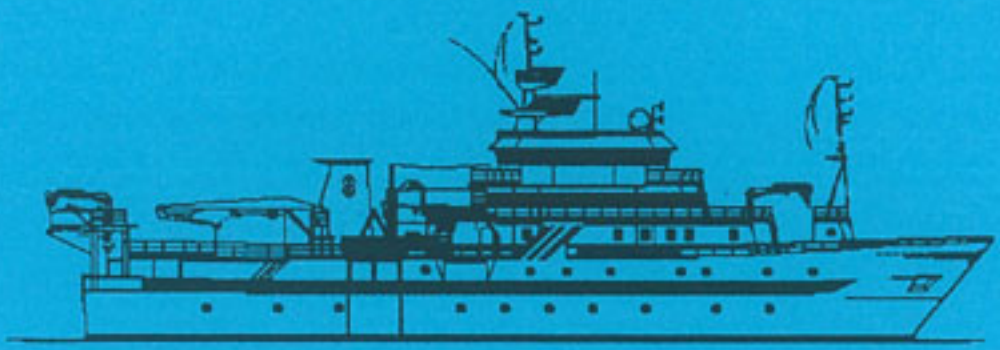
NORAD - FAO/UNDP PROJECT GLO 82/001

CRUISE REPORTS "DR. FRIDTJOF NANSEN"



# SURVEYS OF THE FISH RESOURCES OF NAMIBIA

Preliminary Report Cruise No 2/94

Part I
Surveys of the hake stocks
26 April - 31 May 1994

and

Part II
Surveys of the pelagic stocks
1 June - 23 June 1994

Ministry of Fisheries & Marine Resources
Swakopmund
Republic of Namibia

Institute of Marine Research
Bergen
Norway

The DR FRIDTJOF NANSEN RESEARCH PROGRAMME is sponsored by the Norwegian Agency for Development Cooperation (NORAD), the Food and Agriculture Organization of the United Nations (FAO), and the United Nations Development Programme (UNDP). The programme in Namibia is organized and planned under agreements between NORAD, Namibian authorities and the Institute of Marine Research, Norway. Its execution is the responsibility of the Institute of Marine Research, Bergen in cooperation with the Ministry of Fisheries & Marine Resources of Namibia.

The programme has comprised the following surveys:

| | | |
|---|---|---|
| Survey | 1/90 | 25 January to 19 March 1990 |
| " | 2/90 | 27 May to 20 June 1990 |
| " | 3/90 | 11 September to 6 October 1990 |
| " | 1/91 | 25 January to 23 March 1991 |
| " | 2/91 | 23 October to 16 December 1991 |
| " | 1/92 | 23 April to 21 June 1992 |
| " | 2/92 | 20 October to 16 December 1992 |
| " | 1/93 | 20 January to 19 March 1993 |
| " | 2/93 | 21 April to 25 May 1993 |
| " | 1/94 | 19 January to 21 February 1994* |
| " | 2/94 | 26 April to 24 June 1994 |

* First survey with the new R/V 'Dr. Fridtjof Nansen'.

# PART I

# SURVEYS OF THE HAKE STOCKS
## 26 April - 31 May 1994

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# CHAPTER 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 2/1994

The main objective was to continue the time series obtained with the old 'Dr. Fridtjof Nansen' of the demersal trawl surveys on the hake stocks. This vessel concluded her operations in Namibia in June 1993. As part of the survey program, the complete demersal fish community within the distribution range of the hake stocks would be studied. The less abundant, but commercially important species as monk, sole and kingklip would be given a special emphasis.

The acoustic system was used to observe possible mid-water occurrence of the hakes. The survey design for the swept-area trawl programme was based on a semi-random distribution of hauls along transects perpendicular to the coast. The transects were intended to cover the depth ranges

of the two hake species and with a density of stations adapted to the expected fish densities. Biomass estimates of hake were based on post stratification by depth and density aggregations.

## 1.3 PARTICIPATION

The scientific staff consisted of:

From Namibia:

Filimon Dauseb, Hashali Hamakuaya, Malakia Shimanda and Jamy Traut (26.4 - 31.5)
Michael Evenson, Anke Lehmensiek and Heinie Lesch (26.4 - 16.5)
Michael O'Toole (5.5-16.5)
Johnny Gamathan, Siegfred Gowaseb and Benny Ushona (18.5 - 31.5)

From Norway:

Oddgeir Alvheim, Terje Haugland and Erling Molvær (26.4 - 31.5)
Tore Strømme (5.5 - 16.5), Sigbjørn Mehl (18.5 - 31.5)

## 1.4 NARRATIVE

The course tracks with the positions of the fishing and hydrographic stations are shown in Figures 1 a-c.

The vessel left Walvis Bay on the evening of 26 April and steamed south for about 36 hours to the Orange River to commence the work. The trawl stations were randomly distributed along transects perpendicular to the coast, about 25NM apart. CTD-stations were taken on every trawl station, and additional CTD-stations were taken along standard hydrographic transects. On 5 May the vessel called on Lüderitz to pick up two members of the scientific staff, and continued to cover the Southern Region and the southern part of the Central Region. On 16 May 'Dr. Fridtjof Nansen' came to Walvis Bay to exchange personnel and celebrate the Norwegian Constitution Day on 17 May. The cruise continued on the morning of 18 May in the northern part of the Central Region and proceeded to the Northern Region. In order to avoid steaming during day time, 5 transects were passed to be taken on the way back to Walvis Bay. The northern point of the survey area (off the Cunene River) was reached on 25 May, and 'Dr. Fridtjof Nansen' headed for Walvis Bay, taking the 5 last transects on the way southward. The weather conditions were generally favourable except for a few days with gale, and the programme was completed according to the plans. 210 bottom trawl and 196 CTD-stations were sampled.

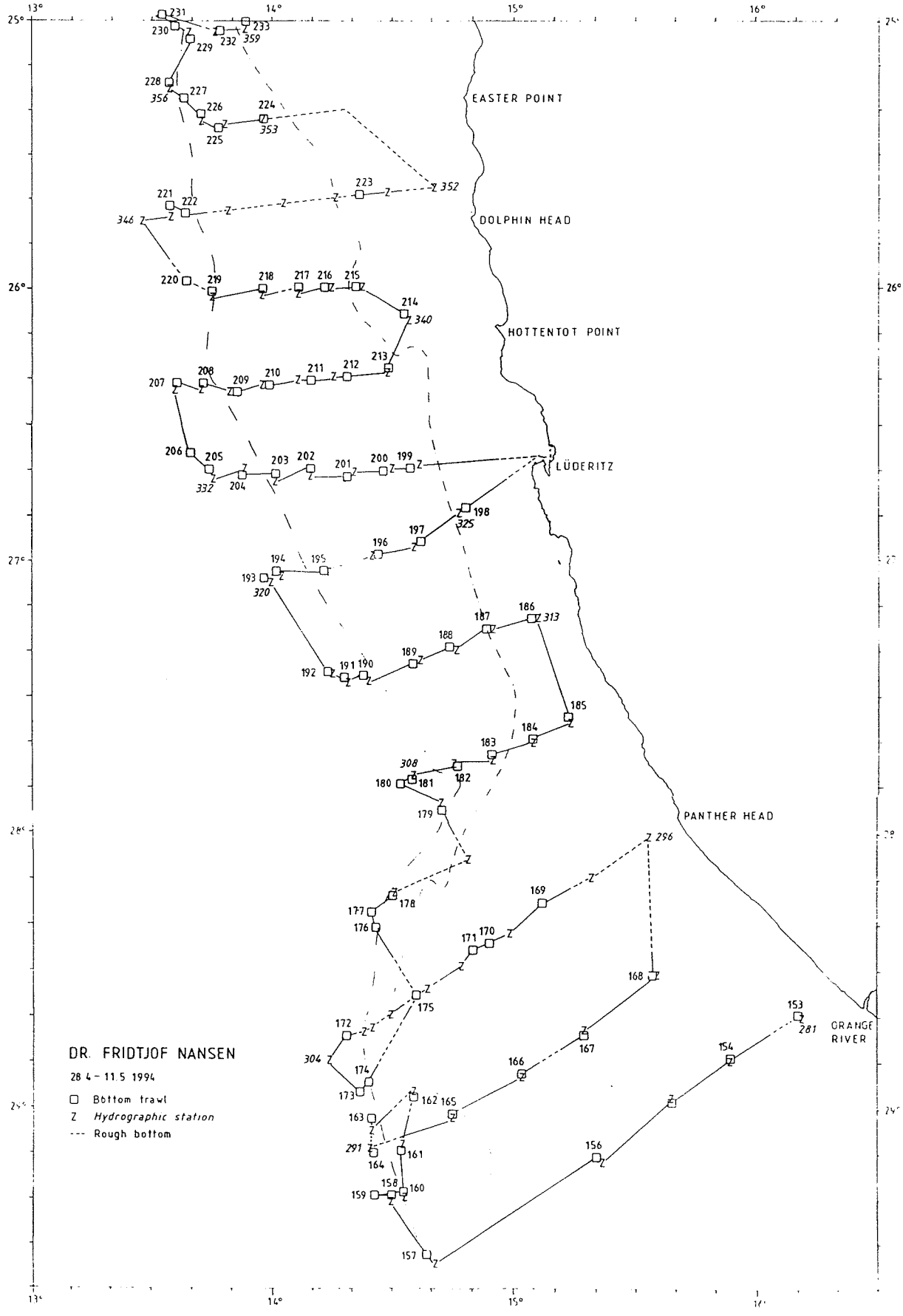



Figure 1a Southern Region (Orange River to St. Francis Bay). Course tracks, fishing stations and hydrographic stations.

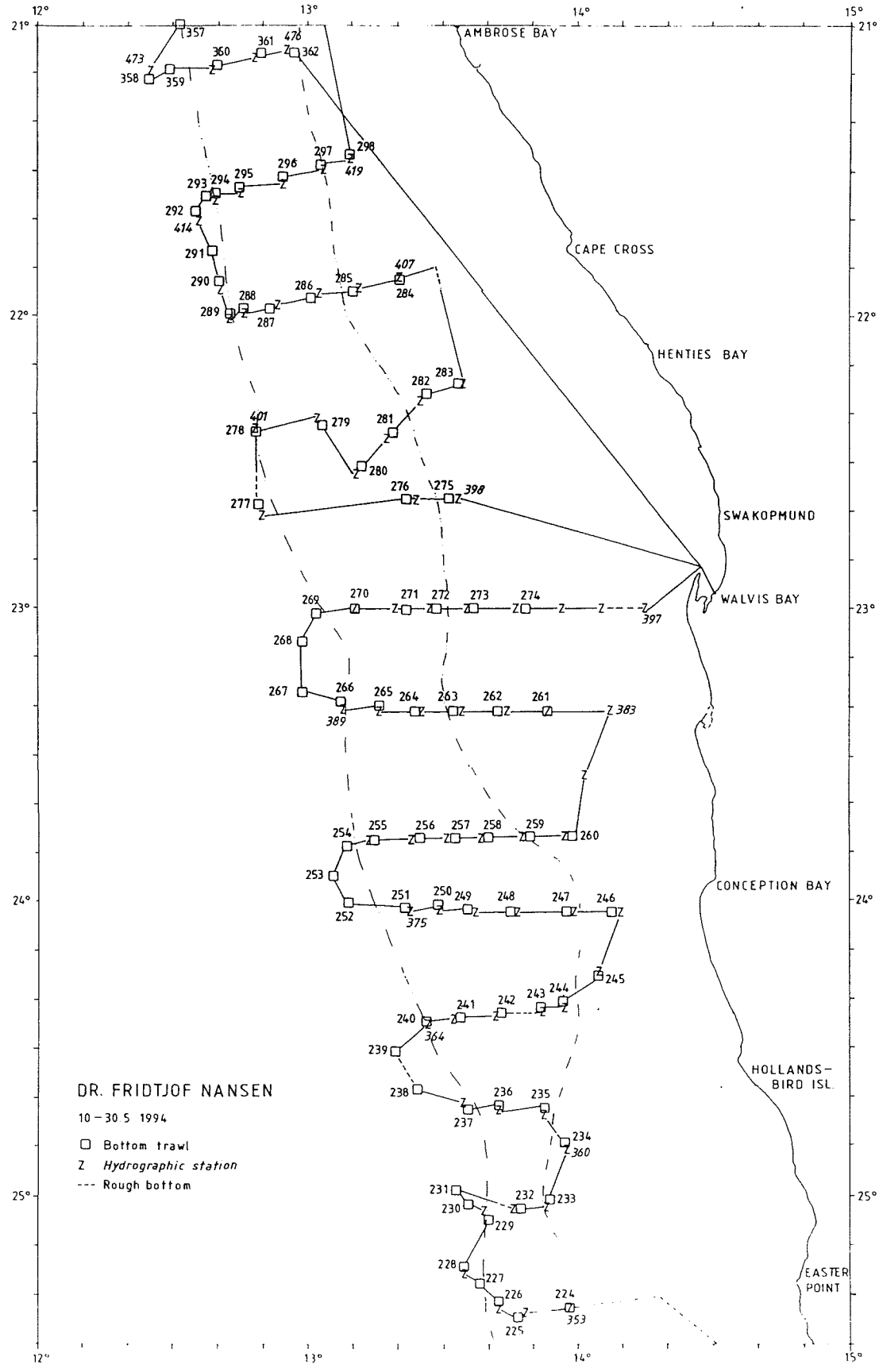



Figure 1b Central Region (St. Francis Bay to Ambrose Bay). Course tracks, fishing stations and hydrographic stations.

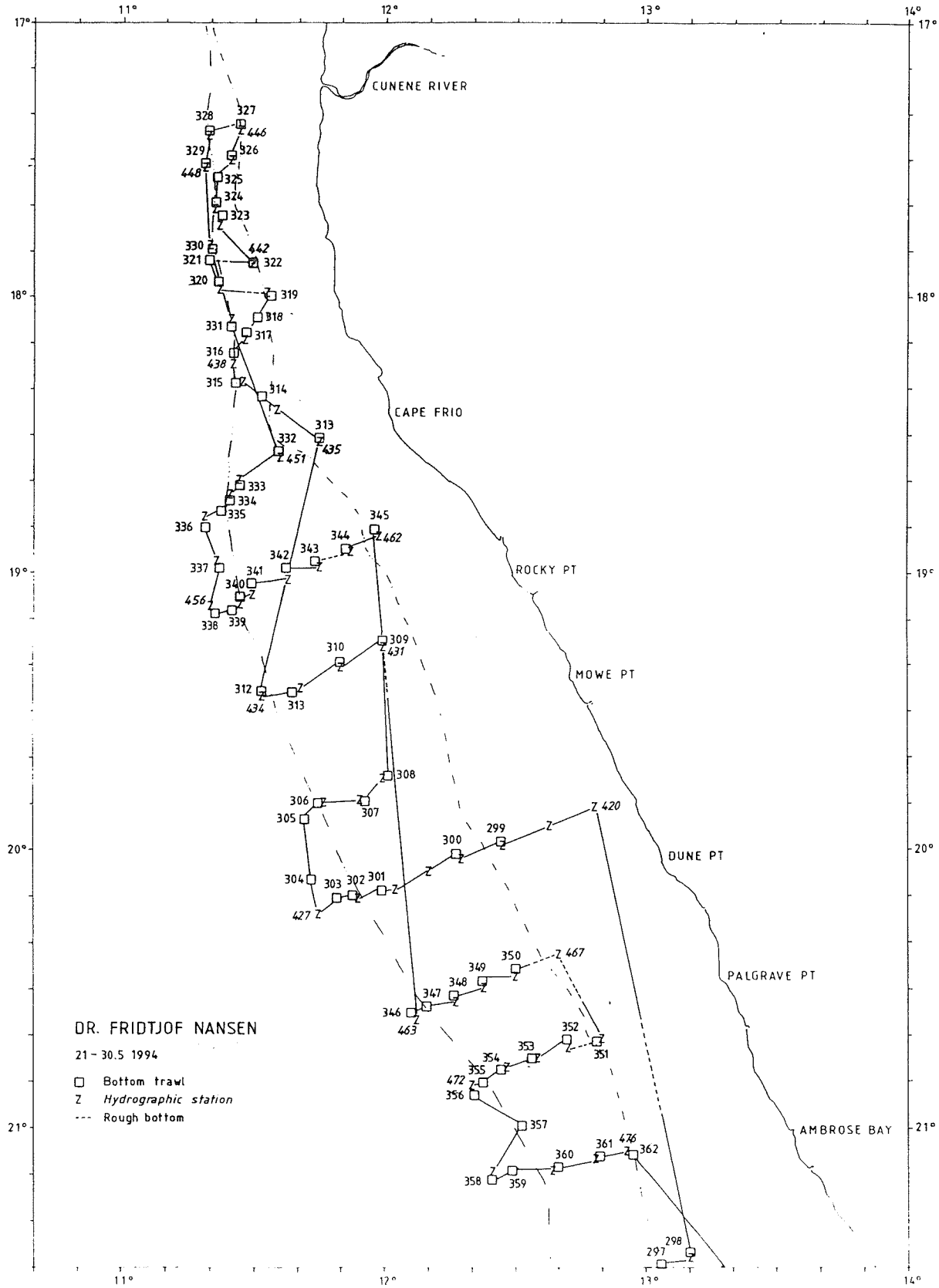



Figure 1c Northern Region (Ambrose Bay to Cunene River). Course tracks, fishing stations and hydrographic stations.

# CHAPTER 2 HYDROGRAPHY

Surface sea temperature could not be collected during the survey, as a new data logging system was still under development.

Bottom temperature and oxygen were recorded at all fishing stations (Figures 2a-c and 3a-c). This was done in order to investigate the effect of these parameters on the distribution of the hake. Low oxygen conditions characterize the shelf environment until beyond 200 m bottom depth from Lüderitz and northwards and parts of the shallow waters until 100-150 m between Conception Bay and Rocky Point have values less than 0.25ml $O_2$/l.

The oxygen maps were overlaid with the distribution maps of the Cape hake in Figures 4a-c. They show that the main part of the hake stock is found between the oxyclines 0.25/0.5 and 1.0 ml/l, indicating that this species can easily tolerate such relatively low figures.

The vertical distribution of temperature, salinity and oxygen along four standard hydrographic transects, collected with a CTD and an attached rosette for water samples, are shown in Figures 5a-c.

In the southern region, off Panther Head, the surface waters are characterized by relatively warm water (16-18°C) with a narrow upwelling zone with colder (13-15°C) water close to the coast. Much of the shelf and coastal waters had high values of oxygen and the offshore water was relatively stable and defined by a strong thermocline at about 50 m depth. Further to the north, off Dolphin Head, upwelling was intense in the subsurface coastal waters. Oxygen deficient waters at the bottom had developed and the 0.5 ml oxycline was located approximately at the 200 m depth contour.

In the central region, the low oxygen conditions on the bottom prevail and there are indications of upwelling in the coastal surface waters.

In northern waters, upwelling was recorded off Dune Point, and the 0.5 ml oxycline was now located at 300 m bottom depth.

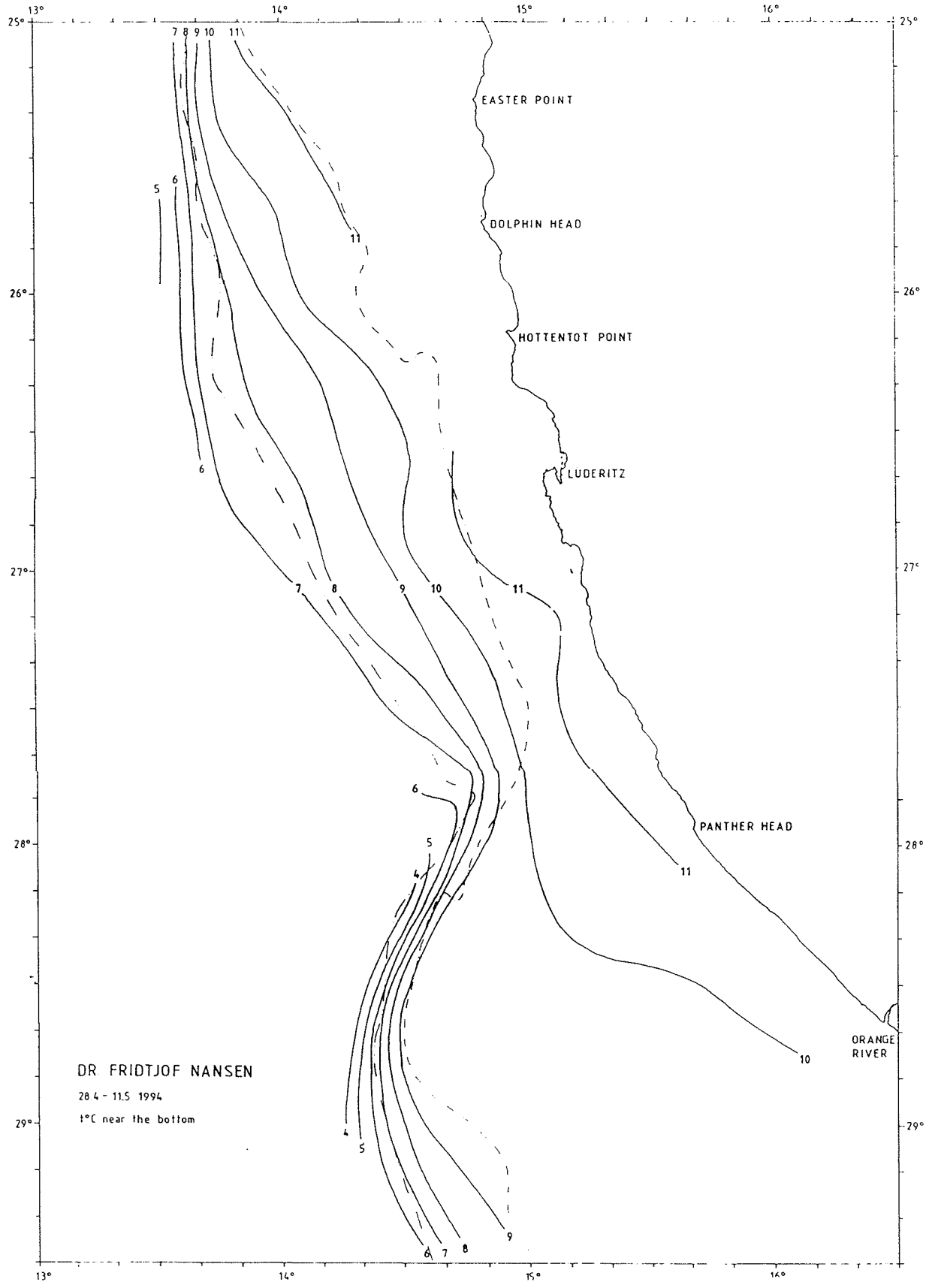



Figure 2a Orange River to St. Francis Bay. Distribution of sea temperature near the bottom.

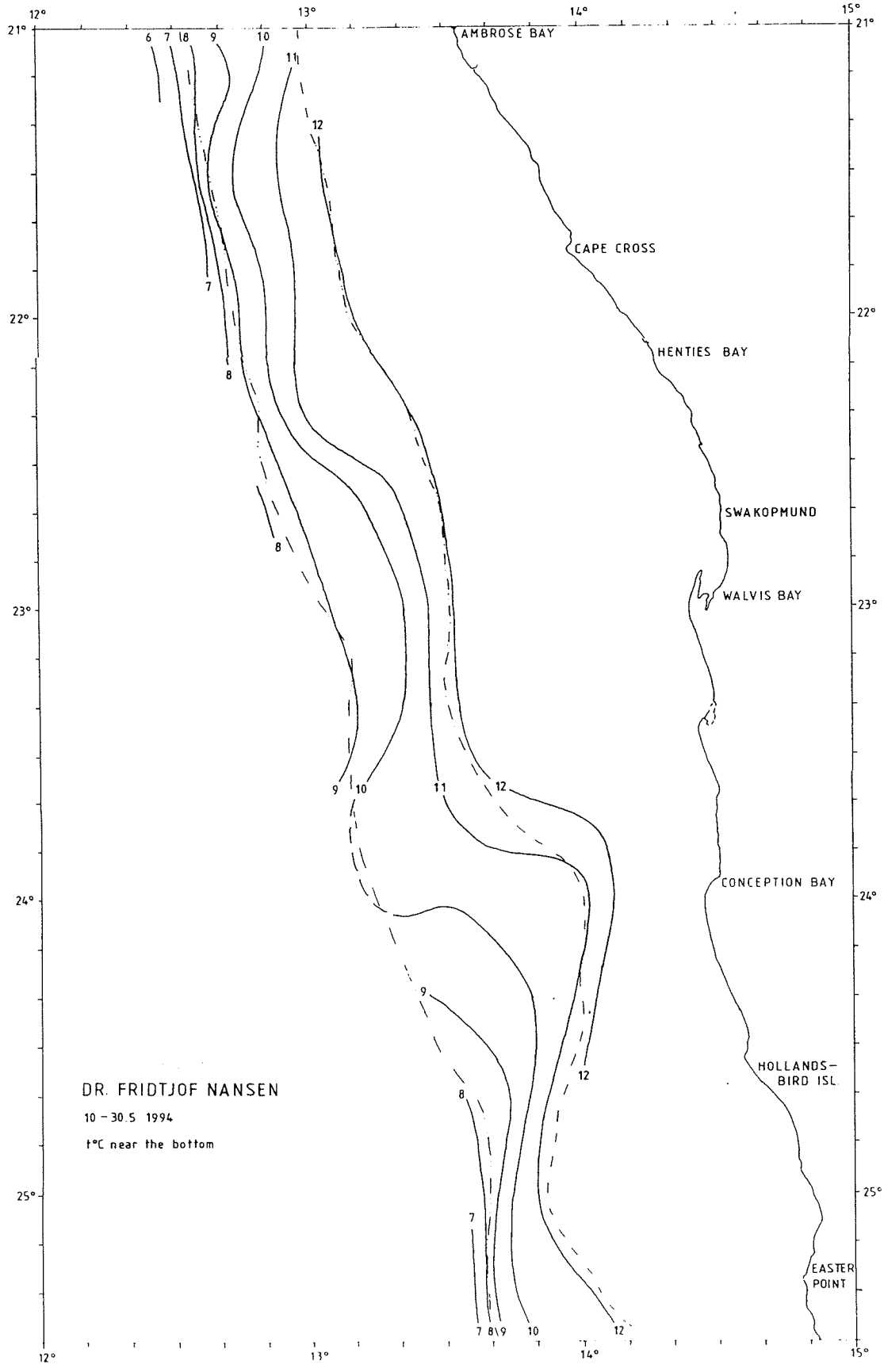



Figure 2b St. Francis Bay to Ambrose Bay. Distribution of sea temperature near the bottom.

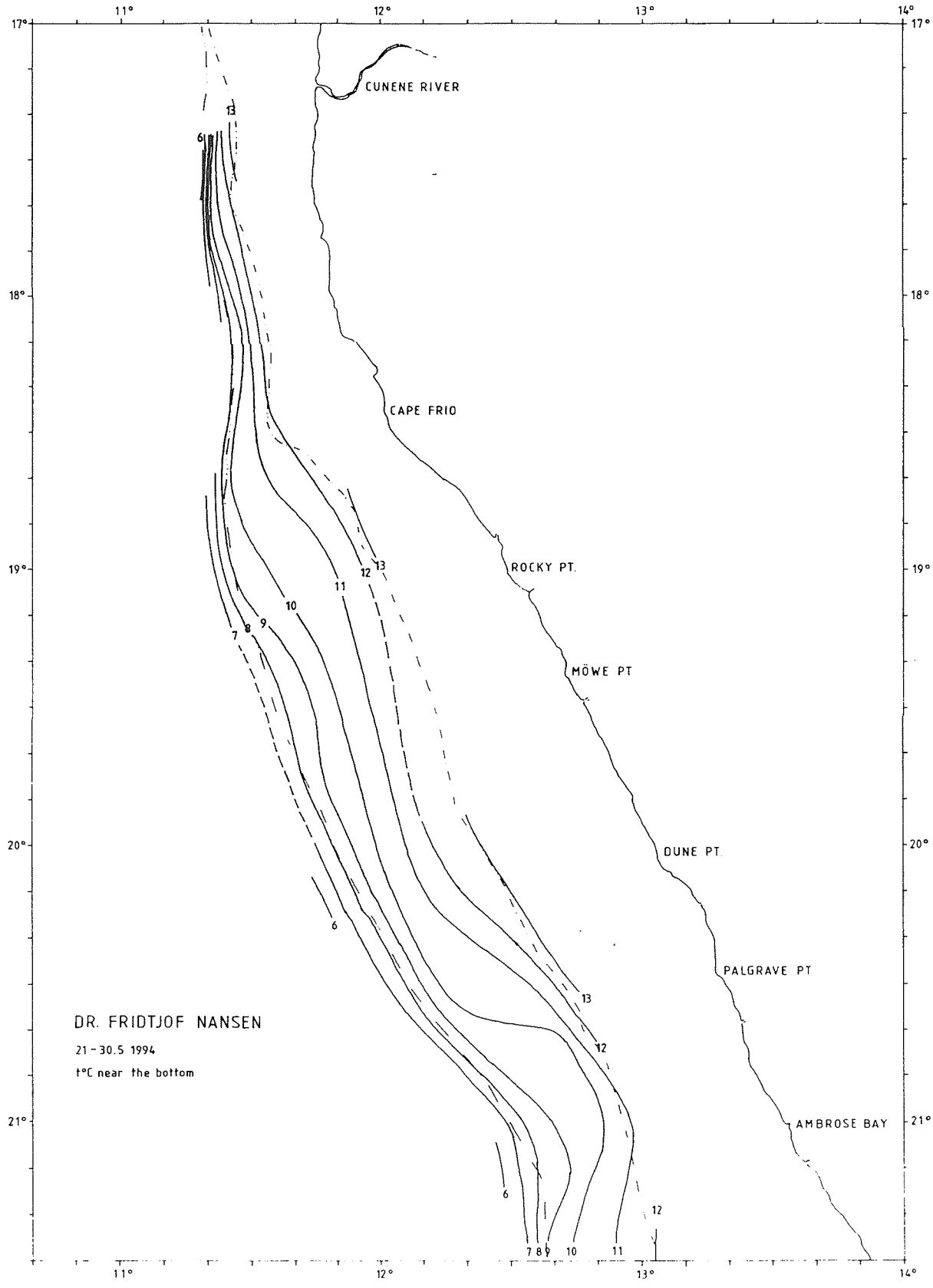



Figure 2c Ambrose Bay to Cunene River. Distribution of sea temperature near the bottom.

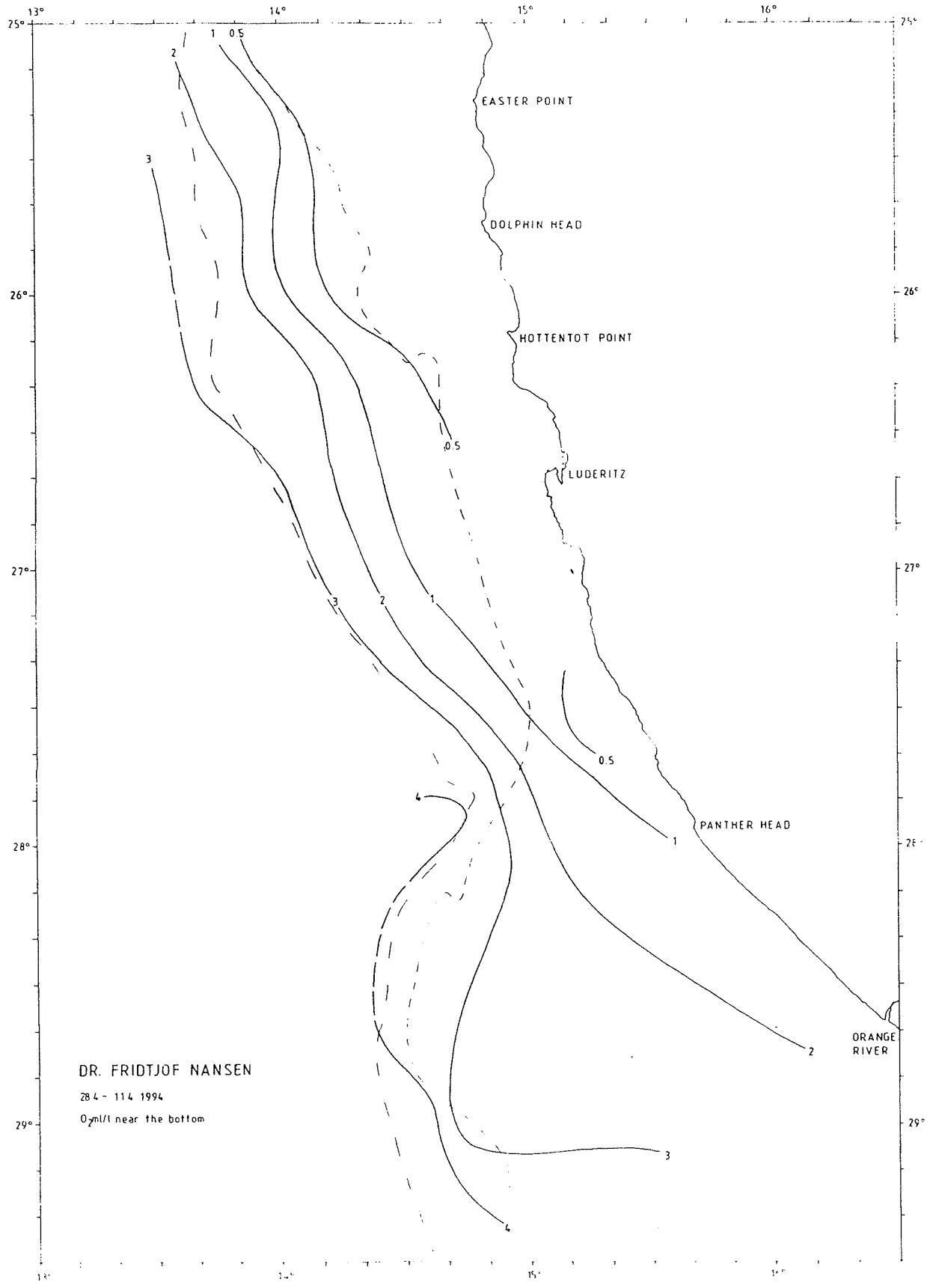



Figure 3a Orange River to St. Francis Bay. Distribution of oxygen (ml/l) near the bottom.

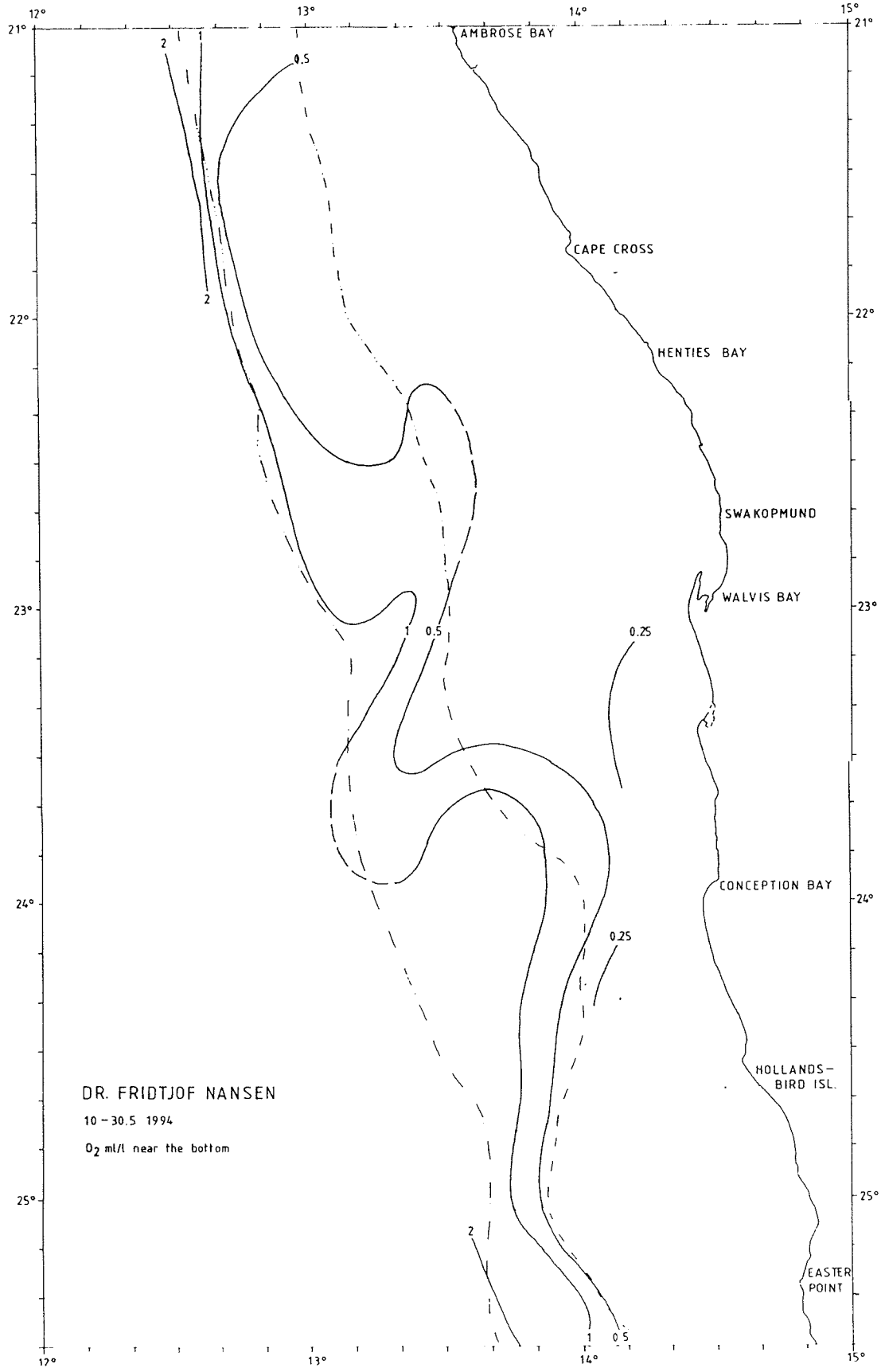



Figure 3b St. Francis Bay to Ambrose Bay. Distribution of oxygen (ml/l) near the bottom.

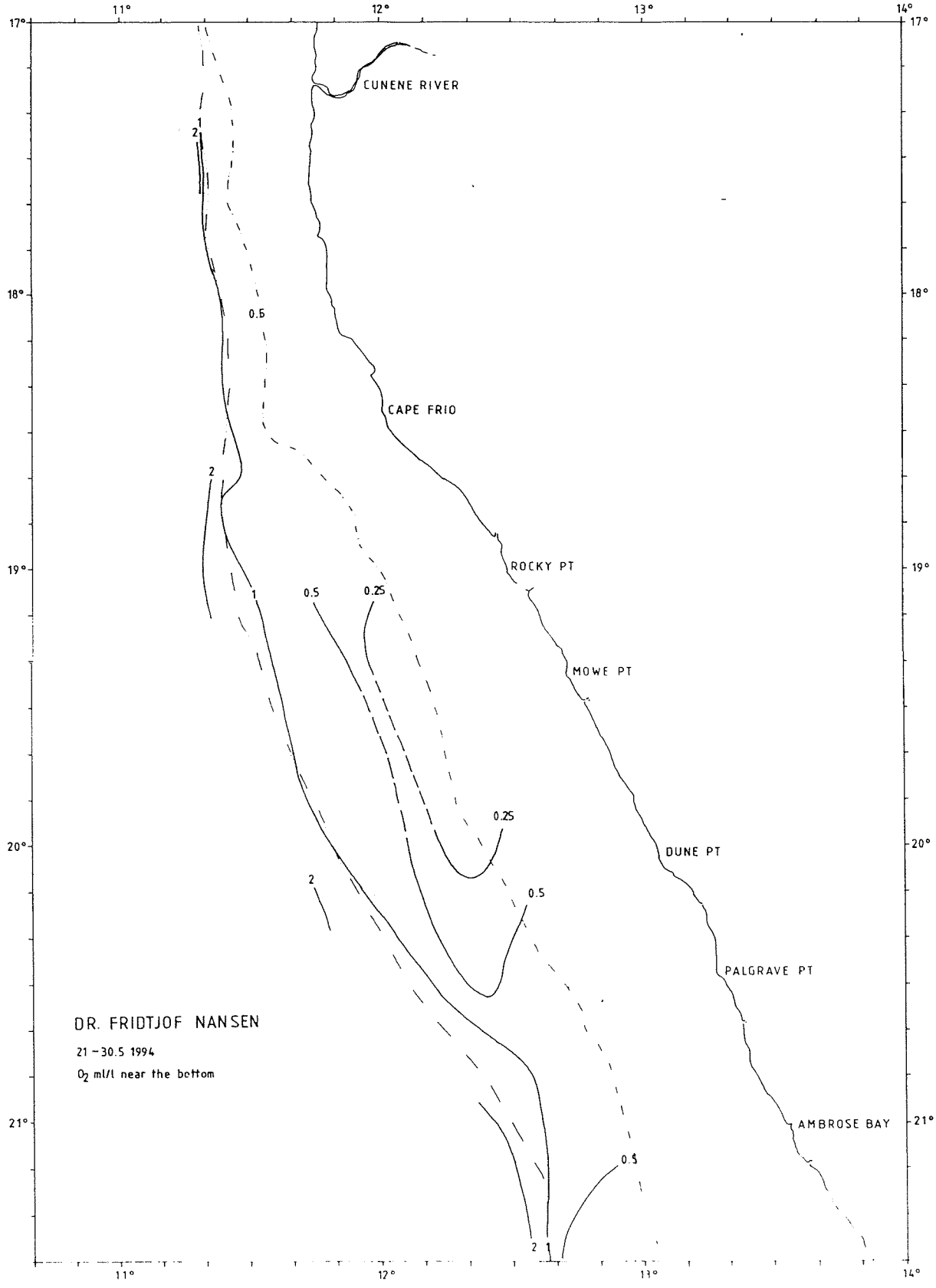



Figure 3c Ambrose Bay to Cunene River. Distribution of oxygen (ml/l) near the bottom.

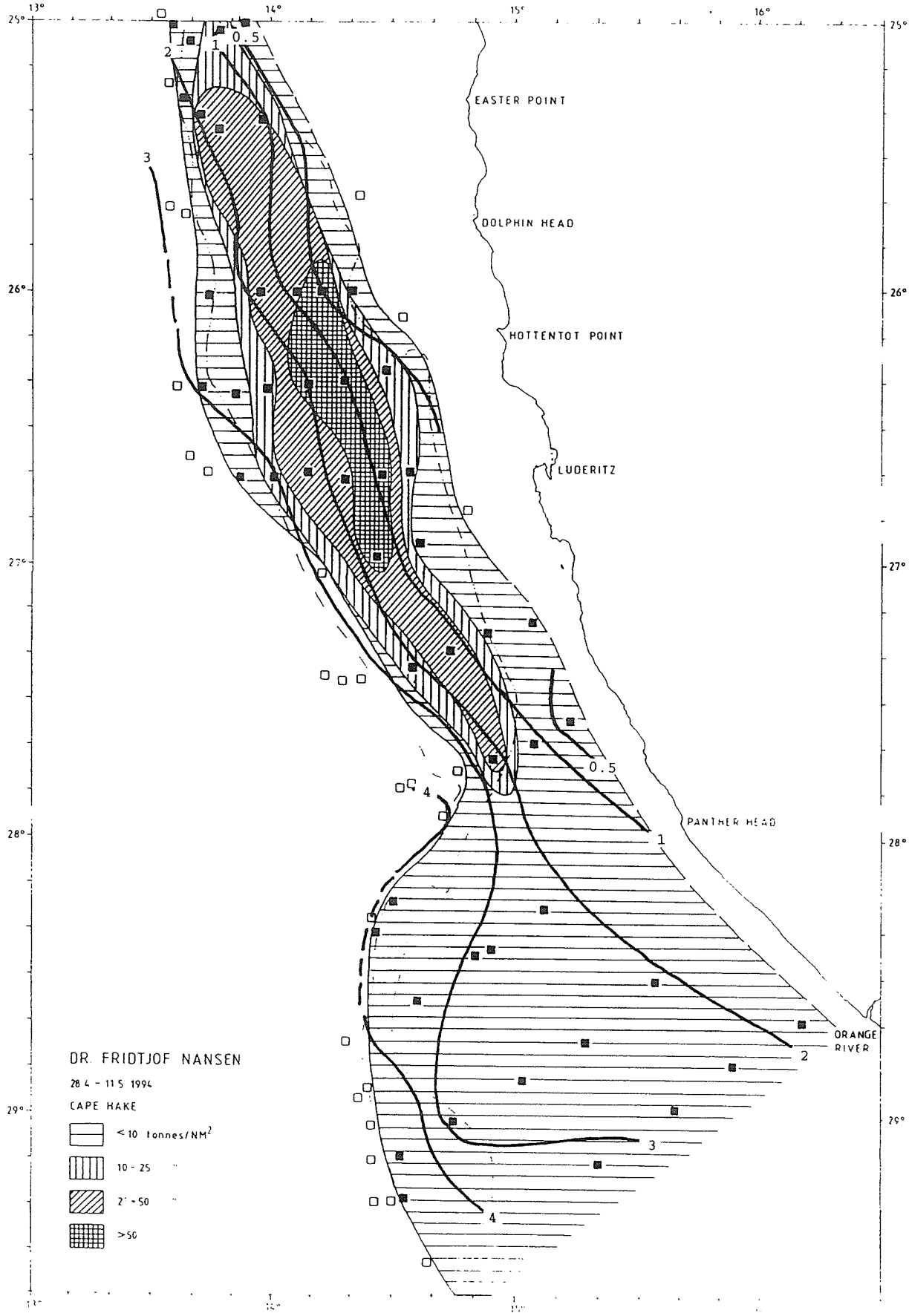



Figure 4a Orange River to St. Francis Bay. Distribution of Cape hake and oxygen (ml/l) near the bottom.

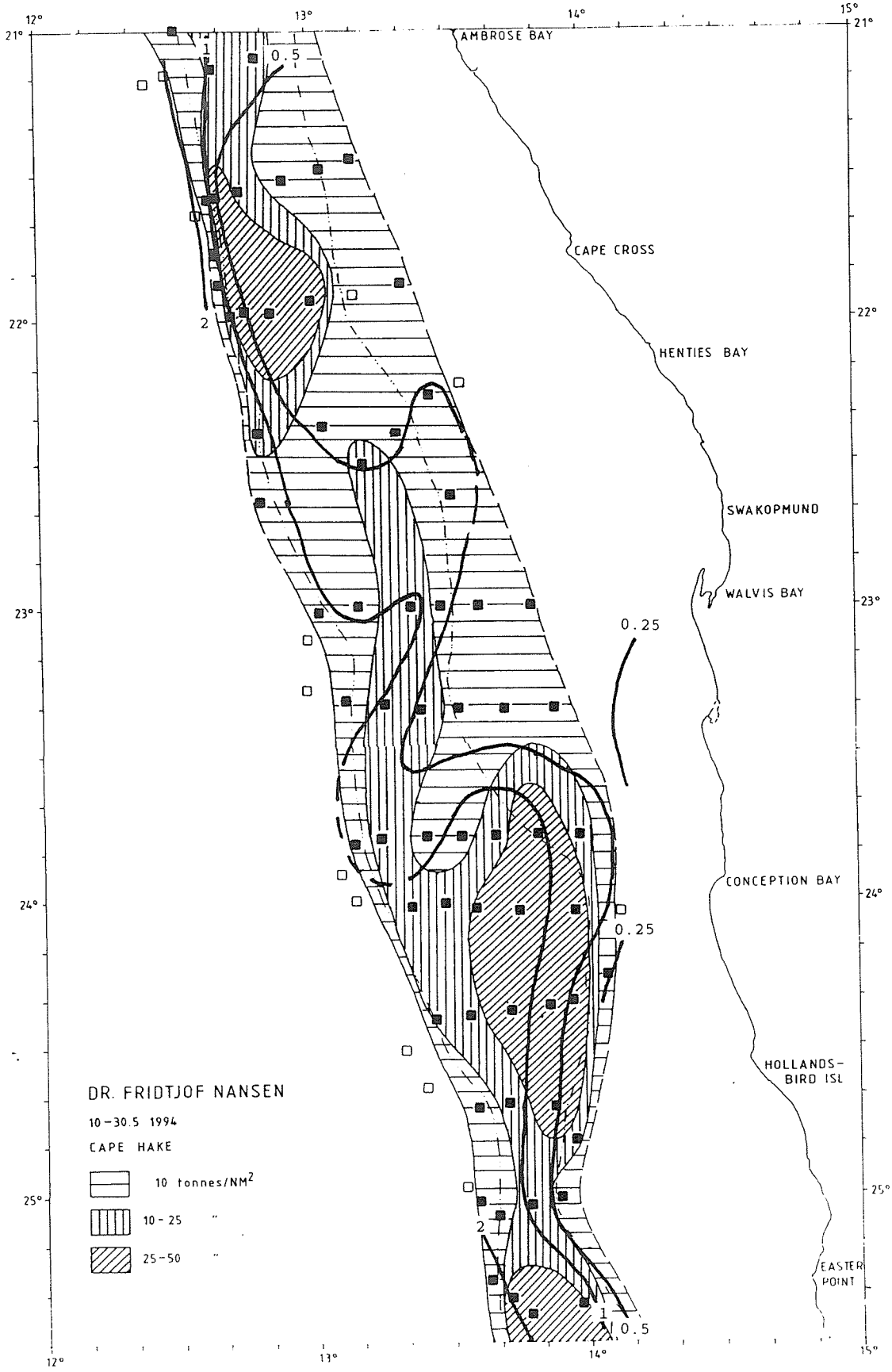



Figure 4b St. Francis Bay to Ambrose Bay. Distribution of Cape hake and oxygen (ml/l) near the bottom.

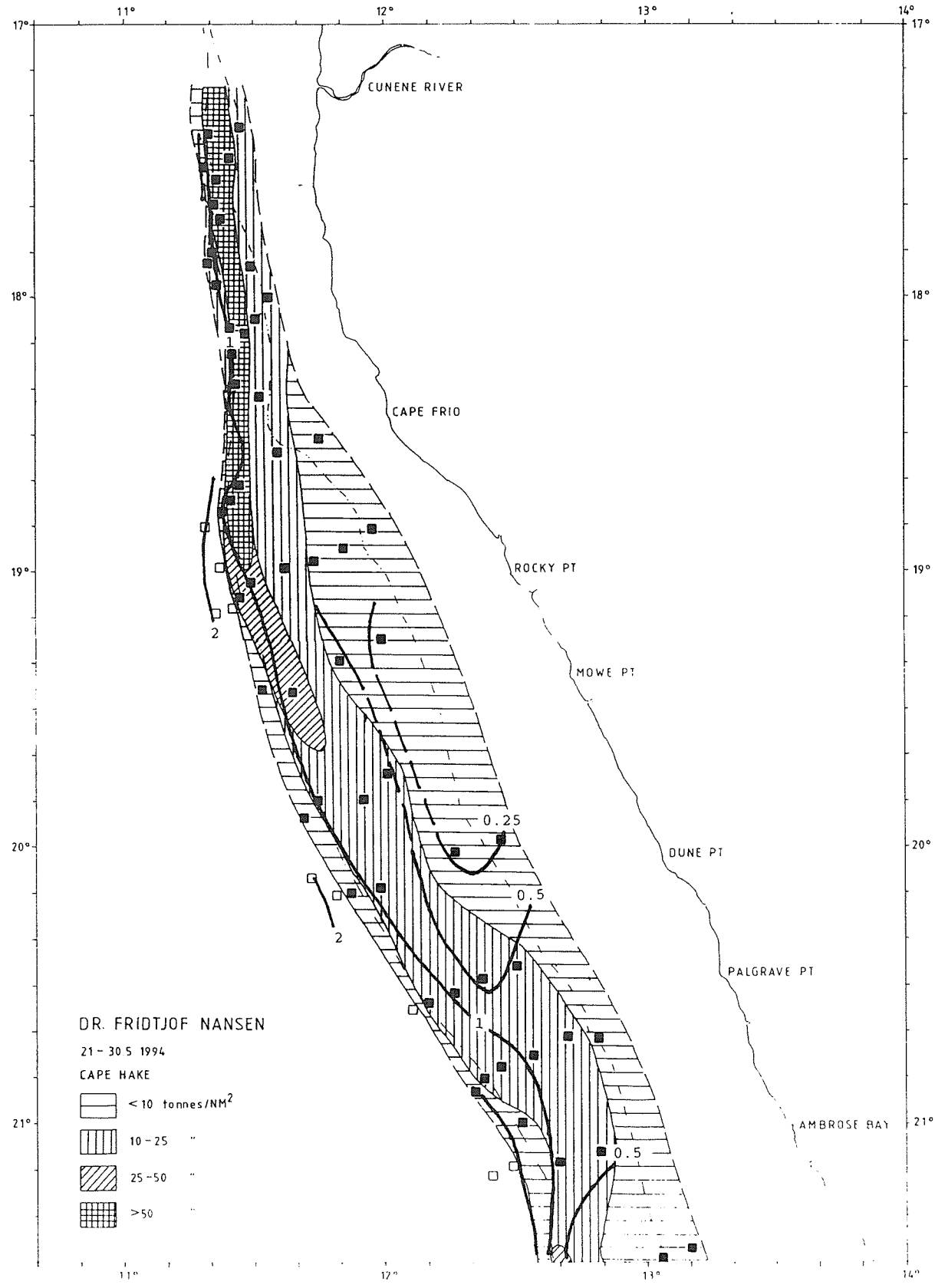



Figure 4c Ambrose Bay to Cunene River. Distribution of Cape hake and oxygen (ml/l) near the bottom.

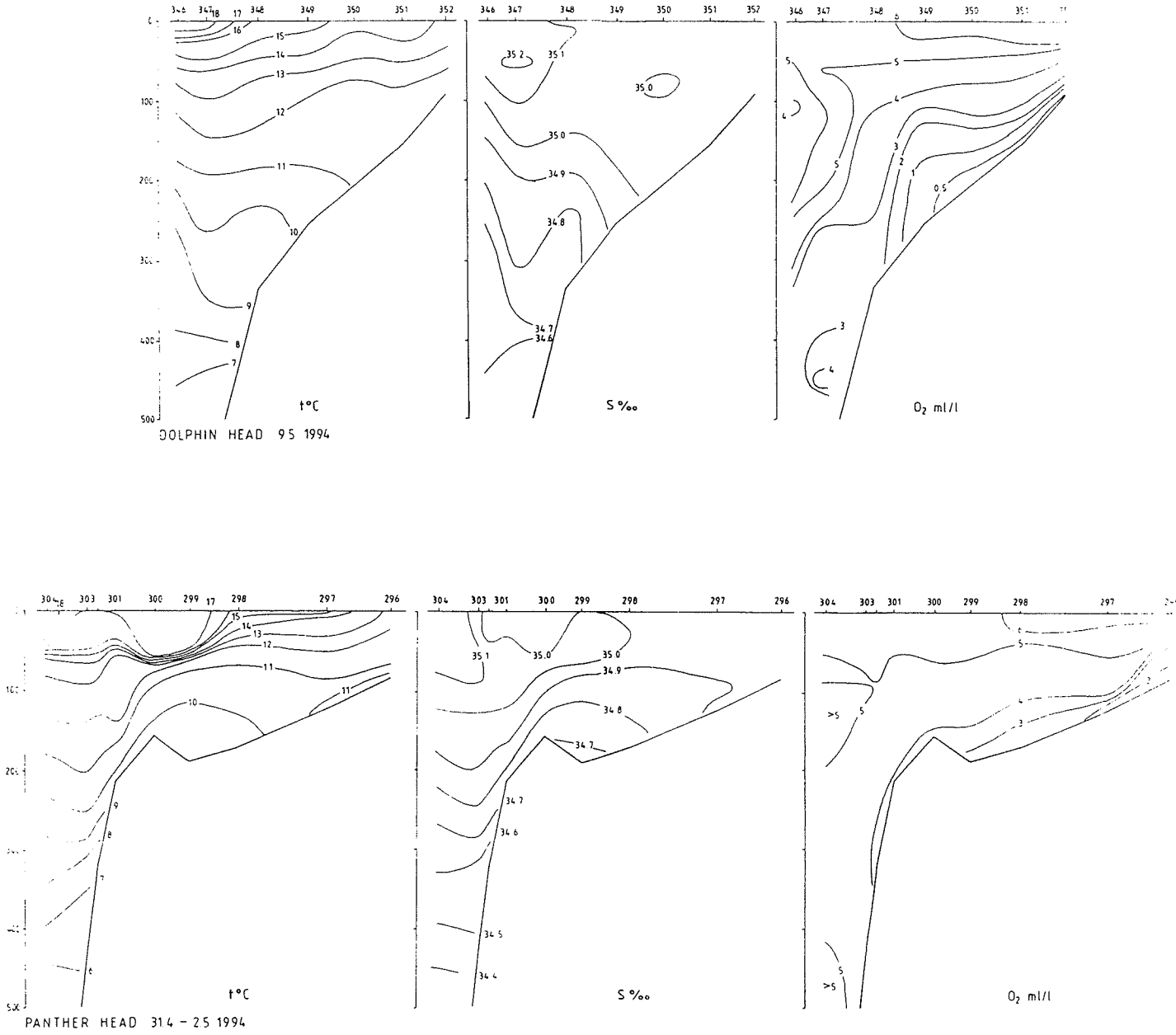



Figure 5a Orange River to St. Francis Bay. Temperature, salinity and oxygen in the standard profiles worked.

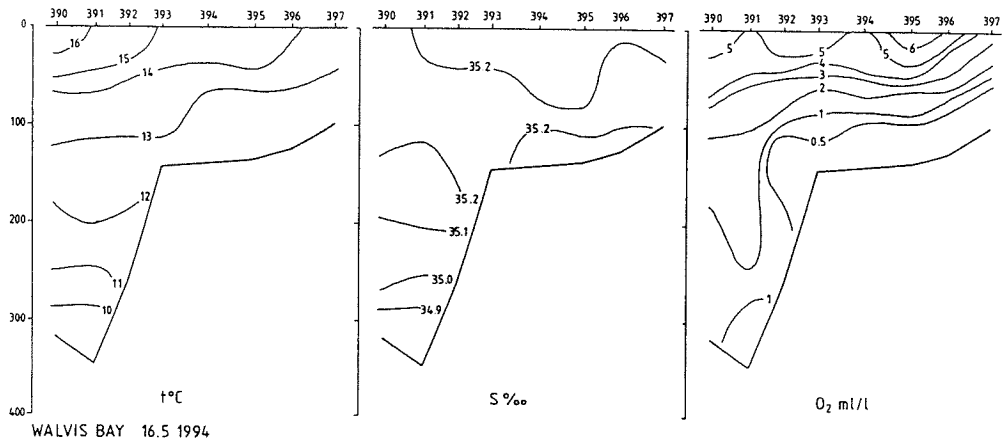



Figure 5b St. Francis Bay to Ambrose Bay. Temperature, salinity and oxygen in the standard profiles worked.

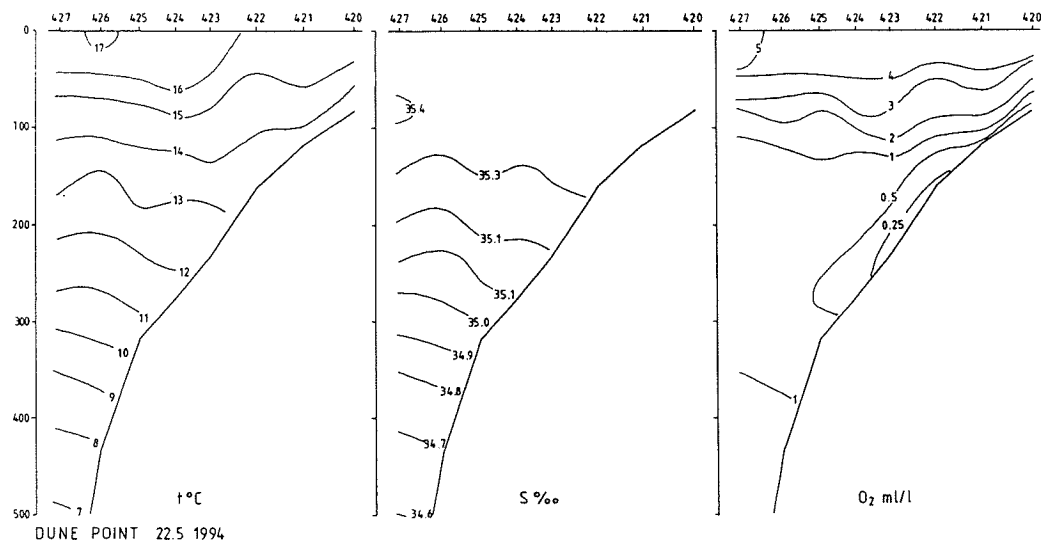



Figure 5c Ambrose Bay to Cunene River. Temperature, salinity and oxygen in the standard profiles worked.

# 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, estimated headline height of 5 m and a distance between the wings during towing of about 18 m. All trawl hauls were monitored by SCANMAR trawl sensors (bottom contact, headline height and distance between the doors). This technology allows to determine with improved accurracy and the actual time the trawl is on the bottom. For conversion of catch rates to fish densities the area between the wings is assumed to be the effective fishing area i.e. the retention factor q is equal to 1. With the new vessel, a new trawl gear was introduced with smaller bobbins. This gear gives better bottom contact and higher catch rates for bottom dwelling species as monk and sole. For the hake species the new gear is assumed to have no difference in performance. The trawl doors, net, warp and wire dimensions are as with the former vessel (see Annex IV). The length of a haul, recorded as distance trawled, was measured by Doppler log on the bottom.

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-waters constituted only a minor problem in the south and in the central area. In the north it made up at average an 8% addition to the demersal biomass in the day hauls and in a more limited number of night hauls the average correction was 35% (Table 1). These corrections are much lower than those applied for the same area in survey 1/94 and are believed to be more representative (Table 1). However, it still seems probable that the relatively high rate of mid-water occurrences observed in the north have caused a negative bias and that the stock biomass for this area may be underestimated.

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/nm²).

| | DAY | NIGHT |
|---|---|---|
| ORANGE RIVER - ST. FRANCIS BAY | | |
| Trawl | | |
| No. stations | 60 | 16 |
| Mean density | 43.9 | 9.5 |
| Acoustic obs. | | |
| No. stations | 11 | 3 |
| Mean density | 7.2 | 2.3 |
| Average acou. corr. | 3% | 5% |
| ST. FRANCIS BAY - AMBROSE BAY | | |
| Trawl | | |
| No. stations | 52 | 15 |
| Mean density | 20.7 | 9.4 |
| Acoustic obs. | | |
| No. stations | 10 | 2 |
| Mean density | 2.7 | 2.9 |
| Average acou. corr. | 3% | 4% |
| AMBROSE BAY - CUNENE RIVER | | |
| Trawl | | |
| No. stations | 47 | 11 |
| Mean density | 26.2 | 16.5 |
| Acoustic obs. | | |
| No. stations | 10 | 6 |
| Mean density | 9.4 | 10.7 |
| Average acou. corr. | 8% | 35% |

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

The complete record of the fishing stations is shown in Annex III. Table 2 shows the catch rates of the main commercial species standardized to kg/hour for the shelf and the slope separately. Compared with the January-February survey the mean catch rates for the hakes are about 30% higher on the shelf and 40% higher on the slope. The mean monk catch rates have decreased by over 80% on the shelf and almost 40% on the slope, but they are still well above the rates obtained in previous years. The catch rate of kingklip increased by about 75% on the slope. The catch rates of the soles have not increased and are low as compared with the other commercial species.

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

SHELF 50-259m

| ST.NO. | DEP. | Hakes | Monk | Kingklip | Soles | Squid | Other |
|---|---|---|---|---|---|---|---|
| 153 | 96 | 77.3 | | 9.1 | 4.8 | | 33.2 |
| 154 | 147 | 1291.0 | 8.0 | | | 17.8 | 1329.5 |
| 155 | 175 | 107.3 | | | | 17.3 | 28.2 |
| 156 | 174 | 103.0 | 1.9 | 115.1 | | 2.4 | 70.2 |
| 165 | 215 | 160.0 | | | | 1.7 | 720.2 |
| 166 | 167 | 223.2 | 1.4 | | | 9.1 | 193.2 |
| 167 | 159 | 77.8 | 4.3 | 4.7 | | 0.5 | 83.8 |
| 168 | 152 | 1123.0 | | 5.9 | | 28.8 | 343.1 |
| 169 | 172 | 1005.3 | 5.2 | | | 17.7 | 345.2 |
| 170 | 177 | 225.8 | 12.1 | | | 4.6 | 84.6 |
| 171 | 181 | 474.5 | 11.2 | 3.0 | | 66.0 | 613.5 |
| 175 | 162 | 32.5 | | | | | 88.0 |
| 184 | 160 | 189.7 | | | 6.4 | 1.0 | 30.0 |
| 185 | 123 | 15.1 | | | | 0.1 | 3.2 |
| 186 | 144 | 46.8 | | | | | 0.6 |
| 187 | 210 | 311.4 | | | | | 4.8 |
| 197 | 259 | 134.9 | | | | | 37.4 |
| 213 | 255 | 474.9 | 18.8 | | | 0.2 | 8.0 |
| 214 | 186 | 165.0 | | | | | 101.0 |
| 215 | 200 | 512.6 | | | | | 38.8 |
| 216 | 255 | 6689.0 | | | | | 4.7 |
| 223 | 182 | 2186.0 | | | | | 47.9 |
| 224 | 224 | 880.5 | | | 1.7 | 0.8 | 194.5 |
| 232 | 249 | 632.1 | 15.5 | | 2.5 | 14.2 | 487.8 |
| 233 | 187 | 257.0 | | | | | 174.0 |
| MEAN | | 695.8 | 3.1 | 5.5 | 0.6 | 7.3 | 202.6 |

SHELF 260-700m

| ST.NO. | DEP. | Hakes | Monk | Kingklip | Soles | Squid | Other |
|---|---|---|---|---|---|---|---|
| 157 | 382 | 432.4 | 33.3 | 14.6 | | 18.4 | 158.2 |
| 158 | 468 | 1919.4 | | 41.6 | | | 15.4 |
| 159 | 592 | 316.4 | | | | 0.3 | 102.4 |
| 160 | 400 | 2051.9 | 9.2 | 123.8 | | 7.9 | 103.3 |
| 161 | 320 | 692.8 | 45.7 | 31.4 | | | 620.4 |
| 163 | 443 | 2045.6 | | 29.0 | | 7.6 | 64.8 |
| 164 | 552 | 506.6 | | | | 0.4 | 86.9 |
| 172 | 599 | 181.0 | | | | 6.5 | 62.3 |
| 173 | 552 | 35.6 | | | | | 60.0 |
| 174 | 451 | 1407.2 | | 30.9 | | 20.4 | 103.1 |
| 176 | 437 | 524.6 | | 13.6 | | 11.6 | 54.8 |
| 177 | 550 | 219.5 | | | | 19.6 | 34.6 |
| 178 | 378 | 973.7 | | | | 19.8 | 62.1 |
| 179 | 540 | 536.4 | | | | 4.1 | 67.0 |
| 180 | 588 | 69.2 | | | | | 268.1 |
| 181 | 475 | 90.5 | | | | 1.7 | 119.9 |
| 182 | 380 | 2998.3 | | 6.2 | | | 51.9 |
| 183 | 262 | 2297.7 | | 5.5 | | 1.1 | 317.1 |
| 188 | 288 | 1627.3 | 7.8 | | | 32.6 | 123.9 |
| 189 | 343 | 1961.7 | | | | 10.1 | 199.0 |
| 190 | 426 | 1437.0 | 4.7 | 21.3 | | 20.6 | 139.0 |
| 191 | 501 | 34.9 | | | | 3.1 | 21.5 |
| 192 | 596 | 160.8 | | 7.4 | | 1.1 | 138.2 |
| 193 | 546 | 388.0 | | | | 0.9 | 78.5 |
| 194 | 448 | 203.6 | | 2.2 | | 0.1 | 17.5 |
| 195 | 393 | 3962.9 | 21.8 | 25.1 | | | 272.6 |
| 196 | 330 | 4892.8 | 73.9 | 7.3 | | | 271.7 |
| 199 | 260 | 490.0 | | | | | 1.5 |
| 200 | 300 | 2306.6 | 18.8 | 651.6 | 6.7 | | 29.1 |
| 201 | 348 | 609.4 | 22.3 | 124.8 | | | 63.3 |
| 202 | 376 | 3182.0 | 10.0 | 8.1 | | 10.4 | 310.0 |
| 203 | 403 | 4030.5 | | 19.9 | | 7.2 | 324.5 |
| 204 | 419 | 2049.7 | | | | 11.3 | 105.3 |
| 205 | 463 | 59.7 | | | | 0.6 | 40.2 |
| 206 | 552 | 211.2 | | | | | 262.0 |
| 207 | 607 | 1192.8 | | | | | 4877.0 |
| 208 | 417 | 5790.4 | 49.1 | 14.8 | | 6.0 | 393.7 |
| 209 | 396 | 1460.8 | 26.4 | 35.8 | | 5.6 | 408.0 |
| 210 | 376 | 5081.1 | 118.0 | 21.9 | | | 244.7 |
| 211 | 332 | 6803.2 | 30.2 | 2.9 | | | 345.6 |
| 212 | 292 | 6374.6 | 85.0 | 1.5 | 7.1 | | 61.6 |
| 217 | 280 | 1961.6 | 109.3 | | 18.1 | | 70.6 |
| 218 | 335 | 1581.4 | 111.3 | | | 0.2 | 209.7 |
| 219 | 410 | 67.1 | 91.3 | 22.0 | | | 200.0 |
| 221 | 599 | 452.1 | 11.0 | | | 22.6 | 126.7 |
| 222 | 465 | 2086.5 | | 8.6 | | 24.0 | 47.3 |
| 225 | 310 | 2645.7 | 58.0 | | | 12.5 | 291.6 |
| 226 | 341 | 1889.4 | 13.7 | | | | 44.5 |
| 227 | 454 | 218.5 | 2.9 | 4.1 | | 0.9 | 115.8 |
| 228 | 552 | 501.6 | 32.9 | | | 60.1 | 324.9 |
| 229 | 401 | 310.8 | 85.2 | 2.2 | | 23.7 | 400.0 |
| 230 | 500 | 321.7 | 20.3 | | | 59.9 | 341.5 |
| 231 | 600 | 632.7 | | | | 23.6 | 459.0 |
| MEAN | | 1590.2 | 20.6 | 24.1 | 0.6 | 8.6 | 258.7 |

The depth distribution of the two hake species based on the catch rates converted to densities are shown in Table 3. Except for the Cape hake in shallow waters and deep water hake in 250-350 m, all densities are higher than in the previous survey for both species.

Table 3 Southern Region. Depth distribution of the two hake spacies. Mean densities in tonnes/nm$^2$ and mean catch rates kg/hour.

| | 100-250m | 250-350m | 350-450m | 450-550m | 550-650m |
|---|---|---|---|---|---|
| Cape hake | | | | | |
| Density | 5.8 | 58.9 | 5.8 | 0.1 | |
| Catch rate | 175 | 1770 | 175 | 3 | |
| Deep w. hake | | | | | |
| Density | 0.3 | 8.6 | 60.5 | 22.2 | 12.2 |
| Catch rate | 10 | 260 | 1810 | 670 | 370 |
| No. of hauls | 21 | 17 | 17 | 17 | 11 |

The distribution of the two hake species based on plots of densities by fishing stations is shown in Figures 6 and 7. These include the acoustic estimates of fish present above the 5 m bottom channel during trawling as discussed above. The distribution pattern of the two species is similar to that found in the previous surveys with relatively high densities of Cape hake extending from 25°S to about 28°S.

Biomass estimates based on a post-stratification of the densities as shown in Figure 6 and 7, give 240 000 tonnes for the Cape and 215 000 tonnes for the deep water hake (Table 4). The estimates are 20 and 35% higher than in survey 1/94 for Cape and deep water hake respectively and for both species the highest in the time series. The 95% confidence limits give a range of ±14% on the estimate of the Cape hake and ±22% of the deep water hake.

Table 4 Southern Region. Estimates of total biomass by surveys, 1 000 tonnes.

| Year/Survey | Cape hake | Deep water hake |
|---|---|---|
| 90/1 | 130 | 22 |
| 90/3 | 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 |

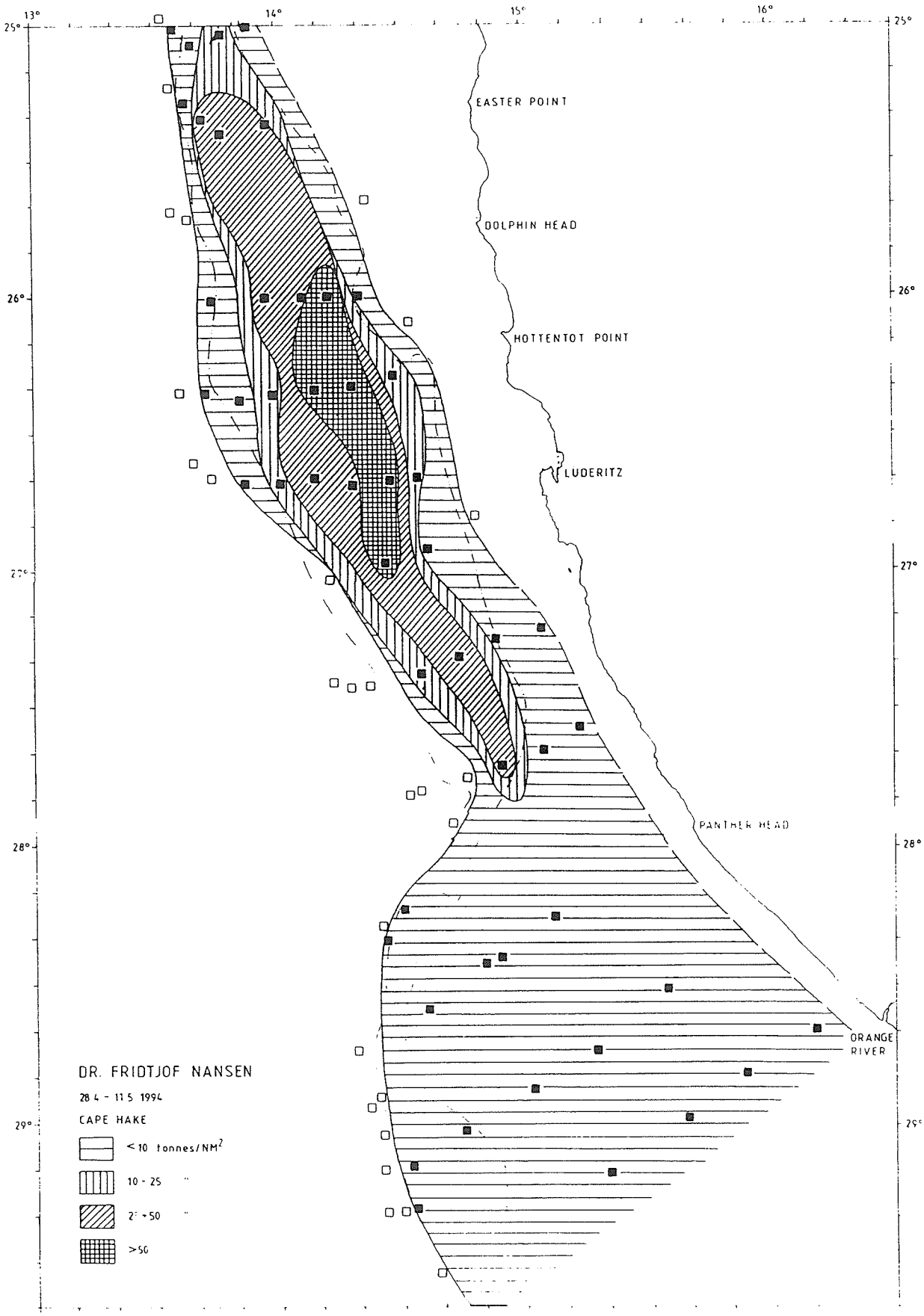



Figure 6 Orange River to Francis Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

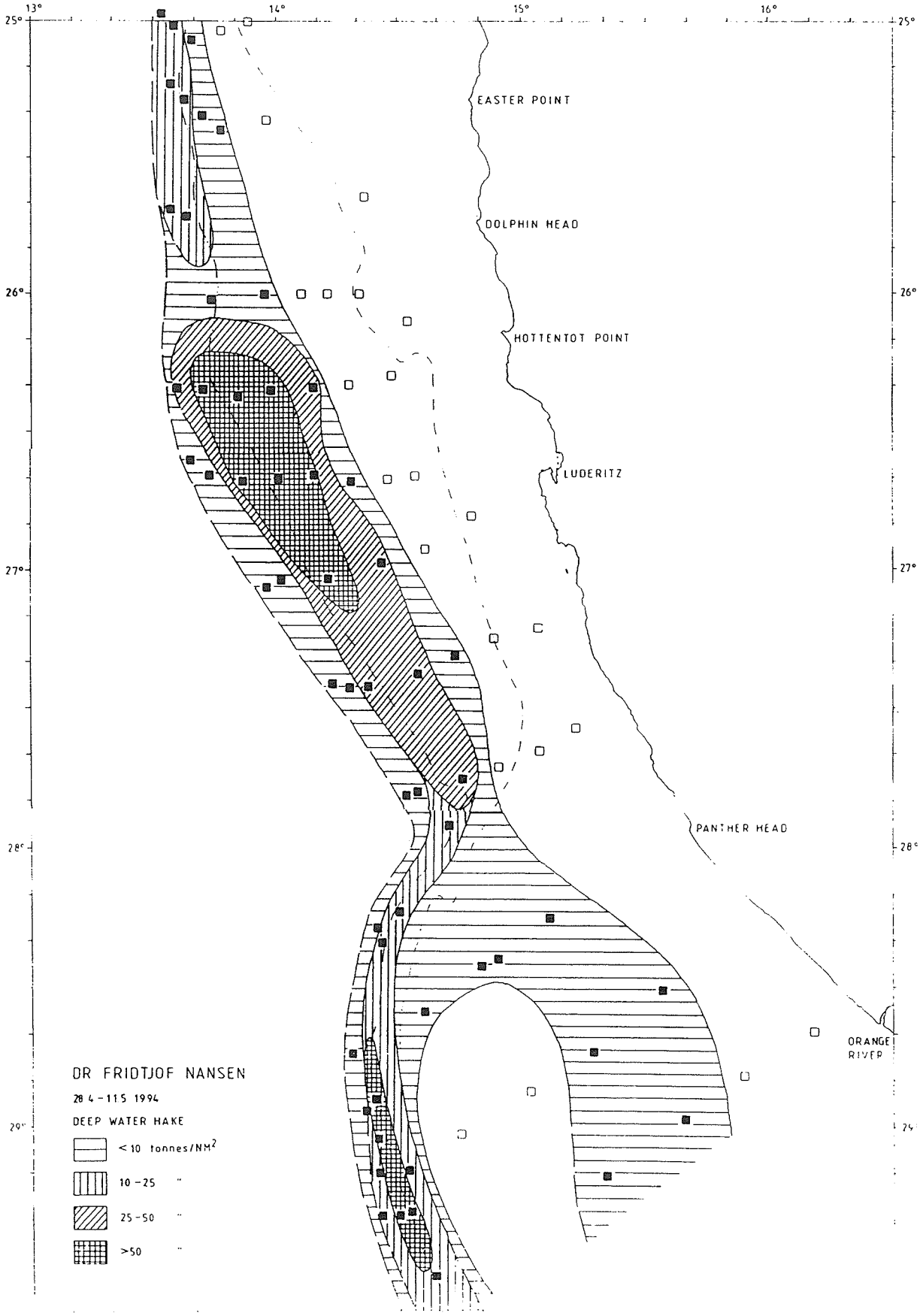



Figure 7 Orange River to St. Francis Bay. Distribution of deep water hake. Empty squares indicate stations where deep water hake was not caught.

