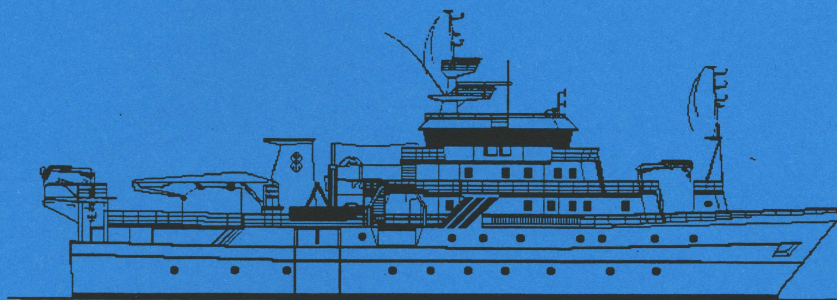


NORAD - FAO/UNDP PROJECT GLO 92/013

CRUISE REPORTS "DR. FRIDTJOF NANSEN"



## **SURVEYS OF THE FISH RESOURCES OF NAMIBIA**

**Cruise Report No 1/99**

**Surveys of the hake stocks  
11 January - 21 February 1999**

**Ministry of Fisheries & Marine Resources  
Swakopmund  
Republic of Namibia**

**Institute of Marine Research  
Bergen  
Norway**



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11 January - 21 February 1999**

by

**T. Strømme<sup>1</sup>, I. Huse<sup>1</sup>, and B. Staalesen<sup>2</sup>**

1. Institute of Marine Research  
P. O. Box 1870 Nordnes  
N-5817 Bergen, Norway

2. National Marine Information and Research Centre  
P.O. Box 912  
Swakopmund, Namibia

**Institute of Marine Research  
Bergen, 1999**

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# 1 INTRODUCTION

## 1.1 GENERAL OBJECTIVES

Following an offer from NORAD extended through FAO and UNDP, an agreement was reached in Windhoek in January 1990 between the UNDP Resident Representative and Namibian authorities for the execution of a programme of surveys of the fish resources of the Namibian shelf with the RV 'Dr. Fridtjof Nansen'.

The main objectives were agreed as follows:

To describe the distribution, composition and abundance of the most important fish resources. Small pelagic fish, including horse mackerel, pilchard and anchovy would be investigated by the acoustic integration method combined with sampling with mid-water and bottom trawls. A swept area trawl survey programme would be used for the demersal stocks. All catches would be sampled by species, weight and numbers, including biological sampling of the commercially important stocks.

To carry out environmental studies including recording of surface temperature on a continuous basis and hydrographic sampling on a series of fixed profiles.

## 1.2 OBJECTIVES OF SURVEY 1/1999

The main objectives were to continue to monitor the abundance, geographic distribution and size composition of the hake stocks within the Namibian EEZ and to describe the trends in development of the hake stocks within the programme perspective of support to rebuilding of the hake stocks since independence. These objectives are in line with the national priorities set in the Government White paper of 1990. As secondary objectives, the lesser abundant, but commercial important species as monk, sole and kingklip would be studied in detail as these species form a natural bycatch of a hake survey in Namibia. As part of the hake research, environment parameters were continuously recorded in order to improve knowledge on the influence of the environment on the distribution of the hake stocks.

The acoustic system was used to observe and include in the estimates possible mid-water occurrences of the hakes. The survey design for the swept-area trawl programme was based



on a semi-random distribution of hauls along regular transects perpendicular to the coast. The transect distance was normally between 20 and 25 NM. On the slope the stations were laid out to cover the depth ranges of the two hake species. The on-shelf stations were laid out 10 to 15 NM apart until the zero line of hake distribution was found. Information from the acoustic system was also used in this process. Biomass estimates of hake were based on post stratification by depth and density aggregations.

Additional objectives were to carry out comparative fishing with a local freezer trawler. Specific aims of trawl intercalibration with commercial freezer trawler include: (a) investigate viability of using trawlers in conducting hake biomass surveys by doing a full coverage with the trawlers and make an independent assessment from these data (b) compare the catch rates of the research vessel to those of the trawlers (c) involve the fishing industry in the assessment of hake resources.

In the survey was also included a special study to look at the feeding ecology of the hake and its main prey species. Two persons were specially allocated to the task of systematically collect the material for later analysis ashore. An overview of the material collected and some results from the compiled data are shown in Annex II

### 1.3 PARTICIPATION

The scientific staff consisted of:

From Namibia:

Frances DEALIE (1-4/2), Johnny GAMATHAM (1-21/2), Fabian HAFIKU (11-30/1), Aili HAMUMYELA (11-30/1), Matthew HANGHOME (1-21/2), Erastus ILEKA, 1-21/2, Titus ILLENDE (1-21/2), Paul KAINGE (11-30/1), Alvino LAKAI (1-21/2), Bryan LOUW (1-21/2), Lima MAARTENS (11-30/1), Paula MATROS (11-18/1), Maria MUTOTA (11-30/1), Toini MWEENDA (11-30/1), Jean-Paul ROUX (1-21/2), Malakia SHIMANDA (11-30/1), Peter SILOKA 1-21/2, Bjørn STAALESEN (1-21/2), Sean WELLS (11-30/1), Anneke van der WESTHUIZEN (11-30/1) Johannes D. van Wyk (1-21/2).

From Norway:

Oddgeir ALVHEIM (12/1-22/2, Cruise leader 12-18/1), Ingvar HUSE (Cruise leader 18-30/1), Jarle KRISTIANSEN (12/1-22/2), Tore MØRCH (12/1-22/2), Marek OSTROWSKI (1-22/2), Tore STRØMME (Cruise leader 1-22/2).

## 1.4 NARRATIVE

The course tracks with the positions of the fishing and hydrographic stations are shown in Figures 1 a-c. The grid lines in 1999 were slightly altered to incorporate accumulated knowledge about fish distribution and bottom conditions, and to facilitate spatial analysis.

“Dr. Fridtjof Nansen”, accompanied by the Namibian freezer trawler “Ribadeo”, left Walvis Bay on the afternoon of 11 January and steamed south to commence the work near the South African border at Orange River. Trawling inshore of 300 m was preferably carried out during daylight hours, but the deeper stations on the slope were also carried out during dark. CTD-stations were taken on every trawl station and also at some untrawlable sites in order to map the environmental conditions in relation to fish distribution. Both ships trawled side by side on all stations except a few stations left out by “Ribadeo”. On 30 January the ships called at Walvis Bay for crew change, having covered the area north to Sandwich Harbour.

“Dr. Fridtjof Nansen” departed the port of Walvis Bay for the second leg of the survey on 1 February accompanied by the freezer trawler “Ribadeo”. Fishing started on the morning of 2 February, trawling with “Ribadeo” in a tandem. Both ships worked northwards following the standard grid pattern. On the night to 17 February the vessels steamed north to the Cunene and worked southwards to Cape Frio. Arrival in Walvis Bay was on 21 February.

The weather conditions were exceptionally good on the southern leg, with little wind and calm seas. On the northern leg the weather conditions were also favourable.

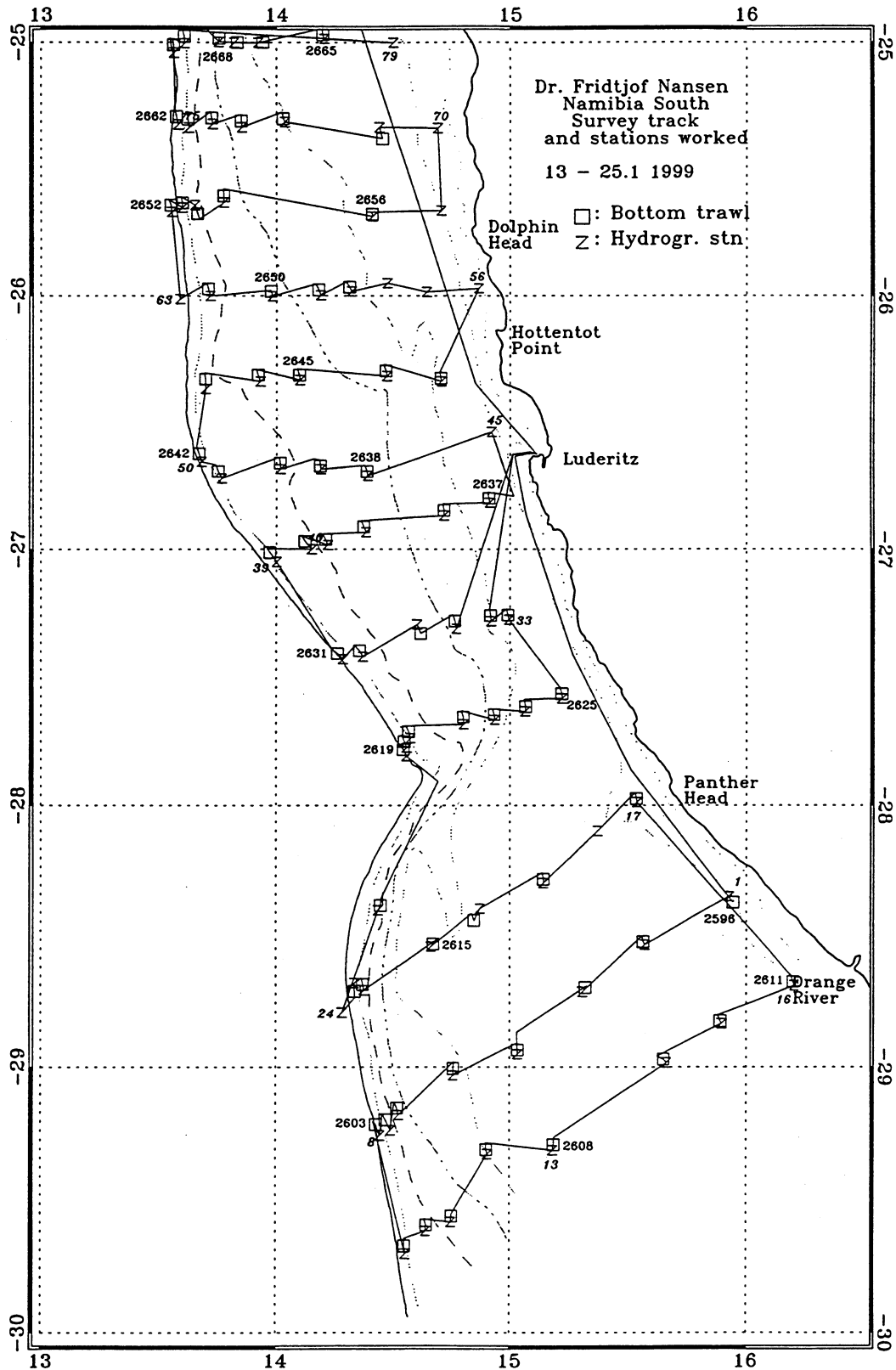


Figure 1a Southern Region (Orange River to St. Francis Bay). Course tracks, fishing stations and hydrographic stations.



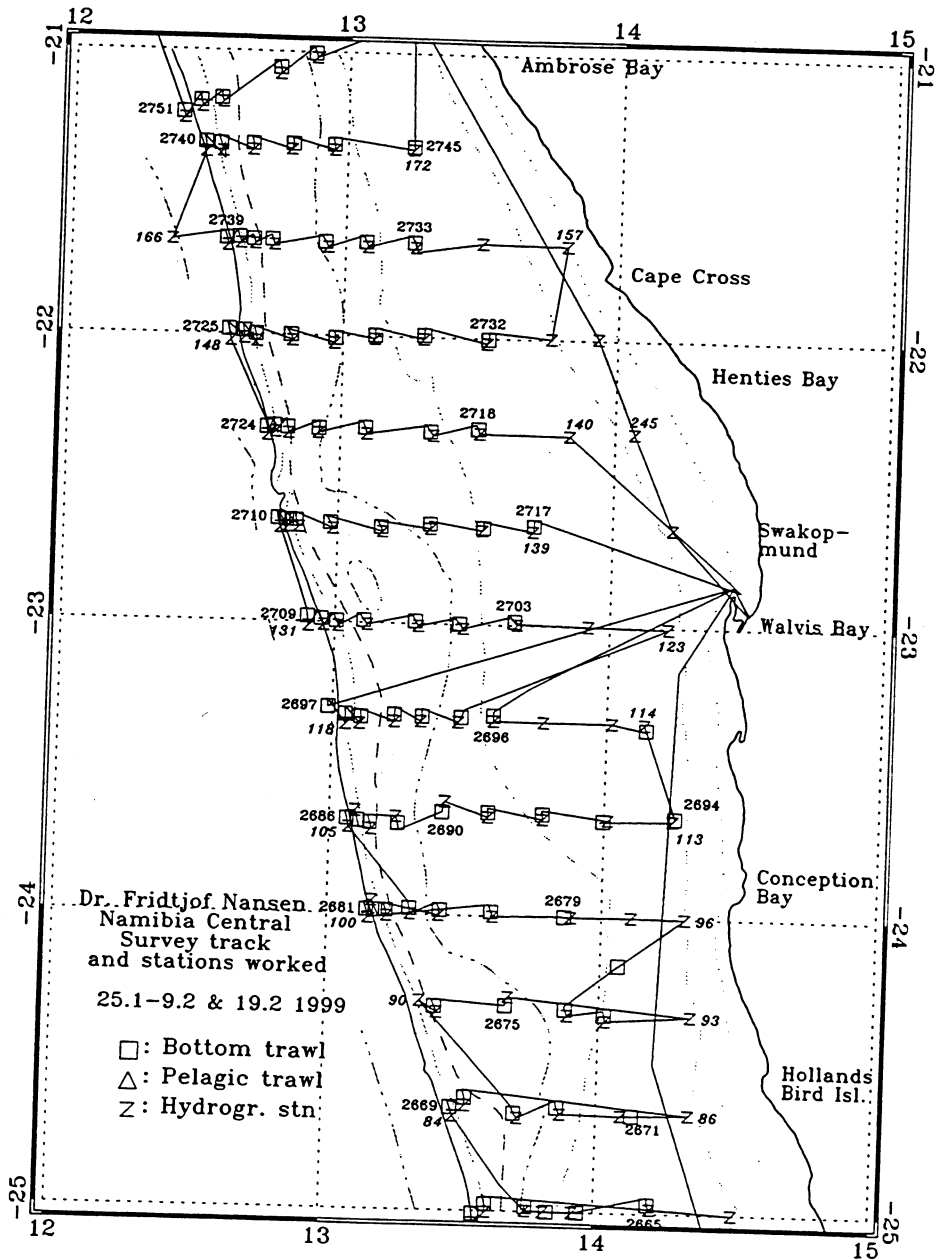


Figure 1b Central Region (St. Francis Bay to Ambrose Bay). Course tracks, fishing stations and hydrographic stations.

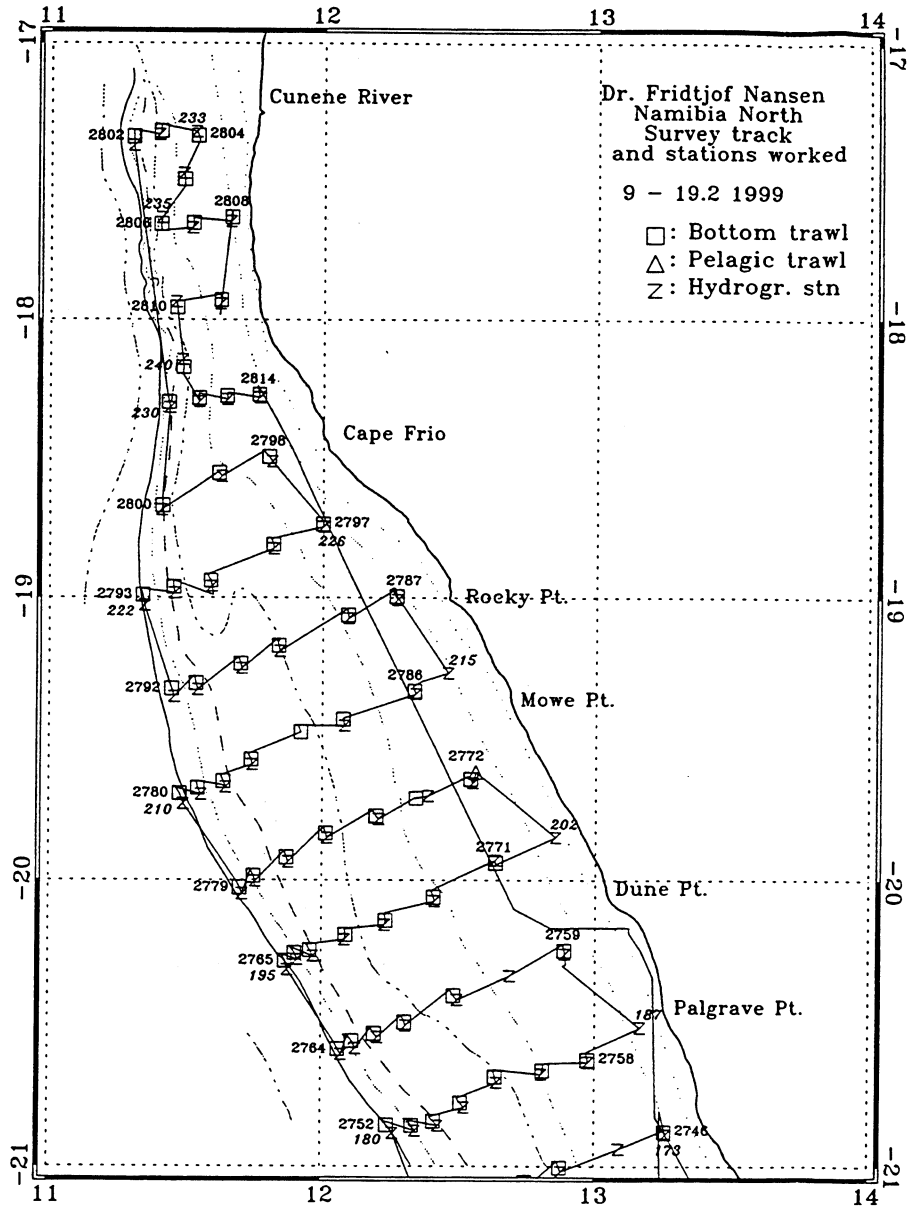


Figure 1c Northern Region (Ambrose Bay to Cunene River). Course tracks, fishing stations and hydrographic stations.

## CHAPTER 2 HYDROGRAPHY (by Marek Ostrowski)

In the course of the January/February 1999 hake survey, the following environmental parameters were measured continuously: wind speed and direction along the shiptrack (Figure 2), and the temperature of sea water from engine intake (Figure 3). From hydrographic stations, available are data on temperature, conductivity and depth (CTD), and the measurements of current speed and direction with Acoustic Doppler Current Profiler (ADCP, Figure 5). This report focuses on presentation of a preliminary result, based predominantly on the CTD data.

Data on temperature and salinity have been collected with the Sea Bird CTD instrument. While the majority of the CTD profiles were obtained at locations of fish trawl stations, the necessary, additional CTD casts were performed to assure a uniform coverage of the hydrography over the Namibian shelf, and shelf-break regions.

Features of hydrographic conditions during the 1999 January/February cruise are shown by means of vertical sections in offshore (Figure 6a and 6b) and longshore (Figure 7) directions, and by means of horizontal maps at four depth levels (Figures 8 and 9). The classical picture of coastal upwelling was observed in the southernmost part of the survey area, in the Lüderitz region (Panther Head section, Figure 6a). The subsurface isotherms were strongly sloping toward the coast, and there was a band of cool upwelled water ( $T = 12-16^{\circ}$ ,  $S = 34.9-35.0$  psu) trapped in the coastal region. Further north (e.g. Conception Bay Figure 6a), there are symptoms of relaxation of upwelling, as the surface temperature increased inshore, and the upwelled water became limited to the subsurface layer. North of Walvis Bay, the near-surface stratified layer, caused by solar heating, became a dominant feature in the temperature distribution (Cape Cross Section, Figure 6b). The salinity distributions from this region displayed rather weak offshore gradients, much weaker than those observed from the upwelling active regions to the south.

Signature of upwelling off southern Namibia is clearly distinguished on horizontal distributions of temperature (Figure 8) obtained in the surface layers (5, and 20 meters depth). In these cases, isotherms of  $18^{\circ}\text{C}$  and  $16^{\circ}\text{C}$  are oriented approximately in the longshore direction, with the temperatures decreasing inshore. Uplifts of the  $<14^{\circ}\text{C}$  water, are clearly seen near surface in the inshore areas of Orange River and Lüderitz, and are also present in the subsurface layer further north, up to the Walvis Bay region.



The region north of Ambrose Bay (latitude 21°S), reveals signature of the penetration of Angolan water ( $T = 18-22^\circ$ ,  $S = 35.5 - 35.9$  psu) into the Namibian shelf. Based on the vertical longshore salinity section (Figure 7), the southern limit of the high saline Angolan water can be approximately located at latitude 20°S. From the horizontal salinity distribution in Figure 9, it appears that the southward penetration of this high saline water in the upper 20 meters was more extensive on the offshore side of the shelf than inshore. Associated with such an offshore increase in salinity was also an increase in surface temperature, what is clearly seen on the map of the surface temperatures obtained underway from the continuous registration of temperature of the engine intake water (Figure 3). A distinct surface feature, observed in that figure, is an inshore lens of water  $T < 20^\circ$ , located between Cunene River and Dune Point, with temperatures decreasing toward the coast. This suggest an offshore water drag and a weak upwelling activity, but from studying the vertical section of temperature at Dune Point (Figure 6b) it is apparent that this effect is limited to surface and subsurface layers.

Oxygen-deficient, near-bottom layer was present in February 1999 almost in the entire coastal zone off Namibia (Figure 4). Oxygen concentrations within this layer were less than 0.5 ml/l. Its largest longshore extent was observed at depths 100-120 meters, between the two extreme indentations in Namibian shelf: off Lüderitz (Sta. 44, latitude 26°50'S) in the south, and off Rocky Point in the north (Sta. 226, latitude 18°55'S). Inshore, in the Walvis Bay region, the observed bottom concentrations rose slightly above a 0.5 ml/l threshold (Stas. 244, and 245), while offshore, in central and northern Namibia, those concentrations stayed below this threshold all the way down to the shelf-break. In the south (southwards of Sta. 68, latitude 25°42'S), the 0.5 ml/l limit was reached at much shallower depths (Figure 7c). Thickness of the oxygen-deficient layer generally increased with the distance offshore, reaching, at stations located along the shelf-break, heights between 20 and 100 meters above the bottom. At deeper stations, located on the continental slope (Figure 10), the layer of oxygen minimum occurred midwater - an expected feature for an open-ocean oxygen profile. From examining the oxygen offshore sections (e.g. Cape Cross section, Figure 6), it appeared that there had been some continuity between the bottom-attached low-oxygen at the shelf, and this mid-water layer of oxygen minimum over the continental slope.

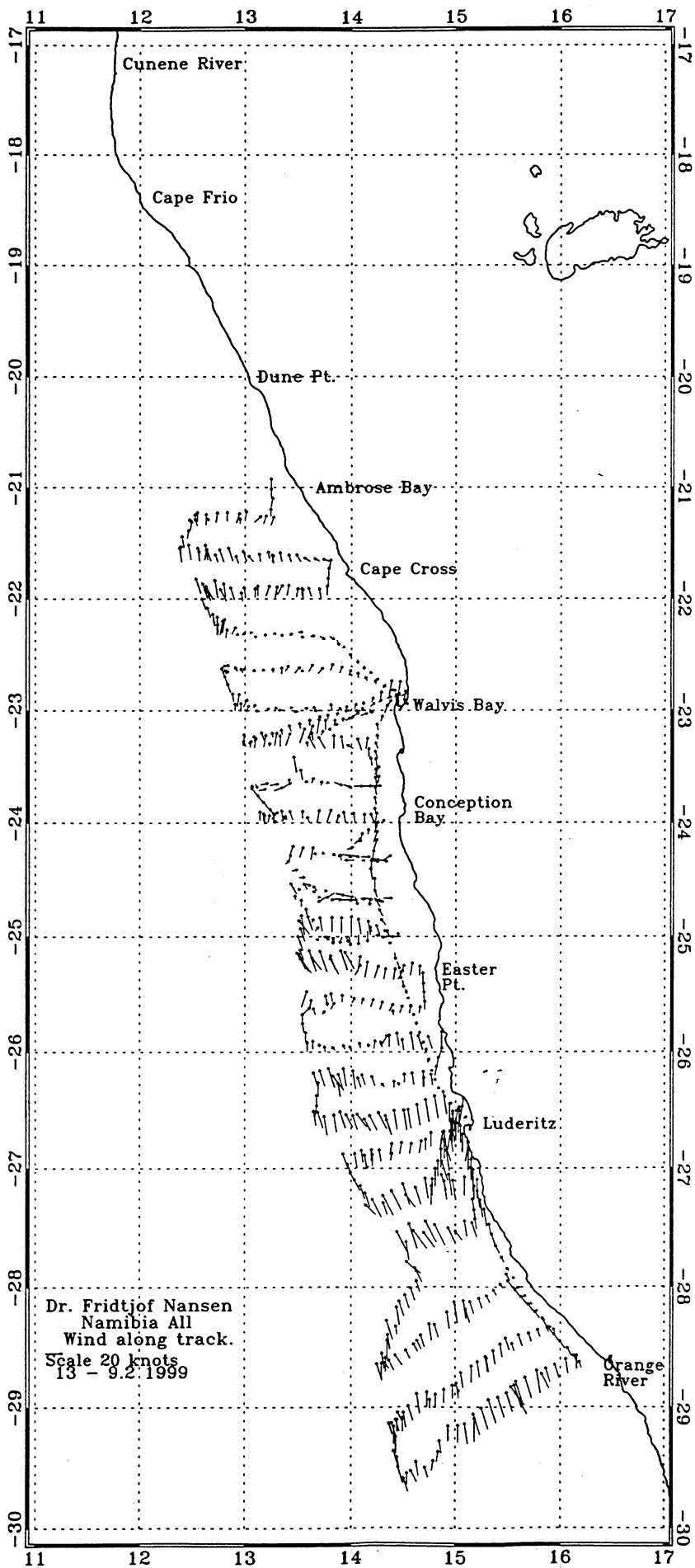


Figure 2 Orange River to Cunene River. Wind conditions along the survey track.

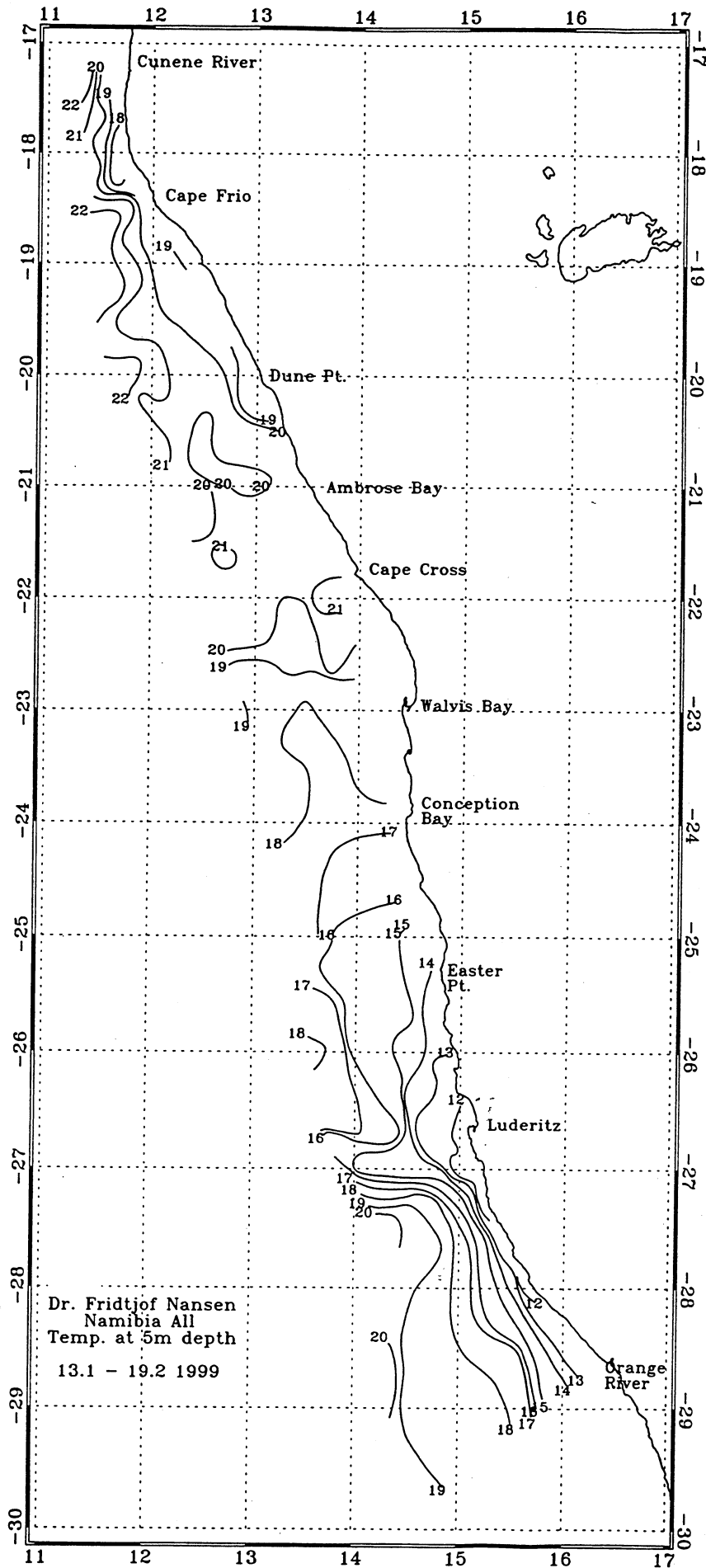


Figure 3 Orange River to Cunene River. Distribution of sea temperature at 5 m depth.



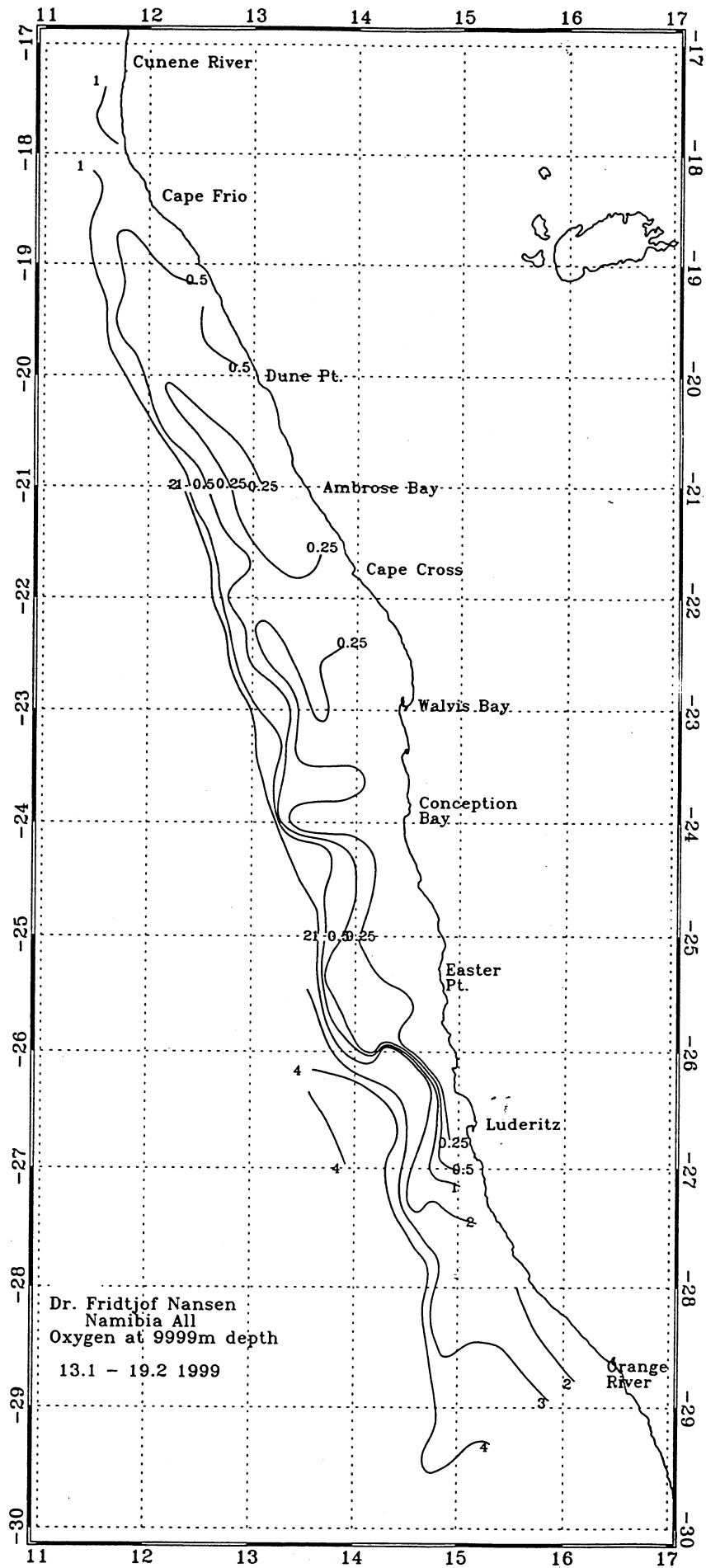


Figure 4 Orange River to Cunene River. Distribution of oxygen (ml/l) near the bottom.

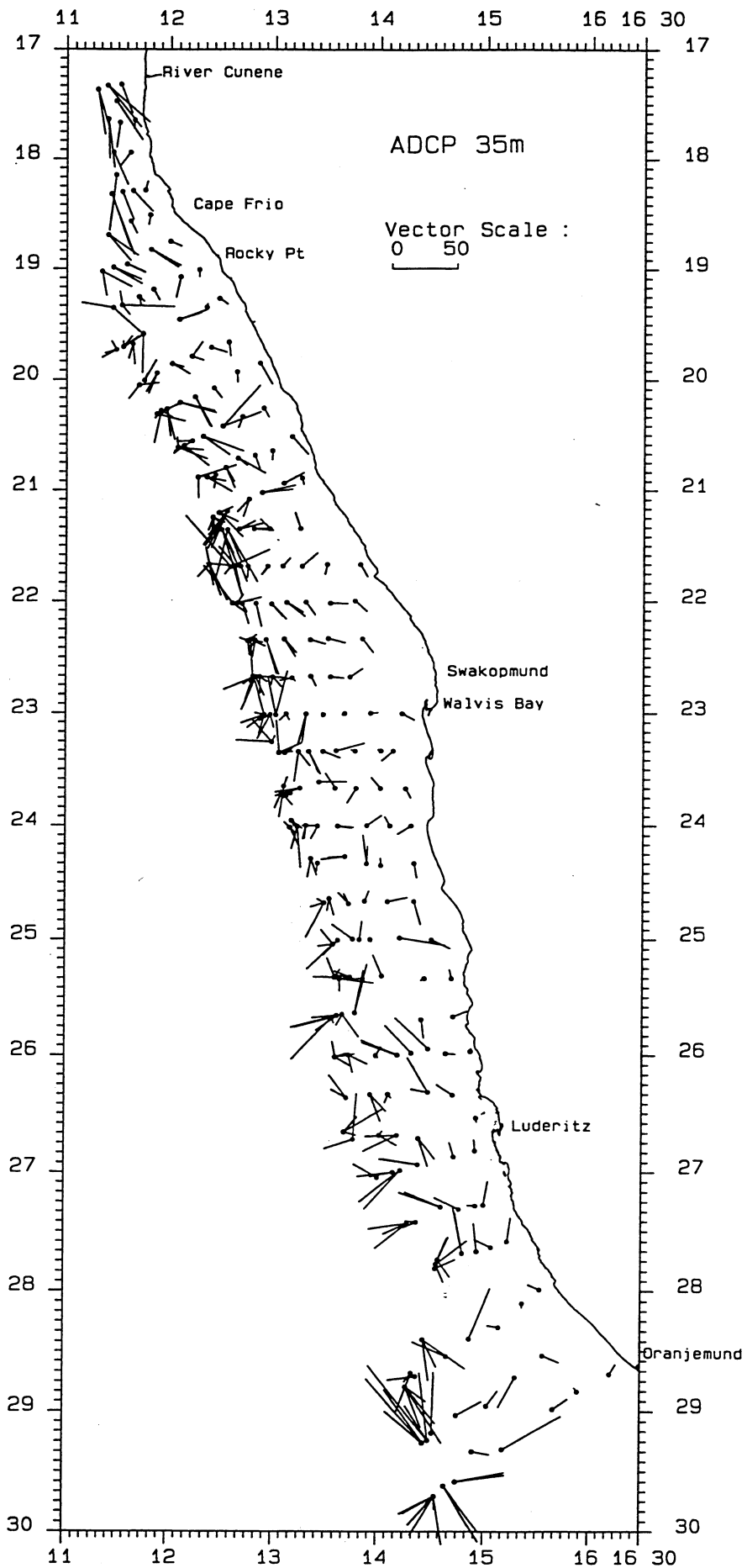
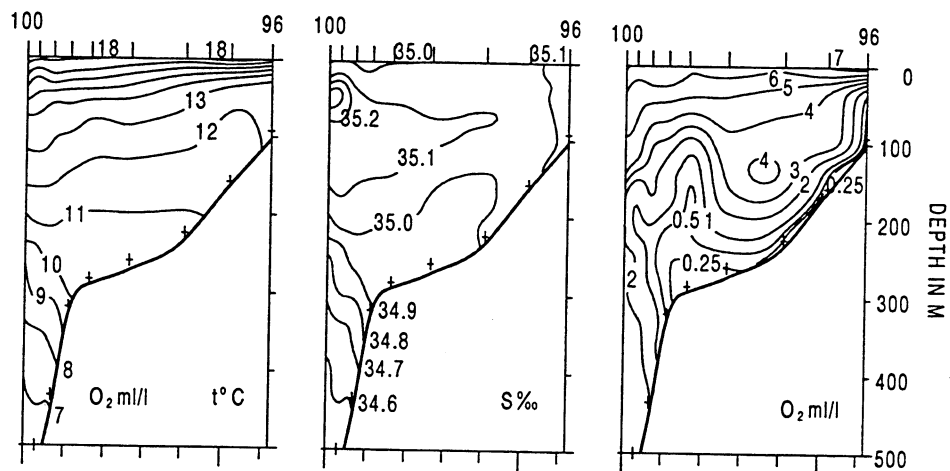
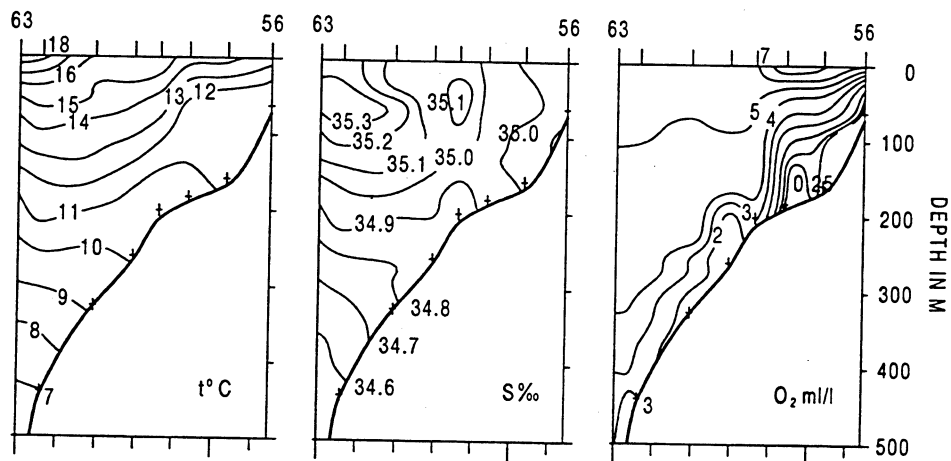


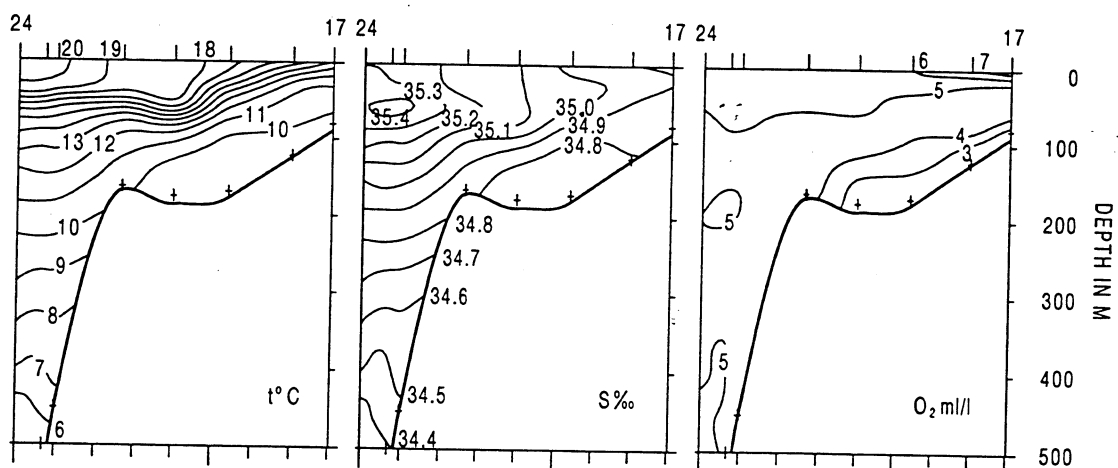
Figure 5 Orange River to Cunene River. ADCP current measurements on CTD stations.



### CONCEPTION BAY 27 - 28.1 1999

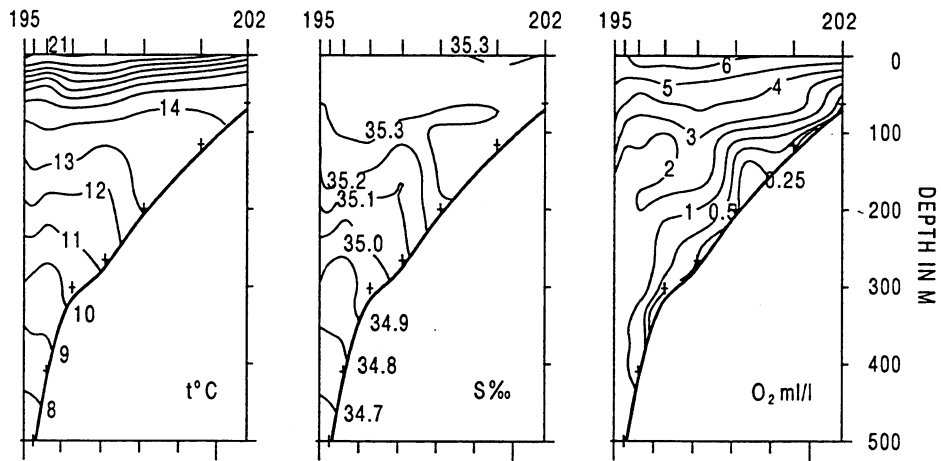


### DOLPHIN HEAD 21 - 22.1 1999

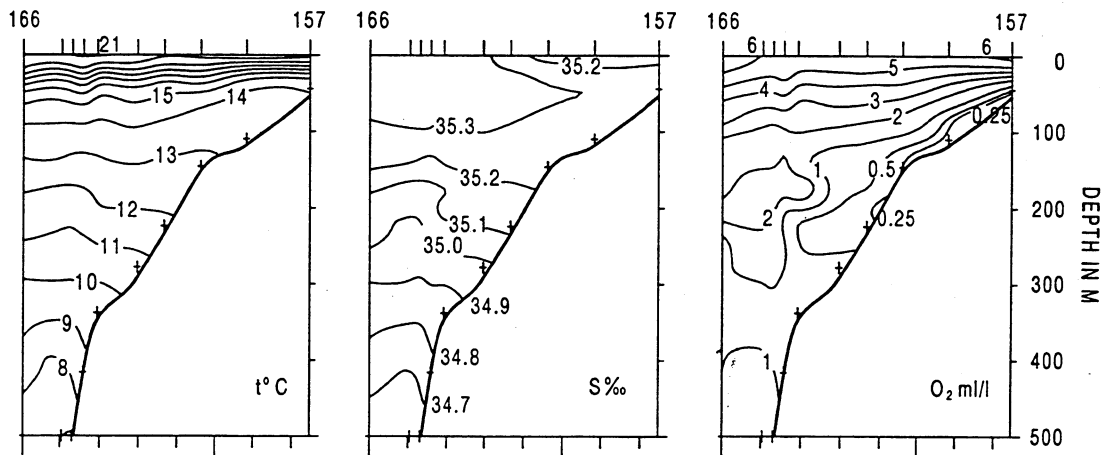


### PANTHER HEAD 15 - 16.1 1999

Figure 6a Temperature, salinity and oxygen in the standard profiles worked.



DUNE POINT 11 - 12. 2 1999



CAPE CROSS 6 - 7.2 1999

Figure 6b Temperature, salinity and oxygen in the standard profiles worked.

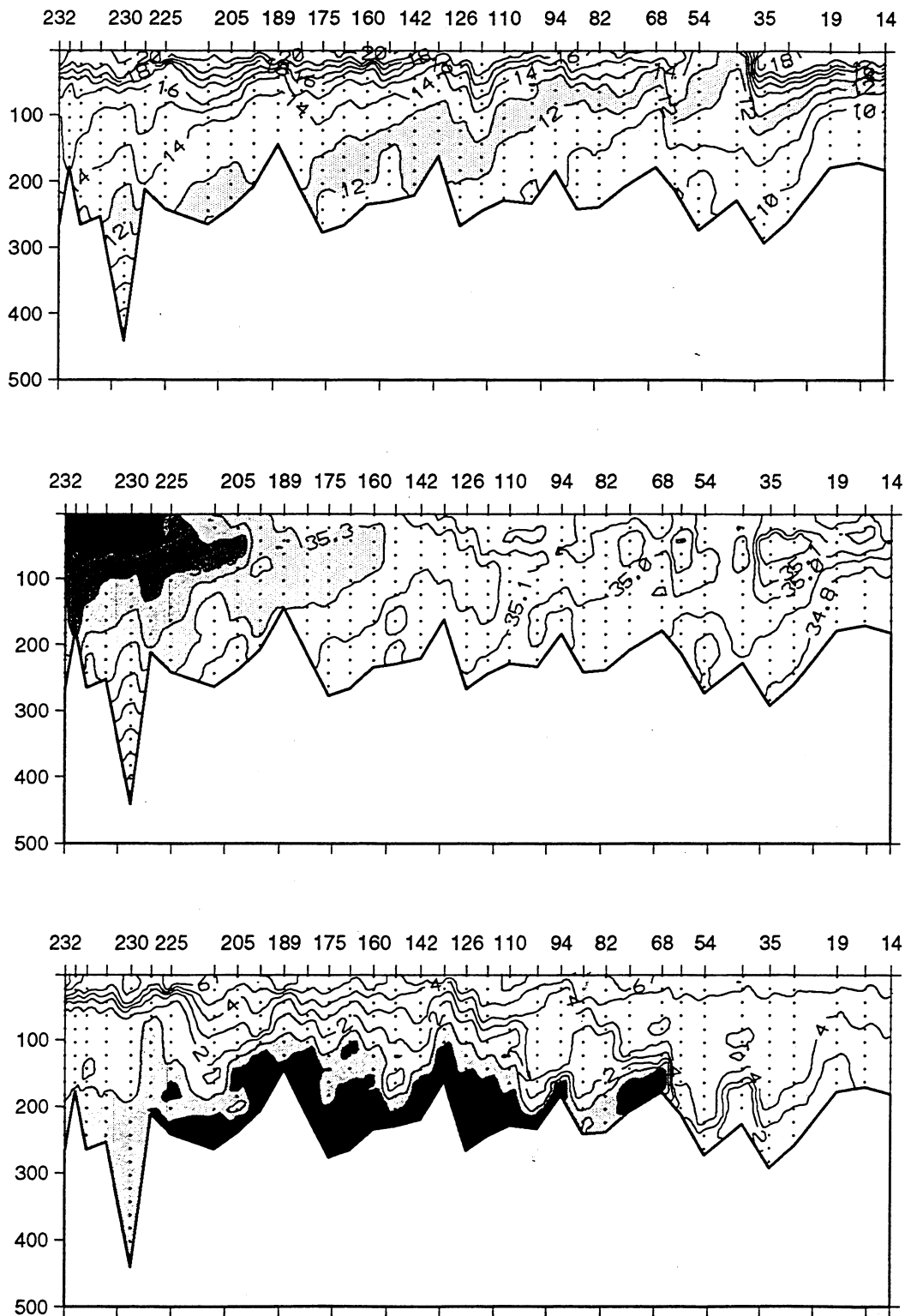


Figure 7. Vertical longshore sections along approx. 200-meters isobath of temperature salinity and oxygen. Left axis denotes depth in meters, and top axis gives station numbers.

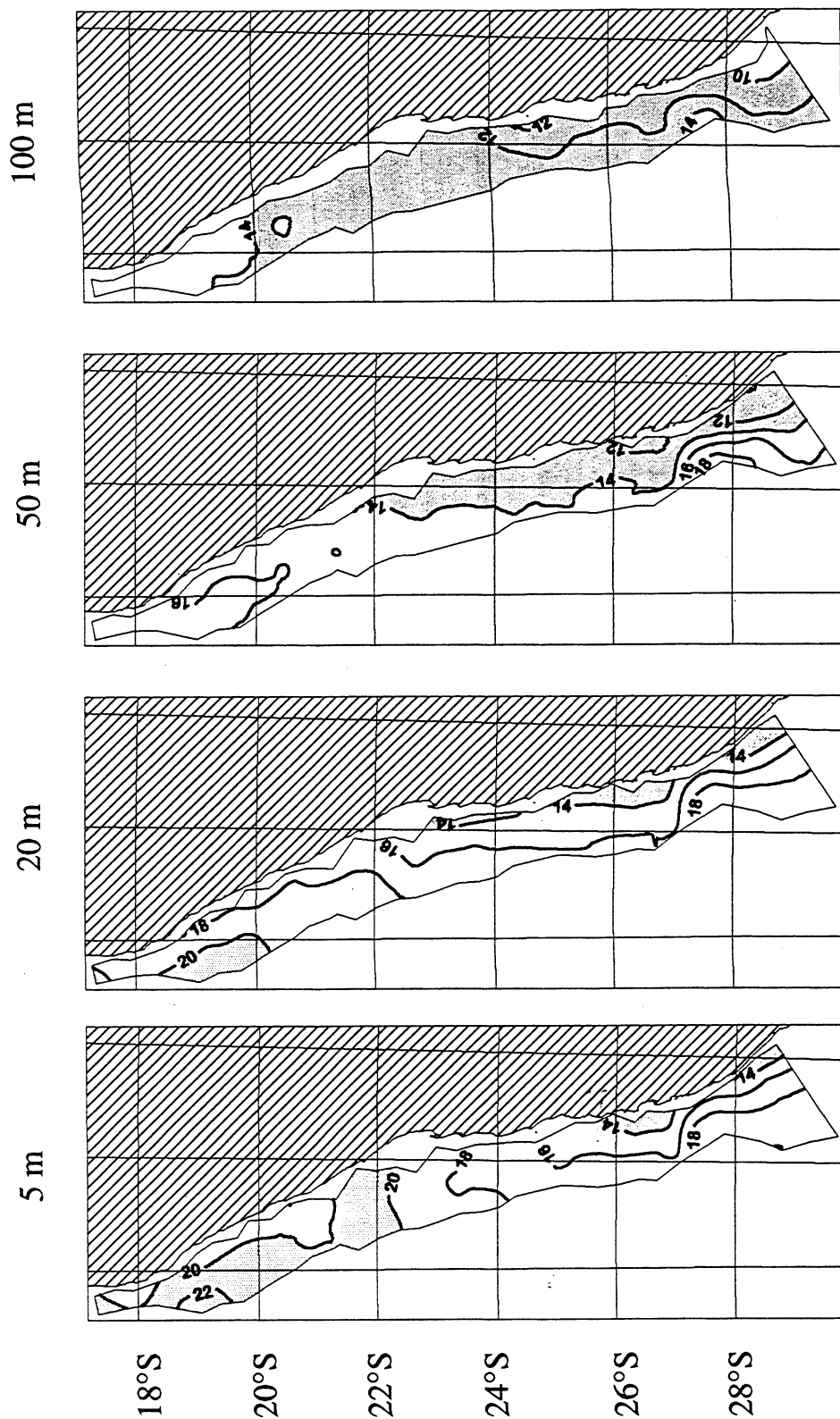


Figure 8. Horizontal distributions of temperature off Namibia during February 1999, at four depths: 5, 20, 50 and 100-meters.

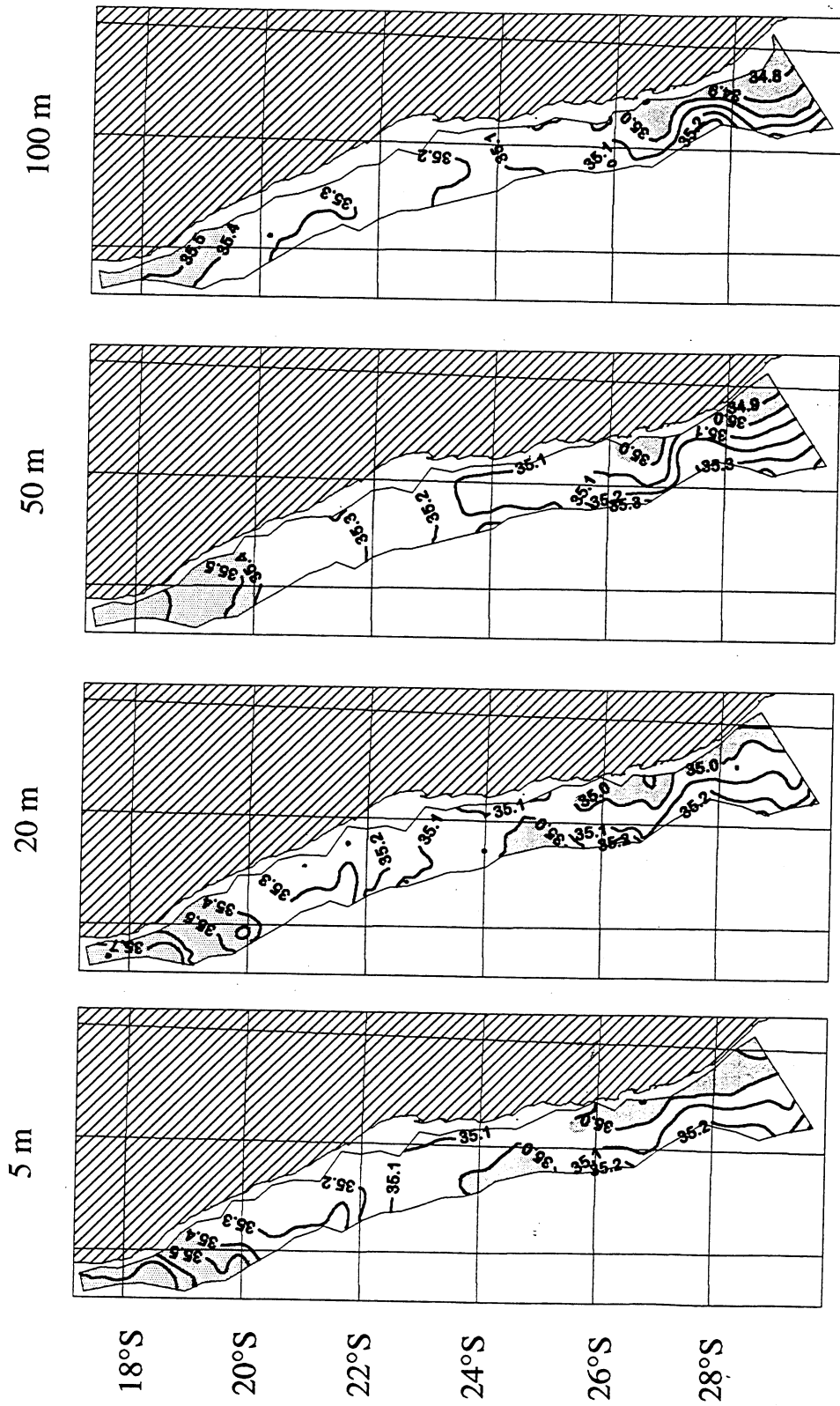


Figure 9. Horizontal distributions of salinity off Namibia during February 1999, at four depths: 5, 20, 50 and 100-meters.



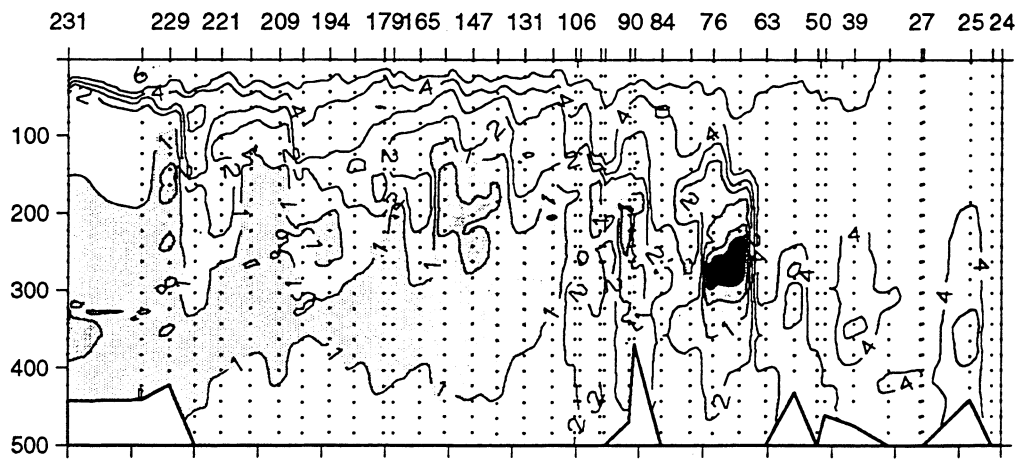


Figure 10. Vertical longshore section of oxygen along approx. 500-meters isobath, obtained from the 1999 hake survey off Namibia. Left axis denote depth in meters, and top axis gives station numbers.

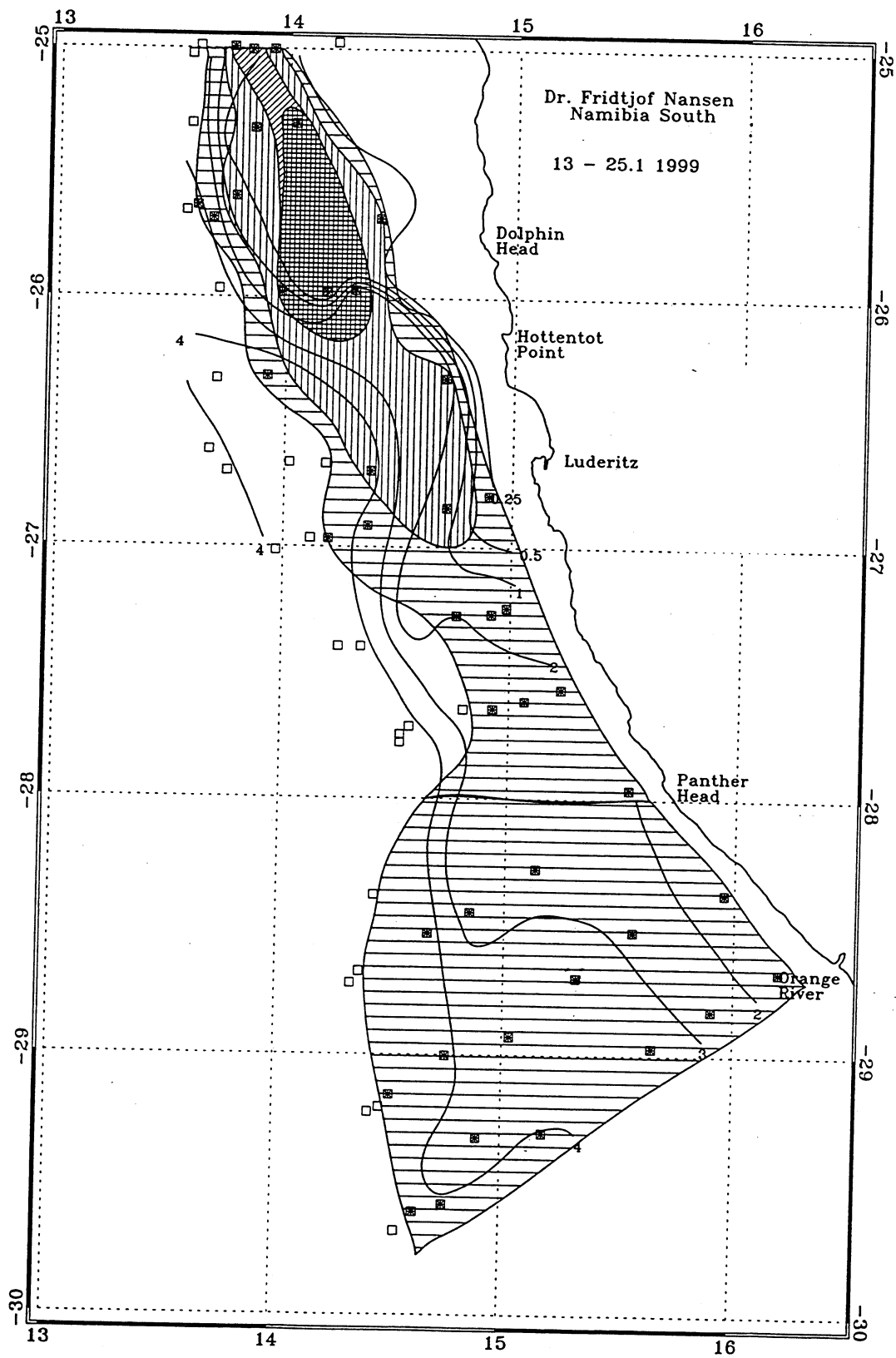


Figure 11a Orange River to St. Francis Bay. Distribution of Cape hake and oxygen (ml/l) near the bottom.

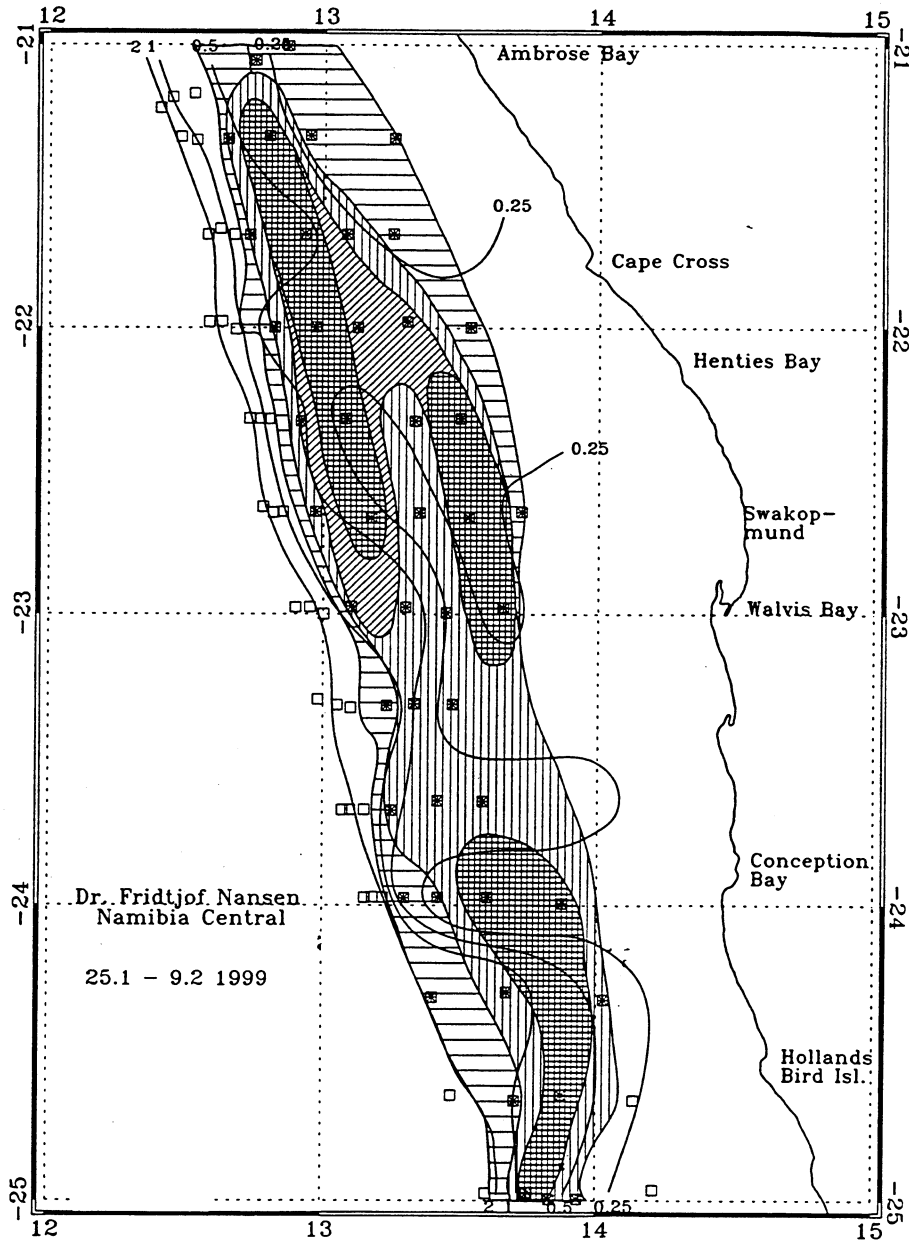


Figure 11b St. Francis Bay to Ambrose Bay. Distribution of Cape hake and oxygen (ml/l) near the bottom.

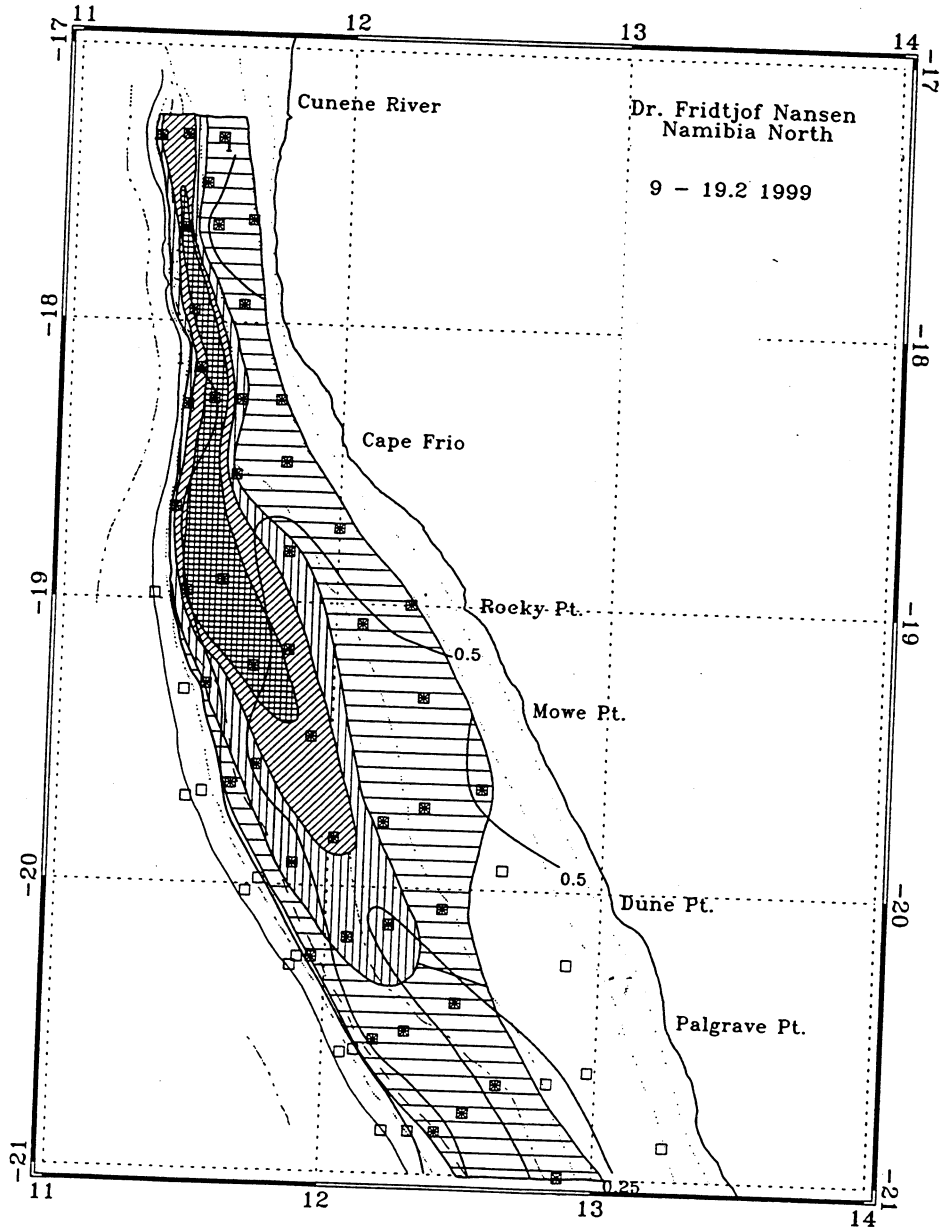


Figure 11c Ambrose Bay to Cunene River. Distribution of Cape hake and oxygen (ml/l) near the bottom.

## CHAPTER 3 RESULTS OF THE ACOUSTIC AND TRAWL SURVEY

## 3.1 DISCUSSION OF METHODS

In the trawl survey programme all catches were sampled for composition in weight and numbers by species. The bottom trawl has a headline of 31 m (float line), a footrope of 47 m, headline height of 5 m and a distance between the wings during towing of about 21 m. All trawl hauls were monitored by SCANMAR trawl sensors (trawl depth, headline height and distance between the doors). This technology allows to determine with improved accuracy the actual time the trawl is on the bottom. A 10 m constraining rope is attached between the warps, 140 m in front of the doors.

This constraining rope keeps the distance between the doors constant irrespective of trawl depth. For conversion of catch rates to fish densities the area between the wings is assumed to be equal to the effective fishing area and the retention factor  $q$  is

set to 1. However, the width of the swept area assessments used in the whole time series of surveys is 18.5 m, while the true wing spread is 21 m. Therefore, if the wings are assumed to constitute the limits of the swept area,  $q$  has in practice been 1.14, which is the proportion of

| Table 1 Hakes. Frequency of observations of hake in mid-water during trawling. No. of trawl stations with swept area densities and no. of stations with observations of hake above 5 m from bottom with acoustic density estimate (tonnes/NM <sup>2</sup> ). |      |       |
|--|------|-------|
|  | DAY  | NIGHT |
| <b>ORANGE RIVER - ST. FRANCIS BAY</b>  |      |       |
| Trawl  |      |       |
| No. stations   | 57   | 15    |
| Mean density   | 30.2 | 8.5   |
| Acoustic obs.  |      |       |
| No. stations   | 28   | 14    |
| Mean density   | 1.9  | 1.1   |
| Average acoustic correction %  | 3    | 12    |
| <b>ST. FRANCIS BAY - AMBROSE BAY</b>   |      |       |
| Trawl  |      |       |
| No. stations   | 58   | 16    |
| Mean density   | 28.1 | 10.7  |
| Acoustic obs.  |      |       |
| No. stations   | 35   | 12    |
| Mean density   | 1.3  | 1.2   |
| Average acoustic correction %  | 3    | 8     |
| <b>AMBROSE BAY - CUNENE RIVER</b>  |      |       |
| Trawl  |      |       |
| No. stations   | 50   | 13    |
| Mean density   | 18.3 | 23.7  |
| Acoustic obs.  |      |       |
| No. stations   | 21   | 12    |
| Mean density   | 6.2  | 9.2   |
| Average acoustic correction %  | 14   | 36    |

21 by 18.5. However, it has been decided to keep the old constants used in the time series until more precise measure of bias becomes available. In contrast to many other gadiform species, gear avoidance and herding is low in the hakes and the wing distance are assumed to be close to the effective swept path. With the new vessel, starting from January 1994, a new trawl gear with smaller bobbins was introduced. For the hake species the new gear is assumed to have no difference in performance. The trawl doors are Thyborøen 7.9 m<sup>2</sup>, 2060 kg, but the net, warp and wire dimensions are as with the former vessel (see Annex IV). The length of a haul over bottom, recorded as distance trawled, was measured by log pulses from the GPS, and checked against the lengths of the traces of the hauls on the GPS plotter system.

The problem of mid-water occurrence of hake and its effect on the swept area assessments has been discussed in earlier cruise reports. As in previous investigations, off-bottom hake in mid-water constituted only a minor problem in the south and in the central area.

Fish abundance (in weights and numbers) by length groups or by cohorts are found by combining the total abundance obtained from catch records with the length distributions of the species. Length distributions in fish aggregations are obtained by pooling the length frequencies from trawl stations using the catch rates as weighting factors, and regional length based estimates are obtained through pooling the length frequencies from these areas with the biomass of the aggregations as weighting factor.

### 3.1.1 COMPARATIVE TRAWLING WITH "RIBADEO", AND THE USE OF MULTI SAMPLER ON BOTTOM TRAWL

In order to establish a robust hake abundance measurement methodology based on the application of commercial vessels, a standard Namibian freezer trawler, the "Ribadeo" trawled in tandem with the "Nansen" for the whole cruise. In 1998 two different vessels were used, one for each leg. The results from 1998 indicated that the repeatability of catch rates between the commercial vessel and the "Nansen" was good. This was also the case this year. The trawl rigging on the commercial vessel was fine tuned, and the problems experienced on soft bottom for the commercial vessel were reduced. Most of these problems probably were related to the relative lengths of the bridles. The upper bridles should be 80 cm longer than the lower ones for this trawl using the Steinshamn doors in order to avoid excessive digging in the groundgear mid section, particularly if the door spread is reduced early in the haul. The doors do not have the massive spreading power of the Thyborøen doors, and consequently do not take restriction well. For the future it should therefore be considered to log door spread data from the Scanmar system for every haul in order to calculate swept area from these data. This to avoid strapping and full door spread can be established early in the haul, reducing digging to a minimum. If one still wants to maintain door restriction, the strapping point has

to be worked out for each vessel during practical tests, starting at 200 m with 15 m restriction rope. A detailed gear rigging and operations protocol should be established for future use of commercial vessels in swept area sampling.

