiurus lepturus         | 0.93       | 23      | 0.23        |      |
| Illex coindetii             | 0.93       | 12      | 0.23        |      |
| Ariomma bondi               | 0.81       | 23      | 0.20        |      |
| Alloteuthis africana        | 0.58       | 128     | 0.14        |      |
| Lepidotrigla cadmani        | 0.58       | 35      | 0.14        |      |
| Syacium micrurum            | 0.58       | 105     | 0.14        |      |
| Bathygobius paganelius      | 0.46       | 70      | 0.11        |      |
| J E L Y F I S H             | 0.46       | 23      | 0.11        |      |
| Raja miraletus              | 0.35       | 12      | 0.09        |      |
| Epigonus telescopus         | 0.23       | 12      | 0.06        |      |
| Sphoeroides marmoratus      | 0.23       | 12      | 0.06        |      |
| Grammolites gruvelli        | 0.12       | 12      | 0.03        |      |
| Total                       | 401.83     |         | 99.98       |      |

PROJECT STATION: 872  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 550  
 start stop duration Long E 441  
 TIME :10:14:30 10:44:44 30 (min) Purpose code: 3  
 LOG :5262.66 5264.21 1.53 Area code : 5  
 FDEPTH: 39 38 GearCond.code:  
 BDEPTH: 39 38 Validity code:  
 Towing dir: 130° Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 135.76 CATCH/HOUR: 271.52

PROJECT STATION: 875  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 530  
 start stop duration Long E 444  
 TIME :16:17:54 16:49:40 32 (min) Purpose code: 3  
 LOG :5301.40 5302.99 1.58 Area code : 5  
 FDEPTH: 105 102 GearCond.code:  
 BDEPTH: 105 102 Validity code:  
 Towing dir: 145° Wire out: 350 m Speed: 30 kn\*10  
 Sorted: 43 Kg Total catch: 127.98 CATCH/HOUR: 239.96

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
|                             | weight     | numbers     |            |
| Chloroscombrus chrysurus    | 61.56      | 840         | 22.67 3711 |
| Brachydeuterus auritus      | 59.40      | 954         | 21.88 3702 |
| Selene dorsalis             | 54.48      | 342         | 20.06 3705 |
| Portunus validus            | 17.60      | 62          | 6.48       |
| Pteroscion pelli            | 12.36      | 336         | 4.55 3708  |
| Trichiurus lepturus         | 11.22      | 438         | 4.13       |
| Sphyræna guachancho         | 9.54       | 50          | 3.51 3710  |
| Galeoides decadactylus      | 8.40       | 144         | 3.09 3706  |
| Ilisha africana             | 6.72       | 342         | 2.47 3709  |
| Sepia officinalis hierredda | 5.62       | 14          | 2.07       |
| Scomberomorus tritor        | 4.90       | 10          | 1.80 3707  |
| Pseudotolithus senegalensis | 4.64       | 20          | 1.71 3701  |
| Pennaeus notialis           | 3.06       | 120         | 1.13       |
| Stromateus fiatola          | 2.30       | 4           | 0.85       |
| Cynoglossus senegalensis    | 2.10       | 12          | 0.77       |
| Selar crumenophthalmus      | 1.60       | 8           | 0.59 3704  |
| Sardinella maderensis       | 1.42       | 10          | 0.52 3703  |
| Grammolites gruvelli        | 0.96       | 66          | 0.35       |
| Cynoponticus ferox          | 0.86       | 2           | 0.32       |
| Drepane africana            | 0.60       | 12          | 0.22       |
| Brotula barbata             | 0.42       | 6           | 0.15       |
| Ephippion guttifer          | 0.42       | 6           | 0.15       |
| Saurida brasiliensis        | 0.36       | 84          | 0.13       |
| Raja miraletus              | 0.26       | 2           | 0.10       |
| Citharus linguatula         | 0.24       | 12          | 0.09       |
| Octopus vulgaris            | 0.18       | 2           | 0.07       |
| Todaropsis eblanae          | 0.12       | 6           | 0.04       |
| Alectis alexandrinus        | 0.12       | 6           | 0.04       |
| Antennarius sp.             | 0.06       | 12          | 0.02       |
| Total                       | 271.52     |             | 99.96      |

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
|                             | weight     | numbers     |            |
| Lepidotrigla cadmani        | 40.61      | 883         | 16.92      |
| Ariomma bondi               | 35.04      | 1074        | 14.60 3737 |
| Illex coindetii             | 27.84      | 3606        | 11.60      |
| Lagocephalus laevigatus     | 20.81      | 743         | 8.67       |
| Sepia officinalis hierredda | 18.17      | 214         | 7.57       |
| Setarches guentheri         | 15.98      | 377         | 6.66       |
| Bagellus bellottii          | 15.92      | 259         | 6.63 3738  |
| Dentex angolensis           | 12.21      | 73          | 5.09 3734  |
| Citharus linguatula         | 11.36      | 793         | 4.73       |
| Dentex congoensis           | 7.93       | 197         | 3.30 3735  |
| Priacanthus arenatus        | 7.14       | 96          | 2.98       |
| Uranoscopus albesca         | 6.81       | 169         | 2.84       |
| Dentex canariensis          | 5.12       | 62          | 2.13 3736  |
| Saurida brasiliensis        | 4.95       | 1429        | 2.06       |
| Squatina oculata            | 3.60       | 6           | 1.50       |
| Raja miraletus              | 3.26       | 17          | 1.36       |
| Fistularia petimba          | 0.79       | 6           | 0.33       |
| Pterothrissus belloci       | 0.73       | 6           | 0.30       |
| Trichiurus lepturus         | 0.73       | 11          | 0.30       |
| Perulibatrachus rossignoli  | 0.23       | 6           | 0.10       |
| Brachydeuterus auritus      | 0.17       | 28          | 0.07       |
| Selar crumenophthalmus      | 0.06       | 11          | 0.03       |
| Total                       | 239.46     |             | 99.77      |

PROJECT STATION: 873  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 552  
 start stop duration Long E 444  
 TIME :11:36:48 12:06:38 30 (min) Purpose code: 3  
 LOG :5268.93 5270.51 1.57 Area code : 5  
 FDEPTH: 27 27 GearCond.code:  
 BDEPTH: 27 27 Validity code:  
 Towing dir: 325° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 61.69 CATCH/HOUR: 123.38

PROJECT STATION: 876  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 527  
 start stop duration Long E 434  
 TIME :21:54:54 22:19:51 25 (min) Purpose code: 3  
 LOG :5324.50 5325.73 1.21 Area code : 5  
 FDEPTH: 481 430 GearCond.code:  
 BDEPTH: 481 430 Validity code:  
 Towing dir: 170° Wire out: 1350 m Speed: 30 kn\*10  
 Sorted: 26 Kg Total catch: 159.49 CATCH/HOUR: 382.78

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
|                             | weight     | numbers     |            |
| Ilisha africana             | 23.98      | 684         | 18.71 3715 |
| Pseudotolithus typus        | 14.80      | 248         | 12.00 3723 |
| Trichiurus lepturus         | 10.38      | 760         | 8.41       |
| Albula vulpes               | 8.84       | 40          | 7.16 3717  |
| Ethmalosa fimbriata         | 8.56       | 32          | 6.94 3721  |
| Sphyræna guachancho         | 8.42       | 72          | 6.82 3712  |
| Nematopalaemon hastatus     | 7.88       | 29516       | 6.39       |
| Chloroscombrus chrysurus    | 5.96       | 174         | 4.83 3725  |
| Galeoides decadactylus      | 5.28       | 102         | 4.28 3716  |
| Pteroscion pelli            | 3.98       | 106         | 3.23 3720  |
| Pentaneus quinquarius       | 3.74       | 112         | 3.03 3719  |
| Selene dorsalis             | 3.40       | 90          | 2.76 3713  |
| Scomberomorus tritor        | 3.24       | 32          | 2.63 3718  |
| Portunus validus            | 2.50       | 50          | 2.03       |
| Lagocephalus laevigatus     | 1.82       | 10          | 1.48       |
| Pseudotolithus senegalensis | 1.82       | 40          | 1.48 3724  |
| Pennaeus notialis           | 1.52       | 54          | 1.23       |
| Parapennaeps atlantica      | 1.22       | 276         | 0.99       |
| Brachydeuterus auritus      | 1.18       | 26          | 0.96 3722  |
| Trachinotus ovatus          | 1.12       | 8           | 0.91       |
| Pennaeus monodon            | 1.10       | 6           | 0.89       |
| Sardinella maderensis       | 0.76       | 24          | 0.62 3714  |
| Drepane africana            | 0.66       | 48          | 0.53       |
| Caranx hippos               | 0.56       | 6           | 0.45       |
| Raja miraletus              | 0.38       | 2           | 0.31       |
| Cymbium cymbium             | 0.34       | 2           | 0.28       |
| Antennarius sp.             | 0.32       | 26          | 0.26       |
| Squilla mantis              | 0.30       | 18          | 0.24       |
| Epinephelus aeneus          | 0.06       | 2           | 0.05       |
| Callinectes pallidus        | 0.06       | 4           | 0.05       |
| Calappa sp.                 | 0.06       | 2           | 0.05       |
| Saurida brasiliensis        | 0.02       | 4           | 0.02       |
| Alectis alexandrinus        | 0.02       | 2           | 0.02       |
| Total                       | 123.38     |             | 100.04     |

| SPECIES                 | CATCH/HOUR | % OF TOT. C | SAMP   |
|-------------------------|------------|-------------|--------|
|                         | weight     | numbers     |        |
| Hymenocephalus italicus | 257.76     | 18072       | 67.34  |
| Benthodesmus tenuis     | 23.90      | 446         | 6.24   |
| Epigonus sp.            | 20.45      | 274         | 5.34   |
| Sea cucumbers           | 15.26      | 72          | 3.99   |
| Bathygadus macrops      | 12.12      | 29          | 3.17   |
| Nezumia aequalis        | 9.50       | 547         | 2.48   |
| Laemonema laureysi      | 9.50       | 58          | 2.48   |
| Stereomastix sp.        | 8.06       | 1123        | 2.11   |
| Malacocephalus laevis   | 5.90       | 72          | 1.54   |
| Lamprogrammus exutus    | 5.18       | 14          | 1.35   |
| Small shrimps           | 2.74       | 446         | 0.72   |
| Hoplostethus cadenati   | 2.59       | 86          | 0.68   |
| Dibranchius atlanticus  | 2.02       | 288         | 0.53   |
| Zenion hololepis        | 1.58       | 72          | 0.41   |
| OPHICHTHIDAE            | 1.44       | 101         | 0.38   |
| OPHIDIIDAE              | 1.30       | 72          | 0.34   |
| Aristeus varidens       | 1.01       | 72          | 0.26   |
| Cyttopsis roseus        | 0.84       | 14          | 0.22   |
| SEPIOLIDAE              | 0.72       | 14          | 0.19   |
| Sphoeroides marmoratus  | 0.43       | 14          | 0.11   |
| GALATHEIDAE *           | 0.43       | 29          | 0.11   |
| Chaunax pictus          | 0.14       | 14          | 0.04   |
| Total                   | 382.87     |             | 100.03 |

PROJECT STATION: 874  
 DATE: 9/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 533  
 start stop duration Long E 447  
 TIME :15:00:13 15:30:09 30 (min) Purpose code: 3  
 LOG :5296.30 5297.76 1.45 Area code : 5  
 FDEPTH: 65 78 GearCond.code:  
 BDEPTH: 65 78 Validity code:  
 Towing dir: 241° Wire out: 241 m Speed: 30 kn\*10  
 Sorted: 32 Kg Total catch: 78.44 CATCH/HOUR: 156.88

PROJECT STATION: 877  
 DATE: 10/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 516  
 start stop duration Long E 447  
 TIME :05:44:06 06:15:10 31 (min) Purpose code: 3  
 LOG :5377.78 5379.37 1.59 Area code : 5  
 FDEPTH: 147 140 GearCond.code:  
 BDEPTH: 147 140 Validity code:  
 Towing dir: 150° Wire out: 455 m Speed: 30 kn\*10  
 Sorted: 49 Kg Total catch: 116.48 CATCH/HOUR: 225.45

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
|                             | weight     | numbers     |            |
| Brachydeuterus auritus      | 77.52      | 6482        | 49.41 3733 |
| Sepia officinalis hierredda | 11.84      | 160         | 7.55       |
| Sphyræna guachancho         | 10.56      | 204         | 6.73 3732  |
| Squatina oculata            | 10.48      | 12          | 6.68       |
| Pentheroscion mbizi         | 8.56       | 120         | 5.46 3728  |
| Lepidotrigla cadmani        | 6.32       | 236         | 4.41 3731  |
| Saurida brasiliensis        | 5.88       | 1312        | 3.75       |
| Priacanthus arenatus        | 4.36       | 32          | 2.78       |
| Ariomma bondi               | 3.48       | 88          | 2.22       |
| Serranus accraensis         | 3.12       | 120         | 1.99 3730  |
| Pseudupeneus prayensis      | 2.60       | 48          | 1.66       |
| Pagrus caeruleostictus      | 2.28       | 40          | 1.45 3729  |
| Alloteuthis africana        | 1.80       | 692         | 1.15       |
| Trichlurus lepturus         | 1.72       | 12          | 1.10       |
| Citharus linguatula         | 1.52       | 132         | 0.97       |
| Illex coindetii             | 0.76       | 8           | 0.48       |
| Ilisha africana             | 0.60       | 12          | 0.38       |
| Grammolites gruvelli        | 0.48       | 20          | 0.31       |
| Lagocephalus laevigatus     | 0.48       | 4           | 0.31       |
| Bathygobius paganelius      | 0.44       | 56          | 0.28       |
| Syacium micurum             | 0.40       | 72          | 0.25       |
| Chloroscombrus chrysurus    | 0.32       | 4           | 0.20       |
| Setarches guentheri         | 0.20       | 24          | 0.13       |
| J E L Y F I S H             | 0.16       | 4           | 0.10       |
| Selar crumenophthalmus      | 0.16       | 8           | 0.10       |
| Calappa pelli               | 0.12       | 8           | 0.08       |
| Epinephelus haifensis       | 0.12       | 4           | 0.08       |
| Total                       | 156.88     |             | 100.01     |

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
|                             | weight     | numbers     |            |
| Ariomma bondi               | 90.23      | 2445        | 40.02 3742 |
| Lepidotrigla cadmani        | 18.12      | 285         | 8.04       |
| Pentheroscion mbizi         | 17.48      | 116         | 7.75 3740  |
| Squalus blainvilliei        | 16.37      | 6           | 7.26       |
| Dentex angolensis           | 14.28      | 105         | 6.33 3739  |
| Priacanthus arenatus        | 8.30       | 75          | 3.68       |
| Squatina oculata            | 8.28       | 4           | 3.67       |
| Pterothrissus belloci       | 7.84       | 81          | 3.48       |
| Sepia officinalis hierredda | 7.14       | 81          | 3.17       |
| Uranoscopus albesca         | 6.85       | 151         | 3.04       |
| Brotula barbata             | 5.57       | 12          | 2.47       |
| Illex coindetii             | 5.40       | 221         | 2.40       |
| Citharus linguatula         | 3.89       | 151         | 1.73       |
| Raja miraletus              | 3.60       | 17          | 1.60       |
| Lophiodon kempii            | 2.32       | 17          | 1.03       |
| Peristedion cataphractum    | 1.92       | 58          | 0.85       |
| Dentex congoensis           | 1.39       | 23          | 0.62 3741  |
| Trichiurus lepturus         | 1.39       | 17          | 0.62       |
| Todaropsis eblanae          | 1.16       | 52          | 0.51       |
| Antigonia capros            | 0.87       | 17          | 0.39       |
| Bembris greyl               | 0.81       | 17          | 0.36       |
| Dibranchius atlanticus      | 0.64       | 58          | 0.28       |
| Zenopsis conchifer          | 0.58       | 6           | 0.26       |
| Zeus faber                  | 0.46       | 6           | 0.20       |
| Setarches guentheri         | 0.23       | 41          | 0.10       |
| Lepidotrigla carolae        | 0.17       | 6           | 0.08       |
| Brachyobius paganelius      | 0.06       | 6           | 0.03       |
| Saurida brasiliensis        | 0.06       | 17          | 0.03       |
| Total                       | 225.41     |             | 100.00     |

PROJECT STATION: 878  
 DATE:10/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 518 Long E 452  
 start stop duration  
 TIME :07:38:43 08:08:27 30 (min) Purpose code: 3  
 LOG :5387.51 5389.00 1.48 Area code : 5  
 FDEPTH: 81 83 GearCond.code:  
 BDEPTH: 81 83 Validity code:  
 Towing dir: 325° Wire out: 250 m Speed: 30 kn\*10  
 Sorted: 35 Kg Total catch: 66.26 CATCH/HOUR: 132.52

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Lepidotrigla cadmani           | 24.24      | 612     | 18.29       |      |
| Sepia officinalis hierredda    | 20.72      | 284     | 15.64       |      |
| Priacanthus arenatus           | 17.40      | 348     | 13.13       |      |
| Mustelus mustelus              | 10.36      | 2       | 7.82        |      |
| Ariomma bondi                  | 7.68       | 156     | 5.80        | 3744 |
| Citharus linguatula            | 7.64       | 524     | 5.77        |      |
| Todaropsis ebianae             | 6.76       | 312     | 5.10        |      |
| Raja miraletus                 | 5.12       | 16      | 3.86        |      |
| Serranus accraensis            | 4.52       | 156     | 3.41        |      |
| Pentheroscion mbizi            | 4.08       | 36      | 3.08        | 3745 |
| Uranoscopus albesca            | 3.48       | 24      | 2.63        |      |
| Dentex canariensis             | 2.76       | 44      | 2.08        | 3746 |
| Trichiurus lepturus            | 2.36       | 36      | 1.78        |      |
| Alloteuthis africana           | 2.20       | 756     | 1.66        |      |
| Fistularia petimba             | 1.48       | 12      | 1.12        |      |
| Saurida brasiliensis           | 1.32       | 252     | 1.00        |      |
| Setarches guentheri            | 1.24       | 36      | 0.94        |      |
| Lepidotrigla carolae           | 1.04       | 56      | 0.78        |      |
| Syacium micurum                | 0.92       | 164     | 0.69        |      |
| Illex coindetii                | 0.88       | 12      | 0.66        |      |
| Pseudupeneus prayensis         | 0.84       | 16      | 0.63        |      |
| Pagellus bellottii             | 0.68       | 8       | 0.51        |      |
| Dentex congoensis              | 0.68       | 16      | 0.51        |      |
| Brotula barbata                | 0.60       | 8       | 0.45        |      |
| Epinephelus aeneus             | 0.56       | 2       | 0.42        |      |
| Chilomycterus spinosus mauret. | 0.52       | 4       | 0.39        |      |
| Calappa pelii                  | 0.36       | 2       | 0.27        |      |
| Bathygobius paganelius         | 0.36       | 48      | 0.27        |      |
| Peristedion cataphractum       | 0.28       | 8       | 0.21        |      |
| Grammoplites gruvelli          | 0.28       | 16      | 0.21        |      |
| Parapenaeus longirostris       | 0.24       | 28      | 0.18        |      |
| Decapterus punctatus           | 0.24       | 4       | 0.18        |      |
| Dicologlossa cuneata           | 0.20       | 4       | 0.15        |      |
| Biennius normani               | 0.16       | 8       | 0.12        |      |
| Lophiodes kempi                | 0.16       | 4       | 0.12        |      |
| Microchirus boscanion          | 0.08       | 4       | 0.06        |      |
| Scyllarides herklotsii         | 0.04       | 4       | 0.03        |      |
| Antennarius occidentalis       | 0.04       | 4       | 0.03        |      |
| Total                          | 132.52     |         | 99.98       |      |

PROJECT STATION: 881  
 DATE:10/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 509 Long E 506  
 start stop duration  
 TIME :13:18:30 13:48:28 30 (min) Purpose code: 3  
 LOG :5417.02 5418.69 1.66 Area code : 5  
 FDEPTH: 38 40 GearCond.code:  
 BDEPTH: 38 40 Validity code:  
 Towing dir: 160° Wire out: 160 m Speed: 30 kn\*10  
 Sorted: 54 Kg Total catch: 54.48 CATCH/HOUR: 108.96

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Selene dorsalis             | 40.28      | 182     | 36.97       | 3766 |
| Sphyaena guachancho         | 11.72      | 112     | 10.76       | 3767 |
| Pteroscion pelli            | 10.74      | 862     | 9.86        | 3769 |
| Brachydeuterus auritus      | 10.56      | 596     | 9.69        | 3771 |
| Ilisha africana             | 8.66       | 960     | 7.95        | 3770 |
| Chloroscombrus chrysurus    | 7.40       | 84      | 6.79        |      |
| Pseudotolithus senegalensis | 6.82       | 164     | 6.26        | 3765 |
| Penaeus notialis            | 3.90       | 28      | 3.58        | 3768 |
| Parapenaeus longirostris    | 2.86       | 108     | 2.62        |      |
| Citharus linguatula         | 2.22       | 496     | 2.04        |      |
| Raja miraletus              | 1.20       | 4       | 1.10        |      |
| Sepiella ornata             | 0.56       | 2       | 0.51        |      |
| Alectis alexandrinus        | 0.50       | 6       | 0.46        |      |
| Pseudotolithus typus        | 0.26       | 26      | 0.24        |      |
| Grammoplites gruvelli       | 0.20       | 8       | 0.18        |      |
| J E L Y F I S H             | 0.18       | 62      | 0.17        |      |
| Antennarius sp.             | 0.16       | 4       | 0.15        |      |
| Squilla acuelata calmani    | 0.12       | 2       | 0.11        |      |
| Lagocephalus laevigatus     | 0.12       | 12      | 0.11        |      |
| Trachinotus teraia          | 0.10       | 12      | 0.09        |      |
| Pseudotolithus elongatus    | 0.08       | 2       | 0.07        |      |
| Galeoides decadactylus      | 0.08       | 4       | 0.07        |      |
| Nematopalaemon hastatus     | 0.06       | 68      | 0.06        |      |
| Sardinella maderensis       | 0.06       | 2       | 0.06        |      |
| Sicyonia galeata            | 0.04       | 10      | 0.04        |      |
| Total                       | 108.96     |         | 100.01      |      |

PROJECT STATION: 882  
 DATE:10/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 503 Long E 502  
 start stop duration  
 TIME :15:08:51 15:39:14 30 (min) Purpose code: 3  
 LOG :5427.48 5429.08 1.59 Area code : 5  
 FDEPTH: 60 60 GearCond.code:  
 BDEPTH: 60 60 Validity code:  
 Towing dir: 335° Wire out: 202 m Speed: 30 kn\*10  
 Sorted: 41 Kg Total catch: 41.15 CATCH/HOUR: 82.30

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Mustelus mustelus           | 23.84      | 22      | 28.97       |      |
| Brachydeuterus auritus      | 14.88      | 2032    | 18.08       |      |
| Parapenaeopsis atlantica    | 11.86      | 1264    | 14.41       |      |
| Trichiurus lepturus         | 6.76       | 280     | 8.21        |      |
| Sepia officinalis hierredda | 4.78       | 80      | 5.81        |      |
| Sphyaena guachancho         | 3.26       | 58      | 3.96        | 3772 |
| Bathygobius paganelius      | 2.30       | 414     | 2.79        |      |
| Citharus linguatula         | 2.24       | 220     | 2.72        |      |
| Cymbium cymbium             | 2.10       | 6       | 2.55        |      |
| Saurida brasiliensis        | 1.78       | 526     | 2.16        |      |
| Ballistes capricrus         | 1.32       | 2       | 1.60        |      |
| Raja miraletus              | 1.20       | 8       | 1.46        |      |
| Serranus accraensis         | 1.20       | 64      | 1.46        |      |
| Brotula barbata             | 0.72       | 12      | 0.87        |      |
| Portunus validus            | 0.70       | 4       | 0.85        |      |
| Priacanthus arenatus        | 0.62       | 8       | 0.75        |      |
| Syacium micurum             | 0.58       | 78      | 0.70        |      |
| Grammoplites gruvelli       | 0.40       | 26      | 0.49        |      |
| Squilla acuelata calmani    | 0.36       | 16      | 0.44        |      |
| Pentheroscion mbizi         | 0.34       | 8       | 0.41        |      |
| Lagocephalus laevigatus     | 0.32       | 8       | 0.39        |      |
| Cynoglossus senegalensis    | 0.18       | 2       | 0.22        |      |
| Penaeus notialis            | 0.16       | 2       | 0.19        |      |
| Decapterus punctatus        | 0.14       | 2       | 0.17        |      |
| Illex coindetii             | 0.14       | 2       | 0.17        |      |
| Pseudupeneus prayensis      | 0.08       | 2       | 0.10        |      |
| Octopus vulgaris            | 0.02       | 2       | 0.02        |      |
| Zeus faber                  | 0.02       | 2       | 0.02        |      |
| Total                       | 82.30      |         | 99.97       |      |

PROJECT STATION: 883  
 DATE:10/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 501 Long E 456  
 start stop duration  
 TIME :17:07:48 17:37:41 30 (min) Purpose code: 3  
 LOG :5440.18 5441.60 1.12 Area code : 5  
 FDEPTH: 84 83 GearCond.code:  
 BDEPTH: 84 83 Validity code:  
 Towing dir: 145° Wire out: 275 m Speed: 30 kn\*10  
 Sorted: 47 Kg Total catch: 47.75 CATCH/HOUR: 95.50

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Selar crumenophthalmus      | 32.48      | 238     | 34.01       | 3773 |
| Ariomma bondi               | 20.84      | 468     | 21.82       | 3774 |
| Squatina oculata            | 8.68       | 4       | 9.09        |      |
| Sepia officinalis hierredda | 6.44       | 40      | 6.74        |      |
| Lepidotrigla cadmani        | 6.12       | 2       | 6.41        |      |
| Priacanthus arenatus        | 5.22       | 154     | 5.47        |      |
| Epinephelus aeneus          | 3.56       | 66      | 3.73        |      |
| Raja miraletus              | 2.62       | 2       | 2.74        |      |
| Alloteuthis africana        | 1.58       | 10      | 1.65        |      |
| Illex coindetii             | 1.24       | 354     | 1.30        |      |
| Dentex angolensis           | 1.18       | 24      | 1.24        |      |
| Brachydeuterus auritus      | 0.86       | 12      | 0.90        |      |
| Fistularia petimba          | 0.74       | 10      | 0.77        |      |
| Dentex congoensis           | 0.44       | 16      | 0.46        |      |
| Pseudupeneus prayensis      | 0.38       | 12      | 0.40        |      |
| Calappa pelii               | 0.36       | 8       | 0.38        |      |
| Pagellus bellottii          | 0.34       | 2       | 0.36        |      |
| Uranoscopus albesca         | 0.32       | 4       | 0.34        |      |
| Citharus linguatula         | 0.28       | 2       | 0.29        |      |
| Lophiodes kempi             | 0.26       | 26      | 0.27        |      |
| Lophius sp.                 | 0.26       | 2       | 0.27        |      |
| Decapterus punctatus        | 0.22       | 4       | 0.23        |      |
| Bathygobius paganelius      | 0.20       | 2       | 0.23        |      |
| Serranus accraensis         | 0.20       | 12      | 0.21        |      |
| Grammoplites gruvelli       | 0.16       | 4       | 0.17        |      |
| Octopus vulgaris            | 0.14       | 2       | 0.15        |      |
| Sphyaena guachancho         | 0.10       | 2       | 0.10        |      |
| Cymbium cymbium             | 0.06       | 30      | 0.06        |      |
| Total                       | 95.50      |         | 100.00      |      |

PROJECT STATION: 879  
 DATE:10/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 522 Long E 458  
 start stop duration  
 TIME :09:23:22 09:53:18 30 (min) Purpose code: 3  
 LOG :5397.28 5398.84 1.56 Area code : 5  
 FDEPTH: 40 37 GearCond.code:  
 BDEPTH: 40 37 Validity code:  
 Towing dir: 146° Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 41 Kg Total catch: 41.78 CATCH/HOUR: 83.56

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 31.80      | 2024    | 38.06       | 3751 |
| Sphyaena guachancho         | 19.64      | 382     | 23.50       | 3748 |
| Trachinotus teraia          | 9.48       | 80      | 11.35       | 3747 |
| Chloroscombrus chrysurus    | 4.60       | 72      | 5.51        | 3750 |
| Scomberomorus tritor        | 3.74       | 24      | 4.48        | 3752 |
| Portunus validus            | 2.58       | 8       | 3.09        |      |
| Epinephelus aeneus          | 1.96       | 4       | 2.35        |      |
| Penaeus notialis            | 1.78       | 142     | 2.13        |      |
| Priacanthus arenatus        | 1.78       | 50      | 2.13        |      |
| Caranx hippos               | 1.26       | 8       | 1.51        | 3749 |
| Selene dorsalis             | 0.86       | 64      | 1.03        | 3754 |
| Trichiurus lepturus         | 0.72       | 48      | 0.86        |      |
| Ilisha africana             | 0.66       | 22      | 0.79        | 3753 |
| Raja miraletus              | 0.66       | 4       | 0.79        |      |
| Pseudotolithus senegalensis | 0.36       | 2       | 0.43        |      |
| Grammoplites gruvelli       | 0.32       | 18      | 0.38        |      |
| Fistularia petimba          | 0.26       | 2       | 0.31        |      |
| Decapterus punctatus        | 0.24       | 2       | 0.29        |      |
| Citharus linguatula         | 0.16       | 4       | 0.19        |      |
| Pseudupeneus prayensis      | 0.16       | 4       | 0.19        |      |
| Parapenaeus longirostris    | 0.14       | 30      | 0.17        |      |
| Selar crumenophthalmus      | 0.14       | 6       | 0.17        |      |
| Sicyonia galeata            | 0.08       | 34      | 0.10        |      |
| Lepidotrigla cadmani        | 0.06       | 2       | 0.07        |      |
| Sepiella ornata             | 0.04       | 12      | 0.05        |      |
| Penaeus kerathurus          | 0.02       | 2       | 0.02        |      |
| Peristedion cataphractum    | 0.02       | 2       | 0.02        |      |
| Alloteuthis africana        | 0.02       | 4       | 0.02        |      |
| Antennarius occidentalis    | 0.02       | 6       | 0.02        |      |
| Total                       | 83.56      |         | 100.01      |      |

PROJECT STATION: 880  
 DATE:10/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 521 Long E 503  
 start stop duration  
 TIME :10:42:21 11:12:44 30 (min) Purpose code: 3  
 LOG :5403.22 5404.79 1.56 Area code : 5  
 FDEPTH: 26 27 GearCond.code:  
 BDEPTH: 26 27 Validity code:  
 Towing dir: 160° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 39 Kg Total catch: 39.22 CATCH/HOUR: 78.44

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trichiurus lepturus         | 15.06      | 754     | 19.20       |      |
| J E L Y F I S H             | 14.60      | 12      | 18.61       |      |
| Portunus validus            | 8.24       | 46      | 10.50       |      |
| Sphyaena guachancho         | 6.70       | 86      | 8.54        | 3760 |
| Ilisha africana             | 5.52       | 216     | 7.04        | 3759 |
| Pseudotolithus senegalensis | 4.90       | 50      | 6.25        | 3762 |
| Scomberomorus tritor        | 4.68       | 22      | 5.97        | 3763 |
| Chloroscombrus chrysurus    | 2.64       | 68      | 3.37        | 3758 |
| Galeoides decadactylus      | 2.46       | 52      | 3.14        | 3756 |
| Trachinotus teraia          | 2.40       | 22      | 3.06        | 3764 |
| Brachydeuterus auritus      | 2.32       | 80      | 2.96        |      |
| Pseudotolithus typus        | 1.80       | 16      | 2.29        | 3761 |
| Penaeus notialis            | 1.54       | 62      | 1.96        |      |
| Pteroscion pelli            | 1.52       | 36      | 1.94        | 3755 |
| Selene dorsalis             | 0.88       | 66      | 1.12        | 3757 |
| Caranx hippos               | 0.50       | 4       | 0.64        |      |
| Drepane africana            | 0.44       | 22      | 0.56        |      |
| Elops lacerta               | 0.42       | 2       | 0.54        |      |
| Parapenaeopsis atlantica    | 0.38       | 476     | 0.48        |      |
| Penaeus monodon             | 0.30       | 2       | 0.38        |      |
| Squilla acuelata calmani    | 0.22       | 16      | 0.28        |      |
| Callinectes pallidus        | 0.22       | 22      | 0.28        |      |
| Nematopalaemon hastatus     | 0.20       | 620     | 0.25        |      |
| Octopus vulgaris            | 0.18       | 2       | 0.23        |      |
| Pentaneus quinquarius       | 0.16       | 4       | 0.20        |      |
| Selar crumenophthalmus      | 0.08       | 2       | 0.10        |      |
| Eucinostomus melanopterus   | 0.04       | 2       | 0.05        |      |
| Alectis alexandrinus        | 0.04       | 2       | 0.05        |      |
| Total                       | 78.44      |         | 99.99       |      |

PROJECT STATION: 884  
 DATE: 10/ 6/05 GEAR TYPE: BT No:16 POSITION: Lat N 456  
 start stop duration Long E 448  
 TIME :20:40:02 21:05:52 26 (min) Purpose code: 3  
 LOG :5458.05 5459.31 1.26 Area code : 5  
 FDEPTH: 344 351 GearCond.code:  
 BDEPTH: 344 351 Validity code:  
 Towing dir: 140° Wire out: 1000 m Speed: 29 kn\*10

Sorted: 24 Kg Total catch: 36.53 CATCH/HOUR: 84.30

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Zenion hololepis            | 32.95      | 5633    | 39.09       |      |
| Parasudis fraser-bruenneri  | 16.18      | 891     | 19.19       |      |
| Chlorophthalmus atlanticus  | 6.37       | 240     | 7.56        |      |
| Trigla lyra                 | 5.54       | 28      | 6.57        |      |
| Malacocephalus laevis       | 3.53       | 83      | 4.19        |      |
| Hymnocephalus italicus      | 3.16       | 468     | 3.75        |      |
| Cyttopsis roseus            | 1.78       | 95      | 2.11        |      |
| Stereomastis sp.            | 1.45       | 90      | 1.72        |      |
| Polymetme corythaeola       | 1.45       | 198     | 1.72        |      |
| Nezumia aequalis            | 1.36       | 53      | 1.61        |      |
| Opiisthoteuthis sp.         | 1.29       | 12      | 1.53        |      |
| Peristedion cataphractum    | 1.18       | 48      | 1.40        |      |
| Parapenaeus longirostris    | 1.18       | 83      | 1.40        | 3775 |
| Scylliorhinus cervigoni     | 0.85       | 2       | 1.01        |      |
| Chascanopsetta lugubris     | 0.76       | 14      | 0.90        |      |
| Dibranchius atlanticus      | 0.67       | 90      | 0.79        |      |
| Epigonus telescopus         | 0.55       | 5       | 0.65        |      |
| Malacocephalus occidentalis | 0.55       | 7       | 0.65        |      |
| Epigonus sp.                | 0.48       | 32      | 0.57        |      |
| Solenocera africana         | 0.42       | 32      | 0.50        | 3776 |
| MYCTOPHIDAE                 | 0.39       | 235     | 0.46        |      |
| CONGRIDAE                   | 0.35       | 5       | 0.42        |      |
| Coelorrinchus coelorhincus  | 0.28       | 5       | 0.33        |      |
| S H R I M P S               | 0.25       | 0       | 0.30        |      |
| Bembrops greyi              | 0.25       | 12      | 0.30        |      |
| GALATHEIDAE                 | 0.25       | 18      | 0.30        |      |
| Benthodesmus tenuis         | 0.21       | 25      | 0.25        |      |
| Synagrops microlepis        | 0.18       | 14      | 0.21        |      |
| Xenolepidichthys dagleishi  | 0.18       | 18      | 0.21        |      |
| Setarches guentheri         | 0.12       | 14      | 0.14        |      |
| Chaunax pictus              | 0.07       | 14      | 0.08        |      |
| C R A B S                   | 0.05       | 5       | 0.06        |      |
| Total                       | 84.28      |         | 99.97       |      |

PROJECT STATION: 887  
 DATE: 11/ 6/05 GEAR TYPE: BT No:16 POSITION: Lat N 447  
 start stop duration Long E 511  
 TIME :08:10:16 08:41:14 31 (min) Purpose code: 3  
 LOG :5531.10 5532.66 1.53 Area code : 5  
 FDEPTH: 58 53 GearCond.code:  
 BDEPTH: 58 53 Validity code:  
 Towing dir: 150° Wire out: 200 m Speed: 30 kn\*10

Sorted: 8 Kg Total catch: 8.03 CATCH/HOUR: 15.54

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 5.65       | 145     | 36.36       | 3782 |
| Brachydeuterus auritus      | 2.63       | 263     | 16.92       | 3781 |
| Alloteuthis africana        | 1.28       | 426     | 8.24        |      |
| J E L Y F I S H             | 1.22       | 29      | 7.85        |      |
| Lagocephalus laevigatus     | 0.91       | 8       | 5.86        |      |
| Dentex congongensis         | 0.58       | 2       | 3.73        |      |
| Parapenaeus longirostris    | 0.58       | 48      | 3.73        |      |
| Todaropsis eblanae          | 0.33       | 101     | 2.12        |      |
| Serranus acroaensis         | 0.29       | 10      | 1.87        |      |
| Citharus linguatula         | 0.27       | 15      | 1.74        |      |
| Sphyræna guachancho         | 0.21       | 2       | 1.35        |      |
| Lophiodes kempi             | 0.21       | 2       | 1.35        |      |
| Selar crumenophthalmus      | 0.17       | 6       | 1.09        |      |
| Chascanopsetta lugubris     | 0.17       | 4       | 1.09        |      |
| Penaeus notialis            | 0.15       | 6       | 0.97        |      |
| Scyllarides herklotsii      | 0.15       | 25      | 0.97        |      |
| Illex coindetii             | 0.14       | 4       | 0.90        |      |
| Syacium micrurum            | 0.12       | 15      | 0.77        |      |
| Sepia officinalis hierredda | 0.10       | 10      | 0.64        |      |
| Trichiurus lepturus         | 0.10       | 4       | 0.64        |      |
| Priacanthus arenatus        | 0.08       | 6       | 0.51        |      |
| Lepidotrigla carolae        | 0.04       | 2       | 0.26        |      |
| Sphoeroides marmoratus      | 0.02       | 2       | 0.13        |      |
| Selene dorsalis             | 0.02       | 8       | 0.13        |      |
| Saurida brasiliensis        | 0.02       | 10      | 0.13        |      |
| Pterothrissus bellouci      | 0.02       | 6       | 0.13        |      |
| Dibranchius atlanticus      | 0.02       | 4       | 0.13        |      |
| Grammolites gruvelli        | 0.02       | 2       | 0.13        |      |
| Sicyonia galeata            | 0.02       | 2       | 0.13        |      |
| Bathygobius paganellus      | 0.02       | 2       | 0.13        |      |
| Total                       | 15.54      |         | 100.00      |      |

PROJECT STATION: 885  
 DATE: 11/ 6/05 GEAR TYPE: BT No:16 POSITION: Lat N 439  
 start stop duration Long E 458  
 TIME :04:14:32 04:44:20 30 (min) Purpose code: 3  
 LOG :5508.51 5510.02 1.50 Area code : 5  
 FDEPTH: 252 242 GearCond.code:  
 BDEPTH: 252 242 Validity code:  
 Towing dir: 160° Wire out: 760 m Speed: 30 kn\*10

Sorted: 21 Kg Total catch: 131.58 CATCH/HOUR: 263.16

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Cyttopsis roseus            | 171.12     | 17324   | 65.03       |      |
| Chlorophthalmus atlanticus  | 35.64      | 1082    | 13.54       |      |
| Saurida brasiliensis        | 14.28      | 1740    | 5.43        |      |
| Illex coindetii             | 10.20      | 120     | 3.88        |      |
| Synagrops microlepis        | 6.96       | 612     | 2.64        |      |
| Epigonus sp.                | 5.40       | 864     | 2.05        |      |
| Bembrops greyi              | 5.40       | 96      | 2.05        |      |
| Chascanopsetta lugubris     | 4.32       | 96      | 1.64        |      |
| Peristedion cataphractum    | 3.00       | 96      | 1.14        |      |
| Laemonea lauroysi           | 2.04       | 12      | 0.78        |      |
| Dentex congongensis         | 1.80       | 12      | 0.68        |      |
| Malacocephalus occidentalis | 1.20       | 24      | 0.46        |      |
| Antigonia capros            | 0.60       | 84      | 0.23        |      |
| S H R I M P S               | 0.48       | 240     | 0.18        |      |
| Benthodesmus tenuis         | 0.24       | 24      | 0.09        |      |
| Penaeus notialis            | 0.12       | 156     | 0.05        |      |
| Cynoponticus ferox          | 0.12       | 12      | 0.05        |      |
| Dibranchius atlanticus      | 0.12       | 12      | 0.05        |      |
| Zenion hololepis            | 0.12       | 12      | 0.05        |      |
| Total                       | 263.16     |         | 100.02      |      |

PROJECT STATION: 888  
 DATE: 11/ 6/05 GEAR TYPE: BT No:16 POSITION: Lat N 440  
 start stop duration Long E 519  
 TIME :10:09:24 10:41:36 32 (min) Purpose code: 3  
 LOG :5542.97 5544.58 1.61 Area code : 5  
 FDEPTH: 38 36 GearCond.code:  
 BDEPTH: 38 36 Validity code:  
 Towing dir: 150° Wire out: 180 m Speed: 30 kn\*10

Sorted: 34 Kg Total catch: 269.76 CATCH/HOUR: 505.80

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Chloroscombrus chrysurus    | 267.30     | 4035    | 52.85       | 3783 |
| Brachydeuterus auritus      | 163.80     | 3551    | 32.38       | 3788 |
| Galeoides decadactylus      | 14.10      | 195     | 2.79        | 3785 |
| Pseudotolithus senegalensis | 13.80      | 15      | 2.73        |      |
| Scomberomorus tritor        | 13.65      | 45      | 2.70        | 3786 |
| Selene dorsalis             | 10.50      | 225     | 2.08        | 3784 |
| Sphyræna guachancho         | 5.10       | 45      | 1.01        |      |
| Lagocephalus laevigatus     | 4.65       | 30      | 0.92        |      |
| Portunus validus            | 4.05       | 15      | 0.80        |      |
| Ilisha africana             | 3.30       | 120     | 0.65        | 3787 |
| Penaeus notialis            | 1.95       | 60      | 0.39        |      |
| Alectis alexandrinus        | 1.20       | 45      | 0.24        |      |
| Trichiurus lepturus         | 0.75       | 15      | 0.15        |      |
| Pteroscion pelli            | 0.60       | 15      | 0.12        |      |
| Caranx hippos               | 0.60       | 15      | 0.12        |      |
| Eucinostomus melanopterus   | 0.45       | 30      | 0.09        |      |
| Total                       | 505.80     |         | 100.02      |      |

PROJECT STATION: 886  
 DATE: 11/ 6/05 GEAR TYPE: BT No:16 POSITION: Lat N 443  
 start stop duration Long E 506  
 TIME :06:32:50 07:06:04 33 (min) Purpose code: 3  
 LOG :5522.50 5524.39 1.90 Area code : 5  
 FDEPTH: 98 95 GearCond.code:  
 BDEPTH: 98 95 Validity code:  
 Towing dir: 320° Wire out: 300 m Speed: 31 kn\*10

Sorted: 38 Kg Total catch: 77.84 CATCH/HOUR: 141.53

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 82.62      | 2102    | 58.38       | 3777 |
| Alloteuthis africana        | 10.58      | 4284    | 7.48        |      |
| Dentex angolensis           | 9.38       | 76      | 6.63        | 3778 |
| Priacanthus arenatus        | 8.65       | 185     | 6.11        |      |
| Illex coindetii             | 6.73       | 818     | 4.76        |      |
| Scorpaena scrofa            | 5.67       | 7       | 4.01        |      |
| Dentex congongensis         | 5.38       | 62      | 3.80        | 3779 |
| Squatina oculata            | 2.73       | 2       | 1.93        |      |
| Fistularia petimba          | 2.73       | 29      | 1.93        |      |
| Sepia officinalis hierredda | 2.11       | 7       | 1.49        |      |
| Dentex canariensis          | 0.95       | 18      | 0.67        | 3780 |
| Chascanopsetta lugubris     | 0.73       | 22      | 0.52        |      |
| Lepidotrigla cadmani        | 0.69       | 18      | 0.49        |      |
| Trichiurus lepturus         | 0.69       | 15      | 0.49        |      |
| Selene dorsalis             | 0.55       | 7       | 0.39        |      |
| Decapterus punctatus        | 0.51       | 15      | 0.36        |      |
| Todaropsis eblanae          | 0.18       | 11      | 0.13        |      |
| Antigonia capros            | 0.18       | 29      | 0.13        |      |
| Parapenaeus longirostris    | 0.11       | 7       | 0.08        |      |
| Citharus linguatula         | 0.11       | 7       | 0.08        |      |
| Peristedion cataphractum    | 0.11       | 4       | 0.08        |      |
| Bathygobius paganellus      | 0.04       | 4       | 0.03        |      |
| Dibranchius atlanticus      | 0.04       | 4       | 0.03        |      |
| Syacium micrurum            | 0.04       | 4       | 0.03        |      |
| Saurida brasiliensis        | 0.04       | 7       | 0.03        |      |
| Total                       | 141.55     |         | 100.06      |      |

PROJECT STATION: 889  
 DATE: 11/ 6/05 GEAR TYPE: BT No:16 POSITION: Lat N 432  
 start stop duration Long E 525  
 TIME :11:57:48 12:28:45 31 (min) Purpose code: 3  
 LOG :5552.88 5554.58 1.67 Area code : 5  
 FDEPTH: 29 28 GearCond.code:  
 BDEPTH: 29 28 Validity code:  
 Towing dir: 150° Wire out: 165 m Speed: 30 kn\*10

Sorted: 102 Kg Total catch: 102.05 CATCH/HOUR: 197.52

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sphyræna guachancho         | 47.23      | 132     | 23.91       | 3790 |
| Brachydeuterus auritus      | 27.02      | 377     | 13.68       |      |
| Chloroscombrus chrysurus    | 26.52      | 370     | 13.43       | 3789 |
| Galeoides decadactylus      | 23.95      | 308     | 12.07       | 3791 |
| Drapana africana            | 8.19       | 130     | 4.15        |      |
| Trichiurus lepturus         | 7.86       | 93      | 3.98        |      |
| Pomadourus jubelini         | 7.41       | 25      | 3.75        | 3792 |
| Caranx senegalensis         | 7.26       | 27      | 3.68        |      |
| Ilisha africana             | 7.14       | 325     | 3.61        |      |
| Caranx hippos               | 6.19       | 33      | 3.13        | 3795 |
| Portunus validus            | 6.08       | 41      | 3.08        |      |
| Trachinotus teraia          | 5.30       | 8       | 2.68        |      |
| Scomberomorus tritor        | 5.05       | 23      | 2.56        | 3794 |
| Pseudotolithus senegalensis | 2.57       | 12      | 1.30        | 3793 |
| Alectis alexandrinus        | 1.94       | 35      | 0.98        |      |
| Rhizoprionodon acutus       | 1.74       | 2       | 0.88        |      |
| Trachinotus ovatus          | 1.45       | 2       | 0.73        |      |
| Selar crumenophthalmus      | 1.24       | 15      | 0.63        |      |
| Lagocephalus laevigatus     | 0.70       | 4       | 0.35        |      |
| Penaeus monodon             | 0.66       | 4       | 0.33        |      |
| Sphoeroides marmoratus      | 0.54       | 2       | 0.27        |      |
| Sardinella maderensis       | 0.50       | 8       | 0.25        |      |
| J E L Y F I S H             | 0.37       | 6       | 0.19        |      |
| Epinephelus aeneus          | 0.37       | 2       | 0.19        |      |
| Squilla mantis              | 0.15       | 4       | 0.08        |      |
| Callinectes pallidus        | 0.10       | 2       | 0.05        |      |
| Penaeus notialis            | 0.10       | 2       | 0.05        |      |
| Total                       | 197.53     |         | 99.99       |      |

PROJECT STATION: 890  
 DATE: 11/6/05 GEAR TYPE: BT No:16 POSITION: Lat N 426 Long E 520  
 start stop duration  
 TIME :13:48:59 14:18:44 30 (min) Purpose code: 3  
 LOG :5563.85 5565.27 1.41 Area code : 5  
 FDEPTH: 63 61 GearCond.code:  
 BDEPTH: 63 61 Validity code:  
 Towing dir: 150° Wire out: 212 m Speed: 30 kn\*10  
 Sorted: 161 Kg Total catch: 161.76 CATCH/HOUR: 323.52

| SPECIES                        | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|--------------------------------|---------------|---------|--------------|------|
|                                | weight        | numbers |              |      |
| Pagrus caeruleostictus         | 183.76        | 352     | 56.80        | 3798 |
| Selene dorsalis                | 50.60         | 480     | 15.64        | 3799 |
| Brachydeuterus auritus         | 32.92         | 1608    | 10.18        |      |
| Pagellus bellottii             | 26.68         | 220     | 8.25         | 3796 |
| Alloteuthis africana           | 8.94          | 3112    | 2.76         |      |
| Pseudupeneus prayensis         | 6.74          | 178     | 2.08         | 3797 |
| Ubrina canariensis             | 2.60          | 6       | 0.80         |      |
| Sphyræna quachancho            | 2.60          | 32      | 0.80         |      |
| Sepia officinalis hierredda    | 2.52          | 14      | 0.78         |      |
| Raja miraletus                 | 1.14          | 10      | 0.35         |      |
| Priacanthus arenatus           | 0.66          | 44      | 0.20         |      |
| Octopus vulgaris               | 0.54          | 2       | 0.17         |      |
| Lagocephalus laevigatus        | 0.50          | 6       | 0.15         |      |
| Citharus linguatula            | 0.44          | 40      | 0.14         |      |
| Chilomycterus spinosus mauret. | 0.42          | 4       | 0.13         |      |
| Selar crumenophthalmus         | 0.34          | 8       | 0.11         |      |
| Caranx hippos                  | 0.34          | 2       | 0.11         |      |
| Penaeus notialis               | 0.26          | 12      | 0.08         |      |
| Grammolites gruvelli           | 0.24          | 6       | 0.07         |      |
| Galeoides decadactylus         | 0.22          | 6       | 0.07         |      |
| Syacium micrurum               | 0.20          | 48      | 0.06         |      |
| Callinectes pallidus           | 0.12          | 2       | 0.04         |      |
| Erythrocles monodi             | 0.10          | 22      | 0.03         |      |
| Fistularia petimba             | 0.08          | 2       | 0.02         |      |
| Lepidotrigla cadmani           | 0.08          | 2       | 0.02         |      |
| Anthias anthias                | 0.08          | 4       | 0.02         |      |
| Chloroscombrus chrysurus       | 0.08          | 4       | 0.02         |      |
| Microchirus frechkopi          | 0.06          | 2       | 0.02         |      |
| Lutjanus goreensis             | 0.06          | 2       | 0.02         |      |
| Liocarcinus corrugatus         | 0.04          | 2       | 0.01         |      |
| Saurida brasiliensis           | 0.04          | 8       | 0.01         |      |
| Blennius normani               | 0.04          | 2       | 0.01         |      |
| Helicolenus dactylopterus      | 0.04          | 2       | 0.01         |      |
| Unidentified fish              | 0.02          | 2       | 0.01         |      |
| Sphoeroides marmoratus         | 0.02          | 2       | 0.01         |      |
| <b>Total</b>                   | <b>323.52</b> |         | <b>99.98</b> |      |

PROJECT STATION: 893  
 DATE: 12/6/05 GEAR TYPE: BT No:16 POSITION: Lat N 409 Long E 526  
 start stop duration  
 TIME :05:48:01 06:21:53 34 (min) Purpose code: 3  
 LOG :5565.09 5657.82 1.71 Area code : 5  
 FDEPTH: 73 83 GearCond.code:  
 BDEPTH: 73 83 Validity code:  
 Towing dir: 330° Wire out: 245 m Speed: 30 kn\*10  
 Sorted: 46 Kg Total catch: 77.47 CATCH/HOUR: 136.71

| SPECIES                     | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|-----------------------------|---------------|---------|---------------|------|
|                             | weight        | numbers |               |      |
| Dentex congoensis           | 41.58         | 805     | 30.41         | 3805 |
| Sepia officinalis hierredda | 27.81         | 78      | 20.34         |      |
| Mustelus mustelus           | 18.35         | 7       | 13.42         |      |
| Dentex angolensis           | 15.04         | 134     | 11.00         | 3804 |
| Squatina oculata            | 6.11          | 4       | 4.47          |      |
| Alloteuthis africana        | 6.00          | 3452    | 4.39          |      |
| Pistularia petimba          | 4.09          | 28      | 2.99          |      |
| Scorpaena scrofa            | 2.12          | 7       | 1.55          |      |
| Lepidotrigla carolae        | 2.08          | 39      | 1.52          |      |
| Octopus vulgaris            | 2.06          | 2       | 1.51          |      |
| Pentheroscion mbizi         | 1.98          | 14      | 1.45          | 3806 |
| Priacanthus arenatus        | 1.87          | 35      | 1.37          |      |
| Ariomma bondi               | 1.48          | 35      | 1.08          |      |
| Zeus faber                  | 1.34          | 11      | 0.98          |      |
| Raja miraletus              | 1.13          | 7       | 0.83          |      |
| Epinephelus aeneus          | 0.78          | 2       | 0.57          |      |
| Dentex canariensis          | 0.60          | 7       | 0.44          |      |
| Decapterus punctatus        | 0.60          | 21      | 0.44          |      |
| J E L Y F I S H             | 0.35          | 0.35    | 0.26          |      |
| Plesionika martia           | 0.35          | 240     | 0.26          |      |
| Illex coindetii             | 0.35          | 28      | 0.26          |      |
| Citharus linguatula         | 0.35          | 21      | 0.26          |      |
| Uranoscopus albesca         | 0.18          | 4       | 0.13          |      |
| Grammolites gruvelli        | 0.07          | 4       | 0.05          |      |
| Syacium micrurum            | 0.04          | 4       | 0.03          |      |
| <b>Total</b>                | <b>136.71</b> |         | <b>100.01</b> |      |

PROJECT STATION: 891  
 DATE: 11/6/05 GEAR TYPE: BT No:16 POSITION: Lat N 423 Long E 515  
 start stop duration  
 TIME :15:43:48 16:13:40 30 (min) Purpose code: 3  
 LOG :5574.65 5576.15 1.50 Area code : 5  
 FDEPTH: 142 140 GearCond.code:  
 BDEPTH: 142 140 Validity code:  
 Towing dir: 143° Wire out: 450 m Speed: 30 kn\*10  
 Sorted: 38 Kg Total catch: 64.90 CATCH/HOUR: 129.80

| SPECIES                     | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|-----------------------------|---------------|---------|--------------|------|
|                             | weight        | numbers |              |      |
| Ariomma bondi               | 47.60         | 1488    | 36.67        | 3800 |
| Squatina oculata            | 24.60         | 6       | 18.95        |      |
| Pentheroscion mbizi         | 9.44          | 104     | 7.27         | 3803 |
| Dentex angolensis           | 8.68          | 68      | 6.69         | 3801 |
| Sepia officinalis hierredda | 5.60          | 92      | 4.31         |      |
| Dentex congoensis           | 4.24          | 60      | 3.27         | 3802 |
| Todaropsis obianae          | 3.88          | 292     | 2.99         |      |
| Illex coindetii             | 3.84          | 76      | 2.96         |      |
| Lagocephalus laevigatus     | 3.24          | 100     | 2.50         |      |
| Epinephelus haifensis       | 2.64          | 4       | 2.03         |      |
| Lepidotrigla cadmani        | 2.60          | 44      | 2.00         |      |
| Uranoscopus albesca         | 2.52          | 16      | 1.94         |      |
| Priacanthus arenatus        | 2.20          | 48      | 1.69         |      |
| Trichurus lepturus          | 1.48          | 32      | 1.14         |      |
| Citharus linguatula         | 1.28          | 52      | 0.99         |      |
| Pterothrissus belloci       | 1.08          | 8       | 0.83         |      |
| Saurida brasiliensis        | 1.00          | 208     | 0.77         |      |
| Raja miraletus              | 0.92          | 8       | 0.71         |      |
| Brotula barbata             | 0.48          | 4       | 0.37         |      |
| Grammolites gruvelli        | 0.44          | 16      | 0.34         |      |
| Bathygobius paganellus      | 0.40          | 40      | 0.31         |      |
| Dicologlossa cuneata        | 0.32          | 4       | 0.25         |      |
| Parapenaeopsis atlantica    | 0.28          | 32      | 0.22         |      |
| Antigonia capros            | 0.24          | 12      | 0.18         |      |
| Sphyræna quachancho         | 0.20          | 4       | 0.15         |      |
| Setarches guentheri         | 0.12          | 4       | 0.09         |      |
| Microchirus wittei          | 0.08          | 4       | 0.06         |      |
| Lepidotrigla carolae        | 0.08          | 4       | 0.06         |      |
| <b>Total</b>                | <b>129.80</b> |         | <b>99.99</b> |      |

PROJECT STATION: 894  
 DATE: 12/6/05 GEAR TYPE: BT No:16 POSITION: Lat N 412 Long E 528  
 start stop duration  
 TIME :07:15:25 07:45:47 30 (min) Purpose code: 3  
 LOG :5662.65 5664.14 1.46 Area code : 5  
 FDEPTH: 51 51 GearCond.code:  
 BDEPTH: 51 51 Validity code:  
 Towing dir: 150° Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 34 Kg Total catch: 68.49 CATCH/HOUR: 136.98

| SPECIES                     | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|-----------------------------|---------------|---------|--------------|------|
|                             | weight        | numbers |              |      |
| Pseudupeneus prayensis      | 68.96         | 1392    | 50.34        | 3807 |
| Sepia officinalis hierredda | 34.96         | 140     | 25.52        |      |
| Balistes caprisicus         | 12.56         | 24      | 9.17         |      |
| Lagocephalus laevigatus     | 11.92         | 96      | 8.70         |      |
| Alloteuthis africana        | 3.28          | 984     | 2.39         |      |
| Priacanthus arenatus        | 1.48          | 16      | 1.08         |      |
| Caranx crysos               | 0.72          | 4       | 0.53         |      |
| Mustelus mustelus           | 0.62          | 2       | 0.45         |      |
| Syacium micrurum            | 0.60          | 16      | 0.44         |      |
| Raja miraletus              | 0.48          | 4       | 0.35         |      |
| Trachinocephalus nyops      | 0.32          | 4       | 0.23         |      |
| J E L Y F I S H             | 0.28          | 4       | 0.20         |      |
| Pagrus caeruleostictus      | 0.28          | 4       | 0.20         |      |
| Octopus vulgaris            | 0.16          | 4       | 0.12         |      |
| Pagellus bellottii          | 0.16          | 4       | 0.12         |      |
| Decapterus punctatus        | 0.12          | 4       | 0.09         |      |
| Sphoeroides marmoratus      | 0.08          | 4       | 0.06         |      |
| <b>Total</b>                | <b>136.98</b> |         | <b>99.99</b> |      |

PROJECT STATION: 892  
 DATE: 12/6/05 GEAR TYPE: BT No:14 POSITION: Lat N 404 Long E 515  
 start stop duration  
 TIME :02:43:40 03:13:28 30 (min) Purpose code: 3  
 LOG :5639.27 5640.77 1.49 Area code : 5  
 FDEPTH: 509 505 GearCond.code:  
 BDEPTH: 509 505 Validity code:  
 Towing dir: 160° Wire out: 1450 m Speed: 30 kn\*10  
 Sorted: 39 Kg Total catch: 39.83 CATCH/HOUR: 79.66

| SPECIES                     | CATCH/HOUR   |         | % OF TOT. C   | SAMP |
|-----------------------------|--------------|---------|---------------|------|
|                             | weight       | numbers |               |      |
| J E L L Y F I S H           | 18.10        |         | 22.72         |      |
| Laemonema laureysi          | 9.60         | 60      | 12.05         |      |
| Hymenoccephalus italicus    | 7.72         | 40      | 9.69          |      |
| Hydrolagus sp.              | 5.82         | 92      | 7.31          |      |
| C R U S T A C E A N S       | 5.60         | 654     | 7.03          |      |
| Malacocephalus occidentalis | 5.52         | 172     | 6.93          |      |
| Chaunax pictus              | 5.08         | 16      | 6.38          |      |
| Centrophorus uyato          | 5.00         | 2       | 6.28          |      |
| Benthodesmus tenuis         | 3.90         | 134     | 4.90          |      |
| Synphobranchus kaupii       | 2.38         | 116     | 2.99          |      |
| Dibranchius atlanticus      | 2.08         | 32      | 2.61          |      |
| Todaropsis eblanae          | 1.18         | 6       | 1.48          |      |
| Lamprogrammus exutus        | 1.12         | 40      | 1.41          |      |
| Aristeus varidens           | 0.94         | 60      | 1.18          |      |
| Raja doutrei                | 0.90         | 2       | 1.13          |      |
| Dicrolene intronigra        | 0.82         | 2       | 1.03          |      |
| Solenocera africana         | 0.78         | 50      | 0.98          |      |
| Halosaurus ovenii           | 0.62         | 10      | 0.78          |      |
| Sea urchins (weak spines)   | 0.54         | 60      | 0.68          |      |
| Cyrtopsis roseus            | 0.52         | 118     | 0.65          |      |
| MYCTOPHIDAE                 | 0.50         | 58      | 0.60          |      |
| Stomias boa boa             | 0.30         | 6       | 0.38          |      |
| Gonostoma sp.               | 0.24         | 12      | 0.30          |      |
| MELANOSTOMIATIDAE           | 0.18         | 12      | 0.23          |      |
| Hoplostethus cadenati       | 0.06         | 2       | 0.08          |      |
| Nessorhamphus ingolfianus   | 0.06         | 4       | 0.08          |      |
| Etmopterus polli            | 0.06         | 2       | 0.08          |      |
| Nemichthys scolopaceus      | 0.04         | 4       | 0.05          |      |
| Tripiophos hemingi          | 0.02         | 2       | 0.03          |      |
| <b>Total</b>                | <b>79.66</b> |         | <b>100.04</b> |      |

PROJECT STATION: 895  
 DATE: 12/6/05 GEAR TYPE: BT No:16 POSITION: Lat N 414 Long E 531  
 start stop duration  
 TIME :08:51:05 09:21:45 31 (min) Purpose code: 3  
 LOG :5671.17 5672.74 1.55 Area code : 5  
 FDEPTH: 33 34 GearCond.code:  
 BDEPTH: 33 34 Validity code:  
 Towing dir: 160° Wire out: 180 m Speed: 29 kn\*10  
 Sorted: 67 Kg Total catch: 110.08 CATCH/HOUR: 213.06

| SPECIES                   | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|---------------------------|---------------|---------|---------------|------|
|                           | weight        | numbers |               |      |
| Chloroscombrus chrysurus  | 110.42        | 2462    | 51.83         | 3811 |
| Sphyræna quachancho       | 31.86         | 161     | 14.95         |      |
| Pseudupeneus prayensis    | 12.46         | 114     | 5.85          | 3808 |
| Selene dorsalis           | 11.38         | 203     | 5.34          | 3814 |
| Caranx crysos             | 7.80          | 19      | 3.66          | 3810 |
| Rhizopryonodon acutus     | 7.70          | 6       | 3.61          |      |
| Brachydeuterus auritus    | 7.05          | 141     | 3.31          | 3813 |
| Pagrus caeruleostictus    | 4.97          | 56      | 2.33          | 3812 |
| Scomberomorus tritor      | 4.55          | 27      | 2.14          | 3809 |
| Epinephelus aeneus        | 3.00          | 4       | 1.41          |      |
| Paragaleus pectoralis     | 1.86          | 2       | 0.87          |      |
| Lepidotrigla cadmani      | 1.78          | 10      | 0.84          |      |
| Portunus validus          | 1.65          | 4       | 0.77          |      |
| Caranx hippos             | 1.65          | 10      | 0.77          |      |
| Syacium micrurum          | 1.41          | 14      | 0.66          |      |
| Selar crumenophthalmus    | 0.89          | 6       | 0.42          |      |
| Balistes caprisicus       | 0.66          | 10      | 0.31          |      |
| Ethmalosa fimbriata       | 0.52          | 17      | 0.24          |      |
| Trachinus armatus         | 0.39          | 6       | 0.18          |      |
| Eucinostomus melanopterus | 0.33          | 10      | 0.15          |      |
| Raja miraletus            | 0.27          | 4       | 0.13          |      |
| Priacanthus arenatus      | 0.27          | 4       | 0.13          |      |
| Decapterus punctatus      | 0.14          | 4       | 0.07          |      |
| Alectis alexandrinus      | 0.06          | 4       | 0.03          |      |
| <b>Total</b>              | <b>213.07</b> |         | <b>100.00</b> |      |

PROJECT STATION: 896  
 DATE:12/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 409 Long E 544  
 start stop duration  
 TIME :11:14:38 11:46:06 31 (min) Purpose code: 3  
 LOG :5687.90 5689.47 1.56 Area code : 5  
 FDEPTH: 26 25 GearCond.code:  
 BDEPTH: 26 25 Validity code:  
 Towing dir: 90° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 65 Kg Total catch: 65.55 CATCH/HOUR: 126.87

| SPECIES                     | CATCH/HOUR     | % OF TOT. C | SAMP |
|-----------------------------|----------------|-------------|------|
|                             | weight numbers |             |      |
| Chloroscombrus chrysurus    | 35.26 631      | 27.79       | 3816 |
| Trichiurus lepturus         | 24.93 314      | 19.65       |      |
| Pomadasya jubelini          | 8.03 60        | 6.33        | 3815 |
| Rhizoprionodon acutus       | 7.94 6         | 6.26        |      |
| Galeoides decadactylus      | 7.47 174       | 5.89        | 3819 |
| Trachinotus teraia          | 7.06 45        | 5.56        | 3820 |
| Scomberomorus tritor        | 6.39 23        | 5.04        | 3818 |
| Sphyræna guachancho         | 5.32 25        | 4.35        |      |
| Pseudotolithus senegalensis | 5.38 37        | 4.24        |      |
| Caranx senegalensis         | 3.66 43        | 2.88        |      |
| Ilisha africana             | 3.02 240       | 2.38        |      |
| Lagocephalus laevigatus     | 2.71 15        | 2.14        | 3821 |
| Abula vulpes                | 1.55 6         | 1.22        |      |
| Pteroscion pelli            | 1.41 39        | 1.11        |      |
| Sardinella maderensis       | 1.24 15        | 0.98        |      |
| Caranx hippos               | 1.20 10        | 0.95        | 3817 |
| Drepane africana            | 1.16 46        | 0.91        |      |
| Brachydeuterus auritus      | 0.72 12        | 0.57        |      |
| Squilla acuelata calmani    | 0.54 19        | 0.43        |      |
| Pseudotolithus typus        | 0.45 6         | 0.35        |      |
| Penaeus notialis            | 0.33 29        | 0.26        |      |
| Selene dorsalis             | 0.25 50        | 0.20        |      |
| Penaeus monodon             | 0.21 2         | 0.17        |      |
| Ethmalosa fimbriata         | 0.15 2         | 0.12        |      |
| Portunus validus            | 0.10 2         | 0.08        |      |
| Callinectes pallidus        | 0.08 8         | 0.06        |      |
| Citharus linguatula         | 0.04 4         | 0.03        |      |
| Syacium micrurum            | 0.04 4         | 0.03        |      |
| Antennarius sp.             | 0.02 2         | 0.02        |      |
| Echeneis naucrates          | 0.02 2         | 0.02        |      |
| Uranoscopus albesca         | 0.00 2         |             |      |
| Total                       | 126.88         | 100.02      |      |

PROJECT STATION: 897  
 DATE:12/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 402 Long E 543  
 start stop duration  
 TIME :13:30:25 14:00:14 30 (min) Purpose code: 3  
 LOG :5698.69 5700.07 1.37 Area code : 5  
 FDEPTH: 34 35 GearCond.code:  
 BDEPTH: 34 35 Validity code:  
 Towing dir: 310° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 89 Kg Total catch: 89.51 CATCH/HOUR: 179.02

| SPECIES                     | CATCH/HOUR     | % OF TOT. C | SAMP |
|-----------------------------|----------------|-------------|------|
|                             | weight numbers |             |      |
| Brachydeuterus auritus      | 77.20 1312     | 43.12       |      |
| Galeoides decadactylus      | 21.80 220      | 12.18       |      |
| Trichiurus lepturus         | 16.28 72       | 9.09        |      |
| Rhizoprionodon acutus       | 12.00 8        | 6.70        |      |
| Pseudotolithus senegalensis | 10.28 46       | 5.74        | 3823 |
| Sphyræna guachancho         | 8.42 34        | 4.70        | 3822 |
| Portunus validus            | 6.48 16        | 3.62        |      |
| Lagocephalus laevigatus     | 4.62 16        | 2.58        | 3830 |
| Chloroscombrus chrysurus    | 4.34 70        | 2.42        | 3827 |
| Trachinotus teraia          | 3.58 32        | 2.00        | 3829 |
| Scomberomorus tritor        | 3.52 14        | 1.97        | 3824 |
| Caranx hippos               | 2.20 12        | 1.23        | 3825 |
| Pagrus caeruleostictus      | 1.38 14        | 0.77        | 3826 |
| Syacium micrurum            | 1.02 16        | 0.57        |      |
| Selene dorsalis             | 0.88 32        | 0.49        | 3828 |
| Pomadasya jubelini          | 0.84 6         | 0.47        |      |
| Epinephelus aeneus          | 0.64 2         | 0.36        |      |
| Penaeus notialis            | 0.60 22        | 0.34        |      |
| Caranx senegalensis         | 0.56 4         | 0.31        |      |
| Pseudupeneus prayensis      | 0.42 4         | 0.23        |      |
| Eucinostomus melanopterus   | 0.40 4         | 0.22        |      |
| Priacanthus arenatus        | 0.36 2         | 0.20        |      |
| Balistes capricus           | 0.34 2         | 0.19        |      |
| Dentex gibbosus             | 0.26 2         | 0.15        |      |
| Pteroscion pelli            | 0.14 2         | 0.08        |      |
| Ilisha africana             | 0.14 2         | 0.08        |      |
| Alectis alexandrinus        | 0.10 2         | 0.06        |      |
| Drepane africana            | 0.10 2         | 0.06        |      |
| Squilla acuelata calmani    | 0.06 2         | 0.03        |      |
| Sardinella maderensis       | 0.06 2         | 0.03        |      |
| Total                       | 179.02         | 99.99       |      |

PROJECT STATION: 898  
 DATE:12/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 355 Long E 539  
 start stop duration  
 TIME :15:38:51 16:08:53 30 (min) Purpose code: 3  
 LOG :5712.31 5713.84 1.52 Area code : 5  
 FDEPTH: 53 51 GearCond.code:  
 BDEPTH: 53 51 Validity code:  
 Towing dir: 310° Wire out: 195 m Speed: 30 kn\*10  
 Sorted: 36 Kg Total catch: 72.36 CATCH/HOUR: 144.72

| SPECIES                 | CATCH/HOUR     | % OF TOT. C | SAMP |
|-------------------------|----------------|-------------|------|
|                         | weight numbers |             |      |
| Pseudupeneus prayensis  | 68.40 1518     | 47.26       | 3831 |
| Balistes capricus       | 59.28 56       | 40.96       | 3832 |
| Decapterus punctatus    | 3.60 108       | 2.49        | 3835 |
| Pagellus bellottii      | 3.08 56        | 2.13        | 3833 |
| Pagrus caeruleostictus  | 2.20 20        | 1.52        | 3834 |
| Priacanthus arenatus    | 1.96 24        | 1.35        |      |
| Trachinocephalus myops  | 1.56 20        | 1.08        |      |
| Lagocephalus laevigatus | 1.28 20        | 0.88        |      |
| Ariomma bondi           | 0.88 12        | 0.61        |      |
| Boops boops             | 0.68 16        | 0.47        |      |
| Syacium micrurum        | 0.56 12        | 0.39        |      |
| Xyrichtys novacula      | 0.36 12        | 0.25        |      |
| Fistularia petimba      | 0.28 8         | 0.19        |      |
| Aluterus blankerti      | 0.24 4         | 0.17        |      |
| Bothus podas africanus  | 0.20 4         | 0.14        |      |
| Trigla lyra             | 0.12 4         | 0.08        |      |
| Dactylopterus volitans  | 0.04 4         | 0.03        |      |
| Total                   | 144.72         | 100.00      |      |

PROJECT STATION: 899  
 DATE:12/ 6/05 GEAR TYPE: PT No: 1 POSITION:Lat N 356 Long E 538  
 start stop duration  
 TIME :16:41:25 17:06:42 25 (min) Purpose code: 1  
 LOG :5715.74 5717.72 1.96 Area code : 5  
 FDEPTH: 18 35 GearCond.code:  
 BDEPTH: 51 54 Validity code:  
 Towing dir: 130° Wire out: 120 m Speed: 45 kn\*10  
 Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 900  
 DATE:12/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 334 Long E 542  
 start stop duration  
 TIME :23:19:22 23:51:53 33 (min) Purpose code: 3  
 LOG :5756.70 5758.29 1.57 Area code : 5  
 FDEPTH: 877 898 GearCond.code:  
 BDEPTH: 877 898 Validity code:  
 Towing dir: 300° Wire out:2100 m Speed: 28 kn\*10  
 Sorted: 29 Kg Total catch: 169.02 CATCH/HOUR: 307.31

| SPECIES                     | CATCH/HOUR     | % OF TOT. C | SAMP   |
|-----------------------------|----------------|-------------|--------|
|                             | weight numbers |             |        |
| HOLUTHUROIDEA               | 174.11         | 284         | 56.66  |
| J E L L Y F I S H           | 42.11          |             | 13.70  |
| Hydrolagus africanus        | 13.20          | 22          | 4.30   |
| Bathyrroconger vicinus      | 12.98          | 44          | 4.22   |
| Halosaurus ovenii           | 10.25          | 436         | 3.34   |
| Dibranchius atlanticus      | 10.25          | 1004        | 3.34   |
| C R U S T A C E A N S       | 7.09           | 1078        | 2.31   |
| Aristeus varidens           | 6.11           | 818         | 1.99   |
| Malacocephalus occidentalis | 5.67           | 22          | 1.85   |
| GONOSTOMATIDAE              | 5.24           | 76          | 1.71   |
| Lucigadus sp.               | 3.82           | 229         | 1.24   |
| Bathygadus sp.              | 3.05           | 11          | 0.99   |
| E C H I N O D E R M A T A   | 2.40           | 87          | 0.78   |
| Conostoma denudata          | 2.40           | 22          | 0.78   |
| Laemonema laureysi          | 2.07           | 55          | 0.67   |
| MELANOSTOMIATIDAE           | 1.96           | 22          | 0.64   |
| Ebinania costaecanarie      | 1.16           | 2           | 0.38   |
| AXIIDAE                     | 0.98           | 98          | 0.32   |
| Deania calcea               | 0.73           | 4           | 0.24   |
| Centrophorus squamosus      | 0.73           | 2           | 0.24   |
| Scopelosaurus sp.           | 0.55           | 44          | 0.18   |
| Small shrimps               | 0.44           | 44          | 0.14   |
| Total                       | 307.30         |             | 100.02 |

PROJECT STATION: 901  
 DATE:13/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 337 Long E 557  
 start stop duration  
 TIME :04:49:10 05:19:11 30 (min) Purpose code: 3  
 LOG :5793.80 5795.26 1.45 Area code : 5  
 FDEPTH: 423 417 GearCond.code:  
 BDEPTH: 423 417 Validity code:  
 Towing dir: 300° Wire out:1200 m Speed: 30 kn\*10  
 Sorted: 39 Kg Total catch: 77.08 CATCH/HOUR: 154.16

| SPECIES                     | CATCH/HOUR     | % OF TOT. C | SAMP  |
|-----------------------------|----------------|-------------|-------|
|                             | weight numbers |             |       |
| Hymenocephalus italicus     | 52.24          | 2162        | 33.89 |
| Parasudis fraser-bruenneri  | 25.72          | 622         | 16.68 |
| Zenion hololepis            | 20.48          | 1982        | 13.28 |
| Chaunax pictus              | 11.40          | 56          | 7.39  |
| Nezumia aequalis            | 7.60           | 36          | 4.93  |
| Epigonus telescopus         | 5.92           | 64          | 3.84  |
| Malacocephalus laevis       | 3.72           | 44          | 2.41  |
| Laemonema laureysi          | 3.40           | 28          | 2.21  |
| Setarches guentheri         | 3.20           | 240         | 2.08  |
| OCTOPOTEUTHIDAE             | 2.60           | 20          | 1.69  |
| Stereomastis sp.            | 2.52           | 348         | 1.63  |
| Trigla lyra                 | 1.80           | 8           | 1.17  |
| Todarodes sagittatus        | 1.76           | 4           | 1.14  |
| Heterocarpus ensifer        | 1.60           | 388         | 1.04  |
| Gadella imberbis            | 1.48           | 40          | 0.96  |
| Cyttopsius roseus           | 1.36           | 24          | 0.88  |
| Nettenchelys sp.            | 1.08           | 40          | 0.70  |
| Aristeus varidens           | 1.04           | 120         | 0.67  |
| Bembrops greyi              | 0.92           | 20          | 0.60  |
| Hoplostethus cadenati       | 0.92           | 24          | 0.60  |
| Dibranchius atlanticus      | 0.76           | 96          | 0.49  |
| Chlorophthalmus atlanticus  | 0.68           | 12          | 0.44  |
| Bathygadus macrops          | 0.56           | 4           | 0.36  |
| Ebinania costaecanarie      | 0.36           | 24          | 0.23  |
| GALATHEIDAE                 | 0.32           | 48          | 0.21  |
| Coelorhynchus coelorhynchus | 0.24           | 4           | 0.16  |
| Solenocera africana         | 0.20           | 28          | 0.13  |
| Raja sp.                    | 0.08           | 4           | 0.05  |
| Galeus polli                | 0.04           | 4           | 0.03  |
| Chascanopsetta lugubris     | 0.04           | 4           | 0.03  |
| Polymetme corythaenoides    | 0.04           | 4           | 0.03  |
| Shrimps, small, non comm.   | 0.04           | 40          | 0.03  |
| Total                       | 154.12         |             | 99.98 |

PROJECT STATION: 902  
 DATE:13/ 6/05 GEAR TYPE: PT No: 1 POSITION:Lat N 342 Long E 558  
 start stop duration  
 TIME :07:05:53 07:45:23 40 (min) Purpose code: 1  
 LOG :5804.14 5806.26 2.13 Area code : 5  
 FDEPTH: 100 300 GearCond.code:  
 BDEPTH: 276 322 Validity code:  
 Towing dir: 192° Wire out: 700 m Speed: 35 kn\*10  
 Sorted: 2 Kg Total catch: 21.50 CATCH/HOUR: 32.25

| SPECIES             | CATCH/HOUR     | % OF TOT. C | SAMP   |
|---------------------|----------------|-------------|--------|
|                     | weight numbers |             |        |
| Zenion hololepis    | 24.45          | 4035        | 75.81  |
| Maurolicus muelleri | 6.75           | 12240       | 20.93  |
| Egiphanus sp.       | 0.75           | 135         | 2.33   |
| Illex coindetii     | 0.30           | 30          | 0.93   |
| Total               | 32.25          |             | 100.00 |

DATE:13/ 6/05 PROJECT STATION: 903  
 GEAR TYPE: BT No:16 POSITION:Lat N 347  
 start stop duration Long E 558

TIME :09:35:50 10:06:21 31 (min) Purpose code: 3  
 LOG :5816.36 5817.91 1.53 Area code : 5  
 FDEPTH: 152 151 GearCond.code: 3  
 BDEPTH: 152 151 Validity code:  
 Towing dir: 260° Wire out: 450 m Speed: 30 kn\*10

Sorted: 33 Kg Total catch: 193.77 CATCH/HOUR: 375.04

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 288.70     | 10150   | 76.98       | 3838 |
| Dentex congoensis           | 17.30      | 209     | 4.61        | 3839 |
| Pentheroscion mbizi         | 12.77      | 93      | 3.40        | 3837 |
| Priacanthus arenatus        | 12.77      | 232     | 3.40        |      |
| Raja miraletus              | 5.92       | 46      | 1.58        |      |
| Pterothrissus bellocci      | 5.46       | 58      | 1.46        |      |
| Dentex angolensis           | 5.34       | 35      | 1.42        | 3836 |
| Uranoscopus albesca         | 5.23       | 58      | 1.39        |      |
| Lepidotrigla cadmani        | 3.95       | 81      | 1.05        |      |
| Illex coindetii             | 3.25       | 836     | 0.87        |      |
| Todaropsis eblanae          | 2.90       | 105     | 0.77        |      |
| Squatina oculata            | 2.85       | 2       | 0.76        |      |
| Citharus linguatula         | 1.51       | 46      | 0.40        |      |
| Sepia officinalis hierredda | 1.16       | 23      | 0.31        |      |
| Peristodion cataphractum    | 1.16       | 46      | 0.31        |      |
| Setarches guentheri         | 1.16       | 31      | 0.31        |      |
| Cynoponticus ferox          | 1.05       | 12      | 0.28        |      |
| Bembrops greyl              | 0.81       | 35      | 0.22        |      |
| Saurida brasiliensis        | 0.70       | 128     | 0.19        |      |
| Bathygobius paganellus      | 0.35       | 35      | 0.09        |      |
| Stereomastis sp.            | 0.23       | 12      | 0.06        |      |
| Parapenaeus longirostris    | 0.23       | 81      | 0.06        |      |
| Syacium micrurum            | 0.12       | 12      | 0.03        |      |
| Dibranchius atlanticus      | 0.12       | 12      | 0.03        |      |
| Total                       | 375.04     |         | 99.98       |      |

DATE:13/ 6/05 PROJECT STATION: 906  
 GEAR TYPE: BT No:16 POSITION:Lat N 359  
 start stop duration Long E 616

TIME :15:57:14 16:27:22 30 (min) Purpose code: 3  
 LOG :5855.92 5857.49 1.56 Area code : 5  
 FDEPTH: 41 45 GearCond.code: 3  
 BDEPTH: 41 45 Validity code:  
 Towing dir: 113° Wire out: 170 m Speed: 30 kn\*10

Sorted: 68 Kg Total catch: 68.75 CATCH/HOUR: 137.50

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sphyraena guachancho        | 43.96      | 360     | 31.97       | 3852 |
| Chloroscombrus chrysurus    | 21.38      | 228     | 15.55       | 3853 |
| Sepia officinalis hierredda | 14.46      | 32      | 10.52       |      |
| Lagocephalus laevigatus     | 13.00      | 68      | 9.45        |      |
| Rhizoprionodon acutus       | 7.60       | 4       | 5.53        |      |
| Pseudupeneus prayensis      | 7.16       | 100     | 5.21        | 3850 |
| Portunus validus            | 7.06       | 14      | 5.13        |      |
| Priacanthus arenatus        | 5.64       | 40      | 4.10        | 3851 |
| Pagrus caeruleostictus      | 5.34       | 122     | 3.88        | 3847 |
| Alloteuthis africana        | 1.46       | 364     | 1.06        |      |
| Selene dorsalis             | 1.44       | 16      | 1.05        | 3849 |
| Trichurus lepturus          | 1.34       | 12      | 0.97        |      |
| Caranx crysos               | 1.32       | 8       | 0.96        |      |
| Octopus vulgaris            | 1.06       | 2       | 0.77        | 3848 |
| Balistes capriciscus        | 1.00       | 4       | 0.73        |      |
| Scomberomorus tritor        | 0.94       | 2       | 0.68        |      |
| Raja miraletus              | 0.64       | 2       | 0.47        |      |
| Brachydeuterus auritus      | 0.60       | 18      | 0.44        |      |
| Sardinella maderensis       | 0.56       | 8       | 0.41        |      |
| Penaeus notialis            | 0.36       | 6       | 0.26        |      |
| Callinectes pallidus        | 0.30       | 10      | 0.22        |      |
| Citharus linguatula         | 0.28       | 24      | 0.20        |      |
| Pagellus bellottii          | 0.24       | 2       | 0.17        |      |
| Syacium micrurum            | 0.14       | 2       | 0.10        |      |
| Fistularia petimba          | 0.14       | 2       | 0.10        |      |
| Drepane africana            | 0.06       | 2       | 0.04        |      |
| Squilla acuelata calmani    | 0.02       | 2       | 0.01        |      |
| Total                       | 137.50     |         | 99.98       |      |

DATE:13/ 6/05 PROJECT STATION: 904  
 GEAR TYPE: BT No:16 POSITION:Lat N 354  
 start stop duration Long E 558

TIME :11:32:15 12:05:04 33 (min) Purpose code: 3  
 LOG :5826.88 5828.52 1.63 Area code : 5  
 FDEPTH: 60 61 GearCond.code: 3  
 BDEPTH: 60 61 Validity code:  
 Towing dir: 80° Wire out: 210 m Speed: 30 kn\*10