The size compositions of the Cape hake from pooled samples weighted by catch rates are shown for each region by depth ranges in Annex I. There is as usual an increase of size with depth. A length frequency analysis, to identify the cohorts in the stock, was performed in the same way as during the three previous surveys . The results are shown in Table 5.

Table 5 Southern Region. Cape hake. Estimated age-cohorts from optimized length distributions.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|---|---|---|---|---|---|
| 1993 | 22.0 | 1.50 | 0.11 | 85 | 5 |
| 1992 | 27.0 | 2.35 | 0.30 | 232 | 30 |
| 1991 | 32.5 | 3.30 | 0.42 | 237 | 75 |
| 1990 | 42.0 | 3.70 | 0.11 | 95 | 50 |
| older | | | 0.07 | 45 | 80 |

The dominating cohorts are the 1992 and 1991 yearclasses which is estimated to 72% of the total number of fish. The fishable part of the Cape hake in the region constitutes 140 mill. fish with a biomass of 130 000 tonnes. Since the previous survey the fishable biomass has increased with 20 mill. fish and about 24 thousand tonnes.

The size composition of the deep water hake is shown in Annex I. Results from a length frequency analysis on the deep water hake is shown in Table 6. The non-fishable part of the stock in the region is estimated to about 390 mill. fish with a biomass of 51 thousand tonnes, and about 270 mill. fish with a biomass of 164 thousand tonnes constitutes the fishable biomass.

Table 6 Southern Region. Deep water hake. Estimated age-cohorts from optimized length distributions.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|---|---|---|---|---|---|
| 1993 | 23.5 | 2.0 | 0.26 | 168 | 14 |
| 1992 | 28.4 | 2.5 | 0.28 | 189 | 29 |
| 1991 | 38.0 | 3.0 | 0.25 | 178 | 66 |
| older | | | 0.21 | 125 | 106 |

## 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 hakes on the shelf are only about 50% of those obtained in the January survey this year, while the catch rates in the slope are almost the double. Also for monk the catch rates in the more shallow depth range have decreased considerably, while the rates in the deeper waters are at the same level as in January.

Table 7 Central Region. Catch rates by main groups in swept area bottom trawl hauls, kg/hour.

SHELF 100-259m

| ST.NO. | DEP. | Hakes | Monk | Kingklip | Soles | Squid | Other |
|---|---|---|---|---|---|---|---|
| 234 | 163 | 508.60 | | | | | 38.60 |
| 235 | 227 | 1383.76 | | | | | 156.02 |
| 244 | 235 | 3372.12 | | | | | |
| 245 | 147 | 182.70 | | | | | 0.40 |
| 246 | 143 | 158.40 | | | | | |
| 247 | 219 | 1422.40 | | | 1.34 | 2.56 | 316.94 |
| 248 | 252 | 1748.02 | 4.30 | | | 14.80 | 97.04 |
| 257 | 245 | 425.64 | 23.88 | | | | 4520.40 |
| 258 | 218 | 884.30 | 10.82 | | | 65.80 | 3712.40 |
| 259 | 193 | 1957.44 | 6.16 | | | | 1924.52 |
| 260 | 179 | 544.74 | 0.70 | | | | 293.50 |
| 261 | 153 | 10.20 | | | | | 0.40 |
| 262 | 153 | 175.20 | | | | | 1.60 |
| 263 | 190 | 74.40 | | | | | 1.92 |
| 272 | 229 | 271.02 | 0.52 | | | | 2.10 |
| 273 | 145 | 90.36 | | | | | 6.00 |
| 274 | 139 | 6.12 | | | | | |
| 275 | 160 | 145.38 | | | | | 6.12 |
| 281 | 224 | 141.04 | 0.18 | | 5.14 | | 3.60 |
| 282 | 157 | 242.40 | | | | | 3.72 |
| 283 | 130 | | | | | | |
| 284 | 152 | 52.14 | | | | | 0.78 |
| 285 | 183 | | | | | | |
| 297 | 212 | 274.00 | | | | | 1268.00 |
| 298 | 141 | 259.60 | | | | | 164.78 |
| MEAN | | 573.20 | 1.86 | | 0.26 | 3.33 | 500.75 |

SLOPE 260-700m

| ST.NO. | DEP. | Hakes | Monk | Kingklip | Soles | Squid | Other |
|---|---|---|---|---|---|---|---|
| 236 | 365 | 554.56 | 146.98 | | | 34.44 | 176.84 |
| 237 | 414 | 348.80 | 27.48 | 4.20 | | 26.40 | 337.34 |
| 238 | 614 | 615.18 | 2.92 | | | 95.70 | 576.18 |
| 239 | 693 | 206.20 | | | | 61.40 | 562.60 |
| 240 | 371 | 1160.40 | 12.58 | 2.30 | | 36.80 | 272.24 |
| 241 | 340 | 1524.40 | 19.52 | 10.70 | | 22.32 | 126.90 |
| 243 | 272 | 2534.72 | | | | 19.60 | 1159.24 |
| 249 | 268 | 3028.92 | 2.88 | | | 34.00 | 550.20 |
| 250 | 275 | 1201.86 | 23.70 | | | | 691.54 |
| 251 | 291 | 1128.06 | 12.32 | | | | 1558.14 |
| 252 | 599 | 398.20 | 4.38 | | | 52.20 | 422.64 |
| 253 | 652 | 172.44 | 1.80 | | | | 400.00 |
| 254 | 459 | 156.40 | 2.82 | | | 14.40 | 918.70 |
| 255 | 324 | 771.62 | 6.28 | | | 56.64 | 333.76 |
| 256 | 274 | 91.90 | 3.98 | | | 7.00 | 332.00 |
| 264 | 270 | 2043.74 | 5.48 | | 4.60 | | 436.42 |
| 265 | 353 | 974.80 | 55.60 | 3.30 | | 184.80 | 2271.36 |
| 266 | 422 | 449.30 | 19.94 | | | 65.28 | 317.06 |
| 267 | 654 | 153.90 | 3.46 | | | | 415.80 |
| 268 | 597 | 155.42 | 4.04 | | | | 400.00 |
| 269 | 447 | 226.40 | 14.98 | | | 19.36 | 483.12 |
| 270 | 319 | 707.62 | 25.56 | | | | 241.92 |
| 271 | 325 | 569.06 | 53.56 | | | 12.00 | 105.44 |
| 277 | 461 | 82.42 | 17.96 | 2.68 | | | 615.90 |
| 278 | 399 | 361.72 | 31.98 | 4.00 | | 44.60 | 265.34 |
| 279 | 263 | 214.56 | | | | | 2.28 |
| 280 | 260 | 927.21 | 1.89 | | | | 544.05 |
| 286 | 278 | 2500.16 | | | | | 541.84 |
| 287 | 329 | 1308.50 | 214.00 | 0.20 | 31.40 | | 710.24 |
| 288 | 335 | 1379.40 | 22.68 | 0.62 | 9.52 | 23.40 | 1350.56 |
| 289 | 402 | 811.50 | 154.22 | 10.20 | | 57.12 | 2089.64 |
| 290 | 497 | 385.10 | 243.00 | | | 2.04 | 822.58 |
| 291 | 495 | 365.50 | 66.20 | | | | 853.60 |
| 292 | 541 | 174.20 | 44.06 | | | | 577.24 |
| 293 | 463 | 251.60 | 86.42 | | | | 614.08 |
| 294 | 405 | 648.94 | 148.50 | | 0.68 | | 608.70 |
| 295 | 333 | 528.64 | 1.08 | | 2.40 | 2.46 | 92.46 |
| 296 | 284 | 168.60 | | | | | 7.80 |
| 357 | 400 | 263.64 | 36.58 | 25.94 | | 2.80 | 355.00 |
| 358 | 604 | 160.90 | | | | 12.30 | 676.14 |
| 359 | 500 | 523.30 | 5.10 | | | 20.40 | 651.90 |
| 360 | 361 | 193.92 | 31.02 | | | | 120.00 |
| 361 | 310 | 469.10 | 44.90 | 0.56 | 3.22 | 7.56 | 144.52 |
| MEAN | | 718.44 | 37.21 | 1.50 | 1.21 | 21.28 | 575.19 |

The density index by depth ranges of the two hake species is shown in Table 8. For the Cape hake the density for the depth range 100-250 m is less than 40% of that obtained in January, while in all the deeper depth ranges the densities are more than doubled compared to the previous survey. The density index on the deep water hake has in the same period increased somewhat in the 250-350 m and 550-650 m depth ranges, while the index has decreased in the depth ranges from 350 to 550 m.

Table 8 Central Region. Depth distribution of the two hake species. Mean densities in tonnes/nm² and mean catch rates kg/hour.

| | 100-250m | 250-350m | 350-450m | 450-550m | 550-650m |
|---|---|---|---|---|---|
| Cape hake | | | | | |
| Density | 12.4 | 26.2 | 11.7 | 0.7 | |
| Catch rate | 370 | 780 | 350 | 20 | |
| Deep w. hake | | | | | |
| Density | | 2.3 | 4.9 | 8.6 | 12.0 |
| Catch rate | | 70 | 145 | 260 | 360 |
| No. of hauls | 24 | 19 | 11 | 7 | 4 |

The biomass estimate of Cape hake for the central region based on post stratification is 160 thousand tonnes (Table 9.) This represents a further reduction, 65 thousand tonnes or almost 30% since survey 1/94. The estimate on the deep water hake is 30 thousand tonnes, the same as in the previous survey. The 95% confidence limits on the estimates are ±15% on the Cape hake and ±18% on the deep water hake.

Table 9 Central Region. Estimates of total biomass by surveys, 1 000 tonnes.

| Year/Survey | Cape hake | Deep water hake |
|---|---|---|
| 90/1 | 180 | 4 |
| 90/3 | 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 |

Figure 8 shows the distribution of Cape hake over this region. This has the same main features as that of previous surveys, with high concentrations of fish forming bands 10-15 NM thick, but their depth position varying between surveys. In survey 1/93 the high concentrations were found from 20NM off Walvis Bay and in survey 2/93 and 1/94 it was about 30NM further offshore. In the present survey high concentrations were found at about the same distance from the coast, but they covered a smaller area. It is highly probable that the hydrographic conditions are forming a strong barrier for the fish distribution.

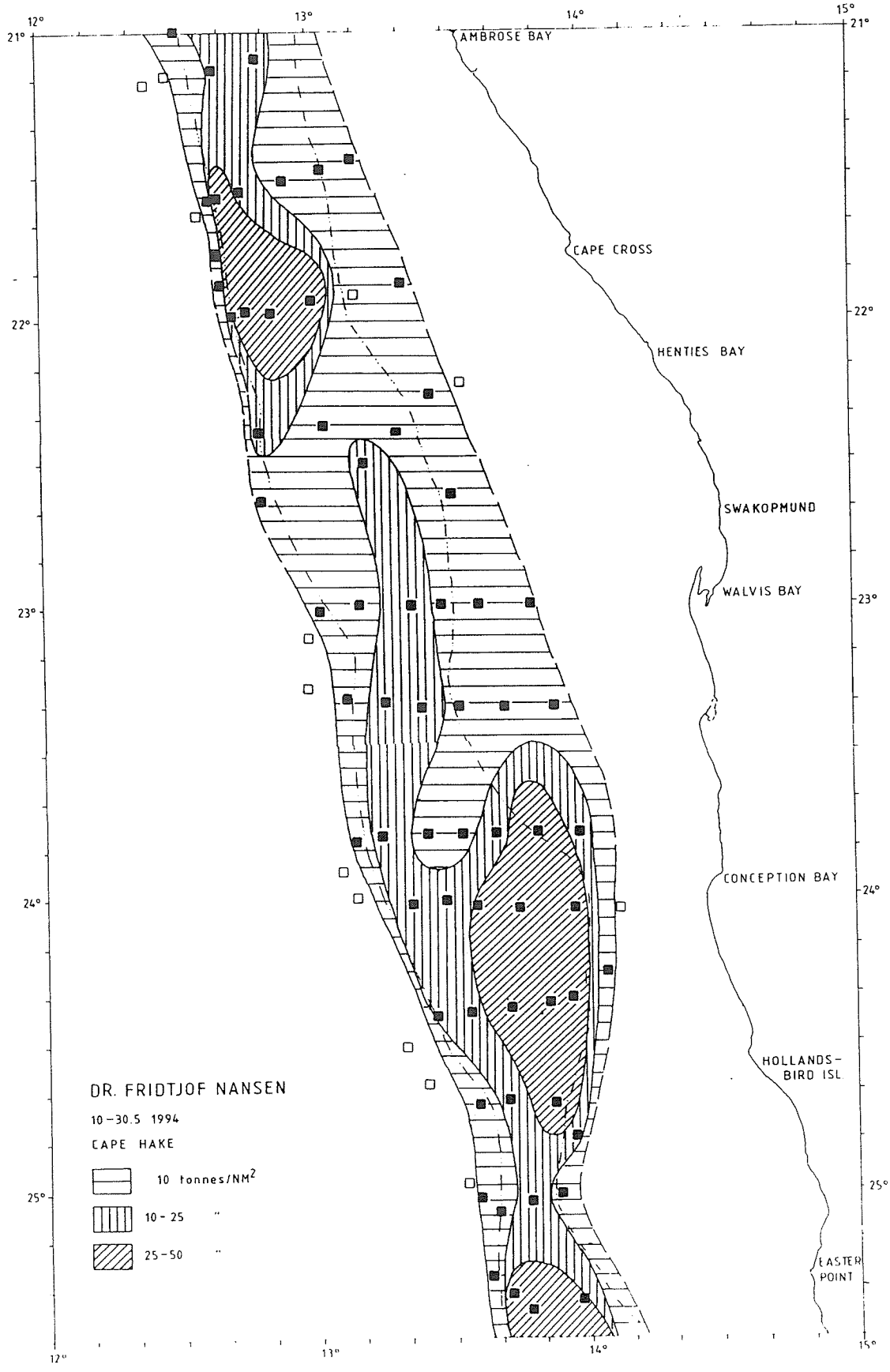



Figure 8 St. Francis Bay to Ambrose Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

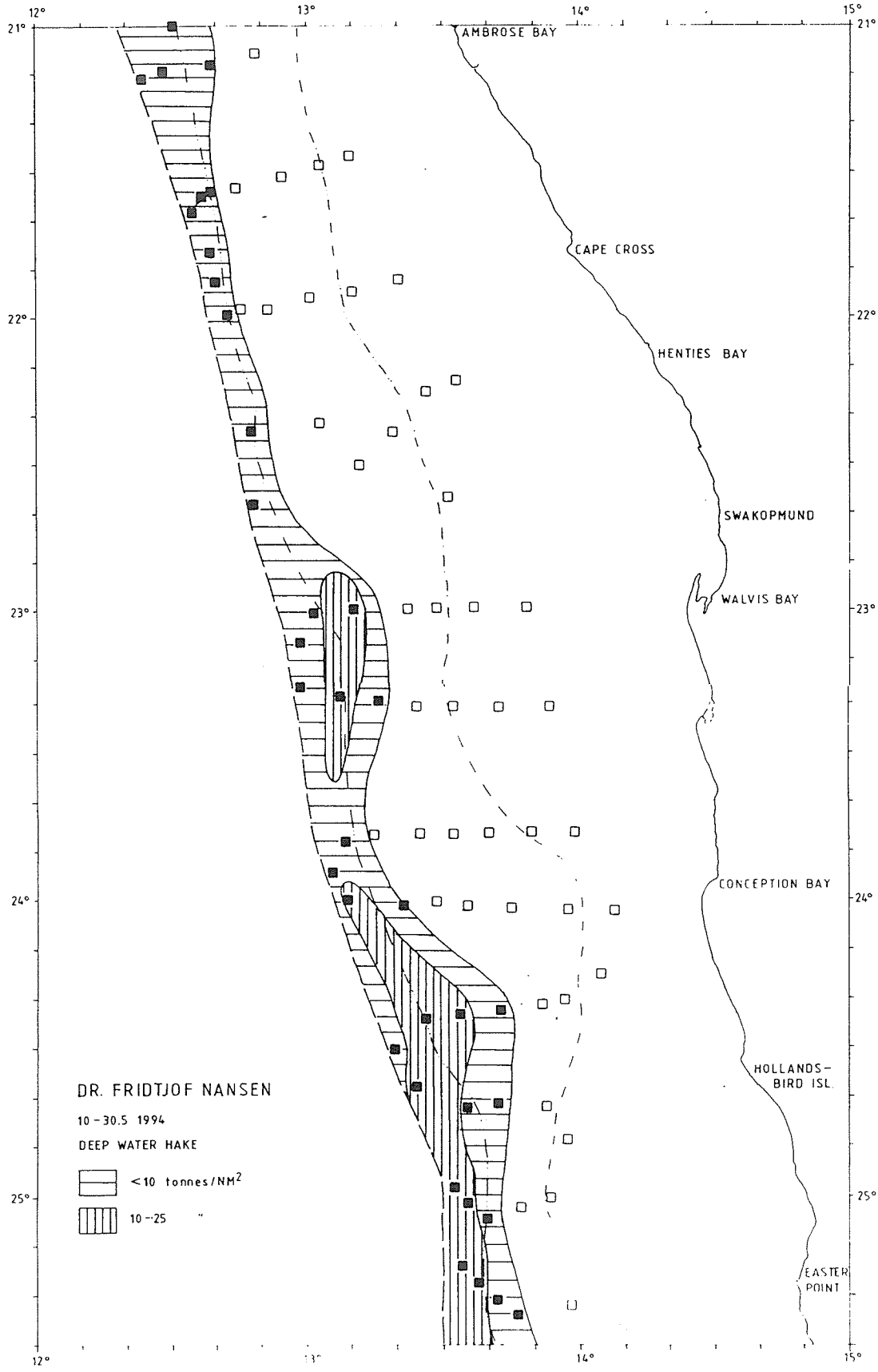



Figure 9 St. Francis Bay to Ambrose Bay. Distribution of deep water hake. Empty squares indicate stations where Cape hake was not caught.

The results from a cohort analysis on the length distribution are shown in Table 10.

Table 10 Central Region. Cape hake. Estimated age-cohorts from optimized length distributions.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|---|---|---|---|---|---|
| 1992 | 24.1 | 2.6 | 0.83 | 830 | 77 |
| 1991 | 30.5 | 2.7 | 0.11 | 101 | 19 |
| older | | | 0.06 | 64 | 64 |

The 1992 yearclass dominates the fish population with 83% of the number of fish, followed by the 1991 yearclass with 11%. The fishable part of the population is 67 mill. fish and 65 000 tonnes, an increase of 15 000 tonnes compared to the previous survey. The non-fishable biomass is estimated to 927 mill. fish with a biomass of 95 000 tonnes, which is only half of what was estimated in January this year and brings the recruitment potential to the fishable biomass down towards half of the normal.

The more narrow distribution of deep water hake is presented in Fig. 9. Results from the length frequency analysis for the deep water hake is shown in Table 11. In this population the non-fishable biomass makes up 53% of the number of fish while the remaining 47% are fish of size bigger than 35 cm and are estimated to 36 mill. fish and 22 000 tonnes, 4 000 tonnes less than in the previous survey.

Table 11 Central Region. Deep water hake. Estimated age-cohorts from optimized length distributions.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|---|---|---|---|---|---|
| 1992 | 28.5 | 2.0 | 0.317 | 24 | 4 |
| 1991 | 34.3 | 2.2 | 0.29 | 22 | 6 |
| 1990 | 41.0 | 3.5 | 0.2 | 16 | 7 |
| 1989 | 51.5 | 3.5 | 0.19 | 15 | 13 |
| older | | | 0.003 | - | - |

## 3.4 NORTHERN REGION, AMBROSE BAY TO CUNENE RIVER

Table 12 shows the catch rates by main groups for the shelf and slope separately. The mean rate for hakes has increased by approximately 25% in the shallower zone and in the deeper zone the rate is more than doubled compared to survey 1/94. The catch rates for monk in the slope is about 30% lower than in previous survey, but still much higher than in previous years.

Table 12 Northern Region. Catch rates by main groups in swept area bottom trawl hails, kg/hour.

SHELF 100-259m

| ST.NO. | DEP. | Hakes | Monk | Dentex | Horse mck. | Squid | Other |
|---|---|---|---|---|---|---|---|
| 299 | 160 | 30.9 | | | 1.9 | | |
| 300 | 233 | 78.8 | | | | | 0.0 |
| 309 | 259 | 37.4 | | 1.0 | 8.6 | | 1.1 |
| 313 | 178 | 125.4 | | 69.8 | 1728.0 | 31.5 | 19.4 |
| 314 | 237 | 456.2 | 11.7 | 1170.0 | 18.3 | | 256.6 |
| 318 | 242 | 303.0 | | 36.7 | 17.3 | | 153.0 |
| 319 | 195 | 560.1 | 80.4 | 5910.0 | 2202.0 | | 471.0 |
| 322 | 212 | 456.4 | 15.4 | 825.3 | 1143.5 | | 363.5 |
| 326 | 228 | 2406.9 | | 376.3 | 793.1 | | 804.0 |
| 327 | 186 | 637.8 | | 131.1 | 2990.2 | | 476.5 |
| 332 | 117 | 447.6 | 17.4 | 594.6 | 575.4 | | 257.1 |
| 344 | 240 | 234.8 | 2.4 | 1458.0 | 1414.8 | | 64.8 |
| 345 | 165 | 310.1 | | | 1755.0 | | 46.0 |
| 351 | 197 | 307.3 | 8.2 | 17.4 | 906.0 | | 5.8 |
| MEAN | | 456.6 | 9.7 | 756.4 | 968.1 | 2.3 | 208.5 |

SHELF 260-650m

| ST.NO. | DEP. | Hakes | Monk | Dentex | Horse mck. | Squid | Other |
|---|---|---|---|---|---|---|---|
| 301 | 345 | 928.7 | 168.3 | 9.6 | | 15.3 | 831.4 |
| 302 | 442 | 147.8 | 16.2 | | | 21.1 | 1404.6 |
| 303 | 528 | 169.9 | 20.6 | | 1.8 | 11.5 | 657.9 |
| 304 | 587 | 119.0 | 29.2 | | 11.4 | 50.7 | 617.4 |
| 305 | 464 | 136.2 | 34.2 | | | 15.5 | 701.3 |
| 306 | 399 | 243.9 | 108.6 | | | 33.2 | 345.2 |
| 307 | 343 | 351.8 | 30.9 | 44.2 | 0.7 | 13.5 | 198.0 |
| 308 | 302 | 134.5 | 38.2 | | 2.6 | 9.4 | 89.6 |
| 310 | 307 | 183.0 | 161.2 | 47.1 | 7.6 | 5.8 | 227.0 |
| 311 | 367 | 1017.3 | 121.4 | | 15.1 | 4.9 | 280.1 |
| 312 | 453 | 337.6 | 22.7 | | 0.4 | 8.6 | 418.7 |
| 315 | 330 | 3404.1 | 2.7 | 1325.6 | 10.7 | | 1031.8 |
| 316 | 413 | 377.4 | 11.2 | | | | 19.1 |
| 317 | 354 | 497.4 | 12.7 | | | | 19.5 |
| 320 | 472 | 486.1 | 82.2 | | | 84.0 | 1846.0 |
| 321 | 588 | 422.8 | 33.1 | | | 0.6 | 1368.2 |
| 323 | 303 | 3097.6 | 20.8 | 532.4 | 145.2 | | 1054.2 |
| 324 | 404 | 4705.9 | 126.1 | 26.7 | | | 1247.2 |
| 325 | 345 | 2735.5 | | 463.3 | 218.2 | | 1845.5 |
| 328 | 372 | 1728.0 | 8.4 | | | 98.8 | 2184.2 |
| 329 | 499 | 844.0 | 25.1 | | | | 2188.9 |
| 330 | 524 | 396.8 | 129.8 | | | | 718.1 |
| 331 | 498 | 514.0 | 45.4 | | | 50.8 | 2476.4 |
| 333 | 290 | 2632.2 | 22.3 | 327.6 | 179.8 | | 1224.0 |
| 334 | 374 | 2756.5 | 47.0 | | | | 1074.5 |
| 335 | 443 | 762.1 | 54.3 | | | 16.3 | 508.9 |
| 336 | 602 | 130.2 | 10.1 | | | | 1199.1 |
| 337 | 501 | 222.5 | 95.8 | | | | 781.7 |
| 338 | 593 | 182.8 | 74.7 | | | | 617.5 |
| 339 | 499 | 1173.0 | 34.0 | | | 12.6 | 382.3 |
| 340 | 394 | 846.6 | 28.0 | | | 15.1 | 316.7 |
| 341 | 308 | 1235.7 | 35.7 | 15.7 | 41.7 | 3.3 | 789.4 |
| 342 | 285 | 466.1 | 27.6 | 148.5 | 312.0 | 7.1 | 308.9 |
| 343 | 289 | 256.3 | | 182.5 | 109.4 | | 35.9 |
| 346 | 479 | 64.8 | 38.2 | | | | 755.4 |
| 347 | 393 | 409.7 | 23.6 | | | 18.4 | 336.8 |
| 348 | 304 | 500.0 | 15.0 | | 59.2 | 28.0 | 126.6 |
| 349 | 294 | 380.6 | 0.7 | 3.5 | 84.0 | 22.9 | 16.8 |
| 350 | 269 | 500.9 | 2.2 | 206.4 | 49.4 | 7.2 | 66.7 |
| 352 | 303 | 463.6 | 47.5 | 63.4 | 56.4 | 16.0 | 91.9 |
| 353 | 325 | 886.8 | 29.0 | 2.0 | 29.1 | 25.8 | 161.1 |
| 354 | 349 | 450.9 | 27.6 | | 42.9 | 59.8 | 270.3 |
| 355 | 429 | 771.4 | 65.8 | | | 4.9 | 496.5 |
| 356 | 501 | 119.3 | 50.2 | | | 28.6 | 843.9 |
| MEAN | | 868.0 | 45.0 | 77.2 | 31.3 | 15.7 | 731.3 |

Figure 10 shows the distribution of Cape hake in the northern region by levels of density calculated from the catch rates and with corrections for fish in mid-water. The pattern of distribution is similar to that found previously in this region, with concentrations of high density in deeper waters extending northwards to the Cunene River.

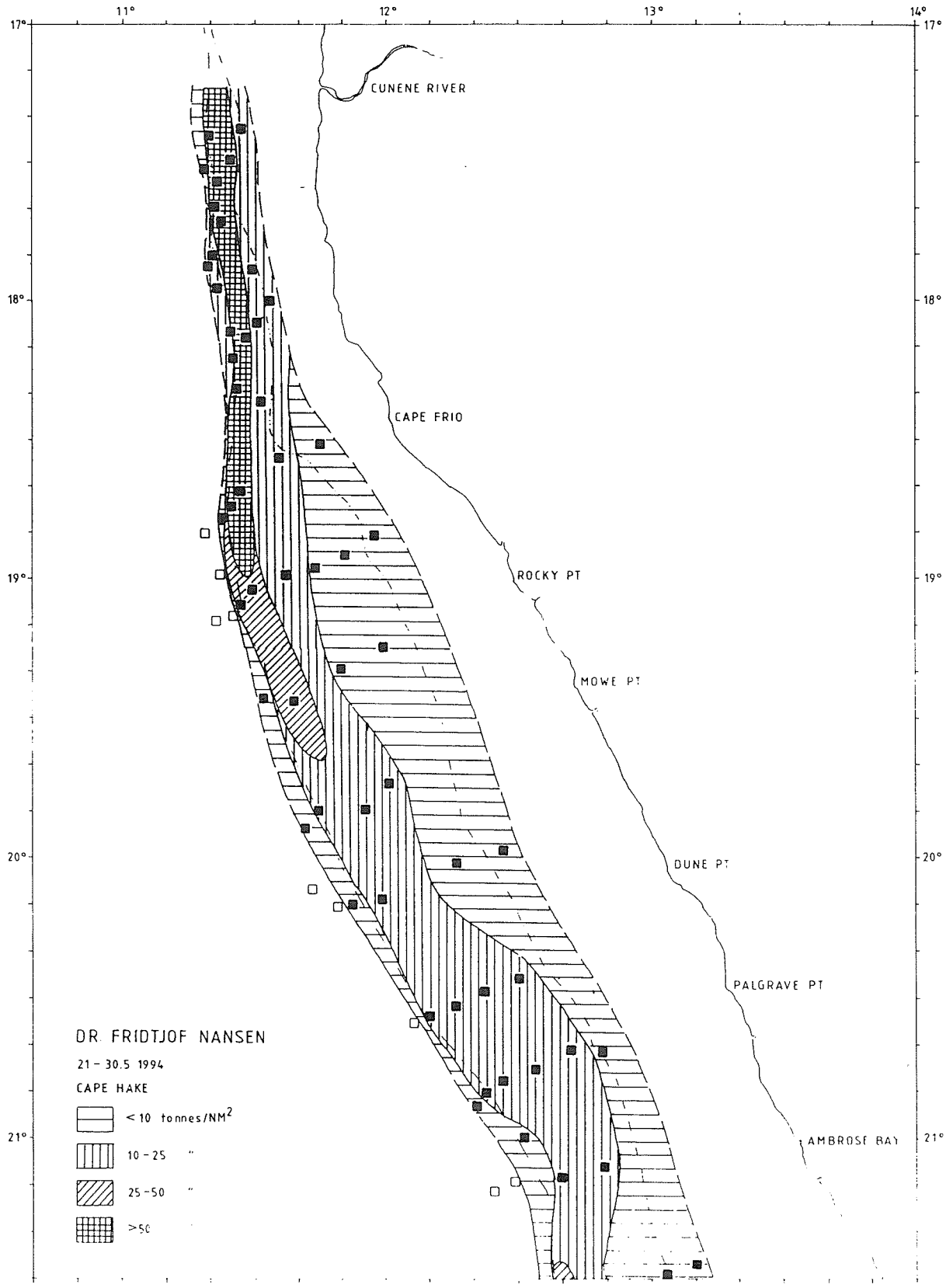



Figure 10 Ambrose Bay to Cunene River. Distribution of Cape hake. Empty squares indicate stations where deep water hake was not caught.

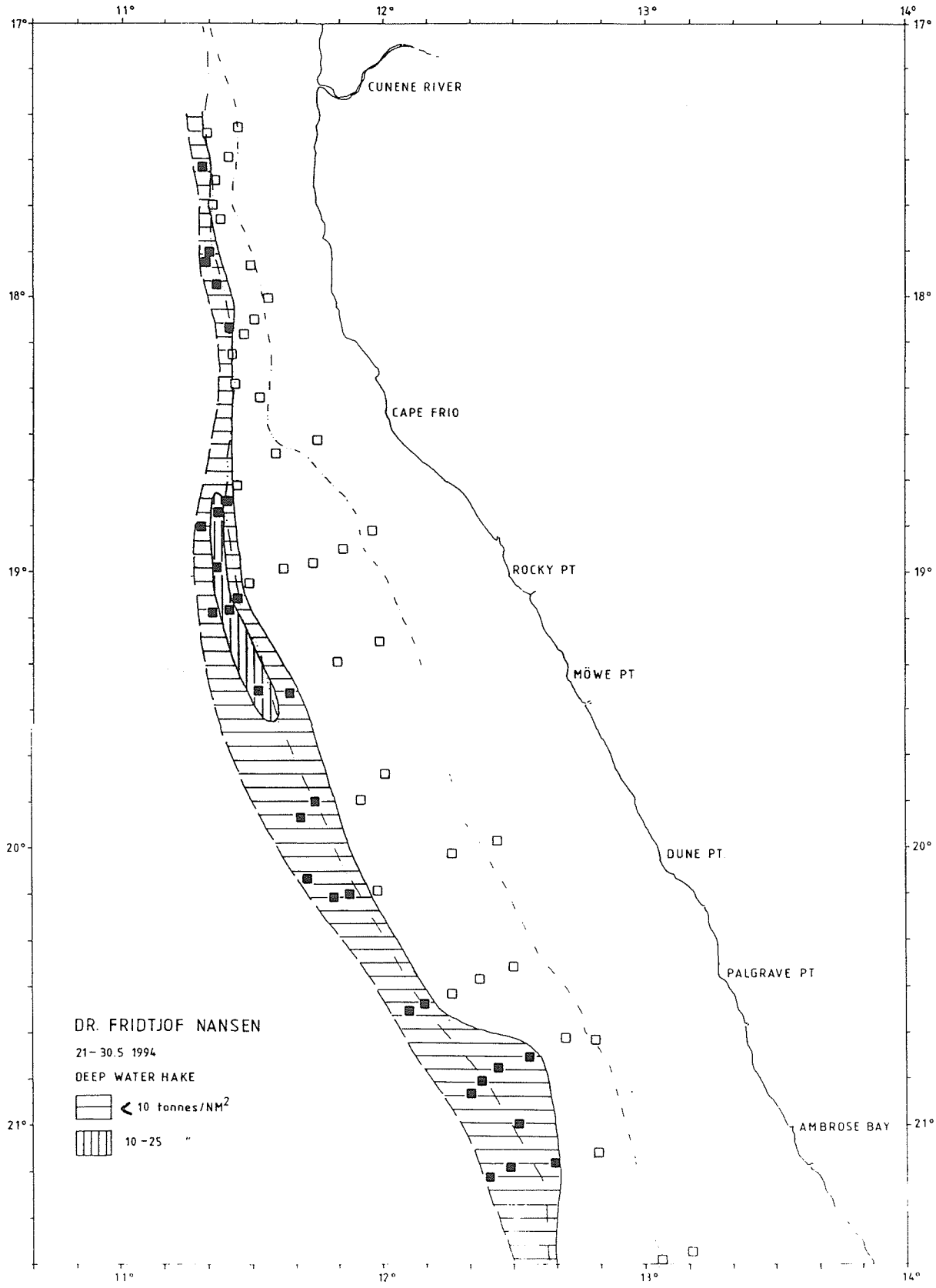



Figure 11 Ambrose Bay to Cunene River. Distribution of deep water hake. Empty squares indicate stations where deep water hake was not caught.

The depth distribution of the two hake species based on catch rates converted to densities are shown in Table 13. For Cape hake there was an increase in densities in all depth ranges compared to survey 94/1. The densities of deep water hake decreased somewhat in 350 - 450 m and 550 - 650 m but on the other hand increased in 450 - 550 m. This can be explained by small differences in distribution and area coverage between the two surveys.

Table 13 Northern Region. Depth distribution of the two hake species. Mean densities in tonnes/nm$^2$ and mean catch rates kg/hour.

| | 100-250m | 250-350m | 350-450m | 450-550m | 550-650m |
|---|---|---|---|---|---|
| Cape hake | | | | | |
| Density | 14.7 | 33.1 | 35.4 | 3.9 | 1.3 |
| Catch rate | 440 | 990 | 1060 | 120 | 40 |
| Deep w. hake | | | | | |
| Density | | 0.2 | 2.1 | 9.1 | 5.8 |
| Catch rate | | 7 | 62 | 270 | 170 |
| No. of hauls | 13 | 18 | 12 | 11 | 4 |

Biomass estimates give a total of 130 000 tonnes of Cape hake and 14 000 tonnes of deep water hake (Table 14). For the Cape hake this represents an increase of 40 000 tonnes since the last survey in January 1994. The deep water hake on the other hand shows a decrease from 20 to 14 thousand tonnes, but the estimate is still more than the double of that obtained in April - May 1993. The 95% confidence limits on the estimates are ±12% on the Cape hake and ±47% on the deep water hake.

Table 14 Northern Region. Estimates of total biomass by surveys, 1 000 tonnes.

| Year/Survey | Cape hake | Deep water hake |
|---|---|---|
| 90/1 | 180 | |
| 90/3 | 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 |

* + hake in the mid-water.

The size compositions of the two hake species are shown in Annex I. The results of an analysis done on the pooled length frequency distribution on Cape hake in the northern region is shown in Table 15. The young part of the population with fish three years and younger makes up 69% of the number of fish, or 240 million fish with a biomass of 39 thousand tonnes. The so called 'fishable biomass', representing fish of 36 cm and larger, constitutes 135 mill. fish with a biomass of 102 000 tonnes.

Table 15 Northern Region. Cape hake. Estimated age-cohorts from optimized length distributions.

| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|---|---|---|---|---|---|
| 1992 | 25.9 | 2.7 | 0.50 | 175 | 20 |
| 1991 | 35.0 | 3.5 | 0.19 | 65 | 19 |
| 1990 | 43.0 | 3.5 | 0.13 | 47 | 24 |
| older | | | 0.18 | 60 | 67 |

A similar analysis on deep water hake (Table 16), shows that only 29%, or 7 million fish with a biomass of 1 600 tonnes, is young fish of age 3 years or less. The fishable biomass is 13 000 tonnes.

Table 16 Northern Region. Deep water hake. Estimated age-cohorts from optimized length distributions.

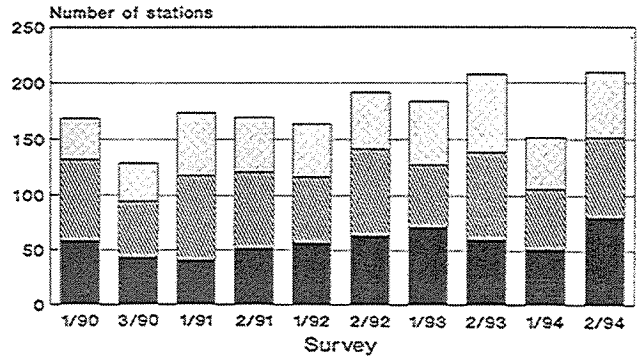
| Year class | Mean length | Sigma | Fraction of all fish | Population million N | Biomass 1 000 t |
|---|---|---|---|---|---|
| 1992 | 28.1 | 2.0 | 0.11 | 3 | 0.4 |
| 1991 | 35.1 | 2.5 | 0.18 | 4 | 1.2 |
| 1990 | 42.0 | 3.2 | 0.38 | 10 | 4.8 |
| 1989 | 51.0 | 3.0 | 0.33 | 9 | 7.6 |

# CHAPTER 4 CONSIDERATIONS ON THE SURVEY RESULTS

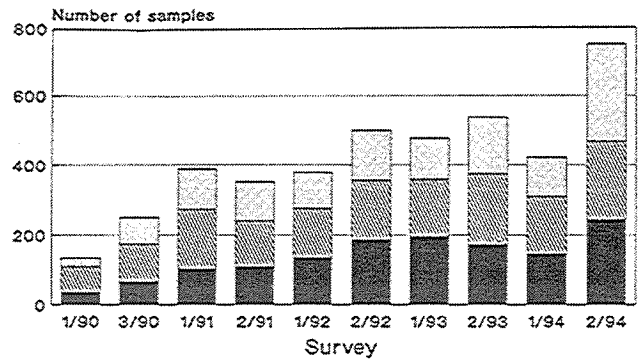
## Survey effort

The present survey is the 10th in a series started in early 1990, covering the distribution of the hake stocks over the whole Namibian shelf. Figure 12 shows the effort spent in these investigations. The effort of the present survey is the highest both in number of trawl stations and of length samples.

a)




b)




c)

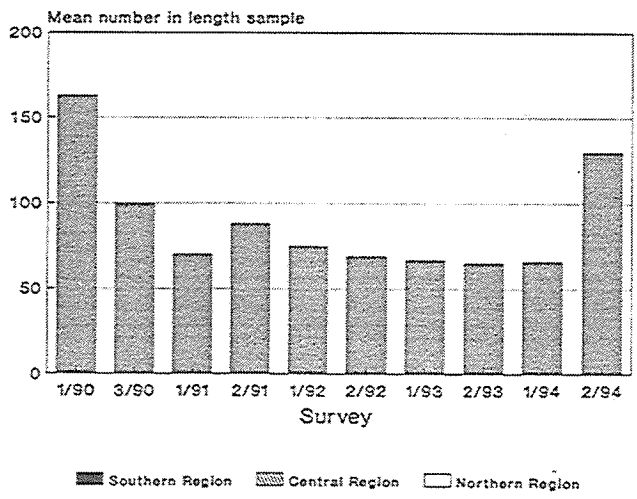



Figure 12 Hake survey effort 1990-94. a) Number of trawl stations by regions; b) Number of length frequency samples by regions; c) Mean number of fish in length sample.

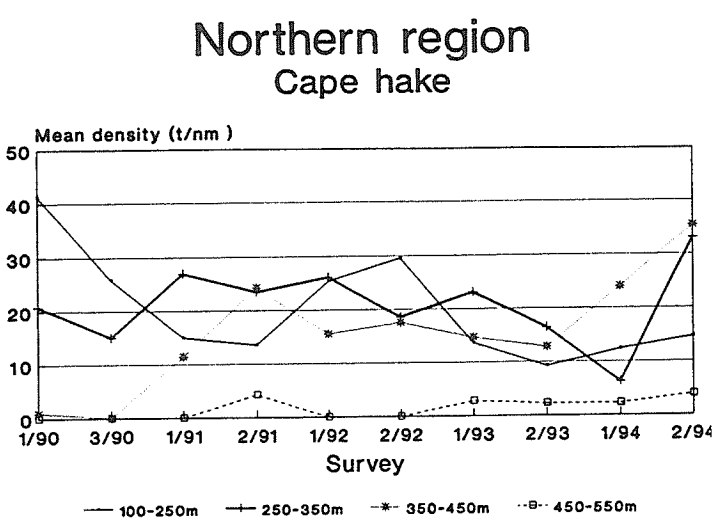
Mid-water behaviour of the hake can cause problems for the trawl survey methodology. However, improved acoustic technology has made it possible to establish a technique that can reduce the effect of this behaviour on the estimates. In the last four surveys (1993 to 1994) the pelagic behaviour may have caused some underestimate in the biomass, especially in the Northern Region.

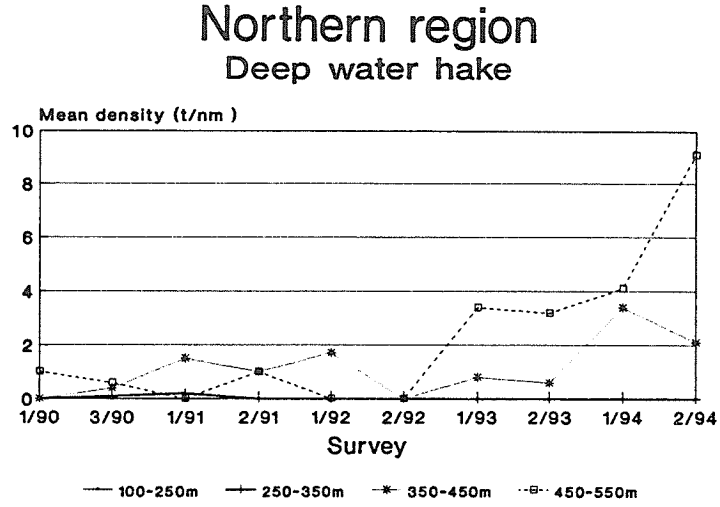
**Catch per unit effort**

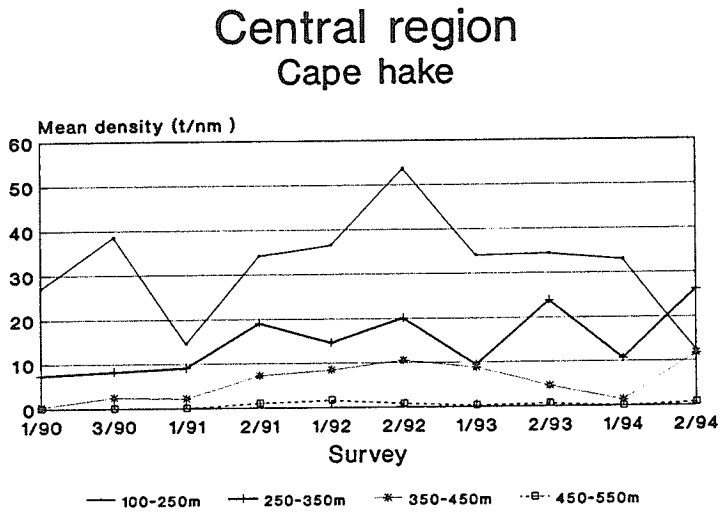
A summary of the estimates of the mean density of the hakes by depth strata is shown in Figure 13. For the Cape hake, the densities in the shallow range 100-250 m mainly reflect the strength of the young fish, 2-3 years of age, that inhabit this zone. Since the previous survey in February, the Southern Region shows a considerable decrease in the density of young fish from 11 to 6 tonnes/nm$^2$, the Central Region shows an alarming reduction from 33 to 12.4 t/nm$^2$, while the Northern Region had an insignificant increase from 12.4 to 14.7 t/nm$^2$. The drastic reduction in the Central Region will be further discussed below. The densities in the deeper zones mainly reflect the state of the fishable part of the hake stock. In the Southern Region these densities increased for both species, and most pronounced for deep water hake.

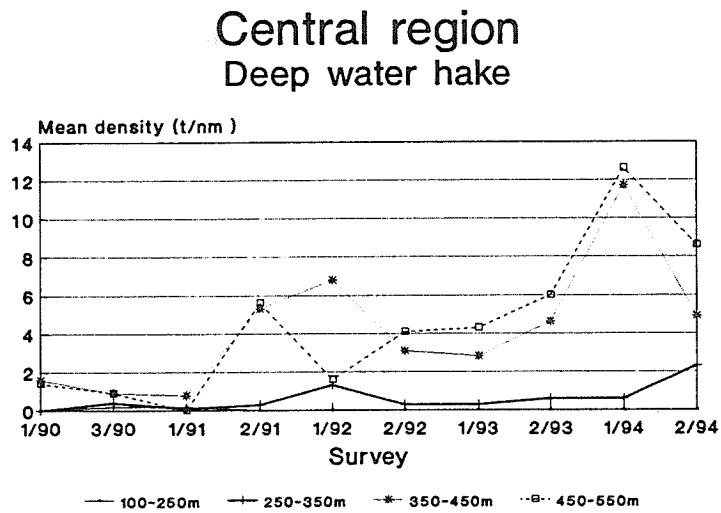
**Biomass estimates**

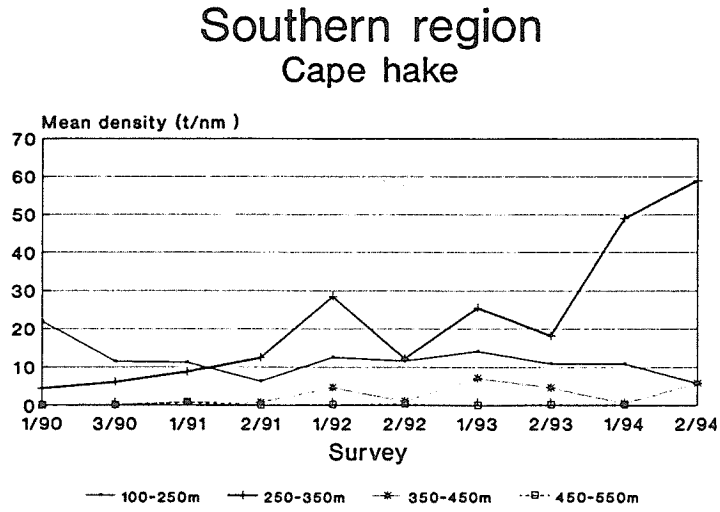
Table 19 shows a summary of the biomass estimates for the two hake stocks by regions and surveys. The estimated total biomass of hakes has increased slightly since May 1993 from 740 to 790 thousand tonnes. This increase results from higher estimates of both species in the Southern Region and of Cape hake in the Northern Region. In the Central Region the biomass of Cape hake has continued to decline and is now back to the level of 1990. The sudden drop in the biomass of Cape hake in the Central Region from 225 thousand tonnes to 160 thousand tonnes applies mainly to the young fish that will recruit to the fishery in the next 2-3 years. The cause for this reduction is not known, but the sudden character of the phenomenon indicates an environmental incidence causing mass mortalities, similar to what was observed in early 1993. The total country estimates on fishable biomass and recruits have also been summarized graphically in Figure 14. The dominant feature is the reduction in the fishable biomass of the Cape hake from 390 to 300 thousand tonnes during the last two years. This reduction has mainly taken place in the Central and partly the Northern Region (-105 and -40 thousand tonnes respectively), while in the Southern Region the biomass is 50 thousand tonnes higher than in survey 2/92 (Table 19).



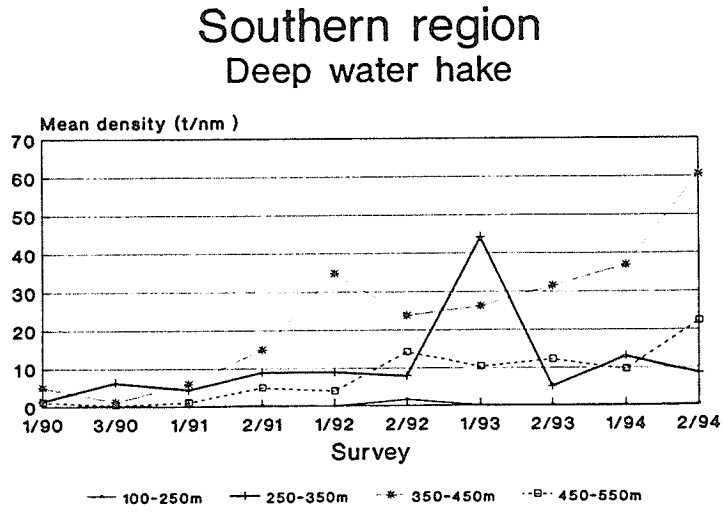




Figure 13 Estimated mean densities in depth strata by surveys. Mean densities in tonnes/nm$^2$.

Table 19 Summary of total, fishable and non-fishable biomass estimates for the two hake species by surveys and areas. 1 000 tonnes.

| | Feb-Mar 1990 | Sep-Oct 1990 | Jan-Feb 1991 | Oct-Nov 1991 | Apr-May 1992 | Oct-Nov 1992 | Jan-Feb 1993 | Apr-May 1993 | Jan-Feb 1994 | Apr-May 1994 |
|---|---|---|---|---|---|---|---|---|---|---|
| **TOTAL BIOMASS** | | | | | | | | | | |
| SOUTHERN REGION | | | | | | | | | | |
| Cape hake | 130 | 130 | 126 | 80 | 200 | 160 | 210 | 180 | 200 | 240 |
| Deep water hake | 22 | 25 | 31 | 83 | 145 | 125 | 150 | 115 | 160 | 215 |
| CENTRAL REGION | | | | | | | | | | |
| Cape hake | 180 | 219 | 150 | 302 | 261 | 542 | 280 | 280 | 225 | 160 |
| Deep water hake | 4 | 6 | 6 | 13 | 15 | 15 | 12 | 20 | 30 | 30 |
| NORTHERN REGION | | | | | | | | | | |
| Cape hake | 180 | 105* | 200 | 140 | 185 | 190 | 150 | 110 | 92 | 130 |
| Deep water hake | | | | 2 | 4 | 8 | 4 | 6 | 20 | 15 |
| TOTAL NAMIBIA | | | | | | | | | | |
| Cape hake | 490 | 450 | 480 | 520 | 650 | 890 | 640 | 570 | 520 | 530 |
| Deep water hake | 25 | 35 | 40 | 100 | 160 | 150 | 170 | 140 | 210 | 260 |
| Both | 516 | 485* | 513 | 620 | 810 | 1040 | 810 | 710 | 737 | 790 |
| **FISHABLE BIOMASS** | | | | | | | | | | |
| SOUTHERN REGION | | | | | | | | | | |
| Cape hake | | | | 42 | 145 | 75 | 115 | 94 | 112 | 130 |
| Deep water hake | | | | 42 | 113 | 80 | 123 | 95 | 114 | 164 |
| CENTRAL REGION | | | | | | | | | | |
| Cape hake | | | | 140 | 85 | 170 | 150 | 118 | 50 | 65 |
| Deep water hake | | | | (13) | 15 | 15 | 9 | 16 | 26 | 22 |
| NORTHERN REGION | | | | | | | | | | |
| Cape hake | | | | 135 | 143 | 143 | 113 | 88 | 74 | 102 |
| Deep water hake | | | | - | - | - | - | - | 19 | 13 |
| Cape hake | 200 | 270* | 280 | 320 | 370 | 390 | 380 | 300 | 240 | 300 |
| Deep water hake | 20 | 20* | 20 | 50 | 130 | 100 | 140 | 120 | 160 | 200 |
| TOTAL FISHABLE | 220 | 290* | 300 | 370 | 503 | 490 | 520 | 420 | 400 | 500 |
| **NON-FISHABLE BIOMASS** | | | | | | | | | | |
| Cape hake | 290 | 180 | 200 | 200 | 280 | 500 | 260 | 270 | 280 | 230 |
| Deep water hake | 5 | 15 | 20 | 50 | 130 | 50 | 30 | 20 | 50 | 60 |
| TOTAL NON-FISHABLE | 295 | 195 | 220 | 250 | 410 | 550 | 290 | 290 | 330 | 290 |

* Unadjusted underestimate due to fish off the bottom.

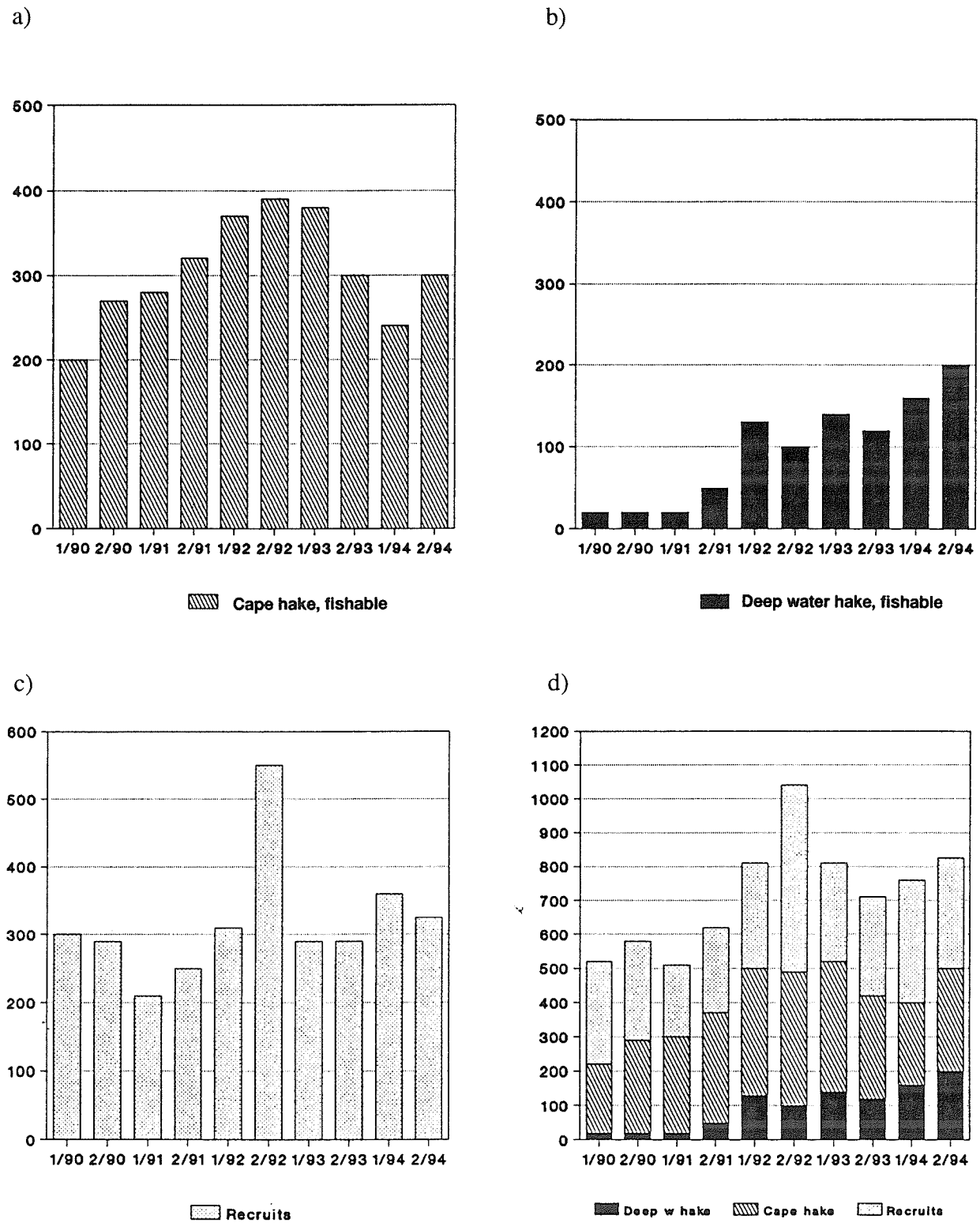



Figure 14 Trends in biomass estimates: a) Cape hake, 'fishable stock', b) deep water hake, 'fishable' stock, c) recruits ('non-fishable' biomass) and d) total hake in Namibia. Thousand tonnes.

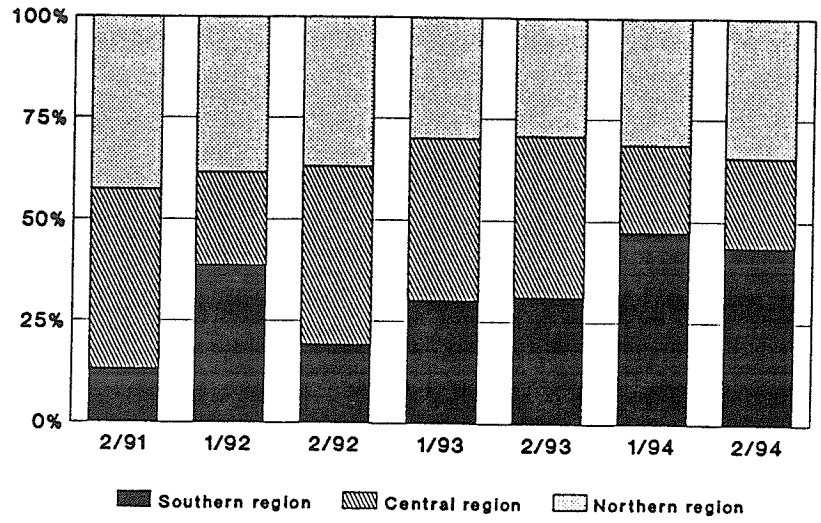



Figure 15 Relative regional share of fishable biomass of Cape hake 1991-94.

## Geographic shift in the fishable biomass

Figure 13 shows the development of the relative share of the fishable biomass of Cape hake in the regions for the last three years. The figure demonstrates that the Southern Region, which in October 1991 only represented a 13% share of the biomass, in the last survey had increased to 44%. In the same period the biomass in the Central Region was reduced from 44 to 22% and in the north from 43 to 34%.

## Recruitment potential

The recruitment to the stock of Cape hake can be estimated from the numerical abundance of the two year old fish. The estimates for the 1992 yearclass based on the current survey data are shown in Table 20 together with previous observations. A 'normal' recruitment level after two years seems to be around 2 billion fish ±200 million (Table 20). The 1992 yearclass fell within this range on the previous survey, but is now reduced to 1.25 billion, well below the average level. The reduction is mainly located in the Central Region, likely caused by environmental anomalies as discussed above. The further life history of the 1992 yearclass should be followed closely as it will be the main component determining the size of the fishable biomass in 1996.

Table 20 Estimates of strength of recent yearclasses of Cape hake. Cohort population numbers at about two years of age for the groups assumed to have been spawned in 1988, 1989, 1990, 1991 and 1992. Millions of fish.

| Yearclass | 1988 | 1989 | 1990 | 1990 | 1991 | 1991 | 1991 | 1992 | 1992 |
|---|---|---|---|---|---|---|---|---|---|
| Southern region | 980 | 100 | 160 | 300 | 990 | 670 | 390 | 250 | 230 |
| Central region | 1 320 | 170 | 1 710 | 1 620 | 3 500 | 1 230 | 1 370 | 1 880 | 830 |
| Northern region | 10 | 10 | 20 | 240 | 440 | 270 | 130 | 70 | 175 |
| Total | 2 310 | 280 | 1 890 | 2 160 | 4 930 | 2 170 | 1 890 | 2 200 | 1235 |
| Survey/Year | 1/90 | 1/91 | 2/91 | 1/92 | 2/92 | 1/93 | 2/93 | 1/94 | 2/94 |

## Management considerations

A management practice that would ensure a more balanced harvest on the two hake species is strongly recommended. Administratively, the solution would perhaps be to direct the fisheries by regions. Estimates of the fishable hake biomass in this report are therefore presented by species and regions to allow for this management option, if chosen.

The rebuilding of the Namibian hake stocks since independence has followed a simple but effective strategy where after strict regulations on foreign fishing, part of the surplus production was set off to build up the standing stock of hake and the rest was mainly reserved to a growing national fishing industry. The rapid recovery of the hake stocks during the first years also allowed a gradual increase in the annual hake quotas as follows:

1991: 80 thousand tonnes
1992: 100 thousand tonnes
1993: 120 thousand tonnes
1994: 150 thousand tonnes

The first three years' quota were linked to an increasing harvestable biomass, while the most recent raise could seem more based on expectations that the stock should naturally and gradually increase towards its full potential. The findings in this report show that the most recent increase in the quota was not consistent with the trends observed through the survey investigations, that had already in the past year shown a stagnating or even declining stock biomass.

Historical catch records higher than 500 thousand tonnes indicate that the hake stocks have not yet reached their full potential in Namibian waters. *Why is then the fishable biomass*

*levelling out and why are there signs of overfishing when the annual yields still are moderate?* To understand this, one should keep in mind that most fish stocks in dynamic ecosystems do not grow gradually even if the conditions for expansion are favourable. Instead, the growth occurs often in uneven steps and leaps not seldom in orders of magnitude, dependent on the reproduction success of the stock. Table 20 has shown that the recruitment, measured at two years of age, has been fairly stable around 2 billion fish since independence, with one exception. The 1991 yearclass had a very promising level at 1.5 years of age, but was decimated drastically down to a 'normal' level during the following 3 months.

Attempts have been made to compare the recruitment indices from the Nansen surveys with similar data from the ICSEAF VPA studies for the yearclasses 1968-1985 and with recruitment indices from Spanish trawl surveys for the yearclasses 1981-86, (Appendix XX). To make the indices comparable several corrections had to be applied which make the results, compiled in Figure 16, indicative only.

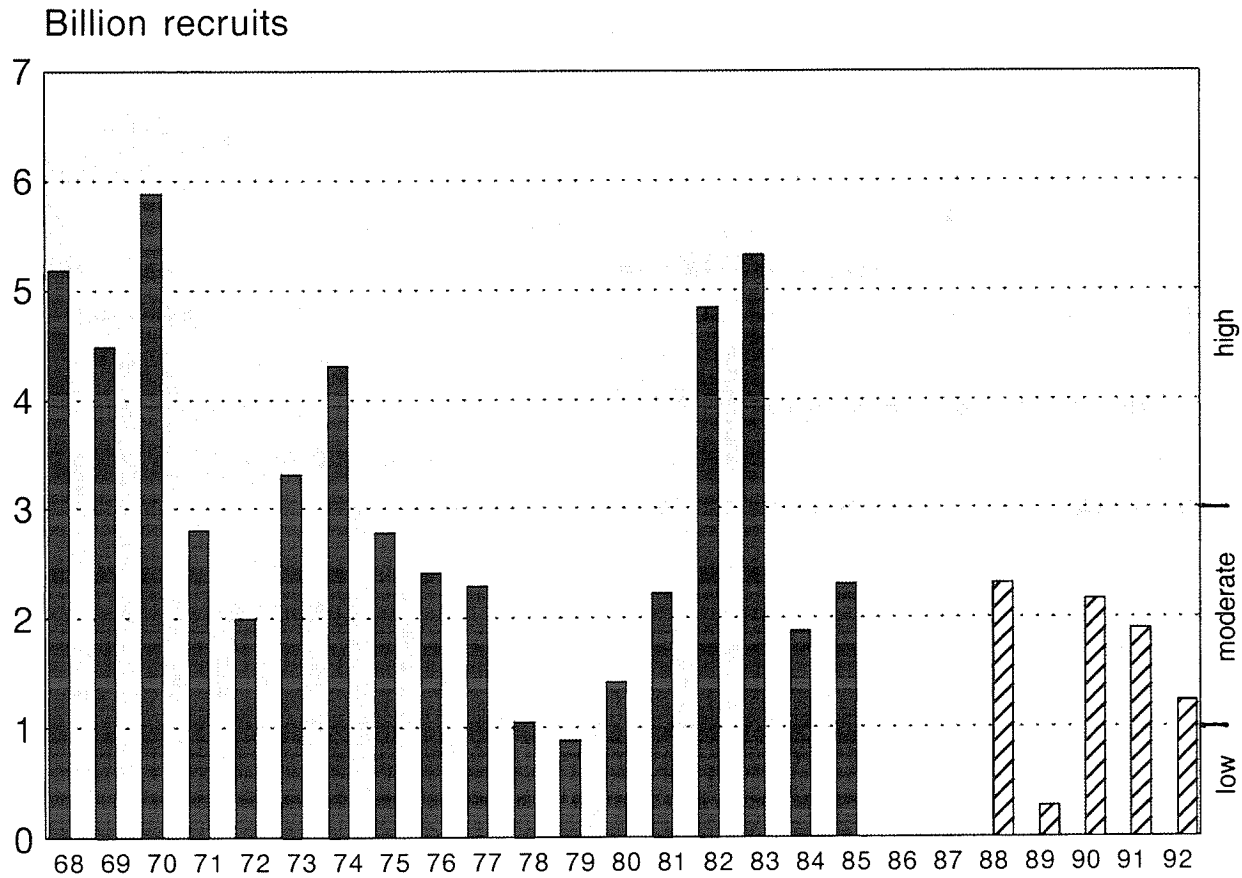



Figure 16 Recruitment indices on Cape hake yearclasses 1968-92. Compiled from ICSEAF VPA studies, Spanish trawl surveys and the Nansen surveys. See Appendix XX for details.

The figure indicates several important features:

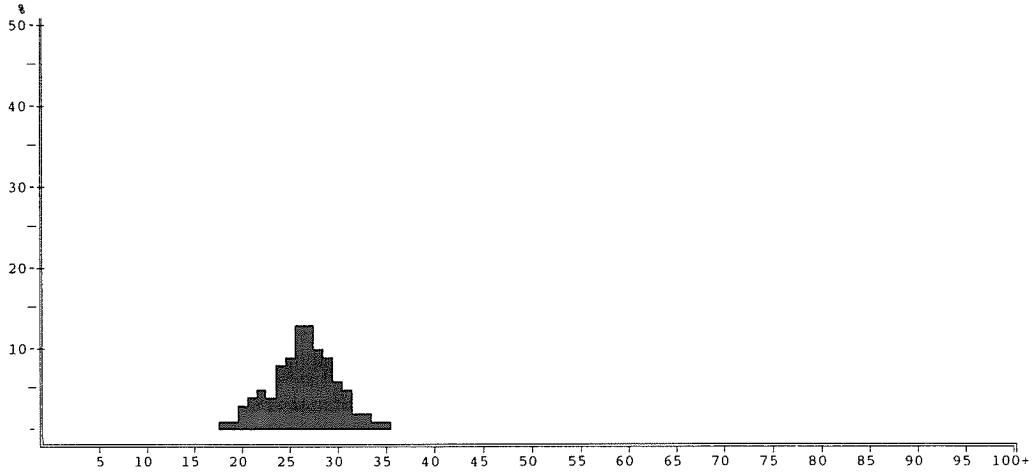
- The recruitment process is extremely dynamic with yearclass strengths between 5.9 billion and 0.3 billion fish.
- The recruitment in the period since independence (yearclass 1988 and after) has been moderate with most groups around 2 billion fish.
- High recruitment, defined as more than 3 billion fish occurred in the periods 1968-70, 1973-74 and 1982-83 and these were the fundament for the following rich fishery.

The 1991 yearclass was estimated to 4.9 billion fish at the stage of 1.5 years, and thus set out to be a very strong yearclass. Unfortunately it was drastically reduced during the following months as already pointed out. With reference to the recent development of the fishable biomass, discussed above, one may therefore conclude that with the present recruitment level sustaining around 2 billion fish, the present effort in the fishery is in balance or perhaps even somewhat overexploiting the production capacity of the hake stocks. Further expansion of the fishery should probably await until at least one strong yearclass is recruited and firmly established at 2 years of age.

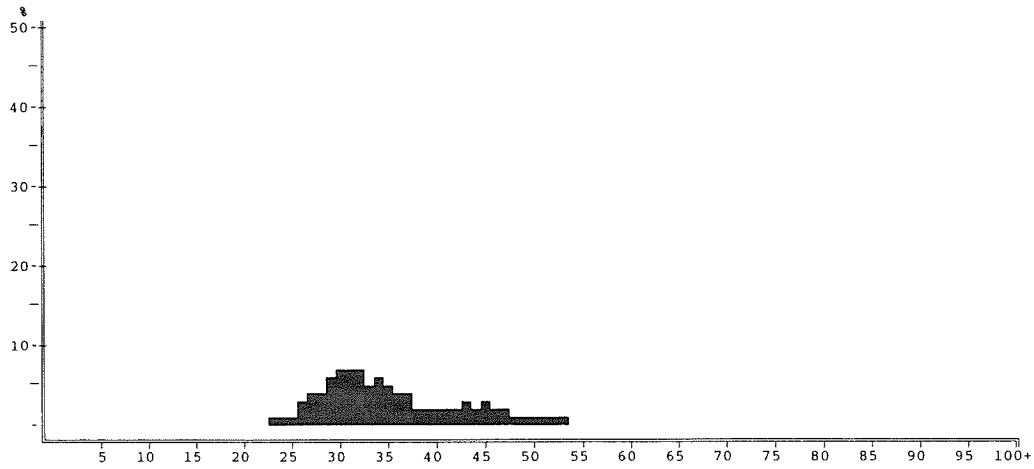
**Other considerations**

The management of the Namibian hake resources is at present based to a large degree on the results from the trawl surveys. The fishery data, stored in a UNIX data base, are not yet available for the urgent needed research. The main obstacle seems to be the transfer of the fish log forms into a user friendly database or statistical package. It is recommended that until the UNIX system is fully developed, to establish a simple PC based database. Past experience from several research institutions show that UNIX systems take a long time to develop, and the user threshold, before they are useful for the scientists, is usually high.