The Scanmar Multisampler was used successfully on the bottom trawl for 5 hauls. The purpose of these tests were to evaluate the potential use of this system in situations with large amounts of jellyfish in order to let the trawl get to the bottom without getting filled with jellyfish on the ways to and from the bottom. The extension piece on the multisampler was fastened to the bottom trawl in front of the extension piece on the trawl where the diameter of the trawl was the same as that of the Multisampler extension piece. The ten floats normally used on the net in front of the Multisampler were moved to the sampler itself, as they seemed to block the signal transmission between the sampler and the ship. The experiments were carried out on soft bottom, and for harder bottom at least two additional floats should be used to secure flotation of the sampler. The technical feasibility of operation was good, and hauls could be conducted about equally fast as with the normal trawl. The spare trawl on the port net-drum was used, so that the two trawls could be operated alternately. The catch rates for these hauls were very low, and the Multisampler catch rates were lower than those of the "Ribadeo". This may be due to fish swimming with the trawl in front of the Multisampler, and escaping through the frame when the net is closed at the end of the haul. This bias can be avoided by waiting to close the net until well after the trawl has left the bottom, alternatively to open another bag after the first one is closed. Jellyfish were also caught with the Multisampler in quantities large enough to indicate that there may be substantial amounts present also near the bottom. Additional tests should be carried out with varying catch rates and bottom conditions in order to establish an operational protocol.

### **3.2 SOUTHERN REGION, ORANGE RIVER TO ST. FRANCIS BAY**

Annex III shows the complete records of the fishing stations. Table 2 shows the catch rates of the main commercial species standardised to kg/hour for the shelf and the slope separately. For the hakes the mean catch rates on the shelf are 610 kg/hr (SE=350), while in the slope they are 360 kg/hr (SE=247). This represent a considerable reduction from about 1000 kg/hr and 786 kg/hr for the shelf and the slope respectively found during the survey in January 1997. The high standard error (SE) associated with the mean values should give some caution in the interpretation. Monk catch rates on the shelf show strong increase from the survey in January 1998; on the shelf it has increased from about 3 to 10 kg/h and on the slope from 5 to 27 kg/h. The increase is mainly associated with a new trawl that was operating with exceptionally close bottom contact.



Table 2 Southern region. Catch rates in kg/hour by main groups by swept area bottom trawl for the shelf and the slope.

Means and standard errors (SE) included.

## SHELF 75-259 m

| STA  | TDEP | Cape hake | D. w. hake | Monk | Horse mck. | Kingklip | Other  |
|------|------|-----------|------------|------|------------|----------|--------|
| 2596 | 97   | 123.6     |            | 1.3  | 7.7        | 11.0     | 436.3  |
| 2597 | 161  | 30.7      | 84.0       | 1.3  | 2.0        | 2.2      | 226.1  |
| 2598 | 174  | 68.8      | 214.0      | 7.7  | 13.6       | 1.9      | 237.5  |
| 2599 | 180  | 94.7      | 55.2       | 42.0 | 17.8       | 1.9      | 91.2   |
| 2600 | 219  | 155.9     | 400.1      | 29.9 | 14.9       | 2.7      | 292.4  |
| 2607 | 194  | 23.3      |            | 15.0 | 0.4        |          | 77.8   |
| 2608 | 190  | 22.1      | 6.4        | 7.8  | 24.8       | 0.5      | 99.1   |
| 2609 | 182  | 24.9      | 69.9       | 1.0  | 6.6        | 2.8      | 63.1   |
| 2610 | 156  | 19.8      |            | 19.5 | 10.9       | 2.3      | 1574.8 |
| 2611 | 104  | 27.2      |            |      | 45.4       | 4.9      | 646.2  |
| 2612 | 89   | 19.6      |            |      | 0.2        | 0.8      | 238.9  |
| 2613 | 178  | 68.6      | 235.8      | 11.6 |            | 15.8     | 105.4  |
| 2614 | 189  | 131.7     |            | 50.9 | 45.3       | 15.6     | 804.3  |
| 2615 | 176  | 254.1     |            | 10.2 | 33.6       |          | 577.2  |
| 2624 | 174  | 104.3     |            | 0.7  | 5.1        | 2.8      | 182.0  |
| 2625 | 132  | 45.5      |            |      |            |          | 411.3  |
| 2626 | 174  | 50.2      |            | 0.6  |            |          | 72.0   |
| 2627 | 192  | 52.5      | 7.3        |      |            | 4.7      | 85.0   |
| 2636 | 224  | 609.1     |            |      |            | 4.8      | 229.1  |
| 2637 | 154  | 5.0       |            |      |            | 2.4      | 199.1  |
| 2646 | 219  | 28.5      | 7.9        | 2.0  |            | 1.0      | 95.9   |
| 2647 | 164  | 451.2     |            |      |            |          | 639.1  |
| 2648 | 234  | 8862.2    |            | 84.2 | 20.5       | 26.7     | 150.4  |
| 2656 | 178  | 519.5     |            |      |            |          | 8.9    |
| 2658 | 206  | 3588.0    |            |      |            |          | 224.6  |
| 2665 | 165  |           |            |      |            |          | 222.3  |
| 2666 | 184  | 382.1     |            |      | 0.8        |          | 30.2   |
| 2667 | 217  | 1196.3    |            |      | 91.5       |          | 51.4   |
| Mean |      | 605.7     | 38.6       | 10.2 | 12.2       | 3.7      | 288.3  |
| SE   |      | 332.8     | 17.6       | 3.7  | 3.9        | 4.2      | 20.2   |

## SLOPE 260-700 m

| STA  | TDEP | Cape hake | D. w. hake | Monk  | Horse mck. | Kingklip | Other  |
|------|------|-----------|------------|-------|------------|----------|--------|
| 2601 | 357  | 17.8      | 99.9       | 0.0   | 0.0        | 44.6     | 115.8  |
| 2602 | 490  | 0.0       | 89.2       | 2.2   | 0.0        | 15.6     | 85.4   |
| 2603 | 593  | 0.0       | 143.9      | 0.0   | 0.0        | 0.0      | 401.2  |
| 2604 | 529  | 0.0       | 1249.1     | 3.9   | 0.0        | 14.2     | 168.3  |
| 2605 | 419  | 61.1      | 1513.6     | 17.6  | 0.0        | 19.9     | 237.6  |
| 2606 | 359  | 44.4      | 1034.9     | 0.0   | 0.0        | 17.4     | 931.3  |
| 2616 | 473  | 2672.0    | 500.5      | 0.0   | 2.0        | 37.1     | 32.4   |
| 2617 | 550  | 0.0       | 422.9      | 0.4   | 0.0        | 7.7      | 211.0  |
| 2618 | 434  | 0.0       | 308.3      | 20.6  | 0.0        | 79.2     | 144.9  |
| 2619 | 570  | 0.0       | 292.9      | 0.0   | 0.0        | 0.0      | 287.8  |
| 2620 | 521  | 0.0       | 63.6       | 0.0   | 0.0        | 0.0      | 246.6  |
| 2621 | 462  | 0.0       | 140.7      | 4.5   | 0.0        | 12.5     | 99.0   |
| 2622 | 342  | 0.0       | 1723.5     | 0.0   | 31.9       | 35.3     | 367.4  |
| 2623 | 284  | 33.5      | 465.4      | 82.8  | 0.0        | 6.3      | 222.7  |
| 2628 | 287  | 93.4      | 1.4        | 3.8   | 20.9       | 11.9     | 1045.2 |
| 2629 | 340  | 21.6      | 885.1      | 47.2  | 18.1       | 13.1     | 304.5  |
| 2630 | 436  | 0.0       | 470.7      | 0.0   | 0.0        | 9.0      | 174.4  |
| 2631 | 557  | 0.0       | 31.8       | 3.0   | 0.0        | 0.0      | 151.1  |
| 2632 | 473  | 0.0       | 20.3       | 0.0   | 0.0        | 0.0      | 73.4   |
| 2633 | 406  | 0.0       | 653.8      | 19.1  | 0.0        | 10.5     | 403.7  |
| 2634 | 388  | 8.2       | 225.7      | 47.9  | 0.0        | 13.2     | 650.4  |
| 2635 | 353  | 16.8      | 218.3      | 41.8  | 0.0        | 18.5     | 284.0  |
| 2638 | 336  | 715.5     | 1711.4     | 22.5  | 5.8        | 85.7     | 461.4  |
| 2639 | 378  | 0.0       | 1343.9     | 15.3  | 0.0        | 75.3     | 853.5  |
| 2640 | 407  | 0.0       | 1171.3     | 0.0   | 0.0        | 47.9     | 302.8  |
| 2641 | 459  | 0.0       | 777.1      | 13.1  | 0.0        | 2.3      | 61.1   |
| 2642 | 550  | 0.0       | 282.2      | 9.1   | 0.0        | 0.0      | 107.9  |
| 2643 | 434  | 0.0       | 521.4      | 0.0   | 0.0        | 23.0     | 172.6  |
| 2644 | 379  | 28.5      | 705.6      | 66.2  | 0.0        | 40.3     | 306.7  |
| 2645 | 344  | 474.2     | 1372.8     | 3.8   | 6.8        | 0.0      | 332.3  |
| 2649 | 264  | 3995.3    | 0.0        | 288.8 | 49.8       | 0.0      | 413.9  |
| 2650 | 328  | 4977.4    | 183.8      | 195.8 | 286.3      | 36.8     | 2006.6 |
| 2651 | 455  | 0.0       | 871.3      | 48.6  | 0.0        | 3.6      | 434.8  |
| 2652 | 640  | 0.0       | 92.0       | 0.0   | 0.0        | 0.0      | 4123.4 |
| 2653 | 533  | 4.2       | 352.9      | 63.2  | 0.0        | 0.0      | 1000.5 |
| 2654 | 421  | 16.9      | 321.5      | 4.3   | 0.0        | 89.9     | 385.0  |
| 2655 | 336  | 486.4     | 0.0        | 43.8  | 0.0        | 5.0      | 2094.3 |
| 2659 | 264  | 516.2     | 0.0        | 0.0   | 1.8        | 0.0      | 137.1  |
| 2660 | 323  | 114.0     | 0.0        | 0.0   | 0.0        | 0.0      | 428.3  |
| 2661 | 476  | 36.8      | 2802.4     | 19.2  | 62.0       | 0.0      | 490.8  |
| 2662 | 595  | 1.1       | 264.9      | 0.0   | 0.0        | 0.0      | 1590.9 |
| 2663 | 597  | 0.0       | 250.5      | 33.3  | 0.0        | 0.0      | 1843.0 |
| 2664 | 501  | 0.0       | 616.3      | 30.8  | 0.0        | 0.0      | 1384.6 |
| 2668 | 296  | 1555.5    | 0.0        | 33.4  | 68.8       | 0.0      | 342.5  |
| Mean |      | 333.4     | 562.7      | 26.8  | 11.3       | 18.0     | 594.6  |
| SE   |      | 155.6     | 91.5       | 8.0   | 6.8        | 3.8      | 114.5  |

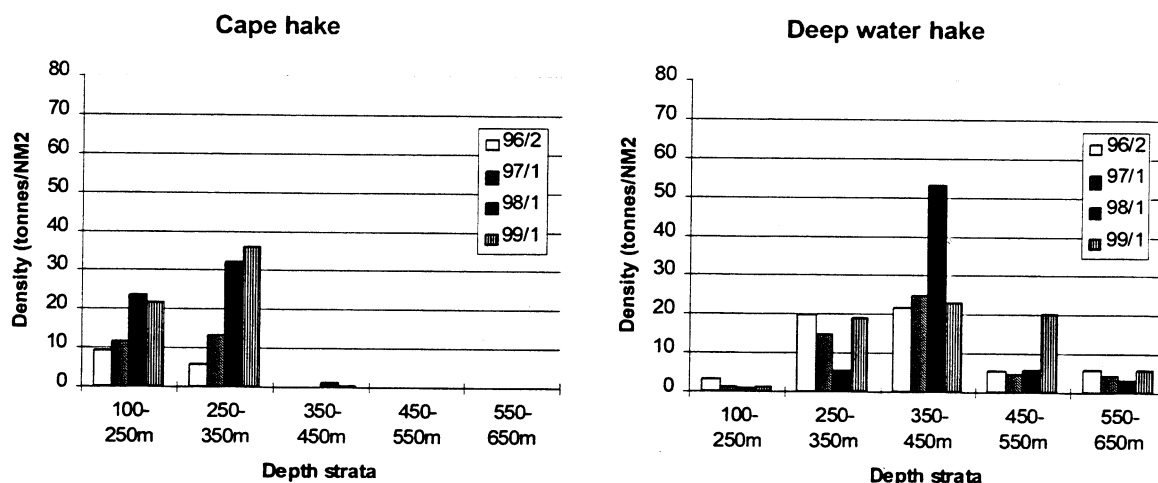


Figure 12. Southern region. Depth distribution of two hake species. Mean densities in tonnes/NM<sup>2</sup>.

Figure 12 shows the depth distribution of the two hake species based on the catch rates converted to densities. A comparison with three previous January surveys (1996, 1997 and 1998) shows that the catch rates for the Cape hake are close to the values observed in 1998 and remain relatively high. Compared to last year's survey the deep water hake has increased in the 250-350 m zone and are now back to the 1996-97 level. In the 350-450 m zone the deep water hake have decreased during one year and back to the same level as in the years 1996-97. A relative high increase in the 450-550 m zone is observed for the deep water hake.

The distribution of the two hake species based on plots of densities by fishing stations is shown in Figures 13 and 14. These include the acoustic estimates of fish present above the 5 m bottom channel during trawling as explained above. The Cape hake (Figure 13) densities were very high in the shelf areas at 100-200 m bottom depth off Dolphin Head. About 70% of the fish in the southern region is contained in this aggregation which is mainly the abundant 1996 year-class of hake, modal length around 27 cm, and has still not started migrating towards the slope. The distribution features on the slope seem normal

| Year/survey | Cape hake | Deep water hake |
|-------------|-----------|-----------------|
| 90/1        | 130       | 22              |
| 90/2        | 130       | 25              |
| 91/1        | 113       | 31              |
| 91/2        | 80        | 82              |
| 92/1        | 200       | 145             |
| 92/2        | 160       | 125             |
| 93/1        | 210       | 150             |
| 93/2        | 180       | 115             |
| 94/1        | 200       | 160             |
| 94/2        | 240       | 215             |
| 94/3        | 150       | 121             |
| 95/2        | 145       | 140             |
| 96/1        | 169       | 202             |
| 96/2        | 89        | 167             |
| 97/1        | 121       | 132             |
| 98/1        | 327       | 186             |
| 99/1        | 216       | 172             |

for the Cape hake. For the deep water hake (Figure 14) dense registrations on the slope, 350-500 m, were found from Lüderitz and northwards. This fish had a size range from 40-50 cm.

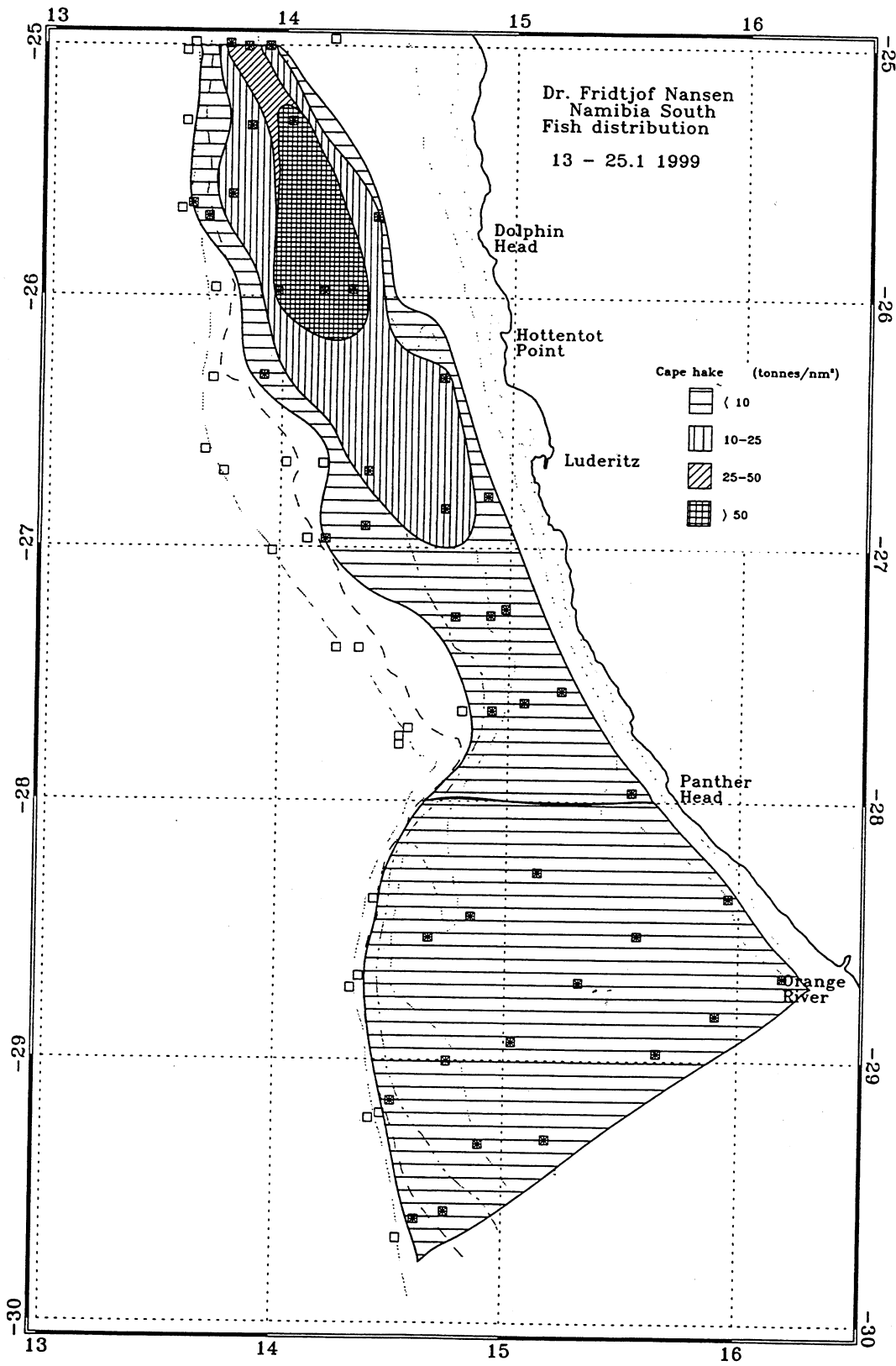


Figure 13 Orange River to St. Francis Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

Biomass estimates based on a post-stratification of the densities as shown in Figures 13 and 14, gives 216 000 tonnes for the Cape and 172 000 tonnes for the deep water hake (Table 3), a 45% decrease for the Cape hake and 8% decrease for the deep water hake since the previous survey. The 95% confidence limits give a range of  $\pm 32\%$  on the estimate of the Cape hake and  $\pm 11\%$  of the deep water hake.

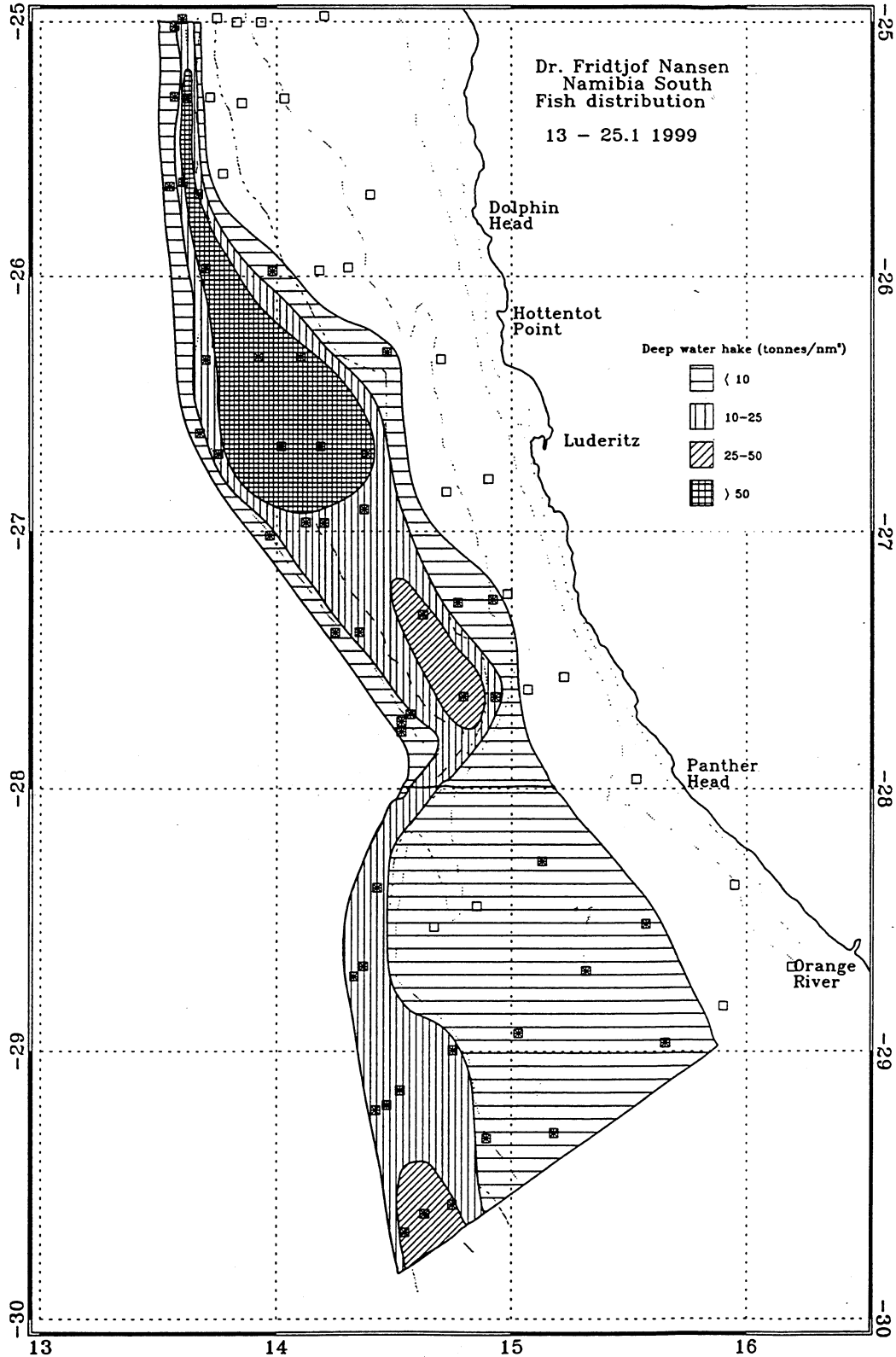


Figure 14 Orange River to St. Francis Bay. Distribution of deep water hake. Empty squares indicate stations where deep water hake was not caught.

The size compositions, in biomass and numbers, of the Cape hake from pooled samples weighted by catch rates are shown in Figure 15. A length frequency analysis to identify cohorts in the stock, was performed in the same way as during the seven previous surveys. The results are shown in Table 5.

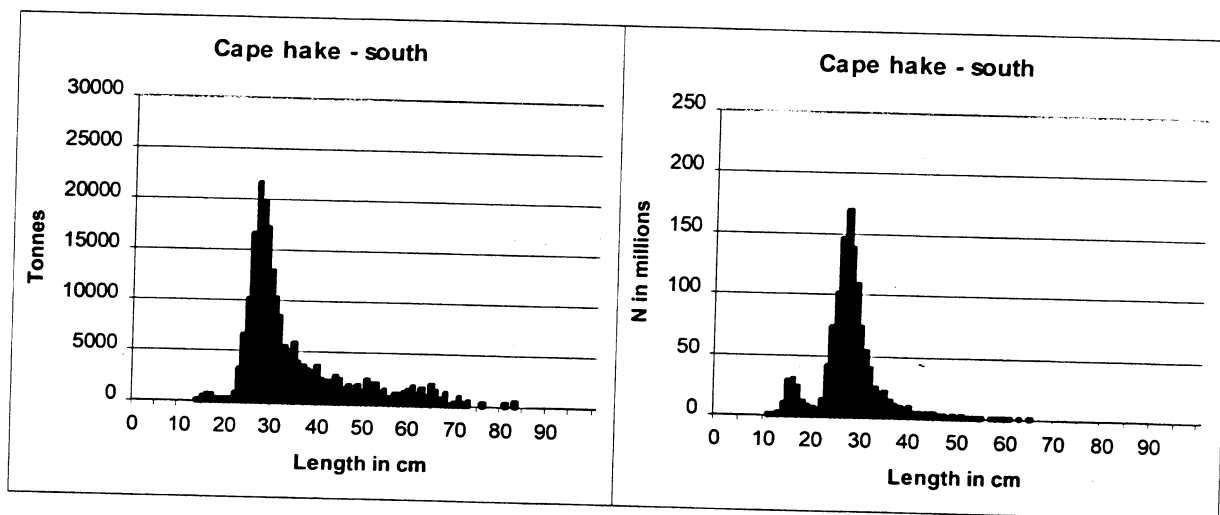


Figure 15 Length composition of Cape hake in biomass and numbers.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|------------|-------------|-------|----------------------|----------------------|-----------------|
| 1997b      | 15.8        | 1.2   | 0.08                 | 118                  | 3               |
| 1996       | 27.0        | 2.5   | 0.77                 | 968                  | 127             |
| 1995       | 34.7        | 2.7   | 0.10                 | 126                  | 34              |
| older      |             |       | 0.05                 | 63                   | 52              |

As seen in Table 5 the main part of the Cape hake, both in numbers (77%) and biomass (59%), is made up of fish around 27 cm. This is probably the remains of the exceptionally strong 1996 year-class, that was first recorded in the hake survey in Jan-Feb 1998. A puzzling feature is that the fish is relatively small in 1999 and if it is the 1996 year-class, it would only have grown from 22 to 27 cm in one year. On the other hand there are no other strong cohorts higher on the length scale that can be associated with a strong 1996 year-class. It is therefore concluded that the growth in the cohort has been slower than normal, perhaps due to overpopulation and lack of food. Figure 15 also shows that cohorts following the 1996 cohort are very weak, a sign of reproduction failure for the 1997 year-class.

The fishable biomass of Cape hake, defined as all fish bigger than 35 cm, is estimated to 67 000 tonnes and 107 million fish. This is a decrease from last years 106 000 tonnes and 184 million fish. The recruitment to the fishable biomass was expected to be low during 1998 as the young 1996 year-class was still too small to enter the fishery. The decrease in biomass can therefore mainly be explained by fishing on an adult stock with temporary low recruitment. The mean body weight has however increased during 1998 from 0.58 kg to

0.63 kg, indicating that fish population becomes older as the strong 1994 year-class is growing.

The size composition of the deep water hake is shown in Figure 16 and the results from the cohort slicing in Table 6. The fishable part of the stock in the region is estimated to about 88 000 and 164 million fish, a slight reduction from 116 000 tonnes in January 1998. The mean body weight in the fishable biomass has increased from 0.44 kg to 0.53kg during 1998.

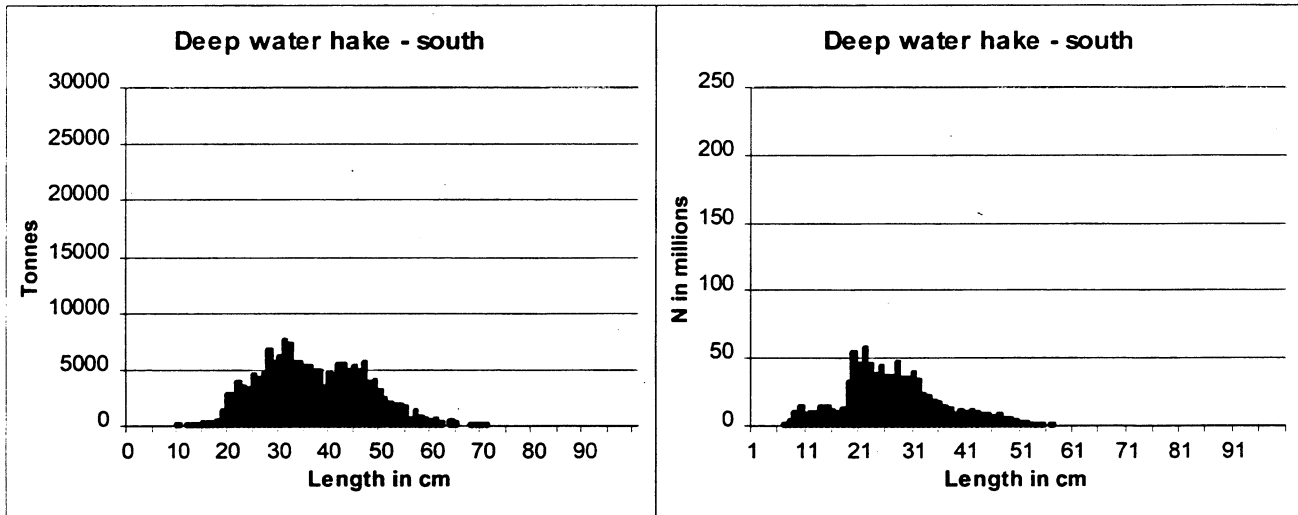


Figure 16 Length composition of deep water hake in biomass and numbers.

| Table 6 Southern region. Deep water hake. Estimated age-cohorts from optimised length distributions. |             |       |                      |                      |                 |
|--|-------------|-------|----------------------|----------------------|-----------------|
| Year class   | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
| 1996   | 14.4        | 1.5   | 0.055                | 52                   | 1               |
| 1997   | 20.8        | 2.0   | 0.29                 | 256                  | 15              |
| 1996b  | 26.0        | 2.1   | 0.24                 | 211                  | 25              |
| 1996   | 31.0        | 2.2   | 0.19                 | 172                  | 34              |
| 1995   | 36.5        | 3.0   | 0.12                 | 106                  | 34              |
| 1994   | 44.2        | 3.2   | 0.08                 | 73                   | 41              |
| older  |             |       | 0.025                | 22                   | 22              |

### 3.3 Central region, St. Francis Bay to Ambrose Bay

Table 7 shows the catch composition for the shelf and the slope by main groups. The mean catch rates for the hakes on the shelf are significantly lower than in 1998, reduced from 2200 kg/hr to 891 kg/hr. On the slope the mean rate has increased from 380 to 650 kg/hr between the 1998 and the 1999 survey. As for the southern region the monk catches are extraordinary high due to an exceptionally well trimmed trawl.

Figure 17 shows the mean catch rates by depth ranges of the two hake species, and compared with the three previous January surveys in 1996, 1997 and 1998. As already mentioned above the catch rates for the Cape hake on the shelf (100-250 m) shows a decrease since the record figures in 1998. The densities on the slope show a significant increase in the 250 to 350 bottom stratum since the previous year. The deep water hake, only present on the slope, has shown a down-going trend since 1996, but could show a slight increase in 1999 in the 350-450 stratum.

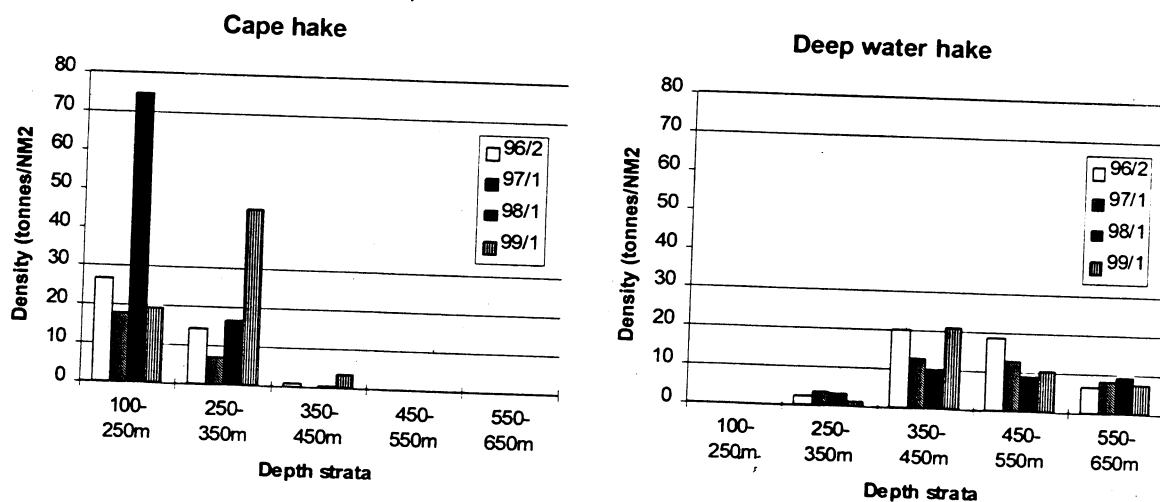


Figure 17 Central region. Depth distribution of two hake species. Mean densities in tonnes/NM<sup>2</sup>.

Figure 18 shows the geographical distribution of Cape hake in the central region. The two high density areas; one off Walvis Bay and the other off Conception bay, it constituted mostly of young fish with mode around 25-27 cm. The high-aggregation on the slope between Ambrose Bay and Swakopmund consists of a mixture of small and big fish. The deep water hake (Figure 19) shows the traditional distribution pattern along the slope, with densities in the 1-10 tonnes/NM<sup>2</sup> range and two aggregations in the 10-25 t/NM<sup>2</sup> range between the 350 and 450 bottom contour.



Table 7 Central region. Catch rates in kg/hour by main groups by swept area bottom trawl for the shelf and the slope. Means and standard errors (SE) included.

| SHELF 100-259 m |      |           |            |       |            |          |         |
|-----------------|------|-----------|------------|-------|------------|----------|---------|
| STA             | TDEP | Cape hake | D. w. hake | Monk  | Horse mck. | Kingklip | Other   |
| 2671            | 157  |           |            |       |            |          | 30000.0 |
| 2676            | 196  | 369.0     |            |       |            |          | 153.7   |
| 2679            | 238  | 1256.2    |            |       | 0.0        |          | 56.3    |
| 2691            | 225  | 112.1     |            |       |            |          | 6.4     |
| 2702            | 238  | 50.1      |            |       |            |          | 88.6    |
| 2703            | 152  | 1150.6    |            |       |            |          | 8.5     |
| 2716            | 157  | 1404.5    |            |       |            |          | 5.7     |
| 2717            | 136  | 0.4       |            |       |            |          | 10.3    |
| 2718            | 156  | 1512.0    |            |       |            |          | 1.2     |
| 2719            | 221  | 483.4     |            |       |            |          | 14.4    |
| 2720            | 258  | 5506.3    |            | 291.2 |            |          | 203.3   |
| 2730            | 230  | 1155.0    |            |       |            |          | 10.6    |
| 2731            | 172  | 1536.7    |            |       | 246.2      |          | 217.9   |
| 2732            | 134  | 86.4      |            |       |            |          | 0.3     |
| 2733            | 151  | 25.2      |            |       |            |          | 28.0    |
| 2734            | 241  | 499.0     |            |       |            |          | 10.3    |
| 2745            | 129  | 0.2       |            |       | 1.1        |          | 1.2     |
| Mean            |      | 891.0     |            | 17.1  | 14.6       |          | 1812.8  |
| SE              |      | 322.7     |            | 17.1  | 14.5       |          | 1761.8  |
| SLOPE 260-700 m |      |           |            |       |            |          |         |
| STA             | TDEP | Cape hake | D. w. hake | Monk  | Horse mck. | Kingklip | Other   |
| 2669            | 533  |           | 333.9      | 55.2  |            |          | 1775.4  |
| 2670            | 418  |           | 613.2      | 7.8   | 21.1       | 5.0      | 499.8   |
| 2672            | 263  | 2410.6    |            | 8.4   | 5.5        |          | 50.7    |
| 2673            | 376  | 73.7      | 1008.4     | 223.2 |            |          | 1070.3  |
| 2674            | 370  | 63.0      | 3083.9     | 1.2   | 837.5      | 70.2     | 498.0   |
| 2675            | 318  | 509.0     | 378.6      | 48.9  | 95.5       |          | 323.1   |
| 2680            | 269  | 3534.9    |            | 2.3   |            |          | 212.0   |
| 2681            | 635  |           | 67.6       | 2.1   |            |          | 708.2   |
| 2682            | 543  |           | 86.2       | 12.3  | 1.8        |          | 420.8   |
| 2683            | 445  |           | 93.3       | 24.8  | 0.5        |          | 565.6   |
| 2684            | 291  | 33.1      |            |       |            | 0.1      | 170.2   |
| 2685            | 325  | 86.9      |            | 232.2 |            | 0.6      | 882.8   |
| 2686            | 634  |           | 54.3       | 16.0  |            |          | 447.7   |
| 2687            | 536  |           | 127.8      | 30.2  |            |          | 966.6   |
| 2688            | 438  |           | 227.0      | 53.3  |            |          | 270.7   |
| 2689            | 329  | 1004.2    | 206.0      | 60.4  | 96.0       | 0.9      | 303.9   |
| 2690            | 264  | 337.6     |            | 0.2   | 1.9        |          | 231.3   |
| 2697            | 661  |           | 40.6       |       |            |          | 124.3   |
| 2698            | 558  |           | 155.8      | 5.3   |            |          | 714.0   |
| 2699            | 455  |           | 441.1      | 23.9  |            |          | 647.2   |
| 2700            | 384  | 212.6     | 326.3      | 65.0  |            | 110.9    | 636.2   |
| 2701            | 338  | 434.3     | 12.5       | 286.3 |            |          | 448.7   |
| 2704            | 282  | 11.0      |            |       |            |          | 25.4    |
| 2705            | 362  | 138.7     | 131.3      | 78.2  |            |          | 274.9   |
| 2706            | 320  | 1036.0    |            | 31.5  | 120.4      |          | 796.2   |
| 2707            | 485  |           | 341.2      | 26.5  |            |          | 1023.6  |
| 2708            | 583  |           | 76.6       |       |            |          | 219.1   |
| 2709            | 670  |           | 161.4      |       |            |          | 247.4   |
| 2710            | 637  |           | 240.3      | 4.2   |            |          | 470.5   |
| 2711            | 546  |           | 615.6      | 4.4   |            |          | 505.0   |
| 2712            | 438  |           | 78.8       | 27.5  |            | 13.1     | 368.8   |
| 2713            | 304  | 615.4     | 1.5        | 56.9  | 14.6       |          | 1032.6  |
| 2714            | 307  | 2899.9    |            | 33.2  | 66.6       |          | 463.1   |
| 2715            | 271  | 188.2     |            |       |            |          | 0.2     |
| 2721            | 315  | 759.0     |            | 25.2  |            | 2.2      | 168.9   |
| 2722            | 407  |           | 656.2      | 0.5   |            |          | 246.9   |
| 2723            | 510  |           | 186.6      | 19.0  |            |          | 3038.0  |
| 2724            | 604  |           | 521.4      |       |            |          | 364.0   |
| 2725            | 683  |           | 295.4      |       |            |          | 410.2   |
| 2726            | 571  |           | 457.0      | 12.0  |            |          | 487.6   |
| 2727            | 483  |           | 221.3      | 14.3  |            |          | 523.0   |
| 2728            | 341  | 260.2     | 1.6        | 82.4  |            |          | 357.5   |
| 2729            | 314  | 2251.1    |            | 27.9  | 38.7       |          | 105.6   |
| 2735            | 295  | 2363.8    |            |       |            |          | 4.2     |
| 2736            | 353  | 538.4     | 33.5       | 48.3  | 0.1        |          | 36.4    |
| 2737            | 421  |           | 348.3      | 60.2  |            |          | 182.1   |
| 2738            | 520  |           | 188.7      | 12.5  |            |          | 533.4   |
| 2739            | 618  |           | 56.7       |       |            |          | 497.2   |
| 2740            | 573  |           | 164.5      | 7.1   |            |          | 255.3   |
| 2741            | 485  |           | 451.7      | 14.0  |            | 6.4      | 630.4   |
| 2742            | 368  | 240.6     | 23.4       | 48.8  |            |          | 146.4   |
| 2743            | 326  | 2682.4    |            | 17.8  |            |          | 81.4    |
| 2744            | 269  | 26.8      |            |       |            |          | 7.4     |
| 2748            | 342  | 110.8     |            | 17.4  |            |          | 565.4   |
| 2749            | 448  |           | 1137.1     | 6.3   |            |          | 1454.0  |
| 2750            | 544  |           | 145.7      | 1.8   |            |          | 538.7   |
| 2751            | 646  |           | 293.8      | 2.9   |            |          | 358.4   |
| Mean            |      | 400.4     | 247.1      | 32.3  | 22.8       | 3.7      | 498.0   |
| SE              |      | 111.3     | 60.5       | 7.4   | 14.9       | 2.3      | 66.0    |

The biomass estimate of Cape hake for the central region, based on post stratification, is 294 000 tonnes, a decrease from 460 000 tonnes in January 1997. The main part of this decrease should be ascribed the reduction in numbers of the 1996 year-class that still inhabit the shelf in high number. The estimate on the deep water hake is 52 000 tonnes, 10 000 more than estimated one year earlier. The 95% confidence limits on the estimates are  $\pm 21\%$  on the Cape hake and  $\pm 56\%$  on the deep water hake. The wide confidence limits for deep water hake is closely linked with one exceptionally high catch (St.no. 2674).

| Year/survey | Cape hake | Deep water hake |
|-------------|-----------|-----------------|
| 90/1        | 180       | 4               |
| 90/2        | 219       | 6               |
| 91/1        | 150       | 6               |
| 91/2        | 302       | 13              |
| 92/1        | 261       | 15              |
| 92/2        | 542       | 15              |
| 93/1        | 280       | 12              |
| 93/2        | 280       | 20              |
| 94/1        | 225       | 30              |
| 94/2        | 160       | 30              |
| 94/3        | 112       | 16              |
| 95/2        | 105       | 40              |
| 96/1        | 145       | 73              |
| 96/2        | 182       | 58              |
| 97/1        | 112       | 46              |
| 98/1        | 461       | 42              |
| 99/1        | 294       | 52              |

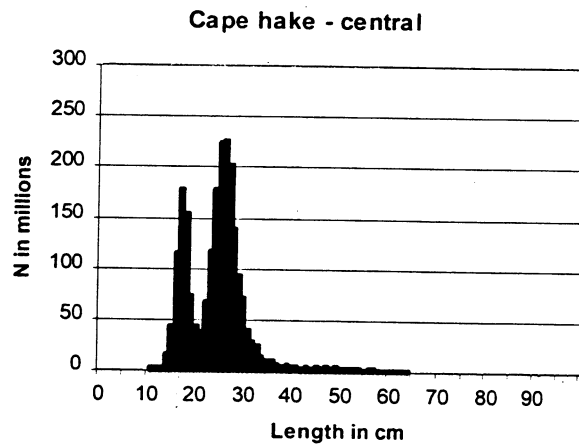
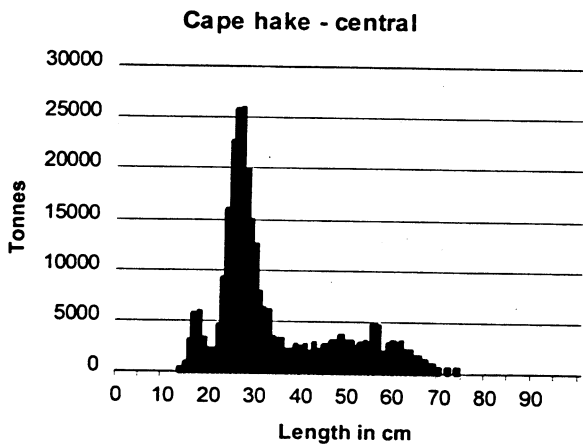


Figure 20 Central region. Length composition of Cape hake in biomass and numbers.

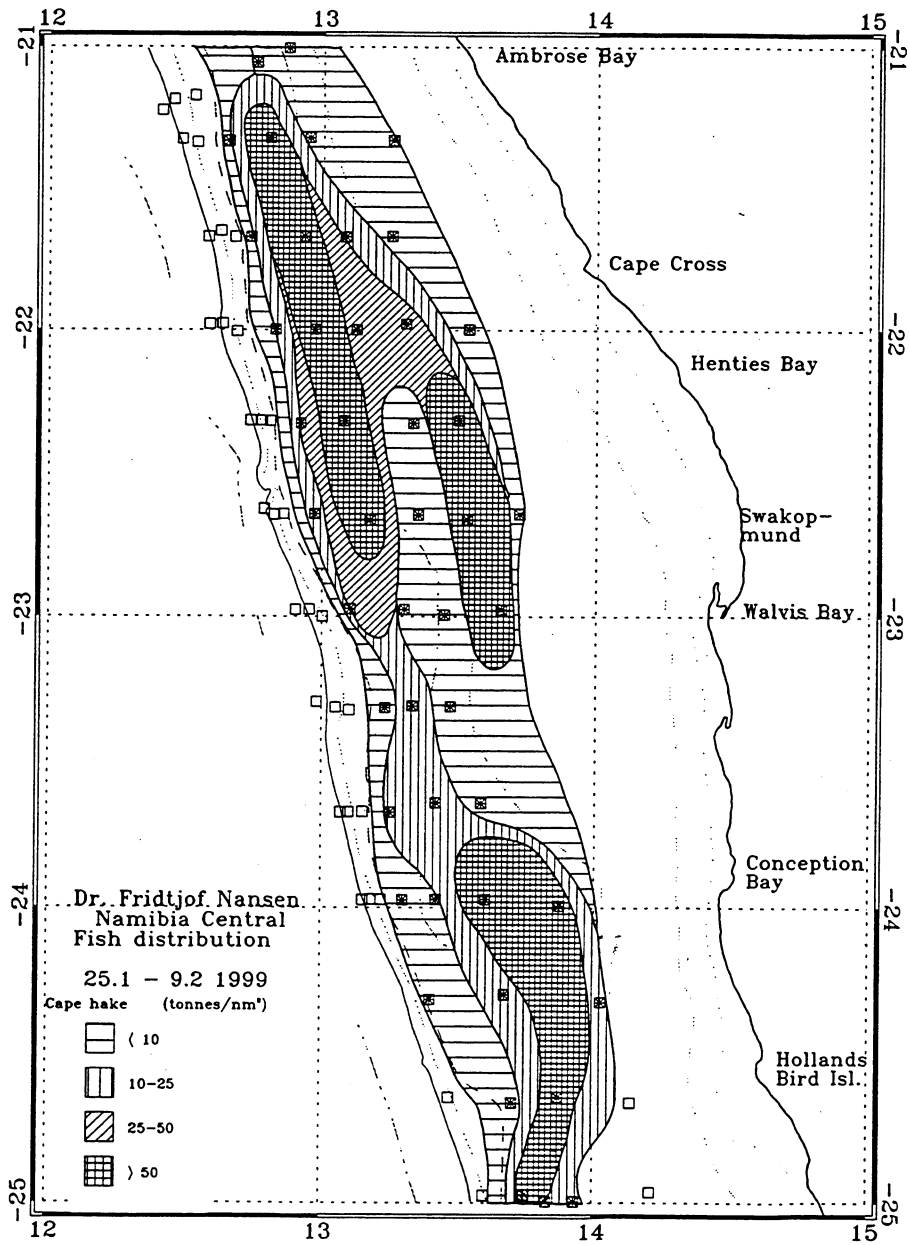


Figure 18 St. Francis Bay to Ambrose Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

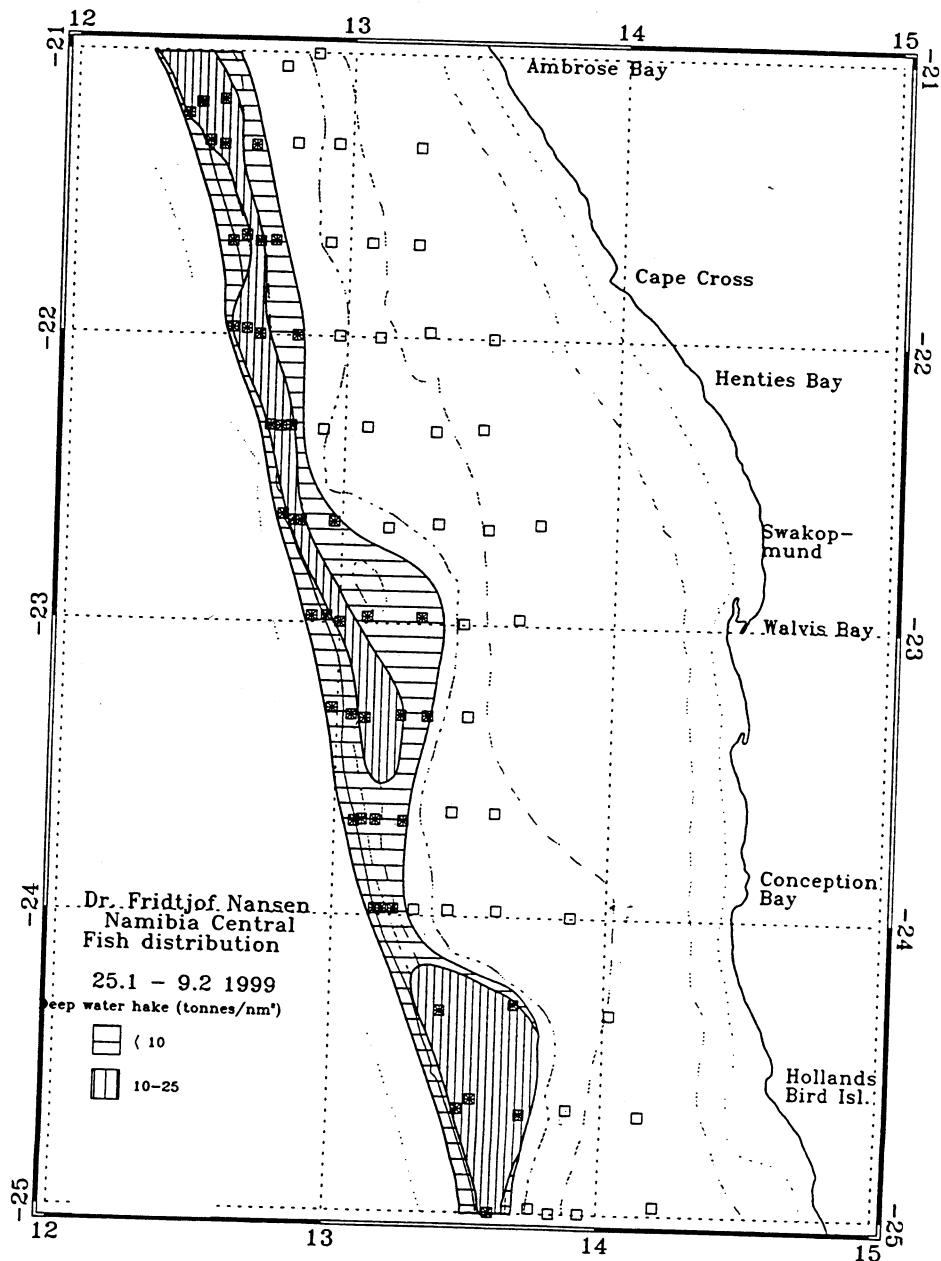


Figure 19 St. Francis Bay to Ambrose Bay. Distribution of deep water hake. Empty squares indicate stations where Cape hake was not caught.

Size composition of Cape hake, in number and biomass, based on the pooled length samples are shown in Figure 20 and the results from the cohort analysis are shown in Table 9.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|------------|-------------|-------|----------------------|----------------------|-----------------|
| 1997b      | 17.3        | 1.3   | 0.27                 | 605                  | 20              |
| 1996       | 25.8        | 2.4   | 0.62                 | 1392                 | 157             |
| 1995       | 32.0        | 2.4   | 0.058                | 135                  | 29              |
| older      |             |       | 0.052                | 118                  | 90              |

The 1996 year class, with a modal length around 26 cm constitutes the dominating cohort in number and biomass. The fishable part of the Cape hake is estimated to 90 000 tonnes; down 45 000 tonnes from the 135 000 tonnes of January 1998. The mean body weight in the fishable biomass is 0.74 kg compared to 0.53 in January 1998. The relative high proportion of the 1994 year-class dominates still the population as it grows in body size. Of the fishable biomass 24 000, 29 000 and 22 000 are in the 40-49, 50-59 and 60-69 cm range respectively.

Size composition from the pooled length samples and the results from the cohort slicing on the deep water hake is shown in Figure 21 and Table 10 respectively. Fishable biomass is estimated to 60 000 tonnes (40 000 tonnes in 1998). Mean body weight in the fishable biomass is reduced from 0.65 kg to 0.59 kg. The fishable biomass of deep water hake consisted in this region in January 1998 mostly of fish around 50 cm. This size-group is now reduced by 50% in biomass, but are at the same time more than replaced by two following cohorts. This could indicate that there is a well functioning turnover in the harvesting of this resource at present.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|------------|-------------|-------|----------------------|----------------------|-----------------|
| 1997       | 23.4        | 2.2   | 0.19                 | 31                   | 3               |
| 1996       | 29.5        | 2.3   | 0.335                | 55                   | 9               |
| 1995       | 36.0        | 2.8   | 0.25                 | 41                   | 12              |
| 1994       | 45.0        | 3.5   | 0.128                | 22                   | 13              |
| 1993       | 51.2        | 3.56  | 0.09                 | 15                   | 13              |
| older      |             |       | 0.007                | 1                    | 2               |

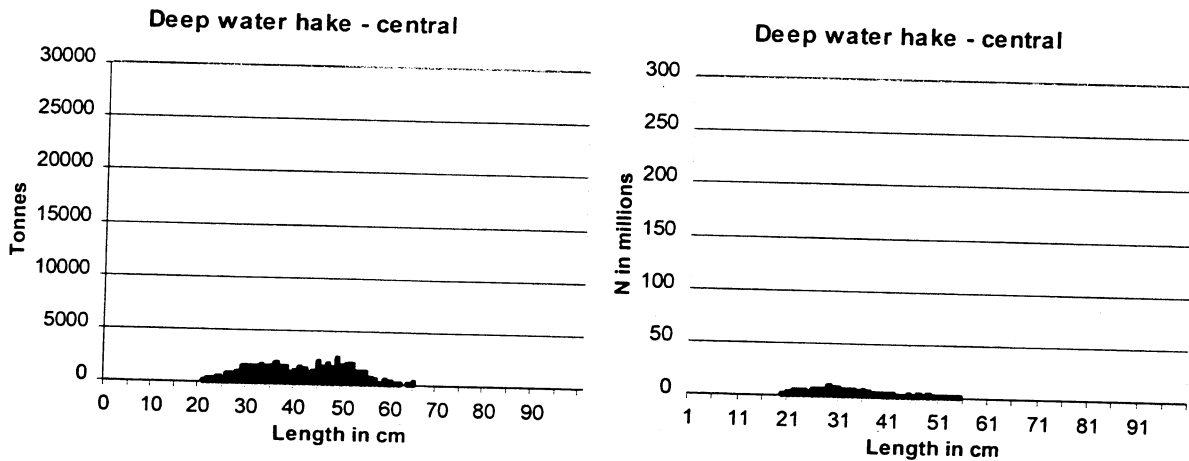


Figure 21 Central region. Length composition of Deep water hake in biomass and numbers.

### 3.4 Northern region, Ambrose Bay to Cunene River

Table 11 shows the catch rates by main groups for the shelf and slope separately. The mean catch rate for the Cape hake has decreased slightly on the shelf compared to 1998 (-30%). On the slope the rates have decreased by about 40% and 30% for the Cape hake and the deep water hake respectively. Due to the relative high standard error the change is not significant. The catch rate for monk continued to be high as in the two other region due to the well performing trawl. This was however damaged at station 2787, whereafter the catch rates fell to a level more normal for such a trawl. Dentex rates on the slope has reduced from 1260 kg/hour in 1998 to 590 kg/hr in 1999. Horse mackerel rates are quite similar to mean rates in 1998, (1512 and 1702).

Table 11 Northern region. Catch rates in kg/hour by main groups by swept area bottom trawl for the shelf and the slope. Means and standard errors (SE) included

| SHELF 100-259 m |      |           |            |       |            |        |        |
|-----------------|------|-----------|------------|-------|------------|--------|--------|
| STA             | TDEP | Cape hake | D. w. hake | Monk  | Horse mck. | Dentex | Other  |
| 2746            | 104  |           |            |       |            |        |        |
| 2757            | 178  |           |            |       |            |        | 17.1   |
| 2758            | 132  |           |            |       |            |        |        |
| 2759            | 117  | 1.7       |            |       | 0.9        |        | 0.5    |
| 2770            | 206  | 245.4     |            |       |            |        | 0.0    |
| 2771            | 127  |           |            |       |            |        |        |
| 2773            | 124  | 6.2       |            |       | 78.3       |        | 2.9    |
| 2774            | 152  | 6.2       |            |       | 11.8       |        | 9.6    |
| 2775            | 246  | 113.2     |            |       | 0.5        | 1.9    | 0.2    |
| 2786            | 135  | 1022.6    |            |       |            |        |        |
| 2787            | 105  | 0.3       |            |       |            |        | 0.7    |
| 2788            | 172  | 129.9     |            |       | 2566.2     | 6.0    | 43.9   |
| 2796            | 238  | 265.9     |            |       | 9.6        | 92.6   | 4.6    |
| 2797            | 121  | 7.7       |            |       | 3.8        |        | 0.4    |
| 2798            | 143  | 20.8      |            |       | 2458.0     |        | 14.6   |
| 2799            | 211  | 235.7     |            |       | 10389.6    | 541.0  | 15.4   |
| 2803            | 258  | 314.9     |            |       |            | 181.4  | 931.9  |
| 2804            | 143  | 769.3     |            |       | 4208.2     | 6277.3 | 668.9  |
| 2805            | 176  | 47.0      |            |       | 1012.8     | 575.1  | 256.2  |
| 2807            | 174  | 183.8     |            |       | 1634.6     | 1998.9 | 501.6  |
| 2808            | 103  | 65.4      |            |       | 1942.5     |        | 110.4  |
| 2809            | 134  | 131.8     |            |       | 449.5      | 1663.7 | 271.3  |
| 2810            | 257  | 2780.7    |            |       | 295.4      | 2135.3 | 520.1  |
| 2812            | 250  | 3017.2    |            |       | 248.7      | 753.9  | 207.4  |
| 2813            | 140  | 344.7     |            |       | 13868.2    | 1143.3 | 114.1  |
| 2814            | 114  | 25.5      |            |       | 112.3      |        | 201.9  |
| Mean            |      | 374.5     |            |       | 1511.2     | 591.2  | 149.8  |
| SE              |      | 153.5     |            |       | 650.2      | 260.7  |        |
| SLOPE 260-700 m |      |           |            |       |            |        |        |
| STA             | TDEP | Cape hake | D. w. hake | Monk  | Horse mck. | Dentex | Other  |
| 2747            | 276  | 22.0      |            |       |            |        | 20.0   |
| 2752            | 601  |           | 498.5      |       |            |        | 888.3  |
| 2753            | 499  |           | 456.9      | 29.4  |            |        | 1129.2 |
| 2754            | 405  | 40.6      | 82.1       | 102.6 |            |        | 545.0  |
| 2755            | 334  | 33.3      |            | 5.2   |            | 15.8   | 178.3  |
| 2756            | 307  | 259.8     |            |       |            |        | 0.8    |
| 2760            | 275  | 19.0      |            |       |            |        | 5.8    |
| 2761            | 309  | 261.6     |            |       | 26.8       | 43.9   | 17.8   |
| 2762            | 346  | 169.2     |            | 18.8  | 2.6        | 8.7    | 449.4  |
| 2763            | 469  |           | 234.3      | 30.8  |            |        | 843.1  |
| 2764            | 568  |           | 398.1      | 38.9  |            |        | 1206.4 |
| 2765            | 597  |           | 238.0      | 37.3  |            |        | 742.3  |
| 2766            | 517  |           | 266.5      | 37.7  |            |        | 460.9  |
| 2767            | 420  | 23.8      | 333.6      | 40.9  |            |        | 353.2  |
| 2768            | 315  | 333.1     |            | 3.6   |            | 251.2  | 335.7  |
| 2769            | 271  | 351.4     |            |       | 0.2        | 1.1    |        |
| 2776            | 325  | 739.6     |            |       | 5.2        | 301.3  | 44.0   |
| 2777            | 379  | 389.0     |            | 46.1  | 30.3       |        | 250.1  |
| 2778            | 478  |           | 459.0      | 87.1  |            |        | 466.1  |
| 2779            | 567  |           | 234.8      | 7.1   |            |        | 1038.9 |
| 2780            | 629  |           | 315.6      | 29.5  |            |        | 944.7  |
| 2781            | 529  |           | 302.7      | 16.9  |            |        | 698.8  |
| 2782            | 424  | 13.0      | 514.8      | 21.1  |            |        | 488.9  |
| 2783            | 359  | 658.5     |            | 25.7  |            |        | 629.6  |
| 2784            | 315  | 1351.6    |            | 7.6   | 26.9       | 112.6  | 225.9  |
| 2789            | 302  | 1392.2    |            |       | 301.2      | 350.2  | 33.4   |
| 2790            | 339  | 2409.8    |            | 1.4   | 23.3       | 561.8  | 509.7  |
| 2791            | 435  | 255.1     | 471.8      | 3.7   |            |        | 242.1  |
| 2792            | 546  |           | 1140.0     | 9.9   |            |        | 911.0  |
| 2793            | 596  |           | 657.3      |       |            |        | 730.7  |
| 2794            | 381  | 2885.8    |            |       |            |        | 367.8  |
| 2795            | 276  | 4245.5    |            | 18.9  |            | 7.0    | 272.7  |
| 2800            | 419  | 443.7     | 50.4       | 2.6   |            |        | 735.4  |
| 2801            | 429  | 363.4     |            | 32.8  |            |        | 1973.1 |
| 2802            | 440  | 1157.5    | 94.0       | 2.4   |            |        | 2504.8 |
| 2806            | 277  | 967.8     |            | 2.2   | 492.5      | 130.7  | 1641.6 |
| 2811            | 351  | 820.6     |            | 3.3   | 4.7        | 37.8   | 1075.7 |
| Mean            |      | 529.9     | 182.4      | 17.9  | 24.7       | 49.2   | 620.6  |
| SE              |      | 151.1     | 42.0       | ???   | 13.5       | 20.1   |        |



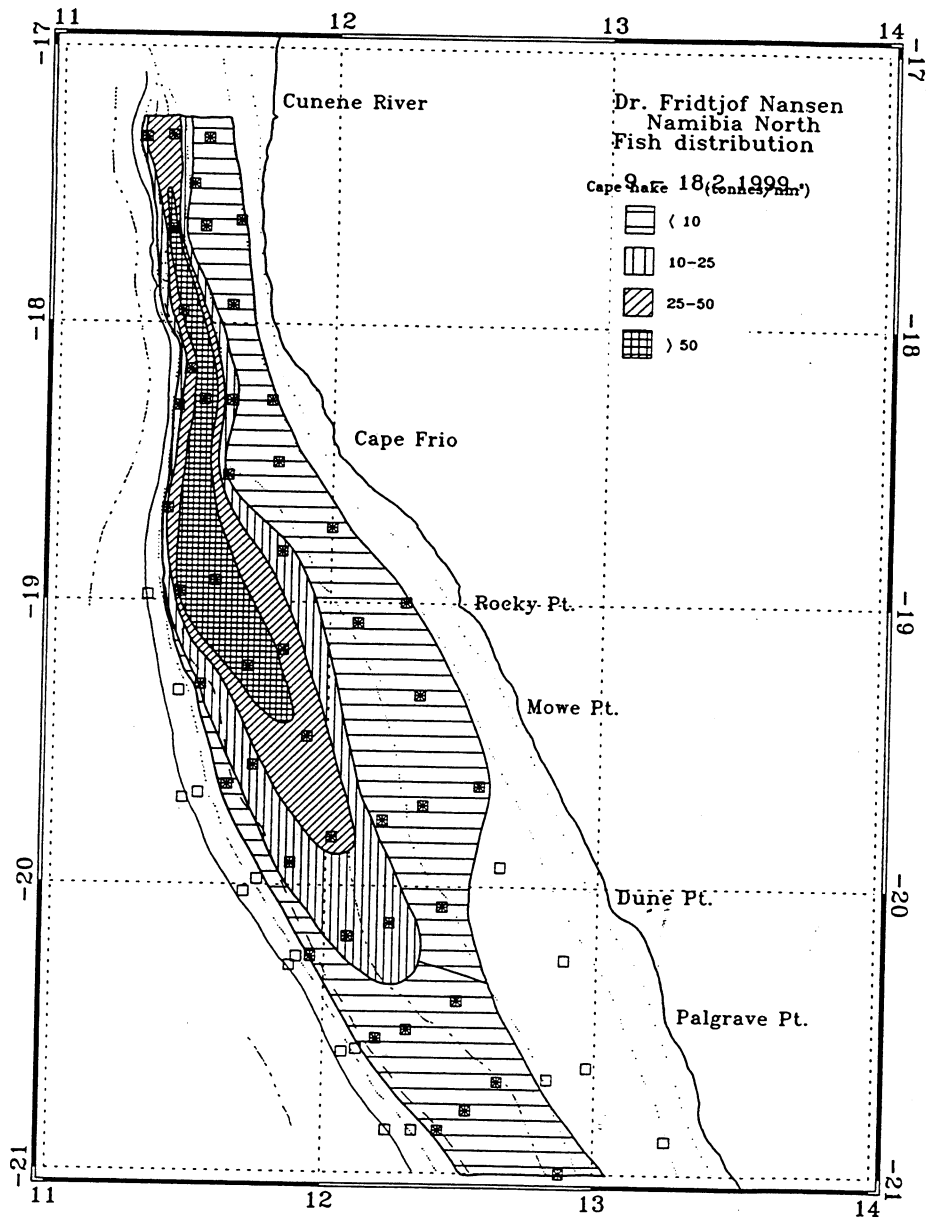


Figure 22 Ambrose Bay to Cunene River. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

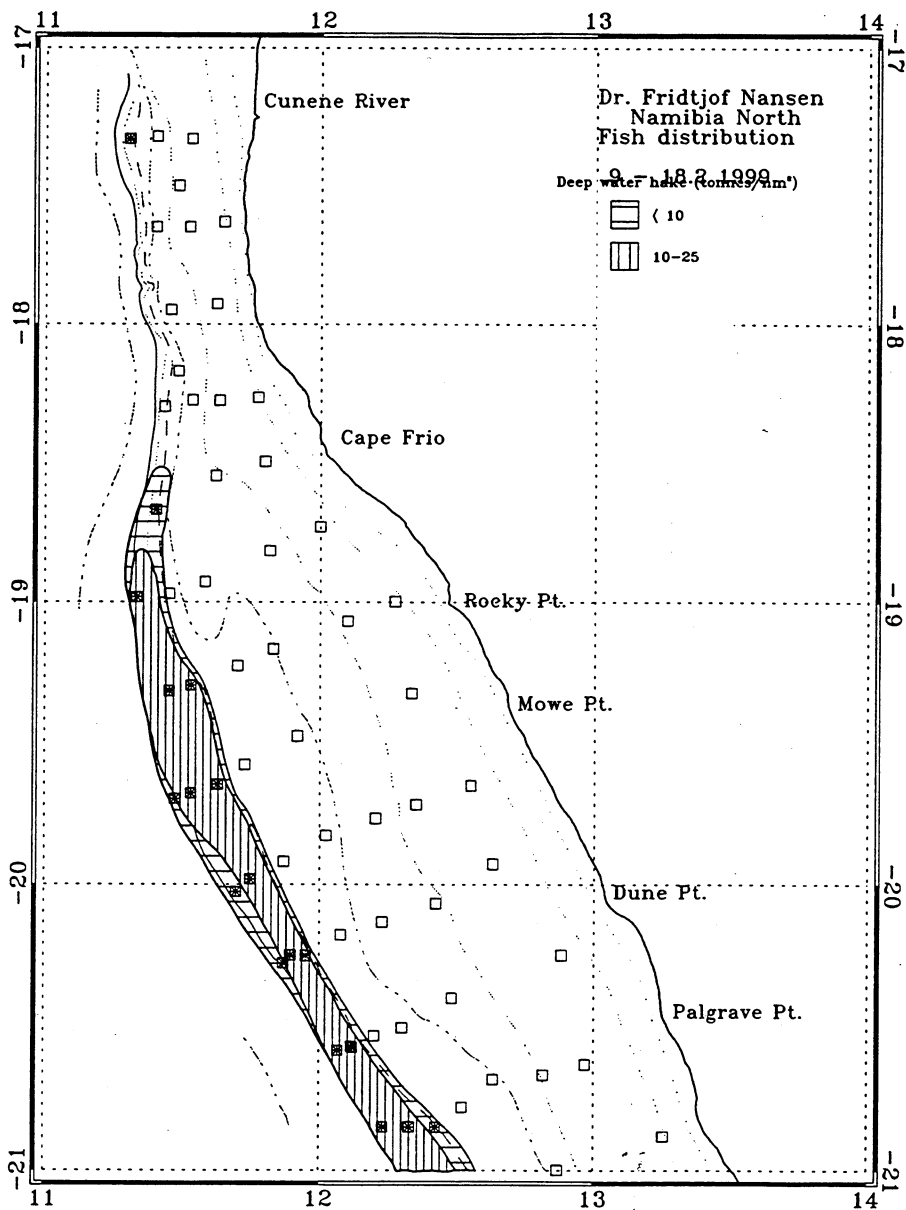


Figure 23 Ambrose Bay to Cunene River. Distribution of deep water hake. Empty squares indicate stations where deep water hake was not caught.

Figure 22 shows the distribution of Cape hake in the northern region by levels of density calculated from the catch rates and with correction for fish in mid-water. A considerable increase in fish densities was observed in the February 1998 survey, compared to the two previous years. The last survey confirm that the densities for Cape hake in the north are still high. The deep water hake, Figure 23, which in the later years has been observed in the deeper waters up the latitude of Cunene River, was now recorded in only station north of

Cape Frio. This was possibly due to more shallow stations in the northern region this year than in the previous two years.

The depth distribution of the two hake species based on catch rates converted to densities is shown in Figure 24. Densities of Cape hake are high in the 250-350 and 350-450 m bottom depth strata. The densities for the deep water hake remain relatively stable during the later years, except for a reduction in the 350-450 m zone. It could be that the high abundance of Cape hake in the region has forced the deep water hake back to its main habitat in the deep.

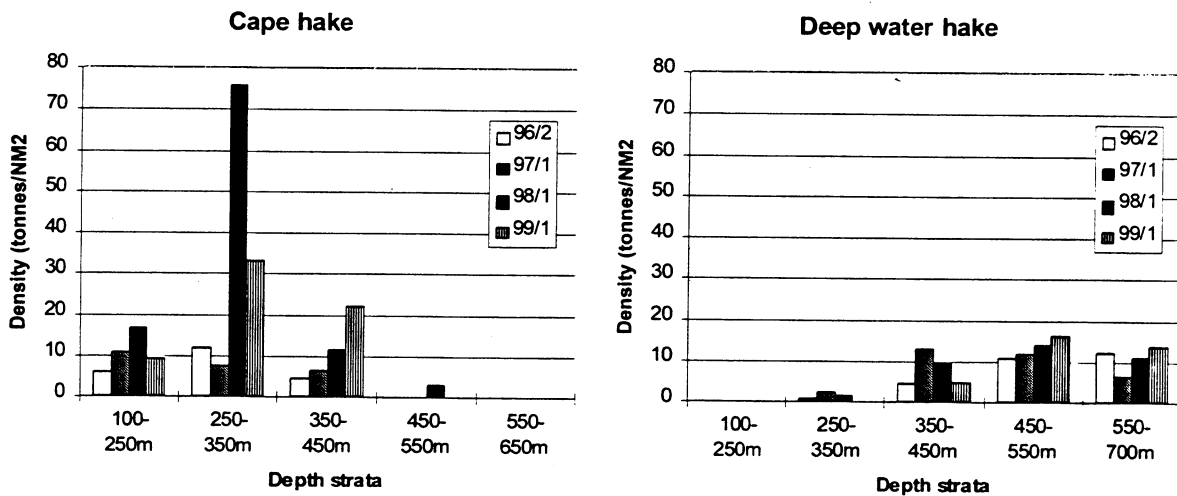


Figure 24 Northern region. Depth distribution of two hake species. Mean densities in tonnes/NM<sup>2</sup>.

Biomass estimates give a total of 175 000 tonnes of Cape hake and 26 000 tonnes of deep water hake (Table 12). For the Cape hake this is about 25% lower than estimated earlier, a not significant difference. The deep water hake has decreased from 50 000 to 26 000 tonnes. The 95% confidence limits on the estimates of the Cape hake are  $\pm 21\%$ . For deep water hake the confidence limits are  $\pm 27\%$ .

The size compositions of the two hake species are shown in Figure 25 and in Annex I. A cohort analysis was done on the two hake

| Year/survey | Cape hake | Deep water hake |
|-------------|-----------|-----------------|
| 90/1        | 180       |                 |
| 90/2        | 105*      |                 |
| 91/1        | 200       |                 |
| 91/2        | 140       | 2               |
| 92/1        | 185       | 4               |
| 92/2        | 190       | 8               |
| 93/1        | 150       | 4               |
| 93/2        | 110       | 6               |
| 94/1        | 90        | 20              |
| 94/2        | 130       | 14              |
| 94/3        | 87        | 9               |
| 95/2        | 117       | 24              |
| 96/1        | 132       | 31              |
| 96/2        | 94        | 31              |
| 97/1        | 73        | 40              |
| 98/1        | 229       | 50              |
| 99/1        | 175       | 26              |

\* + Hake in the mid-water

species and the results are shown in Tables 14 and 15. Both Table 13 and Figure 25 show that the biomass of Cape hake is composed mainly of adult fish while the young fish dominates in numbers. The so called 'fishable biomass' of Cape hake in the northern region, representing fish of 36 cm and larger, constitutes 115 000 tonnes, about 45 000 less than one year earlier. The estimate on non-fishable biomass for deep water hake is 20 000 tonnes, compared to 50 000 the previous year.

