

### **BENEFIT SURVEYS**

## Acoustic survey of the mesopelagic fish resources of the Benguela region

23 August - 12 September 2006

Ministry of Fisheries & Marine Resources Swakopmund Namibia Marine and Coastal Management Cape Town South-Africa

Institute of Marine Research Bergen Norway **CRUISE REPORTS "DR. FRIDTJOF NANSEN"** 

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### 23 August - 12 September 2006

### by

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### **1.1. BACKGROUND**

Fisheries acoustic surveys in the Benguela region have in the past only focused on commercially important species such as sardine, anchovy, horse mackerel and round herring (Barange *et al.* 1999, Boyer and Hampton 2001). Recently they have also been used to estimate the biomass and target strength of jellyfish in Namibian waters (Brierley *et al.* 2001) and have at times been used to correct estimates of hake biomass obtained from bottom trawl surveys (Iilende *et al.* 2001). Given the synoptic nature of acoustic surveys and improved technology available, these surveys are also ideal for estimating the biomass of non-commercial species such as lanternfish and lightfish in a relatively short time. Despite the perceived high biomass of mesopelagic fish biomass in both the northern and southern Benguela (Armstrong and Prosch (1991) and their associated importance in the food web (Shannon and Jarre-Teichmann 1999), very little effort has, however, been spent on estimating the biomass and target strength of mesopelagic fish.

The combined biomass of the myctophid *Lampanyctodes hectoris* (the lanternfish) and the sternoptychid *Maurolicus muelleri* (the lightfish) in the southern Benguela was estimated by Armstrong and Prosch (1991) to be in the order of one million tons during two surveys in 1983 and 1987. *L hectoris* is by far the most abundant myctophid in the northern Benguela and is distributed over the outer shelf from Walvis Bay to the Orange River and further south into South Africa's west coast area. The biomass of lanternfish in the northern Benguela has previously been estimated at around 800 000 tons, although negative biases such as under sampling during the day and net avoidance at night were noted for this estimate (Hewitson and Cruikshank 1993). Several acoustic surveys conducted each year in the Benguela region are restricted to the inner shelf area (approximately 200 m isobath) and therefore not suitable for providing simultaneous mesopelagic fish biomass estimates, as the distributional range of both lanternfish and lightfish extends out to at least a bottom depth of 500 m (Hulley and Prosch 1987).

Several attempts to model trophic flows in the southern and northern Benguela have had to incorporate uncertainty about many of the parameter estimates in the mass balanced models used (Jarre-Teichmann *et al.* 1998, Shannon *et al.* 2004, Roux and Shannon 2004). Whereas biomass estimates of the commercially important fish species are available, data on mesopelagic production and consumption have not been updated since the mid 1980s. Results from trophic

flow models of the region have, however, confirmed that mesopelagic fish play an important role in the food web of the Benguela, particularly as a link between zooplankton and hake (Jarre-Teichmann *et al.* 1998, Shannon and Jarre-Teichmann 1999). Apart from hake, mesopelagic fish are also consumed by other demersal fish and large horse mackerel, cephalopods, large pelagic such as tuna and snoek and even by seabirds.

In addition, round herring (*Etrumeus whiteheadi*) is currently not of commercial importance in Namibia and there is limited information on the species from that region. Round herring is also considered to be of little importance to the trophic flow of the northern Benguela and is basically eliminated from the trophic flow models (Jarre-Teichmann *et al.* 1998) due to there being little information available. During May 2004, however, an acoustic survey of the LUCORC region by the R. S. Africana found substantial amounts of round herring (260 000 tons) in the area between Lüderitz and the Orange River (MCM unpublished data). These fish could be an important food source to other top predators such as large pelagic fish (Shannon and Jarre-Teichmann 1999), condrichthyans (Jarre-Teichmann *et al.* 1998), seals and seabirds (Crawford *et al.* 1991), yet not enough information is available to include them into ecosystem models.

Given recent endeavours to move away from single-stock assessments procedures towards an integrated ecosystems approach to fisheries management, some fundamental uncertainties need to be addressed for several species groups. These include greater effort to improve indices of biomass, consumption, predator selectivity and the variability in these related to absolute abundances of prey species (Shannon *et al.* 2004, Roux and Shannon 2004). This proposal aims to address some of the questions related to the mesopelagic species located in the northern and southern Benguela through a dedicated acoustic survey, with bottom and midwater trawling for target identification, of the entire shelf out to a depth of 500 m between Walvis Bay and Cape Point.

### **1.2. OBJECTIVES OF THE SURVEY**

- 1. Assessing the biomass and distribution patterns of mesopelagic fish species in the southern and Northern Benguela?
- 2. Determine the target strength of mesopelagic fish species in the Benguela region in-situ using high resolution multi-frequency techniques
- 3. Collect oceanographic variables (temperature, salinity and oxygen) to determine their

influence on the distribution and behaviour of mesopelagic fish species in the Benguela region

- 4. Collect mesopelagic egg and larvae to quantify their abundance and map their horizontal distribution.
- 5. Collect acoustic and trawl data on diel vertical migration of mesopelagic fish species during its diel cycle.

### **1.3. PARTICIPATION**

The participants consisted of scientific staff from:

MCM, South Africa:

Janet Coetzee (Project Leader), Johan De Goede, Dagmar Merkle, Nadipah Twatwa, Jan Van Der Westhuizen, Marc Hendricks and Mareck Lipinski

The University of Bergen, Norway Arved Staby

NatMIRC, Namibia: Uatjavi Uanivi, Birgit Goeck, Erasmus Kakonya, Twali Akawa and Martha Uumati

Institute of Marine Research, Norway:

Jens Otto Krakstad (Cruise Leader), Erling Kåre Stenevik, Tor Egil Johannson and Ole Sverre Fossheim

### **1.4.** NARRATIVE

The ship left Walvis Bay on Wednesday  $23^{rd}$  August at 20:00 UTC (Local time = UTC+1). The first acoustic transect was reached at 01:50 UTC the following morning. There was a break in the survey outside Lüderitz on the early morning of the  $30^{th}$  after the eight transect due to bad weather. The survey was resumed at 08:00 on the morning of the  $1^{st}$  September after a crew change in Lüderitz on the  $31^{st}$  August. Another break in the acoustic survey was made on the

morning of the 2<sup>nd</sup> September to allow for a 36 h diel station. The station was completed and the survey resumed on the 3<sup>rd</sup> at midday. The border between Namibia and South Africa at the Orange River was reached on the late evening of the 4<sup>th</sup> September. The survey was terminated off Cape Town on the 12<sup>th</sup> at 01:30 after the last Multinet station, and the vessel thereafter steamed to Cape Town where we arrived at 08:30 in the morning, local time.

The survey area was divided into five different strata based on the expected density of mesopelagics within each region. Within each stratum acoustic data was collected routinely on randomly spaced parallel transects between 500 m bottom depth to the coast at 20 m depth, or to the end of the fish distribution. Bottom and pelagic trawl catches were used to identify acoustic targets and collect length frequency data and biological data on the sampled populations.

CTD's and Hydro bios plankton nets were conducted with 15 NM intervals on predetermined transects spaced approximately 60 NM apart. CTD's were taken to 250 m depth.

All together 90 Pelagic trawl stations, 6 bottom trawl stations, 47 plankton net stations, 52 hydrographical stations were completed during the survey.

#### **1.5. SURVEY EFFORT**

The survey design consisted of a series of pre-stratified, randomly spaced, parallel transects, designed to obtain unbiased estimates of stock size and sampling variance (Jolly and Hampton 1990). The survey area was divided into five strata: Walvis Bay to Easter Point, Easter Point to the Orange River, Orange River to Hondeklip Bay, Hondklip Bay to Doring Bay, Doring Bay to Cape Columbine and Cape Columbine to Cape Point (Fig. 1). Survey effort in the area south of Luderitz was adjusted downward during the survey in order to complete coverage of the entire area.

Figure 1 shows the cruise tracks with fishing stations and Figure 2 shows plankton and hydrographical stations. Table 1 summarizes the survey effort by strata.

Area	BT	PT	Total	CTD casts	Multinet	Log (nm)
			Trawls		stations	
Walvis Bay - Easter Point	1	21	22	11	11	661.6
Easter Point - The Orange River	4	35	39	14	14	758.9
Orange River - Hondklip Bay	0	11	11	8	8	389.4
Hondklip Bay - Doring Bay	0	12	12	7	7	346.1
Doring Bay - Cape Columbine	1	8	9	6	6	336
Cape Columbine - Cape Point	0	3	3	2	2	200
Total	6	90	96	48	48	2692

**Table 1.** Summary of survey efforts by regions, including number of demersal and pelagic trawl hauls, CTD casts, Multinet stations and distance surveyed.



Figure 1. Course track with fishing stations in the survey area. Depth contours are indicated



Figure 2. Course track with plankton and hydrographical stations in the survey area. Depth contours are indicated

### 2.1. HYDROGRAPHIC SAMPLING

A Seabird 911+ CTD probe was used to obtain vertical profiles of the temperature, salinity and oxygen. Real time logging was carried out using the PC based Seabird Seasave software. CTD casts were conducted on predetermined environmental sampling transects. The casts were stopped a few meters above the bottom, and at a maximum of 500 m depth. An underwater low-light sensor attached to the CTD provided information of light extinction with depth.

Meteorological data logged from the Aanderaa meteorological station included wind direction and speed, air temperature, incident solar intensity and sea surface temperature (SST). All data were averaged by unit distance sailed (1 NM).

A SBE 21 Seacat Thermosalinograph was continuously logging surface salinity data from 5 m depth during the survey.

### 2.2. TRAWL SAMPLING

#### **Fishing gear**

The vessel has two different sized four-panel 'Åkrahamn' pelagic trawls and one 'Gisund super bottom trawl' that were used during the survey. The smallest pelagic trawl has 10-12 m vertical opening under normal operation, whereas the large trawl has 15-18 m opening, and a typical wing distance of 35 m. The larger Åkrahamn pelagic trawl was connected with the multisampler during the survey. The multisampler is advantageous because it has three codends that can be opened and closed at any depth. It can therefore take three separate discrete samples in each hauls. Each net was typically open for 10-15 m during trawling.

The bottom trawl has a 31 m headline and a 47 m footrope fitted with a 12" rubber bobbins gear. The codend has 20 mm meshes, and has an inner net with 10 mm mesh size. The vertical opening is about 5.5 m. The distance between the wing tips is about 18 m during towing. The sweeps are 40 m long. The trawl doors are 'Thyborøen' kombi, 8 m<sup>2</sup> and weigh 2000 kg. The door spreading is about 45 m when using restraining rope. Trawling was conducted for species

identification only and no restraining rope was therefore used during the survey. Typical trawl time was 30 min.

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

The pelagic trawls are equipped with a trawl eye that provides information about the trawl opening and the distance of the footrope to the bottom. A pressure sensor is used to show the depth on the headline.

#### 2.3. MULTINET PLANKTON SAMPLER AND CUFES

The Hydrobios Multinet was used to collect depth stratified Zoo- and ichtyoplankton samples. The plankton sampler has an opening of  $0.5 \times 0.5$  m and five nets with a mesh size of 405 µm. A flow meter was mounted at the opening of each net. A Scanmar depth recorder with acoustic transmission to the vessel was mounted on top of the Multinet. The plankton sampler was retrieved at a speed of 0.5 - 1.0 m/sec while the vessel maintained a speed of 2 - 2.5 knots, and typical towing time per net was three minutes. The depth intervals used during this survey were 0 - 50 m, 50 - 100 m, 100 - 150 m, 150 - 200 m and 200 - 250 m when bottom depths were greater than 100 m, and 0 - 25 m, 25 - 50 m, 50 - 75 m and 75 - 100 m above bottom when bottom depth was less than 100 m.

The CUFES (Continues Underway Fish Egg Sampler) system was mounted onboard prior to the survey. Samples from the system was regularly collected every 30 min (5 nm) during the whole survey The species composition of the samples were determined and the number of eggs of each species counted and registered together with the middle position of the sampled area.

#### 2.3.1. Processing of ichthyoplankton from the multinet

After removing the cups from the Multinet the samples were transferred into petridishes and examined under a stereomicroscope. All fish larvae and fish eggs were removed from the sample. The eggs and larvae were identified using the key of Olivar and Fortuño (1991) and counted.

#### 2.4. BUOYANCY MEASUREMENTS OF FISH EGGS AND LARVAE

The onboard equipment from Martin Instrument Co. Ltd. was used to measure specific gravity of fish eggs. The equipment consists of three glass cylinders, 50 mm internal diameter and 700 mm high, submersed in a temperature-controlled transparent water container. The temperature was kept constant by a ship-mounted cooling unit. A linear salinity gradient was set up in each column by filling the columns from two conical flasks, each filled with 830 ml salt water solution, connected by a plastic tube at the bottom, one with low-salinity and the other with high-salinity. The filling of each column took about 30 min.

The columns were calibrated by inserting glass floats with known specific gravities ranging from about 1.021 to 1.027 g cm<sup>-3</sup>, into each column. Table 1 shows the Id. number and the exact specific gravities at  $11.5^{\circ}$ C and  $15^{\circ}$ C for each float. The specific gravity of the floats was given with an accuracy of +/- 0.0002 g cm<sup>-3</sup>.

The fish eggs to be measured were inserted into the columns with a pipette just below the surface and were allowed to settle before the first measurement of the vertical position in the column was taken. Only wild caught eggs were measured. Neutral buoyancy of the eggs was expressed in salinity units by calculating the salinity gradient in the column from the absolute densities of the floats and from the temperature in the columns.

Column I			Column II			Column III		
Id. No	pat		Id. No	ρ	at	Id. No	ρ	at
	11.5°C	15.0°C		11.5°C	15.0°C		11.5°C	15.0°C
22635	1.0233	1.0232	23745	1.0228	1.0228	22633	1.0218	1.0217
20381	1.0243	1.0242	20377	1.0248	1.0247	20380	1.0241	1.0240
20375	1.0255	1.0254	20372	1.0262	1.0261	20374	1.0256	1.0255
20366	1.0270	1.0269	20358	1.0281	1.0280	20362	1.0276	1.0275

Table 1: Exact specific gravities, p, at 11.5°C and 15°C of glass floats in the three columns.

#### 2.5. MULTIFREQUENCY ACOUSTIC SAMPLING AND ANALYSIS

### Equipment

Two synchronised Simrad EK 500 echosounders connected to four transducers with operating frequencies of 18 kHz, 38 kHz, 120 kHz (split beam) and 200 kHz (single beam) were used during the survey. All acoustic transducers were calibrated successfully in Elefant Bay in Angola

prior to the survey. No major deviation from prior calibrations was observed. The calibration report with the technical specifications and operational settings used can be found in Annex II. To minimise differences in sampling resolution, the pulse length and band width setting of the transducers were set to short/wide (18 kHz; 0.7 ms), medium/wide (38 kHz; 1.0 ms) and long/narrow respectively (120 kHz and 200 kHz; 1.0 ms). Data were logged continuously on transects and during trawls with Windows based Sonar Data\_Echolog v3.4 software. Analysis and post processing of logged data was done using Sonar Data Echoview software, v3.4.

#### **Target strength estimation**

Target strength (TS) is the scaling factor required to convert the mean area backscattering coefficient  $s_A$  (NASC;  $m^2/NM^2$ ) to fish density. No specific target strength relationships are presently available for the dominant mesopelagic fish species of the central and southern Benguela region. For this reason we attempted to collect *in situ* TS data during the course of the survey at 38 kHz (the principle survey frequency for biomass estimation in the region).

Due to data volume restrictions, acoustic data collected during steaming between stations and between trawls was limited to binned data (i.e., no sample data) of all four frequencies. During trawling and during the reciprocal steam back to the start of the trawling position, sample power and angle telegrams of the 38 kHz and 200 kHz transducers were also collected. During these times, the pulse duration of the 200 kHz transducer was changed from 0.6 ms (long/narrow) to 0.2 ms (medium/wide) in order to reduce the pulse length and the resolvable pulse volume. In order to match the target strength and biological data as closely as possible, the analysis was restricted to files collected either during or directly before or after successful identification of acoustic targets by aimed trawling. Data collection was mainly (but not exclusively) restricted to night time recordings in areas where mesopelagic fish dispersed in various sound scattering layers in mid-water or close to the surface. Furthermore, data collection was restricted to areas where trawl samples indicated dominance (>80%) of one species only and the catch rate of that species exceeded 20 kg.hr<sup>-1</sup>. Targeting of specific layers (depth discrete sampling) was made possible with the multi-sampler and enabled us to successfully extract target strength information from various species-specific depth bands in close proximity to the trawl.

The echogram of each of the selected experiments was visually inspected to select regions where fish densities appeared to be low enough for the extraction of echoes from single targets. These regions often did not coincide completely with the depth at which the trawl samples were collected, as these were often aimed at the densest part of the concentrations. Instead, selections were made around the periphery of these concentrations, where lower densities enabled successful extraction of single targets.

The methods used to extract and analyse single target detections differed depending on the data (sample data or binned data) collected and the transducer type (hull mounted or submersible) used to collect the data. Three methods of single target detection were used:

- (i) When only binned data were collected, individual targets detected at 38 kHz and 120 kHz by the EK500 internal target detection algorithm, based on the phase and echo duration, were exported for further analysis as explained below.
- (ii) During trawling and immediately after trawling, the sample data collected were used in Sonar data Echo view's virtual echogram module to create a new echogram based on the single target detection (split beam method II) algorithm (see echo view help documentation). The algorithm acts on power data on a ping-by-ping basis. It calculates power data from TS values using the following formula:

$$P_i = TS_i - 40Log(R_i) - 2aR_i$$
<sup>(1)</sup>

Where:

TSi = target strength of sample i Ri = the corrected range of the sample defined as Ri = ri - at a = absorption coefficient (dB/m) and where:

ri	=range of sample <i>i</i>
a	= TVG range correction offset
t	= sample thickness

(iii) The target-tracking module of Sonar data Echo view was used to track single target detections from the submersible 38 kHz split beam transducer while the ship was stationary.

Further screening of the 38 kHz data collected was carried out by comparing signals at 38 and 200 kHz (when the data originated from the keel mounted transducers). The 120 kHz data was not used as it was anticipated that the shorter pulse duration setting used during and after trawling at 200 kHz (medium/wide; 0.2ms) would make this data more effective for data screening. The screening was based on the fact that the keel-mounted 38 and 200 kHz transducers are in close physical proximity to each other resulting in significant beam overlap and the ability to detect the same targets at both frequencies simultaneously. If the transmissions are synchronised, (in this case the 200 kHz transducer was triggered from the 38 kHz transducer) a target should therefore appear at very nearly the same range in both sounders. By accepting only 38 kHz targets which have been detected as single by the 200 kHz transducer, which has a higher range resolution (~15 cm at 0.2 ms) the discrimination at 38 kHz can in principle be improved substantially.

Single targets detected during stationary data collection with the 38 kHz submersible transducer through both the Simrad EK500 single target detection method and from the Sonar data Echo view virtual split beam method II algorithm were compared both to each other and to the single targets contained within single target tracks. The aim of this comparison was to estimate the effectiveness of all three methods in screening out multiple targets.

TS histograms were generated for both the screened and un-screened (by 200 kHz) 38 kHz single target data and related to the mean length of the particular species contained in the associated trawl. To estimate the peak in the TS histogram, it was assumed that the back-scattering cross-section follows a lognormal distribution. A normal probability density function was calculated and fitted to the observed data. The standard deviation ( $\sigma$ ) was first estimated by fitting a one-tailed normal distribution to the left tail of the histogram. Next the mean of the PDF was calculated by adjusting the mean ( $\mu$ ) until the peak of the function was aligned with the peak of the data distribution. The form of the fitted function is:

$$f_i = \frac{1}{\sigma\sqrt{2\pi}} e^{\frac{-(x_i - \mu)^2}{2\sigma^2}}$$
(2)

Where  $\mu$  and  $\sigma$  are the mean and standard deviation (in dB) of the TS distribution.

Calculation of the mean TS of species j is by numerical integration of the function itself (after transformation to the linear domain), rather than from the actual data. A regression of mean TS versus mean fish standard length (L) obtained from the trawl sample gave the TS as a function of fish size according to the form:

$$TS_j = a + b \log L_j \tag{3}$$

Mean TS per kg of fish for species j was also derived for biomass estimation by dividing the mean TS per individual by the mean weight (W)<sub>j</sub> of 1 fish of species j as follows:

$$(TS_{kg})_j = TS_j - 10 \log W \tag{4}$$

Where W is the weight in kg of 1 fish of species *j* 

Regression of  $(TS_{kg})_j$  against mean length of species *j* then gives the length related  $TS_{kg}$  for species *j* of the following form:

$$(TS_{kg})_j = a + b \operatorname{Log} L_j$$
<sup>(5)</sup>

For species *j*, this expression is converted to the linear form  $(\overline{\sigma}_{kg})_j$ ; the mean back scattering cross section per kg which is used in equation (8) below for density estimation as follows:

$$(\overline{\sigma}_{kg})_j = \frac{\sum n_i \cdot 10^{0.1b_j} \cdot l_i^{\frac{a_j}{10}}}{\sum n_i}$$
(6)

Where  $l_i = \text{length class } i$ 

 $n_i$  = number of fish in length class i

 $b_j$  and  $a_j$  are constants in the TS<sub>kg</sub> versus length relationship

TS estimation was attempted for the 3 most dominant mesopelagic fish species found during the survey, i.e., two myctophids *Lampanyctodes hectoris* (also known locally as the lanternfish) and *Symbolophorous boobs* and the sternoptychid *Maurolicus muelleri* (also known locally as the lightfish). Target strength relationships for pelagic fish found during this survey (sardine, anchovy and horse mackerel) have been estimated previously (Barange et al 1996) and were applied accordingly. For round herring, the target strength was assumed to be the same as that applied for sardine.

#### **Estimation of biomass**

Target species of the same genus are generally not acoustically distinguishable. When more than one species of fish (each with a different TS) is present within an ESDU (elementary sampling distance unit), it is necessary to partition the echo intensity between the species. The contribution of species *j* to the total  $s_A$  (mean back scattering coefficient) is given by:

$$(\mathbf{s}_{\mathbf{A}})_j = \mathbf{F}_j \cdot \mathbf{s}_{\mathbf{A}} \tag{7}$$

$$F_{j} = \frac{n_{i}\overline{\sigma}_{j}}{\sum n_{j}\overline{\sigma}_{j}}$$
(8)

And  $\overline{\sigma}_j$  = mean back scattering cross section for species  $_j$ 

 $n_j$  = number of fish of species j in the sample

 $(s_A)_j = \frac{\frac{W_j}{\overline{w}_j}\overline{\sigma}_j.s_A}{\sum_{i}^{m} \frac{W_j}{\overline{w}_i}\overline{\sigma}_j}$ 

where 
$$n_j = \frac{W_j}{\overline{w}}$$
 (9)  
where  $\overline{w}_j$  = mean weight of species  $_j$  and

 $W_i$  = is the weight of species *j* in the sample

Therefore:

$$= (s_A)_j = \frac{W_j(\overline{\sigma}_{kg})_j \cdot s_A}{\sum_j^m W_j(\overline{\sigma}_{kg})_j}$$
(11)

(10)

The area density  $(kg.m^{-2})$  for fish of species *j* is given by:

$$\rho_{kg} = \frac{(s_A)_j}{4\pi .1852^2 (\bar{\sigma}_{kg})_j}$$
(12)

By substitution of equation (11) into (12), the density is

$$\rho_{kg} = \frac{W_j(\overline{\sigma}_{kg})_j \cdot S_A}{4\pi \cdot 1852^2 \sum_{j}^m W_j(\overline{\sigma}_{kg})_j \cdot (\overline{\sigma}_{kg})_j}$$
(13)

Which simplifies to:

$$\rho_{kg} = \frac{W_j \cdot s_A}{4\pi \cdot 1852^2 \sum_j^m W_j (\overline{\sigma}_{kg})_j}$$
(14)

Mean density estimates obtained from equation (14) above per species per ESDU, (variable length, but mostly around 10 nm) were then averaged per transect and stratum according to the stratified random method of Jolly and Hampton 1990. Detail of the method is provided below for

completeness:

The mean density  $(kg.m^{-2})$  of a transect *i* is given by

$$\overline{\rho}_{j} = \frac{\sum \rho_{i} \cdot L_{i}}{\sum L_{i}}$$
(15)

Where  $\rho_i$  is the measured density and  $L_i$  is the length (nm) of each ESDU on transect i

The mean density of the stratum $_k$  is then given by

$$\overline{\rho}_{k} = \frac{\sum \rho_{j} \cdot L_{j}}{\sum L_{j}}$$
(16)

Where  $L_j$  is the length of each transect in nautical miles

And the biomass of each species in  $stratum_k$  is

$$B_k = \overline{\rho}_k \cdot A_k \tag{17}$$

Where  $A_k$  is the surface area in km<sup>2</sup> of the surveyed area of stratum *k*.

The variance  $s_k^2$  of the mean density estimate of stratum<sub>k</sub> is given as

$$s_k^2 = \frac{n_k}{n_k - 1} \cdot \frac{\sum \left[ \left( \overline{\rho}_j - \overline{\rho}_k \right) \cdot L_i \right]^2}{\left( \sum L_j \right)^2}$$
(18)

Where  $n_k$  is the number of transects in stratum k

The CV of the mean density estimate of stratum  $_k$  is then given by

$$CV_k = \frac{\sqrt{s_k^2}}{\overline{\rho}_k} \tag{19}$$

The variance of the biomass of stratum $_k$  is calculated as

$$\sigma_k^2 = (CV_k \cdot B_k)^2 \tag{20}$$

And the biomass for the entire survey area is simply the sum of the biomass of all strata, while the CV of this total biomass estimate is calculated by simple summation across all strata

$$CV_{total \ biomass} = \frac{\sqrt{\sum_{k}^{m} \sigma_{k}^{2}}}{\sum_{k}^{m} B_{k}}$$
(21)

The surface area occupied by the survey derived biomass for each stratum was computed by projecting a density surface (which includes all sampled positions) onto a plane and calculating the positive area of the projection in squared degrees using Surfer 8 mapping software. The relationship between latitude and distance is constant, whereas the distance expressed as degrees of longitude varies with the cosine of the latitude. Conversion of squared degrees to km<sup>2</sup> was therefore according to

$$A_{km^2} = \deg^2 \cdot 60(60\cos lat) \cdot 1.852^2$$
(22)

Where *lat* is taken as the mean latitude of the stratum.

Trawl samples were pooled per stratum to obtain size compositions of the entire populations surveyed. Individual trawl length distributions were weighted according to the acoustically estimated biomass in the vicinity of the trawl. Weighted size frequencies were computed for all strata and summed to produce a size frequency for the survey. The method of weighting of the length frequencies is given below:

For stratum i,  $(T)_{ij}$  is the vector of numbers in sample j, where the elements of the vector correspond to length classes. The acoustic weighting for each trawl sample is given by:

$$Z_{ij} = \sum L_{ijk} \cdot \rho_{ijk} \tag{23}$$

Where  $L_{ijk}$  and  $\rho_{ijk}$  are the mean length and mean acoustic density respectively for sample *j* and interval (ESDU) *k* in stratum *i*.

To weigh individual trawls, one needs to convert the acoustic weighting factor (in terms of mass) into a factor in terms of numbers. The trawl-weighting factor,  $Q_{ij}$ , is given by:

$$Q_{ij} = \frac{Z_{ij}}{X_{ij}} \tag{24}$$

Where  $X_{ij}$  is the length frequency mass of sample *j*.

Weighted length frequency in stratum i is the vector (T)<sub>i</sub>:

$$(T)_i = \sum (T)_{ij} \cdot Q_{ij} \tag{25}$$

To get total numbers  $(N)_i$  in stratum *i*, multiply the weighted length frequency by:

$$(N)_i = (T)_i \sum Z_{ij} \cdot B_i \tag{26}$$

Where  $B_i$  is the biomass in stratum *i*. Then sum the numbers at length across strata to obtain the total numbers at length in the survey.

Fish distribution maps were derived from data interpolation using standard Kriging routines in Surfer 8.

#### 2.6. **DIEL STATIONS**

One diel cycle station was conducted during the survey. During this cycle the vessel was anchored during a period each dusk and dawn, and the submersible transducer was lowered to a depth < 50 m above the fish aggregations of interest, and followed this layer over the migration period. The purpose of this was to capture the migration phase of the mesopelagic fish, and follow single fish during the migration phase to collect data on target strength and individuals swimming behaviour. Trawling and plankton sampling with the Multinet was conducted between each diel period in order to collect biological data and information on the size distribution and species composition of the fish in the area. Approximately 36h was spent with the diel experiment, and one dusk situation and two dawn situations were recorded.

The prerequisites for the 48hr station were calm waters and the presence of sufficient amounts of mesopelagic fish at a bottom depth of 250-300 m. In the early hours of September the  $2^{nd}$ , weather conditions were favourable, and a pelagic trawl towed at 55 m depth contained sufficient amounts of mesopelagic fish (*Lampanyctodes hectoris*) to proceed with the experiment. A depth stratified multinet and a CTD were conducted, before the vessel was

anchored at 27<sup>0</sup>07'S 14<sup>0</sup>44'E at approximately 250 m bottom depth. The submersible transducer was lowered to just beneath the surface, and the settings on both the Ek-500 sounders changed so that the 38kHz on the Ek500-2 and the 120kHz on the Ek500-1 were active and transmitted the desired raw data. A detailed list of the settings is given in Appendix II. Initially the ping rate of the submersible transducer was low, which was increased by changing the settings in the operation menu from externally triggered to normal. At 04h00 UCT the transducer was lowered to a depth of 25 m, close to a distinct layer lying between 30-50 m depth. The descent of this layer started at 04h20 UCT and the transducer was subsequently lowered to a depth of 170 m at 05h00 UCT, trying to record individual fish targets while they descended through the beam. At 05h15 this continuous thread of mesopelagic fish started scattering a bit more at a depth of 185 m, and not long after went deeper than 200 m. By 06h00 UCT the fish had settled close to the bottom and no noticeable changes in the layer structure could be observed. Data collection with 'station settings' was stopped at 07h00 UCT, the transducer heaved onboard and the transducer settings changed to 'trawl-settings'. A succession of trawls, CTDs and multinets followed before the vessel anchored again in the afternoon at 15h00 UCT to observe the dusk period until 20h00 UCT. This was followed by another period of targeted trawling, CTD and Multinet stations before the vessel anchored for the third migration period at 03h00 UCT. The experiment was terminated around midday on the 3<sup>rd</sup> after a last cycle of targeted trawling, CTD and Multinet station. Weather conditions had deteriorated and made the collection of good data impossible, thus omitting the observation of the second dusk migration.

### **3.1. OCEANOGRAPHIC CONDITIONS**

The sea surface temperature (SST, 5 m depth) was continuously recorded during the survey. Figure 3 shows the horizontal distribution of SST in the surveyed region. The most prominent feature in the survey area was the upwelling cell off Lüderitz. Water masses in this area had a temperature between 10 and 16°C. Temperature isolines were recorded along the coast. Lowest water temperatures of 10°C were recorded from Lüderitz and north indicating the most intense up-welling area. The highest temperatures of 15°C were recorded offshore, with occasional pockets of 16°C waters.



Figure 3. Horisontal distribution of surface temperature (5 m depth) in the survey area

The sea surface salinity (SSS, 5 m depth) was continuously recording from the thermosalinograph during the survey. Figure 4 shows the horizontal distribution of SSS in the surveyed region. Low salinity values along the coast of Southern Namibia corresponds with low

SST and illustrates the low salinity water masses linked with the upwelling situation off the southern Namibian shelf. The isolines were typically distributed along the coast in the survey area, with the lowest salinity recordings found inshore in the survey area, and in particular north of Lüderitz were minimum salinity of 34.4 PSU were recorded in a small area. Highest salinity values were recorded offshore of the 200 m isobath with PSU >35.0 off Namibia increasing to 35.4 PSU off Saldanha Bay in South Africa.



Figure 4. Horizontal distribution of surface salinity (5 m depth) in the survey area

Figure 5 shows the vertical distribution of temperature salinity and oxygen recorded on the hydrographical transects conducted during the survey. Data were recorded from the surface to 250 m depth at each station. The profiles show that there was pronounced upwelling along the whole coast with subsurface waters of low temperature and salinity coming to the surface inshore. The coldest surface water temperatures <12° C were found inshore in the central part of the survey area on line 5, 8 and 10, with surface waters typically increasing inshore further south. Offshore surface temperatures were typically 14°C increasing to >16°C on line 16. Bottom water temperatures at 250 m depth were typically 10°C in the northern part of the area decreasing to 8°C in the south. Salinity measurement corresponded with the temperature values. Lowest salinity values around 34.9 PSU were found inshore in the most intense upwelling area with values around 35.0 PSU north and south of this. Offshore salinity values increased southwards from >35.0 PSU in the northern part towards > 35.4 PSU on line 16. Bottom salinity values at 250 m depth decreased southwards with salinity around 34.9 in the northern part of the area to 34.6 PSU in the south leading to a much larger salinity gradient on the southern cross shelf transects. It is clear from the measurements on line 14 and 16 that a different water body with other characteristics are present offshore in the upper 100 m and a clear frontal zone (salinity and temperature) is present between these water masses and the more costal water masses. Water masses in the whole survey area were well oxygenised with oxygen concentrations up to 6 ml/l in the surface layers, decreasing towards 2 ml/l in bottom waters. Slightly more oxygenated waters were found in the south of the survey area.





c) Line 8



d) Line 10





Figure 5. Vertical sections of temperature, salinity and oxygen in the survey area. The name of the section refers to the transect number of the survey.

### **3.2. TARGET STRENGTH ESTIMATION**

Preliminary analysis of the *in situ* target strength data collected was performed on board. The only data presented here is the single target data collected at 38 kHz from the keel mounted transducer. Screening of single targets was performed by comparing the depth of single targets collected simultaneously by the keel mounted 200 kHz transducer as described in the methods. Given the higher frequency and the relative low TS of the mesopelagic targets, the 200 kHz data

was only reliable up to a depth of approximately 100m. Further analysis of all TS data collected will be performed in due course.

#### Lampanyctodes hectoris

During this survey the lanternfish, *Lampanyctodes hectoris* was found dispersed in layers close to the surface at night, making it relatively easy to extract TS data for this species. Often, however, the density in these layers was very high and TS data could only be extracted around the periphery of dense layers. In this preliminary analysis data associated with 11 trawl samples (Table 2), thought to have been suited to TS measurement, have been analysed.

	Trawl	Mean	Mean	%	Other species present
Trawl	Depth	Length	$TS_{\text{ind}}$	L.	
no	(m)	(Lt)	(dB)	hecoris	
1741	25	5.20	-53.00	99.2	Juvenile hake, squid sp.
1748	30	6.50	-51.63	96.0	Juvenile hake, gobies, squid sp.
1749	10	4.16	-54.21	58.6	Snoek, Krill, squid sp.
1750	43	5.38	-53.30	77.2	S. boops, snoek, M.muelleri
1753	25	4.78	-53.97	87.5	M.muelleri
1754	25	4.32	-54.51	100.0	-
1755	60	5.36	-53.33	77.1	Snoek, M.muelleri
1759	80	5.80	-52.97	82.0	S. boops, squid sp.
1761	75	5.79	-52.31	99.2	S. boops, squid sp., M. Muelleri
1778	30	5.20	-53.73	98.5	Squid sp.
1792	10	5.20	-53.15	93.0	S. boops

Table 2. Details of trawl samples associated with L. hectoris target strength data collections.

The regression of mean  $TS_{ind}$  versus Fish length (Log L<sub>t</sub>) was highly significant (P<<0.001) with a standard error of 0.32. A scatterplot of  $TS_{ind}$  versus fish length for *L. hectoris* is shown in Figure 6. Also shown is the fitted regression according to the equation  $TS = a + b \text{ Log } L_t$  and the average b<sub>20</sub> constant. A summary of the regression constants as well as the  $TS_{kg}$  fitted equation for all three species is given in Table V.



Figure 6. Scatterplot of TS<sub>ind</sub> (dB) versus fish length for *Lampanyctodes hectoris*.

#### Maurolicus Muelleri

During this survey it was mostly very difficult to find mono-specific dispersed layers of *M. muelleri* close to the surface at night. An attempt to extract single targets from the periphery of dense schools during the day was also attempted, but failed. All single targets detected at 38 kHz in the vicinity of schools were rejected after screening by the 200 kHz single target data. For this reason we had to relax our criteria of selecting suitable data files for target extraction. In some cases, when other species were present, or dominant in the catch, the TS distributions showed clearly separated peaks and it was possible to match a certain peak to a certain organism. The data set analysed thus far is promising, but lacks sufficient data for larger *M. muelleri*. In this preliminary analysis data associated with 9 trawl samples (Table 3), thought to have been suited to TS measurement, have been analysed.

	Trawl	Mean	Mean	%	Other species present
Trawl	Depth	Length	$TS_{ind}$	М.	
no	(m)	(Lt)	(dB)	muelleri	
1789	110	5.20	-51.71	96.7	squid
1797	85	4.28	-53.55	92.1	Round herring, horse mackerel, shrimps
1798	58	4.48	-53.30	43.1	Round herring, horse mackerel
1801	30	4.10	-54.23	47.1	Round herring, horse mackerel, squid
1803	20	4.33	-53.84	100	-
1807	30	4.36	-53.77	96.7	Round herring, squid
1809	25	4.62	-53.08	5.81	Round herring, krill, snoek, squid
1812	10	4.63	-53.05	2.25	Round herring
1815	20	4.00	-54.31	13.7	Angelfish

Table 3. Details of trawl samples associated with *M. muelleri* target strength data collections.

The regression of mean  $TS_{ind}$  versus Fish length (Log L<sub>t</sub>) was also highly significant (P<<0.001) with a standard error of 0.15. A scatterplot of  $TS_{ind}$  versus fish length for *M. muelleri* is shown in Figure 7. Also shown is the fitted regression according to the equation  $TS = a + b \text{ Log } L_t$  and the average  $b_{20}$  constant. A summary of the regression constants as well as the  $TS_{kg}$  fitted equation for all three species is given in Table V.



Figure 7. Scatterplot of TS<sub>ind</sub> (dB) versus fish length for *Maurolicus muelleri*.

### Symbolophorous boops

Although *Symbolophorous boops* was found in many trawl samples, especially on the outer regions of the shelf, it was mainly found in mixed layers associated with *Lampanyctodes hectors* and other fish species. A few trawls associated with some larger catches of *S. Boops* were

selected and a preliminary TS expression has been calculated based on these. The slope of the regression is very high, however, and more data of larger fish need to be collected to verify these results. In this preliminary analysis data associated with 5 trawl samples (Table 4), thought to have been suited to TS measurement, have been analysed.

	Trawl	Mean	Mean	%	Other species present
Trawl	Depth	Length	$TS_{\text{ind}}$	<i>S</i> .	
no	(m)	(Lt)	(dB)	boops	
1737	10	10.97	-50.65	98.6	squid
1744	45	10.55	-51.80	87.1	myctophids, squid
1759	80	11.44	-46.63	18.0	L. hectoris, other myctophids
1767	30	11.88	-46.77	73.1	myctophids, shrimps
1816	5	12.80	-42.59	69.1	Myctophids, M muelleri, horse mackerel

Table 4. Details of trawl samples associated with S. boops target strength data collections.

The regression of mean  $TS_{ind}$  versus Fish length (Log L<sub>t</sub>) was also significant (P<0.005) with a standard error of 0.93. A scatterplot of  $TS_{ind}$  versus fish length for *S. boops* is shown in Figure 8. Also shown is the fitted regression according to the equation  $TS = a + b \text{ Log } L_t$  and the average  $b_{20}$  constant. A summary of the regression constants as well as the  $TS_{kg}$  fitted equation for all three species is given in Table 5.



Figure 8. Scatterplot of TS<sub>ind</sub> (dB) versus fish length for Maurolicus muelleri

	(dB indiv	vidual <sup>-1</sup> )	$(dB kg^{-1})$
	$Y=20 \log L_t-b_{20}$	Y=a log L <sub>t</sub> -b	$Y=a \log L_t - b$
Lampanyctodes hectoris	n = 11	a = 13.82	a = -14.63
	$b_{20} = 67.51$	b = -63.18	b = -12.53
	s.e.m = 0.52	$r^2 = 0.86$	$r^2 = 0.88$
		s.e of $Y = 0.32$	s.e = 0.32
Maurolicus muelleri	n = 9	a = 23.01	a = -1.59
	$b_{20} = 66.36$	b = -68.31	b = -21.47
	s.e.m = 0.48	$r^2 = 0.97$	$r^2 = 0.12$
		s.e of Y= 0.15	s.e = 0.15
Symbolophorus boops	n = 5	a = 110.28	a = 79.87
	$b_{20} = 69.69$	b = -164.67	b = -112.99
	s.e.m = 0.64	$r^2 = 0.95$	$r^2 = 0.95$
		s.e of Y= 0.93	s.e = 0.93

**Table 5.** Parameters of the regression equations fitted to the TS data for *Lampanyctodes hectoris*, *maurolicus muelleri* and *symbolophorous boobs*.

The length weight regressions used to fit the  $TS_{kg}$  equation was derived from on-board measurements of length (l<sub>t</sub>, cm) and weight (g). Figure 9 shows a scatterplot of length versus weight for all three species for which a TS measurement has been calculated. Also shown are the regressions fitted to the data.



**Figure 9.** Scatterplot of fish weight versus fish length for *lampanyctodes hectoris* (a), *Maurolicus muelleri* (b) and *Symbolophorous boops* (c). Also shown are the fitted regressions.