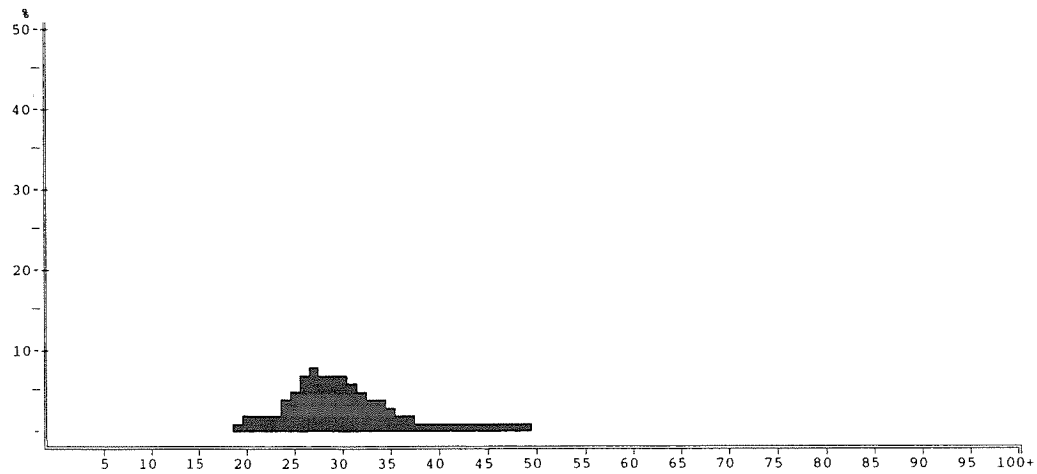
# Annex I Size composition of main stocks



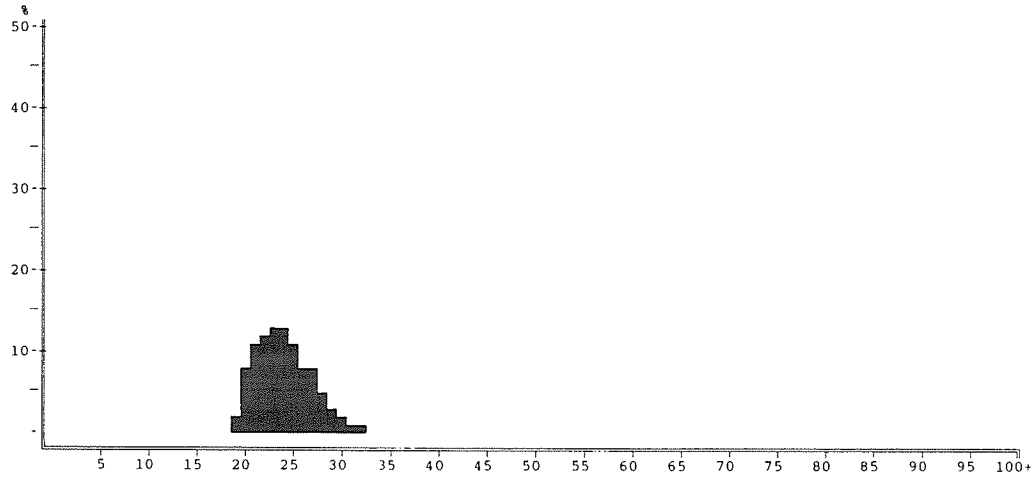

*Merluccius capensis*
SOUTHERN REGION 50-259m



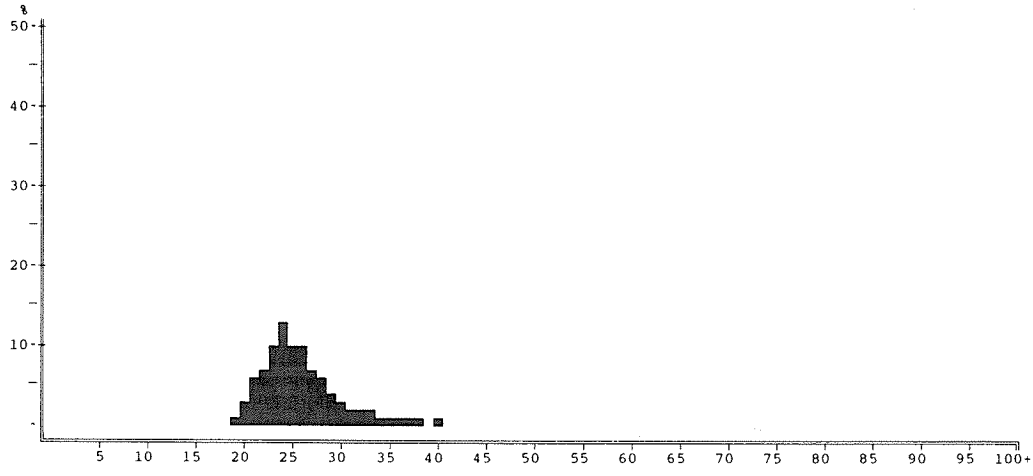

*Merluccius capensis*
SOUTHERN REGION 260-650m



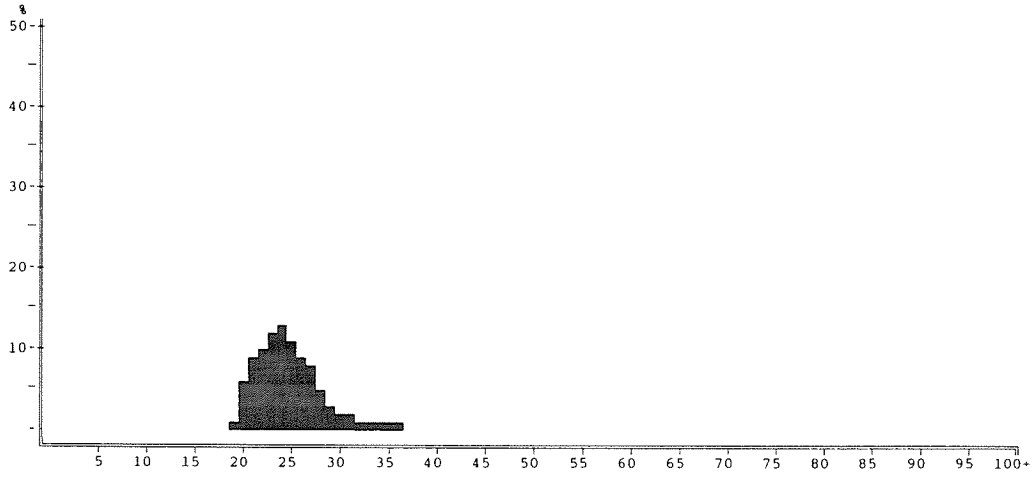

*Merluccius capensis*
SOUTHERN REGION Total



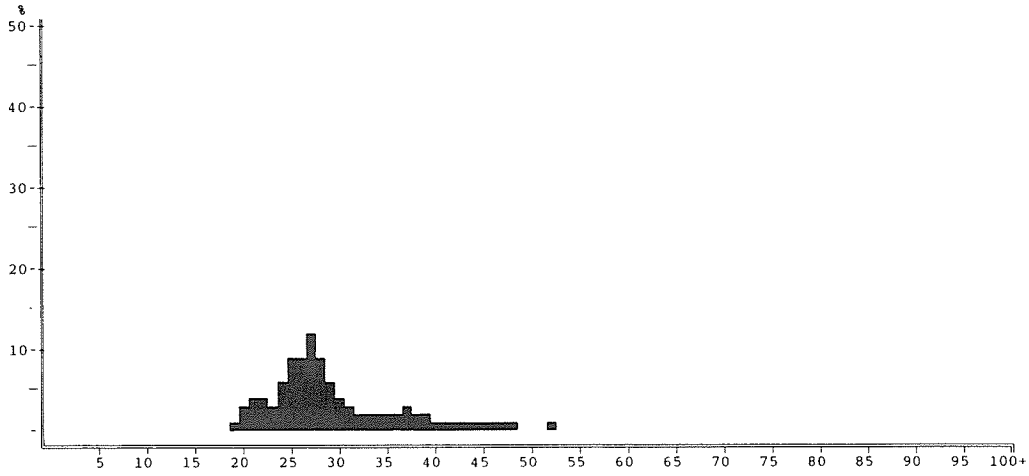

*Merluccius capensis*
CENTRAL REGION 100-259m



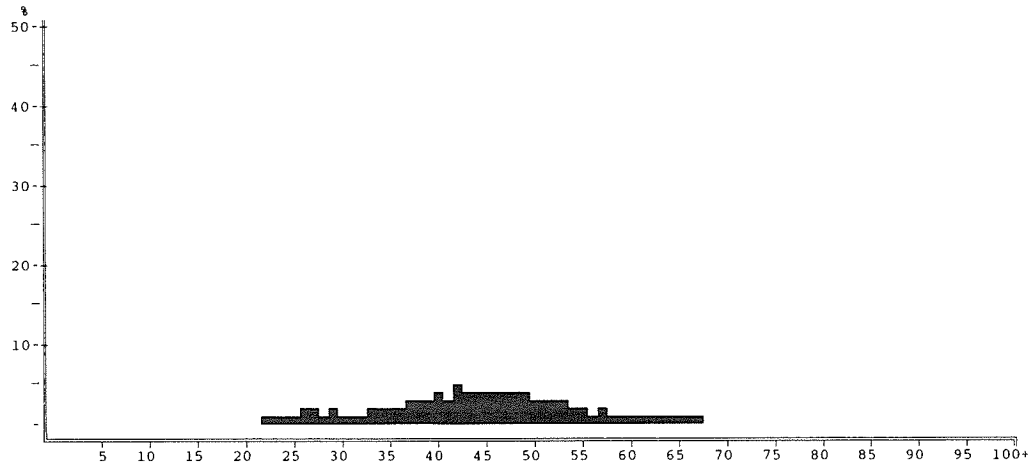

*Merluccius capensis*
CENTRAL REGION 260-700m



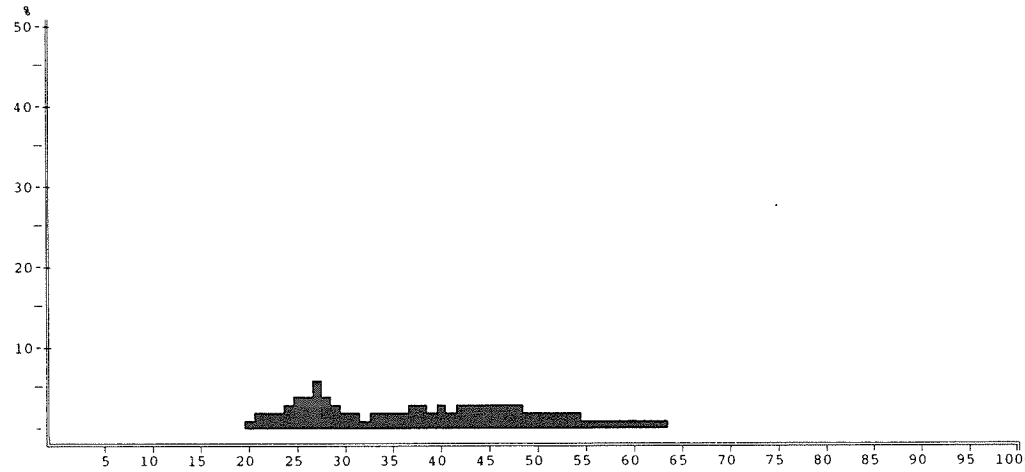

*Merluccius capensis*
CENTRAL REGION Total



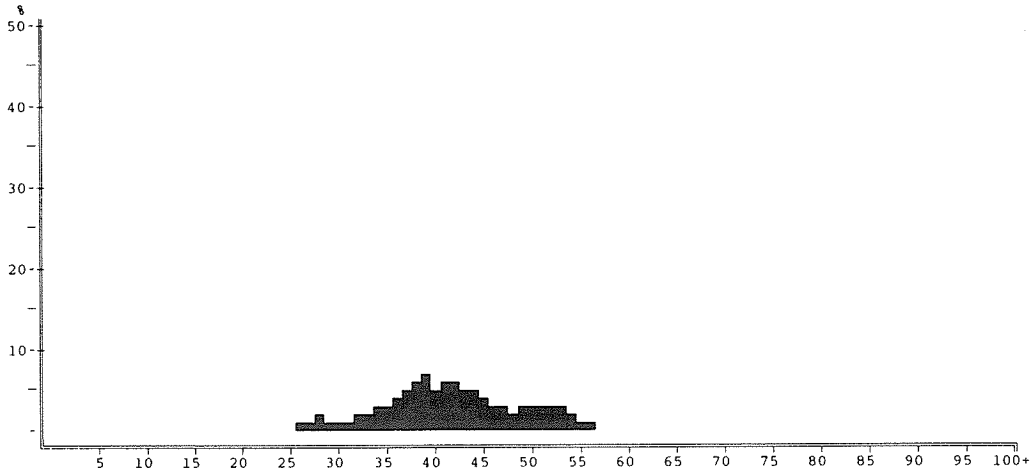

*Merluccius capensis*
NORTHERN REGION 100-259m



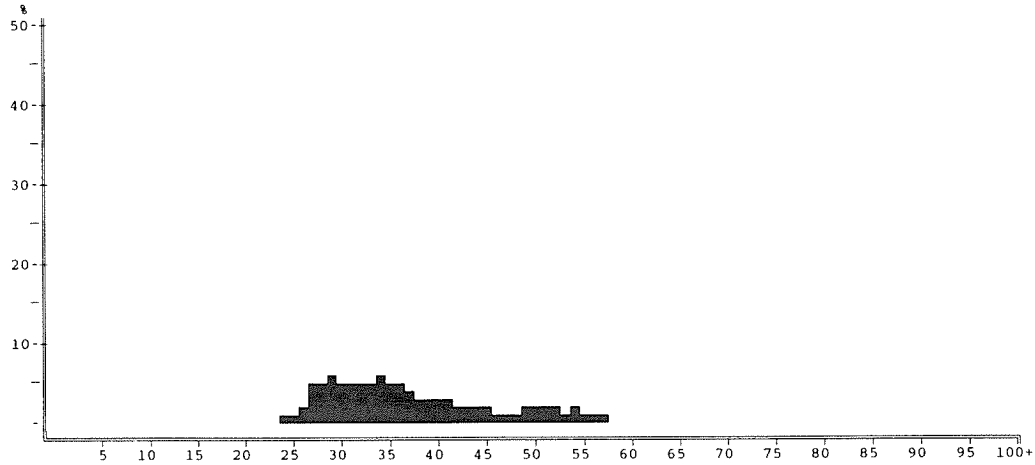

*Merluccius capensis*
NORTHERN REGION 260-650m



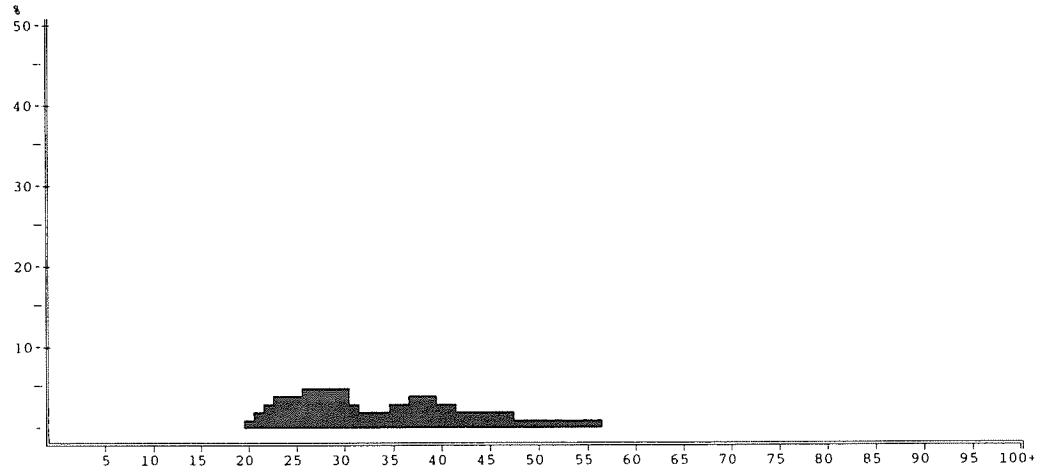

*Merluccius capensis*
NORTHERN REGION Total




*Merluccius paradoxus*
NORTHERN REGION Total




*Merluccius paradoxus*
CENTRAL REGION Total

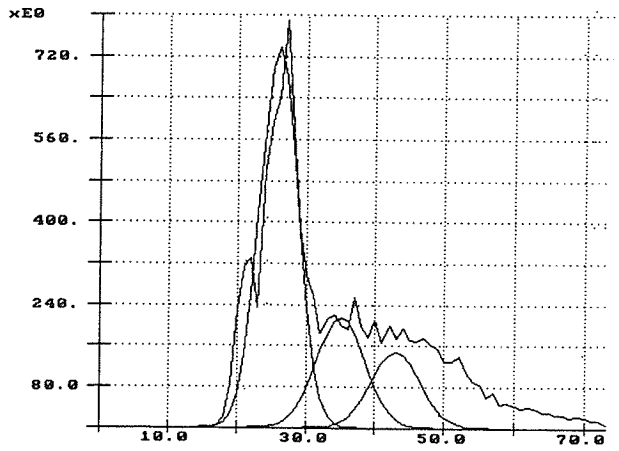


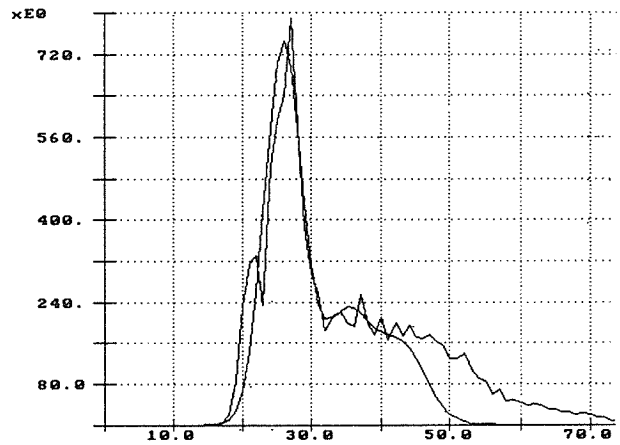

*Merluccius paradoxus*
SOUTHERN REGION Total

## Annex II The size composition of the hake stocks split into length cohorts through optimizing techniques

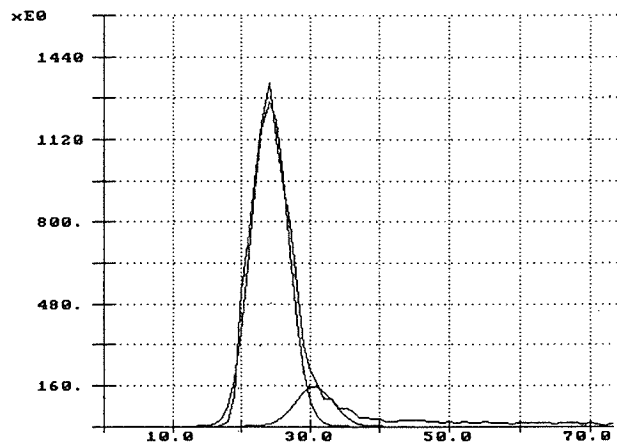
CAPE HAKE

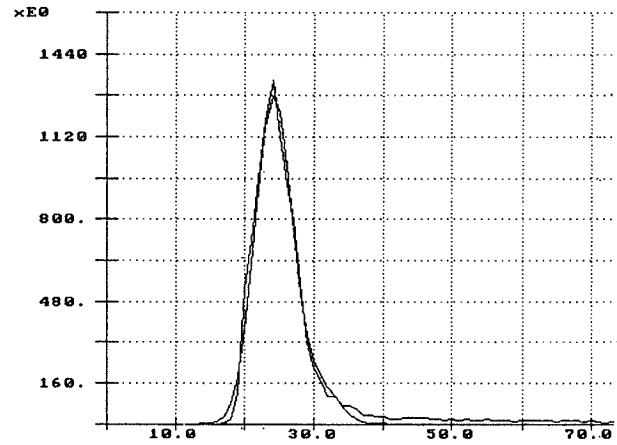
NORTHERN REGION



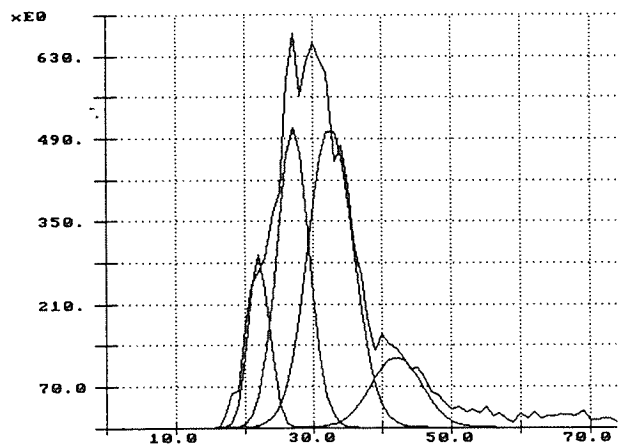



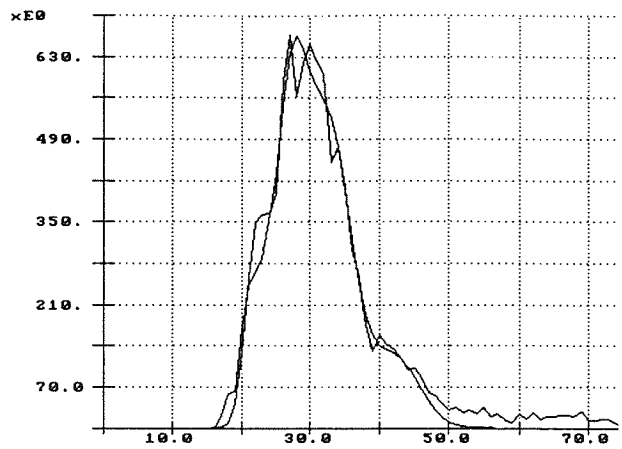

CENTRAL REGION




SOUTHERN REGION



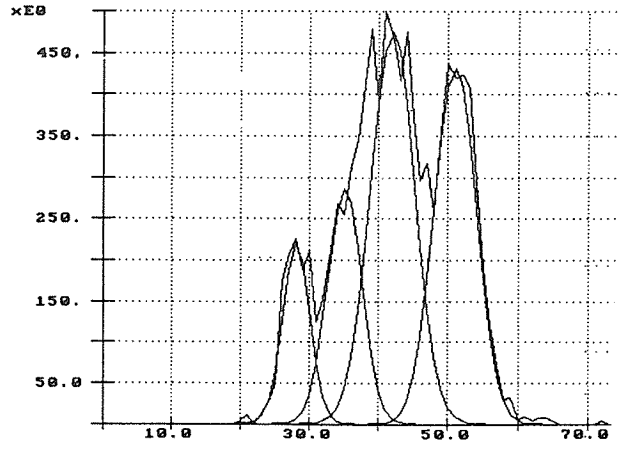



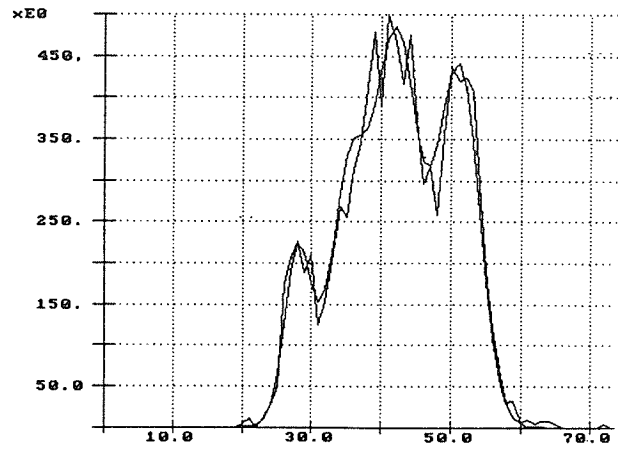

The length frequency distribution with the estimated cohorts.

The length frequency distribution with the resultant distribution explained by the estimated cohorts.

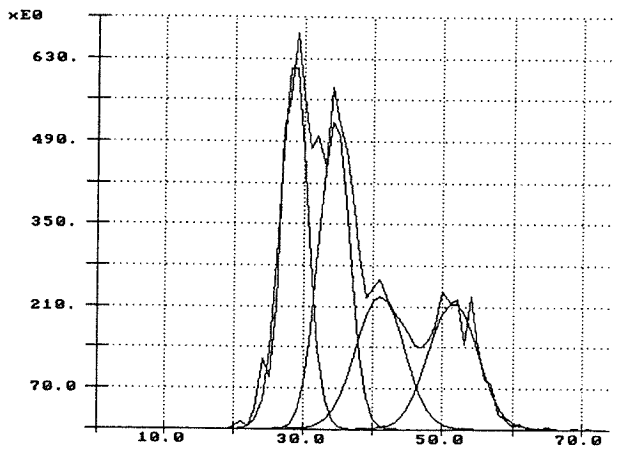
DEEP WATER HAKE

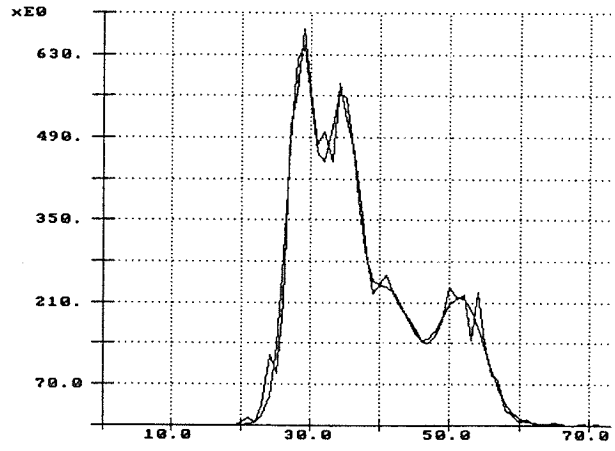
NORTHERN REGION



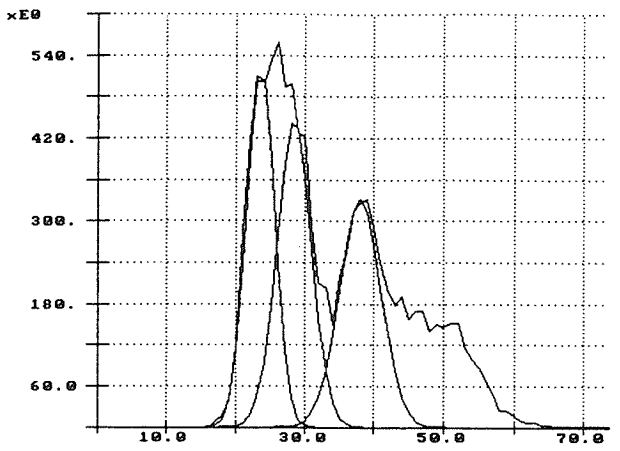



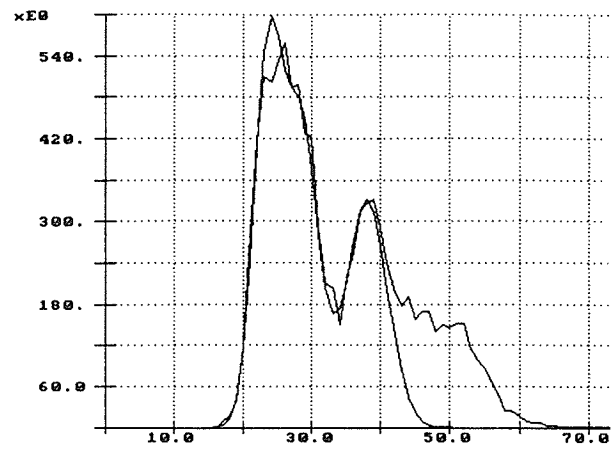

CENTRAL REGION




SOUTHERN REGION




The length frequency distribution with the estimated cohorts.

The length frequency distribution with the resultant distribution explained by the estimated cohorts.

# Annex III Records of fishing stations

PROJECT STATION: 153

DATE:28/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2840
start stop duration Long E 1611
TIME :11:10:00 11:28:00 18 (min) Purpose code: 3
LOG :1326.80 1327.70 0.90 Area code : 1
FDEPTH: 96 96 GearCond.code:
BDEPTH: 96 96 Validity code:
Towing dir: 330° Wire out: 400 m Speed: 30 kn*10

Sorted: 37 Kg Total catch: 37.31 CATCH/HOUR: 124.37

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 37.17 | 377 | 29.89 | 2 |
| Merluccius capensis, male | 35.17 | 353 | 28.28 | 1 |
| Chelidonichthys capensis | 12.83 | 43 | 10.32 | |
| Squilla acuelata calmani | 9.83 | 677 | 7.90 | |
| Genypterus capensis | 9.07 | 13 | 7.29 | 4 |
| Merluccius capensis, juveniles | 5.00 | 420 | 4.02 | 3 |
| Austroglossus microlepis | 4.77 | 27 | 3.84 | 6 |
| Callorhinchus capensis | 4.03 | 7 | 3.24 | |
| Sufflogobius bibarbatus | 3.53 | 313 | 2.84 | |
| Jasus lalandii | 1.87 | 17 | 1.50 | |
| Trachurus capensis | 1.10 | 7 | 0.88 | 5 |
| Total | 124.37 | | 100.00 | |

PROJECT STATION: 154

DATE:28/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2850
start stop duration Long E 1554
TIME :14:16:00 14:46:00 30 (min) Purpose code: 3
LOG :1349.20 1350.80 1.60 Area code : 1
FDEPTH: 148 145 GearCond.code:
BDEPTH: 148 145 Validity code:
Towing dir: 345° Wire out: 600 m Speed: 30 kn*10

Sorted: 151 Kg Total catch: 1323.20 CATCH/HOUR: 2646.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Etrumeus whiteheadi | 1261.00 | 19076 | 47.65 | 10 |
| Merluccius capensis, juveniles | 1086.00 | 91356 | 41.04 | 9 |
| Merluccius capensis, female | 142.00 | 320 | 5.37 | 8 |
| Merluccius capensis, male | 63.00 | 200 | 2.38 | 7 |
| Chelidonichthys capensis | 35.20 | 100 | 1.33 | |
| Todarodes sagittatus | 15.60 | 20 | 0.59 | |
| Thyrsites atun | 11.10 | 4 | 0.42 | 11 |
| Lepidopus caudatus | 10.20 | 800 | 0.39 | |
| Brama brama | 9.04 | 6 | 0.34 | |
| Lophius vomerinus | 8.00 | 40 | 0.30 | 13 |
| Sardinops ocellatus | 2.80 | 40 | 0.11 | 12 |
| Todaropsis eblanae | 1.40 | 60 | 0.05 | |
| Sepia australis | 0.80 | 40 | 0.03 | |
| Helicolenus dactylopterus | 0.20 | 20 | 0.01 | |
| Total | 2646.34 | | 100.01 | |

PROJECT STATION: 155

DATE:28/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2859
start stop duration Long E 1539
TIME :17:33:00 18:03:00 30 (min) Purpose code: 3
LOG :1370.50 1372.20 1.70 Area code : 1
FDEPTH: 174 175 GearCond.code:
BDEPTH: 174 175 Validity code:
Towing dir: 355° Wire out: 650 m Speed: 41 kn*10

Sorted: 76 Kg Total catch: 76.44 CATCH/HOUR: 152.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 84.30 | 6654 | 55.14 | 14 |
| Sepia australis | 17.32 | 1784 | 11.33 | |
| Etrumeus whiteheadi | 13.82 | 178 | 9.04 | 19 |
| Merluccius capensis, female | 13.58 | 20 | 8.88 | 16 |
| Helicolenus dactylopterus | 6.04 | 242 | 3.95 | |
| Merluccius capensis, male | 5.10 | 10 | 3.34 | 15 |
| Merluccius paradoxus, female | 3.80 | 46 | 2.49 | 18 |
| Holohalaelurus regani | 3.12 | 24 | 2.04 | |
| Chelidonichthys capensis | 2.96 | 4 | 1.94 | |
| Paracallionymus costatus | 1.34 | 100 | 0.88 | |
| Merluccius paradoxus, male | 0.54 | 4 | 0.35 | 17 |
| Trachurus capensis | 0.46 | 2 | 0.30 | |
| Lepidopus caudatus | 0.24 | 8 | 0.16 | |
| Cynoglossus capensis | 0.14 | 4 | 0.09 | |
| Chelidonichthys queketti | 0.12 | 2 | 0.08 | |
| Total | 152.88 | | 100.01 | |

PROJECT STATION: 156

DATE:28/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2911
start stop duration Long E 1521
TIME :22:43:00 23:13:00 30 (min) Purpose code: 3
LOG :1399.90 1401.40 1.50 Area code : 1
FDEPTH: 177 171 GearCond.code:
BDEPTH: 177 171 Validity code:
Towing dir: 310° Wire out: 700 m Speed: 33 kn*10

Sorted: 146 Kg Total catch: 146.34 CATCH/HOUR: 292.68

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Genypterus capensis | 115.10 | 118 | 39.33 | 25 |
| Merluccius capensis, juveniles | 63.60 | 6132 | 21.73 | 20 |
| Helicolenus dactylopterus | 35.32 | 486 | 12.07 | |
| Merluccius capensis, female | 24.70 | 30 | 8.44 | 22 |
| Holohalaelurus regani | 13.98 | 46 | 4.78 | |
| Merluccius capensis, male | 11.60 | 12 | 3.96 | 21 |
| Cynoglossus capensis | 9.12 | 58 | 3.12 | |
| Trachurus capensis | 4.22 | 22 | 1.44 | 26 |
| Aristeus varidens | 3.12 | 84 | 1.07 | |
| Merluccius paradoxus, female | 2.58 | 22 | 0.88 | 24 |
| Sepia australis | 2.40 | 142 | 0.82 | |
| Lophius vomerinus | 1.92 | 2 | 0.66 | |
| Zeus capensis | 1.62 | 48 | 0.55 | |
| Squalus megalops | 0.86 | 2 | 0.29 | |
| Merluccius paradoxus, male | 0.54 | 4 | 0.18 | 23 |
| Nezumia leonis | 0.48 | 8 | 0.16 | |
| Paracallionymus costatus | 0.44 | 70 | 0.15 | |
| Congiopodus spinifer | 0.42 | 6 | 0.14 | |
| Lepidopus caudatus | 0.40 | 8 | 0.14 | |
| Notopogon macrosolen | 0.26 | 10 | 0.09 | |
| Total | 292.68 | | 100.00 | |

PROJECT STATION: 157

DATE:29/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2923
start stop duration Long E 1439
TIME :05:38:00 06:08:00 30 (min) Purpose code: 3
LOG :1446.60 1448.10 1.50 Area code : 1
FDEPTH: 378 385 GearCond.code:
BDEPTH: 378 385 Validity code:
Towing dir: 325° Wire out:1250 m Speed: 35 kn*10

Sorted: 179 Kg Total catch: 328.49 CATCH/HOUR: 656.98

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 266.00 | 520 | 40.49 | 30 |
| Merluccius paradoxus, male | 166.40 | 312 | 25.33 | 29 |
| Coelorinchus fasciatus | 67.80 | 1204 | 10.32 | |
| Lophius vomerinus | 33.30 | 12 | 5.07 | 27 |
| Holohalaelurus regani | 27.72 | 240 | 4.22 | |
| Malacocephalus laevis | 25.84 | 36 | 3.93 | |
| Helicolenus dactylopterus | 18.88 | 148 | 2.87 | |
| Genypterus capensis | 14.60 | 10 | 2.22 | 28 |
| Octopus vulgaris | 14.56 | 2 | 2.22 | |
| Squalus megalops | 10.96 | 8 | 1.67 | |
| Todarodes sagittatus | 3.84 | 4 | 0.58 | |
| Trachurus capensis | 2.68 | 12 | 0.41 | |
| Hoplostethus mediterraneus | 1.08 | 16 | 0.16 | |
| Zenopsis conchifer | 0.68 | 4 | 0.10 | |
| MYCTOPHIDAE | 0.64 | 56 | 0.10 | |
| Cynoglossus capensis | 0.60 | 12 | 0.09 | |
| Callinectes sp | 0.36 | 20 | 0.05 | |
| Epigonus denticulatus | 0.36 | 64 | 0.05 | |
| Paracallionymus costatus | 0.32 | 64 | 0.05 | |
| Tripterophycis gilchristi | 0.12 | 20 | 0.02 | |
| Myxine capensis | 0.12 | 4 | 0.02 | |
| Notopogon macrosolen | 0.08 | 4 | 0.01 | |
| Rossia sp. | 0.04 | 4 | 0.01 | |
| Total | 656.98 | | 99.99 | |

PROJECT STATION: 158

DATE:29/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2920
start stop duration Long E 1430
TIME :08:48:00 09:18:00 30 (min) Purpose code: 3
LOG :1461.50 1463.20 1.70 Area code : 1
FDEPTH: 470 465 GearCond.code:
BDEPTH: 470 465 Validity code:
Towing dir: ° Wire out:1300 m Speed: 28 kn*10

Sorted: 205 Kg Total catch: 988.22 CATCH/HOUR: 1976.44

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1667.40 | 1522 | 84.36 | 33 |
| Merluccius paradoxus, male | 252.00 | 378 | 12.75 | 32 |
| Genypterus capensis | 41.60 | 10 | 2.10 | 31 |
| Hydrolagus sp. | 8.50 | 10 | 0.43 | |
| Photichthys argenteus | 3.36 | 274 | 0.17 | |
| Malacocephalus laevis | 1.90 | 10 | 0.10 | |
| Coelorinchus braueri | 1.36 | 52 | 0.07 | |
| Selachophidium guentheri | 0.32 | 10 | 0.02 | |
| Total | 1976.44 | | 100.00 | |

PROJECT STATION: 159

DATE:29/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2920
start stop duration Long E 1426
TIME :11:23:00 11:53:00 30 (min) Purpose code: 3
LOG :1468.40 1469.80 1.40 Area code : 1
FDEPTH: 595 589 GearCond.code:
BDEPTH: 595 589 Validity code:
Towing dir: ° Wire out:1500 m Speed: 30 kn*10

Sorted: 175 Kg Total catch: 209.53 CATCH/HOUR: 419.06

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 249.60 | 380 | 59.56 | 35 |
| Merluccius paradoxus, male | 66.80 | 148 | 15.94 | 34 |
| Trachyrincus scabrus | 39.96 | 378 | 9.54 | |
| Yarrella blackfordi | 25.20 | 300 | 6.01 | |
| Raja caudaspinosa | 7.08 | 6 | 1.69 | |
| Etmopterus lucifer | 5.70 | 60 | 1.36 | |
| Myxine capensis | 4.92 | 6 | 1.17 | |
| Alepocephalus sp. | 4.20 | 162 | 1.00 | |
| Selachophidium guentheri | 3.66 | 48 | 0.87 | |
| Malacocephalus laevis | 3.00 | 48 | 0.72 | |
| Coelorinchus braueri | 2.28 | 192 | 0.54 | |
| Shrimps, small, non comm. | 1.80 | 456 | 0.43 | |
| Nezumia sp. | 1.50 | 90 | 0.36 | |
| Solenocera africana | 0.96 | 162 | 0.23 | |
| Hydrolagus sp. | 0.72 | 6 | 0.17 | |
| GERYONIDAE | 0.60 | 6 | 0.14 | |
| Ebinania costaecanarie | 0.36 | 6 | 0.09 | |
| Epigonus denticulatus | 0.30 | 6 | 0.07 | |
| Octopus sp. | 0.18 | 6 | 0.04 | |
| Loligo vulgaris | 0.12 | 6 | 0.03 | |
| Nemichthys curvirostris | 0.06 | 6 | 0.01 | |
| Notacanthus sexspinis | 0.06 | 6 | 0.01 | |
| Total | 419.06 | | 99.98 | |

PROJECT STATION: 160

DATE:29/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2919
start stop duration Long E 1433
TIME :15:29:00 15:59:00 30 (min) Purpose code: 3
LOG :1480.80 1482.30 1.50 Area code : 1
FDEPTH: 402 397 GearCond.code:
BDEPTH: 402 397 Validity code:
Towing dir: 360° Wire out:1300 m Speed: 33 kn*10

Sorted: 261 Kg Total catch: 1148.13 CATCH/HOUR: 2296.26

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1056.00 | 1492 | 45.99 | 38 |
| Merluccius paradoxus, male | 779.80 | 1114 | 33.96 | 39 |
| Merluccius capensis, female | 170.98 | 56 | 7.45 | 36 |
| Genypterus capensis | 123.80 | 86 | 5.39 | 40 |
| Coelorinchus braueri | 71.50 | 1610 | 3.11 | |
| Merluccius capensis, male | 45.10 | 12 | 1.96 | 37 |
| Helicolenus dactylopterus | 15.92 | 78 | 0.69 | |
| Lophius vomerinus | 9.20 | 4 | 0.40 | 41 |
| Lepidopus caudatus | 8.46 | 12 | 0.37 | |
| Todarodes sagittatus | 6.24 | 12 | 0.27 | |
| Malacocephalus laevis | 5.34 | 22 | 0.23 | |
| Sepia sp | 1.66 | 56 | 0.07 | |
| Epigonus denticulatus | 0.88 | 66 | 0.04 | |
| Yarrella blackfordi | 0.66 | 44 | 0.03 | |
| Paracallionymus costatus | 0.44 | 66 | 0.02 | |
| C R A B S | 0.10 | 12 | | |
| Total | 2296.08 | | 99.98 | |

PROJECT STATION: 161

DATE:29/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2910
start stop duration Long E 1432
TIME :17:21:00 17:51:00 30 (min) Purpose code: 3
LOG :1489.20 1490.70 1.50 Area code : 1
FDEPTH: 326 314 GearCond.code:
BDEPTH: 326 314 Validity code:
Towing dir: 350° Wire out:1150 m Speed: 32 kn*10

Sorted: 218 Kg Total catch: 695.15 CATCH/HOUR: 1390.30

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, male | 208.80 | 972 | 15.02 | 48 |
| Merluccius capensis, female | 195.60 | 70 | 14.07 | 43 |
| Coelorinchus fasciatus | 186.84 | 4284 | 13.44 | |
| Merluccius paradoxus, female | 176.40 | 1008 | 12.69 | 49 |
| Epigonus denticulatus | 144.00 | 2772 | 10.36 | |
| Zeus capensis | 84.60 | 108 | 6.09 | |
| Malacocephalus laevis | 81.00 | 288 | 5.83 | |
| Merluccius paradoxus, female | 64.50 | 54 | 4.64 | 45 |
| Holohalaelurus regani | 63.72 | 252 | 4.58 | |
| Lophius vomerinus | 45.70 | 16 | 3.29 | 46 |
| Merluccius paradoxus, male | 33.70 | 42 | 2.42 | 44 |
| Genypterus capensis | 31.40 | 16 | 2.26 | 47 |
| Cynoglossus capensis | 24.12 | 360 | 1.73 | |
| Helicolenus dactylopterus | 18.36 | 180 | 1.32 | |
| Zenopsis conchifer | 12.96 | 36 | 0.93 | |
| Merluccius capensis, male | 7.70 | 2 | 0.55 | 42 |
| Merluccius paradoxus, juvenile | 6.12 | 144 | 0.44 | |
| Scomber japonicus | 2.26 | 2 | 0.16 | |
| Notacanthus sexspinis | 2.16 | 36 | 0.16 | |
| Etmopterus lucifer | 0.36 | 36 | 0.03 | |
| Total | 1390.30 | | 100.01 | |

PROJECT STATION: 162

DATE:29/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2858
start stop duration Long E 1436
TIME :20:22:00 20:52:00 30 (min) Purpose code: 3
LOG :1502.60 1504.00 1.40 Area code : 1
FDEPTH: 235 225 GearCond code: 8
BDEPTH: 235 225 Validity code: 9
Towing dir: 10° Wire out: 750 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 163

DATE:30/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2903
start stop duration Long E 1425
TIME :06:33:00 07:03:00 30 (min) Purpose code: 3
LOG :1529.30 1503.70 1.40 Area code : 1
FDEPTH: 435 450 GearCond code:
BDEPTH: 435 450 Validity code:
Towing dir: 350° Wire out:1100 m Speed: 29 kn*10

Sorted: 191 Kg Total catch: 1073.50 CATCH/HOUR: 2147.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1839.60 | 1800 | 85.68 | 53 |
| Merluccius paradoxus, male | 199.20 | 252 | 9.28 | 52 |
| Coelorinchus fasciatus | 36.00 | 540 | 1.68 | |
| Genypterus capensis | 29.00 | 16 | 1.35 | 50 |
| Helicolenus dactylopterus | 21.72 | 132 | 1.01 | |
| Todarodes sagittatus | 7.56 | 12 | 0.35 | |
| Merluccius paradoxus, juvenile | 6.84 | 60 | 0.32 | 51 |
| Holohalaelurus regani | 3.24 | 12 | 0.15 | |
| Epigonus denticulatus | 2.40 | 336 | 0.11 | |
| Malacocephalus laevis | 1.44 | 12 | 0.07 | |
| Total | 2147.00 | | 100.00 | |

PROJECT STATION: 164

DATE:30/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2911
start stop duration Long E 1425
TIME :09:23:00 09:53:00 30 (min) Purpose code: 3
LOG :1544.70 1546.20 1.50 Area code : 1
FDEPTH: 550 553 GearCond.code:
BDEPTH: 550 553 Validity code:
Towing dir: 360° Wire out:1400 m Speed: 31 kn*10

Sorted: 158 Kg Total catch: 296.92 CATCH/HOUR: 593.84

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 477.40 | 444 | 80.39 | 55 |
| Ruvettus pretiosus | 36.50 | 2 | 6.15 | |
| Merluccius paradoxus, male | 29.20 | 60 | 4.92 | 54 |
| Coelorinchus braueri | 22.72 | 434 | 3.83 | |
| Yarrella blackfordi | 8.52 | 734 | 1.43 | |
| Selachophidium guentheri | 5.48 | 84 | 0.92 | |
| Notacanthus sexspinis | 3.12 | 60 | 0.53 | |
| Raja caudaspinosa | 2.66 | 2 | 0.45 | |
| Neocyttus rhomboidalis | 2.24 | 12 | 0.38 | |
| Etmopterus lucifer | 2.00 | 120 | 0.34 | |
| Helicolenus dactylopterus | 1.60 | 8 | 0.27 | |
| Malacocephalus laevis | 1.08 | 12 | 0.18 | |
| Tripterophycis gilchristi | 0.40 | 8 | 0.07 | |
| Nezumia sp. | 0.40 | 12 | 0.07 | |
| Todarodes sagittatus | 0.36 | 4 | 0.06 | |
| Epigonus denticulatus | 0.16 | 4 | 0.03 | |
| Total | 593.84 | | 100.02 | |

PROJECT STATION: 165

DATE:30/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2903
start stop duration Long E 1446
TIME :13:14:00 13:44:00 30 (min) Purpose code: 3
LOG :1568.20 1570.10 1.90 Area code : 1
FDEPTH: 215 215 GearCond.code:
BDEPTH: 215 215 Validity code:
Towing dir: 360° Wire out:8003 m Speed: 7 kn*10

Sorted: 129 Kg Total catch: 440.96 CATCH/HOUR: 881.92

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 532.00 | 2230 | 60.32 | 59 |
| Merluccius capensis, female | 108.40 | 62 | 12.29 | 56 |
| Etrumeus whiteheadi | 64.26 | 672 | 7.29 | 61 |
| Lepidopus caudatus | 45.50 | 308 | 5.16 | |
| Merluccius capensis, juveniles | 37.10 | 1204 | 4.21 | 60 |
| Helicolenus dactylopterus | 25.76 | 280 | 2.92 | |
| Zeus capensis | 15.82 | 84 | 1.79 | |
| Thyrsites atun | 15.80 | 10 | 1.79 | 58 |
| Merluccius capensis, male | 14.50 | 10 | 1.64 | 57 |
| Brama brama | 13.90 | 8 | 1.58 | |
| Scyliorhinus capensis | 2.80 | 14 | 0.32 | |
| Raja leopardus | 2.72 | 2 | 0.31 | |
| Todarodes sagittatus | 1.68 | 28 | 0.19 | |
| Cynoglossus capensis | 1.12 | 14 | 0.13 | |
| Emmelichthys nitidus | 0.56 | 14 | 0.06 | |
| Total | 881.92 | | 100.00 | |

PROJECT STATION: 166

DATE:30/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2853
start stop duration Long E 1502
TIME :16:14:00 16:44:00 30 (min) Purpose code: 3
LOG :1588.20 1590.10 1.90 Area code : 1
FDEPTH: 168 165 GearCond.code:
BDEPTH: 168 165 Validity code:
Towing dir: 360° Wire out: 650 m Speed: 35 kn*10

Sorted: 133 Kg Total catch: 213.46 CATCH/HOUR: 426.92

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 108.10 | 96 | 25.32 | 62 |
| Merluccius capensis, juveniles | 80.00 | 5442 | 18.74 | 67 |
| Thyrsites atun | 69.60 | 82 | 16.30 | 64 |
| Lepidopus caudatus | 38.80 | 624 | 9.09 | |
| Merluccius capensis, male | 35.10 | 32 | 8.22 | 63 |
| Chelidonichthys capensis | 19.68 | 40 | 4.61 | |
| Trachurus capensis | 15.20 | 56 | 3.56 | 66 |
| Etrumeus whiteheadi | 14.16 | 136 | 3.32 | 68 |
| Congiopodus torvus | 13.28 | 8 | 3.11 | |
| Helicolenus dactylopterus | 11.36 | 112 | 2.66 | |
| Todarodes sagittatus | 7.84 | 32 | 1.84 | |
| Scyliorhinus capensis | 7.36 | 24 | 1.72 | |
| Zeus capensis | 2.96 | 16 | 0.69 | |
| Lophius vomerinus | 1.40 | 2 | 0.33 | 65 |
| Sepia australis | 1.28 | 120 | 0.30 | |
| Cynoglossus capensis | 0.80 | 16 | 0.19 | |
| Total | 426.92 | | 100.00 | |

PROJECT STATION: 167

DATE:30/ 4/94 GEAR TYPE: BT No:1 POSITION:Lat S 2845
start stop duration Long E 1517
TIME :18:53:00 19:23:00 30 (min) Purpose code: 3
LOG :1606.50 1608.00 1.50 Area code : 1
FDEPTH: 157 160 GearCond.code:
BDEPTH: 157 160 Validity code:
Towing dir: " Wire out: 500 m Speed: 30 kn*10

Sorted: 85 Kg Total catch: 85.55 CATCH/HOUR: 171.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 49.60 | 44 | 28.99 | 70 |
| Merluccius capensis, female | 26.30 | 40 | 15.37 | 69 |
| Thyrsites atun | 24.00 | 26 | 14.03 | 71 |
| Galeorhinus galeus | 22.50 | 46 | 13.15 | |
| Scyliorhinus capensis | 10.62 | 42 | 6.21 | |
| Genypterus capensis | 4.66 | 14 | 2.72 | 73 |
| Trachurus capensis | 4.38 | 18 | 2.56 | 72 |
| Lophius vomerinus | 4.30 | 2 | 2.51 | 75 |
| Zeus capensis | 3.70 | 36 | 2.16 | |
| Cynoglossus capensis | 3.40 | 36 | 1.99 | |
| Helicolenus dactylopterus | 3.24 | 66 | 1.89 | |
| Chelidonichthys capensis | 2.56 | 6 | 1.50 | |
| Raja pullopunctata | 2.08 | 2 | 1.22 | |
| Raja leopardus | 2.02 | 2 | 1.18 | |
| Merluccius paradoxus, female | 1.28 | 4 | 0.75 | 76 |
| Lepidopus caudatus | 1.18 | 18 | 0.69 | |
| Paracallionymus costatus | 1.16 | 176 | 0.68 | |
| Shrimps, small, non comm | 1.14 | 242 | 0.67 | |
| Congiopodus spinifer | 0.82 | 8 | 0.48 | |
| NEMICHTHYIDAE | 0.66 | 32 | 0.39 | |
| Merluccius capensis, juveniles | 0.66 | 72 | 0.39 | 74 |
| Octopus sp. | 0.52 | 10 | 0.30 | |
| Chelidonichthys queketti | 0.32 | 2 | 0.19 | |
| Total | 171.10 | | 100.02 | |

PROJECT STATION: 168

DATE: 1/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2832
start stop duration Long E 1534
TIME :06:33:00 07:03:00 30 (min) Purpose code: 3
LOG :1638.40 1640.20 1.80 Area code : 1
FDEPTH: 152 152 GearCond.code:
BDEPTH: 152 152 Validity code:
Towing dir: ° Wire out: 500 m Speed: 31 kn*10

Sorted: 268 Kg Total catch: 750.42 CATCH/HOUR: 1500.84

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 721.80 | 60420 | 48.09 | 84 |
| Merluccius capensis, female | 225.70 | 582 | 15.04 | 78 |
| Thyrsites atun | 153.00 | 40 | 10.19 | 81 |
| Chelidonichthys capensis | 145.44 | 432 | 9.69 | |
| Merluccius capensis, male | 84.30 | 220 | 5.62 | 77 |
| Merluccius capensis, female | 52.56 | 612 | 3.50 | 83 |
| Sepia australis | 28.80 | 1188 | 1.92 | |
| Etrumeus whiteheadi | 22.68 | 288 | 1.51 | 87 |
| Merluccius paradoxus, female | 17.38 | 144 | 1.16 | 86 |
| Merluccius paradoxus, female | 10.50 | 72 | 0.70 | 80 |
| Trachurus capensis | 9.00 | 36 | 0.60 | |
| Merluccius paradoxus, male | 7.20 | 72 | 0.48 | 85 |
| Lepidopus caudatus | 6.84 | 324 | 0.46 | |
| Genypterus capensis | 5.36 | 2 | 0.36 | |
| Merluccius capensis, male | 2.52 | 36 | 0.17 | 82 |
| Zeus capensis | 2.16 | 36 | 0.14 | |
| Paracallionymus costatus | 2.16 | 216 | 0.14 | |
| Helicolenus dactylopterus | 1.44 | 36 | 0.10 | |
| Merluccius paradoxus, male | 1.02 | 8 | 0.07 | 79 |
| Genypterus capensis | 0.52 | 36 | 0.03 | |
| Sufflogobius bibarbatus | 0.36 | 36 | 0.02 | |
| Total | 1500.74 | | 99.99 | |

PROJECT STATION: 169

DATE: 1/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2816
start stop duration Long E 1507
TIME :13:12:00 13:42:00 30 (min) Purpose code: 3
LOG :1699.30 1700.90 1.60 Area code : 1
FDEPTH: 176 168 GearCond.code:
BDEPTH: 176 168 Validity code:
Towing dir: 350° Wire out: 650 m Speed: 33 kn*10

Sorted: 137 Kg Total catch: 686.70 CATCH/HOUR: 1373.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 468.50 | 1220 | 34.11 | 88 |
| Merluccius capensis, juveniles | 343.50 | 28288 | 25.01 | 90 |
| Merluccius capensis, male | 160.50 | 350 | 11.69 | 89 |
| Trachurus capensis | 96.00 | 324 | 6.99 | 93 |
| Zeus capensis | 47.10 | 340 | 3.43 | |
| Callorhinchus capensis | 36.50 | 20 | 2.66 | |
| Chelidonichthys capensis | 35.20 | 130 | 2.56 | |
| Raja leopardus | 31.00 | 20 | 2.26 | |
| Etrumeus whiteheadi | 30.50 | 340 | 2.22 | 94 |
| Merluccius paradoxus, female | 28.00 | 200 | 2.04 | 91 |
| Squalus megalops | 27.70 | 60 | 2.02 | |
| Brama brama | 23.00 | 10 | 1.67 | |
| Todarodes sagittatus | 11.90 | 20 | 0.87 | |
| Lepidopus caudatus | 8.50 | 360 | 0.62 | |
| Lophius vomerinus | 5.20 | 10 | 0.38 | 95 |
| Merluccius paradoxus, male | 4.80 | 50 | 0.35 | 92 |
| Congiopodus spinifer | 4.60 | 30 | 0.33 | |
| Todaropsis eblanae | 4.40 | 80 | 0.32 | |
| Helicolenus dactylopterus | 3.00 | 210 | 0.22 | |
| Paracallionymus costatus | 1.40 | 120 | 0.10 | |
| Sepia australis | 1.40 | 80 | 0.10 | |
| Cynoglossus capensis | 0.50 | 10 | 0.04 | |
| Sufflogobius bibarbatus | 0.20 | 50 | 0.01 | |
| Total | 1373.40 | | 100.00 | |

PROJECT STATION: 170

DATE: 1/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2824
start stop duration Long E 1454
TIME :15:56:00 16:26:00 30 (min) Purpose code: 3
LOG :1719.10 1720.80 1.70 Area code : 1
FDEPTH: 176 177 GearCond.code:
BDEPTH: 176 177 Validity code:
Towing dir: 360° Wire out: 650 m Speed: 37 kn*10

Sorted: 163 Kg Total catch: 163.36 CATCH/HOUR: 326.72

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 108.70 | 126 | 33.27 | 97 |
| Merluccius capensis, juveniles | 71.60 | 5448 | 21.91 | 103 |
| Merluccius paradoxus, female | 27.10 | 216 | 8.29 | 100 |
| Galeorhinus galeus | 24.20 | 2 | 7.41 | |
| Chelidonichthys queketti | 15.90 | 24 | 4.87 | |
| Merluccius capensis, male | 12.20 | 30 | 3.73 | 98 |
| Lophius vomerinus | 12.10 | 2 | 3.70 | 96 |
| Etrumeus whiteheadi | 7.40 | 76 | 2.26 | 102 |
| Trigla lyra | 7.20 | 22 | 2.20 | |
| Trachurus capensis | 6.90 | 24 | 2.11 | 99 |
| Merluccius paradoxus, male | 6.20 | 26 | 1.90 | 101 |
| Zeus capensis | 5.94 | 50 | 1.82 | |
| Scyliorhinus capensis | 5.80 | 24 | 1.78 | |
| Lepidopus caudatus | 5.60 | 86 | 1.71 | |
| Sepia australis | 3.64 | 248 | 1.11 | |
| Squalus megalops | 2.42 | 6 | 0.74 | |
| Helicolenus dactylopterus | 1.34 | 32 | 0.41 | |
| Cynoglossus capensis | 0.98 | 12 | 0.30 | |
| Todaropsis eblanae | 0.74 | 20 | 0.23 | |
| Paracallionymus costatus | 0.74 | 92 | 0.23 | |
| Ommastrephes pteropus | 0.24 | 2 | 0.07 | |
| Emmelichthys nitidus | 0.14 | 2 | 0.04 | |
| NEMICHTHYIDAE | 0.02 | 2 | 0.01 | |
| Squilla acuelata calmani | 0.02 | 2 | 0.01 | |
| Total | 327.12 | | 100.11 | |

PROJECT STATION: 171

DATE: 1/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2826
start stop duration Long E 1450
TIME :17:30:00 18:00:00 30 (min) Purpose code: 3
LOG :1729.30 1731.20 1.90 Area code : 1
FDEPTH: 182 180 GearCond.code:
BDEPTH: 182 180 Validity code:
Towing dir: 30° Wire out: 700 m Speed: 37 kn*10

Sorted: 134 Kg Total catch: 584.08 CATCH/HOUR: 1168.16

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 507.00 | 1710 | 43.40 | 113 |
| Merluccius capensis, female | 167.40 | 104 | 14.33 | 107 |
| Merluccius paradoxus, female | 136.80 | 1680 | 11.71 | 112 |
| Merluccius capensis, juveniles | 94.20 | 8390 | 8.06 | 110 |
| Sepia australis | 45.30 | 3840 | 3.88 | |
| Lepidopus caudatus | 39.30 | 570 | 3.36 | |
| Merluccius capensis, female | 36.60 | 540 | 3.13 | 109 |
| Holohalaelurus regani | 31.80 | 120 | 2.72 | |
| Merluccius capensis, male | 23.90 | 26 | 2.05 | 106 |
| Todarodes sagittatus | 14.70 | 30 | 1.26 | |
| Cynoglossus capensis | 11.40 | 180 | 0.98 | |
| Lophius vomerinus | 11.20 | 10 | 0.96 | 104 |
| Paracallionymus costatus | 8.40 | 1860 | 0.72 | |
| Merluccius paradoxus, male | 8.10 | 150 | 0.69 | 111 |
| Merluccius capensis, male | 7.50 | 180 | 0.64 | 108 |
| Chelidonichthys capensis | 6.30 | 30 | 0.54 | |
| Todaropsis eblanae | 6.00 | 120 | 0.51 | |
| Chelidonichthys queketti | 3.90 | 30 | 0.33 | |
| Etrumeus whiteheadi | 3.00 | 30 | 0.26 | |
| Genypterus capensis | 2.96 | 2 | 0.25 | 105 |
| Zeus capensis | 1.80 | 30 | 0.15 | |
| Helicolenus dactylopterus | 0.60 | 120 | 0.05 | |
| Total | 1168.16 | | 99.98 | |

PROJECT STATION: 172

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2845
start stop duration Long E 1419
TIME :00:57:00 01:57:00 60 (min) Purpose code: 3
LOG :1776.50 1779.60 3.10 Area code : 1
FDEPTH: 598 600 GearCond.code:
BDEPTH: 598 600 Validity code:
Towing dir: 350° Wire out:1850 m Speed: 32 kn*10

Sorted: 208 Kg Total catch: 249.69 CATCH/HOUR: 249.69

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 180.95 | 147 | 72.47 | 114 |
| Trachyrincus scabrus | 43.20 | 499 | 17.30 | |
| Todarodes sagittatus | 6.48 | 15 | 2.60 | |
| Etmopterus pusillus | 6.40 | 1 | 2.56 | |
| Selachophidium guentheri | 2.76 | 36 | 1.11 | |
| Nezumia sp. | 1.89 | 75 | 0.76 | |
| Aristeus varidens | 1.50 | 372 | 0.60 | |
| Yarrella blackfordi | 1.44 | 78 | 0.58 | |
| Neocyttus rhomboidalis | 1.38 | 9 | 0.55 | |
| Trachurus capensis | 0.87 | 3 | 0.35 | |
| ALEPOCEPHALIDAE | 0.81 | 30 | 0.32 | |
| Etmopterus lucifer | 0.66 | 15 | 0.26 | |
| Notacanthus sexspinis | 0.48 | 15 | 0.19 | |
| ASTRONESTHIDAE | 0.30 | 3 | 0.12 | |
| Hoplostethus atlanticus | 0.30 | 18 | 0.12 | |
| NEMICHTHYIDAE | 0.24 | 9 | 0.10 | |
| Hydrolagus sp. | 0.03 | 3 | 0.01 | |
| Total | 249.69 | | 100.00 | |

PROJECT STATION: 173

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2856
start stop duration Long E 1422
TIME :05:32:00 06:02:00 30 (min) Purpose code: 3
LOG :1800.20 1803.70 1.70 Area code : 1
FDEPTH: 549 554 GearCond.code:
BDEPTH: 549 554 Validity code:
Towing dir: 165° Wire out:1700 m Speed: 36 kn*10

Sorted: 17 Kg Total catch: 47.80 CATCH/HOUR: 95.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Deepwater fish mixture | 60.00 | | 62.76 | |
| Merluccius paradoxus, female | 35.60 | 28 | 37.24 | 115 |
| Total | 95.60 | | 100.00 | |

PROJECT STATION: 174

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2855
start stop duration Long E 1424
TIME :07:20:00 07:50:00 30 (min) Purpose code: 3
LOG :1809.80 1811.10 1.30 Area code : 1
FDEPTH: 450 451 GearCond.code:
BDEPTH: 450 451 Validity code:
Towing dir: ° Wire out:1400 m Speed: 28 kn*10

Sorted: 201 Kg Total catch: 780.80 CATCH/HOUR: 1561.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1328.00 | 1184 | 85.04 | 118 |
| Merluccius paradoxus, male | 79.20 | 108 | 5.07 | 117 |
| Ruvettus pretiosus | 58.80 | 6 | 3.77 | |
| Genypterus capensis | 30.90 | 12 | 1.98 | 116 |
| Helicolenus dactylopterus | 29.40 | 100 | 1.88 | |
| Todarodes sagittatus | 20.40 | 42 | 1.31 | |
| Coelorinchus fasciatus | 9.20 | 100 | 0.59 | |
| Photichthys argenteus | 4.90 | 350 | 0.31 | |
| Maurolicus muelleri | 0.80 | 334 | 0.05 | |
| Total | 1561.60 | | 100.00 | |

PROJECT STATION: 175

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2836
start stop duration Long E 1437
TIME :10:27:00 10:42:00 15 (min) Purpose code: 3
LOG :1831.80 1832.50 0.70 Area code : 1
FDEPTH: 163 160 GearCond.code:
BDEPTH: 163 160 Validity code:
Towing dir: 10° Wire out: 500 m Speed: 28 kn*10

Sorted: 30 Kg Total catch: 30.12 CATCH/HOUR: 120.48

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Etrumeus whiteheadi | 28.00 | 32 | 23.24 | 122 |
| Merluccius capensis, female | 24.68 | 16 | 20.48 | 119 |
| Galeorhinus galeus | 21.60 | 4 | 17.93 | |
| Chelidonichthys capensis | 9.80 | 12 | 8.13 | |
| Lepidopus caudatus | 6.20 | 4 | 5.15 | |
| Merluccius capensis, male | 4.76 | 4 | 3.95 | 120 |
| Trachurus capensis | 4.40 | 20 | 3.65 | 121 |
| Chelidonichthys queketti | 4.24 | 28 | 3.52 | |
| Thyrsites atun | 4.08 | 8 | 3.39 | 123 |
| Merluccius paradoxus, male | 3.08 | 4 | 2.56 | 124 |
| Congiopodus spinifer | 3.08 | 16 | 2.56 | |
| Zeus capensis | 2.80 | 12 | 2.32 | |
| Raja sp. | 2.20 | 4 | 1.83 | |
| Helicolenus dactylopterus | 1.20 | 4 | 1.00 | |
| Photichthys argenteus | 0.36 | 36 | 0.30 | |
| Total | 120.48 | | 100.01 | |

PROJECT STATION: 176

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2820
start stop duration Long E 1427
TIME :12:54:00 13:24:00 30 (min) Purpose code: 3
LOG :1852.80 1854.30 1.50 Area code : 1
FDEPTH: 436 437 GearCond.code:
BDEPTH: 436 437 Validity code:
Towing dir: 190° Wire out:1350 m Speed: 31 kn*10

Sorted: 302 Kg Total catch: 302.34 CATCH/HOUR: 604.68

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 460.70 | 474 | 76.19 | 125 |
| Merluccius paradoxus, male | 63.60 | 124 | 10.52 | 126 |
| Deepwater fish mixture | 20.70 | | 3.42 | |
| Genypterus capensis | 13.60 | 10 | 2.25 | 127 |
| Etmopterus lucifer | 13.10 | 720 | 2.17 | |
| Todarodes sagittatus | 7.20 | 10 | 1.19 | |
| Raja confundens | 5.20 | 6 | 0.86 | |
| Octopus sp | 4.42 | 2 | 0.73 | |
| Coelorinchus fasciatus | 2.56 | 30 | 0.42 | |
| Scyliorhinus capensis | 2.48 | 4 | 0.41 | |
| Hydrolagus sp. | 2.08 | 2 | 0.34 | |
| Photichthys argenteus | 1.90 | 224 | 0.31 | |
| Etrumeus whiteheadi | 1.82 | 20 | 0.30 | 128 |
| Helicolenus dactylopterus | 1.62 | 6 | 0.27 | |
| Aristeus varidens | 1.34 | 224 | 0.22 | |
| Emmelichthys nitidus | 0.60 | 30 | 0.10 | |
| Nezumia sp. | 0.56 | 20 | 0.09 | |
| Beryx splendens | 0.52 | 2 | 0.09 | |
| Merluccius paradoxus, juvenile | 0.32 | 6 | 0.05 | 129 |
| Selachophidium guentheri | 0.22 | 2 | 0.04 | |
| Malacocephalus laevis | 0.06 | 2 | 0.01 | |
| MACROURIDAE | 0.04 | 2 | 0.01 | |
| Loligo vulgaris | 0.02 | 2 | | |
| NEMICHTHYIDAE | 0.02 | 2 | | |
| Total | 604.68 | | 99.99 | |

PROJECT STATION: 177

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2818
start stop duration Long E 1425
TIME :14:29:00 14:59:00 30 (min) Purpose code: 3
LOG :1860.00 1861.60 1.60 Area code : 1
FDEPTH: 547 553 GearCond.code:
BDEPTH: 547 553 Validity code:
Towing dir: 20° Wire out:1650 m Speed: 33 kn*10

Sorted: 136 Kg Total catch: 136.85 CATCH/HOUR: 273.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 208.40 | 192 | 76.14 | 130 |
| Moroteuthis robsoni | 15.40 | 2 | 5.63 | |
| Etmopterus pusillus | 13.80 | 12 | 5.04 | |
| Merluccius paradoxus, male | 11.10 | 18 | 4.06 | 131 |
| Aristeus varidens | 6.20 | 1320 | 2.27 | |
| Todarodes sagittatus | 4.16 | 8 | 1.52 | |
| Etmopterus lucifer | 3.62 | 36 | 1.32 | |
| Raja caudaspinosa | 2.56 | 4 | 0.94 | |
| Trachyrincus scabrus | 2.50 | 40 | 0.91 | |
| Nezumia sp. | 1.86 | 64 | 0.68 | |
| Photichthys argenteus | 1.70 | 100 | 0.62 | |
| Hydrolagus sp. | 1.06 | 2 | 0.39 | |
| Hoplostethus atlanticus | 0.60 | 2 | 0.22 | |
| Ebinania costaecanarie | 0.42 | 2 | 0.15 | |
| Notacanthus sexspinis | 0.14 | 4 | 0.05 | |
| Hoplostethus cadenati | 0.12 | 4 | 0.04 | |
| Scopelosaurus meadi | 0.04 | 2 | 0.01 | |
| Raja leopardus | 0.02 | 2 | 0.01 | |
| Total | 273.70 | | 100.00 | |

PROJECT STATION: 178

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2814
start stop duration Long E 1430
TIME :16:43:00 17:05:00 22 (min) Purpose code: 3
LOG :1873.20 1874.40 1.20 Area code : 1
FDEPTH: 382 374 GearCond.code:
BDEPTH: 382 374 Validity code:
Towing dir: 14° Wire out:1200 m Speed: 36 kn*10

Sorted: 179 Kg Total catch: 387.05 CATCH/HOUR: 1055.59

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 502.09 | 791 | 47.56 | 135 |
| Merluccius paradoxus, male | 425.73 | 739 | 40.33 | 134 |
| Merluccius capensis, female | 43.64 | 11 | 4.13 | 133 |
| Coelorinchus fasciatus | 29.18 | 338 | 2.76 | |
| Todarodes sagittatus | 15.68 | 30 | 1.49 | |
| Squalus megalops | 8.73 | 5 | 0.83 | |
| Raja confundens | 4.09 | 5 | 0.39 | |
| Malacocephalus laevis | 4.09 | 25 | 0.39 | |
| Scyliorhinus capensis | 3.98 | 5 | 0.38 | |
| Octopus vulgaris | 3.76 | 5 | 0.36 | |
| Holohalaelurus regani | 3.55 | 11 | 0.34 | |
| Shrimps, small, non comm | 2.45 | 65 | 0.23 | |
| Merluccius paradoxus, juvenile | 2.24 | 55 | 0.21 | 132 |
| Photichthys argenteus | 1.77 | 202 | 0.17 | |
| Beryx splendens | 1.25 | 5 | 0.12 | |
| Notacanthus sexspinis | 0.87 | 11 | 0.08 | |
| Galeus polli | 0.60 | 5 | 0.06 | |
| MYCTOPHIDAE | 0.60 | 515 | 0.06 | |
| Physiculus capensis | 0.55 | 11 | 0.05 | |
| Todaropsis eblanae | 0.35 | 25 | 0.03 | |
| Raja sp. | 0.22 | 5 | 0.02 | |
| Nezumia sp. | 0.11 | 5 | 0.01 | |
| Tripterophycis gilchristi | 0.05 | 5 | | |
| Total | 1055.58 | | 100.00 | |

PROJECT STATION: 179

DATE: 2/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2756
start stop duration Long E 1442
TIME :21:12:00 21:42:00 30 (min) Purpose code: 3
LOG :1905.60 1906.90 1.30 Area code : 1
FDEPTH: 535 545 GearCond.code:
BDEPTH: 535 545 Validity code:
Towing dir: 30° Wire out:1400 m Speed: 24 kn*10

Sorted: 174 Kg Total catch: 303.70 CATCH/HOUR: 607.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 475.48 | 396 | 78.28 | 137 |
| Merluccius paradoxus, male | 60.90 | 80 | 10.03 | 136 |
| Coelorinchus matamua | 39.02 | | 6.42 | |
| Notacanthus sexspinis | 18.40 | 220 | 3.03 | |
| CONGRIDAE | 5.00 | 8 | 0.82 | |
| Todarodes sagittatus | 4.06 | 4 | 0.67 | |
| Galeus polli | 1.12 | 8 | 0.18 | |
| Etmopterus lucifer | 0.88 | 14 | 0.14 | |
| Photichthys argenteus | 0.78 | 70 | 0.13 | |
| Coelorinchus braueri | 0.66 | 20 | 0.11 | |
| MYXINIDAE | 0.56 | 10 | 0.09 | |
| MYCTOPHIDAE | 0.50 | 50 | 0.08 | |
| OPHICHTHIDAE | 0.08 | 8 | 0.01 | |
| Total | 607.44 | | 99.99 | |

PROJECT STATION: 180

DATE: 3/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2750
start stop duration Long E 1433
TIME :00:04:00 00:34:00 30 (min) Purpose code: 3
LOG :1918.90 1920.60 1.70 Area code : 1
FDEPTH: 585 591 GearCond.code:
BDEPTH: 585 591 Validity code:
Towing dir: 320° Wire out:1600 m Speed: 35 kn*10

Sorted: 75 Kg Total catch: 168.70 CATCH/HOUR: 337.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 94.20 | 590 | 27.92 | |
| Merluccius paradoxus, female | 69.20 | 52 | 20.51 | 138 |
| Neocyttus rhomboidalis | 63.60 | 216 | 18.85 | |
| Mola mola | 44.00 | 2 | 13.04 | |
| Etmopterus pusillus | 36.00 | 36 | 10.67 | |
| Nezumia sp. | 16.20 | 324 | 4.80 | |
| Yarrella blackfordi | 6.60 | 288 | 1.96 | |
| Scomberesox saurus | 3.60 | 12 | 1.07 | |
| Aristeus varidens | 2.40 | 420 | 0.71 | |
| Selachophidium guentheri | 1.20 | 12 | 0.36 | |
| Photichthys argenteus | 0.12 | 24 | 0.04 | |
| OPHICHTHIDAE | 0.12 | 12 | 0.04 | |
| Squilla mantis | 0.02 | 24 | 0.01 | |
| Total | 337.26 | | 99.98 | |

PROJECT STATION: 181

DATE: 3/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2749
start stop duration Long E 1436
TIME :06:41:00 07:11:00 30 (min) Purpose code: 3
LOG :1934.80 1936.30 1.50 Area code : 1
FDEPTH: 470 480 GearCond.code:
BDEPTH: 470 480 Validity code:
Towing dir: 320° Wire out:1250 m Speed: 31 kn*10

Sorted: 106 Kg Total catch: 106.05 CATCH/HOUR: 212.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 77.50 | 82 | 36.54 | 140 |
| Krill | 39.70 | | 18.72 | |
| Coelorinchus braueri | 18.90 | 388 | 8.91 | |
| Merluccius paradoxus, male | 13.00 | 16 | 6.13 | 139 |
| Bathyraja smithii | 12.76 | 2 | 6.02 | |
| Deania profundorum | 9.20 | 12 | 4.34 | |
| Neocyttus rhomboidalis | 8.68 | 28 | 4.09 | |
| Coelorinchus fasciatus | 7.56 | 80 | 3.56 | |
| Malacocephalus laevis | 5.38 | 48 | 2.54 | |
| Notacanthus sexspinis | 4.54 | 66 | 2.14 | |
| Galeus polli | 3.82 | 34 | 1.80 | |
| Todarodes sagittatus | 1.72 | 4 | 0.81 | |
| Photichthys argenteus | 1.36 | 88 | 0.64 | |
| Deania calcea | 1.24 | 2 | 0.58 | |
| Nezumia sp. | 1.24 | 48 | 0.58 | |
| Helicolenus dactylopterus | 1.08 | 6 | 0.51 | |
| Ebinania costaecanarie | 0.96 | 2 | 0.45 | |
| Aristeus varidens | 0.82 | 62 | 0.39 | |
| Scopelosaurus meadi | 0.68 | 14 | 0.32 | |
| Etmopterus lucifer | 0.58 | 34 | 0.27 | |
| Yarrella blackfordi | 0.40 | 34 | 0.19 | |
| Photonectes braueri | 0.36 | 14 | 0.17 | |
| Neoscopelus macrolepidotus | 0.32 | 8 | 0.15 | |
| Raja sp. | 0.14 | 4 | 0.07 | |
| Shrimps, small, non comm | 0.08 | 14 | 0.04 | |
| MYCTOPHIDAE | 0.08 | 6 | 0.04 | |
| Total | 212.10 | | 100.00 | |

PROJECT STATION: 182

DATE: 3/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2746
start stop duration Long E 1447
TIME :09:02:00 09:32:00 30 (min) Purpose code: 3
LOG :1949.60 1951.10 1.50 Area code : 1
FDEPTH: 390 370 GearCond.code:
BDEPTH: 390 370 Validity code:
Towing dir: 350° Wire out:1100 m Speed: 30 kn*10

Sorted: 189 Kg Total catch: 1528.23 CATCH/HOUR: 3056.46

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 2339.30 | 2968 | 76.54 | 142 |
| Merluccius paradoxus, male | 659.04 | 1160 | 21.56 | 141 |
| Coelorinchus fasciatus | 20.50 | 410 | 0.67 | |
| Squalus megalops | 15.08 | 16 | 0.49 | |
| Galeus polli | 8.80 | 98 | 0.29 | |
| Genypterus capensis | 6.20 | 6 | 0.20 | 143 |
| Photichthys argenteus | 4.92 | 1968 | 0.16 | |
| Cyttus traversi | 2.62 | 16 | 0.09 | |
| Total | 3056.46 | | 100.00 | |

PROJECT STATION: 183

DATE: 3/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2743
start stop duration Long E 1455
TIME :11:52:00 12:22:00 30 (min) Purpose code: 3
LOG :1961.80 1963.10 1.30 Area code : 1
FDEPTH: 255 268 GearCond.code:
BDEPTH: 255 268 Validity code:
Towing dir: ° Wire out: 700 m Speed: 27 kn*10

Sorted: 132 Kg Total catch: 1310.66 CATCH/HOUR: 2621.32

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 1645.00 | 89616 | 62.75 | 146 |
| Merluccius capensis, male | 367.50 | 1716 | 14.02 | 145 |
| Merluccius capensis, female | 285.20 | 1330 | 10.88 | 144 |
| PHOTICHTHYIDAE | 190.40 | 39666 | 7.26 | |
| Brama brama | 74.90 | 66 | 2.86 | |
| Galeorhinus galeus | 43.00 | 2 | 1.64 | |
| Genypterus capensis | 5.50 | 12 | 0.21 | 148 |
| Coelorinchus fasciatus | 4.20 | 280 | 0.16 | |
| Scomber japonicus | 3.86 | 2 | 0.15 | 149 |
| Todaropsis eblanae | 0.70 | 106 | 0.03 | |
| Lepidopus caudatus | 0.70 | 36 | 0.03 | |
| Sepia australis | 0.36 | 36 | 0.01 | |
| Total | 2621.32 | | 100.00 | |

PROJECT STATION: 184

DATE: 3/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2740
start stop duration Long E 1505
TIME :14:01:00 14:31:00 30 (min) Purpose code: 3
LOG :1974.70 1976.10 1.40 Area code : 1
FDEPTH: 160 160 GearCond.code:
BDEPTH: 160 160 Validity code:
Towing dir: 360° Wire out: 300 m Speed: 32 kn*10

Sorted: 113 Kg Total catch: 113.53 CATCH/HOUR: 227.06

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 108.80 | 660 | 47.92 | 150 |
| Merluccius capensis, male | 78.50 | 588 | 34.57 | 151 |
| Chelidonichthys capensis | 12.98 | 46 | 5.72 | |
| Trachurus capensis | 7.90 | 32 | 3.48 | 154 |
| Austroglossus microlepis | 6.40 | 26 | 2.82 | 153 |
| Lepidopus caudatus | 3.70 | 132 | 1.63 | |
| Merluccius capensis, juveniles | 2.42 | 128 | 1.07 | 152 |
| Callorhinchus capensis | 2.30 | 2 | 1.01 | |
| Raja clavata | 2.00 | 2 | 0.88 | |
| Sufflogobius bibarbatus | 1.10 | 220 | 0.48 | |
| Todaropsis eblanae | 0.50 | 14 | 0.22 | |
| Sepia australis | 0.46 | 24 | 0.20 | |
| Total | 227.06 | | 100.00 | |

PROJECT STATION: 185

DATE: 3/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2736
start stop duration Long E 1514
TIME :15:59:00 16:29:00 30 (min) Purpose code: 3
LOG :1986.40 1988.10 1.70 Area code : 1
FDEPTH: 124 121 GearCond.code:
BDEPTH: 124 121 Validity code:
Towing dir: 345° Wire out: 500 m Speed: 35 kn*10

Sorted: 5 Kg Total catch: 9.19 CATCH/HOUR: 18.38

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 10.10 | 492 | 54.95 | 157 |
| Merluccius capensis, female | 3.92 | 28 | 21.33 | 155 |
| Sufflogobius bibarbatus | 3.20 | 338 | 17.41 | |
| Merluccius capensis, male | 1.08 | 12 | 5.88 | 156 |
| Todaropsis eblanae | 0.06 | 2 | 0.33 | |
| PORTUNIDAE | 0.02 | 2 | 0.11 | |
| Total | 18.38 | | 100.01 | |

PROJECT STATION: 186

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2713
start stop duration Long E 1505
TIME :06:37:00 06:51:00 14 (min) Purpose code: 3
LOG :2020.00 2020.70 0.70 Area code : 1
FDEPTH: 142 145 GearCond.code:
BDEPTH: 142 145 Validity code:
Towing dir: 230° Wire out: 400 m Speed: 32 kn*10

Sorted: 11 Kg Total catch: 11.06 CATCH/HOUR: 47.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 22.11 | 176 | 46.65 | 159 |
| Merluccius capensis, juveniles | 18.69 | 4564 | 39.43 | 160 |
| Merluccius capensis, male | 6.00 | 56 | 12.66 | 158 |
| Sufflogobius bibarbatus | 0.60 | 99 | 1.27 | |
| Total | 47.40 | | 100.01 | |

PROJECT STATION: 187

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2716
start stop duration Long E 1454
TIME :08:24:00 08:54:00 30 (min) Purpose code: 3
LOG :2031.10 2032.60 1.50 Area code : 1
FDEPTH: 200 220 GearCond.code:
BDEPTH: 200 220 Validity code:
Towing dir: 270° Wire out: 550 m Speed: 32 kn*10

Sorted: 26 Kg Total catch: 158.10 CATCH/HOUR: 316.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 150.60 | 960 | 47.63 | 162 |
| Merluccius capensis, male | 132.60 | 924 | 41.94 | 161 |
| Merluccius capensis, juveniles | 28.20 | 996 | 8.92 | 163 |
| Sufflogobius bibarbatus | 4.80 | 648 | 1.52 | |
| Total | 316.20 | | 100.01 | |

PROJECT STATION: 188

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2719
start stop duration Long E 1444
TIME :10:13:00 10:43:00 30 (min) Purpose code: 3
LOG :2040.50 2042.00 1.50 Area code : 1
FDEPTH: 285 290 GearCond.code:
BDEPTH: 285 290 Validity code:
Towing dir: 270° Wire out: 850 m Speed: 30 kn*10

Sorted: 84 Kg Total catch: 895.78 CATCH/HOUR: 1791.56

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 864.60 | 3080 | 48.26 | 166 |
| Merluccius capensis, male | 605.00 | 2332 | 33.77 | 165 |
| Merluccius paradoxus, female | 75.68 | 792 | 4.22 | 169 |
| MYCTOPHIDAE | 66.00 | | 3.68 | |
| Merluccius capensis, juveniles | 63.36 | 1936 | 3.54 | 167 |
| Todarodes sagittatus | 30.58 | 44 | 1.71 | |
| Callorhinchus capensis | 24.86 | 22 | 1.39 | |
| Coelorinchus fasciatus | 14.30 | 198 | 0.80 | |
| Mustelus palumbes | 13.42 | 22 | 0.75 | |
| Merluccius paradoxus, juvenile | 11.88 | 264 | 0.66 | 170 |
| Lophius vomerinus | 7.80 | 2 | 0.44 | 164 |
| Merluccius paradoxus, male | 6.82 | 66 | 0.38 | 168 |
| Maurolicus muelleri | 2.86 | | 0.16 | |
| Sufflogobius bibarbatus | 2.20 | 594 | 0.12 | |
| Todaropsis eblanae | 1.98 | 66 | 0.11 | |
| Chlorophthalmus atlanticus | 0.22 | 22 | 0.01 | |
| Squilla acuelata calmani | 0.00 | 22 | | |
| Total | 1791.56 | | 100.00 | |

PROJECT STATION: 189

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2733
start stop duration Long E 1436
TIME :12:09:00 12:39:00 30 (min) Purpose code: 3
LOG :2050.60 2052.30 1.70 Area code : 1
FDEPTH: 339 346 GearCond.code:
BDEPTH: 339 346 Validity code:
Towing dir: 260° Wire out:1000 m Speed: 31 kn*10

Sorted: 146 Kg Total catch: 1085.39 CATCH/HOUR: 2170.78

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 963.48 | 5950 | 44.38 | 173 |
| Merluccius capensis, female | 559.44 | 680 | 25.77 | 171 |
| Merluccius paradoxus, male | 250.86 | 1998 | 11.56 | 174 |
| Merluccius capensis, male | 187.96 | 282 | 8.66 | 172 |
| Shrimps, small, non comm. | 74.20 | | 3.42 | |
| Galeus polli | 64.68 | 696 | 2.98 | |
| Helicolenus dactylopterus | 29.90 | 296 | 1.38 | |
| Coelorinchus fasciatus | 16.14 | 252 | 0.74 | |
| Trachurus capensis | 14.06 | 14 | 0.65 | |
| Todarodes sagittatus | 10.06 | 74 | 0.46 | |
| Total | 2170.78 | | 100.00 | |

PROJECT STATION: 190

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2726
start stop duration Long E 1423
TIME :14:45:00 15:15:00 30 (min) Purpose code: 3
LOG :2065.20 2067.30 2.10 Area code : 1
FDEPTH: 426 425 GearCond.code:
BDEPTH: 426 425 Validity code:
Towing dir: 330° Wire out:1300 m Speed: 35 kn*10

Sorted: 131 Kg Total catch: 811.30 CATCH/HOUR: 1622.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1042.20 | 2188 | 64.23 | 175 |
| Merluccius paradoxus, male | 394.80 | 972 | 24.33 | 176 |
| Coelorinchus fasciatus | 85.00 | 1012 | 5.24 | |
| Helicolenus dactylopterus | 29.96 | 122 | 1.85 | |
| Genypterus capensis | 21.30 | 8 | 1.31 | 180 |
| Todarodes sagittatus | 20.64 | 40 | 1.27 | |
| Malacocephalus laevis | 10.38 | 54 | 0.64 | |
| Galeus polli | 5.80 | 54 | 0.36 | |
| Lophius vomerinus | 4.70 | 2 | 0.29 | 179 |
| Aristeus varidens | 2.56 | 784 | 0.16 | |
| PHOTICHTHYIDAE | 2.02 | 202 | 0.12 | |
| Hoplostethus atlanticus | 2.02 | 28 | 0.12 | 178 |
| NEMICHTHYIDAE | 1.22 | 14 | 0.08 | |
| Total | 1622.60 | | 100.00 | |

PROJECT STATION: 191

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2727
start stop duration Long E 1419
TIME :16:47:00 17:17:00 30 (min) Purpose code: 3
LOG :2074.10 2075.90 1.80 Area code : 1
FDEPTH: 500 502 GearCond.code:
BDEPTH: 500 502 Validity code:
Towing dir: 324° Wire out:1450 m Speed: 35 kn*10

Sorted: 29 Kg Total catch: 29.77 CATCH/HOUR: 59.54

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 26.40 | 34 | 44.34 | 181 |
| Deepwater fish mixture | 9.74 | | 16.36 | |
| Merluccius paradoxus, male | 8.50 | 14 | 14.28 | 182 |
| Raja confundens | 5.64 | 2 | 9.47 | |
| Todarodes sagittatus | 3.12 | 4 | 5.24 | |
| Trachyrincus scabrus | 2.26 | 54 | 3.80 | |
| Yarrella blackfordi | 1.36 | 148 | 2.28 | |
| Selachophidium guentheri | 0.94 | 14 | 1.58 | |
| Nezumia sp | 0.70 | 24 | 1.18 | |
| Nezumia leonis | 0.32 | 6 | 0.54 | |
| Myxine capensis | 0.26 | 2 | 0.44 | |
| Galeus polli | 0.18 | 2 | 0.30 | |
| Aristeus varidens | 0.12 | 14 | 0.20 | |
| Total | 59.54 | | 100.01 | |