Sorted: 85 Kg Total catch: 170.90 CATCH/HOUR: 310.73

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| J E L L Y F I S H           | 233.78     | 1538    | 75.24       |      |
| Pseudupeneus prayensis      | 22.65      | 513     | 7.29        | 3845 |
| Sepia officinalis hierredda | 10.33      | 36      | 3.32        |      |
| Dentex angolensis           | 10.00      | 247     | 3.22        | 3840 |
| Priacanthus arenatus        | 8.47       | 164     | 2.73        | 3844 |
| Brachydeuterus auritus      | 8.40       | 938     | 2.70        | 3846 |
| Decapterus rhonchus         | 5.24       | 455     | 1.69        | 3842 |
| Alloteuthis africana        | 2.62       | 804     | 0.84        |      |
| Mustelus mustelus           | 1.89       | 4       | 0.61        |      |
| Decapterus punctatus        | 1.09       | 44      | 0.35        | 3843 |
| Ariomma bondi               | 1.09       | 65      | 0.35        | 3841 |
| Raja miraletus              | 1.05       | 11      | 0.34        |      |
| Epinephelus aeneus          | 0.91       | 4       | 0.29        |      |
| Lagocephalus laevigatus     | 0.76       | 4       | 0.24        |      |
| Sphyraena guachancho        | 0.69       | 22      | 0.22        |      |
| Illex coindetii             | 0.62       | 7       | 0.20        |      |
| Lutjanus goreensis          | 0.36       | 4       | 0.12        |      |
| Trachinus armatus           | 0.36       | 4       | 0.12        |      |
| Penaeus notialis            | 0.22       | 4       | 0.07        |      |
| Grammolites gruvelli        | 0.15       | 4       | 0.05        |      |
| Citharus linguatula         | 0.04       | 4       | 0.01        |      |
| Total                       | 310.72     |         | 100.00      |      |

DATE:13/ 6/05 PROJECT STATION: 907  
 GEAR TYPE: BT No:16 POSITION:Lat N 352  
 start stop duration Long E 617

TIME :18:30:28 18:59:36 29 (min) Purpose code: 3  
 LOG :5867.72 5869.39 1.67 Area code : 5  
 FDEPTH: 88 75 GearCond.code: 3  
 BDEPTH: 88 75 Validity code:  
 Towing dir: 360° Wire out: 300 m Speed: 30 kn\*10

Sorted: 40 Kg Total catch: 40.47 CATCH/HOUR: 83.73

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Squatina oculata            | 18.04      | 8       | 21.55       |      |
| Dentex congoensis           | 9.19       | 157     | 10.98       | 3855 |
| Sepia officinalis hierredda | 7.41       | 95      | 8.85        |      |
| Dentex angolensis           | 5.48       | 58      | 6.54        | 3854 |
| Dentex canariensis          | 4.97       | 62      | 5.94        | 3856 |
| Citharus linguatula         | 4.94       | 252     | 5.90        |      |
| Priacanthus arenatus        | 4.61       | 89      | 5.51        |      |
| Scorpaena scrofa            | 3.77       | 21      | 4.50        |      |
| Lepidotrigla cadmani        | 2.54       | 58      | 3.03        |      |
| Fistularia petimba          | 2.46       | 14      | 2.94        |      |
| Plesionika martia           | 2.38       | 892     | 2.84        |      |
| Trichurus lepturus          | 1.63       | 39      | 1.95        |      |
| Broutia barbata             | 1.55       | 17      | 1.85        |      |
| Trachinus pellegrini        | 1.53       | 77      | 1.83        |      |
| Syacium micrurum            | 1.51       | 279     | 1.80        |      |
| Uranoscopus cadenati        | 1.47       | 35      | 1.76        |      |
| Raja miraletus              | 1.32       | 6       | 1.58        |      |
| Ariomma bondi               | 1.16       | 27      | 1.39        |      |
| Lepidotrigla carolae        | 0.99       | 46      | 1.18        |      |
| Chloroscombrus chrysurus    | 0.85       | 10      | 1.02        |      |
| Pentheroscion mbizi         | 0.68       | 4       | 0.81        |      |
| Parapenaeus longirostris    | 0.60       | 124     | 0.72        |      |
| Scorpaena normani           | 0.58       | 6       | 0.69        |      |
| Setarches guentheri         | 0.56       | 21      | 0.67        |      |
| Pterothrissus bellocci      | 0.48       | 4       | 0.57        |      |
| Sphyraena guachancho        | 0.46       | 4       | 0.55        |      |
| Dactylopterus volitans      | 0.46       | 4       | 0.55        |      |
| Octopus vulgaris            | 0.35       | 2       | 0.42        |      |
| Bathygobius paganellus      | 0.29       | 46      | 0.35        |      |
| J E L L Y F I S H           | 0.29       | 2       | 0.35        |      |
| Illex coindetii             | 0.25       | 2       | 0.30        |      |
| Cynoponticus ferox          | 0.19       | 2       | 0.23        |      |
| Serranus africana           | 0.12       | 4       | 0.14        |      |
| Antennarius sp.             | 0.12       | 2       | 0.14        |      |
| Sphoeroides marmoratus      | 0.12       | 6       | 0.14        |      |
| Solenocera africana         | 0.10       | 10      | 0.12        |      |
| Todaropsis eblanae          | 0.08       | 4       | 0.10        |      |
| Alloteuthis africana        | 0.06       | 4       | 0.07        |      |
| Saurida brasiliensis        | 0.06       | 12      | 0.07        |      |
| Callinectes pallidus        | 0.02       | 2       | 0.02        |      |
| Cepola pauciradiatus        | 0.02       | 2       | 0.02        |      |
| Selene dorsalis             | 0.02       | 2       | 0.02        |      |
| Total                       | 83.71      |         | 99.99       |      |

DATE:13/ 6/05 PROJECT STATION: 905  
 GEAR TYPE: BT No:16 POSITION:Lat N 405  
 start stop duration Long E 602

TIME :13:38:02 14:08:39 31 (min) Purpose code: 3  
 LOG :5840.83 5842.19 1.36 Area code : 5  
 FDEPTH: 24 25 GearCond.code: 3  
 BDEPTH: 24 25 Validity code:  
 Towing dir: 113° Wire out: 125 m Speed: 30 kn\*10

Sorted: 35 Kg Total catch: 35.44 CATCH/HOUR: 68.59

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trichurus lepturus          | 24.58      | 852     | 35.84       |      |
| Ilisha africana             | 8.07       | 474     | 11.77       |      |
| Pseudotolithus senegalensis | 4.18       | 54      | 6.09        |      |
| Galeoides decadactylus      | 4.14       | 93      | 6.04        |      |
| Portunus validus            | 2.98       | 15      | 4.34        |      |
| Penaeus monodon             | 2.83       | 19      | 4.13        |      |
| Pomadour jubelini           | 2.61       | 12      | 3.81        |      |
| Penaeus notialis            | 2.44       | 124     | 3.56        |      |
| Scomberomorus tritor        | 1.99       | 8       | 2.90        |      |
| Lagocephalus laevigatus     | 1.95       | 10      | 2.84        |      |
| Callinectes pallidus        | 1.82       | 54      | 2.65        |      |
| Chloroscombrus chrysurus    | 1.78       | 41      | 2.60        |      |
| Alloteuthis africana        | 1.74       | 774     | 2.54        |      |
| Peroscion pelli             | 1.49       | 103     | 2.17        |      |
| Epinephelus aeneus          | 1.30       | 2       | 1.90        |      |
| Squilla acuelata calmani    | 1.18       | 58      | 1.72        |      |
| Sepia officinalis hierredda | 0.89       | 4       | 1.30        |      |
| Sphyraena guachancho        | 0.62       | 2       | 0.90        |      |
| Selene dorsalis             | 0.45       | 199     | 0.66        |      |
| Raja miraletus              | 0.45       | 2       | 0.66        |      |
| Drepane africana            | 0.29       | 6       | 0.42        |      |
| Penaeus kerathurus          | 0.27       | 14      | 0.39        |      |
| Sardinella maderensis       | 0.19       | 15      | 0.28        |      |
| Brachydeuterus auritus      | 0.14       | 2       | 0.20        |      |
| Uranoscopus albesca         | 0.12       | 2       | 0.17        |      |
| Synoglossus senegalensis    | 0.08       | 4       | 0.12        |      |
| Syacium micrurum            | 0.02       | 6       | 0.03        |      |
| Trachinus sp.               | 0.00       | 2       |             |      |
| Dibranchius atlanticus      | 0.00       | 4       |             |      |
| Total                       | 68.60      |         | 100.03      |      |

DATE:13/ 6/05 PROJECT STATION: 908  
 GEAR TYPE: PT No: 4 POSITION:Lat N 341  
 start stop duration Long E 618

TIME :21:31:57 22:02:05 30 (min) Purpose code: 1  
 LOG :5884.37 5886.04 1.68 Area code : 5  
 FDEPTH: 0 0 GearCond.code: 3  
 BDEPTH: 333 367 Validity code:  
 Towing dir: 180° Wire out: 150 m Speed: 30 kn\*10

Sorted: 13 Kg Total catch: 13.42 CATCH/HOUR: 26.84

| SPECIES                | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------|------------|---------|-------------|------|
|                        | weight     | numbers |             |      |
| MYCTOPHIDAE            | 19.82      | 24474   | 73.85       |      |
| Hypoclydonia bella     | 4.50       | 248     | 16.77       |      |
| J E L L Y F I S H      | 1.66       | 48      | 6.18        |      |
| Unidentified fish      | 0.40       | 72      | 1.49        |      |
| Ariomma bondi          | 0.16       | 18      | 0.60        |      |
| Illex coindetii        | 0.14       | 2       | 0.52        |      |
| Selene dorsalis        | 0.10       | 76      | 0.37        |      |
| C E P H A L O P O D A  | 0.02       | 10      | 0.07        |      |
| Sphoeroides marmoratus | 0.02       | 4       | 0.07        |      |
| Priacanthus arenatus   | 0.02       | 2       | 0.07        |      |
| Total                  | 26.84      |         | 99.99       |      |

PROJECT STATION: 909  
 DATE:14/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 340  
 start stop duration Long E 637  
 TIME :03:52:14 04:22:14 30 (min) Purpose code: 3  
 LOG :5925.95 5927.53 1.58 Area code : 5  
 FDEPTH: 278 296 GearCond.code:  
 BDEPTH: 278 296 Validity code:  
 Towing dir: 95° Wire out: 850 m Speed: 30 kn\*10

Sorted: 41 Kg Total catch: 85.91 CATCH/HOUR: 171.82

| SPECIES                  | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------|------------|---------|-------------|------|
|                          | weight     | numbers |             |      |
| Saurida brasiliensis     | 92.56      | 3428    | 53.87       |      |
| Illex coindetii          | 34.96      | 404     | 20.35       |      |
| Peristedion cataphractum | 11.16      | 356     | 6.50        |      |
| Onmastrephes bartrani    | 5.86       | 2       | 3.41        |      |
| Chascanopsetta lugubris  | 3.48       | 32      | 2.03        |      |
| Squalus megalops         | 2.60       | 6       | 1.51        |      |
| Trigla lyra              | 2.08       | 20      | 1.21        |      |
| Ariomma melanum          | 2.00       | 12      | 1.16        |      |
| Cyttopsis roseus         | 1.68       | 80      | 0.98        |      |
| Raja straeleni           | 1.68       | 4       | 0.98        |      |
| Pterothrissus bellioi    | 1.64       | 8       | 0.95        |      |
| Brotula barbata          | 1.52       | 4       | 0.88        |      |
| Parapenaeus longirostris | 1.44       | 284     | 0.84        |      |
| Bassanago albescens      | 1.28       | 12      | 0.74        |      |
| Hoplostethus cadenati    | 1.20       | 4       | 0.70        |      |
| Physiculus sp.           | 1.08       | 20      | 0.63        |      |
| Raja miraletus           | 1.00       | 4       | 0.58        |      |
| C R U S T A C E A N S    | 0.88       | 44      | 0.51        |      |
| Bembrops greyi           | 0.68       | 4       | 0.40        |      |
| Grammolites gruvelli     | 0.48       | 4       | 0.28        |      |
| Dibranchius atlanticus   | 0.44       | 28      | 0.26        |      |
| Antigonia capros         | 0.44       | 32      | 0.26        |      |
| Trachyrincus scabrus     | 0.36       | 4       | 0.21        |      |
| Scyliorhinus cervigoni   | 0.32       | 2       | 0.19        |      |
| Setarches guentheri      | 0.32       | 4       | 0.19        |      |
| Monolele microstoma      | 0.24       | 16      | 0.14        |      |
| CaIappa sp.              | 0.20       | 4       | 0.12        |      |
| Synagrops microlepis     | 0.16       | 8       | 0.09        |      |
| Microchirus wittei       | 0.08       | 4       | 0.05        |      |
| MYCTOPHIDAE              | 0.00       | 4       |             |      |
| Total                    | 171.82     |         | 100.02      |      |

PROJECT STATION: 912  
 DATE:14/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 405  
 start stop duration Long E 639  
 TIME :09:47:25 10:18:03 31 (min) Purpose code: 3  
 LOG :5958.53 5960.05 1.51 Area code : 5  
 FDEPTH: 39 39 GearCond.code:  
 BDEPTH: 39 39 Validity code:  
 Towing dir: 90° Wire out: 190 m Speed: 30 kn\*10

Sorted: 32 Kg Total catch: 32.34 CATCH/HOUR: 62.59

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Sphyaena guanchancho      | 13.88      | 37      | 22.18       |      |
| Chloroscombrus chrysurus  | 12.19      | 163     | 19.48       | 3865 |
| Brachydeuterus auritus    | 10.72      | 186     | 17.13       | 3866 |
| Rhizoprionodon acutus     | 6.27       | 4       | 10.02       |      |
| Pseudupeneus prayensis    | 4.63       | 43      | 7.40        | 3868 |
| Pagrus caeruleostictus    | 3.33       | 54      | 5.32        | 3864 |
| Selar crumenophthalmus    | 3.14       | 15      | 5.02        | 3867 |
| Balistes caprisicus       | 2.23       | 6       | 3.56        |      |
| Scomberomorus tritor      | 1.78       | 6       | 2.84        |      |
| Selene dorsalis           | 1.76       | 17      | 2.81        |      |
| Raja miraletus            | 1.14       | 8       | 1.82        |      |
| Epinephelus aeneus        | 0.46       | 2       | 0.73        |      |
| Lagocephalus laevigatus   | 0.43       | 4       | 0.69        |      |
| Todaropsis eblanae        | 0.15       | 2       | 0.24        |      |
| Illex sp.                 | 0.12       | 2       | 0.19        |      |
| Todarodes sagittatus      | 0.12       | 2       | 0.19        |      |
| Eucinostomus melanopterus | 0.10       | 2       | 0.16        |      |
| Alloteuthis africana      | 0.06       | 14      | 0.10        |      |
| Grammolites gruvelli      | 0.04       | 2       | 0.06        |      |
| Octopus vulgaris          | 0.02       | 2       | 0.03        |      |
| Scylliarides herklotsii   | 0.02       | 2       | 0.03        |      |
| Sepiella ornata           | 0.02       | 4       | 0.03        |      |
| Total                     | 62.61      |         | 100.03      |      |

PROJECT STATION: 910  
 DATE:14/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 349  
 start stop duration Long E 640  
 TIME :06:07:44 06:38:27 31 (min) Purpose code: 3  
 LOG :5938.56 5940.11 1.56 Area code : 5  
 FDEPTH: 132 134 GearCond.code:  
 BDEPTH: 132 134 Validity code:  
 Towing dir: 90° Wire out: 414 m Speed: 30 kn\*10

Sorted: 76 Kg Total catch: 342.73 CATCH/HOUR: 663.35

| SPECIES                  | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------|------------|---------|-------------|------|
|                          | weight     | numbers |             |      |
| Ariomma bondi            | 552.39     | 15058   | 83.27       | 3857 |
| Umbrina canariensis      | 37.35      | 155     | 5.63        | 3860 |
| Dentex congongensis      | 18.77      | 223     | 2.83        | 3859 |
| Illex coindetii          | 11.23      | 571     | 1.69        |      |
| Squatina oculata         | 9.29       | 4       | 1.40        |      |
| Dentex angolensis        | 8.23       | 68      | 1.24        | 3858 |
| Todaropsis eblanae       | 5.61       | 397     | 0.85        |      |
| Trichurus lepturus       | 3.87       | 110     | 0.58        |      |
| Lophiodes kempi          | 3.68       | 10      | 0.55        |      |
| Peristedion cataphractum | 3.00       | 97      | 0.45        |      |
| Priacanthus arenatus     | 2.61       | 39      | 0.21        |      |
| Pterothrissus bellioi    | 1.39       | 12      | 0.21        |      |
| Fistularia petimba       | 1.16       | 8       | 0.17        |      |
| Brotula barbata          | 0.99       | 6       | 0.15        |      |
| Raja miraletus           | 0.85       | 4       | 0.13        |      |
| Raja straeleni           | 0.81       | 2       | 0.12        |      |
| Lepidotrigla cadmani     | 0.68       | 10      | 0.10        |      |
| Uranoscopus albesca      | 0.37       | 2       | 0.06        |      |
| Citharus linguatula      | 0.29       | 10      | 0.04        |      |
| Cepola pauciradiatus     | 0.21       | 14      | 0.03        |      |
| Lepidotrigla carolae     | 0.19       | 10      | 0.03        |      |
| Parapenaeus longirostris | 0.10       | 19      | 0.02        |      |
| Dibranchius atlanticus   | 0.10       | 2       | 0.02        |      |
| Saurida brasiliensis     | 0.10       | 68      | 0.02        |      |
| Biennius normani         | 0.08       | 2       | 0.01        |      |
| Total                    | 663.35     |         | 99.99       |      |

PROJECT STATION: 913  
 DATE:14/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 409  
 start stop duration Long E 641  
 TIME :11:14:37 11:44:19 30 (min) Purpose code: 3  
 LOG :5965.66 5967.14 1.47 Area code : 5  
 FDEPTH: 26 26 GearCond.code:  
 BDEPTH: 26 26 Validity code:  
 Towing dir: 90° Wire out: 100 m Speed: 30 kn\*10

Sorted: 49 Kg Total catch: 49.94 CATCH/HOUR: 99.88

| SPECIES                  | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------|------------|---------|-------------|------|
|                          | weight     | numbers |             |      |
| Brachydeuterus auritus   | 23.88      | 360     | 23.91       | 3877 |
| Chloroscombrus chrysurus | 17.40      | 306     | 17.42       | 3873 |
| Sphyaena guanchancho     | 14.06      | 48      | 14.08       | 3869 |
| Galeoides decadactylus   | 9.76       | 84      | 9.77        | 3870 |
| Drepane africana         | 8.68       | 14      | 8.69        | 3875 |
| Scomberomorus tritor     | 7.18       | 8       | 7.19        | 3872 |
| Selene dorsalis          | 5.88       | 72      | 5.89        | 3874 |
| Caranx senegallus        | 4.94       | 36      | 4.95        | 3871 |
| Alectis alexandrinus     | 3.84       | 32      | 3.84        | 3876 |
| Portunus validus         | 1.40       | 4       | 1.40        |      |
| J E L L Y F I S H        | 0.92       | 14      | 0.92        |      |
| Balistes caprisicus      | 0.68       | 2       | 0.68        |      |
| Pagrus caeruleostictus   | 0.50       | 4       | 0.50        |      |
| Decapterus rhonchus      | 0.48       | 4       | 0.48        |      |
| Pseudupeneus prayensis   | 0.16       | 2       | 0.16        |      |
| Trichurus lepturus       | 0.12       | 2       | 0.12        |      |
| Total                    | 99.88      |         | 100.00      |      |

PROJECT STATION: 911  
 DATE:14/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 358  
 start stop duration Long E 640  
 TIME :08:09:55 08:40:20 30 (min) Purpose code: 3  
 LOG :5949.83 5951.39 1.54 Area code : 5  
 FDEPTH: 76 74 GearCond.code:  
 BDEPTH: 76 74 Validity code:  
 Towing dir: 270° Wire out: 250 m Speed: 30 kn\*10

Sorted: 41 Kg Total catch: 41.53 CATCH/HOUR: 83.06

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pentheroscion mbizi         | 22.40      | 204     | 26.97       | 3861 |
| Squatina oculata            | 15.90      | 10      | 19.14       |      |
| Alloteuthis africana        | 7.16       | 308     | 8.62        |      |
| Trichurus lepturus          | 6.50       | 148     | 7.83        | 3863 |
| Sepia officinalis hierredda | 5.88       | 40      | 7.08        |      |
| Illex coindetii             | 3.34       | 26      | 4.02        |      |
| Lepidotrigla cadmani        | 2.76       | 72      | 3.32        |      |
| Priacanthus arenatus        | 2.12       | 24      | 2.55        |      |
| Sea urchins (weak spines)   | 2.00       | 236     | 2.41        |      |
| Ariomma bondi               | 1.70       | 60      | 2.05        |      |
| Raja miraletus              | 1.42       | 12      | 1.71        |      |
| J E L L Y F I S H           | 1.20       | 16      | 1.44        |      |
| Selar crumenophthalmus      | 1.16       | 22      | 1.40        | 3862 |
| Dentex congongensis         | 1.12       | 20      | 1.35        |      |
| Octopus vulgaris            | 1.06       | 2       | 1.28        |      |
| Pagrus caeruleostictus      | 0.84       | 14      | 1.01        |      |
| Saurida brasiliensis        | 0.78       | 166     | 0.94        |      |
| Pseudupeneus prayensis      | 0.72       | 12      | 0.87        |      |
| Serranus accraensis         | 0.62       | 24      | 0.75        |      |
| Lepidotrigla carolae        | 0.56       | 28      | 0.67        |      |
| Citharus linguatula         | 0.50       | 30      | 0.60        |      |
| Todaropsis eblanae          | 0.50       | 14      | 0.60        |      |
| Fistularia petimba          | 0.40       | 4       | 0.48        |      |
| Sphyaena guanchancho        | 0.38       | 8       | 0.46        |      |
| Decapterus punctatus        | 0.36       | 20      | 0.43        |      |
| Syacium micrurum            | 0.26       | 54      | 0.31        |      |
| Peristedion cataphractum    | 0.26       | 10      | 0.31        |      |
| Uranoscopus albesca         | 0.22       | 4       | 0.26        |      |
| Grammolites gruvelli        | 0.22       | 12      | 0.26        |      |
| Parapenaeus longirostris    | 0.18       | 22      | 0.22        |      |
| Sardinella maderensis       | 0.12       | 4       | 0.14        |      |
| Physiculus huloti           | 0.08       | 4       | 0.10        |      |
| Biennius normani            | 0.08       | 10      | 0.10        |      |
| Synchiropus phaeton         | 0.08       | 2       | 0.10        |      |
| Lagocephalus laevigatus     | 0.06       | 2       | 0.07        |      |
| Dibranchius atlanticus      | 0.04       | 2       | 0.05        |      |
| Bathygobius paganellus      | 0.04       | 2       | 0.05        |      |
| Brachydeuterus auritus      | 0.04       | 2       | 0.05        |      |
| Total                       | 83.06      |         | 100.00      |      |

PROJECT STATION: 914  
 DATE:14/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 406  
 start stop duration Long E 659  
 TIME :13:50:02 14:21:34 32 (min) Purpose code: 3  
 LOG :5983.80 5985.44 1.62 Area code : 5  
 FDEPTH: 40 40 GearCond.code:  
 BDEPTH: 40 40 Validity code:  
 Towing dir: 100° Wire out: 165 m Speed: 30 kn\*10

Sorted: 18 Kg Total catch: 18.09 CATCH/HOUR: 33.92

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 13.14      | 422     | 38.74       | 3879 |
| Alectis alexandrinus        | 7.22       | 15      | 21.29       | 3880 |
| Chloroscombrus chrysurus    | 6.77       | 66      | 19.96       | 3878 |
| Caranx senegallus           | 1.65       | 9       | 4.86        |      |
| Portunus validus            | 1.61       | 4       | 4.75        |      |
| Drepane africana            | 0.83       | 2       | 2.45        |      |
| Caranx crysos               | 0.81       | 4       | 2.39        |      |
| Sphyaena guanchancho        | 0.54       | 8       | 1.59        |      |
| Lagocephalus laevigatus     | 0.39       | 2       | 1.15        |      |
| Selene dorsalis             | 0.38       | 8       | 1.12        |      |
| Bembrops greyi              | 0.26       | 11      | 0.77        |      |
| Eucinostomus melanopterus   | 0.19       | 4       | 0.56        |      |
| Sepia officinalis hierredda | 0.11       | 32      | 0.32        |      |
| C R U S T A C E A N S       | 0.02       | 4       | 0.06        |      |
| Total                       | 33.92      |         | 100.01      |      |



PROJECT STATION: 915  
 DATE:14/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 401 Long E 700  
 start stop duration  
 TIME :15:28:31 15:58:36 30 (min) Purpose code: 3  
 LOG :5992.40 5993.98 1.57 Area code : 5  
 FDEPTH: 65 66 GearCond.code:  
 BDEPTH: 65 66 Validity code:  
 Towing dir: 270° Wire out: 240 m Speed: 30 kn\*10  
 Sorted: 44 Kg Total catch: 44.22 CATCH/HOUR: 88.44

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Brachydeuterus auritus         | 34.48      | 3278    | 38.99       |      |
| Trichurus lepturus             | 17.92      | 490     | 20.26       |      |
| Squatina oculata               | 12.00      | 8       | 13.57       |      |
| Sepia officinalis hierredda    | 3.32       | 40      | 3.75        |      |
| Alloteuthis africana           | 3.32       | 986     | 3.75        |      |
| J E L Y F I S H                | 1.60       | 34      | 1.81        |      |
| Pseudupeneus prayensis         | 1.60       | 26      | 1.81        |      |
| Illex coindetii                | 1.48       | 14      | 1.67        |      |
| Pentheroscion mbizi            | 1.30       | 10      | 1.47        |      |
| Raja miraletus                 | 1.28       | 14      | 1.45        |      |
| Lepidotrigla cadmani           | 1.02       | 26      | 1.15        |      |
| Sphyræna guachancho            | 1.00       | 34      | 1.13        |      |
| Parapenaeus longirostris       | 1.00       | 126     | 1.13        |      |
| Chilomycterus spinosus mauret. | 0.70       | 4       | 0.79        |      |
| Callinectes pallidus           | 0.58       | 32      | 0.66        |      |
| Citharus linguatula            | 0.58       | 84      | 0.66        |      |
| Priacanthus arenatus           | 0.56       | 8       | 0.63        |      |
| Chloroscombrus chrysurus       | 0.54       | 4       | 0.61        |      |
| Todaropsis eblanae             | 0.54       | 480     | 0.61        |      |
| Grammolites gruvelli           | 0.48       | 22      | 0.54        |      |
| Saurida brasiliensis           | 0.46       | 118     | 0.52        |      |
| Penaeus notialis               | 0.42       | 8       | 0.47        |      |
| Lagocephalus laevigatus        | 0.36       | 6       | 0.41        |      |
| Dentex angolensis              | 0.34       | 2       | 0.38        |      |
| Serranus africana              | 0.30       | 22      | 0.34        |      |
| Octopus vulgaris               | 0.24       | 2       | 0.27        |      |
| Blennius normani               | 0.18       | 26      | 0.20        |      |
| Ariomma bondi                  | 0.18       | 30      | 0.20        |      |
| Fistularia petimba             | 0.16       | 4       | 0.18        |      |
| Sardinella maderensis          | 0.10       | 2       | 0.11        |      |
| Syacium micrurus               | 0.10       | 34      | 0.11        |      |
| Lepidotrigla carolae           | 0.08       | 8       | 0.09        |      |
| Decapterus punctatus           | 0.08       | 4       | 0.09        |      |
| Antennarius sp.                | 0.06       | 8       | 0.07        |      |
| Bathygobius paganelius         | 0.06       | 10      | 0.07        |      |
| Squilla acuelata calmani       | 0.02       | 4       | 0.02        |      |
| Calappa sp.                    | 0.00       | 2       |             |      |
| Total                          | 88.44      |         | 99.97       |      |

PROJECT STATION: 918  
 DATE:15/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 351 Long E 721  
 start stop duration  
 TIME :05:56:04 06:26:09 30 (min) Purpose code: 3  
 LOG :6081.08 6082.72 1.64 Area code : 5  
 FDEPTH: 129 134 GearCond.code:  
 BDEPTH: 129 134 Validity code:  
 Towing dir: 90° Wire out: 484 m Speed: 30 kn\*10  
 Sorted: 35 Kg Total catch: 66.83 CATCH/HOUR: 133.66

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 58.72      | 1580    | 43.93       | 3885 |
| Priacanthus arenatus        | 25.68      | 360     | 19.21       |      |
| Dentex angolensis           | 19.20      | 156     | 14.36       | 3886 |
| Illex coindetii             | 9.92       | 1036    | 7.42        |      |
| Dentex congoensis           | 7.76       | 100     | 5.81        | 3887 |
| Epinephelus aeneus          | 5.28       | 4       | 3.95        |      |
| Citharus linguatula         | 1.64       | 96      | 1.23        |      |
| Pentheroscion mbizi         | 1.28       | 12      | 0.96        |      |
| Raja miraletus              | 1.00       | 4       | 0.75        |      |
| Trichurus lepturus          | 0.64       | 4       | 0.48        |      |
| Fistularia petimba          | 0.62       | 4       | 0.46        |      |
| Pterothrissus belloci       | 0.44       | 4       | 0.33        |      |
| Pontinus kuhlii             | 0.36       | 4       | 0.27        |      |
| Epinephelus haifensis       | 0.28       | 2       | 0.21        |      |
| Lepidotrigla cadmani        | 0.28       | 8       | 0.21        |      |
| Lepidotrigla carolae        | 0.20       | 12      | 0.15        |      |
| Pontinus accraensis         | 0.12       | 4       | 0.09        |      |
| Bembrops greyi              | 0.12       | 4       | 0.09        |      |
| Bathygobius paganelius      | 0.08       | 8       | 0.06        |      |
| Sea urchins (strong spines) | 0.04       | 4       | 0.03        |      |
| Total                       | 133.66     |         | 100.00      |      |

PROJECT STATION: 919  
 DATE:15/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 357 Long E 722  
 start stop duration  
 TIME :07:59:27 08:30:59 32 (min) Purpose code: 3  
 LOG :6093.32 6094.87 1.54 Area code : 5  
 FDEPTH: 81 80 GearCond.code:  
 BDEPTH: 81 80 Validity code:  
 Towing dir: 90° Wire out: 250 m Speed: 30 kn\*10  
 Sorted: 40 Kg Total catch: 77.13 CATCH/HOUR: 144.62

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 51.23      | 1320    | 35.42       | 3888 |
| Sepia officinalis hierredda | 36.79      | 158     | 25.44       |      |
| Priacanthus arenatus        | 18.86      | 188     | 13.04       |      |
| Mustelus mustelus           | 12.08      | 2       | 8.35        |      |
| Lepidotrigla cadmani        | 4.69       | 124     | 3.24        |      |
| Trichurus lepturus          | 4.24       | 98      | 2.93        |      |
| Decapterus punctatus        | 4.20       | 98      | 2.90        | 3889 |
| Scorpaena normani           | 2.51       | 8       | 1.74        |      |
| Lepidotrigla carolae        | 2.51       | 49      | 1.74        |      |
| Epinephelus aeneus          | 1.89       | 4       | 1.31        |      |
| Todaropsis eblanae          | 1.31       | 116     | 0.91        |      |
| Serranus accraensis         | 0.98       | 45      | 0.68        |      |
| Pentheroscion mbizi         | 0.53       | 45      | 0.37        |      |
| Saurida brasiliensis        | 0.49       | 45      | 0.34        |      |
| Selar crumenophthalmus      | 0.34       | 4       | 0.24        |      |
| Illex coindetii             | 0.34       | 4       | 0.24        |      |
| Raja miraletus              | 0.34       | 4       | 0.24        |      |
| Antennarius occidentalis    | 0.30       | 8       | 0.21        |      |
| Alloteuthis africana        | 0.23       | 83      | 0.16        |      |
| Blennius normani            | 0.19       | 15      | 0.13        |      |
| Citharus linguatula         | 0.19       | 15      | 0.13        |      |
| Sphoeroides marmoratus      | 0.15       | 4       | 0.10        |      |
| Zeus faber                  | 0.11       | 4       | 0.08        |      |
| Chaetodon marcellae         | 0.08       | 8       | 0.06        |      |
| Bathygobius paganelius      | 0.08       | 4       | 0.06        |      |
| Total                       | 144.66     |         | 100.06      |      |

PROJECT STATION: 920  
 DATE:15/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 411 Long E 731  
 start stop duration  
 TIME :10:00:34 10:00:47 30 (min) Purpose code: 3  
 LOG :6111.60 6113.21 1.60 Area code : 5  
 FDEPTH: 34 33 GearCond.code:  
 BDEPTH: 34 33 Validity code:  
 Towing dir: 100° Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 39 Kg Total catch: 75.18 CATCH/HOUR: 150.36

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ilisha africana             | 38.60      | 3510    | 25.67       | 3898 |
| Trichurus lepturus          | 38.00      | 342     | 25.27       |      |
| Pteroscion pelli            | 14.08      | 608     | 9.36        | 3897 |
| Chloroscombrus chrysurus    | 10.28      | 196     | 6.84        | 3896 |
| Galeoides decadactylus      | 8.68       | 164     | 5.77        | 3890 |
| Scomberomorus tritor        | 6.48       | 12      | 4.31        | 3892 |
| Sphyræna guachancho         | 6.32       | 52      | 4.20        | 3895 |
| Pseudotolithus senegalensis | 5.04       | 24      | 3.35        | 3891 |
| Pomadasyus jubelini         | 4.52       | 20      | 3.01        | 3893 |
| Portunus validus            | 4.08       | 24      | 2.71        |      |
| Brachydeuterus auritus      | 3.72       | 212     | 2.47        | 3899 |
| Selene dorsalis             | 2.92       | 72      | 1.94        | 3894 |
| Lagocephalus laevigatus     | 2.72       | 20      | 1.81        |      |
| Penaeus notialis            | 1.56       | 52      | 1.04        |      |
| Epinephelus aeneus          | 0.60       | 4       | 0.40        |      |
| Sepia officinalis hierredda | 0.56       | 56      | 0.37        |      |
| J E L Y F I S H             | 0.40       | 4       | 0.27        |      |
| Caranx senegalensis         | 0.28       | 4       | 0.19        |      |
| Drepane africana            | 0.28       | 12      | 0.19        |      |
| Sardinella maderensis       | 0.20       | 4       | 0.13        |      |
| Decapterus punctatus        | 0.20       | 8       | 0.13        |      |
| Cynoponcticus ferox         | 0.16       | 4       | 0.11        |      |
| Callinectes sp.             | 0.16       | 4       | 0.11        |      |
| Eucinostomus melanopterus   | 0.16       | 12      | 0.11        |      |
| Cynoglossus senegalensis    | 0.12       | 8       | 0.08        |      |
| Squilla acuelata calmani    | 0.12       | 8       | 0.08        |      |
| Citharus linguatula         | 0.08       | 8       | 0.05        |      |
| Setarches guentheri         | 0.04       | 4       | 0.03        |      |
| Total                       | 150.36     |         | 100.00      |      |

PROJECT STATION: 917  
 DATE:14/ 6/05 GEAR TYPE: PT No: 4 POSITION:Lat N 354 Long E 704  
 start stop duration  
 TIME :19:40:28 20:17:07 37 (min) Purpose code: 1  
 LOG :6010.47 6012.33 1.66 Area code : 5  
 FDEPTH: 0 0 GearCond.code:  
 BDEPTH: 115 128 Validity code:  
 Towing dir: 210° Wire out: 100 m Speed: 33 kn\*10  
 Sorted: 21 Kg Total catch: 21.69 CATCH/HOUR: 35.17

| SPECIES                  | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------|------------|---------|-------------|------|
|                          | weight     | numbers |             |      |
| Ariomma bondi            | 34.12      | 1172    | 97.01       | 3884 |
| Eretmochelys imbricata   | 0.52       | 2       | 1.48        |      |
| Trichurus lepturus       | 0.18       | 3       | 0.51        |      |
| Saurida brasiliensis     | 0.16       | 136     | 0.45        |      |
| Todarodes sagittatus     | 0.03       |         | 0.09        |      |
| Hemiramphus brasiliensis | 0.02       | 10      | 0.06        |      |
| Total                    | 35.03      |         | 99.60       |      |

PROJECT STATION: 921  
 DATE:15/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 413 Long E 740  
 start stop duration  
 TIME :12:25:33 12:55:20 30 (min) Purpose code: 3  
 LOG :6121.21 6122.74 1.53 Area code : 5  
 FDEPTH: 23 23 GearCond.code:  
 BDEPTH: 23 23 Validity code:  
 Towing dir: 100° Wire out: 125 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 122.36 CATCH/HOUR: 244.72

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 46.96      | 1222    | 19.19       | 3906 |
| Galeoides decadactylus      | 41.04      | 490     | 16.77       | 3902 |
| Chloroscombrus chrysurus    | 34.60      | 410     | 14.14       | 3905 |
| Scomberomorus tritor        | 23.80      | 88      | 9.73        | 3904 |
| J E L Y F I S H             | 19.44      | 48      | 7.94        |      |
| Chaetodipterus gorenensis   | 16.64      | 84      | 6.80        |      |
| Caranx hippos               | 15.28      | 96      | 6.24        |      |
| Sphyraena guachancho        | 12.84      | 56      | 5.25        | 3901 |
| Selene dorsalis             | 11.88      | 188     | 4.85        | 3907 |
| Pteroscion pelli            | 4.80       | 56      | 1.96        | 3903 |
| Pomadasy jubelini           | 4.04       | 120     | 1.65        | 3900 |
| Eucinostomus melanopterus   | 3.68       | 8       | 1.50        |      |
| Trichiurus lepturus         | 1.92       | 140     | 0.78        |      |
| Lagocephalus laevisgatus    | 1.08       | 4       | 0.44        |      |
| Epinephelus aeneus          | 1.00       | 8       | 0.41        |      |
| Decapterus punctatus        | 0.92       | 8       | 0.38        |      |
| Ilisha africana             | 0.88       | 24      | 0.36        |      |
| Pseudupeneus prayensis      | 0.88       | 8       | 0.36        |      |
| Alectis alexandrinus        | 0.84       | 36      | 0.34        |      |
| Sardinella maderensis       | 0.68       | 4       | 0.28        |      |
| Sepia officinalis hierredda | 0.56       | 4       | 0.23        |      |
| Callinectes sp.             | 0.56       | 20      | 0.23        |      |
| Squilla aculeata calmani    | 0.36       | 4       | 0.15        |      |
| Cynoglossus senegalensis    | 0.04       | 8       | 0.02        |      |
| Total                       | 244.72     |         | 100.00      |      |

PROJECT STATION: 922  
 DATE:15/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 409 Long E 740  
 start stop duration  
 TIME :14:00:01 14:30:05 30 (min) Purpose code: 3  
 LOG :6129.49 6131.17 1.66 Area code : 5  
 FDEPTH: 40 37 GearCond.code:  
 BDEPTH: 40 37 Validity code:  
 Towing dir: 70° Wire out: 165 m Speed: 30 kn\*10  
 Sorted: 26 Kg Total catch: 26.28 CATCH/HOUR: 52.56

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Chloroscombrus chrysurus    | 14.06      | 178     | 26.75       |      |
| Portunus validus            | 8.24       | 26      | 15.68       |      |
| Lagocephalus laevisgatus    | 5.88       | 34      | 11.19       |      |
| Brachydeuterus auritus      | 5.58       | 196     | 10.62       |      |
| Trachinotus gorenensis      | 2.72       | 4       | 5.18        |      |
| Sphyraena guachancho        | 2.58       | 6       | 4.91        |      |
| Sphyraena afra              | 2.34       | 4       | 4.45        |      |
| Selar crumenophthalmus      | 1.60       | 14      | 3.04        |      |
| Caranx crysos               | 1.12       | 2       | 2.13        |      |
| Ballistes capriscus         | 1.10       | 2       | 2.09        |      |
| Scomberomorus tritor        | 1.04       | 2       | 1.98        |      |
| Pomadasy jubelini           | 0.88       | 2       | 1.67        |      |
| Sepia officinalis hierredda | 0.84       | 4       | 1.60        |      |
| Caranx hippos               | 0.64       | 4       | 1.22        |      |
| Sardinella maderensis       | 0.60       | 6       | 1.14        |      |
| Citharus linguatula         | 0.56       | 30      | 1.07        |      |
| Grammolites gruvelli        | 0.54       | 26      | 1.03        |      |
| Pseudupeneus prayensis      | 0.30       | 6       | 0.57        |      |
| Parapenaeus longirostris    | 0.30       | 82      | 0.57        |      |
| Selene dorsalis             | 0.28       | 2       | 0.53        |      |
| Epinephelus aeneus          | 0.26       | 2       | 0.49        |      |
| Cynoglossus senegalensis    | 0.24       | 2       | 0.46        |      |
| Eucinostomus melanopterus   | 0.24       | 6       | 0.46        |      |
| Penaeus notialis            | 0.22       | 14      | 0.42        |      |
| Galeoides decadactylus      | 0.22       | 2       | 0.42        |      |
| Callinectes pallidus        | 0.18       | 2       | 0.34        |      |
| Total                       | 52.56      |         | 100.01      |      |

PROJECT STATION: 923  
 DATE:15/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 355 Long E 739  
 start stop duration  
 TIME :17:46:51 17:57:17 10 (min) Purpose code: 3  
 LOG :6148.71 6149.23 0.50 Area code : 5  
 FDEPTH: 101 96 GearCond.code:  
 BDEPTH: 101 96 Validity code:  
 Towing dir: 360° Wire out: 333 m Speed: 30 kn\*10  
 Sorted: 11 Kg Total catch: 10.99 CATCH/HOUR: 65.94

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ephippion guttifer          | 12.78      | 480     | 19.38       |      |
| Sepia officinalis hierredda | 7.02       | 90      | 10.65       |      |
| Illex coindetii             | 5.52       | 300     | 8.37        |      |
| Scorpaena normani           | 5.22       | 168     | 7.92        |      |
| Lepidotrigla cadmani        | 5.22       | 138     | 7.92        |      |
| Ariomma bondi               | 4.14       | 126     | 6.28        |      |
| Dentex angolensis           | 3.84       | 42      | 5.82        |      |
| Uranoscopus albesca         | 3.12       | 60      | 4.73        |      |
| Citharus linguatula         | 2.94       | 180     | 4.46        |      |
| Portunus validus            | 2.28       | 12      | 3.46        |      |
| Priacanthus arenatus        | 2.04       | 60      | 3.09        |      |
| Brotula barbata             | 1.92       | 6       | 2.91        |      |
| Saurida brasiliensis        | 1.92       | 504     | 2.91        |      |
| Lepidotrigla carolae        | 1.80       | 102     | 2.73        |      |
| Parapenaeus longirostris    | 1.44       | 270     | 2.18        |      |
| Fistularia petimba          | 1.26       | 12      | 1.91        |      |
| Dentex congoensis           | 1.08       | 24      | 1.64        |      |
| Pterothrissus bellocci      | 0.54       | 6       | 0.82        |      |
| Epinephelus haifensis       | 0.42       | 6       | 0.64        |      |
| Trichiurus lepturus         | 0.24       | 6       | 0.36        |      |
| Echeneis naucrates          | 0.18       | 6       | 0.27        |      |
| Brachydeuterus auritus      | 0.18       | 6       | 0.27        |      |
| Bathygobius paganellus      | 0.18       | 90      | 0.27        |      |
| Solenocera africana         | 0.12       | 18      | 0.18        |      |
| Callinectes pallidus        | 0.12       | 6       | 0.18        |      |
| Grammolites gruvelli        | 0.12       | 6       | 0.18        |      |
| Serranus accraensis         | 0.12       | 12      | 0.18        |      |
| Pentheroscion mbizi         | 0.12       | 12      | 0.18        |      |
| Microchirus frechkopi       | 0.06       | 6       | 0.09        |      |
| Chloroscombrus chrysurus    | 0.00       | 6       |             |      |
| Total                       | 65.94      |         | 99.98       |      |

PROJECT STATION: 924  
 DATE:15/ 6/05 GEAR TYPE: PT No: 4 POSITION:Lat N 336 Long E 737  
 start stop duration  
 TIME :23:24:45 23:56:51 32 (min) Purpose code: 1  
 LOG :6170.15 6171.54 1.39 Area code : 5  
 FDEPTH: 0 0 GearCond.code:  
 BDEPTH: 653 700 Validity code:  
 Towing dir: 180° Wire out: 100 m Speed: 30 kn\*10  
 Sorted: 4 Kg Total catch: 4.07 CATCH/HOUR: 7.63

| SPECIES              | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------|------------|---------|-------------|------|
|                      | weight     | numbers |             |      |
| MYCTOPHIDAE          | 5.55       | 1652    | 72.74       |      |
| Brama brama          | 0.62       | 4       | 8.13        |      |
| Illex coindetii      | 0.45       | 8       | 5.80        |      |
| Sepia juveniles      | 0.43       | 349     | 5.64        |      |
| Carangidae juveniles | 0.36       | 369     | 4.72        |      |
| Exocoetus volitans   | 0.15       | 6       | 1.97        |      |
| Epigonus telescopus  | 0.08       | 2       | 1.05        |      |
| FISH LARVAE          | 0.00       | 4       |             |      |
| Total                | 7.64       |         | 100.15      |      |

PROJECT STATION: 925  
 DATE:16/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 351 Long E 757  
 start stop duration  
 TIME :05:50:25 06:21:00 31 (min) Purpose code: 3  
 LOG :6217.99 6219.64 1.64 Area code : 5  
 FDEPTH: 153 144 GearCond.code:  
 BDEPTH: 153 144 Validity code:  
 Towing dir: 90° Wire out: 484 m Speed: 30 kn\*10  
 Sorted: 39 Kg Total catch: 128.97 CATCH/HOUR: 249.62

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 88.61      | 2493    | 35.50       | 3909 |
| Dentex angolensis           | 80.88      | 461     | 32.40       | 3911 |
| Spicara alta                | 24.06      | 271     | 9.64        | 3908 |
| Illex coindetii             | 11.05      | 753     | 4.43        |      |
| Raja miraletus              | 8.13       | 48      | 3.26        |      |
| Dentex congoensis           | 7.32       | 81      | 2.93        | 3910 |
| Priacanthus arenatus        | 6.99       | 116     | 2.80        |      |
| Squatina oculata            | 6.29       | 2       | 2.52        |      |
| Sepia officinalis hierredda | 5.42       | 14      | 2.17        |      |
| Antigonia capros            | 4.95       | 116     | 1.98        |      |
| Pentheroscion mbizi         | 2.85       | 27      | 1.14        |      |
| Zeus faber                  | 1.30       | 14      | 0.52        |      |
| Citharus linguatula         | 1.16       | 48      | 0.46        |      |
| Cepola macrophthalmia       | 0.27       | 14      | 0.11        |      |
| Todaropsis eblanae          | 0.14       | 75      | 0.06        |      |
| Bathygobius paganellus      | 0.14       | 14      | 0.06        |      |
| Saurida brasiliensis        | 0.08       | 14      | 0.03        |      |
| Total                       | 249.64     |         | 100.01      |      |

PROJECT STATION: 926  
 DATE:20/ 6/05 GEAR TYPE: PT No: 1 POSITION:Lat N 356 Long E 758  
 start stop duration  
 TIME :05:05:40 05:36:55 31 (min) Purpose code: 1  
 LOG :6559.29 6561.28 1.98 Area code : 5  
 FDEPTH: 50 55 GearCond.code:  
 BDEPTH: 76 97 Validity code:  
 Towing dir: 185° Wire out: 170 m Speed: 38 kn\*10  
 Sorted: 1 Kg Total catch: 1.37 CATCH/HOUR: 2.65

| SPECIES            | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------|------------|---------|-------------|------|
|                    | weight     | numbers |             |      |
| Todaropsis eblanae | 1.61       | 6       | 60.75       |      |
| J E L Y F I S H    | 1.05       | 10      | 39.62       |      |
| Total              | 2.66       |         | 100.37      |      |

PROJECT STATION: 927  
 DATE:20/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 401 Long E 759  
 start stop duration  
 TIME :07:08:21 07:38:48 30 (min) Purpose code: 3  
 LOG :6571.75 6573.30 1.54 Area code : 5  
 FDEPTH: 66 63 GearCond.code:  
 BDEPTH: 66 63 Validity code:  
 Towing dir: 270° Wire out: 220 m Speed: 31 kn\*10  
 Sorted: 55 Kg Total catch: 54.61 CATCH/HOUR: 109.22

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 69.36      | 4446    | 63.50       | 3912 |
| Saurida brasiliensis        | 13.46      | 2636    | 12.32       |      |
| Pseudupeneus prayensis      | 7.22       | 208     | 6.61        | 3915 |
| Pagellus bellottii          | 4.70       | 90      | 4.30        | 3916 |
| Brotula barbata             | 2.44       | 16      | 2.23        | 3914 |
| Sepia officinalis hierredda | 1.72       | 44      | 1.57        |      |
| Allotauhis africana         | 1.54       | 258     | 1.41        |      |
| Parapenaeus longirostris    | 1.44       | 144     | 1.32        |      |
| Pentheroscion mbizi         | 0.78       | 6       | 0.71        |      |
| Ariomma bondi               | 0.64       | 8       | 0.59        |      |
| Priacanthus arenatus        | 0.56       | 12      | 0.51        |      |
| Citharus linguatula         | 0.54       | 50      | 0.49        |      |
| Raja miraletus              | 0.54       | 28      | 0.49        |      |
| Sardinella maderensis       | 0.50       | 30      | 0.46        | 3913 |
| Sphyraena guachancho        | 0.48       | 20      | 0.44        |      |
| Sea urchins (strong spines) | 0.44       | 30      | 0.40        |      |
| Lepidotrigla cadmani        | 0.44       | 10      | 0.40        |      |
| Serranus accraensis         | 0.44       | 18      | 0.40        |      |
| Syacium micrurum            | 0.42       | 90      | 0.38        |      |
| Epinephelus aeneus          | 0.32       | 2       | 0.29        |      |
| Dentex canariensis          | 0.30       | 4       | 0.27        |      |
| Grammolites gruvelli        | 0.24       | 22      | 0.22        |      |
| Lagocephalus lagocephalus   | 0.18       | 2       | 0.16        |      |
| Zeus faber                  | 0.14       | 2       | 0.13        |      |
| Scyllarides herklotsii      | 0.14       | 18      | 0.13        |      |
| Lophiodes kempi             | 0.04       | 4       | 0.04        |      |
| Epinephelus haifensis       | 0.04       | 2       | 0.04        |      |
| Dicologlossa cuneata        | 0.04       | 2       | 0.04        |      |
| Setarches guentheri         | 0.04       | 6       | 0.04        |      |
| Sphoeroides marmoratus      | 0.02       | 4       | 0.02        |      |
| Bathygobius paganellus      | 0.02       | 2       | 0.02        |      |
| Blennius normani            | 0.02       | 4       | 0.02        |      |
| Lepidotrigla carolae        | 0.02       | 4       | 0.02        |      |
| J E L Y F I S H             | 0.00       | 20      |             |      |
| Total                       | 109.22     |         | 99.97       |      |

PROJECT STATION: 928  
 DATE:20/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 406  
 start stop duration Long E 757  
 TIME :09:11:46 09:41:21 30 (min) Purpose code: 3  
 LOG :6579.61 6581.12 1.49 Area code : 5  
 FDEPTH: 46 46 GearCond.code:  
 BDEPTH: 46 46 Validity code:  
 Towing dir: 270° Wire out: 170 m Speed: 31 kn\*10

Sorted: 32 Kg Total catch: 71.29 CATCH/HOUR: 142.58

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 63.40      | 4226    | 44.47       | 3918 |
| Trichiurus lepturus         | 19.14      | 1544    | 13.42       |      |
| Pteroscion pelli            | 11.36      | 2522    | 7.97        | 3921 |
| Sphyræna guachancho         | 6.70       | 56      | 4.70        | 3924 |
| Grammoplites gruvelli       | 5.04       | 220     | 3.53        |      |
| Penæus notialis             | 4.14       | 388     | 2.90        | 3923 |
| Pentheroscion mbizi         | 4.14       | 60      | 2.90        | 3919 |
| J E L Y F I S H             | 3.50       | 120     | 2.45        |      |
| Parapenæus longirostris     | 3.30       | 2476    | 2.31        | 3922 |
| Citharus linguatula         | 2.54       | 230     | 1.78        |      |
| Pseudopenæus prayensis      | 2.36       | 46      | 1.66        | 3917 |
| Priacanthus arenatus        | 2.04       | 30      | 1.43        |      |
| Brotula barbata             | 1.52       | 18      | 1.07        | 3920 |
| Antennarius occidentalis    | 1.46       | 66      | 1.02        |      |
| Microchirus frechkopi       | 1.30       | 50      | 0.91        |      |
| Octopus vulgaris            | 1.24       | 10      | 0.87        |      |
| Pseudotolithus senegalensis | 1.24       | 4       | 0.87        |      |
| Squatina oculata            | 1.22       | 2       | 0.86        |      |
| Sepia officinalis hierredda | 1.14       | 20      | 0.80        |      |
| Epinephelus aeneus          | 1.00       | 6       | 0.70        |      |
| Saurida brasiliensis        | 0.90       | 282     | 0.63        |      |
| Serranus accraensis         | 0.74       | 54      | 0.52        |      |
| Cynoglossus canariensis     | 0.60       | 60      | 0.42        |      |
| Lagocephalus laevigatus     | 0.54       | 14      | 0.38        |      |
| Bathygobius paganelius      | 0.54       | 114     | 0.38        |      |
| Raja miraletus              | 0.50       | 24      | 0.35        |      |
| Sicyonia galeata            | 0.44       | 194     | 0.31        |      |
| Scyllarides herklotsii      | 0.34       | 104     | 0.24        |      |
| Setarches guentheri         | 0.24       | 60      | 0.17        |      |
| Liocarcinus corrugatus      | 0.04       | 10      | 0.03        |      |
| Penæus kerathurus           | 0.02       | 2       | 0.01        |      |
| Total                       | 142.68     |         | 100.06      |      |

PROJECT STATION: 929  
 DATE:20/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 408  
 start stop duration Long E 813  
 TIME :11:53:21 12:23:51 31 (min) Purpose code: 3  
 LOG :6599.76 6601.40 1.63 Area code : 5  
 FDEPTH: 38 43 GearCond.code:  
 BDEPTH: 38 43 Validity code:  
 Towing dir: 180° Wire out: 160 m Speed: 30 kn\*10

Sorted: 59 Kg Total catch: 58.71 CATCH/HOUR: 113.63

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 48.77      | 3445    | 42.92       | 3932 |
| Trichiurus lepturus         | 31.43      | 2737    | 27.66       |      |
| Penæus notialis             | 7.97       | 441     | 7.01        | 3933 |
| Sphyræna guachancho         | 4.41       | 35      | 3.88        | 3931 |
| Chloroscombrus chrysurus    | 2.81       | 27      | 2.47        | 3927 |
| Cymbium cymbium             | 2.57       | 2       | 2.26        |      |
| Pteroscion pelli            | 2.42       | 166     | 2.13        | 3928 |
| Pseudotolithus senegalensis | 2.34       | 14      | 2.06        | 3926 |
| Raja miraletus              | 1.82       | 10      | 1.60        |      |
| Portunus validus            | 1.30       | 2       | 1.14        |      |
| Grammoplites gruvelli       | 1.22       | 56      | 1.07        |      |
| Sepiella ornata             | 1.20       | 157     | 1.06        |      |
| Cynoglossus canariensis     | 1.20       | 6       | 1.06        | 3933 |
| Priacanthus arenatus        | 0.93       | 10      | 0.82        |      |
| Lagocephalus laevigatus     | 0.50       | 10      | 0.44        |      |
| Antennarius occidentalis    | 0.46       | 10      | 0.40        |      |
| Ilisha africana             | 0.37       | 60      | 0.33        | 3930 |
| Scomberomorus tritor        | 0.35       | 2       | 0.31        |      |
| Sardinella maderensis       | 0.35       | 19      | 0.31        | 3925 |
| Parapenæopsis atlantica     | 0.19       | 45      | 0.17        | 3934 |
| Citharus linguatula         | 0.17       | 21      | 0.15        |      |
| Selene dorsalis             | 0.14       | 2       | 0.12        |      |
| Cynoponticus ferox          | 0.12       | 2       | 0.11        |      |
| Scyllarides herklotsii      | 0.12       | 29      | 0.11        |      |
| Euclinostomus melanopterus  | 0.12       | 4       | 0.11        |      |
| Pseudopenæus prayensis      | 0.08       | 2       | 0.07        |      |
| Brotula barbata             | 0.06       | 4       | 0.05        |      |
| Microchirus frechkopi       | 0.06       | 2       | 0.05        |      |
| Octopus vulgaris            | 0.04       | 2       | 0.04        |      |
| Sicyonia galeata            | 0.04       | 43      | 0.04        |      |
| Setarches guentheri         | 0.02       | 4       | 0.02        |      |
| Bathygobius paganelius      | 0.02       | 2       | 0.02        |      |
| Alloteuthis africana        | 0.02       | 2       | 0.02        |      |
| Alektis alexandrinus        | 0.02       | 4       | 0.02        |      |
| Total                       | 113.64     |         | 100.03      |      |

PROJECT STATION: 930  
 DATE:20/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 356  
 start stop duration Long E 812  
 TIME :14:51:34 15:21:52 30 (min) Purpose code: 3  
 LOG :6614.27 6615.80 1.51 Area code : 5  
 FDEPTH: 83 80 GearCond.code:  
 BDEPTH: 83 80 Validity code:  
 Towing dir: 270° Wire out: 300 m Speed: 30 kn\*10

Sorted: 52 Kg Total catch: 52.34 CATCH/HOUR: 104.68

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex angolensis           | 40.16      | 412     | 38.36       | 3937 |
| Priacanthus arenatus        | 22.04      | 568     | 21.05       |      |
| Pagellus bellottii          | 12.00      | 252     | 11.46       | 3938 |
| Ariomma bondi               | 8.00       | 396     | 7.64        | 3936 |
| Mustelus mustelus           | 6.84       | 2       | 6.53        |      |
| Illex coindetii             | 5.44       | 822     | 5.20        |      |
| Pagrus caeruleostictus      | 3.16       | 10      | 3.02        | 3935 |
| Sepia officinalis hierredda | 1.70       | 10      | 1.62        |      |
| Fistularia petimba          | 1.22       | 8       | 1.17        |      |
| Lepidotrigla cadmani        | 1.06       | 28      | 1.01        |      |
| Zeus faber                  | 1.00       | 12      | 0.96        | 3939 |
| Raja miraletus              | 0.78       | 4       | 0.75        |      |
| Citharus linguatula         | 0.48       | 30      | 0.46        |      |
| Lepidotrigla carolae        | 0.28       | 14      | 0.27        |      |
| Chloroscombrus chrysurus    | 0.20       | 2       | 0.19        |      |
| Boops boops                 | 0.08       | 2       | 0.08        |      |
| Grammoplites gruvelli       | 0.08       | 2       | 0.08        |      |
| Arnoglossus imperialis      | 0.08       | 10      | 0.08        |      |
| Chaetodon marcellae         | 0.06       | 2       | 0.06        |      |
| Blennius normani            | 0.02       | 2       | 0.02        |      |
| Total                       | 104.68     |         | 100.01      |      |

PROJECT STATION: 931  
 DATE:21/ 6/05 GEAR TYPE: PT No: 7 POSITION:Lat N 411  
 start stop duration Long E 843  
 TIME :00:42:18 01:12:19 30 (min) Purpose code: 1  
 LOG :6675.28 6677.79 2.50 Area code : 6  
 FDEPTH: 0 0 GearCond.code:  
 BDEPTH: 34 41 Validity code:  
 Towing dir: 155° Wire out: 159 m Speed: 50 kn\*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 932  
 DATE:21/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 408  
 start stop duration Long E 833  
 TIME :05:21:39 05:51:47 30 (min) Purpose code: 3  
 LOG :6692.32 6693.99 1.66 Area code : 6  
 FDEPTH: 60 51 GearCond.code:  
 BDEPTH: 60 51 Validity code:  
 Towing dir: 40° Wire out: 210 m Speed: 33 kn\*10

Sorted: 72 Kg Total catch: 72.25 CATCH/HOUR: 144.50

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Selar crumenophthalmus         | 35.72      | 214     | 24.72       | 3942 |
| J E L Y F I S H                | 32.76      |         | 22.67       |      |
| Selene dorsalis                | 15.68      | 150     | 10.85       | 3943 |
| Brachydeuterus auritus         | 15.52      | 740     | 10.74       | 3941 |
| Sphyræna guachancho            | 9.52       | 40      | 6.59        | 3940 |
| Saurida brasiliensis           | 6.64       | 2014    | 4.60        |      |
| Squatina oculata               | 6.52       | 2       | 4.51        |      |
| Cymbium cymbium                | 4.48       | 6       | 3.10        |      |
| Parapenæus longirostris        | 2.80       | 648     | 1.94        |      |
| Epinephelus aeneus             | 2.16       | 6       | 1.49        |      |
| Priacanthus arenatus           | 1.92       | 18      | 1.33        |      |
| Alloteuthis africana           | 1.86       | 332     | 1.29        |      |
| Penæus notialis                | 1.76       | 74      | 1.22        |      |
| Raja miraletus                 | 1.54       | 10      | 1.07        |      |
| Sepia officinalis hierredda    | 0.94       | 24      | 0.65        |      |
| Pentheroscion mbizi            | 0.72       | 6       | 0.50        |      |
| Chilomycterus spinosus mauret. | 0.60       | 2       | 0.42        |      |
| Brotula barbata                | 0.58       | 2       | 0.40        |      |
| Uranoscopus albesca            | 0.52       | 18      | 0.36        |      |
| Cynoglossus canariensis        | 0.50       | 2       | 0.35        |      |
| Serranus accraensis            | 0.44       | 18      | 0.30        |      |
| Citharus linguatula            | 0.42       | 40      | 0.29        |      |
| Schedophilus pamarco           | 0.20       | 2       | 0.14        |      |
| Illex coindetii                | 0.20       | 2       | 0.14        |      |
| Scyllarides herklotsii         | 0.12       | 8       | 0.08        |      |
| Dicologlossa cuneata           | 0.10       | 2       | 0.07        |      |
| Bathygobius paganelius         | 0.08       | 14      | 0.06        |      |
| Sepiella ornata                | 0.08       | 18      | 0.06        |      |
| Syacium micurum                | 0.06       | 8       | 0.04        |      |
| Grammoplites gruvelli          | 0.04       | 4       | 0.03        |      |
| Sardinella maderensis          | 0.02       | 2       | 0.01        |      |
| Antennarius occidentalis       | 0.00       | 2       |             |      |
| Total                          | 144.50     |         | 100.02      |      |

PROJECT STATION: 933  
 DATE:21/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 414  
 start stop duration Long E 838  
 TIME :07:00:27 07:30:07 30 (min) Purpose code: 3  
 LOG :6701.78 6703.44 1.66 Area code : 6  
 FDEPTH: 24 30 GearCond.code:  
 BDEPTH: 24 30 Validity code:  
 Towing dir: 220° Wire out: 120 m Speed: 32 kn\*10

Sorted: 35 Kg Total catch: 121.93 CATCH/HOUR: 243.86

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 37.92      | 1032    | 15.55       | 3950 |
| Ilisha africana             | 31.04      | 2492    | 12.73       | 3953 |
| Trichiurus lepturus         | 28.80      | 286     | 11.81       | 3946 |
| Galeoides decadactylus      | 27.68      | 272     | 11.35       | 3944 |
| Pseudotolithus elongatus    | 21.84      | 160     | 8.96        | 3951 |
| Chloroscombrus chrysurus    | 20.24      | 536     | 8.30        | 3947 |
| Pteroscion pelli            | 8.80       | 288     | 3.61        |      |
| Drepane africana            | 8.24       | 184     | 3.38        | 3945 |
| Pseudotolithus senegalensis | 7.60       | 40      | 3.12        | 3952 |
| Hemicarax bicolor           | 6.88       | 208     | 2.82        |      |
| Sphyræna guachancho         | 6.88       | 48      | 2.82        | 3948 |
| Alektis alexandrinus        | 5.28       | 152     | 2.17        |      |
| Albula vulpes               | 4.88       | 32      | 2.00        |      |
| Selene dorsalis             | 4.72       | 136     | 1.94        | 3949 |
| Portunus validus            | 3.60       | 96      | 1.48        |      |
| Penæus notialis             | 3.28       | 184     | 1.35        |      |
| Raja miraletus              | 2.96       | 16      | 1.21        |      |
| Sardinella maderensis       | 2.64       | 160     | 1.08        | 3954 |
| Caranx hippos               | 1.84       | 16      | 0.75        |      |
| Lagocephalus laevigatus     | 1.60       | 8       | 0.66        |      |
| Penæus monodon              | 1.60       | 8       | 0.66        |      |
| Rhizoprionodon acutus       | 1.22       | 2       | 0.50        |      |
| Pisodonophis semicinctus    | 1.20       | 8       | 0.49        |      |
| J E L Y F I S H             | 1.12       | 24      | 0.46        |      |
| Scomberomorus tritor        | 0.80       | 8       | 0.33        |      |
| Grammoplites gruvelli       | 0.48       | 32      | 0.20        |      |
| Antennarius occidentalis    | 0.40       | 40      | 0.16        |      |
| Psettodes belcheri          | 0.16       | 8       | 0.07        |      |
| Cynoglossus browni          | 0.08       | 8       | 0.03        |      |
| Sepiella ornata             | 0.08       | 8       | 0.03        |      |
| Total                       | 243.86     |         | 100.02      |      |

PROJECT STATION: 934  
 DATE:21/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 410  
 start stop duration Long E 853  
 TIME :09:43:50 10:14:01 30 (min) Purpose code: 3  
 LOG :6721.98 6723.57 1.58 Area code : 6  
 FDEPTH: 21 21 GearCond.code:  
 BDEPTH: 21 21 Validity code:  
 Towing dir: 290° Wire out: 120 m Speed: 32 kn\*10  
 Sorted: 29 Kg Total catch: 143.30 CATCH/HOUR: 286.60

PROJECT STATION: 937  
 DATE:21/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 355  
 start stop duration Long E 900  
 TIME :15:36:48 16:03:51 27 (min) Purpose code: 3  
 LOG :6758.73 6760.30 1.57 Area code : 6  
 FDEPTH: 59 59 GearCond.code:  
 BDEPTH: 59 59 Validity code:  
 Towing dir: 110° Wire out: 250 m Speed: 30 kn\*10  
 Sorted: 11 Kg Total catch: 54.65 CATCH/HOUR: 121.44

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP   |
|-----------------------------|------------|-------------|--------|
| weight                      | numbers    |             |        |
| Trichiurus lepturus         | 86.00      | 1404        | 30.01  |
| J E L Y F I S H             | 49.60      | 70          | 17.31  |
| Pseudotolithus elongatus    | 40.50      | 270         | 14.13  |
| Scomberomorus tritor        | 28.80      | 30          | 10.05  |
| Chloroscombus chrysurus     | 23.70      | 490         | 8.27   |
| Elops senegalensis          | 16.50      | 60          | 5.76   |
| Ilisha africana             | 10.90      | 1240        | 3.80   |
| Pomadoury jubelini          | 7.10       | 30          | 2.48   |
| Portunus validus            | 4.40       | 120         | 1.54   |
| Drepane africana            | 4.20       | 120         | 1.47   |
| Pteroscion pelli            | 4.10       | 110         | 1.43   |
| Pseudotolithus typus        | 2.50       | 10          | 0.87   |
| Sphyræna guachancho         | 2.30       | 20          | 0.80   |
| Selene dorsalis             | 2.30       | 20          | 0.80   |
| Sardinella maderensis       | 2.10       | 60          | 0.73   |
| Hemicaranx bicolor          | 1.20       | 10          | 0.42   |
| Sepia officinalis hierredda | 0.40       | 10          | 0.14   |
| Total                       | 286.60     |             | 100.01 |

| SPECIES                        | CATCH/HOUR | % OF TOT. C | SAMP   |
|--------------------------------|------------|-------------|--------|
| weight                         | numbers    |             |        |
| Pagellus bellottii             | 55.60      | 578         | 45.78  |
| Alectis alexandrinus           | 17.29      | 9           | 14.24  |
| Saurida brasiliensis           | 13.53      | 3271        | 11.14  |
| Brachydeuterus auritus         | 8.04       | 818         | 6.62   |
| Sepia officinalis hierredda    | 4.89       | 24          | 4.03   |
| Lepidotrigla cadmani           | 3.04       | 56          | 2.50   |
| Fistularia petimba             | 2.91       | 18          | 2.40   |
| Sphyræna guachancho            | 2.24       | 18          | 1.84   |
| Venus verrucosa                | 1.69       | 62          | 1.39   |
| Alloteuthis africana           | 1.44       | 364         | 1.19   |
| Parapenaeus longirostris       | 1.29       | 258         | 1.06   |
| SEPIIDAE                       | 1.20       | 96          | 0.99   |
| Grammolites gruvelli           | 1.20       | 56          | 0.99   |
| E C H I N O D E R M A T A      | 1.09       | 9           | 0.90   |
| Dentex angolensis              | 1.04       | 7           | 0.86   |
| Raja miraletus                 | 0.96       | 9           | 0.79   |
| Uranoscopus albesca            | 0.80       | 11          | 0.66   |
| Cymbium pepo                   | 0.76       | 2           | 0.63   |
| Citharus linguatula            | 0.71       | 64          | 0.58   |
| Todaropsis eblanae             | 0.49       | 20          | 0.40   |
| Chilomycterus spinosus mauret. | 0.31       | 2           | 0.26   |
| Serranus accraensis            | 0.27       | 16          | 0.22   |
| Priacanthus arenatus           | 0.18       | 2           | 0.15   |
| Syacium micrum                 | 0.16       | 27          | 0.13   |
| Ariomma bondi                  | 0.11       | 16          | 0.09   |
| Lophiodon kempfi               | 0.07       | 2           | 0.06   |
| Bathygobius paganelius         | 0.07       | 7           | 0.06   |
| Biennius normani               | 0.04       | 7           | 0.03   |
| Zeus faber                     | 0.02       | 2           | 0.02   |
| Total                          | 121.44     |             | 100.01 |

PROJECT STATION: 935  
 DATE:21/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 406  
 start stop duration Long E 849  
 TIME :11:37:08 12:07:30 30 (min) Purpose code: 3  
 LOG :6733.44 6735.09 1.64 Area code : 6  
 FDEPTH: 52 55 GearCond.code:  
 BDEPTH: 52 55 Validity code:  
 Towing dir: 305° Wire out: 210 m Speed: 30 kn\*10  
 Sorted: 25 Kg Total catch: 25.55 CATCH/HOUR: 51.10

| SPECIES                        | CATCH/HOUR | % OF TOT. C | SAMP   |
|--------------------------------|------------|-------------|--------|
| weight                         | numbers    |             |        |
| Epinephelus aeneus             | 17.32      | 8           | 33.89  |
| Selene dorsalis                | 11.32      | 48          | 22.15  |
| Squatina oculata               | 6.60       | 2           | 12.92  |
| Pagrus caeruleostictus         | 4.16       | 6           | 8.14   |
| Brotula barbata                | 2.98       | 4           | 5.83   |
| Trichiurus lepturus            | 2.18       | 66          | 4.27   |
| Raja miraletus                 | 1.42       | 8           | 2.78   |
| Parapenaeus longirostris       | 0.60       | 138         | 1.17   |
| Calappa pelli                  | 0.58       | 2           | 1.14   |
| Chilomycterus spinosus mauret. | 0.50       | 2           | 0.98   |
| Portunus validus               | 0.46       | 14          | 0.90   |
| Uranoscopus albesca            | 0.44       | 6           | 0.86   |
| Citharus linguatula            | 0.36       | 18          | 0.70   |
| Penaeus notialis               | 0.32       | 20          | 0.63   |
| Pagellus bellottii             | 0.32       | 2           | 0.63   |
| Alloteuthis africana           | 0.30       | 68          | 0.59   |
| Scomberomorus tritor           | 0.28       | 2           | 0.55   |
| Sepia officinalis hierredda    | 0.20       | 20          | 0.39   |
| Bathygobius paganelius         | 0.18       | 32          | 0.35   |
| Octopus vulgaris               | 0.14       | 2           | 0.27   |
| Saurida brasiliensis           | 0.12       | 48          | 0.23   |
| Brachydeuterus auritus         | 0.12       | 6           | 0.23   |
| OCTOPODIDAE                    | 0.06       | 4           | 0.12   |
| Antennarius occidentalis       | 0.04       | 2           | 0.08   |
| Paronchelius stauchi           | 0.04       | 4           | 0.08   |
| Grammolites gruvelli           | 0.04       | 4           | 0.08   |
| Serranus accraensis            | 0.02       | 4           | 0.04   |
| Squilla acuelata calmani       | 0.00       | 2           |        |
| Total                          | 51.10      |             | 100.00 |

PROJECT STATION: 938  
 DATE:21/ 6/05 GEAR TYPE: PT No: 7 POSITION:Lat N 354  
 start stop duration Long E 909  
 TIME :19:48:09 20:18:08 30 (min) Purpose code: 1  
 LOG :6778.68 6780.13 1.44 Area code : 6  
 FDEPTH: 0 0 GearCond.code:  
 BDEPTH: 27 28 Validity code:  
 Towing dir: 330° Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 15 Kg Total catch: 14.62 CATCH/HOUR: 29.24

| SPECIES                | CATCH/HOUR | % OF TOT. C | SAMP  |
|------------------------|------------|-------------|-------|
| weight                 | numbers    |             |       |
| Sardinella maderensis  | 15.10      | 652         | 51.64 |
| Scomberomorus tritor   | 8.48       | 26          | 29.00 |
| Ilisha africana        | 1.94       | 228         | 6.63  |
| Raja miraletus         | 1.32       | 14          | 4.51  |
| Trachinotus ovatus     | 0.96       | 18          | 3.28  |
| Sphyræna guachancho    | 0.62       | 8           | 2.12  |
| Hemicaranx bicolor     | 0.50       | 8           | 1.71  |
| Brachydeuterus auritus | 0.26       | 4           | 0.89  |
| Callinectes pallidus   | 0.06       | 2           | 0.21  |
| Total                  | 29.24      |             | 99.99 |

PROJECT STATION: 936  
 DATE:21/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 401  
 start stop duration Long E 847  
 TIME :13:28:04 13:58:33 30 (min) Purpose code: 3  
 LOG :6744.61 6746.19 1.51 Area code : 6  
 FDEPTH: 68 69 GearCond.code:  
 BDEPTH: 68 69 Validity code:  
 Towing dir: 110° Wire out: 280 m Speed: 30 kn\*10  
 Sorted: 76 Kg Total catch: 192.34 CATCH/HOUR: 384.68

| SPECIES                        | CATCH/HOUR | % OF TOT. C | SAMP   |
|--------------------------------|------------|-------------|--------|
| weight                         | numbers    |             |        |
| Brachydeuterus auritus         | 295.80     | 14398       | 76.90  |
| Mustelus mustelus              | 15.16      | 2           | 3.94   |
| E C H I N O D E R M A T A      | 12.36      | 66          | 3.21   |
| Dentex angolensis              | 10.84      | 84          | 2.82   |
| Saurida brasiliensis           | 6.48       | 1830        | 1.68   |
| Sepia officinalis hierredda    | 6.00       | 16          | 1.56   |
| Venus verrucosa                | 4.44       | 288         | 1.15   |
| Ariomma bondi                  | 4.26       | 228         | 1.11   |
| Pagellus bellottii             | 3.96       | 40          | 1.03   |
| Chilomycterus spinosus mauret. | 3.54       | 36          | 0.92   |
| Raja miraletus                 | 3.54       | 24          | 0.92   |
| Priacanthus arenatus           | 3.48       | 48          | 0.90   |
| Citharus linguatula            | 3.36       | 204         | 0.87   |
| Lepidotrigla cadmani           | 2.94       | 54          | 0.76   |
| Todaropsis eblanae             | 2.52       | 138         | 0.66   |
| Lagocephalus laevigatus        | 2.22       | 12          | 0.58   |
| Sepia officinalis hierredda    | 1.44       | 96          | 0.37   |
| Uranoscopus albesca            | 0.84       | 12          | 0.22   |
| Parapenaeus longirostris       | 0.78       | 162         | 0.20   |
| Setarches quentheri            | 0.30       | 12          | 0.08   |
| Antennarius occidentalis       | 0.18       | 6           | 0.05   |
| Biennius normani               | 0.12       | 12          | 0.03   |
| Bathygobius paganelius         | 0.06       | 6           | 0.02   |
| Decapterus punctatus           | 0.06       | 6           | 0.02   |
| Total                          | 384.68     |             | 100.00 |

PROJECT STATION: 939  
 DATE:21/ 6/05 GEAR TYPE: PT No: 1 POSITION:Lat N 401  
 start stop duration Long E 900  
 TIME :22:40:03 23:04:12 24 (min) Purpose code: 1  
 LOG :6793.95 6795.86 1.87 Area code : 6  
 FDEPTH: 25 18 GearCond.code:  
 BDEPTH: 45 42 Validity code:  
 Towing dir: 110° Wire out: 130 m Speed: 45 kn\*10  
 Sorted: 22 Kg Total catch: 22.15 CATCH/HOUR: 55.38

| SPECIES                 | CATCH/HOUR | % OF TOT. C | SAMP   |
|-------------------------|------------|-------------|--------|
| weight                  | numbers    |             |        |
| Sardinella maderensis   | 27.60      | 580         | 49.84  |
| Rhizoprionodon acutus   | 13.00      | 3           | 23.47  |
| Scomberomorus tritor    | 4.83       | 15          | 8.72   |
| Ilisha africana         | 3.23       | 375         | 5.83   |
| Sphyræna guachancho     | 2.88       | 33          | 5.20   |
| Saurida brasiliensis    | 1.65       | 760         | 2.98   |
| Trichiurus lepturus     | 0.73       | 80          | 1.32   |
| Hemicaranx bicolor      | 0.65       | 5           | 1.17   |
| Selar crumenophthalmus  | 0.25       | 5           | 0.45   |
| J E L Y F I S H         | 0.18       | 5           | 0.33   |
| Lolligoncula mercatoris | 0.18       | 180         | 0.33   |
| Bregmaceros sp.         | 0.08       | 148         | 0.14   |
| Alloteuthis africana    | 0.05       | 5           | 0.09   |
| Sepiella ornata         | 0.05       | 10          | 0.09   |
| Chloroscombus chrysurus | 0.03       | 10          | 0.05   |
| Brachydeuterus auritus  | 0.03       | 5           | 0.05   |
| Total                   | 55.42      |             | 100.06 |

PROJECT STATION: 940  
 DATE:22/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 357 Long E 903  
 start stop duration  
 TIME :05:24:23 05:54:24 30 (min) Purpose code: 3  
 LOG :6826.17 6827.71 1.54 Area code : 6  
 FDEPTH: 49 50 GearCond.code:  
 BDEPTH: 49 50 Validity code:  
 Towing dir: 310ø Wire out: 200 m Speed: 31 kn\*10  
 Sorted: 51 Kg Total catch: 50.62 CATCH/HOUR: 101.24

PROJECT STATION: 943  
 DATE:22/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 337 Long E 916  
 start stop duration  
 TIME :11:17:04 11:47:24 30 (min) Purpose code: 3  
 LOG :6864.41 6865.97 1.54 Area code : 6  
 FDEPTH: 35 34 GearCond.code:  
 BDEPTH: 35 34 Validity code:  
 Towing dir: 140ø Wire out: 160 m Speed: 30 kn\*10  
 Sorted: 104 Kg Total catch: 209.52 CATCH/HOUR: 419.04

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
| weight                      | numbers    |             |            |
| Brachydeuterus auritus      | 43.96      | 1098        | 43.42 3987 |
| Sepia officinalis hierredda | 13.40      | 50          | 13.24      |
| Pagellus bellottii          | 10.56      | 66          | 10.43 3988 |
| Selene dorsalis             | 10.10      | 92          | 9.98 3989  |
| Sphyræna guachancho         | 5.86       | 42          | 5.79 3990  |
| E C H I N O D E R M A T A   | 4.26       | 238         | 4.21       |
| Scomberomorus tritor        | 3.88       | 6           | 3.83 3991  |
| J E L L Y F I S H           | 2.92       | 114         | 2.88       |
| Alloteuthis africana        | 1.30       | 222         | 1.28       |
| Selar crumenophthalmus      | 1.02       | 20          | 1.01       |
| Citharus linguatula         | 0.90       | 30          | 0.89       |
| Fistularia petimba          | 0.72       | 4           | 0.71       |
| Parapenaeus longirostris    | 0.52       | 120         | 0.51       |
| Balistes capricus           | 0.46       | 2           | 0.45       |
| Saurida brasiliensis        | 0.44       | 202         | 0.43       |
| Sepia juveniles             | 0.18       | 64          | 0.18       |
| Penaeus notialis            | 0.16       | 6           | 0.16       |
| Lichia amia                 | 0.12       | 2           | 0.12       |
| Trachurus trecae            | 0.08       | 2           | 0.08       |
| Epinephelus haifensis       | 0.08       | 2           | 0.08       |
| Serranus accraensis         | 0.06       | 6           | 0.06       |
| Lophius vaillanti           | 0.06       | 12          | 0.06       |
| Sepiella ornata             | 0.04       | 8           | 0.04       |
| Antennarius occidentalis    | 0.04       | 8           | 0.04       |
| Calappa-like with spines    | 0.02       | 8           | 0.02       |
| 'Spider crab'               | 0.02       | 2           | 0.02       |
| Grammolites gruvelli        | 0.02       | 6           | 0.02       |
| Scyllarides herklotsii      | 0.02       | 4           | 0.02       |
| Setarches guentheri         | 0.02       | 2           | 0.02       |
| Zeus faber                  | 0.02       | 4           | 0.02       |
| Total                       | 101.24     | 100.00      |            |

| SPECIES                      | CATCH/HOUR | % OF TOT. C | SAMP       |
|------------------------------|------------|-------------|------------|
| weight                       | numbers    |             |            |
| Sphyræna guachancho          | 112.60     | 740         | 26.87 4017 |
| Galeoides decadactylus       | 94.20      | 804         | 22.48 4014 |
| Brachydeuterus auritus       | 56.40      | 1060        | 13.46 4018 |
| Selene dorsalis              | 31.38      | 366         | 7.49 4007  |
| Chloroscombrus chrysurus     | 27.80      | 578         | 6.63 4005  |
| Sphyræna afra                | 26.00      | 8           | 6.20       |
| Pteroscion pelli             | 18.94      | 226         | 4.52 4008  |
| Drepane africana             | 13.90      | 268         | 3.32 4009  |
| Illosha africana             | 7.20       | 284         | 1.72 4016  |
| Portunus validus             | 4.98       | 38          | 1.19       |
| Pseudotolithus brachygnathus | 4.36       | 12          | 1.04 4012  |
| Pseudotolithus senegalensis  | 3.30       | 26          | 0.79 4013  |
| Alectis alexandrinus         | 2.60       | 8           | 0.62       |
| Penaeus notialis             | 2.48       | 178         | 0.59 4019  |
| Psettodes belcheri           | 2.42       | 18          | 0.58       |
| Sepia officinalis hierredda  | 1.82       | 4           | 0.43       |
| Cynoponticus ferox           | 1.68       | 4           | 0.40       |
| Pomadoury peroteti           | 1.64       | 8           | 0.39       |
| Trichurus lepturus           | 1.48       | 60          | 0.38 4011  |
| Sardinella maderensis        | 1.48       | 126         | 0.35 4010  |
| Selar crumenophthalmus       | 0.64       | 8           | 0.15       |
| Cynoglossus canariensis      | 0.52       | 4           | 0.12       |
| Lagocephalus laevigatus      | 0.38       | 4           | 0.09       |
| Scomberomorus tritor         | 0.30       | 4           | 0.07       |
| Epinephelus aeneus           | 0.26       | 8           | 0.06       |
| Scyllarides herklotsii       | 0.12       | 12          | 0.03       |
| Brotula barbata              | 0.04       | 4           | 0.01       |
| Total                        | 419.04     | 99.98       |            |

PROJECT STATION: 941  
 DATE:22/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 359 Long E 905  
 start stop duration  
 TIME :07:04:13 07:34:07 30 (min) Purpose code: 3  
 LOG :6835.11 6836.73 1.61 Area code : 6  
 FDEPTH: 30 33 GearCond.code:  
 BDEPTH: 30 33 Validity code:  
 Towing dir: 160ø Wire out: 140 m Speed: 32 kn\*10  
 Sorted: 52 Kg Total catch: 85.41 CATCH/HOUR: 170.82