#### 3.3. DISTRIBUTION, SIZE COMPOSITION AND BIOMASS ESTIMATES

Following the calculation of preliminary estimates of target strength for the myctophids *Lampanyctodes hectoris* (the lanternfish) and symbolophorous boops (the bogue lanternfish) and the sternoptychid *Maurolicus muelleri* (the lightfish), it was possible to estimate the biomass of these three species. Although several other lanternfish species were caught during some of the trawls, their abundance was not sufficiently high to warrant biomass estimation. Table 6 gives the biomass estimates derived per stratum and for the entire survey area.

**Table 6.** Estimates of mean density ( $\overline{\rho}$ ), Biomass (B) and coefficient of variation (CV) derived for each stratum and for the total survey area for *Lampanyctodes hectoris*, *Maurolicus muelleri* and *Symbolophorous boops*. Stratum A (W.Bay to Easter Point), Stratum B (Easter Point to Orange River), Stratum C (Orange River to Hondeklip Bay), Stratum D (Hondeklip Bay to Doring Bay) and Stratum E (Doring Bay to Cape Town).

	Lampanyctodes hectoris			Mauroli	cus muell	eri	Symbolophorous boops				
	$\overline{ ho}$	В	CV	$\overline{ ho}$	В	CV	$\overline{ ho}$	В	CV		
	$(g.m^{-2})$	(tons)	(%)	$(g.m^{-2})$	(tons)	(%)	$(g.m^{-2})$	(tons)	(%)		
Stratum A	8.71	260528	0.18	1.83	54739	0.37	7.50	224354	0.51		
Stratum B	6.52	297613	0.25	1.06	48251	0.50	0.66	29906	0.41		
Stratum C	0.70	24652	0.95	3.66	129057	0.70	0.05	1842	0.95		
Stratum D	1.20	36447	0.97	11.19	340858	0.38	0.19	5839	0.98		
Stratum E	2.42	84039	0.46	2.42	171091	0.21	0.65	22601	0.94		
Total up to Orange River											
		563954	0.16		102990	0.31		254260	0.44		
Total for Su	urvey										
		709094	0.15		745071	0.22		284543	0.41		

The total biomass of mesopelagic fish species recorded during the survey is around 1.7 million tones with approximately equal quantities of lanternfish and lightfish. The contribution of other myctophids (dominated by *Symbolophorous boops*) was around 16 % of the total. In the area between Walvis Bay and the Orange River, the biomass was dominated by lanternfish while the dominance of lightfish in the area south of the Orange River was evident. The biomass of commercially exploited pelagic fish incidentally encountered during the survey was also calculated and is given in Table 7. It must be cautioned, however, that survey effort was not high

enough to ensure unbiased sampling of the biomass of small pelagics such as sardine. These fish have a very patchy distribution and the biomass is developed over small spatial scales. The biomass is therefore dependent on the hit or miss of high density areas. Furthermore, these pelagic fish species frequently occur very close inshore and therefore their entire distribution would not have been covered during this survey. The only significant biomass of commercially exploited fish measured was that of round herring at around 300 thousand tons. This biomass was divided almost equally between the northern area and the southern area of the survey.

**Table 7.** Estimates of Biomass (B) and coefficient of variation (CV) derived for each stratum and for the total survey area for commercial pelagic fish incidentally encountered during the survey. Stratum A (W.Bay to Easter Point), Stratum B (Easter Point to Orange River), Stratum C (Orange River to Hondeklip Bay), Stratum D (Hondeklip Bay to Doring Bay) and Stratum E (Doring Bay to Cape Town).

	Sardine		An	Anchovy		Round herring		ackerel			
-	В	CV	В	CV	В	CV	В	CV			
	(tons)	(%)	(tons)	(%)	(tons)	(%)		(%)			
Stratum A	0	0.00	0	0.00	45	1.05	3029	0.96			
Stratum B	0	0.00	0	0.00	170276	0.83	10	1.02			
Stratum C	4534	0.95	0	0.00	95965	0.07	882	1.05			
Stratum D	0	0.00	135	0.98	32573	0.98	3761	0.99			
Stratum E	0	0.00	107	1.15	59859	0.44	2836	0.50			
Total up to Orange River											
	0	0.00	0	0.00	170321	0.83	3039	0.96			
Total for Survey											
	4534	0.62	242	0.95	358651	0.41	10521	0.47			

The distribution and relative abundance of *Lampanyctodes hectoris, Maurolicus muelleri,* Symbolophorous boops and *Etrumeus whiteheadi* is shown in Figures 10 and 11. The distribution of *Lampanyctodes hectoris*, the lanternfish was continuous from Walvis Bay to just north of Hondeklip bay. In this area, the highest densities occurred in the midshelf area with a few high-density areas occurring north of the Orange River. In the southern part of the survey, lanternfish densities were much lower and limited to the offshore regions mostly, with another high-density spot off Cape Town.



Figure 10. Distribution and relative abundance of lanternfish (left) and lightfish (right).

The distribution of lightfish expanded across the shelf in most areas, with the abundance increasing towards the south where several high-density areas were recorded in the midshelf area south of Hondeklip Bay.



Figure 11. Distribution and relative abundance of symbolophorous boops (left) and round herring (right).

The distribution of *Symbolophorous boops* was mainly limited to the outer shelf areas, with a very high-density area between Walvis Bay and Easter point. Although the distribution extended as far south as Cape Columbine, the densities in the southern area were much lower. A very high-density area of round herring was found close inshore just south of Lüderitz. Further south the densities remained constant over the mid to inner shelf between the Orange River and Cape Columbine.

The population length frequency distribution derived from acoustically weighted trawl length frequencies for each of the 3 target species, for each stratum and for the survey as a whole is given in Figure 12, 13 and 14.



**Figure 12.** Acoustically weighted length frequency for each stratum and the entire population – Lanternfish (*Lampanyctodes hectoris*)



**Figure 13.** Acoustically weighted length frequency for each stratum and the entire population – Lightfish (*Maurolicus muelleri*).



**Figure 14.** Acoustically weighted length frequency for each stratum and the entire population – myctophid (*Symbolophorous boops*).

#### **3.4. DISTRIBUTION AND ABUNDANCE OF EGG AND LARVAE**

Data on egg and larvae distribution was collected with the Hydrobios Multinet and the CUFES. Egg and larvae of both lightfish and lanternfish were distributed in the whole survey area. The Hydrobios Multinet collected depth discrete samples of egg and larvae from standard depths of 0 - 50 m, 50 - 100 m, 100 - 150 m, 150 - 200 m and 200 - 250 m as described in the method chapter. Typically eggs were found in high concentrations further offshore than the larvae, and lightfish deeper than lanternfish.

### Lightfish

The horizontal distribution of egg and larvae of the lightfish are described in Figure 15 and 16. The data from each station was merged to show the total concentration per surface area. Both egg and larvae of the lightfish were found in large quantities in the three upper nets, between 0 - 150 m depth. Highest concentrations were found between 50 - 100 m depth.

Lightfish eggs were the most frequently found eggs in the Multinet. The distribution was continues from the first survey line off Walvis Bay to the survey was terminated outside Cape Town. The lowest concentrations were found off Panther Head where the shelf is at its most narrow. High concentrations were found on each side of this with particularly high concentrations on the shelf edge around the 200 m isobath. The concentrations decreased inshore and disappeared between 100 m - 50 m depth.

The lightfish larvae were patchier distributed than the eggs. One concentration area was found offshore at the shelf edge off Conception Bay. Another concentration was found on the diel station south of Lüderitz around 200 m depth, extending southwards in lower concentrations to the next environmental line. The third and largest concentration area was found on the South African shelf immediately south of the Orange River border to Namibia. This concentration area extended from approximately 100 m depth and offshore out off the survey area with the highest concentrations were found offshore on the line off Hondeklip. The distribution extended south of the survey area off Cape Town.



Figure 15. Horizontal distribution of eggs from the lightfish, *Maurolicus muelleri* in the survey area. Data collected with the Hydrobios Multinet



Figure 16. Horizontal distribution of larvae from the lightfish, *Maurolicus muelleri* in the survey area. Data collected with the Hydrobios Multinet

#### Lanternfish

Egg and larvae of the lanternfish, Figure 17 and 18, were typically found closer to the surface

than lightfish, gradually decreasing to low concentrations in the deepest net between 200 -250 depth. The highest abundance of eggs was found offshore on the shelf edge between Walvis Bay and Lüderitz with eggs distributed across the whole shelf towards Lüderitz. A gap in the distribution was experienced south of Lüderitz were the shelf edge is most narrow. Another concentration area was found on the South African shelf edge, south of the Orange River to approximately 32°30' S, with the inshore part of the abundance typically following the 100 m isobath. Highest concentrations were found between the 200 m and the 500 m isobath.

The distribution of larvae of lanternfish was more extensive than the eggs, with a distribution across the whole survey region. Very few lanternfish larvae was found inshore of the 100 m isobath between Hollands Bird Island and Panther Head, corresponding with the most intense part of the Lüderitz upwelling cell observed during the survey. The highest concentrations of lanternfish eggs were distributed offshore in the northern part of the survey area, and extended outside of the surveyed area. In the southern part of the survey area, on the other hand, main concentrations were found on the shelf between 100 m and 200 m depth. The distribution extended offshore and southwards outside of the surveyed area.



**Figure 17.** Horizontal distribution of eggs from lanternfish, *Lampanyctus hectoris* and *Symbolophorus boops* in the survey area. Data collected with the Hydrobios Multinet



Figure 18. Horizontal distribution of larvae from lanternfish, *Lampanyctus hectoris* and *Symbolophorus boops* in the survey area. Data collected with the Hydrobios Multinet

#### **3.5. EGG BUOYANCY MEASUREMENTS**

Only wild caught eggs were used for buoyancy measurements during this survey. On Multinet station 11 and 12, a number of good quality lightfish eggs were found and about 30 eggs were inserted into density gradient column II. The eggs were in different stages and some of the eggs started to hatch shortly after. However, a number of eggs were in early stages and measurements on these eggs were conducted for four days until hatching and also newly hatched larvae were measured (Figure 19). The mean salinity of neutral buoyancy was 32.83 during the first measurements and the eggs got heavier towards hatching. After hatching, the newly hatched larvae had a salinity of mean neutral buoyancy of between 32.5 and 33. The measurements of the larvae were conducted shortly after hatching while larval movement was still low. After a while the larvae swimming activity increased. They were very actively swimming upward followed by a quiet period while sinking. The impression is that they were more active than other larvae we have measured before such as sardine and anchovy. Typically they would sink for about one minute for then to swim up to 8 cm up the column. A second experiment on lightfish eggs were conducted towards the end of the survey (eggs collected from stations 39-41). These eggs were heavier than the eggs from the first experiment and had a salinity of mean neutral buoyancy of 35.27 during the first measurement.

On one of the last stations, a high number of good quality lanternfish eggs were found and about 20 of these were inserted in column II. They were only measured two times before the survey ended and the salinity of mean neutral buoyancy was 33.44 during the first measurement and 34.04 during the second measurement.



**Figure 19.** Buoyancy of lightfish eggs/larvae during development from newly fertilized until after hatching. The three last measurements are larvae.

#### **3.6. DIEL CYCLE**

#### **3.6.1.** Environmental conditions

Five CTD's were taken during the diel experiments, Figure 20. The results show that the water masses were relatively stable during the period. Temperatures ranged from >14.5°C in the surface to <9.5°C in the bottom waters. Salinity ranged from 35.0 PSU in the surface to 34.7 PSU in the bottom waters. The water column was well oxygenated with values ranging from 6 ml/l in the surface to <3.5 in the bottom layer.



**Figure 20.** Vertical sections of temperature, salinity and oxygen during the diel experiment period. Scale on x-axis is time in hours from first station.

#### 3.6.2. Acoustic observations

The vertical migration of a mesopelagic fish layer, composed primarily of *L. hectoris*, was observed during two dawn decent (Figure 21) and one dusk ascent (Figure 22) period. The acoustic observations were groundtruthed by several bottom and pelagic trawls. In addition, stomach contents data and zooplankton caught in depth stratified Multinet hauls will be analysed at a later stage to shed more light on the vertical distribution and feeding behaviour of *L. hectoris*.

The scattered surface layer (between 20-40 m deep) was observed starting to descent at 05h20 in a dense stream until it had reached the sea floor (250 m) at 06h25 (Figure 21). The start of the migration commenced long before sunrise, which was at 06h13. The average decent rate of the observed layer was calculated at 5.9 cm/sec, which was slightly quicker than the ascent rate of 4.8 cm/sec. Catch data from trawl stations performed before and after the dawn period showed that in this case *L. hectoris* proportions in the upper 60 m were comparatively high (98%) before the descent started (Table 8). In addition, deeper (>100 m) towed multisampler trawls also done shortly before the descent showed higher proportions of cape hake (55-60%) and lower percentages of *L. hectoris*. After the decent was 'completed', the dense layer hard on the bottom was composed of a mixture of cape hake (74%) and *L. hectoris* (18%), while a tow about 10 m above the bottom contained a high percentage of *L. hectoris* (97%), (Table 8). Very few *L*.

*hectoris* remained higher up in the water column during daytime, although proportions were still high in a multisampler trawl at 30 and 80 m respectively.

The dense layer on and close to the bottom started ascending at app. 17h00 (Figure 22), well before sunset at 17h48. The average ascent rate was 4.8 cm/sec, and by app. 18h20 the layer had reached a depth of 20 m beneath the surface, where it scattered and spread out over a depth range of 20-40 m. In 1.2 hrs this layer had thus migrated 230 m off the bottom. The ascent was slightly slower compared to the descent, which took just over an hour. The dense layer observed on the sea bottom before the ascent started consisted mainly of cape hake and some *L. hectoris* (Table 9; Tow 1773). The amounts of *L. hectoris* at 160 and 60 m were very small and zero respectively (Table 9), indicating that this species was practically absent at these depths during daytime. Multisampler trawls performed after the layers had stabilized indicated that the top 60m consisted of 98% *L. hectoris* (see above under descent). Catch rates of nighttime pelagic (shallower than 60 m) *L. hectoris* were similarly high as daytime demersal *L. hectoris*. Pelagic catch rates ranged from 34-128 kg/hr, while daytime demersal catch rates varied between 53-250 kg/hr., indicating that the largest proportion of the myctophids take part in this vertical migration. This is further substantiated by the observation that night time deep trawls and daytime shallow trawls contained very little or no *L. hectoris*.



Figure 21. Vertical descent at dawn of *L. hectoris* to 250m bottom depth. Numbers indicate trawl stations performed at various depths and are summarized in Table 8.

Station #	Time	Depth (m)	Total catch (kg)	% L. hectoris
1776	22:45	95	4.2	73
1777	23:10	60	32.4	98
1778	23:30	30	6.8	99
1779	01:10	180	10.1	1
1780	01:40	140	1.7	9
1781	02:10	115	1.4	20
1882	08:35	240	362	18
1883	10:05	235	64.1	98
1884	10:30	80	0.6	95
1885	10:56	30	0.1	87

**Table 8.** Summary of trawl stations done before and after the dusk descent on the 02/09/06. The station numbers are shown in Figure 20.

**Table 9.** Summary of trawl stations done before the dawn ascent on 02/09/06. Trawl station numbers are shown in Figure 21.

Station #	Time	Depth (m)	Total catch (kg)	% L. hectoris
1772	11:00	213	172	8
1773	14:08	225	1	21
1774	14:38	160	0.01	50
1775	15:10	60	0.05	0



**Figure 22.** Vertical ascent at dusk of *L. hectoris* from 250m to 20-30m depth. Numbers indicate trawl stations performed at various depths and are summarized in Table 9.

#### ANNEX I **RECORDS OF FISHING STATIONS**

DR. FRIDTJOF NANSEN DATE:24/ 8/06 GEAR TYD	PROJECT:BE P PE: PT No: 2 POS	ROJECT STATION:1733 ITION:Lat S 2336
Start stop duration TIME :07:53:53 08:03:52 10 (min LOG :1962.27 1962.80 0.51 FDEPTH: 190 190 BDEPTH: 202 201	) Purpose code: Area code : GearCond.code: Validity code:	Long E 1339 1 1
Towing dir: 190ø Wire out:	500 m Speed: 34	kn*10
Sorted: Kg Total catch:	3.19 CAT	CH/HOUR: 19.14
SPECIES	CATCH/HOUR weight numbers	% OF TOT. C SAMP
Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus	15.24 9150 3.06 4140 0.84 30	79.62 8341 15.99 8342 4.39
Total	19.14	100.00
DR. FRIDTJOF NANSEN DATE:24/ 8/06 GEAR TYD	PROJECT:BE P PE: PT No: 2 POS	ROJECT STATION:1734 ITION:Lat S 2335
start stop duration TIME :08:13:36 08:24:11 11 (min	) Purpose code:	Long E 1340
FDEPTH: 160 160 BDEPTH: 198 196	GearCond.code: Validity code:	±
Sorted: Kg Total gatch:	450 m Speed: 32	CH/HOLE 1 20
sorted, kg fotal catch.	0.22 CAI	CH/HOUR: 1.20
SPECIES	CATCH/HOUR	% OF TOT. C SAMP
Todaropsis eblanae Lampanyctodes bectoris	0.55 11	45.83 8346 22.50 8343
Todarodes sagittatus Maurolicus muelleri	0.16 5	13.33 8345 13.33 8344
SHRIMPS	0.05 196	4.17
Total	1.19	99.16
DR FRIDTIOF NANSEN	PROJECT: BE D	ROJECT STATION:1735
DATE:24/ 8/06 GEAR TY start stop duration	PE: PT No: 2 POS	ITION:Lat S 2335 Long E 1342
TIME :08:43:16 08:53:17 10 (min LOG :1964 70 1965 40 0 57	) Purpose code:	1
FDEPTH: 60 60 BDEPTH: 192 190	GearCond.code: Validity code:	-
Towing dir: 65ø Wire out:	200 m Speed: 34	kn*10
Sorted: Kg Total catch:	0.04 CAT	CH/HOUR: 0.24
SPECIES	CATCH/HOUR	% OF TOT. C SAMP
Todarodes sagittatus	weight numbers 0.12 12	50.00 8349
Lampanyctodes hectoris Maurolicus muelleri	0.06 48	25.00 8347 25.00 8348
Total	0.24	100.00
DR. FRIDTJOF NANSEN DATE:24/ 8/06 GEAR TYD	PROJECT:BE P PE: BT No: 1 POS	ROJECT STATION:1736 ITION:Lat S 2342
TIME :13:19:21 13:45:29 26 (min LOG :1992.76 1994.93 1.59	) Purpose code: Area code :	1 2
FDEPTH: 280 270 BDEPTH: 280 270	GearCond.code: Validity code:	
Towing dir: 75ø Wire out:	800 m Speed: 34	kn*10
Sorted: 24 Kg Total catch:	93.80 CAT	CH/HOUR: 216.46
SPECIES	CATCH/HOUR	% OF TOT. C SAMP
Lampanyctodes hectoris	146.86 114102	67.85 8355
Merluccius capensis Symbolophorus boops	35.77 166 19.96 5589	16.52 8350 9.22 8354
Coelorinchus coelorhinc. polli Chlorophthalmus sp.	8.65 62 2.08 76	4.00 8352 0.96 8353
Helicolenus dactylopterus Lepidopus caudatus	1.13 48 1.04 2	0.52 8351 0.48
SQUOM50 Squilla sp.	0.67 9 0.28 16	0.31 8356 0.13
Total	216.44	99.99
DR. FRIDTJOF NANSEN	PROJECT:BE P	ROJECT STATION: 1737
Start stop duration	PE- PINO: 4 POS	Long E 1310
LOG :2019.14 2019.99 0.84	Area code :	2
BDEPTH: 10 10 BDEPTH: 439 413	Validity code:	km * 1.0
iowing air: 610 Wire out: Sorted: Ka Total catch:	57.00 Car	CH/HOUR: 228.00
	CAI	
SPECIES	weight numbers	S UF TUT. C SAMP
Argonauta sp. Lycoteuthis diadema	2.16 8	0.95
· · · · · · · · · · · · · · · · · · ·	040	

Lycoteutnis diadema Todarodes sagittatus SQUEN11 Bathynectes piperitus 0.68 20 0.30 0.32 92 0.14 0.08 4 0.04 229.96 Total

DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:1738 DATE:25/ 8/06 GEAR TYPE: PT No: 1 POSITION:Lat S 2412 start stop duration Long E 1331 TIME :03:50:04 04:19:21 29 (min) Purpose code: 1

BDEPTH: 311 313 Towing dir: 252ø Wire out:	Area code GearCond.co Validity co 380 m Speed	: 2 ode: ode: 35 }	2 <n*10< th=""><th></th></n*10<>	
Sorted: 7 Kg Total catch:	34.80	CATCH	H/HOUR:	72.00
SPECIES	CATCH/HOUR	ere f	S OF TOT. C	SAMP
Lampanyctodes hectoris Symbolophorus boops ARGENTINDAE Dosidicus sp. Lycoteuthis diadema Electrona risso Maurolicus muelleri	62.77 43 8.36 1 0.37 0.25 0.12 0.10 0.02	8426 206 52 68 21 43 29	87.18 11.61 0.51 0.35 0.17 0.14 0.03	8358 8359 8360 8361 8361
Total	71.99		99.99	
DR. FRIDTJOF NANSEN 1 DATE:25/ 8/06 GEAR TYI start stop duration TIME :11:00:36 11:10:57 10 (min LOG :2113.30 2113.90 0.59 FDEPTH: 240 240 BDEPTH: 254 256 Towing dir: 245ø Wire out:	PROJECT:BE PE: PT No: 2 ) Purpose cod Area code GearCond.cc Validity cc 650 m Speed:	PROSIT POSIT le: 1 ode: ode: 35 }	DJECT STATI FION:Lat Long 1 2 cn*10	ON:1739 S 2405 E 1351
Sorted: 3 Kg Total catch:	13.70	CATCI	H/HOUR:	82.20
SPECIES Lampanyctodes hectoris Maurolicus muelleri Symbolophorus boops Dosidicus sp.	CATCH/HOUF weight numb 65.28 59 10.50 11 6.36 2 0.06	ers 9304 592 2790 30	\$ OF TOT. C 79.42 12.77 7.74 0.07	SAMP 8365 8363 8364
Total	82.20	DR	100.00	ON:1740
DATE: 25/ 8/06 GEAR TY	DE: DT No: 2	POSIT	TTON:Lat	01111110
start stop duration TIME :11:28:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 FDEPTH: 225 225 BDEPTH: 259 262 Towing dir: 250ø Wire out:	) Purpose cod Area code GearCond.co Validity co 550 m Speed:	le: 1 ode: ode: 35 }	Long 1 2 cn*10	S 2406 E 1349
start stop duration TIME 11:28:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 FDEFTH: 225 225 BDEPTH: 259 262 Towing dir: 2500 Wire out: Sorted: 2 Kg Total catch:	) Purpose cod Area code GearCond.cc Validity cc 550 m Speed: 1.58	le: 1 ode: 35 } CATCI	Long 1 2 cn*10 H/HOUR:	S 2406 E 1349 9.48
start stop duration TIME 11:28:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 FDEFTH: 225 225 BDEPTH: 259 262 Towing dir: 250ø Wire out: Sorted: 2 Kg Total catch: SPECIES Maurolicus muelleri	) Purpose cod Area code GearCond.cc Validity cc 550 m Speed: 1.58 CATCH/HOUF weight numb 7.80 S	de: 1 ode: 35 } CATCH	Long L cn*10 H/HOUR: S OF TOT. C 82.28	S 2406 E 1349 9.48 SAMP 8367
start stop duration TIME 11:28:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 FDEPTH: 225 225 BDEPTH: 259 262 Towing dir: 2500 Wire out: Sorted: 2 Kg Total catch: SPECIES Maurolicus muelleri Todarodes angolensis Lampanyctodes hectoris	) Purpose cod Area code GearCond.cc Validity cc 550 m Speed: 1.58 CATCH/HOUT weight numm 7.80 \$ 1.08 0.42 0.18	de: 1 : 2 ode: 35 } CATCH CATCH 2 2 2 3 2 4 5 2 6 2 6 2 6 2 6 2 6 2 6 4 5 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1	Long 1 2 scn*10 H/HOUR: & OF TOT. C 82.28 11.39 4.43 1.90	9.48 9.48 SAMP 8367 8366
start stop duration TIME 11:28:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 FDEPTH: 225 225 BDEPTH: 2259 262 Towing dir: 250@ Wire out: Sorted: 2 Kg Total catch: SPECIES Maurolicus muelleri Todaropeis eblanae Todarodes angolensis Lampanyctodes hectoris Total	Purpose coc Area code GearCond cc Validity cc 550 m Speed: 1.58 CATCH/HOUK weight num 7.80 5 1.08 0.42 0.18 9.48	de: 1 ode: 2 35 } CATCH 0054 18 6 264	Long Long Long H/HOUR: OF TOT. C 82.28 11.39 4.43 1.90 100.00	9.48 9.48 SAMP 8366
STATL Stop duration TIME 11:28:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 FDEPTH: 225 225 BDEPTH: 259 262 Towing dir: 2500 Wire out: Sorted: 2 Kg Total catch: SPECIES Maurolicus muelleri Todarodes angolensis Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN D DATE:25/ 8/06 GEAR TYI start stop duration TIME :51:40:44 51:41:56 15 (min LOG :2170.22 2171.19 0.96 FDEPTH: 25 25 BDEPTH: 159 157 Towing dir: 700 Wire out:	<pre>) Purpose cod Area code GearCond.cc Validity cc 550 m Speed: 1.58 CATCH/HOUF weight num 7.80 0 0.42 0.18 9.48 PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cc Validity cc 130 m Speed:</pre>	e:         1           ::         2           ::         35           ::         35           ::         35           ::         2	Long Lang A/HOUR: CRN*10 A/HOUR: CRN*10 COF TOT. C 82.28 11.39 4.43 1.90 100.00 DJECT STATI TION:Lat Long Lang CRN*10	9.48 9.48 SAMP 8366 0N:1741 S 2423 E 1403
STATL Stop duration TIME 11:28:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 PDEPTH: 225 225 DDEPTH: 259 262 Towing dir: 2500 Wire out: Sorted: 2 Kg Total catch: SPECIES Maurolicus muelleri Todarodes angolensis Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE:25/ 8/06 GEAR TY Start stop duration TIME :51:40:44 51:41:56 15 (min LOG :2170.22 2171.19 0.96 PDEPTH: 159 157 Towing dir: 700 Wire out: Sorted: 11 Kg Total catch:	<pre>purpose cod Area code GearCond.cc Validity cc Validity cc 550 m Speed: 1.58 CATCH/HOUR weight num 7.80 0.42 0.18 9.48 9.48 PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cc Validity cc 130 m Speed: 11.00</pre>	Le:         1           :         2           ide:         35           :         35           :         35           :         35           :         35           :         35           :         35           :         35           :         35           :         264           :         264           :         264           :         2 <td:< td="">         2           :</td:<>	Long Long A/HOUR: Cn*10 A/HOUR: Cor TOT. C 82.28 11.39 4.43 1.90 100.00 DJECT STATI Long Long Cn*10 H/HOUR:	S 2406 E 1349 9.48 SAMP 8366 0N:1741 S 2423 E 1403 44.00
SPECIES SPECIE	<pre>Private 2 Private 2 P</pre>	Le:         1           .:         .:           .:         <	Long Long H/HOUR: OF TOT. C 82.28 11.39 4.43 1.90 100.00 DJECT STATI TION:Lat Long Long L H H HOUR: & OF TOT. C	9.48 9.48 SAMP 8367 8366 0N:1741 S 2423 E 1403 44.00 SAMP
start stop duration TTME 11:22:42 11:38:53 10 (min LOG :2114.86 2115.44 0.57 FDEPTH: 225 225 BDEPTH: 259 262 Towing dir: 2500 Wire out: Sorted: 2 Kg Total catch: SPECIES Maurolicus muelleri Todarodes angolensis Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN D DATE:25/ 8/06 GEAR TYI start stop duration TIME :51:40:44 51:41:56 15 (min LOG :2170.22 2171.19 0.96 FDEPTH: 159 157 Towing dir: 700 Wire out: Sorted: 11 Kg Total catch: SPECIES Lampanyctodes hectoris Merluccius capensis, juveniles Todarodes angolensis Data total	<pre>) Purpose cod Area code GearCond.cc Validity cc 550 m Speed: 1.58 CATCH/HOUF weight num 7.80 0 0.42 0.18 9.48 PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cc Validity cc 11.00 CATCH/HOUF weight num 43.64 40 0.04</pre>	le: ] : 2 : 2 : 35 ] CATCH 2 : 35 ] CATCH 2 : 35 ] CATCH 2 : 35 ] CATCH 2 : 4 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2	Long Long Long H/HOUR: OF TOT. C 82.28 11.39 4.43 1.90 	<ul> <li>S 2406</li> <li>P 1349</li> <li>9.48</li> <li>SAMP</li> <li>8366</li> <li>ON:1741</li> <li>S 2423</li> <li>F 1403</li> <li>44.00</li> <li>SAMP</li> <li>8368</li> </ul>

Total

DR. FRIDTJOF NANSEN I DATE:25/ 8/06 GEAR TYN start stop duration	PROJECT:BE PE: PT No: 2 PO	PROJECT STATION:1742 SITION:Lat S 2430 Long E 1346	
TIME :21:40:55 21:41:05 10 (min) LOG :2195.08 2195.67 0.57	Purpose code: Area code	1 : 2	
FDEPTH: 100 100 BDEPTH: 328 325	GearCond.code Validity code	:	
Towing dir: 550 Wire out:	250 m Speed: 4	0 kn*10	
Sorted: 2 Kg Total catch:	12.35 CA	TCH/HOUR: 74.10	
SPECIES	CATCH/HOUR	% OF TOT. C SAMP	
Lampanyctodes hectoris	58.08 4191	0 78.38 8370 4 20.16 8369	
Maurolicus muelleri	0.84 104	4 20.16 8369 4 1.13 8371	
Total	74 04		
Total	, 1101	<u>.</u>	
DR. FRIDTJOF NANSEN I DATE:25/ 8/06 GEAR TYI	PROJECT:BE PE: PT No: 2 PO	PROJECT STATION:1743 SITION:Lat S 2429	
TIME :21:41:16 23:20:07 12 (min)	Purpose code:	LONG E 1348 1 : 2	
FDEPTH: 300 30 BDEPTH: 318 312	GearCond.code Validity code	:	
Towing dir: 70ø Wire out:	120 m Speed: 3	8 kn*10	
Sorted: 3 Kg Total catch:	16.50 CA	TCH/HOUR: 82.50	
SPECIES	CATCH/HOUR	% OF TOT. C SAMP	
Lampanyctodes hectoris	weight number 43.90 5047	s 0 53.21 8373	
Symbolophorus boops Lycoteuthis diadema	38.45 363 0.05 2	0 46.61 8372 0 0.06	
Todarodes angolensis	0.05 2	0 0.06	
Total	82.45	99.94	
DR. FRIDTJOF NANSEN I DATE:26/ 8/06 GEAR TYP	PROJECT:BE PE: PT No: 1 PO	PROJECT STATION:1744 SITION:Lat S 2435	
start stop duration TIME :02:24:44 02:53:57 29 (min)	Purpose code:	Long E 1328	
LOG :2221.35 2222.99 1.63 FDEPTH: 45 45	Area code GearCond.code	: 2	
BDEPTH: 478 424 Towing dir: 70ø Wire out:	Validity code 150 m Speed: 3	: 3 kn*10	
Sorted: 4 Kg Total catch:	20.65 CA	TCH/HOUR: 42.72	
SPECIES	CATCH/HOUR weight number	% OF TOT. C SAMP s	
Symbolophorus boops Electrona risso	37.20 384	4 87.08 8376 6 6.69 8375	
Gymnoscopelus sp. Lampanyctodes hectoris	1.49 28 0.52 47	1 3.49 8374 8 1.22 8377	
Gymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteutbis diadema	1.49 28 0.52 47 0.52 16 0.12 1	1 3.49 8374 8 1.22 8377 1 1.22 0 0.28	
Gymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2	1 3.49 8374 8 1.22 8377 1 1.22 0 0.28 1 0.05	
Gymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73	1 3.49 8374 8 1.22 8377 1 1.22 0 0.28 1 0.05 100.03	
Gymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73	1 3.49 8374 8 1.22 8377 1 1.22 0 0.28 1 0.05 100.03	
Gymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa — Total DR. FRIDTJOF NANSEN I DATE:26/ 8/06 GEAR TY	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73	1 3.49 8374 8 1.22 8377 1 1.22 0 0.28 1 0.05 100.03	
Gymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total DR. FRIDTJOF NANSEN DATE:26/ 8/06 GEAR TYI start stop duration TIME :08:21:12 08:30:28 9 (min)	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73 PROJECT:BE PE: PT No: 1 PO Purpose code:	1 3.49 8374 8 1.22 8377 1 1.22 8377 1 0.05 100.03 PROJECT STATION:1745 SITION:Lat S 2432 Long E 1406 1	
Cymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total DR. FRIDTJOF NANSEN I DATE:26/ 8/06 GEAR TYI start stop duration TIME :08:21:12.08:30:28 9 (min) LOG :2273.06 2273.60 0.53 FDEPTH: 140 140 140	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73 PROJECT:BE PE: PT No: 1 PO Purpose code: Area code GearCond.code	1 3.49 8374 8 1.22 8377 1 1.22 8377 1 0.05 100.03 PROJECT STATION:1745 SITION:Lat S 2432 Long E 1406 1 : 2	
Cymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total DR. FRIDTJOF NANSEN I DATE:26/ 8/06 GEAR TYI start stop duration TIME :08:21:12 08:30:28 9 (min) LOG :2273.06 2273.60 0.53 FDEPTH: 140 140 BDEPTH: 154 153 Towing dir: 2466 Wire out:	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73 PROJECT:BE PE: PT No: 1 PO Purpose code: Area code GearCond.code Validity code	1 3.49 8374 8 1.22 8377 1 1.22 8377 1 0.05 100.03 PROJECT STATION:1745 SITION:Lat S 2432 Long E 1406 1 : 2 : : : : : : : :	
Cymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total DR. FRIDTJOF NANSEN I DATE:26/ 8/06 GEAR TYI start stop duration TIME :08:21:12 08:30:28 9 (mini LOG :2273.06 2273.60 0.53 FDEFTE: 140 140 EDEFTE: 154 153 Towing dir: 246ø Wire out: Sorted: 14 Kg Total catch:	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73 PROJECT:BE PE: PT No: 1 PO Purpose code: Area code GearCond.code Validity code 360 m Speed: 4 14.13 CA	1 3.49 8374 8 1.22 8377 1 1.22 8377 1 0.05 100.03 PROJECT STATION:1745 SITION:LAL S 2432 Long E 1406 1 : 2 : : : : : : : : : : : : : : : : : :	
Cymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total DR. FRIDTJOF NANSEN I DATE:26/ 8/06 GEAR TYI Start stop duration TIME :08:21:12 08:30:28 9 (min) LOG :2273.06 0.53 FDEPTH: 140 140 BDEPTH: 154 153 Towing dir: 2460 Wire out: Sorted: 14 Kg Total catch:	1.49 28 0.52 27 0.52 16 0.12 1 0.02 2 42.73 PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE Area code GearCond.code Validity code 360 m Speed: 4 14.13 CA	1 3.49 8374 8 1.22 8377 1 1.22 8377 1 0.05 1 0.05 1 0.05 5TTION:Lat S 2432 Long E 1406 1 : 2 : 2 : 2 : 3 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2	
Gymnoscopelus sp. Lampanyctodes hectoris Dosidicus sp. Lycoteuthis diadema Stomias boa boa Total DATE:26/ 8/06 GEAR TYI Start stop duration TIME :08:21:12 08:30:28 9 (min) LoG :2273.06 0.53 FDEPTH: 140 140 BDEPTH: 154 153 Towing dir: 246ø Wire out: Sorted: 14 Kg Total catch: SPECIES	1.49 28 0.52 47 0.52 16 0.12 1 0.02 2 42.73 PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE Area code GearCond.code Validity code 360 m Speed: 4 14.13 CA CATCH/HOUR weight number	1 3.49 8374 8 1.22 8377 1 1.22 8377 1 0.05 100.03 PROJECT STATION:1745 STITION:Lat S 2432 Long E 1406 1 : 2 : 2 : 3 kn*10 TCH/HOUR: 94.20 % OF TOT. C SAMP s	
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 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT STATION:1747

 DATE:26/8/06
 GEAR TYPE: PT No: 2
 POSITION:Lat
 S 2507

 start
 stop
 duration
 Long
 E 1426

 TIME
 :16:53:23
 17:03:11
 10 (min)
 Purpose code: 1
 Long
 E 1426

 LOG
 :2340.61
 2341.18
 0.56
 Area code : 2
 FDEPTH: 130
 130
 GearCond.code:

 BDEPTH:
 131
 132
 Validity code:
 Towing dir:
 72ø
 Wire out: 320 m
 Speed: 40 kn\*10
 Sorted: 6 Kg Total catch: 6.40 CATCH/HOUR: 38.40 CATCH/HOUR SPECIES % OF TOT. C SAMP CATCH, weight 20.22 10.44 6.48 0.60 0.42 0.12 H/HOUR numbers 72 180 5622 96 264 6 12 18 Chelidonichthys capensis Merluccius capensis, juveniles Lampanyctodes hectoris Lepidopus caudatus Sufflogobius bibarbatus Todaropsis eblanae Todaropsa angolensis Lolligoncula mercatoris 52.66 27.19 16.88 1.56 1.09 0.31 0.16 0.16 8382 0.06 38.40 100.01 Total PROJECT:BE PROJECT STATION:1748 GEAR TYPE: PT No: 2 POSITION:Lat S 2506 Long E 1428 
 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT:SE

 DATE:267.8/06
 GEAR TYPE: PT No: 2
 POSITION:L

 start
 stop
 duration
 L

 TIME:17:19:01
 17:29:20
 10
 (min)
 Purpose code: 1

 LOG
 :3242.12
 2342.82
 4.87
 Area code : 2
 2

 FDEPTH:
 30
 GearCond.code: 1
 1
 26
 Validity code:

 Towing dir:
 72ø
 Wire out: 130 m
 Speed: 40 km\*10
 Sorted: 6 Kg Total catch: 6.25 CATCH/HOUR: 37.50 CATCH/HOUR % OF TOT. C SAMP weight numbers 36.00 26346 96.00 8383 0.84 18 2.24 0.42 198 1.12 0.12 18 0.32 0.06 12 0.16 0.06 18 0.16 SPECIES Lampanyctodes hectoris Merluccius capensis, juveniles Lolligoncula mercatoris Todaropsis eblanae Todarodes angolensis Sufflogobius bibarbatus 37.50 100.00 Total PROJECT:BE PROJECT STATION:1749 GEAR TYPE: PT No: 4 POSITION:Lat S 2512 Long E 1410 DR. FRIDTJOF NANSEN PROJECT:BE PROJECT S DATE:26/8/06 GEAR TYPE: PT No: 4 POSITION:La start stop duration Lo TIME :21:25:05 21:39:41 15 (min) Purpose code: 1 LOG :2367.47 2368.26 0.79 Area code : 2 FDEPTH: 10 10 GearCond.code: BDEPTH: 191 190 Validity code: Towing dir: 70ø Wire out: 130 m Speed: 40 kn\*10 Sorted: 15 Kg Total catch: 15.10 CATCH/HOUR: 60.40 CATCH/HOUR % OF TOT. C SAMP weight numbers 35.40 74000 58.61 8384 12.80 4 21.19 7.36 896 12.19 2.80 4 4.64 1.80 9060 2.98 0.12 4 0.20 0.08 36 0.13 0.04 SPECIES 58.61 21.19 12.19 4.64 2.98 0.20 0.13 0.07 0.07 Lampanyctodes hectoris Thyrsites atun Todarodes angolensis Merluccius capensis Krill Argonauta sp. Abriliopsis gilchristi Elops sp. Lolligoncula mercatoris 0.04 4 4 Total 60.44 100.08 
 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT STATION:1750

 DATE:27/ 8/06
 GEAR TYPE: PT No: 1
 POSITION:Lat
 S
 2524

 start
 stop
 duration
 Long
 E
 1342

 TIME :03:13:52
 03:43:10
 29 (min)
 Purpose code: 1
 Long
 E

 LOG
 :2403.55
 2405.40
 1.83
 Arac code : 2
 FDEPTH: 40
 45
 GearCond.code:

 BDEPTH:
 :367
 394
 Validity code:
 Towing dir: 208ø
 Wire out: 130 m
 Speed: 36 kn\*10
 Sorted: 7 Kg Total catch: 73.05 CATCH/HOUR: 151.14 CATCH/HOUR % OF TOT. C weight numbers 116.67 78902 77.19 24.99 2249 16.53 7.03 2 4.65 1.59 163 1.05 0.52 62 0.34 0.25 103 0.17 SPECIES SAMP Lampanyctodes hectoris Symbolophorus boops Thyrsites atun Maurolicus muelleri Lycoteuthis diadema Abriliopsis gilchristi Electrona risso 8386 8385 8388 62 103 21 0.25 0.17 8387 99 97 Total 151.11