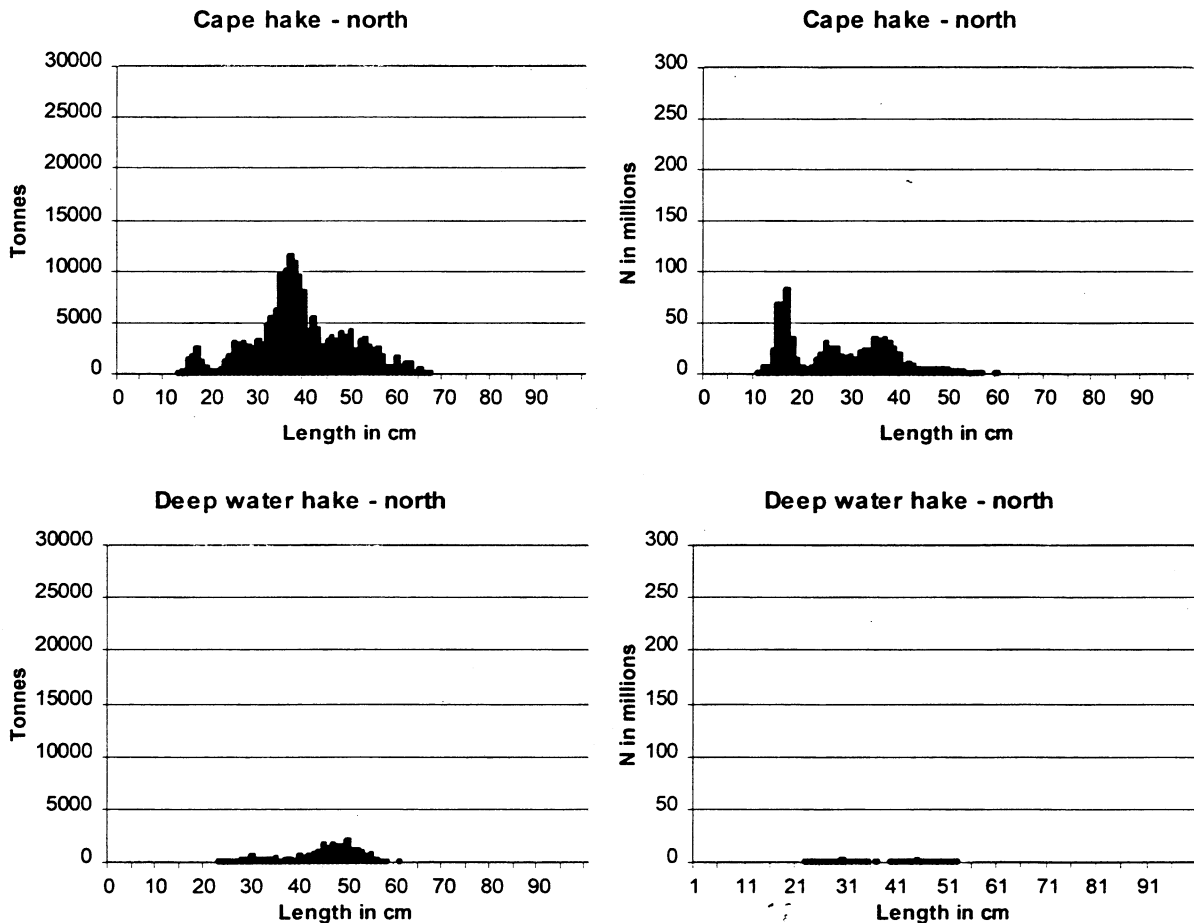


Figure 25 Northern region. Length composition of Cape hake in biomass and numbers.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|------------|-------------|-------|----------------------|----------------------|-----------------|
| 1998       | 12.0        | 1.0   | 0.02                 | 13                   | -               |
| 1997       | 16.5        | 1.5   | 0.35                 | 303                  | 9               |
| 1996       | 25.5        | 2.3   | 0.20                 | 171                  | 19              |
| 1995       | 36.0        | 3.2   | 0.35                 | 301                  | 92              |
| 1994       | 46.0        | 3.5   | 0.05                 | 44                   | 28              |
| older      |             |       | 0.03                 | 25                   | 26              |

Table 14 Northern region. Deep water hake. Estimated age-cohorts.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|------------|-------------|-------|----------------------|----------------------|-----------------|
| 1997       | 24.5        | 2.5   | 0.17                 | 10                   | 1               |
| 1996       | 30.4        | 2.7   | 0.26                 | 15                   | 3               |
| 1995       | 36          | 2.7   | 0.09                 | 5                    | 2               |
| 1994       | 46          | 3.7   | 0.38                 | 23                   | 15              |
| 1993       | 52          | 3.6   | 0.10                 | 6                    | 6               |
| older      |             |       | 0.00                 | -                    | -               |

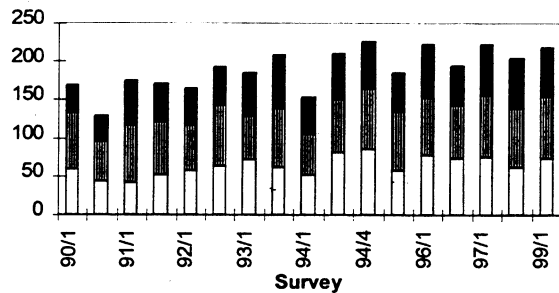
## CHAPTER 4 CONSIDERATIONS ON THE SURVEY RESULTS

### Survey effort

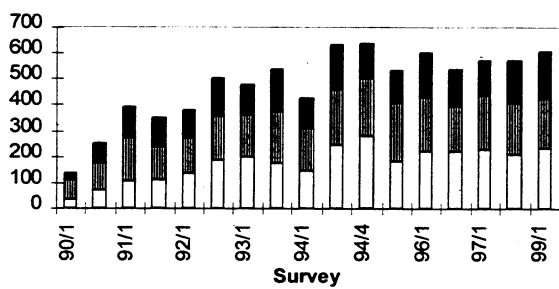
The present survey is the 17th in a series started in early 1990, covering the distribution of the hake stocks over the whole Namibian shelf. Figure 26 shows the effort spent in these investigations. This survey was done in 41 days, including two days for call at Walvis Bay for exchange of crew and scientists.

Hakes may be partly inaccessible to the trawl-net due to vertical migrations. If not compensated for, this would underestimate the abundance of fish. However, the uses of acoustic assessment techniques and the Bergen Echo Integrator (BEI) post processing system enabled the biomass in the overlying water column to be included in the assessment. It is therefore not likely that major off-bottom aggregations of hakes have been missed. During the recent survey the average acoustic corrections during day time were 3%, 3% and 14% for the south, central and northern region respectively. The corresponding figures for the night hauls are 12%, 8% and 36%. Most hauls are carried out during daylight hours, but for logistic reasons a limited number of night hauls are conducted. These are usually carried out on the peripheries of the fish distributions where the densities are low and where the corrections for fish off bottom in absolute terms therefore are small.

Number of stations



Number of stations



Mean number measured per station

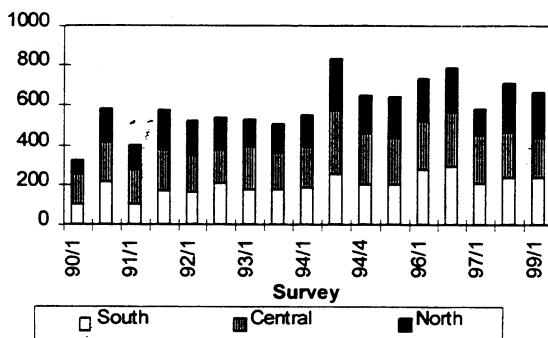


Figure 26 Hake survey effort 1990-99.

a) Number of trawl stations by regions; b) Number of length frequencies by regions; c) Mean number of fish measured per station.

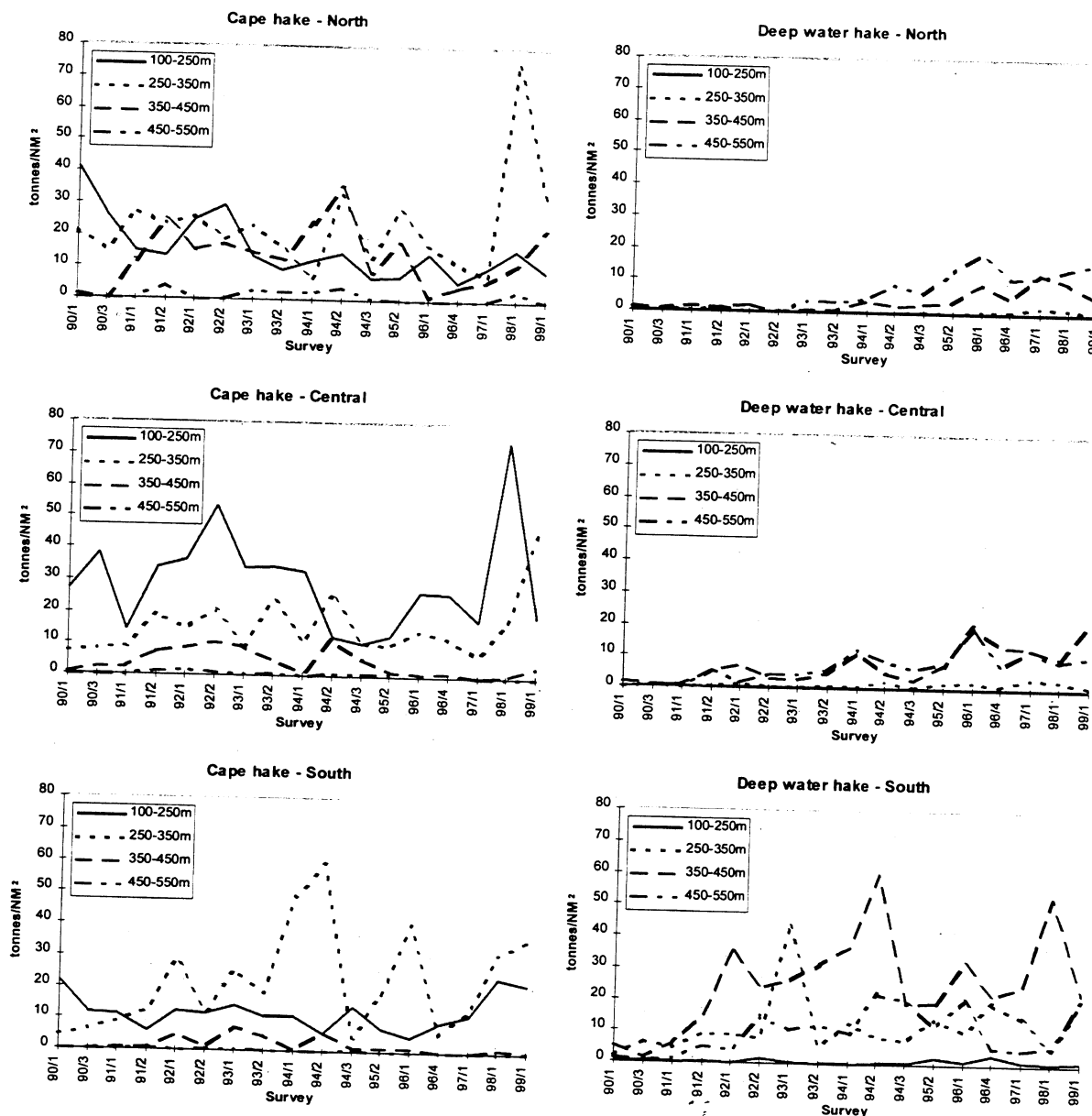


Figure 27 Estimated mean densities in depth by strata by surveys. Mean densities in tonnes/NM<sup>2</sup>.

### Catch per unit effort

A summary of the estimates of the mean density of the hakes by depth stratum is shown in Figure 27. The densities in the shallow ranges 100-250 m mainly reflect the strength of the young fish, 2-3 years of age, that inhabit this zone. The catch rates on the shelf in the central region show a strong decline compared to the previous year, a sign of the weak 1997 year-class that now inhabits the shelf. Contrary to this the densities on the upper slope, at 250-350 m bottom depth, shows increase in the densities for the south and central regions, a sign that the rich 1996 year-class now gradually has moved into deeper waters. For the deep water

hake the pattern is more uncertain. In the southern region some decline in the 350-450 m zone is observed, but this is compensated by an increase in densities more shallow (250-350 m) and deeper (450-550 m).

### Biomass estimates

Table 15 give the summaries of the biomass estimates for the two hake stocks by regions and surveys since the beginning of the survey programme in 1990. Figure 28a-d show the summaries of estimated fishable, non-fishable and total biomass of hake species since 1990. Since the Jan.-Feb. survey in 1998 the estimated fishable biomass of Cape hake has been reduced with about 30% from 400 000 to 275 000 tonnes. The reduction in the deep water hake is also about 30%, from 200 000 to 145 000 tonnes. The recruit biomass has been reduced by approximately 25% in one year.

| Table 15 Summary of total, fishable and non-fishable biomass for the two hake species by surveys and areas. 1 000 tonnes. |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
|---|-----------------|-----------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| TOTAL BIOMASS   |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
|   | Feb-Mar<br>1990 | Sep-Oct<br>1990 | Jan-Feb<br>1991 | Oct-Nov<br>1991 | Apr-<br>May<br>1992 | Oct-Nov<br>1992 | Jan-Feb<br>1993 | Apr-<br>May<br>1993 | Jan-Feb<br>1994 | Apr-<br>May<br>1994 | Oct-Nov<br>1994 | Apr-<br>May<br>1995 | Jan-Feb<br>1996 | Sep-Oct<br>1996 | Jan-Feb<br>1997 | Jan-Feb<br>1998 | Jan-Feb<br>1999 |
| <b>SOUTHERN REGION</b>  |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 118             | 142             | 128             | 84              | 203                 | 163             | 222             | 179                 | 200             | 240                 | 150             | 145                 | 169             | 89              | 121             | 327             | 216             |
| Deep water hake   | 21              | 30              | 34              | 83              | 145                 | 125             | 150             | 115                 | 160             | 215                 | 120             | 140                 | 202             | 167             | 132             | 186             | 172             |
| <b>CENTRAL REGION</b>   |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 176             | 202             | 147             | 309             | 265                 | 530             | 285             | 279                 | 225             | 160                 | 110             | 105                 | 145             | 182             | 112             | 462             | 294             |
| Deep water hake   | 4               | 5               | 6               | 15              | 15                  | 17              | 16              | 19                  | 30              | 30                  | 15              | 40                  | 73              | 58              | 46              | 42              | 51              |
| <b>NORTHERN REGION</b>  |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 203             | 116*            | 195             | 140             | 190                 | 199             | 147             | 110                 | 92              | 130                 | 90              | 120                 | 132             | 94              | 74              | 229             | 176             |
| Deep water hake   |                 |                 |                 | 2               | 4                   | 8               | 4               | 6                   | 20              | 15                  | 10              | 25                  | 31              | 31              | 40              | 50              | 25              |
| <b>TOTAL NAMIBIA</b>  |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 497             | 460*            | 470             | 533             | 658                 | 892             | 654             | 568                 | 520             | 530                 | 350             | 370                 | 446             | 365             | 307             | 1018            | 686             |
| Deep water hake   | 25              | 35              | 40              | 100             | 164                 | 150             | 170             | 140                 | 210             | 260                 | 145             | 205                 | 306             | 256             | 218             | 278             | 248             |
| Both  | 422             | 485*            | 503             | 633             | 822                 | 1042            | 824             | 708                 | 737             | 790                 | 495             | 575                 | 752             | 621             | 525             | 1296            | 934             |
| <b>FISHABLE BIOMASS</b>   |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| <b>SOUTHERN REGION</b>  |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 20              | 44              | 54              | 50              | 145                 | 69              | 92              | 99                  | 112             | 130                 | 35              | 62                  | 51              | 14              | 36              | 107             | 67              |
| Deep water hake   | 16              | 20              | 14              | 42              | 113                 | 80              | 123             | 95                  | 114             | 164                 | 61              | 66                  | 113             | 66              | 71              | 114             | 88              |
| <b>CENTRAL REGION</b>   |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 20              | 76              | 67              | 147             | 108                 | 180             | 133             | 121                 | 50              | 65                  | 58              | 54                  | 41              | 46              | 46              | 134             | 92              |
| Deep water hake   | 1               | 5               | 6               | 6               | 13                  | 12              | 13              | 19                  | 26              | 22                  | 10              | 34                  | 56              | 46              | 40              | 39              | 35              |
| <b>NORTHERN REGION</b>  |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 66              | 62*             | 170             | 134             | 145                 | 133             | 106             | 89                  | 74              | 102                 | 63              | 93                  | 88              | 48              | 60              | 160             | 116             |
| Deep water hake   | -               | -               | -               | 2               | 4                   | 8               | 4               | 6                   | 19              | 13                  | 8               | 21                  | 28              | 27              | 35              | 49              | 21              |
| Cape hake   | 106             | 182*            | 291             | 331             | 398                 | 382             | 331             | 309                 | 240             | 300                 | 156             | 209                 | 180             | 108             | 142             | 401             | 275             |
| Deep water hake   | 20              | 25*             | 20              | 50              | 130                 | 100             | 140             | 120                 | 160             | 200                 | 79              | 121                 | 197             | 139             | 146             | 202             | 144             |
| <b>TOTAL FISHABLE</b>   | <b>126</b>      | <b>207*</b>     | <b>311</b>      | <b>381</b>      | <b>528</b>          | <b>482</b>      | <b>471</b>      | <b>429</b>          | <b>400</b>      | <b>500</b>          | <b>235</b>      | <b>330</b>          | <b>377</b>      | <b>247</b>      | <b>288</b>      | <b>603</b>      | <b>419</b>      |
| <b>NON-FISHABLE BIOMASS</b>   |                 |                 |                 |                 |                     |                 |                 |                     |                 |                     |                 |                     |                 |                 |                 |                 |                 |
| Cape hake   | 391             | 278             | 179             | 202             | 250                 | 510             | 260             | 259                 | 280             | 230                 | 193             | 161                 | 266             | 257             | 165             | 617             | 411             |
| Deep water hake   | 5               | 15              | 20              | 50              | 34                  | 50              | 30              | 20                  | 50              | 60                  | 66              | 84                  | 109             | 117             | 72              | 76              | 104             |
| <b>TOTAL<br/>NON-FISHABLE</b>   | <b>396</b>      | <b>293</b>      | <b>199</b>      | <b>252</b>      | <b>284</b>          | <b>560</b>      | <b>290</b>      | <b>279</b>          | <b>330</b>      | <b>290</b>          | <b>259</b>      | <b>245</b>          | <b>375</b>      | <b>374</b>      | <b>236</b>      | <b>693</b>      | <b>515</b>      |

\*Unadjusted underestimate due to fish off the bottom



Very few new recruits (20-35 cm) have entered the population during 1998 and the reduction in biomass in this group is therefore mainly from reduction of the strong 1996 year-class that entered the shelf in late 1997. This fish has shown a retarded growth during 1998, but should start enter into the catches of the commercial fishery by second half of 1999, or early 2000. Compared with previous year-classes at the same life-stage the 1996 year-class is still above average in numbers and should give a strong contribution to the fishable biomass in the nearest year, if the frame conditions develops 'normal'.

The estimates on deep water hake adult biomass has been varying between 120 and 200 thousand tonnes since 1995 and seems to withstand the higher fishing pressure in the later years well.

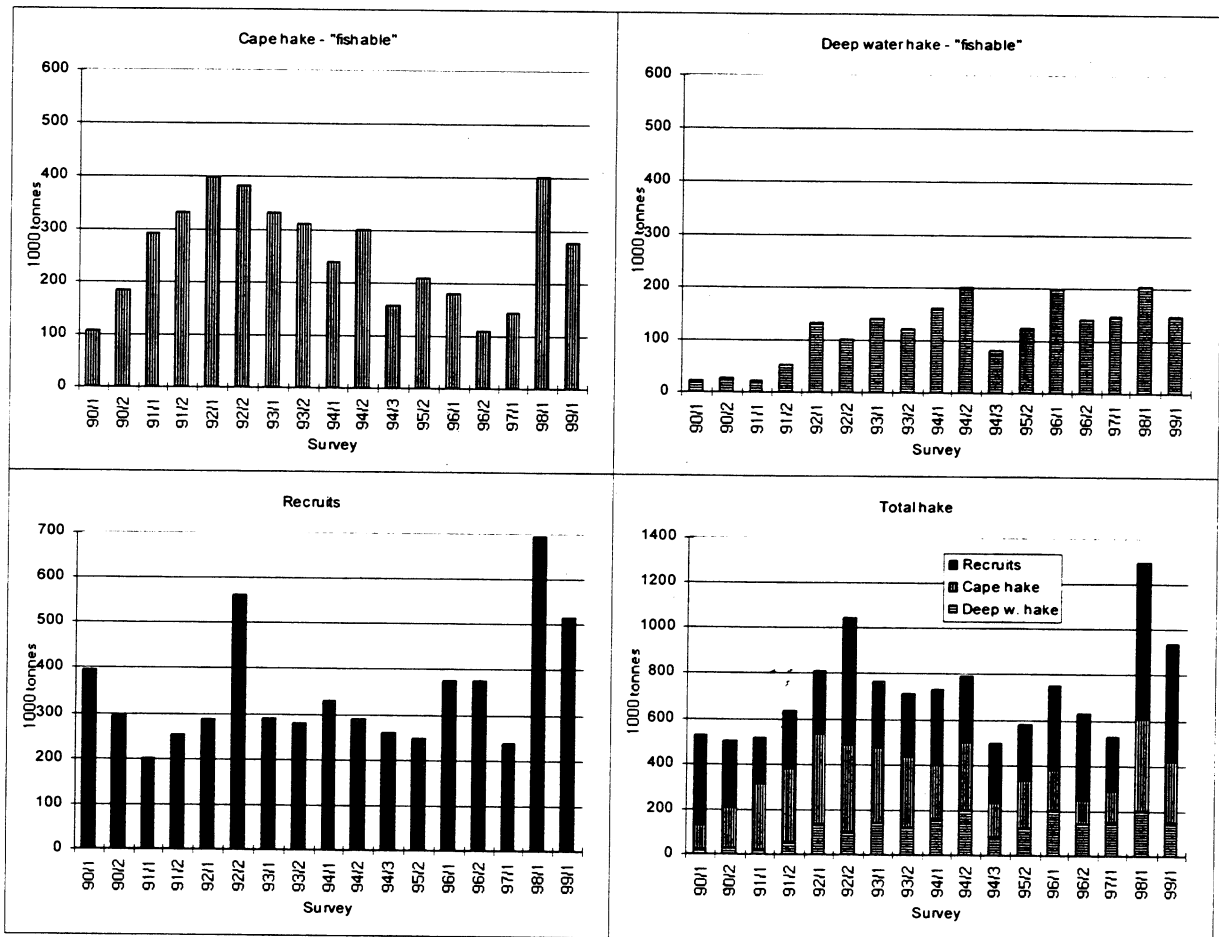


Figure 28 Trends in biomass estimates: a) Cape hake, 'fishable stock', b) deep water hake, 'fishable stock', c) recruits ('non-fishable' biomass) and d) total hake in Namibia. Thousand tonnes.

### Estimated size composition and structure of the biomass

Figure 29 shows the estimated size distribution in number and biomass for the Cape hake for all three regions combined. Overlaid in the figures are also indicated cohorts, results from the

cohort slicing technique. The figure demonstrates a fairly well balanced stock in terms of size distribution of the biomass, but not of the number distribution. The reduction rate in number by length in the fishable biomass, that is from 35 cm and onwards, is high, but this is to a considerable extent compensated by the growth in the individual weight, giving only a slightly sloping biomass distribution between 30 and 60 cm, Figure 29 (bottom). The strength of the incoming 1996 year-class with a mode around 26 cm is also demonstrated. The absence of fish around 20-22 cm is striking; this should normally be the size-range of the next cohort, the 1997 year-class. Instead there is a cohort entering with a mode around 17cm. This is probably the 1997 year-class, small sized, either due to retarded growth or a due to a late birth, perhaps meeting a reproductive optimum later in the year than normal.

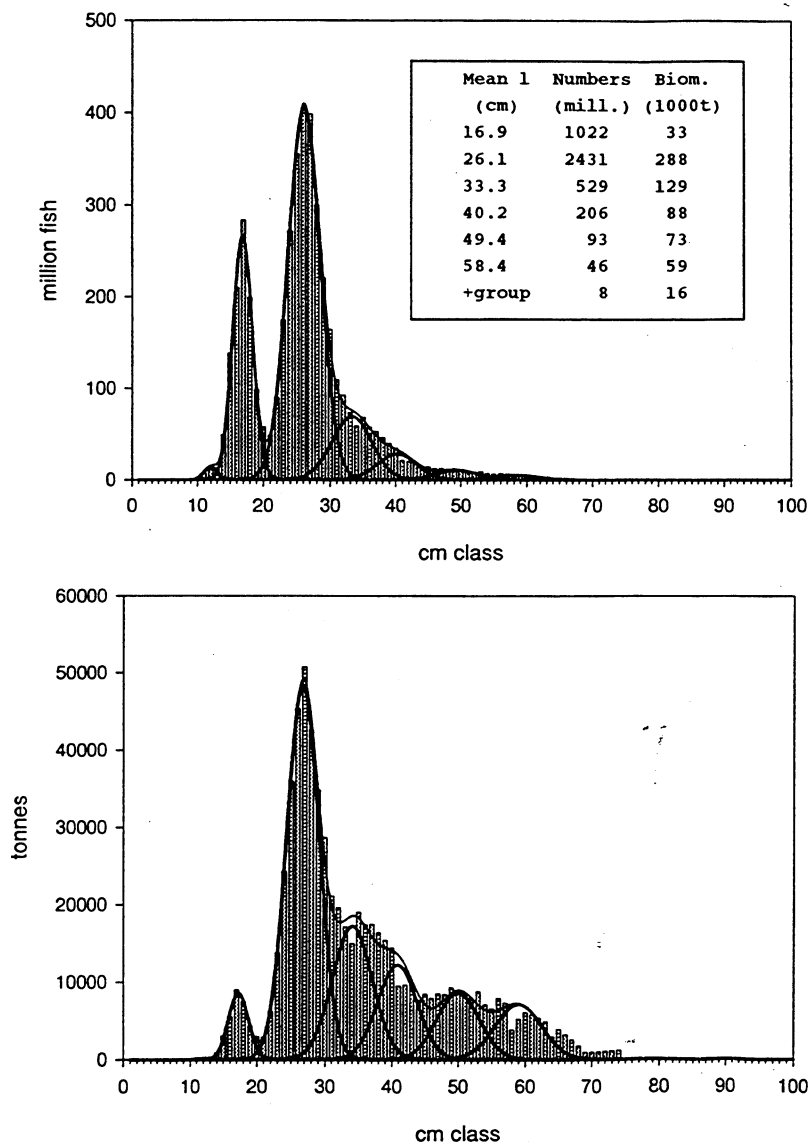


Figure 29 Estimated size structure by length classes, Cape hake, expressed in numbers (top) and biomass (bottom) Estimated cohorts overlaid.

The size distribution by number and weight of the deep water hake is shown in Figure 30. The biomass distribution shows a balanced stock consisting of several year-classes. A moderate number of small fish, less than 25 cm, is from the shelf waters close to Orange River and shows that this area functions as a nursery area for the young deep water hake, but the small amount demonstrates that the main recruitment to the adult stock must come from outside the survey area.

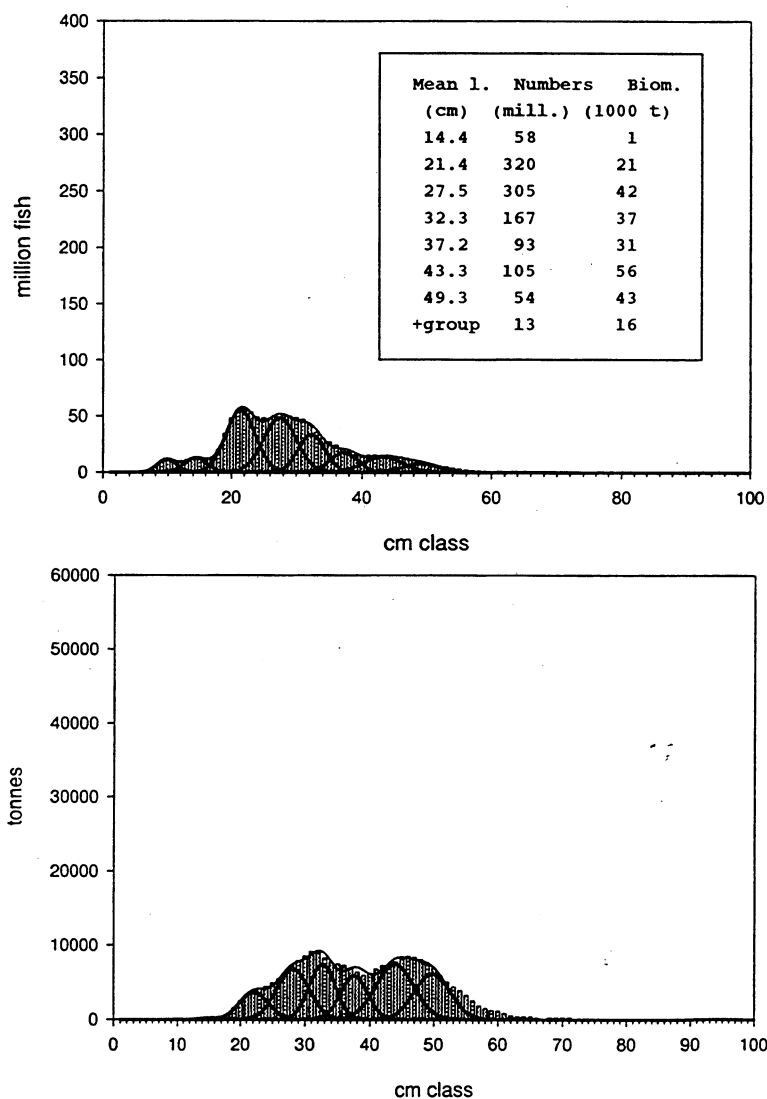


Figure 30 Estimated size structure by length classes, Deep water hake, expressed in numbers (top) and biomass (bottom) Estimated cohorts overlaid.

## Geographic shift in the fishable biomass

Figure 31 shows the development of the relative share of the fishable biomass of Cape hakes in the regions for the last nine years. The northern region has during the last 5 years accounted for about 40 % of the adult standing stock of Cape hake. The central region had a low relative share of the biomass in 1994-96 (Figure 31), a feature that was associated with poor environment conditions in this region. Since 1997 the regional share of the central stock is about 30%, indicating that the region has now recovered to a more 'normal' state. A shift in the distribution of the standing stock will naturally also be affected by an uneven fishing pressure, but such analysis is outside the scope of this report.

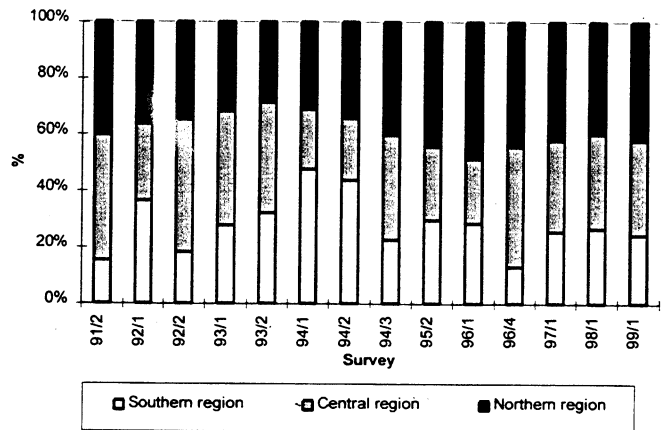


Figure 31 Relative regional share of fishable biomass of Cape hake 1991-99.

## Recruitment potential

Incoming recruits to the stock of Cape hakes can be estimated from the numerical abundance of the 1.5-2 year old fish. The young fish settle at the bottom usually in early spring (October-November) which is the first time one may assess and estimate the strength of year classes by trawl surveys. Table 16 shows the recent estimates for the 1997 year-class, together with previous observations of the two-yearlings. A 'normal' recruitment level after two years is usually around two billion fish  $\pm 200$  million. The 1997 year-class estimated from this survey consists of about 1 billion fish and must be classified as 'weak'.

| Year class      | 1988  | 1989 | 1990  | 1991  | 1991  | 1991  | 1992  | 1992  | 1993  | 1993  | 1994  | 1994  | 1995 | 1996  | 1997  |
|-----------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| Southern region | 980   | 100  | 300   | 990   | 670   | 390   | 250   | 2 308 | 1 730 | 510   | 485   | 672   | 10   | 1417  | 120   |
| Central region  | 1 320 | 170  | 1 620 | 3 500 | 1 230 | 1 370 | 1 880 | 3 017 | 490   | 430   | 1 030 | 1 313 | 120  | 3 014 | 600   |
| Northern region | 10    | 10   | 240   | 440   | 270   | 130   | 70    | 5     | 190   | 80    | 0     | 342   | 200  | 584   | 300   |
| Total           | 2 205 | 515  | 1 518 | 4 930 | 2 170 | 1 890 | 2 200 | 1 235 | 2 410 | 1 020 | 1 515 | 2 327 | 330  | 5 141 | 1 020 |
| Survey/Year     | 1/90  | 1/91 | 1/92  | 2/92  | 1/93  | 2/93  | 1/94  | 2/94  | 3/94  | 1/95  | 1/96  | 4/96  | 1/97 | 1/98  | 1/99  |

In Table 17 the non-fishable biomass is split by the age classes identified through the cohort analysis. The table shows that a large proportion of the recruits of Cape hake (288 000 tonnes) belongs to the cohort that is now three years, the 1996 year class. The 2-yearlings are estimated to only 54 000 tonnes, compared to 400 000 tonnes for the 1996 year-class at the same life-stage last year. This indicates that the 1996 year-class will be the main cohort to carry the fisheries for several years from year 2000. The biomass of deep water hake recruits in Namibia has been within the range 70-120 thousand tonnes since 1995, while at the beginning of the decade it was within the range 15-50 thousand tonnes, Table 17. The Namibian recruitment figures for the deep water hake are however less relevant as it is assumed that the main recruitment of this species originates from the much bigger population south of the Orange River.

| Table 17 Recruit biomass by species and age groups. 1 000 tonnes. |        |        |        |                     |
|---|--------|--------|--------|---------------------|
|   | 1 year | 2 year | 3 year | 4 year<br>(partial) |
| Cape hake   | -      | 33     | 288    | 90                  |
| Deepwater hake  | 1      | 21     | 42     | 40                  |
| Total   | 1      | 54     | 330    | 130                 |

### Conclusions and management considerations

The stock of Cape hake seems to be in a growing state and should approach a balanced age composition soon. The stock shows a growth in the mean size in the fishable biomass during 1998, a sign that the fishing pressure is not depressing the stock growth. A relative strong year-class should enter the fishery in the second half of 1999 or perhaps early 2000 and should give momentum to the fishable part of the stock.

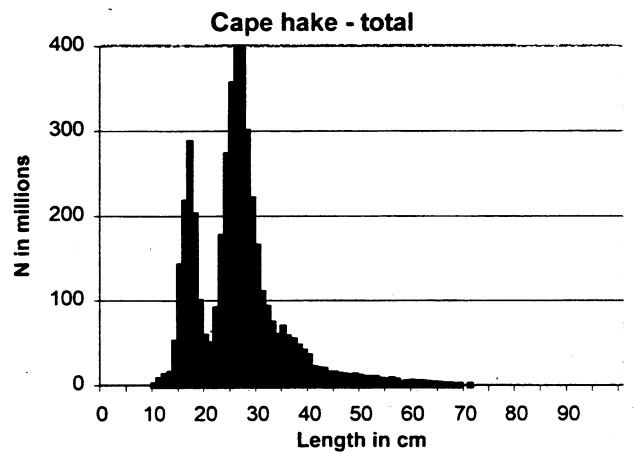
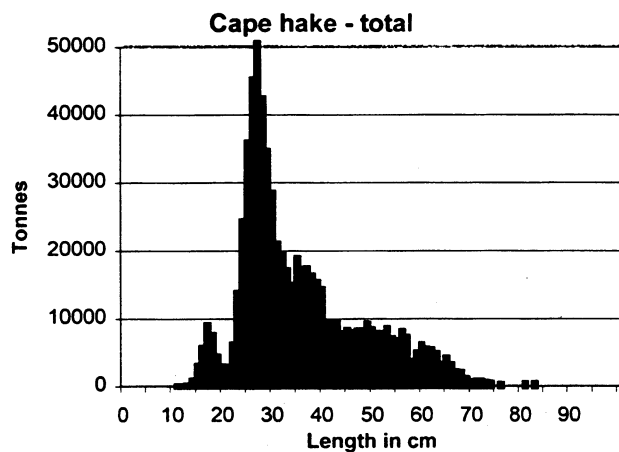
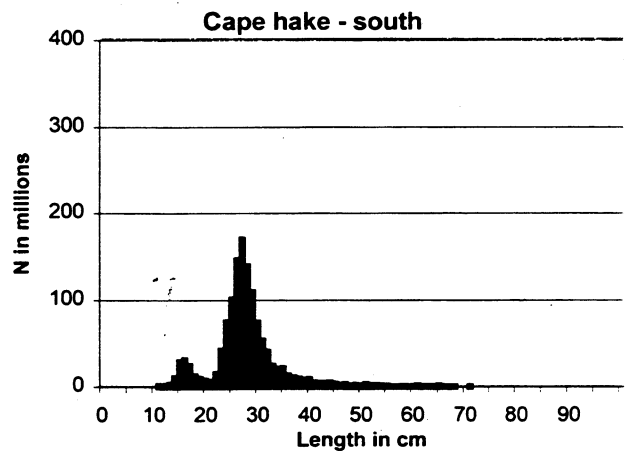
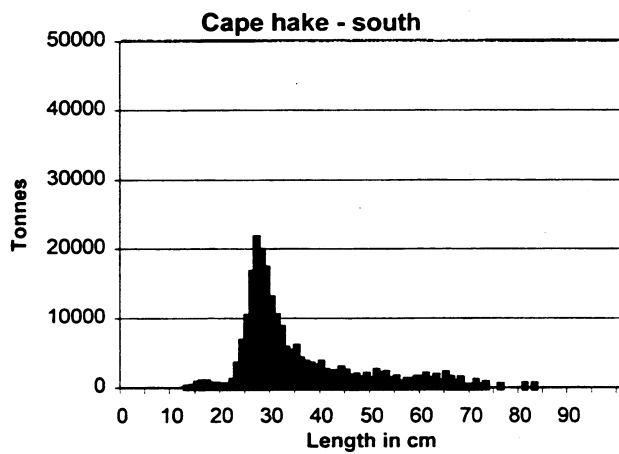
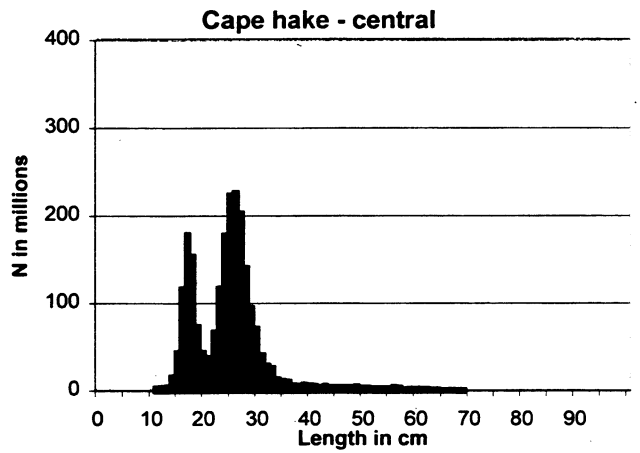
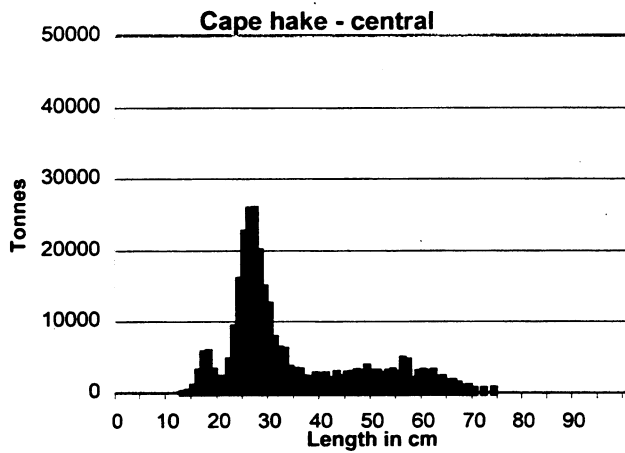
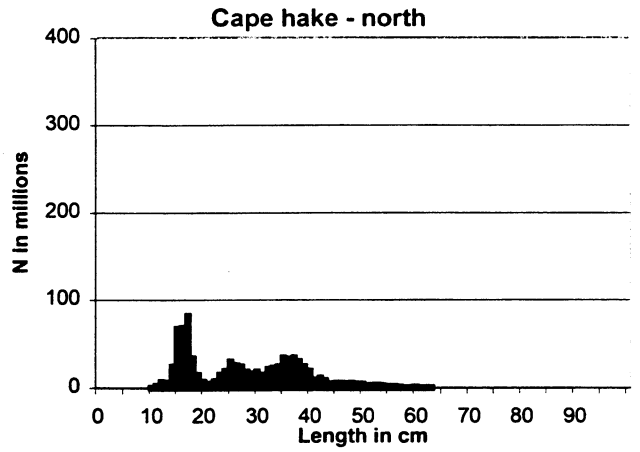
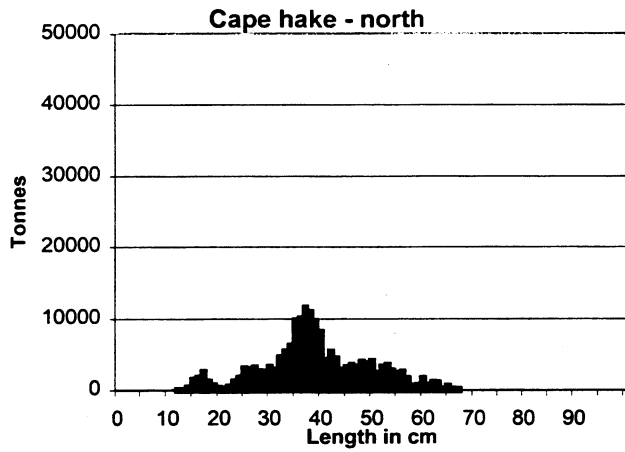
Hake are well known cannibalistic and opportunistic feeders and where young and old fish overlap, the main cause of natural mortality of the young is from cannibalistic feeding. This will probably occur to a high degree as the strong 1996 year-class will move into deeper waters during the year. A fishing strategy that protect the young fish by 'weeding' out the old in the overlapping zones will probably lessen this effect. This could be achieved with the use of sorting grids in the overlapping zones.

The deep water hake seems to be in a well balanced state and seems to have sustained the last years increased fishing effort in Namibian waters with resilience. Because of the quality of

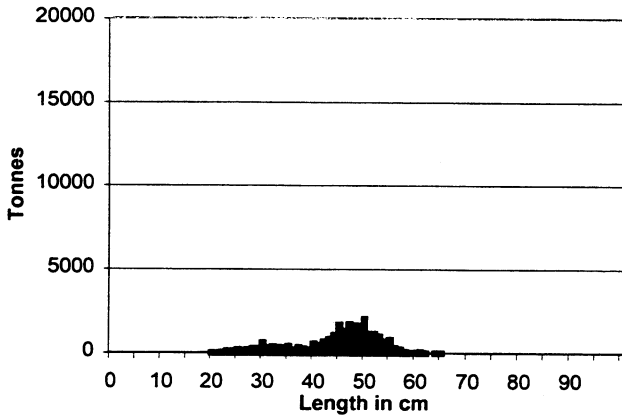
the flesh it is a favoured target by the industry and during 1997 and 1998 more vessels have targeted this species. The rich population of deep water hake in Namibian waters in the later years can be considered as a spin off effect from a mainly South African stock that seems to be in a healthy state. Continued favourable recruitment to the Namibian habitat is likely highly dependent on a good state in the main stock and this factor would therefore be outside the control of the Namibian management regime. But relieved the management concern for recruitment and replacement of the stock one should still not harvest the stock to its maximum in Namibian waters. The deep water hake occupies a niche deeper than the Cape hake and a good harvesting strategy should still be to maximise the biomass yield from this zone else not utilised. A fish stock can be harvested to a level where it safely replaces itself and such fishing can therefore be considered as sustainable. But fish should also be considered as 'collecting devices' for low level biomass else not available to man, like cows in a grazing field. Thus there is an optimum density for efficient biomass throughput. It is still the challenge of scientists and managers to find this optimum standing stock density for the deep water hake in Namibian waters. A long term sustainable harvest of the species in Namibian waters would also require closer regional co-operation in research on this species.

Though not statistically significant the data collected indicate that the deeper waters, the 450-550 depth range, hold densities of deep water hake that are not yet affected by fishing. A comparison with the logs from the fisheries should reveal if this is a zone still not utilised by the industry.

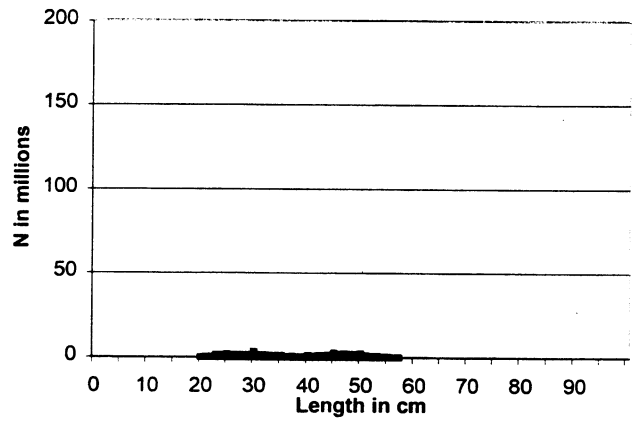
# Annex I Size Comoposition of main stocks



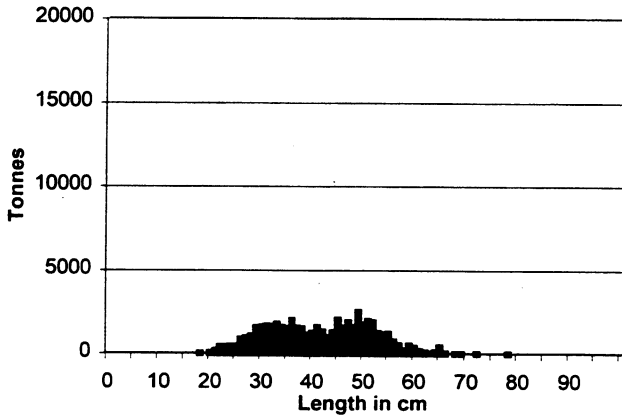
Deep water hake - north



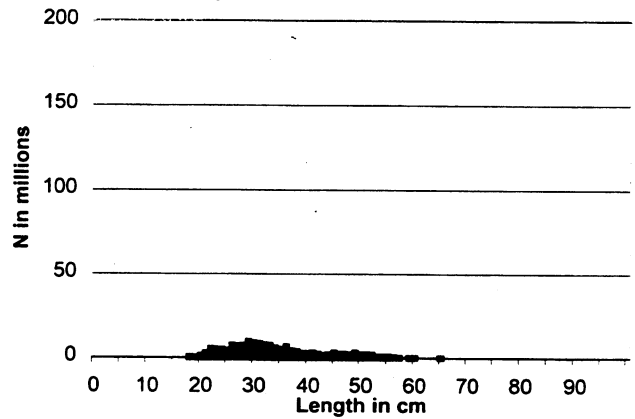
Deep water hake - north



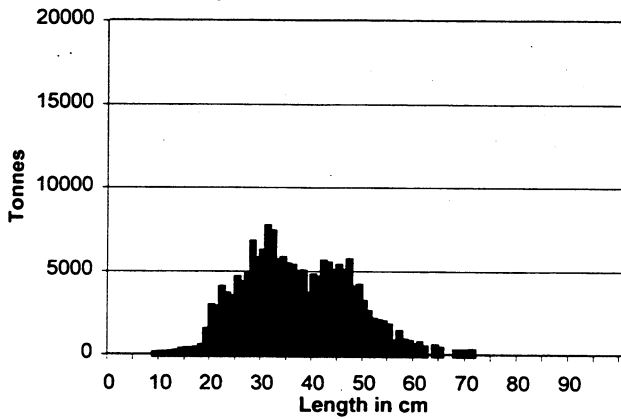
Deep water hake - central



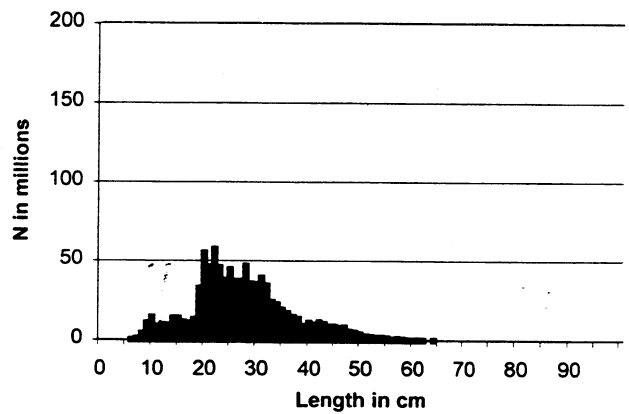
Deep water hake - central



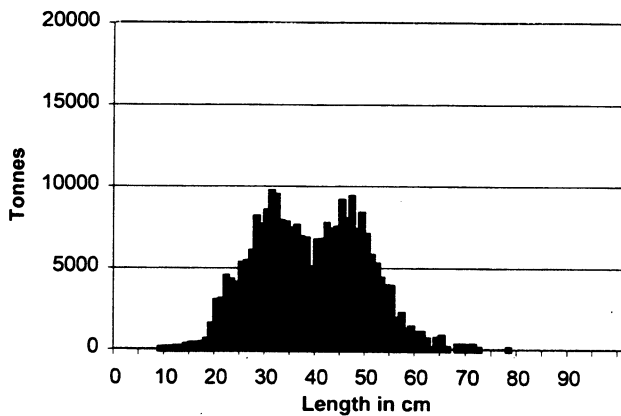
Deep water hake - south



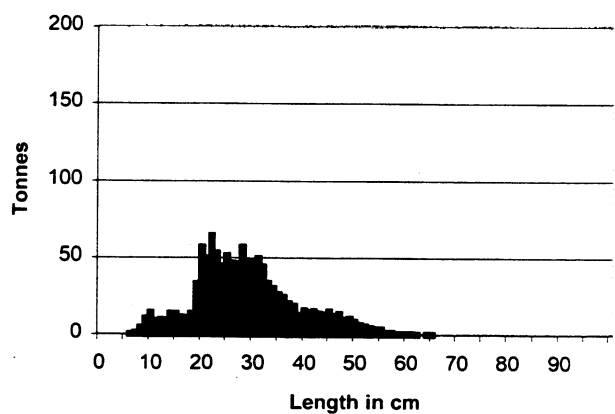
Deep water hake - south



Deep water hake - total



Deep water hake - total





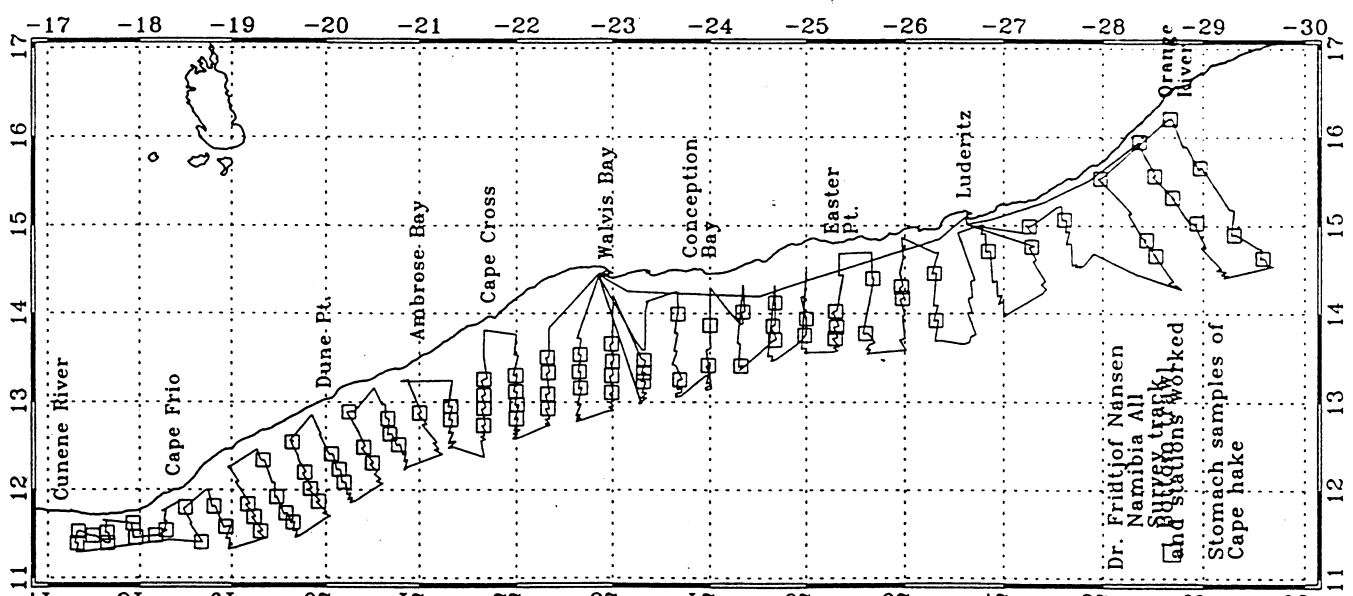
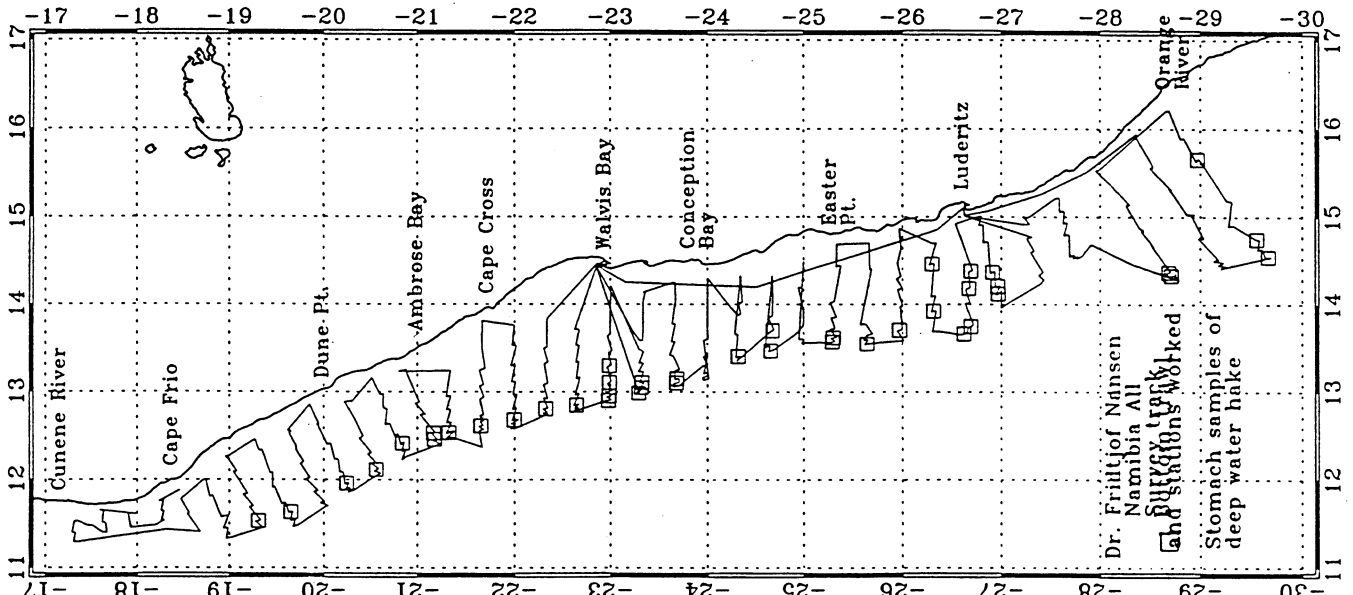
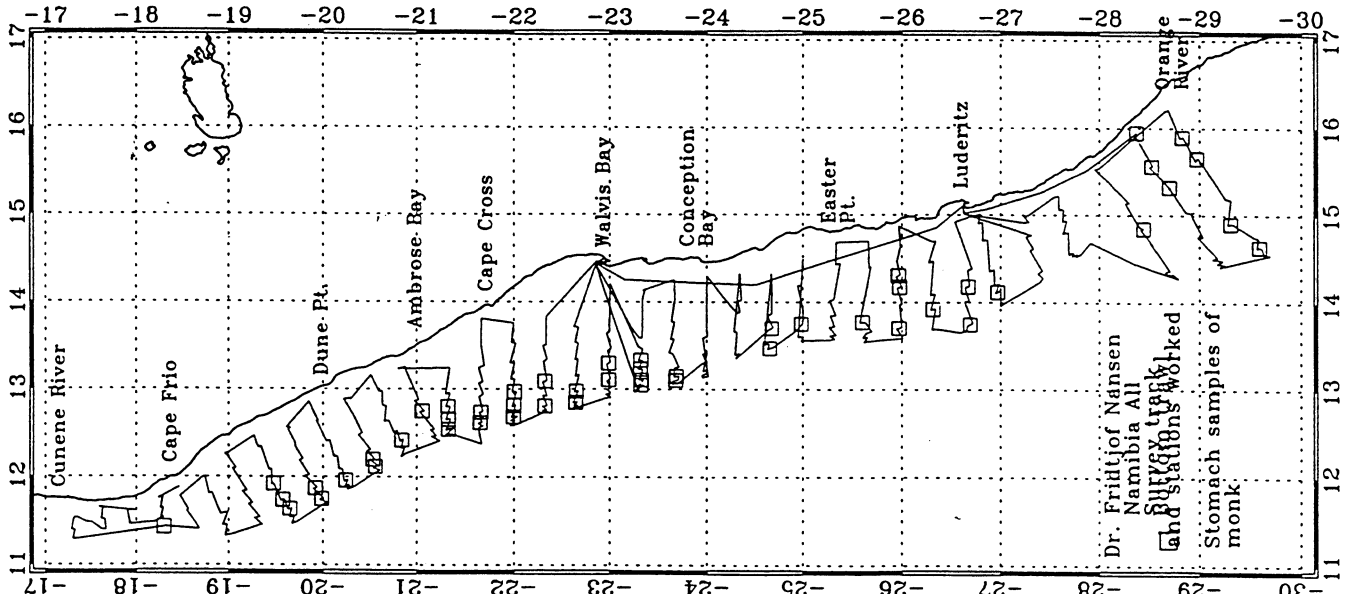
## Annex II Overview of data collected for the special study on the feeding ecology of hake and its prey species

A study of trophic relationships between the main fish stocks has been initiated as part of the research programme of the Ecosystem Analysis Section. Participation in this survey had the following aims:

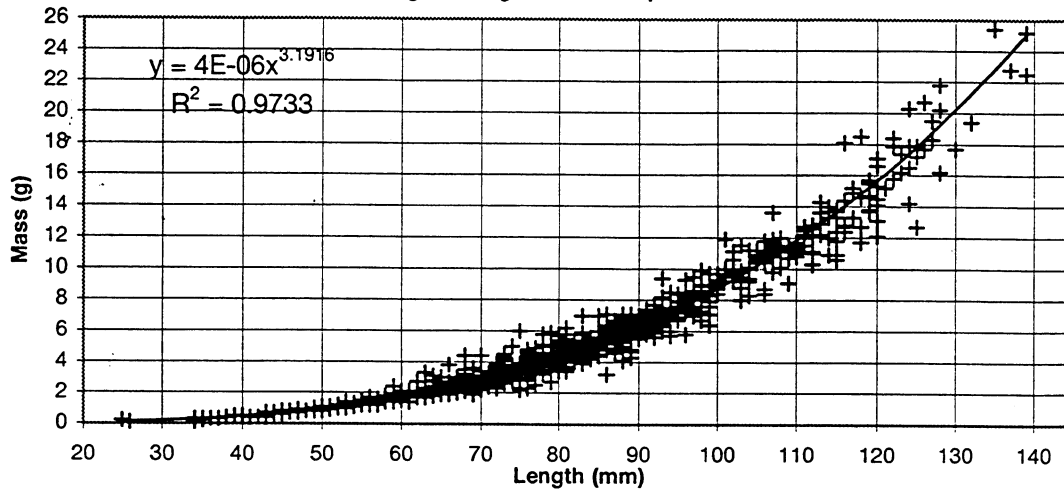
- 1) to investigate the diet of the two hake species by means of stomach sampling with particular reference to predation of *M. capensis* upon *M. paradoxus* and cannibalism within *M. capensis*;
- 2) to obtain diet composition information on several species of fish to assess their trophic levels in order to aggregate the trophic models which are being developed, with emphasis of potential predators or competitors of hakes;
- 3) to obtain length frequency distributions and length-mass relationships on some important forage species such as bearded goby (*Sufflogobius bibarbatus*) and Myctophidae (particularly *Lampanyctodes hectoris*).

A total of 2614 fish stomachs containing food of 21 different species have been collected over the entire Namibian shelf. Fig 1 illustrates the geographical distribution of samples collected for the 3 main species investigated. Analysis of these samples will be undertaken in the laboratory.

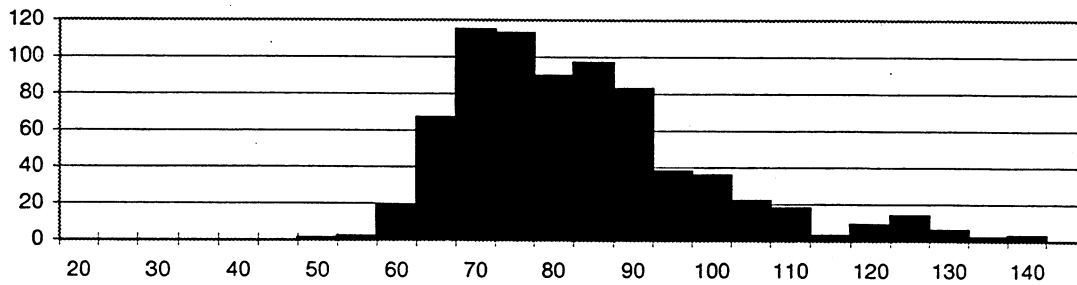
Fig 2 illustrates the preliminary results of the morphometric study of *Sufflogobius bibarbatus* and the size frequency distribution of the fish represented in the bottom trawl samples in the three different regions



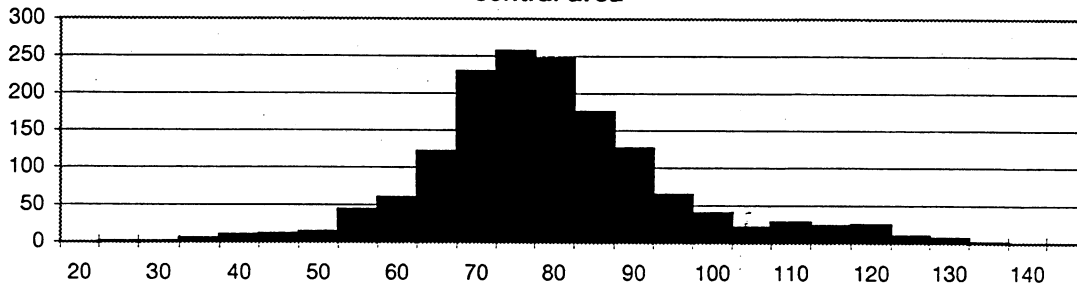
**Sufflogobius bibarbatus**  
Length - Weight relationship N=1419



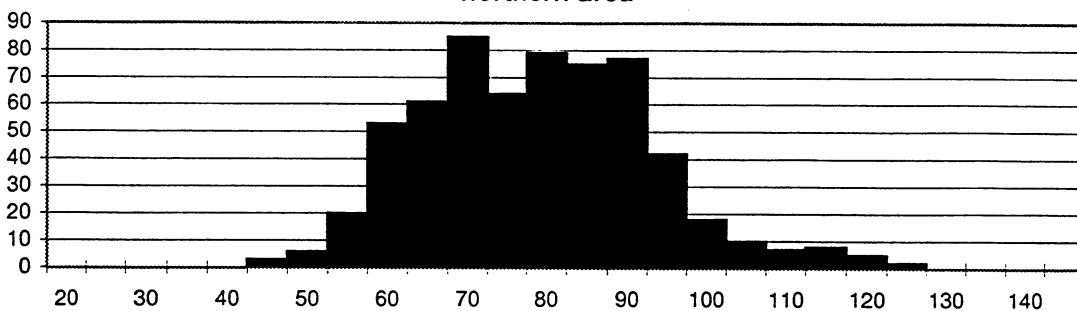
**Length frequency distribution southern area**



**Length frequency distribution central area**



**Length frequency distribution northern area**



# Annex III Records of fishing stations

PROJECT STATION: 2596  
 DATE: 13/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2822 Long E 1557  
 start stop duration  
 TIME :04:39:43 05:09:42 30 (min) Purpose code: 3  
 LOG :1475.18 1476.52 1.32 Area code : 1  
 FDEPTH: 96 97 GearCond.code:  
 BDEPTH: 96 97 Validity code:  
 Towing dir: 315° Wire out: 350 m Speed: 30 kn\*10  
 Sorted: 94 Kg Total catch: 289.95 CATCH/HOUR: 579.90

| SPECIES                     | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|-----------------------------|---------------|---------|--------------|------|
|                             | weight        | numbers |              |      |
| Chelidonichthys capensis    | 355.68        | 2107    | 61.33        |      |
| Merluccius capensis, female | 95.88         | 522     | 16.53        | 8736 |
| Sepia australis             | 63.44         | 3639    | 10.94        |      |
| Merluccius capensis, male   | 21.74         | 176     | 3.75         | 8735 |
| Genypteris capensis         | 10.96         | 228     | 1.89         | 8737 |
| Trachurus capensis          | 7.72          | 74      | 1.33         | 8740 |
| Mustelus palumbes           | 6.24          | 2       | 1.08         |      |
| Merluccius capensis         | 5.98          | 168     | 1.03         | 8734 |
| Austroglossus microlepis    | 4.20          | 28      | 0.72         | 8739 |
| Lolligoncula mercatoris     | 2.08          | 676     | 0.36         |      |
| Squilla sp.                 | 2.08          | 286     | 0.36         |      |
| Sufflogobius bibarbatu      | 1.56          | 312     | 0.27         |      |
| Lophius vomerinus           | 1.28          | 6       | 0.22         | 8738 |
| Congiopus spinifer          | 0.52          | 52      | 0.09         |      |
| Todaropsis eblanae          | 0.26          | 26      | 0.04         |      |
| Cynoglossus zanzibarensis   | 0.16          | 6       | 0.03         |      |
| Etrumeus whiteheadi         | 0.12          | 2       | 0.02         |      |
| <b>Total</b>                | <b>579.90</b> |         | <b>99.99</b> |      |

PROJECT STATION: 2597  
 DATE: 13/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2831 Long E 1534  
 start stop duration  
 TIME :08:10:15 08:36:11 26 (min) Purpose code: 3  
 LOG :1500.67 1501.98 1.29 Area code : 1  
 FDEPTH: 162 160 GearCond.code:  
 BDEPTH: 162 160 Validity code:  
 Towing dir: 360° Wire out: 500 m Speed: 30 kn\*10  
 Sorted: 61 Kg Total catch: 150.02 CATCH/HOUR: 346.20

| SPECIES                     | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|-----------------------------|---------------|---------|---------------|------|
|                             | weight        | numbers |               |      |
| Raja miraletus              | 93.46         | 42      | 27.00         |      |
| Merluccius paradoxus        | 83.95         | 1715    | 24.25         | 8743 |
| Sepia australis             | 38.01         | 2483    | 10.98         |      |
| Merluccius capensis, female | 25.52         | 67      | 7.37          | 8742 |
| Chelidonichthys capensis    | 24.37         | 21      | 7.04          | 8744 |
| Lepidopus caudatus          | 17.24         | 53      | 4.98          |      |
| Callorhynchus capensis      | 9.76          | 270     | 2.82          |      |
| Todarodes sagittatus        | 6.46          | 5       | 1.87          |      |
| Todaropsis eblanae          | 6.44          | 12      | 1.86          |      |
| Todaropsis eblanae          | 6.02          | 125     | 1.74          |      |
| Merluccius capensis, male   | 5.22          | 14      | 1.51          | 8741 |
| Holohalaelurus regani       | 5.19          | 21      | 1.50          |      |
| Coelorrinchus fasciatus     | 4.57          |         | 1.32          |      |
| Paracallionymus costatus    | 4.36          | 665     | 1.26          |      |
| Austroglossus microlepis    | 2.31          | 5       | 0.67          | 8746 |
| Genypteris capensis         | 2.17          | 48      | 0.63          | 8745 |
| Squilla acuelata calmani    | 2.08          | 145     | 0.60          |      |
| Trachurus capensis          | 2.03          | 7       | 0.59          | 8747 |
| Helicolenus dactylopterus   | 1.66          | 125     | 0.48          |      |
| Sufflogobius bibarbatu      | 1.25          | 302     | 0.36          |      |
| Lophius vomerinus           | 1.25          | 7       | 0.36          | 8748 |
| Cynoglossus zanzibarensis   | 1.02          | 21      | 0.29          |      |
| Bathynectes piperitus       | 0.83          | 21      | 0.24          |      |
| Lolligoncula mercatoris     | 0.62          | 219     | 0.18          |      |
| Maurolicus muelleri         | 0.42          | 270     | 0.12          |      |
| <b>Total</b>                | <b>346.21</b> |         | <b>100.02</b> |      |

PROJECT STATION: 2598  
 DATE: 13/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2842 Long E 1519  
 start stop duration  
 TIME :11:04:42 11:14:05 9 (min) Purpose code: 3  
 LOG :1522.65 1523.20 0.55 Area code : 1  
 FDEPTH: 173 175 GearCond.code: 9  
 BDEPTH: 173 175 Validity code: 1  
 Towing dir: 30° Wire out: 550 m Speed: 35 kn\*10  
 Sorted: 82 Kg Total catch: 81.53 CATCH/HOUR: 543.53

| SPECIES                      | CATCH/HOUR    |         | % OF TOT. C  | SAMP |
|------------------------------|---------------|---------|--------------|------|
|                              | weight        | numbers |              |      |
| Galeorhinus galeus           | 136.33        | 7       | 25.08        |      |
| Merluccius paradoxus, female | 135.60        | 1887    | 24.95        | 8756 |
| Merluccius capensis, female  | 58.00         | 87      | 10.67        | 8754 |
| Merluccius paradoxus, male   | 49.47         | 933     | 9.10         | 8755 |
| Etrumeus whiteheadi          | 21.73         | 393     | 4.00         |      |
| Merluccius paradoxus         | 20.13         | 1120    | 3.70         | 8749 |
| Maurolicus muelleri          | 19.87         | 12420   | 3.66         |      |
| Helicolenus dactylopterus    | 16.00         | 1907    | 2.94         |      |
| Trachurus capensis           | 13.60         | 27      | 2.50         | 8750 |
| Merluccius capensis, male    | 10.80         | 40      | 1.99         | 8753 |
| Holohalaelurus regani        | 10.67         | 93      | 1.96         |      |
| Merluccius paradoxus         | 8.80          | 227     | 1.62         | 8757 |
| Sepia australis              | 8.40          | 700     | 1.55         |      |
| Paracallionymus costatus     | 8.00          | 753     | 1.47         |      |
| Lophius vomerinus            | 7.73          | 33      | 1.42         | 8752 |
| Lepidopus caudatus           | 7.47          | 127     | 1.37         |      |
| Chelidonichthys capensis     | 4.13          | 20      | 0.76         |      |
| Todaropsis eblanae           | 2.67          | 133     | 0.49         |      |
| Zeus capensis                | 2.00          | 40      | 0.37         |      |
| Genypteris capensis          | 1.87          | 13      | 0.34         | 8751 |
| Cynoglossus capensis         | 0.27          | 13      | 0.05         |      |
| <b>Total</b>                 | <b>543.54</b> |         | <b>99.99</b> |      |

