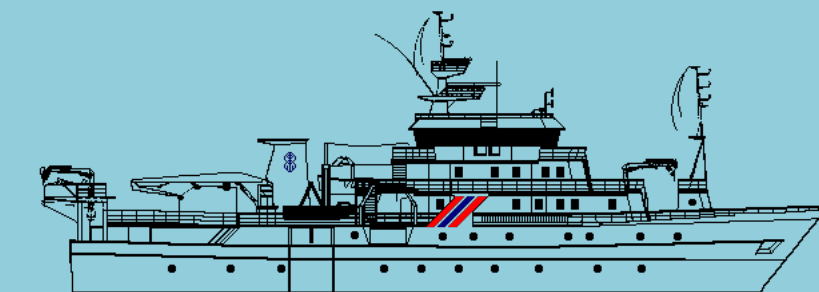


## Cruise Report "Dr. Fridtjof Nansen"



**CCLME**  
**North West Africa Ecosystem Survey**  
**Guinea - Morocco**

**20 October – 21 December 2011**

By

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## **THE EAF-NANSEN PROJECT**

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

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

## **LE PROJET EAF-NANSEN**

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

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

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## INTRODUCTION

The Canary Current Large Marine Ecosystem (CCLME) project is executed by the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Environment Programme (UNEP) in a combined effort to reverse the degradation of the Canary Current large marine ecosystem caused by over-fishing, habitat modification and changes in water quality by adoption of an ecosystem-based management approach. The current phase of the CCLME project will be operational for five years (2010-2015) in the seven participating countries Cape Verde, Guinea, Guinea Bissau, Mauritania, Morocco, Senegal and The Gambia. The project is funded by the Global Environment Facility (GEF) and co-financed by participating countries and other partners.

Ecosystem based approaches to management include holistic knowledge of the ecosystem, fishery-independent surveys are thus of high relevance. In this regard, an Ecosystem survey was planned using the R/V "Dr. Fridtjof Nansen" during October-December 2011 through a co-operation between the EAF-Nansen Project of FAO and the Canary Current Large marine Ecosystem (CCLME) and the Institutions within the countries visited during the survey. The survey will constitute a baseline-study of the shelf and slope biodiversity and environment. This will include an evaluation of demersal and pelagic fish resources, recordings of seabirds and marine mammals, collection of benthic invertebrates, zoo and phytoplankton as well as investigations of the physical environment.

### 1.1. The Survey area

The CCLME is one of the world's major cold water upwelling boundary current LME's. It ranks third in the world in terms of primary production and has one of the highest fisheries productions of any large African marine ecosystem. The annual fish production in the Canary Current LME ranges from 2-3 million tonnes and the fisheries are of major economic and social importance providing sustainable livelihoods, fish-protein supplies and revenue for the coastal populations and states of the region. The CCLME coastal zone also provides important goods and services to coastal states including provision of critical fish habitat, wood from mangroves and provision of coastal and marine space for agriculture, aquaculture, urban development, tourism and transport.

However, the fishery activities in the Canary Current are currently declining and many resources are classified as overexploited. Some of the underlying causes of the declining fisheries include the over-capacity of fishing fleets (both industrial and artisanal); poor scientific database of a dynamic and complex ecosystem; weak management regime and low monitoring activity, control and surveillance; lack of scientific and technical capacity for management; and poor stakeholders' participation in management decisions.

In addition, the region is experiencing degradation of several important habitats including estuaries, wetlands (particularly mangroves) and benthic habitats. The causes for the degradation include over-harvesting of wood, trawling, sedimentation, upstream hydro-electric and irrigation schemes and the absence of any systematic policy for conservation of these critical habitats. Habitats are also affected by changing water quality such as salinity changes (mainly due to river dams), oil pollution and eutrophication.



## 1.2. Aims and objectives

The purpose of the R/V 'Dr. Fridtjof Nansen' survey was established during the second meeting of the Working Group on planning and analysis of ecosystem surveys in the CCLME area held in Casablanca Morocco 30 - 31 May 2011. The Working Group outlined the priorities in terms of thematic sampling to be achieved during the regional ecosystem survey (CCLME 2011).

Based on the sampling priorities and discussions during the meeting the main objectives of the survey have been set as follows:

- To obtain information on demersal fish abundance and biodiversity by demersal trawling where conditions for bottom-trawling are adequate.
- To determine the distribution of small pelagic fish resources in the survey region using acoustic methods and a systematic grid survey strategy.
- Additional biological sampling from trawl catches to collect data on size distribution, further biological information and genetic material from selected species
- To establish as far as possible the distribution, abundance and composition of other taxa at different trophic levels along the shelf (phyto- and zooplankton, egg and fish larvae, cetaceans and sea birds, and benthic biodiversity).
- Map the environmental conditions in the survey area (temperature, salinity, oxygen, chlorophyll, nutrients and sediments)
- Capacity building of CCLME trainees and young scientists.

### 1.3. Participation

A total of 43 scientists and technicians participated in the survey. The full list of the participants and their affiliations is given in Table 1 below.

Table 1. List of participants

Name	Nationality	Date of Embarkation	Date of Demarcation	Institution
Jan Arne Vågenes	Norway	20/10, Conakry	16/11, Nouadhibou	IMR
Tore Mørk	Norway	20/10, Conakry	16/11, Nouadhibou	IMR
Frøydis Lygre	Norway	20/10, Conakry	21/12 Las Palmas	UiB
Bjørn Krafft	Norway	20/10, Conakry	16/11, Nouadhibou	IMR
Jens-Otto Krakstad	Norway	20/10, Conakry	16/11, Nouadhibou	IMR
Diana Zaera	Venezuela	20/10, Conakry	16/11, Nouadhibou	IMR
Alexander Beck	Germany	20/10, Conakry	16/11, Nouadhibou	IMR
Kathrine Michalsen	Norway	16/11, Nouadhibou	21/12 Las Palmas	IMR
Oddgeir Alvheim	Norway	16/11, Nouadhibou	21/12 Las Palmas	IMR
Espen Bagøien	Norway	16/11, Nouadhibou	21/12 Las Palmas	IMR
Ole Sverre Fossheim	Norway	16/11, Nouadhibou	21/12 Las Palmas	IMR
Jan Frode Wilhelmsen	Norway	16/11, Nouadhibou	21/12 Las Palmas	IMR
Ousmane Tagbé Camara	Guinée	20/10, Conakry	03/11, Dakar	CNSHB
Amadou Oury Barry	Guinée	20/10, Conakry	16/11, Nouadhibou	CERESCOR
Duarté Bucal	Guinée Bissau	20/10, Conakry	03/11, Dakar	CIPA
Amadeu Mendes De Almeida	Guinée Bissau	20/10, Conakry	16/11, Nouadhibou	CIPA
Ibrahima Camara	Senegal	20/10, Conakry	18/12, Agadir	CRODT
Mbarack Fall	Senegal	20/10, Conakry	03/11, Dakar	CRODT
Ebu Mass MBye	The Gambia	20/10, Conakry	03/11, Dakar	DF
Ivanice Monteiro	Cape Verde	20/10, Conakry	03/11, Dakar	INDP
Mohamed Ben Lemlih	Mauritania	20/10, Conakry	03/11, Dakar	IMROP
Abdellahi Ould Samba Ould Bilal	Mauritania	03/11, Dakar	16/11, Nouadhibou	IMROP
Sidi Mohamed Ould Baba	Mauritania	03/11, Dakar	16/11, Nouadhibou	IMROP
Yahya Ould Eleiou	Mauritania	03/11, Dakar	16/11, Nouadhibou	IMROP
Sid'Ahmed Ould Hemed	Mauritania	16/11, Nouadhibou	18/12, Agadir	IMROP
Bouya Abderrahmane M'bengue	Mauritania	16/11, Nouadhibou	18/12, Agadir	IMROP
Abdellatif Boumaaz	Morocco	16/11, Nouadhibou	30/11, Las Palmas	INRH
Jamal Settih	Morocco	16/11, Nouadhibou	30/11, Las Palmas	INRH
Mohammed Moustahfid	Morocco	16/11, Nouadhibou	30/11, Las Palmas	INRH
Agouzouk Abdelaaziz	Morocco	16/11, Nouadhibou	30/11, Las Palmas	INRH
Hakima Zidane	Morocco	16/11, Nouadhibou	30/11, Las Palmas	INRH
Abdelmajid Dridi	Morocco	30/11, Las Palmas	18/12, Agadir	INRH
Mohammed Araabab	Morocco	30/11, Las Palmas	18/12, Agadir	INRH
Idrissi Farah Hounaida	Morocco	30/11, Las Palmas	18/12, Agadir	INRH
Youness Belbchir	Morocco	30/11, Las Palmas	18/12, Agadir	INRH
Tarik Baibai	Morocco	30/11, Las Palmas	18/12, Agadir	INRH
Ana Ramos Martos	Spain	20/10, Conakry	16/11, Nouadhibou	IEO Vigo
Susana Soto de Matos-Pita	Spain	20/10, Conakry	16/11, Nouadhibou	U. de Vigo
Eva Garcia Isarch	Spain	16/11, Nouadhibou	18/12, Agadir	IEO Cadiz
Francisco Ramil	Spain	16/11, Nouadhibou	18/12, Agadir	U. de Vigo
Koen Van Waerebeek	Belgium	20/10, Conakry	16/11, Nouadhibou	Indep.
Abdoulaye Djiba	Senegal	16/11, Nouadhibou	18/12, Agadir	FIBA /IFAN
Paul Robinson	UK	03/11, Dakar	18/12, Agadir	Indep.

List of institution abbreviations:

CNSHB:	Centre National de Sciences Halieutiques de Boussoura, Guinée
CERESCOR:	Centre de Recherche Scientifique de Conacry-Rogbane, Guinée
CIPA:	Centro de Investigação Pesqueira Aplicada, Guinée Bissau
DF:	Department of Fisheries Banjul, The Gambia
INDP:	Instituto Nacional De Desenvolvimento Das Pescas, Cape Verde
IMR:	Institute of Marine Research, Norway

IEO:	Instituto Español de Oceanografía, Spain
IMROP:	Mauritanian Institute for Oceanographic Research and Fisheries, Mauritania
INRH:	National Institute of Fisheries Research, Morocco
FIBA/IFAN	Fondation internationale du Banc d'arguin
Indep.	Independent consultant
U. de Vigo:	University of Vigo, Spain

#### 1.4. Narrative

The vessel left port in Conakry in Guinea on the 20<sup>th</sup> October at 19:30 and started the first transect inshore close to the border of Sierra Leone more or less immediately after departure. The border between Guinea and Guinea Bissau was crossed at 26<sup>th</sup> October at midday. Transects in Guinea and the southern part of Guinea Bissau were long and hence only one transect was made per day. Further north, transects decreased in length and two transects were covered per day. The border between Guinea Bissau and Senegal was reached on the 30<sup>th</sup> October late in the evening. On the 1<sup>st</sup> November at 14:30 the vessel entered the territorial waters of The Gambia, and the next day it went back into Senegal. The vessel called into port in Dakar on the morning of the 3<sup>rd</sup> November for bunkering and change of scientific crew. Departure was the next day around 14:00 and the vessel steamed back south to start working on the deep water stations of the last two transects south of Cap Vert. After finalising the southern shelf of Senegal, the vessel moved north of Cap Vert on the 6<sup>th</sup> November, just after midnight. The northern shelf of Senegal between Cap Vert and St. Louis was surveyed from the 6<sup>th</sup> November till around midday on the 8<sup>th</sup> November, before the vessel entered the territorial waters of Mauritania. The vessel continued working on the Mauritanian shelf until breaking off in the morning of the 15<sup>th</sup> November for a call to port in Nouadhibou to change crew and scientists. The next day the new crew was onboard, but due to administrative problems, the vessel did not leave Nouadhibou before the 17<sup>th</sup> November at 14:00. We then initiated the first transect south of Cap Blanc. Transects between Cap Barbas and Cap Bojador are long and only one transect was achievable per day. The vessel called to port in Las Palmas during the morning of the 30<sup>th</sup> November for bunkering and change of the local scientific crew. Departure was the next day around 17:00 after bunkering and the vessel steamed back south to start working on the shallow water stations of the new transects north of Cap Bojador. From Cap Juby and northwards the bottom was relatively uneven and trawling was not achievable for all depth intervals. The shelf was steep and the bottom depth increased from 200-700 m within a short distance. Trawling deeper than 500 m was therefore not possible. The vessel continued working on the Moroccan shelf until it had to break off in the morning of the 16<sup>th</sup> December for a call in port in Agadir to change vessel crew and for a wrap-up meeting for the cruise.

The survey was carried out around the clock with the shallow region covered during the day and the deep water region generally covered during the night. Transects were made perpendicular to the depth isobaths and spaced 20 NM apart, covering the depth region from 20 m near the coast to 500 m bottom-depth. Trawling was conducted within four different depth regions on each of these transects, between 20-50 m depth, 50-100 m depth, 100-200 m depth and 200-500 m depth. When time permitted, occasional trawls were conducted deeper than 500 m. Trawls at depths < 150 m were only conducted during daytime hours to reduce possible effects of diurnal migrations. Pelagic trawls were conducted to sample acoustic targets, but were also made “blindly” along transects when time permitted. CTD’s were taken at each bottom trawl station.

Every third transect was termed an “Ecosystem transect” with a more elaborate sampling program. These transects extended to 1000 m depth. CTD’s were taken at 1000 m, 500 m, 200 m, 100 m, 50 m and 30 m at the coastal margin of the transect. Additionally, three stations for sampling of nutrients, chlorophyll, phyto and zooplankton, and soft-sediment invertebrates were conducted at 500 m, 100 m and 30 m depth. Trawling was undertaken within the same depth regions as for all other transects.

Acoustic data from the 18 kHz, 38 kHz, 120 kHz and 200 kHz transducers, ADCP data and data from the thermosalinograph and weather station were recorded continuously during the survey. The multibeam bottom mapping echosounder SM710 was run routinely following the call on Dakar the 3<sup>rd</sup> November, where the necessary replacement of the MRU (Motion Reference Unit) was made.

#### Survey effort

For the purpose of acoustic and swept area abundance estimation the coast was divided into four regions. The first region (Region 1) included the area from the border between Sierra Leone and Guinea to Cap vert. Region two covered the coastal waters between Cap Vert to Cap Blanc, Region three covered the region between Cap Blanc to Cap Juby and region four between Cap Juby to Cap Cantin.

Figures 1.1-1.2 show the cruise tracks with bottom trawls, pelagic trawls, hydro graphic stations, and plankton stations. Table 2 summarises the survey effort in each sub-area.

Table 2. Number of hydrographic (CTD), plankton (PL), pelagic trawl (PT), and bottom trawl (BT), G grab and benthos sledge stations (G) as well as the distance covered (NM) during the survey, by sub-areas.

Subregion/Country	Nautical miles	Bottom trawls	Pelagic trawls	CTD	Plankton	Grab	Sledge
Cap Juby-Casablanca	1650	55	0	93	48	24	0
Cap Blanc-Cap Juby	1990	69	1	106	54	18	12
Mauritania	1070	49	0	71	29	5	10
Senegal N	680	31	0	38	12	2	3
The Gambia	150	6	0	9	6	1	2
Senegal S	230	9	1	13	6	1	2
Guinea Bissau	670	26	3	30	11	2	4
Guinea Conacry	850	24	6	34	12	3	5
Total	7290	269	11	394	178	56	38

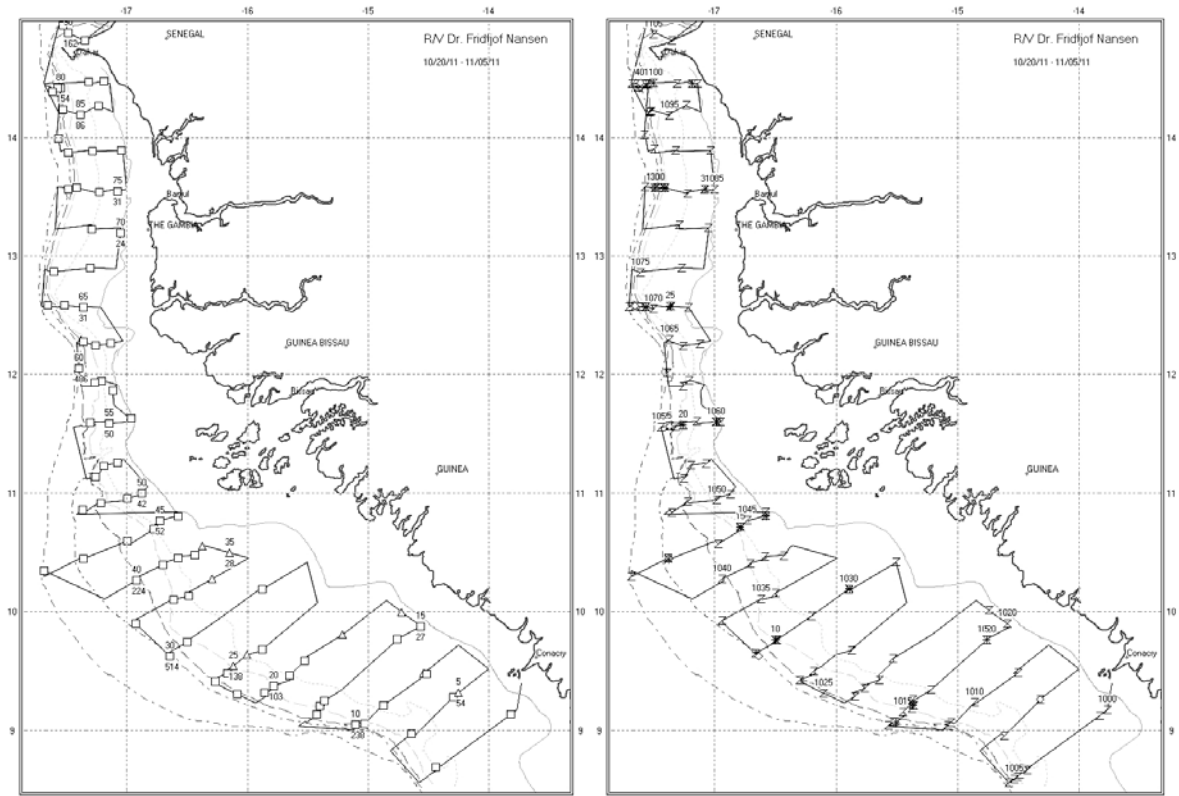


Figure 1.1. Course track Conacy - Cap Vert. a) Bottom trawl (□) and pelagic (Δ) trawl stations, b) Hydrographic (Z), plankton (×) and benthos (◇) stations. The 20, 50, 100, 200, 500 and 1000 m depth contours are indicated

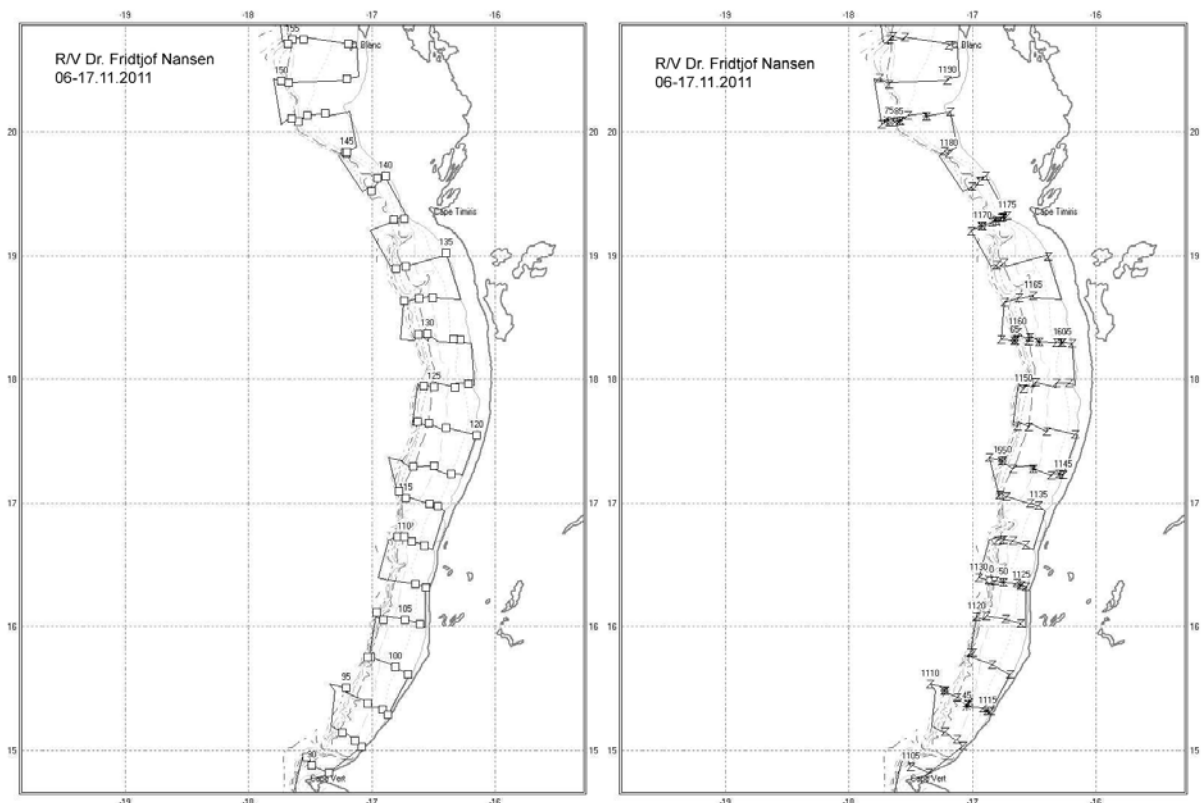


Figure 1.2. Course track Cap Vert- Cap Blanc a) Bottom trawl (□) and pelagic (Δ) trawl stations, b) Hydrographic (Z), plankton (×) and benthos (◇) stations. The 20, 50, 100, 200, 500 and 1000 m depth contours are indicated

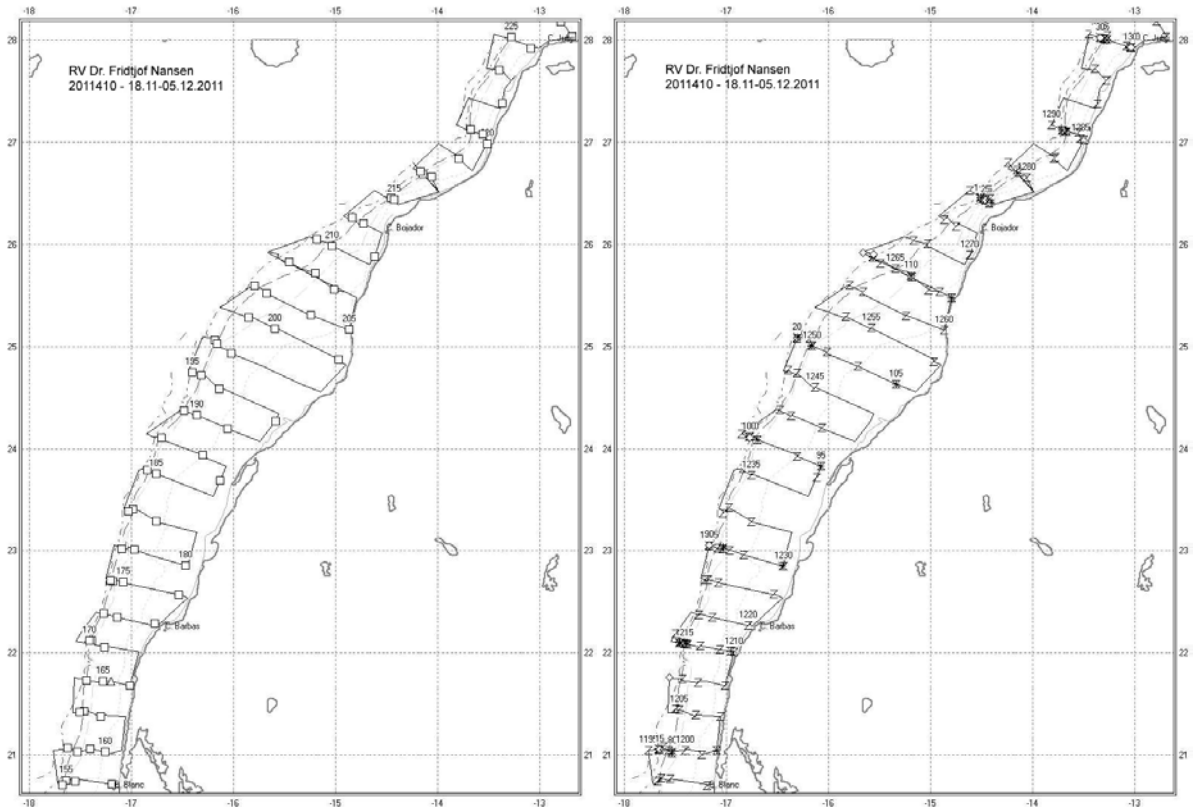


Figure 1.3. Course track Cap Blanc – Cap Juby a) Bottom trawl (□) and pelagic (Δ) trawl stations, b) Hydrographic (Z), plankton (×) and benthos (◇) stations. The 20, 50, 100, 200, 500 and 1000 m depth contours are indicated

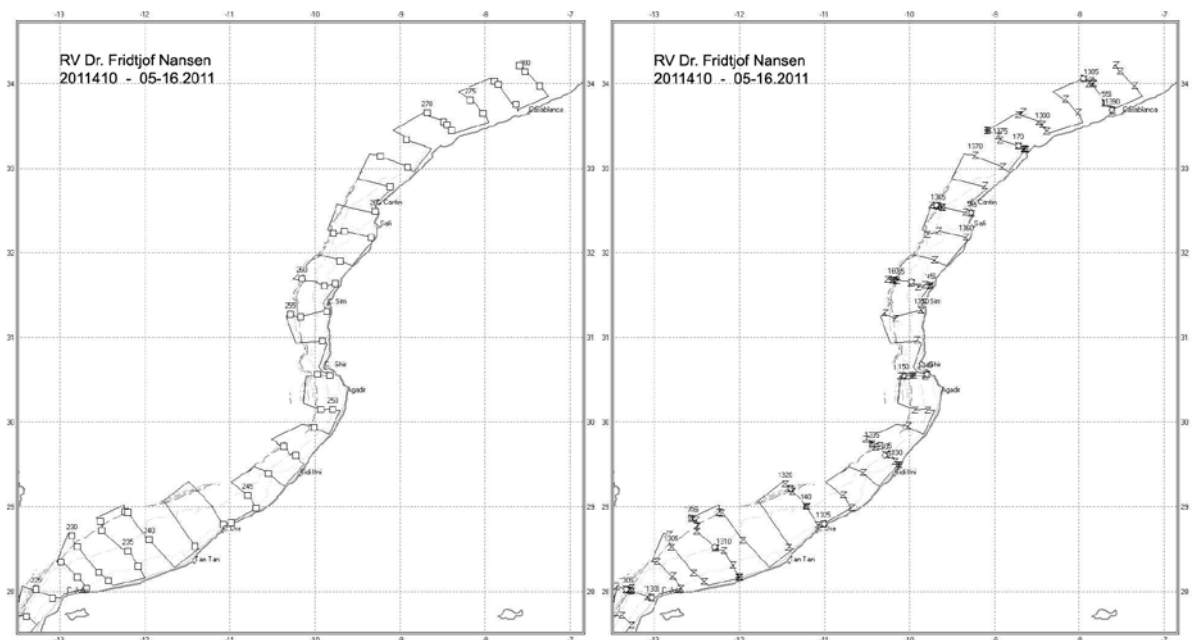


Figure 1.4. Course track Cap Juby – Casablanca a) Bottom trawl (□) and pelagic (Δ) trawl stations, b) Hydrographic (Z), plankton (×) and benthos (◇) stations. The 20, 50, 100, 200, 500 and 1000 m depth contours are indicated

## METHODS

### 1.5. Meteorological and hydrographical sampling

#### *Meteorological observations*

Wind direction and speed, air temperature, air pressure, relative humidity, and sea surface temperature (5 m depth) were logged automatically every 60 sec. with an WIMDA meteorological sensor.

#### *CTD*

Vertical temperature and salinity profiles were obtained by a Seabird 911 CTD, while *in situ* concentrations of dissolved oxygen were measured using a CTD-mounted oxygen-sensor. Real time logging and plotting was done using the Seabird Seasave software installed on a PC. Above the shelf and slope, the profiles ranged from the surface to within a few metres above the bottom. Offshore, the maximum sampling depth was 1500 m.

Niskin water-bottles (10 l) attached to a CTD-mounted rosette were used to collect water at predefined depths (see below). For calibration of the salinity (conductivity) measurements of the CTD, the salinity of seawater from the Niskin-bottle containing the deepest water-sample from each shallow, intermediately deep, and deep plankton-station was analyzed using a Portasal salinometer (mod. 8410) onboard the vessel.

For calibration of the oxygen-measurements from the CTD-mounted sensor, the oxygen-concentrations in water-samples from all Niskin-bottles at the deep plankton-stations were analyzed by the Winkler redox titration method, following the procedures of Hagebø (2008). Oxygen-concentrations were analyzed from 23 out of a total of 31 deep stations during the cruise. During the first part of the cruise (20 October – 16 November) the concentration of sodium tiosulphate was reduced to only 20% of that described by Hagebø (2008). The purpose of this was to reduce the effect of the coarse titration doses (~ 0.04-0.06 ml) of the dosimeter (Dosimeter 625) available on the vessel. However, during the second leg of the cruise (16 November – 21 December) the titration dose-steps were observed to decrease to 0.02 ml, and the original concentration of sodium tiosulphate was therefore used. From each Niskin-bottle, a water sample for oxygen-analyses was collected first, and then the water temperature in the same bottle was measured. These temperature-data were used to calculate potential temperature at the time when the Winkler-reagents were added. The potential temperature is used in the calculation of oxygen-concentration per weight-unit of seawater.

Samples for nutrient analyses (nitrate, nitrite, phosphate and silicate) were taken from Niskin water-bottles at 25, 10 and 5 m at the shallow plankton-station (30 m bottom-depth), at 100, 75, 50, 25, 10 and 5 m at the intermediately deep plankton station (100 m bottom-depth), and at 500, 400, 300, 200, 150, 100, 75, 50, 25, 10 and 5 m at the deep plankton-station (500 m bottom-depth). The water-samples (20 ml, scintillation vials PE) were added 2 ml chloroform and stored dark onboard at 4°C for subsequent analysis on shore. Due to chloroform-limitation, such samples were not made for the last ecological transects of the cruise. However, during most of the last part of the cruise, two additional samples representing a total of 40 ml of seawater from the water-bottles were taken from all depths and frozen on 20 ml scintillation vials at -18 °C without the addition of chloroform. These samples are to be analyzed for an intercomparison of the two methods.

For calculation of chlorophyll *a* and phaeopigment concentrations, water-samples (263 ml) were collected from the same standardized depths as described above for the nutrients. The water-samples were filtered on Munktell glass fiber filters (GF/C, 25 mm diameter) using a custom-made filtration system. The filters were then stored at -18°C in the dark for subsequent analysis on shore.

Also attached to the CTD was a Chelsea Mk III Aquatracka fluorometer which measures *in situ* fluorescence on a relative scale. This again, can be related to the absolute chlorophyll concentrations obtained from the analyses of the samples collected from the water-bottles.

#### *Thermosalinograph*

The SBE 21 Seacat thermosalinograph was running continuously during the survey, obtaining samples of sea surface salinity and relative temperature and fluorescence (5 m depth) every 10 seconds. An attached in-line Turner Design SCUFA Fluorometer measured Chlorophyll a levels [RFU] at 5 m below the sea surface while underway during the entire cruise.

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

A vessel-mounted Acoustic Doppler Current Profiler (VMADCP) from RD Instruments was run continuously during the survey. The frequency of the VMADCP is 150 kHz. The system was run in narrow band mode and data were averaged in 8 m vertical bins and stored on files for post survey processing. A missing spare part, the MRU (Motion Reference Unit) may have reduced the quality of the ADCP data between 20.10 and 03.10. The MRU was replaced in Dakar. The quality control will only be made at post survey analyses of the data.

### 1.6. Phytoplankton sampling

At each plankton-station, qualitative phytoplankton samples were collected with a net (35 cm in diameter and mesh-size of 10  $\mu\text{m}$ ) hauled vertically from 30 m depth to the surface. The samples were preserved with 2 ml 20% formalin and stored on dark 25 ml glass bottles for later taxonomic analyses. However, about midway in the last part of the cruise both of the two available nets became ripped due to wear and tear and could no longer be used.

In addition, water-samples from the Niskin-bottles representing the depth closest to the *in situ* fluorescence maximum were taken at the plankton-stations along every third ecological transect. The samples were preserved with 2 ml lugol on dark 25 ml glass bottles for later taxonomic analysis on shore. About midway in the last part of the cruise, the sampling intensity was increased so that such samples were taken at all phytoplankton stations.

### 1.7. Zooplankton sampling

Zooplankton samples were collected with a Hydro-Bios Multinet. The multinet was equipped with 5 nets of mesh-size 180  $\mu\text{m}$  for depth-stratified sampling, a pressure sensor and an electronic flow-meter. The multinet was deployed and retrieved at a speed of  $\sim 1.5$  m per second and was towed obliquely behind the vessel. For the shallow plankton-station one net was towed in the 25-0 depth-stratum, for the medium-deep station four nets sampled the strata of 100-75 m, 75-50 m, 50-25 m and 25-0 m, and at the deep plankton-station five nets sampled the strata of 200-100 m, 100-75 m, 75-50 m, 50-25 m and 25-0 m.

The sample from each net was divided into two half's using a plankton splitter. Digital photos qualitatively showing the contents of one half were taken using a stereoscope. Thereafter, this half was preserved with borax-buffered formalin resulting in a 4% final concentration on a 100 ml plastic bottle for later taxonomic analysis on shore. The other half of the sample was sequentially sieved through three filters to obtain the plankton biomasses representing the size-fractions  $>2000$   $\mu\text{m}$ , 2000-1000  $\mu\text{m}$ , and 1000-180  $\mu\text{m}$ . The biomass samples were stored on preweighed aluminium dishes, and dried at  $\sim 50$   $^{\circ}\text{C}$  for periods of 6–24 h. Limited storage capacity in the drying chamber restricted the drying period. The samples were thereafter kept frozen at  $-18^{\circ}\text{C}$  for subsequent weighing of biomass dry weight on shore (following a second drying period). During the second leg of the cruise we chose to take pictures of the biomass-half, and for many stations the composition of



each of the three size-fractions were documented qualitatively. Due to time limitations, zooplankton-pictures were not taken at all stations.

At the plankton-stations along every third ecological-transect, a WP2 net (56 cm in diameter, 180 µm) was hauled vertically from the same maximum depth as the deepest Multinet (shallow plankton-station 25 m, medium-deep plankton-station 100 m, and deep plankton-station 200 m) - to the surface. These zooplankton samples were preserved with borax-buffered formalin resulting in a 4% final concentration on 100 ml plastic bottles for subsequent taxonomic analysis on shore.

#### 1.8. Biological fish sampling

Demersal trawl hauls were taken randomly on the shelf during daytime while pelagic hauls were taken randomly throughout the survey at night and to catch acoustic targets.

Trawl hauls were sampled for species composition by weight and number. The deck sampling procedure is described in detail by Strømme (1992). Length measurements were taken for selected target species on most stations. An Electronic Fish Meter (SCANTROL) connected to a customised data acquisition system (Nansis) running on a Windows PC was used for length measurements. The total length of each fish was recorded to the nearest 1 cm, rounding down when this was between sizes. Sex was collected from the first randomly selected 20-30 individuals of target species. For crustaceans the carapace length was measured to the nearest 0.1 cm, again rounding down. Basic information recorded at each fishing station, i.e. trawl hauls, is presented in Annex I. Annex VI gives an overview of the biological fish samples taken.

Whenever possible, 30 individuals of sardines (*Sardina pilchardus*) and sardinella (*Sardinella aurita* and *Sardinella maderensis*) were frozen on each transect. If the catch was small, tissue samples from at least 5 individuals were put in Eppendorf tubes together with Ethanol for genetic analysis in Morocco. 5 tissue samples (finclip or gillrakes) from *Epinephellus spp* and *Pagellus bellotti* were put in Eppendorf tubes together with Ethanol.

In addition, 50 tissues samples of *Capros aper* were collected at position 23°02'N 17°05'W. The samples were put in Eppendorf tubes filled with Ethanol and sent to Dr. Edward Farrell, Ireland for genetic analysis in order to look at stock structure in the Northeast Atlantic.

Investigating the radioactive pollution is done by measurements of Caesium in fish. Measurements of Plutonium, Strontium and Technetium can also be done. Biota samples were taken from hake (*Merluccius senegalensis*) and silvery John Dory (*Zenopsis atlanticus*) from totally 35 individuals. Fish filets of 50-200 g were frozen onboard the vessel and will be freeze-dried prior to analysis on land. Radioactive pollution will be analysed from just one randomly chosen station for the whole cruise.

For analysis of toxins (PCB7 chlorinated pesticide, PAH or brominated compounds) in fish, 2 g of the fish muscle from 25 fish from two areas was frozen. When it comes to persistent environmental toxins (PCB, dioxins, pesticides, and brominated compounds) the liver is expected to have the highest levels. The liver (2g) from the same fishes were wrapped in aluminium foil and frozen. The gallbladder were put in eppendorf tubes and frozen at -20°C in order to get an idea about what compounds that recently have been consumed

#### 1.9. Zoobenthos sampling

Zoobenthos samples, mainly from epi- and suprabenthic communities, were collected from the catches obtained in the bottom trawls. Invertebrates were sampled for species composition by number and weight. Total catch or subsamples of total catch, were sorted on deck to morphospecies

level, counted and weighed. Pictures of all species from fresh material were taken at all stations, in order to obtain images of colour and other characteristic relevant for taxonomic identification, that can be lost during the preservation process, after the material have been fixed. Finally, a representative collection of samples were preserved in alcohol (80%) or formalin (4%) solutions, for posterior analysis in laboratory.

A complete reference collection from each of the 6 countries (Guinea, Guinea-Bissau, Senegal, The Gambia, Mauritania and Morocco) was taken to the IEO, as the responsible institution of zoobenthos studies in this survey. Additional collections from each area was taken for the coastal country.

In addition, sediment samples were collected in all trawling stations, for granulometry, organic matter and carbonates analysis. The samples were obtained using a cylindrical steel collector, specially designed for this purpose, attached to the trawl net. The sediment samples were stored frozen.

Both the faunistic data and the collection details were punched on board in standard format files created and used by the IEO. The pictures were stored in independent files per trawl stations.

#### 1.10. Soft sediment sampling of macrofauna

The benthic macrofauna was sampled using a Sneli Sledge (Sneli, 1998) and a 0.1 m<sup>2</sup> van Veen grab. Three stations, at 30 m; 100 m and 500 m depth, were sampled every 1° latitude from Conakry to Casablanca. The Sneil sledge was used for stations at 30 m and 100 m depth, while the van Veen grab was used at 500 m depth. About half way through the survey the sledge was lost and all stations were sampled using the grab. Sub samples were taken from the sledge and two replicates were taken on each grab station. The sediment was separated into light- and heavy fraction and fixed in 8% borax pre-buffered formalaldehyde (formalin) or 95% ethanol. The heavy fraction was screened through two sieves of mesh size 1.0 mm and 0.5 mm, the light fraction only through a sieve with mesh size 0.5 mm. The sediment retained on each sieve was transferred to plastic containers and labelled. Larger animals were sorted out immediately and fixed on separate containers. For the samples fixed on ethanol, this was changed within 24 hours and then again the next day to secure the quality of the material. After the survey the samples were shipped to the University Museum of Bergen, Collections of Natural History, where they will be sorted and identified.

#### 1.11. Seabird visual observations

The objectives of the seabird survey were to record: (1) the perpendicular distance from the observer to all bird observations whilst the vessel was on transect; and (2) interactions between the vessel and birds during trawls. The transect methods, to enable density estimates, are fully described in Buckland et al 2001. This and the trawl observations followed the protocols currently being used further north in the East Atlantic ([www.fameproject.eu](http://www.fameproject.eu)). The one observer on board (PR) made observations from dawn to dusk, with short breaks, resulting in 11.5 to 12 hours of observations daily. For transects, observer eye height was 12.5 m, on the deck in front of the wheelhouse. 180 degree forwards scan by eye was used, supplemented by periodic scans with binocular and telescope for cetaceans and to confirm bird identification. Observations were assigned to distance bands with the aid of horizontal and vertical angle measurement to the individual (or estimation, if there was much simultaneous activity) and later triangulation. Birds were assigned to species, number, age, distance, flight direction and behaviour (ESAS coded). Environmental variables that could influence detection or behaviour (for example sea state, glare) were recorded at the start of each transect and subsequently whenever they changed. Observations of trawls were made from the back of the boat during the trawl, from setting to landing of nets. Birds were classified according to their behaviour and the vessel activity. During all surveys observations were timed to the nearest minute,

synchronised to the vessel computer. Observations were then linked to the vessel position, provided at 2 minute intervals and other attributes simultaneously recorded on the vessel computer. The survey form templates, codes used on the forms and the final data spreadsheet were provided at the end of the survey.

#### 1.12. Cetacean visual observations

The R/V Fridtjof Nansen was used as a platform of opportunity for marine mammal observations in 'passing mode', as the vessel's operation did not allow closing on marine mammal sightings, nor adapt speed in function of sightings. The cruise design, dedicated to fisheries and oceanographic research, requires multiple daily stations for bottom trawling, CTDs, plankton-net hauls and other experiments when the vessel's speed is greatly reduced, typically ranging from 0-5km/h (3 knots or less). Full stops and back-tracking on a completed transect line may also occur.

Evidently, such an operation mode does not allow a line transect sampling protocol for marine mammals as basic assumptions of the model are not fulfilled. Even between stations, cruise speed fluctuates around 10 knots, a borderline velocity, as many cetacean species can match this speed. Mean progress (velocity) along the major track lines is further reduced due to the sampling stations, therefore the probability that the same groups and individuals being re-sighted are high. An evaluation of likely re-sightings is made in situ.

Some measure of relative abundance between-species, such as an encounter rate, will be considered in the data analysis, but comparability with other (non-CCLME) cruises will necessarily be limited.

During transit legs, the single observer visually scans from -90° (port) to 90° (starboard) both with 7x50 binoculars and by naked eye (to spot cetaceans close to the ship) preferentially from the radar deck (at 24m -to confirm), if not from the fore-castle deck (14m), depending on the captain's indications and the need for the primary radar. A maximum amount of effort is concentrated on and near the trackline so as not to miss any sightings there. During low-speed or stationary sampling activities the platform is treated as a quasi-fixed vantage point and 360° are scanned, considering that the probability that cetaceans may approach from behind the vessel is significantly increased.

Main parameters collected include (see datasheet for full list) when available/applicable: species, time, GPS-position, relative position of animals to ship (estimated angle and radial distance), group size estimates, group composition, diagnostic or unusual morphological features, any behavioural comments, basic air/sea conditions and some other info. A sketch of notable external features and of the sighting dynamics may be added.

Species are identified in a strictly conservative way, i.e. only when diagnostic features were confirmed, alternatively the sighting is assigned to the family or genus level. When identification is probable but not confirmed, it is classified as a "like-species" (cf. IWC usage).

As a high priority, but depending on distance, it is attempted to take photographs with a Canon reflex camera with a 70-300mm zoom lens. A GPS waypoint is marked and a paper sighting data form is filled out.

A separate form is used for observer effort information, with indications of sea state, swell and ship's activity (although more detailed data from the vessel's log will be used for analysis).

#### 1.13. Multibeam echo sounder for bottom mapping

The EM 710 multibeam echo sounder is a high to very high-resolution seabed mapping system. Acquisition depth is approximately 3 m below the transducers, and the maximum acquisition depth is limited, in practice, to 1000 - 1500 m on "Dr. Fridtjof Nansen". Across track coverage (swath width) is

up to 5.5 times water depth and may be limited by the operator either in angle or in swath width without reducing the number of beams. The operating frequencies are between 70 to 100 kHz. There are 128 beams with dynamic focusing employed in the near field. The transmitting fan is divided into three sectors to maximize range capability and to suppress interference from multiples of strong bottom echoes. The sectors are transmitted sequentially within each ping, and use distinct frequencies or waveforms. The along track beam width is 1 degree. Ping rate is set (manually) according to depth. The receiving beam width is 2 degrees. All raw data from the EM 710 multibeam echo sounder was stored to disk for later analyses, the data was also logged to the Olex plotting system onboard.

A missing spare part, the MRU (Motion Reference Unit) caused the EM 710 to malfunction and no data was logged between 20.10 and 03.11. The MRU was replaced in Dakar, and raw data from the EM 710 was logged routinely from there onward.

#### 1.14. Single beam acoustic sampling

##### *Acoustic equipment*

Acoustic data were recorded using a Simrad ER60 scientific echo sounder equipped with keel-mounted transducers at nominal operating frequencies of 18, 38, 120 and 200 kHz. All transceivers were calibrated in Baía dos Elephantes the 07 of August 2011. The technical specifications and operational settings of the echo sounder used during the survey are given in Annex II.

##### *Allocation of acoustic energy to species group*

Acoustic data were post-processed using the latest acoustic data post-processing software, the Large Scale Survey System (LSSS) Version 1.5. Scatters were displayed at 38 kHz. The mean 5 nautical miles (NM) area backscattering coefficient  $s_A$  ( $m^2/NM^2$ ) was allocated to a predefined set of species groups on the basis of established echogram features. Ground truthing and estimation of mean length and weight were accomplished by means of targeted pelagic and demersal trawling. For carangids and associated species, an overall average length of 23 cm and a condition factor of 0.88 were applied. The target groups used during the survey can be found in Table 3, while the complete records of fishing stations and catches are shown in Annex I.

Table 3. Allocation of acoustic densities to species groups. Note that for the group's sardinella, horse mackerel, big-eye grunt and sardine all encountered species are listed, while only examples are listed for the remaining groups.

Group	Taxon	Species	
Sardinella	<i>Sardinella</i> sp.	<i>S. aurita</i> <i>S. maderensis</i>	
Sardine	<i>Sardina</i>	<i>S. pilchardus</i>	
Anchovy	<i>Engraulis</i>	<i>Engraulis encrasicolus</i>	
Horse mackerels	<i>Trachurus</i> sp.	<i>T. trecae</i> <i>T. trachurus</i> <i>T. picturatus</i>	
	<i>Decapterus</i>	<i>Decapterus rhonchus</i>	
Pelagic species 1	Clupeidae <sub>1</sub>	<i>Ilisha africana</i> <i>Ethmalosa fimbriata</i>	
		Pelagic species 2	Carangidae <sub>2</sub>
Scombridae	Scombridae		
Others	Others		
Big eye grunt		<i>Brachydeuterus auritus</i>	
Other demersal species	Demersal families		
Mesopelagic species	Myctophidae		
	Other mesopelagic fish		
Plankton	Calanoidae	<i>Calanus</i> sp.	
	Euphausiidae	<i>Meganyctiphanes</i> sp.	
	Other plankton		

<sup>1</sup> other than *Sardines* sp.; <sup>2</sup> other than *Trachurus* sp. and *Decapterus rhonchus*

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

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

or in the form

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

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

where L is the total length and  $C_F$  is the reciprocal back scattering strength, or the so-called fish conversion factor. Generally, 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

A = area (NM<sup>2</sup>) of fish concentration

s<sub>A</sub> = mean integrator value (echo density) in area A (m<sup>2</sup>/NM<sup>2</sup>)

p<sub>i</sub> = proportion of fish in length group i in samples from the area

C<sub>Fi</sub> = fish conversion factor for length group i

Further, the traditional method is to sum the number per length group (N<sub>i</sub>) to obtain the total number of fish:

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

The length distribution of a given species within an area is computed by simple addition of the length frequencies obtained in the pelagic trawl samples within the area. In the case of co-occurrence of target species, the s<sub>A</sub> value is split in accordance with length distribution and catch rate in numbers in the trawl catches. Biomass per length group (B<sub>i</sub>) is estimated by applying measured weights by length (W<sub>i</sub>) when available or theoretical weights (calculated by using condition factors), multiplied with number of fish in the same length group (N<sub>i</sub>). The total biomass in each area is obtained by summing the biomass of each length group:

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

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

However, the combination of low s<sub>A</sub> value recorded, few PEL1 and PEL2 in the bottom trawl catch and few pelagic trawls made the splitting by length groups unreliable. Therefore, a theoretic mean length of 23 cm was used to convert the s<sub>A</sub> values by stratum (Equation 3) to number of fish. Equation 5 was used to convert the number of fish in the defined average length class (23 cm) to total estimated biomasses of PEL1 and PEL2.

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

#### *Swept area biomass calculations*

The biomass calculation of demersal fish in the survey area was based on the swept area method. All valid stations are treated as representative for the relevant depth intervals where the species or group of species were caught. All biomass calculations were done in the software program Nansis.

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

The catchability coefficient is seldom known, but because the coefficient is assumed to be constant between surveys, the swept-area index will reflect any change in population abundances between surveys.

## WIND, HYDROGRAPY AND FLUORESCENCE

### 1.15. Wind pattern, sea surface temperature, salinity and fluorescence.

Wind speed and direction was recorded from the vessels weather station located in the mast above the wheel house and results are illustrated in Figures 3.1 - 3.2. The horizontal distribution of sea surface temperature (SST), sea surface salinity (SSS), oxygen (CTD data measured at 5m) and sea surface fluorescence (SSF) (recorded with TSG and interpreted as a proxy for primary production), are presented in Figures 3.3 – 3.6.

#### *Conakry - Cap Vert*

A generally calm wind (2-12 m/s), on average from a westerly direction dominated during the survey between Conakry to Cap Vert. However, north of 14°N the wind speed increased (>18 m/s) and the direction turned more northerly around Cap Vert.

The SST in Guinea and Guinea Bissau was dominated by temperatures around 28°C but with cooler waters (26°C) inshore around the archipelago outside Guinea Bissau. Further north the main part of the Casamance shelf was dominated by temperatures warmer than 29°C, and slightly cooler water masses (28°C) from The Gambia decreasing slightly towards Dakar.

The SSS show influence of fresher water masses especially inshore in Guinea with salinity down to 29, offshore in the same area salinity was around 34 creating a strong salinity gradient in that area. The salinity increased gradually northwards reaching 34 around Casamance and 35 south of Dakar.

The surface oxygen recorded during this leg ranged from 3.5-5 ml/l, with the highest concentration between 14-15°N close to the northern border of The Gambia. The lowest oxygen concentrations were found in the waters just south of Cap Vert.

The SSF measured during this leg was generally low ranging from 0-0.1µg/l. The highest concentrations were found in The Gambia and Guinea Bissau (0.2-0.3µg/l)

#### *Cap Vert – Cap Blanc*

The wind speed during the leg between Cap Vert and Cap Blanc was strongest in the areas around Cap Vert and Cap Blanc (15-24 m/s). The wind direction in these two areas varied strongly, alternating within the whole range between a southerly and a northerly direction. In the area between these two Caps, the wind speed was calmer (4-17m/s) and the wind direction was prevailingly from the north

The SST near Cap Vert was the warmest on this leg (26°C), it became cooler further to the north and more inshore (~20°C) and north of Cap Timiris the coldest SST was measured from this leg (17-19°C).

The SSS was high, and levels above the value of 36 were recorded over the whole latitudinal range of the region. The salinity generally decreased somewhat towards the coast.

The oxygen levels measured in the surface layer during this leg was varying from 3.5-6.5 ml/l. The areas in the southern and northern part of the region displayed the lowest concentrations, while the highest levels were located close to shore south of Cap Timiris. The highest SSF concentrations (~1.0 µg/l) were patchy distributed throughout the whole latitudinal range of this region.

#### *Cap Blanc-Cap Juby*

The wind speed during the leg between Cap Vert and Cap Juby was typically about 20 m/s, and mostly the wind blew from the north-north easterly direction.

The measured SST during this leg was dominated by inshore waters with temperatures of about 18-19°C, and a warmer layer further offshore in the northern part of the area (20-22°C).

The SSS displayed during this leg showed little variation. The salinity level was ~ 36 in the southern and northern part and slightly higher in the mid-part of this region.

The surface oxygen levels were rather homogenous (~5 ml/l), except in a small coastal area just north of Cap Blanc (3.5 ml/l).

The SSF levels were highest close to shore in the mid part (>1 µg/l), and the levels were variable, though lower in the remaining parts of this survey stretch.

#### *Cap Juby – Casablanca*

The wind speed during the leg between Cap Juby and Casablanca was rather variable, showing values between 5-22 m/s. considering the area as a whole, the wind predominantly blew from a north - north-easterly direction.

The measured SST was typically around 18°C, though with some cooler areas close to the coast (16°C) and warmer temperatures in the offshore parts between Cap Juby and Tan Tan (20°C).

The SSS was rather constant at ~36.

The surface oxygen levels were mostly about 5 ml/l except in smaller coastal areas in the southernmost part (4.5 ml/l).

The SSF levels recorded were variable, only the coast-near areas off Cap Ghir Adir, Cap Sim and Tan Tan displayed concentrations above 0.75 µg/l.



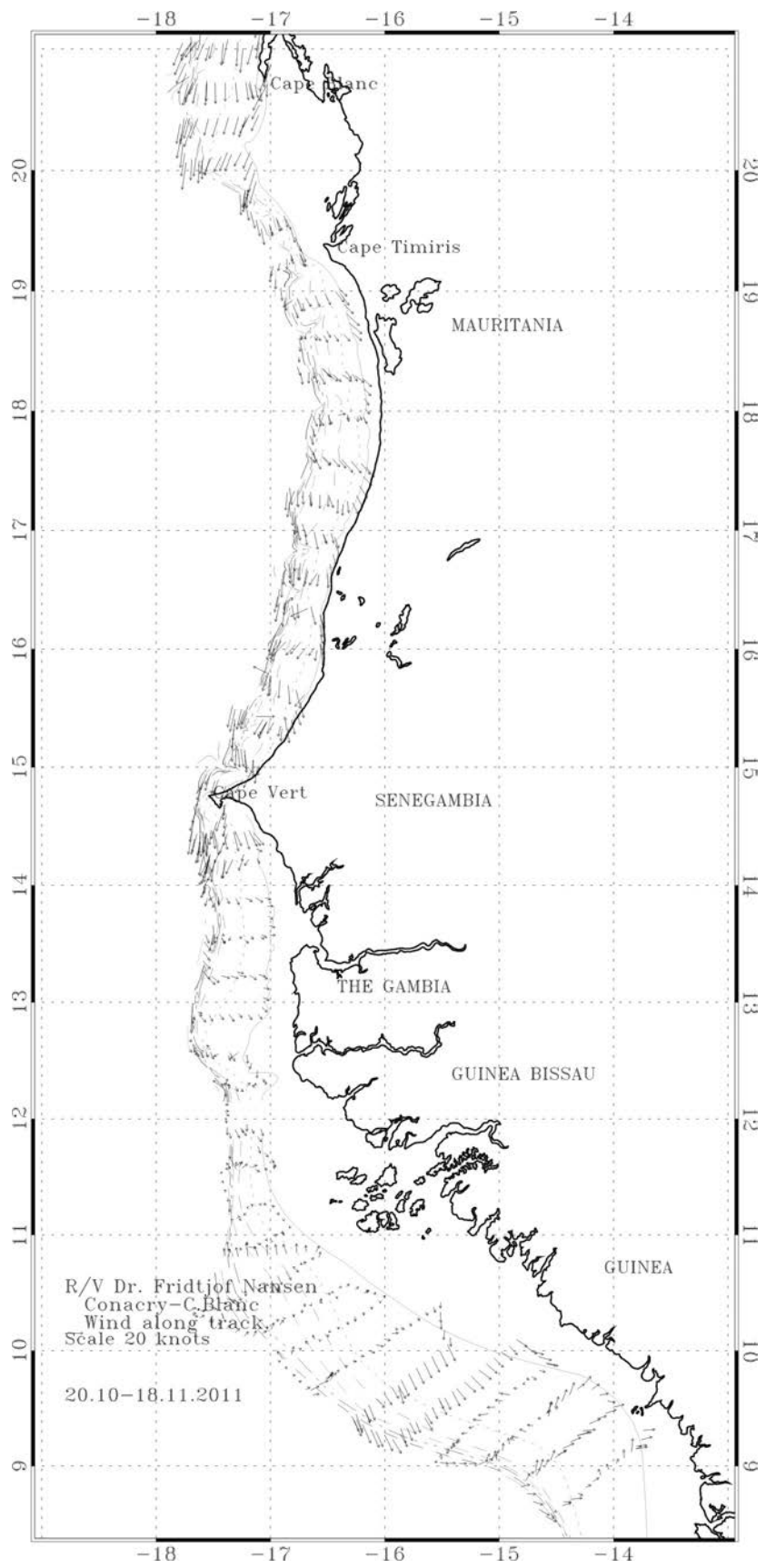


Figure 3.1. Wind vectors (arrows indicate strength and direction) during the survey period from Cap Vert – Cap Blanc.

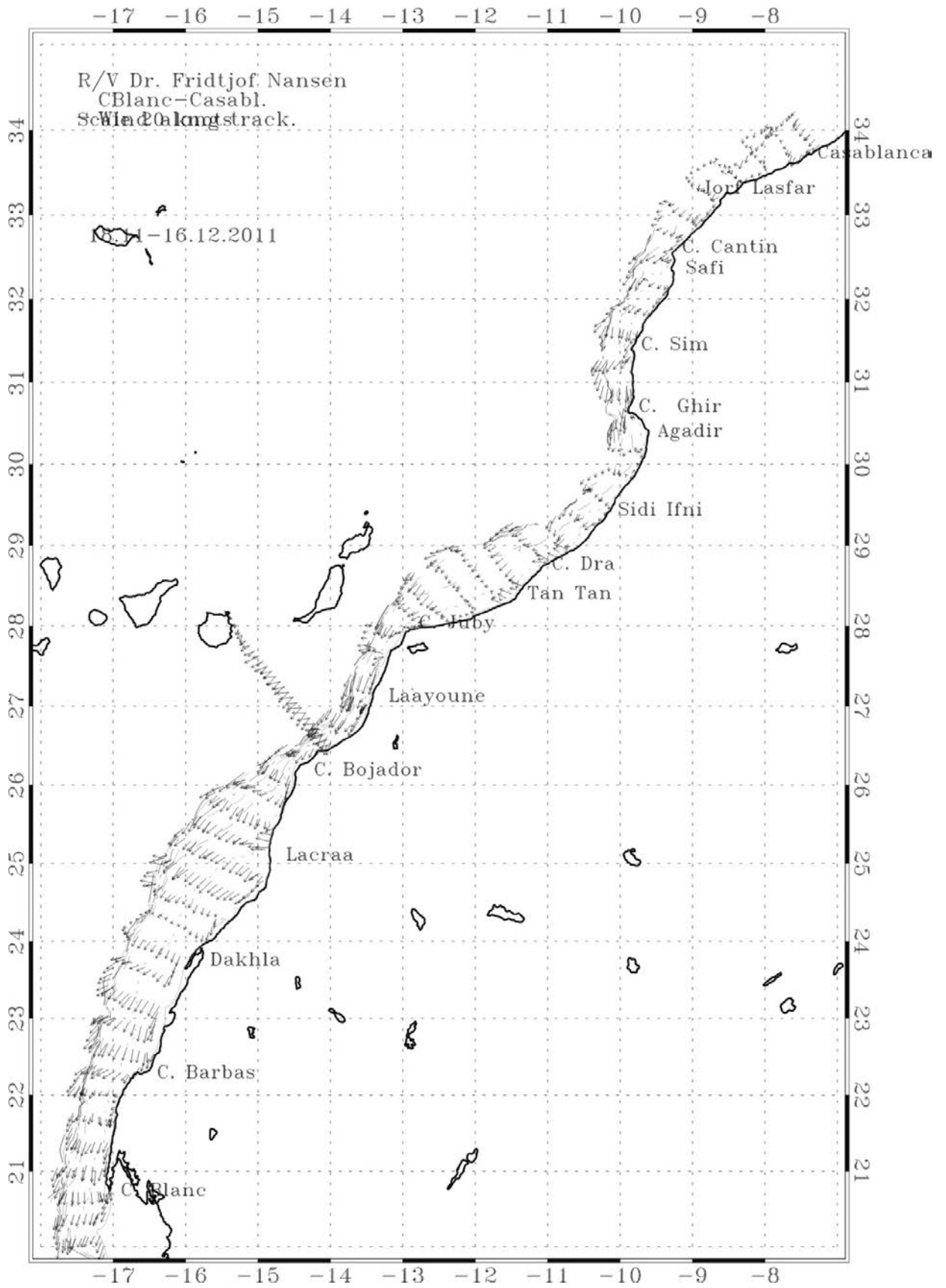


Figure 3.2. Wind vectors (arrows indicate strength and direction) during the survey period from Cap Blanc – Casablanca.

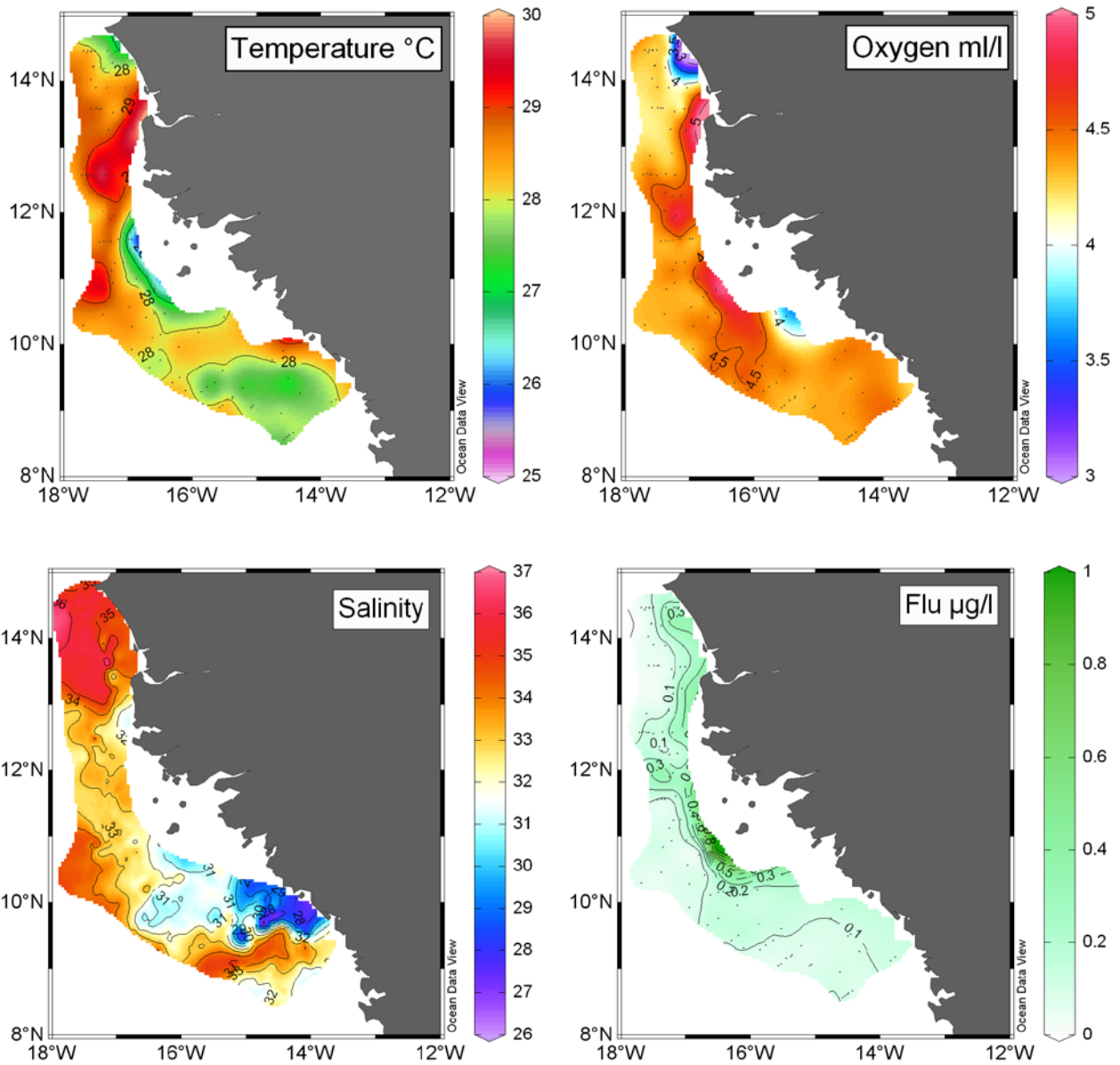


Figure 3.3: Sea Surface isolines of Temperature (SST), Sea Surface Salinity (SSS) (thermosalinograph data) oxygen and Sea Surface Fluorescence (SSF) (CTD data at 5m depth), and between Conacry and Cap Vert.

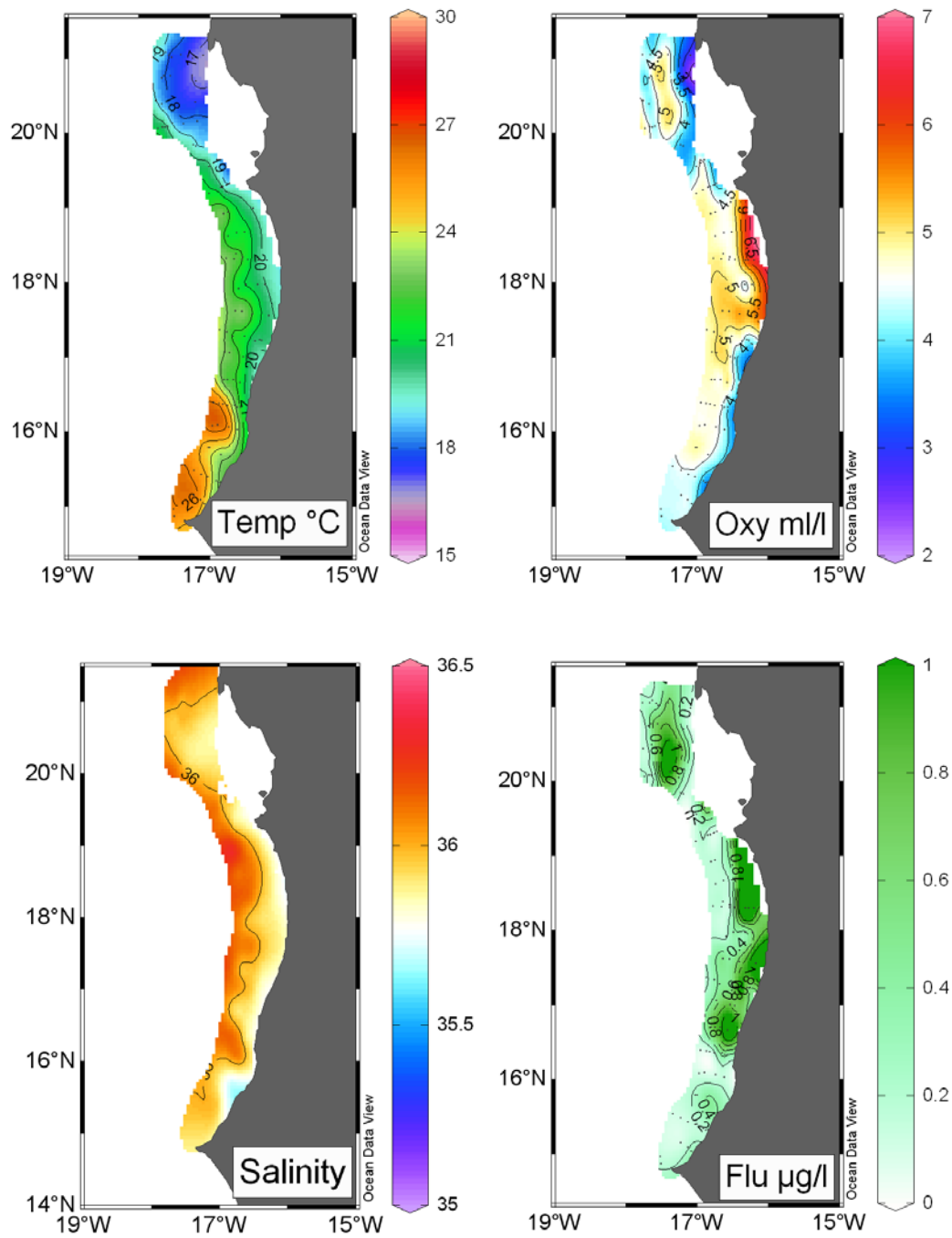


Figure 3.4. Sea Surface isolines of Temperature (SST), Sea Surface Salinity (SSS) (thermosalinograph data) oxygen and Sea Surface Fluorescence (SSF) (CTD data at 5m depth), and between Cap Vert and Cap Blanc.

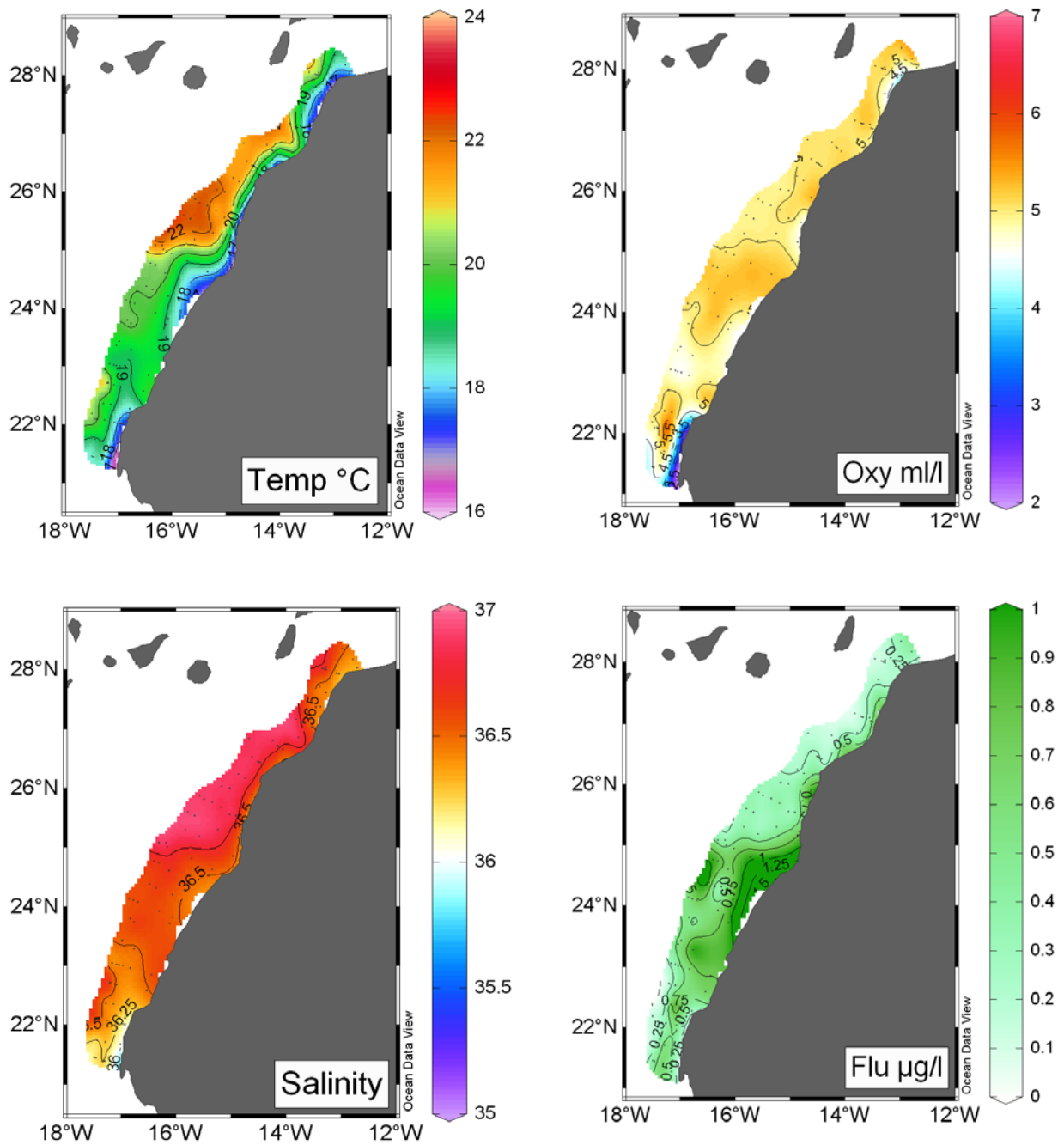


Figure 3.5. Sea Surface isolines of Temperature (SST), Sea Surface Salinity (SSS) (thermosalinograph data) oxygen and Sea Surface Fluorescence (SSF) (CTD data at 5m depth), and between Cap Blanc and Cap Juby.

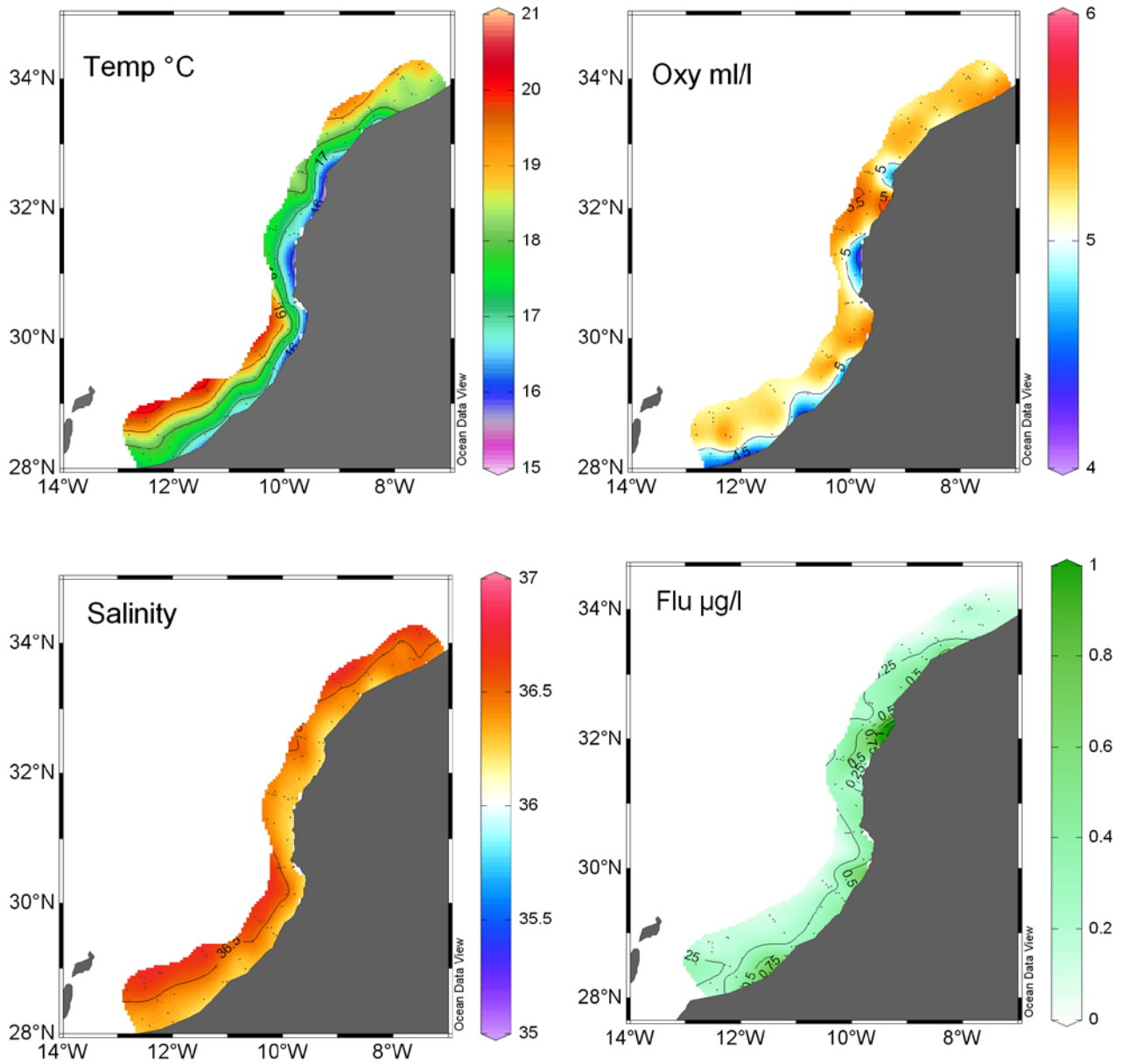


Figure 3.6. Sea Surface isolines of Temperature (SST), Sea Surface Salinity (SSS) (thermosalinograph data) oxygen and Sea Surface Fluorescence (SSF) (CTD data at 5m depth), and between Cap Juby and Casablanca.

### 1.16. Cross shelf hydrographic profiles

Cross shelf CTD profiles were made for all environmental transects. Stations were taken at predefined depths with a maximum depth of 1000 m. All casts were made to a few meters off the bottom. Figure 3.7 shows the distribution of temperature, salinity, oxygen and fluorescence from the “ecosystem” transects down to 500 m depth.

#### *Conakry - Cap Vert*

Transects 1 to 5 shows the hydrographic profiles in Guinea to Guinea Bissau. The temperature layers were stratified on the shelf, with warm surface waters and a relatively strong thermocline at about 25 m depth. Temperature in the surface was  $>27^{\circ}\text{C}$  and waters were well mixed shallower than this depth. Temperatures thereafter decreased gradually to  $\sim 10^{\circ}\text{C}$  at 500 m depth and  $< 5.5^{\circ}\text{C}$  at 1000 m. Further north there were indications of upwelling especially on transect two, three and four. Cooler and more saline water masses were located on the shelf while relatively fresh, warm water masses were found offshore above the thermocline. A salinocline coincided with the thermocline at  $\sim 25$  m depth, with the maximum salinity below this being  $>35.5$ . Deeper, there was typically a gradual decrease in salinity reaching levels  $< 35.5$ . The oxygen content on the shelf was relatively high in the uppermost 30-40 m, below which an abrupt decline is seen. This is clearly visible off the shelf break where values  $< 2$  ml/l are observed. The fluorescence plots generally show comparatively higher chlorophyll levels, indicating higher primary production, towards the coastline on the shelf and above the thermocline at around 30-40 m depth, with maximum values exceeding 0.3 mg/l. Environmental transects 6-8 represent the area between Casamance-Cap Vert. As further south, the temperature layers were strongly stratified on the shelf, with warm surface waters  $>28^{\circ}\text{C}$  and a relatively strong thermocline around 25 m depth. Surface temperatures declined northwards. Temperature at 500 m depth was  $\sim 10^{\circ}\text{C}$ . There are signs of upwelling with intrusion of cooler and more saline water masses on the shelf. Low oxygen layers are visible at depths below about 350 m, but additionally the transect off The Gambia (transect 7) indicates a hypoxic layer near the bottom of the shelf with  $\text{O}_2$  levels  $< 1$  ml/l. This layer extends to about 10-20 m from the bottom at depths between 50 and 100 m. A similar hypoxic layer is also visible in the environmental transect 8, south of Dakar. To our knowledge this phenomenon has rarely been observed in this area before, with the exception of the DFN survey in October 2000. The fluorescence was moderate, displaying the highest levels on the inner shelf and at ca. 25 m depth. The fluorescence maximum descends as one goes offshore on transect 7.

#### *Cap Vert- Cap Blanc*

Environmental transects 9 – 15 represent the surveyed areas in the Senegalese and Mauritanian waters between Cap Vert and Cap Blanc. The surface temperature on transects 9 and 10 was lower compared to the previous transects (about  $22 - 25^{\circ}\text{C}$ ), with a thermocline between about 20 and 25 m. The surface water along transect 11 was colder than for the previous transects ( $20 - 22^{\circ}\text{C}$ ), and gradually increasing in the offshore direction. The temperatures decreased to  $\sim 11^{\circ}\text{C}$  at 500 m depth. When moving northwards, cooler and more saline water was found on the shelf, while fresher waters were visible offshore above the thermocline. The oxygen levels showed little variation between the five transects. The fluorescence values suggested that the highest primary production generally took place inshore on the shelf at depths of about 30-40 m.

#### *Cap Blanc – Cap Juby*

Environmental transects 16-23 represent the area between Cap Blanc and Cap Juby. The temperature below 300 m depth was  $\sim 14^{\circ}\text{C}$  for transects 16-19. The surface temperatures are similar for the transects, with values around  $20^{\circ}\text{C}$  west of the coastal ridge and with somewhat cooler surface temperatures closer to shore ( $\sim 17-18^{\circ}\text{C}$ ). At transect 20, the deep water was markedly cooler ( $11-12^{\circ}\text{C}$ ), but this tendency was not continued for the more northern transects (21-23), which displayed the same patterns as transects 16-19. The fresher waters were allocated to the deeper

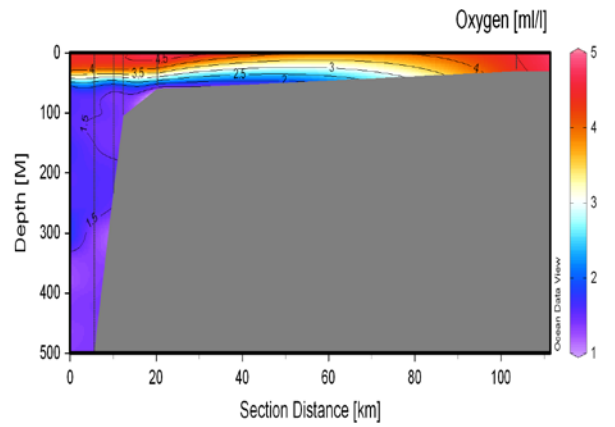
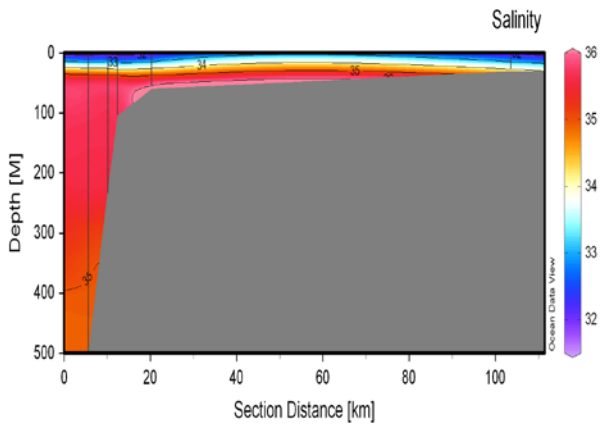
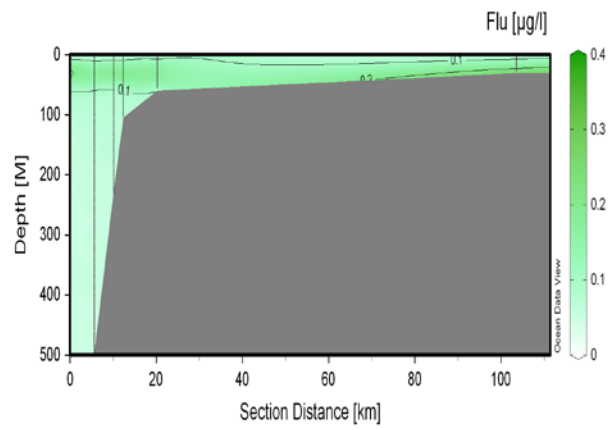
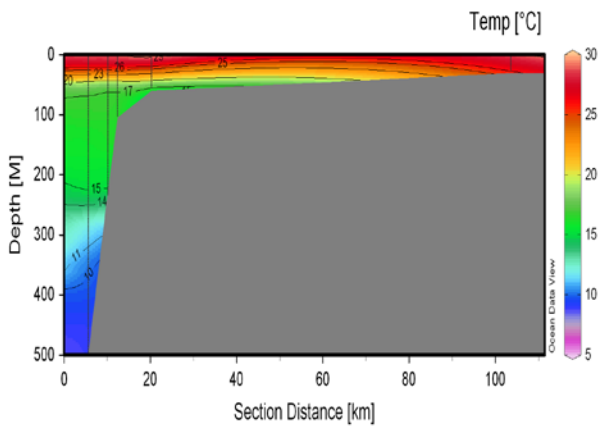
layers, and at transects 16 -18 some of this water was observed on top of the shelf edge. The salinity in the upper layers were similar for all the transects, except for transect 23 where a decrease in salinity level was observed close to shore. Water with low oxygen levels occurred on the shelf and along the bottom of the shelf towards the coast in transects 16-19. However, this water was limited to outside the shelf-edge in transects 20-23. In addition there was a layer of rather low oxygen saturated water from surface to bottom at the easternmost part of transect 23. The fluorescence levels were highest above the continental shelf and increasing towards shore for all these transects.

#### *Cap Juby – Casablanca*

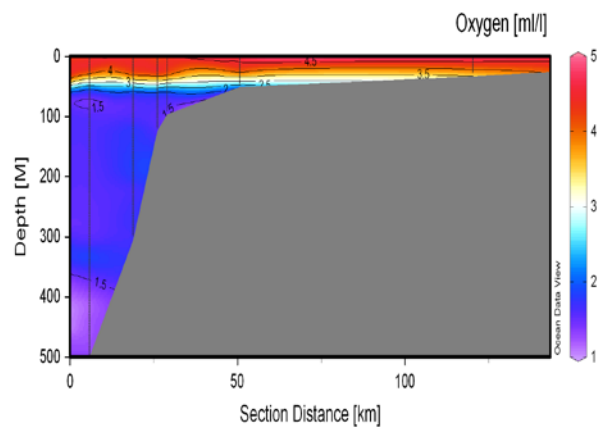
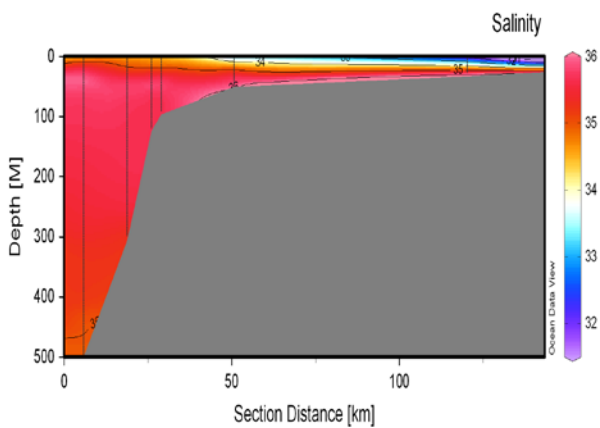
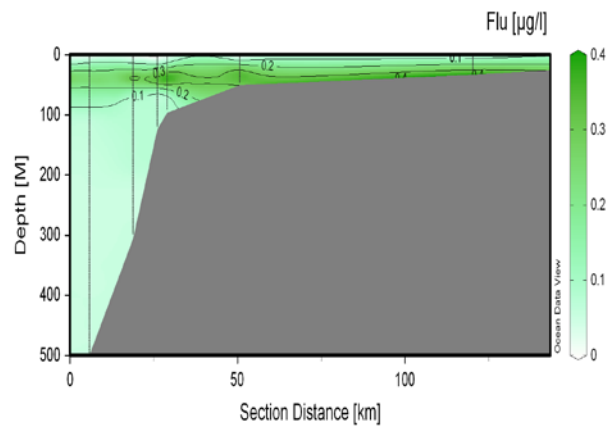
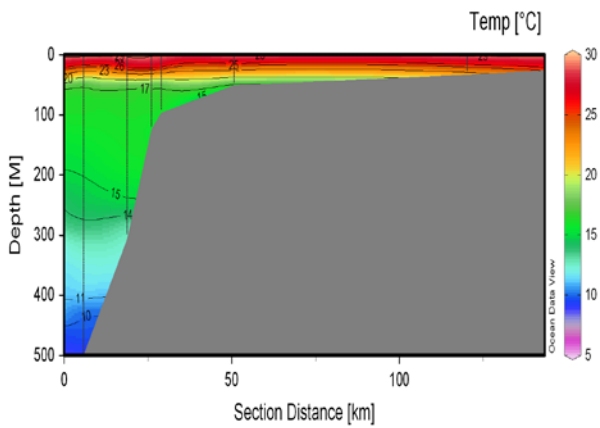
Environmental transects 24-31 represent the area between Cap Juby and Casablanca. The deep cold water (<14°C) was located below 300 m on all transects. The surface water was similar for all transects in this region with temperatures of ~18-19°C, and slightly decreasing from offshore waters towards the coast. The less saline deep water occurred below the shelf edge for transects 24 and 25, was more mixed into the water above the shelf-edge in transects 27 and 28, and the stratification with less saline water below the shelf edge occurred again in transect 29. Transect 29 also displayed an area with relatively fresh water near the coast, possibly due to river run-off. For transects 30 and 31, fresher water occurred on the shelf and this water was found along bottom all the way to the coastline. Water with rather low oxygen levels was found in the deep layers below the shelf edge and along the bottom towards the coastline for all transects in this region. The fluorescence levels were rather low, being highest in the upper parts of water column above the shelf.