DR. FRIDTJOF NANSEN	PROJECT:BE	PROJECT	STATION:1	751
DATE:27/ 8/06 GEAR TY start stop duration	PE: PT No: 1	POSITION:L	at S 2 ong E 1	.329
TIME :07:20:50 07:32:40 12 (min LOG :2436.52 2437.20 0.67	Area code	ie: 1 ; 1		
FDEPTH: 150 150 BDEPTH: 754 744 Towing dir: 29ø Wire out:	GearCond.co Validity co 400 m Speed	ode: ode: : 40 kn*10		
Sorted: 32 Kg Total catch:	32.00	CATCH/HOUR	: 160.	00
SPECIES	CATCH/HOU	R % OF T	от.с s	AMP
Maurolicus muelleri	159.80 15	1920 9	9.88 8	389
Emmelichthys nitidus	0.05	5	0.03	
Total	160.00	10	0.00	
DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY	PROJECT:BE PE: BT No:19	PROJECT	STATION:1	752
start stop duration TIME :15:48:01 16:07:25 19 (min	) Purpose cor	le: 1	ong E 1	353
LOG :2494.59 2495.65 1.04 FDEPTH: 341 341	Area code GearCond.co	: 1 de:		
BDEPTH: 341 341 Towing dir: 148ø Wire out:	Validity co 1020 m Speed	de: 32 kn*10		
Sorted: 392 Kg Total catch:	392.39	CATCH/HOUR	: 1239.	13
		,		-
SPECIES	CATCH/HOU weight num	R % OF T Ders	OT.C S	AMP
Merluccius capensis Merluccius paradoxus	549.47 495.79	L326 4 2207 4	4.34 8 0.01 8	391 390
Helicolenus dactylopterus Lampanyctodes hectoris	142.11 25.26	553 1	1.47 8 2.04	392
Caelorinchus simorhynchus Nezumia sp.	8.84	92 129	0.71 0.43	
Squalus megalops Trachurus capensis	4.42 3.63	9 16	0.36	
Lycoteuthis diadema Galeus polli	2.12	101 13	0.17 0.14	
Epigonus sp. Chlorophthalmus sp.	0.35	82 3	0.03	
Total	1239.13		9.99	
DATE:27/ 8/06 GEAR TY start stop duration	PE: PT No: 1	POSITION:L	at S 2 ong E 1	542 408
DHF:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out:	PE: PT No: 1 ) Purpose cod Area code GearCond.cd Validity cd 130 m Speed	POSITION:L L L L L L L L L L L L L L L L L L L	at S 2 ong E 1	408
DRTE:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :25:16.74 25:17.81 1.07 FDEPTH: 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch:	PE: PT No: 1 ) Purpose cod Area code GearCond.cd Validity cd 130 m Speed 18.65	POSITION:L L le: 1 : 1 ode: ode: : 40 kn*10 CATCH/HOUR	at S 2 ong E 1 : 74.	60
DATE:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES	PE: PT No: 1 ) Purpose cod Area code GearCond.cc Validity cc 130 m Speed 18.65 CATCH/HOUL Vaight pump	POSITION:L L e: 1 cde: : 40 kn*10 CATCH/HOUR	at S 2 ong E 1 : 74. OT. C S	60 SAMP
DATE:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Mawrolione melleri	PE: PT No: 1 ) Purpose coo Area code GearCond.cc Validity cc 130 m Speed 18.65 CATCH/HOUN weight num 65.28 7 22 1	POSITION:L L L L L L L L L L L L L L L L L L L	at S 2 ong E 1 : 74. OT. C S 7.51 8	60 60 6394
DHF:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total	PE: PT No: 1 ) Purpose cod Area code GearCond.cc Validity cc 130 m Speed 18.65 CATCH/HOUI weight numi 65.28 7: 9.32 10 74.60	POSITION:L L L L L L L L L L L L L L L L L L L	at S 2 ong E 1 : 74. OT. C S 7.51 8 2.49 8	60 60 3394 393
DHF2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total	<pre>PF: PT No: 1 ) Purpose cot Area code GearCond.ct Validity ct 130 m Speed 18.65 CATCH/HOUN weight num 65.28 7; 9.32 1i 74.60</pre>	POSITION:L le: 1 L ode: : 1 ode: : 40 kn*10 CATCH/HOUR & \$ 0F T pers \$ 0884 1 10	at S 2 ong E 1 : 74. OT. C S 7.51 8 2.49 8 0.00	60 60 3394 393
DR. FRIDTJOF NANSEN DATE:2/1 8/06 GEAR TY FDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY Start stop duration TIME :2213:52 Guration TIME :2213:52 SI (min LOG :2541.37 2542.33 0.96 FDEPTH: 188 156 BDEPTH: 18	<pre>PF: PT No: 1 ) Purpose cot Area code GearCond.ct Validity ct 130 m Speed 18.65 CATCH/HOU weight num 65.28 7 9.32 10 74.60 PROJECT:BE PE: PT No: 1 ) Purpose cot Area code GearCond.ct Validity ct </pre>	POSITION: L POSITION: L 1: 1 1: 1	at S 2 ong E 1 : 74. OT. C S 7.51 8 2.49 8 0.00 STATION:1 at S 2 ong E 1	542 408 60 3AMP 394 393 754 535 426
DRIF2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 25 25 BEDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total — DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 90ø Wire out: Sorted: 5 Kq Total catch:	<pre>PE: PT No: 1 ) Purpose cox Area code GearCond.cv Validity cv 130 m Speed 18.65 CATCH/HOU weight num 65.28 7: 9.32 10 74.60 PROJECT:BE PROJECT:BE PROJECT:BE PRO: 1 ) Purpose cox Area code GearCond.cv Validity cv 130 m Speed 5.00</pre>	POSITION:L POSITION:L 1: 1: 1: 1: 1: 1: 1: 1: 2: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 1: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 2: 40 kn*10 CATCH/HOUR 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4	at S 2 ong E 1 : 74. 0T. C S 7.51 8 2.49 8 0.000 STATION:1 at S 2 ong E 1 : 20.	542 408 60 394 393 754 535 426
DRIF2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total DR. FRIDTUJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 90ø Wire out: Sorted: 5 Kg Total catch:	<pre>PF: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 18.65 CATCH/HOUS weight num 65.28 CATCH/HOUS PROJECT:BE PROJECT:BE PROJECT:BE PR: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 5.00</pre>	POSITION:L le: 1 L : 1 : 2 : 40 kn*10 CATCH/HOUR PROJECT PROJECT PROJECT PROJECT L : 40 kn*10 CATCH/HOUR	at S 2 ong E 1 : 74. OT. C S 7.51 8   STATION:1 at S 2 ong E 1  : 20.	542 408 60 394 393 754 535 426
DRF 2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 900 Wire out: Sorted: 5 Kg Total catch:	<pre>PF: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv l30 m Speed 18.65 CATCH/HOU weight num 65.28 7; 9.32 10 74.60 PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv l30 m Speed 5.00 CATCH/HOU weight num</pre>	POSITION:L le: 1 L i: 1 vde: 40 kn*10 CATCH/HOUR CATCH/HOUR CATCH/HOUR PROJECT POSITION:L POSITION:L POSITION:L i: 1 POSITION:L CATCH/HOUR CATCH/HOUR CATCH/HOUR CATCH/HOUR CATCH/HOUR	at S 2 ong E 1 : 74. OT. C S 7.51 8 2.49 8 0.00 STATION:1 at S 2 ong E 1 : 20. OT. C S	542 408 60 1394 393 754 1535 426 00
DR: 2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 90ø Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris	<pre>PF: PT No: 1 ) Purpose cot Area code GearCond.ct Validity ct 130 m Speed 18.65 CATCH/HOU weight num 65.28 72 9.32 11 74.60 PROJECT:BE PE: PT No: 1 ) Purpose cot Area code GearCond.ct Validity ct 130 m Speed 5.00 CATCH/HOU weight num 20.00 2:</pre>	POSITION:L POSITION:L 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2	at S 2 ong E 1 : 74. OT. C S 7.51 8 2.49 8 0.00 STATION:1 at S 2 ong E 1 : 20. OT. C S 0.00 8	542 408 60 1394 393 393 754 535 426 00 1395
DRTE:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 25 25 BDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total — DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 BDEPTH: 158 156 Towing dir: 90ø Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris Total —	<pre>PF: PT No: 1 ) Purpose con Area code GearCond.ct Validity ct li30 m Speed</pre>	POSITION: L POSITION: L 1 L 1 L 1 CATCH/HOUR CATCH/HOUR 2 % OF T 2550 8 26884 1 1 0 PROJECT POSITION: L POSITION: L 1 CATCH/HOUR 2 % OF T 2060 10 10 10 10 10 10 10 10 10 10	at S 2 ong E 1 : 74. OT. C S 7.51 & 2.49 & 2.49 & 0.00 STATION:1 at S 2 ong E 1 : 20. OT. C S 0.00 & 0.00 &	1542 408 60 RAMP 1394 3393 754 535 5426 00 RAMP
DRIF 2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 25 25 BEDEPTH: 240 246 Towing dir: 2420 Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 900 Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DEPTH: 158 156 Towing dir: 900 Wire out: Sorted: 5 Kg Total catch: DR. FRIDTJOF NANSEN DEPTH: 25 25 DEPTH: 158 156 Total DR. FRIDTJOF NANSEN	<pre>PF: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 18.65 CATCH/HOU weight num 65.28 7 9.32 10 74.60 PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 5.00 CATCH/HOU 20.00 2: 20.00 PROJECT:BE P</pre>	POSITION: L POSITION: L la: 1 1 1 1 1 1 1 1 1 1 1 1 1 1	at \$ 2 ong E 1 : 74. OT. C \$ 7.51 & 2.49 & 0.00 STATION:1 at \$ 2 ong E 1 : 20. OT. C \$ 0.00 & 0.00 & 0.00 & STATION:2	1542 408 60 14MP 393 754 426 00 1395 3295
DR. FRIDTJOF NANSEN DATE:20/ 8/06 GEAR TY FDEPTH: 240 JAC FDEPTH: 25 25 BEDEPTH: 240 Z46 Towing dir: 2420 Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total Catch: DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY Start stop duration TIME :2218:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 900 Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris Total Total Total Catch: DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY DATE:28/ 8/06 GEAR TY DATE:28/ 8/06 GEAR TY	<pre>PF: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 18.65 CATCH/HOUJ weight num 65.28 7 9.32 10 74.60  PROJECT:BE PFNo: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 5.00 CATCH/HOU weight num 20.00 2: 20.00  PROJECT:BE PF: PT No: 1 &gt; Durpose cod </pre>	POSITION:L POSITION:L la: 1 1 1 1 1 1 1 1 1 1 1 1 1 1	at S 2 ong E 1 : 74. OT. C S 7.51 & 2.49 & 0.00 STATION:1 at S 2 0.00 & 0.00 & 0.00 & STATION:1 at S 2 0.00 & 0.00 & STATION:1 2 at S 2 0.00 & 0.00 & STATION:1 2 at S 2 0.00 & STATION:1 2 at S 2 0.00 & STATION:1 3 at S 2 0 & STATION:1 2 at S 2 & STATION:1 2 & STATION	542 408 60 1394 393 754 535 426 00 00 1395 426 100 100 100 100 100 100 100 100 100 10
DR. FRIDTJOF NANSEN DATE :27/ 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 25 25 BEDEPTH: 240 246 Towing dir: 2420 Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total Catch: DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 900 Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris Total Total Total Catch: DR. FRIDTJOF NANSEN DATE:28/ 8/06 GEAR TY start stop duration TIME :05:51:02 06:04:23 13 (min LOG :2605.47 06:04:23 13 (min	<pre>PF: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 18.65 CATCH/HOUJ weight num 65.28 7 9.32 10 74.60  PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 5.00 CATCH/HOUJ weight num 20.00 2: 20.00  PROJECT:BE PE: PT No: 1 ) Purpose cod Area code </pre>	POSITION:L POSITION:L le: 1 1 1 CATCH/HOUR & 0 FT PROJECT PROJECT PROJECT POSITION:L ie: 1 i: 1 0 PROJECT POSITION:L ie: 1 0 PROJECT POSITION:L ie: 1 0 PROJECT POSITION:L ie: 1 0 PROJECT POSITION:L ie: 1 0 10 PROJECT POSITION:L ie: 1 0 10 PROJECT POSITION:L ie: 1 1 1 1 1 1 1 1 1 1 1 1 1 1	at S 2 ong E 1 : 74. OT. C S 2.49 8 0.00 STATION:1 at S 2 0ng E 1 : 20. OT. C S 0.00 8 0.00 8	542 408 60 50 535 535 426 00 535 542 60 3395 755 563 420
DRIF 2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2420 Wire out: SDEDEPTH: 240 246 Towing dir: 2420 Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total Catalor DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 900 Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris Total Total Total Catalor DR. FRIDTJOF NANSEN DATE:28/ 8/06 GEAR TY start stop duration TIME :05:51:02 06:04:23 13 (min LOG :2605.47 266.35 0.88 FDEPTH: 60 60 EDEPTH: 60 60	<pre>PF: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 18.65 CATCH/HOU weight num 65.28 7: 9.32 10 74.60  PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv 130 m Speed 5.00 PROJECT:BE PE: PT No: 1 ) Purpose cod Area code GearCond.cv Validity cv Validity cv IIII num 20.00 2: 0.00 PROJECT:BE PI No: 1 ) Purpose cod Area code GearCond.cv Validity cv IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII</pre>	POSITION: L POSITION: L la: 1 1 1 1 1 1 1 1 1 1 1 1 1 1	at S 2 ong E 1 : 74. OT. C S 7.51 & 2.49 & 0.00 STATION:1 4 S 2 ong E 1 : 20. OT. C S 0.00 & STATION:1 at S 2 0.00 STATION:1 at S 2 ong E 1	542 408 60 14MP 1393 754 535 5426 00 1395 755 5426 1395
DR. FEIDTJOF NANSEN DR. FRIDTJOF NANSEN DATE: 28, 8, 70 GEAR TY Start stop duration TTME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 240 246 Towing dir: 242æ Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total	<pre>PE: PT No: 1 ) Purpose coo Area code GearCond.c; Validity c; 130 m Speed 18.65 CATCH/HOU weight num 65.28 7 9.32 10 74.60 PROJECT:BE PE: PT No: 1 ) Purpose coo Area code GearCond.c; Validity c; Validity c;</pre>	POSITION: L POSITION: L 1 L 1 L 1 CATCH/HOUR 2 & OF T 2 & OF	at S 2 ong E 1 : 74. OT. C S 7.51 8 2.49 8 0.00 STATION:1 at S 2 0ng E 1 : 20. OT. C S 0.00 8 0.00 8 STATION:1 at S 2 ong E 1 : 20.	<ul> <li>542</li> <li>408</li> <li>60</li> <li>KAMP</li> <li>3394</li> <li>3393</li> <li>754</li> <li>535</li> <li>426</li> <li>00</li> <li>KAMP</li> <li>3395</li> <li>755</li> <li>420</li> <li>77</li> </ul>
DRTE:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (min LOG :2516.74 2517.81 1.07 FDEPTH: 25 25 BEDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total	<pre>PF: PT No: 1 ) Purpose coo Area code GearCond.cv Validity cv li30 m Speed l8.65 CATCH/HOU weight num 65.28 7 9.32 li 74.60 PROJECT:BE PE: PT No: 1 ) Purpose coo Area code GearCond.cv Validity cv li30 m Speed 5.00 CATCH/HOU weight num 20.00 2: 20.00 PROJECT:BE PE: PT No: 1 ) Purpose coc Area code GearCond.cv Validity cd State Stat</pre>	POSITION:L POSITION:L 1: 1 1: 1	at S 2 ong E 1 : 74. OT. C S 7.51 & 2.49 & 2.49 & 3.000 STATION:1 at S 2 0.00 & 0.000 & 0.000 & STATION:1 at S 2 0.00 & 0.000 & STATION:1 at S 2 0.00 & 0.000 & 0.000 & 0.000 & STATION:1 at S 2 0.000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.0000 &	<ul> <li>542</li> <li>408</li> <li>60</li> <li>amp</li> <li>3393</li> <li>754</li> <li>535</li> <li>426</li> <li>00</li> <li>xamp</li> <li>395</li> <li>755</li> <li>420</li> <li>777</li> <li>tamp</li> </ul>
DRIF:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (Min LOG :2516.74 25 25 BEDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total — DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (Min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 90ø Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris Total — DR. FRIDTJOF NANSEN DATE:28/ 8/06 GEAR TY start stop duration TIME :05:51:02 06:04:23 13 (Min LOG :2605.47 2606.35 0.88 FDEPTH: 60 60 EDEPTH: 206 206 Towing dir: 15ø Wire out: Sorted: 21 Kg Total catch:	<pre>PF: PT No: 1 ) Purpose cox Area code GearCond.cv Validity cv I30 m Speed     18.65     CATCH/HOU weight num     65.28 7 9.32 10 74.60  PROJECT:BE PE: PT No: 1 ) Purpose cox Validity cv I30 m Speed     5.00     CATCH/HOU weight num     20.00 22 20.00  PROJECT:BE PE: PT No: 1 ) Purpose cox Area code GearCond.cv Validity cv I30 m Speed     21.40     CATCH/HOU weight num     76.15 7 </pre>	POSITION: L POSITION: L la: 1 L la: 1 CATCH/HOUR CATCH/HOUR R & OF T PEROJECT POSITION: L ia: 1 DOSTION: L ia: 1 DOSTION: L CATCH/HOUR R & OF T POSITION: L DOSTION: L CATCH/HOUR R & OF T POSITION: L CATCH/HOUR R & OF T POSITION: L DOST PROJECT POSITION: L DOST POSITION: L POSITION: L DOST POSITION: L POSITION: L POSITION: L DOST POSITION: L POSITION: L DOST POSITION: L POSITION: L POSITIO	at S 2 ong E 1 : 74. OT. C S 7.51 & 8 2.49 & 8 0.00 STATION:1 at S 2 ong E 1 : 20. OT. C S 0.00 & 8 TATION:1 at S 2 ong E 1 : 20. OT. C S 0.00 & 8 STATION:1	542 408 60 iAMP 3393 754 535 426 00 iAMP 3395 755 426 3395 777 iAMP 3396
DRIF:2// 8/06 GEAR TY start stop duration TIME :18:50:12 19:05:39 15 (Min LOG :2516.74 25 25 BEDEPTH: 240 246 Towing dir: 242ø Wire out: Sorted: 18 Kg Total catch: SPECIES Lampanyctodes hectoris Maurolicus muelleri Total — DR. FRIDTJOF NANSEN DATE:27/ 8/06 GEAR TY start stop duration TIME :22:18:55 22:33:28 15 (Min LOG :2541.37 2542.33 0.96 FDEPTH: 158 156 Towing dir: 90ø Wire out: Sorted: 5 Kg Total catch: SPECIES Lampanyctodes hectoris Total — DR. FRIDTJOF NANSEN DATE:28/ 8/06 GEAR TY start stop duration TIME :05:51:02 06:04:23 13 (Min LOG :2605.47 206.35 0.88 FDEPTH: 60 60 BDEPTH: 206 206 Towing dir: 15ø Wire out: Sorted: 21 Kg Total catch: SPECIES Lampanyctodes hectoris Total = 5 Vire of the catch of the ca	<pre>PF: PT No: 1 ) Purpose cox Area code GearCond.cv Validity cv I30 m Speed     18.65     CATCH/HOUN weight num     65.28 7     9.32 10     74.60  PROJECT:BE PE: PT No: 1 ) Purpose cox Area code GearCond.cv Validity cv I30 m Speed     5.00  CATCH/HOUN weight num     20.00 2:     20.00  PROJECT:BE PE: PT No: 1 ) Purpose cox Area code GearCond.cv Validity cv I30 m Speed     21.40     CATCH/HOUN     %eight num     76.15 7     18.00     4.52 .</pre>	POSITION: L POSITION: L la: 1 i 1 carcella de: i 40 kn*10 CATCH/HOUR k 0F T pers 4 0F T pers 550 8 1884 1 100 PROJECT POSITION: L i i 1 i i 1 de: i 40 kn*10 CATCH/HOUR k 0F T pers 1 i 1 de: i 40 kn*10 CATCH/HOUR k 0F T pers 2 i 40 kn*10 CATCH/HOUR k 0F T pers 3 carcella de: i 40 kn*10 CATCH/HOUR k 0F T pers 3 carcella de: i 1 carcella de: i 1 carcella de: i 2 carcella	at S 2 ong E 1 : 74. OT. C S 7.51 & 8 2.49 & 8 0.00 STATION:1 at S 2 ong E 1 : 20. OT. C S 0.00 & 8 0.00 & 8 0.00 & 8 STATION:1 : 20. OT. C S 0.00 & 8 0.00 &	542 408 60 iAMP 3393 754 535 533 754 535 426 00 iAMP 3395 755 603 395 777 77 77 77 77

98.77

Total

100.00

 
 DR. FRIDTJOF NANSEN
 PROJECT: BE
 PROJECT STATION:1756

 DATE:28/8/06
 GEAR TYPE: PT No: 1 POSITION:Lat S 2612
 start stop duration
 Long E 1400

 THE: 09/36:12 09:58:01 22 (min) Purpose code: 1
 LOG 2631.81 2633.09 1.26
 Area code : 1
 FDEPTH: 150 150
 GearCond.code:

 DEDFTH:
 346 342
 Validity code:
 Towing dir: 320 Wire out: 330 m Speed: 40 kn\*10
 Towing dir: 320 Wire out: 330 m Speed: 40 kn\*10
 Sorted: Kg Total catch: CATCH/HOUR: CATCH/HOUR % OF TOT. C SAMP weight numbers 0.00 SPECIES NO CATCH Total DR. FRIDTJOF NANSEN DATE:28/ 8/06 PROJECT:BE PROJECT ST GEAR TYPE: PT No: 1 POSITION:Lat PROJECT STATION:1757 Lat S 2609 Long E 1401 
 DATE:28/8/06
 GEAR TYPE: PT No: 1
 POSITION:La

 start
 stop
 duration
 Lo

 TIME
 :10:49:51
 11:10:14
 20 (min)
 Purpose code: 1

 LOG
 :263:57
 263:77
 .11
 .14
 Area code
 1

 FDEPTH:
 290
 295
 GearCond.code:

 BDEPTH:
 336
 331
 Validity code:

 Towing dir:
 55ø
 Wire out: 700 m
 Speed: 33 kn\*10

 LUUR: 335.10 H/HOUR % OF TOT. C SAMP numbers 969 29.96 46650 21.19 8396 14457 19.94 8397 1944 17.66 2166 9.41 1437 1.08 2622 ^ 84 Sorted: 2 Kg Total catch: 111.70 CATCH/HOUR: 335.10 SPECIES CATCH/HOUR CATCH, weight 100.38 71.01 66.81 59.19 31.53 Todarodes angolensis Lampanyctodes hectoris Symbolophorus boops J E L L Y F I S H Lycoteuthis diadema Electrona risso Maurolicus muelleri ARGENTINIDAE 3.63 2.13 0.42 Total 335.10 100.01 
 DR. FRIDIJOF NANSEN
 PROJECT:BE
 PROJECT STATION:1758

 DATE:28/8/06
 GEAR TYPE: PT No: 1
 POSITION:Lat
 S
 2620

 start
 stop
 duration
 Long
 E
 1339

 TIME
 14:49:49
 9 (min)
 Purpose code: 1
 1

 LOG
 :2663.76
 2664.27
 0.51
 Area code
 1

 PDEPTH:
 160
 150
 GearCond.code:
 EDEPTH:
 529
 554
 Validity code:

 Towing dir:
 249ø
 Wire out: 500 m
 Speed: 34 kn\*10
 34 kn\*10
 Sorted: 16 Kg Total catch: 16.20 CATCH/HOUR: 108.00 CATCH/HOUR % OF TOT. C SAMP weight numbers 107.47 103673 99.51 8401 0.47 20 0.44 0.07 20 0.06 SPECIES Maurolicus muelleri Lycoteuthis diadema Emmelichthys nitidus Total 108.01 100.01 
 DR. FRIDIJOF NANSEN
 PROJECT:BE
 PROJECT STATION:1759

 DATE:29/8/06
 GEAR TYPE: PT No: 1 POSITION:Lat S 2646

 start
 stop
 duration
 Long E 1403

 TIME :02:42:18 02:55:33 13 (min)
 Purpose code: 1
 LOG :2733.55 2734.32 0.77
 Area code : 1

 FDEPTH:
 80
 GearCond.code:
 EDEPTH: 408
 410
 Validity code:

 Towing dir:
 2508
 Wire out: 240 m
 Speed: 35 kn\*10
 10
 Sorted: Kg Total catch: 11.34 CATCH/HOUR: 52.34 
 CATCH/HOUR
 % OF TOT. C
 SAMP

 weight
 numbers
 3402
 3402

 42.92
 25389
 82.00
 8402

 9.42
 822
 18.00
 8403

 0.05
 9
 0.10
 0.05
 SPECIES Lampanyctodes hectoris Symbolophorus boops Abriliopsis gilchristi Emmelichthys nitidus 100.20 52.44 Total DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:1760 DATE:29/8/06 GEAR TYPE: PT No: 1 POSITION:Lat S 2639 start stop duration Long E 1422 TIME :06:40:08 06:41:00 16 (min) Purpose code: 1 LOG :2759.79 2761.07 1.28 Area code : 1 FDEPTH: 25 25 GearCond.code: BDEPTH: 337 341 Validity code: Towing dir: 290@ Wire out: 130 m Speed: 40 kn\*10 Sorted: Kg Total catch: 0.02 CATCH/HOUR: 0.08 SPECTES CATCH/HOUR % OF TOT. C SAMP earch/Hour weight numbers 0.04 8 0.04 8 0.04 4 0.04 11 Brama brama 50.00 Maurolicus muelleri 50.00 50.00 50.00 8404 Emmelichthys nitidus Abriliopsis gilchristi 0 16 Total 200 00

DR. FRIDTJOF NANSEN	PROJECT:BE	PROJE	CT STATIO	N:1761
DATE:29/ 8/06 GEAR TY	PE: PT No: 1	POSITIO	N:Lat S	2635
TIME :10:01:35 11:41:35 18 (min	) Purpose cod	le: 1	Long E	1439
LOG :2782.47 2783.32 0.81	Area code	: 1		
FDEPTH: 75 75	GearCond.co	de:		
BDEPTH: 223 218	Validity co	de:	1.0	
lowing dir. 13/2 wire out.	230 m Speed.	30 KH"	10	
Sorted: Kg Total catch:	37.00	CATCH/H	OUR: 1	23.33
PECIES	CATCH/HOUR	\$ 0	F TOT. C	SAMP
mnanyctodes bectoris	122 30 91	043	99 16	8405
darodes angolensis	0.57	47	0.46	0105
mbolophorus boops	0.30	67	0.24	8407
vcoteutnis diadema urolicus muelleri	0.13	20	0.11	8406
riliopsis gilchristi	0.03	3	0.02	0100
tal	123.40	-	100.05	
DR. FRIDTJOF NANSEN DATE: 1/ 9/06 GEAR TY start stop duration	PROJECT:BE PE: BT No:19	PROJE	CT STATIO N:Lat S Long E	N:1762 2647 1449
TIME :03:20:51 08:20:04 28 (min	) Purpose cod	le: 1	Toura P	1112
LOG :2867.26 2868.85 1.60	Area code	: 1		
BDEPTH: 179 173	Validity co	de:		
Towing dir: Ø Wire out:	540 m Speed:	32 kn*	10	
Sorted: 2 Kg Total catch:	403.05	CATCH/H	OUR: 8	63.68
ECIES	CATCH/HOUR	8 0	F TOT. C	SAME
	weight numb	ers		
rluccius capensis	362.14 5	070	41.93	8409
yrsites atun mpanyctodes bectoris	325.71	88	37.71	8412
elidonichthys capensis	17.68	56	2.05	8411
llorhinchus capensis	15.00	9	1.74	
darodes angolensis	13.52	171	1.57	
tflogobius bibarbatus	6.56 1 5.0°	153	0.76	8414
achurus capensis mia australis	5.08	171	0.59	
urolicus muelleri	3.54 3	446	0.41	8413
pidopus caudatus	0.51	9	0.06	
tal	0.20		100.01	
ICAL	003.08		100.UI	
DR. FRIDTJOF NANSEN	PROJECT:BE	PROJE	CT STATIO	N:1763
DATE: 1/ 9/06 GEAR TY start stop duration	PE: BT No:19	POSITIO	N:Lat S Long E	2655 1430
LOG :2894.10 2895.06 0.96	, rurpose coc Area code	: 1		
FDEPTH: 314 314	GearCond.co	de:		
BDEPTH: 314 314 Towing dir: 355ø Wire out:	Validity co 900 m Speed:	de: 30 kn*	10	
Sorted: 373 Kg Total catch:	373.29	CATCH/H	OUR: 11	19.87
PECIES	CATCH / HOUS	<u></u>	F TOT C	SAME
- ···	weight numb	ers		
rluccius paradoxus, juvenile	397.80	555	35.52	8419
mpanyctodes hectoris	2/6.00 183.42 115	621 068	24.65	8418
elorinchus coelorhinc. polli	100.50 2	052	8.97	041/
rluccius capensis	90.00	159	8.04	
mbolophorus boops	21.75 4	287	1.94	8416
darodes angolensis	19.80	186 21	1.77	
nypterus capensis	8.40	9	0.75	
pidopus caudatus	6.00	6	0.54	
yrsites atun	3.90	3	0.35	
coleulnis diadema leus polli	0.57	30	0.05	
urolicus muelleri	0.39	315	0.03	8415
uilla sp.	0.27	21	0.02	
thynectes piperitus	0.27	12	0.02	
riliopsis gilchristi	0.24	81	0.02	
merrenenys niciaus Digonus sp.	0.12	21	0.01	
BIIDAE	0.06	24	0.01	
ysiculus capensis	0.03	3		
tal	1119.90	-	100.00	

DR. FRIDTJOF NANSEN	PROJECT : BE	PROJECT STATION:1764
DATE: 1/ 9/06	GEAR TYPE: PT No: 1	POSITION:Lat S 2701
start stop	duration	Long E 1409
TIME :17:34:41 17:50:4	3 16 (min) Purpose coo	le: 1
LOG :2920.65 2921.61	0.95 Area code	: 1
FDEPTH: 300 310	GearCond.co	de:
BDEPTH: 410 406	Validity co	de:
Towing dir: 69ø	Wire out: 900 m Speed:	37 kn*10
Sorted: 4 Kg To	otal catch: 4.19	CATCH/HOUR: 15.71

SPECIES	CATCH	I/HOUR	% OF TOT. C	SAMP
	weight	numbers		
Diaphus sp.	8.29	623	52.77	8421
Lycoteuthis diadema	2.96	188	18.84	
Photichthys argenteus	2.21	353	14.07	
Symbolophorus boops	1.58	124	10.06	8420
Todarodes angolensis	0.23	4	1.46	
Gymnoscopelus sp.	0.23	30	1.46	
Epigonus sp.	0.11	30	0.70	
Maurolicus muelleri	0.04	15	0.25	
Funchalia woodwardi	0.04	4	0.25	
Electrona risso	0.04	23	0.25	
Total	15.73		100.11	