PROJECT STATION: 2599  
 DATE: 13/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2856 Long E 1502  
 start stop duration  
 TIME :14:14:10 14:43:35 29 (min) Purpose code: 3  
 LOG :1549.45 1551.07 1.62 Area code : 1  
 FDEPTH: 180 179 GearCond.code:  
 BDEPTH: 180 179 Validity code:  
 Towing dir: 360° Wire out: 550 m Speed: 30 kn\*10  
 Sorted: 107 Kg Total catch: 145.50 CATCH/HOUR: 301.03

| SPECIES                      | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|------------------------------|---------------|---------|---------------|------|
|                              | weight        | numbers |               |      |
| Merluccius capensis, female  | 84.41         | 62      | 28.04         | 8759 |
| Lophius vomerinus            | 42.00         | 25      | 13.95         | 8760 |
| Merluccius paradoxus, female | 32.07         | 292     | 10.65         | 8764 |
| Brama brama                  | 28.34         | 17      | 9.41          |      |
| Sepia australis              | 24.52         | 4717    | 8.15          |      |
| Trachurus capensis           | 17.79         | 52      | 5.91          | 8765 |
| Merluccius paradoxus         | 13.45         | 1169    | 4.47          | 8766 |
| Merluccius capensis, male    | 10.26         | 8       | 3.41          | 8758 |
| Merluccius paradoxus, male   | 9.72          | 110     | 3.23          | 8763 |
| Callorhynchus capensis       | 8.07          | 6       | 2.68          |      |
| Etrumeus whiteheadi          | 7.14          | 83      | 2.37          |      |
| Helicolenus dactylopterus    | 3.21          | 161     | 1.07          |      |
| Holohalaelurus regani        | 3.10          | 17      | 1.03          |      |
| Maurolicus muelleri          | 3.10          | 2328    | 1.03          |      |
| Zeus capensis                | 2.48          | 31      | 0.82          |      |
| Squalus megalops             | 2.28          | 6       | 0.76          |      |
| Paracallionymus costatus     | 2.17          | 327     | 0.72          |      |
| Todaropsis eblanae           | 2.07          | 48      | 0.69          |      |
| Genypteris capensis          | 1.94          | 4       | 0.64          | 8761 |
| Lepidopus caudatus           | 1.86          | 17      | 0.62          |      |
| Chelidonichthys queketti     | 1.03          | 10      | 0.34          |      |
| Cynoglossus zanzibarensis    | 0.93          | 10      | 0.31          |      |
| Congiopus spinifer           | 0.72          | 6       | 0.24          |      |
| Coelorrinchus fasciatus      | 0.21          | 6       | 0.07          |      |
| <b>Total</b>                 | <b>302.87</b> |         | <b>100.61</b> |      |

PROJECT STATION: 2600  
 DATE: 13/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2900 Long E 1445  
 start stop duration  
 TIME :17:16:21 17:46:07 30 (min) Purpose code: 3  
 LOG :1570.24 1571.84 1.60 Area code : 1  
 FDEPTH: 223 214 GearCond.code:  
 BDEPTH: 223 214 Validity code:  
 Towing dir: 360° Wire out: 680 m Speed: 30 kn\*10  
 Sorted: 17 Kg Total catch: 447.97 CATCH/HOUR: 895.94

| SPECIES                      | CATCH/HOUR    |         | % OF TOT. C   | SAMP |
|------------------------------|---------------|---------|---------------|------|
|                              | weight        | numbers |               |      |
| Merluccius paradoxus         | 391.82        | 5138    | 43.73         | 8767 |
| Merluccius capensis, female  | 124.60        | 68      | 13.91         | 8771 |
| Lepidopus caudatus           | 57.20         | 660     | 6.38          |      |
| Helicolenus dactylopterus    | 45.54         | 1090    | 5.08          |      |
| Callorhynchus capensis       | 43.56         | 22      | 4.86          |      |
| Merluccius capensis, male    | 31.32         | 24      | 3.50          | 8772 |
| Lophius vomerinus            | 29.92         | 24      | 3.34          | 8775 |
| Sepia australis              | 26.84         | 3058    | 3.00          |      |
| Squalus megalops             | 26.18         | 22      | 2.92          |      |
| Raja straeleni               | 24.86         | 22      | 2.77          |      |
| Thyrstites atun              | 15.64         | 12      | 1.75          | 8768 |
| Trachurus capensis           | 14.92         | 46      | 1.67          | 8770 |
| Zeus capensis                | 10.34         | 22      | 1.15          |      |
| Coelorrinchus fasciatus      | 9.46          | 154     | 1.06          |      |
| Malacocephalus laevis        | 8.80          | 78      | 0.98          |      |
| Holohalaelurus regani        | 7.70          | 34      | 0.86          |      |
| Merluccius paradoxus, female | 7.60          | 10      | 0.85          | 8774 |
| Emmelichthys nitidus         | 7.26          | 22      | 0.81          |      |
| Genypteris capensis          | 2.68          | 6       | 0.30          | 8769 |
| Etrumeus whiteheadi          | 2.42          | 22      | 0.27          |      |
| Paracallionymus costatus     | 1.98          | 396     | 0.22          |      |
| Chelidonichthys queketti     | 1.76          | 12      | 0.20          |      |
| Arnoglossus capensis         | 0.88          | 44      | 0.10          |      |
| Cynoglossus zanzibarensis    | 0.88          | 22      | 0.10          |      |
| Merluccius paradoxus, male   | 0.68          | 2       | 0.08          | 8773 |
| CONGRIDAE                    | 0.66          | 34      | 0.07          |      |
| Squilla acuelata calmani     | 0.22          | 22      | 0.02          |      |
| Todaropsis eblanae           | 0.22          | 12      | 0.02          |      |
| <b>Total</b>                 | <b>895.94</b> |         | <b>100.00</b> |      |

PROJECT STATION: 2601  
 DATE: 13/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2909 Long E 1431  
 start stop duration  
 TIME : 20:33:53 21:03:34 30 (min) Purpose code: 3  
 LOG : 1592.69 1594.26 1.56 Area code : 1  
 FDEPTH: 362 351 GearCond. code:  
 BDEPTH: 362 351 Validity code:  
 Towing dir: 330° Wire out: 1100 m Speed: 30 kn\*10

Sorted: 110 Kg Total catch: 139.06 CATCH/HOUR: 278.12

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 65.08      | 16      | 23.40       | 8781 |
| Genypterus capensis          | 44.64      | 28      | 16.05       | 8777 |
| Octopus vulgaris             | 37.60      | 8       | 13.52       |      |
| Helicolenus dactylopterus    | 33.84      | 100     | 12.17       |      |
| Merluccius capensis, female  | 17.76      | 8       | 6.39        | 8776 |
| Coelorinchus fasciatus       | 14.88      | 148     | 5.35        |      |
| Merluccius paradoxus, female | 13.44      | 74      | 4.83        | 8779 |
| Merluccius paradoxus, male   | 10.84      | 54      | 3.90        | 8780 |
| Merluccius paradoxus, male   | 10.56      | 62      | 3.80        | 8778 |
| Symbolophorus boops          | 10.16      | 400     | 3.65        |      |
| Epigonus denticulatus        | 3.68       | 164     | 1.32        |      |
| Maurollicus muelleri         | 3.52       | 292     | 1.27        |      |
| Malacocephalus laevis        | 2.40       | 28      | 0.86        |      |
| Cyttus traversi              | 2.24       | 4       | 0.81        |      |
| Myxine capensis              | 2.24       | 8       | 0.81        |      |
| Paracallionymus costatus     | 1.84       | 60      | 0.66        |      |
| Tripterygion gilchristi      | 1.68       | 28      | 0.60        |      |
| Zeus capensis                | 0.68       | 8       | 0.24        |      |
| Bathynectes piperitus        | 0.44       | 12      | 0.16        |      |
| PARAPAGURIDAE *              | 0.28       | 32      | 0.10        |      |
| CALAPPIDAE                   | 0.16       | 12      | 0.06        |      |
| POLYCHAELIDAE                | 0.08       | 28      | 0.03        |      |
| Squilla aculeata calmani     | 0.04       | 4       | 0.01        |      |
| ARISTEIDAE                   | 0.04       | 8       | 0.01        |      |
| Total                        |            | 278.12  | 100.00      |      |

PROJECT STATION: 2602  
 DATE: 13/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2912 Long E 1428  
 start stop duration  
 TIME : 23:06:11 23:35:55 30 (min) Purpose code: 3  
 LOG : 1605.16 1606.78 1.62 Area code : 1  
 FDEPTH: 486 493 GearCond. code:  
 BDEPTH: 486 493 Validity code:  
 Towing dir: 345° Wire out: 1450 m Speed: 35 kn\*10

Sorted: 90 Kg Total catch: 96.20 CATCH/HOUR: 192.40

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 79.80      | 84      | 41.48       | 8782 |
| Deepwater fish mixture       | 19.50      |         | 10.14       |      |
| Genypterus capensis          | 15.60      | 6       | 8.11        | 8785 |
| OCTOPODIDAE                  | 13.44      | 2       | 6.99        |      |
| Squalus megalops             | 11.16      | 228     | 5.80        |      |
| Merluccius paradoxus, male   | 9.40       | 14      | 4.89        | 8783 |
| Raja confundens              | 9.36       | 8       | 4.86        |      |
| Myxine capensis              | 4.80       | 72      | 2.49        |      |
| Trachyrincus scabrus         | 3.96       | 166     | 2.06        |      |
| Helicolenus dactylopterus    | 3.00       | 16      | 1.56        |      |
| Todarodes sagittatus         | 2.72       | 4       | 1.41        |      |
| Zeus capensis                | 2.58       | 4       | 1.34        |      |
| Symbolophorus boops          | 2.52       | 100     | 1.31        |      |
| Nezumia sp.                  | 2.52       | 142     | 1.31        |      |
| Notacanthus sexspinis        | 2.46       | 66      | 1.28        |      |
| Coelorinchus fasciatus       | 2.22       | 30      | 1.15        |      |
| Lophius vomerinus            | 2.20       | 2       | 1.14        | 8784 |
| Bathynectes piperitus        | 1.80       | 10      | 0.94        |      |
| Selachophidium guentheri     | 0.90       | 18      | 0.47        |      |
| Bassanago albescens          | 0.84       | 4       | 0.44        |      |
| MORIDAE                      | 0.78       | 30      | 0.41        |      |
| Lamprogrammus exutus         | 0.30       | 4       | 0.16        |      |
| Ebinania costaecanarie       | 0.24       | 16      | 0.12        |      |
| Yarrella blackfordi          | 0.18       | 6       | 0.09        |      |
| CONGRIDAE                    | 0.12       | 6       | 0.06        |      |
| Total                        |            | 192.40  | 100.01      |      |

PROJECT STATION: 2603  
 DATE: 14/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2913 Long E 1425  
 start stop duration  
 TIME : 01:44:02 02:04:09 20 (min) Purpose code: 3  
 LOG : 1616.29 1617.32 1.02 Area code : 1  
 FDEPTH: 585 601 GearCond. code: 9  
 BDEPTH: 585 601 Validity code: 1  
 Towing dir: 350° Wire out: 1650 m Speed: 32 kn\*10

Sorted: 79 Kg Total catch: 181.70 CATCH/HOUR: 545.10

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrus         | 175.80     | 2580    | 32.25       |      |
| Merluccius paradoxus, female | 137.34     | 96      | 25.20       | 8787 |
| Nezumia sp.                  | 67.50      | 1185    | 12.38       |      |
| Coelorinchus matamua         | 38.10      | 150     | 6.99        |      |
| OPHIDIIDAE                   | 19.20      | 45      | 3.52        |      |
| CHIMAERIDAE                  | 18.60      | 75      | 3.41        |      |
| Squalus megalops             | 15.90      | 90      | 2.92        |      |
| Hoplostethus atlanticus      | 14.16      | 36      | 2.60        | 8788 |
| Selachophidium guentheri     | 13.80      | 210     | 2.53        |      |
| Chaceon maritae              | 7.50       | 30      | 1.38        |      |
| Merluccius paradoxus, male   | 6.60       | 15      | 1.21        | 8786 |
| Allocyttus verrucosus        | 6.30       | 120     | 1.16        |      |
| Neocyttus rhomboidalis       | 5.10       | 45      | 0.94        |      |
| Hoplostethus cadenati        | 4.50       | 120     | 0.83        |      |
| Notacanthus sexspinis        | 3.90       | 75      | 0.72        |      |
| Myxine capensis              | 3.30       | 30      | 0.61        |      |
| Ebinania costaecanarie       | 1.80       | 15      | 0.33        |      |
| BATHYPTERIDAE                | 1.20       | 15      | 0.22        |      |
| Yarrella blackfordi          | 1.20       | 105     | 0.22        |      |
| Helicolenus dactylopterus    | 1.20       | 15      | 0.22        |      |
| MYCTOPHIDAE                  | 0.90       | 30      | 0.17        |      |
| Symbolophorus boops          | 0.60       | 60      | 0.11        |      |
| Aristeus varidens            | 0.60       | 105     | 0.11        |      |
| Total                        |            | 545.10  | 100.03      |      |

PROJECT STATION: 2604  
 DATE: 14/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2940 Long E 1433  
 start stop duration  
 TIME : 06:55:55 07:29:19 33 (min) Purpose code: 3  
 LOG : 1652.74 1654.39 1.63 Area code : 1  
 FDEPTH: 528 529 GearCond. code:  
 BDEPTH: 528 529 Validity code:  
 Towing dir: 360° Wire out: 1500 m Speed: 30 kn\*10

Sorted: 133 Kg Total catch: 789.48 CATCH/HOUR: 1435.42

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 933.42     | 1820    | 65.03       | 8790 |
| Merluccius paradoxus, male   | 315.64     | 751     | 21.99       | 8789 |
| Raja leopardus               | 43.27      | 13      | 3.01        |      |
| Coelorinchus braueri         | 35.38      | 1235    | 2.46        |      |
| Ruvettus pretiosus           | 21.20      | 2       | 1.48        |      |
| Malacocephalus laevis        | 19.60      | 127     | 1.37        |      |
| Genypterus capensis          | 14.15      | 2       | 0.99        | 8791 |
| Etmopterus lucifer           | 8.40       | 280     | 0.59        |      |
| Helicolenus dactylopterus    | 8.15       | 38      | 0.57        |      |
| Todarodes sagittatus         | 6.62       | 13      | 0.46        |      |
| Selachophidium guentheri     | 6.11       | 89      | 0.43        |      |
| Nezumia sp.                  | 4.58       | 102     | 0.32        |      |
| Photichthys argenteus        | 4.58       | 216     | 0.32        |      |
| Lophius vomerinus            | 3.85       | 4       | 0.27        | 8792 |
| Chaceon maritae              | 3.82       | 40      | 0.27        |      |
| Rossia enigmatica            | 2.80       | 127     | 0.20        |      |
| Ebinania costaecanarie       | 1.53       | 25      | 0.11        |      |
| Bassanago albescens          | 1.27       | 13      | 0.09        |      |
| Notacanthus sexspinis        | 0.76       | 13      | 0.05        |      |
| Solenocera africana          | 0.25       | 38      | 0.02        |      |
| Total                        |            | 1435.42 | 100.03      |      |

PROJECT STATION: 2605  
 DATE: 14/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2933 Long E 1433  
 start stop duration  
 TIME : 09:11:29 09:41:30 30 (min) Purpose code: 3  
 LOG : 1662.29 1663.76 1.46 Area code : 1  
 FDEPTH: 419 419 GearCond. code:  
 BDEPTH: 419 419 Validity code:  
 Towing dir: 340° Wire out: 1200 m Speed: 30 kn\*10

Sorted: 221 Kg Total catch: 924.94 CATCH/HOUR: 1849.88

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 816.36     | 2524    | 44.13       | 8797 |
| Merluccius paradoxus, male   | 584.94     | 2262    | 31.62       | 8799 |
| Merluccius paradoxus, female | 112.32     | 58      | 6.07        | 8799 |
| Coelorinchus fasciatus       | 111.66     | 1058    | 6.04        |      |
| Merluccius capensis, female  | 57.44      | 26      | 3.11        | 8799 |
| Malacocephalus laevis        | 31.62      | 88      | 1.71        |      |
| Epigonus denticulatus        | 21.46      | 668     | 1.16        |      |
| Genypterus capensis          | 19.92      | 10      | 1.08        | 8799 |
| Helicolenus dactylopterus    | 19.44      | 130     | 1.05        |      |
| Lophius vomerinus            | 17.64      | 12      | 0.95        | 8799 |
| Scyliorhinus capensis        | 14.22      | 14      | 0.77        |      |
| Squalus megalops             | 13.06      | 14      | 0.71        |      |
| Bassanago albescens          | 13.06      | 14      | 0.71        |      |
| Bathyroconger vicinus        | 7.54       | 14      | 0.41        |      |
| Todarodes sagittatus         | 5.56       | 8       | 0.30        |      |
| Merluccius capensis, male    | 3.64       | 2       | 0.20        | 8799 |
| Total                        |            | 1849.88 | 100.02      |      |

PROJECT STATION: 2606  
 DATE: 14/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2933 Long E 1444  
 start stop duration  
 TIME : 11:13:43 11:22:10 8 (min) Purpose code: 3  
 LOG : 1672.18 1672.61 0.42 Area code : 1  
 FDEPTH: 357 360 GearCond. code: 9  
 BDEPTH: 357 360 Validity code: 1  
 Towing dir: 350° Wire out: 1100 m Speed: 35 kn\*10

Sorted: 89 Kg Total catch: 270.39 CATCH/HOUR: 2027.93

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, male   | 648.00     | 4050    | 31.95       | 8800 |
| Merluccius paradoxus, female | 367.20     | 2400    | 18.11       | 8800 |
| Epigonus denticulatus        | 193.73     | 3683    | 9.55        |      |
| Coelorinchus fasciatus       | 176.85     | 2295    | 8.72        |      |
| Zeus capensis                | 143.10     | 203     | 7.06        |      |
| Helicolenus dactylopterus    | 109.35     | 473     | 5.39        |      |
| Holohalaelurus regani        | 101.25     | 443     | 4.99        |      |
| Brama brama                  | 50.40      | 30      | 2.49        |      |
| SQUALIDAE                    | 39.83      | 38      | 1.96        |      |
| Merluccius capensis, female  | 32.10      | 15      | 1.58        | 8800 |
| Malacocephalus laevis        | 30.38      | 240     | 1.50        |      |
| Scyliorhinus capensis        | 23.63      | 38      | 1.17        |      |
| Merluccius paradoxus, female | 19.65      | 8       | 0.97        | 8800 |
| Galeus polli                 | 19.58      | 135     | 0.97        |      |
| Hoplostethus mediterraneus   | 19.58      | 510     | 0.97        |      |
| Genypterus capensis          | 17.40      | 15      | 0.86        | 8800 |
| SEPIOLIDAE                   | 15.53      | 810     | 0.77        |      |
| Merluccius capensis, male    | 12.30      | 8       | 0.61        | 8800 |
| Cynoglossus capensis         | 2.70       | 135     | 0.13        |      |
| OMASTREPHIDAE                | 2.70       | 38      | 0.13        |      |
| Paracallionymus costatus     | 1.35       | 270     | 0.07        |      |
| Nezumia sp.                  | 0.68       | 135     | 0.03        |      |
| OPHIDIIDAE                   | 0.68       | 68      | 0.03        |      |
| Total                        |            | 2027.97 | 100.01      |      |

PROJECT STATION:2607  
 DATE:14/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2919 Long E 1454  
 start stop duration Purpose code: 3  
 TIME :13:48:22 14:17:59 30 (min) Area code : 1  
 LOG :1691.31 1692.95 1.62 GearCond.code:  
 FDEPTH: 195 193 Validity code:  
 BDEPTH: 195 193  
 Towing dir: 350° Wire out: 600 m Speed: 35 kn\*10  
 Sorted: 58 Kg Total catch: 58.28 CATCH/HOUR: 116.56

| SPECIES                        | CATCH/HOUR weight | % OF TOT. C numbers | SAMP  |
|--------------------------------|-------------------|---------------------|-------|
| Merluccius capensis, female    | 23.32             | 16                  | 20.01 |
| Zeus capensis                  | 19.24             | 82                  | 16.51 |
| Holohalaelurus regani          | 16.44             | 50                  | 14.10 |
| Lophius vomerinus              | 15.04             | 20                  | 12.90 |
| Congiopodus spinifer           | 8.80              | 6                   | 7.55  |
| Chelidonichthys capensis       | 6.68              | 4                   | 5.73  |
| Sepia australis                | 5.04              | 560                 | 4.32  |
| PARAPAGURIDAE *                | 4.00              | 444                 | 3.43  |
| Etmopterus brachyurus          | 3.40              | 10                  | 2.92  |
| Thyrsites atun                 | 2.44              | 2                   | 2.09  |
| Mustelus mustelus              | 2.16              | 4                   | 1.85  |
| Paracallionymus costatus       | 1.84              | 168                 | 1.58  |
| Chelidonichthys capensis       | 1.72              | 10                  | 1.48  |
| Malacocephalus laevis          | 1.68              | 14                  | 1.44  |
| Todarodes sagittatus           | 0.96              | 4                   | 0.82  |
| Monolene microstoma            | 0.88              | 52                  | 0.75  |
| Merluccius paradoxus, juvenile | 0.48              | 58                  | 0.41  |
| Lepidopus caudatus             | 0.44              | 8                   | 0.38  |
| SEPIOLIDAE                     | 0.40              | 14                  | 0.34  |
| Dicrolene intronigra           | 0.40              | 2                   | 0.34  |
| Trachurus capensis             | 0.40              | 2                   | 0.34  |
| Etrumeus whiteheadi            | 0.36              | 2                   | 0.31  |
| Coelorinchus fasciatus         | 0.24              | 4                   | 0.21  |
| Hoplostethus mediterraneus     | 0.16              | 2                   | 0.14  |
| Helicolenus dactylopterus      | 0.04              | 4                   | 0.03  |
| Total                          | 116.56            |                     | 99.98 |

PROJECT STATION:2608  
 DATE:14/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2918 Long E 1511  
 start stop duration Purpose code: 3  
 TIME :16:19:23 16:50:15 31 (min) Area code : 1  
 LOG :1709.66 1711.33 1.67 GearCond.code:  
 FDEPTH: 184 195 Validity code:  
 BDEPTH: 184 195  
 Towing dir: 350° Wire out: 600 m Speed: 30 kn\*10  
 Sorted: 83 Kg Total catch: 83.04 CATCH/HOUR: 160.72

| SPECIES                        | CATCH/HOUR weight | % OF TOT. C numbers | SAMP  |
|--------------------------------|-------------------|---------------------|-------|
| Etrumeus whiteheadi            | 54.23             | 629                 | 33.74 |
| Trachurus capensis             | 24.77             | 74                  | 15.41 |
| Merluccius capensis, female    | 20.90             | 15                  | 13.00 |
| Lophius vomerinus              | 7.82              | 12                  | 4.87  |
| Chelidonichthys capensis       | 7.59              | 39                  | 4.72  |
| Squalus megalops               | 6.31              | 14                  | 3.93  |
| Congiopodus spinifer           | 6.31              | 14                  | 3.93  |
| Holohalaelurus regani          | 6.08              | 17                  | 3.78  |
| Helicolenus dactylopterus      | 4.57              | 48                  | 2.84  |
| Zeus capensis                  | 3.99              | 35                  | 2.48  |
| Merluccius paradoxus, female   | 3.72              | 21                  | 2.31  |
| Raja wallacei                  | 3.21              | 2                   | 2.00  |
| Sepia australis                | 3.14              | 615                 | 1.95  |
| Merluccius paradoxus, male     | 2.67              | 25                  | 1.66  |
| Emmelichthys nitidus           | 1.39              | 17                  | 0.86  |
| Merluccius capensis, male      | 1.20              | 2                   | 0.75  |
| Merluccius paradoxus, juvenile | 0.81              | 124                 | 0.50  |
| Gerypteris capensis            | 0.50              | 2                   | 0.31  |
| Paracallionymus costatus       | 0.43              | 54                  | 0.27  |
| Cynoglossus zanzibarensis      | 0.35              | 2                   | 0.22  |
| Todarodes sagittatus           | 0.27              | 10                  | 0.17  |
| Lepidopus caudatus             | 0.23              | 4                   | 0.14  |
| Arnoglossus capensis           | 0.15              | 6                   | 0.09  |
| XANTHIDAE                      | 0.04              | 2                   | 0.02  |
| CHIMAERIDAE                    | 0.04              | 35                  | 0.02  |
| Total                          | 160.72            |                     | 99.97 |

PROJECT STATION:2609  
 DATE:15/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2858 Long E 1539  
 start stop duration Purpose code: 3  
 TIME :04:16:40 04:46:41 30 (min) Area code : 1  
 LOG :1755.78 1757.42 1.60 GearCond.code:  
 FDEPTH: 182 182 Validity code:  
 BDEPTH: 182 182  
 Towing dir: 350° Wire out: 600 m Speed: 30 kn\*10  
 Sorted: 42 Kg Total catch: 84.16 CATCH/HOUR: 168.32

| SPECIES                      | CATCH/HOUR weight | % OF TOT. C numbers | SAMP  |
|------------------------------|-------------------|---------------------|-------|
| Merluccius paradoxus         | 55.16             | 2204                | 32.77 |
| Sepia australis              | 30.00             | 2336                | 17.82 |
| Merluccius capensis, female  | 23.20             | 40                  | 13.78 |
| Merluccius paradoxus, female | 12.00             | 122                 | 7.13  |
| Paracallionymus costatus     | 7.48              | 588                 | 4.44  |
| Helicolenus dactylopterus    | 6.64              | 292                 | 3.94  |
| Trachurus capensis           | 6.64              | 24                  | 3.94  |
| Holohalaelurus regani        | 4.68              | 40                  | 2.78  |
| Chelidonichthys capensis     | 3.44              | 6                   | 2.04  |
| Symbolophorus boops          | 3.04              | 496                 | 1.81  |
| Gerypteris capensis          | 2.84              | 24                  | 1.69  |
| Merluccius paradoxus, male   | 2.72              | 32                  | 1.62  |
| Coelorinchus fasciatus       | 2.64              | 40                  | 1.57  |
| Merluccius capensis, male    | 1.72              | 6                   | 1.02  |
| Lepidopus caudatus           | 1.40              | 36                  | 0.83  |
| Raja straeleni               | 1.08              | 4                   | 0.64  |
| Cynoglossus zanzibarensis    | 1.08              | 32                  | 0.64  |
| Lophius vomerinus            | 0.96              | 4                   | 0.57  |
| Solenocera africana          | 0.36              | 34                  | 0.21  |
| Zeus capensis                | 0.36              | 6                   | 0.21  |
| Emmelichthys nitidus         | 0.36              | 2                   | 0.21  |
| Todarodes sagittatus         | 0.24              | 22                  | 0.14  |
| Congiopodus spinifer         | 0.24              | 2                   | 0.14  |
| Squilla acuelata calmani     | 0.04              | 4                   | 0.02  |
| Total                        | 168.32            |                     | 99.96 |

PROJECT STATION:2610  
 DATE:15/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2850 Long E 1554  
 start stop duration Purpose code: 3  
 TIME :07:37:58 08:07:52 30 (min) Area code : 1  
 LOG :1776.66 1778.09 1.42 GearCond.code:  
 FDEPTH: 156 155 Validity code:  
 BDEPTH: 156 155  
 Towing dir: 350° Wire out: 550 m Speed: 30 kn\*10  
 Sorted: 89 Kg Total catch: 813.63 CATCH/HOUR: 1627.26

| SPECIES                        | CATCH/HOUR weight | % OF TOT. C numbers | SAMP   |
|--------------------------------|-------------------|---------------------|--------|
| Merluccius paradoxus, juvenile | 660.44            | 22078               | 40.59  |
| Sepia australis                | 313.88            | 19266               | 19.29  |
| Etrumeus whiteheadi            | 301.72            | 5510                | 18.54  |
| Todarodes sagittatus           | 137.56            | 304                 | 8.45   |
| Brama brama                    | 28.24             | 10                  | 1.74   |
| Galeorhinus galeus             | 27.48             | 2                   | 1.69   |
| Paracallionymus costatus       | 22.80             | 1634                | 1.40   |
| Lophius vomerinus              | 19.50             | 92                  | 1.20   |
| Helicolenus dactylopterus      | 19.00             | 1064                | 1.17   |
| Loligo reynaudi                | 12.92             | 38                  | 0.79   |
| Krill                          | 12.16             |                     | 0.75   |
| Trachurus capensis             | 10.88             | 36                  | 0.67   |
| Merluccius capensis, female    | 9.88              | 38                  | 0.61   |
| Merluccius capensis, male      | 9.88              | 38                  | 0.61   |
| Holohalaelurus regani          | 9.12              | 114                 | 0.56   |
| Raja straeleni                 | 8.24              | 6                   | 0.51   |
| Cynoglossus zanzibarensis      | 6.84              | 266                 | 0.42   |
| Lampantodes hectoris           | 5.32              | 2128                | 0.33   |
| Lepidopus caudatus             | 3.04              | 76                  | 0.19   |
| Congiopodus spinifer           | 2.28              | 38                  | 0.14   |
| Gerypteris capensis            | 2.28              | 24                  | 0.14   |
| Thyrsites atun                 | 1.52              | 2                   | 0.09   |
| GONEPLACIDAE                   | 0.76              | 38                  | 0.05   |
| Bathynectes piperitus          | 0.76              | 38                  | 0.05   |
| Squilla acuelata calmani       | 0.76              | 114                 | 0.05   |
| Total                          | 1627.26           |                     | 100.03 |

PROJECT STATION:2611  
 DATE:15/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2841 Long E 1612  
 start stop duration Purpose code: 3  
 TIME :10:41:05 11:11:29 30 (min) Area code : 1  
 LOG :1799.93 1801.33 1.38 GearCond.code:  
 FDEPTH: 106 101 Validity code:  
 BDEPTH: 106 101  
 Towing dir: 340° Wire out: 380 m Speed: 35 kn\*10  
 Sorted: 109 Kg Total catch: 361.82 CATCH/HOUR: 723.64

| SPECIES                        | CATCH/HOUR weight | % OF TOT. C numbers | SAMP   |
|--------------------------------|-------------------|---------------------|--------|
| Chelidonichthys queketti       | 343.20            | 1630                | 47.43  |
| Deepwater fish mixture         | 94.80             |                     | 13.10  |
| Callorhynchus capensis         | 94.40             | 130                 | 13.05  |
| Trachurus capensis             | 45.40             | 160                 | 6.27   |
| Jasus lalandii                 | 33.80             | 282                 | 4.67   |
| Squilla acuelata calmani       | 26.20             | 1750                | 3.62   |
| Merluccius capensis, female    | 16.00             | 128                 | 2.21   |
| Sepia australis                | 15.00             | 790                 | 2.07   |
| Austroglossus microlepis       | 11.48             | 36                  | 1.59   |
| Mustelus mustelus              | 10.60             | 10                  | 1.46   |
| Thyrsites atun                 | 9.84              | 10                  | 1.36   |
| Merluccius capensis, male      | 8.92              | 96                  | 1.23   |
| Gerypteris capensis            | 4.92              | 64                  | 0.68   |
| Merluccius capensis, juveniles | 3.24              | 168                 | 0.45   |
| Sufflogobius bibarbatatus      | 2.80              | 410                 | 0.39   |
| Merluccius capensis, female    | 2.24              | 2                   | 0.31   |
| Paracallionymus costatus       | 0.40              | 20                  | 0.06   |
| Holohalaelurus regani          | 0.40              | 30                  | 0.06   |
| Total                          | 723.64            |                     | 100.01 |

PROJECT STATION:2612  
 DATE:15/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2758 Long E 1532  
 start stop duration Purpose code: 3  
 TIME :16:55:17 17:25:32 30 (min) Area code : 1  
 LOG :1857.64 1859.13 1.49 GearCond.code:  
 FDEPTH: 88 90 Validity code:  
 BDEPTH: 88 90  
 Towing dir: 3° Wire out: 320 m Speed: 30 kn\*10  
 Sorted: 116 Kg Total catch: 129.96 CATCH/HOUR: 259.92

| SPECIES                        | CATCH/HOUR weight | % OF TOT. C numbers | SAMP  |
|--------------------------------|-------------------|---------------------|-------|
| Thyrsites atun                 | 200.08            | 156                 | 76.98 |
| Chelidonichthys capensis       | 19.00             | 140                 | 7.31  |
| Merluccius capensis, female    | 15.68             | 122                 | 6.03  |
| Callorhynchus capensis         | 12.40             | 10                  | 4.77  |
| Merluccius capensis, male      | 3.88              | 46                  | 1.49  |
| Jasus lalandii                 | 3.40              | 30                  | 1.31  |
| Squilla acuelata calmani       | 2.00              | 20                  | 0.77  |
| Etrumeus whiteheadi            | 1.00              | 20                  | 0.38  |
| Gerypteris capensis            | 0.80              | 18                  | 0.31  |
| Sufflogobius bibarbatatus      | 0.40              | 44                  | 0.15  |
| Sepia australis                | 0.40              | 20                  | 0.15  |
| Trachurus capensis             | 0.20              | 2                   | 0.08  |
| Loligo reynaudi                | 0.12              | 4                   | 0.05  |
| Merluccius capensis, juveniles | 0.08              | 6                   | 0.03  |
| Total                          | 259.44            |                     | 99.81 |

DATE:15/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2817  
 start stop duration Long E 1508  
 TIME :21:33:27 22:03:19 30 (min) Purpose code: 3  
 LOG :1891.25 1892.79 1.53 Area code : 1  
 FDEPTH: 178 177 GearCond.code:  
 BDEPTH: 178 177 Validity code:  
 Towing dir: 350° Wire out: 580 m Speed: 35 kn\*10

Sorted: 81 Kg Total catch: 218.59 CATCH/HOUR: 437.18

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 177.20     | 2020    | 40.53       | 8854 |
| Merluccius paradoxus, male   | 45.40      | 660     | 10.38       | 8853 |
| Merluccius capensis, female  | 27.00      | 120     | 6.18        | 8850 |
| Raja leopardus               | 21.52      | 10      | 4.92        |      |
| Callorhynchus, capensis      | 20.20      | 10      | 4.62        |      |
| Merluccius capensis, female  | 18.24      | 18      | 4.17        | 8848 |
| Genypterus capensis          | 15.76      | 72      | 3.60        | 8852 |
| Merluccius capensis, male    | 15.40      | 80      | 3.52        | 8849 |
| Raja straeleni               | 13.96      | 10      | 3.19        |      |
| Cynoglossus zanzibarensis    | 13.20      | 240     | 3.02        |      |
| Merluccius paradoxus         | 13.20      | 510     | 3.02        | 8855 |
| Helicolenus dactylopterus    | 13.00      | 840     | 2.97        |      |
| Lophius vomerinus            | 11.56      | 26      | 2.64        | 8851 |
| Merluccius capensis, male    | 8.00       | 8       | 1.83        | 8847 |
| Chelidonichthys queketti     | 5.64       | 16      | 1.29        |      |
| Paracallionymus costatus     | 3.40       | 430     | 0.78        |      |
| Todaropsis eblanae           | 2.80       | 40      | 0.64        |      |
| Sepia australis              | 2.80       | 170     | 0.64        |      |
| Holohalaelurus regani        | 2.40       | 10      | 0.55        |      |
| Lepidopus caudatus           | 2.40       | 30      | 0.55        |      |
| Sufflogobius bibarbatus      | 2.00       | 50      | 0.46        |      |
| Zeus capensis                | 1.80       | 40      | 0.41        |      |
| Squilla aculeata calmani     | 0.30       | 30      | 0.07        |      |
| Total                        | 437.18     |         | 99.98       |      |

PROJECT STATION: 26  
 DATE:16/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2827  
 start stop duration Long E 1451  
 TIME :10:13:57 10:44:27 31 (min) Purpose code: 3  
 LOG :1959.29 1960.83 1.54 Area code : 1  
 FDEPTH: 466 475 GearCond.code:  
 BDEPTH: 466 475 Validity code:  
 Towing dir: 360° Wire out:1300 m Speed: 35 kn\*10

Sorted: 175 Kg Total catch: 296.00 CATCH/HOUR: 572.18

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 350.96     | 614     | 61.26       | 8856 |
| Merluccius paradoxus, male   | 149.54     | 310     | 26.10       | 8857 |
| Genypterus capensis          | 37.05      | 17      | 6.47        | 8858 |
| Coelorrhinchus fasciatus     | 7.94       | 323     | 1.39        |      |
| Todarodes sagittatus         | 5.81       | 10      | 1.01        |      |
| Brama brama                  | 3.68       | 2       | 0.64        |      |
| Helicolenus dactylopterus    | 2.09       | 8       | 0.36        |      |
| Trachurus capensis           | 2.01       | 10      | 0.35        | 8859 |
| Holohalaelurus regani        | 1.47       | 4       | 0.26        |      |
| Myxine capensis              | 1.39       | 21      | 0.24        |      |
| MACROURIDAE                  | 1.12       | 122     | 0.20        |      |
| Symbolophorus boops          | 1.12       | 91      | 0.20        |      |
| Malacocephalus laevis        | 1.12       | 10      | 0.20        |      |
| Lycoteuthis diadema          | 0.97       | 139     | 0.17        |      |
| Ebinania costaeacanarie      | 0.97       | 4       | 0.17        |      |
| MYCTOPHIDAE                  | 0.77       | 254     | 0.13        |      |
| Bassanago albescens          | 0.70       | 8       | 0.12        |      |
| SEPIIDAE                     | 0.62       | 21      | 0.11        |      |
| Trachyrincus scabrus         | 0.56       | 70      | 0.10        |      |
| PARAPAGURIDAE                | 0.48       | 118     | 0.08        |      |
| Beryx splendens              | 0.46       | 2       | 0.08        |      |
| Yarella blackfordi           | 0.35       | 31      | 0.06        |      |
| Chelidonichthys capensis     | 0.21       | 4       | 0.04        |      |
| OPHIIDAE                     | 0.14       | 8       | 0.02        |      |
| Dicrolene intronigra         | 0.14       | 8       | 0.02        |      |
| Emmelichthys nitidus         | 0.14       | 14      | 0.02        |      |
| Epigonus telescopus          | 0.14       | 8       | 0.02        |      |
| Total                        | 571.95     |         | 99.82       |      |

PROJECT STATION: 2614  
 DATE:16/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2827  
 start stop duration Long E 1451  
 TIME :04:09:04 04:39:29 30 (min) Purpose code: 3  
 LOG :1918.79 1920.46 1.66 Area code : 1  
 FDEPTH: 188 190 GearCond.code:  
 BDEPTH: 188 190 Validity code:  
 Towing dir: 350° Wire out: 600 m Speed: 30 kn\*10

Sorted: 190 Kg Total catch: 523.86 CATCH/HOUR: 1047.72

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Sepia australis                | 291.72     | 30734   | 27.84       |      |
| Merluccius paradoxus, juvenile | 184.36     | 9812    | 17.60       | 8862 |
| Merluccius capensis, female    | 117.88     | 86      | 11.25       | 8861 |
| Galeorhinus galeus             | 100.00     | 6       | 9.54        |      |
| Lepidopus caudatus             | 56.76      | 968     | 5.42        |      |
| Lophius vomerinus              | 50.88      | 68      | 4.86        | 8857 |
| Trachurus capensis             | 45.32      | 198     | 4.33        | 8858 |
| Chelidonichthys capensis       | 44.44      | 88      | 4.24        |      |
| Holohalaelurus regani          | 32.12      | 110     | 3.07        |      |
| Squalus megalops               | 27.28      | 66      | 2.60        |      |
| Helicolenus dactylopterus      | 22.44      | 1804    | 2.14        |      |
| Genypterus capensis            | 15.56      | 56      | 1.49        | 8859 |
| Thyrssites atun                | 11.92      | 6       | 1.33        | 8856 |
| Merluccius capensis, male      | 13.80      | 8       | 1.32        | 8860 |
| Mustelus mustelus              | 11.00      | 22      | 1.05        |      |
| Cynoglossus zanzibarensis      | 9.24       | 308     | 0.88        |      |
| Paracallionymus costatus       | 6.60       | 880     | 0.63        |      |
| Todarodes sagittatus           | 3.96       | 198     | 0.38        |      |
| Maurolicus muelleri            | 0.44       | 242     | 0.04        |      |
| Total                          | 1047.72    |         | 100.01      |      |

PROJECT STATION: 2626  
 DATE:16/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2827  
 start stop duration Long E 1451  
 TIME :12:05:40 12:35:21 30 (min) Purpose code: 3  
 LOG :1965.57 1967.05 1.47 Area code : 1  
 FDEPTH: 549 551 GearCond.code:  
 BDEPTH: 549 551 Validity code:  
 Towing dir: 170° Wire out:1500 m Speed: 35 kn\*10

Sorted: 267 Kg Total catch: 321.04 CATCH/HOUR: 642.08

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 380.20     | 360     | 59.21       | 8863 |
| Trachyrincus scabrus         | 65.16      | 1686    | 10.15       |      |
| Merluccius paradoxus, male   | 42.72      | 52      | 6.65        | 8864 |
| Cruriraja parcomaculata      | 35.76      | 60      | 5.57        |      |
| Ruvettus pretiosus           | 30.92      | 2       | 4.82        |      |
| Nezumia sp.                  | 23.52      | 234     | 3.66        |      |
| Todarodes sagittatus         | 19.16      | 32      | 2.98        |      |
| Aristeus varidens            | 10.44      | 1842    | 1.63        |      |
| Genypterus capensis          | 7.72       | 2       | 1.20        |      |
| Galeus polli                 | 6.12       | 486     | 0.95        |      |
| Chaceon maritae              | 6.00       | 48      | 0.93        |      |
| Ebinania costaeacanarie      | 4.08       | 42      | 0.64        |      |
| Yarella blackfordi           | 3.72       | 216     | 0.58        |      |
| Notacanthus sexspinis        | 2.28       | 42      | 0.36        |      |
| Selachophidium guentheri     | 1.92       | 18      | 0.30        |      |
| Lycoteuthis diadema          | 1.32       | 132     | 0.21        |      |
| Bassanago albescens          | 0.48       | 6       | 0.07        |      |
| Lophius vomerinus            | 0.44       | 2       | 0.07        | 8865 |
| Coelorrhinchus matamua       | 0.12       | 36      | 0.02        |      |
| Total                        | 642.08     |         | 100.00      |      |

PROJECT STATION: 2615  
 DATE:16/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2832  
 start stop duration Long E 1440  
 TIME :06:51:35 07:21:08 30 (min) Purpose code: 3  
 LOG :1934.40 1935.96 1.54 Area code : 1  
 FDEPTH: 170 181 GearCond.code:  
 BDEPTH: 170 181 Validity code:  
 Towing dir: 50° Wire out: 580 m Speed: 30 kn\*10

Sorted: 171 Kg Total catch: 437.50 CATCH/HOUR: 875.00

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 187.68     | 136     | 21.45       | 8864 |
| Squalus megalops            | 165.20     | 520     | 18.88       |      |
| Zeus capensis               | 70.80      | 360     | 8.09        |      |
| Merluccius capensis, male   | 66.40      | 72      | 7.59        | 8863 |
| Chelidonichthys queketti    | 57.60      | 520     | 6.58        |      |
| Holohalaelurus regani       | 56.00      | 180     | 6.40        |      |
| Chelidonichthys capensis    | 52.40      | 120     | 5.99        |      |
| Emmelichthys nitidus        | 41.60      | 1640    | 4.75        |      |
| Raja straeleni              | 38.00      | 20      | 4.34        |      |
| Trachurus capensis          | 33.60      | 140     | 3.84        | 8866 |
| Callorhynchus capensis      | 32.40      | 20      | 3.70        |      |
| Loligo reynaudi             | 18.40      | 60      | 2.10        |      |
| Thyrssites atun             | 18.36      | 14      | 2.10        | 8867 |
| Congilopodus spinifer       | 12.40      | 60      | 1.42        |      |
| Lophius vomerinus           | 10.16      | 18      | 1.16        | 8865 |
| Raja wallacei               | 8.40       | 20      | 0.96        |      |
| PARAPAGURIDAE               | 4.40       | 1800    | 0.50        |      |
| Arnoglossus capensis        | 0.80       | 100     | 0.09        |      |
| Cynoglossus zanzibarensis   | 0.40       | 40      | 0.05        |      |
| Total                       | 875.00     |         | 99.99       |      |

PROJECT STATION: 2626  
 DATE:16/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2827  
 start stop duration Long E 1451  
 TIME :17:29:20 18:00:01 31 (min) Purpose code: 3  
 LOG :2000.63 2002.24 1.59 Area code : 1  
 FDEPTH: 429 435 GearCond.code:  
 BDEPTH: 429 435 Validity code:  
 Towing dir: 360° Wire out:1200 m Speed: 30 kn\*10

Sorted: 236 Kg Total catch: 285.76 CATCH/HOUR: 553.10

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus         | 123.68     | 370     | 22.35       |      |
| Merluccius paradoxus, female | 115.59     | 331     | 20.65       | 8868 |
| Genypterus capensis          | 79.24      | 58      | 14.13       | 8869 |
| Merluccius paradoxus, male   | 69.02      | 221     | 12.49       | 8870 |
| Coelorrhinchus fasciatus     | 64.22      | 1550    | 11.61       |      |
| Etmopterus brachyurus        | 37.51      | 1707    | 6.78        |      |
| Octopus vulgaris             | 24.04      | 6       | 4.35        |      |
| Lophius vomerinus            | 20.63      | 75      | 3.73        | 8871 |
| Notacanthus sexspinis        | 3.72       | 75      | 0.67        |      |
| Helicolenus dactylopterus    | 3.02       | 12      | 0.55        |      |
| Todarodes sagittatus         | 2.79       | 6       | 0.50        |      |
| Nezumia leonis               | 2.21       | 134     | 0.40        |      |
| Nezumia micronychodon        | 2.09       | 81      | 0.34        |      |
| Tripterygius gilchristi      | 1.51       | 75      | 0.27        |      |
| Physiculus capensis          | 1.16       | 58      | 0.21        |      |
| Bathynectes piperitus        | 1.05       | 87      | 0.19        |      |
| Epigonus denticulatus        | 0.58       | 23      | 0.10        |      |
| Aristeus varidens            | 0.46       | 151     | 0.08        |      |
| Hoplostethus cadenati        | 0.46       | 12      | 0.08        |      |
| Todaropsis eblanae           | 0.12       | 6       | 0.02        |      |
| Total                        | 553.10     |         | 99.99       |      |

PROJECT STATION: 2619  
 DATE: 16/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2747 Long E 1432  
 start stop duration  
 TIME : 22:49:23 23:19:13 30 (min) Purpose code: 3  
 LOG : 2045.01 2046.49 1.48 Area code: 1  
 FDEPTH: 569 570 GearCond. code:  
 BDEPTH: 569 570 Validity code:  
 Towing dir: 330° Wire out: 1550 m Speed: 35 kn\*10  
 Sorted: 183 Kg Total catch: 290.39 CATCH/HOUR: 580.78

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 273.82     | 258     | 47.15       | 8880 |
| Trachyrincus scabrus         | 111.36     | 1296    | 19.17       |      |
| RAJIDAE                      | 68.32      | 8       | 11.76       |      |
| Nezumia microgrychodon       | 62.08      | 1664    | 10.69       |      |
| Merluccius paradoxus, male   | 19.12      | 28      | 3.29        | 8879 |
| Selachophidium guentheri     | 15.20      | 176     | 2.62        |      |
| Chaceon maritae              | 7.36       | 72      | 1.27        |      |
| Galeus polli                 | 5.60       | 112     | 0.96        |      |
| Coelorinchus fasciatus       | 5.60       | 64      | 0.96        |      |
| Cruriraja parcomaculata      | 5.28       | 24      | 0.91        |      |
| Raja leopardus               | 2.24       | 24      | 0.39        |      |
| Aristeus varidens            | 1.92       | 336     | 0.33        |      |
| Todarodes sagittatus         | 1.28       | 2       | 0.22        |      |
| Myxine capensis              | 0.64       | 8       | 0.11        |      |
| Notacanthus sexspinis        | 0.64       | 32      | 0.11        |      |
| Yarella blackfordi           | 0.32       | 32      | 0.06        |      |
| Total                        | 580.78     |         | 100.00      |      |

PROJECT STATION: 2622  
 DATE: 17/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2739 Long E 144  
 start stop duration  
 TIME : 05:38:20 06:08:46 30 (min) Purpose code: 3  
 LOG : 2075.96 2077.49 1.50 Area code: 1  
 FDEPTH: 343 340 GearCond. code:  
 BDEPTH: 343 340 Validity code:  
 Towing dir: 355° Wire out: 1050 m Speed: 30 kn\*10  
 Sorted: 175 Kg Total catch: 1079.07 CATCH/HOUR: 2158.14

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 1139.42    | 4658    | 52.80       | 8891 |
| Merluccius paradoxus, male   | 584.04     | 2954    | 27.06       | 8890 |
| Coelorinchus fasciatus       | 163.54     | 592     | 7.58        |      |
| Centrolophus niger           | 72.00      | 20      | 3.34        |      |
| Brama brama                  | 59.64      | 34      | 2.76        |      |
| Genypterus capensis          | 35.32      | 26      | 1.64        | 8889 |
| Trachurus capensis           | 31.92      | 82      | 1.48        | 8888 |
| Bathynectes piperitus        | 18.88      | 796     | 0.87        |      |
| Galeus polli                 | 13.70      | 130     | 0.63        |      |
| Todarodes sagittatus         | 8.52       | 20      | 0.39        |      |
| Helicolenus dactylopterus    | 7.78       | 38      | 0.36        |      |
| Holohalaelurus regani        | 6.66       | 38      | 0.31        |      |
| Thyrsites atun               | 4.12       | 2       | 0.19        | 8887 |
| Malacocephalus laevis        | 4.06       | 56      | 0.19        |      |
| Beryx splendens              | 2.60       | 18      | 0.12        |      |
| Lampanyctodes hectoris       | 2.22       | 1110    | 0.10        |      |
| Lepidopus caudatus           | 2.22       | 20      | 0.10        |      |
| Squilla acuelata calmani     | 0.74       | 112     | 0.03        |      |
| Rossia enigmatica            | 0.38       | 20      | 0.02        |      |
| Paracallionymus costatus     | 0.38       | 38      | 0.02        |      |
| Total                        | 2158.14    |         | 99.99       |      |

PROJECT STATION: 2620  
 DATE: 17/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2745 Long E 1432  
 start stop duration  
 TIME : 00:49:04 01:19:34 31 (min) Purpose code: 3  
 LOG : 2051.54 2053.19 1.65 Area code: 1  
 FDEPTH: 523 519 GearCond. code:  
 BDEPTH: 523 519 Validity code:  
 Towing dir: 350° Wire out: 1450 m Speed: 35 kn\*10  
 Sorted: 64 Kg Total catch: 160.30 CATCH/HOUR: 310.26

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrus         | 133.01     | 1928    | 42.87       |      |
| Nezumia microgrychodon       | 47.54      | 1401    | 15.32       |      |
| Merluccius paradoxus, female | 47.19      | 66      | 15.21       | 8881 |
| Hydrolagus sp.               | 17.81      | 23      | 5.74        |      |
| Merluccius paradoxus, male   | 16.45      | 31      | 5.30        | 8882 |
| Selachophidium guentheri     | 16.41      | 255     | 5.29        |      |
| Trachyscorpia capensis       | 11.50      | 8       | 3.71        |      |
| Deania profundorum           | 4.49       | 8       | 1.45        |      |
| Ebinania costaecanarie       | 2.48       | 15      | 0.80        |      |
| Chaceon maritae              | 2.40       | 19      | 0.77        |      |
| S H R I M P S                | 2.32       | 255     | 0.75        |      |
| Etmopterus brachyurus        | 2.01       | 8       | 0.65        |      |
| SQUALIDAE                    | 2.01       | 54      | 0.65        |      |
| Raja leopardus               | 1.39       | 15      | 0.45        |      |
| Cruriraja parcomaculata      | 0.93       | 8       | 0.30        |      |
| Sepia hieronis               | 0.93       | 15      | 0.30        |      |
| Coelorinchus matamua         | 0.46       | 8       | 0.15        |      |
| Yarella blackfordi           | 0.31       | 31      | 0.10        |      |
| MACROURIDAE                  | 0.31       | 8       | 0.10        |      |
| SEPIOLIDAE                   | 0.15       | 8       | 0.05        |      |
| Lycoteuthis diadema          | 0.15       | 8       | 0.05        |      |
| Total                        | 310.25     |         | 100.01      |      |

PROJECT STATION: 2623  
 DATE: 17/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2739 Long E 1456  
 start stop duration  
 TIME : 06:40:33 08:21:31 28 (min) Purpose code: 3  
 LOG : 2088.42 2089.81 1.37 Area code: 1  
 FDEPTH: 269 298 GearCond. code:  
 BDEPTH: 269 298 Validity code:  
 Towing dir: 360° Wire out: 800 m Speed: 30 kn\*10  
 Sorted: 110 Kg Total catch: 378.37 CATCH/HOUR: 810.79

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus         | 418.39     | 3124    | 51.60       | 8898 |
| Lophius vomerinus            | 82.84      | 21      | 10.22       | 8899 |
| Lampanyctodes hectoris       | 73.31      | 27484   | 9.04        |      |
| Octopus vulgaris             | 36.54      | 13      | 4.51        |      |
| Squilla acuelata calmani     | 35.36      | 4290    | 4.36        |      |
| Coelorinchus fasciatus       | 28.29      | 602     | 3.49        |      |
| Merluccius paradoxus, female | 27.58      | 154     | 3.40        | 8896 |
| Merluccius capensis, female  | 22.29      | 107     | 2.75        | 8895 |
| Merluccius paradoxus, male   | 19.46      | 107     | 2.40        | 8897 |
| Todarodes sagittatus         | 18.17      | 32      | 2.24        |      |
| Chelidonichthys queketti     | 13.44      | 13      | 1.66        |      |
| Merluccius capensis, male    | 11.21      | 47      | 1.38        | 8894 |
| Sepia australis              | 10.14      | 626     | 1.25        |      |
| Genypterus capensis          | 6.34       | 24      | 0.78        | 8892 |
| Bathynectes piperitus        | 3.77       | 201     | 0.46        |      |
| Helicolenus dactylopterus    | 1.89       | 13      | 0.23        |      |
| Beryx splendens              | 0.94       | 13      | 0.12        |      |
| Austroglossus microlepis     | 0.86       | 2       | 0.11        | 8893 |
| Total                        | 810.82     |         | 100.00      |      |

PROJECT STATION: 2621  
 DATE: 17/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2743 Long E 1434  
 start stop duration  
 TIME : 02:44:58 03:14:59 30 (min) Purpose code: 3  
 LOG : 2058.35 2059.86 1.51 Area code: 1  
 FDEPTH: 463 460 GearCond. code:  
 BDEPTH: 463 460 Validity code:  
 Towing dir: 330° Wire out: 1300 m Speed: 35 kn\*10  
 Sorted: 100 Kg Total catch: 128.46 CATCH/HOUR: 256.92

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 96.48      | 202     | 37.55       | 8885 |
| Merluccius paradoxus, male   | 44.20      | 124     | 17.20       | 8886 |
| Coelorinchus fasciatus       | 41.04      | 636     | 15.97       |      |
| Coelorinchus braueri         | 12.80      | 574     | 4.98        |      |
| Genypterus capensis          | 12.48      | 4       | 4.86        | 8883 |
| Helicolenus dactylopterus    | 12.40      | 30      | 4.83        |      |
| Octopus vulgaris             | 8.30       | 2       | 3.23        |      |
| PARAPAGURIDAE                | 6.48       | 612     | 2.52        |      |
| Aristeus varidens            | 5.40       | 652     | 2.10        |      |
| Lophius vomerinus            | 4.52       | 2       | 1.76        | 8884 |
| Selachophidium guentheri     | 3.44       | 60      | 1.34        |      |
| LITHODIDAE                   | 3.36       | 160     | 1.31        |      |
| Nezumia micronychodon        | 1.52       | 70      | 0.59        |      |
| Symbolophorus boops          | 1.04       | 108     | 0.40        |      |
| Ebinania costaecanarie       | 0.76       | 8       | 0.30        |      |
| Nezumia leonis               | 0.44       | 48      | 0.17        |      |
| Myxine capensis              | 0.40       | 6       | 0.16        |      |
| Malacocephalus laevis        | 0.40       | 10      | 0.16        |      |
| Raja confundens              | 0.40       | 4       | 0.16        |      |
| Chaceon maritae              | 0.24       | 2       | 0.09        |      |
| Venefica proboscidea         | 0.16       | 2       | 0.06        |      |
| MYCTOPHIDAE                  | 0.12       | 14      | 0.05        |      |
| Todaropsis eblanae           | 0.10       | 2       | 0.04        |      |
| Tripterygius gilchristi      | 0.08       | 2       | 0.03        |      |
| PARALEPIDIDAE                | 0.04       | 4       | 0.02        |      |
| Physiculus capensis          | 0.04       | 2       | 0.02        |      |
| Bathynectes piperitus        | 0.04       | 2       | 0.02        |      |
| Photichthys argenteus        | 0.04       | 4       | 0.02        |      |
| Total                        | 256.72     |         | 99.94       |      |

PROJECT STATION: 2624  
 DATE: 17/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2737 Long E 1504  
 start stop duration  
 TIME : 09:53:31 10:24:53 31 (min) Purpose code: 3  
 LOG : 2099.75 2101.49 1.72 Area code: 1  
 FDEPTH: 172 175 GearCond. code:  
 BDEPTH: 172 175 Validity code:  
 Towing dir: 360° Wire out: 598 m Speed: kn\*10  
 Sorted: 91 Kg Total catch: 152.34 CATCH/HOUR: 294.85

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Chelidonichthys queketti    | 63.33      | 194     | 21.48       |      |
| Merluccius capensis, female | 61.78      | 312     | 20.95       | 8901 |
| Callorhynchus capensis      | 60.54      | 31      | 20.53       |      |
| Thyrsites atun              | 28.03      | 15      | 9.51        | 8902 |
| Merluccius capensis, male   | 27.29      | 132     | 9.26        | 8900 |
| Merluccius capensis, male   | 7.82       | 12      | 2.65        | 8907 |
| Merluccius capensis, female | 7.39       | 6       | 2.51        | 8908 |
| Etrumeus whiteheadi         | 6.81       | 70      | 2.31        |      |
| Todarodes sagittatus        | 5.73       | 15      | 1.94        |      |
| Trachurus capensis          | 5.11       | 15      | 1.73        | 8903 |
| Lepidopus caudatus          | 4.49       | 39      | 1.52        |      |
| Sepia australis             | 4.03       | 333     | 1.37        |      |
| MYCTOPHIDAE                 | 3.25       | 1223    | 1.10        |      |
| Squilla acuelata calmani    | 3.25       | 511     | 1.10        |      |
| Genypterus capensis         | 2.79       | 43      | 0.95        | 8904 |
| Chaceon maritae             | 0.77       | 23      | 0.26        |      |
| Lophius vomerinus           | 0.66       | 2       | 0.22        | 8906 |
| Sufflogobius bibarbus       | 0.62       | 132     | 0.21        |      |
| Austroglossus microlepis    | 0.54       | 8       | 0.18        | 8905 |
| Lycoteuthis diadema         | 0.46       | 186     | 0.16        |      |
| Bathynectes piperitus       | 0.15       | 8       | 0.05        |      |
| Total                       | 294.84     |         | 99.99       |      |



2622  
2739  
144

PROJECT STATION: 2625  
DATE: 17/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2734 Long E 1513  
start stop duration  
TIME :11:51:49 12:21:23 30 (min) Purpose code: 3  
LOG :2112.03 2113.60 1.55 Area code : 1  
FDEPTH: 132 131 GearCond.code:  
BDEPTH: 132 131 Validity code:  
Towing dir: 350° Wire out: 420 m Speed: 35 kn\*10

Sorted: 82 Kg Total catch: 228.40 CATCH/HOUR: 456.80

SAMP

| SPECIES                       | CATCH/HOUR weight numbers | % OF TOT. C | SAMP |
|-------------------------------|---------------------------|-------------|------|
| 8891 Etrumeus whiteheadi      | 305.60 1440               | 66.90       | 8913 |
| 8890 Thyrssites atun          | 44.28 30                  | 9.69        | 8912 |
| Merluccius capensis, female   | 40.68 230                 | 8.91        | 8910 |
| Trachyscorpia capensis        | 15.00 30                  | 3.28        |      |
| Austroglossus microlepis      | 12.40 30                  | 2.71        | 8911 |
| Callorhynchus capensis        | 12.40 20                  | 2.71        |      |
| 8888 Sepia australis          | 7.20 350                  | 1.58        |      |
| MAJIDAE                       | 6.60 600                  | 1.44        |      |
| Merluccius capensis, male     | 4.84 44                   | 1.06        | 8909 |
| C R A B S                     | 3.20 230                  | 0.70        |      |
| Sufflogobius bibarbatu        | 1.60 270                  | 0.35        |      |
| Bathynectes piperitus         | 1.20 60                   | 0.26        |      |
| 8887 Paracallionymus costatus | 0.60 70                   | 0.13        |      |
| Squilla acuelata calmani      | 0.40 90                   | 0.09        |      |
| HISTIOTEUTHIDAE               | 0.20 20                   | 0.04        |      |
| Todarodes sagittatus          | 0.20 10                   | 0.04        |      |
| S H R I M P S                 | 0.20 120                  | 0.04        |      |
| Helicolenus dactylopterus     | 0.20 10                   | 0.04        |      |
| Total                         | 456.80                    | 99.97       |      |

PROJECT STATION: 2626  
DATE: 18/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2727 Long E 1414  
start stop duration  
TIME :15:51:25 16:22:00 31 (min) Purpose code: 3  
LOG :2257.04 2258.67 1.61 Area code : 1  
FDEPTH: 288 285 GearCond.code:  
BDEPTH: 288 285 Validity code:  
Towing dir: 345° Wire out: 870 m Speed: 30 kn\*10

Sorted: 103 Kg Total catch: 607.90 CATCH/HOUR: 1176.5

| SPECIES                        | CATCH/HOUR weight numbers | % OF TOT. C | SAMP |
|--------------------------------|---------------------------|-------------|------|
| Merluccius paradoxus, juvenile | 686.71 7432               | 58.36       | 8913 |
| Lampanyctodes hectoris         | 118.45 43084              | 10.07       | 8912 |
| Coelorinchus fasciatus         | 88.26 3097                | 7.50        | 8910 |
| Merluccius capensis, female    | 81.99 99                  | 6.97        | 8911 |
| Todarodes sagittatus           | 39.48 116                 | 3.36        |      |
| Helicolenus dactylopterus      | 37.16 387                 | 3.16        |      |
| Symbolophorus boops            | 29.42 5265                | 2.50        |      |
| Trachurus capensis             | 20.90 77                  | 1.78        |      |
| Octopus vulgaris               | 12.08 2                   | 1.03        |      |
| Genypterus capensis            | 11.88 17                  | 1.01        | 8913 |
| Merluccius capensis, male      | 11.42 19                  | 0.97        | 8912 |
| Raja straeleni                 | 9.60 2                    | 0.82        |      |
| Bathynectes piperitus          | 6.97 271                  | 0.59        |      |
| Brama brama                    | 5.96 4                    | 0.51        |      |
| Mustelus palumbes              | 4.41 2                    | 0.37        |      |
| Callorhynchus capensis         | 4.41 2                    | 0.37        |      |
| Lophius vomerinus              | 3.79 2                    | 0.32        | 8913 |
| Squilla acuelata calmani       | 1.55 155                  | 0.13        | 8912 |
| Merluccius paradoxus, female   | 1.35 6                    | 0.11        | 8913 |
| Sepia australis                | 0.39 39                   | 0.03        |      |
| Sufflogobius bibarbatu         | 0.39 39                   | 0.03        |      |
| Total                          | 1176.57                   | 99.99       |      |

2623  
2739  
1456

PROJECT STATION: 2626  
DATE: 17/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2716 Long E 1459  
start stop duration  
TIME :15:47:31 16:17:37 30 (min) Purpose code: 3  
LOG :2146.85 2148.41 1.55 Area code : 1  
FDEPTH: 174 173 GearCond.code:  
BDEPTH: 174 173 Validity code:  
Towing dir: 350° Wire out: 530 m Speed: 30 kn\*10

Sorted: 64 Kg Total catch: 63.72 CATCH/HOUR: 127.44

SAMP

| SPECIES                       | CATCH/HOUR weight numbers | % OF TOT. C | SAMP |
|-------------------------------|---------------------------|-------------|------|
| Merluccius capensis, female   | 36.44 210                 | 28.59       | 8917 |
| 8898 Chelidonichthys capensis | 18.84 54                  | 14.78       |      |
| 8899 Todarodes sagittatus     | 15.56 74                  | 12.21       |      |
| Merluccius capensis, male     | 13.44 98                  | 10.55       | 8920 |
| Callorhynchus capensis        | 12.28 8                   | 9.64        |      |
| Raja straeleni                | 10.92 4                   | 8.57        |      |
| Thyrssites atun               | 7.68 2                    | 6.03        | 8916 |
| Genypterus capensis           | 4.72 28                   | 3.70        | 8914 |
| Austroglossus microlepis      | 1.64 4                    | 1.29        | 8915 |
| PORTUNIDAE                    | 1.64 54                   | 1.29        |      |
| 8896 Sepia australis          | 1.28 68                   | 1.00        |      |
| 8895 Bathynectes piperitus    | 1.08 60                   | 0.85        |      |
| 8897 Lophius vomerinus        | 0.56 2                    | 0.44        | 8918 |
| MAJIDAE                       | 0.40 20                   | 0.31        |      |
| Octopus vulgaris              | 0.40 2                    | 0.31        |      |
| Merluccius capensis           | 0.28 8                    | 0.22        | 8919 |
| Sufflogobius bibarbatu        | 0.16 34                   | 0.13        |      |
| Lepidopus caudatus            | 0.04 4                    | 0.03        |      |
| CALAPPIDAE                    | 0.04 2                    | 0.03        |      |
| Lampanyctodes hectoris        | 0.04 24                   | 0.03        |      |
| Aequorea aequorea             | 0.00 20000                |             |      |
| Total                         | 127.44                    | 100.00      |      |

PROJECT STATION: 2627  
DATE: 18/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2727 Long E 1414  
start stop duration  
TIME :16:41:33 18:21:02 31 (min) Purpose code: 3  
LOG :2270.07 2271.80 1.72 Area code : 1  
FDEPTH: 340 339 GearCond.code:  
BDEPTH: 340 339 Validity code:  
Towing dir: 350° Wire out: 1050 m Speed: 30 kn\*10

Sorted: 96 Kg Total catch: 666.22 CATCH/HOUR: 1289.4

| SPECIES                      | CATCH/HOUR weight numbers | % OF TOT. C | SAMP |
|------------------------------|---------------------------|-------------|------|
| Merluccius paradoxus         | 825.29 8404               | 64.00       | 8913 |
| Coelorinchus fasciatus       | 253.63 2717               | 19.67       | 8912 |
| Merluccius paradoxus, female | 54.39 87                  | 4.22        | 8910 |
| Lophius vomerinus            | 47.19 6                   | 3.66        | 8911 |
| Galeus polli                 | 26.17 201                 | 2.03        |      |
| Merluccius capensis, female  | 21.56 15                  | 1.67        | 8913 |
| Trachurus capensis           | 18.12 50                  | 1.41        |      |
| Helicolenus dactylopterus    | 15.10 201                 | 1.17        |      |
| Genypterus capensis          | 13.05 12                  | 1.01        | 8912 |
| Bathynectes piperitus        | 9.06 352                  | 0.70        | 8913 |
| Merluccius paradoxus, male   | 5.42 12                   | 0.42        | 8912 |
| Squilla acuelata calmani     | 0.50 101                  | 0.04        |      |
| Total                        | 1289.48                   | 100.00      |      |

2624  
2737  
1504

PROJECT STATION: 2627  
DATE: 17/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2716 Long E 1455  
start stop duration  
TIME :17:38:28 18:08:55 30 (min) Purpose code: 3  
LOG :2155.53 2157.09 1.57 Area code : 1  
FDEPTH: 192 192 GearCond.code:  
BDEPTH: 192 192 Validity code:  
Towing dir: 360° Wire out: 600 m Speed: 30 kn\*10

Sorted: 75 Kg Total catch: 74.78 CATCH/HOUR: 149.56

SAMP

| SPECIES                      | CATCH/HOUR weight numbers | % OF TOT. C | SAMP |
|------------------------------|---------------------------|-------------|------|
| Raja alba                    | 48.52 2                   | 32.44       |      |
| Merluccius capensis, female  | 35.04 230                 | 23.43       | 8925 |
| Merluccius capensis, male    | 17.44 132                 | 11.66       | 8924 |
| Chelidonichthys capensis     | 10.12 28                  | 6.77        |      |
| Todarodes sagittatus         | 7.88 24                   | 5.27        |      |
| Raja straeleni               | 6.92 4                    | 4.63        |      |
| Merluccius paradoxus, female | 6.36 80                   | 4.25        | 8923 |
| Callorhynchus capensis       | 6.36 8                    | 4.25        |      |
| Genypterus capensis          | 4.76 22                   | 3.18        | 8921 |
| Lampanyctodes hectoris       | 2.44 914                  | 1.63        |      |
| Austroglossus microlepis     | 1.40 2                    | 0.94        |      |
| Merluccius paradoxus, male   | 0.96 14                   | 0.64        | 8922 |
| Bathynectes piperitus        | 0.72 22                   | 0.48        |      |
| PORTUNIDAE                   | 0.32 10                   | 0.21        |      |
| Sufflogobius bibarbatu       | 0.12 18                   | 0.08        |      |
| Sepia australis              | 0.08 10                   | 0.05        |      |
| Congiopodus spinifer         | 0.08 2                    | 0.05        |      |
| Helicolenus dactylopterus    | 0.04 4                    | 0.03        |      |
| Aequorea aequorea            | 0.00 20000                |             |      |
| Total                        | 149.56                    | 99.99       |      |

PROJECT STATION: 2628  
DATE: 18/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2727 Long E 1427  
start stop duration  
TIME :20:01:39 20:01:39 30 (min) Purpose code: 3  
LOG :2289.61 2291.23 1.57 Area code : 1  
FDEPTH: 437 434 GearCond.code:  
BDEPTH: 437 434 Validity code:  
Towing dir: 330° Wire out: 1250 m Speed: 30 kn\*10

Sorted: 115 Kg Total catch: 327.06 CATCH/HOUR: 654.12

| SPECIES                      | CATCH/HOUR weight numbers | % OF TOT. C | SAMP |
|------------------------------|---------------------------|-------------|------|
| Merluccius paradoxus, female | 293.52 1050               | 44.87       | 8913 |
| Merluccius paradoxus, male   | 171.24 684                | 26.18       | 8912 |
| Coelorinchus fasciatus       | 131.52 1686               | 20.11       |      |
| Helicolenus dactylopterus    | 15.72 66                  | 2.40        |      |
| Raja confundens              | 9.48 6                    | 1.45        |      |
| Genypterus capensis          | 9.00 6                    | 1.38        | 8914 |
| Merluccius paradoxus, female | 5.92 2                    | 0.91        | 8913 |
| Solenocera africana          | 5.28 1758                 | 0.81        |      |
| Todarodes sagittatus         | 4.28 6                    | 0.65        |      |
| Selachophidium guentheri     | 3.24 60                   | 0.50        |      |
| Nezumia sp.                  | 1.92 210                  | 0.29        |      |
| Malacocephalus laevis        | 1.08 54                   | 0.17        |      |
| Bathynectes piperitus        | 0.72 42                   | 0.11        |      |
| Coelorinchus matama          | 0.48 6                    | 0.07        |      |
| Hoplostethus mediterraneus   | 0.36 12                   | 0.06        |      |
| MACROURIDAE                  | 0.12 6                    | 0.02        |      |
| Symbolophorus boops          | 0.12 12                   | 0.02        |      |
| MYCTOPHIDAE                  | 0.12 30                   | 0.02        |      |
| Total                        | 654.12                    | 100.02      |      |

PROJECT STATION:2631  
DATE:18/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2724 Long E 1415  
start stop duration  
TIME :03:20:15 03:20:47 32 (min) Purpose code: 3  
LOG :2298.50 2300.00 1.50 Area code : 1  
FDEPTH: 551 562 GearCond.code:  
BDEPTH: 551 562 Validity code:  
Towing dir: 330° Wire out:1500 m Speed: 35 kn\*10

Sorted: 40 Kg Total catch: 99.12 CATCH/HOUR: 185.85

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrur         | 50.55      | 1148    | 27.20       |      |
| RAJIDAE                      | 45.75      | 30      | 24.62       |      |
| Merluccius paradoxus, female | 30.90      | 23      | 16.63       | 8942 |
| Nezumia sp.                  | 12.90      | 390     | 6.94        |      |
| ARISTEIIDAE                  | 7.50       | 158     | 4.04        |      |
| Chaceon maritae              | 5.70       | 45      | 3.07        |      |
| Selachophidium guentheri     | 4.65       | 68      | 2.50        |      |
| RAJIDAE                      | 4.50       | 8       | 2.42        |      |
| Ebinania costaecanarie       | 3.90       | 15      | 2.10        |      |
| Raja leopardus               | 3.90       | 38      | 2.10        |      |
| Lophius vomerinus            | 3.04       | 2       | 1.64        | 8944 |
| Coelorinchus matamua         | 2.40       | 8       | 1.29        |      |
| Todarodes sagittatus         | 2.33       | 4       | 1.25        |      |
| Raja caudaspinosa            | 1.95       | 105     | 1.05        |      |
| Helicolenus dactylopterus    | 1.80       | 15      | 0.97        |      |
| Solenocera africana          | 1.20       | 90      | 0.65        |      |
| MACROURIDAE                  | 1.05       | 8       | 0.56        |      |
| Merluccius paradoxus, male   | 0.86       | 2       | 0.46        | 8943 |
| Octopus vulgaris             | 0.45       | 8       | 0.24        |      |
| Bathynectes piperitus        | 0.45       | 8       | 0.24        |      |
| Shrimps, small, non comm.    | 0.08       | 8       | 0.04        |      |
| Total                        | 185.86     |         | 100.01      |      |

PROJECT STATION:2632  
DATE:19/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2701 Long E 1358  
start stop duration  
TIME :03:03:30 03:23:04 20 (min) Purpose code: 3  
LOG :2327.21 2328.29 1.08 Area code : 1  
FDEPTH: 474 472 GearCond.code: 9  
BDEPTH: 474 472 Validity code: 1  
Towing dir: 330° Wire out:1300 m Speed: 35 kn\*10