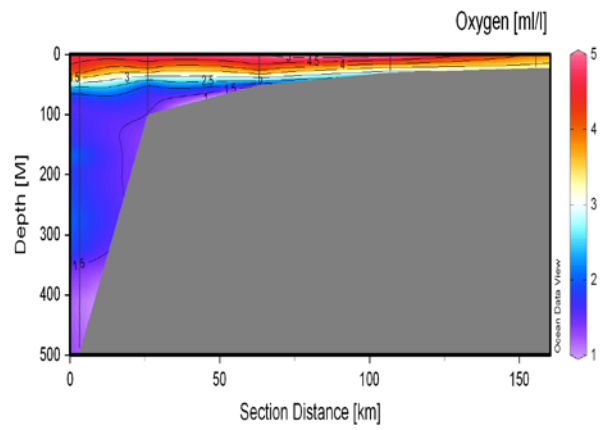
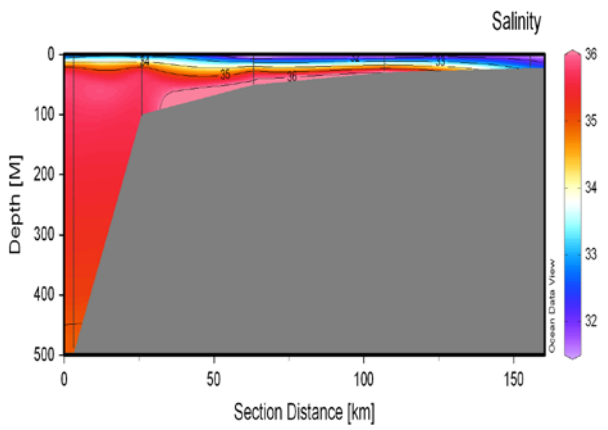
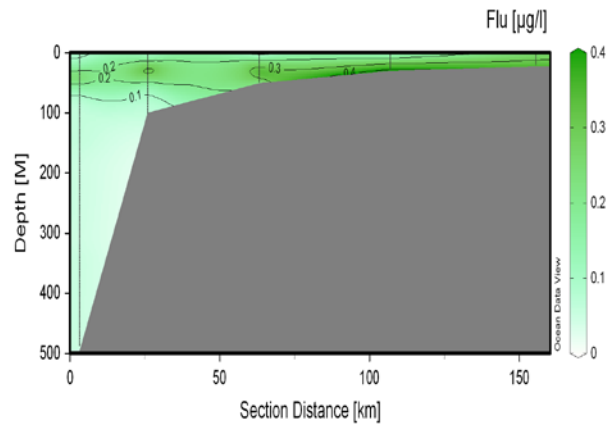
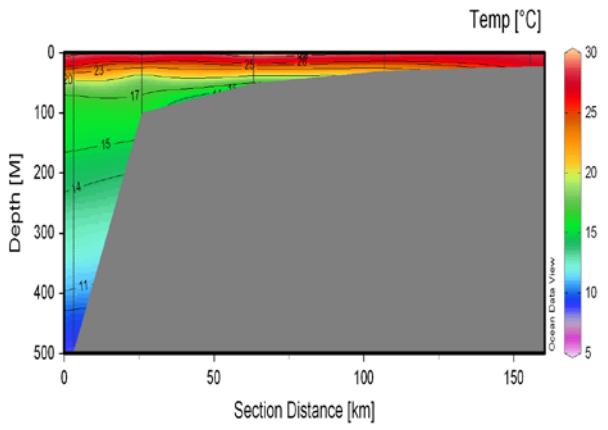
Conakry – Cap Vert Line 1



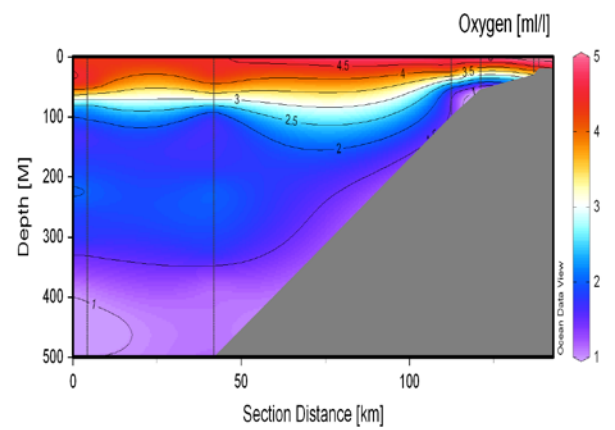
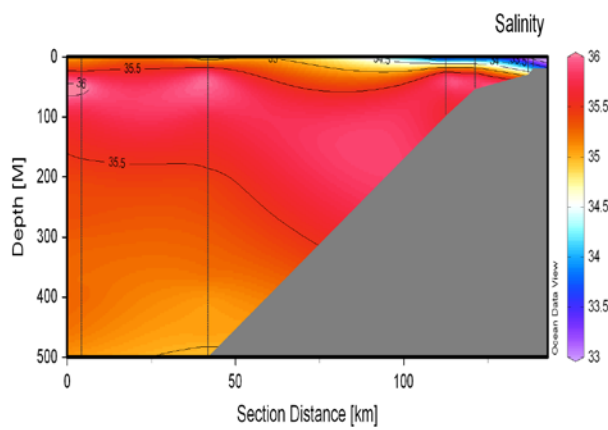
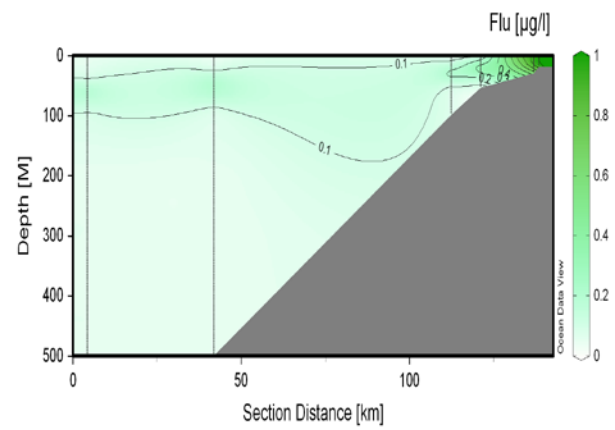
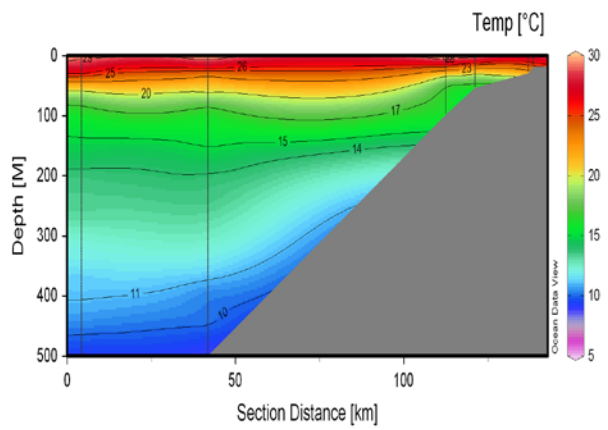
Conakry – Cap Vert Line 2



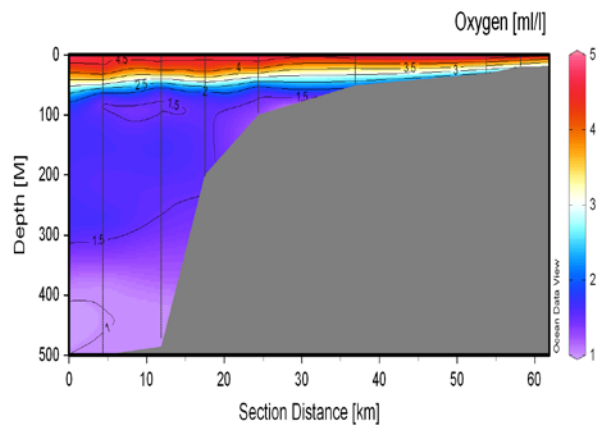
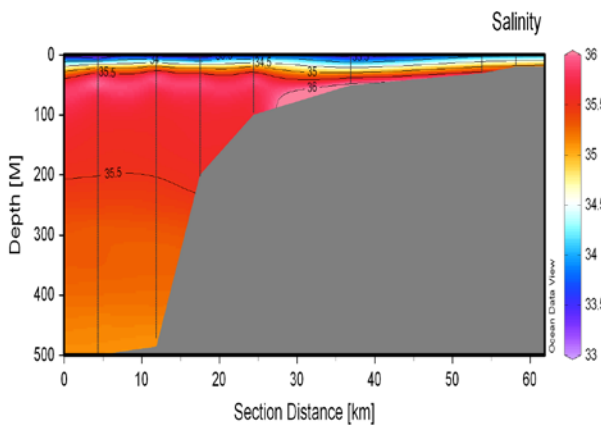
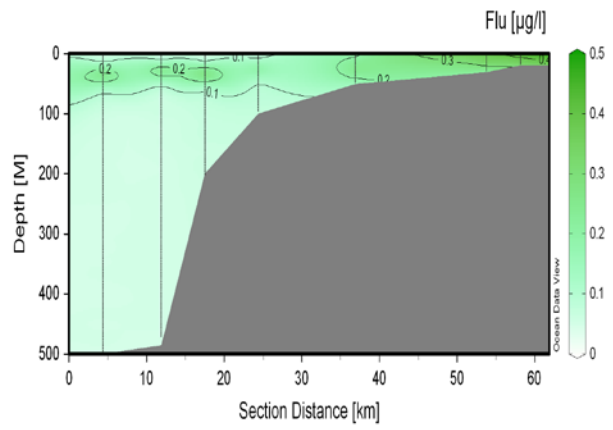
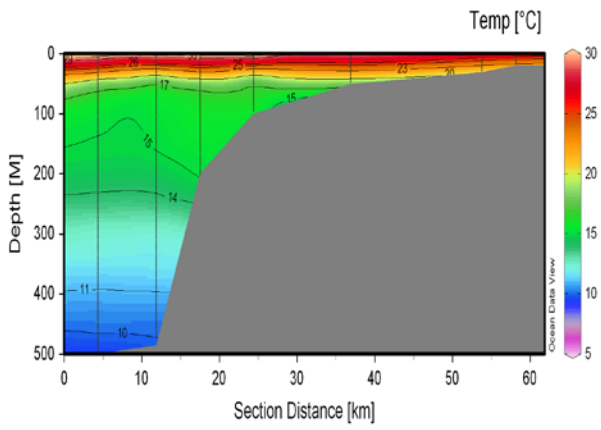
Conakry – Cap Vert Line 3



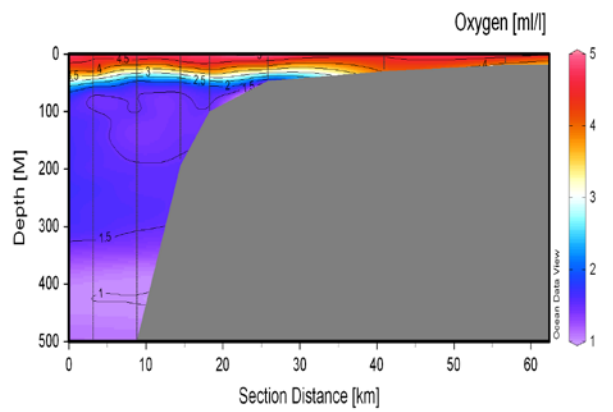
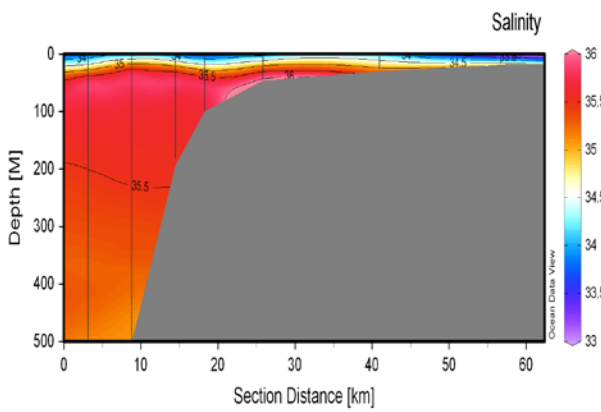
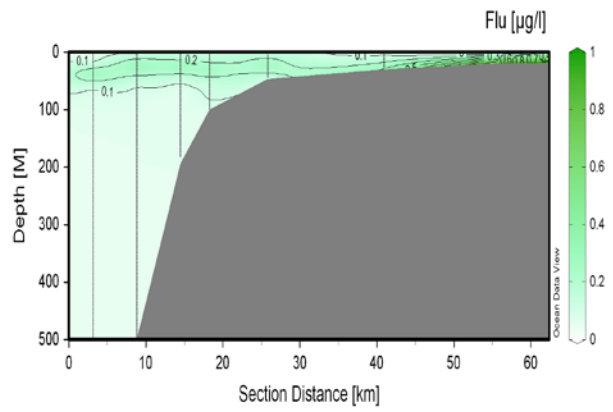
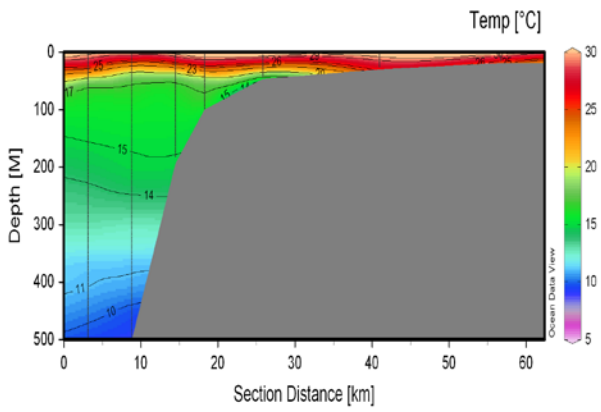
Conakry – Cap Vert Line 4



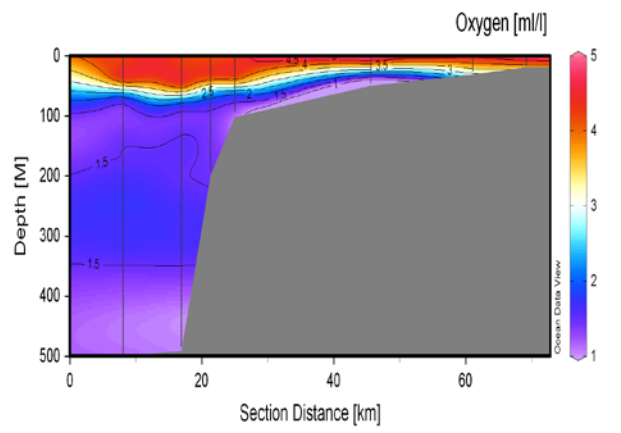
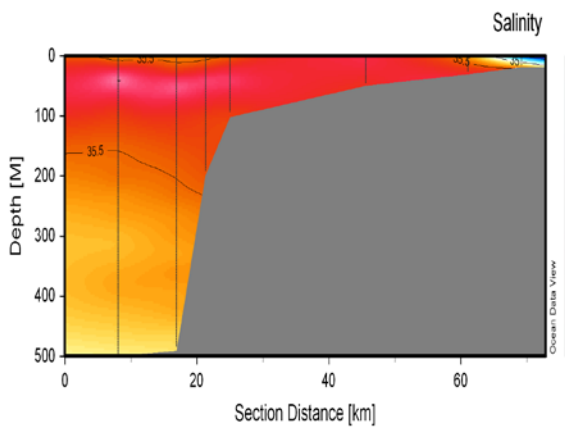
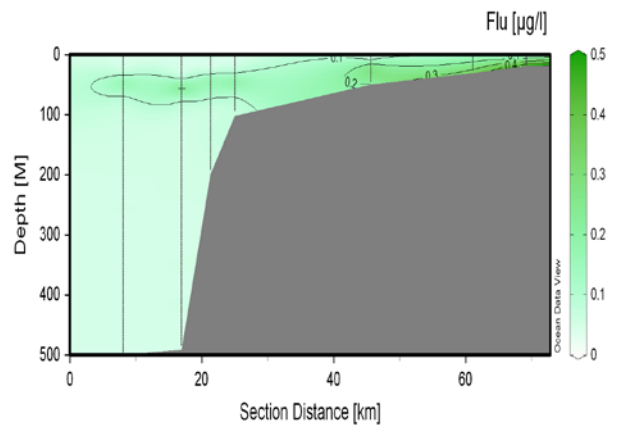
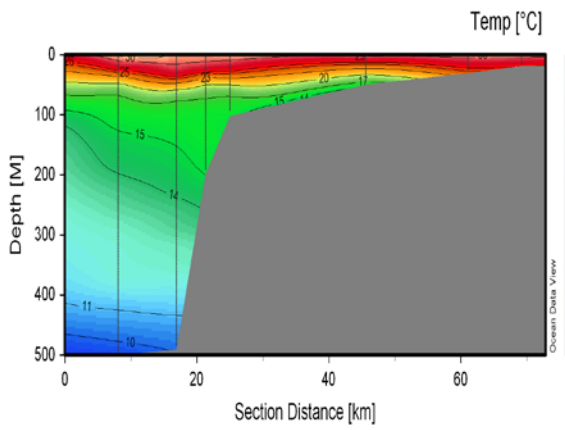
Conakry – Cap Vert Line 5



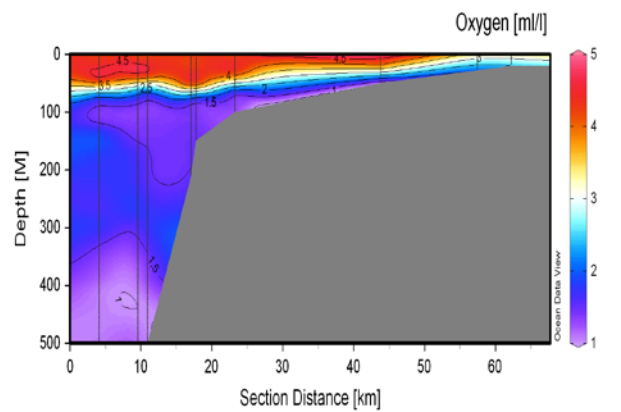
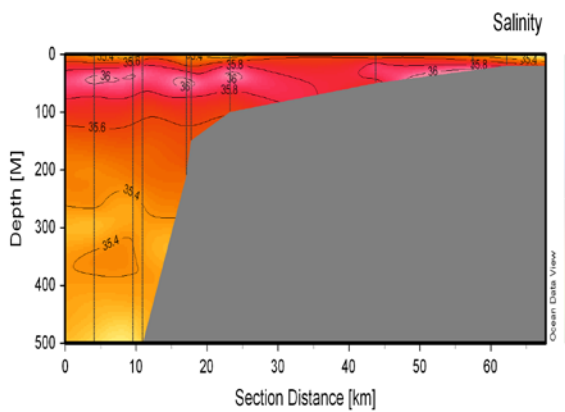
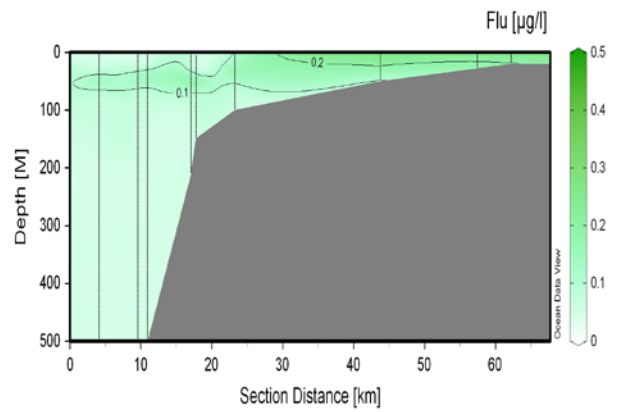
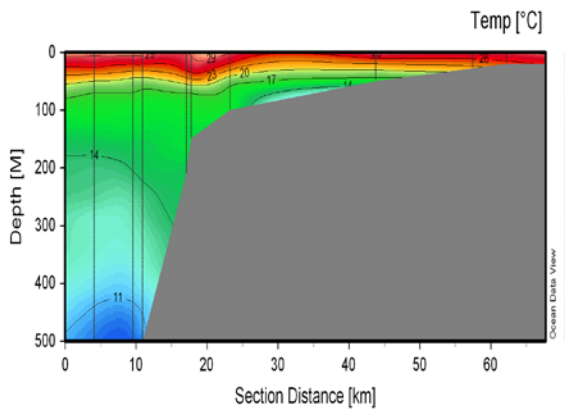
Conakry – Cap Vert Line 6



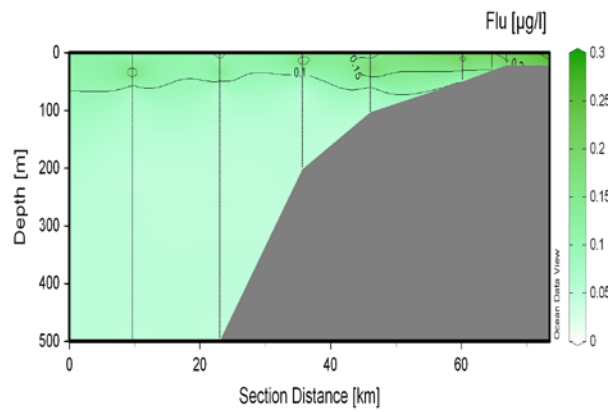
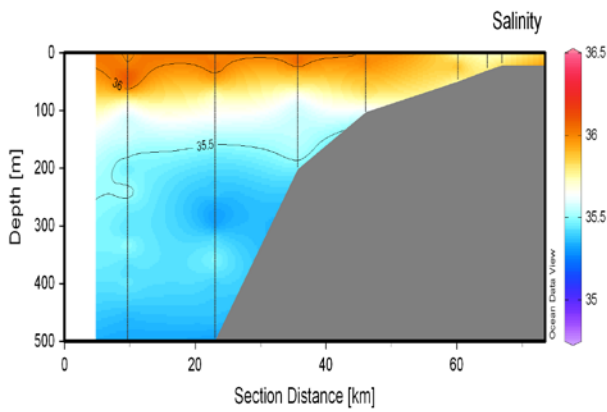
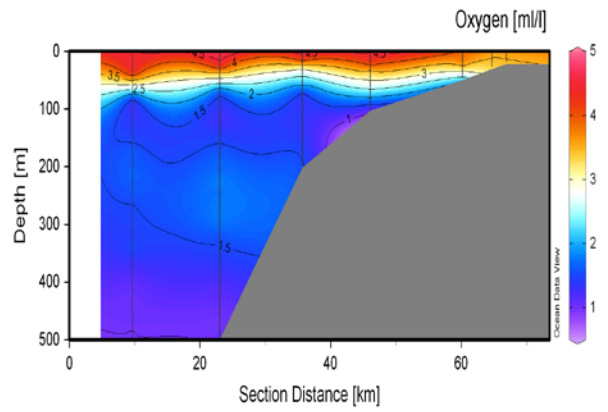
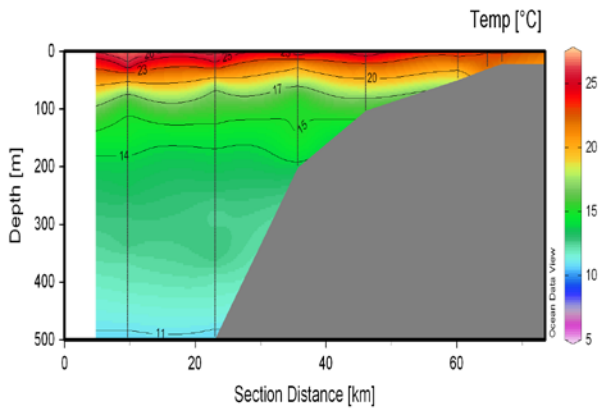
Conakry – Cap Vert Line 7



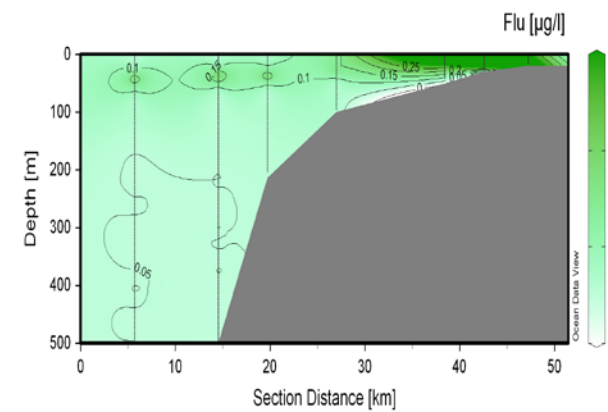
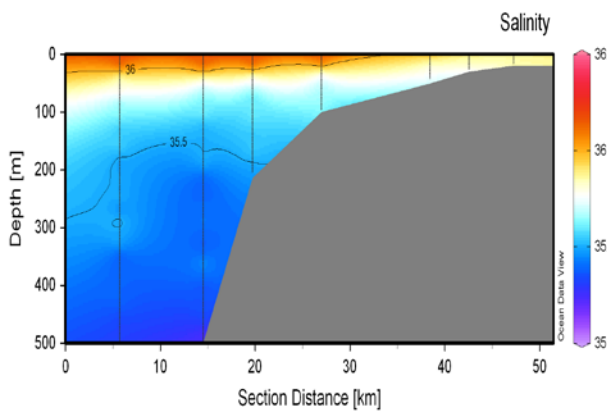
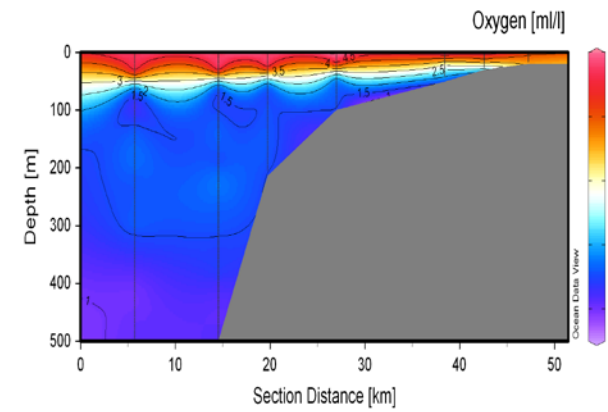
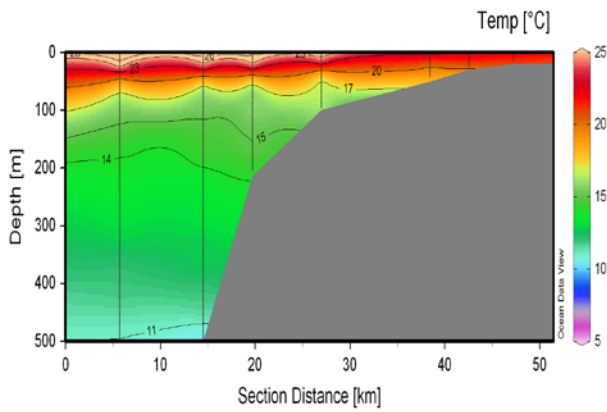
Conakry – Cap Vert Line 8



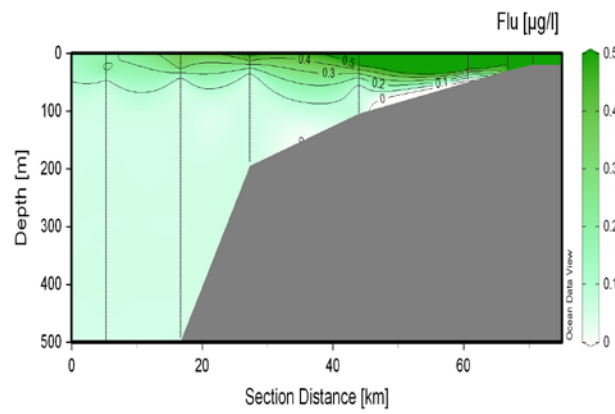
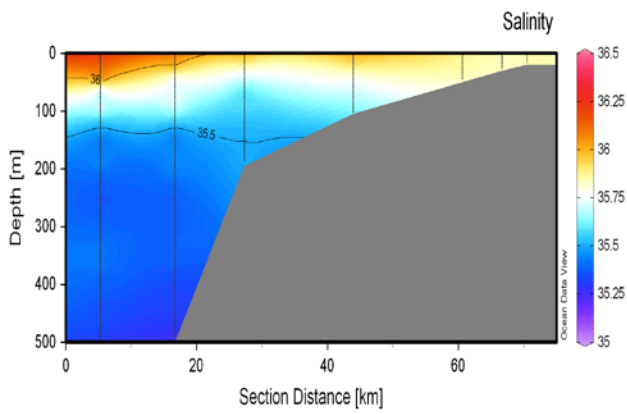
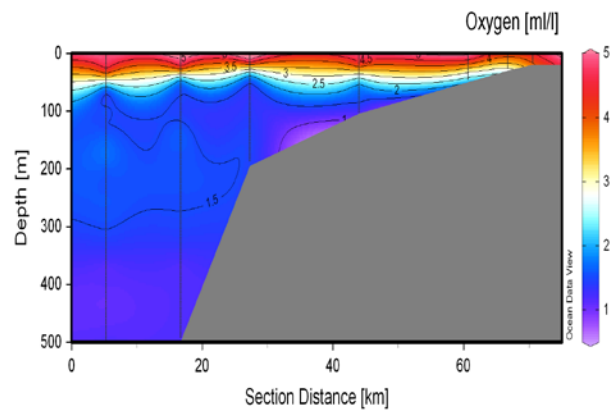
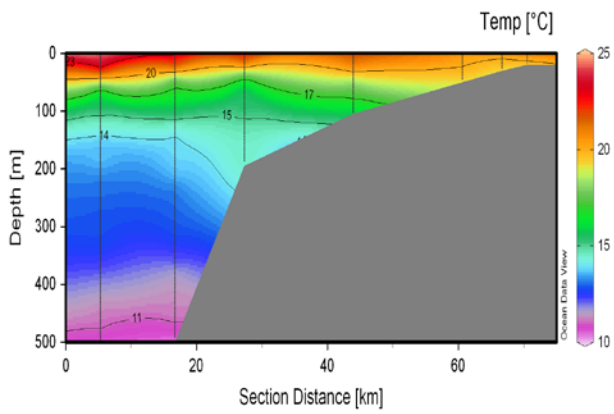
Cap Vert – Cap Blanc Line 9



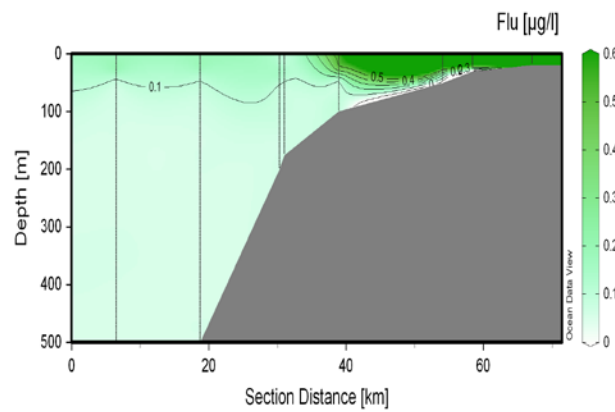
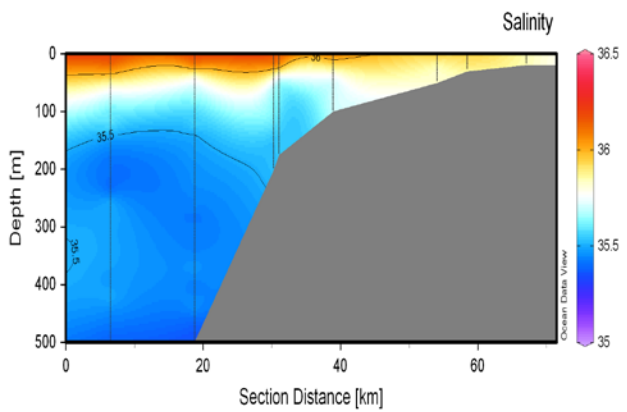
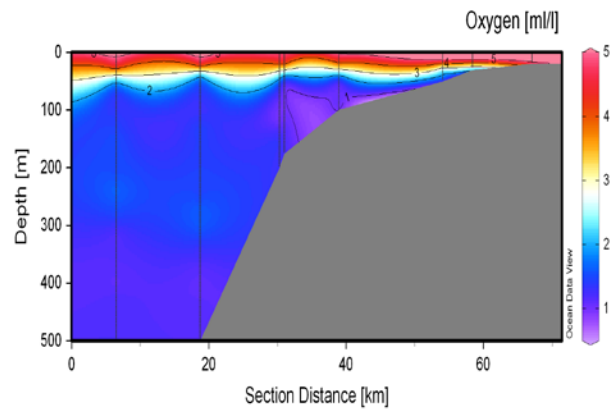
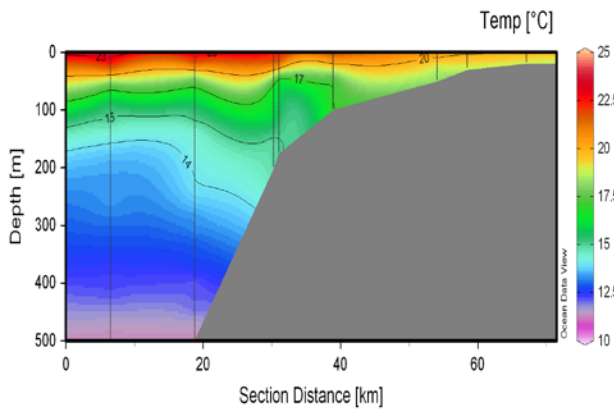
Cap Vert – Cap Blanc Line 10



Cap Vert – Cap Blanc Line 11

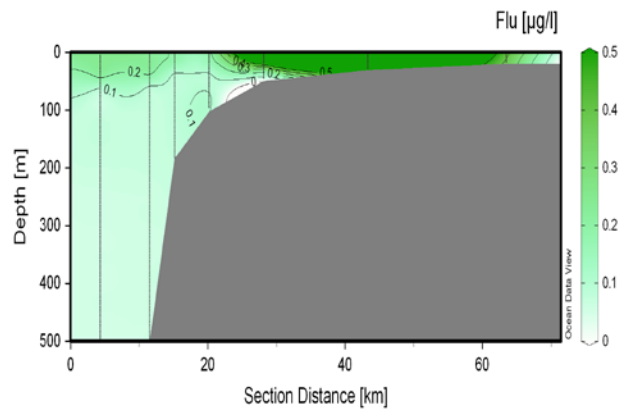
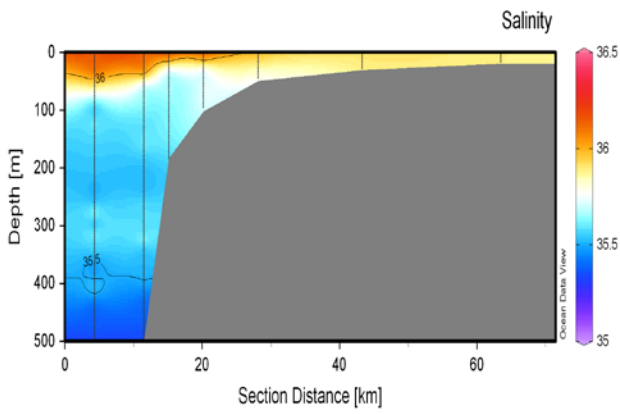
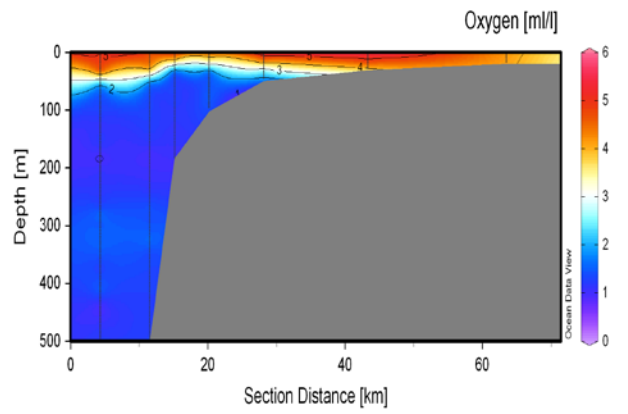
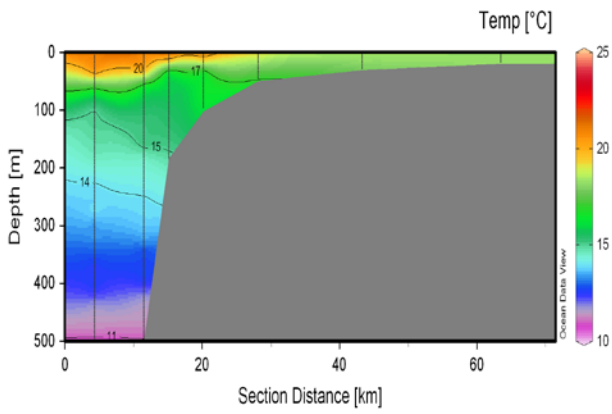


Vert – Cap Blanc Line 12

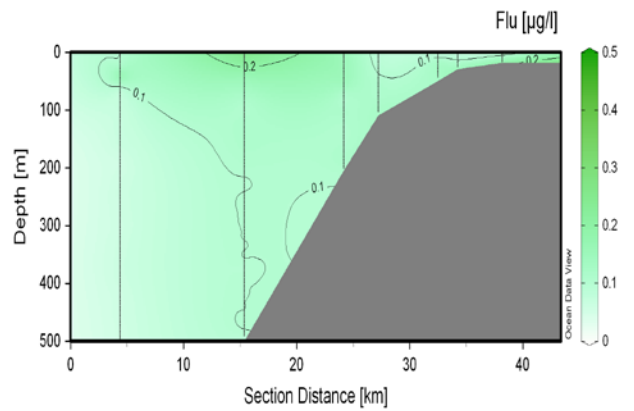
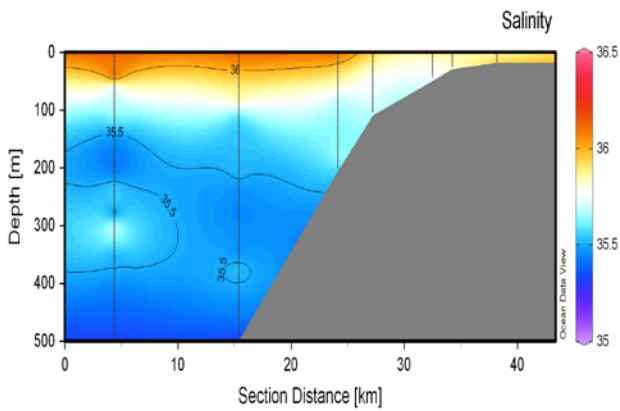
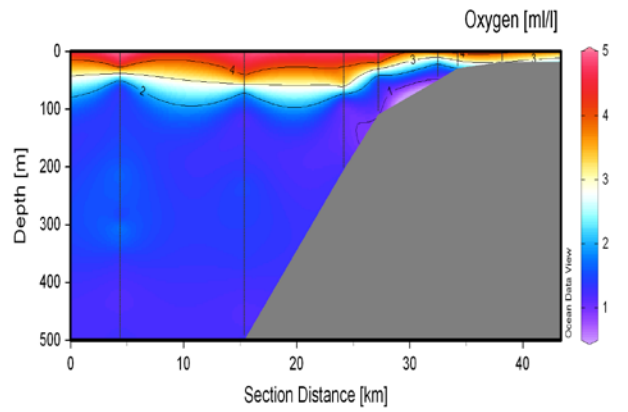
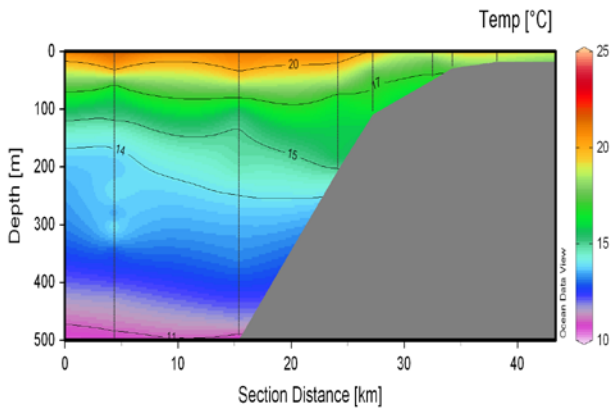




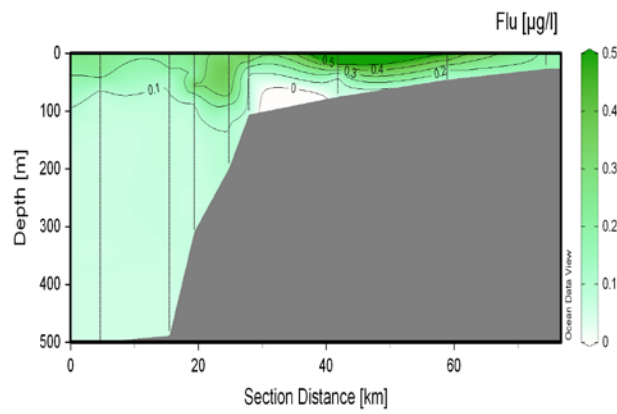
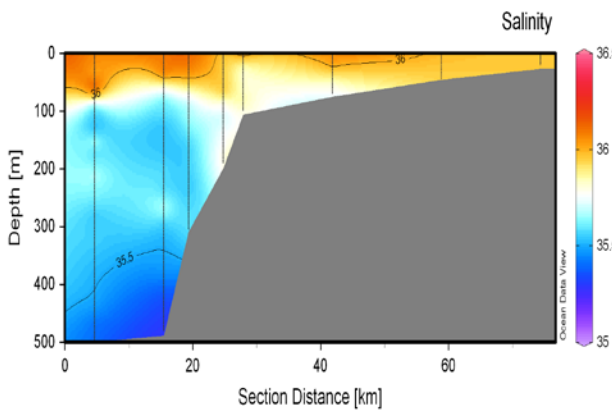
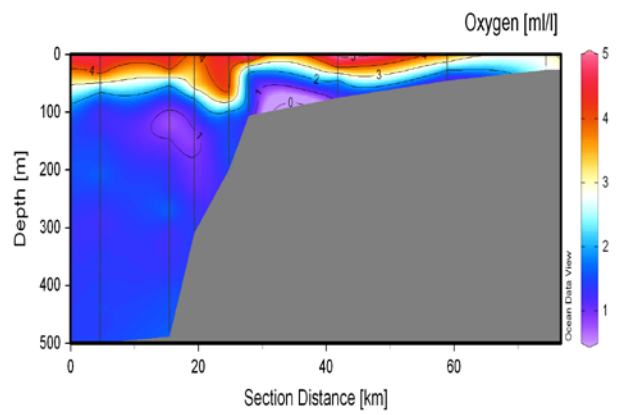
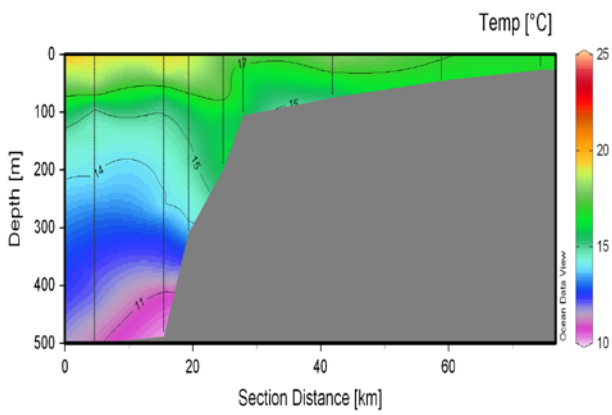
Cap Vert – Cap Blanc Line 13



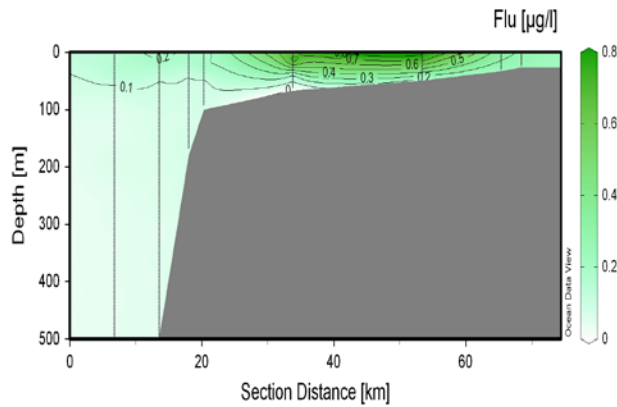
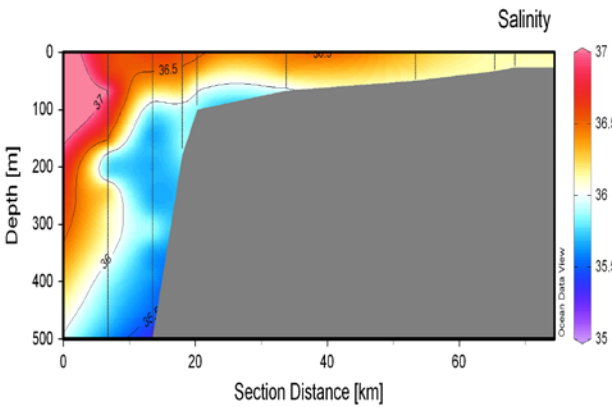
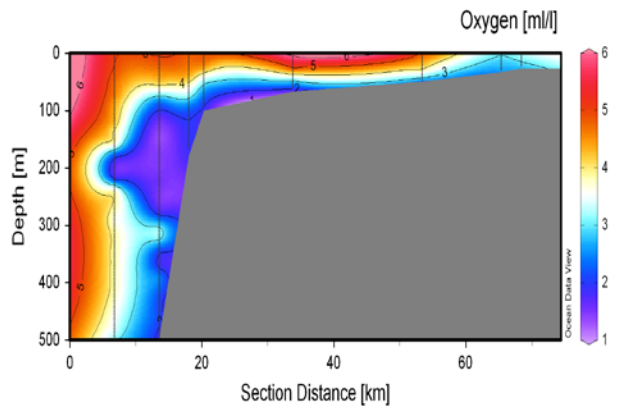
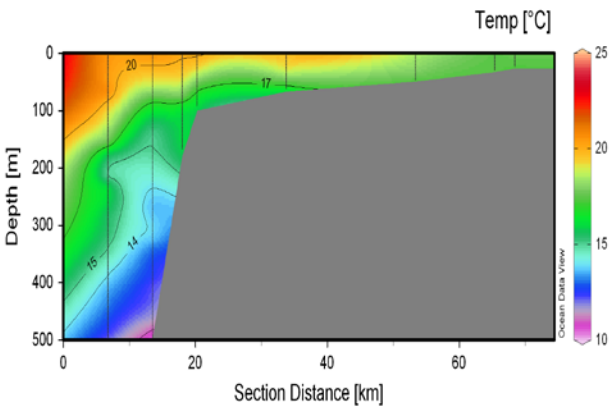
Cap Vert – Cap Blanc Line 14



Cap Vert – Cap Blanc Line 15

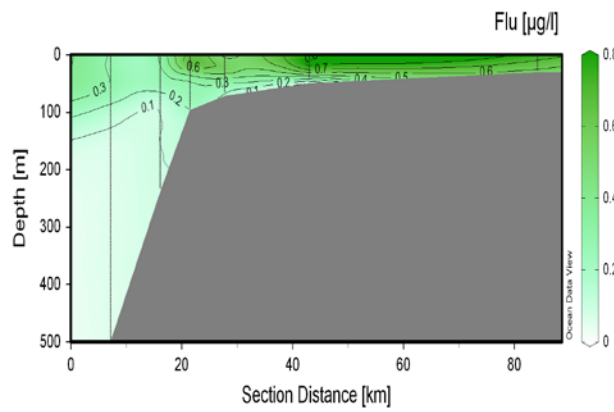
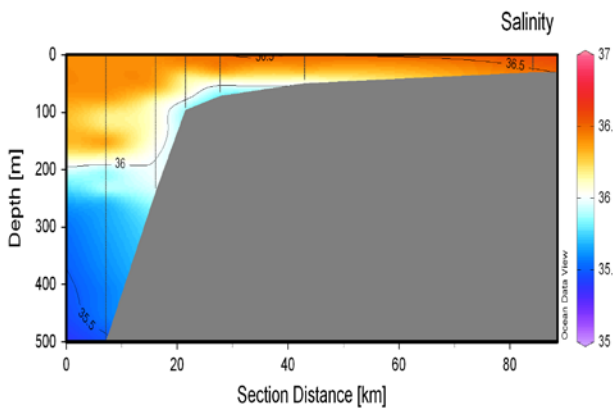
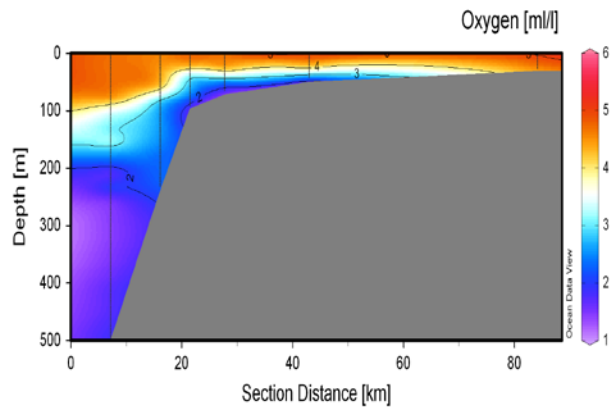
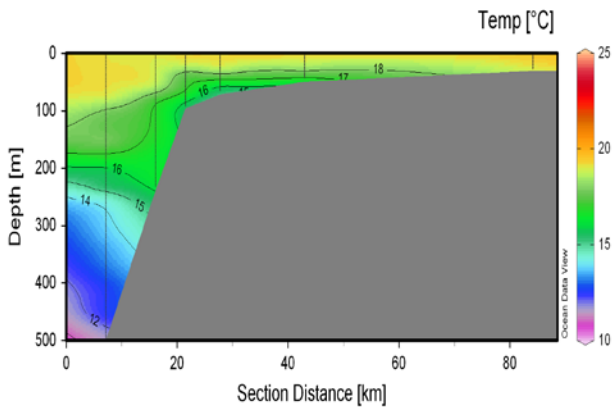


Cap Blanc – Cap Juby Line 16

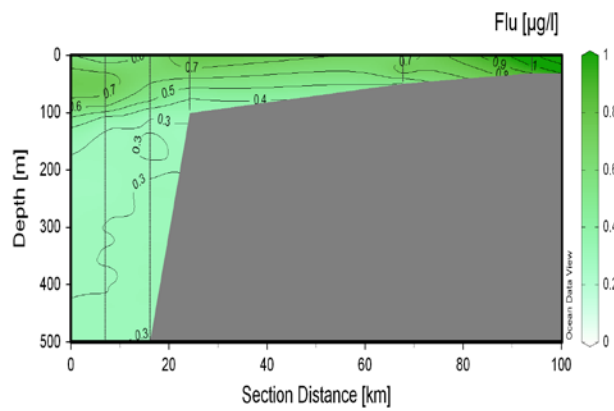
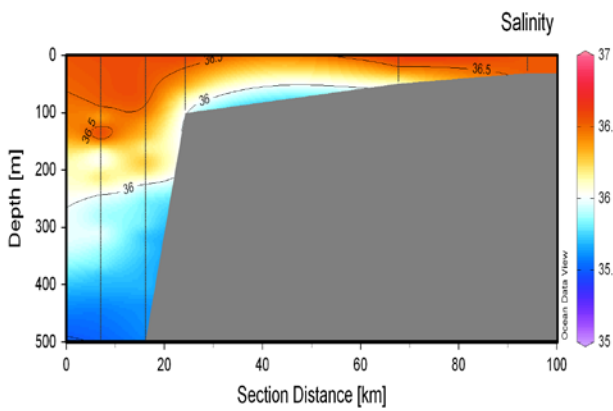
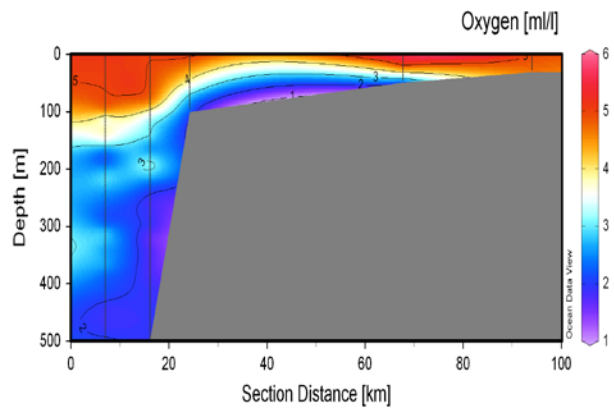
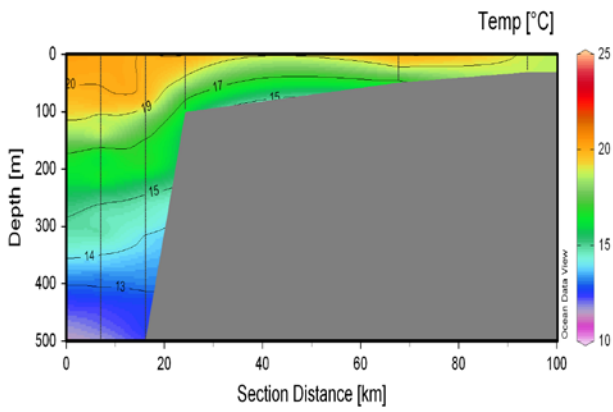




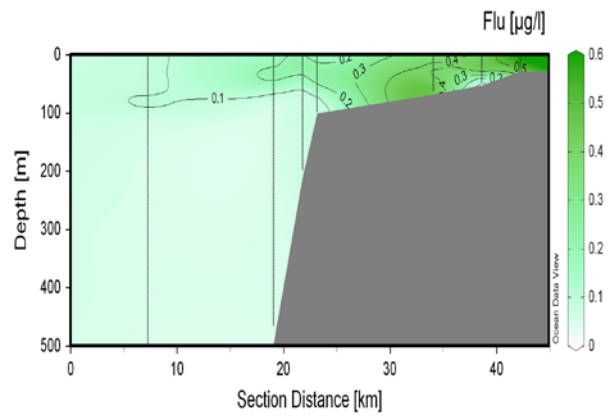
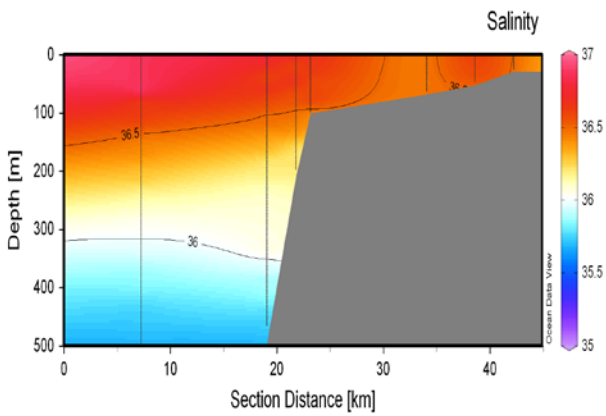
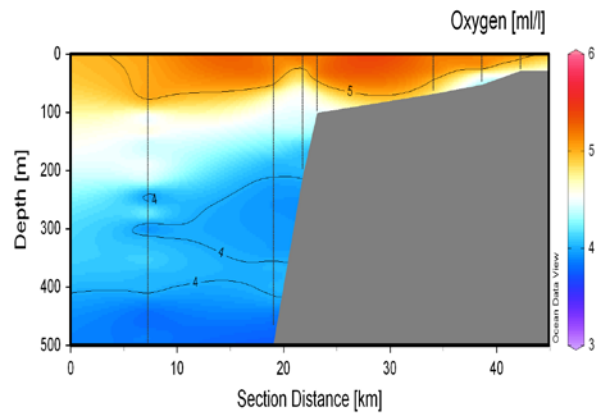
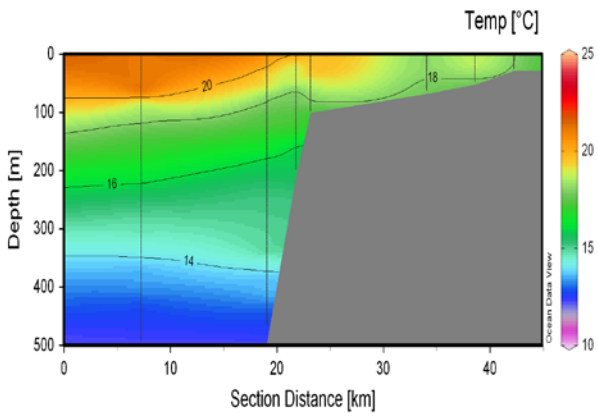
Cap Blanc – Cap Juby Line 17



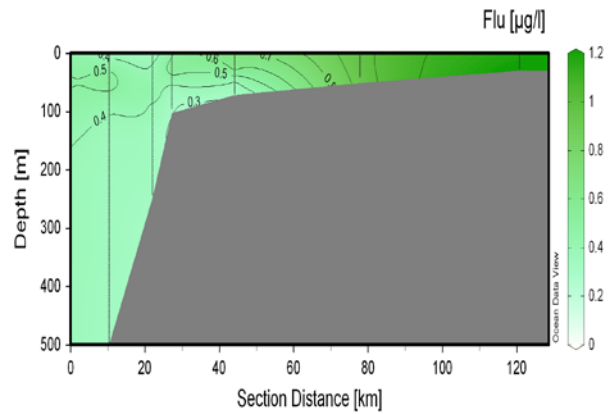
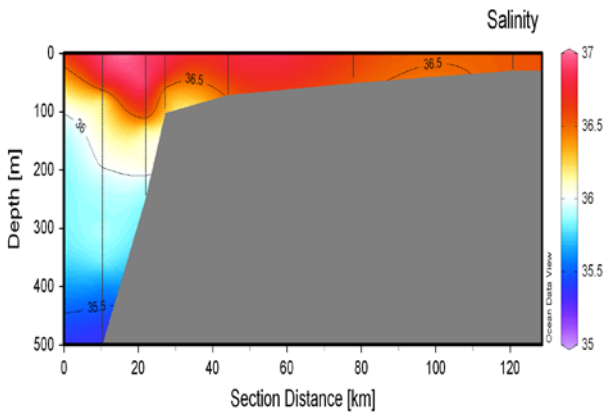
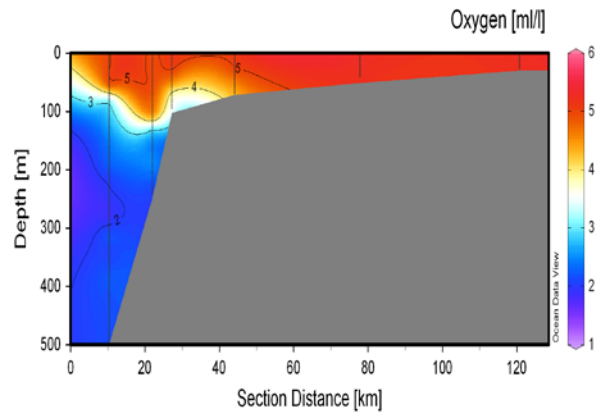
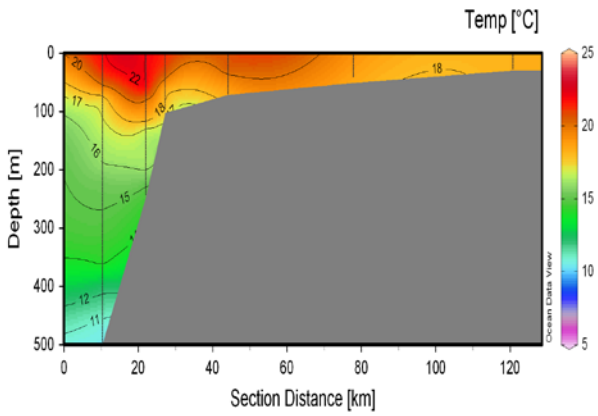
Cap Blanc – Cap Juby Line 18



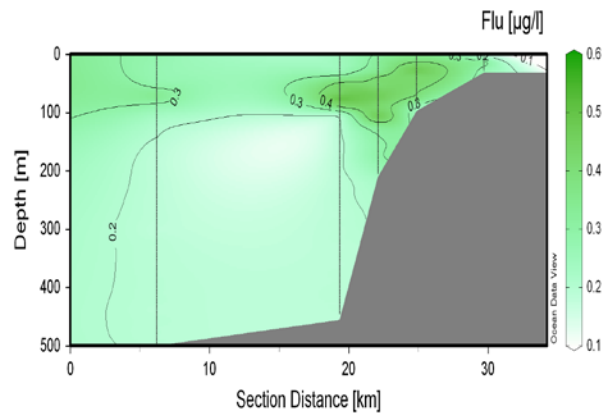
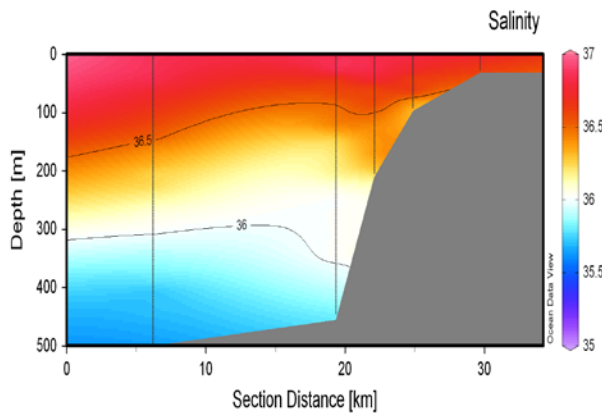
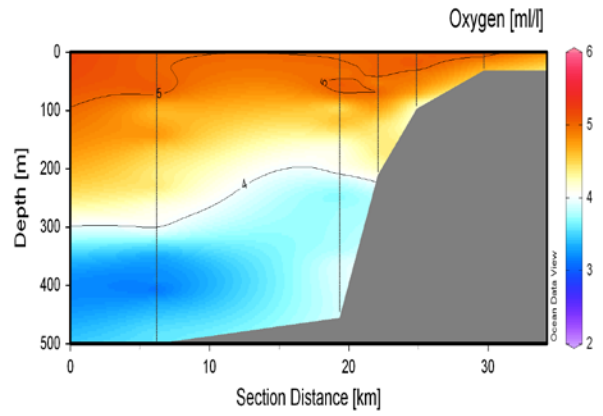
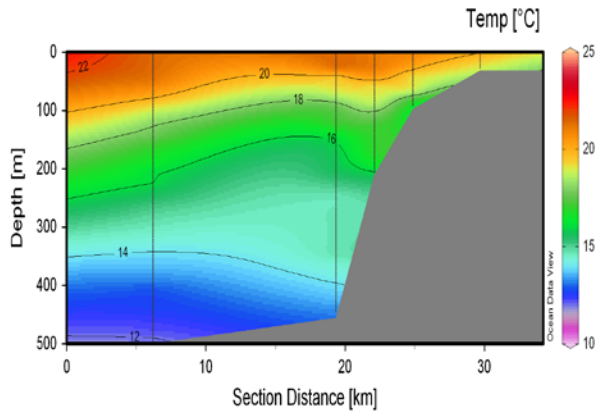
Cap Blanc – Cap Juby Line 19



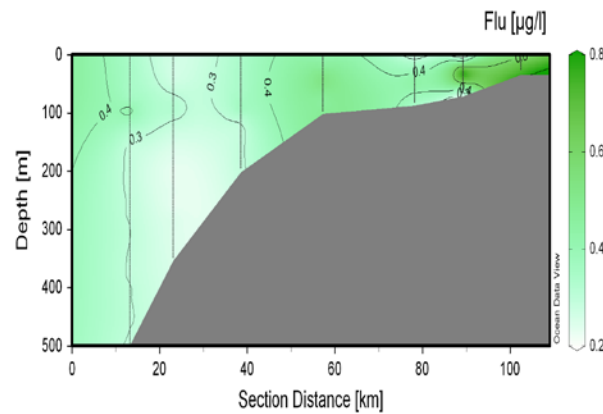
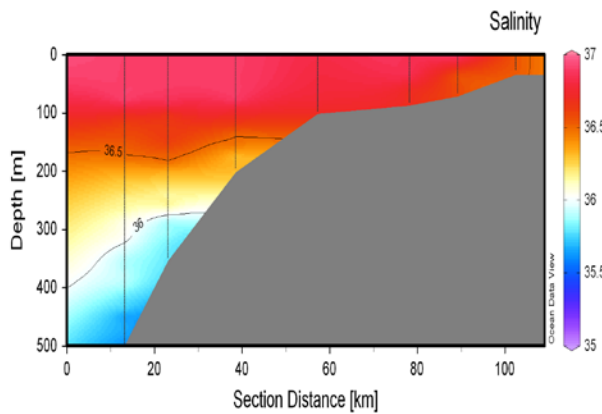
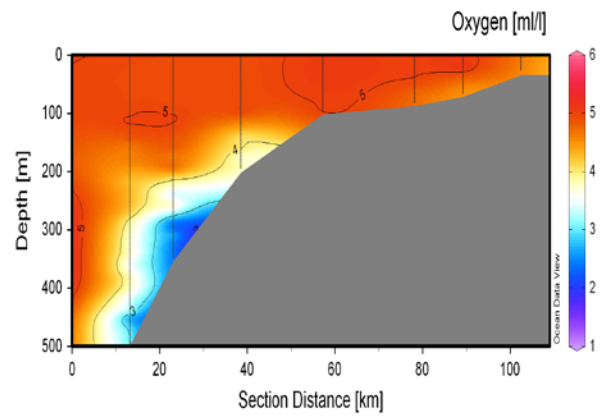
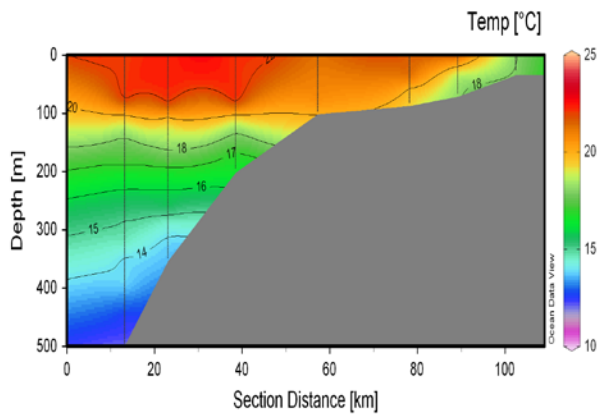
Cap Blanc – Cap Juby Line 20



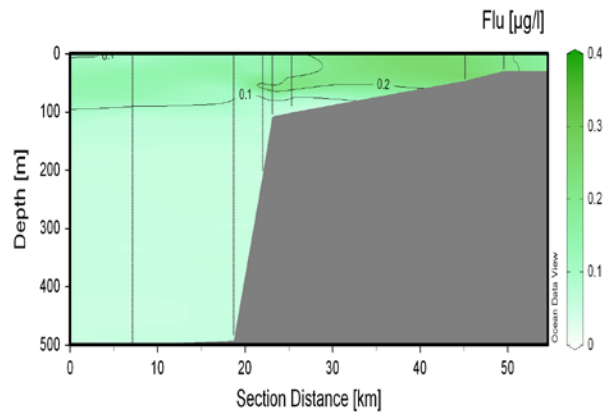
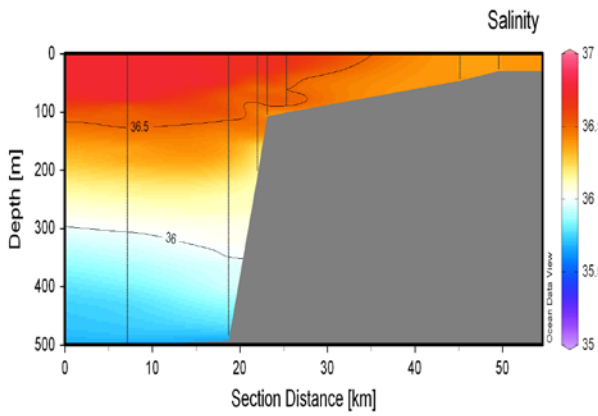
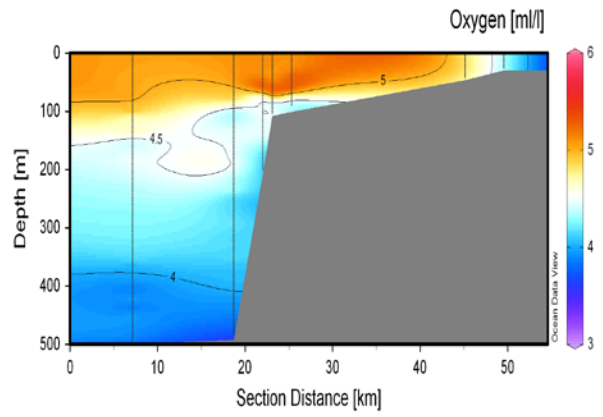
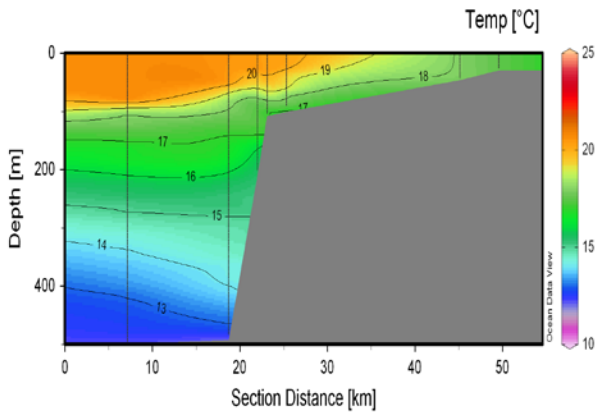
Cap Blanc – Cap Juby Line 21



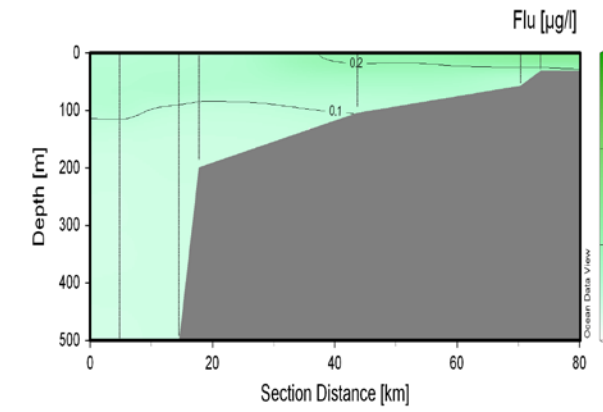
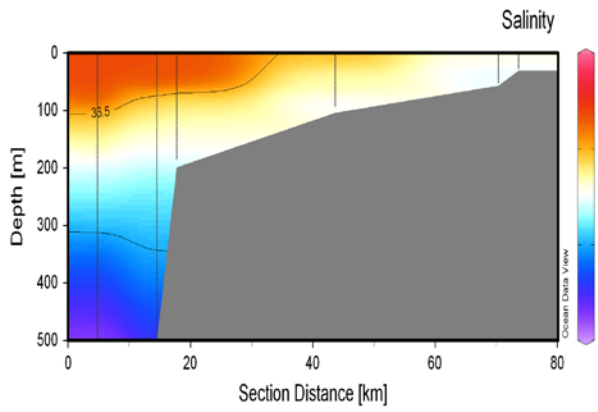
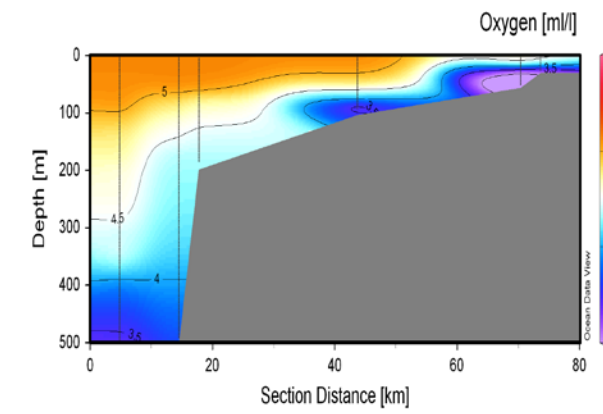
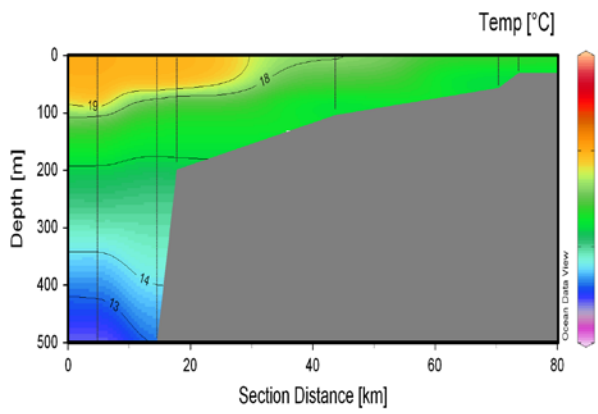
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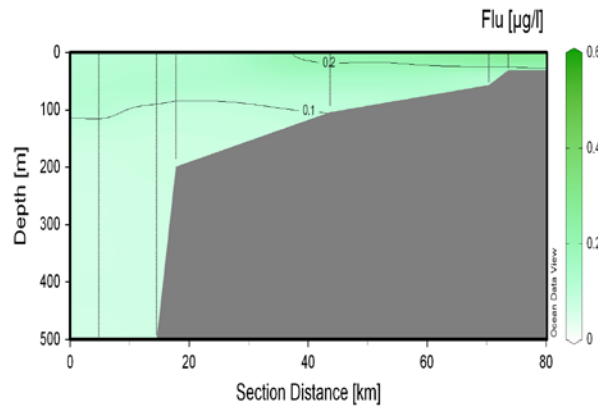
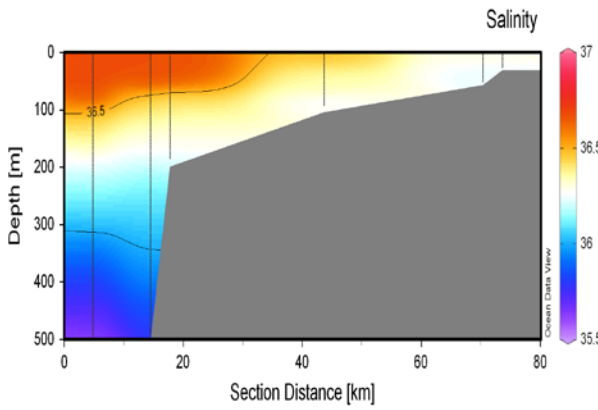
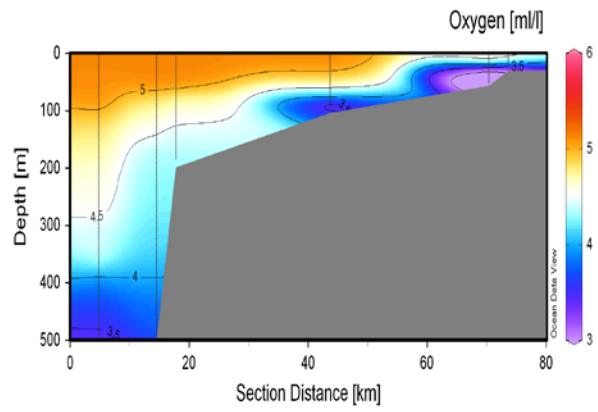
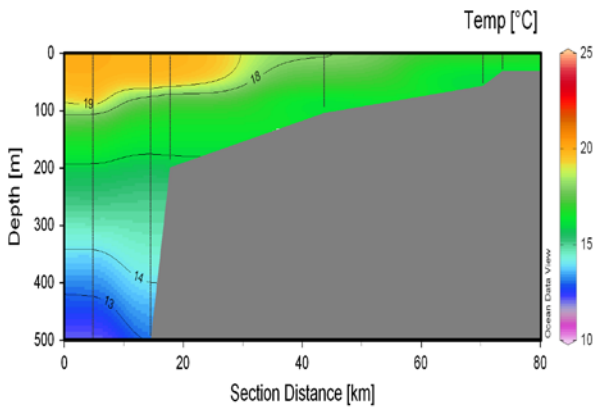
Cap Blanc – Cap Juby Line 23



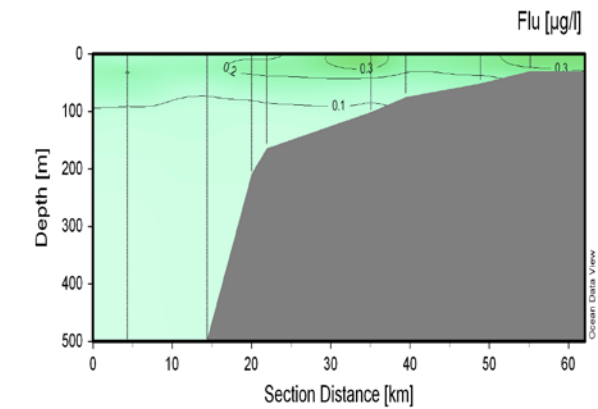
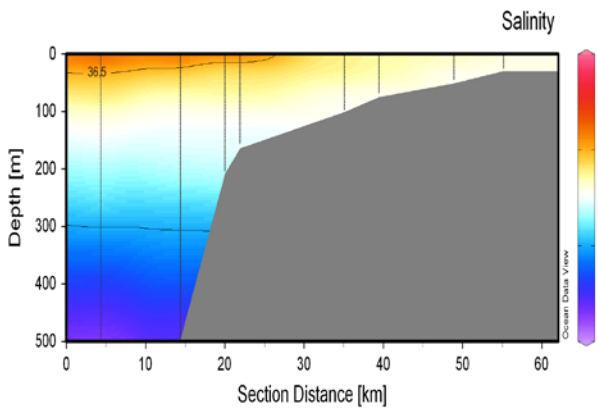
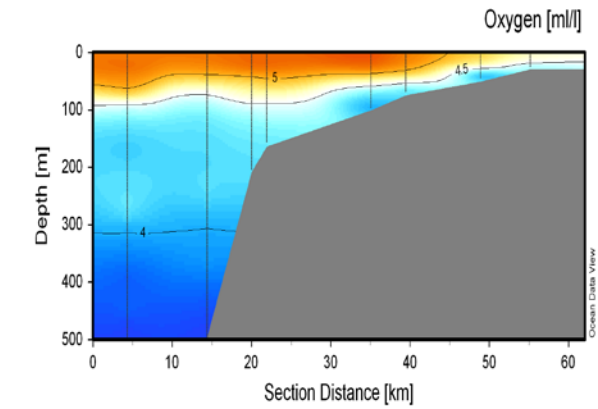
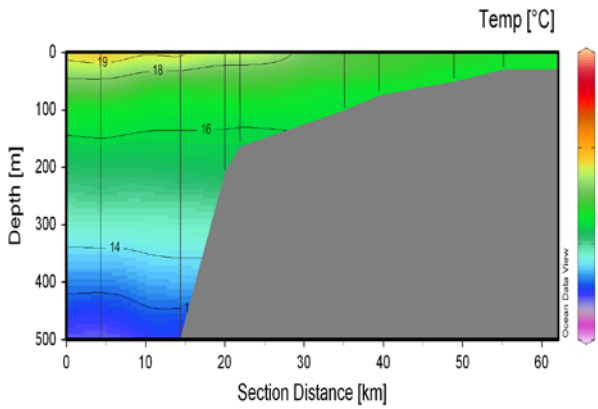
Cap Juby - Casablanca Line 24



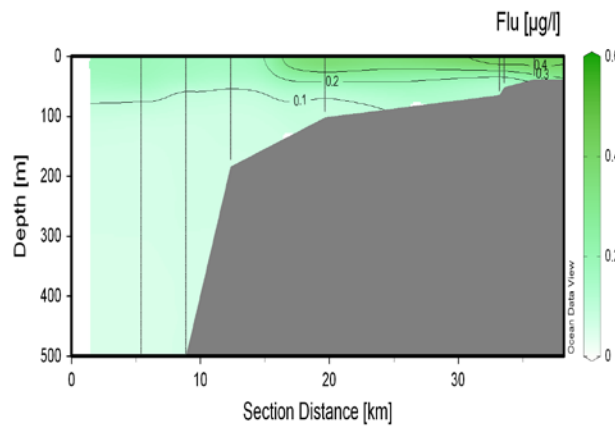
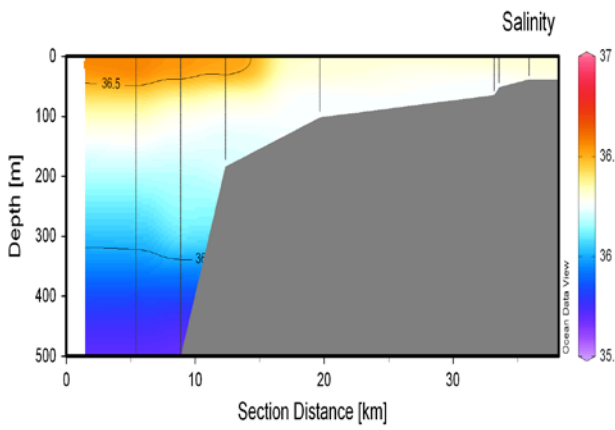
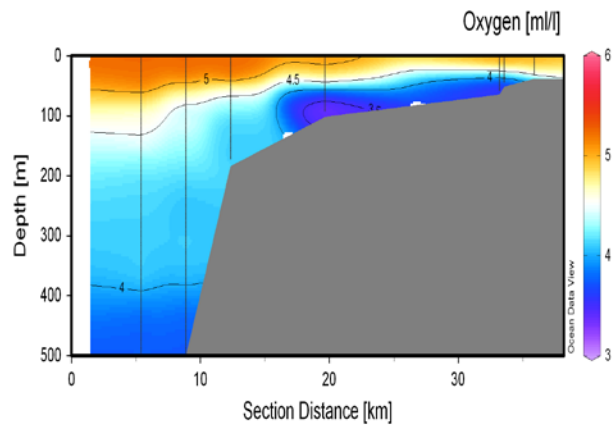
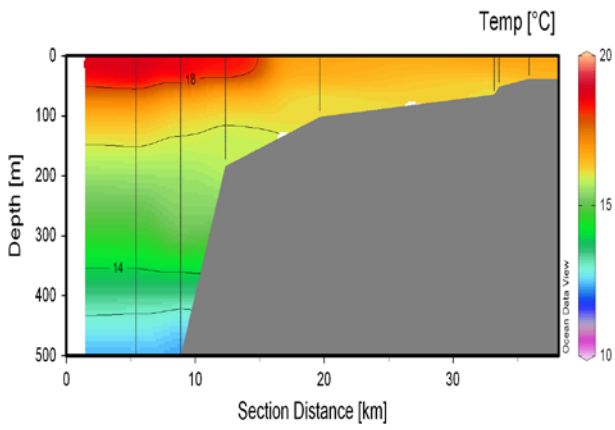
Cap Juby - Casablanca Line 25



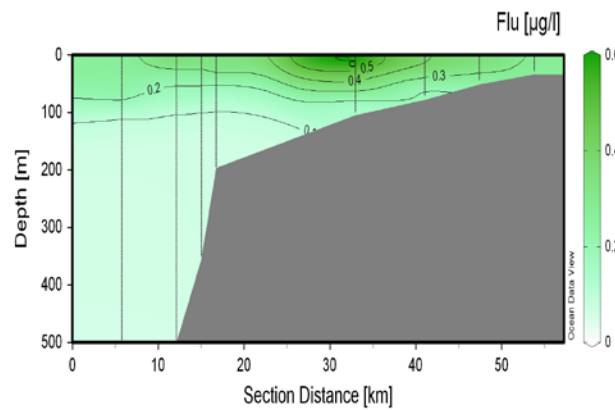
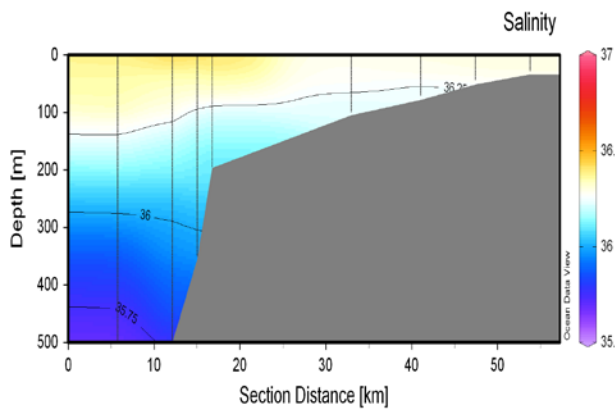
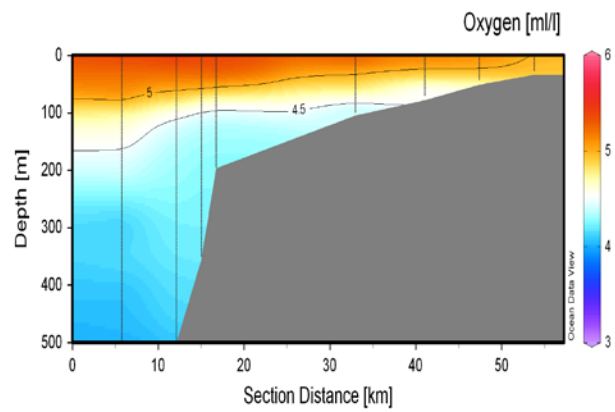
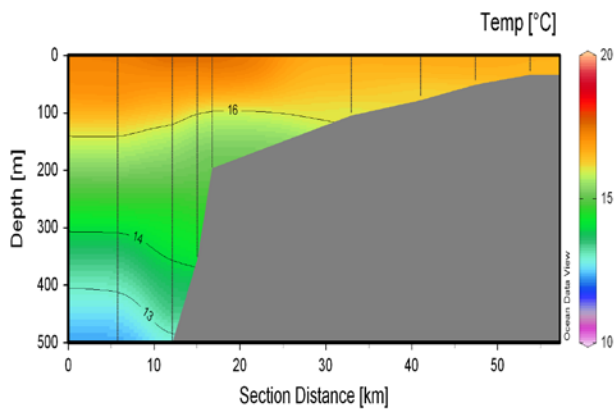
Cap Juby - Casablanca Line 26



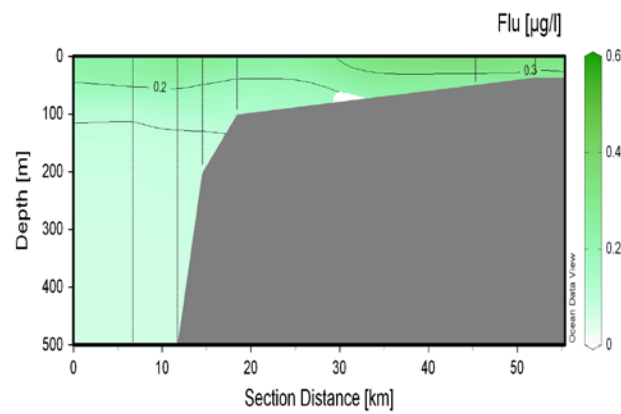
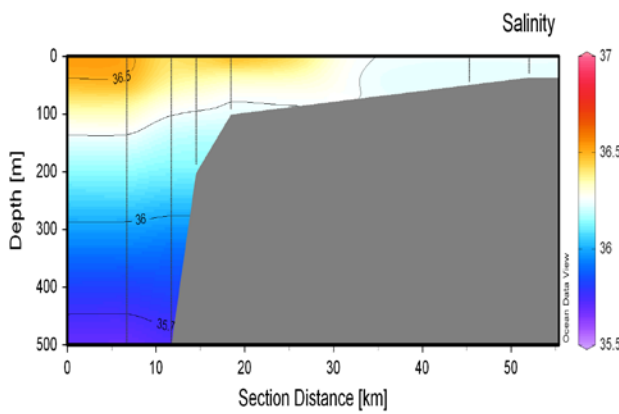
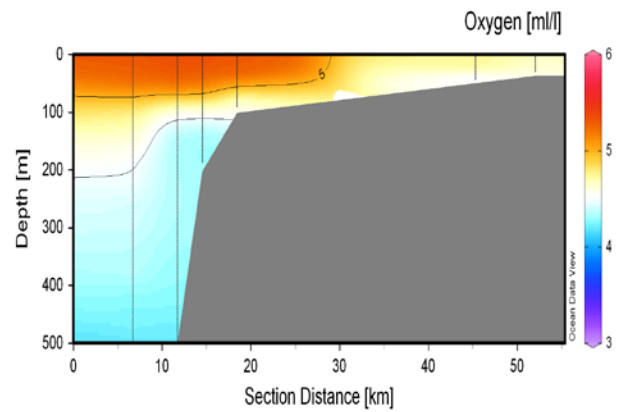
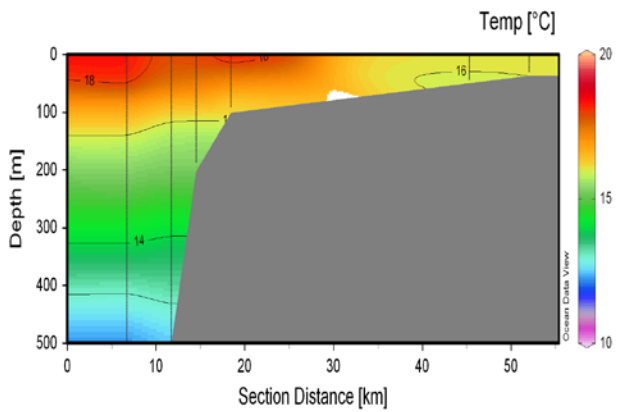
Cap Juby - Casablanca Line 27



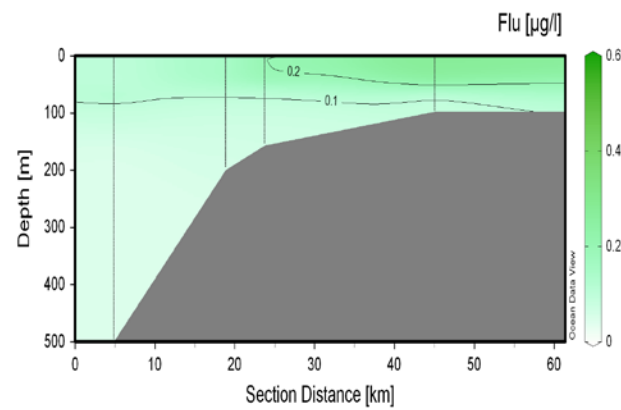
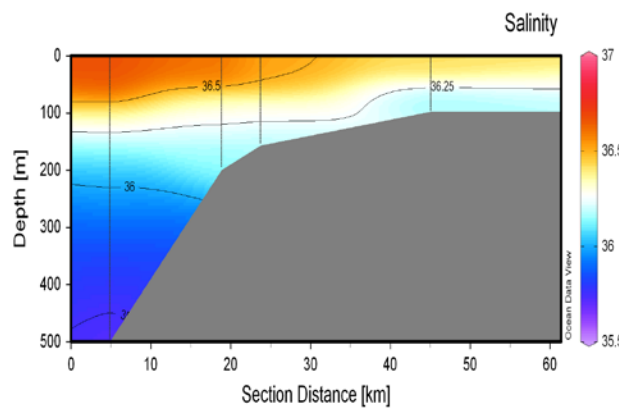
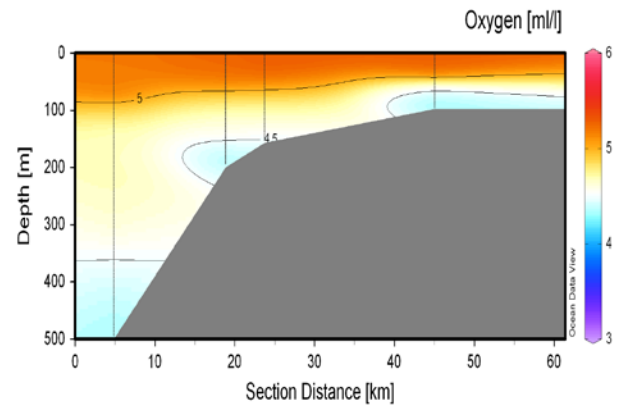
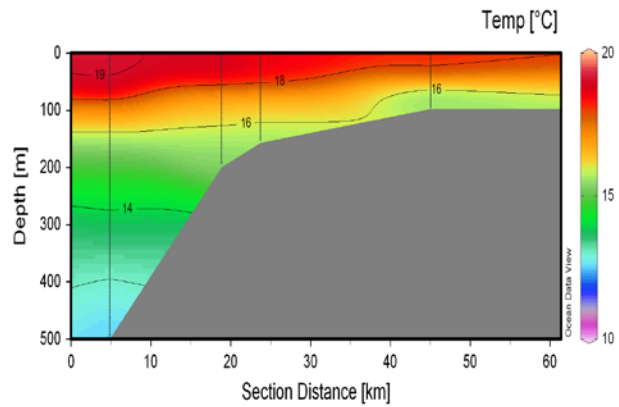
Cap Juby - Casablanca Line 28



Cap Juby - Casablanca Line 29



Cap Juby - Casablanca Line 30





Cap Juby - Casablanca Line 31

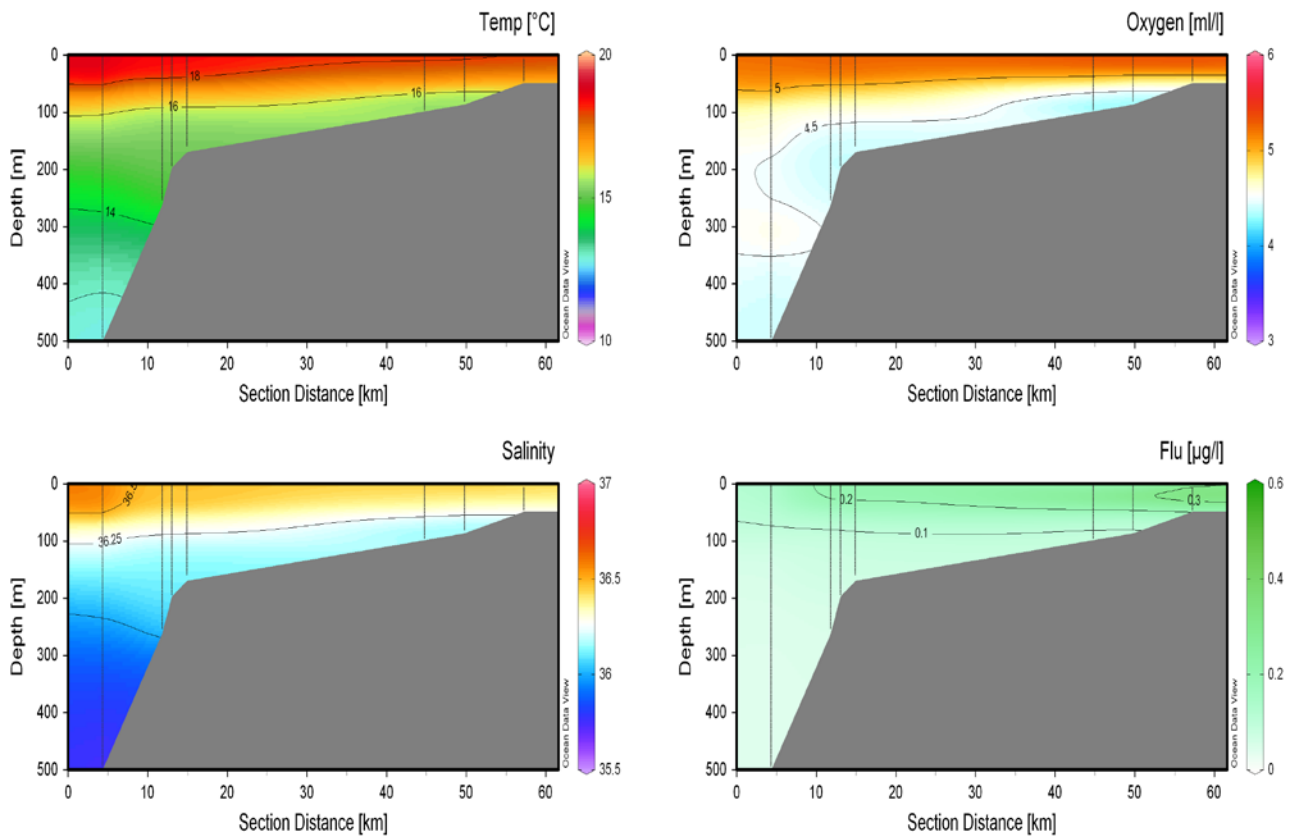


Figure 3.7. Cross shelf CTD profiles were made for all environmental lines executed during the CCLME survey in 2011.



### 1.17. Status of analysis of nutrients and plankton data

#### *Nutrient samples*

Samples collected for analysis of nitrate, nitrite, phosphate and silicate, and preserved with chloroform will be analysed by the IMR (Institute of Marine Research), Norway, during spring 2012. The nutrient samples that were deep-frozen without addition of chloroform are stored for analysis at the INRH (Institute National de Recherché Halieutique), Morocco.

#### *Phytoplankton samples*

All chlorophyll samples, as well as phytoplankton samples (both qualitative net samples preserved with formalin and quantitative samples from water bottles preserved with lugol) are currently stored for taxonomic analysis at the INRH.

#### *Zooplankton*

All samples for size-fractionated zooplankton biomass have now been analysed by the IMR. All formalin-preserved zooplankton samples from the Multinet and WP2 nets are kept for taxonomic analysis at the INRH. The qualitative digital images from the zooplankton net samples are stored on hard disks at IMR (see figure 3.8 for example).

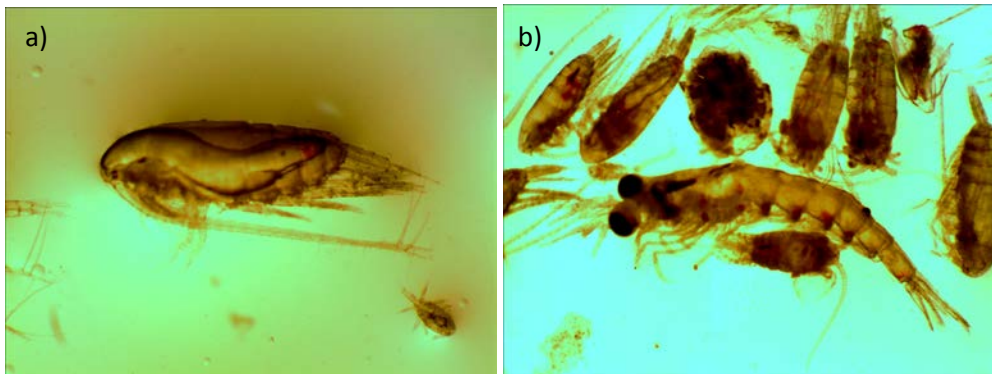


Figure 3.8. Examples of digital images taken of materials collected by the zooplankton net. Image a) illustrates a copepod (calanoid), taxonomic identification to species has not yet been done. Image b) contains both copepods and the largest individual is krill (Euphausid).

## ACOUSTIC ABUNDANCE AND DISTRIBUTION

The hydro acoustic survey covered the shelf and slope from roughly 20 m depth to 500 m bottom depth (1000 m depth on the ecosystem transects). Continuous acoustic recording and analysis were carried out throughout the survey to depths of 500 m. This survey was not a dedicated acoustic survey. Spacing between transects was 20 nm and very few pelagic trawls were made to verify acoustic targets. As a consequence there is a larger uncertainty around the distribution than during the previous acoustic biomass surveys with the Dr. Fridtjof Nansen in the region (until 2006), and it has been decided by the CCLME not to publish the biomass indexes as their accuracy is less than during the ordinary acoustic surveys in the region. This is especially a problem for the sardinella and sardine species as these have very patchy high density distributions, and also because length samples are biased as they effectively avoid the bottom trawl mainly used during this survey.

The data are presented for four main regions 1. Conakry – Cap Vert, 2. Cap Vert-Cap Blanc 3. Cap Blanc – Cap Juby and 4. Cap Juby – Cap Cantin.

Average  $s_A$  per acoustic category (5 nm values) and number of 5 nm values (#) per acoustic category recorded in each region during the survey can be found in Table 4. 0 values are excluded from the average.

### 1.18. Conakry– Cap Vert

Acoustic distribution and abundance was estimated for four species groups on the shelf between Conakry and Cap Vert. These were Sardinella, horse mackerel, Pel 1 and Pel 2.

#### *Sardinella*

Both *Sardinella aurita* and *S. maderensis* was abundant on the shelf between Conakry and Cap Vert (Figure 4.1). The distribution was generally from the coast to 100 m depth. Two low density distribution areas with mixed schools of both species were found on the Guinean shelf. Another medium density area stretched on the outer shelf from Guinea and across Guinea Bissau. As no sardinella was caught in trawl caches within this area the distribution is entirely based on the interpretation of sardinella-like features on the echograms. The density of sardinella increased northwards and relatively high density areas was found on the shelf between Casamance and The Gambia, this distribution area continued northwards to Cap Vert with decreasing density. *S. maderensis* and *S. aurita* mixed in this area with a slightly more inshore distribution for *S. maderensis*.

The length sample distribution suffers from lack of sardinella samples through the survey area. *S. aurita* catches gave one cohort with mean length around 13 cm, another cohort can be seen around 23 cm mixing with slightly larger fish with a peak around 27 cm. An expected cohort with peak between 15-20 cm is not visible. *S. maderensis* catches gave a few juvenile fish < 10 cm in the catches, the rest of the catches had a distribution around 19-30 cm. Although the resolution is poor two modal peaks at 19, 23 and 28 cm possibly corresponding to three different age cohorts are identified.