LOG         :233.13         0.73         Area code         : 1           FDEFTH:         100         IOO         GearCond.code:         1           Sorted:         2 Kg         Total catch:         1.55         CATCH/HOUR:         7.           SPECIES         CATCH/HOUR         4 OF TOT. C S         S <td< th=""><th></th><th>ION: S E</th><th>STAT Lat Long</th><th>OJECT</th><th>PI POS: ode:</th><th>PROJECT:BE PE: PT No: Purpose</th><th>GEAR TY op duration 00:45 12 (min</th><th>DR. FRIDTJOF NANSEN DATE: 1/ 9/06 start st TIME :18:20:21 20:</th></td<>		ION: S E	STAT Lat Long	OJECT	PI POS: ode:	PROJECT:BE PE: PT No: Purpose	GEAR TY op duration 00:45 12 (min	DR. FRIDTJOF NANSEN DATE: 1/ 9/06 start st TIME :18:20:21 20:
Sorted: 2 Kg       Total catch:       1.55       CATCH/HOUR:       7.         SPECIES       CATCH/HOUR:       % 0F TOT. C S       % wight numbers       8.5         Funchalia woodwardi       0.45       90       5.81       8         Mutra ficure mission       0.15       15       2.14       8         Diama mission       0.15       15       2.14       8         Diama mission       0.15       15       2.14       8         Total				1 1 kn*10	code: code: code: d: 38	Area cod GearCond Validity 320 m Spe	5.13 0.73 100 451 70ø Wire out:	LOG :2934.39 293 FDEPTH: 100 BDEPTH: 460 Towing dir:
SPECIES         CATCH/HOUR         % OF TOT. C         S           Funchalia woodwardi Gymnoscopelus sp.         0.45         90         5.81         8           Biectrona risso         0.15         35         1.94         8           Catal         0.15         35         1.94         8           Total         7.80         100.65         100.66           DR. FRIDTUOF NANSEN         PROJECT:BE         PROJECT STATION:1 Long E 1         2.13           TNE :: 1/ 9/06         GEAR TYPE: FT No: 2 POSITION:1 Long E 1         100.66           DR. FRIDTUOF NANSEN         PROJECT:BE         PROJECT:STATION:1 Long E 1         100.66           TNE :: 1/ 9/06         GEAR TYPE: FT No: 2 POSITION:1 Long E 1         100.66         100.66           Species         Towing dir: 700 Wire out: 270 m Speed: 37 kn*10         100.66         100.66           Species         CATCH/HOUR * 0F TOT. C         S         100.66         100.00           Symbolophorus boops         0.40         75         9.30         8           Lycoteuthys nitidus         0.05         15         1.16           Total         4.30         99.99         100           DR. FRIDTUOF NANSEN         PROJECT:BE         PROJECT STATION:1 Log :2938.13	.75	7	R:	H/HOU	CAT	1.55	Total catch:	Sorted: 2 Kg
Punchalis woodwardi         weight (1)         weight (2)         State (2) <td>SAMP</td> <td>2</td> <td>TOT.</td> <td>% OF</td> <td>UR</td> <td>CATCH/H</td> <td></td> <td>SPECIES</td>	SAMP	2	TOT.	% OF	UR	CATCH/H		SPECIES
Life(10)1a [1930]       0.12       23       1.94       6         Lampanytodes hectoris       0.03       50       0.65       8         Total       7.80       100.66         DR. FRIDTJOF NANSEN       PROJECT:BE       PROJECT STATION:I         DATE: 1/ 9/06       GEAR TYPE: PT No: 2       POSITION:Lat S 2         start       stop duration       Long E 1         LOG :2936.26       2937.02       0.75       Area code : 1         PDETH:       70       0       GeacCond.code:         BDETH:       441       456       Validity code:         Towing dir:       70 %       Wire out: 270 %       Special 37 kn*10         Sorted:       1 Kg       Total catch:       0.86       CATCH/HOUR * 0F TOT. C \$         Gymnoacopelus sp.       0.40       75       9.30       8         Gymnoacopelus sp.       0.40       30       9.30       8         Lepidops caudatus       0.35       95       1.16         Emmelichthys nitidus       0.35       1.16       Log : 293.31       1.16         TME :20:51:28 21:08:31       17       (min) Purpose code: 1       Log : 293.43       1.52         DATE: 1/ 9/06       GEAR TYPE: PT No: 2       POSITION:L	8425 8428		89.68 5.81 2.58		185 mbers	weight n 6.95 0.45 0.20		Funchalia woodwardi Gymnoscopelus sp. Maurolicus muelleri
Total     7.80     100.66       DR. FRIDTJOF NANSEN     PROJECT:BE     PROJECT STATION:I       DATE: 1/ 9/06     GEAR TYPE: TN NO: 2 POSITION:Lat S 2       STME :20:00:00 20:00:01 12 (min)     Purpose code: 1       LOG :2936.26 2937.02 0.75     Area code :1       PDEPTH: 70 70     GearCond.code:       BDEPTH: 70 70     GearCond.code:       BDEPTH: 70 70     Speed: 37 kn*10       Sorted: 1 Kg     Total catch:     0.86       CATCH/HOUR     * 0F TOT. C S       weight numbere     * 0F TOT. C S       Yemochologius ap     0.40     75       Oymnoscopelus ap     0.40     30       Oymnoscopelus ap     0.40     30       Oymnoscopelus ap     0.35     95       DATE: 1/ 9/06     GEAR TYPE: FT No: 2 POSITION:Lat S 2       Start stop duration     Long E 1       TMM :20:51:28 21:08:31     116       DATE: 1/ 9/06     GEAR TYPE: FT No: 2 POSITION:Lat S 2       Start stop duration     Long E 1       TMM :20:51:28 21:08:31     Tom Speed: 30 kn*10       Sorted: 2 Kg     Total catch: 1.52       DATE: 1/ 9/06     GEAR TYPE: PT No: 2 POSITION:Lat S 2       SPECIES     CATCH/HOUR * 0F TOT. C S       Weight numbers     30       DATE: 1/ 9/06     GEAR TYPE: PT No: 2 POSITION:Lat S 2	8420		0.65		50	0.05		Lampanyctodes hectoris
DR. FRIDTUOF NAMSEN PROJECT BE PROJECT STATION-1 DATE: 1/ 9/06 GEAR TYPE: PT No: 2 POSITION-Lat S 2 start stop duration. TIME :20:00:00 20:00:01 12 (min) Purpose code: 1 LOG :2936.26 2937.02 0.75 Area code :1 PDEPTH: 70 70 GearCand.code: DDEPTH: 70 70 Wire out: 270 m Speed: 37 kn*10 Sorted: 1 Kg Total catch: 0.86 CATCH/HOUR: 4. SPECIES CATCH/HOUR & OF TOT. C S Weight numbers Symbolophorus boops 0.40 75 9.30 8 Gymmoscopelus sp. 0.40 75 9.30 8 Symbolophorus boops 0.40 30 9.30 8 Lycoteuthis diadema 0.33 40 6.98 Lycoteuthis diadema 0.33 40 6.98 Lycoteuthis diadema 0.35 95 8.14 8 Lycoteuthis diadema 0.30 40 6.98 Lycoteuthis diadema 0.30 40 6.98 DDTE: 1/ 9/06 GEAR TYPE: PT No: 2 POSITION:Lat S 2 Validity code: 1 Towing dir: 700 Wire out: 170 m Speed: 38 kn*10 Sorted: 2 Kg Total catch: 1.52 CATCH/HOUR: 5. SPECIES CATCH/HOUR & 0F TOT. C S Weight numbers Symbolophorus boops 0.29 73 1.13 8 Did 5.35 99.81 DER. FRIDTUOF NAMSEN PROJECT HE PROJECT STATION! DTE: 2/ 9/06 GEAR TYPE: PT No: 1 POSITION:Lat S 2 Symbolophorus boops 0.28 74 4.666 8 DATE: 2/ 9/06 GEAR TYPE: PT NO: 1 POSITION:Lat S 2 Symbolophorus boops 1.01 357 3.13 8 DATE: 2/ 9/06 GEAR TYPE: PT NO: 1 POSITION:Lat S 2 Symbolophorus boops 1.028 74 4.666 8 DDEPTH: 55 55 99.81 Total 5.35 99.81 DER. FRIDTUOF NAMSEN PROJECT:BE PROJECT STATION! DTE: 2/ 9/06 GEAR TYPE: PT NO: 1 POSITION:Lat S 2 Symbolophorus boops 1.018 355 0.044 7 0.75 8 DDEPTH: 55 55 55 55 55 55 55 55 55 55 55 55 55			00.66	1		7.80		Total
DATE: 17 906 GEAR TYPE: PT NO: 2 POSITION:Lat S 2 start stop duration TIME :20:00:00 20:00:01 12 (min) Purpose code: 1 LOG 2336.26 2337.02 0.75 Area code : 1 FDEPTH: 70 70 GearCond.code: Towing dir: 70s Wire out: 270 m Speed: 37 km*10 Sorted: 1 Kg Total catch: 0.86 CATCH/HOUR: 4. SPECIES CATCH/HOUR % OF TOT. C S Weight numbers Symbolophorus boops 0.40 30 9.30 8 Symbolophorus boops 0.40 30 9.30 8 Lepidopus caudatus 0.05 15 1.16 Emmelichthys nitidus 0.05 35 1.116 Total 4.30 99.99 DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:Lat S 2 start stop duration Long E 1 TOWING dir: 70s Wire out: 170 m Speed: 1 LOG :2938.13 2939.34 1.18 Area code : 1 FDEFTH: 429 422 Validity code: Towing dir: 70s Wire out: 170 m Speed: 38 km*10 Sorted: 2 Kg Total catch: 1.52 CATCH/HOUR % OF TOT. C S Weight numbers Symbolophorus boops 0.25 74 4.66 8 Lapcotouthis diadema 0.30 40 6.98 1. Log :2938.13 2939.34 1.18 Area code : 1 FDEFTH: 429 422 Validity code: DEFTH: 5.55 57 46 4.66 8 Lappanyctodes hectoris 0.18 367 3.36 8 Abriliopsis gilchristi 0.04 7 0.75 8 Total 5.35 99.81 DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:1 DATE: 2/ 9/06 GEAR TYPE: FT No: 1 POSITION:Lat S 2 start stop duration Long E 1 TIME :20:50:37:42 29 (min) Purpose code: 1 DATE: 2/ 9/06 GEAR TYPE: FT No: 1 POSITION:Lat S 2 start stop duration Long E 1 TIME :01:08:55 01:37:42 29 (min) Purpose code: 1 DATE: 2/ 9/06 GEAR TYPE: FT No: 1 POSITION:Lat S 2 start stop duration Long E 1 TIME :01:08:55 01:37:42 29 (min) Purpose code: 1 LOG :2973.58 2975.31 1.74 Area code : 1 FDEFTH: 55 55 GearCond.code: BDEFTH: 257 247 Validity code: Towing dir: 90s Wire out: 180 m Speed: 30 km*10 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR % OF TOT. C S Weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.85 85	1766	ION:	STAT	OJECI	PI	PROJECT:BE		DR. FRIDTJOF NANSEN
LINE 12010/00/2010/12/2010/2010/2010/12/2010/2010/2010/2010/2010/2010/2010/2010/2010/2010/2010	2703 1404	S E	Lat Long	TION	POS:	PE: PT No:	GEAR TY op duration	DATE: 1/ 9/06 start st
PDEPTH:       70       70       GearCond.code:         BDEPTH:       41       436       Validity code:         Towing dir:       70%       Wire out:       270 m       Speed:       37 kn*10         Sorted:       1 Kg       Total catch:       0.86       CATCH/HOUR:       4.         SPECIES       CATCH/HOUR       % OF TOT. C       S         Lampanyctodes hectoris       1.95       310       45.35       8         Symbolophorus boops       0.40       75       9.30       8         Symbolophorus boops       0.40       30       9.30       8         Lepidopus caudatus       0.35       95       8.14       8         Lycoteuthis diadema       0.30       40       6.98       1.06         Lycoteuthis diadema       0.30       40       6.98       1.06         Total				1	iode:	Area cod	7.02 0.75	LOG :2936.26 293
Sorted:       1 Kg       Total catch:       0.86       CATCH/HOUR:       4.         SPECIES       CATCH/HOUR       % OF TOT. C       S         Lampanyctodes hectoris       1.95       310       45.35       8         Funchalia woodwardi       0.80       60       16.60         Gymoscopelus sp.       0.40       75       9.30       8         Symbolophorus boops       0.40       75       9.30       8         Lycoteuthis diadema       0.35       95       8.14       8         Lycoteuthis diadema       0.05       15       1.16         Emmelichtys nitidus       0.05       35       1.61         Total				kn*10	code: code: d: 37	GearCond Validity 270 m Spe	70 436 70ø Wire out:	FDEPTH: 70 BDEPTH: 441 Towing dir:
SPECIES       CATCH/HOUR       % OF TOT. C       S         Lampanyctodes hectoris       1.95       310       45.35       8         Punchalia woodwardi       0.80       60       16.60         Gymnoscopelus sp.       0.40       75       9.30       8         Symbolophorus boops       0.40       30       9.30       8         Lepidopus caudatus       0.35       95       8.14       8         Lycoteuthis diadema       0.30       40       6.98       1.16         Emmelichthys nitidus       0.05       15       1.16       1.16         Total       4.30       99.99       9       9       9         DR. FRIDTJOF NANSEN       PROJECT:BE       PROJECT STATION:1       Long E 1         DATE: 1/ 9/06       GEAR TYPE: PT No: 2 POSITION:Lat S 2       2       Second: 1         LOG : 2938.13 293.34       1.18       Area code : 1       FDEPTH: 30       30       GearCond.code:         BDEPTH: 30       30       GearCond.code:       EDEPTH:       5       5         Sorted: 2 Kg       Total catch:       1.52       CATCH/HOUR: \$ OF TOT. C       S         Symbolophorus boops       3.92       395       73.13       8      <	1.30	4	R:	H/HOU	CAT	0.86	Total catch:	Sorted: 1 Kg
weight         numbers           Lampanyctodes hectoris         1.95         310         45.35         8           Funchalia woodwardi         0.80         60         18.60           Symbolophorus boops         0.40         30         9.30         8           Symbolophorus boops         0.40         30         9.30         8           Lectrona risso         0.35         95         8.14         8           Lepidopus caudatus         0.05         15         1.16           Emmelichthys nitidus         0.05         35         1.16           Total         4.30         99.99         9           DR. FRIDTJOF NANSEN         PROJECT:BE         PROJECT STATION:1           DATE: 1/ 9/06         GEAR TYPE: PT No: 2 POSITION:Lat \$2         2           TIME :20:51:28         21:08:31         17 (min) Purpose code: 1         1           LOG :2938.13         2939.34         1.18         Area code : 1         1           FDEPTH:         30         30         GearCond.code:         1           FDEPTH:         422         Validity code:         5.22         1           Funchalia woodwardi         0.28         7.23         7.13         8	SAMP	2	TOT.	% OF	UR	CATCH/H		SPECIES
Funchalia woodwardi       0.80       60       18.60         Symbolophorus boops       0.40       30       9.30       8         Symbolophorus boops       0.40       30       9.30       8         Lectrona risso       0.35       95       8.14       8         Lycoteuthis diadema       0.30       40       6.98       8         Lepidopus caudatus       0.05       35       1.16         Total       4.30       99.99       99.99         DR. FRIDTJOF NANSEN       PROJECT:BE       PROJECT STATION:1         DATE: 1/9/06       GEAR TYPE: PT No: 2       POSITION:Lat \$2         IDG :2938.13       2939.34       1.18       Area code : 1         FDEPTH:       30       30       GearCond.code:         BDEPTH:       422       Wire out: 170 m Speed: 38 kn*10       5.         Sorted:       2 Kg       Total catch:       1.52       CATCH/HOUR:       5.         Spmbolophorus boops       3.92       395       73.13       8         Lycoteuthis diadema       0.64       74       11.94       422         Funchalia woodwardi       0.28       28       5.22         Electrona risso       0.25       74	8432		45.35		mbers 310	weight n 1.95		Lampanyctodes hectoris
Symbolophorus boops         0.40         30         9.30         8           Electrona risso         0.35         95         8.14         8           Lycoteuthis diadema         0.30         40         6.98         8           Lycoteuthis diadema         0.30         40         6.98         8           Lycoteuthis diadema         0.30         40         6.98         8           Logitous caudatus         0.05         35         1.16           Total	8430		18.60 9.30		60 75	0.80 0.40		Funchalia woodwardi Gymnoscopelus sp.
Lycoteuthis diadema         0.30         40         6.98           Lycoteuthis diadema         0.05         15         1.16           Emmelichthys nitidus         0.05         35         1.16           Total         4.30         99.99           DR. FRIDTJOF NANSEN         PROJECT: BE         PROJECT STATION:1           DATE: 1/ 9/06         GEAR TYPE: PT No: 2 POSITION:Lat S 2         2           start stop duration         Long E 1         Long E 1           DEDEPTH: 30         30         GearCond.code:           BDEPTH: 429         422         Validity code:           Towing dir: 700 Wire out: 170 m Speed: 38 kn*10         Sorted: 2 Kg           Sorted: 2 Kg         Total catch:         1.52           Punchalia woodwardi         0.28         2395           Lycoteuthis diadema         0.64         74           Date: 2/ 9/06         GEAR TYPE: PT No: 1 POSITION:Lat S 2           Bymbolophorus boops         3.92         3.95           Catch/HOUR<% OF TOT. C S	8429 8431		9.30		30 95	0.40		Symbolophorus boops Electrona risso
DR. FRIDTJOF NANSEN         PROJECT:BE         DROJECT:STATION:1           DR. FRIDTJOF NANSEN         PROJECT:BE         PROJECT STATION:1           DATE: 1/ 9/06         GEAR TYPE: FT No: 2 POSITION:Lat S 2           start stop duration         Long E 1           TOTE: 2938.13 293.34 1.18         Area code : 1           DEDEPTH: 30         30         GearCond.code:           BDEPTH: 429         422         Validity code:           Towing dir: 70ø Wire out: 170 m Speed: 38 kn*10         Sorted: 2 Kg           Sorted: 2 Kg         Total catch:         1.52           Punchalia woodwardi         0.28         295           Lampanyctodes hectoris         0.18         367           Abrilopsis gilchristi         0.04         7           Gymnoscopelus sp.         0.04         7           Total         5.35         99.81           DR. FRIDTJOF NANSEN         PROJECT:BE         PROJECT STATION:1           DATE: 2/ 9/06         GEAR TYPE: PT No: 1 POSITION:Lat S 2           Gymnoscopelus sp.         0.04         7           Total         5.35         99.81           DR. FRIDTJOF NANSEN         PROJECT:BE         PROJECT STATION:L           DATE: 2/ 9/06         GEAR TYPE: PT No: 1 POSITION:Lat S 2 <td< td=""><td></td><td></td><td>6.98</td><td></td><td>40</td><td>0.30</td><td></td><td>Lycoteuthis diadema Lepidopus caudatus</td></td<>			6.98		40	0.30		Lycoteuthis diadema Lepidopus caudatus
Total     4.30     99.99       DR. FRIDTJOF NANSEN start stop duration start stop duration TIME :20:51:28 21:08:31 17 (min) Purpose code: 1 LOG :2938.13 293.34 1.88 BEEPTH: 30 30 BEEPTH: 329 422 Towing dir: 70ø Wire out: 170 m Speed: 38 km*10     Log E 1 FEEPTH: 30 Sorted: 2 Kg Total catch: 1.52 CATCH/HOUR * OF TOT. C S Weight numbers 3.92 395.73.13 8 Jycoteuthis diadema Dymoscopelus sp. Total     Sorted: 2 Kg Total catch: 1.52 CATCH/HOUR * OF TOT. C S Weight numbers 3.92 395.73.13 8 Jycoteuthis diadema 0.64 74 11.94 Sorted: 2.5.74 4.66 8 Lampanyctodes hectoris Monte Start stop duration TIME :01:08:55 01:37:42 29 (min) DATE: 2/ 9/06 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR * OF TOT. C S Weight numbers Sorted: 2.77 Sorted: 2			1.16		35	0.05		Emmelichthys nitidus
DR. FRIDTJOF NANSEN     PROJECT:BE     PROJECT STATION:1       DATE: 1/ 9/06     GEAR TYPE: PT No: 2 POSITION:Lat S 2     start stop duration     Long E 1       TIME :20:51:28 21:08:31 17 (min)     Purpose code: 1     LOG :2938.13 2939.34 1.18     Area code : 1       FDEPTH: 30     30     GearCond.code:     BEEPTH: 429 422     Validity code:       Towing dir: 70@ Wire out: 170 m Speed: 38 kn*10     Sorted: 2 Kg     Total catch:     1.52     CATCH/HOUR     % OF TOT. C S       Symbolophorus boops     3.92     395     73.13     8       Lycoteuthis diadema     0.64     74     11.94       Funchalia woodwardi     0.28     28     5.22       Electrona risso     0.25     74     4.66       Apmantodes hectoris     0.18     367     3.36       Gymnoscopelus sp.     0.04     7     0.75     8       Total     5.35     99.81     Long E 1       DR. FRIDTJOF NANSEN     PROJECT:BE     PROJECT STATION:Lat S 2       Start stop duration     Long E 1     LOG :2973.58     295.31       TME :01:08:55 01:37:42     29 (min) Purpose code: 1     Long E 1       LOG :2973.58     Qatration     Long E 1       DEPTH: 55     74     Validity code:       Towing dir: 90@ Wire out: 180 m Speed: 30 kn*10     S			99.99			4.30		Total
DATE: 1/ 9/06 GEAR TYPE: PT No: 2 POSITION:Lat S 2 start stop duration Long E 1 TIME :20:51:28 21:08:31 17 (min) Purpose code: 1 LOG :2938.13 239.34 1.18 Area code : 1 FDEPTH: 429 422 Validity code: Towing dir: 70@ Wire out: 170 m Speed: 38 kn*10 Sorted: 2 Kg Total catch: 1.52 CATCH/HOUR: 5. SPECIES CATCH/HOUR % OF TOT. C S weight numbers Symbolophorus boops 3.92 395 73.13 8 Lycoteuthis diadema 0.64 74 11.94 Funchalia woodwardi 0.28 28 5.22 Electrona risso 0.25 74 4.66 8 Lampanyctodes hectoris 0.18 367 3.36 8 Abriliopsis glichristi 0.04 7 0.75 8 Total 5.35 99.81 DR. FRIDTIOF NANSEN PROJECT:EE PROJECT STATION:1 DATE: 2/ 9/06 GEAR TYPE: PT No: 1 POSITION:Lat S 2 start stop duration Long E 1 TOME : 201:08:55 01:37:42 29 (min) Purpose code: 1 FDEPTH: 55 55 GearCond.code: BDEPTH: 257 247 Validity code: DEDTIOF : 201:08:155 01:37:42 29 (min) Purpose code: 1 FDEPTH: 52 55 GearCond.code: BDEPTH: 257 247 Validity code: DEDTIOF : 201:08:155 01:37:42 29 (min) Purpose code: 1 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR: 46. SPECIES CATCH/HOUR % 0F TOT. C S weight numbers Lampanyctodes hectoris 39.29 2037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	1767	ION:	STAT	OJECI	PI	PROJECT: BE		DR. FRIDTJOF NANSEN
TIME       :20:51:28 21:08:31 17 (min)       Purpose code: 1         LOG       :2938.13 2393.34 1.88       Area code : 1         FDEPTH:       30       30       GearCond.code:         BDEPTH:       422       Validity code:       Towing dir:       70ø Wire out:       170 m Speed: 38 kn*10         Sorted:       2 Kg       Total catch:       1.52       CATCH/HOUR:       5.         SPECIES       CATCH/HOUR % OF TOT. C S       weight numbers       Symbolophorus boops       3.92       395       73.13       8         Lycoteuthis diadema       0.64       74       11.94       Funchalia woodwardi       0.28       28       5.22         Electrona risso       0.25       74       4.66       8         Abriliopsis glichristi       0.04       7       0.75       8         Gymnoscopelus sp.       0.04       7       0.75       8         Total       5.35       99.81       1       29.06       1         DAT:       2/9/06       GEAR TYPE: PT No: 1 POSITION:Lat S 2       2       1       1.06       1.2973.58       2975.31       1.74       Area code : 1       1         DAT:       2/9/06       GEAR TYPE: PT No: 1 POSITION:Lat S 2       2.55       GearCond	2703 1406	S E	Lat Long	TION	POS	PE: PT No:	GEAR TY op duration	DATE: 1/ 9/06 start st
FDEPTH:       30       30       GearCond.code:         BDEPTH:       429       Validity code:         Towing dir:       70ø Wire out:       170 m Speed:       38 kn*10         Sorted:       2 Kg       Total catch:       1.52       CATCH/HOUR:       5.         SPECIES       CATCH/HOUR % OF TOT. C S       weight numbers       Symbolophorus boops       3.92       395       73.13       8         Lycoteuthis diadema       0.64       74       11.94       Funchalia woodwardi       0.28       2.22         Electrona risso       0.25       74       4.66       8         Abriliopsis gilchristi       0.18       367       3.36       8         Gymnoscopelus sp.       0.04       7       0.75       8         Total       5.35       99.81       100       100       100         DR. FRIDTJOF NANSEN       PROJECT: BE       PROJECT STATION:1       DATE: 2/ 9/06       GEAR TYPE: PT No: 1 POSITION:Lat S 2       1.74       Area code : 1         DATE:       2/ 9/06       GEAR TYPE: PT No: 1 POSITION:Lat S 2       5       5       GearCond.code:         BDEPTH:       257       247       Validity code:       1       1         Towing di:       90 Wire				1	ode:	Purpose Area cod	08:31 17 (min 9.34 1.18	TIME :20:51:28 21: LOG :2938.13 293
Towing dir: 70ø Wire out: 170 m Speed: 38 kn*10         Sorted: 2 Kg       Total catch:       1.52       CATCH/HOUR:       5.         SPECIES       CATCH/HOUR % OF TOT. C S       weight numbers       3.92       395       73.13       8         Lycoteuthis diadema       0.28       28       5.22       5.22       5.22       5.22       5.22       5.22       5.22       5.22       5.22       5.22       5.22       5.22       5.22       5.23       5.23       5.22       5.22       5.22       5.22       5.23       5.23       5.22       5.22       5.23       5.25       5.27       2.20       1.1       1.0       1.27       2.27					code:	GearCond	30	FDEPTH: 30 BDEPTH: 429
Sorted:       2 Kg       Total catch:       1.52       CATCH/HOUR:       5.         SPECIES       CATCH/HOUR & OF TOT. C S       weight numbers       8         Symbolophorus boops       3.92       395       73.13       8         Lycoteuthis diadema       0.28       28       5.22         Electrona risso       0.28       28       5.22         Electrona risso       0.18       367       3.36       8         Apriliopsis gilchristi       0.04       7       0.75       8         Gymnoscopelus sp.       0.04       7       0.75       8         Total       5.35       99.81       29       100       21       22       21       21       21       21       21       22       21       21       21       21       21       21       21       21       21       21       21       21       21 <t< td=""><td></td><td></td><td></td><td></td><td>coue.</td><td>Validity</td><td>422</td><td></td></t<>					coue.	Validity	422	
SPECIES         CATCH/HOUR         % OF TOT. C         S           Symbolophorus boops         3.92         395         73.13         8           Lycoteuthis diadema         0.64         74         11.94           Punchalia woodwardi         0.28         28         5.22           Electrona risso         0.25         74         4.66         8           Ampanyctodes hectoris         0.18         367         3.36         8           Abriliopsis gilchristi         0.04         7         0.75         8           Gymnoscopelus sp.         0.04         7         0.75         8           Total         5.35         99.81         99.81           DR. FRIDTJOF NANSEN         PROJECT:BE         PROJECT STATION:Lat         S           itte: 21/ 9/06         GEAR TYPE: PT No: 1 POSITION:Lat S 2         2         1.01         1.02         1.02         1.02         1.03         1.04         1.03         1.04         1.04         1.04         1.04         1.05         1.05         1.01         1.05         1.04         1.05         1.05         1.04         1.05         1.04         1.05         1.04         1.05         1.05         1.05         1.05         1.06				kn*10	d: 38	170 m Spe	422 70ø Wire out:	Towing dir:
Symbolophorus boops         3.92         395         73.13         8           Lycoteuthis diadema         0.64         74         11.94           Funchalia woodwardi         0.28         285         5.22           Electrona risso         0.25         74         4.66         8           Lampanyctodes hectoris         0.18         367         3.36         8           Abriliopsis gilchristi         0.04         7         0.75         8           Gymnoscopelus sp.         0.04         7         0.75         8           Total         5.35         99.81         99.81           DR. FRIDTJOF NANSEN         PROJECT:BE         PROJECT STATION:1         Long E 1           LOG         12973.58         2975.31         1.74         Area code : 1           FDEPTH:         257         247         Validity code:         1           Towing dir:         900         Wire out: 180 m Speed: 30 kn*10         Sorted: 23 Kg         Total catch:         22.70         CATCH/HOUR:         46.           SPECIES         CATCH/HOUR % OF TOT. C         S         weight numbers         39.29         2037         83.65         8           Lampanyctodes hectoris         39.29         2037	5.36	5	R:	kn*10 H/HOU	code: 38 CATO	170 m Spe	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg
Lycoteuthis diadema         0.64         74         11.94           Punchalia woodwardi         0.28         28         5.22           Electrona risso         0.25         74         4.66         8           Lampanyctodes hectoris         0.18         367         3.36         8           Abriliopsis gilchristi         0.04         7         0.75         8           Gymnoscopelus sp.         0.04         7         0.75         8           Total         5.35         99.81         99.81           DR. FRIDTJOF NANSEN         PROJECT:BE         PROJECT STATION:1         Long E           DATE: 2/ 9/06         GEAR TYPE: PT No: 1         POSITION:Lat S         2           start stop duration         Long E         1         Long E         1           IDM: 55         01:37:42         29 (min)         Purpose code: 1         Long E         1           IDM: 55         2975.31         1.74         Area code : 1         1         EDEPTH: 55         257         Validity code:           Towing dir:         900 Wire out: 180 m Speed: 30 kn*10         Sorted: 23 Kg         Total catch: 22.70         CATCH/HOUR: 46.           SPECIES         CATCH/HOUR % 0F TOT. C         S         weight numbers<	5.36 SAMP	5	R: TOT.	kn*10 H/HOU % OF	CATO	Validity 170 m Spe 1.52 CATCH/H	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES
Electrona risso 0.25 74 4.66 8 Lampanyctodes hectoris 0.18 367 3.36 8 Abriliopsis gilchristi 0.04 7 0.75 8 Gymnoscopelus sp. 0.04 7 0.75 8 Total 5.35 99.81 DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:1 DATE: 2/ 9/06 GEAR TYPE: PT No: 1 POSITION:Lat S 2 start stop duration Long E 1 LOG :2973.58 2975.31 1.74 Area code : 1 FDEPTH: 55 55 GearCond.code: BDEPTH: 257 247 Validity code: Towing dir: 900 Wire out: 180 m Speed: 30 kn*10 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR: 46. SPECIES CATCH/HOUR % OF TOT. C S weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	5.36 SAMP 8432	5	R: TOT. 73.13	kn*10 H/HOU % OF	CATO CATO UUR Mbers 395	Validity 170 m Spe 1.52 CATCH/H weight n 3.92	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops
Abriliopsis gilchristi       0.04       7       0.75       8         Gymnoscopelus sp.       0.04       7       0.75       8         Total       5.35       99.81         DR. FRIDTJOF NANSEN       PROJECT:BE       PROJECT STATION:1         DATE: 2/ 9/06       GERAT TYPE: PT No: 1       POSITION:Lat       S 2         TIME       :01:08:55       01:37:42       29 (min)       Purpose code: 1         FDEPTH:       :5       5       GearCond.code:       1         BDEPTH:       :257       :247       Validity code:       10         Sorted:       23 Kg       Total catch:       22.70       CATCH/HOUR:       46.         SPECIES       CATCH/HOUR       % OF TOT. C       S       weight       numbers         Lampanyctodes hectoris       39.29       22037       83.65       8         Merluccius paradoxus, juvenile       4.63       106       9.86       8	5.36 SAMP 8432	5	R: TOT. 73.13 11.94 5.22	kn*10 H/HOU % OF	UR Mbers 395 74 28	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.28	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Funchalia woodwardi
DR. FRIDTJOF NANSEN     PROJECT:BE     PROJECT:STATION:1       DATE: 2/ 9/06     GEAR TYPE: PT No: 1     POSITION:Lat S 2       start     stop     duration     Long E 1       DG: 2973.58     2975.31     1.74     Area code : 1       FDEFTH:     257     247     Validity code:       Downed:     29.00     Wire out: 180     Mspeed: 30       Sorted:     23 Kg     Total catch:     22.70       CATCH/HOUR:     46.3     39.29     2037       Bampanyctodes hectoris     39.29     22037     83.65	SAMP 8432 8436 8434	5	R: TOT. 73.13 11.94 5.22 4.66 3.36	kn*10 H/HOU % OF	CATO OUR IMbers 395 74 28 74 367	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.28 0.25 0.18	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Punchalia woodwardi Electrona risso Lamoanyctodes hectoris
DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:1 DATE: 2/ 9/06 GEAR TYPE: PT No: 1 POSITION:Lat S 2 start stop duration Long E 1 TIME :01:08:55 01:37:42 29 (min) Purpose code: 1 LOG :2973.58 2975.31 1.74 Area code : 1 FDEPTH: 55 55 GearCond.code: BDEPTH: 257 247 Validity code: Towing dir: 90ø Wire out: 180 m Speed: 30 kn*10 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR: 46. SPECIES CATCH/HOUR % OF TOT. C S weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	SAMP 8432 8436 8434 8433	5	R: TOT. 73.13 11.94 5.22 4.66 3.36 0.75	kn*10 H/HOU % OF	CATC OUR mbers 395 74 28 74 367 7 7	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.28 0.25 0.18 0.04 0.04	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Funchalia woodwardi Electrona risso Lampanyctodes hectoris Abriliopsis gilchristi Symnosconelus sp.
DR. FRIDTUOF NANSEN PROJECT:BE PROJECT STATION:1 DATE:2/9/06 GEAR TYPE: FT No:1 POSITION:La S 2 start stop duration TIME :01:08:55 01:37:42 29 (min) Purpose code: 1 LOG :2973.58 2975.31 1.74 Area code : 1 FDEPTH: 55 55 GearCond.code: EDEPTH: 557 247 Validity code: Towing dir: 90ø Wire out: 180 m Speed: 30 kn*10 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR: 46. SPECIES CATCH/HOUR % OF TOT. C S weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	SAMP 8432 8436 8434 8433	5	<pre>TOT. 73.13 11.94 5.22 4.66 3.36 0.75 0.75 999.81</pre>	kn*10 H/HOU % OF	CAT( )UR mmbers 395 74 28 74 367 7 7	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.28 0.25 0.18 0.04 0.04 5.35	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Funchalia woodwardi Electrona risso Lampanyctodes hectoris Apriliopsis gilchristi Symnoscopelus sp. Total
THE       :01:08:55       01:57:42       291 (min)       Purpose code: 1       Doing b       1         LOG       :2973.58       2975.31       1.74       Area code       :1         FDEPTH:       55       GearCond.code:       1         FDEPTH:       257       247       Validity code:         Towing dir:       900 Wire out:       180 m Speed:       30 kn*10         Sorted:       23 Kg       Total catch:       22.70       CATCH/HOUR:       46.         SPECIES       CATCH/HOUR % OF TOT. C       S       weight numbers         Lampanyctodes hectoris       39.29       22037       83.65       8         Merluccius paradoxus, juvenile       4.63       106       9.86       8	SAMP 8432 8436 8434 8433	5	R: 73.13 11.94 5.22 4.66 3.36 0.75 999.81	kn*10 H/HOU % OF	CAT( CAT( UR mbers 395 74 28 74 367 7 7 7	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 0.04 5.35	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Punchalia woodwardi Blectrona risso Lampanyctodes hectoris Apriliopeis gilchristi Symmoscopelus sp. Total
Lous .273.36 29/3.31 1./4 Area code : 1 FDEPTH: 55 55 GearCond.code: BDEPTH: 257 247 Validity code: Towing di: 900 Wire out: 180 m Speed: 30 kn*10 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR: 46. SPECIES CATCH/HOUR % OF TOT. C S Weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	5.36 SAMP 8432 8436 8434 8433 8433 1768 2707	5 C ION: S F	R: TOT. 73.13 11.94 5.22 4.66 3.36 0.75 0.75 99.81 STAT Lat Lat	kn*10 CH/HOU % OF  CJECT TION:	UUR IMDErss 395 74 28 74 367 7 7 9 7	Validity 170 m Spe 1.52 CATCH/H weight n 0.64 0.28 0.28 0.25 0.18 0.04 5.35 PROJECT:BE PE: PT No:	422 70ø Wire out: Total catch: 	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Punchalia woodwardi Electrona risso Abriliopsis gilchristi Symnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06
BDEPTH: 257 247 Validity code: Towing dir: 90ø Wire out: 180 m Speed: 30 kn*10 Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR: 46. SPECIES CATCH/HOUR % OF TOT. C S Weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	SAMP 8432 8436 8434 8433 8433 1768 2707 1445	ION: S E	R: TOT. 73.13 11.94 5.22 4.66 3.36 0.75 0.75 99.81 99.81 STAT Lat Long	kn*10 H/HOU % OF  COJECT TION	CAT( UUR umberss 395 74 28 74 367 7 7 91 . POS: code:	Validity 170 m Sec. 2015 2015 2015 2015 2015 2015 2015 2015	422 70ø Wire out: Total catch: 	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops tycoteuthis diadema Punchalia woodwardi Electrona risso Abriliopsis gilchristi Gymnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 Start st Ticon :::08:55 01: Ticon :::08:55 01:
Sorted: 23 Kg Total catch: 22.70 CATCH/HOUR: 46. SPECIES CATCH/HOUR % OF TOT. C S weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	5.36 SAMP 8432 8436 8434 8433 8433 1768 2707 1445	ION: S E	R: 73.13 11.94 5.22 4.66 3.36 0.75 0.75 99.81 STAT Lat Long	kn*10 H/HOU & OF 	CAT( OUR mmbers 395 74 28 74 28 74 367 7 7 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 5.35 PROJECT:BE PE: FT No: Purpose Area cod GearCond	422 70ø Wire out: Total catch: GEAR TY op duration 37:42 29 (min 5.31 1.74 55	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Funchalia woodwardi Electrona risso Abriliopsis gilchristi Apriliopsis gilchristi Aymnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st TIME 01:08:55 01: LOG :2973.58 297 FDEPTH: 55
SPECIES CATCH/HOUR % OF TOT. C S weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	5.36 SAMP 8432 8436 8434 8433 1768 2707 1445	ION: S E	R: 73.13 11.94 5.22 0.75 0.75 99.81 STAT Lat Long	kn*10 H/HOU % OF 	Ad: 38 CATC UR Imbers 395 74 28 74 28 74 367 7 7 7 7 7 7 7 7 7 7 9 9 9 9 9 9 9 9 9	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 5.35 PROJECT:BE PE: PT No: Purpose Area cod GearCodh Validity 180 m Spe	422 70ø Wire out: Total catch: GEAR TY op duration 37:42 29 (min 5.31 1.74 55 247 90ø Wire out:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops tycoteuthis diadema Funchalia woodwardi Electrona risso Abriliopsis gilchristi Jymnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st TIME :01:08:55 01: LOG :2973.58 297 FDEPTH: 55 BDEPTH: 257 Towing dir:
weight numbers Lampanyctodes hectoris 39.29 22037 83.65 8 Merluccius paradoxus, juvenile 4.63 106 9.86 8	5.36 SAMP 8432 8436 8434 8433 1768 2707 1445	5 ION: S E 46	R: TOT. 73.13 11.94 4.66 0.75 0.75 0.75 99.81 STAT Lat Long R:	kn*10 H/HOU % OF  TION: 1 1 kn*10 H/HOU	CAT( CAT( CAT( CAT( CAT( CAT( CAT( CAT(	Validity 170 m Spe 1.52 CATCH/H weight n 0.64 0.25 0.64 0.25 0.18 0.04 5.35 PROJECT:BE PE: PT No: ) Purpose Area cod GearCond Validity 180 m Spe 22.70	422 70ø Wire out: Total catch: GEAR TY op duration 37:42 29 (min 5.31 1.74 55 3.11 1.74 547 90ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Cycoteuthis diadema Punchalia woodwardi Electrona risso Abriliopsis gilchristi Jymnoscopelus sp. Total DR. PRIDTJOF NANSEN DATE: 2/ 9/06 Start st TIME :01:08:55 01: LOG :2973.58 297 FDEPTH: 55 BDEPTH: 257 Towing dir: Sorted: 23 Kg
Merluccius paradoxus, juvenile 4.63 106 9.86 8	5.36 SAMP 8432 8436 8434 8433 1768 2707 1445 .97 SAMP	5 2 10N: 5 E 46	R: TOT. 73.13 5.22 4.66 0.75 0.75 99.81 STAT Lat Long R: TOT.	kn*10 H/HOU % OF COJECT: TION: 1 kn*10 H/HOU % OF	CAT( UUR CAT( UUR 395 74 395 74 28 74 28 77 7 7 7 7 7 7 7 7 7 7 7 7	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 5.35 PROJECT:BE PE: PT No: PE: PT	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Punchalia woodwardi Electrona risso Lampanyctodes hectoris symnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st TIME :01:08:55 01: LOG :2973.58 297 FDEPTH: 257 BDEPTH: 257 Towing dir: Sorted: 23 Kg SPECIES
Lepidopus caudatus 2.21 74 4.71	5.36 SAMP 8432 8436 8434 8433 1768 8433 1768 8433 1768 97 5.97 SAMP 8438	5 ION: S E 46	R: TOT. 73.13 11.94 5.22 4.66 0.75 99.81 STAT Long R: TOT. 83.65	kn*10 H/HOU % OF COJECT TION: 1 kn*11 H/HOU % OF	CAT( CAT( UR 395 74 387 74 367 7 7 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 0.04 5.35 PROJECT:BE PE: PT No: PE: PT No: PE: PT No: 22.70 CATCH/H weight n 39.29	422 70ø Wire out: Total catch:	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Punchalia woodwardi Electrona risso Lampanyctodes hectoris symnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st TIME 101:08:55 01: LOG :2973.58 297 FDEPTH: 257 BDEPTH: 257 Towing dir: Sorted: 23 Kg SPECIES
Maurolicus muelleri         0.43         370         0.92         8           Todarodes angolensis         0.33         120         0.70	5.36 SAMP 8432 8434 8434 8433 1768 8434 1768 2707 1445 5.97 SAMP 8438 8439	5 C ION: S E 46	R: TOT. 73.13 11.94 5.22 4.66 0.75 99.81 STAT Long R: TOT. 83.65 9.86 4.71	kn*10 H/HOU % OF 	CAT( CAT( UUR 395 74 387 74 367 7 7 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 0.04 5.35 PROJECT: EE PE: PT 00 64 75.35 Purpose Area cod GearCond Validity 180 m Spe 22.70 CATCH/H weight n 39.29 4.63 2.21	GEAR TY op duration 37:42 29 (min 53 1.74 247 90ø Wire out: Total catch: uvenile	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Funchalia woodwardi Electrona risso Lampanyctodes hectoris hyriliopsis gilchrist Jymnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st ILOG :2973.58 297 FDEPTH: 257 BOEPTH: 257 Towing dir: Sorted: 23 Kg SPECIES Lampanyctodes hectoris Werluccius paradoxus, j Lepidopus cudatus
Scopelosaurus meadi 0.02 2 0.04	5.36 SAMP 8432 8436 8434 8433 1768 8433 1768 2707 1445 5.97 SAMP 8438 8439 8437	5 ION: S E 46	R: TOT. 73.13 11.94 5.22 4.66 3.36 0.75 99.81 Lat Long R: TOT. 83.65 9.86 4.71 0.72 0.70	kn*10 H/HOU % OF 	UIR UIR UIR UIR MIDERS 3955 74 28 74 28 74 28 74 28 74 28 74 7 7 7 7 7 7 7 7 7 7 7 7 7	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 0.04 5.35 PROJECT: HE PE: PT No: Purpose 22.70 CATCH/H weight n 39.29 4.63 2.21 0.39.20 0.39.20 0.39.20 0.39.20 0.39.20 0.43 0.39.20 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.39.20 0.43 0.43 0.39.20 0.43 0.43 0.43 0.43 0.43 0.43 0.43 0.4	422 70ø Wire out: Total catch: GEAR TY op duration 37:42 29 (min 5:31 1.74 55 31 1.74 50ø Wire out: Total catch: uvenile	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops Lycoteuthis diadema Funchalia woodwardi Electrona risso Abriliopsis gilchristi Jymnoscopelus sp. Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st TIME :01:08:55 01: LOG :2973.58 297 FDEPTH: 55 BDEPTH: 55 BDEPTH: 55 BDEPTH: 55 BDEPTH: 257 Towing dir: Sorted: 23 Kg SPECIES Lampanyctodes hectoris Maurolicus muelleri
Emmeticititys nitidus 0.02 4 0.04 Elops sp. 0.02 6 0.04	5.36 SAMP 8432 8434 8433 8433 1768 8433 1768 2707 1445 5.97 SAMP 8438 8439 8437	5 C ION: E 46	R: TOT. 73.13 11.94 5.22 4.66 3.36 0.75 9.81 STAT Lat Long R: TOT. 83.65 9.86 4.71 0.92 0.70 0.70 0.75 0.	kn*10 % OF 	UR CAT: UR MIDERS 395574 28 74 28 74 28 74 367 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 0.04 5.35 PROJECT:BE PE: PT Nose PE: PT Nose PE: PT Nose 22.70 CATCH/H weight n 39.29 (A13) 22.70 CATCH/H weight n 39.29 (A13) 22.70 CATCH/H weight n 39.29 (A13) 22.70 CATCH/H	422 70ø Wire out: Total catch: GEAR TY op duration 37:42 29 (min 531 1.74 55 247 90ø Wire out: Total catch: uvenile	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops tycoteuthis diadema Funchalia woodwardi Electrona risso Toural DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 start st TIME :01:08:55 01: Costal 2373.58 2:97 FDEPTH: 257 BOEPTH: 257 BOEPTH: 257 Towing dir: Sorted: 23 Kg SPECIES Lampanyctodes hectoris Werluccius paradoxus, j Copelosaurus meadi
Epigonus sp. 0.02 2 0.04	5.36 SAMP 8432 8434 8433 8433 1768 8433 1768 2707 1445 5.97 SAMP 8438 8439 8437	5 2 10N: 8 E 46	R: TOT. 73.13 11.94 5.22 4.66 0.75 99.81 STAT Lat Long R: TOT. 83.65 9.86 4.71 0.92 0	kn*10 % OF 	UIR UIR UIR UIR UIR 0UR 000 000 000 000 000 000 00	Validity 170 m Spe 1.52 CATCH/H weight n n 3.92 0.64 0.25 0.18 0.04 5.35 PROJECT:BE PE: PT No: PUTPOSE Area cod GearCod Validity 180 m Spe 22.70 CATCH/H weight n 39.29 4.63 2.21 0.43 0.02 0.02	422 70ø Wire out: Total catch: GEAR TY op duration 37:42 29 (min 5.31 1.74 55 3.11 1.74 500 Wire out: Total catch: uvenile	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops tycoteuthis diadema Funchalia woodwardi Electrona risso Apriliopeis gilchristi Gymnoscopelus sp. Total DR. FEIDTJOF NANSEN DATE: 2/ 9/06 start st IIME 01:08:55 01: LOG :2973.58 297 FDEPTH: 55 BDEPTH: 257 Towing dir: Sorted: 23 Kg SPECIES Lampanyctodes hectoris Kaurolicus muelleri Todarodes angolensis Scopelosaurus meadi Emmelichthys nitidus Elops sp.
Total 46.97 100.00	5.36 SAMP 8432 8434 8434 8433 1768 2707 1445 5.97 SAMP 8438 8439 8437	5 2 10N: 5 8 46	R: TOT. 73.13 11.94 4.66 0.75 999.81 STAT Lat Long R: TOT. 83.65 9.86 4.71 0.92 0.70 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.94 0.92 0.94 0.92 0.94 0.92	kn*10 % OF 	UIR UIR UIR UIR UIR 0UR 0UR 000 000 000 000 000 00	Validity 170 m Spe 1.52 CATCH/H weight n 3.92 0.64 0.25 0.18 0.04 5.35 PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE 22.70 CearCond Validity 180 m Spe 22.70 Validity 180 m Spe 22.70 Validity 180 m Spe 22.70 Validity 180 m Spe 22.70 Validity 180 m Spe 22.70 Validity 180 m Spe 22.70 Validity 180 m Spe 20.71 Validity 180 m Spe 20.71 Validity 2.71 Validity 0.02	422 70ø Wire out: Total catch: GEAR TY op duration 5.31 1.74 55 247 90ø Wire out: Total catch: uvenile	Towing dir: Sorted: 2 Kg SPECIES Symbolophorus boops tycoteuthis diadema Funchalia woodwardi Electrona risso Abriliopsis gilchristi Jymnoscopelus sp. Total DR. FRIDTUOF NANSEN DATE: 2/ 9/06 start st TIME :01:08:55 01: LOG :2973.58 297 FDEPTH: 55 BDEPTH: 55 BDEPTH: 55 BDEPTH: 257 Towing dir: Sorted: 23 Kg SPECIES Lampanyctodes hectoris Kerluccius muelleri Todarodes angolensis Scopelosarus meadi Emmelichthys nitidus Elops sp.

