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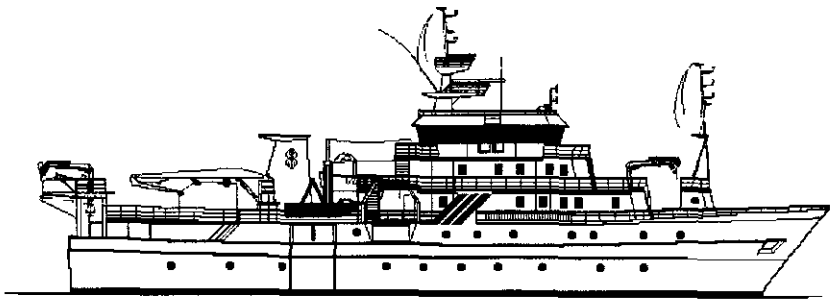
CRUISE REPORTS "DR. FRIDTJOF NANSEN"



SURVEYS OF THE FISH RESOURCES OF THE WESTERN GULF OF GUINEA

Guinea Bissau, Guinea, Sierra Leone and Liberia

Survey of the pelagic and demersal resources 29 April - 16 May 2006

Scientific Report

Institute of Marine Research (IMR)
Norway

Centro de Investigação Pesqueira Aplicada (CIPA)
Guinea Bissau

Centre National des Sciences Halieutiques (CNSHB)
Guinea

Ministry of Fisheries and Marine Resources
Sierra Leone

Ministry of Fisheries and Marine Resources
Liberia

University of Ghana
Ghana

CRUISE REPORTS "DR. FRIDTJOF NANSEN"

SURVEYS OF THE FISH RESOURCES OF THE WESTERN GULF OF GUINEA (Guinea Bissau, Guinea, Sierra Leone and Liberia)

Survey of the pelagic and demersal resources 29 April - 16 May 2006

by

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Institute of Marine Research
Bergen, 2007

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CHAPTER 1 INTRODUCTION

The survey of the Western part of Gulf reflects a discrepancy in coverage of the Western reaches of the Guinea Current LME, as this region was last surveyed in 1995. The present survey with 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 covered Guinea Bissau, Guinea, Sierra Leone and Liberia, and will continue along the continental shelf to include also the remaining GCLME countries.

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 Tema, Ghana, prior to the survey 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 Tema, Ghana, the main objectives of the survey were:

- to map the distribution and estimate the acoustic abundance of the main pelagic species / groups in the region
- to describe the distribution, composition and estimate the abundance of the main demersal 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 map the general hydrographic regime by using a CTD-sonde 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 in Conakry, Guinea 28 April. All participants stayed on board for the whole duration of the survey. The African participants represented the countries in the region covered by the survey, and one invited participant from Ghana.

From Guinea Bissau:

Luis Malabe da Fonseca, Vitorino Assau Nahada

From Guinea:

Amadou Bah (Team Leader), Amsoumane Keita, M'Mah Soumah

From Sierra Leone:

Sheku Sei (Team Leader), Ibrahim Turay (Local Cruise Leader)

From Liberia:

Alvin S. Jue-Seah, D.Wesseh Kay

From Marine Fisheries Research Division, Tema, Ghana:

Emmanuel Lamptey

From Institute of Marine Research, Norway:

Oddgeir Alvheim, Ingvar Huse (Cruise Leader), Thor Egil Johansson and Tore Mørk.

1.3 Narrative

The vessel left Conakry (Guinea) at 17:30 on 28 April. The survey started at 21:00 the next day after the vessel arrived at the border between Senegal and Guinea Bissau at 17°09' W. The shelf was surveyed as much as possible during the day (0600 to 1800) by transects perpendicular to the general direction of the coastline, 30 or 40 NM (nautical miles) apart (30 NM transect distance was used in Guinea Bissau, but as this transect distance soon proved to exceed available time, 40 NM was adopted for the rest of the survey). Sampling was continued around the clock in the whole region, and for the whole duration of the survey.

The border to Guinea was reached on 05 May at 23:00h, and the coverage of Guinea was started immediately. The border between Guinea and Sierra Leone was reached on 07 May, and the vessel continued surveying into Sierra Leonean waters. The border between Sierra Leone and Liberia was reached 10 May, and the surveying continued through Liberian waters until the border with Cote d'Ivoire was reached 14 May at 17:00h, where the survey was discontinued. The vessel docked in Tema, Ghana on 16 May at 18:00h.

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 recording and analysis was carried 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. Zooplankton samples were taken either at the outer or at the inner end of each transect line with Hydrobios Multinet plankton sampler. At each plankton station a vertical net was also hauled from the bottom to the surface. Grab samples were taken at the innermost station of each transect. Additional grab samples were taken at every third transect line at the second innermost trawl station, and midway between the two innermost trawl stations.

1.4 Survey effort

Figure 1.1. shows the cruise tracks with bottom trawls, pelagic trawls and hydrographic stations, and Figure 1.2 shows the cruise tracks with plankton and grab stations.

Table 1.1 summarises the survey effort in each area.

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^2).

						Swept area hauls						Distance surveyed
Region	CTD	P	G	PT	BT	0-30 m	20-30 m	31-50 m	51-100 m	100-200 m	>200 m	
Guinea Bissau	22	9	8	2	20	3		4	6	4	3	625
Area (NM^2)						4550	1000	1600	1560	1270	2500	
Guinea	12	5	5	6	16	2		5	3	2	2	450
Area (NM^2)						4600	1350	4100	1110	700	250	
Sierra Leone	28	6	10	6	26	8		8	8	1	0	580
Area (NM^2)						4160	1640	2160	2220	440	-	
Liberia	25	8	12	5	21	2		5	14	0	0	590
Area (NM^2)						850	-	990	3140	500	-	
Total area (NM^2)												2245

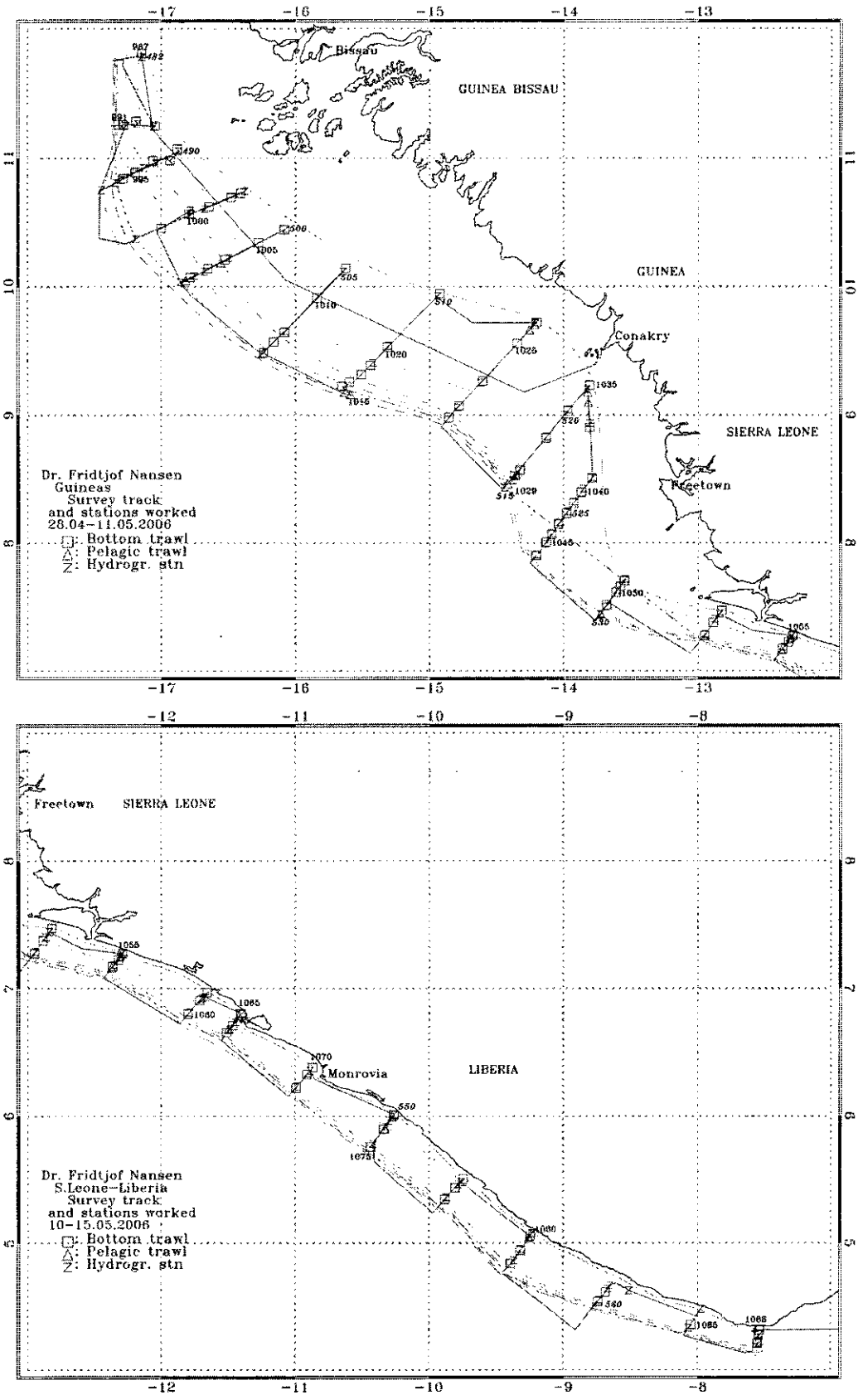


Figure 1.1 Course track with bottom trawl, pelagic trawl and hydrographic stations for Guinea Bissau-Guinea-Sierra Leone West (top) Sierra Leone East-Liberia (bottom). Depth contours are indicated.

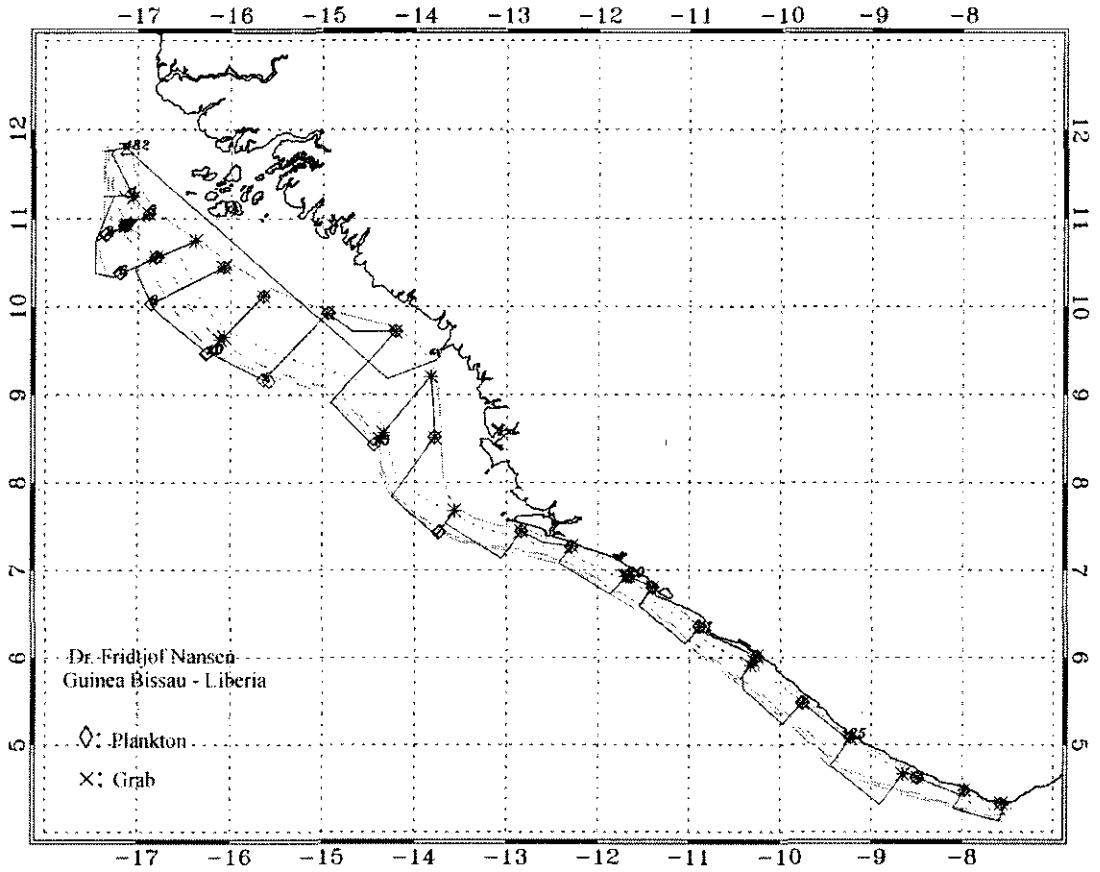


Figure 1.2 Course track with plankton and grab sample stations for the survey area. Depth contours are indicated.

CHAPTER 2 METHODS

2.1 Meteorological and hydrographical sampling

Temperature, salinity and oxygen
CTD stations were taken in connection with all bottom trawl stations. Figure 1 presents positions for the CTD stations. 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 normally not deeper than 300 m. The new oxygen sensor has shown to be very stable, and no calibration was conducted during the 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 most target species on most stations. The length of each fish was recorded to the nearest 1 cm below. The carapace length was measured to the nearest 0.5 cm below for shrimp. 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 each country 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 Zooplankton 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. One sample was taken at one of the stations in each transect, either the outermost or the innermost, throughout the survey trying to cover both inshore and offshore areas. In addition a vertical net sample was taken for each Multinet station for comparison

2.4 Benthos grab sampling

The soft-bottom benthic macrofauna sampling was carried out using Peterson grab with a surface area of 0.20m^2. At each of the stations (Figure 1.2), the Peterson grab was deployed from an operated winch onto the seafloor. Five 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 ziplock bags, stored in a freezer and sent to Nigerian Institute for Oceanography and Marine Research, Lagos for both granulometric and chemical analyses.

Samples were taken at the innermost trawl station of each transect. Additional samples were taken for every third transect at the second innermost trawl station, and halfway between the innermost and the second innermost trawl station.

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 and anchovy)
- PEL 2 (carangids, scombrids, barracudas, hairtail)
- anchovy
- 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, anchovy, PEL 2):

$$TS = 20 \log L - 72 \, dB \qquad (1)$$

or in the form

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

where L is total length and C_F is the 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

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

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:

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

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:

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

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:

$$B = \frac{A}{a} \cdot \frac{\overline{X}}{q} \qquad (6)$$

A is the total area surveyed, a is the swept area of the net per haul, $\overline{X}$ 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 $\overline{X}_i$ and s_i^2 respectively, then an unbiased estimate of the population mean $\overline{X}$ is the stratified mean $\overline{X}_{st}$, which is given by:

$$\overline{X}_{st} = \frac{1}{N} \sum_{i=1}^{k} N_i \overline{X_i} = \sum_{i=1}^{k} W_i \overline{X_i} \qquad (7)$$

where $Wi = \frac{Ni}{N} = \frac{A_i}{A}$ is the relative size of the i^{th} stratum (A_i is the area of the i^{th} stratum and A is the total area surveyed). The variance of the stratified mean is given by

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

where n_i is number of hauls in the i^{th} 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/NM²), 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® equipment based on GPS readings. The area swept for each haul was thus 18.5 m (traditionally applied wing spread for the "Nansen" bottom trawl) times the distance trawled, raised to NM²/hour. The catchability coefficient (q), i.e the fraction of the fish encountered by the 18,5 m horizontal opening of the trawl that was actually caught, was assumed equal to 1 for comparison with previous surveys. 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 spread-sheet, 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/NM²). 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). GRAFER 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

3.1 Surface distribution

The surface layer temperature (5 m depth) was continuously recorded during the cruise. Figure 3.1 shows the horizontal distribution of sea surface temperature (SST) for the survey area.

Guinea Bissau and Guinea
The sea surface temperatures outside of Guinea Bissau and Guinea were characterised by water masses with temperatures ranging from 22°C in the Northwest to 29°C in the Southeast towards the border of Sierra Leone. This water was assumed to be influenced by water from the Canary Current as an upwelling flowing in across the wide shelf area in this region. A local participating scientists from Guinea (Dr. Amsoumane Keita, Pers. Comm.) who had taken a PhD on this phenomenon had found that this upwelling was related to the rainy season.

On the Southeastern part of the wide shelf area towards Sierra Leone, tropical water masses (>29°C) were encountered.

Sierra Leone and Liberia
Here the tropical water masses (>29°C) dominated the SST throughout the area.

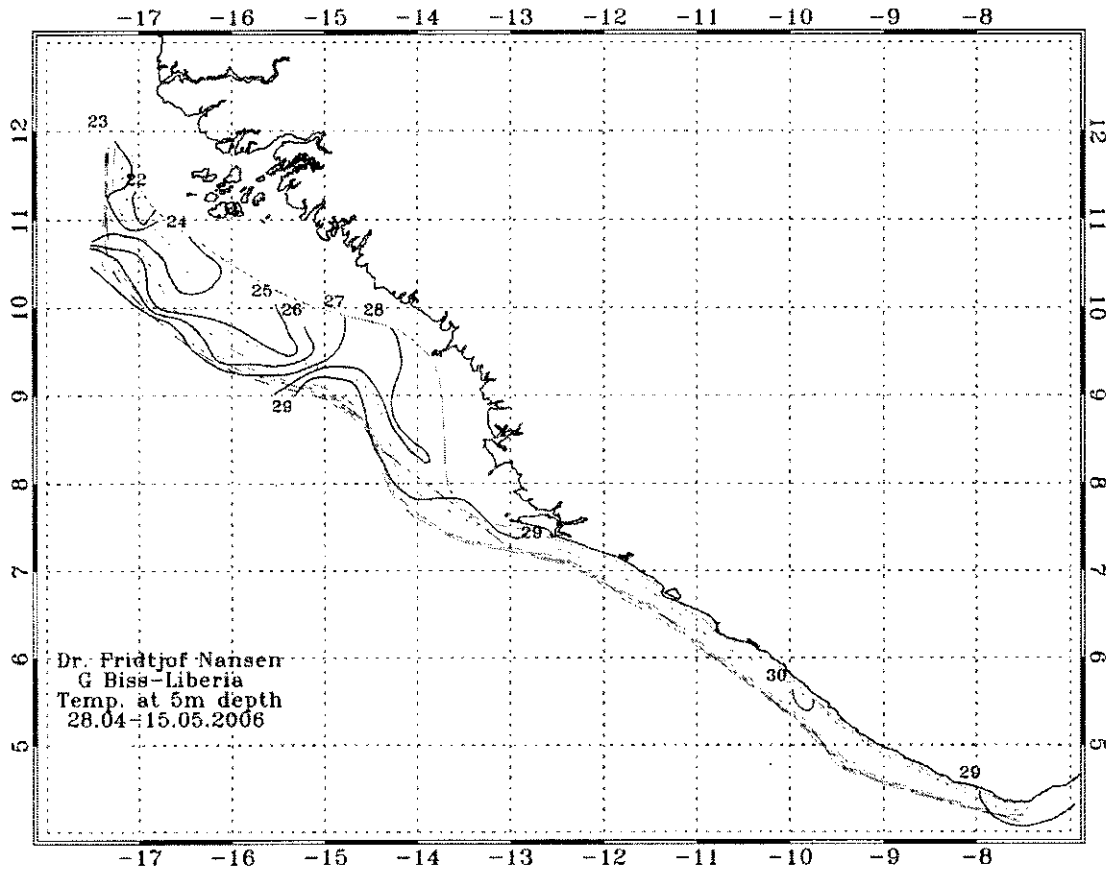


Figure 3.1 Horizontal distribution of surface temperature (5 m depth) in the survey area.

The surface salinity (Figure 3.2 a and b) was recorded from the Thermosalinograph at 5 m depth. The salinity was characterised by oceanic water in the West, and by coastal influence in the East.

Guinea Bissau and Guinea

Generally the salinity was corresponding with temeperature in these countries, in the sense that the upwelling of deeper oceanic water was also identifiable in the salinity. In Guinea Bissau the upwelling could be traced directly by a deep intrucion at 35.9 ppt, being reduced to 35.5 ppt towards the shore. These saline water masses also penetrated from the deep into most of the Guinean shelf, with salinities of 35.5 ppt still measured at the Western shelf of Sierra Leone.

Sierra Leone and Liberia

The sea surface salinity in these two countries was more typical of a coastal narrow shelf tropical situation, with salinities ranging between 34.7 and 35.3 ppt, decreasing even further to 34.1 ppt in areas with river outlets (e. g. Southern Liberia).

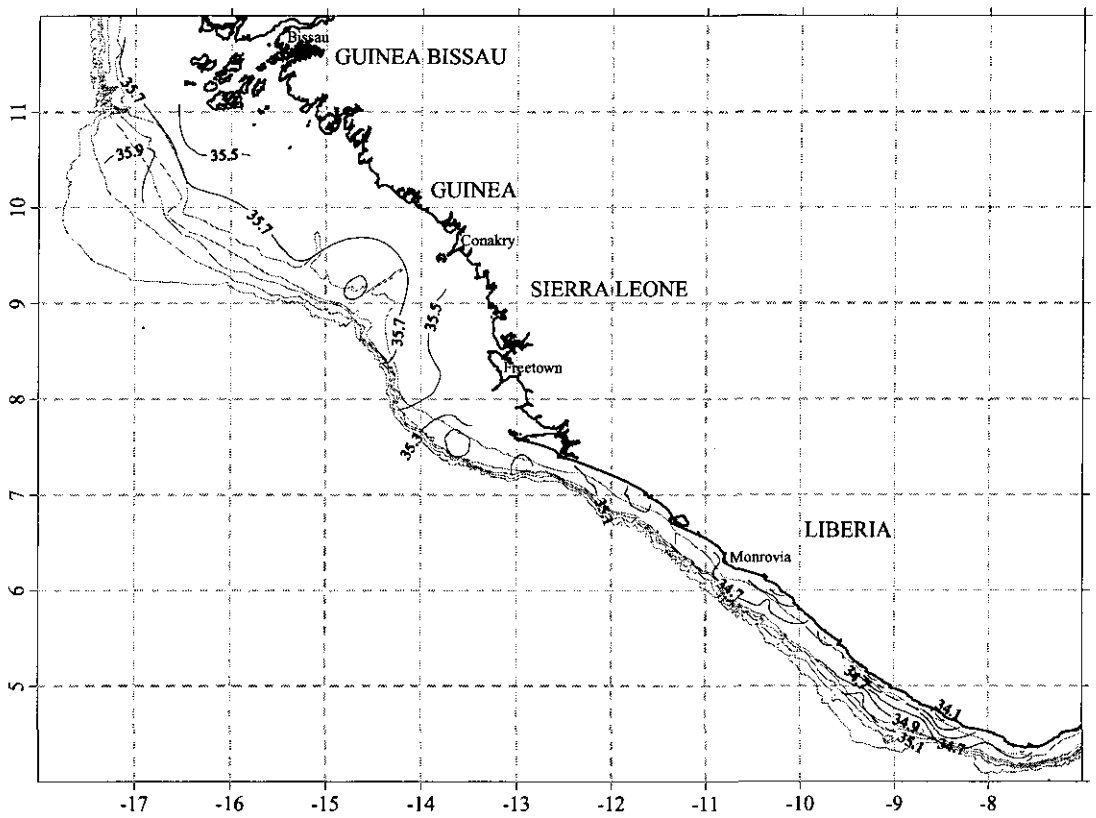
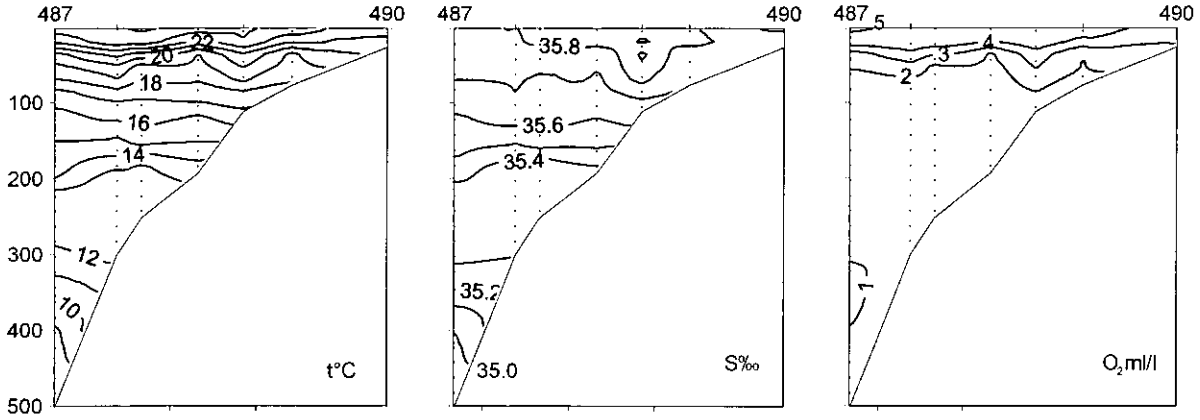


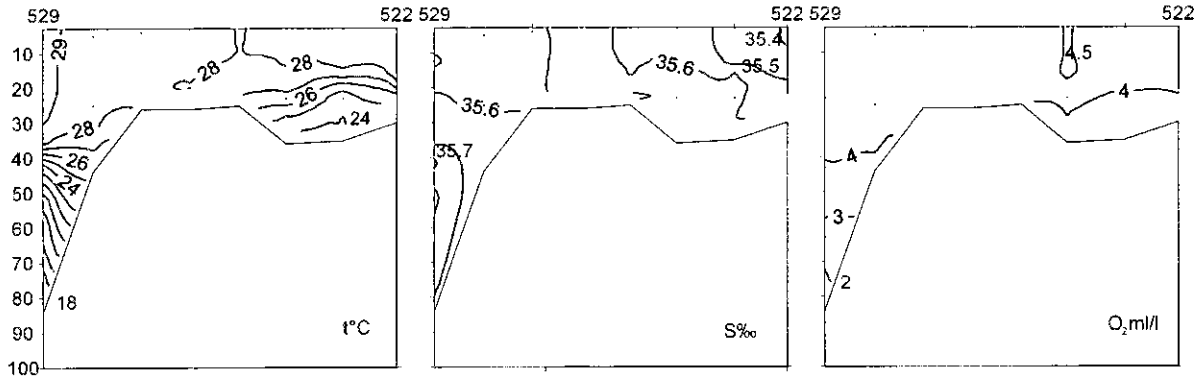
Figure 3.2 Horizontal distribution of surface salinity (5 m depth) at a) Guinea Bissau - Guinea b) Sierra Leone – Liberia.

3.2 Vertical distribution

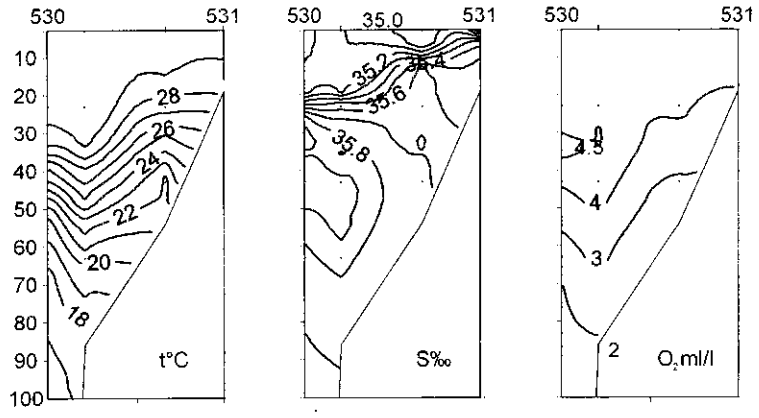
Figures 2.3a-d shows the vertical distribution of temperature, salinity and dissolved oxygen as recorded on the hydrographic transects worked during the survey.



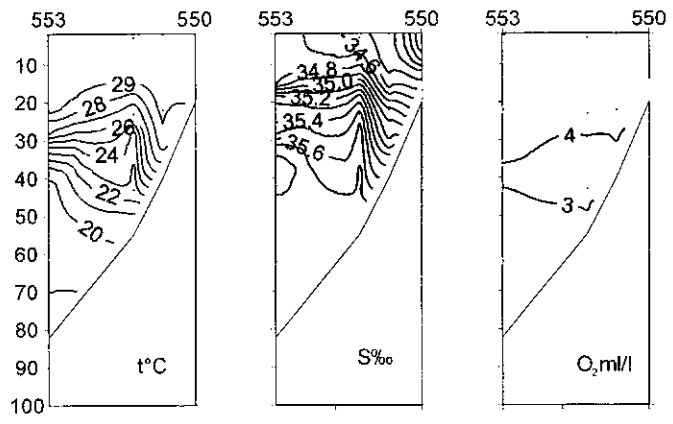
a) Guinea Bissau



b) Guinea



c) Sierra Leone



d) Liberia

Figure 3.3a-d Vertical sections of temperature, salinity and oxygen.

The temperature and salinity data indicate that the Western upwelling does not originate from very deep water, rather from intermediate depths (<200 m), as the deeper water masses are less saline than the upper, and are only balanced density wise by the positive temperature gradient towards the surface.

In the South, the surface water is influenced by fresh water from the coast, and the deepest water is the most saline in theis area.

The oxygen data indicate that most of the oxygen content in the water originates from surface diffusion, creating favourable oxygen conditions e. g. on the Guinean shelf. Deeper water masses are, however, poor in oxygen, probably due to high degradation of biological material.

Wind conditions

Figure 3.3 shows wind conditions during the survey. There was little wind and prevailing good weather all through the survey period. Whatever wind we had was northerly in the Northwest, a gust of easterly wind in the middle and a south-westerly gust at the end of the survey. But generally we had calm winds and very favourable sea conditions all through the survey.

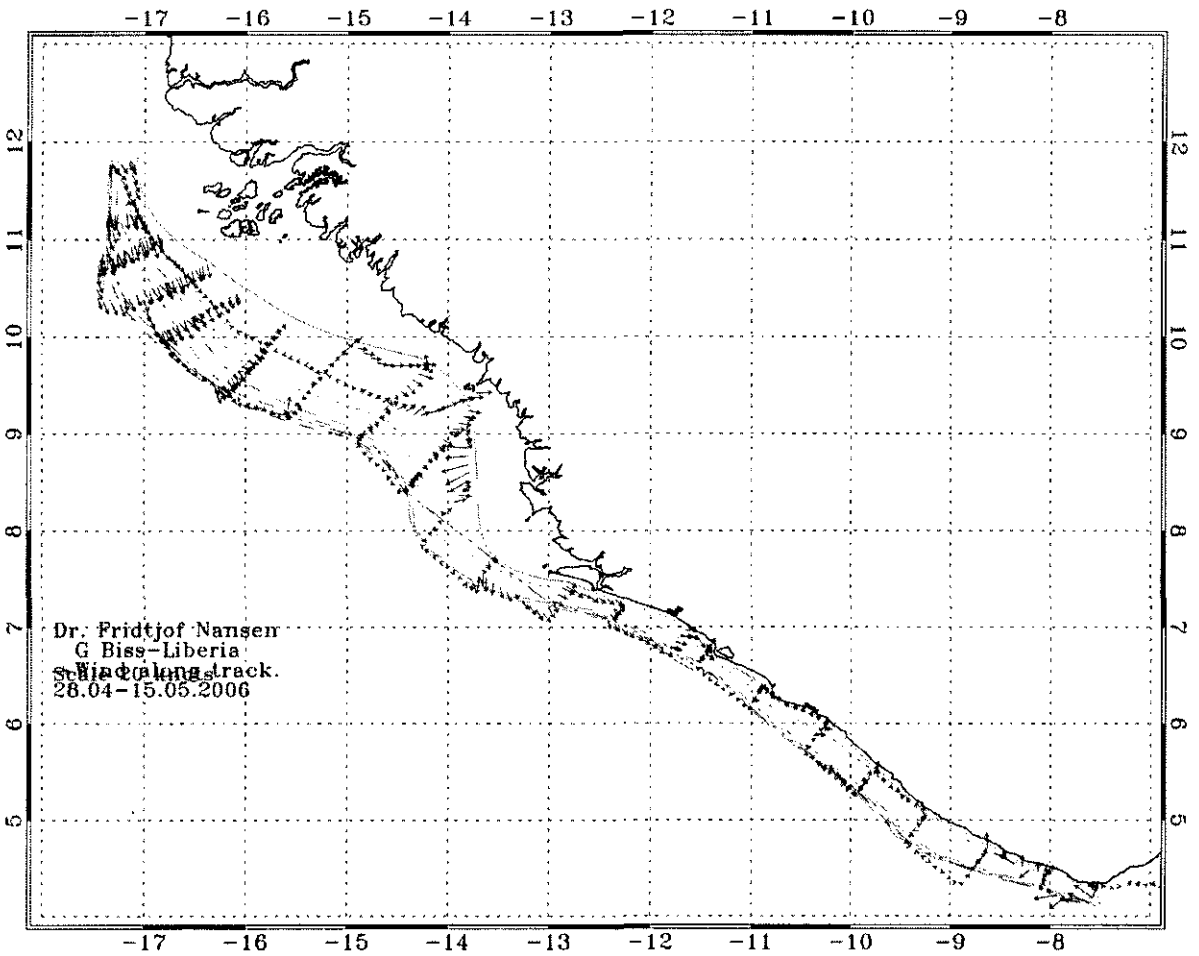


Figure 3.3 Wind along track in the survey area. Arrow vectors show direction and relative speed

CHAPTER 4 RESULTS OF THE ACOUSTIC SURVEY

The distribution area of main groups of pelagic fish in the region, i.e. sardinellas, anchovy, 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 Guinea Bissau - Liberia

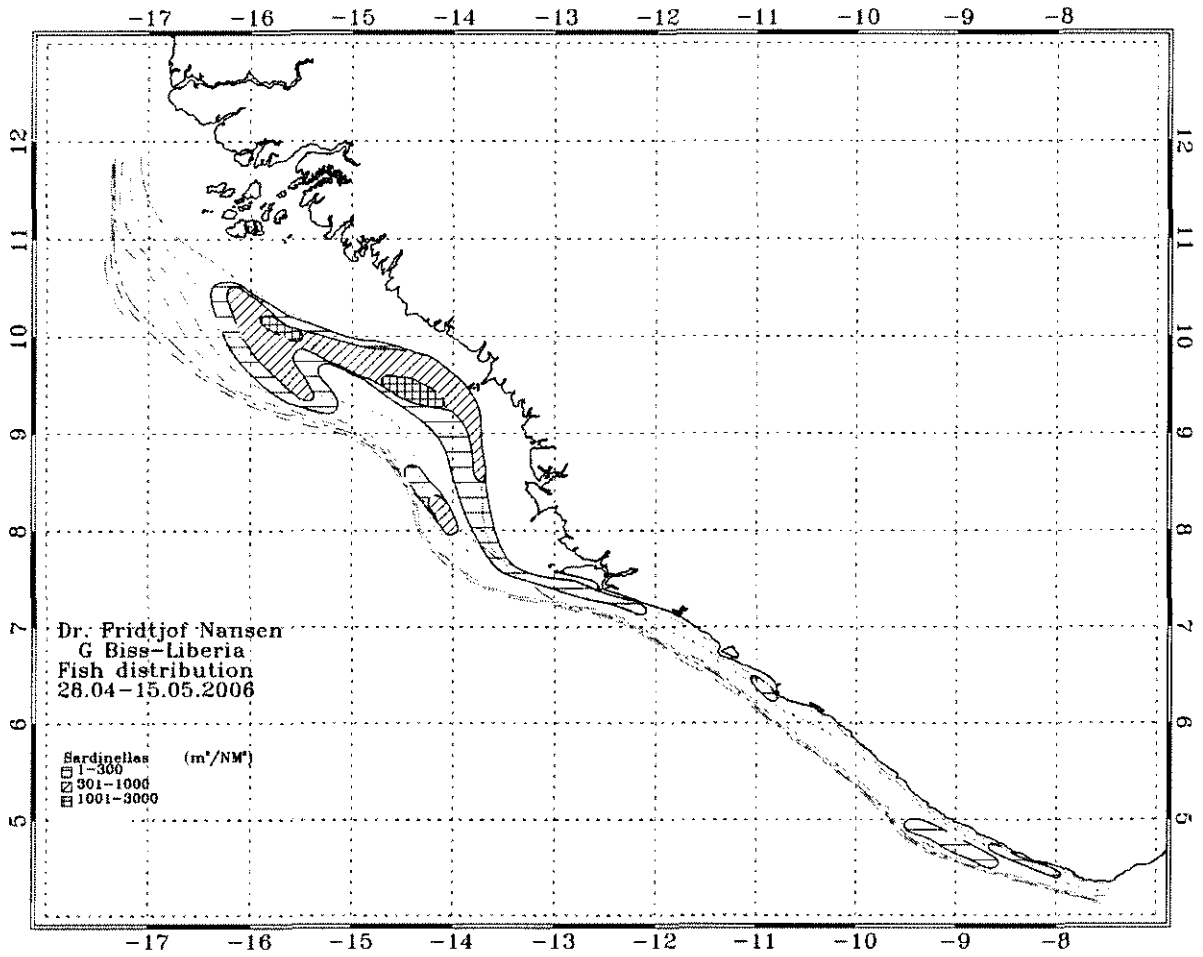
The hydroacoustic survey covered the shelf and slope to 3-500 m bottom depth, with bottom trawls being deployed mainly down to 100 m depth, and continued with one or two pelagic trawls along the transects at night for pelagic species identification. Generally low to medium acoustic densities where found 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

Dense concentrations of sardinellas were mainly found on the wide shelf outside of Southeast Guinea Bissau and Guinea, tapering off into Sierra Leone. This coincided well with the upwelling area mentioned above. *Sardinella aurita* dominated in this area (Figure 4.1a).

Further Southeast *Sardinella maderensis* was found, often in the same areas as *S. aurita*. The concentrations were, however, scattered and did not represent significant biomasses. The size of the sardinellas caught was also small. Whether this was due to avoidance of the trawl by the largest fish, or due to a lack of large fish in the area is unclear. However, when large sardinellas are present in a survey area, the "Nansen" trawl normally catches at least some of the large fish, indicating that the wide shelf area mainly contained young sardinella.