PROJECT STATION: 944  
 DATE:22/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 340 Long E 928  
 start stop duration  
 TIME :13:41:51 14:12:07 30 (min) Purpose code: 3  
 LOG :6879.11 6880.67 1.55 Area code : 6  
 FDEPTH: 19 20 GearCond.code:  
 BDEPTH: 19 20 Validity code:  
 Towing dir: 162ø Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 69 Kg Total catch: 227.83 CATCH/HOUR: 455.66

| SPECIES                      | CATCH/HOUR | % OF TOT. C | SAMP       |
|------------------------------|------------|-------------|------------|
| weight                       | numbers    |             |            |
| Chloroscombrus chrysurus     | 55.12      | 936         | 32.27 3992 |
| Illosha africana             | 28.08      | 1804        | 16.44 3998 |
| Trichurus lepturus           | 11.04      | 596         | 6.46       |
| Rhizoprionodon acutus        | 8.84       | 2           | 5.18       |
| Brachydeuterus auritus       | 7.28       | 480         | 4.26 3994  |
| Selene dorsalis              | 7.24       | 204         | 4.24 3996  |
| J E L L Y F I S H            | 6.86       | 24          | 4.02 12    |
| Pseudotolithus typus         | 6.64       | 70          | 3.89 4000  |
| Sphyræna guachancho          | 6.00       | 72          | 3.51       |
| Galeoides decadactylus       | 5.84       | 100         | 3.42 3997  |
| Pteroscion pelli             | 5.32       | 776         | 3.11 3993  |
| Portunus validus             | 5.08       | 116         | 2.97       |
| Caranx hippos                | 2.38       | 14          | 1.39       |
| Sphyrna lewini               | 2.08       | 4           | 1.22       |
| Sardinella maderensis        | 1.80       | 120         | 1.05 3999  |
| Pagellus bellottii           | 1.78       | 4           | 1.04       |
| Drepane africana             | 1.76       | 16          | 1.03       |
| Scomberomorus tritor         | 1.54       | 10          | 0.90       |
| Penaeus notialis             | 1.42       | 90          | 0.83       |
| Pseudotolithus brachygnathus | 1.32       | 2           | 0.77       |
| Trachurus trecae             | 1.18       | 8           | 0.69       |
| Elops senegalensis           | 0.58       | 2           | 0.34       |
| Pomadoury jubelini           | 0.40       | 2           | 0.23       |
| Pisodonophis semicinctus     | 0.20       | 2           | 0.12       |
| Todaropsis ebiana            | 0.20       | 96          | 0.12       |
| Bathygobius paganellus       | 0.20       | 108         | 0.12       |
| Sepia officinalis hierredda  | 0.20       | 8           | 0.12       |
| Anthias squampinnis          | 0.18       | 26          | 0.11       |
| Grammolites gruvelli         | 0.12       | 14          | 0.07       |
| Batrachoides liberiensis     | 0.08       | 4           | 0.05       |
| Cynoponticus ferox           | 0.06       | 2           | 0.04       |
| Total                        | 170.82     | 100.01      |            |

| SPECIES                      | CATCH/HOUR | % OF TOT. C | SAMP       |
|------------------------------|------------|-------------|------------|
| weight                       | numbers    |             |            |
| Chloroscombrus chrysurus     | 152.20     | 5490        | 33.40 4023 |
| Pseudotolithus senegalensis  | 60.00      | 848         | 13.17 4026 |
| Illosha africana             | 54.46      | 2802        | 11.95 4028 |
| Brachydeuterus auritus       | 33.80      | 800         | 7.42 4027  |
| Sphyræna guachancho          | 27.20      | 112         | 5.97 4030  |
| Ethmalosa fimbriata          | 24.98      | 270         | 5.48 4029  |
| Pseudotolithus brachygnathus | 20.52      | 2           | 4.50       |
| Sardinella maderensis        | 16.28      | 518         | 3.57 4024  |
| Drepane africana             | 15.38      |             | 3.38       |
| Trichurus lepturus           | 14.20      | 346         | 3.12       |
| Galeoides decadactylus       | 6.84       | 106         | 1.50 4022  |
| Selene dorsalis              | 5.62       | 840         | 1.23 4020  |
| Caranx hippos                | 4.20       | 60          | 0.92 4021  |
| Pteroscion pelli             | 3.96       | 142         | 0.87 4025  |
| Scomberomorus tritor         | 3.22       | 8           | 0.71       |
| Portunus validus             | 3.00       | 30          | 0.66       |
| Pseudotolithus brachygnathus | 2.80       | 8           | 0.61       |
| Sphyræna afra                | 2.52       | 2           | 0.55       |
| Pentaneus quinquarius        | 1.94       | 22          | 0.43       |
| Pseudotolithus elongatus     | 1.40       | 16          | 0.31       |
| Penaeus monodon              | 0.68       | 8           | 0.15       |
| Penaeus notialis             | 0.30       | 22          | 0.07       |
| Sepiella ornata              | 0.16       | 16          | 0.04       |
| Total                        | 455.66     | 100.01      |            |

PROJECT STATION: 942  
 DATE:22/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 346 Long E 913  
 start stop duration  
 TIME :09:28:38 09:58:09 30 (min) Purpose code: 3  
 LOG :6852.95 6854.56 1.60 Area code : 6  
 FDEPTH: 19 24 GearCond.code:  
 BDEPTH: 19 24 Validity code:  
 Towing dir: 220ø Wire out: 120 m Speed: 32 kn\*10  
 Sorted: 34 Kg Total catch: 96.43 CATCH/HOUR: 192.86

PROJECT STATION: 945  
 DATE:22/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 322 Long E 922  
 start stop duration  
 TIME :16:56:32 17:27:18 31 (min) Purpose code: 3  
 LOG :6900.02 6901.66 1.63 Area code : 6  
 FDEPTH: 106 103 GearCond.code:  
 BDEPTH: 106 103 Validity code:  
 Towing dir: 140ø Wire out: 350 m Speed: 32 kn\*10  
 Sorted: 68 Kg Total catch: 97.56 CATCH/HOUR: 188.83

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
| weight                      | numbers    |             |            |
| Chloroscombrus chrysurus    | 94.08      | 3564        | 48.78 4001 |
| Illosha africana            | 33.42      | 1032        | 17.33 4006 |
| Galeoides decadactylus      | 13.86      | 132         | 7.19 4003  |
| Selene dorsalis             | 11.34      | 192         | 5.88       |
| Brachydeuterus auritus      | 6.84       | 144         | 3.55 4004  |
| Arius laticaudatus          | 6.42       | 6           | 3.33       |
| Trichurus lepturus          | 5.52       | 138         | 2.86 4002  |
| Rhizoprionodon acutus       | 4.64       | 2           | 2.41       |
| Portunus validus            | 3.78       | 102         | 1.96       |
| Sardinella maderensis       | 3.54       | 84          | 1.84 4005  |
| Penaeus monodon             | 2.10       | 18          | 1.09       |
| Pomadoury jubelini          | 1.38       | 6           | 0.72       |
| Sphyræna guachancho         | 1.32       | 18          | 0.68       |
| Pteroscion pelli            | 1.20       | 66          | 0.62       |
| Pseudotolithus senegalensis | 0.84       | 12          | 0.44       |
| Penaeus notialis            | 0.72       | 102         | 0.37       |
| Nematopalaemon hastatus     | 0.54       | 270         | 0.28       |
| Trachinotus teraia          | 0.54       | 6           | 0.28       |
| Caranx hippos               | 0.54       | 6           | 0.28       |
| Alectis alexandrinus        | 0.24       | 6           | 0.12       |
| Total                       | 192.86     | 100.01      |            |

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
| weight                      | numbers    |             |            |
| Ariomma bondi               | 110.15     | 2549        | 58.33 4034 |
| Dentex angolensis           | 18.21      | 242         | 9.64 4032  |
| Dentex congoensis           | 17.17      | 430         | 9.09 4031  |
| Squatina oculata            | 8.11       | 6           | 4.29       |
| Priacanthus arenatus        | 7.03       | 99          | 3.72       |
| Mustelus mustelus           | 6.95       | 4           | 3.68       |
| Dentex canariensis          | 5.55       | 97          | 2.94 4033  |
| Lepidotrigla cadmani        | 4.63       | 103         | 2.45       |
| Illex coindetii             | 3.12       | 134         | 1.65       |
| Pterothrissus belloci       | 2.19       | 23          | 1.16       |
| Sepia officinalis hierredda | 2.07       | 41          | 1.10       |
| Raja miraletus              | 1.14       | 4           | 0.60       |
| Pontinus accraensis         | 1.03       | 39          | 0.55       |
| Citharus linguatula         | 0.75       | 17          | 0.40       |
| Lepidotrigla carolae        | 0.17       | 17          | 0.09       |
| Zeus faber                  | 0.15       | 4           | 0.08       |
| Uranoscopus aibesca         | 0.12       | 17          | 0.06       |
| Bathygobius paganellus      | 0.10       | 12          | 0.05       |
| Fistularia petimba          | 0.06       | 2           | 0.03       |
| Syacium micrum              | 0.04       | 8           | 0.02       |
| Pagellus acarne             | 0.04       | 4           | 0.02       |
| Spicara aita                | 0.04       | 4           | 0.02       |
| Serranus africana           | 0.02       | 2           | 0.01       |
| Total                       | 188.84     | 99.98       |            |

PROJECT STATION: 946  
 DATE:23/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 327 Long E 932  
 start stop duration  
 TIME :05:19:26 05:50:04 31 (min) Purpose code: 3  
 LOG :6966.03 6967.66 1.62 Area code : 6  
 FDEPTH: 24 24 GearCond.code:  
 BDEPTH: 24 24 Validity code:  
 Towing dir: 140° Wire out: 130 m Speed: 32 kn\*10

Sorted: 47 Kg Total catch: 47.54 CATCH/HOUR: 92.01

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Galeoides decadactylus      | 18.31      | 314     | 19.90       | 4036 |
| Sphyræna guachancho         | 12.08      | 137     | 13.13       | 4040 |
| Pseudolithus senegalensis   | 12.08      | 95      | 13.13       | 4037 |
| Brachydeuterus auritus      | 11.54      | 234     | 12.54       | 4035 |
| Ilisha africana             | 9.54       | 710     | 10.37       | 4044 |
| Chloroscombrus chrysurus    | 7.18       | 161     | 7.80        | 4045 |
| Drepane africana            | 3.21       | 99      | 3.49        | 4038 |
| Sepia officinalis hierredda | 2.67       | 6       | 2.90        |      |
| Caranx hippos               | 2.57       | 19      | 2.79        | 4039 |
| Scomberomorus tritor        | 2.30       | 17      | 2.50        |      |
| Uraspis secunda             | 1.57       | 14      | 1.71        | 4046 |
| Portunus validus            | 1.47       | 39      | 1.60        |      |
| Selene dorsalis             | 1.47       | 54      | 1.60        | 4041 |
| Trichurus lepturus          | 0.99       | 37      | 1.08        |      |
| Elops lacerta               | 0.99       | 4       | 1.08        |      |
| Polydactylus quadrifilis    | 0.79       | 2       | 0.86        |      |
| Lagocephalus laevigatus     | 0.74       | 4       | 0.80        |      |
| Penaeus notialis            | 0.52       | 29      | 0.57        |      |
| Alectis alexandrinus        | 0.43       | 8       | 0.47        | 4043 |
| Sardinella maderensis       | 0.43       | 21      | 0.47        | 4042 |
| Chaetodipterus gorenensis   | 0.41       | 6       | 0.45        |      |
| Squilla aculeata calmani    | 0.23       | 12      | 0.25        |      |
| Cynoglossus canariensis     | 0.21       | 2       | 0.23        |      |
| Pteroscion pelli            | 0.12       | 10      | 0.13        |      |
| Epinephelus aeneus          | 0.08       | 2       | 0.09        |      |
| Trachinocephalus myops      | 0.06       | 2       | 0.07        |      |
| Grammopistes gruvelli       | 0.04       | 4       | 0.04        |      |
| Total                       | 92.03      |         | 100.05      |      |

PROJECT STATION: 949  
 DATE:23/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 315 Long E 931  
 start stop duration  
 TIME :11:37:10 12:06:59 30 (min) Purpose code: 3  
 LOG :7005.88 7007.51 1.64 Area code : 6  
 FDEPTH: 68 64 GearCond.code:  
 BDEPTH: 68 64 Validity code:  
 Towing dir: 330° Wire out: 180 m Speed: 30 kn\*10

Sorted: 37 Kg Total catch: 37.06 CATCH/HOUR: 74.12

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Squatina oculata            | 22.80      | 4       | 30.76       |      |
| Dentex angolensis           | 12.16      | 180     | 16.41       | 4061 |
| Priacanthus arenatus        | 9.82       | 90      | 13.25       |      |
| Sepia officinalis hierredda | 6.68       | 38      | 9.01        | 4060 |
| Alloteuthis africana        | 5.32       | 2060    | 7.18        |      |
| Dentex congolensis          | 3.58       | 86      | 4.83        | 4057 |
| Epinephelus aeneus          | 2.34       | 4       | 3.16        | 4063 |
| Erythrocles monodi          | 2.04       | 18      | 2.75        | 4058 |
| Pagellus bellottii          | 1.70       | 14      | 2.29        | 4056 |
| Pseudupeneus prayensis      | 1.56       | 16      | 2.10        | 4064 |
| Lagocephalus laevigatus     | 1.08       | 8       | 1.46        |      |
| Selene dorsalis             | 0.82       | 8       | 1.11        |      |
| Spicara alta                | 0.82       | 8       | 1.11        |      |
| Ariomma bondi               | 0.74       | 98      | 1.00        | 4062 |
| Raja miraletus              | 0.60       | 2       | 0.81        |      |
| Citharus linguatula         | 0.56       | 46      | 0.76        |      |
| Lepidotrigla cadmani        | 0.46       | 12      | 0.62        |      |
| Todaropsis eblanae          | 0.46       | 6       | 0.62        |      |
| Decapterus punctatus        | 0.30       | 40      | 0.40        | 4059 |
| Uranoscopus albesca         | 0.20       | 2       | 0.27        |      |
| Arnoglossus imperialis      | 0.06       | 2       | 0.08        |      |
| Grammopistes gruvelli       | 0.02       | 2       | 0.03        |      |
| Total                       | 74.12      |         | 100.01      |      |

PROJECT STATION: 950  
 DATE:23/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 316 Long E 935  
 start stop duration  
 TIME :13:24:26 13:54:19 30 (min) Purpose code: 3  
 LOG :7016.40 7018.00 1.60 Area code : 6  
 FDEPTH: 36 37 GearCond.code:  
 BDEPTH: 36 37 Validity code:  
 Towing dir: 330° Wire out: 160 m Speed: 30 kn\*10

Sorted: 34 Kg Total catch: 34.14 CATCH/HOUR: 68.28

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sepia officinalis hierredda | 43.32      | 278     | 63.44       | 4065 |
| Selar crumenophthalmus      | 7.32       | 68      | 10.72       | 4066 |
| Sphyræna afra               | 5.28       | 2       | 7.73        |      |
| Lagocephalus laevigatus     | 2.54       | 16      | 3.72        |      |
| Pagrus caeruleostictus      | 2.14       | 44      | 3.13        | 4067 |
| Priacanthus arenatus        | 1.06       | 6       | 1.55        |      |
| Balistes capricus           | 1.02       | 10      | 1.49        | 4070 |
| Portunus validus            | 1.00       | 2       | 1.46        |      |
| Pseudupeneus prayensis      | 0.96       | 8       | 1.41        | 4069 |
| Epinephelus aeneus          | 0.86       | 2       | 1.26        | 4068 |
| Psettodes belcheri          | 0.72       | 2       | 1.05        |      |
| Pagellus bellottii          | 0.72       | 8       | 1.05        |      |
| Raja miraletus              | 0.46       | 2       | 0.67        |      |
| Caranx hippos               | 0.36       | 2       | 0.53        |      |
| Chaetodipterus gorenensis   | 0.20       | 4       | 0.29        |      |
| Alloteuthis africana        | 0.10       | 40      | 0.15        |      |
| Eucinostomus melanopterus   | 0.10       | 2       | 0.15        |      |
| Brachydeuterus auritus      | 0.10       | 2       | 0.15        |      |
| Grammopistes gruvelli       | 0.02       | 2       | 0.03        |      |
| Total                       | 68.28      |         | 99.98       |      |

PROJECT STATION: 951  
 DATE:23/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 316 Long E 946  
 start stop duration  
 TIME :16:05:50 16:35:54 30 (min) Purpose code: 3  
 LOG :7033.32 7034.91 1.60 Area code : 6  
 FDEPTH: 21 23 GearCond.code:  
 BDEPTH: 21 23 Validity code:  
 Towing dir: 120° Wire out: 120 m Speed: 30 kn\*10

Sorted: 111 Kg Total catch: 111.15 CATCH/HOUR: 222.30

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Trichurus lepturus         | 33.60      | 794     | 15.11       | 4073 |
| Ilisha africana            | 32.28      | 3450    | 14.52       | 4071 |
| Pseudolithus senegalensis  | 24.04      | 138     | 10.81       | 4079 |
| Sphyræna afra              | 20.84      | 6       | 9.37        |      |
| Pseudolithus brachygnathus | 17.92      | 8       | 8.06        |      |
| Pentaneus quinquearius     | 13.84      | 2       | 6.23        |      |
| Pseudolithus typus         | 12.68      | 42      | 5.70        | 4080 |
| Pomadasy jubelini          | 12.58      | 32      | 5.66        | 4072 |
| Drepane africana           | 7.24       | 58      | 3.26        | 4074 |
| Galeoides decadactylus     | 6.68       | 70      | 3.00        | 4076 |
| Arius heudeloti            | 6.56       | 4       | 2.95        |      |
| Chloroscombrus chrysurus   | 5.74       | 166     | 2.58        | 4082 |
| Scomberomorus tritor       | 4.52       | 22      | 2.03        | 4075 |
| Dasyatis margarita         | 3.70       | 8       | 1.66        |      |
| Pteroscion pelli           | 3.46       | 96      | 1.56        | 4077 |
| Sphyræna guachancho        | 3.30       | 58      | 1.48        | 4078 |
| Caranx hippos              | 2.26       | 6       | 1.02        | 4081 |
| Nematopalaemon hastatus    | 1.66       | 158     | 0.75        |      |
| Selene dorsalis            | 1.44       | 164     | 0.65        |      |
| Parapenaeopsis atlantica   | 1.18       | 280     | 0.53        |      |
| Penaeus notialis           | 1.14       | 34      | 0.51        |      |
| Lutjanus gorenensis        | 1.12       | 2       | 0.50        |      |
| Raja miraletus             | 0.68       | 2       | 0.31        |      |
| Brachydeuterus auritus     | 0.56       | 12      | 0.25        |      |
| J E L Y F I S H            | 0.52       | 12      | 0.23        |      |
| Torpedo nobiliana          | 0.52       | 2       | 0.23        |      |
| Batrachoides liberiensis   | 0.50       | 22      | 0.22        |      |
| Cynoglossus senegalensis   | 0.38       | 20      | 0.17        |      |
| Pecten jacobus             | 0.26       | 122     | 0.12        |      |
| Balistes capricus          | 0.22       | 2       | 0.10        |      |
| Dactylopterus volitans     | 0.18       | 2       | 0.08        |      |
| Sepiella ornata            | 0.12       | 12      | 0.05        |      |
| Callinectes pallidus       | 0.12       | 8       | 0.05        |      |
| Pagellus bogaraveo         | 0.12       | 2       | 0.05        |      |
| Sardinella aurita          | 0.10       | 2       | 0.04        |      |
| Pentaneus quinquearius     | 0.10       | 2       | 0.04        |      |
| Squilla aculeata calmani   | 0.04       | 2       | 0.02        |      |
| Penaeus kerathurus         | 0.04       | 2       | 0.02        |      |
| Cynoponticus ferox         | 0.02       | 2       | 0.01        |      |
| Paramola cuvieri           | 0.02       | 4       | 0.01        |      |
| Alectis alexandrinus       | 0.02       | 2       | 0.01        |      |
| Total                      | 222.30     |         | 99.95       |      |

PROJECT STATION: 948  
 DATE:23/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 313 Long E 925  
 start stop duration  
 TIME :10:08:54 10:38:15 29 (min) Purpose code: 3  
 LOG :6998.27 6999.81 1.54 Area code : 6  
 FDEPTH: 120 121 GearCond.code:  
 BDEPTH: 120 121 Validity code:  
 Towing dir: 160° Wire out: 350 m Speed: 31 kn\*10

Sorted: 58 Kg Total catch: 217.42 CATCH/HOUR: 449.83

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex congolensis          | 205.61     | 4452    | 45.71       | 4052 |
| Spicara alta                | 109.24     | 1649    | 24.28       | 4051 |
| Dentex angolensis           | 31.82      | 296     | 7.07        | 4050 |
| Ariomma bondi               | 21.25      | 737     | 4.72        | 4054 |
| Priacanthus arenatus        | 19.47      | 296     | 4.33        |      |
| Erythrocles monodi          | 18.70      | 163     | 4.16        | 4055 |
| Sardinella maderensis       | 18.08      | 234     | 4.02        | 4053 |
| CARSL02                     | 6.06       | 54      | 1.35        |      |
| Sepia officinalis hierredda | 3.56       | 54      | 0.79        |      |
| Scorpaena scrofa            | 2.48       | 8       | 0.55        |      |
| Anthias anthias             | 2.34       | 132     | 0.52        |      |
| Lepidotrigla cadmani        | 1.72       | 48      | 0.38        |      |
| SQULO22                     | 1.47       | 917     | 0.33        |      |
| Citharus linguatula         | 1.47       | 93      | 0.33        |      |
| Zeus faber                  | 1.47       | 8       | 0.33        |      |
| Fistularia petimba          | 1.32       | 8       | 0.29        |      |
| Raja miraletus              | 1.16       | 8       | 0.26        |      |
| Lophiodes kemp              | 1.10       | 8       | 0.24        |      |
| Uranoscopus albesca         | 0.48       | 23      | 0.11        |      |
| Chloroscombrus chrysurus    | 0.39       | 8       | 0.09        |      |
| Boops boops                 | 0.25       | 8       | 0.06        |      |
| Setarches guentheri         | 0.23       | 8       | 0.05        |      |
| Ilix coindetii              | 0.17       | 8       | 0.04        |      |
| Total                       | 449.84     |         | 100.01      |      |

PROJECT STATION: 952  
 DATE:23/ 6/05 GEAR TYPE: PT No:1 POSITION:Lat N 308 Long E 940  
 start stop duration  
 TIME :18:38:33 19:08:28 30 (min) Purpose code: 1  
 LOG :7045.08 7046.85 1.72 Area code : 6  
 FDEPTH: 0 0 GearCond.code:  
 BDEPTH: 41 54 Validity code:  
 Towing dir: 230° Wire out: 150 m Speed: 35 kn\*10  
 Sorted: 13 Kg Total catch: 13.02 CATCH/HOUR: 26.04

| SPECIES                | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------|------------|---------|-------------|------|
|                        | weight     | numbers |             |      |
| Scomberomorus tritor   | 18.50      | 38      | 71.04       | 4083 |
| Ariomma bondi          | 4.24       | 64      | 16.28       | 4084 |
| Sphyraena guachancho   | 1.38       | 6       | 5.30        |      |
| Selene dorsalis        | 0.72       | 10      | 2.76        |      |
| Alloteuthis africana   | 0.68       | 248     | 2.61        |      |
| Saurida brasiliensis   | 0.32       | 138     | 1.23        |      |
| Selar crumenophthalmus | 0.20       | 2       | 0.77        |      |
| Total                  | 26.04      |         | 99.99       |      |

PROJECT STATION: 953  
 DATE:23/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 303 Long E 925  
 start stop duration  
 TIME :22:56:47 23:00:12 3 (min) Purpose code: 3  
 LOG :7078.17 7078.34 0.16 Area code : 6  
 FDEPTH: 607 612 GearCond.code:  
 BDEPTH: 607 612 Validity code:  
 Towing dir: 330° Wire out:1400 m Speed: 30 kn\*10  
 Sorted: 10 Kg Total catch: 10.65 CATCH/HOUR: 213.00

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Centrophorus granulosus   | 56.00      | 20      | 26.29       |      |
| Sea cucumbers             | 49.00      | 260     | 23.00       |      |
| Gonostoma elongatum       | 16.40      | 760     | 7.70        |      |
| B I V A L V E S           | 9.20       | 40      | 4.32        |      |
| Stereomastis sp.          | 8.80       | 440     | 4.13        |      |
| Ijimaia loppesi           | 8.80       | 20      | 4.13        |      |
| ENOPLOTEUTHIDAE           | 8.20       | 40      | 3.85        |      |
| MYCTOPHIDAE               | 8.00       | 780     | 3.76        |      |
| Benthodesmus tenuis       | 6.80       | 180     | 3.19        |      |
| Laemonema laureysi        | 6.00       | 20      | 2.82        |      |
| Malacocephalus laevis     | 6.00       | 20      | 2.82        |      |
| Etmopterus pusillus       | 5.60       | 20      | 2.63        |      |
| Bathygadus macrops        | 4.80       | 20      | 2.25        |      |
| Xenodermichthys copei     | 4.40       | 120     | 2.07        |      |
| Shrimps, small, non comm. | 3.00       | 880     | 1.41        |      |
| Hoplostethus cadenati     | 2.40       | 180     | 1.13        |      |
| Hydrolagus sp.            | 2.40       | 20      | 1.13        |      |
| Ectreposebastes lmus      | 2.40       | 40      | 1.13        |      |
| Dibranchius atlanticus    | 1.60       | 20      | 0.75        |      |
| Yarella blackfordi        | 1.00       | 40      | 0.47        |      |
| ALEPOCEPHALIDAE           | 1.00       | 40      | 0.47        |      |
| Ectreposebastes imus      | 0.80       | 40      | 0.38        |      |
| Nezumia milleri           | 0.20       | 20      | 0.09        |      |
| Aristeus varidens         | 0.20       | 120     | 0.09        |      |
| Total                     | 213.00     |         | 100.01      |      |

PROJECT STATION: 954  
 DATE:24/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 304 Long E 948  
 start stop duration  
 TIME :05:21:27 05:51:09 30 (min) Purpose code: 3  
 LOG :7113.11 7114.66 1.53 Area code : 6  
 FDEPTH: 23 24 GearCond.code:  
 BDEPTH: 23 24 Validity code:  
 Towing dir: 180° Wire out: 120 m Speed: 32 kn\*10  
 Sorted: 118 Kg Total catch: 117.65 CATCH/HOUR: 235.30

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Drepane africana             | 38.46      | 214     | 16.35       | 4089 |
| Lutjanus gorensis            | 30.76      | 34      | 13.07       | 4085 |
| Galeoides decadactylus       | 27.04      | 250     | 11.49       | 4088 |
| Lethrinus atlanticus         | 25.60      | 130     | 10.88       | 4086 |
| Chaetodipterus lippei        | 21.08      | 62      | 8.96        | 4094 |
| Pagrus caeruleostictus       | 15.64      | 36      | 6.65        | 4090 |
| Scomberomorus tritor         | 12.92      | 28      | 5.49        | 4092 |
| Dasyatis margarita           | 8.72       | 22      | 3.71        |      |
| Selene dorsalis              | 7.58       | 60      | 3.22        | 4087 |
| Caranx hippos                | 7.02       | 38      | 2.98        | 4091 |
| Pomadasya jubelini           | 5.84       | 10      | 2.48        | 4096 |
| Cantherines pullus           | 4.14       | 6       | 1.76        |      |
| Selar crumenophthalmus       | 3.84       | 2316    | 1.63        |      |
| Sphyraena guachancho         | 3.42       | 16      | 1.45        | 4093 |
| Elops senegalensis           | 3.06       | 16      | 1.30        |      |
| Alectis alexandrinus         | 2.52       | 10      | 1.07        |      |
| Ephippion guttifer           | 2.16       | 4       | 0.92        |      |
| Pistularia petimba           | 1.88       | 14      | 0.80        |      |
| Sphyraena afra               | 1.82       | 2       | 0.77        |      |
| Sepia officinalis hierredda  | 1.78       | 12      | 0.76        |      |
| Chloroscombrus chrysurus     | 1.58       | 24      | 0.67        | 4095 |
| Balistes punctatus           | 1.54       | 4       | 0.65        |      |
| Acanthostracion quadricornis | 1.20       | 6       | 0.51        |      |
| Brachydeuterus auritus       | 0.76       | 38      | 0.32        |      |
| Caranx senegalensis          | 0.76       | 2       | 0.32        |      |
| Psettodes belcheri           | 0.60       | 4       | 0.25        |      |
| Lutjanus fulgens             | 0.60       | 2       | 0.25        |      |
| Syacium micrurum             | 0.54       | 2       | 0.23        |      |
| Eucinostomus melanopterus    | 0.54       | 6       | 0.23        |      |
| APOGONIDAE                   | 0.50       | 212     | 0.21        |      |
| Panulirus regius             | 0.46       | 2       | 0.20        |      |
| Aluterus blankerti           | 0.28       | 2       | 0.12        |      |
| Pseudotolithus senegalensis  | 0.22       | 2       | 0.09        |      |
| Pseudupeneus prayensis       | 0.16       | 2       | 0.07        |      |
| Sardinella maderensis        | 0.08       | 4       | 0.03        |      |
| Callinectes pallidus         | 0.06       | 4       | 0.03        |      |
| Scorpaena angolensis         | 0.06       | 2       | 0.03        |      |
| Squilla cadenati             | 0.02       | 2       | 0.01        |      |
| Portunus validus             | 0.02       | 2       | 0.01        |      |
| Penaeus kerathurus           | 0.02       | 2       | 0.01        |      |
| Penaeus notialis             | 0.02       | 2       | 0.01        |      |
| Total                        | 235.30     |         | 99.99       |      |

PROJECT STATION: 955  
 DATE:24/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 304 Long E 944  
 start stop duration  
 TIME :06:56:26 07:26:11 30 (min) Purpose code: 3  
 LOG :7121.62 7123.18 1.55 Area code : 6  
 FDEPTH: 37 38 GearCond.code:  
 BDEPTH: 37 38 Validity code:  
 Towing dir: 165° Wire out: 160 m Speed: 32 kn\*10  
 Sorted: 130 Kg Total catch: 130.21 CATCH/HOUR: 260.42

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Galeoides decadactylus      | 42.92      | 410     | 16.48       | 4107 |
| Sphyraena guachancho        | 38.68      | 230     | 14.85       | 4100 |
| Pagrus caeruleostictus      | 29.64      | 86      | 11.38       | 4101 |
| Chaetodipterus lippei       | 26.08      | 48      | 10.01       | 4098 |
| Chloroscombrus chrysurus    | 21.48      | 336     | 8.25        |      |
| Brachydeuterus auritus      | 18.32      | 420     | 7.03        | 4097 |
| Epinephelus aeneus          | 11.90      | 28      | 4.57        | 4105 |
| Cymbium cymbium             | 9.92       | 8       | 3.81        |      |
| Rhizoprionodon acutus       | 9.84       | 2       | 3.78        |      |
| Psettodes belcheri          | 6.88       | 30      | 2.64        |      |
| Sphyraena afra              | 6.64       | 6       | 2.55        | 4099 |
| Alectis alexandrinus        | 6.32       | 54      | 2.43        | 4106 |
| Lutjanus gorensis           | 5.12       | 2       | 1.97        |      |
| Sepia officinalis hierredda | 4.86       | 24      | 1.87        |      |
| Drepane africana            | 4.28       | 34      | 1.64        | 4104 |
| Caranx hippos               | 3.88       | 22      | 1.49        | 4103 |
| Pomadasya jubelini          | 2.94       | 4       | 1.13        |      |
| Selene dorsalis             | 2.34       | 28      | 0.90        | 4102 |
| Scomberomorus tritor        | 2.32       | 8       | 0.89        |      |
| Sardinella maderensis       | 1.08       | 18      | 0.41        |      |
| Portunus validus            | 0.94       | 2       | 0.36        |      |
| Lethrinus atlanticus        | 0.94       | 2       | 0.36        |      |
| Dasyatis margarita          | 0.58       | 2       | 0.22        |      |
| Selar crumenophthalmus      | 0.54       | 12      | 0.21        |      |
| Penaeus notialis            | 0.44       | 20      | 0.17        |      |
| Lagocephalus laevigatus     | 0.38       | 2       | 0.15        |      |
| Cynoglossus senegalensis    | 0.30       | 2       | 0.12        |      |
| Raja miraletus              | 0.30       | 2       | 0.12        |      |
| Ilisha africana             | 0.14       | 18      | 0.05        |      |
| Aluterus blankerti          | 0.14       | 2       | 0.05        |      |
| Grammolites gruvelli        | 0.08       | 4       | 0.03        |      |
| Syacium micrurum            | 0.08       | 2       | 0.03        |      |
| Bathygobius paganellus      | 0.04       | 4       | 0.02        |      |
| Sicyonia galeata            | 0.02       | 2       | 0.01        |      |
| Serranus accraensis         | 0.02       | 2       | 0.01        |      |
| Calappa sp.                 | 0.02       | 2       | 0.01        |      |
| 'Spider crab 2'             | 0.02       | 4       | 0.01        |      |
| Total                       | 260.42     |         | 100.01      |      |

PROJECT STATION: 956  
 DATE:24/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 302 Long E 938  
 start stop duration  
 TIME :08:44:27 09:14:08 30 (min) Purpose code: 3  
 LOG :7131.24 7132.87 1.62 Area code : 6  
 FDEPTH: 72 71 GearCond.code:  
 BDEPTH: 72 71 Validity code:  
 Towing dir: 330° Wire out: 250 m Speed: 32 kn\*10  
 Sorted: 22 Kg Total catch: 22.76 CATCH/HOUR: 45.52

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Squatina oculata            | 11.08      | 4       | 24.34       |      |
| Sepia officinalis hierredda | 6.38       | 50      | 14.02       |      |
| Dentex congongensis         | 4.30       | 96      | 9.45        | 4110 |
| Selar crumenophthalmus      | 2.88       | 264     | 6.33        | 4109 |
| Arius sp.                   | 2.68       | 2       | 5.89        |      |
| Dentex angolensis           | 2.18       | 34      | 4.79        |      |
| Psettodes belcheri          | 2.04       | 8       | 4.48        |      |
| Dasyatis margarita          | 1.82       | 2       | 4.00        |      |
| Alloteuthis africana        | 1.68       | 248     | 3.69        |      |
| Priacanthus arenatus        | 1.06       | 12      | 2.33        |      |
| Epinephelus aeneus          | 1.04       | 2       | 2.28        |      |
| Sphyraena guachancho        | 1.02       | 8       | 2.24        |      |
| Todaropsis eblanae          | 0.80       | 8       | 1.76        |      |
| Pseudupeneus prayensis      | 0.78       | 14      | 1.71        |      |
| Brachydeuterus auritus      | 0.76       | 16      | 1.67        |      |
| Lepidotrigla cadmani        | 0.74       | 14      | 1.63        |      |
| J E L Y F I S H             | 0.70       | 20      | 1.54        |      |
| Scorpaena scrofa            | 0.62       | 2       | 1.36        |      |
| Torpedo torpedo             | 0.48       | 2       | 1.05        |      |
| Raja miraletus              | 0.42       | 2       | 0.92        |      |
| Lepidotrigla carolae        | 0.42       | 28      | 0.92        |      |
| Ariomma bondi               | 0.28       | 10      | 0.62        |      |
| Caranx hippos               | 0.26       | 2       | 0.57        |      |
| Grammolites gruvelli        | 0.24       | 12      | 0.53        |      |
| Uranoscopus albesca         | 0.24       | 2       | 0.53        |      |
| Serranus accraensis         | 0.16       | 8       | 0.35        |      |
| Sea urchins (strong spines) | 0.14       | 2       | 0.31        |      |
| Saurida brasiliensis        | 0.10       | 18      | 0.22        |      |
| Dicolloglossa cuneata       | 0.06       | 2       | 0.13        |      |
| Citharus linguatula         | 0.06       | 4       | 0.13        |      |
| Sphoeroides pachgaster      | 0.04       | 2       | 0.09        |      |
| Syacium micrurum            | 0.02       | 2       | 0.04        |      |
| 'Spider crab'               | 0.02       | 4       | 0.04        |      |
| Blennius normani            | 0.02       | 2       | 0.04        |      |
| Total                       | 45.52      |         | 100.00      |      |

PROJECT STATION: 957  
 DATE:24/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 302 Long E 931  
 start stop duration  
 TIME :11:03:46 11:33:58 30 (min) Purpose code: 3  
 LOG :7145.61 7147.24 1.62 Area code : 6  
 FDEPTH: 120 118 GearCond.code:  
 BDEPTH: 120 118 Validity code:  
 Towing dir: 160° Wire out: 380 m Speed: 30 kn\*10  
 Sorted: 86 Kg Total catch: 189.53 CATCH/HOUR: 379.06

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 149.60     | 938     | 39.47       | 4112 |
| Dentex congongensis         | 119.40     | 3118    | 31.50       | 4113 |
| Seriola dumerili            | 34.00      | 2       | 8.97        |      |
| Dentex angolensis           | 19.40      | 254     | 5.12        | 4111 |
| Squatina oculata            | 14.20      | 4       | 3.75        |      |
| Priacanthus arenatus        | 12.82      | 210     | 3.38        |      |
| Anthias anthias             | 8.42       | 716     | 2.22        |      |
| Heptanchias perlo           | 5.60       | 2       | 1.48        |      |
| Dasyatis margarita          | 4.30       | 6       | 1.13        |      |
| Decapterus punctatus        | 2.54       | 248     | 0.67        |      |
| Spicara alta                | 2.52       | 126     | 0.66        |      |
| Parapandalus narval         | 2.20       | 738     | 0.58        |      |
| Portunus validus            | 1.66       | 6       | 0.44        |      |
| Lepidotrigla cadmani        | 1.40       | 34      | 0.37        |      |
| Sepia officinalis hierredda | 0.44       | 12      | 0.12        |      |
| Zeus faber                  | 0.22       | 6       | 0.06        |      |
| Citharus linguatula         | 0.16       | 6       | 0.04        |      |
| Alloteuthis africana        | 0.12       | 22      | 0.03        |      |
| Todaropsis eblanae          | 0.06       | 6       | 0.02        |      |
| Total                       | 379.06     |         | 100.01      |      |

PROJECT STATION: 958  
 DATE:24/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 252  
 start stop duration Long E 934  
 TIME :13:08:05 13:30:14 22 (min) Purpose code: 3  
 LOG :7158.84 7160.04 1.19 Area code : 6  
 FDEPTH: 229 237 GearCond.code:  
 BDEPTH: 229 237 Validity code:  
 Towing dir: 330° Wire out: 600 m Speed: 30 kn\*10

Sorted: 141 Kg Total catch: 141.28 CATCH/HOUR: 385.31

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Synagrops microlepis        | 311.18     | 110471  | 80.76       |      |
| Ariomma bondi               | 28.09      | 622     | 7.29        | 4114 |
| Squatina oculata            | 12.98      | 11      | 3.37        |      |
| Uranoscopus albesca         | 10.96      | 115     | 2.84        |      |
| Todaropsis eblanae          | 5.05       | 101     | 1.31        | 4115 |
| Illex coindetii             | 4.55       | 76      | 1.18        | 4116 |
| Dentex angolensis           | 3.87       | 27      | 1.00        | 4117 |
| Hypoclydonia bella          | 3.00       | 450     | 0.78        |      |
| Antigonia capros            | 1.55       | 46      | 0.40        |      |
| Spicara alta                | 1.31       | 8       | 0.34        |      |
| Pterothrissus belloci       | 1.20       | 8       | 0.31        |      |
| Torpedo nobiliana           | 0.76       | 3       | 0.20        |      |
| Peristedion cataphractum    | 0.30       | 11      | 0.08        |      |
| Sepia officinalis hierredda | 0.30       | 3       | 0.08        |      |
| Parapenaeus longirostris    | 0.11       | 11      | 0.03        |      |
| Anthias anthias             | 0.05       | 3       | 0.01        |      |
| Syacium micrurum            | 0.03       | 5       | 0.01        |      |
| Total                       | 385.29     |         | 99.99       |      |

PROJECT STATION: 959  
 DATE:24/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 250  
 start stop duration Long E 936  
 TIME :14:49:43 15:19:36 30 (min) Purpose code: 3  
 LOG :7166.02 7167.56 1.53 Area code : 6  
 FDEPTH: 122 129 GearCond.code:  
 BDEPTH: 122 129 Validity code:  
 Towing dir: 180° Wire out: 360 m Speed: 30 kn\*10

Sorted: 54 Kg Total catch: 129.66 CATCH/HOUR: 259.32

| SPECIES              | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------|------------|---------|-------------|------|
|                      | weight     | numbers |             |      |
| Dentex congoensis    | 117.00     | 2412    | 45.12       | 4119 |
| Ariomma bondi        | 81.30      | 2820    | 31.35       | 4118 |
| Priacanthus arenatus | 30.38      | 388     | 11.72       |      |
| Dentex angolensis    | 15.10      | 158     | 5.82        | 4120 |
| Spicara alta         | 10.22      | 134     | 3.94        | 4121 |
| Raja miraletus       | 3.72       | 14      | 1.43        |      |
| Zeus faber           | 0.84       | 4       | 0.32        |      |
| Trigla lyra          | 0.28       | 10      | 0.11        |      |
| Todaropsis eblanae   | 0.20       | 4       | 0.08        |      |
| Citharus linguatula  | 0.20       | 14      | 0.08        |      |
| Zenopsis conchifer   | 0.08       | 4       | 0.03        |      |
| Total                | 259.32     |         | 100.00      |      |

PROJECT STATION: 960  
 DATE:24/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 249  
 start stop duration Long E 940  
 TIME :16:17:33 16:47:30 30 (min) Purpose code: 3  
 LOG :7173.23 7174.87 1.63 Area code : 6  
 FDEPTH: 91 88 GearCond.code:  
 BDEPTH: 91 88 Validity code:  
 Towing dir: 360° Wire out: 270 m Speed: 30 kn\*10

Sorted: 57 Kg Total catch: 57.08 CATCH/HOUR: 114.16

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Ariomma bondi                  | 33.80      | 674     | 29.61       | 4125 |
| Dentex congoensis              | 26.76      | 488     | 23.44       | 4124 |
| Dentex angolensis              | 20.76      | 186     | 18.19       | 4122 |
| Sepia officinalis hierredda    | 9.56       | 44      | 8.37        |      |
| Priacanthus arenatus           | 8.22       | 78      | 7.20        |      |
| Lepidotrigla cadmani           | 4.36       | 108     | 3.82        |      |
| Uranoscopus albesca            | 1.50       | 14      | 1.31        |      |
| Dentex canariensis             | 1.46       | 24      | 1.28        | 4123 |
| Raja miraletus                 | 1.24       | 8       | 1.09        |      |
| Illex coindetii                | 0.88       | 12      | 0.77        |      |
| Decapterus punctatus           | 0.86       | 18      | 0.75        |      |
| Lophiodes kemp                 | 0.84       | 4       | 0.74        |      |
| Torpedo torpedo                | 0.68       | 2       | 0.60        |      |
| Chilomycterus spinosus mauret. | 0.68       | 2       | 0.60        |      |
| Zeus faber                     | 0.58       | 4       | 0.51        |      |
| Todarodes sagittatus           | 0.42       | 8       | 0.37        |      |
| Pontinus accraensis            | 0.28       | 6       | 0.25        |      |
| Todaropsis eblanae             | 0.24       | 2       | 0.21        |      |
| J E L Y F I S H                | 0.24       | 2       | 0.21        |      |
| Citharus linguatula            | 0.22       | 14      | 0.19        |      |
| Saurida brasiliensis           | 0.16       | 16      | 0.14        |      |
| Parapenaeus longirostris       | 0.16       | 16      | 0.14        |      |
| Octopus vulgaris               | 0.14       | 2       | 0.12        |      |
| Antennarius occidentalis       | 0.04       | 2       | 0.04        |      |
| Blennius normani               | 0.04       | 2       | 0.04        |      |
| Syacium micrurum               | 0.02       | 4       | 0.02        |      |
| Serranus accraensis            | 0.02       | 2       | 0.02        |      |
| Total                          | 114.16     |         | 100.03      |      |

PROJECT STATION: 961  
 DATE:25/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 236  
 start stop duration Long E 934  
 TIME :05:19:58 05:50:10 30 (min) Purpose code: 3  
 LOG :7233.78 7235.46 1.69 Area code : 6  
 FDEPTH: 100 106 GearCond.code:  
 BDEPTH: 100 106 Validity code:  
 Towing dir: 20° Wire out: 320 m Speed: 32 kn\*10

Sorted: 189 Kg Total catch: 188.96 CATCH/HOUR: 377.92

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 262.76     | 8224    | 69.53       | 4126 |
| Dentex congoensis           | 54.92      | 1002    | 14.53       | 4128 |
| Squatina oculata            | 14.16      | 4       | 3.75        |      |
| Sepia officinalis hierredda | 11.34      | 58      | 3.00        |      |
| Epinephelus aeneus          | 7.92       | 4       | 2.10        |      |
| Dentex angolensis           | 7.18       | 50      | 1.90        | 4127 |
| Dentex gibbosus             | 6.04       | 2       | 1.60        |      |
| Illex coindetii             | 3.94       | 86      | 1.04        |      |
| Priacanthus arenatus        | 2.42       | 20      | 0.64        |      |
| Lepidotrigla cadmani        | 1.56       | 38      | 0.41        |      |
| Todaropsis eblanae          | 1.00       | 12      | 0.26        |      |
| Raja miraletus              | 0.68       | 2       | 0.18        |      |
| Pontinus accraensis         | 0.66       | 16      | 0.17        |      |
| Zeus faber                  | 0.64       | 2       | 0.17        |      |
| Erythrocles monodi          | 0.64       | 52      | 0.17        |      |
| Lepidotrigla carolae        | 0.48       | 20      | 0.13        |      |
| Fistularia petimba          | 0.36       | 2       | 0.10        |      |
| Spicara alta                | 0.24       | 26      | 0.06        |      |
| Brotula barbata             | 0.22       | 2       | 0.06        |      |
| Sargocentron hastatus       | 0.20       | 2       | 0.05        |      |
| Uranoscopus albesca         | 0.14       | 8       | 0.04        |      |
| Anthias anthias             | 0.10       | 4       | 0.03        |      |
| Parapenaeus longirostris    | 0.08       | 12      | 0.02        |      |
| Syacium micrurum            | 0.06       | 4       | 0.02        |      |
| Citharus linguatula         | 0.04       | 2       | 0.01        |      |
| Serranus cabrilla           | 0.04       | 4       | 0.01        |      |
| Bathygobius paganellus      | 0.04       | 4       | 0.01        |      |
| C R A B S                   | 0.02       | 2       | 0.01        |      |
| Blennius normani            | 0.02       | 2       | 0.01        |      |
| Setarches guentheri         | 0.02       | 2       | 0.01        |      |
| Total                       | 377.92     |         | 100.02      |      |

PROJECT STATION: 962  
 DATE:25/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 235  
 start stop duration Long E 938  
 TIME :06:57:41 07:28:01 30 (min) Purpose code: 3  
 LOG :7243.15 7244.73 1.57 Area code : 6  
 FDEPTH: 65 66 GearCond.code:  
 BDEPTH: 65 66 Validity code:  
 Towing dir: 10° Wire out: 220 m Speed: 32 kn\*10

Sorted: 47 Kg Total catch: 46.76 CATCH/HOUR: 93.52

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex congoensis           | 20.88      | 438     | 22.33       | 4133 |
| Squatina oculata            | 13.32      | 8       | 14.24       |      |
| Sepia officinalis hierredda | 11.54      | 58      | 12.34       |      |
| Priacanthus arenatus        | 10.70      | 88      | 11.44       |      |
| Ariomma bondi               | 10.46      | 234     | 11.18       | 4129 |
| Dentex angolensis           | 8.82       | 74      | 9.43        | 4132 |
| Lepidotrigla cadmani        | 3.94       | 10      | 4.21        |      |
| Decapterus punctatus        | 2.36       | 218     | 2.52        | 4131 |
| Pagellus bellottii          | 2.08       | 42      | 2.22        | 4134 |
| Pseudupeneus prayensis      | 1.72       | 36      | 1.84        | 4130 |
| Epinephelus aeneus          | 1.54       | 4       | 1.65        | 4135 |
| Alloteuthis africana        | 1.26       | 320     | 1.35        |      |
| Illex coindetii             | 1.04       | 14      | 1.11        |      |
| Brotula barbata             | 1.02       | 6       | 1.09        |      |
| J E L Y F I S H             | 0.82       | 14      | 0.88        |      |
| Lepidotrigla carolae        | 0.30       | 26      | 0.32        |      |
| Serranus accraensis         | 0.22       | 10      | 0.24        |      |
| Scorpaena scrofa            | 0.20       | 2       | 0.21        |      |
| Todaropsis eblanae          | 0.16       | 6       | 0.17        |      |
| Citharus linguatula         | 0.16       | 12      | 0.17        |      |
| HOLUTHUROIDEA               | 0.14       | 2       | 0.15        |      |
| Octopus vulgaris            | 0.14       | 2       | 0.15        |      |
| Zeus faber                  | 0.14       | 4       | 0.15        |      |
| Raja miraletus              | 0.14       | 2       | 0.15        |      |
| Saurida brasiliensis        | 0.14       | 20      | 0.15        |      |
| Antennarius occidentalis    | 0.08       | 4       | 0.09        |      |
| Sphoeroides marmoratus      | 0.08       | 6       | 0.09        |      |
| Syacium micrurum            | 0.06       | 12      | 0.06        |      |
| Bathygobius paganellus      | 0.02       | 2       | 0.02        |      |
| Blennius normani            | 0.02       | 2       | 0.02        |      |
| Uranoscopus albesca         | 0.02       | 2       | 0.02        |      |
| Total                       | 93.52      |         | 99.99       |      |

PROJECT STATION: 963  
 DATE:25/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 234  
 start stop duration Long E 942  
 TIME :08:35:38 09:05:10 30 (min) Purpose code: 3  
 LOG :7252.97 7254.48 1.51 Area code : 6  
 FDEPTH: 46 47 GearCond.code:  
 BDEPTH: 46 47 Validity code:  
 Towing dir: 10° Wire out: 180 m Speed: 31 kn\*10

Sorted: 76 Kg Total catch: 75.59 CATCH/HOUR: 151.18

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 102.48     | 1986    | 67.79       | 4136 |
| Cynoptericus ferox          | 18.36      | 2       | 12.14       |      |
| J E L Y F I S H             | 12.74      | 156     | 8.43        |      |
| Selene dorsalis             | 5.76       | 68      | 3.81        | 4137 |
| Penaeus notialis            | 2.92       | 64      | 1.93        |      |
| Uranoscopus albesca         | 1.40       | 40      | 0.93        |      |
| Sphyraena guanchano         | 1.38       | 6       | 0.91        |      |
| Sepia officinalis hierredda | 1.34       | 10      | 0.89        |      |
| Scomberomorus tritor        | 1.24       | 2       | 0.82        |      |
| Brotula barbata             | 0.60       | 4       | 0.40        |      |
| Dicologlossa cuneata        | 0.54       | 8       | 0.36        |      |
| Raja miraletus              | 0.34       | 6       | 0.22        |      |
| Parapenaeus longirostris    | 0.32       | 82      | 0.21        |      |
| Alloteuthis africana        | 0.30       | 88      | 0.20        |      |
| Saurida brasiliensis        | 0.22       | 36      | 0.15        |      |
| Priacanthus arenatus        | 0.18       | 2       | 0.12        |      |
| Grammolites gruvelli        | 0.16       | 8       | 0.11        |      |
| Epinephelus aeneus          | 0.14       | 2       | 0.09        |      |
| Selar crumenophthalmus      | 0.12       | 2       | 0.08        |      |
| Microchirus frechkopi       | 0.10       | 6       | 0.07        |      |
| Decapterus punctatus        | 0.10       | 10      | 0.07        |      |
| Epigonus telescopus         | 0.08       | 16      | 0.05        |      |
| Scyllarides herklottsi      | 0.08       | 14      | 0.05        |      |
| Bathygobius paganellus      | 0.08       | 36      | 0.05        |      |
| Shrimps, small, non comm.   | 0.06       | 14      | 0.04        |      |
| Antennarius occidentalis    | 0.02       | 2       | 0.01        |      |
| C R A B S                   | 0.02       | 6       | 0.01        |      |
| C R A B S                   | 0.02       | 8       | 0.01        |      |
| Blennius normani            | 0.02       | 2       | 0.01        |      |
| Citharus linguatula         | 0.02       | 2       | 0.01        |      |
| Setarches guentheri         | 0.02       | 4       | 0.01        |      |
| Sicyonia galeata            | 0.02       | 2       | 0.01        |      |
| Total                       | 151.18     |         | 99.99       |      |



PROJECT STATION: 964  
 DATE:25/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 236 Long E 943  
 start stop duration  
 TIME :09:55:51 10:17:07 21 (min) Purpose code: 3  
 LOG :7260.45 7261.47 1.01 Area code : 6  
 FDEPTH: 26 24 GearCond.code:  
 BDEPTH: 26 24 Validity code:  
 Towing dir: 180° Wire out: 120 m Speed: 31 kn\*10  
 Sorted: 502 Kg Total catch: 502.41 CATCH/HOUR: 1435.46

| SPECIES                      | CATCH/HOUR | % OF TOT. C | SAMP      |
|------------------------------|------------|-------------|-----------|
| weight                       | numbers    |             |           |
| Chaetodontipterus lippei     | 1102.00    | 2723        | 4140      |
| Acanthurus monroviae         | 105.14     | 163         | 7.32 4142 |
| Lutjanus greenis             | 87.60      | 14          | 6.10 4138 |
| Chaetodontipterus greenis    | 28.57      | 43          | 1.99 4141 |
| Selar crumenophthalmus       | 23.49      | 334         | 1.64 4147 |
| Caranx senegalensis          | 16.89      | 29          | 1.18 4143 |
| Pagrus caeruleostictus       | 15.57      | 14          | 1.08 4145 |
| Alectis alexandrinus         | 13.66      | 43          | 0.95 4144 |
| Aluterus monoceros           | 7.86       | 6           | 0.55      |
| Albula vulpes                | 4.94       | 11          | 0.34      |
| Sparisoma rubripinne         | 4.74       | 3           | 0.33      |
| Lutjanus fulgens             | 4.63       | 17          | 0.32 4139 |
| Lethrinus atlanticus         | 3.94       | 17          | 0.27 4148 |
| Raja miraletus               | 3.91       | 17          | 0.27      |
| Fistularia petimba           | 2.51       | 6           | 0.17      |
| Lagocephalus laevigatus      | 2.43       | 6           | 0.17      |
| Epinephelus aeneus           | 2.14       | 6           | 0.15 4146 |
| Aluterus blankerti           | 1.91       | 3           | 0.13      |
| Acanthostracion quadricornis | 1.63       | 9           | 0.11      |
| Scyllarides herklotzii       | 0.86       | 3           | 0.06      |
| Brachydeuterus auritus       | 0.74       | 14          | 0.05      |
| Pseudupeneus prayensis       | 0.29       | 3           | 0.02      |
| Total                        | 1435.45    |             | 99.97     |

PROJECT STATION: 965  
 DATE:25/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 225 Long E 943  
 start stop duration  
 TIME :13:05:01 13:35:56 31 (min) Purpose code: 3  
 LOG :7278.40 7280.03 1.63 Area code : 6  
 FDEPTH: 23 29 GearCond.code:  
 BDEPTH: 23 29 Validity code:  
 Towing dir: 330° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 61.02 CATCH/HOUR: 118.10

| SPECIES                   | CATCH/HOUR | % OF TOT. C | SAMP       |
|---------------------------|------------|-------------|------------|
| weight                    | numbers    |             |            |
| Ilisha africana           | 51.10      | 4485        | 43.27 4155 |
| Pseudolithus senegalensis | 11.21      | 103         | 9.49 4158  |
| Sphyræna afra             | 6.39       | 2           | 5.41       |
| Brachydeuterus auritus    | 6.12       | 252         | 5.18 4156  |
| Pteroscion pelli          | 4.88       | 292         | 4.13 4151  |
| Sphyræna guachancho       | 4.80       | 48          | 4.06 4153  |
| Galeoides decadactylus    | 4.18       | 50          | 3.54 4157  |
| Penæus notialis           | 4.06       | 155         | 3.44 4159  |
| Selene dorsalis           | 3.10       | 112         | 2.62 4154  |
| Portunus validus          | 2.75       | 56          | 2.33       |
| Caranx senegalensis       | 2.63       | 10          | 2.23       |
| Parapenaeopsis atlantica  | 2.63       | 1171        | 2.23       |
| Sardinella maderensis     | 2.59       | 192         | 2.19 4149  |
| Scomberomorus tritor      | 2.54       | 8           | 2.15 4152  |
| Caranx hippos             | 2.15       | 12          | 1.82       |
| Dasyatis margarita        | 2.07       | 15          | 1.75       |
| Trichiurus lepturus       | 1.39       | 153         | 1.18       |
| Chloroscombrus chrysurus  | 0.95       | 33          | 0.80 4150  |
| Sepiella ornata           | 0.52       | 484         | 0.44       |
| Pisodonophis semicinctus  | 0.46       | 2           | 0.39       |
| Drepane africana          | 0.39       | 17          | 0.33       |
| Psettodes belcheri        | 0.25       | 6           | 0.21       |
| Lagocephalus laevigatus   | 0.21       | 2           | 0.18       |
| Paraconger notialis       | 0.19       | 2           | 0.16       |
| Squilla acuelata calmani  | 0.15       | 10          | 0.13       |
| Lolliguncula mercatoris   | 0.15       | 165         | 0.13       |
| Selar crumenophthalmus    | 0.14       | 4           | 0.12       |
| Grammoplites gruvelli     | 0.08       | 10          | 0.07       |
| Antennarius occidentalis  | 0.02       | 12          | 0.02       |
| Total                     | 118.10     |             | 100.00     |

PROJECT STATION: 966  
 DATE:25/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 226 Long E 938  
 start stop duration  
 TIME :14:36:03 15:06:20 30 (min) Purpose code: 3  
 LOG :7286.42 7288.00 1.56 Area code : 6  
 FDEPTH: 47 46 GearCond.code:  
 BDEPTH: 47 46 Validity code:  
 Towing dir: 360° Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 57 Kg Total catch: 57.18 CATCH/HOUR: 114.36

| SPECIES                        | CATCH/HOUR | % OF TOT. C | SAMP      |
|--------------------------------|------------|-------------|-----------|
| weight                         | numbers    |             |           |
| J E L L Y F I S H              | 96.20      | 282         | 84.12     |
| Pseudupeneus prayensis         | 2.92       | 20          | 2.55 4160 |
| Pageiulus bellottii            | 1.98       | 8           | 1.73 4161 |
| Epinephelus aeneus             | 1.90       | 6           | 1.66 4162 |
| Raja miraletus                 | 1.44       | 8           | 1.26      |
| Sepia officinalis hierredda    | 1.36       | 8           | 1.19      |
| Brotila barbata                | 1.30       | 2           | 1.14      |
| Chilomycterus spinosus mauret. | 1.28       | 4           | 1.12      |
| Cymbium sp.                    | 1.10       | 70          | 0.96      |
| Grammoplites gruvelli          | 0.96       | 12          | 0.84      |
| Alloteuthis africana           | 0.82       | 278         | 0.72      |
| Priacanthus arenatus           | 0.72       | 2           | 0.63      |
| Fistularia petimba             | 0.54       | 6           | 0.47      |
| Serranus accraensis            | 0.30       | 10          | 0.26      |
| Dasyatis margarita             | 0.26       | 2           | 0.23      |
| Brachydeuterus auritus         | 0.22       | 6           | 0.19      |
| Psettodes belcheri             | 0.22       | 4           | 0.19      |
| Selene dorsalis                | 0.20       | 2           | 0.17      |
| Syacium micrurum               | 0.20       | 2           | 0.17      |
| Calappa pelii                  | 0.16       | 6           | 0.14      |
| Decapterus punctatus           | 0.14       | 2           | 0.12      |
| Dentex congoensis              | 0.10       | 2           | 0.09      |
| Saurida brasiliensis           | 0.04       | 8           | 0.03      |
| Total                          | 114.36     |             | 99.98     |

PROJECT STATION: 967  
 DATE:25/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 227 Long E 934  
 start stop duration  
 TIME :16:15:28 16:45:27 30 (min) Purpose code: 3  
 LOG :7295.25 7296.84 1.58 Area code : 6  
 FDEPTH: 83 82 GearCond.code:  
 BDEPTH: 83 82 Validity code:  
 Towing dir: 10° Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 69 Kg Total catch: 69.11 CATCH/HOUR: 138.22

| SPECIES                     | CATCH/HOUR | % OF TOT. C | SAMP       |
|-----------------------------|------------|-------------|------------|
| weight                      | numbers    |             |            |
| Ariomma bondi               | 83.68      | 2156        | 60.54 4163 |
| Dentex angolensis           | 19.26      | 218         | 13.93 4164 |
| Priacanthus arenatus        | 9.00       | 108         | 6.51       |
| Dentex congoensis           | 8.16       | 198         | 5.90 4165  |
| Sepia officinalis hierredda | 5.92       | 18          | 4.28       |
| J E L L Y F I S H           | 3.32       | 44          | 2.40       |
| Raja miraletus              | 1.86       | 8           | 1.35       |
| Euthynnus alletteratus      | 1.56       | 2           | 1.13       |
| Illex coindetii             | 1.26       | 16          | 0.91       |
| Lepidotrigla cadmani        | 1.24       | 30          | 0.90       |
| Decapterus punctatus        | 0.98       | 18          | 0.71 4166  |
| Alloteuthis africana        | 0.40       | 82          | 0.29       |
| Spherooides marmoratus      | 0.38       | 2           | 0.27       |
| Citharus linguatula         | 0.28       | 16          | 0.20       |
| Zeus faber                  | 0.28       | 6           | 0.20       |
| Fistularia petimba          | 0.26       | 2           | 0.19       |
| Uranoscopus albesca         | 0.20       | 4           | 0.14       |
| Pseudupeneus prayensis      | 0.10       | 2           | 0.07       |
| Selar crumenophthalmus      | 0.08       | 2           | 0.06       |
| Total                       | 138.22     |             | 99.98      |

PROJECT STATION: 968  
 DATE:26/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 140 Long E 729  
 start stop duration  
 TIME :09:43:22 10:06:06 23 (min) Purpose code: 3  
 LOG :7439.18 7440.36 1.17 Area code : 8  
 FDEPTH: 49 48 GearCond.code:  
 BDEPTH: 49 48 Validity code:  
 Towing dir: 180° Wire out: 180 m Speed: 32 kn\*10  
 Sorted: 65 Kg Total catch: 64.90 CATCH/HOUR: 169.30

| SPECIES                        | CATCH/HOUR | % OF TOT. C | SAMP       |
|--------------------------------|------------|-------------|------------|
| weight                         | numbers    |             |            |
| Dactylopterus volitans         | 85.30      | 334         | 50.38 4171 |
| Sepia officinalis hierredda    | 23.90      | 31          | 14.12 4170 |
| Acanthostracion quadricornis   | 15.26      | 104         | 9.01 4167  |
| Chilomycterus spinosus mauret. | 7.46       | 63          | 4.41       |
| Syacium micrurum               | 6.76       | 63          | 3.99 4175  |
| Balistes caprisucus            | 4.96       | 10          | 2.93 4173  |
| Caranx crysos                  | 4.70       | 8           | 2.78 4168  |
| Decapterus punctatus           | 4.17       | 102         | 2.46 4176  |
| Fistularia petimba             | 3.81       | 10          | 2.25       |
| Torpedo marmorata              | 3.68       | 10          | 2.17       |
| Epinephelus aeneus             | 3.37       | 3           | 1.99 4169  |
| Psettodes belcheri             | 1.90       | 3           | 1.12       |
| Torpedo torpedo                | 1.83       | 10          | 1.08       |
| Pagrus caeruleostictus         | 0.78       | 13          | 0.46 4172  |
| Antennarius pardalis           | 0.73       | 5           | 0.43       |
| Pseudupeneus prayensis         | 0.50       | 3           | 0.30       |
| Alloteuthis africana           | 0.10       | 31          | 0.06       |
| Bothus podas africanus         | 0.08       | 5           | 0.05       |
| Saurida brasiliensis           | 0.03       | 8           | 0.02       |
| Total                          | 169.32     |             | 100.01     |

PROJECT STATION: 969  
 DATE:26/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 143 Long E 726  
 start stop duration  
 TIME :11:36:48 11:50:09 13 (min) Purpose code: 3  
 LOG :7452.42 7453.13 0.70 Area code : 8  
 FDEPTH: 29 42 GearCond.code:  
 BDEPTH: 29 42 Validity code:  
 Towing dir: 10° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 239 Kg Total catch: 238.62 CATCH/HOUR: 1101.32

| SPECIES                        | CATCH/HOUR | % OF TOT. C | SAMP      |
|--------------------------------|------------|-------------|-----------|
| weight                         | numbers    |             |           |
| Chelonia mydas                 | 923.08     | 18          | 83.82     |
| Sepia officinalis hierredda    | 54.92      | 83          | 4.99 4177 |
| Acanthostracion quadricornis   | 50.12      | 480         | 4.55 4179 |
| Diodon maculatus               | 20.31      | 226         | 1.84      |
| Dactylopterus volitans         | 18.92      | 88          | 1.72 4178 |
| Lethrinus atlanticus           | 15.37      | 60          | 1.40 4180 |
| Balistes punctatus             | 3.69       | 14          | 0.34      |
| Fistularia tabacaria           | 3.55       | 9           | 0.32      |
| Octopus vulgaris               | 3.51       | 5           | 0.32      |
| Aluterus blankerti             | 2.68       | 18          | 0.24      |
| Rypticus saponaceus            | 1.98       | 23          | 0.18      |
| Fistularia petimba             | 1.15       | 5           | 0.10      |
| Scorpaena laevis               | 1.11       | 5           | 0.10      |
| Chilomycterus spinosus mauret. | 0.55       | 5           | 0.05      |
| Antennarius pardalis           | 0.37       | 5           | 0.03      |
| Total                          | 1101.31    |             | 100.00    |

PROJECT STATION: 970  
 DATE:26/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 142 Long E 719  
 start stop duration  
 TIME :13:25:03 13:50:28 25 (min) Purpose code: 3  
 LOG :7465.36 7466.70 1.33 Area code : 8  
 FDEPTH: 58 65 GearCond.code:  
 BDEPTH: 58 65 Validity code:  
 Towing dir: 180° Wire out: 220 m Speed: 30 kn\*10  
 Sorted: 24 Kg Total catch: 24.49 CATCH/HOUR: 58.78

| SPECIES                        | CATCH/HOUR | % OF TOT. C | SAMP       |
|--------------------------------|------------|-------------|------------|
| weight                         | numbers    |             |            |
| Sepia officinalis hierredda    | 19.66      | 50          | 33.45 4181 |
| Pagrus caeruleostictus         | 11.54      | 48          | 19.63 4183 |
| Dactylopterus volitans         | 5.69       | 22          | 9.68 4184  |
| Selar crumenophthalmus         | 4.63       | 14          | 7.88 4185  |
| Chilomycterus spinosus mauret. | 4.58       | 29          | 7.79       |
| Dentex congoensis              | 2.33       | 62          | 3.96 4182  |
| Octopus vulgaris               | 1.85       | 2           | 3.15       |
| Fistularia petimba             | 1.22       | 5           | 2.08       |
| Balistes caprisucus            | 0.96       | 2           | 1.63       |
| Diodon maculatus               | 0.94       | 17          | 1.60       |
| Priacanthus arenatus           | 0.79       | 2           | 1.34       |
| Pseudupeneus prayensis         | 0.79       | 5           | 1.34       |
| Zeus faber                     | 0.67       | 5           | 1.14       |
| Scorpaena laevis               | 0.65       | 2           | 1.11       |
| Sea urchins (weak spines)      | 0.62       | 2           | 1.05       |
| Aluterus blankerti             | 0.53       | 5           | 0.90       |
| Fistularia tabacaria           | 0.50       | 2           | 0.85       |
| Acanthostracion quadricornis   | 0.31       | 7           | 0.53       |
| Xyrichtys novacula             | 0.29       | 2           | 0.49       |
| Rypticus saponaceus            | 0.17       | 2           | 0.29       |
| Synodus saurus                 | 0.05       | 5           | 0.09       |
| Total                          | 58.77      |             | 99.98      |

PROJECT STATION: 971  
 DATE:26/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 140  
 start stop duration Long E 720  
 TIME :14:42:28 15:03:41 21 (min) Purpose code: 3  
 LOG :7470.50 7471.55 1.05 Area code : 8  
 FDEPTH: 44 38 GearCond.code:  
 BDEPTH: 44 38 Validity code:  
 Towing dir: 20ø Wire out: 190 m Speed: 30 kn\*10

Sorted: 15 Kg Total catch: 14.73 CATCH/HOUR: 42.09

| SPECIES                        | CATCH/HOUR   |         | % OF TOT. C   | SAMP |
|--------------------------------|--------------|---------|---------------|------|
|                                | weight       | numbers |               |      |
| Fistularia petimba             | 15.14        | 60      | 35.97         |      |
| Dactylopterus volitans         | 9.09         | 40      | 21.60         | 4188 |
| Sepia officinalis hierredda    | 5.23         | 9       | 12.43         | 4187 |
| Lycodontis maroai              | 3.54         | 17      | 8.41          |      |
| Acanthostracion quadricornis   | 3.49         | 31      | 8.29          | 4189 |
| Fistularia tabacaria           | 2.54         | 6       | 6.03          |      |
| Diodon maculatus               | 1.69         | 11      | 4.02          |      |
| Pagrus caeruleostictus         | 0.57         | 6       | 1.35          |      |
| Aluterus blankerti             | 0.37         | 3       | 0.88          |      |
| Chilomycterus spinosus mauret. | 0.34         | 3       | 0.81          |      |
| Torpedo torpedo                | 0.09         | 3       | 0.21          |      |
| <b>Total</b>                   | <b>42.09</b> |         | <b>100.00</b> |      |

PROJECT STATION: 972  
 DATE:26/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 134  
 start stop duration Long E 715  
 TIME :16:27:41 16:49:01 21 (min) Purpose code: 3  
 LOG :7483.10 7484.21 1.09 Area code : 8  
 FDEPTH: 79 75 GearCond.code:  
 BDEPTH: 79 75 Validity code:  
 Towing dir: 180ø Wire out: 260 m Speed: 30 kn\*10

Sorted: 157 Kg Total catch: 156.68 CATCH/HOUR: 447.66

| SPECIES                        | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|--------------------------------|---------------|---------|---------------|------|
|                                | weight        | numbers |               |      |
| Pagrus caeruleostictus         | 373.66        | 2657    | 83.47         | 4191 |
| Dactylopterus volitans         | 40.97         | 149     | 9.15          | 4193 |
| Aloteuthis africana            | 11.74         | 4891    | 2.62          |      |
| Lepidotrigla cadmani           | 5.43          | 129     | 1.61          |      |
| Boops boops                    | 4.49          | 34      | 1.00          | 4190 |
| Sepia officinalis hierredda    | 2.86          | 40      | 0.64          |      |
| Pseudupeneus prayensis         | 2.03          | 17      | 0.45          | 4192 |
| Lepidotrigla carolae           | 1.66          | 57      | 0.37          |      |
| Fistularia petimba             | 1.46          | 6       | 0.33          |      |
| Seriola carpenteri             | 0.71          | 3       | 0.16          |      |
| Torpedo torpedo                | 0.69          | 3       | 0.15          |      |
| Acanthostracion quadricornis   | 0.43          | 3       | 0.10          |      |
| Chelidonichthys gabonensis     | 0.37          | 3       | 0.08          |      |
| Chilomycterus spinosus mauret. | 0.31          | 3       | 0.07          |      |
| Bothus podas africanus         | 0.26          | 3       | 0.06          |      |
| Ariomma bondi                  | 0.23          | 26      | 0.05          |      |
| Citharus linguatula            | 0.17          | 3       | 0.04          |      |
| Decapterus punctatus           | 0.17          | 11      | 0.04          |      |
| Zeus faber                     | 0.03          | 3       | 0.01          |      |
| <b>Total</b>                   | <b>447.67</b> |         | <b>100.00</b> |      |

PROJECT STATION: 973  
 DATE:27/ 6/05 GEAR TYPE: PT No: 1 POSITION:Lat N 128  
 start stop duration Long E 713  
 TIME :00:57:45 01:22:54 25 (min) Purpose code: 1  
 LOG :7524.35 7525.70 1.33 Area code : 8  
 FDEPTH: 0 9 GearCond.code:  
 BDEPTH: 89 79 Validity code:  
 Towing dir: 70ø Wire out: 180 m Speed: 34 kn\*10

Sorted: 3 Kg Total catch: 3.22 CATCH/HOUR: 7.73

| SPECIES                 | CATCH/HOUR  |         | % OF TOT. C   | SAMP |
|-------------------------|-------------|---------|---------------|------|
|                         | weight      | numbers |               |      |
| Ariomma bondi           | 5.11        | 79      | 66.11         | 4194 |
| Selar crumenophthalmus  | 2.62        | 10      | 33.89         | 4195 |
| Holocentrus ascensionis | 0.00        | 2       |               |      |
| ACANTHURIDAE            | 0.00        | 2       |               |      |
| <b>Total</b>            | <b>7.73</b> |         | <b>100.00</b> |      |

PROJECT STATION: 974  
 DATE:27/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 133  
 start stop duration Long E 728  
 TIME :06:56:24 07:16:53 20 (min) Purpose code: 3  
 LOG :7565.25 7566.34 1.08 Area code : 8  
 FDEPTH: 47 55 GearCond.code:  
 BDEPTH: 47 55 Validity code:  
 Towing dir: 70ø Wire out: 180 m Speed: 31 kn\*10

Sorted: 13 Kg Total catch: 12.84 CATCH/HOUR: 38.52

| SPECIES                        | CATCH/HOUR   |         | % OF TOT. C  | SAMP |
|--------------------------------|--------------|---------|--------------|------|
|                                | weight       | numbers |              |      |
| Sepia officinalis hierredda    | 10.74        | 18      | 27.88        |      |
| Dactylopterus volitans         | 6.93         | 21      | 17.99        | 4198 |
| Lethrinus atlanticus           | 4.17         | 15      | 10.83        | 4197 |
| Fistularia tabacaria           | 3.66         | 6       | 9.50         |      |
| Fistularia petimba             | 1.92         | 9       | 4.98         |      |
| Dentex gibbosus                | 1.86         | 18      | 4.83         | 4196 |
| Scorpaena sp.                  | 1.83         | 9       | 4.75         |      |
| Aluterus blankerti             | 1.32         | 18      | 3.43         |      |
| Diodon maculatus               | 1.23         | 9       | 3.19         |      |
| Chilomycterus spinosus mauret. | 1.23         | 12      | 3.19         |      |
| Aulostomus strigosus           | 1.20         | 6       | 3.12         |      |
| Rypticus saponaceus            | 0.93         | 6       | 2.41         |      |
| Acanthostracion quadricornis   | 0.93         | 12      | 2.41         |      |
| Aloteuthis africana            | 0.57         | 177     | 1.48         |      |
| <b>Total</b>                   | <b>38.52</b> |         | <b>99.99</b> |      |

PROJECT STATION: 975  
 DATE:27/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 126  
 start stop duration Long E 718  
 TIME :10:05:01 10:30:34 26 (min) Purpose code: 3  
 LOG :7582.48 7583.73 1.25 Area code : 8  
 FDEPTH: 76 73 GearCond.code:  
 BDEPTH: 76 73 Validity code:  
 Towing dir: ø Wire out: 250 m Speed: 30 kn\*10

Sorted: 68 Kg Total catch: 68.20 CATCH/HOUR: 157.38

| SPECIES                        | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|--------------------------------|---------------|---------|---------------|------|
|                                | weight        | numbers |               |      |
| Pagellus bellottii             | 105.92        | 425     | 67.30         | 4203 |
| Sepia officinalis hierredda    | 8.93          | 7       | 5.67          |      |
| Pagrus caeruleostictus         | 8.45          | 7       | 5.37          | 4200 |
| Boops boops                    | 6.23          | 39      | 3.96          | 4202 |
| Decapterus macarellus          | 6.18          | 35      | 3.93          | 4201 |
| Dactylopterus volitans         | 5.17          | 25      | 3.29          | 4205 |
| Chilomycterus spinosus mauret. | 3.58          | 18      | 2.27          |      |
| Lethrinus atlanticus           | 2.47          | 7       | 1.57          | 4204 |
| Pseudupeneus prayensis         | 2.42          | 35      | 1.54          | 4199 |
| Trachinus armatus              | 2.03          | 42      | 1.29          |      |
| Octopus vulgaris               | 1.48          | 2       | 0.94          |      |
| Uranoscopus albesca            | 1.15          | 9       | 0.73          |      |
| Fistularia petimba             | 0.99          | 2       | 0.63          |      |
| Zeus faber                     | 0.83          | 2       | 0.53          |      |
| Scorpaena stephanica           | 0.51          | 2       | 0.32          |      |
| Chelidonichthys lastoviza      | 0.42          | 9       | 0.27          |      |
| Trachinocephalus myops         | 0.39          | 5       | 0.25          |      |
| Aluterus blankerti             | 0.23          | 2       | 0.15          |      |
| <b>Total</b>                   | <b>157.38</b> |         | <b>100.01</b> |      |

PROJECT STATION: 976  
 DATE:27/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 127  
 start stop duration Long E 712  
 TIME :11:49:51 12:19:37 30 (min) Purpose code: 3  
 LOG :7590.85 7592.40 1.53 Area code : 8  
 FDEPTH: 85 87 GearCond.code:  
 BDEPTH: 85 87 Validity code:  
 Towing dir: 310ø Wire out: 290 m Speed: 30 kn\*10

Sorted: 87 Kg Total catch: 173.96 CATCH/HOUR: 347.92

| SPECIES                     | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|-----------------------------|---------------|---------|---------------|------|
|                             | weight        | numbers |               |      |
| Pagellus bellottii          | 280.80        | 2466    | 80.71         | 4211 |
| Ariomma bondi               | 34.80         | 5694    | 10.00         | 4210 |
| Dactylopterus volitans      | 7.36          | 32      | 2.12          | 4207 |
| Trachinus radiatus          | 4.24          | 4       | 1.22          |      |
| Fistularia petimba          | 4.12          | 20      | 1.18          |      |
| Boops boops                 | 3.40          | 16      | 0.98          |      |
| Sepia officinalis hierredda | 3.08          | 48      | 0.89          | 4208 |
| Pagrus caeruleostictus      | 3.08          | 4       | 0.89          | 4206 |
| OPHEM01                     | 1.88          | 8       | 0.54          |      |
| Lepidotrigla cadmani        | 1.60          | 4       | 0.46          |      |
| Antigonia capros            | 1.36          | 28      | 0.39          |      |
| Trachinus armatus           | 1.12          | 16      | 0.32          |      |
| Pseudupeneus prayensis      | 0.56          | 4       | 0.16          | 4209 |
| Chelidonichthys lastoviza   | 0.32          | 4       | 0.09          |      |
| Lepidotrigla carolae        | 0.20          | 12      | 0.06          |      |
| <b>Total</b>                | <b>347.92</b> |         | <b>100.01</b> |      |

PROJECT STATION: 977  
 DATE:27/ 6/05 GEAR TYPE: BT No:16 POSITION:Lat N 130  
 start stop duration Long E 711  
 TIME :13:21:50 13:47:40 26 (min) Purpose code: 3  
 LOG :7597.98 7599.33 1.35 Area code : 8  
 FDEPTH: 81 84 GearCond.code:  
 BDEPTH: 81 84 Validity code:  
 Towing dir: 180ø Wire out: 290 m Speed: 30 kn\*10

Sorted: 91 Kg Total catch: 90.84 CATCH/HOUR: 209.63

| SPECIES                        | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|--------------------------------|---------------|---------|--------------|------|
|                                | weight        | numbers |              |      |
| Pagellus bellottii             | 180.00        | 738     | 85.87        | 4212 |
| Dactylopterus volitans         | 9.23          | 35      | 4.40         | 4214 |
| Pagrus caeruleostictus         | 9.18          | 5       | 4.38         | 4213 |
| Fistularia petimba             | 2.77          | 9       | 1.32         |      |
| Torpedo torpedo                | 2.47          | 7       | 1.18         |      |
| Raja miraletus                 | 1.66          | 5       | 0.79         |      |
| Sepia officinalis hierredda    | 1.15          | 14      | 0.55         | 4216 |
| Pseudupeneus prayensis         | 0.76          | 7       | 0.36         | 4215 |
| Echelus nyurus                 | 0.55          | 2       | 0.26         |      |
| Scorpaena stephanica           | 0.53          | 2       | 0.25         |      |
| Chilomycterus spinosus mauret. | 0.53          | 2       | 0.25         |      |
| Dentex congoensis              | 0.42          | 7       | 0.20         |      |
| Trachinus armatus              | 0.28          | 5       | 0.13         |      |
| Lepidotrigla carolae           | 0.09          | 5       | 0.04         |      |
| <b>Total</b>                   | <b>209.62</b> |         | <b>99.98</b> |      |

PROJECT STATION: 978  
 DATE:28/ 6/05 GEAR TYPE: PT No: 1 POSITION:Lat N 12  
 start stop duration Long E 626  
 TIME :10:35:09 11:10:04 35 (min) Purpose code: 1  
 LOG :7715.82 7717.98 2.10 Area code : 8  
 FDEPTH: 10 10 GearCond.code:  
 BDEPTH: 207 68 Validity code:  
 Towing dir: 180ø Wire out: 180 m Speed: 30 kn\*10

Sorted: Kg Total catch: 0.03 CATCH/HOUR: 0.05

| SPECIES                 | CATCH/HOUR  |         | % OF TOT. C   | SAMP |
|-------------------------|-------------|---------|---------------|------|
|                         | weight      | numbers |               |      |
| Decapterus sp.          | 0.02        | 2       | 40.00         |      |
| Sepiella ornata         | 0.02        | 2       | 40.00         |      |
| Lagocephalus laevigatus | 0.02        | 2       | 40.00         |      |
| <b>Total</b>            | <b>0.06</b> |         | <b>120.00</b> |      |

PROJECT STATION: 979  
 DATE: 28/ 6/05 GEAR TYPE: BT No:14 POSITION: Lat N 10 Long E 627  
 start stop duration  
 TIME :11:53:54 12:13:26 20 (min) Purpose code: 3  
 LOG :7720.67 7721.63 0.94 Area code : 8  
 FDEPTH: 65 71 GearCond.code:  
 BDEPTH: 65 71 Validity code:  
 Towing dir: 335ø Wire out: 280 m Speed: 30 kn\*10  
 Sorted: 116 Kg Total catch: 115.56 CATCH/HOUR: 346.68

PROJECT STATION: 982  
 DATE: 28/ 6/05 GEAR TYPE: FT No: 1 POSITION: Lat N 4 Long E 639  
 start stop duration  
 TIME :22:47:00 23:19:00 32 (min) Purpose code: 1  
 LOG :7771.30 7773.01 1.69 Area code : 8  
 FDEPTH: 5 5 GearCond.code:  
 BDEPTH: 74 75 Validity code:  
 Towing dir: 60ø Wire out: 150 m Speed: 35 kn\*10  
 Sorted: 32 Kg Total catch: 32.22 CATCH/HOUR: 60.41

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Paranthias furcifer            | 111.30     | 432     | 32.10       | 4224 |
| Pagellus bellottii             | 87.60      | 723     | 25.27       | 4222 |
| Dactylopterus volitans         | 35.40      | 174     | 10.21       | 4219 |
| Dentex congoensis              | 28.50      | 1593    | 8.22        | 4220 |
| Alloteuthis africana           | 18.00      | 12342   | 5.19        |      |
| Pagrus caeruleostictus         | 16.08      | 99      | 4.64        | 4223 |
| Dentex canariensis             | 12.84      | 6       | 3.70        | 4221 |
| Sepia officinalis hierredda    | 12.27      | 210     | 3.54        | 4218 |
| Pseudupeneus prayensis         | 8.40       | 96      | 2.42        | 4217 |
| Chilomycterus spinosus mauret. | 6.69       | 36      | 1.93        |      |
| Fistularia petimba             | 3.39       | 36      | 0.98        |      |
| Syacium micrurum               | 2.07       | 207     | 0.60        |      |
| Torpedo torpedo                | 1.59       | 3       | 0.46        |      |
| Torpedo marmorata              | 1.23       | 3       | 0.35        |      |
| Citharus linguatula            | 0.51       | 33      | 0.15        |      |
| Priacanthus arenatus           | 0.42       | 3       | 0.12        |      |
| Chaetodon robustus             | 0.24       | 3       | 0.07        |      |
| Lepidotrigla carolae           | 0.06       | 6       | 0.02        |      |
| Liocarcinus corrugatus         | 0.03       | 6       | 0.01        |      |
| Synodus saurus                 | 0.03       | 3       | 0.01        |      |
| Saurida brasiliensis           | 0.03       | 6       | 0.01        |      |
| Total                          | 346.68     |         | 100.00      |      |

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Sardinella maderensis     | 43.50      | 12853   | 72.01       | 4241 |
| Caranx hippos             | 4.82       | 2       | 7.98        |      |
| Sardinella maderensis     | 2.68       | 15      | 4.44        | 4239 |
| Hypoclydonia bella        | 1.97       | 246     | 3.26        | 4243 |
| Selar crumenophthalmus    | 1.82       | 6       | 3.01        | 4242 |
| MYCTOPHIDAE               | 1.73       | 1686    | 2.86        |      |
| Decapterus macarellus     | 1.44       | 6       | 2.38        | 4240 |
| Illex coindetii           | 1.14       | 13      | 1.89        |      |
| Ornithoteuthis antillarum | 0.64       | 34      | 1.06        |      |
| Promethichthys prometheus | 0.28       | 13      | 0.46        |      |
| Decapterus punctatus      | 0.19       | 2       | 0.31        |      |
| Alloteuthis africana      | 0.11       | 103     | 0.18        |      |
| Parexocoetus brachypterus | 0.06       | 2       | 0.10        |      |
| Ariomma bondi             | 0.04       | 2       | 0.07        |      |
| Total                     | 60.42      |         | 100.01      |      |