DR. FRIDTJOF NANSEN         P           DATE: 2/ 9/06         GEAR TYP           start stop duration           TIME :08:14:47 08:26:45         12 (min)           LOG :2983.28 2984.05 0.75           FDEPTH: 230 220           BDEPTH: 235 228           Towing dir: 75ø Wire out:	ROJECT:BE E: PT No: 2 P Purpose code Area code GearCond.cod Validity cod 730 m Speed:	PROJECT STATION DSITION:Lat S Long E : 1 : 1 2: 2: 39 kn*10	:1769 2706 1448
Sorted: 27 Kg Total catch:	27.26 C	ATCH/HOUR: 13	5.30
SPECIES Lampanyctodes hectoris Lepidopus caudatus Maurolicus muelleri Etrumeus whiteheadi Symbolophorus boops Total	CATCH/HOUR weight numbe: 128.55 749 7.00 1. 0.45 3: 0.25 0.05 136.30	* OF TOT. C 20 94.31 10 5.14 30 0.33 5 0.18 5 0.04 100.00	SAMP 8441 8440
DR. FRIDTJOF NANSEN P DATE: 2/9/06 GEAR TYP start stop duration TIME :08:00:31 08:00:42 12 (min) LOG :2984.65 2985.40 0.73 FDEPTH: 60 60 BDEPTH: 221 214 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch:	ROJECT:BE E: PT No: 2 P Purpose code Area code GearCond.cod Validity cod 200 m Speed: 0.17 C.	PROJECT STATION SITION:Lat S Long E : 1 : 2 : 39 kn*10 ATCH/HOUR:	1770 2705 1450
SPECIES	CATCH/HOUR	S OF TOT. C	SAMP
Lampanyctodes hectoris Lycoteuthis diadema Gymnoscopelus sp. Symbolophorus boops	weight numbe: 0.35 1 0.05 0.05 0.05	rs 75 41.18 5 5.88 5 5.88 5 5.88 5	8442
Total	0.50	58.82	
DR. FRIDTJOF NANSEN P DATE: 2/ 9/06 GEAR TYP start stop duration TIME :08:00:47 09:01:05 14 (min)	ROJECT:BE E: PT No: 2 P	PROJECT STATION DSITION:Lat S Long E	1771 2705 1451
LOG :2985.92 2986.85 0.93 FDEPTH: 30 30 BDEPTH: 211 206 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch:	Area code GearCond.cod Validity cod 120 m Speed: 1.31 C	. 1 ≥: ≥: 39 kn*10 ATCH/HOUR: !	5.61
LOG :2985.92 2986.85 0.93 FDEPTH: 30 30 BDEPTH: 211 206 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch: SPECIES	Area code GearCond.code Validity cod 120 m Speed: 1.31 C	* 1 =: 1 =: 39 kn*10 ATCH/HOUR: !	5.61
LOG :2985.92 2986.85 0.93 FDEPTH: 30 30 BDEPTH: 211 206 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch: SPECIES Todarodes angolensis Lampanyctodes hectoris Maurolicus muelleri	Area code GearCond.cod Validity cod 120 m Speed: 1.31 C. CATCH/HOUR weight number 5.49 16 0.13 0.04	* 1 : 1 : 2 39 kn*10 ATCH/HOUR: ! * OF TOT. C 59 2.32 9 0.71	5.61 SAMP 8443 8444
LOG :2985.92 2986.85 0.93 FDEPTH: 30 30 BDEPTH: 211 206 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch: SPECIES Todarodes angolensis Lampanyctodes hectoris Maurolicus muelleri Total	Area code GearCond.cod Validity cod 120 m Speed: 1.31 C. CATCH/HOUR weight number 5.49 16 0.13 0.04 5.66	* 1 = 1 = 2 = 39 kn*10 ATCH/HOUR: 9 * OF TOT. C CS 9 0.71 100.89	5.61 SAMP 8443 8444
LOG :2985.92 2986.85 0.93 FDEPTH: 30 30 BDEPTH: 211 206 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch: SPECIES Todarodes angolensis Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN P DATE: 2/ 9/06 GEAR TYP Start stop duration TIME :09:01:08 01:00:00 16 (nin) LOG :2989.28 2990.16 0.86 FDEPTH: 210 213 BDEPTH: 210 213 Towing dir: 190ø Wire out: Sorted: 172 Kg Total catch:	Area code GearCond.cod Validity cod 120 m Speed: 1.31 C CATCH/HOUR weight number 5.49 16 0.04 5.66 ROJECT:BE E: BT No:19 P Purpose code Area code GearCond.cod Validity cod Validity cod	<pre>. 1 . 1 . 1 . 2 . 2 . 39 kn*10 ATCH/HOUR:</pre>	5.61 SAMP 8443 8444 :1772 2704 1451
LOG :2985.92 2986.85 0.93 FDEPTH: 30 30 BDEPTH: 211 206 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch: SPECIES Todarodes angolensis Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN P DATE: 2/ 9/06 GEAR TYP Start stop duration TIME :09:01:08 10:00:09 16 (min) LOG :2989.28 2990.16 0.66 FDEPTH: 210 213 BDEPTH: 210 213 Towing dir: 190ø Wire out: Sorted: 172 Kg Total catch:	Area code GearCond.cod Validity cod 120 m Speed: 1.31 C CATCH/HOUR weight number 5.49 16 0.13 0 0.04 5.66 ROJECT:BE E: BT No:19 P Purpose code GearCond.cod Validity cod 172.06 C	<pre>: 1 : 1 :: 1 :: 1 :: 2 :: 2 : 39 kn*10 ATCH/HOUR:</pre>	5.61 SAMP 8443 8444 :1772 2704 1451
LOG :2985.92 2986.85 0.93 FDEPTH: 30 30 BDEPTH: 211 206 Towing dir: 75ø Wire out: Sorted: 1 Kg Total catch: SPECIES Todarodes angolensis Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN P DATE: 2/ 9/06 GEAR TYP start stop duration TIME :09:01:08 10:00:09 16 (min) LOG :2989.28 2990.16 0.86 FDEPTH: 210 213 BDEPTH: 210 213 BDEPTH: 210 213 Towing dir: 190ø Wire out: Sorted: 172 Kg Total catch: SPECIES Merluccius capensis, juveniles Lampanyctodes hectoris Marluccius garadoxus, juvenile Merluccius paradoxus, juvenile Merluccius capensis Sufflogobius bibarbatus Maurolicus muelleri Sepia australis Loliguncula sp. Todarodes angolensis Abriliopsis gilchristi Emmelichthys nitidus Argonauta sp. Lepidopus caudatus	Area         code           GearCond.cod         GearCond.cod           Validity cod         120 m           Speed:         1.31 C.           CATCH/HOUR         GearCond.cod           weight number         5.49 16           0.13         0.04           5.66           ROJECT:BE           E: BT No:19 P           Purpose code           Area code           GearCond.cod           Validity cod           172.06 C.           CATCH/HOUR           weight number           534.98 88           53.25 190           33.53 5           18.75 2           2.63 2           0.34 2           0.34 2           0.04 0           0.04 0	1         : 1         : 1         : 1         : 1         : 2         : 39 kn*10         ATCH/HOUR:         * OF TOT. C         : 1         : 0.01         . 001         . 001         . 001         : 1         : 1         : 1         : 1         : 1         : 1         : 1         : 1         : 1         : 1         : 1         : 2         : 3         Kn*10         ATCH/HOUR:         * 0F TOT. C         : 54         : 82.91         : 51         : 52         : 52         : 52         : 52         : 52         : 52         : 52         : 52         : 52         : 53         : 54         : 29         : 4         : 0.01         : 0.01         : 0.01         : 0.01         : 0.01 <t< td=""><td>5.61 SAMP 8443 8444 :1772 2704 1451 5.23 SAMP 8446 8447 8448 8447 8448</td></t<>	5.61 SAMP 8443 8444 :1772 2704 1451 5.23 SAMP 8446 8447 8448 8447 8448

DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :13:08:14 13:23:36 15 (mir LOG : 297.62 2998.49 0.87	PROJECT:BE PE: PT No: 1 P 1) Purpose code Area code	PROJECT STATION:1773 DSITION:Lat S 2706 Long E 1448 : 1 : 1
FDEPTH: 225 225 BDEPTH: 236 230 Towing dir: 60ø Wire out:	GearCond.cod Validity cod 580 m Speed:	e: e: 35 kn*10
Sorted: 1 Kg Total catch:	0.99 C	ATCH/HOUR: 3.96
SPECIES Lepidopus caudatus Etrumeus whiteheadi Lampanyctodes hectoris Maurolicus muelleri Lycoteuthis diadema Lulliconsula marcatoria	CATCH/HOUR weight numbe 1.28 0.96 0.84 4 0.76 7 0.08	% OF TOT. C         SAMP           32         32.32           16         24.24         8453           24         21.21         8451           56         19.19         8452           4         2.02         4
Total	3.96	99.99
DR. FRIDTJOF NANSEN DATE: 2/9/06 GEAR TT start stop duration TIME :13:38:00 13:53:08 15 (mir LOG :2299.40 0.31 0.90 FDEPTH: 160 160 BDEPTH: 220 212 Towing dir: 60ø Wire out:	PROJECT:BE PE: PT No: 2 P 1) Purpose code Area code GearCond.cod Validity cod 550 m Speed:	PROJECT STATION:1774 SSITION:Lat S 2705 Long E 1450 : 1 :: : : : : : : : : : : : :
Sorted: 1 Kg Total catch:	0.02 C	ATCH/HOUR: 0.08
SPECIES Lampanyctodes hectoris Maurolicus muelleri — Total —	CATCH/HOUR weight numbe 0.04 0.04 0.08	* OF TOT. C SAMP rs 16 50.00 8455 8 50.00 8454 
DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME 14:09:01 14:24:24 15 (mir LOG :3001.03 3001.94 0.89 FDEPTH: 60 60 BDEPTH: 207 199 Towing dir: 600 Wire out:	PROJECT:BE 'PE: PT No: 2 P ) Purpose code Area code GearCond.cod Validity cod 180 m Speed:	PROJECT STATION:1775 DSITION:Lat S 2705 : 1 : 1 : 2 : 2 40 kn*10
Sorted: Kg Total catch:	0.06 C	ATCH/HOUR: 0.24
Sorted: Kg Total catch:	0.06 C	ATCH/HOUR: 0.24
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Todarodes angolensis — Total	0.06 C CATCH/HOUR weight numbe 0.16 0.04 0.04 0.04 0.24	ATCH/HOUR: 0.24 * OF TOT. C SAMP 8 66.67 4 16.67 8456 12 10.01
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TT start stop duration TIME '21:46:25 21:58:31 12 (mir LOG :3014.06 3014.78 0.71 FDEPTH: 95 95 BDEPTH: 239 234 Towing dir: 50ø Wire out:	0.06 C CATCH/HOUR weight numbe 0.16 0.04 0.04 0.24 PROJECT:BE PE: PT No: 2 P PI) Purpose code Area code GearCond.cod Validity cod 300 m Speed:	ATCH/HOUR: 0.24 * OF TOT. C SAMP rs 66.67 4 16.67 8456 12 16.67 8456 100.01 PROJECT STATION:1776 DSITION:Lat S 2706 Long E 1447 : 1 s: a: b: b: b: b: b: b: b: b: b: b
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :21:46:25 21:58:31 12 (mir LOG :3014.06 3014.78 0.71 FDEPTH: 95 95 BDEPTH: 239 234 Towing dir: 50ø Wire out: Sorted: 4 Kg Total catch:	0.06 C CATCH/HOUR weight numbe 0.16 0.04 0.04 0.24 PROJECT:BE 'PE: PT No: 2 P 1) Purpose code GearCond.cod Validity cod 300 m Speed: 4.20 C	ATCH/HOUR: 0.24 * OF TOT. C SAMP rs 66.67 4 16.67 8456 12 16.67 100.01 PROJECT STATION:1776 OSITION:LAL S 2706 Long E 1447 : 1 : 1 : 39 kn*10 ATCH/HOUR: 21.00
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Todarodes angolensis Total DR. FEIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :21:46:25 21:58:31 12 (mir LOG :3014.06 3014.78 0.71 FDEPTH: 95 95 BDEPTH: 239 234 Towing dir: 50ø Wire out: Sorted: 4 Kg Total catch: SPECIES Lampanyctodes hectoris Merluccius paradoxus, juvenile Maurolicus paradoxus, juvenile Maurolicus muelleri Lepidopus caudatus Sepia australis Inicteuthis capensis	0.06 C CATCH/HOUR weight numbe 0.16 0.04 0.04 0.24 PROJECT:BE PPE: PT No: 2 P 1) Purpose code Area code GearCond.cod Validity cod Validity cod Validity cod CATCH/HOUR weight numbe 15.50 80 2.00 1.85 18 0.10 0.05 21.00	ATCH/HOUR: 0.24 * OF TOT. C SAMP rs 66.67 4 16.67 8456 12 16.67 8456 12 16.67 
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Todarodes angolensis Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY Start stop duration TIME :21:46:25 21:58:31 12 (min LOG :014:06 3014.78 0.71 FDEPTH: 25 23 BDEPTH: 25 24 Towing dir: 500 Wire out: Sorted: 4 Kg Total catch: SPECIES Lampanyctodes hectoris Merluccius paradoxus, juvenile Maurolicus muelleri Lepidopus caudatus Sepia australis Inioteuthis capensis Total	0.06 C CATCH/HOUR weight numbe 0.16 0.04 0.24 PROJECT:BE PE: PT No: 2 P 1) Purpose code Area code GearCond.cod Validity cod 300 m Speed: 4.20 C CATCH/HOUR weight numbe 15.50 80 2.00 1.85 18 1.50 0.05 21.00	ATCH/HOUR: 0.24 * OF TOT. C SAMP rs 66.67 4 16.67 8456 12 16.67 100.01 PROJECT STATION:1776 DSITION:Lat S 2706 C Long E 1447 : 1 : 2 : 39 kn*10 ATCH/HOUR: 21.00 * OF TOT. C SAMP rs 55 73.81 8457 75 9.52 8458 10 8.81 8459 35 7.14 5 0.24 100.00
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :21:46:25 21:58:31 12 (mir LOG :3014.06 3014.78 0.71 FDEPTH: 95 95 BDEPTH: 239 234 Towing dir: 500 Wire out: Sorted: 4 Kg Total catch: SPECIES Lampanyctodes hectoris Merluccius muelleri Lepidopus caudatus Sepia australis Inioteuthis capensis Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :22:10:02 22:22:03 12 (mir LOG :3015.06 0.73 FDEPTH: 60 60 BDEPTH: 231 225 Towing dir: 500 Wire out:	0.06 C CATCH/HOUR weight numbe 0.04 0.04 0.04 0.24 PROJECT:BE PE:PT No: 2 P POJECT:BE PE:PT No: 2 P PARABOR CATCH/HOUR 15.50 80 2.00 CATCH/HOUR 15.50 80 2.1.00 PROJECT:BE PE:PT No: 2 P PUTPOSE CODE PROJECT:BE PE:PT No: 2 P PUTPOSE CODE Area code GearCond.cod Validity cod 200 m Speed:	ATCH/HOUR: 0.24 * OF TOT. C SAMP rs 6 66.67 4 16.67 8 456 12 16.67 8456 12 16.67 100.01 PROJECT STATION:1776 SITION:Lat S 2706 Long E 1447 : 1 : 1 8: 9 kn*10 ATCH/HOUR: 21.00 * OF TOT. C SAMP rs 9 kn*10 ATCH/HOUR: 21.00 * OF TOT. C SAMP rs 9 kn*10 ATCH/HOUR: 21.00 * OF TOT. C SAMP rs 9 kn*10 ATCH/HOUR: 21.00 PROJECT STATION:1777 SITION:Lat S 2705 Long E 1448 : 1 : 1 : 1 : 1 : 39 kn*10
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Todarodes angolensis Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :21:46:25 21:58:31 12 (min LOG :3014.06 3014.78 0.71 FDEPTH: 95 95 BDEPTH: 239 234 Towing dir: 500 Wire out: Sorted: 4 Kg Total catch: SPECIES Lampanyctodes hectoris Merluccius paradoxus, juvenile Maurolicus muelleri Legidopus caudatus Sepia australis Inioteuthis capensis Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :221:0102 22:22:03 12 (min LOG :3015.42 3016.15 0.73 FDEPTH: 60 60 BDEPTH: 231 225 Towing dir: 500 Wire out: Sorted: 1 Kg Total catch:	0.06 C CATCH/HOUR weight numbe 0.16 0.04 0.24 PROJECT:BE PPE: PT No: 2 P 1) Purpose code Area code GearCond.cod Validity cod 2.00 1.85 1.50 0.10 0.05 21.00 PROJECT:BE PPE: PT No: 2 P PROJECT:BE PPE: PT No: 2 P 1.50 0.10 0.05 21.00 PROJECT:BE PPE: PT No: 2 C PROJECT:BE PPE: PT NO: 2 C PROJECT:BE PROJECT:BE PPE: PT NO: 2 C PROJECT:BE PROJE	ATCH/HOUR: 0.24 * OF TOT. C SAMP rs 8 66.67 4 16.67 8 66.67 12 16.67 100.01 PROJECT STATION:1776 DSITION:Lat S 2706 Long E 1447 : 1 : 2 : 39 kn*10 ATCH/HOUR: 21.00 * OF TOT. C SAMP rs 55 73.81 8457 35 7.14 5 0.48 100.00 PROJECT STATION:1777 PROJECT STATION:1777 SPISTION:Lat S 2705 Long E 1448 : 1 : 1 : 39 kn*10 ATCH/HOUR: 162.00
Sorted: Kg Total catch: SPECIES SQUEN11 Maurolicus muelleri Todarodes angolensis Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :21:46:25 21:58:31 12 (min LOG :3014.06 3014.78 0.71 FDEPTH: 95 95 BDEPTH: 239 234 Towing dir: 500 Wire out: Sorted: 4 Kg Total catch: SPECIES Lampanyctodes hectoris Merluccius paradoxus, juvenile Maurolicus muelleri Legidopus caudatus Sepia australis Inioteuthis capensis Total DR. FRIDTJOF NANSEN DATE: 2/ 9/06 GEAR TY start stop duration TIME :221:0102 22:22:03 12 (min LOG :3015.42 3016.15 0.73 FDEPTH: 610 60 BDEPTH: 231 225 Towing dir: 500 Wire out: Sorted: 1 Kg Total catch: SPECIES Lampanyctodes hectoris Legidopus caudatus Maurolicus muelleri	0.06 C CATCH/HOUR weight numbe 0.16 0.04 0.04 0.24 PROJECT:BE PE: PT No: 2 P Purpose code Area code GearCond.cod Validity cod 0.00 1.85 18 1.50 80 2.00 1.85 18 1.50 0.10 0.05 21.00 PROJECT:BE PE: PT No: 2 P PROJECT:BE PE: PT No: 2 P PROJECT:BE PE: PT No: 2 P 1.50 0.10 0.05 21.00 PROJECT:BE PE: PT No: 2 P 1.50 0.10 0.05 21.00 PROJECT:BE PE: PT No: 2 P 1.50 0.10 0.05 21.00 PROJECT:BE 1.50 0.10 0.05 21.00 PROJECT:BE PE: PT No: 2 P 1.50 0.10 0.05 21.00 PROJECT:BE PE: PT No: 2 P PROJECT:BE PE: PT No: 2 P 1.50 0.10 0.05 21.00 PROJECT:BE PE: PT No: 2 P 1.50 0.10 0.05 21.00 PROJECT:BE PE: PT No: 2 P 1.50 0.24 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.10 0.05 0.24 0.00 0.05 0.02 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.05 0.00 0.05 0	ATCH/HOUR: 0.24 * OF TOT. C SAMP rs 66.67 4 16.67 8456 12 16.67 - 100.01 PROJECT STATION:1776 DSITION:Lat S 2706 DSITION:Lat S 2706 1 Long E 1447 : 1 : 1 : 2 : 39 kn*10 ATCH/HOUR: 21.00 * OF TOT. C SAMP rs 0.52 8458 10 8.81 8459 35 7.14 5 0.48 30 0.24 - 100.00 PROJECT STATION:1777 PROJECT STATION:1777 PROJECT STATION:1777 DSITION:Lat S 2705 Long E 1448 : 1 : 1 : 1 : 1 : 2 : 39 kn*10 ATCH/HOUR: 162.00 * OF TOT. C SAMP rs 0.24 - 100.00 PROJECT STATION:1777 DSITION:Lat S 2705 Long E 1448 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1

DATE: 2/ 9/06 GEAR TY	PROJECT:BE PE: PT No: 2 P	OSITION:Lat S	2704
start stop duration TIME :22:33:08 22:44:52 12 (min	) Purpose code	Long E	1449
LOG :3016.82 3017.57 0.73	Area code	: 1	
BDEPTH: 221 216	Validity cod	e: e:	
Towing dir: 40ø Wire out:	115 m Speed:	39 kn*10	
Sorted: 7 Kg Total catch:	6.80 C	ATCH/HOUR: 3	4.00
SPECIES	CATCH/HOUR weight numbe	% OF TOT. C	SAMP
Lampanyctodes hectoris	33.50 186	70 98.53	8462
Abriliopsis gilchristi	0.05	15 0.15	
Argonauta sp.	0.05	5 0.15	
Total	34.00	100.01	
DR. FRIDTJOF NANSEN	PROJECT:BE	PROJECT STATION	1:1779
DATE: 3/ 9/06 GEAR TY start stop duration	PE: PT No: 2 P	OSITION:Lat S	2705
TIME :00:10:05 00:25:08 15 (min	) Purpose code	: 1	1110
LOG :3020.93 3021.77 0.84 FDEPTH: 180 180	Area code GearCond.cod	: 1 e:	
BDEPTH: 228 234	Validity cod	e: 40 hm #10	
Towing dir: 2000 Wire out:	550 m Speed:	40 kn*10	
Sorted: 10 Kg Total catch:	10.14 C	ATCH/HOUR: 4	0.56
SPECIES	CATCH/HOUR weight numbe	% OF TOT. C rs	SAMP
Merluccius capensis Callorhinchus capensis	24.40 3 9.80	04 60.16 4 24.16	8463
Merluccius paradoxus, juvenile	3.20	64 7.89	8464
Maurolicus muelleri Lampanyctodes hectoris	0.44 2	40 5.23 68 1.08	8465 8467
Sufflogobius bibarbatus	0.32 2	72 0.79	8466
Total	40.56	100.00	
DD PDIDTOP NAMOPN	DOTECT DE	DROIFOR CENTION	1.1700
DATE: 3/ 9/06 GEAR TY	PROJECTIBE PE: PT No: 2 P	OSITION:Lat S	2706
			2700
start stop duration TIME :00:40:03 00:55:29 15 (min	) Purpose code	Long E	1447
start stop duration TIME :00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82	) Purpose code Area code	Long E : 1 : 5	1447
start stop duration TIME :00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243	) Purpose code Area code GearCond.cod Validity cod	Long E : 1 : 5 e: e:	1447
start stop duration TIME 00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 2000 Wire out:	) Purpose code Area code GearCond.cod Validity cod 440 m Speed:	Long E : 1 : 5 e: e: 40 kn*10	1447
start stop duration TIME :00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 EDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch:	) Purpose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR:	1447 6.72
start stop duration THE :00:40:03 00:55:29 15 (min LOG :0022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES	) Purpose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: % OF TOT. C	6.72 SAMP
start stop duration TIME :00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES	) Purpose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe	Long E : 1 : 5 e: 40 kn*10 ATCH/HOUR: % OF TOT. C rs 20 FT 20	6.72 SAMP
start stop duration TIME :00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDETH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis	<pre>Purpose code Area code GearCond.cod Validity cod 440 m Speed:</pre>	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C rs 72 55.36 20 23.81	6.72 SAMP 8471 8468
start stop duration TIME :00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 2000 Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Muurdiowe mullari	<pre>Purpose code Area code GearCond.cod Validity cod 440 m Speed:</pre>	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C 72 55.36 20 23.81 28 6.93 60 7 74	2700 1447 6.72 SAMP 8471 8468 8470 8469
start stop duration TIME :00:40:03 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus	) Purpose code Area code GearCond cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe 3.72 1.60 0.60 4 0.52 4 0.52	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: \$ OF TOT. C rs 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98	6.72 SAMP 8471 8468 8470 8469
start stop duration THE :00:40:30 00:55:29 15 (min LOG :00:25:29 15 (min LOG :00:25:29 12 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbarus	Purpose code Area code GearCond cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe 3.72 1.60 0.60 4 0.52 4 0.20 0.04	Long E : 1 :5 e: 40 kn*10 ATCH/HOUR: * OF TOT. C rs 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60	6.72 SAMP 8471 8468 8470 8469 8472
start stop duration THE :00:40:30 00:55:29 15 (min LOG :0022.56 3023.38 0.82 FDEPTH: 140 140 EDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus	) Purpose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe 3.72 1.60 0.60 4 0.52 4 0.04 0.04 0.04	Long E : 1 : 5 e: e 40 kn*10 ATCH/HOUR: * OF TOT. C rs 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 8 0.60	6.72 SAMP 8471 8468 8470 8469 8472
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total	) Purpose code Area code GearCond cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe 3.72 1.60 0.60 4 0.52 4 0.04 0.04 	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: \$ OF TOT. C rs 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 100.02	2,000 1447 6.72 SAMP 8471 8468 8479 8469 8469
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start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 2000 Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TUME :01/20:08 01/24/53 17 (min	) Purpose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C CAPTCH/HOUR weight numbe 3.72 1.60 0.60 4 0.52 4 0.52 4 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C 72 55.36 22 3.81 28 8.93 50 7.74 4 2.98 8 0.60 8 0.60 PROJECT STATION OSITION:Lat S . 1 Long E	6.72 SAMP 8471 8470 8470 8469 8472 8472
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 024.95 0.91	Propose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C CAPTCH/HOUR weight numbe 3.72 1.66 4 0.52 4 0.52 4 0.52 4 0.04 0.04 6.72 PROJECT:BE PE: PT No: 2 P ) Purpose code Area code	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 100.02 PROJECT STATION OSITION:Lat S Long E : 1 : 1 : 1	6.72 SAMP 8471 8468 8470 8469 8472 8472 8472
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 024.95 0.91 FDEPTH: 115 115	Propose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe 3.72 1.60 0.60 4 0.52 4 0.60 4 0.52 0.60 4 0.52 0.60 4 0.72 PROJECT:BE PE: PT No: 2 P ) Purpose code GearCond.cod Validity cod	Long E : 1 : 5 : 40 kn*10 ATCH/HOUR: \$ OF TOT. C rs \$ OF TOT. C rs 2 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 100.02 PROJECT STATION OSITION:LAL S Long E : 1 : 1 e:	6.72 SAMP 8471 8460 8469 8472 8472 (:1781 2707 1447
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FEIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 3024.95 0.91 FDEPTH: 115 115 BDEPTH: 248 255 Towing dir: 200ø Wire out:	Purpose code Area code GearCond cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe 3.72 1.60 0.60 4 0.20 0.60 4 0.20 0.04 6.72 PROJECT:BE PE: PT No: 2 P ) Purpose code Area code GearCond.cod Validity cod 330 m Speed:	Long E : 1 : 5 e: 40 kn*10 ATCH/HOUR: * OF TOT. C rs 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 100.02 PROJECT STATION OSITION:Lat S : 1 : 1 : 1 : 1 : 1 : 37 kn*10	6.72 SAMP 8471 8468 8470 8469 8472 ::1781 2707 1447
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 0.91 FDEPTH: 115 115 BDEPTH: 248 255 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch:	PROJECT:BE PROJECT:BC PROJECT:BE PROJECT:BC PROJEC	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C 72 55.36 20 23.81 28 8.93 60 7.74 8 0.60 298 8 0.60 100.02 PROJECT STATION OSITION:Lat S Long E : 1 : 1 e: a: 37 kn*10 ATCH/HOUR:	1447 1447 6.72 SAMP 8471 8468 8470 8469 8472 (:1781 2707 1447 4.76
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 3024.95 0.91 FDEPTH: 248 255 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES	Purpose code Area code GearCond.cod Validity cod 440 m Speed: 1.68 C CATCH/HOUR weight numbe 3.72 1.60 0.60 4 0.52 4 0.60 4 0.20 0.04 0.04 6.72 PROJECT:BE PE: PT No: 2 P ) Purpose code Area code GearCond.cod Validity cod 330 m Speed: 1.35 C	Long E : 1 : 5 e: 40 kn*10 ATCH/HOUR: * OF TOT. C rs 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 100.02 PROJECT STATION OSITION:Lat S Long E : 1 : 1 e: e: e: e: e: vs vs vs vs vs vs vs vs vs vs	6.72 SAMP 8471 8468 8470 8469 8472 8472 8472 8472 8472 8472 8472 8472
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 2000 Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Initeuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 024.95 0.91 FDEPTH: 115 115 BDEPTH: 115 115 BDEPTH: 248 255 Towing dir: 2000 Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile	Purpose code           Area code           GearCond.cod           Validity cod           1.68           CATCH/HOUR           weight           1.60           0.60           4           0.60           4           0.60           4           0.60           4           0.60           0.60           0.60           0.60           0.60           0.61           0.62           0.62           0.61           0.62           0.62           0.61           0.62           0.62           0.63           0.64           0.72           PROJECT: BE           PE: PT NO: 2           0.9           Purpose code           Area code           GearCond.cod           330 m Speed:           1.35           CATCH/HOUR           weight numbe           1.62	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C 72 55.36 23.81 28 8.93 60 7.74 4 2.98 8 0.60 0.60 0.60 100.02 PROJECT STATION CSITION:Lat S Long E : 1 : 1 e: e: * OF TOT. C rs 37 kn*10 ATCH/HOUR:	6.72 SAMP 8471 8468 8470 8479 8479 8479 8479 8479 8472 1:1781 2707 1447 4.76 SAMP 8474
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 0.91 FDEPTH: 115 115 BDEPTH: 115 115 BDEPTH: 1248 255 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hector'is	PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE PROJECT:BE DESCRIPTION: 2 PR CATCH/HOUR NOT NOT SUPPORT PROJECT:BE PROJECT:BC PROJECT:BE PROJEC	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C rs 2 55.36 2 23.81 28 8.93 60 7.74 8 0.60 28 8.93 60 7.74 4 2.98 8 0.60 100.02 PROJECT STATION OSITION:Lat S Long E : 1 : 1 e: 37 kn*10 ATCH/HOUR: * OF TOT. C rs 34.03 32 29.62 9 1 9.96	6.72 SAMP 8471 8468 8470 8469 8472 (:1781 2707 1447 4.76 SAMP 8474 8473 8476
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 024.95 0.91 FDEPTH: 115 115 BDEPTH: 248 255 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Funchalia woodwardi	PROJECT:BE PROJEC	Long E : 1 : 5 : 40 kn*10 ATCH/HOUR: \$ OF TOT. C rs 2 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 100.02 PROJECT STATION OSITION:LAL S : 1 : 1 e: 37 kn*10 ATCH/HOUR: \$ OF TOT. C rs 34.03 32 29.62 99 19.96 72 6.72	<ul> <li>a 1447</li> <li>a 1447</li> <li>a 1447</li> <li>a 1447</li> <li>a 1447</li> <li>a 1447</li> <li>a 1469</li> <li>a 146</li></ul>
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inicteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY Start stop duration TIME :01:08:08 01:24:53 17 (min LOG :2024.03 3024.95 0.91 FDEPTH: 115 115 BDEPTH: 248 255 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius capensis Lampanyctodes hectoris Funchalia woodwardi Maurolicus muelleri Lepidopus caudatus	Purpose code Area code GearCond cod Validity cod           440 m Speed:           1.68 C           CATCH/HOUR           weight numbe           3.72           1.60           0.60 4           0.52 4           0.60 4           0.20           0.04           6.72           PROJECT: BE           PE: PT No: 2 P           ) Purpose code           GearCond.cod           Validity cod           330 m Speed:           1.62           1.41           0.95 3           0.32 5           0.28 2           0.18	Long E : 1 : 5 : 40 kn*10 ATCH/HOUR: * OF TOT. C rs * 0F TOT. C rs 8 0.60 	6.72 SAMP 8471 8468 8470 8469 8472 ::1781 2707 1447 1447 4.76 SAMP 8473 8476 8475
start stop duration TIME :00:40:30 00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR TY start stop duration TIME :01:08:08 01:24:53 17 (min LOG :3024.03 3024.95 0.91 FDEPTH: 115 115 BDEPTH: 248 255 Towing dir: 200ø Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius capensis Lampanyctodes hectoris Funchalia woodwardi Maurolicus muelleri Lepidopus caudatus Total	Purpose code Area code GearCond cod Validity cod 440 m Speed:           1.68 C           CATCH/HOUR           weight numbe 3.72           1.60 C           0.60 4           0.52 4           0.60 4           0.20 0.4           0.04 0.20 0.4           6.72           PROJECT: HE           PE: PT No: 2 P           ) Purpose code Area code GearCond.cod Validity cod           1.35 C           CATCH/HOUR           weight numbe 1.62           1.41 0.95 3           0.92 5           0.28 2           0.18	Long E : 1 : 5 : 40 kn*10 ATCH/HOUR: * OF TOT. C rs 72 55.36 20 23.81 28 8.93 60 7.74 4 2.98 8 0.60 100.02 PROJECT STATION OSITION:Lat S : 1 : 1 : 1 : 1 : 2 : 0F TOT. C rs . Long E : 37 kn*10 ATCH/HOUR: * OF TOT. C rs . Long E : 1 : 1 : 2 	6.72 SAMP 8471 8468 8470 8469 8472 ::1781 2707 1447 
start stop duration TIME :0:40:30:00:55:29 15 (min LOG :3022.56 3023.38 0.82 FDEPTH: 140 140 BDEPTH: 238 243 Towing dir: 2000 Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius cagensis Lampanyctodes hectoris Maurolicus muelleri Lepidopus caudatus Inioteuthis capensis Sufflogobius bibarbatus Total DR. FELDTJOF NANSEN DATE: 3/ 9/06 GEAR TY mister stop duration TIME :01:08:08 01:24:53 17 (min LOG :024.03 024.95 0.91 FDEPTH: 115 115 BDEPTH: 115 115 BDEPTH: 115 115 BDEPTH: 1248 255 Towing dir: 2000 Wire out: Sorted: 1 Kg Total catch: SPECIES Merluccius paradoxus, juvenile Merluccius capensis Lampanyctodes hectoris Funchalia woodwardi Maurolicus muelleri Lepidopus caudatus Total	Purpose code Area code GearCond.cod Validity cod           1.68         C           CATCH/HOR         C           weight         numbe           3.72         1.60         4           0.60         4         0.60           0.60         4         0.52         4           0.60         4         0.20         0.04           0.61         4         0.20         4           0.62         4         0.20         4           0.20         0.04         0.04         0.04           0.72         PROJECT:BE         2         PROJECT:BE           PEP. PT NO: 2         P         1.35         C           CATCH/HOUR         weight         numbe         1.65           1.35         C         C         CATCH/HOUR           weight         numbe         1.62         1.41           0.55         3         0.28         2           0.18         2         0.18         2	Long E : 1 : 5 e: e: 40 kn*10 ATCH/HOUR: * OF TOT. C 72 55.36 23.81 28 8.93 60 7.74 4 2.98 8 0.60 0.60 0.60 100.02 PROJECT STATION SITION:Lat S : 1 Long E : 1 : 1 e: e: * OF TOT. C rs 37 kn*10 ATCH/HOUR: * 0F TOT. C rs 34.03 32 29.62 99 19.96 79.99	6.72 SAMP 8471 8468 8470 8479 8479 8479 8479 8472 1:1781 2707 1447 1447 4.76 SAMP 8474 8473 8475

DATE: 3/ 9/06 GEAR T	PROJECT:BE YPE: BT No:19	PR POSI	OJECT STATI TION:Lat	S 2706
TIME :07:35:56 07:56:35 21 (mi: LOG :3031.57 3032.68 1.09	n) Purpose co Area code	ode: :	1 1	
FDEPTH: 241 243 BDEPTH: 241 243	GearCond.c Validity c	ode:		
Towing dir: 1550 Wire out	: 640 m Speed	1: 34 1	kn*10	024 74
Sorted: 362 kg Total catch	. 302.10	CAIC	H/HOUR: 1	1034.74
SPECIES	CATCH/HOU weight num	JR lbers	% OF TOT. C	SAMP
Merluccius capensis, juveniles Lampanyctodes hectoris	767.97 188.51 14	9543 15009	74.22 18.22	8479 8477
Callorhinchus capensis Merluccius capensis	37.14 8.57	20 17	3.59	
Kaja straeleni Merluccius paradoxus, juvenile	8.57	191 2	0.83	8480
Chelidonichthys capensis Maurolicus muelleri	2.86	6 1506	0.28	8478
Todarodes angolensis Caelorinchus simorhynchus	1.63	86	0.16	
Lepidopus caudatus Sufflogobius bibarbatus	0.23 0.03	3 17	0.02	
Total –	1034.74		100.01	
DE FETOTIOF MANSEN	DRAIFOT BE	DD		ON: 1783
DATE: 3/ 9/06 GEAR T start stop duration	YPE: PT No: 2	POSI	TION:Lat Long	S 2709 E 1447
TIME :09:03:29 09:18:00 15 (mi LOG :3035.46 3036.22 0.75	n) Purpose co Area code	ode: :	1	
FDEPTH: 235 235 BDEPTH: 256 260	GearCond.c Validity c	ode:		
Towing dir: 170ø Wire out	: 570 m Speed	1: 32 1	kn*10	256 20
borcea. of ky local cacon	. 01.05			190.10
SPECIES	CATCH/HOU weight num	JR 1bers	% OF TOT. (	C SAMP
Lampanyctodes hectoris Lepidopus caudatus Etrupus relitabasdi	250.32 15 3.24	68 24	97.70	8481
Maurolicus muelleri	1.16	1032	0.45	8482
Total	256.20		99.99	
DR. FRIDTJOF NANSEN	PROJECT:BE	PR	OJECT STATI	LON:1784
DATE: 3/ 9/06 GEAR T start stop duration	YPE: PT No: 2	POSI	TION:Lat Long	S 2711 E 1447
TIME :09:30:07 09:44:03 14 (mi	n) Purpose co	ode:	1	
LOG :3036.69 3037.36 0.66	Area code		1	
LOG :3036.69 3037.36 0.66 FDEPTH: 80 80 BDEPTH: 259 260 Towing dir: 170g Wire out	Area code GearCond.c Validity c : 260 m Speed	ode: ode:	1 kn*10	
LOG :3036.69 3037.36 0.66 FDEPTH: 80 80 BDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch	Area code GearCond.c Validity c : 260 m Speed : 0.63	code: code: l: 39 l CATC	1 kn*10 H/HOUR:	2.70
LOG :3036.69 3037.36 0.66 FDEFTH: 80 80 BDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch	Area code GearCond.c Validity c : 260 m Speed : 0.63	code: code: l: 39 l CATC	1 kn*10 H/HOUR: % OF TOT (	2.70 Samp
LOG :3036.69 3037.36 0.66 PDEPTH: 80 80 BDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight nun 2.53	code: code: l: 39 l CATCI JR lers 1671	1 kn*10 H/HOUR: % OF TOT. C 93.70	2.70 2 SAMP 8484
LOG :3036.69 3037.36 0.66 PDEPTH: 80 80 BDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17	code: code: l: 39 l CATCI IR bbers 1671 133	1 kn*10 H/HOUR: % OF TOT. C 93.70 6.30	2.70 SAMP 8484 8485
LOG :3036.69 3037.36 0.66 PDEPTH: 80 80 BDEPTH: 259 260 Towing dir: 1700 Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total -	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70	: code: code: 1: 39 1 CATCI JR 100 1671 133	1 kn*10 H/HOUR: \$ OF TOT. C 93.70 6.30 100.00	2.70 SAMP 8484 8485
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 170s Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN	Area code GearCond.c Validity c : 260 m Speec : 0.63 CATCH/HOI weight num 2.53 0.17 2.70 PROJECT:BE	CATC DECATC	1 kn*10 H/HOUR: % OF TOT. C 93.70 6.30 100.00	2.70 C SAMP 8484 8485 CON:1785
LOG :3036.69 3037.36 0.66 PDEPTH: 80 80 BDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T start stop duration	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2	CATCI CATCI I: 39 I CATCI IR IBDERS 1671 133 PR( POSI	1 kn*10 H/HOUR: % OF TOT. C 93.70 6.30 	2.70 2 SAMP 8484 8485 00N:1785 5 2712 E 1448
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T Start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 0.72	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPCJECT:BE YPCJECT:BE YPCJECT:BE YPCJECT:BE YPCJECT:BE YPCJECT:BE YPCJECT:CALL	CATC CATC CATC CATC CATC CATC CATC CATC	1 kn*10 H/HOUR: \$ OF TOT. C 93.70 6.30 100.00 0JECT STATI TION:Lat Long 1	2.70 2 SAMP 8484 8485 1001:1785 8 2712 E 1448
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LOG :3036.69 3037.36 0.66 PDETTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c : 90 m Speed : 0.07	CATCI CATCI I: 39 I CATCI IR ICATCI IR ICATCI POSI POSI CATCI CATCI	1 kn*10 H/HOUR: % OF TOT. ( 93.70 6.30 100.00 OJECT STATI TION:Lat Long 1 1 kn*10 H/HOUR:	2.70 2 SAMP 8484 8485 00N:1785 S 2712 E 1448 0.35
LOG :3036.69 3037.36 0.66 PDETTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose co Area code GearCond.c Validity c : 0.07	:: is is isolation in the second seco	1 km*10 H/HOUR: % OF TOT. C 93.70 6.300 100.00 DJECT STATJ TION:Lat Long 1 km*10 H/HOUR:	2.70 C SAMP 8484 8485 con:1785 S 2712 E 1448 0.35
LOG :3036.69 3037.36 0.66 PDEPTH: 269 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T Start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 0.72 FDEPTH: 36 3038.75 0.72 FDEPTH: 263 266 Towing dir: 150ø Wire out Sorted: Kg Total catch SPECIES	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOI weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 N) Purpose oc Area code GearCond.c Validity c 90 m Speed : 0.07 CATCH/HOI weight num 0.35	:: i: 39 l CATCI IR : bbers 1671 133 POST ode: :: : 39 l POST ode: :: : : : : : : : : : CATCI CATCI	1 km*10 H/HOUR: % OF TOT. c 93.70 6.30 100.00 OJECT STATI TTON:Lat Long 1 km*10 H/HOUR: % OF TOT. c 100.00	2.70 2 SAMP 8484 8485 2000:1785 2 2712 E 1448 0.35 2 SAMP 8486
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T Start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 0.72 PDEPTH: 263 266 Towing dir: 150ø Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri	Area code GearCond.c Validity c : 260 m Speec : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose cc Area code GearCond.c Validity c : 0.07 CATCH/HOU weight num 0.35 0.00	:: : : : : : : : : : : : : : : : : : :	1 km*10 H/HOUR: % OF TOT. c 93.70 6.30 100.00 OJECT STATI TION:Lat Long 1 km*10 H/HOUR: % OF TOT. c 100.00	2.70 2 SAMP 8484 8485 1000:1785 8 2712 E 1448 0.35 2 SAMP 8486 8487
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LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 1700 Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T Start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 0.72 PDEPTH: 36 3038.75 0.72 PDEPTH: 36 3038.75 0.72 PDEPTH: 36 3038.75 0.72 PDEPTH: 36 3038.75 0.72 FDEPTH: 263 266 Towing dir: 150ø Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T STATE stop duration TIME :07:38/42 0.07:50:30 12 (mi	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight nun 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c 90 m Speed : 0.07 CATCH/HOU weight nun 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose oc	:: 39 1 CATCC R DEPR 1671 133 1671 133 1671 133 1671 133 1671 133 CATCC CATCC CATCC CATCC CATCC Sode: SodE: Sode: Sode: Sode: Sode: Sode: Sode: Sode: Sode: Sode: Sode: Sode:	1 km*10 H/HOUR: % OF TOT. ( 93.70 6.30 00000 00000 00000 1 0000 1 0000 0000	2.70 2 SAMP 8484 8485 2 212 E 1448 0.35 2 SAMP 8486 8487 8486 8487 0.000:1786 8487 0.000:1786 8487 8486 8487 8486 8487 8486 8487 8486 8487 8486 8487 8486 8487 8486 8486
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir:170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 0.72 FDEPTH: 30 30 BDEPTH: 263 266 Towing dir: 150ø Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T TATAL DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T TOTAL DR. FRIDTJOF NANSEN DATE: 4/ 9/06 JUNCAL CATCH TIME :07:38:42 07:50:30 12 (mi LOG :3197.78 3198.48 0.70 FDEPTH: 115 115	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 N) Purpose oc Area code GearCond.c Validity c : 0.07 CATCH/HOU weight num 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 N) Purpose oc Area code GearCond.c	:: : : : : : : : : : : : : : : : : : :	1 km*10 H/HOUR: % OF TOT. c 93.70 6.30 00JECT STAT1 TTON:Lat Long 1 km*10 H/HOUR: % OF TOT. c 100.00 00JECT STAT1 TTON:Lat Long 1 1 km*10 1 00.00 00JECT STAT1 TTON:Lat Long 1 1	2.70 2 SAMP 8484 8485 2712 E 1448 0.35 2 SAMP 8486 8487 8487 8487 8487 8486 8487 2 SAMP
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 1700 Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 0.72 PDEPTH: 36 3038.07 0.72 PDEPTH: 36 306 BDEPTH: 263 266 Towing dir: 1500 Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T STAT stop duration TIME :07:38:42 07:50:30 12 (mi LOG :3197.78 3198.48 0.70 PDEPTH: 115 115 BDEPTH: 129 127 Towing dir: 600 Wire out	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c 90 m Speed : 0.07 CATCH/HOU weight num 0.35 PROJECT:BE YPE: PT No: 2 n) Ourpose oc CATCH/HOU weight num 0.35 PROJECT:BE YPE: PT No: 2 No: 0 No: 0	rest is a second	1 km*10 H/HOUR: % OF TOT. c 93.70 6.30 100.00 0JECT STATJ TION:Lat Long 1 1 km*10 H/HOUR: % OF TOT. c 100.00 0JECT STATJ TION:Lat Long 1 1 km*10 km*10 km*10 km*10 km*10	2.70 2 SAMP 8484 8485 2 2712 E 1448 0.35 2 SAMP 8486 8487 2 SAMP 8486 8487 2 SAMP
LOG :3036.69 3037.36 0.66 PDETTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total	Area code GearCond.c Validity o : 260 m Speed CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity o : 90 m Speed : 0.07 CATCH/HOU weight num 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity o : 300 m Speed : 300 m Speed : 4.89	rest is a set of the s	1 km*10 H/HOUR: % OF TOT. C 93.70 6.30 100.00 0JECT STAT1 1 km*10 H/HOUR: % OF TOT. C 100.00 100.00 100.00 100.00 100.00 100.00 km*10 km*10 H/HOUR: %	2.70 2 SAMP 8484 8485 2712 E 1448 0.35 2 SAMP 8486 8487 2223 E 1543 E 1543
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 1700 Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total Total Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T SHORE SUBSCIES Lampanyctodes hectoris Maurolicus muelleri Total Towing dir: 1500 Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total Total DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T STOTAL STORE SUBSCIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total Sorted: Kg Total catch SPECIES Sorted: Kg Total catch SPECIES SUBSCIES Sorted: 4 Kg Total catch SPECIES	Area code GearCond.c Validity o : 260 m Speed : 0.63 CATCH/HOI weight num 2.53 0.17 2.70 PROJECT:EE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity o : 0.07 CATCH/HOI weight num GearCond.c Validity o 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity o : 300 m Speed : 4.89	carcinological carcinologicarcinological carcinological carcinological carcinolog	1 km*10 H/HOUR: % OF TOT. C 93.70 6.30 0.00 0.00 0.00 0.00 0.00 100.00 100.00 100.00 100.00 100.00 100.00 0.00	2.70 2 SAMP 8484 8485 2712 E 1448 0.35 2 SAMP 8486 8487 2 SAMP 24.45 2 SAMP
LOG :3036.69 3037.36 0.66 PDETTH: 259 260 Towing dir: 1700 Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T Start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3036.75 0.72 PDEPTH: 20 30 BDETTH: 263 2266 Towing dir: 1500 Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total Total Total DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T start stop duration TIME :07:38:42 07:50:30 12 (mi LOG :3197.78 3198.48 0.70 PDEPTH: 115 115 BDEPTH: 129 127 Towing dir: 600 Wire out Sorted: 4 Kg Total catch SPECIES Krill Lollicompula marcatoric	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose cc Area code GearCond.c V90 might num 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose cc Area code : 0.07 CATCH/HOU weight num 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose cc Area code : 0.07 CATCH/HOU weight num GearCond.c Validity c : 300 m Speed : 4.89 CATCH/HOU weight num	CATCCI CA	1 km*10 H/HOUR: % OF TOT. C 93.70 6.30 00ECT STAT1 TION:Lat Long 1 km*10 H/HOUR: % OF TOT. C 100.00 00ECT STAT1 TION:Lat Long 1 km*10 H/HOUR: % OF TOT. C 39.47 39.47 39.47	2.70 2 SAMP 8484 8485 2712 E 1448 0.35 2 SAMP 8486 8487 24.45 24.45
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 1700 Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T Start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 TOEPTH: 36 3038.07 DEPTH: 263 266 Towing dir: 1500 Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T start stop duration TIME :07:38:42 07:50:30 12 (mi LOG :3197.78 3198.48 0.70 PDEPTH: 115 115 BDEPTH: 129 127 Towing dir: 600 Wire out Sorted: 4 Kg Total catch SPECIES Krill Lolligoncula mercatoris Sepia australis	Area code GearCond.c Validity c : 260 m Speed : 0.63 CATCH/HOU weight nun 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c : 0.07 CATCH/HOU weight nun 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c : 0.07 CATCH/HOU weight nun 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 a) Purpose oc Area code GearCond.c Validity c : 300 m Speed : 4.89	carcol ca	1 km*10 H/HOUR: % OF TOT. ( 93.70 6.30 100.00 OJECT STATI TION:Lat Long 1 km*10 H/HOUR: % OF TOT. ( 100.00 0JECT STATI 1 km*10 H/HOUR: % OF TOT. ( 39.47 23.93 16.56 11.4	2.70 2 SAMP 8484 8485 2712 E 1448 0.35 2 SAMP 8486 8487 0.35 2 SAMP 8486 2 SAMP 24.45 2 SAMP
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 1700 Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 0.72 PDEPTH: 36 205 Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 4/ 9/06 GEAR T start stop duration TIME :07:38:42 07:50:30 12 (mi LOG :3197.78 3198.48 0.70 PDEPTH: 115 115 BDEPTH: 129 127 Towing dir: 600 Wire out Sorted: 4 Kg Total catch SPECIES Krill Lolligoncula mercatoris Sepia australis Merluccius capensis, juveniles Lepidopus caudatus Todaropsis eblanae	Area code GearCond.c Validity c : 0.63 CATCH/HOU weight nun 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c : 0.07 CATCH/HOU weight nun 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c : 300 m Speec : 4.89 CATCH/HOU weight nun 0.35 0.00 0.35 PROJECT:BE YPE: PT No: 2 1.60 0.60	CATC: CATC: CATC: CATC: CATC: CATC: CATC: POST: POST: POST: POST: POST: POST: POST: POST: POST: POST: POST: POST: CATC: CA	1 km*10 H/HOUR: % OF TOT. ( 93.70 6.30 0000 0000 0000 0000 100.00 100.00 100.00 0000 100.00 100.00 0000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 00000 100.00 0000 100.00 00000 100.00 0000 100.00 0000 100.00 0000 100.00 0000 100.00 0000 100.00 0000 100.00 0000 0000 0000 0000 0000 0000 0000 0000	2.70 2 SAMP 8484 8485 2 212 E 1448 0.35 2 SAMP 8486 8487 2 SAMP 8486 2 1543 2 24.45 2 SAMP
LOG :3036.69 3037.36 0.66 PDEPTH: 259 260 Towing dir: 170ø Wire out Sorted: 1 Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 3/ 9/06 GEAR T Start stop duration TIME :09:56:26 10:08:33 12 (mi LOG :3038.02 3038.75 0.72 FDEPTH: 36 3038.75 0.72 FDEPTH: 10 3038.72 122 Towing dir: 150ø Wire out Sorted: Kg Total catch SPECIES Lampanyctodes hectoris Maurolicus muelleri Total DR. FRIDTJOF NANSEN DATE: 4/ 9/66 GEAR T TIME :07:38:42 07:50:30 12 (mi LOG :319:78 3196.46 0.70 FDEPTH: 113 115 BDEPTH: 129 127 Towing dir: 600 Wire out Sorted: 4 Kg Total catch SPECIES Krill Lolligoncula mercatoris Sepia australis Merluccius capensis, juveniles Lepidopus caudatus Todaropsis eblanae Lampanyctodes hectoris	Area code GearCond.c Validity c : 0.63 CATCH/HOU weight num 2.53 0.17 2.70 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c : 0.07 CATCH/HOU weight num 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c : 0.07 CATCH/HOU weight num 0.35 PROJECT:BE YPE: PT No: 2 n) Purpose oc Area code GearCond.c Validity c 300 m Speed : 4.89 CATCH/HOU weight num 9.65 2 5.85 4.05 2.70 1.60 0.05	CATCI CATCI	1 km*10 H/HOUR: % OF TOT. C 93.70 6.30 100.00 OJECT STATI TION:Lat Long 1 km*10 H/HOUR: % OF TOT. C 100.00 OJECT STATI TION:Lat Long 1 km*10 H/HOUR: % OF TOT. C 39.47 23.93 16.56 11.04 6.54 2.45 0.20	2.70 2 SAMP 8484 8485 2 212 E 1448 0.35 2 SAMP 8486 8487 CON:1786 8487 2 SAMP 24.45 2 SAMP 8488 8489