Ilisha africana was found in rather loose concentrations in Northwest Guinea Bissau, and on the narrow shelf in Sierra Leone and Liberia, but was absent from the wide shelf in Guinea Bissau, Guinea and Sierra Leone (Figure 4.1b). The total biomass was small.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Dr. Fridtjof Nansen
G Biss-Liberia
Fish distribution
26.04-15.05.2006
Sardinellas (m²/NM²)
1-300
301-1000
1001-3000

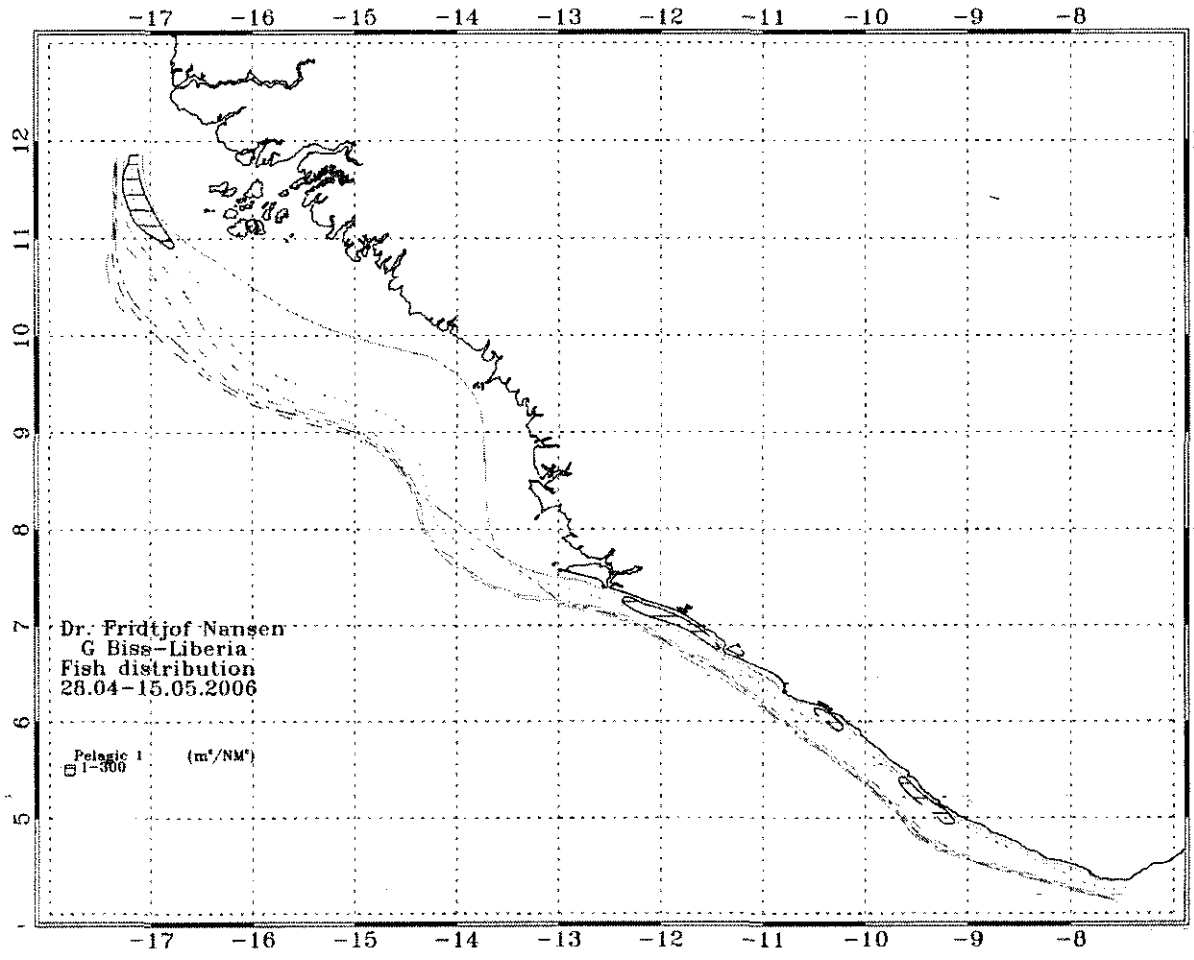


Figure 4.1. Distribution of sardinellas (a) and P1 (b)(mainly *Ilisha africana)* in the survey area.

Anchovy

Anchovy was found only sparingly in three areas along the coast between 20 and 50 m bottom depth (Figure 4.2). The largest patch was found on the Guinean shelf, with two smaller patches in Sierra Leone and Liberia. The total biomass was small.

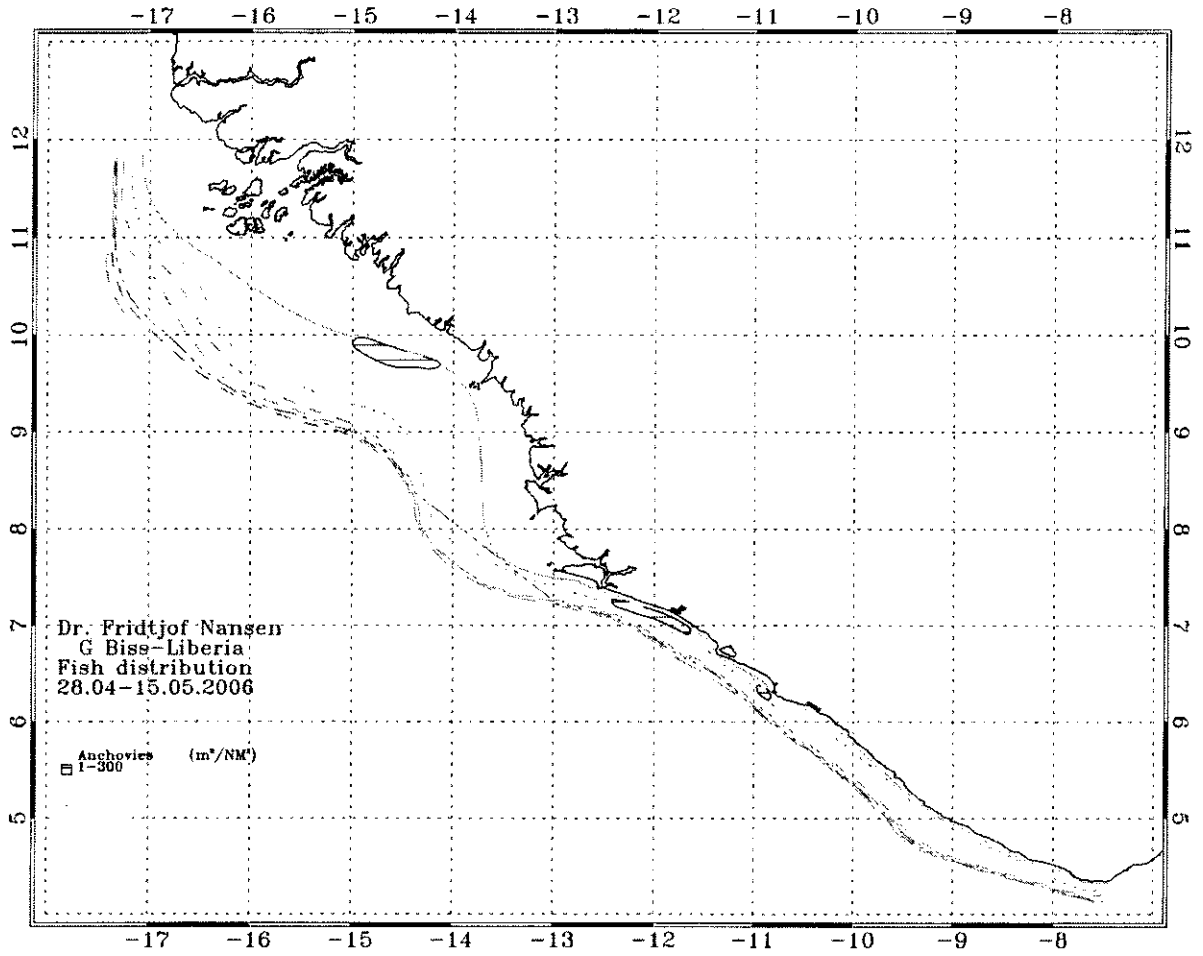


Figure 4.2 Distribution of anchovy in the survey area.

PEL 2 (carangids, scombrids, barracudas and hairtail) and horse mackerel (Trachurus trecae)

The species category PEL 2 consisted of Carangidae, Trichiuridae and Sphyraenidae, and Scombridae. Most pelagic fish were found inshore of 100 m depth. The most abundant PEL 2 species in the trawl catches were *Chloroscombrus chrysurus, Trachurus trecae* and *Decapterus punctatus.* Length frequencies of the species can be found in Annex II.

Schools of horse mackerel that could be positively identified were classified as horse mackerel (Figure 4.3b) while suspected but not positively identified horse mackerel schools were included in P2 (Figure 4.3a).

Schools of PEL 2 species, mainly of low density, were found along the whole coastline (Figure 4.3.a) with a high-density patch in northwest Sierra Leonean waters. A substantial part of the biomass was located in the outer part of the wide shelf in the north-western part of the survey area. The total biomass represented the majority of the biomass of pelagic fish in the survey area.

Positively identified horse mackerel (Figure 4.3b) was mainly found in the mid to north-western part of the wide shelf area outside of Guinea and Guinea Bissau, in addition to a small patch in south-eastern Liberian waters. The biomass should be seen in connection with that of PEL 2, and thus represents part of the largest pelagic fish resource in the survey area.

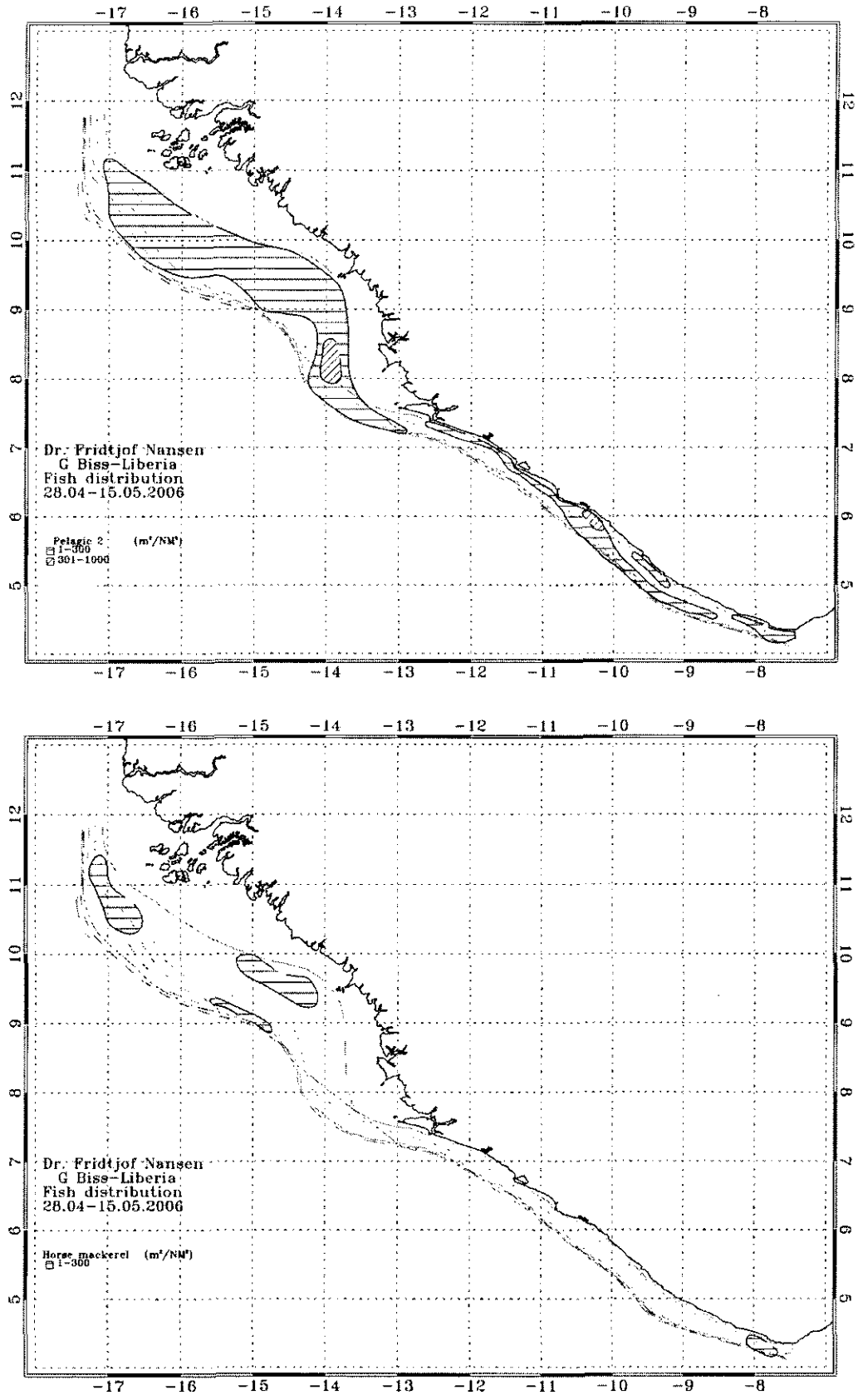


Figure 4.3 Distribution of PEL 2, unidentified carangids, scombrids, barracudas and hairtail (top) and horse mackerel (bottom) in the survey area.

Demersal species

There were consistent acoustic recordings of relatively dense concentrations of demersal fish towards the shelf break. These were mainly *Dentex congoensis*, *Dentex angolensis* and *Ariomma bondi*. These sometimes lifted off the shelf, and as a consequence the swept area survey may possibly have underestimated this resource.

4.2 Review of results

No recent previous survey was available for comparisons in the region. Consequently, no comparisons with previous surveys where made. Some general features observed during this survey are commented below.

Pelagic fish were present over large parts of the region. The main densities of pelagic fish were found inshore of 50 m bottom depth, extending inshore into <20 m depth (inshore of the survey area). Most pelagic hauls at night were taken as blind hauls, as relatively few schools were seen on the echo sounder. This was partly due to a dispersed distribution, and partly due to high abundance of plankton that made acoustic detection and separation difficult. Small sardinellas, small carangids and anchovy dominated on the inner shelf, while larger carangids, scombrids and barracudas were more widely distributed over the entire shelf.

The total pelagic fish biomass in the investigated area was small compared to what is normal in upwelling areas like the Canary Current and the Benguela system.

CHAPTER 5 RESULTS FROM THE SWEPT 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 5.1gives 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.

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 Western Gulf of Guinea**

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

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

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

5.1 Guinea Bissau

A total of 20 swept-area trawl hauls were made on the Guinea Bissauan shelf. In most hauls the trawl bottom time was around 30 min. This was a prerequisite for the trawl data to be included in the analysis.

Table 5.2 a, b and c shows 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 respectively. Average catches were around 1053 kg/h on the inner shelf, 181 kg/h on the mid shelf and 1047 kg/h on

the outer shelf and slope. The pelagic group contributed 62 % of the total catch and an average catch of 658 kg/h on the inner shelf, while the demersal group accounted for 30 % of the catch. On the mid shelf, demersal and pelagic species contributed 4 and 60 % or 8 and 108 kg/h respectively while cephalopods accounted for 7 % of the total catch. On the outer shelf and slope the 'other' group constituted 63 % of the catch. The demersal group contributed 19%, or 195 kg/h.

Prawns/shrimps were not caught in commercial quantities except for on one station at 229 m.

Sharks and Rays where also present across the shelf in rather low quantities, somewhat more on the mid shelf than shallower and deeper.

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

Table 5.2 Guinea Bissau. 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 (101-250m).

a) Inner shelf, 0-50 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
987	39	620.0	27.4	2.4	6.2	16.8	25.4	698.1
988	35	429.1	1175.8	0.0	2.2	45.4	45.1	1697.6
992	27	4.9	68.5	0.0	3.0	0.0	27.6	104.0
997	25	1004.0	1371.3	0.0	6.4	18.3	145.3	2545.4
998	36	125.0	194.8	0.0	3.2	0.0	208.8	531.8
1004	28	2.1	896.1	0.0	0.0	0.0	0.0	898.2
1005	43	7.2	870.3	0.0	7.7	0.0	13.2	898.4
Mean	33	313.2	657.7	0.3	4.1	11.5	66.5	1053.4
% catch		29.7	62.4	0.0	0.4	1.1	6.3	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
989	61	0.0	5.5	0.0	1.3	0.0	12.9	19.8
991	86	31.1	470.0	0.0	56.1	0.0	142.1	699.2
993	51	0.0	6.2	0.0	7.3	0.0	23.8	37.3
994	76	2.4	2.2	0.0	5.6	0.0	54.2	64.4
999	62	11.6	162.8	0.0	6.1	0.0	35.4	215.8
1006	74	0.0	0.0	0.0	0.5	27.2	19.5	47.2
Mean	68	7.5	107.8	0.0	12.8	4.5	48.0	180.6
% catch		4.2	59.7	0.0	7.1	2.5	26.6	100.0

c) Outer shelf and slope, 101-250 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
990	120	1279.6	0.0	0.0	227.5	0.0	389.1	1896.2
995	165	54.9	29.6	0.0	14.4	12.3	945.6	1056.8
996	246	11.1	0.0	3.4	38.7	0.0	246.5	299.8
1000	142	15.4	164.5	0.0	20.9	0.0	104.3	305.0
1001	229	0.0	301.3	15.2	462.0	4.8	719.5	1502.8
1007	177	0.9	0.0	0.0	1.7	40.2	1903.8	1946.6
1008	220	2.1	5.2	1.1	6.4	16.2	293.9	324.9
Mean	186	194.8	71.5	2.8	110.2	10.5	657.5	1047.4
% catch		18.6	6.8	0.3	10.5	1.0	62.8	100.0

Table 5.3 a, b and c shows the catch rates of the main pelagic families caught in the bottom trawl on the inner, mid and outer shelf/slope respectively. The dominant species on the inner and mid shelf were carangids, represented by *Chloroscombrus chrysurus* and *Chlorophthalmus atlanticus*. Barracudas were sparingly represented in Guinea Bissau, while hairtails (*Trichiurus lepturus*) were only found on 6 stations, with one big catch of 244 kg on the outer shelf dominating the catch.

The clupeoid species that dominates the shallow water pelagic ecosystems in large parts of western Africa were patchily represented on the inner shelf and sparingly represented on the mid shelf. Those that occurred most frequently were *Sardinella aurita* and *Ilisha africana*. In total these species contributed 6.4 % of the total catch on the inner slope.

Table 5.3 Guinea Bissau. 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	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
987	39	1.1	20.8	0.0	0.2	5.4	670.7	698.1
988	35	9.0	1165.4	0.4	0.0	1.0	521.9	1697.6
992	27	0.0	68.5	0.0	0.0	0.0	35.5	104.0
997	25	0.0	1338.3	1.6	0.0	31.5	1174.1	2545.4
998	36	0.1	193.6	1.0	0.0	0.0	337.0	531.8
1004	28	396.0	200.1	300.0	0.0	0.0	2.1	898.2
1005	43	65.0	549.7	255.6	0.0	0.0	28.1	898.4
Mean	33	67.3	505.2	79.8	0.0	5.4	395.6	1053.4
% catch		6.4	48.0	7.6	0.0	0.5	37.6	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
989	61	0.0	2.0	0.0	3.5	0.0	14.3	19.8
991	86	0.0	368.0	102.0	0.0	0.0	229.2	699.2
993	51	0.0	6.2	0.0	0.0	0.0	31.1	37.3
994	76	0.0	2.2	0.0	0.0	0.0	62.2	64.4
999	62	24.0	133.0	1.8	3.0	1.0	53.1	215.8
1006	74	0.0	0.0	0.0	0.0	0.0	47.2	47.2
Mean	68	4.0	85.2	17.3	1.1	0.2	72.8	180.6
% catch		2.2	47.2	9.6	0.6	0.1	40.3	100.0

c) Outer shelf and slope, 101-250 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
990	120	0.0	0.0	0.0	0.0	0.0	1896.2	1896.2
995	165	0.0	24.0	0.0	5.6	0.0	1027.2	1056.8
996	246	0.0	0.0	0.0	0.0	0.0	299.8	299.8
1000	142	0.4	164.0	0.0	0.0	0.0	140.5	305.0
1001	229	0.0	57.3	0.0	244.0	0.0	1201.5	1502.8
1007	177	0.0	0.0	0.0	0.0	0.0	1946.6	1946.6
1008	220	0.0	0.0	0.0	5.2	0.0	319.7	324.9
Mean	186	0.1	35.1	0.0	36.4	0.0	975.9	1047.4
% catch		0.0	3.3	0.0	3.5	0.0	93.2	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 high on the inner shelf, low on the mid shelf and high again on the outer shelf and slope. Seabreams dominated the inner shelf catches with an average of 154 kg/h, constituting 115% of the total catch in this area. Croakers dominated the outer shelf with 151 kg/h, constituting 14%, one catch in the Northwest part bringing the numbers up.

Snappers, groupers and grunts were only sparingly represented.

Table 5.4 **Guinea Bissau. 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
987	39	6.4	0.0	0.0	0.0	46.1	645.7	698.1
988	35	23.4	0.0	3.6	0.0	0.0	1670.6	1697.6
992	27	2.2	0.0	0.0	2.7	0.0	99.1	104.0
997	25	936.5	0.0	0.0	0.0	0.0	1608.9	2545.4
998	36	110.6	0.0	6.2	8.2	0.0	406.8	531.8
1004	28	0.0	0.0	0.0	0.0	0.0	898.2	898.2
1005	43	0.0	0.0	0.0	0.0	0.0	898.4	898.4
Mean	33	154.1	0.0	1.4	1.6	6.6	889.7	1053.4
% catch		14.6	0.0	0.1	0.1	0.6	84.5	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
989	61	0	0	0	0	0	19.8	19.8
991	86	31.06	0	0	0	0	668.15	699.2
993	51	0	0	0	0	0	37.28	37.3
994	76	2.4	0	0	0	0	62.01	64.4
999	62	11.62	0	0	0	0	204.22	215.8
1006	74	0	0	0	0	0	47.18	47.2
Mean	68	7.5	0.0	0.0	0.0	0.0	173.1	180.6
% catch		4.2	0.0	0.0	0.0	0.0	95.8	100.0

c) Outer shelf and slope, 101-250 m

Sta. no.	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
990	120	241.56	0	0	0	1038	616.66	1896.2
995	165	51.22	0	0.28	0	3.38	1001.94	1056.8
996	246	0	0	0	0	1.43	298.35	299.8
1000	142	1.24	0	0	0	14.12	289.62	305.0
1001	229	0	0	0	0	0	1502.76	1502.8
1007	177	0	0	0	0	0	1946.62	1946.6
1008	220	1.8	0	0	0	0	323.06	324.9
Mean	186	42.3	0.0	0.0	0.0	151.0	854.1	1047.4
% catch		4.0	0.0	0.0	0.0	14.4	81.5	100.0

5.2 Guinea

A total of 14 swept-area trawl hauls were made on the shelf off Guinea. The shelf was mainly even, with sandy substrate, and suited for bottom trawling, but with occasional hard spots towards the Southeast.

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 mean catch rates of pelagic species from 0-50 m depth were 547 kg/h or 61% of the total catch while demersal species contributed 239 kg/h or 27% of the total catch. Prawns/shrimps, cephalopods and sharks and rays contributed only marginally to the total catch in this depth region. The group of other species had a mean catch rate of 100 kg/h or 11% of the total.

The average catch rate at mid shelf was 3711 kg/h. Table 5.5 b shows that pelagic fish was the most abundant group with 92% of the mean total catch. This was mainly due to the contribution from one single catch of pelagic fish. Demersal species had an average catch rate of only 6.8 kg/h.

On the outer shelf and slope cephalopods had the highest catch rates of the main groups with 57.6 kg/h, constituting 8%. "Other" constituted 87%.

Table 5.5 Guinea. 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-rays	Other	Total
1010	37	13.0	1 062.0	0.0	0.0	0.0	7.5	1 082.5
1011	27	3.4	204.5	0.0	7.2	0.0	97.4	312.4
1020	43	0.7	0.5	0.0	0.9	0.0	23.9	26.1
1021	45	768.3	888.7	0.0	11.1	0.0	33.8	1 701.8
1024	26	392.0	249.5	0.0	5.9	0.0	16.4	663.8
1025	34	136.5	1 421.2	0.0	0.0	0.0	253.8	1 811.5
1026	44	361.0	5.2	0.0	4.3	0.0	270.0	640.5
Mean	37	239.3	547.4	0.0	4.2	0.0	100.4	891.2
% catch		26.8	61.4	0.0	0.5	0.0	11.3	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
1012	73	0.0	1 091.0	0.0	0.0	0.0	3.0	1 094.0
1018	81	0.0	12 440.6	0.0	1.4	0.0	1 184.6	13 626.5
1019	56	0.3	1.8	0.0	0.8	0.0	21.1	24.0
Mean	70	6.8	4 511.1	0.0	0.7	0.0	402.9	4 914.8
% catch		0.1	91.8	0.0	0.0	0.0	8.2	100.0

c) Outer shelf and slope, 101-300 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
1013	138	0.0	78.1	0.0	26.0	0.0	318.7	422.9
1014	259	5.9	0.0	2.4	119.0	3.0	137.9	268.2
1016	277	53.9	0.0	2.2	23.1	28.3	500.1	607.6
1017	167	0.0	0.0	0.0	62.4	0.0	1 653.2	1 715.6
Mean	210	15.0	19.5	1.1	57.6	7.8	652.5	753.6
% catch		2.0	2.6	0.2	7.6	1.0	86.6	100.0

The catches of the different pelagic groups in the bottom trawl survey off Guinea is described in Table 5.6. Carangids dominated the pelagic part of the catches on all shelf areas. Catches of carangids comprised 40% on the inner shelf, with an average catch of 358 kg/h. The catches increased to 4500 kg/h on the mid shelf, mainly due to one big catch of *Trachurus trecae*.

Clupeoids had an average catch rate of 179 kg/h on the inner shelf, decreasing to 8 kg/h on the mid shelf. Barracudas were represented on some stations on the inner shelf, but absent on the mid and outer shelves. Scombrids had catch rates on the mid shelf only of 4 kg/h. The dominating carangids in Guinea were *Trachurus trecae* and *Decapterus punctatus*.

Table 5.6 Guinea. 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), c) outer shelf and slope, 101-250 m.

a) Inner shelf, 0-50 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1010	37	152.9	882.1	0.4	0.0	26.6	20.5	1 082.5
1011	27	8.2	196.3	0.0	0.0	0.0	107.9	312.4
1020	43	0.0	0.5	0.0	0.0	0.0	25.5	26.1
1021	45	85.5	803.2	0.0	0.0	0.0	813.2	1 701.8
1024	26	64.2	173.5	0.0	0.0	11.8	414.3	663.8
1025	34	939.9	448.0	0.0	0.0	33.3	390.3	1 811.5
1026	44	1.3	3.9	0.0	0.0	0.0	635.3	640.5
Mean	37	178.9	358.2	0.1	0.0	10.2	343.9	891.2
% catch		20.1	40.2	0.0	0.0	1.1	38.6	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1012	73	18.8	1 060.6	11.6	0.0	0.0	3.0	1 094.0
1018	81	4.1	12 435.2	1.4	0.0	0.0	1 185.9	13 626.5
1019	56	1.4	0.5	0.0	0.0	0.0	22.2	24.0
Mean	70	8.1	4 498.7	4.3	0.0	0.0	403.7	4 914.8
% catch		0.2	91.5	0.1	0.0	0.0	8.2	100.0

c) Outer shelf and slope, 101-300 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1013	138	0.0	77.0	0.0	1.1	0.0	344.7	422.9
1014	259	0.0	0.0	0.0	0.0	0.0	268.2	268.2
1016	277	0.0	0.0	0.0	0.0	0.0	607.6	607.6
1017	167	0.0	0.0	0.0	0.0	0.0	1 715.6	1 715.6
Mean	210	0.0	19.3	0.0	0.3	0.0	734.0	753.6
% catch		0.0	2.6	0.0	0.0	0.0	97.4	100.0

Catch rates of commercial demersal fish groups in Guinea are presented in Table 5.7 a, b and c. The most dominant group was seabreams with mean catches of 57 kg/h on the inner shelf, and small catches on the mid shelf. The two most important species in this group were *Pagrus caeruleostictus* and *Pagellus bellottii*. Snappers contributed 1% of the total catch on the inner shelf, but were absent further out.

Table 5.7 Guinea. 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
1010	37	3.1	0.0	0.0	0.0	0.0	1 079.4	1 082.5
1011	27	3.2	0.0	0.0	0.0	0.0	309.2	312.4
1020	43	0.7	0.0	0.0	0.0	0.0	25.3	26.1
1021	45	15.9	0.0	0.0	0.0	0.0	1 685.9	1 701.8
1024	26	79.6	0.0	0.0	0.0	0.0	584.2	663.8
1025	34	108.0	0.0	0.0	0.0	0.0	1 703.5	1 811.5
1026	44	185.9	80.8	13.5	2.5	0.0	357.7	640.5
Mean	37	56.6	11.5	1.9	0.4	0.0	820.8	891.2
% catch		6.4	1.3	0.2	0.0	0.0	92.1	100.0

b) Mid shelf, 51-100 m

Sta.no.	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
1012	73	0.0	0.0	0.0	0.0	0.0	1 094.0	1 094.0
1018	81	0.0	0.0	0.0	0.0	0.0	13 626.5	13 626.5
1019	56	0.3	0.0	0.0	0.0	0.0	23.7	24.0
Mean	70	0.1	0.0	0.0	0.0	0.0	4 914.7	4 914.8
% catch		0.0	0.0	0.0	0.0	0.0	100.0	100.0

c) Outer shelf and slope, 101-300 m

Sta. no.	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
1013	138	0.0	0.0	0.0	0.0	0.0	422.9	422.9
1014	259	0.0	0.0	0.0	0.0	0.0	268.2	268.2
1016	277	0.0	0.0	0.0	0.0	0.0	607.6	607.6
1017	167	0.0	0.0	0.0	0.0	0.0	1 715.6	1 715.6
Mean	210	0.0	0.0	0.0	0.0	0.0	753.6	753.6
% catch		0.0	0.0	0.0	0.0	0.0	100.0	100.0

5.3 Sierra Leone

A total of 25 swept-area trawl hauls were made on the shelf off Sierra Leone. The shelf in Sierra Leone is characterised by being wide, with at times hard bottom in the Northwest, narrowing down in the Southeast towards Liberia.

Table 5.8 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 mean catch rates of pelagic species from 0-50 m depth were 471 kg/h or 59% of the total catch while demersal species contributed 203 kg/h or 25% of the total catch. Prawns/shrimps, cephalopods and sharks and rays contributed somewhat to the total catch with 5,1 kg/h (0.6%), 1.6 kg/h (0.2%) and 15 kg/h (1.9%) respectively on the inner shelf. The group of other species had a mean catch rate of 107 kg/h or 13% of the total on the inner shelf.

The average catch rate on mid shelf was 2014 kg/h. Table 5.5 b shows that pelagic fish was the most abundant group with 25% of the mean total catch. Demersal species had an average catch rate of 135 kg/h, constituting 7%.

On the outer shelf and slope only one haul was carried out due to rough bottom conditions, and the catch at this station was low and mixed.

Table 5.8 Catch rates and related percentages of main groups caught on the inner a) and outher shelf of Sierra Leone (0-50 m), catches in kg/h.

a) Inner shelf, 0-50 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
1033	39	135.4	16.2	0.0	2.8	0.0	83.3	237.7
1034	30	379.0	154.8	0.0	1.5	0.0	18.6	553.9
1035	26	91.8	30.8	3.8	1.3	0.0	88.8	216.5
1039	32	217.3	653.0	0.0	14.9	0.0	87.5	972.7
1041	32	171.2	1 950.5	0.0	0.0	0.0	151.9	2 273.6
1042	25	786.8	219.2	0.0	0.0	0.0	216.0	1 222.0
1043	26	9.7	91.8	0.0	0.7	0.0	145.7	248.0
1044	26	191.3	2 740.9	0.0	0.0	0.0	115.7	3 047.9
1045	31	12.4	33.4	0.0	3.0	213.2	264.6	526.7
1049	28	192.3	276.8	0.0	0.0	10.5	152.0	631.6
1053	46	386.2	518.0	8.3	0.0	0.0	31.5	944.0
1054	22	192.5	78.6	6.7	0.0	0.6	210.9	489.3
1057	22	90.3	248.3	3.1	0.0	0.0	56.7	398.4
1058	42	234.1	222.5	5.3	1.5	14.5	57.5	535.4
1061	48	59.7	241.1	0.0	0.4	0.0	1.9	303.2
1062	25	104.5	55.0	53.7	0.0	0.0	30.0	243.3
Mean	31	203.4	470.7	5.1	1.6	14.9	107.0	802.8
% catch		25.3	58.6	0.6	0.2	1.9	13.3	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
1027	70	0.0	28.6	0.0	0.8	0.0	35.1	64.4
1031	78	320.8	451.3	0.0	3.6	6.2	1 901.4	2 683.3
1032	54	0.6	862.8	0.0	0.9	0.0	24.7	889.0
1046	88	42.4	2 214.5	0.0	0.0	0.0	245.3	2 502.3
1051	78	156.8	343.2	0.0	0.0	0.0	79.1	579.1
1052	76	384.9	3.6	0.0	1.3	10.8	20.3	420.7
1059	61	2.7	1.1	0.0	0.0	0.0	5.9	9.8
1060	86	178.3	184.7	0.0	0.0	0.0	8 602.8	8 965.8
Mean	74	135.8	511.2	0.0	0.8	2.1	1 364.3	2 014.3
% catch		6.7	25.4	0.0	0.0	0.1	67.7	100.0

c) Outer shelf and slope, 101-250 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
1028	108	0.0	3.7	0.0	0.0	0.0	157.4	161.1
Mean	108	0.0	3.7	0.0	0.0	0.0	157.4	161.1
% catch		0.0	2.3	0.0	0.0	0.0	97.7	100.0

The catches of the different pelagic groups in the bottom trawl survey off Sierra Leone is described in Table 5.9. Carangids dominated the pelagic part of the catches on all shelf areas.

Catches of carangids comprised 49% on the inner shelf, with an average catch of 386 kg/h. The catches increased to 435 kg/h on the mid shelf. At the one station on the outer shelf only carangids of the main groups were caught, but sparingly (0.2%).

Clupeoids had an average catch rate of 50 kg/h on the inner shelf, increasing to 71 kg/h on the mid shelf. Barracudas were widely and heavily represented on the inner shelf (26 kg/h, 3.3%), but practically absent on the mid and outer shelves. Scombrids had small catch rates on the mid and inner shelf. Hairtails were caught on the inner shelf in the Southeast. The dominating carangids in Sierra Leone were *Chloroscombrus chrysurus, Priacanthus arenatus* and *Decapterus punctatus.*

Table 5.9 Sierra Leone. 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), c) outer shelf and slope, 101-250 m.

a) Inner shelf, 0-50 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1033	39	0.0	15.0	0.0	0.0	1.2	221.5	237.7
1034	30	71.6	83.2	0.0	0.0	0.0	399.1	553.9
1035	26	0.8	30.0	0.0	0.0	0.0	185.7	216.5
1039	32	116.0	537.0	0.0	0.0	0.0	319.7	972.7
1041	32	36.0	1 914.5	0.0	0.0	0.0	323.1	2 273.6
1042	25	0.0	219.2	0.0	0.0	0.0	1 002.8	1 222.0
1043	26	0.1	91.7	0.0	0.0	0.0	156.2	248.0
1044	26	0.0	2 739.4	0.0	0.0	1.5	307.0	3 047.9
1045	31	0.0	33.4	0.0	0.0	0.0	493.3	526.7
1049	28	5.2	221.2	3.2	2.6	44.6	354.8	631.6
1053	46	135.4	126.9	6.2	62.0	187.5	426.0	944.0
1054	22	17.2	36.7	3.5	14.4	6.8	410.7	489.3
1057	22	153.9	56.8	0.0	23.6	14.0	150.1	398.4
1058	42	98.1	31.6	1.4	6.4	85.1	312.8	535.4
1061	48	149.2	11.5	0.0	0.0	80.4	62.0	303.2
1062	25	12.5	34.5	0.0	5.9	2.1	188.3	243.3
Mean	31	49.7	386.4	0.9	7.2	26.4	332.1	802.8
% catch		6.2	48.1	0.1	0.9	3.3	41.4	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1027	70	0.5	28.1	0.0	0.0	0.0	35.9	64.4
1031	78	209.2	242.1	0.0	0.0	0.0	2 232.0	2 683.3
1032	54	13.9	848.9	0.0	0.0	0.0	26.3	889.0
1046	88	197.4	1 995.0	22.1	0.0	0.0	287.8	2 502.3
1051	78	0.9	322.9	19.4	0.0	0.0	235.9	579.1
1052	76	0.0	3.6	0.0	0.0	0.0	417.2	420.7
1059	61	0.0	0.1	0.0	0.0	1.0	8.7	9.8
1060	86	147.0	37.7	0.0	0.0	0.0	8 781.1	8 965.8
Mean	74	71.1	434.8	5.2	0.0	0.1	1 503.1	2 014.3
% catch		3.5	21.6	0.3	0.0	0.0	74.6	100.0

c) Outer shelf and slope, 101-250 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1028	108	0.0	3.7	0.0	0.0	0.0	157.4	161.1
Mean	108	0.0	3.7	0.0	0.0	0.0	157.4	161.1
% catch		0.0	2.3	0.0	0.0	0.0	97.7	100.0

Catch rates of commercial demersal fish groups in Sierra Leone are presented in Table 5.10 a, b and c. The most dominant group was seabreams with mean catches of 105 kg/h on the inner shelf, constituting 13 %, and 122 kg/h constituting 6% on the mid shelf. Even in the deep haul at 108 m, 11 kg/h of seabreams were caught. The two most important species in this group were *Pagrus caeruleostictus* and *Pagellus bellottii,* while *Dentex congoensis* was caught on the deep station. There was a good catch (22 kg/h) of snappers on one station on the inner shelf. Grunts and croakers were caught in relatively high numbers (18 kg/h, 2.3% and 24 kg/h, 3% respectively) on the inner shelf. Further out they were more or less missing.

Table 5.10 **Sierra Leone. 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
1033	39	135.4	0.0	0.0	0.0	0.0	102.3	237.7
1034	30	129.4	2.4	4.2	241.6	0.0	176.3	553.9
1035	26	90.0	0.0	0.0	0.0	0.0	126.5	216.5
1039	32	170.0	0.0	1.5	0.0	0.0	801.2	972.7
1041	32	163.0	0.0	0.8	0.0	0.0	2 109.7	2 273.6
1042	25	783.2	0.0	0.0	0.0	0.0	438.8	1 222.0
1043	26	9.7	0.0	0.0	0.0	0.0	238.2	248.0
1044	26	176.2	0.0	0.0	12.3	0.0	2 859.4	3 047.9
1045	31	5.8	0.0	0.0	4.8	0.0	516.1	526.7
1049	28	28.3	0.0	0.0	8.2	6.7	588.4	631.6
1053	46	0.0	0.0	1.0	0.0	146.8	796.2	944.0
1054	22	0.0	22.4	0.0	24.9	66.9	375.1	489.3
1057	22	0.0	0.0	0.0	0.4	72.7	325.3	398.4
1058	42	0.0	0.0	0.0	0.0	31.3	504.0	535.4
1061	48	3.8	0.0	8.9	0.0	1.7	288.7	303.2
1062	25	0.0	0.0	0.0	0.0	60.2	183.1	243.3
Mean	31	105.9	1.6	1.0	18.3	24.2	651.8	802.8
% catch		13.2	0.2	0.1	2.3	3.0	81.2	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
1027	70	0.0	0.0	0.0	0.0	0.0	64.4	64.4
1031	78	280.0	0.0	13.8	0.0	0.0	2 389.5	2 683.3
1032	54	0.6	0.0	0.0	0.0	0.0	888.4	889.0
1046	88	39.7	0.0	0.0	0.0	0.0	2 462.6	2 502.3
1051	78	128.3	0.0	21.6	0.0	0.0	429.1	579.1
1052	76	378.4	1.0	0.0	0.0	5.5	35.9	420.7
1059	61	1.8	0.0	0.0	0.0	0.0	8.0	9.8
1060	86	150.8	0.0	0.0	0.0	0.0	8 815.0	8 965.8
Mean	74	122.4	0.1	4.4	0.0	0.7	1 886.6	2 014.3
% catch		6.1	0.0	0.2	0.0	0.0	93.7	100.0

c) Outer shelf and slope, 101-250 m

Sta. no.	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
1028	108	10.8	0.0	0.0	0.0	0.0	150.3	161.1
Mean	108	10.8	0.0	0.0	0.0	0.0	150.3	161.1
% catch		0.5	0.0	0.0	0.0	0.0	6.7	100.0

5.4 Liberia

The cost of Liberia is generally characterised by a narrow shelf that breaks at around 100 m depth. A total of 20 swept-area trawl hauls were carried out. Trawling was made difficult towards the shelf break and shore due to rough bottom conditions, particularly in the Southeast.