PROJECT STATION: 980  
 DATE: 28/ 6/05 GEAR TYPE: BT No:14 POSITION: Lat N 6 Long E 629  
 start stop duration  
 TIME :13:20:52 13:21:08 9 (min) Purpose code: 3  
 LOG :7731.06 7731.52 0.46 Area code : 8  
 FDEPTH: 45 53 GearCond.code:  
 BDEPTH: 45 53 Validity code:  
 Towing dir: ø Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 34 Kg Total catch: 33.54 CATCH/HOUR: 223.60

PROJECT STATION: 983  
 DATE: 29/ 6/05 GEAR TYPE: BT No:14 POSITION: Lat N 2 Long E 635  
 start stop duration  
 TIME :05:57:55 06:27:17 29 (min) Purpose code: 3  
 LOG :7808.98 7810.49 1.51 Area code : 8  
 FDEPTH: 66 74 GearCond.code:  
 BDEPTH: 66 74 Validity code:  
 Towing dir: 220ø Wire out: 240 m Speed: 31 kn\*10  
 Sorted: 88 Kg Total catch: 167.90 CATCH/HOUR: 347.38

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Pagellus bellottii             | 92.67      | 820     | 41.44       | 4225 |
| Dactylopterus volitans         | 37.67      | 207     | 16.85       | 4229 |
| Pagrus caeruleostictus         | 23.67      | 73      | 10.59       | 4227 |
| Pseudupeneus prayensis         | 20.00      | 207     | 8.94        | 4230 |
| Seriola fasciata               | 10.27      | 33      | 4.59        | 4231 |
| Ballistes capriscus            | 10.27      | 20      | 4.59        |      |
| Sepia officinalis hierredda    | 8.13       | 33      | 3.64        | 4226 |
| Syacium micrurum               | 4.20       | 193     | 1.88        |      |
| Dentex congoensis              | 4.07       | 340     | 1.82        | 4228 |
| Fistularia petimba             | 3.93       | 7       | 1.76        |      |
| Chilomycterus spinosus mauret. | 2.53       | 13      | 1.13        |      |
| Citharus linguatula            | 2.47       | 107     | 1.10        |      |
| Alloteuthis africana           | 2.13       | 2013    | 0.95        |      |
| Lagocephalus laevigatus        | 0.73       | 13      | 0.33        |      |
| Serranus accraensis            | 0.27       | 7       | 0.12        |      |
| Microchirus frechkopi          | 0.20       | 13      | 0.09        |      |
| Fistularia tabacaria           | 0.20       | 33      | 0.09        |      |
| Saurida brasiliensis           | 0.13       | 20      | 0.06        |      |
| Decapterus punctatus           | 0.07       | 7       | 0.03        |      |
| Total                          | 223.61     |         | 100.00      |      |

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Dentex congoensis              | 121.57     | 3699    | 35.00       | 4244 |
| Dactylopterus volitans         | 54.62      | 37      | 15.72       |      |
| Brachydeuterus auritus         | 42.46      | 6989    | 12.22       | 4246 |
| Pagellus bellottii             | 36.58      | 319     | 10.53       | 4245 |
| Alloteuthis africana           | 17.30      | 9579    | 4.98        |      |
| Fistularia petimba             | 11.05      | 25      | 3.18        | 4247 |
| Citharus linguatula            | 10.92      | 348     | 3.14        |      |
| Sepia officinalis hierredda    | 10.43      | 199     | 3.00        |      |
| Pagrus caeruleostictus         | 8.28       | 17      | 2.38        |      |
| Epinephelus aeneus             | 6.17       | 2       | 1.78        |      |
| Priacanthus arenatus           | 5.88       | 17      | 1.69        |      |
| Lepidotrigla cadmani           | 4.72       | 99      | 1.36        |      |
| Dentex angolensis              | 3.52       | 8       | 1.01        |      |
| Chilomycterus spinosus mauret. | 2.52       | 25      | 0.73        |      |
| Saurida brasiliensis           | 2.48       | 637     | 0.71        |      |
| Syacium micrurum               | 2.15       | 37      | 0.62        |      |
| Torpedo torpedo                | 1.78       | 8       | 0.51        |      |
| Lepidotrigla carolae           | 1.24       | 25      | 0.36        |      |
| Pseudupeneus prayensis         | 1.08       | 8       | 0.31        |      |
| Brotula barbata                | 0.83       | 4       | 0.24        |      |
| Lagocephalus laevigatus        | 0.58       | 8       | 0.17        |      |
| Decapterus punctatus           | 0.58       | 17      | 0.17        |      |
| J E L Y F I S H                | 0.33       | 4       | 0.09        |      |
| Bathygobius paganellus         | 0.17       | 29      | 0.05        |      |
| Zeus faber                     | 0.12       | 4       | 0.03        |      |
| Ariomma bondi                  | 0.04       | 4       | 0.01        |      |
| Total                          | 347.40     |         | 99.99       |      |

PROJECT STATION: 981  
 DATE: 28/ 6/05 GEAR TYPE: FT No: 1 POSITION: Lat N 2 Long E 629  
 start stop duration  
 TIME :20:13:46 20:47:24 31 (min) Purpose code: 1  
 LOG :7755.09 7756.91 1.82 Area code : 8  
 FDEPTH: 10 10 GearCond.code:  
 BDEPTH: 77 76 Validity code:  
 Towing dir: 180ø Wire out: 150 m Speed: 35 kn\*10  
 Sorted: 95 Kg Total catch: 94.94 CATCH/HOUR: 183.75

PROJECT STATION: 984  
 DATE: 29/ 6/05 GEAR TYPE: BT No:14 POSITION: Lat N 7 Long E 641  
 start stop duration  
 TIME :08:06:45 08:20:38 14 (min) Purpose code: 3  
 LOG :7822.48 7823.11 0.44 Area code : 8  
 FDEPTH: 56 53 GearCond.code: 9  
 BDEPTH: 56 53 Validity code: 1  
 Towing dir: 35ø Wire out: 200 m Speed: 300 kn\*10  
 Sorted: 999 Kg Total catch: 1059.75 CATCH/HOUR: 4541.79

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Sardinella maderensis     | 71.23      | 5874    | 38.76       | 4232 |
| Acanthurus monroviae      | 39.87      | 77      | 21.70       | 4233 |
| Apsilus fuscus            | 35.46      | 91      | 19.30       | 4236 |
| Lutjanus fulgens          | 13.97      | 43      | 7.60        | 4238 |
| MYCTOPHIDAE               | 12.54      | 13169   | 6.82        |      |
| Decapterus macarellus     | 2.77       | 12      | 1.51        | 4237 |
| Selar crumenophthalmus    | 2.13       | 8       | 1.16        | 4234 |
| Caranx crysos             | 0.95       | 2       | 0.52        |      |
| Ornithoteuthis antillarum | 0.83       | 43      | 0.45        |      |
| Promethichthys prometheus | 0.68       | 39      | 0.37        |      |
| Euthynnus alletteratus    | 0.68       | 2       | 0.37        |      |
| Decapterus punctatus      | 0.66       | 72      | 0.36        | 4235 |
| Saurida brasiliensis      | 0.48       | 151     | 0.26        |      |
| PARALEPIDIDAE             | 0.45       | 77      | 0.24        |      |
| Priacanthus cruentatus    | 0.39       | 4       | 0.21        |      |
| Alloteuthis africana      | 0.31       | 155     | 0.17        |      |
| Illex coindetii           | 0.17       | 2       | 0.09        |      |
| Chaetodon robustus        | 0.08       | 2       | 0.04        |      |
| Lethrinus atlanticus      | 0.04       | 2       | 0.02        |      |
| Lagocephalus laevigatus   | 0.04       | 10      | 0.02        |      |
| GOBIIDAE                  | 0.02       | 2       | 0.01        |      |
| Apsilus fuscus            | 0.02       | 2       | 0.01        |      |
| Total                     | 183.77     |         | 99.99       |      |

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Lutjanus fulgens               | 4388.57    | 9874    | 96.63       | 4248 |
| Pomadourus incisus             | 37.11      | 381     | 0.82        | 4250 |
| Paranthias furcifer            | 23.01      | 167     | 0.51        | 4252 |
| Pagellus bellottii             | 21.56      | 231     | 0.47        | 4254 |
| Dactylopterus volitans         | 15.69      | 90      | 0.35        | 4249 |
| Sepia officinalis hierredda    | 14.40      | 86      | 0.32        |      |
| Pseudupeneus prayensis         | 8.14       | 124     | 0.18        | 4253 |
| Alloteuthis africana           | 5.79       | 2824    | 0.13        |      |
| Priacanthus arenatus           | 5.23       | 17      | 0.12        |      |
| Syacium micrurum               | 4.93       | 51      | 0.11        |      |
| Pagrus caeruleostictus         | 4.50       | 47      | 0.10        | 4255 |
| Apsilus fuscus                 | 3.94       | 26      | 0.09        |      |
| Decapterus punctatus           | 3.09       | 60      | 0.07        | 4251 |
| Chilomycterus spinosus mauret. | 2.40       | 30      | 0.05        |      |
| Brachydeuterus auritus         | 0.90       | 146     | 0.02        |      |
| Citharus linguatula            | 0.73       | 39      | 0.02        |      |
| Seriola fasciata               | 0.69       | 4       | 0.02        |      |
| Caranx hippos                  | 0.69       | 4       | 0.02        |      |
| Fistularia petimba             | 0.17       | 4       |             |      |
| Rypticus saponaceus            | 0.13       | 4       |             |      |
| Lagocephalus laevigatus        | 0.13       | 4       |             |      |
| Total                          | 4541.80    |         | 100.03      |      |

PROJECT STATION: 985  
 DATE:29/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 13  
 start stop duration Long E 646  
 TIME :09:53:10 10:18:26 25 (min) Purpose code: 3  
 LOG :7834.74 7836.06 1.31 Area code : 8  
 FDEPTH: 53 51 GearCond.code:  
 BDEPTH: 53 51 Validity code:  
 Towing dir: 210° Wire out: 180 m Speed: 31 kn\*10  
 Sorted: 315 Kg Total catch: 318.93 CATCH/HOUR: 765.43

PROJECT:G3 PROJECT STATION: 228  
 DATE:30/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 53  
 start stop duration Long E 903  
 TIME :09:25:30 09:55:21 30 (min) Purpose code: 3  
 LOG :8022.00 8023.54 1.53 Area code : 8  
 FDEPTH: 67 65 GearCond.code:  
 BDEPTH: 67 65 Validity code:  
 Towing dir: 170° Wire out: 220 m Speed: 30 kn\*10  
 Sorted: 73 Kg Total catch: 199.17 CATCH/HOUR: 398.34

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Dactylopterus volitans         | 523.92     | 2712    | 68.45       | 4261 |
| Pagellus bellottii             | 77.28      | 758     | 10.10       | 4256 |
| Pagrus caeruleostictus         | 53.28      | 84      | 6.96        | 4258 |
| Epinephelus aeneus             | 26.16      | 10      | 3.42        | 4260 |
| Chilomycterus spinosus mauret. | 16.30      | 142     | 2.13        |      |
| Syacium micrurum               | 16.08      | 161     | 2.10        | 4263 |
| Sepia officinalis hierredda    | 11.76      | 96      | 1.54        | 4265 |
| Alloteuthis africana           | 9.36       | 4414    | 1.22        |      |
| Pseudupeneus prayensis         | 6.00       | 55      | 0.78        | 4257 |
| Fistularia petimba             | 5.52       | 19      | 0.72        |      |
| Lethrinus atlanticus           | 4.54       | 7       | 0.59        | 4262 |
| Lutjanus fulgens               | 4.27       | 10      | 0.56        | 4264 |
| Acanthostracion quadricornis   | 3.19       | 22      | 0.42        |      |
| Rypticus saponaceus            | 2.95       | 14      | 0.39        | 4259 |
| Aluterus blankerti             | 1.94       | 5       | 0.25        |      |
| Zeus faber                     | 1.44       | 2       | 0.19        |      |
| Arnoglossus imperialis         | 0.96       | 199     | 0.13        |      |
| Decapterus punctatus           | 0.24       | 89      | 0.03        |      |
| Pomadourus incisus             | 0.24       | 2       | 0.03        |      |
| Total                          | 765.43     |         | 100.01      |      |

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Dentex congoensis              | 146.74     | 3850    | 36.84       | 374  |
| Arionna bondi                  | 129.04     | 3512    | 32.39       | 371  |
| Sardinella aurita              | 36.02      | 594     | 9.04        | 369  |
| Dentex angolensis              | 15.94      | 148     | 4.00        | 375  |
| Priacanthus arenatus           | 12.54      | 170     | 3.15        |      |
| Decapterus punctatus           | 11.50      | 258     | 2.89        | 372  |
| Lepidotrigla cadmani           | 7.42       | 236     | 1.86        |      |
| Pseudupeneus prayensis         | 5.34       | 50      | 1.34        | 370  |
| Pagellus bellottii             | 4.58       | 72      | 1.15        | 373  |
| Sepia officinalis hierredda    | 4.40       | 160     | 1.10        |      |
| Selar crumenophthalmus         | 3.24       | 82      | 0.81        |      |
| Raja miraletus                 | 3.14       | 6       | 0.79        |      |
| Rhinobatos albomaculatus       | 2.60       | 2       | 0.65        |      |
| Lepidotrigla carolae           | 2.36       | 126     | 0.59        |      |
| Arnoglossus imperialis         | 2.20       |         | 0.55        |      |
| Starfish                       | 1.98       | 126     | 0.50        |      |
| Chilomycterus spinosus mauret. | 1.66       | 6       | 0.42        |      |
| Lophiodes kempii               | 1.50       | 12      | 0.38        |      |
| Dactylopterus volitans         | 0.94       | 6       | 0.24        |      |
| Grammoplites gruvelli          | 0.82       | 28      | 0.21        |      |
| Fistularia petimba             | 0.82       | 12      | 0.21        |      |
| Ilex coindetii                 | 0.78       | 12      | 0.20        |      |
| Squatina oculata               | 0.70       | 2       | 0.18        |      |
| Citharus linguatula            | 0.50       | 38      | 0.13        |      |
| Sphoeroides marmoratus         | 0.50       | 12      | 0.13        |      |
| Saurida brasiliensis           | 0.38       | 22      | 0.10        |      |
| Setarches guentheri            | 0.38       | 6       | 0.10        |      |
| Pecten jacobus                 | 0.32       | 16      | 0.08        |      |
| Total                          | 398.34     |         | 100.03      |      |

PROJECT STATION: 986  
 DATE:29/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 15  
 start stop duration Long E 647  
 TIME :12:49:39 13:12:21 23 (min) Purpose code: 3  
 LOG :7845.98 7847.13 1.13 Area code : 8  
 FDEPTH: 73 73 GearCond.code:  
 BDEPTH: 73 73 Validity code:  
 Towing dir: 190° Wire out: 280 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 63.75 CATCH/HOUR: 166.30

PROJECT:G3 PROJECT STATION: 229  
 DATE:30/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 53  
 start stop duration Long E 909  
 TIME :11:28:04 11:58:19 30 (min) Purpose code: 3  
 LOG :8032.83 8034.37 1.53 Area code : 8  
 FDEPTH: 45 46 GearCond.code:  
 BDEPTH: 45 46 Validity code:  
 Towing dir: 170° Wire out: 190 m Speed: 30 kn\*10  
 Sorted: 29 Kg Total catch: 58.60 CATCH/HOUR: 117.20

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Sea cucumbers                  | 46.96      | 107     | 28.24       |      |
| Dactylopterus volitans         | 38.61      | 37      | 23.22       | 4268 |
| Pagellus bellottii             | 37.57      | 198     | 22.59       | 4266 |
| Alloteuthis africana           | 8.35       | 4610    | 5.02        |      |
| Dentex macropthalmus           | 7.59       | 39      | 4.56        | 4271 |
| Syacium micrurum               | 5.56       | 183     | 3.34        | 4272 |
| Pagrus caeruleostictus         | 4.02       | 10      | 2.42        | 4267 |
| Aluterus blankerti             | 3.83       | 5       | 2.30        |      |
| Chilomycterus spinosus mauret. | 3.76       | 18      | 2.26        |      |
| Zeus faber                     | 2.66       | 3       | 1.60        |      |
| Sepia officinalis hierredda    | 2.03       | 29      | 1.22        | 4270 |
| Lagocephalus laevigatus        | 1.75       | 8       | 1.05        |      |
| Echelus myrus                  | 0.89       | 3       | 0.54        |      |
| Pseudupeneus prayensis         | 0.83       | 16      | 0.50        | 4269 |
| Arnoglossus imperialis         | 0.63       | 50      | 0.38        |      |
| Fistularia petimba             | 0.50       | 3       | 0.30        |      |
| Arnoglossus blachei *          | 0.42       | 57      | 0.25        |      |
| Priacanthus arenatus           | 0.37       | 3       | 0.22        |      |
| Total                          | 166.33     |         | 100.01      |      |

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Raja miraletus              | 15.24      | 132     | 13.00       |      |
| Pagellus bellottii          | 14.80      | 136     | 12.63       | 378  |
| Penaeus notialis            | 14.72      | 544     | 12.56       | 382  |
| Sepia officinalis hierredda | 11.68      | 188     | 9.97        | 381  |
| Dactylopterus volitans      | 7.60       | 36      | 6.48        | 376  |
| Epinephelus aeneus          | 6.40       | 16      | 5.46        | 377  |
| Fistularia petimba          | 5.96       | 44      | 5.09        |      |
| Lagocephalus laevigatus     | 5.72       | 12      | 4.88        |      |
| Priacanthus arenatus        | 5.60       | 32      | 4.78        |      |
| Balistes capriscus          | 4.00       | 12      | 3.41        |      |
| Saurida brasiliensis        | 3.76       | 782     | 3.21        |      |
| Serranus accraensis         | 3.28       | 126     | 2.80        |      |
| Syacium micrurum            | 2.12       | 20      | 1.81        |      |
| Grammoplites gruvelli       | 2.12       | 144     | 1.81        |      |
| Cephalopholis taeniops      | 2.04       | 8       | 1.74        | 380  |
| Cymbium sp.                 | 2.00       | 12      | 1.71        |      |
| Dicologlossa cuneata        | 1.80       | 20      | 1.54        |      |
| Sphoeroides marmoratus      | 1.44       | 60      | 1.23        |      |
| Calappa pelii               | 1.16       | 40      | 0.99        |      |
| Citharus linguatula         | 1.12       | 60      | 0.96        |      |
| Pseudupeneus prayensis      | 1.00       | 12      | 0.85        | 379  |
| Alloteuthis africana        | 0.80       | 224     | 0.68        |      |
| Liocarcinus corrugatus      | 0.64       | 92      | 0.55        |      |
| Boops boops                 | 0.60       | 56      | 0.51        |      |
| Pagrus caeruleostictus      | 0.60       | 4       | 0.51        |      |
| Todaropsis eblanae          | 0.36       | 4       | 0.31        |      |
| C R A B S                   | 0.24       | 20      | 0.20        |      |
| Arnoglossus imperialis      | 0.24       | 56      | 0.20        |      |
| Zeus faber                  | 0.08       | 4       | 0.07        |      |
| Lepidotrigla carolae        | 0.04       | 8       | 0.03        |      |
| Antennarius occidentalis    | 0.04       | 6       | 0.03        |      |
| Total                       | 117.20     |         | 100.00      |      |

PROJECT:G3 PROJECT STATION: 227  
 DATE:30/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 56  
 start stop duration Long E 904  
 TIME :07:11:37 07:34:17 23 (min) Purpose code: 3  
 LOG :8005.21 8006.46 1.17 Area code : 4  
 FDEPTH: 64 60 GearCond.code:  
 BDEPTH: 64 60 Validity code:  
 Towing dir: 100° Wire out: 220 m Speed: 32 kn\*10  
 Sorted: 70 Kg Total catch: 196.08 CATCH/HOUR: 511.51

PROJECT:G3 PROJECT STATION: 230  
 DATE:30/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 51  
 start stop duration Long E 913  
 TIME :13:43:53 14:13:24 30 (min) Purpose code: 3  
 LOG :8043.48 8045.01 1.53 Area code : 8  
 FDEPTH: 20 23 GearCond.code:  
 BDEPTH: 20 23 Validity code:  
 Towing dir: 0 Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 25 Kg Total catch: 25.41 CATCH/HOUR: 50.82

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Arionna bondi                  | 227.27     | 4278    | 44.43       | 364  |
| Decapterus punctatus           | 108.94     | 2418    | 21.30       | 365  |
| Dentex congoensis              | 69.03      | 1526    | 13.50       | 367  |
| Priacanthus arenatus           | 22.93      | 282     | 4.48        |      |
| Dentex angolensis              | 18.94      | 172     | 3.70        | 362  |
| Pagellus bellottii             | 17.06      | 235     | 3.34        | 366  |
| Epinephelus aeneus             | 8.09       | 16      | 1.58        | 368  |
| Lepidotrigla cadmani           | 7.90       | 203     | 1.54        |      |
| Sardinella aurita              | 6.81       | 94      | 1.33        | 363  |
| Citharus linguatula            | 3.29       | 227     | 0.64        |      |
| Fistularia petimba             | 3.13       | 21      | 0.61        |      |
| Raja miraletus                 | 2.92       | 10      | 0.57        |      |
| Pseudupeneus prayensis         | 2.27       | 23      | 0.44        |      |
| Chilomycterus spinosus mauret. | 1.90       | 10      | 0.37        |      |
| Selar crumenophthalmus         | 1.72       | 23      | 0.34        |      |
| Dactylopterus volitans         | 1.51       | 8       | 0.30        |      |
| Sepia officinalis hierredda    | 1.49       | 78      | 0.29        |      |
| Lepidotrigla carolae           | 1.25       | 47      | 0.24        |      |
| Scorpaena normani              | 1.07       | 3       | 0.21        |      |
| Brotula barbata                | 1.02       | 3       | 0.20        |      |
| Arnoglossus imperialis         | 0.86       | 235     | 0.17        |      |
| Sphoeroides marmoratus         | 0.63       | 16      | 0.12        |      |
| Microchirus frechkopi          | 0.39       | 8       | 0.08        |      |
| Boops boops                    | 0.31       | 8       | 0.06        |      |
| Alloteuthis africana           | 0.23       | 110     | 0.04        |      |
| Sea urchins                    | 0.16       | 16      | 0.03        |      |
| Pecten jacobus                 | 0.16       | 16      | 0.03        |      |
| Cymbium sp.                    | 0.16       | 16      | 0.03        |      |
| Biennius normani               | 0.08       | 8       | 0.02        |      |
| Total                          | 511.52     |         | 99.99       |      |

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Ephippion guttifer           | 13.44      | 22      | 26.45       |      |
| Scomberomorus tritor         | 12.84      | 10      | 25.27       | 383  |
| Sepia officinalis hierredda  | 7.74       | 24      | 15.23       | 387  |
| Balistes punctatus           | 2.96       | 6       | 5.82        |      |
| Acanthostracion quadricornis | 2.42       | 8       | 4.76        |      |
| Albula vulpes                | 2.02       | 4       | 3.97        |      |
| Lagocephalus laevigatus      | 1.78       | 4       | 3.50        |      |
| Sphyræna afra                | 1.48       | 2       | 2.91        |      |
| Syacium micrurum             | 1.32       | 12      | 2.60        | 386  |
| Pagrus caeruleostictus       | 1.30       | 12      | 2.56        | 384  |
| Psettodes belcheri           | 0.62       | 2       | 1.22        |      |
| Balistes capriscus           | 0.60       | 2       | 1.18        |      |
| Fistularia petimba           | 0.56       | 4       | 1.10        |      |
| Alloteuthis africana         | 0.34       | 118     | 0.67        |      |
| Epinephelus aeneus           | 0.32       | 2       | 0.63        | 385  |
| Euclinostomus melanopterus   | 0.30       | 4       | 0.59        |      |
| Starfish                     | 0.22       | 8       | 0.43        |      |
| Grammoplites gruvelli        | 0.14       | 6       | 0.28        |      |
| Dicologlossa cuneata         | 0.14       | 2       | 0.28        |      |
| Citharus linguatula          | 0.10       | 4       | 0.20        |      |
| C R A B S                    | 0.06       | 6       | 0.12        |      |
| Saurida brasiliensis         | 0.04       | 10      | 0.08        |      |
| Antennarius occidentalis     | 0.04       | 4       | 0.08        |      |
| Decapterus sp.               | 0.02       | 2       | 0.04        |      |
| Sphoeroides marmoratus       | 0.02       | 2       | 0.04        |      |
| Total                        | 50.82      |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 231  
 DATE:30/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 38  
 start stop duration Long E 910  
 TIME :16:46:33 17:09:42 23 (min) Purpose code: 3  
 LOG :8068.34 8069.54 1.20 Area code : 8  
 FDEPTH: 33 34 GearCond.code:  
 BDEPTH: 33 34 Validity code:  
 Towing dir: 170° Wire out: 170 m Speed: 30 kn\*10  
 Sorted: 83 Kg Total catch: 82.99 CATCH/HOUR: 216.50

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Pagellus bellottii             | 88.85      | 775     | 41.04       | 391  |
| J E L L Y F I S H              | 37.30      | 770     | 17.23       |      |
| Sepia officinalis hierredda    | 20.30      | 55      | 9.38        |      |
| Sphyræna guachancho            | 15.78      | 44      | 7.29        | 388  |
| Raja miraletus                 | 8.71       | 31      | 4.02        |      |
| Pseudopeneus prayensis         | 7.77       | 55      | 3.59        | 389  |
| Syacium micrurum               | 6.31       | 125     | 2.91        |      |
| Fistularia petimba             | 5.06       | 42      | 2.34        |      |
| Balistes capricus              | 4.54       | 21      | 2.10        |      |
| Grammolites gruvell            | 3.42       | 196     | 1.58        |      |
| Pagrus caeruleostictus         | 3.08       | 42      | 1.42        | 390  |
| Torpedo torpedo                | 2.06       | 5       | 0.95        |      |
| Lethrinus atlanticus           | 2.06       | 10      | 0.95        |      |
| Chilomycterus spinosus mauret. | 1.67       | 16      | 0.77        |      |
| Caranx senegalus               | 1.25       | 3       | 0.58        |      |
| Epinephelus aeneus             | 1.20       | 3       | 0.55        |      |
| Spherooides marmoratus         | 0.99       | 44      | 0.46        |      |
| Selene dorsalis                | 0.94       | 5       | 0.43        |      |
| Dactylopterus volitans         | 0.89       | 8       | 0.41        |      |
| Calappa rubroguttata           | 0.83       | 10      | 0.38        |      |
| Aluterus heudelotii            | 0.81       | 5       | 0.37        |      |
| Lagocephalus laevigatus        | 0.81       | 3       | 0.37        |      |
| Penaeus notialis               | 0.70       | 26      | 0.32        |      |
| Bathysolea sp.                 | 0.26       | 3       | 0.12        |      |
| Antennarius occidentalis       | 0.26       | 16      | 0.12        |      |
| Saurida brasiliensis           | 0.18       | 94      | 0.08        |      |
| Serranus accraensis            | 0.16       | 16      | 0.07        |      |
| Paromola cuvieri               | 0.13       | 13      | 0.06        |      |
| Alloteuthis africana           | 0.08       | 23      | 0.04        |      |
| Decapterus punctatus           | 0.05       | 5       | 0.02        |      |
| Lophiodes kempi                | 0.05       | 3       | 0.02        |      |
| C R A B S                      | 0.03       | 10      | 0.01        |      |
| Calappa-like with spines       | 0.03       | 10      | 0.01        |      |
| Scyllarides herklotsii         | 0.03       | 10      | 0.01        |      |
| Total                          | 216.59     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 233  
 DATE:30/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 37  
 start stop duration Long E 854  
 TIME :21:59:14 22:29:00 30 (min) Purpose code: 3  
 LOG :8098.93 8100.45 1.51 Area code : 8  
 FDEPTH: 257 260 GearCond.code:  
 BDEPTH: 257 260 Validity code:  
 Towing dir: 180° Wire out: 750 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 94.81 CATCH/HOUR: 189.62

| SPECIES                         | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------------|------------|---------|-------------|------|
|                                 | weight     | numbers |             |      |
| Epinephelus goreensis           | 53.60      | 4       | 28.27       | 400  |
| Parasudis fraser-bruenneri      | 30.90      | 4106    | 16.30       |      |
| Setarches guentheri             | 15.48      | 576     | 8.16        |      |
| Peristedion cataphractum        | 9.70       | 352     | 5.12        |      |
| Trigla lyra                     | 9.16       | 138     | 4.83        | 396  |
| Malacocephalus occidentalis     | 7.44       | 102     | 3.92        |      |
| Shrimps, small, non comm.       | 7.02       | 2916    | 3.70        |      |
| Illex coindetii                 | 6.72       | 70      | 3.54        | 398  |
| Lophiodes kempi                 | 6.12       | 48      | 3.23        | 394  |
| Dentex angolensis               | 5.64       | 28      | 2.97        | 395  |
| Cyttopsis roseus                | 4.08       | 160     | 2.15        |      |
| Squalus megalops                | 3.36       | 12      | 1.77        |      |
| Synagrops microlepis            | 3.18       | 228     | 1.68        |      |
| Parapenaeus longirostris        | 3.16       | 738     | 1.67        |      |
| Calappa-like with spines        | 3.00       | 106     | 1.58        |      |
| Physiculus huloti               | 2.56       | 60      | 1.35        |      |
| Chascanopsetta lugubris         | 2.28       | 28      | 1.20        |      |
| Zenion longipinnis              | 2.08       | 316     | 1.10        |      |
| Brotula barbata                 | 1.78       | 12      | 0.94        | 397  |
| MYCTOPHIDAE                     | 1.62       |         | 0.85        |      |
| Pterothrissus bellocci          | 1.54       | 12      | 0.81        |      |
| Cone gastropod                  | 1.44       | 40      | 0.76        |      |
| Antigonia capros                | 1.36       | 168     | 0.72        |      |
| Todaropsis eblanae              | 1.06       | 24      | 0.56        | 399  |
| Aulopus cadenati                | 0.84       | 4       | 0.44        |      |
| Bembrops heterurus              | 0.70       | 6       | 0.37        |      |
| Coelioxinchus coelori. geronimo | 0.64       | 16      | 0.34        |      |
| Xenomystax sp.                  | 0.54       | 18      | 0.28        |      |
| Monolele microstoma             | 0.46       | 70      | 0.24        |      |
| Hypoclydonia bella              | 0.42       | 10      | 0.22        |      |
| Synchiropus phaeton             | 0.40       | 10      | 0.21        |      |
| Priacanthus arenatus            | 0.36       | 4       | 0.19        |      |
| Ariomma bondi                   | 0.34       | 6       | 0.18        |      |
| Solenocera africana             | 0.34       | 60      | 0.18        |      |
| Goneplax sp.                    | 0.12       | 4       | 0.06        |      |
| Citharus linguatula             | 0.10       | 6       | 0.05        |      |
| Promethichthys prometheus       | 0.04       | 4       | 0.02        |      |
| Polymetme corythaeola           | 0.04       | 4       | 0.02        |      |
| Total                           | 189.62     |         | 99.98       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 232  
 DATE:30/ 6/05 GEAR TYPE: BT No:14 POSITION:Lat N 39  
 start stop duration Long E 858  
 TIME :19:33:20 20:03:24 30 (min) Purpose code: 3  
 LOG :8088.25 8089.81 1.55 Area code : 8  
 FDEPTH: 125 121 GearCond.code:  
 BDEPTH: 125 121 Validity code:  
 Towing dir: 190° Wire out: 380 m Speed: 31 kn\*10  
 Sorted: 63 Kg Total catch: 126.26 CATCH/HOUR: 252.52

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex congoensis           | 80.80      | 1890    | 32.00       | 393  |
| Diaphus sp.                 | 44.40      | 9556    | 17.58       |      |
| Scorpaena normani           | 30.96      | 774     | 12.26       |      |
| Sepia officinalis hierredda | 10.32      | 192     | 4.09        |      |
| Dentex angolensis           | 10.12      | 104     | 4.01        | 392  |
| Citharus linguatula         | 8.84       | 3528    | 3.50        |      |
| Illex coindetii             | 7.84       | 128     | 3.10        |      |
| Lepidotrigla cadmani        | 7.76       | 180     | 3.07        |      |
| Raja miraletus              | 5.24       | 16      | 2.08        |      |
| Hoplunnis punctata          | 4.96       | 136     | 1.96        |      |
| Squalus blainvilliei        | 3.44       | 8       | 1.36        |      |
| Priacanthus arenatus        | 3.44       | 28      | 1.36        |      |
| Antigonia capros            | 3.40       | 140     | 1.35        |      |
| Ariomma bondi               | 3.12       | 64      | 1.24        |      |
| Squatina oculata            | 3.04       | 4       | 1.20        |      |
| Synagrops microlepis        | 2.64       | 116     | 1.05        |      |
| Lepidotrigla carolae        | 2.40       | 96      | 0.95        |      |
| Pterothrissus bellocci      | 1.96       | 16      | 0.78        |      |
| Dentex angolensis           | 1.92       | 32      | 0.76        |      |
| Brotula barbata             | 1.88       | 12      | 0.74        |      |
| Plesionika edwardsii        | 1.76       | 48      | 0.70        |      |
| Aristeus varidens           | 1.72       | 52      | 0.68        |      |
| Spicara alta                | 1.64       | 24      | 0.65        |      |
| Syacium micrurum            | 1.56       | 236     | 0.62        |      |
| C R A B S                   | 1.36       | 40      | 0.54        |      |
| Fistularia petimba          | 1.16       | 8       | 0.46        |      |
| Peristedion cataphractum    | 1.08       | 16      | 0.43        |      |
| Physiculus huloti           | 0.96       | 40      | 0.38        |      |
| Aulopus cadenati            | 0.96       | 24      | 0.38        |      |
| Dactylopterus volitans      | 0.76       | 4       | 0.30        |      |
| Uroconger syringinus        | 0.36       | 4       | 0.14        |      |
| Paraconger notialis         | 0.24       | 12      | 0.10        |      |
| Aluterus heudelotii         | 0.16       | 4       | 0.06        |      |
| Microchirus frechkopi       | 0.16       | 8       | 0.06        |      |
| Serranus africana           | 0.08       | 4       | 0.03        |      |
| Promethichthys prometheus   | 0.08       | 4       | 0.03        |      |
| Total                       | 252.52     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 234  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 26  
 start stop duration Long E 848  
 TIME :02:22:06 02:40:20 18 (min) Purpose code: 3  
 LOG :8130.20 8131.16 0.94 Area code : 8  
 FDEPTH: 560 569 GearCond.code:  
 BDEPTH: 560 569 Validity code:  
 Towing dir: 360° Wire out:1300 m Speed: 30 kn\*10  
 Sorted: 8 Kg Total catch: 7.89 CATCH/HOUR: 26.30

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| MYCTOPHIDAE                | 5.93       | 3857    | 22.55       |      |
| Peristedion cataphractum   | 5.43       | 183     | 20.65       |      |
| J E L L Y F I S H          | 5.00       |         | 19.01       |      |
| Shrimps, small, non comm.  | 2.40       | 3067    | 9.13        |      |
| Todaropsis eblanae         | 2.00       | 23      | 7.60        |      |
| Polymetme corythaeola      | 1.00       | 57      | 3.80        |      |
| Gephyroberyx darwini       | 0.83       | 3       | 3.16        |      |
| Parasudis fraser-bruenneri | 0.60       | 120     | 2.28        |      |
| Acanthephyra sp.           | 0.53       | 193     | 2.02        |      |
| Cone gastropod             | 0.47       | 13      | 1.79        |      |
| Deepwater fish mixture     | 0.30       |         | 1.14        |      |
| Cyttopsis roseus           | 0.27       | 7       | 1.03        |      |
| MELANOSTOMIATIDAE          | 0.27       | 3       | 1.03        |      |
| PASIPHAETIDAE              | 0.27       | 30      | 1.03        |      |
| ASTRONESTHIDAE             | 0.23       | 7       | 0.87        |      |
| Leptocephalus              | 0.13       | 10      | 0.49        |      |
| Setarches guentheri        | 0.13       | 3       | 0.49        |      |
| Hoplunnis punctata         | 0.07       | 13      | 0.27        |      |
| XXXXX01                    | 0.07       | 3       | 0.27        |      |
| Microchirus wittei         | 0.07       | 3       | 0.27        |      |
| Argyrops leucis sladeni    | 0.07       | 37      | 0.27        |      |
| Chauliodus minimus         | 0.03       | 3       | 0.11        |      |
| Ectroposbastes imus        | 0.03       | 7       | 0.11        |      |
| Promethichthys prometheus  | 0.03       | 3       | 0.11        |      |
| CARISTIIDAE                | 0.03       | 3       | 0.11        |      |
| PARALEPIDIDAE              | 0.03       | 3       | 0.11        |      |
| C R A B S                  | 0.03       | 3       | 0.11        |      |
| Zenion longipinnis         | 0.03       | 7       | 0.11        |      |
| Total                      | 26.28      |         | 99.92       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 235  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 23  
 start stop duration Long E 853  
 TIME :05:21:00 05:51:00 30 (min) Purpose code: 3  
 LOG :8147.54 8149.12 1.57 Area code : 8  
 FDEPTH: 226 237 GearCond.code:  
 BDEPTH: 226 237 Validity code:  
 Towing dir: 195° Wire out: 660 m Speed: 31 kn\*10

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 238  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 21  
 start stop duration Long E 914  
 TIME :11:38:17 12:07:55 30 (min) Purpose code: 3  
 LOG :8187.44 8188.99 1.55 Area code : 8  
 FDEPTH: 20 25 GearCond.code:  
 BDEPTH: 20 25 Validity code:  
 Towing dir: 175° Wire out: 120 m Speed: 30 kn\*10

Sorted: 51 Kg Total catch: 151.55 CATCH/HOUR: 303.10

Sorted: 51 Kg Total catch: 50.95 CATCH/HOUR: 101.90

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Sea cucumbers             | 99.30      | 400     | 32.76       |      |
| Hypoclydonia bella        | 44.20      | 2150    | 14.58       |      |
| Squatina oculata          | 37.60      | 60      | 12.41       |      |
| Parasudis fraser-brueneri | 22.50      | 390     | 7.42        |      |
| Todaropsis eblanae        | 13.80      | 170     | 4.55        |      |
| Synagrops microlepis      | 13.60      | 1860    | 4.49        |      |
| Illex coindetii           | 12.10      | 120     | 3.99        |      |
| Torpedo nobiliana         | 9.20       | 10      | 3.04        |      |
| Lophiodes kempi           | 8.70       | 70      | 2.87        |      |
| Cruriraja parcomaculata   | 7.60       | 10      | 2.51        |      |
| Peristedion cataphractum  | 7.50       | 320     | 2.47        |      |
| Cyttopsis roseus          | 6.90       | 1080    | 2.28        |      |
| Lepidotrigla cadmani      | 5.30       | 120     | 1.75        |      |
| Bembrops greyi            | 5.30       | 90      | 1.75        |      |
| Raja straeleni            | 3.50       | 10      | 1.15        |      |
| Aulopus cadenati          | 3.00       | 30      | 0.99        |      |
| Calappa-like with spines  | 0.90       | 20      | 0.30        |      |
| Malacocephalus laevis     | 0.70       | 10      | 0.23        |      |
| Parapenaeus longirostris  | 0.60       | 230     | 0.20        |      |
| Dentex angolensis         | 0.40       | 20      | 0.13        |      |
| Monolele microstoma       | 0.40       | 40      | 0.13        |      |
| Total                     | 303.10     |         | 100.00      |      |

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Sepia officinalis hierredda    | 16.00      | 46      | 15.70       | 418  |
| Ephippion guttifer             | 15.20      | 8       | 14.92       |      |
| Lethrinus atlanticus           | 13.40      | 84      | 13.15       | 415  |
| Caranx senegallus              | 8.28       | 16      | 8.13        | 420  |
| Syacium micrurum               | 6.84       | 70      | 6.71        | 425  |
| Acanthostracion quadricornis   | 5.84       | 42      | 5.73        |      |
| Caranx crysos                  | 4.34       | 8       | 4.26        | 422  |
| Sphyræna guanchancho           | 4.14       | 12      | 4.06        | 424  |
| Brachydeuterus auritus         | 3.80       | 70      | 3.73        | 423  |
| Raja miraletus                 | 2.86       | 8       | 2.81        |      |
| Psettodes belcheri             | 2.64       | 4       | 2.59        |      |
| Epinephelus aeneus             | 2.52       | 16      | 2.47        | 417  |
| Eucinostomus melanopterus      | 2.50       | 54      | 2.45        |      |
| Selar crumenophthalmus         | 2.18       | 50      | 2.14        | 419  |
| Sardinella maderensis          | 1.48       | 12      | 1.45        | 421  |
| Rhinobatos albomaculatus       | 1.42       | 2       | 1.39        |      |
| Pagrus caeruleostictus         | 1.12       | 48      | 1.10        | 416  |
| Selene dorsalis                | 1.10       | 4       | 1.08        |      |
| Balistes caprisicus            | 0.88       | 4       | 0.86        |      |
| Chaetodipterus goreensis       | 0.82       | 6       | 0.80        |      |
| Aluterus blankerti             | 0.72       | 28      | 0.71        |      |
| Sphoeroides marmoratus         | 0.66       | 40      | 0.65        |      |
| Chilomycterus spinosus mauret. | 0.64       | 4       | 0.63        |      |
| Uranoscopus albesca            | 0.38       | 4       | 0.37        |      |
| Pagellus bellottii             | 0.34       | 4       | 0.33        |      |
| Penaeus notialis               | 0.28       | 10      | 0.27        |      |
| Priacanthus arenatus           | 0.28       | 2       | 0.27        |      |
| Antennarius occidentalis       | 0.28       | 6       | 0.27        |      |
| Scorpaena laevis               | 0.24       | 2       | 0.24        |      |
| Alloteuthis africana           | 0.22       | 62      | 0.22        |      |
| Grammolites gruvelli           | 0.20       | 32      | 0.20        |      |
| Citharus linguatula            | 0.20       | 14      | 0.20        |      |
| Microrhynchus frechkopi        | 0.04       | 4       | 0.04        |      |
| Penaeus kerathurus             | 0.04       | 2       | 0.04        |      |
| Dicologlossa hexopthalma       | 0.02       | 2       | 0.02        |      |
| Total                          | 101.90     |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 236  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 23  
 start stop duration Long E 859  
 TIME :07:31:28 08:01:15 30 (min) Purpose code: 3  
 LOG :8161.64 8163.24 1.60 Area code : 8  
 FDEPTH: 69 69 GearCond.code:  
 BDEPTH: 69 69 Validity code:  
 Towing dir: 180° Wire out: 220 m Speed: 31 kn\*10

Sorted: 70 Kg Total catch: 766.04 CATCH/HOUR: 1532.08

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sardinella aurita           | 482.68     | 11306   | 31.50       | 402  |
| Decapterus punctatus        | 476.52     | 9604    | 31.10       | 403  |
| Ariomma bondi               | 362.12     | 22770   | 23.64       | 404  |
| Dentex congoensis           | 108.02     | 3410    | 7.05        | 401  |
| Priacanthus arenatus        | 28.38      | 352     | 1.85        |      |
| Pagellus bellottii          | 13.20      | 330     | 0.86        | 405  |
| Scomberomorus tritor        | 11.88      | 88      | 0.78        |      |
| Lepidotrigla cadmani        | 9.46       | 330     | 0.62        |      |
| Dentex angolensis           | 6.60       | 88      | 0.43        |      |
| Sepia officinalis hierredda | 6.38       | 286     | 0.42        |      |
| Pseudupeneus prayensis      | 6.38       | 66      | 0.42        |      |
| Illex coindetii             | 5.06       | 220     | 0.33        |      |
| Lepidotrigla carolae        | 3.74       | 154     | 0.24        |      |
| Boops boops                 | 3.52       | 66      | 0.23        |      |
| Todaropsis eblanae          | 3.30       | 132     | 0.22        |      |
| Arnoeglossus imperialis     | 2.20       | 440     | 0.14        |      |
| Starfish                    | 1.10       | 2       | 0.07        |      |
| Peristedion cataphractum    | 0.44       | 22      | 0.03        |      |
| Sphoeroides marmoratus      | 0.44       | 22      | 0.03        |      |
| Blennius normani            | 0.44       | 44      | 0.03        |      |
| Citharus linguatula         | 0.22       | 22      | 0.01        |      |
| Total                       | 1532.08    |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 237  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 23  
 start stop duration Long E 908  
 TIME :09:48:23 10:04:13 16 (min) Purpose code: 3  
 LOG :8176.05 8176.88 0.84 Area code : 8  
 FDEPTH: 44 45 GearCond.code:  
 BDEPTH: 44 45 Validity code:  
 Towing dir: 180° Wire out: 160 m Speed: 31 kn\*10

Sorted: 32 Kg Total catch: 32.26 CATCH/HOUR: 120.98

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Penaeus notialis               | 15.79      | 649     | 13.05       | 406  |
| Priacanthus arenatus           | 14.18      | 116     | 11.72       | 407  |
| Grammolites gruvelli           | 13.50      | 1260    | 11.16       |      |
| Decapterus punctatus           | 11.21      | 233     | 9.27        | 411  |
| Citharus linguatula            | 9.45       | 1665    | 7.81        |      |
| Sepia officinalis hierredda    | 8.48       | 229     | 7.01        | 414  |
| Pagellus bellottii             | 7.50       | 289     | 6.20        | 409  |
| Serranus accraensis            | 6.86       | 285     | 5.67        |      |
| Sardinella aurita              | 6.04       | 120     | 4.99        | 412  |
| Saurida brasiliensis           | 4.20       | 1050    | 3.47        |      |
| Arnoeglossus imperialis        | 3.71       | 896     | 3.07        |      |
| Epinephelus aeneus             | 3.26       | 566     | 2.69        |      |
| Pseudupeneus prayensis         | 2.29       | 41      | 1.89        | 410  |
| Pagrus caeruleostictus         | 2.21       | 45      | 1.83        | 408  |
| Raja miraletus                 | 1.95       | 8       | 1.61        |      |
| Balistes caprisicus            | 1.58       | 4       | 1.31        |      |
| Sphoeroides marmoratus         | 1.46       | 120     | 1.21        |      |
| Syacium micrurum               | 0.90       | 8       | 0.74        |      |
| Brotula barbata                | 0.90       | 8       | 0.74        |      |
| Chilomycterus spinosus mauret. | 0.75       | 4       | 0.62        |      |
| Selene dorsalis                | 0.53       | 4       | 0.44        |      |
| Calappa pelii                  | 0.41       | 4       | 0.34        |      |
| Lophiodes kempi                | 0.38       | 30      | 0.31        |      |
| Sicyonia galeata               | 0.34       | 116     | 0.28        |      |
| Fistularia petimba             | 0.23       | 8       | 0.19        |      |
| Liocarcinus corrugatus         | 0.11       | 8       | 0.09        |      |
| Rypticus saponaceus            | 0.11       | 4       | 0.09        |      |
| Setarches guentheri            | 0.08       | 8       | 0.07        |      |
| SOLEIDAE                       | 0.04       | 11      | 0.03        |      |
| Total                          | 121.00     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 239  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 21  
 start stop duration Long E 912  
 TIME :15:10:15 15:40:24 30 (min) Purpose code: 3  
 LOG :8211.42 8212.97 1.55 Area code : 8  
 FDEPTH: 32 30 GearCond.code:  
 BDEPTH: 32 30 Validity code:  
 Towing dir: 180° Wire out: 160 m Speed: 30 kn\*10

Sorted: 26 Kg Total catch: 26.19 CATCH/HOUR: 52.38

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Pagrus caeruleostictus         | 16.96      | 68      | 32.38       | 427  |
| Balistes caprisicus            | 8.46       | 14      | 16.15       | 434  |
| Brachydeuterus auritus         | 7.10       | 96      | 13.55       | 432  |
| Lutjanus fulgens               | 4.18       | 4       | 7.98        | 431  |
| Syacium micrurum               | 2.56       | 40      | 4.89        | 433  |
| Pagellus bellottii             | 2.16       | 10      | 4.12        | 428  |
| Fistularia petimba             | 1.56       | 8       | 2.98        |      |
| Sepia officinalis hierredda    | 1.50       | 14      | 2.86        | 435  |
| Epinephelus aeneus             | 1.16       | 4       | 2.21        | 429  |
| Penaeus notialis               | 1.12       | 42      | 2.14        | 426  |
| Sphoeroides marmoratus         | 1.04       | 38      | 1.99        |      |
| Chilomycterus spinosus mauret. | 0.84       | 4       | 1.60        |      |
| Grammolites gruvelli           | 0.70       | 42      | 1.34        |      |
| Aluterus blankerti             | 0.62       | 8       | 1.18        |      |
| Raja miraletus                 | 0.62       | 2       | 1.18        |      |
| Dentex canariensis             | 0.60       | 2       | 1.15        | 430  |
| Selene dorsalis                | 0.26       | 2       | 0.50        |      |
| Acanthostracion quadricornis   | 0.24       | 2       | 0.46        |      |
| Serranus accraensis            | 0.24       | 14      | 0.46        |      |
| Fistularia tabacaria           | 0.14       | 2       | 0.27        |      |
| Psettodes belcheri             | 0.10       | 2       | 0.19        |      |
| Squilla mantis                 | 0.08       | 2       | 0.15        |      |
| Cephalopholis taeniods         | 0.06       | 2       | 0.11        |      |
| Antennarius occidentalis       | 0.04       | 2       | 0.08        |      |
| Saurida brasiliensis           | 0.02       | 4       | 0.04        |      |
| Bothus podas africanus         | 0.02       | 2       | 0.04        |      |
| Total                          | 52.38      |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 240  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 5  
 start stop duration Long E 904  
 TIME :16:45:57 17:16:17 30 (min) Purpose code: 3  
 LOG :8221.37 8222.92 1.54 Area code : 8  
 FDEPTH: 53 57 GearCond.code:  
 BDEPTH: 53 57 Validity code:  
 Towing dir: 270° Wire out: 220 m Speed: 31 kn\*10

Sorted: 71 Kg Total catch: 162.74 CATCH/HOUR: 325.48

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Decapterus punctatus           | 75.50      | 2270    | 23.20       | 437  |
| Pagellus bellottii             | 63.30      | 854     | 19.45       | 442  |
| Epinephelus aeneus             | 18.88      | 2       | 5.80        |      |
| Dentex congongensis            | 18.60      | 494     | 5.71        | 440  |
| Pseudupeneus prayensis         | 17.94      | 270     | 5.51        | 436  |
| Sepia officinalis hierredda    | 17.80      | 614     | 5.47        |      |
| J E L L Y F I S H              | 17.30      | 944     | 5.32        |      |
| Ariomma bondi                  | 16.80      | 314     | 5.16        | 438  |
| Lepidotrigla cadmani           | 12.54      | 280     | 3.85        |      |
| Priacanthus arenatus           | 12.10      | 104     | 3.72        |      |
| Alloteuthis africana           | 10.40      | 4890    | 3.20        |      |
| Dentex angolensis              | 5.24       | 54      | 1.61        | 439  |
| Sardinella aurita              | 4.14       | 214     | 1.27        | 441  |
| Fistularia petimba             | 4.10       | 50      | 1.26        |      |
| Sphoeroides marmoratus         | 4.10       | 124     | 1.26        |      |
| Raja miraletus                 | 3.74       | 24      | 1.15        |      |
| Grammolites gruvelli           | 3.40       | 120     | 1.04        |      |
| Citharus linguatula            | 3.30       | 344     | 1.01        |      |
| Lepidotrigla carolae           | 2.20       | 160     | 0.68        |      |
| Chilomycterus spinosus mauret. | 1.94       | 10      | 0.60        |      |
| Selar crumenophthalmus         | 1.80       | 24      | 0.55        |      |
| Serranus accraensis            | 1.74       | 64      | 0.53        |      |
| Dactylopterus volitans         | 1.34       | 14      | 0.41        |      |
| Panaeus notialis               | 1.04       | 30      | 0.32        |      |
| Antennarius occidentalis       | 1.00       | 20      | 0.31        |      |
| Boops boops                    | 0.84       | 64      | 0.26        |      |
| Dicologlossa cuneata           | 0.74       | 24      | 0.23        |      |
| Brotula barbata                | 0.60       | 4       | 0.18        |      |
| Octopus vulgaris               | 0.44       | 4       | 0.14        |      |
| Saurida brasiliensis           | 0.44       | 50      | 0.14        |      |
| Pecten jacobus                 | 0.40       | 40      | 0.12        |      |
| Arnoglossus imperialis         | 0.34       | 100     | 0.10        |      |
| Illex coindetii                | 0.34       | 4       | 0.10        |      |
| Calappa rubroguttata           | 0.30       | 14      | 0.09        |      |
| Syacium micrurum               | 0.24       | 64      | 0.07        |      |
| Hippocampus punctatus          | 0.24       | 4       | 0.07        |      |
| Anthias anthias                | 0.14       | 10      | 0.04        |      |
| Lophiodes kempi                | 0.14       | 10      | 0.04        |      |
| Blennius normani               | 0.04       | 4       | 0.01        |      |
| Total                          | 325.48     |         | 99.98       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 241  
 DATE: 1/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat N 7  
 start stop duration Long E 851  
 TIME :20:27:01 20:58:08 31 (min) Purpose code: 3  
 LOG :8240.53 8242.17 1.63 Area code : 8  
 FDEPTH: 318 318 GearCond.code:  
 BDEPTH: 318 318 Validity code:  
 Towing dir: 190° Wire out: 920 m Speed: 31 kn\*10

Sorted: 17 Kg Total catch: 119.55 CATCH/HOUR: 231.39

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Zeus capensis              | 81.02      | 7777    | 35.01       |      |
| Parapeneus longirostris    | 39.83      | 3712    | 17.21       |      |
| Parasudus fraser-bruenerri | 39.29      | 2615    | 16.98       |      |
| Scyllorhinus cervigoni     | 12.06      | 27      | 5.21        |      |
| Illex coindetii            | 10.43      | 95      | 4.51        |      |
| Chlorophthalmus atlanticus | 8.94       | 555     | 3.86        |      |
| Stereomastis sp.           | 8.54       | 379     | 3.69        |      |
| Peristedion cataphractum   | 6.10       | 271     | 2.64        |      |
| GALATHEIDAE *              | 5.28       | 596     | 2.28        |      |
| NETTASTOMATIDAE            | 3.25       | 41      | 1.40        |      |
| Raja miraletus             | 2.55       | 41      | 1.10        |      |
| Coelorrhinus coelorrhinus  | 2.30       | 54      | 0.99        |      |
| Pterothrissus belloci      | 2.17       | 14      | 0.94        |      |
| Cyttopsis roseus           | 1.90       | 54      | 0.82        |      |
| PORTUNIDAE                 | 1.76       | 68      | 0.76        |      |
| Setarches guentheri        | 1.63       | 95      | 0.70        |      |
| Chascanopsetta lugubris    | 1.22       | 14      | 0.53        |      |
| Hypoclydonia Epla          | 0.68       | 41      | 0.29        |      |
| Bathyracogmer vicinus      | 0.54       | 14      | 0.23        |      |
| Dibranchius atlanticus     | 0.54       | 81      | 0.23        |      |
| Dicologlossa cuneata       | 0.41       | 14      | 0.18        |      |
| Monolele microstoma        | 0.41       | 41      | 0.18        |      |
| Gadella imberbis           | 0.27       | 14      | 0.12        |      |
| Calappa-like with spines   | 0.27       | 14      | 0.12        |      |
| Total                      | 231.39     |         | 99.98       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 242  
 DATE: 2/ 7/05 GEAR TYPE: PT No: 1 POSITION:Lat N 4  
 start stop duration Long E 837  
 TIME :00:13:55 00:44:11 30 (min) Purpose code: 3  
 LOG :8259.45 8261.55 2.09 Area code : 8  
 FDEPTH: 30 30 GearCond.code:  
 BDEPTH: 996 889 Validity code:  
 Towing dir: 160° Wire out: 120 m Speed: 40 kn\*10

Sorted: 30 Kg Total catch: 29.64 CATCH/HOUR: 59.28

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| MYCTOPHIDAE               | 38.28      | 26796   | 64.57       |      |
| Ariomma melanum           | 7.90       | 476     | 13.33       |      |
| Trichiurus lepturus       | 6.30       | 10      | 10.63       |      |
| Promethichthys prometheus | 3.64       | 224     | 6.14        |      |
| Psenes cyanophrys         | 0.90       | 6       | 1.52        |      |
| Paradiplospinus gracilis  | 0.66       | 2       | 1.11        |      |
| Ornithoteuthis antillarum | 0.62       | 24      | 1.05        |      |
| Leptoccephalus            | 0.54       | 118     | 0.91        |      |
| ENOPELOEUTHIDAE           | 0.26       | 78      | 0.44        |      |
| Selene dorsalis           | 0.12       | 54      | 0.20        |      |
| PARALEPIDIDAE             | 0.02       | 2       | 0.03        |      |
| Nemichthys curvirostris   | 0.02       | 2       | 0.03        |      |
| Symbolophorus sp.         | 0.02       | 2       | 0.03        |      |
| Total                     | 59.28      |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 243  
 DATE: 2/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 10  
 start stop duration Long E 841  
 TIME :02:22:06 02:40:59 19 (min) Purpose code: 3  
 LOG :8273.96 8274.78 0.91 Area code : 8  
 FDEPTH: 540 612 GearCond.code:  
 BDEPTH: 540 612 Validity code:  
 Towing dir: 180° Wire out:1350 m Speed: 30 kn\*10

Sorted: 12 Kg Total catch: 32.68 CATCH/HOUR: 103.20

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Nematocarcinus africanus   | 50.46      | 12616   | 48.90       |      |
| Lophius vaillanti          | 7.55       | 9       | 7.32        |      |
| Hoplostethus cadenati      | 6.63       | 357     | 6.42        |      |
| Yarella blackfordi         | 5.37       | 237     | 5.20        |      |
| Zenion longipinnis         | 4.52       | 357     | 4.38        |      |
| Laemonema laureysi         | 4.17       | 32      | 4.04        |      |
| Peristedion cataphractum   | 3.79       | 142     | 3.67        |      |
| Todarodes sagittatus       | 2.81       | 3       | 2.72        |      |
| Oplithoteuthis sp.         | 2.62       | 3       | 2.54        |      |
| Benthodesmus tenuis        | 2.34       | 51      | 2.27        |      |
| Merluccius polli           | 2.08       | 3       | 2.02        |      |
| Polymetme corythaecola     | 1.67       | 95      | 1.62        |      |
| Bathygadus macrops         | 1.07       | 13      | 1.04        |      |
| Epigonus telescopus        | 1.01       | 6       | 0.98        |      |
| Lophiodes kempi            | 0.85       | 6       | 0.82        |      |
| Symphurus sp.              | 0.51       | 25      | 0.49        |      |
| Lamprogrammus exutus       | 0.51       | 25      | 0.49        |      |
| Steindachneria sp.         | 0.51       | 73      | 0.49        |      |
| Nephropsis atlantica       | 0.51       | 25      | 0.49        |      |
| Aristeus varidens          | 0.51       | 16      | 0.49        |      |
| Dibranchius atlanticus     | 0.47       | 47      | 0.46        |      |
| Stereomastis sp.           | 0.47       | 499     | 0.46        |      |
| Plesiopenaeus edwardsianus | 0.47       | 6       | 0.46        |      |
| Malacocephalus laevis      | 0.41       | 3       | 0.40        |      |
| Paracomge notialis         | 0.38       | 3       | 0.37        |      |
| Beryx splendens            | 0.32       | 3       | 0.31        |      |
| Galeus polli               | 0.32       | 6       | 0.31        |      |
| Halosaurus rostratus       | 0.28       | 3       | 0.27        |      |
| Monolele microstoma        | 0.25       | 25      | 0.24        |      |
| Myxine sp.                 | 0.25       | 3       | 0.24        |      |
| Total                      | 103.11     |         | 99.91       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 244  
 DATE: 2/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 11  
 start stop duration Long E 853  
 TIME :05:36:37 06:06:07 30 (min) Purpose code: 3  
 LOG :8293.31 8294.87 1.56 Area code : 8  
 FDEPTH: 127 132 GearCond.code:  
 BDEPTH: 127 132 Validity code:  
 Towing dir: 150° Wire out: 360 m Speed: 31 kn\*10

Sorted: 62 Kg Total catch: 371.16 CATCH/HOUR: 742.32

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ariomma bondi               | 644.40     | 15006   | 86.81       | 443  |
| Dentex congongensis         | 26.28      | 612     | 3.54        | 445  |
| Octopus vulgaris            | 17.04      | 12      | 2.30        |      |
| Sea cucumbers               | 12.84      | 12      | 1.73        |      |
| Dentex angolensis           | 10.68      | 72      | 1.44        | 444  |
| Priacanthus arenatus        | 10.56      | 84      | 1.42        |      |
| Illex coindetii             | 3.84       | 84      | 0.52        |      |
| Lepidotrigla cadmani        | 3.36       | 96      | 0.45        |      |
| Spicara alta                | 2.76       | 36      | 0.37        |      |
| Citharus linguatula         | 2.64       | 324     | 0.36        |      |
| Setarches guentheri         | 1.92       | 48      | 0.26        |      |
| Raja miraletus              | 1.56       | 24      | 0.21        |      |
| Aulopus cadenati            | 1.32       | 12      | 0.18        |      |
| Todaropsis eblanae          | 1.08       | 132     | 0.15        |      |
| Sepia officinalis hierredda | 0.84       | 12      | 0.11        |      |
| Peristedion cataphractum    | 0.72       | 12      | 0.10        |      |
| Serranus cabrilla           | 0.36       | 12      | 0.05        |      |
| Arnoglossus imperialis      | 0.12       | 24      | 0.02        |      |
| Total                       | 742.32     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 245  
 DATE: 2/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 8  
 start stop duration Long E 856  
 TIME :07:16:26 07:43:35 27 (min) Purpose code: 3  
 LOG :8302.80 8304.26 1.45 Area code : 8  
 FDEPTH: 71 75 GearCond.code:  
 BDEPTH: 71 75 Validity code:  
 Towing dir: 215° Wire out: 250 m Speed: 32 kn\*10

Sorted: 65 Kg Total catch: 325.40 CATCH/HOUR: 723.11

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sardinella aurita           | 233.22     | 35878   | 32.25       | 446  |
| Boops boops                 | 144.22     | 2156    | 19.94       | 447  |
| Dentex congongensis         | 120.67     | 4878    | 16.69       | 450  |
| Decapterus punctatus        | 101.78     | 3044    | 14.08       | 448  |
| Epinephelus aeneus          | 31.78      | 22      | 4.39        | 453  |
| Pagellus bellottii          | 20.44      | 322     | 2.83        | 451  |
| Lutjanus fulgens            | 18.56      | 33      | 2.57        | 454  |
| Pagrus caeruleostictus      | 11.00      | 33      | 1.52        | 449  |
| Ariomma bondi               | 10.78      | 256     | 1.49        |      |
| Pseudupeneus prayensis      | 7.33       | 122     | 1.01        | 452  |
| Sepia officinalis hierredda | 5.33       | 156     | 0.74        |      |
| Raja miraletus              | 4.78       | 22      | 0.66        |      |
| Torpedo torpedo             | 3.67       | 11      | 0.51        |      |
| Lepidotrigla cadmani        | 2.00       | 56      | 0.28        |      |
| Lepidotrigla carolae        | 2.00       | 111     | 0.28        |      |
| Anthias anthias             | 0.89       | 89      | 0.12        |      |
| Fistularia petimba          | 0.89       | 11      | 0.12        |      |
| Aulopus cadenati            | 0.78       | 11      | 0.11        |      |
| Arnoglossus imperialis      | 0.78       | 156     | 0.11        |      |
| Illex coindetii             | 0.44       | 11      | 0.11        |      |
| Sphoeroides marmoratus      | 0.44       | 11      | 0.06        |      |
| Chromis cadenati            | 0.33       | 22      | 0.05        |      |
| Serranus accraensis         | 0.33       | 11      | 0.05        |      |
| Todaropsis eblanae          | 0.11       | 22      | 0.02        |      |
| Chaetodon marcellae         | 0.04       | 11      | 0.01        |      |
| Total                       | 722.93     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 246  
 DATE: 2/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 8  
 start stop duration Purpose code: 3  
 TIME :09:22:12 09:52:39 30 (min) Long E 904  
 LOG :8316.23 8317.87 1.63 Area code : 8  
 FDEPTH: 47 48 GearCond.code:  
 BDEPTH: 47 48 Validity code:  
 Towing dir: 215ø Wire out: 180 m Speed: 31 kn\*10

Sorted: 91 Kg Total catch: 253.25 CATCH/HOUR: 506.50

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 248  
 DATE: 2/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 24  
 start stop duration Purpose code: 3  
 TIME :15:44:23 16:07:44 23 (min) Long E 900  
 LOG :8361.43 8362.65 1.33 Area code : 8  
 FDEPTH: 32 33 GearCond.code:  
 BDEPTH: 32 33 Validity code:  
 Towing dir: 180ø Wire out: 140 m Speed: 30 kn\*10

Sorted: 41 Kg Total catch: 80.28 CATCH/HOUR: 209.43

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sardinella aurita           | 183.40     | 1964    | 36.21       | 456  |
| Decapterus punctatus        | 133.00     | 3152    | 26.26       | 460  |
| Epinephelus aeneus          | 39.20      | 28      | 7.74        | 458  |
| Pagellus bellottii          | 24.44      | 966     | 4.83        | 462  |
| Priacanthus arenatus        | 19.04      | 120     | 3.76        |      |
| Pseudupeneus prayensis      | 13.80      | 568     | 2.72        | 459  |
| Alloteuthis africana        | 11.98      | 2532    | 2.37        |      |
| Squatina oculata            | 11.48      | 2       | 2.27        |      |
| Brachydeuterus auritus      | 9.38       | 1182    | 1.85        | 464  |
| Sepia officinalis hierredda | 8.90       | 414     | 1.76        | 465  |
| Boops boops                 | 7.84       | 610     | 1.55        | 457  |
| Saurida brasiliensis        | 6.02       | 704     | 1.19        |      |
| J E L Y F I S H             | 5.26       |         | 1.04        |      |
| Epigonus sp.                | 3.86       | 1338    | 0.76        |      |
| Lepidotrigia carolae        | 3.50       | 308     | 0.69        |      |
| Pagrus caeruleostictus      | 2.52       | 28      | 0.50        | 461  |
| Raja miraletus              | 2.46       | 14      | 0.49        |      |
| Penaeus notialis            | 2.32       | 84      | 0.46        | 455  |
| Fistularia petimba          | 2.18       | 22      | 0.43        |      |
| Arnoglossus imperialis      | 2.04       | 358     | 0.40        |      |
| Maja squinado               | 2.04       | 2       | 0.40        |      |
| Dactylopterus volitans      | 1.62       | 14      | 0.32        |      |
| Grammolites gruvelli        | 1.40       | 98      | 0.28        |      |
| Spherooides marmoratus      | 1.34       | 42      | 0.26        |      |
| Dentex congensis            | 1.34       | 98      | 0.26        | 463  |
| Illex coindetii             | 1.12       | 8       | 0.22        |      |
| Lepidotrigia cadmani        | 1.12       | 28      | 0.22        |      |
| Serranus accraensis         | 0.92       | 42      | 0.18        |      |
| Ariomma bondi               | 0.70       | 56      | 0.14        |      |
| Liocarcinus corrugatus      | 0.64       | 28      | 0.13        |      |
| Torpedo torpedo             | 0.54       | 2       | 0.11        |      |
| Dicologlossa hexopthalma    | 0.24       | 8       | 0.05        |      |
| Lagocephalus laevigatus     | 0.24       | 8       | 0.05        |      |
| Synodus saurus              | 0.24       | 8       | 0.05        |      |
| Serranus accraensis         | 0.16       | 8       | 0.03        |      |
| 'Spider crab'               | 0.14       | 22      | 0.03        |      |
| Blennius normani            | 0.08       | 22      | 0.02        |      |
| Total                       | 506.50     |         | 100.03      |      |

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Pagellus bellottii             | 67.83      | 1336    | 32.39       | 475  |
| Pagrus caeruleostictus         | 18.00      | 603     | 8.59        | 476  |
| J E L Y F I S H                | 15.65      |         | 7.47        |      |
| Lagocephalus lagocephalus      | 11.32      | 31      | 5.41        |      |
| Sepia officinalis hierredda    | 10.90      | 537     | 5.20        | 478  |
| Lophiodes kempi                | 10.54      | 5       | 5.03        |      |
| Pseudupeneus prayensis         | 9.39       | 277     | 4.48        | 474  |
| Priacanthus arenatus           | 8.45       | 68      | 4.03        |      |
| Syacium micrurus               | 8.24       | 120     | 3.93        | 477  |
| Fistularia petimba             | 8.09       | 52      | 3.86        |      |
| Sea cucumbers                  | 7.64       | 5       | 3.65        |      |
| Raja miraletus                 | 5.32       | 16      | 2.54        |      |
| Balistes capricus              | 5.22       | 5       | 2.49        |      |
| Grammolites gruvelli           | 3.65       | 350     | 1.74        |      |
| Epinephelus aeneus             | 3.23       | 5       | 1.54        | 473  |
| Saurida brasiliensis           | 2.71       | 360     | 1.29        |      |
| Torpedo torpedo                | 2.56       | 10      | 1.22        |      |
| Chilomycterus spinosus mauret. | 1.62       | 5       | 0.77        |      |
| Sea urchins                    | 1.46       | 10      | 0.70        |      |
| Lethrinus atlanticus           | 1.25       | 5       | 0.60        |      |
| Chlamys purpuratus             | 1.04       | 31      | 0.50        |      |
| Alloteuthis africana           | 1.04       | 344     | 0.50        |      |
| Arnoglossus imperialis         | 0.83       | 120     | 0.40        |      |
| Lepidotrigia carolae           | 0.63       | 104     | 0.30        |      |
| Penaeus notialis               | 0.42       | 10      | 0.20        |      |
| Decapterus punctatus           | 0.37       | 63      | 0.18        |      |
| Spherooides marmoratus         | 0.37       | 16      | 0.18        |      |
| Fistularia tabacaria           | 0.31       | 21      | 0.15        |      |
| Serranus accraensis            | 0.31       | 26      | 0.15        |      |
| Dactylopterus volitans         | 0.26       | 26      | 0.12        |      |
| Bothus podas africanus         | 0.21       | 26      | 0.10        |      |
| Aluterus blankerti             | 0.16       | 10      | 0.08        |      |
| Trachinocephalus myops         | 0.16       | 5       | 0.08        |      |
| Citharus linguatula            | 0.10       | 5       | 0.05        |      |
| Brachydeuterus auritus         | 0.05       | 5       | 0.02        |      |
| Sardinella aurita              | 0.05       | 16      | 0.02        |      |
| Total                          | 209.38     |         | 99.96       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 247  
 DATE: 2/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 10  
 start stop duration Purpose code: 3  
 TIME :12:10:49 12:20:46 10 (min) Long E 915  
 LOG :8332.06 8332.60 0.52 Area code : 8  
 FDEPTH: 21 21 GearCond.code:  
 BDEPTH: 21 21 Validity code:  
 Towing dir: 270ø Wire out: 120 m Speed: 30 kn\*10

Sorted: 53 Kg Total catch: 43.14 CATCH/HOUR: 258.84

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 249  
 DATE: 2/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 26  
 start stop duration Purpose code: 3  
 TIME :17:13:57 17:34:55 21 (min) Long E 852  
 LOG :8371.10 8372.24 1.14 Area code : 8  
 FDEPTH: 39 42 GearCond.code:  
 BDEPTH: 39 42 Validity code:  
 Towing dir: 180ø Wire out: 170 m Speed: 32 kn\*10

Sorted: 70 Kg Total catch: 225.71 CATCH/HOUR: 644.89

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dasyatis margarita          | 94.20      | 246     | 36.39       |      |
| Syacium micrurus            | 20.04      | 402     | 7.74        |      |
| Pagrus caeruleostictus      | 16.56      | 84      | 6.40        | 470  |
| Spherooides marmoratus      | 14.76      | 1116    | 5.70        |      |
| Psettodes belcheri          | 12.06      | 36      | 4.66        |      |
| Sphyraena guanchcho         | 11.64      | 18      | 4.50        | 471  |
| Caranx crysos               | 11.28      | 12      | 4.36        |      |
| Caranx senegallus           | 9.78       | 18      | 3.78        |      |
| Decapterus punctatus        | 9.30       | 156     | 3.59        | 467  |
| Galeoides decadactylus      | 7.56       | 30      | 2.92        | 469  |
| Scomberomorus toritor       | 7.50       | 12      | 2.90        |      |
| Lutjanus fulgens            | 6.12       | 6       | 2.36        |      |
| Brachydeuterus auritus      | 6.00       | 96      | 2.32        | 468  |
| Alectis alexandrinus        | 5.52       | 36      | 2.13        |      |
| Epinephelus aeneus          | 5.46       | 54      | 2.11        | 466  |
| Sepia officinalis hierredda | 4.08       | 48      | 1.58        | 472  |
| Grammolites gruvelli        | 3.18       | 246     | 1.23        |      |
| Penaeus notialis            | 2.52       | 144     | 0.97        |      |
| Rhinobatos albomaculatus    | 2.40       | 6       | 0.93        |      |
| Aluterus blankerti          | 1.92       | 84      | 0.74        |      |
| Sardinella maderensis       | 1.38       | 18      | 0.53        |      |
| Calappa rubroguttata        | 1.32       |         | 0.51        |      |
| Callinectes pallidus        | 1.32       | 30      | 0.51        |      |
| Pseudupeneus prayensis      | 1.26       | 6       | 0.49        |      |
| Torpedo torpedo             | 0.54       | 18      | 0.21        |      |
| Monochirus hispidus         | 0.36       | 54      | 0.14        |      |
| Squilla mantis              | 0.24       | 6       | 0.09        |      |
| Selene dorsalis             | 0.18       | 6       | 0.07        |      |
| Pagellus bellottii          | 0.12       | 18      | 0.05        |      |
| Chaetodipterus gorceensis   | 0.12       | 6       | 0.05        |      |
| Penaeus kerathurus          | 0.12       | 6       | 0.05        |      |
| Total                       | 258.84     |         | 100.01      |      |

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sardinella aurita           | 176.74     | 20057   | 27.41       | 483  |
| Decapterus punctatus        | 148.63     | 8897    | 23.05       | 485  |
| Saurida brasiliensis        | 62.66      | 8894    | 9.72        |      |
| Lutjanus fulgens            | 57.43      | 369     | 8.91        | 479  |
| Lutjanus fulgens            | 44.97      | 6       | 6.97        | 478  |
| Dactylopterus volitans      | 33.09      | 137     | 5.13        | 484  |
| Sepia officinalis hierredda | 24.34      | 249     | 3.77        |      |
| Pagellus bellottii          | 17.23      | 1063    | 2.67        | 481  |
| Pseudupeneus prayensis      | 14.49      | 400     | 2.25        | 480  |
| Alloteuthis africana        | 12.86      | 5611    | 1.99        |      |
| Cymbium cymbium             | 7.11       | 9       | 1.10        |      |
| Chromis cadenati            | 7.03       | 351     | 1.09        |      |
| Balistes punctatus          | 6.17       | 9       | 0.96        |      |
| Syacium micrurus            | 5.49       | 206     | 0.85        | 484  |
| Aluterus japonicus          | 4.46       | 283     | 0.69        | 482  |
| Aluterus heudelotii         | 3.43       | 9       | 0.53        |      |
| Bodianus speciosus          | 3.26       | 9       | 0.51        |      |
| Paraconger notialis         | 3.09       | 17      | 0.48        |      |
| Echeneis naucrates          | 2.57       | 9       | 0.40        |      |
| J E L Y F I S H             | 1.97       |         | 0.31        |      |
| Citharus linguatula         | 1.80       | 43      | 0.28        |      |
| Priacanthus arenatus        | 1.80       | 17      | 0.28        |      |
| Grammolites gruvelli        | 1.37       | 111     | 0.21        |      |
| Spherooides marmoratus      | 1.20       | 51      | 0.19        |      |
| Serranus accraensis         | 0.34       | 26      | 0.05        |      |
| Calappa pelii               | 0.34       | 9       | 0.05        |      |
| Uranoscopus polli           | 0.34       | 9       | 0.05        |      |
| Arnoglossus imperialis      | 0.26       | 86      | 0.04        |      |
| Lepidotrigia cadmani        | 0.26       | 17      | 0.04        |      |
| Boops boops                 | 0.09       | 9       | 0.01        |      |
| Blennius normani            | 0.09       | 17      | 0.01        |      |
| Total                       | 644.91     |         | 100.00      |      |



DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 250  
 DATE: 2/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 24  
 start stop duration Long E 846  
 TIME :20:12:55 20:41:51 29 (min) Purpose code: 3  
 LOG :8387.89 8389.37 1.46 Area code : 8  
 FDEPTH: 260 263 GearCond.code:  
 BDEPTH: 260 263 Validity code:  
 Towing dir: 190° Wire out: 800 m Speed: 32 kn\*10

Sorted: 26 Kg Total catch: 77.46 CATCH/HOUR: 160.26

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Parapenaeus longirostris    | 36.00      | 5332    | 22.46       |      |
| Parasudis fraser-brueneri   | 26.44      | 1297    | 16.50       |      |
| Peristedion cataphractum    | 26.32      | 807     | 16.42       |      |
| Dentex angolensis           | 16.63      | 56      | 10.38       |      |
| Brotula barbata             | 5.28       | 12      | 3.29        |      |
| Illex coindetii             | 5.09       | 56      | 3.18        |      |
| Bembrops greyi              | 4.41       | 81      | 2.75        |      |
| Pterothrissus bellocci      | 4.16       | 37      | 2.60        |      |
| Chlorophthalmus atlanticus  | 4.10       | 354     | 2.56        |      |
| Synagrops microlepis        | 3.66       | 186     | 2.28        |      |
| Physiculus huloti           | 3.29       | 99      | 2.05        |      |
| Todaropsis eblanae          | 3.23       | 62      | 2.02        |      |
| Chascanopsetta lugubris     | 3.10       | 25      | 1.93        |      |
| Dactylopterus volitans      | 2.92       | 6       | 1.82        |      |
| Hypoclydonia bella          | 2.61       | 74      | 1.63        |      |
| Calappa-like with spines    | 2.54       | 99      | 1.58        |      |
| Monolepis microstoma        | 2.30       | 230     | 1.44        |      |
| Lophiodes kempi             | 1.99       | 6       | 1.24        |      |
| Lepidotrigla cadmani        | 1.30       | 19      | 0.81        |      |
| Setarches guentheri         | 1.12       | 19      | 0.70        |      |
| Diaphus sp.                 | 0.99       | 391     | 0.62        |      |
| UNIDENTIFIED FISH           | 0.74       | 130     | 0.46        |      |
| Coelorinchus coelorhincus   | 0.74       | 37      | 0.46        |      |
| Paraconger notialis         | 0.50       | 6       | 0.31        |      |
| Malacocephalus occidentalis | 0.37       | 25      | 0.23        |      |
| Scyllorhinus cervigoni      | 0.19       | 6       | 0.12        |      |
| Zenion longipinnis          | 0.19       | 25      | 0.12        |      |
| Squilla acuelata calmani    | 0.06       | 6       | 0.04        |      |
| Total                       | 160.27     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 251  
 DATE: 5/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 33  
 start stop duration Long E 846  
 TIME :09:50:34 09:56:38 6 (min) Purpose code: 1  
 LOG :8470.45 8470.80 0.34 Area code : 8  
 FDEPTH: 79 79 GearCond.code: 9  
 BDEPTH: 79 79 Validity code: 9  
 Towing dir: 180° Wire out: 250 m Speed: 31 kn\*10

Sorted: 12 Kg Total catch: 12.34 CATCH/HOUR: 123.40

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex angolensis           | 50.70      | 720     | 41.09       | 486  |
| Lepidotrigla cadmani        | 19.20      | 570     | 15.56       |      |
| J E L Y F I S H             | 15.90      | 230     | 12.88       |      |
| Sepia officinalis hierredda | 7.40       | 200     | 6.00        |      |
| Dentex congoensis           | 6.30       | 250     | 5.11        | 487  |
| Illex coindetii             | 4.80       | 260     | 3.89        |      |
| Citharus linguatula         | 3.80       | 300     | 3.08        |      |
| Lepidotrigla carolae        | 2.90       | 100     | 2.35        |      |
| Brotula barbata             | 2.60       | 10      | 2.11        |      |
| Uranoscopus albesca         | 2.50       | 50      | 2.03        |      |
| Lophiodes kempi             | 1.40       | 30      | 1.13        |      |
| Bathygobius paganelius      | 1.40       | 150     | 1.13        |      |
| Trachurus trecae            | 1.20       | 20      | 0.97        |      |
| Parapenaeus longirostris    | 0.80       | 110     | 0.65        |      |
| Serranus accraensis         | 0.70       | 30      | 0.57        |      |
| Scorpaena scrofa            | 0.60       | 10      | 0.49        |      |
| Aloteuthis africana         | 0.40       | 160     | 0.32        |      |
| 'Spider crab'               | 0.30       | 200     | 0.24        |      |
| Saurida brasiliensis        | 0.20       | 40      | 0.16        |      |
| Arnoglossus imperialis      | 0.20       | 20      | 0.16        |      |
| Syacium micrurum            | 0.10       | 10      | 0.08        |      |
| Total                       | 123.40     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 252  
 DATE: 5/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 40  
 start stop duration Long E 840  
 TIME :12:14:19 12:23:56 13 (min) Purpose code: 3  
 LOG :8487.16 8487.82 0.65 Area code : 8  
 FDEPTH: 117 109 GearCond.code:  
 BDEPTH: 117 109 Validity code:  
 Towing dir: 180° Wire out: 300 m Speed: 30 kn\*10

Sorted: 33 Kg Total catch: 145.52 CATCH/HOUR: 671.63

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Selene dorsalis              | 293.54     | 2529    | 43.71       | 490  |
| Dentex angolensis            | 109.85     | 794     | 16.36       | 489  |
| Brotula barbata              | 66.09      | 74      | 9.84        |      |
| Uranoscopus albesca          | 40.98      | 443     | 6.10        |      |
| Epinephelus aeneus           | 33.23      | 5       | 4.95        |      |
| Pentheroscion mbizi          | 29.72      | 425     | 4.43        | 488  |
| Squatina oculata             | 26.40      | 9       | 3.93        |      |
| Lepidotrigla cadmani         | 11.08      | 185     | 1.65        |      |
| Bathygobius paganelius       | 10.34      | 1422    | 1.54        |      |
| Dicologlossa cuneata         | 9.78       | 111     | 1.46        |      |
| Priacanthus arenatus         | 6.09       | 37      | 0.91        |      |
| Citharus linguatula          | 5.91       | 166     | 0.88        |      |
| Dentex congoensis            | 5.54       | 74      | 0.82        |      |
| Bembrops heterurus           | 4.80       | 185     | 0.71        |      |
| Sepia officinalis hierredda  | 4.43       | 55      | 0.66        |      |
| Venus sp.                    | 3.51       | 111     | 0.52        |      |
| Lophius vaillanti            | 2.58       | 55      | 0.38        |      |
| Pterothrissus bellocci       | 2.03       | 18      | 0.30        |      |
| Monolepis microstoma         | 1.48       | 111     | 0.22        |      |
| Parapenaeus longirostris     | 1.48       | 332     | 0.22        |      |
| Pythonichthys microphthalmus | 1.11       | 18      | 0.17        |      |
| Microchirus frechkopi        | 0.92       | 37      | 0.14        |      |
| Physiculus sp.               | 0.37       | 55      | 0.06        |      |
| Saurida brasiliensis         | 0.18       | 18      | 0.03        |      |
| Setarches guentheri          | 0.18       | 18      | 0.03        |      |
| Total                        | 671.62     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 253  
 DATE: 5/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 44  
 start stop duration Long E 841  
 TIME :13:37:42 13:58:24 21 (min) Purpose code: 3  
 LOG :8495.07 8496.28 1.22 Area code : 8  
 FDEPTH: 25 26 GearCond.code:  
 BDEPTH: 25 26 Validity code:  
 Towing dir: 5° Wire out: 120 m Speed: 30 kn\*10