GEAR 11.	PE: PT No: 2 POS	ITION:Lat S	2822
start stop duration TIME :07:59:34 08:11:53 12 (min	) Purpose code:	Long E	1544
LOG :3198.94 3199.66 0.72 FDEPTH: 50 50	Area code : GearCond.code:	1	
BDEPTH: 124 122 Towing dir: 40ø Wire out:	150 m Speed: 38	kn*10	
Sorted: Kg Total catch:	0.04 CAT	CH/HOUR:	0.20
SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
Lolligoncula mercatoris	weight numbers 0.10 35	50.00	
Maurolicus muelleri Krill	0.05 90 0.05 150	25.00 25.00	8490
epidopus caudatus	0.00 5		
'otal	0.20	100.00	
	DPO.TECT . DE	POIFOT STATION	1-1788
DATE: 4/ 9/06 GEAR TY start stop duration	PE: PT No: 1 POS	ITION:Lat S Long E	2830
TIME :11:17:41 11:42:20 25 (min LOG :3225.70 3227.19 1.48	) Purpose code: Area code :	1	1921
FDEPTH: 100 100 BDEPTH: 180 176	GearCond.code: Validity code:		
Towing dir: 74ø Wire out:	270 m Speed: 40	kn*10	
Sorted: 147 Kg Total catch:	147.15 CAT	CH/HOUR: 35	3.16
PECIES	CATCH/HOUR	% OF TOT. C	SAMP
trumeus whiteheadi	weight numbers 352.22 8638	99.73	8491
ardinops ocellatus	0.94 22	0.27	8492
otal	353.16	100.00	
	DDA TEOM . DD	DO TROM OFFICE	1.1.700
DATE: 4/ 9/06 GEAR TY	PE: PT No: 2 POS	ITION:Lat S	2841
TIME :16:08:01 16:19:59 12 (min	) Purpose code:	1	1402
FDEPTH: 165 165	GearCond.code:	1	
Towing dir: 70ø Wire out:	500 m Speed: 36	kn*10	
Sorted: Kg Total catch:	0.60 CAT	CH/HOUR:	3.00
PECIES	CATCH/HOUR	% OF TOT. C	SAMP
aurolicus muelleri	weight numbers 2.90 2910	96.67	8493
nioteuthis capensis mmelichthys nitidus	0.05 40	1.67	
otal	3.00	100.01	
start stop duration	PE: PT No: 2 POS	ITION:Lat S Long E	2841 1453
start         stop         duration           TIME         :16:25:58         16:38:02         12         (min           LOG         :3263.26         3263.98         0.72         FDEPTH:         110           BDEPTH:         116         110         100         EDEPTH:         100         100	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code: Validity code: 240 m crocd: 2	ITION:Lat S Long E 1 1	2841 1453
Start         Start         Start         Start           TIME         :16:25:58         16:38:02         12         (min           LOG         :3263.26         3263.98         0.72         FDEPTH:         10           BDEPTH:         186         185         Towing dir:         70ø         Wire out:           Sorted:         Kg         Total catch:         Total catch:         Sorted:         Kg	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code: Validity code: 340 m Speed: 38	STION:Lat S Long E 1 1 s kn*10	2841 1453
Start stop duration TIME :16:25:58 16:38:02 12 (min LOG :3263.26 3263.98 0.7 FDEPTH: 110 110 BDEPTH: 186 185 Towing dir: 70ø Wire out: Sorted: Kg Total catch:	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code Validity code: 340 m Speed: 38 10.00 CAT	ITION:Lat S Long E 1 1 kn*10 CCH/HOUR: 5	2841 1453
TIME :16:25:58 16:38:02 12 (min ILOG :3263.26 326.98 0.72 FDEPTH: 110 110 BDEPTH: 166 185 Towing dir: 70ø Wire out: Sorted: Kg Total catch: PECIES	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code: Validity code: 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers	ITION:Lat S Long E 1 kn*10 CCH/HOUR: 5 % OF TOT. C	2841 1453
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TIME :16:25:58 16:38:02 12 (min TIME :16:25:58 16:38:02 12 (min LOG :3263.26 3263.98 0.72 FDEFTH: 110 110 BDEFTH: 186 185 Towing dir: 70ø Wire out: Sorted: Kg Total catch: PECIES Waurolicus muelleri	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00	STITON:Lat S Long E 1 1 kn*10 CCH/HOUR: 5 * OF TOT. C 100.00 100.00	2841 1453 0.00 SAMP 8494
TIME 16:25:58 16:38:02 12 (min LOG 13:263.26 326.398 0.72 FDEPTH: 110 110 BDEPTH: 166 185 Towing dir: 70ø Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code Validity code: 340 m Speed: 36 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00	ITION:Lat S Long E 1 1 kn*10 CH/HOUR: 5 * OF TOT. C 100.00 100.00	2841 1453 0.00 SAMP 8494
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DR. FRIDTJOF NANSEN DATE: 4/ 9/06 DATE: 4/ 9	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code Validity code: 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE E PE: PT No: 2 POS ) Purpose code: Area code : Area code : CATCH/HOUR	ITION:Lat S Long E 1 1 kn*10 CCH/HOUR: 5 * OF TOT. C 100.00 100.00 WROJECT STATION ITION:Lat S Long E 1	2841 1453 50.00 SAMP 8494 1:1791 2840 1454
DR. FRIDTJOF NANSEN DATE: 4/9/06 DATE: 4/9	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code: Validity code: 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PPOJECT:BE F PE: PT No: 2 POS ) Purpose code: GearCond.code Walidity code: 35 m Speed: 37	ITION:Lat S Long E 1 1 kn*10 CCH/HOUR: 5 * OF TOT. C 100.00 100.00 UTION:Lat S Long E 1 1 kn*10	2841 1453 0.00 SAMP 8494 1:1791 2840 1454
DR. FRIDTUOF NANSEN DATE: 4/ 9/06 DATE: 4/ 9/06 DATE: 4/ 9/06 DEPTH: 18 DATE: 4/ 9/06 DATE: 126:44:33 16:56:31 12 (min TIME :16:44:33 16:56:31 12 (min DATE: 16:44:33 16:56:31 12 (min DATE: 16:44:35 16:56:31 12 (min DATE: 16:45:35 16:56:31 12 (min DATE: 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:55 16:	PE: PT No: 2 POS ) Purpose code: dearCond.code Validity code 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F DE: PT No: 2 POS ) Purpose code: Area code : GearCond.code 135 m Speed: 37 0.02 CAT	ITION:Lat S Long E 1 1 kn*10 CCH/HOUR: 5 * OF TOT. C 100.00 100.00 COJECT STATION ITION:Lat S Long E 1 1 kn*10 CCH/HOUR:	2840 1453 50.00 SAMP 8494 1:1791 2840 1454 0.10
DR. FRIDTJOF NANSEN DATE: 46:426:426 DATE: 47.06 DATE: 47.06 DEPTH: 110 DEPTH: 110 DEPTH: 110 DEPTH: 110 DEPTH: 16 DEPTH: 16 DEPTH: 16 DEPTH: 16 DATE: 47.9706 DATE: 47.97	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code: 135 m Speed: 37 0.02 CAT CATCH/HOUR	ITION:Lat S Long E 1 1 kn*10 CCH/HOUR: 5 * OF TOT. C * 100.00 TROJECT STATION Lat S Long E 1 1 kn*10 CH/HOUR: *	2841 1453 .0.00 SAMP 8494 151791 2840 1454 0.10 SAMP
DR. FRIDTJOF NANSEN DATE: 46:264.26 DATE: 47.97 DEPTH: 110 DEPTH: 110 DEPTH: 110 DEPTH: 16 DEPTH: 16 DEPTH: 16 DEPTH: 16 DEPTH: 16 DEPTH: 16 DEPTH: 16 DEPTH: 16 DATE: 4/ 9/06 DATE: 4/ 9/06 DATE: 4/ 9/06 DATE: 126:241.33 DATE: 126:241.33 Start stop duration TIME: 16:244.33 TIME: 16:244.33 TIME: 16:244.33 TIME: 16:244.33 TOWING dir: 700 Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE E PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code: Jara code : GearCond.code: 135 m Speed: 37 0.02 CAT CATCH/HOUR weight numbers 0.10 66	ITION:Lat S Long E 1 1 kn*10 CCH/HOUR: 5 * OF TOT. C * 100.00 TOJECT STATION Long E 1 kn*10 CH/HOUR: * kn*10 CCH/HOUR: * OF TOT. C	2841 1453 00.00 SAMP 8494 1454 0.10 SAMP 8495
DR. FRIDTUOF NANSEN DATE: 16:25:26 16:38:02 12 (min LOG :2263.26 3263.98 0.72 PDEPTH: 110 110 BDEPTH: 160 185 Towing dir: 70s Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal DR. FRIDTUOF NANSEN Start stop duration TIME :16:44:33 16:56:31 12 (min LOG :3264.28 3264.96 0.67 FDEPTH: 46 46 BDEPTH: 184 183 Towing dir: 70s Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS Area code : Area code : Validity code: Ualidity code: 0.02 CAT CATCH/HOUR weight numbers 0.10 65 0.10	ITION:Lat S Long E 1 1 kn*10 CH/HOUR: 5 * OF TOT. C 100.00 IUTION:Lat S Long E 1 kn*10 CH/HOUR: * OF TOT. C * OF TOT. C 100.00 100.00	2841 1453 0.00 SAMP 8494 1:1791 2840 1454 0.10 SAMP 8495
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TIME :16:25:58 16:38:02 12 (min LOG :3263.26 3263.98 0.72 FDEPTH: 110 110 BDEPTH: 186 185 Towing dir: 70ø Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code 340 m Speed: 36 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PROJECT:BE F PROJECT:BE F Marca code Validity code 135 m Speed: 37 0.02 CAT CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F PROJECT:BE F PR	ITION:Lat S Long E 1 1 kn*10 CH/HOUR: 5 * OF TOT. C 100.00 TOJECT STATION ITION:LAT S 1 kn*10 CH/HOUR: * OF TOT. C 1 kn*10 CH/HOUR: * OF TOT. C 1 CH/HOUR: * OF TOT. C *	2841 1453 0.000 SAMP 8494 1454 0.10 SAMP 8495 1454
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TIME 16:25:50 16:38:02 12 (min         TIME :16:25:50 16:38:02 12 (min         LOG :3263.26 3263.98 0.7         PDEPTH: 110 110         DBPETH: 186 185         Towing dir: 700 Wire out:         Sorted: Kg Total catch:         PECTES         aurolicus muelleri         otal         DR. FRIDTUOF NANSEN         DATE: 4/ 9/06 GEAR TY:         start stop duration         TIME :16:44:33 16:56:31 12 (min         LOG :3264.28 3264.96 0.67         FDEPTH: 184 183         DR. FRIDTUOF NANSEN         DATE: 4/ 9/06 GEAR TY:         Sorted: Kg Total catch:         PDEPTH: 184 183         DATE: Kg Total catch:         PECTES         aurolicus muelleri         otal         DR. FRIDTUOF NANSEN         DATE: 4/ 9/06 GEAR TY         Towing dir: 700 Wire out:         Sorted: Kg Total catch:         PECTES         aurolicus muelleri         otal         DATE: 4/ 9/06 GEAR TY	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code 340 m Speed: 36 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F Marca code Validity code: 0.10 65 0.10 PROJECT:BE F PROJECT:BE F	ITION:Lat S Long E 1 1 kn*10 CH/HOUR: 5 * OF TOT. C 100.00 TOJECT STATION ITION:LAT S Long E 1 kn*10 CH/HOUR: * OF TOT. C 100.00 CH/HOUR: * OF TOT. C 100.00 CH/HOUR: * OF TOT. C 100.00 CH/HOUR: * OF TOT. C 1 1 kn*10 CH/HOUR: * OF TOT. C 1 kn*10 CH/HOUR: * OF TOT. C * OF TOT. C 1 kn*10 CH/HOUR: * OF TOT. C 1 kn*10 CH/HOUR: * OF TOT. C * OF TOT. C	2841 1453 0.000 SAMP 8494 1454 0.10 SAMP 8495 1454 1454
DR. FRIDTUOF NANSEN DATE: 4/ 9/06 DEPTH: 4/ 9/06 DEPTH: 4/ 9/06 DEPTH: 4/ 9/06 DEPTH: 4/ 9/06 DEPTH: 4/ 9/06 DEPTH: 4/ 9/06 DATE: 4/ 9/06 DEPTH: 10 DEPTH: 4/ 9/06 DEPTH: 10 DEPTH: 4/ 9/06 DEPTH: 290 304 TOWING dir: 700 Wire out:	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code: 340 m Speed: 36 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code Validity code: 135 m Speed: 37 0.02 CAT CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F PE: PT No: 1 POS ) Purpose code: Area code 150 m Speed: 37 0.10 7 0.10 7 0	ITION:Lat S Long E 1 kn*10 CH/HOUR: 5 OF TOT. C 100.00 100.00 CH/HOUR: 5 Long E 1 kn*10 CH/HOUR: 4 OF TOT. C 100.00 CH/HOUR: 5 100.00 CH/HOUR: 5 CH/HOUR: 5 CH/	2841 1453 0.000 SAMP 8494 1454 0.10 SAMP 8495 1454 0.10 SAMP 8495
TIME :16:25:50 16:38:02 12 (min TIME :16:25:50 16:38:02 12 (min LOG :3263.26 3263.98 0.72 PDEPTH: 110 110 BDEPTH: 166 185 Towing dir: 70ø Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal DR. FRIDTJOF NANSEN GEAR TY DATE: 4/ 9/06 GEAR TY Start stop duration TME :16:44:33 16:56:31 12 (min LOG :3264.28 3264.96 0.67 FDEFTH: 46 46 BDEPTH: 16:44:183 Towing dir: 70ø Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal DR. FRIDTJOF NANSEN TO DATE: 4/ 9/06 GEAR TY start stop duration TME :20:19:42 20:22:47 3 (min LOG :3294.45 3294.78 0.33 FDEPTH: 10 10 BDEPTH: 290 304 Towing dir: 70ø Wire out: Sorted: Kg Total catch:	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code 340 m Speed: 36 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code Validity code 135 m Speed: 37 0.10 65 0.10 PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F SCORE CODE 1.18 CAT	ITION:Lat S Long E 1 kn*10 CH/HOUR: 5 OF TOT. C OOUBCT STATION ITION:Lat S Long E 1 Kn*10 CH/HOUR: 4 OF TOT. C 100.00 CH/HOUR: 5 1 CH/HOUR: 22 CH/HOUR: 22	2841 1453 0.000 SAMP 8494 1453 0.10 SAMP 8495 1454 0.10 SAMP 8495 1428
TIME :16:25:50 16:38:02 12 (min TIME :16:25:50 16:38:02 12 (min LOG :3263.26 3263.98 0.72 PDEPTH: 110 110 BDEPTH: 166 185 Towing dir: 70ø Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code 340 m Speed: 36 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code Validity code: 135 m Speed: 37 0.02 CAT CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE C CATCH/HOUR Weight numbers 1.1.18 CAT Weight numbers CATCH/HOUR	ITION:Lat S Long E 1 kn*10 CH/HOUR: 5 * OF TOT. C 100.00 100.00 CH/HOUR: 5 1 * OF TOT. C * OF TOT. C	2841 1453 0.000 SAMP 8494 1453 0.10 SAMP 8495 1454 0.10 SAMP 8495 1428
TIME :16:25:58 16:38:02 12 (min TIME :16:25:58 16:38:02 12 (min LOG :3263.26 3263.98 0.72 FDEPTH: 110 110 DEPTH: 166 185 Towing dir: 700 Wire out: Sorted: Kg Total catch: PECIES Haurolicus muelleri TME :16:44:33 16:56:31 12 (min LOG :3264.28 3264.96 0.67 FDEPTH: 46 46 0.67 FDEPTH: 48 264.96 0.67 FDEPTH: 48 183 Towing dir: 700 Wire out: Sorted: Kg Total catch: PECIES Haurolicus muelleri Total	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code' Validity code: 340 m Speed: 38 10.00 CAI CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code : Validity code: Validity code: 0.02 CAI CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE F PROJECT:BE CODE: 1.10 65 0.10 PROJECT:BE CODE: Area code : Area code : 0.10 65 0.10 PROJECT:BE CODE: Area code : Area code :	ITION:Lat S Long E 1 1 kn*10 CH/HOUR: 5 * OF TOT. C 100.00 100.00 100.00 100.00 100.00 111ION:Lat S Long E 1 1 kn*10 CH/HOUR: 4 1 cH/HOUR: 22 * OF TOT. C 1 cH/HOUR: 22 * OF TOT. C 1 % OF TOT. C	2841 1453 0.0.00 SAMP 8494 1453 0.10 SAMP 8495 1454 0.10 SAMP 8495 1428 3.60 SAMP
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TIME :16:25:50 16:38:02 12 (min TIME :16:25:50 16:38:02 12 (min LOG :1263.26 326 326 .07 1 PDEPTH: 110 110 BDEPTH: 166 185 Towing dir: 70æ Wire out: Sorted: Kg Total catch: PECIES aurolicus muelleri otal	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code Validity code: 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code : Area code : CATCH/HOUR weight numbers 0.10 65 0.10 CATCH/HOUR weight numbers Area code : CATCH/HOUR weight numbers 150 m Speed: 33 11.18 CAT CATCH/HOUR weight numbers 208.00 153040 15.60 1060	ITION:Lat S Long E 1 1 CH/HOUR: 5 * OF TOT. C * OF TOT. C * OF TOT. C * OF TOT. C * DOF TOT. C * OF TOT. C	2841 1453 0.000 SAMP 8494 151791 2840 1454 0.10 SAMP 8495 1428 3.60 SAMP 1428 3.60 SAMP
DR. FRIDTUOF NANSEN DR. FRIDTUOF NANSEN DR. FRIDTUOF NANSEN DR. FRIDTUOF NANSEN DR. FRIDTUOF NANSEN DATE: 4/ 9/06 DREFTH: 186 DATE: 4/ 9/06 DATE: 4/ 9/06 DATE: 4/ 9/06 DATE: 184 DATE: 184	PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code' Validity code: 340 m Speed: 38 10.00 CAT CATCH/HOUR weight numbers 50.00 41995 50.00 41995 50.00 41995 50.00 41995 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code Validity code: 0.02 CAT CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F PE: PT No: 1 POS ) Purpose code: Area code : GearCond.code: Validity code: 150 m Speed: 33 11.18 CAT CATCH/HOUR weight numbers 208.00 15304 15.60 1066 223.60	ITION:Lat S Long E 1 1 kn*10 CH/HOUR: 5 * OF TOT. C * OF TOT. C	22841 1453 0.000 SAMP 8494 1454 0.10 SAMP 8495 1454 0.10 SAMP 1454 1454 1454 0.10 SAMP 1428 1428 1428 1428 1428 1428 1428 1428
DR. FRIDTUOF NANSEN       DATA         DR. FRIDTUOF NANSEN       DATA         DOR       Sorted:         Kg       Total catch:         DATE: 4/ 9/06       GEAR TY         DATE: 184       183         Towing dir: 70ø Wire out:       Sorted: Kg         Sorted:       Kg       Total catch:         PECIES       uurolicus muelleri         DATE: 4/ 9/06       GEAR TY         Sorted:       Kg       Total catch:         PECIES       10         DDATE: 10       10         EDATE: 4/ 9/06       GEAR TY         Sorted:       Kg       Total catch:         YECIES       10       10         DDDEPTH: 200 304       10         DEDEPTH: 200 304       10         DEDEPTH: 200 304       10	PE: PT No: 2 POS ) Purpose code: GearCond.code Validity code 340 m Speed: 36 10.00 CAI CATCH/HOUR weight numbers 50.00 41995 50.00 PROJECT:BE F PE: PT No: 2 POS ) Purpose code: Area code : GearCond.code Validity code: 135 m Geaed: 0.02 CAI CATCH/HOUR weight numbers 0.10 65 0.10 PROJECT:BE F PE: PT No: 1 POS ) Purpose code: Area code : CATCH/HOUR weight numbers 11.18 CAI CATCH/HOUR weight numbers 208.00 153040 15.60 1060 223.60 PROJECT:BE F PE: PT No: 2 POS	ITION:Lat S Long E 1 1 kn*10 CH/HOUR: 5 4 OF TOT. C 4 OF TOT. C 100.00 100.00 CH/HOUR: 5 1 2 kn*10 CH/HOUR: 4 4 OF TOT. C 100.00 100.00 CH/HOUR: 22 4 OF TOT. C 1 2 kn*10 CH/HOUR: 22 4 OF TOT. C 1 2 kn*10 CH/HOUR: 22 4 OF TOT. C 1 2 kn*10 CH/HOUR: 22 4 OF TOT. C 2 0.00 0 0.00 0 0.00 0 0 0 0 0 0 0 0 0 0 0 0	2841 1453 0.0.00 SAMP 8494 1453 0.10 SAMP 8495 1454 0.10 SAMP 8495 1454 1454 1454 1454 1454 1454 1454 1

FDEPTH: 250 250 GearCond.code: BDEPTH: 281 288 Validity code: Towing dir: 243ø Wire out: 690 m Speed: 36 kn\*10 Sorted: 80 Kg Total catch: 80.10 CATCH/HOUR: 320.40 CATCH/HOUR % OF TOT. C SAMP weight numbers 247.80 328 77.34 8493 72.60 97148 22.66 8494 SPECIES Brama brama Maurolicus muelleri 320.40 100.00 Total 
 DR. FRIDIJOF NANSEN
 PROJECT:BE
 PROJECT STATION:1795

 DATE: 5/ 9/06
 GEAR TYPE: PT No: 2
 POSITION:Lat
 S
 2940

 start
 stop
 duration
 Long
 E
 1527

 TIME :16:15:00
 16:26:59
 12 (min)
 Purpose code: 1
 Long
 E

 LOG
 343.44
 3435.14
 0.72
 Arac code
 5
 FDEPTH: 40
 40
 GearCond.code:
 E

 DEDETT
 195
 198
 Validity code:
 Towing dir: 250ø
 Wire out: 140 m
 Speed: 38 kn\*10
 Sorted: 126 Kg Total catch: 126.35 CATCH/HOUR: 631.75 CATCH/HOUR % OF TOT. C SAMP weight numbers 580.75 11500 91.93 8497 51.00 665 8.07 8496 SPECIES Etrumeus whiteheadi Sardinops ocellatus 100.00 Total 631.75 DR. FRIDTJOF NANSEN PROJECT:BE PROJECT ST. GEAR TYPE: PT No: 1 POSITION:Lat PROJECT STATION:1796 
 DATE:
 6/9/06
 GEAR TYPE:
 PT No:
 1
 POSITION:La

 start
 stop
 duration
 Lo

 TIME
 :00:42:27
 01:02:10
 20 (min)
 Purpose code:
 1

 LOG
 :3489.46
 3490.73
 1.27
 Area code
 5

 FDEPTH:
 45
 GearCond.code:
 5

 BDEPTH:
 168
 169
 Validity code:

 Towing dir:
 330ø
 Wire out:
 160 m
 Speed:
 40 kn\*10
 DATE: 6/ 9/06 I:Lat S 2916 Long E 1610 Sorted: 4 Kg Total catch: 4.75 CATCH/HOUR: 14.25 CATCH/HOUR % OF TOT. C SAMP weight numbers 8.85 903 62.11 3.30 5391 23.16 8498 1.83 45 12.84 8500 0.15 24 1.05 8501 SPECIES Sepia australis Maurolicus muelleri Etrumeus whiteheadi Merluccius capensis, juveniles Lampanyctodes hectoris Lolligoncula mercatoris 62.11 23.16 12.84 1.05 0.63 0.09 42 12 8499 0.21 Todarodes angolensis Inioteuthis capensis 0.03 3 3 0.21 Total 14 28 100 21 DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:1797 DATE: 6/ 9/06 GEAR TYPE: PT No: 1 POSITION:Lat S 2946 start stop duration Long E 1649 TIME :08:45:29 09:02:37 17 (min) Purpose code: 1 LOG :3558.58 3559.65 1.05 Area code : 5 FDEPTH: 85 85 GearCond.code: BDEPTH: 129 128 Validity code: Towing dir: 340@ Wire out: 260 m Speed: 37 kn\*10 Sorted: 13 Kg Total catch: 12.51 CATCH/HOUR: 44.15 CATCH/HOUR % OF TOT. C SAMP weight numbers 40.66 58496 92.10 8503 3.42 145 7.75 8502 SPECIES Maurolicus muelleri Etrumeus whiteheadi Funchalia woodwardi Trachurus capensis, juvenile 8503 8502 145 95 7 0.04 0.09 8504 0.04 0.09 44.16 100.03 Total PROJECT:BE PROJECT STATION:1798 GEAR TYPE: PT No: 1 POSITION:Lat S 3011 Long E 1639 DR. FRIDTJOF NANSEN 
 DATE:
 6/9/06
 GEAR TYPE: PT No: 1
 POSITION:La

 start
 stop
 duration
 Lo

 TIME
 14:41:31
 15:01:09
 20 (min)
 Purpose code: 1

 LOG
 :3610.63
 3611.91
 1.27
 Area code : 1

 FDEPTH:
 65
 50
 GearCond.code:

 BDEPTH:
 187
 185
 Validity code:

 Towing dir:
 65ø
 Wire out: 250 m
 Speed: 40 kn\*10
 DATE: 6/ 9/06 Sorted: Kg Total catch: 12.07 CATCH/HOUR: 36.21 CATCH/HOUR % OF TOT. C SAMP weight numbers 20.40 366 56.34 8506 15.60 17601 43.08 8505 0.21 108 0.58 8507 SPECIES Etrumeus whiteheadi Maurolicus muelleri Trachurus capensis, juvenile 100.00 36.21 Total

DR. FRIDTJOF NANSEN DATE: 6/ 9/06 GEAR TY	PROJECT:BE I PE: PT No: 2 PO:	PROJECT STATION:179 SITION:Lat S 302
start stop duration TIME :19:07:58 19:20:05 12 (min	) Purpose code:	Long E 160
LOG :3649.86 3650.59 0.72 FDEPTH: 120 120	Area code GearCond.code	5
BDEPTH: 235 234 Towing dir: 67ø Wire out:	Validity code 340 m Speed: 3'	7 kn*10
Sorted: Kg Total catch:	0.28 CA	TCH/HOUR: 1.40
SPECIES	CATCH/HOUR	% OF TOT. C SAM
Maurolicus muelleri	1.05 188	75.00
Todaropsis eblanae	0.05	3.57
Sepia australis Inioteuthis capensis	0.05 20	3.57
Total	1.40	100.00
DR. FRIDTJOF NANSEN	PROJECT:BE I	PROJECT STATION:180
start stop duration	PE. PINO. 2 PO.	Long E 160
LOG :3651.14 3651.86 0.72	Area code:	1 5
FDEPTH: 60 60 BDEPTH: 234 232	GearCond.code Validity code	
Towing dir: 67ø Wire out:	165 m Speed: 3'	7 kn*10
Sorted: Kg Total catch:	0.61 CA	TCH/HOUR: 3.05
SPECIES	CATCH/HOUR	% OF TOT. C SAM
Maurolicus muelleri	weight numbers 3.05 555	s 5 100.00 850
Total	3.05	100.00
DR. FRIDTJOF NANSEN	PROJECT: BE	PROJECT STATION:180
DATE: 6/ 9/06 GEAR TY start stop duration	PE: PT No: 2 PO:	Long E 160
TIME :19:54:34 20:06:40 12 (min LOG :3652.57 3653.32 0.74	<ol> <li>Purpose code: Area code</li> </ol>	1
FDEPTH: 30 30	GearCond.code	
DDED0011 220 220	N-1:2:4-	
BDEPTH: 230 229 Towing dir: 67ø Wire out:	Validity code 90 m Speed: 3	7 kn*10
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch:	Validity code 90 m Speed: 3 0.18 CA	7 kn*10 7 cH/HOUR: 0.90
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch:	Validity code 90 m Speed: 3 0.18 CA	7 kn*10 rCH/HOUR: 0.90
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight numbers	7 kn*10 TCH/HOUR: 0.90 % OF TOT. C SAM
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number: 0.40 56 0.30	7 kn*10 rCH/HOUR: 0.90 % OF TOT. C SAM 3 44.44 850 5 33.33 851
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number: 0.40 56 0.30 9 0.05	7 kn*10 rCH/HOUR: 0.90 % OF TOT. C SAM 44.44 850 5 33.33 851 5 5.56
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number: 0.40 56 0.30 9 0.05 9 0.05 9	7 kn*10 rCH/HOUR: 0.90 * OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis —	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight numberr 0.40 56 0.05 1 0.05 1 0.05 1 0.05 1	<pre>7 kn*10 rcH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56</pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis Total	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number 0.40 560 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1	7 kn*10 rcH/HOUR: 0.90 * OF TOT. C SAM 44,44 5,56
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todaropeis eblanae Lolligoncula mercatoris Trachurus capensis — Total —	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number 0.40 56 0.05 9 0.05 9 0.05 9 0.05 9 0.05 9 0.05 9 0.05 9 0.90	7 kn*10 7 kn*10 7 cCH/HOUR: 0.90 * OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 851 100.01
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis Total	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number 0.40 56 0.05 9 0.05 9 0.05 9 0.05 9 0.05 9 0.90	7 kn*10 7 kn*10 7 kn*10 8 OF TOT. C SAM 9 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 100.01 8 00 9 00 TOT. C SAM 9 00 TOT. C SAM
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis Total — DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TY start stop duration TME :00:31:41.00:46:51 15 (mir	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number 0.40 566 0.35 1 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 0.90 PROJECT:BE 1 PRE: PT No: 2 PO: 1) Purpose code:	7 kn*10 rcH/HOUR: 0.90 * OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56 100.01 PROJECT STATION:180 SITION:Lat S 303 Long E 152 1
BDEPTH: 2.30 2.29 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis Total — DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TT start stop duration TIME :00:31:41 00:46:51 15 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number 0.40 56i 0.30 5 0.05 1 0.05 1	7 kn*10 rCH/HOUR: 0.90 * OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 .56 5 .56 5 .56 5 .56 851 100.01 PROJECT STATION:180 SITION:Lat S 303 Long E 152 1
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total — DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TT start stop duration TIME: 00:31:41 00:46:51 15 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 308 308	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight numberr 0.40 56! 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 PROJECT:BE 1 PROJECT:BE 1 PE: PT No: 2 PO( ) Purpose code: Area code GearCond.code Validity code Sum Speed: 4'	<pre>7 kn*10 rcH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56 851 100.01 PROJECT STATION:180 SITION:141 S 303 Long E 152 1 5 5 5 1 5 5 5 1 5 5 5 5 5 5 5 5 5 5 5</pre>
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total Total DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TT start stop duration TIME :00:31:41 00:46:511 5( mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 108 308 Towing dir: 65ø Wire out: Sorted: 11 Kg Total catch:	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number 0.40 561 0.05 1 0.05 1	<pre>7 kn*10 rCH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56 851 100.01 PROJECT STATION:180 SITION:Lat S 303 Long E 152 1 5 5 ) kn*10 rCH/HOUR: 45.80</pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus Todarogsis eblanae Lolligoncula mercatoris Trachurus capensis Total DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TY start stop duration TME :00:31:41.00:46:51 15 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 108 100 BDEPTH: 108 100 BDEPTH: 308 308 Towing dir: 650 Wire out: Sorted: 11 Kg Total catch:	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number: 0.40 560 0.05 1 0.05 1	7 kn*10 rCH/HOUR: 0.90 * OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 6 5.56 851 100.01 PROJECT STATION:180 ILTION:Lat S 303 Long E 152 1 5 5 0 kn*10 rCH/HOUR: 45.80
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus Todarogsis eblanae Lolligoncula mercatoris Trachurus capensis Total DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TY start stop duration TIME :00:31:41 00:46:511 5( mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 100 100 BDEPTH: 108 308 Towing dir: 650 Wire out: Sorted: 11 Kg Total catch:	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number 0.40 561 0.05 1 0.05 1	7 kn*10 PCH/HOUR: 0.90 * OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 851 100.01 PROJECT STATION:180 SITITON:Lat S 303 Long E 152 1 5 0 kn*10 PCH/HOUR: 45.80 * OF TOT. C SAM
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis Total — — DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TT start stop duration TIME 100:31:41 00:46:511 5( mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 100 100 BDEPTH: 108 308 Towing dir: 65ø Wire out: Sorted: 11 Kg Total catch: SPECIES Maurolicus muelleri Brama brama	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number: 0.46 561 0.05 1 0.05 1	<pre>7 kn*10 rCH/HOUR: 0.90 % OF TOT. C SAM 9 44.44 850 5 33.33 851 5 5.6 5 5.6 5 5.6 5 5.6 5 5.6 6 5.56 5 100.01 PROJECT STATION:180 SITION:Lat S 303 Long E 152 1 5 9 0) kn*10 rCH/HOUR: 45.80 % OF TOT. C SAM 5 79.91 851 2 0.09</pre>
BDEPTH: 230 229 Towing dir: 67ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis Total DR. FRIDTUOF NANSEN DATE: 7/ 9/06 GEAR TY start stop duration TIME :00:31:41 00:46:511 15 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 100 100 BDEPTH: 108 308 Towing dir: 65ø Wire out: Sorted: 11 Kg Total catch: SPECIES Maurolicus muelleri Brama brama	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number: 0.40 561 0.05 1 0.05 1	<pre>7 kn*10 rcH/HOUR: 0.90 % OF TOT. C SAM 9 44.44 850 5 33.33 851 5 5.6 5 5.6 5 5.6 5 5.6 5 5.6 851 100.01 PROJECT STATION:180 SITION:Lat S 303 Long E 152 1 5 9 0) kn*10 rcH/HOUR: 45.80 % OF TOT. C SAM 5 79.91 851 20.09 100.00</pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total Total DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TT start stop duration TIME :00:31:41 00:46:511 5( muir LOG :3693:07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 108 100 BDEPTH: 308 308 Towing dir: 650 Wire out: Sorted: 11 Kg Total catch: SPECIES Maurolicus muelleri Brama brama	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number 0.40 56i 0.05 1 0.05 1	<pre>7 kn*10 rcH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56 851 100.01 PROJECT STATION:180 SITION:141 S 303 1 Long E 152 1 5 0 kn*10 rcH/HOUR: 45.80 % OF TOT. C SAM 5 79.91 851 20.09 100.00 </pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total Catal DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TT start stop duration DATE: 7/ 9/06 GEAR TT start stop duration TIME :00:31:41 00:46:51 15 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 308 308 Towing dir: 650 Wire out: Sorted: 11 Kg Total catch: SPECIES Maurolicus muelleri Brama brama Total	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number 0.40 561 0.05 1 0.05 1	<pre>7 kn*10 PCH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.6 5 5.6 5 5.6 5 5.6 5 5.6 5 5.6 851 100.01 PROJECT STATION:180 SITION:141 S 303 Long E 152 1 5 0 kn*10 PCH/HOUR: 45.80 % OF TOT. C SAM 5 79.91 851 20.09 100.00 PD04ECE EXEMPTION:120 </pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total Total DR. FRIDTUOF NANSEN DATE: 7/ 9/06 GEAR TT Start stop duration TIME :00:31:41 00:46:511 5( mir LOG :3693:07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 100 100 BDEPTH: 308 308 Towing dir: 650 Wire out: Sorted: 11 Kg Total catch: SPECIES Maurolicus muelleri Brama brama Total Total Catch GEAR TY	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number 0.40 561 0.05 1 0.05 1	<pre>7 kn*10 rcH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 5 5.56 s 100.01 PROJECT STATION:180 SITION:141 \$ 303 complexity of the second sec</pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total Total Total DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TI Start stop duration TIME :00:31:41 00:46:511 5 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 308 308 Towing dir: 650 Wire out: Sorted: 11 Kg Total catch: SPECIES Maurolicus muelleri Brama brama Total Total Total CEAR TI SATE : 7/ 9/06 GEAR TI start stop duration DATE: 7/ 9/06 GEAR TI start stop duration DATE: 7/ 9/06 GEAR TI start stop duration	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight number: 0.40 561 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 0.05 1 PROJECT:BE 1 PRE: PT No: 2 PO: 11.45 CA: CATCH/HOUR Weight number: 36.60 59610 9.20 1 45.80 PROJECT:BE 1 PROJECT:BE 1 PROJE	<pre>7 kn*10 rCH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 851 100.01 PROJECT STATION:180 SITION:141 \$ 303 100.00 PROJECT STATION:180 \$ OF TOT. C SAM 5 79.91 851 20.09 100.00 PROJECT STATION:180 SITION:141 \$ 303 Long E 153 1</pre>
BDEPTH: 230 229 Towing dir: 67e Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula meratoris Trachurus capensis Total	Validity code 90 m Speed: 3' 0.18 CA: CATCH/HOUR weight numberr 0.40 56! 0.05 1 0.05 1	<pre>7 kn*10 7 kn*10 1CH/HOUR: 0.90</pre>
BDEPTH: 230 229 Towing dir: 67e Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Errumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total Total Total DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TI Start stop duration TIME :00:31:41 00:46:511 5 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 308 308 Towing dir: 65s Wire out: Sorted: 11 Kg Total catch: SPECIES Maurolicus muelleri Brama brama Total Total Total Catch: DR. FRIDTJOF NANSEN DATE: 7/ 9/06 GEAR TI start stop duration TME :00:52:49 01:07:22 15 (mir LOG :3694.19 3655.11 0.92 FDEPTH: 20 20 BDEPTH: 309 303 Towing dir: 65s Wire out:	Validity code 90 m Speed: 3 0.18 CA: CATCH/HOUR weight number: 0.40 56 0.05 1 0.05 1 0	<pre>7 kn*10 rCH/HOUR: 0.90 % OF TOT. C SAM 0 44.44 850 5 33.33 851 5 5.56 5 5.56 5 5.56 5 5.56 6 5.56 7 100.01 PROJECT STATION:180 SITION:Lat S 303 Long E 152 1 0 kn*10 rCH/HOUR: 45.80 % OF TOT. C SAM 79.91 851 79.91 851 79.91 851 79.91 851 70.00 PROJECT STATION:180 SITION:Lat S 303 Long E 153 1 5 0 kn*10 </pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus Todaropsis eblanae Lolligoncula mercatoris Trachurus capensis Total	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number: 0.40 560 0.05 1 0.05 1	<pre>7 kn*10 PCH/HOUR: 0.90 % OF TOT. C SAM 9 44.44 850 5 33.33 851 5 5.6 5 5.6 5 5.6 5 5.6 5 5.6 85 100.01 PPROJECT STATION:180 SITION:Lat S 303 Long E 152 1 5 9 0 kn*10 PCH/HOUR: 45.80 % OF TOT. C SAM 5 79.91 851 20.09 100.00 PROJECT STATION:160 SITION:Lat S 303 Long E 153 1 5 9 0 kn*10 PCH/HOUR: 26.60</pre>
BDEPTH: 230 229 Towing dir: 670 Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes sagittatus Todarodes sagittatus Todarodes sagittatus Total Total Total DR. FRIDTUOF NANSEN DATE: 7/ 9/06 GEAR TT start stop duration TIME :00:31:41 00:46:51 15 (mir LOG :3693.07 3693.95 0.88 FDEPTH: 100 100 BDEPTH: 108 100 BDEPTH: 308 308 Total catch: SPECIES Maurolicus muelleri Brama brama Total Total Total CEAR TT start stop duration TIME :00:52:49 01:07:22 15 (mir LOG :3694.19 3055.11 0.92 FDEPTH: 20 20 BDEPTH: 309 303 Towing dir: 650 Wire out: Sorted: Kg Total catch:	Validity code 90 m Speed: 3' 0.18 CA' CATCH/HOUR weight number: 0.40 560 0.05 10 0.05	<pre>7 kn*10 PCH/HOUR: 0.90 % OF TOT. C SAM 9 44.44 850 5 33.33 851 5 5.6 5 5.6 6 5.56 6 5.56 9 100.01 PPROJECT STATION:180 SITION:Lat S 303 Long E 152 1 100.00 PROJECT STATION:180 % OF TOT. C SAM 5 79.91 851 20.09 100.00 PROJECT STATION:180 SITION:Lat S 303 1 Long E 153 1 1 PROJECT STATION:180 PROJECT ST</pre>