Table 5.11 a, b, c and d shows catch rates by main groups for the inner (0-50 m) and mid (51-100 m) shelf respectively, as no trawling was possible in the outer shelf region. Pelagic species dominated in the inshore region with 162 kg/h or 52% of the catches. The second most important group was demersal species which contributed 95 kg/h and 30% of the catches. Prawns/shrimps contributed 19 kg/h (6.2%) while cephalopods and sharks only contributed smaller amounts. The group of other species had a mean catch rate of 36 kg/h or 11% of the total. Overall catches were about the same on the inner and mid shelf with 314 and 320 kg/h respectively. On the mid shelf demersal species dominated with 144 kg/h and 45%, followed by pelagics with 91 kg/h and 28%. The group of other species gave 71 kg/h and 22% of the catches. Prawns and shrimps, cephalopods and sharks and rays only contributed small amounts to the total catches.

Table 5.11 Liberia. 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).

a) Inner shelf, 0-50 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
1065	31	194.8	327.9	46.3	0.0	0.0	37.3	606.3
1069	47	74.5	111.9	5.7	2.4	0.0	8.1	202.6
1070	25	117.0	96.8	32.6	0.0	0.0	18.7	265.2
1073	25	4.4	15.8	1.0	0.0	0.0	29.5	50.7
1078	44	111.3	9.9	29.8	1.8	0.0	48.7	201.5
1087	39	69.5	407.1	0.3	0.0	2.3	76.2	555.4
1088	30	1 013.4	33.1	0.6	0.0	0.0	34.7	1 081.8
Mean	34	226.4	143.2	16.6	0.6	0.3	36.2	423.4
% catch		53.5	33.8	3.9	0.1	0.1	8.5	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Demersal	Pelagic	Shrimps	Cephalopod	Sharks-rays	Other	Total
1066	56	77.8	5.7	0.5	0.1	0.0	0.9	85.1
1067	80	84.9	3.4	0.4	7.2	12.0	4.4	112.2
1068	94	57.0	0.2	0.0	6.7	2.8	9.7	76.3
1074	61	21.8	44.8	0.0	9.7	0.0	4.1	80.4
1075	94	246.1	105.0	0.0	0.0	0.0	75.5	426.6
1076	90	230.6	0.0	0.0	0.6	0.0	19.4	250.6
1077	64	156.3	8.2	2.5	2.2	0.0	46.7	215.9
1080	59	49.0	27.9	0.1	4.8	0.0	6.4	88.1
1081	72	75.2	77.3	0.0	3.9	0.0	13.8	170.3
1082	89	618.1	537.8	0.0	2.7	31.7	91.8	1 282.1
1083	92	117.8	66.5	0.0	1.2	90.0	15.1	290.6
1084	71	106.8	3.4	0.0	6.1	1.4	42.6	160.2
1085	80	160.4	276.4	0.0	1.8	6.3	647.2	1 092.1
1086	79	14.9	111.5	0.1	6.2	0.0	13.3	146.0
Mean	77	144.0	90.6	0.3	3.8	10.3	70.8	319.7
% catch		45.0	28.3	0.1	1.2	3.2	22.1	100.0

Pelagic species were fairly abundant on the Liberian shelf. Clupeoids dominated the inner shelf (48 kg/h, 15%), while Carangids dominated the mid shelf (65 kg/h, 20%). The dominant clupeids were *Sardinella maderensis and Ilisha africana*. The carangids were dominated by *Selene dorsalis* and *Decapterus punctatus.*

Table 5.12 Liberia. 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	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1065	31	198.6	25.2	0.0	42.4	61.7	278.4	606.3
1069	47	65.9	12.4	0.0	8.8	24.8	90.7	202.6
1070	25	18.5	48.0	0.0	20.9	9.5	168.4	265.2
1073	25	0.2	0.1	1.2	0.0	14.3	34.9	50.7
1078	44	2.3	1.4	0.0	1.5	4.7	191.7	201.5
1087	39	4.7	59.4	0.6	0.7	341.8	148.2	555.4
1088	30	0.0	33.1	0.0	0.0	0.0	1048.7	1081.8
Mean	34	41.5	25.7	0.3	10.6	65.3	280.1	423.4
% catch		9.8	6.1	0.1	2.5	15.4	66.2	100.0

b) Mid shelf, 51-100 m

Sta. no.	Depth	Clupeoids	Carangids	Scombrids	Hairtails	Barracudas	Other	Total
1066	56	0.6	1.3	0.0	0.8	2.9	79.3	85.1
1067	80	0.0	0.5	0.0	2.9	0.0	108.8	112.2
1068	94	0.0	0.0	0.0	0.2	0.0	76.1	76.3
1074	61	0.2	43.0	0.0	0.0	1.7	35.5	80.4
1075	94	0.0	105.0	0.0	0.0	0.0	321.6	426.6
1076	90	0.0	0.0	0.0	0.0	0.0	250.6	250.6
1077	64	0.3	1.0	0.0	0.0	6.9	207.7	215.9
1080	59	0.6	26.1	0.0	0.0	1.2	60.3	88.1
1081	72	22.0	55.3	0.0	0.0	0.0	93.0	170.3
1082	89	178.2	352.4	7.2	0.0	0.0	744.3	1 282.1
1083	92	0.0	63.0	3.5	0.0	0.0	224.1	290.6
1084	71	0.1	2.5	0.0	0.0	0.9	156.8	160.2
1085	80	2.2	236.3	6.1	0.0	31.8	815.7	1 092.1
1086	79	2.7	17.3	0.0	3.5	88.0	34.5	146.0
Mean	77	14.8	64.5	1.2	0.5	9.5	229.2	319.7
% catch		4.6	20.2	0.4	0.2	3.0	71.7	100.0

On the inner shelf no seabreams were caught. Grunts were caught on most stations, while the dominating group was croakers, with 67 kg/h and 21% of the mean catches. "Others" constituted 238 kg/h and 76% of the mean catches. Sciaenids were prominent on the innermost station on the last transect, as it was trawled just outside of an estuary.

On the mid shelf the seabreams dominated, with a mean catch rate of 100 kg/h and 31% of the mean total catch. The main species were *Dentex congoensis* and *D. angolensis*. Croakers were also caught here, but in much smaller quantities. "Others" constituted 212 kg/h and 66%.

Table 5.13 Liberia. 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
1065	31	0.0	0.0	0.0	0.3	182.1	423.9	606.3
1069	47	0.0	0.0	0.0	0.0	15.3	187.4	202.6
1070	25	0.0	0.0	0.0	2.5	97.4	165.3	265.2
1073	25	0.0	0.0	0.0	0.5	3.9	46.3	50.7
1078	44	0.0	0.0	0.0	47.5	51.3	102.7	201.5
1087	39	0.0	0.0	0.0	1.0	51.9	502.4	555.4
1088	30	0.0	46.1	0.0	1.4	917.9	116.4	1 081.8
Mean	34	0.0	6.6	0.0	7.6	188.6	220.6	423.4
% catch		0.0	1.6	0.0	1.8	44.5	52.1	100.0

b) Mid shelf, 51-100 m

Sta.no.	Depth	Seabreams	Snappers	Groupers	Grunts	Croakers	Other	Total
1066	56	1.2	0.0	17.6	0.0	0.7	65.6	85.1
1067	80	72.6	0.0	12.1	0.0	0.0	27.5	112.2
1068	94	51.6	0.0	0.2	0.0	5.1	19.3	76.3
1074	61	16.5	0.0	2.3	0.6	0.0	61.0	80.4
1075	94	189.9	0.0	0.0	0.0	0.0	236.7	426.6
1076	90	229.6	0.0	0.0	0.0	0.0	20.9	250.6
1077	64	97.0	0.0	0.0	0.0	2.4	116.6	215.9
1080	59	33.4	0.0	13.9	0.0	0.8	40.0	88.1
1081	72	75.2	0.0	0.0	0.0	0.0	95.0	170.3
1082	89	392.2	0.0	0.0	0.0	23.4	866.5	1 282.1
1083	92	92.5	0.0	0.0	0.0	1.2	196.9	290.6
1084	71	77.1	0.0	15.8	0.0	2.2	65.2	160.2
1085	80	66.0	0.0	0.0	0.0	3.0	1 023.1	1 092.1
1086	79	3.2	0.0	0.0	0.0	11.7	131.1	146.0
Mean	77	99.8	0.0	4.4	0.0	3.6	211.8	319.7
% catch		31.2	0.0	1.4	0.0	1.1	66.2	100.0

5.5 Swept area estimates

Swept area estimates based on the demersal trawl data are presented in Table 5.14, and in further detail in Appendix VIII.

Table 5.14 Total swept area estimates in tonnes 2006

Country	Seabreams	Grunts[1]	Croakers	Groupers	Snappers	*B. auritus*	Sharks	Rays	Cephalop.	**Total**
Guinea Bissau	15907	142	11736	128	0	11622	1809	1865	3837	**47047**
Guinea	7873	41	0	287	1804	19823	189	358	1932	**32306**
Sierra Leone	21362	2131	2897	440	191	5940	2144	298	260	**35663**
Liberia	13031	369	9535	440	297	1628	1056	306	407	**27068**
Total	**58173**	**2683**	**24168**	**1295**	**2292**	**39013**	**5198**	**2826**	**6435**	**142084**

[1] Grunts excluding *Brachydeuterus auritus*.

The total swept area biomass for the shelf of the four countries in question was measured to be around 140,000 tonnes. A number of uncertainties should be considered when applying this and other abundance estimates in this report, particularly regarding trawl catchability, patchiness, interpolation and area calculations. Also, the relatively low number of trawl hauls per area unit, relative to the degree of variability in fish concentrations should be remembered. So, this being said, the numbers can be used as a guideline to magnitudes regarding the resource situation in the area.

Guinea Bissau had the highest abundance, constituted by good availability of seabreams, croakers and cephalopods, pluss the ever-present *Brachydauterus auritus*. Also, the size structure in the populations seemed to be good, indicating healthy fish stocks in terms of exploitation. The seasonal upwelling situation probably contributes towards this situation, but looking at the stock structure, there seems to be an indication of a balanced fishing effort, at least on the southern shelf that was the object of investigation during this survey.

Guinea also had a fairly large demersal fish resource constituted by seabreams and quite a few snappers in addition to large amounts of *Brachydeuterus*, but given the wide shelf and the influence of the upwelling, more fish could have been expected. Also, the length structure in the populations was not as good as in Guinea Bissau, indicating high fishing pressure. This was emphasised by the observation of large international trawlers fishing particularly in the shelf break area. Indications of good recruitment was, however, present, as small commercial fish were abundantly present.

In Sierra Leone the situation improved again. The total abundance measured was comparable to Guinea, but the fish were larger, and consequently the fishing pressure seemed to be lower than on the Guinean shelf. Seabreams constituted the most frequent catch of valuable commercial species.

Liberia had the lowest measured abundance, but not substantially lowere than Sierra Leone and Guinea. Also here, seabreams were the dominating group, followed by croakers in terms of valuable commercial species. It should, however, be noted that one big catch of large croakers close to a probable spawning habitat did rais these numbers somewhat. The exploitation situation in Liberia seemed good, with accumulated stock type length distributions being the norm.

5.6 Overall review of results

Guinea Bissau
The survey off Guinea Bissau was characterised by fairly good catches of both demersal and pelagic fish. This apparent comparative richness probably originates from the seasonal upwelling, creating the nutrient basis for a relatively high primary production for this latitude. The demersal fish generally had a quite large mean length for the species in question, indicating that the fishing pressure is moderate.

Guinea
Guinea has a wide shelf that is also exposed to the seasonal upwelling. A high fish production for the latitude should therefore be expected. The preliminary results of the survey may indicate that the fishing pressure is quite high, as the mean lengths of both the demersal and

pelagic fishes are quite low for the species in question. There was, however, no clear indication of a recruitment failure, as juvenile fish were abundant.

Sierra Leone

Sierra Leone gave good catches both of pelagic and particularly of large demersal fish. This indicates that the fishing pressure here has been lower than in Guinea, as the upwelling effect should be less here than further to the Northwest. While the present situation is good, it may soon change, as a fleet of IUU fishing vessels were operating in the region.

Liberia

Liberia is characterised by an oceanic environment with higher sea surface temperatures than Guinea Bissau, Guinea and Northwestern Sierra Leone, at least during the upwelling in the rainy season. The demersal species dominated, but also pelagic species like sardinella were found. There seemed to have been a low fishing pressure particularly in the Southeastern part, as large fish were abundant close to shore. Liberia has tropical shelf waters, and consequently can expect low production. There are, however, still potentially good conditions for artisanal fishing and sport fishing, as much of the shelf area is rocky, and thus is protected from illegal trawl fishing.

Annex I Records of fishing stations

PROJECT STATION: 987

DATE:29/ 4/06 GEAR TYPE: BT No:19 POSITION:Lat N 1149
start stop duration Long W 1709
TIME :21:04:06 21:28:09 24 (min) Purpose code: 3
LOG :6509.18 6510.51 1.32 Area code : 1
FDEPTH: 39 38 GearCond.code:
BDEPTH: 39 38 Validity code:
Towing dir: 170ø Wire out: 150 m Speed: 30 kn*10

Sorted: 119 Kg Total catch: 279.23 CATCH/HOUR: 698.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	456.85	5460	65.44	4277
Arius parkii	110.68	348	15.85	4278
Pseudotolithus senegalensis	31.00	30	4.44	4273
Chloroscombrus chrysurus	20.05	270	2.87	4275
Galeoides decadactylus	18.13	35	2.60	4274
Rhizoprionodon acutus	16.75	3	2.40	
Pteroscion peli	12.10	138	1.73	4276
Pagellus bellottii	6.35	28	0.91	
Sepiella ornata	6.15	55	0.88	
Sphyraena guachancho	5.40	8	0.77	
Syacium micrurum	3.85	250	0.55	
Pseudotolithus typus	3.00	5	0.43	
Penaeus notialis	2.38	125	0.34	
Chilomycterus spinosus mauret.	2.15	8	0.31	
Sardinella maderensis	0.98	8	0.14	
Pseudupeneus prayensis	0.70	8	0.10	
Selene dorsalis	0.70	8	0.10	
Eucinostomus melanopterus	0.43	8	0.06	
OPHICHTHIDAE	0.15	15	0.02	
Trichiurus lepturus	0.15	15	0.02	
Ilisha africana	0.15	8	0.02	
Total	698.10		99.98	

PROJECT STATION: 990

DATE:30/ 4/06 GEAR TYPE: BT No:19 POSITION:Lat N 1115
start stop duration Long W 1719
TIME :12:46:45 13:16:45 30 (min) Purpose code: 3
LOG :6620.90 6622.40 1.50 Area code : 1
FDEPTH: 120 120 GearCond.code:
BDEPTH: 120 120 Validity code:
Towing dir: 83ø Wire out: 360 m Speed: 30 kn*10

Sorted: 164 Kg Total catch: 948.11 CATCH/HOUR: 1896.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pentheroscion mbizi	1015.20	10672	53.54	4290
Spicara alta	297.60	1740	15.69	4293
Todaropsis eblanae	222.00	3664	11.71	4294
Dentex congoensis	116.40	842	6.14	4291
Dentex angolensis	79.80	528	4.21	4288
Scorpaena stephanica	60.00	180	3.16	
Pagrus africanus	31.80	72	1.68	4287
Umbrina canariensis	22.80	72	1.20	
Dentex macrophthalmus	13.56	60	0.72	4292
Zeus faber	11.00	20	0.58	4289
Illex coindetii	5.52	36	0.29	
Priacanthus arenatus	5.40	24	0.28	
Aulopus cadenati	3.48	36	0.18	
Zenopsis conchifer	3.00	2	0.16	
Chaetodon hoefleri	2.88	24	0.15	
Antigonia capros	2.76	48	0.15	
Ariomma bondi	1.56	36	0.08	
Sphoeroides pachgaster	1.46	2	0.08	
Total	1896.22		100.00	

PROJECT STATION: 988

DATE:30/ 4/06 GEAR TYPE: BT No:19 POSITION:Lat N 1115
start stop duration Long W 1703
TIME :07:02:40 07:32:43 30 (min) Purpose code: 3
LOG :6585.73 6587.18 1.44 Area code : 1
FDEPTH: 32 38 GearCond.code:
BDEPTH: 32 38 Validity code:
Towing dir: 270ø Wire out: 150 m Speed: 30 kn*10

Sorted: 160 Kg Total catch: 848.82 CATCH/HOUR: 1697.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	671.20	10662	39.54	4285
Brachydeuterus auritus	381.20	10334	22.45	4287
Decapterus rhonchus	376.20	1652	22.16	4283
Chloroscombrus chrysurus	95.00	988	5.60	4284
Rhizoprionodon acutus	45.40	34	2.67	
Pseudupeneus prayensis	29.88	250	1.76	4280
Pagellus bellottii	23.38	176	1.38	4279
Decapterus punctatus	23.00	850	1.35	4286
Arius parkii	14.50	38	0.85	
Sardinella aurita	9.00	288	0.53	4281
Arius latiscutatus	6.40	2	0.38	
Fistularia tabacaria	5.60	6	0.33	
Lagocephalus laevigatus	5.12	12	0.30	
Epinephelus aeneus	3.62	12	0.21	4282
Syacium micrurum	3.26	12	0.19	
Alloteuthis africana	1.12	238	0.07	
Sepiella ornata	1.12	26	0.07	
Sphyraena guachancho	1.00	2	0.06	
Sphoeroides marmoratus	0.76	12	0.04	
Bothus podas africanus	0.50	12	0.03	
Scomber japonicus	0.38	26	0.02	
Total	1697.64		99.99	

PROJECT STATION: 991

DATE:30/ 4/06 GEAR TYPE: BT No:19 POSITION:Lat N 1115
start stop duration Long W 1717
TIME :15:51:10 16:09:24 18 (min) Purpose code: 3
LOG :6641.39 6642.32 0.92 Area code : 1
FDEPTH: 86 85 GearCond.code:
BDEPTH: 86 85 Validity code:
Towing dir: 90ø Wire out: 236 m Speed: 30 kn*10

Sorted: 105 Kg Total catch: 209.76 CATCH/HOUR: 699.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	241.33	3257	34.52	4296
Decapterus rhonchus	126.67	273	18.12	4295
Scomber japonicus	102.00	2073	14.59	4299
Ariomma bondi	66.67	977	9.54	4297
Todaropsis eblanae	47.33	1063	6.77	
Scorpaena stephanica	36.00	120	5.15	
Dentex congoensis	30.13	460	4.31	4298
Raja miraletus	11.87	20	1.70	
Antigonia capros	9.67	153	1.38	
Illex coindetii	8.27	140	1.18	
Sphoeroides pachgaster	7.33	20	1.05	
Zeus faber	5.67	13	0.81	
Chaetodon hoefleri	2.33	13	0.33	
Dactylopterus volitans	1.67	7	0.24	
Dentex angolensis	0.93	7	0.13	
Spicara alta	0.67	7	0.10	
Sepiella ornata	0.47	7	0.07	
Lepidotrigla carolae	0.13	7	0.02	
Aulopus cadenati	0.07	7	0.01	
Total	699.21		100.02	

PROJECT STATION: 989

DATE:30/ 4/06 GEAR TYPE: BT No:19 POSITION:Lat N 1117
start stop duration Long W 1711
TIME :10:11:46 10:35:20 24 (min) Purpose code: 3
LOG :6601.29 6602.50 1.21 Area code : 1
FDEPTH: 61 60 GearCond.code:
BDEPTH: 61 60 Validity code:
Towing dir: 140ø Wire out: 200 m Speed: 30 kn*10

Sorted: 8 Kg Total catch: 7.90 CATCH/HOUR: 19.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Fistularia petimba	5.93	263	30.03	
Trichiurus lepturus	3.50	10	17.72	
Fistularia petimba	3.13	8	15.85	
Caranx crysos	2.03	3	10.28	
Liocarcinus corrugatus	1.68	385	8.51	
Lagocephalus laevigatus	1.00	3	5.06	
Alloteuthis africana	0.73	263	3.70	
Sepiella ornata	0.50	5	2.53	
Chelidonichthys gabonensis	0.33	3	1.67	
Dicologoglossa cuneata	0.28	3	1.42	
Priacanthus arenatus	0.23	3	1.16	
Saurida brasiliensis	0.18	15	0.91	
Sepia officinalis hierredda	0.10	3	0.51	
Microchirus boscanion	0.05	5	0.25	
Grammoplites gruveli	0.05	3	0.25	
Lepidotrigla carolae	0.05	3	0.25	
Syacium micrurum	0.03	3	0.15	
Total	19.80		100.25	

PROJECT STATION: 992

DATE: 1/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1104
start stop duration Long W 1653
TIME :08:11:33 08:41:42 30 (min) Purpose code: 3
LOG :6726.66 6728.25 1.58 Area code : 1
FDEPTH: 27 27 GearCond.code:
BDEPTH: 27 27 Validity code:
Towing dir: 140ø Wire out: 150 m Speed: 30 kn*10

Sorted: 52 Kg Total catch: 52.00 CATCH/HOUR: 104.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	64.00	210	61.54	4301
Balistes capriscus	17.00	18	16.35	4302
Pomadasys rogeri	2.72	2	2.62	
Sepia officinalis hierredda	2.64	10	2.54	
Rhinobatos rhinobatos	2.34	2	2.25	
Pagellus bellottii	2.16	12	2.08	4300
Chloroscombrus chrysurus	1.96	14	1.88	
Echeneis naucrates	1.86	4	1.79	
Trachurus trecae	1.68	10	1.62	
Lagocephalus laevigatus	1.56	2	1.50	
Diodon sp.	1.22	2	1.17	
Rachycentron canadum	1.04	2	1.00	
Chilomycterus spinosus mauret.	0.90	2	0.87	
Selene dorsalis	0.70	6	0.67	
Chaetodon hoefleri	0.48	4	0.46	
Uranoscopus polli	0.42	2	0.40	
Todaropsis eblanae	0.40	8	0.38	
Trachinocephalus myops	0.38	4	0.37	
Syacium micrurum	0.22	4	0.21	
Bothus podas africanus	0.18	6	0.17	
Decapterus punctatus	0.14	2	0.13	
Total	104.00		100.00	

PROJECT STATION: 993

DATE: 1/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1059
start stop duration Long W 1656
TIME :09:41:31 10:12:56 31 (min) Purpose code: 3
LOG :6735.76 6737.37 1.60 Area code : 1
FDEPTH: 50 52 GearCond.code:
BDEPTH: 50 52 Validity code:
Towing dir: 140ø Wire out: 200 m Speed: 30 kn*10

Sorted: 19 Kg Total catch: 19.26 CATCH/HOUR: 37.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Fistularia petimba	13.55	58	36.35	
Sepia officinalis hierredda	7.28	35	19.53	4303
Lagocephalus laevigatus	5.23	10	14.03	
Caranx crysos	2.71	4	7.27	
Fistularia tabacaria	2.61	2	7.00	
Decapterus rhonchus	1.94	8	5.20	
Chaetodon hoefleri	0.87	6	2.33	
Decapterus punctatus	0.79	8	2.12	
Trachurus trecae	0.77	4	2.07	
Chelidonichthys gabonensis	0.74	6	1.98	
Sphoeroides marmoratus	0.33	4	0.89	
Scorpaena scrofa	0.21	2	0.56	
Syacium micrurum	0.15	2	0.40	
Bothus podas africanus	0.10	2	0.27	
Total	37.28		100.00	

PROJECT STATION: 994

DATE: 1/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1059
start stop duration Long W 1704
TIME :11:46:02 12:16:39 31 (min) Purpose code: 3
LOG :6749.90 6751.34 1.42 Area code : 1
FDEPTH: 76 76 GearCond.code:
BDEPTH: 76 76 Validity code:
Towing dir: 135ø Wire out: 240 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 33.27 CATCH/HOUR: 64.39

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Fistularia petimba	16.65	33	25.86	
Pseudupeneus prayensis	10.41	72	16.17	4305
Scorpaena stephanica	6.70	21	10.41	
Octopus vulgaris	4.26	2	6.62	
Raja miraletus	4.24	10	6.58	
Dactylopterus volitans	3.35	8	5.20	
Sphoeroides pachgaster	2.77	4	4.30	
Chaetodon hoefleri	2.75	19	4.27	
Pagrus africanus	2.09	4	3.25	4304
Uranoscopus albesca	1.84	2	2.86	
Chelidonichthys gabonensis	1.72	14	2.67	
Priacanthus arenatus	1.43	17	2.22	
Sepia officinalis hierredda	1.28	10	1.99	
Echelus myrus	1.26	2	1.96	
Caranx crysos	0.79	2	1.23	
Torpedo torpedo	0.79	4	1.23	
Decapterus rhonchus	0.74	2	1.15	
Decapterus punctatus	0.64	6	0.99	
Pagellus bellottii	0.31	14	0.48	
Fistularia petimba	0.29	31	0.45	
Alloteuthis africana	0.10	23	0.16	
Total	64.41		100.05	

PROJECT STATION: 995

DATE: 1/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1054
start stop duration Long W 1712
TIME :14:10:31 14:40:58 30 (min) Purpose code: 3
LOG :6763.82 6765.35 1.54 Area code : 1
FDEPTH: 178 152 GearCond.code:
BDEPTH: 178 152 Validity code:
Towing dir: 62ø Wire out: 470 m Speed: 30 kn*10

Sorted: 141 Kg Total catch: 528.47 CATCH/HOUR: 1056.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	368.10	10858	34.83	4311
Spicara alta	362.70	1960	34.32	4306
Antigonia capros	162.00	4924	15.33	
Dentex angolensis	29.88	224	2.83	4309
Zenopsis conchifer	27.60	20	2.61	4308
Trachurus trecae	24.04	5854	2.27	4307
Dentex congoensis	21.34	198	2.02	4304
Todaropsis eblanae	12.42	100	1.18	
Squatina oculata	*10.00*	*4*	*0.95*	
Zeus faber	8.52	16	0.81	4310
Trichiurus lepturus	5.58	100	0.53	
Sphoeroides pachgaster	5.40	8	0.51	
Ariomma bondi	3.34	46	0.32	
Umbrina canariensis	2.66	8	0.25	4305
Squalus mitsukurii	2.30	2	0.22	
Octopus vulgaris	2.00	2	0.19	
Lepidotrigla cadmani	1.98	28	0.19	
Echeneis naucrates	1.90	2	0.18	
Pterothrissus belloci	1.62	10	0.15	
Scorpaena stephanica	1.00	10	0.09	
Raja miraletus	0.80	2	0.08	
Pentheroscion mbizi	0.72	10	0.07	
Synchiropus phaeton	0.64	10	0.06	
Serranus africana	0.28	10	0.03	
Total	1056.82		100.02	

PROJECT STATION: 996

DATE: 1/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1050
start stop duration Long W 1717
TIME :15:24:56 15:55:49 31 (min) Purpose code: 3
LOG :6776.27 6777.82 1.54 Area code : 1
FDEPTH: 251 241 GearCond.code:
BDEPTH: 251 241 Validity code:
Towing dir: 62ø Wire out: 630 m Speed: 30 kn*10

Sorted: 76 Kg Total catch: 154.87 CATCH/HOUR: 299.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	130.65	3416	43.59	4312
Synagrops microlepis	31.35	1622	10.46	
Illex coindetii	31.32	252	10.45	
Zenopsis conchifer	24.39	19	8.14	4314
CHIROSTYLIDAE	22.22	2685	7.41	
Pterothrissus belloci	11.54	79	3.85	
Todaropsis eblanae	7.41	105	2.47	
Hypoclydonia bella	6.54	466	2.18	
Ariomma bondi	6.10	139	2.04	
Merluccius polli	5.90	31	1.97	4313
Parasudis fraser-brunneri	4.84	706	1.61	
Brotula barbata	3.77	2	1.26	
Parapenaeus longirostris	3.41	379	1.14	
Lepidotrigla cadmani	2.13	39	0.71	
Umbrina canariensis	1.43	2	0.48	
Trigla lyra	1.34	4	0.45	
Raja miraletus	0.97	2	0.32	
Pontinus accraensis	0.74	4	0.25	
Antigonia capros	0.74	56	0.25	
Lepidotrigla carolae	*0.66*	*31*	*0.22*	
Echelus myrus	0.58	2	0.19	
Synchiropus phaeton	0.39	21	0.13	
Peristedion cataphractum	0.35	17	0.12	
Coelorinchus coelorhincus	0.31	4	0.10	
Grammoplites gruveli	0.31	4	0.10	
Chascanopsetta lugubris	0.21	4	0.07	
Cynoponticus ferox	0.14	4	0.05	
Zenion longipinnis	0.04	17	0.01	
Total	299.78		100.02	

PROJECT STATION: 997

DATE: 2/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1044
start stop duration Long W 1625
TIME :09:33:35 10:08:56 35 (min) Purpose code: 3
LOG :6896.65 6898.39 1.72 Area code : 1
FDEPTH: 23 26 GearCond.code:
BDEPTH: 23 26 Validity code:
Towing dir: 245ø Wire out: 150 m Speed: 30 kn*10

Sorted: 193 Kg Total catch: 1484.83 CATCH/HOUR: 2545.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	1039.89	18329	40.85	4317
Pagellus bellottii	772.97	4666	30.37	4315
Decapterus rhonchus	253.03	2745	9.94	4319
Pagrus caeruleostictus	163.54	602	6.42	4318
Pseudupeneus prayensis	101.06	864	3.97	4316
Brachydeuterus auritus	67.53	722	2.65	4320
Albula vulpes	35.64	46	1.40	
Caranx crysos	28.70	93	1.13	
Sphyraena afra	27.60	2	1.08	
Rhizoprionodon acutus	18.34	5	0.72	
Selene dorsalis	16.66	170	0.65	
Sphyraena guachancho	3.86	15	0.15	
Nicholsina usta	3.86	15	0.15	
Sepia officinalis hierredda	3.70	15	0.15	
Ephippion guttifer	2.74	3	0.11	
Octopus vulgaris	2.74	3	0.11	
Panulirus regius	1.97	2	0.08	
Scomberomorus tritor	1.59	2	0.06	
Total	2545.42		99.99	

PROJECT STATION: 998

DATE: 2/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1042
start stop duration Long W 1629
TIME :11:00:30 11:30:38 30 (min) Purpose code: 3
LOG :6901.60 6903.17 1.56 Area code : 1
FDEPTH: 35 37 GearCond.code:
BDEPTH: 35 37 Validity code:
Towing dir: 245ø Wire out: 150 m Speed: 30 kn*10

Sorted: 148 Kg Total catch: 265.85 CATCH/HOUR: 531.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	158.20	612	29.75	4325
Dasyatis pastinaca	120.00	2	22.57	
Pagellus bellottii	109.68	934	20.63	4324
Pseudupeneus prayensis	82.20	770	15.46	4321
Trachurus trecae	31.20		5.87	
Epinephelus aeneus	*8.16*	*10*	*1.16*	*4322*
Seriola sp.	4.20	10	0.79	
Pomadasys rogeri	3.40	10	0.64	
Acanthurus monroviae	2.40	4	0.45	
Plectorhinchus mediterraneus	2.40	4	0.45	
Pomadasys jubelini	2.40	4	0.45	
Octopus vulgaris	1.80	4	0.34	
Priacanthus arenatus	1.64	10	0.31	
Sepia officinalis hierredda	1.40	4	0.26	
Scomber japonicus	1.02	52	0.19	4323
Mugil sp.	1.00	4	0.19	
Pagrus caeruleostictus	0.94	4	0.18	
Torpedo torpedo	0.80	4	0.15	
Syacium micrurum	0.80	4	0.15	
Sardinella aurita	0.14	4	0.03	
Total	531.78		100.02	

PROJECT STATION: 999

DATE: 2/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1037
start stop duration Long W 1639
TIME :12:43:08 13:14:04 31 (min) Purpose code: 3
LOG :6912.39 6914.00 1.58 Area code : 1
FDEPTH: 59 64 GearCond.code:
BDEPTH: 59 64 Validity code:
Towing dir: 245ø Wire out: 200 m Speed: 30 kn*10

Sorted: 111 Kg Total catch: 111.51 CATCH/HOUR: 215.83

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	127.55	830	59.10	4327
Sardinella aurita	24.00	145	11.12	4326
Fistularia petimba	15.29		7.08	
Pagellus bellottii	10.94	89	5.07	4328
Priacanthus arenatus	8.85	72	4.10	
Sepia officinalis hierredda	4.66	33	2.16	4331
Decapterus punctatus	3.66	74	1.70	4329
Trichiurus lepturus	3.00	4	1.39	
Dactylopterus volitans	2.54	6	1.18	
Pseudupeneus prayensis	2.50	19	1.16	4330
Trachinocephalus myops	2.28	10	1.06	
Scomber japonicus	1.84	10	0.85	
Trachurus trecae	1.74	15	0.81	
Raja miraletus	1.55	4	0.72	
Octopus vulgaris	1.39	2	0.64	
Lagocephalus laevigatus	1.16	2	0.54	
Sphyraena guachancho	0.97	2	0.45	
Chelidonichthys gabonensis	0.70	6	0.32	
Pagrus caeruleostictus	0.68	2	0.32	
Echeneis naucrates	0.54	2	0.25	
Total	215.84		100.02	

PROJECT STATION:1000

DATE: 2/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1034
start stop duration Long W 1648
TIME :14:43:36 15:13:51 30 (min) Purpose code: 3
LOG :6923.24 6924.75 1.51 Area code : 1
FDEPTH: 146 138 GearCond.code:
BDEPTH: 146 138 Validity code:
Towing dir: 7ø Wire out: 360 m Speed: 30 kn*10

Sorted: 115 Kg Total catch: 152.49 CATCH/HOUR: 304.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	131.20	174	43.02	4332
Ariomma bondi	28.20	786	9.25	
Saurida brasiliensis	23.84	1896	7.82	
Decapterus rhonchus	23.80	38	7.80	4333
Todaropsis eblanae	18.80	740	6.16	
Pentheroscion mbizi	12.52	130	4.11	
Fistularia petimba	12.20	26	4.00	
Scorpaena stephanica	9.36	40	3.07	
Trachurus trecae, juvenile	9.04	2712	2.96	
Synagrops microlepis	8.96	710	2.94	
Synagrops microlepis	5.30	842	1.74	
Pterothrissus belloci	4.08	32	1.34	
Raja miraletus	3.84	16	1.26	
Dactylopterus volitans	2.36	4	0.77	
Illex coindetii	2.08	24	0.68	
Antigonia capros	1.96	40	0.64	
Chlorophthalmus atlanticus	1.88	436	0.62	
Umbrina canariensis	1.60	2	0.52	
Dentex angolensis	1.24	6	0.41	
Lepidotrigla carolae	0.60	16	0.20	
PORTUNIDAE	0.52	468	0.17	
Pseudupeneus prayensis	0.48	4	0.16	
Sardinella aurita	0.44	2	0.14	
Zeus faber	0.36	4	0.12	
Synagrops microlepis	0.20	4	0.07	
Lepidotrigla cadmani	0.12	16	0.04	
Total	304.98		100.01	

PROJECT STATION:1001

DATE: 2/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1027
start stop duration Long W 1700
TIME :17:25:41 17:55:14 30 (min) Purpose code: 3
LOG :6941.32 6942.82 1.49 Area code : 1
FDEPTH: 228 230 GearCond.code:
BDEPTH: 228 230 Validity code:
Towing dir: 250ø Wire out: 570 m Speed: 30 kn*10

Sorted: 103 Kg Total catch: 751.38 CATCH/HOUR: 1502.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	624.00	5200	41.52	
Illex coindetii	462.00	5076	30.74	4335
Trichiurus lepturus	244.00	866	16.24	
Trachurus trecae	56.00	76	3.73	4334
Synagrops microlepis	43.20	3086	2.87	
Antigonia capros	22.20	1268	1.48	
Parapenaeus longirostris	15.20	1810	1.01	
Raja miraletus	12.00	20	0.80	
Scorpaena stephanica	9.60	20	0.64	
CHIROSTYLIDAE	5.60	780	0.37	
Mustelus mustelus	4.76	2	0.32	
Raja sp.	1.90	2	0.13	
Decapterus rhonchus	1.30	2	0.09	
Pontinus accraensis	1.00	20	0.07	
Total	1502.76		100.01	

PROJECT STATION:1002

DATE: 2/ 5/06 GEAR TYPE: PT No: 5 POSITION:Lat N 1003
start stop duration Long W 1649
TIME :22:46:19 23:16:20 30 (min) Purpose code: 1
LOG :6974.34 6976.06 1.70 Area code : 1
FDEPTH: 30 70 GearCond.code:
BDEPTH: 261 237 Validity code:
Towing dir: 61ø Wire out: 200 m Speed: 33 kn*10

Sorted: 35 Kg Total catch: 35.89 CATCH/HOUR: 71.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ariomma bondi	45.60	2022	63.53	4334
SALPS	10.00		13.93	
MYCTOPHIDAE	7.28	2104	10.14	
Synagrops microlepis	4.68	290	6.52	
PARALEPIDIDAE	1.18	102	1.64	
Hypoclydonia bella	1.14	180	1.59	
C E P H A L O P O D A	0.82	168	1.14	
Sphoeroides marmoratus	0.44	16	0.61	
Parapenaeopsis atlantica	0.26	148	0.36	
UNIDENTIFIED FISH	0.14	2	0.20	
TRACHIPTERIDAE	0.14	4	0.20	
Antigonia capros	0.04	4	0.06	
Selene dorsalis, juveniles	0.04	100	0.06	
Fistularia petimba	0.02	2	0.03	
Total	71.78		100.01	

PROJECT STATION:1003

DATE: 3/ 5/06 GEAR TYPE: PT No: 2 POSITION:Lat N 1011
start stop duration Long W 1633
TIME :01:30:47 02:00:17 30 (min) Purpose code: 1
LOG :6992.53 6994.12 1.56 Area code : 1
FDEPTH: 50 50 GearCond.code:
BDEPTH: 107 85 Validity code:
Towing dir: 61ø Wire out: 120 m Speed: 32 kn*10

Sorted: 12 Kg Total catch: 12.51 CATCH/HOUR: 25.02

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
SALPS	16.00		63.95	
Fistularia petimba	5.60	12	22.38	
Synagrops microlepis	1.40	78	5.60	
Saurida brasiliensis	0.88	492	3.52	
C E P H A L O P O D A	0.58	522	2.32	
S H R I M P S	0.32	280	1.28	
MYCTOPHIDAE	0.14	50	0.56	
Sepia sp.	0.06	16	0.24	
Liocarcinus corrugatus	0.04	36	0.16	
Chaetodon marcellae	0.00	2		
Selene dorsalis, juveniles	0.00	2		
Total	25.02		100.01	