PROJECT STATION: 192

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2725
start stop duration Long E 1414
TIME :18:48:00 19:18:00 30 (min) Purpose code: 3
LOG :2080.60 2082.10 1.50 Area code : 1
FDEPTH: 595 596 GearCond.code:
BDEPTH: 595 596 Validity code:
Towing dir: 330° Wire out:1700 m Speed: 28 kn*10

Sorted: 153 Kg Total catch: 153.73 CATCH/HOUR: 307.46

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 157.10 | 150 | 51.10 | 185 |
| Coelorinchus braueri | 30.40 | 352 | 9.89 | |
| Centrophorus squamosus | 28.50 | 2 | 9.27 | |
| S H R I M P S | 24.00 | 320 | 7.81 | |
| Nezumia sp. | 19.10 | 390 | 6.21 | |
| Selachophidium guentheri | 17.66 | 234 | 5.74 | |
| Genypterus capensis | 7.36 | 2 | 2.39 | 183 |
| Deania calcea | 7.24 | 4 | 2.35 | |
| Malacocephalus laevis | 4.22 | 20 | 1.37 | |
| Merluccius paradoxus, male | 3.70 | 6 | 1.20 | 184 |
| Raja sp. | 2.16 | 30 | 0.70 | |
| Photichthys argenteus | 1.30 | 94 | 0.42 | |
| Todarodes sagittatus | 1.08 | 4 | 0.35 | |
| Yarrella blackfordi | 0.62 | 60 | 0.20 | |
| Hydrolagus sp | 0.50 | 2 | 0.16 | |
| Neoscopelus macrolepidotus | 0.50 | 20 | 0.16 | |
| Coelorinchus matamua | 0.44 | 2 | 0.14 | |
| Galeus polli | 0.40 | 4 | 0.13 | |
| Shrimps, small, non comm | 0.32 | 74 | 0.10 | |
| Notacanthus sexspinis | 0.30 | 4 | 0.10 | |
| Ebinania costaecanarie | 0.14 | 4 | 0.05 | |
| Leptostomias gracilis | 0.12 | 2 | 0.04 | |
| Lycodes agulhensis | 0.10 | 2 | 0.03 | |
| Malacocephalus occidentalis | 0.08 | 2 | 0.03 | |
| Scopelosaurus meadi | 0.04 | 2 | 0.01 | |
| Etmopterus lucifer | 0.04 | 4 | 0.01 | |
| Lepidion capensis | 0.04 | 2 | 0.01 | |
| Total | 307.46 | | 99.97 | |

PROJECT STATION: 193

DATE: 4/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2703
start stop duration Long E 1357
TIME :22:47:00 23:17:00 30 (min) Purpose code: 3
LOG :2106.80 2108.30 1.50 Area code : 1
FDEPTH: 545 546 GearCond.code:
BDEPTH: 545 546 Validity code:
Towing dir: 330° Wire out:1500 m Speed: 30 kn*10

Sorted: 234 Kg Total catch: 233.71 CATCH/HOUR: 467.42

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 377.30 | 358 | 80.72 | 187 |
| Nezumia sp. | 25.30 | 662 | 5.41 | |
| RAJIDAE | 16.00 | 2 | 3.42 | |
| Trachyrincus scabrus | 12.10 | 344 | 2.59 | |
| Merluccius paradoxus, male | 10.70 | 14 | 2.29 | 186 |
| Selachophidium guentheri | 9.16 | 84 | 1.96 | |
| Raja leopardus | 3.18 | 64 | 0.68 | |
| Shrimps, small, non comm | 2.84 | 274 | 0.61 | |
| Etmopterus lucifer | 2.38 | 4 | 0.51 | |
| Raja confundens | 1.72 | 4 | 0.37 | |
| Trachyscorpia capensis | 1.62 | 12 | 0.35 | |
| Yarrella blackfordi | 1.12 | 60 | 0.24 | |
| Hydrolagus sp | 1.04 | 2 | 0.22 | |
| Notacanthus sexspinis | 0.96 | 26 | 0.21 | |
| Todarodes sagittatus | 0.88 | 2 | 0.19 | |
| Coloconger scholesi | 0.52 | 2 | 0.11 | |
| Galeus polli | 0.28 | 2 | 0.06 | |
| Etmopterus pusillus | 0.18 | 4 | 0.04 | |
| Ebinania costaecanarie | 0.10 | 2 | 0.02 | |
| PORTUNIDAE | 0.04 | 2 | 0.01 | |
| Total | 467.42 | | 100.01 | |

PROJECT STATION: 194

DATE: 5/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2703
start stop duration Long E 1402
TIME :01:03:00 01:33:00 30 (min) Purpose code: 3
LOG :2117.10 2118.80 1.70 Area code : 1
FDEPTH: 448 448 GearCond.code:
BDEPTH: 448 448 Validity code:
Towing dir: 330° Wire out:1300 m Speed: 35 kn*10

Sorted: 112 Kg Total catch: 111.69 CATCH/HOUR: 223.38

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 147.50 | 342 | 66.03 | 188 |
| Merluccius paradoxus, male | 56.10 | 136 | 25.11 | 189 |
| Helicolenus dactylopterus | 7.00 | 32 | 3.13 | |
| Coelorinchus fasciatus | 5.68 | 68 | 2.54 | |
| Selachophidium guentheri | 2.20 | 34 | 0.98 | |
| Genypterus capensis | 2.20 | 2 | 0.98 | 190 |
| Nezumia sp. | 1.30 | 44 | 0.58 | |
| RAJIDAE | 0.60 | 4 | 0.27 | |
| Malacocephalus laevis | 0.28 | 4 | 0.13 | |
| Raja confundens | 0.20 | 2 | 0.09 | |
| Raja leopardus | 0.14 | 4 | 0.06 | |
| Todaropsis eblanae | 0.06 | 2 | 0.03 | |
| MACROURIDAE | 0.06 | 2 | 0.03 | |
| PARALEPIDIDAE | 0.04 | 2 | 0.02 | |
| PORTUNIDAE | 0.02 | 2 | 0.01 | |
| Total | 223.38 | | 99.99 | |

PROJECT STATION: 195

DATE: 5/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2703
start stop duration Long E 1414
TIME :06:37:00 07:07:00 30 (min) Purpose code: 3
LOG :2139.90 2141.60 1.70 Area code : 1
FDEPTH: 393 392 GearCond.code:
BDEPTH: 393 392 Validity code:
Towing dir: 345° Wire out:1150 m Speed: 33 kn*10

Sorted: 206 Kg Total catch: 2141.18 CATCH/HOUR: 4282.36

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 2902.60 | 7314 | 67.78 | 194 |
| Merluccius paradoxus, male | 1060.30 | 3960 | 24.76 | 193 |
| Coelorinchus fasciatus | 251.16 | 2336 | 5.86 | |
| Genypterus capensis | 25.10 | 14 | 0.59 | 191 |
| Lophius vomerinus | 21.80 | 4 | 0.51 | 192 |
| Galeus polli | 14.50 | 138 | 0.34 | |
| Helicolenus dactylopterus | 6.90 | 46 | 0.16 | |
| Total | 4282.36 | | 100.00 | |

PROJECT STATION: 196

DATE: 5/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2659
start stop duration Long E 1426
TIME :09:16:00 09:46:00 30 (min) Purpose code: 3
LOG :2155.80 2157.30 1.50 Area code : 1
FDEPTH: 334 325 GearCond.code:
BDEPTH: 334 325 Validity code:
Towing dir: 70° Wire out: 900 m Speed: 30 kn*10

Sorted: 201 Kg Total catch: 2622.84 CATCH/HOUR: 5245.68

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 2596.80 | 3456 | 49.50 | 198 |
| Merluccius capensis, male | 910.40 | 1536 | 17.36 | 197 |
| Merluccius paradoxus, female | 891.20 | 7296 | 16.99 | 201 |
| Merluccius capensis, juveniles | 275.20 | 10370 | 5.25 | 199 |
| Merluccius paradoxus, male | 219.20 | 1984 | 4.18 | 200 |
| Coelorinchus fasciatus | 142.72 | 2224 | 2.72 | |
| Galeus polli | 81.28 | 832 | 1.55 | |
| Lophius vomerinus | 73.90 | 18 | 1.41 | 196 |
| MYCTOPHIDAE | 19.20 | | 0.37 | |
| Trachurus capensis | 10.56 | 32 | 0.20 | |
| Helicolenus dactylopterus | 8.96 | 64 | 0.17 | |
| Genypterus capensis | 7.30 | 8 | 0.14 | 195 |
| PORTUNIDAE | 5.76 | 96 | 0.11 | |
| Krill | 3.20 | | 0.06 | |
| Total | 5245.68 | | 100.01 | |

PROJECT STATION: 197

DATE: 5/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2656
start stop duration Long E 1437
TIME :11:15:00 11:45:00 30 (min) Purpose code: 3
LOG :2166.10 2767.60 1.50 Area code : 1
FDEPTH: 265 252 GearCond.code:
BDEPTH: 265 252 Validity code:
Towing dir: 70° Wire out: 750 m Speed: 31 kn*10

Sorted: 20 Kg Total catch: 86.12 CATCH/HOUR: 172.24

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 127.20 | 5184 | 73.85 | 202 |
| Sufflogobius bibarbatus | 31.04 | 6390 | 18.02 | |
| Merluccius capensis, female | 7.04 | 32 | 4.09 | 203 |
| Squilla acuelata calmani | 4.88 | 184 | 2.83 | |
| C R A B S | 1.44 | 24 | 0.84 | |
| Merluccius capensis, male | 0.64 | 8 | 0.37 | 204 |
| Total | 172.24 | | 100.00 | |

PROJECT STATION: 198

DATE: 5/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2649
start stop duration Long E 1448
TIME :13:16:00 13:46:00 30 (min) Purpose code: 3
LOG :2177.90 2179.70 1.80 Area code : 1
FDEPTH: 186 177 GearCond.code:
BDEPTH: 186 177 Validity code: 9
Towing dir: 51° Wire out: 600 m Speed: 38 kn*10

Sorted: Kg Total catch: 30.00 CATCH/HOUR: 60.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 60.00 | | 100.00 | |
| Total | 60.00 | | 100.00 | |

PROJECT STATION: 199

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2640
start stop duration Long E 1435
TIME :06:47:00 07:17:00 30 (min) Purpose code: 3
LOG :2242.50 2244.00 1.50 Area code : 1
FDEPTH: 255 265 GearCond.code:
BDEPTH: 255 265 Validity code:
Towing dir: 250° Wire out: 750 m Speed: 30 kn*10

Sorted: 49 Kg Total catch: 245.75 CATCH/HOUR: 491.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 275.00 | 1190 | 55.95 | 206 |
| Merluccius capensis, male | 113.50 | 660 | 23.09 | 205 |
| Merluccius capensis, juveniles | 101.50 | 4456 | 20.65 | 207 |
| MYCTOPHIDAE | 0.60 | 480 | 0.12 | |
| Sufflogobius bibarbatus | 0.60 | 140 | 0.12 | |
| Lepidopus caudatus | 0.30 | 10 | 0.06 | |
| Total | 491.50 | | 99.99 | |

PROJECT STATION: 200

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION: Lat S 2641
start stop duration Long E 1429
TIME :08:33:00 09:03:00 30 (min) Purpose code: 3
LOG :2248.50 2250.20 1.70 Area code : 1
FDEPTH: 295 304 GearCond.code:
BDEPTH: 295 304 Validity code:
Towing dir: 250° Wire out: 850 m Speed: 33 kn*10

Sorted: 504 Kg Total catch: 1506.40 CATCH/HOUR: 3012.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1806.00 | 1620 | 59.94 | 212 |
| Genypterus capensis | 651.60 | 638 | 21.63 | 208 |
| Merluccius capensis, male | 493.20 | 502 | 16.37 | 211 |
| Lophius vomerinus | 18.80 | 6 | 0.62 | 209 |
| Galeus polli | 11.60 | 200 | 0.39 | |
| Callorhinchus capensis | 9.66 | 14 | 0.32 | |
| Hexanchus griseus | 7.80 | 2 | 0.26 | |
| Merluccius capensis, juveniles | 7.40 | 402 | 0.25 | 213 |
| Austroglossus microlepis | 6.74 | 36 | 0.22 | 210 |
| Squilla acuelata calmani | 0.00 | 14 | | |
| Total | 3012.80 | | 100.00 | |

PROJECT STATION: 201

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2642
start stop duration Long E 1420
TIME :10:42:00 11:12:00 30 (min) Purpose code: 3
LOG :2258.00 2259.50 1.50 Area code : 1
FDEPTH: 345 350 GearCond.code:
BDEPTH: 345 350 Validity code:
Towing dir: 260° Wire out:1000 m Speed: 30 kn*10

Sorted: 220 Kg Total catch: 409.89 CATCH/HOUR: 819.78

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 474.00 | 736 | 57.82 | 217 |
| Genypterus capensis | 124.80 | 54 | 15.22 | 214 |
| Merluccius capensis, male | 91.08 | 280 | 11.11 | 216 |
| Coelorinchus fasciatus | 39.98 | 468 | 4.88 | |
| Merluccius paradoxus, female | 37.68 | 60 | 4.60 | 219 |
| Lophius vomerinus | 22.30 | 6 | 2.72 | 215 |
| Helicolenus dactylopterus | 14.40 | 120 | 1.76 | |
| Merluccius paradoxus, male | 6.60 | 28 | 0.81 | 218 |
| Centrolophus niger | 4.34 | 2 | 0.53 | |
| Callinectes sp. | 2.86 | 64 | 0.35 | |
| Galeus polli | 1.74 | 24 | 0.21 | |
| Total | 819.78 | | 100.01 | |

PROJECT STATION: 202

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2641
start stop duration Long E 1410
TIME :12:51:00 13:21:00 30 (min) Purpose code: 3
LOG :2269.20 2270.90 1.70 Area code : 1
FDEPTH: 376 376 GearCond.code:
BDEPTH: 376 376 Validity code:
Towing dir: 360° Wire out:1150 m Speed: 34 kn*10

Sorted: 214 Kg Total catch: 1760.25 CATCH/HOUR: 3520.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1494.50 | 5176 | 42.45 | 222 |
| Merluccius capensis, female | 1057.20 | 1452 | 30.03 | 220 |
| Merluccius capensis, male | 391.20 | 768 | 11.11 | 221 |
| Merluccius paradoxus, male | 239.12 | 956 | 6.79 | 223 |
| Coelorinchus fasciatus | 128.10 | 1162 | 3.64 | |
| Deepwater fish mixture | 90.00 | | 2.56 | |
| Helicolenus dactylopterus | 71.74 | | 2.04 | |
| Todarodes sagittatus | 10.40 | 18 | 0.30 | |
| Lophius vomerinus | 10.00 | 4 | 0.28 | 224 |
| Galeus polli | 8.88 | 86 | 0.25 | |
| Genypterus capensis | 8.10 | 4 | 0.23 | 225 |
| Callinectes sp. | 5.12 | 120 | 0.15 | |
| Trachurus capensis | 3.42 | 18 | 0.10 | 226 |
| Selachophidium guentheri | 2.72 | 86 | 0.08 | |
| Total | 3520.50 | | 100.01 | |

PROJECT STATION: 203

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2642
start stop duration Long E 1401
TIME :15:23:00 15:53:00 30 (min) Purpose code: 3
LOG :2283.00 2284.60 1.60 Area code : 1
FDEPTH: 404 402 GearCond.code:
BDEPTH: 404 402 Validity code:
Towing dir: 360° Wire out:1200 m Speed: 31 kn*10

Sorted: 186 Kg Total catch: 2191.05 CATCH/HOUR: 4382.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 2535.00 | 6092 | 57.85 | 229 |
| Merluccius capensis, female | 731.16 | 198 | 16.69 | 227 |
| Merluccius paradoxus, male | 728.60 | 2220 | 16.63 | 230 |
| Coelorinchus fasciatus | 171.14 | 1554 | 3.91 | |
| Shrimps, small, non comm. | 139.08 | | 3.17 | |
| Merluccius capensis, male | 35.76 | 24 | 0.82 | 228 |
| Genypterus capensis | 19.90 | 8 | 0.45 | 231 |
| Helicolenus dactylopterus | 8.88 | 98 | 0.20 | |
| Todarodes sagittatus | 7.16 | 24 | 0.16 | |
| Galeus polli | 3.46 | 24 | 0.08 | |
| Nezumia sp. | 1.72 | 74 | 0.04 | |
| Selachophidium guentheri | 0.24 | 24 | 0.01 | |
| Total | 4382.10 | | 100.01 | |

PROJECT STATION: 204

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2642
start stop duration Long E 1352
TIME :17:24:00 17:54:00 30 (min) Purpose code: 3
LOG :2295.50 2297.20 1.70 Area code : 1
FDEPTH: 419 419 GearCond.code:
BDEPTH: 419 419 Validity code:
Towing dir: 360° Wire out:1250 m Speed: 34 kn*10

Sorted: 174 Kg Total catch: 1083.10 CATCH/HOUR: 2166.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1392.70 | 2926 | 64.29 | 234 |
| Merluccius paradoxus, male | 650.40 | 1266 | 30.02 | 233 |
| Coelorinchus fasciatus | 80.20 | 930 | 3.70 | |
| Helicolenus dactylopterus | 16.22 | 102 | 0.75 | |
| Todarodes sagittatus | 11.28 | 26 | 0.52 | |
| Selachophidium guentheri | 6.84 | 114 | 0.32 | |
| Merluccius capensis, female | 6.56 | 2 | 0.30 | 232 |
| Galeus polli | 1.40 | 12 | 0.06 | |
| Nezumia sp. | 0.60 | 12 | 0.03 | |
| Total | 2166.20 | | 99.99 | |

PROJECT STATION: 205

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2641
start stop duration Long E 1344
TIME :20:30:00 21:00:00 30 (min) Purpose code: 3
LOG :2308.50 2309.70 1.20 Area code : 1
FDEPTH: 465 460 GearCond.code:
BDEPTH: 465 460 Validity code:
Towing dir: 340° Wire out:1300 m Speed: 24 kn*10

Sorted: 50 Kg Total catch: 50.27 CATCH/HOUR: 100.54

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 50.30 | 78 | 50.03 | 236 |
| S H R I M P S | 10.64 | 980 | 10.58 | |
| Merluccius paradoxus, male | 9.40 | 18 | 9.35 | 235 |
| Raja confundens | 6.90 | 4 | 6.86 | |
| Coelorinchus fasciatus | 6.74 | 102 | 6.70 | |
| Helicolenus dactylopterus | 6.04 | 22 | 6.01 | |
| Photichthys argenteus | 3.44 | 360 | 3.42 | |
| Selachophidium guentheri | 3.42 | 62 | 3.40 | |
| Galeus polli | 1.36 | 12 | 1.35 | |
| Nezumia sp. | 0.90 | 40 | 0.90 | |
| Todarodes sagittatus | 0.64 | 2 | 0.64 | |
| MYCTOPHIDAE | 0.40 | | 0.40 | |
| Nansenia tenera | 0.16 | 6 | 0.16 | |
| Epigonus denticulatus | 0.10 | 2 | 0.10 | |
| Macroparalepis macrogeneion | 0.08 | 2 | 0.08 | |
| PORTUNIDAE | 0.02 | 2 | 0.02 | |
| Total | 100.54 | | 100.00 | |

PROJECT STATION: 206

DATE: 6/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2637
start stop duration Long E 1340
TIME :22:08:00 22:38:00 30 (min) Purpose code: 3
LOG :2314.20 2315.60 1.40 Area code : 1
FDEPTH: 550 554 GearCond.code:
BDEPTH: 550 554 Validity code:
Towing dir: 340° Wire out:1600 m Speed: 26 kn*10

Sorted: 132 Kg Total catch: 236.58 CATCH/HOUR: 473.16

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 209.20 | 180 | 44.21 | 238 |
| Coelorinchus matamua | 52.00 | 240 | 10.99 | |
| Coelorinchus braueri | 48.50 | 1078 | 10.25 | |
| Nezumia sp. | 38.00 | 1048 | 8.03 | |
| Selachophidium guentheri | 34.60 | 420 | 7.31 | |
| Ebinania costaecanarie | 34.20 | 30 | 7.23 | |
| Deania profundorum | 26.20 | 40 | 5.54 | |
| Coelorinchus fasciatus | 12.90 | 110 | 2.73 | |
| Hydrolagus sp. | 3.10 | 10 | 0.66 | |
| Etmopterus lucifer | 2.90 | 10 | 0.61 | |
| Myxine capensis | 2.00 | 20 | 0.42 | |
| Merluccius paradoxus, male | 1.96 | 2 | 0.41 | 237 |
| Photichthys argenteus | 1.90 | 110 | 0.40 | |
| Shrimps, small, non comm. | 1.50 | 260 | 0.32 | |
| Epigonus denticulatus | 1.20 | 10 | 0.25 | |
| S H R I M P S | 1.10 | 80 | 0.23 | |
| Helicolenus dactylopterus | 1.00 | 10 | 0.21 | |
| Tripterophycis gilchristi | 0.50 | 30 | 0.11 | |
| Leptostomias gracilis | 0.40 | 10 | 0.08 | |
| Total | 473.16 | | 99.99 | |

PROJECT STATION: 207

DATE: 7/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2622
start stop duration Long E 1337
TIME :01:15:00 01:45:00 30 (min) Purpose code: 3
LOG :2331.40 2333.00 1.60 Area code : 1
FDEPTH: 604 609 GearCond.code: 8
BDEPTH: 604 609 Validity code:
Towing dir: 360° Wire out:1700 m Speed: 34 kn*10

Sorted: 668 Kg Total catch: 3034.90 CATCH/HOUR: 6069.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Hoplostethus atlanticus | 2057.00 | 3128 | 33.89 | 241 |
| Deania profundorum | 1825.80 | 1904 | 30.08 | |
| Merluccius paradoxus, female | 1185.80 | 810 | 19.54 | 240 |
| Nezumia sp. | 266.60 | 2924 | 4.39 | |
| Deania quadrispinosum | 158.44 | 136 | 2.61 | |
| Deania calcea | 153.00 | 204 | 2.52 | |
| Epigonus denticulatus | 135.32 | 136 | 2.23 | |
| Coelorinchus matamua | 116.28 | 476 | 1.92 | |
| Notacanthus sexspinis | 96.56 | 1088 | 1.59 | |
| Ebinania costaecanarie | 31.28 | 68 | 0.52 | |
| RAJIDAE | 21.76 | 68 | 0.36 | |
| Selachophidium guentheri | 14.96 | 136 | 0.25 | |
| Merluccius paradoxus, male | 7.00 | 8 | 0.12 | 239 |
| Total | 6069.80 | | 100.02 | |

PROJECT STATION: 208

DATE: 7/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2627
start stop duration Long E 1342
TIME :07:32:00 08:02:00 30 (min) Purpose code: 3
LOG :2351.40 2353.10 1.70 Area code : 1
FDEPTH: 420 413 GearCond.code:
BDEPTH: 420 413 Validity code:
Towing dir: 10° Wire out:1200 m Speed: 33 kn*10

Sorted: 190 Kg Total catch: 3126.98 CATCH/HOUR: 6253.96

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 4369.60 | 9832 | 69.87 | 245 |
| Merluccius paradoxus, male | 1413.80 | 3550 | 22.61 | 244 |
| Coelorinchus fasciatus | 348.80 | 3920 | 5.58 | |
| Lophius vomerinus | 49.10 | 4 | 0.79 | 242 |
| Selachophidium guentheri | 17.90 | 244 | 0.29 | |
| Genypterus capensis | 14.80 | 10 | 0.24 | 243 |
| Ebinania costaecanarie | 7.70 | 40 | 0.12 | |
| Merluccius capensis, female | 7.00 | 2 | 0.11 | |
| Todarodes sagittatus | 6.00 | 40 | 0.10 | |
| Myxine capensis | 5.80 | 82 | 0.09 | |
| Raja confundens | 4.30 | 2 | 0.07 | |
| PORTUNIDAE | 3.60 | 122 | 0.06 | |
| Lithodes ferox | 2.32 | 4 | 0.04 | |
| Shrimps, small, non comm. | 1.64 | 776 | 0.03 | |
| Macroparalepis macrogeneion | 1.20 | 40 | 0.02 | |
| Nezumia sp. | 0.40 | 122 | 0.01 | |
| Total | 6253.96 | | 100.03 | |

PROJECT STATION: 209

DATE: 7/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2623
start stop duration Long E 1351
TIME :09:42:00 10:12:00 30 (min) Purpose code: 3
LOG :2361.60 2363.20 1.60 Area code : 1
FDEPTH: 400 392 GearCond code:
BDEPTH: 400 392 Validity code:
Towing dir: 85° Wire out:1150 m Speed: 35 kn*10

Sorted: 217 Kg Total catch: 968.35 CATCH/HOUR: 1936.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1001.60 | 2560 | 51.72 | 250 |
| Merluccius paradoxus, male | 364.80 | 1126 | 18.84 | 249 |
| Coelorinchus fasciatus | 300.16 | 2730 | 15.50 | |
| Merluccius capensis, female | 94.40 | 36 | 4.87 | 248 |
| Helicolenus dactylopterus | 61.20 | 486 | 3.16 | |
| Genypterus capensis | 35.80 | 22 | 1.85 | 246 |
| Lophius vomerinus | 26.42 | 8 | 1.36 | 247 |
| Nezumia sp. | 19.40 | 244 | 1.00 | |
| Galeus polli | 9.10 | 90 | 0.47 | |
| Selachophidium guentheri | 8.70 | 140 | 0.45 | |
| Todarodes sagittatus | 5.64 | 26 | 0.29 | |
| PORTUNIDAE | 4.74 | 128 | 0.24 | |
| MYCTOPHIDAE | 2.56 | | 0.13 | |
| Myxine capensis | 2.18 | 26 | 0.11 | |
| Total | 1936.70 | | 99.99 | |

PROJECT STATION: 210

DATE: 7/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2627
start stop duration Long E 1358
TIME :11:34:00 12:04:00 30 (min) Purpose code: 3
LOG :2368.90 2370.50 1.60 Area code : 1
FDEPTH: 380 372 GearCond code:
BDEPTH: 380 372 Validity code:
Towing dir: 85° Wire out:1100 m Speed: 30 kn*10

Sorted: 221 Kg Total catch: 2732.86 CATCH/HOUR: 5465.72

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 3659.04 | 12320 | 66.95 | 253 |
| Merluccius paradoxus, male | 1031.36 | 3732 | 18.87 | 254 |
| Merluccius capensis, female | 390.72 | 140 | 7.15 | 255 |
| Coelorinchus fasciatus | 148.90 | 2182 | 2.72 | |
| Lophius vomerinus | 118.00 | 22 | 2.16 | 252 |
| Nezumia sp. | 48.22 | 1654 | 0.88 | |
| Helicolenus dactylopterus | 29.22 | 316 | 0.53 | |
| Genypterus capensis | 21.90 | 12 | 0.40 | 251 |
| Selachophidium guentheri | 8.44 | 316 | 0.15 | |
| MYCTOPHIDAE | 6.40 | 1654 | 0.12 | |
| Callinectes sp. | 3.52 | 70 | 0.06 | |
| Total | 5465.72 | | 99.99 | |

PROJECT STATION: 211

DATE: 7/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2621
start stop duration Long E 1409
TIME :14:58:00 15:28:00 30 (min) Purpose code: 3
LOG :2384.00 2385.60 1.60 Area code : 1
FDEPTH: 336 327 GearCond code:
BDEPTH: 336 327 Validity code:
Towing dir: 80° Wire out:1050 m Speed: 32 kn*10

Sorted: 209 Kg Total catch: 3590.94 CATCH/HOUR: 7181.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 3479.86 | 6142 | 48.45 | 256 |
| Merluccius capensis, male | 2005.40 | 4736 | 27.92 | 257 |
| Merluccius paradoxus, female | 1056.36 | 5994 | 14.71 | 258 |
| Merluccius paradoxus, male | 255.30 | 1480 | 3.55 | 259 |
| Coelorinchus fasciatus | 222.74 | 3786 | 3.10 | |
| Helicolenus dactylopterus | 64.76 | 740 | 0.90 | |
| Galeus polli | 36.26 | 52 | 0.50 | |
| Lophius vomerinus | 30.20 | 14 | 0.42 | 261 |
| Nezumia sp. | 15.18 | 740 | 0.21 | |
| Callinectes sp. | 6.66 | 112 | 0.09 | |
| Merluccius capensis, juveniles | 6.30 | 148 | 0.09 | 262 |
| Genypterus capensis | 2.86 | 4 | 0.04 | 260 |
| Total | 7181.88 | | 99.98 | |

PROJECT STATION: 212

DATE: 7/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2620
start stop duration Long E 1418
TIME :17:12:00 17:42:00 30 (min) Purpose code: 3
LOG :2391.60 2393.40 1.80 Area code : 1
FDEPTH: 296 288 GearCond code:
BDEPTH: 296 288 Validity code:
Towing dir: 80° Wire out: 950 m Speed: 32 kn*10

Sorted: 163 Kg Total catch: 3264.90 CATCH/HOUR: 6529.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 3203.80 | 10780 | 49.06 | 267 |
| Merluccius capensis, juveniles | 1611.60 | 55334 | 24.68 | 268 |
| Merluccius capensis, male | 1559.20 | 7260 | 23.88 | 266 |
| Lophius vomerinus | 85.00 | 54 | 1.30 | 263 |
| Coelorinchus fasciatus | 46.20 | 936 | 0.71 | |
| Squilla acuelata calmani | 9.90 | 550 | 0.15 | |
| Austroglossus microlepis | 7.10 | 10 | 0.11 | 265 |
| Galeus polli | 2.20 | 110 | 0.03 | |
| Sufflogobius bibarbatus | 1.66 | 716 | 0.03 | |
| Lepidopus caudatus | 1.64 | 56 | 0.03 | |
| Genypterus capensis | 1.50 | 4 | 0.02 | 264 |
| Total | 6529.80 | | 100.00 | |

PROJECT STATION: 213

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2619
start stop duration Long E 1429
TIME :06:40:00 07:00:00 20 (min) Purpose code: 3
LOG :2420.70 2421.80 1.10 Area code : 1
FDEPTH: 268 242 GearCond code:
BDEPTH: 268 242 Validity code:
Towing dir: ° Wire out: 800 m Speed: 35 kn*10

Sorted: 87 Kg Total catch: 167.32 CATCH/HOUR: 501.96

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 234.60 | 1266 | 46.74 | 271 |
| Merluccius capensis, juveniles | 140.70 | 5565 | 28.03 | 272 |
| Merluccius capensis, male | 99.60 | 654 | 19.84 | 270 |
| Lophius vomerinus | 18.84 | 3 | 3.75 | 269 |
| Thyrsites atun | 4.50 | 3 | 0.90 | |
| Chelidonichthys capensis | 1.92 | 6 | 0.38 | |
| Coelorinchus fasciatus | 1.62 | 30 | 0.32 | |
| Todaropsis eblanae | 0.18 | 6 | 0.04 | |
| Total | 501.96 | | 100.00 | |

PROJECT STATION: 214

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2607
start stop duration Long E 1433
TIME :08:40:00 09:10:00 30 (min) Purpose code: 3
LOG :2434.20 2435.70 1.50 Area code : 1
FDEPTH: 185 187 GearCond code:
BDEPTH: 185 187 Validity code:
Towing dir: 310° Wire out: 550 m Speed: 33 kn*10

Sorted: 32 Kg Total catch: 133.00 CATCH/HOUR: 266.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 165.00 | 5012 | 62.03 | 273 |
| Sufflogobius bibarbatus | 78.40 | 15680 | 29.47 | |
| Thyrsites atun | 14.40 | 4 | 5.41 | |
| Callorhinchus capensis | 8.20 | 10 | 3.08 | |
| Total | 266.00 | | 99.99 | |

PROJECT STATION: 215

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 26
start stop duration Long E 1421
TIME :10:42:00 11:12:00 30 (min) Purpose code: 3
LOG :2447.30 2448.90 1.60 Area code : 1
FDEPTH: 200 200 GearCond code:
BDEPTH: 200 200 Validity code:
Towing dir: 265° Wire out: 600 m Speed: 34 kn*10

Sorted: 55 Kg Total catch: 275.70 CATCH/HOUR: 551.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 449.00 | 12656 | 81.43 | 276 |
| Merluccius capensis, female | 41.20 | 460 | 7.47 | 275 |
| Sufflogobius bibarbatus | 37.20 | 9300 | 6.75 | |
| Merluccius capensis, male | 22.40 | 290 | 4.06 | 274 |
| MYCTOPHIDAE | 1.20 | 700 | 0.22 | |
| Maurolicus muelleri | 0.40 | 160 | 0.07 | |
| Total | 551.40 | | 100.00 | |

PROJECT STATION: 216

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2601
start stop duration Long E 1414
TIME :12:27:00 12:57:00 30 (min) Purpose code: 3
LOG :2455.00 2456.70 1.70 Area code : 1
FDEPTH: 251 259 GearCond code:
BDEPTH: 251 259 Validity code:
Towing dir: 265° Wire out: 750 m Speed: 35 kn*10

Sorted: 56 Kg Total catch: 3346.87 CATCH/HOUR: 6693.74

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 3208.20 | 22534 | 47.93 | 277 |
| Merluccius capensis, male | 2283.00 | 19806 | 34.11 | 278 |
| Merluccius capensis, juveniles | 1197.80 | 41850 | 17.89 | 279 |
| Sufflogobius bibarbatus | 4.74 | 1068 | 0.07 | |
| Total | 6693.74 | | 100.00 | |

PROJECT STATION: 217

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2602
start stop duration Long E 1407
TIME :14:16:00 14:46:00 30 (min) Purpose code: 3
LOG :2463.50 2465.30 1.80 Area code : 1
FDEPTH: 281 279 GearCond code:
BDEPTH: 281 279 Validity code:
Towing dir: 355° Wire out: 850 m Speed: 35 kn*10

Sorted: 211 Kg Total catch: 1079.80 CATCH/HOUR: 2159.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1200.00 | 3568 | 55.57 | 282 |
| Merluccius capensis, male | 495.60 | 2346 | 22.95 | 283 |
| Merluccius capensis, juveniles | 266.00 | 8340 | 12.32 | 284 |
| Lophius vomerinus | 109.28 | 92 | 5.06 | 280 |
| Sufflogobius bibarbatus | 23.60 | 3690 | 1.09 | |
| Austroglossus microlepis | 18.10 | 18 | 0.84 | 281 |
| Coelorinchus fasciatus | 17.62 | 194 | 0.82 | |
| Galeus polli | 15.80 | 638 | 0.73 | |
| Squilla acuelata calmani | 8.40 | 306 | 0.39 | |
| Torpedo nobiliana | 3.12 | 2 | 0.14 | |
| MYCTOPHIDAE | 1.80 | 2638 | 0.08 | |
| Lepidopus caudatus | 0.28 | 14 | 0.01 | |
| Total | 2159.60 | | 100.00 | |

PROJECT STATION: 218

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2601
start stop duration Long E 1357
TIME :16:36:00 17:06:00 30 (min) Purpose code: 3
LOG :2477.10 2478.70 1.60 Area code : 1
FDEPTH: 334 336 GearCond code:
BDEPTH: 334 336 Validity code:
Towing dir: 350° Wire out:1000 m Speed: 31 kn*10

Sorted: 292 Kg Total catch: 951.30 CATCH/HOUR: 1902.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1084.20 | 1028 | 56.99 | 287 |
| Merluccius capensis, male | 353.60 | 620 | 18.59 | 286 |
| Merluccius paradoxus, female | 124.70 | 824 | 6.55 | 289 |
| Lophius vomerinus | 111.26 | 48 | 5.85 | 285 |
| Coelorinchus fasciatus | 70.20 | 1284 | 3.69 | |
| PORTUNIDAE | 62.70 | 2132 | 3.30 | |
| Galeus polli | 35.80 | 542 | 1.88 | |
| Helicolenus dactylopterus | 30.40 | 264 | 1.60 | |
| Merluccius paradoxus, male | 18.90 | 144 | 0.99 | 288 |
| Nezumia sp. | 8.80 | 528 | 0.46 | |
| Epigonus denticulatus | 0.64 | 8 | 0.03 | |
| Squilla acuelata calmani | 0.60 | 120 | 0.03 | |
| Selachophidium guentheri | 0.56 | 8 | 0.03 | |
| Todaropsis eblanae | 0.24 | 8 | 0.01 | |
| Total | 1902.60 | | 100.00 | |

PROJECT STATION: 219

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2602
start stop duration Long E 1345
TIME :19:06:00 19:36:00 30 (min) Purpose code: 3
LOG :2491.50 2493.00 1.50 Area code : 1
FDEPTH: 405 415 GearCond code:
BDEPTH: 405 415 Validity code:
Towing dir: 340° Wire out:1200 m Speed: 30 kn*10

Sorted: 90 Kg Total catch: 190.21 CATCH/HOUR: 380.42

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Miscellaneous fishes | 200.00 | | 52.57 | |
| Lophius vomerinus | 91.32 | 32 | 24.01 | 290 |
| Merluccius paradoxus, female | 48.50 | 78 | 12.75 | 294 |
| Genypterus capensis | 22.00 | 12 | 5.78 | 291 |
| Merluccius capensis, female | 14.60 | 6 | 3.84 | 292 |
| Merluccius paradoxus, male | 4.00 | 8 | 1.05 | 293 |
| Total | 380.42 | | 100.00 | |

PROJECT STATION: 220

DATE: 8/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2559
start stop duration Long E 1339
TIME :21:06:00 21:36:00 30 (min) Purpose code: 3
LOG :2501.50 2503.00 1.50 Area code : 1
FDEPTH: 550 550 GearCond code: 8
BDEPTH: 550 550 Validity code: 9
Towing dir: 360° Wire out:1600 m Speed: 30 kn*10

Sorted: 159 Kg Total catch: 267.38 CATCH/HOUR: 534.76

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 245.90 | 212 | 45.98 | 295 |
| Deania calcea | 55.20 | 56 | 10.32 | |
| Lophius vomerinus | 41.90 | 6 | 7.84 | 298 |
| Nezumia sp. | 40.20 | 704 | 7.52 | |
| Raja confundens | 31.20 | 8 | 5.83 | |
| Selachophidium guentheri | 25.36 | 384 | 4.74 | |
| Coelorinchus matamua | 24.16 | 104 | 4.52 | |
| Etmopterus lucifer | 18.80 | 48 | 3.52 | |
| Merluccius capensis, female | 13.20 | 2 | 2.47 | 297 |
| Todarodes sagittatus | 11.04 | 16 | 2.06 | |
| Ebinania costaecanarie | 8.72 | 8 | 1.63 | |
| MAJIDAE | 6.80 | 8 | 1.27 | |
| Raja caudaspinosa | 4.40 | 8 | 0.82 | |
| Trachyrincus scabrus | 3.84 | 24 | 0.72 | |
| Merluccius paradoxus, male | 1.48 | 2 | 0.28 | 296 |
| Scomberesox saurus | 0.80 | 8 | 0.15 | |
| Epigonus denticulatus | 0.72 | 8 | 0.13 | |
| Galeus polli | 0.64 | 16 | 0.12 | |
| Myxine capensis | 0.40 | 8 | 0.07 | |
| Total | 534.76 | | 99.99 | |

PROJECT STATION: 221

DATE: 9/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2542
start stop duration Long E 1335
TIME :04:12:00 04:42:00 30 (min) Purpose code: 3
LOG :2536.60 2538.20 1.60 Area code : 1
FDEPTH: 596 601 GearCond code:
BDEPTH: 596 601 Validity code:
Towing dir: 300° Wire out:1700 m Speed: 33 kn*10

Sorted: 256 Kg Total catch: 306.19 CATCH/HOUR: 612.38

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 448.20 | 374 | 73.19 | 299 |
| Nezumia sp | 72.60 | 1342 | 11.86 | |
| Todarodes sagittatus | 22.62 | 54 | 3.69 | |
| Deania calcea | 20.10 | 18 | 3.28 | |
| Selachophidium guentheri | 18.90 | 276 | 3.09 | |
| Lophius vomerinus | 10.98 | 2 | 1.79 | 301 |
| Hoplostethus cadenati | 4.98 | 612 | 0.81 | |
| Merluccius paradoxus, male | 3.92 | 4 | 0.64 | 300 |
| Epigonus denticulatus | 2.82 | 48 | 0.46 | |
| Galeus polli | 1.86 | 6 | 0.30 | |
| Photichthys argenteus | 1.08 | 120 | 0.18 | |
| Notacanthus sexspinis | 1.08 | 42 | 0.18 | |
| Etmopterus lucifer | 0.90 | 12 | 0.15 | |
| Yarrella blackfordi | 0.84 | 48 | 0.14 | |
| Scomberesox saurus | 0.72 | 6 | 0.12 | |
| Neocyttus rhomboidalis | 0.42 | 6 | 0.07 | |
| Ebinania costaecanarie | 0.36 | 6 | 0.06 | |
| Total | 612.38 | | 100.01 | |

PROJECT STATION: 222

DATE: 9/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2544
start stop duration Long E 1339
TIME :06:43:00 07:13:00 30 (min) Purpose code: 3
LOG :2547.90 2549.40 1.50 Area code : 1
FDEPTH: 465 465 GearCond code:
BDEPTH: 465 465 Validity code:
Towing dir: 350° Wire out:1400 m Speed: 31 kn*10

Sorted: 194 Kg Total catch: 1083.21 CATCH/HOUR: 2166.42

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1942.60 | 3102 | 89.67 | 304 |
| Merluccius paradoxus, male | 143.90 | 238 | 6.64 | 303 |
| Todarodes sagittatus | 24.00 | 56 | 1.11 | |
| Galeus polli | 19.60 | 328 | 0.90 | |
| Helicolenus dactylopterus | 13.40 | 46 | 0.62 | |
| Genypterus capensis | 8.60 | 4 | 0.40 | 302 |
| Selachophidium guentheri | 6.24 | 80 | 0.29 | |
| Nezumia sp | 4.76 | 90 | 0.22 | |
| Beryx splendens | 2.52 | 12 | 0.12 | |
| Photichthys argenteus | 0.80 | 80 | 0.04 | |
| Total | 2166.42 | | 100.01 | |

PROJECT STATION: 223

DATE: 9/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2540
start stop duration Long E 1422
TIME :12:49:00 13:19:00 30 (min) Purpose code: 3
LOG :2594.80 2596.50 1.70 Area code : 1
FDEPTH: 183 181 GearCond code:
BDEPTH: 183 181 Validity code:
Towing dir: 350° Wire out: 600 m Speed: 32 kn*10

Sorted: 27 Kg Total catch: 1116.95 CATCH/HOUR: 2233.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 2186.00 | 74644 | 97.86 | 305 |
| Sufflogobius bibarbatus | 47.90 | 8444 | 2.14 | |
| Total | 2233.90 | | 100.00 | |

PROJECT STATION: 224

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2523
start stop duration Long E 1358
TIME :06:40:00 07:10:00 30 (min) Purpose code: 3
LOG :2678.60 2680.20 1.60 Area code : 1
FDEPTH: 227 220 GearCond code:
BDEPTH: 227 220 Validity code:
Towing dir: 350° Wire out: 650 m Speed: 33 kn*10

Sorted: 165 Kg Total catch: 538.75 CATCH/HOUR: 1077.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 536.00 | 3950 | 49.74 | 307 |
| Merluccius capensis, female | 290.20 | 1372 | 26.93 | 308 |
| Thyrsites atun | 170.20 | 78 | 15.80 | 306 |
| Merluccius capensis, juveniles | 54.30 | 2154 | 5.04 | 309 |
| Trachurus capensis | 12.70 | 80 | 1.18 | |
| Coelorinchus fasciatus | 7.30 | 216 | 0.68 | |
| Sufflogobius bibarbatus | 3.40 | 498 | 0.32 | |
| Austroglossus microlepis | 1.70 | 4 | 0.16 | |
| Lepidopus caudatus | 0.90 | 56 | 0.08 | |
| Todarodes sagittatus | 0.80 | 34 | 0.07 | |
| Total | 1077.50 | | 100.00 | |

PROJECT STATION: 225

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2524
start stop duration Long E 1347
TIME :09:07:00 09:37:00 30 (min) Purpose code: 3
LOG :2693.30 2694.80 1.50 Area code : 1
FDEPTH: 300 320 GearCond code:
BDEPTH: 300 320 Validity code:
Towing dir: 270° Wire out: 850 m Speed: 30 kn*10

Sorted: 147 Kg Total catch: 1503.89 CATCH/HOUR: 3007.78

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1397.40 | 4054 | 46.46 | 312 |
| Merluccius capensis, male | 696.20 | 2500 | 23.15 | 311 |
| Merluccius capensis, juveniles | 465.40 | 19040 | 15.47 | 313 |
| Helicolenus dactylopterus | 146.40 | 2194 | 4.87 | |
| Merluccius paradoxus, female | 85.40 | 434 | 2.84 | 315 |
| Coelorinchus fasciatus | 70.60 | 1734 | 2.35 | |
| Lophius vomerinus | 57.98 | 36 | 1.93 | 310 |
| Trachurus capensis | 25.26 | 52 | 0.84 | 316 |
| Cubiceps caerulus | 22.44 | 102 | 0.75 | |
| Todarodes sagittatus | 12.00 | 26 | 0.40 | |
| Galeus polli | 7.40 | 3214 | 0.25 | |
| Nezumia leonis | 7.20 | 358 | 0.24 | |
| MYCTOPHIDAE | 6.88 | 766 | 0.23 | |
| Chlorophthalmus atlanticus | 2.60 | 358 | 0.09 | |
| PORTUNIDAE | 2.04 | 102 | 0.07 | |
| Merluccius paradoxus, male | 1.30 | 52 | 0.04 | 314 |
| Squilla acuelata calmani | 0.76 | 52 | 0.03 | |
| Todaropsis eblanae | 0.52 | 26 | 0.02 | |
| Total | 3007.78 | | 100.03 | |

PROJECT STATION: 226

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2522
start stop duration Long E 1342
TIME :11:02:00 11:32:00 30 (min) Purpose code: 3
LOG :2700.50 2702.40 1.90 Area code : 1
FDEPTH: 345 337 GearCond code:
BDEPTH: 345 337 Validity code:
Towing dir: 355° Wire out:1000 m Speed: 34 kn*10

Sorted: 177 Kg Total catch: 973.78 CATCH/HOUR: 1947.56

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1291.04 | 1812 | 66.29 | 317 |
| Merluccius capensis, male | 418.28 | 838 | 21.48 | 318 |
| Merluccius paradoxus, female | 154.52 | 782 | 7.93 | 319 |
| Merluccius capensis, juveniles | 22.30 | 804 | 1.15 | 322 |
| Coelorinchus fasciatus | 15.62 | 250 | 0.80 | |
| Lophius vomerinus | 13.66 | 4 | 0.70 | 321 |
| Helicolenus dactylopterus | 12.22 | 136 | 0.63 | |
| Galeus polli | 7.24 | 102 | 0.37 | |
| PHOTICHTHYIDAE | 5.20 | 748 | 0.27 | |
| Merluccius paradoxus, male | 3.28 | 22 | 0.17 | 320 |
| MYCTOPHIDAE | 2.16 | 1280 | 0.11 | |
| Nezumia sp. | 1.48 | 46 | 0.08 | |
| Squilla acuelata calmani | 0.56 | 22 | 0.03 | |
| Total | 1947.56 | | 100.01 | |

PROJECT STATION: 227

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2518
start stop duration Long E 1338
TIME :12:54:00 13:24:00 30 (min) Purpose code: 3
LOG :2710.70 2712.30 1.60 Area code : 1
FDEPTH: 452 455 GearCond code:
BDEPTH: 452 455 Validity code:
Towing dir: 355° Wire out:1300 m Speed: 31 kn*10

Sorted: 142 Kg Total catch: 171.13 CATCH/HOUR: 342.26

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 186.10 | 308 | 54.37 | 325 |
| Galeus polli | 42.40 | 1016 | 12.39 | |
| Merluccius capensis, female | 29.00 | 16 | 8.47 | 323 |
| Hoplostethus cadenati | 16.64 | 682 | 4.86 | |
| Nezumia sp. | 13.48 | 586 | 3.94 | |
| Deepwater fish mixture | 12.32 | | 3.60 | |
| Selachophidium guentheri | 8.88 | 172 | 2.59 | |
| Notacanthus sexspinis | 8.52 | 264 | 2.49 | |
| Helicolenus dactylopterus | 5.64 | 28 | 1.65 | |
| Genypterus capensis | 4.10 | 2 | 1.20 | 328 |
| Trachipterus jacksonensis | 3.40 | 2 | 0.99 | |
| Lophius vomerinus | 2.90 | 2 | 0.85 | 327 |
| Merluccius paradoxus, male | 2.10 | 12 | 0.61 | 326 |
| Tripterophycis gilchristi | 1.64 | 220 | 0.48 | |
| GONOSTOMATIDAE | 1.60 | 80 | 0.47 | |
| Merluccius capensis, male | 1.30 | 2 | 0.38 | 324 |
| Todarodes sagittatus | 0.92 | 4 | 0.27 | |
| Epigonus denticulatus | 0.48 | 4 | 0.14 | |
| Ebinania costaecanarie | 0.36 | 8 | 0.11 | |
| MYCTOPHIDAE | 0.32 | 44 | 0.09 | |
| Coelorinchus fasciatus | 0.16 | 4 | 0.05 | |
| Total | 342.26 | | 100.00 | |

PROJECT STATION: 228

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2515
start stop duration Long E 1325
TIME :14:52:00 15:22:00 30 (min) Purpose code: 3
LOG :2717.60 2719.50 1.90 Area code : 1
FDEPTH: 550 554 GearCond.code:
BDEPTH: 550 554 Validity code:
Towing dir: 360° Wire out:1600 m Speed: 33 kn*10

Sorted: 294 Kg Total catch: 459.75 CATCH/HOUR: 919.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 475.40 | 592 | 51.70 | 329 |
| Hoplostethus cadenati | 144.76 | 7824 | 15.74 | |
| Nezumia sp. | 67.34 | 1182 | 7.32 | |
| Todarodes sagittatus | 60.06 | 140 | 6.53 | |
| Selachophidium guentheri | 34.58 | 504 | 3.76 | |
| Lophius vomerinus | 32.90 | 4 | 3.58 | 331 |
| Merluccius paradoxus, male | 26.20 | 38 | 2.85 | 330 |
| Epigonus denticulatus | 23.52 | 364 | 2.56 | |
| Deania calcea | 17.50 | 14 | 1.90 | |
| ATELEOPODIDAE | 16.24 | 882 | 1.77 | |
| Coelorinchus matamua | 9.24 | 70 | 1.00 | |
| Trachyrincus scabrus | 4.34 | 70 | 0.47 | |
| Etmopterus lucifer | 4.20 | 14 | 0.46 | |
| Galeus polli | 2.24 | 28 | 0.24 | |
| Notacanthus sexspinis | 0.98 | 56 | 0.11 | |
| Total | 919.50 | | 99.99 | |

PROJECT STATION: 229

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2505
start stop duration Long E 1340
TIME :17:10:00 17:40:00 30 (min) Purpose code: 3
LOG :2730.60 2732.10 1.50 Area code : 1
FDEPTH: 400 401 GearCond.code:
BDEPTH: 400 401 Validity code:
Towing dir: 5° Wire out:1200 m Speed: 30 kn*10

Sorted: 233 Kg Total catch: 410.92 CATCH/HOUR: 821.84

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Galeus polli | 236.00 | 2896 | 28.72 | |
| Merluccius capensis, female | 227.60 | 100 | 27.69 | 334 |
| Lophius vomerinus | 85.20 | 36 | 10.37 | 332 |
| Merluccius paradoxus, female | 74.60 | 96 | 9.08 | 336 |
| Helicolenus dactylopterus | 51.52 | 512 | 6.27 | |
| Krill | 32.00 | | 3.89 | |
| Todarodes sagittatus | 23.68 | 48 | 2.88 | |
| Selachophidium guentheri | 18.72 | 352 | 2.28 | |
| Raja confundens | 12.00 | 10 | 1.46 | |
| Notacanthus sexspinis | 11.20 | 304 | 1.36 | |
| Coelorinchus fasciatus | 11.04 | 192 | 1.34 | |
| Nezumia micronychodon | 8.48 | 320 | 1.03 | |
| Torpedo nobiliana | 7.00 | 2 | 0.85 | |
| Merluccius paradoxus, male | 5.00 | 8 | 0.61 | 335 |
| MYCTOPHIDAE | 4.80 | | 0.58 | |
| Merluccius capensis, male | 3.60 | 4 | 0.44 | 333 |
| Epigonus denticulatus | 3.04 | 144 | 0.37 | |
| Genypterus capensis | 2.20 | 2 | 0.27 | |
| MELANOSTOMIATIDAE | 1.28 | 16 | 0.16 | |
| Squilla acuelata calmani | 1.12 | 80 | 0.14 | |
| Shrimps, small, non comm. | 0.96 | 192 | 0.12 | |
| Maurolicus muelleri | 0.80 | | 0.10 | |
| Total | 821.84 | | 100.01 | |

PROJECT STATION: 230

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2502
start stop duration Long E 1336
TIME :19:19:00 19:49:00 30 (min) Purpose code: 3
LOG :2738.30 2739.70 1.40 Area code : 1
FDEPTH: 500 500 GearCond.code:
BDEPTH: 500 500 Validity code:
Towing dir: 360° Wire out:1450 m Speed: 30 kn*10

Sorted: 204 Kg Total catch: 371.69 CATCH/HOUR: 743.38

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 312.00 | 506 | 41.97 | 340 |
| Hoplostethus cadenati | 96.04 | 3946 | 12.92 | |
| Raja confundens | 70.00 | 56 | 9.42 | |
| Todarodes sagittatus | 59.92 | 182 | 8.06 | |
| Selachophidium guentheri | 40.04 | 574 | 5.39 | |
| Galeus polli | 31.92 | 364 | 4.29 | |
| Ebinania costaecanarie | 24.50 | 70 | 3.30 | |
| Centroscymnus crepidater | 20.30 | 14 | 2.73 | |
| Lophius vomerinus | 20.28 | 4 | 2.73 | 337 |
| Deania calcea | 17.92 | 28 | 2.41 | |
| Nezumia micronychodon | 14.00 | 434 | 1.88 | |
| Lithodes ferox | 10.80 | 18 | 1.45 | |
| Merluccius paradoxus, male | 7.90 | 12 | 1.06 | 339 |
| MYCTOPHIDAE | 7.00 | | 0.94 | |
| Shrimps, small, non comm | 5.60 | | 0.75 | |
| Cubiceps caerulus | 2.52 | 28 | 0.34 | |
| Merluccius capensis, female | 1.80 | 2 | 0.24 | 338 |
| Trachyrincus scabrus | 0.56 | 14 | 0.08 | |
| Epigonus denticulatus | 0.14 | 14 | 0.02 | |
| Squilla acuelata calmani | 0.14 | 28 | 0.02 | |
| Total | 743.38 | | 100.00 | |

PROJECT STATION: 231

DATE:10/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2459
start stop duration Long E 1333
TIME :20:52:00 21:22:00 30 (min) Purpose code: 3
LOG :2744.80 2746.20 1.60 Area code : 1
FDEPTH: 600 600 GearCond.code:
BDEPTH: 600 600 Validity code:
Towing dir: 360° Wire out:1700 m Speed: 30 kn*10

Sorted: 340 Kg Total catch: 557.65 CATCH/HOUR: 1115.30

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 618.20 | 660 | 55.43 | 342 |
| Trachyrincus scabrus | 245.00 | 560 | 21.97 | |
| Nezumia micronychodon | 67.40 | 1460 | 6.04 | |
| Selachophidium guentheri | 44.00 | 700 | 3.95 | |
| Dicrolene intronigra | 28.20 | 460 | 2.53 | |
| Deania calcea | 26.20 | 20 | 2.35 | |
| Todarodes sagittatus | 23.60 | 40 | 2.12 | |
| Yarrella blackfordi | 22.00 | 1420 | 1.97 | |
| Merluccius paradoxus, male | 14.50 | 18 | 1.30 | 341 |
| Hoplostethus cadenati | 13.00 | 440 | 1.17 | |
| Allocyttus verrucosus | 6.60 | 100 | 0.59 | |
| Raja confundens | 4.20 | 20 | 0.38 | |
| Shrimps, small, non comm | 1.60 | 460 | 0.14 | |
| MYCTOPHIDAE | 0.80 | 140 | 0.07 | |
| Total | 1115.30 | | 100.01 | |

PROJECT STATION: 232

DATE:11/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2503
start stop duration Long E 1347
TIME :06:45:00 07:05:00 20 (min) Purpose code: 3
LOG :2780.40 2781.40 1.00 Area code : 1
FDEPTH: 247 250 GearCond.code:
BDEPTH: 247 250 Validity code:
Towing dir: 350° Wire out: 700 m Speed: 30 kn*10

Sorted: 93 Kg Total catch: 384.01 CATCH/HOUR: 1152.03

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 456.00 | 2115 | 39.58 | 343 |
| Merluccius capensis, female | 323.70 | 1872 | 28.10 | 344 |
| Merluccius capensis, juveniles | 154.20 | 7998 | 13.39 | 346 |
| Merluccius capensis, male | 154.20 | 1098 | 13.39 | 345 |
| Coelorinchus fasciatus | 18.60 | 465 | 1.61 | |
| Lophius vomerinus | 15.45 | 18 | 1.34 | 347 |
| Todarodes sagittatus | 14.19 | 12 | 1.23 | |
| Sufflogobius bibarbatus | 10.20 | 1614 | 0.89 | |
| Helicolenus dactylopterus | 2.97 | 51 | 0.26 | |
| Austroglossus microlepis | 2.52 | 3 | 0.22 | 348 |
| Total | 1152.03 | | 100.01 | |

PROJECT STATION: 233

DATE:11/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2501
start stop duration Long E 1353
TIME :08:40:00 09:10:00 30 (min) Purpose code: 3
LOG :2789.30 2790.80 1.50 Area code : 1
FDEPTH: 188 185 GearCond.code:
BDEPTH: 188 185 Validity code:
Towing dir: 20° Wire out: 20 m Speed: 32 kn*10

Sorted: 86 Kg Total catch: 215.50 CATCH/HOUR: 431.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 178.80 | 4804 | 41.48 | 351 |
| Sufflogobius bibarbatus | 174.00 | 12770 | 40.37 | |
| Merluccius capensis, female | 45.00 | 380 | 10.44 | 349 |
| Merluccius capensis, male | 33.20 | 330 | 7.70 | 350 |
| Total | 431.00 | | 99.99 | |

PROJECT STATION: 234

DATE:11/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2450
start stop duration Long E 1357
TIME :10:42:00 11:12:00 30 (min) Purpose code: 3
LOG :2801.20 2802.70 1.50 Area code : 2
FDEPTH: 160 165 GearCond.code:
BDEPTH: 160 165 Validity code:
Towing dir: 350° Wire out: 480 m Speed: 30 kn*10

Sorted: 54 Kg Total catch: 273.60 CATCH/HOUR: 547.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 263.00 | 2140 | 48.06 | 353 |
| Merluccius capensis, male | 199.00 | 1330 | 36.37 | 352 |
| Merluccius capensis, juveniles | 46.60 | 1180 | 8.52 | 354 |
| Trachurus capensis | 33.30 | 220 | 6.09 | 355 |
| Sufflogobius bibarbatus | 5.30 | 600 | 0.97 | |
| Total | 547.20 | | 100.01 | |

PROJECT STATION: 235

DATE:11/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2443
start stop duration Long E 1353
TIME :12:39:00 13:09:00 30 (min) Purpose code: 3
LOG :2811.20 2813.00 1.80 Area code : 2
FDEPTH: 226 228 GearCond.code:
BDEPTH: 226 228 Validity code:
Towing dir: 360° Wire out: 750 m Speed: 35 kn*10

Sorted: 78 Kg Total catch: 769.89 CATCH/HOUR: 1539.78

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 781.06 | 7050 | 50.73 | 357 |
| Merluccius capensis, male | 401.80 | 3978 | 26.09 | 356 |
| Merluccius capensis, juveniles | 200.90 | 6448 | 13.05 | 358 |
| Sufflogobius bibarbatus | 156.02 | 14876 | 10.13 | |
| Total | 1539.78 | | 100.00 | |

PROJECT STATION: 236

DATE:11/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2442
start stop duration Long E 1343
TIME :15:12:00 15:42:00 30 (min) Purpose code: 3
LOG :2825.70 2827.50 1.80 Area code : 2
FDEPTH: 366 363 GearCond.code:
BDEPTH: 366 363 Validity code:
Towing dir: 350° Wire out:1200 m Speed: 32 kn*10

Sorted: 337 Kg Total catch: 456.37 CATCH/HOUR: 912.74

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 305.70 | 412 | 33.49 | 360 |
| Lophius vomerinus | 146.98 | 46 | 16.10 | 363 |
| Merluccius capensis, male | 107.00 | 252 | 11.72 | 359 |
| Helicolenus dactylopterus | 71.40 | 620 | 7.82 | |
| Merluccius capensis, juveniles | 52.02 | 2038 | 5.70 | 366 |
| Ebinania costaecanarie | 44.10 | 56 | 4.83 | |
| Todarodes sagittatus | 34.44 | 112 | 3.77 | |
| Merluccius paradoxus, female | 29.80 | 68 | 3.26 | 362 |
| Merluccius capensis, female | 27.58 | 232 | 3.02 | 364 |
| Coelorinchus fasciatus | 24.16 | 574 | 2.65 | |
| Nezumia sp | 22.40 | 686 | 2.45 | |
| Merluccius capensis, male | 19.40 | 176 | 2.13 | 365 |
| Galeus polli | 11.34 | 162 | 1.24 | |
| Merluccius paradoxus, female | 6.44 | 36 | 0.71 | 367 |
| Merluccius paradoxus, male | 5.90 | 14 | 0.65 | 361 |
| Selachophidium guentheri | 2.38 | 56 | 0.26 | |
| Notacanthus sexspinis | 1.06 | 50 | 0.12 | |
| Merluccius paradoxus, male | 0.64 | 8 | 0.07 | 368 |
| Total | 912.74 | | 99.99 | |

PROJECT STATION: 237

DATE:11/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2443
start stop duration Long E 1336
TIME :17:13:00 17:43:00 30 (min) Purpose code: 3
LOG :2837.20 2839.00 1.80 Area code : 2
FDEPTH: 416 411 GearCond.code:
BDEPTH: 416 411 Validity code:
Towing dir: 350° Wire out:1300 m Speed: 34 kn*10

Sorted: 229 Kg Total catch: 372.11 CATCH/HOUR: 744.22

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Galeus polli | 232.20 | 3770 | 31.20 | |
| Merluccius capensis, female | 202.00 | 70 | 27.14 | 372 |
| Merluccius paradoxus, female | 126.40 | 222 | 16.98 | 374 |
| Helicolenus dactylopterus | 61.68 | 552 | 8.29 | |
| Lophius vomerinus | 27.48 | 14 | 3.69 | 369 |
| Todarodes sagittatus | 26.40 | 60 | 3.55 | |
| Merluccius capensis, male | 16.80 | 8 | 2.26 | 371 |
| Raja confundens | 15.00 | 12 | 2.02 | |
| Selachophidium guentheri | 6.48 | 96 | 0.87 | |
| Trachyrincus scabrus | 5.52 | 48 | 0.74 | |
| Nezumia micronychodon | 5.40 | 48 | 0.73 | |
| Hexanchus griseus | 4.20 | 2 | 0.56 | |
| Genypterus capensis | 4.20 | 2 | 0.56 | 370 |
| Epigonus denticulatus | 3.60 | 144 | 0.48 | |
| Merluccius paradoxus, male | 3.60 | 8 | 0.48 | 373 |
| Lithodes ferox | 1.70 | 6 | 0.23 | |
| MYCTOPHIDAE | 1.20 | | 0.16 | |
| Coelorinchus fasciatus | 0.24 | 24 | 0.03 | |
| Notacanthus sexspinis | 0.12 | 12 | 0.02 | |
| Total | 744.22 | | 99.99 | |

PROJECT STATION: 238

DATE:11/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2438
start stop duration Long E 1325
TIME :19:53:00 20:23:00 30 (min) Purpose code: 3
LOG :2851.40 2852.70 1.30 Area code : 2
FDEPTH: 620 607 GearCond.code:
BDEPTH: 620 607 Validity code:
Towing dir: 340° Wire out:1800 m Speed: 29 kn*10

Sorted: 339 Kg Total catch: 644.99 CATCH/HOUR: 1289.98

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 613.62 | 520 | 47.57 | 375 |
| Deania calcea | 365.20 | 198 | 28.31 | |
| Todarodes sagittatus | 95.26 | 198 | 7.38 | |
| Hoplostethus cadenati | 70.62 | 3278 | 5.47 | |
| Nezumia sp. | 63.58 | 1320 | 4.93 | |
| Selachophidium guentheri | 20.46 | 286 | 1.59 | |
| Etmopterus lucifer | 19.14 | 66 | 1.48 | |
| Coelorinchus matamua | 10.78 | 44 | 0.84 | |
| MYCTOPHIDAE | 7.04 | 1232 | 0.55 | |
| Coelorinchus braueri | 4.84 | 88 | 0.38 | |
| Galeus polli | 4.40 | 88 | 0.34 | |
| RAJIDAE | 3.52 | 22 | 0.27 | |
| Tripterophycis gilchristi | 3.30 | 120 | 0.26 | |
| Lophius vomerinus | 2.92 | 2 | 0.23 | 377 |
| Shrimps, small, non comm. | 1.98 | 528 | 0.15 | |
| Merluccius paradoxus, male | 1.56 | 2 | 0.12 | 376 |
| Photichthys argenteus | 0.66 | 110 | 0.05 | |
| Notacanthus sexspinis | 0.66 | 22 | 0.05 | |
| Sepia sp | 0.44 | 44 | 0.03 | |
| Total | 1289.98 | | 100.00 | |

PROJECT STATION: 239

DATE:11/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2431
start stop duration Long E 1320
TIME :21:34:00 21:49:00 15 (min) Purpose code: 3
LOG :2858.80 2859.60 0.80 Area code : 2
FDEPTH: 690 696 GearCond.code:
BDEPTH: 690 696 Validity code:
Towing dir: 340° Wire out:1950 m Speed: 31 kn*10

Sorted: 94 Kg Total catch: 207.55 CATCH/HOUR: 830.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 206.20 | 180 | 24.84 | 378 |
| Neocyttus rhomboidalis | 168.00 | 440 | 20.24 | |
| Deania calcea | 107.00 | 60 | 12.89 | |
| Todarodes sagittatus | 61.40 | 160 | 7.40 | |
| Hoplostethus cadenati | 57.80 | 2240 | 6.96 | |
| Hoplostethus atlanticus | 57.60 | 80 | 6.94 | 379 |
| Trachyrincus scabrus | 47.40 | 280 | 5.71 | |
| Nezumia sp | 44.80 | 1500 | 5.40 | |
| Deepwater fish mixture | 39.60 | | 4.77 | |
| Trachyscorpia capensis | 25.80 | 20 | 3.11 | |
| Raja confundens | 6.40 | 20 | 0.77 | |
| Selachophidium guentheri | 4.20 | 60 | 0.51 | |
| Photichthys argenteus | 3.60 | 240 | 0.43 | |
| GONOSTOMATIDAE | 0.40 | 20 | 0.05 | |
| Total | 830.20 | | 100.02 | |

PROJECT STATION: 240

DATE:12/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2425
start stop duration Long E 1327
TIME :06:45:00 07:15:00 30 (min) Purpose code: 3
LOG :2885.50 2887.20 1.70 Area code : 2
FDEPTH: 375 367 GearCond.code:
BDEPTH: 375 367 Validity code:
Towing dir: 360° Wire out:1100 m Speed: 32 kn*10

Sorted: 191 Kg Total catch: 742.16 CATCH/HOUR: 1484.32

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 544.80 | 288 | 36.70 | 383 |
| Merluccius paradoxus, female | 531.20 | 864 | 35.79 | 385 |
| Deania calcea | 75.60 | 80 | 5.09 | |
| Helicolenus dactylopterus | 63.60 | 568 | 4.28 | |
| Merluccius capensis, male | 52.80 | 40 | 3.56 | 382 |
| Todarodes sagittatus | 36.80 | 104 | 2.48 | |
| Merluccius paradoxus, male | 31.60 | 48 | 2.13 | 384 |
| Raja confundens | 31.20 | 16 | 2.10 | |
| Coelorinchus fasciatus | 26.00 | 288 | 1.75 | |
| Neocyttus rhomboidalis | 24.24 | 72 | 1.63 | |
| Galeus polli | 14.56 | 200 | 0.98 | |
| Epigonus denticulatus | 13.20 | 440 | 0.89 | |
| Lophius vomerinus | 12.58 | 8 | 0.85 | 380 |
| MYCTOPHIDAE | 8.00 | | 0.54 | |
| Trachurus capensis | 4.40 | 8 | 0.30 | 386 |
| Nezumia micronychodon | 4.00 | 144 | 0.27 | |
| Genypterus capensis | 2.30 | 2 | 0.15 | 381 |
| Selachophidium guentheri | 2.24 | 32 | 0.15 | |
| Yarrella blackfordi | 1.60 | | 0.11 | |
| Etmopterus pusillus | 1.28 | 8 | 0.09 | |
| Krill | 1.20 | | 0.08 | |
| Coelorinchus braueri | 0.88 | 16 | 0.06 | |
| Notacanthus sexspinis | 0.24 | 16 | 0.02 | |
| Total | 1484.32 | | 100.00 | |

PROJECT STATION: 241

DATE:12/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2424
start stop duration Long E 1334
TIME :09:06:00 09:36:00 30 (min) Purpose code: 3
LOG :2895.70 2897.20 1.50 Area code : 2
FDEPTH: 340 340 GearCond.code:
BDEPTH: 340 340 Validity code:
Towing dir: 50° Wire out: 950 m Speed: 30 kn*10

Sorted: 186 Kg Total catch: 851.92 CATCH/HOUR: 1703.84

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 797.50 | 2880 | 46.81 | 392 |
| Merluccius capensis, female | 635.00 | 512 | 37.27 | 390 |
| Merluccius capensis, male | 49.30 | 58 | 2.89 | 389 |
| Merluccius paradoxus, male | 42.60 | 184 | 2.50 | 391 |
| Coelorinchus fasciatus | 28.04 | 436 | 1.65 | |
| Trachurus capensis | 26.40 | 48 | 1.55 | 393 |
| Selachophidium guentheri | 24.16 | 38 | 1.42 | |
| Todarodes sagittatus | 22.32 | 48 | 1.31 | |
| Epigonus denticulatus | 19.80 | 764 | 1.16 | |
| Lophius vomerinus | 19.52 | 14 | 1.15 | 387 |
| Genypterus capensis | 10.70 | 8 | 0.63 | 388 |
| MYCTOPHIDAE | 9.60 | | 0.56 | |
| Nezumia sp. | 8.50 | 280 | 0.50 | |
| Galeus polli | 6.20 | 126 | 0.36 | |
| Krill | 2.40 | | 0.14 | |
| Guentherus altivela | 1.50 | 10 | 0.09 | |
| PORTUNIDAE | 0.30 | 10 | 0.02 | |
| Total | 1703.84 | | 100.01 | |

PROJECT STATION: 242

DATE:12/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2423
start stop duration Long E 1343
TIME :11:19:00 11:34:00 15 (min) Purpose code: 2
LOG :2906.40 2907.30 0.90 Area code : 3
FDEPTH: 320 315 GearCond.code: 3
BDEPTH: 320 315 Validity code:
Towing dir: 60° Wire out: 950 m Speed: 36 kn*10

Sorted: 187 Kg Total catch: 659.69 CATCH/HOUR: 2638.76

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1497.76 | 3452 | 56.76 | 396 |
| Merluccius capensis, male | 524.00 | 1936 | 19.86 | 397 |
| Merluccius capensis, juveniles | 265.36 | 10220 | 10.06 | 395 |
| Merluccius paradoxus, female | 84.16 | 524 | 3.19 | 398 |
| Coelorinchus fasciatus | 73.52 | 816 | 2.79 | |
| Helicolenus dactylopterus | 47.40 | 976 | 1.80 | |
| Lophius vomerinus | 46.52 | 44 | 1.76 | 400 |
| Todarodes sagittatus | 31.20 | 76 | 1.18 | |
| MYCTOPHIDAE | 30.00 | 12200 | 1.14 | |
| Merluccius paradoxus, male | 18.92 | 104 | 0.72 | 399 |
| Trachurus capensis | 9.32 | 16 | 0.35 | |
| Nezumia sp. | 3.76 | 316 | 0.14 | |
| Genypterus capensis | 3.36 | 4 | 0.13 | 394 |
| Epigonus denticulatus | 3.16 | 212 | 0.12 | |
| Chlorophthalmus atlanticus | 0.32 | 32 | 0.01 | |
| Total | 2638.76 | | 100.01 | |

PROJECT STATION: 243

DATE:12/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2423
start stop duration Long E 1353
TIME :13:34:00 14:04:00 30 (min) Purpose code: 3
LOG :2919.70 2921.40 1.70 Area code : 2
FDEPTH: 271 273 GearCond.code:
BDEPTH: 271 273 Validity code:
Towing dir: 350° Wire out: 850 m Speed: 33 kn*10

Sorted: 117 Kg Total catch: 1856.78 CATCH/HOUR: 3713.56

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 1120.90 | 43472 | 30.18 | 403 |
| Trachurus capensis | 1092.06 | 6816 | 29.41 | 404 |
| Merluccius capensis, female | 773.48 | 6942 | 20.83 | 401 |
| Merluccius capensis, male | 640.34 | 7164 | 17.24 | 402 |
| Sufflogobius bibarbatus | 54.20 | 3488 | 1.46 | |
| Todarodes sagittatus | 19.60 | 32 | 0.53 | |
| Coelorinchus fasciatus | 7.60 | 158 | 0.20 | |
| Pterothrissus belloci | 4.44 | 32 | 0.12 | |
| Squilla acuelata calmani | 0.94 | 64 | 0.03 | |
| Total | 3713.56 | | 100.00 | |

PROJECT STATION: 244

DATE:12/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2421
start stop duration Long E 1357
TIME :15:27:00 15:57:00 30 (min) Purpose code: 3
LOG :2928.80 2930.60 1.80 Area code : 2
FDEPTH: 233 236 GearCond.code:
BDEPTH: 233 236 Validity code:
Towing dir: 360° Wire out: 750 m Speed: 35 kn*10

Sorted: 29 Kg Total catch: 1686.06 CATCH/HOUR: 3372.12

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1432.60 | 16240 | 42.48 | 405 |
| Merluccius capensis, male | 1339.80 | 16936 | 39.73 | 406 |
| Merluccius capensis, juveniles | 599.72 | 19140 | 17.78 | 407 |
| Total | 3372.12 | | 99.99 | |

PROJECT STATION: 245

DATE:12/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2416
start stop duration Long E 1405
TIME :17:10:00 17:40:00 30 (min) Purpose code: 3
LOG :2939.80 2941.60 1.80 Area code : 2
FDEPTH: 148 146 GearCond.code:
BDEPTH: 148 146 Validity code:
Towing dir: 10° Wire out: 550 m Speed: 36 kn*10

Sorted: 18 Kg Total catch: 91.55 CATCH/HOUR: 183.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 161.50 | 6542 | 88.20 | 410 |
| Merluccius capensis, male | 10.80 | 160 | 5.90 | 408 |
| Merluccius capensis, female | 10.40 | 150 | 5.68 | 409 |
| Sufflogobius bibarbatus | 0.40 | 150 | 0.22 | |
| Total | 183.10 | | 100.00 | |

PROJECT STATION: 246

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2403
start stop duration Long E 1408
TIME :06:38:00 07:08:00 30 (min) Purpose code: 3
LOG :2977.20 2978.70 1.50 Area code : 2
FDEPTH: 140 145 GearCond code:
BDEPTH: 140 145 Validity code:
Towing dir: 320° Wire out: 500 m Speed: 29 kn*10

Sorted: 19 Kg Total catch: 79.20 CATCH/HOUR: 158.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 158.40 | 5478 | 100.00 | 411 |
| Total | 158.40 | | 100.00 | |

PROJECT STATION: 247

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2402
start stop duration Long E 1358
TIME :08:30:00 09:00:00 30 (min) Purpose code: 3
LOG :2987.90 2989.40 1.50 Area code : 2
FDEPTH: 215 222 GearCond code:
BDEPTH: 215 222 Validity code:
Towing dir: 270° Wire out: 630 m Speed: 31 kn*10

Sorted: 55 Kg Total catch: 871.55 CATCH/HOUR: 1743.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 768.00 | 6528 | 44.06 | 414 |
| Merluccius capensis, male | 518.40 | 5664 | 29.74 | 413 |
| Trachurus capensis | 179.34 | 1184 | 10.29 | 416 |
| Merluccius capensis, juveniles | 136.00 | 4320 | 7.80 | 415 |
| Chelidonichthys capensis | 83.84 | 192 | 4.81 | |
| Callorhinchus capensis | 38.40 | 32 | 2.20 | |
| Sufflogobius bibarbatus | 10.88 | 2240 | 0.62 | |
| Coelorinchus fasciatus | 4.48 | 32 | 0.26 | |
| Todaropsis eblanae | 2.56 | 96 | 0.15 | |
| Austroglossus microlepis | 1.34 | 4 | 0.08 | 412 |
| Total | 1743.24 | | 100.01 | |

PROJECT STATION: 248

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2402
start stop duration Long E 1346
TIME :10:35:00 11:05:00 30 (min) Purpose code: 3
LOG :3000.10 3001.50 1.40 Area code : 2
FDEPTH: 250 253 GearCond code:
BDEPTH: 250 253 Validity code:
Towing dir: 270° Wire out: 720 m Speed: 32 kn*10

Sorted: 126 Kg Total catch: 932.08 CATCH/HOUR: 1864.16

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 677.16 | 4206 | 36.33 | 422 |
| Merluccius capensis, juveniles | 552.46 | 22978 | 29.64 | 423 |
| Merluccius capensis, male | 420.50 | 3510 | 22.56 | 421 |
| Merluccius capensis, female | 94.60 | 68 | 5.07 | 419 |
| Coelorinchus fasciatus | 26.68 | 1190 | 1.43 | |
| Trachurus capensis | 25.24 | 116 | 1.35 | 424 |
| Trachipterus jacksonensis | 20.00 | 8 | 1.07 | |
| Todarodes sagittatus | 13.64 | 30 | 0.73 | |
| Thyrsites atun | 11.20 | 2 | 0.60 | 417 |
| Sufflogobius bibarbatus | 5.80 | 610 | 0.31 | |
| Galeus polli | 5.22 | 696 | 0.28 | |
| Lophius vomerinus | 4.30 | 16 | 0.23 | 418 |
| Merluccius capensis, male | 3.30 | 4 | 0.18 | 420 |
| Helicolenus dactylopterus | 1.74 | 58 | 0.09 | |
| MYCTOPHIDAE | 1.16 | 812 | 0.06 | |
| Todaropsis eblanae | 1.16 | 58 | 0.06 | |
| Total | 1864.16 | | 99.99 | |

PROJECT STATION: 249

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2401
start stop duration Long E 1337
TIME :12:25:00 12:55:00 30 (min) Purpose code: 3
LOG :3009.50 3011.30 1.80 Area code : 2
FDEPTH: 267 269 GearCond code:
BDEPTH: 267 269 Validity code:
Towing dir: 280° Wire out: 850 m Speed: 38 kn*10