Sorted: 61 Kg Total catch: 980.64 CATCH/HOUR: 2801.83

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 1885.26    | 39223   | 67.29       | 491  |
| Selar crumenophthalmus      | 336.51     | 1829    | 12.01       | 494  |
| Selene dorsalis             | 226.74     | 1246    | 8.09        |      |
| Sardinella maderensis       | 165.49     | 1554    | 5.91        | 493  |
| Pagellus bellottii          | 70.86      | 914     | 2.53        | 492  |
| Dentex angolensis           | 18.29      | 91      | 0.65        |      |
| Chloroscombrus chrysurus    | 16.00      | 183     | 0.57        |      |
| Pseudupeneus prayensis      | 14.63      | 411     | 0.52        |      |
| Penaeus notialis            | 11.43      | 274     | 0.41        |      |
| Serranus accraensis         | 11.43      | 1360    | 0.41        |      |
| Priacanthus arenatus        | 10.06      | 46      | 0.36        |      |
| Sepia officinalis hierredda | 9.14       | 411     | 0.33        |      |
| Grammolites gruveli         | 6.40       | 823     | 0.23        |      |
| Scorpaena scrofa            | 4.57       | 46      | 0.16        |      |
| Citharus linguatula         | 4.11       | 274     | 0.15        |      |
| Sicyonia galeata            | 3.20       | 1463    | 0.11        |      |
| Brotula barbata             | 1.83       | 91      | 0.07        |      |
| Callinectes pallidus        | 0.91       | 91      | 0.03        |      |
| Antennarius occidentalis    | 0.91       | 91      | 0.03        |      |
| Lophius vaillanti           | 0.91       | 137     | 0.03        |      |
| Uranoscopus albesca         | 0.46       | 46      | 0.02        |      |
| Bathygobius paganelius      | 0.46       | 46      | 0.02        |      |
| Microchirus frechkopi       | 0.46       | 46      | 0.02        |      |
| HOMOLIDAE                   | 0.46       | 46      | 0.02        |      |
| C R A B S                   | 0.46       | 46      | 0.02        |      |
| Cheilodichthys sp.          | 0.46       | 91      | 0.02        |      |
| Sphaeroides marmoratus      | 0.46       | 46      | 0.02        |      |
| Total                       | 2801.90    |         | 100.03      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 254  
 DATE: 5/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 53  
 start stop duration Long E 832  
 TIME :16:04:33 16:34:35 30 (min) Purpose code: 3  
 LOG :8513.73 8515.29 1.57 Area code : 8  
 FDEPTH: 45 45 GearCond.code:  
 BDEPTH: 45 45 Validity code:  
 Towing dir: 180° Wire out: 180 m Speed: 30 kn\*10

Sorted: 59 Kg Total catch: 148.66 CATCH/HOUR: 297.32

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Decapterus punctatus        | 165.70     | 2762    | 55.73       | 495  |
| Pagellus bellottii          | 49.90      | 214     | 16.78       |      |
| J E L Y F I S H             | 22.60      | 2140    | 7.60        |      |
| Pseudupeneus prayensis      | 15.50      | 120     | 5.21        | 496  |
| Fistularia petimba          | 7.70       | 64      | 2.59        |      |
| Lagocephalus laevis         | 5.90       | 4       | 1.98        |      |
| Priacanthus arenatus        | 5.90       | 50      | 1.98        |      |
| Sepia officinalis hierredda | 5.50       | 30      | 1.85        |      |
| Trachinocephalus myops      | 4.40       | 10      | 1.35        |      |
| Sardinella aurita           | 3.00       | 30      | 1.01        |      |
| Raja miraletus              | 2.30       | 4       | 0.77        |      |
| Dactylopterus volitans      | 2.24       | 20      | 0.75        |      |
| Trachinus armatus           | 1.94       | 24      | 0.65        |      |
| Ariomma bondi               | 1.50       | 10      | 0.50        |      |
| Lepidotrigla cadmani        | 0.84       | 10      | 0.28        |      |
| Scomber japonicus           | 0.84       | 4       | 0.28        |      |
| Sardinella maderensis       | 0.84       | 10      | 0.28        |      |
| Bothus podas africanus      | 0.44       | 10      | 0.15        |      |
| Sea urchins                 | 0.34       | 10      | 0.11        |      |
| Citharus linguatula         | 0.34       | 4       | 0.11        |      |
| Total                       | 297.32     |         | 99.96       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 255  
 DATE: 5/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 103  
 start stop duration Long E 826  
 TIME :19:50:18 20:10:54 21 (min) Purpose code: 3  
 LOG :8538.24 8539.33 1.08 Area code : 8  
 FDEPTH: 119 122 GearCond.code:  
 BDEPTH: 119 122 Validity code:  
 Towing dir: 210° Wire out: 360 m Speed: 32 kn\*10

Sorted: Kg Total catch: 43.18 CATCH/HOUR: 123.37

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Dentex congoensis         | 29.00      | 583     | 23.51       | 497  |
| Promethichthys prometheus | 17.74      | 926     | 14.38       |      |
| Lepidotrigla carolae      | 10.54      | 183     | 8.54        |      |
| Illex coindetii           | 10.06      | 191     | 8.15        |      |
| Aulopus cadenati          | 6.49       | 77      | 5.26        |      |
| NETTASTOMATIDAE           | 6.31       | 406     | 5.11        |      |
| Lepidotrigla cadmani      | 5.74       | 111     | 4.65        |      |
| Priacanthus arenatus      | 4.77       | 37      | 3.87        |      |
| Decapterus punctatus      | 3.91       | 60      | 3.17        |      |
| Syacium micrurum          | 3.63       | 163     | 2.94        |      |
| Ariomma bondi             | 3.31       | 49      | 2.68        |      |
| Physiculus sp.            | 3.03       | 157     | 2.46        |      |
| Raja miraletus            | 2.89       | 6       | 2.34        |      |
| PANDALIDAE                | 2.83       | 1509    | 2.29        |      |
| Scorpaena scrofa          | 2.66       | 6       | 2.16        |      |
| Synagrops microlepis      | 2.11       | 109     | 1.71        |      |
| Dentex angolensis         | 2.03       | 20      | 1.65        |      |
| MYCTOPHIDAE               | 1.71       | 571     | 1.39        |      |
| Fistularia petimba        | 0.91       | 11      | 0.74        |      |
| Spicara alta              | 0.91       | 9       | 0.74        |      |
| Umbrina canariensis       | 0.86       | 3       | 0.70        |      |
| Dactylopterus volitans    | 0.46       | 3       | 0.37        |      |
| Lophiodes kempi           | 0.37       | 3       | 0.30        |      |
| Pseudupeneus prayensis    | 0.34       | 3       | 0.28        |      |
| Sea urchins               | 0.29       | 11      | 0.24        |      |
| Echelus myrus             | 0.26       | 3       | 0.21        |      |
| Callinectes sp.           | 0.11       | 6       | 0.09        |      |
| Solenocera africana       | 0.09       | 17      | 0.07        |      |
| Total                     | 123.36     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 256  
 DATE: 5/ 7/05 GEAR TYPE: PT No:1 POSITION:Lat S 117  
 start stop duration Long E 824  
 TIME :22:29:31 22:59:57 30 (min) Purpose code: 1  
 LOG :8556.56 8558.36 1.67 Area code : 8  
 FDEPTH: 5 5 GearCond.code:  
 BDEPTH: 385 150 Validity code:  
 Towing dir: 119ø Wire out: 170 m Speed: 35 kn\*10

Sorted: Kg Total catch: 50.72 CATCH/HOUR: 101.44

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Trichurus lepturus        | 37.08      | 1934    | 36.55       |      |
| MYCTOPHIDAE               | 23.44      | 9986    | 23.11       |      |
| Hyppolydonia bella        | 17.24      | 1534    | 17.00       |      |
| Katsuwonus pelamis        | 12.08      | 4       | 11.91       |      |
| Promethichthys prometheus | 4.32       | 338     | 4.26        |      |
| PARALEPIDAE               | 3.82       | 1188    | 3.77        |      |
| CENTROLOPHIDAE            | 1.62       | 2       | 1.60        |      |
| Illex coindetii           | 0.84       | 78      | 0.83        |      |
| Scopelosaurus sp.         | 0.52       | 24      | 0.51        |      |
| GEMPYLIDAE                | 0.30       | 2       | 0.30        |      |
| Synagrops microlepis      | 0.12       | 28      | 0.12        |      |
| Illex sp.                 | 0.06       | 20      | 0.06        |      |
| Total                     | 101.44     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 257  
 DATE: 6/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 137  
 start stop duration Long E 838  
 TIME :02:37:14 03:06:16 29 (min) Purpose code: 3  
 LOG :8585.99 8587.47 1.45 Area code : 8  
 FDEPTH: 103 103 GearCond.code:  
 BDEPTH: 103 103 Validity code:  
 Towing dir: 125ø Wire out: 280 m Speed: 30 kn\*10

Sorted: 29 Kg Total catch: 28.69 CATCH/HOUR: 59.36

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Chelidonichthys gabonensis  | 10.24      | 149     | 17.25       |      |
| Sepia officinalis hierredda | 8.30       | 95      | 13.98       |      |
| Priacanthus arenatus        | 7.30       | 54      | 12.30       |      |
| Scorpaena scrofa            | 6.87       | 25      | 11.57       |      |
| Parapandalus narval         | 4.99       | 8477    | 8.41        |      |
| Saurida brasiliensis        | 4.99       | 569     | 8.41        |      |
| Trichurus lepturus          | 2.73       | 6       | 4.60        |      |
| Dentex congoensis           | 2.30       | 60      | 3.87        |      |
| NETTASTOMATIDAE             | 2.17       | 10      | 3.66        |      |
| CMMASTREPHIDAE              | 0.99       | 25      | 1.67        |      |
| Umbrina canariensis         | 0.89       | 2       | 1.50        |      |
| Citharus linguatula         | 0.83       | 31      | 1.40        |      |
| Illex coindetii             | 0.79       | 21      | 1.33        |      |
| Dentex angolensis           | 0.79       | 6       | 1.33        |      |
| Pagrus africanus            | 0.74       | 2       | 1.25        |      |
| Dentex canariensis          | 0.72       | 2       | 1.21        |      |
| Pagrus caeruleostictus      | 0.70       | 2       | 1.18        |      |
| Selar crumenophthalmus      | 0.48       | 8       | 0.81        |      |
| Uranoscopus polii           | 0.46       | 6       | 0.77        |      |
| Bregmaceros sp.             | 0.39       | 403     | 0.66        |      |
| Ariomma bondi               | 0.31       | 6       | 0.52        |      |
| Spicara alta                | 0.23       | 14      | 0.39        |      |
| Dicolopoglossa cuneata      | 0.19       | 2       | 0.32        |      |
| CEPOLIDAE                   | 0.17       | 14      | 0.29        |      |
| Sea urchins                 | 0.12       | 4       | 0.20        |      |
| FORCUNIDAE                  | 0.10       | 41      | 0.17        |      |
| Synagrops microlepis        | 0.08       | 2       | 0.13        |      |
| Squilla mantis              | 0.06       | 4       | 0.10        |      |
| Physcullus sp.              | 0.06       | 4       | 0.10        |      |
| Boops boops                 | 0.06       | 2       | 0.10        |      |
| Trachinus pellegrini        | 0.04       | 2       | 0.07        |      |
| Sea cucumbers               | 0.04       | 6       | 0.07        |      |
| Calappa pelii               | 0.04       | 2       | 0.07        |      |
| Raja miraletus              | 0.04       | 2       | 0.07        |      |
| 'Spider crab'               | 0.04       | 12      | 0.07        |      |
| Promethichthys prometheus   | 0.04       | 2       | 0.07        |      |
| Antigonia capros            | 0.02       | 2       | 0.03        |      |
| Anthias anthias             | 0.02       | 2       | 0.03        |      |
| Syacium micrurum            | 0.02       | 4       | 0.03        |      |
| Total                       | 59.35      |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 258  
 DATE: 6/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 145  
 start stop duration Long E 845  
 TIME :05:39:27 06:09:52 30 (min) Purpose code: 3  
 LOG :8601.06 8602.72 1.66 Area code : 8  
 FDEPTH: 111 109 GearCond.code:  
 BDEPTH: 111 109 Validity code:  
 Towing dir: 320ø Wire out: 330 m Speed: 32 kn\*10

Sorted: 67 Kg Total catch: 316.87 CATCH/HOUR: 633.74

| SPECIES              | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------|------------|---------|-------------|------|
|                      | weight     | numbers |             |      |
| Spicara alta         | 241.00     | 5240    | 38.03       |      |
| Boops boops          | 206.80     | 5720    | 32.63       | 498  |
| Dentex congoensis    | 107.80     | 1550    | 17.01       | 499  |
| Trichurus lepturus   | 16.30      | 180     | 2.57        |      |
| Scorpaena scrofa     | 14.40      | 20      | 2.27        |      |
| Squatina oculata     | 13.40      | 10      | 2.11        |      |
| Umbrina canariensis  | 8.90       | 30      | 1.40        |      |
| Mustelus mustelus    | 8.00       | 2       | 1.26        |      |
| Illex coindetii      | 7.30       | 150     | 1.15        |      |
| Pagellus bellottii   | 3.70       | 10      | 0.58        |      |
| Dentex canariensis   | 3.68       | 10      | 0.58        |      |
| Ariomma bondi        | 1.10       | 20      | 0.17        |      |
| Trachurus trecae     | 0.70       | 10      | 0.11        |      |
| Saurida brasiliensis | 0.66       | 70      | 0.10        |      |
| Total                | 633.74     |         | 99.97       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 259  
 DATE: 6/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 141  
 start stop duration Long E 849  
 TIME :07:48:04 08:18:35 31 (min) Purpose code: 3  
 LOG :8615.14 8616.70 1.55 Area code : 8  
 FDEPTH: 70 70 GearCond.code:  
 BDEPTH: 70 70 Validity code:  
 Towing dir: 140ø Wire out: 230 m Speed: 30 kn\*10

Sorted: 66 Kg Total catch: 101.88 CATCH/HOUR: 197.19

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trachurus trecae            | 62.01      | 1057    | 31.45       | 500  |
| Illex coindetii             | 26.63      | 2729    | 13.50       |      |
| Dentex congoensis           | 23.03      | 726     | 11.68       | 501  |
| Saurida brasiliensis        | 18.19      | 2799    | 9.22        |      |
| Alloteuthis africana        | 16.24      | 4057    | 8.24        |      |
| Pagellus bellottii          | 11.25      | 221     | 5.71        | 502  |
| Ariomma bondi               | 9.93       | 174     | 5.04        |      |
| Sepia officinalis hierredda | 6.91       | 79      | 3.26        |      |
| Squatina oculata            | 4.45       | 2       | 1.26        |      |
| Grammolites gruvelli        | 3.93       | 145     | 1.99        |      |
| Trigla lyra                 | 2.83       | 74      | 1.44        |      |
| Priacanthus arenatus        | 2.65       | 17      | 1.34        |      |
| Mustelus mustelus           | 2.38       | 12      | 1.21        |      |
| Pseudupeneus prayensis      | 1.92       | 33      | 0.97        |      |
| Trachinus armatus           | 1.49       | 17      | 0.76        |      |
| Dentex angolensis           | 1.37       | 6       | 0.69        |      |
| Lagocephalus laevigatus     | 1.03       | 10      | 0.52        |      |
| Fistularia petimba          | 0.50       | 6       | 0.25        |      |
| Dactylopterus volitans      | 0.45       | 4       | 0.23        |      |
| Total                       | 197.19     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 260  
 DATE: 6/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 138  
 start stop duration Long E 857  
 TIME :09:49:51 10:19:35 30 (min) Purpose code: 3  
 LOG :8627.68 8629.29 1.60 Area code : 8  
 FDEPTH: 47 42 GearCond.code:  
 BDEPTH: 47 42 Validity code:  
 Towing dir: ø Wire out: 180 m Speed: 32 kn\*10

Sorted: 32 Kg Total catch: 480.49 CATCH/HOUR: 960.98

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Lutjanus fulgens               | 466.40     | 1140    | 48.76       | 503  |
| Pagellus bellottii             | 189.00     | 10110   | 19.67       | 505  |
| Boops boops                    | 105.90     | 7560    | 11.02       | 504  |
| Trachurus trecae               | 27.30      | 4590    | 2.84        | 507  |
| Dentex canariensis             | 25.50      | 90      | 2.65        |      |
| Sardinella aurita              | 23.10      | 1890    | 2.40        | 506  |
| Pseudupeneus prayensis         | 16.50      | 780     | 1.72        |      |
| Apsilus fuscus                 | 14.70      | 30      | 1.53        |      |
| Squatina oculata               | 12.84      | 4       | 1.34        |      |
| DIODONTIDAE                    | 12.48      | 4       | 1.30        |      |
| Chilomycterus spinosus mauret. | 10.20      | 30      | 1.06        |      |
| Alloteuthis africana           | 8.40       | 2370    | 0.87        |      |
| Plectorhynchus mediterraneus   | 8.08       | 2       | 0.84        |      |
| Mustelus mustelus              | 7.80       | 2       | 0.81        |      |
| Sepia officinalis hierredda    | 6.84       | 6       | 0.71        |      |
| Raja miraletus                 | 6.24       | 12      | 0.65        |      |
| Brachydeuterus auritus         | 4.80       | 60      | 0.50        |      |
| Grammolites gruvelli           | 3.90       | 180     | 0.41        |      |
| Syacium micrurum               | 3.00       | 60      | 0.31        |      |
| Lepidotrigla cadmani           | 1.50       | 30      | 0.16        |      |
| Lepidotrigla carolae           | 1.50       | 150     | 0.16        |      |
| Saurida brasiliensis           | 1.50       | 120     | 0.16        |      |
| Fistularia petimba             | 0.60       | 30      | 0.06        |      |
| Chaetodon robustus             | 0.30       | 30      | 0.03        |      |
| Argoiosus imperialis           | 0.30       | 30      | 0.03        |      |
| Total                          | 960.88     |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 261  
 DATE: 6/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 143  
 start stop duration Long E 910  
 TIME :12:29:05 12:59:22 30 (min) Purpose code: 3  
 LOG :8645.32 8646.91 1.57 Area code : 8  
 FDEPTH: 20 20 GearCond.code:  
 BDEPTH: 20 20 Validity code:  
 Towing dir: 150ø Wire out: 120 m Speed: 30 kn\*10

Sorted: 47 Kg Total catch: 348.79 CATCH/HOUR: 697.58

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 550.40     | 67540   | 78.90       | 508  |
| Decapterus rhonchus         | 23.40      | 2500    | 3.35        |      |
| Pagellus bellottii          | 16.60      | 780     | 2.38        |      |
| Sepia officinalis hierredda | 16.40      | 12      | 2.35        |      |
| Sphyræna quachancho         | 14.40      | 1240    | 2.06        |      |
| Dactylopterus volitans      | 13.60      | 20      | 1.95        |      |
| Stromateus fiatola          | 11.18      | 30      | 1.60        | 509  |
| Trichurus lepturus          | 9.20       | 240     | 1.32        |      |
| Pteroscion peli             | 8.80       | 140     | 1.26        |      |
| Alloteuthis africana        | 7.74       | 2460    | 1.11        |      |
| Psettodes belcheri          | 7.20       | 20      | 1.03        |      |
| Raja miraletus              | 5.00       | 20      | 0.72        |      |
| Pseudupeneus prayensis      | 3.60       | 80      | 0.52        |      |
| Lagocephalus laevigatus     | 3.40       | 40      | 0.49        |      |
| Syacium micrurum            | 2.80       | 20      | 0.40        |      |
| Uranoscopus polii           | 1.80       | 20      | 0.26        |      |
| Selar crumenophthalmus      | 1.00       | 20      | 0.14        |      |
| Trachinocephalus myops      | 0.60       | 40      | 0.09        |      |
| Grammolites gruvelli        | 0.20       | 20      | 0.03        |      |
| Trachinus lineolatus        | 0.20       | 20      | 0.03        |      |
| Callinectes pallidus        | 0.20       | 20      | 0.03        |      |
| Total                       | 697.72     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 262  
 DATE: 6/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 149  
 start stop duration Long E 907  
 TIME :14:05:35 14:35:38 30 (min) Purpose code: 3  
 LOG :8653.62 8655.10 1.47 Area code : 8  
 FDEPTH: 37 37 GearCond.code:  
 BDEPTH: 37 37 Validity code:  
 Towing dir: 150ø Wire out: 160 m Speed: 30 kn\*10

Sorted: 54 Kg Total catch: 268.09 CATCH/HOUR: 536.18

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pagellus bellottii          | 260.00     | 75500   | 48.49       |      |
| Sepia officinalis hierredda | 187.40     | 390     | 34.95       |      |
| Pseudupeneus prayensis      | 31.10      | 1690    | 5.80        | 510  |
| Decapterus punctatus        | 12.70      | 980     | 2.37        | 512  |
| Alloteuthis africana        | 9.20       | 2760    | 1.72        |      |
| Sardinella aurita           | 8.40       | 300     | 1.57        | 511  |
| Saurida brasiliensis        | 5.20       | 390     | 0.97        |      |
| Scomber japonicus           | 4.00       | 170     | 0.75        | 513  |
| Syacium micrurum            | 3.70       | 30      | 0.69        |      |
| Brachydeuterus auritus      | 2.70       | 420     | 0.50        |      |
| Dentex canariensis          | 2.50       | 10      | 0.47        |      |
| Balistes capricus           | 1.82       | 2       | 0.34        |      |
| Grammopites gruvelli        | 1.40       | 80      | 0.26        |      |
| Priacanthus arenatus        | 1.40       | 120     | 0.26        |      |
| Lepidotrigla carolae        | 1.40       | 130     | 0.26        |      |
| Fistularia petimba          | 1.00       | 80      | 0.19        |      |
| Raja miraletus              | 0.76       | 2       | 0.14        |      |
| Pemaeus notialis            | 0.70       | 30      | 0.13        |      |
| Trachinocephalus myops      | 0.50       | 10      | 0.09        |      |
| Microchirus wittei          | 0.10       | 10      | 0.02        |      |
| Microchirus frechkopi       | 0.10       | 10      | 0.02        |      |
| Bothus podas africanus      | 0.10       | 10      | 0.02        |      |
| Total                       | 536.18     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 263  
 DATE: 6/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 155  
 start stop duration Long E 900  
 TIME :16:11:39 16:41:28 30 (min) Purpose code: 3  
 LOG :8667.05 8668.58 1.42 Area code : 8  
 FDEPTH: 62 62 GearCond.code:  
 BDEPTH: 62 62 Validity code:  
 Towing dir: 150ø Wire out: 230 m Speed: 30 kn\*10

Sorted: 22 Kg Total catch: 108.30 CATCH/HOUR: 216.60

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dactylopterus volitans      | 155.40     | 1520    | 71.75       | 514  |
| Trachinus armatus           | 10.30      | 130     | 4.76        |      |
| Ariomma bondi               | 8.90       | 110     | 4.11        |      |
| Sepia officinalis hierredda | 8.50       | 60      | 3.92        |      |
| Pagellus bellottii          | 8.20       | 80      | 3.79        |      |
| Priacanthus arenatus        | 7.80       | 60      | 3.60        |      |
| Alloteuthis africana        | 7.30       | 2040    | 3.37        |      |
| Trachinocephalus myops      | 4.00       | 20      | 1.85        |      |
| Dentex canariensis          | 2.10       | 10      | 0.97        |      |
| Pseudupeneus prayensis      | 1.40       | 20      | 0.65        |      |
| Sardinella aurita           | 1.20       | 10      | 0.55        |      |
| Chelidonichthys gabonensis  | 0.90       | 10      | 0.42        |      |
| Sphaeroides marmoratus      | 0.30       | 10      | 0.14        |      |
| Saurida brasiliensis        | 0.20       | 20      | 0.09        |      |
| Decapterus punctatus        | 0.10       | 10      | 0.05        |      |
| Total                       | 216.60     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 264  
 DATE: 6/ 7/05 GEAR TYPE: BT No:15 POSITION:Lat S 211  
 start stop duration Long E 848  
 TIME :22:46:32 23:16:39 30 (min) Purpose code: 3  
 LOG :8705.94 8707.47 1.52 Area code : 8  
 FDEPTH: 563 555 GearCond.code:  
 BDEPTH: 563 555 Validity code:  
 Towing dir: 355ø Wire out:1450 m Speed:300 kn\*10

Sorted: 31 Kg Total catch: 59.16 CATCH/HOUR: 118.32

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Nematocarcinus africanus  | 74.12      | 15334   | 62.64       |      |
| Hoplostethus cadenati     | 11.12      | 378     | 9.40        |      |
| Laemonema laureysi        | 9.70       | 90      | 8.20        |      |
| Octopus sp.               | 3.02       | 4       | 2.55        |      |
| Yarellia blackfordi       | 2.64       | 94      | 2.23        |      |
| MELANOSTOMIATIDAE         | 2.38       | 46      | 2.01        |      |
| NETTASTOMATIDAE           | 2.18       | 34      | 1.84        |      |
| Lamprogrammus exutus      | 2.16       | 30      | 1.83        |      |
| Malacocephalus laevis     | 1.62       | 38      | 1.37        |      |
| C E P H A L O P O D A     | 1.58       | 8       | 1.34        |      |
| POLYCHAELIDAE             | 1.24       | 116     | 1.05        |      |
| Gonostoma elongatum       | 0.86       | 38      | 0.73        |      |
| Ectreposebastes imus      | 0.72       | 22      | 0.61        |      |
| Ebinania costaecanarie    | 0.68       | 4       | 0.57        |      |
| Nezumia aequalis          | 0.64       | 46      | 0.54        |      |
| MYCTOPHIDAE               | 0.56       | 348     | 0.47        |      |
| Bathygadus sp.            | 0.42       | 38      | 0.35        |      |
| Melanostomias sp.         | 0.38       | 12      | 0.32        |      |
| Brama brama               | 0.38       | 4       | 0.32        |      |
| Tripliphos hemingi        | 0.34       | 42      | 0.29        |      |
| Myxine capensis           | 0.30       | 4       | 0.25        |      |
| Cynoponticus ferox        | 0.22       | 4       | 0.19        |      |
| Xenodermichthys copei     | 0.16       | 8       | 0.14        |      |
| NOMEIDAE                  | 0.12       | 4       | 0.10        |      |
| Physiculus sp.            | 0.12       | 4       | 0.10        |      |
| Glyphocrangon sp.         | 0.08       | 16      | 0.07        |      |
| PANDALIDAE                | 0.08       | 38      | 0.07        |      |
| Gonostoma sp.             | 0.08       | 8       | 0.07        |      |
| GEMPYLIDAE                | 0.08       | 12      | 0.07        |      |
| Ornithoteuthis antillarum | 0.08       | 4       | 0.07        |      |
| Chascanopsetta lugubris   | 0.08       | 4       | 0.07        |      |
| GONOSTOMATIDAE            | 0.04       | 4       | 0.03        |      |
| OMMASTREPHIDAE            | 0.04       | 4       | 0.03        |      |
| Symphurus sp.             | 0.04       | 8       | 0.03        |      |
| Bathyrocongus sp.         | 0.04       | 8       | 0.03        |      |
| Argyropelecus gigas       | 0.04       | 8       | 0.03        |      |
| Total                     | 118.34     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 265  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 216  
 start stop duration Long E 852  
 TIME :01:08:58 01:36:07 27 (min) Purpose code: 3  
 LOG :8719.81 8721.25 1.43 Area code : 8  
 FDEPTH: 281 284 GearCond.code:  
 BDEPTH: 281 284 Validity code:  
 Towing dir: 350ø Wire out: 800 m Speed: 30 kn\*10

Sorted: 60 Kg Total catch: 109.80 CATCH/HOUR: 244.00

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Chlorophthalmus atlanticus | 87.91      | 1773    | 36.03       |      |
| Parasudis fraser-brueneri  | 56.71      | 1378    | 23.24       |      |
| Paromola cuvieri           | 18.93      | 11      | 7.76        |      |
| Trigla lyra                | 10.67      | 80      | 4.37        |      |
| Chascanopsetta lugubris    | 8.18       | 169     | 3.35        |      |
| Peristedion cataphractum   | 6.13       | 169     | 2.51        |      |
| Zenion hololepis           | 5.82       | 551     | 2.39        |      |
| GALATHEIDAE *              | 5.51       | 400     | 2.26        |      |
| Trichurus lepturus         | 5.24       | 31      | 2.15        |      |
| Illex coindetii            | 4.53       | 31      | 1.86        |      |
| Epigonus telescopus        | 4.44       | 187     | 1.82        |      |
| Hymenocephalus italicus    | 3.78       | 440     | 1.55        |      |
| Plesionika martia          | 3.60       | 947     | 1.48        |      |
| Malacocephalus laevis      | 2.98       | 36      | 1.22        |      |
| Merluccius polli           | 2.93       | 7       | 1.20        |      |
| Etmopterus spinax          | 2.84       | 4       | 1.16        |      |
| Squalus megalops           | 2.62       | 2       | 1.07        |      |
| Lophius vaillanti          | 1.47       | 13      | 0.60        |      |
| Lophiodes kempi            | 1.24       | 4       | 0.51        |      |
| Pterothrissus bellocci     | 1.16       | 9       | 0.48        |      |
| Scylliorhinus cervigoni    | 0.98       | 13      | 0.40        |      |
| Priacanthus arenatus       | 0.71       | 4       | 0.29        |      |
| Benthodesmus tenuis        | 0.67       | 84      | 0.27        |      |
| Calappa pelii              | 0.67       | 9       | 0.27        |      |
| Dibranchius atlanticus     | 0.44       | 36      | 0.18        |      |
| Parapenaeus longirostris   | 0.40       | 44      | 0.16        |      |
| Coelorrhinus sp.           | 0.36       | 13      | 0.15        |      |
| Cyttopsis roseus           | 0.36       | 22      | 0.15        |      |
| MYCTOPHIDAE                | 0.31       | 124     | 0.13        |      |
| NETTASTOMATIDAE            | 0.31       | 4       | 0.13        |      |
| Setarches guentheri        | 0.31       | 40      | 0.13        |      |
| Hypoclydonia bella         | 0.27       | 9       | 0.11        |      |
| Galeus polli               | 0.27       | 4       | 0.11        |      |
| Argyropelecus gigas        | 0.27       | 111     | 0.11        |      |
| Physiculus sp.             | 0.27       | 9       | 0.11        |      |
| Polymetme corythaeola      | 0.22       | 18      | 0.09        |      |
| GEMPYLIDAE                 | 0.18       | 4       | 0.07        |      |
| Dicrolene intronigra       | 0.09       | 4       | 0.04        |      |
| Bathymectes piperitus      | 0.09       | 4       | 0.04        |      |
| Dactylopterus volitans     | 0.04       | 36      | 0.02        |      |
| Xenolepidichthys dagleishi | 0.04       | 4       | 0.02        |      |
| Arnoglossus imperialis     | 0.04       | 4       | 0.02        |      |
| Total                      | 243.99     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 266  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 218  
 start stop duration Long E 854  
 TIME :04:11:47 04:32:06 20 (min) Purpose code: 3  
 LOG :8731.97 8733.06 1.09 Area code : 8  
 FDEPTH: 154 156 GearCond.code:  
 BDEPTH: 154 156 Validity code:  
 Towing dir: 320ø Wire out: 430 m Speed: 30 kn\*10

Sorted: 52 Kg Total catch: 104.08 CATCH/HOUR: 312.24

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Antigonia capros            | 129.72     | 3696    | 41.54       |      |
| Chlorophthalmus atlanticus  | 72.12      | 2772    | 23.10       |      |
| Trichurus lepturus          | 31.14      | 306     | 9.97        |      |
| Aulopus filamentosus        | 17.40      | 300     | 5.57        |      |
| Mustelus mustelus           | 15.66      | 24      | 5.02        |      |
| Dentex canariensis          | 9.84       | 204     | 3.15        |      |
| Umbra canariensis           | 7.08       | 18      | 2.27        |      |
| Trigla lyra                 | 7.02       | 42      | 2.25        |      |
| Lepidotrigla carolae        | 6.78       | 270     | 2.17        |      |
| Synagrops microlepis        | 4.50       | 252     | 1.44        |      |
| Lepidotrigla cadmani        | 4.32       | 168     | 1.38        |      |
| Sepia officinalis hierredda | 3.60       | 30      | 1.15        |      |
| Merluccius polli            | 1.44       | 18      | 0.46        |      |
| Uranoscopus cadenati        | 0.42       | 6       | 0.13        |      |
| OPHIDIIDAE                  | 0.36       | 30      | 0.12        |      |
| Illex coindetii             | 0.36       | 12      | 0.12        |      |
| Nealotus tripes             | 0.18       | 6       | 0.06        |      |
| Physiculus huloti           | 0.12       | 6       | 0.04        |      |
| Dibranchius atlanticus      | 0.12       | 12      | 0.04        |      |
| Cynoponticus ferox          | 0.06       | 6       | 0.02        |      |
| Total                       | 312.24     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 267  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 208  
 start stop duration Long E 903  
 TIME :06:36:02 07:06:03 30 (min) Purpose code: 3  
 LOG :8750.89 8752.47 1.56 Area code : 8  
 FDEPTH: 69 68 GearCond.code:  
 BDEPTH: 69 68 Validity code:  
 Towing dir: 165ø Wire out: 230 m Speed: 31 kn\*10

Sorted: 51 Kg Total catch: 516.37 CATCH/HOUR: 1032.74

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pagellus bellottii          | 295.80     | 3150    | 28.64       | 517  |
| Saurida brasiliensis        | 228.60     | 44670   | 22.14       |      |
| Boops boops                 | 148.20     | 4590    | 14.35       | 515  |
| Alloteuthis africana        | 138.60     | 60780   | 13.42       |      |
| Sepia officinalis hierredda | 65.10      | 540     | 6.30        |      |
| Illex coindetii             | 41.40      | 3780    | 4.01        |      |
| Trachurus trecae            | 31.20      | 510     | 3.02        | 516  |
| Mustelus mustelus           | 21.56      | 4       | 2.09        |      |
| Priacanthus arenatus        | 20.40      | 150     | 1.98        |      |
| Pseudupeneus prayensis      | 11.10      | 120     | 1.07        |      |
| Fistularia petimba          | 11.10      | 120     | 1.07        |      |
| Grammopites gruvelli        | 5.70       | 270     | 0.55        |      |
| Torpedo marmorata           | 5.60       | 2       | 0.54        |      |
| Squatina oculata            | 4.64       | 4       | 0.45        |      |
| Torpedo torpedo             | 2.34       | 4       | 0.23        |      |
| Raja miraletus              | 1.40       | 4       | 0.14        |      |
| Total                       | 1032.74    |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 268  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 205  
 start stop duration Long E 913  
 TIME :08:48:21 09:11:33 23 (min) Purpose code: 3  
 LOG :8764.62 8765.87 1.24 Area code : 8  
 FDEPTH: 39 37 GearCond.code:  
 BDEPTH: 39 37 Validity code:  
 Towing dir: ø Wire out: 170 m Speed: 32 kn\*10  
 Sorted: 69 Kg Total catch: 9646.43 CATCH/HOUR: 25164.60

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 271  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 220  
 start stop duration Long E 912  
 TIME :15:09:43 15:39:22 30 (min) Purpose code: 3  
 LOG :8806.32 8807.82 1.49 Area code : 8  
 FDEPTH: 56 56 GearCond.code:  
 BDEPTH: 56 56 Validity code:  
 Towing dir: 140ø Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 62 Kg Total catch: 196.49 CATCH/HOUR: 392.98

| SPECIES                | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------|------------|---------|-------------|------|
|                        | weight     | numbers |             |      |
| Decapterus punctatus   | 8493.73    | 1165615 | 33.75       | 519  |
| Prlacanthus arenatus   | 8180.77    | 46946   | 32.51       |      |
| Sardinella aurita      | 5327.69    | 460351  | 21.17       | 518  |
| Boops boops            | 1444.75    | 44763   | 5.74        |      |
| Zeus faber             | 465.81     | 365     | 1.85        |      |
| Cephalopholis taeniops | 396.68     | 365     | 1.58        |      |
| Pagellus bellottii     | 378.47     | 31297   | 1.50        | 520  |
| Pseudupeneus prayensis | 272.95     | 13466   | 1.08        |      |
| Lutjanus fulgens       | 69.16      | 365     | 0.27        |      |
| Brachydeuterus auritus | 43.67      | 1093    | 0.17        |      |
| Scomber japonicus      | 25.49      | 1456    | 0.10        |      |
| Engraulis encrasicolus | 21.83      | 1821    | 0.09        |      |
| Penaeus notialis       | 21.83      | 365     | 0.09        |      |
| Sphyræna guachancho    | 21.83      | 365     | 0.09        |      |
| Total                  | 25164.66   |         | 99.99       |      |

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Pagellus bellottii             | 214.04     | 2172    | 54.47       | 527  |
| Trachinus armatus              | 26.94      | 342     | 6.86        |      |
| Cheilodichthys gabonensis      | 25.38      | 276     | 6.46        |      |
| Trachinocephalus myops         | 17.52      | 114     | 4.46        |      |
| Trachinus radiatus             | 16.74      | 54      | 4.26        |      |
| Bothus podas africanus         | 15.48      | 402     | 3.94        |      |
| Squatina oculata               | 14.90      | 2       | 3.79        |      |
| Umbrina canariensis            | 10.80      | 36      | 2.75        |      |
| Alloteuthis africana           | 9.72       | 4860    | 2.47        |      |
| Uranoscopus cadenati           | 5.94       | 42      | 1.51        |      |
| Sphyræna sphyræna              | 5.40       | 24      | 1.37        |      |
| Boops boops                    | 5.16       | 102     | 1.31        |      |
| Pseudupeneus prayensis         | 3.36       | 48      | 0.86        |      |
| Sepia officinalis hierredda    | 3.28       | 20      | 0.83        |      |
| Syacium micrurum               | 2.88       | 24      | 0.73        |      |
| Fistularia petimba             | 2.76       | 30      | 0.70        |      |
| Dicologlossa hexophthalma      | 1.92       | 24      | 0.49        |      |
| Trachurus trecae               | 1.86       | 6       | 0.47        |      |
| Dactylopterus volitans         | 1.68       | 18      | 0.43        |      |
| Priacanthus arenatus           | 1.62       | 12      | 0.41        |      |
| Torpedo torpedo                | 1.56       | 2       | 0.40        |      |
| Synaptura cadenati             | 1.02       | 6       | 0.26        |      |
| Octopus sp.                    | 0.90       | 12      | 0.23        |      |
| Sphoeroides marmoratus         | 0.60       | 12      | 0.15        |      |
| Chilomycterus spinosus mauret. | 0.54       | 6       | 0.14        |      |
| Brachydeuterus auritus         | 0.42       | 6       | 0.11        |      |
| Total                          | 392.42     |         | 99.86       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 269  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 200  
 start stop duration Long E 917  
 TIME :10:51:36 11:01:37 10 (min) Purpose code: 3  
 LOG :8773.41 8773.92 0.39 Area code : 8  
 FDEPTH: 19 19 GearCond.code:  
 BDEPTH: 19 19 Validity code:  
 Towing dir: 160ø Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 35 Kg Total catch: 536.85 CATCH/HOUR: 3221.10

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 272  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 228  
 start stop duration Long E 904  
 TIME :17:09:26 17:39:14 30 (min) Purpose code: 3  
 LOG :8820.58 8822.17 1.59 Area code : 8  
 FDEPTH: 106 109 GearCond.code:  
 BDEPTH: 106 109 Validity code:  
 Towing dir: 330ø Wire out: 300 m Speed: 31 kn\*10  
 Sorted: 85 Kg Total catch: 85.36 CATCH/HOUR: 170.72

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus Juv. | 1719.00    | 440910  | 53.37       | 522  |
| Sardinella aurita           | 1134.00    | 108900  | 35.21       | 521  |
| Sphyræna sp.                | 159.30     | 11340   | 4.95        |      |
| Decapterus punctatus        | 135.90     | 720     | 4.22        |      |
| Pagellus bellottii          | 20.70      | 2250    | 0.64        | 523  |
| Prlacanthus arenatus        | 19.80      | 90      | 0.61        |      |
| Lutjanus fulgens            | 16.20      | 90      | 0.50        |      |
| Penaeus notialis            | 9.00       | 270     | 0.28        |      |
| Chlorophthalmus atlanticus  | 4.50       | 90      | 0.14        |      |
| Selene dorsalis, juveniles  | 1.80       | 180     | 0.06        |      |
| Boops boops                 | 0.90       | 90      | 0.03        |      |
| Total                       | 3221.10    |         | 100.01      |      |

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex macrophthalmus       | 41.80      | 642     | 24.48       | 532  |
| Pagellus bellottii          | 13.68      | 124     | 8.01        | 531  |
| Umbrina canariensis         | 13.16      | 34      | 7.71        | 528  |
| Ariomma bondi               | 12.96      | 206     | 7.59        | 529  |
| Trichurus lepturus          | 10.60      | 14      | 6.21        |      |
| Alloteuthis africana        | 10.56      | 2904    | 6.19        |      |
| Illex coindetii             | 9.82       | 442     | 5.75        |      |
| Saurida brasiliensis        | 9.54       | 1908    | 5.59        |      |
| Rhinobatos albomaculatus    | 9.24       | 4       | 5.41        |      |
| Lepidotrigla carolae        | 5.72       | 204     | 3.35        |      |
| Sepia officinalis hierredda | 5.00       | 66      | 2.93        |      |
| Raja miraletus              | 4.80       | 18      | 2.81        |      |
| Zeus faber                  | 3.98       | 6       | 2.33        |      |
| Fistularia petimba          | 3.48       | 14      | 2.04        |      |
| Spicara alta                | 3.36       | 64      | 1.97        |      |
| Sea cucumbers               | 1.90       | 4       | 1.11        |      |
| Octopus vulgaris            | 1.82       | 2       | 1.07        |      |
| Trachinus pellegrini        | 1.58       | 36      | 0.93        |      |
| Scorpaena angolensis        | 1.46       | 4       | 0.86        |      |
| Citharus linguatula         | 1.08       | 64      | 0.63        |      |
| Dentex angolensis           | 1.06       | 10      | 0.62        |      |
| Sphoeroides marmoratus      | 0.94       | 6       | 0.55        |      |
| Pseudupeneus prayensis      | 0.76       | 6       | 0.45        |      |
| Priacanthus arenatus        | 0.72       | 4       | 0.42        |      |
| Dentex canariensis          | 0.66       | 2       | 0.39        |      |
| Cynoponticus ferox          | 0.34       | 4       | 0.20        |      |
| Boops boops                 | 0.28       | 4       | 0.16        |      |
| Trachinus armatus           | 0.18       | 10      | 0.11        |      |
| Syacium micrurum            | 0.12       | 16      | 0.07        |      |
| Trachinus lineolatus        | 0.08       | 2       | 0.05        |      |
| Microchirus boscanion       | 0.04       | 2       | 0.02        |      |
| Total                       | 170.72     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 270  
 DATE: 7/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 215  
 start stop duration Long E 919  
 TIME :13:12:36 13:24:05 11 (min) Purpose code: 3  
 LOG :8791.73 8792.37 0.63 Area code : 8  
 FDEPTH: 38 39 GearCond.code:  
 BDEPTH: 38 39 Validity code:  
 Towing dir: 325ø Wire out: 160 m Speed: 30 kn\*10  
 Sorted: 87 Kg Total catch: 87.13 CATCH/HOUR: 475.25

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 273  
 DATE: 7/ 7/05 GEAR TYPE: BT No:15 POSITION:Lat S 239  
 start stop duration Long E 858  
 TIME :21:45:53 22:15:54 30 (min) Purpose code: 3  
 LOG :8847.52 8849.06 1.54 Area code : 8  
 FDEPTH: 491 478 GearCond.code:  
 BDEPTH: 491 478 Validity code:  
 Towing dir: 325ø Wire out:1350 m Speed: 31 kn\*10  
 Sorted: 23 Kg Total catch: 213.94 CATCH/HOUR: 427.88

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Pagellus bellottii           | 123.05     | 1571    | 25.89       |      |
| Pomadasy incisus             | 82.58      | 720     | 17.38       | 526  |
| Umbrina canariensis          | 40.36      | 87      | 8.49        |      |
| Dentex canariensis           | 34.47      | 65      | 7.25        |      |
| Lutjanus fulgens             | 29.51      | 158     | 6.21        |      |
| Trachurus trecae             | 28.42      | 458     | 5.98        | 524  |
| Acanthopus monroviae         | 24.87      | 33      | 5.23        |      |
| Lithognathus mormyrus        | 17.35      | 44      | 3.65        |      |
| Sepia officinalis hierredda  | 14.56      | 49      | 3.06        |      |
| Sphyræna sphyræna            | 12.27      | 55      | 2.58        |      |
| Raja miraletus               | 11.35      | 22      | 2.39        |      |
| Pagrus caeruleostictus       | 10.91      | 60      | 2.30        |      |
| Pseudupeneus prayensis       | 7.69       | 147     | 1.62        |      |
| Alloteuthis africana         | 7.53       | 1882    | 1.58        |      |
| Plectorhynchus mediterraneus | 7.09       | 5       | 1.49        |      |
| Chaetodon robustus           | 4.09       | 55      | 0.86        |      |
| Syacium micrurum             | 3.16       | 44      | 0.66        |      |
| Decapterus punctatus         | 2.89       | 147     | 0.61        | 525  |
| Scyllarides herklotsii       | 2.45       | 11      | 0.52        |      |
| Cephalopholis nigri          | 2.18       | 11      | 0.46        |      |
| Fistularia petimba           | 2.07       | 11      | 0.44        |      |
| Grammolites gruvelli         | 2.02       | 98      | 0.43        |      |
| Prlacanthus arenatus         | 1.42       | 5       | 0.30        |      |
| Torpedo torpedo              | 0.82       | 5       | 0.17        |      |
| Sardinella aurita            | 0.76       | 76      | 0.16        |      |
| Boops boops                  | 0.55       | 33      | 0.12        |      |
| Penaeus notialis             | 0.44       | 11      | 0.09        |      |
| Brachydeuterus auritus       | 0.38       | 76      | 0.08        |      |
| Total                        | 475.24     |         | 100.00      |      |

| SPECIES                  | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------|------------|---------|-------------|------|
|                          | weight     | numbers |             |      |
| Nematocarcinus africanus | 224.58     | 48146   | 52.49       |      |
| Hymenocephalus italicus  | 93.86      | 8570    | 21.94       |      |
| Lamprogrammus exutus     | 43.12      | 552     | 10.08       |      |
| Hoplostethus cadenati    | 33.44      | 1046    | 7.82        |      |
| Plesionika martia        | 9.30       | 798     | 2.17        |      |
| Benthodesmus tenuis      | 6.46       | 190     | 1.51        |      |
| Laemonema laureysi       | 5.88       | 114     | 1.37        |      |
| Geryon maritae           | 2.84       | 20      | 0.66        |      |
| Malacocephalus laevis    | 2.28       | 20      | 0.53        |      |
| POLYCHAELIDAE            | 1.52       | 152     | 0.36        |      |
| Physiculus sp.           | 0.94       | 20      | 0.22        |      |
| Melanostomias sp.        | 0.76       | 20      | 0.18        |      |
| Laemonema sp.            | 0.56       | 58      | 0.13        |      |
| Parapandalus sp.         | 0.56       | 114     | 0.13        |      |
| Bathyclupea sp.          | 0.38       | 58      | 0.09        |      |
| Ectreposebastes imus     | 0.38       | 20      | 0.09        |      |
| Gonostoma sp.            | 0.38       | 20      | 0.09        |      |
| GONOSTOMATIDAE           | 0.38       | 38      | 0.09        |      |
| MYCTOPHIDAE              | 0.18       | 76      | 0.04        |      |
| Total                    | 427.80     |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 274  
 DATE: 8/ 7/05 GEAR TYPE: BT No:15 POSITION:Lat S 239  
 start stop duration Long E 912  
 TIME :05:19:56 05:49:37 30 (min) Purpose code: 3  
 LOG :8889.99 8891.54 1.55 Area code : 8  
 FDEPTH: 91 92 GearCond.code:  
 BDEPTH: 91 92 Validity code:  
 Towing dir: 140ø Wire out: 280 m Speed: 31 kn\*10

Sorted: 73 Kg Total catch: 73.80 CATCH/HOUR: 147.60

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pagellus bellottii          | 58.56      | 432     | 39.67       | 536  |
| Lepidotrigla carolae        | 16.84      | 232     | 11.41       |      |
| Priacanthus arenatus        | 9.88       | 66      | 6.69        |      |
| Mustelus mustelus           | 7.48       | 4       | 5.07        |      |
| Sepia officinalis hierredda | 7.32       | 88      | 4.96        |      |
| Dactylopterus volitans      | 6.54       | 42      | 4.43        |      |
| J E L Y F I S H             | 6.22       | 110     | 4.21        |      |
| Myxistrophis rostellatus    | 5.48       | 6       | 3.71        |      |
| Raja miraletus              | 4.14       | 14      | 2.80        |      |
| Fistularia petimba          | 4.06       | 26      | 2.75        | 535  |
| Torpedo torpedo             | 2.88       | 6       | 1.95        |      |
| Saurida brasiliensis        | 2.56       | 298     | 1.73        |      |
| Zeus faber                  | 2.10       | 6       | 1.42        |      |
| Ubrina canariensis          | 2.06       | 6       | 1.40        |      |
| Chromis cadenati            | 1.78       | 20      | 1.21        |      |
| Sargocentron haastatus      | 1.48       | 10      | 1.00        |      |
| Dentex macrocephalus        | 1.40       | 52      | 0.95        | 533  |
| Boops boops                 | 1.38       | 34      | 0.93        |      |
| Ariomma bondi               | 1.28       | 34      | 0.87        | 534  |
| Sphaeroides marmoratus      | 1.28       | 8       | 0.87        |      |
| Torpedo marmorata           | 1.08       | 2       | 0.73        |      |
| Illex coindetii             | 0.88       | 68      | 0.60        |      |
| Pseudupeneus prayensis      | 0.72       | 8       | 0.49        |      |
| Antigonia capros            | 0.20       | 36      | 0.14        |      |
| Total                       | 147.60     | 99.99   |             |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 277  
 DATE: 8/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 237  
 start stop duration Long E 939  
 TIME :13:27:13 13:57:17 30 (min) Purpose code: 3  
 LOG :8949.31 8950.89 1.57 Area code : 8  
 FDEPTH: 37 38 GearCond.code:  
 BDEPTH: 37 38 Validity code:  
 Towing dir: 140ø Wire out: 160 m Speed: 31 kn\*10

Sorted: 40 Kg Total catch: 416.51 CATCH/HOUR: 833.02

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Engraulis encrasicolus      | 319.00     | 48554   | 38.29       | 546  |
| Pagellus bellottii          | 237.16     | 16764   | 28.47       | 549  |
| Sepia officinalis hierredda | 113.52     | 242     | 13.63       |      |
| Ephippion guttifer          | 43.78      | 22      | 5.26        |      |
| Brachydeuterus auritus      | 37.40      | 1232    | 4.49        |      |
| Scomber japonicus           | 21.78      | 462     | 2.61        | 548  |
| Pagrus caeruleostictus      | 19.14      | 44      | 2.30        |      |
| Torpedo torpedo             | 15.94      | 66      | 1.91        |      |
| Pomadasy incisus            | 7.04       | 44      | 0.85        |      |
| Pseudupeneus prayensis      | 5.28       | 198     | 0.63        |      |
| Dentex canariensis          | 4.18       | 22      | 0.50        |      |
| Pseudolithus senegalensis   | 3.52       | 4       | 0.42        |      |
| Cynoglossus canariensis     | 2.30       | 10      | 0.28        |      |
| Trachurus trecae, juvenile  | 1.10       | 660     | 0.13        | 547  |
| Alloteuthis africana        | 0.88       | 308     | 0.11        |      |
| Lepidotrigla carolae        | 0.66       | 110     | 0.08        |      |
| Sphyraena guachancho        | 0.44       | 22      | 0.05        |      |
| Grammolites gruvelli        | 0.22       | 22      | 0.03        |      |
| Sardinella aurita           | 0.22       | 44      | 0.03        |      |
| Saurida brasiliensis        | 0.22       | 66      | 0.03        |      |
| Total                       | 833.78     | 100.10  |             |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 278  
 DATE: 8/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 241  
 start stop duration Long E 934  
 TIME :15:13:53 15:43:55 30 (min) Purpose code: 3  
 LOG :8960.34 8961.88 1.53 Area code : 8  
 FDEPTH: 53 52 GearCond.code:  
 BDEPTH: 53 52 Validity code:  
 Towing dir: 130ø Wire out: 200 m Speed: 31 kn\*10

Sorted: 69 Kg Total catch: 578.06 CATCH/HOUR: 1156.12

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Scomber japonicus           | 665.84     | 29288   | 57.59       | 551  |
| Pagellus bellottii          | 334.32     | 19096   | 28.92       | 550  |
| Epinephelus aeneus          | 34.60      | 4       | 2.99        |      |
| Sepia officinalis hierredda | 28.00      | 84      | 2.42        |      |
| Pseudupeneus prayensis      | 24.64      | 1176    | 2.13        |      |
| Balistes caprisicus         | 13.16      | 12      | 1.14        |      |
| Dactylopterus volitans      | 12.04      | 84      | 1.04        |      |
| Alloteuthis africana        | 9.52       | 3332    | 0.82        |      |
| Trachurus trecae, juvenile  | 6.44       | 2352    | 0.56        |      |
| Chelidonichthys gabonensis  | 6.44       | 84      | 0.56        |      |
| Leptocharias smithii        | 6.20       | 2       | 0.54        |      |
| Raja miraletus              | 4.96       | 10      | 0.43        |      |
| Trachinocephalus myops      | 1.96       | 28      | 0.17        |      |
| Trachinus armatus           | 1.68       | 28      | 0.15        |      |
| Grammolites gruvelli        | 1.40       | 56      | 0.12        |      |
| Fistularia petimba          | 1.40       | 56      | 0.12        |      |
| Arnoglossus imperialis      | 1.12       | 196     | 0.10        |      |
| Torpedo torpedo             | 0.92       | 2       | 0.08        |      |
| Ubrina canariensis          | 0.92       | 2       | 0.08        |      |
| Saurida brasiliensis        | 0.56       | 28      | 0.05        |      |
| Total                       | 1156.12    | 100.01  |             |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 275  
 DATE: 8/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 229  
 start stop duration Long E 929  
 TIME :08:41:29 09:11:13 30 (min) Purpose code: 3  
 LOG :8916.98 8918.57 1.57 Area code : 8  
 FDEPTH: 40 39 GearCond.code:  
 BDEPTH: 40 39 Validity code:  
 Towing dir: 320ø Wire out: 160 m Speed: 31 kn\*10

Sorted: 64 Kg Total catch: 319.80 CATCH/HOUR: 639.60

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pagellus bellottii          | 277.80     | 5770    | 43.43       | 537  |
| Brachydeuterus auritus      | 277.60     | 25470   | 43.40       | 538  |
| Sphyraena guachancho        | 33.50      | 240     | 5.24        | 541  |
| Sepia officinalis hierredda | 12.60      | 40      | 1.97        |      |
| Rhinobatos albomaculatus    | 9.30       | 10      | 1.45        |      |
| Pseudupeneus prayensis      | 6.50       | 330     | 1.02        | 539  |
| Scomber japonicus           | 5.20       | 260     | 0.81        | 540  |
| Cynoglossus canariensis     | 4.00       | 20      | 0.63        |      |
| Fistularia petimba          | 3.10       | 70      | 0.48        | 542  |
| Aluterus blankerti          | 2.20       | 10      | 0.34        |      |
| Priacanthus arenatus        | 1.60       | 10      | 0.25        |      |
| Pomadasy incisus            | 1.40       | 10      | 0.22        |      |
| Trachurus trecae            | 1.40       | 180     | 0.22        |      |
| Penaeus notialis            | 1.30       | 20      | 0.20        |      |
| Citharus linguatula         | 0.80       | 20      | 0.13        |      |
| Bothus podas africanus      | 0.70       | 20      | 0.11        |      |
| Zeus faber                  | 0.40       | 10      | 0.06        |      |
| Sardinella aurita           | 0.20       | 20      | 0.03        |      |
| Total                       | 639.60     | 99.99   |             |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 279  
 DATE: 8/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 251  
 start stop duration Long E 924  
 TIME :17:32:02 18:02:01 30 (min) Purpose code: 3  
 LOG :8977.80 8979.32 1.51 Area code : 8  
 FDEPTH: 102 103 GearCond.code:  
 BDEPTH: 102 103 Validity code:  
 Towing dir: 125ø Wire out: 320 m Speed: 30 kn\*10

Sorted: 190 Kg Total catch: 190.53 CATCH/HOUR: 381.06

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| RAJIDAE                     | 200.00     | 2       | 52.49       |      |
| Mustelus mustelus           | 39.20      | 22      | 10.29       |      |
| Saurida brasiliensis        | 28.48      | 3322    | 7.47        |      |
| Lepidotrigla carolae        | 25.00      | 520     | 6.56        |      |
| Pagellus bellottii          | 18.84      | 248     | 4.94        |      |
| Illex coindetii             | 14.00      | 496     | 3.67        |      |
| Sepia officinalis hierredda | 12.46      | 110     | 3.27        |      |
| Citharus linguatula         | 6.94       | 254     | 1.82        |      |
| Trichurus lepturus          | 6.72       | 8       | 1.76        | 552  |
| Ubrina canariensis          | 6.52       | 18      | 1.71        | 553  |
| Trachinus pellegrini        | 3.38       | 94      | 0.89        |      |
| Myxistrophis rostellatus    | 2.92       | 24      | 0.77        |      |
| Brotula barbata             | 2.82       | 138     | 0.74        |      |
| Setarches guentheri         | 2.70       | 38      | 0.71        |      |
| J E L Y F I S H             | 2.32       | 20      | 0.61        |      |
| Raja miraletus              | 1.62       | 6       | 0.43        |      |
| Dactylopterus volitans      | 1.50       | 4       | 0.39        |      |
| Torpedo torpedo             | 1.30       | 2       | 0.34        |      |
| Alloteuthis africana        | 1.20       | 304     | 0.31        |      |
| Grammolites gruvelli        | 1.12       | 24      | 0.29        |      |
| Uranoscopus polli           | 1.02       | 10      | 0.27        |      |
| Bothus podas africanus      | 0.32       | 8       | 0.08        |      |
| Priacanthus arenatus        | 0.30       | 2       | 0.08        |      |
| Antigonia capros            | 0.22       | 40      | 0.06        |      |
| Scomber japonicus           | 0.10       | 4       | 0.03        |      |
| Zeus faber                  | 0.06       | 10      | 0.02        |      |
| Total                       | 381.06     | 100.00  |             |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 276  
 DATE: 8/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 225  
 start stop duration Long E 934  
 TIME :10:30:50 10:41:02 10 (min) Purpose code: 3  
 LOG :8927.96 8928.48 0.52 Area code : 8  
 FDEPTH: 19 20 GearCond.code:  
 BDEPTH: 19 20 Validity code:  
 Towing dir: 140ø Wire out: 120 m Speed: 30 kn\*10

Sorted: 53 Kg Total catch: 231.10 CATCH/HOUR: 1386.60

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Brachydeuterus auritus         | 1092.48    | 45984   | 78.79       | 543  |
| Sphyraena guachancho           | 103.68     | 4560    | 7.48        | 545  |
| Alectis alexandrinus           | 103.56     | 12      | 7.47        |      |
| Pagellus bellottii             | 36.48      | 2160    | 2.63        |      |
| Scomber japonicus              | 24.48      | 816     | 1.77        | 544  |
| Dentex canariensis             | 8.88       | 144     | 0.64        |      |
| Pseudupeneus prayensis         | 4.56       | 48      | 0.33        |      |
| Psettodes belcheri             | 4.32       | 24      | 0.31        |      |
| Galeoides decadactylus         | 2.64       | 48      | 0.19        |      |
| Chilomycterus spinosus mauret. | 2.40       | 24      | 0.17        |      |
| Penaeus notialis               | 1.44       | 24      | 0.10        |      |
| Sardinella aurita              | 1.20       | 120     | 0.09        |      |
| Sicyonia galeata               | 0.24       | 24      | 0.02        |      |
| Trachinocephalus myops         | 0.24       | 24      | 0.02        |      |
| Total                          | 1386.60    | 100.01  |             |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 280  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 305  
 start stop duration Long E 929  
 TIME :01:41:08 02:11:57 31 (min) Purpose code: 3  
 LOG :9029.47 9031.03 1.54 Area code : 8  
 FDEPTH: 301 306 GearCond.code:  
 BDEPTH: 301 306 Validity code:  
 Towing dir: 137° Wire out: 750 m Speed: 30 kn\*10

Sorted: 43 Kg Total catch: 109.23 CATCH/HOUR: 211.41

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 282  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 258  
 start stop duration Long E 938  
 TIME :05:40:53 06:10:52 30 (min) Purpose code: 3  
 LOG :9052.97 9054.45 1.47 Area code : 8  
 FDEPTH: 89 90 GearCond.code:  
 BDEPTH: 89 90 Validity code:  
 Towing dir: 140° Wire out: 300 m Speed: 30 kn\*10

Sorted: 51 Kg Total catch: 98.30 CATCH/HOUR: 196.60

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Chlorophthalmus atlanticus  | 80.01      | 2332    | 37.85       |      |
| GALATHEIDAE                 | 42.62      | 4128    | 20.16       |      |
| Plesionika marila           | 8.34       | 2595    | 3.94        |      |
| Parasudis fraser-bruenneri  | 7.26       | 174     | 3.43        |      |
| Merluccius polli            | 7.10       | 31      | 3.36        |      |
| Centrophorus granulosus     | 6.93       | 2       | 3.28        |      |
| Parapanaeus longirostris    | 4.80       | 567     | 2.27        |      |
| Illex coindetii             | 4.28       | 41      | 2.02        |      |
| Calappa-like with spines    | 4.12       | 77      | 1.95        |      |
| Hymenocephalus italicus     | 3.70       | 838     | 1.75        |      |
| Peristedion cataphractum    | 3.70       | 124     | 1.75        |      |
| Epigonus telescopus         | 3.50       | 139     | 1.66        |      |
| Trigla lyra                 | 2.73       | 21      | 1.29        |      |
| Chascanopsetta lugubris     | 2.63       | 68      | 1.24        |      |
| Trichiurus lepturus         | 2.57       | 170     | 1.22        |      |
| Todaropsis eblanae          | 2.52       | 56      | 1.19        |      |
| NETTASTOMATIDAE             | 2.48       | 25      | 1.17        |      |
| Paromola cuvieri            | 2.32       | 6       | 1.10        |      |
| Saurida brasiliensis        | 2.26       | 72      | 1.07        |      |
| Bembrops heterurus          | 2.17       | 41      | 1.03        |      |
| Scyliorhinus cervigoni      | 1.95       | 21      | 0.92        |      |
| Physiculus sp.              | 1.74       | 56      | 0.82        |      |
| Polymetme corythaeola       | 1.59       | 221     | 0.75        |      |
| Raja miraletus              | 1.49       | 6       | 0.70        |      |
| Zenion hololepis            | 1.24       | 114     | 0.59        |      |
| Lophius vaillanti           | 1.08       | 15      | 0.51        |      |
| Dibranchius atlanticus      | 0.97       | 114     | 0.46        |      |
| MYCTOPHIDAE                 | 0.97       | 248     | 0.46        |      |
| CONGRIDAE                   | 0.83       | 6       | 0.39        |      |
| Raja straeleni              | 0.81       | 6       | 0.38        |      |
| Citharus linguatula         | 0.64       | 21      | 0.30        |      |
| Pontinus accraensis         | 0.56       | 6       | 0.26        |      |
| Chelidonichthys gabonensis  | 0.56       | 6       | 0.26        |      |
| Cyttopsis roseus            | 0.31       | 10      | 0.15        |      |
| Arnoglossus imperialis      | 0.15       | 10      | 0.07        |      |
| Lepidotrigla carolae        | 0.10       | 6       | 0.05        |      |
| Setarches guentheri         | 0.10       | 10      | 0.05        |      |
| CEPOLIDAE                   | 0.06       | 6       | 0.03        |      |
| Xenolepidichthys americanus | 0.06       | 6       | 0.03        |      |
| Epigonus sp.                | 0.06       | 6       | 0.03        |      |
| Liocarcinus corrugatus      | 0.06       | 6       | 0.03        |      |
| Total                       | 211.37     |         | 99.97       |      |

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trichiurus lepturus          | 34.52      | 68      | 17.56       |      |
| J E L Y F I S H              | 29.12      |         | 14.81       |      |
| Dentex congongensis          | 28.32      | 744     | 14.40       | 557  |
| Sepiella ornata              | 18.64      | 216     | 9.48        |      |
| Pagellus bellottii           | 16.84      | 204     | 8.57        | 558  |
| Illex coindetii              | 15.12      | 1260    | 7.69        |      |
| Boops boops                  | 11.08      | 312     | 5.64        | 556  |
| Mustelus mustelus            | 10.72      | 4       | 5.45        |      |
| Alloteuthis africana         | 7.80       | 2184    | 3.97        |      |
| Chelidonichthys gabonensis   | 3.76       | 112     | 1.91        |      |
| Trachurus trecae             | 3.28       | 12      | 1.67        |      |
| Selene dorsalis              | 2.76       | 12      | 1.40        |      |
| Scorpaena scrofa             | 2.20       | 4       | 1.12        |      |
| Torpedo sp.                  | 1.72       | 4       | 0.87        |      |
| Saurida brasiliensis         | 1.64       | 468     | 0.83        |      |
| Zeus faber                   | 1.48       | 12      | 0.75        |      |
| Lophiodes kempi              | 1.44       | 4       | 0.73        |      |
| Chilomycterus sp.            | 1.08       | 8       | 0.55        |      |
| Citharus linguatula          | 1.00       | 52      | 0.51        |      |
| Grammopites gruvelli         | 0.92       | 28      | 0.47        |      |
| Brachydeuterus auritus       | 0.76       | 16      | 0.39        |      |
| Antigonia capros             | 0.64       | 32      | 0.33        |      |
| Sea cucumbers                | 0.60       | 4       | 0.31        |      |
| Branchiostegus semifasciatus | 0.56       | 4       | 0.28        |      |
| Fistularia petimba           | 0.44       | 4       | 0.22        |      |
| Blennius normani             | 0.16       | 12      | 0.08        |      |
| Total                        | 196.60     |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 283  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 251  
 start stop duration Long E 946  
 TIME :08:03:58 08:24:01 20 (min) Purpose code: 3  
 LOG :9068.58 9069.58 1.01 Area code : 8  
 FDEPTH: 47 47 GearCond.code:  
 BDEPTH: 47 47 Validity code:  
 Towing dir: 140° Wire out: 170 m Speed: 30 kn\*10

Sorted: 62 Kg Total catch: 1274.51 CATCH/HOUR: 3823.53

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sardinella aurita           | 2142.66    | 83394   | 56.04       | 559  |
| Pagellus bellottii          | 1248.45    | 67482   | 32.65       | 561  |
| Scomber japonicus           | 144.00     | 6360    | 3.77        | 562  |
| Trachurus trecae, juvenile  | 118.08     | 14946   | 3.09        | 563  |
| Sepia officinalis hierredda | 44.28      | 183     | 1.16        |      |
| Raja miraletus              | 40.59      | 123     | 1.06        |      |
| Brachydeuterus auritus      | 25.83      | 798     | 0.68        | 560  |
| Pseudupeneus prayensis      | 24.60      | 1968    | 0.64        |      |
| Citharus linguatula         | 22.74      | 369     | 0.59        |      |
| Torpedo torpedo             | 9.84       | 60      | 0.26        |      |
| Saurida brasiliensis        | 2.46       | 492     | 0.06        |      |
| Total                       | 3823.53    |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 281  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 303  
 start stop duration Long E 931  
 TIME :03:26:59 03:56:55 30 (min) Purpose code: 3  
 LOG :9037.80 9039.28 1.48 Area code : 8  
 FDEPTH: 161 159 GearCond.code:  
 BDEPTH: 161 159 Validity code:  
 Towing dir: 157° Wire out: 400 m Speed: 30 kn\*10

Sorted: 42 Kg Total catch: 234.92 CATCH/HOUR: 469.84

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Arionma bondi                | 150.24     | 2400    | 31.98       | 554  |
| Aulopus cadenati             | 78.96      | 1428    | 16.81       |      |
| Illex coindetii              | 30.48      | 384     | 6.49        |      |
| Antigonia capros             | 26.40      | 768     | 5.62        |      |
| Dentex angolensis            | 25.20      | 156     | 5.36        | 555  |
| Merluccius merluccius        | 24.24      | 288     | 5.16        |      |
| Lepidotrigla carolae         | 24.12      | 792     | 5.13        |      |
| Squalus megalops             | 21.48      | 24      | 4.57        |      |
| Dentex congongensis          | 17.40      | 264     | 3.70        |      |
| Mystriophis rostellatus      | 13.92      | 24      | 2.96        |      |
| Umbrina canariensis          | 12.48      | 24      | 2.66        |      |
| Synagrops microlepis         | 10.20      | 420     | 2.17        |      |
| Mustelus mustelus            | 8.12       | 2       | 1.73        |      |
| Peristedion cataphractum     | 7.68       | 192     | 1.63        |      |
| Todaropsis eblanae           | 3.96       | 64      | 0.84        |      |
| Brotula barbata              | 3.72       | 12      | 0.79        |      |
| Pterothrissus belloci        | 2.52       | 24      | 0.54        |      |
| Lepidotrigla cadmani         | 2.04       | 24      | 0.43        |      |
| Pentheroscion mbizi          | 1.92       | 12      | 0.41        |      |
| Branchiostegus semifasciatus | 1.68       | 12      | 0.36        |      |
| Chlorophthalmus atlanticus   | 1.20       | 204     | 0.26        |      |
| CEPOLIDAE                    | 0.84       | 42      | 0.18        |      |
| Dibranchius atlanticus       | 0.72       | 12      | 0.15        |      |
| Citharus linguatula          | 0.36       | 12      | 0.08        |      |
| Total                        | 469.88     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 284  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 248  
 start stop duration Long E 954  
 TIME :10:09:20 10:29:33 20 (min) Purpose code: 3  
 LOG :9081.62 9082.72 1.09 Area code : 8  
 FDEPTH: 21 19 GearCond.code:  
 BDEPTH: 21 19 Validity code:  
 Towing dir: 320° Wire out: 120 m Speed: 31 kn\*10

Sorted: 78 Kg Total catch: 640.71 CATCH/HOUR: 1922.13

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 1252.50    | 459249  | 65.16       | 564  |
| Ilisha africana             | 132.36     | 7425    | 6.89        | 568  |
| Pseudotolithus senegalensis | 129.36     | 75      | 6.73        |      |
| Sphyræna guachancho         | 70.11      | 1836    | 3.65        | 566  |
| Arius heudeoti              | 65.64      | 75      | 3.41        |      |
| Trichiurus lepturus         | 64.86      | 2625    | 3.37        | 565  |
| Alectis alexandrinus        | 56.82      | 12      | 2.96        |      |
| Pagellus bellottii          | 36.75      | 786     | 1.91        |      |
| Sepia officinalis hierredda | 24.36      | 36      | 1.27        |      |
| Paragaleus pectoralis       | 19.26      | 12      | 1.00        |      |
| Selene dorsalis             | 19.11      | 4350    | 0.99        | 567  |
| Pteroscion pelli            | 14.61      | 186     | 0.76        |      |
| Galeoides decadactylus      | 13.86      | 261     | 0.72        |      |
| Pomadourus jubelini         | 10.86      | 36      | 0.56        |      |
| Rhizoprionodon acutus       | 6.42       | 3       | 0.33        |      |
| Torpedo nobiliana           | 3.60       | 3       | 0.19        |      |
| Stromateus fiatola          | 0.90       | 3       | 0.05        |      |
| Eucinostomus melanopterus   | 0.75       | 36      | 0.04        |      |
| Total                       | 1922.13    |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 285  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 302  
 start stop duration Long E 954  
 TIME :15:18:21 15:49:34 31 (min) Purpose code: 3  
 LOG :9116.55 9118.13 1.57 Area code : 8  
 FDEPTH: 53 53 GearCond.code:  
 BDEPTH: 53 53 Validity code:  
 Towing dir: 130° Wire out: 200 m Speed: 30 kn\*10

Sorted: 49 Kg Total catch: 952.64 CATCH/HOUR: 1843.82

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pagellus bellottii          | 512.90     | 35903   | 27.82       |      |
| Trachurus trecae            | 442.74     | 4984    | 24.01       | 570  |
| Sardinella aurita           | 330.00     | 39097   | 17.90       | 571  |
| Boops boops                 | 221.61     | 43790   | 12.02       | 573  |
| Trachurus trecae, juvenile  | 91.94      | 23710   | 4.99        | 572  |
| Scomber japonicus           | 35.81      | 1935    | 1.94        | 569  |
| Brachydeuterus auritus      | 30.97      | 435     | 1.68        |      |
| Priacanthus arenatus        | 23.71      | 145     | 1.29        |      |
| Zeus faber                  | 20.07      | 23      | 1.09        |      |
| Pomadourus incisus          | 16.94      | 97      | 0.92        |      |
| Fistularia petimba          | 16.45      | 97      | 0.89        |      |
| Squatina oculata            | 15.10      | 4       | 0.82        |      |
| Torpedo torpedo             | 14.03      | 23      | 0.76        |      |
| Trachinocephalus myops      | 13.06      | 97      | 0.71        |      |
| Alloteuthis africana        | 12.58      | 5323    | 0.68        |      |
| Syacium micrurum            | 11.13      | 97      | 0.60        |      |
| Dactylopterus volitans      | 8.23       | 23      | 0.45        |      |
| Pseudotolithus senegalensis | 7.26       | 48      | 0.39        |      |
| Sepia officinalis hierredda | 6.29       | 48      | 0.34        |      |
| Engraulis encrasicolus      | 3.87       | 532     | 0.21        |      |
| Trachinus armatus           | 3.87       | 48      | 0.21        |      |
| Panulirus regius            | 2.69       | 4       | 0.15        |      |
| Fseudupeneus prayensis      | 2.09       | 17      | 0.11        |      |
| Citharus linguatula         | 0.48       | 48      | 0.03        |      |
| Total                       | 1843.82    |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 288  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 317  
 start stop duration Long E 938  
 TIME :22:30:43 23:00:45 30 (min) Purpose code: 3  
 LOG :9157.62 9159.14 1.51 Area code : 8  
 FDEPTH: 343 332 GearCond.code:  
 BDEPTH: 343 332 Validity code:  
 Towing dir: 135° Wire out: 950 m Speed: 30 kn\*10

Sorted: 27 Kg Total catch: 191.17 CATCH/HOUR: 382.34

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Geryon maritae             | 185.64     | 714     | 48.55       |      |
| Chlorophthalmus atlanticus | 96.04      | 1498    | 25.12       |      |
| Merluccius polli           | 25.62      | 56      | 6.70        |      |
| Benthodesmus tenuis        | 12.18      | 588     | 3.19        |      |
| Parapenaeus longirostris   | 8.82       | 1036    | 2.31        |      |
| Hymenocephalus italicus    | 7.42       | 966     | 1.94        |      |
| Plesionika martia          | 7.28       | 1540    | 1.90        |      |
| Illex coindetii            | 4.90       | 42      | 1.28        |      |
| Chascanopsetta lugubris    | 4.62       | 56      | 1.21        |      |
| Galeus polli               | 4.20       | 70      | 1.10        |      |
| Chaunax pictus             | 3.92       | 56      | 1.03        |      |
| Trigla lyra                | 3.78       | 28      | 0.99        |      |
| Epigonus telescopus        | 2.66       | 56      | 0.70        |      |
| Dibranchius atlanticus     | 2.24       | 378     | 0.59        |      |
| Todaropsis eblanae         | 1.96       | 14      | 0.51        |      |
| Etmopterus spinax          | 1.40       | 28      | 0.37        |      |
| Parasudis fraser-bruenneri | 1.12       | 14      | 0.29        |      |
| GALATHEIDAE *              | 1.12       | 112     | 0.29        |      |
| Bembrops greyi             | 0.98       | 14      | 0.26        |      |
| Dentex congoensis          | 0.98       | 14      | 0.26        |      |
| Calappa-like with spines   | 0.84       | 14      | 0.22        |      |
| Physiculus sp.             | 0.84       | 28      | 0.22        |      |
| Trichiurus lepturus        | 0.84       | 14      | 0.22        |      |
| Polymetne corythaeola      | 0.56       | 14      | 0.15        |      |
| Promethichthys prometheus  | 0.56       | 14      | 0.15        |      |
| Laemonema laureysi         | 0.42       | 14      | 0.11        |      |
| MYCTOPHIDAE                | 0.28       | 168     | 0.07        |      |
| Bathynectes piperitus      | 0.28       | 14      | 0.07        |      |
| Peristedion cataphractum   | 0.28       | 42      | 0.07        |      |
| Saurida brasiliensis       | 0.14       | 14      | 0.04        |      |
| Argyropelecus sp.          | 0.14       | 126     | 0.04        |      |
| Solenocera africana        | 0.14       | 14      | 0.04        |      |
| CEPOLIDAE                  | 0.14       | 14      | 0.04        |      |
| Total                      | 382.34     |         | 100.03      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 286  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 309  
 start stop duration Long E 948  
 TIME :17:19:30 17:49:52 30 (min) Purpose code: 3  
 LOG :9130.56 9132.05 1.48 Area code : 8  
 FDEPTH: 92 91 GearCond.code:  
 BDEPTH: 92 91 Validity code:  
 Towing dir: 130° Wire out: 280 m Speed: 30 kn\*10

Sorted: 32 Kg Total catch: 122.26 CATCH/HOUR: 244.52

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Illex coindetii                | 46.24      | 2216    | 18.91       |      |
| Trichiurus lepturus            | 38.24      | 56      | 15.64       | 576  |
| Sea urchins                    | 27.52      | 5920    | 11.25       |      |
| Sepia officinalis hierredda    | 25.04      | 256     | 10.24       |      |
| Saurida brasiliensis           | 23.44      | 4040    | 9.59        |      |
| Trachinus pellegrini           | 14.32      | 368     | 5.86        |      |
| Selene dorsalis                | 14.24      | 56      | 5.82        |      |
| Citharus linguatula            | 10.08      | 272     | 4.12        |      |
| Chelidonichthys gabonensis     | 6.08       | 200     | 2.49        |      |
| Raja miraletus                 | 5.68       | 24      | 2.32        |      |
| Dentex congoensis              | 5.04       | 104     | 2.06        | 574  |
| Mustelus mustelus              | 4.92       | 2       | 2.01        |      |
| Torpedo torpedo                | 4.56       | 8       | 1.86        |      |
| Pagellus bellottii             | 4.48       | 48      | 1.83        | 575  |
| Cynoponticus ferox             | 4.24       | 8       | 1.73        |      |
| Grammolites gruveii            | 3.04       | 72      | 1.24        |      |
| Uranoscopus polli              | 2.40       | 24      | 0.98        |      |
| Priacanthus arenatus           | 1.76       | 8       | 0.72        |      |
| Ariomma bondi                  | 1.68       | 264     | 0.69        |      |
| Chilomycterus spinosus mauret. | 1.36       | 8       | 0.56        |      |
| Boops boops                    | 0.16       | 16      | 0.07        |      |
| Total                          | 244.52     |         | 99.99       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 289  
 DATE: 10/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 325  
 start stop duration Long E 945  
 TIME :01:06:10 01:36:18 30 (min) Purpose code: 3  
 LOG :9172.65 9174.19 1.52 Area code : 8  
 FDEPTH: 372 361 GearCond.code:  
 BDEPTH: 372 361 Validity code:  
 Towing dir: 140° Wire out: 950 m Speed: 30 kn\*10

Sorted: 29 Kg Total catch: 168.56 CATCH/HOUR: 337.12

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Hoplostethus cadenati        | 58.32      | 564     | 17.30       |      |
| Deania calcea                | 44.18      | 72      | 13.11       |      |
| Merluccius polli             | 42.12      | 84      | 12.49       |      |
| Lophius vaillanti            | 34.20      | 48      | 10.14       |      |
| Plesionika martia            | 27.60      | 2244    | 8.19        |      |
| Chlorophthalmus atlanticus   | 23.16      | 300     | 6.87        |      |
| Trichiurus lepturus          | 10.80      | 72      | 3.20        |      |
| Hymenocephalus italicus      | 10.32      | 972     | 3.06        |      |
| Benthodesmus tenuis          | 9.48       | 312     | 2.81        |      |
| GALATHEIDAE *                | 9.36       | 132     | 2.78        |      |
| Epigonus telescopus          | 9.00       | 108     | 2.67        |      |
| Chaunax pictus               | 7.32       | 792     | 2.17        |      |
| Physiculus sp.               | 6.36       | 24      | 1.89        |      |
| Geryon maritae               | 6.12       | 24      | 1.82        |      |
| Etmopterus spinax            | 4.56       | 72      | 1.35        |      |
| Coelorinchus sp.             | 4.44       | 120     | 1.32        |      |
| Dibranchius sp.              | 3.84       | 768     | 1.14        |      |
| Malacocephalus laevis        | 3.00       | 12      | 0.89        |      |
| Illex coindetii              | 2.88       | 24      | 0.85        |      |
| Parasudis fraser-bruenneri   | 2.28       | 180     | 0.68        |      |
| Gephyroberyx darwini         | 2.16       | 72      | 0.65        |      |
| Nematocarcinus africanus     | 2.16       | 62      | 0.64        |      |
| Bathynectes piperitus        | 1.92       | 48      | 0.57        |      |
| Chascanopsetta lugubris      | 1.56       | 36      | 0.46        |      |
| Trigla lyra                  | 1.44       | 12      | 0.43        |      |
| Calappa-like with spines     | 1.32       | 12      | 0.39        |      |
| Nezumia sp.                  | 1.08       | 60      | 0.32        |      |
| Galeus polli                 | 1.08       | 36      | 0.32        |      |
| MYCTOPHIDAE                  | 0.96       | 444     | 0.28        |      |
| Polymetne corythaeola        | 0.84       | 48      | 0.25        |      |
| Plesiopepenaeus edwardsianus | 0.72       | 156     | 0.21        |      |
| Setarches guentheri          | 0.72       | 60      | 0.21        |      |
| Epigonus sp.                 | 0.60       | 132     | 0.18        |      |
| Bathysolea sp.               | 0.60       | 24      | 0.18        |      |
| Laemonema sp.                | 0.12       | 24      | 0.04        |      |
| Solenocera africana          | 0.12       | 36      | 0.04        |      |
| Helicolenus dactylopterus    | 0.12       | 12      | 0.04        |      |
| Raja sp.                     | 0.12       | 12      | 0.04        |      |
| SOLEIDAE                     | 0.12       | 12      | 0.04        |      |
| Total                        | 337.12     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 287  
 DATE: 9/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 316  
 start stop duration Long E 939  
 TIME :20:50:42 21:20:50 30 (min) Purpose code: 3  
 LOG :9149.99 9151.50 1.51 Area code : 8  
 FDEPTH: 175 174 GearCond.code:  
 BDEPTH: 175 174 Validity code:  
 Towing dir: 140° Wire out: 510 m Speed: 30 kn\*10

Sorted: 70 Kg Total catch: 372.50 CATCH/HOUR: 745.00

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Chlorophthalmus atlanticus | 321.00     | 7406    | 43.09       |      |
| Merluccius polli           | 179.62     | 840     | 24.11       |      |
| Dentex congoensis          | 75.66      | 942     | 10.16       | 577  |
| Aulopus cadenati           | 59.90      | 632     | 8.04        |      |
| Antigonia capros           | 30.70      | 942     | 4.12        |      |
| Chelidonichthys gabonensis | 18.96      | 518     | 2.54        |      |
| Squalus megalops           | 17.88      | 6       | 2.40        |      |
| Cynoponticus ferox         | 15.86      | 46      | 2.13        |      |
| Raja miraletus             | 9.88       | 34      | 1.33        |      |
| Uranoscopus polli          | 4.94       | 46      | 0.66        |      |
| Parapenaeus longirostris   | 2.30       | 632     | 0.31        |      |
| Octopus vulgaris           | 1.98       | 2       | 0.21        |      |
| Ariomma bondi              | 1.48       | 22      | 0.20        |      |
| Sea cucumbers              | 1.38       | 12      | 0.19        |      |
| Peristedion cataphractum   | 1.38       | 70      | 0.19        |      |
| Scylliorhinus cervigoni    | 0.92       | 12      | 0.12        |      |
| Citharus linguatula        | 0.92       | 34      | 0.12        |      |
| Scorpaena sp.              | 0.68       | 12      | 0.09        |      |
| Total                      | 745.04     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 290  
 DATE:10/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 327  
 start stop duration Long E 950  
 TIME :03:34:45 04:03:55 29 (min) Purpose code: 3  
 LOG :9183.71 9185.26 1.55 Area code : 8  
 FDEPTH: 180 183 GearCond.code:  
 BDEPTH: 180 183 Validity code:  
 Towing dir: 320° Wire out: 460 m Speed: 30 kn\*10  
 Sorted: 32 Kg Total catch: 189.55 CATCH/HOUR: 392.17