PROJECT STATION:1004

DATE: 3/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1027
start stop duration Long W 1605
TIME :07:05:03 07:25:13 20 (min) Purpose code: 3
LOG :7028.57 7029.60 1.01 Area code : 1
FDEPTH: 28 28 GearCond.code:
BDEPTH: 28 28 Validity code:
Towing dir: 245ø Wire out: 140 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 299.40 CATCH/HOUR: 898.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	396.00	31971	44.09	4337
Scomber japonicus	300.00	8295	33.40	4335
Decapterus rhonchus	162.60	4176	18.10	4336
Decapterus punctatus	36.00	3141	4.01	4338
Brachydeuterus auritus	2.10	90	0.23	
Trachurus trecae, juvenile	1.50	330	0.17	
Total	898.20		100.00	

PROJECT STATION:1005

DATE: 3/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1021
start stop duration Long W 1617
TIME :09:40:28 10:10:18 30 (min) Purpose code: 3
LOG :7041.95 7043.42 1.46 Area code : 1
FDEPTH: 41 44 GearCond.code:
BDEPTH: 41 44 Validity code:
Towing dir: 241ø Wire out: 150 m Speed: 30 kn*10

Sorted: 114 Kg Total catch: 449.19 CATCH/HOUR: 898.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	475.80	7762	52.96	4340
Scomber japonicus	255.60	5446	28.45	4339
Sardinella aurita	65.00	1094	7.24	4342
Decapterus punctatus	60.60	1528	6.75	4341
Alectis alexandrinus	8.56	2	0.95	
Sepia officinalis hierredda	7.68	28	0.85	4343
Arius parkii	7.18	2	0.80	
Decapterus rhonchus	4.76	26	0.53	
Aluterus heudelotii	4.00	8	0.45	
Lagocephalus laevigatus	3.60	8	0.40	
Raja miraletus	3.00	6	0.33	
Priacanthus arenatus	2.60	8	0.29	
Total	898.38		100.00	

PROJECT STATION:1006

DATE: 3/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1013
start stop duration Long W 1632
TIME :12:26:38 12:56:26 30 (min) Purpose code: 3
LOG :7060.98 7062.53 1.53 Area code : 1
FDEPTH: 80 67 GearCond.code:
BDEPTH: 80 67 Validity code:
Towing dir: 61ø Wire out: 230 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 23.59 CATCH/HOUR: 47.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Mustelus mustelus	27.20	6	57.65	
Lagocephalus laevigatus	6.06	10	12.84	
Fistularia petimba	4.60	18	9.75	
Trachinus armatus	2.48	36	5.26	4344
Uranoscopus albesca	1.72	2	3.65	
Bothus podas africanus	1.34	40	2.84	
Chelidonichthys gabonensis	1.12	10	2.37	
Raja miraletus	0.80	2	1.70	
Pseudupeneus prayensis	0.64	6	1.36	4345
Scorpaena scrofa	0.54	6	1.14	
Illex coindetii	0.42	8	0.89	
Trachinocephalus myops	0.22	2	0.47	
Sepia officinalis hierredda	0.04	2	0.08	
Total	47.18		100.00	

PROJECT STATION:1007

DATE: 3/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1008
start stop duration Long W 1639
TIME :14:34:18 15:04:08 30 (min) Purpose code: 3
LOG :7073.62 7075.20 1.55 Area code : 1
FDEPTH: 171 183 GearCond.code:
BDEPTH: 171 183 Validity code:
Towing dir: 242ø Wire out: 530 m Speed: 30 kn*10

Sorted: 103 Kg Total catch: 973.31 CATCH/HOUR: 1946.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	1684.00	73508	86.51	
Synagrops microlepis	106.00	11716	5.45	
Sphoeroides marmoratus	36.00	38	1.85	
Mustelus mustelus	30.20	10	1.55	
Scorpaena stephanica	26.10	58	1.34	
Antigonia capros	25.80	2264	1.33	
Lepidotrigla carolae	15.08	88	0.77	
Squalus mitsukurii	10.00	6	0.51	
Aulopus cadenati	6.68	88	0.34	
Ariomma bondi	2.32	88	0.12	
Todaropsis eblanae	1.74	116	0.09	
Raja miraletus	1.00	2	0.05	
Merluccius polli	0.88	30	0.05	
Fistularia petimba	0.52	2	0.03	
Lepidotrigla cadmani	0.30	58	0.02	
Total	1946.62		100.01	

PROJECT STATION:1008

DATE: 3/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1004
start stop duration Long W 1647
TIME :16:41:37 17:11:15 30 (min) Purpose code: 3
LOG :7085.54 7087.06 1.51 Area code : 1
FDEPTH: 225 215 GearCond.code:
BDEPTH: 225 215 Validity code:
Towing dir: 62ø Wire out: 575 m Speed: 30 kn*10

Sorted: 70 Kg Total catch: 162.43 CATCH/HOUR: 324.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	187.60	5224	57.75	
Synagrops microlepis	87.00	4310	26.78	
Squatina oculata	11.60	2	3.57	
Ariomma bondi	7.30	426	2.25	
Trichiurus lepturus	5.20	192	1.60	
CHIROSTYLIDAE	5.20	1702	1.60	
Pterothrissus belloci	5.16	46	1.59	
Squalus mitsukurii	4.00	4	1.23	
Illex coindetii	3.70	70	1.14	
Todaropsis eblanae	2.50	100	0.77	
Dentex angolensis	1.80	4	0.55	
Parapenaeus longirostris	1.10	206	0.34	
Antigonia capros	0.60	10	0.18	
Heptranchias perlo	0.60	2	0.18	
Aulopus cadenati	0.54	6	0.17	
Merluccius polli	0.30	6	0.09	
Sepia officinalis hierredda	0.20	10	0.06	
Pontinus accraensis	0.18	6	0.06	
Grammoplites gruveli	0.12	6	0.04	
Parasudis fraser-bruenneri	0.10	16	0.03	
Monolene microstoma	0.06	6	0.02	
Total	324.86		100.00	

PROJECT STATION:1009

DATE: 4/ 5/06 GEAR TYPE: PT No: 2 POSITION:Lat N 929
start stop duration Long W 1614
TIME :02:25:50 02:56:54 31 (min) Purpose code: 1
LOG :7154.00 7155.69 1.68 Area code : 2
FDEPTH: 40 44 GearCond.code:
BDEPTH: 250 194 Validity code:
Towing dir: 41ø Wire out: 100 m Speed: 32 kn*10

Sorted: 22 Kg Total catch: 22.59 CATCH/HOUR: 43.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	34.84		79.69	
Shrimps, small, non comm.	3.87		8.85	
Trachipterus trachypterus	3.15	17	7.20	
PARALEPIDIDAE	0.79	89	1.81	
Ariomma bondi	0.31	19	0.71	
Illex coindetii	0.21	6	0.48	
Sphoeroides marmoratus	0.14	6	0.32	
Trichiurus lepturus	0.14	4	0.32	
Hypoclydonia bella	0.14	12	0.32	
Synagrops microlepis	0.06	2	0.14	
GONOSTOMATIDAE	0.04	4	0.09	
Fistularia petimba	0.02	2	0.05	
Selene dorsalis, juveniles	0.00	4		
Total	43.71		99.98	

PROJECT STATION:1010

DATE: 4/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 955
start stop duration Long W 1550
TIME :05:15:24 05:45:57 30 (min) Purpose code: 3
LOG :7197.20 7198.81 1.60 Area code : 2
FDEPTH: 36 38 GearCond.code:
BDEPTH: 36 38 Validity code:
Towing dir: 225ø Wire out: 150 m Speed: 32 kn*10

Sorted: 148 Kg Total catch: 541.24 CATCH/HOUR: 1082.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	793.60	16056	73.31	4355
Sardinella maderensis	97.60	1772	9.02	4350
Decapterus punctatus	55.60	2512	5.14	4351
Sardinella aurita	55.28	776	5.11	4354
Decapterus rhonchus	28.08	152	2.59	4346
Sphyraena afra	26.60	2	2.46	
Brachydeuterus auritus	9.92	104	0.92	4353
Trachurus trecae	3.68	328	0.34	4352
Balistes punctatus	3.40	4	0.31	
Pseudupeneus prayensis	2.76	20	0.25	4347
Pagellus bellottii	2.04	18	0.19	4348
Selene dorsalis	1.12	16	0.10	
Pagrus caeruleostictus	1.04	6	0.10	4349
Trachinocephalus myops	0.80	8	0.07	
Xyrichtys novacula	0.56	8	0.05	
Scomber japonicus	0.40	8	0.04	
Total	1082.48		100.00	

PROJECT STATION:1011

DATE: 4/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 1009
start stop duration Long W 1537
TIME :12:23:23 12:53:31 30 (min) Purpose code: 3
LOG :7222.00 7223.47 1.45 Area code : 2
FDEPTH: 26 28 GearCond.code:
BDEPTH: 26 28 Validity code:
Towing dir: 220ø Wire out: 150 m Speed: 30 kn*10

Sorted: 108 Kg Total catch: 156.20 CATCH/HOUR: 312.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	114.40	1952	36.62	4356
Rachycentron canadum	91.40	6	29.26	
Decapterus rhonchus	66.60		21.32	
Decapterus punctatus	10.60		3.39	
Sepia officinalis hierredda	7.20	14	2.30	
Sardinella aurita	6.00	362	1.92	4359
Cronius ruber	4.80	88	1.54	
Pagrus caeruleostictus	3.12	74	1.00	4358
Decapterus rhonchus	2.88	38	0.92	4357
Sardinella maderensis	2.20	80	0.70	4360
Trachurus trecae	1.80		0.58	
Balistes capriscus	1.16	4	0.37	
Brachydeuterus auritus	0.16	8	0.05	
Pagellus bellottii	0.08	4	0.03	
Total	312.40		100.00	

PROJECT STATION:1012

DATE: 4/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 939
start stop duration Long W 1605
TIME :17:40:35 18:00:57 20 (min) Purpose code: 3
LOG :7264.33 7265.53 1.20 Area code : 2
FDEPTH: 68 78 GearCond.code:
BDEPTH: 68 78 Validity code:
Towing dir: 220ø Wire out: 220 m Speed: 30 kn*10

Sorted: 66 Kg Total catch: 364.66 CATCH/HOUR: 1093.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus punctatus	1059.30	30696	96.83	4361
Sardinella aurita	18.81	510	1.72	4363
Scomber japonicus	11.55	180	1.06	4362
Chelidonichthys gabonensis	2.16	18	0.20	
Chloroscombrus chrysurus	1.32	51	0.12	
Priacanthus arenatus	0.84	18	0.08	
Total	1093.98		100.01	

PROJECT STATION:1013

DATE: 4/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 934
start stop duration Long W 1610
TIME :18:59:41 19:29:48 30 (min) Purpose code: 3
LOG :7273.01 7274.47 1.45 Area code : 2
FDEPTH: 142 133 GearCond.code:
BDEPTH: 142 133 Validity code:
Towing dir: 40ø Wire out: 350 m Speed: 30 kn*10

Sorted: 60 Kg Total catch: 211.43 CATCH/HOUR: 422.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ariomma bondi	177.80	9994	42.05	
Antigonia capros	86.10	3826	20.36	
Trachurus trecae	77.00		18.21	
Illex coindetii	26.04	1066	6.16	
Aulopus cadenati	13.24	252	3.13	
Syacium micrurum	10.86	162	2.57	
Lagocephalus laevigatus	6.72	36	1.59	
Uranoscopus albesca	4.80	8	1.14	
Raja miraletus	4.08	8	0.96	
Liocarcinus corrugatus	3.44	722	0.81	
Priacanthus arenatus	2.24	42	0.53	
Dactylopterus volitans	1.92	8	0.45	
Lepidotrigla carolae	1.82	78	0.43	
Chelidonichthys gabonensis	1.20	14	0.28	
Trichiurus lepturus	1.12	28	0.26	
Zeus faber	0.92	36	0.22	
Trachinus pellegrini	0.84	14	0.20	
Pontinus accraensis	0.70	22	0.17	
Grammoplites gruveli	0.64	8	0.15	
Lepidotrigla cadmani	0.56	8	0.13	
Synchiropus phaeton	0.50	22	0.12	
Saurida brasiliensis	0.24	8	0.06	
Peristedion cataphractum	0.08	8	0.02	
Total	422.86		100.00	

PROJECT STATION:1014

DATE: 4/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 929
start stop duration Long W 1614
TIME :21:03:11 21:33:11 30 (min) Purpose code: 3
LOG :7286.17 7287.62 1.43 Area code : 2
FDEPTH: 256 261 GearCond.code:
BDEPTH: 256 261 Validity code:
Towing dir: 120ø Wire out: 600 m Speed: 30 kn*10

Sorted: 37 Kg Total catch: 134.10 CATCH/HOUR: 268.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Illex coindetii	119.00	956	44.37	
Chlorophthalmus atlanticus	65.80		24.53	
Aulopus cadenati	45.08	308	16.81	
MYCTOPHIDAE	6.66	5994	2.48	
Parasudis fraser-bruenneri	6.30	594	2.35	
Brotula barbata	5.30	8	1.98	
Squalus mitsukurii	3.00	2	1.12	
APOGONIDAE	2.04	176	0.76	
Synagrops microlepis	1.90	84	0.71	
Parapenaeus longirostris	1.90	232	0.71	
Pontinus accraensis	1.76	22	0.66	
Ariomma bondi	1.54	22	0.57	
Lophiodes kempi	1.12	8	0.42	
Lagocephalus laevigatus	1.06	8	0.40	
Chascanopsetta lugubris	0.92	22	0.34	
Grammoplites gruveli	0.84	22	0.31	
Promethichthys prometheus	0.64	8	0.24	
Merluccius polli	0.60	2	0.22	
Calappa-like with spines	0.50	8	0.19	
Liocarcinus corrugatus	0.50	84	0.19	
Pterothrissus belloci	0.36	8	0.13	
Coelorinchus coelorhincus	0.36	14	0.13	
Shrimps, small, non comm.	0.28	182	0.10	
Nematopalaemon hastatus	0.22	154	0.08	
Trigla lyra	0.22	8	0.08	
Peristedion cataphractum	0.14	14	0.05	
Synchiropus phaeton	0.08	14	0.03	
CHIROSTYLIDAE	0.08	42	0.03	
GONOSTOMATIDAE	0.00	8		
Total	268.20		99.99	

PROJECT STATION:1015

DATE: 5/ 5/06 GEAR TYPE: PT No: 2 POSITION:Lat N 910
start stop duration Long W 1535
TIME :05:12:47 05:43:42 31 (min) Purpose code: 3
LOG :7333.03 7335.00 1.96 Area code : 2
FDEPTH: 40 43 GearCond.code:
BDEPTH: 35i 322 Validity code:
Towing dir: 310ø Wire out: 130 m Speed: 38 kn*10

Sorted: 17 Kg Total catch: 17.76 CATCH/HOUR: 34.37

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	23.23	8061	67.59	
Ariomma bondi	7.35	552	21.38	
Trachipterus trachypterus	1.26	14	3.67	
Synagrops microlepis	1.16	50	3.38	
Hypoclydonia bella	1.01	101	2.94	
CARANGIDAE	0.12	48	0.35	
PARALEPIDIDAE	0.12	25	0.35	
CARANGIDAE	0.06	33	0.17	
Selene dorsalis, juveniles	0.06	29	0.17	
Illex coindetii	0.02	6	0.06	
Total	34.39		100.06	

PROJECT STATION:1016

DATE: 5/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 913
start stop duration Long W 1539
TIME :07:27:34 07:57:47 30 (min) Purpose code: 3
LOG :7342.89 7344.44 1.53 Area code : 2
FDEPTH: 273 280 GearCond.code:
BDEPTH: 273 280 Validity code:
Towing dir: 100ø Wire out: 700 m Speed: 30 kn*10

Sorted: 100 Kg Total catch: 303.80 CATCH/HOUR: 607.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	426.60	12118	70.21	
Merluccius polli	53.00	194	8.72	4364
Synagrops microlepis	34.66	1702	5.70	
Illex coindetii	18.54	262	3.05	
Pterothrissus belloci	18.40	190	3.03	
Mustelus mustelus	13.00	2	2.14	
Squatina oculata	13.00	2	2.14	
Lophiodes kempi	5.68	10	0.93	
CHIROSTYLIDAE	4.86	352	0.80	
Todaropsis eblanae	4.42	28	0.73	
APOGONIDAE	2.52	270	0.41	
Galeus polli	2.26	82	0.37	
Torpedo torpedo	2.26	2	0.37	
Parapenaeus longirostris	2.16	270	0.36	
Raja miraletus	1.64	2	0.27	
Peristedion cataphractum	1.62	64	0.27	
Parasudis fraser-bruenneri	1.18	64	0.19	
Brotula barbata	0.90	2	0.15	
Chascanopsetta lugubris	0.72	10	0.12	
Sepia officinalis hierredda	0.18	18	0.03	
Total	607.60		99.99	

PROJECT STATION:1017

DATE: 5/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 915
start stop duration Long W 1536
TIME :09:04:42 09:34:43 30 (min) Purpose code: 3
LOG :7351.74 7353.23 1.47 Area code : 2
FDEPTH: 168 166 GearCond.code:
BDEPTH: 168 166 Validity code:
Towing dir: 110ø Wire out: 420 m Speed: 30 kn*10

Sorted: 90 Kg Total catch: 857.80 CATCH/HOUR: 1715.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Antigonia capros	1643.60	39874	95.80	
Illex coindetii	62.40	780	3.64	
Chlorophthalmus atlanticus	7.40	190	0.43	
Erythrocles monodi	2.20	20	0.13	
Total	1715.60		100.00	

PROJECT STATION:1018

DATE: 5/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 919
start stop duration Long W 1530
TIME :10:41:21 10:56:13 15 (min) Purpose code: 3
LOG :7361.29 7362.05 0.76 Area code : 2
FDEPTH: 80 82 GearCond.code:
BDEPTH: 80 82 Validity code:
Towing dir: 210ø Wire out: 220 m Speed: 30 kn*10

Sorted: 200 Kg Total catch: 3406.63 CATCH/HOUR: 13626.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	12430.40	695032	91.22	4366
Saurida brasiliensis	1060.80	98364	7.78	
Ariomma bondi	102.68	3612	0.75	
Priacanthus arenatus	12.24	340	0.09	
Lagocephalus laevigatus	5.44	68	0.04	
Decapterus punctatus	4.76	408	0.03	
Sardinella aurita	4.08	272	0.03	
Antigonia capros	3.40	68	0.02	
Illex coindetii	1.36	68	0.01	
Scomber japonicus	1.36	68	0.01	
Total	13626.52		99.98	

PROJECT STATION:1019

DATE: 5/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 923
start stop duration Long W 1526
TIME :11:58:19 12:28:09 30 (min) Purpose code: 3
LOG :7369.68 7371.17 1.49 Area code : 2
FDEPTH: 58 54 GearCond.code:
BDEPTH: 58 54 Validity code:
Towing dir: 43ø Wire out: 180 m Speed: 30 kn*10

Sorted: 12 Kg Total catch: 12.00 CATCH/HOUR: 24.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pseudupeneus prayensis	13.26	74	55.25	4367
Lagocephalus laevigatus	2.08	4	8.67	
Trachinocephalus myops	1.46	10	6.08	
Sardinella aurita	1.38	24	5.75	4368
Torpedo torpedo	1.32	2	5.50	
Pisodonophis semicinctus	1.28	4	5.33	
Priacanthus arenatus	0.70	4	2.92	
Bothus podas africanus	0.60	14	2.50	
Decapterus punctatus	0.46	8	1.92	
Illex coindetii	0.36	12	1.50	
Sepia officinalis hierredda	0.32	2	1.33	
Pagellus bellottii	0.30	2	1.25	
Chelidonichthys gabonensis	0.24	2	1.00	
Octopus defilippi	0.10	2	0.42	
Sphoeroides marmoratus	0.08	2	0.33	
Fistularia petimba	0.06	2	0.25	
Total	24.00		100.00	

PROJECT STATION:1020

DATE: 5/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 932
start stop duration Long W 1519
TIME :14:09:19 14:39:28 30 (min) Purpose code: 3
LOG :7382.90 7384.49 1.59 Area code : 2
FDEPTH: 41 44 GearCond.code:
BDEPTH: 41 44 Validity code:
Towing dir: 220ø Wire out: 150 m Speed: 30 kn*10

Sorted: 13 Kg Total catch: 13.03 CATCH/HOUR: 26.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Balistes capriscus	5.36	6	20.57	
Aluterus heudelotii	3.96	8	15.20	
Trachinocephalus myops	3.62	14	13.89	
Lagocephalus laevigatus	3.22	8	12.36	
Echeneis naucrates	2.20	4	8.44	
Fistularia petimba	1.30	22	4.99	
Pseudupeneus prayensis	1.26	14	4.83	
Diodon holocanthus	1.08	2	4.14	
Pagellus bellottii	0.74	4	2.84	
Calappa rubroguttata	0.64	2	2.46	
Sepia officinalis hierredda	0.62	2	2.38	
Decapterus rhonchus	0.52	2	2.00	
Raja miraletus	0.50	2	1.92	
Syacium micrurum	0.40	4	1.53	
Illex coindetii	0.26	8	1.00	
Xyrichtys novacula	0.24	4	0.92	
Trachinus armatus	0.14	2	0.54	
Total	26.06		100.01	

PROJECT STATION:1021

DATE: 5/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 957
start stop duration Long W 1455
TIME :18:39:38 18:59:38 20 (min) Purpose code: 3
LOG :7422.67 7423.81 1.14 Area code : 2
FDEPTH: 44 46 GearCond.code:
BDEPTH: 44 46 Validity code:
Towing dir: 220ø Wire out: 160 m Speed: 30 kn*10

Sorted: 60 Kg Total catch: 567.28 CATCH/HOUR: 1701.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	752.40	26631	44.21	4371
Decapterus punctatus	416.10	25029	24.45	4372
Decapterus rhonchus	273.60	20661	16.08	4375
Trachurus trecae	85.50	7992	5.02	4373
Sardinella aurita	85.50	6558	5.02	4370
Aluterus heudelotii	31.35	57	1.84	
Chloroscombrus chrysurus	26.79	597	1.57	4374
Pagrus caeruleostictus	12.30	201	0.72	4369
Sepia officinalis hierredda	11.10	30	0.65	
Pagellus bellottii	3.60	30	0.21	
Rhinobatos cemiculus	2.40	30	0.14	
Selene dorsalis	1.20	30	0.07	
Total	1701.84		99.98	

PROJECT STATION:1022

DATE: 6/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 942
start stop duration Long W 1413
TIME :02:51:05 03:19:41 29 (min) Purpose code: 1
LOG :7477.47 7478.99 1.51 Area code : 2
FDEPTH: 15 15 GearCond.code:
BDEPTH: 30 25 Validity code:
Towing dir: 220ø Wire out: 130 m Speed: 30 kn*10

Sorted: 41 Kg Total catch: 586.85 CATCH/HOUR: 1214.17

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	302.90	8371	24.95	4378
Brachydeuterus auritus	218.48	60083	17.99	
Sardinella maderensis	153.72	28380	12.66	
Chloroscombrus chrysurus	102.62	25655	8.45	
Engraulis encrasicolus	93.10	33917	7.67	
Chloroscombrus chrysurus	84.41	32077	6.95	
Decapterus punctatus	78.00	1800	6.42	
Brachydeuterus auritus	66.83	17599	5.50	
Decapterus punctatus	43.86	11963	3.61	
Sphyraena guachancho	28.45	112	2.34	4376
Engraulis encrasicolus	18.41	5748	1.52	
Decapterus rhonchus	10.55	31	0.87	4377
Sphippion guttifer	5.42	2	0.45	
Selar crumenophthalmus	2.26	10	0.19	
Sphyraena guachancho	1.99	99	0.16	
Arius parkii	1.47	2	0.12	
Pseudupeneus prayensis	0.66	66	0.05	
Euthynnus alletteratus	0.54	2	0.04	
Pagrus caeruleostictus	0.33	33	0.03	
Penaeus notialis	0.02	2		
Total	1214.02		99.97	

PROJECT STATION:1023

DATE: 6/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 940
start stop duration Long W 1415
TIME :04:05:31 04:25:33 20 (min) Purpose code: 3
LOG :7480.82 7481.83 1.00 Area code : 2
FDEPTH: 15 15 GearCond.code:
BDEPTH: 26 33 Validity code:
Towing dir: 220ø Wire out: 136 m Speed: 30 kn*10

Sorted: 4 Kg Total catch: 285.87 CATCH/HOUR: 857.61

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	720.00	107076	83.95	4380
Decapterus rhonchus	108.90	10890	12.70	
Engraulis encrasicolus	15.00	3750	1.75	
Pseudupeneus prayensis	8.40	696	0.98	4381
Decapterus rhonchus	3.81	84	0.44	4379
Sphyraena guachancho	1.50	6	0.17	
Total	857.61		99.99	

PROJECT STATION:1024

DATE: 6/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 943
start stop duration Long W 1412
TIME 09:23.00 09:53.00 30 (min) Purpose code: 3
LOG :7490.91 7492.71 1.78 Area code : 2
FDEPTH: 27 25 GearCond.code:
BDEPTH: 27 25 Validity code:
Towing dir: 220ø Wire out: 140 m Speed: 30 kn*10

Sorted: 54 Kg Total catch: 331.89 CATCH/HOUR: 663.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	206.00	33610	31.03	
Decapterus&Trachurus JUVENILES	114.00	24872	17.17	
Brachydeuterus auritus	106.40	1678	16.03	4382
Decapterus punctatus	42.20		6.36	
Pagrus caeruleostictus	39.80	242	6.00	4383
Sardinella spp. (juv.)	39.00	7242	5.88	
Pagrus caeruleostictus	27.60	2068	4.16	4384
Engraulis encrasicolus	24.60	4920	3.71	4385
Pagellus bellottii	12.20	2604	1.84	
Sphyraena afra	7.40	2	1.11	
Selar crumenophthalmus	6.74	80	1.02	
Decapterus rhonchus	5.80	30	0.87	
Sepia officinalis hierredda	3.60	8	0.54	
Sphippion guttifer	3.58	2	0.54	
Sphyraena guachancho	2.86	8	0.43	
Sepia officinalis hierredda	2.30	76	0.35	
Chloroscombrus chrysurus	2.20	36	0.33	
Lagocephalus laevigatus	2.06	6	0.31	
Fistularia petimba	2.04	36	0.31	
Chaetodipterus goreensis	2.00	8	0.30	
Psettodes belcheri	1.92	6	0.29	
Portunus validus	1.78	4	0.27	
Rachycentron canadum	1.70	2	0.26	
Sphyraena guachancho	1.54	44	0.23	
Caranx crysos	0.90	8	0.14	
Selene dorsalis	0.90	14	0.14	
Pseudupeneus prayensis	0.80	154	0.12	
Chloroscombrus chrysurus	0.80	306	0.12	
Sardinella maderensis	0.58	14	0.09	
Priacanthus arenatus	0.48	8	0.07	
Total	663.78		100.02	

PROJECT STATION:1025

DATE: 6/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 933
start stop duration Long W 1421
TIME :09:25:39 09:45:38 20 (min) Purpose code: 3
LOG :7504.00 7505.08 1.07 Area code : 2
FDEPTH: 35 32 GearCond.code:
BDEPTH: 35 32 Validity code:
Towing dir: 220ø Wire out: 150 m Speed: 30 kn*10

Sorted: 39 Kg Total catch: 603.83 CATCH/HOUR: 1811.49

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	939.90	59124	51.89	4388
Decapterus rhonchus	314.70	20979	17.37	4389
Pseudupeneus prayensis	240.03	8451	13.25	4387
Decapterus punctatus	106.20	9804	5.86	4392
Pagrus caeruleostictus	64.26	1872	3.55	4391
Pagellus bellottii	43.74	378	2.41	4386
Sphyraena afra	33.30	3	1.84	
Brachydeuterus auritus	28.50	1635	1.57	
Trachurus trecae	20.40	2451	1.13	
Torpedo torpedo	9.63	3	0.53	
Decapterus rhonchus	6.69	33	0.37	4390
Galeoides decadactylus	2.52	18	0.14	
Priacanthus arenatus	1.62	36	0.09	
Total	1811.49		100.00	

PROJECT STATION:1026

DATE: 6/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 916
start stop duration Long W 1436
TIME :13:00:36 13:30:23 30 (min) Purpose code: 3
LOG :7529.33 7530.89 1.55 Area code : 2
FDEPTH: 48 40 GearCond.code:
BDEPTH: 48 40 Validity code:
Towing dir: 40ø Wire out: 150 m Speed: 30 kn*10

Sorted: 320 Kg Total catch: 320.25 CATCH/HOUR: 640.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	124.20	874	19.39	4397
Acanthurus monroviae	100.00	80	15.61	4402
Pseudupeneus prayensis	79.00	700	12.33	4399
Lethrinus atlanticus	78.20	126	12.21	4394
Pagrus caeruleostictus	58.40	228	9.12	4403
Lutjanus goreensis	44.40	28	6.93	4396
Pseudupeneus prayensis	34.40	982	5.37	4400
Bodianus speciosus	25.44	50	3.97	
Lutjanus agennes	16.40	2	2.56	
Balistes punctatus	14.00	12	2.19	
Epinephelus aeneus	12.80	2	2.00	4393
Lutjanus fulgens	10.10	20	1.58	4395
Lutjanus endecacanthus	8.80	2	1.37	
Sepia officinalis hierredda	4.30	14	0.67	
Decapterus rhonchus	3.88	32	0.61	4401
Pagrus africanus	3.30	14	0.52	4398
Coris julis	3.22	44	0.50	
Pomadasys rogeri	2.54	2	0.40	
Aluterus monoceros	2.08	2	0.32	
Dactylopterus volitans	1.88	2	0.29	
Chaetodon hoefleri	1.78	16	0.28	
Holacanthus africanus	1.60	4	0.25	
Fistularia petimba	1.56	34	0.24	
Sardinella maderensis	1.34	6	0.21	
Apsilus fuscus	1.08	10	0.17	
Rypticus saponaceus	1.04	4	0.16	
Chromis cadenati	0.92	38	0.14	
Albula vulpes	0.82	2	0.13	
Cephalopholis taeniops	0.74	8	0.12	
Xyrichtys novacula	0.70	14	0.11	
Lagocephalus laevigatus	0.60	2	0.09	
Raja miraletus	0.58	2	0.09	
Priacanthus arenatus	0.36	2	0.06	
Syacium micrurum	0.04	2	0.01	
Total	640.50		100.00	

PROJECT STATION:1027

DATE: 6/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 904

	start	stop	duration			Long W 1447
TIME	:15:59:35	16:30:59	31	(min)	Purpose code:	3
LOG	:7550.83	7552.42	1.57		Area code :	3
FDEPTH:	73	66			GearCond.code:	
BDEPTH:	73	66			Validity code:	

Towing dir: 40ø Wire out: 190 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 33.29 CATCH/HOUR: 64.43

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus punctatus	28.06	619	43.55	4404
Pseudupeneus prayensis	25.35	790	39.35	4405
Priacanthus arenatus	5.77	52	8.96	
Balistes capriscus	2.13	2	3.31	
Lagocephalus laevigatus	1.28	15	1.99	
Sepia officinalis hierredda	0.77	23	1.20	
Sardinella aurita	0.52	14	0.81	4406
Chelidonichthys gabonensis	0.27	4	0.42	
Bothus podas africanus	0.14	6	0.22	
Trachinus armatus	0.08	2	0.12	
Chromis cadenati	0.06	2	0.09	
Total	64.43		100.02	

PROJECT STATION:1028

DATE: 6/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 859

	start	stop	duration			Long W 1451
TIME	:18:10:32	18:40:52	30	(min)	Purpose code:	3
LOG	:7563.86	7565.33	1.46		Area code :	3
FDEPTH:	110	105			GearCond.code:	
BDEPTH:	110	105			Validity code:	

Towing dir: 35ø Wire out: 300 m Speed: 30 kn*10

Sorted: 40 Kg Total catch: 80.55 CATCH/HOUR: 161.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ariomma bondi	118.00	1828	73.25	4407
Antigonia capros	10.56	264	6.55	
Dentex congoensis	8.78	60	5.45	4408
Scorpaena stephanica	4.98	12	3.09	
Erythrocles monodi	4.28	14	2.66	
Trachurus trecae	2.98	10	1.85	4410
Lagocephalus laevigatus	2.96	18	1.84	
Pagellus bellottii	1.98	12	1.23	4409
Priacanthus arenatus	1.70	30	1.06	
Fistularia petimba	1.32	4	0.82	
Raja miraletus	1.20	4	0.74	
Decapterus punctatus	0.70	20	0.43	
Anthias squamipinnis	0.56	20	0.35	
Chelidonichthys gabonensis	0.40	6	0.25	
Boops boops	0.28	2	0.17	
Microchirus wittei	0.16	6	0.10	
Sepia officinalis hierredda	0.16	6	0.10	
Trigla lyra	0.10	6	0.06	
Total	161.10		100.00	

PROJECT STATION:1029

DATE: 7/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 828

	start	stop	duration			Long W 1425
TIME	:02:18:52	02:49:06	30	(min)	Purpose code:	1
LOG	:7620.19	7621.75	1.55		Area code :	3
FDEPTH:	15	35			GearCond.code:	
BDEPTH:	107	93			Validity code:	

Towing dir: 40ø Wire out: 130 m Speed: 30 kn*10

Sorted: 17 Kg Total catch: 17.17 CATCH/HOUR: 34.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ariomma bondi	19.90	622	57.95	
Diodon holocanthus	12.10	310	35.24	
Hypoclydonia bella	1.60	228	4.66	
Priacanthus arenatus	0.30	4	0.87	
Engraulis encrasicolus	0.20	30	0.58	
Illex coindetii	0.10	8	0.29	
Brama brama	0.08	2	0.23	
Echeneis naucrates	0.02	2	0.06	
Anthias anthias	0.02	2	0.06	
Caranx crysos	0.02	12	0.06	
Total	34.34		100.00	

PROJECT STATION:1030

DATE: 7/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 832

	start	stop	duration			Long W 1421
TIME	:03:54:35	04:25:07	31	(min)	Purpose code:	1
LOG	:7627.69	7629.40	1.70		Area code :	3
FDEPTH:	35	39			GearCond.code:	
BDEPTH:	66	79			Validity code:	

Towing dir: 220ø Wire out: 130 m Speed: 30 kn*10

Sorted: 5 Kg Total catch: 5.51 CATCH/HOUR: 10.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ariomma bondi	3.70	271	34.71	
Sardinella aurita	3.37	134	31.61	4412
Decapterus rhonchus	2.73	159	25.61	4411
Diodon holocanthus	0.45	10	4.22	
Scomber japonicus	0.41	6	3.85	
Illex coindetii	0.02	4	0.19	
Total	10.68		100.19	

PROJECT STATION:1031

DATE: 7/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 832

	start	stop	duration			Long W 1422
TIME	:07:03:06	07:32:58	30	(min)	Purpose code:	3
LOG	:7648.46	7650.06	1.60		Area code :	3
FDEPTH:	73	83			GearCond.code:	
BDEPTH:	73	83			Validity code:	

Towing dir: 210ø Wire out: 200 m Speed: 30 kn*10

Sorted: 122 Kg Total catch: 1341.66 CATCH/HOUR: 2683.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Priacanthus arenatus	1822.60	103506	67.92	
Pagellus bellottii	240.00	2242	8.94	4419
Sardinella aurita	209.20	10262	7.80	4417
Decapterus punctatus	191.00	10232	7.12	4413
Trachurus trecae	48.60	1216	1.81	4418
Pagrus caeruleostictus	40.00	236	1.49	4415
Scorpaena sp.	31.96	46	1.19	
Boops boops	27.00	496	1.01	
Lagocephalus laevigatus	20.20	180	0.75	
Pseudupeneus prayensis	14.40	226	0.54	4414
Epinephelus aeneus	13.84	6	0.52	4416
Ariomma bondi	7.80	856	0.29	
Squatina oculata	6.18	2	0.23	
Chelidonichthys gabonensis	4.00	46	0.15	
Illex coindetii	3.60	22	0.13	
Decapterus rhonchus	2.48	90	0.09	
Saurida brasiliensis	0.46	46	0.02	
Total	2683.32		100.00	

PROJECT STATION:1032

DATE: 7/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 834

	start	stop	duration			Long W 1420
TIME	:10:33:33	11:03:36	30	(min)	Purpose code:	3
LOG	:7658.51	7660.15	1.63		Area code :	3
FDEPTH:	48	59			GearCond.code:	
BDEPTH:	48	59			Validity code:	

Towing dir: 225ø Wire out: 180 m Speed: 30 kn*10

Sorted: 46 Kg Total catch: 444.52 CATCH/HOUR: 889.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	482.40	3334	54.26	4422
Chloroscombrus chrysurus	266.40	3618	29.96	4424
Decapterus punctatus	96.72	1364	10.88	4423
Sardinella maderensis	13.92	98	1.57	
Lagocephalus laevigatus	6.24	72	0.70	
Dactylopterus volitans	5.74	10	0.65	
Priacanthus arenatus	5.22	98	0.59	4421
Pseudupeneus prayensis	2.70	36	0.30	4420
Selene dorsalis	2.40	24	0.27	
Raja miraletus	1.62	8	0.18	
Bothus podas africanus	1.20	24	0.13	
Fistularia petimba	0.98	18	0.11	
Sepia officinalis hierredda	0.94	6	0.11	
Caranx crysos	0.94	4	0.11	
Torpedo torpedo	0.64	2	0.07	
Pagrus caeruleostictus	0.60	2	0.07	
Xyrichtys novacula	0.38	10	0.04	
Total	889.04		100.00	

PROJECT STATION:1033

DATE: 7/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 849

	start	stop	duration			Long W 1408
TIME	:15:16:19	15:46:02	30	(min)	Purpose code:	3
LOG	:7692.20	7693.75	1.55		Area code :	3
FDEPTH:	38	40			GearCond.code:	
BDEPTH:	38	40			Validity code:	

Towing dir: 220ø Wire out: 150 m Speed: 30 kn*10

Sorted: 118 Kg Total catch: 118.86 CATCH/HOUR: 237.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagrus caeruleostictus	75.40	512	31.72	4425
Pagellus bellottii	60.00	378	25.24	4428
Pseudupeneus prayensis	42.00	550	17.67	4426
Acanthurus monroviae	13.00	10	5.47	
Chloroscombrus chrysurus	11.24	148	4.73	4427
Bodianus speciosus	5.68	2	2.39	
Dactylopterus volitans	5.44	6	2.29	
Aluterus heudelotii	5.20	12	2.19	
Caranx crysos	3.80	6	1.60	
Diodon holocanthus	3.20	6	1.35	
Fistularia petimba	3.14	100	1.32	
Raja miraletus	3.00	8	1.26	
Sepia officinalis hierredda	2.78		1.17	
Sphyraena sphyraena	1.20	4	0.50	
Trachinocephalus myops	0.94	4	0.40	
Xyrichtys novacula	0.42	6	0.18	
Chilomycterus spinosus mauret.	0.42	2	0.18	
Lagocephalus laevigatus	0.34	2	0.14	
Chaetodon hoefleri	0.26	2	0.11	
Sparisoma rubripinne	0.26	2	0.11	
Total	237.72		100.02	