#### *Horse mackerel*

During previous acoustic surveys with Dr. Fridtjof Nansen in Senegal the horse mackerel biomass index has included *Trachurus trecae* and *Decapterus rhonchus*. However to keep consistency between regions during this survey and because this year also *T. trachurus* was common on the Senegalese shelf the horse mackerel estimate include only *T. trecae* and *T. trachurus*. *Decapterus rhonchus* was included as part of the Pel2 estimate. As the two trachurus species are very similar in

appearance and also had the same size range in this area they were carefully identified in every trawl.

The distribution of horse mackerel was found from the Casamance area and northwards to approximately 14°N. *T. Trecae* was found mainly inshore in this area while *T. Trachurus* had a slightly more offshore distribution and was found with highest concentrations midshelf around 50 m depth. It is unusual to find *T. Trachurus* on the shelf south of Dakar at this time of the year, and the frequency of occurrence in the trawl catches were higher than any previously recorded.

The length distributions for the two species were similar. *T. Capnsis* showed a small modal peak at 9 cm, and a size range of fish between 18-33 cm. *T. Trecae* showed similar length distribution with a few individuals caught between 9- 12 cm and 21-33 cm.

#### *Pel1*

The Pel 1 species (other clupeoids) was distributed in two small low density areas on the Casamance shelf and outside The Gambia around 20 m depth. Only one species formed part of this distribution area, namely *Ilisha africana*.

#### *Pel2*

A number of pelagic shelf species makes up the acoustic group Pel2 (Table 3). The distribution of these species was more or less continues in four low density areas between Conakry and Cap Vert with exception of a gap on the mid shelf where fish density was very low.

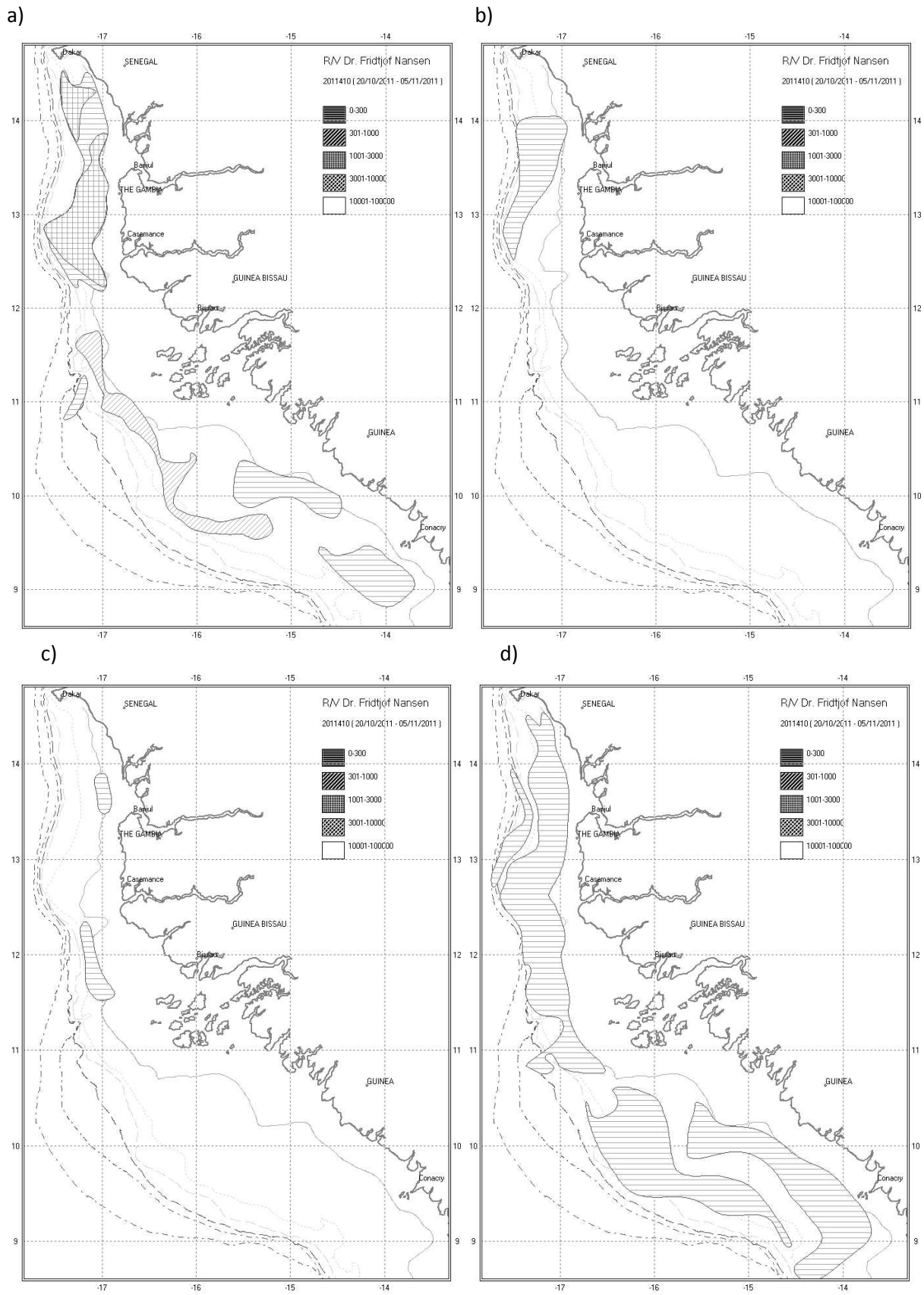


Figure 4.1. Distribution of acoustic backscattering of sardinella a), horse mackerel b), Pel 1 c) and Pel 2 d) from Conakry - Dakar

#### 1.19. Cap Vert- Cap Blanc

Acoustic distribution and abundance was estimated for five species groups on the shelf between Cap Vert and Tarfaya (Cap Juby). These were sardine, sardinella, horse mackerel, Pelagic 1 and Pelagic 2.

##### *Sardine*

Sardine (*Sardina pilchardus*) was only found in scattered recordings between Cap Timiris to Cap Blanc. The length measurements showed mainly adult sardine (20-25 cm) and some few juveniles.

##### *Sardinella*

Most of the sardinella observed in this region were recorded from about 50 nautical miles north of St. Louis and northwards to Cap Timiris (Figure 4.4). Some dense shoals were found. The distribution was as observed earlier years with *Sardinella maderensis* more inshore than *S. aurita*. Both juvenile and adult sardinella were found. Some few juvenile sardinella were also caught in the trawls between Cayar and St. Louis, but no clear recordings on the echo sounder.

##### *Anchovy*

A few weak shoals of anchovy was recorded west off Banc d'Arguin, but is not shown in the figures.

##### Horse mackerel

Horse mackerels, both *Trachurus trecae* and *T. trachurus*, were distributed in scattered recordings nearly continuously from Cap Vert to Cap Blanc. Dense recordings were only seen between Nouakchott and Cap Timiris.

##### *Pelagic 1*

*Ilisha africana* is the only species contributing to this distribution, found near St. Louis and near Nouakchott.

##### *Pelagic 2*

A number of pelagic shelf species makes up the Pelagic 2 group (Figure 4.4). The most common species were *Chloroscombrus chrysurus* and *Selene dorsalis*, found south off Cap Timiris and *Decapterus rhonchus* and *Scomber japonicus*, found scattered along in the whole region.

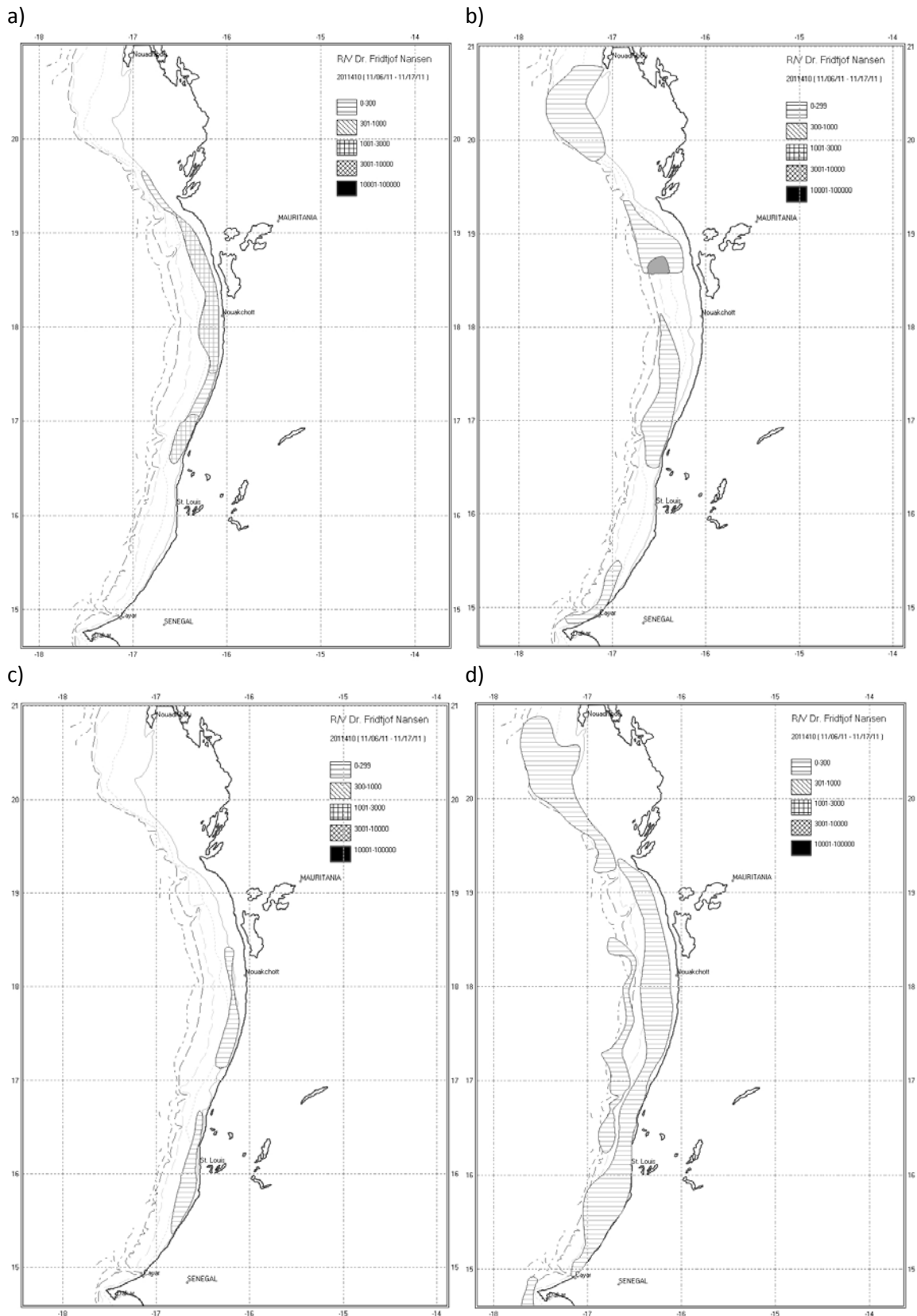


Figure 4.4. Distribution of acoustic backscattering of sardinella a), horse mackerel b), Pel 1 c) and Pel 2 d) from Cap Vert- Cap Blanc

## 1.20. Cap Blanc – Tarfaya (Cap Juby)

### *Sardine*

The sardine stock off Northwest Africa has been surveyed by local research vessels and Dr. Fridtjof Nansen for many years. The size of the stock was large in periods, but also collapsing to a very low level. During this survey the southern part of the sardine was found only in three patches between Cap Barbas and Dakhla. In the northern part, Laayoune area, only scattered recordings were observed. This confirms very well with the collapse of the stock reported from the regional pelagic survey.

Length samples showed that the sardine in south were mainly small (< 20 cm), while in the central patch both young (10-18 cm) and adult fish were caught, and the northern patch most fish were from 15 to 24 cm. In the Laayoune area mostly young sardine was found and some larger on the mid-shelf.

### *Sardinella*

*Sardinella aurita* was only found south of Dakhla, one inshore patch near Cap Barbas was consisting of juvenile fish (about 8-11 cm), and the fish in the two more offshore patches was larger, mostly between 12-22 cm. One dense shoal of *Sardinella aurita* was found between Cap Blanc and Cap Barbas, the pelagic showed adult fish between 26 and 36 cm.

### *Anchovy*

Anchovy was found between Cap Blanc and Cap Barbas, and between Laayoune and Cap Juby. The anchovy was rather small, mostly between 8 and 12 cm.

### *Horse mackerel*

*Trachurus trecae* was found between Cap Blanc to Dakhla while *T. trachurus* was found nearly all over the region. Generally the two species were young (less than 20 cm), but near the slope larger specimen above 20 cm were found.

### *Chub mackerel*

Chub mackerel (*Scomber japonicus*) was found scattered on the shelf from Cap Barbas to Laayoune.

### *Pelagic 1 and Pelagic 2*

Pelagic 1 and Pelagic 2 were only found very scattered in this region and are not presented.

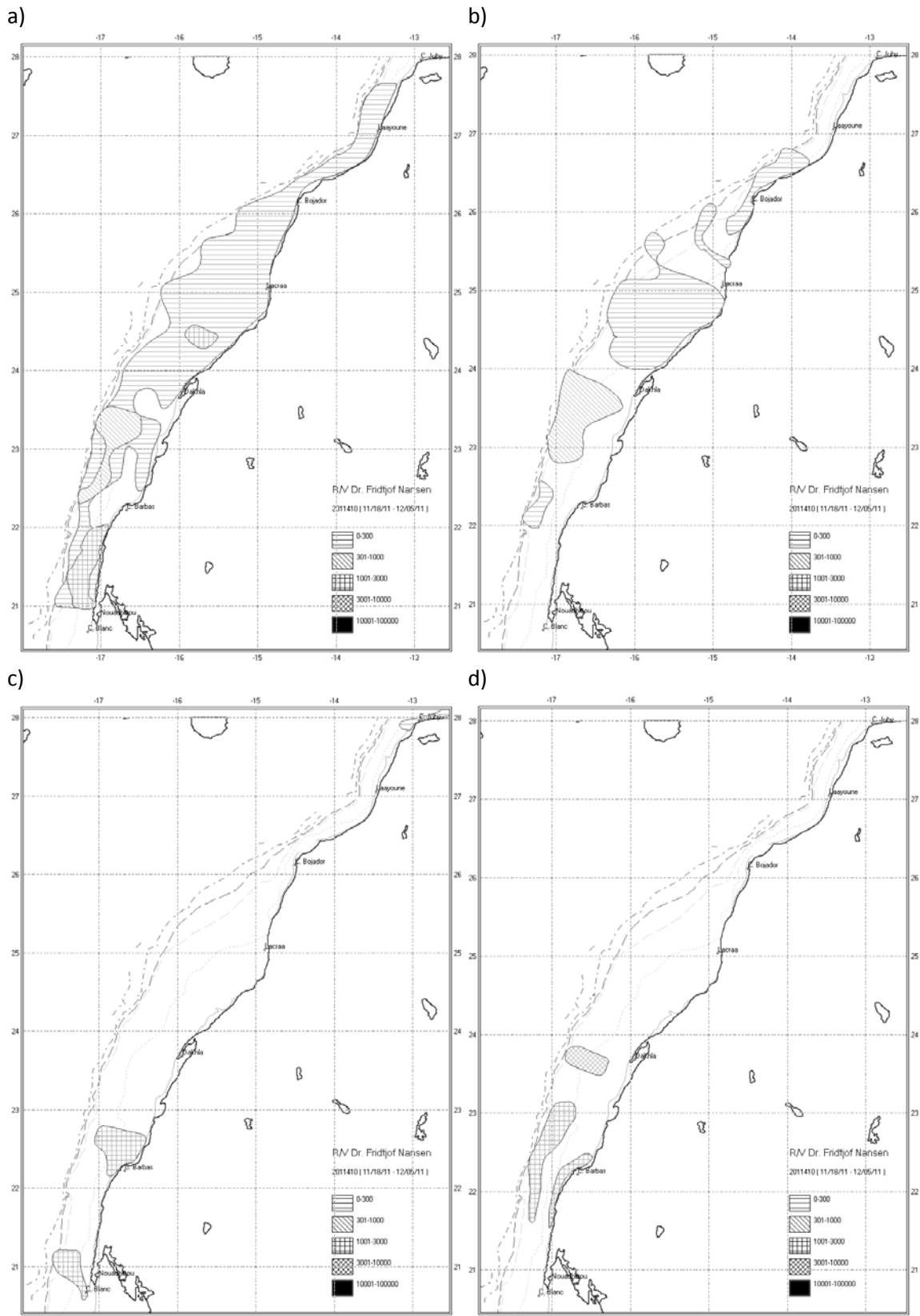


Figure 4.5. Distribution of acoustic backscattering of horse mackerel a), mackerel b), Anchovy c) and Sardine d) from Cap Blanc – Cap Juby



### 1.21. Cap Juby – Casablanca

#### *Sardine*

Also in this region the recordings of sardine were scattered, no dense concentrations. Most length samples showed young sardine, generally smaller than 20 cm.

#### *Sardinella*

No sardinella was recorded in this region.

#### *Anchovy*

Anchovy was found mostly in scattered patches from Tarfaya to Casablanca, only near Safi dense shoals were recorded. Lengths were mostly less than 15 cm.

#### *Horse mackerel*

Horse mackerel (*Trachurus trachurus*) was recorded continuously along the coast to Casablanca. Recordings were scattered in his region. Most of the horse mackerel was juvenile and young fish less than about 20 cm. Larger specimen were occasionally found north off Agadir area.

#### *Chub mackerel*

Chub mackerel was found scattered along the coast in most of the region. Most of the catches consisted of mainly juvenile fish. Some of the chub mackerel were up to 30 cm.

Table 4. Average  $s_A$  per acoustic category (5 nm values) and number of 5 nm values (#) per acoustic category recorded in each region during the survey. 0 values are excluded from the average.

Region		MAKRE	HORSE	SARDP	SARD	PEL1	PEL2	ANSJO	ODFI	BRAC	PLANK	MESFI	TOTAL
Conacry-Cap Vert	average	-	109	-	757	136	39	-	25	250	2626	216	2926
	#	0	28	0	99	14	186	0	146	35	350	25	350
Cap vert-Cap Blanc	average	-	490	1487	1371	196	220	1669	28	18	3412	236	4036
	#	0	71	14	33	20	124	8	169	2	244	9	244
Cap Blanc-Cap Juby	average	614	455	1480	2252	2737	554	1157	293	100	1374	1350	3350
	#	105	218	53	32	15	22	25	281	1	361	182	363
Cap Juby-Casablanca	average	315	118	693	-	95	-	835	29	-	1007	831	2133
	#	121	119	43	0	33	0	39	221	0	280	230	280

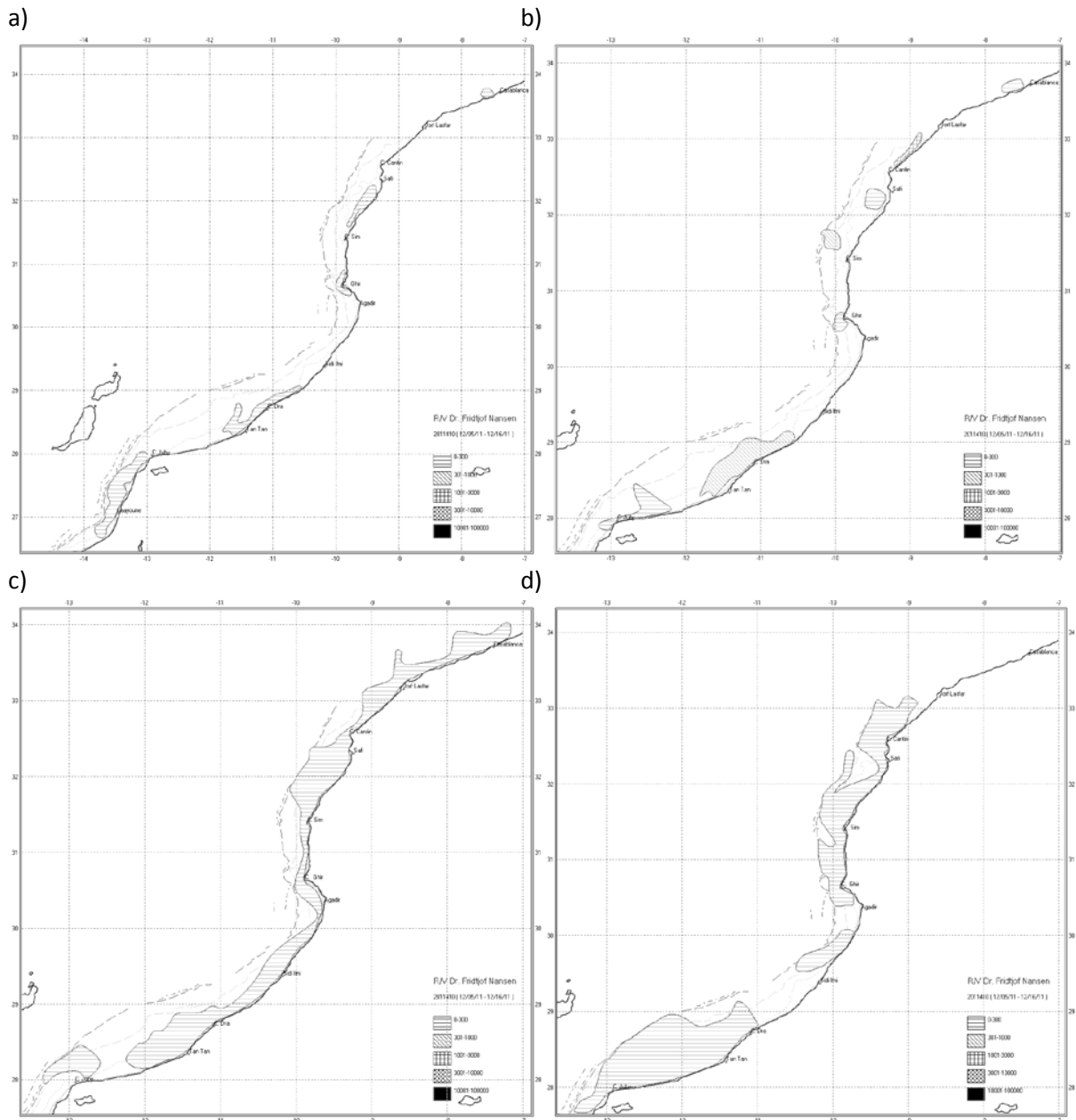


Figure 4.5. Distribution of acoustic backscattering of sardine a), anchovy b), horse mackerel c) and mackerel d) from Cap Jubu – Casablanca

## SWEPT AREA ABUNDANCE AND DISTRIBUTION

The trawl survey covered the shelf and slope from 20 m to 500 m bottom depth. Catch rates are presented per region and depth strata for main groups (Demersal, Pelagic, Sharks, Shrimps, Cephalopods and other species) and the subdivision demersal groups (Croakers, Groupers, Grunts, Seabream, Snappers, Hake and others) in Table 6-7. The group of other species are considered non-commercial and comprises all species not defined within any of the other groups. Four depth strata were defined prior to the survey, 0 -50 m depth (inner shelf), 50 - 100 m depth (outer shelf), 100 - 200 m depth (upper slope) and 200 – 500 m depth (lower slope). The trawl positions are mapped in Figures 1.1-1.4, station information and catch by species are presented in Annex I.

Biomass indexes are presented per four main regions 1. Conakry – Cap Vert, 2. Cap Vert-Cap Blanc, 3. Cap Blanc – Cap Jubu and 4. Cap Jubu – Cap Cantin but analyses of catch rates was broken down to finer resolution as this was an expressed wish from the countries in the southern part of the region.

### 1.22. Analyses of catch rates

#### Conakry – Cap Vert

##### Guinea

A total of 22 valid trawl stations were analysed in Guinea, of these 8 stations were between 0 -50 m depth, 5 between 50 - 100 m depth, 5 between 100 - 200 m depth and 4 between 200 – 500 m. Table 6 shows the catch rates of main groups, while table 7 shows catch rate for the main demersal species groups.

#### Main groups

The average catch rate in the depth region between 0 -50 m was 137 kg/h. The “other” group was the most dominant with average catch rates of 69 kg/h, this was followed by the demersal group with average catch rates of 42 kg/h. The pelagic group had average catch rates of 20.5 kg/h. The groups of cephalopods, shrimps and sharks showed only small catches.

Between 50-100 m the catch rates decreased to 102 kg/h. The most abundant group was the group of “other” species with 91.7% of the total (93.5 kg/h). The species *Antigonia capros* dominated in the catches. The other groups had low catch rates.

The catch rates showed a tenfold increase at the upper slope with catch rates of 1222 kg/h. The “other” category still showed 90.9% of the total catches. Within this depth region it was *Erythrocles monody* that dominated.

Trawls on the lower slope gave an average catch rate of 649 kg/h. Shrimps, especially the *Nematocarcinus rotundus* was abundant with catch rates of 157 kg/h, sharks had catch rates of 151 kg/h while the group of other species had 324 kg/h. *Chlorophthalmus atlanticus* and *Antigonia capros* dominated this group.

#### Demersal groups

Table 7 shows catch rate for the main demersal species groups. Seabream and especially *Pagrus caeruleostictus* dominated among the demersal species on the inner shelf. No demersal species were found in high abundance on the outer shelf although a few seabreams could also be found also here. At the upper slope seabreams showed average catch rates of 63 kg/h, *Dentex angolensis* dominated within this depth region. At the lower slope few valuable demersal species were found although a few hake, *Merluccius polli* were found. The average catch rate was 1 kg/h.

Table 6. Catch rates (kg/hour), mean values, standard dev. And percentage of main groups caught in valid swept area bottom trawl hauls. Guinea. : a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
1	25.5	1	56	33.8		0.7	99.9	191.4
4	48	0.3	130	67.6		0.1	189.3	387.4
7	34	7.2	39.6	5.3			91.1	143.2
14	34	12.7	81.8	8.1			71.1	173.6
15	26	1.9	19.9	15.8			27.3	64.9
18	46	1.9	0.3	2.7	4.6		23.5	33.1
27	47.5	2		4.8			43	49.8
28	30	1.3	10.1	26.2			13.3	50.9
Mean	36.4	3.5	42.2	20.5	0.6	0.1	69.8	136.8
Std dev	9.5	4.2	45.6	22	1.6	0.2	58	118.4
%		2.6	30.8	15.0	0.4	0.1	51.0	100.0

b)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
2	58.5	0.4					243.3	243.7
3	90	0.5			28.6		131.7	160.7
8	50.5	0.3					33.8	34.1
13	83	0.3	4.6	0.1			48.6	53.6
19	60.5	6.7	0.4	0.6			10.2	17.9
Mean	68.5	1.6	1	0.1	5.7		93.5	102
Std dev	17	2.8	2	0.3	12.8		95.4	96.9
%		1.6	1.0	0.1	5.6		91.7	100.0

c)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
9	112.5		51.1		10.3		157.9	219.3
12	121.5	3.5	32.1	8.5			304.7	348.8
20	108		241.3	57.7	99.7		3159.6	3558.2
24	182	20.7	3.9				238.5	263.2
29	135.5	14.8	5.2		4.6		1695.3	1720
Mean	131.9	7.8	66.7	13.2	22.9		1111.2	1221.9
Std dev	29.9	9.4	99.6	25.1	43.1		1309.4	1448.6
%		0.6	5.5	1.1	1.9		90.9	100.0

d)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
10	236	6.3			2.7		26.9	35.8
11	337	15.1		20	34.5		416.5	486.1
21	218	7.8	0.4		558.4		331.2	897.9
23	455	11.5	3.8		9.3	628.3	521.7	1174.5
Mean	311.5	10.2	1	5	151.2	157.1	324.1	648.6
Std dev	109.1	3.9	1.8	10	271.8	314.1	212.9	496.8
%		1.6	0.2	0.8	23.3	24.2	50.0	100.0

Table 7. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. Guinea. : a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear depth	Croakers	Groupers	Grunts	Seabream	Snappers	Hake	Other	Total
1	25.5			1.5	4			185.9	191.4
4	48		16.3		113.7			257.4	387.4
7	34				39.6			103.6	143.2
14	34		11.5		70.3			91.9	173.6
15	26				19.9			44.9	64.9
18	46							33.1	33.1
27	47.5							49.8	49.8
28	30				10.1			40.9	50.9
Mean	36.4		3.5	0.2	32.2			100.9	136.8
Std dev	9.5		6.6	0.5	40.8			80.9	118.4
%			2.6	0.1	23.5			73.8	100.0

b)

Station	Gear depth	Croakers	Groupers	Grunts	Seabream	Snappers	Hake	Other	Total
2	58.5							243.7	243.7
3	90							160.7	160.7
8	50.5							34.1	34.1
13	83				4.6			49	53.6
19	60.5				0.4			17.5	17.9
Mean	68.5				1			101	102
Std dev	17				2			97.6	96.9
%					1.0			99.0	100.0

c)

Station	Gear depth	Croakers	Groupers	Grunts	Seabream	Snappers	Hake	Other	Total
9	112.5	2.4			48			168.9	219.3
12	121.5		0.3		31.7			316.7	348.8
20	108				227.4			3330.8	3558.2
24	182				3.9			259.3	263.2
29	135.5				5.2			1714.8	1720
Mean	131.9	0.5	0.1		63.3			1158.1	1221.9
Std dev	29.9	1.1	0.1		93.6			1371.6	1448.6
%			0.0		5.2			94.8	100.0

d)

Station	Gear depth	Croakers	Groupers	Grunts	Seabream	Snappers	Hake	Other	Total
10	236							35.8	35.8
11	337							486.1	486.1
21	218						0.4	897.5	897.9
23	455						3.8	1170.7	1174.5
Mean	311.5						1	647.5	648.6
Std dev	109.1						1.8	495.5	496.8
%							0.2	99.8	100.0

### Guinea Bissau

A total of 25 valid trawl stations were analysed in Guinea Bissau, of these 7 stations were between 0 - 50 m depth, 6 between 50 - 100 m depth, 7 between 100 - 200 m depth and 5 between 200 – 500 m. Table 8 shows the catch rates of main groups, while table 9 shows catch rate for the main demersal species groups.

#### Main groups

The average catch rate at the inner shelf was 255 kg/h. Of this pelagic species were the more important with average catch rates of 137 kg/h, *Ilisha africana* and *Trichiurus lepturus* dominated the catches. Demersal species had catch rates of 42 kg/h, especially *Pomadasys jubelini*, while the “other” group had catch rates of 74 kg/h, notably the gastropod *Cymbium sp.* was part of this group and were frequently caught in the area.

At the outer shelf the average catch rate was 187 kg/h. Of this demersal species gave 30 kg/h, cephalopods 6 kg/h and pelagic species 5 kg/h. The group of “other” non commercial species had catch rates of 146 kg/h. Dominant species were jellyfish, *Chromis cadenati*, *Dactylopterus volitans* and *Trachinus armatus*. None of these are commercial species.

The upper slope showed average catch rate of 424 kg/h. With the exception of the non-commercial species that gave 252 kg/h sharks were the most abundant group in this depth region with average catches of 60 kg/h, especially one large catch of *Mustelus mustelus* accounted for this. Demersal species had average catch rates of 48 kg/h, cephalopods had catch rates of 36 kg/h, *Illex coindetii* was dominant, while 28 kg/h of pelagic species were caught. The dominant species in this group were *Trachurus trecae* and *Trichiurus lepturus*. The group of Shrimps had very low catches.

At the lower slope average catch rates were 255 kg/h. In this depth region demersal dominated with 33 kg/h, followed by pelagic species, 27 kg/h, mainly *Trichiurus lepturus*, cephalopods, 10 kg/h, mainly *Illex coindetii*, and sharks, 8 kg/h. The “other” group had average catch rates of 176 kg/h. In this group *Synagrops microlepis* and *Chlorophthalmus atlanticus* were most abundant.

#### Demersal groups

Of the demersal groups at the Inner shelf it was grunts that had the highest catch rates of 15 kg/h, *Pomadasys jubelini* was dominant. Croakers followed with 10 kg/h while both seabreams and groupers had catch rates of <1 kg/h.

At the outer shelf croakers showed average catches of 8 kg/h, groupers 4 kg/h, seabreams 3 kg/h and grunts 1 kg/h.

Further from the coast, at the upper slope seabreams were the only abundant of the demersal groups (32 kg/h) and especially *Dentex angolensis* was dominant. A few groupers (2 kg/h) and croakers (2 kg/h) were caught, but catch rates of these were low.

In deeper waters, at the lower slope, hake, *Merluccius polli*, was the only commercially interesting species with 32 kg/h. Croakers were caught in low amounts (<1 kg/h).

Table 8. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Guinea Bissau: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
37	48.5	1.1	2.1	51.1			8.2	62.5
46	27	1.2	13.4	32.5			26.7	73.8
50	41	6.5	1.6	17.7			13.5	39.3
51	40	1.1	2.8	23			23.8	50.7
55	49.5	4.1	99	49.5		3.6	69.6	225.8
56	27.5		8.4	231.6			273	513
57	26		166.6	551.2			101.1	819
Mean	37.1	2	42	136.7		0.5	73.7	254.9
Std dev	10.2	2.4	65.2	197.4		1.4	94.1	301
%		0.8	16.5	53.6		0.2	28.9	100.0

b)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
33	62.5	14.9	0.2	0.2			55.4	70.7
38	64	10.1		0.5			171.1	181.7
45	51		8				6.1	14
49	61	9.8	0.3	2.6			44	56.8
52	72	0.5	121.7	16.7			583.9	722.9
58	71.5		51.7	9		1.1	12.4	74.3
Mean	63.7	5.9	30.3	4.8		0.2	145.5	186.7
Std dev	7.7	6.5	49.1	6.7		0.5	222.9	268.4
%		3.2	16.2	2.6		0.1	77.9	100.0

c)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
32	168	12.6	29.6	8.9	349.5		411.7	812.3
39	149.5	11.4	0.6	39.1	6.7		105.9	163.7
44	101.5	1.8	7.6	15	4.4		49.4	78.3
48	171.5	172.5	54.9		21.5		522.5	771.4
53	109		221.4				388.4	609.8
54	109.5	51.4	5.6	3	23.1		130.2	213.2
59	103.5	3.9	12.8	128.7	13.1	10.7	153	322.2
Mean	130.4	36.2	47.5	27.8	59.7	1.5	251.6	424.4
Std dev	31.4	62.6	78.9	46.5	128	4.1	184.5	302.2
%		8.5	11.2	6.6	14.1	0.4	59.3	100.0

d)

Station	Gear							Total
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	
31	476.5	7.7	118.3	52	0.3		85.5	263.8
40	224	14.6	23.7	19.4	12		203.4	273
42	483	2.9	10.1	2.2	22.8		99.4	137.3
43	208	13.7	9.7	63	6.5	0.8	359.8	453.6
47	358	10.7	3.8				133.1	147.6
Mean	349.9	9.9	33.1	27.3	8.3	0.2	176.2	255.1
Std dev	132.1	4.8	48.2	28.8	9.5	0.4	112.3	127.7
%		3.9	13.0	10.7	3.3	0.1	69.1	100.0

Table 9. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. Guinea Bissau: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear							Total
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	
37	48.5							62.5
46	27			9.1		3.9		60.7
50	41					0.2		39.1
51	40		1.6			1.2		47.9
55	49.5	1.2	2.9	75.5				146.2
56	27.5	5.1						507.9
57	26	62.4		21.7				734.9
Mean	37.1	9.8	0.6	15.2		0.8		228.4
Std dev	10.2	23.3	1.2	27.8		1.5		278.5
%		3.8	0.2	6.0		0.3		89.6

b)

Station	Gear							Total
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	
33	62.5					0.2		70.5
38	64							181.7
45	51		8					6.1
49	61					0.3		56.5
52	72		15.8	6.6		16.7		683.7
58	71.5	46.1						28.1
Mean	63.7	7.7	4	1.1		2.9		171.1
Std dev	7.7	18.8	6.6	2.7		6.8		258.4
%		4.1	2.1	0.6		1.6		91.6



c)

Station	Gear								
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
32	168					4.1		808.1	812.3
39	149.5					0.6		163.1	163.7
44	101.5		4.2			3.5		70.7	78.3
48	171.5	9.9				20.9		740.6	771.4
53	109		12.2			191.2		406.3	609.8
54	109.5		0.4			1.6		211.2	213.2
59	103.5	2.5						319.7	322.2
Mean	130.4	1.8	2.4			31.7		388.5	424.4
Std dev	31.4	3.7	4.6			70.7		285.3	302.2
%		0.4	0.6			7.5		91.5	100.0

d)

Station	Gear								
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
31	476.5				118.3			145.5	263.8
40	224				23.7			249.3	273
42	483				10.1			127.3	137.3
43	208	4.6			5.1			443.9	453.6
47	358				3.8			143.9	147.6
Mean	349.9	0.9			32.2			222	255.1
Std dev	132.1	2.1			48.8			133.2	127.7
%		0.4			12.6			87.0	100.0

#### *Casamance-Cap Vert (Excluding The Gambia)*

Trawling was difficult in parts of the slope area between Casamance and Dakar and therefore had poorer trawl coverage than preferred. A total of 20 valid swept area trawls were made between 20-500 m depth excluding trawls within The Gambia. Of these 7 trawls were made on the inner shelf, 5 on the outer shelf, 3 on the upper slope and 5 on the deep slope. Two trawls were made at depths >500 m.

*Trachurus trachurus* was recorded in all together six trawls south of Cap Vert during this survey. This is quite unusual (only 7 stations has been recorded before in the history of the Nansen program) and one station was the second southernmost record onboard.

#### Main groups

The total average catch between 20-50 m depth were 481 kg/h. Demersal species gave the highest catch rates of 259 kg/h. Pelagic species gave average catches of 153 kg/h while cephalopods had average catches of 2 kg/h. The group of other species contributed 67 kg/h to the overall catch. No sharks or shrimps were caught within this depth region.

At the outer shelf at depths between 50-100 m the overall average catch was 633 kg/h. Of this demersal species were the most abundant with average catches of 416 kg/h, pelagic species gave average catch rates of 122 kg/h while 4 kg/h of cephalopods and 2 kg/h of shrimps were caught. The "other" species had average catches of 90 kg/h.

Between 100-200 m 162 kg/h were caught on average. Demersal species accounted for 16 kg/h, while cephalopods showed average catch rates of 13 kg/h. Sharks gave average catches of 4 kg/h

while both pelagic species and shrimps gave catches of <1 kg/h. The group of “other” species had average catches of 127 kg/h.

At the lower slope the average catch was 417 kg/h. Of this demersal species had the highest catch rate with 81 kg/h, cephalopods gave average catches of 18 kg/h, sharks 16 kg/h, shrimps 5 kg/h and pelagic species <1 kg/h. The group of other “non-commercial” species had average catches of 296 kg/h.

#### Demersal groups

At the inner shelf grunts was the dominant of the demersal species groups with average catches of 95 kg/h. Seabreams followed with 83 kg/h, while croakers and groupers both gave average catches of 7 kg/h.

The outer shelf showed relatively good catches of demersal species. Seabreams gave an average catch of 131 kg/h followed closely by grunts with 130 kg/h. Snappers had average catches of 26 kg/h. This was due to one single catch of w

Croakers showed catch rates of 16 kg/h groupers 5 kg/h and hake <1 kg/h

Catch rates at the upper slope gave average catches of 4 kg/h of seabreams, Croakers and hake both showed catches of 1 kg/h while groupers had catch rates of >1 kg/h.

Hake was the dominant demersal species at the lower slope with 59 kg/h, a few grunts were caught (<1 kg/h). No other commercially important demersal species were found.

Table 10. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Casamance-Cap Vert excluding The Gambia. : a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m a)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
64	31.5	1.2	68.8	146.8			19.1	236
65	29	0.5	127.8	43.7			93.6	265.5
66	46	3.2	87	162.9			97.2	350.4
69	37		548.1	104.2			125	777.3
76	28		298.8	315.1			10.8	624.6
86	36.5	6.4	573.9	117.5			95.8	793.5
87	29.5	5	106.3	182.2			26.1	319.7
Mean	33.9	2.3	258.7	153.2			66.8	481
Std dev	6.4	2.6	220.1	84.5			46.4	243.5
%		0.5	53.8	31.9			13.9	100.0

b)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
63	68		440.3	104.9		9	24.4	578.7
68	67	13.1	30.9	198.7			153.5	396.3
77	54.5		711.4	172.2			100.2	983.8
85	86.5	4.9	5.2	12.9			9.2	32.3
88	51		889.9	119.3			162.6	1171.9
Mean	65.4	3.6	415.6	121.6		1.8	90	632.6
Std dev	14	5.7	396.7	71.8		4	71.2	456.4
%		0.6	65.7	19.2		0.3	14.2	100.0

c)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
62	105.5	2.9	30.1		9.4	1.5	32.6	76.5
80	152	6.2	14.8	1.3	3.4		240.4	266
84	159.5	31.2	2.3				108.4	141.9
Mean	139	13.4	15.7	0.5	4.3	0.5	127.1	161.5
Std dev	29.3	15.5	13.9	0.8	4.8	0.9	105.2	96.3
%		8.3	9.7	0.3	2.7	0.3	78.7	100.0

d)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
60	482		172	4.3	25.1	21.1	130.3	352.8
67	459	11.8	129.7		41.4		212	394.8
78	444	6.1	33.2		7.9	4.3	154.7	206.1
81	273.5	13	61.2		1.8		279.4	355.4
83	222.5	59.5	10.4		5.4		702.3	777.5
Mean	376.2	18.1	81.3	0.9	16.3	5.1	295.7	417.3
Std dev	119.2	23.7	67.7	1.9	16.6	9.1	234.4	213.8
%		4.3	19.5	0.2	3.9	1.2	70.9	100.0

Table 11. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. Casamance-Cap Vert excluding The Gambia: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m a)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
64	31.5	39.5	2.8	3.4				190.4	236
65	29			37.8		1.8		225.9	265.5
66	46		11.7	55		2		281.6	350.4
69	37	6.2	8.4	164.3		83.3		515.1	777.3
76	28		28	172.1		73.8		350.7	624.6
86	36.5			148.7		401.1		243.8	793.5
87	29.5			86.7		17.2		215.8	319.7
Mean	33.9	6.5	7.3	95.4		82.7		289	481
Std dev	6.4	14.7	10.2	67		144.7		112.6	243.5
%		1.4	1.5	19.8		17.2		60.1	100.0

b)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
63	68	63	27			5.3		483.4	578.7
68	67	7.7				23.2		365.4	396.3
77	54.5	7.6		345.6		219.1	127.7	283.8	983.8
85	86.5				0.5	1.1		30.7	32.3
88	51			303.4		404.1		464.4	1171.9
Mean	65.4	15.7	5.4	129.8	0.1	130.6	25.5	325.5	632.6
Std dev	14	26.7	12.1	178.4	0.2	177.9	57.1	183.3	456.4
%		2.5	0.9	20.5	0.0	20.6	4.0	51.5	100.0

c)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
62	105.5	3.8	1		1	3.8		67	76.5
80	152				8.4			257.6	266
84	159.5				2.3			139.6	141.9
Mean	139	1.3	0.3		3.9	1.3		154.7	161.5
Std dev	29.3	2.2	0.6		4	2.2		96.2	96.3
%		0.8	0.2		2.4	0.8		95.8	100.0

d)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
60	482				165.7			187.1	352.8
67	459				47.8			347	394.8
78	444			4.4	28.8			172.9	206.1
81	273.5				50.4			305	355.4
83	222.5				0			777.5	777.5
Mean	376.2			0.9	58.5			357.9	417.3
Std dev	119.2			2	63.2			246.1	213.8
%				0.2	14.0			85.8	100.0

### *The Gambia*

Upon request from Gambian scientists The Gambia was treated as a separate area in our observations of catch rates. Only 5 valid swept area trawl stations were conducted within the region. Of these two were between 20-50 m depth, two between 50-100 m depth and one between 100-200 m depth. The slope off The Gambia is steep and it proved difficult to find adequate trawl bottom within the area. One trawl at the lower slope was aborted after only few minutes. The catch from this was not used in any further analyses.

### Main groups

The average catch rate on the inner shelf was relatively high with 1966 kg/h. The demersal group was the dominating with 1330 kg/h or 68% of the total catch. Pelagic species had average catches of 375 kg/h. *Chloroscombrus chrysurus*, *Decapterus rhonchus* and *Trachurus trecae* were the most common. The group of other species gave catches of 260 kg/h. Cephalopods, Sharks or shrimps were not caught within this depth zone.

At the outer shelf the overall catch rates decreased to 613 kg/h. The pelagic group dominated with 399 kg/h. Notably, *Trachurus trachurus* who is normally distributed further north during this time of the year was made in this region, in addition good catches were made of *Decapterus rhonchus*. The demersal group had catch rates of 155 kg/h. Shrimps were negligible in the catches while no sharks and cephalopods were caught.

Only one station was sampled between 100-200 m. This station gave a catch rate of 478 kg/h. Pelagic species gave 303 kg/h while demersal species gave a catch of 15 kg/h and cephalopods 9 kg/h.

#### Demersal groups

Grunts dominated the catches of demersal species on the inner shelf with 388 kg/h followed by Seabreams with 83 kg/h and groupers with 7 kg/h. *Brachydeuterus auritus* was the most dominant grunt in the depth region while *Pagrus caeruleostictus* was the most dominant seabream.

At the outer shelf seabreams were the most dominant with 134 kg/h. Especially *Pagellus bellottii* and *Pagrus caeruleostictus* were frequent in the catches. Grunts had average catches of 12 kg/h and croakers 6 kg/h.

At the upper slope the single trawl station gave 12 kg/h of hake, *M. polli*, while seabreams gave a catch of 3 kg/h.

Table 12. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. The Gambia. : a) 20–50 m, b): 50-100 m, c): 100-200 m

a)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
70	23.5		1076.3	133.6			128.2	1338.2
75	31.5		1584.5	616.9			392.5	2593.9
Mean	27.5		1330.4	375.2			260.4	1966.1
Std dev	5.7		359.3	341.7			186.9	888
%			67.7	19.1			13.2	100.0

b)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
71	52		165.6	711.6		0.6	70.4	948.1
74	50.5		143.6	86.5			46.7	276.9
Mean	51.2		154.6	399.1		0.3	58.6	612.5
Std dev	1.1		15.5	442		0.4	16.7	474.6
%			25.2	65.2			9.6	100.0

c)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
73	108	9.3	14.6	303.4			151	478.3

Table 13. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. The Gambia: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
70	23.5		12.9	216.5		147.9		960.8	1338.2
75	31.5			559.9		18.6		2015.4	2593.9
Mean	27.5		6.5	388.2		83.3		1488.1	1966.1
Std dev	5.7		9.1	242.8		91.4		745.7	888
%			0.3	19.7		4.2		75.7	100.0

b)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
71	52	12.6		2.7		147.4		785.4	948.1
74	50.5			20.5		121.6		134.8	276.9
Mean	51.2	6.3		11.6		134.5		460.1	612.5
Std dev	1.1	8.9		12.6		18.2		460.1	474.6
%		1.0		1.9		22.0		75.1	100.0

c)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
73	108				11.7	2.7		463.8	478.3

#### Cap Vert-Cap Blanc

##### *Cap Vert- St. Louis*

A total of 18 valid swept area trawls were made between 20 - 500 m depth on altogether 5 transects between Cap Vert and St. Louis. Of these 5 trawls were made on the inner shelf, 4 on the outer shelf, 5 on the upper slope and 4 on the deep slope. No trawls were made deeper than 500 m. Catch rates increased considerably in this area compared to the shelf between Casamance and Cap Vert.

#### Main groups

The total average catch between 20 - 50 m depth were 900 kg/h. Demersal species were the most dominant with average catches of 290 kg/h followed by pelagic species with catches of 50 kg/h. Among the pelagic species *Trichiurus lepturus* and *Selene dorsalis* dominated. Shrimps and cephalopods were not important in the catches with 2 kg/h and <1 kg/h respectively. No sharks were caught. The “other” group had an average catch of 558 kg/h. This group contained a highly diverse group of species. The most dominant being *Galeoides decadactylus*, Jellyfish *Pentaneumus quinquarius*, *Cynoponticus ferox* and *Cynoglossus monody*.

At the outer shelf at depths between 50 - 100 m the average catch was 237 kg/h, a decline compared with the inner shelf. Demersal species was the most dominant also in this depth region with 66 kg/h. Pelagic species had average catch rates of 63 kg/h, and dominated by, *Trichiurus lepturus* which was

the single most dominant of all species in this depth region, and *Trachurus trachurus*. Cephalopods increased in abundance from the shallow area and had average catches of 12 kg/h. The commercially very important *Octopus vulgaris* dominated the catch of this group. Shrimps, particularly *Penaeus notialis*, also became considerably more important with an average catch of 10 kg/h. The group of "other" species gave an average catch of 88 kg/h. *Mystriophis rostellatus* and *Saurida brasiliensis* were the most abundant. No catches of sharks were made.

The catch on the upper slope increased again to 502 kg/h. Of this pelagic species were dominating with 236 kg/h, mainly due to one big catch of *Trachurus trecae*, a few *Scomber japonicus* were also caught in this region. Demersal species had average catches of 63 kg/h while cephalopods gave 14 kg/h. The dominant cephalopods in the depth region were *Illex coindetii* and *Octopus vulgaris*. Sharks had catch rates of 4 kg/h. No shrimps were caught. The "other" non commercial species had average catches of 185 kg/h. In this group the most important species in terms of biomass was *Aulopus cadenati*, *Antigonia capros* and *Pontinus kuhlii*.

At the lower slope the average catch was 687 kg/h. Shrimps were the most important species group in this depth region and had relatively good catch rates with 121 kg/h on average. The two dominant shrimp species were *Nematocarcinus africanus* and *Parapenaeus longirostris*. Demersal species had average catches of 89 kg/h. Cephalopods had similar catch size to the upper slope with 15 kg/h. A few sharks were caught (5 kg/h) while pelagic species were unimportant in the catches with <1 kg/h. The "Other" group gave 459 kg/h. In this group *Chlorophthalmus atlanticus*, *Zenopsis conchifer* and *Scorpaena stephanica* were the most important.

#### Demersal groups

Relatively good catches of demersal species were made on the inner shelf. Croakers gave average catch rates of 173 kg/h. The group was dominated by *Pteroscion peli* and *Pseudolithus senegalensis*. Grunts yielded average catches of 45 kg/h, dominated especially by *Pomadasys peroteti*. Seabreams also had relatively good catch rates in this depth region with 42 kg/h. *Pagellus bellottii*, *Pomadasys jubelini* and *Pagrus caeruleostictus* were the three most dominant species in this group. Groupers gave average catch rates of 2 kg/h.

Also at the outer shelf croakers was the most dominant of the demersal species group with 15kg/h. *Pteroscion peli* dominated in this region as well as further inshore. Grunts, especially *Brachydeuterus auritus* and *Pomadasys peroteti*, had average catch rates of 12 kg/h, hake, *Merluccius polli*, had average catches of 7 kg/h while seabreams, especially *Dentex angolensis*, gave a catch rate of 3 kg/h.

At the upper slope Hake, *Merluccius polli* and to a lesser extent *M. senegalensis*, dominated the catches with 52 kg/h. Only small catches (<1 kg/h) were made of seabreams and groupers. No other species groups were important in the catches.

Only hake was caught among the commercially important species on the deep slope. The catch rate was 85 kg/h. Both *Merluccius polli* and *M. senegalensis* were present in the catches.



Table 14. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Cap Vert- St. Louis: a) 20–50 m, b): 50-100 m, c): 100-200 m

a)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
91	35		136.6	18.5			180.5	335.6
92	45.5	1.7	236.7	37			272.5	547.9
98	23		368	51.3		10.9	771.6	1201.8
99	26		475	88.5			1414.8	1978.4
106	36		235	54.5			148.3	437.7
Mean	33.1	0.3	290.2	50		2.2	557.5	900.3
Std dev	8.9	0.7	132	25.8		4.9	541.2	691.1
%			32.2	5.6		0.2	61.9	100.0

b)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
93	98.5	16	31	73.5			78.5	199
97	51	16.4	124.4	40.6		39.2	222	442.5
100	60	6.5	92.2	5.4			16.1	120.2
105	75.5	8.2	14.7	130.9			34	187.8
Mean	71.2	11.8	65.6	62.6		9.8	87.7	237.4
Std dev	20.8	5.2	51.5	53.3		19.6	93.3	141.1
%		5.0	27.6	26.4		4.1	36.9	100.0

c)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
90	163.5	12.8	66.9		21.5		263	364.2
94	175.5	36.9	107.3	7.3			140.3	291.7
96	106.5	0.5		1136.7			6.5	1143.6
101	137.5	13	58.1	38			214.1	323.1
104	147	4.7	82.2				300.3	387.2
Mean	146	13.6	62.9	236.4	4.3		184.8	502
Std dev	26.5	14.1	39.8	503.5	9.6		116.3	360.6
%		2.7	12.5	47.1	0.9		36.8	100.0

d)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
89	413.5	15.4	43.6		0.5		601.9	661.4
95	495.5	5.3	23.5			179.4	108.4	316.6
102	239.5	34.6	220.3	0.2		129.3	821.8	1206.2
103	425.5	3.2	67.9		20	175.5	303.5	570
Mean	393.5	14.6	88.8	0.1	5.1	121	458.9	688.6
Std dev	108.8	14.4	89.5	0.1	9.9	83.8	315.8	374.7
%		2.1	12.9	0.0	0.7	17.6	66.6	100.0

Table 15. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. Cap Vert- St. Louis: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
91	35		11.6	21.5		103.4		199	335.6
92	45.5	3		118.2		108.6		318.1	547.9
98	23	323.2		10.9				867.7	1201.8
99	26	342.4		69.3				1566.7	1978.4
106	36	197.2	0.3	5.6				234.7	437.7
Mean	33.1	173.2	2.4	45.1		42.4		637.2	900.3
Std dev	8.9	166.3	5.2	48		58.1		585.9	691.1
%		19.2	0.3	5.0		4.7		70.8	100.0

b)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
93	98.5			2.2	27.2	0.1		169.6	199
97	51	50.6		43		1.4		347.6	442.5
100	60	6		2				112.2	120.2
105	75.5	1.9		0	2.1	10.7		173.1	187.8
Mean	71.2	14.6		11.8	7.3	3		200.6	237.4
Std dev	20.8	24.1		20.8	13.3	5.2		101.9	141.1
%		6.1		5.0	3.1	1.3		84.5	100.0

c)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
90	163.5				52.5			311.7	364.2
94	175.5				104.4			187.3	291.7
96	106.5							1143.6	1143.6
101	137.5		0.5		19.2			303.4	323.1
104	147		0.1		81.4	0.6		305.1	387.2
Mean	146		0.1		51.5	0.1		450.2	502
Std dev	26.5		0.2		43	0.3		391.1	360.6
%					10.3			89.7	100.0

d)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
89	413.5				43.6			617.8	661.4
95	495.5				23.5			293	316.6
102	239.5				206.3			1000	1206.2
103	425.5				67.9			502.1	570
Mean	393.5				85.3			603.2	688.6
Std dev	108.8				82.6			296.7	374.7
%					12.4			87.6	100.0

### *St. Louis-Cap Blanc*

A total of 42 valid swept area trawls were made between 20 - 500 m depth. Of these 11 trawls were made on the inner shelf, 9 on the outer shelf, 12 on the upper slope and 10 on the deep slope. No trawls were made deeper than 500 m. Catch rates continued to increase in this area compared with further south

#### Main groups

The total average catch between 20 - 50 m depth was 4104.8 kg/h, but sizes of catches varied considerably. Demersal species were the most dominant with average catches of 1654 kg/h followed by pelagic species with catches of 1397 kg/h. An average catch of 27 kg/h of sharks and 11 kg/h of cephalopods were caught. Both species groups were of low importance in the catches. No catches of shrimps were made. The "other" group had an average catch of 1016 kg/h.

At the outer shelf at depths between 50 - 100 m the average catch was 1271 kg/h, a decline compared with the inner shelf, but still relatively high catch rates. The pelagic species dominated with 979 kg/h while demersal showed catch rates of 95 kg/h. Cephalopods increased in abundance from the shallow area and had average catches of 41 kg/h. The commercially very important *Octopus vulgaris* dominated the catch of this group. < 1 kg/h of sharks and no shrimps were caught. The group of "other" species gave an average catch of 155 kg/h.

The catch on the upper slope increased slightly compared with the outer shelf with 1478 kg/h. Of this demersal species gave average catch rates of 442 kg/h while pelagic species showed average catches of 235 kg/h. Cephalopods in the depth region showed catch rates of 28 kg/h while shark catches were < 1 kg/h. No shrimps were caught in this depth region either. The "other" non commercial species had average catches of 774 kg/h.

At the lower slope the average catch was 841 kg/h. Demersal species were the most dominant of the commercial groups with catches of 217 kg/h while shrimps was the second most dominant although with considerably lower catch rates (28 kg/h). Pelagic species had catch rates of 17 kg/h followed by cephalopods (7 kg/h) and sharks (6 kg/h). The "Other" group was the overall most dominant with 568 kg/h.

#### Demersal groups

Relatively good catches of demersal species were made on the inner shelf. The most dominant species group was grunts (253 kg/h) followed by seabreams (210 kg/h), croakers (101 kg/h) and groupers (6 kg/h). No hake and no snappers were caught in this depth region.

Catches of demersal species on the outer shelf was considerably lower. Seabreams was the most dominant group with 24 kg/h followed by hake with 18 kg/h. Croakers had average catches of 12 kg/h while grunts and groupers gave catches of 6 and 0.6 kg/h respectively. No snappers were caught.

At the upper slope Hake dominated the catches with 376 kg/h. Croakers had catch rates of 22 kg/h while seabreams gave catches of 7 kg/h. Groupers was not common in the catches (<1 kg/h while no snappers and no grunts were caught).

Hake was the only dominant demersal species between 200-500 m depth with catch rates of 207 kg/h. A few croakers (2 kg/h) were the only other commercially important species group that was caught.

Table 16. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. St. Louis-Cap Blanc: a) 20–50 m, b): 50-100 m, c): 100-200 m

a)

Station	Gear							Total
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	
107	20.5		769.6	792.3	5.3		6955.6	8522.9
112	37.5		272.4	71.1			348.9	692.4
113	41.5		11413.5	11959.5			341.9	23714.9
119	49.5	9.6	151.8	77.4			92.4	331.2
127	27	15.6	417.1	82.1			83.9	598.8
135	20	4.1	593.6	617.2			174	1389.0
139	30	4.8	102.5	50.9	2.8		547.5	708.5
140	24.5	23.2	1185.7	1224			2005.2	4438.1
146	31.5	0.4	205.9	133.5			68.8	408.6
152	29.5	9	2799.6	216	285.2		182.7	3492.5
153	36.5	58.4	285.5	143.1			368.9	855.9
Mean	31.6	11.4	1654.3	1397	26.7		1015.5	4104.8
Std dev	9	17.3	3328	3523.8	85.8		2044.9	6970.4
		0.3	40.3	34.0	0.7		24.7	100.0

b)

Station	Gear							Total
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	
108	54	33.3	456	39.6			74.6	603.4
111	73.5	4.5	38.3	34.7			192.6	270.0
114	69.5	42.1	13.4	1503.5			168.4	1727.4
126	77.5	0.3	174.2	513.6			90	778.1
129	50.5	9.9	17.6	110.9			131.2	269.7
134	92	112.5	91.1	4336.4			360.7	4900.6
141	71	81.7	26.5	1993.1			190.5	2291.8
147	50	75.2	0.6	277.6			106.8	460.3
154	79	13.5	39.3	2.2	3		82.2	140.1
Mean	68.6	41.4	95.2	979.1	0.3		155.2	1271.3
Std dev	14.4	39.8	145.4	1447.7	1		89.5	1543.3
		3.3	7.5	77.0			12.2	100.0

c)

Station	Gear							Total
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	
110	121	0.7	60.4	17.1			175.8	254.0
115	117	83.2	92.3	13.8			118	307.3
117	190.5	21.7	472.5				2387.2	2881.4
118	103	4.7	174	248.3			93.7	520.8
122	187		477.5				1095.2	1572.6
125	185.5	53.7	544.2				379.2	977.1
130	177		233.4				1208	1441.4
133	182.5		493.3	8.1			1687.6	2189.1
136	173.5		464.2				1532.6	1996.8
138	110.5		10.9	404.4			93	508.3
148	109	161.3	1778.4	2125.1			127.4	4192.2
155	141	5.6	501.9		8		383.8	899.3
Mean	149.8	27.6	441.9	234.7	0.7		773.5	1478.4
Std dev	35.8	49.7	464.6	609.1	2.3		783.1	1184.5
		1.9	29.9	15.9			52.3	100.0

d)

Station	Gear							Total
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	
109	275	6.8	262.7		1.6		527.4	798.5
116	327	13.1	157.7	48.6			1746.7	1966.0
123	370.5		83.2			57.3	307.5	448.0
124	355.5		182.7			221.5	685.8	1090.0
131	348.5	5.2	156.2	57.2			874.6	1093.2
132	499	1.6	15.2		27.4		201.6	245.8
137	345.5	9.6	175.7	30.7			350.8	566.9
149	282.5	31.7	695.1	1.4			261.5	989.6
150	363.5		346.5	27.3			465.8	839.6
156	346.5		92.3		29.2		254.8	376.3
Mean	351.4	6.8	216.7	16.5	5.8	27.9	567.6	841.4
Std dev	61.1	9.9	192	22.6	11.9	70.4	465.5	496.1
		0.8	25.8	2.0	0.7	3.3	67.5	100.0

Table 17. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. St. Louis-Cap Blanc: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m  
a)

Station	Gear								
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
107	20.5	702.6		12.8				7807.4	8522.9
112	37.5	54.9		106.4		73.7		457.5	692.4
113	41.5			703.2		438.5		22573.3	23714.9
119	49.5	6.9		18.3		99		206.9	331.2
127	27			28.9		323.1		246.8	598.8
135	20		1.9	359.8		195.5		831.8	1389
139	30		7	1.3		94.2		606.1	708.5
140	24.5			102.2		661.2		3674.7	4438.1
146	31.5		10.3	120.4		75.3		202.7	408.6
152	29.5	349.5	48.1	1324.3		213.8		1556.8	3492.5
153	36.5					134.6		721.3	855.9
Mean	31.6	101.3	6.1	252.5		209.9		3535	4104.8
Std dev	9	225	14.4	414		195.2		6715	6970.4
		2.5	0.1	6.2		5.1		86.1	100.0

b)

Station	Gear								
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
108	54	72.7	0.2	33.3		128.7		368.6	603.4
111	73.5			3.2	28.4	4.1		234.3	270.0
114	69.5					12		1715.4	1727.4
126	77.5	30.8		16.4	49.8	26.4		654.7	778.1
129	50.5	1.7	0.6		4.7	7.8		254.9	269.7
134	92				56.7	34.4		4809.5	4900.6
141	71		4.4		8			2279.4	2291.8
147	50					0.6		459.6	460.3
154	79				16.4	1.7		122	140.1
Mean	68.6	11.7	0.6	5.9	18.2	24		1210.9	1271.3
Std dev	14.4	25	1.5	11.6	22	41.1		1540.4	1543.3
		0.9		0.5	1.4	1.9		95.2	100.0

c)

Station	Gear								Total
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	
110	121				28	0.4		225.5	254.0
115	117	44.2	2.7		32.2	1.8		226.5	307.3
117	190.5				472.5			2408.9	2881.4
118	103		2.6		169.9	0.6		347.7	520.8
122	187				363.5			1209.1	1572.6
125	185.5				502			475.1	977.1
130	177				123			1318.4	1441.4
133	182.5				357.6	36.2		1795.3	2189.1
136	173.5	203			253.3			1540.4	1996.8
138	110.5							508.3	508.3
148	109	13.2			1720.2	45		2413.8	4192.2
155	141				484.7			414.6	899.3
Mean	149.8	21.7	0.4		375.6	7		1073.6	1478.4
Std dev	35.8	58.5	1		461.9	15.8		824.2	1184.5
		1.5			25.4	0.5		72.6	100.0

d)

Station	Gear								Total
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	
109	275				242.8			555.8	798.5
116	327	17.8			85.4			1862.9	1966.0
123	370.5				83.2			364.7	448.0
124	355.5				182.7			907.3	1090.0
131	348.5				156.2			936.9	1093.2
132	499				14.7			231.1	245.8
137	345.5				175.7			391.1	566.9
149	282.5				695.1			294.6	989.6
150	363.5				346.5			493.1	839.6
156	346.5				91.3			285	376.3
Mean	351.4	1.8			207.4			632.3	841.4
Std dev	61.1	5.6			195.4			498.2	496.1
		0.2			24.6			75.1	100.0

#### *Cap Blanc – Cap Juby*

A total of 64 valid trawl stations were analysed in this area, of these 12 stations were between 0 -50 m depth, 18 between 50 - 100 m depth, 20 between 100 - 200 m depth and 14 between 200 – 500 m. Table 18 shows the catch rates of main groups, while Table 19 shows catch rate for the main demersal species groups.

#### Main groups

The average catch rate in the depth region between 0 -50 m was 1391 kg/h. The demersal group was the most dominant with average catch rates of 837.5 kg/h, this was followed by the “other” group with average catch rates of 333 kg/h. The pelagic group had average catch rates of 212 kg/h. The groups of cephalopods and sharks showed only small catches. No shrimps were caught.

Between 50-100 m the catch rates decreased to 362.2 kg/h. The most abundant group was the pelagic group with 61.8 % of the total (224 kg/h). The demersal group had average catch rates of 82.4 kg/h.

The mean catch rates doubled at the upper slope with catch rates of 798.5 kg/h. The pelagic category still showed 60 % of the total catches but the size of the catches varied a lot.

Bottom trawls on the lower slope gave an average catch rate of 608.4 kg/h. The group “other” dominated with mean catch rates of 481.5 kg/h, while demersal, pelagic and sharks showed up in 7.2, 7.1 and 5.6 % of the catches, respectively. Shrimps and cephalopods only showed up in 0.5 and 0.4 % of the catches.

#### Demersal groups

Table 19 shows catch rate for the main demersal species groups. The group “other” dominated among the demersal species on the inner shelf. No demersal species were found in high abundance on the outer shelf, upper slope or lower slope, although a few grunts could be found on the inner shelf (25.4%). The average catch rate for the different depth intervals from the inner shelf and to deeper water was 1391.9, 362.2, 798.5 and 608.4, respectively.

Table 18. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Cap Blanc-Cap Juby: a) 20–50 m, b): 50-100 m, c): 100-200 and d): 200-500 m

a)

Station	Gear							Total
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	
167	30.5	2.6	741.8	223.3			103.3	1071.0
173	30.5	3.7	851.8	1357.4	19.6	0.3	3714.3	5947.1
174	32.5	1	942.1	149	0.8		52	1145.0
180	31	7.5	1320.4	154.2			27.9	1510.0
186	28.5	7.2	1110.7	11.9	3.6		57.5	1191.0
191	38.5	1.7	27.9	34.5			2.5	66.5
199	30.5	17.4	561.4	11.6			14.4	604.8
205	44	9.6	149				17.6	176.2
211	41		2208	521.6			32.8	2762.4
220	32	10.6	843.5	54.1			85.6	993.9
223	28	1.8	33.2	33.5			34.7	103.2
226	45.5	1.4		14			122.8	138.1
Mean	35.3	7.2	837.5	212.4	1.8		333	1391.9
Std dev	6.8	8.2	727.3	372.8	5.4	0.1	1016.6	1609.3
		0.5	60.2	15.3	0.1		23.9	100.0



b)

Station	Gear							Total
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	
159	78	78.6	1.3	143.8	1		332	556.8
161	67.5	9.9	12.2	17.5			34.8	74.4
165	70	7.4	9.6	200.4			4.1	221.5
172	78	11.4	14.1	1589.7			7.4	1622.7
175	75	11.7	13.3	86.9			21.7	133.5
179	74.5	2.9	4.1	14.7	4.1		9.9	35.7
181	57	2.1	21.4	161.7	1		24.6	210.7
185	74		7.4	1086.4			101.1	1194.9
187	51	17.1	984.7	160	2		33	1196.8
190	73.5	5.4		0.6			3.2	9.2
193	68.5	2.8	25	17.5			30.1	75.4
198	73.5	2.4	13.7	9.7			8.2	34.0
200	77.5	2.2	1.1	0			0.1	3.4
204	75.5		30.9	6.7			2.5	40.1
206	88.5	4.1					0.5	4.5
219	81.5	5.6	257.7	34.4			2.4	300.1
221	70	2.7	25.4	20.9			8.5	57.4
224	95.5	7.7	61.7	481.8			196.8	748.0
Mean	73.8	9.7	82.4	224	0.5		45.6	362.2
Std dev	10	17.8	232.8	431.1	1.1		86.2	498.3
		2.7	22.7	61.8	0.1		12.6	100.0

c)

Station	Gear							
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
158	104			127.8			4156.2	4284.0
162	134.5	8.2	16.8	12.3		233.3	125.7	396.3
164	126	5.5		8876.7			125.7	9007.9
169	113.5			258.6			12.8	271.4
171	111		7.7	23.1			25.8	56.7
176	149.5	3.7	4.2	0.1	11.7		85.4	105.1
182	133		2.3	11.7	6.1		11.3	31.3
188	104		29.3	6.2	1.5		29.7	66.7
189	121.5	2.8	3.5	6.2			32.6	45.1
194	190.5		19.8	35.5			79.7	134.9
197	111.5		4.8	0.8			18.8	24.4
201	124.5		177.1	17.4			17.5	212.0
203	157	7.5	111.9	61.7			66.5	247.6
207	165.5	3.7	114.2	5			58.6	181.4
210	171.5	0.3	3	21.5			22.5	47.3
212	118		38.5	65			11.7	115.1
214	114.5	5.2	25.9	18			24.1	73.3
217	109.5	1.1	12.1	16.8			6.1	36.1
222	105	17.2	10.3	0.3			12.1	40.0
225	109.5	1.3	89.9	20.4			482.7	594.4
Mean	128.7	2.8	33.6	479.3	1	11.7	270.3	798.5
Std dev	25.2	4.3	49.5	1977.5	2.9	52.2	920.6	2146.3
		0.4	4.2	60.0	0.1	1.5	33.9	100.0

d)

Station	Gear							
	depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
157	316.5	22.4	189.1	0.4	155.8		941.4	1309.0
163	330.5	0.3	7.6	0.3	15.2		325.2	348.6
170	362.5		5.8	148.1	271.6		4736.8	5162.3
177	340		0.5	2.6	3.5		186.7	193.3
178	229		14.1	188.8	7.5		56.8	267.2
183	343.5	3.4	2.3	41.3	7.8		97.1	151.9
184	272.5	1.4	25.1	12.2	1		195.2	234.9
195	375.5		4.5	2.3	0.4	26	55.5	88.8
196	247.5	0.9	141	197.2			24.9	364.0
202	265.5	1.4	55.1	1.4			11.3	69.2
208	352.5	0.4	33.4	1.4			10.2	45.3
209	342.5	0.8	61.1	4.8			24.1	90.7
213	367.5		10.5	0	14.4		40.4	65.3
218	317.5	0.3	67.9	3.9	0.1	19.8	34.8	126.8
Mean	318.8	2.2	44.1	43.2	34.1	3.3	481.5	608.4
Std dev	46.8	5.9	56.8	74.6	79.6	8.4	1248.9	1349.2
		0.4	7.2	7.1	5.6	0.5	79.1	100.0

Table 19. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. Cap Blanc-Cap Juby: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear								
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
160	46.5	126.7	7.4	1177.7		534.8		539.5	2386.2
167	30.5	461.9	9.9	39.3		40.1		519.8	1071.0
173	30.5	362.4		255.1		50.6		5278.9	5947.1
174	32.5	26.4		582.7		246.6		289.3	1145.0
180	31	15.4		631.4		113.3		749.8	1510.0
186	28.5		0.5	136.9		96.3		957.3	1191.0
191	38.5			11.8		10.8		43.9	66.5
199	30.5					9.3		595.5	604.8
205	44					2.5		173.6	176.2
211	41		0	1609.8		37.7		1114.9	2762.4
220	32	49	2.9	138.5	13.1	10.2		780.3	993.9
223	28	4		16.3	3.1	2.2		77.6	103.2
226	45.5							138.1	138.1
Mean	35.3	80.5	1.6	353.8	1.2	88.8		866	1391.9
Std dev	6.8	152.8	3.3	515.9	3.7	150.7		1369.4	1609.3
		5.8	0.1	25.4	0.1	6.4		62.2	100.0

b)

Station	Gear								
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
159	78					1.3		555.4	556.8
161	67.5			4.3		7.7		62.4	74.4
165	70					5.2		216.3	221.5
172	78		12.6			1.6		1608.6	1622.7
175	75			0.8		11.8		121	133.5
179	74.5					0.5		35.2	35.7
181	57					21.3		189.5	210.7
185	74							1194.9	1194.9
187	51	51.9	1.1	271.5		284.3		588	1196.8
190	73.5							9.2	9.2
193	68.5	8.1	0.2			7.6		59.5	75.4
198	73.5					2.3		31.8	34.0
200	77.5					1		2.3	3.4
204	75.5					2.1		38	40.1
206	88.5							4.5	4.5
219	81.5	4.9				56		239.2	300.1
221	70			0.7	1.3	3.7		51.7	57.4
224	95.5		0.9		5.3	9.1		732.7	748.0
Mean	73.8	3.6	0.8	15.4	0.4	23.1		318.9	362.2
Std dev	10	12.2	2.9	63.9	1.3	66.5		456.6	498.3

c)

Station	Gear								Total
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	
158	104							4284	4284.0
162	134.5					0.8		395.4	396.3
164	126							9007.9	9007.9
169	113.5							271.4	271.4
171	111		1		0.4			55.3	56.7
176	149.5							105.1	105.1
182	133				0.1	0.8		30.4	31.3
188	104	13.4		2.2		8.5		42.6	66.7
189	121.5	0.8						44.3	45.1
194	190.5	1.2				0.8		132.9	134.9
197	111.5		1.1			3.6		19.6	24.4
201	124.5					13.2		198.8	212.0
203	157		0.8			12.3		234.5	247.6
207	165.5		1.8			37		142.6	181.4
210	171.5					3		44.3	47.3
212	118					10.7		104.5	115.1
214	114.5					8.6		64.7	73.3
217	109.5					5.5		30.6	36.1
222	105		0.2		3.4	0.4		36	40.0
225	109.5					77.4		517	594.4
Mean	128.7	0.8	0.2	0.1	0.2	9.1		788.1	798.5
Std dev	25.2	3	0.5	0.5	0.8	18.3		2148.9	2146.3
		0.1				1.1		98.7	100.0

d)

Station	Gear								Total
	depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	
157	316.5				184.3			1124.6	1309.0
163	330.5				3.9			344.7	348.6
170	362.5				5.8			5156.4	5162.3
177	340							193.3	193.3
178	229				6			261.3	267.2
183	343.5				1.2			150.7	151.9
184	272.5	0.8			9.3	12.5		212.4	234.9
195	375.5				3.5	1		84.4	88.8
196	247.5				27.5	113.5		223	364.0
202	265.5				5.8	10.6		52.8	69.2
208	352.5				11.6	21.8		12	45.3
209	342.5				9.2	51.9		29.6	90.7
213	367.5				7.4	3.1		54.9	65.3
218	317.5				24.5	43.3		59	126.8
Mean	318.8	0.1			21.4	18.4		568.5	608.4
Std dev	46.8	0.2			47.6	32.2		1349.9	1349.2
					3.5	3.0		93.4	100.0

#### *Cap Juby- Casablanca*

A total of 52 valid trawl stations were analysed in this area, of these 11 stations were between 0 -50 m depth, 18 between 50 - 100 m depth, 16 between 100 - 200 m depth and 7 between 200 – 500 m. Table 20 shows the catch rates of groups, while Table 21 shows catch rate for the main demersal species groups. The bottom in this area was very uneven and it was difficult to find areas

suitable for bottom trawling. Especially at the lower slope this reduced the number of trawl hauls conducted.

#### Main groups

The average catch rate in the depth region between 0 -50 m was 1053 kg/h. The “other” group was the most dominant with average catch rates of 773.3 kg/h, this was followed by the pelagic group with average catch rates of 229.9 kg/h. The demersal group had average catch rates of 47.8 kg/h. The group of cephalopods showed only small catches (0.2 %). No shrimps and sharks were caught.

Between 50-100 m the catch rates decreased to 422.5 kg/h. The most abundant group was the pelagic group with 71.9 % of the total (303.6 kg/h). The demersal group had average catch rates of 32.8 kg/h.

The mean catch rates increased at the upper slope with catch rates of 518.4 kg/h. The dominating group was now “other” (with 51.2 % of the catches and 265.5 kg/h), while the pelagic group followed closely (with 233.5 kg/h and 45%).

Bottom trawls on the lower slope gave an average catch rate of 80.5 kg/h. The groups “other and pelagic dominated with mean catch rates of 34.1 kg/h and 27.5 kg/h. The demersal group had average catches of 13.1 kg/h Shrimps and cephalopods only showed up in 0.5 and 0.4 % of the catches.

#### Demersal groups

Table 21 shows catch rate for the main demersal species groups. The group “other” dominated among the demersal species on the inner shelf (> 95% in all depth intervals). No demersal species were found in high abundance on the outer shelf, upper slope or lower slope, although a few hake could be found on the upper and lower slope. The average catch rate for the different depth intervals from the inner shelf and to deeper water was 1053.1, 422.5, 798.5518.4 and 80.5, respectively.

Table 20. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Cap Juby-Casablanca. a) 20–50 m, b): 50-100 m, c): 100-200 and d): 200-500 m

a)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
227	40	2.6	95.6	17.6			113.3	229.0
233	46	2.2	40	72.7			87.7	202.7
234	49	13.2	12.8	262			161.2	449.1
241	38		11.1	323.7			78.2	413.0
243	39	2.1	95.5	518.6		1.4	2784.0	3401.6
244	49		82.5	1210		0.4	5064.0	6357.0
258	34.5	0.4	18.4	71.5			57.6	147.9
261	44.5		133.3	9.5			25.6	168.4
262	35		7.8	15.3			66.0	89.0
265	43		22.1	25.3			38.1	85.5
273	47.5	0.2	6.7	3			30.5	40.4
Mean	42.3	1.9	47.8	229.9		0.2	773.3	1053.1
Std dev	5.3	3.9	45.3	365.6		0.4	1639.5	2007.9
%		0.2	4.5	21.8			73.4	100.0

b)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
228	70.5	8	29.3	137.9			47.4	222.6
232	57	9.4	90.7	103.2			88.3	291.6
235	90	1.7	8.6	688.8			44.5	743.6
240	73	19.4	8.5	20.4			18.6	66.9
242	63.5	3.7	57.9	223.5			32.3	317.4
245	85.5		12.4	38.9			25.5	76.7
246	94	0.7	12.9	42.8			9.3	65.8
247	73.5		0	2323.3			15.3	2338.6
250	97.5	7.3	16.8	19.2		6.2	253.8	303.3
253	65	2.9	100.6	650.1			395.8	1149.4
257	61.5	1.3	82.8	19.7			254.9	358.7
259	75.5	3.3	22.8	16			33.4	75.5
263	79		9	1101.5			0.7	1111.2
266	79.5		48.9	9.1			109.8	167.8
268	97	5.8	58.7	22.8			72.0	159.2
272	80		6.5	2.7			10.6	19.9
274	88.5		11.7	0.9			19.7	32.3
278	87	0.6	11.7	44.9			47.2	104.3
Mean	78.8	3.6	32.8	303.6		0.3	82.2	422.5
Std dev	12.3	5.0	32.2	590.9		1.5	108.4	589.5
		0.9	7.8	71.9		0.1	19.5	100.0

c)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
229	107.5	2.9	42.5	568.3			241.9	855.7
231	128.5	1.6	59.2	23.7			54.9	139.5
236	132.5	1.9	2.7	2279			99.9	2383.6
239	149.5		10.5	2.3			61.9	74.7
248	175.5	3.8	7.9	95.3			84.3	191.4
249	128	6.8	13.8	100.6			23.8	145.0
251	141.5	5.9	15.8	0.5			14.2	36.5
252	105	1	30.2	24.5			65.3	121.1
256	154	2.5	4.7	40.5	1.4		16.8	65.8
264	133		44.4	434.6			15.7	494.7
267	164.5		12.2	117.4			157.9	287.5
269	156.5		1.9	5.2			56.6	63.6
271	108.5		8.5	2.6			15.2	26.3
275	140		8.2	2.6			55.8	66.6
277	161.5	6	8.8	27.5			3258.5	3300.9
279	118.5		3.8	11.8			25.4	41.1
Mean	137.8	2.0	17.2	233.5	0.1		265.5	518.4
Std dev	21.5	2.4	17.3	569.8	0.3		800.4	947.0
		0.4	3.3	45.0			51.2	100.0

d)

Station	Gear depth	Cephalopods	Demersal	Pelagic	Sharks	Shrimps	Other	Total
230	340.5	1.6	31.1	12.8	0.6	19.7	119.9	185.8
237	337.5	3.4	15.7	2.8			8.7	30.7
238	216	5.6	20.1	28.8			92.3	146.8
255	350	10.1	1.5	10.6	2.2		21.4	45.7
260	355	2.2	3.6	26.2	1.4		4.3	37.6
270	363		27.3	46.5			12.4	86.1
276	270.5		5.5	41.6			7.9	55.0
280	274		0.1	50.4			5.8	56.4
Mean	313.3	2.8	13.1	27.5	0.5	2.5	34.1	80.5
Std dev	53.1	3.5	12.1	17.7	0.8	7.0	45.4	56.4
		3.5	16.3	34.2	0.6	3.1	42.4	100.0



Table 21. Catch rates (kg/hour) by demersal groups caught in valid swept area bottom trawl hauls. Juby-Casablanca: a) 20–50 m, b): 50-100 m, c): 100-200 m d): 200-500 m

a)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
227	40	6.6		23	2	0.4		197.1	229.0
233	46	10.4		7.6	0.4			184.3	202.7
234	49			1.6	2.6			445.0	449.1
241	38				0.7			412.3	413.0
243	39	1.3		71.1	0.4			3328.8	3401.6
244	49	12.9		27.8	16.9			6299.3	6357.0
258	34.5				18.2			129.6	147.9
261	44.5							168.4	168.4
262	35				1.9			87.1	89.0
265	43				6			79.5	85.5
273	47.5				1.3			39.0	40.4
Mean	42.3	2.8		11.9	4.6			1033.7	1053.1
Std dev	5.3	4.8		22.0	6.6	0.1		1987.7	2007.9
%		0.3		1.1	0.4			98.2	100.0

b)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
228	70.5					4.4		218.2	222.6
232	57	10.8	1.1	8				271.7	291.6
235	90				6.9			736.7	743.6
240	73				0	0.9		66.0	66.9
242	63.5	10.7		1.9	2.4	6		296.4	317.4
245	85.5				3.9	4		68.8	76.7
246	94	0.4			5.6	2.5		57.2	65.8
247	73.5							2338.6	2338.6
250	97.5				15.7			287.6	303.3
253	65				100.3			1049.1	1149.4
257	61.5				76.8			281.9	358.7
259	75.5				22.8			52.7	75.5
263	79				1.6			1109.6	1111.2
266	79.5		0.5		32.1			135.2	167.8
268	97				36.1			123.1	159.2
272	80				6.5			13.3	19.9
274	88.5				11.2			21.1	32.3
278	87				11.7			92.7	104.3
Mean	78.8	1.2	0.1	0.6	18.5	1.0		401.1	422.5
Std dev	12.3	3.5	0.3	1.9	28.0	1.9		588.0	589.5
		0.3	0.0	0.1	4.4	0.2		94.9	100.0

c)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
229	107.5				11.8	11.9		832.0	855.7
231	128.5					31.3		108.2	139.5
236	132.5							2383.6	2383.6
239	149.5				0.7	4.2		69.8	74.7
248	175.5				6.8	1.1		183.4	191.4
249	128				12.3			132.7	145.0
251	141.5				14.3			22.2	36.5
252	105				29.2			91.8	121.1
256	154		0.4		2.3			63.1	65.8
264	133				39.5			455.2	494.7
267	164.5				2.9			284.6	287.5
269	156.5				0.6			63.1	63.6
271	108.5				6.4			20.0	26.3
275	140				8.2			58.4	66.6
277	161.5				8.8			3292.1	3300.9
279	118.5				3.8			37.3	41.1
Mean	137.8		0.0		9.2	3.0		506.1	518.4
Std dev	21.5		0.1		11.0	8.1		948.4	947.0
					1.8	0.6		97.6	100.0

d)

Station	Gear depth	Croakers	Groupers	Grunts	Hake	Seabream	Snappers	Other	Total
230	340.5				24.8	6.2		154.7	185.8
237	337.5				14	1.7		14.9	30.7
238	216				5.4	14.5		126.9	146.8
255	350				1.5			44.2	45.7
260	355							37.6	37.6
270	363				27.3			58.8	86.1
276	270.5				5.4			49.7	55.0
280	274				0.1			56.2	56.4
Mean	313.3				9.8	2.8		67.9	80.5
Std dev	53.1				11.0	5.2		47.6	56.4
					12.2	3.5		84.3	100.0

### 1.23. Biomass index

Biomass index of demersal and pelagic species (based on demersal trawl data) varied regionally and had generally high coefficients of variation (cv; Table 22). Due to the high degree of uncertainty, indexes are not very precise, i.e. reliable, and should be treated as such.

The highest estimate (195 000 t), dominated by grunts and seabreams, was calculated for the region Cap Blanc – C. Juby, and was more than twice as high as the index from the two southernmost regions. The index from these regions – Conakry to C. Vert and C. Vert to C. Blanc – were similar (70

000 – 80 000 t), with grunts and seabreams dominating the biomass, as well as hakes between C. Vert and C. Blanc. The estimate for the region C. Juby – Casablanca was the lowest of all (7 600 t), with seabreams making up most of the biomass. In most regions fish families including snappers, groupers and croakers, as well as the hake species (*M. polli* and *senegalensis*) contributed relatively little to the index (Table 2). The only region where croakers and *M. polli* contributed substantially was between C. Vert and C. Blanc.

Table 22. Shelf (20 – 200m) swept area index of selected demersal fish species and families. Co-efficient of variation (CV) is shown in parentheses.

Species / Family	Conakry - C. Vert	C. Vert – C. Blanc	C. Blanc - C. Juby	C. Juby - Casablanca
<i>M.senegalensis</i>	52 (2.29)	4763 (0.83)	23 (1.5)	48 (1.1)
<i>M.polli</i>	58 (2.86)	13952 (0.87)	68 (1.54)	
Snappers	1002 (2.14)			
Groupers	2578 (0.43)	506 (0.90)	561 (0.70)	19 (0.98)
Grunts	38845 (0.46)	17304 (0.74)	79497 (0.61)	920 (1.10)
Croakers	3797 (0.66)	13025 (0.60)	17491 (0.78)	428 (0.79)
Seabreams	34493 (0.47)	22429 (0.49)	97252 (0.33)	6229 (0.46)
<b>Demersal *</b>	<b>80825</b>	<b>71980</b>	<b>194892</b>	<b>7645</b>

\* The demersal swept area index includes the Nansis codes SPADE, SPADI, SPALI, SPAPA, SPAPR, SPASP, PODP, SCI, SER, LUT, MERME02, and MERME03

Table 23. Shelf (20 – 200m) swept area index of selected pelagic fish species. Co-efficient of variation (CV) is shown in parentheses.

Species	Conakry - C. Vert	C. Vert – C. Blanc	C. Blanc - C. Juby	C. Juby - Casablanca
<i>D.rhonchus</i>	10837 (0.49)	11980 (0.79)	2215 (1.16)	
<i>T.treace</i>	5346 (0.69)	17788 (0.68)	23010 (0.81)	
<i>T.trachurus</i>	5782 (1.53)	30607 (1.5)	24655 (0.59)	18907 (0.56)
<i>S.aurita</i>	711 (0.81)	1263 (1.28)	15606 (1.13)	
<i>S.maderensis</i>	866 (0.69)	1509 (1.3)		
<i>E.encrasicolus</i>		2199 (1.45)	71765 (1.32)	60079 (1.4)
<i>S.pilchardus</i>		9195 (1.67)	28314 (1.1)	15991 (1.2)
<i>S.japonicus</i>	1388 (2.86)	4954 (1.9)	41193 (1.36)	69192 (0.74)
<b>Pelagic *</b>	<b>61459</b>	<b>145112</b>	<b>208508</b>	<b>165420</b>

\* The pelagic estimate includes the Nansis codes ENG, CLU, CAR, SCM, SPH, and TRI.

Pelagic swept area indexes by region were highest (> 145 000 t) north of Cap Vert. The predominant species' in the region Conakry – C. Vert were false scad (*D. rhonchus*) and horse mackerels (*Trachurus spp*), in the region C. Vert – C. Blanc the Atlantic (*T. trachurus*) and Cunene horse mackerel (*T. trecae*), and north of C. Blanc (up to Casablanca) the European anchovy (*E. encrasicolus*) and chub mackerel (*S. japonicas*; Table 23). The highest swept area index (ca 208 000 t) was derived for the region C. Blanc – C. Juby, with the largest contribution from the European anchovy and both horse mackerel species. The contribution of sardinella and the European pilchard were minor regardless of region.

Table 24. Shelf (20 – 200m) swept area index of selected other pelagic and demersal species and families. Co-efficient of variation (CV) is shown in parentheses.

Species	Conakry - C. Vert	C. Vert – C. Blanc	C. Blanc - C. Juby	C.Juby - Casablanca
Shrimps	221 (1.02)	322 (1.42)	858 (2.79)	67 (1.33)
Cephalopods	3076 (0.8)	4987 (0.39)	4207 (0.41)	1084 (0.38)
<i>O. vulgaris</i>	506 (0.52)	2415 (0.52)	656 (0.41)	179 (0.6)
Sharks	2572 (1.47)	1804 (1.47)	539 (0.89)	13 (1.58)
Rays	1784 (0.75)	3968 (0.75)	4242 (0.61)	1067 (0.6)

\* The swept area index includes the Nansis codes SHR (shrimps), SQU( cephalopods), SHA (sharks), and RAY (rays).

Estimates for some common non-fish species/groups like cephalopods (squids and octopus, including *O. vulgaris*) and elasmobranches (sharks and rays) are shown in Table 24.

## 1.24. Zoobenthos

During the survey, 274 valid bottom trawls, distributed in 5 depth strata, were carried out from Guinea Conakry to Morocco. A number of 1154048 invertebrates of 1085 different species belonging to 36 high level taxa (phylum, class, order) were collected, constituting a total biomass (wet weight) of 20971 kg.

The most representative taxon in whole the area was Crustacea, mainly Decapoda, which shows a clear dominance mainly due to the abundance of *Nematocarcinus africanus*, *Parapenaeus longirostris*, *Plesionika heterocarpus* and *Calappa pelli*.

The benthos biomass was clearly dominated by Decapoda (59%) and Cephalopoda (33%), together accounting for 92% of total biomass.

Abundance was dominated by Decapoda (67%) and Cephalopoda (10%). However, 5 other taxa (Pennatulacea, Crinoidea, Polychaeta, Bivalvia and Cirripedia) should be added to the first two to reach similar percentages in abundance.

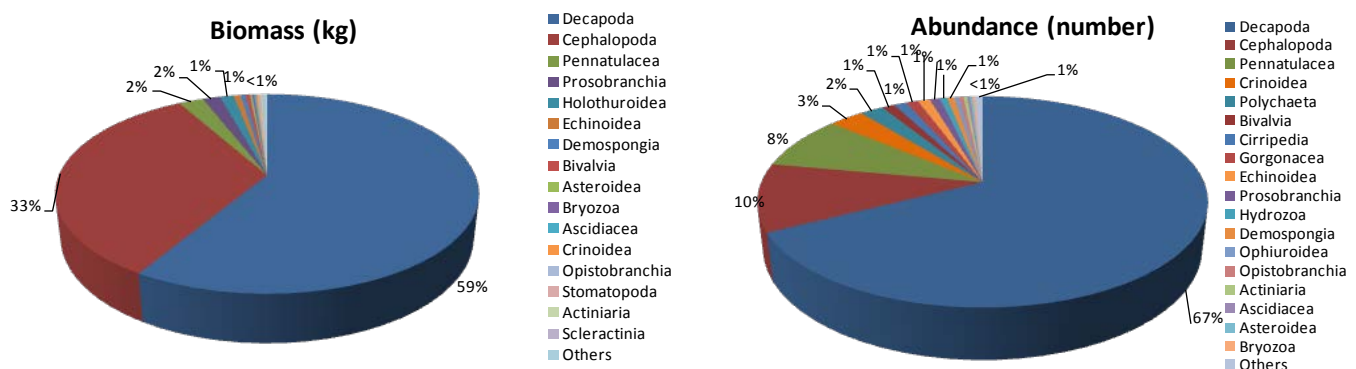


Figure 5.1 Total, biomass (left) and abundance (right) of zoobenthos

### GUINEA

A total of 24 bottom trawls were carried out in Guinean waters. A number of 117393 invertebrates were collected with a total biomass of 734 kg. A specific richness of 184 species belonging to 22 high level taxa was detected.

Decapoda was the most important taxon with a strong dominance both in biomass (79%) and abundance (97%), mainly due to three species: *Nematocarcinus africanus*, *Nematocarcinus* sp and *Macropipus rugosus*.

Echinoidea (represented by Cidaroidae and Diadematidae) is the second most important group but with only 5% of biomass and 3% of abundance. Cephalopoda (mainly *Sepia officinalis*, *Illex coindetii* and *Octopus vulgaris*) and Prosobranchia, with relative high specific richness (25 species), showed some relevance in biomass but with very low abundance values. *Sepia officinalis* was a relatively frequent species in the area, with a frequency of apparition of 48%.

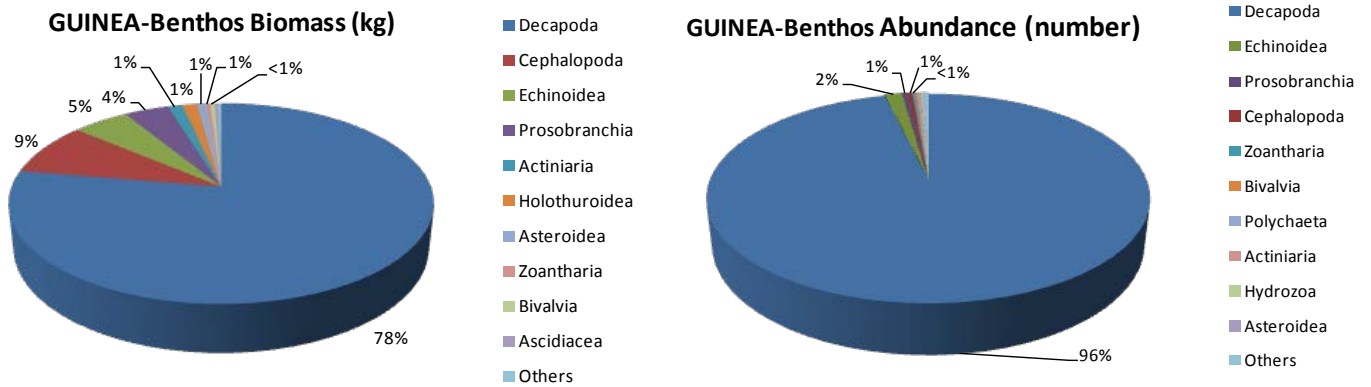


Figure 5.2 Guinea, biomass (left) and abundance (right) of zoobenthos

### GUINEA BISSAU

A number of 54712 invertebrates that constitute a biomass of 549 kg were collected in 26 bottom trawls performed in waters off Guinea Bissau. A total number of 248 species belonging to 22 high level taxa were identified.