Sorted: 31 Kg Total catch: 31.24 CATCH/HOUR: 93.72

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| S H R I M P S                | 28.26      | 2100    | 30.15       |      |
| Merluccius paradoxus, female | 19.14      | 33      | 20.42       | 8945 |
| Coelorinchus fasciatus       | 16.26      | 384     | 17.35       |      |
| Helicolenus dactylopterus    | 6.18       | 21      | 6.59        |      |
| Coelorinchus braueri         | 4.20       | 120     | 4.48        |      |
| Nezumia micronychodon        | 2.88       | 120     | 3.07        |      |
| Symbolophorus boops          | 2.70       | 255     | 2.88        |      |
| Lampanyctodes hectoris       | 2.64       | 1698    | 2.82        |      |
| Selachophidium guentheri     | 2.64       | 51      | 2.82        |      |
| Raja straeleni               | 2.46       | 48      | 2.62        |      |
| Ebinania costaecanarie       | 1.62       | 3       | 1.73        |      |
| Merluccius paradoxus, male   | 1.20       | 6       | 1.28        | 8946 |
| Todarodes sagittatus         | 1.14       | 9       | 1.22        |      |
| Octopus vulgaris             | 0.48       | 6       | 0.51        |      |
| PARAPAGURIDAE *              | 0.30       | 36      | 0.32        |      |
| Photichthys argenteus        | 0.24       | 12      | 0.26        |      |
| Trachyrincus scabrur         | 0.24       | 3       | 0.26        |      |
| Bathynectes piperitus        | 0.24       | 15      | 0.26        |      |
| Myxine capensis              | 0.24       | 3       | 0.26        |      |
| Lycoteuthis diadema          | 0.18       | 18      | 0.19        |      |
| MELANOSTOMIIDAE              | 0.12       | 3       | 0.13        |      |
| Etmopterus brachyurus        | 0.12       | 3       | 0.13        |      |
| Maurollicus muelleri         | 0.06       | 51      | 0.06        |      |
| SERGESTIDAE                  | 0.06       | 21      | 0.06        |      |
| Notacanthus sexspinis        | 0.06       | 3       | 0.06        |      |
| PARALEPIDIDAE                | 0.06       | 6       | 0.06        |      |
| Total                        | 93.72      |         | 99.99       |      |

PROJECT STATION:2633  
DATE:19/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2658 Long E 1407  
start stop duration  
TIME :06:13:55 06:43:57 30 (min) Purpose code: 3  
LOG :2342.83 2344.28 1.44 Area code : 1  
FDEPTH: 406 406 GearCond.code:  
BDEPTH: 406 406 Validity code:  
Towing dir: 345° Wire out:1200 m Speed: 30 kn\*10

Sorted: 126 Kg Total catch: 543.54 CATCH/HOUR: 1087.08

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 549.68     | 1768    | 50.56       | 8950 |
| Coelorinchus fasciatus       | 308.38     | 3250    | 28.37       |      |
| Merluccius paradoxus, male   | 104.12     | 456     | 9.58        | 8949 |
| Nezumia micronychodon        | 32.50      | 750     | 2.99        |      |
| Raja confundens              | 20.14      | 20      | 1.85        |      |
| Lophius vomerinus            | 19.12      | 8       | 1.76        | 8947 |
| Helicolenus dactylopterus    | 16.34      | 76      | 1.50        |      |
| Genypteris capensis          | 10.48      | 6       | 0.96        | 8948 |
| Selachophidium guentheri     | 8.36       | 142     | 0.77        |      |
| Bathynectes piperitus        | 4.76       | 134     | 0.44        |      |
| Galeus polli                 | 4.00       | 28      | 0.37        |      |
| S H R I M P S                | 2.86       | 940     | 0.26        |      |
| Lampanyctodes hectoris       | 2.10       | 1046    | 0.19        |      |
| Myxine capensis              | 2.10       | 20      | 0.19        |      |
| Octopus vulgaris             | 0.96       | 10      | 0.09        |      |
| Todarodes sagittatus         | 0.58       | 10      | 0.05        |      |
| Tripterophycis gilchristi    | 0.20       | 38      | 0.02        |      |
| Ebinania costaecanarie       | 0.10       | 10      | 0.01        |      |
| Maurollicus muelleri         | 0.10       | 124     | 0.01        |      |
| Epigonus denticulatus        | 0.10       | 20      | 0.01        |      |
| Symbolophorus boops          | 0.10       | 10      | 0.01        |      |
| Total                        | 1087.08    |         | 99.99       |      |

PROJECT STATION:263  
DATE:19/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 265 Long E 141  
start stop duration  
TIME :08:24:49 08:54:55 30 (min) Purpose code: 3  
LOG :2353.54 2355.01 1.47 Area code : 1  
FDEPTH: 388 388 GearCond.code:  
BDEPTH: 388 388 Validity code:  
Towing dir: 350° Wire out:1150 m Speed: 30 kn\*10

Sorted: 162 Kg Total catch: 472.66 CATCH/HOUR: 945.32

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAM |
|------------------------------|------------|---------|-------------|-----|
|                              | weight     | numbers |             |     |
| Coelorinchus fasciatus       | 467.36     | 4922    | 49.44       |     |
| Merluccius paradoxus, female | 186.60     | 500     | 19.74       | 895 |
| Raja confundens              | 95.68      | 46      | 10.12       |     |
| Lophius vomerinus            | 47.88      | 8       | 5.06        | 895 |
| Merluccius paradoxus, male   | 39.08      | 150     | 4.13        | 895 |
| Bassanago albescens          | 27.60      | 46      | 2.92        |     |
| Helicolenus dactylopterus    | 24.84      | 92      | 2.63        |     |
| Galeus polli                 | 13.80      | 92      | 1.46        |     |
| Genypteris capensis          | 13.16      | 8       | 1.39        | 895 |
| Bathynectes piperitus        | 11.04      | 276     | 1.17        |     |
| Nezumia micronychodon        | 10.12      | 184     | 1.07        |     |
| Merluccius capensis, female  | 7.32       | 8       | 0.77        | 895 |
| Merluccius capensis, male    | 0.84       | 2       | 0.09        | 895 |
| Aequorea aequorea            | 0.00       | 30      |             |     |
| Chrysaora sp.                | 0.00       | 20000   |             |     |
| Total                        | 945.32     |         | 99.99       |     |

PROJECT STATION:263  
DATE:19/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 265 Long E 142  
start stop duration  
TIME :10:51:56 11:22:04 30 (min) Purpose code: 3  
LOG :2367.78 2369.36 1.54 Area code : 1  
FDEPTH: 352 354 GearCond.code:  
BDEPTH: 352 354 Validity code:  
Towing dir: 350° Wire out:1030 m Speed: 35 kn\*10

Sorted: 156 Kg Total catch: 289.68 CATCH/HOUR: 579.36

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAM |
|------------------------------|------------|---------|-------------|-----|
|                              | weight     | numbers |             |     |
| Coelorinchus fasciatus       | 221.04     | 2196    | 38.15       |     |
| Merluccius paradoxus, female | 185.80     | 440     | 32.07       | 896 |
| Lophius vomerinus            | 41.76      | 16      | 7.21        | 896 |
| Merluccius paradoxus, male   | 32.52      | 96      | 5.61        | 896 |
| Helicolenus dactylopterus    | 30.96      | 144     | 5.34        |     |
| Genypteris capensis          | 18.48      | 20      | 3.19        | 896 |
| Merluccius capensis, female  | 15.72      | 16      | 2.71        | 895 |
| Nezumia micronychodon        | 15.12      | 468     | 2.61        |     |
| Bathynectes piperitus        | 12.96      | 324     | 2.24        |     |
| MYCTOPHIDAE                  | 2.88       | 1836    | 0.50        |     |
| Merluccius capensis, male    | 1.04       | 2       | 0.18        | 895 |
| Shrimps, small, non comm.    | 0.72       | 504     | 0.12        |     |
| Epigonus telescopus          | 0.36       | 36      | 0.06        |     |
| Aequorea aequorea            | 0.00       | 7920    |             |     |
| Chrysaora sp.                | 0.00       | 118     |             |     |
| Total                        | 579.36     |         | 99.99       |     |

PROJECT STATION:263  
DATE:19/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 265 Long E 144  
start stop duration  
TIME :14:02:33 14:32:16 30 (min) Purpose code: 3  
LOG :2390.95 2392.57 1.60 Area code : 1  
FDEPTH: 224 223 GearCond.code:  
BDEPTH: 224 223 Validity code:  
Towing dir: 350° Wire out: 675 m Speed: 35 kn\*10

Sorted: 50 Kg Total catch: 420.30 CATCH/HOUR: 840.60

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAM |
|--------------------------------|------------|---------|-------------|-----|
|                                | weight     | numbers |             |     |
| Merluccius capensis, female    | 424.08     | 2128    | 50.45       | 896 |
| Merluccius capensis, male      | 185.06     | 1158    | 22.02       | 896 |
| Lampanyctodes hectoris         | 133.00     | 89774   | 15.82       |     |
| Sufflogobius bibarbatus        | 57.38      | 3022    | 6.83        |     |
| Chelidonichthys capensis       | 16.72      | 38      | 1.99        |     |
| Todarodes sagittatus           | 8.40       | 24      | 1.00        |     |
| Bathynectes piperitus          | 3.80       | 114     | 0.45        |     |
| OMASTREPHIDAE                  | 3.42       | 152     | 0.41        |     |
| Helicolenus dactylopterus      | 3.04       | 20      | 0.36        |     |
| Genypteris capensis            | 2.36       | 6       | 0.28        | 896 |
| Squilla aculeata calmani       | 1.90       | 248     | 0.23        |     |
| Austroglossus microlepis       | 1.24       | 8       | 0.15        | 896 |
| Merluccius capensis, juveniles | 0.20       | 20      | 0.02        |     |
| Chrysaora sp.                  | 0.00       | 5440    |             |     |
| Aequorea aequorea              | 0.00       | 84      |             |     |
| Total                          | 840.60     |         | 100.01      |     |

PROJECT STATION:263  
DATE:19/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 264 Long E 145  
start stop duration  
TIME :16:14:33 16:44:44 30 (min) Purpose code: 3  
LOG :2405.35 2406.87 1.51 Area code : 1  
FDEPTH: 155 153 GearCond.code:  
BDEPTH: 155 153 Validity code:  
Towing dir: 350° Wire out: 500 m Speed: 30 kn\*10

Sorted: 7 Kg Total catch: 101.74 CATCH/HOUR: 203.48

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAM |
|-----------------------------|------------|---------|-------------|-----|
|                             | weight     | numbers |             |     |
| Sufflogobius bibarbatus     | 177.32     | 24180   | 87.14       |     |
| Squilla aculeata calmani    | 14.88      | 1054    | 7.31        |     |
| Callorhynchus capensis      | 3.20       | 2       | 1.57        |     |
| Bathynectes piperitus       | 2.48       | 62      | 1.22        |     |
| Merluccius capensis, female | 2.32       | 10      | 1.14        | 896 |
| Merluccius capensis         | 2.04       | 62      | 1.00        | 896 |
| MAJIDAE                     | 1.24       | 62      | 0.61        |     |
| Merluccius capensis, male   | 0.68       | 8       | 0.33        | 896 |
| Aequorea aequorea           | 0.00       | 24000   |             |     |
| Chrysaora sp.               | 0.00       | 1680    |             |     |
| Total                       | 204.16     |         | 100.32      |     |

STATION: 2634  
S 2658  
E 1422

PROJECT STATION: 2638  
DATE: 20/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2642 Long E 1423  
start stop duration  
TIME :04:24:08 04:55:05 31 (min) Purpose code: 3  
LOG :2477.36 2478.95 1.56 Area code : 1  
FDEPTH: 336 336 GearCond.code: 1  
BDEPTH: 336 336 Validity code:  
Towing dir: 350° Wire out: 1009 m Speed: 30 kn\*10

945.32 Sorted: 210 Kg Total catch: 1551.14 CATCH/HOUR: 3002.21

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 1224.39    | 4897    | 40.78       | 8971 |
| Merluccius paradoxus, male   | 486.97     | 3310    | 16.22       | 8972 |
| Merluccius capensis, female  | 438.58     | 929     | 14.61       | 8973 |
| Coelorrinchus fasciatus      | 391.74     | 5032    | 13.05       |      |
| Merluccius capensis, male    | 270.58     | 639     | 9.01        | 8970 |
| Genypterus capensis          | 85.70      | 45      | 2.85        | 8975 |
| Helicolenus dactylopterus    | 28.26      | 194     | 0.94        |      |
| Lophius vomerinus            | 22.49      | 12      | 0.75        | 8976 |
| Bathynectes piperitus        | 20.90      | 774     | 0.70        |      |
| Nezumia sp.                  | 9.68       | 58      | 0.32        |      |
| Merluccius capensis, female  | 6.35       | 2       | 0.21        | 8974 |
| Trachurus capensis           | 5.81       | 19      | 0.19        | 8977 |
| Lampanyctodes hectoris       | 4.26       | 2129    | 0.14        |      |
| Thyrssites atun              | 3.41       | 2       | 0.11        | 8978 |
| Squilla acuelata calmani     | 2.71       | 252     | 0.09        |      |
| Epigonus telescopus          | 0.39       | 19      | 0.01        |      |
| Total                        | 3002.22    |         | 99.98       |      |

PROJECT STATION: 2638  
DATE: 20/1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2642 Long E 1423

start stop duration  
TIME :14:30:01 15:00:03 30 (min) Purpose code: 3  
LOG :2531.60 2533.26 1.65 Area code : 1  
FDEPTH: 552 547 GearCond.code: 1  
BDEPTH: 552 547 Validity code:  
Towing dir: 340° Wire out: 1540 m Speed: 35 kn\*10

Sorted: 173 Kg Total catch: 199.56 CATCH/HOUR: 399.12

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 281.84     | 250     | 70.62       | 8971 |
| Nezumia micronychodon        | 35.36      | 736     | 8.86        |      |
| Selachophidium guentheri     | 21.44      | 232     | 5.37        |      |
| Coelorrinchus braueri        | 18.72      | 480     | 4.69        |      |
| Lophius vomerinus            | 9.08       | 2       | 2.28        |      |
| Coelorrinchus fasciatus      | 7.36       | 72      | 1.84        |      |
| Raja confundens              | 7.04       | 20      | 1.76        |      |
| Todarodes sagittatus         | 6.16       | 8       | 1.54        |      |
| Trachyrinchus scabrus        | 2.00       | 28      | 0.50        |      |
| Centroscyllium fabricii      | 1.84       | 16      | 0.46        |      |
| Ebinania costaeacanarie      | 1.76       | 16      | 0.44        |      |
| Nezumia leonis               | 1.28       | 8       | 0.32        |      |
| S H R I M P S                | 1.08       | 360     | 0.27        |      |
| Lycoteuthis diadema          | 0.64       | 48      | 0.16        |      |
| Tripterygion gilchristi      | 0.56       | 16      | 0.14        |      |
| Myxine capensis              | 0.56       | 4       | 0.14        |      |
| Notacanthus sexspinis        | 0.56       | 20      | 0.14        |      |
| Yarella blackfordi           | 0.40       | 16      | 0.10        |      |
| Merluccius paradoxus         | 0.32       | 4       | 0.08        |      |
| Etmopterus brachyurus        | 0.32       | 4       | 0.08        |      |
| Symbolophorus boops          | 0.32       | 20      | 0.08        |      |
| MACROPHIDIAE                 | 0.24       | 20      | 0.06        |      |
| Photichthys argenteus        | 0.24       | 16      | 0.06        |      |
| Total                        | 399.12     |         | 99.99       |      |

STATION: 2635  
S 2655  
E 1422

PROJECT STATION: 2639  
DATE: 20/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2640 Long E 1411  
start stop duration  
TIME :07:02:01 07:32:42 31 (min) Purpose code: 3  
LOG :2491.62 2493.05 1.42 Area code : 1  
FDEPTH: 378 377 GearCond.code: 1  
BDEPTH: 378 377 Validity code:  
Towing dir: 360° Wire out: 1150 m Speed: 30 kn\*10

579.36 Sorted: 169 Kg Total catch: 1182.10 CATCH/HOUR: 2287.94

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 1055.79    | 3457    | 46.15       | 8980 |
| Coelorrinchus fasciatus      | 580.30     | 5369    | 25.36       |      |
| Merluccius paradoxus, male   | 281.69     | 1196    | 12.31       | 8979 |
| Helicolenus dactylopterus    | 136.06     | 772     | 5.95        |      |
| Genypterus capensis          | 75.25      | 35      | 3.29        | 8983 |
| Nezumia sp.                  | 59.21      | 1086    | 2.59        |      |
| Bathynectes piperitus        | 48.17      | 1066    | 2.11        |      |
| Lophius vomerinus            | 15.25      | 6       | 0.67        | 8982 |
| Galeus polli                 | 12.14      | 93      | 0.53        |      |
| MYCTOPHIDIAE                 | 6.62       | 2206    | 0.29        |      |
| S H R I M P S                | 6.62       | 3310    | 0.29        |      |
| Merluccius paradoxus, female | 6.43       | 2       | 0.28        | 8981 |
| Selachophidium guentheri     | 2.21       | 130     | 0.10        |      |
| Squilla acuelata calmani     | 1.47       | 166     | 0.06        |      |
| Epigonus telescopus          | 0.37       | 37      | 0.02        |      |
| Symbolophorus boops          | 0.37       | 56      | 0.02        |      |
| Total                        | 2287.95    |         | 100.02      |      |

PROJECT STATION: 2639  
DATE: 20/1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2640 Long E 1411

start stop duration  
TIME :17:28:56 17:59:02 30 (min) Purpose code: 3  
LOG :2549.83 2551.36 1.51 Area code : 1  
FDEPTH: 431 437 GearCond.code: 1  
BDEPTH: 431 437 Validity code:  
Towing dir: 360° Wire out: 1250 m Speed: 30 kn\*10

Sorted: 87 Kg Total catch: 358.11 CATCH/HOUR: 716.2

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 379.94     | 936     | 51.05       | 8980 |
| Merluccius paradoxus, male   | 141.46     | 330     | 19.75       | 8979 |
| Coelorrinchus braueri        | 97.02      | 1596    | 13.55       |      |
| Todarodes sagittatus         | 30.08      | 68      | 4.20        |      |
| Genypterus capensis          | 23.04      | 12      | 3.22        |      |
| Helicolenus dactylopterus    | 18.92      | 78      | 2.64        |      |
| Lampanyctodes hectoris       | 7.26       | 4840    | 1.01        |      |
| Nezumia micronychodon        | 5.72       | 276     | 0.80        |      |
| Raja confundens              | 3.74       | 12      | 0.52        |      |
| S H R I M P S                | 2.64       | 1980    | 0.37        |      |
| Trachyrinchus scabrus        | 1.54       | 44      | 0.22        |      |
| Selachophidium guentheri     | 1.44       | 66      | 0.20        |      |
| Notacanthus sexspinis        | 1.32       | 22      | 0.18        |      |
| PARALEPIDIAE                 | 1.20       | 12      | 0.17        |      |
| Yarella blackfordi           | 0.88       | 44      | 0.12        |      |
| Symbolophorus boops          | 0.66       | 188     | 0.09        |      |
| Lycoteuthis diadema          | 0.22       | 66      | 0.03        |      |
| Total                        | 716.20     |         | 100.12      |      |

STATION: 2636  
S 2651  
E 1443

PROJECT STATION: 2640  
DATE: 20/1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2640 Long E 1401  
start stop duration  
TIME :09:31:32 10:01:31 30 (min) Purpose code: 3  
LOG :2505.40 2506.84 1.44 Area code : 1  
FDEPTH: 407 406 GearCond.code: 1  
BDEPTH: 407 406 Validity code:  
Towing dir: 360° Wire out: 1200 m Speed: 30 kn\*10

840.60 Sorted: 142 Kg Total catch: 761.01 CATCH/HOUR: 1522.02

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 790.76     | 2212    | 51.95       | 8985 |
| Merluccius paradoxus, male   | 380.50     | 1326    | 25.00       | 8984 |
| Coelorrinchus fasciatus      | 177.76     | 1312    | 11.68       |      |
| Todarodes sagittatus         | 57.50      | 188     | 3.78        |      |
| Genypterus capensis          | 47.92      | 30      | 3.15        | 8986 |
| Helicolenus dactylopterus    | 41.76      | 176     | 2.74        |      |
| Deepwater fish mixture       | 10.00      | 7500    | 0.66        |      |
| Nezumia micronychodon        | 6.76       | 200     | 0.44        |      |
| Maurollicus muelleri         | 2.76       | 2062    | 0.18        |      |
| S H R I M P S                | 2.00       | 726     | 0.13        |      |
| Lampanyctodes hectoris       | 1.50       | 826     | 0.10        |      |
| Selachophidium guentheri     | 1.50       | 12      | 0.10        |      |
| Malacocephalus laevis        | 0.50       | 12      | 0.03        |      |
| Epigonus denticulatus        | 0.26       | 76      | 0.02        |      |
| Symbolophorus boops          | 0.26       | 62      | 0.02        |      |
| Bathynectes piperitus        | 0.26       | 26      | 0.02        |      |
| Total                        | 1522.00    |         | 100.00      |      |

PROJECT STATION: 2640  
DATE: 21/1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2640 Long E 1401

start stop duration  
TIME :04:24:21 04:54:52 31 (min) Purpose code: 3  
LOG :2581.47 2582.90 1.41 Area code : 1  
FDEPTH: 380 377 GearCond.code: 1  
BDEPTH: 380 377 Validity code:  
Towing dir: 350° Wire out: 1200 m Speed: 30 kn\*10

Sorted: 205 Kg Total catch: 592.74 CATCH/HOUR: 1147.2

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 583.05     | 1192    | 50.82       | 9000 |
| Coelorrinchus fasciatus      | 169.63     | 1999    | 14.79       |      |
| Merluccius paradoxus, male   | 101.52     | 263     | 8.85        | 8980 |
| Helicolenus dactylopterus    | 89.67      | 453     | 7.82        |      |
| Lophius vomerinus            | 66.23      | 12      | 5.77        | 9000 |
| Genypterus capensis          | 40.30      | 25      | 3.51        | 5000 |
| Merluccius capensis, female  | 28.45      | 19      | 2.48        | 8980 |
| Merluccius paradoxus, female | 20.98      | 6       | 1.83        | 8980 |
| Nezumia micronychodon        | 11.69      | 149     | 1.02        |      |
| MYCTOPHIDIAE                 | 9.06       | 4525    | 0.79        |      |
| Todarodes sagittatus         | 8.86       | 19      | 0.77        |      |
| Selachophidium guentheri     | 7.57       | 157     | 0.66        |      |
| Shrimps, small, non comm.    | 3.29       | 1094    | 0.29        |      |
| Squilla acuelata calmani     | 2.81       | 157     | 0.24        |      |
| Bathynectes piperitus        | 2.63       | 74      | 0.23        |      |
| Etmopterus lucifer           | 0.99       | 8       | 0.09        |      |
| Epigonus telescopus          | 0.45       | 33      | 0.04        |      |
| Symbolophorus boops          | 0.08       | 17      | 0.01        |      |
| Total                        | 1147.26    |         | 100.01      |      |

STATION: 2641  
S 2644  
E 1451

PROJECT STATION: 2641  
DATE: 20/1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2642 Long E 1345  
start stop duration  
TIME :12:27:43 12:58:49 31 (min) Purpose code: 3  
LOG :2523.70 2525.36 1.65 Area code : 1  
FDEPTH: 461 457 GearCond.code: 1  
BDEPTH: 461 457 Validity code:  
Towing dir: 345° Wire out: 1270 m Speed: 35 kn\*10

Sorted: 232 Kg Total catch: 441.54 CATCH/HOUR: 854.59

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 606.35     | 834     | 70.95       | 8990 |
| Merluccius paradoxus, male   | 170.71     | 261     | 19.98       | 8989 |
| Coelorrinchus fasciatus      | 46.86      | 757     | 5.48        |      |
| Lophius vomerinus            | 13.12      | 4       | 1.54        | 8988 |
| Todarodes sagittatus         | 4.57       | 12      | 0.53        |      |
| Selachophidium guentheri     | 3.97       | 79      | 0.46        |      |
| Helicolenus dactylopterus    | 2.54       | 12      | 0.30        |      |
| Genypterus capensis          | 2.32       | 2       | 0.27        | 8987 |
| Symbolophorus boops          | 0.75       | 56      | 0.09        |      |
| Nezumia leonis               | 0.52       | 27      | 0.06        |      |
| Bathynectes piperitus        | 0.37       | 8       | 0.04        |      |
| S H R I M P S                | 0.37       | 45      | 0.04        |      |
| Photichthys argenteus        | 0.37       | 33      | 0.04        |      |
| Malacocephalus laevis        | 0.29       | 4       | 0.03        |      |
| Nezumia micronychodon        | 0.23       | 12      | 0.03        |      |
| Myxine capensis              | 0.23       | 4       | 0.03        |      |
| Total                        | 853.57     |         | 99.87       |      |

PROJECT STATION: 2645  
 DATE: 21/ 1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2619 Long E 1406  
 start stop duration  
 TIME :06:53:14 07:24:59 32 (min) Purpose code: 3  
 LOG :2595.65 2597.28 1.59 Area code : 1  
 FDEPTH: 345 342 GearCond.code:  
 BDEPTH: 345 342 Validity code:  
 Towing dir: 350° Wire out: 1050 m Speed: 30 kn\*10

Sorted: 159 Kg Total catch: 1168.00 CATCH/HOUR: 2190.00

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 1038.83    | 4346    | 47.44       | 9004 |
| Merluccius paradoxus, male   | 334.01     | 1896    | 15.25       | 9003 |
| Merluccius capensis, female  | 328.61     | 443     | 15.01       | 9006 |
| Helicolenus dactylopterus    | 161.31     | 1084    | 7.37        |      |
| Merluccius capensis, male    | 145.63     | 270     | 6.65        | 9005 |
| Coelorinchus fasciatus       | 107.44     | 1226    | 4.91        |      |
| Galeus polli                 | 17.96      | 171     | 0.82        |      |
| Nezumia micronychodon        | 17.38      | 371     | 0.79        |      |
| MYCTOPHIDAE                  | 15.68      | 7838    | 0.72        |      |
| Todarodes sagittatus         | 7.80       | 17      | 0.36        |      |
| Trachurus capensis           | 6.84       | 15      | 0.31        | 9008 |
| Lophius vomerinus            | 3.83       | 4       | 0.17        | 9007 |
| Bathynectes piperitus        | 1.99       | 86      | 0.09        |      |
| Shrimps, small, non comm.    | 1.71       | 799     | 0.08        |      |
| Symbolophorus boops          | 0.56       | 43      | 0.03        |      |
| Maurollicus muelleri         | 0.28       | 242     | 0.01        |      |
| Squilla acuelata calmani     | 0.15       | 15      | 0.01        |      |
| Total                        | 2190.01    |         | 100.02      |      |

PROJECT STATION: 2646  
 DATE: 21/ 1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2618 Long E 1428  
 start stop duration  
 TIME :10:16:21 10:46:42 30 (min) Purpose code: 3  
 LOG :2620.74 2622.48 1.71 Area code : 1  
 FDEPTH: 227 211 GearCond.code:  
 BDEPTH: 227 211 Validity code:  
 Towing dir: 330° Wire out: 750 m Speed: 35 kn\*10

Sorted: 62 Kg Total catch: 67.66 CATCH/HOUR: 135.32

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Thyrssites atun              | 53.08      | 12      | 39.23       | 9015 |
| Callorhynchus capensis       | 24.92      | 14      | 18.42       |      |
| Merluccius capensis, female  | 18.40      | 104     | 13.60       | 9012 |
| Merluccius capensis, male    | 10.08      | 64      | 7.45        | 9011 |
| Merluccius paradoxus, female | 6.56       | 90      | 4.85        | 9014 |
| Etrumeus whiteheadi          | 5.52       | 72      | 4.08        | 9010 |
| Sufflogobius bibarbatus      | 5.40       | 1820    | 3.99        |      |
| Raja straeleni               | 2.76       | 6       | 2.04        |      |
| Lophius vomerinus            | 2.00       | 4       | 1.48        | 9016 |
| Coelorinchus fasciatus       | 1.68       | 48      | 1.24        |      |
| Merluccius paradoxus, male   | 1.36       | 18      | 1.01        | 9013 |
| Austroglossus microlepis     | 1.12       | 2       | 0.83        | 9017 |
| Lepidopus caudatus           | 1.08       | 18      | 0.80        |      |
| Genypteris capensis          | 1.00       | 2       | 0.74        | 9009 |
| Squilla acuelata calmani     | 0.24       | 6       | 0.18        |      |
| DROMIIDAE                    | 0.12       | 6       | 0.09        |      |
| Total                        | 135.32     |         | 100.03      |      |

PROJECT STATION: 2647  
 DATE: 21/ 1/99 GEAR TYPE: BT No: 12 POSITION: Lat S 2620 Long E 1442  
 start stop duration  
 TIME :12:55:02 13:24:59 30 (min) Purpose code: 3  
 LOG :2639.58 2641.02 1.44 Area code : 1  
 FDEPTH: 164 164 GearCond.code:  
 BDEPTH: 164 164 Validity code:  
 Towing dir: 350° Wire out: 550 m Speed: 35 kn\*10

Sorted: 47 Kg Total catch: 545.14 CATCH/HOUR: 1090.28

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis            | 415.20     | 12920   | 38.08       | 9020 |
| Sufflogobius bibarbatus        | 287.20     | 58560   | 26.34       |      |
| Merluccius capensis, juveniles | 193.60     | 12600   | 17.76       | 9022 |
| Lampanyctodes hectoris         | 89.20      | 40720   | 8.18        |      |
| Galeorhinus galeus             | 30.00      | 2       | 2.75        |      |
| Merluccius capensis, female    | 20.80      | 200     | 1.91        | 9018 |
| Chelidonichthys capensis       | 18.40      | 40      | 1.69        |      |
| Merluccius capensis, male      | 15.20      | 120     | 1.39        | 9019 |
| Thyrssites atun                | 9.00       | 2       | 0.83        | 9021 |
| Todarodes sagittatus           | 8.80       | 280     | 0.81        |      |
| Austroglossus microlepis       | 2.88       | 8       | 0.26        | 9017 |
| Chrysaora sp.                  | 0.00       | 160     |             |      |
| Total                          | 1090.28    |         | 100.00      |      |

PROJECT STATION: 2648  
 DATE: 22/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2558 Long E 1418  
 start stop duration  
 TIME :04:32:44 05:02:26 30 (min) Purpose code: 3  
 LOG :2714.49 2716.05 1.54 Area code : 1  
 FDEPTH: 229 238 GearCond.code:  
 BDEPTH: 229 238 Validity code:  
 Towing dir: 350° Wire out: 700 m Speed: 30 kn\*10

Sorted: 120 Kg Total catch: 4572.01 CATCH/HOUR: 9144.02

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 5369.46    | 33674   | 58.72       | 9024 |
| Merluccius capensis, male      | 3492.72    | 29774   | 38.20       | 9023 |
| Lophius vomerinus              | 84.18      | 410     | 0.92        | 9026 |
| Sufflogobius bibarbatus        | 61.60      | 7700    | 0.67        |      |
| Mustelus mustelus              | 37.24      | 2       | 0.41        |      |
| Austroglossus microlepis       | 33.10      | 270     | 0.36        | 9028 |
| Genypteris capensis            | 26.70      | 102     | 0.29        | 9027 |
| Trachurus capensis             | 20.54      | 102     | 0.22        | 9029 |
| MYCTOPHIDAE                    | 12.32      | 102666  | 0.13        |      |
| Merluccius capensis, juveniles | 6.16       | 718     | 0.07        | 9025 |
| Total                          | 9144.02    |         | 99.99       |      |

PROJECT STATION: 2649  
 DATE: 22/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2559 Long E 1411  
 start stop duration  
 TIME :06:40:10 07:10:07 30 (min) Purpose code: 3  
 LOG :2724.83 2726.38 1.53 Area code : 1  
 FDEPTH: 265 263 GearCond.code:  
 BDEPTH: 265 263 Validity code:  
 Towing dir: 350° Wire out: 800 m Speed: 30 kn\*10

Sorted: 318 Kg Total catch: 2373.86 CATCH/HOUR: 4747.72

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 2235.70    | 9440    | 47.09       | 9031 |
| Merluccius capensis, male   | 1671.64    | 8296    | 35.21       | 9030 |
| Lophius vomerinus           | 288.80     | 302     | 6.08        | 9035 |
| Sufflogobius bibarbatus     | 142.20     | 15800   | 3.00        |      |
| Squilla acuelata calmani    | 93.22      | 3200    | 1.96        |      |
| Merluccius capensis, female | 85.24      | 48      | 1.80        | 9032 |
| Coelorinchus fasciatus      | 79.00      | 1976    | 1.66        |      |
| Trachurus capensis          | 49.78      | 238     | 1.05        | 9036 |
| Austroglossus microlepis    | 40.20      | 80      | 0.85        | 9034 |
| Todarodes sagittatus        | 26.86      | 118     | 0.57        |      |
| Chelidonichthys capensis    | 19.76      | 40      | 0.42        |      |
| MYCTOPHIDAE                 | 12.64      | 6320    | 0.27        |      |
| Merluccius capensis, male   | 2.68       | 2       | 0.06        | 9033 |
| Total                       | 4747.72    |         | 100.02      |      |

PROJECT STATION: 2650  
 DATE: 22/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2559 Long E 1359  
 start stop duration  
 TIME :08:54:03 08:59:55 6 (min) Purpose code: 3  
 LOG :2738.55 2738.84 0.27 Area code : 1  
 FDEPTH: 328 327 GearCond.code: 9  
 BDEPTH: 328 327 Validity code: 1  
 Towing dir: 360° Wire out: 990 m Speed: 30 kn\*10

Sorted: 202 Kg Total catch: 768.67 CATCH/HOUR: 7686.70

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius capensis, female  | 2845.00    | 5190    | 37.01       | 9042 |
| Merluccius capensis, male    | 1413.80    | 5000    | 18.39       | 9039 |
| Coelorinchus fasciatus       | 1033.80    | 9940    | 13.45       |      |
| Merluccius capensis, female  | 679.40     | 430     | 8.84        | 9044 |
| Centrolophus niger           | 467.50     | 60      | 6.08        |      |
| Trachurus capensis           | 286.30     | 1060    | 3.72        |      |
| Lophius vomerinus            | 195.80     | 70      | 2.55        | 9041 |
| Merluccius paradoxus, female | 170.00     | 1440    | 2.21        | 9038 |
| Nezumia micronychodon        | 155.00     | 3880    | 2.02        |      |
| Helicolenus dactylopterus    | 90.00      | 880     | 1.17        |      |
| Lampanyctodes hectoris       | 87.50      | 58310   | 1.14        |      |
| Callorhynchus capensis       | 80.00      | 60      | 1.04        |      |
| Bathynectes piperitus        | 51.30      | 1560    | 0.67        |      |
| Merluccius capensis, male    | 39.20      | 20      | 0.51        | 9043 |
| Genypteris capensis          | 36.80      | 10      | 0.48        | 9040 |
| Squilla acuelata calmani     | 23.80      | 1810    | 0.31        |      |
| Merluccius paradoxus, male   | 13.80      | 130     | 0.18        | 9037 |
| Galeus polli                 | 11.30      | 130     | 0.15        |      |
| Sufflogobius bibarbatus      | 3.80       | 250     | 0.05        |      |
| Epigonus denticulatus        | 1.30       | 500     | 0.02        |      |
| Shrimps, small, non comm.    | 1.30       | 500     | 0.02        |      |
| Total                        | 7686.70    |         | 100.01      |      |

PROJECT STATION: 2651  
 DATE: 22/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2558 Long E 1342  
 start stop duration  
 TIME :11:08:00 11:38:11 30 (min) Purpose code: 3  
 LOG :2755.13 2756.54 1.39 Area code : 1  
 FDEPTH: 453 457 GearCond.code:  
 BDEPTH: 453 457 Validity code:  
 Towing dir: 350° Wire out: 1300 m Speed: 35 kn\*10

Sorted: 169 Kg Total catch: 679.13 CATCH/HOUR: 1358.26

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 721.56     | 1354    | 53.12       | 9047 |
| Coelorinchus fasciatus       | 209.50     | 2142    | 15.42       |      |
| Merluccius paradoxus, male   | 149.74     | 284     | 11.02       | 9048 |
| Nezumia micronychodon        | 79.38      | 2038    | 5.84        |      |
| Lophius vomerinus            | 48.64      | 18      | 3.58        | 9046 |
| Raja confundens              | 27.30      | 22      | 2.01        |      |
| Lithodes ferox               | 26.20      | 26      | 1.93        |      |
| Schedophilus huttoni         | 23.94      | 10      | 1.76        |      |
| Todarodes sagittatus         | 20.80      | 58      | 1.53        |      |
| Myxine capensis              | 12.60      | 116     | 0.93        |      |
| Bathynectes piperitus        | 7.56       | 482     | 0.56        |      |
| Photichthys argenteus        | 7.14       | 788     | 0.53        |      |
| Helicolenus dactylopterus    | 4.84       | 22      | 0.36        |      |
| Galeus polli                 | 3.58       | 32      | 0.26        |      |
| Genypteris capensis          | 3.56       | 2       | 0.26        | 9045 |
| Selachophidium guentheri     | 3.16       | 106     | 0.23        |      |
| Shrimps, small, non comm.    | 2.74       | 1040    | 0.20        |      |
| Epigonus denticulatus        | 2.22       | 10      | 0.16        |      |
| Ebinania costaecanarie       | 1.48       | 22      | 0.11        |      |
| Notacanthus sexspinis        | 1.26       | 64      | 0.09        |      |
| MELANOSTOMIATIDAE            | 0.64       | 10      | 0.05        |      |
| POLYCHAELIDAE                | 0.42       | 126     | 0.03        |      |
| Total                        | 1358.26    |         | 99.98       |      |

ION:2649 S 2559 E 1411 DATE:22/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2539 Long E 1333 PROJECT STATION:2652

TIME :16:08:56 16:38:49 30 (min) Purpose code: 3  
LOG :2788.57 2789.95 1.35 Area code : 1  
FDEPTH: 635 645 GearCond.code:  
BDEPTH: 635 645 Validity code:  
Towing dir: 355° Wire out:1700 m Speed: 30 kn\*10

Sorted: 66 Kg Total catch: 2107.74 CATCH/HOUR: 4215.48

| SAMP  | SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-------|------------------------------|------------|---------|-------------|------|
|       |                              | weight     | numbers |             |      |
| 9031  | Dicrolene intronigra         | 1457.28    | 23598   | 34.57       |      |
| 9030  | Coelorinchus matamua         | 807.30     | 4140    | 19.15       |      |
| 9035  | Nezumia micronychodon        | 430.56     | 5382    | 10.21       |      |
|       | Cruriraja parcomaculata      | 418.14     | 1864    | 9.92        |      |
|       | Selachophidium guentheri     | 401.58     | 4140    | 9.53        |      |
| 9032  | Hoplostethus atlanticus      | 231.84     | 4968    | 5.50        | 9051 |
|       | Raja confundens              | 219.42     | 208     | 5.21        |      |
| 9036  | Merluccius paradoxus, female | 87.76      | 76      | 2.08        | 9049 |
| 9034  | Trachyrincus scabrus         | 62.10      | 414     | 1.47        |      |
|       | Alloctytus verrucosus        | 33.12      | 414     | 0.79        |      |
|       | Ebinania costaecanarie       | 24.84      | 208     | 0.59        |      |
|       | Raja leoparardus             | 20.70      | 208     | 0.49        |      |
| 9033  | Nemichthys scolopaceus       | 12.42      | 208     | 0.29        |      |
|       | Merluccius paradoxus, male   | 4.28       | 4       | 0.10        | 9050 |
|       | Alepocephalus sp.            | 4.14       | 414     | 0.10        |      |
|       | J E L L Y F I S H            | 0.00       |         |             |      |
| Total |                              | 4215.48    |         | 100.00      |      |

PROJECT STATION:2655 DATE:23/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2536 Long E 1346

TIME :04:36:15 05:06:06 30 (min) Purpose code: 3  
LOG :2825.77 2827.46 1.69 Area code : 1  
FDEPTH: 337 334 GearCond.code:  
BDEPTH: 337 334 Validity code:  
Towing dir: 355° Wire out:1000 m Speed: 30 kn\*10

Sorted: 273 Kg Total catch: 1314.72 CATCH/HOUR: 2629.44

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Coelorinchus fasciatus      | 1165.44    | 10042   | 44.32       |      |
| Galeus polli                | 539.52     | 11732   | 20.52       |      |
| Helicolenus dactylopterus   | 346.76     | 1440    | 13.19       |      |
| Merluccius capensis, female | 229.44     | 138     | 8.73        | 9065 |
| Merluccius capensis, female | 179.32     | 518     | 6.82        | 9067 |
| Merluccius capensis, male   | 51.08      | 172     | 1.94        | 9066 |
| Lophius vomerinus           | 43.76      | 42      | 1.66        | 9069 |
| Merluccius capensis, male   | 26.56      | 14      | 1.01        | 9064 |
| Bathynectes piperitus       | 17.66      | 672     | 0.67        |      |
| Nezumia micronychodon       | 15.36      | 596     | 0.58        |      |
| Genypterus capensis         | 4.96       | 4       | 0.19        | 9068 |
| Todarodes sagittatus        | 4.22       | 20      | 0.16        |      |
| Epigonus telescopus         | 2.30       | 58      | 0.09        |      |
| Squilla acuelata calmani    | 2.30       | 192     | 0.09        |      |
| GALATHEIDAE *               | 0.38       | 76      | 0.01        |      |
| S H R I M P S               | 0.38       | 58      | 0.01        |      |
| Total                       | 2629.44    |         | 99.99       |      |

ION:2650 S 2559 E 1359 DATE:22/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2538 Long E 1336 PROJECT STATION:2653

TIME :18:49:37 19:19:32 30 (min) Purpose code: 3  
LOG :2797.54 2799.08 1.53 Area code : 1  
FDEPTH: 530 536 GearCond.code:  
BDEPTH: 530 536 Validity code:  
Towing dir: 350° Wire out:1500 m Speed: 30 kn\*10

Sorted: 237 Kg Total catch: 709.87 CATCH/HOUR: 1419.74

| SAMP  | SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-------|------------------------------|------------|---------|-------------|------|
|       |                              | weight     | numbers |             |      |
| 9042  | Merluccius paradoxus, female | 331.56     | 380     | 23.35       | 9052 |
| 9039  | Nezumia micronychodon        | 197.60     | 2812    | 13.92       |      |
| 9044  | Notacanthus sexspinis        | 185.44     | 3420    | 13.06       |      |
|       | Lithodes ferox               | 167.20     | 304     | 11.78       |      |
| 9041  | Selachophidium guentheri     | 161.88     | 2622    | 11.40       |      |
| 9038  | Hoplostethus atlanticus      | 110.96     | 3458    | 7.82        | 9057 |
|       | Lophius vomerinus            | 63.24      | 20      | 4.45        | 9056 |
|       | Todarodes sagittatus         | 61.56      | 228     | 4.34        |      |
|       | Coelorinchus matamua         | 47.88      | 722     | 3.37        |      |
|       | Ebinania costaecanarie       | 28.88      | 304     | 2.03        |      |
|       | Trachyrincus scabrus         | 25.84      | 304     | 1.82        |      |
| 9043  | Merluccius paradoxus, male   | 21.36      | 26      | 1.50        | 9053 |
| 9040  | Dicrolene intronigra         | 3.80       | 76      | 0.27        |      |
|       | Merluccius capensis, female  | 3.28       | 4       | 0.23        | 9054 |
|       | Octopus vulgaris             | 3.04       | 38      | 0.21        |      |
|       | Galeus polli                 | 2.28       | 38      | 0.16        |      |
|       | Raja confundens              | 2.28       | 76      | 0.16        |      |
|       | Yarella blackfordi           | 1.52       | 76      | 0.11        |      |
|       | Merluccius capensis, male    | 0.96       | 2       | 0.07        | 9055 |
|       | Symbolophorus boops          | 0.38       | 38      | 0.03        |      |
| Total |                              | 1420.94    |         | 100.08      |      |

PROJECT STATION:2655 DATE:23/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2544 Long E 1422

TIME :09:24:36 09:34:10 10 (min) Purpose code: 3  
LOG :2866.23 2866.72 0.49 Area code : 1  
FDEPTH: 178 177 GearCond.code: 9  
BDEPTH: 178 177 Validity code: 1  
Towing dir: 350° Wire out: 580 m Speed: 30 kn\*10

Sorted: 49 Kg Total catch: 88.06 CATCH/HOUR: 528.36

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis            | 291.96     | 2292    | 55.26       |      |
| Merluccius capensis, female    | 144.12     | 906     | 27.28       | 9071 |
| Merluccius capensis, male      | 83.40      | 528     | 15.78       | 9070 |
| Merluccius capensis, juveniles | 8.88       | 426     | 1.68        | 9070 |
| Aequorea aequorea              | 0.00       | 12000   |             |      |
| Chrysaora sp.                  | 0.00       | 18000   |             |      |
| Total                          | 528.36     |         | 100.00      |      |

PROJECT STATION:2655 DATE:23/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2552 Long E 1422

TIME :15:41:39 15:43:20 2 (min) Purpose code: 3  
LOG :2923.13 2923.19 0.09 Area code : 1  
FDEPTH: 151 151 GearCond.code: 9  
BDEPTH: 151 151 Validity code: 9  
Towing dir: 360° Wire out: 450 m Speed: 30 kn\*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:2655 DATE:24/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2511 Long E 140

TIME :04:38:59 05:09:06 30 (min) Purpose code: 3  
LOG :2959.73 2961.31 1.57 Area code : 1  
FDEPTH: 207 205 GearCond.code:  
BDEPTH: 207 205 Validity code:  
Towing dir: 355° Wire out: 650 m Speed: 30 kn\*10

Sorted: 73 Kg Total catch: 1906.32 CATCH/HOUR: 3812.64

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 2106.00    | 15860   | 55.24       | 9071 |
| Merluccius capensis, male      | 1482.00    | 13000   | 38.87       | 9071 |
| Sufflogobius bibarbatatus      | 186.16     | 20696   | 4.88        |      |
| Merluccius capensis, juveniles | 17.68      | 1196    | 0.46        | 9071 |
| Squilla acuelata calmani       | 16.64      | 780     | 0.44        |      |
| Notacanthus sexspinis          | 2.08       | 104     | 0.05        |      |
| Galeus polli                   | 1.04       | 52      | 0.03        |      |
| Bathynectes piperitus          | 1.04       | 52      | 0.03        |      |
| Chrysaora sp.                  | 0.00       | 240     |             |      |
| Total                          | 3812.64    |         | 100.00      |      |

ION:2651 S 2558 E 1342 DATE:22/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2541 Long E 1340 PROJECT STATION:2654

TIME :20:52:02 21:22:07 30 (min) Purpose code: 3  
LOG :2805.91 2807.29 1.38 Area code : 1  
FDEPTH: 424 418 GearCond.code:  
BDEPTH: 424 418 Validity code:  
Towing dir: 170° Wire out:1200 m Speed: 30 kn\*10

Sorted: 250 Kg Total catch: 408.76 CATCH/HOUR: 817.52

| SAMP  | SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-------|------------------------------|------------|---------|-------------|------|
|       |                              | weight     | numbers |             |      |
| 9047  | Merluccius paradoxus, female | 281.32     | 498     | 34.41       | 9061 |
|       | Deepwater fish mixture       | 180.96     |         | 22.14       |      |
| 9048  | Genypterus capensis          | 89.88      | 32      | 10.99       | 9059 |
|       | Coelorinchus fasciatus       | 40.80      | 660     | 4.99        |      |
| 9046  | Merluccius paradoxus, male   | 40.16      | 82      | 4.91        | 9060 |
|       | Nezumia micronychodon        | 38.16      | 780     | 4.67        |      |
|       | Raja confundens              | 27.60      | 12      | 3.38        |      |
|       | Cruriraja parcomaculata      | 26.16      | 12      | 3.20        |      |
|       | Todarodes sagittatus         | 24.72      | 36      | 3.02        |      |
|       | Helicolenus dactylopterus    | 16.08      | 48      | 1.97        |      |
|       | Merluccius capensis, female  | 15.00      | 14      | 1.83        | 9063 |
|       | Notacanthus sexspinis        | 8.40       | 312     | 1.03        |      |
|       | Bathynectes piperitus        | 4.56       | 192     | 0.56        |      |
|       | Lophius vomerinus            | 4.28       | 2       | 0.52        | 9058 |
|       | Lithodes ferox               | 4.12       | 4       | 0.50        |      |
|       | Selachophidium guentheri     | 3.84       | 36      | 0.47        |      |
|       | Myxine capensis              | 2.64       | 24      | 0.32        |      |
|       | Hoplostethus cadenati        | 2.40       | 108     | 0.29        |      |
|       | Galeus polli                 | 1.92       | 12      | 0.23        |      |
|       | Merluccius capensis, male    | 1.88       | 2       | 0.23        | 9062 |
|       | Octopus sp.                  | 1.44       | 12      | 0.18        |      |
|       | Symbolophorus boops          | 0.96       | 84      | 0.12        |      |
|       | Scomberesox saurus           | 0.24       | 12      | 0.03        |      |
| Total |                              | 817.52     |         | 99.99       |      |

PROJECT STATION:2655 DATE:24/ 1/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2511 Long E 135

TIME :07:09:36 07:39:25 30 (min) Purpose code: 3  
LOG :2974.46 2976.06 1.58 Area code : 1  
FDEPTH: 267 261 GearCond.code:  
BDEPTH: 267 261 Validity code:  
Towing dir: 360° Wire out: 830 m Speed: 30 kn\*10

Sorted: 43 Kg Total catch: 327.56 CATCH/HOUR: 655.12

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 297.84     | 1586    | 45.46       | 9071 |
| Merluccius capensis, male      | 218.38     | 1448    | 33.33       | 9071 |
| Squilla acuelata calmani       | 96.40      | 3358    | 14.71       |      |
| Sufflogobius bibarbatatus      | 33.88      | 8470    | 5.17        |      |
| Merluccius capensis, juveniles | 6.16       | 570     | 0.94        | 9071 |
| Trachurus capensis             | 1.84       | 16      | 0.28        | 9071 |
| Galeus polli                   | 0.62       | 30      | 0.09        |      |
| Aequorea aequorea              | 0.00       | 400     |             |      |
| Chrysaora sp.                  | 0.00       | 170     |             |      |
| Total                          | 655.12     |         | 99.98       |      |

PROJECT STATION: 2660  
 DATE: 24/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2518 Long E 1343  
 start stop duration  
 TIME : 09:11:48 09:41:15 29 (min) Purpose code: 3  
 LOG : 2985.48 2987.04 1.55 Area code : 1  
 FDEPTH: 324 321 GearCond.code:  
 BDEPTH: 324 321 Validity code:  
 Towing dir: 360° Wire out: 1000 m Speed: 30 kn\*10

Sorted: 78 Kg Total catch: 262.10 CATCH/HOUR: 542.28  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Deepwater fish mixture 292.34 21060 53.91  
 Squilla acuelata calmani 101.67 4115 18.75  
 Merluccius capensis, female 69.81 226 12.87 9080  
 Merluccius capensis, male 44.15 232 8.14 9081  
 Sufflogobius bibrabatus 17.13 4711 3.16  
 Bathynectes piperitus 16.01 745 2.95  
 Merluccius capensis, juveniles 0.79 48 0.15 9079  
 S H R I M P S 0.78 168 0.07  
 Total 542.27 100.00

PROJECT STATION: 2661  
 DATE: 24/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2518 Long E 1337  
 start stop duration  
 TIME : 11:27:01 11:57:45 31 (min) Purpose code: 3  
 LOG : 2996.57 2998.16 1.57 Area code : 1  
 FDEPTH: 472 480 GearCond.code:  
 BDEPTH: 472 480 Validity code: 1  
 Towing dir: 360° Wire out: 1300 m Speed: 34 kn\*10

Sorted: 161 Kg Total catch: 1762.47 CATCH/HOUR: 3411.23  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Merluccius paradoxus, female 2660.96 9137 78.01 9082  
 Nezumia micronychodon 263.13 5193 7.71  
 Merluccius paradoxus, male 141.45 606 4.15 9086  
 Trachurus capensis 61.97 314 1.82 9084  
 Trachyrincus scabrus 57.93 180 1.70  
 Raja confundens 55.68 68 1.63  
 Ebinania costaecanarie 46.26 23 1.36  
 Merluccius capensis, female 36.81 23 1.08 9085  
 Notacanthus sexspinis 25.14 449 0.74  
 Hoplostethus cadenati 24.70 1190 0.72  
 Lophius vomerinus 19.24 6 0.56 9083  
 Bathynectes piperitus 5.85 201 0.17  
 Galeus polli 4.94 45 0.14  
 Squilla acuelata calmani 4.49 360 0.13  
 Helicolenus dactylopterus 2.69 23 0.08  
 Total 3411.24 100.00

PROJECT STATION: 2662  
 DATE: 24/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2518 Long E 1334  
 start stop duration  
 TIME : 13:39:40 14:12:12 33 (min) Purpose code: 3  
 LOG : 3005.16 3006.91 1.73 Area code : 1  
 FDEPTH: 585 604 GearCond.code:  
 BDEPTH: 585 604 Validity code:  
 Towing dir: 5° Wire out: 1620 m Speed: 34 kn\*10

Sorted: 171 Kg Total catch: 1021.30 CATCH/HOUR: 1856.91  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Nezumia micronychodon 624.91 9973 33.65  
 Merluccius paradoxus, female 259.53 278 13.98 9089  
 Selachophidium guentheri 239.49 2556 12.90  
 Notacanthus sexspinis 180.29 5113 9.71  
 Hoplostethus cadenati 123.78 3767 6.67  
 Raja confundens 114.36 336 6.16  
 OPISTHOTEUTHIDAE 108.98 336 5.87  
 Yarella blackfordi 87.45 4373 4.71  
 Ebinania costaecanarie 34.98 202 1.88  
 Galeus polli 34.98 336 1.88  
 Todarodes sagittatus 28.25 67 1.52  
 Allocyttus verrucosus 6.73 67 0.36  
 Merluccius paradoxus, male 5.38 7 0.29 9088  
 Epigonus telescopus 2.69 67 0.14  
 Bathyroconger vicinus 2.69 67 0.14 9087  
 Merluccius capensis, female 1.05 2 0.06  
 PARAPAGURIDAE \* 0.67 67 0.04  
 Dicrolene intronigra 0.67 67 0.04  
 Total 1856.88 100.00

PROJECT STATION: 2663  
 DATE: 24/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2501 Long E 1334  
 start stop duration  
 TIME : 16:39:28 17:09:24 30 (min) Purpose code: 3  
 LOG : 3023.22 3024.74 1.50 Area code : 1  
 FDEPTH: 597 596 GearCond.code:  
 BDEPTH: 597 596 Validity code:  
 Towing dir: 5° Wire out: 1650 m Speed: 30 kn\*10

Sorted: 184 Kg Total catch: 1063.38 CATCH/HOUR: 2126.76  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Trachyrincus scabrus 859.68 2160 40.42  
 Nezumia micronychodon 375.84 4320 17.67  
 Merluccius paradoxus, female 250.40 248 11.77 9090  
 Selachophidium guentheri 142.56 2448 6.70  
 GONOSTOMATIDAE 126.72 1872 5.96  
 Deania profundorum 86.40 72 4.06  
 Cruriraja parmaculata 59.04 72 2.78  
 Notacanthus sexspinis 43.20 1368 2.03  
 Lophius vomerinus 33.28 10 1.56 9091  
 Todarodes sagittatus 26.32 56 1.24  
 S H R I M P S 21.60 288 1.02  
 OPISTHOTEUTHIDAE 15.84 72 0.74  
 Allocyttus verrucosus 15.84 288 0.74  
 Hoplostethus cadenati 15.84 576 0.74  
 Cruriraja parmaculata 14.40 144 0.68  
 Hoplostethus mediterraneus 11.52 216 0.54  
 ALEPOCEPHALIDAE 7.20 72 0.34  
 Lithodes ferox 6.56 24 0.31  
 Bathyroconger vicinus 5.76 72 0.27  
 Yarella blackfordi 5.76 720 0.27  
 PARALEPIDIDAE 1.44 72 0.07  
 Symbolophorus boops 1.44 144 0.07  
 Merluccius paradoxus, male 0.12 2 0.01 9092  
 Total 2126.76 99.99

PROJECT STATION: 241  
 DATE: 24/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 241 Long E 111  
 start stop duration  
 TIME : 18:40:55 19:10:39 30 (min) Purpose code: 3  
 LOG : 3031.07 3032.67 1.58 Area code : 2  
 FDEPTH: 500 502 GearCond.code:  
 BDEPTH: 500 502 Validity code:  
 Towing dir: 360° Wire out: 1450 m Speed: 30 kn\*10

Sorted: 370 Kg Total catch: 1016.22 CATCH/HOUR: 2032.41  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Merluccius paradoxus, female 604.48 672 29.74 901  
 Selachophidium guentheri 394.88 352 19.43  
 Lithodes ferox 337.92 928 16.63  
 Nezumia micronychodon 316.80 3648 15.59  
 Hoplostethus cadenati 145.92 7456 7.18  
 Ebinania costaecanarie 65.92 128 3.24  
 GONOSTOMATIDAE 44.80 2496 2.20  
 Lophius vomerinus 30.84 14 1.52 901  
 Notacanthus sexspinis 24.32 672 1.20  
 Lampanyctodes hectoris 14.72 3680 0.72  
 Galeus polli 12.16 128 0.60  
 Merluccius paradoxus, male 11.84 20 0.58 901  
 Bathynectes piperitus 8.96 416 0.44  
 Epigonus telescopus 8.32 128 0.41  
 Todarodes sagittatus 7.36 16 0.36  
 Maurolicus muelleri 1.28 224 0.06  
 Yarella blackfordi 0.64 64 0.03  
 Bathyroconger vicinus 0.64 32 0.03  
 Total 2031.80 99.96

PROJECT STATION: 266  
 DATE: 25/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 241 Long E 141  
 start stop duration  
 TIME : 04:40:18 05:10:13 30 (min) Purpose code: 3  
 LOG : 3106.94 3108.45 1.50 Area code : 2  
 FDEPTH: 166 164 GearCond.code:  
 BDEPTH: 166 164 Validity code:  
 Towing dir: 355° Wire out: 550 m Speed: 30 kn\*10

Sorted: 8 Kg Total catch: 111.14 CATCH/HOUR: 222.28  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Sufflogobius bibrabatus 157.08 39270 70.67  
 Raja confundens 59.64 42 26.83  
 Merluccius capensis, juveniles 5.56 330 2.50 9091  
 Aequorea aequorea 0.00 10160  
 Chrysaora sp. 0.00 350  
 Total 222.28 100.00

PROJECT STATION: 2666  
 DATE: 25/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2460 Long E 1356  
 start stop duration  
 TIME : 07:24:52 07:54:47 30 (min) Purpose code: 3  
 LOG : 3125.39 3126.96 1.54 Area code : 1  
 FDEPTH: 184 184 GearCond.code:  
 BDEPTH: 184 184 Validity code:  
 Towing dir: 90° Wire out: 600 m Speed: 30 kn\*10

Sorted: 52 Kg Total catch: 206.56 CATCH/HOUR: 413.12  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Merluccius capensis, female 212.00 1224 51.32 9098  
 Merluccius capensis, male 17.08 1256 41.17 9097  
 Chelidonichthys capensis 2.04 64 6.55  
 Sufflogobius bibrabatus 2.72 392 0.66  
 Trachurus capensis 0.80 8 0.19 9100  
 Merluccius capensis, juveniles 0.00 24 0.12 9095  
 Chelidonichthys capensis 0.00 364  
 Chrysaora sp. 0.00 2678  
 Total 413.12 100.01

PROJECT STATION: 2667  
 DATE: 25/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2500 Long E 1350  
 start stop duration  
 TIME : 09:30:40 10:00:42 30 (min) Purpose code: 3  
 LOG : 3137.32 3138.89 1.55 Area code : 1  
 FDEPTH: 226 208 GearCond.code:  
 BDEPTH: 226 208 Validity code:  
 Towing dir: 90° Wire out: 700 m Speed: 34 kn\*10

Sorted: 118 Kg Total catch: 669.58 CATCH/HOUR: 1339.16  
 SPECIES CATCH/HOUR % OF TOT. C SAMP  
 weight numbers  
 Merluccius capensis, female 682.50 2500 50.96 9101  
 Merluccius capensis, male 415.00 2088 30.99 9101  
 Merluccius capensis, female 98.76 76 7.37 9101  
 Trachurus capensis 91.50 374 6.83 9101  
 Brama brama 22.60 16 1.69  
 Sufflogobius bibrabatus 18.24 3344 1.36  
 Lampanyctodes hectoris 5.26 1972 0.39  
 Merluccius capensis, juveniles 3.76 314 0.28 9101  
 Pterothrissus belloci 1.20 12 0.09  
 Todaropsis eblanae 0.24 12 0.02  
 Squilla acuelata calmani 0.10 12 0.01  
 Chrysaora sp. 0.00 240  
 Total 1339.16 99.99

STATION: 2664  
Lat S 2458  
Long E 1336

PROJECT STATION: 2668  
DATE: 25/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2459 Long E 1345  
start stop duration  
TIME : 11:40:39 11:59:18 19 (min) Purpose code: 3  
LOG : 3149.62 3150.54 0.90 Area code : 2  
FDEPTH: 297 295 GearCond.code: 9  
BDEPTH: 297 295 Validity code: 1  
Towing dir: 180° Wire out: 900 m Speed: 34 kn\*10

Sorted: 151 Kg Total catch: 633.37 CATCH/HOUR: 2000.12

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 866.34     | 3107    | 43.31       | 9108 |
| Merluccius capensis, male      | 689.18     | 3092    | 34.46       | 9111 |
| Coelorinchus fasciatus         | 90.66      | 2760    | 4.53        |      |
| Sufflogobius bibarbatatus      | 69.13      | 13168   | 3.46        |      |
| Trachurus capensis             | 68.78      | 294     | 3.44        | 9107 |
| Squilla acuelata calmani       | 62.87      | 3145    | 3.14        |      |
| Todarodes sagittatus           | 62.84      | 208     | 3.14        |      |
| Austroglossus microlepis       | 41.68      | 205     | 2.08        | 9109 |
| Lophius vomerinus              | 33.35      | 35      | 1.67        | 9106 |
| Galeus polli                   | 5.56       | 278     | 0.28        |      |
| Pterothrissus belloci          | 4.52       | 35      | 0.23        |      |
| Merluccius capensis, juveniles | 3.47       | 174     | 0.17        | 9110 |
| Lampanyctodes hectoris         | 1.74       | 714     | 0.09        |      |
| Chrysaora sp.                  | 0.00       | 379     |             |      |
| Total                          | 2000.12    |         | 100.00      |      |

PROJECT STATION: 2669  
DATE: 25/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2439 Long E 1328  
start stop duration  
TIME : 15:47:17 16:16:05 29 (min) Purpose code: 3  
LOG : 3182.60 3184.04 1.41 Area code : 1  
FDEPTH: 535 530 GearCond.code: 1  
BDEPTH: 535 530 Validity code:  
Towing dir: 340° Wire out: 1500 m Speed: 30 kn\*10

Sorted: 240 Kg Total catch: 1046.15 CATCH/HOUR: 2164.45

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrus         | 602.90     | 2373    | 27.85       |      |
| Nezumia micronychodon        | 397.66     | 5388    | 18.37       |      |
| Merluccius paradoxus, female | 322.18     | 348     | 14.89       | 9112 |
| Deania profundorum           | 271.94     | 192     | 12.56       |      |
| Coelorinchus matamua         | 157.78     | 1154    | 7.29        |      |
| Epigonus telescopus          | 98.77      | 3399    | 4.56        |      |
| Lophius vomerinus            | 55.16      | 10      | 2.55        | 9114 |
| Selachophidium guentheri     | 52.59      | 962     | 2.43        |      |
| Lithodes ferox               | 41.50      | 91      | 1.92        |      |
| Hoplostethus cadenati        | 39.77      | 2822    | 1.84        |      |
| Helicolenus dactylopterus    | 33.35      | 64      | 1.54        |      |
| GONOSTOMATIDAE               | 25.66      | 1668    | 1.19        |      |
| Etmopterus lucifer           | 19.24      | 64      | 0.89        |      |
| Notacanthus sexspinis        | 12.83      | 192     | 0.59        |      |
| Merluccius paradoxus, male   | 11.75      | 17      | 0.54        | 9113 |
| Todarodes sagittatus         | 9.19       | 21      | 0.42        |      |
| S H R I M P S                | 5.13       | 1860    | 0.24        |      |
| Squilla acuelata calmani     | 3.85       | 257     | 0.18        |      |
| Yarrella blackfordi          | 1.28       | 128     | 0.06        |      |
| Galeus polli                 | 0.64       | 64      | 0.03        |      |
| ALEPOCEPHALIDAE              | 0.64       | 64      | 0.03        |      |
| Maurollicus muelleri         | 0.64       | 64      | 0.03        |      |
| Total                        | 2164.45    |         | 100.00      |      |

PROJECT STATION: 2670  
DATE: 25/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2437 Long E 1331  
start stop duration  
TIME : 17:40:15 18:10:21 30 (min) Purpose code: 3  
LOG : 3190.06 3191.69 1.63 Area code : 1  
FDEPTH: 423 413 GearCond.code: 1  
BDEPTH: 423 413 Validity code:  
Towing dir: 340° Wire out: 1200 m Speed: 30 kn\*10

Sorted: 125 Kg Total catch: 573.85 CATCH/HOUR: 1147.70

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 564.28     | 1700    | 49.17       | 9115 |
| Nezumia micronychodon        | 137.48     | 4166    | 11.98       |      |
| Coelorinchus fasciatus       | 107.90     | 1066    | 9.40        |      |
| Lithodes ferox               | 63.74      | 124     | 5.55        |      |
| Merluccius paradoxus, male   | 48.96      | 182     | 4.27        | 9116 |
| Selachophidium guentheri     | 47.80      | 768     | 4.16        |      |
| Helicolenus dactylopterus    | 40.90      | 260     | 3.56        |      |
| Schedophilus huttoni         | 25.34      | 10      | 2.21        |      |
| Todarodes sagittatus         | 22.08      | 48      | 1.92        |      |
| Trachurus capensis           | 21.12      | 76      | 1.84        | 9117 |
| Bathynectes piperitus        | 16.12      | 624     | 1.40        |      |
| Etmopterus lucifer           | 9.02       | 28      | 0.79        |      |
| Ebinania costaecanarie       | 8.06       | 48      | 0.70        |      |
| Lophius vomerinus            | 7.80       | 6       | 0.68        | 9119 |
| Epigonus telescopus          | 5.00       | 192     | 0.44        |      |
| Genypterus capensis          | 5.00       | 2       | 0.44        | 9118 |
| Centroprorus squamosus       | 4.42       | 10      | 0.39        |      |
| Galeus polli                 | 4.22       | 116     | 0.37        |      |
| Shrimps, small, non comm.    | 2.50       | 836     | 0.22        |      |
| Notacanthus sexspinis        | 2.30       | 76      | 0.20        |      |
| Lampanyctodes hectoris       | 1.54       | 508     | 0.13        |      |
| Trachyrincus scabrus         | 0.58       | 20      | 0.05        |      |
| Yarrella blackfordi          | 0.38       | 48      | 0.03        |      |
| GONOSTOMATIDAE               | 0.20       | 20      | 0.02        |      |
| Maurollicus muelleri         | 0.20       | 86      | 0.02        |      |
| Total                        | 1146.94    |         | 99.94       |      |

PROJECT STATION: 2671  
DATE: 26/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2440 Long E 1408  
start stop duration  
TIME : 04:42:28 04:52:25 10 (min) Purpose code: 3  
LOG : 3261.63 3262.12 0.48 Area code : 2  
FDEPTH: 156 157 GearCond.code: 2  
BDEPTH: 156 157 Validity code:  
Towing dir: 270° Wire out: 500 m Speed: 30 kn\*10

Sorted: 20 Kg Total catch: 5000.00 CATCH/HOUR: 30000.00

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, juveniles | 29340.30   | 2332794 | 97.80       | 9120 |
| Sufflogobius bibarbatatus      | 659.70     | 112500  | 2.20        |      |
| Aequorea aequorea              | 0.00       | 457536  |             |      |
| Chrysaora sp.                  | 0.00       | 22272   |             |      |
| Total                          | 30000.00   |         | 100.00      |      |

PROJECT STATION: 2672  
DATE: 26/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2440 Long E 1408  
start stop duration  
TIME : 07:27:58 07:57:26 29 (min) Purpose code: 3  
LOG : 3278.45 3279.89 1.44 Area code : 2  
FDEPTH: 257 268 GearCond.code: 2  
BDEPTH: 257 268 Validity code:  
Towing dir: 360° Wire out: 800 m Speed: 30 kn\*10

Sorted: 82 Kg Total catch: 1196.39 CATCH/HOUR: 247

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 1366.45    | 5758    | 55.20       |      |
| Merluccius capensis, male   | 1037.69    | 5758    | 41.92       |      |
| Sufflogobius bibarbatatus   | 26.79      | 5359    | 1.08        |      |
| MYCTOPHIDAE                 | 13.03      | 13034   | 0.53        |      |
| Todarodes sagittatus        | 9.43       | 37      | 0.38        |      |
| Lophius vomerinus           | 8.44       | 6       | 0.34        |      |
| Merluccius capensis, female | 6.50       | 2       | 0.26        |      |
| Trachurus capensis          | 5.50       | 12      | 0.22        |      |
| Squilla acuelata calmani    | 1.45       | 72      | 0.06        |      |
| Aequorea aequorea           | 0.00       | 99      |             |      |
| Chrysaora sp.               | 0.00       | 304     |             |      |
| Total                       | 2475.28    |         | 99.99       |      |

PROJECT STATION: 2673  
DATE: 26/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2440 Long E 1408  
start stop duration  
TIME : 09:37:17 10:07:35 30 (min) Purpose code: 3  
LOG : 3290.45 3291.97 1.51 Area code : 2  
FDEPTH: 374 378 GearCond.code: 2  
BDEPTH: 374 378 Validity code:  
Towing dir: 340° Wire out: 1140 m Speed: 34 kn\*10

Sorted: 223 Kg Total catch: 1187.75 CATCH/HOUR: 2375

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 971.60     | 2276    | 40.90       |      |
| Coelorinchus fasciatus       | 435.40     | 5984    | 18.33       |      |
| Nezumia micronychodon        | 253.40     | 7128    | 10.67       |      |
| Lophius vomerinus            | 223.20     | 398     | 8.43        |      |
| Schedophilus huttoni         | 200.20     | 70      | 9.40        |      |
| Merluccius capensis, female  | 67.60      | 42      | 2.85        |      |
| Helicolenus dactylopterus    | 53.20      | 980     | 2.24        |      |
| Ebinania costaecanarie       | 51.80      | 140     | 2.18        |      |
| Merluccius paradoxus, male   | 36.76      | 298     | 1.55        |      |
| Notacanthus sexspinis        | 28.00      | 700     | 1.18        |      |
| Bathynectes piperitus        | 12.60      | 420     | 0.53        |      |
| Galeus polli                 | 12.60      | 210     | 0.53        |      |
| Squilla acuelata calmani     | 8.40       | 420     | 0.35        |      |
| Hoplostethus cadenati        | 7.00       | 350     | 0.29        |      |
| Merluccius capensis, male    | 6.08       | 4       | 0.26        |      |
| Austroglossus microlepis     | 4.16       | 20      | 0.18        |      |
| Epigonus denticulatus        | 2.80       | 140     | 0.12        |      |
| Chlorophthalmus atlanticus   | 0.70       | 70      | 0.03        |      |
| Total                        | 2375.50    |         | 100.02      |      |

PROJECT STATION: 2674  
DATE: 26/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2440 Long E 1408  
start stop duration  
TIME : 14:55:06 15:26:48 32 (min) Purpose code: 3  
LOG : 3327.43 3328.94 1.48 Area code : 2  
FDEPTH: 370 369 GearCond.code: 2  
BDEPTH: 370 369 Validity code:  
Towing dir: 335° Wire out: 1050 m Speed: 34 kn\*10

Sorted: 171 Kg Total catch: 2428.72 CATCH/HOUR: 4553

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 2892.83    | 9994    | 63.52       | 9121 |
| Trachurus capensis           | 837.53     | 2876    | 18.39       | 9122 |
| Coelorinchus fasciatus       | 325.65     | 4485    | 7.15        | 9123 |
| Merluccius paradoxus, male   | 191.10     | 780     | 4.20        | 9124 |
| Genypterus capensis          | 70.20      | 21      | 1.54        | 9125 |
| Merluccius capensis, female  | 63.00      | 30      | 1.38        | 9126 |
| Helicolenus dactylopterus    | 57.53      | 390     | 1.26        |      |
| Nezumia micronychodon        | 47.78      | 1609    | 1.05        |      |
| Lithodes ferox               | 15.64      | 17      | 0.34        |      |
| Epigonus telescopus          | 15.60      | 926     | 0.34        |      |
| Galeus polli                 | 12.68      | 195     | 0.26        |      |
| Bathynectes piperitus        | 9.75       | 390     | 0.21        |      |
| OPHIDIIDAE                   | 5.85       | 49      | 0.13        |      |
| Chlorophthalmus atlanticus   | 3.90       | 585     | 0.09        |      |
| Lophius vomerinus            | 1.24       | 2       | 0.03        | 9127 |
| S H R I M P S                | 0.98       | 98      | 0.02        |      |
| MYCTOPHIDAE                  | 0.98       | 244     | 0.02        |      |
| Squilla acuelata calmani     | 0.98       | 49      | 0.02        |      |
| Chaceon maritae              | 0.68       | 2       | 0.01        |      |
| Total                        | 4553.90    |         | 99.98       |      |

PROJECT STATION: 2675  
 DATE: 26/ 1/99 GEAR TYPE: BT No: POSITION: Lat S 2418 Long E 1340  
 start stop duration  
 TIME : 20:00:46 25:00:46 30 (min) Purpose code: 3  
 LOG : 3345.80 3347.34 1.36 Area code : 2  
 FDEPTH: 320 315 GearCond.code:  
 BDEPTH: 320 315 Validity code:  
 Towing dir: 350° Wire out: 990 m Speed: 30 kn\*10  
 Sorted: 164 Kg Total catch: 677.54 CATCH/HOUR: 1355.08