PROJECT STATION:1034

DATE: 7/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 902

	start	stop	duration			Long W 1358
TIME	:18:02:35	18:33:04	30	(min)	Purpose code:	3
LOG	:7713.76	7715.58	1.81		Area code :	3
FDEPTH:	28	32			GearCond.code:	
BDEPTH:	28	32			Validity code:	

Towing dir: 220ø Wire out: 150 m Speed: 30 kn*10

Sorted: 226 Kg Total catch: 276.94 CATCH/HOUR: 553.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys rogeri	241.60	276	43.62	4429
Pagrus caeruleostictus	99.40	600	17.95	4431
Sardinella aurita	71.60	4406	12.93	4430
Alectis alexandrinus	44.00	44	7.94	
Decapterus punctatus	39.20	2864	7.08	4434
Pagellus bellottii	30.00	256	5.42	4433
Acanthurus monroviae	5.68	6	1.03	
Bodianus speciosus	5.60	4	1.01	
Epinephelus aeneus	4.20	6	0.76	4432
Aluterus monoceros	2.80	6	0.51	
Balistes punctatus	2.20	2	0.40	
Lutjanus goreensis	1.80	2	0.32	
Sepia officinalis hierredda	1.50	4	0.27	
Lethrinus atlanticus	1.40	2	0.25	
Chaetodipterus goreensis	1.12	2	0.20	
Torpedo torpedo	1.06	2	0.19	
Lutjanus fulgens	0.60	2	0.11	
Pseudupeneus prayensis	0.12	10	0.02	
Total	553.88		100.01	

PROJECT STATION:1035

DATE: 7/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 914

	start	stop	duration			Long W 1348
TIME	:20:51:48	21:23:24	32	(min)	Purpose code:	3
LOG	:7735.49	7737.27	1.76		Area code :	3
FDEPTH:	25	26			GearCond.code:	
BDEPTH:	25	26			Validity code:	

Towing dir: 220ø Wire out: 130 m Speed: 30 kn*10

Sorted: 94 Kg Total catch: 115.46 CATCH/HOUR: 216.49

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagrus caeruleostictus	71.44	842	33.00	4438
Psettodes sp.	34.88	139	16.11	4437
Ephippion guttifer	26.63	11	12.30	
Pagellus bellottii	18.56	152	8.57	4440
Pseudupeneus prayensis	15.41	1453	7.12	4439
Decapterus punctatus	12.71	671	5.87	
Decapterus rhonchus	11.03	1592	5.09	4442
Decapterus rhonchus	5.81	17	2.68	
Chaetodipterus goreensis	3.75	11	1.73	
Penaeus notialis	3.06	86	1.41	4435
Priacanthus arenatus	2.81	68	1.30	
Brachydeuterus auritus	1.80	225	0.83	4441
Conger conger	1.54	4	0.71	
Sepia officinalis hierredda	1.31	8	0.61	
Syacium micrurum	1.13	23	0.52	
Scorpaena scrofa	1.03	2	0.48	
Penaeus kerathurus	0.75	36	0.35	4436
Cronius ruber	0.68	11	0.31	
Sardinella aurita	0.68	68	0.31	
Selar crumenophthalmus	0.47	8	0.22	
Raja miraletus	0.38	2	0.18	
Torpedo torpedo	0.32	2	0.15	
Grammoplites gruveli	0.11	11	0.05	
Engraulis encrasicolus	0.11	23	0.05	
Trachinocephalus myops	0.11	2	0.05	
Total	216.51		100.00	

PROJECT STATION:1036

DATE: 7/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 911

	start	stop	duration			Long W 1349
TIME	:22:37:04	23:08:03	31	(min)	Purpose code:	1
LOG	:7739.62	7741.41	1.79		Area code :	3
FDEPTH:	20	15			GearCond.code:	
BDEPTH:	30	25			Validity code:	

Towing dir: 175ø Wire out: 130 m Speed: 30 kn*10

Sorted: 45 Kg Total catch: 215.07 CATCH/HOUR: 416.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	347.23	27573	83.42	4443
Decapterus punctatus	33.45	2843	8.04	
Sphyraena afra	20.13	2	4.84	
Sardinella maderensis	11.50	105	2.76	4444
Scomberomorus tritor	2.11	4	0.51	
Sepia officinalis hierredda	0.70	12	0.17	
Decapterus rhonchus	0.70	70	0.17	
Fistularia petimba	0.35	12	0.08	
Engraulis encrasicolus	0.12	46	0.03	
Total	416.29		100.02	

PROJECT STATION:1037

DATE: 8/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 906

	start	stop	duration			Long W 1349
TIME	:23:38:35	00:08:57	30	(min)	Purpose code:	1
LOG	:7744.51	7746.18	1.68		Area code :	3
FDEPTH:	15	15			GearCond.code:	
BDEPTH:	30	25			Validity code:	

Towing dir: 175ø Wire out: 130 m Speed: 30 kn*10

Sorted: 37 Kg Total catch: 143.73 CATCH/HOUR: 287.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	122.80	12972	42.72	4453
Chloroscombrus chrysurus	61.60	946	21.43	4450
Sardinella maderensis	33.60	962	11.69	4448
Decapterus rhonchus	17.86	48	6.21	4445
Sardinella maderensis	13.00	988	4.52	4449
Decapterus punctatus	12.20	1220	4.24	4452
Sardinella aurita	8.20	122	2.85	4447
Decapterus punctatus	6.40	456	2.23	4451
Sphyraena sphyraena	4.18	22	1.45	
Selene dorsalis	3.80	60	1.32	4446
Euthynnus alletteratus	2.22	4	0.77	
Brachydeuterus auritus	0.94	30	0.33	
Brachydeuterus auritus	0.40	20	0.14	
Dentex macrophthalmus	0.26	2	0.09	
Total	287.46		99.99	

PROJECT STATION:1038

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 854

	start	stop	duration			Long W 1348
TIME	:01:50:20	02:00:08	30	(min)	Purpose code:	1
LOG	:7757.64	7759.26	1.62		Area code :	3
FDEPTH:	25	26			GearCond.code:	
BDEPTH:	25	26			Validity code:	

Towing dir: 355ø Wire out: 140 m Speed: 30 kn*10

Sorted: 67 Kg Total catch: 174.99 CATCH/HOUR: 349.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	185.26	4954	52.93	
Pseudupeneus prayensis	45.60	1180	13.03	4456
Pagrus caeruleostictus	27.26	568	7.79	
Mustelus mustelus	20.62	4	5.89	
Sardinella aurita	20.60	734	5.89	
Sphyraena afra	15.52	2	4.43	
Galeoides decadactylus	13.02	266	3.72	4454
Decapterus punctatus	7.70		2.20	
Sepia officinalis hierredda	3.06	16	0.87	
Trachinocephalus myops	3.00	50	0.86	
Decapterus rhonchus	1.60	100	0.46	4455
Chaetodipterus goreensis	1.42	4	0.41	
Echelus myrus	0.92	4	0.26	
Priacanthus arenatus	0.66	16	0.19	
Sarpa salpa	0.60	8	0.17	
Dicologoglossa hexophthalma	0.52	12	0.15	
Sphyrna lewini	0.48	2	0.14	
Citharus linguatula	0.46	4	0.13	
Eucinostomus melanopterus	0.42	6	0.12	
Nicholsina usta	0.40	2	0.11	
Chloroscombrus chrysurus	0.34	12	0.10	
Penaeus notialis	0.28	10	0.08	
Penaeus kerathurus	0.24	10	0.07	
Total	349.98		100.00	

PROJECT STATION:1039

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 830

	start	stop	duration			Long W 1347
TIME	:07:24:03	07:54:01	30	(min)	Purpose code:	3
LOG	:7789.07	7790.93	1.84		Area code :	3
FDEPTH:	31	33			GearCond.code:	
BDEPTH:	31	33			Validity code:	

Towing dir: 215ø Wire out: 150 m Speed: 30 kn*10

Sorted: 164 Kg Total catch: 486.34 CATCH/HOUR: 972.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus punctatus	531.00	50066	54.59	4451
Sardinella aurita	116.00	9592	11.93	4448
Pagellus bellottii	106.20	884	10.92	4447
Pagrus caeruleostictus	63.80	238	6.56	4449
Lethrinus atlanticus	38.80	72	3.99	4450
Acanthurus monroviae	30.20	50	3.10	
Cymbium sp.	24.00	6	2.47	
Sepia officinalis hierredda	14.94	22	1.54	4452
Balistes punctatus	12.70	14	1.31	
Chaetodipterus goreensis	8.20		0.84	
Pseudupeneus prayensis	7.20	70	0.74	4446
Brachydeuterus auritus	7.00	100	0.72	
Bodianus speciosus	3.36	6	0.35	
Decapterus rhonchus	3.00	100	0.31	
Caranx crysos	3.00	2	0.31	
Psettodes belcheri	1.82	4	0.19	
Epinephelus costae	1.46	2	0.15	
Total	972.68		100.02	

PROJECT STATION:1040

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 824

	start	stop	duration			Long W 1352
TIME	:08:52:19	09:22:09	30	(min)	Purpose code:	1
LOG	:7798.73	7800.34	1.61		Area code :	3
FDEPTH:	37	33			GearCond.code:	
BDEPTH:	37	33			Validity code:	

Towing dir: 35ø Wire out: 150 m Speed: 30 kn*10

Sorted: 169 Kg Total catch: 897.36 CATCH/HOUR: 1794.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	1250.00	36658	69.65	4458
Brachydeuterus auritus	255.20	8210	14.22	4459
Decapterus rhonchus	106.60	436	5.94	4453
Pagellus bellottii	68.40	952	3.81	4461
Decapterus rhonchus	21.40	666	1.19	4457
Caranx crysos	17.40	42	0.97	4455
Selene dorsalis	13.60	290	0.76	
Balistes capriscus	11.80	8	0.66	
Sphyraena guachancho	7.80	58	0.43	
Selar crumenophthalmus	6.30	24	0.35	4454
Pseudupeneus prayensis	5.74	76	0.32	4460
Boops boops	4.94	88	0.28	
Pagrus caeruleostictus	4.66	44	0.26	4456
Decapterus punctatus	4.20	88	0.23	
Dactylopterus volitans	4.20	6	0.23	
Sardinella maderensis	3.20	30	0.18	
Euthynnus alletteratus	2.32	4	0.13	
Priacanthus arenatus	2.00	58	0.11	
Caranx crysos	1.80	30	0.10	
Sepia officinalis hierredda	1.74	2	0.10	
Sphyraena guachancho	0.58	4	0.03	
Sphyraena sphyraena	0.50	2	0.03	
Sphyraena guachancho	0.48	10	0.03	
Galeoides decadactylus	0.32	2	0.02	
Total	1795.18		100.03	

PROJECT STATION:1041

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 819
start stop duration Long W 1356
TIME :10:48:48 11:18:50 30 (min) Purpose code: 3
LOG :7808.86 7810.44 1.57 Area code : 3
FDEPTH: 33 31 GearCond.code:
BDEPTH: 33 31 Validity code:
Towing dir: 215ø Wire out: 150 m Speed: 30 kn*10

Sorted: 181 Kg Total catch: 1136.79 CATCH/HOUR: 2273.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	1901.80	37304	83.65	4464
Pagellus bellottii	142.00	1154	6.25	4465
Priacanthus arenatus	63.50	948	2.79	
Sardinella aurita	33.30	296	1.46	4462
Pseudupeneus prayensis	30.78	282	1.35	4463
Balistes punctatus	22.40	20	0.99	
Dactylopterus volitans	19.00	28	0.84	
Pagrus caeruleostictus	18.36	162	0.81	4466
Lethrinus atlanticus	7.30	46	0.32	4467
Selene dorsalis	5.04	118	0.22	
Balistes capriscus	4.08	2	0.18	
Caranx crysos	3.70	6	0.16	
Aluterus Monoceros	3.56	14	0.16	
Diodon holocanthus	3.40	14	0.15	
Decapterus punctatus	3.24	14	0.14	
Pagrus africanus	2.66	14	0.12	
Sardinella maderensis	2.66	30	0.12	
Rhinobatos cemiculus	2.60	2	0.11	
Galeoides decadactylus	1.62	14	0.07	
Raja miraletus	0.86	2	0.04	
Epinephelus costae	0.84	2	0.04	
Decapterus punctatus	0.74	14	0.03	
Coris julis	0.14	14	0.01	
Total	2273.58		100.01	

PROJECT STATION:1042

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 814
start stop duration Long W 1359
TIME :12:08:47 12:38:45 30 (min) Purpose code: 3
LOG :7814.70 7816.19 1.79 Area code : 3
FDEPTH: 25 24 GearCond.code:
BDEPTH: 25 24 Validity code:
Towing dir: 215ø Wire out: 150 m Speed: 30 kn*10

Sorted: 165 Kg Total catch: 611.00 CATCH/HOUR: 1222.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pagrus caeruleostictus	499.20	3404	40.85	4474
Pagellus bellottii	284.00	1840	23.24	4468
Chloroscombrus chrysurus	152.00	3578	12.44	4473
Priacanthus arenatus	129.60	2410	10.61	4470
Decapterus rhonchus	67.20	1120	5.50	4472
Pseudupeneus prayensis	49.60	408	4.06	4469
Balistes capriscus	16.60	18	1.36	
Cymbium sp.	10.60	4	0.87	
Lethrinus atlanticus	3.60	18	0.29	4471
Dactylopterus volitans	3.08	6	0.25	
Diodon holocanthus	2.40	10	0.20	
Aluterus monoceros	1.92	10	0.16	
Xyrichtys novacula	1.68	30	0.14	
Nicholsina usta	0.48	10	0.04	
Total	1221.96		100.01	

PROJECT STATION:1043

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 809
start stop duration Long W 1402
TIME :13:37:41 14:08:01 30 (min) Purpose code: 3
LOG :7821.14 7822.64 1.49 Area code : 3
FDEPTH: 26 26 GearCond.code:
BDEPTH: 26 26 Validity code:
Towing dir: 215ø Wire out: 150 m Speed: 30 kn*10

Sorted: 123 Kg Total catch: 123.98 CATCH/HOUR: 247.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Balistes capriscus	90.80	100	36.62	4475
Chloroscombrus chrysurus	80.80	1692	32.59	4479
Dactylopterus volitans	47.60	166	19.20	
Decapterus rhonchus	10.44	60	4.21	4478
Pagrus caeruleostictus	9.08	72	3.66	4477
Pseudupeneus prayensis	2.24	16	0.90	4480
Diodon holocanthus	1.64	4	0.66	
Chilomycterus spinosus mauret.	0.90	4	0.36	
Sepia officinalis hierredda	0.74	2	0.30	
Aluterus monoceros	0.68	2	0.27	
Pagellus bellottii	0.64	4	0.26	
Priacanthus arenatus	0.58	8	0.23	
Eucinostomus melanopterus	0.52	6	0.21	
Selar crumenophthalmus	0.46	10	0.19	
Echeneis naucrates	0.38	2	0.15	
Trachinocephalus myops	0.20	2	0.08	
Xyrichtys novacula	0.18	2	0.07	
Sardinella maderensis	0.08	2	0.03	
Total	247.96		99.99	

PROJECT STATION:1044

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 804
start stop duration Long W 1405
TIME :14:59:30 15:29:57 30 (min) Purpose code: 3
LOG :7826.94 7828.46 1.52 Area code : 3
FDEPTH: 25 26 GearCond.code:
BDEPTH: 25 26 Validity code:
Towing dir: 215ø Wire out: 150 m Speed: 30 kn*10

Sorted: 165 Kg Total catch: 1523.96 CATCH/HOUR: 3047.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	2690.00	45154	88.26	4483
Pagellus bellottii	146.60	1040	4.81	4487
Pseudupeneus prayensis	74.40	680	2.44	4482
Pagrus caeruleostictus	29.60	180	0.97	4485
Selene dorsalis	20.00	380	0.66	4484
Chaetodipterus goreensis	13.20	32	0.43	4481
Pomadasys rogeri	12.30	22	0.40	4486
Caranx crysos	11.40	20	0.37	
Selar crumenophthalmus	11.20	60	0.37	
Dactylopterus volitans	10.80	40	0.35	
Lagocephalus laevigatus	9.40	60	0.31	
Decapterus rhonchus	6.80	20	0.22	
Eucinostomus melanopterus	3.20	40	0.10	
Brachydeuterus auritus	2.80	20	0.09	
Aluterus heudelotii	1.80	20	0.06	
Priacanthus arenatus	1.80	20	0.06	
Sphyraena guachancho	1.52	4	0.05	
Ephippion guttifer	1.10	2	0.04	
Total	3047.92		99.99	

PROJECT STATION:1045

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 800
start stop duration Long W 1408
TIME :16:29:00 16:59:06 30 (min) Purpose code: 3
LOG :7833.22 7834.84 1.61 Area code : 3
FDEPTH: 34 27 GearCond.code:
BDEPTH: 34 27 Validity code:
Towing dir: 33ø Wire out: 150 m Speed: 30 kn*10

Sorted: 263 Kg Total catch: 263.45 CATCH/HOUR: 526.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Rhizoprionodon acutus	213.20	122	40.46	
Dactylopterus volitans	133.60	506	25.36	
Balistes capriscus	103.60	92	19.66	4489
Chloroscombrus chrysurus	21.60	412	4.10	4492
Chaetodipterus goreensis	16.70	38	3.17	4488
Pseudupeneus prayensis	10.00	104	1.90	4490
Caranx senegallus	8.00	8	1.52	
Pagellus bellottii	5.80	54	1.10	4491
Pomadasys rogeri	4.80	8	0.91	
Sepia officinalis hierredda	3.00	6	0.57	
Brachydeuterus auritus	1.84	20	0.35	4493
Selar crumenophthalmus	1.80	6	0.34	
Decapterus rhonchus	1.12	6	0.21	
Selene dorsalis	0.92	46	0.17	4494
Aluterus heudelotii	0.48	6	0.09	
Lagocephalus laevigatus	0.24	2	0.05	
Total	526.70		99.96	

PROJECT STATION:1046

DATE: 8/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 754
start stop duration Long W 1413
TIME :18:25:25 18:44:35 19 (min) Purpose code: 3
LOG :7845.38 7846.51 1.12 Area code : 3
FDEPTH: 86 90 GearCond.code:
BDEPTH: 86 90 Validity code:
Towing dir: 215ø Wire out: 220 m Speed: 30 kn*10

Sorted: 64 Kg Total catch: 792.38 CATCH/HOUR: 2502.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus punctatus	1973.68	55431	78.88	4500
Priacanthus arenatus	202.11	9303	8.08	
Sardinella aurita	197.37	6748	7.89	4496
Dentex congoensis	26.84	515	1.07	4499
Scomber japonicus	22.11	395	0.88	4495
Trachurus trecae	21.32	553	0.85	4498
Lagocephalus laevigatus	20.53	237	0.82	
Raja miraletus	12.25	41	0.49	
Pagrus caeruleostictus	9.73	28	0.39	4497
Dactylopterus volitans	6.44	19	0.26	
Pseudupeneus prayensis	2.78	41	0.11	
Boops boops	2.78	41	0.11	
Dentex canariensis	2.05	3	0.08	
Scorpaena angolensis	1.23	6	0.05	
Dentex angolensis	1.04	6	0.04	
Total	2502.26		100.00	

PROJECT STATION:1047

DATE: 9/ 5/06 GEAR TYPE: PT No: 1 POSITION:Lat N 727
start stop duration Long W 1344
TIME :01:20:38 01:55:45 35 (min) Purpose code: 1
LOG :7895.87 7897.98 2.10 Area code : 3
FDEPTH: 22 29 GearCond.code:
BDEPTH: 152 89 Validity code:
Towing dir: 35ø Wire out: 130 m Speed: 30 kn*10

Sorted: 52 Kg Total catch: 52.50 CATCH/HOUR: 90.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hypoclydonia bella	48.09	4181	53.43	
Euthynnus alletteratus	27.26	26	30.29	4501
Alectis alexandrinus	4.37	2	4.86	
Ariomma bondi	3.79	147	4.21	4502
Echeneis naucrates	3.31	3	3.68	
Illex coindetii	1.47	86	1.63	
Caranx hippos	1.41	2	1.57	
Promethichthys prometheus	0.15	3	0.17	
Saurida brasiliensis	0.10	17	0.11	
Caranx crysos	0.05	2	0.06	
Total	90.00		100.01	

PROJECT STATION:1048

DATE: 9/ 5/06 GEAR TYPE: PT No: 1 POSITION:Lat N 740
start stop duration Long W 1335
TIME :03:47:08 04:17:05 30 (min) Purpose code: 1
LOG :7911.60 7913.44 1.82 Area code : 3
FDEPTH: 47 12 GearCond.code:
BDEPTH: 47 31 Validity code:
Towing dir: 35ø Wire out: 130 m Speed: 30 kn*10

Sorted: 31 Kg Total catch: 35.82 CATCH/HOUR: 71.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinella maderensis	54.80	712	76.49	4503
Brachydeuterus auritus	7.44	410	10.39	4505
Chloroscombrus chrysurus	3.98	82	5.56	4504
Euthynnus alletteratus	3.56	6	4.97	
Decapterus rhonchus	0.88	10	1.23	
Sphyraena guachancho	0.48	10	0.67	
Selene dorsalis	0.40	10	0.56	
Echeneis naucrates	0.10	2	0.14	
Total	71.64		100.01	

PROJECT STATION:1049

DATE: 9/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 742
start stop duration Long W 1333
TIME :07:28:19 07:58:02 30 (min) Purpose code: 3
LOG :7918.89 7920.57 1.66 Area code : 3
FDEPTH: 23 32 GearCond.code:
BDEPTH: 23 32 Validity code:
Towing dir: 215ø Wire out: 140 m Speed: 30 kn*10

Sorted: 163 Kg Total catch: 315.82 CATCH/HOUR: 631.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	201.60	4814	31.92	4515
Brachydeuterus auritus	122.60	6248	19.41	4514
Galeoides decadactylus	104.00	1810	16.47	4516
Sphyraena guachancho	31.30	68	4.96	4510
Galeoides decadactylus	28.30	74	4.48	4509
Arius heudeloti	26.30	10	4.16	
Pagrus caeruleostictus	21.90	140	3.47	4507
Selene dorsalis	17.70	506	2.80	
Sphyraena guachancho	11.14	170	1.76	4511
Albula vulpes	8.56	14	1.36	4508
Rhizoprionodon acutus	8.20	12	1.30	
Pagrus caeruleostictus	6.40		1.01	
Pseudotolithus senegalensis	5.70	6	0.90	
Pomadasys jubelini	5.66	14	0.90	4506
Eucinostomus melanopterus	5.06	80	0.80	
Sardinella maderensis	4.06	80	0.64	4512
Pseudupeneus prayensis	3.74	64	0.59	4513
Scomberomorus tritor	3.22	6	0.51	
Trichiurus lepturus	2.56	38	0.41	
Sphyrna lewini	2.32	4	0.37	
Sphyraena barracuda	2.14	2	0.34	
Pomadasys rogeri	1.72	6	0.27	
Balistes capriscus	1.50	6	0.24	
Ilisha africana	1.18	58	0.19	
Decapterus rhonchus	1.02	48	0.16	
Pteroscion peli	0.96	48	0.15	
Caranx crysos	0.90	6	0.14	
Pomadasys rogeri	0.86	6	0.14	
Cronius ruber	0.80	6	0.13	
Lethrinus atlanticus	0.24	2	0.04	
Total	631.64		100.02	

PROJECT STATION:1050

DATE: 9/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 737
start stop duration Long W 1337
TIME :09:29:07 09:44:00 15 (min) Purpose code: 3
LOG :7925.80 7926.60 0.78 Area code : 3
FDEPTH: 57 60 GearCond.code: 4
BDEPTH: 57 60 Validity code: 9
Towing dir: 215ø Wire out: 180 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
J E L L Y F I S H	0.00			
Total				

PROJECT STATION:1051

DATE: 9/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 731
start stop duration Long W 1341
TIME :11:05:03 11:35:07 30 (min) Purpose code: 3
LOG :7935.29 7936.82 1.52 Area code : 3
FDEPTH: 81 75 GearCond.code:
BDEPTH: 81 75 Validity code:
Towing dir: 35ø Wire out: 220 m Speed: 30 kn*10

Sorted: 289 Kg Total catch: 289.53 CATCH/HOUR: 579.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Decapterus punctatus	240.00	13434	41.45	4508
Dentex congoensis	85.60	996	14.78	4506
Trachurus trecae	82.00	444	14.16	4511
Chromis cadenati	61.20	538	10.57	
Dentex angolensis	32.40	230	5.60	4509
Epinephelus aeneus	21.60	2	3.73	4512
Scomber japonicus	19.40		3.35	
Priacanthus arenatus	11.60	16	2.00	
Pagrus caeruleostictus	9.60	18	1.66	4510
Boops boops	6.82	90	1.18	
Fistularia petimba	1.94	12	0.34	
Erythrocles monodi	1.20	164	0.21	
Echeneis naucrates	1.20	4	0.21	
Sardinella aurita	0.94	52	0.16	4507
Decapterus rhonchus	0.86	2	0.15	
Scorpaena sp.	0.74	4	0.13	
Pagellus bellottii	0.74	6	0.13	
Raja miraletus	0.62	2	0.11	
Pseudupeneus prayensis	0.40	4	0.07	
Citharus linguatula	0.20	6	0.03	
Total	579.06		100.02	

PROJECT STATION:1052

DATE: 9/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 716
start stop duration Long W 1257
TIME :17:24:40 17:56:41 28 (min) Purpose code: 3
LOG :7992.35 7993.57 1.06 Area code : 3
FDEPTH: 73 79 GearCond.code:
BDEPTH: 73 79 Validity code:
Towing dir: 225ø Wire out: 200 m Speed: 30 kn*10

Sorted: 182 Kg Total catch: 182.23 CATCH/HOUR: 420.53

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	322.85	3192	76.77	4520
Pagrus caeruleostictus	24.46	60	5.82	4517
Dentex angolensis	15.58	99	3.70	4515
Priacanthus arenatus	11.19	125	2.66	
Squatina oculata	10.78	7	2.56	
Pagellus bellottii	8.54	28	2.03	4516
Umbrina canariensis	5.54	16	1.32	4518
Dentex canariensis	4.62	5	1.10	4514
Trachurus trecae	3.55	25	0.84	
Pseudupeneus prayensis	2.49	42	0.59	4519
Dentex gibbosus	2.31	2	0.55	4513
Scorpaena angolensis	1.48	5	0.35	
Zeus faber	1.18	5	0.28	
Sepia officinalis hierredda	1.15	2	0.27	
Ariomma bondi	1.15	53	0.27	
Lutjanus fulgens	0.97	2	0.23	
Raja miraletus	0.72	5	0.17	
Anthias anthias	0.65	83	0.15	
Lagocephalus laevigatus	0.60	5	0.14	
Fistularia petimba	0.42	2	0.10	
Alloteuthis africana	0.12	62	0.03	
Chaetodon robustus	0.12	2	0.03	
Scyllarides herklotsii	0.09	2	0.02	
Lepidotrigla cadmani	0.09	2	0.02	
Calappa pelii	0.05	2	0.01	
Lepidotrigla carolae	0.02	2		
Total	420.72		100.01	

PROJECT STATION:1053

DATE: 9/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 723
start stop duration Long W 1253
TIME :18:55:50 19:25:57 30 (min) Purpose code: 3
LOG :8002.34 8004.00 1.67 Area code : 3
FDEPTH: 49 43 GearCond.code:
BDEPTH: 49 43 Validity code:
Towing dir: 35ø Wire out: 150 m Speed: 30 kn*10

Sorted: 150 Kg Total catch: 471.99 CATCH/HOUR: 943.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	231.60	9608	24.53	4525
Sphyraena guachancho	180.20	532	19.09	4521
Pteroscion peli	125.60	4186	13.31	
Ilisha africana	106.80	3132	11.31	
Selene dorsalis	98.40	6560	10.42	4524
Trichiurus lepturus	62.00	2018	6.57	
Ethmalosa fimbriata	28.56	4106	3.03	
Chloroscombrus chrysurus	20.16		2.14	
Pseudotolithus senegalensis	19.80	46	2.10	4522
Sphyraena afra	7.30	2	0.77	
Penaeus notialis	7.20	228	0.76	4527
Arius heudeloti	6.80	4	0.72	
Pentanemus quinquarius	6.48	96	0.69	
Scomberomorus tritor	6.18	10	0.65	4523
Elops senegalensis	5.76	24	0.61	
Galeoides decadactylus	5.52	240	0.58	4526
Portunus validus	5.20	24	0.55	
Drepane africana	3.80	2	0.40	
Caranx senegallus	3.10	4	0.33	
Trachurus trecae	2.88	24	0.31	
Selar crumenophthalmus	2.40	24	0.25	
Eucinostomus melanopterus	1.92	48	0.20	
Galeoides decadactylus	1.86	8	0.20	
Serranus accraensis	0.96	48	0.10	
Dicologoglossa cuneata	0.96	24	0.10	
Shrimps, small, non comm.	0.96	408	0.10	
Pseudotolithus senegalensis	0.72	48	0.08	
Pseudotolithus elongatus	0.72	2	0.08	
Penaeus kerathurus	0.14	12	0.01	4528
Total	943.98		99.99	

PROJECT STATION:1054

DATE: 9/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 728
start stop duration Long W 1249
TIME :20:42:37 21:12:51 30 (min) Purpose code: 3
LOG :8011.02 8012.59 1.57 Area code : 3
FDEPTH: 19 24 GearCond.code:
BDEPTH: 19 24 Validity code:
Towing dir: 215ø Wire out: 140 m Speed: 30 kn*10

Sorted: 95 Kg Total catch: 244.67 CATCH/HOUR: 489.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Galeoides decadactylus	77.44	3248	15.83	4532
Brachydeuterus auritus	73.44	2476	15.01	4536
Pentanemus quinquarius	55.04	1074	11.25	4537
Pteroscion peli	34.24	1388	7.00	
Polydactylus quadrifilis	28.80	2	5.89	
Selene dorsalis	24.48	2938	5.00	
Pomadasys jubelini	24.40	20	4.99	4533
Galeoides decadactylus	22.80	90	4.66	4534
Lutjanus dentatus	22.40	2	4.58	
Ilisha africana	16.32		3.34	
Trichiurus lepturus	14.40	304	2.94	
Pseudotolithus senegalensis	13.60	34	2.78	4531
Dasyatis margarita	12.80	16	2.62	
Chloroscombrus chrysurus	10.88	1088	2.22	
Pseudotolithus senegalensis	8.48	112	1.73	
Sphyraena guachancho	6.80	16	1.39	
Pseudotolithus typus	4.80	2	0.98	
Parapenaeopsis atlantica	4.40	1274	0.90	
Eucinostomus melanopterus	4.32	64	0.88	
Pseudotolithus elongatus	4.20	20	0.86	4535
Scomberomorus tritor	3.54	4	0.72	
Arius heudeloti	3.10	2	0.63	
Penaeus kerathurus	2.14	96	0.44	4530
Cynoglossus senegalensis	2.08	16	0.43	
Drepane africana	1.92	16	0.39	
Trachinocephalus myops	1.92	32	0.39	
Lethrinus atlanticus	1.80	4	0.37	
Drepane africana	1.80	2	0.37	
Pseudupeneus prayensis	1.60	16	0.33	
Pseudotolithus epipercus	1.60	16	0.33	
Caranx senegallus	1.32	2	0.27	
Ethmalosa fimbriata	0.90	8	0.18	
Rhizoprionodon acutus	0.64	2	0.13	
Pomadasys peroteti	0.48	2	0.10	
Portunus validus	0.34	2	0.07	
Penaeus notialis	0.12	2	0.02	4529
Total	489.34		100.02	

PROJECT STATION:1057

DATE:10/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 717
start stop duration Long W 1217
TIME :06:28:01 06:57:37 30 (min) Purpose code: 3
LOG :8068.48 8070.04 1.54 Area code : 3
FDEPTH: 19 25 GearCond.code:
BDEPTH: 19 25 Validity code:
Towing dir: 215ø Wire out: 130 m Speed: 30 kn*10

Sorted: 76 Kg Total catch: 199.22 CATCH/HOUR: 398.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ilisha africana	141.50	370	35.51	
Pseudotolithus senegalensis	32.10	172	8.06	4548
Chloroscombrus chrysurus	30.80	1108	7.73	4550
Trichiurus lepturus	23.60	390	5.92	
Pseudotolithus senegalensis	20.50		5.15	
Galeoides decadactylus	19.00		4.77	
Pteroscion peli	17.50	150	4.39	
Brachydeuterus auritus	17.20	722	4.32	4551
Caranx crysos	17.10		4.29	
Galeoides decadactylus	12.20	70	3.06	4545
Sardinella maderensis	11.30	1424	2.84	4549
Pentanemus quinquarius	11.30	620	2.84	4547
Sphyraena guachancho	10.80	34	2.71	4546
Panulirus regius	6.56	14	1.65	
Selene dorsalis	4.90	400	1.23	
Caranx crysos	4.00	20	1.00	
Sphyraena guachancho	3.20	20	0.80	
Drepane africana	2.58	2	0.65	
Penaeus notialis	2.42	34	0.61	4553
Cynoglossus senegalensis	2.30	10	0.58	
Pseudotolithus moorii	1.90	10	0.48	
Portunus validus	1.34	4	0.34	
Drepane africana	1.20	50	0.30	
Penaeus kerathurus	0.70	48	0.18	4552
Sardinella maderensis	0.62	6	0.16	
Ethmalosa fimbriata	0.50	2	0.13	
Pomadasys jubelini	0.40	10	0.10	
Pseudotolithus elongatus	0.40	2	0.10	
Pseudotolithus typus	0.32	2	0.08	
Microchirus wittei	0.20	10	0.05	
Total	398.44		100.03	

PROJECT STATION:1055

DATE:10/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 716
start stop duration Long W 1218
TIME :03:07:17 03:37:19 30 (min) Purpose code: 1
LOG :8049.75 8051.24 1.48 Area code : 3
FDEPTH: 12 14 GearCond.code:
BDEPTH: 24 32 Validity code:
Towing dir: 215ø Wire out: 130 m Speed: 30 kn*10

Sorted: 73 Kg Total catch: 73.99 CATCH/HOUR: 147.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ilisha africana	63.80	3284	43.11	4537
Chloroscombrus chrysurus	25.50	676	17.23	4540
Sphyraena sphyraena	17.56	58	11.87	4538
Sardinella maderensis	14.64	214	9.89	4544
Galeoides decadactylus	6.70	90	4.53	4541
Sarda sarda	4.30		2.91	
Alectis alexandrinus	4.20	48	2.84	4539
Brachydeuterus auritus	3.58	58	2.42	4543
Trichiurus lepturus	3.28		2.22	
Selene dorsalis	2.28		1.54	
Drepane africana	1.20	2	0.81	
Caranx crysos	0.60	4	0.41	
Penaeus notialis	0.10	18	0.07	
Pteroscion peli	0.10	2	0.07	
Portunus validus	0.06	2	0.04	
Penaeus kerathurus	0.04	2	0.03	
Caranx hippos	0.04	2	0.03	
Total	147.98		100.02	

PROJECT STATION:1058

DATE:10/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 713
start stop duration Long W 1219
TIME :08:14:13 08:43:38 29 (min) Purpose code: 3
LOG :8072.77 8074.36 1.58 Area code : 3
FDEPTH: 38 46 GearCond.code:
BDEPTH: 38 46 Validity code:
Towing dir: 215ø Wire out: 150 m Speed: 30 kn*10

Sorted: 91 Kg Total catch: 258.75 CATCH/HOUR: 535.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	202.76	6329	37.87	
Ilisha africana	61.99	1922	11.58	
Sphyraena guachancho	46.24	273	8.64	4558
Sphyraena guachancho	38.81	1260	7.25	4559
Galeoides decadactylus	33.46		6.25	
Sardinella maderensis	26.65	1767	4.98	4555
Pseudotolithus senegalensis	23.38	52	4.37	4557
Selene dorsalis	18.97	710	3.54	
Galeoides decadactylus	15.70	151	2.93	4556
Rhizoprionodon acutus	14.48	4	2.70	
Sardinella maderensis	8.05	120	1.50	4554
Pteroscion peli	6.66	217	1.24	
Trichiurus lepturus	6.37	188	1.19	
Chloroscombrus chrysurus	5.94	87	1.11	
Penaeus notialis	5.28	250	0.99	4560
Portunus validus	4.49	23	0.84	
Alectis alexandrinus	3.02	2	0.56	
Caranx senegallus	1.97	2	0.37	
Stromateus fiatola	1.90	4	0.35	
Sepia officinalis hierredda	1.51	2	0.28	
Sardinella aurita	1.43	6	0.27	
Caranx crysos	1.41	2	0.26	
Scomberomorus tritor	1.37	2	0.26	
Eucinostomus melanopterus	1.30	29	0.24	
Pseudotolithus senegalensis	1.30	14	0.24	
Balistes capriscus	0.62	2	0.12	
Alectis alexandrinus	0.29	29	0.05	
Total	535.35		99.98	

PROJECT STATION:1056

DATE:10/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 710
start stop duration Long W 1222
TIME :04:51:23 05:16:05 25 (min) Purpose code: 1
LOG :8058.48 8059.88 1.40 Area code : 3
FDEPTH: 14 18 GearCond.code:
BDEPTH: 63 54 Validity code:
Towing dir: 35ø Wire out: 130 m Speed: 30 kn*10

Sorted: 29 Kg Total catch: 29.60 CATCH/HOUR: 71.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Engraulis encrasicolus	56.16	9504	79.05	
Brachydeuterus auritus	10.68	2136	15.03	
Sardinella maderensis	2.18	60	3.07	
Ilisha africana	0.60	38	0.84	
Sepia officinalis hierredda	0.58	2	0.82	
Chloroscombrus chrysurus	0.48	19	0.68	
Cynoglossus cadenati	0.22	2	0.31	
Decapterus punctatus	0.10	10	0.14	
Decapterus rhonchus	0.02	2	0.03	
Sphyraena guachancho	0.02	2	0.03	
Total	71.04		100.00	

PROJECT STATION:1059

DATE:10/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 710
start stop duration Long W 1222
TIME :09:40:22 10:10:28 30 (min) Purpose code: 3
LOG :8077.38 8078.99 1.60 Area code : 3
FDEPTH: 58 64 GearCond.code:
BDEPTH: 58 64 Validity code:
Towing dir: 215ø Wire out: 180 m Speed: 30 kn*10

Sorted: 4 Kg Total catch: 4.91 CATCH/HOUR: 9.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Scorpaena stephanica	3.58	8	36.46	
Dentex angolensis	1.40	6	14.26	
Priacanthus arenatus	1.16	8	11.81	
Sphyraena guachancho	1.00	8	10.18	
Aluterus heudelotii	0.56	2	5.70	
Brachydeuterus auritus	0.50	8	5.09	
Brotula barbata	0.46	2	4.68	
Fistularia petimba	0.38	10	3.87	
Pagrus caeruleostictus	0.38	2	3.87	
Uranoscopus albesca	0.24	2	2.44	
Selar crumenophthalmus	0.14	2	1.43	
Pseudupeneus prayensis	0.02	2	0.20	
Total	9.82		99.99	