Decapoda clearly dominated in abundance (79%). However, biomass showed a very different figure of dominance, being Cephalopoda (34%) the most important group, followed by Decapoda (26%), Holothuroidea (21%) and Prosobranchia (11%).

The most abundant Decapoda species were *Nematocarcinus africanus*, *Macropipus rugosus* and *Parapenaeus longirostris*, but the bigger size of Cephalopoda, mainly *Illex coindetii*, *Sepia officinalis* and *Octopus vulgaris* involved the dominance of this group in the invertebrate biomass. In addition, *I. coindetii* and *S. officinalis* were very frequent in the prospected area, with frequencies of apparition of 52% and 44%, respectively. The contribution of Holothuroidea in the invertebrate biomass is mainly related to the catch of deep-water species (*Benthoturia funebris*, *Benthogone rosea* and *Paroriza pallens*) in deep-water trawls.

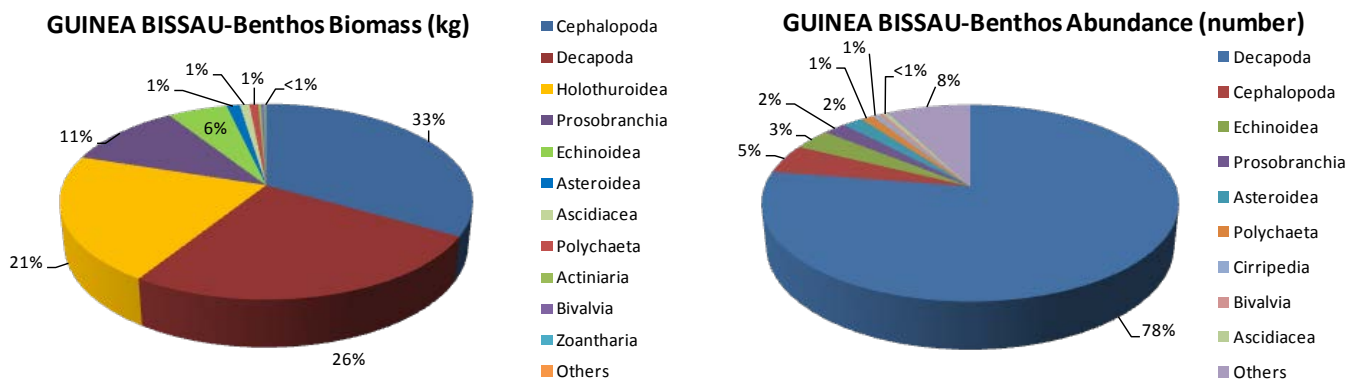


Figure 5.3 Guinea Bissau, biomass (left) and abundance (right) of zoobenthos

### SENEGAL SOUTH

Only 9 bottom trawls were carried out in this area. A number of 13996 invertebrates of 108 different species included in 16 high level taxa were collected in the area, constituting a total biomass of 78 kg. Decapods showed a strong dominance both in biomass (69%) and abundance (91%), mainly due to the presence of three main species: *Nematocarcinus africanus*, *Parapenaeus longirostris* and *Panulirus regius*.

Cephalopoda, mainly *Illex coindetii*, *Octopus vulgaris* and *Sepia officinalis*, and Prosobranchia with relative high specific richness (20 species), showed some relevance in biomass but little in abundance (1%).

An unidentified species of hermit crab (Paguroidea) was the most frequent taxon in the area, appearing in 56% of the trawls performed.

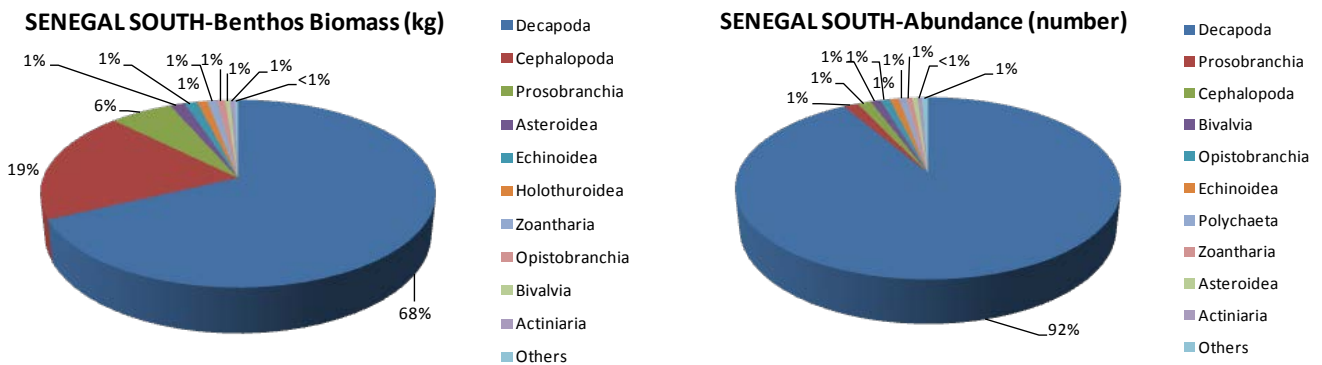


Figure 5.4 Senegal South, biomass (left) and abundance (right) of zoobenthos

### THE GAMBIA

Only 6 bottom trawls were carried out in waters off The Gambia, with a total catch of 3430 invertebrates, which constituted 27 kg of biomass. Specific richness was 66 species included in 17 high level taxa.

In contraposition to near areas, Decapoda was not the dominant group in The Gambia, representing only 8% in biomass and 18% in abundance.

The most important taxa in biomass were Echinoidea (22%), Cephalopoda (18%), Prosobranchia (13%) and Holothuroidea (11%). Prosobranchia was dominant in abundance (36%), followed by Decapoda (18%) and Echinoidea (11%).

Cidaroidea and Diadematidae within Echinoidea; *Natica adamsoni* and *Thais haemastoma* within Prosobranchia; *Illex coindetii*, *Sepia officinalis* and *Octopus vulgaris* within Cephalopoda; Paguroidea within Decapoda; and *Stichopus regalis* within Holothuroidea performs these figures.

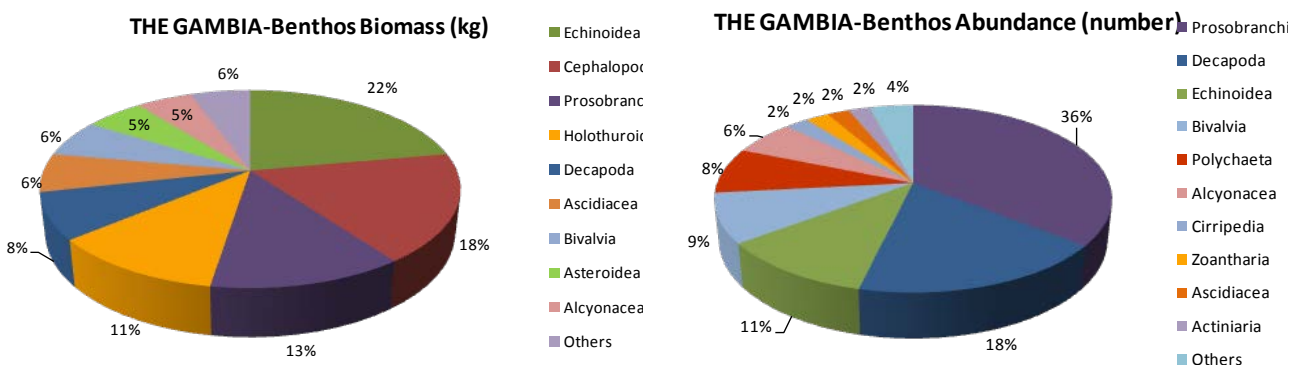


Figure 5.5 The Gambia, biomass (left) and abundance (right) of zoobenthos

## SENEGAL NORTH

A total of 31 bottom trawls were carried out off the north area of Senegal, in which 129982 invertebrates of 209 different species belonging to with 22 high level taxa were collected, with a total biomass of 828 kg.

Decapoda showed similar values of dominance in biomass (70%) and abundance (83%), being *Nematocarcinus africanus*, *Parapenaeus longirostris* and *Munida speciosa* the principal species into this group.

Three species of Cephalopoda, *Illex coindetii*, *Octopus vulgaris* and *Sepia elegans*, represents 16% of biomass, while two Bivalvia, *Ostrea* sp and *Chlamys* cf *varia* accounted for 8%.

The cephalopods *I. coindetii* and *O. vulgaris* were the most frequent species in this area, with frequencies of apparition of 52% and 48%, respectively.

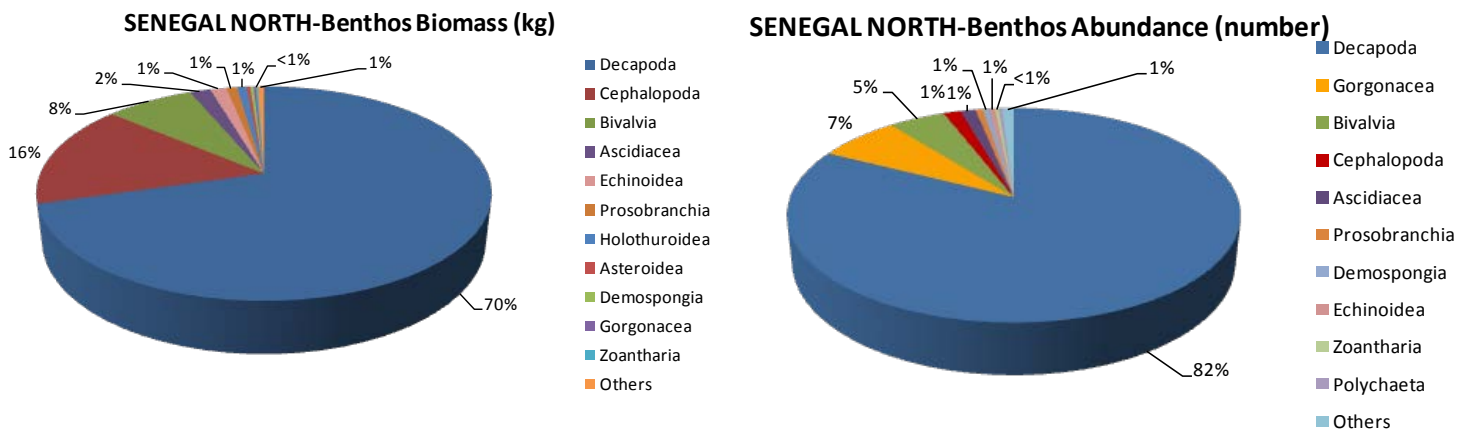


Figure 5.6 Senegal North, biomass (left) and abundance (right) of zoobenthos

## MAURITANIA

A number of 50 bottom trawls were carried out in Mauritanian waters, obtaining a total catch of 504792 invertebrates and 16896 kg of biomass. The specific diversity was 224 species included in 25 high level taxa.

Decapoda was the dominant group in abundance (59%) and biomass (58%), followed in both cases by Cephalopoda (20%, 37%) and Pennatulacea (19%, 3%). The decapods *Calappa pelli*, *Parapenaeus longirostris*, *Plesionika heterocarpus* and *Macropipus rugosus*, the cephalopod *Loligo vulgaris* and the pennatulacean *Veretillum cynomorium* were the most abundant species.

The shrimps *P. heterocarpus* and *P. longirostris* were the most frequent species in this area, with frequency of apparition around 40% each one, followed by the cephalopods *Octopus vulgaris* (39%) and *L. vulgaris* (37%).



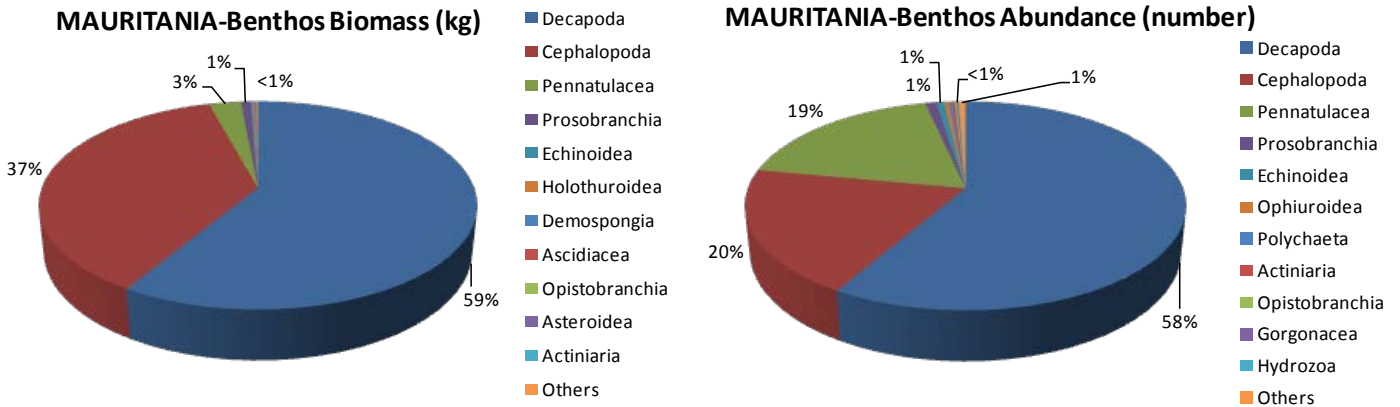


Figure 5.7 Mauritania, biomass (left) and abundance (right) of zoobenthos

### CAP BLANC-CAP JUBY SECTOR

A total of 68 bottom trawls were carried out in this sector, in which a number of 221177 invertebrates that constituted 1252 kg of biomass were collected. The specific richness was 411 species included in 35 high level taxa.

Decapoda was the dominant group both in abundance (60%) and in biomass (57%). Other representative taxa were Crinoidea and Polychaeta (11% - 9% in abundance) and Cephalopoda and Holothuroidea (13% - 7% in biomass). The most important species were *Macropipus rugosus*, *Plesionika heterocarpus*, *Penaeopsis serrata* and *Paromola cuvieri* within Decapoda, *Loligo vulgaris*, *Sepia officinalis*, *Octopus vulgaris* and *Alloteuthis subulata* within Cephalopoda, and *Phyllochaetopterus socialis* within Polychaeta.

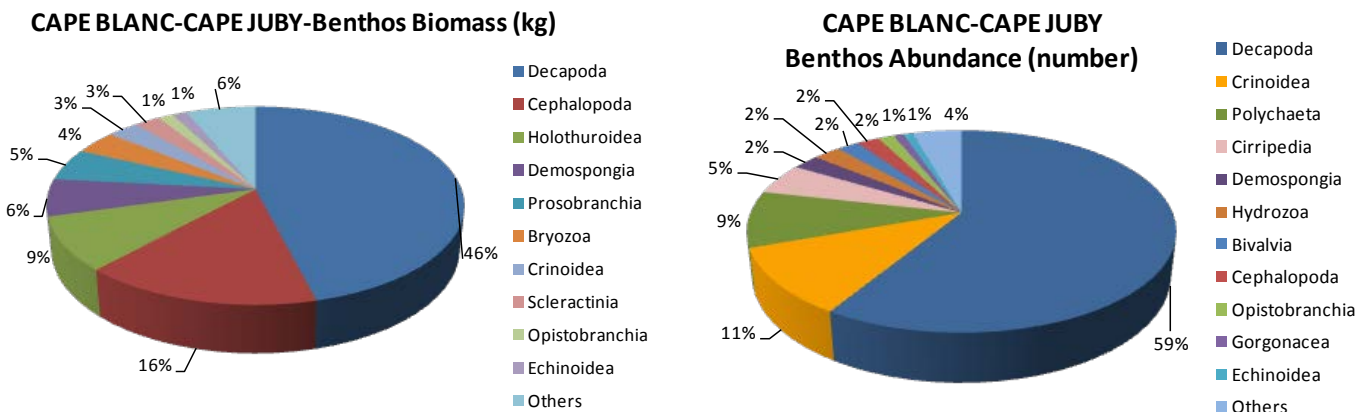


Figure 5.8 Cap Blanc – Cap Juby, biomass (left) and abundance (right) of zoobenthos

The hermit crab *Dardanus arrosor* was a very frequent species in whole the area, being present in 66% of the trawls performed. Other frequent taxa were the hydroid *Aglaophenia parvula* (54%), the gorgonian *Leptogorgia riodouri* (51%) and the crab *M. rugosus* (49%).

### CAP JUBY – CASABLANCA SECTOR

A number of 57 bottom trawls were carried out between Cap Juby and Casablanca, with a total catch of 108631 invertebrates that constituted 607 kg of biomass. The specific diversity was 314 species included in 30 high level taxa.

Decapoda was the dominant group in abundance (68%) and biomass (52%), followed in both cases by Cephalopoda (10%, 24%). The decapods *Parapenaeus longirostris*, *Solenocera membranacea*, *Plesionika heterocarpus*, *Penaeopsis serrata* and *Maja squinado*, and the cephalopods *Loligo vulgaris*, *Alloteuthis subulata*, *Illex coindetii*, *Sepia officinalis* and *Sepia orbyniiana* were the most abundant species.

The most frequent taxa in the area were the shrimps *S. membranacea* and *P. longirostris* (64 – 62%), the crab *Medorippe lanata* (60%) and the cephalopod *A. subulata* (60%).

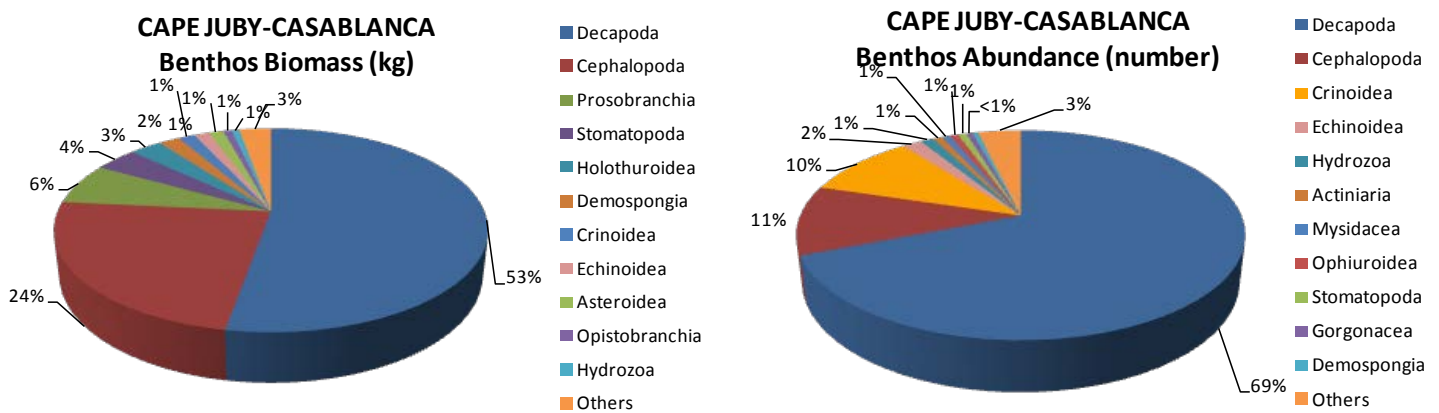


Figure 5.9 Cap Juby - Casablanca, biomass (left) and abundance (right) of zoobenthos

### REMARKS

The results exposed above constitute a very preliminary approximation to the composition, abundance and distribution of macrozoobenthos in the study area, based on the work developed onboard during the survey.

First, global results obtained in the whole sampled area are exposed. After, preliminary results for each prospected area are explained. Each zone is limited by either geographical or political borders. That involves that in the case of Senegal, two zones had to be considered (North and South), due to the presence of The Gambia.

The preliminary analysis of the results shows a clear dominance of the Decapoda in the study area, both in abundance and biomass, while cephalopods constitute the second most important group. The decapods dominance is mainly due to the high abundance of species belonging to the group Natantia (*Nematocarcinus africanus*, *Parapenaeus longirostris*, *Penaeopsis serrate*, *Solenocera membranacea* and several species of the genus *Plesionika*) although it is worth mentioning the importance of the *Brachyura* in certain areas (i.e. *Macropipus rugosus*) and especially in the shallower strata (i.e. *Calappa pelli*).

The presence of widely distributed species in the study area is quite remarkable among the group Cephalopoda. Furthermore, most of them have commercial interest as it is the case for *Loligo vulgaris*, *Octopus vulgaris*, *Sepia officinalis*, *Sepia orbygniana*, *Sepia elegans*, *Alloteuthis subulata* and *Alloteuthis africana*.

This figure of dominance keeps approximately the same through whole the study area, although with certain variations in each of the study zones considered. Results obtained for The Gambia are the only exception to this general scheme. In fact, Decapoda and Cephalopoda together constitute only 28% of the invertebrate biomass and 20% of the abundance in Gambian waters. This difference in relation to the other areas may be attributed to the low number of fishing stations recorded in this country, due to its small coastal extension.

Benthic communities seem to present similar structures, in relation to the dominant groups and to their trophic strategies, which therefore may exploit the available resources in a similar way. However, important variations regarding the specific composition of the benthic communities could be appreciated. These differences should be more evident when samples identification and analysis of the faunal bathymetric distribution are available.

It is worth mentioning the differences appreciated in the faunal composition between the South zone (from Guinea to Cap Blanc) with tropical seas typical species, to the North zone (from Cap Blanc to Casablanca), where species of temperate waters tend to dominate. This change from tropical to temperate waters is especially evident in the shallowest strata, and for certain groups as Prosobranchia and Decapoda, with higher diversity in southern waters. As sampling was advancing from south to north, we could detect a diminution and later total disappearing of tropical species, which were replaced for the correspondent in temperate waters. This change was less evident in the deeper strata, where some species have a much more widespread distribution in whole the study area.

It is worth noting that the highest specific richness was detected in waters off Mauritania, where the benthic fauna includes typically tropical species in the south and temperate species in the north. Other important remark detected along the survey was the difference in the main suspension-feeders distribution (mainly Porifera, Hydrozoa, Octocorals, Bryozoa and Crynoidea), which were much more abundant in the north area. The presence of suspension-feeders in shallow waters is mainly related to the planktonic productivity that provides the needed food for their development. However, suspension-feeders communities in deep waters are more related to the existence of bottom currents, that favours the re-suspension, lateral transport and availability of organic matter. In the other way, in absence of bottom currents, the organic matter deposits on the bottom and the communities are mainly detritivorous (i.e. Holothurioidea). In this sense, it is worth mentioning that sediment samples have been collected in all fishing stations. The analysis of these samples (granulometry, organic matter, carbonates) will provide relevant additional information, in order to understand the development of benthic communities.

Finally, it is important to bear in mind that results showed are preliminary and several years of work will be still needed. The implication of all the partners' countries in CCLME project will be essential for the successful development of these studies. This will provide the knowledge of the benthic diversity, distribution and community's structure, as a relevant part of the ecosystem approach considered in the CCLME project.

#### 1.25. Soft sediments

Soft sediment samples of macrobenthos were collected with the Sneli sledge and grab. Alle samples were transferred to the University of Bergen and the results will be presented in a separate report to CCLME.

### 1.26. Seabirds

The transects north of Cap Juby have seen large changes in both the abundance and species composition of seabirds in comparison with lower latitudes, for example pomarine skua *Stercorarius pomarinus* has been replaced by great skua *Catharacta skua* as the main food robber at trawls. Perhaps coinciding with the low sardine numbers noted above, the abundance of Northern Gannets *Morus bassanus* is much less than further south, although this is still the dominant species and large numbers have attended trawl discards.

Many hundreds of Great Shearwaters *Puffinus griseus* has been a surprise. Breeding individuals are on nests on Tristan da Cunha near the Antarctic now, so this seems to be a newly discovered wintering location for non-breeding birds, or very late migration. Mediterranean gull's *Larus melanocephalus* wintering behaviour is not known, so many observations, all of birds in their first year, over the continental shelf, including both day and night foraging at trawls, are a first. The globally "Critical" Balearic shearwater *Puffinus mauretanicus* is the most threatened seabird of the CCLME. Though more characteristic of the Mediterranean and coastal SW Europe, our observations in recent days, at the edge of its wintering range, will be of interest to analyses.

A full report on the seabird observations made during the survey will be presented to the CCLME separately.

### 1.27. Cetaceans

The full report on Cetacean observations made during the survey has been presented separately.

### 1.28. Genetics

Report on genetic analyses on the collected samples will be presented to the CCLME separately.

### 1.29. Fish Biodiversity

On our 62 day long cruise along the North West coast of Africa we have conducted 281 bottom trawl catches. In these we have recorded more than 470 different fish species, belonging to more than 120 families. In addition we have collected about 1000 different invertebrate species, belonging to almost all phyla: sponges, cnidarians, molluscs, crustaceans, echinoderms. In the following a description in biodiversity in 4 different regions and 3 depth ranges will be given.

As the survey has progressed northwards, from tropical to temperate waters, the fauna have changed. From the amazing tropical fauna, full of colours, to more discrete specimens that becomes more similar to the European fauna. The number of species recorded in the bottom trawl have also decreased with increasing latitude (Figure 5.10). The highest number of species was found in shallow area, from 20-50 m. The number of species in each trawl station is presented in Figure 5.11.

In south, around 25 fish species occur regularly in survey trawl catches, while the number is 15 species in the north. The total biomass and abundance is dominated by few species; for instance, the two most abundant fish species constituted over 90% of the total abundance of all species caught in bottom trawls

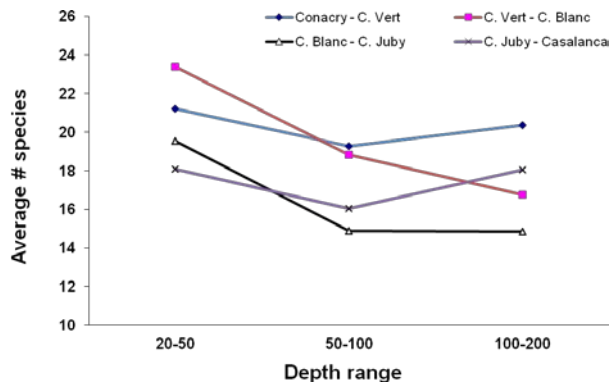


Figure 5.10. Average number of species from three depth ranges in the four main regions.

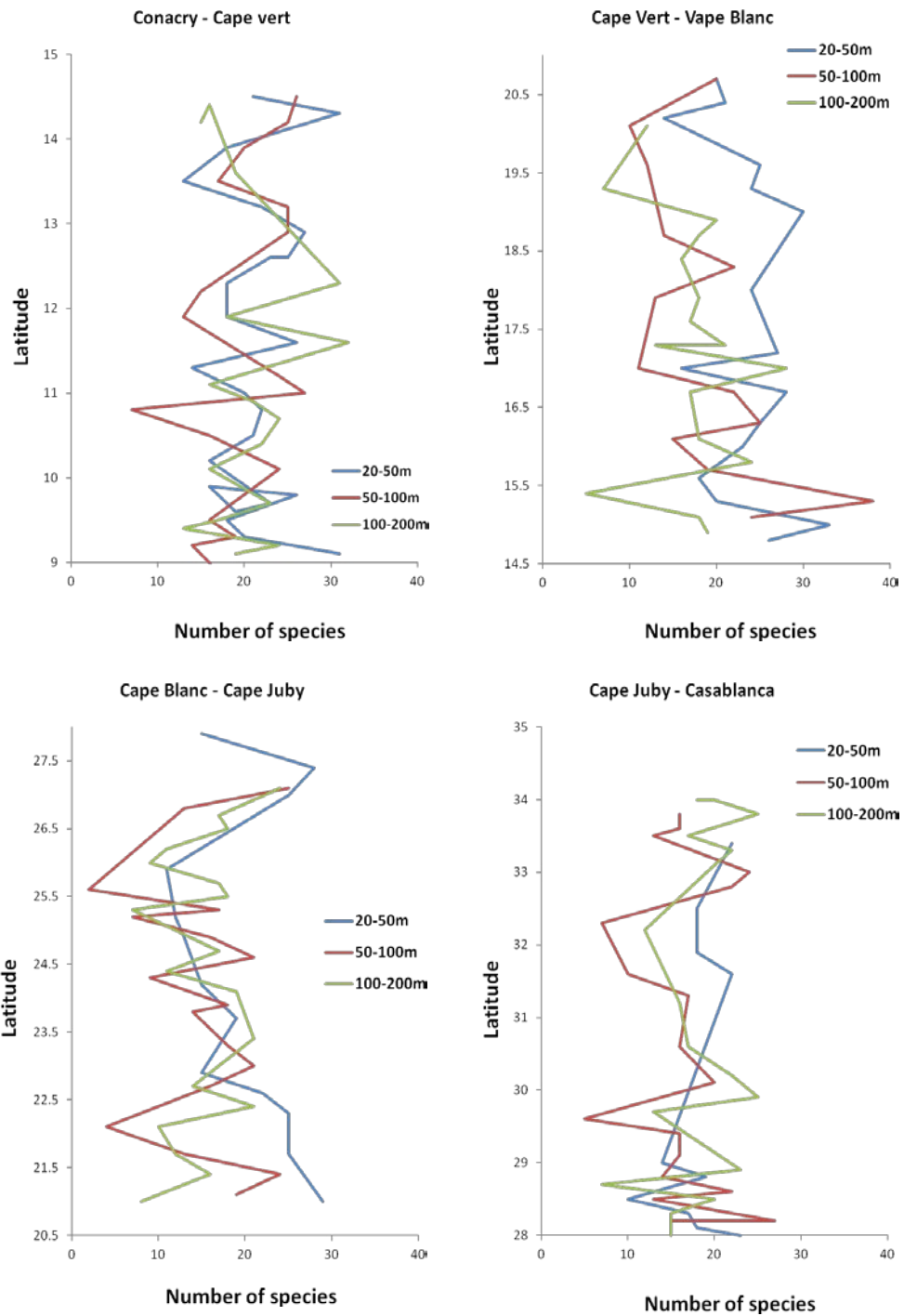


Figure 5.11 Number of species in individual trawl hauls from three depth ranges in the four main regions.

In the Appendix to this report we provide an updated list of species recorded during the cruise. However, it should be noted that: 1) some of the records need to be validated because of identification uncertainty, and 2) the taxonomic status of some of the species is unclear. In spite of this, the appendix lists 470 different fish species, belonging to more than 120 families. For comparison, in the Barents Sea only 204 species from 70 families are recorded during a similar type of survey. The most important families are described under the swept area chapter. The cumulative relative abundance (blue line) and relative abundance (log scale; bars) plotted against species rank for all marine species caught in demersal and pelagic trawls are presented in Figure 5.12.

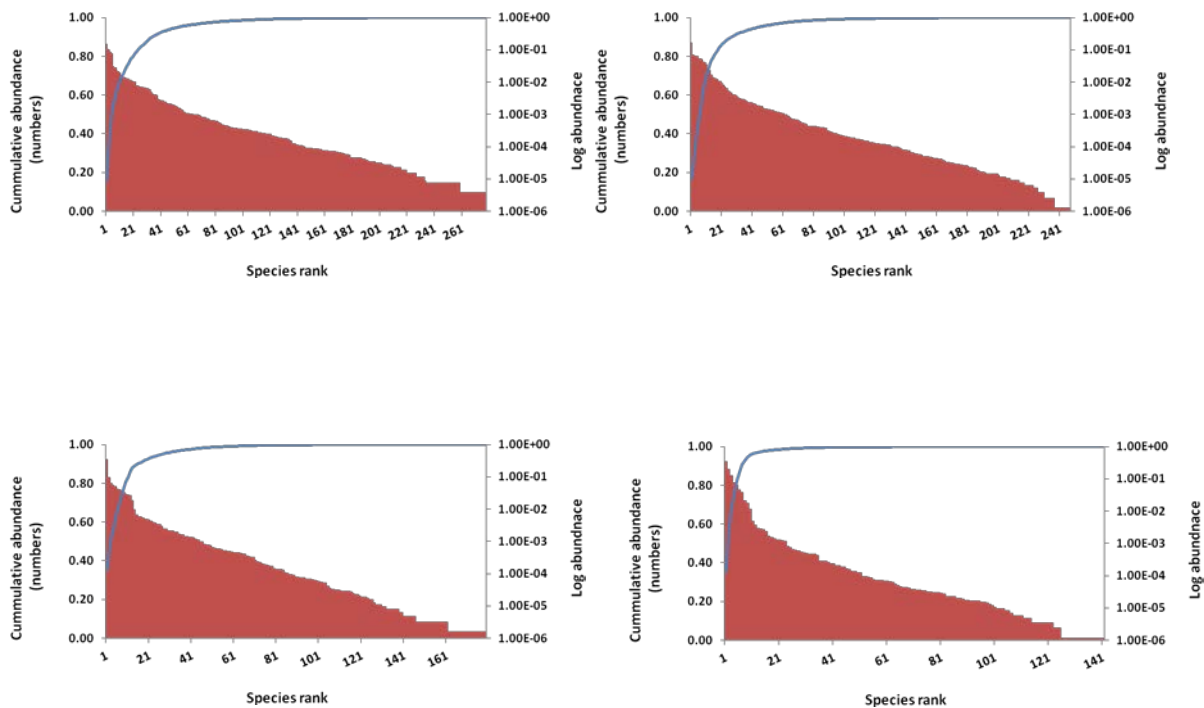


Figure 5.12. Cumulative relative abundance (blue line) and relative abundance (log scale; bars) plotted against species rank (Whittaker plot) for all marine species caught in demersal and pelagic trawls in a) the region Conakry and Cap Vert (total number of species caught  $n = 278$ ), b) the region Cap Vert and Cap Blanc (total number of species caught  $n = 248$ ), c) the region Cap Blanc and Cap Juby (total number of species caught  $n = 179$ ) and d) the region Cap Juby and Casablanca (total number of species caught  $n = 141$ ).

The frequency of occurrence of species present in more than 25% of all trawls (pelagic and demersal) conducted in the 4 regions are presented in figure x5. In south, the number of species sampled may be larger, but fewer of them occur in more than 25% of the trawl stations than is the case further north

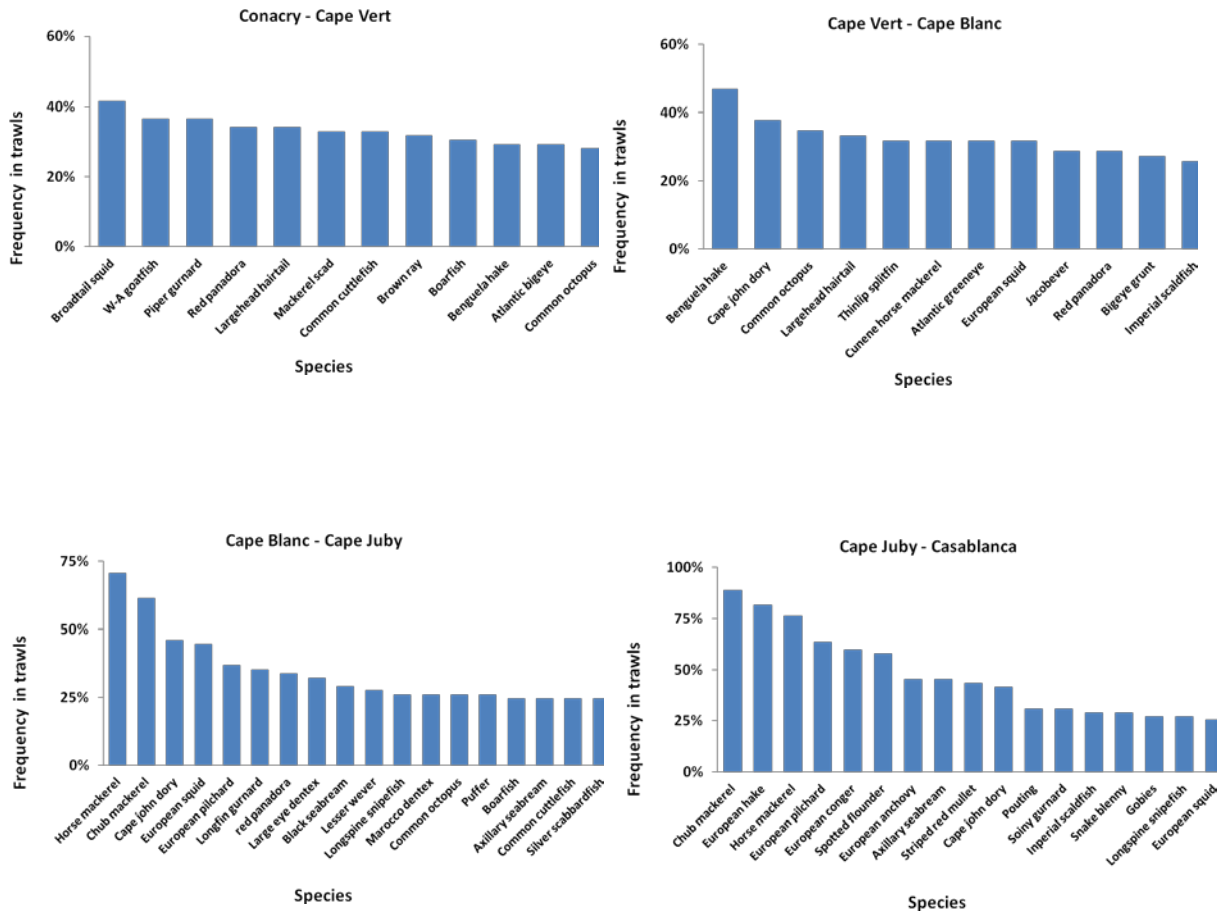


Figure 5.13 Frequency of occurrence of species present in more than 25% of all trawls (pelagic and demersal) conducted in the area between a) Conakry and Cap Vert at 20 – 700 m depth, b) Cap Vert and Cap Blanc at 20 – 500 m depth, c) Cap Blanc and Cap Juby at 20 – 400 m depth and d) Cap Juby and Casablanca at 20 – 600 m depth.

A specimen belonging to fishes called rovers, Emmelichthyidae, in the genus *Emmelichthys* did cause some excitement during the cruise. This family, consisting of only three genera and about 15 species, is found in tropical and warm temperate waters and they are feeding on plankton. Adults are usually found near the bottom from 100-400 m depth. The individual we caught was not described in any of the literature we had available onboard. After some e-mailing with specialist on land, we got the impression that this could be a new species. A tissue sample was conserved in ethanol for genetic analysis and the specimen itself was conserved properly in order to send it to a taxonomist when the cruise is over. Two days later we caught five more of this fish and we started to realize that the species was not as rare as first though.

Another day we caught a fish that lives in the cavity of a sea cucumber. One fish species, *Carapus acus*, in Eastern Atlantic is fairly well known for this behaviour and we recorded it on the survey last year to São Tomé. The specimen we caught this time was smaller and looked different from the previous one. May be it is an early stage or another species? This specimen will also be sent to a specialist for further examination.

Sometimes it can be really difficult to differentiate between species. We have to count gill racers, spines etc., and big discussions between the expert's onboard starts. Internet and various other literatures are checked and usually everybody agrees and they have all learned something new that day. Since it is so small details that distinguish one species from another, it is quite common that the locals identify the most common species for the area, without considering the possibility that it can



be a close relative. We had one on those discussions yesterday about three types of hake (*Merluccius senegalensis*, *Merluccius polli* and *Merluccius merluccius*).

Preliminary observations also reveal new information on the distribution of many species. For example, the distribution of horse mackerel *T. Trachurus* was found on the shelf south of Dakar. This is quite unusual at this time of the year, and the frequencies of occurrence in the trawl catches were higher than any previously recorded. This is also the case of two species of octopus the Musky octopus *Eledone moschata* and the spider octopus *Octopus salutti*, whose southern limit previously was believed to be in the Gulf of Cadiz, but which we now have found along the coast of Morocco.

Other findings are related to additional groups that are not very well known, for instance the Hydroids. We have collected colonies of the genus *Diphasia* and *Nemertesia* that could not be assigned to any of the species presently known. This leads us to think that they may belong to new species.

The different fish species are not evenly distributed along the coast of northwest Africa, but have highest abundance in the areas where the environmental conditions suit their preferences. The different water masses, i.e. coastal water, Atlantic water, and the frontal zones between these water masses, together with bottom type, temperature and depth, are important factors determining the distribution and abundance of the fish species. For pelagic species the distribution and abundance of zooplankton is also very important. Species with the same environmental preferences will co-occur in limited geographical areas and form fish assemblages, with distinctive species compositions.

## SUMMARY AND CONCLUSIONS

This survey is the first of two CCLME regional surveys covering two different seasons in the Canary Current Ecosystem. The second survey will take place from beginning of May to end of July 2012. The full reporting from these surveys will come in workshop reports when these surveys are completed. In this summary, the main results from the first survey (20 October – 21 December, 2011) are highlighted:

### Environmental data

The survey area is a coastal upwelling system with a continental shelf that extends up to 150 km offshore. It is a dynamic system with seasonal fluctuations and the production rate and species composition of both phyto- and zooplankton is influenced by a number of physical factors such as vertical stratification of the water column, nutrient conditions, ocean currents, wind strength and direction and as well as temperature. In this upwelling system the deep water, low on oxygen but rich on nutrients, mix at a high rate with the nutrient-poor, warm oxygen-rich surface water and increase the production of marine life.

Some areas within this region have very strong stratified deep layers with oxygen depleted water, and very little mixing occurs. Here the dissolved oxygen has reached a point where it becomes detrimental to aquatic organisms living in the system, so called “dead zones”. As a consequence of global climate change, increased warming of the surface water may strengthen the stratification of these water layers, hence reducing the mixing effect between the deep and surface layers.

In other parts of the world such dead zones have been observed to extend into relatively shallow water, where the richest marine ecosystems are, with adverse consequences for ocean life. During this survey we have observed symptoms of this phenomenon in certain areas along our survey. However, the nutrient and plankton data collected along the environmental survey lines are yet to be analysed, and the physical environmental data need to be treated statistically before any firm conclusion can be drawn from this material. We also wish to collect comparable information from historical surveys to set our data in a temporal perspective. Our future analysis will include in-depth studies of phyto- and zooplankton abundance, species composition, vertical and horizontal distributions and biomass. This will further be related to the physical and chemical environmental factors.

### Acoustic observations

Continues acoustic recordings were made during the survey. However, demersal trawling was prioritized during the survey providing little time for pelagic trawls to identify acoustic targets. As a consequence of the uncertainty introduced by this it was decided not to publish the acoustic abundance estimates calculated in the cruise report. Moreover, this was not set to be one of our primary targets as the local vessels in the region has the capacity to do this themselves.

However a few observations are worth noting. *Sardinella* was distributed with higher abundance further south than usually during the November cruises. *Trachurus trachurus* also had a slightly more southward distribution limit than usual with sever catches south of Dakar.

The abundance of sardines recorded during the survey seems to be much lower than during previous surveys with the Dr. Fridtjof Nansen. Some fish was found off the coast of Mauritania, further north, in the previously main area for sardines, very few catches and only few acoustic recordings were made. The abundance of scad was good with a wide distribution area covering the whole survey area north of Cap Blanc, and some few catches also south of this.

### Swept area indexes

The regions between Conacry and Cap Vert and between Cap Vert and Cap Blanc both showed relative similar total demersal swept area indexes between 50 000 – 100 000 tonnes (Table 22).

North of this the demersal fish abundance increased to almost 200 000 tonnes between Cap Blanc and Cap Juby, before it declined sharply between Cap Juby and Casablanca to < 10 000 tonnes. Grunts and seabreams were the fish groups that contributed most to the overall swept area abundance. Catch indexes was made also of other groups, sharks rays, shrimps and cephalopods (table 24). The cephalopods including octopus were the most abundant with peak abundance between Cap Vert and Conacry and declining catches north and south of this. Sharks had peak abundance in the south between Conacry and Cap Vert while rays had peak abundance between Cap Blanc and Cap Juby. In terms of fish biodiversity the highest number of species (Figure 5.10) were found in the inner shelf region (20-50 m depth) between Cap Vert and Cap Blanc, followed by the slope region (100 – 500 m depth) between Conacry and Cap vert.

#### Whales and dolphins visual observations

Our study documented the seasonal distribution in the survey area of whales and dolphins and confirmed new recordings of humpback whales in Guinea Bissau and in The Gambia.

The other material recorded during the survey requires further analyses in the lab and will be reported separately after the survey.

## REFERENCES

- Bamy, I.L., Van Waerebeek, K., Bah, S.S., Dia, M., Kaba, B., Keita, N. & Konate, S. (2010) Species occurrence of cetaceans in Guinea, including humpback whales with southern hemisphere seasonality. *Marine Biodiversity Records* 3 (e48): 1-10. doi:10.1017/S1755267210000436.
- Buckland, S.T., Anderson, D.R., Burnham, K.P., Laake, J.L., Borchers, D.L. & Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press.
- Hagebø, M. 2008. Bestemmelse av oppløst oksygen i sjøvann v.h.a. Winklermetoden, redoks titrering. Kvalitetshåndbok for Havforskningsinstituttet Kjemilaboratoriet. 9 pp.
- FAO 1984, Fishery Committee for the eastern Central Atlantic. Report on the R.V. Dr. Fridtjof Nansen fish resources surveys off West Africa: Morocco to Ghana and Cape Verde. CECAF/ECAF Series 84/29 (en)
- Perrin, W.F. & Van Waerebeek, K. (2011) The Small-Cetacean Fauna of the West Coast of Africa and Macaronesia: diversity and distribution. Proceedings of the Watch Symposium at Adeje, Tenerife, 16-20 October 2007. UNEP/CMS, Bonn. (In press).
- Schlitzer, R., Ocean Data View, <http://odv.awi.de>, 2011.
- Sneli, Jon-Arne 1998 03 13. A simple benthic sledge for shallow and deep-sea sampling. – *Sarsia* 83:69-72. Bergen.
- Stramma L., Brant P., Schafstall J., Schott F., Fisher J. & Kortzinger A. (2008). *Oxygen Minimum Zone in the North Atlantic south and east of the Cape Verde Islands*. Journal of Geophysical Research. 15 pp.
- Stramma L. and Schott F. (1998). *The mean flow field of the Tropical Atlantic Ocean*. Deep-Sea Research, part II, 25 pp.
- Strømme, T. 1992. NAN-SIS: Software for fishery survey data logging and analysis. User's manual. FAO Computerized Information Series (Fisheries). No. 4. Rome, FAO. 1992. 103.
- Van Waerebeek, K., Barnett, L., Camara, A., Cham, A., Diallo, M., Djiba, A., Jallow, A.O., Ndiaye, E., Samba Ould Bilal, A.O. and Bamy, I. L. (2004). Distribution, status and biology of the Atlantic humpback dolphin *Sousa teuszii* (Kükenthal, 1892). *Aquatic Mammals* 30(1): 56-83.

# ANNEX I RECORDS OF FISHING STATIONS

R/V Dr. Fridtjof Nansen		SURVEY:2011410		STATION: 1	
DATE	: 20/10/2011	GEAR TYPE: BT NO:	6	POSITION: Lat	N 9°8.20
				Lon	W 13°49.14
TIME	: 22:22:58	start stop duration	22:53:15	Purpose	: 3
LOG	: 7373.02	7374.63	1.6	Region	: 2200
FDEPTH:	26	25		Gear cond.:	0
BDEPTH:	26	25		Validity	: 0
Towing dir:	0°	Wire out	: 110 m	Speed	: 3.2 kn
Sorted	: 97	Total catch:	96.61	Catch/hour:	191.43
SPECIES					
	weight	numbers		CATCH/HOUR	% OF TOT. C
Dentex congoensis	43.89	341		22.93	
Cymbium sp.	24.08	10		12.58	
Syacium micrurum	17.97	89		9.39	
Sardinella maderensis	15.75	245		8.23	
Ephippion guttifer	11.10	14		5.80	
Dactylopterus volitans	10.11	38		5.28	
Sphyræna sphyraena	8.72	2		4.55	
Brachydeuterus auritus	6.64	89		3.47	
Cynoglossus senegalensis	5.67	32		2.96	
Decapterus rhonchus	5.65	52		2.95	
Balistes capricus	5.27	48		2.75	
Chaetodipterus lippei	4.99	24		2.61	
Rhinobatos rhinobatos	4.32	6		2.26	
CONGRUIDE	4.18	18		2.18	
Pagrus caeruleostictus	4.00	22		2.09	
Trachinocephalus myops	3.01	89		1.57	
Sphyræna guachancho	2.00	6		1.05	
Lagocephalus laevigatus	1.80	2		0.94	
Albula vulpes	1.51	2		0.79	
Pomadasyds jubelini	1.49	2		0.78	
Remora sp.	1.21	2		0.63	
Alectis alexandrinus	1.17	2		0.61	
Psettodes bennetti	1.11	4		0.58	
Sepia officinalis	0.99	6		0.52	
Dicologlossa hexophthalma	0.95	24		0.50	
Stephanolepis hispidus	0.85	12		0.45	
Psettodes belcheri	0.75	2		0.39	
Pseudupeneus prayensis	0.73	10		0.38	
Penaeus kerathurus	0.69	24		0.36	
Sardinella aurita	0.50	6		0.26	
Grammolites gruvelli	0.34	12		0.18	
Total	191.43			100.00	

R/V Dr. Fridtjof Nansen		SURVEY:2011410		STATION: 2	
DATE	: 21/10/2011	GEAR TYPE: BT NO:	6	POSITION: Lat	N 8°41.43
				Lon	W 14°26.42
TIME	: 04:45:23	start stop duration	05:14:04	Purpose	: 3
LOG	: 7425.84	7427.15	1.3	Region	: 2200
FDEPTH:	58	59		Gear cond.:	0
BDEPTH:	58	59		Validity	: 0
Towing dir:	0°	Wire out	: 140 m	Speed	: 2.7 kn
Sorted	: 117	Total catch:	116.50	Catch/hour:	243.72
SPECIES					
	weight	numbers		CATCH/HOUR	% OF TOT. C
Trigla lyra	114.52	1262		46.99	
Dactylopterus volitans	34.16	182		14.02	
Bothus podas africanus	28.31	697		11.61	
Trachinus armatus	25.96	345		10.65	
Ariomma bondi	16.61	251		6.82	
Dicologlossa hexophthalma	8.12	126		3.33	
Saurida brasiliensis	4.79	48		1.97	
Raja miraletus	3.12	15		1.28	
Chilomycterus spinosus mauret.	2.05	6		0.84	
Lagocephalus laevigatus	1.80	38		0.74	
Zanobatus shoeneleini	1.44	4		0.59	
Pseudupeneus prayensis	1.07	10		0.44	
Grammolites gruvelli	0.44	25		0.18	
Microchirus boscanion	0.40	27		0.16	
Illex coindetii	0.40	6		0.16	
Arnoglossus Capnsis	0.23	46		0.09	
Ephippion guttifer	0.19	17		0.08	
Cynoponticus ferox	0.13	4		0.05	
Total	243.72			100.00	

R/V Dr. Fridtjof Nansen		SURVEY:2011410		STATION: 3	
DATE	: 21/10/2011	GEAR TYPE: BT NO:	6	POSITION: Lat	N 8°58.47
				Lon	W 14°38.57
TIME	: 13:48:34	start stop duration	14:17:18	Purpose	: 3
LOG	: 7490.25	7491.56	1.3	Region	: 2200
FDEPTH:	88	92		Gear cond.:	0
BDEPTH:	88	92		Validity	: 0
Towing dir:	0°	Wire out	: 220 m	Speed	: 2.7 kn
Sorted	: 32	Total catch:	76.96	Catch/hour:	160.72
SPECIES					
	weight	numbers		CATCH/HOUR	% OF TOT. C
Antigonia capros	118.20	2857		73.54	
Mustelus mustelus	28.61	4		17.80	
Lagocephalus laevigatus	3.47	4		2.16	
Fistularia petimba	2.46	13		1.53	
Trigla lyra	2.26	29		1.40	
Raja miraletus	1.80	4		1.12	
Scorpaena stephanica	1.55	8		0.96	
Arnoglossus Capnsis	0.58	13		0.36	
Illex coindetii	0.46	4		0.29	
Scorpaena normani	0.46	8		0.29	
Arnoglossus imperialis	0.25	21		0.16	
Priacanthus arenatus	0.21	4		0.13	
Trachinus armatus	0.17	8		0.10	
Microchirus boscanion	0.08	4		0.05	
Syngnathidae sp.	0.08	4		0.05	
Bothus podas africanus	0.08	4		0.05	
Total	160.72			100.00	

R/V Dr. Fridtjof Nansen		SURVEY:2011410		STATION: 4	
DATE	: 21/10/2011	GEAR TYPE: BT NO:	6	POSITION: Lat	N 9°16.84
				Lon	W 14°17.73
TIME	: 18:27:32	start stop duration	18:57:48	Purpose	: 3
LOG	: 7527.58	7529.17	1.6	Region	: 2200
FDEPTH:	48	48		Gear cond.:	0
BDEPTH:	48	48		Validity	: 0
Towing dir:	0°	Wire out	: 140 m	Speed	: 3.1 kn
Sorted	: 99	Total catch:	195.45	Catch/hour:	387.41
SPECIES					
	weight	numbers		CATCH/HOUR	% OF TOT. C
Galeoides decadactylus	151.44	936		39.09	4
Pagellus bellottii	66.01	460		17.04	5
Pagrus caeruleostictus	47.67	186		12.30	
Decapterus rhonchus	31.91	402		8.24	3
Pseudupeneus prayensis	26.40	301		6.82	
Sardinella aurita	25.67	214		6.63	1
Epinephelus aeneus	16.33	2		4.22	
Raja miraletus	5.35	12		1.38	
Sphyræna sphyraena	4.36	34		1.13	
Sphyræna guachancho	4.26	12		1.10	
Bothus podas africanus	2.08	48		0.54	
Rhinobatos rhinobatos	1.21	2		0.31	
Antigonia capros	1.11	18		0.29	
Trachinocephalus myops	0.91	14		0.24	
Trachinotus sp.	0.91	14		0.24	
Sardinella maderensis	0.52	4		0.13	2
Priacanthus arenatus	0.44	4		0.11	
Pseudupeneus prayensis	0.40	4		0.10	0
Sepia officinalis	0.30	8		0.08	
Penaeus notialis	0.14	4		0.04	
Total	387.41			100.00	

R/V Dr. Fridtjof Nansen		SURVEY:2011410		STATION: 5	
DATE	: 21/10/2011	GEAR TYPE: PT NO:	4	POSITION: Lat	N 9°19.08
				Lon	W 14°15.04
TIME	: 21:02:56	start stop duration	21:32:22	Purpose	: 3
LOG	: 7535.32	7536.89	1.6	Region	: 2200
FDEPTH:	10	10		Gear cond.:	0
BDEPTH:	54	54		Validity	: 0
Towing dir:	0°	Wire out	: 110 m	Speed	: 3.2 kn
Sorted	: 5	Total catch:	58.74	Catch/hour:	119.76
SPECIES					
	weight	numbers		CATCH/HOUR	% OF TOT. C
Sardinella aurita	105.30	1264		87.93	6
Decapterus rhonchus	8.77	245		7.32	7
Brachydeuterus auritus	3.77	49		3.15	15
Sphyræna sphyraena	1.47	6		1.23	
Sardinella maderensis	0.45	4		0.37	8
Total	119.76			100.00	

R/V Dr. Fridtjof Nansen		SURVEY:2011410		STATION: 6	
DATE	: 22/10/2011	GEAR TYPE: PT NO:	4	POSITION: Lat	N 9°28.79
				Lon	W 14°32.61
TIME	: 04:02:03	start stop duration	04:30:40	Purpose	: 3
LOG	: 7596.40	7597.98	1.6	Region	: 2200
FDEPTH:	0	0		Gear cond.:	0
BDEPTH:	39	40		Validity	: 0
Towing dir:	0°	Wire out	: 110 m	Speed	: 3.3 kn
Sorted	: 10	Total catch:	45.50	Catch/hour:	95.39
SPECIES					
	weight	numbers		CATCH/HOUR	% OF TOT. C
Decapterus rhonchus	32.18	143		33.74	9
Brachydeuterus auritus	10.99	132		11.52	14
Pagellus bellottii	9.69	59		10.15	12
Pagrus caeruleostictus	7.67	29		8.04	11
Mustelus mustelus	4.93	4		5.16	
Priacanthus arenatus	3.54	13		3.71	
Saurida brasiliensis	3.50	27		3.67	
Pseudupeneus prayensis	3.46	29		3.63	13
Aluterus heudelotii	2.91	6		3.05	
Selar crumenophthalmus	2.20	8		2.31	
Sepia officinalis	2.14	10		2.24	
Decapterus punctatus	2.05	36		2.15	10
Chilomycterus spinosus mauret.	1.99	4		2.09	
Pomadasyds jubelini	1.74	2		1.82	
Stephanolepis hispidus	1.32	10		1.38	
Lagocephalus laevigatus	1.17	2		1.23	
Fistularia petimba	0.88	6		0.92	
Echeneis naucrates	0.75	4		0.79	
Sphyræna guachancho	0.67	4		0.70	
Scomber japonicus	0.63	2		0.66	
Dicologlossa hexophthalma	0.46	8		0.48	
Trachinus armatus	0.40	2		0.42	
Bothus podas africanus	0.10	2		0.11	
Total	95.39			100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 7  
 DATE :22/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°28.59  
 start stop duration Lon W 14°30.91  
 TIME :06:48:22 07:18:52 30.5 (min) Purpose : 3  
 LOG : 7615.18 7616.79 1.6 Region : 2200  
 FDEPTH: 34 34 Gear cond.: 0  
 BDEPTH: 34 34 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.2 kn  
 Sorted : 73 Total catch: 72.81 Catch/hour: 143.23

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Priacanthus arenatus	51.15 368	35.71	18
Pagellus bellottii	23.31 157	16.28	16
Pseudupeneus prayensis	17.31 122	12.09	17
Pagrus caeruleostictus	16.33 87	11.40	19
Sepia officinalis	7.22 16	5.04	22
Balistes capricus	6.79 53	4.74	20
Trachinocephalus myops	4.52 16	3.16	
Lagocephalus laevigatus	3.93 10	2.75	
Decapterus rhonchus	2.95 18	2.06	21
Chilomycterus spinosus mauret.	2.85 8	1.99	
Fistularia tabacaria	1.91 10	1.33	
Sphyræna guachancho	1.32 6	0.92	
Rhinobatos rhinobatos	1.18 4	0.82	
Caranx crysos	0.98 4	0.69	
Aluterus schoepfi	0.89 2	0.62	
Bodianus iagonensis	0.51 4	0.36	
Bothus podas africanus	0.08 2	0.05	
Plastic bags	0.00 10	0.00	
Total	143.23	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 8  
 DATE :22/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°12.80  
 start stop duration Lon W 14°52.50  
 TIME :10:16:29 10:37:05 20.6 (min) Purpose : 3  
 LOG : 7643.27 7644.39 1.1 Region : 2200  
 FDEPTH: 52 49 Gear cond.: 0  
 BDEPTH: 52 49 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.2 kn  
 Sorted : 12 Total catch: 11.71 Catch/hour: 34.11

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Diodon holocanthus	11.36 17	33.30	
Balistes capricus	8.59 6	25.19	
Rhinobatos rhinobatos	3.79 6	11.10	
Raja miraletus	2.83 9	8.28	
Chilomycterus spinosus mauret.	1.57 6	4.61	
Dactylopterus volitans	1.14 3	3.33	
Trigla lyra	0.96 6	2.82	
Xyrichtys novacula	0.79 15	2.31	
Bothus podas africanus	0.70 9	2.05	
Priacanthus arenatus	0.67 3	1.96	
Trachinocephalus myops	0.61 6	1.79	
Trachinus armatus	0.61 6	1.79	
Octopus vulgaris	0.35 3	1.02	
Spherooides marmoratus	0.15 3	0.43	
Total	34.11	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 9  
 DATE :22/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°3.10  
 start stop duration Lon W 15°1.72  
 TIME :13:02:37 13:33:24 30.8 (min) Purpose : 3  
 LOG : 7663.59 7665.02 1.4 Region : 2200  
 FDEPTH: 111 114 Gear cond.: 0  
 BDEPTH: 111 114 Validity : 0  
 Towing dir: 0° Wire out : 270 m Speed : 2.8 kn  
 Sorted : 113 Total catch: 112.51 Catch/hour: 219.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Anthias anthias	85.73 1885	39.09	
Dentex angolensis	48.03 324	21.90	
Antigonia capros	29.38 290	13.39	
Erythrocles monodi	10.92 88	4.98	
Mustelus mustelus	10.33 2	4.71	
Scorpaena stephanica	9.26 25	4.22	
Scorpaena scrofa	6.84 8	3.12	
Raja miraletus	4.78 18	2.18	
Spicara alta	2.94 21	1.34	
Umbalina canariensis	2.42 4	1.10	
Dactylopterus volitans	2.07 14	0.94	
Trigla lyra	1.72 21	0.78	
Fistularia petimba	1.48 4	0.68	
Priacanthus arenatus	0.92 4	0.42	
Zeus faber	0.74 4	0.34	
Boops boops	0.66 4	0.30	
Trachinocephalus myops	0.60 4	0.28	
Pontinus kuhlii	0.39 4	0.18	
Arnoglossus imperialis	0.12 4	0.05	
Total	219.32	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 10  
 DATE :22/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°2.83  
 start stop duration Lon W 15°6.33  
 TIME :15:03:25 15:31:29 28.1 (min) Purpose : 3  
 LOG : 7672.58 7673.75 1.2 Region : 2200  
 FDEPTH: 238 234 Gear cond.: 0  
 BDEPTH: 238 234 Validity : 0  
 Towing dir: 0° Wire out : 550 m Speed : 2.5 kn  
 Sorted : 17 Total catch: 16.76 Catch/hour: 35.82

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Chlorophthalmus atlanticus	6.82 545	19.03	
Raja straeleni	5.60 4	15.63	
Raja miraletus	5.15 17	14.38	
Todaropsis eblanae	4.62 49	12.89	
Trachinocephalus myops	3.29 28	9.19	
Ariomma bondi	3.10 985	8.65	
Squalus mesalops	2.65 2	7.40	
Illex coindetii	1.39 60	3.88	
Scorpaena scrofa	0.77 2	2.15	
Pontinus kuhlii	0.49 6	1.37	
Anthias anthias	0.38 6	1.07	
Arnoglossus imperialis	0.36 19	1.01	
Uranoscopus cadenati	0.36 2	1.01	
Sepia officinalis	0.28 19	0.78	
Enchelycore nigricans	0.26 4	0.72	
Zenopsis conchifer	0.21 2	0.60	
Spherooides pachgaster	0.04 2	0.12	
Stephanolepis hispidus	0.04 2	0.12	
Total	35.82	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 11  
 DATE :23/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°25.67  
 start stop duration Lon W 15°25.67  
 TIME :01:30:31 01:59:11 28.7 (min) Purpose : 3  
 LOG : 7726.45 7727.77 1.3 Region : 2200  
 FDEPTH: 342 332 Gear cond.: 0  
 BDEPTH: 342 332 Validity : 0  
 Towing dir: 0° Wire out : 840 m Speed : 2.8 kn  
 Sorted : 21 Total catch: 232.27 Catch/hour: 486.09

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Chlorophthalmus atlanticus	314.54 6063	64.71	
Ijimaia loppei	50.23 13	10.33	
Squatina oculata	28.88 2	5.94	
Chlorophthalmus fraseri	22.23 452	4.57	
Trichurus lepturus	19.97 1507	4.11	
Todaropsis eblanae	15.07 132	3.10	
Synagrops microlepis	10.17 339	2.09	
Malacocephalus occidentalis	8.29 1149	1.70	
Scyllorhinus stellaris	5.65 57	1.16	
Pterothissus belloci	3.96 19	0.81	
Torpedo marmorata	2.41 2	0.50	
Astronesthes sp.	2.07 132	0.43	
Peristedion cataphractum	1.32 57	0.27	
Argyropelecus gigas	1.13 339	0.23	
Raja straeleni	0.19 19	0.04	
Total	486.09	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 12  
 DATE :23/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°12.21  
 start stop duration Lon W 15°24.05  
 TIME :03:42:46 04:13:14 30.5 (min) Purpose : 3  
 LOG : 7735.55 7736.89 1.3 Region : 2200  
 FDEPTH: 116 127 Gear cond.: 0  
 BDEPTH: 116 127 Validity : 0  
 Towing dir: 0° Wire out : 290 m Speed : 2.6 kn  
 Sorted : 45 Total catch: 177.12 Catch/hour: 348.78

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Chlorophthalmus atlanticus	143.35 1085	41.10	
Torpedo marmorata	36.23 24	10.39	
Scorpaena scrofa	30.88 87	8.85	
Dentex angolensis	29.85 213	8.56	
Scorpaena stephanica	28.36 79	8.13	
Antigonia capros	20.48 1024	5.87	
Pontinus kuhlii	12.37 165	3.55	
Trichurus lepturus	8.51 370	2.44	
Trigla lyra	5.99 39	1.72	
Ariomma cf. melanum	5.99 181	1.72	
Spicara alta	4.88 39	1.40	
Ariomma bondi	4.25 71	1.22	
Anthias anthias	3.54 47	1.02	
Octopus vulgaris	2.05 8	0.59	
Spherooides pachgaster	1.89 8	0.54	
Pagellus bellottii	1.89 8	0.54	
Laemomema laureysii	1.73 79	0.50	
Illex coindetii	1.50 16	0.43	
Cynoponticus ferox	1.34 16	0.38	
Peristedion cataphractum	1.10 47	0.32	
Saurida brasiliensis	0.87 102	0.25	
Dicologlossa hexophthalma	0.71 8	0.20	
Citharus linguatula	0.71 8	0.20	
Serranus africana	0.32 8	0.09	
Total	348.78	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 13  
 DATE :23/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°15.01  
 start stop duration Lon W 15°21.63  
 TIME :08:19:03 08:50:20 31.3 (min) Purpose : 3  
 LOG : 7750.05 7751.53 1.5 Region : 2200  
 FDEPTH: 82 84 Gear cond.: 0  
 BDEPTH: 82 84 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 2.8 kn  
 Sorted : 28 Total catch: 27.94 Catch/hour: 53.59

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Antigonia capros	41.62 1024	77.67	
Pagellus bellottii	4.58 96	8.55	23
Dactylopterus volitans	1.29 6	2.40	
Raja miraletus	1.23 6	2.29	
Spherooides marmoratus	1.05 4	1.97	
Lepidotrigla carolae	0.79 33	1.47	
Torpedo nobiliana	0.71 2	1.32	
Ariomma bondi	0.56 8	1.04	
Scorpaena laevis	0.50 4	0.93	
Sepia orbignyana	0.29 2	0.54	
Spherooides pachgaster	0.25 4	0.47	
Pontinus kuhlii	0.21 2	0.39	
Trachurus trecae	0.13 4	0.25	
Trachinus armatus	0.12 4	0.21	
Pseudupeneus prayensis	0.10 2	0.18	
Priacanthus arenatus	0.08 2	0.14	
Arnoglossus imperialis	0.06 4	0.11	
Microchirus boscanion	0.04 2	0.07	
Plastic bags	0.00 4	0.00	
Total	53.59	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 14  
 DATE :23/10/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 9°46.06  
 start stop duration Lon W 14°45.86  
 TIME :15:38:42 16:05:04 26.4 (min) Purpose : 3  
 LOG : 7802.99 7804.42 1.4 Region : 2200  
 FDEPTH: 34 34 Gear cond.: 0  
 BDEPTH: 34 34 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.3 kn  
 Sorted : 76 Total catch: 76.30 Catch/hour: 173.61  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Pagrus caeruleostictus	64.39	300	37.09	
Pseudupeneus prayensis	15.36	168	8.85	
Sepia officinalis	12.67	18	7.30	
Lethrinus atlanticus	10.28	20	5.92	
Canthidermis maculatus	9.85	5	5.67	
Epinephelus aeneus	9.74	5	5.61	
Priacanthus arenatus	7.99	14	4.60	
Pagellus bellottii	5.87	91	3.38	
Dasyatis centroura	5.01	2	2.88	
Rachycentron canadum	4.76	5	2.74	
Aluterus blunckii	4.51	11	2.60	
Balistes capricus	4.10	9	2.36	
Balistes punctatus	4.03	2	2.32	
Sphyræna guachancho	2.78	2	1.60	
Decapterus rhonchus	2.62	9	1.51	27
Caranx crysos	2.46	5	1.42	
Rhinobatos cemiculus	1.77	2	1.02	
Epinephelus costae	1.75	5	1.01	
Dactylopterus volitans	1.48	2	0.85	
Fistularia petimba	1.18	5	0.68	
Saurida brasiliensis	0.34	2	0.20	
Decapterus punctatus	0.27	11	0.16	
Lagocephalus laevis	0.23	5	0.13	
Arnoglossus imperialis	0.16	2	0.09	
Uranoscopus cadenati	0.02	2	0.01	
Plastic bags	0.00	2	0.00	
Total	173.61		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 15  
 DATE :23/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°52.46  
 start stop duration Lon W 14°34.07  
 TIME :18:06:37 18:36:51 30.2 (min) Purpose : 3  
 LOG : 7820.17 7821.80 1.6 Region : 2200  
 FDEPTH: 27 25 Gear cond.: 0  
 BDEPTH: 27 25 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.2 kn  
 Sorted : 33 Total catch: 32.69 Catch/hour: 64.88  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Pagrus caeruleostictus	19.15	159	29.52	35
Cymium pepo	13.00	4	20.04	
Pseudupeneus prayensis	10.52	81	16.21	38
Caranx crysos	8.44	46	13.00	36
Decapterus rhonchus	3.47	20	5.35	34
Trachurus trachurus	3.27	16	5.05	
Sepia officinalis	1.93	8	2.97	33
Aluterus punctatus	1.35	4	2.08	
Balistes capricus	1.25	14	1.93	37
Pagellus bellottii	0.79	10	1.22	32
Sardinella maderensis	0.58	4	0.89	30
Calappa rubroguttata	0.50	4	0.76	
Xyrichtys novacula	0.26	6	0.40	
Eucinostomus melanopterus	0.22	4	0.34	
Bothus podas africanus	0.08	4	0.12	
Trachinus armatus	0.08	2	0.12	
Total	64.88		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 16  
 DATE :23/10/2011 GEAR TYPE: BT NO: 7 POSITION:Lat N 9°59.77  
 start stop duration Lon W 14°43.28  
 TIME :20:10:09 20:41:21 31.2 (min) Purpose : 3  
 LOG : 7831.91 7833.22 1.3 Region : 2200  
 FDEPTH: 0 0 Gear cond.: 0  
 BDEPTH: 25 25 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 2.5 kn  
 Sorted : 44 Total catch: 43.52 Catch/hour: 83.69  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	70.42	1658	84.15	
Sphyræna sphyraena	5.10	33	6.09	
Sardinella maderensis	4.87	96	5.81	39
Decapterus rhonchus	1.60	94	1.91	40
Sepia officinalis	1.23	158	1.47	
Selene dorsalis	0.38	6	0.46	
Chloroscombrus chrysurus	0.10	2	0.11	
Total	83.69		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 17  
 DATE :24/10/2011 GEAR TYPE: PT NO: 4 POSITION:Lat N 9°48.43  
 start stop duration Lon W 15°12.68  
 TIME :01:12:52 01:42:19 29.5 (min) Purpose : 3  
 LOG : 7869.52 7870.97 1.5 Region : 2200  
 FDEPTH: 0 0 Gear cond.: 0  
 BDEPTH: 33 33 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.0 kn  
 Sorted : 2 Total catch: 1.59 Catch/hour: 3.24  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Lagocephalus laevis	1.41	6	43.40	
Echeneis naucrates	1.00	4	30.82	
Sphyræna guachancho	0.65	4	20.13	
Decapterus punctatus	0.18	4	5.66	
Total	3.24		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 18  
 DATE :24/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°35.31  
 start stop duration Lon W 15°31.41  
 TIME :06:46:20 07:16:31 30.2 (min) Purpose : 3  
 LOG : 7899.24 7900.86 1.6 Region : 2200  
 FDEPTH: 46 46 Gear cond.: 0  
 BDEPTH: 46 46 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.2 kn  
 Sorted : 17 Total catch: 16.63 Catch/hour: 33.06  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
J E L L Y F I S H	9.54	0	28.86	
Lagocephalus laevis	4.87	12	14.73	
Mustelus mustelus	4.57	4	13.83	
Bothus podas africanus	2.27	36	6.86	
Diodon holocanthus	2.25	4	6.79	
Sepia officinalis	1.79	8	5.41	
Trachinocephalus myops	1.75	8	5.29	
Caranx crysos	1.59	2	4.81	
Uranoscopus polli	1.59	8	4.81	
Sphyræna sphyraena	0.99	4	3.01	
Syacium micrurum	0.58	2	1.74	
Fistularia tabacaria	0.38	2	1.14	
Brachydeuterus auritus	0.30	6	0.90	
Octopus vulgaris	0.16	2	0.48	
Xyrichtys novacula	0.16	2	0.48	
Trachinus armatus	0.14	2	0.42	
Decapterus rhonchus	0.14	2	0.42	
Plastic bags	0.00	18	0.00	
Metal waste	0.00	2	0.00	
Total	33.06		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 19  
 DATE :24/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°27.80  
 start stop duration Lon W 15°39.17  
 TIME :08:55:29 09:26:01 30.5 (min) Purpose : 3  
 LOG : 7914.16 7915.97 1.8 Region : 2200  
 FDEPTH: 59 62 Gear cond.: 0  
 BDEPTH: 59 62 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 3.6 kn  
 Sorted : 9 Total catch: 9.11 Catch/hour: 17.90  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Sepia officinalis	6.74	33	37.65	
Raja miraletus	3.71	10	20.75	
Bothus podas africanus	1.55	29	8.67	
J E L L Y F I S H	1.26	22	7.03	
Lagocephalus laevis	1.12	2	6.26	
Trachinus armatus	0.92	4	5.16	
Chelidonichthys Capnsis	0.43	4	2.41	
Fistularia tabacaria	0.43	4	2.41	
Sphyræna sphyraena	0.37	2	2.09	
Pagellus bellottii	0.37	4	2.09	42
Trigla lyra	0.35	4	1.98	
Dactylopterus volitans	0.31	2	1.76	
Trachurus trachurus	0.24	2	1.32	
Halobatrachus didactylus	0.08	2	0.44	43
Plastic bags	0.00	14	0.00	
Wood, paper, cardboard	0.00	2	0.00	
Total	17.90		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 20  
 DATE :24/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°22.58  
 start stop duration Lon W 15°46.87  
 TIME :10:58:44 11:22:05 23.4 (min) Purpose : 3  
 LOG : 7927.26 7928.48 1.2 Region : 2200  
 FDEPTH: 103 113 Gear cond.: 0  
 BDEPTH: 103 113 Validity : 0  
 Towing dir: 0° Wire out : 280 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 1384.74 Catch/hour: 3558.22  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Erythrocles monodi	2983.30	18141	83.84	
Dentex angolensis	227.41	1645	6.39	44
Anthias anthias	128.74	2236	3.62	
Squatina oculata	99.70	26	2.80	
Trachurus trecae	57.66	306	1.62	45
Spicara alta	14.39	103	0.40	
Boops boops	13.88	77	0.39	
Zeus faber	12.33	26	0.35	
Scorpaena scrofa	11.05	26	0.31	
Priacanthus arenatus	4.37	26	0.12	
Fistularia tabacaria	4.37	26	0.12	
Antigonia capros	1.03	51	0.03	
Plastic bags	0.00	3	0.00	
Total	3558.22		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 21  
 DATE :24/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°19.10  
 start stop duration Lon W 15°51.54  
 TIME :12:54:57 13:23:29 28.5 (min) Purpose : 3  
 LOG : 7938.57 7939.96 1.4 Region : 2200  
 FDEPTH: 210 226 Gear cond.: 0  
 BDEPTH: 210 226 Validity : 0  
 Towing dir: 0° Wire out : 520 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 426.95 Catch/hour: 897.90

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Sphyrna lewini	525.76	2	58.55
Antigonia capros	245.01	6951	27.29
Chlorophthalmus atlanticus	47.63	1420	5.31
Ariomma bondi	25.83	461	2.88
Squalus megalops	22.88	17	2.55
Squatina oculata	8.77	2	0.98
Illex coindetii	7.84	84	0.87
Trachinocephalus myops	4.37	86	0.49
Pterothrissus belloci	2.65	23	0.30
Raja miraletus	2.21	6	0.25
Peristedion cataphractum	1.70	74	0.19
Heptranchias perlo	1.01	6	0.11
Chascanopsetta lugubris	0.67	6	0.07
Pontinus kuhlii	0.61	17	0.07
Zenopsis conchifer	0.50	6	0.06
Merluccius polli	0.44	6	0.05
Total	897.90	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 22  
 DATE :24/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°18.36  
 start stop duration Lon W 16°5.02  
 TIME :15:59:20 16:29:24 30.1 (min) Purpose : 3  
 LOG : 7957.59 7958.95 1.4 Region : 2200  
 FDEPTH: 521 559 Gear cond.: 0  
 BDEPTH: 521 559 Validity : 0  
 Towing dir: 0° Wire out : 1050 m Speed : 2.7 kn  
 Sorted : 61 Total catch: 396.54 Catch/hour: 791.23

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Centrophorus uyato	290.52	92	36.72
Yarrella blackfordi	204.32	1323	25.82
Heterocephalus ensifer	194.55	43774	24.59
Xenodermichthys copei	23.09	0	2.92
SEARSIIDAE	21.79	130	2.75
Lamprogrammus sp.	13.11	221	1.66
Ancistroteuthis sp.	11.41	78	1.44
Hoplostethus atlanticus	8.94	182	1.13
Merluccius polli	7.40	14	0.94
Lophius willianti	6.23	208	0.79
Coelorhynchus coelorhynchus	3.25	52	0.41
Laemonema laureysi	2.99	12	0.38
Directus argenteus	2.08	156	0.26
MELANOSTOMIATIDAE	0.52	26	0.07
Microchirus boscanion	0.52	14	0.07
Setarches quencheri	0.26	12	0.03
MYCTOPHIDAE	0.26	92	0.03
Plastic bags	0.00	2	0.00
Total	791.23	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 23  
 DATE :24/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°24.85  
 start stop duration Lon W 16°16.08  
 TIME :19:48:33 20:18:55 30.4 (min) Purpose : 3  
 LOG : 7980.42 7981.94 1.5 Region : 2200  
 FDEPTH: 464 446 Gear cond.: 0  
 BDEPTH: 464 446 Validity : 0  
 Towing dir: 0° Wire out : 1070 m Speed : 3.0 kn  
 Sorted : 28 Total catch: 594.47 Catch/hour: 1174.46

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Nematocarcinus rotundus	628.25	103162	53.49
Nezumia aequalis	120.71	6593	10.28
Chanaux pictus	110.04	3295	9.37
Nettastoma sp.	79.03	10	6.73
Yarrella blackfordi	64.54	2462	5.50
Pterothrissus belloci	45.95	231	3.91
Hymnocephalus italicus	32.04	650	2.73
MELANOSTOMIATIDAE	16.26	0	1.38
STOMIIDAE	16.24	231	1.38
Laemonema laureysi	13.47	233	1.15
Lophius willianti	11.56	26	0.98
Illex coindetii	11.48	79	0.98
RAJIDAE	9.48	4	0.81
Centrophorus uyato	6.03	2	0.51
Merluccius polli	3.75	12	0.32
Galeus polli	3.26	93	0.28
Zenopsis conchifer	1.24	2	0.11
Parasudis sp.	1.11	8	0.09
Plastic bags	0.00	6	0.00
Total	1174.46	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 24  
 DATE :24/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°28.80  
 start stop duration Lon W 16°9.93  
 TIME :22:47:57 23:18:16 30.3 (min) Purpose : 3  
 LOG : 7996.15 7997.70 1.6 Region : 2200  
 FDEPTH: 185 179 Gear cond.: 0  
 BDEPTH: 185 179 Validity : 0  
 Towing dir: 0° Wire out : 450 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 132.98 Catch/hour: 263.15

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Aulopus cadenati	101.72	1547	38.65
Trigla lyra	41.75	984	15.87
Chlorophthalmus atlanticus	27.74	792	10.54
Scorpaena scrofa	26.28	554	9.99
Illex coindetii	20.74	273	7.88
Peristedion cataphractum	16.62	309	6.32
Antigonia capros	10.13	522	3.85
Ophisurus serpens	5.58	234	2.12
Dentex angolensis	3.88	36	1.47
Scorpaena stephanica	3.13	12	1.19
Pontinus kuhlii	1.90	28	0.72
Lepidotrigla cadmani	1.07	4	0.41
Pterothrissus belloci	0.71	4	0.27
Ariomma bondi	0.67	12	0.26
Synagrops bellus	0.63	32	0.24
Uranoscopus polli	0.44	4	0.17
Arnoglossus imperialis	0.16	8	0.06
Total	263.15	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 25  
 DATE :25/10/2011 GEAR TYPE: PT NO: 4 POSITION:Lat N 9°32.74  
 start stop duration Lon W 16°7.13  
 TIME :00:33:20 01:01:47 28.5 (min) Purpose : 3  
 LOG : 8003.60 8005.22 1.6 Region : 2200  
 FDEPTH: 0 0 Gear cond.: 0  
 BDEPTH: 138 129 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.4 kn  
 Sorted : 0 Total catch: 46.26 Catch/hour: 97.56

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Saurida brasiliensis	41.34	4338	42.37
Aulopus cadenati	23.73	278	24.32
Trigla lyra	7.44	95	7.63
Decapterus rhonchus	6.88	6	7.05
Ariomma bondi	6.77	146	6.94
Chlorophthalmus atlanticus	3.31	101	3.39
Pontinus kuhlii	2.45	53	2.51
Scorpaena scrofa	2.45	59	2.51
Caranx crysos	1.81	2	1.86
Scorpaena stephanica	0.57	2	0.58
Balistes caprisicus	0.44	2	0.45
Sepia officinalis	0.19	21	0.19
Spherooides pachgaster	0.11	2	0.11
Selene dorsalis	0.08	27	0.09
Total	97.56	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 26  
 DATE :25/10/2011 GEAR TYPE: PT NO: 4 POSITION:Lat N 9°38.20  
 start stop duration Lon W 16°0.19  
 TIME :02:05:13 02:33:51 28.6 (min) Purpose : 3  
 LOG : 8012.39 8014.13 1.7 Region : 2200  
 FDEPTH: 0 0 Gear cond.: 0  
 BDEPTH: 60 55 Validity : 0  
 Towing dir: 0° Wire out : 105 m Speed : 3.7 kn  
 Sorted : 0 Total catch: 10.26 Catch/hour: 21.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
JELLYFISH	11.88	6	55.26
Ariomma bondi	4.97	69	23.10
Dactylopterus volitans	1.95	13	9.06
Caranx crysos	1.87	4	8.67
Hirundichthys speculiger	0.34	2	1.56
Priacanthus arenatus	0.29	2	1.36
Decapterus rhonchus	0.19	4	0.88
Lagocephalus laevigatus	0.02	2	0.10
Total	21.50	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 27  
 DATE :25/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°40.90  
 start stop duration Lon W 15°52.62  
 TIME :06:47:20 07:17:42 30.4 (min) Purpose : 3  
 LOG : 8027.26 8028.67 1.5 Region : 2200  
 FDEPTH: 48 47 Gear cond.: 0  
 BDEPTH: 48 47 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.0 kn  
 Sorted : 25 Total catch: 25.20 Catch/hour: 49.79

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
J E L L Y F I S H	16.40	8	32.94
Peristedion cataphractum	13.24	632	26.59
Trigla lyra	4.07	32	8.17
Alectis alexandrinus	2.77	2	5.56
Dactylopterus volitans	2.11	4	4.25
Sepia officinalis	1.88	4	3.77
Raja miraletus	1.50	2	3.02
Chloroscombrus chrysurus	1.32	10	2.66
Bothus podas africanus	1.28	20	2.58
Trachinocephalus myops	1.03	6	2.06
Spherooides marmoratus	0.75	2	1.51
Sphyrna sphyraena	0.69	2	1.39
Lagocephalus laevigatus	0.61	2	1.23
Diodon sp.	0.53	4	1.07
Trachinus armatus	0.41	2	0.83
Pseudupeneus prayensis	0.32	4	0.63
NETTASTOMIATIDAE	0.30	4	0.60
Antigonia capros	0.20	2	0.40
Octopus vulgaris	0.12	2	0.24
Spherooides pachgaster	0.10	2	0.20
Synchropus phaeton	0.10	2	0.20
Scorpaena normani	0.06	2	0.12
Plastic bags	0.00	8	0.00
Total	49.79	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 28  
 DATE :25/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°11.54  
 start stop duration Lon W 15°52.64  
 TIME :16:44:47 17:14:41 29.9 (min) Purpose : 3  
 LOG : 8113.26 8114.24 1.0 Region : 2200  
 FDEPTH: 30 30 Gear cond.: 0  
 BDEPTH: 30 30 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 2.0 kn  
 Sorted : 25 Total catch: 25.37 Catch/hour: 50.91

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Alectis alexandrinus	13.85	2	27.20
Selar crumenophthalmus	10.03	40	19.71
Pagrus caeruleostictus	5.66	36	11.12
Dasyatis pastinaca	5.02	2	9.85
Pagellus bellottii	4.39	30	8.63
Pseudupeneus prayensis	2.95	18	5.79
Sphyrna guachancho	2.15	2	4.22
Rachycentron canadum	2.11	2	4.14
Psettodes belcheri	1.65	2	3.23
Sepia officinalis	1.32	6	2.60
Eucinostomus melanopterus	0.74	8	1.46
Echeneis neuvates	0.48	2	0.87
Trachinocephalus myops	0.38	2	0.75
Decapterus rhonchus	0.14	2	0.28
Brachydeuterus auritus	0.08	2	0.16
Plastic bags	0.00	16	0.00
Total	50.91	100.00	



R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 29  
 DATE :26/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°44.60  
 start stop duration Lon W 16°29.96  
 TIME :03:07:46 03:36:11 28.4 (min) Purpose : 3  
 LOG : 8177.28 8178.70 1.4 Region : 2200  
 FDEPTH: 130 141 Gear cond.: 0  
 BDEPTH: 130 141 Validity : 0  
 Towing dir: 0° Wire out : 310 m Speed : 3.0 km  
 Sorted : 45 Total catch: 814.73 Catch/hour: 1720.05

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Antigonia capros	768.16 19294	44.66	
Synagrops microlepis	284.80 18467	16.56	
Aulopus cadenati	172.48 1885	10.03	
Scorpaena normani	111.11 2567	6.46	
Scorpaena stephanica	88.25 281	5.13	
Trigla lyra	79.42 4212	4.62	
Trachinus pellegrini	79.02 1243	4.59	
Macropodus sp.	45.12 6619	2.62	
Sphoeroides pachgaster	25.67 40	1.49	
Fontinus kuhlii	19.66 241	1.14	
Illex coindetii	11.23 160	0.65	
Arnoglossus imperialis	6.02 201	0.35	
Dentex angolensis	5.21 40	0.30	
Uranoscopus polli	4.81 40	0.28	
Pseudupeneus prayensis	4.41 40	0.26	
Pterothrissus belloci	3.61 40	0.21	
Octopus vulgaris	3.61 40	0.21	
Squalus megalops	2.89 2	0.17	
Mustelus mustelus	1.75 4	0.10	
Peristedion cataphractum	1.60 80	0.09	
Dicologlossa hexophthalma	0.40 40	0.02	
Biennius normani	0.40 40	0.02	
Ariomma bondi	0.40 40	0.02	
Total	1720.05	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 30  
 DATE :26/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°37.55  
 start stop duration Lon W 16°38.68  
 TIME :08:20:42 08:52:00 31.3 (min) Purpose : 3  
 LOG : 8196.45 8197.96 1.5 Region : 2200  
 FDEPTH: 514 513 Gear cond.: 0  
 BDEPTH: 514 513 Validity : 0  
 Towing dir: 0° Wire out : 1050 m Speed : 2.9 km  
 Sorted : 28 Total catch: 204.88 Catch/hour: 392.74

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Nematocarcinus africanus	235.32 0	59.92	
Merluccius polli	36.90 113	9.40	53
Laemonema laureysi	23.12 150	5.89	
Ancistrocheirus leaeuuri	20.13 127	5.12	
Centroprorus uyato	17.54 6	4.47	
Lophius vaillanti	16.73 10	4.26	52
Stomias boa boa	13.80 0	3.51	
Yarrella blackfordi	6.79 391	1.73	
Trichurus lepturus	4.68 8	1.19	51
Hoplostethus cadenati	4.37 0	1.11	
Nezumia aequalis	2.42 138	0.61	
Ariomma bondi	1.73 69	0.44	
Opisthoporus sp.	1.63 2	0.41	
Chascanopsetta lugubris	1.15 23	0.29	
Setarches guentheri	1.15 69	0.29	
Hymenocephalus italicus	1.15 150	0.29	
Aulopus filamentosus	0.92 12	0.23	
Chanaux pictus	0.81 46	0.20	
Benthodesmus tenuis	0.58 12	0.15	
Galeus polli	0.58 23	0.15	
NETTASTOMATIDAE	0.46 12	0.12	
Peristedion cataphractum	0.46 12	0.12	
Necharricta pinnata	0.12 12	0.03	
Antigonia capros	0.12 23	0.03	
Argyrolepiscus aculeatus	0.12 58	0.03	
Total	392.74	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 31  
 DATE :26/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 9°54.04  
 start stop duration Lon W 16°55.40  
 TIME :11:33:52 12:04:04 30.2 (min) Purpose : 3  
 LOG : 8219.76 8221.17 1.4 Region : 2100  
 FDEPTH: 479 474 Gear cond.: 0  
 BDEPTH: 479 474 Validity : 0  
 Towing dir: 0° Wire out : 1000 m Speed : 2.8 km  
 Sorted : 0 Total catch: 132.77 Catch/hour: 263.78

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Merluccius polli	118.31 451	44.85	54
Trichurus lepturus	51.95 519	19.70	
Setarches guentheri	25.21 1140	9.56	
Laemonema laureysi	18.42 137	6.98	
Hymenocephalus italicus	12.93 602	4.90	
Lophiodon kempi	12.12 10	4.59	
Zeus faber	10.25 8	3.89	
Illex coindetii	7.75 66	2.94	
Chanaux pictus	4.17 24	1.58	
Ariomma bondi	1.61 42	0.61	
Chlorophthalmus atlanticus	0.42 6	0.16	
Chascanopsetta lugubris	0.30 6	0.11	
Galeus polli	0.28 6	0.11	
Nemichthys curvirostris	0.06 6	0.02	
Metal waste	0.00 2	0.00	
Total	263.78	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 32  
 DATE :26/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°5.93  
 start stop duration Lon W 16°36.54  
 TIME :15:43:46 16:14:09 30.4 (min) Purpose : 3  
 LOG : 8246.47 8248.01 1.5 Region : 2100  
 FDEPTH: 169 167 Gear cond.: 0  
 BDEPTH: 169 167 Validity : 0  
 Towing dir: 0° Wire out : 400 m Speed : 3.0 km  
 Sorted : 20 Total catch: 411.27 Catch/hour: 812.25

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Mustelus mustelus	336.24 122	41.40	
Antigonia capros	218.33 3107	26.88	
Saurida brasiliensis	127.74 31935	15.73	
Brotula barbata	25.48 16	3.14	
Scorpaena stephanica	23.03 65	2.84	
Raja miraletus	13.25 22	1.63	
Squalus megalops	13.23 10	1.63	
Illex coindetii	12.60 239	1.55	
Aulopus cadenati	10.43 87	1.28	
Decapterus rhonchus	8.89 10	1.09	
Scorpaena scrofa	5.87 65	0.72	
Ariomma bondi	5.21 109	0.64	
Dentex angolensis	4.13 22	0.51	
Trigla lyra	3.48 22	0.43	
Citharus linguatula	3.04 22	0.37	
Peristedion cataphractum	1.30 22	0.16	
Total	812.25	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 33  
 DATE :26/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°7.87  
 start stop duration Lon W 16°29.18  
 TIME :17:29:21 17:59:17 29.9 (min) Purpose : 3  
 LOG : 8256.94 8258.24 1.3 Region : 2100  
 FDEPTH: 59 66 Gear cond.: 0  
 BDEPTH: 59 66 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 2.6 km  
 Sorted : 35 Total catch: 35.25 Catch/hour: 70.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachinus armatus	15.14 291	21.42	
Dactylopterus volitans	14.53 130	20.57	
Setarches guentheri	13.59 124	19.23	
Octopus vulgaris	9.72 6	13.76	
Sepia officinalis	4.15 10	5.87	55
Sphoeroides marmoratus	2.31 8	3.26	
Trigla lyra	1.96 22	2.78	
Raja undulata	1.70 4	2.41	
Zeus faber	1.50 2	2.13	
Fistularia tabacaria	1.04 6	1.48	
Ancistrocheirus leaeuuri	1.02 26	1.45	
Scorpaena stephanica	0.84 2	1.19	
Bothus podas africanus	0.52 10	0.74	
Saurida brasiliensis	0.52 136	0.74	
BLENNIIDAE	0.36 4	0.51	
Torpedo torpedo	0.36 2	0.51	
CONGRIDAE	0.34 2	0.48	
Decapterus rhonchus	0.24 4	0.34	56
Pseudupeneus prayensis	0.20 2	0.28	
Priacanthus arenatus	0.18 6	0.26	
Pagellus bellottii	0.16 2	0.23	
Bembrops greyi	0.14 2	0.20	
Antigonia capros	0.12 2	0.17	
Plastic bags	0.00 4	0.00	
Total	70.66	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 34  
 DATE :26/10/2011 GEAR TYPE: PT NO: 4 POSITION:Lat N 10°16.46  
 start stop duration Lon W 16°17.49  
 TIME :19:52:55 20:23:26 30.5 (min) Purpose : 3  
 LOG : 8272.85 8274.83 2.0 Region : 2100  
 FDEPTH: 10 10 Gear cond.: 0  
 BDEPTH: 46 40 Validity : 0  
 Towing dir: 0° Wire out : 1100 m Speed : 3.9 km  
 Sorted : 94 Total catch: 199.87 Catch/hour: 3931.59