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Chlorophthalmus atlanticus | 163.86     | 3588    | 41.78       |      |
| Merluccius polli           | 115.45     | 534     | 29.44       |      |
| Aulopus cadenati           | 28.30      | 310     | 7.22        |      |
| Dentex congoensis          | 27.19      | 335     | 6.93        | 578  |
| Antigonia capros           | 14.90      | 410     | 3.80        |      |
| Lepidotrigla carolae       | 6.83       | 236     | 1.74        |      |
| Dentex angolensis          | 5.83       | 12      | 1.49        |      |
| Brotula barbata            | 5.21       | 12      | 1.33        |      |
| Epigonus sp.               | 4.10       | 670     | 1.05        |      |
| Trichiurus lepturus        | 3.85       | 50      | 0.98        |      |
| Mystriophis rostellatus    | 2.36       | 12      | 0.60        |      |
| Trigla lyra                | 2.11       | 25      | 0.54        |      |
| Starfish                   | 2.01       | 2       | 0.51        |      |
| Todaropsis eblanae         | 1.99       | 37      | 0.51        |      |
| Bathynectes piperitus      | 1.37       | 12      | 0.35        |      |
| Peristedion cataphractum   | 1.24       | 50      | 0.32        |      |
| Benbrops sp.               | 1.12       | 25      | 0.29        |      |
| Physiculus sp.             | 0.99       | 25      | 0.25        |      |
| Lepidotrigla cadmani       | 0.99       | 12      | 0.25        |      |
| Parasudis fraser-brueneri  | 0.62       | 74      | 0.16        |      |
| Dibranchius atlanticus     | 0.62       | 112     | 0.16        |      |
| Synagrops microlepis       | 0.62       | 37      | 0.16        |      |
| Nezumia sp.                | 0.25       | 12      | 0.06        |      |
| CEROLIDAE                  | 0.12       | 12      | 0.03        |      |
| MYCTOPHIDAE                | 0.12       | 50      | 0.03        |      |
| Arngiossus imperialis      | 0.12       | 12      | 0.03        |      |
| Total                      | 392.17     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 293  
 DATE:10/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 308  
 start stop duration Long E 1020  
 TIME :11:58:37 12:10:53 12 (min) Purpose code: 3  
 LOG :9241.48 9242.13 0.65 Area code : 8  
 FDEPTH: 23 22 GearCond.code:  
 BDEPTH: 23 22 Validity code:  
 Towing dir: 325° Wire out: 120 m Speed: 31 kn\*10  
 Sorted: 50 Kg Total catch: 245.39 CATCH/HOUR: 1226.95

| SPECIES                       | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-------------------------------|------------|---------|-------------|------|
|                               | weight     | numbers |             |      |
| Sardinella aurita - Juveniles | 553.80     | 57870   | 45.14       | 588  |
| Brachydeuterus auritus        | 431.40     | 110070  | 35.16       |      |
| Pagrus caeruleostictus        | 38.40      | 90      | 3.13        |      |
| Pseudotolithus senegalensis   | 30.00      | 45      | 2.45        |      |
| Chaetodipterus gorenensis     | 29.40      | 105     | 2.40        |      |
| Pagellus bellottii            | 26.40      | 570     | 2.15        | 589  |
| Pomadasyss jubelini           | 19.50      | 30      | 1.59        |      |
| Dentex canariensis            | 18.00      | 30      | 1.47        |      |
| Trichiurus lepturus           | 17.70      | 660     | 1.44        |      |
| Lutjanus gorenensis           | 10.15      | 5       | 0.83        |      |
| Rhizoprionodon acutus         | 9.85       | 5       | 0.80        |      |
| Pseudupeneus prayensis        | 8.40       | 10      | 0.68        |      |
| Plectrohinchus mediterraneus  | 8.00       | 5       | 0.65        |      |
| Pomadasyss incisus            | 7.65       | 30      | 0.62        |      |
| Galeoides decadactylus        | 5.10       | 150     | 0.42        |      |
| Sphyræna guachancho           | 5.10       | 210     | 0.42        |      |
| Pteroscion peli               | 3.30       | 420     | 0.27        |      |
| Ilisha africana               | 2.40       | 180     | 0.20        |      |
| Chaetodon robustus            | 1.20       | 30      | 0.10        |      |
| Trachurus trecae              | 0.30       | 30      | 0.02        |      |
| Dibranchius atlanticus        | 0.30       | 30      | 0.02        |      |
| PENAEIDAE                     | 0.30       | 60      | 0.02        |      |
| Selene dorsalis, juveniles    | 0.30       | 90      | 0.02        |      |
| Total                         | 1226.95    |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 294  
 DATE:10/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 324  
 start stop duration Long E 1020  
 TIME :15:43:09 16:03:56 21 (min) Purpose code: 3  
 LOG :9273.08 9274.19 1.10 Area code : 8  
 FDEPTH: 47 45 GearCond.code:  
 BDEPTH: 47 45 Validity code:  
 Towing dir: 355° Wire out: 180 m Speed: 30 kn\*10  
 Sorted: 77 Kg Total catch: 214.00 CATCH/HOUR: 611.43

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Sardinella aurita              | 228.69     | 26486   | 37.40       | 599  |
| Dentex barnardi                | 78.86      | 137     | 12.90       | 595  |
| Pomadasyss incisus             | 62.14      | 360     | 10.16       | 593  |
| Pagellus bellottii             | 56.23      | 934     | 9.20        | 597  |
| Umbrina canariensis            | 54.51      | 103     | 8.92        | 594  |
| Boops boops                    | 30.34      | 12540   | 4.96        | 592  |
| Alloteuthis africana           | 20.06      | 8486    | 3.28        |      |
| Pagrus caeruleostictus         | 19.37      | 26      | 3.17        |      |
| Epinephelus aeneus             | 16.69      | 3       | 2.73        |      |
| Lutjanus fulgens               | 16.03      | 26      | 2.62        | 596  |
| Trachurus trecae               | 13.63      | 2794    | 2.23        | 591  |
| Sepia officinalis hierredda    | 4.37       | 9       | 0.71        |      |
| Citharus linguatula            | 3.69       | 60      | 0.60        |      |
| Scyllarides herklotsii         | 1.86       | 3       | 0.30        |      |
| Pseudupeneus prayensis         | 1.54       | 29      | 0.25        |      |
| Scomber japonicus              | 1.03       | 103     | 0.17        | 590  |
| Sargocentron hastatus          | 0.77       | 3       | 0.13        |      |
| Chilomycterus spinosus mauret. | 0.60       | 3       | 0.10        |      |
| Torpedo torpedo                | 0.60       | 3       | 0.10        |      |
| Brachydeuterus auritus Juv.    | 0.43       | 120     | 0.07        | 598  |
| Total                          | 611.44     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 295  
 DATE:10/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 325  
 start stop duration Long E 1014  
 TIME :17:21:07 17:51:11 30 (min) Purpose code: 3  
 LOG :9284.81 9286.34 1.52 Area code : 8  
 FDEPTH: 64 63 GearCond.code:  
 BDEPTH: 64 63 Validity code:  
 Towing dir: 135° Wire out: 200 m Speed: 30 kn\*10  
 Sorted: 42 Kg Total catch: 234.66 CATCH/HOUR: 469.32

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pagellus bellottii          | 126.28     | 2814    | 26.91       | 601  |
| Sepia officinalis hierredda | 56.84      | 434     | 12.11       |      |
| Citharus linguatula         | 45.36      | 8498    | 9.67        |      |
| Raja miraletus              | 37.10      | 42      | 7.91        |      |
| Chelidonichthys gabonensis  | 31.78      | 546     | 6.77        |      |
| Spicara alta                | 25.06      | 7070    | 5.34        |      |
| Dactylopterus volitans      | 22.68      | 56      | 4.83        | 605  |
| Priacanthus arenatus        | 18.06      | 98      | 3.85        |      |
| Ilex coindatii              | 15.26      | 350     | 3.25        |      |
| Chromis cadenati            | 14.42      | 126     | 3.07        | 604  |
| Lutjanus agennes            | 11.34      | 14      | 2.42        |      |
| Rhinobatos albomaculatus    | 10.68      | 4       | 2.28        |      |
| Umbrina canariensis         | 9.80       | 28      | 2.09        |      |
| Sargocentron hastatus       | 7.00       | 42      | 1.49        |      |
| Grammolites gruvelli        | 6.44       | 322     | 1.37        |      |
| Trachurus trecae            | 5.74       | 364     | 1.22        | 603  |
| Stromateus fiatola          | 5.46       | 14      | 1.16        |      |
| Epinephelus aeneus          | 3.84       | 4       | 0.82        |      |
| Pagrus caeruleostictus      | 3.78       | 14      | 0.81        |      |
| Mustelus mustelus           | 3.72       | 2       | 0.79        |      |
| Chaetodon hoeffleri         | 2.80       | 14      | 0.60        |      |
| Pomadasyss incisus          | 2.24       | 14      | 0.48        |      |
| Scyllarides herklotsii      | 1.68       | 2       | 0.36        |      |
| Brotula barbata             | 1.98       | 70      | 0.21        |      |
| Arionna bondi               | 0.56       | 140     | 0.12        | 602  |
| Chaetodon marcellae         | 0.28       | 14      | 0.06        |      |
| Boops boops                 | 0.14       | 28      | 0.03        |      |
| Total                       | 469.32     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 292  
 DATE:10/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 310  
 start stop duration Long E 1010  
 TIME :09:17:00 09:28:04 11 (min) Purpose code: 3  
 LOG :9222.78 9223.18 0.39 Area code : 8  
 FDEPTH: 42 42 GearCond.code:  
 BDEPTH: 42 42 Validity code:  
 Towing dir: 140° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 41 Kg Total catch: 2247.44 CATCH/HOUR: 12258.76

| SPECIES              | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------|------------|---------|-------------|------|
|                      | weight     | numbers |             |      |
| Sardinella aurita    | 11612.73   | 752089  | 94.73       | 583  |
| Boops boops          | 507.27     | 130429  | 4.14        | 587  |
| Dentex canariensis   | 45.05      | 322     | 0.37        |      |
| Scomber japonicus    | 32.18      | 1931    | 0.26        | 584  |
| Decapterus punctatus | 28.96      | 2575    | 0.24        | 585  |
| Epinephelus aeneus   | 16.47      | 2575    | 0.13        |      |
| Trachurus trecae     | 16.09      | 2253    | 0.13        | 586  |
| Total                | 12258.75   |         | 100.00      |      |



DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 296  
 DATE:10/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 337  
 start stop duration Long E 1001  
 TIME :21:43:23 22:13:48 30 (min) Purpose code: 3  
 LOG :9310.10 9311.66 1.55 Area code : 8  
 FDEPTH: 180 172 GearCond.code:  
 BDEPTH: 180 172 Validity code:  
 Towing dir: 125° Wire out: 520 m Speed: 30 kn\*10  
 Sorted: 56 Kg Total catch: 265.50 CATCH/HOUR: 531.00

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Merluccius polli           | 146.88     | 838     | 27.66       |      |
| Chlorophthalmus atlanticus | 96.66      | 3654    | 18.20       |      |
| Aulopus cadenati           | 65.78      | 748     | 12.39       |      |
| Brotula barbata            | 51.68      | 70      | 9.73        |      |
| Antigonia capros           | 37.88      | 1746    | 7.13        |      |
| Dentex congensis           | 32.66      | 370     | 6.15        | 607  |
| Umbrina canariensis        | 30.50      | 82      | 5.74        | 606  |
| Octopus vulgaris           | 21.60      | 18      | 4.07        |      |
| Chelidonichthys lastoviza  | 7.64       | 72      | 1.44        |      |
| Chelidonichthys gabonensis | 7.20       | 208     | 1.36        |      |
| Uranoscopus polli          | 6.56       | 46      | 1.24        |      |
| Dentex canariensis         | 5.76       | 18      | 1.08        |      |
| Dactylopterus volitans     | 4.50       | 10      | 0.85        |      |
| Illex coindetii            | 4.40       | 28      | 0.83        |      |
| Trachurus trecae           | 3.32       | 10      | 0.63        |      |
| Ariomma bondi              | 2.06       | 28      | 0.39        |      |
| Parapenaeus longirostris   | 1.98       | 658     | 0.37        |      |
| Lophius vaillanti          | 1.80       | 10      | 0.34        |      |
| Sea cucumbers              | 1.08       | 10      | 0.20        |      |
| Physiculus sp.             | 0.62       | 18      | 0.12        |      |
| Malacocephalus laevis      | 0.26       | 10      | 0.05        |      |
| Symblophorus boops         | 0.18       | 36      | 0.03        |      |
| Total                      | 531.00     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 298  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 349  
 start stop duration Long E 1013  
 TIME :03:23:16 03:53:14 30 (min) Purpose code: 3  
 LOG :9341.66 9343.26 1.59 Area code : 8  
 FDEPTH: 161 169 GearCond.code:  
 BDEPTH: 161 169 Validity code:  
 Towing dir: 315° Wire out: 400 m Speed: 30 kn\*10  
 Sorted: 30 Kg Total catch: 55.06 CATCH/HOUR: 110.12

| SPECIES                  | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------|------------|---------|-------------|------|
|                          | weight     | numbers |             |      |
| Umbrina canariensis      | 16.64      | 32      | 15.11       |      |
| Trichiurus lepturus      | 13.72      | 28      | 12.46       |      |
| Antigonia capros         | 13.12      | 1556    | 11.91       |      |
| Mystriophis rostellatus  | 9.96       | 20      | 9.04        |      |
| Synagrops microlepis     | 9.44       | 388     | 8.57        |      |
| Uranoscopus cadenati     | 7.24       | 52      | 6.57        |      |
| Trigla lyra              | 6.16       | 48      | 5.59        |      |
| Brotula barbata          | 4.88       | 12      | 4.43        |      |
| Merluccius polli         | 4.08       | 52      | 3.71        |      |
| Todaropsis eblanae       | 3.88       | 44      | 3.52        |      |
| Pterothrissus belloci    | 3.72       | 36      | 3.38        |      |
| Lepidotrigla carolae     | 3.52       | 104     | 3.20        |      |
| Pentheroscion mbizi      | 2.92       | 12      | 2.65        |      |
| Torpedo torpedo          | 2.88       | 4       | 2.62        |      |
| Octopus sp.              | 1.52       | 8       | 1.38        |      |
| OPHICHTHIDAE             | 1.16       | 24      | 1.05        |      |
| Citharus linguatula      | 1.08       | 20      | 0.98        |      |
| Dibranchius atlanticus   | 0.92       | 240     | 0.84        |      |
| Raja straeleni           | 0.68       | 4       | 0.62        |      |
| Lepidotrigla cadmani     | 0.48       | 8       | 0.44        |      |
| Synchiropus phaeton      | 0.40       | 16      | 0.36        |      |
| Echelus myrus            | 0.36       | 4       | 0.33        |      |
| Peristedion cataphractum | 0.32       | 32      | 0.29        |      |
| Bembrops heterurus       | 0.28       | 12      | 0.25        |      |
| Syacium micrum           | 0.16       | 4       | 0.15        |      |
| CEPOLIDAE                | 0.12       | 12      | 0.11        |      |
| GALATHEIDAE *            | 0.12       | 20      | 0.11        |      |
| Calappa pelii            | 0.08       | 4       | 0.07        |      |
| Malacocephalus laevis    | 0.08       | 4       | 0.07        |      |
| Arnoglossus imperialis   | 0.08       | 12      | 0.07        |      |
| Symblophorus boops       | 0.04       | 4       | 0.04        |      |
| Epigonon sp.             | 0.04       | 4       | 0.04        |      |
| Chascanopsetta lugubris  | 0.04       | 4       | 0.04        |      |
| Total                    | 110.12     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 299  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 340  
 start stop duration Long E 1022  
 TIME :05:52:00 06:22:59 31 (min) Purpose code: 3  
 LOG :9360.20 9361.78 1.58 Area code : 8  
 FDEPTH: 83 84 GearCond.code:  
 BDEPTH: 83 84 Validity code:  
 Towing dir: 140° Wire out: 240 m Speed: 30 kn\*10  
 Sorted: 75 Kg Total catch: 75.00 CATCH/HOUR: 145.16

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| J E L Y F I S H             | 27.83      |         | 19.17       |      |
| Pagellus bellottii          | 17.44      | 232     | 12.01       | 608  |
| Trachurus trecae            | 15.41      | 97      | 10.62       | 609  |
| Sepia officinalis hierredda | 12.91      | 62      | 8.89        |      |
| Mustelus mustelus           | 11.42      | 8       | 7.87        |      |
| Alloteuthis africana        | 7.99       | 3083    | 5.50        |      |
| Rhinobatos albomaculatus    | 7.97       | 4       | 5.49        |      |
| Scomber japonicus           | 7.74       | 19      | 5.33        | 612  |
| Chelidonichthys gabonensis  | 6.85       | 112     | 4.72        |      |
| Dentex congensis            | 6.74       | 217     | 4.64        | 611  |
| Citharus linguatula         | 4.88       | 213     | 3.36        |      |
| Raja miraletus              | 3.41       | 6       | 2.35        |      |
| Grammolites gruvelli        | 2.90       | 89      | 2.00        |      |
| Zeus faber                  | 2.52       | 12      | 1.74        |      |
| Saurida brasiliensis        | 1.80       | 343     | 1.24        |      |
| Trichiurus lepturus         | 1.43       | 2       | 0.99        |      |
| Priacanthus arenatus        | 1.35       | 6       | 0.93        |      |
| Illex coindetii             | 1.28       | 81      | 0.88        |      |
| Serranus accraensis         | 1.08       | 27      | 0.74        |      |
| Torpedo torpedo             | 0.89       | 2       | 0.61        |      |
| Ariomma bondi               | 0.41       | 72      | 0.28        | 613  |
| Boops boops                 | 0.29       | 8       | 0.20        | 610  |
| Pseudupeneus prayensis      | 0.23       | 2       | 0.16        |      |
| Arnoglossus imperialis      | 0.14       | 17      | 0.10        |      |
| Cepola pauciradiatus        | 0.10       | 4       | 0.07        |      |
| Dentex angolensis           | 0.08       | 4       | 0.06        | 610  |
| Biennius normani            | 0.06       | 2       | 0.04        |      |
| Antigonia capros            | 0.06       | 19      | 0.04        |      |
| Syacium micrum              | 0.04       | 6       | 0.03        |      |
| Total                       | 145.25     |         | 100.06      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 297  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 340  
 start stop duration Long E 1001  
 TIME :00:01:25 00:31:31 30 (min) Purpose code: 3  
 LOG :9320.48 9322.01 1.52 Area code : 8  
 FDEPTH: 341 349 GearCond.code:  
 BDEPTH: 341 349 Validity code:  
 Towing dir: 134° Wire out: 920 m Speed: 30 kn\*10  
 Sorted: 38 Kg Total catch: 177.85 CATCH/HOUR: 355.70

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Chlorophthalmus atlanticus | 148.06     | 2058    | 41.62       |      |
| Merluccius polli           | 64.68      | 166     | 18.18       |      |
| Hoplostethus cadenati      | 15.62      | 166     | 4.39        |      |
| Parapenaeus longirostris   | 13.30      | 1408    | 3.74        |      |
| Parasudis fraser-brueneri  | 12.76      | 176     | 3.59        |      |
| GALATHEIDAE *              | 12.54      | 1882    | 3.53        |      |
| Deania calcea              | 9.08       | 16      | 2.55        |      |
| Trigla sp.                 | 8.46       | 44      | 2.38        |      |
| Illex coindetii            | 6.60       | 44      | 1.86        |      |
| NETTASTOMATIDAE            | 6.38       | 66      | 1.79        |      |
| Trichiurus lepturus        | 6.26       | 22      | 1.76        |      |
| Raja straeleni             | 5.64       | 8       | 1.59        |      |
| Hymenocephalus italicus    | 4.72       | 606     | 1.33        |      |
| Epigonon telescopus        | 4.28       | 100     | 1.20        |      |
| Chascanopsetta lugubris    | 3.40       | 100     | 0.96        |      |
| Coelorinchus sp.           | 3.30       | 78      | 0.93        |      |
| Etmopterus spinax          | 3.18       | 34      | 0.89        |      |
| Lophius vaillanti          | 3.08       | 56      | 0.87        |      |
| Bathynectes piperitus      | 2.96       | 44      | 0.83        |      |
| Geryon maritae             | 2.96       | 12      | 0.83        |      |
| Plesionika martia          | 2.64       | 572     | 0.74        |      |
| Dibranchius atlanticus     | 2.52       | 584     | 0.71        |      |
| Malacocephalus laevis      | 2.20       | 12      | 0.62        |      |
| Laemonema laureysi         | 1.86       | 34      | 0.52        |      |
| Aulopus cadenati           | 1.20       | 12      | 0.34        |      |
| Todaropsis eblanae         | 0.98       | 12      | 0.28        |      |
| Galeus polli               | 0.98       | 22      | 0.28        |      |
| Polymetme corythaeola      | 0.88       | 44      | 0.25        |      |
| Mystriophis rostellatus    | 0.76       | 12      | 0.21        |      |
| Todarodes sp.              | 0.66       | 12      | 0.19        |      |
| Solenocera africana        | 0.54       | 56      | 0.15        |      |
| Helicolenus dactylopterus  | 0.54       | 22      | 0.15        |      |
| Peristedion cataphractum   | 0.54       | 22      | 0.15        |      |
| Benthodesmus tenuis        | 0.44       | 34      | 0.12        |      |
| Calappa-like with spines   | 0.44       | 12      | 0.12        |      |
| Nezumia leonis             | 0.44       | 22      | 0.12        |      |
| CONGRIDAE                  | 0.40       | 2       | 0.11        |      |
| Bembrops greyi             | 0.32       | 12      | 0.09        |      |
| Chaunax pictus             | 0.10       | 12      | 0.03        |      |
| Total                      | 355.70     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 300  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 331  
 start stop duration Long E 1032  
 TIME :08:34:17 09:04:17 30 (min) Purpose code: 3  
 LOG :9379.80 9381.30 1.48 Area code : 8  
 FDEPTH: 40 40 GearCond.code:  
 BDEPTH: 40 40 Validity code:  
 Towing dir: 135° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 35 Kg Total catch: 210.24 CATCH/HOUR: 420.48

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Brachydeuterus auritus Juv.  | 288.96     | 88248   | 68.72       | 616  |
| Pagellus bellottii           | 42.96      | 3768    | 10.22       | 615  |
| Trachurus trecae             | 19.92      | 996     | 4.74        | 614  |
| Umbrina canariensis          | 17.64      | 48      | 4.20        | 619  |
| Pomadasy incisus             | 14.28      | 84      | 3.40        | 617  |
| Sepia officinalis hierredda  | 9.36       | 12      | 2.23        |      |
| Pseudotolithus senegaicensis | 7.56       | 12      | 1.80        |      |
| Boops boops                  | 5.52       | 96      | 1.31        | 618  |
| Zeus faber                   | 3.60       | 12      | 0.86        |      |
| Trichiurus lepturus          | 2.64       | 12      | 0.63        |      |
| Pseudupeneus prayensis       | 2.16       | 48      | 0.51        |      |
| Citharus linguatula          | 2.04       | 12      | 0.49        |      |
| Chelidonichthys gabonensis   | 1.44       | 12      | 0.34        |      |
| Chaetodon hoeferi            | 1.32       | 12      | 0.31        |      |
| Brachydeuterus auritus       | 1.08       | 24      | 0.26        | 620  |
| Total                        | 420.48     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 301  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 330  
 start stop duration Long E 1430  
 TIME :10:38:35 11:08:32 30 (min) Purpose code: 3  
 LOG :9392.25 9393.72 1.47 Area code : 8  
 FDEPTH: 26 25 GearCond.code:  
 BDEPTH: 26 25 Validity code:  
 Towing dir: 320° Wire out: 120 m Speed: 30 kn\*10  
 Sorted: 37 Kg Total catch: 134.88 CATCH/HOUR: 269.76

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 304  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 347  
 start stop duration Long E 1036  
 TIME :17:20:40 17:50:43 30 (min) Purpose code: 3  
 LOG :9435.89 9437.44 1.55 Area code : 8  
 FDEPTH: 67 68 GearCond.code:  
 BDEPTH: 67 68 Validity code:  
 Towing dir: 140° Wire out: 220 m Speed: 30 kn\*10  
 Sorted: 56 Kg Total catch: 222.28 CATCH/HOUR: 444.56

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Ilisha africana             | 114.38     | 18298   | 42.40       |      |
| Pteroscion peli             | 38.84      | 2878    | 14.40       |      |
| Trichilurus lepturus        | 29.96      | 1142    | 11.11       |      |
| Sepia juveniles             | 24.30      | 36      | 9.01        |      |
| Parapenaeopsis atlantica    | 17.50      | 4670    | 6.49        |      |
| Pseudotolithus senegalensis | 11.48      | 74      | 4.26        | 621  |
| Brachydeuterus auritus      | 6.36       | 1688    | 2.36        |      |
| B I V A L V E S             | 5.60       | 1856    | 2.08        |      |
| Raja straeleni              | 5.52       | 22      | 2.05        |      |
| Penaeus notialis            | 4.20       | 148     | 1.56        |      |
| Dasyatis margarita          | 1.96       | 8       | 0.73        |      |
| Pomadasy incisus            | 1.32       | 8       | 0.49        |      |
| Cynoglossus canariensis     | 1.12       | 8       | 0.42        |      |
| Trachurus trecae            | 1.12       | 42      | 0.42        |      |
| Pseudupeneus prayensis      | 0.98       | 8       | 0.36        |      |
| Calappa rubroguttata        | 0.98       | 36      | 0.36        |      |
| Galeoides decadactylus      | 0.98       | 92      | 0.36        |      |
| Pagellus bellottii          | 0.84       | 8       | 0.31        |      |
| Callinectes sp.             | 0.62       | 344     | 0.23        |      |
| Drepane africana            | 0.48       | 8       | 0.18        |      |
| Sepiella ornata             | 0.34       | 8       | 0.13        |      |
| Sicyonia galeata            | 0.20       | 182     | 0.07        |      |
| Selene dorsalis, juveniles  | 0.20       | 84      | 0.07        |      |
| Epinephelus aeneus          | 0.14       | 8       | 0.05        |      |
| Pisodonophis semicinctus    | 0.14       | 2       | 0.05        |      |
| Small crabs                 | 0.06       | 14      | 0.02        |      |
| COPELACIDAE                 | 0.06       | 14      | 0.02        |      |
| Sphyræna guachancho         | 0.06       | 8       | 0.02        |      |
| Total                       | 269.74     |         | 100.01      |      |

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pagellus bellottii          | 205.20     | 4596    | 46.16       | 629  |
| Saurida brasiliensis        | 51.12      | 10560   | 11.50       |      |
| Sepia officinalis hierredda | 40.80      | 2232    | 9.18        |      |
| Citharus linguatula         | 30.72      | 6144    | 6.91        |      |
| Epinephelus aeneus          | 27.40      | 2       | 6.16        |      |
| Chelidichthys gabonensis    | 13.68      | 360     | 3.08        |      |
| Illex coindetii             | 12.12      | 288     | 2.73        |      |
| Squatina oculata            | 11.04      | 2       | 2.48        |      |
| Alloteuthis africana        | 8.04       | 1104    | 1.81        |      |
| Mustelus mustelus           | 7.84       | 6       | 1.76        |      |
| Umbrina canariensis         | 6.84       | 12      | 1.54        |      |
| Trachurus trecae, juvenile  | 6.72       | 732     | 1.51        |      |
| Grammolites gruveli         | 4.08       | 216     | 0.92        | 628  |
| Zeus faber                  | 3.72       | 12      | 0.84        |      |
| Boops boops                 | 2.52       | 60      | 0.57        |      |
| Brotula barbata             | 2.52       | 108     | 0.57        |      |
| Spicara alta                | 2.28       | 252     | 0.51        | 630  |
| Dactylopterus volitans      | 2.28       | 12      | 0.51        |      |
| Ariomma bondi               | 2.16       | 360     | 0.49        | 631  |
| Cepola pauciradiatus        | 1.68       | 60      | 0.38        |      |
| Serranus accraensis         | 0.72       | 48      | 0.16        |      |
| Fistularia petimba          | 0.60       | 24      | 0.13        |      |
| Chaetodon marcellae         | 0.48       | 12      | 0.11        |      |
| Total                       | 444.56     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 305  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 401  
 start stop duration Long E 1022  
 TIME :21:47:51 22:17:52 30 (min) Purpose code: 3  
 LOG :9465.21 9466.75 1.36 Area code : 8  
 FDEPTH: 322 307 GearCond.code:  
 BDEPTH: 322 307 Validity code:  
 Towing dir: 310° Wire out: 850 m Speed: 30 kn\*10  
 Sorted: 37 Kg Total catch: 268.25 CATCH/HOUR: 536.50

| SPECIES                         | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------------|------------|---------|-------------|------|
|                                 | weight     | numbers |             |      |
| J E L L Y F I S H               | 125.02     | 448     | 23.30       |      |
| Parasudis fraser-brueneri       | 76.30      | 1470    | 14.22       |      |
| Chlorophthalmus atlanticus      | 74.48      | 1386    | 13.88       |      |
| Merluccius polli                | 72.80      | 196     | 13.57       |      |
| Parapenaeus longirostris        | 30.38      | 2058    | 5.66        |      |
| Lophus vaiiianiti               | 15.26      | 84      | 2.84        |      |
| Torpedo sp.                     | 14.70      | 14      | 2.74        |      |
| Illex coindetii                 | 14.14      | 70      | 2.64        |      |
| Chascanopssetta lugubris        | 12.04      | 126     | 2.24        |      |
| Zenion hololepis                | 11.06      | 70      | 2.06        |      |
| Todaropsis eblanae              | 10.78      | 56      | 2.01        |      |
| Malacocephalus laevis           | 9.80       | 98      | 1.83        |      |
| Centrophorus granulosus         | 8.40       | 2       | 1.57        |      |
| Coelorhynchus coelorhinc. polli | 6.86       | 154     | 1.28        |      |
| Deania calcea                   | 6.04       | 4       | 1.13        |      |
| GALATHEIDAE *                   | 5.88       | 882     | 1.10        |      |
| Paromola cuvieri                | 4.90       | 14      | 0.91        |      |
| Hoplostethus cadenati           | 4.76       | 70      | 0.89        |      |
| NETTASTOMATIDAE                 | 4.62       | 56      | 0.86        |      |
| Scorpaena normani               | 3.92       | 42      | 0.73        |      |
| Bathynectes piperitus           | 3.64       | 98      | 0.68        |      |
| Dibranchius atlanticus          | 3.22       | 434     | 0.60        |      |
| Raja miraletus                  | 3.08       | 14      | 0.57        |      |
| Hymenocephalus italicus         | 2.66       | 406     | 0.50        |      |
| Hyponus telescopus              | 2.52       | 98      | 0.47        |      |
| Etmopterus sp.                  | 2.10       | 14      | 0.39        |      |
| Saurida brasiliensis            | 1.96       | 302     | 0.37        |      |
| Benthodesmus tenuis             | 1.12       | 42      | 0.21        |      |
| Peristedion cataphractum        | 0.98       | 28      | 0.18        |      |
| Cyttopsis roseus                | 0.70       | 70      | 0.13        |      |
| Physiculus sp.                  | 0.56       | 14      | 0.10        |      |
| Citharus linguatula             | 0.42       | 28      | 0.08        |      |
| MYCTOPHIDAE                     | 0.42       | 196     | 0.08        |      |
| Nezumia sp.                     | 0.42       | 14      | 0.08        |      |
| CEPOLIDAE                       | 0.28       | 28      | 0.05        |      |
| Solenocera africana             | 0.14       | 14      | 0.03        |      |
| Sicyonia galeata                | 0.14       | 14      | 0.03        |      |
| Argyropelecus sladeni           | 0.14       | 28      | 0.03        |      |
| Total                           | 536.64     |         | 100.04      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 306  
 DATE:12/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 408  
 start stop duration Long E 1025  
 TIME :01:24:16 01:39:06 15 (min) Purpose code: 3  
 LOG :9485.91 9486.62 0.70 Area code : 8  
 FDEPTH: 573 568 GearCond.code:  
 BDEPTH: 573 568 Validity code:  
 Towing dir: 135° Wire out: 1420 m Speed: 30 kn\*10  
 Sorted: 45 Kg Total catch: 45.03 CATCH/HOUR: 180.12

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 303  
 DATE:11/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 344  
 start stop duration Long E 1040  
 TIME :15:42:15 16:12:22 30 (min) Purpose code: 3  
 LOG :9425.17 9426.66 2.50 Area code : 8  
 FDEPTH: 47 47 GearCond.code:  
 BDEPTH: 47 47 Validity code:  
 Towing dir: 136° Wire out: 190 m Speed: 30 kn\*10  
 Sorted: 81 Kg Total catch: 353.08 CATCH/HOUR: 706.16

| SPECIES                       | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-------------------------------|------------|---------|-------------|------|
|                               | weight     | numbers |             |      |
| Sardinella aurita - Juveniles | 280.00     | 45300   | 39.65       | 626  |
| Trachurus trecae, juvenile    | 121.40     | 24280   | 17.19       | 627  |
| Brachydeuterus auritus Juv.   | 101.40     | 30420   | 14.36       | 625  |
| Trichilurus lepturus          | 53.88      | 72      | 7.63        | 622  |
| Zeus faber                    | 21.80      | 40      | 3.09        |      |
| Rhinobatos albomaculatus      | 18.88      | 4       | 2.67        |      |
| Uranoscopus polli             | 17.80      | 100     | 2.52        |      |
| Priacanthus arenatus          | 13.60      | 40      | 1.93        |      |
| Pseudupeneus prayensis        | 11.20      | 40      | 1.59        |      |
| Sepia officinalis hierredda   | 9.92       | 8       | 1.40        |      |
| Alloteuthis africana          | 9.60       | 3720    | 1.36        |      |
| Pagellus bellottii            | 9.40       | 3360    | 1.33        | 624  |
| Pseudotolithus senegalensis   | 6.96       | 6       | 0.99        |      |
| Pomadasy incisus              | 6.80       | 40      | 0.96        |      |
| Mustelus mustelus             | 6.64       | 2       | 0.94        |      |
| Umbrina canariensis           | 6.28       | 12      | 0.89        | 623  |
| Trachinus armatus             | 3.80       | 40      | 0.54        |      |
| Citharus linguatula           | 3.60       | 20      | 0.51        |      |
| Scomber japonicus             | 1.80       | 40      | 0.25        |      |
| Sphyræna guachancho           | 0.80       | 80      | 0.11        |      |
| Engraulis encrasicolus        | 0.60       | 80      | 0.08        |      |
| Total                         | 706.16     |         | 99.99       |      |

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Plesionika martia         | 105.44     | 20808   | 58.54       |      |
| Hoplostethus cadenati     | 38.40      | 312     | 21.32       |      |
| Centrophorus uyato        | 8.32       | 16      | 4.62        |      |
| Trichilurus lepturus      | 5.48       | 16      | 3.04        |      |
| Melanostomias sp.         | 5.28       | 80      | 2.93        |      |
| Lamprogrammus exutus      | 3.36       | 204     | 1.87        |      |
| Merluccius polli          | 3.04       | 4       | 1.69        |      |
| Stereonastis sp.          | 2.68       | 240     | 1.49        |      |
| Triplophos hemingi        | 2.56       | 272     | 1.42        |      |
| Polymetme corythaeola     | 1.32       | 704     | 0.73        |      |
| Chaunax pictus            | 1.12       | 12      | 0.62        |      |
| Bathyrocongrus sp.        | 0.60       | 60      | 0.33        |      |
| Notacanthus sexspinis     | 0.52       | 12      | 0.29        |      |
| Myxina capensis           | 0.48       | 4       | 0.27        |      |
| C E P H A L O P O D A     | 0.40       | 4       | 0.22        |      |
| Nezumia aequalis          | 0.24       | 8       | 0.13        |      |
| Aristeus varidens         | 0.20       | 12      | 0.11        |      |
| Gadella imberbis          | 0.20       | 12      | 0.11        |      |
| Rossia sp.                | 0.16       | 4       | 0.09        |      |
| Promethichthys prometheus | 0.16       | 4       | 0.09        |      |
| Xenodermichthys copei     | 0.08       | 4       | 0.04        |      |
| Total                     | 180.04     |         | 99.95       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 307  
 DATE:12/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 408  
 start stop duration Long E 1033  
 TIME :03:54:59 04:25:06 30 (min) Purpose code: 3  
 LOG :9501.79 9503.30 1.50 Area code : 8  
 FDEPTH: 177 174 GearCond.code:  
 BDEPTH: 177 174 Validity code:  
 Towing dir: 140° Wire out: 450 m Speed: 30 kn\*10  
 Sorted: 57 Kg Total catch: 143.07 CATCH/HOUR: 286.14

| SPECIES                    | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|----------------------------|---------------|---------|---------------|------|
|                            | weight        | numbers |               |      |
| Dentex angoliensis         | 94.40         | 330     | 32.99         | 636  |
| Brotula barbata            | 49.80         | 114     | 17.40         |      |
| Sea cucumbers              | 38.24         | 140     | 13.36         |      |
| Pterothrissus bellocci     | 22.30         | 194     | 7.79          |      |
| Parulibranchius rossignoli | 16.40         | 144     | 5.73          |      |
| Aulopus cadenati           | 14.04         | 124     | 4.91          |      |
| Mystriophis rostellatus    | 11.90         | 34      | 4.16          |      |
| Antigonia capros           | 10.50         | 280     | 3.67          |      |
| Illex coindetii            | 5.40          | 30      | 1.89          |      |
| Umrina canariensis         | 4.50          | 10      | 1.57          |      |
| Saurida brasiliensis       | 3.80          | 1030    | 1.33          |      |
| Synagrops microlepis       | 2.64          | 100     | 0.92          |      |
| Raja miraletus             | 2.54          | 4       | 0.89          |      |
| Chelidonichthys gabonensis | 2.54          | 34      | 0.89          |      |
| Scorpaena normani          | 2.40          | 4       | 0.84          |      |
| Trachurus trecae           | 1.54          | 4       | 0.54          |      |
| Peristedion cataphractum   | 1.14          | 44      | 0.40          |      |
| Cepola pauciradiatus       | 0.80          | 54      | 0.28          |      |
| Dibranchius atlanticus     | 0.40          | 60      | 0.14          |      |
| NETTASTOMATIDAE            | 0.34          | 10      | 0.12          |      |
| Citharus linguatula        | 0.24          | 4       | 0.08          |      |
| Epigonus telescopus        | 0.14          | 34      | 0.05          |      |
| GALATHEIDAE *              | 0.14          | 40      | 0.05          |      |
| <b>Total</b>               | <b>286.14</b> |         | <b>100.00</b> |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 310  
 DATE:12/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 405  
 start stop duration Long E 1101  
 TIME :16:31:35 17:01:39 30 (min) Purpose code: 3  
 LOG :9574.57 9576.08 1.51 Area code : 9  
 FDEPTH: 47 46 GearCond.code:  
 BDEPTH: 47 46 Validity code:  
 Towing dir: 230° Wire out: 190 m Speed: 30 kn\*10  
 Sorted: 20 Kg Total catch: 274.44 CATCH/HOUR: 548.88

| SPECIES                 | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|-------------------------|---------------|---------|--------------|------|
|                         | weight        | numbers |              |      |
| Brachydeuterus auritus  | 228.96        | 5004    | 41.71        | 637  |
| Pomadasyus incisus      | 75.78         | 324     | 13.81        | 639  |
| Pentheroscion mbizi     | 59.04         | 1116    | 10.76        |      |
| Trichiurus lepturus     | 58.14         | 2718    | 10.59        | 638  |
| Raja miraletus          | 37.26         | 144     | 6.79         |      |
| Cynoglossus canariensis | 23.76         | 360     | 4.33         |      |
| Pseudotolithus sp.      | 21.96         | 234     | 4.00         |      |
| 'Undidentified crab'    | 16.56         | 144     | 3.02         |      |
| Penaeus notialis        | 6.66          | 342     | 1.21         |      |
| Grammolites gruveli     | 5.40          | 522     | 0.98         |      |
| GONEPLACIDAE            | 4.50          | 756     | 0.82         |      |
| C R A B S               | 2.16          | 288     | 0.39         |      |
| Scyllarides herklotsii  | 1.62          | 252     | 0.30         |      |
| Lagocephalus laevigatus | 1.44          | 18      | 0.26         |      |
| Mystriophis rostellatus | 1.44          | 18      | 0.26         |      |
| PARAPAGURIDAE           | 1.08          | 18      | 0.20         |      |
| Pentanemus quinquarius  | 0.90          | 18      | 0.16         |      |
| Uranoscopus polli       | 0.72          | 54      | 0.13         |      |
| Zeus faber              | 0.36          | 108     | 0.07         |      |
| Cepola pauciradiatus    | 0.36          | 18      | 0.07         |      |
| Squilla mantis          | 0.24          | 54      | 0.04         |      |
| 'Mole crab'             | 0.18          | 18      | 0.03         |      |
| Liocarcinus corrugatus  | 0.18          | 36      | 0.03         |      |
| Sicyonia galeata        | 0.18          | 54      | 0.03         |      |
| <b>Total</b>            | <b>548.88</b> |         | <b>99.99</b> |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 311  
 DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 422  
 start stop duration Long E 1041  
 TIME :23:55:11 00:25:30 30 (min) Purpose code: 3  
 LOG :9621.70 9623.22 1.50 Area code : 9  
 FDEPTH: 544 541 GearCond.code:  
 BDEPTH: 544 541 Validity code:  
 Towing dir: 125° Wire out:1390 m Speed: 30 kn\*10  
 Sorted: 20 Kg Total catch: 58.88 CATCH/HOUR: 117.76

| SPECIES                  | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|--------------------------|---------------|---------|---------------|------|
|                          | weight        | numbers |               |      |
| Hoplostethus cadenati    | 43.98         | 456     | 37.35         |      |
| Raja miraletus           | 12.24         | 36      | 10.39         |      |
| Nematocarcinus africanus | 10.32         | 1392    | 8.76          |      |
| Lamprogrammus exutus     | 9.54          | 174     | 8.10          |      |
| Rhizoprionodon acutus    | 7.80          | 12      | 6.62          |      |
| Gonostoma elongatum      | 4.80          | 120     | 4.08          |      |
| Centrophorus uyato       | 4.20          | 18      | 3.57          |      |
| Trichiurus lepturus      | 4.20          | 120     | 3.57          |      |
| Nezumia sp.              | 2.88          | 60      | 2.45          |      |
| Etmopterus spinax        | 2.82          | 12      | 2.39          |      |
| Melanostomias sp.        | 2.52          | 30      | 2.14          |      |
| Halosaurus ovenii        | 2.52          | 192     | 2.14          |      |
| Triplophos hemingi       | 2.52          | 318     | 2.14          |      |
| Paraconger notialis      | 1.20          | 72      | 1.02          |      |
| Stereomastis sp.         | 1.20          | 102     | 1.02          |      |
| Chaunax pictus           | 0.84          | 6       | 0.71          |      |
| Cynoglossus canariensis  | 0.78          | 12      | 0.66          |      |
| Nezumia sp.              | 0.66          | 24      | 0.56          |      |
| Xanodermichthys copei    | 0.54          | 12      | 0.46          |      |
| Polymetna corythaeola    | 0.48          | 90      | 0.41          |      |
| Hymenocephalus sp.       | 0.48          | 18      | 0.41          |      |
| Dibranchius atlanticus   | 0.42          | 12      | 0.36          |      |
| 'Undidentified crab'     | 0.30          | 84      | 0.25          |      |
| Diplophos sp.            | 0.30          | 12      | 0.25          |      |
| Laemonema laureysi       | 0.22          | 12      | 0.19          |      |
| <b>Total</b>             | <b>117.76</b> |         | <b>100.00</b> |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 312  
 DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 420  
 start stop duration Long E 1044  
 TIME :02:03:10 02:33:14 30 (min) Purpose code: 3  
 LOG :9631.55 9633.04 1.48 Area code : 9  
 FDEPTH: 258 254 GearCond.code:  
 BDEPTH: 258 254 Validity code:  
 Towing dir: 130° Wire out: 700 m Speed: 30 kn\*10  
 Sorted: 43 Kg Total catch: 87.00 CATCH/HOUR: 174.00

| SPECIES                    | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|----------------------------|---------------|---------|---------------|------|
|                            | weight        | numbers |               |      |
| Atractoscion aequidens     | 56.88         | 200     | 32.69         |      |
| Munidopsis sp.             | 36.32         | 10056   | 20.87         |      |
| Parapenaeus longirostris   | 24.72         | 3956    | 14.21         |      |
| Illex coindetii            | 17.68         | 176     | 10.16         |      |
| Parasudis fraser-brueneri  | 6.24          | 292     | 3.59          |      |
| Brotula barbata            | 5.96          | 104     | 3.43          |      |
| Chascanopssetta lugubris   | 5.56          | 4       | 3.20          |      |
| Pterothrissus bellocci     | 3.52          | 132     | 2.02          |      |
| Trigla lyra                | 2.72          | 4       | 1.56          |      |
| Bathynectes piperitus      | 2.24          | 60      | 1.29          |      |
| Gadella imberbis           | 2.20          | 64      | 1.26          |      |
| Bathyrroconger vicinus     | 2.00          | 36      | 1.15          |      |
| Trichiurus lepturus        | 1.88          | 180     | 1.08          |      |
| Chlorophthalmus atlanticus | 0.80          | 24      | 0.46          |      |
| Peristedion cataphractum   | 0.76          | 160     | 0.44          |      |
| Galeus polli               | 0.72          | 20      | 0.41          |      |
| Merluccius polli           | 0.64          | 8       | 0.37          |      |
| Pontinus accraensis        | 0.28          | 12      | 0.16          |      |
| Lophiodes kempfi           | 0.24          | 36      | 0.14          |      |
| Zenion hololepis           | 0.24          | 28      | 0.14          |      |
| Monolepis microstoma       | 0.08          | 8       | 0.05          |      |
| Syacium micrurum           | 0.08          | 4       | 0.05          |      |
| <b>Total</b>               | <b>174.00</b> |         | <b>100.02</b> |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 308  
 DATE:12/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 401  
 start stop duration Long E 1043  
 TIME :06:20:29 06:50:32 30 (min) Purpose code: 3  
 LOG :9519.90 9521.44 1.54 Area code : 8  
 FDEPTH: 89 90 GearCond.code:  
 BDEPTH: 89 90 Validity code:  
 Towing dir: 135° Wire out: 270 m Speed: 30 kn\*10  
 Sorted: 79 Kg Total catch: 622.84 CATCH/HOUR: 1245.68

| SPECIES                     | CATCH/HOUR     |         | % OF TOT. C  | SAMP |
|-----------------------------|----------------|---------|--------------|------|
|                             | weight         | numbers |              |      |
| Trachurus trecae            | 649.80         | 3572    | 52.16        | 632  |
| Dentex angoliensis          | 171.76         | 664     | 13.79        | 634  |
| Trichiurus lepturus         | 70.48          | 132     | 5.66         | 633  |
| Illex coindetii             | 64.78          | 7030    | 5.20         |      |
| Alloteuthis africana        | 52.62          | 13680   | 4.22         |      |
| Priacanthus armatus         | 49.96          | 190     | 4.01         |      |
| Scomber japonicus           | 28.50          | 56      | 2.29         |      |
| Seriola carpenteri          | 25.46          | 38      | 2.04         | 635  |
| Raja miraletus              | 21.28          | 56      | 1.71         |      |
| Squatina oculata            | 18.96          | 6       | 1.52         |      |
| Brotula barbata             | 17.48          | 56      | 1.40         |      |
| Pentheroscion mbizi         | 14.06          | 76      | 1.13         |      |
| Sea cucumbers               | 14.06          | 94      | 1.13         |      |
| Sepia officinalis hierredda | 12.54          | 56      | 1.01         |      |
| Octopus vulgaris            | 11.36          | 8       | 0.91         |      |
| Fistularia petimba          | 10.64          | 18      | 0.85         |      |
| Pseudupeneus prayensis      | 6.26           | 38      | 0.50         |      |
| Citharus linguatula         | 3.98           | 132     | 0.32         |      |
| Chelidonichthys gabonensis  | 1.70           | 18      | 0.14         |      |
| <b>Total</b>                | <b>1245.68</b> |         | <b>99.99</b> |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 309  
 DATE:12/ 7/05 GEAR TYPE: BT No:16 POSITION:Lat S 355  
 start stop duration Long E 1050  
 TIME :08:40:44 08:59:54 19 (min) Purpose code: 3  
 LOG :9534.33 9535.17 0.60 Area code : 8  
 FDEPTH: 47 49 GearCond.code: 8  
 BDEPTH: 47 49 Validity code: 9  
 Towing dir: 140° Wire out: 150 m Speed: 30 kn\*10  
 Sorted: 35 Kg Total catch: 175.05 CATCH/HOUR: 552.79

| SPECIES                     | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|-----------------------------|---------------|---------|--------------|------|
|                             | weight        | numbers |              |      |
| Brachydeuterus auritus      | 433.58        | 86716   | 78.43        |      |
| Pagellus bellottii          | 43.89         | 2826    | 7.94         |      |
| Ephippion guttifer          | 26.37         | 16      | 4.77         |      |
| Pomadasyus incisus          | 19.11         | 95      | 3.46         |      |
| Pseudotolithus senegalensis | 8.53          | 16      | 1.54         |      |
| Cymbium glans               | 6.79          | 16      | 1.23         |      |
| Trachurus trecae            | 6.16          | 32      | 1.11         |      |
| Trichiurus lepturus         | 4.74          | 474     | 0.86         |      |
| Sea cucumbers               | 2.84          | 16      | 0.51         |      |
| Citharus linguatula         | 0.79          | 32      | 0.14         |      |
| <b>Total</b>                | <b>552.80</b> |         | <b>99.99</b> |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 313  
DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 409  
start stop duration Long E 1057  
TIME :05:22:12 05:52:14 30 (min) Purpose code: 3  
LOG :9654.14 9655.69 1.54 Area code : 9  
FDEPTH: 76 75 GearCond.code:  
BDEPTH: 76 75 Validity code:  
Towing dir: 135ø Wire out: 225 m Speed: 31 kn\*10  
Sorted: 87 Kg Total catch: 2839.00 CATCH/HOUR: 5678.00

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 3206.82    | 63248   | 56.48       | 640  |
| Trachurus trecae            | 1884.42    | 16572   | 33.19       | 641  |
| Trichiurus lepturus         | 232.28     | 260     | 4.09        |      |
| Dentex congoensis           | 101.78     | 608     | 1.79        | 642  |
| Sepia officinalis hierredda | 78.30      | 86      | 1.38        |      |
| Brotula barbata             | 53.06      | 260     | 0.93        |      |
| Raja miraletus              | 32.18      | 174     | 0.57        |      |
| Squatina oculata            | 25.40      | 4       | 0.45        |      |
| Pagellus bellottii          | 22.62      | 260     | 0.40        |      |
| Citharus linguatula         | 21.74      | 434     | 0.38        |      |
| Octopus vulgaris            | 19.40      | 14      | 0.34        |      |
| Total                       | 5678.00    |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 314  
DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 405  
start stop duration Long E 1108  
TIME :07:48:31 08:12:22 24 (min) Purpose code: 3  
LOG :9670.33 9671.55 1.22 Area code : 9  
FDEPTH: 24 24 GearCond.code:  
BDEPTH: 24 24 Validity code:  
Towing dir: 305ø Wire out: 130 m Speed: 30 kn\*10  
Sorted: 33 Kg Total catch: 200.86 CATCH/HOUR: 502.15

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Pseudotolithus senegalensis | 104.23     | 1313    | 20.76       | 645  |
| Parapenaeopsis atlantica    | 93.50      | 14960   | 18.62       |      |
| Cynoglossus senegalensis    | 82.50      | 150     | 16.43       |      |
| Pteroscion pelli            | 58.43      | 2283    | 11.64       |      |
| Pentaneus quinquarius       | 35.20      | 935     | 7.01        | 644  |
| Trichiurus lepturus         | 33.95      | 370     | 6.76        | 648  |
| Ilisha africana             | 33.95      | 3335    | 6.76        | 643  |
| Pseudotolithus typus        | 23.93      | 468     | 4.77        | 646  |
| Brachydeuterus auritus      | 11.83      | 398     | 2.36        | 647  |
| Arius heudeloti             | 7.78       | 5       | 1.55        |      |
| Synaptura lusitanica        | 4.53       | 138     | 0.90        |      |
| Dicologlossa cuneata        | 4.25       | 165     | 0.85        |      |
| Raja miraletus              | 2.60       | 13      | 0.52        |      |
| Mystriophis rostellatus     | 1.93       | 13      | 0.38        |      |
| Rhinobatos albonaculatus    | 1.93       | 13      | 0.38        |      |
| Pseudupeneus prayensis      | 1.38       | 13      | 0.27        |      |
| Selene dorsalis             | 0.28       | 83      | 0.06        |      |
| Total                       | 502.20     |         | 100.02      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 315  
DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 418  
start stop duration Long E 1115  
TIME :11:50:05 12:20:21 30 (min) Purpose code: 3  
LOG :9701.35 9703.26 1.54 Area code : 9  
FDEPTH: 48 49 GearCond.code:  
BDEPTH: 48 49 Validity code:  
Towing dir: 310ø Wire out: 200 m Speed: 30 kn\*10  
Sorted: 32 Kg Total catch: 286.01 CATCH/HOUR: 572.02

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Brachydeuterus auritus      | 340.92     | 6696    | 59.60       |      |
| Cynoglossus canariensis     | 62.82      | 432     | 10.98       | 649  |
| Dicologlossa cuneata        | 32.58      | 612     | 5.70        |      |
| Trichiurus lepturus         | 25.74      | 864     | 4.50        |      |
| Pteroscion pelli            | 19.08      | 828     | 3.34        |      |
| Raja miraletus              | 13.68      | 216     | 2.39        |      |
| Pseudotolithus senegalensis | 13.32      | 36      | 2.33        |      |
| Small crabs                 | 9.00       | 2592    | 1.57        |      |
| Grammolites gruvelli        | 8.64       | 396     | 1.51        |      |
| Torpedo marmorata           | 8.10       | 18      | 1.42        |      |
| Paromola cuvieri            | 7.92       | 1026    | 1.38        |      |
| Torpedo torpedo             | 7.20       | 18      | 1.26        |      |
| Ilisha africana             | 5.94       | 108     | 1.04        |      |
| Cynoponticus ferox          | 3.04       | 4       | 0.53        |      |
| Pentaneus quinquarius       | 2.70       | 36      | 0.47        |      |
| Microchirus frechkopi       | 2.16       | 162     | 0.38        |      |
| Calappa-like with spines    | 1.62       | 594     | 0.28        |      |
| Scyllarides herklotsii      | 1.08       | 270     | 0.19        |      |
| Pentheroscion mbizi         | 1.08       | 18      | 0.19        |      |
| Squilla mantis              | 0.90       | 90      | 0.16        |      |
| Selene dorsalis             | 0.90       | 18      | 0.16        |      |
| Brotula barbata             | 0.54       | 54      | 0.09        |      |
| Zeus faber                  | 0.36       | 18      | 0.06        |      |
| Sepia officinalis hierredda | 0.36       | 18      | 0.06        |      |
| Serranus accraensis         | 0.36       | 36      | 0.06        |      |
| Setarches guentheri         | 0.36       | 72      | 0.06        |      |
| Bathygobius paganellus      | 0.36       | 54      | 0.06        |      |
| Dicologlossa hexophthalma   | 0.36       | 18      | 0.06        |      |
| Trachinus draco             | 0.18       | 18      | 0.03        |      |
| 'Spider crab'               | 0.18       | 54      | 0.03        |      |
| Calappa pelli               | 0.18       | 18      | 0.03        |      |
| Sicyonia galeata            | 0.18       | 162     | 0.03        |      |
| Parapenaeopsis atlantica    | 0.18       | 36      | 0.03        |      |
| Total                       | 572.02     |         | 99.98       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 316  
DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 419  
start stop duration Long E 1108  
TIME :13:33:20 13:43:30 10 (min) Purpose code: 3  
LOG :9711.84 9712.37 0.51 Area code : 9  
FDEPTH: 73 74 GearCond.code:  
BDEPTH: 73 74 Validity code:  
Towing dir: 130ø Wire out: 240 m Speed: 30 kn\*10  
Sorted: 29 Kg Total catch: 271.00 CATCH/HOUR: 1626.00

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trichiurus lepturus         | 926.64     | 15012   | 56.99       | 652  |
| Dicologlossa cuneata        | 163.08     | 3024    | 10.03       |      |
| Octopus vulgaris            | 147.96     | 54      | 9.10        |      |
| Pagellus bellottii          | 136.62     | 1566    | 8.40        | 650  |
| Brotula barbata             | 42.96      | 90      | 2.64        | 651  |
| Bathygobius paganellus      | 35.10      | 4482    | 2.16        |      |
| Uranoscopus polli           | 30.78      | 54      | 1.89        |      |
| Fistularia petimba          | 30.78      | 378     | 1.89        |      |
| Raja miraletus              | 23.22      | 108     | 1.43        |      |
| Citharus linguatula         | 18.90      | 486     | 1.16        |      |
| Pentheroscion mbizi         | 17.28      | 108     | 1.06        |      |
| Calappa-like with spines    | 13.50      | 108     | 0.83        |      |
| Mustelus mustelus           | 7.44       | 6       | 0.46        |      |
| Calappa-like with spines    | 7.02       | 3726    | 0.43        |      |
| Brachydeuterus auritus      | 7.02       | 108     | 0.43        |      |
| Serranus accraensis         | 6.48       | 108     | 0.40        |      |
| Parapenaeus longirostris    | 4.32       | 486     | 0.27        |      |
| Grammolites gruvelli        | 2.16       | 54      | 0.13        |      |
| Trachurus trecae            | 2.16       | 324     | 0.13        |      |
| Sepia officinalis hierredda | 1.08       | 54      | 0.07        |      |
| Zeus faber                  | 1.08       | 108     | 0.07        |      |
| Lepidotrigla carolae        | 0.54       | 54      | 0.03        |      |
| Total                       | 1626.12    |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 317  
DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 428  
start stop duration Long E 1055  
TIME :16:46:28 17:16:38 30 (min) Purpose code: 3  
LOG :9738.99 9740.53 1.52 Area code : 9  
FDEPTH: 137 137 GearCond.code:  
BDEPTH: 137 137 Validity code:  
Towing dir: 130ø Wire out: 380 m Speed: 31 kn\*10  
Sorted: 62 Kg Total catch: 154.13 CATCH/HOUR: 308.26

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Dentex angolensis            | 101.40     | 434     | 32.89       | 654  |
| Brotula barbata              | 39.00      | 80      | 12.65       | 653  |
| Synagrops microlepis         | 25.20      | 524     | 8.17        |      |
| Trichiurus lepturus          | 24.50      | 36      | 7.95        | 652  |
| Sea cucumbers                | 15.50      | 34      | 5.03        |      |
| MYCTOPHIDAE                  | 14.80      | 864     | 4.80        |      |
| Ilex coindetii               | 14.70      | 214     | 4.77        |      |
| Todaropsis eblanae           | 11.64      | 170     | 3.78        |      |
| Citharus linguatula          | 8.80       | 164     | 2.85        |      |
| Pterothrissus belloci        | 7.84       | 54      | 2.54        |      |
| Sepia officinalis hierredda  | 5.74       | 50      | 1.86        |      |
| Trachurus trecae             | 5.40       | 14      | 1.75        |      |
| Antigonia capros             | 5.34       | 60      | 1.73        |      |
| Pentheroscion mbizi          | 5.34       | 30      | 1.73        |      |
| Branchiostegus semifasciatus | 4.74       | 4       | 1.54        |      |
| Lophiodes kempfi             | 3.24       | 4       | 1.05        |      |
| Chelidonichthys gabonensis   | 3.10       | 14      | 1.01        |      |
| Syacium micrum               | 3.04       | 270     | 0.99        |      |
| Arnoglossus imperialis       | 2.74       | 120     | 0.89        |      |
| Ariomma bondi                | 2.54       | 4       | 0.82        |      |
| Atractoscion aequidens       | 2.04       | 4       | 0.66        |      |
| Octopus vulgaris             | 1.52       | 2       | 0.49        |      |
| Saurida brasiliensis         | 0.10       | 24      | 0.03        |      |
| Total                        | 308.26     |         | 99.98       |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 318  
DATE:13/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 435  
start stop duration Long E 1059  
TIME :20:55:24 21:25:29 30 (min) Purpose code: 3  
LOG :9757.85 9759.38 1.53 Area code : 9  
FDEPTH: 508 512 GearCond.code:  
BDEPTH: 508 512 Validity code:  
Towing dir: 315ø Wire out:1350 m Speed: 30 kn\*10  
Sorted: 54 Kg Total catch: 324.24 CATCH/HOUR: 648.48

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Nematocarcinus africanus     | 406.20     | 28152   | 62.64       |      |
| Chlamydoselachus anguineus   | 63.84      | 12      | 9.84        |      |
| Hoplostethus cadenati        | 40.80      | 264     | 6.29        |      |
| Aristeus varidens            | 28.20      | 2412    | 4.35        |      |
| POLYCHAELIDAE                | 20.04      | 2124    | 3.09        |      |
| Chaceon maritae              | 19.68      | 36      | 3.03        |      |
| Halosaurus ovenii            | 10.32      | 264     | 1.59        |      |
| Chaunax pictus               | 9.84       | 48      | 1.52        |      |
| Deania calcea                | 9.12       | 36      | 1.41        |      |
| Raja miraletus               | 7.08       | 12      | 1.09        |      |
| Laemonema laureysi           | 5.16       | 132     | 0.80        |      |
| Lamprogrammus exultus        | 3.72       | 156     | 0.57        |      |
| OPHIDIIDAE                   | 3.60       | 60      | 0.56        |      |
| UNIDENTIFIED FISH            | 2.88       | 12      | 0.44        |      |
| MORIDAE                      | 2.40       | 552     | 0.37        |      |
| Bathygadus melanobranchus    | 2.28       | 84      | 0.35        |      |
| Nezumia sp.                  | 2.04       | 84      | 0.31        |      |
| Coelorrhinchus coelorhynchus | 1.92       | 84      | 0.30        |      |
| Etmopterus spinax            | 1.92       | 156     | 0.30        |      |
| Lophiodes kempfi             | 1.68       | 24      | 0.26        |      |
| Todaropsis eblanae           | 1.32       | 24      | 0.20        |      |
| Triplophos hemingi           | 1.08       | 144     | 0.17        |      |
| Diastobranchius capensis     | 0.72       | 24      | 0.11        |      |
| Benthodesmus tenuis          | 0.60       | 12      | 0.09        |      |
| Yarellia blackfordi          | 0.60       | 12      | 0.09        |      |
| Cynoglossus sp.              | 0.36       | 36      | 0.06        |      |
| Physiculus sp.               | 0.36       | 12      | 0.06        |      |
| Trichiurus lepturus          | 0.36       | 12      | 0.06        |      |
| Bathynectes piperitus        | 0.24       | 12      | 0.04        |      |
| C E P H A L O P O D A        | 0.12       | 12      | 0.02        |      |
| Total                        | 648.48     |         | 100.01      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 319  
 DATE:14/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 441  
 start stop duration Long E 1109  
 TIME :00:33:09 01:03:11 30 (min) Purpose code: 3  
 LOG :9778.28 9779.81 1.53 Area code : 9  
 FDEPTH: 297 298 GearCond.code:  
 BDEPTH: 297 298 Validity code:  
 Towing dir: 328ø Wire out: 750 m Speed: 30 kn\*10  
 Sorted: 47 Kg Total catch: 126.77 CATCH/HOUR: 253.54

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius polli            | 136.40     | 390     | 53.80       |      |
| Parapenaeus longirostris    | 28.90      | 3686    | 11.40       |      |
| Pterothrissus belloci       | 23.60      | 140     | 9.31        |      |
| Centrophorus uyato          | 18.32      | 14      | 7.23        |      |
| Cynoponticus ferox          | 8.90       | 100     | 3.51        |      |
| Calappa-like with spines    | 8.70       | 190     | 3.43        |      |
| Brotula barbata             | 4.40       | 10      | 1.74        |      |
| Ilex coindetii              | 3.96       | 40      | 1.56        |      |
| Chlorophthalmus atlanticus  | 3.86       | 36      | 1.52        |      |
| Trichiurus lepturus         | 3.14       | 150     | 1.24        |      |
| Cephalopholis nigri         | 2.46       | 16      | 0.97        |      |
| Galeus polli                | 1.76       | 26      | 0.69        |      |
| Hoplostethus cadenati       | 1.60       | 26      | 0.63        |      |
| Malacocephalus occidentalis | 1.50       | 26      | 0.59        |      |
| Pontinus accraensis         | 1.20       | 16      | 0.47        |      |
| Malacocephalus laevis       | 1.06       | 36      | 0.42        |      |
| Lophius vaillanti           | 0.90       | 6       | 0.35        |      |
| Synagrops microlepis        | 0.84       | 36      | 0.33        |      |
| Stereomastis sp.            | 0.50       | 100     | 0.20        |      |
| Raja miraletus              | 0.44       | 16      | 0.17        |      |
| Octopus vulgaris            | 0.40       | 6       | 0.16        |      |
| Yarella blackfordi          | 0.20       | 50      | 0.08        |      |
| Dibranchius atlanticus      | 0.20       | 16      | 0.08        |      |
| Cyttopsis roseus            | 0.20       | 6       | 0.08        |      |
| Peristedion cataphractum    | 0.10       | 6       | 0.04        |      |
| Total                       | 253.54     |         | 100.00      |      |

DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 320  
 DATE:14/ 7/05 GEAR TYPE: BT No:14 POSITION:Lat S 441  
 start stop duration Long E 1110  
 TIME :02:23:46 02:53:45 30 (min) Purpose code: 3  
 LOG :9786.48 9788.07 1.56 Area code : 9  
 FDEPTH: 152 153 GearCond.code:  
 BDEPTH: 152 153 Validity code:  
 Towing dir: 314ø Wire out: 450 m Speed: 31 kn\*10  
 Sorted: 45 Kg Total catch: 95.40 CATCH/HOUR: 190.80

| SPECIES                    | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------|------------|---------|-------------|------|
|                            | weight     | numbers |             |      |
| Brotula barbata            | 75.12      | 72      | 39.37       | 657  |
| Dentex angolensis          | 28.00      | 96      | 14.68       | 656  |
| Merluccius polli           | 27.36      | 128     | 14.34       |      |
| Pterothrissus belloci      | 12.28      | 104     | 6.44        |      |
| Trigla lyra                | 9.84       | 112     | 5.16        |      |
| Parapenaeus longirostris   | 8.52       | 2524    | 4.47        |      |
| Umbrina canariensis        | 6.96       | 12      | 3.65        |      |
| Trachinocephalus myops     | 6.68       | 104     | 3.50        |      |
| Octopus sp.                | 3.72       | 4       | 1.95        |      |
| Uranoscopus cadenati       | 3.20       | 20      | 1.68        |      |
| Pteroscion pelli           | 2.92       | 52      | 1.53        |      |
| Pentheroscion mbizi        | 2.36       | 4       | 1.24        |      |
| Chlorophthalmus atlanticus | 1.16       | 132     | 0.61        |      |
| Monoleine macrostoma       | 0.72       | 76      | 0.38        |      |
| Trichiurus lepturus        | 0.72       | 20      | 0.38        |      |
| Cynoponticus ferox         | 0.36       | 12      | 0.19        |      |
| Zeus faber                 | 0.32       | 4       | 0.17        |      |
| Calappa sp.                | 0.24       | 8       | 0.13        |      |
| Yarella blackfordi         | 0.20       | 56      | 0.10        |      |
| Epigonus telescopus        | 0.12       | 24      | 0.06        |      |
| Total                      | 190.80     |         | 100.03      |      |

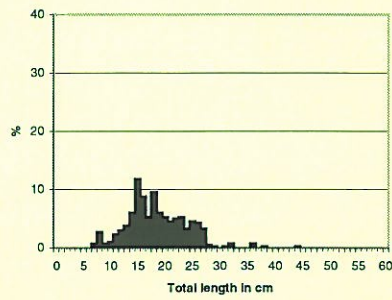
DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 321  
 DATE:14/ 7/05 GEAR TYPE: PT No: 1 POSITION:Lat S 428  
 start stop duration Long E 1123  
 TIME :05:27:48 03:57:51 30 (min) Purpose code: 1  
 LOG :9807.60 9809.43 1.82 Area code : 9  
 FDEPTH: 10 10 GearCond.code:  
 BDEPTH: 53 43 Validity code:  
 Towing dir: 50ø Wire out: 150 m Speed: 35 kn\*10  
 Sorted: 80 Kg Total catch: 1842.13 CATCH/HOUR: 3684.26

| SPECIES               | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------|------------|---------|-------------|------|
|                       | weight     | numbers |             |      |
| Sardinella aurita     | 3174.00    | 17400   | 86.15       | 655  |
| Sardinella maderensis | 450.50     | 3300    | 12.23       | 658  |
| Selene dorsalis       | 35.50      | 450     | 0.96        |      |
| Decapterus punctatus  | 12.00      | 50      | 0.33        |      |
| Mustelus mustelus     | 10.20      | 2       | 0.28        |      |
| Scomber japonicus     | 2.06       | 2       | 0.06        |      |
| Total                 | 3684.26    |         | 100.01      |      |

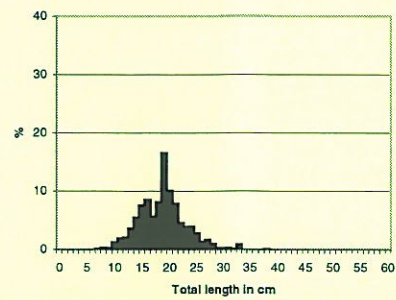
DR. FRIDTJOF NANSEN PROJECT:G3 PROJECT STATION: 322  
 DATE:14/ 7/05 GEAR TYPE: PT No: 1 POSITION:Lat S 440  
 start stop duration Long E 1132  
 TIME :09:14:47 09:44:49 30 (min) Purpose code: 1  
 LOG :9837.68 9839.42 1.74 Area code : 9  
 FDEPTH: 10 10 GearCond.code:  
 BDEPTH: 55 47 Validity code:  
 Towing dir: 50ø Wire out: 150 m Speed: 35 kn\*10  
 Sorted: 1 Kg Total catch: 0.73 CATCH/HOUR: 1.46

| SPECIES     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-------------|------------|---------|-------------|------|
|             | weight     | numbers |             |      |
| Sarda sarda | 1.46       | 2       | 100.00      |      |
| Total       | 1.46       |         | 100.00      |      |

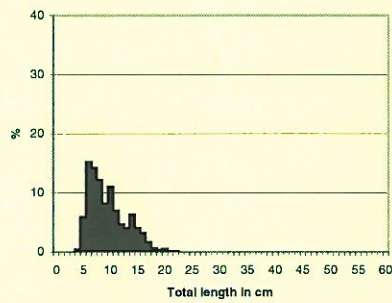
## Annex II Length distribution of main species



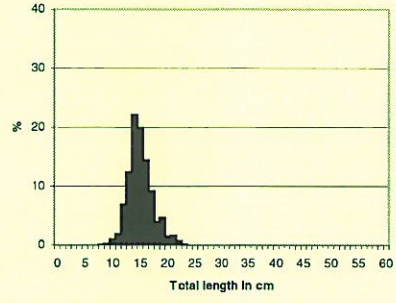
*Pseudotolithus typus* NIGERIA  
Mean length = 19.0 cm N = 289



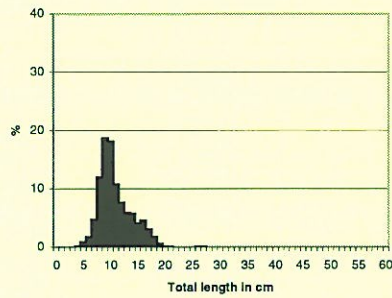
*Galeoides decadctylus* NIGERIA  
Mean length = 19.2 cm N = 711



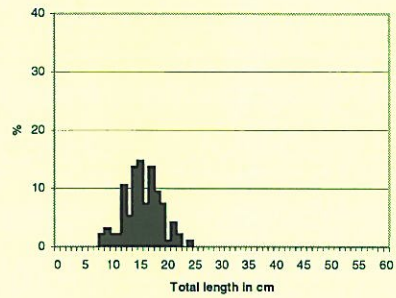
*Pteroscion peli* NIGERIA  
Mean length = 10.0 cm 868



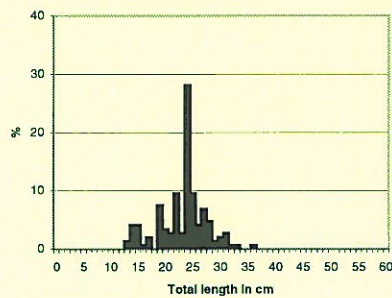
*Pseudupeneus prayensis* NIGERIA  
Mean length = 15.5 cm N = 565



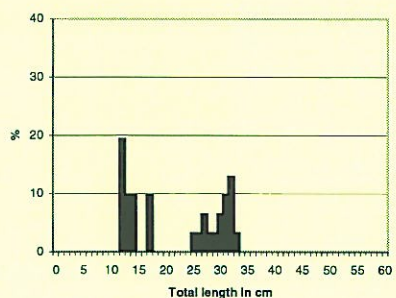
*Brachydeuterus auritus* NIGERIA  
Mean length = 11.4 cm N = 3190



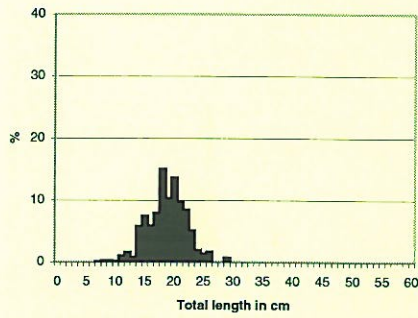
*Drepane africana* NIGERIA  
Mean length = 15.9 cm N = 95



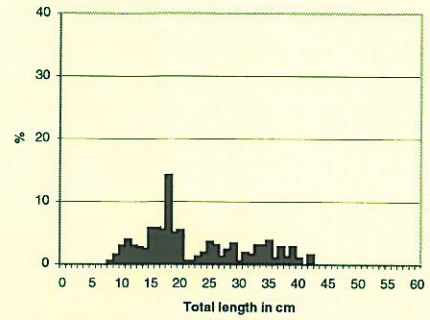
*Pomadasys jubelini* NIGERIA  
Mean length = 23.7 cm N = 111



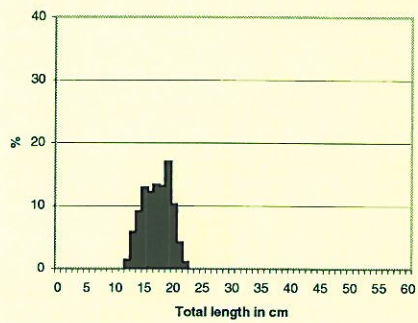
*Ethmalosa fimbriata* NIGERIA  
Mean length = 22.4 cm N = 21



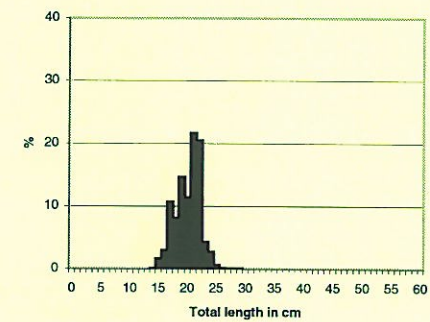
*Dentex angolensis* NIGERIA  
Mean length = 19.6 cm N = 461



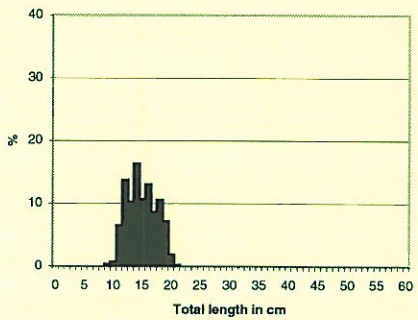
*Pagrus caeruleostictus* NIGERIA  
Mean length = 22.8 cm N = 238



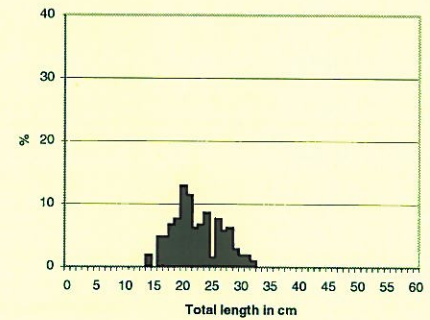
*Dentex canariensis* NIGERIA  
Mean length = 17.5 cm N = 154



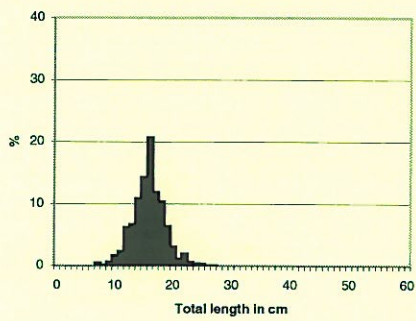
*Pentheroscion mbizi* NIGERIA  
Mean length = 20.6 cm N = 370



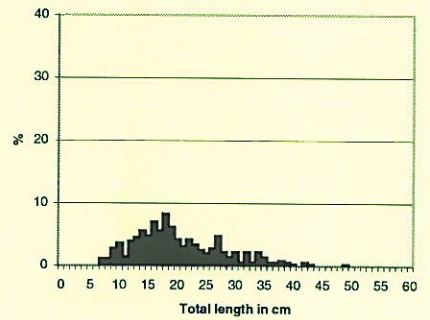
*Dentex congoensis* NIGERIA  
Mean length = 15.4 cm N = 380



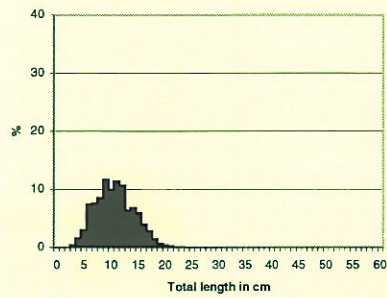
*Pseudotolithus elongatus* NIGERIA  
Mean length = 22.8 cm N = 121



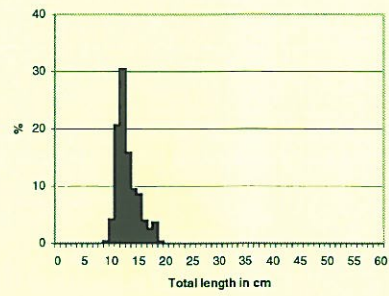
*Pagellus bellottii* NIGERIA  
Mean length = 16.3 cm N = 607



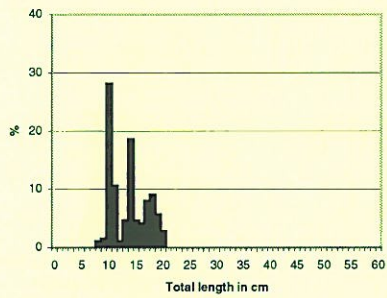
*Pseudotolithus senegalensis* NIGERIA  
Mean length = 20.7 cm N = 251



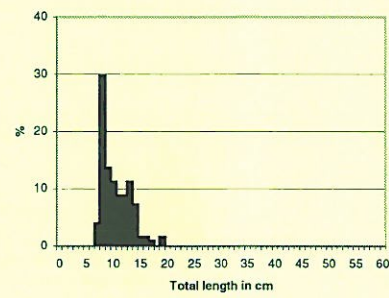
*Ilisha africana* NIGERIA  
Mean length = 11.2 cm N = 1255



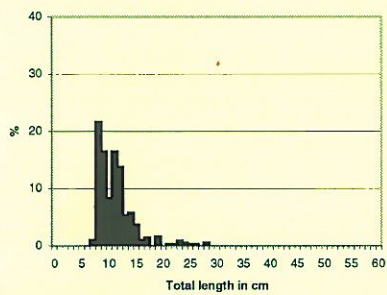
*Decapterus punctatus* NIGERIA  
Mean length = 13.3 cm N = 171



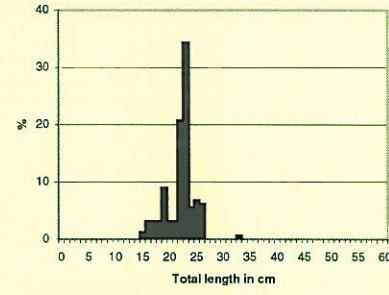
*Sardinella aurita* NIGERIA  
Mean length = 14.0 cm N = 67



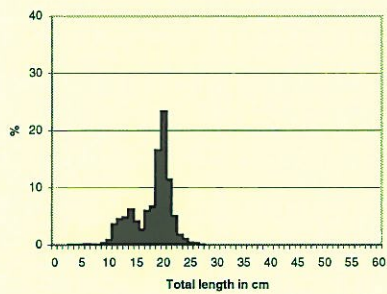
*Decapterus rhonchus* NIGERIA  
Mean length = 10.9 cm N = 125



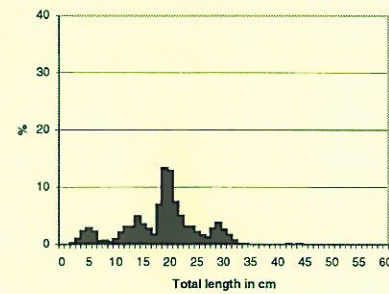
*Sardinella maderensis* NIGERIA  
Mean length = 11.7 cm N = 264



*Selar crumenophthalmus* NIGERIA  
Mean length = 22.6 cm N = 57

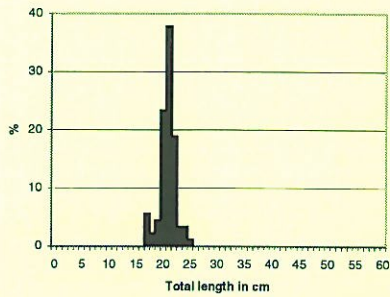


*Chloroscombrus chrysurus* NIGERIA  
Mean length = 18.5 cm N = 1059

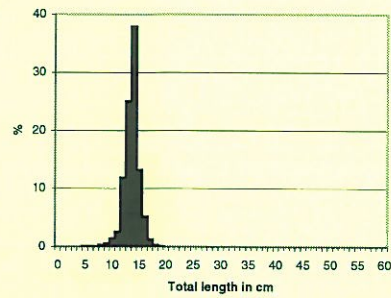


*Selene dorsalis* NIGERIA  
Mean length = 19.2 cm N = 1047

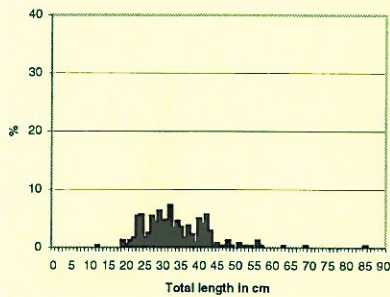




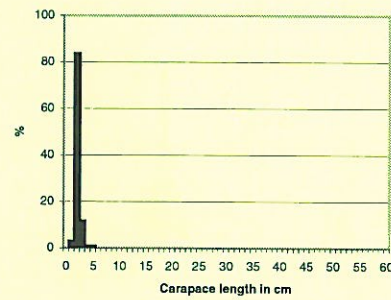
*Trachinotus teraia* NIGERIA  
Mean length = 21.3 cm N = 90



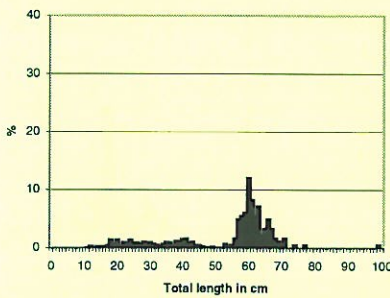
*Ariomma bondi* NIGERIA  
Mean length = 14.1 cm N = 1411



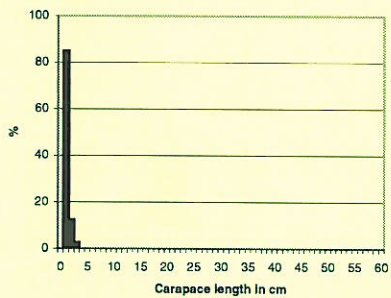
*Scomberomorus tritor* NIGERIA  
Mean length = 34.1 cm N = 180



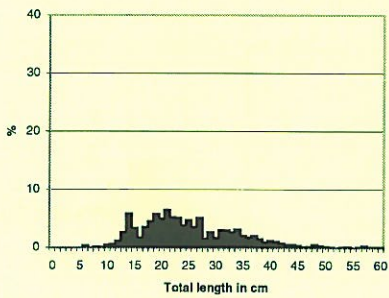
*Penaeus notialis* NIGERIA  
Mean length = 2.6 cm N = 98



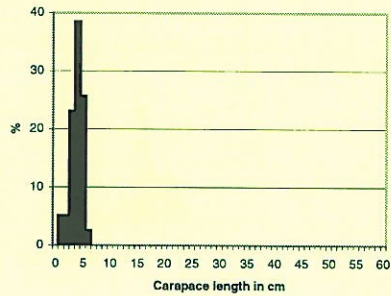
*Trichiurus lepturus* NIGERIA  
Mean length = 54.0 cm N = 610



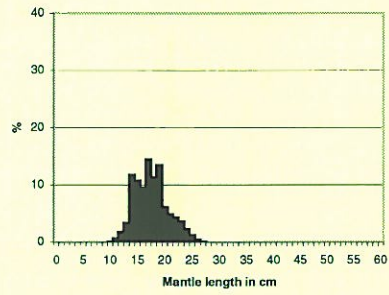
*Parapenaeus longirostris* NIGERIA  
Mean length = 1.7 mm N = 92



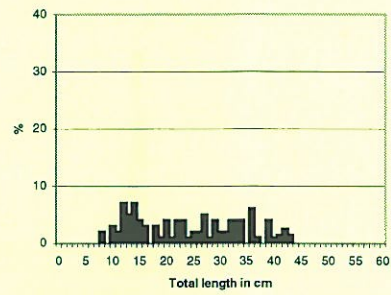
*Sphyraena guachancho* NIGERIA  
Mean length = 25.4 cm N = 1120



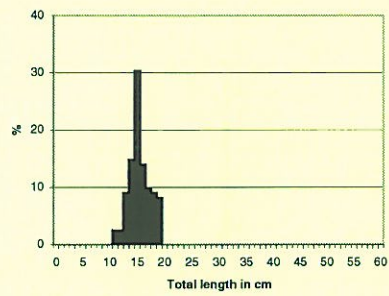
*Aristeus varidens* NIGERIA  
Mean length = 4.3 cm N = 39