100.00

26.60

Total

 
 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT STATION:1804

 DATE: 7/ 9/06
 GEAR TYPE: PT No: 2 POSITION:Lat S 3112

 start stop duration
 Long E 1540

 TIME :07:19:28 07:31:53 12 (min) Purpose code: 1

 LOG :3751.01 3751.75 0.72
 Area code : 1

 FDEPTH: 195 195
 GearCond.code:

 BDEPTH: 603 600
 Validity code:

 Towing dir: 3320
 Wire out: 635 m Speed: 38 kn\*10
 Sorted: Kg Total catch: 16.98 CATCH/HOUR: 84.90 CATCH/HOUR % OF TOT. C SAMP weight numbers 81.50 71135 96.00 8514 3.40 5 4.00 SPECIES Maurolicus muelleri Brama brama 100.00 84.90 Total 
 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT:S

 DATE: 7/ 9/06
 GEAR TYPE: PT NO: 2
 POSITION:La

 start
 stop
 duration
 LL

 TIME: 07.143:43 07:55:47
 12
 (min)
 Purpose code: 1

 LOG
 :3752.25
 3752.99
 0.73
 Area code
 :5

 FDEPTH:
 28
 26
 GearCond.code:
 E

 EDEPTH:
 598
 608
 Validity code:
 Towing dir: 3320
 Wire out: 90 m
 Speed: 39 kn\*10
 PROJECT:BE PROJECT STATION:1805 GEAR TYPE: PT No: 2 POSITION:Lat S 3111 Long E 1540 Sorted: Kg Total catch: 0.01 CATCH/HOUR: 0.05 CATCH/HOUR % OF TOT. C SAMP weight numbers 0.05 25 100.00 0.05 100.00 SPECIES Loligo reynaudi 0.05 Total 
 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT STATION:1806

 DATE: 7/ 9/06
 GEAR TYPE: PT No: 1
 POSITION:Lat S
 3106

 start
 stop
 duration
 Long E
 1611

 TIME :14:34:38
 14:54:17
 20 (min)
 Purpose code: 1
 Long E
 1611

 LOG
 373:45
 379:46
 1.15
 Arac code : 5
 5
 FDEPTH: 300
 300
 GearCond.code:
 BDEPTH: 330
 340
 Validity code:
 Towing dir: 245ø
 Wire out: 900 m
 Speed: 40 kn\*10
 Sorted: Kg Total catch: 23.15 CATCH/HOUR: 69.45 CATCH/HOUR % OF TOT. C SAMP weight numbers 54.15 57561 77.97 8515 15.30 6 22.03 SPECIES Maurolicus muelleri Brama brama Total 69.45 100.00 PROJECT:BE PROJECT STATION:18U/ GEAR TYPE: PT No: 2 POSITION:Lat S 3057 Long E 1634 FRIDTJOF NANSEN DR 
 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT ST

 DATE: 7/ 9/06
 GEAR TYPE: PT No: 2
 POSITION:La

 start
 stop
 duration
 Lo

 TIME: 20:36:37
 20:48:39
 12
 (min)
 Purpose code: 1

 LOG
 :825.83
 326.56
 0.72
 Area code
 :5

 FDEPTH:
 80
 80
 GearCond.code:

 BDEPTH:
 256
 262
 Validity code:

 Towing dir:
 254ø
 Wire out: 260 m
 Speed: 38 kn\*10
 Sorted: Kg Total catch: 5.22 CATCH/HOUR: 26.10 CATCH/HOUR % OF TOT. C SAMP weight numbers 25.25 42080 96.74 8516 0.65 10 2.49 8517 0.15 10 0.57 0.05 5 0.19 0.05 10 ^ SPECIES Maurolicus muelleri Etrumeus whiteheadi Todarodes angolensis Todaropsis eblanae Elops sp. 26.15 100.18 Total 
 DR. FRIDTJOF NANSEN
 PROJECT:BE
 PROJECT:DE

 DATE: 7/ 9/06
 GEAR TYPE: PT NO: 2
 POSITION:Li

 start
 stop
 duration
 Li

 TIME :21:01:44
 12 (min)
 Purpose code: 1
 LOG

 LOG :3827.32
 3828.08
 0.75
 Area code : 5
 FDEPTH: 30
 30
 GearCond.code:

 EDEPTH:
 262
 262
 Validity code:
 Towing dir: 254ø
 Wire out: 90 m
 Speed: 39 kn\*10
 PROJECT STATION:1808 Lat S 3058 Long E 1633 Sorted: Kg Total catch: 0.06 CATCH/HOUR: 0.30 CATCH/HOUR SPECIES % OF TOT. C SAMP CATCH/HOUR weight numbers 0.15 130 0.05 5 0.05 5 0.05 10 Maurolicus muelleri C E P H A L O P O D J Inioteuthis capensis Trachurus capensis 50.00 16.67 16.67 16.67 8519 A 8518 100.01

0.30

Total

DR. FRIDTJOF NANSEN E DATE: 8/ 9/06 GEAR TYP	PROJECT:BE PE: PT No: 1 I	PROJECT STATION:1809 POSITION:Lat S 3042
TIME :03:42:14 03:57:15 15 (min) LOG :3875.80 3876.74 0.94	Purpose code Area code	2: 1 : 1
BDEPTH: 25 25 BDEPTH: 141 144 Towing dir: 250ø Wire out:	Validity coo 130 m Speed:	le: 40 kn*10
Sorted: Kg Total catch:	15.66 0	CATCH/HOUR: 62.64
SPECIES	CATCH/HOUR	% OF TOT. C SAMP
Krill Thyrsites atun	34.48 766 9.68	520 55.04 8 15.45
Lolliguncula sp. Maurolicus muelleri	9.44 34 3.64 49	184 15.07 948 5.81 8520
Sepia australis Etrumeus whiteheadi	3.60 1	144 5.75 24 2.17 8522
Lepidopus caudatus Merluccius capensis, juveniles	0.04	68 0.06 4 0.06
Total	62.64	99.98
DD PDIDTITOP NANGEN	PATEOTIE	DDO.TECT STATION-1810
DATE: 8/ 9/06 GEAR TYP start stop duration	PE: PT No: 1 I	PROJECT STATION. 1810 POSITION: Lat S 3059 Long E 1737
TIME :08:38:09 08:51:08 13 (min) LOG :3913.11 3913.88 0.76	Purpose code	2: 1 : 5
FDEPTH: 40 45 BDEPTH: 59 68 Towing dir: 320ø Wire out:	Validity coo 120 m Speed:	ie: ie: 38 kn*10
Sorted: 18 Kg Total catch:	49.49 (	CATCH/HOUR: 228.42
	a) maii (110110	
SPECIES Etrumeus whiteheadi	veight numbe	* OF TOT. C SAMP ers 142 73 39 8524
Engraulis capensis Thyrsites atun	30.32 67 18.92	738 13.27 8523 9 8.28
Lolligoncula mercatoris Trachipterus trachypterus	6.74 36 4.80 20	597 2.95 008 2.10 8525
Total	228.41	99.99
DR. FRIDTJOF NANSEN	ROJECT:BE	PROJECT STATION:1811
DATE: 8/ 9/06 GEAR TYP start stop duration	E: PT No: 1 H	POSITION:Lat S 3125 Long E 1730
TIME :13:56:35 14:13:36 17 (min) LOG :3959.56 3960.54 0.97	Area code	2: 1 : 5
BDEPTH: 157 152	Validity cod	le:
Towing dir: 68ø Wire out:	330 m Speed:	40 kn*10
Towing dir: 68ø Wire out: Sorted: Kg Total catch:	330 m Speed: 4.56 (	40 kn*10 CATCH/HOUR: 16.09
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES	330 m Speed: 4.56 CATCH/HOUR	40 kn*10 CATCH/HOUR: 16.09 % OF TOT. C SAMP
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204	40 kn*10 CATCH/HOUR: 16.09 % OF TOT. C SAMP ers 142 100.00 8526
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total	330 m Speed: 4.56 0 CATCH/HOUR weight numbe 16.09 204 16.09	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP 242 100.00 8526 100.00
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN	330 m Speed: 4.56 (CATCH/HOUR weight numbe 16.09 204 16.09	40 kn*10 CATCH/HOUR: 16.09 * OF TOT. C SAMP ers 142 100.00 8526 
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI Start stop duration TIME :17:51:00 18:05:15 (min)	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose codd	40 kn*10 CATCH/HOUR: 16.09 * OF TOT. C SAMP PTS 442 100.00 8526 100.00 PROJECT STATION:1812 PROJECT STATION:1812 20SITION:Lat S 3134 Long E 1703 : 1
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN I DATE: 8/ 9/06 GEAR TYI Start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose codd Area code GearCond.coc	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP ers 142 100.00 8526 100.00 PROJECT STATION:1612 POSITION:Lat S 3134 Long E 1703 : 1 : 5 ie:
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN E DATE: 8/ 9/06 GEAR TYI start stop duration TIME :17:51:00 18:05:35 15 (min) LOG SP0.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 Towing dir: 65ø Wire out:	A30 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code Area code GearCond.coc Validity coc 20 m Speed:	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP prs 142 100.00 8526 100.00 PROJECT STATION:1812 POSITION:Lat S 3134 Long E 1703 : 1 : 5 ie: 37 km*10
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN E DATE: 8/ 9/06 GEAR TY Start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 BDEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch:	330 m Speed: 4.56 ( CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PROJECT:BE PE: PT No: 1 I Purpose codd Area code GearCond.coc Validity coc 120 m Speed: 5.82 (	40 kn*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP 2TS 442 100.00 8526 100.00 PROJECT STATION:1812 2OSITION:Lat S 3134 Long E 1703 : 1 : 5 42: 37 kn*10 2ATCH/HOUR: 23.28
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI Start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 1 0 10 BDEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code Area code GearCond.coc Validity coc 120 m Speed: 5.82 C CATCH/HOUR weight numbe	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP Prs 142 100.00 8526 100.00 PROJECT STATION:1812 POSITION:Lat S 3134 Long E 1703 : 1 : 5 ie: 37 km*10 2ATCH/HOUR: 23.28 * OF TOT. C SAMP PRS
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI Start stop duration TIME start stop duration TIME start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEFTH: 10 10 BDEFTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri	A.56 CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 204 16.09 204 16.09 204 205 205 204 205 205 204 205	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP prs 42 100.00 8526 100.00 PROJECT STATION:1812 POSITION:Lat S 3134 Long E 1703 15 16: 137 km*10 2ATCH/HOUR: 23.28 * OF TOT. C SAMP prs 84 96.74 8527 84 96.74 8527
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI start stop duration TIME :17:51:00 18:05:35 15 (min) LGG :3990.39 3991.26 0.85 FDEFTH: 10 10 BDEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Legidopus caudatus Todarodes angolensis	A30 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code GearCond.coc Validiy.coc 120 m Speed: 5.82 C CATCH/HOUR weight numbe 22.52 1 0.56 2 0.04 0.04	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP prs 142 100.00 8526 100.00 PROJECT STATION:1812 20SITION:Lat S 3134 20SITION:Lat S 3134 1: 5 1:
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI Start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 Towing dir: 65e Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lampanyches hetoris Merluccius paradoxus, juvenile Trachurus camensis	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE VE: PT No: 1 I PUPDes code GearCond.code GearCond.code CATCH/HOUR weight code CATCH/HOUR weight code CATCH/HOUR	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP prs 42 100.00 8526 
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN E DATE: 8/ 9/06 GEAR TYI start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 TOwing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lepidopus caudatus Todarodes angolensis Lampanyctodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code Area code GearCond.coc Validity coc 120 m Speed: 5.82 C CATCH/HOUR weight numbe 22.52 5 0.56 5 0.04	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP PTS 42 100.00 8526 100.00 PROJECT STATION:1812 POSITION:Lat S 3134 Long E 1703 : 1 : 5 40: 40 F TOT. C SAMP * OF TOT. C SAMP PTS 80 F TOT. C SAMP PTS 84 96.74 8527 54 2.41 8528 8 0.17 12 0.17 8530 4 0.17 12 0.17 8530 4 0.17 8539 100.00
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN E DATE: 8/ 9/06 GEAR TYI Start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 DEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lepidopus caudatus Todarodes angolensis Lampanyctodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code GearCond.cox Validity code 120 m Speed: 5.82 C CATCH/HOUR weight numbe 22.52 : 0.56 2 0.04 0.04 0.04 0.04 0.04 23.28	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP Prs 142 100.00 8526 100.00 PROJECT STATION:1812 20SITION:Lat S 3134 Long E 1703 : 1 : 5 16: 37 km*10 2ATCH/HOUR: 23.28 * OF TOT. C SAMP Prs 84 96.74 8527 4 0.17 12 0.17 8530 4 0.17 4 0.17 8529 100.00
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI Start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lampanytodes hactoris Merluccius paradoxus, juvenile Trachurus capensis Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYH date: 8/ 9/06 GEAR TYH	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code GearCond.coc Validity. 5.82 C CATCH/HOUR weight numbe 22.52 0 CATCH/HOUR weight numbe 22.52 0 CATCH/HOUR weight numbe 22.52 0 0.04 0 0.05	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP prs 42 100.00 8526 100.00 PROJECT STATION:1812 20SITION:Lat S 3134 1 Long E 1703 1 1 Long E 1703 1 1 Long E 1703 1 2 23.28 * OF TOT. C SAMP prs 4 0.17 4 0.17 4 0.17 4 0.17 4 0.17 5 20 100.00 PROJECT STATION:1813 20SITION:Lat S 3146 20SITION:Lat S 3146 20SI
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN I DATE: 8/ 9/06 GEAR TYI start stop duration TIME :17:51:00 10 8:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lepidopus caudatus Total DR. FRIDTJOF NANSEN E DATE: 8/ 9/06 GEAR TYI start stop duration TIME :22:00:42 22:15:43 15 (min) LOG :4025.92 4026.86 0.94	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code Area code CATCH/HOUR 0.56 2 0.56 2 0.56 2 0.04 0.	40 kn*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP PTS 142 100.00 8526 100.00 PROJECT STATION:1812 2OSITION:Lat S 3134 Long E 1703 : 1 : 5 ie: ie: 37 kn*10 2ATCH/HOUR: 23.28 * OF TOT. C SAMP PTS 80 0.17 12 0.17 8529 4 0.17 12 0.17 8530 4 0.17 12 0.17 8530 4 0.17 100.00 PROJECT STATION:1813 2OSITION:Lat S 3146 Long E 1631 : 5
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYT start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lepidopus caudatus Todarodes angolensis Lampanyctodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYT start stop duration TIME :22:00:42 22:15:43 15 (min) LOG :4025.92 4026.86 0.94 FDEPTH: 100 100 BDEFTH: 346 341	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 204 16.09 204 PROJECT:BE E: PT No: 1 I Purpose codd Area code GearCond.coc Validity coc CATCH/HOUR weight numbe 22.52 : 0.56 : 0.04 0.05 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0	40 km*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP prs 42 100.00 8526 100.00 PROJECT STATION:1812 POSITION:Lat S 3134 Long E 1703 : 1 : 5 2005TTION:Lat S 3134 CATCH/HOUR: 23.28 * OF TOT. C SAMP * OF TOT. C SAMP prs 84 96.74 8527 564 2.41 8528 8 0.17 4 0.17 8520 100.00 PROJECT STATION:1813 POSITION:Lat S 3146 0.17 4 0.17 8520 100.00 PROJECT STATION:1813 PROJECT STATION:1815 PROJECT STATION:1815
Towing dir: 68% Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEFTH: 10 10 BDEFTH: 270 265 Towing dir: 65% Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lepidopus caudatus Todarodes angolensis Lampanyctodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total DR. FRIDTJOF NANSEN F DATT: 8/ 9/06 GEAR TYI start stop duration TIME :22:00:42 22:15:43 15 (min) LOG :4025.92 4026.86 0.94 FDEFTH: 100 100 BDEFTH: 346 341 Towing dir: 62% Wire out:	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 PROJECT:BE PE: PT No: 1 I Purpose code Area code GearCond.coc Validity coc CATCH/HOUR weight numbe 22.52 : 0.56 2 0.04 0.04 0.04 0.04 0.04 23.28 PROJECT:BE PE: PT No: 2 I Purpose code Area code CATCH/HOUR Weight numbe 22.52 : 0.56 2 0.04 0.	40 kn*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP Prs 42 100.00 8526 100.00 PROJECT STATION:1812 20SITION:Lat S 3134 2: 1 5 5 16: 37 kn*10 2ATCH/HOUR: 23.28 * OF TOT. C SAMP Prs 84 96.74 8527 4 0.17 12 0.17 8530 4 0.17 14 0.17 15 5 16: 16: 16: 17 5 16: 17 5 16: 17 5 16: 17 5 16: 17 5 16: 16: 17 5 16: 17 5 16: 10: 10: 10: 10: 10: 10: 10: 10
Towing dir: 68% Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEFTH: 10 10 BDEPTH: 270 265 Towing dir: 65% Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Legidopus caudatus Todarodes angolensis Lampanyctodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI start stop duration TIME :22:00:42 22:15:43 15 (min) LOG :4025.92 4026.86 0.94 FDEFTH: 100 100 BDEFTH: 346 341 Towing dir: 62% Wire out: Sorted: Kg Total catch:	330 m Speed: 4.56 ( CATCH/HOUR weight numbelie 16.09 200 16.09 200 16.09 PROJECT:BE PE: PT No: 1 I Purpose code CATCH/HOUR weight numbelie 22.52 1 0.56 2 0.04 0 0.04 0 0.04 0.05 0.	40 kn*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP PTS 142 100.00 8526 100.00 PROJECT STATION:1812 20SITION:Lat S 3134 15 15 16: 37 kn*10 2ATCH/HOUR: 23.28 * OF TOT. C SAMP PTS 64 96.74 8527 54 96.74 8527 54 0.17 4 0.17 8530 0.17 8530 100.00 PROJECT STATION:1813 20SITION:Lat S 3146 Long E 1631 : 5 16: 15 15 15 15 15 15 15 15 15 15
Towing dir: 68s Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/9/06 GEAR TYI start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 Towing dir: 65s Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lampanycodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total DR. FRIDTJOF NANSEN F DATE: 8/9/06 GEAR TYI start stop duration TME :22:00:42 22:15:43 15 (min) LOG :4025.92 4026.86 0.94 FDEPTH: 100 100 BDEPTH: 346 341 Towing dir: 62s Wire out: Sorted: Kg Total catch: SPECIES	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 204 16.09 204 16.09 204 16.09 204 CATCH/HOUR weight numbe 20.20 m Speed: 5.82 C CATCH/HOUR weight numbe 22.52 C CATCH/HOUR weight numbe 23.28 PROJECT:BE PE: PT No: 2 I PUPOSe code GearCod.cod 0.04 0.	40 kn*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP PTS 42 100.00 8526 100.00 PROJECT STATION:1812 20SITION:Lat S 3134 1 Long E 1703 1 1 Long E 1703 1 1 Long E 1703 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Towing dir: 68ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYT start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.39 3991.26 0.85 FDEPTH: 10 10 BDEPTH: 270 265 Towing dir: 65ø Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lepidopus caudatus Todarodes angolensis Lampanyctodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYT start stop duration TIME :22:00:42 22:15:43 15 (min) LOG :4025.92 4026.86 0.94 FDEFTH: 100 100 BDEFTH: 346 341 Towing dir: 62ø Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Merluccius paradoxus, juvenile Lampanyctodes hectoris	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 204 16.09 204 PROJECT:BE E: DT No: 1 I Purpose codd Area code GearCond.coc Validity coc CATCH/HOUR weight numbe 22.52 : 0.56 : 0.04 0.05 0	40 kn*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP PTS 42 100.00 8526 100.00 PROJECT STATION:1812 POSITION:Lat S 3134 Long E 1703 : 1 : 5 2005TTION:Lat S 3134 Long E 1703 : 1 : 5 2005TTION:Lat S 3134 CATCH/HOUR: 23.28 * OF TOT. C SAMP PTS 40.17 44 0.17 44 0.17 44 0.17 44 0.17 44 0.17 44 0.17 4529 100.00 PROJECT STATION:1813 POSITION:Lat S 3146 : 1 ENDECT STATION:1813 PROJECT STATION:1813 PROJECT STATION:1813 2005TTION:Lat S 3146 : 1 CATCH/HOUR: 24.40 * OF TOT. C SAMP PTS 40 kn*10 2ATCH/HOUR: 24.40 * OF TOT. C SAMP 1.64 8528 1.64 8528 1.65 1.64 8528 1.65 1.65 8529 1.65 1.65 1.65 8529 1.65 1.65 1.65 8529 1.65 1.65 1.65 1.65 1.65 1.65 1.55 1.55
Towing dir: 68s Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI start stop duration TIME :17:51:00 18:05:35 15 (min) LOG :3990.33 3991.26 0.85 FDEFTH: 10 10 BDEFTH: 270 265 Towing dir: 65s Wire out: Sorted: Kg Total catch: SPECIES Etrumeus whiteheadi Maurolicus muelleri Lepidopus caudatus Todarodes angolensis Lampanyctodes hectoris Merluccius paradoxus, juvenile Trachurus capensis Total DR. FRIDTJOF NANSEN F DATE: 8/ 9/06 GEAR TYI start stop duration TIME :22:00:42 22:15:43 15 (min) LOG :4025.92 4026.86 0.94 FDEFTH: 100 100 BDEFTH: 346 341 Towing dir: 62s Wire out: Sorted: Kg Total catch: SPECIES Maurolicus muelleri Merluccius paradoxus, juvenile Lampanyctodes hectoris Maurolicus muelleri Merluccius paradoxus, juvenile Lampanyctodes hectoris Data : Kg Total catch: SPECIES	330 m Speed: 4.56 C CATCH/HOUR weight numbe 16.09 204 16.09 204 16.09 204 PROJECT:BE PE: PT No: 1 I Purpose code Area code GearCond.cor Validity cor 0.56 2 CATCH/HOUR weight numbe 22.52 1 0.56 2 0.04 0.0	40 kn*10 2ATCH/HOUR: 16.09 * OF TOT. C SAMP PTS 142 100.00 8526 100.00 PROJECT STATION:1812 20SITION:Lat S 3134 2: 1 1: 5 1: 1 1: 5 1: 5 1: 5 1: 5 1: 6 1: 7 1: 7

	EAR TYPE: PT No: 2 POSITION:Lat S 3146
start stop durat TIME :22:24:28 22:39:14 15	(min) Purpose code: 1
LOG :4027.35 4028.34 0.99	Area code : 5
BDEPTH: 340 334	Validity code:
Towing dir: 246ø Wire	e out: 180 m Speed: 40 kn*10
Sorted: 2 Kg Total o	catch: 13.32 CATCH/HOUR: 53.28
SPECTES	
SPECIES	weight numbers
Lampanyctodes hectoris Maurolicus muelleri	44.28 24820 83.11 8533 5.96 8204 11.19 8532
Brama brama Lycoteuthis diadema	2.80 4 5.26 8531 0.24 80 0.45
TOTAL	53.28 100.01
DR. FRIDTJOF NANSEN DATE: 8/ 9/06 GF	PROJECT:BE PROJECT STATION:1815 EAR TYPE: PT No: 2 POSITION:Lat S 3145
start stop durat	tion Long E 1634
LOG :4028.88 4030.05 1.16	5 Area code : 5
FDEPTH: 20 20 BDEPTH: 330 325	GearCond.code: Validity code:
Towing dir: 64ø Wire	e out: 100 m Speed: 40 kn*10
Sorted: Kg Total o	catch: 38.48 CATCH/HOUR: 144.30
2552252	
SPECIES	CATCH/HOUR % OF TOT. C SAMP weight numbers
Brama brama Maurolicus muelleri	122.25 113 84.72 8536 19.80 31984 13.72 8535
Lampanyctodes hectoris	2.10 960 1.46 8534
Lycoteuthis diadema	0.04 8 0.03
Todaropsis eblanae	0.04 8 0.03
Total	144.31 100.02
DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GF	PROJECT:BE PROJECT STATION:1816 EAR TYPE: PT No: 4 POSITION:Lat S 3155
start stop durat	tion Long E 1610
LOG :4055.42 4057.17 1.72	2 Area code : 1
FDEPTH: 5 5 BDEPTH: 516 534	GearCond.code: Validity code:
Towing dir: 174ø Wire	e out: 130 m Speed: 40 kn*10
Sorted: Kg Total o	catch: 44.16 CATCH/HOUR: 88.32
SPECIES	weight numbers
Symbolophorus boops Brama brama	61.00 5770 69.07 8537 17.80 16 20.15 8538
Lycoteuthis diadema	8.10 426 9.17 8539 0.50 4 0.57
Todarodes angolensis	0.48 64 0.54
Maurolicus muelleri Trachurus capensis	0.40 416 0.45 8540 0.02 4 0.02 8541
Abriliopsis gilchristi	0.02 4 0.02
Total	88.32 99.99
DR. FRIDTJOF NANSEN	PROJECT:BE PROJECT STATION:1817
DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GE start stop durat	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 ion Long E 1619
DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GF start stop durat TIME :09:13:10 09:46:21 33 LOG :4109 64 4111 25 1 63	PROJECT:BE PROJECT STATION:1817 SAR TYPE: PT No: 1 POSITION:Lat S 3238 cion Long E 1619 (min) Purpose code: 1 trae.code : 5
DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GE start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315	PROJECT:BE PROJECT STATION:1817 AR TYPE: PT No: 1 POSITION:Lat S 3238 cion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code:
DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEPTH: 1451 1636 TOWING dir: 2500 Wire	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 cion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: = out: 850 m Speed: 35 kn*10
DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 DPEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 2500 Wire Sorted: Kg Total o	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 cion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: e out: 850 m Speed: 35 kn*10 catch: 14.84 CATCH/HOUR: 26.98
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total c	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 ion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: e out: 850 m Speed: 35 kn*10 catch: 14.84 CATCH/HOUR: 26.98
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 PDEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 ion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: e out: 850 m Speed: 35 kn*10 satch: 14.84 CATCH/HOUR: 26.98 CATCH/HOUR % OF TOT. C SAMP weight numbers
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 PDEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus mmelleri	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 tion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: a out: 850 m Speed: 35 kn*10 catch: 14.84 CATCH/HOUR: 26.98 CATCH/HOUR % OF TOT. C SAMP weight numbers of FOT. C SAMP weight numbers 0 98.93 8542
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 2500 Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOFTYCHIDAE Abriliopsis gilchristi	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 tion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: e out: 850 m Speed: 35 kn*10 catch: 14.84 CATCH/HOUR: 26.98 CATCH/HOUR % OF TOT. C SAMP weight numbers 26.69 2949 98.93 8542 0.13 4 0.48 0.04 7 0.15
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abbriliopsis gilchristi Cranchia scabra Todarodes angolensis	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 tion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: e out: 850 m Speed: 35 kn*10 catch: 14.84 CATCH/HOUR: 26.98 CATCH/HOUR % OF TOT. C SAMP weight numbers 26.69 2949 98.93 8542 0.13 4 0.48 0.04 7 0.15 0.02 2 0.07
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEFTH: 300 315 BDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus cadatus	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 tion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: e out: 850 m Speed: 35 kn*10 CATCH/HOUR % OF TOT. C SAMP weight numbers 26.69 29849 98.93 8542 0.13 4 0.48 0.04 7 0.15 0.02 2 0.07 0.02 2 0.07 0.02 2 0.07
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEFTH: 300 315 BDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Todarodes angolensis Todarodes Jichristi Elops sp.	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 fion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: s out: 850 m Speed: 35 kn*10 CATCH/HOUR % OF TOT. C SAMP weight numbers 26.69 29849 98.93 8542 0.13 4 0.48 0.04 7 0.15 0.02 2 0.07 0.02 2 0.07 0.02 5 0.07 8544 0.04 7 0.07
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 PDETTH: 300 315 BDETTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total o SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Ellops sp. Emmelichthys nitidus Lampanyctodes hectoris	PROJECT:BE         PROJECT STATION:1817           EAR TYPE: PT No: 1         POSITION:Lat         S         3238           cion         Long         E         1619           (min)         Purpose code: 1         1         Area code         5           GearCond.code:         Validity code:         2         2           Pout: 850 m         Speed: 35 kn*10         5           CattCH/HOUR         & OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Ellops sp. Emmelichthys nitidus Lampanyctodes hectoris	PROJECT:BE         PROJECT STATION:1817           EAR TYPE: PT No: 1         POSITION:Lat         S         3238           cion         Long         E         1619           (min)         Purpose code: 1         1         Area code         5           GearCond.code:         Validity code:         2         2           validity code:         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         4         0.07         0.02         8543           0.02         2         0.07         0.02         85           0.02         4         0.07         0.02         8543           0.02         4         0.07         0.07         8543           0.02         4         0.07         0.01         0.02         100.05
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Ellops sp. Emmelichthys nitidus Lampanyctodes hectoris	PROJECT:BE         PROJECT STATION:1817           EAR TYPE: PT No: 1         POSITION:Lat         S         3238           cion         Long         E         1619           (min)         Purpose code:         1           Area code         :5         GearCond.code:           Validity code:         validity code:         26.98           cATCH/HOUR         & OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         2         0.07         0.02         4         0.07         0.02         85         0.07         8543
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDETH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Ellops sp. Emmelichthys nitidus Lampanyctodes hectoris Total	PROJECT:BE         PROJECT STATION:1817           SAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         1           1         Area code : 5         5           GearCond.code:         Validity code: 2         0           p out: 850 m         Speed: 35 kn*10           satch:         14.84         CATCH/HOUR: 26.98           CATCH/HOUR         4 OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         4         0.07         0.02         85         0.07         8543
DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH start stop durat TIMS :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDETH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOFTYCHIDAE Abriliopsig sjlchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH	PROJECT:BE         PROJECT STATION:1817           SAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         1           1         Area code : 5         5           GearCond.code:         Validity code: 2         0           ≥ out: 850 m         Speed: 35 kn*10           batch:         14.84         CATCH/HOUR: 26.98           CATCH/HOUR % OF TOT. C         SAMP           weight numbers         26.69         9849           0.13         4         0.48           0.02         2         0.07           0.02         2         0.07           0.02         2         0.07           0.02         2         0.07           0.02         2         0.07           0.02         4         0.07           0.02         85         0.07           0.02         8         0.07           0.02         8         0.07           0.02         8         0.07           0.02         100.05         100.05
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 EDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsig gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Enmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH start stop durat TIME: 15:58:13 16:10:32 12	PROJECT:BE         PROJECT STATION:1817           SAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         Area code : 5           GearCond.code:         Validity code:         validity code:           a out: 850 m         Speed: 35 kn*10           batch:         14.84         CATCH/HOUR:         26.98           CATCH/HOUR % OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         8543
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDETTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Enmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH start stop durat TIME :15:58:13 16:10:32 12 LOG :4151.24 4152.10 0.68 FDEFTH: 250 250	PROJECT:BE         PROJECT STATION:1817           SAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         1           Area code : 5         GearCond.code:         Validity code:           a out: 850 m         Speed: 35 kn*10           batch:         14.84         CATCH/HOUR:         26.98           CATCH/HOUR & OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         8543
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 EDEPTH: 1451 1636 Towing dir: 2500 Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH DATE: 9/ 9/06 GH TIME :15:58:13 16:10:32 12 LOG :4151.24 4152.10 0.85 FDDEPTH: 250 250	PROJECT:BE         PROJECT STATION:Lât         S         3238           tion         Long E         1619           (min)         Purpose code: 1         Area code : 5         5           GearCond.code:         Validity code: 2         0         7           a out: 850 m         Speed: 35 kn*10         5         5           catch:         14.84         CATCH/HOUR:         26.98           CATCH/HOUR %         OF TOT. C         SAMP           weight         numbers         26.69         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         8543         -         -           0.02         4         0.07         8543         -         -           0.02         2         0.07         100.05         -         -           PROJECT:BE         PROJECT STATION:1818         3224         -         -         -           0.02         2         POSITION:Lat
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 EDEPTH: 1451 1636 Towing dir: 2500 Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DRF: 9/9/06 GH DRT: 9/9/06 GH TIME :15:58:13 16:10:32 12 LOG :4151.24 4152.10 0.85 FDEPTH: 250 250 EDEPTH: 318 319 Towing dir: 3300 Wire Carting T	PROJECT:BE         PROJECT STATION:1817           SAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         Area code : 5           GearCond.code:         Validity code:         Validity code:           ≥ out: 850 m         Speed: 35 kn*10           batch:         14.84         CATCH/HOUR:         26.98           CATCH/HOUR *         OF TOT. C         SAMP           weight numbers         26.69         98.93         8542           0.13         4         0.48         0.04         7           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         2         0.07         8543         -         -           27.00         -         100.05         -         3224           Cherry Pri No: 2         POSITION:Lat S         3224         -           (min)         Purpose code: 1         100.05         -           FROJECT:BE         PROJECT
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH Start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 EDEFTH: 300 315 EDEFTH: 1451 1636 Towing dir: 2500 Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abbrilopsis gilchristi Cranchia scabra Todarodes angolennis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DRE: 9/ 9/06 GH Elops Sp. Emmelichtys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DRE: 9/ 9/06 GH Start stop durat TIME :15:55:13 16:10:32 12 LOG :4151.24 4152.10 0.68 FDEFTH: 216 250 EDEFTH: 310 319 Towing dir: 3300 Wire Sorted: Kg Total of	PROJECT:BE         PROJECT STATION:Lat         S         3238           fin         Long         E         1619           (min)         Purpose code:         1           Area code         :5         GearCond.code:           Validity code:         a         validity code:           a out:         850 m         Speed: 35 kn*10           catch:         14.84         CATCH/HOUR:         26.98           CATCH/HOUR         % OF TOT. C         SAMP           weight         numbers         % OF TOT. C         SAMP           0.13         4         0.48         0.04         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         2         0.07         8543
DR. FRIDTJOF NANSEN Start stop durat TIME :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 EDEFTH: 1451 1636 Towing dir: 2500 Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH Start stop durat TIME :15:58:13 16:10:32 12 LOG :4151.24 4152.10 0.68 FDEFTH: 250 250 EDEFTH: 216 330 Wire Sorted: Kg Total of SPECIES	PROJECT:BE         PROJECT STATION:Lat         S         3238           fin         Long         E         1619           (min)         Purpose code:         1         Area code         5           GearCond.code:         Validity code:         26.98         26.69         29849         98.93         8542           0.13         4         0.48         0.15         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.7           0.02         2         0.07         0.02         5         0.07         8543
DR. FRIDTJOF NANSEN SATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LGG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abbrilopsig gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Abbrilops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :15:58:13 16:10:32 12 LGG :4151.24 4152.10 0.88 FDEFTH: 216 250 BDETTH: 250 250 BDETTH: 216 330ø Wire Sorted: Kg Total of SPECIES Lampanyctodes hectoris	PROJECT:BE         PROJECT STATION:1817           EAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         1           1         Area code : 5         5           GearCond.code:         Validity code:         26.98           CATCH/HOUR         & OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         2         0.07         0.02         4         0.07           0.02         4         0.07         0.02         85         0.07         8543
DR. FRIDTJOF NANSEN Start stop durat TIME :09:13:10 09:46:21 33 LGG :4109.64 4111.25 1.63 FDEPTH: 300 315 BDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Abriliopsis gilchristi Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GF Start stop durat TIME :15:58:13 16:10:32 12 LGG :4151.24 4152.10 0.85 FDEFTH: 318 319 Towing dir: 330ø Wire Sorted: Kg Total of SPECIES Lampanyctodes hectoris Etrimeus whiteheadi	PROJECT:BE         PROJECT STATION:1817           EAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         1           1         Area code : 5         5           GearCond.code:         Validity code: 2         0           Poult: 850 m         Speed: 35 kn*10         5           catch:         14.84         CATCH/HOUR: 26.98           CATCH/HOUR         % OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07         0.02         2         0.07           0.02         2         0.07         0.02         2         0.07         0.02         2         0.07         0.02         2         0.07         0.02         2         0.07         0.02         2         0.07         0.02         2         0.07
DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :09:13:10 09:46:21 33 LGG :4109.64 4111.25 1.63 FDEPTH: 300 315 BDEFTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/9/06 GH start stop durat TIME :15:58:13 16:10:32 12 LGG :4151.24 4152.10 0.85 FPEPTH: 318 319 Towing dir: 330ø Wire Sorted: Kg Total of SPECIES Lampanyctodes hectoris Etrumeus whiteheadi Maurolicus muelleri	PROJECT:BE PROJECT STATION:1817 EAR TYPE: PT No: 1 POSITION:Lat S 3238 ion Long E 1619 (min) Purpose code: 1 1 Area code : 5 GearCond.code: Validity code: Pout: 850 m Speed: 35 kn*10 patch: 14.84 CATCH/HOUR: 26.98 CATCH/HOUR & OF TOT. C SAMP weight numbers 26.69 29849 98.93 8542 0.13 4 0.48 0.04 7 0.15 0.02 2 0.07 0.02 2 0.07 0.02 2 0.07 0.02 2 0.07 0.02 4 0.07 0.02 4 0.07 0.02 4 0.07 0.02 85 0.07 8543 27.00 100.05 PROJECT:BE PROJECT STATION:1818 EAR TYPE: PT No: 2 POSITION:Lat S 3224 ion Long E 1653 (min) Purpose code: 1 GearCond.code: Validity code: PROJECT: BE PROJECT STATION:1818 EAR TYPE: PT No: 2 POSITION:Lat S 3224 ion Long E 1653 (min) Purpose code: 1 GearCond.code: Validity code: PROJECT: BE PROJECT STATION:1818 EAR TYPE: PT No: 2 POSITION:Lat S 3224 ion Long E 1653 (min) Purpose code: 1 GearCond.code: PROJECT:BE PROJECT STATION:1818 EAR TYPE: PT No: 2 POSITION:Lat S 3224 ion Long E 1653 (min) Purpose code: 1 GearCond.code: 1 CATCH/HOUR & OF TOT. C SAMP Weight numbers 74.70 42730 49.14 8545 74.70 915 48.68 8546 3.30 2340 2.17 8547 
DR. FRIDTJOF NANSEN Start stop durat TIMS :09:13:10 09:46:21 33 LOG :4109.64 211.25 1.61 FDEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 250s Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsis gilchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH start stop durat TME 15:58:13 16:10:32 12 LOG :4151.24 4152.10 0.88 FPEPTH: 250 250 BDEPTH: 318 319 Towing dir: 330s Wire Sorted: Kg Total of SPECIES Lampanyctodes hectoris Elops sp. Elops Sp. Elops Sp. Sorted: Kg Total of SPECIES Lampanyctodes hectoris Etrumeus whicheadi Maurolicus muelleri Total	PROJECT:BE         PROJECT STATION:1817           SAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         1           Area code         :5         GearCond.code: Validity code:           > out: 850 m         Speed: 35 kn*10           statch:         14.84         CATCH/HOUR:         26.98           CATCH/HOUR         & OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         2         0.07         0.02         100.05           PROJECT:BE         PROJECT STATION:1818         2244         100.05           PROJECT:BE         PROJECT STATION:1818         3224           ion         Long E         1653         100.05           PROJECT:BE         PROJECT STATION:1818         5           earcond.code:         1         GearCond.code:
DR. FRIDTJOF NANSEN Start stop durat TIMS :09:13:10 09:46:21 33 LOG :4109.64 4111.25 1.61 FDEPTH: 300 315 BDEPTH: 1451 1636 Towing dir: 250ø Wire Sorted: Kg Total of SPECIES Maurolicus muelleri STERNOPTYCHIDAE Abriliopsig sjlchristi Cranchia scabra Todarodes angolensis Lepidopus caudatus MYCTOPHIDAE Elops sp. Emmelichthys nitidus Lampanyctodes hectoris Total DR. FRIDTJOF NANSEN DATE: 9/ 9/06 GH Start stop durat TIME :15:58:13 16:10:32 12 LOG :4151.24 4152.10 0.88 FDEPTH: 316 20 200 BDEPTH: 318 319 Towing dir: 330ø Wire Sorted: Kg Total of SPECIES Lampanyctodes hectoris Etrumeus whicheadi Maurolicus muelleri Total	PROJECT:BE         PROJECT STATION:1817           SAR TYPE: PT No: 1         POSITION:Lat S         3238           ion         Long E         1619           (min)         Purpose code: 1         Area code : 5           GearCond.code:         Validity code:         2           > out: 850 m         Speed: 35 kn*10           statch:         14.84         CATCH/HOUR:         26.98           CATCH/HOUR         & OF TOT. C         SAMP           weight numbers         26.69         29849         98.93         8542           0.13         4         0.48         0.04         7         0.15           0.02         2         0.07         0.02         2         0.07           0.02         2         0.07         0.02         4         0.07           0.02         2         0.07         0.02         100.05           PROJECT:BE         PROJECT STATION:1818         3224           ion         Long E         1653           (min)         Purpose code: 1         1           GearCond.code:         Validity code:         3224           ion         Speed: 37 kn*10         3240           catch:         30.40         <