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Sardinella maderensis	2827.98 24222	71.93	70
Sphyrna quachancho	499.93 930	12.72	59
Chloroscombrus chrysurus	207.92 3130	5.29	57
Selene dorsalis	112.53 837	2.86	58
Sardinella aurita	109.19 545	2.78	71
Brachydeuterus auritus	60.67 377	1.54	62
Arius parkii	45.18 41	1.15	
Decapterus rhonchus	35.15 202	0.89	60
Caranx crysos	21.74 41	0.55	61
Ariomma bondi	11.30 41	0.29	69
Total	3931.59	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 35  
 DATE :26/10/2011 GEAR TYPE: PT NO: 7 POSITION:Lat N 10°29.72  
 start stop duration Lon W 16°8.98  
 TIME :23:51:09 00:21:16 30.1 (min) Purpose : 3  
 LOG : 8303.37 8305.61 2.2 Region : 2100  
 FDEPTH: 5 5 Gear cond.: 0  
 BDEPTH: 28 30 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 4.5 km  
 Sorted : 3 Total catch: 3.14 Catch/hour: 6.25

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	2.57 24	41.08	
Dactylopterus volitans	1.59 14	25.48	
Sardinella maderensis	0.62 4	9.87	
Lagocephalus laevigatus	0.46 2	7.32	
Trachinus armatus	0.28 4	4.46	
Scorpaena scrofa	0.26 2	4.14	
Trigla lyra	0.24 2	3.82	
Chloroscombrus chrysurus	0.14 2	2.23	
Decapterus punctatus	0.10 2	1.59	
Total	6.25	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 36  
 DATE :27/10/2011 GEAR TYPE: BT NO: 4 POSITION:Lat N 10°33.01  
 start stop duration Lon W 16°22.27  
 TIME :03:14:33 03:42:54 28.4 (min) Purpose : 3  
 LOG : 8323.95 8325.69 1.8 Region : 2100  
 FDEPTH: 0 0 Gear cond.: 0  
 BDEPTH: 35 39 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.7 kn  
 Sorted : 24 Total catch: 23.68 Catch/hour: 50.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Decapterus rhonchus	20.42	254	40.75
Brachydeuterus auritus	8.91	68	17.78
Sphyræna guachancho	8.55	36	17.06
Rachycentron canadum	4.80	2	9.59
Selene dorsalis	3.98	53	7.94
Caranx crysos	2.98	15	5.95
Decapterus punctatus	0.47	11	0.93
Plastic bags	0.00	4	0.00
Total	50.12		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 37  
 DATE :27/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°28.71  
 start stop duration Lon W 16°26.24  
 TIME :06:45:54 07:16:23 30.5 (min) Purpose : 3  
 LOG : 8336.00 8337.56 1.6 Region : 2100  
 FDEPTH: 48 49 Gear cond.: 0  
 BDEPTH: 48 49 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.1 kn  
 Sorted : 8 Total catch: 31.75 Catch/hour: 62.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Selene dorsalis	45.08	368	72.13
Trichiurus lepturus	3.23	12	5.17
Lagocephalus laevis	1.73	4	2.77
Arius parkii	1.52	2	2.43
Caranx crysos	1.46	10	2.33
Fistularia tabacaria	1.24	8	1.98
Sphyræna sphyraena	1.12	6	1.80
Sepia officinalis	1.08	4	1.73
Trigla lyra	1.08	10	1.73
Trachinocephalus myops	0.89	4	1.42
Diodon holocanthus	0.75	2	1.20
CONGRIDAE	0.75	2	1.20
Trachinus armatus	0.73	10	1.17
Brachydeuterus auritus	0.63	6	1.01
Paraconger notialis	0.37	2	0.60
Decapterus rhonchus	0.22	4	0.35
Syacium micrurum	0.20	2	0.31
Spherooides marmoratus	0.18	4	0.28
Priacanthus arenatus	0.18	20	0.28
Bothus podas africanus	0.08	2	0.13
Plastic bags	0.00	6	0.00
Total	62.50		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 38  
 DATE :27/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°27.30  
 start stop duration Lon E 16°34.60  
 TIME :08:53:05 09:23:11 30.1 (min) Purpose : 3  
 LOG : 8347.92 8349.30 1.4 Region : 2100  
 FDEPTH: 62 66 Gear cond.: 0  
 BDEPTH: 62 66 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 2.8 kn  
 Sorted : 4 Total catch: 91.13 Catch/hour: 181.65

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Trachinus armatus	90.20	1876	49.65
Dactylopterus volitans	74.65	574	41.10
Octopus vulgaris	5.02	10	2.77
Sepia officinalis	4.88	26	2.69
Fistularia tabacaria	2.05	16	1.13
Torpedo torpedo	1.36	4	0.75
Uranoscopus polli	0.74	2	0.41
Raja miraletus	0.66	2	0.36
Trichiurus lepturus	0.48	2	0.26
Synaptura lusitanica	0.34	8	0.19
Priacanthus arenatus	0.34	100	0.19
Trigla lyra	0.30	6	0.16
Bothus podas africanus	0.24	8	0.13
Grammolites gruvelli	0.22	6	0.12
Todaropsis eblanae	0.16	2	0.09
Dicologlossa cuneata	0.02	2	0.01
Total	181.65		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 39  
 DATE :27/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°23.79  
 start stop duration Lon W 16°41.95  
 TIME :11:05:41 11:35:41 30.0 (min) Purpose : 3  
 LOG : 8360.91 8362.26 1.4 Region : 2100  
 FDEPTH: 146 153 Gear cond.: 0  
 BDEPTH: 146 153 Validity : 0  
 Towing dir: 0° Wire out : 350 m Speed : 2.7 kn  
 Sorted : 81 Total catch: 81.87 Catch/hour: 163.74

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Trachurus trecae	39.14	1172	23.90
Scorpaena stephanica	27.00	152	16.49
Antigonia capros	25.42	452	15.52
Ariomma bondi	14.02	270	8.56
Illex coindetii	11.38	472	6.95
Citharus linguatula	9.94	112	6.07
Trigla lyra	8.64	148	5.28
Mustelus mustelus	6.50	4	3.97
Raja miraletus	5.70	14	3.48
Torpedo torpedo	3.36	4	2.05
Saurida brasiliensis	3.36	722	2.05
Spherooides pachgaster	3.06	4	1.87
Zeus faber	1.30	10	0.79
Aulopus cadenati	1.16	26	0.71
Bembrops greyi	1.12	44	0.68
Dactylopterus volitans	1.08	10	0.66
Dentex angolensis	0.62	8	0.38
Scorpaena scrofa	0.22	4	0.13
Lophiodes kempi	0.22	10	0.13
Priacanthus arenatus	0.22	44	0.13
Heptranchias perlo	0.16	2	0.10
Spicara alta	0.12	4	0.07
Total	163.74		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 40  
 DATE :27/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°15.75  
 start stop duration Lon W 16°55.28  
 TIME :14:06:29 14:37:00 30.5 (min) Purpose : 3  
 LOG : 8381.24 8382.83 1.6 Region : 2100  
 FDEPTH: 224 224 Gear cond.: 0  
 BDEPTH: 224 224 Validity : 0  
 Towing dir: 0° Wire out : 540 m Speed : 3.1 kn  
 Sorted : 43 Total catch: 138.85 Catch/hour: 272.97

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Chlorophthalmus atlanticus	66.06	649	24.20
Synagrops microlepis	49.54	767	18.15
Ariomma bondi	39.81	944	14.58
Antigonia capros	27.66	694	10.13
Merluccius polli	23.65	248	8.66
Trichiurus lepturus	19.36	31	7.09
Illex coindetii	14.63	442	5.36
Squatina oculata	11.97	6	4.39
Raja miraletus	6.07	12	2.23
Scorpaena normani	3.72	6	1.36
Bembrops greyi	2.77	41	1.02
Spherooides pachgaster	2.18	6	0.80
Pontinus kuhlii	1.71	12	0.63
Aulopus cadenati	1.24	6	0.45
Peristedion cataphractum	0.94	35	0.35
Chascanopsetta lugubris	0.83	6	0.30
Trigla lyra	0.83	12	0.30
Plastic bags	0.00	6	0.00
Total	272.97		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 41  
 DATE :27/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°20.70  
 start stop duration Lon W 17°41.02  
 TIME :20:59:44 21:30:12 30.5 (min) Purpose : 3  
 LOG : 8440.89 8442.41 1.5 Region : 2100  
 FDEPTH: 983 983 Gear cond.: 0  
 BDEPTH: 983 983 Validity : 0  
 Towing dir: 0° Wire out : 2000 m Speed : 3.0 kn  
 Sorted : 87 Total catch: 86.64 Catch/hour: 170.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Holothuria sp.	86.67	32	50.78
Stereomastis talismani	19.24	311	11.28
Mesotaria lactea	13.83	30	8.10
Talimania sp.	9.85	43	5.77
Yarella blackfordi	6.46	95	3.79
Alepocephalus sp.	5.42	10	3.17
Lamprogrammus exotus	4.53	30	2.65
Halosaurus ovenii	3.33	63	1.95
Aristeus varidens	3.31	130	1.94
Enoploteuthis sp.	3.19	14	1.87
Paraconger notialis	2.52	8	1.48
Deania calcea	2.50	14	1.47
Moroteuthis robsoni	2.13	2	1.25
Synsphyrobranchius kaupii	1.95	30	1.14
Hydrolagus sp.	1.79	2	1.05
Bathysaurus ferox	1.10	75	0.65
Antigonia capros	1.02	37	0.60
Centrophorus squamosus	0.98	4	0.58
Coryphaenoides sp.	0.39	2	0.23
Stomias boa boa	0.28	4	0.16
Ceratas sp.	0.10	2	0.06
ALEPOCEPHALIDAE	0.02	2	0.01
Nezumia sp.	0.02	2	0.01
Argyropelecus sp.	0.02	2	0.01
Plastic bags	0.00	8	0.00
Total	170.66		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 42  
 DATE :28/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°26.77  
 start stop duration Lon W 17°21.48  
 TIME :04:00:21 04:30:53 30.5 (min) Purpose : 3  
 LOG : 8472.48 8473.92 1.4 Region : 2100  
 FDEPTH: 480 486 Gear cond.: 0  
 BDEPTH: 480 486 Validity : 0  
 Towing dir: 0° Wire out : 1150 m Speed : 2.8 kn  
 Sorted : 70 Total catch: 69.88 Catch/hour: 137.33

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Lophiodes kempi	39.70	12	28.91
Chaunax pictus	26.02	149	18.95
Nezumia sp.	24.37	204	17.74
Hydrolagus sp.	22.80	1234	16.60
Merluccius polli	10.06	39	7.33
Yarella blackfordi	6.37	55	4.64
Illex coindetii	2.91	31	2.12
Ophiodon elongatus	2.36	16	1.72
Benthodesmus tenuis	1.26	8	0.92
Trichiurus lepturus	0.94	16	0.69
Cynoponticus ferox	0.55	8	0.40
Total	137.33		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 43  
 DATE :28/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°35.79  
 start stop duration Lon W 16°59.56  
 TIME :07:40:33 08:11:46 31.2 (min) Purpose : 3  
 LOG : 8500.13 8501.61 1.5 Region : 2100  
 FDEPTH: 208 208 Gear cond.: 0  
 BDEPTH: 208 208 Validity : 0  
 Towing dir: 0° Wire out : 500 m Speed : 2.8 kn  
 Sorted : 81 Total catch: 236.04 Catch/hour: 453.63

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Synagrops microlepis	191.95 12079	42.31	
Saurida brasiliensis	122.52 16451	27.01	
Trichiurus lepturus	59.10 135	13.03	74
Macropodus sp.	17.10 1067	3.77	
Illex coindetii	13.55 379	2.99	
Scorpaena stephanica	6.69 33	1.47	
Spherooides pachgaster	5.92 13	1.30	
Merluccius polli	5.09 63	1.12	
Ubrina canariensis	4.61 4	1.02	
Mustelus mustelus	4.23 2	0.93	
Caranx crysos	3.90 4	0.86	
Citharus linguatula	3.84 71	0.85	
Antigonia capros	2.94 571	0.65	
Pontinus accraensis	2.79 54	0.61	
Squatina oculata	2.31 2	0.51	
Aulopus cadenati	2.17 6	0.48	
Scorpaena normani	1.54 25	0.34	
Pterothrissus belloci	1.50 10	0.33	
Zeus faber	0.86 4	0.19	
Plesionika williamsi	0.67 43	0.15	
Parapenaeus longirostris	0.15 15	0.03	
Octopus vulgaris	0.13 6	0.03	
Sepia officinalis	0.06 15	0.01	
Total	453.63	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 44  
 DATE :28/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°41.70  
 start stop duration Lon W 16°46.64  
 TIME :10:51:32 11:21:56 30.4 (min) Purpose : 3  
 LOG : 8522.04 8523.42 1.4 Region : 2100  
 FDEPTH: 104 99 Gear cond.: 0  
 BDEPTH: 104 99 Validity : 0  
 Towing dir: 0° Wire out : 250 m Speed : 2.7 kn  
 Sorted : 40 Total catch: 39.68 Catch/hour: 78.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Scorpaena stephanica	15.04 39	19.20	
Trachurus trecae	15.00 531	19.15	77
Trigla lyra	13.30 336	16.99	
Raja miraletus	6.20 18	7.91	
Spherooides pachgaster	6.14 6	7.84	
Mustelus mustelus	4.44 8	5.67	
Epinephelus aeneus	4.18 2	5.34	75
Dentex angolensis	2.94 10	3.76	76
Fistularia tabacaria	2.23 6	2.85	
Zeus faber	2.09 22	2.67	
Ariomma bondi	1.74 22	2.22	
Sepia officinalis	0.89 14	1.13	
Illex coindetii	0.87 26	1.11	
Zenopsis conchifer	0.65 2	0.83	
Antigonia capros	0.53 75	0.68	
Pagellus bellottii	0.51 32	0.66	
Saurida brasiliensis	0.41 59	0.53	
Citharus linguatula	0.34 22	0.43	
Chlorophthalmus atlanticus	0.20 28	0.25	
Aulopus cadenati	0.18 2	0.23	
Arnoglossus imperialis	0.16 30	0.20	
Grammolites gruvelli	0.12 4	0.15	
Peristedion cataphractum	0.10 6	0.13	
Octopus vulgaris	0.06 2	0.08	
Total	78.32	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 45  
 DATE :28/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°46.00  
 start stop duration Lon W 16°43.47  
 TIME :14:05:48 14:35:59 30.2 (min) Purpose : 3  
 LOG : 8533.87 8535.19 1.3 Region : 2100  
 FDEPTH: 52 50 Gear cond.: 0  
 BDEPTH: 52 50 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 2.6 kn  
 Sorted : 7 Total catch: 7.06 Catch/hour: 14.04

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Epinephelus aeneus	7.95 2	56.66	78
Dactylopterus volitans	4.53 34	32.29	
Fistularia petimba	1.17 4	8.36	
Citharus linguatula	0.18 4	1.27	
Bothus podas africanus	0.14 4	0.99	
Arnoglossus imperialis	0.04 16	0.28	
Sepia officinalis	0.02 2	0.14	
Total	14.04	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 46  
 DATE :28/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°48.28  
 start stop duration Lon W 16°34.56  
 TIME :16:54:54 17:24:55 30.0 (min) Purpose : 3  
 LOG : 8546.16 8547.76 1.6 Region : 2100  
 FDEPTH: 31 23 Gear cond.: 0  
 BDEPTH: 31 23 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.2 kn  
 Sorted : 37 Total catch: 36.88 Catch/hour: 73.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Decapterus rhonchus	12.92 94	17.52	79
Galeoides decadactylus	10.40 62	14.10	
Balistes capricus	8.56 48	11.61	
Sphyrana quachanchu	6.76 38	9.15	
Pomadasy jubelini	4.90 16	6.64	
Pomadasy incisus	4.24 26	5.75	
Pagellus bellottii	3.92 32	5.31	
Caranx crysos	3.78 8	5.12	
Dactylopterus volitans	3.36 24	4.56	
Chloroscombrus chrysurus	2.98 20	4.04	
Trichiurus lepturus	2.70 4	3.66	
Sardinella maderensis	2.54 22	3.44	80
Eucinostomus melanopterus	1.98 14	2.68	
Sepia officinalis	1.18 2	1.60	
Citharus linguatula	0.86 8	1.17	
Aluterus blankerti	0.82 2	1.11	
Selene dorsalis	0.72 10	0.98	
Echeneis naucrates	0.42 2	0.57	
Brachydeuterus auritus	0.32 2	0.43	
Fistularia petimba	0.18 2	0.24	
Spherooides marmoratus	0.14 2	0.19	
Decapterus punctatus	0.08 2	0.11	
Total	73.76	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 47  
 DATE :29/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°51.76  
 start stop duration Lon W 17°22.04  
 TIME :00:02:03 00:32:37 30.6 (min) Purpose : 3  
 LOG : 8607.04 8608.33 1.3 Region : 2100  
 FDEPTH: 365 351 Gear cond.: 0  
 BDEPTH: 365 351 Validity : 0  
 Towing dir: 0° Wire out : 840 m Speed : 2.5 kn  
 Sorted : 75 Total catch: 75.24 Catch/hour: 147.63

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Chlorophthalmus atlanticus	96.53 2029	65.39	
Nezumia sp.	10.95 141	7.42	
Illex coindetii	10.71 94	7.26	
Laemonema laureysi	10.24 181	6.94	
Synagrops microlepis	6.71 224	4.55	
Pterothrissus belloci	4.63 27	3.14	
Merluccius polli	3.77 47	2.55	
Conger conger	1.45 4	0.98	
Peristedion cataphractum	1.37 43	0.93	
Lophius vaillanti	1.10 8	0.74	
Chascanopsetta lugubris	0.12 12	0.08	
Ophisurus serpens	0.04 4	0.03	
Total	147.63	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 48  
 DATE :29/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°55.19  
 start stop duration Lon W 17°12.67  
 TIME :02:54:57 03:25:00 30.1 (min) Purpose : 3  
 LOG : 8622.75 8624.11 1.4 Region : 2100  
 FDEPTH: 170 173 Gear cond.: 0  
 BDEPTH: 170 173 Validity : 0  
 Towing dir: 0° Wire out : 420 m Speed : 2.7 kn  
 Sorted : 58 Total catch: 386.36 Catch/hour: 771.43

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Illex coindetii	172.51 2204	22.36	
Scorpaena normani	134.18 4089	17.39	
Aulopus cadenati	107.82 1070	13.98	
Trigla lyra	94.88 2460	12.30	
Antigonia capros	92.65 2188	12.01	
Scorpaena stephanica	29.71 128	3.85	
Brotula barbata	24.12 16	3.13	
Dentex angolensis	20.93 160	2.71	
Spherooides pachgaster	19.97 32	2.59	
Raja miraletus	18.69 48	2.42	
Peristedion cataphractum	13.10 415	1.70	
Mustelus mustelus	11.48 2	1.49	
Ubrina canariensis	9.90 16	1.28	
Squalus megalops	5.81 2	0.75	
Squatina oculata	4.19 4	0.54	
Arnoglossus imperialis	3.83 367	0.50	
Bembrops greyi	2.08 48	0.27	81
Uranoscopus polli	1.76 16	0.23	
Dicologlossa hexophthalma	1.76 32	0.23	
Pontinus kuhlii	1.12 16	0.14	
Ariomma bondi	0.96 16	0.12	
Total	771.43	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 49  
 DATE :29/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 10°57.22  
 start stop duration Purpose : 3  
 TIME :06:54:19 07:24:27 30.1 (min) Region : 2100  
 LOG : 8640.71 8642.25 1.6 Gear cond.: 0  
 FDEPTH: 62 60 Validity : 0  
 BDEPTH: 62 60  
 Towing dir: 0° Wire out : 160 m Speed : 3.1 kn  
 Sorted : 29 Total catch: 28.52 Catch/hour: 56.79

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Dactylopterus volitans	17.52 131	30.86	
Illex coindetii	9.76 185	17.18	
Antigonia capros	5.48 38	9.64	
Zeus faber	4.20 2	7.40	
Peristedion cataphractum	2.89 117	5.08	
Raja circularis	2.65 2	4.66	
Trichiurus lepturus	2.19 6	3.82	82
Raja miraletus	1.95 4	3.44	
Priacanthus arenatus	1.57 8	2.77	83
Trigla lyra	1.25 12	2.21	
Scorpaena stephanica	1.15 8	2.03	
Bothus podas africanus	1.15 18	2.03	
CONGRIDAE	1.15 4	2.03	
Trachinocephalus myops	0.78 6	1.37	
Pegusa lascaris	0.76 6	1.33	
Aulopus cadenati	0.54 6	0.95	
Synchiropus phaeton	0.46 14	0.81	
Sphyræna sphyraena	0.40 2	0.70	84
Dentex angolensis	0.32 2	0.56	
Spherooides marmoratus	0.30 2	0.53	
Scorpaena normani	0.10 4	0.18	
Bembrops greyi	0.10 2	0.18	
Decapterus rhonchus	0.04 2	0.07	
Octopus vulgaris	0.02 2	0.04	85
Sepia officinalis	0.02 2	0.04	
Chelidonichthys sp.	0.02 2	0.04	
Scorpaena normani	0.02 2	0.04	0
Total	56.79	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 50  
 DATE :29/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°0.06  
 start stop duration Purpose : 3  
 TIME :08:47:16 09:17:20 30.1 (min) Region : 2100  
 LOG : 8652.90 8654.36 1.5 Gear cond.: 0  
 FDEPTH: 42 40 Validity : 0  
 BDEPTH: 42 40  
 Towing dir: 0° Wire out : 130 m Speed : 2.9 kn  
 Sorted : 20 Total catch: 19.71 Catch/hour: 39.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Selene dorsalis	11.53 58	29.33	90
Dactylopterus volitans	5.92 26	15.07	
Sepia officinalis	4.99 6	12.68	87
Decapterus rhonchus	4.89 12	12.43	86
Fistularia tabacaria	3.65 0	9.28	
Illex coindetii	1.48 24	3.75	
Arius parkii	1.42 2	3.60	
CONGRIDAE	1.02 6	2.59	
Raja miraletus	0.76 2	1.93	
Trichiurus lepturus	0.70 2	1.78	88
Syacium micrurum	0.64 4	1.62	
Caranx crysos	0.58 2	1.47	
Scorpaena scrofa	0.42 2	1.07	89
Pseudupeneus prayensis	0.28 2	0.71	
Trachinocephalus myops	0.26 2	0.66	
Peristedion cataphractum	0.24 10	0.61	0
Pagellus bellottii	0.22 2	0.56	91
Pegusa lascaris	0.18 8	0.46	
Rypticus saponaceus	0.16 2	0.41	
Peristedion cataphractum	0.00 2	0.00	
Total	39.32	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 51  
 DATE :29/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°15.21  
 start stop duration Purpose : 3  
 TIME :12:43:34 13:13:37 30.1 (min) Region : 2100  
 LOG : 8684.08 8685.69 1.6 Gear cond.: 0  
 FDEPTH: 39 41 Validity : 0  
 BDEPTH: 39 41  
 Towing dir: 0° Wire out : 120 m Speed : 3.2 kn  
 Sorted : 25 Total catch: 25.38 Catch/hour: 50.68

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Selene dorsalis	17.15 110	33.85	
Pseudupeneus prayensis	12.96 84	25.57	
Dactylopterus volitans	5.21 10	10.28	
Fistularia petimba	4.01 22	7.92	
Decapterus rhonchus	3.45 12	6.82	
Caranx crysos	1.76 6	3.47	
Epinephelus aeneus	1.60 4	3.15	93
Pagellus bellottii	1.20 10	2.36	
Citharus linguatula	1.18 8	2.32	
Alloteuthis africana	1.10 811	2.17	
Trichiurus lepturus	0.64 2	1.26	
Paraconger notialis	0.34 2	0.67	
Synchiropus phaeton	0.08 6	0.16	
Fishing gears	0.00 2	0.00	
Total	50.68	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 52  
 DATE :29/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°13.68  
 start stop duration Purpose : 3  
 TIME :14:37:43 15:07:45 30.0 (min) Region : 2100  
 LOG : 8695.87 8697.13 1.3 Gear cond.: 0  
 FDEPTH: 72 72 Validity : 0  
 BDEPTH: 72 72  
 Towing dir: 0° Wire out : 180 m Speed : 2.5 kn  
 Sorted : 55 Total catch: 361.80 Catch/hour: 722.88

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
J E L L Y F I S H	231.17 0	31.98	
Chromis cadenati	151.95 1047	21.02	
Boops boops	72.59 583	10.04	
Scorpaena stephanica	65.97 182	9.13	
Cymbium sp.	46.09 12	6.38	
Zeus faber	34.03 38	4.71	
Pseudupeneus prayensis	27.53 260	3.81	
Pagellus bellottii	16.74 64	2.32	94
Epinephelus aeneus	15.78 14	2.18	95
Dactylopterus volitans	11.95 26	1.65	
Arius parkii	9.99 12	1.38	
Plectorhynchus mediterraneus	6.61 12	0.91	
Raja miraletus	5.83 12	0.81	
Caranx crysos	5.83 12	0.81	
Scomber japonicus	5.31 26	0.74	
Trachurus trecae	3.24 26	0.45	
Fistularia petimba	3.20 10	0.44	
Sarda sarda	2.32 2	0.32	
Spherooides pachgaster	2.08 12	0.29	
Trigla lyra	1.94 12	0.27	
Anthias sp.	1.56 26	0.22	
Arnoglossus imperialis	0.64 52	0.09	
Sepia officinalis	0.52 12	0.07	
Fishing gears	0.00 4	0.00	
Total	722.88	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 53  
 DATE :29/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°9.12  
 start stop duration Purpose : 3  
 TIME :16:34:08 17:04:46 30.6 (min) Region : 2100  
 LOG : 8706.71 8708.19 1.5 Gear cond.: 0  
 FDEPTH: 109 109 Validity : 0  
 BDEPTH: 109 109  
 Towing dir: 0° Wire out : 260 m Speed : 2.9 kn  
 Sorted : 48 Total catch: 311.30 Catch/hour: 609.79

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Spicara alta	188.44 1095	30.90	
Dentex angolensis	170.62 1070	27.98	96
Antigonia capros	60.72 443	9.96	
Ariomma bondi	59.84 993	9.81	
Muraena helena	31.95 14	5.24	
Dentex macrophthalmus	20.63 64	3.38	98
Pagrus africanus	17.94 38	2.94	99
Scorpaena scrofa	17.18 64	2.82	97
Epinephelus aeneus	12.22 13	2.00	
Priacanthus arenatus	11.34 25	1.86	
Trigla lyra	9.60 178	1.57	
Spherooides pachgaster	3.57 12	0.58	
Anthias sp.	2.15 14	0.35	
Aulopus cadenati	2.04 14	0.33	
Scorpaena stephanica	1.02 12	0.17	
Raja miraletus	0.51 12	0.08	
Total	609.77	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 54  
 DATE :30/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°35.55  
 start stop duration Purpose : 3  
 TIME :06:39:06 07:09:24 30.3 (min) Region : 2100  
 LOG : 8775.12 8776.63 1.5 Gear cond.: 0  
 FDEPTH: 109 110 Validity : 0  
 BDEPTH: 109 110  
 Towing dir: 0° Wire out : 280 m Speed : 3.0 kn  
 Sorted : 43 Total catch: 107.68 Catch/hour: 213.23

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Illex coindetii	50.61 194	23.74	
Ariomma bondi	46.73 1022	21.92	
Scorpaena stephanica	26.34 269	12.35	
Mustelus mustelus	23.07 4	10.82	
Lesueurichthys sanzoi	16.63 0	7.80	
Trigla lyra	7.80 154	3.66	
Priacanthus arenatus	5.43 32	2.54	
Scorpaena normani	4.20 123	1.97	
Brotula barbata	3.62 6	1.70	
Monolene microstoma	3.21 547	1.50	
Trachurus trecae	3.01 135	1.41	102
Citharus linguatula	2.85 59	1.34	
Pterothrissus belloci	2.73 182	1.28	
Arnoglossus imperialis	2.22 273	1.04	
Raja sp.	1.78 2	0.84	
Zeus faber	1.66 20	0.78	
Macropipus sp.	1.66 206	0.78	
Uranoscopus polli	1.66 12	0.78	
Antigonia capros	1.27 127	0.59	
Spicara alta	1.19 8	0.56	
Dentex canariensis	1.15 24	0.54	101
Microchirus boscanion	1.07 111	0.50	
Raja miraletus	0.99 4	0.46	
Pagellus bellottii	0.48 16	0.22	
Sepia officinalis	0.40 20	0.19	100
Serranus accraensis	0.36 4	0.17	
Octopus vulgaris	0.36 4	0.17	
OPHICHTHIDAE	0.36 4	0.17	
Microchirus sp.	0.24 12	0.11	
Syngnathus acus	0.08 8	0.04	
Synsphybranchus sp.	0.04 4	0.02	
Dicologlossa hexophthalma	0.04 4	0.02	
Total	213.23	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 55  
 DATE :30/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°35.48  
 start stop duration Lon W 17°9.61  
 TIME :08:47:25 09:17:26 30.0 (min) Purpose : 3  
 LOG : 8788.36 8789.88 1.5 Region : 2100  
 FDEPTH: 50 49 Gear cond.: 0  
 BDEPTH: 50 49 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.0 km  
 Sorted : 113 Total catch: 112.96 Catch/hour: 225.77

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pomadoury jubelini	75.55	66	33.46	25
Trichiurus lepturus	43.37	502	19.21	
Cymbium sp.	27.58	8	12.22	
Galeoides decadactylus	22.58	226	10.00	104
Brachydeuterus auritus	19.39	2	8.59	
GOBIIDAE	5.58	460	2.47	
Stromateus fiatola	3.72	4	1.65	
Penaeus notialis	3.64	170	1.61	
Raja straeleni	3.28	2	1.45	
Epinephelus aeneus	2.86	2	1.27	103
Illex coindetii	2.30	72	1.02	
Bembrops greyi	2.22	84	0.98	
Raja miraletus	1.92	2	0.85	
Octopus vulgaris	1.78	6	0.79	
Pisodonophis semicinctus	1.76	4	0.78	
Selene dorsalis	1.56	12	0.69	
Umbina canariensis	1.16	6	0.51	
Ophiurus serpens	1.10	2	0.49	
Citharus linguatula	0.98	10	0.43	
Sardinella maderensis	0.86	2	0.38	
Priacanthus arenatus	0.76	2	0.34	
Ariomma bondi	0.76	2	0.34	
Cynoglossus senegalensis	0.64	14	0.28	
Cynoglossus senegalensis	0.22	24	0.10	0
Pseudupeneus prayensis	0.18	2	0.08	
Serranus accraensis	0.04	2	0.02	
Total	225.77		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 56  
 DATE :30/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°37.91  
 start stop duration Lon W 16°57.72  
 TIME :11:46:25 11:57:15 10.8 (min) Purpose : 3  
 LOG : 8803.02 8803.51 0.5 Region : 2100  
 FDEPTH: 27 28 Gear cond.: 9  
 BDEPTH: 27 28 Validity : 4  
 Towing dir: 0° Wire out : 120 m Speed : 2.7 km  
 Sorted : 0 Total catch: 92.60 Catch/hour: 513.02

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Ilisha africana	169.53	7457	33.05	105
Cymbium sp.	157.78	22	30.76	
Portunus validus	49.86	89	9.72	
Trichiurus lepturus	36.12	859	7.04	
Cynoglossus senegalensis	32.35	399	6.31	
Stromateus fiatola	24.60	44	4.79	
Galeoides decadactylus	13.30	66	2.59	
Lagocephalus laevigatus	9.09	22	1.77	
Citharus linguatula	6.43	177	1.25	
Pseudotolithus senegalensis	5.10	22	0.99	
Ophiurus serpens	4.21	222	0.82	
Brachydeuterus auritus	3.32	22	0.65	
Sardinella maderensis	1.33	89	0.26	
Total	513.02		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 57  
 DATE :30/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°51.80  
 start stop duration Lon W 17°6.67  
 TIME :14:42:42 15:06:40 24.0 (min) Purpose : 3  
 LOG : 8826.00 8827.15 1.1 Region : 2100  
 FDEPTH: 26 26 Gear cond.: 0  
 BDEPTH: 26 26 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 2.9 km  
 Sorted : 0 Total catch: 327.18 Catch/hour: 818.97

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Ilisha africana	353.07	7702	43.11	106
Trichiurus lepturus	102.15	3119	12.47	
Galeoides decadactylus	72.07	333	8.22	
Stromateus fiatola	54.84	158	6.70	
Pentheroscion mbizi	44.16	666	5.39	
Arius parkii	42.58	158	5.20	
Brachydeuterus auritus	33.99	578	4.15	
Trachinotus ovatus	28.21	123	3.44	
Pomadoury jubelini	21.73	18	2.65	
Pseudotolithus senegalensis	18.22	18	2.23	
Lagocephalus lagocephalus	14.02	18	1.71	
Chloroscombrus chrysurus	6.66	35	0.81	
Arius heudelotii	5.96	18	0.73	
Pisodonophis semicinctus	5.61	18	0.68	
Cynoglossus senegalensis	4.91	53	0.60	
Sardinella aurita	3.85	18	0.47	
Ophichthus bennettii	3.50	53	0.43	
Selene dorsalis	2.45	140	0.30	
Total	818.97		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 58  
 DATE :30/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°56.58  
 start stop duration Lon W 17°12.30  
 TIME :16:53:27 17:23:53 30.4 (min) Purpose : 3  
 LOG : 8840.69 8842.25 1.6 Region : 2100  
 FDEPTH: 74 69 Gear cond.: 0  
 BDEPTH: 74 69 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.1 km  
 Sorted : 0 Total catch: 37.66 Catch/hour: 74.26

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pentheroscion mbizi	36.67	306	49.39	
Galeoides decadactylus	11.24	30	15.14	107
Trichiurus lepturus	8.97	1055	12.08	
Umbina canariensis	6.31	77	8.50	
Arius parkii	4.14	6	5.58	
Pseudotolithus senegalensis	3.15	4	4.25	
Penaeus notialis	1.14	333	1.54	
Brotula barbata	1.12	4	1.51	
Spherooides pachgaster	0.63	16	0.85	
Brachydeuterus auritus	0.34	2	0.45	
Pseudupeneus prayensis	0.24	2	0.32	
Fistularia tabacaria	0.20	2	0.27	
GOBIIDAE	0.10	8	0.13	
Total	74.26		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 59  
 DATE :30/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 11°56.11  
 start stop duration Lon W 17°15.67  
 TIME :18:23:16 18:53:26 30.2 (min) Purpose : 3  
 LOG : 8849.24 8850.76 1.5 Region : 2100  
 FDEPTH: 104 103 Gear cond.: 0  
 BDEPTH: 104 103 Validity : 0  
 Towing dir: 0° Wire out : 250 m Speed : 3.0 km  
 Sorted : 21 Total catch: 162.05 Catch/hour: 322.17

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Synagrops microlepis	121.77	16241	37.80	
Trachurus trecae	95.33	6708	29.59	108
Trichiurus lepturus	33.40	2672	10.37	
Saurida brasiliensis	20.18	3326	6.26	
Squatina oculata	12.03	2	3.73	
Parapanaeus longirostris	10.72	2408	3.33	
Brotula barbata	10.26	14	3.18	
Scorpaena stephanica	5.49	28	1.70	
Laemonema laureysi	3.34	56	1.04	
Umbina canariensis	2.50	14	0.78	
Illex coindetii	2.09	14	0.65	
Sepia officinalis	1.39	42	0.43	
Scyliorhinus canicula	1.03	2	0.32	
GOBIIDAE	0.83	70	0.26	
Nezumia sp.	0.83	28	0.26	
Spherooides marmoratus	0.42	14	0.13	
Octopus vulgaris	0.51	2	0.12	
Fistularia tabacaria	0.16	2	0.05	
Total	322.17		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 60  
 DATE :30/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°3.07  
 start stop duration Lon W 17°23.75  
 TIME :22:09:46 22:40:04 30.3 (min) Purpose : 3  
 LOG : 8875.87 8877.29 1.4 Region : 1300  
 FDEPTH: 486 478 Gear cond.: 0  
 BDEPTH: 486 478 Validity : 0  
 Towing dir: 0° Wire out : 1050 m Speed : 2.8 km  
 Sorted : 82 Total catch: 178.10 Catch/hour: 352.79

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	165.66	507	46.96	
Yarella blackfordi	47.98	2514	13.60	
Laemonema laureysi	36.72	1143	10.41	
Malacocephalus laevis	23.16	412	6.56	
Nematocarcinus africanus	19.99	6660	5.67	
Lophius sp.	17.83	4	5.05	
Centrophorus granulosus	13.87	4	3.93	
Neoharriotta pinnata	7.03	2	1.99	
Lamprogammus exutus	6.34	85	1.80	
Caranx crysos	4.02	8	1.14	
Hydrolagus sp.	3.76	2	1.07	
Ophichthus sp.	1.78	67	0.51	
Parapanaeus longirostris	1.11	67	0.31	
Chaunax pictus	0.93	16	0.26	
Nezumia aequalis	0.75	111	0.21	
Halosauridae sp.	0.67	180	0.19	
Melanostomias sp.	0.44	26	0.12	
Galeus polli	0.42	8	0.12	
Decapterus rhonchus	0.26	8	0.07	
Pterothrissus belloci	0.08	2	0.02	
Total	352.79		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 61  
 DATE :31/10/2011 GEAR TYPE: BT NO: 4 POSITION:Lat N 12°17.30  
 start stop duration Lon W 17°22.77  
 TIME :02:46:12 03:16:17 30.1 (min) Purpose : 3  
 LOG : 8907.47 8909.29 1.8 Region : 1300  
 FDEPTH: 0 0 Gear cond.: 0  
 BDEPTH: 120 418 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.6 km  
 Sorted : 46 Total catch: 46.45 Catch/hour: 92.65

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Selene dorsalis	67.52	519	72.87	
Trachinotus ovatus	20.15	94	21.74	
Carcharhinus signatus	3.59	2	3.88	
Decapterus rhonchus	1.90	74	1.08	109
Hemicaranx bicolor	0.38	12	0.41	
Naucrates ductor	0.02	2	0.02	
Total	92.65		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 62  
 DATE :31/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°16.81  
 start stop duration Lon W 17°21.52  
 TIME :06:50:03 07:20:18 30.3 (min) Purpose : 3  
 LOG : 8917.94 8919.39 1.5 Region : 1300  
 FDEPTH: 105 106 Gear cond.: 0  
 BDEPTH: 105 106 Validity : 0  
 Towing dir: 0° Wire out : 270 m Speed : 2.9 km  
 Sorted : 39 Total catch: 38.57 Catch/hour: 76.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brotula barbata	20.63	60	26.96	
Scorpaena stephanica	18.15	129	23.72	
Squalus megalops	9.38	6	12.26	
Priacanthus arenatus	4.44	12	5.81	
Dentex angolensis	3.77	30	4.93	110
Umbina canariensis	3.77	22	4.93	
Synagrops microlepis	2.28	12	2.98	
Octopus vulgaris	2.06	8	2.70	
Saurida brasiliensis	1.92	194	2.51	
Ariomma bondi	1.69	40	2.20	
Parapandalus narval	1.49	1097	1.94	
Zeus faber	1.11	12	1.45	
Serranus scriba	0.97	6	1.27	
Merluccius polli	0.95	4	1.24	
Illex coindetii	0.60	26	0.78	
Branchiostegus semifasciatus *	0.60	4	0.78	
Yarella blackfordi	0.48	34	0.62	
Scorpaena normani	0.48	6	0.62	
Fistularia tabacaria	0.36	4	0.47	
Sepia officinalis	0.26	6	0.34	
GOBIIDAE	0.22	8	0.29	
Laemonema laureysi	0.20	6	0.26	
Syngnathus acus	0.16	14	0.21	
Cepola pauciradiatus	0.14	10	0.18	
Raja sp.	0.08	2	0.10	
Citharus linguatula	0.08	10	0.10	
Microchirus sp.	0.08	2	0.10	
Cynoglossus senegalensis	0.08	16	0.10	
Spherooides marmoratus	0.06	4	0.08	
Trigla lyra	0.02	2	0.03	
Trichiurus lepturus	0.02	4	0.03	
Total	76.50		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 63  
 DATE :31/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°14.92  
 start stop duration Lon W 17°15.46  
 TIME :08:49:28 09:20:10 30.7 (min) Purpose : 3  
 LOG : 8929.82 8931.27 1.4 Region : 1300  
 FDEPTH: 68 68 Gear cond.: 0  
 BDEPTH: 68 68 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 2.8 kn  
 Sorted : 44 Total catch: 296.09 Catch/hour: 578.68

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	337.52 32527	58.33	
Trichiurus lepturus	84.14 2914	14.54	
Pentheroscion mbizi	53.16 1272	9.19	
Epinephelus aeneus	26.97 8	4.66	112
Decapterus rhonchus	12.72 82	2.20	111
Umbrina canariensis	9.85 123	1.70	
Pegusa lascaris	9.65 20	1.67	
Parapenaeus longirostris	9.03 1272	1.56	
Brotula barbata	7.50 20	1.30	
Pseudupeneus prayvensis	5.94 20	1.03	
Pagellus bellottii	5.34 82	0.92	
GOBIIDAE	5.14 145	0.89	
Sphyaena sphyaena	4.10 20	0.71	
Selene dorsalis	3.91 41	0.68	
Priacanthus arenatus	3.69 185	0.64	
Total	578.68	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 64  
 DATE :31/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°16.01  
 start stop duration Lon W 17°7.81  
 TIME :10:44:59 11:15:00 30.0 (min) Purpose : 3  
 LOG : 8941.58 8943.21 1.6 Region : 1300  
 FDEPTH: 30 33 Gear cond.: 0  
 BDEPTH: 30 33 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.3 kn  
 Sorted : 62 Total catch: 118.10 Catch/hour: 236.04

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trichiurus lepturus	110.73 4117	46.91	
Pseudotolithus senegalensis	28.18 164	11.94	
Ilisha africana	27.02 532	11.45	
Arius parkii	23.14 56	9.81	
Galeoides decadactylus	10.11 40	4.28	
Scorpaena laevis	7.75 232	3.29	
Pseudotolithus typus	6.10 4	2.58	
Pseudotolithus brachygnathus	3.52 2	1.49	
Pomadasya jubelini	3.40 4	1.44	
Sphyaena guachancho	3.04 8	1.29	
Epinephelus aeneus	2.78 6	1.18	113
Selene dorsalis	2.56 12	1.08	116
Chloroscombrus chrysurus	1.80 16	0.76	117
Umbrina canariensis	1.72 16	0.73	
Sardinella maderensis	1.68 12	0.71	115
Octopus vulgaris	1.24 4	0.52	
Pseudupeneus prayvensis	0.84 8	0.36	114
Fistularia petimba	0.44 4	0.19	
Total	236.04	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 65  
 DATE :31/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°33.93  
 start stop duration Lon W 17°21.53  
 TIME :16:21:35 16:52:01 30.4 (min) Purpose : 3  
 LOG : 8981.50 8983.03 1.5 Region : 1300  
 FDEPTH: 31 27 Gear cond.: 0  
 BDEPTH: 31 27 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.0 kn  
 Sorted : 45 Total catch: 134.72 Catch/hour: 265.55

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Brachydeuterus auritus	83.97 913	31.62	
Pomadasya jubelini	37.84 124	14.25	
Galeoides decadactylus	27.50 118	10.35	
Diodon holocanthus	23.59 6	8.89	
Psettodes belcheri	20.22 6	7.62	
Selene dorsalis	17.15 130	6.46	122
Panulirus regius	10.82 6	4.08	
Trichiurus lepturus	10.58 41	3.99	
Ilisha africana	7.21 136	2.72	
Caranx crysos	4.49 6	1.69	
Arius parkii	4.20 12	1.58	
Zanobatus shoeneleini	3.55 6	1.34	
Sphyaena guachancho	3.02 6	1.14	
Chaetodon hoefleri	2.19 12	0.82	
Pagrus caeruleostictus	1.77 12	0.67	
Eucinostomus melanopterus	1.64 18	0.62	
Lethrinus atlanticus	1.30 6	0.49	
Sardinella maderensis	1.24 30	0.47	
Scorpaena angolensis	1.12 12	0.42	
Pseudupeneus prayvensis	1.01 6	0.38	118
Torpedo torpedo	0.65 6	0.24	
Octopus vulgaris	0.47 6	0.18	
Fishing gears	0.00 12	0.00	
Total	265.55	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 66  
 DATE :31/10/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°34.96  
 start stop duration Lon W 17°31.01  
 TIME :18:21:23 18:51:38 30.3 (min) Purpose : 3  
 LOG : 8995.75 8997.31 1.6 Region : 1300  
 FDEPTH: 45 47 Gear cond.: 0  
 BDEPTH: 45 47 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.1 kn  
 Sorted : 78 Total catch: 176.64 Catch/hour: 350.36

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Decapterus rhonchus	115.14 553	32.86	26
Fistularia tabacaria	44.55 325	12.72	
Pomadasya jubelini	44.41 71	12.68	
Pseudupeneus prayvensis	28.92 182	8.25	24
Selene dorsalis	22.89 192	6.53	28
Arius parkii	17.85 22	5.10	
Scorpaena angolensis	11.39 103	3.25	
Pomadasya incisius	10.61 40	3.03	120
Epinephelus aeneus	10.57 13	3.02	119
Chloroscombrus chrysurus	10.04 61	2.86	125
Trichiurus lepturus	6.43 13	1.83	123
Priacanthus arenatus	6.15 18	1.75	126
Trachurus trecae	3.93 13	1.12	121
Sphyaena guachancho	3.53 4	1.01	
Sepia officinalis	3.17 18	0.91	
Psettodes belcheri	2.82 4	0.80	
Syacium micrurum	2.10 8	0.60	
Epinephelus gorensis	1.17 4	0.33	124
Spondyliosoma cantharus	1.03 4	0.29	
Sphyaena sphyaena	0.99 4	0.28	
Pagellus bellottii	0.93 13	0.27	128
Trigla lyra	0.67 4	0.19	
Brachydeuterus auritus	0.44 4	0.12	
Trachinocephalus myops	0.36 4	0.10	
Spherooides marmoratus	0.28 4	0.08	
Total	350.36	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 67  
 DATE :01/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°35.21  
 start stop duration Lon W 17°39.03  
 TIME :02:16:19 02:36:28 20.2 (min) Purpose : 3  
 LOG : 9022.17 9023.08 0.9 Region : 1300  
 FDEPTH: 455 463 Gear cond.: 0  
 BDEPTH: 455 463 Validity : 0  
 Towing dir: 0° Wire out : 1020 m Speed : 2.7 kn  
 Sorted : 45 Total catch: 132.60 Catch/hour: 394.84

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Lamprogrammus exultus	81.89 1117	20.74	
Gephyroberyx darwini	74.89 30	18.97	
Merluccius polli	47.79 402	12.10	
Lophiodon kempi	27.10 12	6.86	
Helicolenus dactylopterus	26.35 74	6.67	
Malacocephalus occidentalis	24.71 476	6.26	
Yarrella blackfordi	24.12 1012	6.11	
Zenopsis conchifer	19.21 15	4.86	
Deania profundorum	17.57 68	4.45	
Centrophorus granulatus	16.08 6	4.07	
Illex coindetii	11.46 74	2.90	
Squalus megalops	7.74 3	1.96	
Trigla lyra	6.25 15	1.58	
Pterothrissus belloci	4.76 45	1.21	
Raja alba	1.94 3	0.49	
Fistularia petimba	1.49 15	0.38	
Chlorophthalmus atlanticus	0.89 30	0.23	
Neorossia sp.	0.30 15	0.08	
Chascanopsetta lugubris	0.30 15	0.08	
Total	394.84	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 68  
 DATE :01/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°51.89  
 start stop duration Lon W 17°36.30  
 TIME :08:38:28 09:11:07 32.7 (min) Purpose : 3  
 LOG : 9064.79 9066.29 1.5 Region : 1300  
 FDEPTH: 66 68 Gear cond.: 0  
 BDEPTH: 66 68 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 2.8 kn  
 Sorted : 54 Total catch: 215.64 Catch/hour: 396.28

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Decapterus rhonchus	174.40 2042	44.01	131
Scorpaena angolensis	79.88 1049	20.16	
Pagellus bellottii	23.15 176	5.84	130
Selene dorsalis	16.89 77	4.26	133
Pseudupeneus prayvensis	16.54 134	4.17	132
Torpedo torpedo	14.43 14	3.64	
Sepia officinalis	12.11 64	3.06	134
Umbrina canariensis	7.74 28	1.95	
Trachinocephalus myops	7.19 57	1.81	
Torpedo marmorata	7.08 2	1.79	
Priacanthus arenatus	5.49 7	1.39	
Lagocephalus lagocephalus	5.35 28	1.35	
Raja miraletus	4.78 7	1.21	
Zeus faber	4.54 2	1.15	
Sardinella aurita	4.36 14	1.10	129
Scomber japonicus	3.11 7	0.78	135
Chaetodon hoefleri	2.46 15	0.62	
Zenopsis conchifer	1.73 2	0.44	
Fistularia petimba	1.40 20	0.35	
Syacium micrurum	1.27 13	0.32	
Illex coindetii	0.99 7	0.25	
Chromis cadenati	0.77 7	0.19	
Yarrella blackfordi	0.57 28	0.14	
Spherooides marmoratus	0.07 6	0.02	
Fishing gears	0.00 2	0.00	
Total	396.28	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 69  
 DATE :01/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 12°54.14  
 start stop duration Lon W 17°18.25  
 TIME :11:45:13 12:15:41 30.5 (min) Purpose : 3  
 LOG : 9083.55 9085.07 1.5 Region : 1300  
 FDEPTH: 38 36 Gear cond.: 0  
 BDEPTH: 38 36 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.0 km  
 Sorted : 74 Total catch: 394.75 Catch/hour: 777.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Brachydeuterus auritus	261.33 3454	33.62	
Pomadasya jubelini	78.19 73	10.06	
Pomadasya incisus	76.40 473	9.83	
Chloroscombrus chrysurus	61.50 662	7.91	
Galeoides decadactylus	43.54 136	5.60	
Pagrus caeruleostictus	42.61 189	5.48	137
Pagellus bellottii	32.31 199	4.16	136
Eucinostomus melanopterus	27.51 305	3.54	
Arius heudelotii	24.56 22	3.16	
Trichurus lepturus	24.56 63	3.16	
Acanthurus monroviae	14.69 22	1.89	
Pseudupeneus prayensis	13.21 126	1.70	
Plectorhynchus mediterraneus	9.75 41	1.25	
Decapterus rhonchus	9.33 95	1.20	138
Selene dorsalis	8.80 126	1.13	
Paraconger notialis	8.39 32	1.08	
Lithognathus mormyrus	8.39 22	1.08	
Epinephelus aeneus	8.39 10	1.08	
Fistularia petimba	4.92 32	0.63	
Dicologlossa cuneata	4.41 41	0.57	
Umbrina cirrosa	4.29 10	0.55	
Raja alba	4.08 32	0.52	
Umbrina canariensis	1.89 10	0.24	0
Zeus faber	1.56 10	0.20	
Sphaeroides marmoratus	1.14 32	0.15	
Antennarius occidentalis	0.95 10	0.12	
Dicologlossa hexophthalma	0.63 10	0.08	
Total	777.32	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 70  
 DATE :01/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°11.84  
 start stop duration Lon W 17°3.20  
 TIME :15:34:40 16:04:51 30.2 (min) Purpose : 3  
 LOG : 9114.61 9116.48 1.9 Region : 1400  
 FDEPTH: 24 23 Gear cond.: 0  
 BDEPTH: 24 23 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.7 km  
 Sorted : 67 Total catch: 673.10 Catch/hour: 1338.17

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Brachydeuterus auritus	679.92 10596	50.81	
Pomadasya jubelini	151.89 755	11.35	
Pagrus caeruleostictus	142.35 616	10.64	139
Selene dorsalis	71.37 1471	5.33	
Eucinostomus melanopterus	53.88 676	4.03	
Plectorhynchus mediterraneus	40.16 159	3.00	
Chloroscombrus chrysurus	37.97 417	2.84	
Pomadasya incisus	24.45 278	1.83	
Galeoides decadactylus	22.27 80	1.66	
Arius heudelotii	19.09 40	1.43	
Balistes punctatus	14.12 20	1.05	
Trichurus lepturus	13.92 40	1.04	
Epinephelus aeneus	12.92 20	0.97	
Pseudupeneus prayensis	11.33 99	0.85	
Acanthurus monroviae	9.54 20	0.71	
Sphyræna guachancho	8.75 40	0.65	
Balistes capricus	6.96 20	0.52	
Pagellus bellottii	5.57 20	0.42	
Fistularia petimba	3.78 40	0.28	
Sparisoma rubripinne	3.38 20	0.25	
Stephanolepis hispidus	2.98 20	0.22	
Ilisha africana	1.59 40	0.12	
Total	1338.17	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 71  
 DATE :01/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°13.39  
 start stop duration Lon W 17°17.47  
 TIME :18:05:12 18:35:50 30.6 (min) Purpose : 3  
 LOG : 9132.56 9134.15 1.6 Region : 1400  
 FDEPTH: 52 52 Gear cond.: 0  
 BDEPTH: 52 52 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.1 km  
 Sorted : 63 Total catch: 484.04 Catch/hour: 948.17

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Trachurus trachurus	546.91 3816	57.68	141
Decapterus rhonchus	154.75 1021	16.32	145
Pagellus bellottii	102.17 570	10.78	140
Pagrus caeruleostictus	41.76 151	4.40	143
Pseudupeneus prayensis	23.51 196	2.48	144
Umbrina canariensis	12.62 61	1.33	
Trigla lyra	10.36 106	1.09	
Dactylopterus volitans	10.07 29	1.06	
Priacanthus arenatus	9.79 61	1.03	
Scorpaena angolensis	6.91 119	0.73	
Dicologlossa hexophthalma	5.70 76	0.60	
Trichurus lepturus	4.21 16	0.44	
Spondyliosoma cantharus	3.45 16	0.36	
Brachydeuterus auritus	2.86 45	0.30	
Sardinella aurita	2.84 29	0.30	142
Plectorhynchus mediterraneus	2.70 16	0.29	
Syacium micrurum	1.65 16	0.17	
Sphyræna sphyraena	1.51 16	0.16	
Scomber japonicus	1.35 16	0.14	
Bothus podas africanus	0.90 16	0.10	
Fistularia petimba	0.90 16	0.10	
Parapenaeus longirostris	0.61 16	0.06	
Chromis cadenati	0.45 16	0.05	
Arnoglossus imperialis	0.16 16	0.02	
Fishing gears	0.00 2	0.00	
Total	948.15	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 72  
 DATE :02/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°33.70  
 start stop duration Lon W 17°29.21  
 TIME :03:45:39 03:53:01 7.4 (min) Purpose : 3  
 LOG : 9189.86 9190.28 0.4 Region : 1400  
 FDEPTH: 458 455 Gear cond.: 9  
 BDEPTH: 458 455 Validity : 4  
 Towing dir: 0° Wire out : 1080 m Speed : 3.5 km  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Malacocephalus occidentalis	0.00 0	0.00	
Lamprogrammus exutus	0.00 0	0.00	
Yarrella blackfordi	0.00 0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 73  
 DATE :02/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°34.44  
 start stop duration Lon W 17°25.02  
 TIME :07:30:24 08:00:58 30.6 (min) Purpose : 3  
 LOG : 9208.30 9209.79 1.5 Region : 1400  
 FDEPTH: 106 110 Gear cond.: 0  
 BDEPTH: 106 110 Validity : 0  
 Towing dir: 0° Wire out : 260 m Speed : 2.9 km  
 Sorted : 35 Total catch: 243.68 Catch/hour: 478.27

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Scomber japonicus	302.26 3091	63.20	146
Scorpaena laevis	128.46 234	26.86	
Raja miraletus	13.46 27	2.82	
Merluccius polli	11.68 55	2.44	
Illex coindetii	3.85 27	0.80	
Pterothrissus belloci	3.02 14	0.63	
Octopus vulgaris	2.75 14	0.57	
Scpia officinalis	2.75 14	0.57	
Dentex angolensis	2.75 55	0.57	
Trigla lyra	2.06 27	0.43	
Cynoglossus senegalensis	1.10 55	0.23	
Trachurus trachurus	1.10 14	0.23	147
Zeus faber	0.82 14	0.17	
Synaphobranchus affinis	0.69 14	0.14	
Peristedion cataphractum	0.55 14	0.11	
Nettastoma sp.	0.41 27	0.09	
Bembrops greyi	0.41 14	0.09	
Boops boops	0.16 14	0.03	
Metal waste	0.00 2	0.00	
Total	478.27	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 74  
 DATE :02/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°32.18  
 start stop duration Lon W 17°13.45  
 TIME :10:01:03 10:31:36 30.6 (min) Purpose : 3  
 LOG : 9225.29 9226.87 1.6 Region : 1400  
 FDEPTH: 50 51 Gear cond.: 0  
 BDEPTH: 50 51 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.1 km  
 Sorted : 0 Total catch: 141.00 Catch/hour: 276.92

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Trachurus trachurus	74.63 422	26.95	
Pagrus caeruleostictus	43.01 1009	15.53	148
Pagellus bellottii	42.62 299	15.39	153
Pseudupeneus prayensis	36.14 314	13.05	155
Dentex canariensis	30.09 79	10.87	156
Pomadasya incisus	17.68 47	6.38	
Selene dorsalis	9.86 67	3.56	149
Fistularia petimba	7.66 67	2.77	
Spondyliosoma cantharus	5.89 24	2.13	
Plectorhynchus mediterraneus	2.83 8	1.02	
Priacanthus arenatus	1.45 8	0.52	
Diplodus cervinus cervinus	1.45 4	0.52	
Decapterus rhonchus	1.37 24	0.50	150
Raja miraletus	0.79 2	0.28	
Chaetodon hoefleri	0.71 4	0.26	
Sardinella maderensis	0.67 4	0.24	151
Boops boops	0.08 12	0.03	
Total	276.92	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 75  
 DATE :02/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°32.79  
 start stop duration Lon W 17°4.49  
 TIME :12:53:15 13:23:17 30.0 (min) Purpose : 3  
 LOG : 9238.04 9239.60 1.6 Region : 1400  
 FDEPTH: 31 32 Gear cond.: 0  
 BDEPTH: 31 32 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.1 km  
 Sorted : 68 Total catch: 1298.27 Catch/hour: 2593.95

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Brachydeuterus auritus	1005.99 16627	38.78	
Pomadasya jubelini	548.55 1986	21.15	
Galeoides decadactylus	392.53 1518	15.13	
Chloroscombrus chrysurus	271.43 2468	10.46	
Decapterus rhonchus	115.02 645	4.43	158
Trachurus trecae	100.98 494	3.89	157
Sphyræna guachancho	36.82 190	1.42	
Selene dorsalis	31.13 266	1.20	
Trichurus lepturus	25.05 38	0.97	
Sardinella maderensis	23.54 190	0.91	
Lithognathus mormyrus	18.60 38	0.72	
Trachinotus ovatus	12.91 76	0.50	
Pomadasya incisus	11.39 76	0.44	
Total	2593.95	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 76  
 DATE :02/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°53.56  
 start stop duration Lon W 17°22.79  
 TIME :16:19:15 16:50:29 31.2 (min) Purpose : 3  
 LOG : 9265.07 9266.89 1.8 Region : 1300  
 FDEPTH: 25 31 Gear cond.: 0  
 BDEPTH: 25 31 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.5 kn  
 Sorted : 46 Total catch: 731.52 Catch/hour: 1405.42

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	780.79	14302	55.56	
Trachurus trecae	114.66	676	8.16	159
Pomadasya jubelini	88.53	246	6.30	
Pagrus caeruleostictus	60.25	277	4.29	
Selene dorsalis	55.33	461	3.94	
Chloroscombrus chrysurus	50.41	523	3.59	
Plectorhinchus mediterraneus	43.65	123	3.11	
Sphyræna guachancho	43.65	123	3.11	
Pomadasya incisus	39.96	277	2.84	
Epinephelus aeneus	27.97	31	1.99	
Arius heudelotii	24.90	31	1.77	
Decapterus rhonchus	21.21	123	1.51	
Pagellus bellottii	13.53	61	0.96	
Alectis alexandrinus	12.30	31	0.87	
Trichiurus lepturus	11.07	31	0.79	
Batrachoides sp.	10.14	123	0.72	
Caranx cryosus	6.46	61	0.46	
Sphoeroides marmoratus	0.61	31	0.04	
Total	1405.42		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 77  
 DATE :02/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°53.23  
 start stop duration Lon W 17°16.87  
 TIME :18:16:35 18:46:52 30.3 (min) Purpose : 3  
 LOG : 9278.83 9280.52 1.7 Region : 1300  
 FDEPTH: 51 58 Gear cond.: 0  
 BDEPTH: 51 58 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.3 kn  
 Sorted : 53 Total catch: 496.35 Catch/hour: 983.85

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pomadasya incisus	324.88	1958	33.02	
Trachurus trachurus	123.39	872	12.54	
Lutjanus goreensis	119.13	16	12.11	166
Pagellus bellottii	103.81	658	10.55	162
Priacanthus arenatus	77.82	428	7.91	
Pagrus caeruleostictus	48.54	131	4.93	161
Dentex canariensis	36.69	115	3.73	163
Decapterus rhonchus	36.19	230	3.68	160
Dentex gibbosus	30.11	16	3.06	
Plectorhinchus mediterraneus	20.73	50	2.11	165
Selene dorsalis	12.67	65	1.29	
Lutjanus fulgens	8.56	16	0.87	
Umbrina canariensis	7.57	32	0.77	
Dactylopterus volitans	6.58	32	0.67	
Pseudupeneus prayensis	6.42	50	0.65	164
Chaetodon hoefleri	5.95	32	0.60	
Diplodus vulgaris	5.09	16	0.52	
Parapristipoma octolineatum	4.12	16	0.42	
Fistularia tabacaria	3.45	16	0.35	
Brachydeuterus auritus	2.14	32	0.22	
Total	983.85		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 78  
 DATE :02/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°52.23  
 start stop duration Lon W 17°29.08  
 TIME :21:44:07 22:14:32 30.4 (min) Purpose : 3  
 LOG : 9302.40 9303.81 1.4 Region : 1300  
 FDEPTH: 450 438 Gear cond.: 0  
 BDEPTH: 450 438 Validity : 0  
 Towing dir: 0° Wire out : 940 m Speed : 2.8 kn  
 Sorted : 32 Total catch: 104.50 Catch/hour: 206.11

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Phyllosoma	51.36	7984	24.92	
Laemonema laureysi	33.14	2036	16.08	
Merluccius polli	27.30	142	13.24	167
Malacocephalus laevis	26.67	181	12.94	
Bathynectes piperitus	8.36	174	4.06	
Centrophorus granulosus	7.89	2	3.83	
Guentherus altivela	7.00	2	3.40	
Chaunax pictus	6.55	16	3.18	
Illex coindetii	5.44	24	2.64	
Yarrella blackfordi	5.05	126	2.45	
Pomadasya incisus	4.42	8	2.14	
Munida sp.	4.34	915	2.11	
Conger conger	4.34	24	2.11	
Aristeus varidens	2.45	252	1.19	
Lophius sp.	2.05	32	1.00	
Chlorophthalmus atlanticus	1.81	71	0.88	
Merluccius senegalensis	1.48	2	0.72	
Epigonus sp.	1.34	55	0.65	
Scorpaena normani	1.34	87	0.65	
Parapanaeus longirostris	1.03	103	0.50	
Solenocera africana	0.79	189	0.38	
Stereomastis sp.	0.71	8	0.34	
Sepia officinalis	0.63	8	0.31	
Peristedion cataphractum	0.32	16	0.15	
NETTASTOMATIDAE	0.32	16	0.15	
Total	206.11		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 79  
 DATE :03/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 13°59.59  
 start stop duration Lon W 17°33.90  
 TIME :01:51:17 02:22:07 30.8 (min) Purpose : 3  
 LOG : 9328.81 9330.28 1.5 Region : 1300  
 FDEPTH: 700 696 Gear cond.: 0  
 BDEPTH: 700 696 Validity : 0  
 Towing dir: 0° Wire out : 1540 m Speed : 2.9 kn  
 Sorted : 7 Total catch: 71.30 Catch/hour: 138.76

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	33.67	78	24.26	
Yarrella blackfordi	18.49	681	13.32	
Epigonus telescopus	16.93	175	12.20	
Nezumia aequalis	13.82	409	9.96	
Illex coindetii	12.26	19	8.84	
Hoplostethus cadenati	11.68	350	8.42	
Lamprogrammus exutus	10.90	78	7.85	
Scymnodon obscurus	8.76	39	6.31	
NETTASTOMATIDAE	3.89	19	2.81	
Halosauridae sp.	3.89	97	2.81	
Galeus polli	3.50	39	2.52	
Aulopus cadenati	0.97	19	0.70	
Total	138.76		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 80  
 DATE :04/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°25.04  
 start stop duration Lon W 17°32.64  
 TIME :18:16:12 18:47:09 31.0 (min) Purpose : 3  
 LOG : 9401.42 9402.98 1.6 Region : 1300  
 FDEPTH: 154 150 Gear cond.: 0  
 BDEPTH: 154 150 Validity : 0  
 Towing dir: 0° Wire out : 390 m Speed : 3.0 kn  
 Sorted : 50 Total catch: 137.23 Catch/hour: 266.04

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Ariomma bondi	129.69	3152	49.75	
PYROSOMIDAE	72.12	0	27.11	
Antigonia capros	11.34	1274	4.26	
Aulopus cadenati	11.28	6	4.24	
Merluccius senegalensis	8.43	29	3.17	
Sphoeroides pachgaster	6.75	17	2.54	
Boops boops	6.34	64	2.38	
Raja miraletus	6.15	8	2.31	
Illex coindetii	5.47	81	2.05	
Scyliorhinus canicula	3.37	4	1.27	
Scorpaena stephanica	2.04	64	0.77	
Trachurus trachurus	1.34	12	0.50	
Erythrocles monodi	0.81	2	0.31	0
Octopus vulgaris	0.52	14	0.20	
Arnoglossus imperialis	0.21	21	0.08	
Sepia elegans	0.17	12	0.07	
Total	266.04		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 81  
 DATE :04/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°25.00  
 start stop duration Lon W 17°34.10  
 TIME :20:44:29 21:14:52 30.4 (min) Purpose : 3  
 LOG : 9414.00 9415.50 1.5 Region : 1300  
 FDEPTH: 290 257 Gear cond.: 0  
 BDEPTH: 290 257 Validity : 0  
 Towing dir: 0° Wire out : 680 m Speed : 3.0 kn  
 Sorted : 40 Total catch: 180.07 Catch/hour: 355.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Chlorophthalmus atlanticus	103.03	2406	28.99	
Merluccius polli	50.36	825	14.17	
Aulopus cadenati	48.93	203	13.77	
Synagrops microlepis	37.13	3393	10.45	
Bembrops greyi	29.13	247	8.20	
PYROSOMIDAE	22.20	0	6.25	
Trigla lyra	15.00	160	4.22	
Pontinus kuhlii	12.79	213	3.60	
OCTOPODIDAE	12.34	132	3.47	
Brotula barbata	10.84	26	3.05	
Chascanopsetta lugubris	5.95	89	1.67	
Galeus polli	1.78	26	0.50	
Peristedion cataphractum	1.68	231	0.47	
MICTOPHIDAE	1.42	409	0.40	
MORIDAE	1.33	18	0.37	
Lophiodes kempi	0.80	36	0.22	
Illex coindetii	0.71	8	0.20	
Total	355.40		100.00	



R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 82  
 DATE :04/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°23.00  
 start stop duration Lon W 17°36.85  
 TIME :23:09:30 23:39:55 30.4 (min) Purpose : 3  
 LOG : 9425.86 9427.34 1.5 Region : 1300  
 FDEPTH: 659 652 Gear cond.: 0  
 BDEPTH: 659 652 Validity : 0  
 Towing dir: 0° Wire out : 1300 m Speed : 2.9 km  
 Sorted : 60 Total catch: 159.32 Catch/hour: 314.24

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Lophius vaillanti	67.46 16	21.47	
Physiculus huloti	55.78 55	17.75	
Nematocarcinus africanus	47.57 11613	15.14	
Centrophorus squamosus	41.81 4	13.31	
Laemonema sp.	17.28 339	5.50	
Hoplostethus cadenati	13.81 536	4.39	
Yarella blackfordi	12.62 473	4.02	
Coelorhynchus coelorhynchus	10.81 118	3.44	
Champsodon sp.	6.15 142	1.96	
Xenodermichthys copei	5.76 276	1.83	
Merluccius polli	4.73 8	1.51	
Bembrops sp.	3.94 24	1.26	
Centrophorus lusitanicus	3.75 2	1.19	
Dicrolene intransigra	3.63 110	1.15	
Galeus polli	2.68 6	0.85	
Chaceon maritae	2.33 6	0.74	
Nezumia sp.	1.97 166	0.63	
Todarodes sagittatus	1.81 8	0.58	
MELANOSTOMIATIDAE	1.26 110	0.40	
CONGRIDAE	1.18 8	0.38	0
TRIGLIDAE	1.03 8	0.33	
Chlorophthalmus atlanticus	1.03 16	0.33	
Halosauroptis rostratus	0.95 47	0.30	
Pontinus kuhlii	0.95 8	0.30	
Peristedion cataphractum	0.95 134	0.30	
MYCTOPHIDAE	0.79 473	0.25	
Chascanopsetta lugubris	0.55 16	0.18	
Chauliodus sloani	0.39 24	0.13	
Scymnodon squamulosus	0.39 4	0.13	
MACROURIDAE	0.39 8	0.13	
Argyropelecus affinis	0.16 39	0.05	0
Diretmus argenteus	0.16 8	0.05	
CONGRIDAE	0.16 8	0.05	
Total	314.24	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 83  
 DATE :05/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°13.92  
 start stop duration Lon W 17°31.99  
 TIME :04:19:38 04:50:19 30.7 (min) Purpose : 3  
 LOG : 9461.49 9463.08 1.6 Region : 1300  
 FDEPTH: 221 224 Gear cond.: 0  
 BDEPTH: 221 224 Validity : 0  
 Towing dir: 0° Wire out : 510 m Speed : 3.1 km  
 Sorted : 42 Total catch: 397.55 Catch/hour: 777.48

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Aulopus cadenati	290.42 20	37.35	
Chlorophthalmus atlanticus	169.17 0	21.76	
Synagrops microlepis	59.26 96	7.62	
Torpedo marmorata	56.71 2	7.29	
Pontinus kuhlii	46.94 1408	6.04	
Octopus vulgaris	39.90 332	5.13	
Laemonema sp.	33.05 391	4.25	
Sepia elegans	12.52 372	1.61	
Antigonia capros	12.32 489	1.58	
Chascanopsetta lugubris	10.95 78	1.41	
HOPLIPTHYIDAE	10.37 489	1.33	
Brotula barbata	10.37 39	1.33	
Loligo vulgaris	7.04 59	0.91	
Lagocephalus laevigatus	6.45 20	0.83	
CONGRIDAE	4.30 39	0.55	
Scylliorhynchus cervigoni	4.11 10	0.53	
Peristedion cataphractum	2.35 2	0.30	
Galeus polli	1.27 37	0.16	
Total	777.48	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 84  
 DATE :05/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°14.29  
 start stop duration Lon W 17°31.58  
 TIME :05:50:23 06:20:35 30.2 (min) Purpose : 3  
 LOG : 9467.94 9469.47 1.5 Region : 1300  
 FDEPTH: 160 159 Gear cond.: 0  
 BDEPTH: 160 159 Validity : 0  
 Towing dir: 0° Wire out : 380 m Speed : 3.0 km  
 Sorted : 16 Total catch: 71.42 Catch/hour: 141.89

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Aulopus cadenati	78.48 517	55.31	
Illex coindetii	18.83 183	13.27	
Octopus vulgaris	11.13 111	7.84	
Synagrops microlepis	5.96 437	4.20	
Spherooides pachgaster	4.77 16	3.36	
Antigonia capros	4.53 302	3.19	
Torpedo marmorata	4.05 8	2.86	
Ariomma melanum	3.02 64	2.13	
Merluccius senegalensis	2.30 16	1.62	
Saurida brasiliensis	1.83 127	1.29	
Uranoscopus polli	1.75 32	1.23	
Trigla lyra	1.59 16	1.12	
Sepia elegans	1.27 24	0.90	
Pontinus accraensis	1.27 8	0.90	
Arnoglossus imperialis	1.11 24	0.78	
Total	141.89	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 85  
 DATE :05/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°11.66  
 start stop duration Lon W 17°22.87  
 TIME :08:18:19 08:48:23 30.1 (min) Purpose : 3  
 LOG : 9484.09 9485.56 1.5 Region : 1300  
 FDEPTH: 86 87 Gear cond.: 0  
 BDEPTH: 86 87 Validity : 0  
 Towing dir: 0° Wire out : 210 m Speed : 2.9 km  
 Sorted : 16 Total catch: 16.19 Catch/hour: 32.30

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Trachurus trachurus	6.84 148	21.19	169
Sepia elegans	4.25 16	13.16	
Boops boops	3.63 90	11.24	
Sardinella aurita	3.37 54	10.44	168
Fistularia petimba	2.71 18	8.40	
Scorpaena stephanica	1.90 2	5.87	
Sphyaena guachancho	1.64 8	5.06	
Spherooides pachgaster	1.60 6	4.94	
Scomber japonicus	0.96 10	2.96	
Zeus faber	0.70 6	2.16	
Synchropus phaeton	0.60 48	1.85	
Dentex angolensis	0.56 28	1.73	
Pagellus bellottii	0.56 36	1.73	
Octopus vulgaris	0.52 12	1.61	
Merluccius senegalensis	0.50 2	1.54	
Scorpaena scrofa	0.44 6	1.36	
Citharus linguatula	0.42 8	1.30	
Arnoglossus imperialis	0.20 38	0.62	
Illex coindetii	0.18 2	0.56	
Antennarius occidentalis	0.16 4	0.49	
Decapterus punctatus	0.14 4	0.43	
Trigla lyra	0.14 2	0.43	
Bembrops greyi	0.12 2	0.37	
Saurida brasiliensis	0.10 10	0.31	
Spherooides marmoratus	0.08 2	0.25	
Total	32.30	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 86  
 DATE :05/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°15.94  
 start stop duration Lon W 17°14.00  
 TIME :10:47:17 11:17:11 29.9 (min) Purpose : 3  
 LOG : 9499.91 9501.51 1.6 Region : 1300  
 FDEPTH: 36 37 Gear cond.: 0  
 BDEPTH: 36 37 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.2 km  
 Sorted : 56 Total catch: 395.43 Catch/hour: 793.51

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Pagellus bellottii	219.13 1539	27.62	
Pomadasy incisus	129.77 1030	16.35	
Pagrus caeruleostictus	95.86 457	12.08	
Spondyliosoma cantharus	79.30 13	9.99	
Decapterus rhonchus	71.86 616	9.06	170
Fistularia tabacaria	37.12 26	4.68	
Pseudupeneus prayensis	21.91 170	2.76	
Chloroscombrus chrysurus	19.95 170	2.51	
Plectorhynchus mediterraneus	18.90 65	2.38	
Brachydeuterus auritus	11.74 130	1.48	
Dicologlossa hexophthalma	11.74 26	1.48	
Sphyaena guachancho	10.56 65	1.33	
Diplodus sargus *	6.90 13	0.87	
Dentex canariensis	6.78 26	0.85	
Albula vulpes	6.52 13	0.82	
Trachurus trachurus	6.52 38	0.82	171
Octopus vulgaris	6.38 13	0.80	
Selene dorsalis	5.22 65	0.66	
Trachinus armatus	4.56 13	0.57	
Parapristipoma octolineatum	3.91 13	0.49	
Trachinocephalus myops	3.13 13	0.39	
Priacanthus arenatus	2.99 13	0.38	
Galeoides decadactylus	2.99 26	0.38	
Sardinella aurita	2.73 91	0.34	173
Spherooides marmoratus	1.83 39	0.23	
Diplodus bellottii	1.57 26	0.20	
Eucinostoma melanopterus	1.16 13	0.15	
Fistularia petimba	1.04 13	0.13	
Bothus podas africanus	0.78 26	0.10	
Decapterus punctatus	0.64 52	0.08	
Fishing gears	0.00 2	0.00	
Total	793.51	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 87  
 DATE :05/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°28.32  
 start stop duration Lon W 17°11.40  
 TIME :15:26:34 15:57:00 30.5 (min) Purpose : 3  
 LOG : 9529.73 9531.30 1.6 Region : 1300  
 FDEPTH: 30 29 Gear cond.: 0  
 BDEPTH: 30 29 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.1 km  
 Sorted : 41 Total catch: 162.23 Catch/hour: 319.67

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Chloroscombrus chrysurus	149.75 1702	46.85	
Pomadasy incisus	86.70 611	27.12	
Decapterus rhonchus	26.01 270	8.14	180
Pseudupeneus prayensis	16.95 142	5.30	
Lithognathus mormyrus	9.30 32	2.91	
Pagrus caeruleostictus	6.62 39	2.07	
Octopus vulgaris	5.04 8	1.58	
Fistularia tabacaria	4.49 63	1.41	
Selene dorsalis	3.07 32	0.96	
Galeoides decadactylus	1.58 8	0.49	
Aluterus heudelotii	1.40 2	0.44	
Sardinella maderensis	1.34 16	0.42	181
Diplodus bellottii	1.26 16	0.39	
Pagellus bellottii	1.26 8	0.39	
Brachydeuterus auritus	1.18 16	0.37	
Trachurus trachurus	1.10 8	0.35	
Sphyaena guachancho	0.95 8	0.30	
Syacium micrum	0.47 8	0.15	
Synchropus phaeton	0.47 24	0.15	
Spherooides marmoratus	0.47 16	0.15	
Trachinus armatus	0.24 8	0.07	
Total	319.67	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 88  
 DATE :05/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°28.05  
 start stop duration Lon W 17°18.71  
 TIME :17:13:33 17:43:25 29.9 (min) Purpose : 3  
 LOG : 9540.31 9541.83 1.5 Region : 1300  
 FDEPTH: 51 51 Gear cond.: 0  
 BDEPTH: 51 51 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.1 kn  
 Sorted : 53 Total catch: 583.39 Catch/hour: 1171.86

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Pagellus bellottii	317.07	1267	27.06	183	
Pomadasy incisus	291.66	2431	24.89		
Diplodus bellottii	165.72	3999	14.14		
Trachurus crecaea	89.27	729	7.62	182	
Pseudupeneus prayensis	77.78	884	6.64		
Pagrus caeruleostictus	76.23	420	6.51		
Zeus faber	48.39	44	4.13		
Decapterus rhonchus	16.79	66	1.43		
Bodianus speciosus	13.26	44	1.13		
Boops boops	12.27	1193	1.05		
Plectorhynchus mediterraneus	11.71	66	1.00		
Fistularia petimba	6.85	110	0.58		
Dentex canariensis	6.41	22	0.55		
Chaetodon hoefleri	6.19	44	0.53		
Scomberomorus tritor	4.42	44	0.38		
Spondylisoma cantharus	4.42	44	0.38		
Parapristipoma octolineatum	4.42	22	0.38		
Sardinella aurita	4.20	110	0.36	184	
Stephanolepis hispidus	3.76	22	0.32		
Decapterus punctatus	2.65	110	0.23		
Decapterus punctatus	2.65	110	0.23		
Antennarius pardalis	2.43	22	0.21		
Scomber japonicus	1.99	22	0.17		
Trigla lyra	1.77	22	0.15		
Bembrops greyi	1.10	22	0.09		
Citharus linguatula	0.66	22	0.06		
Spherooides marmoratus	0.44	22	0.04		
Total	1171.86		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 89  
 DATE :06/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°56.82  
 start stop duration Lon W 17°31.70  
 TIME :05:17:56 05:47:46 29.8 (min) Purpose : 3  
 LOG : 9611.35 9612.71 1.4 Region : 1300  
 FDEPTH: 411 416 Gear cond.: 0  
 BDEPTH: 411 416 Validity : 0  
 Towing dir: 0° Wire out : 980 m Speed : 2.7 kn  
 Sorted : 37 Total catch: 328.85 Catch/hour: 661.45

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Zenopsis conchifer	398.26	424	60.21		
Helicolenus dactylopterus	76.03	344	11.49		
Laemonema laureysi	72.41	1973	10.95		
Merluccius senegalensis	43.63	398	6.60		
Malacocephalus laevis	40.71	525	6.15		
Illex coindetii	15.39	109	2.33		
Dicologlossa cuneata	7.60	199	1.15		
Chlorophthalmus atlanticus	3.80	145	0.57		
Raja leoparidus	1.99	72	0.30		
Yarella blackfordi	1.09	181	0.16		
Galeus polli	0.54	18	0.08		
Total	661.45		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 90  
 DATE :06/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°52.80  
 start stop duration Lon W 17°29.20  
 TIME :07:31:29 08:01:58 30.5 (min) Purpose : 3  
 LOG : 9622.73 9624.26 1.5 Region : 1300  
 FDEPTH: 162 165 Gear cond.: 0  
 BDEPTH: 162 165 Validity : 0  
 Towing dir: 0° Wire out : 410 m Speed : 3.0 kn  
 Sorted : 53 Total catch: 185.13 Catch/hour: 364.19

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Ariomma bondi	112.92	1896	31.01		
Antigonia capros	104.26	1060	28.63		
Merluccius senegalensis	52.52	224	14.42		
Squatina oculata	21.54	4	5.91		
Pontinus kuhlii	16.64	157	4.57		
Brotula barbata	14.38	16	3.95		
Illex coindetii	12.79	191	3.51		
Zenopsis conchifer	7.85	8	2.16		
Zeus faber	7.69	49	2.11		
Spherooides pachgaster	3.27	16	0.90		
Bembrops greyi	2.50	24	0.69		
Aulopus cadenati	1.75	8	0.48		
Synchiropus phaeton	1.57	83	0.43		
Chlorophthalmus atlanticus	1.50	24	0.41		
Argocheilichthys imperialis	1.18	57	0.32		
Raja miraletus	1.08	2	0.30		
Citharus linguatula	0.41	8	0.11		
Pterothrissus belloci	0.33	16	0.09		
Fishing gears	0.00	2	0.00		
Total	364.19		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 91  
 DATE :06/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 14°49.07  
 start stop duration Lon W 17°20.85  
 TIME :09:50:35 10:20:02 29.5 (min) Purpose : 3  
 LOG : 9637.21 9638.64 1.4 Region : 1300  
 FDEPTH: 32 38 Gear cond.: 0  
 BDEPTH: 32 38 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 2.9 kn  
 Sorted : 50 Total catch: 164.71 Catch/hour: 335.57

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Pagellus bellottii	79.48	0	23.68		
Fistularia petimba	33.68	181	10.04		
Pseudupeneus prayensis	25.63	216	7.64		
Aluterus monoceros	23.45	35	6.99		
Pagrus caeruleostictus	21.64	61	6.45		
Torpedo torpedo	20.94	26	6.24		
Ballistes capricus	19.05	35	5.68		
Pomadasy incisus	16.79	96	5.00		
Torpedo marmorata	13.04	10	3.89		
Caranx crysos	12.20	18	3.64		
Epinephelus aeneus	11.61	18	3.46		
Chilomycterus spinosus mauret.	10.55	53	3.14		
Rhinobatos cemiculus	10.19	12	3.04		
Eucinostomus melanopterus	8.21	77	2.45		
Fistularia tabacaria	5.30	2	1.58		
Plectorhynchus mediterraneus	4.75	18	1.41		
Decapterus punctatus	3.36	157	1.00		
Decapterus rhonchus	2.93	43	0.87		
Dasyatis marmorata	2.67	8	0.80		
Synchiropus phaeton	2.59	147	0.77		
Dentex canariensis	2.32	8	0.69		
Trigla lyra	1.81	18	0.54		
Cynoglossus monodi	1.81	8	0.54		
Raja miraletus	1.57	2	0.47		
Plastic bags	0.00	2	0.00		
Plastic bags	0.00	4	0.00		
Total	335.57		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 92  
 DATE :06/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°1.76  
 start stop duration Lon W 17°5.15  
 TIME :12:51:27 13:21:37 30.2 (min) Purpose : 3  
 LOG : 9658.70 9659.98 1.3 Region : 1300  
 FDEPTH: 45 46 Gear cond.: 0  
 BDEPTH: 45 46 Validity : 0  
 Towing dir: 0° Wire out : 135 m Speed : 2.5 kn  
 Sorted : 75 Total catch: 275.48 Catch/hour: 547.86

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
J E L L Y F I S H	88.06	0	16.07		
Pomadasy peroteti	77.50	320	14.15		
Lithognathus mormyrus	70.60	241	12.89		
Pseudupeneus prayensis	50.95	386	9.30		
Pagrus caeruleostictus	37.98	101	6.93		
Galeoides decadactylus	28.74	131	5.25		
Pomadasy incisus	26.11	183	4.77		
Aluterus monoceros	20.96	22	3.83		
Gerres sp.	17.76	175	3.24		
Alectis alexandrinus	15.27	52	2.79		
Spherooides marmoratus	14.70	8	2.68		
Pomadasy rogeri	14.56	30	2.66		
Raja miraletus	14.56	30	2.66		
Dasyatis marmorata	11.63	8	2.12		
Selene dorsalis	8.87	153	1.62		
Zeus faber	7.34	8	1.34		
Brachydeuterus auritus	6.90	605	1.26		
Sphyræna guachancho	5.97	123	1.09		
Trichurus lepturus	5.45	74	0.99		
Fistularia petimba	4.14	22	0.62		
Pteroscacion pelli	3.04	22	0.56		
Chilomycterus spinosus mauret.	2.90	14	0.53		
Cynoglossus cadenati	2.68	22	0.49		
Cynoglossus canariensis	2.39	8	0.44		
Octopus vulgaris	1.67	8	0.30		
Lagocephalus laevigatus	1.51	8	0.28		
Synchiropus phaeton	1.23	58	0.23		
Microchirus frechkopi	1.07	8	0.20		
Trigla lyra	1.01	8	0.19		
Sardinella aurita	0.93	22	0.17	186	
Dactylopterus volitans	0.86	8	0.16		
Decapterus rhonchus	0.50	21	0.09		
Fishing gears	0.00	2	0.00		
Total	547.86		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 93  
 DATE :06/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°4.78  
 start stop duration Lon W 17°8.06  
 TIME :14:33:04 15:03:37 30.6 (min) Purpose : 3  
 LOG : 9668.07 9669.47 1.4 Region : 1300  
 FDEPTH: 98 99 Gear cond.: 0  
 BDEPTH: 98 99 Validity : 0  
 Towing dir: 0° Wire out : 240 m Speed : 2.7 kn  
 Sorted : 25 Total catch: 101.33 Catch/hour: 199.01

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Trachurus trachurus	30.32	717	15.24	187	
Trichurus lepturus	30.25	416	15.20		
Saurida brasiliensis	27.57	7090	13.86		
Merluccius polli	27.18	110	13.66	188	
Trigla lyra	23.18	244	11.65		
Decapterus rhonchus	10.37	24	5.21	189	
Scorpaena stephanica	9.90	24	4.97		
Octopus vulgaris	8.25	24	4.14		
Alloteuthis africana	7.23	2710	3.63		
Raja miraletus	6.44	8	3.24		
Pseudupeneus prayensis	2.91	24	1.46		
Sphyræna guachancho	2.59	8	1.30		
Citharus linguatula	2.51	55	1.26		
Pomadasy rogeri	2.20	8	1.11		
Pontinus accraensis	1.57	8	0.79		
Spherooides marmoratus	1.57	47	0.79		
Priacanthus arenatus	1.49	8	0.75		
Brachydeuterus auritus	1.49	8	0.75	190	
Pterothrissus belloci	1.10	31	0.55		
Sepia elegans	0.55	16	0.28		
Engraulis encrasicolus	0.16	8	0.08		
Chilomycterus spinosus mauret.	0.08	8	0.04		
Pagellus bellottii	0.08	8	0.04		
Gobiidae	0.02	2	0.01		
Total	199.01		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 94  
 DATE :06/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°9.66  
 start stop duration Lon W 17°14.25  
 TIME :16:43:21 17:13:00 29.7 (min) Purpose : 3  
 LOG : 9680.65 9682.18 1.5 Region : 1300  
 FDEPTH: 170 181 Gear cond.: 0  
 BDEPTH: 170 181 Validity : 0  
 Towing dir: 0° Wire out : 430 m Speed : 3.1 kn  
 Sorted : 49 Total catch: 144.14 Catch/hour: 291.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Aulopus cadenati	97.13	8	33.30	
Merluccius polli	86.61	4391	29.69	0
Illex coindetii	33.43	429	11.46	
Chlorophthalmus atlanticus	18.29	409	6.27	
Merluccius senegalensis	17.81	308	6.11	
Zenopsis conchifer	10.16	4	3.48	
Trachurus trecae	7.28	117	2.50	
Zeus faber	5.26	40	1.80	
Pontinus kuhlii	3.72	40	1.28	
Octopus vulgaris	3.44	12	1.18	
Brotula barbata	2.83	4	0.97	
Scorpaena stephanica	1.74	202	0.60	
Mystriophis rostellatus	1.34	4	0.46	
Spherooides pachgaster	1.17	4	0.40	
Capros aper	0.77	12	0.26	
Pterothrissus belloci	0.40	4	0.14	
Malacocephalus laevis	0.24	4	0.08	
Arnoglossus imperialis	0.04	4	0.01	
Total	291.68		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 95  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°30.29  
 start stop duration Lon W 17°12.47  
 TIME :00:13:18 00:43:37 30.3 (min) Purpose : 3  
 LOG : 9731.86 9733.24 1.4 Region : 1300  
 FDEPTH: 496 495 Gear cond.: 0  
 BDEPTH: 496 495 Validity : 0  
 Towing dir: 0° Wire out : 1135 m Speed : 2.7 kn  
 Sorted : 22 Total catch: 159.97 Catch/hour: 316.57

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Nematocarcinus africanus	179.39	40546	56.67	
Physiculus sp.	43.50	1399	13.74	
Merluccius polli	23.55	83	7.44	
Malacocephalus laevis	22.58	152	7.13	
CONGRIDAE	13.58	277	4.29	
Yarella blackfordi	13.16	305	4.16	
Hymenocephalus italicus	6.92	97	2.19	
Illex coindetii	5.26	42	1.66	
Chlorophthalmus atlanticus	1.94	55	0.61	
Nezumia aequalis	1.80	235	0.57	
Halosauridae sp.	1.52	152	0.48	
Coelorinchus sp.	1.39	55	0.44	
Coelorinchus sp.	1.11	14	0.35	0
Lophius sp.	0.83	14	0.26	
OGCOCEPHALIDAE	0.03	14	0.01	
Argyropelecus sp.	0.02	14	0.01	
Total	316.57		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 96  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°22.74  
 start stop duration Lon W 17°2.10  
 TIME :07:39:51 08:10:51 31.0 (min) Purpose : 3  
 LOG : 9760.56 9762.09 1.5 Region : 1300  
 FDEPTH: 105 108 Gear cond.: 0  
 BDEPTH: 105 108 Validity : 0  
 Towing dir: 0° Wire out : 280 m Speed : 3.0 kn  
 Sorted : 25 Total catch: 590.88 Catch/hour: 1143.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	1128.77	4366	98.70	
Scomber japonicus	7.90	46	0.69	
Zeus faber	6.04	46	0.53	
Illex coindetii	0.46	46	0.04	
Saurida brasiliensis	0.46	46	0.04	
Total	1143.64		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 97  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°20.01  
 start stop duration Lon W 16°54.82  
 TIME :11:12:42 11:44:15 31.6 (min) Purpose : 3  
 LOG : 9776.09 9777.61 1.5 Region : 1300  
 FDEPTH: 50 52 Gear cond.: 0  
 BDEPTH: 50 52 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 2.9 kn  
 Sorted : 67 Total catch: 232.70 Catch/hour: 442.54

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mystriophis rostellatus	114.10	61	25.78	
PYROSOMIDAE	45.64	0	10.31	
Pomadasys peroteti	42.98	183	9.71	
Pteroscion pelli	42.68	1666	9.64	
Peneaus notialis	39.18	276	8.85	195
Trichurus lepturus	34.61	1255	7.82	
Brachydeuterus auritus	29.13	2236	6.58	
Bembrops greyi	17.42	1392	3.94	
Octopus vulgaris	16.32	42	3.69	
Pentaneus quinquarius	15.97	1605	3.61	0
Galeoides decadactylus	8.06	38	1.82	
Ubrina canariensis	7.91	68	1.79	
Antennarius occidentalis	5.40	388	1.22	
Scorpaena stephanica	3.65	99	0.83	
Dactylopterus volitans	3.19	30	0.72	
Trachurus trecae	2.59	137	0.58	
Fagellus bellotii	1.37	8	0.31	191
Raja miraletus	1.37	8	0.31	
Sphyraena guanchancho	1.14	23	0.26	
Pentaneus quinquarius	1.06	84	0.24	
Torpedo torpedo	0.91	30	0.21	
Sardinella maderensis	0.84	30	0.19	194
Chilomycterus spinosus mauret.	0.84	2	0.19	
Pseudupeneus prayensis	0.76	8	0.17	
Dicologlossa cuneata	0.76	129	0.17	
Selene dorsalis	0.76	8	0.17	
Citharus linguatula	0.61	8	0.14	
Syacium micrum	0.61	30	0.14	
Antennarius pardalis	0.53	15	0.12	
OGCINIDAE	0.38	53	0.09	
Sardinella aurita	0.38	8	0.09	193
Brotula barbata	0.30	243	0.07	
Dicologlossa hexophthalma	0.30	8	0.07	
Microchirus frechkopi	0.30	38	0.07	
Chloroscombrus chrysurus	0.30	38	0.07	
Spherooides marmoratus	0.08	8	0.02	
Sepia elegans	0.08	8	0.02	
Plastic bags	0.00	8	0.00	
Total	442.54		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 98  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°17.50  
 start stop duration Lon W 16°52.26  
 TIME :14:08:05 14:38:18 30.2 (min) Purpose : 3  
 LOG : 9787.57 9789.31 1.7 Region : 1300  
 FDEPTH: 24 22 Gear cond.: 0  
 BDEPTH: 24 22 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.5 kn  
 Sorted : 55 Total catch: 605.33 Catch/hour: 1201.85