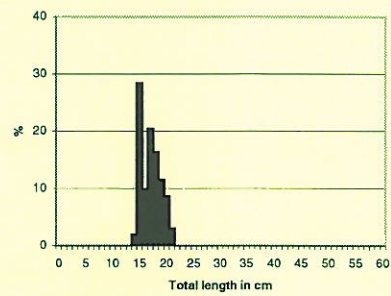
*Dentex angolensis* CAMEROON  
Mean length = 18.1 cm N = 715



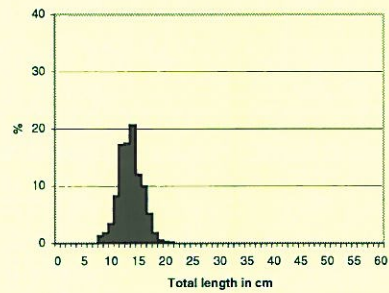
*Pagrus caeruleostictus* CAMEROON  
Mean length = 24.7 cm N = 6



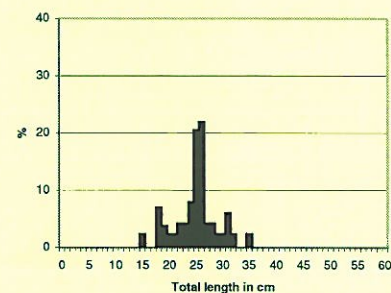
*Dentex canariensis* CAMEROON  
Mean length = 15.9 cm N = 45



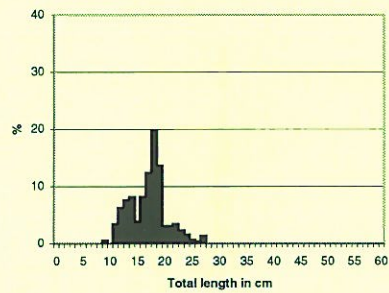
*Spicara alta* CAMEROON  
Mean length = 17.6 cm N = 97



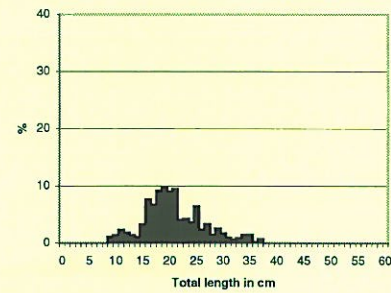
*Dentex congoensis* CAMEROON  
Mean length = 14.0 cm N = 910



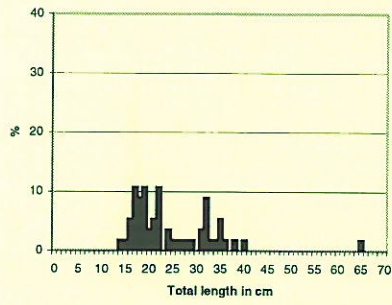
*Pseudotolithus elongatus* CAMEROON  
Mean length = 25.5 cm N = 47



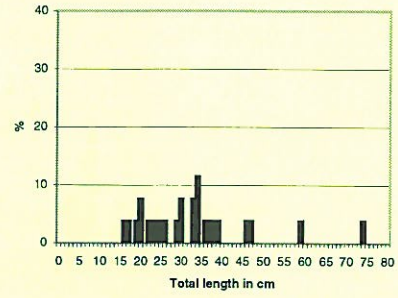
*Pagellus bellottii* CAMEROON  
Mean length = 17.6cm N = 225



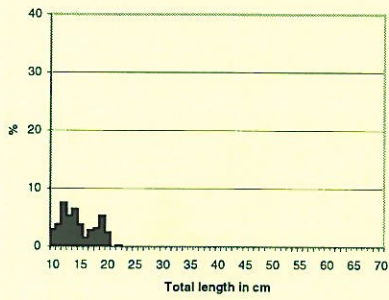
*Pseudotolithus senegalensis* CAMEROON  
Mean length = 21.3 cm N = 251



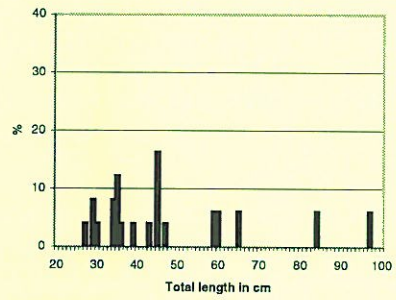
*Pseudotolithus typus* CAMEROON  
Mean length = 25.0 cm N = 56



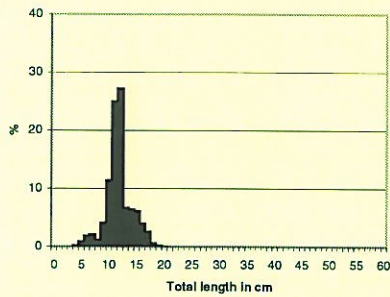
*Epinephelus aeneus* CAMEROON  
Mean length = 33.0 cm N = 26



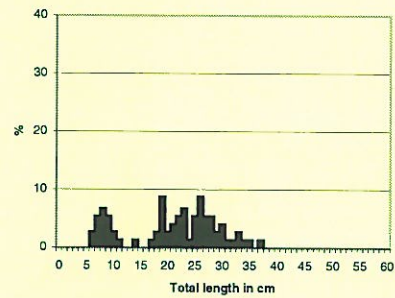
*Pteroscion peli* CAMEROON  
Mean length = 10.9 cm N = 379



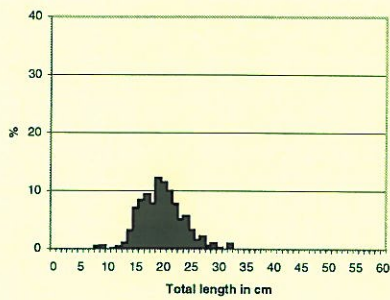
*Lutjanus goreensis* CAMEROON  
Mean length = 48.7 cm N = 22



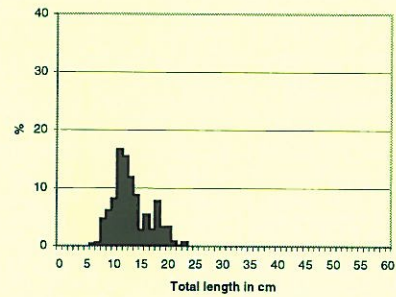
*Brachydeuterus auritus* CAMEROON  
Mean length = 12.2 cm N = 1032



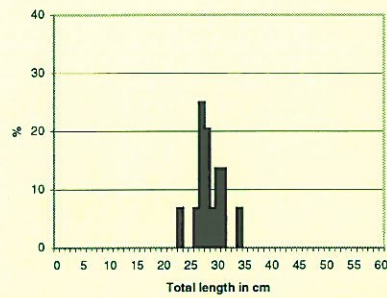
*Lethrinus atlanticus* CAMEROON  
Mean length = 21.3 cm N = 71



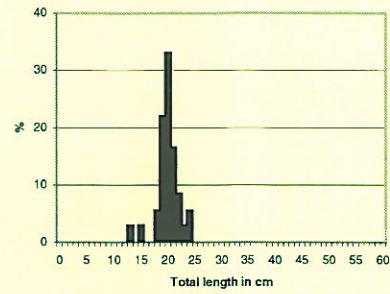
*Galeoides decadactylus* CAMEROON  
Mean length = 20.1 cm N = 359



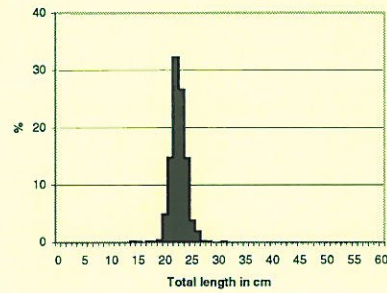
*Drepane africana* CAMEROON  
Mean length = 13.6 cm N = 273



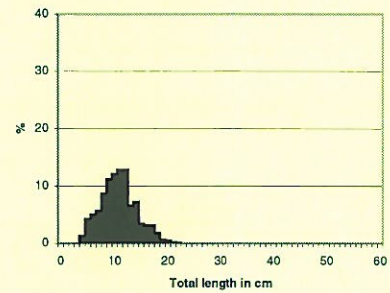
*Chaetodipterus goreensis* CAMEROON  
Mean length = 28.9 cm N = 15



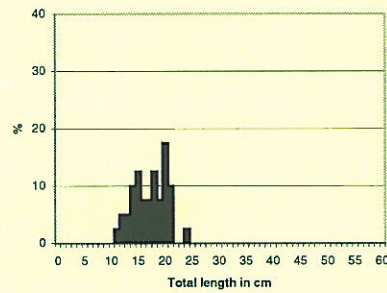
*Ethmalosa fimbriata* CAMEROON  
Mean length = 20.5 cm N = 36



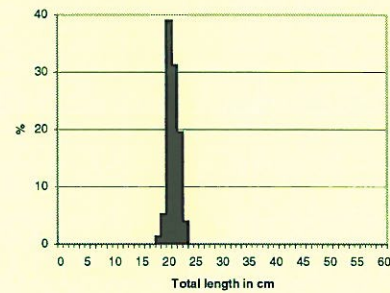
*Chaetodipterus lippei* CAMEROON  
Mean length = 23.0 cm N = 121



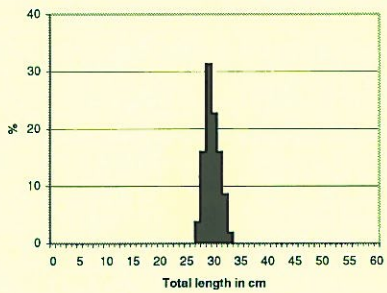
*Ilisha africana* CAMEROON  
Mean length = 11.3 cm N = 1036



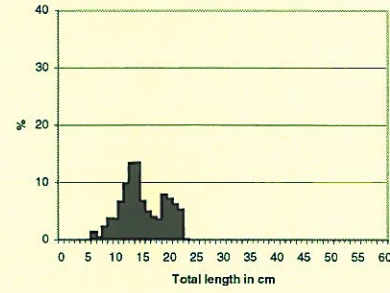
*Pseudupeneus prayensis* CAMEROON  
Mean length = 17.7 cm N = 40



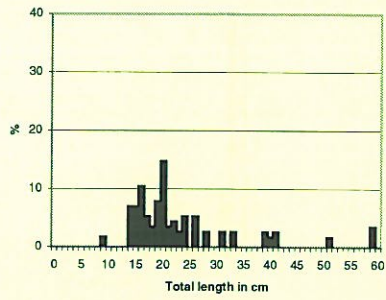
*Sardinella aurita* CAMEROON  
Mean length = 21.2 cm N = 77



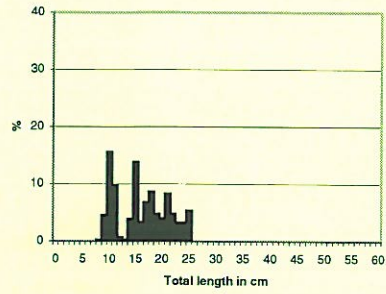
*Acanthurus monroviae* CAMEROON  
Mean length = 30.1 cm N = 57



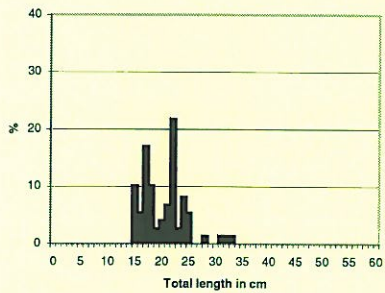
*Sardinella maderensis* CAMEROON  
Mean length = 15.5 cm N = 702



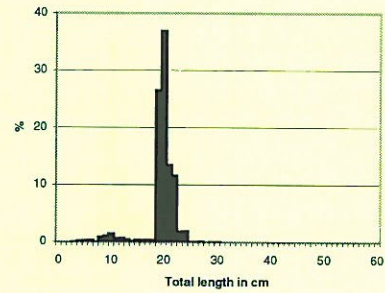
*Alectis alexandrinus* CAMEROON  
Mean length = 24.4 cm N = 50



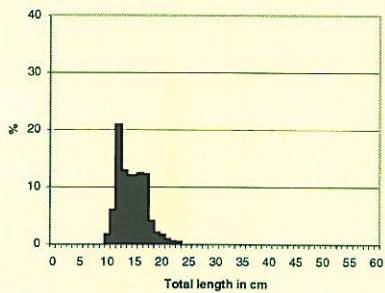
*Selar crumenophthalmus* CAMEROON  
Mean length = 16.8 cm N = 238



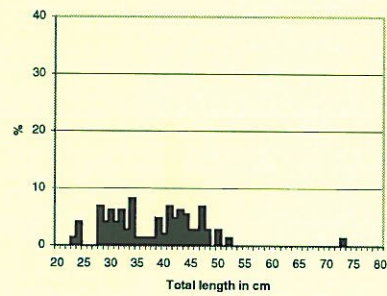
*Caranx hippos* CAMEROON  
Mean length = 20.8 cm N = 51



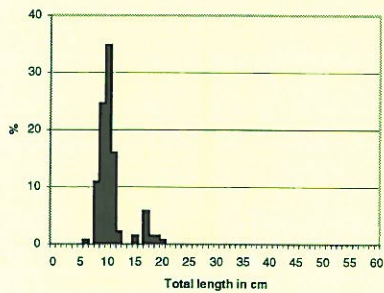
*Selene dorsalis* CAMEROON  
Mean length = 20.1 cm N = 580



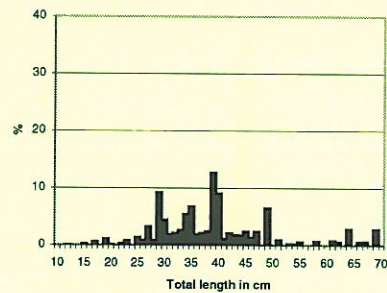
*Chloroscombrus chrysurus* CAMEROON  
Mean length = 14.9 cm N = 499



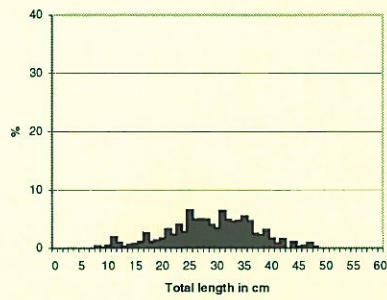
*Scomberomorus tritor* CAMEROON  
Mean length = 38.4 cm N = 70



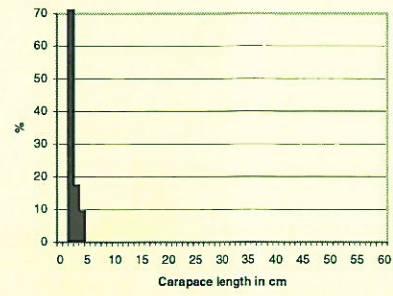
*Decapterus punctatus* CAMEROON  
Mean length = 11.0 cm N = 138



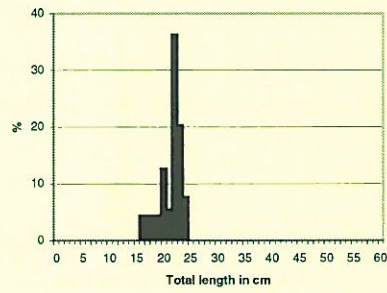
*Trichiurus lepturus* CAMEROON  
Mean length = 39.6 cm N = 161



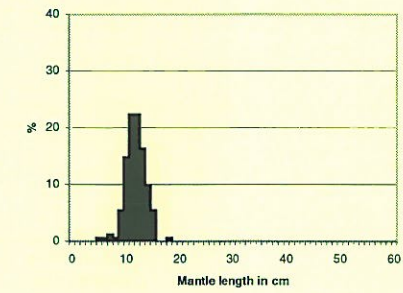
*Sphyaena guachancho* CAMEROON  
Mean length = 29.4 cm N = 321



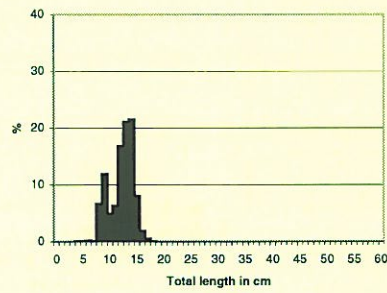
*Penaeus notialis* CAMEROON  
Mean length = 2.9 cm N = 131



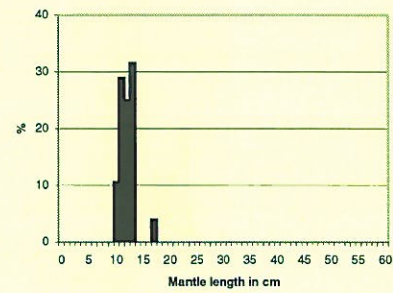
*Erythrocles monodi* CAMEROON  
Mean length = 21.8 cm N = 30



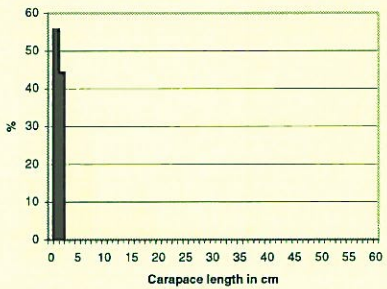
*Sepia officinalis* CAMEROON  
Mean length = 12.2 cm N = 80



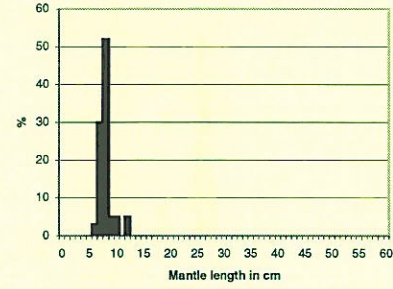
*Ariomma bondi* CAMEROON  
Mean length = 12.7 cm N = 1264



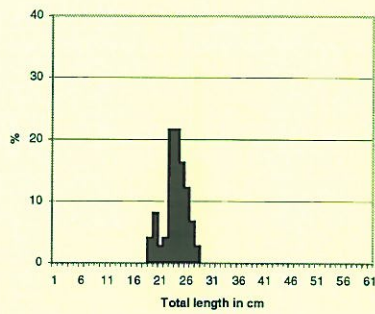
*Illex coindetii* CAMEROON  
Mean length = 12.5 cm N = 28



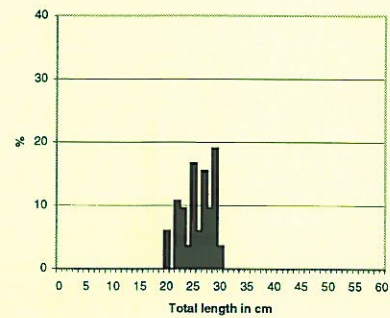
*Parapenaeus longirostris* CAMEROON  
Mean length = 1.9 cm N = 57



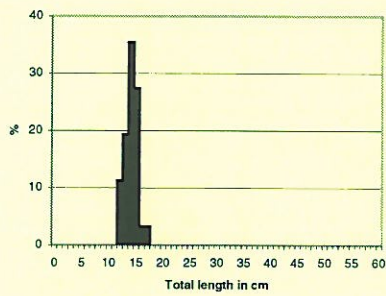
*Todaropsis eblanae* CAMEROON  
Mean length = 8.5 cm N = 37



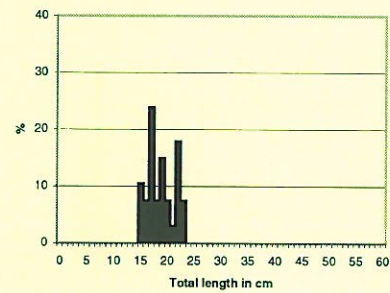
*Boops boops*  
Mean length = 23.3 cm  
PRINCIPE  
N = 29



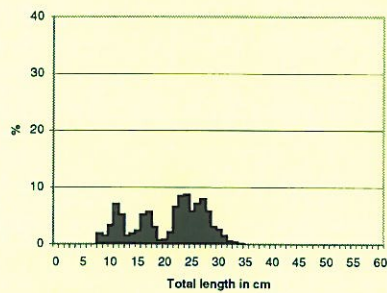
*Lethrinus atlanticus*  
Mean length = 26.3 cm  
PRINCIPE  
N = 21



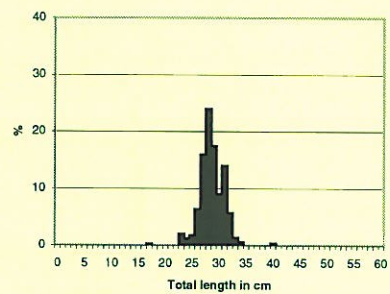
*Dentex congouensis*  
Mean length = 14.5 cm  
PRINCIPE  
N = 26



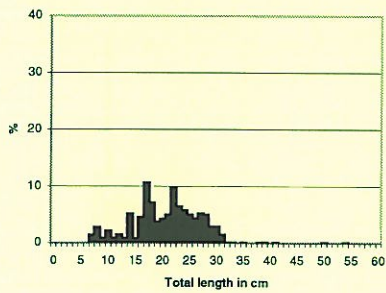
*Pseudupeneus prayensis*  
Mean length = 19.3 cm  
PRINCIPE  
N = 27



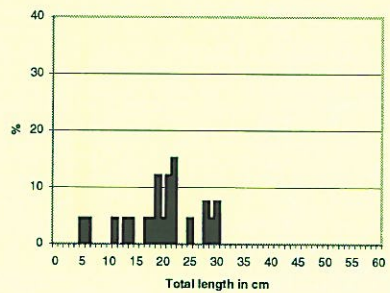
*Pagellus bellottii*  
Mean length = 21.5 cm  
PRINCIPE  
N = 354



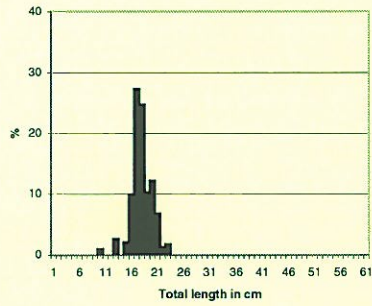
*Dactylopterus volitans*  
Mean length = 29.1 cm  
PRINCIPE  
N = 133



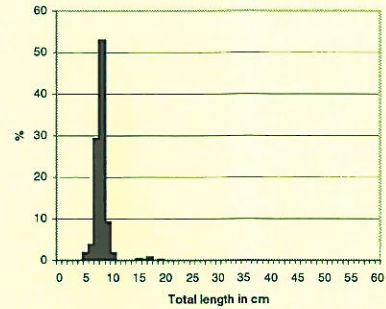
*Pagrus caeruleostictus*  
Mean length = 21.2 cm  
PRINCIPE  
N = 170



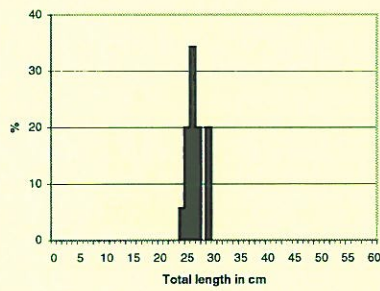
*Syacium micrurum*  
Mean length = 20.3 cm  
PRINCIPE  
N = 24



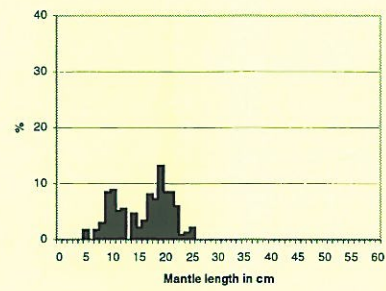
*Acanthostracion quadricornis* PRINCIPE  
Mean length = 17.5 cm N = 87



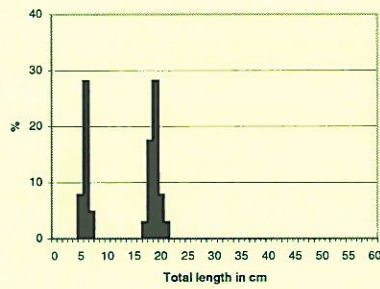
*Ariomma bondi* PRINCIPE  
Mean length = 8.3 cm N = 87



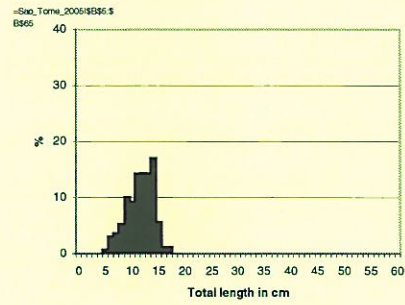
*Decapterus macarellus* PRINCIPE  
Mean length = 27.0 cm N = 15



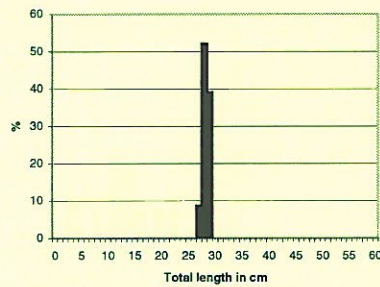
*Sepia officinalis hieredda* PRINCIPE  
Mean length = 16.3 cm N = 72



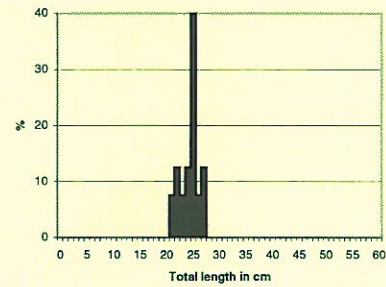
*Decapterus punctatus* PRINCIPE  
Mean length = 14.1 cm N = 39



*Dentex congoensis* SÃO TOMÉ  
Mean length = 12.0 cm N = 244

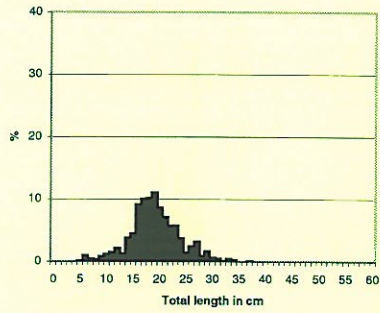


*Selar crumenophthalmus* PRINCIPE  
Mean length = 28.8 cm N = 10

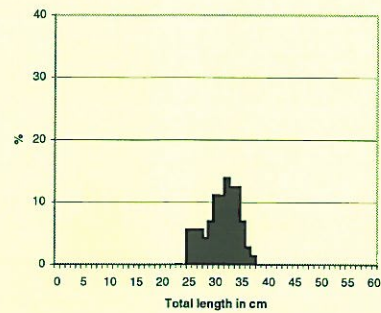


*Dentex macrophthalmus* SÃO TOMÉ  
Mean length = 24.9 cm N = 15

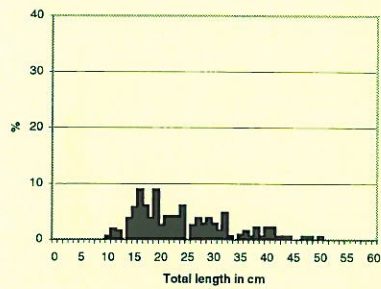




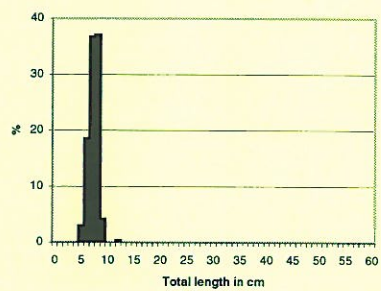
*Pagellus bellottii* SÃO TOMÉ  
Mean length = 19.6 cm N = 639



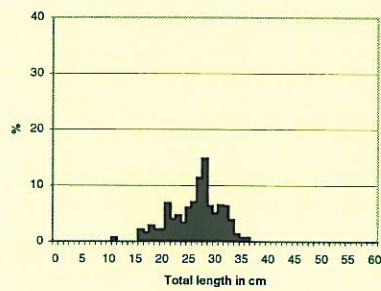
*Lutjanus fulgens* SÃO TOMÉ  
Mean length = 31.5 cm N = 98



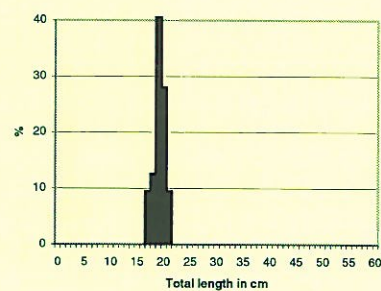
*Pagrus caeruleostictus* SÃO TOMÉ  
Mean length = 24.5 cm N = 94



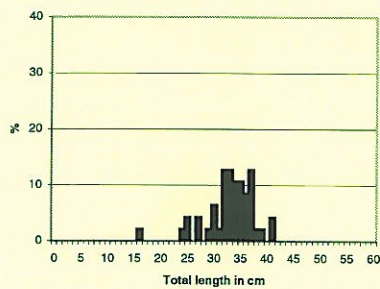
*Brachydeuterus auritus* SÃO TOMÉ  
Mean length = 7.7 cm N = 237



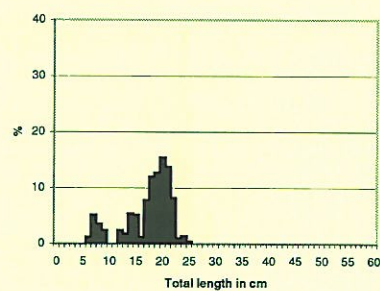
*Paranthias furcifer* SÃO TOMÉ  
Mean length = 26.8 cm N = 153



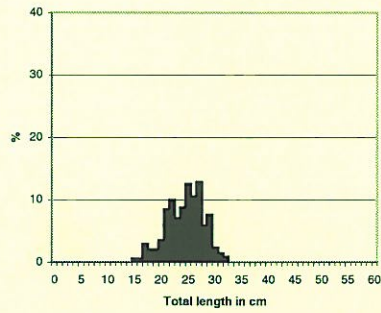
*Pomadasys incisus* SÃO TOMÉ  
Mean length = 19.7 cm N = 32



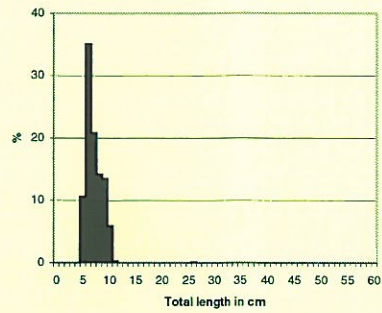
*Apsilus fuscus* SÃO TOMÉ  
Mean length = 33.6 cm N = 47



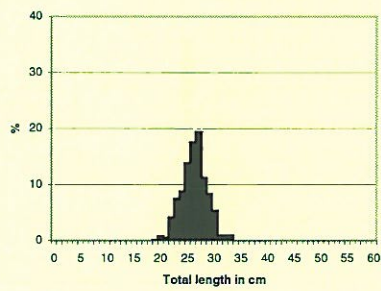
*Pseudupeneus prayensis* SÃO TOMÉ  
Mean length = 17.9 cm N = 121



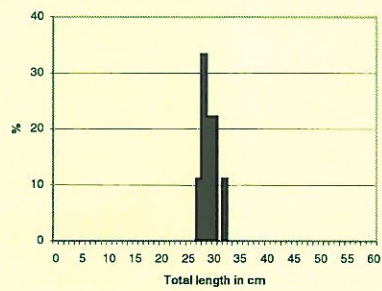
*Syacium micrurum* SÃO TOMÉ  
Mean length = 25.0 cm N = 137



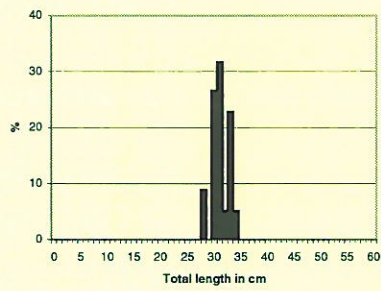
*Sardinella maderensis* SÃO TOMÉ  
Mean length = 7.6 cm N = 233



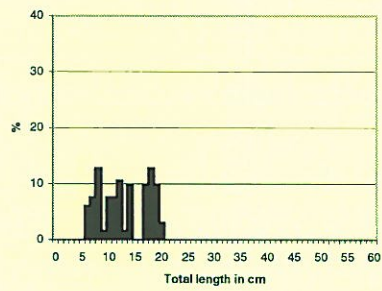
*Dactylopterus volitans* SÃO TOMÉ  
Mean length = 26.8 cm N = 228



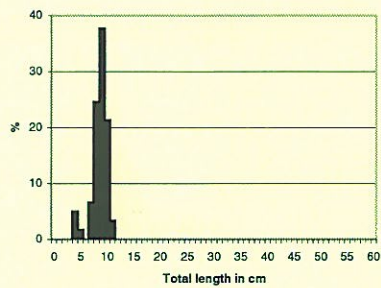
*Decapterus macarellus* SÃO TOMÉ  
Mean length = 29.6 cm N = 9



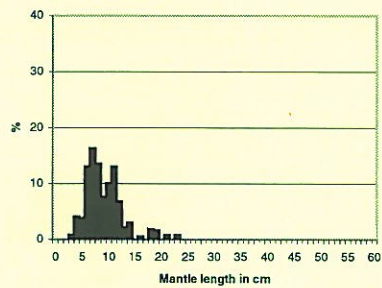
*Acanthurus monroviae* SÃO TOMÉ  
Mean length = 31.6 cm N = 22



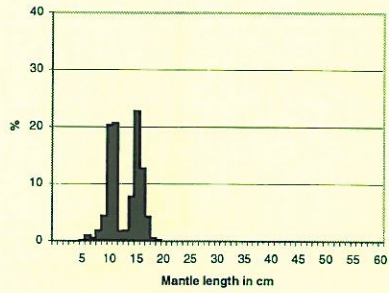
*Decapterus punctatus* SÃO TOMÉ  
Mean length = 13.4 cm N = 51



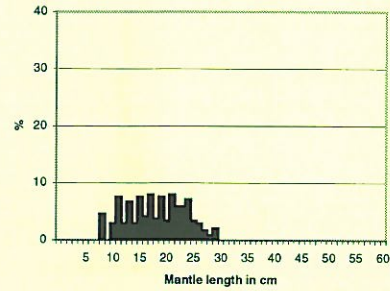
*Hypoclydonia bella* SÃO TOMÉ  
Mean length = 9.1 cm N = 61



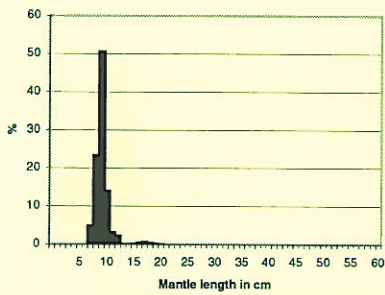
*Sepia officinalis hieredda* SÃO TOMÉ  
Mean length = 9.6 cm N = 126



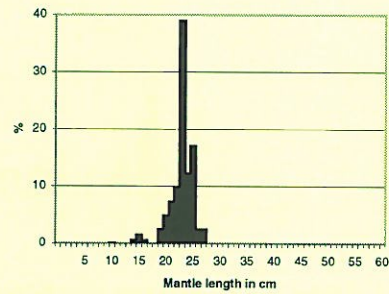
*Ariomma bondi* GABON & CONGO  
Mean length = 13.2 cm N = 609



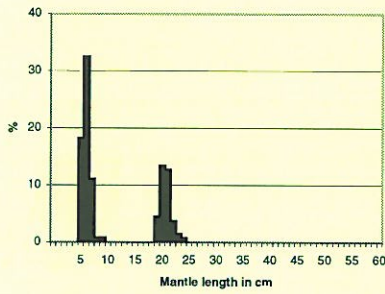
*Syacium micrurum* GABON & CONGO  
Mean length = 18.5 cm N = 84



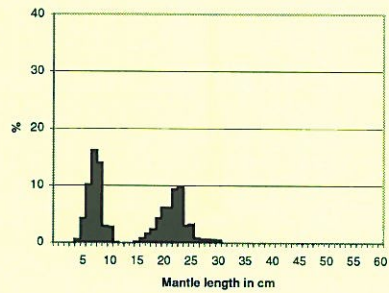
*Decapterus punctatus* GABON & CONGO  
Mean length = 9.6 cm 1032



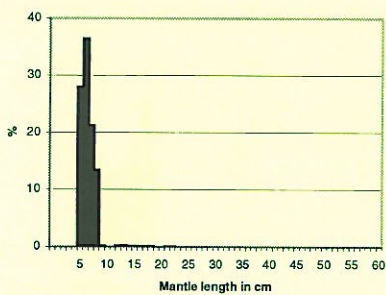
*Selar crumenophthalmus* GABON & CONGO  
Mean length = 23.4 cm N = 65



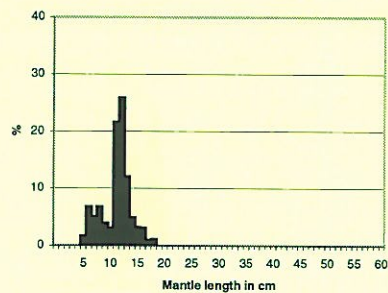
*Selene dorsalis* GABON & CONGO  
Mean length = 11.8 cm N = 129



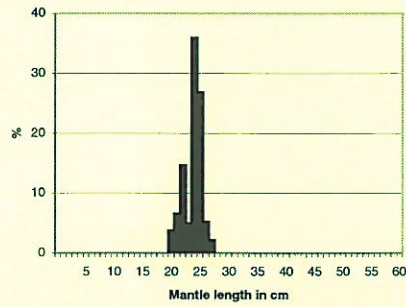
*Trachurus trecae* GABON & CONGO  
Mean length = 14.8 cm N = 889



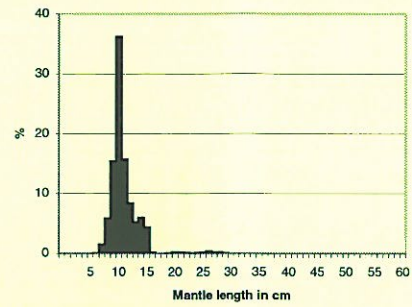
*Spicara alta* GABON & CONGO  
Mean length = 6.7 cm N = 101



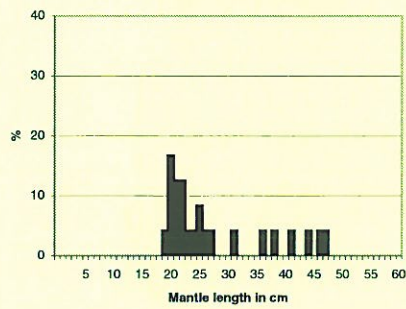
*Ilisha africana* GABON & CONGO  
Mean length = 11.6 cm 253



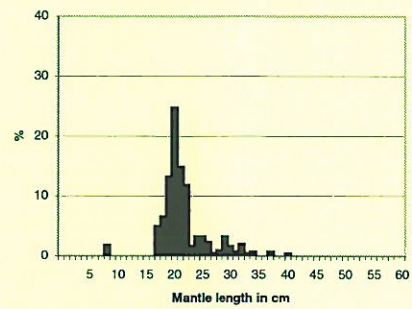
*Sardinella maderensis* GABON & CONGO  
Mean length = 24.3 cm N = 72



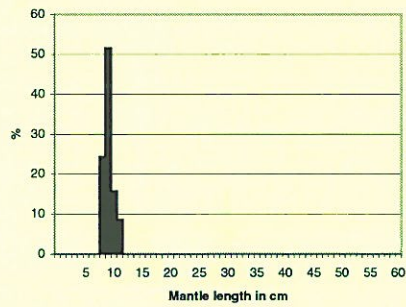
*Sardinella aurita* GABON & CONGO  
Mean length = 11.3 cm N = 1672



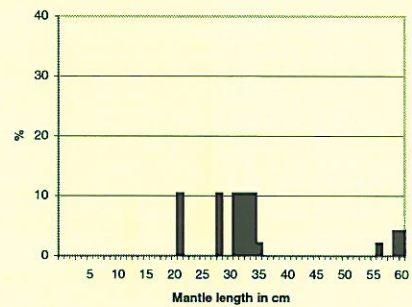
*Cynoglossus canariensis* GABON & CONGO  
Mean length = 28.4 cm N = 24



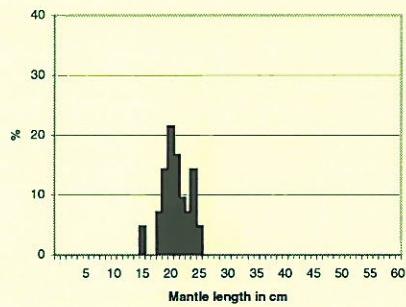
*Dactylopterus volitans* GABON & CONGO  
Mean length = 22.0 cm N = 82



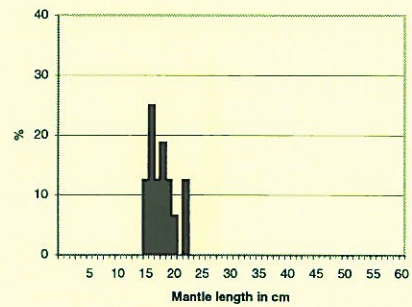
*Engraulis encrasicolus* GABON & CONGO  
Mean length = 9.6 cm N = 70



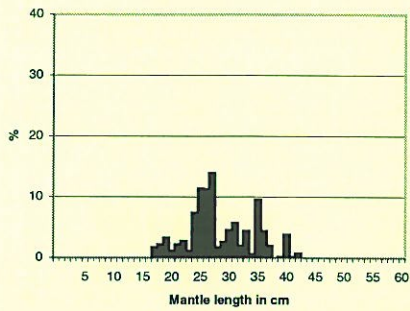
*Fistularia petimba* GABON & CONGO  
Mean length = 42.6 cm N = 20



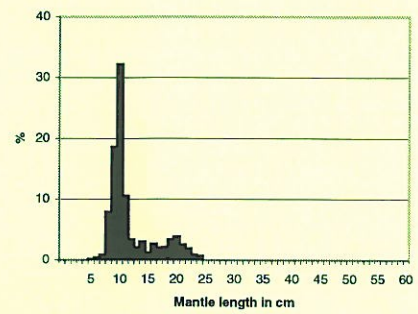
*Lethrinus atlanticus* GABON & CONGO  
21.4 N = 42



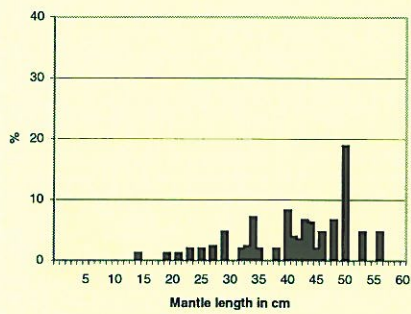
*Lophiodes kempii* GABON & CONGO  
Mean length = 18.3 cm N = 16



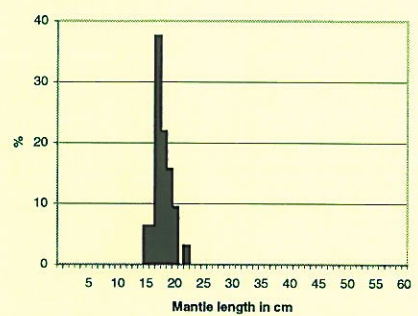
*Lutjanus fulgens* GABON & CONGO  
Mean length = 28.87 cm N = 91



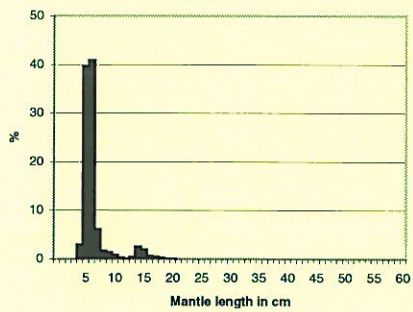
*Pseudupeneus prayensis* GABON & CONGO  
Mean length = 12.4 cm N = 488



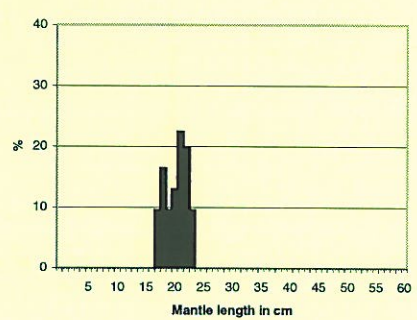
*Brotula barbata* GABON & CONGO  
Mean length = 42.1 cm N = 41



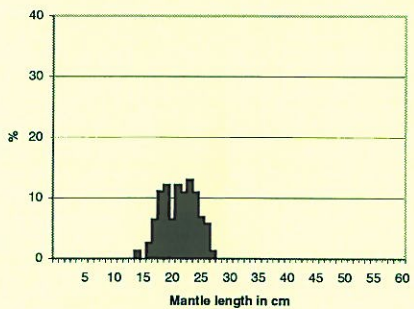
*Pentanemus quinquarius* GABON & CONGO  
Mean length = 18.3 cm N = 32



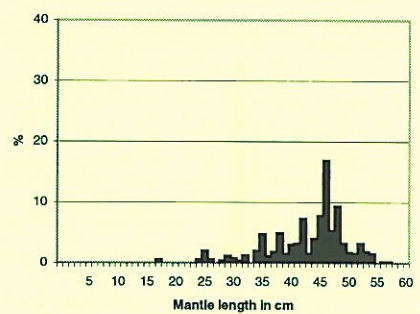
*Brachydeuterus auritus* GABON & CONGO  
Mean length = 6.8 cm N = 1094



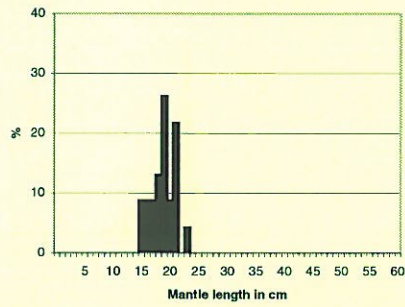
*Pomadasys incisus* GABON & CONGO  
Mean length = 21.7 cm N = 106



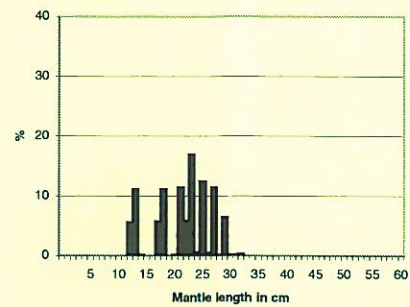
*Priacanthus arenatus* GABON & CONGO  
Mean length = 20.7 cm N = 31



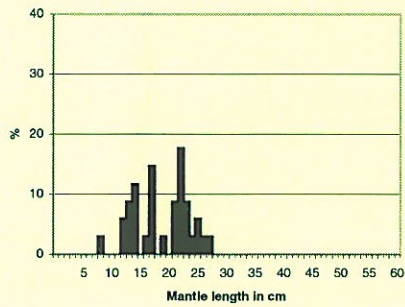
*Trichiurus lepturus* GABON & CONGO  
Mean length = 45.2 cm N = 210



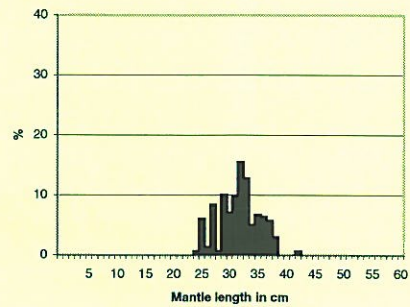
*Pentheroscion mbizi* GABON & CONGO  
Mean length = 19.3 cm N = 23



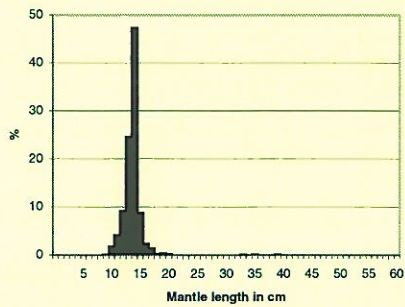
*Pseudotolithus senegalensis* GABON  
Mean length = 21.7 cm N = 54



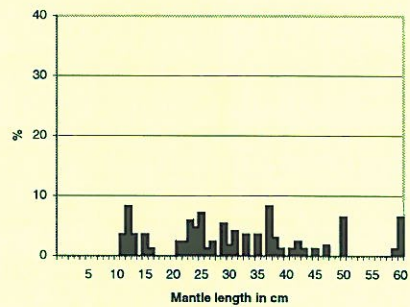
*Pseudotolithus typus* GABON & CONGO  
Mean length = 19.2 cm N = 34



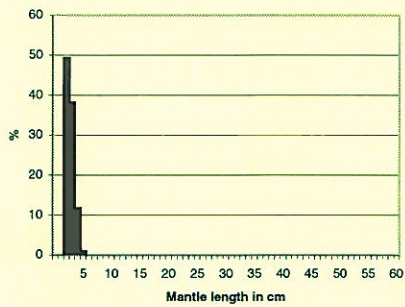
*Umbrina canariensis* GABON & CONGO  
Mean length = 32.2 cm N = 57



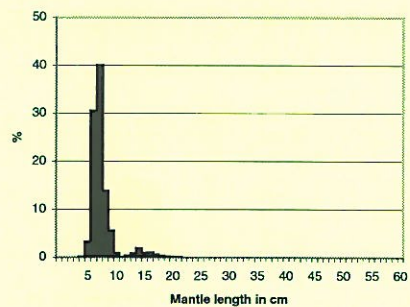
*Scomber japonicus* GABON & CONGO  
Mean length = 14.1 cm N = 373



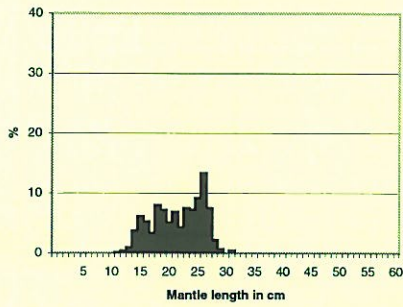
*Epinephelus aeneus* GABON & CONGO  
Mean length = 32.0 cm N = 49



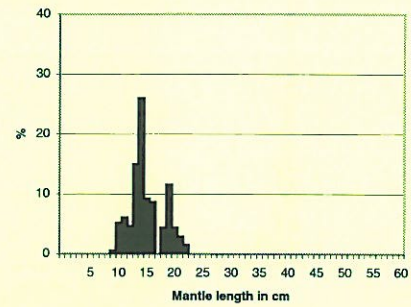
*Penaeus notialis* GABON & CONGO  
Mean length = 3.1 cm N = 342



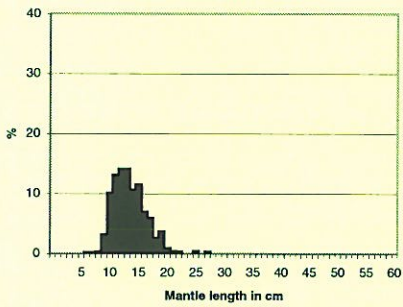
*Boops boops* GABON & CONGO  
Mean length = 7.9 cm N = 748



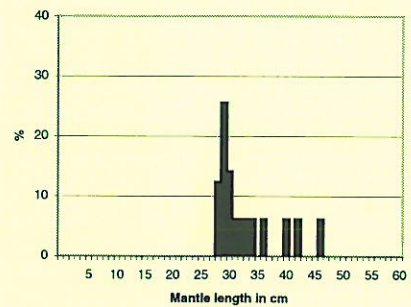
*Dentex angolensis* GABON & CONGO  
Mean length = 22.1 cm N = 354



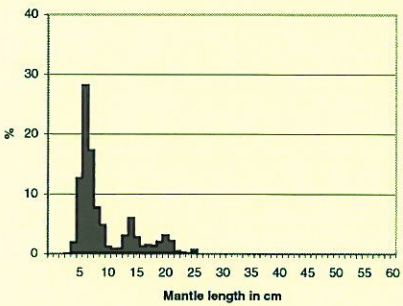
*Dentex macrophthalmus* GABON & CONGO  
Mean length = 15.4 cm N = 90



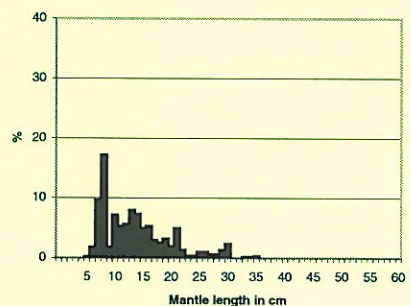
*Dentex congoensis* GABON & CONGO  
Mean length = 14.0 cm N = 1175



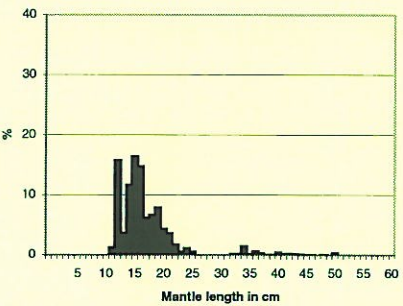
*Dentex barnardi* GABON & CONGO  
Mean length = 33.3 cm N = 16



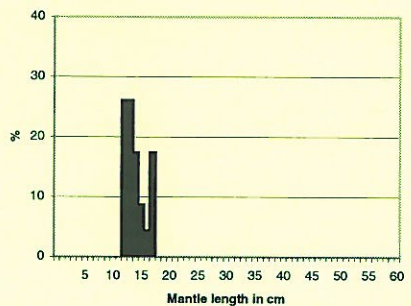
*Pagellus bellottii* GABON & CONGO  
Mean length = 9.6 cm N = 36



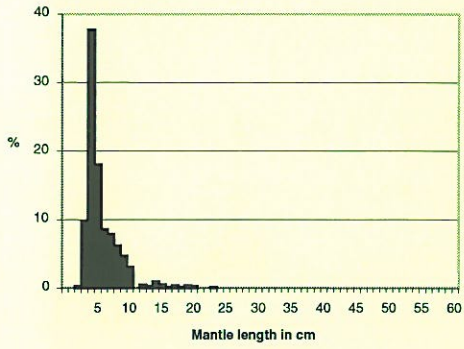
*Pagrus caeruleostictus* GABON & CONGO  
Mean length = 14.2 cm N = 169



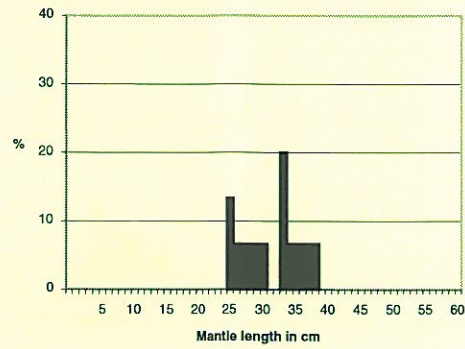
*Sphyræna guachancho* GABON & CONGO  
Mean length = 17.29 cm N = 155



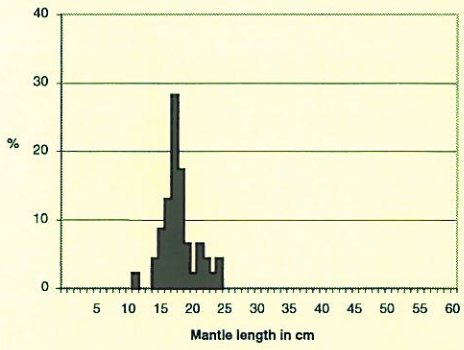
*Illex coindetii* GABON & CONGO  
Mean length = 14.4 cm N = 23



*Sepia officinalis* GABON & CONGO  
 Mean length = 6.1 cm N = 320



*Stromateus fiatola* GABON & CONGO  
 Mean length = 31.8 cm N = 15



*Trigla lyra* GABON & CONGO  
 Mean length = 18.2 cm N = 46



### Annex III Summary of biological samples

| NIGERIA                     |                                    |           |              |          |            |            | Length-Weight Relationship |      |                |
|-----------------------------|------------------------------------|-----------|--------------|----------|------------|------------|----------------------------|------|----------------|
| S/N                         | Species                            | # Samples | Cond. Factor | St. Dev. | Min Length | Max Length | a                          | b    | R <sup>2</sup> |
| 1                           | <i>Albula vulpes</i>               | 13        | 0.70         | 0.15     | 27.5       | 42.3       | 0.00005                    | 2.50 | 0.94           |
| 2                           | <i>Alectis alexandrinus</i>        | 14        | 0.93         | 0.22     | 21.6       | 59         | 0.0595                     | 3.29 | 0.97           |
| 3                           | <i>Ariomma bondi</i>               | 228       | 1.26         | 0.09     | 9.6        | 19.9       | 0.0164                     | 2.58 | 0.95           |
| 4                           | <i>Aristeus varidens</i>           | 39        | 33.68        | 6.90     | 1.76       | 6.28       | 0.8322                     | 2.36 | 0.97           |
| 5                           | <i>Brachydeuterus auritus</i>      | 371       | 1.29         | 0.55     | 4.5        | 18.2       | 0.013                      | 2.96 | 0.95           |
| 6                           | <i>Brotula barbata</i>             | 17        | 0.69         | 0.03     | 13.8       | 41.2       | 0.0074                     | 2.98 | 0.94           |
| 7                           | <i>Caranx hippos</i>               | 19        | 0.11         | 0.11     | 19.5       | 34         | 0.0045                     | 2.96 | 0.95           |
| 8                           | <i>Caranx senegallus</i>           | 8         | 0.82         | 0.06     | 28         | 33.6       | 0.0227                     | 2.70 | 0.91           |
| 9                           | <i>Carcharhinus signatus</i>       | 1         | 0.34         | -        | 102        | 102        | -                          | -    | -              |
| 10                          | <i>Centrophorus granulosus</i>     | 15        | 0.55         | 0.06     | 59         | 102        | 0.0015                     | 3.30 | 0.96           |
| 11                          | <i>Centrophorus squamosus</i>      | 1         | 0.47         | -        | 46         | 46         | -                          | -    | -              |
| 12                          | <i>Centrophorus uyato</i>          | 2         | 0.56         | 0.04     | 77         | 86         | -                          | -    | -              |
| 13                          | <i>Deania calcea</i>               | 2         | 0.38         | 22.98    | 37         | 41         | -                          | -    | -              |
| 14                          | <i>Dentex angolensis</i>           | 151       | 1.44         | 2.84     | 10         | 29.7       | 0.0568                     | 2.53 | 0.94           |
| 15                          | <i>Dentex canariensis</i>          | 88        | 1.43         | 0.06     | 12.2       | 21.9       | 0.0197                     | 2.78 | 0.98           |
| 16                          | <i>Dentex congoensis</i>           | 275       | 1.41         | 0.19     | 9.6        | 23         | 0.013                      | 2.96 | 0.97           |
| 17                          | <i>Epinephelus aeneus</i>          | 1         | 1.11         | -        | 24.2       | 24.2       | -                          | -    | -              |
| 18                          | <i>Etmopterus polli</i>            | 1         | 0.36         | -        | 22         | 22         | -                          | -    | -              |
| 19                          | <i>Etmopterus pusillus</i>         | 5         | 0.38         | 0.04     | 32         | 43         | 0.0377                     | 3.30 | 0.96           |
| 20                          | <i>Galeoides decadactylus</i>      | 69        | 1.03         | 0.09     | 16.1       | 32.6       | 0.008                      | 3.08 | 0.97           |
| 21                          | <i>Galeus polli</i>                | 22        | 0.29         | 0.05     | 22         | 31         | 0.0002                     | 3.86 | 0.90           |
| 22                          | <i>Heptanchias perlo</i>           | 1         | 0.39         | -        | 110        | 110        | -                          | -    | -              |
| 23                          | <i>Ilisha africana</i>             | 28        | 0.70         | 0.08     | 13         | 20.8       | 0.0141                     | 2.75 | 0.97           |
| 24                          | <i>Mustelus mustelus</i>           | 26        | 0.33         | 0.04     | 34         | 137        | 0.004                      | 3.06 | 0.90           |
| 25                          | <i>Oxynotus centrina</i>           | 2         | 0.86         | 0.27     | 21         | 25         | -                          | -    | -              |
| 26                          | <i>Pagellus bellotii</i>           | 186       | 1.38         | 0.19     | 7.5        | 30         | 0.0225                     | 2.86 | 0.95           |
| 27                          | <i>Pagrus caeruleostictus</i>      | 22        | 1.58         | 0.09     | 15.8       | 21.5       | 0.0218                     | 2.89 | 0.97           |
| 28                          | <i>Paragelus pectoralis</i>        | 2         | 0.46         | 0.17     | 55         | 66         | -                          | -    | -              |
| 29                          | <i>Parapenaeus longirostris</i>    | 118       | 52.18        | 11.02    | 1          | 3.78       | 0.0045                     | 2.50 | 0.93           |
| 30                          | <i>Penaeus notialis</i>            | 153       | 72.71        | 8.11     | 1.9        | 4.88       | 0.899                      | 2.70 | 0.97           |
| 31                          | <i>Pentheroscion mbizi</i>         | 75        | 1.05         | 0.08     | 15.3       | 26.2       | 0.0327                     | 3.05 | 0.96           |
| 32                          | <i>Pseudotolithus senegalensis</i> | 60        | 0.70         | 0.13     | 16         | 51.1       | 0.0031                     | 3.25 | 0.95           |
| 33                          | <i>Pseudupenaeus prayensis</i>     | 64        | 1.26         | 0.12     | 11.9       | 22.7       | 0.011                      | 3.04 | 0.97           |
| 34                          | <i>Pterocion peli</i>              | 106       | 1.26         | 0.21     | 4.3        | 19.6       | 0.0154                     | 2.84 | 0.98           |
| 35                          | <i>Rhizoprionodon acutus</i>       | 31        | 0.45         | 0.05     | 37         | 99         | 0.0036                     | 3.05 | 0.90           |
| 36                          | <i>Sardinella aurita</i>           | 14        | 0.79         | 0.07     | 9          | 17         | 0.0093                     | 2.93 | 0.98           |
| 37                          | <i>Sardinella maderensis</i>       | 25        | 0.88         | 0.16     | 9.5        | 17.5       | 0.0179                     | 2.71 | 0.94           |
| 38                          | <i>Scomberomorus tritor</i>        | 46        | 0.55         | 0.19     | 17.7       | 57.1       | 0.0142                     | 2.73 | 0.95           |
| 39                          | <i>Scyliorhinus cervigonis</i>     | 5         | 0.45         | 0.02     | 25         | 50         | 0.0069                     | 2.88 | 0.98           |
| 40                          | <i>Selar crumenophthalmus</i>      | 51        | 1.18         | 0.07     | 17         | 24.6       | 0.0048                     | 2.96 | 0.97           |
| 41                          | <i>Selene dorsalis</i>             | 150       | 1.11         | 0.27     | 3.3        | 30.5       | 0.0215                     | 2.76 | 0.89           |
| 42                          | <i>Serranus accraensis</i>         | 31        | 1.23         | 0.14     | 11         | 16         | 0.1169                     | 3.39 | 0.94           |
| 43                          | <i>Sphyaena guachancho</i>         | 210       | 0.46         | 0.06     | 11.9       | 59.9       | 0.0069                     | 2.87 | 0.94           |
| 44                          | <i>Squalus blainville</i>          | 3         | 0.50         | 0.06     | 62         | 90         | 0.0003                     | 3.62 | 0.99           |
| 45                          | <i>Squalus megalops</i>            | 21        | 0.45         | 0.11     | 25         | 60         | 0.0143                     | 2.69 | 0.94           |
| 46                          | <i>Squatina oculata</i>            | 79        | 0.85         | 0.89     | 18         | 163        | 0.0356                     | 2.61 | 0.77           |
| 47                          | <i>Trachinotus teraia</i>          | 40        | 1.16         | 0.08     | 20.2       | 24.1       | 0.1169                     | 2.25 | 0.84           |
| 48                          | <i>Trichiurus lepturus</i>         | 94        | 0.05         | 0.01     | 9          | 82.6       | 0.0002                     | 3.26 | 0.93           |
| 49                          | <i>Umbrina canariensis</i>         | 37        | 1.18         | 0.07     | 22.4       | 33.5       | 0.0105                     | 3.04 | 0.97           |
| Total Number of Species     |                                    | 49        |              |          |            |            |                            |      |                |
| Total Number of Individuals |                                    | 3022      |              |          |            |            |                            |      |                |

| CAMEROON                    |                                  |           |              |          |            |            | Length-Weight Relationship |      |                |  |
|-----------------------------|----------------------------------|-----------|--------------|----------|------------|------------|----------------------------|------|----------------|--|
| S/N                         | Species                          | # Samples | Cond. Factor | St. Dev. | Min Length | Max Length | a                          | b    | R <sup>2</sup> |  |
| 1                           | <i>Alectis alexandrinus</i>      | 4         | 0.09         | 0.00     | 52         | 61         | 0.0096                     | 2.42 | 1.00           |  |
| 2                           | <i>Ariomma bondi</i>             | 108       | 1.24         | 0.30     | 11.7       | 19.1       | 0.04                       | 2.56 | 0.86           |  |
| 3                           | <i>Brachydeuterus auritus</i>    | 304       | 1.40         | 0.13     | 6.5        | 19.8       | 0.0173                     | 2.91 | 0.95           |  |
| 4                           | <i>Caranx hippos</i>             | 10        | 1.13         | 0.08     | 18         | 24.5       | 0.0154                     | 2.90 | 0.97           |  |
| 5                           | <i>Caranx senegallus</i>         | 11        | 1.22         | 0.06     | 22.2       | 26.8       | 0.0139                     | 2.96 | 0.97           |  |
| 6                           | <i>Chaetodipterus lippei</i>     | 28        | 3.16         | 0.39     | 15         | 28.8       | 0.2218                     | 2.36 | 0.97           |  |
| 7                           | <i>Chloroscombrus chrysurus</i>  | 61        | 0.82         | 0.10     | 15.5       | 21.6       | 0.0185                     | 2.72 | 0.87           |  |
| 8                           | <i>Decapterus punctatus</i>      | 7         | 0.65         | 0.02     | 14.7       | 18         | 0.0042                     | 3.15 | 0.99           |  |
| 9                           | <i>Dentex angolensis</i>         | 182       | 1.39         | 0.24     | 10.1       | 27.5       | 0.0195                     | 2.88 | 0.93           |  |
| 10                          | <i>Dentex canariensis</i>        | 31        | 1.42         | 0.06     | 12.5       | 19.5       | 0.0234                     | 2.82 | 0.98           |  |
| 11                          | <i>Dentex congoensis</i>         | 213       | 1.44         | 0.25     | 8.2        | 22         | 0.0258                     | 2.78 | 0.95           |  |
| 12                          | <i>Drepane africana</i>          | 147       | 2.65         | 0.27     | 9.1        | 23.9       | 0.014                      | 3.23 | 0.95           |  |
| 13                          | <i>Epinephelus aeneus</i>        | 19        | 1.38         | 0.59     | 15.9       | 48.1       | 0.0239                     | 2.82 | 0.94           |  |
| 14                          | <i>Galeoides decadactylus</i>    | 176       | 1.03         | 0.08     | 10.5       | 33.1       | 0.0085                     | 3.06 | 0.95           |  |
| 15                          | <i>Ilisha africana</i>           | 247       | 0.72         | 0.11     | 4.3        | 21.6       | 0.0155                     | 2.71 | 0.93           |  |
| 16                          | <i>Lethrinus atlanticus</i>      | 48        | 1.43         | 0.17     | 11.8       | 36.9       | 0.0127                     | 3.04 | 0.96           |  |
| 17                          | <i>Lutjanus fulgens</i>          | 6         | 1.37         | 0.23     | 21         | 30.5       | 0.1401                     | 2.29 | 0.83           |  |
| 18                          | <i>Lutjanus goreensis</i>        | 10        | 1.43         | 0.11     | 27         | 97         | 0.0177                     | 2.94 | 0.96           |  |
| 19                          | <i>Pagellus bellotti</i>         | 125       | 1.52         | 0.60     | 9.5        | 27.8       | 0.0624                     | 2.51 | 0.87           |  |
| 20                          | <i>Pagrus caeruleostictus</i>    | 6         | 1.50         | 0.06     | 18.1       | 28.6       | 0.0268                     | 2.81 | 0.99           |  |
| 21                          | <i>Penaeus notialis</i>          | 101       | 67.08        | 24.12    | 2.28       | 5.94       | 1.5468                     | 2.21 | 0.85           |  |
| 22                          | <i>Pomadasyd jubelini</i>        | 21        | 1.21         | 0.19     | 21.4       | 46.4       | 0.0241                     | 2.79 | 0.91           |  |
| 23                          | <i>Pseudolithus elongatus</i>    | 24        | 0.79         | 0.08     | 19.1       | 35         | 0.0026                     | 3.34 | 0.97           |  |
| 24                          | <i>Pseudolithus senegalensis</i> | 128       | 0.78         | 0.14     | 13.6       | 42.6       | 0.0055                     | 3.11 | 0.95           |  |
| 25                          | <i>Pseudolithus typus</i>        | 21        | 0.95         | 0.51     | 16         | 66         | 0.0363                     | 2.57 | 0.89           |  |
| 26                          | <i>Pseudupeneus prayensis</i>    | 18        | 1.25         | 0.20     | 11.7       | 18.6       | 0.0163                     | 2.90 | 0.88           |  |
| 27                          | <i>Pteroscion peli</i>           | 35        | 1.22         | 0.27     | 5.5        | 17.5       | 0.0244                     | 2.72 | 0.98           |  |
| 28                          | <i>Sardinella maderensis</i>     | 92        | 0.95         | 0.16     | 8.4        | 19.5       | 0.026                      | 2.60 | 0.92           |  |
| 29                          | <i>Scomberomorus tritor</i>      | 45        | 0.57         | 0.17     | 24.5       | 60         | 0.0114                     | 2.80 | 0.94           |  |
| 30                          | <i>Selar crumenophthalmus</i>    | 76        | 0.96         | 0.26     | 9.5        | 26.5       | 0.0017                     | 3.65 | 0.99           |  |
| 31                          | <i>Selene dorsalis</i>           | 148       | 1.21         | 0.15     | 14.6       | 25.7       | 0.0334                     | 2.66 | 0.87           |  |
| 32                          | <i>Sepia officinalis</i>         | 11        | 11.11        | 3.21     | 10.3       | 13.7       | 0.0797                     | 3.11 | 0.73           |  |
| 33                          | <i>Sphyraena guachancho</i>      | 149       | 0.51         | 0.22     | 9.8        | 48.2       | 0.009                      | 2.81 | 0.93           |  |
| 34                          | <i>Trichiurus lepturus</i>       | 49        | 0.06         | 0.02     | 19.5       | 76         | 0.0002                     | 3.35 | 0.88           |  |
| Total Number of Species     |                                  | 34        |              |          |            |            |                            |      |                |  |
| Total Number of Individuals |                                  | 2661      |              |          |            |            |                            |      |                |  |

| SÃO TOMÉ AND PRÍNCIPE       |                               |           |              |          |            |            | Length-Weight Relationship |       |                |
|-----------------------------|-------------------------------|-----------|--------------|----------|------------|------------|----------------------------|-------|----------------|
| S/N                         | Species                       | # Samples | Cond. Factor | St. Dev. | Min Length | Max Length | a                          | b     | R <sup>2</sup> |
| 1                           | <i>Acanthurus monroviae</i>   | 36        | 1.589        | 0.119    | 28.5       | 35         | 0.1117                     | 2.438 | 0.878          |
| 2                           | <i>Apsilus fuscus</i>         | 56        | 1.050        | 0.157    | 24.4       | 41.3       | 0.047                      | 2.566 | 0.912          |
| 3                           | <i>Boops boops</i>            | 29        | 1.054        | 0.065    | 18.7       | 28.1       | 0.0142                     | 2.904 | 0.974          |
| 4                           | <i>Dactylopterus volitans</i> | 23        | 0.673        | 0.221    | 26         | 42         | 0.0317                     | 2.636 | 0.991          |
| 5                           | <i>Decapterus macarellus</i>  | 20        | 0.832        | 0.035    | 24.8       | 30.8       | 0.0103                     | 2.936 | 0.971          |
| 6                           | <i>Dentex congoensis</i>      | 110       | 1.415        | 0.085    | 9.2        | 17.5       | 0.0176                     | 2.915 | 0.980          |
| 7                           | <i>Dentex gibbosus</i>        | 6         | 1.456        | 0.070    | 12         | 26.7       | 0.0152                     | 2.983 | 0.990          |
| 8                           | <i>Lethrinus atlanticus</i>   | 5         | 1.373        | 0.065    | 23.5       | 30         | 0.0136                     | 3.003 | 0.983          |
| 9                           | <i>Lutjanus fulgens</i>       | 92        | 1.390        | 0.112    | 20.5       | 37         | 0.0159                     | 2.960 | 0.963          |
| 10                          | <i>Pagellus bellottii</i>     | 86        | 1.133        | 0.145    | 15.8       | 38.2       | 0.0244                     | 2.241 | 0.816          |
| 11                          | <i>Pagrus caeruleostictus</i> | 74        | 1.227        | 0.094    | 20.5       | 51.6       | 0.0073                     | 3.157 | 0.923          |
| 12                          | <i>Pseudupeneus prayensis</i> | 21        | 1.156        | 0.072    | 14.8       | 23         | 0.0049                     | 3.289 | 0.978          |
| 13                          | <i>Sardinella maderensis</i>  | 151       | 0.789        | 0.052    | 7.6        | 11.5       | 0.0105                     | 2.871 | 0.961          |
| Total Number of Species     |                               | 13        |              |          |            |            |                            |       |                |
| Total Number of Individuals |                               | 709       |              |          |            |            |                            |       |                |

| GABON OG CONGO              |                                    |           |              |          |            |            | Length-Weight Relationship |      |                |
|-----------------------------|------------------------------------|-----------|--------------|----------|------------|------------|----------------------------|------|----------------|
| S/N                         | Species                            | # Samples | Cond. Factor | St. Dev. | Min Length | Max Length | a                          | b    | R <sup>2</sup> |
| 1                           | <i>Ariomma bondi</i>               | 299       | 1.29         | 0.11     | 6.0        | 18.1       | 0.0100                     | 3.09 | 0.95           |
| 2                           | <i>Boops boops</i>                 | 120       | 1.07         | 0.07     | 6.0        | 19.5       | 0.0114                     | 2.97 | 0.97           |
| 3                           | <i>Brachydeuterus auritus</i>      | 246       | 1.28         | 0.18     | 4.5        | 19.0       | 0.0099                     | 3.12 | 0.97           |
| 4                           | <i>Chromis chromis</i>             | 9         | 1.19         | 0.08     | 14.5       | 22.0       | 0.0064                     | 3.21 | 0.98           |
| 5                           | <i>Cynoglossus canariensis</i>     | 24        | 0.44         | 0.05     | 20.0       | 46.7       | 0.0018                     | 3.28 | 0.97           |
| 6                           | <i>Decapterus punctatus</i>        | 207       | 0.88         | 0.06     | 6.5        | 22.0       | 0.0089                     | 2.99 | 0.97           |
| 7                           | <i>Dentex angolensis</i>           | 160       | 1.50         | 0.19     | 11.0       | 28.5       | 0.0091                     | 3.17 | 0.95           |
| 8                           | <i>Dentex barnardi</i>             | 16        | 1.43         | 0.11     | 28.5       | 47.0       | 0.0103                     | 3.09 | 0.99           |
| 9                           | <i>Dentex congoensis</i>           | 543       | 1.47         | 0.16     | 6.0        | 27.5       | 0.0276                     | 2.76 | 0.94           |
| 10                          | <i>Dentex macropthalmus</i>        | 18        | 1.46         | 0.10     | 10.5       | 15.5       | 0.0220                     | 2.84 | 0.99           |
| 11                          | <i>Engraulis encasicolus</i>       | 38        | 0.68         | 0.04     | 8.4        | 12.1       | 0.0032                     | 3.33 | 0.98           |
| 12                          | <i>Epinephelus aeneus</i>          | 8         | 1.11         | 0.08     | 29.0       | 61.0       | 0.0082                     | 3.08 | 0.97           |
| 13                          | <i>Ilisha africana</i>             | 135       | 0.69         | 0.08     | 6.0        | 19.0       | 0.0127                     | 2.75 | 0.93           |
| 14                          | <i>Pagellus bellotti</i>           | 328       | 1.39         | 0.18     | 3.5        | 25.0       | 0.0158                     | 2.95 | 0.93           |
| 15                          | <i>Pagrus caeruleostictus</i>      | 22        | 1.54         | 0.25     | 14.0       | 43.0       | 0.0316                     | 2.75 | 0.98           |
| 16                          | <i>Pentanemus quinquarius</i>      | 32        | 0.57         | 0.06     | 15.0       | 22.0       | 0.0007                     | 3.72 | 0.95           |
| 17                          | <i>Pomadasyus incisus</i>          | 63        | 1.47         | 0.08     | 17.5       | 26.5       | 0.0110                     | 3.09 | 0.97           |
| 18                          | <i>Pseudotolithus senegalensis</i> | 52        | 0.69         | 0.07     | 13.0       | 41.5       | 0.0056                     | 3.06 | 0.95           |
| 19                          | <i>Pseudotolithus typus</i>        | 35        | 0.62         | 0.05     | 9.0        | 34.5       | 0.0067                     | 2.97 | 0.90           |
| 20                          | <i>Pseudupeneus prayensis</i>      | 126       | 1.24         | 0.12     | 8.0        | 23.5       | 0.0071                     | 3.20 | 0.97           |
| 21                          | <i>Sardinella aurita</i>           | 484       | 0.84         | 0.09     | 7.5        | 29.0       | 0.0080                     | 3.02 | 0.94           |
| 22                          | <i>Sardinella maderensis</i>       | 32        | 0.85         | 0.05     | 8.9        | 27.5       | 0.0127                     | 2.87 | 0.96           |
| 23                          | <i>Scomber japonicus</i>           | 198       | 0.79         | 0.09     | 9.4        | 39.0       | 0.0040                     | 3.25 | 0.95           |
| 24                          | <i>Sphyraena guachancho</i>        | 70        | 0.47         | 0.04     | 12.0       | 49.5       | 0.0062                     | 2.91 | 0.98           |
| 25                          | <i>Spicara alta</i>                | 69        | 1.17         | 0.14     | 5.5        | 22.5       | 0.0073                     | 3.21 | 0.93           |
| 26                          | <i>Trachurus trecae</i>            | 293       | 0.99         | 0.12     | 4.4        | 38.0       | 0.0082                     | 3.07 | 0.91           |
| 27                          | <i>Trichiurus lepturus</i>         | 191       | 0.05         | 0.02     | 18.5       | 115.0      | 0.0001                     | 3.57 | 0.93           |
| 28                          | <i>Umbrina canariensis</i>         | 48        | 1.17         | 0.12     | 17.0       | 42.0       | 0.0048                     | 3.26 | 0.92           |
| Total Number of Species     |                                    | 27        |              |          |            |            |                            |      |                |
| Total Number of Individuals |                                    | 3866      |              |          |            |            |                            |      |                |

## Annex IV Benthos sample stations

A total of 65 grab stations were collected during the survey. Four replicates were attempted from each station. One replicate was retained in the region while three replicates have been shipped to the University of Bergen.