Sorted: 141 Kg Total catch: 1808.00 CATCH/HOUR: 3616.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 2032.24 | 70672 | 56.20 | 430 |
| Merluccius capensis, female | 478.80 | 2872 | 13.24 | 428 |
| Merluccius capensis, male | 367.08 | 2340 | 10.15 | 429 |
| Helicolenus dactylopterus | 175.00 | 5692 | 4.84 | |
| Merluccius capensis, female | 122.90 | 104 | 3.40 | 425 |
| Trachipterus jacksonensis | 110.64 | 54 | 3.06 | |
| Trachurus capensis | 102.14 | 212 | 2.82 | 431 |
| Galeus polli | 79.80 | 2288 | 2.21 | |
| Coelorinchus fasciatus | 61.18 | 1916 | 1.69 | |
| Todarodes sagittatus | 34.00 | 54 | 0.94 | |
| Merluccius capensis, male | 27.90 | 30 | 0.77 | 426 |
| Sufflogobius bibarbatus | 10.20 | 958 | 0.28 | |
| Lepidopus caudatus | 9.04 | 54 | 0.25 | |
| Lophius vomerinus | 2.88 | 4 | 0.08 | 427 |
| Chlorophthalmus atlanticus | 2.20 | 320 | 0.06 | |
| Total | 3616.00 | | 99.99 | |

PROJECT STATION: 250

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2401
start stop duration Long E 1330
TIME :14:18:00 14:48:00 30 (min) Purpose code: 3
LOG :3018.50 3020.40 1.90 Area code : 2
FDEPTH: 276 273 GearCond code:
BDEPTH: 276 273 Validity code:
Towing dir: 360° Wire out: 900 m Speed: 36 kn*10

Sorted: 281 Kg Total catch: 958.55 CATCH/HOUR: 1917.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 485.98 | 19426 | 25.35 | 437 |
| Trachurus capensis | 402.82 | 1584 | 21.01 | 438 |
| Merluccius capensis, female | 267.90 | 84 | 13.97 | 432 |
| Helicolenus dactylopterus | 194.88 | 4872 | 10.17 | |
| Merluccius capensis, male | 190.70 | 992 | 9.95 | 436 |
| Merluccius capensis, female | 164.78 | 904 | 8.60 | 435 |
| Merluccius capensis, male | 92.50 | 114 | 4.82 | 433 |
| Coelorinchus fasciatus | 66.12 | 1532 | 3.45 | |
| Lophius vomerinus | 23.70 | 20 | 1.24 | 434 |
| Galeus polli | 17.92 | 626 | 0.93 | |
| Chlorophthalmus atlanticus | 4.18 | 556 | 0.22 | |
| Brama brama | 3.88 | 2 | 0.20 | |
| Sufflogobius bibarbatus | 1.74 | 174 | 0.09 | |
| Total | 1917.10 | | 100.00 | |

PROJECT STATION: 251

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2402
start stop duration Long E 1323
TIME :15:21:00 15:51:00 30 (min) Purpose code: 3
LOG :3029.20 3031.00 1.80 Area code : 2
FDEPTH: 291 291 GearCond code:
BDEPTH: 291 291 Validity code:
Towing dir: 360° Wire out: 900 m Speed: 35 kn*10

Sorted: 500 Kg Total catch: 1349.26 CATCH/HOUR: 2698.52

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 980.80 | 2560 | 36.35 | 445 |
| Merluccius capensis, male | 544.40 | 294 | 20.17 | 440 |
| Helicolenus dactylopterus | 358.40 | 9190 | 13.28 | |
| Merluccius capensis, female | 327.20 | 410 | 12.13 | 439 |
| Merluccius capensis, juveniles | 255.68 | 10944 | 9.47 | 443 |
| Galeus polli | 114.24 | 4576 | 4.23 | |
| Coelorinchus fasciatus | 82.24 | 2720 | 3.05 | |
| Lophius vomerinus | 12.32 | 12 | 0.46 | 441 |
| Chlorophthalmus atlanticus | 7.68 | 928 | 0.28 | |
| Beryx splendens | 6.72 | 64 | 0.25 | |
| Lepidopus caudatus | 4.16 | 32 | 0.15 | |
| Scomber japonicus | 3.90 | 2 | 0.14 | |
| Merluccius paradoxus, female | 0.78 | 6 | 0.03 | 442 |
| Total | 2698.52 | | 99.99 | |

PROJECT STATION: 252

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2401
start stop duration Long E 1310
TIME :18:50:00 19:20:00 30 (min) Purpose code: 3
LOG :3045.20 3046.80 1.60 Area code : 2
FDEPTH: 600 597 GearCond code:
BDEPTH: 600 597 Validity code:
Towing dir: 340° Wire out:1700 m Speed: 32 kn*10

Sorted: 227 Kg Total catch: 438.71 CATCH/HOUR: 877.42

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 387.40 | 390 | 44.15 | 448 |
| Deania calcea | 81.00 | 54 | 9.23 | |
| Nezumia sp. | 77.04 | 1806 | 8.78 | |
| Deania profundorum | 53.10 | 54 | 6.05 | |
| Todarodes sagittatus | 52.20 | 126 | 5.95 | |
| Beryx splendens | 37.26 | 288 | 4.25 | |
| Galeus polli | 34.92 | 450 | 3.98 | |
| Selachophidium guentheri | 32.94 | 540 | 3.75 | |
| Trachyrincus scabrus | 24.48 | 72 | 2.79 | |
| Hoplostethus cadenati | 23.40 | 468 | 2.67 | |
| Ebinania costaecanarie | 17.46 | 18 | 1.99 | |
| Merluccius paradoxus, male | 10.80 | 10 | 1.23 | 447 |
| Coelorinchus matamua | 8.64 | 36 | 0.98 | |
| Raja confundens | 8.10 | 18 | 0.92 | |
| Shrimps, small, non comm | 7.92 | | 0.90 | |
| Yarrella blackfordi | 7.20 | 342 | 0.82 | |
| Lithodes ferox | 6.66 | 36 | 0.76 | |
| Lophius vomerinus | 4.38 | 4 | 0.50 | 446 |
| Dicrolene intronigra | 1.62 | 36 | 0.18 | |
| Epigonus denticulatus | 0.54 | 18 | 0.06 | |
| Stereomastis sculpta | 0.36 | 18 | 0.04 | |
| Total | 877.42 | | 99.98 | |

PROJECT STATION: 253

DATE:13/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 2355
start stop duration Long E 1307
TIME :20:24:00 20:54:00 30 (min) Purpose code: 3
LOG :3052.00 3053.50 1.50 Area code : 2
FDEPTH: 650 653 GearCond code:
BDEPTH: 650 653 Validity code:
Towing dir: 340° Wire out:1800 m Speed: 30 kn*10

Sorted: 287 Kg Total catch: 287.12 CATCH/HOUR: 574.24

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Deepwater fish mixture | 400.00 | | 69.66 | |
| Merluccius paradoxus, female | 170.40 | 156 | 29.67 | 451 |
| Merluccius paradoxus, male | 2.04 | 2 | 0.36 | 450 |
| Lophius vomerinus | 1.80 | 2 | 0.31 | 449 |
| Total | 574.24 | | 100.00 | |

PROJECT STATION: 254

DATE:13/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2349
start stop duration Long E 1309
TIME :22:01:00 22:31:00 30 (min) Purpose code: 3
LOG :3059.40 3060.90 1.50 Area code : 2
FDEPTH: 465 452 GearCond code:
BDEPTH: 465 452 Validity code:
Towing dir: 360° Wire out:1300 m Speed: 33 kn*10

Sorted: 115 Kg Total catch: 546.16 CATCH/HOUR: 1092.32

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Hoplostethus cadenati | 399.00 | 15384 | 36.53 | |
| Trachyrincus scabrus | 243.00 | 1620 | 22.25 | |
| Merluccius paradoxus, female | 142.00 | 296 | 13.00 | 455 |
| Ebinania costaecanarie | 62.40 | 60 | 5.71 | |
| Nezumia leonis | 56.70 | 2040 | 5.19 | |
| Galeus polli | 43.80 | 360 | 4.01 | |
| Helicolenus dactylopterus | 43.20 | 360 | 3.95 | |
| Selachophidium guentheri | 29.70 | 600 | 2.72 | |
| Todarodes sagittatus | 14.40 | 60 | 1.32 | |
| Epigonus denticulatus | 12.60 | 150 | 1.15 | |
| Merluccius capensis, female | 12.30 | 6 | 1.13 | 453 |
| Trachipterus jacksonensis | 10.00 | 4 | 0.92 | |
| Yarrella blackfordi | 9.60 | 810 | 0.88 | |
| S H R I M P S | 8.70 | 930 | 0.80 | |
| Lophius vomerinus | 2.82 | 4 | 0.26 | 452 |
| Merluccius paradoxus, male | 2.10 | 4 | 0.19 | 454 |
| Total | 1092.32 | | 100.01 | |

PROJECT STATION: 255

DATE:14/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2348
start stop duration Long E 1315
TIME :06:39:00 07:09:00 30 (min) Purpose code: 3
LOG :3073.60 3075.10 1.50 Area code : 2
FDEPTH: 326 322 GearCond.code:
BDEPTH: 326 322 Validity code:
Towing dir: 360° Wire out: 900 m Speed: 31 kn*10

Sorted: 189 Kg Total catch: 584.15 CATCH/HOUR: 1168.30

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 324.80 | 16030 | 27.80 | 461 |
| Merluccius capensis, female | 289.30 | 186 | 24.76 | 458 |
| Helicolenus dactylopterus | 127.36 | 2752 | 10.90 | |
| Galeus polli | 96.96 | 2944 | 8.30 | |
| Merluccius capensis, female | 68.16 | 480 | 5.83 | 460 |
| Merluccius capensis, male | 58.56 | 480 | 5.01 | 459 |
| Todarodes sagittatus | 56.64 | 128 | 4.85 | |
| Coelorinchus fasciatus | 48.96 | 1792 | 4.19 | |
| Chlorophthalmus atlanticus | 45.44 | 6784 | 3.89 | |
| Merluccius capensis, male | 30.80 | 28 | 2.64 | 457 |
| PORTUNIDAE | 6.72 | 352 | 0.58 | |
| Lophius vomerinus | 6.28 | 8 | 0.54 | 456 |
| Shrimps, small, non comm. | 5.44 | | 0.47 | |
| MYCTOPHIDAE | 2.88 | 1728 | 0.25 | |
| Total | 1168.30 | | 100.01 | |

PROJECT STATION: 256

DATE:14/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2347
start stop duration Long E 1324
TIME :08:40:00 09:10:00 30 (min) Purpose code: 3
LOG :3083.90 3085.30 1.40 Area code : 2
FDEPTH: 280 268 GearCond.code:
BDEPTH: 280 268 Validity code:
Towing dir: 90° Wire out: 770 m Speed: 28 kn*10

Sorted: 58 Kg Total catch: 217.44 CATCH/HOUR: 434.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 227.00 | 980 | 52.20 | 466 |
| Merluccius capensis, female | 54.80 | 34 | 12.60 | 464 |
| Helicolenus dactylopterus | 38.60 | 1340 | 8.88 | |
| Squalus megalops | 32.20 | 40 | 7.40 | |
| Galeus polli | 24.60 | 620 | 5.66 | |
| Merluccius capensis, male | 17.90 | 28 | 4.12 | 463 |
| Merluccius capensis, female | 12.20 | 52 | 2.81 | 467 |
| Todarodes sagittatus | 7.00 | 20 | 1.61 | |
| Merluccius capensis, juveniles | 7.00 | 884 | 1.61 | 465 |
| Coelorinchus fasciatus | 6.60 | 280 | 1.52 | |
| Lophius vomerinus | 3.98 | 4 | 0.92 | 462 |
| Squilla aculeata calmani | 2.60 | 100 | 0.60 | |
| PORTUNIDAE | 0.40 | 20 | 0.09 | |
| Total | 434.88 | | 100.02 | |

PROJECT STATION: 257

DATE:14/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2347
start stop duration Long E 1332
TIME :10:18:00 10:43:00 25 (min) Purpose code: 3
LOG :3091.50 3092.80 1.30 Area code : 2
FDEPTH: 248 242 GearCond.code:
BDEPTH: 248 242 Validity code:
Towing dir: 90° Wire out: 730 m Speed: 30 kn*10

Sorted: 154 Kg Total catch: 2070.80 CATCH/HOUR: 4969.92

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 3705.60 | 18648 | 74.56 | 472 |
| Chelidonichthys capensis | 383.04 | 1008 | 7.71 | |
| Coelorinchus fasciatus | 260.40 | 9072 | 5.24 | |
| Merluccius capensis, female | 154.92 | 382 | 3.12 | 470 |
| Merluccius capensis, juveniles | 144.48 | 8232 | 2.91 | 471 |
| Merluccius capensis, male | 126.24 | 475 | 2.54 | 469 |
| Helicolenus dactylopterus | 97.44 | 3864 | 1.96 | |
| Sufflogobius bibarbatus | 48.72 | 4872 | 0.98 | |
| Galeus polli | 25.20 | 1344 | 0.51 | |
| Lophius vomerinus | 23.88 | 29 | 0.48 | 468 |
| Total | 4969.92 | | 100.01 | |

PROJECT STATION: 258

DATE:14/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2347
start stop duration Long E 1340
TIME :11:55:00 12:25:00 30 (min) Purpose code: 3
LOG :3099.10 3100.70 1.80 Area code : 2
FDEPTH: 222 214 GearCond.code:
BDEPTH: 222 214 Validity code:
Towing dir: 90° Wire out: 650 m Speed: 35 kn*10

Sorted: 284 Kg Total catch: 2336.66 CATCH/HOUR: 4673.32

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 3326.00 | 23240 | 71.17 | 476 |
| Merluccius capensis, juveniles | 386.40 | 17920 | 8.27 | 478 |
| Merluccius capensis, male | 288.20 | 2086 | 6.17 | 474 |
| Chelidonichthys capensis | 222.60 | 560 | 4.76 | |
| Merluccius capensis, female | 209.70 | 1372 | 4.49 | 473 |
| Coelorinchus fasciatus | 117.60 | 3640 | 2.52 | |
| Todarodes sagittatus | 65.80 | 140 | 1.41 | |
| Sufflogobius bibarbatus | 23.80 | 3080 | 0.51 | |
| PORTUNIDAE | 15.40 | 700 | 0.33 | |
| Lophius vomerinus | 10.82 | 22 | 0.23 | 475 |
| Lepidopus caudatus | 7.00 | 560 | 0.15 | |
| Total | 4673.32 | | 100.01 | |

PROJECT STATION: 259

DATE:14/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2347
start stop duration Long E 1349
TIME :14:03:00 14:33:00 30 (min) Purpose code: 3
LOG :3108.80 3110.40 1.60 Area code : 2
FDEPTH: 195 191 GearCond.code:
BDEPTH: 195 191 Validity code:
Towing dir: 90° Wire out: 650 m Speed: 33 kn*10

Sorted: 310 Kg Total catch: 1944.06 CATCH/HOUR: 3888.12

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1424.38 | 8276 | 36.63 | 482 |
| Merluccius capensis, male | 914.00 | 8210 | 23.51 | 480 |
| Merluccius capensis, female | 900.60 | 5916 | 23.16 | 479 |
| Chelidonichthys capensis | 299.42 | | 7.70 | |
| Merluccius capensis, juveniles | 142.84 | 5578 | 3.67 | 481 |
| Thyrsites atun | 140.50 | 108 | 3.61 | 483 |
| Pterothrissus belloci | 38.56 | 554 | 0.99 | |
| Sufflogobius bibarbatus | 10.58 | 1358 | 0.27 | |
| Helicolenus dactylopterus | 8.70 | 94 | 0.22 | |
| Lophius vomerinus | 6.16 | 14 | 0.16 | 484 |
| PORTUNIDAE | 2.38 | 94 | 0.06 | |
| Total | 3888.12 | | 99.98 | |

PROJECT STATION: 260

DATE:14/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2347
start stop duration Long E 1358
TIME :15:54:00 16:24:00 30 (min) Purpose code: 3
LOG :3117.60 3119.10 1.50 Area code : 2
FDEPTH: 180 178 GearCond.code:
BDEPTH: 180 178 Validity code:
Towing dir: 75° Wire out: 650 m Speed: 31 kn*10

Sorted: 77 Kg Total catch: 419.47 CATCH/HOUR: 838.94

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 282.40 | 2116 | 33.66 | 485 |
| Merluccius capensis, male | 240.84 | 2408 | 28.71 | 486 |
| Trachurus capensis | 175.00 | 1274 | 20.86 | 489 |
| Chelidonichthys capensis | 115.60 | 410 | 13.78 | |
| Merluccius capensis, juveniles | 21.50 | 778 | 2.56 | 487 |
| Sufflogobius bibarbatus | 2.06 | 226 | 0.25 | |
| Pterothrissus belloci | 0.74 | 10 | 0.09 | |
| Lophius vomerinus | 0.70 | 10 | 0.08 | 490 |
| Trachurus capensis, juvenile | 0.10 | 32 | 0.01 | 491 |
| Total | 838.94 | | 100.00 | |

PROJECT STATION: 261

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2322
start stop duration Long E 1354
TIME :06:31:00 07:01:00 30 (min) Purpose code: 3
LOG :3172.60 3174.10 1.50 Area code : 2
FDEPTH: 155 151 GearCond.code:
BDEPTH: 155 151 Validity code:
Towing dir: 360° Wire out: 450 m Speed: 33 kn*10

Sorted: 5 Kg Total catch: 5.30 CATCH/HOUR: 10.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 6.70 | 82 | 63.21 | 493 |
| Merluccius capensis, male | 2.30 | 30 | 21.70 | 492 |
| Merluccius capensis, juveniles | 1.20 | 66 | 11.32 | 494 |
| Chelidonichthys capensis | 0.40 | 2 | 3.77 | |
| Total | 10.60 | | 100.00 | |

PROJECT STATION: 262

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2321
start stop duration Long E 1344
TIME :08:33:00 09:03:00 30 (min) Purpose code: 3
LOG :3184.30 3185.80 1.50 Area code : 2
FDEPTH: 154 151 GearCond.code:
BDEPTH: 154 151 Validity code:
Towing dir: 270° Wire out: 420 m Speed: 31 kn*10

Sorted: 22 Kg Total catch: 88.40 CATCH/HOUR: 176.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 78.40 | 2614 | 44.34 | 497 |
| Merluccius capensis, male | 48.80 | 696 | 27.60 | 495 |
| Merluccius capensis, female | 48.00 | 608 | 27.15 | 496 |
| Sufflogobius bibarbatus | 1.44 | 120 | 0.81 | |
| Trachurus capensis, juvenile | 0.16 | 32 | 0.09 | |
| Total | 176.80 | | 99.99 | |

PROJECT STATION: 263

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2321
start stop duration Long E 1333
TIME :10:18:00 10:48:00 30 (min) Purpose code: 3
LOG :3194.40 3195.90 1.50 Area code : 2
FDEPTH: 185 195 GearCond.code:
BDEPTH: 185 195 Validity code:
Towing dir: 270° Wire out: 540 m Speed: 30 kn*10

Sorted: 12 Kg Total catch: 38.16 CATCH/HOUR: 76.32

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 26.40 | 1122 | 34.59 | 500 |
| Merluccius capensis, male | 25.20 | 426 | 33.02 | 498 |
| Merluccius capensis, female | 22.80 | 348 | 29.87 | 499 |
| Sufflogobius bibarbatus | 1.08 | 138 | 1.42 | |
| Trachurus capensis | 0.78 | 6 | 1.02 | |
| Trachurus capensis, juvenile | 0.06 | 18 | 0.08 | |
| Total | 76.32 | | 100.00 | |

PROJECT STATION: 264

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2321
start stop duration Long E 1325
TIME :12:00:00 12:30:00 30 (min) Purpose code: 3
LOG :3203.00 3204.50 1.50 Area code : 2
FDEPTH: 260 279 GearCond.code:
BDEPTH: 260 279 Validity code:
Towing dir: 270° Wire out: 750 m Speed: 30 kn*10

Sorted: 79 Kg Total catch: 1245.12 CATCH/HOUR: 2490.24

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 780.48 | 8502 | 31.34 | 504 |
| Merluccius capensis, female | 773.16 | 6602 | 31.05 | 503 |
| Merluccius capensis, juveniles | 490.10 | 26792 | 19.68 | 505 |
| Trachurus capensis | 381.74 | 2600 | 15.33 | 506 |
| Pterothrissus belloci | 16.68 | 466 | 0.67 | |
| Coelorinchus fasciatus | 14.00 | 534 | 0.56 | |
| Helicolenus dactylopterus | 9.00 | 566 | 0.36 | |
| PORTUNIDAE | 7.66 | 334 | 0.31 | |
| Chelidonichthys capensis | 7.00 | 34 | 0.28 | |
| Lophius vomerinus | 5.48 | 12 | 0.22 | 501 |
| Austroglossus microlepis | 4.60 | 6 | 0.18 | 502 |
| Trachurus capensis, juvenile | 0.34 | 100 | 0.01 | 507 |
| Total | 2490.24 | | 99.99 | |

PROJECT STATION: 265

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2321
start stop duration Long E 1317
TIME :14:10:00 14:40:00 30 (min) Purpose code: 3
LOG :3214.30 3216.00 1.70 Area code : 2
FDEPTH: 350 355 GearCond.code:
BDEPTH: 350 355 Validity code:
Towing dir: 340° Wire out:1050 m Speed: 35 kn*10

Sorted: 545 Kg Total catch: 1744.93 CATCH/HOUR: 3489.86

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Hexanchus griseus | 2000.00 | 2 | 57.31 | |
| Merluccius capensis, female | 678.00 | 442 | 19.43 | 520 |
| Todarodes sagittatus | 184.80 | 432 | 5.30 | |
| Merluccius paradoxus, female | 166.40 | 700 | 4.77 | 511 |
| Merluccius capensis, male | 110.90 | 134 | 3.18 | 509 |
| Deepwater fish mixture | 104.16 | | 2.98 | |
| Helicolenus dactylopterus | 83.20 | 1328 | 2.38 | |
| Lophius vomerinus | 55.60 | 36 | 1.59 | 514 |
| Galeus polli | 36.32 | 512 | 1.04 | |
| Coelorinchus fasciatus | 31.04 | 304 | 0.89 | |
| Merluccius paradoxus, male | 12.50 | 56 | 0.36 | 512 |
| Beryx splendens | 8.32 | 16 | 0.24 | |
| Merluccius capensis, female | 5.62 | 34 | 0.16 | 508 |
| Nezumia sp. | 4.16 | 112 | 0.12 | |
| Genypterus capensis | 3.30 | 2 | 0.09 | 513 |
| Selachophidium quentheri | 1.76 | 32 | 0.05 | |
| Merluccius capensis, juveniles | 1.38 | 52 | 0.04 | 510 |
| Malacocephalus laevis | 1.28 | 16 | 0.04 | |
| PORTUNIDAE | 1.12 | 48 | 0.03 | |
| Total | 3489.86 | | 100.00 | |

PROJECT STATION: 266

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2320
start stop duration Long E 1308
TIME :16:33:00 17:03:00 30 (min) Purpose code: 3
LOG :3227.20 3229.00 1.80 Area code : 2
FDEPTH: 419 424 GearCond.code:
BDEPTH: 419 424 Validity code:
Towing dir: 350° Wire out:1200 m Speed: 32 kn*10

Sorted: 258 Kg Total catch: 425.79 CATCH/HOUR: 851.58

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 412.80 | 814 | 48.47 | 518 |
| Todarodes sagittatus | 65.28 | 224 | 7.67 | |
| Galeus polli | 61.76 | 1424 | 7.25 | |
| Trachyrincus scabrus | 56.32 | 528 | 6.61 | |
| Etmopterus pusillus | 52.32 | 176 | 6.14 | |
| Deania profundorum | 31.20 | 48 | 3.66 | |
| Merluccius capensis, female | 30.60 | 10 | 3.59 | 516 |
| Deania calcea | 29.60 | 48 | 3.48 | |
| Selachophidium quentheri | 29.28 | 560 | 3.44 | |
| Lophius vomerinus | 19.94 | 36 | 2.34 | 515 |
| Epigonus denticulatus | 19.68 | 672 | 2.31 | |
| Nezumia leonis | 16.16 | 576 | 1.90 | |
| Raja confundens | 8.96 | 16 | 1.05 | |
| Helicolenus dactylopterus | 6.40 | 576 | 0.75 | |
| Merluccius paradoxus, male | 5.90 | 20 | 0.69 | 517 |
| Beryx splendens | 3.20 | 16 | 0.38 | |
| Ebinania costaecanarie | 0.96 | 16 | 0.11 | |
| Trachurus capensis | 0.90 | 2 | 0.11 | 519 |
| PORTUNIDAE | 0.32 | 32 | 0.04 | |
| Total | 851.58 | | 99.99 | |

PROJECT STATION: 267

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2318
start stop duration Long E 1259
TIME :18:47:00 19:17:00 30 (min) Purpose code: 3
LOG :3239.40 3240.90 1.50 Area code : 2
FDEPTH: 655 652 GearCond.code:
BDEPTH: 655 652 Validity code:
Towing dir: 360° Wire out:1800 m Speed: 31 kn*10

Sorted: 97 Kg Total catch: 286.58 CATCH/HOUR: 573.16

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Hoplostethus cadenati | 180.62 | 6132 | 31.51 | |
| Merluccius paradoxus, female | 151.80 | 146 | 26.48 | 521 |
| Deania calcea | 79.20 | 66 | 13.82 | |
| Neocyttus rhomboidalis | 62.70 | 110 | 10.94 | |
| Lamprogrammus exutus | 28.82 | 132 | 5.03 | |
| Nezumia sp. | 23.32 | 1012 | 4.07 | |
| Selachophidium quentheri | 13.42 | 176 | 2.34 | |
| Diplophos maderensis | 7.70 | 132 | 1.34 | |
| Yarrella blackfordi | 6.38 | 242 | 1.11 | |
| Galeus polli | 5.06 | 44 | 0.88 | |
| OPHICHTHIDAE | 4.84 | 44 | 0.84 | |
| Lophius vomerinus | 3.46 | 4 | 0.60 | 523 |
| Oreosoma atlanticum | 2.42 | 44 | 0.42 | |
| Merluccius paradoxus, male | 2.10 | 2 | 0.37 | 522 |
| Shrimps, small, non comm. | 1.32 | 88 | 0.23 | |
| Total | 573.16 | | 99.98 | |

PROJECT STATION: 268

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2307
start stop duration Long E 1259
TIME :20:42:00 21:12:00 30 (min) Purpose code: 3
LOG :3249.80 3251.10 1.30 Area code : 2
FDEPTH: 600 594 GearCond.code:
BDEPTH: 600 594 Validity code:
Towing dir: 350° Wire out:1700 m Speed: 30 kn*10

Sorted: 279 Kg Total catch: 279.73 CATCH/HOUR: 559.46

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Deepwater fish mixture | 400.00 | | 71.50 | |
| Merluccius paradoxus, female | 155.42 | 188 | 27.78 | 524 |
| Lophius vomerinus | 4.04 | 4 | 0.72 | 525 |
| Total | 559.46 | | 100.00 | |

PROJECT STATION: 269

DATE:15/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2302
start stop duration Long E 1302
TIME :22:21:00 22:51:00 30 (min) Purpose code: 3
LOG :3258.10 3259.20 1.10 Area code : 2
FDEPTH: 450 444 GearCond.code:
BDEPTH: 450 444 Validity code:
Towing dir: 355° Wire out:1250 m Speed: 23 kn*10

Sorted: 143 Kg Total catch: 371.93 CATCH/HOUR: 743.86

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 385.00 | 3352 | 51.76 | |
| Merluccius paradoxus, female | 192.90 | 464 | 25.93 | 527 |
| Merluccius capensis, female | 26.50 | 10 | 3.56 | 526 |
| Helicolenus dactylopterus | 25.74 | 418 | 3.46 | |
| Selachophidium quentheri | 21.56 | 462 | 2.90 | |
| Todarodes sagittatus | 19.36 | 66 | 2.60 | |
| Nezumia sp. | 17.82 | 308 | 2.40 | |
| Lophius vomerinus | 14.98 | 12 | 2.01 | 529 |
| Deania calcea | 13.20 | 22 | 1.77 | |
| Hoplostethus cadenati | 10.34 | 418 | 1.39 | |
| Merluccius paradoxus, male | 7.00 | 14 | 0.94 | 528 |
| Yarrella blackfordi | 3.52 | 330 | 0.47 | |
| Galeus polli | 3.30 | 44 | 0.44 | |
| Epigonus denticulatus | 1.98 | 44 | 0.27 | |
| Ebinania costaecanarie | 0.44 | 22 | 0.06 | |
| Raja confundens | 0.22 | 22 | 0.03 | |
| Total | 743.86 | | 99.99 | |

PROJECT STATION: 270

DATE:16/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2301
start stop duration Long E 1311
TIME :06:35:00 07:05:00 30 (min) Purpose code: 3
LOG :3279.00 3280.70 1.70 Area code : 2
FDEPTH: 325 312 GearCond.code:
BDEPTH: 325 312 Validity code:
Towing dir: 360° Wire out: 950 m Speed: 33 kn*10

Sorted: 136 Kg Total catch: 487.55 CATCH/HOUR: 975.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 521.10 | 1962 | 53.44 | 535 |
| Merluccius capensis, female | 136.90 | 62 | 14.04 | 532 |
| Helicolenus dactylopterus | 110.16 | 2078 | 11.30 | |
| Coelorinchus fasciatus | 52.92 | 1944 | 5.43 | |
| Galeus polli | 46.80 | 900 | 4.80 | |
| Lophius vomerinus | 25.56 | 14 | 2.62 | 530 |
| Merluccius capensis, juveniles | 22.14 | 882 | 2.27 | 533 |
| Merluccius capensis, male | 21.90 | 20 | 2.25 | 531 |
| Epigonus denticulatus | 15.48 | 630 | 1.59 | |
| Trachurus capensis | 7.38 | 18 | 0.76 | 536 |
| Merluccius paradoxus, male | 5.58 | 18 | 0.57 | 534 |
| Nezumia leonis | 5.40 | 1134 | 0.55 | |
| Shrimps, small, non comm. | 2.34 | 522 | 0.24 | |
| PORTUNIDAE | 1.44 | 36 | 0.15 | |
| Total | 975.10 | | 100.01 | |

PROJECT STATION: 271

DATE:16/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2300
start stop duration Long E 1322
TIME :08:52:00 09:22:00 30 (min) Purpose code: 3
LOG :3291.90 3293.50 1.60 Area code : 2
FDEPTH: 330 320 GearCond.code:
BDEPTH: 330 320 Validity code:
Towing dir: 90° Wire out: 950 m Speed: 32 kn*10

Sorted: 219 Kg Total catch: 370.03 CATCH/HOUR: 740.06

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 295.20 | 358 | 39.89 | 539 |
| Merluccius capensis, juveniles | 153.60 | 8132 | 20.76 | 542 |
| Lophius vomerinus | 53.56 | 46 | 7.24 | 537 |
| Merluccius capensis, male | 47.30 | 114 | 6.39 | 538 |
| Merluccius capensis, female | 37.76 | 416 | 5.10 | 541 |
| Helicolenus dactylopterus | 37.12 | 1424 | 5.02 | |
| Merluccius capensis, male | 35.20 | 368 | 4.76 | 540 |
| Trachurus capensis | 26.40 | 80 | 3.57 | 543 |
| Coelorinchus fasciatus | 22.88 | 400 | 3.09 | |
| Todarodes sagittatus | 12.00 | 16 | 1.62 | |
| Galeus polli | 7.84 | 304 | 1.06 | |
| Coelorinchus coelorhinc. polli | 6.88 | 240 | 0.93 | |
| Nezumia leonis | 2.24 | 160 | 0.30 | |
| Chlorophthalmus atlanticus | 1.92 | 144 | 0.26 | |
| Squilla acuelata calmani | 0.16 | 16 | 0.02 | |
| Total | 740.06 | | 100.01 | |

PROJECT STATION: 272

DATE:16/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2300
start stop duration Long E 1329
TIME :10:42:00 11:12:00 30 (min) Purpose code: 3
LOG :3299.20 3300.70 1.50 Area code : 2
FDEPTH: 245 213 GearCond.code:
BDEPTH: 245 213 Validity code:
Towing dir: 90° Wire out: 700 m Speed: 30 kn*10

Sorted: 19 Kg Total catch: 136.82 CATCH/HOUR: 273.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 93.80 | 4722 | 34.28 | 547 |
| Merluccius capensis, female | 90.00 | 1330 | 32.89 | 545 |
| Merluccius capensis, male | 87.22 | 1288 | 31.87 | 544 |
| Suffloqobius bibarbatus | 1.40 | 210 | 0.51 | |
| PORTUNIDAE | 0.56 | 14 | 0.20 | |
| Lophius vomerinus | 0.52 | 2 | 0.19 | 546 |
| Trachurus capensis, juvenile | 0.14 | 56 | 0.05 | |
| Total | 273.64 | | 99.99 | |

PROJECT STATION: 273

DATE:16/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2300
start stop duration Long E 1338
TIME :12:24:00 12:54:00 30 (min) Purpose code: 3
LOG :3307.30 3309.00 1.70 Area code : 2
FDEPTH: 145 144 GearCond.code:
BDEPTH: 145 144 Validity code:
Towing dir: 90° Wire out: 500 m Speed: 30 kn*10

Sorted: 24 Kg Total catch: 48.18 CATCH/HOUR: 96.36

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 87.56 | 3944 | 90.87 | 550 |
| Suffloqobius bibarbatus | 5.92 | 2466 | 6.14 | |
| Merluccius capensis, female | 2.04 | 24 | 2.12 | 548 |
| Merluccius capensis, male | 0.76 | 16 | 0.79 | 549 |
| Squilla acuelata calmani | 0.08 | 12 | 0.08 | |
| Total | 96.36 | | 100.00 | |

PROJECT STATION: 274

DATE:16/ 5/94 GEAR TYPE: BT No:6 POSITION:Lat S 2300
start stop duration Long E 1349
TIME :14:38:00 15:08:00 30 (min) Purpose code: 3
LOG :3317.60 3319.50 1.90 Area code : 2
FDEPTH: 139 139 GearCond.code:
BDEPTH: 139 139 Validity code:
Towing dir: 90° Wire out: 500 m Speed: 35 kn*10

Sorted: 3 Kg Total catch: 3.06 CATCH/HOUR: 6.12

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 5.10 | 200 | 83.33 | 553 |
| Merluccius capensis, female | 0.64 | 8 | 10.46 | 551 |
| Merluccius capensis, male | 0.38 | 6 | 6.21 | 552 |
| Total | 6.12 | | 100.00 | |

PROJECT STATION: 275

DATE:18/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2237
start stop duration Long E 1333
TIME :16:26:00 16:56:00 30 (min) Purpose code: 3
LOG : 343.80 3440.60 1.80 Area code : 2
FDEPTH: 139 180 GearCond.code:
BDEPTH: 139 180 Validity code:
Towing dir: 260° Wire out: 500 m Speed: 35 kn*10

Sorted: 25 Kg Total catch: 75.75 CATCH/HOUR: 151.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 92.10 | 3206 | 60.79 | 556 |
| Merluccius capensis, female | 30.36 | 366 | 20.04 | 554 |
| Merluccius capensis, male | 22.92 | 300 | 15.13 | 555 |
| Sufflogobius bibarbatus | 3.36 | 300 | 2.22 | |
| Trachurus capensis, juvenile | 2.76 | 108 | 1.82 | 557 |
| Total | 151.50 | | 100.00 | |

PROJECT STATION: 276

DATE:18/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2238
start stop duration Long E 1323
TIME :18:18:00 18:48:00 30 (min) Purpose code: 3
LOG :3448.90 3450.50 1.60 Area code : 2
FDEPTH: 255 260 GearCond.code:
BDEPTH: 255 260 Validity code: 9
Towing dir: 260° Wire out: 750 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 277

DATE:18/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2239
start stop duration Long E 1250
TIME :22:21:00 22:51:00 30 (min) Purpose code: 3
LOG :3481.30 3482.90 1.60 Area code : 2
FDEPTH: 452 469 GearCond.code:
BDEPTH: 452 469 Validity code:
Towing dir: 340° Wire out:1300 m Speed: 30 kn*10

Sorted: 73 Kg Total catch: 359.48 CATCH/HOUR: 718.96

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 460.50 | 1940 | 64.05 | |
| Merluccius paradoxus, female | 74.20 | 160 | 10.32 | 558 |
| Nezumia sp. | 41.10 | 1140 | 5.72 | |
| Epigonus denticulatus | 29.70 | 270 | 4.13 | |
| Helicolenus dactylopterus | 25.80 | 330 | 3.59 | |
| Deania calcea | 18.30 | 30 | 2.55 | |
| Lophius vomerinus | 17.96 | 14 | 2.50 | 560 |
| Hoplostethus cadenati | 17.40 | 300 | 2.42 | |
| Beryx splendens | 9.90 | 30 | 1.38 | |
| Galeus polli | 9.30 | 90 | 1.29 | |
| Merluccius capensis, female | 4.70 | 2 | 0.65 | 562 |
| Merluccius paradoxus, male | 3.52 | 8 | 0.49 | 559 |
| Lithodes ferox | 2.70 | 4 | 0.38 | |
| Genypterus capensis | 2.68 | 2 | 0.37 | 561 |
| Coelorinchus fasciatus | 1.20 | 30 | 0.17 | |
| Total | 718.96 | | 100.01 | |

PROJECT STATION: 278

DATE:19/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2224
start stop duration Long E 1249
TIME :06:36:00 07:06:00 30 (min) Purpose code: 3
LOG :3507.00 3508.70 1.70 Area code : 2
FDEPTH: 400 397 GearCond.code:
BDEPTH: 400 397 Validity code:
Towing dir: 360° Wire out:1150 m Speed: 32 kn*10

Sorted: 217 Kg Total catch: 353.82 CATCH/HOUR: 707.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 291.90 | 152 | 41.25 | 566 |
| Galeus polli | 64.00 | 840 | 9.04 | |
| Helicolenus dactylopterus | 48.80 | 180 | 6.90 | |
| Todarodes sagittatus | 44.60 | 80 | 6.30 | |
| Merluccius paradoxus, female | 37.10 | 106 | 5.24 | 568 |
| Selachophidium guentheri | 36.00 | 660 | 5.09 | |
| Lophius vomerinus | 31.98 | 36 | 4.52 | 563 |
| Merluccius capensis, male | 31.70 | 26 | 4.48 | 565 |
| Etmopterus lucifer | 31.00 | 100 | 4.38 | |
| Raja confundens | 24.40 | 20 | 3.45 | |
| Nezumia leonis | 21.20 | 660 | 3.00 | |
| Coelorinchus fasciatus | 17.20 | 300 | 2.43 | |
| Epigonus denticulatus | 8.40 | 200 | 1.19 | |
| Deania calcea | 7.20 | 20 | 1.02 | |
| Centrolophus niger | 6.34 | 2 | 0.90 | |
| Genypterus capensis | 4.00 | 2 | 0.57 | 564 |
| Merluccius paradoxus, male | 1.02 | 6 | 0.14 | 567 |
| Notacanthus sexspinis | 0.80 | 60 | 0.11 | |
| Total | 707.64 | | 100.01 | |

PROJECT STATION: 279

DATE:19/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2222
start stop duration Long E 1304
TIME :09:08:00 09:38:00 30 (min) Purpose code: 3
LOG :3523.30 3524.70 1.40 Area code : 2
FDEPTH: 265 261 GearCond.code:
BDEPTH: 265 261 Validity code:
Towing dir: 150° Wire out: 750 m Speed: 31 kn*10

Sorted: 36 Kg Total catch: 108.42 CATCH/HOUR: 216.84

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 109.20 | 1104 | 50.36 | 570 |
| Merluccius capensis, male | 97.50 | 1134 | 44.96 | 569 |
| Merluccius capensis, juveniles | 7.86 | 264 | 3.62 | 571 |
| Trachurus capensis | 2.28 | 18 | 1.05 | 572 |
| Total | 216.84 | | 99.99 | |

PROJECT STATION: 280

DATE:19/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2231
start stop duration Long E 1312
TIME :11:31:00 11:51:00 20 (min) Purpose code: 3
LOG :3536.60 3537.50 0.90 Area code : 2
FDEPTH: 265 255 GearCond.code:
BDEPTH: 265 255 Validity code:
Towing dir: 45° Wire out: 750 m Speed: 29 kn*10

Sorted: 76 Kg Total catch: 491.05 CATCH/HOUR: 1473.15

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 573.30 | 4641 | 38.92 | 574 |
| Trachurus capensis | 415.35 | 2475 | 28.19 | 576 |
| Merluccius capensis, female | 292.50 | 1716 | 19.86 | 573 |
| Pterothrissus belloci | 73.80 | 723 | 5.01 | |
| Merluccius capensis, juveniles | 61.41 | 3255 | 4.17 | 575 |
| Coelorinchus fasciatus | 38.22 | 1071 | 2.59 | |
| Sufflogobius bibarbatus | 9.30 | 1344 | 0.63 | |
| PORTUNIDAE | 4.47 | 273 | 0.30 | |
| Chlorophthalmus atlanticus | 2.34 | 138 | 0.16 | |
| Lophius vomerinus | 1.89 | 21 | 0.13 | 577 |
| Trachurus capensis, juvenile | 0.39 | 138 | 0.03 | 578 |
| Galeus polli | 0.18 | 39 | 0.01 | |
| Total | 1473.15 | | 100.00 | |

PROJECT STATION: 281

DATE:19/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2224
start stop duration Long E 1319
TIME :13:12:00 13:42:00 30 (min) Purpose code: 3
LOG :3545.70 3547.30 1.60 Area code : 2
FDEPTH: 227 220 GearCond.code:
BDEPTH: 227 220 Validity code:
Towing dir: 45° Wire out: 700 m Speed: 35 kn*10

Sorted: 32 Kg Total catch: 74.98 CATCH/HOUR: 149.96

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 59.20 | 690 | 39.48 | 580 |
| Merluccius capensis, female | 58.00 | 550 | 38.68 | 579 |
| Merluccius capensis, juveniles | 23.84 | 1064 | 15.90 | 581 |
| Austroglossus microlepis | 5.14 | 34 | 3.43 | 583 |
| Trachurus capensis | 2.20 | 16 | 1.47 | 584 |
| PORTUNIDAE | 0.60 | 24 | 0.40 | |
| Pterothrissus belloci | 0.50 | 20 | 0.33 | |
| Sufflogobius bibarbatus | 0.20 | 30 | 0.13 | |
| Lophius vomerinus | 0.18 | 2 | 0.12 | 582 |
| Coelorinchus fasciatus | 0.10 | 6 | 0.07 | |
| Total | 149.96 | | 100.01 | |

PROJECT STATION: 282

DATE:10/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2216
start stop duration Long E 1327
TIME :15:03:00 15:33:00 30 (min) Purpose code: 3
LOG :3556.80 3558.40 1.60 Area code : 2
FDEPTH: 160 153 GearCond.code:
BDEPTH: 160 153 Validity code:
Towing dir: 45° Wire out: 600 m Speed: 34 kn*10

Sorted: 41 Kg Total catch: 123.10 CATCH/HOUR: 246.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 87.60 | 1182 | 35.58 | 585 |
| Merluccius capensis, juveniles | 81.00 | 3116 | 32.90 | 587 |
| Merluccius capensis, male | 73.80 | 1014 | 29.98 | 586 |
| Sufflogobius bibarbatus | 3.60 | 1140 | 1.46 | |
| Trachurus capensis, juvenile | 0.06 | 18 | 0.02 | 588 |
| Chatrabus melanurus | 0.06 | 6 | 0.02 | |
| Total | 246.12 | | 99.96 | |

PROJECT STATION: 283

DATE:19/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2214
start stop duration Long E 1335
TIME :16:56:00 17:26:00 30 (min) Purpose code: 3
LOG :3567.50 3569.10 1.60 Area code : 2
FDEPTH: 127 133 GearCond.code:
BDEPTH: 127 133 Validity code:
Towing dir: 270° Wire out: 450 m Speed: 35 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 284

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2153
start stop duration Long E 1321
TIME :06:37:00 06:57:00 20 (min) Purpose code: 3
LOG :3614.10 3615.10 1.00 Area code : 2
FDEPTH: 152 152 GearCond.code:
BDEPTH: 152 152 Validity code:
Towing dir: 355° Wire out: 450 m Speed: 30 kn*10

Sorted: 8 Kg Total catch: 17.64 CATCH/HOUR: 52.92

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 33.60 | 1599 | 63.49 | 591 |
| Merluccius capensis, female | 11.40 | 168 | 21.54 | 590 |
| Merluccius capensis, male | 7.14 | 96 | 13.49 | 589 |
| Sufflogobius bibarbatus | 0.78 | 84 | 1.47 | |
| Total | 52.92 | | 99.99 | |

PROJECT STATION: 285

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2155
start stop duration Long E 1311
TIME :08:30:00 08:50:00 20 (min) Purpose code: 3
LOG :3625.90 3627.10 1.20 Area code : 2
FDEPTH: 180 186 GearCond code:
BDEPTH: 180 186 Validity code:
Towing dir: 250° Wire out: 500 m Speed: 32 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 286

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2157
start stop duration Long E 1302
TIME :10:13:00 10:43:00 30 (min) Purpose code: 3
LOG :3635.50 3637.00 1.50 Area code : 2
FDEPTH: 270 285 GearCond code:
BDEPTH: 270 285 Validity code:
Towing dir: 255° Wire out: 750 m Speed: 32 kn*10

Sorted: 29 Kg Total catch: 1521.00 CATCH/HOUR: 3042.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1336.40 | 11648 | 43.93 | 593 |
| Merluccius capensis, male | 1128.40 | 10712 | 37.09 | 592 |
| Trachurus capensis | 525.20 | 6760 | 17.26 | 595 |
| Merluccius capensis, juveniles | 35.36 | 1456 | 1.16 | 594 |
| Sufflogobius bibarbatus | 15.60 | 3952 | 0.51 | |
| Trachurus capensis, juvenile | 1.04 | 208 | 0.03 | |
| Total | 3042.00 | | 99.98 | |

PROJECT STATION: 287

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2159
start stop duration Long E 1253
TIME :12:05:00 12:35:00 30 (min) Purpose code: 3
LOG :3645.30 3646.90 1.60 Area code : 2
FDEPTH: 328 330 GearCond code:
BDEPTH: 328 330 Validity code:
Towing dir: 270° Wire out: 950 m Speed: 36 kn*10

Sorted: 413 Kg Total catch: 1132.17 CATCH/HOUR: 2264.34

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 378.42 | 1632 | 16.71 | 601 |
| Merluccius capensis, female | 372.20 | 274 | 16.44 | 596 |
| Chlorophthalmus atlanticus | 339.60 | 13518 | 15.00 | |
| Merluccius capensis, male | 261.12 | 1286 | 11.53 | 602 |
| Merluccius capensis, juveniles | 242.96 | 14168 | 10.73 | 603 |
| Lophius vomerinus | 214.00 | 446 | 9.45 | 598 |
| Coelorinchus fasciatus | 97.80 | 1510 | 4.32 | |
| Dentex macrophthalmus | 83.64 | 224 | 3.69 | 604 |
| Helicolenus dactylopterus | 72.42 | 3042 | 3.20 | |
| Coelorinchus coelorhinc. polli | 61.20 | 2366 | 2.70 | |
| Merluccius capensis, male | 53.80 | 60 | 2.38 | 597 |
| Austroglossus microlepis | 31.40 | 88 | 1.39 | 599 |
| Galeus polli | 24.68 | 490 | 1.09 | |
| Nezumia sp. | 9.80 | 632 | 0.43 | |
| Synagrops microlepis | 9.80 | 530 | 0.43 | |
| PORTUNIDAE | 6.40 | 224 | 0.28 | |
| Pterothrissus belloci | 3.68 | 20 | 0.16 | |
| Trigla lyra | 1.22 | 20 | 0.05 | |
| Genypterus capensis | 0.20 | 2 | 0.01 | 600 |
| Total | 2264.34 | | 99.99 | |

PROJECT STATION: 288

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2159
start stop duration Long E 1247
TIME :13:59:00 14:29:00 30 (min) Purpose code: 3
LOG :3653.60 3655.40 1.80 Area code : 2
FDEPTH: 336 333 GearCond code:
BDEPTH: 336 333 Validity code:
Towing dir: 360° Wire out:1000 m Speed: 35 kn*10

Sorted: 545 Kg Total catch: 1393.09 CATCH/HOUR: 2786.18

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1067.60 | 1186 | 38.32 | 609 |
| Galeus polli | 963.00 | 18810 | 34.56 | |
| Merluccius capensis, male | 301.60 | 430 | 10.82 | 608 |
| Chlorophthalmus atlanticus | 172.20 | 6720 | 6.18 | |
| Helicolenus dactylopterus | 126.00 | 2580 | 4.52 | |
| Coelorinchus coelorhinc. polli | 54.00 | 1740 | 1.94 | |
| Todarodes sagittatus | 23.40 | 60 | 0.84 | |
| Lophius vomerinus | 22.68 | 26 | 0.81 | 605 |
| Coelorinchus fasciatus | 20.40 | 540 | 0.73 | |
| Merluccius capensis, juveniles | 10.20 | 600 | 0.37 | 610 |
| Austroglossus microlepis | 9.52 | 20 | 0.34 | 606 |
| Trachurus capensis | 8.88 | 28 | 0.32 | 607 |
| Brama brama | 2.86 | 2 | 0.10 | |
| Nezumia leonis | 1.80 | 240 | 0.06 | |
| Hyperoglyphe moselii | 1.42 | 2 | 0.05 | |
| Genypterus capensis | 0.62 | 2 | 0.02 | |
| Total | 2786.18 | | 99.98 | |

PROJECT STATION: 289

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2201
start stop duration Long E 1243
TIME :16:08:00 16:38:00 30 (min) Purpose code: 3
LOG :3663.60 3665.20 1.60 Area code : 2
FDEPTH: 405 399 GearCond code:
BDEPTH: 405 399 Validity code:
Towing dir: 360° Wire out:1150 m Speed: 33 kn*10

Sorted: 520 Kg Total catch: 1561.34 CATCH/HOUR: 3122.68

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Plesionika sp. | 683.40 | 615060 | 21.89 | |
| Merluccius capensis, female | 675.70 | 352 | 21.64 | 615 |
| Trachyrincus scabrus | 632.40 | 4880 | 20.25 | |
| Helicolenus dactylopterus | 282.88 | 1700 | 9.06 | |
| Galeus polli | 208.76 | 2720 | 6.69 | |
| Lophius vomerinus | 138.50 | 102 | 4.44 | 611 |
| Hoplostethus cadenati | 108.80 | 7548 | 3.48 | |
| Nezumia leonis | 80.24 | 3604 | 2.57 | |
| Merluccius capensis, male | 71.90 | 52 | 2.30 | 614 |
| Merluccius paradoxus, female | 63.90 | 86 | 2.05 | 616 |
| Todarodes sagittatus | 57.12 | 136 | 1.83 | |
| Coelorinchus fasciatus | 27.88 | 884 | 0.89 | |
| Epigonus denticulatus | 23.12 | 1020 | 0.74 | |
| Lophius vaillanti | 15.72 | 4 | 0.50 | 613 |
| Etmopterus lucifer | 13.60 | 68 | 0.44 | |
| Genypterus capensis | 10.20 | 6 | 0.33 | 612 |
| Selachophidium guentheri | 9.52 | 340 | 0.30 | |
| Chlorophthalmus atlanticus | 6.12 | 272 | 0.20 | |
| Aristeus varidens | 6.12 | 1292 | 0.20 | |
| Dicrolene intronigra | 4.76 | 68 | 0.15 | |
| Ebinania costaecanarie | 2.04 | 68 | 0.07 | |
| Total | 3122.68 | | 100.02 | |

PROJECT STATION: 290

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2153
start stop duration Long E 1241
TIME :18:20:00 18:50:00 30 (min) Purpose code: 3
LOG :3672.30 3673.80 1.50 Area code : 2
FDEPTH: 450 544 GearCond code:
BDEPTH: 450 544 Validity code:
Towing dir: 350° Wire out:1300 m Speed: 33 kn*10

Sorted: 342 Kg Total catch: 726.36 CATCH/HOUR: 1452.72

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 595.00 | 4148 | 40.96 | |
| Merluccius paradoxus, female | 328.80 | 722 | 22.63 | 621 |
| Lophius vomerinus | 243.00 | 164 | 16.73 | 617 |
| Helicolenus dactylopterus | 82.28 | 238 | 5.66 | |
| Nezumia leonis | 74.80 | 1768 | 5.15 | |
| Galeus polli | 38.42 | 510 | 2.64 | |
| Merluccius capensis, female | 36.50 | 22 | 2.51 | 619 |
| Epigonus telescopus | 18.02 | 136 | 1.24 | |
| Merluccius paradoxus, male | 12.50 | 40 | 0.86 | 620 |
| Merluccius capensis, male | 7.30 | 6 | 0.50 | 618 |
| Hoplostethus cadenati | 2.72 | 136 | 0.19 | |
| Geryon maritae | 2.46 | 2 | 0.17 | |
| Lithodes ferox | 2.42 | 2 | 0.17 | |
| Plesionika sp. | 2.04 | 952 | 0.14 | |
| Todarodes sagittatus | 2.04 | 4 | 0.14 | |
| Aristeus varidens | 1.70 | 306 | 0.12 | |
| Epigonus denticulatus | 1.70 | 68 | 0.12 | |
| Ebinania costaecanarie | 1.02 | 34 | 0.07 | |
| Total | 1452.72 | | 100.00 | |

PROJECT STATION: 291

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2148
start stop duration Long E 1239
TIME :19:50:00 20:20:00 30 (min) Purpose code: 3
LOG :3678.20 3679.80 1.60 Area code : 2
FDEPTH: 498 492 GearCond code:
BDEPTH: 498 492 Validity code:
Towing dir: 350° Wire out:1400 m Speed: 32 kn*10

Sorted: 237 Kg Total catch: 642.65 CATCH/HOUR: 1285.30

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 650.00 | 3230 | 50.57 | |
| Merluccius paradoxus, female | 353.40 | 914 | 27.50 | 625 |
| Lophius vomerinus | 66.20 | 28 | 5.15 | 622 |
| Galeus polli | 59.20 | 680 | 4.61 | |
| Hoplostethus cadenati | 56.00 | 2160 | 4.36 | |
| Nezumia leonis | 52.80 | 2080 | 4.11 | |
| Epigonus telescopus | 11.60 | 200 | 0.90 | |
| Epigonus denticulatus | 9.60 | 360 | 0.75 | |
| Merluccius capensis, female | 7.40 | 4 | 0.58 | 623 |
| Laemonema laureysi | 4.80 | 40 | 0.37 | |
| Merluccius paradoxus, male | 4.70 | 12 | 0.37 | 624 |
| Raja sp. | 4.40 | 40 | 0.34 | |
| Alepocephalus sp. | 2.40 | 520 | 0.19 | |
| Chlorophthalmus atlanticus | 1.60 | 40 | 0.12 | |
| Yarrella blackfordi | 1.20 | 120 | 0.09 | |
| Total | 1285.30 | | 100.01 | |

PROJECT STATION: 292

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2139
start stop duration Long E 1236
TIME :22:06:00 22:36:00 30 (min) Purpose code: 3
LOG :3688.10 3689.50 1.40 Area code : 2
FDEPTH: 545 537 GearCond code:
BDEPTH: 545 537 Validity code:
Towing dir: 340° Wire out:1550 m Speed: 29 kn*10

Sorted: 131 Kg Total catch: 397.75 CATCH/HOUR: 795.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 479.70 | 2166 | 60.30 | |
| Merluccius paradoxus, female | 169.70 | 258 | 21.33 | 626 |
| Lophius vomerinus | 44.06 | 28 | 5.54 | 628 |
| Hoplostethus cadenati | 37.96 | 1430 | 4.77 | |
| Nezumia sp. | 18.98 | 858 | 2.39 | |
| Helicolenus dactylopterus | 16.12 | 26 | 2.03 | |
| Lithodes ferox | 9.40 | 18 | 1.18 | |
| RAJIDAE | 8.58 | 78 | 1.08 | |
| Merluccius paradoxus, male | 4.50 | 8 | 0.57 | 627 |
| Galeus polli | 4.16 | 52 | 0.52 | |
| Laemonema laureysi | 1.56 | 52 | 0.20 | |
| Epigonus telescopus | 0.52 | 104 | 0.07 | |
| Epigonus denticulatus | 0.26 | 26 | 0.03 | |
| Total | 795.50 | | 100.01 | |

PROJECT STATION: 293

DATE:20/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2136
start stop duration Long E 1237
TIME :23:35:00 00:05:00 30 (min) Purpose code: 3
LOG :3693.60 3695.10 1.50 Area code : 2
FDEPTH: 467 459 GearCond code:
BDEPTH: 467 459 Validity code:
Towing dir: 340° Wire out:1300 m Speed: 31 kn*10

Sorted: 188 Kg Total catch: 476.05 CATCH/HOUR: 952.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 563.20 | 3308 | 59.15 | |
| Merluccius paradoxus, female | 171.10 | 258 | 17.97 | 631 |
| Lophius vomerinus | 86.42 | 60 | 9.08 | 633 |
| Merluccius capensis, female | 73.10 | 38 | 7.68 | 629 |
| Galeus polli | 19.20 | 192 | 2.02 | |
| Nezumia sp. | 16.00 | 672 | 1.68 | |
| Helicolenus dactylopterus | 8.96 | 96 | 0.94 | |
| Merluccius capensis, male | 5.10 | 4 | 0.54 | 630 |
| Aristeus varidens | 3.20 | 576 | 0.34 | |
| Merluccius paradoxus, male | 2.30 | 6 | 0.24 | 632 |
| Ebinania costaecanarie | 1.92 | 64 | 0.20 | |
| Hoplostethus cadenati | 0.96 | 32 | 0.10 | |
| Epigonus denticulatus | 0.32 | 32 | 0.03 | |
| Notacanthus sexspinis | 0.32 | 32 | 0.03 | |
| Total | 952.10 | | 100.00 | |

PROJECT STATION: 294

DATE:21/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2136
start stop duration Long E 1239
TIME :06:43:00 07:13:00 30 (min) Purpose code: 3
LOG :3710.00 3711.40 1.40 Area code : 2
FDEPTH: 403 406 GearCond.code:
BDEPTH: 403 406 Validity code:
Towing dir: 350° Wire out:1150 m Speed: 28 kn*10

Sorted: 419 Kg Total catch: 703.41 CATCH/HOUR: 1406.82

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 525.40 | 312 | 37.35 | 637 |
| Trachyrincus scabrus | 478.50 | 8614 | 34.01 | |
| Merluccius capensis, male | 123.30 | 112 | 8.76 | 636 |
| Lophius vomerinus | 96.40 | 112 | 6.85 | 634 |
| Helicolenus dactylopterus | 53.70 | 450 | 3.82 | |
| Lophius vaillanti | 52.10 | 10 | 3.70 | 635 |
| Chlorophthalmus atlanticus | 28.80 | 870 | 2.05 | |
| Selachophidium guentheri | 15.30 | 570 | 1.09 | |
| Nezumia leonis | 12.90 | 510 | 0.92 | |
| Galeus polli | 6.90 | 90 | 0.49 | |
| Coelorinchus fasciatus | 6.90 | 120 | 0.49 | |
| Ebinania costaecanarie | 3.30 | 30 | 0.23 | |
| Shrimps, small, non comm. | 2.40 | 510 | 0.17 | |
| Austroglossus microlepis | 0.68 | 4 | 0.05 | |
| Merluccius paradoxus, female | 0.24 | 2 | 0.02 | |
| Total | 1406.82 | | 100.00 | |

PROJECT STATION: 295

DATE:21/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2134
start stop duration Long E 1245
TIME :09:00:00 09:30:00 30 (min) Purpose code: 3
LOG :3719.90 3721.30 1.40 Area code : 2
FDEPTH: 330 335 GearCond.code:
BDEPTH: 330 335 Validity code:
Towing dir: 340° Wire out: 950 m Speed: 29 kn*10

Sorted: 120 Kg Total catch: 313.57 CATCH/HOUR: 627.14

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 312.78 | 764 | 49.87 | 641 |
| Merluccius capensis, male | 209.04 | 504 | 33.33 | 640 |
| Dentex macrophthalmus | 79.56 | 344 | 12.69 | |
| Sufflogobius bibarbatus | 9.00 | 2296 | 1.44 | |
| Merluccius capensis, juveniles | 6.82 | 546 | 1.09 | 642 |
| PORTUNIDAE | 3.90 | 214 | 0.62 | |
| Todarodes sagittatus | 2.46 | 6 | 0.39 | |
| Austroglossus microlepis | 2.40 | 6 | 0.38 | 639 |
| Lophius vomerinus | 1.08 | 6 | 0.17 | 638 |
| Total | 627.04 | | 99.98 | |

PROJECT STATION: 296

DATE:21/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2132
start stop duration Long E 1255
TIME :11:33:00 12:03:00 30 (min) Purpose code: 3
LOG :3732.80 3734.30 1.50 Area code : 2
FDEPTH: 285 282 GearCond.code:
BDEPTH: 285 282 Validity code:
Towing dir: 360° Wire out: 800 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 88.20 CATCH/HOUR: 176.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 84.00 | 696 | 47.62 | 644 |
| Merluccius capensis, female | 71.50 | 546 | 40.53 | 643 |
| Merluccius capensis, juveniles | 13.10 | 726 | 7.43 | 646 |
| Trachurus capensis | 7.26 | 66 | 4.12 | 645 |
| Sufflogobius bibarbatus | 0.54 | 158 | 0.31 | |
| Total | 176.40 | | 100.01 | |

PROJECT STATION: 297

DATE:21/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2129
start stop duration Long E 1304
TIME :14:08:00 14:38:00 30 (min) Purpose code: 3
LOG :3745.40 3747.00 1.60 Area code : 2
FDEPTH: 210 214 GearCond.code:
BDEPTH: 210 214 Validity code:
Towing dir: 360° Wire out: 600 m Speed: 30 kn*10

Sorted: 77 Kg Total catch: 771.00 CATCH/HOUR: 1542.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1268.00 | 20932 | 82.23 | 650 |
| Merluccius capensis, female | 130.60 | 1620 | 8.47 | 647 |
| Merluccius capensis, male | 91.00 | 1280 | 5.90 | 648 |
| Merluccius capensis, juveniles | 52.40 | 2460 | 3.40 | 649 |
| Total | 1542.00 | | 100.00 | |

PROJECT STATION: 298

DATE:21/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2128
start stop duration Long E 1310
TIME :16:35:00 17:05:00 30 (min) Purpose code: 3
LOG :3756.50 3757.10 1.60 Area code : 2
FDEPTH: 141 140 GearCond.code:
BDEPTH: 141 140 Validity code:
Towing dir: 340° Wire out: m Speed: 35 kn*10

Sorted: 19 Kg Total catch: 212.19 CATCH/HOUR: 424.38

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 148.50 | 2662 | 34.99 | 654 |
| Merluccius capensis, juveniles | 138.16 | 5654 | 32.56 | 653 |
| Merluccius capensis, female | 70.62 | 902 | 16.64 | 651 |
| Merluccius capensis, male | 50.82 | 770 | 11.98 | 652 |
| Chatrabus melanurus | 13.20 | 44 | 3.11 | |
| Sufflogobius bibarbatus | 3.08 | 462 | 0.73 | |
| Total | 424.38 | | 100.01 | |

PROJECT STATION: 299

DATE:22/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1959
start stop duration Long E 1227
TIME :06:33:00 06:51:00 18 (min) Purpose code: 3
LOG :3880.00 3880.90 0.90 Area code : 3
FDEPTH: 161 159 GearCond.code:
BDEPTH: 161 159 Validity code:
Towing dir: 340° Wire out: 450 m Speed: 30 kn*10

Sorted: 2 Kg Total catch: 9.84 CATCH/HOUR: 32.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 25.73 | 1200 | 78.45 | 657 |
| Merluccius capensis, female | 3.60 | 67 | 10.98 | 656 |
| Trachurus capensis | 1.87 | 53 | 5.70 | 658 |
| Merluccius capensis, male | 1.60 | 27 | 4.88 | 655 |
| Total | 32.80 | | 100.01 | |

PROJECT STATION: 300

DATE:22/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2002
start stop duration Long E 1217
TIME :08:44:00 09:14:00 30 (min) Purpose code: 3
LOG :3892.90 3894.40 1.50 Area code : 3
FDEPTH: 235 230 GearCond.code:
BDEPTH: 235 230 Validity code:
Towing dir: 340° Wire out: 650 m Speed: 30 kn*10

Sorted: 19 Kg Total catch: 39.42 CATCH/HOUR: 78.84

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 49.20 | 376 | 62.40 | 660 |
| Merluccius capensis, male | 27.20 | 232 | 34.50 | 659 |
| Merluccius capensis, juveniles | 2.40 | 148 | 3.04 | 661 |
| Sufflogobius bibarbatus | 0.04 | 20 | 0.05 | |
| Total | 78.84 | | 99.99 | |

PROJECT STATION: 301

DATE:22/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2010
start stop duration Long E 1200
TIME :12:39:00 13:09:00 30 (min) Purpose code: 3
LOG :3916.10 3917.60 1.50 Area code : 3
FDEPTH: 345 345 GearCond.code:
BDEPTH: 345 345 Validity code:
Towing dir: 350° Wire out:1050 m Speed: 33 kn*10

Sorted: 578 Kg Total catch: 976.68 CATCH/HOUR: 1953.36

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 753.40 | 718 | 38.57 | 662 |
| Helicolenus dactylopterus | 292.74 | 4720 | 14.99 | |
| Deepwater fish mixture | 271.40 | | 13.89 | |
| Merluccius capensis, male | 175.30 | 220 | 8.97 | 663 |
| Chlorophthalmus atlanticus | 170.00 | 6670 | 8.70 | |
| Lophius vomerinus | 122.80 | 102 | 6.29 | 664 |
| Pterothrissus belloci | 50.66 | 204 | 2.59 | |
| Lophius vaillanti | 45.52 | 16 | 2.33 | 665 |
| Galeus polli | 30.60 | 374 | 1.57 | |
| Todarodes sagittatus | 15.30 | 68 | 0.78 | |
| Dentex macrophthalmus | 9.62 | 20 | 0.49 | 666 |
| Coelorinchus coelorhinc. polli | 8.20 | 170 | 0.42 | |
| Dicrolene intronigra | 4.42 | 68 | 0.23 | |
| PORTUNIDAE | 3.40 | 68 | 0.17 | |
| Total | 1953.36 | | 99.99 | |

PROJECT STATION: 302

DATE:22/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2011
start stop duration Long E 1154
TIME :15:09:00 15:39:00 30 (min) Purpose code: 3
LOG :3925.60 3927.30 1.70 Area code : 3
FDEPTH: 442 441 GearCond.code:
BDEPTH: 442 441 Validity code:
Towing dir: 320° Wire out:1250 m Speed: 32 kn*10

Sorted: 108 Kg Total catch: 794.82 CATCH/HOUR: 1589.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 618.40 | 5456 | 38.90 | |
| Hoplostethus cadenati | 370.98 | 15646 | 23.34 | |
| Deepwater fish mixture | 257.58 | | 16.20 | |
| Nezumia sp. | 124.20 | 7762 | 7.81 | |
| Merluccius paradoxus, female | 83.10 | 196 | 5.23 | 667 |
| Merluccius capensis, female | 51.46 | 44 | 3.24 | 669 |
| Todarodes sagittatus | 21.06 | 108 | 1.32 | |
| Lophius vomerinus | 16.18 | 18 | 1.02 | 671 |
| Galeus polli | 15.12 | 162 | 0.95 | |
| Raja confundens | 9.18 | 54 | 0.58 | |
| Merluccius capensis, male | 8.40 | 6 | 0.53 | 670 |
| Merluccius paradoxus, male | 4.80 | 16 | 0.30 | 668 |
| Ebinania costaecanarie | 2.70 | 162 | 0.17 | |
| Yarrella blackfordi | 2.70 | 432 | 0.17 | |
| PORTUNIDAE | 2.16 | 54 | 0.14 | |
| Epigonus telescopus | 1.62 | 54 | 0.10 | |
| Total | 1589.64 | | 100.00 | |

PROJECT STATION: 303

DATE:22/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2011
start stop duration Long E 1150
TIME :17:06:00 17:36:00 30 (min) Purpose code: 3
LOG :3932.90 3934.60 1.70 Area code : 3
FDEPTH: 530 526 GearCond.code:
BDEPTH: 530 526 Validity code:
Towing dir: 330° Wire out:1450 m Speed: 31 kn*10

Sorted: 129 Kg Total catch: 434.35 CATCH/HOUR: 868.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 495.00 | 2704 | 56.98 | |
| Merluccius paradoxus, female | 167.70 | 154 | 19.30 | 673 |
| Nezumia sp | 67.20 | 3000 | 7.74 | |
| Hoplostethus cadenati | 55.80 | 1560 | 6.42 | |
| Helicolenus dactylopterus | 18.60 | 120 | 2.14 | |
| Lophius vomerinus | 15.08 | 4 | 1.74 | 674 |
| Todarodes sagittatus | 11.50 | 18 | 1.32 | |
| Galeus polli | 7.20 | 60 | 0.83 | |
| Lophius vaillanti | 5.56 | 2 | 0.64 | 675 |
| Lithodes ferox | 5.40 | 10 | 0.62 | |
| Raja sp. | 3.30 | 60 | 0.38 | |
| Selachophidium guentheri | 3.30 | 90 | 0.38 | |
| Merluccius paradoxus, male | 2.20 | 4 | 0.25 | 672 |
| Epigonus denticulatus | 1.80 | 30 | 0.21 | |
| Trachurus capensis | 1.80 | 90 | 0.21 | |
| Nemichthys scolopaceus | 0.30 | 30 | 0.03 | |
| Total | 861.74 | | 99.19 | |

PROJECT STATION: 304

DATE:22/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2007
start stop duration Long E 1144
TIME :20:33:00 21:03:00 30 (min) Purpose code: 3
LOG :3948.30 3949.80 1.50 Area code : 3
FDEPTH: 590 583 GearCond code:
BDEPTH: 590 583 Validity code:
Towing dir: 340° Wire out:1650 m Speed: 32 kn*10

Sorted: 97 Kg Total catch: 413.88 CATCH/HOUR: 827.76

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 289.50 | 1208 | 34.97 | |
| Nezumia sp. | 197.10 | 8410 | 23.81 | |
| Merluccius paradoxus, female | 118.00 | 110 | 14.26 | 676 |
| Todarodes sagittatus | 50.70 | 90 | 6.12 | |
| Galeus polli | 39.30 | 360 | 4.75 | |
| RAJIDAE | 36.30 | 30 | 4.39 | |
| Lophius vomerinus | 23.90 | 8 | 2.89 | 679 |
| Hoplostethus cadenati | 16.80 | 570 | 2.03 | |
| Alepocephalus sp. | 14.10 | 300 | 1.70 | |
| Trachurus capensis, juvenile | 11.40 | 450 | 1.38 | 680 |
| Helicolenus dactylopterus | 9.00 | 60 | 1.09 | |
| Lophius vaillanti | 5.32 | 4 | 0.64 | 678 |
| Epigonus telescopus | 4.80 | 90 | 0.58 | |
| Notacanthus sexspinis | 2.70 | 30 | 0.33 | |
| Paradiplospinus gracilis | 2.40 | 30 | 0.29 | |
| Ebinania costaecanarie | 1.50 | 30 | 0.18 | |
| Merluccius paradoxus, male | 1.04 | 2 | 0.13 | 677 |
| Laemonema laureysi | 0.90 | 30 | 0.11 | |
| Lamprogrammus exutus | 0.90 | 30 | 0.11 | |
| Epigonus denticulatus | 0.90 | 30 | 0.11 | |
| Aristeus varidens | 0.60 | 60 | 0.07 | |
| Phrynichthys wedli | 0.60 | 30 | 0.07 | |
| Total | 827.76 | | 100.01 | |

PROJECT STATION: 305

DATE:22/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1954
start stop duration Long E 1142
TIME :22:59:00 23:29:00 30 (min) Purpose code: 3
LOG :3962.00 3963.50 1.50 Area code : 3
FDEPTH: 470 458 GearCond code:
BDEPTH: 470 458 Validity code:
Towing dir: 350° Wire out:1400 m Speed: 30 kn*10

Sorted: 105 Kg Total catch: 443.59 CATCH/HOUR: 887.18

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 585.00 | 3742 | 65.94 | |
| Merluccius paradoxus, female | 78.80 | 190 | 8.88 | 681 |
| Merluccius capensis, female | 50.00 | 38 | 5.64 | 683 |
| Nezumia sp. | 42.12 | 2088 | 4.75 | |
| Hoplostethus cadenati | 33.48 | 828 | 3.77 | |
| Lophius vomerinus | 26.90 | 8 | 3.03 | 685 |
| Helicolenus dactylopterus | 26.64 | 180 | 3.00 | |
| Todarodes sagittatus | 15.48 | 36 | 1.74 | |
| Galeus polli | 9.00 | 108 | 1.01 | |
| Lophius vaillanti | 7.30 | 4 | 0.82 | 686 |
| Merluccius capensis, male | 6.60 | 6 | 0.74 | 684 |
| Ebinania costaecanarie | 3.24 | 72 | 0.37 | |
| Raja leopardus | 1.44 | 36 | 0.16 | |
| Merluccius paradoxus, male | 0.82 | 2 | 0.09 | 682 |
| Epigonus denticulatus | 0.36 | 36 | 0.04 | |
| Total | 887.18 | | 99.98 | |

PROJECT STATION: 306

DATE:23/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1951
start stop duration Long E 1145
TIME :06:37:00 07:07:00 30 (min) Purpose code: 3
LOG :3976.20 3977.70 1.50 Area code : 3
FDEPTH: 400 397 GearCond code:
BDEPTH: 400 397 Validity code:
Towing dir: 360° Wire out:1150 m Speed: 32 kn*10

Sorted: 208 Kg Total catch: 365.47 CATCH/HOUR: 730.94

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT C | SAMP |
|---|---|---|---|---|
| Helicolenus dactylopterus | 285.60 | 2512 | 39.07 | |
| Merluccius capensis, female | 210.80 | 154 | 28.84 | 690 |
| Lophius vomerinus | 104.40 | 48 | 14.28 | 687 |
| Todarodes sagittatus | 33.20 | 62 | 4.54 | |
| Merluccius paradoxus, female | 23.60 | 52 | 3.23 | 691 |
| Nezumia sp. | 18.48 | 768 | 2.53 | |
| Hoplostethus cadenati | 10.08 | 456 | 1.38 | |
| Merluccius capensis, male | 9.50 | 10 | 1.30 | 689 |
| Ebinania costaecanarie | 8.64 | 48 | 1.18 | |
| Trachyrincus scabrus | 6.00 | 72 | 0.82 | |
| Galeus polli | 5.28 | 96 | 0.72 | |
| Selachophidium guentheri | 4.80 | 48 | 0.66 | |
| Lophius vaillanti | 4.20 | 2 | 0.57 | 688 |
| Neoharriotta pinnata | 2.28 | 2 | 0.31 | |
| Laemonema laureysi | 1.92 | 24 | 0.26 | |
| Coelorinchus fasciatus | 1.68 | 72 | 0.23 | |
| Chlorophthalmus atlanticus | 0.48 | 24 | 0.07 | |
| Total | 730.94 | | 99.99 | |

PROJECT STATION: 307

DATE:23/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1951
start stop duration Long E 1155
TIME :09:00:00 09:30:00 30 (min) Purpose code: 3
LOG :3988.40 3989.80 1.40 Area code : 3
FDEPTH: 350 336 GearCond code:
BDEPTH: 350 336 Validity code:
Towing dir: 75° Wire out: 950 m Speed: 28 kn*10

Sorted: 230 Kg Total catch: 319.53 CATCH/HOUR: 639.06

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 275.30 | 328 | 43.08 | 693 |
| Helicolenus dactylopterus | 95.60 | 2900 | 14.96 | |
| Merluccius capensis, male | 76.50 | 110 | 11.97 | 692 |
| Dentex macrophthalmus | 44.20 | 130 | 6.92 | 695 |
| Pterothrissus belloci | 33.00 | 120 | 5.16 | |
| Lophius vomerinus | 30.86 | 44 | 4.83 | 694 |
| Chlorophthalmus atlanticus | 22.20 | 860 | 3.47 | |
| Guentherus altivela | 15.80 | 20 | 2.47 | |
| Todarodes sagittatus | 13.50 | 26 | 2.11 | |
| Coelorinchus coelorhinc. polli | 9.00 | 220 | 1.41 | |
| PORTUNIDAE | 5.60 | 160 | 0.88 | |
| Coelorinchus fasciatus | 5.40 | 160 | 0.84 | |
| Synagrops microlepis | 4.20 | 540 | 0.66 | |
| Ebinania costaecanarie | 2.40 | 40 | 0.38 | |
| Nezumia sp. | 2.00 | 120 | 0.31 | |
| Galeus polli | 1.60 | 20 | 0.25 | |
| Hoplostethus cadenati | 1.20 | 320 | 0.19 | |
| Trachurus capensis | 0.70 | 2 | 0.11 | 696 |
| Total | 639.06 | | 100.00 | |

PROJECT STATION: 308

DATE:23/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1944
start stop duration Long E 1201
TIME :10:59:00 11:29:00 30 (min) Purpose code: 3
LOG :3998.40 3999.80 1.40 Area code : 3
FDEPTH: 306 297 GearCond code:
BDEPTH: 306 297 Validity code:
Towing dir: 70° Wire out: 900 m Speed: 28 kn*10

Sorted: 106 Kg Total catch: 137.13 CATCH/HOUR: 274.26

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 95.90 | 280 | 34.97 | 698 |
| Pterothrissus belloci | 53.20 | 394 | 19.40 | |
| Merluccius capensis, male | 38.60 | 150 | 14.07 | 697 |
| Lophius vomerinus | 38.20 | 58 | 13.93 | 700 |
| Trigla lyra | 9.76 | 72 | 3.56 | |
| Todarodes sagittatus | 9.44 | 28 | 3.44 | |
| Chlorophthalmus atlanticus | 7.36 | 352 | 2.68 | |
| C R A B S | 5.52 | 160 | 2.01 | |
| Neoharriotta pinnata | 4.82 | 2 | 1.76 | |
| Austroglossus microlepis | 3.36 | 16 | 1.23 | |
| Trachurus capensis | 2.56 | 56 | 0.93 | 699 |
| Raja leopardus | 1.62 | 2 | 0.59 | |
| Coelorinchus coelorhinc. polli | 1.12 | 48 | 0.41 | |
| Sufflogobius bibarbatus | 0.72 | 112 | 0.26 | |
| Helicolenus dactylopterus | 0.64 | 48 | 0.23 | |
| Coelorinchus fasciatus | 0.48 | 24 | 0.18 | |
| Synagrops microlepis | 0.40 | 96 | 0.15 | |
| Selachophidium guentheri | 0.32 | 8 | 0.12 | |
| Etrumeus whiteheadi | 0.24 | 8 | 0.09 | |
| Total | 274.26 | | 100.01 | |

PROJECT STATION: 309

DATE:23/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1916
start stop duration Long E 1200
TIME :14:50:00 15:13:00 23 (min) Purpose code: 3
LOG :4027.70 4029.00 1.30 Area code : 3
FDEPTH: 260 257 GearCond code:
BDEPTH: 260 257 Validity code:
Towing dir: 350° Wire out: 800 m Speed: 32 kn*10