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
J E L Y F I S H	455.36	0	37.89	
Pteroscion pelli	240.24	6091	19.99	
Cynoglossus monodi	126.02	502	10.49	
Pentaneus quinquarius	102.65	2708	8.54	
Pseudolithus senegalensis	50.23	175	4.18	
Lagocephalus laevigatus	33.20	22	2.76	
Arius parkii	32.98	502	2.74	
Pseudolithus typus	32.76	371	2.73	
Galeoides decadactylus	27.08	480	2.25	
Ephippion guttifer	26.21	44	2.18	
Selene dorsalis	19.66	131	1.64	
Trachinotus ovatus	16.82	22	1.40	
Trichurus lepturus	13.76	393	1.14	
Pomadasys incisus	10.92	153	0.91	
Peneaus notialis	10.92	480	0.91	
Brachydeuterus auritus	0.87	87	0.07	
Ilisha africana	0.87	284	0.07	
Spherooides pachgaster	0.87	44	0.07	
Caranx hippos	0.22	44	0.02	
Antennarius occidentalis	0.22	22	0.02	
Total	1201.85		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 99  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°37.05  
 start stop duration Lon W 16°42.38  
 TIME :17:17:17 17:47:16 30.0 (min) Purpose : 3  
 LOG : 9810.42 9811.99 1.6 Region : 1300  
 FDEPTH: 23 29 Gear cond.: 0  
 BDEPTH: 23 29 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.1 kn  
 Sorted : 50 Total catch: 988.52 Catch/hour: 1978.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Galeoides decadactylus	865.90	40	43.77	
Pteroscion pelli	310.93	14484	15.72	
Cynoponticus ferox	172.37	3188	8.71	
Pentaneus quinquarius	162.93	4173	8.24	
Trichurus lepturus	77.13	1811	3.90	0
Cynoglossus senegalensis	72.01	630	3.64	
Pomadasys jubelini	69.27	236	3.50	
Cynoglossus monodi	55.10	158	2.78	
Drepane africana	49.97	78	2.53	
Arius parkii	38.95	945	1.97	
Pseudolithus senegalensis	31.48	668	1.59	
Portunus validus	27.94	40	1.41	
Arius heudelotii	22.03	394	1.11	
Ilisha africana	11.01	3738	0.56	
Lagocephalus laevigatus	8.25	40	0.42	
Brachydeuterus auritus	2.34	276	0.12	
Selene dorsalis	0.38	236	0.02	
Antennarius occidentalis	0.38	40	0.02	
Total	1978.36		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 100  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°40.63  
 start stop duration Lon W 16°48.66  
 TIME :18:31:01 19:01:25 30.4 (min) Purpose : 3  
 LOG : 9817.59 9819.19 1.6 Region : 1300  
 FDEPTH: 55 65 Gear cond.: 0  
 BDEPTH: 55 65 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 3.1 kn  
 Sorted : 32 Total catch: 60.88 Catch/hour: 120.16  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	78.95	8372	65.70	
Octopus vulgaris	6.47	8	5.39	
Zeus faber	6.18	4	5.14	
Trichurus lepturus	5.33	83	4.43	
Brotula barbata	5.25	63	4.37	
Pteroscion pelli	5.25	182	4.37	
Pomadasy jubelini	2.01	4	1.68	
GOBIIDAE	1.93	827	1.61	
Antennarius occidentalis	1.93	47	1.61	
Raja miraletus	1.91	2	1.59	
Synagrops microlepis	1.50	32	1.25	
Bembrops greyi	0.83	67	0.69	
Citharus linguatula	0.79	36	0.66	
Umbrina canariensis	0.71	4	0.59	
Pseudupeneus prayensis	0.39	16	0.33	
Arnoglossus imperialis	0.39	47	0.33	
Dicologlossa hexophthalma	0.16	12	0.13	
Scorpaena scrofa	0.12	4	0.10	
Sphyræna guachancho	0.04	4	0.03	
Total	120.16		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 101  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°45.29  
 start stop duration Lon W 17°0.56  
 TIME :21:06:17 21:36:35 30.3 (min) Purpose : 3  
 LOG : 9833.86 9835.45 1.6 Region : 1300  
 FDEPTH: 137 138 Gear cond.: 0  
 BDEPTH: 137 138 Validity : 0  
 Towing dir: 0° Wire out : 350 m Speed : 3.1 kn  
 Sorted : 28 Total catch: 163.18 Catch/hour: 323.13  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Pontinus kuhlii	56.67	1283	17.54	
Aulopus cadenati	51.68	760	15.99	
MYCTOPHIDAE	39.68	1259	12.28	
Trachurus trecae	38.02	0	11.77	
Antigonia capros	21.15	1093	6.54	
Scorpaena scrofa	19.49	261	6.03	
Brotula barbata	19.37	48	5.99	
Merluccius senegalensis	19.25	95	5.96	
Boops boops	19.01	345	5.88	
Octopus vulgaris	11.76	83	3.64	
Arnoglossus imperialis	7.60	677	2.35	
Sphoeroides pachgaster	4.51	12	1.40	
Synagrops microlepis	3.21	261	0.99	
Malacocephalus laevis	2.69	71	0.83	
Bembrops greyi	1.31	36	0.40	
Saurida brasiliensis	1.31	214	0.40	
Raja miraletus	1.19	2	0.37	
GOBIIDAE	1.19	48	0.37	
Illex coindetii	1.19	36	0.37	
Erythrocles monodi	1.07	83	0.33	
Citharus linguatula	0.95	24	0.29	
Ophiusus sp	0.36	24	0.11	
Serranus cabrilla	0.36	12	0.11	
Serranus africana	0.12	59	0.04	
Total	323.13		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 102  
 DATE :07/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 15°45.34  
 start stop duration Lon W 17°1.96  
 TIME :23:10:42 23:42:23 31.7 (min) Purpose : 3  
 LOG : 9844.17 9845.84 1.7 Region : 1300  
 FDEPTH: 244 235 Gear cond.: 0  
 BDEPTH: 244 235 Validity : 0  
 Towing dir: 0° Wire out : 600 m Speed : 3.2 kn  
 Sorted : 51 Total catch: 636.69 Catch/hour: 1206.23  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Chlorophthalmus atlanticus	696.49	1447	57.74	
Merluccius polli	172.88	119	14.33	
Parapanaeus longirostris	129.30	17453	10.72	
Pontinus kuhlii	67.98	1563	5.64	
Merluccius senegalensis	33.40	47	2.77	
Illex coindetii	22.51	213	1.87	
Bembrops greyi	15.63	166	1.30	
MYCTOPHIDAE	14.21	165	1.18	
Brotula barbata	13.98	25	1.16	
Paraconger notialis	11.14	545	0.92	
Chascanopsetta lugubris	7.10	95	0.59	
Octopus vulgaris	6.16	47	0.51	
Sepia elegans	5.93	355	0.49	
Synagrops microlepis	4.04	95	0.33	
Lophiodes kempi	3.09	25	0.26	
Synchiropus phaeton	1.19	95	0.10	
Peristedion cataphractum	0.47	166	0.04	
Trachurus trachurus	0.25	25	0.02	
Arnoglossus imperialis	0.25	25	0.02	
Blennius sp.	0.25	25	0.02	
Total	1206.23		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 103  
 DATE :08/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°07.02  
 start stop duration Lon W 16°57.55  
 TIME :03:47:23 04:17:51 30.5 (min) Purpose : 3  
 LOG : 9877.04 9878.67 1.6 Region : 1300  
 FDEPTH: 426 425 Gear cond.: 0  
 BDEPTH: 426 425 Validity : 0  
 Towing dir: 0° Wire out : 1040 m Speed : 3.2 kn  
 Sorted : 38 Total catch: 289.46 Catch/hour: 569.99  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Scorpaena stephanica	123.86	1693	21.73	
Nematocarcinus africanus	120.91	47653	21.21	
Zenopsis conchifer	114.01	79	20.00	
Parapanaeus longirostris	94.55	6951	9.57	
Physiculus sp.	38.00	670	6.67	
Merluccius senegalensis	35.25	20	6.18	
Merluccius polli	32.49	295	5.70	
Centrophorus granulosus	19.99	10	3.51	
Chlorophthalmus atlanticus	11.81	551	2.07	
Malacocephalus laevis	9.06	79	1.59	
Illex coindetii	3.15	20	0.55	
CONGRIDAE	2.95	79	0.52	
MYCTOPHIDAE	1.58	630	0.28	
Lophius vaillanti	1.58	20	0.28	
Arnoglossus imperialis	0.59	39	0.10	
Merluccius polli	0.20	20	0.03	0
Arnoglossus Capnis	0.02	39	0.00	
Total	569.99		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 104  
 DATE :08/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°3.52  
 start stop duration Lon W 16°54.32  
 TIME :06:23:39 06:54:09 30.5 (min) Purpose : 3  
 LOG : 9890.48 9891.97 1.5 Region : 1300  
 FDEPTH: 153 141 Gear cond.: 0  
 BDEPTH: 153 141 Validity : 0  
 Towing dir: 0° Wire out : 360 m Speed : 2.9 kn  
 Sorted : 30 Total catch: 196.84 Catch/hour: 387.23  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
PYROSOMIDAE	130.43	0	33.68	
Merluccius polli	81.44	319	21.03	
Pontinus kuhlii	63.93	1279	16.51	
Aulopus cadenati	35.55	332	9.18	
Antigonia capros	30.43	1751	7.86	
Pterothrissus belloci	11.11	370	2.87	
Arnoglossus imperialis	6.90	114	1.78	
Saurida brasiliensis	6.51	307	1.68	
Bembrops greyi	5.74	165	1.48	
Capros aper	3.84	37	0.99	
Illex coindetii	3.84	89	0.99	
Trigla lyra	2.81	89	0.73	
Zeus faber	1.53	12	0.40	
Zenopsis conchifer	1.40	12	0.36	
Sepia elegans	0.90	114	0.23	
Dentex angolensis	0.65	12	0.17	
GOBIIDAE	0.13	12	0.03	
Serranus africana	0.08	12	0.02	
Total	387.23		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 105  
 DATE :08/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°3.25  
 start stop duration Lon W 16°43.99  
 TIME :09:03:17 09:33:55 30.6 (min) Purpose : 3  
 LOG : 9906.41 9907.84 1.4 Region : 1300  
 FDEPTH: 76 75 Gear cond.: 0  
 BDEPTH: 76 75 Validity : 0  
 Towing dir: 0° Wire out : 180 m Speed : 2.8 kn  
 Sorted : 28 Total catch: 95.89 Catch/hour: 187.84  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Trichurus lepturus	127.33	1371	67.79	
Priacanthus arenatus	22.53	69	11.99	
Dentex angolensis	10.71	80	5.70	196
Illex coindetii	6.86	10	3.65	
Fistularia petimba	5.00	18	2.66	
Zeus faber	3.37	10	1.79	
Sphyræna guachancho	2.94	10	1.55	
Merluccius polli	2.06	10	1.10	
Pontinus kuhlii	1.96	20	1.04	
Umbrina canariensis	1.94	2	1.03	
Octopus vulgaris	1.39	4	0.74	
Aulopus cadenati	0.69	10	0.37	
Trachurus trecae	0.59	88	0.31	
Arnoglossus imperialis	0.29	10	0.16	
Saurida brasiliensis	0.20	10	0.10	
Total	187.84		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 106  
 DATE :08/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°1.37  
 start stop duration Lon W 16°36.85  
 TIME :10:57:47 11:27:54 30.1 (min) Purpose : 3  
 LOG : 9917.78 9919.28 1.5 Region : 1300  
 FDEPTH: 36 36 Gear cond.: 0  
 BDEPTH: 36 36 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.0 kn  
 Sorted : 44 Total catch: 219.75 Catch/hour: 437.75  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Pteroscion pelli	99.60	777	22.75	
Pseudolithus senegalensis	97.61	100	22.30	
Pentaneus quinquarius	75.70	275	17.29	
Drepane africana	50.60	50	11.56	
Arius parkii	25.80	120	5.89	
Trichurus lepturus	25.30	319	5.78	
Ilisha africana	15.54	1135	3.55	
Chloroscombus chrysurus	11.65	70	2.66	
Galeoides decadactylus	11.45	209	2.62	
Torpedo torpedo	6.37	10	1.46	
Brachydeuterus auritus	5.68	378	1.30	
Pomadasy jubelini	5.58	20	1.27	
Sargocentron hastatus	1.89	10	0.43	
Selene dorsalis	1.59	20	0.36	
Cynoglossus canariensis	1.00	10	0.23	
Brotula barbata	0.40	10	0.09	
Sardinella aurita	0.40	10	0.09	
Synchiropus phaeton	0.40	20	0.09	
Epinephelus aeneus	0.30	10	0.07	
GOBIIDAE	0.30	149	0.31	
Antennarius occidentalis	0.20	10	0.05	
Syacium micrum	0.20	10	0.05	
Lagocephalus laevigatus	0.20	10	0.05	
Total	437.75		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 107  
 DATE :08/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°18.96  
 start stop duration Lon W 16°33.98  
 TIME :14:27:20 14:57:02 29.7 (min) Purpose : 3  
 LOG : 9943.97 9945.41 1.4 Region : 1200  
 FDEPTH: 20 21 Gear cond.: 0  
 BDEPTH: 20 21 Validity : 0  
 Towing dir: 0° Wire out : 105 m Speed : 2.9 kn  
 Sorted : 133 Total catch: 4218.81 Catch/hour: 8522.85  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
J E L L Y F I S H	6146.28	0	72.12	
Pentaneus quinquevittatus	546.03	11295	6.41	
Pteroscion pelli	505.15	13026	5.93	
Trichurus lepturus	270.94	2564	3.18	
Ilisha africana	234.21	15592	2.75	
Stromateus fiatola	221.04	347	2.59	
Pseudotolithus senegalensis	104.63	485	1.23	
Pseudotolithus typus	92.85	762	1.09	
Galeoides decadactylus	78.99	1386	0.93	
Brachydeuterus auritus	51.28	2148	0.60	
Cynoglossus canariensis	47.81	347	0.56	
Drepane africana	45.73	69	0.54	
Chloroscombrus chrysaureus	42.96	1939	0.50	
Ephippion guttifer	41.58	69	0.49	
Lagocephalus laevigatus	37.42	139	0.44	
Selene dorsalis	19.40	1802	0.23	
Pomadasya peroteti	12.79	55	0.15	
Raja miraletus	9.70	69	0.11	
Leptocharias smithii	5.25	8	0.06	
Arius parkii	2.95	26	0.03	
Trachurus trachurus	1.70	2	0.02	
Sphyræna sphyraena	1.39	69	0.02	
Citharus linguatula	1.39	208	0.02	
Alectis alexandrinus	0.69	69	0.01	
GOBIIDAE	0.69	69	0.01	
Total	8522.85		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 108  
 DATE :08/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°20.83  
 start stop duration Lon W 16°38.71  
 TIME :17:19:08 17:49:10 30.0 (min) Purpose : 3  
 LOG : 9954.42 9955.88 1.5 Region : 1200  
 FDEPTH: 54 54 Gear cond.: 0  
 BDEPTH: 54 54 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 2.9 kn  
 Sorted : 45 Total catch: 302.02 Catch/hour: 603.44  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Brachydeuterus auritus	213.99	2751	35.46	
Pagellus bellottii	65.89	356	10.92	197
Pagrus caeruleostictus	62.84	186	10.41	
Pseudotolithus senegalensis	49.25	186	8.16	
Octopus vulgaris	33.29	34	5.52	
Trichurus lepturus	25.97	543	4.30	
Pomadasya incisus	24.12	118	4.00	
Pseudupeneus prayensis	22.08	152	3.66	
Femtheroscion mbizi	13.25	288	2.20	
Citharus linguatula	11.39	186	1.89	
Raja miraletus	10.49	16	1.74	
Scorpaena scrofa	10.35	186	1.72	
Umbrina canariensis	10.19	68	1.69	
Zeus faber	10.03	4	1.66	
Pomadasya jubelini	9.17	18	1.52	
Alectis alexandrinus	7.47	16	1.24	
Arius heudelotii	6.29	16	1.04	
Fistularia petimba	4.42	34	0.73	
Trachurus trecae	4.26	32	0.71	
GOBIIDAE	3.60	797	0.60	
Sphyræna guanchancho	1.88	16	0.31	
Bembris greyi	1.54	68	0.25	
Brotula barbata	0.85	16	0.14	
Antennarius occidentalis	0.68	16	0.11	
Serranus cabrilla	0.17	50	0.03	
Total	603.44		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 109  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°43.69  
 start stop duration Lon W 16°47.60  
 TIME :05:29:30 05:59:45 30.3 (min) Purpose : 3  
 LOG : 29.43 30.94 1.5 Region : 1200  
 FDEPTH: 274 276 Gear cond.: 0  
 BDEPTH: 274 276 Validity : 0  
 Towing dir: 0° Wire out : 710 m Speed : 3.0 kn  
 Sorted : 95 Total catch: 402.60 Catch/hour: 798.55  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Merluccius polli	242.78	2886	30.40	200
Helicolenus dactylopterus	127.34	2648	15.95	
Pontinus kuhlii	117.82	922	14.75	
Gephyroberyx darwini	92.63	42	11.60	
Chlorophthalmus atlanticus	64.86	3035	8.12	
Zenopsis conchifer	51.57	71	6.46	
Aulopus cadenati	31.54	417	3.95	
Brotula barbata	12.50	30	1.56	
Pterothrissus belloci	11.90	149	1.49	
Nezumia aequalis	10.71	238	1.34	
Malacocephalus laevis	10.12	119	1.27	
OPHIIDIAE	7.44	268	0.93	
Illex coindetii	6.84	30	0.86	
Pegusa lascaris	6.55	119	0.82	
Centropristis granulosa	1.59	2	0.20	
Synagrops microlepis	1.49	89	0.19	
MYCTOPHIDAE	0.89	268	0.11	
Total	798.55		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 110  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°43.68  
 start stop duration Lon W 16°44.32  
 TIME :07:38:51 08:10:01 31.2 (min) Purpose : 3  
 LOG : 40.27 41.76 1.5 Region : 1200  
 FDEPTH: 120 122 Gear cond.: 0  
 BDEPTH: 120 122 Validity : 0  
 Towing dir: 0° Wire out : 300 m Speed : 2.9 kn  
 Sorted : 37 Total catch: 131.94 Catch/hour: 253.97  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	148.89	18298	58.63	
Brotula barbata	31.95	65	12.58	
Merluccius polli	28.03	243	11.04	202
Trachurus trecae	11.32	445	4.46	201
Uranoscopus polli	6.74	13	2.65	
Pterothrissus belloci	6.33	148	2.49	
Scomber japonicus	5.79	67	2.28	
Raja miraletus	4.18	4	1.64	
Zeus faber	3.20	6	1.26	
Pontinus kuhlii	1.48	40	0.58	
Arnoglossus imperialis	1.35	121	0.53	
Malacocephalus laevis	1.21	27	0.48	
Trigla lyra	0.94	121	0.37	
Saurida brasiliensis	0.81	256	0.32	
Illex coindetii	0.67	121	0.27	
Pegusa lascaris	0.67	13	0.27	
Dentex angolensis	0.40	2	0.16	
Total	253.97		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 111  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°41.42  
 start stop duration Lon W 16°40.62  
 TIME :09:38:35 10:10:19 30.7 (min) Purpose : 3  
 LOG : 50.15 51.67 1.5 Region : 1200  
 FDEPTH: 76 71 Gear cond.: 0  
 BDEPTH: 76 71 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.0 kn  
 Sorted : 30 Total catch: 138.30 Catch/hour: 270.03  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Synagrops microlepis	85.15	1230	31.53	
PYROSOMIDAE	48.81	0	18.08	
Zeus faber	29.09	98	10.77	
Merluccius polli	28.41	117	10.52	204
Trichurus lepturus	17.47	215	6.47	
Trachurus trecae	16.11	1103	5.97	203
GOBIIDAE	11.52	1806	4.27	
Dactylopterus volitans	6.93	10	2.57	
Saurida brasiliensis	5.76	1835	2.13	
Pomadasya jubelini	3.24	2	1.20	
Dentex angolensis	3.12	215	1.16	
Pterothrissus belloci	3.03	137	1.12	
Arius parkii	2.23	2	0.82	
Octopus vulgaris	2.13	4	0.79	
Loligo vulgaris	2.05	1093	0.76	
Arnoglossus imperialis	1.95	137	0.72	
Scomber japonicus	1.07	10	0.40	
Pagellus bellottii	0.90	49	0.36	
Pseudupeneus prayensis	0.39	10	0.14	
Illex coindetii	0.29	88	0.11	
Boops boops	0.20	39	0.07	
Brachydeuterus auritus	0.10	29	0.04	
Total	270.03		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 112  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°39.40  
 start stop duration Lon W 16°34.47  
 TIME :11:29:38 11:59:20 29.7 (min) Purpose : 3  
 LOG : 60.82 62.25 1.4 Region : 1200  
 FDEPTH: 39 36 Gear cond.: 0  
 BDEPTH: 39 36 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 2.9 kn  
 Sorted : 100 Total catch: 342.75 Catch/hour: 692.42  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Galeoides decadactylus	98.10	545	14.17	
Scyphozoa	90.14	0	13.02	
PYROSOMIDAE	64.28	0	9.28	
Pagrus caeruleostictus	63.64	190	9.19	
Pomadasya peroteti	57.58	242	8.32	
Pomadasya incisus	46.83	295	6.76	
Ilisha africana	34.38	347	4.97	
Cymbium sp.	28.95	10	4.18	
Brachydeuterus auritus	24.85	251	3.59	
Pseudotolithus typus	23.94	113	3.46	
Ephippion guttifer	23.09	8	3.33	
Pseudotolithus senegalensis	18.10	38	2.61	
Drepane africana	17.88	30	2.58	
Alectis alexandrinus	17.19	53	2.48	
Selene dorsalis	15.98	386	2.31	
Arius parkii	12.57	53	1.81	
Pagellus bellottii	10.06	53	1.45	
Raja miraletus	9.80	22	1.42	
Aspyrosomus regius	9.60	8	1.39	
Cynoglossus canariensis	5.76	38	0.83	
Pseudupeneus prayensis	4.61	30	0.67	
Umbrina canariensis	3.25	22	0.47	
Balistes capricus	3.25	8	0.47	
Trachurus trachurus	2.34	53	0.34	205
Flectrohynchus mediterraneus	1.96	8	0.28	
Fistularia petimba	1.58	16	0.23	
Dactylopterus volitans	1.52	8	0.22	
Sphyræna sphyraena	1.21	16	0.18	
Total	692.42		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 113  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°58.48  
 start stop duration Lon W 16°28.11  
 TIME :15:38:24 15:58:47 20.4 (min) Purpose : 3  
 LOG : 93.19 94.34 1.1 Region : 1200  
 FDEPTH: 42 41 Gear cond.: 0  
 BDEPTH: 42 41 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.4 kn  
 Sorted : 85 Total catch: 8055.18 Catch/hour: 23714.94

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Brachydeuterus auritus	10271.89	84380	43.31	209
Chloroscombrus chrysurus	7583.26	55319	31.98	207
Stromateus fiatola	1847.55	1931	7.79	
Selene dorsalis	763.84	11859	3.22	
Decapterus rhonchus	744.55	4136	3.14	206
Alectis alexandrinus	645.28	551	2.72	
Pomadasy incisus	427.42	2205	1.80	
Pagellus bellottii	278.51	1655	1.17	
Pomadasy peroteti	275.76	277	1.16	
Trachurus trachurus	212.33	1378	0.90	208
Galeoides decadactylus	170.96	551	0.72	
Trichiurus lepturus	162.69	277	0.69	
Pagrus caeruleostictus	159.95	551	0.67	
Pseudupeneus prayensis	63.42	551	0.27	
Aluterus heudelotii	55.14	277	0.23	
Fistularia petimba	52.40	551	0.22	
Total	23714.94		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 114  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 16°59.49  
 start stop duration Lon W 16°31.93  
 TIME :17:14:37 17:44:15 29.6 (min) Purpose : 3  
 LOG : 101.64 103.17 1.5 Region : 1200  
 FDEPTH: 70 69 Gear cond.: 0  
 BDEPTH: 70 69 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.1 kn  
 Sorted : 26 Total catch: 853.05 Catch/hour: 1727.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trichiurus lepturus	825.28	4878	47.78	
Trachurus trecae	631.49	5613	36.56	210
Zeus faber	154.36	134	8.94	
Decapterus rhonchus	46.78	200	2.71	
Octopus vulgaris	42.10	67	2.44	
Dentex angolensis	6.68	200	0.39	
GOBIIDAE	6.68	1270	0.39	
Pagellus bellottii	5.35	67	0.31	
Scorpaena scrofa	4.68	67	0.27	
Spherooides marmoratus	2.67	67	0.15	
Boops boops	1.34	67	0.08	
Total	1727.40		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 115  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 17°2.45  
 start stop duration Lon W 16°43.76  
 TIME :19:57:29 20:27:47 30.3 (min) Purpose : 3  
 LOG : 119.10 120.53 1.4 Region : 1200  
 FDEPTH: 117 117 Gear cond.: 0  
 BDEPTH: 117 117 Validity : 0  
 Towing dir: 0° Wire out : 300 m Speed : 2.8 kn  
 Sorted : 51 Total catch: 155.19 Catch/hour: 307.31

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Illex coindetii	79.70	1139	25.94	
Umbina carolinensis	44.22	6	14.39	
Aulop cadenati	38.32	2327	12.47	
Merluccius polli	32.18	178	10.47	211
Chelidonichthys lucerna	11.88	257	3.87	
Brotula barbata	9.50	10	3.09	
Scorpaena stephanica	9.41	50	3.06	
GOBIIDAE	8.81	40	2.87	
Arnoglossus imperialis	8.51	1446	2.77	
Pontinus kuhlii	8.42	644	2.74	
Trachurus trecae	7.62	366	2.48	
Lophiodes kempii	6.73	10	2.19	
Antigonia capros	6.53	475	2.13	
Scomber japonicus	6.14	40	2.00	
Uranoscopus polli	4.65	50	1.51	
Gadella maraldi	3.66	69	1.19	
Octopus vulgaris	3.47	20	1.13	
Fistularia petimba	2.77	10	0.90	
Raja clavata	2.69	2	0.88	
MYCTOPHIDAE	2.38	871	0.77	
Serranus cabrilla	1.78	20	0.58	
Dentex angolensis	1.78	99	0.58	
Branchiostegus semifasciatus *	1.39	2	0.45	
OPHIIDAE	1.29	50	0.42	
Capros aper	1.09	257	0.35	
Serranus africana	0.89	59	0.29	
Synagrops microlepis	0.79	79	0.26	
Boops boops	0.69	40	0.23	
Total	307.31		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 116  
 DATE :09/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 17°5.85  
 start stop duration Lon W 16°46.90  
 TIME :21:59:10 22:29:34 30.4 (min) Purpose : 3  
 LOG : 129.87 131.37 1.5 Region : 1200  
 FDEPTH: 331 323 Gear cond.: 0  
 BDEPTH: 331 323 Validity : 0  
 Towing dir: 0° Wire out : 810 m Speed : 3.0 kn  
 Sorted : 96 Total catch: 996.12 Catch/hour: 1966.03

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Helicolenus dactylopterus	497.13	4516	25.29	
Gephyroberyx darwini	447.79	2220	22.78	
Hyperoglyphe moselii *	294.34	296	14.97	
Epligonus telescopus	244.24	398	12.42	
Merluccius polli	85.36	1384	4.34	
Pontinus kuhlii	84.87	740	4.32	
Brotula barbata	54.53	75	2.77	
Trachurus trachurus	48.61	75	2.47	
Zenopsis conchifer	38.49	26	1.96	
Scorpaena normani	32.07	124	1.63	
Bembrops greyi	25.42	296	1.29	
Chlorophthalmus atlanticus	21.97	1086	1.12	
Centrolophus niger	17.76	26	0.90	
Miracorvina angolensis	17.76	6	0.90	29
Ijmaia loppei	17.63	2	0.90	
Illex coindetii	13.09	174	0.67	
Malacocephalus laevis	6.67	75	0.34	
Pegusa lascaris	5.68	174	0.29	
Pterothrissus belloci	4.70	26	0.24	
MYCTOPHIDAE	4.20	1382	0.21	
Synagrops microlepis	3.71	247	0.19	
Total	1966.03		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 117  
 DATE :10/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 17°17.70  
 start stop duration Lon W 16°39.89  
 TIME :05:36:05 06:04:38 28.6 (min) Purpose : 3  
 LOG : 171.05 172.53 1.5 Region : 1200  
 FDEPTH: 192 189 Gear cond.: 0  
 BDEPTH: 192 189 Validity : 0  
 Towing dir: 0° Wire out : 480 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 1772.05 Catch/hour: 2881.45

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Chlorophthalmus atlanticus	1805.04	84582	62.64	
Merluccius polli	472.52	9639	16.40	215
Raja straeleni	189.01	95	6.56	
Raja clavata	186.17	95	6.46	
Pontinus kuhlii	72.77	4158	2.53	
Zenopsis conchifer	68.99	95	2.39	
Helicolenus dactylopterus	40.64	2457	1.41	
Illex coindetii	18.90	95	0.66	
Aulop cadenati	11.34	95	0.39	
Synagrops microlepis	6.62	567	0.23	
Capros aper	3.78	567	0.13	
Bembrops greyi	2.84	189	0.10	
Sepia omni	2.84	189	0.10	
Total	2881.45		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 118  
 DATE :10/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 17°18.20  
 start stop duration Lon W 16°29.71  
 TIME :07:39:34 08:10:00 30.4 (min) Purpose : 3  
 LOG : 184.60 186.00 1.4 Region : 1200  
 FDEPTH: 103 103 Gear cond.: 0  
 BDEPTH: 103 103 Validity : 0  
 Towing dir: 0° Wire out : 270 m Speed : 2.8 kn  
 Sorted : 38 Total catch: 264.11 Catch/hour: 520.76

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	220.83	11621	42.41	214
Merluccius senegalensis	140.09	870	26.90	213
Zeus faber	37.13	124	7.13	
Merluccius polli	29.81	138	5.72	212
Trichiurus lepturus	25.40	41	4.88	
Pterothrissus belloci	13.80	262	2.65	
Saurida brasiliensis	13.25	4141	2.54	
Spherooides pachyaster	11.04	28	2.12	
Microchirus boscanion	6.35	607	1.22	
Octopus vulgaris	4.69	14	0.90	
Synagrops microlepis	4.14	442	0.80	
Serranus cabrilla	2.48	69	0.48	
Citharus linguatula	2.35	69	0.45	
Arnoglossus imperialis	2.35	373	0.45	
Scomber japonicus	2.07	14	0.40	
Scorpaena stephanica	1.93	28	0.37	
Boops boops	0.97	55	0.19	
Malacocephalus laevis	0.83	14	0.16	
Chelidonichthys lucerna	0.55	28	0.11	
Dentex angolensis	0.55	73	0.11	
Serranus africana	0.14	14	0.03	
Total	520.76		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 119  
 DATE :10/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 17°14.11  
 start stop duration Lon W 16°21.50  
 TIME :11:17:08 11:47:53 30.8 (min) Purpose : 3  
 LOG : 199.69 201.28 1.6 Region : 1200  
 FDEPTH: 50 49 Gear cond.: 0  
 BDEPTH: 50 49 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.1 kn  
 Sorted : 87 Total catch: 169.74 Catch/hour: 331.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagellus bellottii	90.34	464	27.28	219
PYROSOMIDAE	52.29	0	15.79	
Trachurus trecae	41.17	827	12.43	222
Trichiurus lepturus	27.32	109	8.25	216
Arius parkii	26.54	55	8.01	
Pomadasy incisus	16.74	70	5.05	
Zeus faber	14.44	23	4.36	
Octopus vulgaris	9.37	16	2.83	
Pagrus caeruleostictus	8.66	27	2.62	218
J E L Y F T S H	7.22	0	2.18	
Pseudupeneus prayensis	6.32	55	1.91	
Alectis alexandrinus	6.09	8	1.84	
Pseudolithus brachygnathus	5.62	12	1.70	
Raja miraletus	5.58	8	1.68	
Fistularia petimba	3.04	16	0.92	
Chelidonichthys lucerna	1.64	23	0.49	
Pomadasy peroteti	1.56	4	0.47	220
Campogramma glycos	1.44	4	0.44	
Argyrosomus regius	1.33	4	0.40	217
Ilisa africana	1.13	8	0.34	
Brachydeuterus auritus	1.01	20	0.31	221
Galeoides decadactylus	1.01	4	0.31	
Scorpaena laevis	0.70	12	0.21	
Sphyaena sphyraena	0.23	4	0.07	
Sepia officinalis	0.20	4	0.06	
Spherooides marmoratus	0.16	4	0.05	
Monochirus hispidus	0.04	4	0.01	
Total	331.20		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 120  
 DATE :10/11/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 17°32.98  
 start stop duration Lon W 16°9.29  
 TIME :16:08:26 16:30:17 21.9 (min) Purpose : 3  
 LOG : 229.20 230.35 1.1 Region : 1200  
 FDEPTH: 20 22 Gear cond.: 8  
 BDEPTH: 20 22 Validity : 3  
 Towing dir: 0° Wire out : 130 m Speed : 3.2 kn  
 Sorted : 87 Total catch: 564.03 Catch/hour: 1548.82

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagrus caeruleostictus	255.54	1013	16.50	
Arius parkii	228.36	741	14.74	
Plectrothorichus mediterraneus	157.62	434	10.18	225
Brachydeuterus auritus	126.32	892	8.16	223
Pomadasy incisus	119.42	634	7.71	
Alectis alexandrinus	83.37	71	5.38	
Octopus vulgaris	72.85	16	4.70	
Drepene africana	47.78	36	3.08	
Umbra canariensis	39.79	54	2.57	224
Pagrus auriga	37.35	55	2.41	
Galeoides decadactylus	33.34	143	2.15	
Lagocephalus laevigatus	32.95	16	2.13	
Dactylopterus volitans	31.72	16	2.05	
Mugil cephalus	31.72	16	2.05	
Pomadasy jubelini	27.73	55	1.79	
Diplodus puntazzo	27.35	36	1.77	
Pseudupeneus prayensis	26.36	162	1.70	
Bodianus speciosus	23.18	16	1.50	0
Pagellus bellottii	19.77	91	1.28	
Diplodus vulgaris	16.31	16	1.05	
Chloroscombrus chrysurus	16.12	107	1.04	
Balistes punctatus	15.93	16	1.03	
Acanthurus monroviae	14.66	16	0.95	
Argyrosomus regius	11.07	16	0.71	
Selene dorsalis	10.16	181	0.66	
Torpedo marmorata	8.90	5	0.57	0
Dentex canariensis	8.35	16	0.54	
Fistularia petimba	8.16	71	0.53	
Chaetodon hoefleri	5.44	16	0.35	
Epinephelus aeneus	4.67	16	0.30	
Zeus faber	3.84	16	0.25	
Ilisha africana	2.72	16	0.18	0
Plastic bags	0.00	3	0.00	
Fishing gears	0.00	3	0.00	
Total	1548.82		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 121  
 DATE :10/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 17°36.65  
 start stop duration Lon W 16°23.94  
 TIME :18:37:34 19:07:45 30.2 (min) Purpose : 3  
 LOG : 246.84 248.35 1.5 Region : 1200  
 FDEPTH: 100 95 Gear cond.: 0  
 BDEPTH: 100 95 Validity : 3  
 Towing dir: 0° Wire out : 270 m Speed : 3.0 kn  
 Sorted : 27 Total catch: 134.18 Catch/hour: 266.76

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	53.38	2356	20.01	73
Pterothrissus belloci	52.29	1193	19.60	
Merluccius senegalensis	44.53	348	16.69	31
Trichurus lepturus	28.83	99	10.81	
Synagrops microlepis	14.51	1531	5.44	
Merluccius polli	12.03	268	4.51	41
Gadella maraldi	10.54	338	3.95	
Spherooides pachgaster	8.23	20	3.09	
Brotula barbata	7.75	30	2.91	
Dentex angolensis	7.46	477	2.79	
GOBIIDAE	5.77	1014	2.16	
Pagellus bellottii	4.17	10	1.57	
Trigla lyra	3.68	89	1.38	
Citharus linguatula	3.58	169	1.34	
Torpedo torpedo	2.37	2	0.89	
Boops boops	1.69	99	0.63	
Saurida brasiliensis	1.49	358	0.56	
Octopus vulgaris	1.39	10	0.52	
Scorpaena scrofa	1.09	10	0.41	
Arnoglossus imperialis	0.99	119	0.37	
Zeus faber	0.99	10	0.37	
Plastic bags	0.00	2	0.00	
Fishing gears	0.00	2	0.00	
Total	266.76		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 122  
 DATE :10/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 17°38.54  
 start stop duration Lon W 16°32.19  
 TIME :20:58:49 21:28:31 29.7 (min) Purpose : 3  
 LOG : 261.64 263.02 1.4 Region : 1200  
 FDEPTH: 187 187 Gear cond.: 0  
 BDEPTH: 187 187 Validity : 0  
 Towing dir: 0° Wire out : 480 m Speed : 2.8 kn  
 Sorted : 30 Total catch: 778.44 Catch/hour: 1572.61

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pontinus kuhlii	345.09	2206	21.94	
Helicolenus dactylopterus	320.40	3782	20.37	
Merluccius polli	297.82	6461	18.94	227
Chlorophthalmus atlanticus	196.44	12501	12.49	
Brotula barbata	104.00	158	6.61	
Raja straeleni	91.92	53	5.85	
Merluccius senegalensis	65.66	525	4.18	226
Pterothrissus belloci	42.02	473	2.67	
Bembrops greyi	36.77	473	2.34	
Uranoscopus polli	21.01	53	1.34	
Synagrops microlepis	12.08	788	0.77	
OPHIIDAE	9.98	368	0.63	
Gadella maraldi	8.93	53	0.57	
Lophiodes kempii	8.93	53	0.57	
Trigla lyra	6.83	105	0.43	
Coelorinchus coelorhincus	3.68	53	0.23	
Malacocephalus occidentalis	1.05	53	0.07	
Total	1572.61		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 123  
 DATE :10/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 17°39.32  
 start stop duration Lon W 16°37.87  
 TIME :23:14:33 23:44:50 30.3 (min) Purpose : 3  
 LOG : 273.52 274.99 1.5 Region : 1200  
 FDEPTH: 370 371 Gear cond.: 0  
 BDEPTH: 370 371 Validity : 0  
 Towing dir: 0° Wire out : 850 m Speed : 2.9 kn  
 Sorted : 67 Total catch: 226.07 Catch/hour: 447.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Helicolenus dactylopterus	145.05	2249	32.38	228
Merluccius polli	83.22	386	18.58	229
PYROSOMIDAE	63.45	0	14.16	
Gadella maraldi	59.82	761	13.35	
Parapenaeus longirostris	28.93	3888	6.46	
Nematocarcinus africanus	28.34	13896	6.33	
Lophiodes kempii	8.62	12	1.92	
Malacocephalus laevis	8.04	109	1.80	
Raja straeleni	6.84	6	1.53	
Zenopsis conchifer	3.69	8	0.82	
Dicologlossa cuneata	3.63	87	0.81	
Gymnothorax sp.	2.02	22	0.45	
Coelorinchus coelorhincus	1.59	44	0.35	
Chlorophthalmus atlanticus	1.45	52	0.32	
Gempylus serpens	1.37	8	0.31	
Yarella blackfordi	1.23	174	0.27	
Stomias boa	0.36	36	0.08	
Hoplostethus cadenati	0.28	14	0.06	
Gonostoma elongatum	0.06	14	0.01	
Photichthys sp	0.00	2	0.00	
Total	447.96		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 124  
 DATE :11/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 17°56.88  
 start stop duration Lon W 16°35.80  
 TIME :04:06:16 04:27:14 21.0 (min) Purpose : 3  
 LOG : 306.14 307.24 1.1 Region : 1200  
 FDEPTH: 357 354 Gear cond.: 0  
 BDEPTH: 357 354 Validity : 0  
 Towing dir: 0° Wire out : 860 m Speed : 3.2 kn  
 Sorted : 33 Total catch: 380.94 Catch/hour: 1089.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Helicolenus dactylopterus	250.30	3880	22.96	
Parapenaeus longirostris	221.46	35880	20.32	
Merluccius polli	182.66	1373	16.76	
Chlorophthalmus atlanticus	169.27	3502	15.53	
Malacocephalus laevis	82.06	1717	7.53	
Hoplostethus atlanticus	48.41	69	4.44	
Lophiodes kempii	37.42	137	3.43	
Dicologlossa cuneata	24.72	172	2.27	
PYROSOMIDAE	23.35	0	2.14	
CONGRIDAE	19.91	103	1.83	
Yarella blackfordi	14.76	4807	1.35	
Hymenocephalus italicus	8.58	172	0.79	
Raja straeleni	4.29	3	0.39	
Coelorinchus coelorhincus	2.75	69	0.25	
Total	1089.96		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 125  
 DATE :11/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 17°56.41  
 start stop duration Lon W 16°29.86  
 TIME :05:44:24 06:14:35 30.2 (min) Purpose : 3  
 LOG : 316.07 317.64 1.6 Region : 1200  
 FDEPTH: 187 184 Gear cond.: 0  
 BDEPTH: 187 184 Validity : 0  
 Towing dir: 0° Wire out : 460 m Speed : 3.1 kn  
 Sorted : 20 Total catch: 491.50 Catch/hour: 977.14

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius senegalensis	449.80	5070	46.03	92
Pontinus kuhlii	114.81	1740	11.75	
Pterothrissus belloci	113.82	2187	11.65	
Synagrops microlepis	52.68	3280	5.39	
Merluccius polli	52.19	696	5.34	230
Chlorophthalmus atlanticus	48.71	3529	4.98	
Octopus vulgaris	42.74	50	4.37	
OPHIIDAE	28.83	1143	2.95	
Brotula barbata	13.42	50	1.37	
Helicolenus dactylopterus	12.43	2584	1.27	
Bembrops greyi	10.44	99	1.07	
Nezumia sp.	9.94	99	1.02	
Zenopsis conchifer	7.95	50	0.81	
Illex coindetii	7.46	99	0.76	
Capros aper	4.97	646	0.51	
Sepia elegans	3.48	50	0.36	
Arnoglossus imperialis	2.49	50	0.25	
Malacocephalus laevis	0.99	149	0.10	
Total	977.14		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 126  
 DATE :11/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 17°56.19  
 start stop duration Lon W 16°19.65  
 TIME :08:21:15 08:51:23 30.1 (min) Purpose : 3  
 LOG : 330.90 332.56 1.7 Region : 1200  
 FDEPTH: 78 77 Gear cond.: 0  
 BDEPTH: 78 77 Validity : 0  
 Towing dir: 0° Wire out : 210 m Speed : 3.3 kn  
 Sorted : 23 Total catch: 390.75 Catch/hour: 778.13

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trichurus lepturus	457.02	3148	58.73	
Zeus faber	80.23	135	10.31	
Trachurus trecae	56.54	440	7.27	231
Arius parkii	50.78	34	6.53	
Merluccius senegalensis	49.76	271	6.40	232
Umbra canariensis	30.81	68	3.96	233
Plectrothorichus mediterraneus	16.43	30	2.11	234
Pagrus caeruleostictus	16.25	34	2.09	
Spherooides pachgaster	9.48	34	1.22	
Pagellus bellottii	7.45	34	0.96	
Dentex angolensis	2.71	203	0.35	
Loligo vulgaris	0.34	203	0.04	
GOBIIDAE	0.34	237	0.04	
Total	778.13		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 127  
 DATE :11/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 17°57.86  
 start stop duration Lon W 16°13.25  
 TIME :10:30:12 11:00:38 30.4 (min) Purpose : 3  
 LOG : 343.11 344.56 1.4 Region : 1200  
 FDEPTH: 24 30 Gear cond.: 0  
 BDEPTH: 24 30 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 2.8 kn  
 Sorted : 61 Total catch: 303.67 Catch/hour: 598.76  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Pagellus bellottii	230.10	0	38.43	236
Pagrus caeruleostictus	73.35	0	12.25	235
Decapterus rhonchus	65.07	0	10.87	238
Brachydeuterus auritus	64.71	438	10.81	
Dactylopterus volitans	34.19	83	5.71	
Pseudupeneus prayensis	24.61	473	4.11	
Pomadasy incisus	19.17	95	3.20	
Octopus vulgaris	15.58	8	2.60	
Lithognathus mormyrus	15.26	24	2.55	
Pomadasy jubelini	9.70	12	1.62	
Halobatrachus didactylus	9.58	24	1.60	
Sardinella aurita	6.63	24	1.11	237
Alectis alexandrinus	5.52	2	0.92	
Dentex canariensis	4.38	12	0.73	
Zeus faber	4.26	24	0.71	
Drepane africana	3.84	2	0.64	
Fistularia petimba	2.72	35	0.45	
Scomber japonicus	2.48	12	0.41	
Antennarius occidentalis	1.89	24	0.32	
Chloroscombrus chrysurus	1.66	12	0.28	
Trigla lyra	1.54	12	0.26	
Scorpaena scrofa	1.30	24	0.22	
Selene dorsalis	0.75	12	0.13	
Boops boops	0.47	12	0.08	
Total	598.76		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 128  
 DATE :11/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°19.30  
 start stop duration Lon W 16°16.99  
 TIME :16:31:27 16:46:27 15.0 (min) Purpose : 3  
 LOG : 377.16 378.13 1.0 Region : 1200  
 FDEPTH: 32 33 Gear cond.: 4  
 BDEPTH: 32 33 Validity : 3  
 Towing dir: 0° Wire out : 120 m Speed : 3.1 kn  
 Sorted : 40 Total catch: 39.60 Catch/hour: 158.40  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Decapterus rhonchus	42.20	192	26.64	
Trichurus lepturus	32.00	96	20.20	
Halobatrachus didactylus	22.20	276	14.02	
Pagellus bellottii	16.88	116	10.66	239
Brachydeuterus auritus	6.80	44	4.29	240
Campogramma glaycos	5.16	16	3.26	
Trachurus trecae	5.00	160	3.16	
Sardinella aurita	3.76	20	2.37	241
Epinephelus aeneus	3.68	4	2.32	
Fistularia petimba	3.24	28	2.05	
Sardinella maderensis	2.64	8	1.67	
Stromateus fiatola	2.56	4	1.62	
Leptocharias smithii	2.40	4	1.52	
Pomadasy incisus	2.20	8	1.39	
Dactylopterus volitans	2.00	4	1.26	
Argyrosomus regius	1.32	4	0.83	
Scorpaena laevis	0.88	16	0.56	
Zeus faber	0.68	4	0.43	
Chelidichthys obscurus	0.64	4	0.40	
Ilisha africana	0.64	4	0.40	
Dentex canariensis	0.56	8	0.35	
Chelidichthys lucerna	0.32	4	0.20	
OPHIDIIDAE	0.24	16	0.15	
Spherooides marmoratus	0.20	8	0.13	
Pseudupeneus prayensis	0.20	4	0.13	
Fishing gears	0.00	12	0.00	
Total	158.40		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 129  
 DATE :11/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°19.64  
 start stop duration Lon W 16°20.24  
 TIME :17:37:32 18:07:35 30.1 (min) Purpose : 3  
 LOG : 383.27 384.80 1.5 Region : 1200  
 FDEPTH: 50 51 Gear cond.: 0  
 BDEPTH: 50 51 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.0 kn  
 Sorted : 22 Total catch: 135.06 Catch/hour: 269.67  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
COBIIDAE	66.61	1186	24.70	
Trachurus trecae	60.50	3870	22.43	243
Trichurus lepturus	42.89	0	15.90	
Zeus faber	30.55	180	11.33	
Pseudupeneus prayensis	16.65	479	6.18	
Pagellus bellottii	7.79	192	2.89	242
Illex coindetii	7.43	132	2.75	
Merluccius senegalensis	4.67	36	1.73	245
Antennarius occidentalis	4.43	96	1.64	
Decapterus rhonchus	3.95	12	1.47	244
Pegusa lascaris	3.71	563	1.38	
Campogramma glaycos	3.59	12	1.33	
Spherooides marmoratus	3.47	144	1.29	
Scorpaena laevis	3.11	48	1.16	
Boops boops	2.88	611	1.07	
Arnoglossus imperialis	1.68	371	0.62	
Umbrina canariensis	1.68	12	0.62	
Sepia orbignyana	1.44	84	0.53	
Loligo vulgaris	1.08	443	0.40	
Cepola pauciradiatus	0.60	36	0.22	
Serranus cabrilla	0.60	48	0.22	
Bembrops greyi	0.36	72	0.13	
Total	269.67		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 130  
 DATE :11/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°22.34  
 start stop duration Lon W 16°32.98  
 TIME :22:08:59 22:39:20 30.4 (min) Purpose : 3  
 LOG : 406.60 408.03 1.4 Region : 1200  
 FDEPTH: 178 176 Gear cond.: 0  
 BDEPTH: 178 176 Validity : 0  
 Towing dir: 0° Wire out : 470 m Speed : 2.8 kn  
 Sorted : 46 Total catch: 729.12 Catch/hour: 1441.42  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Helicolenus dactylopterus	515.58	5725	35.77	
Chlorophthalmus atlanticus	297.01	22078	20.61	
Pontinus kuhlii	216.36	1961	15.01	
Merluccius polli	123.04	1803	8.54	152
Erotula barbata	82.24	127	5.71	
Pterothrissus belloci	54.72	917	3.80	
Zeus faber	37.64	32	2.61	
Dentex maroccanus	28.15	95	1.95	
Aulopus cadenati	26.57	285	1.84	
Trigla lyra	13.92	127	0.97	
Lophius piscatorius	12.02	63	0.83	
Zenopsis conchifer	10.75	95	0.75	
Synagrops microlepis	9.49	601	0.66	
Arnoglossus imperialis	5.06	190	0.35	
Microchirus wittei	4.74	63	0.33	
Gadella maraldi	4.11	482	0.29	
Total	1441.42		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 131  
 DATE :12/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°21.93  
 start stop duration Lon W 16°37.56  
 TIME :01:07:50 01:39:01 31.2 (min) Purpose : 3  
 LOG : 420.57 422.19 1.6 Region : 1200  
 FDEPTH: 348 349 Gear cond.: 0  
 BDEPTH: 348 349 Validity : 0  
 Towing dir: 0° Wire out : 875 m Speed : 3.1 kn  
 Sorted : 32 Total catch: 568.08 Catch/hour: 1093.16  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Scorpaena laevis	602.69	7516	55.13	
Merluccius polli	156.22	2113	14.29	246
Trichurus lepturus	57.15	242	5.23	
Laemonema laureysi	50.22	866	4.59	
Lophius piscatorius	45.72	104	4.18	
Zenopsis conchifer	42.60	69	3.90	
PYROSOMIDAE	41.22	0	3.77	
Gephyroberyx darwini	30.13	35	2.76	
Malacocephalus occidentalis	12.47	173	1.14	
Apogon sp.	12.12	416	1.11	
CONGRIDAE	10.04	104	0.92	
Pegusa lascaris	8.66	139	0.79	
Chlorophthalmus atlanticus	7.62	104	0.70	
Coelorrhinus sp.	7.27	139	0.67	
Illex coindetii	5.20	35	0.48	
Coelorrhinus coelorrhinus	2.42	104	0.22	
RAJIDAE	1.04	69	0.10	
Yarella blackfordi	0.35	139	0.03	
Total	1093.16		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 132  
 DATE :12/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°37.97  
 start stop duration Lon W 16°44.41  
 TIME :08:45:17 09:15:17 30.0 (min) Purpose : 3  
 LOG : 458.10 459.40 1.3 Region : 1200  
 FDEPTH: 494 504 Gear cond.: 0  
 BDEPTH: 494 504 Validity : 0  
 Towing dir: 0° Wire out : 1050 m Speed : 2.6 kn  
 Sorted : 57 Total catch: 122.91 Catch/hour: 245.82  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Lophius sp.	42.00	34	17.09	
Helicolenus dactylopterus	36.40	720	14.81	
Laemonema laureysi	25.10	660	10.21	
Trachyrincus scabrus	23.30	430	9.48	
Hoplostethus cadenati	19.40	1100	7.89	
Merluccius polli	14.70	40	5.98	247
Ijimaia loppei	11.30	2	4.60	
Bathyrcongus vicinus	9.90	260	4.03	
Centrophorus granulosus	9.80	4	3.99	
Yarella blackfordi	8.00	640	3.25	
Centrophorus lusitanicus	7.20	4	2.93	
Deania profundorum	6.20	50	2.52	
Raja sp.	5.70	2	2.32	
Nezumia aequalis	5.30	210	2.16	
Coloconger sp.	4.82	4	1.96	
Galeus polli	4.20	50	1.71	
Stomias boa boa	3.50	350	1.42	
Pegusa lascaris	1.70	60	0.69	
Illex coindetii	1.60	80	0.65	
Synagrops microlepis	1.30	90	0.53	
Ebinania costaecanarie	1.20	50	0.49	
ATHERINIDAE	1.00	340	0.41	
ALPHECEPHALIDAE	0.90	150	0.37	
DICERATIIDAE	0.60	50	0.24	
Lamprogrammus sp.	0.50	30	0.20	
Nemichthys curvirostris	0.10	30	0.04	
SCORPAENIDAE	0.10	10	0.04	
Total	245.82		100.00	



R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 133  
 DATE :12/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°39.06  
 start stop duration Lon W 16°36.98  
 TIME :11:36:23 12:05:55 29.5 (min) Purpose : 3  
 LOG : 472.39 473.86 1.5 Region : 1200  
 FDEPTH: 179 186 Gear cond.: 0  
 BDEPTH: 179 186 Validity : 0  
 Towing dir: 0° Wire out : 480 m Speed : 3.0 kn  
 Sorted : 54 Total catch: 1077.40 Catch/hour: 2189.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Helicolenus dactylopterus	601.42	5811	27.47	
Chlorophthalmus atlanticus	524.21	54605	23.95	
Merluccius senegalensis	357.60	2072	16.34	249
Synagrops microlepis	337.28	30071	15.41	
Zenopsis conchifer	119.88	447	5.48	
Brotula barbata	99.56	81	4.55	
PYROSOMIDAE	50.80	0	2.32	
Dentex angolensis	36.17	163	1.65	
Bembrops greyi	18.69	203	0.85	
Pontinus kuhlii	16.25	41	0.74	
Trachurus trachurus	8.13	41	0.37	154
Pterothrissus belloci	6.50	41	0.30	
Synchiropus phaeton	3.25	163	0.15	
Chelidonichthys lastoviza	3.25	41	0.15	
Nemichthys curvirostris	2.44	284	0.11	
Syacium micrurus	1.63	41	0.07	
Antigonia capros	1.22	41	0.06	
Microchirus boscanion	0.81	41	0.04	
Total	2189.10		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 134  
 DATE :12/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°39.74  
 start stop duration Lon W 16°30.42  
 TIME :13:36:37 13:51:08 14.5 (min) Purpose : 3  
 LOG : 483.50 484.26 0.8 Region : 1200  
 FDEPTH: 93 91 Gear cond.: 0  
 BDEPTH: 93 91 Validity : 0  
 Towing dir: 0° Wire out : 260 m Speed : 3.1 kn  
 Sorted : 53 Total catch: 1185.96 Catch/hour: 4900.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	4332.64	210868	88.41	252
Zeus faber	192.44	372	3.93	
Spherooides pachgaster	156.20	467	3.19	
Otopus vulgaris	75.29	95	1.54	
Merluccius senegalensis	56.69	281	1.16	
Dentex macrophthalmus	34.40	186	0.70	253
Illex coindetii	34.40	558	0.70	
Engraulis encrasicolus	5.58	558	0.11	250
Synchiropus phaeton	3.72	186	0.08	
Sardinella aurita	3.72	372	0.08	251
Cepola pauciradiatus	2.79	95	0.06	
Sepia orbignyana	1.86	95	0.04	
Alloteuthis africana	0.91	95	0.02	
Fishing gears	0.00	8	0.00	
Total	4900.64		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 135  
 DATE :12/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°1.48  
 start stop duration Lon W 16°23.94  
 TIME :18:09:17 18:39:07 29.8 (min) Purpose : 3  
 LOG : 522.78 524.28 1.5 Region : 1200  
 FDEPTH: 20 20 Gear cond.: 0  
 BDEPTH: 20 20 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.0 kn  
 Sorted : 133 Total catch: 690.54 Catch/hour: 1388.95

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Decapterus rhonchus	287.63	11823	20.71	256
Pomadasy incisus	193.30	1557	13.92	
Sardinella aurita	179.22	1106	12.90	255
Pagrus caeruleostictus	170.20	786	12.25	
Plectorhynchus mediterraneus	142.81	356	10.28	
Cymbium sp.	113.44	24	8.17	
Sardinella maderensis	57.61	261	4.15	254
Stromateus fiatola	34.72	56	2.50	
Trichiurus lepturus	28.36	56	2.04	
Chloroscombrus chrysurus	27.76	187	2.00	
Pagellus bellottii	25.32	336	1.82	257
Diplodus vulgaris	20.46	36	1.47	
Raja miraletus	17.82	18	1.28	
Ephippion guttifer	15.89	8	1.14	
Pomadasy peroteti	15.09	18	1.09	
Pseudupeneus prayensis	14.06	205	1.01	
Pomadasy jubelini	8.65	18	0.62	
Arius huedelotii	7.88	18	0.57	
Diplodus bellottii	5.63	36	0.41	
Rhinobatos rhinobatos	4.22	2	0.30	
Loligo vulgaris	4.04	78	0.29	
Bodianus speciosus	3.56	18	0.26	
Brachydeuterus auritus	2.43	18	0.18	
Citharus linguatula	1.87	18	0.13	
Pegusa lascaris	1.87	18	0.13	
Serranus scriba	1.87	18	0.13	
Sardina pilchardus	1.87	18	0.13	
Bothus podas africanus	1.31	18	0.09	
Sepia officinalis	0.08	32	0.01	
Alloteuthis africana	0.02	2	0.00	
Total	1388.99		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 136  
 DATE :12/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°54.91  
 start stop duration Lon W 16°43.50  
 TIME :21:43:14 22:13:34 30.3 (min) Purpose : 3  
 LOG : 549.51 551.07 1.6 Region : 1200  
 FDEPTH: 174 173 Gear cond.: 0  
 BDEPTH: 174 173 Validity : 0  
 Towing dir: 0° Wire out : 450 m Speed : 3.1 kn  
 Sorted : 42 Total catch: 1009.36 Catch/hour: 1996.76

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Helicolenus dactylopterus	597.33	10772	29.91	0
Chlorophthalmus atlanticus	447.18	70896	22.40	
Merluccius polli	253.29	3134	12.69	174
Ubrina canariensis	203.03	196	10.17	258
Pontinus kuhlii	199.70	2285	7.00	
Zeus faber	110.98	65	5.56	
Synagrops microlepis	50.92	5027	2.55	
Uranoscopus polli	43.74	131	2.19	
Pterothrissus belloci	29.38	261	1.47	
Bembrops greyi	28.07	326	1.41	
Helicolenus dactylopterus	23.94	2	1.20	
Capros aper	20.89	1240	1.05	
Aulopus cadenati	11.75	65	0.59	
Trigla lyra	9.79	65	0.49	
OPHIDIIDAE	7.83	326	0.39	
Lophius sp.	7.18	65	0.36	
Zenopsis conchifer	5.88	65	0.29	
Malaccocephalus laevis	4.57	131	0.23	
Arnoglossus imperialis	1.31	65	0.07	
Fishing gears	0.00	2	0.00	
Total	1996.76		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 137  
 DATE :12/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 18°53.65  
 start stop duration Lon W 16°48.15  
 TIME :23:44:42 00:14:11 29.5 (min) Purpose : 3  
 LOG : 560.00 561.51 1.5 Region : 1200  
 FDEPTH: 346 345 Gear cond.: 0  
 BDEPTH: 346 345 Validity : 0  
 Towing dir: 0° Wire out : 810 m Speed : 3.1 kn  
 Sorted : 26 Total catch: 278.52 Catch/hour: 566.87

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Helicolenus dactylopterus	258.58	3873	45.62	
Merluccius polli	175.75	2037	31.00	
Laemonema laureysi	30.45	985	5.37	
Malaccocephalus laevis	19.03	157	3.36	
Gephyroberyx darwini	18.13	22	3.20	
Lepidopus caudatus	17.24	45	3.04	
TRICHIURIDAE	13.43	45	2.37	
Todarodes sagittatus	9.63	22	1.70	
Trachyrincus scabrus	7.84	179	1.38	
CONGER SP	4.48	22	0.79	
Chlorophthalmus sp.	2.46	90	0.43	
Epigonus telescopus	2.24	22	0.39	
Lophius willanti	1.57	22	0.28	
Synagrops microlepis	1.57	90	0.28	
Chlorophthalmus atlanticus	1.12	90	0.20	
Nezumia africana	1.12	67	0.20	
Cyttopsis rosea	0.90	22	0.16	
Synchiropus phaeton	0.45	22	0.08	
MYCTOPHIDAE	0.45	179	0.08	
Simenchelys parasiticus	0.45	45	0.08	
Total	566.87		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 138  
 DATE :13/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°17.55  
 start stop duration Lon W 16°49.41  
 TIME :09:30:22 09:57:49 27.5 (min) Purpose : 3  
 LOG : 607.65 608.78 1.1 Region : 1200  
 FDEPTH: 106 115 Gear cond.: 0  
 BDEPTH: 106 115 Validity : 0  
 Towing dir: 0° Wire out : 290 m Speed : 2.5 kn  
 Sorted : 32 Total catch: 232.55 Catch/hour: 508.31

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	404.37	2492	79.55	
Spherooides pachgaster	52.24	131	10.28	
Zenopsis conchifer	19.02	22	3.74	
Scorpaena stephanica	11.80	22	2.32	
Zeus faber	9.95	17	1.96	261
Dentex maroccanus	9.68	33	1.90	260
Pagellus acarne	1.25	2	0.25	
Total	508.31		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 139  
 DATE :13/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°18.15  
 start stop duration Lon W 16°44.48  
 TIME :11:55:14 12:25:03 29.8 (min) Purpose : 3  
 LOG : 614.40 616.01 1.6 Region : 1200  
 FDEPTH: 28 32 Gear cond.: 0  
 BDEPTH: 28 32 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.2 kn  
 Sorted : 89 Total catch: 352.14 Catch/hour: 708.53

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Zeus faber	372.80	95	52.62	
Pseudupeneus prayensis	83.54	722	11.79	
Pagellus bellottii	64.19	306	9.06	263
PYROSOMIDAE	47.02	0	6.64	
Chloroscombrus chrysurus	41.99	237	5.93	262
Lagocephalus laevigatus	22.90	16	3.23	
Pagrus caeruleostictus	20.36	28	2.87	268
Ephippion guttifer	9.18	6	1.29	
Dentex canariensis	8.13	33	1.15	264
Epinephelus aeneus	6.96	11	0.98	265
Chilomycterus spinosus mauret.	6.30	16	0.89	
Loligo vulgaris	4.83	32	0.68	
Alectis alexandrinus	4.47	6	0.63	
Leptocharias smithii	2.82	4	0.40	
Trachurus trecae	1.99	17	0.28	270
Raja miraletus	1.63	2	0.23	
Pagrus auriga	1.51	2	0.21	267
Stephanolepis sp.	1.39	2	0.20	
Bodianus iagomensis	1.33	6	0.19	
Sardinella aurita	1.33	22	0.19	
Plectorhynchus mediterraneus	1.31	2	0.18	266
Decapterus rhonchus	1.15	6	0.16	269
Fistularia petimba	0.76	22	0.11	
Chelidonichthys lucerna	0.66	6	0.09	
Total	708.53		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 140  
 DATE :13/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°38.46  
 start stop duration Purpose : 3  
 TIME :15:38:41 15:58:50 20.2 (min) Region : 1200  
 LOG : 642.01 643.09 1.1 Gear cond.: 0  
 FDEPTH: 25 24 Validity : 0  
 BDEPTH: 25 24  
 Towing dir: 0° Wire out : 130 m Speed : 3.2 kn  
 Sorted : 115 Total catch: 1490.45 Catch/hour: 4438.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Algae	1621.94	0	36.55
Decapterus rhonchus	903.87	813	20.37
Pagellus bellottii	650.32	465	14.65
Sardinella maderensis	224.90	0	5.07
Arius parkii	148.65	387	3.35
Diplodus bellottii	139.74	1200	3.15
Ephippion guttifer	131.61	39	2.97
Solea senegalensis	106.06	271	2.39
Pomadasy incisus	102.19	658	2.30
Brachydeuterus auritus	80.52	6155	1.81
Diplodus sargus *	53.42	116	1.20
Raja undulata	46.06	3	1.04
Raja leoparden	40.65	77	0.92
Chloroscombrus chrysurus	25.55	155	0.58
Syacium micurum	24.77	155	0.56
Sepia officinalis	20.52	116	0.46
Galeodes decadactylus	20.13	619	0.45
Sardinella aurita	19.35	77	0.44
Trichiurus lepturus	18.97	426	0.43
Trachurus trachurus	13.94	155	0.31
Cypselurus cyanopterus	13.94	39	0.31
Spondyllosoma cantharus	10.84	39	0.24
Campogramma glaycos	10.84	39	0.24
Sphyrana sphyraena	6.58	155	0.15
Loligo vulgaris	2.71	39	0.06
Total	4438.06		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 141  
 DATE :13/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°37.54  
 start stop duration Purpose : 3  
 TIME :17:21:27 17:46:35 25.1 (min) Region : 1200  
 LOG : 650.69 651.90 1.2 Gear cond.: 0  
 FDEPTH: 72 70 Validity : 0  
 BDEPTH: 72 70  
 Towing dir: 0° Wire out : 200 m Speed : 2.9 kn  
 Sorted : 47 Total catch: 959.88 Catch/hour: 2291.79

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Sardina pilchardus	1334.21	9476	58.22
Trichiurus lepturus	495.90	4011	21.64
Trachurus trecae	162.95	8223	7.11
Zeus faber	136.38	201	5.95
Octopus vulgaris	81.73	100	3.57
GOBIIDAE	42.12	6518	1.84
Brachydeuterus auritus	14.04	3058	0.61
Pterochrissus bellocci	8.52	1153	0.37
Merluccius polli	8.02	50	0.35
Epinephelus aeneus	4.42	2	0.19
Cepola pauciradiatus	2.01	50	0.09
Spherooides marmoratus	1.50	50	0.07
Total	2291.79		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 142  
 DATE :13/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°31.45  
 start stop duration Purpose : 3  
 TIME :19:16:41 19:46:50 30.2 (min) Region : 1200  
 LOG : 661.10 662.62 1.5 Gear cond.: 0  
 FDEPTH: 104 108 Validity : 3  
 BDEPTH: 104 108  
 Towing dir: 0° Wire out : 265 m Speed : 3.0 kn  
 Sorted : 29 Total catch: 141.00 Catch/hour: 280.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Umbina canariensis	135.52	1075	48.30
Zeus faber	40.24	60	14.34
Dentex maroccanus	24.96	466	8.89
Pontinus kuhlii	20.06	131	7.15
Scorpaena stephanica	15.88	84	5.66
Dentex angolensis	9.19	24	3.28
Arnoglossus imperialis	8.36	907	2.98
Brotula barbata	7.84	4	2.79
Illex coindetii	6.81	84	2.43
Raja clavata	6.49	4	2.31
Merluccius senegalensis	2.99	24	1.06
Synagrops microlepis	1.43	107	0.51
Laemonema laureysi	0.84	24	0.30
Total	280.60		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 143  
 DATE :14/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°50.12  
 start stop duration Purpose : 3  
 TIME :00:49:02 01:18:52 29.8 (min) Region : 1200  
 LOG : 699.38 700.66 1.3 Gear cond.: 0  
 FDEPTH: 69 75 Validity : 3  
 BDEPTH: 69 75  
 Towing dir: 0° Wire out : 210 m Speed : 2.6 kn  
 Sorted : 50 Total catch: 126.24 Catch/hour: 253.92

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Zeus faber	75.93	261	29.90
Trachurus trecae	65.13	2565	25.65
PYROSOMIDAE	52.30	0	20.60
Merluccius polli	20.27	141	7.98
Trichiurus lepturus	14.18	382	5.58
Octopus vulgaris	9.05	30	3.56
Dentex macrocephthalmus	3.12	91	1.23
MYCTOPHIDAE	2.98	412	1.17
Synagrops microlepis	2.11	231	0.83
Sardinella aurita	2.07	14	0.82
GOBIIDAE	1.87	543	0.74
Spherooides marmoratus	1.37	24	0.54
Engraulis encrasicolus	1.21	20	0.48
Scorpaena laevis	1.21	40	0.48
Loligo vulgaris	0.36	4	0.14
Arnoglossus imperialis	0.30	24	0.12
Cynoglossus sp.	0.26	4	0.10
Trigla lyra	0.20	14	0.08
Total	253.92		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 144  
 DATE :14/11/2011 GEAR TYPE: PT NO: 4 POSITION:Lat N 19°49.50  
 start stop duration Purpose : 3  
 TIME :01:50:10 02:19:48 29.6 (min) Region : 1200  
 LOG : 702.13 703.80 1.7 Gear cond.: 0  
 FDEPTH: 0 0 Validity : 0  
 BDEPTH: 75 93  
 Towing dir: 0° Wire out : 110 m Speed : 3.4 kn  
 Sorted : 44 Total catch: 461.88 Catch/hour: 935.30

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Sardina pilchardus	893.01	6316	95.48
Scomber japonicus	14.03	43	1.50
Trichiurus lepturus	13.61	1170	1.45
Trachurus trecae	13.18	533	1.41
Engraulis encrasicolus	1.05	150	0.11
Engraulis encrasicolus	0.20	22	0.02
Synagrops microlepis	0.20	65	0.02
Total	935.30		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 145  
 DATE :14/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 19°50.05  
 start stop duration Purpose : 3  
 TIME :03:08:23 03:37:50 29.5 (min) Region : 1200  
 LOG : 708.30 709.69 1.4 Gear cond.: 0  
 FDEPTH: 39 38 Validity : 3  
 BDEPTH: 39 38  
 Towing dir: 0° Wire out : 120 m Speed : 2.8 kn  
 Sorted : 33 Total catch: 361.01 Catch/hour: 735.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Pagellus bellottii	214.27	27333	29.13
Trachurus trecae	185.40	8316	25.21
Zeus faber	107.80	344	14.66
Pseudupeneus prayensis	40.26	185	5.47
Lagocephalus laevis	30.99	26	4.21
Dagrus caeruleostictus	23.84	26	3.24
Octopus vulgaris	18.28	26	2.48
Sardinella aurita	15.63	927	2.12
Sepia officinalis	14.57	106	1.98
Sciaena umbra	14.04	106	1.91
Loligo vulgaris	11.92	212	1.62
Trichiurus lepturus	10.59	715	1.44
Synagrops microlepis	10.06	689	1.37
Merluccius polli	7.42	26	1.01
Trigla lyra	5.83	53	0.79
Pomadasy incisus	5.30	26	0.72
Torpedo torpedo	5.03	26	0.68
Spherooides marmoratus	4.50	132	0.61
Scorpaena laevis	3.44	79	0.47
Fistularia petimba	2.91	79	0.40
GOBIIDAE	1.85	689	0.25
Boops boops	1.32	106	0.18
Brachydeuterus auritus	0.26	53	0.04
Total	735.50		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 146  
 DATE :14/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°9.21  
 start stop duration Purpose : 3  
 TIME :09:03:55 09:34:03 30.1 (min) Region : 1200  
 LOG : 747.77 749.30 1.5 Gear cond.: 0  
 FDEPTH: 32 31 Validity : 0  
 BDEPTH: 32 31  
 Towing dir: 0° Wire out : 130 m Speed : 3.0 kn  
 Sorted : 35 Total catch: 205.20 Catch/hour: 408.63

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trecae	114.86	0	28.11
Pagellus bellottii	75.27	0	18.42
Pomadasy jubelini	64.40	0	15.76
Pomadasy incisus	55.96	0	13.69
Balistes capricus	41.54	28	10.17
Pseudupeneus prayensis	19.93	112	4.88
Stromateus fiatola	15.33	14	3.75
Epinephelus aeneus	10.26	0	2.51
Sardinella aurita	3.35	42	0.82
Citharus linguatula	3.07	14	0.75
Psettodes belcheri	2.15	2	0.53
Trigla lyra	1.39	14	0.34
Microchirus boscanion	0.70	14	0.17
Loligo vulgaris	0.42	14	0.10
Total	408.63		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 147  
 DATE :14/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°7.89  
 start stop duration Purpose : 3  
 TIME :11:03:56 11:34:19 30.4 (min) Region : 1200  
 LOG : 760.36 761.81 1.4 Gear cond.: 0  
 FDEPTH: 50 51 Validity : 0  
 BDEPTH: 50 51  
 Towing dir: 0° Wire out : 150 m Speed : 2.9 kn  
 Sorted : 29 Total catch: 233.04 Catch/hour: 460.25

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trecae	276.50	12703	60.08
Zeus faber	99.54	142	21.63
Loligo vulgaris	75.21	1375	16.34
GOBIIDAE	4.11	521	0.89
Fistularia petimba	2.05	95	0.45
Scorpaena scrofa	0.79	16	0.17
Sardinella aurita	0.63	16	0.14
Pagellus bellottii	0.63	126	0.14
Scomber japonicus	0.47	16	0.10
Saurida brasiliensis	0.32	47	0.07
Total	460.25		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 148  
 DATE :14/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°5.10 Lon W 17°35.83  
 start stop duration Purpose : 3  
 TIME :14:06:34 14:32:08 25.6 (min) Region : 1200  
 LOG : 773.35 774.67 1.3 Gear cond.: 0  
 FDEPTH: 109 109 Validity : 0  
 BDEPTH: 109 109  
 Towing dir: 0° Wire out : 280 m Speed : 3.1 kn  
 Sorted : 61 Total catch: 1786.57 Catch/hour: 4192.19

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	1720.22	14537	41.03	275
Scomber japonicus	1342.90	18760	32.03	277
Trachurus trecae	782.21	30458	18.66	276
Loligo vulgaris	105.22	831	2.51	
Engraulis encrasicolus	63.00	51914	1.50	
Octopus vulgaris	56.08	68	1.34	
Dentex macropthalmus	45.01	277	1.07	
Scorpaena scrofa	36.00	68	0.86	
Zeus faber	20.09	68	0.48	
Sciaena umbra	13.16	69	0.31	
Pterothrissus belloci	5.54	68	0.13	
Syacium micrum	2.77	68	0.07	
Total	4192.19		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 149  
 DATE :14/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°6.64 Lon W 17°39.13  
 start stop duration Purpose : 3  
 TIME :15:56:46 16:12:11 15.4 (min) Region : 1200  
 LOG : 783.03 783.87 0.8 Gear cond.: 0  
 FDEPTH: 283 282 Validity : 0  
 BDEPTH: 283 282  
 Towing dir: 0° Wire out : 700 m Speed : 3.3 kn  
 Sorted : 51 Total catch: 254.50 Catch/hour: 989.63

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	695.07	8644	70.24	280
Zenopsis conchifer	110.05	136	11.12	
MYCTOPHIDAE	97.80	37816	9.88	
Octopus vulgaris	30.52	19	3.08	
Synagrops microlepis	22.75	1672	2.30	
Helicolenus dactylopterus	19.25	1711	1.94	
Chloropthalmus atlanticus	7.00	369	0.71	
CONGRIDAE	2.14	19	0.22	
Lepidopus caudatus	1.36	58	0.14	
Sepia elegans	1.17	58	0.12	
UNIDENTIFIED FISH	1.17	19	0.12	
Laemonema laureysi	0.78	156	0.08	
Engraulis encrasicolus	0.58	19	0.06	
Total	989.63		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 150  
 DATE :14/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°24.54 Lon W 17°44.00  
 start stop duration Purpose : 3  
 TIME :23:55:10 00:16:55 21.8 (min) Region : 1200  
 LOG : 822.83 823.97 1.1 Gear cond.: 0  
 FDEPTH: 366 361 Validity : 0  
 BDEPTH: 366 361  
 Towing dir: 0° Wire out : 840 m Speed : 3.1 kn  
 Sorted : 29 Total catch: 304.37 Catch/hour: 839.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	346.54	3255	41.27	176
Helicolenus dactylopterus	308.00	12568	36.68	
PYROSOMIDAE	67.37	0	8.02	
Synagrops microlepis	36.72	3338	4.37	
Scomber japonicus	27.31	61	3.25	
CONGRIDAE	25.49	91	3.04	
Laemonema laureysi	13.96	607	1.66	
MYCTOPHIDAE	4.25	1730	0.51	
Lophius vaillanti	2.73	30	0.33	
Dicologlossa cuneata	2.43	91	0.29	
Malacoecephalus occidentalis	2.43	30	0.29	
Trachurus scabrus	0.61	30	0.07	
Nezumia micronychodon	0.61	30	0.07	
Chloropthalmus atlanticus	0.61	30	0.07	
Antigonia capros	0.61	30	0.07	
Total	839.64		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 151  
 DATE :15/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°24.05 Lon W 17°40.47  
 start stop duration Purpose : 3  
 TIME :02:13:46 02:34:57 21.2 (min) Region : 1200  
 LOG : 833.92 835.03 1.1 Gear cond.: 0  
 FDEPTH: 110 107 Validity : 3  
 BDEPTH: 110 107  
 Towing dir: 0° Wire out : 280 m Speed : 3.2 kn  
 Sorted : 49 Total catch: 48.99 Catch/hour: 138.72

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dentex macropthalmus	71.64	1419	51.64	
Antigonia capros	9.23	1294	6.65	
Zeus faber	8.49	20	6.12	
Synagrops microlepis	8.30	895	5.98	
PYROSOMIDAE	8.21	0	5.92	
Sciaena umbra	7.87	23	5.67	
Merluccius polli	5.32	40	3.84	
Scomber japonicus	4.11	108	2.96	
MYCTOPHIDAE	4.02	2698	2.90	
Arnoglossus imperialis	3.09	261	2.22	
Cepola macropthalmus	1.87	85	1.35	
Pterothrissus belloci	1.76	28	1.27	
Trachurus trecae	1.42	3	1.02	
Serranus scriba	0.99	14	0.71	
Aulopus cadenati	0.82	28	0.59	
CONGRIDAE	0.57	11	0.41	
Zenopsis conchifer	0.51	3	0.37	
Scomber japonicus	0.25	6	0.18	
Malacoecephalus occidentalis	0.23	23	0.16	
Laemonema laureysi	0.03	3	0.02	
Total	138.72		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 152  
 DATE :15/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°25.84 Lon W 17°12.18  
 start stop duration Purpose : 3  
 TIME :06:48:57 07:14:09 25.2 (min) Region : 1200  
 LOG : 869.94 871.17 1.2 Gear cond.: 0  
 FDEPTH: 29 30 Validity : 0  
 BDEPTH: 29 30  
 Towing dir: 0° Wire out : 110 m Speed : 2.9 kn  
 Sorted : 60 Total catch: 1466.86 Catch/hour: 3492.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Plectorhinchus mediterraneus	892.38	1679	25.55	
Diplodus bellottii	791.71	96798	22.67	
Argyrosomus regius	349.52	336	10.01	
Pomadourus incisus	339.62	1957	9.72	
Mustelus mustelus	285.21	112	8.17	
Pagellus bellottii	193.10	1231	5.53	282
Decapterus rhonchus	192.48	1062	5.51	283
Raja undulata	92.88	336	2.66	
Pomadourus jubelini	92.31	112	2.64	
Brachydeuterus auritus	46.43	279	1.33	
Epinephelus aeneus	40.29	55	1.15	
Raja undulata	32.45	55	0.93	0
Halobatrachus didactylus	30.71	55	0.88	
Arius parkii	25.74	55	0.74	
Sphyaena guachancho	23.50	55	0.67	
Spondyliosa cantharus	20.71	112	0.59	
Chilomycterus spinosus mauret.	17.38	112	0.50	
Loligo vulgaris	8.95	55	0.26	
Serranus scriba	7.83	55	0.22	
Pomadourus saltatrix	5.95	2	0.17	
Trachinus armatus	3.36	55	0.10	
Total	3492.52		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 153  
 DATE :17/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°42.82 Lon W 17°11.49  
 start stop duration Purpose : 3  
 TIME :15:27:54 15:56:34 28.7 (min) Region : 1200  
 LOG : 949.75 951.14 1.4 Gear cond.: 0  
 FDEPTH: 37 36 Validity : 0  
 BDEPTH: 37 36  
 Towing dir: 0° Wire out : 130 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 408.96 Catch/hour: 855.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Engraulis encrasicolus	331.08	58510	38.68	284
Diplodus bellottii	150.89	1494	17.63	290
Trachurus trecae	128.18	3765	14.98	285
Pagellus bellottii	117.61	1157	13.74	286
Loligo vulgaris	50.98	3047	5.96	
Raja undulata	14.19	13	1.66	
Rhinostos rhinobatos	10.65	4	1.24	
Sardinella aurita	9.38	879	1.10	289
Zeus faber	8.69	4	1.01	
Dentex canariensis	7.62	44	0.89	
Pagrus caeruleostictus	6.86	10	0.80	291
Loligo vulgaris	4.31	25	0.50	0
Halobatrachus didactylus	3.60	6	0.42	
Sardinia pilchardus	3.37	249	0.39	287
Octopus vulgaris	2.97	6	0.35	
Dentex gibbosus	2.49	15	0.29	
Trachurus trachurus	1.61	15	0.19	
Mullus barbatus	0.67	4	0.08	
Trichurus lepturus	0.59	59	0.07	
Sepia elegans	0.12	2	0.01	
Total	855.86		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 154  
 DATE :17/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°44.90 Lon W 17°33.18  
 start stop duration Purpose : 3  
 TIME :18:57:18 19:27:24 30.1 (min) Region : 1200  
 LOG : 976.02 977.52 1.5 Gear cond.: 0  
 FDEPTH: 79 79 Validity : 0  
 BDEPTH: 79 79  
 Towing dir: 0° Wire out : 200 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 70.29 Catch/hour: 140.11

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Gobidae sp. 'bars'	29.90	2807	21.34	
Arnoglossus imperialis	25.91	2472	18.49	
Ophidion barbatum	20.25	1148	14.45	
Merluccius polli	16.43	175	11.72	292
Loligo vulgaris	11.64	144	8.31	
Echinocardium sp.	10.84	2711	7.74	
Brama brama	6.80	10	4.85	
Microchirus boscanion	5.26	877	3.76	
Scyllorhinus canicula	2.95	6	2.11	
Trachurus trecae	2.15	108	1.54	293
Octopus vulgaris	1.85	4	1.32	
Dentex macropthalmus	1.12	24	0.80	
Dentex maroccanus	0.96	88	0.68	
Saurida brasiliensis	0.88	120	0.63	
Citharus linguatula	0.72	32	0.51	
Synagrops microlepis	0.72	80	0.51	
Scorpaena stephanica	0.64	24	0.46	
Pagrus caeruleostictus	0.54	2	0.38	
Calappa granulata	0.40	8	0.28	
Capros aper	0.16	24	0.11	
Total	140.11		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 155  
 DATE :17/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°44.96 Lon W 17°38.61  
 start stop duration Purpose : 3  
 TIME :21:50:20 22:20:25 30.1 (min) Region : 1200  
 LOG : 988.44 989.96 1.5 Gear cond.: 0  
 FDEPTH: 144 138 Validity : 0  
 BDEPTH: 144 138  
 Towing dir: 0° Wire out : 375 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 450.87 Catch/hour: 899.34

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius polli	484.71	3985	53.90	
Helicolenus dactylopterus	308.78	37053	34.33	
Chloropthalmus atlanticus	26.21	1580	2.91	
Ophidion barbatum	17.23	790	1.92	
Synagrops microlepis	13.64	1544	1.52	
Capros aper	11.85	826	1.32	
Myctophid sp. A	11.49	4596	1.28	
Etmopterus spinax	7.02	14	0.78	
Aulopus filamentosus	5.74	36	0.64	
Octopus vulgaris	5.59	12	0.62	
Scorpaena normani	3.95	144	0.44	
Scorpaena scrofa	1.80	36	0.20	
Galeus polli	0.98	16	0.11	
Macrorhynchus scolopax	0.36	36	0.04	
Total	899.34		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 156  
 DATE :18/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 20°42.65  
 start stop duration Lon W 17°40.72  
 TIME :00:00:41 00:31:25 30.7 (min) Purpose : 3  
 LOG : 998.41 999.88 1.5 Region : 1200  
 FDEPTH: 351 342 Gear cond.: 0  
 BDEPTH: 351 342 Validity : 0  
 Towing dir: 0° Wire out : 875 m Speed : 2.9 km  
 Sorted : 0 Total catch: 192.71 Catch/hour: 376.26

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Merluccius polli	91.30 451	24.26	
Helicolenus dactylopterus	62.87 2870	16.71	0
Helicolenus dactylopterus	44.01 219	11.70	
Coelorhynchus coelorhynchus	38.27 629	10.17	
Hoplostethus mediterraneus	30.75 2228	8.17	
Lophius budegassa	21.48 14	5.71	
Scyliorhinus canicula	16.67 27	4.43	
Conger conger	14.06 6	3.74	
Palinurus mauritanicus	11.42 21	3.04	
Paramola cuvieri	11.01 18	2.93	
Galeus polli	7.11 123	1.89	
OPHICHTHIDAE	6.64 0	1.76	
Etmopterus spinax	5.47 14	1.45	
Hymenocephalus italicus	5.06 137	1.34	
Raja montagui	4.30 4	1.14	
Nezumia aequalis	2.87 137	0.76	
Raja alba	1.07 2	0.29	
Ophidion barbatum	0.96 0	0.25	
Myctophid sp. A	0.68 21	0.18	
Gadomus sp.	0.27 41	0.07	
Total	376.26	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 157  
 DATE :18/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°3.96  
 start stop duration Lon W 17°37.44  
 TIME :11:17:00 11:47:17 30.3 (min) Purpose : 3  
 LOG : 1043.24 1044.77 1.5 Region : 1120  
 FDEPTH: 323 310 Gear cond.: 0  
 BDEPTH: 323 310 Validity : 0  
 Towing dir: 0° Wire out : 820 m Speed : 3.0 km  
 Sorted : 0 Total catch: 660.38 Catch/hour: 1308.98

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Paramola cuvieri	457.88 1177	34.98	
Helicolenus dactylopterus	215.26 4936	16.45	295
Merluccius polli	184.34 1415	14.08	297
Galeus polli	155.80 833	11.90	
Zenopsis conchifer	130.82 404	9.99	296
Palinurus mauritanicus	54.35 119	4.15	
Hoplostethus mediterraneus	30.92 607	2.36	
Todarodes sagittatus	19.03 36	1.45	
Lophius budegassa	17.88 8	1.37	294
Coelorhynchus coelorhynchus	14.63 309	1.12	
MYCTOPHIDAE	5.83 1843	0.45	
Ophidion barbatum	4.76 48	0.36	
Peristedion cataphractum	4.40 24	0.34	
Pteroctopus tetracirrhus	3.33 12	0.25	
Malacocephalus occidentalis	2.38 36	0.18	
Parasudis fraser-brueneri	1.90 36	0.15	
Synagrops microlepis	1.55 143	0.12	
Laemonema laureysi	1.43 71	0.11	
Microchirus variegatus	1.19 36	0.09	
Nezumia aequalis	0.59 36	0.05	
Lepidopus caudatus	0.36 12	0.03	
Epigonus telescopus	0.36 12	0.03	
Total	1308.98	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 158  
 DATE :18/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°1.87  
 start stop duration Lon W 17°31.68  
 TIME :13:21:08 13:32:03 10.9 (min) Purpose : 3  
 LOG : 1052.64 1053.16 0.5 Region : 1120  
 FDEPTH: 104 104 Gear cond.: 0  
 BDEPTH: 104 104 Validity : 0  
 Towing dir: 0° Wire out : 260 m Speed : 2.9 km  
 Sorted : 0 Total catch: 779.69 Catch/hour: 4284.03

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Engraulis encrasicolus	3923.63 392363	91.59	300
Synagrops microlepis	221.63 30648	5.17	
Trachurus trecae	79.53 2758	1.86	298
Sardina pilchardus	31.81 1698	0.74	299
Lepidopus caudatus	14.85 104	0.35	
Zenopsis conchifer	6.26 11	0.15	
Brama brama	4.67 5	0.11	
Scomber japonicus	1.65 5	0.04	
Total	4284.03	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 159  
 DATE :18/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°3.73  
 start stop duration Lon W 17°24.44  
 TIME :16:41:03 17:11:46 30.7 (min) Purpose : 3  
 LOG : 1064.35 1065.86 1.5 Region : 1120  
 FDEPTH: 77 79 Gear cond.: 0  
 BDEPTH: 77 79 Validity : 0  
 Towing dir: 0° Wire out : 210 m Speed : 2.9 km  
 Sorted : 0 Total catch: 285.07 Catch/hour: 556.78

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Synagrops microlepis	273.93 50574	49.20	
Trachurus trecae	128.69 6123	23.11	301
Loligo vulgaris	77.56 1117	13.93	
GOBIIDAE	42.75 5693	7.68	
Engraulis encrasicolus	8.81 967	1.58	
Trichurus lepturus	8.26 16	1.48	
Sardina pilchardus	3.65 43	0.66	302
Trachurus trachurus	1.72 107	0.31	304
Microchirus boscanion	1.72 279	0.31	
Zeus faber	1.64 6	0.29	
Sardinella aurita	1.50 43	0.27	303
Citharus linguatula	1.29 64	0.23	
Pagellus bellottii	1.09 6	0.20	
Octopus vulgaris	1.04 4	0.19	
Scyliorhinus canicula	1.02 2	0.18	
Scorpaena scrofa	0.86 64	0.15	
Cepola macrophthalma	0.59 16	0.11	
Arnoglossus imperialis	0.43 64	0.08	
Dentex gibbosus	0.23 2	0.04	
Total	556.78	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 160  
 DATE :18/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°1.81  
 start stop duration Lon W 17°15.69  
 TIME :18:26:02 18:56:46 30.7 (min) Purpose : 3  
 LOG : 1075.46 1077.11 1.7 Region : 1100  
 FDEPTH: 46 47 Gear cond.: 0  
 BDEPTH: 46 47 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 3.2 km  
 Sorted : 0 Total catch: 1222.53 Catch/hour: 2386.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Plectorhynchus mediterraneus	1018.87 4122	42.70	
Pagellus bellottii	427.26 2383	17.91	307
Diplopus bellottii	242.62 2491	10.17	
Trachurus trachurus	192.16 1825	8.05	308
Pomadasys incisus	158.88 1267	6.66	
Umbrina canariensis	126.68 730	5.31	
Dentex canariensis	60.31 215	2.53	
Pseudupeneus prayensis	36.50 172	1.53	
Pagrus auriga	33.77 31	1.42	305
Sardina pilchardus	28.79 53	1.21	306
Spondyliosoma cantharus	12.02 64	0.50	
Syacium micrum	6.23 64	0.26	
Rhinobatos rhinobatos	5.95 2	0.25	
Scorpaena scrofa	5.58 43	0.23	
Serranus scriba	4.72 21	0.20	
Dicologlossa cuneata	3.22 21	0.13	
Diplopus vulgaris	3.12 10	0.13	
Diplopus cervinus cervinus	2.93 2	0.12	
Epinephelus aeneus	2.67 2	0.11	
Trigla lyra	2.36 21	0.10	
Sardinella aurita	2.36 64	0.10	
Diplopus puntazzo	2.07 2	0.09	
Arnoglossus thori	1.93 86	0.08	
Dentex gibbosus	1.48 2	0.06	
Echelus myrus	1.29 21	0.05	
Raja miraletus	0.98 2	0.04	
Echelus myrus	0.59 2	0.02	0
Chilomycterus spinosus mauret.	0.45 2	0.02	
Chaetodon hoefleri	0.41 2	0.02	
Total	2386.20	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 161  
 DATE :19/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°22.70  
 start stop duration Lon W 17°18.13  
 TIME :01:27:19 01:57:44 30.4 (min) Purpose : 3  
 LOG : 1121.93 1123.43 1.5 Region : 1120  
 FDEPTH: 67 68 Gear cond.: 0  
 BDEPTH: 67 68 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 3.0 km  
 Sorted : 0 Total catch: 37.71 Catch/hour: 74.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Trachurus trachurus	17.36 769	23.34	
Microchirus variegatus	12.82 949	17.24	
Arnoglossus thori	8.60 833	11.56	
Dentex gibbosus	7.30 146	9.81	
Octopus vulgaris	5.27 18	7.08	
Plectorhynchus mediterraneus	4.26 12	5.73	
Loligo vulgaris	3.83 75	5.14	
Trachinus vipera	3.75 95	5.04	
OPHICHTHIDAE	3.55 134	4.77	
Citharus linguatula	2.09 36	2.81	
Trigla lyra	1.42 12	1.91	
Raja miraletus	1.18 2	1.59	
Scorpaena scrofa	0.63 24	0.85	
Sepia officinalis	0.55 8	0.74	
Pagellus bellottii	0.43 4	0.58	
Solea vulgaris	0.28 4	0.37	
Sepia orbignyana	0.24 8	0.32	
Ophidion barbatum	0.20 16	0.27	
Synodus saurus	0.16 12	0.21	
Scomber japonicus	0.16 4	0.21	
Aspitrigla obscura	0.12 16	0.16	
Trigloporus lastoviza africanu	0.12 4	0.16	
GOBIIDAE	0.04 16	0.05	
Cepola macrophthalma	0.04 4	0.05	
Total	74.40	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 162  
 DATE :19/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°25.69  
 start stop duration Lon W 17°27.81  
 TIME :04:05:26 04:36:13 30.8 (min) Purpose : 3  
 LOG : 1137.86 1139.44 1.6 Region : 1120  
 FDEPTH: 136 133 Gear cond.: 0  
 BDEPTH: 136 133 Validity : 0  
 Towing dir: 0° Wire out : 355 m Speed : 3.1 km  
 Sorted : 0 Total catch: 203.28 Catch/hour: 396.26