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius paradoxus, female   | 371.28     | 2744    | 27.40       | 9146 |
| Merluccius capensis, female    | 329.84     | 560     | 24.34       | 9145 |
| Coelorinchus fasciatus         | 182.28     | 4802    | 13.45       |      |
| Merluccius capensis, male      | 130.76     | 266     | 9.65        | 9144 |
| Trachurus capensis             | 95.48      | 294     | 7.05        | 9138 |
| Todarodes sagittatus           | 57.32      | 76      | 4.23        |      |
| Lophius vomerinus              | 48.92      | 168     | 3.61        | 9139 |
| Merluccius capensis, female    | 45.12      | 18      | 3.33        | 9143 |
| Epigonus telescopus            | 43.12      | 1876    | 3.18        |      |
| Galeus polli                   | 12.04      | 462     | 0.89        |      |
| Lepidopus caudatus             | 8.96       | 14      | 0.66        |      |
| Merluccius paradoxus, male     | 7.28       | 70      | 0.54        | 9147 |
| Helicolenus dactylopterus      | 5.32       | 56      | 0.39        |      |
| Chlorophthalmus atlanticus     | 5.32       | 434     | 0.39        |      |
| Merluccius capensis, male      | 3.32       | 2       | 0.25        | 9142 |
| Squilla acuelata calmani       | 2.52       | 126     | 0.19        |      |
| Coelorinchus matama            | 1.96       | 28      | 0.14        |      |
| MYCTOPHIDAE                    | 1.40       | 798     | 0.10        |      |
| Sufflogobius bibarbatu         | 1.12       | 196     | 0.08        |      |
| Chaceon maritae                | 0.88       | 2       | 0.06        |      |
| Notacanthus sexspinis          | 0.28       | 28      | 0.02        |      |
| Nezumia micronychodon          | 0.28       | 28      | 0.02        |      |
| Lophius vomerinus, juveniles   | 0.14       | 28      | 0.01        | 9140 |
| Merluccius capensis, juveniles | 0.14       | 14      | 0.01        | 9141 |
| Chrysaora sp.                  | 0.00       | 8       |             |      |
| Total                          | 1355.08    |         | 99.99       |      |

PROJECT STATION: 2676  
 DATE: 27/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2420 Long E 1401  
 start stop duration  
 TIME : 71:40:36 75:00:10 20 (min) Purpose code: 3  
 LOG : 3409.49 3410.45 0.95 Area code : 2  
 FDEPTH: 193 198 GearCond.code:  
 BDEPTH: 193 198 Validity code:  
 Towing dir: 360° Wire out: 600 m Speed: 30 kn\*10  
 Sorted: 29 Kg Total catch: 174.24 CATCH/HOUR: 522.72

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 209.88     | 1674    | 40.15       | 9138 |
| Merluccius capensis, male      | 159.12     | 1368    | 30.44       | 9139 |
| Merluccius capensis, juveniles | 117.00     | 8244    | 22.38       | 9140 |
| Sufflogobius bibarbatu         | 31.68      | 9504    | 6.06        |      |
| Todaropsis eblanae             | 4.32       | 126     | 0.83        |      |
| Galeus polli                   | 0.72       | 18      | 0.14        |      |
| Aequorea aequorea              | 0.00       | 8814    |             |      |
| Chrysaora sp.                  | 0.00       | 8736    |             |      |
| Total                          | 522.72     |         | 100.00      |      |

PROJECT STATION: 2677  
 DATE: 27/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2419 Long E 1353  
 start stop duration  
 TIME : 06:40:40 06:41:36 14 (min) Purpose code: 2  
 LOG : 3419.89 3420.57 0.68 Area code : 2  
 FDEPTH: 276 276 GearCond.code:  
 BDEPTH: 276 276 Validity code:  
 Towing dir: 350° Wire out: 840 m Speed: 30 kn\*10  
 Sorted: 1 Kg Total catch: 1.31 CATCH/HOUR: 5.61

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 1.71       | 9       | 30.48       | 9141 |
| Coelorinchus fasciatus         | 1.29       | 21      | 22.99       |      |
| Trachurus capensis             | 1.20       | 4       | 21.39       | 9144 |
| Merluccius capensis, male      | 1.07       | 9       | 19.07       | 9142 |
| Sufflogobius bibarbatu         | 0.26       | 56      | 4.63        |      |
| Merluccius capensis, juveniles | 0.09       | 9       | 1.60        | 9143 |
| Chrysaora sp.                  | 0.00       | 9       |             |      |
| Aequorea aequorea              | 0.00       | 9       |             |      |
| Total                          | 5.62       |         | 100.16      |      |

PROJECT STATION: 2678  
 DATE: 27/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2410 Long E 1404  
 start stop duration  
 TIME : 09:11:41 09:41:14 30 (min) Purpose code: 1  
 LOG : 3436.79 3438.41 1.59 Area code : 2  
 FDEPTH: 180 191 GearCond.code:  
 BDEPTH: 180 191 Validity code:  
 Towing dir: 233° Wire out: 600 m Speed: 30 kn\*10  
 Sorted: 16 Kg Total catch: 2367.00 CATCH/HOUR: 4734.00

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, juveniles | 3846.00    | 396618  | 81.24       | 9145 |
| Sufflogobius bibarbatu         | 888.00     | 223432  | 18.76       |      |
| Total                          | 4734.00    |         | 100.00      |      |

PROJECT STATION: 2679  
 DATE: 27/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2411 Long E 1341  
 start stop duration  
 TIME : 14:24:03 14:54:04 30 (min) Purpose code: 3  
 LOG : 3481.43 3482.92 1.46 Area code : 2  
 FDEPTH: 236 240 GearCond.code:  
 BDEPTH: 236 240 Validity code:  
 Towing dir: 270° Wire out: 750 m Speed: 35 kn\*10  
 Sorted: 56 Kg Total catch: 656.36 CATCH/HOUR: 1312.1

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, male      | 652.88     | 5160    | 50.50       | 9146 |
| Merluccius capensis, female    | 593.28     | 5184    | 45.19       | 9147 |
| Sufflogobius bibarbatu         | 49.92      | 6490    | 3.80        |      |
| Merluccius capensis, juveniles | 4.32       | 264     | 0.33        | 9148 |
| Brama brama                    | 2.08       | 2       | 0.16        |      |
| Trachurus capensis             | 0.02       | 2       |             |      |
| Chrysaora sp.                  | 0.00       | 140     |             |      |
| Total                          | 1312.50    |         | 99.98       |      |

PROJECT STATION: 2680  
 DATE: 27/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2413 Long E 1343  
 start stop duration  
 TIME : 16:49:28 17:19:21 30 (min) Purpose code: 3  
 LOG : 3497.31 3498.84 1.54 Area code : 2  
 FDEPTH: 270 267 GearCond.code:  
 BDEPTH: 270 267 Validity code:  
 Towing dir: 340° Wire out: 850 m Speed: 30 kn\*10  
 Sorted: 71 Kg Total catch: 1874.62 CATCH/HOUR: 3749.24

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 1881.60    | 13300   | 50.19       | 9149 |
| Merluccius capensis, male      | 1619.80    | 12600   | 43.20       | 9150 |
| Sufflogobius bibarbatu         | 123.20     | 20510   | 3.29        |      |
| Squilla acuelata calmani       | 71.40      | 3990    | 1.90        |      |
| Merluccius capensis, female    | 21.08      | 24      | 0.56        | 9151 |
| Merluccius capensis, juveniles | 16.80      | 1260    | 0.45        | 9152 |
| Merluccius capensis, male      | 12.44      | 16      | 0.33        | 9153 |
| Lophius vomerinus              | 2.32       | 8       | 0.06        | 9154 |
| Austroglossus microlepis       | 0.60       | 2       | 0.02        | 9155 |
| Chrysaora sp.                  | 0.00       | 46      |             |      |
| Total                          | 3749.24    |         | 100.00      |      |

PROJECT STATION: 2681  
 DATE: 27/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2415 Long E 1345  
 start stop duration  
 TIME : 20:47:34 21:17:16 30 (min) Purpose code: 3  
 LOG : 3526.42 3527.95 1.50 Area code : 2  
 FDEPTH: 634 636 GearCond.code:  
 BDEPTH: 634 636 Validity code:  
 Towing dir: 340° Wire out: 1650 m Speed: 30 kn\*10  
 Sorted: 77 Kg Total catch: 389.00 CATCH/HOUR: 778.00

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Deania profundorum           | 196.80     | 90      | 25.30       |      |
| Selachophidium guentheri     | 142.20     | 1830    | 18.28       |      |
| Nezumia micronychodon        | 136.80     | 4050    | 17.58       |      |
| Merluccius paradoxus, female | 67.64      | 60      | 8.69        | 9156 |
| Yarrella blackfordi          | 54.60      | 1740    | 7.02        |      |
| Hoplostethus cadenati        | 47.40      | 1800    | 6.09        |      |
| Todarodes sagittatus         | 27.60      | 60      | 3.55        |      |
| Bathyraxia smithii           | 20.44      | 4       | 2.63        |      |
| Lamprogrammus exutus         | 12.60      | 120     | 1.62        |      |
| Lithodes ferox               | 12.28      | 14      | 1.58        |      |
| Ebinania costaecanarie       | 12.00      | 60      | 1.54        |      |
| Alepocephalus rostratus      | 8.40       | 210     | 1.08        |      |
| Neocyttus rhomboidalis       | 7.00       | 60      | 0.90        |      |
| OPISTHOTETHIDAE              | 6.60       | 30      | 0.85        |      |
| Raja leopardus               | 6.32       | 6       | 0.81        |      |
| Hoplostethus atlanticus      | 6.00       | 30      | 0.77        |      |
| Shrimps, small, non comm.    | 2.40       | 600     | 0.31        |      |
| Symbolophorus boops          | 2.40       | 240     | 0.31        |      |
| Lophius vomerinus            | 2.12       | 2       | 0.27        | 9157 |
| Heterocarpus grimaldii       | 1.20       | 60      | 0.15        |      |
| POLYCHAELIDAE                | 1.20       | 150     | 0.15        |      |
| Alloctytus verrucosus        | 1.20       | 30      | 0.15        |      |
| Photichthys argenteus        | 1.20       | 120     | 0.15        |      |
| Bathyroconger vicinus        | 1.00       | 30      | 0.13        |      |
| Coelorinchus braueri         | 0.60       | 60      | 0.08        |      |
| Total                        | 778.00     |         | 99.99       |      |



PROJECT STATION: 2682  
 DATE: 27/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2359 Long E 1311  
 start stop duration  
 TIME : 22:40:18 23:10:01 30 (min) Purpose code: 3  
 LOG : 3532.35 3533.84 1.46 Area code : 2  
 FDEPTH: 546 539 GearCond.code:  
 BDEPTH: 546 539 Validity code:  
 Towing dir: 170° Wire out: 1500 m Speed: 33 kn\*10

Sorted: 84 Kg Total catch: 260.57 CATCH/HOUR: 521.14

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 86.16      | 82      | 16.53       | 9158 |
| Hoplostethus cadenati        | 72.32      | 2448    | 13.88       |      |
| Raja leopardus               | 67.52      | 32      | 12.96       |      |
| Trachyrincus scabrus         | 54.08      | 400     | 10.38       |      |
| Nezumia micronychodon        | 49.28      | 3648    | 9.46        |      |
| Selachophidium guentheri     | 47.36      | 848     | 9.09        |      |
| Deania profundorum           | 30.72      | 16      | 5.89        |      |
| Centroscyllium crepidater    | 17.60      | 16      | 3.38        |      |
| Lithodes ferox               | 17.08      | 34      | 3.28        |      |
| Lophius vomerinus            | 12.32      | 10      | 2.36        | 9159 |
| OPISTHOEUTHIDAE              | 12.16      | 32      | 2.33        |      |
| Yarella blackfordi           | 11.52      | 448     | 2.21        |      |
| Lamprogrammus exutus         | 8.96       | 96      | 1.72        |      |
| Raja confundens              | 5.76       | 48      | 1.11        |      |
| Lithodes ferox               | 4.80       | 144     | 0.92        |      |
| Bathyrcongiger vicinus       | 4.48       | 96      | 0.86        |      |
| Notacanthus sexspinis        | 4.16       | 32      | 0.80        |      |
| Symbolophorus boops          | 3.20       | 512     | 0.61        |      |
| Octopus sp.                  | 2.56       | 32      | 0.49        |      |
| Ebinania costaecanarie       | 2.24       | 64      | 0.43        |      |
| Chaceon maritae, male        | 2.16       | 2       | 0.41        |      |
| Trachurus capensis           | 1.82       | 4       | 0.35        |      |
| Raja straeleni               | 0.96       | 16      | 0.18        |      |
| Epigonus telescopus          | 0.64       | 48      | 0.12        |      |
| Shrimps, small, non comm.    | 0.32       | 48      | 0.06        |      |
| Photichthys argenteus        | 0.32       | 48      | 0.06        |      |
| Alepocephalus rostratus      | 0.32       | 48      | 0.06        |      |
| AXIIDAE                      | 0.16       | 32      | 0.03        |      |
| POLYCHAELIDAE                | 0.16       | 16      | 0.03        |      |
| Total                        | 521.14     |         | 99.99       |      |

PROJECT STATION: 2685  
 DATE: 28/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2359 Long E 1318  
 start stop duration  
 TIME : 10:00:42 11:40:12 29 (min) Purpose code: 3  
 LOG : 3563.99 3565.55 1.53 Area code : 2  
 FDEPTH: 326 324 GearCond.code:  
 BDEPTH: 326 324 Validity code:  
 Towing dir: 350° Wire out: 990 m Speed: 30 kn\*10

Sorted: 193 Kg Total catch: 581.20 CATCH/HOUR: 1202.48

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Coelorinchus fasciatus      | 670.68     | 9931    | 55.77       |      |
| Lophius vomerinus           | 232.18     | 490     | 19.31       | 9169 |
| Pterothrissus bellocci      | 148.97     | 1490    | 12.39       |      |
| Merluccius capensis, male   | 43.45      | 236     | 3.61        | 9167 |
| Merluccius capensis, female | 43.45      | 184     | 3.61        | 9168 |
| Helicolenus dactylopterus   | 23.83      | 1622    | 1.98        |      |
| Austroglossus microlepis    | 22.88      | 52      | 1.90        | 9170 |
| Galeus polli                | 5.96       | 199     | 0.50        |      |
| Todarodes sagittatus        | 3.19       | 8       | 0.27        |      |
| Sufflogobius bibarbatatus   | 1.32       | 132     | 0.11        |      |
| CHLOROPHTHALMIDAE           | 1.32       | 166     | 0.11        |      |
| Solenocera africana         | 1.32       | 265     | 0.11        |      |
| PORTUNIDAE                  | 1.32       | 33      | 0.11        |      |
| Lampanyctodes hectoris      | 0.66       | 99      | 0.05        |      |
| Bathynectes piperitus       | 0.66       | 33      | 0.05        |      |
| Squilla acuelata calmani    | 0.66       | 66      | 0.05        |      |
| Genypterus capensis         | 0.62       | 8       | 0.05        | 9171 |
| Chrysaora sp.               | 0.00       | 62      |             |      |
| Total                       | 1202.47    |         | 99.98       |      |

PROJECT STATION: 2686  
 DATE: 28/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2341 Long E 1304  
 start stop duration  
 TIME : 10:02:33 10:32:14 30 (min) Purpose code: 3  
 LOG : 3587.20 3588.67 1.44 Area code : 2  
 FDEPTH: 634 634 GearCond.code:  
 BDEPTH: 634 634 Validity code:  
 Towing dir: 350° Wire out: 1600 m Speed: 34 kn\*10

Sorted: 110 Kg Total catch: 259.01 CATCH/HOUR: 518.02

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Nezumia micronychodon        | 122.88     | 5792    | 23.72       |      |
| Selachophidium guentheri     | 119.68     | 1600    | 23.10       |      |
| Deania quadrispinosum        | 109.80     | 60      | 21.20       |      |
| Merluccius paradoxus, female | 54.28      | 42      | 10.48       | 9172 |
| Schedophilus huttoni         | 32.00      | 32      | 6.18        |      |
| Neocyttus rhomboidalis       | 18.52      | 64      | 3.58        |      |
| Lophius vomerinus            | 16.00      | 10      | 3.09        | 9173 |
| Hoplostethus cadenati        | 14.72      | 832     | 2.84        |      |
| Centrophorus squamosus       | 11.04      | 2       | 2.13        |      |
| Deania profundorum           | 5.20       | 8       | 1.00        |      |
| Yarella blackfordi           | 5.12       | 160     | 0.99        |      |
| Raja leopardus               | 3.12       | 2       | 0.60        |      |
| Bathyrcongiger vicinus       | 2.56       | 32      | 0.49        |      |
| Shrimps, small, non comm.    | 0.64       | 64      | 0.12        |      |
| MYCTOPHIDAE                  | 0.64       | 128     | 0.12        |      |
| Nephropsis atlantica         | 0.64       | 32      | 0.12        |      |
| Neoscolepis macrolepidotus   | 0.32       | 32      | 0.06        |      |
| Coelorinchus fasciatus       | 0.32       | 32      | 0.06        |      |
| Coelorinchus braueri         | 0.32       | 32      | 0.06        |      |
| Raja sp.                     | 0.22       | 4       | 0.04        |      |
| Total                        | 518.02     |         | 99.98       |      |

PROJECT STATION: 2683  
 DATE: 28/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2359 Long E 1313  
 start stop duration  
 TIME : 00:18:25 00:48:04 30 (min) Purpose code: 3  
 LOG : 3537.46 3538.95 1.46 Area code : 2  
 FDEPTH: 444 445 GearCond.code:  
 BDEPTH: 444 445 Validity code:  
 Towing dir: 340° Wire out: 1300 m Speed: 33 kn\*10

Sorted: 97 Kg Total catch: 342.12 CATCH/HOUR: 684.24

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Helicolenus dactylopterus    | 124.80     | 608     | 18.24       |      |
| Merluccius paradoxus, female | 90.20      | 132     | 13.18       | 9160 |
| Yarella blackfordi           | 74.24      | 6976    | 10.85       |      |
| Nezumia micronychodon        | 66.56      | 6976    | 9.73        |      |
| Deania profundorum           | 43.52      | 32      | 6.36        |      |
| Solenocera africana          | 37.12      | 7292    | 5.42        |      |
| Raja leopardus               | 37.12      | 32      | 5.42        |      |
| Selachophidium guentheri     | 37.12      | 608     | 5.42        |      |
| Notacanthus sexspinis        | 30.72      | 512     | 4.49        |      |
| Lithodes ferox               | 29.00      | 40      | 4.24        |      |
| Lophius vomerinus            | 24.84      | 20      | 3.63        | 9162 |
| Coelorinchus fasciatus       | 23.68      | 352     | 3.46        |      |
| Hoplostethus cadenati        | 17.92      | 672     | 2.62        |      |
| Epigonus telescopus          | 10.24      | 480     | 1.50        |      |
| Centrophorus granulosus      | 8.16       | 2       | 1.19        |      |
| Shrimps, small, non comm.    | 7.04       | 2144    | 1.03        |      |
| Centrosyllium fabricii       | 7.04       | 32      | 1.03        |      |
| Symbolophorus boops          | 5.76       | 864     | 0.84        |      |
| Raja doutrei                 | 4.88       | 2       | 0.71        |      |
| Merluccius paradoxus, male   | 3.12       | 4       | 0.46        | 9161 |
| Trachyrincus scabrus         | 0.64       | 32      | 0.09        |      |
| Trachurus capensis           | 0.52       | 4       | 0.08        |      |
| Total                        | 684.24     |         | 99.99       |      |

PROJECT STATION: 2687  
 DATE: 28/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2341 Long E 1306  
 start stop duration  
 TIME : 11:55:21 12:25:11 30 (min) Purpose code: 3  
 LOG : 3593.82 3595.34 1.52 Area code : 2  
 FDEPTH: 536 536 GearCond.code:  
 BDEPTH: 536 536 Validity code:  
 Towing dir: 160° Wire out: 1500 m Speed: 34 kn\*10

Sorted: 179 Kg Total catch: 562.24 CATCH/HOUR: 1124.48

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrus         | 464.80     | 2760    | 41.33       |      |
| Merluccius paradoxus, female | 120.68     | 120     | 10.73       | 9174 |
| Selachophidium guentheri     | 93.60      | 1400    | 8.32        |      |
| Nezumia micronychodon        | 88.00      | 2920    | 7.83        |      |
| Raja confundens              | 85.60      | 160     | 7.61        |      |
| Deania quadrispinosum        | 75.72      | 34      | 6.73        |      |
| Notacanthus sexspinis        | 59.20      | 840     | 5.26        |      |
| Centrophorus squamosus       | 36.72      | 4       | 3.27        |      |
| Lophius vomerinus            | 30.16      | 22      | 2.68        | 9175 |
| Lithodes ferox               | 18.20      | 38      | 1.62        |      |
| Deania profundorum           | 17.12      | 28      | 1.52        |      |
| Bathyrincus smithii          | 10.60      | 2       | 0.94        |      |
| Raja leopardus               | 10.40      | 80      | 0.92        |      |
| Merluccius paradoxus, male   | 7.08       | 8       | 0.63        | 9176 |
| Solenocera africana          | 3.20       | 560     | 0.28        |      |
| Photichthys argenteus        | 1.60       | 120     | 0.14        |      |
| Etmopterus pusillus          | 0.60       | 2       | 0.05        |      |
| Triplophus hemingi           | 0.40       | 40      | 0.04        |      |
| PARAPAGURIDAE *              | 0.40       | 40      | 0.04        |      |
| Shrimps, small, non comm.    | 0.40       | 120     | 0.04        |      |
| Total                        | 1124.48    |         | 99.98       |      |

PROJECT STATION: 2684  
 DATE: 28/1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2359 Long E 1325  
 start stop duration  
 TIME : 03:21:35 05:01:37 30 (min) Purpose code: 3  
 LOG : 3554.52 3556.12 1.57 Area code : 2  
 FDEPTH: 290 291 GearCond.code:  
 BDEPTH: 290 291 Validity code:  
 Towing dir: 340° Wire out: 870 m Speed: 30 kn\*10

Sorted: 20 Kg Total catch: 101.69 CATCH/HOUR: 203.38

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Sufflogobius bibarbatatus      | 144.44     | 15042   | 71.02       |      |
| Merluccius capensis, female    | 18.16      | 70      | 8.93        | 9163 |
| Squilla acuelata calmani       | 17.48      | 736     | 8.59        |      |
| Merluccius capensis, male      | 14.96      | 82      | 7.36        | 9164 |
| Notacanthus sexspinis          | 4.60       | 92      | 2.26        |      |
| Merluccius capensis, juveniles | 1.84       | 138     | 0.90        | 9166 |
| S H R I M P S                  | 0.92       | 552     | 0.45        |      |
| GONOSTOMATIDAE                 | 0.46       | 92      | 0.23        |      |
| Hoplostethus cadenati          | 0.46       | 46      | 0.23        |      |
| Genypterus capensis            | 0.06       | 2       | 0.03        | 9165 |
| Total                          | 203.38     |         | 100.00      |      |

PROJECT STATION: 2688  
 DATE: 28/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2341 Long E 1309  
 start stop duration  
 TIME :13:42:09 14:12:08 30 (min) Purpose code: 3  
 LOG :3600.16 3601.71 1.53 Area code : 2  
 FDEPTH: 436 439 GearCond.code:  
 BDEPTH: 436 439 Validity code:  
 Towing dir: 350° Wire out: 1220 m Speed: 34 kn\*10  
 Sorted: 180 Kg Total catch: 275.45 CATCH/HOUR: 550.90

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 212.72     | 328     | 38.61       | 9177 |
| Helicolenus dactylopterus    | 55.72      | 378     | 10.11       |      |
| Trachyrincus scabrus         | 52.04      | 1498    | 9.45        |      |
| Lophius vomerinus            | 44.96      | 44      | 8.16        | 9180 |
| Selachophidium guentheri     | 34.44      | 672     | 6.25        |      |
| Schedophilus huttoni         | 33.04      | 14      | 6.00        |      |
| Nezumia micronychodon        | 24.92      | 1288    | 4.52        |      |
| Deania profundorum           | 16.80      | 26      | 3.05        |      |
| Lithodes ferax               | 15.24      | 40      | 2.77        |      |
| Coelorrinchus fasciatus      | 14.56      | 392     | 2.64        |      |
| Merluccius paradoxus, male   | 14.24      | 24      | 2.58        | 9178 |
| Lophius vaillanti            | 8.32       | 2       | 1.51        | 9179 |
| Notacanthus sexspinis        | 7.28       | 265     | 1.32        |      |
| Galeus polli                 | 7.00       | 70      | 1.27        |      |
| Raja confundens              | 2.52       | 28      | 0.46        |      |
| Myxine capensis              | 1.68       | 14      | 0.30        |      |
| Shrimps, small, non comm.    | 1.40       | 280     | 0.25        |      |
| Yarella blackfordi           | 1.40       | 140     | 0.25        |      |
| Octopus sp.                  | 1.12       | 14      | 0.20        |      |
| Ebinania costaecanarie       | 0.56       | 14      | 0.10        |      |
| Aristeus varidens            | 0.52       | 42      | 0.09        |      |
| Lampadena pontifex           | 0.28       | 56      | 0.05        |      |
| Photichthys argenteus        | 0.14       | 28      | 0.03        |      |
| Total                        | 550.90     |         | 99.97       |      |

PROJECT STATION: 2689  
 DATE: 28/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2341 Long E 1315  
 start stop duration  
 TIME :15:40:16 16:10:04 30 (min) Purpose code: 3  
 LOG :3609.94 3611.43 1.47 Area code : 2  
 FDEPTH: 330 328 GearCond.code:  
 BDEPTH: 330 328 Validity code:  
 Towing dir: 170° Wire out: 1000 m Speed: 30 kn\*10  
 Sorted: 225 Kg Total catch: 835.67 CATCH/HOUR: 1671.34

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius capensis, female  | 519.34     | 1150    | 31.07       | 9184 |
| Merluccius capensis, male    | 271.34     | 884     | 16.23       | 9183 |
| Merluccius capensis, female  | 197.44     | 90      | 11.81       | 9182 |
| Merluccius paradoxus, female | 183.34     | 1216    | 10.97       | 9186 |
| Coelorrinchus fasciatus      | 147.34     | 6700    | 8.82        |      |
| Trachurus capensis           | 95.98      | 500     | 5.74        | 9190 |
| Lophius vomerinus            | 60.40      | 196     | 3.61        | 9187 |
| Chlorophthalmus atlanticus   | 42.34      | 284     | 2.53        |      |
| Sufflogobius bibaratus       | 35.98      | 4150    | 2.15        |      |
| MYCTOPHIDAE                  | 26.34      | 4384    | 1.58        |      |
| Merluccius paradoxus, male   | 22.66      | 166     | 1.36        | 9185 |
| Merluccius capensis, male    | 16.08      | 8       | 0.96        | 9181 |
| Trachyrincus scabrus         | 10.66      | 116     | 0.64        |      |
| Galeus polli                 | 10.34      | 134     | 0.62        |      |
| Todarodes sagittatus         | 8.96       | 22      | 0.54        |      |
| Nezumia micronychodon        | 5.98       | 516     | 0.36        |      |
| Symbolophorus boops          | 5.34       | 550     | 0.32        |      |
| MACROURIDAE                  | 2.34       | 50      | 0.14        |      |
| Notacanthus sexspinis        | 1.98       | 16      | 0.12        |      |
| Selachophidium guentheri     | 1.66       | 16      | 0.10        |      |
| CONGRIDAE                    | 1.34       | 16      | 0.08        |      |
| Epigonus telescopus          | 0.98       | 50      | 0.06        |      |
| Genypterus capensis          | 0.88       | 2       | 0.05        | 9189 |
| Todaropsis eblanae           | 0.66       | 16      | 0.04        |      |
| Aristeus varidens            | 0.66       | 134     | 0.04        |      |
| Ebinania costaecanarie       | 0.66       | 16      | 0.04        |      |
| Austroglossus microlepis     | 0.32       | 2       | 0.02        | 9188 |
| Total                        | 1671.34    |         | 100.00      |      |

PROJECT STATION: 2690  
 DATE: 28/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2339 Long E 1325  
 start stop duration  
 TIME :17:35:01 18:05:32 31 (min) Purpose code: 3  
 LOG :3622.21 3623.79 1.57 Area code : 2  
 FDEPTH: 265 262 GearCond.code:  
 BDEPTH: 265 262 Validity code:  
 Towing dir: 360° Wire out: 800 m Speed: 30 kn\*10  
 Sorted: 59 Kg Total catch: 295.00 CATCH/HOUR: 570.97

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 184.45     | 832     | 32.30       | 9195 |
| Merluccius capensis, male      | 153.10     | 706     | 26.81       | 9194 |
| Sufflogobius bibaratus         | 138.97     | 29777   | 24.34       |      |
| Squilla aculeata calmani       | 89.23      | 5294    | 15.63       |      |
| Bassanago albescens            | 2.52       | 39      | 0.44        |      |
| Trachurus capensis             | 1.94       | 10      | 0.34        | 9191 |
| Merluccius capensis, juveniles | 0.58       | 48      | 0.10        | 9192 |
| Lophius vomerinus              | 0.19       | 10      | 0.03        | 9193 |
| Total                          | 570.98     |         | 99.99       |      |

PROJECT STATION: 2691  
 DATE: 29/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2338 Long E 1335  
 start stop duration  
 TIME :05:33:04 05:52:34 20 (min) Purpose code: 3  
 LOG :3647.90 3648.84 0.92 Area code : 2  
 FDEPTH: 225 224 GearCond.code: 9  
 BDEPTH: 225 224 Validity code: 1  
 Towing dir: 360° Wire out: 700 m Speed: 30 kn\*10  
 Sorted: 40 Kg Total catch: 39.52 CATCH/HOUR: 118.56

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, male      | 81.42      | 489     | 68.67       | 9196 |
| Merluccius capensis, female    | 30.72      | 198     | 25.91       | 9197 |
| Merluccius capensis, juveniles | 2.58       | 168     | 2.18        | 9198 |
| Sufflogobius bibaratus         | 2.58       | 252     | 2.18        |      |
| Chelidonichthys capensis       | 1.08       | 3       | 0.91        |      |
| Todarodes sagittatus           | 0.18       | 3       | 0.15        |      |
| Chrysaora sp.                  | 0.00       | 18000   |             |      |
| Total                          | 118.56     |         | 100.00      |      |

PROJECT STATION: 2692  
 DATE: 29/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2338 Long E 1347  
 start stop duration  
 TIME :08:13:51 08:33:12 19 (min) Purpose code: 2  
 LOG :3662.88 3663.71 0.79 Area code : 2  
 FDEPTH: 189 188 GearCond.code:  
 BDEPTH: 189 188 Validity code:  
 Towing dir: 360° Wire out: 600 m Speed: 30 kn\*10  
 Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 2693  
 DATE: 29/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2340 Long E 1360  
 start stop duration  
 TIME :10:47:27 11:02:28 15 (min) Purpose code: 2  
 LOG :3679.18 3679.94 0.75 Area code : 2  
 FDEPTH: 171 173 GearCond.code:  
 BDEPTH: 171 173 Validity code:  
 Towing dir: 265° Wire out: 550 m Speed: 33 kn\*10  
 Sorted: 2 Kg Total catch: 1.60 CATCH/HOUR: 6.40

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, juveniles | 3.76       | 228     | 58.75       | 9199 |
| Sufflogobius bibaratus         | 2.64       | 660     | 41.25       |      |
| Chrysaora sp.                  | 0.00       | 16      |             |      |
| Aequorea aequorea              | 0.00       | 332     |             |      |
| Total                          | 6.40       |         | 100.00      |      |

PROJECT STATION: 2694  
 DATE: 29/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2340 Long E 1415  
 start stop duration  
 TIME :13:36:45 13:37:26 1 (min) Purpose code: 2  
 LOG :3697.17 3697.20 0.02 Area code : 2  
 FDEPTH: 118 118 GearCond.code:  
 BDEPTH: 118 118 Validity code:  
 Towing dir: 350° Wire out: 420 m Speed: 30 kn\*10  
 Sorted: 1 Kg Total catch: 0.02 CATCH/HOUR: 1.20

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, juveniles | 0.60       | 60      | 50.00       |      |
| Sufflogobius bibaratus         | 0.60       | 60      | 50.00       |      |
| Total                          | 1.20       |         | 100.00      |      |

PROJECT STATION: 2695  
 DATE: 29/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2321 Long E 1405  
 start stop duration  
 TIME :16:09:27 16:15:23 6 (min) Purpose code: 2  
 LOG :3719.08 3719.36 0.28 Area code : 2  
 FDEPTH: 129 128 GearCond.code:  
 BDEPTH: 129 128 Validity code:  
 Towing dir: 160° Wire out: 430 m Speed: 30 kn\*10  
 Sorted: Kg Total catch: 0.12 CATCH/HOUR: 1.20

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, juveniles | 1.20       | 90      | 100.00      | 9200 |
| Aequorea aequorea              | 0.00       | 10000   |             |      |
| Chrysaora sp.                  | 0.00       | 600     |             |      |
| Total                          | 1.20       |         | 100.00      |      |

PROJECT STATION: 2696  
 DATE: 29/ 1/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2321 Long E 1333  
 start stop duration  
 TIME :20:23:38 20:38:47 15 (min) Purpose code: 2  
 LOG :3753.24 3754.03 0.78 Area code : 2  
 FDEPTH: 179 178 GearCond.code:  
 BDEPTH: 179 178 Validity code:  
 Towing dir: 360° Wire out: 550 m Speed: 30 kn\*10  
 Sorted: 54 Kg Total catch: 54.26 CATCH/HOUR: 217.04

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, male      | 82.48      | 652     | 38.00       | 9201 |
| Sufflogobius bibaratus         | 74.08      | 11272   | 34.13       |      |
| Merluccius capensis, female    | 54.32      | 560     | 25.03       | 9202 |
| Merluccius capensis, juveniles | 6.16       | 704     | 2.84        | 9203 |
| Chrysaora sp.                  | 0.00       | 76      |             |      |
| Total                          | 217.04     |         | 100.00      |      |

DATE: 2/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2318 Long E 1259  
 start stop duration  
 TIME :03:26:44 03:55:40 29 (min) Purpose code: 3  
 LOG :3938.90 3940.51 1.60 Area code : 2  
 FDEPTH: 661 660 GearCond.code:  
 BDEPTH: 661 660 Validity code:  
 Towing dir: 360° Wire out:1750 m Speed: 30 kn\*10

Sorted: 70 Kg Total catch: 79.71 CATCH/HOUR: 164.92

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Deania quadrispinosum        | 58.97      | 31      | 35.76       |      |
| Merluccius paradoxus, female | 40.59      | 35      | 24.61       | 9204 |
| Todarodes sagittatus         | 15.35      | 25      | 9.31        |      |
| Neocyttus rhomboidalis       | 13.90      | 23      | 8.43        |      |
| Yarrella blackfordi          | 5.09       | 186     | 3.09        |      |
| Hoplostethus cadenati        | 4.47       | 112     | 2.71        |      |
| Selachophidium guentheri     | 4.34       | 50      | 2.63        |      |
| Notacanthus sexspinis        | 4.10       | 25      | 2.49        |      |
| Nezumia micronychodon        | 3.85       | 161     | 2.33        |      |
| Centrocyttus crepidater      | 2.28       | 2       | 1.38        |      |
| Alepocephalus sp.            | 2.11       | 25      | 1.28        |      |
| Brama brama                  | 1.82       | 4       | 1.10        |      |
| Lithodes ferox               | 1.70       | 4       | 1.03        |      |
| Shrimps, small, non comm.    | 1.49       | 434     | 0.90        |      |
| Bathylagus glacialis         | 1.37       | 25      | 0.83        |      |
| Bathyroconger vicinus        | 1.12       | 12      | 0.68        |      |
| Etmopterus pusillus          | 0.70       | 2       | 0.42        |      |
| Heterocarpus grimaldii       | 0.62       | 31      | 0.38        |      |
| Symbolophorus boops          | 0.50       | 81      | 0.30        |      |
| Nephropsis atlantica         | 0.37       | 19      | 0.22        |      |
| Stereomastis sp.             | 0.12       | 6       | 0.07        |      |
| Melanocetus johnsoni         | 0.06       | 6       | 0.04        |      |
| Total                        | 164.92     |         | 99.99       |      |

DATE: 2/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2319 Long E 1314  
 start stop duration  
 TIME :11:04:13 11:33:47 30 (min) Purpose code: 3  
 LOG :3972.96 3974.57 1.59 Area code : 2  
 FDEPTH: 383 384 GearCond.code:  
 BDEPTH: 383 384 Validity code:  
 Towing dir: 360° Wire out:1150 m Speed: 30 kn\*10

Sorted: 284 Kg Total catch: 674.90 CATCH/HOUR: 1349.80

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 207.00     | 2016    | 15.34       | 9215 |
| Raja confundens              | 204.66     | 162     | 15.16       |      |
| Merluccius capensis, female  | 201.36     | 120     | 14.92       | 9213 |
| Helicolenus dactylopterus    | 178.20     | 1242    | 13.20       |      |
| Merluccius paradoxus, female | 112.56     | 134     | 8.34        | 9211 |
| Gerypteris capensis          | 110.88     | 36      | 8.21        |      |
| Galeus polli                 | 75.20      | 1316    | 5.57        |      |
| Lophius vomerinus            | 64.96      | 100     | 4.81        |      |
| Schedophilus huttoni         | 64.76      | 54      | 4.80        |      |
| Coelorrinchus fasciatus      | 33.48      | 594     | 2.48        |      |
| Brama brama                  | 25.20      | 18      | 1.87        |      |
| Bathynectes piperitus        | 16.20      | 594     | 1.20        |      |
| Epigonus denticulatus        | 14.40      | 594     | 1.07        |      |
| Merluccius capensis, male    | 11.24      | 6       | 0.83        | 9214 |
| Nezumia micronychodon        | 10.44      | 414     | 0.77        |      |
| Notacanthus sexspinis        | 6.12       | 162     | 0.45        |      |
| Merluccius paradoxus, male   | 4.86       | 36      | 0.36        | 9216 |
| Selachophidium guentheri     | 3.60       | 90      | 0.27        |      |
| Todarodes sagittatus         | 3.24       | 18      | 0.24        |      |
| Merluccius paradoxus, male   | 1.88       | 2       | 0.14        | 9212 |
| Shrimps, small, non comm.    | 0.72       | 18      | 0.05        |      |
| Total                        | 1350.96    |         | 100.08      |      |

DATE: 2/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2319 Long E 1320  
 start stop duration  
 TIME :13:13:20 13:43:32 30 (min) Purpose code: 3  
 LOG :3982.75 3984.32 1.55 Area code : 2  
 FDEPTH: 335 340 GearCond.code:  
 BDEPTH: 335 340 Validity code:  
 Towing dir: 360° Wire out: 980 m Speed: 30 kn\*10

Sorted: 325 Kg Total catch: 590.92 CATCH/HOUR: 1181.84

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius capensis, female  | 317.08     | 232     | 26.83       | 9217 |
| Lophius vomerinus            | 234.36     | 558     | 19.83       | 9220 |
| Coelorrinchus fasciatus      | 131.04     | 4986    | 11.09       |      |
| Schedophilus huttoni         | 110.56     | 48      | 9.35        |      |
| Austroglossus microlepis     | 87.12      | 342     | 7.37        | 9223 |
| Merluccius capensis, male    | 83.04      | 88      | 7.03        | 9218 |
| Trachyrinchus scabrus        | 66.24      | 486     | 5.60        |      |
| Lophius vomerinus            | 51.96      | 126     | 4.40        | 9219 |
| Merluccius capensis, male    | 23.76      | 126     | 2.01        | 9224 |
| Symbolophorus boops          | 15.12      | 2420    | 1.28        |      |
| Merluccius paradoxus, female | 12.52      | 8       | 1.06        | 9221 |
| Galeus polli                 | 12.24      | 198     | 1.04        |      |
| Todarodes sagittatus         | 11.52      | 18      | 0.97        |      |
| Merluccius capensis, female  | 10.44      | 90      | 0.88        | 9222 |
| Centrolophus niger           | 9.08       | 2       | 0.77        |      |
| Squilla acuelata calmani     | 3.24       | 144     | 0.27        |      |
| Sufflogobius bibarbatatus    | 1.80       | 144     | 0.15        |      |
| Solenocera africana          | 0.72       | 108     | 0.06        |      |
| Total                        | 1181.84    |         | 99.99       |      |

DATE: 2/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2319 Long E 1328  
 start stop duration  
 TIME :15:19:07 15:49:42 31 (min) Purpose code: 3  
 LOG :3994.33 3996.07 1.74 Area code : 2  
 FDEPTH: 240 236 GearCond.code:  
 BDEPTH: 240 236 Validity code:  
 Towing dir: 360° Wire out: 800 m Speed: 31 kn\*10

Sorted: 30 Kg Total catch: 71.66 CATCH/HOUR: 138.70

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sufflogobius bibarbatatus   | 84.77      | 25432   | 61.12       |      |
| Merluccius capensis, female | 26.59      | 147     | 19.17       | 9226 |
| Merluccius capensis, male   | 22.80      | 166     | 16.44       | 9225 |
| MYCTOPHIDAE                 | 3.10       | 639     | 2.24        |      |
| Symbolophorus boops         | 0.77       | 77      | 0.56        |      |
| Merluccius capensis         | 0.66       | 43      | 0.48        | 9227 |
| Chrysaora sp.               | 0.00       | 348     |             |      |
| Total                       | 138.69     |         | 100.01      |      |

DATE: 2/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2320 Long E 1306  
 start stop duration  
 TIME :08:44:31 09:15:12 31 (min) Purpose code: 3  
 LOG :3961.32 3962.76 1.43 Area code : 2  
 FDEPTH: 451 458 GearCond.code:  
 BDEPTH: 451 458 Validity code:  
 Towing dir: 360° Wire out:1250 m Speed: 30 kn\*10

Sorted: 161 Kg Total catch: 574.62 CATCH/HOUR: 1112.17

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 428.55     | 732     | 38.53       | 9208 |
| Trachyrinchus scabrus        | 325.70     | 2303    | 29.29       |      |
| Nezumia micronychodon        | 150.66     | 1599    | 13.55       |      |
| Helicolenus dactylopterus    | 55.82      | 352     | 5.02        |      |
| Coelorrinchus fasciatus      | 53.65      | 677     | 4.82        |      |
| Etmopterus pusillus          | 36.85      | 108     | 3.31        |      |
| Lophius vomerinus            | 23.94      | 12      | 2.15        | 9210 |
| Merluccius paradoxus, male   | 12.50      | 17      | 1.12        | 9209 |
| Torpedo nobiliana            | 6.46       | 2       | 0.58        |      |
| Galeus polli                 | 5.42       | 54      | 0.49        |      |
| Epigonus telescopus          | 4.34       | 27      | 0.39        |      |
| Lithodes ferox               | 3.48       | 12      | 0.31        |      |
| Notacanthus sexspinis        | 3.15       | 81      | 0.28        |      |
| Epigonus denticulatus        | 1.63       | 54      | 0.15        |      |
| Total                        | 1112.15    |         | 99.99       |      |

DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2255 Long E 1335  
 start stop duration  
 TIME :04:33:22 04:58:22 25 (min) Purpose code: 3  
 LOG :4077.94 4079.22 1.26 Area code : 2  
 FDEPTH: 152 151 GearCond.code: 9  
 BDEPTH: 152 151 Validity code: 1  
 Towing dir: 330° Wire out: 450 m Speed: 30 kn\*10

Sorted: 32 Kg Total catch: 482.92 CATCH/HOUR: 1159.01

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, male      | 624.96     | 5652    | 51.92       | 9228 |
| Merluccius capensis, female    | 525.60     | 4644    | 45.35       | 9229 |
| Merluccius capensis, juveniles | 7.20       | 612     | 0.62        | 9230 |
| Sufflogobius bibarbatatus      | 0.72       | 180     | 0.06        |      |
| Chelidonichthys capensis       | 0.53       | 2       | 0.05        |      |
| Chrysaora sp.                  | 0.00       | 4320    |             |      |
| Total                          | 1159.01    |         | 100.00      |      |

PROJECT STATION: 2704  
 DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2260 Long E 1327  
 start stop duration  
 TIME :06:46:44 07:13:20 27 (min) Purpose code: 3  
 LOG :4091.51 4092.92 1.38 Area code : 2  
 FDEPTH: 277 287 GearCond.code:  
 BDEPTH: 277 287 Validity code:  
 Towing dir: 330° Wire out: 780 m Speed: 30 kn\*10

Sorted: 8 Kg Total catch: 16.38 CATCH/HOUR: 36.40

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sufflogobius bibarbatus     | 22.89      | 6867    | 62.88       |      |
| Merluccius capensis, female | 6.93       | 36      | 19.04       | 9232 |
| Merluccius capensis, male   | 3.82       | 20      | 10.49       | 9231 |
| Pterothrissus belloci       | 2.53       | 60      | 6.95        |      |
| Merluccius capensis         | 0.22       | 11      | 0.60        | 9233 |
| Aequorea aequorea           | 0.00       | 71111   |             |      |
| Chrysaora sp.               | 0.00       | 1600    |             |      |
| Total                       | 36.39      |         | 99.96       |      |

PROJECT STATION: 2705  
 DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2259 Long E 1318  
 start stop duration  
 TIME :08:20:14 08:21:12 28 (min) Purpose code: 3  
 LOG :4102.67 4103.99 1.29 Area code : 2  
 FDEPTH: 362 362 GearCond.code:  
 BDEPTH: 362 362 Validity code:  
 Towing dir: 340° Wire out: 1000 m Speed: 30 kn\*10

Sorted: 190 Kg Total catch: 290.74 CATCH/HOUR: 623.01

| SPECIES                          | CATCH/HOUR |         | % OF TOT. C | SAMP |
|----------------------------------|------------|---------|-------------|------|
|                                  | weight     | numbers |             |      |
| Merluccius capensis, female      | 123.39     | 79      | 19.81       | 9234 |
| Coelorrinchus fasciatus          | 117.43     | 2490    | 18.85       |      |
| Merluccius paradoxus, female     | 97.50      | 90      | 15.65       | 9236 |
| Lophius vomerinus                | 78.17      | 139     | 12.55       | 9239 |
| Nezumia sp.                      | 48.43      | 1414    | 7.77        |      |
| Galeus polli                     | 38.14      | 471     | 6.12        |      |
| Merluccius paradoxus, female     | 33.21      | 390     | 5.33        | 9237 |
| Schedophilus huttoni             | 24.90      | 9       | 4.00        |      |
| Merluccius capensis, male        | 15.34      | 15      | 2.46        | 9235 |
| Centrolophus niger               | 11.19      | 2       | 1.80        |      |
| Ebinania costaeacanarie          | 11.19      | 21      | 1.80        |      |
| Helicolenus dactylopterus        | 10.29      | 171     | 1.65        |      |
| Chlorophthalmus atlanticus       | 8.14       | 300     | 1.31        |      |
| Coelorrinchus coelorrhinc. polli | 3.86       | 257     | 0.62        |      |
| Bathynectes piperitus            | 1.29       | 43      | 0.21        |      |
| Merluccius paradoxus, male       | 0.56       | 6       | 0.09        | 9238 |
| Total                            | 623.03     |         | 100.02      |      |

PROJECT STATION: 2706  
 DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2259 Long E 1306  
 start stop duration  
 TIME :10:01:05 11:41:32 30 (min) Purpose code: 3  
 LOG :4115.62 4117.08 1.44 Area code : 2  
 FDEPTH: 323 317 GearCond.code:  
 BDEPTH: 323 317 Validity code:  
 Towing dir: 340° Wire out: 980 m Speed: 30 kn\*10

Sorted: 352 Kg Total catch: 992.03 CATCH/HOUR: 1984.06

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 903.60     | 804     | 45.54       | 9240 |
| Helicolenus dactylopterus   | 359.20     | 3070    | 18.10       |      |
| Galeus polli                | 177.60     | 1600    | 8.95        |      |
| Merluccius capensis, male   | 132.38     | 156     | 6.67        | 9241 |
| Chlorophthalmus atlanticus  | 120.96     | 4876    | 6.10        |      |
| Trachurus capensis          | 120.40     | 310     | 6.07        | 9242 |
| Coelorrinchus fasciatus     | 66.40      | 1508    | 3.35        |      |
| Hexanchus griseus           | 52.00      | 18      | 2.62        |      |
| Lophius vomerinus           | 31.52      | 42      | 1.59        | 9243 |
| Raja leopardus              | 20.00      | 6       | 1.01        |      |
| Total                       | 1984.06    |         | 100.00      |      |

PROJECT STATION: 2707  
 DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2260 Long E 1300  
 start stop duration  
 TIME :13:32:23 14:01:48 29 (min) Purpose code: 3  
 LOG :4125.17 4126.71 1.53 Area code : 2  
 FDEPTH: 485 484 GearCond.code:  
 BDEPTH: 485 484 Validity code:  
 Towing dir: 338° Wire out: 1400 m Speed: 30 kn\*10

Sorted: 243 Kg Total catch: 672.46 CATCH/HOUR: 1391.30

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 335.83     | 443     | 24.14       | 9244 |
| Trachyrincus scabrus         | 321.72     | 1504    | 23.12       |      |
| Helicolenus dactylopterus    | 142.97     | 871     | 10.28       |      |
| PANDALIDAE                   | 131.09     | 52436   | 9.42        |      |
| Nezumia sp.                  | 110.57     | 3600    | 7.95        |      |
| Deania calcea                | 70.84      | 99      | 5.09        |      |
| Todarodes sagittatus         | 47.67      | 99      | 3.43        |      |
| Centroscyllium coelolepis    | 28.34      | 2       | 2.04        |      |
| Lophius vomerinus            | 22.80      | 8       | 1.64        | 9246 |
| Epigonus telescopus          | 22.34      | 199     | 1.61        |      |
| Lithodes ferox               | 21.43      | 50      | 1.54        |      |
| Etmopterus pusillus          | 19.20      | 66      | 1.38        |      |
| Raja confundens              | 16.76      | 12      | 1.20        |      |
| Selachophidium guentheri     | 16.55      | 298     | 1.19        |      |
| Galeus polli                 | 15.23      | 166     | 1.09        |      |
| Centrolophus squamosus       | 13.24      | 33      | 0.95        |      |
| Notacanthus sexspinis        | 12.58      | 331     | 0.90        |      |
| Bassanago albescens          | 9.93       | 33      | 0.71        |      |
| Schedophilus huttoni         | 5.79       | 2       | 0.42        |      |
| Merluccius paradoxus, male   | 5.34       | 10      | 0.38        | 9245 |
| Hoplostethus cadenati        | 5.30       | 199     | 0.38        |      |
| Ebinania costaeacanarie      | 3.77       | 2       | 0.27        |      |
| Lophius vaillanti            | 3.72       | 2       | 0.27        | 9247 |
| Bathynectes piperitus        | 3.31       | 99      | 0.24        |      |
| Plesiopenaeus edwardsianus   | 2.98       | 33      | 0.21        |      |
| Yarella blackfordi           | 1.32       | 265     | 0.09        |      |
| Triplophus hemingi           | 0.66       | 66      | 0.05        |      |
| Total                        | 1391.28    |         | 99.99       |      |

PROJECT STATION: 2708  
 DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2258 Long E 1257  
 start stop duration  
 TIME :15:44:12 16:14:40 30 (min) Purpose code: 3  
 LOG :4134.16 4135.88 1.71 Area code : 2  
 FDEPTH: 585 581 GearCond.code:  
 BDEPTH: 585 581 Validity code:  
 Towing dir: 340° Wire out: 1550 m Speed: 30 kn\*10

Sorted: 89 Kg Total catch: 147.91 CATCH/HOUR: 295.82

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 76.64      | 84      | 25.91       | 9248 |
| Nezumia micronychodon        | 44.38      | 2350    | 15.00       |      |
| Selachophidium guentheri     | 37.38      | 656     | 12.64       |      |
| Deania quadrispinosum        | 28.08      | 12      | 9.49        |      |
| Trachyrincus scabrus         | 21.70      | 84      | 7.34        |      |
| Hoplostethus cadenati        | 19.18      | 906     | 6.48        |      |
| Alepocephalus rostratus      | 15.12      | 420     | 5.11        |      |
| Lamprogrammus exutus         | 12.74      | 78      | 4.31        |      |
| Todarodes sagittatus         | 12.28      | 18      | 4.15        |      |
| Centrolophus uyato           | 6.84       | 2       | 2.31        |      |
| Yarella blackfordi           | 5.46       | 98      | 1.85        |      |
| Deania calcea                | 5.16       | 4       | 1.74        |      |
| Helicolenus dactylopterus    | 3.08       | 14      | 1.04        |      |
| Lithodes ferox               | 1.84       | 4       | 0.62        |      |
| Galeus polli                 | 1.82       | 14      | 0.62        |      |
| Bathyrroconger vicinus       | 0.96       | 8       | 0.32        |      |
| Notacanthus sexspinis        | 0.96       | 8       | 0.32        |      |
| Dicrolene intronigra         | 0.64       | 8       | 0.22        |      |
| Ebinania costaeacanarie      | 0.48       | 8       | 0.16        |      |
| Bathylagus glacialis         | 0.42       | 14      | 0.14        |      |
| Heterocarpus grimaldii       | 0.28       | 14      | 0.09        |      |
| Scopelosaurus meadi          | 0.16       | 8       | 0.05        |      |
| Shrimps, small, non comm.    | 0.14       | 70      | 0.05        |      |
| Total                        | 295.74     |         | 99.96       |      |

PROJECT STATION: 2709  
 DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2259 Long E 1254  
 start stop duration  
 TIME :18:15:16 18:45:41 30 (min) Purpose code: 3  
 LOG :4144.16 4145.74 1.50 Area code : 2  
 FDEPTH: 677 663 GearCond.code:  
 BDEPTH: 677 663 Validity code:  
 Towing dir: 350° Wire out: 1850 m Speed: 30 kn\*10

Sorted: 118 Kg Total catch: 204.36 CATCH/HOUR: 408.72

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 161.36     | 152     | 39.48       | 9249 |
| Alepocephalus rostratus      | 78.40      | 240     | 19.18       |      |
| Nezumia sp.                  | 43.20      | 1524    | 10.57       |      |
| Deania quadrispinosum        | 34.20      | 18      | 8.37        |      |
| Coelorrinchus matama         | 29.12      | 96      | 7.12        |      |
| Selachophidium guentheri     | 23.68      | 304     | 5.79        |      |
| Todarodes sagittatus         | 7.76       | 8       | 1.90        |      |
| Deania calcea                | 4.44       | 4       | 1.09        |      |
| Raja confundens              | 4.40       | 2       | 1.08        |      |
| Hoplostethus cadenati        | 3.84       | 176     | 0.94        |      |
| Heterocarpus grimaldii       | 3.20       | 112     | 0.78        |      |
| Dicrolene intronigra         | 2.56       | 48      | 0.63        |      |
| Neocyttus rhomboidalis       | 2.56       | 48      | 0.63        |      |
| Bathyrroconger vicinus       | 1.92       | 16      | 0.47        |      |
| Lithodes ferox               | 1.60       | 48      | 0.39        |      |
| Bathylagus sp.               | 1.20       | 2       | 0.29        |      |
| Notacanthus sexspinis        | 0.96       | 16      | 0.23        |      |
| Raja leopardus               | 0.96       | 32      | 0.23        |      |
| Symbolophorus boops          | 0.64       | 80      | 0.16        |      |
| Ebinania costaeacanarie      | 0.64       | 16      | 0.16        |      |
| Stomias boa boa              | 0.32       | 16      | 0.08        |      |
| Bathylagus glacialis         | 0.32       | 16      | 0.08        |      |
| Shrimps, small, non comm.    | 0.32       | 80      | 0.08        |      |
| Nephropsis atlantica         | 0.32       | 32      | 0.08        |      |
| Coelorrinchus braueri        | 0.32       | 16      | 0.08        |      |
| Synaphobranchus kaupii       | 0.32       | 2       | 0.08        |      |
| Stereomastis sp.             | 0.16       | 16      | 0.04        |      |
| Total                        | 408.72     |         | 100.01      |      |

PROJECT STATION: 2710  
 DATE: 3/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2238 Long E 1247  
 start stop duration  
 TIME :21:41:10 21:41:26 30 (min) Purpose code: 3  
 LOG :4165.70 4167.25 1.51 Area code : 2  
 FDEPTH: 640 633 GearCond.code:  
 BDEPTH: 640 633 Validity code:  
 Towing dir: 340° Wire out:1650 m Speed: 30 kn\*10  
 Sorted: 177 Kg Total catch: 356.73 CATCH/HOUR: 713.46

PROJECT STATION: 2713  
 DATE: 4/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2239 Long E 1258  
 start stop duration  
 TIME :07:05:25 07:35:31 30 (min) Purpose code: 3  
 LOG :4198.47 4199.98 1.48 Area code : 2  
 FDEPTH: 303 304 GearCond.code:  
 BDEPTH: 303 304 Validity code:  
 Towing dir: 340° Wire out: 900 m Speed: 30 kn\*10  
 Sorted: 187 Kg Total catch: 860.48 CATCH/HOUR: 1720.96

| SPECIES                      | CATCH/HOUR weight | % OF TOT. C numbers | SAMP   |
|------------------------------|-------------------|---------------------|--------|
| Merluccius paradoxus, female | 238.52            | 208                 | 33.43  |
| Deania profundorum           | 152.20            | 120                 | 21.33  |
| Nezumia micronychodon        | 61.00             | 2080                | 8.55   |
| Todarodes sagittatus         | 58.40             | 40                  | 8.19   |
| Selachophidium guentheri     | 33.00             | 420                 | 4.63   |
| Deania quadrispinosum        | 22.60             | 20                  | 3.17   |
| Coelorinchus mataua          | 17.40             | 30                  | 2.44   |
| Etmopterus pusillus          | 15.20             | 50                  | 2.13   |
| Raja confundens              | 14.80             | 10                  | 2.07   |
| Notacanthus sexspinis        | 14.20             | 140                 | 1.99   |
| Hoplostethus cadenati        | 13.80             | 490                 | 1.93   |
| OPISTHOTEUTHIDAE             | 10.60             | 50                  | 1.49   |
| Chaceon maritae              | 10.20             | 10                  | 1.43   |
| Lithodes ferox               | 8.12              | 18                  | 1.14   |
| Neocyttus rhomboidalis       | 7.40              | 36                  | 1.04   |
| Deania calcea                | 6.80              | 10                  | 0.95   |
| Lophius vomerinus            | 4.20              | 2                   | 0.59   |
| Bassanago albescens          | 4.00              | 40                  | 0.56   |
| Allocyttus verrucosus        | 3.64              | 42                  | 0.51   |
| Synaphobranchus kaupii       | 2.64              | 10                  | 0.37   |
| Alepocephalus sp.            | 1.80              | 40                  | 0.25   |
| Merluccius paradoxus, male   | 1.80              | 2                   | 0.25   |
| Yarrella blackfordi          | 1.60              | 50                  | 0.22   |
| Yarrella blackfordi          | 1.60              | 50                  | 0.22   |
| Chaunax pictus               | 1.48              | 4                   | 0.21   |
| GALATHEIDAE *                | 1.40              | 440                 | 0.20   |
| Dicrolene intransigra        | 1.40              | 40                  | 0.20   |
| PANDALIDAE                   | 1.00              | 250                 | 0.14   |
| Bathylagus glacialis         | 1.00              | 70                  | 0.14   |
| Ebinania costaecanarie       | 1.00              | 10                  | 0.14   |
| Glyphus marsupialis          | 0.80              | 50                  | 0.11   |
| Aristeus varidens            | 0.60              | 30                  | 0.08   |
| NEPHROPIDAE                  | 0.40              | 40                  | 0.06   |
| Lampanyctodes hectoris       | 0.40              | 50                  | 0.06   |
| Total                        | 715.00            |                     | 100.22 |

| SPECIES                     | CATCH/HOUR weight | % OF TOT. C numbers | SAMP   |
|-----------------------------|-------------------|---------------------|--------|
| Galeus polli                | 779.32            | 778                 | 45.28  |
| Merluccius capensis, female | 442.92            | 388                 | 25.74  |
| Chlorophthalmus punctatus   | 86.52             | 6984                | 5.03   |
| Helicolenus dactylopterus   | 83.16             | 2230                | 4.83   |
| Merluccius capensis, male   | 80.52             | 98                  | 4.68   |
| Merluccius capensis, female | 55.60             | 152                 | 3.23   |
| Lophius vomerinus           | 43.88             | 100                 | 2.55   |
| Merluccius capensis, male   | 36.32             | 114                 | 2.11   |
| Schedophilus huttoni        | 35.68             | 16                  | 2.07   |
| Coelorinchus fasciatus      | 26.04             | 1182                | 1.51   |
| Trachurus capensis          | 14.64             | 58                  | 0.85   |
| Lophius vaillanti           | 13.04             | 4                   | 0.76   |
| Todarodes sagittatus        | 9.76              | 14                  | 0.57   |
| Hexanchus griseus           | 5.64              | 2                   | 0.33   |
| Bathynectes piperitus       | 3.64              | 98                  | 0.21   |
| Diaphus sp.                 | 2.80              | 854                 | 0.16   |
| Merluccius paradoxus        | 1.48              | 20                  | 0.09   |
| Total                       | 1720.96           |                     | 100.00 |

PROJECT STATION: 2714  
 DATE: 4/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2240 Long E 1310  
 start stop duration  
 TIME :09:34:35 10:04:26 30 (min) Purpose code: 3  
 LOG :4214.32 4215.76 1.41 Area code : 2  
 FDEPTH: 308 305 GearCond.code:  
 BDEPTH: 308 305 Validity code:  
 Towing dir: 340° Wire out: 900 m Speed: 30 kn\*10  
 Sorted: 469 Kg Total catch: 1731.42 CATCH/HOUR: 3462.84

| SPECIES                        | CATCH/HOUR weight | % OF TOT. C numbers | SAMP   |
|--------------------------------|-------------------|---------------------|--------|
| Merluccius capensis, female    | 1531.70           | 2550                | 44.23  |
| Merluccius capensis, male      | 724.88            | 1258                | 20.93  |
| Merluccius capensis, female    | 565.00            | 348                 | 16.32  |
| Coelorinchus fasciatus         | 171.36            | 2500                | 4.95   |
| Galeus polli                   | 119.00            | 2618                | 3.44   |
| Hexanchus griseus              | 94.32             | 18                  | 2.72   |
| Merluccius capensis, male      | 78.28             | 64                  | 2.26   |
| Trachurus capensis             | 66.64             | 204                 | 1.92   |
| Pterothrissus bellocci         | 42.84             | 544                 | 1.24   |
| Lophius vomerinus              | 33.24             | 38                  | 0.96   |
| Coelorinchus coelorhinc. polli | 18.36             | 952                 | 0.53   |
| Austroglossus microlepis       | 4.76              | 18                  | 0.14   |
| Raja leopardus                 | 4.64              | 2                   | 0.13   |
| Solenocera africana            | 2.04              | 442                 | 0.06   |
| Bathynectes piperitus          | 2.04              | 34                  | 0.06   |
| Bassanago albescens            | 1.36              | 34                  | 0.04   |
| Chlorophthalmus atlanticus     | 1.36              | 102                 | 0.04   |
| Sufflogobius bibarbatus        | 0.68              | 170                 | 0.02   |
| Synagrops microlepis           | 0.34              | 102                 | 0.01   |
| Total                          | 3462.84           |                     | 100.00 |

PROJECT STATION: 2715  
 DATE: 4/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2239 Long E 1321  
 start stop duration  
 TIME :12:02:13 12:17:30 15 (min) Purpose code: 3  
 LOG :4229.09 4229.78 0.69 Area code : 2  
 FDEPTH: 272 270 GearCond.code: 9  
 BDEPTH: 272 270 Validity code: 1  
 Towing dir: 350° Wire out: 880 m Speed: 31 kn\*10  
 Sorted: 90 Kg Total catch: 47.08 CATCH/HOUR: 188.32

| SPECIES                     | CATCH/HOUR weight | % OF TOT. C numbers | SAMP  |
|-----------------------------|-------------------|---------------------|-------|
| Merluccius capensis, female | 104.88            | 480                 | 55.69 |
| Merluccius capensis, male   | 83.28             | 460                 | 44.22 |
| CENTROLOPHIDAE              | 0.16              |                     | 0.08  |
| Chrysaora sp.               | 0.00              | 720                 |       |
| Aequorea aequorea           | 0.00              | 4480                |       |
| Total                       | 188.32            |                     | 99.99 |

PROJECT STATION: 2712  
 DATE: 4/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2239 Long E 1251  
 start stop duration  
 TIME :04:44:15 05:14:19 30 (min) Purpose code: 3  
 LOG :4185.82 4187.40 1.57 Area code : 2  
 FDEPTH: 448 427 GearCond.code:  
 BDEPTH: 448 427 Validity code:  
 Towing dir: 350° Wire out:1200 m Speed: 30 kn\*10  
 Sorted: 135 Kg Total catch: 244.08 CATCH/HOUR: 488.16

| SPECIES                      | CATCH/HOUR weight | % OF TOT. C numbers | SAMP   |
|------------------------------|-------------------|---------------------|--------|
| Trachyrinchus scabrus        | 138.88            | 578                 | 28.45  |
| Merluccius paradoxus, female | 77.60             | 182                 | 15.90  |
| Schedophilus huttoni         | 75.44             | 34                  | 15.45  |
| Helicolenus dactylopterus    | 35.52             | 160                 | 7.28   |
| Centrophorus squamosus       | 33.64             | 22                  | 6.89   |
| Coelorinchus fasciatus       | 29.76             | 560                 | 6.10   |
| Lophius vomerinus            | 27.48             | 10                  | 5.63   |
| Nezumia sp.                  | 17.28             | 480                 | 3.54   |
| Genypterus capensis          | 13.08             | 4                   | 2.68   |
| Epigonus telescopus          | 10.24             | 48                  | 2.10   |
| Hoplostethus cadenati        | 9.92              | 400                 | 2.03   |
| Epigonus denticulatus        | 6.40              | 192                 | 1.31   |
| Todarodes sagittatus         | 4.56              | 6                   | 0.93   |
| Lithodes ferox               | 3.64              | 2                   | 0.75   |
| Deania profundorum           | 1.32              | 2                   | 0.27   |
| Merluccius paradoxus, male   | 1.16              | 8                   | 0.24   |
| MYCTOPHIDAE                  | 0.96              | 96                  | 0.20   |
| Bathynectes piperitus        | 0.96              | 16                  | 0.20   |
| Aristeus varidens            | 0.32              | 32                  | 0.07   |
| Total                        | 488.16            |                     | 100.02 |

PROJECT STATION: 2716  
 DATE: 4/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2240 Long E 1332  
 start stop duration  
 TIME :14:00:23 14:30:02 30 (min) Purpose code: 3  
 LOG :4242.69 4243.94 1.24 Area code : 2  
 FDEPTH: 156 157 GearCond.code:  
 BDEPTH: 156 157 Validity code:  
 Towing dir: 360° Wire out: 500 m Speed: 30 kn\*10  
 Sorted: 67 Kg Total catch: 705.10 CATCH/HOUR: 1410.20

| SPECIES                     | CATCH/HOUR weight | % OF TOT. C numbers | SAMP   |
|-----------------------------|-------------------|---------------------|--------|
| Merluccius capensis, male   | 588.48            | 6144                | 41.73  |
| Merluccius capensis, female | 455.04            | 4752                | 32.27  |
| Merluccius capensis         | 360.96            | 7872                | 25.60  |
| Sufflogobius bibarbatus     | 5.56              | 2016                | 0.39   |
| Perulibatrachus rossignoli  | 0.16              | 2                   | 0.01   |
| Chrysaora sp.               | 0.00              | 200                 |        |
| Aequorea aequorea           | 0.00              | 28800               |        |
| Total                       | 1410.20           |                     | 100.00 |

PROJECT STATION: 2717  
DATE: 4/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2239 Long E 1343  
start stop duration  
TIME :16:10:24 16:39:21 29 (min) Purpose code: 3  
LOG :4256.26 4257.70 1.42 Area code : 2  
FDEPTH: 136 135 GearCond.code:  
BDEPTH: 136 135 Validity code:  
Towing dir: 360° Wire out: 400 m Speed: 30 kn\*10

Sorted: 1 Kg Total catch: 5.18 CATCH/HOUR: 10.72

| SPECIES               | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------|------------|---------|-------------|------|
|                       | weight     | numbers |             |      |
| Sufflogobius bibarbat | 10.34      | 2458    | 96.46       |      |
| Merluccius capensis   | 0.37       | 6       | 3.45        | 9280 |
| Chrysaora sp.         | 0.00       | 372     |             |      |
| Total                 | 10.71      |         | 99.91       |      |

PROJECT STATION: 2718  
DATE: 5/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2219 Long E 1330  
start stop duration  
TIME :04:48:22 05:08:16 20 (min) Purpose code: 3  
LOG :4371.52 4372.51 0.98 Area code : 2  
FDEPTH: 156 156 GearCond.code: 9  
BDEPTH: 156 156 Validity code: 1  
Towing dir: 320° Wire out: 450 m Speed: 30 kn\*10

Sorted: 25 Kg Total catch: 504.40 CATCH/HOUR: 1513.20

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis         | 1059.60    | 29172   | 70.02       | 9283 |
| Merluccius capensis, female | 295.20     | 2880    | 19.51       | 9282 |
| Merluccius capensis, male   | 157.20     | 1320    | 10.39       | 9281 |
| Sufflogobius bibarbat       | 1.20       | 600     | 0.08        |      |
| Chrysaora sp.               | 0.00       | 6840    |             |      |
| Aequorea aequorea           | 0.00       | 12000   |             |      |
| Total                       | 1513.20    |         | 100.00      |      |

PROJECT STATION: 2719  
DATE: 5/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2220 Long E 1320  
start stop duration  
TIME :06:44:18 07:14:37 30 (min) Purpose code: 3  
LOG :4383.67 4385.18 1.48 Area code : 2  
FDEPTH: 220 221 GearCond.code:  
BDEPTH: 220 221 Validity code:  
Towing dir: 320° Wire out: 650 m Speed: 30 kn\*10

Sorted: 21 Kg Total catch: 248.88 CATCH/HOUR: 497.76

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis         | 326.88     | 7962    | 65.67       | 9286 |
| Merluccius capensis, male   | 97.44      | 1056    | 19.58       | 9284 |
| Merluccius capensis, female | 59.04      | 576     | 11.86       | 9285 |
| Sufflogobius bibarbat       | 14.40      | 4560    | 2.89        |      |
| Aequorea aequorea           | 0.00       | 7200    |             |      |
| Chrysaora sp.               | 0.00       | 20      |             |      |
| Total                       | 497.76     |         | 100.00      |      |

PROJECT STATION: 2720  
DATE: 5/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2219 Long E 1305  
start stop duration  
TIME :09:07:48 09:36:37 29 (min) Purpose code: 3  
LOG :4399.79 4401.15 1.36 Area code : 2  
FDEPTH: 258 258 GearCond.code:  
BDEPTH: 258 258 Validity code:  
Towing dir: 340° Wire out: 720 m Speed: 30 kn\*10

Sorted: 94 Kg Total catch: 2900.36 CATCH/HOUR: 6000.75

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, male   | 2834.26    | 16740   | 47.23       | 9288 |
| Merluccius capensis, female | 2671.99    | 16227   | 44.53       | 9287 |
| Lophius vomerinus           | 291.19     | 1090    | 4.85        | 9290 |
| Sufflogobius bibarbat       | 89.79      | 14965   | 1.50        |      |
| Pterothrissus belloci       | 59.65      | 1283    | 0.99        |      |
| Austroglossus microlepis    | 50.03      | 192     | 0.83        | 9289 |
| Solenocera africana         | 3.85       | 898     | 0.06        |      |
| Total                       | 6000.76    |         | 99.99       |      |

PROJECT STATION: 2721  
DATE: 5/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2220 Long E 1255  
start stop duration  
TIME :11:20:46 11:50:20 30 (min) Purpose code: 3  
LOG :4413.04 4414.53 1.51 Area code : 2  
FDEPTH: 313 316 GearCond.code:  
BDEPTH: 313 316 Validity code:  
Towing dir: 360° Wire out: 920 m Speed: 30 kn\*10

Sorted: 266 Kg Total catch: 477.68 CATCH/HOUR: 955.36

| SPECIES                         | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------------|------------|---------|-------------|------|
|                                 | weight     | numbers |             |      |
| Merluccius capensis, female     | 523.82     | 572     | 54.83       | 9291 |
| Merluccius capensis, male       | 235.22     | 264     | 24.62       | 9292 |
| Chlorophthalmus atlanticus      | 54.36      | 2304    | 5.69        |      |
| Coelorinchus fasciatus          | 27.12      | 378     | 2.84        |      |
| Lophius vomerinus               | 25.24      | 48      | 2.64        | 9295 |
| Todarodes sagittatus            | 23.76      | 48      | 2.49        |      |
| Schedophilus pamarco            | 17.92      | 8       | 1.88        |      |
| Helicolenus dactylopterus       | 11.88      | 510     | 1.24        |      |
| Galeus polli                    | 11.76      | 186     | 1.23        |      |
| Brama brama                     | 5.92       | 4       | 0.62        |      |
| Coelorinchus coelorrhinc. polli | 5.88       | 126     | 0.62        |      |
| Symbolophorus boops             | 3.24       | 2052    | 0.34        |      |
| Austroglossus microlepis        | 2.84       | 12      | 0.30        | 9293 |
| Gonypterus capensis             | 2.16       | 2       | 0.23        | 9294 |
| Zeus capensis                   | 2.08       | 2       | 0.22        |      |
| Squalus megalops                | 1.80       | 6       | 0.19        |      |
| Bathynectes piperitus           | 0.36       | 24      | 0.04        |      |
| Total                           | 955.36     |         | 100.02      |      |