Sorted: 18 Kg Total catch: 18.43 CATCH/HOUR: 48.08

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 29.22 | 102 | 60.77 | 701 |
| Trachurus capensis | 8.61 | 399 | 17.91 | 704 |
| Merluccius capensis, male | 8.19 | 52 | 17.03 | 702 |
| Dentex macrophthalmus | 0.99 | 5 | 2.06 | 703 |
| Synagrops microlepis | 0.26 | 5 | 0.54 | |
| Sufflogobius bibarbatus | 0.26 | 57 | 0.54 | |
| Galeus polli | 0.16 | 3 | 0.33 | |
| Trigla lyra | 0.16 | 3 | 0.33 | |
| Pterothrissus belloci | 0.13 | 3 | 0.27 | |
| Chlorophthalmus atlanticus | 0.10 | 5 | 0.21 | |
| Total | 48.08 | | 99.99 | |

PROJECT STATION: 310

DATE:23/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1920
start stop duration Long E 1150
TIME :17:07:00 17:37:00 30 (min) Purpose code: 3
LOG :4041.60 4043.20 1.60 Area code : 3
FDEPTH: 308 306 GearCond code:
BDEPTH: 308 306 Validity code:
Towing dir: 350° Wire out: 950 m Speed: 30 kn*10

Sorted: 228 Kg Total catch: 315.83 CATCH/HOUR: 631.66

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT C | SAMP |
|---|---|---|---|---|
| Pterothrissus belloci | 174.60 | 1136 | 27.64 | |
| Lophius vomerinus | 161.20 | 150 | 25.52 | 705 |
| Merluccius capensis, female | 154.70 | 218 | 24.49 | 708 |
| Dentex macrophthalmus | 47.10 | 146 | 7.46 | 709 |
| Merluccius capensis, male | 28.30 | 70 | 4.48 | 707 |
| Austroglossus microlepis | 19.50 | 34 | 3.09 | 706 |
| Chlorophthalmus atlanticus | 9.96 | 408 | 1.58 | |
| Galeus polli | 8.88 | 240 | 1.41 | |
| Trachurus capensis | 7.56 | 36 | 1.20 | 710 |
| Hexanchus griseus | 6.22 | 2 | 0.98 | |
| Todarodes sagittatus | 5.84 | 12 | 0.92 | |
| Coelorinchus fasciatus | 4.08 | 252 | 0.65 | |
| Synagrops microlepis | 2.40 | 420 | 0.38 | |
| Coelorinchus coelorhinc. polli | 1.32 | 120 | 0.21 | |
| Total | 631.66 | | 100.01 | |

PROJECT STATION: 311

DATE:23/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1926
start stop duration Long E 1140
TIME :19:35:00 20:05:00 30 (min) Purpose code: 3
LOG :4055.40 4057.00 1.60 Area code : 3
FDEPTH: 360 373 GearCond code:
BDEPTH: 360 373 Validity code:
Towing dir: 240° Wire out:1000 m Speed: 33 kn*10

Sorted: 584 Kg Total catch: 719.39 CATCH/HOUR: 1438.78

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 806.20 | 840 | 56.03 | 713 |
| Merluccius capensis, male | 199.60 | 248 | 13.87 | 712 |
| Helicolenus dactylopterus | 172.56 | 2130 | 11.99 | |
| Lophius vomerinus | 121.40 | 78 | 8.44 | 711 |
| Galeus polli | 45.12 | 456 | 3.14 | |
| Squalus megalops | 24.00 | 48 | 1.67 | |
| Trachurus capensis | 15.12 | 720 | 1.05 | 715 |
| Merluccius paradoxus, female | 11.50 | 46 | 0.80 | 714 |
| Nezumia sp. | 8.64 | 504 | 0.60 | |
| Ebinania costaecanarie | 8.40 | 168 | 0.58 | |
| Epigonus denticulatus | 6.72 | 312 | 0.47 | |
| Chlorophthalmus atlanticus | 5.04 | 168 | 0.35 | |
| Todarodes sagittatus | 4.88 | 8 | 0.34 | |
| Coelorinchus fasciatus | 4.08 | 216 | 0.28 | |
| Coelorinchus coelorhinc. polli | 3.36 | 120 | 0.23 | |
| PORTUNIDAE | 2.16 | 48 | 0.15 | |
| Total | 1438.78 | | 99.99 | |

PROJECT STATION: 312

DATE:23/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1926
start stop duration Long E 1133
TIME :21:33:00 22:03:00 30 (min) Purpose code: 3
LOG :4063.80 4065.40 1.60 Area code : 3
FDEPTH: 455 450 GearCond.code:
BDEPTH: 455 450 Validity code:
Towing dir: 350° Wire out:1250 m Speed: 32 kn*10

Sorted: 205 Kg Total catch: 394.03 CATCH/HOUR: 788.06

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 331.10 | 644 | 42.01 | 717 |
| Trachyrincus scabrus | 129.00 | 1280 | 16.37 | |
| Deania calcea | 109.00 | 20 | 13.83 | |
| Helicolenus dactylopterus | 67.00 | 640 | 8.50 | |
| Nezumia sp. | 37.60 | 1400 | 4.77 | |
| Selachophidium quentheri | 24.80 | 520 | 3.15 | |
| Galeus polli | 24.80 | 260 | 3.15 | |
| Lophius vomerinus | 17.60 | 10 | 2.23 | |
| Ruvettus pretiosus | 17.40 | 2 | 2.21 | |
| Todarodes sagittatus | 8.60 | 16 | 1.09 | |
| Lophius vaillanti | 5.10 | 4 | 0.65 | |
| Merluccius capensis, female | 3.96 | 2 | 0.50 | 718 |
| Laemonema laureysi | 3.20 | 40 | 0.41 | |
| Merluccius paradoxus, male | 2.54 | 6 | 0.32 | 716 |
| Geryon maritae | 2.14 | 2 | 0.27 | |
| Parapenaeus longirostris | 1.80 | 640 | 0.23 | |
| PORTUNIDAE | 1.20 | 40 | 0.15 | |
| Trachurus capensis, juvenile | 0.42 | 14 | 0.05 | 719 |
| Epigonus telescopus | 0.40 | 20 | 0.05 | |
| Ebinania costaecanarie | 0.40 | 20 | 0.05 | |
| Total | 788.06 | | 99.99 | |

PROJECT STATION: 313

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1832
start stop duration Long E 1145
TIME :06:37:00 07:07:00 30 (min) Purpose code: 3
LOG :4129.10 4130.60 1.50 Area code : 3
FDEPTH: 180 175 GearCond.code:
BDEPTH: 180 175 Validity code:
Towing dir: 360° Wire out: 510 m Speed: 30 kn*10

Sorted: 69 Kg Total catch: 986.99 CATCH/HOUR: 1973.98

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1728.00 | 18506 | 87.54 | 725 |
| Dentex macrophthalmus | 69.76 | 540 | 3.53 | 724 |
| Merluccius capensis, female | 46.60 | 174 | 2.36 | 721 |
| Merluccius capensis, female | 38.70 | 316 | 1.96 | 723 |
| Merluccius capensis, male | 33.30 | 226 | 1.69 | 722 |
| Todarodes sagittatus | 31.50 | 46 | 1.60 | |
| Pterothrissus belloci | 18.00 | 406 | 0.91 | |
| Merluccius capensis, male | 5.40 | 40 | 0.27 | 720 |
| Austroglossus microlepis | 1.36 | 46 | 0.07 | |
| Merluccius capensis, juveniles | 1.36 | 46 | 0.07 | |
| Total | 1973.98 | | 100.00 | |

PROJECT STATION: 314

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1822
start stop duration Long E 1132
TIME :09:08:00 09:28:00 20 (min) Purpose code: 3
LOG :4146.90 4147.90 1.00 Area code : 3
FDEPTH: 230 243 GearCond.code:
BDEPTH: 230 243 Validity code:
Towing dir: 310° Wire out: 650 m Speed: 30 kn*10

Sorted: 65 Kg Total catch: 637.60 CATCH/HOUR: 1912.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 1170.00 | 7059 | 61.17 | 732 |
| Merluccius capensis, female | 237.90 | 1755 | 12.44 | 730 |
| Merluccius capensis, male | 175.50 | 1443 | 9.18 | 729 |
| Synagrops microlepis | 101.40 | 17118 | 5.30 | |
| Raja miraletus | 65.91 | 78 | 3.45 | |
| Trigla lyra | 57.72 | 312 | 3.02 | |
| Merluccius capensis, female | 40.80 | 66 | 2.13 | 728 |
| Trachurus capensis | 18.33 | 156 | 0.96 | 731 |
| PORTUNIDAE | 17.94 | 1287 | 0.94 | |
| Lophius vomerinus | 11.70 | 15 | 0.61 | 726 |
| Sufflogobius bibarbatus | 8.97 | 1521 | 0.47 | |
| Pterothrissus belloci | 4.68 | 39 | 0.24 | |
| Merluccius capensis, male | 1.95 | 6 | 0.10 | 727 |
| Total | 1912.80 | | 100.01 | |

PROJECT STATION: 315

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1817
start stop duration Long E 1128
TIME :10:39:00 11:09:00 30 (min) Purpose code: 3
LOG :4154.40 4155.90 1.50 Area code : 3
FDEPTH: 330 330 GearCond.code:
BDEPTH: 330 330 Validity code:
Towing dir: 360° Wire out: 950 m Speed: 30 kn*10

Sorted: 281 Kg Total catch: 2887.48 CATCH/HOUR: 5774.96

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 2439.00 | 4182 | 42.23 | 733 |
| Dentex macrophthalmus | 1325.60 | 5562 | 22.95 | 735 |
| Merluccius capensis, male | 965.10 | 1998 | 16.71 | 734 |
| Helicolenus dactylopterus | 797.20 | 19468 | 13.80 | |
| Galeus polli | 48.40 | 926 | 0.84 | |
| Chlorophthalmus atlanticus | 46.76 | 1422 | 0.81 | |
| Coelorinchus fasciatus | 34.60 | 1936 | 0.60 | |
| Hyperoglyphe moselii | 27.18 | 42 | 0.47 | |
| PORTUNIDAE | 26.20 | 598 | 0.45 | |
| Synagrops microlepis | 20.80 | 2780 | 0.36 | |
| Pterothrissus belloci | 18.74 | 82 | 0.32 | |
| Trachurus capensis | 10.70 | 62 | 0.19 | 737 |
| Laemonema laureysi | 6.38 | 164 | 0.11 | |
| Coelorinchus coelorhinc polli | 3.50 | 164 | 0.06 | |
| Lophius vomerinus | 2.74 | 2 | 0.05 | 736 |
| OPHICHTHIDAE | 2.06 | 20 | 0.04 | |
| Total | 5774.96 | | 99.99 | |

PROJECT STATION: 316

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1813
start stop duration Long E 1126
TIME :12:38:00 13:08:00 30 (min) Purpose code: 3
LOG :4161.30 4163.00 1.70 Area code : 3
FDEPTH: 416 410 GearCond.code:
BDEPTH: 416 410 Validity code:
Towing dir: 20° Wire out:1200 m Speed: 35 kn*10

Sorted: 203 Kg Total catch: 203.83 CATCH/HOUR: 407.66

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 318.00 | 276 | 78.01 | 738 |
| Merluccius capensis, male | 59.40 | 62 | 14.57 | 739 |
| Lophius vomerinus | 11.20 | 6 | 2.75 | 740 |
| ATEAT02 | 5.42 | 2 | 1.33 | |
| Helicolenus dactylopterus | 5.38 | 36 | 1.32 | |
| Galeus polli | 2.82 | 78 | 0.69 | |
| PORTUNIDAE | 1.66 | 34 | 0.41 | |
| Hydrolagus sp. | 1.00 | 2 | 0.25 | |
| Laemonema laureysi | 0.78 | 10 | 0.19 | |
| Nezumia sp. | 0.76 | 38 | 0.19 | |
| Ebinania costaecanarie | 0.40 | 2 | 0.10 | |
| Malacocephalus laevis | 0.30 | 2 | 0.07 | |
| OPHICHTHIDAE | 0.20 | 4 | 0.05 | |
| Paradiplospinus gracilis | 0.18 | 2 | 0.04 | |
| Coelorinchus coelorhinc polli | 0.16 | 10 | 0.04 | |
| Total | 407.66 | | 100.01 | |

PROJECT STATION: 317

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1809
start stop duration Long E 1128
TIME :14:18:00 14:48:00 30 (min) Purpose code: 3
LOG :4166.80 4168.30 1.50 Area code : 3
FDEPTH: 368 340 GearCond.code:
BDEPTH: 368 340 Validity code:
Towing dir: 20° Wire out:1150 m Speed: 31 kn*10

Sorted: 264 Kg Total catch: 264.79 CATCH/HOUR: 529.58

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 435.50 | 424 | 82.23 | 741 |
| Merluccius capensis, male | 61.90 | 78 | 11.69 | 742 |
| Helicolenus dactylopterus | 17.10 | 208 | 3.23 | |
| Lophius vaillanti | 7.46 | 4 | 1.41 | 744 |
| Lophius vomerinus | 5.24 | 6 | 0.99 | 743 |
| Squalus megalops | 2.38 | 4 | 0.45 | |
| Total | 529.58 | | 100.00 | |

PROJECT STATION: 318

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1805
start stop duration Long E 1131
TIME :15:41:00 15:46:00 5 (min) Purpose code: 3
LOG :4172.30 4172.50 0.20 Area code : 3
FDEPTH: 242 242 GearCond.code: 9
BDEPTH: 242 242 Validity code: 1
Towing dir: 360° Wire out: 750 m Speed: 30 kn*10

Sorted: 42 Kg Total catch: 42.50 CATCH/HOUR: 510.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 229.20 | 1080 | 44.94 | 745 |
| Helicolenus dactylopterus | 121.20 | 768 | 23.76 | |
| Merluccius capensis, male | 73.80 | 612 | 14.47 | 746 |
| Dentex macrophthalmus | 36.72 | 180 | 7.20 | 748 |
| Chlorophthalmus atlanticus | 26.64 | 996 | 5.22 | |
| Trachurus capensis | 17.28 | 96 | 3.39 | 747 |
| Synagrops microlepis | 2.76 | 492 | 0.54 | |
| Pterothrissus belloci | 1.56 | 12 | 0.31 | |
| PORTUNIDAE | 0.48 | 12 | 0.09 | |
| Dicologoglossa cuneata | 0.36 | 12 | 0.07 | |
| Total | 510.00 | | 99.99 | |

PROJECT STATION: 319

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1800
start stop duration Long E 1134
TIME :17:01:00 17:21:00 20 (min) Purpose code: 3
LOG :4181.30 4182.50 1.20 Area code : 3
FDEPTH: 190 200 GearCond.code:
BDEPTH: 190 200 Validity code:
Towing dir: 200° Wire out: 650 m Speed: 30 kn*10

Sorted: 292 Kg Total catch: 3074.50 CATCH/HOUR: 9223.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 5910.00 | 39753 | 64.08 | 753 |
| Trachurus capensis | 2202.00 | 63189 | 23.87 | 754 |
| Merluccius capensis, female | 354.30 | 1059 | 3.84 | 750 |
| Synagrops microlepis | 255.60 | 38148 | 2.77 | |
| Pterothrissus belloci | 126.60 | 1500 | 1.37 | |
| Merluccius capensis, female | 97.80 | 420 | 1.06 | 752 |
| Raja miraletus | 88.80 | 60 | 0.96 | |
| Merluccius capensis, male | 84.00 | 303 | 0.91 | 749 |
| Lophius vomerinus | 80.40 | 60 | 0.87 | 755 |
| Merluccius capensis, male | 24.00 | 240 | 0.26 | 751 |
| Total | 9223.50 | | 99.99 | |

PROJECT STATION: 320

DATE:24/ 5/94 GEAR TYPE: BT No:1 POSITION:Lat S 1757
start stop duration Long E 1122
TIME :19:37:00 20:07:00 30 (min) Purpose code: 3
LOG :4195.80 4197.20 1.40 Area code : 3
FDEPTH: 465 479 GearCond.code:
BDEPTH: 465 479 Validity code:
Towing dir: 360° Wire out:1350 m Speed: 30 kn*10

Sorted: 298 Kg Total catch: 1249.13 CATCH/HOUR: 2498.26

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 1432.00 | 14000 | 57.32 | |
| Merluccius capensis, female | 382.50 | 360 | 15.31 | 757 |
| Nezumia sp. | 240.00 | 7040 | 9.61 | |
| Todarodes sagittatus | 84.00 | 160 | 3.36 | |
| Helicolenus dactylopterus | 60.80 | 560 | 2.43 | |
| Merluccius capensis, male | 56.50 | 66 | 2.26 | 756 |
| Lophius vomerinus | 50.10 | 16 | 2.01 | 760 |
| Merluccius paradoxus, female | 39.90 | 58 | 1.60 | 758 |
| Hoplostethus cadenati | 34.40 | 1840 | 1.38 | |
| Lophius vaillanti | 32.10 | 12 | 1.28 | 761 |
| Laemonema laureysi | 24.00 | 240 | 0.96 | |
| Etmopterus pusillus | 20.00 | 80 | 0.80 | |
| CRAGE12 | 19.20 | 82 | 0.77 | 762 |
| CRAGE13 | 9.20 | 48 | 0.37 | 763 |
| Merluccius polli, female | 7.16 | 8 | 0.29 | 759 |
| Ebinania costaecanarie | 3.20 | 80 | 0.13 | |
| Epigonus denticulatus | 2.40 | 160 | 0.10 | |
| Yarrella blackfordi | 0.80 | 240 | 0.03 | |
| Total | 2498.26 | | 100.01 | |

PROJECT STATION: 321

DATE:24/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1753
start stop duration Long E 1120
TIME :21:07:00 21:32:00 25 (min) Purpose code: 3
LOG :4200.50 4201.70 1.20 Area code : 3
FDEPTH: 570 605 GearCond.code:
BDEPTH: 570 605 Validity code:
Towing dir: 10° Wire out:1600 m Speed: 29 kn*10

Sorted: 225 Kg Total catch: 760.27 CATCH/HOUR: 1824.65

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 933.00 | 4786 | 51.13 | |
| Merluccius paradoxus, female | 246.24 | 283 | 13.50 | 767 |
| Raja confundens | 138.00 | 120 | 7.56 | |
| Merluccius capensis, female | 132.24 | 132 | 7.25 | 765 |
| Nezumia sp | 127.80 | 11724 | 7.00 | |
| Hoplostethus cadenati | 68.40 | 2460 | 3.75 | |
| Alepocephalus sp | 34.80 | 60 | 1.91 | |
| Merluccius polli, female | 25.44 | 29 | 1.39 | 766 |
| Lophius vomerinus | 24.72 | 5 | 1.35 | 768 |
| CRAGE12 | 21.84 | 110 | 1.20 | 770 |
| Merluccius capensis, male | 18.84 | 19 | 1.03 | 764 |
| Etmopterus lucifer | 18.60 | 60 | 1.02 | |
| CRAGE13 | 8.40 | 50 | 0.46 | 771 |
| Lophius vaillanti | 8.40 | 10 | 0.46 | 769 |
| Ebinania costaecanarie | 5.40 | 60 | 0.30 | |
| Helicolenus dactylopterus | 4.20 | 60 | 0.23 | |
| Laemonema laureysi | 3.00 | 60 | 0.16 | |
| RAJIDAE | 3.00 | 60 | 0.16 | |
| Galeus polli | 1.20 | 60 | 0.07 | |
| OPISTHOTEUTHIDAE | 0.60 | 60 | 0.03 | |
| Lithodes ferox | 0.53 | 5 | 0.03 | |
| Total | 1824.65 | | 99.99 | |

PROJECT STATION: 322

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1734
start stop duration Long E 1130
TIME :06:42:00 07:02:00 20 (min) Purpose code: 3
LOG :4222.70 4223.80 1.10 Area code : 3
FDEPTH: 215 209 GearCond.code:
BDEPTH: 215 209 Validity code:
Towing dir: 5° Wire out: 600 m Speed: 29 kn*10

Sorted: 149 Kg Total catch: 934.66 CATCH/HOUR: 2803.98

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1143.45 | 9828 | 40.78 | 778 |
| Dentex macrophthalmus | 825.30 | 4788 | 29.43 | 777 |
| Merluccius capensis, female | 248.10 | 588 | 8.85 | 774 |
| Pterothrissus belloci | 220.50 | 1449 | 7.86 | |
| Merluccius capensis, male | 75.60 | 504 | 2.70 | 775 |
| Helicolenus dactylopterus | 73.08 | 567 | 2.61 | |
| Merluccius capensis, female | 67.41 | 504 | 2.40 | 776 |
| Merluccius capensis, male | 65.25 | 240 | 2.33 | 773 |
| Raja confundens | 39.06 | 6 | 1.39 | |
| Synagrops microlepis | 30.87 | 5040 | 1.10 | |
| Lophius vomerinus | 15.36 | 3 | 0.55 | 772 |
| Total | 2803.98 | | 100.00 | |

PROJECT STATION: 323

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1743
start stop duration Long E 1123
TIME :08:52:00 09:22:00 30 (min) Purpose code: 3
LOG :4236.60 4238.10 1.50 Area code : 3
FDEPTH: 305 300 GearCond.code:
BDEPTH: 305 300 Validity code:
Towing dir: 20° Wire out: 900 m Speed: 30 kn*10

Sorted: 171 Kg Total catch: 2425.12 CATCH/HOUR: 4850.24

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 2392.50 | 3234 | 49.33 | 782 |
| Merluccius capensis, male | 705.10 | 1342 | 14.54 | 781 |
| Dentex macrophthalmus | 532.40 | 1870 | 10.98 | 779 |
| Helicolenus dactylopterus | 449.90 | 5324 | 9.28 | |
| Squalus megalops | 168.30 | 572 | 3.47 | |
| Chlorophthalmus atlanticus | 154.44 | 3652 | 3.18 | |
| Trachurus capensis | 145.20 | 638 | 2.99 | 780 |
| Laemonema laureysi | 79.64 | 1408 | 1.64 | |
| Coelorinchus coelorhinc polli | 63.58 | 1892 | 1.31 | |
| Galeus polli | 42.90 | 638 | 0.88 | |
| Raja leopardus | 38.72 | 44 | 0.80 | |
| Lophius vomerinus | 20.80 | 22 | 0.43 | |
| Pterothrissus belloci | 18.26 | 66 | 0.38 | |
| Stromateus fiatola | 16.28 | 22 | 0.34 | |
| Malacocephalus occidentalis | 10.78 | 242 | 0.22 | |
| OPHMY01 | 6.16 | 22 | 0.13 | |
| Coelorinchus fasciatus | 4.18 | 220 | 0.09 | |
| Synagrops microlepis | 1.10 | 88 | 0.02 | |
| Geryon maritae | 0.00 | 20 | | |
| Total | 4850.24 | | 100.01 | |

PROJECT STATION: 324

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1740
start stop duration Long E 1122
TIME :10:40:00 11:10:00 30 (min) Purpose code: 3
LOG :4242.20 4243.80 1.60 Area code : 3
FDEPTH: 400 407 GearCond.code:
BDEPTH: 400 407 Validity code:
Towing dir: 20° Wire out:1150 m Speed: 33 kn*10

Sorted: 367 Kg Total catch: 3052.94 CATCH/HOUR: 6105.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 4231.60 | 3920 | 69.30 | 785 |
| Merluccius capensis, male | 474.32 | 510 | 7.77 | 786 |
| Helicolenus dactylopterus | 463.60 | 2396 | 7.59 | |
| Galeus polli | 310.60 | 3352 | 5.09 | |
| Squalus megalops | 109.76 | 196 | 1.80 | |
| Coelorinchus fasciatus | 81.00 | 1686 | 1.33 | |
| Laemonema laureysi | 80.94 | 824 | 1.33 | |
| S H A R K S | 73.50 | 40 | 1.20 | |
| Lophius vaillanti | 70.22 | 20 | 1.15 | 784 |
| Lophius vomerinus | 55.92 | 22 | 0.92 | 783 |
| RAJIDAE | 42.52 | 20 | 0.70 | |
| Hexanchus griseus | 32.00 | 2 | 0.52 | |
| Dentex macrophthalmus | 26.66 | 78 | 0.44 | 787 |
| Nezumia sp | 21.16 | 1078 | 0.35 | |
| Coloconger scholesi | 17.80 | 20 | 0.29 | |
| Malacocephalus laevis | 7.24 | 58 | 0.12 | |
| Ebinania costaecanarie | 4.32 | 40 | 0.07 | |
| Epigonus telescopus | 1.76 | 40 | 0.03 | |
| PORTUNIDAE | 0.58 | 20 | 0.01 | |
| Epigonus denticulatus | 0.38 | 20 | 0.01 | |
| Total | 6105.88 | | 100.02 | |

PROJECT STATION: 325

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1735
start stop duration Long E 1122
TIME :12:18:00 12:48:00 30 (min) Purpose code: 3
LOG :4248.30 4250.00 1.70 Area code : 3
FDEPTH: 345 344 GearCond.code:
BDEPTH: 345 344 Validity code:
Towing dir: 350° Wire out:1050 m Speed: 34 kn*10

Sorted: 319 Kg Total catch: 2631.09 CATCH/HOUR: 5262.18

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1971.20 | 2820 | 37.46 | 788 |
| Squalus megalops | 1018.40 | 3324 | 19.35 | |
| Merluccius capensis, male | 764.28 | 1278 | 14.52 | 789 |
| Helicolenus dactylopterus | 525.60 | 49796 | 9.99 | |
| Dentex macrophthalmus | 463.30 | 1526 | 8.80 | 790 |
| Trachurus capensis | 218.20 | 968 | 4.15 | 791 |
| Laemonema laureysi | 105.94 | 1362 | 2.01 | |
| Raja leopardus | 62.48 | 50 | 1.19 | |
| Galeus polli | 42.32 | 442 | 0.80 | |
| Hyperoglyphe moselii | 41.00 | 82 | 0.78 | |
| Coelorinchus fasciatus | 30.34 | 754 | 0.58 | |
| PORTUNIDAE | 9.02 | 164 | 0.17 | |
| Malacocephalus laevis | 7.06 | 114 | 0.13 | |
| Chlorophthalmus atlanticus | 3.30 | 16 | 0.06 | |
| Total | 5262.44 | | 99.99 | |

PROJECT STATION: 326

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1730
start stop duration Long E 1125
TIME :14:17:00 14:47:00 30 (min) Purpose code: 3
LOG :4256.60 4258.40 1.80 Area code : 3
FDEPTH: 231 224 GearCond.code:
BDEPTH: 231 224 Validity code:
Towing dir: 20° Wire out: 750 m Speed: 36 kn*10

Sorted: 308 Kg Total catch: 2120.47 CATCH/HOUR: 4240.94

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1981.60 | 4018 | 46.73 | 792 |
| Trachurus capensis | 793.08 | 8324 | 18.70 | 795 |
| Merluccius capensis, male | 423.16 | 1832 | 9.98 | 793 |
| Dentex macrophthalmus | 376.30 | 1946 | 8.87 | 794 |
| Pterothrissus belloci | 284.70 | 1704 | 6.71 | |
| Squalus megalops | 186.00 | 802 | 4.39 | |
| Chlorophthalmus atlanticus | 149.82 | 3892 | 3.53 | |
| Helicolenus dactylopterus | 105.78 | 1818 | 2.49 | |
| Synagrops microlepis | 71.28 | 12176 | 1.68 | |
| PORTUNIDAE | 4.82 | 212 | 0.11 | |
| Merluccius polli, juveniles | 2.12 | 28 | 0.05 | |
| Dicologoglossa cuneata | 0.86 | 14 | 0.02 | |
| Aristeus varidens | 0.72 | 116 | 0.02 | |
| Total | 4380.24 | | 103.28 | |

PROJECT STATION: 327

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1723
start stop duration Long E 1127
TIME :15:57:00 16:17:00 20 (min) Purpose code: 3
LOG :4263.90 4265.00 1.10 Area code : 3
FDEPTH: 187 184 GearCond.code:
BDEPTH: 187 184 Validity code:
Towing dir: 10° Wire out: 650 m Speed: 32 kn*10

Sorted: 220 Kg Total catch: 1411.89 CATCH/HOUR: 4235.67

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 2958.30 | 27459 | 69.84 | 798 |
| Merluccius capensis, female | 506.25 | 1143 | 11.95 | 797 |
| Squalus megalops | 136.80 | 456 | 3.23 | |
| Dentex macrophthalmus | 131.10 | 1140 | 3.10 | 799 |
| Merluccius capensis, male | 117.90 | 327 | 2.78 | 796 |
| Helicolenus dactylopterus | 103.74 | 1482 | 2.45 | |
| Chlorophthalmus atlanticus | 101.46 | 3420 | 2.40 | |
| Synagrops microlepis | 80.94 | 13680 | 1.91 | |
| Pterothrissus belloci | 53.58 | 342 | 1.26 | |
| Trachurus capensis, juvenile | 31.92 | 912 | 0.75 | 800 |
| Merluccius polli, juveniles | 13.68 | 342 | 0.32 | 801 |
| Total | 4235.67 | | 99.99 | |

PROJECT STATION: 328

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1723
start stop duration Long E 1120
TIME :17:42:00 18:12:00 30 (min) Purpose code: 3
LOG :4274.90 4276.40 1.50 Area code : 3
FDEPTH: 367 376 GearCond.code:
BDEPTH: 367 376 Validity code:
Towing dir: 175° Wire out:1100 m Speed: 32 kn*10

Sorted: 581 Kg Total catch: 2009.72 CATCH/HOUR: 4019.44

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1522.40 | 1196 | 37.88 | 804 |
| Squalus megalops | 1140.00 | 3648 | 28.36 | |
| Helicolenus dactylopterus | 750.88 | 6140 | 18.68 | |
| Merluccius capensis, male | 205.60 | 240 | 5.12 | 803 |
| Laemonema laureysi | 170.24 | 2280 | 4.24 | |
| Todarodes sagittatus | 98.80 | 228 | 2.46 | |
| Galeus polli | 48.64 | 456 | 1.21 | |
| Nezumia sp. | 33.44 | 2128 | 0.83 | |
| Coelorinchus coelorhinc polli | 25.84 | 684 | 0.64 | |
| PORTUNIDAE | 9.12 | 152 | 0.23 | |
| Lophius vaillanti | 8.40 | 2 | 0.21 | 802 |
| Chlorophthalmus atlanticus | 3.04 | 76 | 0.08 | |
| Malacocephalus occidentalis | 3.04 | 76 | 0.08 | |
| Total | 4019.44 | | 100.02 | |

PROJECT STATION: 329

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1731
start stop duration Long E 119
TIME :19:36:00 20:06:00 30 (min) Purpose code: 3
LOG :4282.80 4284.20 1.40 Area code : 3
FDEPTH: 500 497 GearCond.code:
BDEPTH: 500 497 Validity code:
Towing dir: 170° Wire out:1400 m Speed: 28 kn*10

Sorted: 453 Kg Total catch: 1529.00 CATCH/HOUR: 3058.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 1403.60 | 7506 | 45.90 | |
| Merluccius paradoxus, female | 711.60 | 790 | 23.27 | 806 |
| Deania calcea | 254.04 | 116 | 8.31 | |
| Hoplostethus cadenati | 212.28 | 7656 | 6.94 | |
| Nezumia sp | 208.80 | 7076 | 6.83 | |
| Merluccius polli, female | 100.10 | 126 | 3.27 | 810 |
| Helicolenus dactylopterus | 49.88 | 232 | 1.63 | |
| Notacanthus sexspinis | 25.52 | 232 | 0.83 | |
| Alepocephalus sp | 24.36 | 116 | 0.80 | |
| Lophius vaillanti | 14.22 | 2 | 0.47 | 812 |
| Merluccius capensis, female | 12.50 | 14 | 0.41 | 808 |
| Merluccius capensis, male | 11.30 | 12 | 0.37 | 807 |
| Lophius vomerinus | 10.86 | 2 | 0.36 | 811 |
| Lamprogrammus exutus | 10.44 | 232 | 0.34 | |
| Merluccius paradoxus, male | 7.00 | 8 | 0.23 | 805 |
| Merluccius polli, male | 1.50 | 2 | 0.05 | 809 |
| Total | 3058.00 | | 100.01 | |

PROJECT STATION: 330

DATE:25/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1750
start stop duration Long E 1121
TIME :23:23:00 23:53:00 30 (min) Purpose code: 3
LOG :4303.80 4305.00 1.20 Area code : 3
FDEPTH: 500 548 GearCond.code:
BDEPTH: 500 548 Validity code:
Towing dir: 175° Wire out:1400 m Speed: 29 kn*10

Sorted: 286 Kg Total catch: 622.35 CATCH/HOUR: 1244.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 478.40 | 2838 | 38.43 | |
| Merluccius capensis, female | 256.90 | 260 | 20.64 | 813 |
| Nezumia sp | 106.24 | 3200 | 8.54 | |
| Merluccius paradoxus, female | 95.90 | 152 | 7.70 | 815 |
| Lophius vaillanti | 65.66 | 20 | 5.28 | 819 |
| Lophius vomerinus | 64.14 | 14 | 5.15 | 818 |
| Helicolenus dactylopterus | 41.92 | 224 | 3.37 | |
| Hoplostethus cadenati | 33.60 | 896 | 2.70 | |
| Merluccius polli, female | 24.30 | 28 | 1.95 | 817 |
| Deania profundorum | 20.80 | 32 | 1.67 | |
| Merluccius capensis, male | 18.30 | 22 | 1.47 | 814 |
| Ebinania costaecanarie | 12.80 | 128 | 1.03 | |
| Geryon maritae | 8.32 | 32 | 0.67 | |
| Notacanthus sexspinis | 4.16 | 64 | 0.33 | |
| Paradiplospinus gracilis | 3.84 | 32 | 0.31 | |
| Laemonema laureysi | 2.88 | 32 | 0.23 | |
| Alepocephalus sp | 2.56 | 224 | 0.21 | |
| Lamprogrammus exutus | 2.56 | 64 | 0.21 | |
| Merluccius paradoxus, male | 1.42 | 2 | 0.11 | 816 |
| Total | 1244.70 | | 100.00 | |

PROJECT STATION: 331

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1806
start stop duration Long E 1125
TIME :02:18:00 02:48:00 30 (min) Purpose code: 3
LOG :4321.60 4323.20 1.60 Area code : 3
FDEPTH: 489 507 GearCond.code:
BDEPTH: 489 507 Validity code:
Towing dir: 190° Wire out:1400 m Speed: 32 kn*10

Sorted: 310 Kg Total catch: 1543.30 CATCH/HOUR: 3086.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 938.90 | 5494 | 30.42 | |
| Deania profundorum | 557.60 | 246 | 18.07 | |
| Deania profundorum | 353.42 | 164 | 11.45 | |
| Merluccius capensis, female | 344.50 | 318 | 11.16 | 820 |
| Nezumia sp | 184.50 | 5248 | 5.98 | |
| Helicolenus dactylopterus | 138.58 | 1066 | 4.49 | |
| Ebinania costaecanarie | 132.02 | 164 | 4.28 | |
| Notacanthus sexspinis | 113.98 | 902 | 3.69 | |
| Merluccius paradoxus, female | 73.20 | 98 | 2.37 | 822 |
| Merluccius capensis, male | 51.90 | 62 | 1.68 | 821 |
| Todarodes sagittatus | 50.84 | 82 | 1.65 | |
| Merluccius polli, female | 44.40 | 36 | 1.44 | 823 |
| Lophius vomerinus | 33.26 | 16 | 1.08 | 824 |
| Hoplostethus cadenati | 28.70 | 5248 | 0.93 | |
| Geryon maritae | 27.88 | 164 | 0.90 | |
| Lophius vaillanti | 12.10 | 8 | 0.39 | 825 |
| Solenocera africana | 0.82 | 82 | 0.03 | |
| Total | 3086.60 | | 100.01 | |

PROJECT STATION: 332

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1834
start stop duration Long E 1137
TIME :06:44:00 06:58:00 14 (min) Purpose code: 3
LOG :4356.40 4357.00 0.60 Area code : 3
FDEPTH: 212 21 GearCond.code:
BDEPTH: 212 21 Validity code:
Towing dir: 320° Wire out: 600 m Speed: 30 kn*10

Sorted: 61 Kg Total catch: 441.52 CATCH/HOUR: 1892.23

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 594.64 | 3343 | 31.43 | 832 |
| Trachurus capensis | 575.36 | 4243 | 30.41 | 831 |
| Merluccius capensis, female | 206.36 | 1607 | 10.91 | 830 |
| Pterothrissus belloci | 125.36 | 2314 | 6.62 | |
| Merluccius capensis, male | 113.14 | 1157 | 5.98 | 829 |
| Merluccius capensis, female | 99.21 | 219 | 5.24 | 828 |
| Synagrops microlepis | 70.07 | 8653 | 3.70 | |
| Raja miraletus | 52.71 | 64 | 2.79 | |
| Merluccius capensis, male | 28.93 | 81 | 1.53 | 827 |
| Lophius vomerinus | 17.44 | 17 | 0.92 | 826 |
| Sufflogobius bibarbatus | 5.14 | 1093 | 0.27 | |
| Chatrabus melanurus | 3.86 | 64 | 0.20 | |
| Total | 1892.22 | | 100.00 | |

PROJECT STATION: 333

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1841
start stop duration Long E 1127
TIME :09:08:00 09:38:00 30 (min) Purpose code: 3
LOG :4371.20 4373.00 1.80 Area code : 3
FDEPTH: 290 289 GearCond.code:
BDEPTH: 290 289 Validity code:
Towing dir: 180° Wire out: 850 m Speed: 34 kn*10

Sorted: 269 Kg Total catch: 2192.85 CATCH/HOUR: 4385.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 2207.40 | 2416 | 50.33 | 836 |
| Chlorophthalmus atlanticus | 528.60 | 18198 | 12.05 | |
| Merluccius capensis, male | 424.80 | 1030 | 9.69 | 835 |
| Synagrops microlepis | 400.20 | 42718 | 9.13 | |
| Dentex macrophthalmus | 327.60 | 1098 | 7.47 | 837 |
| Helicolenus dactylopterus | 250.00 | 5292 | 5.70 | |
| Trachurus capensis | 179.80 | 692 | 4.10 | 838 |
| PORTUNIDAE | 19.40 | 540 | 0.44 | |
| Coelorinchus coelorhinc polli | 13.52 | 744 | 0.31 | |
| Lophius vomerinus | 13.36 | 14 | 0.30 | 833 |
| Galeus polli | 12.32 | 198 | 0.28 | |
| Lophius vaillanti | 8.90 | 4 | 0.20 | 834 |
| Total | 4385.90 | | 100.00 | |

PROJECT STATION: 334

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1844
start stop duration Long E 1125
TIME :10:50:00 11:13:00 23 (min) Purpose code: 3
LOG :4377.20 4378.50 1.30 Area code : 3
FDEPTH: 375 372 GearCond.code:
BDEPTH: 375 372 Validity code:
Towing dir: 180° Wire out:1050 m Speed: 30 kn*10

Sorted: 287 Kg Total catch: 1486.54 CATCH/HOUR: 3877.93

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 2079.44 | 2144 | 53.62 | 842 |
| Merluccius capensis, male | 671.90 | 785 | 17.33 | 841 |
| Helicolenus dactylopterus | 576.26 | 9650 | 14.86 | |
| Galeus polli | 331.04 | 5478 | 8.54 | |
| Chlorophthalmus atlanticus | 50.50 | 1349 | 1.30 | |
| Coelorinchus fasciatus | 33.83 | 1471 | 0.87 | |
| PORTUNIDAE | 29.66 | 1471 | 0.76 | |
| Lophius vaillanti | 28.85 | 16 | 0.74 | 840 |
| Nezumia sp | 22.80 | 1495 | 0.59 | |
| Lophius vomerinus | 18.10 | 21 | 0.47 | 839 |
| Laemonema laureysi | 14.71 | 344 | 0.38 | |
| Coelorinchus coelorhinc polli | 10.54 | 365 | 0.27 | |
| Notacanthus sexspinis | 5.14 | 3 | 0.13 | |
| Merluccius paradoxus, female | 5.14 | 13 | 0.13 | 843 |
| Total | 3877.91 | | 99.99 | |

PROJECT STATION: 335

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1847
start stop duration Long E 1123
TIME :12:11:00 12:41:00 30 (min) Purpose code: 3
LOG :4382.40 4384.30 1.90 Area code : 3
FDEPTH: 443 443 GearCond.code:
BDEPTH: 443 443 Validity code:
Towing dir: 175° Wire out:1250 m Speed: 36 kn*10

Sorted: 432 Kg Total catch: 670.77 CATCH/HOUR: 1341.54

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 649.90 | 1442 | 48.44 | 846 |
| Trachyrincus scabrus | 199.10 | 2546 | 14.84 | |
| Helicolenus dactylopterus | 139.26 | 1276 | 10.38 | |
| Merluccius capensis, female | 91.90 | 90 | 6.85 | 844 |
| Nezumia sp | 55.44 | 2112 | 4.13 | |
| Galeus polli | 43.12 | 506 | 3.21 | |
| Epigonus telescopus | 36.74 | 880 | 2.74 | |
| Lophius vomerinus | 31.04 | 24 | 2.31 | 848 |
| Lophius vaillanti | 23.22 | 14 | 1.73 | 849 |
| Todarodes sagittatus | 16.28 | 66 | 1.21 | |
| Raja caudaspinosa | 15.18 | 22 | 1.13 | |
| Merluccius paradoxus, male | 11.44 | 34 | 0.85 | 847 |
| Merluccius capensis, male | 8.90 | 10 | 0.66 | 845 |
| Epigonus denticulatus | 7.48 | 396 | 0.56 | |
| Geryon maritae | 6.38 | 44 | 0.48 | |
| PHOTICHTHYIDAE | 3.30 | 528 | 0.25 | |
| Aristeus varidens | 1.32 | 318 | 0.10 | |
| Ebinania costaecanarie | 0.88 | 22 | 0.07 | |
| PORTUNIDAE | 0.66 | 22 | 0.05 | |
| Total | 1341.54 | | 99.99 | |

PROJECT STATION: 336

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1850
start stop duration Long E 1119
TIME :14:09:00 14:39:00 30 (min) Purpose code: 3
LOG :4390.40 4392.10 1.50 Area code : 3
FDEPTH: 599 604 GearCond.code:
BDEPTH: 599 604 Validity code:
Towing dir: 190° Wire out:1650 m Speed: 33 kn*10

Sorted: 93 Kg Total catch: 669.67 CATCH/HOUR: 1339.34

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 481.00 | 1828 | 35.91 | |
| Deania calcea | 188.24 | 156 | 14.05 | |
| Nezumia sp | 183.04 | 6188 | 13.67 | |
| Raja caudaspinosa | 151.32 | 400 | 11.30 | |
| ALEPOCEPHALIDAE | 132.00 | 986 | 9.86 | |
| Merluccius paradoxus, female | 124.36 | 128 | 9.29 | 850 |
| Notacanthus sexspinis | 22.36 | 260 | 1.67 | |
| Galeus polli | 19.76 | 260 | 1.48 | |
| Laemonema laureysi | 6.24 | 156 | 0.47 | |
| Lophius vaillanti | 5.74 | 2 | 0.43 | 854 |
| Geryon maritae | 5.20 | 52 | 0.39 | |
| Plesionika sp | 5.20 | 1976 | 0.39 | |
| Lophius vomerinus | 4.34 | 2 | 0.32 | 853 |
| Merluccius paradoxus, male | 4.12 | 6 | 0.31 | 851 |
| OPHICHTHIDAE | 2.60 | 104 | 0.19 | |
| Merluccius polli, female | 1.68 | 2 | 0.13 | 852 |
| Lamprogrammus exutus | 1.04 | 52 | 0.08 | |
| Phrynichthys wedli | 0.52 | 52 | 0.04 | |
| Hoplostethus cadenati | 0.52 | 52 | 0.04 | |
| Aristeus varidens | 0.06 | 60 | | |
| Total | 1339.34 | | 100.02 | |

PROJECT STATION: 337

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1858
start stop duration Long E 1123
TIME :16:27:00 16:57:00 30 (min) Purpose code: 3
LOG :4401.10 4402.70 1.60 Area code : 3
FDEPTH: 500 502 GearCond code:
BDEPTH: 500 502 Validity code:
Towing dir: 170° Wire out:1400 m Speed: 34 kn*10

Sorted: 159 Kg Total catch: 549.99 CATCH/HOUR: 1099.98

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 429.40 | 2888 | 39.04 | |
| Deania calcea | 264.48 | 76 | 24.04 | |
| Merluccius paradoxus, female | 217.30 | 326 | 19.75 | 855 |
| Lophius vomerinus | 58.48 | 20 | 5.32 | 859 |
| Plesionika sp | 47.88 | 28728 | 4.35 | |
| Lophius vaillanti | 37.36 | 12 | 3.40 | 858 |
| Nezumia sp | 28.50 | 1558 | 2.59 | |
| Helicolenus dactylopterus | 9.88 | 76 | 0.90 | |
| Merluccius polli, female | 3.36 | 4 | 0.31 | 857 |
| Merluccius paradoxus, male | 1.82 | 4 | 0.17 | 856 |
| Solenocera africana | 1.52 | 190 | 0.14 | |
| Total | 1099.98 | | 100.01 | |

PROJECT STATION: 338

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1909
start stop duration Long E 1122
TIME :18:52:00 19:22:00 30 (min) Purpose code: 3
LOG :4413.70 4415.10 1.40 Area code : 3
FDEPTH: 590 595 GearCond.code:
BDEPTH: 590 595 Validity code:
Towing dir: 180° Wire out:1600 m Speed: 28 kn*10

Sorted: 131 Kg Total catch: 437.54 CATCH/HOUR: 875.08

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 485.80 | 2044 | 55.51 | |
| Merluccius paradoxus, female | 175.70 | 194 | 20.08 | 862 |
| Nezumia sp | 52.64 | 2772 | 6.02 | |
| Lophius vomerinus | 38.80 | 16 | 4.43 | 860 |
| Lophius vaillanti | 35.90 | 12 | 4.10 | 861 |
| Raja confundens | 28.00 | 168 | 3.20 | |
| Alepocephalus sp | 18.20 | 28 | 2.08 | |
| Selachophidium quentheri | 6.44 | 140 | 0.74 | |
| Galeus polli | 4.76 | 56 | 0.54 | |
| Lamprogrammus exutus | 4.76 | 28 | 0.54 | |
| Haplostethus cadenati | 4.20 | 532 | 0.48 | |
| Merluccius paradoxus, male | 3.84 | 4 | 0.44 | 863 |
| CRAGE12 | 3.70 | 10 | 0.42 | 865 |
| Raja leopardus | 3.36 | 56 | 0.38 | |
| Merluccius polli, female | 3.30 | 4 | 0.38 | 864 |
| Yarrella blackfordi | 2.52 | 280 | 0.29 | |
| Notacanthus sexspinis | 1.40 | 28 | 0.16 | |
| CRAGE13 | 1.20 | 8 | 0.14 | 866 |
| Plesionika sp | 0.56 | 84 | 0.06 | |
| Total | 875.08 | | 99.99 | |

PROJECT STATION: 339

DATE:26/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1909
start stop duration Long E 1125
TIME :20:18:00 20:48:00 30 (min) Purpose code: 3
LOG :4420.70 4422.10 1.60 Area code : 3
FDEPTH: 500 497 GearCond.code:
BDEPTH: 500 497 Validity code:
Towing dir: 355° Wire out:1400 m Speed: 29 kn*10

Sorted: 212 Kg Total catch: 800.95 CATCH/HOUR: 1601.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 1154.10 | 2190 | 72.05 | 868 |
| Trachyrincus scabrus | 291.60 | 1740 | 18.20 | |
| Nezumia sp | 39.72 | 1224 | 2.48 | |
| Lophius vomerinus | 22.70 | 18 | 1.42 | 869 |
| Laemonema laureysi | 20.16 | 216 | 1.26 | |
| Merluccius paradoxus, male | 18.90 | 42 | 1.18 | 867 |
| Helicolenus dactylopterus | 13.44 | 72 | 0.84 | |
| Todarodes sagittatus | 12.60 | 24 | 0.79 | |
| Raja confundens | 12.00 | 72 | 0.75 | |
| Lophius vaillanti | 11.28 | 6 | 0.70 | 870 |
| Etmopterus pusillus | 3.84 | 12 | 0.24 | |
| Galeus polli | 0.96 | 12 | 0.06 | |
| Selachophidium quentheri | 0.60 | 12 | 0.04 | |
| Total | 1601.90 | | 100.01 | |

PROJECT STATION: 340

DATE:27/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1906
start stop duration Long E 1127
TIME :06:39:00 07:09:00 30 (min) Purpose code: 3
LOG :4446.20 4447.50 1.30 Area code : 3
FDEPTH: 396 392 GearCond.code:
BDEPTH: 396 392 Validity code:
Towing dir: 345° Wire out:1100 m Speed: 27 kn*10

Sorted: 240 Kg Total catch: 603.25 CATCH/HOUR: 1206.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 658.40 | 660 | 54.57 | 874 |
| Helicolenus dactylopterus | 207.40 | 11272 | 17.19 | |
| Merluccius capensis, male | 179.00 | 204 | 14.84 | 873 |
| Nezumia sp | 21.52 | 1000 | 1.78 | |
| Schedophilus huttoni | 21.20 | 16 | 1.76 | |
| Coelorinchus coelorhinc polli | 21.10 | 552 | 1.75 | |
| Todarodes sagittatus | 15.10 | | 1.25 | |
| Lophius vomerinus | 14.48 | 10 | 1.20 | 871 |
| Lophius vaillanti | 13.54 | 2 | 1.12 | 872 |
| Galeus polli | 10.00 | 116 | 0.83 | |
| Coelorinchus fasciatus | 9.66 | 258 | 0.80 | |
| Merluccius paradoxus, female | 9.24 | 20 | 0.77 | 875 |
| Laemonema laureysi | 8.20 | 96 | 0.68 | |
| Ruvettus pretiosus | 6.80 | 6 | 0.56 | |
| Ebinania costaecanarie | 4.20 | 16 | 0.35 | |
| Raja caudaspinosa | 3.68 | 10 | 0.31 | |
| Chlorophthalmus atlanticus | 1.84 | 48 | 0.15 | |
| Epigonus denticulatus | 1.14 | 32 | 0.09 | |
| Merluccius paradoxus, male | 0.00 | | | |
| Total | 1206.50 | | 100.00 | |

PROJECT STATION: 341

DATE:27/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1903
start stop duration Long E 1130
TIME :08:41:00 09:11:00 30 (min) Purpose code: 3
LOG :4453.50 4454.80 1.30 Area code : 3
FDEPTH: 310 306 GearCond.code:
BDEPTH: 310 306 Validity code:
Towing dir: 340° Wire out: 900 m Speed: 25 kn*10

Sorted: 242 Kg Total catch: 1060.77 CATCH/HOUR: 2121.54

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 901.20 | 1414 | 42.48 | 876 |
| Chlorophthalmus atlanticus | 471.70 | 14798 | 22.23 | |
| Merluccius capensis, male | 334.54 | 748 | 15.77 | 877 |
| Helicolenus dactylopterus | 212.40 | 5818 | 10.01 | |
| Galeus polli | 81.70 | 1522 | 3.85 | |
| Trachurus capensis | 41.70 | 84 | 1.97 | 878 |
| Lophius vomerinus | 35.66 | 30 | 1.68 | 879 |
| Coelorinchus coelorhinc polli | 15.74 | 800 | 0.74 | |
| Dentex macrophthalmus | 15.74 | 34 | 0.74 | 880 |
| PORTUNIDAE | 7.56 | 266 | 0.36 | |
| Todarodes sagittatus | 3.34 | 8 | 0.16 | |
| Scopelosaurus meadi | 0.26 | 34 | 0.01 | |
| Total | 2121.54 | | 100.00 | |

PROJECT STATION: 342

DATE:27/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1900
start stop duration Long E 1138
TIME :11:03:00 11:33:00 30 (min) Purpose code: 3
LOG :4465.10 4466.50 1.40 Area code : 3
FDEPTH: 285 285 GearCond.code:
BDEPTH: 285 285 Validity code:
Towing dir: 350° Wire out: 800 m Speed: 27 kn*10

Sorted: 353 Kg Total catch: 635.07 CATCH/HOUR: 1270.14

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 352.30 | 598 | 27.74 | 881 |
| Trachurus capensis | 312.00 | 1600 | 24.56 | 887 |
| Synagrops microlepis | 157.20 | 32312 | 12.38 | |
| Dentex macrophthalmus | 148.46 | 520 | 11.69 | 883 |
| Merluccius capensis, male | 113.80 | 336 | 8.96 | 882 |
| Pterothrissus belloci | 96.60 | 800 | 7.61 | |
| Galeus polli | 31.60 | 840 | 2.49 | |
| Lophius vomerinus | 27.60 | 26 | 2.17 | 884 |
| Coelorinchus fasciatus | 11.20 | 460 | 0.88 | |
| Chlorophthalmus atlanticus | 9.40 | 680 | 0.74 | |
| Todarodes sagittatus | 7.06 | 16 | 0.56 | |
| Austroglossus microlepis | 1.32 | 4 | 0.10 | 886 |
| PORTUNIDAE | 1.00 | 72 | 0.08 | |
| Genypterus capensis | 0.60 | 2 | 0.05 | 885 |
| Total | 1270.14 | | 100.01 | |

PROJECT STATION: 343

DATE:27/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1858
start stop duration Long E 1154
TIME :13:06:00 13:30:00 24 (min) Purpose code: 3
LOG :4476.10 4477.30 1.20 Area code : 3
FDEPTH: 289 288 GearCond code:
BDEPTH: 289 288 Validity code:
Towing dir: 340° Wire out: 800 m Speed: 32 kn*10

Sorted: 29 Kg Total catch: 233.60 CATCH/HOUR: 584.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 182.50 | 825 | 31.25 | 891 |
| Merluccius capensis, female | 171.13 | 620 | 29.30 | 888 |
| Trachurus capensis | 109.38 | 650 | 18.73 | 890 |
| Merluccius capensis, male | 85.13 | 475 | 14.58 | 889 |
| Pterothrissus belloci | 15.75 | 213 | 2.70 | |
| Galeus polli | 15.13 | 413 | 2.59 | |
| Synagrops microlepis | 4.75 | 1100 | 0.81 | |
| Sufflogobius bibarbatus | 0.25 | 75 | 0.04 | |
| Total | 584.02 | | 100.00 | |

PROJECT STATION: 344

DATE:27/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1856
start stop duration Long E 1151
TIME :15:14:00 15:44:00 30 (min) Purpose code: 3
LOG :4487.90 4489.60 1.70 Area code : 3
FDEPTH: 241 239 GearCond code:
BDEPTH: 241 239 Validity code:
Towing dir: 330° Wire out: 750 m Speed: 31 kn*10

Sorted: 145 Kg Total catch: 1587.38 CATCH/HOUR: 3174.76

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 1458.00 | 8424 | 45.92 | 896 |
| Trachurus capensis | 1414.80 | 10584 | 44.56 | 895 |
| Merluccius capensis, female | 171.10 | 934 | 5.39 | 892 |
| Merluccius capensis, male | 63.70 | 378 | 2.01 | 893 |
| Pterothrissus belloci | 47.52 | 432 | 1.50 | |
| Austroglossus microlepis | 17.28 | 108 | 0.54 | 897 |
| Lophius vomerinus | 2.36 | 2 | 0.07 | 894 |
| Total | 3174.76 | | 99.99 | |

PROJECT STATION: 345

DATE:27/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 1851
start stop duration Long E 1158
TIME :17:26:00 17:56:00 30 (min) Purpose code: 3
LOG :4500.50 4502.20 1.70 Area code : 3
FDEPTH: 166 163 GearCond code:
BDEPTH: 166 163 Validity code:
Towing dir: 330° Wire out: 600 m Speed: 30 kn*10

Sorted: 108 Kg Total catch: 1055.51 CATCH/HOUR: 2111.02

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1755.00 | 24726 | 83.14 | 901 |
| Merluccius capensis, female | 188.18 | 1580 | 8.91 | 899 |
| Merluccius capensis, male | 110.18 | 1092 | 5.22 | 898 |
| Chatrabus melanurus | 33.18 | 254 | 1.57 | |
| Merluccius capensis, juveniles | 11.70 | 526 | 0.55 | 900 |
| Sufflogobius bibarbatus | 8.78 | 1522 | 0.42 | |
| Trigla lyra | 4.00 | 20 | 0.19 | |
| Total | 2111.02 | | 100.00 | |

PROJECT STATION: 346

DATE:28/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2035
start stop duration Long E 1207
TIME :08:29:00 08:59:00 30 (min) Purpose code: 3
LOG :4609.60 4611.20 1.60 Area code : 3
FDEPTH: 485 472 GearCond.code:
BDEPTH: 485 472 Validity code:
Towing dir: 345° Wire out:1350 m Speed: 32 kn*10

Sorted: 25 Kg Total catch: 429.20 CATCH/HOUR: 858.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 436.50 | 3174 | 50.85 | |
| Deepwater fish mixture | 127.20 | | 14.82 | |
| Neoharriotta pinnata | 78.30 | 30 | 9.12 | |
| Merluccius paradoxus, female | 64.80 | 134 | 7.55 | 902 |
| Nezumia sp. | 44.10 | 1920 | 5.14 | |
| Hoplostethus cadenati | 41.10 | 2700 | 4.79 | |
| Lophius vomerinus | 38.20 | 22 | 4.45 | 903 |
| Plesionika sp. | 18.90 | 11340 | 2.20 | |
| Tetragonurus cuvieri | 7.80 | 30 | 0.91 | |
| Epigonus denticulatus | 1.50 | 30 | 0.17 | |
| Total | 858.40 | | 100.00 | |

PROJECT STATION: 347

DATE:28/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2043
start stop duration Long E 1210
TIME :10:04:00 10:34:00 30 (min) Purpose code: 3
LOG :4617.50 4619.00 1.50 Area code : 3
FDEPTH: 395 390 GearCond.code:
BDEPTH: 395 390 Validity code:
Towing dir: 360° Wire out:1100 m Speed: 30 kn*10

Sorted: 236 Kg Total catch: 395.85 CATCH/HOUR: 791.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 339.30 | 188 | 42.86 | 904 |
| Trachyrincus scabrus | 124.20 | 1130 | 15.69 | |
| Merluccius capensis, male | 69.50 | 46 | 8.78 | 905 |
| Nezumia sp. | 60.12 | 4934 | 7.59 | |
| Helicolenus dactylopterus | 47.88 | 684 | 6.05 | |
| Selachophidium guentheri | 30.42 | 1152 | 3.84 | |
| Lophius vomerinus | 20.20 | 28 | 2.55 | 907 |
| Todarodes sagittatus | 18.36 | 36 | 2.32 | |
| Deania calcea | 17.28 | 36 | 2.18 | |
| Coelorinchus sp. | 15.84 | 468 | 2.00 | |
| Ebinania costaecanarie | 10.80 | 126 | 1.36 | |
| Laemonema laureysi | 9.36 | 108 | 1.18 | |
| Aristeus varidens | 7.20 | 2610 | 0.91 | |
| Galeus polli | 7.02 | 108 | 0.89 | |
| Lophius vaillanti | 3.44 | 2 | 0.43 | 921 |
| Epigonus telescopus | 2.88 | 72 | 0.36 | |
| Hoplostethus cadenati | 1.98 | 198 | 0.25 | |
| Chlorophthalmus atlanticus | 1.44 | 54 | 0.18 | |
| Merluccius paradoxus, female | 0.88 | 6 | 0.11 | 906 |
| Synagrops microlepis | 0.18 | 18 | 0.02 | |
| Epigonus denticulatus | 0.18 | 36 | 0.02 | |
| Total | 788.46 | | 99.57 | |

PROJECT STATION: 348

DATE:28/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2032
start stop duration Long E 1216
TIME :12:09:00 12:39:00 30 (min) Purpose code: 3
LOG :4627.90 4629.40 1.50 Area code : 3
FDEPTH: 306 302 GearCond.code:
BDEPTH: 306 302 Validity code:
Towing dir: 330° Wire out: 950 m Speed: 30 kn*10

Sorted: 284 Kg Total catch: 364.38 CATCH/HOUR: 728.76

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 372.04 | 454 | 51.05 | 908 |
| Merluccius capensis, male | 128.00 | 220 | 17.56 | 909 |
| Deepwater fish mixture | 60.96 | | 8.36 | |
| Trachurus capensis | 59.20 | 432 | 8.12 | 913 |
| Todarodes sagittatus | 28.00 | 80 | 3.84 | |
| Pterothrissus belloci | 20.96 | 216 | 2.88 | |
| Galeus polli | 19.04 | 336 | 2.61 | |
| Lophius vomerinus | 14.96 | 14 | 2.05 | 912 |
| Coelorinchus fasciatus | 11.84 | 336 | 1.62 | |
| Squalus megalops | 10.32 | 16 | 1.42 | |
| Chlorophthalmus atlanticus | 1.28 | 136 | 0.18 | |
| Austroglossus microlepis | 1.22 | 4 | 0.17 | 910 |
| Genypterus capensis | 0.46 | 2 | 0.06 | 911 |
| Nezumia sp. | 0.32 | 24 | 0.04 | |
| PORTUNIDAE | 0.16 | 24 | 0.02 | |
| Total | 728.76 | | 99.98 | |

PROJECT STATION: 349

DATE:28/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2029
start stop duration Long E 1222
TIME :14:18:00 14:48:00 30 (min) Purpose code: 3
LOG :4638.10 4639.70 1.60 Area code : 3
FDEPTH: 296 292 GearCond.code:
BDEPTH: 296 292 Validity code:
Towing dir: 345° Wire out: 900 m Speed: 31 kn*10

Sorted: 109 Kg Total catch: 254.25 CATCH/HOUR: 508.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 158.10 | 1124 | 31.09 | 917 |
| Merluccius capensis, male | 146.90 | 1066 | 28.89 | 918 |
| Trachurus capensis | 84.00 | 672 | 16.52 | 920 |
| Merluccius capensis, female | 75.60 | 70 | 14.87 | 914 |
| Todarodes sagittatus | 22.88 | 136 | 4.50 | |
| Trachipterus trachypterus | 12.00 | 8 | 2.36 | |
| Pterothrissus belloci | 3.60 | 16 | 0.71 | |
| Dentex macrophthalmus | 3.52 | 8 | 0.69 | 919 |
| Austroglossus microlepis | 0.80 | 4 | 0.16 | 915 |
| Lophius vomerinus | 0.70 | 4 | 0.14 | 916 |
| Sufflogobius bibarbatus | 0.40 | 136 | 0.08 | |
| Total | 508.50 | | 100.01 | |

PROJECT STATION: 350

DATE:28/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2026
start stop duration Long E 1230
TIME :16:30:00 17:00:00 30 (min) Purpose code: 3
LOG :4649.80 4651.80 2.00 Area code : 3
FDEPTH: 271 267 GearCond.code:
BDEPTH: 271 267 Validity code:
Towing dir: 350° Wire out: 900 m Speed: 35 kn*10

Sorted: 107 Kg Total catch: 416.44 CATCH/HOUR: 832.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 237.50 | 1646 | 28.52 | 927 |
| Dentex macrophthalmus | 206.40 | 798 | 24.78 | 928 |
| Merluccius capensis, male | 167.20 | 1318 | 20.07 | 926 |
| Merluccius capensis, female | 88.00 | 96 | 10.57 | 925 |
| Pterothrissus belloci | 55.10 | 710 | 6.62 | |
| Trachurus capensis | 49.40 | 748 | 5.93 | 929 |
| Sufflogobius bibarbatus | 8.10 | 2026 | 0.97 | |
| Todarodes sagittatus | 7.20 | 26 | 0.86 | |
| Merluccius capensis, male | 5.70 | 10 | 0.68 | 924 |
| Merluccius capensis, juveniles | 2.54 | 316 | 0.30 | 930 |
| Lophius vomerinus | 2.22 | 4 | 0.27 | 922 |
| Austroglossus microlepis | 2.00 | 8 | 0.24 | 923 |
| Galeus polli | 1.40 | 64 | 0.17 | |
| PORTUNIDAE | 0.12 | 12 | 0.01 | |
| Total | 832.88 | | 99.99 | |

PROJECT STATION: 351

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2042
start stop duration Long E 1249
TIME :06:35:00 07:05:00 30 (min) Purpose code: 3
LOG :4703.50 4705.00 1.50 Area code : 3
FDEPTH: 195 198 GearCond.code:
BDEPTH: 195 198 Validity code:
Towing dir: 340° Wire out: 550 m Speed: 28 kn*10

Sorted: 109 Kg Total catch: 622.35 CATCH/HOUR: 1244.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 906.00 | 9952 | 72.79 | 936 |
| Merluccius capensis, female | 135.00 | 1188 | 10.85 | 935 |
| Merluccius capensis, male | 104.40 | 1236 | 8.39 | 934 |
| Merluccius capensis, juveniles | 62.40 | 4172 | 5.01 | 933 |
| Dentex macrophthalmus | 17.40 | 72 | 1.40 | 937 |
| Lophius vomerinus | 8.24 | 10 | 0.66 | 931 |
| Merluccius capensis, female | 5.50 | 6 | 0.44 | 932 |
| Sufflogobius bibarbatus | 3.36 | 768 | 0.27 | |
| Pterothrissus belloci | 2.40 | 24 | 0.19 | |
| Total | 1244.70 | | 100.00 | |

PROJECT STATION: 352

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2043
start stop duration Long E 1240
TIME :08:35:00 09:05:00 30 (min) Purpose code: 3
LOG :4713.60 4715.10 1.50 Area code : 3
FDEPTH: 300 305 GearCond.code:
BDEPTH: 300 305 Validity code:
Towing dir: 250° Wire out: 850 m Speed: 30 kn*10

Sorted: 320 Kg Total catch: 369.40 CATCH/HOUR: 738.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 320.46 | 732 | 43.38 | 938 |
| Merluccius capensis, male | 141.90 | 384 | 19.21 | 939 |
| Dentex macrophthalmus | 63.40 | 164 | 8.58 | 941 |
| Trachurus capensis | 56.40 | 180 | 7.63 | 944 |
| Lophius vomerinus | 47.48 | 34 | 6.43 | 940 |
| Pterothrissus belloci | 31.50 | 144 | 4.26 | |
| Deepwater fish mixture | 16.56 | | 2.24 | |
| Todarodes sagittatus | 16.00 | 44 | 2.17 | |
| Squalus megalops | 15.06 | 36 | 2.04 | |
| Chlorophthalmus atlanticus | 14.76 | 720 | 2.00 | |
| Coelorinchus fasciatus | 5.82 | 180 | 0.79 | |
| Austroglossus microlepis | 3.34 | 10 | 0.45 | 942 |
| Synagrops microlepis | 2.40 | 420 | 0.32 | |
| Galeus polli | 2.22 | 30 | 0.30 | |
| Merluccius capensis, juveniles | 1.26 | 66 | 0.17 | 943 |
| PORTUNIDAE | 0.24 | 6 | 0.03 | |
| Total | 738.80 | | 100.00 | |

PROJECT STATION: 353

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2045
start stop duration Long E 1233
TIME :10:18:00 10:48:00 30 (min) Purpose code: 3
LOG :4722.00 4723.50 1.50 Area code : 3
FDEPTH: 325 325 GearCond.code:
BDEPTH: 325 325 Validity code:
Towing dir: 250° Wire out: 950 m Speed: 30 kn*10

Sorted: 205 Kg Total catch: 566.87 CATCH/HOUR: 1133.74

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 647.40 | 876 | 57.10 | 947 |
| Merluccius capensis, male | 171.00 | 300 | 15.08 | 948 |
| Merluccius paradoxus, female | 68.40 | 366 | 6.03 | 951 |
| Chlorophthalmus atlanticus | 64.50 | 2594 | 5.69 | |
| Deepwater fish mixture | 37.86 | | 3.34 | |
| Trachurus capensis | 29.10 | 84 | 2.57 | 949 |
| Lophius vomerinus | 29.00 | 44 | 2.56 | 946 |
| Todarodes sagittatus | 25.80 | 126 | 2.28 | |
| Centrolophus niger | 19.90 | 6 | 1.76 | |
| Coelorinchus coelorhinc polli | 10.86 | 420 | 0.96 | |
| Helicolenus dactylopterus | 7.26 | 192 | 0.64 | |
| Squalus megalops | 5.46 | 6 | 0.48 | |
| Coelorinchus fasciatus | 4.80 | 72 | 0.42 | |
| Galeus polli | 3.42 | 42 | 0.30 | |
| Nezumia sp. | 2.64 | 144 | 0.23 | |
| Dentex macrophthalmus | 1.98 | 6 | 0.17 | 950 |
| Austroglossus microlepis | 1.90 | 6 | 0.17 | 945 |
| Pterothrissus belloci | 1.50 | 6 | 0.13 | |
| Epigonus denticulatus | 0.96 | 24 | 0.08 | |
| Total | 1133.74 | | 99.99 | |

PROJECT STATION: 354

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2047
start stop duration Long E 1227
TIME :12:02:00 12:32:00 30 (min) Purpose code: 3
LOG :4730.50 4731.90 1.40 Area code : 3
FDEPTH: 345 353 GearCond code:
BDEPTH: 345 353 Validity code:
Towing dir: 250° Wire out:1000 m Speed: 30 kn*10

Sorted: 265 Kg Total catch: 425.75 CATCH/HOUR: 851.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 309.30 | 270 | 36.32 | 952 |
| Helicolenus dactylopterus | 189.60 | 3820 | 22.27 | |
| Merluccius capensis, male | 90.20 | 102 | 10.59 | 953 |
| Todarodes sagittatus | 59.84 | 160 | 7.03 | |
| Merluccius paradoxus, female | 51.40 | 184 | 6.04 | 954 |
| Trachurus capensis | 42.88 | 112 | 5.04 | 956 |
| Lophius vomerinus | 27.56 | 36 | 3.24 | 955 |
| Squalus megalops | 21.76 | 32 | 2.56 | |
| Coelorinchus fasciatus | 14.40 | 592 | 1.69 | |
| Nezumia sp. | 13.92 | 768 | 1.63 | |
| Galeus polli | 13.44 | 208 | 1.58 | |
| Centrolophus niger | 6.00 | 2 | 0.70 | |
| Laemonema laureysi | 4.64 | 112 | 0.54 | |
| PORTUNIDAE | 3.04 | 32 | 0.36 | |
| Epigonus denticulatus | 1.44 | 96 | 0.17 | |
| Chlorophthalmus atlanticus | 1.28 | 48 | 0.15 | |
| Epigonus telescopus | 0.80 | 32 | 0.09 | |
| Total | 851.50 | | 100.00 | |

PROJECT STATION: 355

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2050
start stop duration Long E 1222
TIME :13:33:00 14:03:00 30 (min) Purpose code: 3
LOG :4737.60 4739.10 1.50 Area code : 3
FDEPTH: 430 428 GearCond code:
BDEPTH: 430 428 Validity code:
Towing dir: 140° Wire out:1250 m Speed: 33 kn*10

Sorted: 451 Kg Total catch: 669.32 CATCH/HOUR: 1338.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 624.00 | 302 | 46.61 | 957 |
| Trachyrincus scabrus | 333.90 | 2492 | 24.94 | |
| Merluccius paradoxus, female | 102.90 | 224 | 7.69 | 959 |
| S H A R K S | 76.68 | 18 | 5.73 | |
| Lophius vomerinus | 57.54 | 30 | 4.30 | 961 |
| Merluccius capensis, male | 44.50 | 28 | 3.32 | 958 |
| Helicolenus dactylopterus | 39.78 | 234 | 2.97 | |
| Nezumia sp. | 27.54 | 810 | 2.06 | |
| Deania calcea | 12.78 | 18 | 0.95 | |
| Lophius vaillanti | 8.26 | 4 | 0.62 | 962 |
| Todarodes sagittatus | 4.94 | 8 | 0.37 | |
| Genypterus capensis | 3.26 | 2 | 0.24 | 960 |
| Geryon maritae | 2.56 | 2 | 0.19 | |
| Total | 1338.64 | | 99.99 | |

PROJECT STATION: 356

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2053
start stop duration Long E 1220
TIME :15:31:00 16:01:00 30 (min) Purpose code: 3
LOG :4745.70 4747.20 1.50 Area code : 3
FDEPTH: 502 499 GearCond code:
BDEPTH: 502 499 Validity code:
Towing dir: 130° Wire out:1400 m Speed: 30 kn*10

Sorted: 105 Kg Total catch: 521.00 CATCH/HOUR: 1042.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 728.70 | 3740 | 69.93 | |
| Merluccius paradoxus, female | 99.60 | 146 | 9.56 | 965 |
| Nezumia sp. | 57.96 | 2856 | 5.56 | |
| Lophius vomerinus | 50.20 | 30 | 4.82 | 967 |
| Hoplostethus cadenati | 42.00 | 1596 | 4.03 | |
| Todarodes sagittatus | 28.56 | 126 | 2.74 | |
| Merluccius capensis, female | 12.00 | 6 | 1.15 | 963 |
| LOPHIIDAE | 6.00 | 2 | 0.58 | |
| Merluccius paradoxus, male | 4.16 | 8 | 0.40 | 966 |
| Merluccius capensis, male | 3.58 | 2 | 0.34 | 964 |
| Galeus polli | 2.52 | 42 | 0.24 | |
| Helicolenus dactylopterus | 2.52 | 42 | 0.24 | |
| Plesionika sp | 2.52 | 2016 | 0.24 | |
| Selachophidium guentheri | 1.26 | 42 | 0.12 | |
| Lamprogrammus exutus | 0.42 | 42 | 0.04 | |
| Total | 1042.00 | | 99.99 | |

PROJECT STATION: 357

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2059
start stop duration Long E 1231
TIME :17:30:00 18:00:00 30 (min) Purpose code: 3
LOG :4758.40 4760.00 1.60 Area code : 3
FDEPTH: 401 398 GearCond code:
BDEPTH: 401 398 Validity code:
Towing dir: 150° Wire out:1200 m Speed: 30 kn*10

Sorted: 180 Kg Total catch: 341.98 CATCH/HOUR: 683.96

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 231.00 | 2318 | 33.77 | |
| Merluccius capensis, female | 145.82 | 70 | 21.32 | 969 |
| Merluccius paradoxus, female | 91.68 | 158 | 13.40 | 971 |
| Helicolenus dactylopterus | 42.20 | 260 | 6.17 | |
| Nezumia sp | 42.00 | 1820 | 6.14 | |
| Genypterus capensis | 25.94 | 12 | 3.79 | 973 |
| Lophius vaillanti | 23.60 | 2 | 3.45 | 975 |
| Merluccius capensis, male | 22.20 | 14 | 3.25 | 970 |
| RAJIDAE | 21.20 | 354 | 3.10 | |
| Lophius vomerinus | 12.98 | 14 | 1.90 | 974 |
| Galeus polli | 5.20 | 60 | 0.76 | |
| Plesionika sp | 5.00 | 1400 | 0.73 | |
| Merluccius paradoxus, male | 3.94 | 6 | 0.58 | 972 |
| PORTUNIDAE | 3.20 | 40 | 0.47 | |
| Laemonema laureysi | 3.00 | 80 | 0.44 | |
| Todarodes sagittatus | 2.80 | 20 | 0.41 | |
| Ebinania costaecanarie | 1.40 | 20 | 0.20 | |
| Epigonus denticulatus | 0.80 | 20 | 0.12 | |
| Total | 683.96 | | 100.00 | |

PROJECT STATION: 358

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2111
start stop duration Long E 1224
TIME :20:29:00 20:59:00 30 (min) Purpose code: 3
LOG :4775.10 4776.50 1.40 Area code : 2
FDEPTH: 600 608 GearCond code:
BDEPTH: 600 608 Validity code:
Towing dir: 165° Wire out:1650 m Speed: 28 kn*10

Sorted: 104 Kg Total catch: 424.67 CATCH/HOUR: 849.34

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachyrincus scabrus | 357.00 | 810 | 42.03 | |
| Merluccius paradoxus, female | 157.10 | 172 | 18.50 | 976 |
| Nezumia sp. | 135.90 | 6136 | 16.00 | |
| Hoplostethus cadenati | 95.70 | 5358 | 11.27 | |
| Raja confundens | 36.90 | 30 | 4.34 | |
| Schedophilus huttoni | 18.90 | 30 | 2.23 | |
| Yarrella blackfordi | 15.00 | 930 | 1.77 | |
| Todarodes sagittatus | 12.30 | 30 | 1.45 | |
| Galeus polli | 6.30 | 60 | 0.74 | |
| Merluccius paradoxus, male | 3.80 | 6 | 0.45 | 977 |
| Helicolenus dactylopterus | 3.30 | 30 | 0.39 | |
| OPHICHTHIDAE | 2.10 | 90 | 0.25 | |
| Geryon maritae | 1.74 | 2 | 0.20 | |
| Aristeus varidens | 1.50 | 150 | 0.18 | |
| ALEPOCEPHALIDAE | 0.90 | 90 | 0.11 | |
| Lamprogrammus exutus | 0.90 | 30 | 0.11 | |
| Total | 849.34 | | 100.02 | |

PROJECT STATION: 359

DATE:29/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2109
start stop duration Long E 1229
TIME :22:12:00 22:42:00 30 (min) Purpose code: 3
LOG :4783.80 4785.20 1.40 Area code : 2
FDEPTH: 500 500 GearCond code:
BDEPTH: 500 500 Validity code:
Towing dir: 360° Wire out:1400 m Speed: 28 kn*10

Sorted: 286 Kg Total catch: 600.35 CATCH/HOUR: 1200.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 511.90 | 1044 | 42.63 | 978 |
| Trachyrincus scabrus | 507.00 | 2280 | 42.23 | |
| Nezumia sp. | 87.00 | 2400 | 7.25 | |
| Epigonus denticulatus | 22.50 | 270 | 1.87 | |
| Todarodes sagittatus | 20.40 | 60 | 1.70 | |
| Galeus polli | 15.30 | 270 | 1.27 | |
| Hoplostethus cadenati | 13.50 | 150 | 1.12 | |
| Merluccius paradoxus, male | 11.40 | 26 | 0.95 | 979 |
| Lophius vaillanti | 5.10 | 2 | 0.42 | 980 |
| Raja confundens | 4.20 | 60 | 0.35 | |
| Laemonema laureysi | 1.50 | 30 | 0.12 | |
| Yarella blackfordi * | 0.90 | 120 | 0.07 | |
| Total | 1200.70 | | 99.98 | |

PROJECT STATION: 360

DATE:30/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2109
start stop duration Long E 1239
TIME :06:32:00 07:02:00 30 (min) Purpose code: 3
LOG :4806.90 4808.50 1.60 Area code : 2
FDEPTH: 365 357 GearCond code:
BDEPTH: 365 357 Validity code:
Towing dir: 30° Wire out:1000 m Speed: 32 kn*10

Sorted: 32 Kg Total catch: 172.47 CATCH/HOUR: 344.94

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 150.80 | 130 | 43.72 | 982 |
| Deepwater fish mixture | 120.00 | | 34.79 | |
| Merluccius capensis, male | 41.50 | 44 | 12.03 | 981 |
| Lophius vomerinus | 31.02 | 40 | 8.99 | 984 |
| Merluccius paradoxus, female | 1.62 | 10 | 0.47 | 983 |
| Total | 344.94 | | 100.00 | |

PROJECT STATION: 361

DATE:30/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2107
start stop duration Long E 1248
TIME :08:30:00 09:00:00 30 (min) Purpose code: 3
LOG :4817.60 4819.10 1.50 Area code : 2
FDEPTH: 315 305 GearCond code:
BDEPTH: 315 305 Validity code:
Towing dir: 70° Wire out: 900 m Speed: 30 kn*10

Sorted: 313 Kg Total catch: 334.93 CATCH/HOUR: 669.86

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 371.60 | 576 | 55.47 | 986 |
| Merluccius capensis, male | 94.80 | 292 | 14.15 | 985 |
| Dentex macrophthalmus | 89.20 | 340 | 13.32 | 991 |
| Lophius vomerinus | 44.90 | 92 | 6.70 | 988 |
| Trachurus capensis | 23.40 | 96 | 3.49 | 992 |
| Chlorophthalmus atlanticus | 17.82 | 690 | 2.66 | |
| Todarodes sagittatus | 7.56 | 18 | 1.13 | |
| Galeus polli | 5.94 | 120 | 0.89 | |
| Pterothrissus belloci | 5.34 | 24 | 0.80 | |
| Austroglossus microlepis | 3.22 | 8 | 0.48 | 989 |
| Merluccius capensis, juveniles | 2.70 | 162 | 0.40 | 987 |
| Squalus megalops | 2.28 | 6 | 0.34 | |
| Genypterus capensis | 0.56 | 2 | 0.08 | 990 |
| Synagrops microlepis | 0.48 | 84 | 0.07 | |
| Coelorinchus coelorhinc polli | 0.06 | 6 | 0.01 | |
| Total | 669.86 | | 99.99 | |

PROJECT STATION: 362

DATE:30/ 5/94 GEAR TYPE: BT No:7 POSITION:Lat S 2105
start stop duration Long E 1257
TIME :10:14:00 10:44:00 30 (min) Purpose code: 3
LOG :4826.40 4828.00 1.60 Area code : 2
FDEPTH: 245 241 GearCond code: 8
BDEPTH: 245 241 Validity code: 9
Towing dir: 140° Wire out: 700 m Speed: 32 kn*10

Sorted: 180 Kg Total catch: 6198.85 CATCH/HOUR: 12397.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 8071.00 | 165830 | 65.10 | 995 |
| Lophius vomerinus | 1438.40 | 2608 | 11.60 | 996 |
| Merluccius capensis, female | 1383.40 | 15928 | 11.16 | 994 |
| Merluccius capensis, male | 1026.46 | 12906 | 8.28 | 993 |
| Merluccius capensis, juveniles | 420.80 | 24000 | 3.39 | 997 |
| LOPHIIDAE | 54.20 | 1028 | 0.44 | |
| Suffogobius bibarbatus | 3.44 | 1032 | 0.03 | |
| Total | 12397.70 | | 100.00 | |

# Annex IV Instruments and fishing gear used

## Acoustic instruments

The SIMRAD EK500/38 KHZ scientific sounder was used during the survey for estimation of fish density. The EK500 has a built- in digital echo integrator, but the Bergen Echo Integrator system (BEI) was used throughout the survey. The details of the instrument settings are as follows:

Transceiver settings:

| | |
|---|---|
| Bandwidth | Wide (3.8 KHz) |
| Pulse length | Medium (1 ms) |
| Max Power | 2000 Watt |
| Sv Transducer gain | 27.8 dB |
| Ts Transducer gain | 28.1 dB |

Printer settings:

| | |
|---|---|
| Range | 0 - 100 or 0 - 250 m |
| TVG | 20 log R |
| TS Colour min | - 50 dB |
| Sv Colour min | - 64 dB |

An ES38B with a 6.8° -3dB beamwith transducer was used for integration.