PROJECT STATION:1060

DATE:10/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 648

	start	stop	duration			Long W 1148
TIME	:15:32:31	16:02:51	30	(min)	Purpose code:	3
LOG	:8132.33	8133.90	1.55		Area code	: 3
FDEPTH:	82	90			GearCond.code:	
BDEPTH:	82	90			Validity code:	

Towing dir: 219ø Wire out: 225 m Speed: 30 kn*10

Sorted: 112 Kg Total catch: 4482.90 CATCH/HOUR: 8965.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ariomma bondi	5962.80		66.51	
Priacanthus arenatus	2627.40	84734	29.30	4562
Dentex congoensis	95.80	1020	1.07	4563
Sardinella maderensis	77.00	4086	0.86	4564
Sardinella aurita	70.00	2202	0.78	4565
Pagrus caeruleostictus	44.80	78	0.50	
Decapterus rhonchus	29.80	630	0.33	
Brachydeuterus auritus	27.52	1652	0.31	
Fistularia petimba	12.58	78	0.14	
Dentex angolensis	10.22		0.11	
Decapterus punctatus	7.86	394	0.09	
Total	8965.78		100.00	

PROJECT STATION:1061

DATE:10/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 654

	start	stop	duration			Long W 1143
TIME	:16:41:00	16:41:00	30	(min)	Purpose code:	3
LOG	:8145.87	8147.34	1.46		Area code	: 3
FDEPTH:	45	50			GearCond.code:	
BDEPTH:	45	50			Validity code:	

Towing dir: 219ø Wire out: 150 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 151.58 CATCH/HOUR: 303.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Engraulis encrasicolus	140.80	7314	46.44	
Sphyraena guachancho	78.40	2584	25.86	4566
Brachydeuterus auritus	45.28	8662	14.94	
Epinephelus aeneus	8.90	2	2.94	4570
Sardinella maderensis	8.40	1280	2.77	
Pagrus caeruleostictus	3.80	10	1.25	4568
Selene dorsalis	3.68	528	1.21	
Alectis alexandrinus	2.64	2	0.87	
Caranx crysos	*2.42*	*4*	*0.80*	
Selene dorsalis	2.32	14	0.77	
Sphyraena guachancho	1.98	18	0.65	4567
Pseudotolithus senegalensis	1.74	2	0.57	
Galeoides decadactylus	1.44	72	0.47	4569
Decapterus rhonchus	0.48	8	0.16	
Aluterus heudelotii	0.48	8	0.16	
Illex coindetii	0.40	104	0.13	
Total	303.16		99.99	

PROJECT STATION:1062

DATE:10/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 658

	start	stop	duration			Long W 1140
TIME	:20:35:40	21:05:45	30	(min)	Purpose code:	3
LOG	:8156.98	8158.63	1.64		Area code	: 3
FDEPTH:	21	29			GearCond.code:	
BDEPTH:	21	29			Validity code:	

Towing dir: *220ø* Wire out: *140 m* Speed: *30 kn*10*

Sorted: 26 Kg Total catch: 121.70 CATCH/HOUR: 243.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Parapenaeopsis atlantica	51.12		21.00	
Brachydeuterus auritus	44.32	1916	18.21	4577
Pseudotolithus senegalensis	21.12	312	8.68	4572
Pteroscion peli	20.00	822	8.22	4573
Selene dorsalis	19.28	2348	7.92	4578
Pseudotolithus senegalensis	19.10	110	7.85	4571
Chloroscombrus chrysurus	15.20	1668	6.24	4580
Pentanemus quinquarius	13.04	224	5.36	4582
Ilisha africana	11.60	644	4.77	4574
Trichiurus lepturus	5.92	96	2.43	4581
Cynoglossus senegalensis	5.68	22	2.33	4576
Penaeus notialis	2.60	114	1.07	4583
Galeoides decadactylus	2.40	56	0.99	4579
Portunus validus	2.22	6	0.91	
Sphyraena guachancho	2.14	6	0.88	
Drepane africana	2.12	2	0.87	
Callinectes pallidus	2.08	104	0.85	
Cynoglossus senegalensis	1.28	56	0.53	4575
Sardinella maderensis	0.88	48	0.36	
B I V A L V E S	0.48	48	0.20	
Drepane africana	0.42	16	0.17	
Cynoglossus monodi	0.32	8	0.13	
Total	243.32		99.97	

PROJECT STATION:1063

DATE:11/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 647

	start	stop	duration			Long W 1125
TIME	:01:57:12	02:27:05	30	(min)	Purpose code:	1
LOG	:8180.00	8181.68	1.68		Area code	: 4
FDEPTH:	13	18			GearCond.code:	
BDEPTH:	33	40			Validity code:	

Towing dir: 220ø Wire out: 130 m Speed: 30 kn*10

Sorted: 6 Kg Total catch: 55.87 CATCH/HOUR: 111.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	57.40	1024	51.37	4590
Ilisha africana	14.58	460	13.05	4586
Lutjanus dentatus	12.50	2	11.19	
Sphyraena guachancho	10.76	96	9.63	4584
Sardinella maderensis	3.46	46	3.10	4588
Selene dorsalis	3.12	40	2.79	4585
Scomberomorus tritor	2.94	12	2.63	
Sardinella maderensis	2.18	310	1.95	4589
Brachydeuterus auritus	2.10	76	1.88	4587
Trichiurus lepturus	2.08	34	1.86	
Galeoides decadactylus	0.28	2	0.25	
Portunus validus	0.16	10	0.14	
Pentanemus quinquarius	0.12	2	0.11	
Penaeus notialis	0.06	6	0.05	
Total	111.74		100.00	

PROJECT STATION:1064

DATE:11/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 641

	start	stop	duration			Long W 1130
TIME	:83:44.87	84:14.80	30	(min)	Purpose code:	1
LOG	:8189.53	8191.16	1.63		Area code	: 4
FDEPTH:	18	36			GearCond.code:	
BDEPTH:	75	64			Validity code:	

Towing dir: 35ø Wire out: 130 m Speed: 30 kn*10

Sorted: 4 Kg Total catch: 16.61 CATCH/HOUR: 33.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pteroscion peli	25.30	822	76.16	
Brachydeuterus auritus	2.06	104	6.20	4592
Selene dorsalis	1.50	28	4.52	4595
Sphyraena sphyraena	1.30	18	3.91	4596
Chloroscombrus chrysurus	1.18	22	3.55	4594
Sardinella maderensis	0.84	8	2.53	
Sepia officinalis hierredda	0.32	2	0.96	
Ilisha africana	0.24	14	0.72	4591
Sardinella maderensis	0.20	28	0.60	4593
Ariomma bondi	0.14	6	0.42	
Engraulis encrasicolus	0.08	10	0.24	
Trichiurus lepturus	0.06	2	0.18	
Total	33.22		99.99	

PROJECT STATION:1065

DATE:11/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 648

	start	stop	duration			Long W 1124
TIME	:06:15:20	06:45:14	30	(min)	Purpose code:	3
LOG	:8200.14	8201.78	1.63		Area code	: 4
FDEPTH:	*27*	*35*			*GearCond.code:*	
BDEPTH:	27	35			Validity code:	

Towing dir: 215ø Wire out: 140 m Speed: 30 kn*10

Sorted: 161 Kg Total catch: 303.16 CATCH/HOUR: 606.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ilisha africana	168.00	4708	27.71	4603
Pteroscion peli	82.80	3350	13.66	
Sphyraena guachancho	59.00	1164	9.73	4597
Pseudotolithus senegalensis	56.90	230	9.38	4598
Trichiurus lepturus	42.40	700	6.99	
Parapenaeopsis atlantica	37.60	9520	6.20	
Pseudotolithus senegalensis	36.00	528	5.94	4600
Ethmalosa fimbriata	27.40	84	4.52	4599
Chloroscombrus chrysurus	20.16	1200	3.32	4601
Galeoides decadactylus	17.52	392	2.89	4602
Brachydeuterus auritus	12.16	272	2.01	
Penaeus notialis	*8.68*	*504*	*1.43*	*4606*
Pentanemus quinquarius	7.52	144	1.24	4604
Cynoglossus senegalensis	5.44	48	0.90	
Pseudotolithus elongatus	5.20	64	0.86	4605
Selene dorsalis	4.64		0.77	
Sardinella maderensis	3.20	312	0.53	
Sphyraena guachancho	2.72	32	0.45	
Echelus myrus	2.24	4	0.37	
Cynoglossus senegalensis	1.48	4	0.24	
Pseudotolithus elongatus	1.20	6	0.20	
Drepane africana	1.12	24	0.18	
Portunus validus	0.72	32	0.12	
Ephippion guttifer	0.64	16	0.11	
Lagocephalus laevigatus	0.64	8	0.11	
Decapterus rhonchus	0.40	8	0.07	
Pomadasys jubelini	0.32	8	0.05	
Brotula barbata	0.24	40	0.04	
Total	606.32		100.02	

PROJECT STATION:1066

DATE:11/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 643

	start	stop	duration			Long W 1128
TIME	:07:39:38	08:09:40	30	(min)	Purpose code:	3
LOG	:8208.50	8210.08	1.57		Area code	: 4
FDEPTH:	60	51			GearCond.code:	
BDEPTH:	60	51			Validity code:	

Towing dir: 35ø Wire out: 180 m Speed: 30 kn*10

Sorted: 42 Kg Total catch: 42.54 CATCH/HOUR: 85.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	56.20	712	66.06	4608
Epinephelus aeneus	17.60	6	20.69	4606
Sphyraena guachancho	2.94	24	3.46	4607
Brotula barbata	2.08	2	2.44	
Selene dorsalis	1.34	48	1.57	4610
Trichiurus lepturus	0.82	14	0.96	
Pteroscion peli	0.74	12	0.87	
Pagelius bellottii	0.74	4	0.87	
Sardinella maderensis	0.64	80	0.75	4609
Lagocephalus laevigatus	0.58	4	0.68	
Parapenaeus longirostris	0.48	32	0.56	
Dentex angolensis	0.44	2	0.52	
Saurida brasiliensis	0.28	44	0.33	
Illex coindetii	0.12	22	0.14	
Cepola sp.	0.08	2	0.09	
Total	85.08		99.99	

PROJECT STATION:1067

DATE:11/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 639

	start	stop	duration			Long W 1131
TIME	:09:37:25	10:07:58	31	(min)	Purpose code:	3
LOG	:8219.57	8221.21	1.63		Area code :	4
FDEPTH:	83	76			GearCond.code:	
BDEPTH:	83	76			Validity code:	

Towing dir: 35ø Wire out: 230 m Speed: 30 kn*10

Sorted: 58 Kg Total catch: 57.96 CATCH/HOUR: 112.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	72.58	585	64.70	4614
Squatina oculata	12.00	4	10.70	
Epinephelus aeneus	11.81	2	10.53	4611
Illex coindetii	6.37	1252	5.68	4613
Trichiurus lepturus	2.92	46	2.60	
Scorpaena scrofa	1.12	2	1.00	
Priacanthus arenatus	1.01	17	0.90	
Illex coindetii	0.75	8	0.67	4612
Ariomma bondi	0.58	21	0.52	
Selene dorsalis	0.45	10	0.40	
Fistularia petimba	0.45	8	0.40	
Chilomycterus spinosus mauret.	0.37	2	0.33	
Syacium micrurum	0.33	8	0.29	
Epinephelus haifensis	0.27	2	0.24	
Chelidonichthys sp.	0.25	4	0.22	
Parapenaeus longirostris	0.23	116	0.21	
Lagocephalus laevigatus	0.19	2	0.17	
Brachydeuterus auritus	0.19	2	0.17	
Parapenaeus longirostris	0.14	2	0.12	
Sepia officinalis hierredda	0.12	4	0.11	
Triplophos hemingi	0.06	4	0.05	
Total	112.19		100.01	

PROJECT STATION:1068

DATE:11/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 613

	start	stop	duration			Long W 1100
TIME	:16:05:19	16:34:56	30	(min)	Purpose code:	3
LOG	:8275.78	8277.35	1.32		Area code :	4
FDEPTH:	79	109			GearCond.code:	
BDEPTH:	79	109			Validity code:	

Towing dir: 217ø Wire out: 220 m Speed: 30 kn*10

Sorted: 38 Kg Total catch: 38.15 CATCH/HOUR: 76.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	46.40	530	60.81	4616
Illex coindetii	5.96	350	7.81	4619
Pentheroscion mbizi	5.14	36	6.74	4617
Dentex angolensis	4.90	38	6.42	4615
Ariomma bondi	2.92	94	3.83	4620
Squatina oculata	2.78	4	3.64	
Scorpaena sp.	2.28	4	2.99	
Fistularia petimba	1.48	8	1.94	
Priacanthus arenatus	1.32	12	1.73	
Antigonia capros	0.94	16	1.23	
Alloteuthis africana	0.72	172	0.94	
Lagocephalus laevigatus	0.34	2	0.45	
Pagellus bellottii	0.30	2	0.39	
Epinephelus aeneus	0.24	2	0.31	4618
Trichiurus lepturus	0.20	4	0.26	
Zeus faber	0.20	4	0.26	
Lepidotrigla carolae	0.18	4	0.24	
Total	76.30		99.99	

PROJECT STATION:1069

DATE:11/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 620

	start	stop	duration			Long W 1055
TIME	:18:05:32	18:36:12	31	(min)	Purpose code:	3
LOG	:8289.15	8290.80	1.64		Area code :	4
FDEPTH:	43	51			GearCond.code:	
BDEPTH:	43	51			Validity code:	

Towing dir: 217ø Wire out: 160 m Speed: 30 kn*10

Sorted: 43 Kg Total catch: 104.69 CATCH/HOUR: 202.63

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	57.48	5307	28.37	4630
Sardinella maderensis	56.32	6288	27.79	4624
Sphyraena guachancho	13.82	331	6.82	4627
Selene dorsalis	11.15	2388	5.50	
Sphyraena guachancho	10.59	37	5.23	4625
Trichiurus lepturus	8.83	159	4.36	
Engraulis encrasicolus	6.50	2775	3.21	4623
Pseudotolithus senegalensis	6.45	21	3.18	4626
Pentheroscion mbizi	4.35	35	2.15	
Penaeus notialis	3.12	182	1.54	4622
Ilisha africana	3.08	70	1.52	4628
Galeoides decadactylus	2.55	64	1.26	4629
Raja miraletus	2.21	6	1.09	
Pteroscion peli	2.09	87	1.03	
Brotula barbata	1.76	4	0.87	
Balistes capriscus	1.63	6	0.80	
Penaeus notialis	1.57	151	0.77	4621
Pentheroscion mbizi	1.57	10	0.77	
Illex coindetii	1.45	64	0.72	
Chloroscombrus chrysurus	1.10	12	0.54	
Sepia sp.	0.99	29	0.49	
Parapenaeopsis atlantica	0.99	105	0.49	
Panulirus regius	0.91	4	0.45	
Pseudotolithus senegalensis	0.81	6	0.40	
Sphyraena sphyraena	0.41	2	0.20	
Saurida brasiliensis	0.35	81	0.17	
Cynoglossus senegalensis	0.23	6	0.11	
Syacium micrurum	0.17	12	0.08	
Alectis alexandrinus	0.12	6	0.06	
Penaeus karathurus	0.04	2	0.02	
Total	202.64		99.99	

PROJECT STATION:1070

DATE:11/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 623

	start	stop	duration			Long W 1052
TIME	:19:43:19	20:13:17	30	(min)	Purpose code:	3
LOG	:8298.96	8300.56	1.58		Area code :	4
FDEPTH:	20	29			GearCond.code:	
BDEPTH:	20	29			Validity code:	

Towing dir: 217ø Wire out: 140 m Speed: 30 kn*10

Sorted: 53 Kg Total catch: 132.61 CATCH/HOUR: 265.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Chloroscombrus chrysurus	34.08	844	12.85	4638
Pseudotolithus senegalensis	33.20	162	12.52	4632
Pseudotolithus senegalensis	32.16	674	12.13	4633
Parapenaeopsis atlantica	30.96	13336	11.67	
Pteroscion peli	28.16	1490	10.62	4642
Trichiurus lepturus	20.88	522	7.87	
Brachydeuterus auritus	17.04	1242	6.42	4641
Selene dorsalis	11.92	1192	4.49	4639
Sardinella maderensis	10.88	584	4.10	4643
Sphyraena guachancho	7.96	26	3.00	4634
Ilisha africana	7.28	656	2.74	
Galeoides decadactylus	4.72	216	1.78	4640
Cynoglossus senegalensis	4.20	14	1.58	4636
Pentanemus quinquarius	3.92	88	1.48	4635
Pseudotolithus elongatus	3.92	8	1.48	4637
Pomadasys jubelini	2.52	2	0.95	
Drepane africana	1.68	96	0.63	
Penaeus notialis	1.68	46	0.63	4631
Sphyraena guachancho	1.52	40	0.57	
Ephippion guttifer	1.12	32	0.42	
Trachinotus ovatus	1.04	16	0.39	
Cynoglossus sp.	1.04	80	0.39	
Cynoglossus senegalensis	0.96	16	0.36	
Caranx hippos	0.92	4	0.35	
Antennarius occidentalis	0.80	72	0.30	
Ethmalosa fimbriata	0.36	2	0.14	
Portunus validus	0.30	2	0.11	
Total	265.22		99.97	

PROJECT STATION:1071

DATE:12/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 600

	start	stop	duration			Long W 1016
TIME	:03:07:57	03:37:13	29	(min)	Purpose code:	1
LOG	:8347.15	8348.63	1.72		Area code :	4
FDEPTH:	16	22			GearCond.code:	
BDEPTH:	28	35			Validity code:	

Towing dir: 215ø Wire out: 130 m Speed: 30 kn*10

Sorted: 72 Kg Total catch: 74.65 CATCH/HOUR: 154.45

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Ilisha africana	57.00	3209	36.91	4644
Sardinella maderensis	27.93		18.08	
Chloroscombrus chrysurus	21.41	457	13.86	4645
Sphyraena guachancho	20.28		13.13	
Brachydeuterus auritus	6.41	205	4.15	4646
Arius heudeloti	4.99	2	3.23	
Scomberomorus tritor	3.04	4	1.97	
Trichiurus lepturus	2.83	41	1.83	
Galeoides decadactylus	2.54		1.64	
Pomadasys jubelini	1.92	2	1.24	
Selene dorsalis	1.84		1.19	
Sphyraena guachancho	1.10	41	0.71	
Chloroscombrus chrysurus	1.06	27	0.69	
Sardinella maderensis	0.43	4	0.28	
Parapenaeopsis atlantica	0.39	137	0.25	
Drepane africana	0.39	2	0.25	
Selene dorsalis	0.31	8	0.20	
Sardinella maderensis	0.27	31	0.17	
Brachydeuterus auritus	0.27	41	0.17	
Penaeus notialis	0.02	4	0.01	
Total	154.43		99.96	

PROJECT STATION:1072

DATE:12/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 554

	start	stop	duration			Long W 1020
TIME	:04:51:35	05:12:16	21	(min)	Purpose code:	1
LOG	:8356.05	8357.33	1.29		Area code :	4
FDEPTH:	22	28			GearCond.code:	
BDEPTH:	58	52			Validity code:	

Towing dir: 35ø Wire out: 130 m Speed: 35 kn*10

Sorted: 603 Kg Total catch: 603.20 CATCH/HOUR: 1723.43

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alectis alexandrinus	1401.71	309	81.33	4647
Caranx senegallus	233.00		13.52	
Selene dorsalis	78.57	597	4.56	4648
Sardinella maderensis	8.06	57	0.47	4649
Ilisha africana	2.09	46	0.12	4650
Total	1723.43		100.00	

PROJECT STATION:1073

DATE:12/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 601

	start	stop	duration			Long W 1015
TIME	:06:14:51	06:37:10	22	(min)	Purpose code:	3
LOG	:8365.12	8366.40	0.94		Area code :	4
FDEPTH:	21	29			GearCond.code:	
BDEPTH:	21	29			Validity code:	

Towing dir: 215ø Wire out: 140 m Speed: 30 kn*10

Sorted: 18 Kg Total catch: 18.59 CATCH/HOUR: 50.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Drepane africana	18.41	106	36.31	4651
Sphyraena guachancho	14.32		28.24	
Galeoides decadactylus	4.01		7.91	
Pseudotolithus senegalensis	3.90		7.69	
Ephippion guttifer	3.00	3	5.92	
Panulirus regius	2.84	5	5.60	
Scomberomorus tritor	1.23	3	2.43	
Penaeus karathurus	0.82	38	1.62	
Cynoglossus senegalensis	0.60	3	1.18	
Pomadasys jubelini	0.49	5	0.97	
Chaetodipterus goreensis	0.30	3	0.59	
Penaeus notialis	0.22	19	0.43	
Eucinostomus melanopterus	0.16	3	0.32	
Sardinella maderensis	0.16	3	0.32	
Pseudupeneus prayensis	0.16	3	0.32	
Alectis alexandrinus	0.08	3	0.16	
Total	50.70		100.01	

PROJECT STATION:1074

DATE:12/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 554
start stop duration Long W 1020
TIME :08:54:47 09:24:46 30 (min) Purpose code: 3
LOG :8373.71 8375.33 1.60 Area code : 4
FDEPTH: 59 63 GearCond.code:
BDEPTH: 59 63 Validity code:
Towing dir: 215ø Wire out: 180 m Speed: 30 kn*10

Sorted: 40 Kg Total catch: 40.18 CATCH/HOUR: 80.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Alectis alexandrinus	24.40	8	30.36	4654
Selene dorsalis	15.20	290	18.91	4652
Dentex angolensis	15.20	90	18.91	4655
Alloteuthis africana	9.66	4186	12.02	
Fistularia petimba	2.46	20	3.06	
Epinephelus aeneus	2.28	2	2.84	
Brachydeuterus auritus	1.76	254	2.19	4656
Caranx senegalius	1.74	2	2.17	
Sphyraena guachancho	1.66	6	2.07	
Pagrus caeruleostictus	1.30	6	1.62	4657
Chloroscombrus chrysurus	0.86	10	1.07	
Decapterus rhonchus	0.78	6	0.97	4653
Boops boops	0.64		0.80	
Lagocephalus laevigatus	0.64	2	0.80	
Pomadasys jubelini	0.58	2	0.72	
Saurida brasiliensis	0.48	88	0.60	
Galeoides decadactylus	0.30	2	0.37	
Pseudupeneus prayensis	0.22	4	0.27	
Ilisha africana	0.14	4	0.17	
Sardinella maderensis	0.06	4	0.07	
Total	80.36		99.99	

PROJECT STATION:1075

DATE:12/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 545
start stop duration Long W 1026
TIME :10:44:25 11:14:13 30 (min) Purpose code: 3
LOG :8386.11 8387.61 1.49 Area code : 4
FDEPTH: 99 89 GearCond.code:
BDEPTH: 99 89 Validity code:
Towing dir: 35ø Wire out: 250 m Speed: 30 kn*10

Sorted: 65 Kg Total catch: 213.30 CATCH/HOUR: 426.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	105.00	1274	24.61	4662
Dentex congoensis	89.60	1164	21.00	4659
Dentex angolensis	85.40	630	20.02	4663
Boops boops	53.40	478	12.52	4660
Priacanthus arenatus	53.20	932	12.47	4658
Dentex canariensis	13.20	18	3.09	4661
Scorpaena sp.	12.00	22	2.81	
Fistularia petimba	6.40	22	1.50	
Brotula barbata	2.80	8	0.66	
Anthias anthias	1.96	106	0.46	
Pagellus bellottii	1.68	8	0.39	
Pseudupeneus prayensis	0.98	8	0.23	
Lagocephalus laevigatus	0.84	8	0.20	
Ariomma bondi	0.14	8	0.03	
Total	426.60		99.99	

PROJECT STATION:1076

DATE:12/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 521
start stop duration Long W 953
TIME :17:23:08 17:46:50 24 (min) Purpose code: 3
LOG :8445.83 8446.97 1.13 Area code : 4
FDEPTH: 87 93 GearCond.code:
BDEPTH: 87 93 Validity code:
Towing dir: 220ø Wire out: 230 m Speed: 30 kn*10

Sorted: 100 Kg Total catch: 100.20 CATCH/HOUR: 250.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex congoensis	165.50	2040	66.07	4668
Dentex angolensis	44.50	393	17.76	4666
Dentex canariensis	9.88	15	3.94	4669
Pagellus bellottii	9.75	78	3.89	4665
Ariomma bondi	7.68	308	3.07	4667
Priacanthus arenatus	4.23	70	1.69	4664
Scorpaena scrofa	2.80	8	1.12	
Lagocephalus laevigatus	1.85	13	0.74	
Fistularia petimba	1.20	15	0.48	
Boops boops	0.95	10	0.38	
Pseudupeneus prayensis	0.63	5	0.25	
Illex coindetii	0.60	38	0.24	
Lepidotrigla cadmani	0.40	10	0.16	
Chelidonichthys gabonensis	0.38	5	0.15	
Lepidotrigla carolae	0.20	10	0.08	
Total	250.55		100.02	

PROJECT STATION:1077

DATE:12/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 526
start stop duration Long W 948
TIME :10:05:55 10:35:30 30 (min) Purpose code: 3
LOG :8456.03 8457.72 1.68 Area code : 4
FDEPTH: 66 61 GearCond.code:
BDEPTH: 66 61 Validity code:
Towing dir: 35ø Wire out: 200 m Speed: 30 kn*10

Sorted: 36 Kg Total catch: 107.92 CATCH/HOUR: 215.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	93.10	680	43.13	4673
Brachydeuterus auritus	47.60	3328	22.05	4671
Dactylopterus volitans	10.64	50	4.93	
Brotula barbata	7.84	20	3.63	4675
Saurida brasiliensis	7.00	966	3.24	
Sphyraena guachancho	6.94	12	3.22	4672
Cynoglossus senegalensis	5.88	42	2.72	4677
Citharus linguatula	5.04	154	2.34	
Pseudupeneus prayensis	5.04	132	2.34	4670
Scorpaena sp.	4.74	8	2.20	
Ariomma bondi	4.00	98	1.85	
Pagellus bellottii	3.86	42	1.79	
Parapenaeus longirostris	2.52	608	1.17	
Umbrina canariensis	2.38	8	1.10	4676
Priacanthus arenatus	1.82	22	0.84	
Boops boops	1.54	246	0.71	
Illex coindetii	1.26	22	0.58	
Sepia officinalis hierredda	0.98	22	0.45	
Decapterus punctatus	0.98	98	0.45	4674
Uranoscopus albesca	0.92	6	0.43	
Physiculus huloti	0.50	36	0.23	
Arnoglossus imperialis	0.36	42	0.17	
Sardinella maderensis	0.28	36	0.13	
Lepidotrigla carolae	0.28	22	0.13	
Bathygobius paganellus	0.22	36	0.10	
MURAENESOCIDAE	0.22	14	0.10	
Total	215.94		100.03	

PROJECT STATION:1078

DATE:12/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 530
start stop duration Long W 945
TIME :20:37:30 20:59:08 21 (min) Purpose code: 3
LOG :8463.26 8464.36 1.09 Area code : 4
FDEPTH: 40 47 GearCond.code:
BDEPTH: 40 47 Validity code:
Towing dir: 220ø Wire out: 150 m Speed: 30 kn*10

Sorted: 47 Kg Total catch: 70.53 CATCH/HOUR: 201.51

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pomadasys jubelini	44.57	57	22.12	4681
Penaeus notialis	29.83	1309	14.80	4683
Pteroscion peli	26.97	1080	13.38	4679
Pseudotolithus senegalensis	23.17	129	11.50	4678
Galeoides decadactylus	14.83	377	7.36	4682
Brachydeuterus auritus	12.34	2869	6.12	4680
Raja miraletus	7.94	17	3.94	
Monochirus hispidus	4.69	31	2.33	
Sphyraena guachancho	4.69	11	2.33	
Stromateus fiatola	4.29	9	2.13	
Fortunus validus	3.31	6	1.64	
Chromis sp.	2.66	360	1.32	
Ilisha africana	2.31	94	1.15	
Dasyatis margarita	2.03	6	1.01	
Pomadasys incisus	1.69	6	0.84	
Cynoglossus senegalensis	1.69	17	0.84	
Paronchelus stauchi	1.63	411	0.81	
Trichiurus lepturus	1.46	14	0.72	
Saurida brasiliensis	1.43	177	0.71	
Illex coindetii	1.29	17	0.64	
Selene dorsalis	1.26	69	0.63	
Pomadasys peroteti	1.20	6	0.60	
Umbrina canariensis	1.20	3	0.60	
Grammoplites gruveli	1.03	69	0.51	
Priacanthus arenatus	0.94	9	0.47	
Torpedo torpedo	0.83	14	0.41	
Dactylopterus volitans	0.66	6	0.33	
Sepia officinalis hierredda	0.54	9	0.27	
Chaetodipterus goreensis	0.49	6	0.24	
Brotula barbata	0.20	6	0.10	
Syacium micrurum	0.20	6	0.10	
Decapterus rhonchus	0.17	14	0.08	
Total	201.54		100.03	

PROJECT STATION:1079

DATE:13/ 5/06 GEAR TYPE: PT No: 7 POSITION:Lat N 503
start stop duration Long W 915
TIME :04:12:19 04:42:09 30 (min) Purpose code: 1
LOG :8510.63 8512.31 1.65 Area code : 4
FDEPTH: 18 35 GearCond.code:
BDEPTH: 59 64 Validity code:
Towing dir: 214ø Wire out: 130 m Speed: 32 kn*10

Sorted: 2 Kg Total catch: 2.62 CATCH/HOUR: 5.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Raja miraletus	1.72	6	32.82	
Arius heudeloti	0.78	2	14.89	
Illex coindetii	0.76	10	14.50	4688
Engraulis encrasicolus	0.56	152	10.69	4687
Chloroscombrus chrysurus	0.46	12	8.78	4683
Decapterus punctatus	0.38	30	7.25	4684
Sardinella aurita	0.16	6	3.05	4685
Torpedo torpedo	0.12	2	2.29	
Citharus linguatula	0.10	2	1.91	
Ilisha africana	0.10	2	1.91	
Brachydeuterus auritus	0.06	14	1.15	4686
Penaeus notialis	0.02	2	0.38	
Boops boops	*0.02*	2	*0.38*	
Total	5.24		100.00	

PROJECT STATION:1080

DATE:13/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 503

	start	stop	duration			Long W 915
TIME	:06:17:32	06:47:39	30 (min)	Purpose code:	3	
LOG	:8517.35	8518.95	1.58	Area code	: 4	
FDEPTH:	54	63		GearCond.code:		
BDEPTH:	54	63		Validity code:		

Towing dir: 215ø Wire out: 180 m Speed: 30 kn*10

Sorted: 44 Kg Total catch: 44.06 CATCH/HOUR: 88.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Selene dorsalis	25.50	404	28.94	4693
Pagrus caeruleostictus	17.70	42	20.09	4692
Epinephelus aeneus	13.90	2	15.77	
Pagellus bellottii	11.24	64	12.76	4694
Illex coindetii	4.76	56	5.40	
Dentex angolensis	4.44	28	5.04	4691
Torpedo torpedo	3.14	8	3.56	
Albula vulpes	1.48	2	1.68	
Sphyraena guachancho	1.18	30	1.34	
Pseudupeneus prayensis	0.98	32	1.11	4690
Umbrina canariensis	0.82	2	0.93	
Brachydeuterus auritus	0.80	60	0.91	
Sardinella aurita	0.56	38	0.64	4695
Decapterus punctatus	0.34	26	0.39	4689
Fistularia petimba	0.28	2	0.32	
Decapterus punctatus	0.28	2	0.32	
Ariomma bondi	0.26	4	0.30	
Boops boops	0.14	12	0.16	
Priacanthus arenatus	0.12	2	0.14	
Penaeus notialis	0.08	4	0.09	
Syacium micrurum	0.08	2	0.09	
Saurida brasiliensis	0.04	10	0.05	
Total	88.12		100.03	

PROJECT STATION:1081

DATE:13/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 457

	start	stop	duration			Long W 919
TIME	:08:00:39	08:30:54	30 (min)	Purpose code:	3	
LOG	:8525.75	8527.40	1.65	Area code	: 4	
FDEPTH:	71	73		GearCond.code:		
BDEPTH:	71	73		Validity code:		

Towing dir: 215ø Wire out: 200 m Speed: 30 kn*10

Sorted: 85 Kg Total catch: 85.14 CATCH/HOUR: 170.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	33.10	264	19.44	4700
Decapterus punctatus	28.00	1186	16.44	4695
Seriola dumerili	27.10	2	15.91	
Sardinella aurita	22.00	684	12.92	4696
Dentex canariensis	17.34	30	10.18	4702
Pagellus bellottii	14.54	178	8.54	4701
Ariomma bondi	7.72	144	4.53	4703
Dentex congoensis	7.18	124	4.22	4699
Illex coindetii	3.94	70	2.31	
Pseudupeneus prayensis	3.64	56	2.14	4697
Pagrus caeruleostictus	3.08	10	1.81	4698
Scorpaena scrofa	0.80	2	0.47	
Priacanthus arenatus	0.56	14	0.33	
Lagocephalus laevigatus	0.48	4	0.28	
Chromis sp.	0.40	30	0.23	
Selene dorsalis	0.16	4	0.09	
Fistularia petimba	0.14	6	0.08	
Lepidotrigla cadmani	0.10	2	0.06	
Total	170.28		99.98	

PROJECT STATION:1082

DATE:13/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 450

	start	stop	duration			Long W 924
TIME	:09:38:52	10:08:54	30 (min)	Purpose code:	3	
LOG	:8535.25	8536.83	1.57	Area code	: 4	
FDEPTH:	92	85		GearCond.code:		
BDEPTH:	92	85		Validity code:		

Towing dir: 35ø Wire out: 250 m Speed: 30 kn*10

Sorted: 66 Kg Total catch: 641.07 CATCH/HOUR: 1282.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	301.50	6300	23.52	4710
Dentex congoensis	284.40	3462	22.18	4704
Boops boops	202.50	2818	15.79	4708
Sardinella aurita	178.20	3794	13.90	4709
Dentex angolensis	51.30	486	4.00	4705
Decapterus punctatus	50.94	1152	3.97	4707
Pagellus bellottii	49.50	468	3.86	4711
Squatina oculata	31.68	18	2.47	
Priacanthus arenatus	28.08	846	2.19	4712
Scorpaena scrofa	23.40	54	1.83	
Umbrina canariensis	23.40	126	1.83	4706
Raja miraletus	8.64	18	0.67	
Pseudupeneus prayensis	7.56	72	0.59	
Scomber japonicus	7.20	126	0.56	
Dentex canariensis	7.02	18	0.55	
Sargocentron hastatus	5.22	36	0.41	
Ariomma bondi	4.86	108	0.38	
Lagocephalus laevigatus	4.32	54	0.34	
Anthias anthias	4.14	342	0.32	
Syacium micrurum	1.62	18	0.13	
Lepidotrigla cadmani	1.44	36	0.11	
Illex coindetii	1.44	18	0.11	
Fistularia petimba	1.44	36	0.11	
Sepia officinalis hierredda	1.26	18	0.10	
Chaetodon marcellae	1.08	18	0.08	
Total	1282.14		100.00	

PROJECT STATION:1083

DATE:13/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 432

	start	stop	duration			Long W 845
TIME	:17:25:30	17:55:11	30 (min)	Purpose code:	3	
LOG	:8606.48	8608.03	1.54	Area code	: 4	
FDEPTH:	85	99		GearCond.code:		
BDEPTH:	85	99		Validity code:		

Towing dir: 214ø Wire out: 250 m Speed: 30 kn*10

Sorted: 104 Kg Total catch: 104.79 CATCH/HOUR: 209.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Squatina oculata	90.00	2	42.94	
Trachurus trecae	63.00	1014	30.06	4718
Dentex congoensis	39.30	502	18.75	4716
Dentex angolensis	25.50	180	12.17	4715
Boops boops	24.12	368	11.51	4714
Dentex canariensis	20.00	14	9.54	4713
Pagellus bellottii	7.70	90	3.67	4719
Torpedo torpedo	5.00	2	2.39	
Scomber japonicus	3.48	36	1.66	4717
Scorpaena scrofa	2.60	4	1.24	
Scorpaena angolensis	2.46	4	1.17	
Zeus faber	1.50	6	0.72	
Priacanthus arenatus	1.24	16	0.59	
Illex coindetii	1.22	16	0.58	
Umbrina canariensis	1.16	4	0.55	
Fistularia petimba	0.64	4	0.31	
Raja miraletus	0.56	2	0.27	
Chilomycterus spinosus mauret.	0.40	2	0.19	
Ariomma bondi	0.24	4	0.11	
Lagocephalus laevigatus	0.22	2	0.10	
Pseudupeneus prayensis	0.14	2	0.07	
Lepidotrigla cadmani	0.10	2	0.05	
Total	290.58		138.64	

PROJECT STATION:1084

DATE:13/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 437

	start	stop	duration			Long W 841
TIME	:18:56:46	19:26:45	30 (min)	Purpose code:	3	
LOG	:8615.92	8617.55	1.62	Area code	: 4	
FDEPTH:	73	69		GearCond.code:		
BDEPTH:	73	69		Validity code:		

Towing dir: 35ø Wire out: 200 m Speed: 30 kn*10

Sorted: 65 Kg Total catch: 80.63 CATCH/HOUR: 161.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex angolensis	54.00	630	33.49	4728
Pagellus bellottii	22.60	284	14.01	4729
Epinephelus aeneus	15.80	2	9.80	4725
Ariomma bondi	10.36	220	6.42	4723
Brachydeuterus auritus	7.18	126	4.45	4721
Priacanthus arenatus	6.78	206	4.20	4724
Chelidonichthys gabonensis	6.12	210	3.80	
Chelidonichthys gabonensis	4.98	88	3.09	
Illex coindetii	4.40	52	2.73	
Brotula barbata	3.36	6	2.08	
Branchiostegus semifasciatus	3.16	16	1.96	4726
Citharus linguatula	3.06	182	1.90	
Trachurus trecae	2.46	52	1.53	4727
Umbrina canariensis	2.16	10	1.34	4722
Cynoglossus senegalensis	1.72	10	1.07	
Pseudupeneus prayensis	1.40	32	0.87	4720
Mustelus mustelus	1.36	2	0.84	
Sepia officinalis hierredda	1.30	26	0.81	
Raja miraletus	1.28	6	0.79	
Boops boops	1.22	28	0.76	
METTASTOMATIDAE	1.06	88	0.66	
Sphyraena guachancho	0.76	2	0.47	
Chilomycterus spinosus mauret.	0.70	8	0.43	
Dactylopterus volitans	0.60	10	0.37	
Arnoglossus imperialis	0.52	56	0.32	
Pagrus caeruleostictus	0.46	2	0.29	
Octopus vulgaris	0.36	2	0.22	
Fistularia petimba	0.26	6	0.16	
Uranoscopus cadenati	0.20	2	0.12	
Scorpaena angolensis	0.20	2	0.12	
Portunus validus	0.16	6	0.10	
Sardinella aurita	0.10	10	0.06	
Sphyraena guachancho	0.10	2	0.06	
Total	160.18		99.32	