**RV Dr Fridtjof Nansen**

**Southern Gulf of Guinea (4 June - 15 June, 2005)**

| Country  | Station # | Date       | # of Replicates | Remark                              |
|----------|-----------|------------|-----------------|-------------------------------------|
| Nigeria  | N01       | 05/06/2005 | 4               | All rep. In formalin                |
| Nigeria  | N02       | 06/06/2005 | 4               |                                     |
| Nigeria  | N03       | 07/06/2005 | 4               |                                     |
| Nigeria  | N04       | 07/06/2005 | 4               |                                     |
| Nigeria  | N05       | 08/06/2005 | 3               |                                     |
| Nigeria  | N06       | 08/06/2005 | 4               |                                     |
| Nigeria  | N07       | 09/06/2005 | 4               |                                     |
| Nigeria  | N08       | 10/06/2005 | 4               |                                     |
| Nigeria  | N09       | 10/06/2005 | 4               |                                     |
| Nigeria  | N10       | 11/06/2005 | 4               |                                     |
| Nigeria  | N11       | 12/06/2005 | 4               |                                     |
| Nigeria  | N12       | 13/06/2005 | 4               |                                     |
| Nigeria  | N13       | 14/06/2005 | 4               |                                     |
| Nigeria  | N14       | 15/06/2005 | 4               |                                     |
| Nigeria  | N15       | 20/06/2005 | 4               |                                     |
| Nigeria  | N16       | 20/06/2005 | 4               | A & D in formalin                   |
| Nigeria  | N17       | 20/06/2005 | 4               | A, B & C in formalin                |
| Cameroon | C01       | 21/06/2005 | 4               | A, B & C in formalin                |
| Cameroon | C02       | 21/06/2005 | 4               | A, B & D in formalin                |
| Cameroon | C03       | 21/06/2005 | 4               | A, B & D in formalin                |
| Cameroon | C04       | 21/06/2005 | 4               | A & C in formalin                   |
| Cameroon | C05       | 21/06/2005 | 4               | A, C & D in formalin                |
| Cameroon | C06       | 21/06/2005 | 4               | A & B in formalin                   |
| Cameroon | C07       | 22/06/2005 | 4               | A, B & C in formalin                |
| Cameroon | C08       | 22/06/2005 | 4               | A & D in formalin                   |
| Cameroon | C09       | 22/06/2005 | 4               | A & B in formalin                   |
| Cameroon | C10       | 23/06/2005 | 4               | A & C in formalin                   |
| Cameroon | C11       | 23/06/2005 | 4               | A, C & D in formalin (very diverse) |
| Cameroon | C12       | 23/06/2005 | 4               | A, B & D in formalin                |
| Cameroon | C13       | 23/06/2005 | 4               | A & C in formalin                   |
| Cameroon | C14       | 23/06/2005 | 4               | A & C in formalin                   |

|                     |      |            |   |                                |
|---------------------|------|------------|---|--------------------------------|
| Cameroon            | C15  | 24/06/2005 | 4 | A & B in formalin              |
| Cameroon            | C16  | 24/06/2005 | 4 | A & C in formalin              |
| Cameroon            | C17  | 24/06/2005 | 4 | A & D in formalin              |
| Cameroon            | C18  | 25/06/2005 | 4 | A & C in formalin              |
| Sao Tome & Principe | SP01 | 26/06/2005 | 4 | A & B in formalin              |
| Sao Tome & Principe | SP02 | 26/06/2005 | 4 | A & D in formalin              |
| Sao Tome & Principe | SP03 | 26/06/2005 | 4 | A & D in formalin              |
| Sao Tome & Principe | SP04 | 26/06/2005 | 4 | A & D in formalin              |
| Sao Tome & Principe | SP05 | 27/06/2005 | 4 | A & C in formalin              |
| Sao Tome & Principe | SP06 | 27/06/2005 | 4 | A, B & C in formalin           |
| Sao Tome & Principe | SP07 | 28/06/2005 | 4 | A, C & D in formalin           |
| Sao Tome & Principe | SP08 | 28/06/2005 | 4 | A, B & D in formalin           |
| Sao Tome & Principe | SP09 | 28/06/2005 | 4 | All rep. In formalin (equator) |
| Sao Tome & Principe | SP10 | 29/06/2005 | 4 | A, B & C in formalin           |
| Sao Tome & Principe | SP11 | 29/06/2005 | 4 | A, C & D in formalin           |
| Gabon               | G01  | 30/06/2005 | 4 | A, B & D in formalin           |
| Gabon               | G02  | 01/07/2005 | 4 | A, B & C in formalin           |
| Gabon               | G03  | 01/07/2005 | 4 | A, B & D in formalin           |
| Gabon               | G04  | 02/07/2005 | 4 | A, B & C in formalin           |
| Gabon               | G05  | 02/07/2005 | 4 | A, C & D in formalin           |
| Gabon               | G06  | 05/07/2005 | 4 | A, C & D in formalin           |
| Gabon               | G07  | 06/07/2005 | 4 | A, B & C in formalin           |
| Gabon               | G08  | 06/07/2005 | 4 | A, C & D in formalin           |
| Gabon               | G09  | 07/07/2005 | 4 | A, C & D in formalin           |
| Gabon               | G10  | 07/07/2005 | 4 | A, B & C in formalin           |
| Gabon               | G11  | 08/07/2005 | 4 | A, C & D in formalin           |
| Gabon               | G12  | 08/07/2005 | 4 | A, B & C in formalin           |
| Gabon               | G13  | 09/07/2005 | 3 | A & B in formalin              |
| Gabon               | G13D | 09/07/2005 | 1 | D in formalin                  |
| Gabon               | G14  | 09/07/2005 | 4 | A, C & D in formalin           |
| Gabon               | G15  | 10/07/2005 | 4 | A, B & D in formalin           |
| Gabon               | G16  | 11/07/2005 | 4 | A, B & C in formalin           |
| Republic of Congo   | CR01 | 12/07/2005 | 4 | A, B & C in formalin           |
| Republic of Congo   | CR02 | 13/07/2005 | 4 | A, B & C in formalin           |

## Annex V Swept-area biomass estimates

### NIGERIA

#### SWEPT AREA ANALYSIS FROM STATION 843 TO STATION 930

| SPECIES NAME                | SAMPLE DISTRIB. BY CATCH CLASSES |    |    |     |     | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |         |         |          |      |
|-----------------------------|----------------------------------|----|----|-----|-----|------------------|------------------------------------|---|---------|---------|----------|------|
|                             | Lower limits, Kg/nm              |    |    |     |     |                  |                                    | - 30m   | 30- 50m | 50-100m | 100-200m |      |
|                             | >0                               | 10 | 30 | 100 | 300 | 1000             |                                    |   |         |         |          |      |
| Ariomma bondi               | 16                               | 9  | 3  | 1   |     |                  | 43                                 | 0.84  |         |         |          |      |
| Brachydeuterus auritus      | 34                               | 14 | 3  |     |     |                  | 75                                 | 0.78  | 0.76    | 1.16    | 0.55     | 4.74 |
| Selene dorsalis             | 30                               | 5  | 2  |     |     |                  | 54                                 | 0.42  | 0.12    | 0.87    | 0.78     | 0.40 |
| Chloroscombrus chrysurus    | 32                               | 5  | 2  |     |     |                  | 57                                 | 0.39  | 0.44    | 1.05    | 0.40     | 0.01 |
| J E L L Y F I S H           | 23                               |    | 3  |     |     |                  | 38                                 | 0.31  | 0.15    | 0.01    | 0.01     | 0.72 |
| Sepia officinalis hierredda | 45                               | 4  | 1  |     |     |                  | 72                                 | 0.29  | 0.01    | 0.09    | 0.59     | 0.27 |
| Sphyræna guachancho         | 47                               | 4  |    |     |     |                  | 75                                 | 0.24  | 0.42    | 0.42    | 0.10     |      |
| Trichiurus lepturus         | 44                               | 3  |    |     |     |                  | 69                                 | 0.23  | 0.37    | 0.41    | 0.09     | 0.03 |
| Pentheroscion mbizi         | 19                               | 3  | 1  |     |     |                  | 34                                 | 0.22  | 0.01    | 0.01    | 0.44     | 0.37 |
| Dentex angolensis           | 14                               | 2  | 1  |     |     |                  | 25                                 | 0.20  |         |         | 0.32     | 0.58 |
| Galeoides decadactylus      | 24                               | 2  |    |     |     |                  | 38                                 | 0.14  | 0.48    | 0.13    |          |      |
| Dentex congoensis           | 14                               | 1  | 1  |     |     |                  | 24                                 | 0.13  |         |         | 0.27     | 0.24 |
| Squatina oculata            | 21                               | 1  |    |     |     |                  | 32                                 | 0.13  | 0.01    |         | 0.23     | 0.33 |
| Ilisha africana             | 23                               | 2  |    |     |     |                  | 37                                 | 0.13  | 0.35    | 0.21    |          |      |
| Pagellus bellottii          | 16                               | 2  |    |     |     |                  | 26                                 | 0.12  |         | 0.02    | 0.28     | 0.07 |
| Pagrus caeruleostictus      | 17                               |    | 1  |     |     |                  | 26                                 | 0.11  | 0.01    | 0.03    | 0.27     |      |
| Priacanthus arenatus        | 41                               |    |    |     |     |                  | 60                                 | 0.11  |         | 0.02    | 0.19     | 0.25 |
| Pseudupeneus prayensis      | 26                               | 2  |    |     |     |                  | 41                                 | 0.11  |         | 0.05    | 0.25     |      |
| Lepidotrigla cadmani        | 27                               | 1  |    |     |     |                  | 41                                 | 0.08  |         |         | 0.09     | 0.36 |
| Scomberomorus tritor        | 29                               |    |    |     |     |                  | 43                                 | 0.08  | 0.25    | 0.09    |          |      |
| Portunus validus            | 27                               |    |    |     |     |                  | 40                                 | 0.08  | 0.06    | 0.23    |          |      |
| Illex coindetii             | 28                               |    |    |     |     |                  | 41                                 | 0.06  |         |         | 0.05     | 0.33 |
| Pteroscion peli             | 23                               |    |    |     |     |                  | 34                                 | 0.06  | 0.08    | 0.16    | 0.01     |      |
| Pseudotolithus senegalensis | 21                               |    |    |     |     |                  | 31                                 | 0.06  | 0.16    | 0.10    |          |      |
| Raja miraletus              | 42                               | 1  |    |     |     |                  | 63                                 | 0.06  | 0.01    | 0.03    | 0.10     | 0.10 |
| Lagocephalus laevigatus     | 35                               |    |    |     |     |                  | 51                                 | 0.05  | 0.04    | 0.06    | 0.03     | 0.09 |
| Mustelus mustelus           | 10                               |    |    |     |     |                  | 15                                 | 0.05  |         |         | 0.10     | 0.12 |
| Rhizoprionodon acutus       | 8                                | 1  |    |     |     |                  | 13                                 | 0.05  | 0.02    | 0.15    | 0.01     |      |
| Penaeus notialis            | 28                               |    |    |     |     |                  | 41                                 | 0.02  | 0.02    | 0.05    | 0.01     |      |
| Parapenaeus longirostris    | 19                               |    |    |     |     |                  | 28                                 | 0.02  |         | 0.01    | 0.04     | 0.01 |
| Parapenaeopsis atlantica    | 10                               |    |    |     |     |                  | 15                                 | 0.01  | 0.01    |         | 0.01     |      |
| Solenocera africana         | 3                                |    |    |     |     |                  | 4                                  |   |         |         |          |      |
| Sicyonia galeata            | 8                                |    |    |     |     |                  | 12                                 |   |         |         |          |      |
| Nematopalaemon hastatus     | 5                                |    |    |     |     |                  | 7                                  |   | 0.02    |         |          |      |
| SHRPE63                     | 9                                |    |    |     |     |                  | 13                                 |   | 0.02    |         |          |      |
| Penaeus kerathurus          | 5                                |    |    |     |     |                  | 7                                  |   |         |         |          |      |
| Plesionika martia           | 2                                |    |    |     |     |                  | 3                                  |   |         |         |          |      |
| Other fish                  |                                  |    |    |     |     |                  |                                    | 0.81  | 1.21    | 0.28    | 0.84     | 1.27 |
| Sum all species             |                                  |    |    |     |     |                  |                                    | 6.39  | 5.03    | 5.64    | 6.78     | 9.16 |
| Sum Snappers                |                                  |    |    |     |     |                  |                                    |   | 0.02    |         |          |      |
| Sum Groupers                |                                  |    |    |     |     |                  |                                    | 0.04  | 0.01    | 0.01    | 0.07     | 0.03 |
| Sum Grunts                  |                                  |    |    |     |     |                  |                                    | 0.80  | 0.83    | 1.19    | 0.78     |      |
| Sum Croakers                |                                  |    |    |     |     |                  |                                    | 0.40  | 0.44    | 0.27    | 0.45     | 0.51 |
| Sum Seabreams               |                                  |    |    |     |     |                  |                                    | 0.60  | 0.01    | 0.05    | 1.21     | 1.00 |
| Sum Sharks                  |                                  |    |    |     |     |                  |                                    | 0.25  | 0.03    | 0.15    | 0.35     | 0.51 |
| Sum Rays                    |                                  |    |    |     |     |                  |                                    | 0.06  | 0.01    | 0.03    | 0.10     | 0.10 |
| Sum Squids                  |                                  |    |    |     |     |                  |                                    | 0.41  | 0.02    | 0.11    | 0.75     | 0.66 |
| Sum                         |                                  |    |    |     |     |                  |                                    | 0.06  |         |         |          |      |

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

68

14

19

26

9

SWEPT AREA ANALYSIS FROM STATION 843 TO STATION 930

| SPECIES NAME               | SAMPLE DISTRIB. BY CATCH CLASSES             |   |   |   |  | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |          |          |          |      |
|----------------------------|--|---|---|---|--|------------------|------------------------------------|---|----------|----------|----------|------|
|                            | Lower limits, Kg/nm<br>>0 10 30 100 300 1000 |   |   |   |  |                  |                                    | 200-300m  | 300-400m | 400-500m | 500-999m |      |
| Trichiurus lepturus        | 1  |   |   | 1 |  | 15               | 3.81                               | 8.26  |          |          |          |      |
| Hymenocephalus italicus    | 4  | 1 | 1 |   |  | 46               | 0.90                               |   | 0.11     | 2.84     |          | 0.13 |
| Epigonus telescopus        | 4  |   | 2 |   |  | 46               | 0.60                               | 1.22  | 0.02     | 0.13     |          |      |
| Ariomma bondi              |  |   | 1 |   |  | 8                | 0.49                               | 1.07  |          |          |          |      |
| HOLOUTURIDAE               |  |   | 1 |   |  | 8                | 0.47                               |   |          |          |          | 3.05 |
| Cyttopsis roseus           | 8  |   | 1 |   |  | 69               | 0.46                               | 0.98  | 0.06     | 0.03     |          | 0.01 |
| Benthodesmus tenuis        | 4  | 2 |   |   |  | 46               | 0.36                               |   | 0.01     | 1.13     |          | 0.07 |
| Centrophorus granulosus    | 3  | 1 |   |   |  | 31               | 0.32                               | 0.25  |          | 0.65     |          |      |
| Saurida brasiliensis       | 1  | 1 |   |   |  | 15               | 0.26                               | 0.57  |          |          |          |      |
| Illex coindetii            | 4  | 2 |   |   |  | 46               | 0.22                               | 0.48  |          | 0.02     |          |      |
| CHLPA02                    | 5  |   |   |   |  | 38               | 0.21                               | 0.22  | 0.56     | 0.22     |          |      |
| ECHEC12                    |  | 1 |   |   |  | 8                | 0.20                               |   |          | 0.65     |          |      |
| Chlorophthalmus atlanticus | 6  | 1 |   |   |  | 54               | 0.20                               | 0.38  | 0.22     | 0.02     |          |      |
| Squatina aculeata          |  | 1 |   |   |  |                  | 0.18                               | 0.39  |          |          |          |      |
| J E L L Y F I S H          | 1  | 1 |   |   |  | 15               | 0.16                               |   |          |          |          | 1.04 |
| ZEIZI01                    | 6  | 1 |   |   |  | 54               | 0.15                               |   | 1.13     | 0.20     |          |      |
| Nematocarcinus africanus   |  | 1 |   |   |  | 8                | 0.15                               |   |          | 0.48     |          |      |
| Synagrops microlepis       | 7  |   |   |   |  | 54               | 0.13                               | 0.27  | 0.01     |          |          |      |
| ZEIZI02                    |  | 1 |   |   |  | 8                | 0.11                               | 0.24  |          |          |          |      |
| Dentex angolensis          | 1  | 1 |   |   |  | 15               | 0.10                               | 0.21  |          |          |          |      |
| Laemonema laureysi         | 8  |   |   |   |  | 62               | 0.08                               | 0.03  |          | 0.12     |          | 0.20 |
| Malacocephalus laevis      | 7  |   |   |   |  | 54               | 0.08                               | 0.06  | 0.12     | 0.13     |          |      |
| Epigonus sp.               | 5  |   |   |   |  | 38               | 0.08                               | 0.03  | 0.02     | 0.22     |          |      |
| Parapenaeus longirostris   | 6  |   |   |   |  | 46               | 0.07                               | 0.14  | 0.04     |          |          |      |
| Bathygadus macrops         | 3  |   |   |   |  | 23               | 0.07                               | 0.09  |          | 0.11     |          |      |
| Squalus megalops           | 4  |   |   |   |  | 31               | 0.06                               | 0.10  |          | 0.05     |          |      |
| Stereomastis sp.           | 6  |   |   |   |  | 46               | 0.06                               | 0.03  | 0.05     | 0.13     |          |      |
| Chaunax pictus             | 6  |   |   |   |  | 46               | 0.06                               |   |          | 0.16     |          | 0.09 |
| Uranoscopus polli          | 1  |   |   |   |  | 8                | 0.05                               | 0.11  |          |          |          |      |
| Dasyatis centroura         | 1  |   |   |   |  | 8                | 0.05                               | 0.11  |          |          |          |      |
| Bembrops greyi             | 6  |   |   |   |  | 46               | 0.05                               | 0.10  | 0.01     | 0.02     |          |      |
| Dibranchus atlanticus      | 10   |   |   |   |  | 77               | 0.05                               | 0.01  | 0.02     | 0.03     |          | 0.22 |
| Nezumia aequalis           | 5  |   |   |   |  | 38               | 0.05                               |   | 0.05     | 0.15     |          |      |
| C R U S T A C E A N S      | 4  |   |   |   |  | 31               | 0.05                               | 0.01  |          | 0.03     |          | 0.22 |
| Ariomma melanum            | 2  |   |   |   |  | 15               | 0.05                               | 0.11  |          |          |          |      |
| Aristeus varidens          | 8  |   |   |   |  | 62               | 0.04                               | 0.02  |          | 0.04     |          | 0.12 |
| Solenocera africana        | 6  |   |   |   |  | 46               | 0.01                               | 0.01  | 0.01     |          |          | 0.01 |
| Small shrimps              | 2  |   |   |   |  | 15               | 0.01                               |   |          | 0.02     |          | 0.01 |
| PASIPHAEIDAE               | 1  |   |   |   |  | 8                |                                    |   |          | 0.01     |          |      |
| Heterocarpus ensifer       | 1  |   |   |   |  | 8                |                                    |   |          | 0.01     |          |      |
| Shrimps, small, non comm.  | 3  |   |   |   |  | 23               |                                    |   |          |          |          |      |
| S H R I M P S              | 3  |   |   |   |  | 23               |                                    |   | 0.01     |          |          |      |
| Other fish                 |  |   |   |   |  |                  | 0.81                               | 0.85  | 0.45     | 0.51     |          | 1.56 |
| Sum all species            |  |   |   |   |  |                  | 11.26                              | 16.35   | 2.90     | 8.11     |          | 6.73 |
| Sum Snappers               |  |   |   |   |  |                  |                                    |   |          |          |          |      |
| Sum Groupers               |  |   |   |   |  |                  |                                    |   |          |          |          |      |
| Sum Grunts                 |  |   |   |   |  |                  |                                    |   |          |          |          |      |
| Sum Croakers               |  |   |   |   |  |                  | 0.01                               | 0.02  |          |          |          |      |
| Sum Seabreams              |  |   |   |   |  |                  | 0.11                               | 0.22  |          |          |          |      |
| Sum Sharks                 |  |   |   |   |  |                  | 0.69                               | 0.84  | 0.03     | 0.72     |          | 0.43 |
| Sum Rays                   |  |   |   |   |  |                  | 0.07                               | 0.15  |          |          |          | 0.02 |
| Sum Squids                 |  |   |   |   |  |                  | 0.28                               | 0.56  | 0.04     | 0.07     |          | 0.02 |
| Sum                        |  |   |   |   |  |                  |                                    |   |          |          |          |      |
| 0.06                       |  |   |   |   |  |                  |                                    |   |          |          |          |      |

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

13 6 1 4 2



# CAMEROON

## SWEPT AREA ANALYSIS FROM STATION 931 TO STATION 967

| SPECIES NAME                 | SAMPLE DISTRIB. BY CATCH CLASSES<br>Lower limits, Kg/nm |    |    |              | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |         |         |          |
|------------------------------|---|----|----|--------------|------------------|------------------------------------|---|---------|---------|----------|
|                              | >0  | 10 | 30 | 100 300 1000 |                  |                                    | - 30m   | 30- 50m | 50-100m | 100-200m |
| Selene dorsalis              | 16  | 1  |    | 1            | 58               | 1.99                               | 0.13  | 0.25    | 5.36    |          |
| Chaetodipterus lippei        | 2   |    |    | 1            | 10               | 1.28                               | 4.32  | 0.14    |         |          |
| Ariomma bondi                | 6   | 3  | 3  |              | 39               | 0.76                               |   |         | 0.38    | 3.84     |
| Brachydeuterus auritus       | 14  | 4  | 2  |              | 65               | 0.68                               | 0.34  | 1.01    | 1.09    |          |
| Dentex congoensis            | 7   | 1  | 3  |              | 35               | 0.59                               |   |         | 0.18    | 3.23     |
| Chloroscombrus chrysurus     | 9   | 2  | 1  |              | 39               | 0.42                               | 1.08  | 0.55    |         |          |
| Sardinella aurita            | 1   |    | 1  |              | 6                | 0.29                               |   |         | 0.81    |          |
| Galeoides decadactylus       | 8   | 1  | 1  |              | 32               | 0.26                               | 0.37  | 0.77    |         |          |
| Ilisha africana              | 6   | 4  |    |              | 32               | 0.26                               | 0.78  | 0.19    |         |          |
| Sphyraena guachancho         | 14  | 1  | 1  |              | 52               | 0.25                               | 0.22  | 0.86    | 0.05    |          |
| J E L Y F I S H              | 10  | 1  | 1  |              | 39               | 0.21                               | 0.18  | 0.62    | 0.11    |          |
| Trichiurus lepturus          | 8   | 2  |    |              | 32               | 0.19                               | 0.59  | 0.07    | 0.01    |          |
| Dentex angolensis            | 12  |    |    |              | 39               | 0.17                               |   |         | 0.21    | 0.58     |
| Sepia officinalis hierredda  | 24  | 1  |    |              | 77               | 0.15                               | 0.02  | 0.28    | 0.20    | 0.11     |
| Lutjanus goreensis           | 2   | 1  | 1  |              | 13               | 0.14                               | 0.45  | 0.03    |         |          |
| Spicara alta                 | 5   |    | 1  |              | 19               | 0.13                               |   |         |         | 0.77     |
| Pseudotolithus senegalensis  | 7   | 1  |    |              | 26               | 0.12                               | 0.41  | 0.02    |         |          |
| Priacanthus arenatus         | 16  |    |    |              | 52               | 0.12                               |   | 0.01    | 0.13    | 0.46     |
| Acanthurus monroviae         |   |    | 1  |              | 3                | 0.12                               | 0.41  |         |         |          |
| Squatina oculata             | 8   |    |    |              | 26               | 0.10                               |   |         | 0.17    | 0.22     |
| Drepane africana             | 9   | 1  |    |              | 32               | 0.10                               | 0.28  | 0.11    |         |          |
| Pagellus bellottii           | 9   | 1  |    |              | 32               | 0.08                               |   | 0.02    | 0.21    |          |
| Scomberomorus tritor         | 14  |    |    |              | 45               | 0.08                               | 0.20  | 0.03    | 0.06    |          |
| Sardinella maderensis        | 13  |    |    |              | 42               | 0.08                               | 0.10  | 0.02    | 0.08    | 0.11     |
| Selar crumenophthalmus       | 10  | 1  |    |              | 35               | 0.08                               | 0.11  | 0.05    | 0.11    |          |
| Sphyraena afra               | 7   |    |    |              | 23               | 0.07                               | 0.11  | 0.20    |         |          |
| Pagrus caeruleostictus       | 5   |    |    |              | 16               | 0.07                               | 0.12  | 0.17    | 0.01    |          |
| Pseudotolithus elongatus     | 3   | 1  |    |              | 13               | 0.07                               | 0.22  |         | 0.01    |          |
| Epinephelus aeneus           | 13  |    |    |              | 42               | 0.05                               | 0.01  | 0.08    | 0.07    | 0.05     |
| Pteroscion peli              | 9   |    |    |              | 29               | 0.05                               | 0.09  | 0.13    |         |          |
| Pseudotolithus brachygnathus | 5   |    |    |              | 13               | 0.05                               | 0.15  | 0.03    |         |          |
| Raja miraletus               | 21  |    |    |              | 68               | 0.05                               | 0.03  | 0.01    | 0.08    | 0.04     |
| Alectis alexandrinus         | 9   |    |    |              | 29               | 0.05                               | 0.08  | 0.05    | 0.05    |          |
| Penaeus notialis             | 14  |    |    |              | 45               | 0.02                               | 0.04  | 0.04    | 0.01    |          |
| Parapenaeus longirostris     | 8   |    |    |              | 26               | 0.01                               |   |         | 0.02    |          |
| Sicyonia galeata             | 2   |    |    |              | 6                |                                    |   |         |         |          |
| Nematopalaemon hastatus      | 2   |    |    |              | 6                |                                    | 0.01  |         |         |          |
| SHRPE63                      | 3   |    |    |              | 10               |                                    | 0.02  |         |         |          |
| Penaeus kerathurus           | 2   |    |    |              | 6                |                                    |   |         |         |          |
| Parapenaeopsis atlantica     | 2   |    |    |              | 6                |                                    | 0.01  |         |         |          |
| Parapandalus narval          | 1   |    |    |              | 3                |                                    |   |         |         | 0.01     |
| Shrimps, small, non comm.    | 1   |    |    |              | 3                |                                    |   |         |         |          |
| Other fish                   |   |    |    |              |                  | 0.77                               | 1.18  | 0.63    | 0.50    | 0.89     |
| Sum all species              |   |    |    |              |                  | 9.91                               | 12.06   | 6.37    | 9.91    | 10.31    |
| Sum Snappers                 |   |    |    |              |                  | 0.15                               | 0.47  | 0.03    |         |          |
| Sum Groupers                 |   |    |    |              |                  | 0.05                               | 0.01  | 0.08    |         |          |
| Sum Grunts                   |   |    |    |              |                  | 0.71                               | 0.44  | 1.04    | 0.07    | 0.05     |
| Sum Croakers                 |   |    |    |              |                  | 0.31                               | 0.92  | 0.21    | 0.01    |          |
| Sum Seabreams                |   |    |    |              |                  | 0.93                               | 0.12  | 0.19    | 0.61    | 3.89     |
| Sum Sharks                   |   |    |    |              |                  | 0.16                               | 0.02  | 0.11    | 0.22    | 0.30     |
| Sum Rays                     |   |    |    |              |                  | 0.07                               | 0.08  | 0.02    | 0.09    | 0.07     |
| Sum Squids                   |   |    |    |              |                  | 0.20                               | 0.02  | 0.29    | 0.30    | 0.17     |
| Sum                          |   |    |    |              |                  |                                    |   |         |         |          |
| 0.04                         |   |    |    |              |                  |                                    |   |         |         |          |

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

31 9 6 11 5

SWEPT AREA ANALYSIS FROM STATION 931 TO STATION 967

| SPECIES NAME              | SAMPLE | DISTRIB. BY CATCH CLASSES |    |    |     | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |          |          |          |      |
|---------------------------|--------|---------------------------|----|----|-----|------------------|------------------------------------|---|----------|----------|----------|------|
|                           |        | Lower limits, Kg/nm       |    |    |     |                  |                                    | 200-300m  | 300-400m | 400-500m | 500-999m |      |
|                           |        | >0                        | 10 | 30 | 100 | 300              | 1000                               |   |          |          |          |      |
| Synagrops microlepis      |        |                           |    | 1  |     |                  |                                    | 4.79  | 9.59     |          |          |      |
| Centrophorus granulosus   |        |                           | 1  |    |     |                  |                                    | 0.88  |          |          |          | 1.75 |
| Sea cucumbers             |        |                           | 1  |    |     |                  |                                    | 0.77  |          |          |          | 1.53 |
| Ariomma bondi             | 1      |                           |    |    |     |                  |                                    | 0.43  | 0.87     |          |          |      |
| Gonostoma elongatum       | 1      |                           |    |    |     |                  |                                    | 0.26  |          |          |          | 0.51 |
| Squatina oculata          | 1      |                           |    |    |     |                  |                                    | 50  | 0.20     | 0.40     |          |      |
| Uranoscopus albesca       | 1      |                           |    |    |     |                  |                                    | 50  | 0.17     | 0.34     |          |      |
| Stereomastis sp.          | 1      |                           |    |    |     |                  |                                    |   | 0.14     |          |          | 0.28 |
| B I V A L V E S           | 1      |                           |    |    |     |                  |                                    |   | 0.14     |          |          | 0.29 |
| Ijimaia loppei            | 1      |                           |    |    |     |                  |                                    | 50  | 0.14     |          |          | 0.28 |
| SQUEN00                   | 1      |                           |    |    |     |                  |                                    | 50  | 0.13     |          |          | 0.26 |
| MYCTOPHIDAE               | 1      |                           |    |    |     |                  |                                    |   | 0.13     |          |          | 0.25 |
| Benthodesmus tenuis       | 1      |                           |    |    |     |                  |                                    |   | 0.11     |          |          | 0.21 |
| Etmopterus pusillus       | 1      |                           |    |    |     |                  |                                    |   | 0.09     |          |          | 0.18 |
| Laemonema laureysi        | 1      |                           |    |    |     |                  |                                    |   | 0.09     |          |          | 0.19 |
| Malacocephalus laevis     | 1      |                           |    |    |     |                  |                                    |   | 0.09     |          |          | 0.19 |
| Todaropsis eblanae        | 1      |                           |    |    |     |                  |                                    |   | 0.08     | 0.16     |          |      |
| Bathygadus macrops        | 1      |                           |    |    |     |                  |                                    |   | 0.08     |          |          | 0.15 |
| Illex coindetii           | 1      |                           |    |    |     |                  |                                    | 50  | 0.07     | 0.14     |          |      |
| Xenodermichthys copei     | 1      |                           |    |    |     |                  |                                    |   | 0.07     |          |          | 0.14 |
| Dentex angolensis         | 1      |                           |    |    |     |                  |                                    |   | 0.06     | 0.12     |          |      |
| Shrimps, small, non comm. | 1      |                           |    |    |     |                  |                                    | 50  | 0.05     |          |          | 0.09 |
| Ectreposebastes imus      | 2      |                           |    |    |     |                  |                                    | 50  | 0.05     |          |          | 0.10 |
| APOHY01                   | 1      |                           |    |    |     |                  |                                    |   | 0.05     | 0.09     |          |      |
| Parapenaeus longirostris  | 1      |                           |    |    |     |                  |                                    | 50  |          |          |          |      |
| Aristeus varidens         | 1      |                           |    |    |     |                  |                                    |   |          |          |          | 0.01 |
| Other fish                |        |                           |    |    |     |                  |                                    |   | 0.24     | 0.17     |          | 0.28 |
| Sum all species           |        |                           |    |    |     |                  |                                    |   | 9.31     | 11.88    |          | 6.69 |
| Sum Snappers              |        |                           |    |    |     |                  |                                    |   |          |          |          |      |
| Sum Groupers              |        |                           |    |    |     |                  |                                    |   |          |          |          |      |
| Sum Grunts                |        |                           |    |    |     |                  |                                    |   |          |          |          |      |
| Sum Croakers              |        |                           |    |    |     |                  |                                    |   |          |          |          |      |
| Sum Seabreams             |        |                           |    |    |     |                  |                                    |   | 0.06     | 0.12     |          |      |
| Sum Sharks                |        |                           |    |    |     |                  |                                    |   | 1.21     | 0.40     |          | 2.01 |
| Sum Rays                  |        |                           |    |    |     |                  |                                    |   | 0.01     | 0.02     |          |      |
| Sum Squids                |        |                           |    |    |     |                  |                                    |   | 0.29     | 0.31     |          | 0.26 |
| Sum                       |        |                           |    |    |     |                  |                                    |   |          |          |          |      |

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

2

1

1

# PRINCIPE

## SWEPT AREA ANALYSIS FROM STATION 968 TO STATION 977

| SPECIES NAME                   | SAMPLE DISTRIB. BY CATCH CLASSES             |   |  |   | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |         |         |          |
|--------------------------------|--|---|--|---|------------------|------------------------------------|---|---------|---------|----------|
|                                | Lower limits, Kg/nm<br>>0 10 30 100 300 1000 |   |  |   |                  |                                    | - 30m   | 30- 50m | 50-100m | 100-200m |
| TURCH21                        |  |   |  | 1 | 11               | 3.18                               |   | 9.52    |         |          |
| Pagellus bellottii             |  |   |  | 3 | 33               | 2.07                               |   |         | 3.10    |          |
| Pagrus caeruleostictus         | 6  |   |  | 1 | 78               | 1.46                               |   | 0.02    | 2.18    |          |
| Dactylopterus volitans         | 7  | 2 |  |   | 100              | 0.68                               |   | 1.23    | 0.40    |          |
| Sepia officinalis hierredda    | 8  | 1 |  |   | 100              | 0.46                               |   | 0.89    | 0.25    |          |
| OSTAC03                        | 5  | 1 |  |   | 67               | 0.25                               |   | 0.72    | 0.01    |          |
| Ariomma bondi                  | 1  | 1 |  |   | 22               | 0.13                               |   |         | 0.19    |          |
| Fistularia petimba             | 9  |   |  |   | 100              | 0.12                               |   | 0.22    | 0.07    |          |
| Lethrinus atlanticus           | 3  |   |  |   | 33               | 0.08                               |   | 0.16    | 0.04    |          |
| DIODI03                        | 4  |   |  |   | 44               | 0.08                               |   | 0.23    | 0.01    |          |
| Chilomycterus spinosus mauret. | 8  |   |  |   | 89               | 0.07                               |   | 0.09    | 0.06    |          |
| Boops boops                    | 3  |   |  |   | 33               | 0.05                               |   |         | 0.08    |          |
| Other fish                     |  |   |  |   |                  | 0.51                               |   | 0.61    | 0.45    |          |
| Sum all species                |  |   |  |   |                  | 9.14                               |   | 13.69   | 6.84    |          |
| Sum Snappers                   |  |   |  |   |                  |                                    |   |         |         |          |
| Sum Groupers                   |  |   |  |   |                  | 0.01                               |   | 0.04    |         |          |
| Sum Grunts                     |  |   |  |   |                  |                                    |   |         |         |          |
| Sum Croakers                   |  |   |  |   |                  |                                    |   |         |         |          |
| Sum Seabreams                  |  |   |  |   |                  | 3.60                               |   | 0.02    | 5.38    |          |
| Sum Sharks                     |  |   |  |   |                  |                                    |   |         |         |          |
| Sum Rays                       |  |   |  |   |                  | 0.04                               |   | 0.06    | 0.03    |          |
| Sum Squids                     |  |   |  |   |                  | 0.52                               |   | 0.93    | 0.34    |          |
| Sum                            |  |   |  |   |                  |                                    |   |         |         |          |

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

9

3

6

# SÃO TOMÉ

## SWEPT AREA ANALYSIS FROM STATION 978 TO STATION 986

| SPECIES NAME                   | SAMPLE DISTRIB. BY CATCH CLASSES             |   |   |   | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |         |         |          |
|--------------------------------|--|---|---|---|------------------|------------------------------------|---|---------|---------|----------|
|                                | Lower limits, Kg/nm<br>>0 10 30 100 300 1000 |   |   |   |                  |                                    | - 30m   | 30- 50m | 50-100m | 100-200m |
| Lutjanus fulgens               | 1  |   |   | 1 | 17               | 38.81                              |   |         | 46.57   |          |
| Dactylopterus volitans         | 1  | 4 |   | 1 | 83               | 3.84                               |   | 1.23    | 4.36    |          |
| Pagellus bellottii             |  | 4 | 2 |   | 100              | 2.03                               |   | 3.02    | 1.83    |          |
| SERPNO1                        |  | 1 | 1 |   | 33               | 0.86                               |   |         | 1.03    |          |
| Dentex congoensis              | 1  | 1 | 1 |   | 50               | 0.84                               |   | 0.13    | 0.98    |          |
| Pagrus caeruleostictus         | 5  | 1 |   |   | 100              | 0.61                               |   | 0.77    | 0.58    |          |
| Sepia officinalis hierredda    | 6  |   |   |   | 100              | 0.37                               |   | 0.27    | 0.40    |          |
| Alloteuthis africana           | 6  |   |   |   | 100              | 0.36                               |   | 0.07    | 0.42    |          |
| Pomadasyis incisus             | 1  | 1 |   |   | 17               | 0.33                               |   |         | 0.40    |          |
| Pseudupeneus prayensis         | 6  |   |   |   | 100              | 0.27                               |   | 0.65    | 0.20    |          |
| Sea cucumbers                  |  | 1 |   |   |                  | 0.27                               |   |         | 0.32    |          |
| Brachydeuterus auritus         | 1  | 1 |   |   | 33               | 0.24                               |   |         | 0.28    |          |
| Syacium micrurum               | 6  |   |   |   | 100              | 0.21                               |   | 0.14    | 0.22    |          |
| Chilomycterus spinosus mauret. | 6  |   |   |   | 100              | 0.20                               |   | 0.08    | 0.22    |          |
| Epinephelus aeneus             | 2  |   |   |   | 33               | 0.17                               |   |         | 0.21    |          |
| Fistularia petimba             | 6  |   |   |   | 100              | 0.13                               |   | 0.13    | 0.14    |          |
| Dentex canariensis             | 1  |   |   |   | 17               | 0.08                               |   |         | 0.09    |          |
| Priacanthus arenatus           | 4  |   |   |   | 67               | 0.08                               |   |         | 0.10    |          |
| Citharus linguatula            | 4  |   |   |   | 50               | 0.08                               |   | 0.08    | 0.08    |          |
| Seriola fasciata               | 2  |   |   |   | 33               | 0.06                               |   | 0.34    | 0.01    |          |
| Balistes capriscus             | 1  |   |   |   | 17               | 0.06                               |   | 0.34    |         |          |
| Other fish                     |  |   |   |   |                  | 0.38                               |   | 0.05    | 0.44    |          |
| Sum all species                |  |   |   |   |                  | 50.28                              |   | 7.30    | 58.88   |          |
| Sum Snappers                   |  |   |   |   |                  | 38.85                              |   |         | 46.61   |          |
| Sum Groupers                   |  |   |   |   |                  | 1.03                               |   | 0.01    | 1.24    |          |
| Sum Grunts                     |  |   |   |   |                  | 0.57                               |   |         | 0.68    |          |
| Sum Croakers                   |  |   |   |   |                  |                                    |   |         |         |          |
| Sum Seabreams                  |  |   |   |   |                  | 3.62                               |   | 3.92    | 3.55    |          |
| Sum Sharks                     |  |   |   |   |                  |                                    |   |         |         |          |
| Sum Rays                       |  |   |   |   |                  | 0.03                               |   |         | 0.03    |          |
| Sum Squids                     |  |   |   |   |                  | 0.73                               |   | 0.34    | 0.82    |          |
| Sum                            |  |   |   |   |                  |                                    |   |         |         |          |

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

6

1

5

# GABON 1<sup>st</sup> LEG

## SWEPT AREA ANALYSIS FROM STATION 227 TO STATION 251

| SPECIES NAME                | DISTRIB. BY CATCH CLASSES |                     |    |    |    | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |     |      |       |         |
|-----------------------------|---------------------------|---------------------|----|----|----|------------------|------------------------------------|---|-----|------|-------|---------|
|                             | SAMPLE                    | Lower limits, Kg/nm | >0 | 10 | 30 |                  |                                    | 100   | 300 | 1000 | - 30m | 30- 50m |
| Arionma bondi               | 4                         |                     | 2  | 2  |    | 44               | 2.48                               |   |     |      | 4.77  | 10.38   |
| Sardinella aurita           | 4                         | 1                   | 3  | 1  |    | 50               | 1.95                               |   |     | 1.41 | 4.77  |         |
| Decapterus punctatus        | 5                         | 1                   | 4  | 1  |    | 61               | 1.88                               | 0.10  |     | 1.13 | 4.89  |         |
| Dentex congoensis           | 3                         | 2                   | 3  |    |    | 44               | 1.02                               |   |     | 0.01 | 2.96  | 1.72    |
| Pagellus bellottii          | 11                        | 3                   |    |    |    | 78               | 0.59                               | 0.01  |     | 0.86 | 0.76  |         |
| Sepia officinalis hierredda | 17                        |                     |    |    |    | 94               | 0.28                               | 0.30  |     | 0.34 | 0.23  | 0.18    |
| Boops boops                 | 6                         |                     | 1  |    |    | 39               | 0.27                               |   |     | 0.03 | 0.93  |         |
| Priacanthus arenatus        | 12                        |                     |    |    |    | 67               | 0.25                               |   |     | 0.19 | 0.49  | 0.23    |
| Lutjanus fulgens            | 3                         | 2                   |    |    |    | 22               | 0.23                               | 0.07  |     | 0.41 | 0.12  |         |
| Epinephelus aeneus          | 11                        | 1                   |    |    |    | 67               | 0.21                               | 0.09  |     | 0.21 | 0.37  |         |
| Dasyatis margarita          |                           |                     | 1  |    |    |                  | 0.17                               | 1.01  |     |      |       |         |
| Pseudupeneus prayensis      | 12                        |                     |    |    |    | 67               | 0.16                               | 0.01  |     | 0.19 | 0.25  |         |
| Saurida brasiliensis        | 9                         | 1                   |    |    |    | 56               | 0.14                               |   |     | 0.31 | 0.01  |         |
| J E L L Y F I S H           | 4                         | 1                   |    |    |    | 28               | 0.14                               |   |     | 0.23 | 0.11  |         |
| Pagrus caeruleostictus      | 10                        |                     |    |    |    | 56               | 0.13                               | 0.20  |     | 0.17 | 0.07  |         |
| Dentex angolensis           | 7                         |                     |    |    |    | 33               | 0.13                               |   |     |      | 0.30  | 0.37    |
| Raja miraletus              | 13                        |                     |    |    |    | 72               | 0.10                               | 0.03  |     | 0.14 | 0.09  | 0.11    |
| Syacium micrurum            | 11                        |                     |    |    |    | 61               | 0.10                               | 0.30  |     | 0.10 | 0.03  | 0.03    |
| Lepidotrigla cadmani        | 9                         |                     |    |    |    | 50               | 0.09                               |   |     | 0.01 | 0.25  | 0.18    |
| Diaphus sp.                 |                           | 1                   |    |    |    | 6                | 0.08                               |   |     |      |       | 0.72    |
| Dactylopterus volitans      | 8                         | 1                   |    |    |    | 50               | 0.08                               |   |     | 0.17 | 0.03  | 0.01    |
| Alloteuthis africana        | 10                        |                     |    |    |    | 56               | 0.07                               | 0.01  |     | 0.12 | 0.07  |         |
| Penaeus notialis            | 9                         |                     |    |    |    | 50               | 0.07                               | 0.03  |     | 0.14 | 0.01  |         |
| Sphyræna guachancho         | 3                         |                     |    |    |    | 17               | 0.06                               | 0.17  |     | 0.06 |       |         |
| Scorpaena normani           | 2                         |                     |    |    |    | 11               | 0.06                               |   |     |      | 0.01  | 0.50    |
| Scomberomorus tritor        | 3                         |                     |    |    |    | 17               | 0.06                               | 0.22  |     |      | 0.07  |         |
| Grammoplites gruvelli       | 12                        |                     |    |    |    | 67               | 0.06                               | 0.04  |     | 0.10 | 0.03  |         |
| Fistularia petimba          | 12                        |                     |    |    |    | 67               | 0.06                               | 0.01  |     | 0.09 | 0.06  | 0.02    |
| Citharus linguatula         | 12                        |                     |    |    |    | 67               | 0.06                               |   |     | 0.05 | 0.05  | 0.19    |
| Sphoeroides marmoratus      | 15                        |                     |    |    |    | 83               | 0.05                               | 0.17  |     | 0.03 | 0.04  |         |
| Ephippion guttifer          | 2                         |                     |    |    |    | 11               | 0.05                               | 0.31  |     |      |       |         |
| Brachydeuterus auritus      | 5                         |                     |    |    |    | 28               | 0.05                               | 0.11  |     | 0.07 |       |         |
| MYCTOPHIDAE                 | 1                         |                     |    |    |    | 6                | 0.05                               |   |     | 0.12 |       |         |
| Sicyonia galeata            | 1                         |                     |    |    |    | 6                |                                    |   |     |      |       |         |
| Penaeus kerathurus          | 2                         |                     |    |    |    | 11               |                                    |   |     |      |       |         |
| SHRPA43                     | 1                         |                     |    |    |    |                  |                                    |   |     |      |       | 0.03    |
| Aristeus varidens           | 1                         |                     |    |    |    | 6                |                                    |   |     |      |       | 0.03    |
| Other fish                  |                           |                     |    |    |    |                  | 0.81                               | 1.21  |     | 0.73 | 0.40  | 1.31    |
| Sum all species             |                           |                     |    |    |    |                  | 11.99                              | 4.40  |     | 7.42 | 22.14 | 16.01   |
| Sum Snappers                |                           |                     |    |    |    |                  | 0.23                               | 0.07  |     | 0.41 | 0.12  |         |
| Sum Groupers                |                           |                     |    |    |    |                  | 0.24                               | 0.09  |     | 0.27 | 0.38  | 0.01    |
| Sum Grunts                  |                           |                     |    |    |    |                  | 0.05                               | 0.11  |     | 0.07 |       |         |
| Sum Croakers                |                           |                     |    |    |    |                  |                                    |   |     |      |       |         |
| Sum Seabreams               |                           |                     |    |    |    |                  | 2.14                               | 0.21  |     | 1.07 | 5.02  | 2.09    |
| Sum Sharks                  |                           |                     |    |    |    |                  | 0.04                               |   |     | 0.04 | 0.01  | 0.11    |
| Sum Rays                    |                           |                     |    |    |    |                  | 0.30                               | 1.09  |     | 0.16 | 0.13  | 0.11    |
| Sum Squids                  |                           |                     |    |    |    |                  | 0.43                               | 0.31  |     | 0.46 | 0.36  | 0.66    |
| Sum                         |                           |                     |    |    |    |                  |                                    |   |     |      |       |         |
| 0.14                        |                           |                     |    |    |    |                  |                                    |   |     |      |       |         |

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

18                      3                      8                      5                      2

SWEPT AREA ANALYSIS FROM STATION 227 TO STATION 251

| SPECIES NAME               | SAMPLE DISTRIB. BY CATCH CLASSES<br>Lower limits, Kg/nm |    |    |              | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |          |          |          |
|----------------------------|---|----|----|--------------|------------------|------------------------------------|---|----------|----------|----------|
|                            | >0  | 10 | 30 | 100 300 1000 |                  |                                    | 200-300m  | 300-400m | 400-500m | 500-999m |
| CHLPA02                    | 3   | 2  |    |              | 83               | 0.65                               | 0.87  | 1.25     |          | 0.01     |
| Sea cucumbers              |   |    | 1  |              | 17               | 0.53                               | 1.05  |          |          |          |
| Zeus capensis              |   | 1  |    |              |                  | 0.43                               |   | 2.57     |          |          |
| Parapenaeus longirostris   | 2   | 2  |    |              | 67               | 0.43                               | 0.44  | 1.26     |          |          |
| Peristedion cataphractum   | 6   |    |    |              | 83               | 0.32                               | 0.48  | 0.19     |          | 0.15     |
| Epinephelus goreensis      |   | 1  |    |              | 17               | 0.30                               | 0.59  |          |          |          |
| Nematocarcinus africanus   |   | 1  |    |              |                  | 0.29                               |   |          |          | 0.88     |
| APOHY01                    | 3   | 1  |    |              | 67               | 0.26                               | 0.50  | 0.02     |          |          |
| Squatina oculata           |   | 1  |    |              | 17               | 0.20                               | 0.40  |          |          |          |
| Illex coindetii            | 4   |    |    |              | 67               | 0.19                               | 0.26  | 0.33     |          |          |
| Dentex angolensis          | 3   |    |    |              | 50               | 0.13                               | 0.25  |          |          |          |
| Todaropsis eblanae         | 4   |    |    |              | 67               | 0.11                               | 0.19  |          |          | 0.03     |
| Synagrops microlepis       | 3   |    |    |              | 50               | 0.11                               | 0.22  |          |          |          |
| Setarches guentheri        | 4   |    |    |              | 67               | 0.10                               | 0.18  | 0.05     |          |          |
| Lophiodes kempfi           | 4   |    |    |              | 67               | 0.10                               | 0.18  |          |          | 0.02     |
| Cyttopsis roseus           | 4   |    |    |              | 67               | 0.07                               | 0.12  | 0.06     |          | 0.01     |
| Scyliorhinus cervigoni     | 2   |    |    |              | 33               | 0.07                               |   | 0.38     |          |          |
| Chlorophthalmus atlanticus | 2   |    |    |              | 33               | 0.07                               | 0.05  | 0.28     |          |          |
| Trigla lyra                | 1   |    |    |              | 17               | 0.05                               | 0.10  |          |          |          |
| Shrimps, small, non comm.  | 2   |    |    |              | 33               | 0.05                               | 0.08  |          |          | 0.04     |
| Torpedo nobiliana          | 1   |    |    |              |                  | 0.05                               | 0.10  |          |          |          |
| Bembrops greyi             | 2   |    |    |              | 33               | 0.05                               | 0.11  |          |          |          |
| Stereomastis sp.           | 2   |    |    |              | 33               | 0.05                               |   | 0.27     |          | 0.01     |
| Solenocera africana        | 1   |    |    |              | 17               |                                    |   |          |          | 0.01     |
| PASIPHAEIDAE               | 1   |    |    |              | 17               |                                    |   |          |          | 0.01     |
| Acanthephyra sp.           | 1   |    |    |              | 17               |                                    |   |          |          | 0.01     |
| Plesiopenaeus edwardsianus | 1   |    |    |              |                  |                                    |   |          |          | 0.01     |
| Aristeus varidens          | 1   |    |    |              | 17               |                                    |   |          |          | 0.01     |
| Other fish                 |   |    |    |              |                  | 0.90                               | 0.94  | 0.67     |          | 1.10     |
| Sum all species            |   |    |    |              |                  | 5.51                               | 7.11  | 7.33     |          | 2.29     |
| Sum Snappers               |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Groupers               |   |    |    |              |                  | 0.30                               | 0.59  |          |          |          |
| Sum Grunts                 |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Croakers               |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Seabreams              |   |    |    |              |                  | 0.13                               | 0.25  |          |          |          |
| Sum Sharks                 |   |    |    |              |                  | 0.29                               | 0.44  | 0.38     |          | 0.01     |
| Sum Rays                   |   |    |    |              |                  | 0.12                               | 0.22  | 0.08     |          |          |
| Sum Squids                 |   |    |    |              |                  | 0.34                               | 0.45  | 0.33     |          | 0.13     |
| Sum                        |   |    |    |              |                  |                                    |   |          |          |          |
| 1.26                       |   |    |    |              |                  |                                    |   |          |          |          |

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

6 3 1 2

# GABON 2<sup>nd</sup> LEG

## SWEPT AREA ANALYSIS FROM STATION 252 TO STATION 309

| SPECIES NAME                         | SAMPLE DISTRIB. BY CATCH CLASSES             |   |   |   |   |   | % incidence | Mean dens. t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |         |         |          |
|--------------------------------------|--|---|---|---|---|---|-------------|------------------------------|---|---------|---------|----------|
|                                      | Lower limits, Kg/nm<br>>0 10 30 100 300 1000 |   |   |   |   |   |             |                              | - 30m   | 30- 50m | 50-100m | 100-200m |
| <i>Sardinella aurita</i>             | 8  |   | 1 | 1 | 2 | 2 | 30          | 18.07                        | 6.06  | 65.81   | 0.78    |          |
| <i>Decapterus punctatus</i>          | 4  | 1 | 2 |   |   |   | 17          | 5.87                         | 0.73  | 22.48   |         | 0.01     |
| <i>Priacanthus arenatus</i>          | 21   | 1 |   |   |   | 1 | 49          | 5.53                         | 0.14  | 21.13   | 0.32    | 0.05     |
| <i>Brachydeuterus auritus</i>        | 8  | 3 | 1 | 2 | 3 |   | 36          | 3.66                         | 19.80   | 1.04    | 0.08    |          |
| <i>Pagellus bellottii</i>            | 14   | 7 | 9 | 3 | 1 |   | 72          | 3.40                         | 0.82  | 7.72    | 4.23    | 0.09     |
| Boops boops                          | 14   |   | 4 | 1 | 1 |   | 43          | 1.96                         | 0.01  | 6.08    | 0.91    | 0.48     |
| <i>Brachydeuterus auritus</i> Juv.   | 1  | 1 | 2 |   | 1 |   | 11          | 1.91                         | 9.75  | 0.98    |         |          |
| <i>Trachurus trecae</i>              | 16   | 1 |   | 2 |   |   | 40          | 0.92                         | 0.01  | 0.30    | 2.83    | 0.01     |
| <i>Scomber japonicus</i>             | 12   | 2 | 1 | 1 |   |   | 34          | 0.70                         | 0.10  | 0.68    | 1.72    |          |
| <i>Sepia officinalis hierredda</i>   | 25   | 4 | 2 |   |   |   | 66          | 0.54                         | 0.19  | 1.11    | 0.68    | 0.09     |
| <i>Sardinella aurita</i> - Juveniles | 1  |   | 1 | 1 |   |   | 6           | 0.48                         | 2.13  | 0.47    |         |          |
| <i>Chlorophthalmus atlanticus</i>    | 2  | 1 | 2 | 1 |   |   | 13          | 0.45                         | 0.02  |         |         | 1.62     |
| <i>Lutjanus fulgens</i>              | 3  | 1 |   | 1 |   |   | 11          | 0.40                         | 0.09  | 1.51    |         |          |
| <i>Selene dorsalis</i>               | 3  |   | 2 |   |   |   | 11          | 0.37                         | 0.89  |         | 0.04    | 0.75     |
| <i>Zeus faber</i>                    | 11   |   |   | 1 |   |   | 26          | 0.35                         |   | 1.25    | 0.10    | 0.01     |
| <i>Pseudupeneus prayensis</i>        | 26   | 1 | 1 |   |   |   | 60          | 0.32                         | 0.13  | 1.02    | 0.12    |          |
| <i>Merluccius polli</i>              | 2  |   | 3 |   |   |   | 11          | 0.31                         |   |         |         | 1.11     |
| <i>Dentex angolensis</i>             | 8  |   | 3 |   |   |   | 23          | 0.30                         | 0.07  |         | 0.40    | 0.61     |
| <i>Trichiurus lepturus</i>           | 12   | 6 |   |   |   |   | 38          | 0.28                         | 0.55  | 0.10    | 0.34    | 0.20     |
| <i>Saurida brasiliensis</i>          | 18   | 1 | 1 |   |   |   | 43          | 0.27                         |   | 0.03    | 0.77    | 0.12     |
| <i>Dentex congolensis</i>            | 10   | 2 | 1 |   |   |   | 28          | 0.26                         |   |         | 0.19    | 0.73     |
| <i>Cephalopholis taenops</i>         |  |   |   | 1 |   |   | 2           | 0.26                         |   | 1.02    |         |          |
| <i>Alloteuthis africana</i>          | 19   | 1 | 1 |   |   |   | 45          | 0.24                         | 0.03  | 0.14    | 0.63    | 0.03     |
| <i>Engraulis encrasicolus</i>        | 3  |   |   | 1 |   |   | 9           | 0.23                         |   | 0.90    | 0.01    |          |
| <i>Illex coindetii</i>               | 15   | 4 |   |   |   |   | 40          | 0.22                         |   |         | 0.53    | 0.21     |
| <i>Trachurus trecae</i> , juvenile   | 4  | 1 | 2 |   |   |   | 15          | 0.21                         |   | 0.53    | 0.25    |          |
| <i>Selar crumenophthalmus</i>        | 2  |   | 1 |   |   |   | 6           | 0.21                         | 1.21  |         |         |          |
| <i>Ilisha africana</i>               | 1  | 1 | 2 |   |   |   | 9           | 0.20                         | 1.19  |         |         |          |
| <i>Spicara alta</i>                  | 5  |   | 1 |   |   |   | 13          | 0.18                         |   |         | 0.06    | 0.57     |
| <i>Antigonia capros</i>              | 10   | 2 | 1 |   |   |   | 28          | 0.18                         |   |         |         | 0.64     |
| <i>Aulopus cadenati</i>              | 3  | 3 |   |   |   |   | 13          | 0.18                         |   |         |         | 0.64     |
| <i>Sphyaena guachancho</i>           | 7  | 2 | 1 |   |   |   | 21          | 0.17                         | 0.78  | 0.15    |         |          |
| <i>Umbrina canariensis</i>           | 17   | 2 |   |   |   |   | 40          | 0.17                         |   | 0.30    | 0.07    | 0.25     |
| <i>Dactylopterus volitans</i>        | 12   |   | 1 |   |   |   | 28          | 0.17                         | 0.05  | 0.01    | 0.52    | 0.02     |
| <i>Sphyaena</i> sp.                  |  |   | 1 |   |   |   | 2           | 0.15                         | 0.85  |         |         |          |
| <i>Brotula barbata</i>               | 8  | 3 |   |   |   |   | 23          | 0.15                         | 0.01  |         | 0.05    | 0.47     |
| <i>Pseudolithus senegalensis</i>     | 7  |   | 1 |   |   |   | 17          | 0.14                         | 0.71  | 0.04    | 0.02    |          |
| RAJIDAE                              |  |   | 1 |   |   |   | 2           | 0.14                         |   |         |         | 0.51     |
| <i>Pomadasys incisus</i>             | 9  | 2 |   |   |   |   | 23          | 0.14                         | 0.05  | 0.44    | 0.05    |          |
| <i>Ariomma bondi</i>                 | 15   |   | 1 |   |   |   | 34          | 0.14                         |   |         | 0.07    | 0.44     |
| <i>Dentex canariensis</i>            | 12   | 2 |   |   |   |   | 30          | 0.13                         | 0.16  | 0.35    | 0.01    | 0.05     |
| <i>Raja miraletus</i>                | 17   | 2 |   |   |   |   | 40          | 0.12                         | 0.02  | 0.16    | 0.18    | 0.06     |
| J E L L Y F I S H                    | 5  | 1 |   |   |   |   | 13          | 0.12                         |   | 0.06    | 0.34    | 0.01     |
| <i>Mustelus mustelus</i>             | 13   | 1 |   |   |   |   | 30          | 0.11                         |   | 0.03    | 0.16    | 0.18     |
| <i>Citharus linguatula</i>           | 22   | 1 |   |   |   |   | 49          | 0.11                         | 0.02  | 0.09    | 0.24    | 0.04     |
| <i>Alectis alexandrinus</i>          |  | 1 | 1 |   |   |   | 4           | 0.11                         | 0.63  |         |         |          |
| <i>Chelidonichthys gabonensis</i>    | 14   | 1 |   |   |   |   | 32          | 0.10                         |   |         | 0.25    | 0.10     |
| <i>Epinephelus aeneus</i>            | 6  | 2 |   |   |   |   | 17          | 0.10                         | 0.03  | 0.11    | 0.15    | 0.09     |
| <i>Sardinella maderensis</i>         | 1  |   | 1 |   |   |   | 4           | 0.10                         | 0.59  |         |         |          |
| <i>Squatina oculata</i>              | 10   |   |   |   |   |   | 21          | 0.09                         |   | 0.03    | 0.20    | 0.10     |
| <i>Lepidotrigla carolae</i>          | 11   |   |   |   |   |   | 23          | 0.07                         |   | 0.01    | 0.04    | 0.21     |
| <i>Pagrus caeruleostictus</i>        | 5  | 1 |   |   |   |   | 11          | 0.06                         | 0.15  | 0.13    | 0.01    |          |
| <i>Pteroscion peli</i>               | 4  | 1 |   |   |   |   | 11          | 0.06                         | 0.37  |         |         |          |
| <i>Dentex barnardi</i>               |  | 1 |   |   |   |   | 2           | 0.05                         |   |         | 0.21    |          |
| <i>Torpedo torpedo</i>               | 14   |   |   |   |   |   | 30          | 0.05                         |   | 0.07    | 0.09    | 0.01     |
| <i>Fistularia petimba</i>            | 16   |   |   |   |   |   | 34          | 0.05                         |   | 0.04    | 0.11    | 0.01     |
| Sea urchins (strong spines)          | 4  | 1 |   |   |   |   | 11          | 0.05                         |   |         | 0.16    |          |
| <i>Penaeus notialis</i>              | 9  |   |   |   |   |   | 19          | 0.04                         | 0.12  | 0.06    |         |          |
| <i>Parapenaeus longirostris</i>      | 4  |   |   |   |   |   | 9           | 0.01                         | 0.02  |         |         | 0.02     |
| <i>Parapenaeopsis atlantica</i>      | 1  |   |   |   |   |   | 2           | 0.01                         | 0.07  |         |         |          |
| <i>Solenocera africana</i>           | 1  |   |   |   |   |   | 2           |                              |   |         |         |          |
| <i>Sicyonia galeata</i>              | 3  |   |   |   |   |   | 6           |                              | 0.01  |         |         |          |
| PENAEIDAE                            | 1  |   |   |   |   |   | 2           |                              |   |         |         |          |
| <i>Parapandalus narval</i>           | 1  |   |   |   |   |   | 2           |                              |   |         |         | 0.01     |
| PANDALIDAE                           | 1  |   |   |   |   |   | 2           |                              |   |         |         | 0.01     |
| Other fish                           |  |   |   |   |   |   |             | 1.09                         | 1.44  | 0.65    | 0.97    | 1.54     |
| Sum all species                      |  |   |   |   |   |   |             | 52.46                        | 50.00   | 137.24  | 18.68   | 12.10    |
| Sum Snappers                         |  |   |   |   |   |   |             | 0.43                         | 0.13  | 1.55    | 0.03    |          |
| Sum Groupers                         |  |   |   |   |   |   |             | 0.37                         | 0.07  | 1.14    | 0.15    | 0.09     |
| Sum Grunts                           |  |   |   |   |   |   |             | 5.75                         | 29.76   | 2.50    | 0.13    |          |
| Sum Croakers                         |  |   |   |   |   |   |             | 0.40                         | 1.08  | 0.34    | 0.12    | 0.34     |
| Sum Seabreams                        |  |   |   |   |   |   |             | 6.20                         | 1.21  | 14.53   | 5.75    | 2.06     |
| Sum Sharks                           |  |   |   |   |   |   |             | 0.25                         | 0.13  | 0.06    | 0.38    | 0.38     |
| Sum Rays                             |  |   |   |   |   |   |             | 0.35                         | 0.06  | 0.29    | 0.33    | 0.60     |
| Sum Squids                           |  |   |   |   |   |   |             | 1.07                         | 0.32  | 1.25    | 1.92    | 0.41     |
| Sum                                  |  |   |   |   |   |   |             |                              |   |         |         |          |
| 0.06                                 |  |   |   |   |   |   |             |                              |   |         |         |          |

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

47

8

12

14

13

SWEPT AREA ANALYSIS FROM STATION 252 TO STATION 309

| SPECIES NAME               | SAMPLE DISTRIB. BY CATCH CLASSES<br>Lower limits, Kg/nm |    |    |              | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |          |          |          |
|----------------------------|---|----|----|--------------|------------------|------------------------------------|---|----------|----------|----------|
|                            | >0  | 10 | 30 | 100 300 1000 |                  |                                    | 200-300m  | 300-400m | 400-500m | 500-999m |
| Chlorophthalmus atlanticus | 1   | 3  | 2  |              | 67               | 1.89                               | 2.77  | 2.85     |          |          |
| Nematocarcinus africanus   | 1   | 1  | 1  |              | 22               | 1.09                               |   | 0.01     | 7.29     | 1.22     |
| Merluccius polli           | 4   | 3  |    |              | 78               | 0.83                               | 0.09  | 1.46     |          | 0.06     |
| Geryon maritae             | 3   |    | 1  |              | 44               | 0.73                               |   | 1.29     | 0.09     |          |
| Plesionika martia          | 6   |    | 1  |              | 78               | 0.63                               | 0.11  | 0.30     | 0.30     | 1.88     |
| Hoplostethus cadenati      | 3   | 3  |    |              | 67               | 0.60                               |   | 0.52     | 1.09     | 0.87     |
| CHLPA02                    | 4   | 2  |    |              | 67               | 0.60                               | 1.79  | 0.72     |          |          |
| J E L L Y F I S H          |   |    | 1  |              | 11               | 0.51                               |   | 0.92     |          |          |
| Hymenocephalus italicus    | 6   |    | 1  |              | 78               | 0.46                               | 0.12  | 0.19     | 3.05     |          |
| GALATHEIDAE *              | 5   | 1  |    |              | 67               | 0.29                               | 0.17  | 0.48     |          |          |
| Parapenaeus longirostris   | 4   | 1  |    |              | 56               | 0.23                               | 0.01  | 0.40     |          |          |
| Deania calcea              | 2   | 1  |    |              | 33               | 0.22                               |   | 0.40     |          |          |
| Lophius vaillanti          | 4   | 1  |    |              | 44               | 0.21                               | 0.05  | 0.37     |          |          |
| Lamprogrammus exutus       | 2   | 1  |    |              | 33               | 0.18                               |   |          | 1.40     | 0.10     |
| Illex coindetii            | 6   |    |    |              | 67               | 0.14                               | 0.14  | 0.23     |          |          |
| Trichiurus lepturus        | 6   |    |    |              | 67               | 0.12                               | 0.17  | 0.14     |          | 0.10     |
| Chascanopsetta lugubris    | 7   |    |    |              | 78               | 0.12                               | 0.26  | 0.17     |          |          |
| Benthodesmus tenuis        | 6   |    |    |              | 67               | 0.11                               | 0.02  | 0.15     | 0.21     |          |
| Paromola cuvieri           | 3   |    |    |              | 33               | 0.10                               | 0.60  | 0.05     |          |          |
| Epigonus telescopus        | 6   |    |    |              | 67               | 0.10                               | 0.14  | 0.15     |          |          |
| Malacocephalus laevis      | 6   |    |    |              | 67               | 0.08                               | 0.09  | 0.11     | 0.07     | 0.03     |
| Trigla lyra                | 4   |    |    |              | 44               | 0.07                               | 0.34  | 0.05     |          |          |
| Laemonema laureysi         | 4   |    |    |              | 44               | 0.07                               |   | 0.02     | 0.19     | 0.16     |
| Zenion hololepis           | 3   |    |    |              | 33               | 0.07                               | 0.18  | 0.09     |          |          |
| Todaropsis eblanae         | 4   |    |    |              | 44               | 0.06                               |   | 0.12     |          |          |
| Centrophorus granulosus    | 2   |    |    |              | 22               | 0.06                               |   | 0.11     |          |          |
| Torpedo sp.                | 1   |    |    |              | 11               | 0.06                               |   | 0.11     |          |          |
| NETTASTOMATIDAE            | 5   |    |    |              | 56               | 0.06                               | 0.01  | 0.09     |          | 0.04     |
| Chaunax pictus             | 4   |    |    |              | 44               | 0.05                               |   | 0.08     |          | 0.02     |
| Solenocera africana        | 4   |    |    |              | 44               |                                    |   | 0.01     |          |          |
| Sicyonia galeata           | 1   |    |    |              |                  |                                    |   |          |          |          |
| Parapandalus sp.           | 1   |    |    |              | 11               |                                    |   |          | 0.02     |          |
| PANDALIDAE                 | 1   |    |    |              | 11               |                                    |   |          |          |          |
| Glyphocrangon sp.          | 1   |    |    |              | 11               |                                    |   |          |          |          |
| Plesiopenaeus edwardsianus | 1   |    |    |              | 11               |                                    |   | 0.01     |          |          |
| Aristeus varidens          | 1   |    |    |              | 11               |                                    |   |          |          |          |
| Other fish                 |   |    |    |              |                  | 0.67                               | 0.62  | 0.89     | 0.18     | 0.66     |
| Sum all species            |   |    |    |              |                  | 10.41                              | 7.68  | 12.49    | 13.89    | 5.14     |
| Sum Snappers               |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Groupers               |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Grunts                 |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Croakers               |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Seabreams              |   |    |    |              |                  |                                    |   | 0.01     |          |          |
| Sum Sharks                 |   |    |    |              |                  | 0.40                               | 0.21  | 0.64     |          | 0.15     |
| Sum Rays                   |   |    |    |              |                  | 0.10                               |   | 0.18     |          |          |
| Sum Squids                 |   |    |    |              |                  | 0.22                               | 0.14  | 0.35     |          | 0.08     |
| Sum                        |   |    |    |              |                  |                                    |   |          |          |          |
| 0.73                       |   |    |    |              |                  |                                    |   |          |          |          |

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

9 1 5 1 2

# CONGO

## SWEPT AREA ANALYSIS FROM STATION 310 TO STATION 322

| SPECIES NAME                | SAMPLE DISTRIB. BY CATCH CLASSES             |   |   |   |   | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |         |         |          |
|-----------------------------|--|---|---|---|---|------------------|------------------------------------|---|---------|---------|----------|
|                             | Lower limits, Kg/nm<br>>0 10 30 100 300 1000 |   |   |   |   |                  |                                    | - 30m   | 30- 50m | 50-100m | 100-200m |
| Brachydeuterus auritus      | 2  |   | 1 | 1 | 1 | 71               | 17.63                              | 0.39  | 9.33    | 52.17   |          |
| Trachurus trecae            | 2  |   |   |   | 1 | 43               | 8.78                               |   |         | 30.63   | 0.09     |
| Trichiurus lepturus         | 3  | 2 | 1 |   | 1 | 100              | 6.08                               | 1.11  | 1.38    | 18.91   | 0.42     |
| Brotula barbata             | 1  | 4 |   |   |   | 71               | 0.98                               |   |         | 1.56    | 1.85     |
| Dicologlossa cuneata        | 1  | 1 | 1 |   |   | 43               | 0.93                               | 0.14  | 0.53    | 2.67    |          |
| Octopus vulgaris            | 2  |   | 1 |   |   | 43               | 0.79                               |   |         | 2.73    | 0.03     |
| Pagellus bellottii          | 1  |   | 1 |   |   | 14               | 0.74                               |   |         | 2.60    |          |
| Dentex angolensis           | 1  |   | 1 |   |   | 29               | 0.61                               |   |         |         | 2.12     |
| Pseudotolithus senegalensis | 1  |   | 1 |   |   | 29               | 0.55                               | 3.42  | 0.22    |         |          |
| Raja miraletus              | 3  | 2 |   |   |   | 57               | 0.51                               | 0.09  | 0.84    | 0.90    |          |
| Dentex congoensis           |  |   | 1 |   |   | 14               | 0.47                               |   |         | 1.65    |          |
| Parapenaopsis atlantica     | 1  |   | 1 |   |   | 29               | 0.44                               | 3.07  |         |         |          |
| Sepia officinalis hierredda | 3  | 1 |   |   |   | 57               | 0.40                               |   | 0.01    | 1.29    | 0.10     |
| Pentheroscion mbizi         | 4  | 1 |   |   |   | 71               | 0.40                               |   | 1.00    | 0.28    | 0.13     |
| Cynoglossus canariensis     | 1  | 1 |   |   |   | 29               | 0.40                               |   | 1.41    |         |          |
| Cynoglossus senegalensis    |  |   | 1 |   |   | 14               | 0.39                               | 2.71  |         |         |          |
| Pteroscion peli             | 2  | 1 |   |   |   | 29               | 0.38                               | 1.92  | 0.31    |         | 0.05     |
| Pomadasy s incisus          |  |   | 1 |   |   | 14               | 0.36                               |   | 1.26    |         |          |
| Citharus linguatula         | 3  |   |   |   |   | 43               | 0.23                               |   |         | 0.66    | 0.15     |
| Ilisha africana             | 1  | 1 |   |   |   | 29               | 0.19                               | 1.11  | 0.10    |         |          |
| Pentanemus quinquarius      | 2  | 1 |   |   |   | 43               | 0.18                               | 1.15  | 0.06    |         |          |
| GOBBA01                     | 1  | 1 |   |   |   | 29               | 0.17                               |   | 0.01    | 0.57    |          |
| Uranoscopus polli           | 1  | 1 |   |   |   | 29               | 0.15                               |   | 0.01    | 0.50    |          |
| Fistularia petimba          |  | 1 |   |   |   | 14               | 0.14                               |   |         | 0.50    |          |
| Merluccius polli            | 1  |   |   |   |   | 14               | 0.13                               |   |         |         | 0.44     |
| Squatina oculata            | 1  |   |   |   |   | 14               | 0.12                               |   |         | 0.41    |          |
| Synagrops microlepis        | 1  |   |   |   |   | 14               | 0.12                               |   |         |         | 0.42     |
| Pseudotolithus typus        | 1  |   |   |   |   | 14               | 0.11                               | 0.79  |         |         |          |
| Pseudotolithus sp.          | 1  |   |   |   |   | 14               | 0.10                               |   | 0.36    |         |          |
| CRAXX03                     | 3  |   |   |   |   | 14               | 0.10                               |   | 0.03    | 0.34    |          |
| Pterothrissus bellocci      | 2  |   |   |   |   | 14               | 0.09                               |   |         |         | 0.33     |
| Grammolites gruveli         | 3  |   |   |   |   | 43               | 0.08                               |   | 0.23    | 0.04    |          |
| CRAXX04                     | 1  |   |   |   |   | 14               | 0.08                               |   | 0.27    |         |          |
| Illex coindetii             | 1  |   |   |   |   |                  | 0.07                               |   |         |         | 0.24     |
| MYCTOPHIDAE                 | 1  |   |   |   |   | 14               | 0.07                               |   |         |         | 0.24     |
| Sea cucumbers               | 1  |   |   |   |   | 14               | 0.07                               |   |         |         | 0.26     |
| Todaropsis eblanae          | 1  |   |   |   |   |                  | 0.06                               |   |         |         | 0.19     |
| Parapenaeus longirostris    | 2  |   |   |   |   | 29               | 0.06                               |   |         | 0.07    | 0.14     |
| Trigla lyra                 | 1  |   |   |   |   | 14               | 0.05                               |   |         |         | 0.16     |
| Penaeus notialis            | 1  |   |   |   |   | 14               | 0.03                               |   | 0.11    |         |          |
| Sicyonia galeata            | 2  |   |   |   |   | 14               |                                    |   | 0.01    |         |          |
| Other fish                  |  |   |   |   |   |                  | 0.68                               | 0.59  | 0.94    | 0.26    | 0.82     |
| Sum all species             |  |   |   |   |   |                  | 43.92                              | 16.49   | 18.43   | 118.74  | 8.18     |
| Sum Snappers                |  |   |   |   |   |                  |                                    |   |         |         |          |
| Sum Groupers                |  |   |   |   |   |                  | 0.03                               |   | 0.01    | 0.11    |          |
| Sum Grunts                  |  |   |   |   |   |                  | 17.99                              | 0.39  | 10.59   | 52.17   |          |
| Sum Croakers                |  |   |   |   |   |                  | 1.58                               | 6.13  | 1.89    | 0.28    | 0.32     |
| Sum Seabreams               |  |   |   |   |   |                  | 1.82                               |   |         | 4.25    | 2.12     |
| Sum Sharks                  |  |   |   |   |   |                  | 0.16                               |   |         | 0.53    |          |
| Sum Rays                    |  |   |   |   |   |                  | 0.59                               | 0.15  | 1.09    | 0.90    |          |
| Sum Squids                  |  |   |   |   |   |                  | 1.34                               |   | 0.01    | 4.02    | 0.62     |
| Sum                         |  |   |   |   |   |                  |                                    |   |         |         |          |
| 0.12                        |  |   |   |   |   |                  |                                    |   |         |         |          |

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

7 1 2 2 2



SWEPT AREA ANALYSIS FROM STATION 310 TO STATION 322

| SPECIES NAME               | SAMPLE DISTRIB. BY CATCH CLASSES<br>Lower limits, Kg/nm |    |    |              | % inci-<br>dence | Mean<br>dens.<br>t/nm <sup>2</sup> | Mean densities by bottom depth strata t/nm <sup>2</sup> |          |          |          |
|----------------------------|---|----|----|--------------|------------------|------------------------------------|---|----------|----------|----------|
|                            | >0  | 10 | 30 | 100 300 1000 |                  |                                    | 200-300m  | 300-400m | 400-500m | 500-999m |
| Nematocarcinus africanus   | 1   |    | 1  |              | 50               | 3.41                               |   |          |          | 6.81     |
| Merluccius polli           | 1   |    | 1  |              | 50               | 1.12                               | 2.24  |          |          |          |
| Hoplostethus cadenati      | 1   | 2  |    |              | 75               | 0.71                               | 0.03  |          |          | 1.40     |
| Chlamydoselachus anguineus |   | 1  |    |              | 25               | 0.52                               |   |          |          | 1.04     |
| Atractoscion aequidens     |   | 1  |    |              | 25               | 0.48                               | 0.96  |          |          |          |
| Parapenaeus longirostris   | 2   |    |    |              | 50               | 0.45                               | 0.89  |          |          |          |
| LOBGA30                    |   | 1  |    |              | 25               | 0.31                               | 0.61  |          |          |          |
| Aristeus varidens          | 1   |    |    |              |                  | 0.23                               |   |          |          | 0.46     |
| Pterothrissus bellocci     | 2   |    |    |              | 50               | 0.22                               | 0.43  |          |          |          |
| Centrophorus uyato         | 2   |    |    |              | 50               | 0.19                               | 0.30  |          |          | 0.07     |
| Illex coindetii            | 2   |    |    |              | 50               | 0.18                               | 0.36  |          |          |          |
| Raja miraletus             | 3   |    |    |              | 75               | 0.16                               | 0.01  |          |          | 0.32     |
| POLYCHAEALIDAE             | 1   |    |    |              | 25               | 0.16                               |   |          |          | 0.33     |
| Chaceon maritae            | 1   |    |    |              | 25               | 0.16                               |   |          |          | 0.32     |
| Lamprogrammus exutus       | 2   |    |    |              | 50               | 0.11                               |   |          |          | 0.22     |
| Halosaurus ovenii          | 2   |    |    |              | 50               | 0.11                               |   |          |          | 0.21     |
| Chaunax pictus             | 2   |    |    |              | 50               | 0.09                               |   |          |          | 0.18     |
| Trichiurus lepturus        | 4   |    |    |              | 100              | 0.08                               | 0.08  |          |          | 0.08     |
| Deania calcea              | 1   |    |    |              | 25               | 0.08                               |   |          |          | 0.15     |
| Brotula barbata            | 2   |    |    |              | 50               | 0.08                               | 0.17  |          |          |          |
| Rhizoprionodon acutus      | 1   |    |    |              | 25               | 0.07                               |   |          |          | 0.13     |
| Cynoponticus ferox         | 1   |    |    |              | 25               | 0.07                               | 0.15  |          |          |          |
| CRAXX03                    | 1   |    |    |              | 25               | 0.07                               | 0.14  |          |          |          |
| Nezumia sp.                | 3   |    |    |              | 50               | 0.05                               |   |          |          | 0.09     |
| Calappa sp.                | 1   |    |    |              | 25               | 0.05                               | 0.10  |          |          |          |
| CHLPA02                    | 1   |    |    |              | 25               | 0.05                               | 0.11  |          |          |          |
| Other fish                 |   |    |    |              |                  | 0.64                               | 0.51  |          |          | 0.78     |
| Sum all species            |   |    |    |              |                  | 9.85                               | 7.09  |          |          | 12.59    |
| Sum Snappers               |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Groupers               |   |    |    |              |                  | 0.02                               | 0.04  |          |          |          |
| Sum Grunts                 |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Croakers               |   |    |    |              |                  | 0.48                               | 0.96  |          |          |          |
| Sum Seabreams              |   |    |    |              |                  |                                    |   |          |          |          |
| Sum Sharks                 |   |    |    |              |                  | 0.92                               | 0.34  |          |          | 1.47     |
| Sum Rays                   |   |    |    |              |                  | 0.16                               | 0.01  |          |          | 0.32     |
| Sum Squids                 |   |    |    |              |                  | 0.19                               | 0.37  |          |          | 0.02     |
| Sum                        |   |    |    |              |                  |                                    |   |          |          |          |

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

4

2

2

## Annex VI Estimates of sample variance

### 1. STRATIFIED MEAN DENSITY AND CONFIDENCE INTERVALS

The stratified estimator of mean density in the entire area is calculated as (Cochran, 1977; eq. 5.1, p. 91)

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

where

$L$  is the number of strata,

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

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

$n_i$  is the number of tows in the  $i^{th}$  stratum, and

$y_{i,k}$  is the catch by the  $k^{th}$  tow in stratum  $i$  (normalized to either kg/hour

or  $t/nmi^2 = \frac{y_{ik}}{area\ swept_{ik}}$  for biomass estimates).

The estimated variance of the stratified mean,  $\bar{y}_{st}$ , is

$$\text{var}(\bar{y}_{st}) = \sum_{i=1}^L W_i^2 \frac{s_i^2}{n_i}, \quad (2)$$

where

$$s_i^2 = \frac{\sum_{k=1}^{n_i} (y_{i,k} - \bar{y}_i)^2}{n_i - 1}. \quad (3)$$

When  $\bar{y}_{st}$  is estimated in  $t/nmi^2$  then an estimate of the total biomass in the area is calculated by

$$B = \bar{y}_{st} \cdot total\ area \quad (4)$$

## 2. PRECISION OF THE ESTIMATES OF MEAN DENSITY

### 2.1. Estimates based on the sample mean

The estimate of the standard error for each stratum mean is given by

$$se(\bar{y}_i) = \sqrt{\frac{s_i^2}{n_i}}, \quad (5)$$

where  $s_i^2$  is from equation (3).

The standard error of the stratified mean ( $\bar{y}_{st}$ , equation 1), i.e. the square root of the variance of  $\bar{y}_{st}$ , is calculated as

$$se(\bar{y}_{st}) = \sqrt{\text{var}(\bar{y}_{st})}, \quad (6)$$

where  $\text{var}(\bar{y}_{st})$  is defined by equation (2).

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 lies in the interval (see Cochran, 1977, pp. 39-44)

$$\bar{y}_{st} \pm t_{(n-1)} se(\bar{y}_{st}), \quad (7)$$

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

### 2.2. Estimates of the mean based on lognormal theory - The Pennington estimator

Since abundance data from marine surveys usually have a large variance (much higher than the mean) and are highly skewed to the right, the sample sizes are typically not large enough so that equation (2) is a valid 95% confidence interval. In fact, the confidence associated with the interval given by equation (7) is usually much lower than 95% (McConnaughey and Conquest, 1992; Conquest *et al.*, 1996; Pennington, 1996). A major problem to the degree of skewness is due to the high proportion of zero tows often observed. Development of confidence intervals is complicated by the asymmetric distribution, and the occurrence of zero catches confounds an effective normalization transformation. Logarithmic transformation will stabilize the variance but data will still not be normally distributed and interpretation of re-transformed means is difficult (Pennington and Grosslein 1978).

One way to generate more precise estimates of the mean and more accurate confidence statements for skewed marine data is to base the estimators on the lognormal Delta

distribution (Pennington, 1983, 1996; Conquest *et al.*, 1996), in which catches are divided into zero and non-zero units, followed by transformation of the non-zero values to natural logarithms. When it is found that the transformed non-zero data are approximated by a lognormal distribution (*i.e.* the logged values are normally distributed), then a more efficient estimator of mean density,  $c_i$ , within each stratum is given by (Pennington, 1983, 1996)

$$c_i = \frac{m_i}{n_i} \exp(\bar{x}_i) G_{m_i}(s_{x,i}^2 / 2), \quad (8)$$

where

$m_i$  is the number of sample values greater than 0 in stratum  $i$ ,

$\bar{x}_i$  and  $s_{x,i}^2$  are the mean and variance, respectively, of the log transformed values of catches greater than 0, and

$G_m(f)$  is an infinite series function of  $m$  and  $f$  [for example,  $m = m_i$  and  $f = s_{x,i}^2 / 2$  in equation (8)] which is used to correct for bias in re-transformation from log to arithmetic scale and is defined by

$$G_m(f) = 1 + \frac{m-1}{m} f + \sum_{j=2}^{\infty} \frac{(m-1)^{2j-1} f^j}{m^j (m+1)(m+3)\cdots(m+2j-3)j!} \quad (9)$$

The variance of  $c_i$  is given by

$$\text{var}(c_i) = \frac{m_i}{n_i} \exp(2\bar{x}_i) \left\{ \frac{m_i}{n_i} G_{m_i}^2(s_{x,i}^2 / 2) - \frac{(m_i-1)}{(n_i-1)} G_{m_i}\left(\frac{m_i-2}{m_i-1} s_{x,i}^2\right) \right\} \quad (10)$$

### 2.3. The modified Pennington estimator

In contrast to estimates based on the sample mean (equation 1 and 2), which are highly sensitive to a single or a few isolated high catch rates that may account for more than 50% of the total catch, Pennington's estimator (equations 8 and 10) is sensitive to low catch rates which contribute little to the total catch, but when log-transformed may give large negative values resulting in a distribution skewed to the left. In such a case a more precise estimator of mean density within each stratum,  $\hat{\mu}_i$ , is given by (modified from Pennington, 1983, 1996)

$$\hat{\mu}_i = \frac{(n_i - m_i)}{n_i} \bar{y}'_i + \frac{m_i}{n_i} \exp(\bar{x}_i) G_{m_i}(s_{x,i}^2 / 2), \quad (11)$$

where

$m_i$  is the number of sample values greater than a defined 'cut-level' (rather than 0 as in equation 8) in stratum  $i$ ,

$\bar{y}'_i$  denotes the arithmetic mean of the non-transformed values less than the cut-level, and  
 $\bar{x}_i$  and  $s_{x,i}^2$  are the mean and variance, respectively, of the logged values of catches greater than the cut-level.

The variance of  $\hat{\mu}_i$  is given by

$$\text{var}(\hat{\mu}_i) = \text{var}(c_i) + \left( \frac{n_i - m_i - 1}{n_i(n_i - 1)} \right) s_i'^2 + \left( \frac{m_i(n_i - m_i)}{n_i^2(n_i - 1)} \right) \bar{y}_i'^2 - 2 \left( \frac{n_i - m_i}{n_i(n_i - 1)} \right) \bar{y}'_i \times c_i, \quad (12)$$

where

$s_i'^2$  is the variance of the values less than the cut-level (equation 3), and  
 $c_i$  and  $\text{var}(c_i)$  are equations (8) and (10) with  $m_i$  bigger than the cut-level.

There is no single objective criterion upon which to define a cut-level bigger than zero. Basically the logged Delta distribution should be viewed (e.g. in GRAFER) in order to determine if it is skewed to the left and/or contains isolated small catches. As a 'rule of thumb' (Pennington pers. com.) the cut-level should be set  $= (2\bar{x}_i - x_{\max})$ , where  $\bar{x}_i$  and  $x_{\max}$  are the mean and the largest value, respectively, of the log transformed values of catches greater than 0.

#### 2.4. Stratified mean and confidence interval based on lognormal theory

The stratified estimate of mean density (denoted by  $\hat{\mu}_{st}$ ) in the entire area is calculated by replacing  $\bar{y}_i$  with  $\hat{\mu}_i$  for each stratum in equation (1). The standard error of  $\hat{\mu}_{st}$  is obtained by substituting  $\text{var}(\hat{\mu}_i)$  for  $s_i^2 / n_i$  (which equals  $\text{var}(\bar{y}_i)$ ) in equation (2) and then

$$\text{se}(\hat{\mu}_{st}) = \sqrt{\text{var}(\hat{\mu}_{st})} \quad (13)$$

Sometimes the  $\hat{\mu}_{st}$ -estimator is higher than the one based on the sample mean. This is because, given the sample sizes typical for marine surveys, the sample mean tends to underestimate the true mean most of the time for these highly skewed distributions (Pennington, 1983, 1996; Conquest *et al.*, 1996).

An approximate 95% confidence interval for  $\hat{\mu}_{st}$  is given by

$$\hat{\mu}_{st} \pm t_{(n-1)} \text{se}(\hat{\mu}_{st}) \quad (14)$$

## **Annex VII Instruments and fishing gear used**

### **Echo sounder**

The SIMRAD EK500/38 kHz scientific sounder was used during the survey for fish abundance estimation. The lowering keel was not submerged during the survey. The Bergen Echo Integrator system (BEI) was used to scrutinise the acoustic records. System calibration experiment using a standard copper sphere was performed 30.03.2005 The settings of 38 kHz echo sounder were as follows:

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

|                    |                                    |
|--------------------|------------------------------------|
| Transducer depth   | 5.50 m                             |
| Absorption coeff.  | 10 dB/km                           |
| Pulse length       | medium (1ms)                       |
| Bandwidth          | wide                               |
| Max power          | 2000 Watt                          |
| 2-way beam angle   | -21.0 dB                           |
| SV transducer gain | 27.39 dB                           |
| TS transducer gain | 27.52 dB                           |
| Angle sensitivity  | 21.9                               |
| 3 dB beamwidth     | 6.8 dg along / athwardship: 6.7 dg |
| Alongship offset   | -0.03 "                            |
| Athwardship offset | 0.06 "                             |

#### **Display menu**

|               |            |
|---------------|------------|
| Echogram      | 1 (38 kHz) |
| Sv colour min | -67 dB     |

#### **Printer- menu**

|                    |                                   |
|--------------------|-----------------------------------|
| Echogram           | 1 (38 kHz)                        |
| Range              | 50, 100, 250, 500, 750 and 1000 m |
| Range start        | 0                                 |
| Bottom range       | 15 m                              |
| Bottom range start | 10 m                              |
| Sv colour min      | -67 dB                            |
| TVG                | 20 log R                          |

**Bottom detection menu**      Minimum level -40 dB

## Annex VIII Example sheet used for calculations of biomass and confidence intervals

Made 23/3 1999 by Jeppe Kolding

This example is the biomass of seabreams in Benin 2002

This sheet is used to calculate stratified mean density, total biomass, and 95% confidence limits on the total biomass. Inputs are only required in the yellow fields and optionally the t-value can be set. NOTE that the Station field MUST be 1 even if there is no catch. Density ( $t/nm^2$ ) is from NAN-SIS and Coefficient of variation (CV) is from GRAFER using the same depth intervals. The underlying assumption is that the CV from the catch (kg/hour) is equal for the density ( $t/nm^2$ ), i.e. that the swept area is constant per hour. Equation numbers (1) and (2) refers to Appendix in report

Input from NANSIS                      GRAFER

| Depth (m) | Area | No Stations | Density ( $t/nm^2$ ) | CV (kg/hour) | Equation(1)= | SD    | Est. Variance    | Equation (2)= |
|-----------|------|-------------|----------------------|--------------|--------------|-------|------------------|---------------|
| 20-30     | 387  | 6           | 0.08                 | 1.83         | 0.04         | 0.146 | 0.021            | 0.001         |
| 31-50     | 134  | 6           | 0.53                 | 1.54         | 0.09         | 0.816 | 0.666            | 0.003         |
| 51-100    | 244  | 5           | 2.59                 | 1.20         | 0.83         | 3.108 | 9.660            | 0.197         |
| Total     | 5561 |             |                      |              |              |       | Var(strat-mean)= | 0.20          |

t-value = 2

Stratified mean = 0.96

SE(strat-mean)= 0.45

95% Confidence limits:

|                |     |    |      |
|----------------|-----|----|------|
| Total biomass= | 734 | 48 | 1420 |
|----------------|-----|----|------|