PROJECT STATION: 2722  
DATE: 5/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2219 Long E 1244  
start stop duration  
TIME :13:29:13 13:59:18 30 (min) Purpose code: 3  
LOG :4424.39 4425.97 1.57 Area code : 2  
FDEPTH: 407 407 GearCond.code:  
BDEPTH: 407 407 Validity code:  
Towing dir: 350° Wire out: 1150 m Speed: 30 kn\*10

Sorted: 402 Kg Total catch: 451.76 CATCH/HOUR: 903.52

| SPECIES                         | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------------|------------|---------|-------------|------|
|                                 | weight     | numbers |             |      |
| Merluccius paradoxus, female    | 625.36     | 860     | 69.21       | 9296 |
| Schedophilus huttoni            | 62.08      | 28      | 6.87        |      |
| Helicolenus dactylopterus       | 60.60      | 416     | 6.71        |      |
| Todarodes sagittatus            | 40.20      | 54      | 4.45        |      |
| Merluccius paradoxus, male      | 30.80      | 48      | 3.41        | 9297 |
| Deania calcea                   | 15.72      | 24      | 1.74        |      |
| Coelorinchus fasciatus          | 15.36      | 492     | 1.70        |      |
| Selachophidium guentheri        | 12.96      | 186     | 1.43        |      |
| Etmopterus pusillus             | 10.00      | 30      | 1.11        |      |
| Nezumia micronychodon           | 6.24       | 204     | 0.69        |      |
| Coelorinchus coelorrhinc. polli | 2.88       | 36      | 0.32        |      |
| Galeus polli                    | 2.88       | 36      | 0.32        |      |
| Hexanchus griseus               | 2.84       | 2       | 0.31        |      |
| Raja confundens                 | 2.72       | 4       | 0.30        |      |
| Brama brama                     | 2.12       | 2       | 0.23        |      |
| Laemonema laureysi              | 2.04       | 48      | 0.23        |      |
| Trachyrincus scabrus            | 1.92       | 42      | 0.21        |      |
| Zeus capensis                   | 1.64       | 2       | 0.18        |      |
| Centroprorus squamosus          | 1.56       | 4       | 0.17        |      |
| Bathynectes piperitus           | 1.20       | 36      | 0.13        |      |
| Notacanthus sexspinis           | 1.08       | 30      | 0.12        |      |
| Epigonus denticulatus           | 0.60       | 12      | 0.07        |      |
| Lophius vomerinus               | 0.48       | 4       | 0.05        | 9298 |
| Ebinania costaecanarie          | 0.24       | 6       | 0.03        |      |
| Total                           | 903.52     |         | 99.99       |      |

PROJECT STATION: 2723  
DATE: 5/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2219 Long E 1246  
start stop duration  
TIME :15:28:24 16:00:35 32 (min) Purpose code: 3  
LOG :4433.10 4434.77 1.65 Area code : 2  
FDEPTH: 511 509 GearCond.code:  
BDEPTH: 511 509 Validity code:  
Towing dir: 350° Wire out: 1400 m Speed: 30 kn\*10

Sorted: 164 Kg Total catch: 1729.90 CATCH/HOUR: 3243.56

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Deania calcea                | 1968.75    | 1125    | 60.70       |      |
| Centroprorus squamosus       | 603.00     | 113     | 18.59       |      |
| Centroscymsus crepidater     | 234.00     | 225     | 7.21        |      |
| Merluccius paradoxus, female | 185.25     | 195     | 5.71        | 9300 |
| Trachyrincus scabrus         | 83.63      | 413     | 2.58        |      |
| Hoplostethus cadonati        | 36.38      | 2123    | 1.12        |      |
| Helicolenus dactylopterus    | 21.38      | 38      | 0.66        |      |
| Todarodes sagittatus         | 18.75      | 19      | 0.58        |      |
| Nezumia micronychodon        | 18.38      | 413     | 0.57        |      |
| Lophius vomerinus            | 14.66      | 4       | 0.45        | 9301 |
| Chlamydoselachus anguineus   | 12.56      | 2       | 0.39        |      |
| Selachophidium guentheri     | 12.00      | 206     | 0.37        |      |
| Lithodes ferox               | 8.59       | 13      | 0.26        |      |
| Centrolophus niger           | 5.63       | 2       | 0.17        |      |
| Chaceon maritae              | 4.84       | 6       | 0.15        |      |
| Lophius vullanti             | 4.35       | 2       | 0.13        | 9302 |
| Notacanthus sexspinis        | 3.75       | 75      | 0.12        |      |
| Aristeus varidens            | 3.75       | 281     | 0.12        |      |
| Bassanago albens             | 2.63       | 38      | 0.08        |      |
| Merluccius paradoxus, male   | 1.31       | 2       | 0.04        | 9299 |
| Total                        | 3243.59    |         | 100.00      |      |

PROJECT STATION: 2724  
DATE: 5/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2219 Long E 1244  
start stop duration  
TIME :17:45:00 18:15:00 30 (min) Purpose code: 3  
LOG :4442.70 4444.00 1.30 Area code : 2  
FDEPTH: 600 607 GearCond.code:  
BDEPTH: 600 607 Validity code:  
Towing dir: 350° Wire out: 1500 m Speed: 30 kn\*10

Sorted: 370 Kg Total catch: 442.74 CATCH/HOUR: 885.48

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 519.12     | 520     | 58.63       | 9304 |
| Deania calcea                | 87.36      | 48      | 9.87        |      |
| Nezumia micronychodon        | 72.00      | 950     | 8.13        |      |
| Centroprorus squamosus       | 50.84      | 6       | 5.74        |      |
| Selachophidium guentheri     | 36.16      | 474     | 4.08        |      |
| Todarodes sagittatus         | 34.08      | 64      | 3.85        |      |
| Centroscymsus crepidater     | 20.80      | 20      | 2.35        |      |
| Trachyrincus scabrus         | 18.88      | 136     | 2.13        |      |
| Coelorinchus matama          | 14.24      | 48      | 1.61        |      |
| Hoplostethus cadonati        | 8.64       | 352     | 0.98        |      |
| Lithodes ferox               | 7.36       | 20      | 0.83        |      |
| Neocyttus rhomboidalis       | 4.80       | 48      | 0.54        |      |
| Chaceon maritae              | 3.08       | 2       | 0.35        |      |
| Raja confundens              | 2.40       | 8       | 0.27        |      |
| Merluccius paradoxus, male   | 2.32       | 2       | 0.26        | 9303 |
| Helicolenus dactylopterus    | 1.92       | 8       | 0.22        |      |
| Hoplostethus atlanticus      | 1.48       | 2       | 0.17        | 9305 |
| Total                        | 885.48     |         | 100.01      |      |

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PROJECT STATION: 2725  
DATE: 5/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2159 Long E 1235  
start stop duration  
TIME :21:22:03 21:52:08 30 (min) Purpose code: 3  
LOG :4465.37 4466.78 1.39 Area code : 2  
FDEPTH: - 677 689 GearCond.code:  
BDEPTH: 677 689 Validity code:  
Towing dir: 350° Wire out: 1800 m Speed: 30 kn\*10

Sorted: 219 Kg Total catch: 352.80 CATCH/HOUR: 705.60

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 295.36     | 280     | 41.86       | 9306 |
| Centroscymnus coelolepis     | 59.24      | 4       | 8.40        |      |
| Nezumia micronychodon        | 58.00      | 1620    | 8.22        |      |
| Schedophilus huttoni         | 46.00      | 20      | 6.52        |      |
| Raja confundens              | 45.00      | 100     | 6.38        |      |
| Neocyttus rhomboidalis       | 37.08      | 86      | 5.26        | 9308 |
| Coelorinchus matamua         | 28.80      | 60      | 4.08        |      |
| Alepocephalus sp.            | 27.60      | 140     | 3.91        |      |
| Todarodes sagittatus         | 26.00      | 80      | 3.68        |      |
| Yarella blackfordi           | 10.80      | 460     | 1.53        |      |
| Deania profundorum           | 10.28      | 2       | 1.46        |      |
| Hoplostethus cadenati        | 9.60       | 54      | 1.36        |      |
| OPISTHOTEUTHIDAE             | 8.80       | 20      | 1.25        |      |
| Selachophidium guentheri     | 8.80       | 360     | 1.25        |      |
| Bathyroconger vicinus        | 8.00       | 80      | 1.13        |      |
| Lamprogrammus exutus         | 7.20       | 40      | 1.02        |      |
| Dicrolene intronigra         | 6.00       | 140     | 0.85        |      |
| Deania calcea                | 4.28       | 2       | 0.61        |      |
| Glyphus marsupialis          | 3.60       | 140     | 0.51        |      |
| Hoplostethus atlanticus      | 1.72       | 6       | 0.24        | 9307 |
| Trachycorpsia capensis       | 0.84       | 2       | 0.11        |      |
| Ebinania costaecanarie       | 0.80       | 20      | 0.11        |      |
| Bathylagus glaciilis         | 0.80       | 80      | 0.11        |      |
| Nephropsis atlantica         | 0.40       | 20      | 0.06        |      |
| Aristeus varidens            | 0.40       | 40      | 0.06        |      |
| PANDALIDAE                   | 0.20       | 100     | 0.03        |      |
| Total                        | 705.60     |         | 100.01      |      |

PROJECT STATION: 2726  
DATE: 6/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2159 Long E 1238  
start stop duration  
TIME :23:49:37 00:19:16 30 (min) Purpose code: 3  
LOG :4476.35 4477.84 1.47 Area code : 2  
FDEPTH: 568 573 GearCond.code:  
BDEPTH: 568 573 Validity code:  
Towing dir: 350° Wire out: 1550 m Speed: 30 kn\*10

Sorted: 254 Kg Total catch: 478.32 CATCH/HOUR: 956.64

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 452.34     | 460     | 47.28       | 9309 |
| Centroscymnus coelolepis     | 108.88     | 8       | 11.38       |      |
| Trachyrincus scabrus         | 92.40      | 336     | 9.66        |      |
| Deania calcea                | 78.40      | 84      | 8.20        |      |
| Neocyttus rhomboidalis       | 35.84      | 98      | 3.75        | 9312 |
| Hoplostethus cadenati        | 35.00      | 2506    | 3.66        |      |
| Nezumia micronychodon        | 33.04      | 1320    | 3.45        |      |
| Lithodes ferox               | 29.40      | 70      | 3.07        |      |
| Raja confundens              | 21.28      | 70      | 2.22        |      |
| Helicolenus dactylopterus    | 15.04      | 42      | 1.57        |      |
| Lophius vomerinus            | 12.00      | 4       | 1.25        | 9311 |
| Selachophidium guentheri     | 9.52       | 168     | 1.00        |      |
| Coelorinchus matamua         | 7.84       | 28      | 0.82        |      |
| OPISTHOTEUTHIDAE             | 5.32       | 14      | 0.56        |      |
| PANDALIDAE                   | 4.76       | 238     | 0.50        |      |
| Merluccius paradoxus, male   | 4.66       | 6       | 0.49        | 9310 |
| Bathylagus glaciilis         | 3.92       | 476     | 0.41        |      |
| Yarella blackfordi           | 2.80       | 168     | 0.29        |      |
| Epigonus denticulatus        | 1.68       | 70      | 0.18        |      |
| Galeus polli                 | 0.56       | 14      | 0.06        |      |
| Bathyroconger vicinus        | 0.56       | 28      | 0.06        |      |
| Nephropsis atlantica         | 0.56       | 14      | 0.06        |      |
| Aristeus varidens            | 0.56       | 70      | 0.06        |      |
| Diaphus hudsoni              | 0.14       | 126     | 0.01        |      |
| Ebinania costaecanarie       | 0.14       | 14      | 0.01        |      |
| Total                        | 956.64     |         | 100.00      |      |

PROJECT STATION: 2727  
DATE: 6/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2160 Long E 1241  
start stop duration  
TIME :05:01:41 05:31:05 29 (min) Purpose code: 3  
LOG :4491.77 4493.22 1.45 Area code : 2  
FDEPTH: 478 487 GearCond.code:  
BDEPTH: 478 487 Validity code:  
Towing dir: 1° Wire out: 1300 m Speed: 30 kn\*10

Sorted: 236 Kg Total catch: 366.64 CATCH/HOUR: 758.57

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrus         | 234.99     | 1003    | 30.98       |      |
| Merluccius paradoxus, female | 217.24     | 250     | 28.64       | 9314 |
| Centrophorus squamosus       | 155.17     | 10      | 20.46       |      |
| Helicolenus dactylopterus    | 29.79      | 37      | 3.93        |      |
| Deania calcea                | 25.86      | 12      | 3.41        |      |
| Centroscymnus crepidater     | 21.72      | 8       | 2.86        |      |
| Hoplostethus cadenati        | 17.13      | 919     | 2.26        |      |
| Lithodes ferox               | 15.97      | 17      | 2.11        |      |
| Lophius vomerinus            | 14.28      | 6       | 1.88        | 9315 |
| Nezumia micronychodon        | 10.43      | 298     | 1.37        |      |
| Notacanthus sexspinis        | 4.47       | 56      | 0.59        |      |
| Merluccius paradoxus, male   | 4.06       | 6       | 0.54        | 9313 |
| Coelorinchus matamua         | 3.35       | 19      | 0.44        |      |
| Epigonus telescopus          | 2.23       | 19      | 0.29        |      |
| Lampanyctus australis        | 1.12       | 186     | 0.15        |      |
| Epigonus denticulatus        | 0.74       | 93      | 0.10        |      |
| Total                        | 758.55     |         | 100.01      |      |

PROJECT STATION: 2728  
DATE: 6/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2160 Long E 1249  
start stop duration  
TIME :07:28:51 07:58:08 29 (min) Purpose code: 3  
LOG :4504.57 4505.91 1.33 Area code : 2  
FDEPTH: 342 340 GearCond.code:  
BDEPTH: 342 340 Validity code:  
Towing dir: 340° Wire out: 950 m Speed: 30 kn\*10

Sorted: 193 Kg Total catch: 339.14 CATCH/HOUR: 701.67

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 182.15     | 302     | 25.96       | 9317 |
| Chloropthalmus atlanticus      | 125.69     | 5369    | 17.91       |      |
| Galeus polli                   | 94.34      | 1347    | 13.45       |      |
| Helicolenus dactylopterus      | 94.03      | 1339    | 13.40       |      |
| Lophius vomerinus              | 82.43      | 118     | 11.75       | 9319 |
| Merluccius capensis, male      | 78.04      | 166     | 11.12       | 9316 |
| Coelorinchus fasciatus         | 24.21      | 652     | 3.45        |      |
| Raja straeleni                 | 5.34       | 2       | 0.76        |      |
| Coelorinchus coelorhinc. polli | 5.28       | 234     | 0.75        |      |
| Hexanchus griseus              | 2.81       | 2       | 0.40        |      |
| Nezumia micronychodon          | 2.79       | 79      | 0.27        |      |
| Coelorinchus braueri           | 1.86       | 17      | 0.22        |      |
| Merluccius paradoxus, female   | 1.57       | 12      | 0.16        | 9320 |
| Austroglossus microlepis       | 1.12       | 10      | 0.16        |      |
| Total                          | 701.66     |         | 100.00      |      |

PROJECT STATION: 2729  
DATE: 6/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2200 Long E 1258  
start stop duration  
TIME :09:54:28 10:25:18 31 (min) Purpose code: 3  
LOG :4518.77 4520.23 1.44 Area code : 2  
FDEPTH: 312 315 GearCond.code:  
BDEPTH: 312 315 Validity code:  
Towing dir: 350° Wire out: 900 m Speed: 30 kn\*10

Sorted: 157 Kg Total catch: 1252.00 CATCH/HOUR: 2423.23

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, male   | 1442.48    | 7510    | 59.53       | 9322 |
| Merluccius capensis, female | 808.57     | 3267    | 33.37       | 9321 |
| Sufflogobius bibarbatu      | 47.38      | 11845   | 1.96        |      |
| Trachurus capensis          | 38.71      | 201     | 1.60        |      |
| Solenocera africana         | 29.11      | 7277    | 1.20        |      |
| Austroglossus microlepis    | 29.11      | 93      | 1.20        | 9323 |
| Lophius vomerinus           | 27.87      | 77      | 1.15        | 9324 |
| Total                       | 2423.23    |         | 100.01      |      |

PROJECT STATION: 2730  
DATE: 6/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2160 Long E 1307  
start stop duration  
TIME :12:03:00 12:33:11 30 (min) Purpose code: 3  
LOG :4531.67 4533.15 1.47 Area code : 2  
FDEPTH: 230 230 GearCond.code:  
BDEPTH: 230 230 Validity code:  
Towing dir: 360° Wire out: 750 m Speed: 30 kn\*10

Sorted: 53 Kg Total catch: 582.78 CATCH/HOUR: 1165.56

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, male   | 693.88     | 4554    | 59.53       | 9326 |
| Merluccius capensis, female | 356.40     | 3894    | 30.58       | 9325 |
| Merluccius capensis         | 104.72     | 1760    | 8.98        | 9327 |
| Sufflogobius bibarbatu      | 10.12      | 3102    | 0.87        |      |
| Solenocera africana         | 0.44       | 242     | 0.04        |      |
| Total                       | 1165.56    |         | 100.00      |      |

PROJECT STATION: 2731  
DATE: 6/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2159 Long E 1318  
start stop duration  
TIME :14:13:59 14:43:23 29 (min) Purpose code: 3  
LOG :4545.89 4547.45 1.55 Area code : 2  
FDEPTH: 174 170 GearCond.code:  
BDEPTH: 174 170 Validity code:  
Towing dir: 360° Wire out: 600 m Speed: 30 kn\*10

Sorted: 91 Kg Total catch: 967.05 CATCH/HOUR: 2000.79

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis         | 573.52     | 14768   | 28.66       | 9332 |
| Merluccius capensis, male   | 495.23     | 4477    | 24.75       | 9329 |
| Merluccius capensis, female | 467.96     | 3886    | 23.39       | 9328 |
| Trachurus capensis          | 246.21     | 2253    | 12.31       | 9330 |
| Sufflogobius bibarbatu      | 93.70      | 9370    | 4.68        |      |
| Squalus megalops            | 51.58      | 149     | 2.58        |      |
| Chelidonichthys capensis    | 48.64      | 207     | 2.43        |      |
| Galeichthys feliceps        | 20.40      | 29      | 1.02        |      |
| Austroglossus microlepis    | 3.56       | 29      | 0.18        | 9331 |
| Aequorea aequorea           | 0.00       | 14146   |             |      |
| Total                       | 2000.80    |         | 100.00      |      |

PROJECT STATION: 2732  
DATE: 6/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2200 Long E 1332  
start stop duration  
TIME :16:52:20 17:22:36 30 (min) Purpose code: 3  
LOG :4565.91 4567.50 1.57 Area code : 2  
FDEPTH: 134 133 GearCond.code:  
BDEPTH: 134 133 Validity code:  
Towing dir: 360° Wire out: 400 m Speed: 30 kn\*10

Sorted: 3 Kg Total catch: 43.35 CATCH/HOUR: 86.70

| SPECIES                | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------|------------|---------|-------------|------|
|                        | weight     | numbers |             |      |
| Merluccius capensis    | 86.40      | 3630    | 99.65       | 9333 |
| Sufflogobius bibarbatu | 0.30       | 180     | 0.35        |      |
| Chrysaora sp.          | 0.00       | 360     |             |      |
| Aequorea aequorea      | 0.00       | 6000    |             |      |
| Total                  | 86.70      |         | 100.00      |      |

PROJECT STATION: 2733  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2140 Long E 1315  
 start stop duration  
 TIME :04:59:55 05:29:54 30 (min) Purpose code: 3  
 LOG :4640.44 4642.03 1.57 Area code : 2  
 FDEPTH: 151 151 GearCond.code: 2  
 BDEPTH: 151 151 Validity code:  
 Towing dir: 340° Wire out: 450 m Speed: 30 kn\*10

Sorted: 11 Kg Total catch: 26.62 CATCH/HOUR: 53.24

| SPECIES                 | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|-------------------------|-------------------|---------|-------------|------|
| Sufflogobius bibarbatus | 27.60             | 5520    | 51.84       |      |
| Merluccius capensis     | 25.20             | 856     | 47.33       | 9334 |
| Chatrabus melanurus     | 0.44              | 2       | 0.83        |      |
| Chrysaora sp.,          | 0.00              | 300     |             |      |
| Total                   | 53.24             |         | 100.00      |      |

PROJECT STATION: 2734  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2140 Long E 1305  
 start stop duration  
 TIME :06:56:52 07:25:59 29 (min) Purpose code: 3  
 LOG :4652.87 4654.29 1.42 Area code : 2  
 FDEPTH: 239 243 GearCond.code: 2  
 BDEPTH: 239 243 Validity code:  
 Towing dir: 340° Wire out: 700 m Speed: 30 kn\*10

Sorted: 25 Kg Total catch: 246.20 CATCH/HOUR: 509.38

| SPECIES                 | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|-------------------------|-------------------|---------|-------------|------|
| Merluccius capensis     | 499.03            | 9163    | 97.97       | 9335 |
| Sufflogobius bibarbatus | 10.34             |         | 2.03        |      |
| Aequorea aequorea       | 0.00              | 8276    |             |      |
| Chrysaora sp.           | 0.00              | 2234    |             |      |
| Total                   | 509.37            |         | 100.00      |      |

PROJECT STATION: 2735  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2140 Long E 1256  
 start stop duration  
 TIME :08:53:35 09:22:59 29 (min) Purpose code: 3  
 LOG :4663.83 4665.27 1.42 Area code : 2  
 FDEPTH: 294 295 GearCond.code: 2  
 BDEPTH: 294 295 Validity code:  
 Towing dir: 340° Wire out: 8809 m Speed: 30 kn\*10

Sorted: 458 Kg Total catch: 1144.53 CATCH/HOUR: 2367.99

| SPECIES                     | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|-----------------------------|-------------------|---------|-------------|------|
| Merluccius capensis, female | 1684.66           | 1349    | 71.14       | 9336 |
| Merluccius capensis, female | 304.03            | 1620    | 12.84       | 9352 |
| Merluccius capensis, male   | 300.52            | 1552    | 12.69       | 9353 |
| Merluccius capensis, male   | 74.54             | 70      | 3.15        | 9337 |
| Pterothrissus belloci       | 3.62              | 21      | 0.15        |      |
| Dentex macrophthalmus       | 0.62              | 6       | 0.03        |      |
| Chrysaora sp.               | 0.00              | 2483    |             |      |
| Aequorea aequorea           | 0.00              | 82759   |             |      |
| Total                       | 2367.99           |         | 100.00      |      |

PROJECT STATION: 2736  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2140 Long E 1244  
 start stop duration  
 TIME :11:19:16 11:39:03 20 (min) Purpose code: 3  
 LOG :4678.34 4679.33 0.95 Area code : 2  
 FDEPTH: 351 354 GearCond.code: 9  
 BDEPTH: 351 354 Validity code: 1  
 Towing dir: 350° Wire out: 1000 m Speed: 31 kn\*10

Sorted: 195 Kg Total catch: 218.91 CATCH/HOUR: 656.73

| SPECIES                      | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|------------------------------|-------------------|---------|-------------|------|
| Merluccius capensis, female  | 405.36            | 498     | 61.72       | 9338 |
| Merluccius capensis, male    | 133.08            | 198     | 20.26       | 9339 |
| Lophius vomerinus            | 48.30             | 39      | 7.35        | 9341 |
| Merluccius paradoxus, female | 33.54             | 342     | 5.11        | 9340 |
| Chlorophthalmus atlanticus   | 13.50             | 468     | 2.06        |      |
| Helicolenus dactylopterus    | 12.06             | 144     | 1.84        |      |
| Galeus polli                 | 5.22              | 72      | 0.79        |      |
| Coelorinchus fasciatus       | 4.68              | 99      | 0.71        |      |
| Nezumia sp.                  | 0.54              | 27      | 0.08        |      |
| Malacocephalus laevis        | 0.36              | 9       | 0.05        |      |
| Trachurus capensis           | 0.09              | 45      | 0.01        |      |
| Aequorea aequorea            | 0.00              | 30000   |             |      |
| Chrysaora sp.                | 0.00              | 1800    |             |      |
| Total                        | 656.73            |         | 99.98       |      |

PROJECT STATION: 2737  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2140 Long E 1245  
 start stop duration  
 TIME :13:03:08 13:04:11 19 (min) Purpose code: 3  
 LOG :4685.74 4686.65 0.90 Area code : 2  
 FDEPTH: 419 422 GearCond.code: 9  
 BDEPTH: 419 422 Validity code: 1  
 Towing dir: 350° Wire out: 1080 m Speed: 30 kn\*10

Sorted: 122 Kg Total catch: 187.00 CATCH/HOUR: 590.53

| SPECIES                      | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|------------------------------|-------------------|---------|-------------|------|
| Merluccius paradoxus, female | 335.81            | 748     | 56.87       | 9341 |
| Lophius vomerinus            | 60.19             | 32      | 10.19       | 9341 |
| Helicolenus dactylopterus    | 54.82             | 303     | 9.28        |      |
| Raja confundens              | 29.56             | 25      | 5.01        |      |
| Schedophilus huttoni         | 26.02             | 13      | 4.41        |      |
| Heptranchias perlo           | 25.71             | 6       | 4.35        |      |
| Merluccius paradoxus, male   | 12.51             | 66      | 2.12        | 9341 |
| Galeus polli                 | 11.37             | 126     | 1.93        |      |
| Plesionika edwardsii         | 10.11             | 872     | 1.71        |      |
| Deania calcea                | 7.52              | 13      | 1.27        |      |
| Hoplostethus cadenati        | 5.56              | 240     | 0.94        |      |
| Trachyrincus scabrus         | 3.54              | 38      | 0.60        |      |
| Laemonema laureysi           | 2.27              | 38      | 0.38        |      |
| Nezumia sp.                  | 2.27              | 101     | 0.38        |      |
| Coelorinchus fasciatus       | 1.52              | 13      | 0.26        |      |
| Yarrella blackfordi          | 0.51              | 38      | 0.09        |      |
| Notacanthus sexspinis        | 0.51              | 13      | 0.09        |      |
| Selachophidium guentheri     | 0.51              | 51      | 0.09        |      |
| Stomias boa boa              | 0.25              | 13      | 0.04        |      |
| Chrysaora sp.                | 0.00              | 1895    |             |      |
| Total                        | 590.56            |         | 100.01      |      |

PROJECT STATION: 2738  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2135 Long E 1237  
 start stop duration  
 TIME :14:49:55 15:19:13 29 (min) Purpose code: 3  
 LOG :4692.62 4694.13 1.44 Area code : 2  
 FDEPTH: 520 519 GearCond.code: 2  
 BDEPTH: 520 519 Validity code:  
 Towing dir: 350° Wire out: 14 m Speed: kn\*10

Sorted: 201 Kg Total catch: 355.06 CATCH/HOUR: 734.61

| SPECIES                      | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|------------------------------|-------------------|---------|-------------|------|
| Trachyrincus scabrus         | 208.97            | 1492    | 28.45       |      |
| Merluccius paradoxus, female | 185.26            | 228     | 25.22       | 9346 |
| Centropristis squamosus      | 122.19            | 10      | 16.63       |      |
| Deania quadrispinosus        | 44.86             | 14      | 6.11        |      |
| Hoplostethus atlanticus      | 43.86             | 1812    | 5.97        |      |
| Nezumia micronychodon        | 41.38             | 761     | 5.63        |      |
| Epigonus telescopus          | 28.55             | 703     | 3.89        |      |
| Todarodes sagittatus         | 12.83             | 21      | 1.75        |      |
| Lophius vomerinus            | 12.54             | 4       | 1.71        | 9347 |
| Heptranchias perlo           | 5.92              | 2       | 0.81        |      |
| Lithodes ferox               | 5.34              | 6       | 0.73        |      |
| Aristeus varidens            | 4.14              | 290     | 0.56        |      |
| Yarrella blackfordi          | 4.14              | 372     | 0.56        |      |
| Notacanthus sexspinis        | 4.14              | 41      | 0.56        |      |
| Merluccius paradoxus, male   | 3.48              | 4       | 0.47        | 9345 |
| Paradiplosinus gracilis      | 3.31              | 269     | 0.45        |      |
| Galeus polli                 | 1.66              | 21      | 0.23        |      |
| Ebinania costaeacanarie      | 1.24              | 41      | 0.17        |      |
| Selachophidium guentheri     | 0.83              | 21      | 0.11        |      |
| Chrysaora sp.                | 0.00              | 1241    |             |      |
| Total                        | 734.64            |         | 100.01      |      |

PROJECT STATION: 2739  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2140 Long E 1234  
 start stop duration  
 TIME :17:11:41 17:41:09 29 (min) Purpose code: 3  
 LOG :4701.83 4703.13 1.36 Area code : 2  
 FDEPTH: 615 620 GearCond.code: 2  
 BDEPTH: 615 620 Validity code:  
 Towing dir: 350° Wire out: 1600 m Speed: 30 kn\*10

Sorted: 67 Kg Total catch: 267.70 CATCH/HOUR: 553.86

| SPECIES                      | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|------------------------------|-------------------|---------|-------------|------|
| Trachyrincus scabrus         | 310.34            | 828     | 56.03       |      |
| Merluccius paradoxus, female | 56.65             | 60      | 10.23       | 9348 |
| Nezumia micronychodon        | 53.79             | 2359    | 9.71        |      |
| Deania quadrispinosus        | 26.48             | 10      | 4.78        |      |
| Centropristis squamosus      | 26.03             | 2       | 4.70        |      |
| Raja confundens              | 14.90             | 41      | 2.69        |      |
| Ebinania costaeacanarie      | 13.24             | 83      | 2.39        |      |
| Yarrella blackfordi          | 13.24             | 745     | 2.39        |      |
| Bassanago albensens          | 10.76             | 124     | 1.94        |      |
| Lithodes ferox               | 8.57              | 17      | 1.55        |      |
| Alepocephalus rostratus      | 6.62              | 83      | 1.20        |      |
| Selachophidium guentheri     | 3.31              | 83      | 0.60        |      |
| Bathylagus glacialis         | 3.31              | 124     | 0.60        |      |
| Notacanthus sexspinis        | 2.48              | 41      | 0.45        |      |
| Hoplostethus atlanticus      | 2.48              | 124     | 0.45        |      |
| Dicrolene intronigra         | 1.66              | 41      | 0.32        |      |
| Total                        | 553.86            |         | 100.01      |      |



PROJECT STATION: 2740  
 DATE: 7/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2119 Long E 1229  
 start stop duration  
 TIME :22:42:36 23:12:10 30 (min) Purpose code: 3  
 LOG :4736.91 4738.46 1.54 Area code : 2  
 FDEPTH: 573 573 GearCond.code:  
 BDEPTH: 573 573 Validity code:  
 Towing dir: 345° Wire out:1500 m Speed: 30 kn\*10

Sorted: 135 Kg Total catch: 213.43 CATCH/HOUR: 426.86

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 162.76     | 148     | 38.13       | 9349 |
| Trachyrincus scabrus         | 63.00      | 252     | 14.76       |      |
| Centrophorus squamosus       | 39.04      | 4       | 9.15        |      |
| Deania calcea                | 34.24      | 12      | 8.02        |      |
| Todarodes sagittatus         | 32.48      | 42      | 7.61        |      |
| Nezumia aequalis             | 22.12      | 968     | 5.18        |      |
| Hoplostethus cadenati        | 11.20      | 392     | 2.62        |      |
| Chaceon maritae              | 10.36      | 14      | 2.43        |      |
| Lithodes ferox               | 9.52       | 14      | 2.23        |      |
| Helicolenus dactylopterus    | 8.12       | 42      | 1.90        |      |
| Lophius vomerinus            | 7.10       | 4       | 1.66        | 9351 |
| Selachophidium guentheri     | 7.00       | 168     | 1.64        |      |
| Alepocephalus sp.            | 4.20       | 98      | 0.98        |      |
| Raja confundens              | 3.92       | 28      | 0.92        |      |
| Brama brama                  | 3.36       | 14      | 0.79        |      |
| Yarella blackfordi           | 3.08       | 210     | 0.72        |      |
| Merluccius paradoxus, male   | 1.72       | 2       | 0.40        | 9350 |
| Bathyroconger vicinus        | 1.40       | 28      | 0.33        |      |
| Ebinania costaeacanarie      | 0.84       | 14      | 0.20        |      |
| GALATHEIDAE *                | 0.56       | 56      | 0.13        |      |
| Bathylagus glacilis          | 0.28       | 42      | 0.07        |      |
| Nephropsis atlantica         | 0.28       | 28      | 0.07        |      |
| Shrimps, small, non comm.    | 0.28       | 126     | 0.07        |      |
| Total                        | 426.86     |         | 100.01      |      |

PROJECT STATION: 2741  
 DATE: 8/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2120 Long E 1232  
 start stop duration  
 TIME :05:11:33 05:41:29 30 (min) Purpose code: 3  
 LOG :4753.94 4755.51 1.56 Area code : 2  
 FDEPTH: 482 487 GearCond.code:  
 BDEPTH: 482 487 Validity code:  
 Towing dir: 350° Wire out:1350 m Speed: 30 kn\*10

Sorted: 341 Kg Total catch: 551.20 CATCH/HOUR: 1102.40

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 443.72     | 602     | 40.25       | 9355 |
| Trachyrincus scabrus         | 215.04     | 1222    | 19.51       |      |
| Centrophorus squamosus       | 134.12     | 10      | 12.17       |      |
| Hoplostethus cadenati        | 114.24     | 4824    | 10.36       |      |
| Helicolenus dactylopterus    | 35.52      | 288     | 3.22        |      |
| Nezumia micronychodon        | 31.68      | 1282    | 2.87        |      |
| Ebinania costaeacanarie      | 22.08      | 216     | 2.00        |      |
| Centrophorus niger           | 14.00      | 8       | 1.27        |      |
| Lophius vomerinus            | 14.00      | 8       | 1.27        | 9356 |
| Schedophilus huttoni         | 12.00      | 4       | 1.09        |      |
| Epigonus telescopus          | 11.52      | 96      | 1.04        |      |
| Notacanthus sexspinis        | 10.56      | 264     | 0.96        |      |
| Todarodes sagittatus         | 8.16       | 24      | 0.74        |      |
| Merluccius paradoxus, male   | 7.96       | 12      | 0.72        | 9354 |
| Genypterus capensis          | 6.36       | 2       | 0.58        | 9357 |
| Deania calcea                | 5.16       | 2       | 0.47        |      |
| Galeus polli                 | 4.32       | 48      | 0.39        |      |
| Chaceon maritae              | 3.20       | 2       | 0.29        |      |
| Aristeus varidens            | 2.88       | 264     | 0.26        |      |
| Lithodes ferox               | 1.60       | 2       | 0.15        |      |
| Yarella blackfordi           | 1.44       | 48      | 0.13        |      |
| Etmopterus pusillus          | 1.40       | 2       | 0.13        |      |
| Bathyroconger vicinus        | 0.96       | 24      | 0.09        |      |
| Selachophidium guentheri     | 0.48       | 24      | 0.04        |      |
| Total                        | 1102.40    |         | 100.00      |      |

PROJECT STATION: 2742  
 DATE: 8/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2120 Long E 1239  
 start stop duration  
 TIME :07:41:16 08:11:25 30 (min) Purpose code: 3  
 LOG :4766.51 4768.02 1.46 Area code : 2  
 FDEPTH: 366 370 GearCond.code:  
 BDEPTH: 366 370 Validity code:  
 Towing dir: 350° Wire out:1020 m Speed: 30 kn\*10

Sorted: 118 Kg Total catch: 229.60 CATCH/HOUR: 459.20

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 199.28     | 202     | 43.40       | 9359 |
| Coelorinchus fasciatus         | 58.40      | 880     | 12.72       |      |
| Lophius vomerinus              | 48.76      | 52      | 10.62       | 9362 |
| Helicolenus dactylopterus      | 46.40      | 400     | 10.10       |      |
| Merluccius capensis, male      | 41.36      | 64      | 9.01        | 9358 |
| Merluccius paradoxus, female   | 22.72      | 228     | 4.95        | 9361 |
| Bathynectes piperitus          | 16.00      | 320     | 3.48        |      |
| Galeus polli                   | 12.80      | 160     | 2.79        |      |
| Nezumia micronychodon          | 9.60       | 240     | 2.09        |      |
| Coelorinchus coelorhinc. polli | 1.60       | 80      | 0.35        |      |
| Malacocephalus laevis          | 1.60       | 80      | 0.35        |      |
| Merluccius paradoxus, male     | 0.68       | 6       | 0.15        | 9360 |
| Total                          | 459.20     |         | 100.01      |      |

PROJECT STATION: 2743  
 DATE: 8/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2119 Long E 1248  
 start stop duration  
 TIME :10:00:16 10:01:29 30 (min) Purpose code: 3  
 LOG :4779.44 4780.78 1.32 Area code : 2  
 FDEPTH: 325 327 GearCond.code:  
 BDEPTH: 325 327 Validity code:  
 Towing dir: 360° Wire out: 920 m Speed: 30 kn\*10

Sorted: 49 Kg Total catch: 1390.82 CATCH/HOUR: 2781.64

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, male      | 1456.00    | 10360   | 52.34       | 9364 |
| Merluccius capensis, female    | 1226.40    | 7616    | 44.09       | 9363 |
| Pterothrissus bellocci         | 50.40      | 952     | 1.61        |      |
| Austroglossus microlepis       | 18.68      | 128     | 0.67        | 9366 |
| Lophius vomerinus              | 17.84      | 42      | 0.64        | 9367 |
| Sufflogobius bibarbatu         | 4.48       | 1456    | 0.16        |      |
| Trigla lyra                    | 3.36       | 56      | 0.12        |      |
| Merluccius capensis, juveniles | 2.24       | 224     | 0.08        | 9365 |
| Solenocera africana            | 2.24       | 728     | 0.08        |      |
| Total                          | 2781.64    |         | 99.99       |      |

PROJECT STATION: 2744  
 DATE: 8/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2119 Long E 1257  
 start stop duration  
 TIME :12:21:31 12:51:16 30 (min) Purpose code: 3  
 LOG :4792.89 4794.50 1.60 Area code : 2  
 FDEPTH: 267 270 GearCond.code:  
 BDEPTH: 267 270 Validity code:  
 Towing dir: 355° Wire out: 780 m Speed: 30 kn\*10

Sorted: 6 Kg Total catch: 17.07 CATCH/HOUR: 34.14

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 15.24      | 186     | 44.64       | 9369 |
| Merluccius capensis, male      | 11.52      | 126     | 33.74       | 9368 |
| Merluccius capensis, juveniles | 6.84       | 420     | 20.04       | 9370 |
| Sufflogobius bibarbatu         | 0.54       | 156     | 1.58        |      |
| Aequorea aequorea              | 0.00       | 20000   |             |      |
| Chrysaora sp.                  | 0.00       | 360     |             |      |
| Total                          | 34.14      |         | 100.00      |      |

PROJECT STATION: 2745  
 DATE: 8/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2120 Long E 1315  
 start stop duration  
 TIME :15:05:28 15:35:07 30 (min) Purpose code: 3  
 LOG :4813.54 4815.14 1.58 Area code : 2  
 FDEPTH: 129 128 GearCond.code:  
 BDEPTH: 129 128 Validity code:  
 Towing dir: 360° Wire out: 450 m Speed: 30 kn\*10

Sorted: 1 Kg Total catch: 1.26 CATCH/HOUR: 2.52

| SPECIES                | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------|------------|---------|-------------|------|
|                        | weight     | numbers |             |      |
| Trachurus capensis     | 1.12       | 126     | 44.44       |      |
| Schedophilus huttoni   | 0.88       | 2       | 34.92       |      |
| Sufflogobius bibarbatu | 0.32       | 44      | 12.70       |      |
| Merluccius capensis    | 0.20       | 6       | 7.94        | 9371 |
| Aequorea aequorea      | 0.00       | 2000    |             |      |
| Chrysaora sp.          | 0.00       | 2400    |             |      |
| Total                  | 2.52       |         | 100.00      |      |

PROJECT STATION: 2746  
 DATE: 9/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2053 Long E 1315  
 start stop duration  
 TIME :05:03:44 05:11:17 8 (min) Purpose code: 3  
 LOG :4853.77 4854.10 0.34 Area code : 3  
 FDEPTH: 104 104 GearCond.code: 5  
 BDEPTH: 104 104 Validity code: 1  
 Towing dir: 345° Wire out 330 m Speed 30 kn\*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 2747  
 DATE: 9/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2100 Long E 1257  
 start stop duration  
 TIME :08:11:43 08:41:18 30 (min) Purpose code: 3  
 LOG :4879.06 4880.52 1.46 Area code : 3  
 FDEPTH: 277 274 GearCond.code:  
 BDEPTH: 277 274 Validity code:  
 Towing dir: 340° Wire out: 770 m Speed: 30 kn\*10

Sorted: 21 Kg Total catch: 21.00 CATCH/HOUR: 42.00

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Sufflogobius bibarbatu      | 20.00      |         | 47.62       |      |
| Merluccius capensis, female | 12.40      | 106     | 29.52       | 9372 |
| Merluccius capensis, male   | 9.60       | 86      | 22.86       | 9373 |
| Chrysaora sp.               | 0.00       | 120     |             |      |
| Aequorea aequorea           | 0.00       | 16000   |             |      |
| Total                       | 42.00      |         | 100.00      |      |

PROJECT STATION: 2748  
 DATE: 9/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2103 Long E 1245  
 start stop duration Purpose code: 3  
 TIME :10:26:25 10:56:11 30 (min) Area code : 2  
 LOG :4891.90 4893.42 1.49 GearCond.code:  
 FDEPTH: 341 342 Validity code:  
 BDEPTH: 341 342  
 Towing dir: 345° Wire out:1020 m Speed: 30 kn\*10  
 Sorted: 10 Kg Total catch: 346.76 CATCH/HOUR: 693.52

| SPECIES                        | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|--------------------------------|------------------------------|-------------|------|
| Pterothrissus bellocci         | 180.32 1512                  | 26.00       |      |
| Sufflogobius bibarbatas        | 131.04 39312                 | 18.89       |      |
| Coelorinchus coelorhinc. polli | 103.04 4480                  | 14.86       |      |
| Coelorinchus fasciatus         | 90.72 4256                   | 13.08       |      |
| Merluccius capensis, female    | 43.08 172                    | 6.21        | 9374 |
| Merluccius capensis, male      | 39.68 200                    | 5.72        | 9375 |
| Merluccius capensis            | 28.00 1064                   | 4.04        | 9376 |
| Lophius vomerinus              | 17.40 36                     | 2.51        | 9377 |
| Solenocera africana            | 16.80 3696                   | 2.42        |      |
| Trigla lyra                    | 15.68 112                    | 2.26        |      |
| Dentex macropthalmus           | 15.68 56                     | 2.26        | 9379 |
| Austroglossus microlepis       | 9.84 60                      | 1.42        | 9378 |
| Todaropsis eblanae             | 2.24 112                     | 0.32        |      |
| Total                          | 693.52                       | 99.99       |      |

PROJECT STATION: 2751  
 DATE: 9/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2111 Long E 1221  
 start stop duration Purpose code: 3  
 TIME :18:42:07 19:12:02 30 (min) Area code : 2  
 LOG :4932.63 4934.14 1.49 GearCond.code:  
 FDEPTH: 646 646 Validity code:  
 BDEPTH: 646 646  
 Towing dir: 350° Wire out:1650 m Speed: 30 kn\*10  
 Sorted: 221 Kg Total catch: 327.56 CATCH/HOUR: 555.12

| SPECIES                      | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|------------------------------|------------------------------|-------------|------|
| Merluccius paradoxus, female | 291.92 288                   | 44.56       | 9381 |
| Deania calcea                | 100.48 30                    | 15.34       |      |
| Trachyrincus scabrus         | 57.92 176                    | 8.84        |      |
| Raja confundens              | 49.28 64                     | 7.52        |      |
| Ebinania costaecanarie       | 36.80 32                     | 5.62        |      |
| Nezumia micronychodon        | 31.36 1030                   | 4.79        |      |
| Alepocephalus rostratus      | 17.60 128                    | 2.69        |      |
| Hoplostethus cadenati        | 16.96 624                    | 2.59        |      |
| Heterocarpus grimaldii       | 15.36 464                    | 2.34        |      |
| Todarodes sagittatus         | 10.92 16                     | 1.67        |      |
| Yarrella blackfordi          | 6.72 224                     | 1.03        |      |
| Lamprogrammus exutus         | 5.76 16                      | 0.88        |      |
| Dicrolene intransigra        | 5.12 96                      | 0.78        |      |
| Chaceon maritae              | 3.16 4                       | 0.48        |      |
| Lophius vomerinus            | 2.88 2                       | 0.44        | 9386 |
| Merluccius paradoxus, male   | 1.92 2                       | 0.29        | 9384 |
| Nephropsis atlantica         | 0.64 32                      | 0.10        |      |
| Nemichthys scolopaceus       | 0.16 16                      | 0.02        |      |
| Stereomastis sp.             | 0.16 16                      | 0.02        |      |
| Total                        | 655.12                       | 100.00      |      |

PROJECT STATION: 2749  
 DATE: 9/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2110 Long E 1232  
 start stop duration Purpose code: 3  
 TIME :13:36:35 14:06:18 30 (min) Area code : 2  
 LOG :4910.98 4912.36 1.35 GearCond.code:  
 FDEPTH: 450 446 Validity code:  
 BDEPTH: 450 446  
 Towing dir: 350° Wire out:1250 m Speed: 30 kn\*10  
 Sorted: 191 Kg Total catch: 1298.71 CATCH/HOUR: 2597.42

| SPECIES                      | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|------------------------------|------------------------------|-------------|------|
| Merluccius paradoxus, female | 1102.50 1930                 | 42.45       | 9378 |
| Trachyrincus scabrus         | 388.70 3956                  | 14.96       |      |
| Schedophilus huttoni         | 292.56 138                   | 11.26       |      |
| Hoplostethus cadenati        | 263.12 52624                 | 10.13       |      |
| Shrimps, small, non comm.    | 229.08 114540                | 8.82        |      |
| Raja confundens              | 75.44 92                     | 2.90        |      |
| Todarodes sagittatus         | 56.12 92                     | 2.16        |      |
| Hydrolagus sp.               | 41.40 46                     | 1.59        |      |
| Helicolenus dactylopterus    | 34.96 322                    | 1.35        |      |
| Merluccius paradoxus, male   | 34.58 66                     | 1.33        | 9379 |
| Nezumia micronychodon        | 34.04 736                    | 1.31        |      |
| Ebinania costaecanarie       | 24.84 92                     | 0.96        |      |
| Chlamydoselachus anguineus   | 7.32 2                       | 0.28        |      |
| Lophius vomerinus            | 6.32 8                       | 0.24        | 9380 |
| Epigonus denticulatus        | 3.68 276                     | 0.14        |      |
| Yarrella blackfordi          | 2.76 276                     | 0.11        |      |
| Total                        | 2597.42                      | 99.99       |      |

PROJECT STATION: 2751  
 DATE: 9/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2051 Long E 1214  
 start stop duration Purpose code: 3  
 TIME :22:26:25 22:56:40 30 (min) Area code : 3  
 LOG :4956.47 4957.90 1.42 GearCond.code:  
 FDEPTH: 600 601 Validity code:  
 BDEPTH: 600 601  
 Towing dir: 330° Wire out:1550 m Speed: 30 kn\*10  
 Sorted: 286 Kg Total catch: 693.39 CATCH/HOUR: 1386.78

| SPECIES                      | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|------------------------------|------------------------------|-------------|------|
| Merluccius paradoxus, female | 498.46 536                   | 35.94       | 9387 |
| Trachyrincus scabrus         | 449.80 1500                  | 32.43       |      |
| Nezumia micronychodon        | 96.20 3700                   | 6.94        |      |
| Hoplostethus cadenati        | 69.68 826                    | 5.02        |      |
| Deania calcea                | 67.72 26                     | 4.88        |      |
| Centroporus squamosus        | 63.72 4                      | 4.59        |      |
| Deania profundorum           | 52.52 20                     | 3.79        |      |
| Todarodes sagittatus         | 27.56 78                     | 1.99        |      |
| Bathyraxia smithii           | 15.00 2                      | 1.08        |      |
| OPISTHOTEUTHIDAE             | 11.44 26                     | 0.82        |      |
| Lithodes ferox               | 9.88 26                      | 0.71        |      |
| Selachophidium guentheri     | 9.36 338                     | 0.67        |      |
| Yarrella blackfordi          | 5.72 494                     | 0.41        |      |
| Chaceon maritae              | 3.04 4                       | 0.22        |      |
| OPHICHTHIDAE                 | 2.08 26                      | 0.15        |      |
| Raja confundens              | 2.00 2                       | 0.14        |      |
| Nephropsis atlantica         | 1.04 26                      | 0.07        |      |
| Epigonus telescopus          | 0.52 26                      | 0.04        |      |
| Notacanthus sexspinis        | 0.52 26                      | 0.04        |      |
| Nemichthys scolopaceus       | 0.52 26                      | 0.04        |      |
| Hoplostethus cadenati        | 0.00                         |             |      |
| Total                        | 1386.78                      | 99.97       |      |

PROJECT STATION: 2750  
 DATE: 9/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2111 Long E 1227  
 start stop duration Purpose code: 3  
 TIME :15:53:50 16:23:35 30 (min) Area code : 2  
 LOG :4921.27 4922.71 1.42 GearCond.code:  
 FDEPTH: 547 541 Validity code:  
 BDEPTH: 547 541  
 Towing dir: 350° Wire out:1450 m Speed: 30 kn\*10  
 Sorted: 167 Kg Total catch: 343.09 CATCH/HOUR: 686.18

| SPECIES                      | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|------------------------------|------------------------------|-------------|------|
| Trachyrincus scabrus         | 231.84 1256                  | 33.79       |      |
| Merluccius paradoxus, female | 142.56 186                   | 20.78       | 9382 |
| Deania calcea                | 111.80 36                    | 16.29       |      |
| Hoplostethus cadenati        | 77.76 2816                   | 11.33       |      |
| Nezumia micronychodon        | 36.96 1428                   | 5.39        |      |
| Centroporus squamosus        | 23.68 4                      | 3.45        |      |
| Selachophidium guentheri     | 20.64 456                    | 3.01        |      |
| Todarodes sagittatus         | 6.92 10                      | 1.01        |      |
| Lamprogrammus exutus         | 6.24 24                      | 0.91        |      |
| Aristeus varidens            | 5.68 392                     | 0.83        |      |
| Lithodes ferox               | 5.32 16                      | 0.78        |      |
| Notacanthus sexspinis        | 4.32 72                      | 0.63        |      |
| Bassanago albescens          | 3.84 48                      | 0.56        |      |
| Ebinania costaecanarie       | 3.36 48                      | 0.49        |      |
| Merluccius paradoxus, male   | 3.12 4                       | 0.45        | 9381 |
| Lophius vomerinus            | 1.84 4                       | 0.27        | 9383 |
| Nephropsis atlantica         | 0.28 20                      | 0.04        |      |
| Glyphus marsupialis          | 0.02 2                       |             |      |
| Total                        | 686.18                       | 100.01      |      |

PROJECT STATION: 2751  
 DATE: 10/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2051 Long E 1221  
 start stop duration Purpose code: 3  
 TIME :00:55:38 01:25:23 30 (min) Area code : 3  
 LOG :4968.75 4970.16 1.40 GearCond.code:  
 FDEPTH: 499 498 Validity code:  
 BDEPTH: 499 498  
 Towing dir: 340° Wire out:1280 m Speed: 30 kn\*10  
 Sorted: 249 Kg Total catch: 809.83 CATCH/HOUR: 1619.66

| SPECIES                      | CATCH/HOUR<br>weight numbers | % OF TOT. C | SAMP |
|------------------------------|------------------------------|-------------|------|
| Trachyrincus scabrus         | 461.40 4480                  | 28.49       |      |
| Merluccius paradoxus, female | 450.04 734                   | 27.79       | 9381 |
| Hoplostethus cadenati        | 342.00 12214                 | 21.12       |      |
| Nezumia micronychodon        | 103.50 7380                  | 6.39        |      |
| Todarodes sagittatus         | 87.96 322                    | 5.43        |      |
| Helicolenus dactylopterus    | 49.80 330                    | 3.07        |      |
| Raja confundens              | 30.60 60                     | 1.89        |      |
| Lophius vomerinus            | 28.40 8                      | 1.82        | 9381 |
| Deania calcea                | 20.00 8                      | 1.23        |      |
| Galeus polli                 | 18.00 240                    | 1.11        |      |
| Merluccius paradoxus, male   | 6.84 14                      | 0.42        | 9381 |
| Deepwater fish mixture       | 4.20 150                     | 0.26        |      |
| Schedophilus huttoni         | 3.64 2                       | 0.22        |      |
| Centroscymnus crepidater     | 2.08 2                       | 0.13        |      |
| Yarrella blackfordi          | 1.80 420                     | 0.11        |      |
| Selachophidium guentheri     | 1.20 30                      | 0.07        |      |
| Ebinania costaecanarie       | 1.20 30                      | 0.07        |      |
| GALATHEIDAE *                | 1.20 360                     | 0.07        |      |
| Notacanthus sexspinis        | 0.60 60                      | 0.04        |      |
| Epigonus denticulatus        | 0.00 150                     |             |      |
| Total                        | 1615.46                      | 99.73       |      |

12751  
12113  
12224

PROJECT STATION: 2754  
DATE: 10/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2051 Long E 1225  
start stop duration  
TIME :05:58:27 06:28:10 30 (min) Purpose code: 3  
LOG :4983.24 4984.59 1.32 Area code : 3  
FDEPTH: 404 406 GearCond.code:  
BDEPTH: 404 406 Validity code:  
Towing dir: 340° Wire out: 1100 m Speed: 30 kn\*10

Sorted: 141 Kg Total catch: 385.31 CATCH/HOUR: 770.62

0385

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Helicolenus dactylopterus      | 313.60     | 2522    | 40.69       |      |
| Lophius vomerinus              | 87.28      | 76      | 12.62       | 9395 |
| Nezumia micronychodon          | 87.04      | 3264    | 11.29       |      |
| Merluccius paradoxus, female   | 81.36      | 852     | 10.56       | 9394 |
| Coelorinchus coelorhinc. polli | 58.88      | 896     | 7.64        |      |
| Merluccius capensis, female    | 36.72      | 32      | 4.76        | 9392 |
| Ruvettus pretiosus             | 24.00      | 4       | 3.11        |      |
| Todarodes sagittatus           | 20.48      | 128     | 2.66        |      |
| Selachophidium guentheri       | 16.64      | 768     | 0.91        |      |
| Coelorinchus fasciatus         | 7.04       | 320     | 0.83        |      |
| Coelorinchus braueri           | 6.40       | 384     | 0.83        |      |
| Lophius vaillanti              | 5.32       | 2       | 0.69        | 9396 |
| Malacocephalus occidentalis    | 4.48       | 128     | 0.58        |      |
| Bathynectes piperitus          | 3.84       | 64      | 0.50        |      |
| Merluccius capensis, male      | 3.84       | 4       | 0.50        | 9391 |
| Galeus polli                   | 1.28       | 64      | 0.17        |      |
| Merluccius paradoxus, male     | 0.74       | 4       | 0.10        | 9393 |
| Shrimps, small, non comm.      | 0.64       |         | 0.08        |      |
| MYCTOPHIDAE                    | 0.32       | 128     | 0.04        |      |
| Epigonus denticulatus          | 0.32       | 64      | 0.04        |      |
| Total                          | 770.22     |         | 99.93       |      |

0386  
0384

PROJECT STATION: 2758  
DATE: 10/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2038 Long E 1258  
start stop duration  
TIME :14:45:19 15:15:28 30 (min) Purpose code: 3  
LOG :5035.03 5036.69 1.63 Area code : 3  
FDEPTH: 131 133 GearCond.code:  
BDEPTH: 131 133 Validity code:  
Towing dir: 350° Wire out: 420 m Speed: 30 kn\*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 2759  
DATE: 11/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2015 Long E 1253  
start stop duration  
TIME :05:10:01 05:40:10 30 (min) Purpose code: 3  
LOG :5084.70 5086.10 1.38 Area code : 3  
FDEPTH: 116 117 GearCond.code:  
BDEPTH: 116 117 Validity code:  
Towing dir: 345° Wire out: 350 m Speed: 30 kn\*10

Sorted: Kg Total catch: 1.56 CATCH/HOUR: 3.12

| SPECIES                   | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------------------------|------------|---------|-------------|------|
|                           | weight     | numbers |             |      |
| Merluccius capensis       | 1.20       | 50      | 38.46       | 9409 |
| Trachurus capensis        | 0.92       | 144     | 29.49       | 9408 |
| Merluccius capensis, male | 0.48       | 4       | 15.38       | 9407 |
| Chelidonichthys capensis  | 0.40       | 2       | 12.82       |      |
| Sufflogobius bibarbatu    | 0.08       | 12      | 2.56        |      |
| Scomberesox saurus        | 0.04       | 2       | 1.28        |      |
| Chrysaora sp.             | 0.00       | 144     |             |      |
| Total                     | 3.12       |         | 99.99       |      |

0752  
0051  
0214

PROJECT STATION: 2755  
DATE: 10/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2047 Long E 1231  
start stop duration  
TIME :06:41:03 08:20:35 30 (min) Purpose code: 3  
LOG :4994.77 4996.03 1.25 Area code : 3  
FDEPTH: 336 332 GearCond.code:  
BDEPTH: 336 332 Validity code:  
Towing dir: 340° Wire out: 950 m Speed: 30 kn\*10

Sorted: 18 Kg Total catch: 116.24 CATCH/HOUR: 232.48

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Pterothrissus bellocci         | 93.40      | 1870    | 40.18       |      |
| Krill                          | 30.00      | 12.90   |             |      |
| Solenocera africana            | 25.00      | 8010    | 10.75       |      |
| Merluccius capensis, female    | 21.92      | 34      | 9.43        | 9402 |
| Dentex macrophthalmus          | 15.76      | 50      | 6.78        | 9401 |
| Merluccius capensis, male      | 11.36      | 34      | 4.89        | 9403 |
| Synagrops microlepis           | 10.00      | 1626    | 4.30        |      |
| Sufflogobius bibarbatu         | 8.00       | 1670    | 3.44        |      |
| Todarodes sagittatus           | 3.20       | 10      | 1.38        |      |
| Lophius vomerinus              | 2.96       | 4       | 1.27        | 9400 |
| Raja confundens                | 2.60       | 2       | 1.03        |      |
| Chlorophthalmus atlanticus     | 2.40       | 190     | 0.95        | 9399 |
| Lophius vomerinus              | 2.20       | 90      | 0.64        | 9397 |
| Austroglossus microlepis       | 1.48       | 6       | 0.26        |      |
| PORTUNIDAE                     | 0.60       | 20      | 0.26        |      |
| Merluccius capensis, juveniles | 0.60       | 70      | 0.26        | 9398 |
| MYCTOPHIDAE                    | 0.60       | 290     | 0.26        |      |
| Bathynectes piperitus          | 0.40       | 40      | 0.17        |      |
| Chrysaora sp.                  | 0.00       | 120     |             |      |
| Total                          | 232.48     |         | 100.01      |      |

078  
087

PROJECT STATION: 2760  
DATE: 11/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2024 Long E 1229  
start stop duration  
TIME :09:10:46 09:40:38 30 (min) Purpose code: 3  
LOG :5113.29 5114.76 1.44 Area code : 3  
FDEPTH: 276 274 GearCond.code:  
BDEPTH: 276 274 Validity code:  
Towing dir: 330° Wire out: 780 m Speed: 30 kn\*10

Sorted: 12 Kg Total catch: 12.40 CATCH/HOUR: 24.80

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis         | 8.36       | 428     | 33.71       | 9412 |
| Merluccius capensis, female | 5.60       | 66      | 22.58       | 9410 |
| Sufflogobius bibarbatu      | 5.36       | 1116    | 21.61       |      |
| Merluccius capensis, male   | 5.00       | 48      | 20.16       | 9411 |
| Chelidonichthys capensis    | 0.32       | 2       | 1.29        |      |
| Scomberesox saurus          | 0.16       | 2       | 0.65        |      |
| Aequorea aequorea           | 0.00       | 4000    |             |      |
| Chrysaora sp.               | 0.00       | 120     |             |      |
| Total                       | 24.80      |         | 100.00      |      |

PROJECT STATION: 2761  
DATE: 11/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2030 Long E 1218  
start stop duration  
TIME :11:40:12 12:10:09 30 (min) Purpose code: 3  
LOG :5129.19 5130.76 1.56 Area code : 3  
FDEPTH: 309 308 GearCond.code:  
BDEPTH: 309 308 Validity code:  
Towing dir: 340° Wire out: 900 m Speed: 30 kn\*10

Sorted: 158 Kg Total catch: 175.04 CATCH/HOUR: 350.08

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 133.56     | 242     | 38.15       | 9416 |
| Merluccius capensis, male   | 127.80     | 308     | 36.51       | 9415 |
| Dentex macrophthalmus       | 43.92      | 174     | 12.55       | 9414 |
| Trachurus capensis          | 26.80      | 240     | 7.66        | 9413 |
| Sufflogobius bibarbatu      | 17.76      | 13320   | 5.07        |      |
| Merluccius capensis         | 0.24       | 6       | 0.07        | 9417 |
| Total                       | 350.08     |         | 100.01      |      |

053  
051  
020

PROJECT STATION: 2756  
DATE: 10/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2048 Long E 1238  
start stop duration  
TIME :10:01:27 10:01:31 30 (min) Purpose code: 3  
LOG :5007.12 5008.71 1.55 Area code : 3  
FDEPTH: 309 304 GearCond.code:  
BDEPTH: 309 304 Validity code:  
Towing dir: 340° Wire out: 910 m Speed: 30 kn\*10

Sorted: 78 Kg Total catch: 130.34 CATCH/HOUR: 260.68

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, male   | 162.98     | 562     | 62.52       | 9405 |
| Merluccius capensis, female | 96.86      | 356     | 37.16       | 9404 |
| Sufflogobius bibarbatu      | 0.48       | 128     | 0.18        |      |
| Bathynectes piperitus       | 0.36       | 4       | 0.14        |      |
| Aequorea aequorea           | 0.00       | 12000   |             |      |
| Total                       | 260.68     |         | 100.00      |      |

PROJECT STATION: 2762  
DATE: 11/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2032 Long E 1212  
start stop duration  
TIME :13:43:36 14:13:26 30 (min) Purpose code: 3  
LOG :5139.93 5141.38 1.44 Area code : 3  
FDEPTH: 347 345 GearCond.code:  
BDEPTH: 347 345 Validity code:  
Towing dir: 335° Wire out: 1000 m Speed: 31 kn\*10

Sorted: 214 Kg Total catch: 324.38 CATCH/HOUR: 648.76

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Pterothrissus bellocci       | 369.92     | 2080    | 57.02       |      |
| Merluccius capensis, male    | 104.84     | 206     | 16.16       | 9419 |
| Merluccius capensis, female  | 64.40      | 334     | 9.93        | 9420 |
| Nezumia sp.                  | 37.12      | 1312    | 5.72        |      |
| Lophius vomerinus            | 18.84      | 74      | 2.90        | 9418 |
| Todarodes sagittatus         | 17.92      | 64      | 2.76        |      |
| CHLOROPHTHALMIDAE            | 14.08      | 768     | 2.17        |      |
| Dentex macrophthalmus        | 8.68       | 28      | 1.34        |      |
| Austroglossus microlepis     | 6.52       | 14      | 1.00        | 9422 |
| Trachurus capensis           | 2.60       | 24      | 0.40        | 9421 |
| Bathynectes piperitus        | 2.56       | 32      | 0.39        |      |
| Trachurus capensis, juvenile | 1.28       | 192     | 0.20        |      |
| Total                        | 648.76     |         | 99.99       |      |

058  
08

PROJECT STATION: 2757  
DATE: 10/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2040 Long E 1249  
start stop duration  
TIME :12:39:03 13:09:06 30 (min) Purpose code: 3  
LOG :5020.93 5022.44 1.51 Area code : 3  
FDEPTH: 192 164 GearCond.code:  
BDEPTH: 192 164 Validity code:  
Towing dir: 360° Wire out: 650 m Speed: 30 kn\*10

Sorted: 3 Kg Total catch: 8.56 CATCH/HOUR: 17.12

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Perulibatrachus rossignoli     | 11.04      | 48      | 64.49       |      |
| Merluccius capensis, juveniles | 5.36       | 262     | 31.31       | 9406 |
| Sufflogobius bibarbatu         | 0.72       | 128     | 4.21        |      |
| Chrysaora sp.                  | 0.00       | 120     |             |      |
| Aequorea aequorea              | 0.00       | 12000   |             |      |
| Total                          | 17.12      |         | 100.01      |      |

PROJECT STATION: 2763  
 DATE: 11/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2034 Long E 1207  
 start stop duration  
 TIME :15:58:22 16:27:41 29 (min) Purpose code: 3  
 LOG :5150.56 5152.08 1.49 Area code : 3  
 FDEPTH: 466 471 GearCond.code:  
 BDEPTH: 466 471 Validity code:  
 Towing dir: 340° Wire out: 1350 m Speed: 30 kn\*10

Sorted: 16 Kg Total catch: 535.62 CATCH/HOUR: 1108.18

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrus         | 524.48     | 3724    | 47.33       |      |
| Merluccius paradoxus, female | 231.56     | 606     | 20.90       | 9423 |
| Helicolenus dactylopterus    | 206.90     | 931     | 18.67       |      |
| Todarodes sagittatus         | 63.10      | 155     | 5.69        |      |
| Lophius vomerinus            | 30.79      | 17      | 2.78        | 9425 |
| Schedophilus huttoni         | 24.50      | 14      | 2.21        |      |
| Nezumia sp.                  | 11.38      | 414     | 1.03        |      |
| Ebinania costaecanarie       | 8.28       | 103     | 0.75        |      |
| Merluccius paradoxus, male   | 2.77       | 8       | 0.25        | 9424 |
| Lithodes ferox               | 2.40       | 2       | 0.22        |      |
| Centrolophus niger           | 2.03       | 2       | 0.18        |      |
| Total                        | 1108.19    |         | 100.01      |      |

PROJECT STATION: 2764  
 DATE: 11/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2035 Long E 1204  
 start stop duration  
 TIME :18:10:43 18:38:41 28 (min) Purpose code: 3  
 LOG :5159.24 5160.52 1.26 Area code : 3  
 FDEPTH: 568 568 GearCond.code:  
 BDEPTH: 568 568 Validity code:  
 Towing dir: 330° Wire out: 1600 m Speed: 30 kn\*10

Sorted: 171 Kg Total catch: 766.90 CATCH/HOUR: 1643.36

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Trachyrincus scabrus         | 837.00     | 3086    | 50.93       |      |
| Merluccius paradoxus, female | 393.09     | 416     | 23.92       | 9426 |
| Nezumia sp.                  | 198.00     | 6171    | 12.05       |      |
| Deania calcea                | 52.93      | 21      | 3.22        |      |
| Lophius vomerinus            | 38.87      | 11      | 2.37        | 9428 |
| Selachophidium guentheri     | 23.14      | 386     | 1.41        |      |
| Raja confundens              | 23.14      | 129     | 1.41        |      |
| Helicolenus dactylopterus    | 21.86      | 64      | 1.33        |      |
| Lithodes ferox               | 17.61      | 34      | 1.07        |      |
| Neoharriotta pinnata         | 15.57      | 9       | 0.94        |      |
| Hoplostethus cadenati        | 11.57      | 450     | 0.70        |      |
| Merluccius paradoxus, male   | 4.97       | 9       | 0.30        | 9427 |
| Epigonus telescopus          | 2.57       | 64      | 0.16        |      |
| Ebinania costaecanarie       | 2.57       | 64      | 0.16        |      |
| Raja confundens              | 0.51       | 4       | 0.03        |      |
| Total                        | 1643.34    |         | 100.00      |      |

PROJECT STATION: 2765  
 DATE: 11/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2015 Long E 1152  
 start stop duration  
 TIME :21:54:04 22:24:09 30 (min) Purpose code: 3  
 LOG :5181.92 5183.45 1.53 Area code : 3  
 FDEPTH: 601 593 GearCond.code:  
 BDEPTH: 601 593 Validity code:  
 Towing dir: 340° Wire out: 1660 m Speed: 30 kn\*10

Sorted: 166 Kg Total catch: 508.80 CATCH/HOUR: 1017.60

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Coelorinchus braueri         | 269.44     | 928     | 26.48       |      |
| Merluccius paradoxus, female | 238.00     | 208     | 23.39       | 9429 |
| Nezumia sp.                  | 158.72     | 8832    | 15.60       |      |
| Hoplostethus cadenati        | 142.72     | 4608    | 14.03       |      |
| Deania calcea                | 67.84      | 32      | 6.67        |      |
| MYXINIDAE                    | 35.20      |         | 3.46        |      |
| Lophius vomerinus            | 28.44      | 10      | 2.79        | 9431 |
| Todaropsis eblanae           | 25.60      | 32      | 2.52        |      |
| Raja confundens              | 14.08      | 128     | 1.38        |      |
| Chaceon maritae              | 9.20       | 8       | 0.90        |      |
| Lophius vaillanti            | 8.88       | 4       | 0.87        | 9430 |
| Bathyrconger vicinus         | 5.12       | 96      | 0.50        |      |
| POLYCHAELIDAE                | 3.20       | 32      | 0.31        |      |
| GALATHEIDAE *                | 3.20       | 320     | 0.31        |      |
| Selachophidium guentheri     | 3.20       | 96      | 0.31        |      |
| Ebinania costaecanarie       | 1.92       | 64      | 0.19        |      |
| Lithodes ferox               | 1.52       | 2       | 0.15        |      |
| Heterocarpus grimaldii       | 1.24       | 38      | 0.12        |      |
| Nephropsis atlantica         | 0.08       | 4       | 0.01        |      |
| Total                        | 1017.60    |         | 99.99       |      |

PROJECT STATION: 2766  
 DATE: 12/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2015 Long E 1154  
 start stop duration  
 TIME :00:01:59 00:31:40 30 (min) Purpose code: 3  
 LOG :5190.50 5191.99 1.46 Area code : 3  
 FDEPTH: 517 516 GearCond.code:  
 BDEPTH: 517 516 Validity code:  
 Towing dir: 335° Wire out: 1360 m Speed: 30 kn\*10

Sorted: 173 Kg Total catch: 382.54 CATCH/HOUR: 765.08

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Coelorinchus braueri         | 281.16     | 158     | 36.75       |      |
| Merluccius paradoxus, female | 263.56     | 324     | 34.45       | 9432 |
| Deania calcea                | 71.92      | 66      | 9.40        |      |
| Nezumia sp.                  | 56.32      | 1628    | 7.36        |      |
| Hoplostethus cadenati        | 31.24      | 1298    | 4.08        |      |
| Lophius vomerinus            | 28.04      | 10      | 3.66        | 9435 |
| Lophius vaillanti            | 9.68       | 4       | 1.27        | 9434 |
| MYXINIDAE                    | 6.60       |         | 0.86        |      |
| Ebinania costaecanarie       | 3.96       | 30      | 0.52        |      |
| Helicolenus dactylopterus    | 3.08       | 22      | 0.40        |      |
| Merluccius paradoxus, male   | 2.92       | 4       | 0.38        | 9433 |
| Galeus polli                 | 2.20       | 22      | 0.29        |      |
| Raja confundens              | 1.76       | 22      | 0.23        |      |
| Epigonus denticulatus        | 1.32       | 22      | 0.17        |      |
| Selachophidium guentheri     | 0.88       | 22      | 0.12        |      |
| GALATHEIDAE *                | 0.44       | 264     | 0.06        |      |
| Total                        | 765.08     |         | 100.00      |      |

PROJECT STATION: 2761  
 DATE: 12/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2015 Long E 115°  
 start stop duration  
 TIME :05:15:01 05:45:47 31 (min) Purpose code: 3  
 LOG :5202.63 5203.99 1.35 Area code : 3  
 FDEPTH: 419 420 GearCond.code:  
 BDEPTH: 419 420 Validity code:  
 Towing dir: 335° Wire out: 1120 m Speed: 30 kn\*10

Sorted: 98 Kg Total catch: 388.29 CATCH/HOUR: 751.53

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 326.52     | 1117    | 43.45       | 9436 |
| Helicolenus dactylopterus    | 88.84      | 3687    | 11.82       |      |
| Schedophilus huttoni         | 55.86      | 25      | 7.43        |      |
| Coelorinchus fasciatus       | 41.23      | 1103    | 5.49        |      |
| Trachyrincus scabrus         | 30.77      | 319     | 4.09        |      |
| Lophius vomerinus            | 28.65      | 21      | 3.81        | 9440 |
| Todarodes sagittatus         | 28.45      | 58      | 3.79        |      |
| Selachophidium guentheri     | 26.13      | 842     | 3.48        |      |
| Merluccius capensis, female  | 23.77      | 15      | 3.16        | 9437 |
| Galeus polli                 | 19.74      | 174     | 2.63        |      |
| Nezumia sp.                  | 17.42      | 406     | 2.32        |      |
| Ebinania costaecanarie       | 15.68      | 29      | 2.09        |      |
| Lophius vaillanti            | 12.23      | 4       | 1.63        | 9441 |
| Raja confundens              | 9.52       | 8       | 1.27        |      |
| Centrolophus uyato           | 7.39       | 2       | 0.98        |      |
| Merluccius paradoxus, male   | 7.12       | 29      | 0.95        | 9438 |
| Genypterus capensis          | 3.45       | 2       | 0.46        | 9439 |
| Chlorophthalmus atlanticus   | 2.90       | 87      | 0.39        |      |
| Chaceon maritae              | 2.55       | 4       | 0.34        |      |
| Centrolophus niger           | 2.44       | 2       | 0.32        |      |
| Bathynectes piperitus        | 0.58       | 29      | 0.08        |      |
| Epigonus denticulatus        | 0.29       | 29      | 0.04        |      |
| Total                        | 751.53     |         | 100.02      |      |