A calibration experiment using a standard copper sphere, performed in Baia dos Tigres 23/2 1994 gave the following results: Sv Transducer gain 27.8 dB, Ts Transducer gain 28.1 dB.

Glossary:

Sv Transducer gain: Peak transducer gain assumed during computation of volume backscattering strength.

Ts Transducer gain: Peak transducer gain assumed during computation of target strength.

Ts Colour min: Lower limit of colour scale relative to target strength.

Sv Colour min: Lower limit of colour scale relative to volume back scattering.

## 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 vessel has two different sized 'Åkrahamn' pelagic trawls and one Gisund super bottom trawl. Only the bottom trawl was used during the survey.

The bottom trawl has a headline of 31m, footrope 47m and 20mm meshsize in the codend with an innernet of 10mm meshsize. The estimated headline height is 5m and distance between the wings during towing about 18m. The trawl is equipped with a 12" rubber bobbins gear and $6m^2$, 1500kg 'Egersund' combi-doors. The sweeps are 40m long.

The following drawings show the size of these trawls.

# F/F Dr. Fridtjof Nansen

OVER/UNDER/SIDER

OVERDEL:
50 STK 11" PLASTKULER

UNDERDEL
14 M/M WIRE OMSP. MED
14 M/M BLYTAU
+ KJETTING.
TOTAL VEKT UNDER 400 KG.

| | |
|---|---|
| 1/2 HOGG | 5,00 MTR |
| STRF. | 6,00 MTR |
| ARM | 6,00 MTR |
| TAMP | 2,60 MTR |
| TOT. | 36,00 MTR |

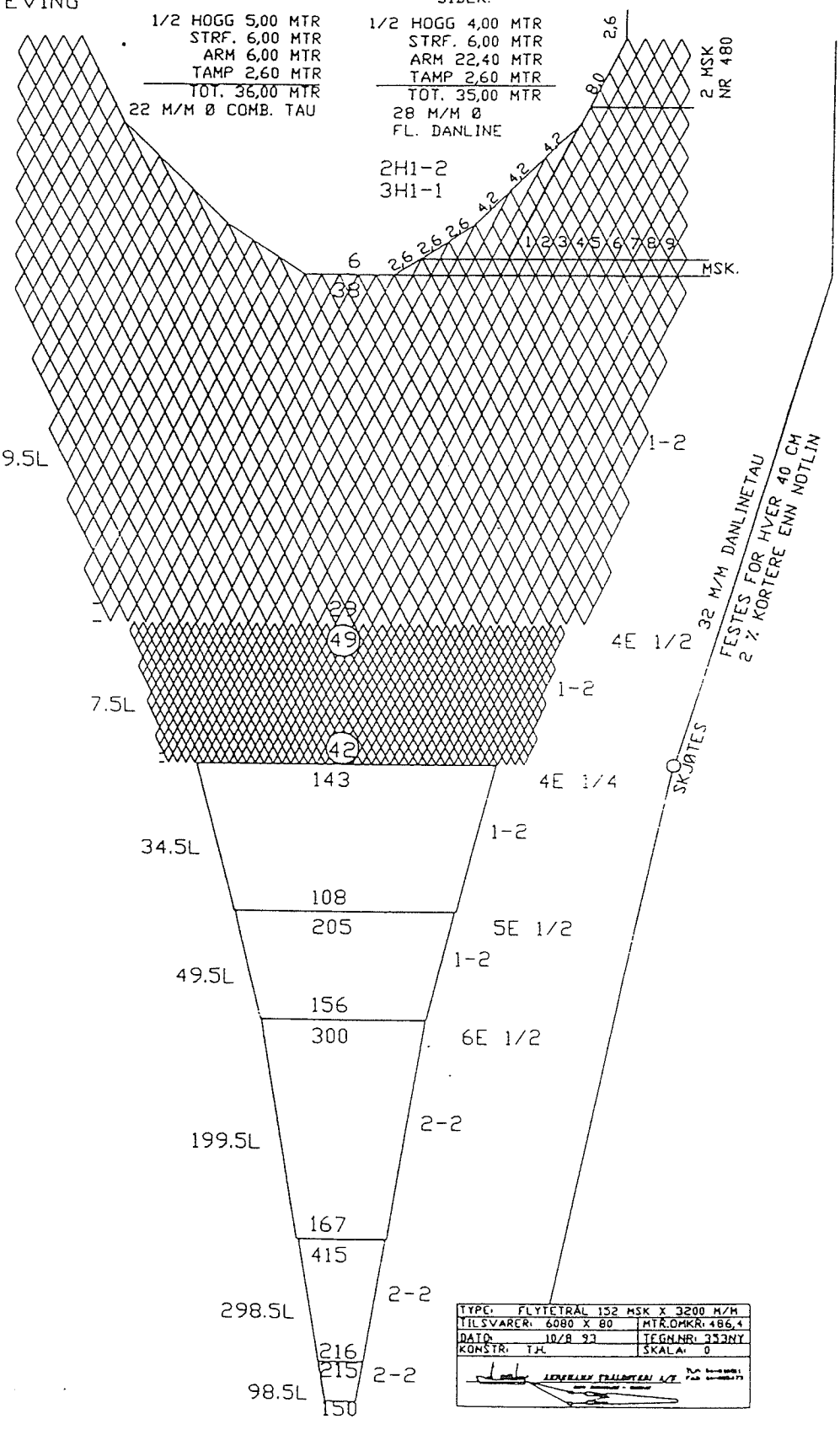
22 M/M Ø COMB. TAU

SIDER.

| | |
|---|---|
| 1/2 HOGG | 4,00 MTR |
| STRF. | 6,00 MTR |
| ARM | 22,40 MTR |
| TAMP | 2,60 MTR |
| TOT. | 35,00 MTR |

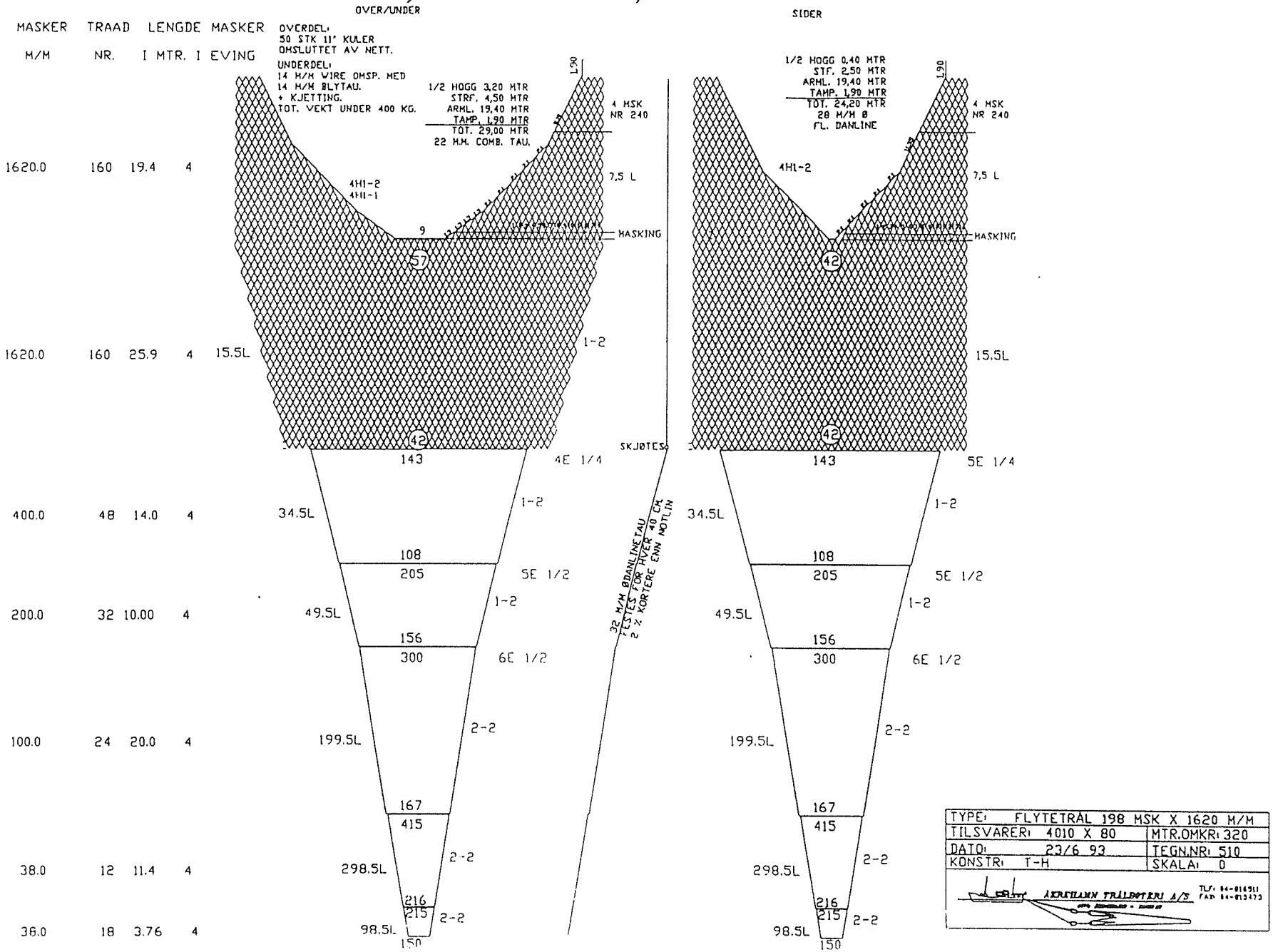
28 M/M Ø
FL. DANLINE

| MASKER M/M | TRAAD NR. | LENGDE I MTR. | MASKER I EVING | |
|---|---|---|---|---|
| 3200.0 | 240 | 22.4 | 4 | |
| 3200.0 | 240 | 32.0 | 4 | 9.5L |
| 1620.0 | 160 | 13.0 | 4 | 7.5L |
| 400.0 | 48 | 14.0 | 4 | 34.5L |
| 200.0 | 32 | 10.00 | 4 | 49.5L |
| 100.0 | 24 | 20.0 | 4 | 199.5L |
| 38.0 | 12 | 11.4 | 4 | 298.5L |
| 38.0 | 18 | 3.76 | 4 | 98.5L |

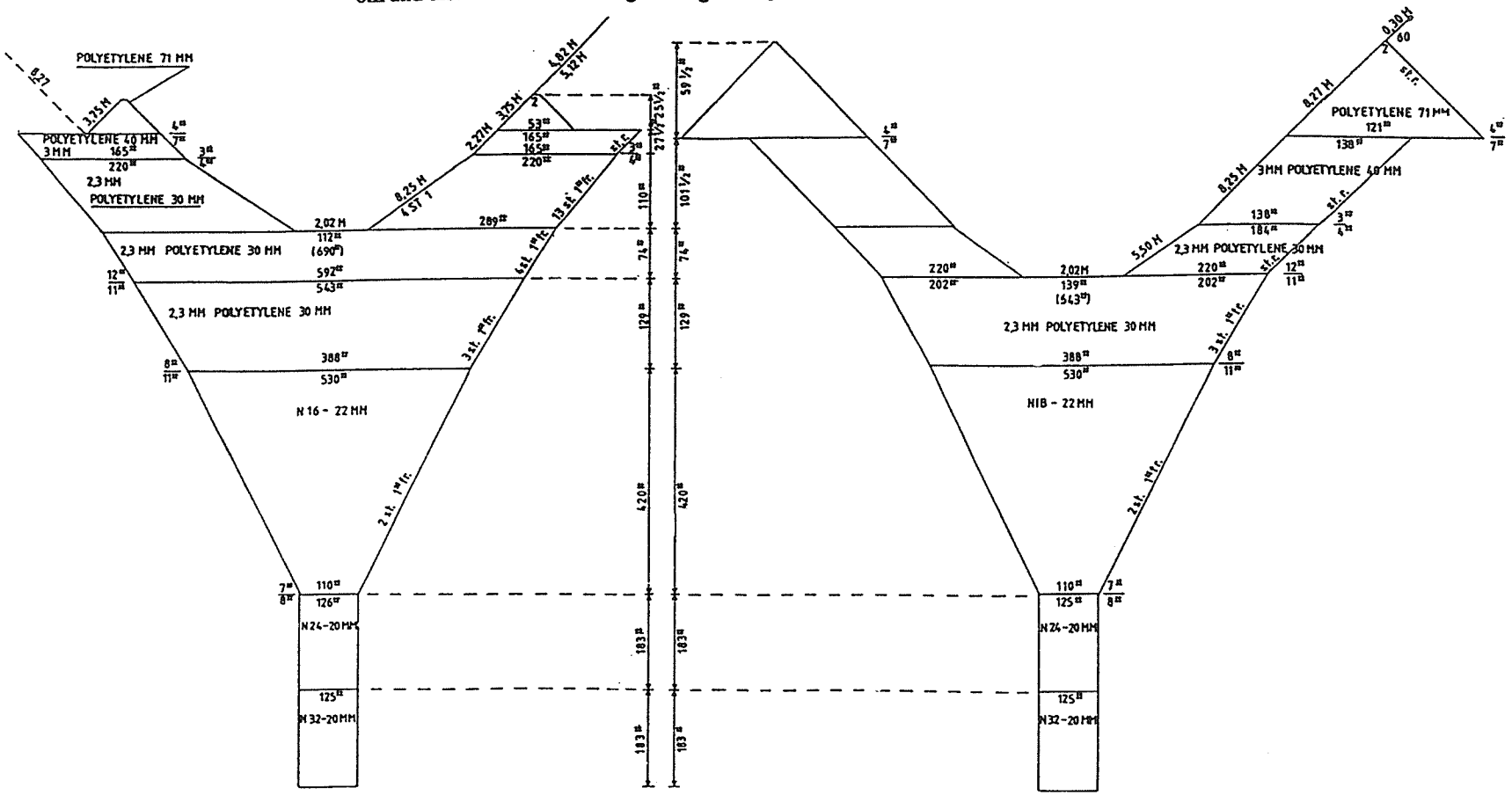



| | | | |
|---|---|---|---|
| TYPE: | FLYTETRÅL 152 MSK X 3200 M/M | | |
| TILSVARER: | 6080 X 80 | MTR.OMKR: | 486,4 |
| DATO: | 10/8 93 | TEGN.NR: | 353NY |
| KONSTR: | TH. | SKALA: | 0 |

# F/F Dr. Fridtjof Nansen



Bottom trawl: High opening shrimp and fish trawl with net headline 31m ( floatline),foot-rope 47m, gear with 12 cm diameter roller disks, 40 m sweeps, estimated headline hight 6m and distance between wings during towing 18-20m.



# Annex V Work note on recruitment variations in the Namibian stock of Cape hake.

by Gunnar Sætersdal

It is important to be able to evaluate the levels of recruitment observed in recent years in the light of information from the history of the previous fisheries on the Cape hake stock especially since it is a general experience that recruitment from hakes and other cod like fishes may fluctuate considerably from year to year and between periods. In this brief note the RV 'Dr. Fridtjof Nansen' data will be compared with the results of a series of Spanish surveys and with those of a VPA analysis of fishery – and biological data collected through ICSEAF.

All survey results agree in showing distinct cohorts which can be followed up to a size well over 30 cm. The main spawning is assumed to take place in August-September (Sedleskaya, 1988). The 0-group is still mainly pelagic in January-March with a size of 10-12cm, the cohort is 20-25cm at 1.5 to 2 years of age and about 30cm at 2.5-3 years of age. The growth rate is likely to be density dependent with lower growth for abundant cohorts.

Table 1 shows estimates of the strength of the yearclasses 1988-1992 from the RV 'Dr. Fridtjof Nansen' surveys 1990-1994 (Anon 1994a). These represent numerical abundance of cohorts at 1.5-2 years of age. The estimates vary greatly between yearclasses, from 0.3 to 4.9 billion, but also between estimates of the same yearclass from different surveys. Especially notable is this for the 1991 yearclass where the estimate declined from 4.9 billion in November-December 1992 to 2.2 billion in February-March 1993. This decline was observed mainly in the Central Region and is thought to have been associated with the phenomenon of mass fish mortality which occur periodically in the Walvis Bay region (Copenhagen *et al.* 1953). Ignoring this high estimate 4 out of the 5 yearclasses investigated show estimates of approximately 2 billion fish. It is important to know whether this represents a high, average or low level of recruitment to the stock. In absolute terms these data may be affected by bias related to the swept area method on which they are based, but they should represent comparable indices.

Table 1 Estimates of strength of recent yearclasses of Cape hake. Cohort population numbers at about two years of age for the groups assumed to have been spawned in 1988, 1989, 1990, 1991 and 1992. Millions of fish.

| Yearclass | 1988 | 1989 | 1990 | 1990 | 1991 | 1991 | 1991 | 1992 |
|---|---|---|---|---|---|---|---|---|
| Southern region | 980 | 100 | 160 | 300 | 990 | 670 | 390 | 250 |
| Central region | 1 320 | 170 | 1 710 | 1 620 | 3 500 | 1 230 | 1 370 | 1 880 |
| Northern region | 10 | 10 | 20 | 240 | 440 | 270 | 130 | 70 |
| Total | 2 310 | 280 | 1 890 | 2 160 | 4 930 | 2 170 | 1 890 | 2 200 |
| Survey/Year | 1/90 | 1/91 | 2/91 | 1/92 | 2/92 | 1/93 | 2/93 | 1/94 |

A set of data similar to that of the RV 'Dr. Fridtjof Nansen' is available from the Spanish Benguela surveys which covered the period 1983 to 1988 with annual or biannual coverages in January-February and July-August, (Macpherson *et al*, 1984, 1985, 1986, 1987 and Gordoa and Macpherson 1988). Table 2 reviews these data which cover the yearclasses 1981 to 1986. In identifying the cohorts use has been made of the growth pattern described above resulting in some disagreements with the identification made by the authors. The simple mean of all estimates at ages from 1.5 to 3 years will be negatively biased when compared with the RV 'Dr. Fridtjof Nansen' estimates at 1.5 to 2 years of age.

Table 2 Strength of yearclasses 1981 - 1986. Estimates based on Spanish trawl survey data 1983-1989. Number of fish in billion.

| | Yearclass | | | | | |
|---|---|---|---|---|---|---|
| | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 |
| At 1.5-2 years | 3.4 | 4.0, 7.0 | 1.3 | 3.0, 4.7 | 0.6 | 0.1 |
| At 2.5-3 years | 5.4, 2.2 | 2.0 | 4.7, 5.0 | 1.0 | 0.6, 0.8 | |
| Simple mean | 3.7 | 4.6 | 3.7 | 2.9 | 0.7 | 0.1 |
| Plus 25% | 4.6 | 5.8 | 4.6 | 3.6 | 0.9 | 0.1 |

There is also a negative bias caused by an incomplete coverage of the Spanish surveys which did not include the shelf north of 23°S, Walvis Bay. (This area was to be covered by a Soviet survey programme which does not seem to have materialized). As shown in Table 1 the Central and Southern Regions were the main areas of recruitment for the Cape hake and this is likely to be a general pattern of distribution. A rough assessment of the RV 'Dr. Fridtjof Nansen' data indicates that on average about 3/4 of the 1.5 to 2 year old fish is found on the shelf south of Walvis Bay. The Spanish estimates should thus be increased by 25%.

Whether these estimates are directly comparable to those of the RV 'Dr. Fridtjof Nansen' could only have been properly checked by comparative fishing experiments. The estimated effective fishing width of the Spanish trawl gear was first reported to be 15.7m (Macpherson *et al*, 1985), but in a later communication referred to as 18.3m (Macpherson, personal communication 1990). On the basis of the trawl design a fishing gear expert assessed the width to be 20m. (Bill West, IMR internal memorandum). There is thus some uncertainty regarding the effective fishing width of the spanish trawl, but it is anyhow not very different from the 18.5m estimated for the RV 'Dr. Fridtjof Nansen' trawl.

The resulting totals range from 0.1 to 5.8 billion and compared with the RV 'Dr. Fridtjof Nansen' data they show recruitment in the early 1980s to have been more than the double of the 2 billion

level of recent years. The high recruitment from that period is well known from the history of the fishery and was especially ascribed to the yearclasses 1982 and 1983. The Spanish data show high recruitment also from the adjoining 1981 and 1984 yearclasses. This may, however, partly be an effect of "overflow" from the abundant cohorts 1982 and 1983 through the use of age length keys.

VPA analyses from the ICSEAF period represent a further source of historical information on recruitment in this stock. Table 3 shows recruitment estimates of a VPA analysis including data up till 1985 from Schumacher (1988). Natural mortalities incorporate estimates of cannibalism.

Table 3 VPA, Cape hakes, Divisions 1.3 and 1.4.Recruitment at age 1 in millions. (Source:Schumacher (1988), Table 1.)

| | | | | | |
|---|---|---|---|---|---|
| 1968 | 5178 | 1974 | 4308 | 1980 | 1408 |
| 1969 | 4481 | 1975 | 2776 | 1981 | 2218 |
| 1970 | 5877 | 1976 | 2408 | 1982 | 4836 |
| 1971 | 2801 | 1977 | 2286 | 1983 | 5315 |
| 1972 | 1989 | 1978 | 1046 | 1984 | 1874 |
| 1973 | 3308 | 1979 | 879 | 1985 | 2303 |

Under the ICSEAF system the Namibian hake stocks were considered as two management units, one covering Division 1.3 and 1.4 and one for the shelf south of 25°S, the Division 1.5. Catches were only identified to species in research vessel surveys. In order to be comparable with the recruitment estimates from the RV 'Dr. Fridtjof Nansen' surveys, the VPA should have excluded the deep water hake caught in Divisions 1.3 and 1.4 and included the Cape hake catches in Division 1.5. Data on the proportion of the fishable biomass of the two species by regions is available for recent years from the RV 'Dr. Fridtjof Nansen' surveys (Anon, 1994,b) and show the following:

Table 4. Mean fishable biomass of Cape hake and deep water hake by regions. Data from 7 surveys 1991-1994.

| | | |
|---|---|---|
| Southern region | | |
| Cape hake | 102 000 | tonnes |
| Deep water hake | 104 000 | " |
| Central region | | |
| Cape hake | 111 000 | tonnes |
| Deep water hake | 17 000 | " |
| Northern region | | |
| Cape hake | 114 000 | tonnes |
| Deep water hake | 5 000 | " |

In this period half the biomass in the Southern region which corresponds to Division 1.5 was Cape hake, while deep water hake was only 9% of the biomass north of 25°S. These proportions may change between periods, but the Spanish surveys 1983-1988 showed an average proportion of 31% of deep water hake of a total mean biomass of 960 000 tonnes south of 23°S which could well indicate a 50/50 proportion south of 25°S (Gordoa et al, 1988). The reported geographical distribution of catch rates in these surveys showed only insignificant rates of deep water hake north of 25°S.

The mean of the reported hake catches in the VPA period 1968-1985 is 290 000 tonnes and 178 000 tonnes for Divisions 1.3+1.4 and 1.5 respectively. Use of the biomass proportions from the RV 'Dr. Fridtjof Nansen' surveys gives a mean Cape hake catch in this period of 353 000 tonnes. It thus seems reasonable to assume that the VPA based on the Division 1.3+1.4 data underestimate the recruitment to the total Cape hake stock by about 20 per cent.

The VPA estimates may also be negatively biased if catches have been underreported as has some times been claimed for periods of this fishery.

A comparison with the Spanish series for the early 1980s shows high recruitment for both sets of data in this period. But the mean yearclass strength 1981-1984 is considerably lower in the VPA series: 3.7 billion against 4.7 billion for the Spanish data which tend to confirm the existence of a negative bias in the VPA.

These three sets of recruitment estimates may be linked up. The methodical basis for the RV 'Dr. Fridtjof Nansen' data is the same as that of the Spanish series. Although a difference in bias can not be excluded it is not likely to be substantial. There is a good correspondence between the estimates from the Spanish surveys in the early 1980s and those of the VPA especially if it is assumed that the VPA underestimates the total Cape hake recruitment. There is thus a basis for considering the VPA and the RV 'Dr. Fridtjof Nansen' data as a time series in which the following periods can be described with recruitment in billion fish:

| | | | |
|---|---|---|---|
| 1968-1974 | Generally high recruitment | Range 2.0-5.9 | Mean 4.0 |
| 1975-1980 | Low to moderate recruitment | Range 0.9-2.8 | Mean 1.8 |
| 1981-1985 | Moderate to high recruitment | Range 1.9-5.3 | Mean 3.3 |
| 1988-1992 | Low to moderate recruitment | Range 0.3-2.3 | Mean 1.8 |

There may be evidence of a spawning stock-recruitment relationship in the history of this stock. The severely depleted stock in the late 1970s produced the weakest yearclasses of the VPA series.

Otherwise yearclass strength seems to vary apparently stochastically within a range of six times or more. In similarity with many Gadid species which demonstrate comparable patterns of yearclass fluctuations it must be inferred that yearclass strength in the Cape hake is initially determined at an early stage by the survival success of larvae or post larvae, but may later be modified by phenomenon of mass mortality and by cannibalism.

Against this historical background the predominant recruitment levels of about 2 billion for the 1988 to 1992 yearclasses must be assessed as moderate. The estimate of nearly 5 billion for the 1991 yearclass in survey 2/1992 is at the level of previous high recruitment years and confirms the high reproductive capacity of the stock.

An additional conclusion is that more comprehensive pre-recruit and recruitment studies should be given high priority.

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# PART II

# SURVEY OF THE PELAGIC STOCKS
## 1 June - 23 June 1994

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ANNEXES

# CHAPTER 1 INTRODUCTION

## 1.1 OBJECTIVES

- To estimate the biomass of four of the commercially important pelagic and mesopelagic fish species in the northern Benguela system; pilchard *Sardinops ocellatus*, anchovy *Engraulis capensis*, round herring *Etrumeus whiteheadi*, juvenile (inshore) and adult (mid-water) Cape horse mackerel *Trachurus capensis*.

- To estimate the biological condition of pilchard, anchovy, round herring and horse mackerel, length, weight, reproductive stage and age.

- To conduct an intercalibration of the scientific acoustical systems of the RV 'Dr. Fridtjof Nansen' and RV 'Welwitschia'.

- To conduct *in situ* target strength measurements on the surveyed fish, using a new split beam sonde, and to perform measurements of schools using the scientific SA950 sonar, dependent on time available, weather conditions and fish distribution.

- To collect data on basic oceanographic parameters, namely dissolved oxygen, temperature and salinity, for correlation with pelagic fish distribution and densities.

- To obtain data on vertical distribution of phytoplankton and sea surface chlorophyll in order to assess the applicability of the satellite biomass estimation programme (SEAWIFS).

- To obtain data on the distribution of planktonic food in relation to hydrography and planktivorous fish.

- To perform smaller experiments as opportunities arise (e.g. if the vessel remains semistationary in an area for hours, short-term fluctuations in phytoplankton biomass would be monitored). If time allows, alternative pathways in chlorophyll extraction would be tested.

- To determine densities of zooplankton for preliminary estimates of zooplankton biomass and to identify the most dominant zooplankton organisms and their relative distributions. This programme is to be regarded as a trial.

## 1.2 PARTICIPATION

The scientific staff from Namibia on the RV 'Dr. Fridtjof Nansen' were:

from 1/6/94 to 23/6/94: David Boyer, Heidrun Plarre, Mari du Plooy, Deon Louw and James Cole (Warwick University, U.K.),
from 1/6/94 to 10/6/94: Graca D Almeida and Sielfried Gowaseb,
from 10/6/94 to 24/6/94: Ann-Lisbeth Agnalt, Michael Evenson and Victor Hashoonga
from 17/6/94 to 23/6/94: Janet Botha

From Angola:
N'Kossi Luyeye and Alphonso Pedro Kingombo joined the cruise until 10/6/94.

The scientific staff from the Institute of Marine Research were:
Egil Ona, Ingvald Svellingen, Valantine Anthonypillai and Erling Molvær.

## 1.3 SCHEDULE

The RV 'Dr. Fridtjof Nansen' left Walvis Bay at 18h00 on 1st June and conducted a preliminary survey from Walvis Bay northward to Angola. The 18, 38 and 120 kHz echo-sounders and the split-beam sonde were calibrated using standard targets in Baía dos Tigres on 5th and 6th June. Trials of calibrating the SA950 sonar were also performed in Baia dos Tigres. The entire area southwards to 26°S was surveyed between 6th June and 19th June. An intercalibration exercise was conducted with the RV 'Welwitschia' on 8th June (Annex X). The RV 'Dr. Fridtjof Nansen' met with the RV 'Welwitschia' on 10th June and exchanged Namibian staff. The two vessels met a second time on 19th June to transship another Namibian scientist. The RV 'Dr. Fridtjof Nansen' arrived in Walvis Bay on 23rd June at 08h00. A total of 3 900 nautical miles were steamed and 83 trawl stations worked.

The RV 'Dr. Fridtjof Nansen' was assisted between 17th and 20th June by the Namibian purse seiner 'Fiskeskjer', which served as a scouting vessel using a medium range 50 kHz Furuno multi-beam sonar and fish-finding echo-sounder.

Since the present project began in 1990, this survey was the first pelagic survey to start in the north and work southwards. This was in order to accommodate the participants from Angola during the Angolan section of the survey as they were unable to participate later in the survey period.

# CHAPTER 2 METHODS

## 2.1 HYRDOGRAPHIC AND PLANKTON SAMPLING

### 2.1.1 Hydrographic sampling methods

A total of 58 hydrographic profiles were worked along 10 hydrographic sections (Annex II) using a Seabird 911+ CTD probe, also carrying a sensor for dissolved oxygen. At each station, water samples were taken at 5 m and at the bottom. These were analyzed for dissolved oxygen using the Winkler method for a check on the measurements made with the sensor. Earlier calibration factors between sensor and Winkler seemed to fit well with the measurements made. Some of the Winkler analysies were, however, regarded as inaccurate, as analysed by untrained personnel.

### 2.1.2 Plankton sampling methods

At each environmental station, namely at 20m depth, 2, 5, 10, 15 and 25 nautical miles from the coast along each latitudinal degree line, the CTD rosette was used to obtain water samples for chlorophyll analysis. Biomass will be estimated for the following depths: 0m (sampled with a bucket), 5m, 10m, 25m, 50m, 75, bottom of water column.

Chlorophyll was estimated fluorometrically, based on the applied recommendations of the SCOR - UNESCO Working Group as reported in "Recommended Procedures for Measuring the Productivity of Plankton Standing Stock and Related Properties" by the U.S.A. National Academy of Sciences (1969). In short, the analysis entailed:

a. Removal of the algae from the sample by filtration through a 45 micrometer membrane filter.

b. Extraction of the pigment with acetone.

c. Measuring the chlorophyll level against a chlorophyll standard of known concentration, using a Turner 10-AU Fluorometer.

The zooplankton sampling methods were based on those used by Sea Fisheries Research Institute in Cape Town. A vertical Calvet haul was taken at every CTD station on the 10 hydrographic lines. The net was attached to the CTD cable just above the CTD frame and was lowered with the CTD to the bottom. The Calvet and the CTD were retrieved at 1.0 m/s. Before and after each haul, the reading of the flowmeter was recorded. After each haul, the net was thoroughly washed down with a strong jet of seawater. The contents of the cod-end bucket were then transferred to a labelled jar and preserved with 5% formalin.

The samples were taken to Swakopmund for sorting and identification of the most dominant zooplankton groups.

The flowmeter was calibrated at the beginning of the cruise by lowering the net (without buckets at the cod-ends) several times to 70m in order to obtain an average recording the flowmeter reading each time.

A separate report on the plankton results will be presented later.

## 2.2 DISTRIBUTION AND ABUNDANCE ESTIMATION

### 2.2.1 Survey area

The limits of the survey area were determined from the previous data of pelagic fish distribution and from reports of commercial fishing vessels prior to, and during, the survey. Previous surveys have extended in the south either from the boundary of the northern and southern Benguela systems, the Lüderitz upwelling cell, or from the border between South Africa and Namibia. Immediately prior to the present survey the South African RV 'Africana' surveyed the Namibian region south of the Lüderitz upwelling cell, and it was therefore regarded as unnecessary for the

RV 'Dr. Fridtjof Nansen' to survey this far south. The southern extent of the survey was therefore taken as the Lüderitz upwelling cell, 26°S. Since the pelagic fish distribution also extends into Angolan waters, permission was obtained from the Angolan authorities to survey northward to the area west of Tombua (16°S).

The inshore limit of the survey was determined by the vessel draught and was normally about 15 m sea depth, or 10 m below the transducer. The offshore limit was determined from a preliminary investigation survey which covered the area to the 150 m isobath. As the schooling species pilchard, anchovy and round herring were found within the 100 m isobath, a larger part of the effort was allocated to this zone. Less frequent transects extended offshore to a depth of about 350 m to cover the more dispersed concentrations of horse mackerel.

To allow comparison with previous pelagic fish surveys, the region was divided into three areas:

| | |
|---|---|
| 26 00' to 21 00'S | Dolphin Head to Ambrose Bay |
| 21 00' to 17 15'S | Ambrose Bay to Cunene River |
| 17 15' to 16 00'S | Cunene River to Tombua |

The course tracks with the fishing stations for the three areas are shown in Figures 1a-c respectively.

Annex I gives a description of the instruments and the fishing gear used.

### 2.2.2 Sampling methods

The acoustic echo-integration system provided measurements of fish area densities, usually averaged over 5 nm distances. However, in areas of high fish concentrations and large along-track variability, an output resolution of 1 nm was used. The acoustic unit measured by a calibrated echo-integrator system is the area back-scattering coefficient, $s_A$, defined as the integral of the volume back-scattering coefficient between the depth limits $Z_1$ and $Z_2$, normalized to $[m^2/nm^2]$:

$$s_A = 4\pi(1852)^2 \int_{z_1}^{z_2} s_v \, dz$$

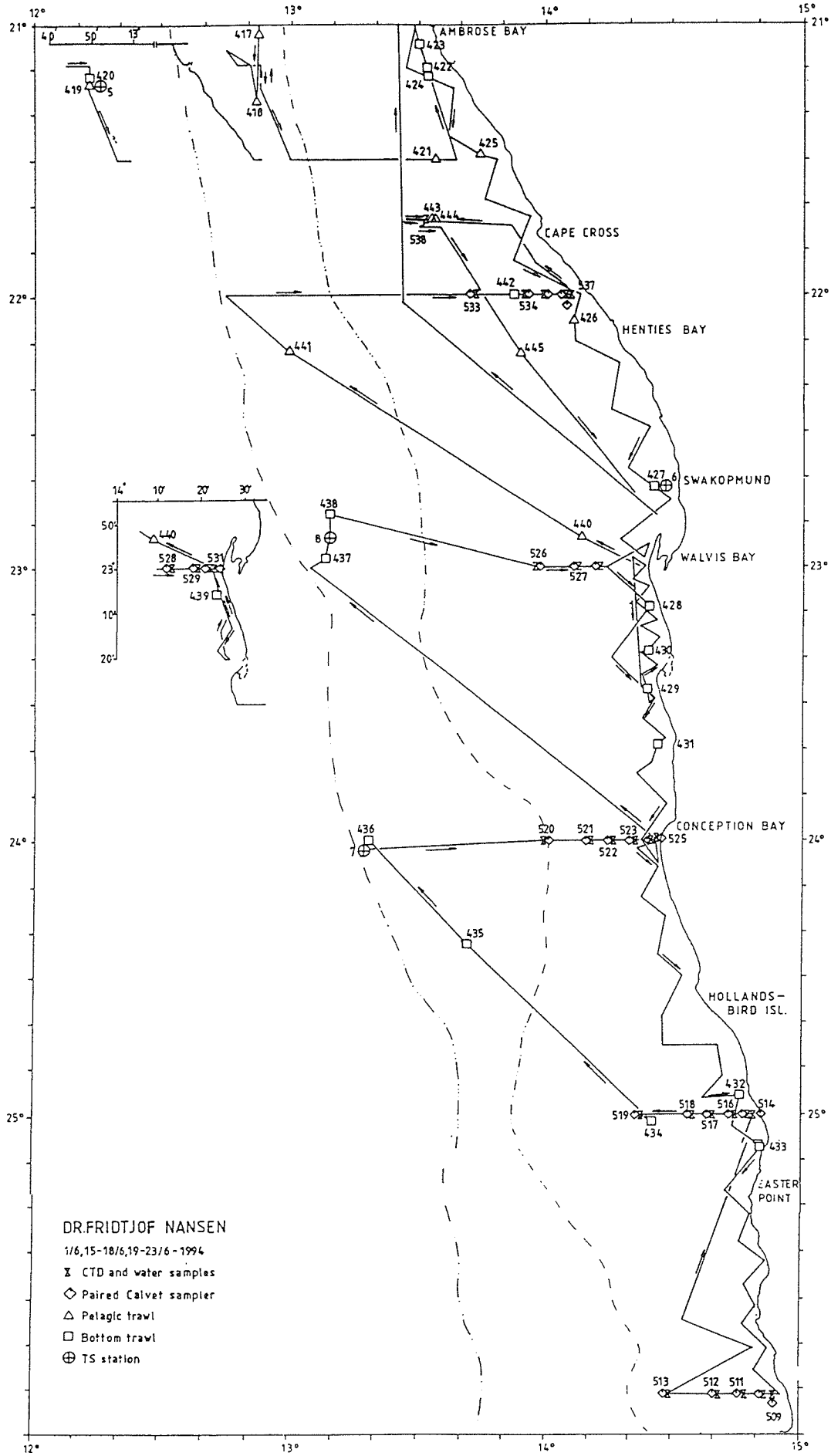



Figure 1a Course track and fishing stations, Easter Point to Ambrose Bay.

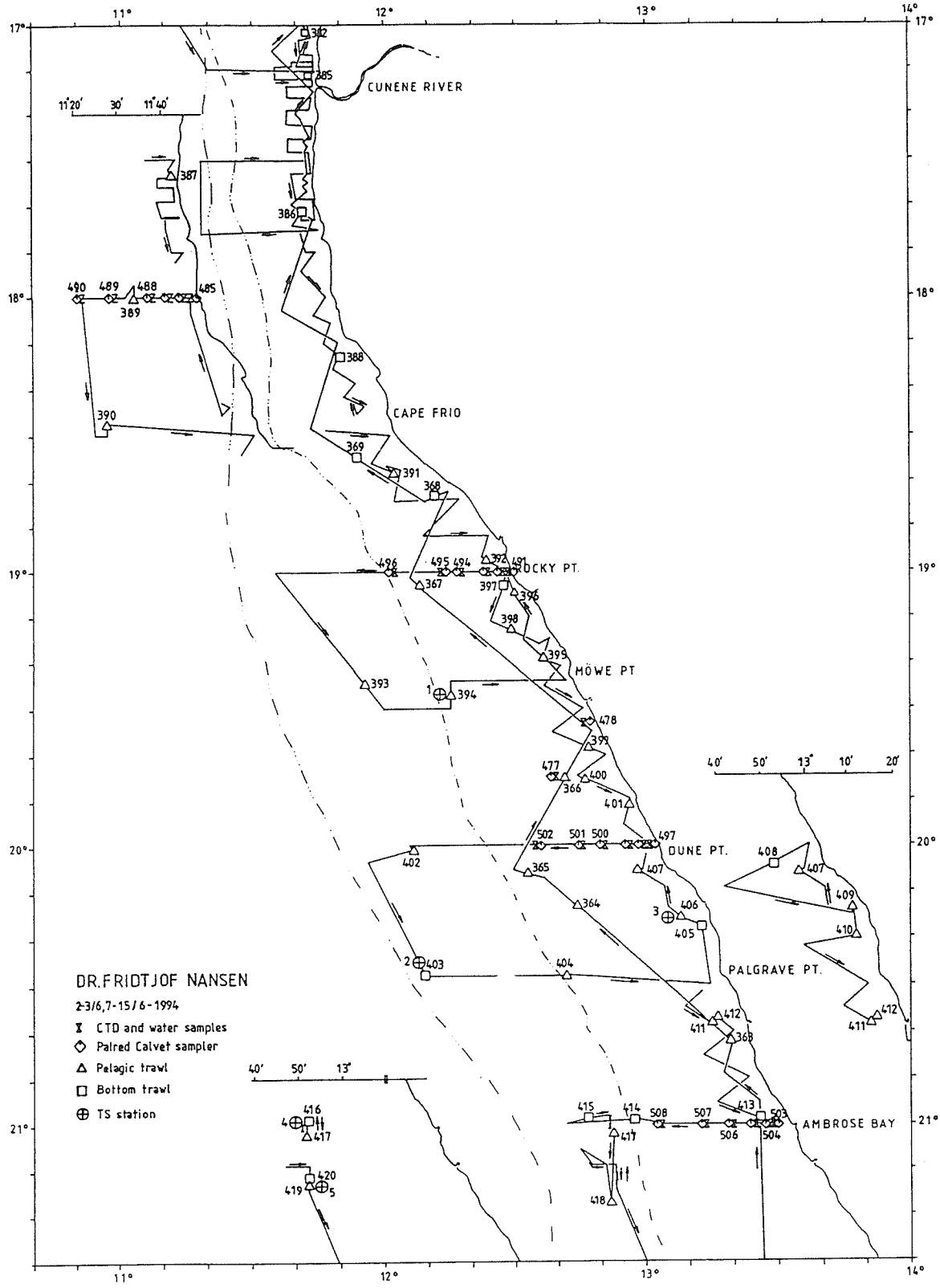



Figure 1b Course track and fishing stations, Ambrose Bay to Cunene River.

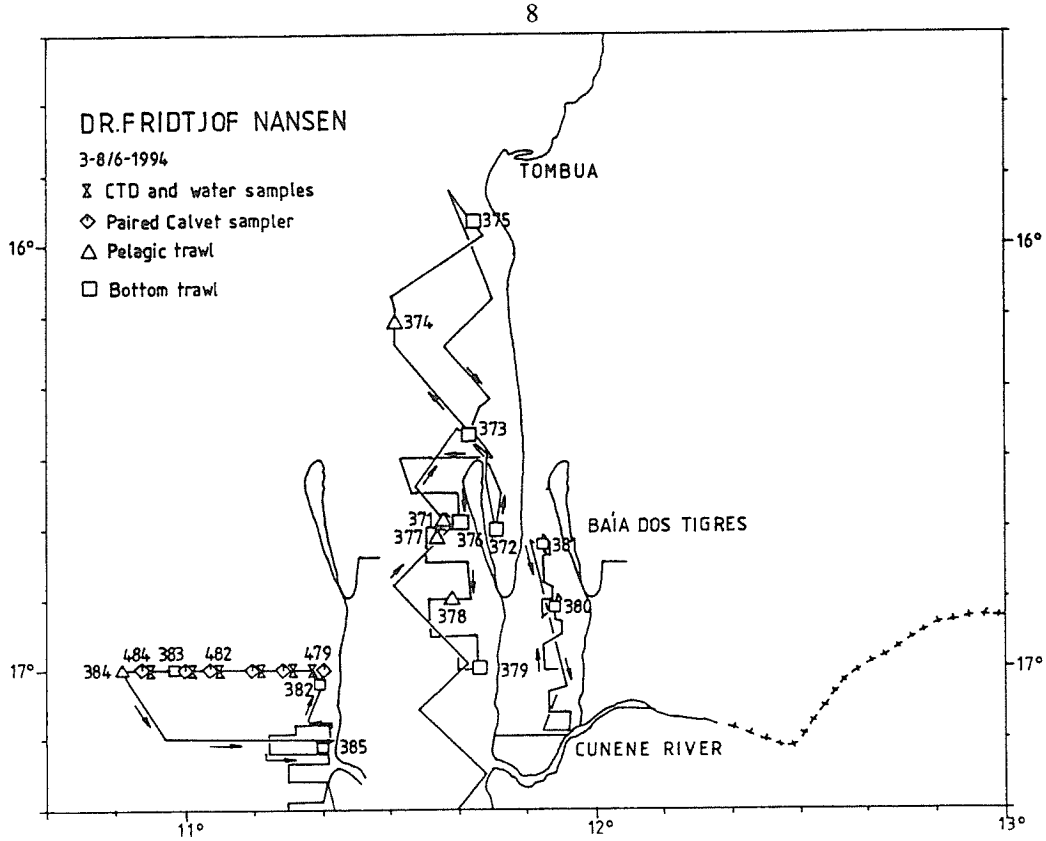



Figure 1c Course track and fishing stations, Cunene River to Tombua.

The integrator data from fish targets were allocated to the following groups on the basis of trawl sampling and acoustic character, as recognised from the echo recordings:

Pilchard
Anchovy
Horse mackerel
Non-commercial pelagic fish, mainly myctophids and gobies
Plankton, including jellyfish
Other demersal species, e.g. hake, sharks, etc.

In general, the integrator data was partitioned to species or species groups by separating the echo recordings horizontally or vertically in the scrutinizing process on the Bergen Echo Integrator, BEI, (Knudsen, 1990). However, where several species or groups of species occur as mixed recordings, their relative contribution to the total integrator reading were computed from the trawl data, assuming a catch efficiency equal for all species and length groups. The correct way to partition the integrator reading when assuming similar target strength-to-length relations for the different species may then be determined from:

$$k_j = s_{A_T} \frac{\sum_{i=1}^{n} n_{ij} L_i^2}{\sum_{j=1}^{m} \sum_{i=1}^{n} n_{ij} L_i^2}$$

where $k_j$ is the relative contribution to the total area backscattering coefficient, $s_{A_T}$ from species $_{ij}$. If the length differences between the different groups are small, the relative contribution may with care be simplified by determining the factor directly from its relative contribution to the total weight of the catch. During this survey, the latter simplification has been used in the partitioning of the integrator data on mixed recordings.

The sampling intensity, or degree of coverage, was determined from the approximate density distribution of fish determined during the course northward, reports from the fishing fleet and the accompanying fishing vessel.

The survey strategy used was essential similar to the one used in previous surveys:

1 All available prior information on fish density and distribution was assessed and used to estimate the probable distribution and density of each region surveyed.

2 The effort was increased in areas with high fish densities.

3 When possible, the most important areas were covered both during day and night.

4 In regions of expected low densities zig-zag transects were surveyed from inshore of the distribution, where possible, to the offshore edge of the distribution. In areas of high expected densities parallel transects were surveyed, also from the inshore to offshore limits of the distribution, perpendicular to the fish density gradient.

5 The widely dispersed mid-water horse mackerel were mainly surveyed using parallel transects.

Information from the fishing fleet and from the preliminary coverage of the area by the RV 'Dr. 'Fridtjof Nansen' and 'Fiskesjer' indicated that the current fish densities were low in most regions and that a zig-zag type of survey pattern would give an appropriate degree of coverage.

In one area, however, in southern Angola, an increased frequency of recorded schools on the northward track indicated that parallel transects would provide the most appropriate coverage of this area.

The weather was favorable for an acoustic survey during most of the cruise, although some echoes were lost during rough weather on 8th and 9th June off Cape Frio. The fish densities in this area were low and air bubble attenuation has not unduly affected the survey results.

Trawl sampling of fish was generally successful, although some hauls were disrupted by high concentrations of jellyfish, as experienced in some previous surveys. This was particularly serious in the mid-water horse mackerel targeted trawls. It was not established whether the jellyfish concentrations were close to the surface and caught during setting or hauling the net, or at the same depth as the horse mackerel. Dense layers of jellyfish also occurred south of Walvis Bay and disrupted trawling in that region.

Mixed species tended to occur in fairly open, low density, shoals and the allocation of species proportions was based solely on the results of trawls in adjacent areas. Some pilchard occurred in these mixed shoals, but in general most of the pilchard stock occurred in small, dense monospecific schools which were easy to identify from the echo recordings. The identification of these schools was confirmed by a number of trawls.

All catches were sampled for composition by weight and numbers of each species and the size distribution of commercially important species, using total length, was determined. The length frequencies of these species are given in Annex V. The complete records of fishing stations are shown in Annex IV.

The distributions of the target species are shown in Figures 2a-c, 3a-c, 4a-c and 5a-c. The scale used in the distribution charts to illustrate different levels of density is in absolute acoustic units, the area back-scattering coefficient, $s_A$ [$m^2$/ $nm^2$]. This ensures the maps to be comparable from survey to survey. Note that in earlier surveys, the scale used was 0.1x $s_A$ . The conversion of the area back-scattering coefficient to biomass, i.e to [tons/$nm^2$], is dependent of the average size of

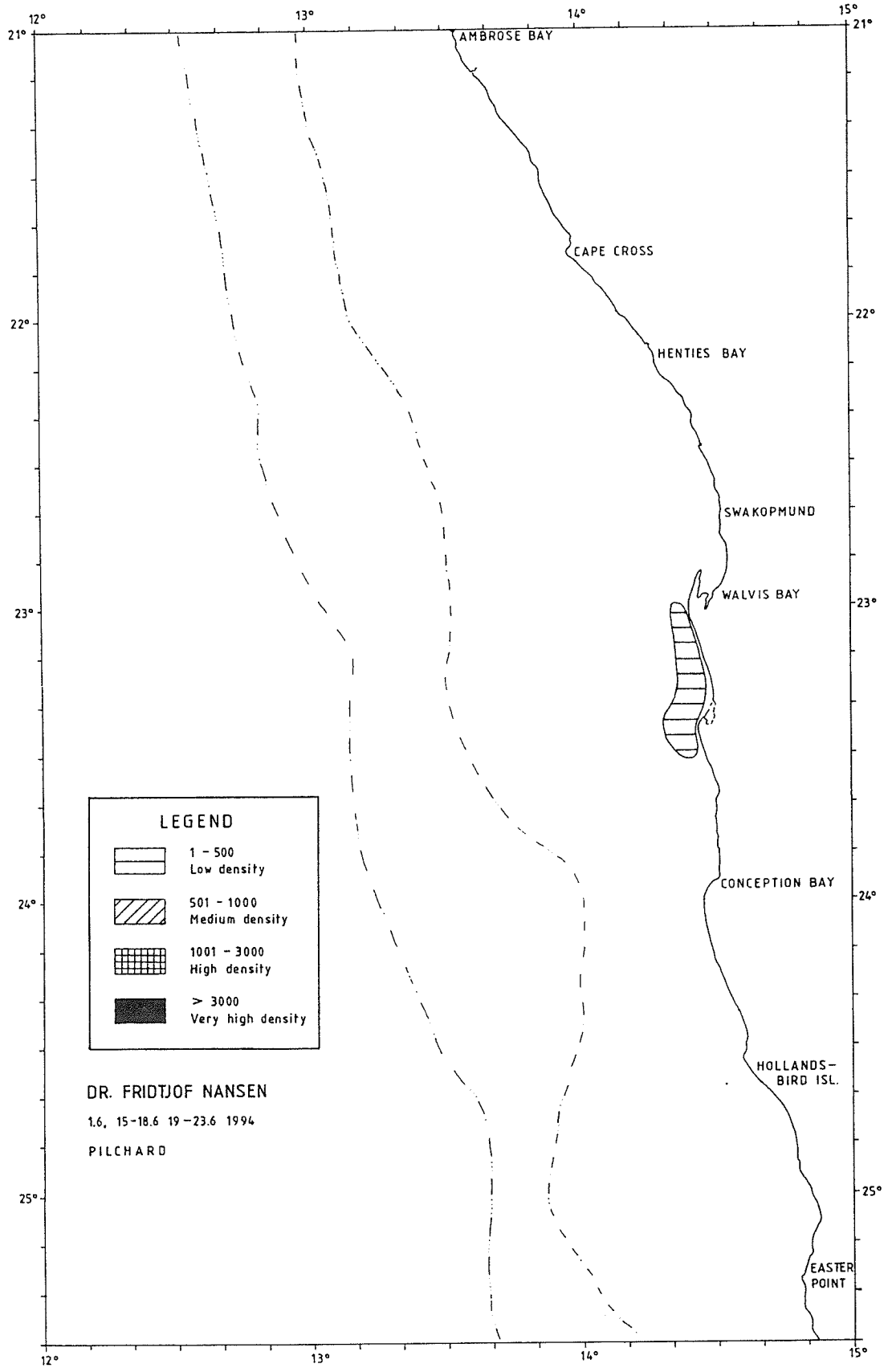



Figure 2a Distribution of pilchard, Easter Point to Ambrose Bay.

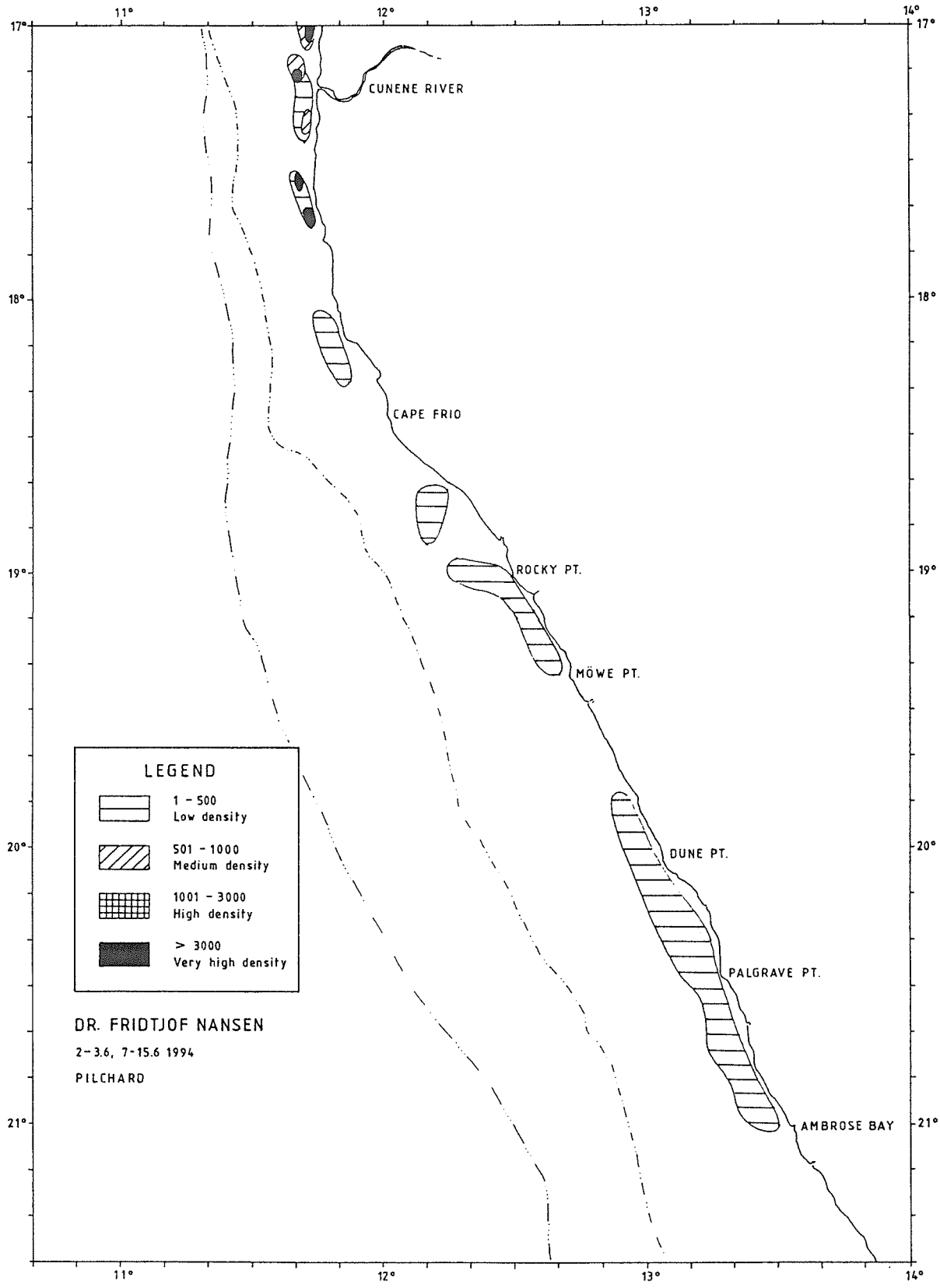



Figure 2b Distribution of pilchard, Ambrose Bay to Cunene River.

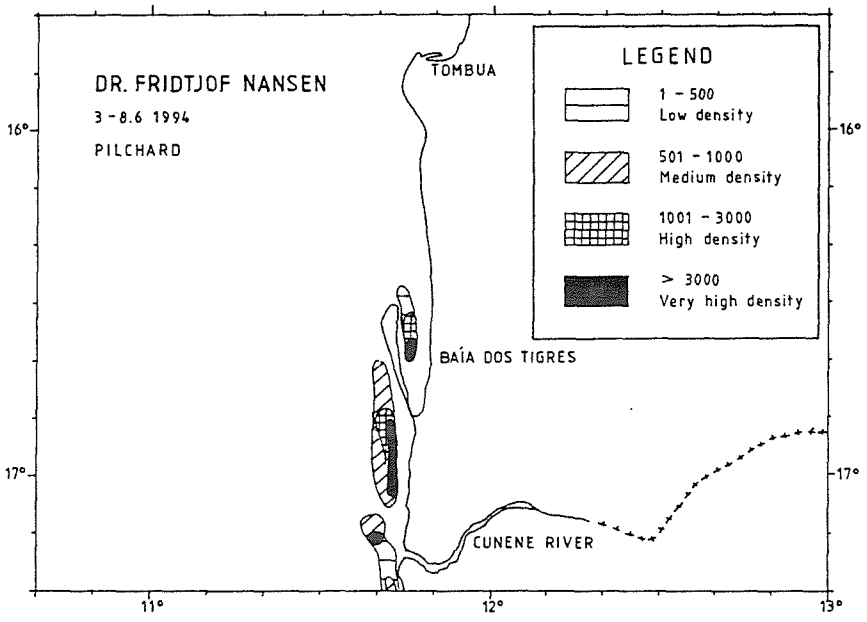



Figure 2c Distribution of pilchard, Cunene River to Tombua.

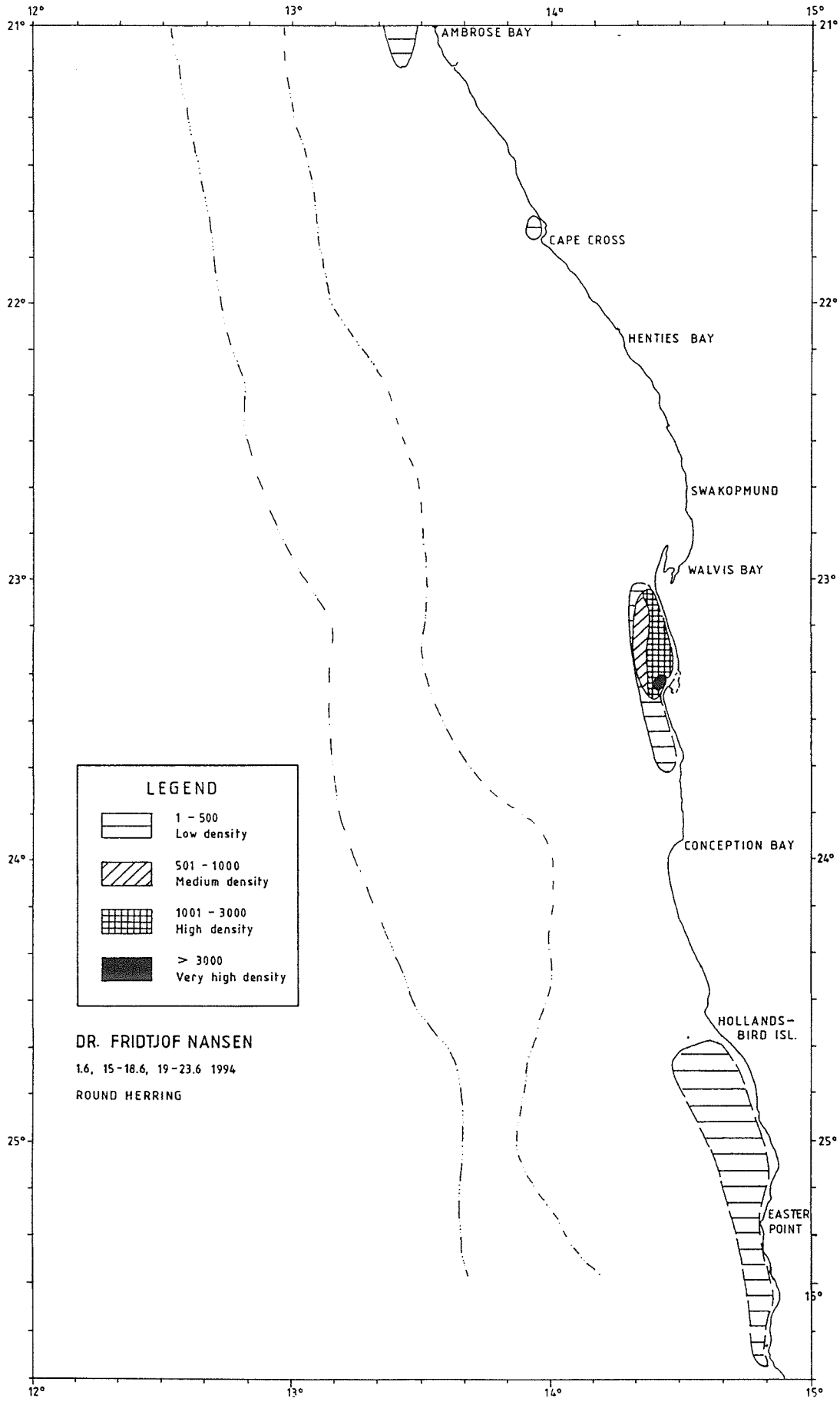



Figure 3a Distribution of round herring, Easter Point to Ambrose Bay.

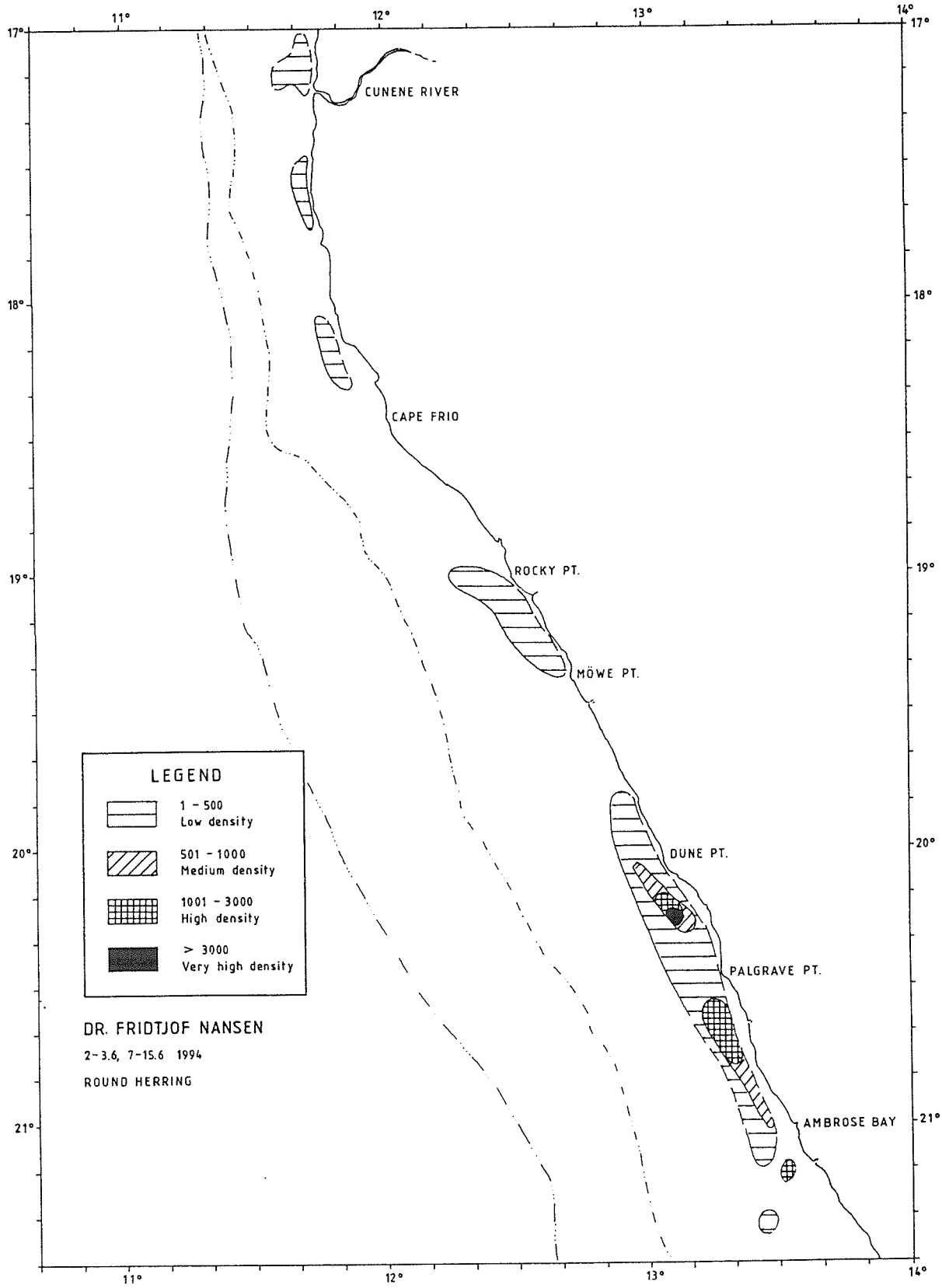



Figure 3b Distribution of round herring, Ambrose Bay to Cunene River.

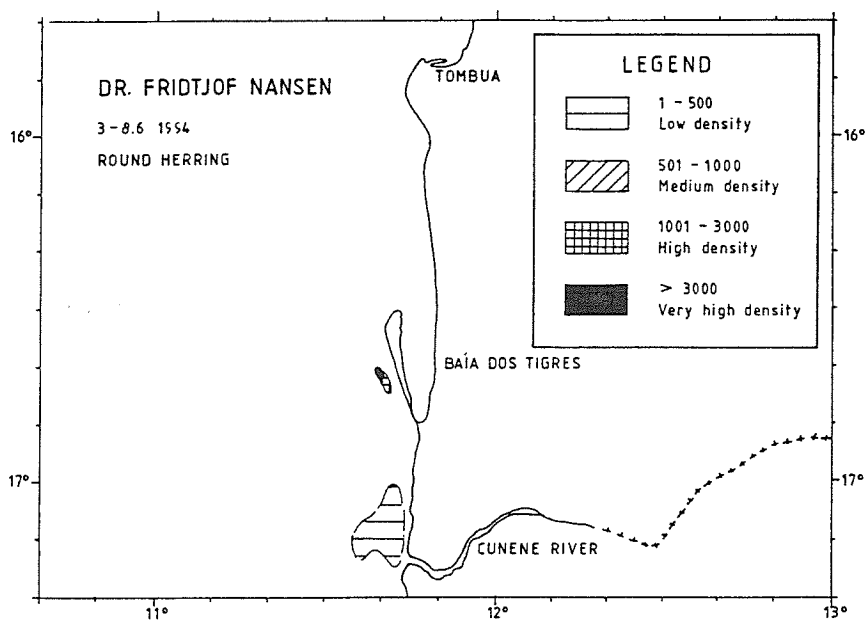



Figure 3c Distribution of round herring, Cunene River to Tombua.

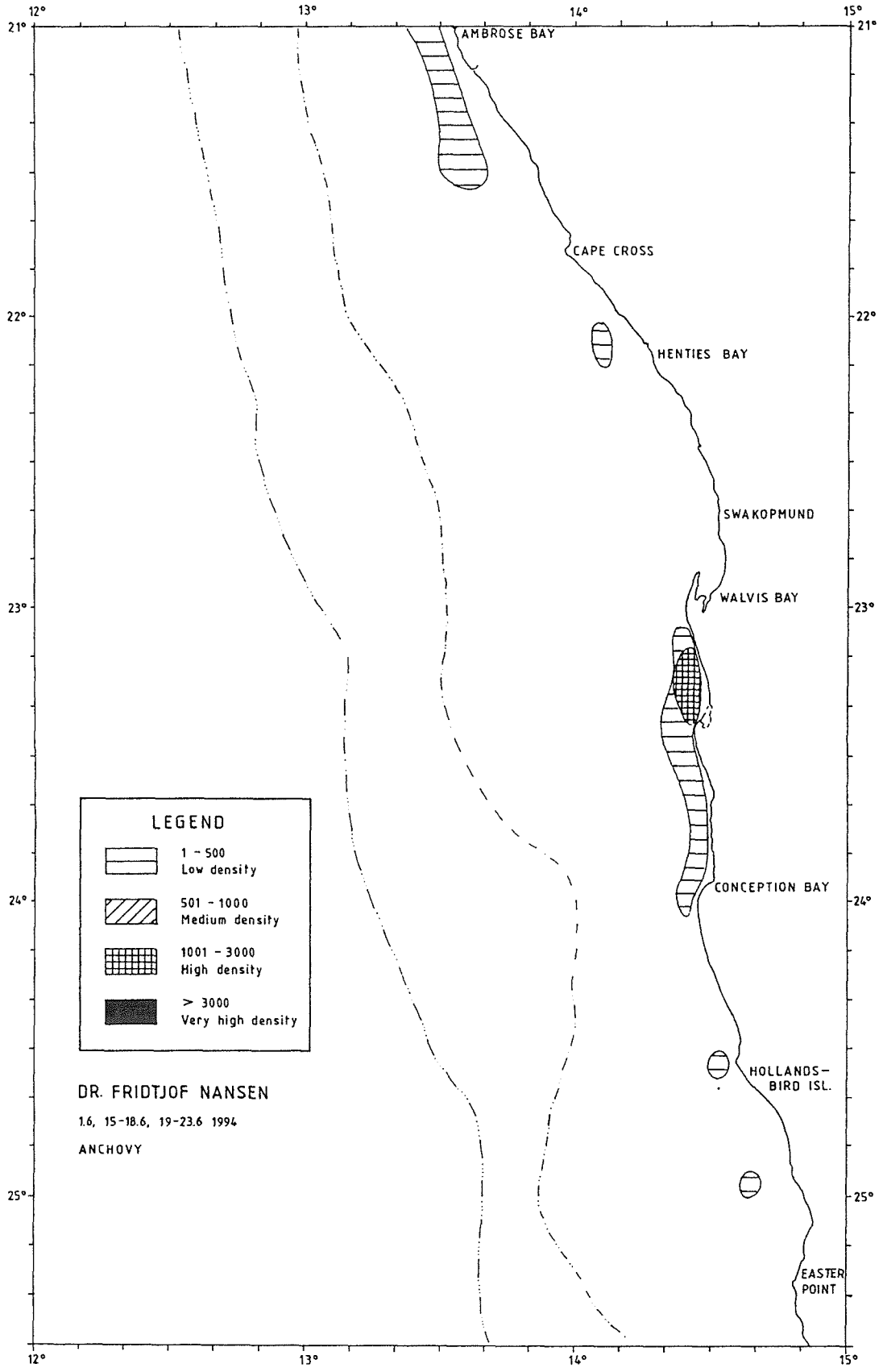



Figure 4a Distribution of anchovy, Easter Point to Ambrose Bay.

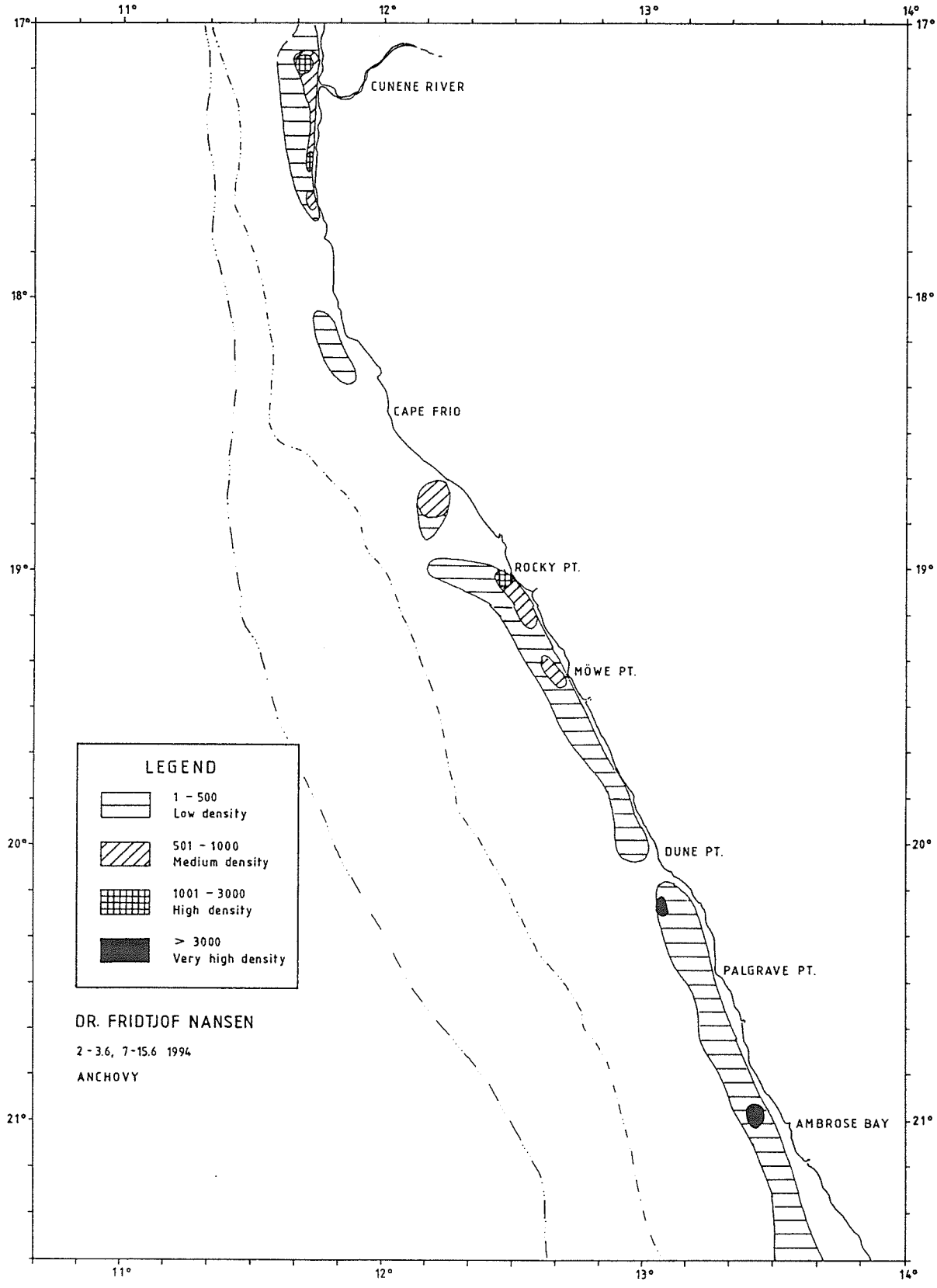



Figure 4b Distribution of anchovy, Ambrose Bay to Cunene River.

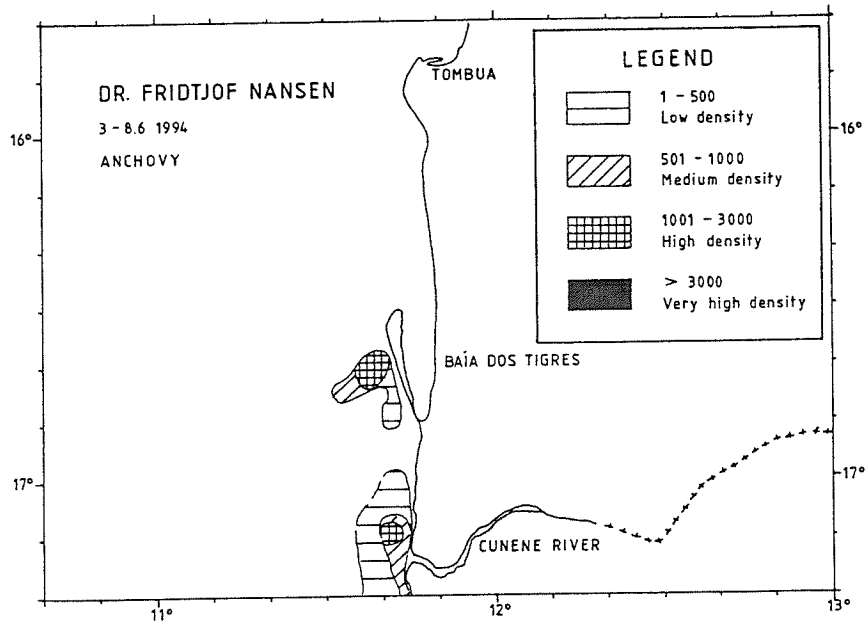



Figure 4c Distribution of anchovy, Cunene River to Tombua.