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Plesionika martia	233.33 116667	58.88	
Synagrops microlepis	54.58 4528	13.77	
Helicolenus dactylopterus	32.75 2583	8.26	
Microchirus variegatus	22.51 3062	5.68	
Ophidion barbatum	15.96 865	4.03	
Lepidopus caudatus	10.78 82	2.72	
Octopus vulgaris	8.19 27	2.07	
Scorpaena elongata	6.28 519	1.58	
Macrorhamphosus scolopax	3.82 355	0.96	
Chlorophthalmus agassizi	3.68 505	0.93	
Scomber japonicus	1.50 14	0.38	
Capros aper	1.23 150	0.31	
Pagellus bellottii	0.82 14	0.21	
Antigonia capros	0.41 96	0.10	
Myctophidae sp. large	0.27 55	0.07	
Aulopus cadenati	0.14 14	0.03	
Total	396.26	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 163  
 DATE :19/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°25.26  
 start stop duration Lon W 17°30.40  
 TIME :06:33:15 07:03:08 29.9 (min) Purpose : 3  
 LOG : 1147.44 1148.91 1.5 Region : 1120  
 FDEPTH: 338 323 Gear cond.: 0  
 BDEPTH: 338 323 Validity : 0  
 Towing dir: 0° Wire out : 830 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 173.55 Catch/hour: 348.61  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Helicolenus dactylopterus	247.07	7496	70.87	
Nezumia aequalis	16.51	350	4.74	
Galeus polli	14.08	20	4.04	
MYCTOPHIDAE	13.74	4809	3.94	
Hoplostethus mediterraneus	10.85	12	3.11	
Epigonus telescopus	7.47	217	2.14	
Synagrops microlepis	4.82	62	1.38	
Merluccius polli	3.90	16	1.12	
Bathysolea polli	3.74	108	1.07	
Raja straeleni	3.62	2	1.04	
Microchirus boscanion	3.62	60	0.32	
Zenopsis conchifer	3.25	12	0.93	
Palinurus mauritanicus	2.81	6	0.81	
Capros aper	2.65	60	0.76	
Pagellus acarne	2.65	12	0.76	
Paramola cuvieri	2.13	6	0.61	
Malacocephalus occidentalis	1.81	36	0.52	
Scyliorhinus canicula	1.10	2	0.32	
Ophidion barbatum	1.08	92	0.31	
Conger conger	0.74	2	0.21	
Chlorophthalmus atlanticus	0.36	12	0.10	
Octopus vulgaris	0.30	2	0.09	
Lepidopus caudatus	0.20	2	0.06	
Scomber japonicus	0.10	2	0.03	
Total	348.61		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 164  
 DATE :19/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°43.99  
 start stop duration Lon W 17°26.39  
 TIME :13:49:49 13:58:49 9.0 (min) Purpose : 3  
 LOG : 1188.60 1189.05 0.5 Region : 1120  
 FDEPTH: 126 126 Gear cond.: 0  
 BDEPTH: 126 126 Validity : 0  
 Towing dir: 0° Wire out : 330 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 1351.18 Catch/hour: 9007.87  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Scomber japonicus	5166.67	126000	57.36	309
Sardina pilchardus	2450.00	78333	27.20	311
Trachurus trecae	1213.33	52333	13.47	310
Lepidopus caudatus	46.67	333	0.52	
Capros aper	33.33	5000	0.37	
Helicolenus dactylopterus	33.33	1333	0.37	
Macrorhamphosus scolopax	23.33	3167	0.26	
Spherooides pachgaster	15.40	20	0.17	
Engraulis encrasicolus	10.00	833	0.11	
Zeus faber	6.87	7	0.08	
Octopus vulgaris	5.47	7	0.06	
Zenopsis conchifer	3.47	13	0.04	
Total	9007.87		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 165  
 DATE :19/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°43.40  
 start stop duration Lon W 17°16.91  
 TIME :17:38:38 18:14:08 35.5 (min) Purpose : 3  
 LOG : 1200.76 1202.58 1.8 Region : 1120  
 FDEPTH: 70 70 Gear cond.: 0  
 BDEPTH: 70 70 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 131.05 Catch/hour: 221.49  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Trachurus trecae	95.83	4279	43.27	314
Scomber japonicus	74.89	2140	33.81	312
Trachurus trachurus	22.83	237	10.31	315
Loligo vulgaris	6.76	74	3.05	316
Sardina pilchardus	5.32	47	2.40	
Dentex maroccanus	4.38	83	1.98	
Dentex gibbosus	3.67	12	1.66	
Trigla lyra	2.72	12	1.23	
Pagellus bellottii	1.54	12	0.69	
Sardinella aurita	1.54	59	0.69	313
GOBIIDAE	0.83	95	0.37	
Microchirus boscanion	0.59	47	0.27	
Alloteuthis africana	0.59	83	0.27	
Total	221.49		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 166  
 DATE :19/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°43.17  
 start stop duration Lon W 17°11.78  
 TIME :19:44:17 19:48:22 4.1 (min) Purpose : 1  
 LOG : 1210.43 1210.63 0.2 Region : 1120  
 FDEPTH: 10 20 Gear cond.: 0  
 BDEPTH: 64 65 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 163.92 Catch/hour: 2410.59  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Sardinella aurita	2311.76	9412	95.90	317
Sardinella maderensis	75.00	353	3.11	
Trachurus trecae	13.24	618	0.55	318
Scomber japonicus	10.59	265	0.44	319
Total	2410.59		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 167  
 DATE :20/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 21°40.82  
 start stop duration Lon W 17°0.91  
 TIME :07:18:24 07:40:43 22.3 (min) Purpose : 3  
 LOG : 1242.12 1243.33 1.2 Region : 1120  
 FDEPTH: 29 32 Gear cond.: 0  
 BDEPTH: 29 32 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.3 kn  
 Sorted : 0 Total catch: 398.60 Catch/hour: 1071.03  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Pteroscion pelli	374.29	7924	34.95	
Trachurus trachurus	170.22	1642	15.89	323
Diplodus bellottii	114.92	978	10.73	
Trachurus trecae	24.08	658	2.25	
Umbrina canariensis	65.83	94	6.15	
Diplodus sargus *	58.50	75	5.46	
Dasyatis centroura	42.99	40	4.01	
Dentex canariensis	40.06	94	3.74	
Pomadoury incisus	39.31	113	3.67	
Serranus scriba	27.81	3	2.60	
Galeoides decadactylus	24.08	658	2.25	321
Argyrosomus regius	21.82	75	2.04	
Trichiurus lepturus	21.25	752	1.98	
Raja miraletus	19.48	46	1.82	
Arius parkii	17.12	19	1.60	
Torpedo marmorata	8.60	5	0.80	
Serranus scriba	5.83	19	0.54	
Epinephelus aeneus	4.11	5	0.38	320
Sardinella aurita	3.95	19	0.37	
Sepia officinalis	2.63	11	0.25	
Zeus faber	2.61	3	0.24	
Scomber japonicus	1.69	19	0.16	322
Stromateus fiatola	1.56	3	0.15	
Galeoides decadactylus	1.13	38	0.11	
Torpedo torpedo	0.64	3	0.06	
Campogramma glycos	0.59	3	0.06	
Total	1071.03		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 168  
 DATE :20/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°3.37  
 start stop duration Lon W 17°15.87  
 TIME :13:18:13 13:49:16 31.1 (min) Purpose : 3  
 LOG : 1285.02 1286.60 1.6 Region : 1120  
 FDEPTH: 67 67 Gear cond.: 1  
 BDEPTH: 67 67 Validity : 2  
 Towing dir: 0° Wire out : 175 m Speed : 3.1 kn  
 Sorted : 24 Total catch: 146.58 Catch/hour: 283.25  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Scomber japonicus	162.32	4690	57.31	325
Trachurus trecae	100.87	4661	35.61	324
Sardinella aurita	15.88	591	5.61	326
Sardina pilchardus	4.17	58	1.47	
Total	283.25		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 169  
 DATE :20/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°7.04  
 start stop duration Lon W 17°23.42  
 TIME :17:02:02 17:17:50 15.8 (min) Purpose : 3  
 LOG : 1301.38 1302.17 0.8 Region : 1120  
 FDEPTH: 115 112 Gear cond.: 0  
 BDEPTH: 115 112 Validity : 0  
 Towing dir: 0° Wire out : 300 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 71.47 Catch/hour: 271.41  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Scomber japonicus	247.22	4827	91.09	327
Spherooides pachgaster	10.37	15	3.82	
Trachurus trecae	6.51	281	2.40	329
Trachurus trachurus	2.26	122	0.83	328
Sardina pilchardus	1.73	15	0.64	
Capros aper	1.06	186	0.39	
Sardinella aurita	0.93	27	0.34	
Arnoglossus thori	0.66	42	0.24	
Antigonia capros	0.40	42	0.15	
Microchirus variegatus	0.27	42	0.10	
Total	271.41		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 170  
 DATE :20/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°7.13  
 start stop duration Lon W 17°24.93  
 TIME :20:20:26 20:50:17 29.9 (min) Purpose : 3  
 LOG : 1317.30 1318.79 1.5 Region : 1120  
 FDEPTH: 355 370 Gear cond.: 0  
 BDEPTH: 355 370 Validity : 0  
 Towing dir: 0° Wire out : 850 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 2568.23 Catch/hour: 5162.26  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Hoplostethus mediterraneus	3305.83	44673	64.04	
Helicolenus dactylopterus	1212.56	17387	23.49	
Galeus polli	262.93	1532	5.09	
Trachurus trachurus	148.06	1532	2.87	330
Coelorinchus coelorinchus	104.66	3063	2.03	
Epigonus telescopus	96.16	1405	1.09	
Bathysolea polli	19.15	639	0.37	
Schedophilus ovalis	17.25	28	0.33	
Chlorophthalmus atlanticus	15.32	894	0.30	
Centroporus uyato	7.44	4	0.14	
Merluccius senegalensis	5.83	6	0.11	
Malacocephalus occidentalis	2.55	129	0.05	
Scorpaena normani	2.13	2	0.04	
Scyliorhinus canicula	1.21	2	0.02	
Chascanopsetta lugubris	1.19	2	0.02	
Total	5162.26		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 171  
 DATE :21/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°22.93  
 start stop duration Lon W 17°16.41  
 TIME :05:46:03 06:18:01 32.0 (min) Purpose : 3  
 LOG : 1363.39 1365.24 1.9 Region : 1120  
 FDEPTH: 113 109 Gear cond.: 0  
 BDEPTH: 113 109 Validity : 0  
 Towing dir: 0° Wire out : 275 m Speed : 3.5 km  
 Sorted : 0 Total catch: 30.18 Catch/hour: 56.66

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	16.18	484	28.56	332
Microchirus boscanion	8.26	1074	14.58	
Trachurus trecae	6.23	180	11.00	331
Synagrops microlepis	5.78	481	10.21	
Ophidion barbatum	4.43	233	7.82	
OPHICHTHIDAE	4.17	128	7.36	
Antigonia capros	3.38	4	5.96	
Dentex maroccanus	1.91	41	3.38	
Arnoglossus imperialis	1.35	101	2.39	
Capros aper	0.98	128	1.72	
Serranus cabrilla	0.98	19	1.72	
Trigla lyra	0.90	8	1.59	
Scomber japonicus	0.45	4	0.80	
Uranoscopus polli	0.41	4	0.73	
Merluccius polli	0.41	8	0.73	
Calappa granulata	0.26	4	0.46	
Dicologlossa hexophthalma	0.22	4	0.40	
Sardina pilchardus	0.19	4	0.33	
Citharus linguatula	0.08	4	0.13	
Scorpaena scrofa	0.04	4	0.07	
Lepidopus caudatus	0.04	4	0.07	
Total	56.66		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 172  
 DATE :21/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°21.07  
 start stop duration Lon W 17°8.36  
 TIME :07:47:53 08:11:29 23.6 (min) Purpose : 3  
 LOG : 1375.46 1376.63 1.2 Region : 1120  
 FDEPTH: 78 78 Gear cond.: 0  
 BDEPTH: 78 78 Validity : 0  
 Towing dir: 0° Wire out : 220 m Speed : 3.0 km  
 Sorted : 0 Total catch: 638.27 Catch/hour: 1622.72

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sardina pilchardus	697.37	6610	42.98	337
Trachurus trecae	651.10	28889	40.12	336
Scomber japonicus	190.37	7536	11.73	334
Sardinella aurita	44.95	1388	2.77	333
Serranus cabrilla	12.56	1027	0.77	
Octopus vulgaris	8.16	1	0.50	
Zeus faber	7.45	10	0.46	
Trachurus trachurus	5.95	66	0.37	
Loligo vulgaris	3.23	20	0.20	
Pagellus bellottii	1.58	8	0.10	335
Total	1622.72		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 173  
 DATE :21/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°17.37  
 start stop duration Lon W 16°46.55  
 TIME :11:23:37 11:35:52 12.3 (min) Purpose : 3  
 LOG : 1401.53 1402.26 0.7 Region : 1120  
 FDEPTH: 31 30 Gear cond.: 0  
 BDEPTH: 31 30 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.6 km  
 Sorted : 32 Total catch: 1214.19 Catch/hour: 5947.05

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Engraulis encrasicolus	3678.86	649670	61.86	342
Sardinella aurita	724.90	112183	12.19	344
Sardina pilchardus	473.00	47300	7.95	343
Pteroscion pelli	259.15	3806	4.36	
Pomadasyus incisus	241.03	3081	4.05	
Arius parkii	168.54	181	2.83	
Decapterus rhonchus	110.55	362	1.86	
Umbrina canariensis	67.05	544	1.13	
Pagellus bellottii	38.55	152	0.65	341
Argyrosomus regius	36.24	181	0.61	
Mustelus mustelus	19.59	15	0.33	
Zeus faber	19.49	15	0.33	339
Trichiurus lepturus	18.61	34	0.31	
Diplodus sargus *	15.04	24	0.25	338
Trachurus trecae	14.50	544	0.24	
Plectorhinchus mediterraneus	14.06	10	0.24	
Dentex canariensis	12.10	29	0.20	340
Aleotis alexandrinus	8.62	15	0.14	
Raja microocellata	8.47	10	0.14	
Gymnura altavela	3.97	5	0.07	
Loligo vulgaris	3.72	10	0.06	
Stromateus fiatola	3.72	5	0.06	
Campogramma glycos	3.53	5	0.06	
Halobatrachus didactylus	3.48	5	0.06	
Peneaus kerathurus	0.29	5	0.00	
Total	5947.05		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 174  
 DATE :21/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°34.21  
 start stop duration Lon W 16°32.34  
 TIME :15:26:39 15:57:21 30.7 (min) Purpose : 3  
 LOG : 1435.54 1436.99 1.5 Region : 1120  
 FDEPTH: 32 33 Gear cond.: 0  
 BDEPTH: 32 33 Validity : 0  
 Towing dir: 0° Wire out : 131 m Speed : 2.8 km  
 Sorted : 0 Total catch: 585.86 Catch/hour: 1144.99

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pomadasyus incisus	517.92	4055	45.23	
Pagellus bellottii	183.22	1489	16.00	350
Diplodus bellottii	72.07	1124	6.29	349
Trachurus trachurus	71.82	696	6.27	352
Plectorhinchus mediterraneus	64.74	147	5.65	
Trachurus trecae	64.73	1249	5.65	353
Dentex canariensis	37.62	219	3.29	348
Umbrina canariensis	26.38	147	2.30	
Spondyliosoma cantharus	22.96	25	2.01	
Dasyatis centroura	22.48	12	1.96	
Zeus faber	14.42	12	1.26	346
Diplodus sargus *	8.79	14	0.77	347
Decapterus rhonchus	7.82	25	0.68	
Diplodus vulgaris	5.62	25	0.49	
Rhinobatos rhinobatos	5.08	2	0.44	
Gymnura altavela	4.93	2	0.43	
Raja naevus	4.89	8	0.43	
Campogramma glycos	4.64	25	0.41	
Pagrus caeruleostictus	2.81	8	0.25	351
Loligo vulgaris	1.04	2	0.09	
Mustelus mustelus	0.76	2	0.07	
Mullus surmuletus	0.24	25	0.02	
Total	1144.99		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 175  
 DATE :21/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°41.54  
 start stop duration Lon W 17°4.84  
 TIME :20:02:17 20:32:14 29.9 (min) Purpose : 3  
 LOG : 1471.28 1472.74 1.5 Region : 1120  
 FDEPTH: 75 75 Gear cond.: 0  
 BDEPTH: 75 75 Validity : 0  
 Towing dir: 0° Wire out : 210 m Speed : 2.9 km  
 Sorted : 0 Total catch: 66.63 Catch/hour: 133.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	52.39	1699	39.24	
Scomber japonicus	16.41	351	12.29	
Sardinella aurita	13.40	188	10.03	355
Pagellus bellottii	10.52	112	7.88	354
Zeus faber	9.26	2	6.93	
Loligo vulgaris	6.66	48	4.99	
Octopus vulgaris	5.01	2	3.75	
Sardina pilchardus	4.70	118	3.52	356
Raja miraletus	4.42	6	3.31	
Arnoglossus imperialis	4.07	315	3.05	
Trachinus draco	3.02	76	2.26	
Spondyliosoma cantharus	1.26	6	0.95	
Plectorhinchus mediterraneus	0.78	2	0.59	
Citharus linguatula	0.70	28	0.53	
Ophidion barbatum	0.70	34	0.53	
Microchirus boscanion	0.21	48	0.16	
Total	133.52		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 176  
 DATE :21/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°41.90  
 start stop duration Lon W 17°11.18  
 TIME :22:03:53 22:34:05 30.2 (min) Purpose : 3  
 LOG : 1482.07 1483.67 1.6 Region : 1120  
 FDEPTH: 150 149 Gear cond.: 0  
 BDEPTH: 150 149 Validity : 0  
 Towing dir: 0° Wire out : 400 m Speed : 3.2 km  
 Sorted : 0 Total catch: 52.91 Catch/hour: 105.12

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Capros aper	25.27	2938	24.04	
Ophididae 'spot nose'	12.56	294	11.94	
Scyliorhinus canicula	11.72	52	11.15	
Macrorhynchus scolopax	10.89	1035	10.36	
Zeus faber	9.38	14	8.92	
Microchirus boscanion	8.58	1119	8.16	
Synagrops microlepis	7.31	525	6.96	
Torpedo marmorata	6.36	6	6.05	
Ophidion barbatum	3.81	342	3.63	
Octopus vulgaris	3.68	4	3.50	
Myctophid sp. A	3.18	1417	3.02	
Scorpaena normani	1.91	64	1.81	
Dentex maroccanus	0.40	8	0.38	
Trichiurus lepturus	0.08	8	0.08	
Total	105.12		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 177  
 DATE :22/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°42.37  
 start stop duration Lon W 17°12.29  
 TIME :23:59:21 00:28:26 29.1 (min) Purpose : 3  
 LOG : 1490.76 1492.10 1.3 Region : 1120  
 FDEPTH: 342 338 Gear cond.: 0  
 BDEPTH: 342 338 Validity : 0  
 Towing dir: 0° Wire out : 875 m Speed : 2.8 km  
 Sorted : 0 Total catch: 93.67 Catch/hour: 193.27

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Halobatrachus didactylus	97.80	578	50.60	
Paramola cuvieri	35.82	56	18.53	
Hoplostethus mediterraneus	12.96	1131	6.70	
Myctophid sp. A	6.77	2880	3.50	
Chaunax pictus	6.60	17	3.42	
Parasudis sp.	6.35	528	3.29	
Chlorophthalmus atlanticus	4.87	281	2.52	
Coelorhynchus coelorhynchus	4.04	107	2.09	
Synagrops microlepis	2.48	190	1.28	
Lepidopus caudatus	2.19	62	1.13	
Scyliorhinus canicula	1.92	4	0.99	
Phycis blennoides	1.82	223	0.94	
Galeus polli	1.59	25	0.82	
Malacocephalus occidentalis	1.49	50	0.77	
Epigonus telescopus	1.49	157	0.77	
Pegusa lascaris	1.40	33	0.73	
Zenopsis conchifer	1.13	4	0.59	
Macrorhamphosus scolopax	0.99	124	0.51	
Ophidion barbatum	0.50	58	0.26	
Scomber japonicus	0.41	8	0.21	
Lampanyctus sp.	0.33	25	0.17	
Capros aper	0.33	33	0.17	
Total	193.27		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 178  
 DATE :22/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°0.91  
 start stop duration Lon W 17°5.87  
 TIME :08:13:11 08:43:09 30.0 (min) Purpose : 3  
 LOG : 1529.60 1531.25 1.7 Region : 1120  
 FDEPTH: 243 215 Gear cond.: 0  
 BDEPTH: 243 215 Validity : 0  
 Towing dir: 0° Wire out : 600 m Speed : 3.3 km  
 Sorted : 0 Total catch: 133.47 Catch/hour: 267.21

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Lepidopus caudatus	96.00	4226	35.93	
Trachurus trachurus	58.16	551	21.77	358
Scomber japonicus	34.68	553	12.98	357
Chlorophthalmus atlanticus	17.73	1107	6.63	
Zenopsis conchifer	13.11	60	4.91	
Synagrops microlepis	8.34	80	3.12	
Pagellus acarne	8.11	24	3.03	
Capros aper	7.29	314	2.73	
Scyliorhinus canicula	6.41	154	2.40	
Merluccius polli	5.96	6	2.23	
Torpedo macrorata	3.57	6	1.34	
Raja miraletus	2.52	28	0.94	
OPHICHTHIDAE	2.10	62	0.79	
Scorpaena normani	1.82	28	0.68	
Mustelus mustelus	1.06	4	0.40	
Antigonia capros	0.35	42	0.13	
Total	267.21		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 179  
 DATE :22/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°0.70  
 start stop duration Lon W 16°58.38  
 TIME :11:34:04 12:04:40 30.6 (min) Purpose : 3  
 LOG : 1542.92 1544.57 1.7 Region : 1120  
 FDEPTH: 74 75 Gear cond.: 0  
 BDEPTH: 74 75 Validity : 0  
 Towing dir: 0° Wire out : 220 m Speed : 2.7 km  
 Sorted : 0 Total catch: 18.21 Catch/hour: 35.69

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Scomber japonicus	8.51	367	23.83	361
Trachurus trachurus	5.84	102	16.37	360
Zeus faber	4.59	4	12.85	359
Scyliorhinus canicula	4.14	10	11.19	
Dentex maroccanus	3.57	82	10.00	362
Octopus vulgaris	2.47	2	6.92	
Aspitrigla obscura	1.84	22	5.16	
Uranoscopus scaber	1.84	2	5.16	
Raja miraletus	0.49	4	1.37	
Pagellus bellottii	0.49	4	1.37	
Zenopsis conchifer	0.37	2	1.04	
Trachinus vipera	0.35	6	0.99	
Sphoeroides pachgaster	0.35	2	0.99	
Loligo vulgaris	0.33	2	0.93	
Sardina pilchardus	0.24	2	0.66	
Sardinella aurita	0.10	2	0.27	
Sepia orbignyana	0.08	2	0.22	
Antigonia capros	0.04	2	0.11	
Alloteuthis subulata	0.02	4	0.07	
Microchirus variegatus	0.02	4	0.05	
Abralia sp.	0.01	4	0.04	
Total	35.69		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 180  
 DATE :22/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 22°51.51  
 start stop duration Lon W 16°28.07  
 TIME :16:05:15 16:25:29 20.2 (min) Purpose : 3  
 LOG : 1576.46 1577.68 1.2 (min) Region : 1120  
 FDEPTH: 31 31 Gear cond.: 0  
 BDEPTH: 31 31 Validity : 0  
 Towing dir: 0° Wire out : 120 m Speed : 3.6 km  
 Sorted : 24 Total catch: 509.37 Catch/hour: 1509.99

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pomadasy incisus	631.42	3913	41.82	
Diplodus bellottii	459.49	4328	30.43	
Trachurus trecae	121.54	1186	8.05	366
Arius parkii	100.79	119	6.67	
Pagellus bellottii	49.21	350	3.26	363
Spondyliosoma cantharus	43.28	89	2.87	
Decapterus rhonchus	28.46	119	1.88	
Zeus faber	26.09	21	1.73	365
Dentex canariensis	18.68	74	1.24	364
Argyrosomus regius	15.42	59	1.02	
Loligo vulgaris	7.50	21	0.50	
Scomber japonicus	4.15	59	0.27	
Raja miraletus	1.81	3	0.12	
Pagrus caeruleostictus	1.48	3	0.10	
Dentex gibbosus	0.68	6	0.05	
Total	1509.99		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 181  
 DATE :22/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°17.53  
 start stop duration Lon W 16°45.42  
 TIME :22:47:04 23:16:43 29.7 (min) Purpose : 3  
 LOG : 1624.83 1626.31 1.5 Region : 1100  
 FDEPTH: 57 57 Gear cond.: 0  
 BDEPTH: 57 57 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 3.0 km  
 Sorted : 0 Total catch: 104.18 Catch/hour: 210.75

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trecae	72.02	3787	34.17	371
Trachurus trachurus	51.14	1554	24.27	370
Sardina pilchardus	32.93	453	15.63	368
Pagellus bellottii	21.28	235	10.10	367
Trigla lyra	12.30	170	5.84	
Scomber japonicus	5.58	138	2.65	369
Raja miraletus	3.76	6	1.79	
Trachinus vipera	3.56	40	1.69	
Zeus faber	1.72	2	0.82	
Trachinus draco	1.62	16	0.77	
Sepia officinalis	1.31	2	0.62	
Scyliorhinus canicula	1.01	2	0.48	
Loligo vulgaris	0.77	4	0.36	
Mullus surmuletus	0.57	8	0.27	
Uranoscopus polli	0.42	2	0.20	
Dicologlossa cuneata	0.40	8	0.19	
Ophidiidae 'spot nose'	0.26	2	0.12	
Dentex maroccanus	0.08	8	0.04	
Total	210.75		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 182  
 DATE :23/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°24.66  
 start stop duration Lon W 16°59.24  
 TIME :01:39:26 02:10:26 31.0 (min) Purpose : 3  
 LOG : 1644.13 1645.66 1.5 Region : 1100  
 FDEPTH: 137 129 Gear cond.: 0  
 BDEPTH: 137 129 Validity : 0  
 Towing dir: 0° Wire out : 350 m Speed : 3.0 km  
 Sorted : 16 Total catch: 16.18 Catch/hour: 31.32

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Scomber japonicus	6.75	176	21.57	374
Galeus polli	4.49	37	14.34	
Macrorhamphosus scolopax	4.20	267	13.41	
Trachurus trachurus	3.14	81	10.01	375
Torpedo torpedo	2.46	6	7.85	
Scyliorhinus canicula	1.57	6	5.01	
Ophidion barbatum	1.43	103	4.57	
Lepidopus caudatus	1.14	17	3.65	
Synagrops microlepis	1.10	95	3.52	
Solea vulgaris	1.01	10	3.21	
Dentex macropthalmus	0.79	8	2.53	372
Aspitrigla obscura	0.70	14	2.22	
Sardina pilchardus	0.64	10	2.04	373
Zeus faber	0.58	2	1.85	
Arnoglossus thori	0.37	79	1.17	
MYCTOPHIDAE	0.29	124	0.93	
Capros aper	0.25	17	0.80	
Parasudis sp.	0.14	35	0.43	
Microchirus variegatus	0.14	15	0.43	
Merluccius senegalensis	0.10	6	0.31	
Trachinus vipera	0.04	4	0.12	
Total	31.32		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 183  
 DATE :23/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°22.98  
 start stop duration Lon W 17°2.01  
 TIME :03:45:43 04:17:22 31.7 (min) Purpose : 3  
 LOG : 1652.92 1654.40 1.5 Region : 1100  
 FDEPTH: 342 345 Gear cond.: 0  
 BDEPTH: 342 345 Validity : 0  
 Towing dir: 0° Wire out : 860 m Speed : 2.8 km  
 Sorted : 7 Total catch: 80.15 Catch/hour: 151.94

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Helicolenus dactylopterus	61.99	1043	40.80	
Lepidopus caudatus	41.33	398	27.20	
Zenopsis conchifer	7.85	23	5.17	
Capros aper	7.20	303	4.74	
Coelorhynchus coelorhynchus	5.69	133	3.74	
Chaunax pictus	5.31	9	3.49	
Galeus polli	4.55	38	2.99	
Nezumia aequalis	3.60	171	2.37	
Todarodes sagittatus	3.37	6	2.22	
SQUALIDAE	3.03	38	2.00	
Paramola cuvieri	2.58	6	1.70	
Merluccius senegalensis	1.21	2	0.80	
Palinurus mauritanicus	1.21	8	0.80	
Arius parkii	1.10	2	0.72	
Solea vulgaris	0.95	57	0.62	
MYCTOPHIDAE	0.57	493	0.37	
Chimaera monstrosa	0.21	2	0.14	
Parasudis sp.	0.19	38	0.12	
Total	151.94		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 184  
 DATE :23/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°47.21  
 start stop duration Lon W 16°50.97  
 TIME :09:19:09 09:49:15 30.1 (min) Purpose : 3  
 LOG : 1689.45 1690.83 1.4 Region : 1100  
 FDEPTH: 286 259 Gear cond.: 0  
 BDEPTH: 286 259 Validity : 0  
 Towing dir: 0° Wire out : 780 m Speed : 2.8 kn  
 Sorted : 0 Total catch: 117.84 Catch/hour: 234.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Hoplostethus mediterraneus	63.23	751	26.92	
Physiculus cf cyanostrophus	24.36	26	10.37	
Zenopsis conchifer	23.32	108	9.93	378
Gephyroberyx darwini	16.58	130	7.06	
ORHICHTHIDAE	12.96	285	5.52	
Dentex macrophthalmus	12.46	86	5.30	377
Lepidopus caudatus	12.18	181	5.18	
MYCTOPHIDAE	10.88	3447	4.63	
Conger conger	10.37	6	4.41	
Merluccius senegalensis	9.31	14	3.96	376
Helicolenus dactylopterus	8.29	78	3.53	
Cyttopsis rosea	5.70	181	2.43	
Schedophilus ovalis	4.07	8	1.73	
Chlorophthalmus atlanticus	3.11	181	1.32	
Chaunax pictus	2.85	52	1.21	
SOLEIDAE	2.59	52	1.10	
Pagellus acarne	2.53	10	1.08	
Coelorhynchus coelorhynchus	2.33	26	0.99	
Synagrops microlepis	1.81	130	0.77	
Todarodes sagittatus	1.42	4	0.60	
Ruvettus pretiosus	1.22	2	0.52	
Macrorhamphosus scolopax	1.04	52	0.44	
Scyliorhinus canicula	1.00	2	0.42	
Umbrina canariensis	0.78	2	0.33	
Arnoglossus imperialis	0.52	52	0.22	
Total	234.90		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 185  
 DATE :23/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°45.22  
 start stop duration Lon W 16°45.39  
 TIME :11:26:15 11:32:43 6.5 (min) Purpose : 3  
 LOG : 1700.14 1700.51 0.4 Region : 1100  
 FDEPTH: 73 75 Gear cond.: 0  
 BDEPTH: 73 75 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.4 kn  
 Sorted : 24 Total catch: 128.85 Catch/hour: 1194.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Scomber japonicus	690.88	25224	57.82	380
Sardinella aurita	313.45	7372	26.23	381
Trachurus trachurus	79.29	1716	6.64	382
Zenopsis conchifer	46.83	176	3.92	
Zeus faber	19.75	19	1.65	
Raja montagui	13.72	9	1.15	
Aspitrigla obscura	10.66	93	0.89	
Hoplostethus mediterraneus	4.17	46	0.35	
Boops boops	4.17	46	0.35	
Ophidion barbatum	3.25	139	0.27	
Sardina pilchardus	2.78	93	0.23	
Raja miraletus	2.69	9	0.23	
Dicologlossa cuneata	1.85	46	0.16	
Macrorhamphosus scolopax	1.39	46	0.12	
Total	1194.90		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 186  
 DATE :23/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°41.16  
 start stop duration Lon W 16°97.94  
 TIME :17:42:27 18:11:54 29.5 (min) Purpose : 3  
 LOG : 1744.61 1746.29 1.7 Region : 1100  
 FDEPTH: 30 27 Gear cond.: 0  
 BDEPTH: 30 27 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 3.4 kn  
 Sorted : 0 Total catch: 584.56 Catch/hour: 1190.95

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Diplodus bellottii	877.08	8086	73.65	
Pomadasy incisus	136.91	813	11.50	387
Pagellus bellottii	53.91	642	4.53	385
Raja miraletus	37.08	20	3.11	
Spondyliosoma cantharus	20.96	299	1.76	
Pagrus auriga	11.98	86	1.01	
Zeus faber	11.45	8	0.96	
Dentex canariensis	8.13	43	0.68	
Trachurus trecae	6.42	43	0.54	384
Trigla lyra	5.99	43	0.50	
Octopus vulgaris	4.38	4	0.37	
Trachurus trachurus	4.28	43	0.36	383
Mustelus mustelus	3.63	2	0.30	
Trachinus vipera	2.99	86	0.25	
Sepia officinalis	1.55	4	0.13	
Dentex gibbosus	1.28	2	0.11	
Loligo vulgaris	1.24	4	0.10	386
Campogramma glycos	1.22	2	0.10	
Serranus cabrilla	0.47	2	0.04	
Total	1190.95		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 187  
 DATE :23/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 23°56.08  
 start stop duration Lon W 16°17.94  
 TIME :22:19:23 22:49:17 29.9 (min) Purpose : 3  
 LOG : 1770.40 1771.83 1.4 Region : 1100  
 FDEPTH: 52 50 Gear cond.: 0  
 BDEPTH: 52 50 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 596.39 Catch/hour: 1196.77

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Pagellus acarne	225.15	949	18.81	
Plectorhynchus mediterraneus	205.28	331	17.15	
Trachurus trachurus	160.03	2075	13.37	388
Dentex canariensis	145.69	397	12.17	392
Pagellus bellottii	138.62	1037	11.58	389
Diplodus vulgaris	105.95	640	8.85	
Pomadasy incisus	66.22	375	5.53	390
Umbrina canariensis	51.87	177	4.33	
Boops boops	38.63	751	3.23	391
Loligo vulgaris	14.45	42	1.21	
Conger conger	10.43	4	0.87	
Trigla lyra	8.83	110	0.74	
Zeus faber	8.63	10	0.72	
Pagellus erythrinus	6.18	22	0.52	
Dicologlossa cuneata	5.08	22	0.42	
Sepia officinalis	2.61	2	0.22	
Scyliorhinus canicula	2.01	6	0.17	
Serranus cabrilla	1.10	22	0.09	
Total	1196.77		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 188  
 DATE :24/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°6.55  
 start stop duration Lon W 16°42.25  
 TIME :02:52:58 03:24:22 31.4 (min) Purpose : 3  
 LOG : 1799.30 1800.66 1.4 Region : 1100  
 FDEPTH: 106 102 Gear cond.: 0  
 BDEPTH: 106 102 Validity : 0  
 Towing dir: 0° Wire out : 270 m Speed : 2.6 kn  
 Sorted : 0 Total catch: 34.91 Catch/hour: 66.71

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
MYCTOPHIDAE	23.96	8985	35.92	
Umbrina canariensis	13.38	34	20.05	393
Dentex macrophthalmus	8.22	54	12.32	394
Trachurus trachurus	5.04	61	7.56	395
Pagellus acarne	4.97	23	7.45	396
Plectorhynchus mediterraneus	2.22	4	3.32	
Aspitrigla obscura	1.91	19	2.86	
Scyliorhinus canicula	1.55	4	2.32	
Trachinus vipera	1.53	103	2.29	
Aphanopus sp.	1.15	4	1.72	
Trigloporus lastoviza africanu	0.73	4	1.09	
Ophisurus serpens	0.57	4	0.86	
Sphoeroides pachgaster	0.54	4	0.80	
Pagellus bellottii	0.31	8	0.46	
Boops boops	0.23	4	0.34	
Arnoglossus thori	0.19	50	0.29	
Synagrops microlepis	0.11	11	0.17	
Microchirus ocellatus	0.08	4	0.11	
Microchirus variegatus	0.04	4	0.06	
Total	66.71		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 189  
 DATE :24/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°22.17  
 start stop duration Lon W 16°29.31  
 TIME :10:54:03 11:24:09 30.1 (min) Purpose : 3  
 LOG : 1847.25 1848.63 1.4 Region : 1100  
 FDEPTH: 120 123 Gear cond.: 0  
 BDEPTH: 120 123 Validity : 0  
 Towing dir: 0° Wire out : 336 m Speed : 2.8 kn  
 Sorted : 0 Total catch: 22.64 Catch/hour: 45.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Zeus faber	23.21	30	51.47	398
Sphoeroides pachgaster	9.03	10	20.01	
Seriola dumerili	6.18	2	13.70	
Sepia officinalis	2.79	4	6.19	
Pagellus erythrinus	2.63	4	5.83	399
Umbrina canariensis	0.85	4	1.88	397
MYCTOPHIDAE	0.32	10	0.71	
Illex coindetii	0.06	2	0.13	
Arnoglossus imperialis	0.02	8	0.04	
Trachinus sp.	0.01	2	0.03	
Chlorophthalmus atlanticus	0.01	4	0.01	
Total	45.10		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 190  
 DATE :24/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°19.82  
 start stop duration Lon W 16°21.85  
 TIME :12:56:25 13:26:56 30.5 (min) Purpose : 3  
 LOG : 1858.87 1860.31 1.4 Region : 1100  
 FDEPTH: 73 74 Gear cond.: 0  
 BDEPTH: 73 74 Validity : 0  
 Towing dir: 0° Wire out : 190 m Speed : 2.8 kn  
 Sorted : 0 Total catch: 4.66 Catch/hour: 9.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Octopus vulgaris	3.74	2	40.77	
Zeus faber	2.22	2	24.25	
Loligo vulgaris	0.98	2	10.73	
Trachinus vipera	0.94	0	10.30	
Sepia officinalis	0.67	2	7.30	
Scomber japonicus	0.43	18	4.72	
Sardina pilchardus	0.10	4	1.07	
Ophichthus sp.	0.04	2	0.43	
Sardinella aurita	0.04	2	0.43	
Total	9.16		100.00	



R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 191  
 DATE :24/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°11.86  
 start stop duration Lon W 16°33.42  
 TIME :15:50:28 16:20:29 30.0 (min) Purpose : 3  
 LOG :1880.03 1881.56 1.5 Region : 1100  
 FDEPTH: 38 39 Gear cond.: 0  
 BDEPTH: 38 39 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.0 km  
 Sorted : 0 Total catch: 33.26 Catch/hour: 66.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Scomber japonicus	18.59	600	27.96	400
Sardina pilchardus	12.80	320	19.24	401
Pomadourys incisus	10.80	60	16.24	
Pagellus bellottii	9.92	74	14.91	403
Diplodus vulgaris	4.92	10	7.40	
Trachurus trachurus	2.74	82	4.12	402
Zeus faber	1.64	2	2.47	
Octopus vulgaris	1.06	2	1.59	
Plectorhinchus mediterraneus	1.02	2	1.53	
Spondyliosoma cantharus	0.86	6	1.29	
Loligo vulgaris	0.62	8	0.93	
Trachinus vipera	0.42	10	0.63	
Aspitrigla obscura	0.40	6	0.60	
Pagellus erythrinus	0.36	2	0.54	
Sardinella aurita	0.36	6	0.54	
Total	66.50		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 192  
 DATE :24/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°16.20  
 start stop duration Lon W 15°35.49  
 TIME :20:03:00 20:12:28 9.5 (min) Purpose : 1  
 LOG :1914.99 1915.49 0.5 Region : 1100  
 FDEPTH: 22 22 Gear cond.: 0  
 BDEPTH: 22 22 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.1 km  
 Sorted : 0 Total catch: 172.01 Catch/hour: 1089.82

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Diplodus bellottii	711.19	10517	65.26	
Cymbium cymbium	115.95	101	10.64	
Pomadourys incisus	89.02	919	8.17	404
Cymbium marmoratum	78.88	19	7.24	
Trachurus trachurus	34.53	634	3.17	405
Pagellus bellottii	15.84	63	1.45	
Sardina pilchardus	13.31	158	1.22	406
Octopus vulgaris	12.80	19	1.22	
Spondyliosoma cantharus	4.12	158	0.38	
Synaptura lusitanica	3.61	6	0.33	
Synaptura cadenati	2.85	2	0.26	
Raja undulata	2.34	6	0.22	
Trigla lyra	1.58	158	0.15	
Decapterus rhonchus	1.58	32	0.15	407
Trachinus vipera	1.58	63	0.15	
Scomber japonicus	0.63	32	0.06	
Total	1089.82		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 193  
 DATE :25/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°35.27  
 start stop duration Lon W 16°8.38  
 TIME :00:54:10 01:24:31 30.4 (min) Purpose : 3  
 LOG :1957.86 1959.23 1.4 Region : 1100  
 FDEPTH: 69 68 Gear cond.: 0  
 BDEPTH: 69 68 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 2.7 km  
 Sorted : 0 Total catch: 38.12 Catch/hour: 75.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Aspitrigla obscura	11.55	134	15.32	
Scomber japonicus	11.15	198	14.80	412
Ophichthus sp.	8.46	63	11.23	
Pagellus erythrinus	8.38	490	11.12	408
Umbrina canariensis	8.07	24	10.70	
Dentex macrophthalmus	7.59	55	10.07	409
Trachinus vipera	4.74	71	6.30	
Trachurus trachurus	4.11	95	5.46	411
Decapterus rhonchus	2.21	24	2.94	
Microchirus variegatus	1.74	332	2.31	
Trachinus draco	1.68	2	2.23	
Sepia officinalis	1.44	4	1.92	
Octopus vulgaris	1.38	2	1.84	
Dicologlossa cuneata	0.87	24	1.15	
Raja undulata	0.47	2	0.63	
Diplodus bellottii	0.40	8	0.52	
Pagellus acarne	0.32	174	0.42	410
Serranus cabrilla	0.24	40	0.31	
Gobiidae	0.24	119	0.31	
Citharus linguatula	0.16	16	0.21	
Chelidonichthys cuculus	0.16	24	0.21	
Total	75.36		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 194  
 DATE :25/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°43.26  
 start stop duration Lon W 16°19.14  
 TIME :03:45:49 04:16:21 30.5 (min) Purpose : 3  
 LOG :1976.17 1977.64 1.5 Region : 1100  
 FDEPTH: 190 191 Gear cond.: 0  
 BDEPTH: 190 191 Validity : 0  
 Towing dir: 0° Wire out : 480 m Speed : 2.9 km  
 Sorted : 0 Total catch: 68.65 Catch/hour: 134.92

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
MYCTOPHIDAE	34.20	11762	25.35	
Trachurus trachurus	33.02	371	24.47	413
Ophichthus sp.	23.58	548	17.48	
Dentex maroccanus	14.50	283	10.75	
Macrorhynchus scolopax	7.66	425	5.68	
Chelidonichthys cuculus	4.36	307	3.23	
Trachinus vipera	4.13	283	3.06	
Ophidion barbatum	3.24	159	2.40	
Trichurus lepturus	2.46	6	1.82	
Capros aper	2.06	77	1.53	
Zeus faber	1.38	4	1.02	
Umbrina canariensis	1.24	4	0.92	
Arnoglossus thori	1.12	366	0.83	
Pagellus bellottii	0.77	18	0.57	
Spherooides pachgaster	0.55	4	0.41	
Microchirus variegatus	0.35	71	0.26	
Torpedo torpedo	0.29	2	0.22	
Total	134.92		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 195  
 DATE :25/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°44.80  
 start stop duration Lon W 16°24.40  
 TIME :06:07:59 06:38:06 30.1 (min) Purpose : 3  
 LOG :1987.47 1989.07 1.6 Region : 1100  
 FDEPTH: 375 376 Gear cond.: 0  
 BDEPTH: 375 376 Validity : 0  
 Towing dir: 0° Wire out : 940 m Speed : 3.2 km  
 Sorted : 0 Total catch: 44.60 Catch/hour: 88.82

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Myctophidae sp. large	32.86	7302	36.99	
Penaepsis serrata	16.65	2015	18.74	
Helicolenus dactylopterus	10.26	114	11.55	
Plesionika maritima	5.74	1525	6.46	
Zenopsis conchifer	5.38	4	6.05	
Parapenaeus longirostris	3.65	478	4.11	
Merluccius polli	3.48	8	3.92	415
Hoplostethus mediterraneus	1.71	380	1.93	
Macrorhynchus scolopax	1.65	100	1.86	
Trachurus trachurus	1.63	18	1.84	414
Dentex macrophthalmus	0.98	6	1.10	
Chaunax pictus	0.80	4	0.90	
Lepidopus caudatus	0.72	28	0.81	
Cyttopsis rosea	0.54	30	0.61	
Polymetma corythaeola	0.52	36	0.58	
Scyllorhinus canicula	0.42	6	0.47	
Coelorrhinus coelorrhinus	0.36	12	0.40	
Buglossidium luteum	0.30	6	0.34	
Synodus saurus	0.30	20	0.34	
Setarches guentheri	0.28	16	0.31	
OPHICHTHIDAE	0.24	8	0.27	
Trigla lyra	0.10	2	0.11	
Epigonus telescopus	0.06	4	0.07	
Trachinus vipera	0.06	2	0.07	
Raja straeleni	0.06	2	0.07	
Ophidion barbatum	0.04	2	0.04	
Laemonema laureysi	0.04	4	0.04	
Nealotus tripes	0.02	2	0.02	
Total	88.82		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 196  
 DATE :25/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°3.59  
 start stop duration Lon W 16°11.21  
 TIME :13:50:13 14:21:01 30.8 (min) Purpose : 3  
 LOG :2027.56 2029.07 1.5 Region : 1100  
 FDEPTH: 248 247 Gear cond.: 0  
 BDEPTH: 248 247 Validity : 0  
 Towing dir: 0° Wire out : 630 m Speed : 2.9 km  
 Sorted : 0 Total catch: 186.77 Catch/hour: 363.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dentex macrophthalmus	113.49	859	31.18	418
Trachurus trachurus	102.31	1473	28.11	419
Scomber japonicus	92.76	2251	25.49	420
Merluccius merluccius	16.56	4	4.55	416
Merluccius merluccius	10.91	205	3.00	417
Macrorhynchus scolopax	6.82	41	1.87	
Zenopsis conchifer	6.24	6	1.71	
Zeus faber	4.31	6	1.18	
Spherooides pachgaster	2.30	8	0.63	
Lepidopus caudatus	2.18	27	0.60	
Mullus surmuletus	1.95	4	0.54	421
Citharus linguatula	1.77	23	0.49	
Chelidonichthys cuculus	1.09	27	0.30	
Illex coindetii	0.86	4	0.24	
Capros aper	0.27	27	0.07	
Arnoglossus imperialis	0.14	14	0.04	
Total	363.96		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 197  
 DATE :25/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°1.60  
 start stop duration Lon W 16°9.54  
 TIME :15:25:57 15:56:05 30.1 (min) Purpose : 3  
 LOG :2035.00 2036.73 1.7 Region : 1100  
 FDEPTH: 112 111 Gear cond.: 0  
 BDEPTH: 112 111 Validity : 0  
 Towing dir: 0° Wire out : 310 m Speed : 3.4 km  
 Sorted : 0 Total catch: 12.23 Catch/hour: 24.35

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Spherooides pachgaster	15.75	22	64.68	
Dentex macrophthalmus	2.43	28	9.98	
Zeus faber	1.97	2	8.09	
Spondyliosoma cantharus	1.15	4	4.74	
Serranus cabrilla	1.14	8	4.66	
Trachurus trachurus	0.80	10	3.27	
Aspitrigla obscura	0.50	4	2.04	
Anthias anthias	0.32	68	1.31	
Mullus surmuletus	0.26	2	1.06	
Ophidion barbatum	0.04	4	0.16	
Plastic bags	0.00	2	0.00	
Fishing gears	0.00	2	0.00	
Total	24.35		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 198  
 DATE :25/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°55.88  
 start stop duration Lon W 16°11.14  
 TIME :19:35:07 20:05:47 30.7 (min) Purpose : 3  
 LOG :2053.17 2054.49 1.3 Region : 1100  
 FDEPTH: 73 74 Gear cond.: 0  
 BDEPTH: 73 74 Validity : 0  
 Towing dir: 0° Wire out : 210 m Speed : 2.6 km  
 Sorted : 0 Total catch: 17.40 Catch/hour: 34.04

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	9.59	78	28.16	422
Pagellus erythrinus	9.25	280	28.05	
OPHICHTHIDAE	2.72	29	7.99	
Spondyliosoma cantharus	2.29	8	6.72	
Trachinus vipera	2.15	39	6.32	
Pagellus acarne	1.74	20	5.11	423
Sepia officinalis	1.43	2	4.20	
Trigloporus lastoviza africanu	1.31	18	3.85	
Trachinus radiatus	1.17	4	3.45	
Loligo vulgaris	1.00	4	2.93	
Microchirus boscanion	0.29	57	0.86	
Trigla lyra	0.27	4	0.80	
Synodus synodus	0.22	10	0.63	
Boops boops	0.16	2	0.46	
Scomber japonicus	0.10	2	0.29	
Gobidae sp. 'bars'	0.06	137	0.17	
Total	34.04		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 199  
 DATE :26/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 24°52.36  
 start stop duration Lon W 14°58.34  
 TIME :07:27:56 07:58:22 30.4 (min) Purpose : 3  
 LOG : 2138.34 2139.99 1.7 Region : 1100  
 FDEPTH: 30 31 Gear cond.: 0  
 BDEPTH: 30 31 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.3 kn  
 Sorted : 0 Total catch: 306.73 Catch/hour: 604.79

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Diplodus bellottii	552.09 7646	91.29	
Loligo vulgaris	16.76 55	2.77	
Spondylosoma cantharus	9.11 83	1.51	
Trachurus trachurus	6.90 55	1.14	424
Cymbium cymbium	4.97 2	0.82	
Scomber japonicus	4.69 28	0.78	425
Mullus surmuletus	3.59 28	0.59	
Zeus faber	2.64 2	0.44	
Raja undulata	2.33 2	0.38	
Trachinus vipera	0.83 28	0.14	
Sepia officinalis	0.67 2	0.11	
Pagrus auriga	0.22 2	0.04	
Plastic bags	0.00 2	0.00	
Total	604.79	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 200  
 DATE :26/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°10.29  
 start stop duration Lon W 15°35.60  
 TIME :13:32:00 14:02:26 30.4 (min) Purpose : 3  
 LOG : 2186.39 2188.03 1.6 Region : 1100  
 FDEPTH: 79 76 Gear cond.: 0  
 BDEPTH: 79 76 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 1.73 Catch/hour: 3.41

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Loligo vulgaris	1.28 51	37.57	
Octopus vulgaris	0.97 4	28.32	
Pagellus bellottii	0.59 51	17.34	
Spondylosoma cantharus	0.43 2	12.72	
Trigloporus lastoviza africanu	0.08 2	2.31	
Serranus cabrilla	0.04 2	1.16	
Arnoglossus thori	0.02 2	0.58	
Total	3.41	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 201  
 DATE :26/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°17.00  
 start stop duration Lon W 15°51.06  
 TIME :16:38:31 17:08:50 30.3 (min) Purpose : 3  
 LOG : 2208.40 2210.05 1.7 Region : 1100  
 FDEPTH: 125 124 Gear cond.: 0  
 BDEPTH: 125 124 Validity : 0  
 Towing dir: 0° Wire out : 350 m Speed : 3.3 kn  
 Sorted : 0 Total catch: 107.10 Catch/hour: 212.01

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Dentex maroccanus	153.41 3246	72.36	426
Spherooides pachgaster	14.35 40	6.77	
Scomber japonicus	13.56 396	6.40	429
Dentex macrocephalus	13.16 119	6.21	427
Pagellus acarne	10.49 49	4.95	428
Trachurus trachurus	3.86 49	1.82	
Aspitrigla obscura	3.17 20	1.49	
Total	212.01	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 202  
 DATE :26/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°35.48  
 start stop duration Lon W 15°47.55  
 TIME :22:11:53 22:41:52 30.0 (min) Purpose : 3  
 LOG : 2251.77 2253.37 1.6 Region : 1100  
 FDEPTH: 263 268 Gear cond.: 0  
 BDEPTH: 263 268 Validity : 0  
 Towing dir: 0° Wire out : 650 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 34.58 Catch/hour: 69.21

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Dentex maroccanus	38.33 252	55.38	430
Dentex macrocephalus	10.61 242	15.33	431
Merluccius polli	5.78 16	8.36	432
Zeus faber	4.18 6	6.04	
Ophidiidae 'spot nose'	3.70 102	5.35	
Illex coindetii	1.40 14	2.02	
Trigla lyra	1.24 38	1.79	
Scomber japonicus	0.94 24	1.36	435
Spherooides pachgaster	0.68 4	0.98	
Mullus surmuletus	0.66 2	0.95	
Trachurus trachurus	0.50 6	0.72	434
Pagellus acarne	0.34 2	0.49	433
Dicologlossa cuneata	0.24 2	0.35	
Citharus linguatula	0.22 6	0.32	
MYCTOPHIDAE	0.20 42	0.29	
Macrorhamphosus scolopax	0.10 10	0.14	
Synagrops microlepis	0.08 2	0.12	
Total	69.21	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 203  
 DATE :27/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°31.05  
 start stop duration Lon W 15°40.53  
 TIME :00:32:52 01:03:24 30.5 (min) Purpose : 3  
 LOG : 2265.29 2266.79 1.5 Region : 1100  
 FDEPTH: 156 158 Gear cond.: 0  
 BDEPTH: 156 158 Validity : 0  
 Towing dir: 0° Wire out : 390 m Speed : 3.0 kn  
 Sorted : 22 Total catch: 126.03 Catch/hour: 247.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Dentex maroccanus	96.27 3428	38.88	436
Trachurus trachurus	60.90 1169	24.60	437
Chelidonichthys cuculus	35.76 1591	14.44	
Dentex macrocephalus	12.28 432	4.96	438
Zeus faber	9.27 16	3.75	
Spherooides pachgaster	6.56 4	2.65	
Loligo vulgaris	5.72 14	2.31	
OPHICHTHIDAE	5.30 206	2.14	
Helicolenus dactylopterus	3.44 2	1.39	
Macrorhamphosus scolopax	2.55 118	1.03	
Pagellus acarne	2.36 10	0.95	
Illex coindetii	1.83 8	0.74	
Mullus surmuletus	1.79 8	0.72	
Arnoglossus thori	1.18 196	0.48	
Serranus cabrilla	0.79 10	0.32	
Scomber japonicus	0.79 10	0.32	
Solea vulgaris	0.63 6	0.25	
Ophidion barbatum	0.20 10	0.08	
Total	247.60	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 204  
 DATE :27/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°18.37  
 start stop duration Lon W 15°14.42  
 TIME :04:54:10 05:25:10 31.0 (min) Purpose : 3  
 LOG : 2296.68 2297.99 1.3 Region : 1100  
 FDEPTH: 75 76 Gear cond.: 0  
 BDEPTH: 75 76 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 2.5 kn  
 Sorted : 0 Total catch: 20.73 Catch/hour: 40.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Pagellus erythrinus	15.10 112	37.63	440
Pagellus acarne	13.65 68	34.01	439
Trachurus trachurus	5.55 108	13.84	441
Spondylosoma cantharus	2.13 12	5.31	
Campogramma glycos	1.14 2	2.85	
Macrorhamphosus scolopax	0.66 31	1.64	
Aspitrigla obscura	0.48 8	1.21	
Trigloporus lastoviza africanu	0.46 6	1.16	
OPHICHTHIDAE	0.29 6	0.72	
Microchirus ocellatus	0.15 6	0.39	
Trachinus vipera	0.14 2	0.34	
Microchirus variegatus	0.14 14	0.34	
Chelidonichthys cuculus	0.14 8	0.34	
Trachinus draco	0.04 2	0.10	
Arnoglossus thori	0.02 4	0.05	
Serranus cabrilla	0.02 2	0.05	
GOBIIDAE	0.02 21	0.05	
Total	40.12	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 205  
 DATE :27/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°10.01  
 start stop duration Lon W 14°51.87  
 TIME :08:15:12 08:45:13 30.0 (min) Purpose : 3  
 LOG : 2320.82 2322.08 1.3 Region : 1100  
 FDEPTH: 43 45 Gear cond.: 0  
 BDEPTH: 43 45 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 2.5 kn  
 Sorted : 0 Total catch: 88.18 Catch/hour: 176.23

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Diplodus vulgaris	76.95 328	43.66	
Diplodus bellottii	49.25 678	27.94	
Pagellus erythrinus	20.29 174	11.51	442
Loligo vulgaris	7.16 20	4.06	444
Raja undulata	5.68 2	3.22	
Zeus faber	5.50 2	3.12	
Cymbium cymbium	3.28 2	1.86	
Spondylosoma cantharus	2.54 28	1.44	
Sepia officinalis	2.42 4	1.37	443
Raja straeleni	2.08 2	1.18	
Aspitrigla obscura	0.70 6	0.40	
Trachinus vipera	0.35 6	0.20	
Total	176.17	99.97	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 206  
 DATE :27/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°33.50  
 start stop duration Lon W 15°0.78  
 TIME :14:32:47 15:03:01 30.2 (min) Purpose : 3  
 LOG : 2357.30 2358.59 1.3 Region : 1100  
 FDEPTH: 89 88 Gear cond.: 0  
 BDEPTH: 89 88 Validity : 0  
 Towing dir: 0° Wire out : 215 m Speed : 2.6 kn  
 Sorted : 0 Total catch: 2.27 Catch/hour: 4.51

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Octopus vulgaris	4.05 2	89.87	
Aspitrigla obscura	0.46 8	10.13	
Total	4.51	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 207  
 DATE :27/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°42.99  
 start stop duration duration Lon W 15°12.03  
 TIME :18:35:18 19:05:35 30.3 (min) Purpose : 3  
 LOG : 2377.17 2378.64 1.5 Region : 1100  
 FDEPTH: 166 165 Gear cond.: 0  
 BDEPTH: 166 165 Validity : 0  
 Towing dir: 0° Wire out : 420 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 91.53 Catch/hour: 181.43  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
Dentex maroccanus	75.32	1617	41.52	448
Dentex macrophthalum	37.03	2426	20.41	445
Spherooides pachgaster	17.74	46	9.78	
Lepidotrigla dieuzeidei	16.89	626	9.31	
Zeus faber	11.28	30	6.22	447
OPHICHTHIDAE	5.63	198	3.10	
Trachurus trachurus	5.00	135	2.75	446
Loligo vulgaris	3.23	10	1.78	
Scorpaena scrofa	2.48	2	1.37	
Macrorhamphosus scolopax	2.22	143	1.22	
Serranus cabrilla	1.80	32	0.99	
Aspitrigla obscura	1.43	24	0.79	
Illex coindetii	0.44	4	0.24	
Anthias anthias	0.40	16	0.22	
Arnoglossus imperialis	0.32	40	0.17	
Citharus linguatula	0.16	16	0.09	
Microchirus boscanion	0.08	8	0.04	
Total	181.43		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 208  
 DATE :27/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°49.70  
 start stop duration duration Lon W 15°27.47  
 TIME :21:59:57 22:30:58 31.0 (min) Purpose : 3  
 LOG : 2400.19 2401.79 1.6 Region : 1100  
 FDEPTH: 350 355 Gear cond.: 0  
 BDEPTH: 350 355 Validity : 0  
 Towing dir: 0° Wire out : 875 m Speed : 3.1 kn  
 Sorted : 25 Total catch: 25.00 Catch/hour: 48.35  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
Dentex macrophthalum	21.75	178	44.99	450
Merluccius polli	11.60	33	24.00	449
Capros aper	2.84	48	5.88	
Penaeopsis serrata	1.98	814	4.10	
Synodus saurus	1.62	106	3.36	
Macrorhamphosus scolopax	1.31	70	2.72	
Cyttopsis rosea	1.22	46	2.52	
Trachurus trachurus	1.14	31	2.36	451
Cyttopsis rosea	1.06	2	2.20	0
Parapenaeus longirostris	1.02	294	2.12	
Aspitrigla obscura	0.85	12	1.76	
Illex coindetii	0.44	4	0.92	
MYCTOPHIDAE	0.41	97	0.84	
Helicolenus dactylopterus	0.37	25	0.76	
Synagrops microlepis	0.23	4	0.48	
OPHICHTHIDAE	0.14	8	0.28	
Lepidopus caudatus	0.14	2	0.28	
Scomber japonicus	0.10	2	0.20	
Physiculus cf cyanostrophus	0.10	2	0.20	
Synchiropus phaeton	0.02	4	0.04	
Total	48.35		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 209  
 DATE :28/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 26°3.14  
 start stop duration duration Lon W 15°11.10  
 TIME :06:54:11 07:25:10 31.0 (min) Purpose : 3  
 LOG : 2448.98 2450.56 1.6 Region : 1100  
 FDEPTH: 350 335 Gear cond.: 0  
 BDEPTH: 350 335 Validity : 0  
 Towing dir: 0° Wire out : 875 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 47.40 Catch/hour: 91.81  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
Dentex macrophthalum	51.90	337	56.54	453
Zenopsis conchifer	14.14	10	15.40	452
Merluccius polli	9.20	54	10.02	455
Lepidopus caudatus	4.57	35	4.98	
OPHICHTHIDAE	2.98	62	3.25	
Spherooides pachgaster	2.71	2	2.95	
Synodus saurus	1.90	287	2.07	
Cyttopsis rosea	1.12	19	1.22	
MYCTOPHIDAE	1.05	124	1.14	
Penaeopsis serrata	0.95	445	1.03	
Illex coindetii	0.77	4	0.84	
Scomber japonicus	0.19	4	0.21	
Parapenaeus longirostris	0.16	74	0.18	
Malacocephalus occidentalis	0.15	4	0.17	
Total	91.81		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 210  
 DATE :28/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°59.18  
 start stop duration duration Lon W 15°2.16  
 TIME :09:53:18 10:22:54 29.6 (min) Purpose : 3  
 LOG : 2464.93 2466.39 1.5 Region : 1100  
 FDEPTH: 172 171 Gear cond.: 0  
 BDEPTH: 172 171 Validity : 0  
 Towing dir: 0° Wire out : 440 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 23.34 Catch/hour: 47.33  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
Trachurus trachurus	12.17	211	25.71	456
Zeus faber	10.75	10	22.71	457
Scomber japonicus	9.29	245	19.62	459
Spherooides pachgaster	8.31	16	17.57	
Dentex macrophthalum	3.04	67	6.43	458
Raja miraletus	2.11	4	4.46	
Aspitrigla obscura	1.28	8	2.70	
Illex coindetii	0.30	8	0.64	
OPHICHTHIDAE	0.08	4	0.17	
Total	47.33		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 211  
 DATE :28/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 25°52.99  
 start stop duration duration Lon W 14°37.17  
 TIME :14:15:21 14:41:11 25.8 (min) Purpose : 3  
 LOG : 2498.93 2500.28 1.4 Region : 1100  
 FDEPTH: 43 39 Gear cond.: 0  
 BDEPTH: 43 39 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 1189.21 Catch/hour: 2762.38  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
Pomadasys incisus	1609.76	12265	58.27	
Trachurus trachurus	519.34	4409	18.80	460
Diplodus bellottii	335.37	5431	12.14	
Pagellus erythrinus	105.40	1343	3.82	461
Pagellus acarne	97.10	448	3.51	
Dentex gibbosus	37.69	128	1.36	
Raja undulata	24.69	7	0.89	
Diplodus vulgaris	21.08	128	0.76	
Zeus faber	8.11	5	0.29	
Camogramma glaycos	2.28	2	0.08	
Diplodus cervinus cervinus	1.58	2	0.06	
Total	2762.38		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 212  
 DATE :28/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 26°12.03  
 start stop duration duration Lon W 14°43.54  
 TIME :18:32:08 19:02:06 30.0 (min) Purpose : 3  
 LOG : 2532.82 2534.40 1.6 Region : 1100  
 FDEPTH: 118 118 Gear cond.: 0  
 BDEPTH: 118 118 Validity : 0  
 Towing dir: 0° Wire out : 320 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 57.48 Catch/hour: 115.11  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
Trachurus trachurus	63.68	733	55.32	463
Pagellus acarne	26.84	116	23.31	462
Pagellus bellottii	10.65	56	9.26	
Spherooides pachgaster	9.17	20	7.97	
Scomber japonicus	1.28	28	1.11	464
Dentex maroccanus	0.96	12	0.84	
Trachinus vipera	0.84	64	0.73	
OPHICHTHIDAE	0.64	20	0.56	
Trigla lyra	0.52	4	0.45	
Microchirus boscanion	0.44	72	0.38	
Arnoglossus imperialis	0.08	4	0.07	
Total	115.11		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 213  
 DATE :28/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 26°9.53  
 start stop duration duration Lon W 14°54.07  
 TIME :21:02:09 21:34:13 32.0 (min) Purpose : 3  
 LOG : 2547.37 2548.94 1.6 Region : 1100  
 FDEPTH: 363 372 Gear cond.: 0  
 BDEPTH: 363 372 Validity : 0  
 Towing dir: 0° Wire out : 875 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 34.89 Catch/hour: 65.34  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
OPHICHTHIDAE	16.20	367	24.79	
Centroprorus uyato	9.64	6	14.76	
Zenopsis conchifer	7.87	4	12.04	467
Merluccius polli	7.38	13	11.29	465
Chlorophthalmus atlanticus	6.35	474	9.72	
Mullus surmuletus	4.06	13	6.22	
Dentex macrophthalum	3.11	26	4.76	466
Galus polli	2.72	7	4.16	
Scyliorhinus canicula	2.08	6	3.18	
Setarches guentheri	2.06	9	3.15	
Polymetme corythaeola	1.29	77	1.98	
Torpedo marmorata	0.86	2	1.32	
MYCTOPHIDAE	0.62	112	0.95	
Cyttopsis rosea	0.32	13	0.49	
Malacocephalus laevis	0.28	4	0.43	
Capros aper	0.19	4	0.29	
Aspitrigla obscura	0.15	2	0.23	
Maurolicus muelleri	0.11	67	0.17	
Arnoglossus thori	0.06	9	0.09	
Total	65.34		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 214  
 DATE :29/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 26°27.06  
 start stop duration duration Lon W 14°27.49  
 TIME :05:12:26 05:42:19 29.9 (min) Purpose : 3  
 LOG : 2591.73 2593.07 1.4 Region : 1100  
 FDEPTH: 113 116 Gear cond.: 0  
 BDEPTH: 113 116 Validity : 0  
 Towing dir: 0° Wire out : 300 m Speed : 2.7 kn  
 Sorted : 0 Total catch: 36.50 Catch/hour: 73.29  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
Dentex maroccanus	15.50	201	21.15	
Trachurus trachurus	12.33	161	16.82	470
Dentex macrophthalum	8.55	120	11.67	468
OPHICHTHIDAE	6.06	149	8.27	
Scomber japonicus	5.70	96	7.78	469
Spherooides pachgaster	5.72	12	7.12	
Aspitrigla obscura	3.98	44	5.42	
MYCTOPHIDAE	3.45	731	4.71	
Microchirus variegatus	2.17	313	2.96	
Trachinus vipera	1.89	96	2.58	
Sepia officinalis	1.77	4	2.41	
Loligo vulgaris	1.73	4	2.36	
Illex coindetii	1.73	8	2.36	
Ophidion barbatum	0.96	44	1.32	
Pagellus acarne	0.88	4	1.21	
Synodus saurus	0.84	68	1.15	
Dicologlossa hexophthalma	0.28	4	0.38	
Zeus faber	0.24	4	0.33	
Total	73.29		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 215  
 DATE :29/11/2011 GEAR TYPE: BT NO: 6 POSITION:Lat N 26°26.37  
 start stop duration duration Lon W 14°25.50  
 TIME :08:14:25 08:45:18 30.9 (min) Purpose : 3  
 LOG : 2602.25 2603.82 1.6 Region : 1100  
 FDEPTH: 67 58 Gear cond.: 8  
 BDEPTH: 67 58 Validity : 9  
 Towing dir: 0° Wire out : 140 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00  
 SPECIES CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers		
N O C A T C H	0.00	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 216  
 DATE :02/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 26°39.52  
 start stop duration Lon W 14°33.70  
 TIME :09:56:34 10:10:01 13.5 (min) Purpose : 3  
 LOG : 2907.28 2907.89 0.6 Region : 1100  
 FDEPTH: 73 72 Gear cond.: 8  
 BDEPTH: 73 72 Validity : 3  
 Towing dir: 0° Wire out : 190 m Speed : 2.7 kn  
 Sorted : 0 Total catch: 166.26 Catch/hour: 741.68

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Pagellus acarne	257.93	1468	34.78	475	
Trachurus trachurus	149.26	1218	20.13	474	
Diplodus vulgaris	145.20	1124	19.58		
Dentex macrophthalmus	53.40	312	7.20	472	
Pagellus erythrinus	52.46	219	7.07	473	
Diplodus cervinus cervinus	17.62	13	2.38	471	
Plectorhynchus mediterraneus	12.62	13	1.70		
Loligo vulgaris	11.24	62	1.52		
Mullus surmuletus	9.37	31	1.26		
Scorpaena scrofa	6.78	4	0.91		
Dasyatis pastinaca	6.25	4	0.84		
Campogramma glaycos	5.80	4	0.78		
Spondyliosoma cantharus	5.62	31	0.76		
Scomber japonicus	2.50	62	0.34		
Sardina pilchardus	2.50	31	0.34		
Dentex maroccanus	2.19	31	0.29		
Anthias anthias	0.94	31	0.13		
Total	741.68		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 217  
 DATE :02/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 26°41.39  
 start stop duration Lon W 14°48.83  
 TIME :12:18:24 12:51:29 33.1 (min) Purpose : 3  
 LOG : 2920.06 2921.57 1.1 Region : 1100  
 FDEPTH: 109 110 Gear cond.: 0  
 BDEPTH: 109 110 Validity : 7  
 Towing dir: 0° Wire out : 280 m Speed : 2.7 kn  
 Sorted : 0 Total catch: 19.90 Catch/hour: 36.10

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Scomber japonicus	14.33	432	39.69	476	
Dentex maroccanus	5.55	149	15.37	478	
Dentex macrophthalmus	4.35	36	12.06	477	
Sphaeroides pachygaster	2.36	5	6.53		
Scomber japonicus	2.14	5	5.93	480	
Aspitrigla obscura	1.72	15	4.77		
Microchirus boscanion	1.05	183	2.91		
Spondyliosoma cantharus	0.98	5	2.71		
J E L Y F I S H	0.91	42	2.51		
Pagellus acarne	0.78	5	2.16	479	
Loligo vulgaris	0.73	2	2.01		
Sepia orbignyana	0.40	2	1.12		
Trachurus trachurus	0.29	4	0.80	482	
Pagellus erythrinus	0.24	2	0.65		
Pagellus bellottii	0.20	2	0.55		
Sardina pilchardus	0.05	2	0.15	481	
Arnoglossus imperialis	0.02	2	0.05		
Total	36.10		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 218  
 DATE :02/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 26°42.45  
 start stop duration Lon W 14°10.24  
 TIME :14:11:09 14:39:24 28.3 (min) Purpose : 3  
 LOG : 2928.34 2929.65 1.3 Region : 1100  
 FDEPTH: 318 317 Gear cond.: 0  
 BDEPTH: 318 317 Validity : 8  
 Towing dir: 0° Wire out : 780 m Speed : 2.8 kn  
 Sorted : 0 Total catch: 59.72 Catch/hour: 126.84

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Dentex macrophthalmus	43.33	208	34.16	483	
Merluccius merluccius	23.79	272	18.75	486	
Parapneustes longirostris	14.59	1982	11.50		
Zenopsis conchifer	13.70	6	10.80	484	
Lophius budegassa	10.30	2	8.12	487	
MYCTOPHIDAE	8.35	3024	6.58		
Plesionika heterocarpus	3.65	1563	2.88		
Lepidopus caudatus	2.12	13	1.67		
Trachurus trachurus	1.78	13	1.41		
Penaeopsis serrata	1.57	886	1.24		
Chaunax pictus	1.27	2	1.00		
Merluccius senegalensis	0.74	4	0.59	485	
Conger conger	0.64	2	0.50		
Chlorophthalmus atlanticus	0.53	104	0.42		
Illex coindetii	0.34	8	0.27		
Scyllorhinus canicula	0.08	4	0.07		
Helicolenus dactylopterus	0.02	6	0.02		
Synagrops microlepis	0.02	2	0.02		
Total	126.84		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 219  
 DATE :02/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 26°50.02  
 start stop duration Lon W 13°47.58  
 TIME :20:37:41 21:06:59 29.3 (min) Purpose : 3  
 LOG : 2979.71 2981.16 1.5 Region : 1100  
 FDEPTH: 83 80 Gear cond.: 0  
 BDEPTH: 83 80 Validity : 0  
 Towing dir: 0° Wire out : 220 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 146.60 Catch/hour: 300.10

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Dentex maroccanus	117.30	2579	39.09	490	
Pagellus acarne	68.17	540	22.71		
Dentex macrophthalmus	49.87	504	16.62	489	
Sardina pilchardus	21.25	197	7.08	488	
Campogramma glaycos	11.42	12	3.81		
Pagellus erythrinus	11.30	98	3.77	491	
Loligo vulgaris	5.61	20	1.87		
Ubrina canariensis	4.91	25	1.64		
Dentex canariensis	3.44	12	1.15		
Dentex gibbosus	2.70	12	0.90		
Aspitrigla obscura	1.72	25	0.57		
Trachurus trachurus	1.72	12	0.57		
Conger conger	0.70	2	0.23		
Total	300.10		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 220  
 DATE :03/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 26°58.96  
 start stop duration Lon W 13°30.86  
 TIME :07:37:05 08:06:52 29.8 (min) Purpose : 3  
 LOG : 3039.23 3040.79 1.6 Region : 1100  
 FDEPTH: 34 30 Gear cond.: 0  
 BDEPTH: 34 30 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 493.31 Catch/hour: 993.91

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Diplodus bellottii	598.39	14077	60.21		
Pomadasy incisus	138.54	1596	13.94	499	
Engraulis encrasicolus	51.50	9693	5.18	501	
Ubrina canariensis	48.96	218	4.93	498	
Diplodus vulgaris	31.55	109	3.17	495	
Sardina pilchardus	29.01	2031	2.92	492	
Trachurus trachurus	14.51	2067	1.46	493	
Merluccius merluccius	13.06	435	1.31	494	
Pomatomus saltatrix	10.48	42	1.05	497	
Campogramma glaycos	7.66	46	0.77		
Dicologlossa cuneata	7.25	145	0.73		
Loligo vulgaris	6.23	30	0.63		
Dentex gibbosus	5.80	36	0.58	496	
Sepia officinalis	4.41	10	0.44		
Spondyliosoma cantharus	4.35	36	0.44		
Maja squinado	3.71	2	0.37		
Cymbium macroratum	3.67	4	0.37		
Gobiidae sp. 'bars'	3.63	1269	0.36		
Serranus cabrilla	2.90	36	0.29		
Raja miraletus	2.74	4	0.28		
Trichiurus lepturus	2.50	8	0.25	500	
Arnoglossus imperialis	1.09	36	0.11		
Conger conger	0.85	6	0.09		
Arnoglossus thori	0.73	36	0.07		
Scomber japonicus	0.42	6	0.04	502	
Total	993.91		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 221  
 DATE :03/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 27°4.85  
 start stop duration Lon W 13°33.33  
 TIME :09:29:51 09:59:53 30.0 (min) Purpose : 3  
 LOG : 3049.37 3050.97 1.6 Region : 1100  
 FDEPTH: 70 70 Gear cond.: 0  
 BDEPTH: 70 70 Validity : 0  
 Towing dir: 0° Wire out : 220 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 28.73 Catch/hour: 57.41

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Trachurus trachurus	18.28	2681	31.85	505	
Pagellus acarne	15.58	86	27.15	504	
J E L Y F I S H	5.51	348	9.61		
Pagellus erythrinus	3.60	48	6.26		
Pagellus bellottii	2.88	28	5.01	509	
Octopus vulgaris	1.80	2	3.13		
Campogramma glaycos	1.68	2	2.92		
GOBIIDAE	1.52	304	2.65		
Merluccius merluccius	1.28	32	2.23	503	
Spondyliosoma cantharus	0.80	12	1.39		
Pomadasy incisus	0.72	24	1.25	508	
Sardina pilchardus	0.68	12	1.18	507	
Loligo vulgaris	0.68	4	1.18		
Dentex maroccanus	0.52	20	0.90	506	
Aspitrigla obscura	0.44	6	0.77		
Cepola sp.	0.36	40	0.63		
Mullus surmuletus	0.24	6	0.42		
Scomber japonicus	0.24	8	0.42		
Sepia officinalis	0.22	2	0.38		
Arnoglossus imperialis	0.12	16	0.21		
Conger conger	0.10	4	0.17		
Microchirus boscanion	0.08	8	0.14		
Citharus linguatula	0.08	64	0.14		
Sepia orbignyana	0.00	2	0.01		
Plastic bags	0.00	2	0.00		
Total	57.41		100.00		

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 222  
 DATE :03/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 27°7.27  
 start stop duration Lon W 13°40.37  
 TIME :13:06:58 13:38:03 31.1 (min) Purpose : 3  
 LOG : 3065.10 3066.55 1.5 Region : 1100  
 FDEPTH: 106 104 Gear cond.: 0  
 BDEPTH: 106 104 Validity : 0  
 Towing dir: 0° Wire out : 280 m Speed : 2.8 kn  
 Sorted : 21 Total catch: 20.73 Catch/hour: 40.01

SPECIES	weight	numbers	CATCH/HOUR	% OF TOT. C	SAMP
Sepia officinalis	7.86	4	19.64		
Octopus vulgaris	7.07	4	17.66		
J E L Y F I S H	6.70	301	16.74		
Dentex maroccanus	5.71	127	14.28	515	
Merluccius senegalensis	2.66	4	6.66	514	
Zeus faber	2.59	6	6.47	516	
Loligo vulgaris	1.47	4	3.67		
Sepia orbignyana	0.77	6	1.93		
Citharus linguatula	0.77	35	1.93		
Merluccius merluccius	0.73	2	1.83	513	
Conger conger	0.73	2	1.83		
Pagellus acarne	0.64	4	1.59	512	
Torpedo marorata	0.46	2	1.16		
Dentex macrophthalmus	0.44	10	1.11	517	
Aspitrigla obscura	0.44	4	1.11		
Arnoglossus imperialis	0.21	27	0.53		
Scomber japonicus	0.19	6	0.48	510	
Microchirus boscanion	0.17	35	0.43		
Trachurus trachurus	0.15	2	0.39	511	
Serranus cabrilla	0.15	2	0.39		
Capros aper	0.06	6	0.14		
Sepia elegans	0.01	2	0.02		
Carapus sp.	0.01	2	0.01		
Plastic bags	0.00	2	0.00		
Total	40.01		100.00		



R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 231  
 DATE :05/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°31.74  
 start stop duration Lon W 12°47.57  
 TIME :19:59:52 20:29:53 30.0 (min) Purpose : 3  
 LOG : 3358.24 3359.76 1.5 Region : 1100  
 FDEPTH: 124 133 Gear cond.: 0  
 BDEPTH: 124 133 Validity : 0  
 Towing dir: 0° Wire out : 330 m Speed : 3.0 km  
 Sorted : 0 Total catch: 69.80 Catch/hour: 139.45

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dentex macropthalmus	31.27	210	22.42	560
Trachurus trachurus	16.78	309	12.04	562
Dentex maroccanus	16.23	2753	11.64	559
Macrorhamphosus gracilis	13.53	2084	9.70	
Zeus faber	11.19	14	8.02	564
Spherooides pachgaster	10.49	16	7.52	
Pagellus acarne	8.79	35	6.30	561
Conger conger	6.19	240	4.44	
Aspitrigla obscura	5.99	260	4.30	
Scorpaena scrofa	4.62	4	3.31	
Scomber japonicus	4.60	206	3.30	563
Trachurus picturatus	2.35	40	1.68	558
Ophidion barbatum	2.05	130	1.47	
Illex coindetii	1.65	10	1.18	
Arnoglossus imperialis	1.30	156	0.93	
Pagellus erythrinus	0.85	6	0.61	
Centracanthus cirrus	0.75	30	0.54	
Raja miraletus	0.58	2	0.42	
Microchirus boscanion	0.20	16	0.14	
CALLIONYMIDAE	0.05	10	0.04	
Total	139.45		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 232  
 DATE :05/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°13.77  
 start stop duration Lon W 12°32.45  
 TIME :23:33:01 00:05:41 32.7 (min) Purpose : 3  
 LOG : 3385.39 3387.01 1.6 Region : 1100  
 FDEPTH: 56 58 Gear cond.: 0  
 BDEPTH: 56 58 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.0 km  
 Sorted : 0 Total catch: 158.69 Catch/hour: 291.61

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	101.44	9273	34.79	566
Engraulis encrasicolus	56.78	5678	19.47	565
Pagellus erythrinus	24.92	176	8.55	567
Diplodus bellottii	23.93	187	8.20	
Dentex maroccanus	14.66	121	5.03	568
Trachinus vipera	14.00	640	4.80	
Umbriina canariensis	9.70	44	3.33	
Pomadasy incisus	8.05	66	2.76	
Pagellus acarne	6.62	44	2.27	569
Sepia officinalis	6.62	4	2.27	
Dasyatis pastinaca	5.24	2	1.80	
Zeus faber	3.22	2	1.10	
J E L Y F I S H	2.21	132	0.76	
Octopus vulgaris	2.02	2	0.69	
Dicologlossa cuneata	1.98	22	0.68	
Arnoglossus imperialis	1.65	187	0.57	
Aspitrigla obscura	1.54	33	0.53	
Scomber japonicus	1.32	33	0.45	570
Mullus surmuletus	1.32	33	0.45	
Argyrosomus regius	1.10	2	0.38	
Serranus cabrilla	1.10	44	0.38	
Illex coindetii	0.74	4	0.25	
Sardina pilchardus	0.44	11	0.15	
Boops boops	0.44	29	0.15	
Synchropus phaeton	0.33	33	0.11	
Erotula barbata	0.22	11	0.08	
Pontinus kuhlii	0.01	11	0.00	
Total	291.61		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 233  
 DATE :06/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°7.57  
 start stop duration Lon W 12°25.67  
 TIME :01:55:40 02:26:56 31.3 (min) Purpose : 3  
 LOG : 3400.30 3401.86 1.6 Region : 1100  
 FDEPTH: 45 47 Gear cond.: 0  
 BDEPTH: 45 47 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.0 km  
 Sorted : 0 Total catch: 105.63 Catch/hour: 202.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Engraulis encrasicolus	72.91	9625	35.97	571
Trachurus trachurus	71.38	18581	35.22	573
Pagellus acarne	17.50	61	8.63	574
Umbriina canariensis	10.36	100	5.11	
Pomadasy incisus	7.60	138	3.75	
Trachinus vipera	4.22	322	2.08	
Diplodus bellottii	3.53	92	1.74	
Dicologlossa cuneata	3.53	115	1.74	
Aspitrigla obscura	3.45	31	1.70	
Octopus vulgaris	2.23	2	1.10	
Squilla mantis	2.23	77	1.10	
Sardina pilchardus	1.30	107	0.64	572
Grammolites gruvelli	0.61	8	0.30	
Lesueurigobius sanzoi	0.46	69	0.23	
Merluccius merluccius	0.44	2	0.22	
Dentex maroccanus	0.31	8	0.15	
Erotula barbata	0.31	15	0.15	
Synchropus phaeton	0.31	23	0.15	
Total	202.68		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 234  
 DATE :06/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°17.95  
 start stop duration Lon W 12°4.81  
 TIME :08:13:29 08:43:15 29.8 (min) Purpose : 3  
 LOG : 3443.13 3444.72 1.6 Region : 1100  
 FDEPTH: 50 48 Gear cond.: 0  
 BDEPTH: 50 48 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 3.2 km  
 Sorted : 0 Total catch: 222.77 Catch/hour: 449.13

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	260.08	27532	57.91	575
J E L Y F I S H	150.00	0	33.40	
Loligo vulgaris	8.06	171	1.80	
Pagellus acarne	7.74	24	1.72	
Trachinus draco	6.90	363	1.54	
Sepia officinalis	5.10	4	1.14	577
Merluccius senegalensis	2.60	10	0.58	576
Torpedo marmorata	2.24	2	0.50	
Sardina pilchardus	1.69	85	0.38	578
Pomadasy incisus	1.57	12	0.35	
Balistes caprisicus	1.11	2	0.25	
Pagellus erythrinus	0.85	12	0.19	
Trigla sp.	0.36	2	0.08	
Scomber japonicus	0.24	12	0.05	
Arnoglossus thori	0.24	24	0.05	
Aspitrigla obscura	0.18	2	0.04	
Mullus surmuletus	0.16	4	0.04	
Total	449.13		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 235  
 DATE :06/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°28.65  
 start stop duration Lon W 12°12.12  
 TIME :11:09:55 11:33:46 23.9 (min) Purpose : 3  
 LOG : 3462.83 3464.12 1.3 Region : 1100  
 FDEPTH: 90 90 Gear cond.: 0  
 BDEPTH: 90 90 Validity : 0  
 Towing dir: 0° Wire out : 250 m Speed : 3.2 km  
 Sorted : 0 Total catch: 295.60 Catch/hour: 743.65

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus trachurus	374.97	14086	50.42	580
Scomber japonicus	260.13	3764	34.98	581
Sardina pilchardus	53.69	996	7.22	579
Lepidotrigla dieuzeidei	15.50	803	2.08	
J E L Y F I S H	14.11	609	1.90	
Spherooides pachgaster	7.35	5	0.99	
Merluccius merluccius	6.92	83	0.93	
Uranoscopus scaber	3.60	28	0.48	
Zeus faber	2.77	28	0.37	
Pagellus acarne	1.71	8	0.23	582
Raja miraletus	1.21	3	0.16	
Sepia officinalis	0.93	3	0.13	
Loligo vulgaris	0.78	3	0.10	
Total	743.65		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 236  
 DATE :06/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°43.30  
 start stop duration Lon W 12°30.36  
 TIME :16:07:26 16:37:55 30.5 (min) Purpose : 3  
 LOG : 3491.41 3492.92 1.5 Region : 1100  
 FDEPTH: 132 133 Gear cond.: 0  
 BDEPTH: 132 133 Validity : 0  
 Towing dir: 0° Wire out : 320 m Speed : 3.0 km  
 Sorted : 0 Total catch: 1210.76 Catch/hour: 2383.38

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Scomber japonicus	2279.04	100256	95.62	583
Engraulis encrasicolus	46.56	2923	1.95	584
Macrorhamphosus scolopax	40.06	3789	1.68	
Spherooides pachgaster	11.10	10	0.47	
Dentex maroccanus	2.71	325	0.11	585
Zeus faber	2.17	2	0.09	
Loligo vulgaris	1.95	8	0.08	
Total	2383.57		100.01	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 237  
 DATE :06/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°49.59  
 start stop duration Lon W 12°31.44  
 TIME :18:42:36 19:16:05 33.5 (min) Purpose : 3  
 LOG : 3503.34 3505.11 1.8 Region : 1100  
 FDEPTH: 327 348 Gear cond.: 0  
 BDEPTH: 327 348 Validity : 0  
 Towing dir: 0° Wire out : 870 m Speed : 3.2 km  
 Sorted : 0 Total catch: 17.12 Catch/hour: 30.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius merluccius	14.01	73	45.68	586
Illex coindetii	3.37	20	10.98	
Conger conger	3.01	66	9.81	
Dentex macropthalmus	1.72	11	5.61	588
Lepidopus caudatus	1.68	25	5.49	
Scomber japonicus	1.13	45	3.68	587
Malacocephalus laevis	1.04	14	3.39	
MICTOPHIDAE	0.90	199	2.92	
J E L Y F I S H	0.90	39	2.92	
Chlorophthalmus agassizi	0.75	68	2.45	
Macrorhamphosus gracilis	0.47	66	1.52	
Argentina sphyraena	0.38	47	1.23	
Lophius budegassa	0.27	2	0.88	
Peristedion cataphractum	0.23	2	0.76	
Capros aper	0.23	32	0.76	
Callionymus lyra	0.18	9	0.58	
Scorpaena scrofa	0.16	2	0.53	
Gadiculus argenteus	0.13	11	0.41	
Arnoglossus imperialis	0.05	5	0.18	
Scyliorhinus canicula	0.04	2	0.12	
Sardina pilchardus	0.04	4	0.12	
Total	30.68		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 238  
DATE :07/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°56.32  
start stop duration Purpose : 3  
TIME :01:50:05 02:19:56 29.9 (min) Region : 1100  
LOG : 3540.35 3541.83 1.5 Gear cond.: 0  
FDEPTH: 215 217 Validity : 0  
BDEPTH: 215 217 Speed : 3.0 km  
Towing dir: 0° Wire out : 540 m Catch/hour: 146.79  
Sorted : 0 Total catch: 73.03

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Trachurus trachurus	27.14	241	18.49	589
WASTE00	21.95	2171	14.95	
Lepidotrigla dieuzeidei	17.97	1375	12.24	
Macrorhamphosus scolopax	15.56	1773	10.60	
Dentex macropthalmus	14.47	103	9.86	591
OPHICHTHIDAE	12.90	537	8.79	
Trachinus vipera	8.20	302	5.59	
MYCTOPHIDAE	7.90	2563	5.38	
Sphoeroides pachgaster	5.61	6	3.82	
Merluccius merluccius	5.41	42	3.68	590
Illex coindetii	4.88	20	3.33	
Scomber japonicus	1.69	6	1.15	592
Capros aper	1.15	265	0.78	
Raja miraletus	0.56	4	0.38	
Sepia orbignyana	0.52	14	0.36	
Peristedion cataphractum	0.30	6	0.21	
Ophidion barbatum	0.24	12	0.16	
Octopus vulgaris	0.16	2	0.11	
Zeus faber	0.06	6	0.04	
Microchirus boscanion	0.06	6	0.04	
Synchiropus phaeton	0.06	6	0.04	
<b>Total</b>	<b>146.79</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 239  
DATE :07/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°55.97  
start stop duration Purpose : 3  
TIME :03:34:50 04:05:40 30.8 (min) Region : 1100  
LOG : 3549.22 3549.72 1.5 Gear cond.: 0  
FDEPTH: 150 149 Validity : 0  
BDEPTH: 150 149 Speed : 2.9 km  
Towing dir: 0° Wire out : 375 m Catch/hour: 74.65  
Sorted : 0 Total catch: 38.36

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Trachinus vipera	16.15	2927	21.64	
MYCTOPHIDAE	14.62	2970	19.58	
Sphoeroides pachgaster	10.02	14	13.43	
Pagellus acarne	5.25	21	7.04	595
OPHICHTHIDAE	4.67	158	6.26	
Lepidotrigla dieuzeidei	4.48	397	6.00	
Macrorhamphosus scolopax	4.32	475	5.79	
Dentex gibbosus	3.85	2	3.16	
Arnoglossus imperialis	2.32	232	3.10	
WASTE00	1.97	228	2.63	
Trachurus trachurus	1.75	16	2.35	594
Citharus linguatula	1.44	187	1.93	
Conger conger	0.74	2	0.99	
Merluccius merluccius	0.68	2	0.91	
Centracanthus cirrus	0.53	10	0.70	
Scomber japonicus	0.53	8	0.70	593
Ophidion barbatum	0.29	16	0.39	
Dentex macropthalmus	0.29	2	0.39	
Capros aper	0.27	43	0.36	
Microchirus boscanion	0.25	53	0.34	
Anthias anthias	0.10	4	0.13	
Dentex macropthalmus	0.08	2	0.10	0
Synchiropus phaeton	0.06	2	0.08	
<b>Total</b>	<b>74.65</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 240  
DATE :07/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°36.86  
start stop duration Purpose : 3  
TIME :07:26:37 07:55:38 29.0 (min) Region : 1100  
LOG : 3576.41 3577.74 1.3 Gear cond.: 0  
FDEPTH: 73 73 Validity : 0  
BDEPTH: 73 73 Speed : 2.8 km  
Towing dir: 0° Wire out : 200 m Catch/hour: 66.86  
Sorted : 0 Total catch: 32.34

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Scomber japonicus	18.92	593	28.29	
Loligo vulgaris	13.52	101	20.22	596
J E L Y F I S H	7.69	347	11.50	
Pagellus acarne	5.79	25	8.66	598
Sepia officinalis	5.15	6	7.70	599
Trachinus draco	2.58	289	3.87	
Trachinus vipera	2.36	254	3.53	
Arnoglossus thori	1.94	269	2.91	
Ophidion barbatum	1.84	64	2.75	
MYCTOPHIDAE	1.51	331	2.26	
Argentina sphyraena	1.43	145	2.13	
Trachurus trachurus	1.34	234	2.01	597
Pagellus bellottii	0.91	2	1.36	
Allosteuich subulata	0.50	74	0.74	
Microchirus boscanion	0.41	66	0.62	
Sepia orbignyana	0.21	2	0.31	
Citharus linguatula	0.17	17	0.25	
Lepidotrigla dieuzeidei	0.17	17	0.25	
Sardina pilchardus	0.12	4	0.19	
Mullus surmuletus	0.10	2	0.15	
Microchirus ocellatus	0.10	2	0.15	
Arnoglossus imperialis	0.10	8	0.15	
<b>Total</b>	<b>66.86</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 241  
DATE :07/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°31.90  
start stop duration Purpose : 3  
TIME :14:27:40 14:57:51 30.2 (min) Region : 1100  
LOG : 3634.67 3636.21 1.6 Gear cond.: 0  
FDEPTH: 39 37 Validity : 0  
BDEPTH: 39 37 Speed : 3.1 km  
Towing dir: 0° Wire out : 130 m Catch/hour: 413.02  
Sorted : 0 Total catch: 207.82

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Sardina pilchardus	177.08	12771	42.87	600
Trachurus trachurus	85.86	22346	20.79	601
Scomber japonicus	60.81	1133	14.72	602
Engraulis encrasicolus	50.68	6916	12.27	603
J E L Y F I S H	26.83	4	6.50	
Diplodus bellottii	8.55	20	2.07	604
Pagellus acarne	1.79	119	0.43	
Merluccius merluccius	0.72	48	0.17	
Microchirus boscanion	0.36	36	0.09	
Trachinus vipera	0.36	12	0.09	
<b>Total</b>	<b>413.02</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 242  
DATE :08/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°47.67  
start stop duration Purpose : 3  
TIME :08:24:49 08:55:17 30.5 (min) Region : 1100  
LOG : 3749.71 3751.18 1.5 Gear cond.: 0  
FDEPTH: 60 67 Validity : 0  
BDEPTH: 60 67 Speed : 2.9 km  
Towing dir: 0° Wire out : 180 m Catch/hour: 317.38  
Sorted : 0 Total catch: 161.23

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Scomber japonicus	154.13	3165	48.56	612
Trachurus trachurus	46.18	827	14.55	606
Pagellus acarne	33.90	83	10.68	609
Engraulis encrasicolus	32.01	2161	10.08	614
Sardina pilchardus	23.15	1276	7.29	608
Umbrina canariensis	10.75	154	3.39	607
Pagellus bellottii	6.02	12	1.90	611
Octopus vulgaris	3.74	10	1.18	
Diplodus vulgaris	2.97	14	0.94	605
Pomadasys inciscus	1.89	24	0.60	
Merluccius senegalensis	1.44	10	0.45	613
Merluccius merluccius	0.93	20	0.29	610
Aspitrigla obscura	0.18	2	0.06	
Mullus surmuletus	0.10	4	0.03	
<b>Total</b>	<b>317.38</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 243  
DATE :08/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°48.94  
start stop duration Purpose : 3  
TIME :11:14:36 11:29:44 15.1 (min) Region : 1100  
LOG : 3760.34 3761.27 0.9 Gear cond.: 0  
FDEPTH: 40 38 Validity : 0  
BDEPTH: 40 38 Speed : 3.7 km  
Towing dir: 0° Wire out : 120 m Catch/hour: 857.77  
Sorted : 0 Total catch: 857.77