PROJECT STATION:1085

DATE:14/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 421

	start	stop	duration			Long W 803
TIME	:06:20:29	06:50:14	30 (min)	Purpose code:	3	
LOG	:8686.45	8687.96	1.49	Area code	: 4	
FDEPTH:	78	82		GearCond.code:		
BDEPTH:	78	82		Validity code:		

Towing dir: 215ø Wire out: 200 m Speed: 30 kn*10

Sorted: 73 Kg Total catch: 546.04 CATCH/HOUR: 1092.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Priacanthus arenatus	525.60	25562	48.13	4737
Trachurus trecae	227.70	9056	20.85	4733
Ariomma bondi	105.30	3346	9.64	4736
Boops boops	91.44	4932	8.37	4730
Dentex angolensis	32.40	54	2.97	
Sphyraena guachancho	19.00	92	1.74	4732
Pagellus bellottii	13.86	450	1.27	
Sphyraena guachancho	12.78	72	1.17	
Dentex congoensis	10.36	42	0.95	4738
Decapterus punctatus	8.64	270	0.79	4734
Dentex angolensis	6.94	112	0.64	4731
Squatina oculata	6.28	6	0.58	
Scomber japonicus	6.12	126	0.56	
Scorpaena scrofa	5.30	12	0.49	
Lagocephalus laevigatus	4.50	18	0.41	
Raja miraletus	4.44	16	0.41	
Pentheroscion mbizi	3.00	14	0.27	4739
Pagellus bellottii	2.40	50	0.22	4735
Sardinella aurita	2.16	54	0.20	
Illex coindetii	1.80	18	0.16	
Fistularia petimba	0.78	4	0.07	
Zeus faber	0.68	4	0.06	
Pseudupeneus prayensis	0.60	4	0.05	
Total	1092.08		100.00	

PROJECT STATION:1086

DATE:14/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 413

start stop duration Long W 733

TIME :11:57:09 12:27:09 30 (min) Purpose code: 3

LOG :8732.98 8734.49 1.51 Area code : 4

FDEPTH: 77 80 GearCond.code:

BDEPTH: 77 80 Validity code:

Towing dir: 260ø Wire out: 200 m Speed: 30 kn*10

Sorted: 73 Kg Total catch: 73.10 CATCH/HOUR: 146.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyraena guachancho	77.20	1384	52.80	4746
Selene dorsalis	11.84	320	8.10	4743
Pentheroscion mbizi	11.70	82	8.00	4740
Priacanthus arenatus	11.14	302	7.62	4745
Sphyraena guachancho	10.78	58	7.37	4744
Decapterus punctatus	4.64	130	3.17	4747
Trichiurus lepturus	3.50	64	2.39	
Sepia officinalis hierredda	3.38	10	2.31	
Dentex angolensis	2.96	28	2.02	4741
Illex coindetii	2.40	154	1.64	
Sardinella aurita	1.44	50	0.98	4742
Engraulis encrasicolus	1.26	138	0.86	
Chelidonichthys gabonensis	0.86	10	0.59	
Caranx crysos	0.84	4	0.57	
Illex coindetii	0.46	6	0.31	
Ariomma bondi	0.38	4	0.26	
Citharus linguatula	0.28	4	0.19	
Pseudupeneus prayensis	0.22	2	0.15	
Dentex congoensis	0.22	4	0.15	
Lagocephalus laevigatus	0.18	4	0.12	
Fistularia petimba	0.16	6	0.11	
Parapenaeus longirostris	0.14	22	0.10	
Bathygobius paganellus	0.04	2	0.03	
Total	146.02		99.84	

PROJECT STATION:1087

DATE:14/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 417

start stop duration Long W 733

TIME :13:39:07 14:09:07 30 (min) Purpose code: 3

LOG :8742.30 8743.86 1.53 Area code : 4

FDEPTH: 38 40 GearCond.code:

BDEPTH: 38 40 Validity code:

Towing dir: 265ø Wire out: 150 m Speed: 30 kn*10

Sorted: 112 Kg Total catch: 277.68 CATCH/HOUR: 555.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sphyraena guachancho	210.10	642	37.83	4755
Sphyraena guachancho	121.00	910	21.79	4749
Galeoides decadactylus	52.20	158	9.40	4750
Pseudotolithus senegalensis	47.10	140	8.48	4748
Selene dorsalis	44.60	200	8.03	4751
Brachydeuterus auritus	16.56	506	2.98	4752
Stromateus fiatola	15.70	10	2.83	
Chloroscombrus chrysurus	13.40	184	2.41	
Sphyraena guachancho	10.68	60	1.92	
Raja miraletus	3.70	6	0.67	
Pseudotolithus senegalensis	3.36	40	0.61	
Ilisha africana	2.90	82	0.52	4754
Mustelus mustelus	2.26	2	0.41	
Sardinella maderensis	1.76	130	0.32	4753
Galeoides decadactylus	1.66	16	0.30	
Pentheroscion mbizi	1.48	8	0.27	
Cynoglossus canariensis	1.46	2	0.26	
Portunus validus	1.32	8	0.24	
Pomadasys jubelini	0.98	6	0.18	
Selene dorsalis	0.78	76	0.14	
Trichiurus lepturus	0.70	18	0.13	
Elagatis bipinnulata	0.62	12	0.11	
Scomberomorus tritor	0.58	2	0.10	
Parapenaeopsis atlantica	0.28	36	0.05	
Fistularia petimba	0.16	2	0.03	
Brotula barbata	0.02	2		
Total	555.36		100.01	

PROJECT STATION:1088

DATE:14/ 5/06 GEAR TYPE: BT No:19 POSITION:Lat N 419

start stop duration Long W 732

TIME :16:09:12 16:25:55 17 (min) Purpose code: 3

LOG :8752.25 8753.14 0.87 Area code : 4

FDEPTH: 29 30 GearCond.code:

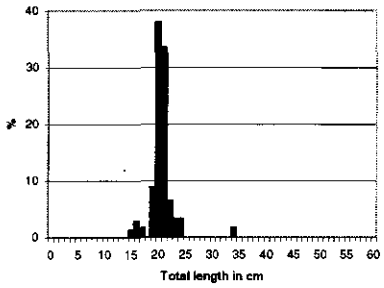
BDEPTH: 29 30 Validity code:

Towing dir: 270ø Wire out: 350 m Speed: 30 kn*10

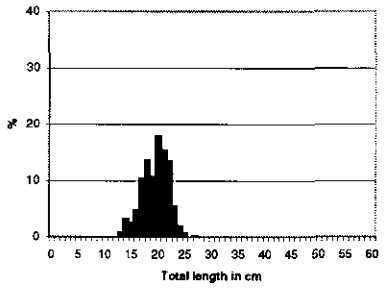
Sorted: 306 Kg Total catch: 306.52 CATCH/HOUR: 1081.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Pseudotolithus typus	634.66	131	58.66	4756
Pseudotolithus typus	256.55	632	23.71	4757
Arius heudeloti	48.00	14	4.44	4760
Lutjanus dentatus	46.06	4	4.26	4758
Selene dorsalis	28.59	131	2.64	4761
Galeoides decadactylus	24.64	78	2.28	4759
Umbrina canariensis	14.65	7	1.35	4762
Pseudotolithus senegalensis	8.68	4	0.80	
Chloroscombrus chrysurus	4.55	32	0.42	
Dasyatis margarita	3.49	4	0.32	
Pseudotolithus elongatus	3.39	4	0.31	
Stromateus fiatola	2.93	7	0.27	
Raja miraletus	1.84	4	0.17	
Pentanemus quinquarius	1.76	14	0.16	
Pomadasys rogeri	1.41	4	0.13	
Parapenaeopsis atlantica	0.64	95	0.06	
Total	1081.84		99.98	

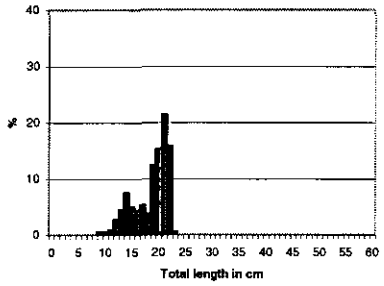
Annex II Length distributions of main species



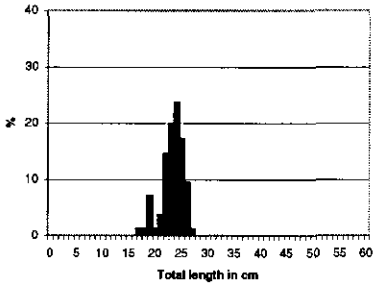
Dentex angolensis GUINEA BISSAU
Mean length = 21.1 cm N = 69



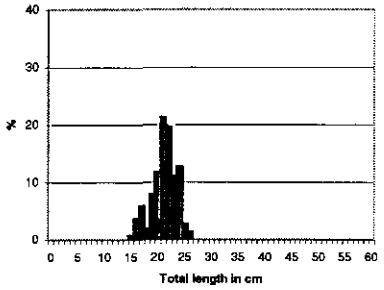
Pseudupeneus prayensis GUINEA BISSAU
Mean length = 20.0 cm N = 174



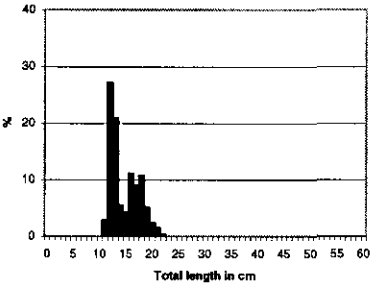
Dentex congoensis GUINEA BISSAU
Mean length = 19.1 cm N = 125



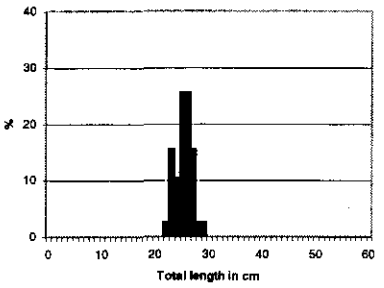
Spicara alta GUINEA BISSAU
Mean length = 23.7 cm N = 85



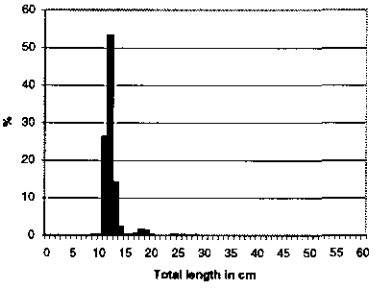
Pagellus bellottii GUINEA BISSAU
Mean length = 21.7 cm N = 152



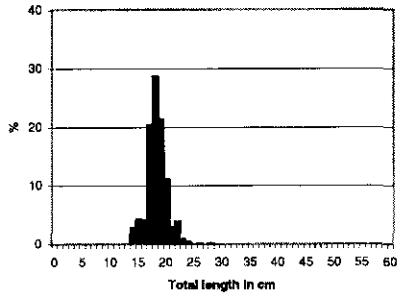
Brachydeuterus auritus GUINEA BISSAU
Mean length = 15.1 cm N = 128



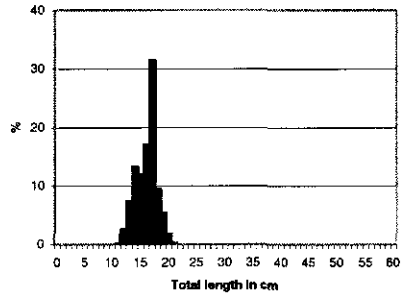
Pagrus caerleostictus GUINEA BISSAU
Mean length = 25.8 cm N = 39



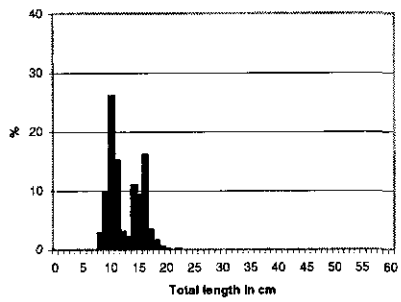
Sardinella aurita GUINEA BISSAU
Mean length = 12.7 cm N = 194



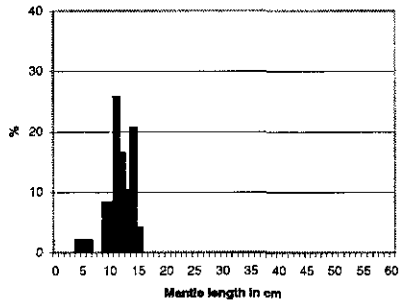
Chloroscombrus chrysurus GUINEA BISSAU
Mean length = 18.7 cm N = 168



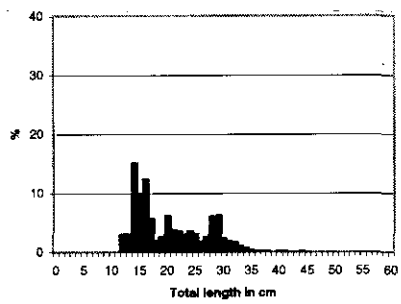
Scomber japonicus GUINEA BISSAU
Mean length = 16.5 cm N = 198



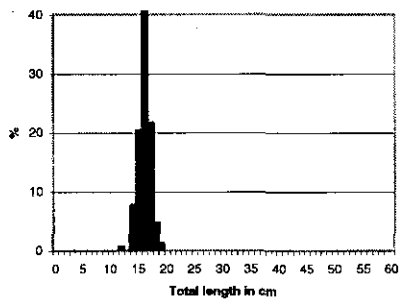
Decapterus punctatus GUINEA BISSAU
Mean length = 12.9 cm N = 202



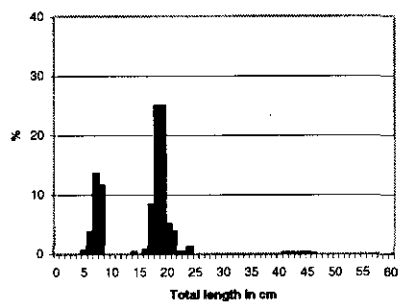
Sepia officinalis hierredda GUINEA BISSAU
Mean length = 12.0 cm N = 49



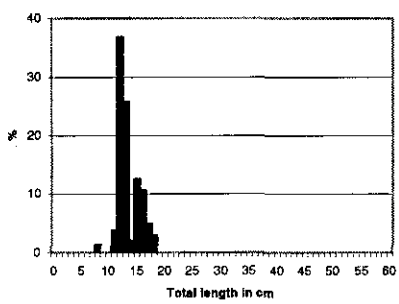
Decapterus rhonchus GUINEA BISSAU
Mean length = 20.8 cm N = 325



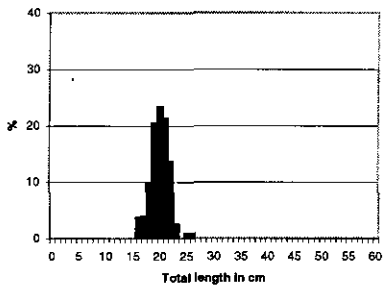
Chlorophthalmus atlanticus GUINEA BISSAU
Mean length = 16.5 cm N = 93



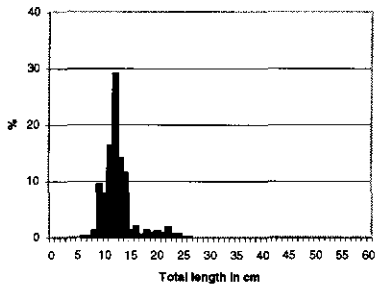
Trachurus trecae GUINEA BISSAU
Mean length = 16.1 cm N = 247



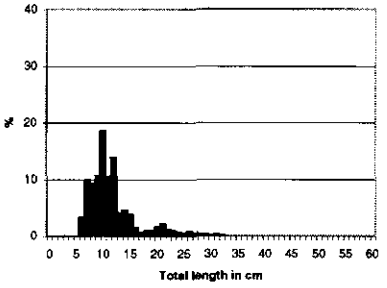
Ariomma bondi GUINEA BISSAU
Mean length = 13.9 cm N = 89



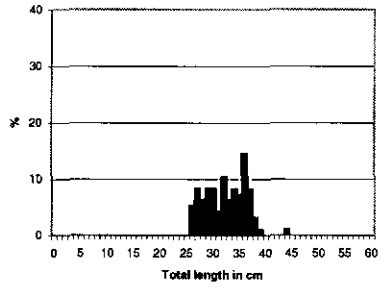
Pagellus bellottii GUINEA
Mean length = 20.5 cm N = 111



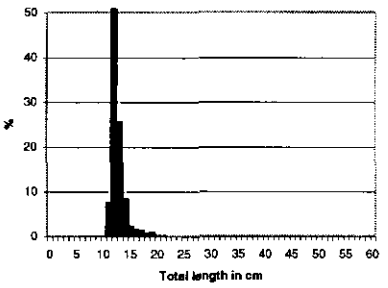
Pseudupeneus prayensis GUINEA
Mean length = 13.0 cm N = 338



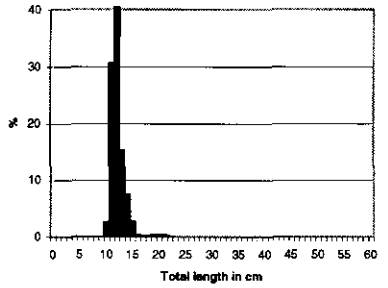
Pagrus caeruleostictus GUINEA
Mean length = 12.1 cm N = 355



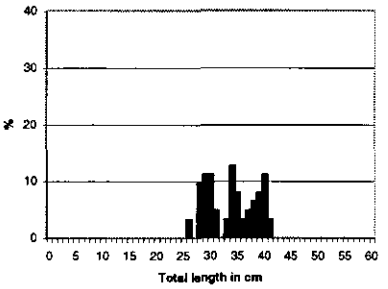
Merluccius polli GUINEA
Mean length = 32.9 cm N = 97



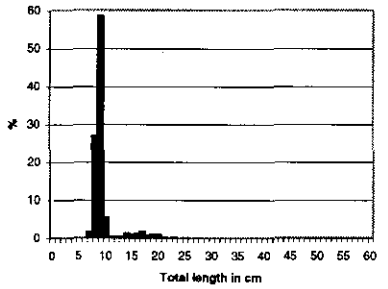
Brachydeuterus auritus GUINEA
Mean length = 13.1 cm N = 111



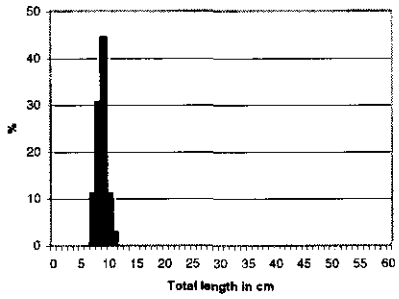
Sardinella aurita GUINEA
Mean length = 12.6 cm N = 230



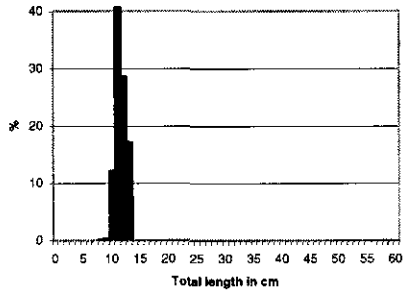
Lethrinus atlanticus GUINEA
Mean length = 34.3 cm N = 63



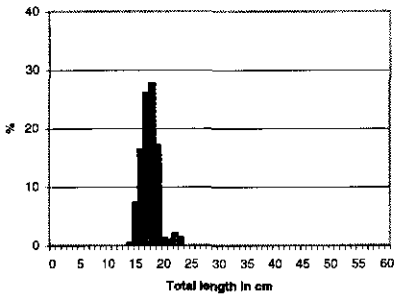
Sardinella maderensis GUINEA
Mean length = 9.8 cm N = 204



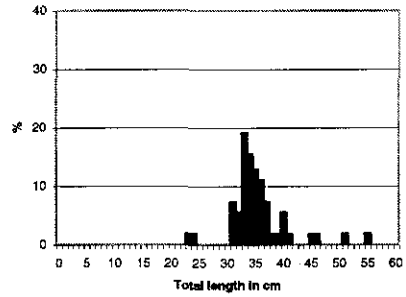
Engraulis encrasicolus GUINEA
Mean length = 9.1 cm N 36



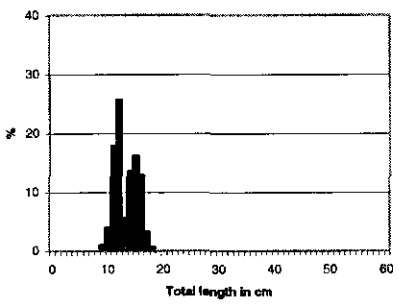
Trachurus trecae GUINEA
Mean length = 12.0 cm N = 179



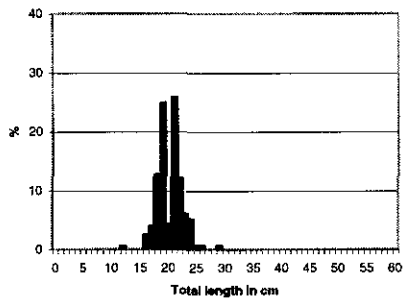
Chloroscombrus chrysurus GUINEA
Mean length = 18.0 cm N = 135



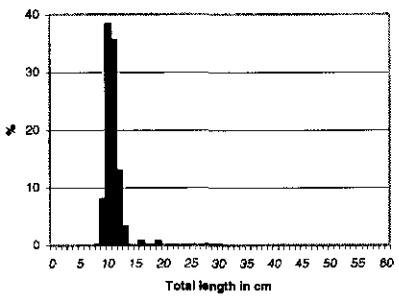
Sphyraena guachancho GUINEA
Mean length = 35.9 cm N = 54



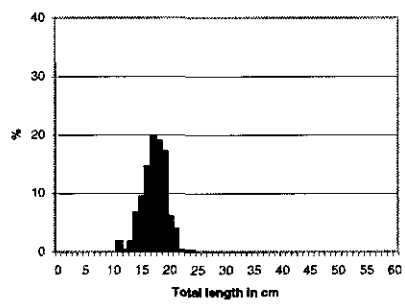
Decapterus punctatus GUINEA
Mean length = 13.7 cm N = 222



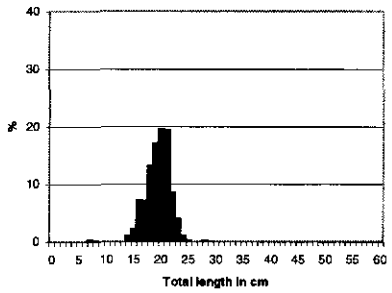
Dentex angolensis SIERRA LEONE
Mean length = 20.7 mm N = 158



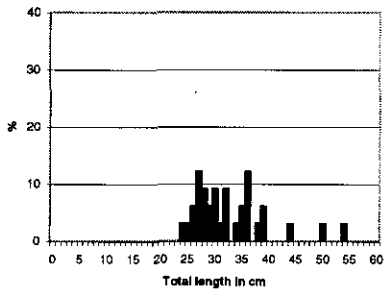
Decapterus rhonchus GUINEA
Mean length = 11.3 cm N = 200



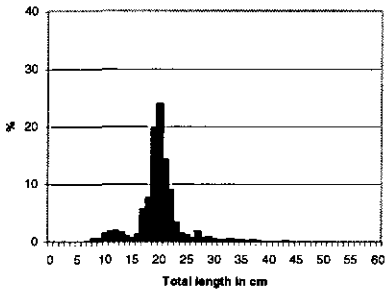
Dentex congoensis SIERRA LEONE
Mean length = 17.7 cm N = 268



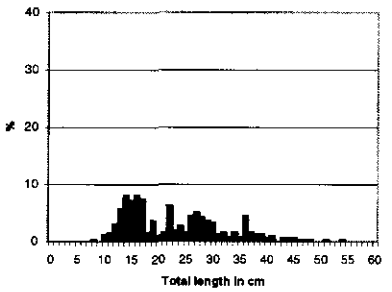
Pagellus bellottii SIERRA LEONE
Mean length = 18.1 cm N = 715



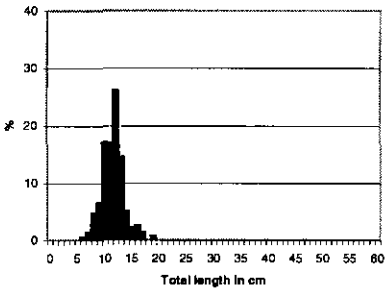
Pseudotolithus elongatus SIERRA LEONE
Mean length = 33.2 cm N = 33



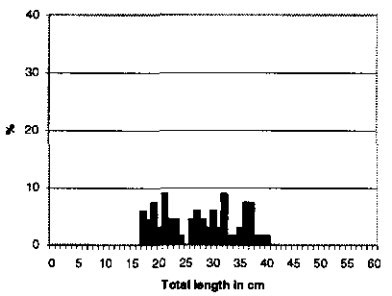
Pagrus caeruleostictus SIERRA LEONE
Mean length = 20.3 cm N = 885



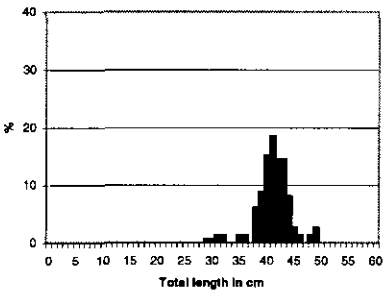
Pseudotolithus senegalensis SIERRA LEONE
Mean length = 23.3 cm N = 222



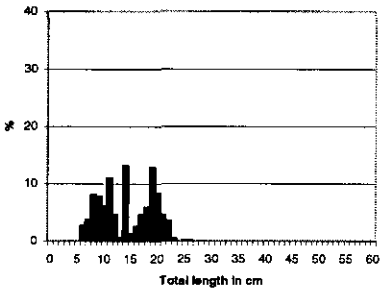
Brachydeuterus auritus SIERRA LEONE
Mean length = 12.0 cm N = 521



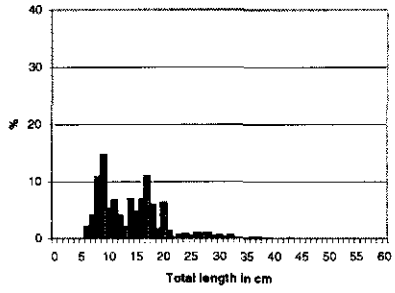
Tethrinus atlanticus SIERRA LEONE
Mean length = 27.9 cm N = 68



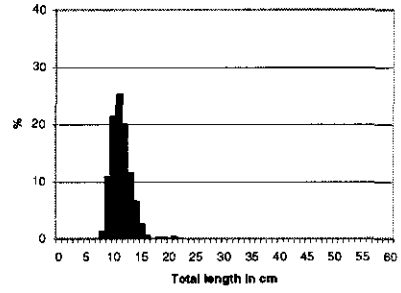
Pomadasys rogeri SIERRA LEONE
Mean length = 41.6 cm N = 81



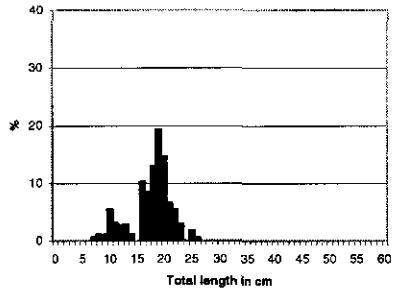
Pseudupeneus prayensis SIERRA LEONE
Mean length = 14.7 cm N = 452



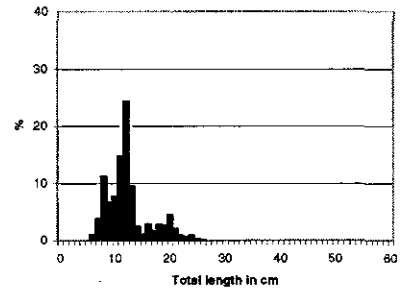
Galeoides decadactylus SIERRA LEONE
Mean length = 14.4 cm N = 547



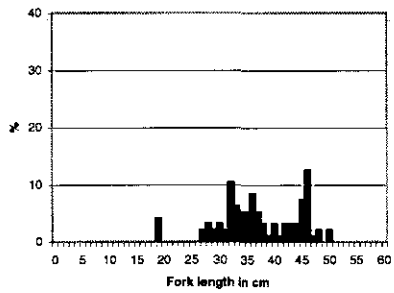
Sardinella aurita SIERRA LEONE
Mean length = 11.8 cm N = 386



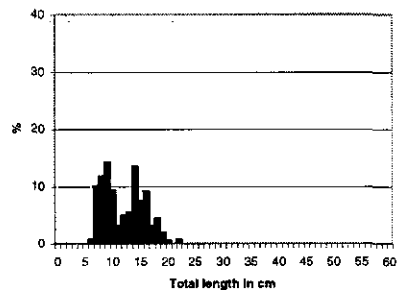
Pentanemus quinquatius SIERRA LEONE
Mean length = 18.2 cm N = 122



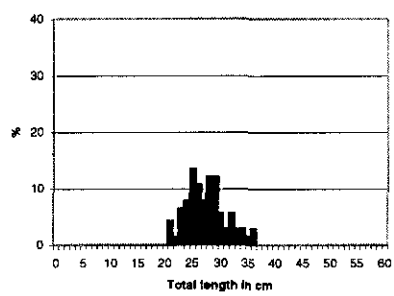
Sardinella maderensis SIERRA LEONE
Mean length = 12.8 cm N = 580



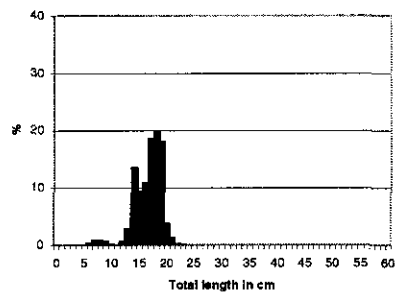
Balistes capriscus SIERRA LEONE
Mean length = 37.7 cm N = 96



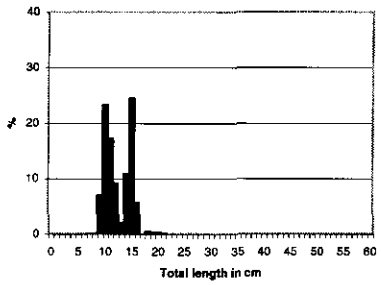
Ilisha africana SIERRA LEONE
Mean length = 12.4 cm N = 162



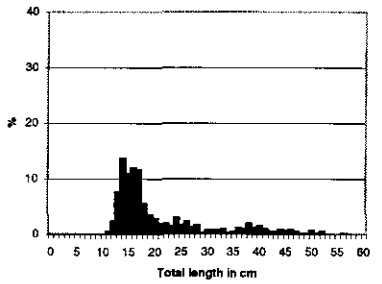
Psettodes sp. SIERRA LEONE
Mean length = 28.0 cm N = 74



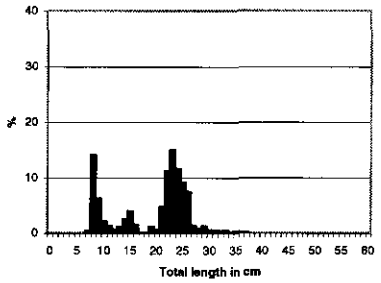
Chloscombrus chrysurus SIERRA LEONE
Mean length = 17.2 cm N = 896



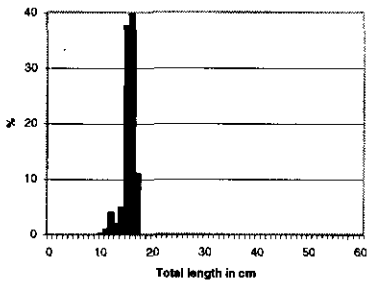
Decapterus punctatus SIERRA LEONE
Mean length = 12.9 cm N = 463



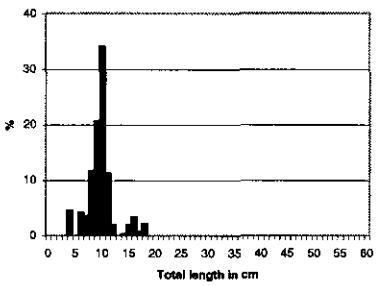
Sphyraena guachancho SIERRA LEONE
Mean length = 21.2 cm N = 707



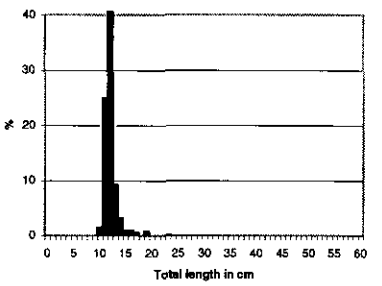
Decapterus rhonchus SIERRA LEONE
Mean length = 19.9 cm N = 336



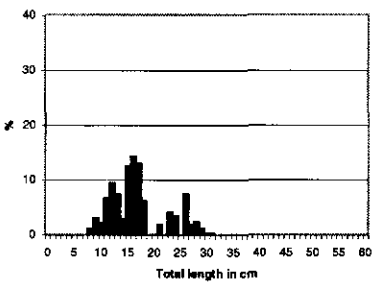
Ariomma bondi SIERRA LEONE
Mean length = 15.9 cm N = 128



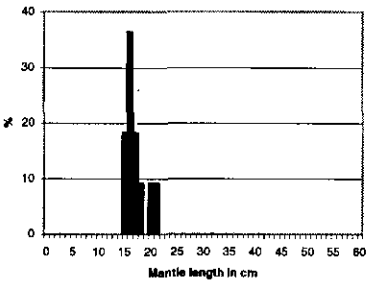
Selene dorsalis SIERRA LEONE
Mean length = 10.2 cm N = 147



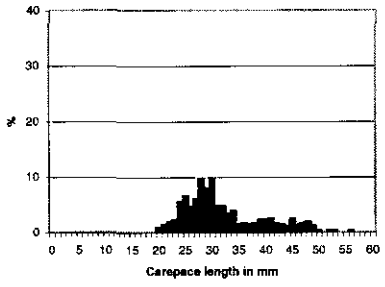
Priacanthus arenatus SIERRA LEONE
Mean length = 12.5 cm N = 223



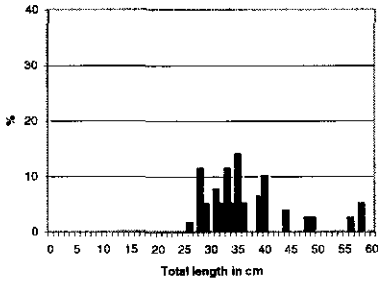
Trachurus trecae SIERRA LEONE
Mean length = 17.3 cm N = 108



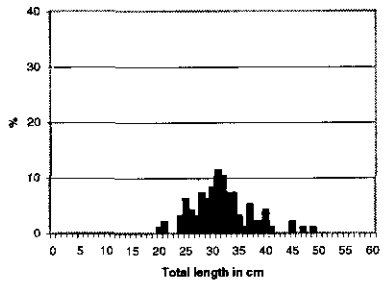
Sepia officinalis hierredda SIERRA LEONE
Mean length = 17.5 cm N = 11



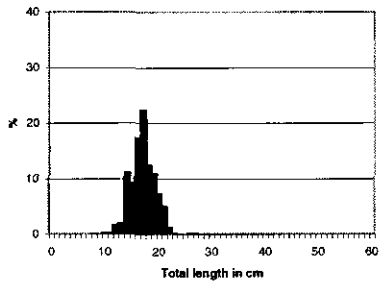
Penaeus notialis SIERRA LEONE
Mean length = 32.4 mm N = 356



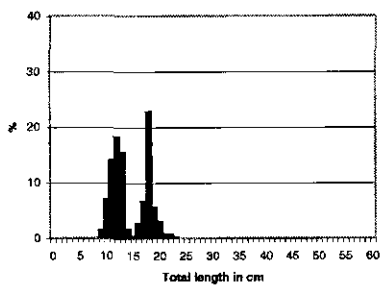
Dentex canariensis LIBERIA
Mean length = 37.0 cm N = 37



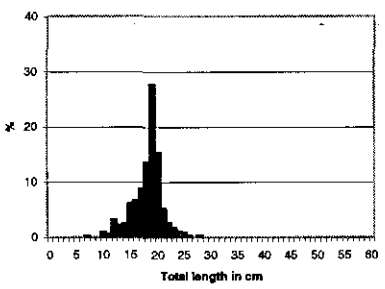
Penaeus kerathurus SIERRA LEONE
Mean length = 32.2 mm N = 97



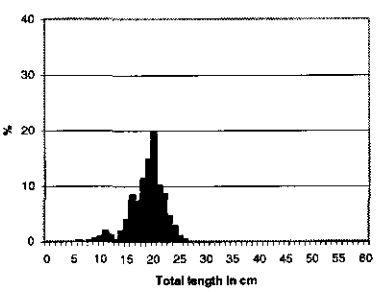
Dentex congoensis LIBERIA
Mean length = 17.5 cm N = 674



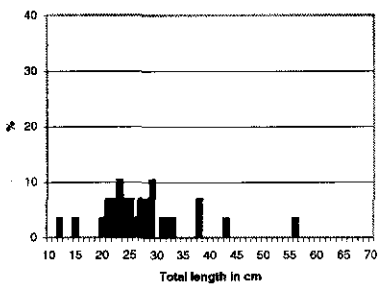
Boops boops LIBERIA
Mean length = 15.0 cm N = 201



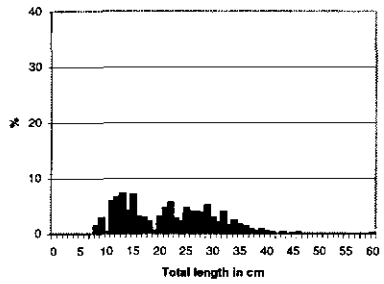
Pagellus bellottii LIBERIA
Mean length = 18.7 cm N = 362



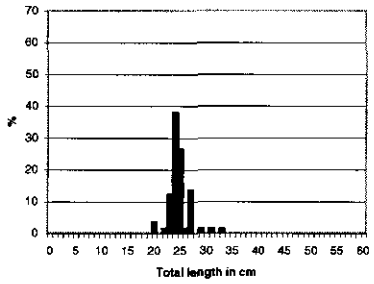
Dentex angolensis LIBERIA
Mean length = 19.4 cm N = 1123



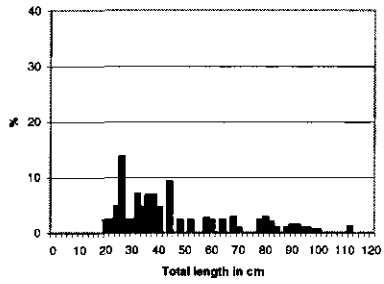
Pagrus caeruleostictus LIBERIA
Mean length = 28.0 cm N = 29



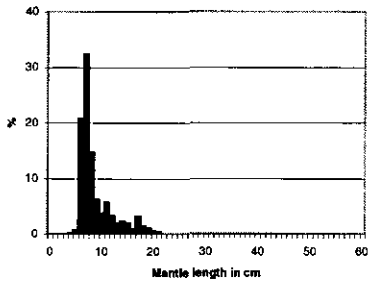
Pseudotolithus senegalensis LIBERIA
Mean length = 21.9 cm N = 369



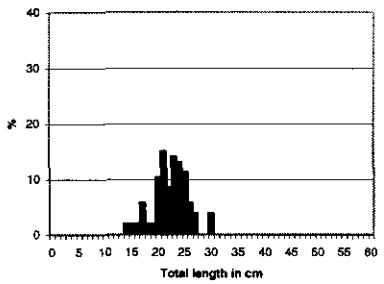
Umbrina canariensis LIBERIA
Mean length = 25.2 cm N = 17