 DATE: 9/9/06
 GEAR TYPE: FT No: 2
 PRODUCT SIA104: 3123

 start stop
 duration
 Long E
 1652

 TIME :16:25:31
 16:37:27
 12 (min)
 Purpose code: 1

 LOG :4152.94
 4153.85
 0.91
 Area code : 1

	FDEPTH: BDEPTH: Tow	60 320 ing dir:	50 320 330ø	Wire out:	GearCond Validity 176 m Spe	l.code: / code: eed: 38	kn*10	
	Sorted:	Kg	Tot	al catch:	1.44	CATC	H/HOUR:	7.20
SPEC	IES				CATCH/H weight n	HOUR	% OF TOT. C	SAMP
Allo	thunnus fa	llai			7.00	5	97.22	05.40
Toda	rodes ango	lensis			0.10	35	1.39	8548
Tota	1				7.20		100.00	
	DR. FRIDTJJ DATE: 9/ 9 S TIME :22: LOG :419 FDEPTH: BDEPTH: Tow	OF NANSEN /06 tart st 42:09 23: 2.39 419 50 202 ing dir:	op d 08:57 3.93 50 206 270ø	GEAR TY uration 27 (min 1.52 Wire out:	PROJECT:BE PE: PT No: ) Purpose Area cod GearCond Validity 175 m Spe	PR 1 POSI code: de : l.code: r code: r code: sed: 35	COJECT STATI TION:Lat Long 1 5 kn*10	CON:1820 S 3217 E 1723
	Sorted:	Kg	Tot	al catch:	0.29	CATC	H/HOUR:	0.64
SPEC	IES				CATCH/H weight n	HOUR numbers	% OF TOT. C	SAMP
Toda	rodes ango	lensis			0.27	40	42.19	05.55
Merl Abri	lionsis gar	adoxus, j lchristi	uvenil	e	0.20	31	31.25	8545
Cham	psodon cap	ensis			0.02	2	3.13	
Maur	olicus mue	lleri			0.02	11	3.13	8547
Lepi	dopus caud	atus			0.02	4	3.13	
Trac	burus cape	nsis			0.02	29	3.13	8546
Tota	1				0.64		100.03	
	s TIME :02: LOG :422 FDEPTH: BDEPTH: Tow Sorted:	tart st 57:21 03: 2.53 422 20 139 ing dir: Kg	op d 12:01 3.44 20 142 240ø Tot	uration 15 (min 0.91 Wire out: al catch:	) Purpose Area cod GearCond Validity 125 m Spe 24.02	code: le : l.code: / code: eed: 40 CATC	Long 1 1 kn*10 cH/HOUR:	E 1747 96.08
SPEC	IES				CATCH/H weight n	IOUR numbers	% OF TOT. C	SAMP
Maur	olicus mue	lleri ercetori-			95.00	114004	98.88	8548
Toda	rodes ango	ercatoris lensis			0.32	132	0.33	
Sepi	a australi	s			0.12	28	0.12	
Trac	hurus cape	nsis			0.04	16	0.04	8549
Tota	1				95.60		99.49	
	DR. FRIDTJ DATE:10/9 S TIME :100: 100: :428 FDEPTH: BDEPTH: Tow Sorted:	OF NANSEN /06 tart st 11:17 10: 0.87 428 115 144 ing dir: 1 Kg	op d 30:11 2.00 115 142 25ø Tot	GEAR TY uration 19 (min 1.13 Wire out: al catch:	PROJECT:BE PE: PT No: Area cod GearCond Validity 330 m Spe 20.56	PR 1 POSI code: de : 1.code: / code: eed: 40 CATC	COJECT STATI TION:Lat Long 5 kn*10 CH/HOUR:	CON:1822 S 3229 E 1749 64.93
ar -								
SPEC	TER				CATCH/H weight r	numbers	s of TOT. (	SAMP
Maur	olicus mue	lleri			48.88	56488	75.28	8550
Bram	a brama				14.21	6	21.89	0550
Etru	meus white	neadi hectoric			1.07	44	1.65	8552
Tota	1				64.92	420		0001
.Jud	-				· · · · 2 2			

DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T	PROJECT:BE YPE: BT No:19	PR POSI	OJECT STATION TION:Lat S	N:1823 3240
start stop duration TIME :14:42:21 15:02:35 20 (min	n) Purpose co	de:	Long E 1	1727
LOG :4310.48 4311.47 1.00 FDEPTH: 251 252	Area code GearCond.c	: ode:	5	
BDEPTH: 251 252 Towing dir: 360ø Wire out	Validity c : 800 m Speed	ode: 1: 30 1	kn*10	
- Sorted: Kg Total catch	: 71.67	CATC	H/HOUR: 21	15.01
-				
SPECIES	CATCH/HOU weight num	JR 1bers	% OF TOT. C	SAMP
Etrumeus whiteheadi Merluccius capensis	72.90	1212	33.91	8555
Merluccius paradoxus	22.80	330	10.60	8556
Maurolicus muelleri Paracallionymus costatus	14.16 1	201	6.54	8558
Chelidonichthys capensis Brama brama	13.83 11.04	33 6	6.43 5.13	
Lampanyctodes hectoris Todaropsis sp.	8.34	5793 87	3.88	8557
Trachurus capensis	3.60	12	1.67	8559
Lepidopus caudatus	2.52	45	1.17	0555
Lophius vomerinus	1.44	3	0.85	
ZEIDAE Holohalaelurus regani	1.29 0.93	6 3	0.60	
Genypterus capensis Coelorinchus coelorhinc, polli	0.54	3	0.25	
Malacocephalus laevis Emmelichthys nitidus	0.18	3	0.08	
Total –	214.98		99.97	
10001	111190		55.57	
DR. FRIDTJOF NANSEN PI	ROJECT:BE	PROJ	ECT STATION:	1824
DATE:10/ 9/06 GEAR T start stop duration	YPE: PT No: 1	POSI	TION:Lat S Long E	3246 1659
TIME :18:54:23 19:09:52 15 (min LOG :4339.22 4340.15 0.93	n) Purpose cc Area code	ode: :	1 1	
FDEPTH: 105 10 BDEPTH: 343 338	GearCond.c Validity c	ode:		
Towing dir: 10ø Wire out	: 140 m Speed	1: 37 1	kn*10	
Sorted: Kg Total catch	: 0.21	CATC	H/HOUR:	0.84
CDECTES	CATCH (HOI	TD	SOF TOT C	SAMD
SFECTES	weight num	bers	or of	OFFO
Elops sp.	0.04	852	4.76	0009
Total -	0.84		100.00	
DD EDIDUTOE NUNCEN		DD		
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T: start stop duration TIME :23:06:31 23:25:31 19 (mi) LOG :4366.59 4367.77 1.16 FDEPTH: 60 560 BDEPTH: 1340 1438 Towing dir: 2000 Wire out	PROJECT:BE YPE: PT No: 1 n) Purpose co Area code GearCond.c Validity c : 180 m Speed	PR POSI ode: : : : : : : : : : : : : : : : : : :	OJECT STATION TION:Lat S Long E 1 5 kn*10	N:1825 3258 1636
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME :23:06:31 23:25:31 19 (mi) LOG :4366.59 4367.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch	PROJECT:BE YPE: PT No: 1 n) Purpose co Area code GearCond.c Validity c : 180 m Speed : 4.69	PROSI POSI ode: code: code: l: 40 l CATC	OJECT STATION TION:Lat S Long E 5 kn*10 H/HOUR: 1	N:1825 3258 1636
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T Start stop duration TIME :23:06:31 23:25:31 19 (min LOG :4366.59 4367.77 1.16 FDEPTH: 60 60 60 BDEPTH: 1340 1438 Towing dir: 200@ Wire out Sorted: Kg Total catch	PROJECT:BE YPE: PT No: 1 n) Purpose cc Area code GearCond.c Validity c : 180 m Speed : 4.69	PR POSI <sup>1</sup> ode: : code: : : : : : : : : : : : : : : : : : :	OJECT STATION TION:Lat S Long E 1 5 kn*10 H/HOUR: ]	N:1825 3258 1636
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DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:3123:25:31 [9 (min LOG :4366.59 43:67.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MYCTOPHIDAE Lampanytotdes hetoris Gymnoscopelus sp. Abriliopsis gilchristi Lycoteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Cranchia scabra Diplophos sp. Cranchia scabra Diaphus sp. Elops sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyrsites atun Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T TIME :08:31:59 09:01:52 30 (min LOG :4446.28 4447.81 1.51 FDEPTH: 220 250 BDEPTH: 220 240 BDEPTH: 221 223 Wire out Sorted: Kg Total catch	PROJECT: BE PROJECT: BE YPE: PT No: 1 n) Purpose cc GearCond.c Validity c Validity c Validity c CATCH/HOU weight num 5.05 2.91 2.91 2.91 2.91 1.48 0.16 0.13 0.06 0.03	PR: POST POST de: iode: iode: i: 40 CATCC R 486 7714 486 7714 486 7714 1513 3 1048 95 16 13 3 3 5 3 2 8 3 3 6 POST POST POST POST POST POST POST POST	OJECT STATIO TION:Lat S Long E 5 kn*10 # OF TOT. C 34.10 19.65 19.18 13.03 9.99 1.08 0.88 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>X:1825 3258 1636 14.81 SAMP 8560 8563 8561 8561 4:18266 3316 1724 12.88</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:3123:25:31 [0 (min LOG :4366.59 4367.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MYCTOPHIDAE Lampanyctodes hetoris Gymnoscopelus sp. Abriliopsis gilchristi Lycoteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Cranchia scabra Diaphus sp. Elops sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyraites atun Total — — DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T Start stop duration TIME 108:31:59 09:01:52 30 (min LOG :4464.28 4447.81 1.51 FDEPTH: 420 245 BDEPTH: 425 445 Towing dir: 2238 Wire out Sorted: Kg Total catch	PROJECT: BE PROJECT: BE YPE: PT No: 1 n Purpose oc Validity o Validity o Validity o validity o CATCH/HOU weight num 5.05 2.91 2.91 2.91 2.91 2.91 1.48 0.16 0.13 0.06 0.03	PRR POST POST vode: vode: i: 40 l cATCC R 486 7714 439 161 3 3 13 3 5 3 2 8 8 3 6 PRR POST POST POST POST Vode: i: 37 l cATCC Vode: cATCC Vode: catch	OJECT STATIO TION:Lat S Long E 1 5 kn*10 H/HOUR: 1 % OF TOT. C 34.10 19.65 19.18 13.03 9.99 1.08 0.88 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>%:1825 3258 1636 14.81 SAMP 8560 8563 8565 8565 8565 8561 *:18266 3316 1724</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:31 23:25:31 19 (min LOG :4366.59 43:67.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MYCTOPHIDAE Lampanytotdes hetoris Gymnoscopelus sp. Abriliopsis gilchristi Lycoteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Cranchia scabra Diaphus sp. Elops sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyrsites atun Total — DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T TIME :08:31:59 00:01:52 30 (min TIME :08:31:59 00:01:52 30 (min LOG :4446.28 4447.81 1.51 FDEPTH: 220 240 BDEPTH: 245 Towing dir: 2230 Wire out Sorted: Kg Total catch SPECIES Maurolicus muelleri	PROJECT: BE PROJECT: BE YPE: PT No: 1 n) Purpose cc GearCond.c Validity c Validity c Validity c CATCH/HOU weight num 5.05 2.91 2.91 2.91 2.91 1.48 0.16 0.13 0.06 0.03	PR: POST POST ade: i: 40 CATCC R 486 7714 486 7714 486 7714 486 714 486 714 439 5 16 13 3 3 3 6 POST POST POST POST POST POST POST POST	OJECT STATIO TION:Lat S Long E 5 km*10 # OF TOT. C 34.10 19.65 19.18 13.03 9.99 1.08 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>X:1825 3258 1636 14.81 SAMP 8560 8563 8565 8561 X:18266 3316 1724 12.88 SAMP 8567</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:3123:25:31 19 (min LOG :4366.59 4367.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MyCTOPHIDAE Lampanyctodes hectoris Gymnoscopelus sp. Abriliopsis gilchristi Lycoteuthis diadema Diplophos sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyraites atun Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T Total - Total - Total catch Sorted: Kg Total catch Sorted: Kg Total catch Species Maurolicus muelleri Diaphus sp. ELOS 445.20 (min) Cost 22:0 (min) DATE:12/20 (min) DATE:12/20 (min) LOG :446.28 447.81 1.51 FDEPTH: 220 250 BDEPTH: 455 445 Towing dir: 22:30 Wire out Sorted: Kg Total catch SPECIES Maurolicus muelleri Diaphus sp.	PROJECT: BE YPE: PT No: 1 n) Purpose cc Validity c Validity c Validity c Validity c Validity c Validity c CATCH/HOU weight num 5.05 2.91 2.91 2.91 2.91 1.48 0.16 0.13 0.06 0.03	PR: POST' de: code	OJECT STATIO TION:Lat S Long E 5 kn*10 # /HOUR: 2 % OF TOT. C 34.10 19.65 19.65 19.65 19.68 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>%:1825 3258 1636 14.81 SAMP 8560 8563 8565 8561 1724 12.88 SAMP 8567 8569</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:3123:25:31 19 (min LOG :4366.59 4367.77 1.16 FDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MYCTOPHIDAE Lampanyctodes hectoris Gymnoscopelus sp. Abriliopsis gilchristi Lycoteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyrsites atun Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T TOTAL DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T DATE:11/ 9/06 JEAR Total TIME :08:31:59 09:01:52 30 (min LOG :446.28 447.81 1.51 PDEPTH: 220 250 BDEPTH: 495 445 Towing dir: 223@ Wire out Sorted: Kg Total catch SPECIES Maurolicus muelleri Diaphus sp. Abriliopsis gilchristi Todarodes sp.	PROJECT: BE PROJECT: BE YPE: PT No: 1 n) Purpose cc Area code GearCond.c Validity c validity c cATCH/HOU weight num 5.05 2.91 2.91 2.91 2.91 2.91 1.48 0.16 0.13 0.06 0.03	PR: POSI' vode: :: :ode: code: : : 40 l CATCC CATCC 1513 1048 95 16 13 35 16 13 35 25 33 6 13 35 25 25 33 6 0 PR: POSI' Vode: : : : : : : : : : : : : : : : : : :	OJECT STATIO TION:Lat S Long E 1 5 kn*10 H/HOUR: 3 4 0F TOT. C 34.10 19.65 19.18 19.18 19.18 19.18 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>\!1825 3258 1636 14.81 SAMP 8560 8562 8564 8565 8564 8564 3316 1724 12.88 SAMP 12.88 SAMP</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:3123:25:31 19 (min LOG :4366.59 4367.77 1.16 FDEPTH: 104 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MVCTOPHIDAE Lampanyctodes hectoris Gymnoscopelus sp. Abriliopsis gilchristi Lycoteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyrsites atun Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T TATE :08:31:59 09:01:52 30 (min LOG :446.28 4447.81 1.51 FDEFTH: 220 2445 Towing dir: 2239 Wire out Sorted: Kg Total catch SPECIES Maurolicus muelleri Diaphus sp. Lestidops sp. Abriliopsis glichristi Todarodes sp. Lestidops sp. Lestidops sp. Lestidops sp.	PROJECT: BE PROJECT: BE WPE: PT No: 1 n) Purpose cc Area code GearCond.c Validity c : 180 m Speed CATCH/HOI weight num 5.05 2.91 2.84 1.48 0.13 0.06 0.03 0.02 0.0	PRR POST de: ::de: :ode: :cde: :i:d0: CATCC R 1513 1048 95 1513 1048 1513 1048 1513 1048 1513 1048 153 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	OJECT STATIO TION:Lat S Long E 1 5 kn*10 H/HOUR: 2 34.10 19.65 19.18 13.03 9.99 1.08 0.88 0.88 0.88 0.88 0.88 0.88 0.84 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>\!1825 3258 1636 14.81 \$\$AMP 8560 8562 8562 8564 8565 8561 \\!1826 3316 1724 12.88 \$\$AMP 8569</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:312:25:31 19 (min LOG :4366.59 4367.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Punchalia woodwardi Symbolophorus boops MyCTOPHIDAE Lampanyctodes hectoris Gymnoscopelus sp. Abriliopsis glichristi Lyocteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyrsites atun DATE:11/ 9/06 GEAR T Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 JOI:52 30 (min LOG :4446.28 4447.61 1.51 FDEPTH: 420 250 BDEPTH: 495 445 Towing di: 2239 Wire out Sorted: Kg Total catch SPECIES Maurolicus muelleri Diaphus sp. Abriliopsis glichristi Todarodes sp. Lestidiops ap. Trachurus capensis Jasus lalandii	PROJECT: BE PROJECT: BE WPE: PT No: 1 a) Purpose cc Area code GearCond.c Validity c : 180 m Speed : 4.69 CATCH/HOU weight num 5.95 2.84 1.48 0.13 0.02 0.02 0	PRR POST de: ::de: :ode: :ode: i:d0: CATCC R 1513 1048 4836 714 439 95 1513 1048 1513 1048 1513 1048 1533 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	OJECT STATIO TION:Lat S Long E 1 5 km*10 H/HOUR: 2 * OF TOT. C 34.10 19.65 19.18 1.03 9.99 1.08 0.88 0.88 0.88 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>\:1825 3258 1636 14.81 \$\$4 8560 8562 8562 8564 8564 8565 8561 1724 12.88 \$\$AMP 8567 8569 8569 8570</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:312:25:31 19 (min LOG :4366.59 4367.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MyCTOPHIDAE Lampanyctodes hectoris Gymoscopelus sp. Abrilopsis glichristi Lyocteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Todarodes angolensis Legidopus caudatus Scomberesox saurus Thyrsites atun DATE:11/ 9/06 GEAR T start stop duration TIME 108:31:59 09:01:52 30 (min LOG :4446.28 4447.81 1.51 FDEPTH: 420 250 BDEPTH: 495 445 Towing dir: 2238 Wire out Sorted: Kg Total catch SPECIES Maurolicus muelleri Diaphus sp. Abriliopsis glichristi Todarodes sp. Lestidiops sp. Trachurus capensis Jasus lalandii Cranchia scabra	PROJECT: BE PROJECT: BE PROJECT: BE GearCond.c Validity c (a factor of the second	PRR POST de: ::de: :ode: :ode: :de: 1513 1048 95 1513 1048 95 1513 1048 95 153 3 3 3 3 3 3 3 3 5 5 25 5 3 3 3 3 3 3	OJECT STATIO TION:LAT S Long E Long E S kn*10 H/HOUR: 2 % OF TOT. C 34.10 19.65 19.18 0.88 0.88 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>%:1825 3258 1636 14.81 SAMP 8560 8562 8564 8564 8565 8564 8565 8561 1724 12.88 SAMP 8567 8569 8567 8569</pre>
DR. FRIDTJOF NANSEN DATE:10/ 9/06 GEAR T start stop duration TIME 23:06:312:25:31 19 (min LOG :4366.59 4367.77 1.16 FDEPTH: 60 60 BDEPTH: 1340 1438 Towing dir: 2000 Wire out Sorted: Kg Total catch SPECIES Symbolophorus boops Funchalia woodwardi Symbolophorus boops MyCTOPHIDAE Lampanyctodes hectoris Gymoscopelus sp. Abrilopsis glichristi Lyoteuthis diadema Diplophos sp. Cranchia scabra Diplophos sp. Todarodes angolensis Lepidopus caudatus Scomberesox saurus Thyrsites atun Total DR. FRIDTJOF NANSEN DATE:11/ 9/06 GEAR T start stop duration TIME 108:31:59 09:01:52 30 (min LOG :4446.28 4447.81 1.51 FDEPTH: 420 250 BDEPTH: 495 445 Towing dir: 2238 Wire out Sorted: Kg Total catch SPECIES Maurolicus muelleri Diaphus sp. Abriliopsis glichristi Todarodes sp. Lestidiops ap. Trachurus capensis Jasus lalandii Cranchia scabra Lampanyctodes hectoris	PROJECT: BE PROJECT: BE PROJECT: BE GearCond.c Validity c (a factor of the second	PRR POST Dest iside: iside: iside: iside: iside: fill potential po	OJECT STATIO TION:LAT S Long E 1 5 km*10 H/HOUR: 2 * OF TOT. C 34.10 19.65 19.18 0.88 0.41 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	<pre>%:1825 3258 1636 14.81 SAMP 8560 8562 8564 8565 8564 3316 1724 12.88 SAMP 8567 8569 8567 8569 8570 8568</pre>

	DR. FRIDTJOF NANSEN	PROJECT : BF	PROJECT STATI	ON:1827
	DATE:11/ 9/06	GEAR TYPE: PT No:	1 POSITION:Lat	5 3319
	start stop	duration	Long 1	E 1803
	TIME :14:08:12 14:33:02	25 (min) Purpose	e code: 1	
	LOG :4493.22 4495.11	1.86 Area cc	de : 5	
	FDEPTH: 20 20	GearCor	nd.code:	
	BDEPTH: 65 78	Validit	y code:	
	Towing dir: 330ø	Wire out: 120 m Sp	eed: 40 kn*10	
	Sorted: Kg To	tal catch: 0.13	CATCH/HOUR:	0.31
SPE	CIES	CATCH/	HOUR % OF TOT. C	SAMP
		weight	numbers	
Tra	churus capensis	0.26	158 83.87	8571
Lol	lligoncula mercatoris	0.02	7 6.45	
-				

reacharab capenbrb	0.10	100	00.07	00/1
Lolligoncula mercatoris	0.02	7	6.45	
Elops sp.	0.02	2	6.45	
Engraulis encrasicolus	0.02	7	6.45	8572
Total	0.32		103.22	

DR. FRIDTJOF NANSEN PROJECT:BE PROJECT STATION:1828 DATE:11/ 9/06 GEAR TYPE: PT No: 1 POSITION:Lat S 3346 start stop duration Long E 1737 TIME :21:23:12 21:38:25 15 (min) Purpose code: 1 LOG :4551.95 4552.84 0.88 GearCond.code: BDEPTH: 264 270 Validity code: Towing dir: 244ø Wire out: 120 m Speed: 38 kn\*10 Sorted: Kg Total catch: 22.12 CATCH/HOUR: 88.48

CATCH/HOUR % OF TOT. C SAMP SPECIES

000				
	weight	numbers		
Lampanyctodes hectoris	73.20	64100	82.73	8573
Thyrsites atun	13.20	4	14.92	
Merluccius paradoxus, juvenile	1.52	224	1.72	8574
Etrumeus whiteheadi	0.40	8	0.45	8575
Champsodon capensis	0.16	32	0.18	
Jasus lalandii	0.04	4	0.05	
Maurolicus muelleri	0.04	4	0.05	8576
Scomberesox saurus	0.04	4	0.05	
Total	88.60		100.15	

DR. FRIDTJOF NANSEN	I PRO	JECT:BE	PROJECT STAT	ION:9999
DATE: 1/ 1/01	GEAR TYPE:	No: P	OSITION:Lat	S
start st	op duration		Long	W
TIME :00:00:00 00:	00:00 (min)	Purpose code	:	
LOG :		Area code	:	
FDEPTH: 0	0	GearCond.cod	e:	
BDEPTH:		Validity cod	e:	
Towing dir:	ø Wire out:	m Speed:	kn*10	
Sorted: Kg	Total catch:	С	ATCH/HOUR:	

\_\_\_\_\_\_CATCH/HOUR % OF TOT. C SAMP weight numbers \_63

Total

Vessel: "Dr. Fridtjof Nansen"			Date:	08.08.2006	
Echo sounder: EK500	-1		Locality:	Baia dos Elefantes, Ar	ngola
Transducer: ES18-E	3	Sphere:	CU64	Bottom depth: 30	m
Sound vel: 1517 m/s r	sphere: 20.2 m	T <sub>sph-dep.</sub>	:17.772°C, S <sub>sph</sub>	-dep.:35,741 ‰ T	$S_{sphere}$ : -34.3 dB
(measured in situ)	1	1 1		1 (00	rreat for cound val art a)
TX/RX no: 3	F	requency:	18 kHz	Date previous calib	ration: 11/1-2006
Settings in sound velocity r	nenu during ca	alibration:		×	
Mean sound velocity bet	ween 0 m and	d sphere d	lepth: 1517 m/s	(settings to be optimised according	the present conditions)
				Values appeared at this	Values set after
Setting parameters in transmitter/r	eceiver menu:	I	Previous values:	calibration	calibration
Transducer depth (m) du	ring	(	),0	0,0	5,5
(has to be 0,0 m during calibration)	IB/km)		2	3	3
Pulso duration (mg)	ID/KIII)	-	Short	Short	Short
				Short	Short
Band width (kHz)		_	Wide	Wide	Wide
TX effect ref. transducer	terminals (W	/) 2	2000	2000	2000
Equivalent beam angle (1	$10 \log \psi$ ) (d)	B) -	.17,2	-17,2	-17,2
$S_v$ transducer sensitivity	(dB)	2	23,90	23,85	23,85
TS transducer sensitivity	(dB)		23,86	23,80	23,80
Angle sensitivity along s	hip	1	13,9	13,9	13,9
Angle sensitivity athwart	t ship	-	13,9	13,9	13,9
3 dB beam width along s	hip (deg)	1	10,9	10,95	11.0
3 dB beam width athwart	t ship (deg)	1	10,9	10,67	10,7
Along ship deviation from	m centre (deg	g) -	0,18	0.01	0.01
Athwart ship deviation fr	rom centre (d	eg) -	0,05	0.11	0.11
				•	•

### ANNEX II CALIBRATION WITH REFERENCE SPHERE

Measured values before any adjustments: (measured with sphere in acoustic axis)

Theoretical S <sub>A</sub> in existing sphere	2049	
$S_A = \frac{\sigma}{r^2 \psi} 1852^2$	$\sigma = 4\pi 10^{0.175}$	

2035

Read  $S_A$  after control/adjustment of  $S_V$  transducer sensitivity (m<sup>2</sup>/nmi<sup>2</sup>)

Remarks:	lowering ke	el: out	<u>in</u>			
File name: 20	06408.018					
Weather cond	litions: 🛛	very good	good	bad	(tick)	Wind speed: 3.5 m/s
In cases where a va	ariance of the tra	ansducer sensitiv	ity is $> 0,3 \text{ dB t}$	here has to be sea	arched for p	ossible causes. If no faults can be proven, a new
calibration has to b	e made after rela	atively short time				

Vessel:	"Dr.	Fridtjof Nanser	n"	Date:	2006.08.08			
Echo sounder:	EK50	00-1		Locality:	Baia dos Elefantes	s, Angola		
Transducer:	ES38	-B	Sphere:	WC38	Bottom depth:	30 m		
Sound vel: 1517 (measured in situ)	m/s	r <sub>sphere</sub> :20,1 m	T <sub>sph-dep</sub> .:	17.772°C, S <sub>sp</sub>	h-dep.:35.741 ‰	TS <sub>sphere</sub> :	-42,4	dB

TX/RX no: 1Frequency: 38 kHzDate previous calibration: 5/8-2005Settings in sound velocity menu during calibration:

Mean sound velocity between 0 m and sphere depth: 1517 m/s (settings to be optimised according the present conditions)

Setting parameters in transmitter/receiver menu:	Previous values:	Values appeared at this calibration	Values set after calibration		
Transducer depth (m) during	0.0	0.0	5.5		
(has to be 0,0 m during calibration)	0,0	0,0	c ,c		
Absorption coefficient (dB/km)	10	10	10		
Pulse duration (ms)	Medium	Medium	Medium		
Band width (kHz)	Wide	Wide	Wide		
TX effect ref. transducer terminals (W)	2000	2000	2000		
Equivalent beam angle (10 log $\psi$ ) (dB)	-21,0	-21,0	-21,0		
$S_v$ transducer sensitivity (dB)	26,96	26,86	26,86		
TS transducer sensitivity (dB)	27,07	26.99	26.99		
Angle sensitivity along ship	21,9	21,9	21,9		
Angle sensitivity athwart ship	21,9	21,9	21,9		
3 dB beam width along ship (deg)	6.9	6,95	7.0		
3 dB beam width athwart ship (deg)	6,9	6,83	6,8		
Along ship deviation from centre (deg)	-0,07	0,02	0,02		
Athwart ship deviation from centre (deg)	0,08	0,02	0,02		

Measured values before any adjustments: (measured with sphere in acoustic axis)

Read TS <sub>sphere</sub> : 42,4 dB	Read $S_A$ : 738 m <sup>2</sup> /nmi <sup>2</sup>
sphere	

Theoretical $S_A$ in existing sphere depth (m <sup>2</sup> /nmi <sup>2</sup> )	769

$$S_A = \frac{\sigma}{r^2 \psi} 1852^2 \qquad \qquad \sigma = 4\pi 10^{0.175}$$

Read  $S_A$  after control/adjustment of  $S_V$  transducer sensitivity (m<sup>2</sup>/nmi<sup>2</sup>)

Remarks:	lowering kee	el: out	<u>in</u>			
File name: 2	006408.038					
Weather con	ditions: 🖾v	very good	good	bad	(tick)	Wind speed: 3.5 m/s
In cases where a	variance of the tran	sducer sensitivi	ity is $> 0,3 \text{ dB th}$	ere has to be sea	urched for p	ossible causes. If no faults can be proven, a new
calibration has to	be made after relati	ively short time				

766

Vessel:	"Dr. 1	Dr. Fridtjof Nansen"		Date:	2006.08.08			
Echo sounder:	EK50	00-1		Locality:	Baia dos Elefantes	s, Angola		
Transducer:	ES12	0-7	Sphere:	WC38	Bottom depth:	30 m		
Sound vel: 1517 (measured in situ)	m/s	r <sub>sphere</sub> :20.2 m	T <sub>sph-dep.</sub> :	17.772°C, S <sub>sp</sub>	h-dep.:35.741 ‰	TS <sub>sphere</sub> :	-39,6	dB

TX/RX no: 2Frequency: 120 kHzDate previous calibration: 11/01-2006Settings in sound velocity menu during calibration:

Mean sound velocity between 0 m and sphere depth: 1517 m/s (settings to be optimised according the present conditions)

Setting parameters in transmitter/receiver menu:	Previous values:	Values appeared at this calibration	Values set after calibration		
Transducer depth (m) during	0,0	0,0	5,5		
(has to be 0.0 m during calibration) Absorption coefficient (dB/km)	38	38	38		
Pulse duration (ms)	Long	Long	Long		
Band width (kHz)	Narrow	Narrow	Narrow		
TX effect ref. transducer terminals (W)	1000	1000	1000		
Equivalent beam angle (10 log $\psi$ ) (dB)	-20,6	-20,6	-20,6		
S <sub>v</sub> transducer sensitivity (dB)	26.23	26.22	26.22		
TS transducer sensitivity (dB)	26.38	26.20	26.20		
Angle sensitivity along ship	21,0	21,0	21,0		
Angle sensitivity athwart ship	21,0	21,0	21,0		
3 dB beam width along ship (deg)	7.3	7.11	7.1		
3 dB beam width athwart ship (deg)	7.2	6.91	6.9		
Along ship deviation from centre (deg)	-0.18	0.3	0.3		
Athwart ship deviation from centre (deg)	-0.08	0.14	0.14		

Measured values before any adjustments: (measured with sphere in acoustic axis)

Read TS <sub>sphere</sub> : -39,6 dB	Read $S_A$ : 1315 m <sup>2</sup> /nmi <sup>2</sup>

Theoretical $S_A$ in existing sphere depth (m <sup>2</sup> /nmi <sup>2</sup> )	1323

$$S_A = \frac{\sigma}{r^2 \psi} 1852^2 \qquad \qquad \sigma = 4\pi 10^{0.175}$$

Read  $S_A$  after control/adjustment of  $S_V$  transducer sensitivity (m<sup>2</sup>/nmi<sup>2</sup>)

Remarks:	lowering	g keel: ou	t <u>in</u>			
File name: 20	006408.1	20				
Weather con	ditions:	⊠very good	l 🗌 good	bad	(tick)	Wind speed: 3.5 m/s
In cases where a variance of the transducer sensitivity is $> 0.3$ dB there has to be searched for possible causes. If no faults can be proven, a new						
calibration has to	be made afte	r relatively short t	ime.			

1324

Vessel:	"Dr. Fridtjof Nansen"			Date:	08.08.2006			
Echo sounder:	EK50	00-2		Locality:	Baia dos Elefantes, Angola			
Transducer:	200-	7F	Sphere:	WC38	Bottom depth:	30 m		
Sound vel: 1517 m/s r <sub>sphere</sub> :20.0 m		T <sub>sph-dep</sub> :17.772°C, S <sub>sph-dep</sub> :2		h-dep.:35.741 ‰	TS <sub>sphere</sub> :	-38,9	dB	

TX/RX no: 1Frequency: 200 kHzDate previous calibration: 11.01.2006Settings in sound velocity menu during calibration:

Mean sound velocity between 0 m and sphere depth: 1524 m/s (settings to be optimised according the present conditions)

		Values appeared at this	Values set after
Setting parameters in transmitter/receiver menu:	Previous values:	calibration	calibration
Transducer depth (m) during	0.0	0.0	5.5
(has to be 0,0 m during calibration)	- ) -	- ) -	- )-
Absorption coefficient (dB/km)	53	53	53
Pulse duration (ms)	Long	Long	Long
Band width (kHz)	Narrow	Narrow	Narrow
TX effect ref. transducer terminals (W)	1000	1000	1000
Equivalent beam angle (10 log $\psi$ ) (dB)	-20,5	-20,5	-20,5
$S_v$ transducer sensitivity (dB)	23.82	23.50	23.50
TS transducer sensitivity (dB)	24,80	23.50	23.50
Angle sensitivity along ship			
Angle sensitivity athwart ship			
3 dB beam width along ship (deg)			
3 dB beam width athwart ship (deg)			
Along ship deviation from centre (deg)			
Athwart ship deviation from centre (deg)			

Measured values before any adjustments: (measured with sphere in acoustic axis)

Read TS<sub>sphere</sub>: -38.9 dBRead S<sub>A</sub>: 1960 m²/nmi²Theoretical S<sub>A</sub> in existing sphere depth (m²/nmi²)1558
$$S_A = \frac{\sigma}{r^2 \psi} 1852^2$$
 $\sigma = 4\pi 10^{0.175}$ 

 Read S<sub>A</sub> after control/adjustment of S<sub>V</sub> transducer sensitivity (m<sup>2</sup>/nmi<sup>2</sup>)
 1540

 Remarks:
 lowering keel: out in

 Weather conditions:
  $\boxtimes$  very good
  $\square$  good
  $\square$  bad (tick)
 Wind speed: 3.5 m/s

 In cases where a variance of the transducer sensitivity is > 0,3 dB there has to be searched for possible causes. If no faults can be proven, a new calibration has to be made after relatively short time.
 In cases where a variance of the transducer sensitivity is > 0,3 dB there has to be searched for possible causes. If no faults can be proven, a new calibration has to be made after relatively short time.

Calibration carried out by: Jan Frode Wilhelmsen, Tore Mørk

# ANNEX III SAMPLES COLLECTED FOR THE HAKE GENETIC PROJECT

	Merluccius caper	nsis	Merluccius paradoxus			
Trawl	Date	Number	Trawl	Date	Number	
1736	24/08/2006	30	1752	27/08/2006	30	
1747	26/08/2006	30	1763	01/09/2006	40	
1762	01/09/2006	30	1782	03/09/2006	30	
1823	01/09/2006	42	1799	06/09/2006	15	
			1823	10/09/2006	75	
Total		132	Total		190	
Number			Number			

Details of genetic samples collected for the hake genetic project