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Engraulis encrasicolus	2768.41	338086	81.39	615
Sardina pilchardus	498.00	30623	14.64	617
Pomadasys inciscus	71.14	928	2.09	
Scomber japonicus	20.62	206	0.61	618
Diplodus bellottii	16.50	309	0.48	
J E L Y F I S H	10.31	4	0.30	
Diplodus vulgaris	6.23	28	0.18	616
Sepia officinalis	1.98	8	0.06	
Chelidonichthys lucerna	1.78	8	0.05	
Penaeus kerathurus	1.39	32	0.04	
Argyrosomus regius	1.27	12	0.04	
Solea vulgaris	0.91	20	0.03	
Torpedo marmorata	0.56	4	0.02	
Mullus surmuletus	0.56	16	0.02	
Halobatrachus didactylus	0.56	4	0.02	
Squilla mantis	0.52	16	0.02	
Merluccius merluccius	0.40	8	0.01	619
Callinectes lyra	0.36	4	0.01	
Loligo vulgaris	0.12	4	0.00	
<b>Total</b>	<b>3401.60</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 244  
DATE :08/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 28°59.15  
start stop duration Purpose : 3  
TIME :14:18:26 14:34:08 15.7 (min) Region : 1100  
LOG : 3783.48 3784.29 0.8 Gear cond.: 0  
FDEPTH: 49 49 Validity : 0  
BDEPTH: 49 49 Speed : 3.1 km  
Towing dir: 0° Wire out : 130 m Catch/hour: 1662.35  
Sorted : 0 Total catch: 1662.35

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Engraulis encrasicolus	5006.12	637423	78.75	620
Sardina pilchardus	1178.20	54287	18.53	621
J E L Y F I S H	47.80	4	0.75	
Pomadasys inciscus	27.84	199	0.44	
Diplodus bellottii	24.86	497	0.39	
Scomber japonicus	17.90	199	0.28	622
Merluccius merluccius	16.90	1094	0.27	623
Trachurus trachurus	13.92	1293	0.22	625
Umbrina canariensis	12.93	199	0.20	
Zeus faber	4.97	99	0.08	624
Solea vulgaris	2.98	99	0.05	
Lesueurigobius sanzoi	1.99	298	0.03	
Penaeopsis serrata	0.42	11	0.01	
Cepola macrophthalma	0.15	4	0.00	
<b>Total</b>	<b>6356.98</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 245  
DATE :08/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 29°7.88  
start stop duration Purpose : 3  
TIME :16:35:18 17:05:34 30.3 (min) Region : 1100  
LOG : 3799.36 3800.97 1.6 Gear cond.: 0  
FDEPTH: 84 87 Validity : 0  
BDEPTH: 84 87 Speed : 3.2 km  
Towing dir: 0° Wire out : 230 m Catch/hour: 38.71  
Sorted : 0 Total catch: 38.71

SPECIES	weight	CATCH/HOUR	% OF TOT. C	SAMP
Scomber japonicus	27.75	438	36.17	626
Engraulis encrasicolus	22.70	1512	29.58	632
Sardina pilchardus	8.36	252	10.90	628
Dentex macropthalmus	3.98	28	5.19	630
Merluccius merluccius	3.92	73	5.11	631
Pagellus acarne	3.53	16	4.60	627
Trachurus trachurus	2.76	44	3.59	629
Chelidonichthys lucerna	1.03	10	1.34	
Zeus faber	0.65	2	0.85	
Citharus linguatula	0.57	44	0.75	
Diplodus vulgaris	0.48	2	0.62	
Mullus surmuletus	0.38	8	0.49	
Boops boops	0.32	2	0.41	
Conger conger	0.16	2	0.21	
Dentex maroccanus	0.14	4	0.18	
Plastic bags	0.00	4	0.00	
<b>Total</b>	<b>76.73</b>		<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 246  
 DATE :09/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 29°23.66  
 start stop duration Lon W 10°32.86  
 TIME :22:28:18 22:58:20 30.0 (min) Purpose : 3  
 LOG : 3847.45 3849.03 1.6 Region : 1100  
 FDEPTH: 93 95 Gear cond.: 0  
 BDEPTH: 93 95 Validity : 0  
 Towing dir: 0° Wire out : 260 m Speed : 3.2 km  
 Sorted : 0 Total catch: 32.90 Catch/hour: 65.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Scomber japonicus	38.57	1113	633
Merluccius merluccius	5.60	24	8.51
Sardina pilchardus	4.22	128	6.41
Pagellus acarne	3.48	10	5.29
Citharus linguatula	3.18	280	4.83
Trigla sp.	2.68	28	4.07
Dentex macrophthalmus	2.54	18	3.86
Scorpaena notata	1.94	26	2.95
Diplodus vulgaris	0.86	2	1.31
Dicologlossa hexopthalma	0.66	10	1.00
Trisopterus luscus	0.58	4	0.88
Sepia elegans	0.54	10	0.82
Umbrina canariensis	0.44	2	0.67
Eledone sp.	0.20	2	0.30
Conger conger	0.14	6	0.21
Callionymus lyra	0.14	4	0.21
Total	65.76		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 247  
 DATE :09/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 29°36.47  
 start stop duration Lon W 10°13.51  
 TIME :05:23:05 05:38:43 15.6 (min) Purpose : 3  
 LOG : 3896.46 3897.22 0.8 Region : 1100  
 FDEPTH: 74 73 Gear cond.: 0  
 BDEPTH: 74 73 Validity : 0  
 Towing dir: 0° Wire out : 190 m Speed : 2.9 km  
 Sorted : 0 Total catch: 609.21 Catch/hour: 2338.62

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Scomber japonicus	2273.32	80292	637
Sardina pilchardus	49.98	967	2.14
Trachinus vipera	8.06	161	0.34
Solea vulgaris	6.45	161	0.28
Arnoglossus imperialis	0.81	81	0.03
Total	2338.62		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 248  
 DATE :09/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 29°42.76  
 start stop duration Lon W 10°22.24  
 TIME :08:44:17 09:14:33 30.3 (min) Purpose : 3  
 LOG : 3913.10 3914.63 1.5 Region : 1100  
 FDEPTH: 169 182 Gear cond.: 0  
 BDEPTH: 169 182 Validity : 0  
 Towing dir: 0° Wire out : 415 m Speed : 3.0 km  
 Sorted : 0 Total catch: 96.57 Catch/hour: 191.35

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trachurus	55.09	836	28.79
Spherooides pachgaster	49.54	75	25.89
Scomber japonicus	40.22	701	21.02
Lophius budegassa	21.50	2	11.24
Merluccius merluccius	6.82	36	3.56
Mullus surmuletus	4.72	38	2.46
Macrorhamphosus gracilis	4.48	59	2.34
Illex coindetii	3.82	63	2.00
Zeus faber	3.45	20	1.80
Dentex macrophthalmus	1.09	18	0.57
Citharus linguatula	0.52	32	0.27
Microchirus variegatus	0.08	4	0.04
Arnoglossus thori	0.04	4	0.02
Total	191.35		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 249  
 DATE :09/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 29°56.26  
 start stop duration Lon W 10°0.53  
 TIME :18:00:03 18:30:01 30.0 (min) Purpose : 3  
 LOG : 3960.77 3962.39 1.6 Region : 1100  
 FDEPTH: 128 128 Gear cond.: 0  
 BDEPTH: 128 128 Validity : 0  
 Towing dir: 0° Wire out : 340 m Speed : 3.2 km  
 Sorted : 0 Total catch: 72.42 Catch/hour: 145.02

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Scomber japonicus	98.87	1722	68.18
Spherooides pachgaster	12.32	22	8.49
Merluccius merluccius	11.96	70	8.24
Octopus vulgaris	4.31	10	2.97
Citharus linguatula	3.81	310	2.62
Zeus faber	2.18	24	1.51
Trachurus trachurus	1.75	30	1.21
Loligo vulgaris	1.50	4	1.04
Lepidotrigla sp.	1.26	8	0.87
Aspitrigla obscura	0.82	6	0.57
Dentex maroccanus	0.76	18	0.52
Spherooides pachgaster	0.75	10	0.52
Ophidion barbatum	0.74	40	0.51
Raja miraletus	0.66	4	0.46
Torpedo marmorata	0.60	2	0.41
Eledone sp.	0.50	4	0.35
Illex coindetii	0.48	6	0.33
Merluccius senegalensis	0.36	2	0.25
Mullus surmuletus	0.36	4	0.25
Conger conger	0.34	4	0.23
Lepidotrigla dieuzeidei	0.28	12	0.19
Callionymus lyra	0.20	40	0.14
Arnoglossus thori	0.15	10	0.10
Scorpaena notata	0.06	2	0.04
Plastic bags	0.00	2	0.00
Total	145.02		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 250  
 DATE :09/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 30°9.94  
 start stop duration Lon W 9°47.49  
 TIME :23:19:10 23:49:28 30.3 (min) Purpose : 3  
 LOG : 4002.82 4004.43 1.6 Region : 1100  
 FDEPTH: 96 99 Gear cond.: 0  
 BDEPTH: 96 99 Validity : 0  
 Towing dir: 0° Wire out : 250 m Speed : 3.2 km  
 Sorted : 0 Total catch: 153.19 Catch/hour: 303.35

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Engraulis encrasicolus	205.54	13426	67.76
Citharus linguatula	30.18	1188	9.95
Merluccius merluccius	15.74	164	5.19
Scomber japonicus	15.09	356	4.97
Lesueurigobius sanzoi	8.32	2079	2.74
Parapenaeus longirostris	6.22	0	2.05
Eledone sp.	6.04	38	1.99
Chelidonichthys lucerna	2.50	20	0.82
Conger conger	2.38	22	0.78
Trachurus trachurus	2.12	4	0.70
Zenopsis conchifer	1.62	2	0.54
Squilla mantis	1.52	50	0.50
Zeus faber	1.27	4	0.42
Trachurus trachurus	1.07	107	0.35
Ophidion barbatum	1.07	59	0.35
Sardina pilchardus	0.95	36	0.31
Loligo vulgaris	0.67	4	0.22
Octopus vulgaris	0.44	2	0.14
Torpedo marmorata	0.44	2	0.14
Sepia elegans	0.18	12	0.06
Total	303.35		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 251  
 DATE :10/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 30°9.02  
 start stop duration Lon W 9°55.83  
 TIME :01:18:37 01:49:23 30.8 (min) Purpose : 3  
 LOG : 4013.75 4015.23 1.5 Region : 1100  
 FDEPTH: 140 143 Gear cond.: 0  
 BDEPTH: 140 143 Validity : 0  
 Towing dir: 0° Wire out : 360 m Speed : 2.9 km  
 Sorted : 0 Total catch: 18.73 Catch/hour: 36.51

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Merluccius merluccius	7.80	363	21.36
Merluccius merluccius	6.53	27	17.89
J E L Y F I S H	5.28	550	14.47
Citharus linguatula	4.72	376	12.92
Illex coindetii	2.77	51	7.58
Eledone sp.	1.89	66	5.18
Ophidion barbatum	1.36	58	3.74
Trachinus vipera	1.11	193	3.04
Eledone sp.	0.97	8	2.67
Torpedo marmorata	0.97	2	2.67
Zeus faber	0.64	6	1.76
Symphurus nigrescens	0.58	53	1.60
Scomber japonicus	0.47	4	1.28
Octopus vulgaris	0.29	4	0.80
Raja miraletus	0.29	2	0.80
Mullus surmuletus	0.21	2	0.59
Conger conger	0.19	12	0.53
Dentex maroccanus	0.14	4	0.37
Callionymus lyra	0.12	35	0.32
Microchirus boscanion	0.06	8	0.16
Lepidopus caudatus	0.06	2	0.16
Arnoglossus imperialis	0.04	2	0.11
Total	36.51		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 252  
 DATE :10/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 30°33.71  
 start stop duration Lon W 9°58.03  
 TIME :09:51:07 10:21:25 30.3 (min) Purpose : 3  
 LOG : 4061.05 4062.65 1.6 Region : 1100  
 FDEPTH: 103 107 Gear cond.: 0  
 BDEPTH: 103 107 Validity : 0  
 Towing dir: 0° Wire out : 260 m Speed : 3.2 km  
 Sorted : 0 Total catch: 61.15 Catch/hour: 121.08

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Merluccius merluccius	29.25	1238	24.16
GOBIDAE	25.64	17327	21.18
Engraulis encrasicolus	22.97	2030	19.97
Trachurus trachurus	22.03	79	18.19
Citharus linguatula	4.90	271	4.05
Zeus faber	4.26	5	3.52
Lepidotrigla dieuzeidei	3.12	20	2.58
Raja miraletus	2.43	4	2.00
Scomber japonicus	2.23	25	1.84
Trachinus radiatus	1.49	4	1.23
Ophidion barbatum	0.99	44	0.82
Octopus vulgaris	0.99	10	0.82
Sardina pilchardus	0.25	4	0.20
Conger conger	0.25	14	0.20
Arnoglossus imperialis	0.15	4	0.12
Microchirus boscanion	0.15	20	0.12
Plastic bags	0.00	8	0.00
Total	121.08		100.00

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 253  
 DATE :10/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 30°33.06  
 start stop duration Lon W 9°49.41  
 TIME :13:04:33 13:23:56 19.4 (min) Purpose : 3  
 LOG : 4075.21 4076.20 1.0 Region : 1100  
 FDEPTH: 66 64 Gear cond.: 0  
 BDEPTH: 66 64 Validity : 0  
 Towing dir: 0° Wire out : 160 m Speed : 3.1 km  
 Sorted : 0 Total catch: 371.25 Catch/hour: 1149.38

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trachurus	458.82	24811	39.92
Engraulis encrasicolus	380.80	42427	33.13
Sardina pilchardus	186.87	4607	16.26
Merluccius merluccius	100.31	3789	8.73
Lesueurigobius sanzoi	10.40	2489	0.91
Trachurus trachurus	3.03	6	0.26
Conger conger	1.52	12	0.13
Octopus vulgaris	1.52	6	0.13
Arnoglossus imperialis	1.49	37	0.13
Scomber japonicus	1.36	9	0.12
Trisopterus luscus	1.02	15	0.09
Loligo vulgaris	0.87	3	0.08
Eledone sp.	0.56	6	0.05
Chelidonichthys lucerna	0.53	3	0.05
Pagellus acarne	0.28	6	0.02
Plastic bags	0.00	6	0.00
Total	1149.38		100.00



R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 254  
 DATE :10/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 30°57.45  
 start stop duration Lon W 9°54.64  
 TIME :19:42:24 20:12:18 29.9 (min) Purpose : 3  
 LOG : 4115.06 4116.52 1.5 Region : 1100  
 FDEPTH: 72 74 Gear cond.: 0  
 BDEPTH: 72 74 Validity : 3  
 Towing dir: 0° Wire out : 190 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 797.87 Catch/hour: 1601.08

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
J E L L Y F I S H	1380.60	134448	86.23
Trachurus trachurus	190.13	31585	11.88
Merluccius merluccius	13.44	241	0.84
Sardina pilchardus	5.62	70	0.35
Trigla lyra	4.92	20	0.31
Citharus linguatula	3.01	60	0.19
Raja miraletus	2.13	2	0.13
Conger conger	0.58	2	0.04
Ophidion barbatum	0.50	10	0.03
Scorpaena notata	0.14	2	0.01
<b>Total</b>	<b>1601.08</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 255  
 DATE :11/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 31°16.22  
 start stop duration Lon W 10°17.57  
 TIME :02:22:17 02:53:33 31.3 (min) Purpose : 3  
 LOG : 4162.91 4164.34 1.4 Region : 1100  
 FDEPTH: 349 351 Gear cond.: 0  
 BDEPTH: 349 351 Validity : 0  
 Towing dir: 0° Wire out : 875 m Speed : 2.7 kn  
 Sorted : 0 Total catch: 23.83 Catch/hour: 45.72

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Illex coindetii	10.05	90	21.99
Lepidopus caudatus	9.02	119	19.72
Conger conger	7.00	132	15.32
Lophius budegassa	5.85	2	12.80
Epigonus telescopus	5.56	324	12.17
Scyliorhinus canicula	1.92	15	4.20
Trachurus trachurus	1.57	4	3.44
Merluccius merluccius	1.48	46	3.23
Coelorrhinus coelorrhinus	0.77	15	1.68
Antigonia sp. 'yellow dorsal/a	0.63	29	1.38
Palinurus mauritanicus	0.61	2	1.34
Malacocephalus laevis	0.38	10	0.84
Helicolenus dactylopterus	0.33	36	0.71
Galeus polli	0.29	6	0.63
MYCTOPHIDAE	0.13	23	0.29
Hoplostethus cadenati	0.06	19	0.13
Synchiropus phaeton	0.06	6	0.13
<b>Total</b>	<b>45.72</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 256  
 DATE :11/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 31°14.55  
 start stop duration Lon W 10°10.12  
 TIME :04:53:53 05:23:32 29.7 (min) Purpose : 3  
 LOG : 4175.60 4177.06 1.5 Region : 1100  
 FDEPTH: 153 155 Gear cond.: 0  
 BDEPTH: 153 155 Validity : 0  
 Towing dir: 0° Wire out : 375 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 32.52 Catch/hour: 65.81

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Lepidopus caudatus	36.22	259	55.04
Citharus linguatula	3.60	215	5.47
Capros aper	3.24	138	4.92
Trachurus trachurus	3.24	10	4.92
Lepidotrigla dieuzeidei	3.24	320	4.92
Illex coindetii	2.51	24	3.81
Raja miraletus	2.49	8	3.78
Merluccius merluccius	2.27	45	3.44
Argentina sphyraena	2.23	186	3.38
Ophidion barbatum	2.02	53	3.08
Scyliorhinus canicula	1.36	2	2.06
Aspitrigla obscura	1.21	12	1.85
Scomber japonicus	1.01	8	1.54
Mullus surmuletus	0.73	4	1.11
Serranus cabrilla	0.40	8	0.62
Callionymus sp.	0.04	4	0.06
<b>Total</b>	<b>65.81</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 257  
 DATE :11/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 31°18.60  
 start stop duration Lon W 9°51.88  
 TIME :08:04:02 08:40:16 36.2 (min) Purpose : 3  
 LOG : 4197.25 4198.98 1.7 Region : 1100  
 FDEPTH: 59 64 Gear cond.: 0  
 BDEPTH: 59 64 Validity : 0  
 Towing dir: 0° Wire out : 180 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 216.64 Catch/hour: 358.68

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
J E L L Y F I S H	245.03	61748	68.32
Merluccius merluccius	76.82	3247	21.42
Trachurus trachurus	17.86	2950	4.98
Diplodus sargus *	5.79	8	1.62
Conger conger	5.05	48	1.41
Raja miraletus	2.00	3	0.56
Scomber japonicus	1.66	12	0.46
Loligo vulgaris	1.27	5	0.36
Gobiidae	1.14	248	0.32
Cepola pauciradiatus	0.88	18	0.24
Aspitrigla obscura	0.66	2	0.18
Sardina pilchardus	0.22	7	0.06
Ophidion barbatum	0.18	5	0.05
Citharus linguatula	0.08	7	0.02
Zeus faber	0.02	2	0.00
Plastic bags	0.00	2	0.00
Fishing gears	0.00	2	0.00
<b>Total</b>	<b>358.68</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 258  
 DATE :11/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 31°38.17  
 start stop duration Lon W 9°45.54  
 TIME :12:40:09 13:03:19 23.2 (min) Purpose : 3  
 LOG : 4226.93 4228.00 1.1 Region : 1100  
 FDEPTH: 33 36 Gear cond.: 0  
 BDEPTH: 33 36 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 2.8 kn  
 Sorted : 0 Total catch: 57.10 Catch/hour: 147.86

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trachurus	31.49	1287	21.30
Engraulis encrasicolus	21.75	2240	14.71
Trachurus trachurus	18.23	36	12.33
Merluccius merluccius	18.23	829	12.33
Cymbium marmoratum	17.43	44	11.79
Sardina pilchardus	14.68	422	9.93
Raja microcellata	5.33	8	3.61
Scomber japonicus	4.14	75	2.80
Gobiidae	3.73	5687	2.52
Campogramma glaycos	2.93	21	1.98
Trisopterus luscus	2.85	228	1.93
J E L L Y F I S H	1.97	984	1.33
Torpedo marmorata	1.55	5	1.05
Solea vulgaris	1.04	18	0.70
Conger conger	0.88	10	0.60
Octopus vulgaris	0.39	3	0.26
Chelidonicichthys lucerna	0.36	5	0.25
Callionymus lyra	0.31	5	0.21
Diplodus bellottii	0.21	10	0.14
Mullus surmuletus	0.16	5	0.11
Macrorhamphosus scolopax	0.16	5	0.11
Syngnatus sp	0.05	295	0.04
<b>Total</b>	<b>147.86</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 259  
 DATE :11/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 31°36.62  
 start stop duration Lon W 9°53.63  
 TIME :14:36:43 15:06:43 30.0 (min) Purpose : 3  
 LOG : 4238.06 4239.48 1.4 Region : 1100  
 FDEPTH: 77 74 Gear cond.: 0  
 BDEPTH: 77 74 Validity : 0  
 Towing dir: 0° Wire out : 190 m Speed : 2.8 kn  
 Sorted : 0 Total catch: 37.73 Catch/hour: 75.46

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Merluccius merluccius	22.80	1224	30.21
Trachurus trachurus	16.00	42	21.20
Citharus linguatula	12.44	168	16.49
Squilla mantis	9.12	272	12.09
Gobiidae	8.24	1572	10.92
Octopus vulgaris	3.30	6	4.37
Conger conger	2.60	44	3.45
Trisopterus luscus	0.64	12	0.85
Solea vulgaris	0.32	4	0.42
Plastic bags	0.00	12	0.00
<b>Total</b>	<b>75.46</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 260  
 DATE :11/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 31°41.71  
 start stop duration Lon W 10°9.42  
 TIME :19:31:00 20:01:20 30.3 (min) Purpose : 3  
 LOG : 4262.16 4263.67 1.5 Region : 1100  
 FDEPTH: 360 350 Gear cond.: 0  
 BDEPTH: 360 350 Validity : 0  
 Towing dir: 0° Wire out : 900 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 19.02 Catch/hour: 37.62

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Lepidopus caudatus	18.00	277	47.85
Trachurus picturatus	3.94	12	10.46
Ophidion barbatum	3.60	107	9.57
Scomber japonicus	3.17	49	8.41
Illex coindetii	1.84	12	4.89
Galeus melastomus	1.17	10	3.10
Trachurus trachurus	1.07	2	2.84
Xenodermichthys copei	0.99	152	2.63
Gadella imberbis	0.89	119	2.37
Conger conger	0.77	2	2.05
Citharus linguatula	0.38	34	1.00
Scorpaena scrofa	0.34	2	0.89
Octopus vulgaris	0.32	2	0.84
MYCTOPHIDAE	0.28	445	0.74
Scyliorhinus stellaris	0.26	6	0.68
Polymetme corythaeola	0.26	44	0.68
Ophisurus serpens	0.10	2	0.26
Gobiidae	0.10	65	0.26
Hoplostethus mediterraneus	0.08	45	0.21
Cyttopsis rosea	0.04	2	0.11
Notacanthus chemnitzii	0.03	2	0.09
MACROURIDAE, juvenile	0.02	10	0.05
<b>Total</b>	<b>37.62</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 261  
 DATE :12/12/2011 GEAR TYPE: BT NO: 21 POSITION: Lat N 31°54.32  
 start stop duration Lon W 9°42.38  
 TIME :05:10:16 05:40:20 30.1 (min) Purpose : 3  
 LOG : 4316.76 4318.25 1.5 Region : 1100  
 FDEPTH: 45 44 Gear cond.: 0  
 BDEPTH: 45 44 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 84.40 Catch/hour: 168.41

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Pagellus acarne	131.59	641	78.14
Raja asterias	14.87	26	8.83
Scomber japonicus	5.45	62	3.23
Trachurus draco	4.99	116	2.96
Trachurus trachurus	3.93	88	2.33
Mullus surmuletus	2.65	64	1.58
Boops boops	1.62	28	0.96
Trisopterus luscus	0.76	20	0.45
Pegusa lascaris	0.48	2	0.28
Conger conger	0.42	4	0.25
Arnoglossus thori	0.38	16	0.23
Synodus saurus	0.36	2	0.21
Aspitrigla obscura	0.32	20	0.19
Engraulis encrasicolus	0.26	16	0.15
Sardina pilchardus	0.10	4	0.06
Callionymus sp.	0.10	2	0.06
Pagellus erythrinus	0.08	2	0.05
Pagrus pagrus	0.06	2	0.04
<b>Total</b>	<b>168.41</b>		<b>100.00</b>

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 262  
 DATE :12/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 32°10.84  
 start stop duration Lon W 9°20.18  
 TIME :09:46:37 10:16:31 29.9 (min) Purpose : 3  
 LOG : 4351.98 4353.59 1.6 Region : 1100  
 FDEPTH: 35 35 Gear cond.: 0  
 BDEPTH: 35 35 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.2 km  
 Sorted : 0 Total catch: 44.36 Catch/hour: 89.05

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Engraulis encrasicolus	50.99 4079	57.26	703
Sardina pilchardus	7.75 281	8.70	700
GOBIIDAE	4.74 2899	5.32	
Mugil cephalus	4.46 12	5.00	702
Ophidion barbatum	3.37 161	3.79	
Campogramma glaycos	3.37 32	3.79	701
Conger conger	2.69 12	3.02	
Pagellus acarne	2.25 12	2.52	
Scomber japonicus	2.13 28	2.39	698
Trachurus trachurus	2.01 434	2.25	704
Merluccius merluccius	1.93 112	2.16	699
Dicologlossa cuneata	1.28 52	1.44	
Pomatomus saltatrix	1.16 4	1.31	705
Lepidotrigla dieuzeidei	0.32 8	0.36	
Ophidion barbatum	0.24 12	0.27	0
Dicologlossa hexophthalma	0.24 24	0.27	
Arnoglossus thori	0.08 4	0.09	
Nemichthys scolopaceus	0.04 4	0.05	
Total	89.05	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 263  
 DATE :12/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 32°15.03  
 start stop duration Lon W 9°39.42  
 TIME :13:02:41 13:33:02 30.4 (min) Purpose : 3  
 LOG : 4374.93 4376.50 1.6 Region : 1100  
 FDEPTH: 81 77 Gear cond.: 0  
 BDEPTH: 81 77 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.1 km  
 Sorted : 0 Total catch: 562.25 Catch/hour: 1111.17

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Scomber japonicus	1085.28 22660	97.67	706
Sardina pilchardus	14.94 415	1.34	709
Pagellus acarne	7.41 67	0.67	707
Merluccius merluccius	1.60 20	0.14	708
Trachurus trachurus	1.28 6	0.12	711
Mullus surmuletus	0.65 12	0.06	710
Plastic bags	0.00 2	0.00	
Total	1111.17	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 264  
 DATE :12/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 32°13.77  
 start stop duration Lon W 9°47.02  
 TIME :15:02:41 15:27:17 24.6 (min) Purpose : 3  
 LOG : 4386.27 4387.54 1.3 Region : 1100  
 FDEPTH: 133 133 Gear cond.: 0  
 BDEPTH: 133 133 Validity : 0  
 Towing dir: 0° Wire out : 350 m Speed : 3.1 km  
 Sorted : 0 Total catch: 202.84 Catch/hour: 494.73

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trachurus	379.76 3951	76.76	713
Scomber japonicus	53.34 812	10.78	714
Merluccius merluccius	39.51 3556	7.99	715
Macrorhamphosus scolopax	9.44 615	1.91	
Pagellus acarne	4.88 32	0.99	712
Spherooides pachgaster	3.27 10	0.66	
Lepidopus caudatus	1.54 22	0.31	
Lepidotrigla dieuzeidei	1.32 44	0.27	
Mullus surmuletus	0.90 5	0.18	716
Trisopterus luscus	0.34 2	0.07	
Argentina sphyraena	0.22 110	0.04	
Capros aper	0.22 44	0.04	
Total	494.73	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 265  
 DATE :13/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 32°29.20  
 start stop duration Lon W 9°17.34  
 TIME :03:34:17 03:45:46 11.5 (min) Purpose : 3  
 LOG : 4447.23 4447.71 0.5 Region : 1100  
 FDEPTH: 44 42 Gear cond.: 0  
 BDEPTH: 44 42 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 2.5 km  
 Sorted : 0 Total catch: 16.35 Catch/hour: 85.45

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trachurus trachurus	21.17 230	24.77	717
Engraulis encrasicolus	15.78 1233	18.47	718
Pagellus acarne	13.80 52	16.15	720
GOBIIDAE	10.92 12779	12.78	
Merluccius merluccius	5.96 340	6.97	719
Scomber japonicus	4.02 57	4.71	721
Lepidotrigla dieuzeidei	2.93 42	3.43	
Conger conger	2.72 94	3.18	
Macrorhamphosus scolopax	2.67 188	3.12	
Diplodus vulgaris	1.99 5	2.32	
Trisopterus luscus	1.67 57	1.96	
Solea vulgaris	1.05 31	1.22	
Diplodus bellottii	0.31 5	0.37	
Citharus linguatula	0.21 21	0.24	
Dicologlossa hexophthalma	0.10 10	0.12	
Sardina pilchardus	0.10 5	0.12	
Microchirus boscanion	0.05 10	0.06	
Plastic bags	0.00 10	0.00	
Total	85.45	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 266  
 DATE :13/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 32°46.77  
 start stop duration Lon W 9°7.18  
 TIME :07:22:20 07:43:12 20.9 (min) Purpose : 3  
 LOG : 4476.05 4477.13 1.1 Region : 1100  
 FDEPTH: 81 78 Gear cond.: 0  
 BDEPTH: 81 78 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.1 km  
 Sorted : 0 Total catch: 58.36 Catch/hour: 167.78

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Trisopterus luscus	56.00 552	33.38	
Merluccius merluccius	32.14 477	19.16	722
Pagellus acarne	16.27 52	9.70	724
Trachinus draco	14.66 161	8.74	
Dicologlossa hexophthalma	9.60 126	5.72	
Trachurus trachurus	8.91 57	5.31	723
Citharus linguatula	7.76 264	4.63	
Conger conger	5.52 75	3.29	
Torpedo marmorata	5.06 6	3.02	
Mullus surmuletus	3.62 17	2.16	
Solea senegalensis	2.13 6	1.27	
Scorpaena scrofa	1.49 34	0.89	
Callionymus sp.	0.92 17	0.55	
Scorpaena notata	0.75 6	0.45	
Dicologlossa cuneata	0.75 11	0.45	
GOBIIDAE	0.75 862	0.45	
Arnoglossus imperialis	0.52 23	0.31	
Serranus cabrilla	0.46 11	0.27	
Raja asterias	0.23 6	0.14	
Sardina pilchardus	0.17 6	0.10	725
Cepola macrophthalma	0.06 11	0.03	
Plastic bags	0.00 9	0.00	
Total	167.78	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 267  
 DATE :13/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°8.56  
 start stop duration Lon W 9°14.11  
 TIME :13:32:48 14:03:24 30.6 (min) Purpose : 3  
 LOG : 4527.00 4528.52 1.5 Region : 1100  
 FDEPTH: 165 164 Gear cond.: 0  
 BDEPTH: 165 164 Validity : 0  
 Towing dir: 0° Wire out : 410 m Speed : 3.0 km  
 Sorted : 0 Total catch: 146.64 Catch/hour: 287.53

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Peristedion cataphractum	74.12 329	25.78	
Trachurus picturatus	71.29 682	24.80	731
Macrorhamphosus scolopax	38.24 4400	13.30	
Scomber japonicus	28.24 624	9.82	730
Trachurus trachurus	17.88 129	6.22	733
Spherooides pachgaster	12.94 18	4.50	
Pagellus acarne	8.82 41	3.07	726
Mullus surmuletus	7.06 49	2.45	728
Capros aper	6.82 247	2.37	
Zeus faber	4.76 8	1.66	729
Raja straeleni	4.51 8	1.57	
Centrocanthus cirrus	3.73 80	1.30	727
Merluccius merluccius	2.94 69	1.02	732
Argentina sphyraena	1.18 224	0.41	
Solea vulgaris	1.18 12	0.41	
Raja miraletus	1.12 2	0.39	
Citharus linguatula	0.94 35	0.33	
Trachinus vipera	0.82 12	0.29	
Dentex maroccanus	0.47 12	0.16	
Macrorhamphosus gracilis	0.47 71	0.16	
Total	287.53	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 268  
 DATE :13/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°0.73  
 start stop duration Lon W 8°54.58  
 TIME :17:03:01 17:33:03 30.0 (min) Purpose : 3  
 LOG : 4552.01 4553.56 1.6 Region : 1100  
 FDEPTH: 97 97 Gear cond.: 0  
 BDEPTH: 97 97 Validity : 0  
 Towing dir: 0° Wire out : 270 m Speed : 3.1 km  
 Sorted : 0 Total catch: 79.70 Catch/hour: 159.19

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Merluccius merluccius	36.05 619	22.65	735
Citharus linguatula	21.57 807	13.55	
Pagellus acarne	20.27 58	12.74	734
Scomber japonicus	19.73 439	12.40	737
Peristedion cataphractum	12.30 48	7.73	
Conger conger	8.79 136	5.52	
Engraulis encrasicolus	8.15 463	5.12	738
Lepidotrigla dieuzeidei	6.47 48	4.07	
Sepia officinalis	5.51 40	3.46	
Zeus faber	4.71 16	2.96	
Macrorhamphosus gracilis	3.91 559	2.46	
Sardina pilchardus	3.04 96	1.91	736
Macrorhamphosus scolopax	1.52 80	0.95	
GOBIIDAE	1.52 1039	0.95	
Dicologlossa hexophthalma	1.36 8	0.85	
Diplodus vulgaris	0.92 2	0.58	
Trisopterus luscus	0.88 24	0.55	
Ophidion barbatum	0.72 24	0.45	
Boops boops	0.72 8	0.45	
Dicologlossa cuneata	0.56 8	0.35	
Sepia elegans	0.24 24	0.15	
Scorpaena notata	0.16 8	0.10	
Cepola macrophthalma	0.08 32	0.05	
Plastic bags	0.00 4	0.00	
Total	159.19	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 269  
 DATE :14/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°20.47  
 start stop duration Lon W 8°55.30  
 TIME :01:05:27 01:35:55 30.5 (min) Purpose : 3  
 LOG : 4600.59 4602.04 1.5 Region : 1100  
 FDEPTH: 156 157 Gear cond.: 0  
 BDEPTH: 156 157 Validity : 0  
 Towing dir: 0° Wire out : 390 m Speed : 2.9 km  
 Sorted : 0 Total catch: 32.32 Catch/hour: 63.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Spherooides pachgaster	22.05	45	34.65	
Macrorhamphosus scolopax	12.76	1737	20.05	
Lepidotrigla dieuzeidei	7.29	1737	11.45	
Argentina sphyraena	6.20	1201	9.75	
Citharus linguatula	3.19	232	5.01	
Scomber japonicus	2.42	43	3.81	739
Trachurus picturatus	2.24	26	3.53	743
Mullus surmuletus	1.73	20	2.72	741
Pagellus acarne	1.20	4	1.89	740
Trachinus vipera	1.16	35	1.83	
OBICHTHIDAE	0.79	33	1.24	
Lepidopus caudatus	0.57	6	0.90	
Raja straeleni	0.55	4	0.87	
Merluccius merluccius	0.55	2	0.87	742
Peristedion cataphractum	0.41	2	0.65	
Trachinus radiatus	0.14	2	0.22	
Uranoscopus scaber	0.12	2	0.19	
Ophidion barbatum	0.08	10	0.12	
Capros aper	0.06	2	0.09	
Microchirus boscanion	0.06	12	0.09	
Centracanthus cirrus	0.04	2	0.06	
Dentex maroccanus	0.02	2	0.03	
Total	63.64		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 270  
 DATE :14/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°39.25  
 start stop duration Lon W 8°41.04  
 TIME :09:07:20 09:37:14 29.9 (min) Purpose : 3  
 LOG : 4644.78 4646.44 1.7 Region : 1100  
 FDEPTH: 364 362 Gear cond.: 0  
 BDEPTH: 364 362 Validity : 0  
 Towing dir: 0° Wire out : 930 m Speed : 3.3 km  
 Sorted : 0 Total catch: 42.90 Catch/hour: 86.14

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Lepidopus caudatus	42.97	177	49.88	
Merluccius merluccius	27.31	1803	31.70	744
Raja asterias	6.02	4	6.99	
Macrorhamphosus gracilis	3.53	474	4.10	
Trachurus trachurus	3.49	8	4.06	745
Mullus surmuletus	0.88	4	1.03	
Malacocephalus laevis	0.80	24	0.93	
MACROURIDAE	0.28	137	0.33	
Argentina sphyraena	0.20	20	0.23	
Gadicius argenteus	0.16	16	0.19	
Chlorophthalmus atlanticus	0.16	8	0.19	
Arnoglossus imperialis	0.12	12	0.14	
Zenion hololepis	0.12	8	0.14	
Maurolicus muelleri	0.08	96	0.09	
Total	86.14		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 271  
 DATE :14/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°32.88  
 start stop duration Lon W 8°29.28  
 TIME :12:13:41 12:44:15 30.6 (min) Purpose : 3  
 LOG : 4663.35 4664.97 1.5 Region : 1100  
 FDEPTH: 109 108 Gear cond.: 0  
 BDEPTH: 109 108 Validity : 0  
 Towing dir: 0° Wire out : 280 m Speed : 3.0 km  
 Sorted : 0 Total catch: 13.42 Catch/hour: 26.34

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius merluccius	6.38	100	24.22	746
Zeus faber	3.95	2	14.98	
Engraulis encrasicolus	3.40	135	12.89	750
Conger conger	2.63	27	9.99	
Pagellus acarne	2.16	8	8.20	748
Trisopterus luscus	1.96	29	7.45	
Citharus linguatula	1.51	114	5.74	
Scomber japonicus	1.30	41	4.92	749
Macrorhamphosus scolopax	1.08	147	4.10	
Sardina pilchardus	0.86	18	3.28	747
Lepidopus caudatus	0.43	2	1.64	
Scorpaena stephanica	0.37	6	1.42	
Solea vulgaris	0.12	4	0.45	
Raja straeleni	0.08	6	0.30	
Callionymus lyra	0.06	8	0.22	
GOBIIDAE	0.04	14	0.15	
Synchiropus phaeton	0.02	8	0.07	
Total	26.34		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 272  
 DATE :14/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°30.84  
 start stop duration Lon W 8°26.69  
 TIME :13:55:44 14:26:18 30.6 (min) Purpose : 3  
 LOG : 4671.81 4673.41 1.6 Region : 1100  
 FDEPTH: 80 80 Gear cond.: 0  
 BDEPTH: 80 80 Validity : 0  
 Towing dir: 0° Wire out : 200 m Speed : 3.2 km  
 Sorted : 0 Total catch: 10.12 Catch/hour: 19.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius merluccius	6.52	198	32.81	752
Engraulis encrasicolus	6.50	343	32.71	751
Scomber japonicus	2.37	75	11.96	
Chelidonichthys lucerna	1.12	10	5.63	
Solea vulgaris	0.96	18	4.84	
Mugil cephalus	0.90	2	4.55	
Trisopterus luscus	0.37	8	1.88	
Sardina pilchardus	0.35	12	1.78	753
Citharus linguatula	0.24	18	1.19	
GOBIIDAE	0.22	39	1.09	
Conger conger	0.16	4	0.79	
Scorpaena notata	0.14	2	0.69	
Callionymus lyra	0.02	0	0.10	
Total	19.86		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 273  
 DATE :14/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°26.84  
 start stop duration Lon W 8°23.76  
 TIME :15:43:32 16:03:50 20.3 (min) Purpose : 3  
 LOG : 4682.06 4683.15 1.1 Region : 1100  
 FDEPTH: 46 49 Gear cond.: 0  
 BDEPTH: 46 49 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.2 km  
 Sorted : 0 Total catch: 13.66 Catch/hour: 40.37

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Engraulis encrasicolus	9.25	721	22.91	755
Torpedo marmorata	8.13	9	20.13	
Torpedo torpedo	4.43	3	10.98	
GOBIIDAE	3.19	591	7.91	
Diplodus vulgaris	2.93	6	7.25	
Pagellus acarne	2.25	15	5.56	757
Scomber japonicus	2.10	71	5.20	785
Chelidonichthys lucerna	1.42	12	3.51	
Merluccius merluccius	1.33	44	3.29	754
Mugil cephalus	1.30	3	3.22	
Solea vulgaris	0.83	15	2.05	
Trisopterus luscus	0.77	24	1.90	
Sardina pilchardus	0.71	47	1.76	758
Mullus surmuletus	0.38	9	0.95	
Conger conger	0.35	3	0.88	
Citharus linguatula	0.27	18	0.66	
Octopus vulgaris	0.21	3	0.51	
Scorpaena notata	0.15	3	0.37	
Trachurus trachurus	0.15	21	0.37	756
Boops boops	0.12	3	0.29	
Diplodus bellottii	0.06	3	0.15	
Synchiropus phaeton	0.06	6	0.15	
Total	40.37		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 274  
 DATE :14/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°38.94  
 start stop duration Lon W 8°1.23  
 TIME :20:23:28 20:53:28 30.0 (min) Purpose : 3  
 LOG : 4719.85 4721.46 1.6 Region : 1100  
 FDEPTH: 90 87 Gear cond.: 0  
 BDEPTH: 90 87 Validity : 0  
 Towing dir: 0° Wire out : 230 m Speed : 3.2 km  
 Sorted : 0 Total catch: 16.18 Catch/hour: 32.35

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Aphia minuta	14.36	0	44.38	
Merluccius merluccius	11.24	356	34.73	759
Citharus linguatula	1.48	90	4.57	
Sardina pilchardus	0.84	32	2.60	760
Dicologlossa hexophthalma	0.84	6	2.60	
Conger conger	0.82	20	2.53	
GOBIIDAE	0.76	320	2.35	
Solea senegalensis	0.66	2	2.04	
Pagellus acarne	0.50	2	1.55	
Lepidotrigla dieuzeidei	0.32	4	0.99	
Engraulis encrasicolus	0.26	18	0.80	
Cepola macrophthalma	0.12	40	0.37	
Scomber japonicus	0.08	2	0.25	
Zeus faber	0.04	2	0.12	
Microchirus variegatus	0.02	2	0.06	
Arnoglossus imperialis	0.02	18	0.06	
Total	32.35		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 275  
 DATE :14/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°48.28  
 start stop duration Lon W 8°10.29  
 TIME :22:58:28 23:28:27 30.0 (min) Purpose : 3  
 LOG : 4737.40 4738.91 1.5 Region : 1100  
 FDEPTH: 139 141 Gear cond.: 0  
 BDEPTH: 139 141 Validity : 0  
 Towing dir: 0° Wire out : 350 m Speed : 3.0 km  
 Sorted : 0 Total catch: 33.25 Catch/hour: 66.57

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mullus surmuletus	10.09	80	15.16	
Scorpaena notata	9.55	16	14.35	
Merluccius merluccius	8.21	348	12.33	761
Trisopterus luscus	7.81	76	11.73	
Raja sp.	7.41	4	11.13	
Raja straeleni	4.20	2	6.32	
Citharus linguatula	4.12	212	6.20	
Scorpaena scrofa	2.92	74	4.39	
Lepidotrigla dieuzeidei	2.48	16	3.73	
Solea vulgaris	2.04	4	3.07	
Trachurus trachurus	2.00	28	3.01	762
Phycis blennoides	1.48	2	2.23	
Macrorhamphosus scolopax	1.24	68	1.86	
Anthias anthias	0.64	32	0.96	
Sardina pilchardus	0.56	16	0.84	763
Macrorhamphosus gracilis	0.48	56	0.72	
Capros aper	0.48	56	0.72	
Lepidotrigla sp.	0.44	12	0.66	
Zeus faber	0.08	4	0.12	
Callionymus lyra	0.08	4	0.12	
Dicologlossa hexophthalma	0.08	4	0.12	
Scomber japonicus	0.04	4	0.06	
Conger conger	0.04	2	0.06	
Argentina sphyraena	0.04	4	0.06	
Engraulis encrasicolus	0.04	4	0.06	
Total	66.57		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 276  
 DATE :15/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 34°1.61  
 start stop duration Lon W 7°53.31  
 TIME :07:24:01 07:54:20 30.3 (min) Purpose : 3  
 LOG : 4782.02 4783.55 1.5 Region : 1100  
 FDEPTH: 271 270 Gear cond.: 0  
 BDEPTH: 271 270 Validity : 0  
 Towing dir: 0° Wire out : 650 m Speed : 3.0 km  
 Sorted : 0 Total catch: 27.81 Catch/hour: 55.03  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Lepidopus caudatus	38.19	406	69.40	
Merluccius merluccius	5.36	596	9.74	764
Zenopsis conchifer	3.36	2	6.11	
Trachurus trachurus	3.05	14	5.34	765
Capros aper	1.31	71	2.37	
Conger conger	0.87	2	1.58	
Argentina sphyraena	0.61	65	1.11	
Macrorhamphosus gracilis	0.57	57	1.04	
Macrorhamphosus scolopax	0.32	14	0.58	
Arnoglossus imperialis	0.32	57	0.58	
Scomber japonicus	0.28	4	0.50	766
Citharus linguatula	0.26	14	0.47	
Ophidion barbatum	0.14	2	0.25	
Scorpaena scrofa	0.12	2	0.22	
Anthias anthias	0.10	2	0.18	
Sardina pilchardus	0.10	2	0.18	767
Hymenocephalus italicus	0.04	28	0.07	
Maurollicus mulleri	0.02	18	0.04	
MYCTOPHIDAE	0.02	2	0.04	
Total	55.03		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 280  
 DATE :16/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 34°9.56  
 start stop duration Lon W 7°31.86  
 TIME :00:14:18 00:45:47 31.5 (min) Purpose : 3  
 LOG : 4880.77 4882.37 1.6 Region : 1100  
 FDEPTH: 285 263 Gear cond.: 0  
 BDEPTH: 285 263 Validity : 0  
 Towing dir: 0° Wire out : 700 m Speed : 3.1 km  
 Sorted : 0 Total catch: 29.57 Catch/hour: 56.36  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Lepidopus caudatus	48.41	537	85.90	
Citharus linguatula	3.03	126	5.38	
Capros aper	1.16	51	2.06	
Conger conger	0.99	25	1.76	
Trachurus picturatus	0.80	6	1.42	782
Sardina pilchardus	0.69	19	1.22	784
Scomber japonicus	0.51	13	0.91	781
Torpedo marmorata	0.19	2	0.34	
MYCTOPHIDAE	0.19	181	0.34	
Merluccius merluccius	0.11	8	0.20	783
Helicolenus dactylopterus	0.08	10	0.14	
Arnoglossus imperialis	0.08	8	0.14	
Synchropus phaeton	0.06	8	0.10	
Epigonus telescopus	0.04	4	0.07	
Lesueurigobius sanzoi	0.02	23	0.03	
Total	56.36		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 277  
 DATE :15/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°59.67  
 start stop duration Lon W 7°50.86  
 TIME :10:00:17 10:21:08 20.9 (min) Purpose : 3  
 LOG : 4792.70 4793.71 1.0 Region : 1100  
 FDEPTH: 162 161 Gear cond.: 0  
 BDEPTH: 162 161 Validity : 0  
 Towing dir: 0° Wire out : 400 m Speed : 2.9 km  
 Sorted : 0 Total catch: 1147.06 Catch/hour: 3300.89  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Macrorhamphosus gracilis	2804.03	420604	84.95	
Macrorhamphosus scolopax	410.94	30409	12.45	
Raja straeleni	34.96	26	1.06	
Scomber japonicus	20.32	691	0.62	772
Merluccius merluccius	8.81	37	0.27	770
Loligo vulgaris	5.58	12	0.17	
Lepidopus caudatus	4.23	58	0.13	
Trachurus trachurus	2.47	20	0.07	768
Zeus faber	2.19	6	0.07	771
Mullus surmuletus	2.07	3	0.06	
Citharus linguatula	1.44	29	0.04	0
Peristedion cataphractum	1.15	6	0.03	
Lepidotrigla dieuzeidei	0.86	20	0.03	
Trachurus picturatus	0.52	14	0.02	769
Illex coindetii	0.46	9	0.01	
Trigloporus lastoviza africanu	0.23	3	0.01	
Citharus linguatula	0.23	3	0.01	
Lepidotrigla sp.	0.20	3	0.01	
Engraulis encrasicolus	0.12	3	0.00	
Conger conger	0.09	3	0.00	
Total	3300.89		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 281  
 DATE :16/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 34°12.78  
 start stop duration Lon W 7°35.85  
 TIME :03:00:59 03:33:15 32.3 (min) Purpose : 3  
 LOG : 4893.56 4895.11 1.6 Region : 1100  
 FDEPTH: 583 579 Gear cond.: 0  
 BDEPTH: 583 579 Validity : 0  
 Towing dir: 0° Wire out : 1250 m Speed : 2.9 km  
 Sorted : 0 Total catch: 20.52 Catch/hour: 38.15  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Polymetme corythaeola	18.87	1980	49.46	
Lophius budegassa	6.64	2	17.40	
Helicolenus dactylopterus	5.32	20	13.94	
Hoplostethus mediterraneus	1.49	76	3.90	
Conger conger	1.41	9	3.70	
Galeus polli	1.30	7	3.41	
Merluccius merluccius	0.89	2	2.34	
Coelorinchus coelorhincus	0.76	33	2.00	
Capros aper	0.61	33	1.61	
Malacocephalus laevis	0.43	17	1.12	
Notacanthus chemnitzii	0.35	13	0.93	0
Setarches guentheri	0.04	2	0.10	
Argyropelecus gigas	0.04	9	0.10	
Total	38.15		100	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 278  
 DATE :15/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°45.22  
 start stop duration Lon W 7°38.22  
 TIME :14:40:32 15:10:31 30.0 (min) Purpose : 3  
 LOG : 4818.11 4819.60 1.5 Region : 1100  
 FDEPTH: 88 86 Gear cond.: 0  
 BDEPTH: 88 86 Validity : 0  
 Towing dir: 0° Wire out : 220 m Speed : 3.0 km  
 Sorted : 0 Total catch: 52.14 Catch/hour: 104.35  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Engraulis encrasicolus	30.07	2546	28.82	776
Sardina pilchardus	22.16	1187	21.24	775
Scomber japonicus	20.26	590	19.42	773
Merluccius merluccius	11.66	446	11.17	774
Aphia minuta	4.25	7685	4.08	
Solea vulgaris	2.70	34	2.59	
Conger conger	2.55	30	2.45	
Trachurus picturatus	2.50	4	2.40	
Citharus linguatula	1.90	100	1.82	
Trisopterus luscus	1.65	24	1.58	
Lesueurigobius sanzoi	1.60	620	1.53	
Lepidotrigla dieuzeidei	1.55	10	1.49	
Sepia officinalis	0.58	2	0.56	
Cepola macrophthalma	0.55	20	0.53	
Callionymus lyra	0.35	10	0.34	
Plastic bags	0.00	2	0.00	
Total	104.35		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2011410 STATION: 279  
 DATE :15/12/2011 GEAR TYPE: BT NO: 21 POSITION:Lat N 33°58.10  
 start stop duration Lon W 7°21.50  
 TIME :21:09:52 21:39:57 30.1 (min) Purpose : 3  
 LOG : 4861.06 4862.58 1.5 Region : 1100  
 FDEPTH: 119 118 Gear cond.: 0  
 BDEPTH: 119 118 Validity : 0  
 Towing dir: 0° Wire out : 320 m Speed : 3.0 km  
 Sorted : 0 Total catch: 20.62 Catch/hour: 41.12  
 CATCH/HOUR % OF TOT. C SAMP

SPECIES	weight	numbers	% OF TOT. C	SAMP
Citharus linguatula	16.87	738	41.03	777
Scomber japonicus	8.87	311	21.58	779
Merluccius merluccius	3.83	42	9.31	780
Sardina pilchardus	2.91	78	7.08	780
Gobiidae	2.47	997	6.01	
Engraulis encrasicolus	1.79	120	4.36	778
Conger conger	1.48	18	3.59	
Trisopterus luscus	0.94	12	2.28	
Scorpaena scrofa	0.60	14	1.45	
Raja sp.	0.40	2	0.97	
Aphia minuta	0.36	491	0.87	
Lepidotrigla dieuzeidei	0.34	4	0.82	
Zeus faber	0.10	2	0.24	
Callionymus sp.	0.08	2	0.19	
Trachurus picturatus	0.06	2	0.15	
Cepola macrophthalma	0.02	8	0.05	
WASTEO	0.00	2	0.00	
Plastic bags	0.00	4	0.00	
Total	41.12		100.00	

## ANNEX II. INSTRUMENTS AND FISHING GEAR USED

### Echo sounder

The SIMRAD ER60/38 kHz scientific sounder was used during the survey for fish abundance estimation. The LSSS Integrator system was used to scrutinise the acoustic records. The settings of the echo sounders were as follows:

#### **Transceiver-2 menu (ES38B 38 kHz)**

Transducer depth	5.50/7.5 m
Absorption coefficient	8.7 dB/km
Pulse length	medium (1,024ms)
Bandwidth	2.43 kHz
Max power	2000 Watt
2-way beam angle	-20,6dB
Gain	25.99 dB
SA correction	-0.59 dB
Angle sensitivity	21.9
3 dB beam width	6.74° along ship 6.77° athwart ship
Along ship offset	0.13°
Athwart ship offset	0.04°

#### **Bottom detection menu**

Minimum level	-45 dB
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### Fishing gear

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

The bottom trawl has a headline of 31 m, footrope 47 m and 20 mm mesh size in the cod end with an inner net of 10 mm mesh size (see drawings below). 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<sup>2</sup>, 1670 kg, their distance while trawling about 45 - 55 m on 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.

The SCANBAS system was used on all trawl hauls. This equipment consists of sensors, a hydrophone, a receiver, a display unit and a battery charger. Communication between sensors and ship is based on acoustic transmission. The doors are fitted with sensors to provide information on their distance and the trawl with a trawl eye that provides information on the trawl opening, the distance of the footrope to the bottom, bottom contact and fish entering the trawl.

## ANNEX III EQUATIONS

Biomass index

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

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

where

$L$  is the number of strata,

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

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

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

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

The total biomass in the area is calculated by

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

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

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

where

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

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

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

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

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

If the sample size is “large” enough, then the Central Limit Theorem states that each time a survey is conducted there is a 95% chance that the true mean is in the interval (see Cochran<sup>2</sup>, 1977)

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

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

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

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

## ANNEX IV. SWEEP AREA ANALYSES PER REGION

### SWEPT AREA ANALYSIS Guinea-Cap Vert

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES						% incidence	Mean dens. t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>			
	Lower limits, Kg/nm								0-30m	30-50m	50-100m	100-200m
	>0	10	30	100	300	1000						
Brachydeuterus auritus	17	4	1	3	1		36.62	1.452	4.504	2.351	0.715	
Erythrocles monodi	3				1		5.63	1.347				4.553
Trachurus trecae	9	4	3		1		23.94	0.795	0.328	0.186	0.144	2.222
Galeoides decadactylus	11	3	1	2			23.94	0.772	3.277	1.191	0.029	
Antigonia capros	13	4	4	1			30.99	0.75		0.002	0.271	2.249
Pomadasys jubelini	6	6	1	1			19.72	0.499	1.105	1.351	0.003	
Pagellus bellottii	23	4	3	1			43.66	0.491	0.073	0.775	0.913	0.005
Pomadasys incisus	7	4	3				19.72	0.476	0.506	0.495	0.901	
Decapterus rhonchus	22	3	4				40.85	0.391	0.214	0.641	0.628	0.014
Trichiurus lepturus	20	6	3				40.85	0.385	0.753	0.437	0.478	0.068
J E L L Y F I S H	3		2	1			8.45	0.376	1.318	0.239	0.419	
Trachurus trachurus	6	2	1	1			14.08	0.358	0.014	0.011	1.136	0.004
Pagrus caeruleostictus	7	10	1				25.35	0.341	0.656	0.608	0.304	
Aulopus cadenati	8	3	4				21.13	0.318			0.002	1.072
Pteroscion peli	2	1	3				8.45	0.309	1.685	0.192	0.075	
Chloroscombrus chrysurus	8	3	2				18.31	0.279	0.763	0.675		
Dentex angolensis	12	2	2				22.54	0.253			0.019	0.837
Pseudupeneus prayensis	30	4					47.89	0.219	0.124	0.412	0.308	0.007
Trigla lyra	27	2	2				43.66	0.219		0.016	0.261	0.454
Ilisha africana	6			1			9.86	0.201	1.292	0.075		
Mustelus mustelus	7	1		1			12.68	0.201		0.008	0.048	0.623
Synagrops microlepis	4		2				8.45	0.197			0.002	0.662
Illex coindetii	23	2	1				36.62	0.19		0.007	0.029	0.606
Ariomma bondi	11	2	2				21.13	0.189		0.001	0.028	0.607
Scorpaena stephanica	16	5					29.58	0.183			0.15	0.462
Selene dorsalis	21	3					33.8	0.161	0.487	0.284	0.067	
Pentanemus quinquarius	1	2	1				5.63	0.159	0.816	0.141	0.027	
Scomber japonicus	6			1			9.86	0.155			0.021	0.502
Scorpaena normani	5		2				9.86	0.124			0.001	0.419
PYROSOMIDAE		2	1				4.23	0.118			0.072	0.325
Dactylopterus volitans	19	2					29.58	0.106	0.042	0.029	0.293	0.005
Pseudotolithus senegalensis	3	2	1				8.45	0.103	0.309	0.23	0.005	
Anthias anthias	1		2				4.23	0.103				0.348
Spicara alta	5		1				8.45	0.103				0.347
Priacanthus arenatus	24	2					36.62	0.1		0.122	0.181	0.043
Merluccius polli	4	2					8.45	0.1			0.048	0.286
Chlorophthalmus atlanticus	4		1				7.04	0.098				0.333
Saurida brasiliensis	14	1	1				22.54	0.094		0.001	0.055	0.259
Arius parkii	9	2					15.49	0.093	0.381	0.125	0.024	
Chromis cadenati	2		1				4.23	0.086			0.276	
Pontinus kuhlii	9	2					15.49	0.084			0.004	0.281
Epinephelus aeneus	16						22.54	0.08	0.115	0.115	0.086	0.027
Cynoponticus ferox	2		1				4.23	0.078	0.549			0.002
Diplodus bellottii	2		1				4.23	0.078	0.004	0.003	0.247	
Cynoglossus monodi	1	1	1				4.23	0.077	0.54	0.003		
Zeus faber	19	2					29.58	0.075		0.019	0.165	0.064
Trachinus armatus	12		1				18.31	0.071	0.001	0.01	0.221	
Plectorhinchus mediterraneus	8	2					14.08	0.068	0.233	0.06	0.066	
Raja miraletus	30						42.25	0.067		0.052	0.058	0.12
Scorpaena laevis	2		1				4.23	0.065		0.013	0.001	0.208
Pentheroscion mbizi		3					4.23	0.065	0.153		0.14	
Brotula barbata	13						18.31	0.065		0.001	0.022	0.195
Pomadasys peroteti		1	1				2.82	0.064		0.169	0.068	
Sphyræna guachancho	18	2					28.17	0.063	0.189	0.129	0.013	
Squatina oculata	3		1				5.63	0.063				0.212
Scorpaena scrofa	10	1					15.49	0.057		0.001	0.001	0.192
Mystriophis rostellatus	1		1				2.82	0.056			0.179	0.002
Lithognathus mormyrus	3	1					5.63	0.056	0.03	0.203		
Fistularia tabacaria	15	2					23.94	0.051	0.015	0.167	0.011	0.011
Lutjanus goreensis			1				1.41	0.05			0.162	
Scorpaena angolensis	3	1					5.63	0.05	0.004	0.02	0.142	
Octopus vulgaris	28						39.44	0.049	0.018	0.021	0.078	0.06
Cymbium sp.	2	1					4.23	0.049	0.075	0.05	0.083	



Merluccius senegalensis	5	1	8.45	0.047			0.001	0.157
Drepane africana		2	2.82	0.046	0.159	0.094		
Sphoeroides pachgaster	17		23.94	0.042	0.003		0.008	0.133
Arius heudelotii	5		7.04	0.042	0.214	0.046		
Spondyllosoma cantharus	4	1	7.04	0.042		0.139	0.02	
Fistularia petimba	18	1	26.76	0.041	0.011	0.094	0.049	0.003
Eucinostomus melanopterus	6	1	9.86	0.039	0.153	0.071		
Cynoglossus senegalensis	5	1	8.45	0.038	0.264	0.002		0.002
Umbrina canariensis	15		21.13	0.037		0.009	0.083	0.032
Trachinus pellegrini		1	1.41	0.037				0.126
Dentex canariensis	5	1	8.45	0.037		0.016	0.104	0.002
Sepia officinalis	24		33.8	0.034	0.013	0.062	0.045	0.009
Torpedo marmorata	3	1	5.63	0.031		0.025	0.012	0.072
Stromateus fiatola	1	1	2.82	0.029	0.191	0.007		
Lagocephalus laevigatus	13		18.31	0.027	0.128	0.024	0.01	
Balistes capriscus	8		11.27	0.027	0.066	0.055	0.012	
Trachinotus ovatus	3		4.23	0.026	0.147	0.023		
Penaeus notialis	4	1	7.04	0.026	0.032	0.007	0.063	
Alectis alexandrinus	5		7.04	0.025	0.039	0.078		
Peristedion cataphractum	10		14.08	0.024		0.025	0.004	0.056
Torpedo torpedo	8		11.27	0.024	0.002	0.052	0.028	0.006
Caranx crysos	12		16.9	0.023	0.071	0.039	0.011	
Aluterus monoceros	2		2.82	0.023		0.09		
Sardinella aurita	11		15.49	0.023	0.015	0.053	0.023	
Sardinella maderensis	11		15.49	0.022	0.068	0.047	0.002	
Macropipus sp.	1	1	2.82	0.022				0.074
Bothus podas africanus	15	1	22.54	0.02		0.012	0.055	
Dentex congoensis		1	1.41	0.019	0.138			
MYCTOPHIDAE		1	1.41	0.018				0.06
Diodon holocanthus	4		5.63	0.017	0.078	0.005	0.016	
Bembrops greyi	13		18.31	0.017		0.004	0.031	0.022
Pseudotolithus typus	2		2.82	0.016	0.095	0.01		
Ephippion guttifer	3		4.23	0.016	0.111			
Muraena helena		1	1.41	0.016				0.052
Squalus megalops	4		5.63	0.015				0.051
Arnoglossus imperialis	21		29.58	0.015			0.003	0.047
Dicologlossa hexophthalma	11		15.49	0.014	0.003	0.021	0.022	0.005
Sphoeroides marmoratus	20		28.17	0.014	0.004	0.04	0.01	0.001
Citharus linguatula	17		23.94	0.013	0.003	0.004	0.008	0.031
Dentex gibbosus	1		1.41	0.013			0.041	
Portunus validus	1		1.41	0.013	0.089			
Psettodes belcheri	4		5.63	0.012	0.069	0.01		
Trachinocephalus myops	14		19.72	0.012	0.009	0.024	0.014	0.001
Syacium micrurum	10		14.08	0.012	0.058	0.007	0.005	
Pterothrissus bellocci	8		11.27	0.011			0.002	0.035
Sphyraena sphyraena	10		14.08	0.011	0.027	0.014	0.01	
Acanthurus monroviae	2		2.82	0.011	0.026	0.027		
Zenopsis conchifer	5		7.04	0.01			0.003	0.032
Chilomycterus spinosus mauret.	7		9.86	0.01		0.031	0.007	
Dentex macrophthalmus	1		1.41	0.01				0.034
Parapenaeus longirostris	3		4.23	0.01			0.015	0.017
Parapandalus narval	1		1.41	0.001				0.002
Penaeus kerathurus	1		1.41		0.002			
Other fish				0.271	0.347	0.399	0.235	0.165
				15.82				
Sum all species				5	23.203	13.302	10.633	19.914
Sum SNAPPERS, JOBFISHES				0.054			0.173	
Sum GROUPERS, SEABASSES				0.083	0.115	0.121	0.086	0.031
Sum GRUNTS, SWEETLIPS				2.574	6.348	4.464	1.768	
Sum CROAKERS, DRUMS, WEAKF., KOBES				0.534	2.242	0.454	0.303	0.032
Sum PANDORAS, PORGIES, SEABREAMS,				1.353	0.901	1.755	1.656	0.907
Sum SHARKS, CHIMAERAS				0.281		0.008	0.048	0.893
Sum BATOID FISHES, RAYS				0.155	0.027	0.222	0.113	0.201
Sum CEPHALOPODS				0.282	0.031	0.092	0.173	0.679
Numbers of stations included in analysis, total and by depth strata				71	10	18	22	21

SWEPT AREA ANALYSIS  
Cap Vert Cap Blanc

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES						% incidence	Mean dens. t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>			
	Lower limits, Kg/nm								0-30m	30-50m	50-100m	100-200m
	>0	10	30	100	300	1000						
Brachydeuterus auritus	14	7	2	2		1	41.27	5.885	3.345	24.143	1.235	
Chloroscombrus chrysurus	8	4	1			1	22.22	3.782	0.953	17.594	0.001	
J E L L Y F I S H	1		1	1		1	6.35	3.621	22.446	0.284		
Trachurus trachurus	10	1	2	1		1	23.81	2.649	0.053	0.509	7.528	0.795
Engraulis encrasicolus	3	1		1		1	9.52	2.402		0.882	0.025	6.637
Trachurus trecae	10	6	7	2	1		41.27	2.175	0.328	0.748	2.505	3.641
Merluccius polli	7	5	2	3	1		28.57	1.962			0.15	5.751
Chlorophthalmus atlanticus	3	1	1	3	1		14.29	1.758				5.273
Trichiurus lepturus	17	5	4	3			46.03	1.544	1.436	0.861	3.726	0.044
Decapterus rhonchus	10	4	4	2			31.75	1.377	4.79	2.186	0.549	
Pagellus bellottii	16	6	6	2			47.62	1.34	3.613	2.359	0.926	
Helicolenus dactylopterus	2	1		5			12.7	1.299				3.896
Pomadasys incisus	6	6	5	2			30.16	1.131	2.602	1.935	1.057	
Stromateus fiatola	1	1	1		1		6.35	1.013	0.875	4.236		
Algae					1		1.59	0.801	5.044			
Sardina pilchardus	3	1			1		7.94	0.756	0.006	0.009	2.437	0.053
Zeus faber	20	5	5	1			49.21	0.749	0.015	0.97	1.38	0.389
Scomber japonicus	11				1		19.05	0.712	0.009		0.014	2.119
Galeoides decadactylus	9	3	2	1			23.81	0.711	3.265	0.911	0.015	
Diplodus bellottii	3		3	1			11.11	0.668	3.139	0.406	0.286	
Synagrops microlepis	11	3	3	1			28.57	0.664			0.644	1.409
Merluccius senegalensis	6	4	1	2			20.63	0.644			0.183	1.767
Pteroscion peli	2	1	3	1			11.11	0.624	3.421	0.266	0.087	
Plectorhinchus mediterraneus	8	1	1		1		17.46	0.617	3.621	0.091	0.079	
Pontinus kuhlii	6	3	3	1			20.63	0.575			0.004	1.72
Pagrus caeruleostictus	8	9	2				30.16	0.501	1.022	1.132	0.348	
Pentanemus quinquarius	1	2	1	1			7.94	0.477	2.693	0.195	0.031	
Selene dorsalis	17	1		1			30.16	0.468	0.352	1.907	0.061	
Alectis alexandrinus	8			1			14.29	0.34	0.057	1.584	0.013	
Pseudupeneus prayensis	21	4					39.68	0.276	0.191	0.803	0.264	
PYROSOMIDAE	7		1				12.7	0.272		0.412	0.17	0.406
Pomadasys jubelini	7	6	1				22.22	0.265	0.975	0.496	0.026	
Pomadasys peroteti	3	2	2				11.11	0.249	0.094	1.018	0.078	
Octopus vulgaris	24	6					47.62	0.239	0.073	0.054	0.475	0.219
Brotula barbata	11	2	2				23.81	0.226		0.001	0.025	0.655
Arius parkii	10	2	1				20.63	0.206	0.793	0.265	0.085	
Pseudotolithus senegalensis	2	3	2				11.11	0.198	0.605	0.366	0.089	
Argyrosomus regius	2			1			4.76	0.194	1.184	0.029		
Aulopus cadenati	6	4	1				17.46	0.191			0.001	0.573
Loligo vulgaris	10	3	1				22.22	0.187	0.052	0.16	0.304	0.163
Ilisha africana	6	1	1				12.7	0.178	0.867	0.198		
Umbrina canariensis	13	1	1				23.81	0.175		0.018	0.135	0.393
Pterothrissus belloci	11	2	1				22.22	0.159			0.023	0.455
Mustelus mustelus			1				1.59	0.153	0.966			
Raja straeleni			2				3.17	0.149				0.447
Sardinella maderensis	4	1	1				9.52	0.144	0.899	0.004	0.002	
Zenopsis conchifer	9	1	1				17.46	0.139			0.003	0.414
Sphoeroides pachgaster	9	1	1				17.46	0.135	0.003		0.28	0.152
Ariomma bondi	1		2				4.76	0.129				0.387
Sardinella aurita	15		1				25.4	0.127	0.678	0.047	0.032	
Ephippion guttifer	4	1	1				9.52	0.125	0.681	0.083		
Illex coindetii	15	3					28.57	0.124			0.086	0.294
GOBIIDAE	15	3					28.57	0.105	0.002	0.001	0.328	0.017
Raja undulata	1	2	1				6.35	0.098	0.568	0.038		
Raja clavata	1		1				3.17	0.097				0.29
Antigonia capros	5	1	1				11.11	0.095				0.285
Drepane africana	2	3					7.94	0.089	0.33	0.178		
Cynoponticus ferox			1				1.59	0.087	0.549			
Cynoglossus monodi	1	1	1				4.76	0.087	0.54	0.005		
Pseudotolithus typus	3		1				6.35	0.082	0.414	0.078		
Epinephelus aeneus	10	1					17.46	0.078	0.216	0.128	0.058	
Cymbium sp.		1	1				3.17	0.076	0.376	0.077		
Bembrops greyi	13	1					22.22	0.069			0.039	0.171
Fistularia petimba	15	2					26.98	0.067	0.01	0.25	0.041	0.005
Mystriophis rostellatus	1		1				3.17	0.063			0.208	0.002

Priacanthus arenatus	7	1		12.7	0.063		0.022	0.185	0.007
Lithognathus mormyrus	3	1		6.35	0.062	0.084	0.235		
Spondylisoma cantharus	4	1		7.94	0.059	0.104	0.193	0.008	
Lutjanus goreensis			1	1.59	0.056			0.187	
Raja miraletus	16			25.4	0.054	0.092	0.092	0.046	0.02
Sphyrna guachancho	13	1		22.22	0.052	0.217	0.059	0.019	
Scorpaena angolensis	2	1		4.76	0.052	0.004	0.028	0.153	
Solea senegalensis			1	1.59	0.052	0.33			
Lagocephalus laevigatus	5	1		9.52	0.052	0.251	0.059		
Scyphozoa			1	1.59	0.05		0.24		
Fistularia tabacaria	4	2		9.52	0.048	0.015	0.214	0.005	0.001
Arius heudelotii	5			7.94	0.043	0.167	0.063	0.011	
Uranoscopus polli	4	1		7.94	0.042				0.125
Dentex macrophthalmus	1	2		4.76	0.041			0.06	0.07
Scorpaena scrofa	9	1		15.87	0.039	0.005		0.031	0.088
Trigla lyra	15			23.81	0.038	0.005	0.013	0.048	0.059
Pentheroscion mbizi	1	1		3.17	0.037			0.123	
Arnoglossus imperialis	19			30.16	0.037			0.054	0.062
Cynoglossus senegalensis	1	1		3.17	0.036	0.229			
Dentex angolensis	10	1		17.46	0.036			0.042	0.07
Dentex canariensis	6	1		11.11	0.036	0.015	0.062	0.069	
Scorpaena stephanica	10			15.87	0.035			0.03	0.078
Saurida brasiliensis	12	1		20.63	0.034			0.066	0.044
Balistes capriscus	2	1		4.76	0.034		0.164		
Cynoglossus canariensis	3	1		6.35	0.031	0.164	0.025		
Diplodus sargus *	1	1		3.17	0.03	0.166	0.017		
Dactylopterus volitans	5	1		9.52	0.029	0.12	0.007	0.028	
Aluterus heudelotii	1	1		3.17	0.027	0.005	0.125		
Penaeus notialis	1	1		3.17	0.027	0.032		0.071	
Aluterus monoceros	2			3.17	0.026		0.125		
OPHIDIIDAE	4			6.35	0.025				0.075
Capros aper	8			12.7	0.025				0.073
Torpedo torpedo	5			7.94	0.024	0.002	0.072	0.029	
Halobatrachus didactylus	2	1		4.76	0.024	0.138	0.01		
Dentex maroccanus	3			4.76	0.023			0.002	0.066
MYCTOPHIDAE	1	1		3.17	0.021				0.064
Chilomycterus spinosus mauret.	6			9.52	0.02	0.059	0.052	0.002	
Raja leopardus		1		1.59	0.02	0.126			
Ophidion barbatum	2			3.17	0.02			0.036	0.027
Eucinostomus melanopterus	3			4.76	0.02		0.095		
Sepia officinalis	6			9.52	0.019	0.064	0.008	0.023	
Syacium micrurum	8			12.7	0.017	0.079	0.006	0.004	0.007
Sphoeroides marmoratus	16			25.4	0.017	0.003	0.053	0.017	
Gobidae sp. 'bars'		1		1.59	0.016			0.053	
Dentex gibbosus	3			4.76	0.016		0.007	0.048	
Citharus linguatula	15			23.81	0.015	0.011	0.008	0.033	0.006
Portunus validus	1			1.59	0.014	0.089			
Torpedo marmorata	3			4.76	0.013		0.034	0.014	0.006
Psettodes belcheri	3			4.76	0.013	0.067	0.012		
Diplodus vulgaris	2			3.17	0.013	0.068		0.008	
Diodon holocanthus	1			1.59	0.012	0.078			
Caranx crysos	3			4.76	0.012	0.033	0.032		
Squatina oculata	1			1.59	0.011				0.034
Gerres sp.	1			1.59	0.011		0.054		
Pomadasys rogeri	2			3.17	0.01		0.044	0.004	
Parapenaeus longirostris	1			1.59	0.005			0.017	
Parapandalus narval	1			1.59	0.001				0.002
Other fish					0.345	0.375	0.388	0.297	0.348
				48.61					
Sum all species				8	77.347	70.535	27.855	40.156	
Sum SNAPPERS, JOBFISHES				0.061				0.201	
Sum GROUPERS, SEABASSES				0.088	0.249	0.131	0.06	0.011	
Sum GRUNTS, SWEETLIPS				8.164	10.637	27.737	2.493		
Sum CROAKERS, DRUMS, WEAKF., KOB				1.324	5.625	0.789	0.433	0.414	
Sum PANDORAS, PORGIES, SEABREAMS,				2.825	8.211	4.413	1.795	0.208	
Sum SHARKS, CHIMAERAS				0.182	0.984	0.007	0.007	0.068	
Sum BATOID FISHES, RAYS				0.481	0.814	0.344	0.089	0.763	
Sum CEPHALOPODS				0.583	0.189	0.223	0.919	0.69	
Numbers of stations included in analysis, total and by depth strata				63	10	13	19	21	

SWEPT AREA ANALYSIS  
Cap Blanc - Cap Juby 2011410

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES						% incidence	Mean dens.	Mean densities by bottom depth strata				
	Lower limits, Kg/nm								t/nm <sup>2</sup>	t/nm <sup>2</sup>			
	>0	10	30	100	300	1000				0-50m	50-100m	100-200m	200-500m
Engraulis encrasicolus	3	2				2	10.77	3.76	8.21	0.02	6.88		
Scomber japonicus	31	2	3	2		1	60.00	3.57	0.07	2.42	9.16	0.30	
Sardina pilchardus	18	2		2	1		35.38	1.92	1.20	1.45	4.14		
Hoplostethus mediterraneus	4	2				1	10.77	1.77		0.01		8.19	
Pomadasys incisus	3	2	4	2	1		18.46	1.72	8.40	0.13			
Diplodus bellottii	2	2	2	5			16.92	1.55	7.75	0.00			
Trachurus trecae	5	3	3	1	1		20.00	1.27	0.54	1.77	2.18		
Trachurus trachurus	31	9	5	1			70.77	1.02	2.47	0.94	0.36	0.74	
Helicolenus dactylopterus	5	3	2		1		16.92	0.94			0.12	4.20	
Plectorhinchus mediterraneus	6	1	1		1		13.85	0.64	2.65	0.41	0.00		
Sardinella aurita	10	1	1	1			20.00	0.49	1.58	0.62	0.00		
Pagellus bellottii	16	3	2	1			33.85	0.47	1.85	0.34	0.02		
Macrorhamphosus scolopax	16		1	1			27.69	0.35	0.02	0.34	0.79	0.03	
Synagrops microlepis	12	1	2				23.08	0.31		0.52	0.50	0.05	
Pteroscion peli			1	1			3.08	0.29	1.44				
Dentex maroccanus	13	2	3				27.69	0.28		0.25	0.63	0.09	
Pagellus acarne	15	2	2				29.23	0.27	0.24	0.70	0.08	0.03	
Dentex macrophthalmus	16	5	1				33.85	0.26		0.13	0.28	0.62	
Paramola cuvieri	2	1		1			6.15	0.26				1.18	
Galeus polli	5		2				10.77	0.23			0.01	1.05	
Umbrina canariensis	8	4	1				20.00	0.21	0.81	0.13	0.03	0.00	
Dentex canariensis	4	3	1				12.31	0.17	0.43	0.29			
Zenopsis conchifer	14	1	1				24.62	0.14		0.08	0.02	0.54	
Diplodus vulgaris	5	1	2				12.31	0.14	0.41	0.21			
Arius parkii	2	1	1				6.15	0.12	0.62			0.00	
Plesionika martia	1		1				3.08	0.12			0.38	0.01	
Merluccius polli	9		1				15.38	0.12	0.01		0.00	0.54	
Lepidopus caudatus	13	3					24.62	0.12			0.12	0.37	
Zeus faber	31						47.69	0.12	0.22	0.10	0.14	0.02	
Loligo vulgaris	29	1					46.15	0.11	0.18	0.25	0.02		
Pagellus erythrinus	10		1				16.92	0.10	0.32	0.11	0.01		
MYCTOPHIDAE	13	2					23.08	0.08			0.19	0.10	
Coelorrinchus coelorrinchus	5		1				9.23	0.07				0.32	
Decapterus rhonchus	3		1				6.15	0.07	0.32	0.01			
Sphoeroides pachgaster	17						26.15	0.06		0.00	0.19	0.01	
Spondyliosoma cantharus	15	1					24.62	0.06	0.28	0.01	0.00		
Halobatrachus didactylus	2		1				4.62	0.06	0.01			0.25	
Capros aper	15	1					24.62	0.05		0.01	0.11	0.05	
Diplodus sargus *	3	1					6.15	0.04	0.20	0.00			
Raja miraletus	12	1					20.00	0.04	0.14	0.02	0.01	0.01	
J E L L Y F I S H	3	1					6.15	0.04	0.16	0.01	0.01		
Merluccius merluccius	6						9.23	0.04	0.03	0.01	0.00	0.13	
Epigonus telescopus	4	1					7.69	0.03				0.16	
OPHICHTHIDAE	15						23.08	0.03		0.01	0.04	0.09	
Octopus vulgaris	17						26.15	0.03	0.01	0.07	0.04	0.00	
Argyrosomus regius	3	1					6.15	0.03	0.16				
Dasyatis centroura	1	1					3.08	0.03	0.16				
Dentex gibbosus	8	1					13.85	0.03	0.12	0.03			
Palinurus mauritanicus	2	1					4.62	0.03				0.14	
GOBIIDAE	6	1					10.77	0.03	0.02	0.09			
Trichiurus lepturus	6						9.23	0.03	0.10	0.02	0.00		
Chlorophthalmus atlanticus	8						12.31	0.02				0.11	
Aspitrigla obscura	23						35.38	0.02	0.01	0.05	0.03	0.00	
Pagrus auriga	2	1					4.62	0.02	0.11				
Chelidonichthys cuculus	4	1					7.69	0.02		0.00	0.07	0.00	
Microchirus variegatus	11						16.92	0.02		0.03	0.04	0.00	
Ophidion barbatum	15						23.08	0.02		0.01	0.05	0.02	
Scyliorhinus canicula	15						23.08	0.02		0.02	0.02	0.03	
Trigla lyra	11						16.92	0.02	0.02	0.05	0.00	0.00	
Sepia officinalis	16						24.62	0.02	0.04	0.02	0.02		
Gymnura altavela	3						4.62	0.02	0.09				
Pseudupeneus prayensis		1					1.54	0.02	0.09				
Ophichthus sp.	3						4.62	0.02		0.02	0.04		
Campogramma glaycos	9						13.85	0.02	0.05	0.03			
Raja undulata	4						6.15	0.02	0.08	0.00			
Dicologlossa cuneata	9						13.85	0.02	0.06	0.02		0.00	
Myctophidae sp. large	1	1					3.08	0.02				0.07	
Trachinus vipera	19						29.23	0.02	0.01	0.03	0.02		
Lophius budegassa	2						3.08	0.02				0.07	

Conger conger	10	15.38	0.01	0.00	0.02	0.00	0.03
Physiculus cf cyanostrophus	2	3.08	0.01				0.06
Microchirus boscanion	14	21.54	0.01		0.01	0.03	0.01
Todarodes sagittatus	3	4.62	0.01				0.06
Bathysolea polli	2	3.08	0.01				0.06
Serranus cabrilla	13	20.00	0.01	0.01	0.03	0.01	
Merluccius senegalensis	7	10.77	0.01		0.00	0.01	0.04
Schedophilus ovalis	2	3.08	0.01				0.05
Mustelus mustelus	4	6.15	0.01	0.05			0.00
Nezumia aequalis	3	4.62	0.01				0.05
Parapenaeus longirostris	4	6.15	0.01				0.05
Penaeopsis serrata	4	6.15	0.01				0.05
Plesionika heterocarpus	1	1.54	0.00				0.01
Penaeus kerathurus	1	1.54		0.00			
Other fish			0.23	0.36	0.10	0.17	0.35
Sum all species		24.37	42.05	11.87	26.95	20.36	
Sum SNAPPERS, JOBFISHES			0.02	0.05	0.03	0.01	
Sum GROUPERS, SEABASSES			2.36	11.04	0.54	0.00	
Sum GRUNTS, SWEETLIPS			0.53	2.41	0.13	0.03	0.00
Sum CROAKERS, DRUMS, WEAKF., KOB			3.38	11.71	2.06	1.01	0.74
Sum PANDORAS, PORGIES, SEABREAMS,			0.17	0.04	0.01	0.01	0.71
Sum HAKES			0.27	0.05	0.02	0.03	1.14
Sum SHARKS, CHIMAERAS			0.14	0.56	0.05	0.02	0.02
Sum BATOID FISHES, RAYS			0.18	0.23	0.33	0.10	0.07
Sum CEPHALOPODS			65	13	18	20	14
Numbers of stations included in analysis, total and by depth strata							

SWEPT AREA ANALYSIS  
Cap Juby - Casablanca 2011410

SPECIES NAME	SAMPLE DISTRIB. BY CATCH CLASSES						% inci- dence	Mean dens.  t/nm <sup>2</sup>	Mean densities by bottom depth strata t/nm <sup>2</sup>			
	Lower limits, Kg/nm								0-50m	50- 100m	100- 200m	200- 500m
	>0	10	30	100	300	1000						
Engraulis encrasicolus	14	7	1	1	1	1	47.17	5.12	22.26	1.34	0.15	
Scomber japonicus	36	5	3	1	3		90.57	4.53	0.35	7.38	6.44	0.03
Macrorhamphosus gracilis	9		1		1		20.75	1.93		0.01	6.37	0.03
Trachurus trachurus	29	6	2	3			75.47	1.34	1.55	2.00	1.06	0.15
Sardina pilchardus	29	2	2	1	1		66.04	1.33	5.29	0.68	0.01	0.00
J E L L Y F I S H	9	2	2				24.53	0.38	0.90	0.57	0.01	0.00
Merluccius merluccius	38	4	1				81.13	0.37	0.15	0.61	0.30	0.29
Macrorhamphosus scolopax	10	3		1			26.42	0.37	0.01	0.00	1.18	0.07
Pagellus acarne	23	1	1				47.17	0.20	0.55	0.18	0.07	
Lepidopus caudatus	9	4					24.53	0.13			0.09	0.68
Sphoeroides pachgaster	10	1					20.75	0.10		0.01	0.29	0.02
Diplodus bellottii	8	1					16.98	0.08	0.33	0.04		
Citharus linguatula	30						56.6	0.08	0.00	0.14	0.10	0.02
Pomadasys incisus	6	1					13.21	0.08	0.35	0.02		
Peristedion cataphractum	5	1					11.32	0.06		0.02	0.16	0.00
Trachurus picturatus	7	1					15.09	0.05		0.01	0.16	0.02
Trisopterus luscus	16	1					32.08	0.05	0.02	0.11	0.02	0.00
Conger conger	32						60.38	0.05	0.03	0.08	0.03	0.06
Dentex macrophthalmus	8	1					16.98	0.05		0.01	0.09	0.09
Lepidotrigla dieuzeidei	17						32.08	0.04	0.01	0.04	0.05	0.08
GOBIIDAE	15						28.3	0.04	0.08	0.02	0.06	
Capros aper	10	1					20.75	0.04			0.02	0.23
Trachinus vipera	10						18.87	0.04	0.01	0.05	0.04	0.03
MYCTOPHIDAE	8	1					16.98	0.04		0.00	0.03	0.17
Zeus faber	22						41.51	0.04	0.02	0.02	0.08	
Dentex maroccanus	11						20.75	0.03	0.00	0.03	0.08	
Umrina canariensis	6						11.32	0.03	0.08	0.04		
Loligo vulgaris	13						24.53	0.03	0.03	0.05	0.03	
Raja straeleni	4	1					9.43	0.03			0.09	
Mullus surmuletus	24						45.28	0.03	0.01	0.02	0.07	0.00
Illex coindetii	12						22.64	0.02		0.00	0.02	0.09
Pagellus erythrinus	5						9.43	0.02	0.00	0.06	0.00	
Diplodus vulgaris	8						15.09	0.02	0.03	0.04		
Trachinus draco	4						7.55	0.02	0.04	0.03		
Lophius budegassa	3						5.66	0.02			0.04	0.03
Sepia officinalis	7						13.21	0.02	0.02	0.04		
Aspitrigla obscura	11						20.75	0.02	0.01	0.01	0.03	
	3						5.66	0.02			0.00	0.09
Argentina sphyraena	10						18.87	0.01		0.00	0.02	0.05
Lesueurigobius sanzoi	6						11.32	0.01	0.01	0.04		
Torpedo marmorata	10						18.87	0.01	0.04	0.01	0.00	0.00
Solea vulgaris	13						24.53	0.01	0.02	0.02	0.01	
Raja asterias	3						5.66	0.01	0.05			0.02
Octopus vulgaris	13						24.53	0.01	0.01	0.02	0.01	0.00
Cymbium marmoratum	1						1.89	0.01	0.06			
Ophidion barbatum	15						28.3	0.01	0.01	0.01	0.02	0.02
OPHICHTHIDAE	3						5.66	0.01			0.01	0.05
Aphia minuta	3						5.66	0.01		0.03	0.00	
Penaeopsis serrata	2						3.77	0.01	0.00			0.05
Parapenaeus longirostris	2						3.77	0.01		0.01		0.01
Plesionika ensis	1						1.89	0.00				0.01
Penaeus kerathurus	1						1.89	0.00	0.00			
Other fish								0.15	0.15	0.18	0.13	0.12
Sum all species								17.11	32.47	13.97	17.38	2.53
Sum SNAPPERS, JOBFISHES												
Sum GROUPERS, SEABASSES								0.00		0.00	0.00	
Sum GRUNTS, SWEETLIPS								0.08	0.35	0.02		
Sum CROAKERS, DRUMS, WEAKF., KOB								0.03	0.09	0.04		
Sum PANDORAS, PORGIERS, SEABREAMS,								0.41	0.91	0.40	0.25	0.09
Sum SHARKS, CHIMAERAS								0.00			0.00	0.02
Sum BATOID FISHES, RAYS								0.08	0.12	0.03	0.13	0.03
Sum CEPHALOPODS								0.09	0.06	0.12	0.07	0.10

## ANNEX V COLLECTED SAMPLES AND RESPONSIBLE INSTITUTIONS

Type	Number/Type/Area	Conservation	Placed at	Status	Responsible
Nutrients	7 cardboard boxes 678 samples Plastic vials (20 ml) Mauritania – Morocco	Frozen	INRH	Analyses starting in April 2012 Prelim. results September 2012	Ahmed Makaoui makaouireda@yahoo.fr
Nutrients	6 cardboard boxes 520 samples Plastic vials (20 ml) Guinea - Morocco	Chloroform	IMR Database	Lab analyses completed Quality control pending. Prelim. results September 2012	Bjørn Kraft Espen Bagøyen
Chlorophyll	Plastic bag ~ 660 samples GF/F filters in plastic tubes Guinea - Morocco	Frozen	INRH	Analyses start in April, results expected end June	Berraho Amina amina_berraho@yahoo.fr
Phytoplankton	4 plastic boxes 118 samples Glass bottles (25 ml) Guinea – Morocco	Formalin or Lugol	INRH	A proposal for Taxonomy analyses will be prepared by Berraho Amina with Guinea	Berraho A, INRH A Keita, Guinea
Zooplankton, Ichtyoplankton (egg / larve) species id.	5 plastic boxes 338 samples Plastic bottles (100 ml) Guinea – Morocco	Formalin	INRH	A proposal for Taxonomy analyses will be prepared by Berraho Amina Preliminary results for Morocco by September	Berraho A. A Keita, Guinea
Zooplankton, Biomass (dry weight)	900 samples	Frozen	IMR	Labwork completed Quality control pending. Expected before September	Bjørn Kraft / Espen bagøyen
Genetics	76 ind. (2 species, 2 stations)	Frozen	INRH		Malika Chlaida
Genetics	96 ind. (5 species, 11 stations)	Ethanol	INRH		Malika Chlaida
Genetics	50 samples of <i>Capros aper</i> at	Ethanol	Marine Institute of	Searching for money to	Edward Farrell, Marine

	position 2302N 1705W		Ireland	analyse data	Institute of Ireland
Fish samples for species id	Xx species	Formalin	IMR		Franz Ublin, IMR, Nor
Benthos (trawl)	7 containers	Ethanol/ Formalin			Morocco- Ettahiri
	3 containers	Ethanol/ Formalin			Senegal
	1 container	Ethanol/ Formalin			Mauritania
Benthos (trawl)	Xx containers	Ethanol/ Formalin	IEO	Proposal from University of Vigo to get the samples analysed with the region	Ana Ramos
Mud samples (trawl)	Xx containers		IEO	Analyses of pollution, POC, etc	Ana Ramos
<i>Otholits</i>	No samples				
<i>Reproduction</i>			In the nansis database	Analysed onboard	Kathrine Michalsen
<i>Length / weight</i>			In the nansis database	Analysed onboard	
<i>Diet</i>	No samples				
<i>birds</i>				Analysed onboard Report and data requested before end of April	Paul Robinson
<i>mammals</i>				Analysed onboard Report and data submitted	Koen Van Waerebeek
Benthos (soft sediments)	X containers	Ethanol/F ormalin	UIB	By mid 2013	UiB, Jon Kongsrud

Genetics = sardine, *S. maderensis*, *sardinella aurita*, *Epinephelus* sp. and *Pagellus bellottii*.



## ANNEX VI BIOLOGICAL FISH SAMPLES TAKEN

SpecCode	Species	N measured	L+W	L+W+S	L+W+S+M	L+S	L+S+M		
ARMAR01	Ariomma bondi	1							
BALBA01	Balistes capricus	34						L	Length
CAPCA01	Capros aper	6	6	6	6			W	Weight
CARCA02	Caranx crysos	30						S	Sex
CARCH01	Chloroscombrus chrysurus	106						M	Maturity
CARCM01	Campogramma glaycos	16							
CARDE02	Decapterus rhonchus	689	182	0	0				
CARSA01	Selar crumenophthalmus	20							
CARSL01	Selene dorsalis	188							
CARTR01	Trachurus trachurus	2806	55	0	0				
CARTR02	Trachurus trecae	2229	4	1	1				
CARTR07	Trachurus picturatus	51							
CENCE01	Centracanthus cirrus	41							
CLUIL01	Ilisha africana	117							
CLUSD01	Sardina pilchardus	1360	25	0	0				
CLUSL01	Sardinella aurita	453	81	44	44				
CLUSL02	Sardinella maderensis	132	60	58	58				
ENGEN01	Engraulis encrasicolus	2186							
LETL01	Lethrinus atlanticus	10	10	10	10				
LOPLP03	Lophius vaillanti	18							
LOPLP06	Lophius budegassa	5							
LUTLU01	Lutjanus gorensis	8							
MERME01	Merluccius merluccius	1449							
MERME02	Merluccius senegalensis	270							
MERME03	Merluccius polli	1000							
MUGMU02	Mugil cephalus	3							
MULML01	Mullus surmuletus	66							
MULPS01	Pseudupeneus prayensis	132							
PLNGA01	Galeoides decadactylus	62							
PODBR01	Brachydeuterus auritus	119							
PODPL01	Plectorhinchus mediterraneus	29							
PODPO01	Pomadasys jubelini	33							
PODPO02	Pomadasys incisus	210							
PODPO03	Pomadasys peroteti	1							
POTPO01	Pomatomus saltatrix	22							
PRIPR01	Priacanthus arenatus	26							
SCIAR01	Argyrosomus regius	1							
SCIMI01	Miracorvina angolensis	3							
SCIUM01	Umbrina canariensis	88							
SCMSC01	Scomber japonicus	1923							
SCRHE01	Helicolenus dactylopterus	78							
SEREPO1	Epinephelus aeneus	27	29	29	22				
SERE26	Epinephelus gorensis	1							
SERE43	Epinephelus costae	1	1	1	1				
SHRPE31	Parapenaeus longirostris	401				401	401		
SHRPE61	Penaeus notialis	45							
SPABO01	Boops boops	48							
SPADE01	Dentex angolensis	172							
SPADE02	Dentex canariensis	97							
SPADE03	Dentex macrophthalmus	507							
SPADE05	Dentex gibbosus	1							
SPADE07	Dentex maroccanus	386							
SPADI01	Diplodus bellottii	76							
SPADI02	Diplodus vulgaris	17							
SPADI05	Diplodus sargus	12							
SPADI06	Diplodus cervinus cervinus	3							
SPAPA01	Pagellus acarne	354							
SPAPA02	Pagellus bellottii	942	281	143	141				
SPAPA03	Pagellus erythrinus	192							
SPAPR02	Pagrus africanus	3							
SPAPR03	Pagrus auriga	17							
SPAPR07	Pagrus caeruleostictus	229	21	16	16				
SPHSP01	Sphyaena guachancho	21							
SPHSP02	Sphyaena sphyaena	1							
SQULO21	Loligo vulgaris	107							
SQUSE11	Sepia officinalis	36							
TRITR01	Trichiurus lepturus	59							
ZEIZE01	Zeus faber	103							
ZEIZN01	Zenopsis conchifer	69							
Totals		19948	755	308	299	401	401		