PROJECT STATION: 2768  
 DATE: 12/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2011 Long E 1205  
 start stop duration  
 TIME :07:29:25 07:59:09 30 (min) Purpose code: 3  
 LOG :5214.30 5215.48 1.17 Area code : 3  
 FDEPTH: 315 315 GearCond.code:  
 BDEPTH: 315 315 Validity code:  
 Towing dir: 340° Wire out: 880 m Speed: 30 kn\*10

Sorted: 23 Kg Total catch: 461.77 CATCH/HOUR: 923.54

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Neoharriotta pinnata        | 253.76     | 182     | 27.48       |      |
| Merluccius capensis, female | 251.96     |         | 27.22       | 9442 |
| Dentex macrophthalmus       | 251.16     | 910     | 27.20       | 9445 |
| Merluccius capensis, male   | 81.00      | 160     | 8.77        | 9443 |
| Sufflogobius bibarbatus     | 33.28      | 6240    | 3.60        |      |
| Todarodes sagittatus        | 32.24      | 52      | 3.49        |      |
| Pterothrissus belloci       | 14.04      | 234     | 1.52        |      |
| Lophius vomerinus           | 3.64       | 2       | 0.39        | 9446 |
| Synagrops microlepis        | 1.04       | 182     | 0.11        |      |
| Diaphus hudsoni             | 1.04       | 208     | 0.11        |      |
| Merluccius capensis         | 0.72       | 28      | 0.08        | 9444 |
| Bathynectes piperitus       | 0.26       | 26      | 0.03        |      |
| Total                       | 923.54     |         | 100.00      |      |

PROJECT STATION: 2769  
 DATE: 12/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2008 Long E 1214  
 start stop duration  
 TIME :09:36:08 10:11:05 35 (min) Purpose code: 3  
 LOG :5225.32 5226.95 1.61 Area code : 3  
 FDEPTH: 273 269 GearCond.code:  
 BDEPTH: 273 269 Validity code:  
 Towing dir: 350° Wire out: 760 m Speed: 30 kn\*10

Sorted: 206 Kg Total catch: 205.69 CATCH/HOUR: 352.61

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, male   | 214.90     | 749     | 60.95       | 9447 |
| Merluccius capensis, female | 136.13     | 518     | 38.61       | 9448 |
| Dentex macrophthalmus       | 1.06       | 3       | 0.30        | 9450 |
| Merluccius capensis         | 0.34       | 15      | 0.10        | 9449 |
| Trachurus capensis          | 0.17       | 3       | 0.05        | 9451 |
| Total                       | 352.60     |         | 100.01      |      |

PROJECT STATION: 2770  
 DATE: 12/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2004 Long E 1225  
 start stop duration  
 TIME :11:56:08 12:26:37 30 (min) Purpose code: 3  
 LOG :5239.83 5241.33 1.48 Area code : 3  
 FDEPTH: 206 205 GearCond.code:  
 BDEPTH: 206 205 Validity code:  
 Towing dir: 350° Wire out: 640 m Speed: 30 kn\*10

Sorted: 24 Kg Total catch: 122.73 CATCH/HOUR: 245.46

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis         | 203.88     | 13630   | 83.06       | 9454 |
| Merluccius capensis, female | 31.04      | 192     | 12.65       | 9453 |
| Merluccius capensis, male   | 10.52      | 76      | 4.29        | 9452 |
| Sufflogobius bibarbatus     | 0.02       | 38      | 0.01        |      |
| Total                       | 245.46     |         | 100.01      |      |

PROJECT STATION: 2771  
 DATE: 12/2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1956 Long E 1238  
 start stop duration  
 TIME :14:36:06 14:43:56 8 (min) Purpose code: 3  
 LOG :5259.40 5259.73 0.33 Area code : 3  
 FDEPTH: 126 127 GearCond.code: 9  
 BDEPTH: 126 127 Validity code: 1  
 Towing dir: 180° Wire out: 420 m Speed: 30 kn\*10

Sorted: Kg Total catch: CATCH/HOUR:

| SPECIES | CATCH/HOUR |         | % OF TOT. C | SAMP |
|---------|------------|---------|-------------|------|
|         | weight     | numbers |             |      |
| Total   | 0.00       |         |             |      |



PROJECT STATION: 2780  
 DATE: 13/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1942 Long E 1128  
 start stop duration  
 TIME :22:26:24 22:56:49 30 (min) Purpose code: 3  
 LOG :5413.88 5415.39 1.47 Area code : 3  
 FDEPTH: 624 633 GearCond.code:  
 BDEPTH: 624 633 Validity code:  
 Towing dir: 340° Wire out: 1620 m Speed: 30 kn\*10

Sorted: 273 Kg Total catch: 644.89 CATCH/HOUR: 1289.78

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 311.04     | 308     | 24.12       | 9484 |
| Coelorrinchus braueri        | 214.56     | 720     | 16.64       |      |
| Scymnodon squamulosus        | 195.84     | 72      | 15.18       |      |
| MYLIOBATIDAE                 | 153.12     | 20400   | 11.87       |      |
| Centrophorus squamosus       | 126.10     | 10      | 9.78        |      |
| Nezumia micronychodon        | 107.52     | 6312    | 8.34        |      |
| Hoplostethus cadenati        | 68.16      | 1896    | 5.28        |      |
| Todarodes sagittatus         | 40.32      | 96      | 3.13        |      |
| Lophius vomerinus            | 29.48      | 6       | 2.29        | 9485 |
| Raja confundens              | 14.40      | 216     | 1.12        |      |
| Chaceon maritae              | 7.68       | 12      | 0.60        |      |
| Ebinania costaeacanarie      | 7.20       | 192     | 0.56        |      |
| Merluccius paradoxus, male   | 4.52       | 4       | 0.35        | 9483 |
| Selachophidium guentheri     | 3.84       | 72      | 0.30        |      |
| Notacanthus sexspinis        | 3.36       | 72      | 0.26        |      |
| Galeus polli                 | 2.40       | 24      | 0.19        |      |
| Bathyroconger vicinus        | 0.24       | 24      | 0.02        |      |
| Total                        | 1289.78    |         | 100.03      |      |

PROJECT STATION: 2783  
 DATE: 14/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1935 Long E 1144  
 start stop duration  
 TIME :07:35:14 08:05:08 30 (min) Purpose code: 3  
 LOG :5448.69 5450.09 1.39 Area code : 3  
 FDEPTH: 359 359 GearCond.code:  
 BDEPTH: 359 359 Validity code:  
 Towing dir: 340° Wire out: 980 m Speed: 30 kn\*10

Sorted: 247 Kg Total catch: 656.92 CATCH/HOUR: 1313.84

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Helicolenus dactylopterus   | 507.84     | 6164    | 38.65       |      |
| Merluccius capensis, female | 496.44     | 628     | 37.79       | 9495 |
| Merluccius capensis, male   | 162.08     | 250     | 12.34       | 9496 |
| Bathynectes piperitus       | 33.12      | 1012    | 2.52        |      |
| Coelorrinchus fasciatus     | 29.44      | 1196    | 2.24        |      |
| Lophius vomerinus           | 25.68      | 28      | 1.95        | 9497 |
| Galeus polli                | 16.56      | 276     | 1.26        |      |
| Neoharriotta pinnata        | 10.28      | 4       | 0.78        |      |
| Heptranchias perlo          | 10.20      | 10      | 0.78        |      |
| Zenopsis conchifer          | 8.28       | 10      | 0.63        |      |
| Raja confundens             | 3.68       | 92      | 0.28        |      |
| PANDALIDAE                  | 3.68       | 1196    | 0.28        |      |
| Chlorophthalmus atlanticus  | 3.68       | 92      | 0.28        |      |
| Trachipterus jacksonensis   | 1.96       | 2       | 0.15        |      |
| Solenocera africana         | 0.92       | 92      | 0.07        |      |
| Total                       | 1313.84    |         | 100.00      |      |

PROJECT STATION: 2784  
 DATE: 14/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1929 Long E 1153  
 start stop duration  
 TIME :10:01:00 10:31:04 30 (min) Purpose code: 3  
 LOG :5464.20 5465.77 1.55 Area code : 3  
 FDEPTH: 315 314 GearCond.code:  
 BDEPTH: 315 314 Validity code:  
 Towing dir: 340° Wire out: 930 m Speed: 30 kn\*10

Sorted: 234 Kg Total catch: 862.28 CATCH/HOUR: 1724.56

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis         | 1030.40    | 4224    | 59.75       |      |
| Merluccius capensis, female | 228.40     | 446     | 13.24       | 9499 |
| Pterothrissus belloci       | 195.84     | 2304    | 11.36       |      |
| Dentex macrophthalmus       | 112.64     | 576     | 6.53        |      |
| Merluccius capensis, male   | 92.76      | 334     | 5.38        | 9498 |
| Trachurus capensis          | 26.88      | 128     | 1.56        |      |
| Sufflogobius bibarbatatus   | 16.64      | 448     | 0.96        |      |
| Austroglobus microlepis     | 10.24      | 64      | 0.59        |      |
| Lophius vomerinus           | 7.60       | 2       | 0.44        | 9500 |
| Bathynectes piperitus       | 2.52       | 128     | 0.15        |      |
| Solenocera africana         | 0.64       | 64      | 0.04        |      |
| Total                       | 1724.56    |         | 100.00      |      |

PROJECT STATION: 2781  
 DATE: 14/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1941 Long E 1132  
 start stop duration  
 TIME :00:47:15 01:17:51 31 (min) Purpose code: 3  
 LOG :5424.54 5426.04 1.49 Area code : 3  
 FDEPTH: 532 526 GearCond.code:  
 BDEPTH: 532 526 Validity code:  
 Towing dir: 340° Wire out: 1360 m Speed: 30 kn\*10

Sorted: 216 Kg Total catch: 526.17 CATCH/HOUR: 1018.39

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 298.53     | 356     | 29.31       | 9487 |
| Coelorrinchus braueri        | 207.33     | 1006    | 20.36       |      |
| Scymnodon squamulosus        | 157.51     | 75      | 15.47       |      |
| Nezumia micronychodon        | 126.31     | 8404    | 12.40       |      |
| Hoplostethus cadenati        | 53.34      | 1686    | 5.24        |      |
| Centrophorus squamosus       | 47.85      | 4       | 4.70        |      |
| MYLIOBATIDAE                 | 47.30      | 8102    | 4.64        |      |
| Helicolenus dactylopterus    | 22.14      | 126     | 2.17        |      |
| Lophius vomerinus            | 16.92      | 8       | 1.66        | 9488 |
| Chaceon maritae              | 10.57      | 25      | 1.04        |      |
| Todarodes sagittatus         | 9.56       | 75      | 0.94        |      |
| Shrimps, small, non comm.    | 6.54       | 5234    | 0.64        |      |
| Merluccius paradoxus, male   | 4.18       | 6       | 0.41        | 9486 |
| Galeus polli                 | 3.52       | 25      | 0.35        |      |
| Aristeus varidens            | 2.52       | 302     | 0.25        |      |
| Notacanthus sexspinis        | 1.51       | 25      | 0.15        |      |
| MALACOSTEIDAE                | 1.01       | 75      | 0.10        |      |
| Selachophidium guentheri     | 1.01       | 25      | 0.10        |      |
| Bathyroconger vicinus        | 0.50       | 25      | 0.05        |      |
| Chlorophthalmus atlanticus   | 0.25       | 25      | 0.02        |      |
| Total                        | 1018.40    |         | 100.00      |      |

PROJECT STATION: 2785  
 DATE: 14/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1926 Long E 1205  
 start stop duration  
 TIME :12:24:05 12:31:57 8 (min) Purpose code: 3  
 LOG :5478.53 5478.92 0.23 Area code : 3  
 FDEPTH: 263 9 GearCond.code: 8  
 BDEPTH: 263 9 Validity code: 9  
 Towing dir: 340° Wire out: 810 m Speed: 30 kn\*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 2782  
 DATE: 14/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1939 Long E 1138  
 start stop duration  
 TIME :05:25:53 05:55:34 30 (min) Purpose code: 3  
 LOG :5438.92 5440.35 1.40 Area code : 3  
 FDEPTH: 423 424 GearCond.code:  
 BDEPTH: 423 424 Validity code:  
 Towing dir: 340° Wire out: 1200 m Speed: 30 kn\*10

Sorted: 62 Kg Total catch: 518.94 CATCH/HOUR: 1037.88

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 440.88     | 2200    | 42.48       | 9490 |
| Helicolenus dactylopterus    | 132.00     | 1166    | 12.72       |      |
| Trachyrinchus scabrus        | 126.72     | 1452    | 12.21       |      |
| Galeus polli                 | 84.04      | 638     | 8.10        |      |
| Merluccius paradoxus, female | 36.96      | 58      | 4.66        | 9489 |
| Nezumia micronychodon        | 35.96      | 1232    | 3.56        |      |
| Merluccius paradoxus, male   | 25.52      | 44      | 2.46        | 9492 |
| Todarodes sagittatus         | 22.00      | 66      | 2.12        |      |
| Lophius vomerinus            | 21.12      | 8       | 2.03        | 9494 |
| Centrophorus sp.             | 16.80      | 4       | 1.62        |      |
| Schedophilus huttoni         | 16.28      | 12      | 1.57        |      |
| Selachophidium guentheri     | 12.76      | 286     | 1.23        |      |
| Raja confundens              | 10.72      | 10      | 1.03        |      |
| Deania profundorum           | 9.32       | 10      | 0.90        |      |
| Merluccius capensis, female  | 8.16       | 4       | 0.79        | 9493 |
| Neoharriotta pinnata         | 5.52       | 2       | 0.53        |      |
| Merluccius capensis, male    | 4.88       | 2       | 0.47        | 9491 |
| Coelorrinchus fasciatus      | 4.40       | 154     | 0.42        |      |
| Ebinania costaeacanarie      | 4.40       | 88      | 0.42        |      |
| Centrophorus niger           | 2.84       | 4       | 0.27        |      |
| Chaceon maritae              | 1.96       | 4       | 0.19        |      |
| Epigonus denticulatus        | 1.76       | 88      | 0.17        |      |
| PANDALIDAE                   | 0.44       | 132     | 0.04        |      |
| Total                        | 1037.88    |         | 99.99       |      |

PROJECT STATION: 2786  
 DATE: 14/ 2/99 GEAR TYPE: BT No: 8 POSITION: Lat S 1920 Long E 1220  
 start stop duration  
 TIME :15:00:31 15:20:21 20 (min) Purpose code: 3  
 LOG :5497.85 5498.91 1.04 Area code : 3  
 FDEPTH: 136 134 GearCond.code: 9  
 BDEPTH: 136 134 Validity code: 1  
 Towing dir: 350° Wire out: 420 m Speed: 30 kn\*10

Sorted: 43 Kg Total catch: 340.88 CATCH/HOUR: 1022.64

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, juveniles | 970.56     | 32016   | 94.91       | 9503 |
| Merluccius capensis, male      | 33.36      | 312     | 3.26        | 9505 |
| Merluccius capensis, female    | 18.72      | 144     | 1.83        | 9504 |
| Total                          | 1022.64    |         | 100.00      |      |

PROJECT STATION: 2787  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1866 Long E 1211  
 start stop duration  
 TIME :05:05:37 05:35:03 29 (min) Purpose code: 3  
 LOG :5537.71 5539.28 1.53 Area code : 3  
 FDEPTH: 106 103 GearCond.code:  
 BDEPTH: 106 103 Validity code:  
 Towing dir: 345° Wire out: 300 m Speed: 30 kn\*10

Sorted: Kg Total catch: 0.48 CATCH/HOUR: 0.99

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Chelidonichthys capensis     | 0.33       | 2       | 33.33       |      |
| Merluccius capensis          | 0.29       | 8       | 29.29       | 9507 |
| Sufflogobius bibarbatatus    | 0.25       | 37      | 25.25       |      |
| Trachurus capensis, juvenile | 0.12       | 137     | 12.12       | 9508 |
| Total                        | 0.99       |         | 99.99       |      |

PROJECT STATION: 2788  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1904 Long E 1206  
 start stop duration  
 TIME : 07:21:37 07:51:19 30 (min) Purpose code: 3  
 LOG : 5552.54 5553.86 1.30 Area code : 3  
 FDEPTH: 174 170 GearCond.code:  
 BDEPTH: 174 170 Validity code:  
 Towing dir: 345° Wire out: 500 m Speed: 30 kn\*10  
 Sorted: 64 Kg Total catch: 1372.99 CATCH/HOUR: 2745.98

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Trachurus capensis             | 2566.24    | 50052   | 93.45       | 9511 |
| Merluccius capensis, juveniles | 82.56      | 2408    | 3.01        | 9510 |
| Merluccius capensis, female    | 30.10      | 216     | 1.10        | 9508 |
| Chelidonichthys capensis       | 23.22      | 86      | 0.85        |      |
| Galeichthys feliceps           | 20.64      | 44      | 0.75        |      |
| Merluccius capensis, male      | 17.20      | 130     | 0.63        | 9509 |
| Dentex macropthalmus           | 6.02       | 44      | 0.22        |      |
| Total                          | 2745.98    |         | 100.01      |      |

PROJECT STATION: 2789  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1910 Long E 1150  
 start stop duration  
 TIME : 10:19:24 10:49:15 30 (min) Purpose code: 3  
 LOG : 5573.14 5574.63 1.45 Area code : 3  
 FDEPTH: 302 301 GearCond.code:  
 BDEPTH: 302 301 Validity code:  
 Towing dir: 340° Wire out: 890 m Speed: 30 kn\*10  
 Sorted: 144 Kg Total catch: 1038.51 CATCH/HOUR: 2077.02

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 553.40     | 1612    | 26.64       | 9514 |
| Merluccius capensis, male   | 553.10     | 1670    | 26.63       | 9515 |
| Dentex macropthalmus        | 350.20     | 1800    | 16.86       | 9517 |
| Trachurus capensis          | 301.24     | 1656    | 14.50       | 9516 |
| Merluccius capensis, female | 251.12     | 432     | 12.09       | 9512 |
| Merluccius capensis, male   | 34.56      | 86      | 1.66        | 9513 |
| Pterothrissus belloci       | 26.20      | 360     | 1.26        |      |
| Sufflogobius bibarbatatus   | 5.48       | 1152    | 0.26        |      |
| Austroglossus microlepis    | 1.72       | 14      | 0.08        |      |
| Total                       | 2077.02    |         | 99.98       |      |

PROJECT STATION: 2790  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1914 Long E 1142  
 start stop duration  
 TIME : 11:41:27 11:41:31 30 (min) Purpose code: 3  
 LOG : 5587.02 5588.50 1.46 Area code : 3  
 FDEPTH: 339 339 GearCond.code:  
 BDEPTH: 339 339 Validity code:  
 Towing dir: 340° Wire out: 980 m Speed: 30 kn\*10  
 Sorted: 154 Kg Total catch: 1752.99 CATCH/HOUR: 3505.98

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 1524.88    | 3396    | 43.49       | 9518 |
| Merluccius capensis, male   | 884.96     | 2326    | 25.24       | 9519 |
| Dentex macropthalmus        | 561.78     | 2120    | 16.02       | 9520 |
| Pterothrissus belloci       | 228.98     | 1430    | 6.53        |      |
| Helicolenus dactylopterus   | 152.76     | 8482    | 4.36        |      |
| Synagrops microlepis        | 66.12      | 9918    | 1.89        |      |
| Trachurus capensis          | 23.26      | 114     | 0.66        | 9521 |
| Todarodes sagittatus        | 18.24      | 22      | 0.52        |      |
| Nezumia micronychodon       | 17.66      | 592     | 0.50        |      |
| Aristeus varidens           | 10.04      | 1368    | 0.29        |      |
| Trigla lyra                 | 5.92       | 22      | 0.17        |      |
| Bathynectes piperitus       | 5.48       | 136     | 0.16        |      |
| Chlorophthalmus atlanticus  | 3.64       | 524     | 0.10        |      |
| Lophius vomerinus           | 1.36       | 22      | 0.04        | 9522 |
| Galeorhinus galeus          | 0.90       | 22      | 0.03        |      |
| Total                       | 3505.98    |         | 100.00      |      |

PROJECT STATION: 2791  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1918 Long E 1132  
 start stop duration  
 TIME : 15:14:26 15:46:12 32 (min) Purpose code: 3  
 LOG : 5602.73 5604.46 1.71 Area code : 3  
 FDEPTH: 442 427 GearCond.code:  
 BDEPTH: 442 427 Validity code:  
 Towing dir: 340° Wire out: 1280 m Speed: 30 kn\*10  
 Sorted: 169 Kg Total catch: 518.73 CATCH/HOUR: 972.62

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 466.31     | 1710    | 47.94       | 9523 |
| Merluccius capensis, female  | 207.17     | 272     | 21.30       | 9524 |
| Helicolenus dactylopterus    | 98.53      | 773     | 10.13       |      |
| Krill                        | 60.90      | 127890  | 6.26        |      |
| Merluccius capensis, male    | 47.96      | 66      | 4.93        | 9525 |
| Trachipterus jacksonensis    | 22.76      | 26      | 2.34        |      |
| Neoharriotta pinnata         | 22.76      | 11      | 2.34        |      |
| Todarodes sagittatus         | 12.83      | 28      | 1.32        |      |
| Merluccius paradoxus, male   | 5.44       | 28      | 0.56        | 9526 |
| Coelorinchus fasciatus       | 5.21       | 114     | 0.54        |      |
| Raja confundens              | 5.14       | 2       | 0.53        |      |
| Galeus polli                 | 4.03       | 38      | 0.41        |      |
| Lophius vomerinus            | 3.68       | 2       | 0.38        | 9527 |
| Ruvettus pretiosus           | 3.15       | 6       | 0.32        |      |
| Nezumia micronychodon        | 1.95       | 77      | 0.20        |      |
| Trachyrincus scabrus         | 1.86       | 43      | 0.19        |      |
| Selachophidium guentheri     | 0.86       | 11      | 0.09        |      |
| Laemonema laureysi           | 0.86       | 11      | 0.09        |      |
| Aristeus varidens            | 0.32       | 23      | 0.03        |      |
| Lampanyctodes hectoris       | 0.23       | 28      | 0.02        |      |
| Diaphus hudsoni              | 0.23       | 98      | 0.02        |      |
| Epigonus denticulatus        | 0.23       | 6       | 0.02        |      |
| Malacocephalus laevis        | 0.11       | 6       | 0.01        |      |
| Shrimps, small, non comm.    | 0.06       | 66      | 0.01        |      |
| Lolliguncula sp.             | 0.06       | 6       | 0.01        |      |
| Total                        | 972.64     |         | 99.99       |      |

PROJECT STATION: 2792  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1919 Long E 1127  
 start stop duration  
 TIME : 17:34:51 18:04:08 29 (min) Purpose code: 3  
 LOG : 5614.00 5615.48 1.45 Area code : 3  
 FDEPTH: 545 546 GearCond.code:  
 BDEPTH: 545 546 Validity code:  
 Towing dir: 340° Wire out: 1550 m Speed: 30 kn\*10  
 Sorted: 288 Kg Total catch: 996.15 CATCH/HOUR: 2061.00

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 1133.07    | 1345    | 54.98       | 9528 |
| Trachyrincus scabrus         | 191.17     | 770     | 9.28        |      |
| Helicolenus dactylopterus    | 131.09     | 943     | 6.36        |      |
| Hoplostethus cadenati        | 124.63     | 5288    | 6.05        |      |
| Deania calcea                | 102.95     | 46      | 5.00        |      |
| Todarodes sagittatus         | 96.33      | 199     | 4.67        |      |
| Centrophorus squamosus       | 90.08      | 8       | 4.37        |      |
| Nezumia micronychodon        | 57.60      | 1837    | 2.79        |      |
| Miscellaneous fishes         | 45.10      |         | 2.19        |      |
| Triplophus hemingi           | 20.36      | 3054    | 0.99        |      |
| Centroscymnus coelolepis     | 15.35      | 2       | 0.74        |      |
| Lophius vomerinus            | 9.93       | 4       | 0.48        | 9530 |
| Yarrella blackfordi          | 7.94       | 844     | 0.39        |      |
| Merluccius paradoxus, male   | 6.95       | 8       | 0.34        | 9529 |
| RAJIDAE                      | 6.00       | 2       | 0.29        |      |
| Gadella imberbis             | 4.97       | 323     | 0.24        |      |
| Neoharriotta pinnata         | 4.80       | 2       | 0.23        |      |
| Bathyrcongus vicinus         | 2.98       | 99      | 0.14        |      |
| Selachophidium guentheri     | 2.48       | 50      | 0.12        |      |
| Raja confundens              | 2.48       | 25      | 0.12        |      |
| Aristeus varidens            | 1.99       | 223     | 0.10        |      |
| Glyphus marsupialis          | 0.99       | 25      | 0.05        |      |
| Stomias boa boa              | 0.50       | 99      | 0.02        |      |
| Ebinania costaeacanarie      | 0.50       | 25      | 0.02        |      |
| Shrimps, small, non comm.    | 0.50       | 99      | 0.02        |      |
| Laemonema laureysi           | 0.25       | 25      | 0.01        |      |
| Total                        | 2060.99    |         | 99.99       |      |

PROJECT STATION: 2793  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1859 Long E 1120  
 start stop duration  
 TIME : 21:04:43 21:34:05 29 (min) Purpose code: 3  
 LOG : 5635.15 5636.58 1.41 Area code : 3  
 FDEPTH: 591 601 GearCond.code:  
 BDEPTH: 591 601 Validity code:  
 Towing dir: 350° Wire out: 1600 m Speed: 30 kn\*10  
 Sorted: 454 Kg Total catch: 670.83 CATCH/HOUR: 1387.92

| SPECIES                      | CATCH/HOUR |         | % OF TOT. C | SAMP |
|------------------------------|------------|---------|-------------|------|
|                              | weight     | numbers |             |      |
| Merluccius paradoxus, female | 656.32     | 697     | 47.29       | 9531 |
| Coelorinchus braueri         | 274.10     | 1117    | 19.75       |      |
| Deania calcea                | 146.36     | 35      | 10.55       |      |
| MYCTOPHIDAE                  | 96.83      | 8803    | 6.98        |      |
| Centrophorus squamosus       | 78.74      | 8       | 5.67        |      |
| Hoplostethus cadenati        | 53.26      | 2774    | 3.84        |      |
| Nezumia micronychodon        | 35.01      | 1843    | 2.52        |      |
| Todarodes sagittatus         | 17.88      | 56      | 1.29        |      |
| Glyphus marsupialis          | 9.31       | 5820    | 0.67        |      |
| Raja confundens              | 7.45       | 19      | 0.54        |      |
| Selachophidium guentheri     | 7.08       | 74      | 0.51        |      |
| Notacanthus sexspinis        | 2.23       | 56      | 0.16        |      |
| Lepidopus caudatus           | 1.12       | 19      | 0.08        |      |
| MELANOCETIDAE                | 1.12       | 56      | 0.08        |      |
| Merluccius paradoxus, male   | 0.95       | 2       | 0.07        | 9532 |
| MALACOSTEIDAE                | 0.19       | 37      | 0.01        |      |
| Total                        | 1387.95    |         | 100.01      |      |

PROJECT STATION: 2794  
 DATE: 15/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1856 Long E 1127  
 start stop duration  
 TIME : 23:25:17 23:55:13 30 (min) Purpose code: 3  
 LOG : 5646.80 5648.28 1.47 Area code : 3  
 FDEPTH: 382 380 GearCond.code:  
 BDEPTH: 382 380 Validity code:  
 Towing dir: 350° Wire out: 1100 m Speed: 30 kn\*10  
 Sorted: 279 Kg Total catch: 1626.78 CATCH/HOUR: 3253.56

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 2493.12    | 2272    | 76.63       | 9533 |
| Merluccius capensis, male   | 392.64     | 472     | 12.07       | 9534 |
| Helicolenus dactylopterus   | 232.80     | 2520    | 7.16        |      |
| Todarodes sagittatus        | 28.20      | 30      | 0.87        |      |
| Chlorophthalmus atlanticus  | 26.40      | 660     | 0.81        |      |
| Nezumia micronychodon       | 25.20      | 810     | 0.77        |      |
| Coelorinchus braueri        | 20.40      | 60      | 0.63        |      |
| Raja confundens             | 15.60      | 30      | 0.48        |      |
| Selachophidium guentheri    | 13.20      | 330     | 0.41        |      |
| MYCTOPHIDAE                 | 3.00       | 1200    | 0.09        |      |
| Galeus polli                | 3.00       | 60      | 0.09        |      |
| Total                       | 3253.56    |         | 100.01      |      |

PROJECT STATION: 2795  
 DATE: 16/ 2/99 GEAR TYPE: BT No: 2 POSITION: Lat S 1856 Long E 1131  
 start stop duration  
 TIME : 05:19:19 05:49:00 30 (min) Purpose code: 3  
 LOG : 5664.16 5665.68 1.52 Area code : 3  
 FDEPTH: 277 275 GearCond.code:  
 BDEPTH: 277 275 Validity code:  
 Towing dir: 345° Wire out: 800 m Speed: 30 kn\*10  
 Sorted: 337 Kg Total catch: 9582.73 CATCH/HOUR: 19165.46

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Synagrops microlepis        | 14769.00   | 22154   | 77.06       |      |
| Merluccius capensis, female | 3030.22    | 6180    | 15.81       | 9535 |
| Merluccius capensis, male   | 1215.28    | 3770    | 6.34        | 9536 |
| Pterothrissus belloci       | 51.04      | 634     | 0.27        |      |
| Squalus megalops            | 44.28      | 82      | 0.23        |      |
| Lophius vomerinus           | 18.90      | 28      | 0.10        |      |
| Raja straeleni              | 16.20      | 14      | 0.08        |      |
| Dentex macropthalmus        | 7.02       | 28      | 0.04        |      |
| Zenopsis conchifer          | 6.48       | 14      | 0.03        |      |
| Trigla lyra                 | 6.22       | 28      | 0.03        |      |
| Helicolenus dactylopterus   | 0.82       | 14      |             |      |
| Total                       | 19165.46   |         | 99.99       |      |

PROJECT STATION:2796  
 DATE:16/ 2/99 GEAR TYPE: BT No: 2 POSITION:Lat S 1849 Long E 1149  
 start stop duration  
 TIME :08:09:13 08:39:03 30 (min) Purpose code: 3  
 LOG :5682.57 5683.93 1.34 Area code : 3  
 FDEPTH: 238 237 GearCond.code: 3  
 BDEPTH: 238 237 Validity code:  
 Towing dir: 345° Wire out: 700 m Speed: 30 kn\*10  
 Sorted: 30 Kg Total catch: 186.32 CATCH/HOUR: 372.64

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex macropthalmus        | 92.60      | 600     | 24.85       |      |
| Merluccius capensis, male   | 79.00      | 690     | 21.20       | 9540 |
| Merluccius capensis, female | 67.20      | 480     | 18.03       | 9541 |
| Merluccius capensis, female | 59.28      | 108     | 15.91       | 9537 |
| Merluccius capensis         | 50.80      | 1900    | 13.63       | 9539 |
| Trachurus capensis          | 9.60       | 100     | 2.58        |      |
| Merluccius capensis, male   | 9.60       | 20      | 2.58        | 9538 |
| Zenopsis conchifer          | 2.12       | 4       | 0.57        |      |
| Pterothrissus belloci       | 1.00       | 10      | 0.27        |      |
| Squalus megalops            | 0.80       | 2       | 0.21        |      |
| Austroglossus microlepis    | 0.44       | 2       | 0.12        |      |
| Sufflogobius bibarbatu      | 0.20       | 80      | 0.05        |      |
| Total                       | 372.64     |         | 100.00      |      |

PROJECT STATION:2800  
 DATE:16/ 2/99 GEAR TYPE: BT No: 2 POSITION:Lat S 1840 Long E 1124  
 start stop duration  
 TIME :17:06:00 17:36:54 31 (min) Purpose code: 3  
 LOG :5747.33 5748.80 1.45 Area code : 3  
 FDEPTH: 415 423 GearCond.code: 3  
 BDEPTH: 415 423 Validity code:  
 Towing dir: 6° Wire out:1200 m Speed: 30 kn\*10  
 Sorted: 33 Kg Total catch: 636.54 CATCH/HOUR: 1232.01

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Merluccius capensis, female    | 362.09     | 476     | 29.39       | 9554 |
| Helicolenus dactylopterus      | 224.36     | 2429    | 18.21       |      |
| Coelorinchus fasciatus         | 154.68     | 3019    | 12.56       |      |
| Coelorinchus coelorhinc. polli | 117.99     | 2950    | 9.58        |      |
| Merluccius capensis, male      | 81.56      | 139     | 6.62        | 9555 |
| Centrolophus niger             | 60.39      | 93      | 4.90        |      |
| Laemonema laureysi             | 52.49      | 883     | 4.26        |      |
| Merluccius paradoxus, female   | 50.40      | 52      | 4.09        | 9556 |
| Raja leopardus                 | 49.66      | 25      | 4.03        |      |
| Galeus polli                   | 15.33      | 139     | 1.24        |      |
| Nezumia micronychodon          | 11.61      | 859     | 0.94        |      |
| Chlorophthalmus atlanticus     | 10.68      | 348     | 0.87        |      |
| Etmopterus pusillus            | 9.75       | 23      | 0.79        |      |
| Merluccius polli, female       | 6.62       | 6       | 0.54        | 9557 |
| Epigonus denticulatus          | 6.50       | 441     | 0.53        |      |
| Aristeus varidens              | 6.04       | 1254    | 0.49        |      |
| Malacocephalus laevis          | 5.11       | 93      | 0.41        |      |
| Lophius vomerinus              | 2.55       | 2       | 0.21        | 9558 |
| Ebinania costaecanarie         | 2.32       | 23      | 0.19        |      |
| Hoplostethus cadenati          | 1.86       | 627     | 0.15        |      |
| Total                          | 1231.99    |         | 100.00      |      |

PROJECT STATION:2797  
 DATE:16/ 2/99 GEAR TYPE: BT No: 2 POSITION:Lat S 1844 Long E 1160  
 start stop duration  
 TIME :10:34:16 10:49:11 15 (min) Purpose code: 3  
 LOG :5697.87 5698.62 0.76 Area code : 3  
 FDEPTH: 121 120 GearCond.code: 9  
 BDEPTH: 121 120 Validity code: 1  
 Towing dir: 360° Wire out: 380 m Speed: 30 kn\*10  
 Sorted: 3 Kg Total catch: 2.98 CATCH/HOUR: 11.92

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 6.00       | 52      | 50.34       | 9543 |
| Trachurus capensis          | 3.84       | 28      | 32.21       | 9544 |
| Merluccius capensis, male   | 1.68       | 28      | 14.09       | 9542 |
| Sufflogobius bibarbatu      | 0.40       | 92      | 3.36        |      |
| Total                       | 11.92      |         | 100.00      |      |

PROJECT STATION:2801  
 DATE:16/ 2/99 GEAR TYPE: BT No: 2 POSITION:Lat S 1818 Long E 1126  
 start stop duration  
 TIME :20:35:33 20:37:05 30 (min) Purpose code: 3  
 LOG :5770.20 5771.62 1.42 Area code : 3  
 FDEPTH: 421 437 GearCond.code: 3  
 BDEPTH: 421 437 Validity code:  
 Towing dir: 350° Wire out:1200 m Speed: 30 kn\*10  
 Sorted: 279 Kg Total catch: 1643.77 CATCH/HOUR: 3287.54

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Helicolenus dactylopterus   | 881.60     | 2842    | 26.82       |      |
| Lophius vomerinus           | 760.96     | 464     | 23.15       | 9563 |
| Nezumia micronychodon       | 742.40     | 11600   | 22.58       |      |
| Merluccius capensis, female | 272.26     | 524     | 8.28        | 9559 |
| Lophius vaillanti           | 190.24     | 174     | 5.79        | 9562 |
| Merluccius capensis, male   | 91.12      | 196     | 2.77        | 9561 |
| Raja leopardus              | 81.64      | 364     | 2.48        |      |
| Selachophidium guentheri    | 81.20      | 1102    | 2.47        |      |
| Squalus acanthias           | 44.08      | 116     | 1.34        |      |
| Galeus polli                | 35.96      | 348     | 1.09        |      |
| Hoplostethus cadenati       | 32.48      | 2668    | 0.99        |      |
| Todarodes sagittatus        | 29.00      | 58      | 0.88        |      |
| Aristeus varidens           | 25.52      | 58      | 0.78        |      |
| Neoharriotta pinnata        | 7.76       | 2       | 0.24        |      |
| Merluccius polli, female    | 7.40       | 8       | 0.23        | 9560 |
| Chlorophthalmus atlanticus  | 2.32       | 232     | 0.07        |      |
| Coelorinchus braueri        | 1.16       | 58      | 0.04        |      |
| Bathynectes piperitus       | 0.58       | 58      | 0.02        |      |
| Total                       | 3287.68    |         | 100.00      |      |

PROJECT STATION:2798  
 DATE:16/ 2/99 GEAR TYPE: BT No: 2 POSITION:Lat S 1830 Long E 1148  
 start stop duration  
 TIME :12:50:42 13:20:36 30 (min) Purpose code: 3  
 LOG :5716.50 5718.17 1.65 Area code : 3  
 FDEPTH: 140 146 GearCond.code: 3  
 BDEPTH: 140 146 Validity code:  
 Towing dir: 320° Wire out: 460 m Speed: 30 kn\*10  
 Sorted: 76 Kg Total catch: 1246.74 CATCH/HOUR: 2493.48

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Trachurus capensis             | 2458.00    | 39900   | 98.58       | 9545 |
| Chelidonichthys capensis       | 13.64      | 58      | 0.55        |      |
| Merluccius capensis, juveniles | 10.52      | 326     | 0.42        | 9547 |
| Merluccius capensis, female    | 6.76       | 58      | 0.27        | 9548 |
| Merluccius capensis, male      | 3.56       | 26      | 0.14        | 9546 |
| Galeichthys feliceps           | 0.56       | 2       | 0.02        |      |
| Parulibrachius rossignoli      | 0.44       | 2       | 0.02        |      |
| Total                          | 2493.48    |         | 100.00      |      |

PROJECT STATION:2802  
 DATE:17/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1720 Long E 1118  
 start stop duration  
 TIME :03:29:51 03:59:40 30 (min) Purpose code: 3  
 LOG :5829.24 5830.81 1.51 Area code : 3  
 FDEPTH: 437 443 GearCond.code: 3  
 BDEPTH: 437 443 Validity code:  
 Towing dir: 350° Wire out:1220 m Speed: 30 kn\*10  
 Sorted: 191 Kg Total catch: 1879.35 CATCH/HOUR: 3758.70

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Helicolenus dactylopterus      | 1733.12    | 15232   | 46.11       |      |
| Merluccius capensis, female    | 835.66     | 1768    | 22.23       | 9564 |
| Merluccius capensis, male      | 321.86     | 724     | 8.56        | 9565 |
| Merluccius polli, female       | 186.30     | 272     | 4.96        | 9566 |
| Coelorinchus coelorhinc. polli | 111.36     | 1472    | 2.96        |      |
| Merluccius paradoxus, female   | 94.00      | 282     | 2.50        | 9568 |
| Laemonema laureysi             | 92.16      | 1792    | 2.45        |      |
| Trachyrincus scabrus           | 78.08      | 512     | 2.08        |      |
| Nezumia micronychodon          | 70.40      | 2048    | 1.87        |      |
| Todarodes sagittatus           | 60.16      | 192     | 1.60        |      |
| Galeus polli                   | 38.40      | 320     | 1.02        |      |
| Ebinania costaecanarie         | 33.28      | 128     | 0.89        |      |
| Merluccius polli, male         | 23.32      | 56      | 0.62        | 9568 |
| Epigonus denticulatus          | 17.92      | 704     | 0.48        |      |
| Stomias boa                    | 12.80      | 64      | 0.34        |      |
| Malacocephalus laevis          | 12.80      | 192     | 0.34        |      |
| Raja leopardus                 | 8.76       | 2       | 0.23        |      |
| Chlorophthalmus atlanticus     | 7.04       | 576     | 0.19        |      |
| Neoharriotta pinnata           | 6.44       | 6       | 0.17        |      |
| Macroparalepis macrogeneion    | 5.12       | 128     | 0.14        |      |
| Centrolophus niger             | 4.16       | 6       | 0.11        |      |
| TRICHIURIDAE                   | 2.56       | 64      | 0.07        |      |
| Lophius vaillanti              | 2.36       | 2       | 0.06        | 9569 |
| Triplophus hemingi             | 0.64       | 64      | 0.02        |      |
| Total                          | 3758.70    |         | 100.00      |      |

PROJECT STATION:2799  
 DATE:16/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1833 Long E 1137  
 start stop duration  
 TIME :14:54:54 15:01:44 7 (min) Purpose code: 3  
 LOG :5730.28 5730.60 0.31 Area code : 3  
 FDEPTH: 209 213 GearCond.code: 9  
 BDEPTH: 209 213 Validity code: 1  
 Towing dir: 340° Wire out: 620 m Speed: 30 kn\*10  
 Sorted: 66 Kg Total catch: 1304.54 CATCH/HOUR: 11181.77

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Trachurus capensis             | 10389.60   | 149057  | 92.92       | 9549 |
| Dentex macropthalmus           | 541.03     | 3669    | 4.84        | 9552 |
| Merluccius capensis, female    | 177.43     | 1071    | 1.59        | 9550 |
| Merluccius capensis, male      | 58.29      | 437     | 0.52        | 9551 |
| Merluccius capensis, juveniles | 12.69      | 737     | 0.11        | 9553 |
| Chelidonichthys capensis       | 2.74       | 9       | 0.02        |      |
| Total                          | 11181.78   |         | 100.00      |      |



PROJECT STATION:2803  
 DATE:17/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1719 Long E 1124  
 start stop duration  
 TIME :05:25:11 05:55:21 30 (min) Purpose code: 3  
 LOG :5838.45 5839.89 1.41 Area code : 3  
 FDEPTH: 259 256 GearCond.code:  
 BDEPTH: 259 256 Validity code:  
 Towing dir: 350° Wire out: 720 m Speed: 30 kn\*10

Sorted: 26 Kg Total catch: 714.12 CATCH/HOUR: 1428.24

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trigla lyra                 | 474.60     | 1408    | 33.23       |      |
| Pterothrissus belloci       | 306.60     | 1854    | 21.47       |      |
| Merluccius capensis, female | 228.20     | 622     | 15.98       | 9570 |
| Dentex macrophthalmus       | 181.44     | 882     | 12.70       | 9572 |
| Merluccius capensis, male   | 86.68      | 252     | 6.07        | 9571 |
| Squalus megalops            | 51.24      | 84      | 3.59        |      |
| Zenopsis conchifer          | 18.48      | 42      | 1.29        |      |
| Helicolenus dactylopterus   | 18.48      | 378     | 1.29        |      |
| Chlorophthalmus atlanticus  | 12.44      | 462     | 0.94        |      |
| Raja leopardus              | 12.04      | 6       | 0.84        |      |
| CALAPPIDAE                  | 11.76      | 126     | 0.82        |      |
| Austroglossus microlepis    | 9.24       | 168     | 0.65        |      |
| Synagrops microlepis        | 7.56       | 924     | 0.53        |      |
| Atractoscion aequidens      | 7.20       | 6       | 0.50        |      |
| Bathynectes piperitus       | 0.84       | 42      | 0.06        |      |
| Ophisurus serpens           | 0.44       | 2       | 0.03        |      |
| Total                       | 1428.24    |         | 99.99       |      |

PROJECT STATION:2804  
 DATE:17/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1720 Long E 1132  
 start stop duration  
 TIME :07:31:52 07:50:25 19 (min) Purpose code: 3  
 LOG :5848.89 5849.91 1.02 Area code : 3  
 FDEPTH: 143 142 GearCond.code:  
 BDEPTH: 143 142 Validity code:  
 Towing dir: 170° Wire out: 420 m Speed: 30 kn\*10

Sorted: 126 Kg Total catch: 3775.80 CATCH/HOUR: 11923.58

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Dentex macrophthalmus       | 6277.26    | 55045   | 52.65       | 9576 |
| Trachurus capensis          | 3101.68    | 30221   | 26.01       | 9575 |
| Trachurus trecae            | 1106.53    | 14305   | 9.28        | 9577 |
| Merluccius capensis, female | 740.84     | 2179    | 6.21        | 9573 |
| Atractoscion aequidens      | 528.63     | 663     | 4.43        |      |
| Spondyliosoma cantharus     | 54.95      | 95      | 0.46        |      |
| Pterothrissus belloci       | 34.11      | 663     | 0.29        |      |
| Trigla lyra                 | 30.32      | 189     | 0.25        |      |
| Merluccius capensis, male   | 28.42      | 189     | 0.24        | 9574 |
| Zeus faber                  | 20.84      | 95      | 0.17        |      |
| Total                       | 11923.58   |         | 99.99       |      |

PROJECT STATION:2805  
 DATE:17/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1730 Long E 1129  
 start stop duration  
 TIME :09:27:16 09:57:18 30 (min) Purpose code: 3  
 LOG :5859.72 5861.29 1.57 Area code : 3  
 FDEPTH: 177 175 GearCond.code:  
 BDEPTH: 177 175 Validity code:  
 Towing dir: 180° Wire out: 500 m Speed: 30 kn\*10

Sorted: 181 Kg Total catch: 945.56 CATCH/HOUR: 1891.12

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Dentex macrophthalmus          | 575.10     | 3804    | 30.41       | 9580 |
| Trachurus trecae               | 523.50     | 4740    | 27.68       | 9583 |
| Trachurus capensis             | 489.30     | 4350    | 25.87       | 9582 |
| Atractoscion aequidens         | 69.30      | 74      | 3.66        |      |
| Chelidonichthys capensis       | 50.76      | 82      | 2.68        |      |
| Pterothrissus belloci          | 45.00      | 6604    | 2.38        | 9580 |
| Merluccius capensis, female    | 37.44      | 154     | 1.98        | 9578 |
| Synagrops microlepis           | 30.90      | 5150    | 1.63        |      |
| Trigla lyra                    | 27.00      | 204     | 1.43        |      |
| Squalus megalops               | 18.00      | 30      | 0.95        |      |
| Spondyliosoma cantharus        | 10.20      | 14      | 0.54        |      |
| Merluccius capensis, male      | 9.60       | 58      | 0.51        | 9579 |
| Trichiurus lepturus            | 1.80       | 44      | 0.10        |      |
| Merluccius capensis, juveniles | 1.56       | 84      | 0.08        | 9581 |
| Perulibatrachus rosignoli      | 0.90       | 14      | 0.05        |      |
| Small squids                   | 0.60       | 14      | 0.03        |      |
| Austroglossus microlepis       | 0.14       | 14      | 0.01        |      |
| Total                          | 1891.10    |         | 99.99       |      |

PROJECT STATION:2806  
 DATE:17/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1739 Long E 1124  
 start stop duration  
 TIME :11:55:54 12:26:04 30 (min) Purpose code: 3  
 LOG :5872.15 5873.65 1.47 Area code : 3  
 FDEPTH: 280 274 GearCond.code:  
 BDEPTH: 280 274 Validity code:  
 Towing dir: 170° Wire out: 820 m Speed: 30 kn\*10

Sorted: 175 Kg Total catch: 1617.38 CATCH/HOUR: 3234.76

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Helicolenus dactylopterus   | 1152.36    |         | 35.62       |      |
| Merluccius capensis, female | 636.72     | 1962    | 19.68       | 9584 |
| Trachurus capensis          | 407.16     | 2052    | 12.59       | 9587 |
| Merluccius capensis, male   | 331.12     | 1144    | 10.24       | 9585 |
| Pterothrissus belloci       | 169.56     | 810     | 5.24        |      |
| Atractoscion aequidens      | 149.04     | 108     | 4.61        |      |
| Dentex macrophthalmus       | 130.68     | 486     | 4.04        |      |
| Squalus megalops            | 112.32     | 270     | 3.47        |      |
| Trachurus trecae            | 85.32      | 756     | 2.64        | 9586 |
| SPARIDAE                    | 35.64      | 54      | 1.10        |      |
| Nezumia micronychodon       | 12.96      | 324     | 0.40        |      |
| Chlorophthalmus atlanticus  | 6.48       | 270     | 0.20        |      |
| Selachophidium guentheri    | 3.24       | 162     | 0.10        |      |
| Lophius vomerinus           | 2.16       | 54      | 0.07        |      |
| Total                       | 3234.76    |         | 100.00      |      |

PROJECT STATION:2807  
 DATE:17/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1739 Long E 1131  
 start stop duration  
 TIME :13:53:10 14:13:10 20 (min) Purpose code: 3  
 LOG :5882.53 5883.61 1.08 Area code : 3  
 FDEPTH: 174 174 GearCond.code:  
 BDEPTH: 174 174 Validity code:  
 Towing dir: 360° Wire out: 600 m Speed: 30 kn\*10

Sorted: 181 Kg Total catch: 1439.65 CATCH/HOUR: 4318.95

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Dentex macrophthalmus          | 1998.93    |         | 46.28       |      |
| Trachurus capensis             | 1634.61    | 25668   | 37.85       | 9590 |
| Atractoscion aequidens         | 332.58     | 378     | 7.70        |      |
| Merluccius capensis, female    | 162.96     | 465     | 3.77        | 9589 |
| Synagrops microlepis           | 59.34      | 39558   | 1.37        |      |
| Chelidonichthys capensis       | 43.47      | 102     | 1.01        |      |
| Pterothrissus belloci          | 29.67      | 792     | 0.69        |      |
| Merluccius capensis, male      | 20.82      | 96      | 0.48        | 9588 |
| Merluccius capensis, juveniles | 17.25      | 828     | 0.40        |      |
| Helicolenus dactylopterus      | 13.80      | 345     | 0.32        |      |
| Trigla lyra                    | 2.76       | 33      | 0.06        |      |
| Austroglossus microlepis       | 2.07       | 33      | 0.05        |      |
| Bathynectes piperitus          | 0.69       | 102     | 0.02        |      |
| Total                          | 4318.95    |         | 100.00      |      |

PROJECT STATION:2808  
 DATE:17/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1739 Long E 1139  
 start stop duration  
 TIME :15:36:40 16:06:27 30 (min) Purpose code: 3  
 LOG :5893.69 5895.33 1.63 Area code : 3  
 FDEPTH: 104 102 GearCond.code:  
 BDEPTH: 104 102 Validity code:  
 Towing dir: 360° Wire out: 330 m Speed: 30 kn\*10

Sorted: 33 Kg Total catch: 1059.11 CATCH/HOUR: 2118.22

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trachurus capensis          | 1292.70    | 16390   | 61.03       | 9593 |
| Trachurus trecae            | 649.76     | 8406    | 30.67       | 9594 |
| Atractoscion aequidens      | 101.68     | 310     | 4.80        |      |
| Merluccius capensis, female | 48.24      | 374     | 2.28        | 9591 |
| Merluccius capensis, male   | 17.16      | 144     | 0.81        | 9592 |
| Galeichthys feliceps        | 8.68       | 62      | 0.41        |      |
| Total                       | 2118.22    |         | 100.00      |      |

PROJECT STATION:2809  
 DATE:18/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1756 Long E 1137  
 start stop duration  
 TIME :05:23:12 05:47:27 24 (min) Purpose code: 3  
 LOG :5928.35 5929.55 1.19 Area code : 3  
 FDEPTH: 130 138 GearCond.code:  
 BDEPTH: 130 138 Validity code:  
 Towing dir: 355° Wire out: 360 m Speed: 30 kn\*10

Sorted: 31 Kg Total catch: 1006.48 CATCH/HOUR: 2516.20

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Dentex macrophthalmus          | 1663.70    | 18005   | 66.12       | 9597 |
| Trachurus capensis             | 449.50     | 6898    | 17.86       | 9598 |
| Atractoscion aequidens         | 173.60     | 465     | 6.90        |      |
| Merluccius capensis, female    | 101.40     | 610     | 4.03        | 9595 |
| Chelidonichthys capensis       | 71.30      | 233     | 2.83        |      |
| Merluccius capensis, male      | 30.35      | 233     | 1.21        | 9596 |
| Galeichthys feliceps           | 12.40      | 78      | 0.49        |      |
| Merluccius capensis, juveniles | 7.75       | 310     | 0.31        |      |
| Etrumeus whiteheadi            | 6.20       | 78      | 0.25        |      |
| Total                          | 2516.20    |         | 100.00      |      |

PROJECT STATION:2810  
 DATE:18/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1757 Long E 1127  
 start stop duration  
 TIME :07:21:25 07:38:50 17 (min) Purpose code: 3  
 LOG :5941.00 5941.90 0.88 Area code : 3  
 FDEPTH: 255 258 GearCond.code:  
 BDEPTH: 255 258 Validity code:  
 Towing dir: 170° Wire out: 720 m Speed: 30 kn\*10

Sorted: 188 Kg Total catch: 1623.94 CATCH/HOUR: 5731.55

| SPECIES                        | CATCH/HOUR |         | % OF TOT. C | SAMP |
|--------------------------------|------------|---------|-------------|------|
|                                | weight     | numbers |             |      |
| Dentex macrophthalmus          | 2135.29    | 9512    | 37.26       | 9601 |
| Merluccius capensis, female    | 1644.00    | 7429    | 28.68       | 9599 |
| Merluccius capensis, male      | 1136.72    | 5527    | 19.83       | 9600 |
| Pterothrissus belloci          | 439.69     | 3356    | 7.67        |      |
| Trachurus capensis             | 295.41     | 2732    | 5.15        | 9602 |
| Squalus megalops               | 25.16      | 60      | 0.44        |      |
| Synagrops microlepis           | 24.56      | 2728    | 0.43        |      |
| Todarodes sagittatus           | 11.05      | 32      | 0.19        |      |
| Merluccius capensis, juveniles | 9.21       | 462     | 0.16        | 9603 |
| Trigla lyra                    | 5.54       | 32      | 0.10        |      |
| Hyperglyphe moselii            | 4.91       | 92      | 0.09        |      |
| Total                          | 5731.54    |         | 100.00      |      |

PROJECT STATION:2811  
 DATE:18/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1810  
 start stop duration Long E 1129  
 TIME :09:38:17 10:10:00 32 (min) Purpose code: 3  
 LOG :5954.41 5955.92 1.53 Area code : 3  
 FDEPTH: 352 350 GearCond.code:  
 BDEPTH: 352 350 Validity code:  
 Towing dir: 180° Wire out: 960 m Speed: 30 kn\*10

Sorted: 158 Kg Total catch: 1036.00 CATCH/HOUR: 1942.50

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Helicolenus dactylopterus   | 993.04     | 13986   | 51.12       |      |
| Merluccius capensis, female | 553.05     | 1388    | 28.47       | 9604 |
| Merluccius capensis, male   | 267.51     | 683     | 13.77       | 9605 |
| Dentex macrophthalmus       | 37.80      | 118     | 1.95        |      |
| Nezumia micronychodon       | 29.14      | 906     | 1.50        |      |
| Selachophidium guentheri    | 14.18      | 315     | 0.73        |      |
| Hoplostethus cadenati       | 11.81      | 866     | 0.61        |      |
| Pterothrissus belloci       | 11.03      | 79      | 0.57        |      |
| Todarodes sagittatus        | 6.30       | 79      | 0.32        |      |
| Trachurus capensis          | 4.73       | 39      | 0.24        |      |
| Synagrops microlepis        | 3.94       | 551     | 0.20        |      |
| Lophius vaillanti           | 3.30       | 2       | 0.17        |      |
| Bathynectes piperitus       | 3.15       | 118     | 0.16        |      |
| Neoharriotta pinnata        | 3.08       | 2       | 0.16        |      |
| Total                       | 1942.06    |         | 99.97       |      |

PROJECT STATION:2812  
 DATE:18/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1817  
 start stop duration Long E 1132  
 TIME :11:42:48 12:02:32 20 (min) Purpose code: 3  
 LOG :5964.33 5965.36 1.01 Area code : 3  
 FDEPTH: 248 251 GearCond.code:  
 BDEPTH: 248 251 Validity code:  
 Towing dir: 360° Wire out: 790 m Speed: 30 kn\*10

Sorted: 153 Kg Total catch: 1409.08 CATCH/HOUR: 4227.24

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Merluccius capensis, female | 1874.04    | 6045    | 44.33       | 9607 |
| Merluccius capensis, male   | 1143.18    | 4362    | 27.04       | 9606 |
| Dentex macrophthalmus       | 753.90     | 3393    | 17.83       |      |
| Trachurus capensis          | 248.70     | 2511    | 5.88        | 9608 |
| Pterothrissus belloci       | 158.40     | 1434    | 3.75        |      |
| Atractoscion aequidens      | 25.38      | 27      | 0.60        |      |
| Synagrops microlepis        | 6.60       | 744     | 0.16        |      |
| Helicolenus dactylopterus   | 6.60       | 138     | 0.16        |      |
| Sufflogobius bibarbatatus   | 4.95       | 579     | 0.12        |      |
| Todarodes sagittatus        | 3.84       | 27      | 0.09        |      |
| MYCTOPHIDAE                 | 1.65       | 606     | 0.04        |      |
| Total                       | 4227.24    |         | 100.00      |      |

PROJECT STATION:2813  
 DATE:18/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1817  
 start stop duration Long E 1138  
 TIME :13:29:07 13:44:13 15 (min) Purpose code: 3  
 LOG :5973.69 5974.44 0.73 Area code : 3  
 FDEPTH: 140 139 GearCond.code:  
 BDEPTH: 140 139 Validity code:  
 Towing dir: 360° Wire out: 500 m Speed: 30 kn\*10

Sorted: 125 Kg Total catch: 3867.56 CATCH/HOUR: 15470.24

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Trachurus capensis          | 13868.16   | 295864  | 89.64       | 9609 |
| Dentex macrophthalmus       | 1143.28    | 8432    | 7.39        |      |
| Merluccius capensis, female | 332.32     | 992     | 2.15        | 9611 |
| Etrumeus whiteheadi         | 114.08     | 1612    | 0.74        | 9610 |
| Merluccius capensis, male   | 12.40      | 124     | 0.08        | 9612 |
| Total                       | 15470.24   |         | 100.00      |      |

PROJECT STATION:2814  
 DATE:18/ 2/99 GEAR TYPE: BT No:12 POSITION:Lat S 1816  
 start stop duration Long E 1146  
 TIME :15:08:42 15:38:19 30 (min) Purpose code: 3  
 LOG :5983.00 5984.63 1.61 Area code : 3  
 FDEPTH: 114 113 GearCond.code:  
 BDEPTH: 114 113 Validity code:  
 Towing dir: 360° Wire out: 400 m Speed: 30 kn\*10

Sorted: 20 Kg Total catch: 169.86 CATCH/HOUR: 339.72

| SPECIES                     | CATCH/HOUR |         | % OF TOT. C | SAMP |
|-----------------------------|------------|---------|-------------|------|
|                             | weight     | numbers |             |      |
| Aequorea aequorea           | 192.96     | 14      | 56.80       |      |
| Trachurus capensis          | 112.32     | 3234    | 33.06       | 9615 |
| Merluccius capensis, female | 18.56      | 172     | 5.46        | 9613 |
| Merluccius capensis, male   | 6.92       | 64      | 2.04        | 9614 |
| Perulibatrachus rosignoli   | 6.08       | 16      | 1.79        |      |
| Etrumeus whiteheadi         | 2.56       | 32      | 0.75        |      |
| Octopus vulgaris            | 0.16       | 16      | 0.05        |      |
| Bathynectes piperitus       | 0.16       | 16      | 0.05        |      |
| Total                       | 339.72     |         | 100.00      |      |

## Annex IV Instruments and fishing gear used

The Simrad scientific echo sounder EK 500/38 kHz, was used during the survey for estimation of fish density. The Bergen Echo Integrator system (BEI) logging raw data from the echo sounder, was used to scrutinise the acoustic records, and to allocate integrator data to fish species. All raw data were stored to CD disc, and a backup of the database of scrutinised data, stored. The details of the settings of the 38 kHz echo sounder were as follows:

### Transceiver-1 menu

|                    |           |
|--------------------|-----------|
| Transducer depth   | 5.5 m     |
| Absorption coeff.  | 10 dB/km  |
| Pulse length       | medium    |
| Bandwidth          | wide      |
| Max. power         | 2 000 W   |
| Angle sensitivity  | 21.9      |
| 2-way beam angle   | -21.0 dB  |
| SV transducer gain | 27.48 dB  |
| TS transducer gain | 27.72 dB  |
| 3 dB Beamwidth     | 6.8 deg   |
| Alongship offset   | -0.05 deg |
| Athwartship offset | 0.14 deg  |

### Display menu

|                   |          |
|-------------------|----------|
| Echogram          | 1        |
| Bottom range      | 12 m     |
| Bottom start      | 10 m     |
| TVG               | 20 log R |
| SV Colour minimum | -64 dB   |
| TS Colour minimum | -50 dB   |

### Printer settings

|                   |                  |
|-------------------|------------------|
| Range             | 0-250 m, 0-500 m |
| TVG               | 20 log R         |
| SV Colour minimum | -64 dB           |

### Bottom detection menu

|               |        |
|---------------|--------|
| Minimum level | -45 dB |
|---------------|--------|

## HYDROGRAPHY

Conductivity, temperature, density, and oxygen were sampled regularly at CTD stations with a Seabird CTD-sonde. The salinity was calculated by a computer.

## FISHING GEAR

The small "Åkrehamn" pelagic trawl and "Gisund super" bottom trawl was used for sampling pelagic fish.

The bottomtrawl had a headline of 31 m, footrope of 47 m and 20 mm meshsize in the codend with an innernet of 10 mm meshsize. The estimated headline height is 5 m and distance

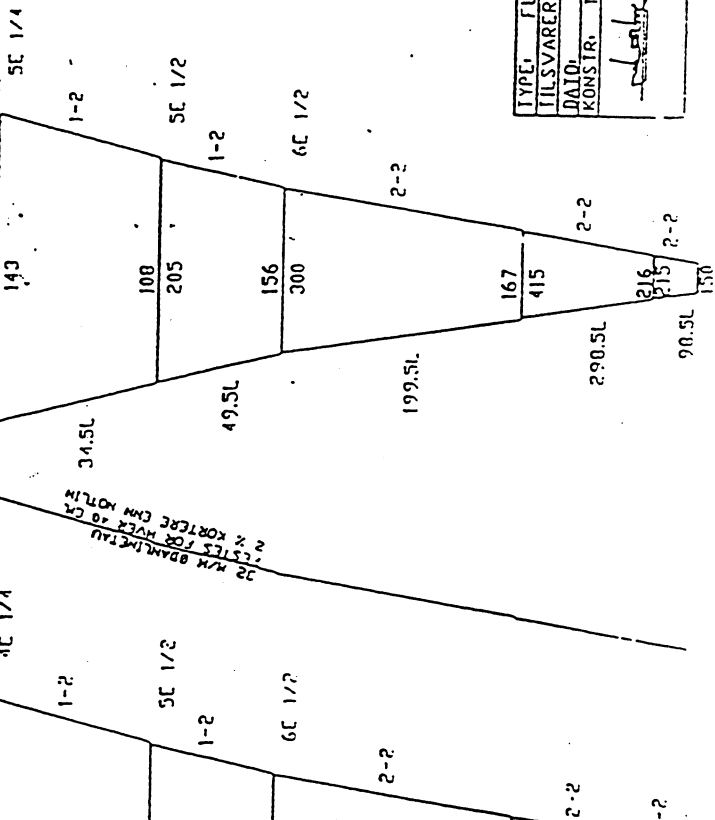
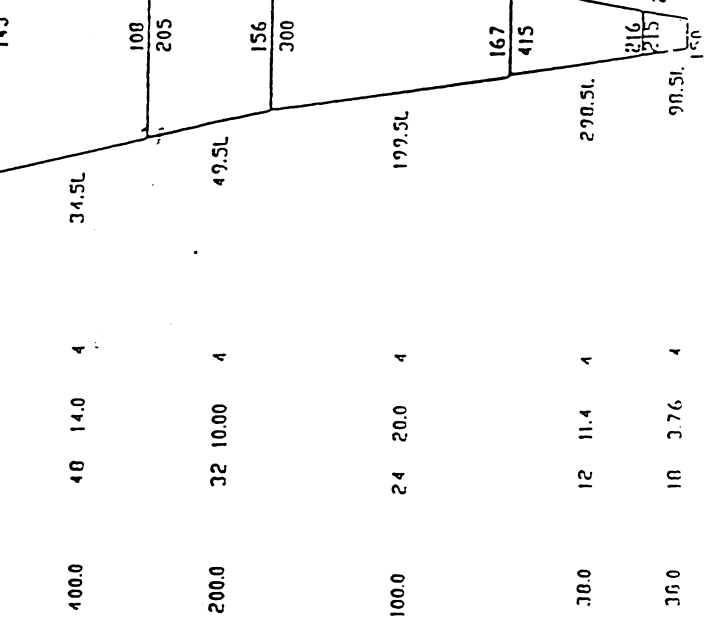
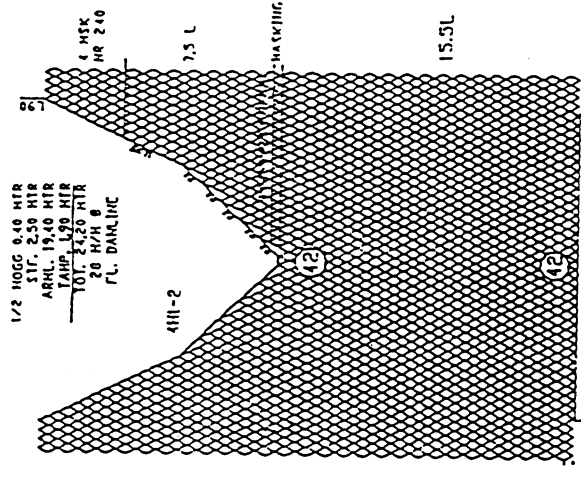
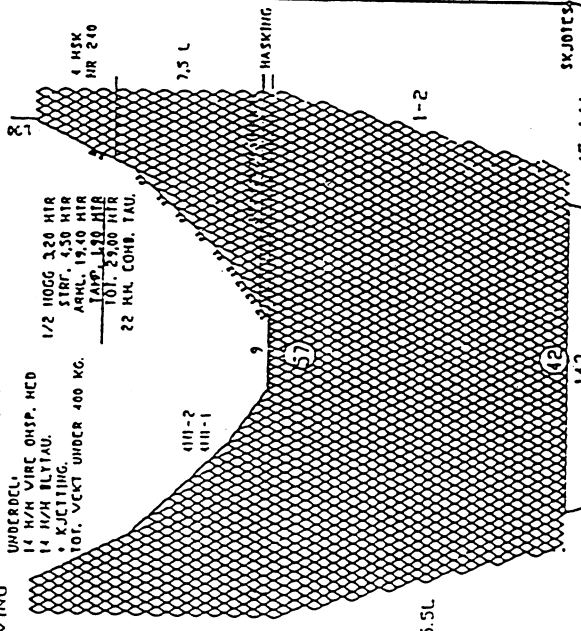
between the wings during towing about 18 m. The trawl is equipped with a 12" rubber bobbins gear and the Tyborøn 7.8 sqm (1670 kg) trawl doors were used for both trawls. Complete drawings of the trawls used are included.

# F/F Dr. Fridtjof Nansen

MASKER  
H/H NR. I MTR. I EVING

| MASKER | TRAAD | LENGDE | MASKER |
|--------|-------|--------|--------|
| 16200  | 160   | 19.4   | 4      |
| 16200  | 160   | 25.9   | 4      |
| 4000   | 40    | 14.0   | 4      |
| 2000   | 32    | 10.00  | 4      |
| 1000   | 24    | 20.0   | 4      |
| 300    | 12    | 11.4   | 4      |
| 300    | 10    | 3.76   | 4      |

OVERDEL:  
20 STR. IV. KULER  
SØRSLUTT AV HETT.  
UNDERDEL:  
14 M/M VARE ØHSP. HED  
14 M/M BLYTAU.  
KJØTTING.  
TOT. VEKT UNDER 400 KG.  
101. 2300 HIR  
22 KH. COHB. TAU.



|            |                             |
|------------|-----------------------------|
| TYPE:      | FLYETRAL 198 HSK X 1620 H/H |
| TILSVARER: | 4010 X 80 MROHKKR.320       |
| DAID:      | 23/6 93                     |
| KONSTR.:   | T-H                         |
| SKALA:     | 0                           |

FRIJØTTA FRIIDRETTEN 1/3

# F/F Dr. Fridtjof Nansen

OVER/UNDER/SIDER

OVERDEL:  
50 STK 11" PLASTKULER

UNDERDEL  
14 M/M VIRE OMSP. MED  
14 M/M BLYTAU  
+ KJETTING.

TOTAL VEKT UNDER 400 KG.

SIDER.

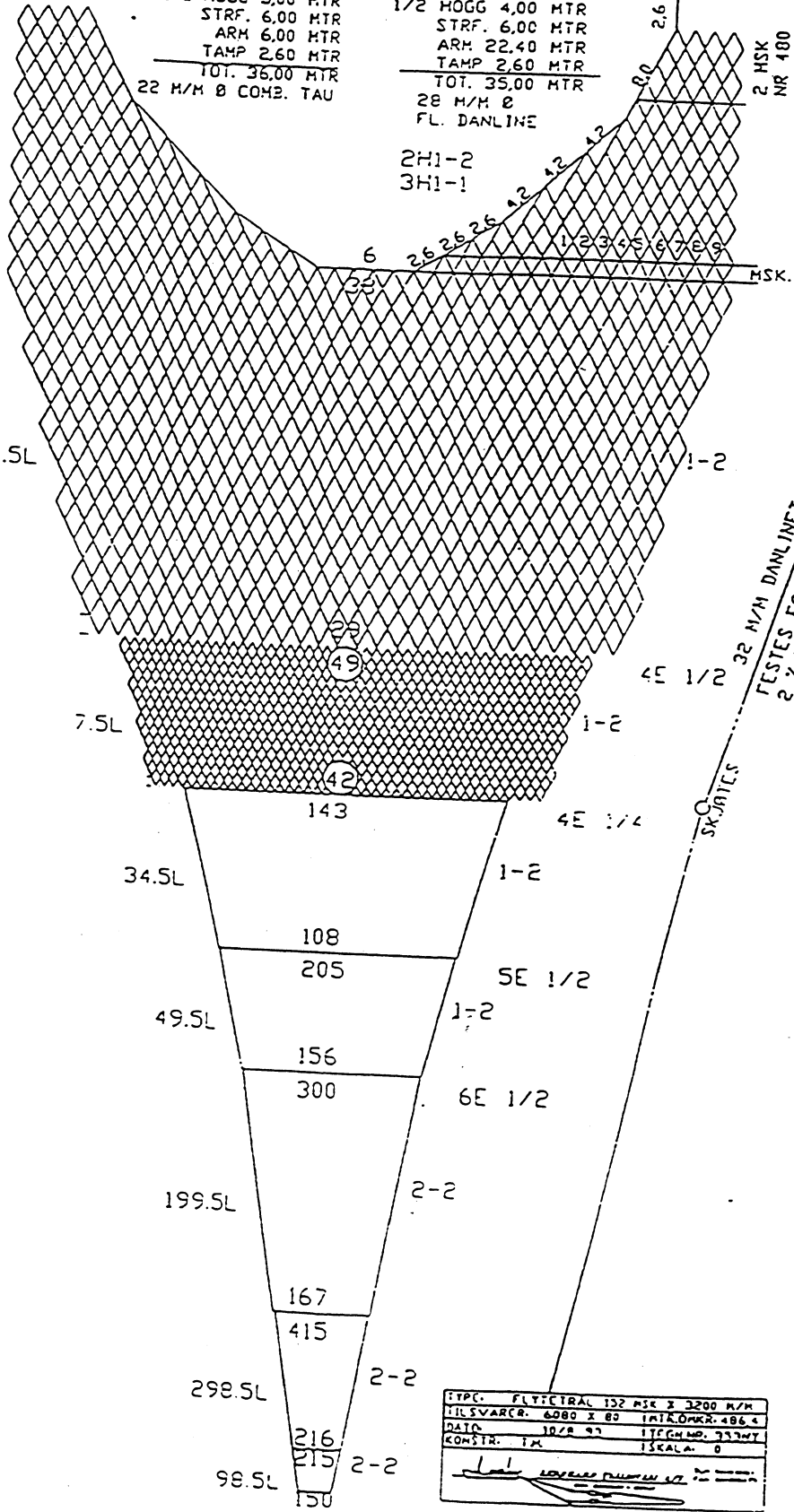
1/2 HOGG 5,00 MTR  
STRF. 6,00 MTR  
ARM 6,00 MTR  
TAMP 2,60 MTR  
TOT. 35,00 MTR  
22 M/M Ø COMB. TAU

1/2 HOGG 4,00 MTR  
STRF. 6,00 MTR  
ARM 22,40 MTR  
TAMP 2,60 MTR  
TOT. 35,00 MTR  
28 M/M Ø  
FL. DANLINE

2H1-2  
3H1-1

MASKER TRAAD LENGDE MASKER  
M/M NR. I MTR. I EVING

|        |     |       |        |
|--------|-----|-------|--------|
| 3200.0 | 240 | 22.4  | 4      |
| 3200.0 | 240 | 32.0  | 4 9.5L |
| 620.0  | 160 | 13.0  | 4      |
| 400.0  | 48  | 14.0  | 4      |
| 200.0  | 32  | 10.00 | 4      |
| 00.0   | 24  | 20.0  | 4      |
| 38.0   | 12  | 11.4  | 4      |
| 38.0   | 18  | 3.76  | 4      |



32 M/M DANLINETAU  
FESTES FOR HVER 40 CM  
2 1/2 KORTERE ENN NOTLIN

TYPE: FLYTETRAL 132 MSK 2 3200 M/M  
TILSVARER: 6080 X 80 1MTR. ØMSK. 4864  
DATO: 10/8 93 ITCOMR. 3732MT  
KONSTR. TM ISKALA: 0  
*[Signature]*