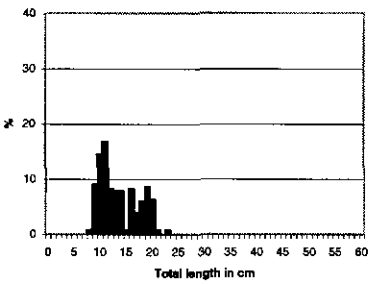
Pseudotolithus typus LIBERIA
Mean length 46.9 cm N = 73



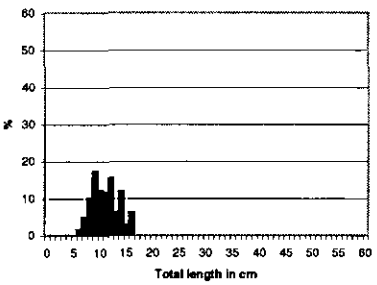
Brachydeuterus auritus LIBERIA
Mean length = 9.2 cm N = 704



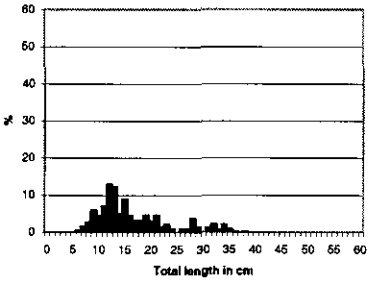
Pentheroscion mbizi LIBERIA
Mean length = 22.8 cm N = 107



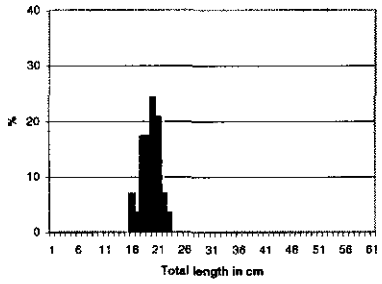
Pseudupeneus prayensis LIBERIA
Mean length = 14.1 cm N = 76



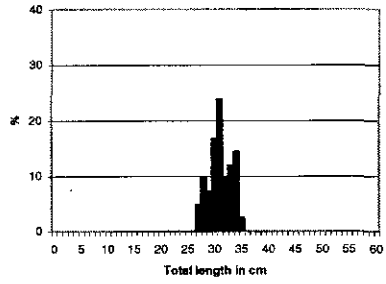
Pteroscion peli LIBERIA
Mean length = 11.5 cm N = 72



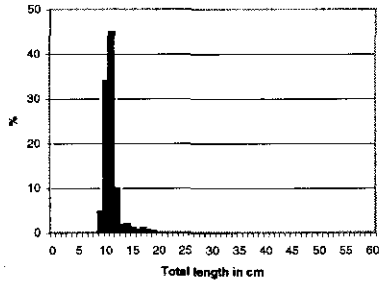
Galeoides decadactylus LIBERIA
Mean length = 16.9 cm N = 242



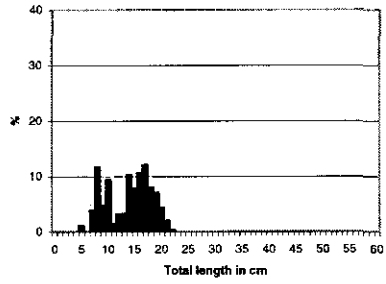
Pentanemus quinquarius LIBERIA
Mean length = 19.1 cm N = 29



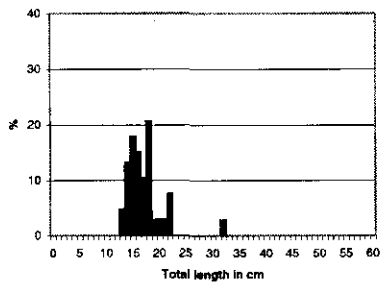
Ethmalosa fimbriata LIBERIA
Mean length = 31.6 cm N = 42



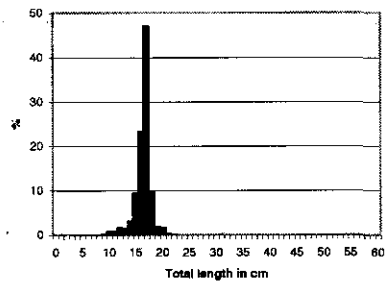
Priacanthus arenatus LIBERIA
Mean length = 11.4 cm N = 398



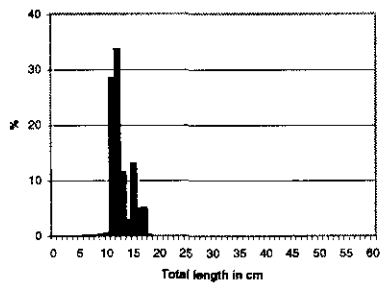
Ilisha africana LIBERIA
Mean length = 14.4 cm N = 345



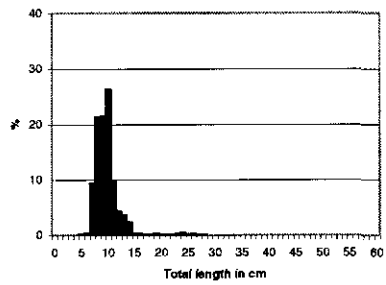
Priacanthus arenatus LIBERIA
Mean length = 17.7 cm N = 39



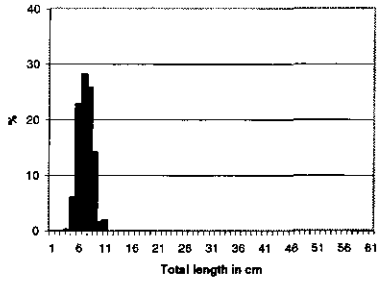
Sardinella aurita LIBERIA
Mean length = 17.0 cm N = 193



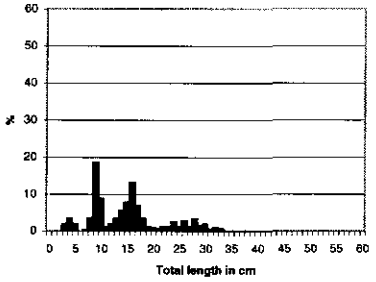
Ariomma bondi LIBERIA
Mean length = 13.2 cm N = 367



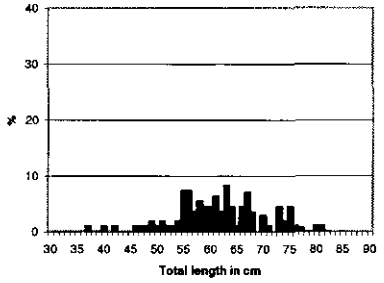
Sardinella maderensis LIBERIA
Mean length = 10.2 cm N = 411



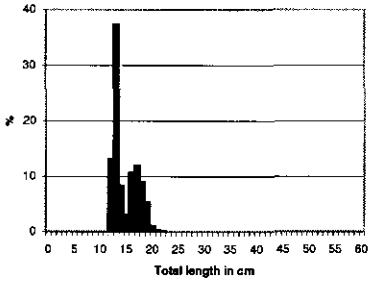
Engraulis encrasicolus LIBERIA
Mean length = 6.8 cm N = 102



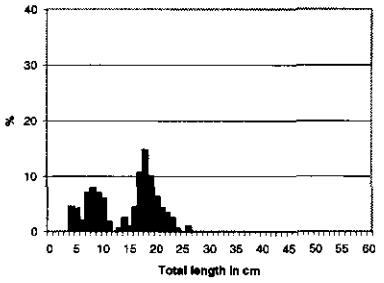
Selene dorsalis LIBERIA
Mean length = 15.3 cm N = 367



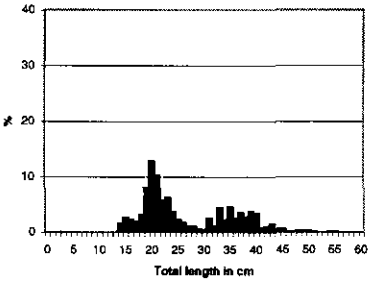
Alectis alexandrinus LIBERIA
Mean length = 62.1 cm N = 112



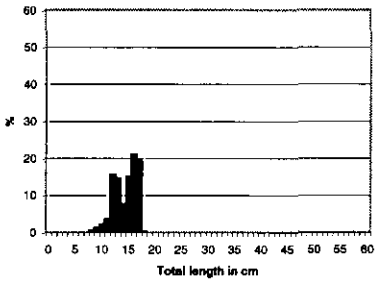
Trachurus trecae LIBERIA
Mean length = 15.2 cm N = 346



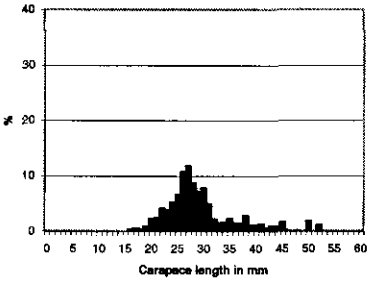
Chloroscombrus chrysurus LIBERIA
Mean length = 14.8cm N = 247



Sphyraena sphyraena LIBERIA
Mean length = 27.1 cm N = 711



Decapterus punctatus LIBERIA
Mean length = 14.9 cm N = 288



Penaeus notialis LIBERIA
Mean length = 29.8 mm N = 285

Annex III Summary of biological samples

Species	Guinea-Bissau			Guinea			Sierra Leone			Liberia			Total		
	Min len	Max len	n meas	Min len	Max len	n meas	Min len	Max len	n meas	Min len	Max len	n meas	Min len	Max len	n meas
Ethmalosa fimbriata										28.1	35.0	20	28.1	35.0	20
Sardinella aurita	17.0	19.5	20	14.5	23.0	20							14.5	23.0	40
Sardinella maderensis				15.5	21.0	20				13.0	25.0	20	13.0	25.0	40
Decapterus rhonchus	15.0	33.0	27	17.0	31.5	18	22.0	26.0	20				15.0	33.0	65
Trachurus trecae	19.0	26.5	5				11.0	18.5	19				11.0	26.5	24
Scomber japonicus	12.5	20.5	20										12.5	20.5	20
Sphyraena gauchancho				24.0	55.0	20	22.0	52.0	20	18.5	44.0	20	18.5	55.0	60
Priacanthus arenatus	18.0	27.0	25										18.0	27.0	25
Brachydeuterus auritus	14.5	20.5	6										14.5	20.5	6
Pomadasys jubelini										32.0	50.0	13	32.0	50.0	13
Pomadasys rogeri							26.0	49.0	20				26.0	49.0	20
Dentex angolensis	16.0	21.5	24				18.0	26.5	20	15.5	23.0	20	15.5	26.5	64
Dentex congoensis	14.4	22.5	45				10.5	17.0	13	16.5	22.0	20	10.5	22.5	78
Dentex macrophthalmus	20.0	26.5	14										20.0	26.5	14
Pagellus bellottii				16.0	22.5	20	16.5	24.5	40				16.0	24.5	60
Pagrus africanus	20.5	43.0	6										20.5	43.0	6
Pagrus caeruleostictus	15.5	27.5	20	15.0	28.0	20	17.5	24.0	20				15.0	28.0	60
Spicara alta	17.5	25.0	20										17.5	25.0	20
Lethrinus atlanticus				27.5	40.0	20							27.5	40.0	20
Pentheroscion mbizi										18.5	30.5	20	18.5	30.5	20
Pseudotolithus elongatus							26.0	33.0	10				26.0	33.0	10
Pseudotolithus senegalensis							24.5	52.0	20	24.0	36.0	20	24.0	52.0	40
Pseudupeneus prayensis	18.5	27.0	20	11.0	24.5	20							11.0	27.0	40
Galeoides decadactylus							14.5	37.5	20				14.5	37.5	20

Annex IV Families/genera in catch analysis and swept area estimates

1) Main groups in swept-area bottom trawl hauls:

Demersal:
Sciaenidae, Sparidae, Haemulidae, Ariidae, Serranidae, Lutjanidae, Merluccidae, Ophidae, Lethrinidae

Pelagic:
Carangidae, Scombridae, Sphyraenidae, Trichiuridae, Clupeidae, Engraulididae

Shrimp:
Shrimps

Cephalopods:
Cephalopods

Sharks:
Sharks

2) Main pelagic families in swept-area bottom trawl hauls:

Clupeids:
Clupeidae, Engraulididae

Carangids:
Carangidae

Scombrids:
Scombridae

Hairtails:
Trichiuridae

Barracudas:
Sphyraenidae

3) Commercially important demersal species grouped by families in swept-area bottom trawl hauls:

Seabream:
Dentex spp., *Diplodus* spp., *Lithognathus* spp., *Pagellus* spp., *Pagrus* spp., *Sparus* spp.

Snappers:
Lutjanidae

Groupers:
Serranidae

Grunts:
Plectorhynchus spp., *Pomadasys* spp.

Croakers:
Sciaenidae

Annex V Swept area biomass estimates

SWEPT AREA ANALYSIS FROM STATION 987 TO STATION 1063

Guinea Bissau 2006

ONLY STATIONS IN SECTOR
ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm >0	10	30	100	300	1000	% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm² - 30m	30- 50m	50-100m	100-200m
Chlorophthalmus atlanticus	1			1	1		18	3.90				16.58
Chloroscombrus chrysurus	2		1	1	1		29	3.27	11.78	5.05		
Decapterus rhonchus	4	1	5	1			65	2.56	5.32	4.57	1.40	0.20
Trachurus trecae	5		2	1			47	2.20	0.02	6.08	1.33	1.28
Pentheroscion mbizi	2				1		18	2.02				8.57
Pagellus bellottii	5		1	1			41	1.83	8.76	1.13	0.06	
Brachydeuterus auritus	1	1		2			18	1.73	0.79	6.77		
Scomber japonicus	3		3				35	1.30	3.30	2.20	0.56	
Spicara alta	1		1	1			18	1.28				5.42
Sardinella aurita	4	1		1			35	0.97	4.36	0.64	0.13	
Todaropsis eblanae	4	1	1				35	0.59			0.26	2.12
Pseudupeneus prayensis	5	2	1				47	0.45	1.14	0.92	0.08	
Antigonia capros	4		1				29	0.39			0.05	1.56
Pagrus caeruleostictus	2		1				18	0.33	1.85	0.01		
Dentex congoensis	2		1				12	0.33			0.16	1.14
Scorpaena stephanica	4	2					35	0.27			0.24	0.80
Decapterus punctatus	5	2					41	0.25	0.40	0.72	0.03	
Arius parkii	2		1				18	0.24		1.03		
Dasyatis pastinaca			1				6	0.23		0.96		
Synagrops microlepis	3		1				12	0.23				0.98
Dentex angolensis	3	1					24	0.22			0.01	0.92
Ariomma bondi	4	1					29	0.20			0.36	0.29
Rhizoprionodon acutus	2	1					18	0.16	0.21	0.52		
Fistularia petimba	9						41	0.14			0.33	0.11
Mustelus mustelus	2						12	0.11			0.15	0.24
Sphoeroides marmoratus	2	1					18	0.07		0.01		0.29
Pagrus africanus	1	1					12	0.07			0.01	0.27
Caranx crysos	4						24	0.07	0.32		0.03	
Albula vulpes		1					6	0.07	0.40			
Zenopsis conchifer	2						12	0.06				0.25
Sepia officinalis hierredda	9						53	0.06	0.07	0.08	0.07	
Sphyraena afra	1						6	0.06	0.31			
Pseudotolithus senegalensis	1						6	0.06		0.24		
Zeus faber	4						24	0.05			0.03	0.16
Lagocephalus laevigatus	7						41	0.05	0.02	0.08	0.07	
Saurida brasiliensis	2						12	0.05				0.20
Umbrina canariensis	3						18	0.05				0.23
Raja miraletus	8						47	0.05		0.03	0.10	0.05
Penaeus notialis	1						6			0.02		
Other fish								0.74	0.70	0.96	0.46	0.97
Sum all species								26.71	39.75	32.02	5.92	42.63
Sum Snappers												
Sum Groupers								0.02		0.08		
Sum Grunts								1.76	0.82	6.84		
Sum Croakers								2.16		0.35		8.80
Sum Seabreams								2.81	10.61	1.14	0.24	2.44
Sum Sharks								0.31	0.21	0.52	0.15	0.42
Sum Rays								0.28	0.03	1.00	0.11	0.05
Sum Squids								0.72	0.10	0.17	0.43	2.20
Sum 0.02												
Number of stations included in analysis, total and by depth strata								17	3	4	6	4

SWEPT AREA ANALYSIS FROM STATION 987 TO STATION 1088

Guinea 2006

ONLY STATIONS IN SECTOR
ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm >0	10	30	100	300	1000	% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm² - 30m	30- 50m	50-100m	100-400m
Trachurus trecae	3	2				1	38	25.93	0.02	0.54	136.30	0.66
Antigonia capros	1	1			1		19	3.69			0.04	14.72
Decapterus punctatus	3	2	1	2			50	3.02	0.52	2.87	9.87	
Saurida brasiliensis	1				1		13	2.18			11.63	
Sardinella aurita	4	2		1			44	2.15	0.07	5.59	0.23	
Brachydeuterus auritus	3	1	1	1			31	2.00	2.93	3.87		
Chloroscombrus chrysurus	4		1	1			31	1.85	1.34	4.26	0.01	
Sardinella maderensis	3		1	1			31	1.70	8.03	0.52		
Decapterus rhonchus	7	1	3				50	1.58	2.11	3.17		
Chlorophthalmus atlanticus	1	1		1			19	1.03				4.12
Pseudupeneus prayensis	5	2	1				44	0.75	0.10	1.88	0.15	
Ariomma bondi	2		2				25	0.61		0.03	1.13	1.55
Illex coindetii	6	1	1				50	0.49			0.02	1.95
Pagrus caeruleostictus	4	3					38	0.39	0.67	0.71		
Pagellus bellottii	6	1	1				50	0.37	0.12	0.93		
Rachycentron canadum	1		1				13	0.20	1.07			
Decapterus&Trachurus JUVENILES			1				6	0.20	1.07			
Acanthurus monroviae			1				6	0.20		0.54		
Lethrinus atlanticus		1						0.16		0.42		
Sphyraena afra	2	1					19	0.13	0.07	0.31		
Aulopus cadenati	1	1					13	0.13				0.51
Merluccius polli	1	1					6	0.11				0.44
Lutjanus goreensis		1						0.09		0.24		
Synagrops microlepis	2	1					19	0.08		0.01		0.30
Aluterus heudelotii	2						13	0.07		0.17		
Engraulis encrasicolus	2						13	0.07	0.40			
Sardinella spp. (juv.)		1					6	0.07	0.37			
Sepia officinalis hierredda	8						44	0.06	0.14	0.08		
MYCTOPHIDAE	2						13	0.05		0.10		0.06
Bodianus speciosus	1							0.05		0.14		
Parapenaeus longirostris	2						6	0.01				0.03
Nematopalaemon hastatus	1						6					
Shrimps, small, non comm.	1						6					
Other fish								0.67	0.34	0.71	0.43	1.23
Sum all species								50.09	19.37	27.09	159.81	25.57
Sum Snappers								0.16		0.44		
Sum Groupers								0.03		0.07		
Sum Grunts								2.01	2.93	3.88		
Sum Croakers												
Sum Seabreams								0.77	0.79	1.66		
Sum Sharks								0.08				0.27
Sum Rays								0.04		0.07	0.02	0.07
Sum Squids								0.56	0.14	0.08	0.02	1.99
Sum												
Number of stations included in analysis, total and by depth strata								16	3	6	3	4

SWEPT AREA ANALYSIS FROM STATION 987 TO STATION 1063

Sierra Leone 2006

ONLY STATIONS IN SECTOR
ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm >0	10	30	100	300	1000	% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm² - 30m	30- 50m	50-100m	100-200m
Ariomma bondi	2		1			1	16	7.87			24.08	4.04
Chloroscombrus chrysurus	7	1	3		2		52	6.96	12.92	7.80	1.02	
Priacanthus arenatus	9	1	2		2		56	6.18	0.47	0.25	18.58	0.06
Decapterus punctatus	6	2	2	1	1		44	3.59	0.05	1.96	9.23	0.02
Pagellus bellottii	7	2	4				52	1.27	1.67	1.29	0.98	0.07
Pagrus caeruleostictus	11	6		1			68	1.21	2.28	0.95	0.54	
Brachydeuterus auritus	7	3	3				52	0.96	1.01	1.87	0.11	
Sardinella aurita	4	3	3				40	0.83		0.78	1.80	
Dentex congoensis	2	1	1	1			20	0.81			2.48	0.30
Decapterus rhonchus	11	1		1			48	0.76	0.37	0.02	1.98	
Sphyraena guachancho	9	3	1				36	0.51	0.26	1.34		
Ilisha africana	3	1	2				24	0.42	0.69	0.64		
Galeoides decadactylus	10	2	1				32	0.40	1.03	0.23		
Pseudupeneus prayensis	15	3					72	0.36	0.57	0.36	0.20	
Rhizoprionodon acutus	3		1				16	0.29	0.03	0.88		
Pomadasys rogeri	4		1				16	0.29	0.06	0.85		
Dactylopterus volitans	6	1	1				32	0.29	0.26	0.62	0.05	
Balistes capriscus	5		2				28	0.28	0.45	0.42	0.01	
Selene dorsalis	11	1					44	0.27	0.34	0.49	0.01	
Pteroscion peli	4	1	1				24	0.25	0.29	0.50		
Pseudotolithus senegalensis	11	1					28	0.21	0.48	0.18		
Trachurus trecae	4	2					24	0.21		0.01	0.62	0.10
Sardinella maderensis	10	1					36	0.20	0.07	0.18	0.36	
Engraulis encrasicolus	1		1				8	0.19		0.60		
Trichiurus lepturus	5	1					24	0.14	0.19	0.26		
Pentanemus quinquarius	3	1					16	0.11	0.32	0.02		
Lagocephalus laevigatus	9						36	0.08	0.04		0.18	0.10
Dentex angolensis	4	1					20	0.08			0.26	
Chromis cadenati	1	1					8	0.08			0.25	
Parapenaeopsis atlantica	1	1					8	0.07	0.21			
Epinephelus aeneus	4						16	0.06		0.05	0.14	
Lethrinus atlanticus	5	1					24	0.06	0.02	0.17		
Caranx crysos	10						36	0.06	0.14	0.06		
Alectis alexandrinus	3	1					12	0.06		0.18		
Acanthurus monroviae	3						12	0.06		0.18		
Boops boops	4						16	0.05			0.14	0.01
Scomber japonicus	2						8	0.05			0.16	
Chaetodipterus goreensis	5						20	0.05	0.07	0.10		
Balistes punctatus	3						12	0.05		0.14		
Penaeus notialis	6						24	0.03	0.03	0.05		
Penaeus kerathurus	4						16	0.01	0.01			
Shrimps, small, non comm.	1						4					
Other fish								0.79	1.26	0.75	0.52	0.82
Sum all species								36.50	25.59	24.18	63.70	5.52
Sum Snappers								0.03	0.09	0.01	0.01	
Sum Groupers								0.06		0.06	0.14	
Sum Grunts								1.29	1.19	2.72	0.11	
Sum Croakers								0.49	0.83	0.68	0.03	
Sum Seabreams								3.43	3.95	2.25	4.44	0.38
Sum Sharks								0.32	0.04	0.88	0.08	
Sum Rays								0.05	0.05	0.03	0.06	0.04
Sum Squids								0.04	0.01	0.09	0.02	0.01
Sum 0.0$												
Number of stations included in analysis, total and by depth strata								25	8	8	8	1

SWEPT AREA ANALYSIS FROM STATION 987 TO STATION 1088

Liberia 2006

ONLY STATIONS IN SECTOR
ARE INCLUDED

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES Lower limits, Kg/nm >0	10	30	100	300	1000	% incidence	Mean dens. t/nm²	Mean densities by bottom depth strata t/nm² - 30m	30- 50m	50-100m	100-200m
Pseudotolithus typus			1	1				1.38		5.81		
Trachurus trecae	1	1	3				24	1.09			1.64	
Dentex congoensis	3	2	3				38	1.03			1.54	
Priacanthus arenatus	11	1		1			62	1.01		0.01	1.52	
Sphyraena guachancho	17	2	2				62	0.92	0.43	2.80	0.31	
Dentex angolensis	7	8					67	0.80			1.21	
Boops boops	6	1	2				43	0.58			0.87	
Pseudotolithus senegalensis	6	5					33	0.38	1.11	1.15		
Brachydeuterus auritus	8	3					52	0.34	0.27	0.62	0.25	
Sardinella aurita	5		1				29	0.31			0.46	
Ilisha africana	5		1				29	0.27	0.12	1.08		
Selene dorsalis	12	1					57	0.24	0.19	0.59	0.12	
Arioma bondi	11		1				57	0.23			0.34	
Squatina oculata	3	2					19	0.22			0.33	
Pagellus bellottii	11	1					52	0.21			0.32	
Pteroscion peli	4	1					24	0.21	0.45	0.69		
Galeoides decadactylus	8	1					38	0.19	0.15	0.73		
Decapterus punctatus	6	1					29	0.14			0.21	
Trichiurus lepturus	8	1					43	0.12	0.33	0.33	0.02	
Sardinella maderensis	7	1					38	0.11	0.18	0.39		
Chloroscombrus chrysurus	5	1					29	0.11	0.54	0.25		
Dentex canariensis	5						24	0.10			0.16	
Parapenaeopsis atlantica	4	1					24	0.10	0.49	0.24		
Epinephelus aeneus	6						29	0.09			0.14	
Pomadasys jubelini	5	1					29	0.08	0.05	0.30		
Penaeus notialis	7						29	0.07	0.03	0.27		
Umbrina canariensis	7						33	0.07		0.10	0.07	
Lutjanus dentatus		1					5	0.07		0.30		
Arius heudeloti		1					5	0.07		0.31		
Illex coindetii	16						67	0.06		0.02	0.08	
Scorpaena scrofa	6						29	0.06			0.08	
Raja miraletus	8						38	0.05		0.10	0.03	
Parapenaeus longirostris	5						19	0.01			0.01	
Penaeus kerathurus	2						10		0.02			
Other fish								0.72	0.86	0.87	0.71	
Sum all species								11.44	5.22	16.96	10.42	
Sum Snappers								0.07		0.30		
Sum Groupers								0.09			0.14	
Sum Grunts								0.42	0.32	0.95	0.25	
Sum Croakers								2.10	1.62	7.86	0.12	
Sum Seabreams								2.75			4.15	
Sum Sharks								0.23		0.02	0.33	
Sum Rays								0.07		0.15	0.05	
Sum Squids								0.09		0.03	0.12	
Sum 0.51												
Number of stations included in analysis, total and by depth strata								21	2	5	14	

Annex VI Excel sheet used for calculations of biomass and confidence intervals

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 optinally 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 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

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 11.01.2006 The settings of 38 kHz echo sounder were as follows:

Transceiver-1 menu (38 kHz lowering keel)

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

Display menu

Echogram	1 (38 kHz)
Sv colour min	-67 dB

Printer- menu

Echogram	1 (38 kHz)
Range	50, 100, 250, 500, 750 and 1000 m
Range start	0
Bottom range	15 m
Bottom range start	10 m
Sv colour min	-67 dB
TVG	20 log R

Bottom detection menu Minimum level -40 dB

Fishing gear

The vessel has "Harstad" and "Åkrahamn" pelagic trawls and "Gisund super bottom trawl".

The bottom trawl has a headline of 31 m, footrope 47 m and 20 mm meshsize in the codend with an innernet of 10 mm meshsize. The estimated opening is 6 m (observed 5.7) and distance between wings during towing about 18 m. The sweeps are 40 m long. The trawl is equipped with a 12" rubber bobbins gear. The doors are of 'Thyborøn' combi type, 7.81 m^2, 1670 kg, their distance while trawling about 45 - 55 m in average, depending on the depth (least distance at low depths). This distance can be kept constant (about 50 m) at all depths by the use of a 9.5 m strap between the wires at 130 m distance from the doors, normally applied at depths greater than 80 m. On the present survey, however, the strap was not applied because most of the trawl hauls were made in shallower waters.

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

The pelagic trawl can be equipped with a trawleye that provides information on the trawl opening and the distance of the footrope to the bottom.

Annex VIII Swept Area Estimates of Main Demersal Groups

Total swept area estimates 2006

Country	Seabreams	Grunts[1]	Croakers	Groupers	Snappers	*B. auritus*	Sharks	Rays	Cephalopods
Guinea Bissau	15907	142	11736	128	0	11622	1809	1865	3837
Guinea	7873	41	0	287	1804	19823	189	358	1932
Sierra Leone	21362	2131	2897	440	191	5940	2144	298	260
Liberia	13031	369	9535	440	297	1628	1056	306	407
Total	58173	2683	24168	1295	2292	39013	5198	2826	6435

[1] Grunts excluding *Brachydeuterus auritus*

Guinea Bissau, swept area estimates 2006

Depth	20-30 m	30-50 m	50-100 m	100-200 m
Area NM^2	1000	1600	1560	1270

	Densities			
Seabreams	10.61	1.14	0.24	2.44
Grunts	0.03	0.07		
Croakers		0.35		8.80
Groupers		0.08		
Snappers				
B. auritus	0.79	6.77		
Sharks	0.21	0.52	0.15	0.42
Rays	0.03	1.00	0.11	0.05
Cephalopods	0.10	0.17	0.43	2.20

	Biomass (tonnes)				Total
Seabreams	10610	1824	374	3099	15907
Grunts	30	112	0	0	142
Croakers	0	560	0	11176	11736
Groupers	0	128	0	0	128
Snappers	0	0	0	0	0
B. auritus	790	10832	0	0	11622
Sharks	210	832	234	533	1809
Rays	30	1600	172	64	1865
Cephalopods	100	272	671	2794	3837
Total	11770	16160	1451	17666	47047

Guinea Bissau, swept area estimates 2006

Depth	20-30 m	30-50 m	50-100 m	100-200 m
Area NM^2	1000	1600	1560	1270

	Densities			
Seabreams	10.61	1.14	0.24	2.44
Grunts	0.03	0.07		
Croakers		0.35		8.80
Groupers		0.08		
Snappers				
B. auritus	0.79	6.77		
Sharks	0.21	0.52	0.15	0.42
Rays	0.03	1.00	0.11	0.05
Cephalopods	0.10	0.17	0.43	2.20

	Biomass (tonnes)				Total
Seabreams	10610	1824	374	3099	15907
Grunts	30	112	0	0	142
Croakers	0	560	0	11176	11736
Groupers	0	128	0	0	128
Snappers	0	0	0	0	0
B. auritus	790	10832	0	0	11622
Sharks	210	832	234	533	1809
Rays	30	1600	172	64	1865
Cephalopods	100	272	671	2794	3837
Total	11770	16160	1451	17666	47047

Sierra Leone, swept area estimates 2006

Depth	20-30 m	30-50 m	50-100 m	100-200 m
Area NM^2	1640	2160	2220	440

	Densities			
Seabreams	3.95	2.25	4.44	0.38
Grunts	0.18	0.85		
Croakers	0.83	0.68	0.03	
Groupers		0.06	0.14	
Snappers	0.09	0.01	0.01	
B. auritus	1.01	1.87	0.11	
Sharks	0.04	0.88	0.08	
Rays	0.05	0.03	0.06	0.04
Cephalopods	0.01	0.09	0.02	0.01

	Biomass (tonnes)				Total
Seabreams	6478	4860	9857	167	21362
Grunts	295	1836	0	0	2131
Croakers	1361	1469	67	0	2897
Groupers	0	130	311	0	440
Snappers	148	22	22	0	191
B. auritus	1656	4039	244	0	5940
Sharks	66	1901	178	0	2144
Rays	82	65	133	18	298
Cephalopods	16	194	44	4	260
Total	10102	14515	10856	189	35663

Liberia, swept area estimates 2006

Depth	0-30 m	30-50 m	50-100 m	100-200 m
Area NM^2	850	990	3140	500

	Densities			
Seabreams			4.15	
Grunts	0.05	0.33		
Croakers	1.62	7.86	0.12	
Groupers			0.14	
Snappers		0.30		
B. auritus	0.27	0.62	0.25	
Sharks		0.02	0.33	
Rays		0.15	0.05	
Cephalopods		0.03	0.12	

	Biomass (tonnes)				Total
Seabreams	0	0	13031	0	13031
Grunts	43	327	0	0	369
Croakers	1377	7781	377	0	9535
Groupers	0	0	440	0	440
Snappers	0	297	0	0	297
B. auritus	230	614	785	0	1628
Sharks	0	20	1036	0	1056
Rays	0	149	157	0	306
Cephalopods	0	30	377	0	407
Total	1649	9217	16202	0	27068

Annex IX Regional estimates, April-May 2006

April-May 2006: Round sardinella (*Sardinella aurita*), number in millions

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5					
6					
7					
8		71	3		74
9		915	12	10	937
10		2 674	85	122	2 881
11	603	3 535	247	48	4 434
12	1 231	4 266	399	27	5 923
13	327	2 783	464	22	3 596
14	50	1 052	490	45	1 637
15		1 668	192	71	1 932
16	123	1 587	41	85	1 836
17	246	2 838	24	134	3 242
18	921	970	8	34	1 932
19	860	272	29	6	1 167
20	61	299	0	4	365
21		245	101	2	349
22		27	7	2	36
23		320			320
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
Total	4 421	23 523	2 105	612	30 661

Annex IX continued

April-May 2006: Round sardinella (*Sardinella aurita*), biomass in tonnes

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5					
6					
7			19		19
8		409	94	81	584
9		7 376	928	1 327	9 631
10		29 095	3 538	691	33 323
11	8 618	50 536	7 332	501	66 988
12	22 597	78 316	10 740	519	112 172
13	7 552	64 357	14 054	1 277	87 240
14	1 440	30 148	6 732	2 499	40 818
15		58 393	1 720	3 598	63 711
16	5 185	67 033	1 213	6 767	80 198
17	12 373	142 960	449	2 002	157 784
18	54 817	57 749	2 036	393	114 995
19	59 915	18 975	14	291	79 196
20	4 972	24 251	9 479	191	38 894
21		22 890	788	173	23 851
22		2 915			2 915
23		39 076			39 076
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
Total	177 470	694 478	59 137	20 310	951 395

Annex IX continued

April-May 2006: Flat sardinella (*Sardinella maderensis*), numbers in millions

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5				1	1
6			10		10
7		66	38	5	110
8		1 177	104	7	1 289
9		2 604	51	21	2 676
10		482	21	20	522
11		212	44	12	269
12		242	69	6	318
13		273	31	4	307
14		718	19	3	740
15		556	21	2	579
16		1 044	44	0	1 088
17		1 427	93	1	1 521
18		373	62		435
19		1 016	74	1	1 090
20		646	73		720
21		177	41		218
22			20		20
23		54	7	3	64
24		3	14	8	25
25			1	3	4
26			1	5	6
27					
28				1	1
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
Total		11 071	837	103	12 012

Annex IX continued

April-May 2006: Flat sardinella (*Sardinella maderensis*), biomass in tonnes

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5				1	1
6			27		27
7		271	157	21	449
8		7 013	622	42	7 676
9		21 655	427	172	22 254
10		5 412	231	220	5 862
11		3 131	652	182	3 965
12		4 594	1 316	118	6 028
13		6 509	731	95	7 335
14		21 232	570	93	21 895
15		20 078	766	67	20 911
16		45 481	1 900	13	47 394
17		74 190	4 816	40	79 047
18		22 904	3 816		26 720
19		73 090	5 291	41	78 422
20		54 012	6 125		60 137
21		17 074	3 942		21 015
22			2 167		2 167
23		6 775	864	396	8 035
24		462	1 944	1 197	3 603
25			179	506	685
26			115	947	1 061
27					
28				236	236
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
Total		383 883	36 656	4 388	424 927

Annex IX continued

April-May 2006: Anchovy (*Engraulis encrasicolus*), numbers in millions

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5		0	160	42	202
6		0	169	44	214
7		132	152	39	323
8		362	71	19	452
9		526	9	2	537
10		132	9	2	143
11		33			33
12		0			0
13					0
14					0
15					0
16					0
17					0
18					0
19					0
20					0
Total		1 184	571	149	1 903

April-May 2006:Anchovy (*Engraulis encrasicolus*), biomass in tonnes

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5			144	38	182
6			251	65	317
7		300	345	90	735
8		1 200	237	62	1 498
9		2 436	41	11	2 488
10		822	56	15	893
11		270			270
12					
13					
14					
15					
16					
17					
18					
19					
20					
Total		5 028	1 074	280	6 382

Annex IX continued

April-May 2006: Ilisha (P1), number in millions

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5				1	1
6	122		2		124
7	951		20	2	973
8	922		22	6	949
9	1 331		28	2	1 361
10	833		20	4	857
11	151		4	0	156
12	218		5	2	225
13	362		11		372
14	933		25	5	963
15	730		22	2	754
16	796		22	7	826
17	453		20	13	487
18	516		17	1	534
19	449		16	2	468
20	144		8		151
21	81		4	2	87
22	122		2	0	124
23					
24					
25					
26					
27					
28					
29					
30					
Total	9 113		248	49	9 411

Annex IX continued

April-May 2006: Ilisha (P1), biomass in tonnes

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5				1	1
6	267		5		272
7	3 209		68	7	3 284
8	4 529		109	27	4 665
9	9 127		191	16	9 334
10	7 716		182	41	7 938
11	1 842		46	6	1 893
12	3 405		80	25	3 510
13	7 117		210		7 327
14	22 764		609	112	23 484
15	21 746		659	68	22 473
16	28 623		796	247	29 666
17	19 432		873	558	20 863
18	26 132		865	58	27 055
19	26 657		971	122	27 750
20	9 903		518		10 421
21	6 441		288	163	6 891
22	11 073		226	21	11 320
23					
24					
25					
26					
27					
28					
29					
30					
Total	209 981		6 695	1 471	218 147

Annex IX continued

April-May 2006: Cunene horse mackerel (*Trachurus trecae*), numbers in millions

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5	0				0
6	3				3
7	13				13
8	11	12			23
9		148			148
10		292	1		293
11		48	4		52
12		17	2	7	26
13		9	1	22	32
14	1			6	6
15				6	6
16	1			31	32
17	9			27	36
18	19			9	28
19	18			2	20
20	4				4
21	2				2
22	1				1
23	1				1
24	1				1
25					
26					
27					
28					
29					
30		10	5		15
31		7	3		10
32					
33					
34					
35					
36					
37					
38					
39					
40					
41	6				6
42	9				9
43	10				10
44	10				10
45	11				11
46	8				8
47	1				1
48	1				1
49					
50	1				1
Total	139	542	17	110	808

Annex IX Regional estimates, April-May 2006

April-May 2006: Round sardinella (*Sardinella aurita*), number in millions

Length cm	Guinea Bissau	Guinea	Sierra Leone	Liberia	TOTAL
5					
6					
7					
8		71	3		74
9		915	12	10	937
10		2 674	85	122	2 881
11	603	3 535	247	48	4 434
12	1 231	4 266	399	27	5 923
13	327	2 783	464	22	3 596
14	50	1 052	490	45	1 637
15		1 668	192	71	1 932
16	123	1 587	41	85	1 836
17	246	2 838	24	134	3 242
18	921	970	8	34	1 932
19	860	272	29	6	1 167
20	61	299	0	4	365
21		245	101	2	349
22		27	7	2	36
23		320			320
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
Total	4 421	23 523	2 105	612	30 661