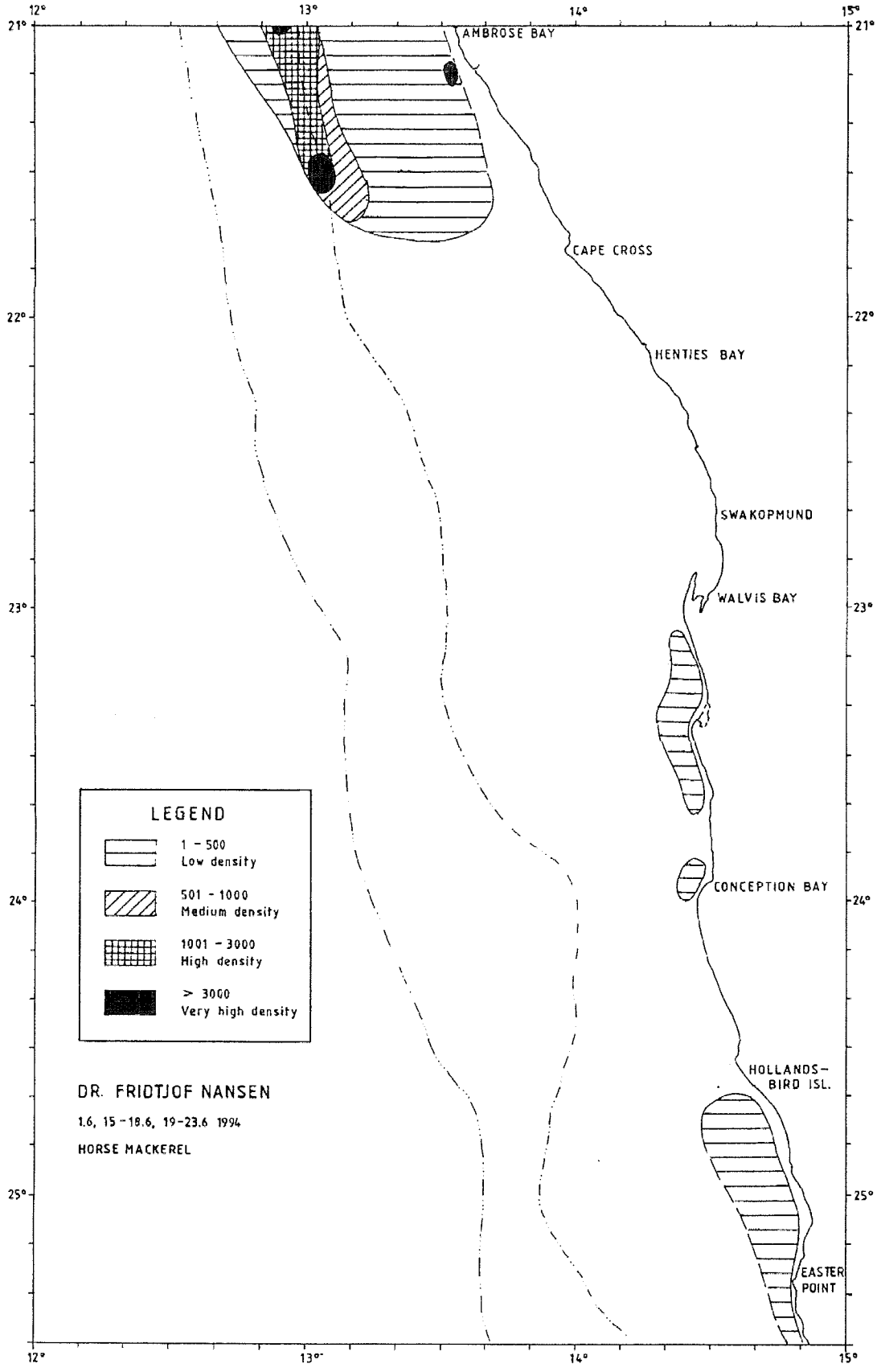



Figure 5a Distribution of horse mackerel, Easter Point to Ambrose Bay.

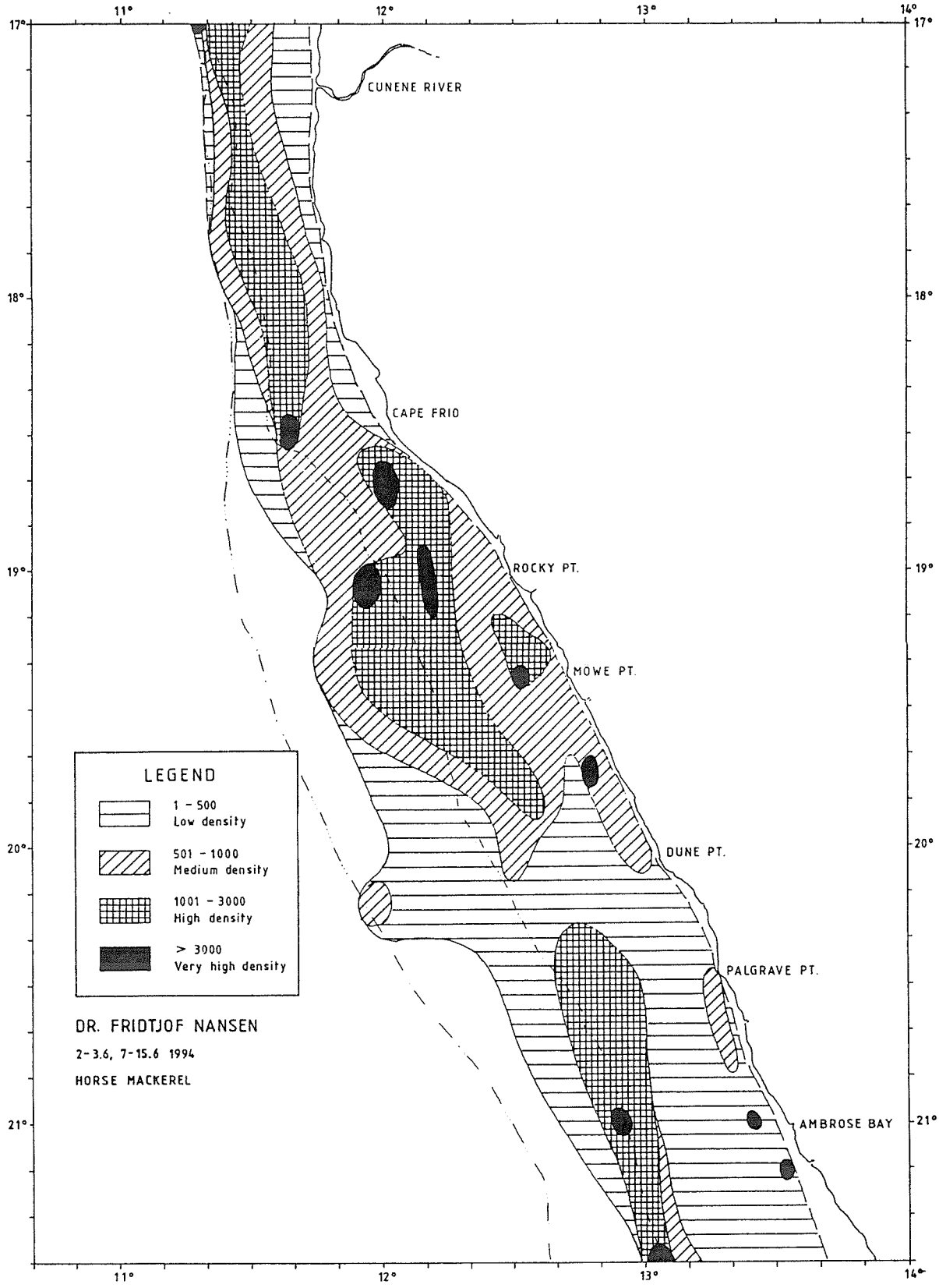



Figure 5b Distribution of horse mackerel, Ambrose Bay to Cunene River.

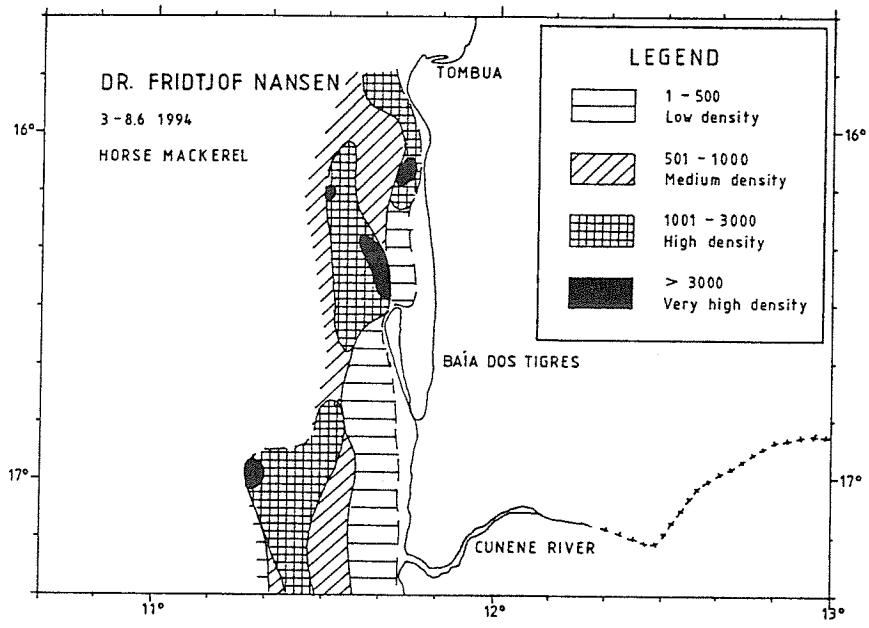



Figure 5c Distribution of horse mackerel, Cunene River to Tombua.

the surveyed fish. An aproximate conversion factor for three fish sizes, 10, 20 and 30 cm, and average values in the density scales used are given in the table below, asuming a target strength of TS = 20logL - 72 [dB]. As the actual mean density within the scale are not indicated in the charts, it is not possible to compute the total biomass directly from the distribution maps, using the indicated conversion, but may help in the interpretation of the distribution maps.

| Density ($s_A$) | 1-500 | 501-1000 | 1001-3000 |
|---|---|---|---|
| Fish length (cm) | | | |
| 10 | 20 | 60 | 130 |
| 20 | 47 | 140 | 380 |
| 30 | 115 | 230 | 460 |

### 2.2.3 Data analysis

The area density of fish as determined by the hydroacoustic method is:

$$\rho_A = \frac{s_A}{<\sigma>}$$

where $s_A$ is the area backscattering coefficient, and $<\sigma>$ is the average acoustic cross section of one fish of the measured species.

The mean area backscattering coefficient, $s_A$, for each surveyed area was obtained by averaging all data measured during the coverage of that area, excluding those values obtained during trawling. The 95% confidence intervals of the mean $s_A$ values were also computed for some areas and comparisons between the different types of transects will be made in a separate report.

The average acoustic cross-section for the fish surveyed was derived from the target strength to size relation earlier used during the surveys conducted by RV 'Dr. Fridtjof Nansen':

$$TS = 10 \log \left(\frac{<\sigma>}{4\pi}\right) = 20 \log L - 72$$

where the total length of the fish is expressed in centimeters. This target strength to size relation has been used for a number of fish species (pilchard, anchovy and round herring), although originally derivated from early measurements of North Sea herring. In earlier reports, the relation is also referred to as the fish conversion factor:

$$C_F = \frac{1}{<\sigma>} = 1.26 E6 \times L^{-2.0}$$

However, recent studies using split-beam echo-sounders indicate that the target strengths of these species may be higher than assumed above (Ona and Svellingen, *pers. comm.*). Until a reliable, *in situ* target strengths have been established, the indicated TS has been used to enable comparison with previous estimates. It is therefore important to note that if a more realistic target

strength of TS =20 log L - 70 [dB] is used the total biomass will be reduced for all species by about 40%.

The length distribution of pilchard within an element area was computed by weighting the length-frequencies obtained in each trawl sample within the area by the measured area backscattering coefficient, $s_A$ , during trawling and close to the trawl station. This was done mainly because the trawling was directed on schools and layers for identification purpose, and that the CPUE varied from haul to haul. For species with a looser schooling behaviour, often registered as shoals or in layers, such as anchovy, round herring and horse mackerel, the length-frequency of each trawl was weighted by the CPUE.

The following formula was applied to calculate the number of fish in each length frequency group (cm) in an area:

$$n_i = s_A \times A \times \frac{p_i}{\sum_{i=1}^{n} \sigma_i p_i}$$

where
- $n_i$ = number of fish in length group i
- A = area in $nm^2$
- $s_A$ = mean acoustic backscattering coefficient in the area
- $p_i$ = proportion of fish in length group i in samples from the area
- $\sigma_i$ = acoustic cross section for one fish in length group i

The number per length group was then summed and the total number of fish obtained. The total biomass of fish was computed using the length-weight relationship obtained from trawl samples.

The biomass estimates for all the target species are shown in Table 2.

## 2.3 BIOLOGICAL SAMPLING

Total length (Lt.), body weight, and gonad weights were recorded for pilchard, anchovy, and horse mackerel to the nearest ½ cm or 1 g below, respectively. Sex and reproductive stage were described by macroscopic examination, scoring each individually sampled fish according to the following categories:

1 Juvenile
2 Inactive
3 Active
4 Ripe
5 Spent

Otoliths were removed for ageing at a future date.

Sampling was standardized across 2° latitudinal intervals according to the following rules:

1 The minimum size of anchovy sampled was 10.0 cm Lt., and for horse mackerel and pilchard 14.0 cm Lt.
2 Up to 10 individuals were sampled per 0.5 cm length class in each 2 latitude interval.
3 Not more than 3 individuals were sampled per 0.5 cm length class per trawl.

Separate from the above parameters, length and weights for each of the four species were recorded by selective sampling across the full range of fish sizes found in trawls. The actual length-weight relationships were determined by fitting power curves to the regressions of weight against length. These relationships were determined for the whole region, as well as for each latitude interval where there was a sufficient spread of lengths among the samples.

The length-weight data of fish above the minimum size (see above) were also used to calculate the fish condition factor, (weight X 100)/length$^3$, of pilchard and anchovy. The condition factors of individual samples were pooled and averaged for each 2° latitude interval in which suitably sized fish were found. For pilchard this included areas 16° - 17°S and 20° - 21°S, and for anchovy: areas 16° - 17°S, 18° - 19°S, and 20° - 21°S.

Significance tests were performed to evaluate differences in fish condition between areas for each species. The type of test depended on the number of areas being compared; for a comparison of the two 'pilchard areas', a two-tailed F-test followed by a Student's t-test on the differences between the means was used. Whereas for a comparison of the three 'anchovy areas' a Model-I Anova for 'unplanned' comparisons between means was used (see Sokal & Rohlf, 1987).

Time limitations prevented similar calculations for horse mackerel and round herring to be done during the survey. These will be available at a later stage.

# CHAPTER 3 RESULTS

## 3.1 HYDROGRAPHY

Annex II shows sections of temperature, salinity and oxygen obtained during the cruise.

The surface temperature is relatively low, about 13°C to 15°C, typical for the season, resulting in weakly stratified water masses. In the upper 200m the temperature varies less than 2 degrees in the southern part, increasing to slightly above 2 degrees in the northern part where the surface layer is somewhat warmer.

The salinity is also extremely homogeneous in the upper 200 m, especially in the southern part.

The surface oxygen censentration is above 4 ml/l in the southern part, decreasing to less than 3 ml/l in the northernmost section at Cunene. The bottom values are less than 1 ml/l.

The water characteristica indicate upwelling at some of the sections. This is most clearly seen in the oxygen distribution by the upward tilt of the isolines approaching the coast, but it is also indicated by the temperature and salinity distributions. The most typical upwelling situation is seen in the section taken at Walvis Bay, where the surface oxygen consentration is less than 2 ml/l close to the shore. Strong upwelling also seems to have occurred at the Rocky Point section. There is evidence for upwelling also at the other sections, except the northernmost one at Cunene.

## 3.2 DISTRIBUTION

### 3.2.1 Dolphin Head to Ambrose Bay

No adult pelagic fish were found in this region. Scattered shoals of juvenile fish occurred close inshore from Walvis Bay to Conception Bay. North of Sandwich Harbour this concentration was fairly dense, but elsewhere the values were low. The species composition was mixed and owing to high densities of jellyfish disrupting the trawls, difficult to determine with any accuracy. Horse mackerel appeared to be the dominant species.

Some mixed shoals of juvenile pelagic fish occurred in the northern part of this region, extending northwards of Ambrose Bay. At the end of the survey a number of shoals of surface schooling juvenile fish were also found in 100 to 130 m waters off Cape Cross. Two trawls were made, one shoal was identified as juvenile hake and juvenile Cape horse mackerel, while another consisted of mainly anchovy and round herring, with smaller proportions of pilchard, horse mackerel and hake. The Lt. of all species was 6.5 to 8.5 cm. While steaming back to Walvis Bay from this region large areas of dispersed juvenile fish were observed near the surface. As it was full moon, it is likely that these fish had occurred above the transducer level during earlier coverages of this region and had not been observed. Owing to lack of time further investigations of this region were not possible. Both the RV 'Dr. Fridtjof Nansen' and RV 'Welwitschia' had surveyed this region acoustically during the previous week and had not found any pelagic fish. It was therefore assumed that the total biomass of juvenile fish occurring in this offshore region was not large.

Very little adult pelagic fish was found north of Walvis Bay.

Despite reports of commercial catches of mid-water horse mackerel being made south of 22°S and the RV 'Dr. Fridtjof Nansen' recording substantial catches at 24°S in particular during the trawl survey in May, mid-water horse mackerel was not recorded south of Walvis Bay. Some few individuals were caught in day-time bottom trawls targeted at demersal hake.

### 3.2.2 Ambrose Bay to Cunene River

The main concentration of pelagic fish in this region was a dense area of pilchard schools north of 17°25'S, continuing northwards into Angolan waters. These schools migrated from very shallow waters during daylight out to between the 40 and 60m isobaths at night. Some few very small schools of pilchard were also recorded near Cape Frio Point and south of Cape Frio reef.

Some dispersed pelagic fish occurred in waters less than 50m deep in the northern part of this region. These fish were often scattered between the dense pilchard schools. These layers were mixed species, usually dominated by anchovy, but also containing round herring, horse mackerel, pilchard and various predatory species such as snoek *Thyrsites atun*, sharks and kob *Argyrosomus hololepidotus*.

Dispersed juvenile fish occurred between Möwe Bay and Ambrose Bay near the surface between the 20 m and 80 m isobaths, the density being fairly high near Ambrose Bay. Pilchard, anchovy, horse mackerel and round herring occurred in this layer, but concentrations of jellyfish hindered

the determination of species proportions. Inshore all four target species seemed to be well represented, while further offshore round herring formed the dominant species.

Further offshore juvenile horse mackerel occurred throughout the region in sometimes fairly dense layers close to the seabed in depths of 80 to 150m. Adult horse mackerel formed a band of fish between the 200 m and 350m isobaths in the north. Trawling in this region was disrupted by dense layers of jellyfish.

### 3.2.3 Cunene River to Tombua

This region was dominated by dense schools of pilchard occurring from south of the Cunene to Baía dos Tigres, including inside the bay. As with the pilchard south of the Cunene, these schools migrated inshore into very shallow waters during the day and into depths of 20 to 40m water at night, in some areas this represented a daily migration of at least 5nm in each direction.

Some less dense shoals consisting mainly of anchovy occurred just north of the Cunene, while round herring occurred throughout the region, often in fairly dense shoals near the seabed around the 80m isobath.

Horse mackerel occurred throughout the inshore part of the region. Transects to assess the mid-water stocks were not conducted north of 17°S, but as relatively high densities were recorded on the northern-most transect it is likely that some mid-water horse mackerel also occurred north of this line. Trawl samples north of 16°40'S consisted almost entirely Cunene horse mackerel *Trachurus trecae*, while further south Cape horse mackerel *T. capensis* was caught.

## 3.3 ABUNDANCE

A strong lateral migration of pilchard into shallow waters was noted in the north, such that during the day all fish were in waters less than 15 m depth and hence outside of the range of the RV 'Dr. Fridtjof Nansen'. All areas where pilchard were found were therefore surveyed at night, and in most areas zero-values were recorded on the inshore part of each transect indicating that all fish had moved into deep waters..

Previous surveys have shown that lower densities are recorded at night compared to the day-time values in the same area. In these instances the daytime values were used for the biomass estimate

based on the assumption that at night considerable amounts of fish occurred above the transducer level. As in previous surveys a vertical migration of pilchard was noted to occur at night, but judging from the recordings, and the SA950 sonar records, most of the fish seemed to be distributed within the transducer range.

The total biomass of pilchard found in Namibia and southern Angola (Table 1) was estimated to be about 260 000 tonnes.

Owing to the inherent problems of assessing a small stock of schooling fish in shallow water using vertical echo sounders, the precision of the estimated biomass of pilchard may be rather low. However, supportive data from the sonar, not yet quantified for biomass estimation, also indicate that the present stock is small.

Table 1 Species composition and biomass estimates (in tonnes) of pelagic fish

| Area | Pilchard | Anchovy | Round herring | Horse mackerel |
|---|---|---|---|---|
| Tombua-Cunene River | 240 000 | 6 000 | 2 000 | 60 000 |
| Cunene River-Ambrose Bay | 20 000 | 30 000 | 50 000 | 1 330 000 |
| Ambrose Bay-Dolphin Head | 1 000 | 15 000 | 18 000 | 110 000 |
| Total Angola | 240 000 | 6 000 | 2 000 | 60 000 |
| Total Namibia | 20 000 | 45 000 | 70 000 | 1 440 000 |
| Total northern Benguela | 260 000 | 51 000 | 72 000 | 1 500 000 |

Some few pre-recruit pilchard schools were registered near Ambrose Bay and south of Walvis Bay, but the abundance was very low. While these fish may still be dispersed in the surface water layers, or possibly in deep waters outside of the survey area, and hence are not yet be fully available to acoustic surveys of this type, the indications are that recruitment of pilchard in 1994 will be weak.

Most anchovy were found in the Ambrose Bay to Möwe Bay region, but at an estimated biomass of some 51 000 tonnes, this stock is also extremely small. More anchovy pre-recruits were recorded than pilchard, but the total number remains very few.

The biomass of round herring was estimated to 72 000 tonnes. The round herring biomass was larger than anchovy, but as much of the stock formed small dispersed schools close to the bottom in waters of 50 m deep or more, this species is unlikely to be targeted by the purse seine fleet and therefore will remain economically unimportant.

Horse mackerel was widely dispersed between Ambrose Bay and 16°40'S, and the total biomass was estimated at about 1 500 000 tonnes.

## 3.4 BIOLOGICAL ANALYSIS OF FISH

### 3.4.1 Length-frequency

Annex VI shows the length-frequency of each species in each of the 2° areas. Samples for ageing were collected and these data will become available later.

Adult pilchard and anchovy were found north of 19°S, while pre-recruits occurred at Ambrose Bay and south of Walvis Bay. Few adult round herring were sampled. Pre-recruit round herring (Lt. = 15-18 cm) were found north of 21°S, usually in deeper waters than the other pelagic species. Juvenile round herring occurred in shoals mixed with similarly sized horse mackerel or anchovy, the main concentrations being north of Ambrose Bay and just south of Walvis Bay.

### 3.4.2 Length - Weight

Length-weight curves and regression equations for each of the four species in the whole region and for each latitude interval per species may be found in Annex VII.

### 3.4.3 Reproductive Status

Results were tabulated for both anchovy and pilchard per latitude interval (see Annex VIII). It was difficult to draw any conclusions from these results given the low number of samples per 1 cm length class and apparent inconsistencies between workers in evaluating maturity stage. Nevertheless the following were noted.

1 The sex ratio of anchovy and pilchard appeared to be inversely related to length in all the latitude intervals for which there were data.

2 Low spawning activity was suggested by low mean gonad weights. This is to be expected given that the main spawning activity of both species in the northern Benguela usually occurs in late summer and autumn.

### 3.4.4 Condition

Mean condition factor, and related parameters, are presented per area for pilchard and anchovy in Annex IX. For both species mean condition was found to be significantly higher in 16°-17°S than for the more southerly latitude intervals. The null hypothesis for both species was that there was no difference in condition between the areas.

For pilchard the results of the two tailed F-test and Students t-test on the difference between two means was $F_s$= 1,20 (P≤0,05) and $T_s$=6,71 (P≤0,001). The results of the ANOVA test on anchovy condition are presented in Annex VI. Condition factor variances were found to be significantly greater among latitude intervals than within latitude intervals ($F_s$=8,81, P≤0,01). Although no significant difference in condition was found between intervals 18° - 19°S and 20° - 21°S ($F_s$=0,74, P≤0.05), anchovy had significantly lower condition factors in both these intervals than in 16° - 17°S ($F_s$=16,00, P≤0,01 and $F_s$=6,97, P≤0,05 respectively).

These differences in fish condition between the northern and central parts of the region suggest that feeding conditions were better in the north, at least during the duration of the survey. It is recommended that this be investigated further by examining the results of the plankton and environmental samples.

## CHAPTER 4 CONCLUDING REMARKS

Conditions were, in general, favourable for surveying pelagic fish acoustically. Weather conditions were acceptable, while the fish distributions were usually within the range of the equipment. Some problems were encountered, including surface shoaling and diurnal migration into shallow waters occurred, but were compensated for by adjusting the survey strategy accordingly. Dense concentrations of jellyfish occurred, particularly in the central and southern region. These hampered trawling and probably masked fish echoes. The impact of such concentrations on the functioning of the ecosystem are likely to be large, whether through predation on fish eggs and

larvae, or through the removal of large amounts of energy and nutrients from the system. Determining the role of jellyfish in the northern Benguela urgently requires attention.

The survey commenced in the north and proceeded southwards, the first time that the region has been surveyed in this direction. Apart from the discomfort of sailing into the prevailing winds and seas, the major part of the fish stocks were surveyed during the early part of the survey, while large areas with low densities were covered at the end. It was therefore difficult to allocate survey time according to fish density. It is recommended that future surveys should be conducted from south to north thereby finishing with the highest concentrations and any remaining time can be allocated to improving the accuracy of the estimate of these high densities.

For the first time in several years the mid-water horse mackerel stocks were assessed during a pelagic survey. This necessitated spending a considerable amount of time on long transects offshore, when the time might have been better spent working more intensively inshore. It is suggested that the offshore stocks of horse mackerel would be better surveyed during the hake swept-area trawl surveys.

The pilchard abundance for the northern Benguela system, that is the Namibian region north of Luderitz and southern Angola, was estimated at below 300 000 tonnes. This confirms the trends documented during the previous six surveys, that the stock size is declining rapidly and is now at such a small size that despite relatively conservative quotas, over-fishing is likely to exasperate the situation. The anchovy and round herring stocks are similarly very small, while the horse mackerel estimate is also lower than most previous estimates.

Experiments conducted during this and previous surveys and, in particular, on similar species elsewhere, indicate that the target strength used to calculate these estimates may be too low and that the actual biomass is somewhat less than the values reported. This means that Namibian pelagic stocks may be considerably smaller than the following tables suggest.

These data are supported by the poor catches of the purse seine fleet during the past 6 months. The catch of non-quota species, anchovy, round herring and juvenile horse mackerel, is some 70% below the catches during the same period in 1993, which was itself only an average season. The total amount of pilchard caught in 1994 has been similar to 1993, but while in most seasons almost all catches have been made close to Walvis Bay, between 24°S and 21°S, only 23% have come from this region in 1994 and indeed less than 40 tonnes have been caught within 60 nm of Walvis so far this year.

In addition, the condition factor of the fish caught during this survey was significantly poorer in the central region, 22°S to 19°S, than farther north. Assuming that the condition factor reflects the quality of the fishes' environment this suggests that feeding conditions, and other related environmental parameters, were not conducive to the maintenance of high pelagic biomasses in this region. Furthermore these poor environmental conditions are likely to have been further shunted up the food chain given the high seal moralities, reportedly due to starvation, in the region.

Table 2 Biomass estimates of pilchard, 1990 to 1994

| Survey | Vessel | Namibian waters | Angolan waters | Total |
|---|---|---|---|---|
| March 1990 | Nansen | 160 000 | - | - |
| June 1990 | Nansen | 515 000 | - | - |
| March 1991 | Nansen | 495 000 | - | - |
| August 1991 | Benguela | 565 000 | - | - |
| November 1991 | Nansen/Benguela | 625 000 | 155 000 | 780 000 |
| June 1992 | Nansen/Benguela | 610 000 | 45 000 | 655 000 |
| August 1992 | Benguela | 410 000 | - | - |
| November 1992 | Benguela | 515 000 | - | - |
| March 1993 | Nansen | 385 000 | 50 000 | 435 000 |
| June 1993 | Nansen | 300 000 | 105 000 | 405 000 |
| August 1993 | Benguela | 445 000 | - | - |
| November 1993 | Benguela | 320 000 | - | - |
| February 1994 | Nansen/Benguela | 0 | 250 000 | 250 000 |
| June 1994 | Nansen | 20 000 | 240 000 | 260 000 |

Table 3 Biomass estimates of anchovy and round herring combined and horse mackerel, 1990 to 1994, in the northern Benguela system.

| Survey | Vessel | Anchovy/ Round herring | Horse mackerel |
|---|---|---|---|
| March 1990 | Nansen | 170 000 | 1 200 000 |
| June 1990 | Nansen | 140 000 | 1 700 000 |
| March 1991 | Nansen | 180 000 | 1 300 000 |
| August 1991 | Benguela | 345 000 | - |
| November 1991 | Nansen/Benguela | 325 000 | 1 400 000 |
| June 1992 | Nansen/Benguela | 175 000 | 2 100 000 |
| August 1992 | Benguela | 250 000 | - |
| November 1992 | Benguela | 17 000 | - |
| March 1993 | Nansen | 335 000 | - |
| June 1993 | Nansen | 230 000 | - |
| August 1993 | Benguela | 220 000 | - |
| November 1993 | Benguela | ? | - |
| June 1994 | Nansen | 120 000 | 1 500 000 |

# Annex I Instruments and fishing gear

The Simrad EK-500, 38 kHz echo scientific sounder was used during the survey for fish abundance estimation. The Bergen Echo Integrator system (BEI) logging the echogram raw data from the echo sounder, was used to scrutinize the acoustic records, and to allocate integrator data to fish species. All raw data was stored to tape, and a backup of the database of scrutinized data, stored. The EK-500, 18 kHz and 120 kHz was often run simultaneously with the 38 kHz echo sounder to analyze frequency-different scattering, in particular in areas with myctophids or jellyfish. Only the echograms were however stored from these frequencies. The details of the settings of the 38 kHz were as follows:

| | | |
|---|---|---|
| **Transceiver-1 menu** | Transducer depth | 0.0m |
| | Absorbtion coeff. | 10 dB/km |
| | Pulse length | medium |
| | Bandwidth | wide |
| | Max Power | 2000 W |
| | 2-way beam angle | -21.0 dB |
| | SV transducer gain | 28.1 dB |
| | TS transducer gain | 28.1 dB |
| | Angle sensitivity | 21.9 |
| | 3 dB beamwidth | 6.8 deg |
| | Alongship offset | 0.00 deg |
| | Athwardship offset | 0.04 deg |
| **Display menu** | Echogram | 1, 1&2 |
| | Bottom range | 15 m |
| | Bottom start | 10 m |
| | TVG | 20logR |
| | SV Colour minimum | -75 dB |
| | TS Colour minimum | -65 dB |
| **Printer menu** | Slave | |
| **Bottom detection menu** | Varying, -30 to -55 dB depending on school density, and bottom conditions. | |

Settings of the other echo sounders is given in detail in Instrument report, Nansen 1994404.

## Hydrography

Conductivity, temperature density and dissolved oxygen were sampled regularly at CTD stations with a Seabird 911+ CTD sonde. The salinity is computed from the data on conductivity by the software retrieving data from the sensors.

## Fishing gear

Two pelagic trawl were used to sample pelagic fish during the survey. The small pelagic trawl, a 320 m circumference, 198 meshes opening Åkrehamn trawl were mainly used in medium to shallow water on high density registrations. In deeper water, in mixed, low density recordings, a larger pelagic trawl, a Åkrehamn 486 m, 152 meshes opening trawl was used for identification and sampling. In very shallow water, where the small pelagic trawl could be destroyed by accidental bottom contact, a bottom trawl, the "Gisund super", was occasionally used to identify and sample schools. The bottom trawl was then rigged as for normal bottom trawl operation, but supplied with large surface floats on the wings. At depths of 20 meters or less, the opening then covered most of the water column. For all trawls, the Tyborøn, 7.8 $m^2$ (1670 kg) trawl doors were used. Complete drawings of the trawls used are included.

# F/F Dr. Fridtjof Nansen

OVER/UNDER/SIDER

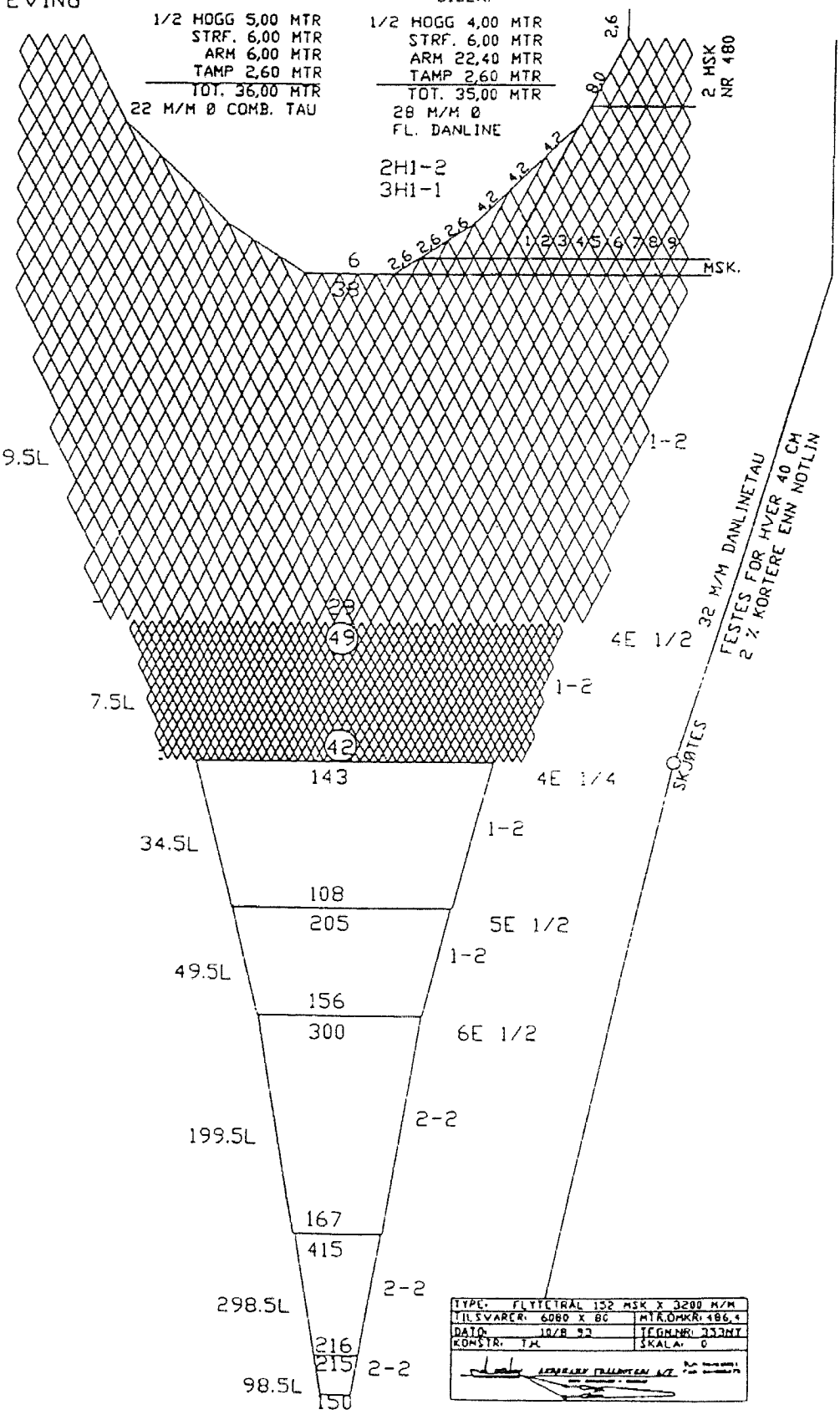
OVERDEL:
50 STK 11" PLASTKULER

UNDERDEL
14 M/M WIRE OMSP. MED
14 M/M BLYTAU
+ KJETTING.
TOTAL VEKT UNDER 400 KG.

| MASKER M/M | TRAAD NR. | LENGDE I MTR. | MASKER I EVING | |
|---|---|---|---|---|
| 3200.0 | 240 | 22.4 | 4 | |
| 3200.0 | 240 | 32.0 | 4 | 9.5L |
| 1620.0 | 160 | 13.0 | 4 | 7.5L |
| 400.0 | 48 | 14.0 | 4 | 34.5L |
| 200.0 | 32 | 10.00 | 4 | 49.5L |
| 100.0 | 24 | 20.0 | 4 | 199.5L |
| 38.0 | 12 | 11.4 | 4 | 298.5L |
| 38.0 | 18 | 3.76 | 4 | 98.5L |

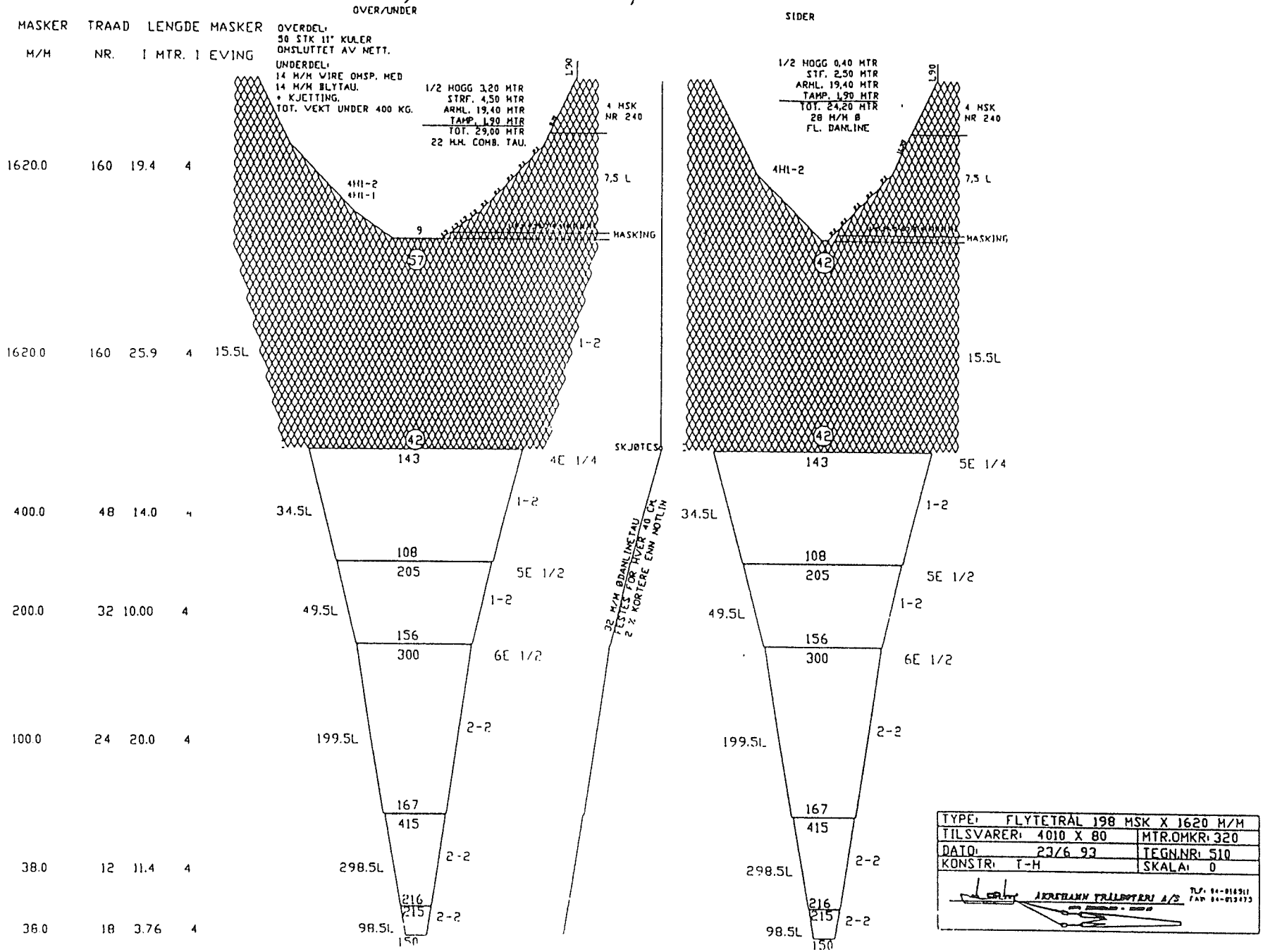
1/2 HOGG 5,00 MTR
STRF. 6,00 MTR
ARM 6,00 MTR
TAMP 2,60 MTR
TOT. 36,00 MTR
22 M/M Ø COMB. TAU

SIDER.
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

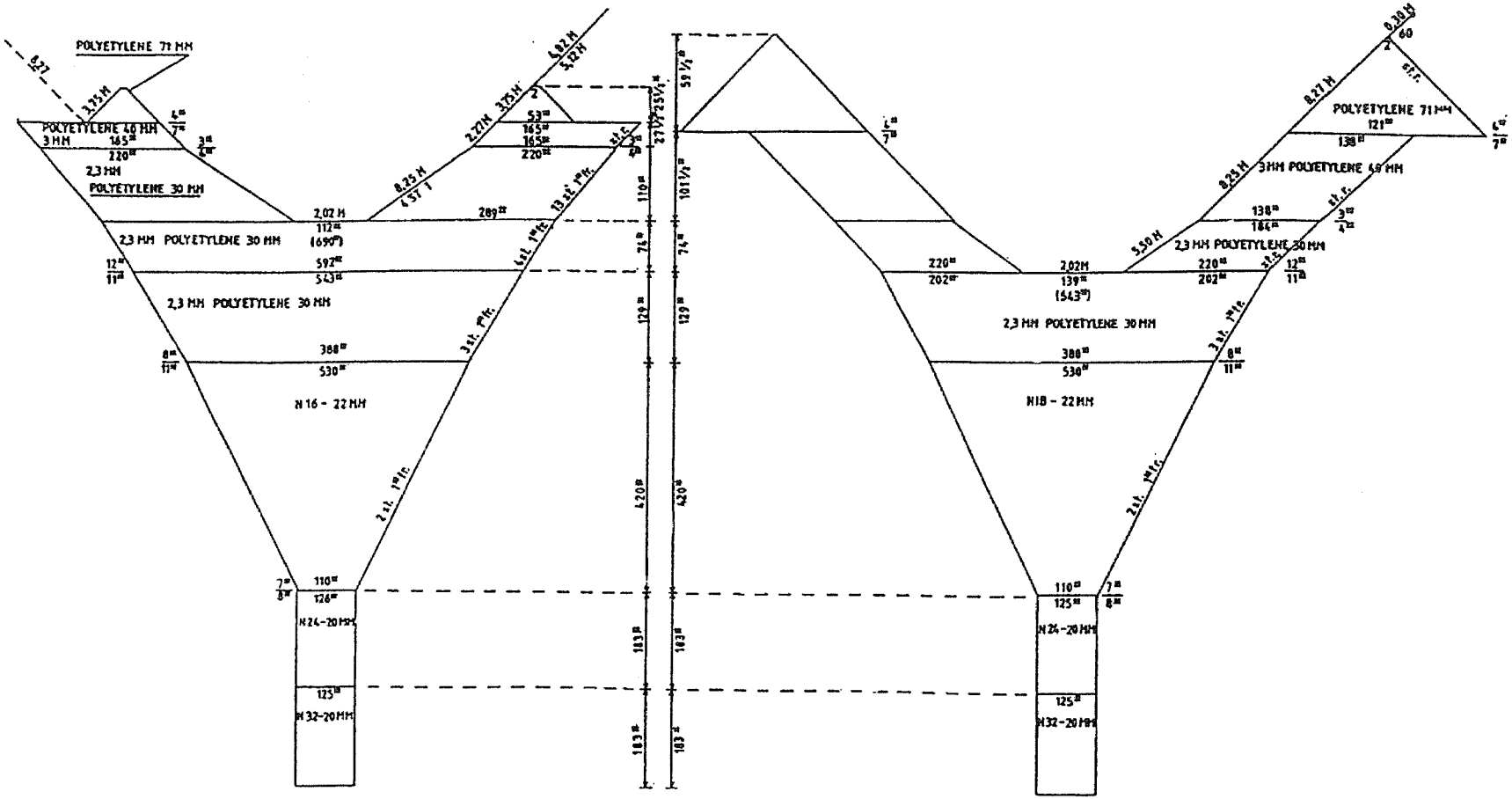



| | |
|---|---|
| TYPE: FLYTETRÅL 152 MSK X 3200 M/M | |
| TILSVARER: 6080 X 80 | MTR.OMKR: 486,4 |
| DATO: 10/8 92 | TEGN.NR: 253NT |
| KONSTR: TH | SKALA: 0 |

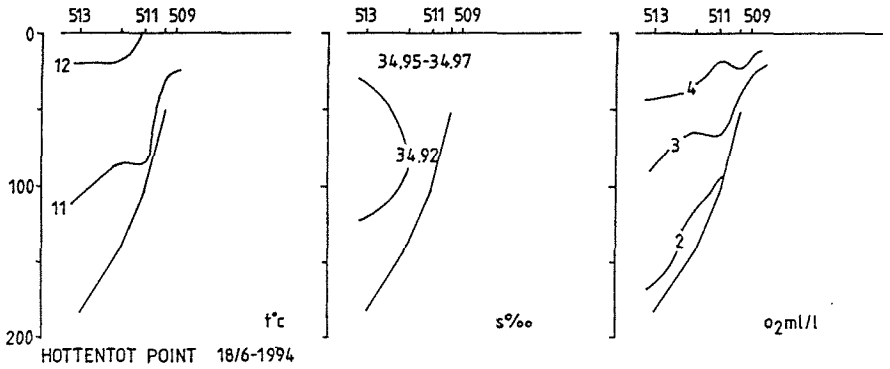
# F/F Dr. Fridtjof Nansen



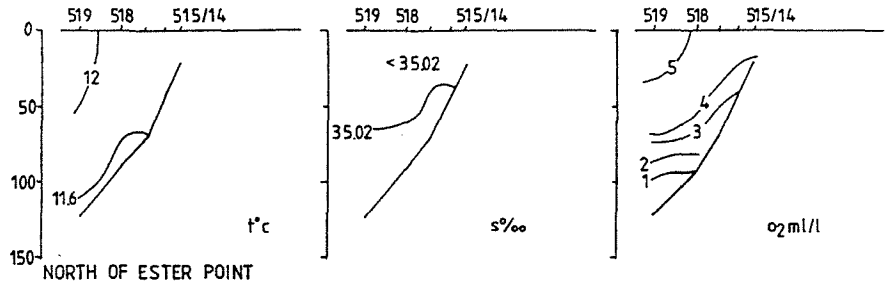
Bottom trawl: High opening shrimp and fish trawl with net headline 31m ( floatline),foot-rope 47m, gear with 12 cm diameter roller disks, 40 m sweeps, estimated headline hight 6m and distance between wings during towing 18-20m.



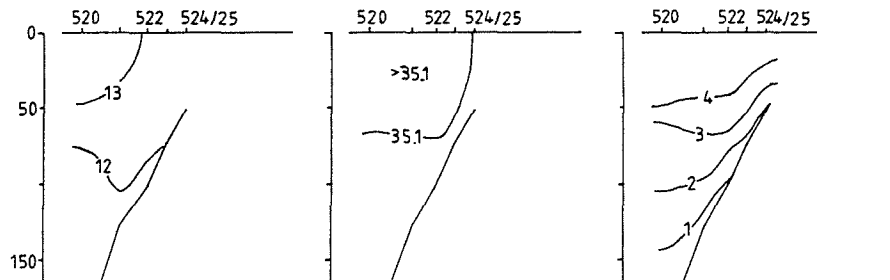
# Annex II Hydrographic profiles



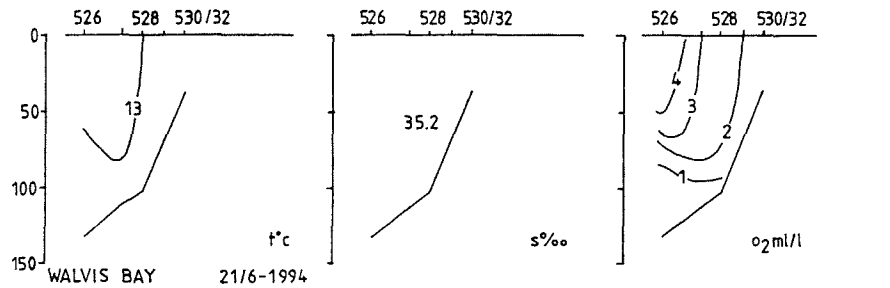

HOTTENTOT POINT 18/6-1994



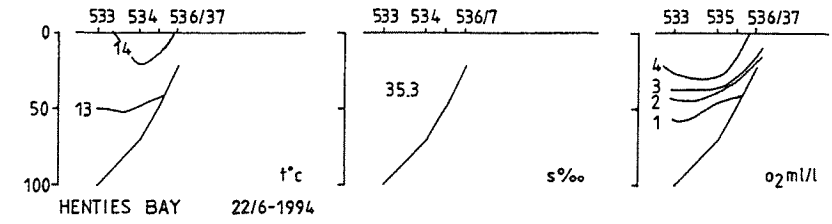

NORTH OF ESTER POINT
19/6-1994




CONCEPTION BAY 20/6-1994




WALVIS BAY 21/6-1994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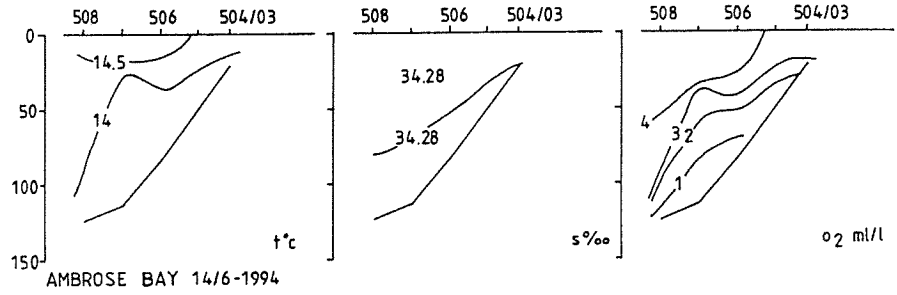
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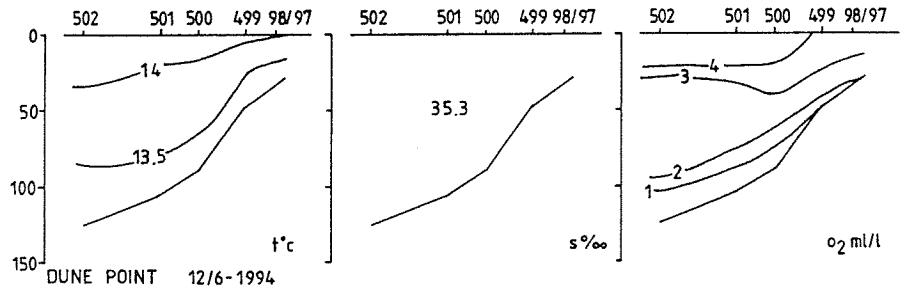
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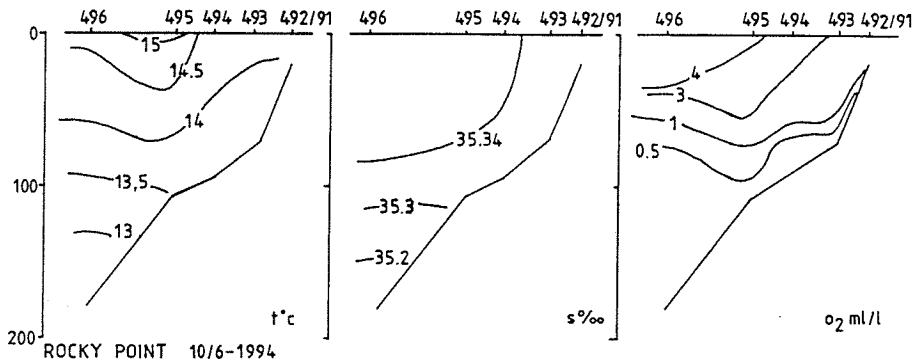
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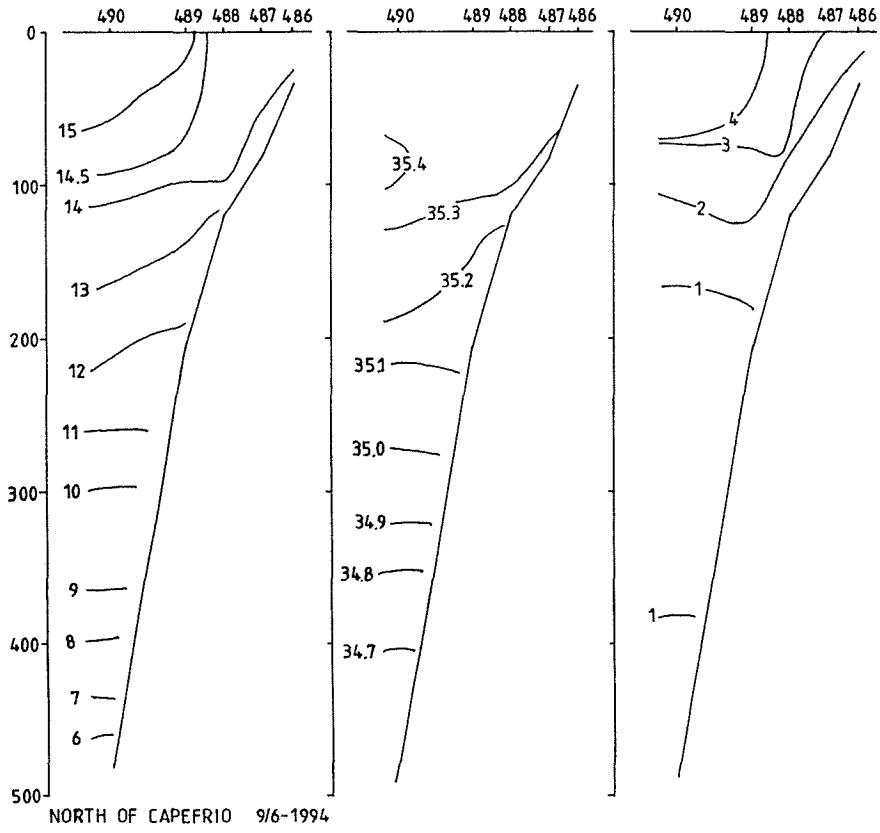
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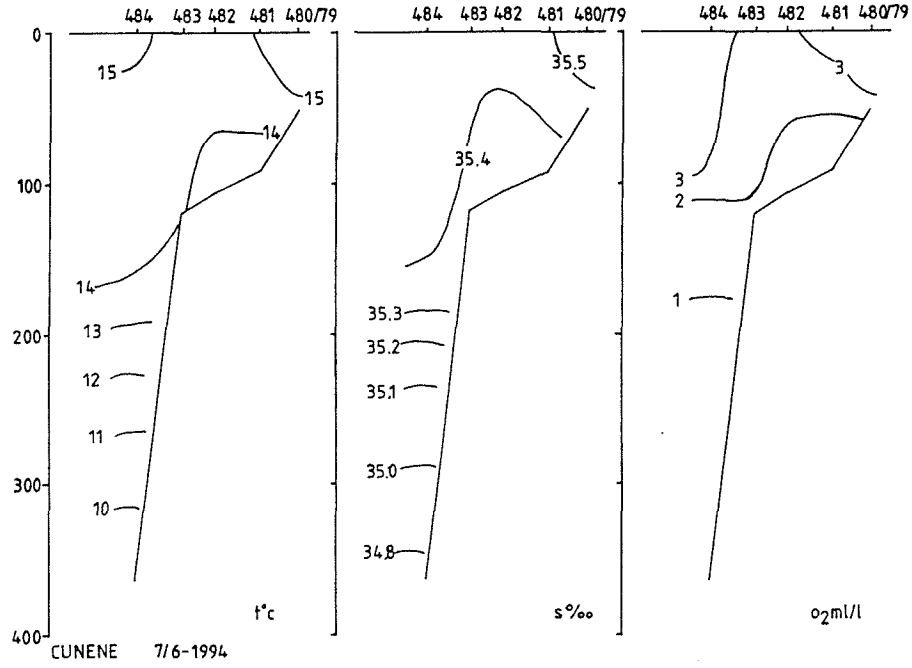
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# Annex III Summary of trawl stations

**FRIDTJOF-NANSEN TRAWL INFORMATION (JUNE 1994)**

| Trawl Number | Latitude (°S) | Bottom Depth (m) | Headrope Depth (m) | Catch by Species (% of total catch) | | | | ***Total Catch (kg)*** |
|---|---|---|---|---|---|---|---|---|
| | | | | *Trachurus* | *Sardinops* | *Engraulis* | *Etrumeus* | |
| 375 | 15,57 | 18 | 18 | 0 | 0 | 0 | 0 | 269 |
| 374 | 16,01 | 600 | 100 | 0 | 0 | 0 | 0 | 165 |
| 373 | 16,26 | 55 | 55 | 0 | 0 | 0 | 4 | 4500 |
| 376 | 16,37 | 14 | 10 | 0 | 0 | 0 | 2 | 187 |
| 371 | 16,38 | 50 | 30 | 0 | 1 | 99 | 0 | 3027 |
| 372 | 16,40 | 18 | 5 | 0 | 60 | 0 | 13 | 15 |
| 377 | 16,41 | 80 | 35 | 0 | 0 | 0 | 0 | 1 |
| 381 | 16,42 | 20 | 10 | 0 | 8 | 0 | 91 | 77 |
| 380 | 16,52 | 5 | 13 | 0 | 98 | 1 | 0 | 10000 |
| 384 | 17,00 | 900 | 200 | 0 | 0 | 0 | 0 | 3 |
| 383 | 17,00 | 130 | 130 | 100 | 0 | 0 | 0 | 3000 |
| 379 | 17,00 | 15 | 15 | 3 | 77 | 6 | 2 | 1005 |
| 382 | 17,02 | 20 | 20 | 18 | 0 | 49 | 17 | 417 |
| 385 | 17,11 | 23 | 10 | 3 | 43 | 50 | 3 | 708 |
| 370 | 17,21 | 65 | 8 | 0 | 0 | 0 | 100 | 1 |
| 387 | 17,34 | 40 | 15 | 18 | 14 | 27 | 26 | 413 |
| 386 | 17,41 | 85 | 85 | 97 | 0 | 0 | 0 | 7000 |
| 389 | 18,00 | 180 | 50 | 100 | 0 | 0 | 0 | 4 |
| 388 | 18,13 | 40 | 5 | 0 | 15 | 69 | 8 | 26 |
| 390 | 18,28 | 313 | 150 | 0 | 0 | 0 | 0 | 17 |
| 369 | 18,35 | 117 | 117 | 96 | 0 | 0 | 0 | 2888 |
| 391 | 18,38 | 70 | 22 | 100 | 0 | 0 | 0 | 1001 |
| 368 | 18,43 | 33 | 10 | 5 | 3 | 53 | 0 | 28 |
| 378 | 18,49 | 30 | 20 | 0 | 0 | 0 | 0 | 1 |
| 392 | 18,57 | 60 | 25 | 100 | 0 | 0 | 0 | 210 |
| 397 | 19,03 | 50 | 50 | 99 | 0 | 0 | 0 | 107 |
| 367 | 19,03 | 136 | 45 | 100 | 0 | 0 | 0 | 15 |
| 396 | 19,05 | 30 | 15 | 1 | 4 | 80 | 2 | 178 |
| 398 | 19,13 | 80 | 30 | 100 | 0 | 0 | 0 | 600 |
| 395 | 19,19 | 48 | 12 | 54 | 0 | 42 | 0 | 24 |
| 393 | 19,25 | 300 | 53 | 98 | 0 | 0 | 0 | 122 |
| 394 | 19,27 | 180 | 30 | 96 | 0 | 0 | 0 | 624 |
| 399 | 19,39 | 50 | 20 | 49 | 0 | 40 | 3 | 90 |
| 366 | 19,45 | 93 | 29 | 83 | 0 | 0 | 0 | 36 |
| 400 | 19,46 | 80 | 37 | 100 | 0 | 0 | 0 | 10003 |
| 401 | 19,57 | 25 | 10 | 73 | 1 | 21 | 3 | 243 |
| 402 | 20,01 | 285 | 92 | (NET BURST) | | | | |
| 408 | 20,04 | 90 | 90 | 98 | 0 | 0 | 0 | 145 |
| 365 | 20,06 | 142 | 35 | 0 | 4 | 0 | 96 | 339 |
| 407 | 20,06 | 64 | 40 | 38 | 1 | 0 | 61 | 46 |
| 364 | 20,13 | 127 | 100 | 0 | 1 | 0 | 97 | 77 |
| 409 | 20,14 | 20 | 0 | 15 | 10 | 45 | 8 | 424 |
| 406 | 20,16 | 44 | 28 | 1 | 2 | 1 | 95 | 21 |
| 405 | 20,18 | 18 | 10 | 0 | 23 | 68 | 8 | 365 |
| 410 | 20,20 | 95 | 55 | 94 | 0 | 0 | 2 | 83 |
| 403 | 20,28 | 327 | 327 | 0 | 0 | 0 | 0 | 238 |
| 404 | 20,28 | 170 | 70 | 94 | 0 | 1 | 1 | 149 |

| Trawl Number | Latitude (°S) | Bottom Depth (m) | Headrope Depth (m) | Catch by Species (% of total catch) | | | | ***Total Catch (kg)*** |
|---|---|---|---|---|---|---|---|---|
| | | | | *Trachurus* | *Sardinops* | *Engraulis* | *Etrumeus* | |
| 415 | 20,30 | 317 | 311 | 38 | 0 | 0 | 0 | 151 |
| 411 | 20,38 | 70 | 15 | 1 | 1 | 1 | 97 | 146 |
| 363 | 20,42 | 30 | 15 | 26 | 0 | 0 | 68 | 1430 |
| 412 | 20,58 | 45 | 18 | 1 | 8 | 6 | 85 | 945 |
| 413 | 20,59 | 34 | 34 | 41 | 3 | 39 | 1 | 2000 |
| 414 | 20,59 | 171 | 164 | 89 | 0 | 0 | 0 | 2464 |
| 416 | 20,59 | 256 | 249 | 38 | 0 | 0 | 0 | 146 |
| 417 | 21,02 | 270 | 165 | 8 | 0 | 0 | 0 | 1 |
| 423 | 21,04 | 25 | 10 | 0 | 0 | 2 | 43 | 1 |
| 422 | 21,10 | 35 | 5 | 31 | 26 | 5 | 29 | 41 |
| 420 | 21,12 | 299 | 292 | 5 | 0 | 0 | 0 | 32 |
| 424 | 21,12 | 47 | 40 | | | | | 0 |
| 419 | 21,13 | 297 | 195 | 11 | 0 | 0 | 0 | 9 |
| 418 | 21,17 | 300 | 183 | 0 | 0 | 0 | 0 | 0 |
| 425 | 21,29 | 44 | 13 | 0 | 2 | 0 | 97 | 172 |
| 421 | 21,30 | 97 | 0 | 32 | 1 | 66 | 0 | 8 |
| 444 | 21,43 | 114 | 5 | 43 | 0 | 0 | 0 | 0 |
| 443 | 21,44 | 114 | 10 | 0 | 0 | 0 | 0 | 0 |
| 442 | 22,00 | 78 | 70 | 0 | 0 | 0 | 0 | 0 |
| 426 | 22,06 | 36 | 10 | 17 | 1 | 4 | 3 | 11 |
| 441 | 22,12 | 283 | 276 | 36 | 0 | 0 | 0 | 1 |
| 445 | 22,13 | 98 | 10 | 7 | 1 | 37 | 55 | 119 |
| 427 | 22,42 | 34 | 27 | 33 | 0 | 0 | 0 | 3 |
| 438 | 22,48 | 314 | 307 | 3 | 0 | 0 | 0 | 446 |
| 440 | 22,53 | 111 | 70 | 12 | 0 | 0 | 0 | 1 |
| 437 | 22,58 | 296 | 289 | 26 | 0 | 0 | 0 | 231 |
| 439 | 23,06 | 27 | 10 | 50 | 3 | 10 | 36 | 153 |
| 428 | 23,09 | 22 | 5 | 70 | 4 | 14 | 11 | 70 |
| 430 | 23,19 | 49 | 42 | 30 | 0 | 0 | 9 | 55 |
| 429 | 23,27 | 33 | 26 | 8 | 0 | 0 | 0 | 19 |
| 431 | 23,39 | 24 | 5 | 38 | 11 | 44 | 4 | 2 |
| 436 | 24,00 | 323 | 316 | 0 | 0 | 0 | 0 | 611 |
| 435 | 24,23 | 324 | 150 | 0 | 0 | 0 | 0 | 2 |
| 435 | 24,23 | 325 | 150 | 0 | 0 | 0 | 0 | 2 |
| 432 | 24,55 | 26 | 0 | 25 | 0 | 1 | 74 | 6 |
| 434 | 25,01 | 120 | 113 | 0 | 0 | 0 | 0 | 31 |
| 434 | 25,01 | 120 | 113 | 0 | 0 | 0 | 0 | 31 |
| 433 | 25,07 | 17 | 10 | 10 | 0 | 2 | 7 | 254 |

# Annex IV Records of fishing stations

PROJECT STATION: 363

DATE: 2/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2042
start stop duration Long E 1319
TIME :09:05:00 09:16:00 11 (min) Purpose code: 1
LOG :5150.30 5151.10 0.80 Area code : 3
FDEPTH: 15 20 GearCond.code:
BDEPTH: 32 32 Validity code:
Towing dir: 340° Wire out: m Speed: 30 kn*10

Sorted: 123 Kg Total catch: 1347.14 CATCH/HOUR: 7348.04

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 5308.64 | 171158 | 72.25 | 998 |
| Trachurus capensis | 2038.31 | 86029 | 27.74 | 999 |
| Merluccius capensis, juveniles | 12.00 | 60 | 0.16 | 1000 |
| Total | 7358.95 | | 100.15 | |

PROJECT STATION: 364

DATE: 2/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2013
start stop duration Long E 1244
TIME :13:42:00 14:12:00 30 (min) Purpose code: 1
LOG :5196.20 5197.90 1.70 Area code : 3
FDEPTH: 100 100 GearCond.code:
BDEPTH: 126 127 Validity code: 1
Towing dir: 113° Wire out: 450 m Speed: 33 kn*10

Sorted: 61 Kg Total catch: 76.41 CATCH/HOUR: 152.82

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 149.76 | 3430 | 98.00 | 1004 |
| Sardinops ocellatus | 2.32 | 36 | 1.52 | 1003 |
| Trachurus capensis | 0.40 | 18 | 0.26 | 1001 |
| Merluccius capensis, juveniles | 0.24 | 18 | 0.16 | 1002 |
| TRIGLIDAE | 0.06 | 4 | 0.04 | |
| Lepidopus caudatus | 0.04 | 2 | 0.03 | |
| Total | 152.82 | | 100.01 | |

PROJECT STATION: 365

DATE: 2/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2006
start stop duration Long E 1233
TIME :16:18:00 16:48:00 30 (min) Purpose code: 1
LOG :5216.50 5218.30 1.80 Area code : 3
FDEPTH: 40 30 GearCond.code:
BDEPTH: 142 141 Validity code:
Towing dir: 110° Wire out: 300 m Speed: 28 kn*10

Sorted: 39 Kg Total catch: 339.51 CATCH/HOUR: 679.02

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 651.88 | 22032 | 96.00 | 1006 |
| Sardinops ocellatus | 25.56 | 332 | 3.76 | 1005 |
| Trachurus capensis | 1.58 | 70 | 0.23 | |
| Total | 679.02 | | 99.99 | |

PROJECT STATION: 366

DATE: 2/ 6/94 GEAR TYPE: OT No:1 POSITION:Lat S 1945
start stop duration Long E 1242
TIME :19:57:00 20:12:00 15 (min) Purpose code: 1
LOG :5248.10 5249.10 1.00 Area code : 3
FDEPTH: 28 30 GearCond.code:
BDEPTH: 94 92 Validity code:
Towing dir: 30° Wire out: 200 m Speed: 30 kn*10

Sorted: Kg Total catch: 36.16 CATCH/HOUR: 144.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 120.00 | 6964 | 82.96 | 1008 |
| Merluccius capensis, juveniles | 16.80 | 912 | 11.62 | 1007 |
| Thyrsites atun | 5.72 | 4 | 3.95 | 1009 |
| Etrumeus whiteheadi | 1.40 | 280 | 0.97 | |
| Trichiurus lepturus | 0.72 | 72 | 0.50 | |
| Total | 144.64 | | 100.00 | |

PROJECT STATION: 367

DATE: 3/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1903
start stop duration Long E 1209
TIME :02:24:00 02:30:00 6 (min) Purpose code: 1
LOG :5307.60 5307.90 0.30 Area code : 3
FDEPTH: 40 50 GearCond.code:
BDEPTH: 136 136 Validity code:
Towing dir: 310° Wire out: 200 m Speed: 34 kn*10

Sorted: 15 Kg Total catch: 451.50 CATCH/HOUR: 4515.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 4515.00 | 192290 | 100.00 | 1009 |
| Total | 4515.00 | | 100.00 | |

PROJECT STATION: 368

DATE: 3/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 1843
start stop duration Long E 1213
TIME :05:23:00 05:38:00 15 (min) Purpose code: 1
LOG :5334.50 5335.20 0.70 Area code : 3
FDEPTH: 10 10 GearCond.code: 1
BDEPTH: 32 33 Validity code:
Towing dir: 260° Wire out: 150 m Speed: 37 kn*10

Sorted: 40 Kg Total catch: 238.32 CATCH/HOUR: 953.28

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 828.00 | 164352 | 86.86 | 1011 |
| Trachurus, Juveniles | 77.52 | 11872 | 8.13 | 1010 |
| Sardinops ocellatus | 47.28 | 7704 | 4.96 | 1012 |
| Merluccius capensis, juveniles | 0.48 | 24 | 0.05 | 1013 |
| Total | 953.28 | | 100.00 | |

PROJECT STATION: 369

DATE: 3/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 1835
start stop duration Long E 1135
TIME :07:45:00 07:55:00 10 (min) Purpose code: 1
LOG :5355.20 5355.60 0.40 Area code : 3
FDEPTH: 117 117 GearCond.code: 1
BDEPTH: 117 117 Validity code:
Towing dir: 330° Wire out: m Speed: 3 kn*10

Sorted: 82 Kg Total catch: 2888.11 CATCH/HOUR: 17328.66

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus, Juveniles | 16635.00 | 432786 | 96.00 | 1014 |
| Dentex macrophthalmus | 252.84 | 2106 | 1.46 | 1017 |
| Merluccius capensis, female | 238.08 | 2526 | 1.37 | 1016 |
| Merluccius capensis, male | 164.34 | 840 | 0.95 | 1015 |
| Trigla lyra | 30.00 | 60 | 0.17 | |
| Raja miraletus | 5.40 | 36 | 0.03 | |
| Sufflogobius bibarbatus | 2.10 | 420 | 0.01 | |
| Ophisurus serpens | 0.90 | 6 | 0.01 | |
| Total | 17328.66 | | 100.00 | |

PROJECT STATION: 370

DATE: 3/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1721
start stop duration Long E 1141
TIME :17:37:00 17:52:00 15 (min) Purpose code: 1
LOG :5454.40 5455.30 0.90 Area code : 3
FDEPTH: 10 5 GearCond.code:
BDEPTH: 61 67 Validity code:
Towing dir: 310° Wire out: 200 m Speed: 40 kn*10

Sorted: 16 Kg Total catch: 0.16 CATCH/HOUR: 0.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 0.44 | 8 | 68.75 | 1019 |
| Trachurus, Juveniles | 0.20 | 76 | 31.25 | 1018 |
| Total | 0.64 | | 100.00 | |

PROJECT STATION: 371

DATE: 4/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1638
start stop duration Long E 1136
TIME :02:00:00 02:02:00 2 (min) Purpose code: 1
LOG : 529.00 529.30 0.30 Area code : 3
FDEPTH: 30 30 GearCond.code: 1
BDEPTH: 51 51 Validity code: 3
Towing dir: 330° Wire out: 150 m Speed: 3 kn*10

Sorted: 60 Kg Total catch: 3026.65 CATCH/HOUR: 90799.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 89925.00 | 2866500 | 99.04 | 1020 |
| Sardinops ocellatus | 645.00 | 16500 | 0.71 | 1021 |
| Etrumeus whiteheadi | 195.00 | 6000 | 0.21 | 1023 |
| Trachurus, Juveniles | 26.70 | 810 | 0.03 | 1022 |
| Myliobatis aquila | 7.80 | 30 | 0.01 | |
| Total | 90799.50 | | 100.00 | |

PROJECT STATION: 372

DATE: 5/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 1640
start stop duration Long E 1145
TIME :15:04:00 15:14:00 10 (min) Purpose code: 1
LOG :5588.40 5588.90 0.50 Area code : 3
FDEPTH: 5 5 GearCond.code: 1
BDEPTH: 17 18 Validity code:
Towing dir: 200° Wire out: 150 m Speed: 3 kn*10

Sorted: 14 Kg Total catch: 14.60 CATCH/HOUR: 87.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Sardinops ocellatus | 54.00 | 624 | 61.64 | 1226 |
| Trachurus trecae | 18.36 | 540 | 20.96 | 1225 |
| Etrumeus whiteheadi | 9.96 | 294 | 11.37 | 1224 |
| Pomatomus saltatrix | 2.94 | 18 | 3.36 | |
| Spondyliosoma cantharus | 2.34 | 6 | 2.67 | |
| Total | 87.60 | | 100.00 | |

PROJECT STATION: 373

DATE: 5/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 1626
start stop duration Long E 1141
TIME :17:12:00 17:42:00 30 (min) Purpose code: 1
LOG :5607.00 5608.50 1.50 Area code : 3
FDEPTH: 57 52 GearCond.code:
BDEPTH: 57 52 Validity code:
Towing dir: 140° Wire out: 250 m Speed: 3 kn*10

Sorted: 112 Kg Total catch: 4500.00 CATCH/HOUR: 9000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus trecae | 6555.00 | 430632 | 72.83 | 1027 |
| Merluccius capensis | 995.00 | | 11.06 | |
| Dentex macrophthalmus | 959.20 | 34150 | 10.66 | 1029 |
| Etrumeus whiteheadi | 360.60 | 8676 | 4.01 | 1028 |
| Todarodes sagittatus | 82.80 | 1590 | 0.92 | |
| Argyrosomus hololepidotus | 22.30 | 160 | 0.25 | |
| Chelidonichthys capensis | 10.98 | 18 | 0.12 | |
| Sepia orbignyana | 6.96 | 12 | 0.08 | |
| Mustelus mustelus | 6.20 | 4 | 0.07 | |
| Austroglossus microlepis | 0.80 | 80 | 0.01 | |
| Total | 8999.84 | | 100.01 | |

PROJECT STATION: 374

DATE: 5/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1601
start stop duration Long E 1131
TIME :20:10:00 20:25:00 15 (min) Purpose code: 1
LOG :5629.90 5630.80 0.90 Area code : 3
FDEPTH: 100 100 GearCond.code:
BDEPTH: 590 867 Validity code:
Towing dir: 360° Wire out: 500 m Speed: 3 kn*10

Sorted: 50 Kg Total catch: 164.63 CATCH/HOUR: 658.52

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus trecae | 595.20 | 3696 | 90.38 | 1030 |
| Trichiurus lepturus | 24.00 | 40 | 3.64 | |
| Hoplostethus melanopus | 13.40 | | 2.03 | |
| Synagrops microlepis | 9.08 | | 1.38 | |
| Yarrella blackfordi | 7.20 | | 1.09 | |
| Todarodes sagittatus | 4.80 | 20 | 0.73 | |
| Schedophilus huttoni | 2.28 | 4 | 0.35 | |
| MYCTOPHIDAE | 1.44 | | 0.22 | |
| Lestrolepis intermedia | 0.48 | 48 | 0.07 | |
| Shrimps, small, non comm. | 0.48 | | 0.07 | |
| Beryx splendens | 0.12 | 4 | 0.02 | |
| Nemichthys scolopaceus | 0.04 | 40 | 0.01 | |
| Total | 658.52 | | 99.99 | |

PROJECT STATION: 375

DATE: 5/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 1557
start stop duration Long E 1142
TIME :23:35:00 23:45:00 10 (min) Purpose code: 1
LOG :5659.80 5654.20 5.60 Area code : 3
FDEPTH: 18 19 GearCond.code:
BDEPTH: 18 19 Validity code:
Towing dir: 180° Wire out: 150 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 269.03 CATCH/HOUR: 1614.18

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus trecae | 1434.00 | 40506 | 88.84 | 1031 |
| Dentex macrophthalmus | 126.00 | 11040 | 7.81 | |
| Lithognathus mormyrus | 20.40 | 240 | 1.26 | |
| Todarodes sagittatus | 16.20 | 120 | 1.00 | |
| Arius parkii | 6.42 | 12 | 0.40 | |
| Octopus sp. | 6.00 | 6 | 0.37 | |
| Bothus podas | 1.86 | 60 | 0.12 | |
| Trachinus armatus | 1.80 | 60 | 0.11 | |
| Fistularia sp. | 1.20 | 60 | 0.07 | |
| Austroglossus microlepis | 0.36 | 60 | 0.02 | |
| Total | 1614.24 | | 100.00 | |

PROJECT STATION: 376

DATE: 6/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 1637
start stop duration Long E 1140
TIME :09:35:00 10:05:00 30 (min) Purpose code: 1
LOG :5742.60 5744.30 1.70 Area code : 3
FDEPTH: 10 10 GearCond.code: 2
BDEPTH: 13 15 Validity code: 3
Towing dir: 343° Wire out: 200 m Speed: 34 kn*10

Sorted: 45 Kg Total catch: 186.53 CATCH/HOUR: 373.06

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Diplodus sargus capensis | 223.30 | 1170 | 59.86 | 1036 |
| Pomatomus saltatrix | 49.18 | 196 | 13.18 | 1037 |
| Lithognathus mormyrus | 46.56 | 218 | 12.48 | 1038 |
| Trachurus trecae | 46.14 | 596 | 12.37 | 1032 |
| Etrumeus whiteheadi | 6.74 | 118 | 1.81 | 1033 |
| Sardinops ocellatus | 0.34 | 14 | 0.09 | 1034 |
| Trichiurus lepturus | 0.04 | 2 | 0.01 | |
| Engraulis capensis | 0.04 | 2 | 0.01 | 1035 |
| Total | 372.34 | | 99.81 | |

PROJECT STATION: 377

DATE: 6/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1641
start stop duration Long E 1137
TIME :11:35:00 12:05:00 30 (min) Purpose code: 1
LOG :5754.80 5756.30 1.50 Area code : 3
FDEPTH: 35 35 GearCond.code:
BDEPTH: 82 80 Validity code:
Towing dir: ° Wire out: 150 m Speed: 35 kn*10

Sorted: 1 Kg Total catch: 0.51 CATCH/HOUR: 1.02

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Todarodes sagittatus | 0.92 | 14 | 90.20 | |
| Trachurus, Juveniles | 0.10 | 34 | 9.80 | 1039 |
| Total | 1.02 | | 100.00 | |

PROJECT STATION: 378

DATE: 6/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1649
start stop duration Long E 1139
TIME :15:00:00 15:06:00 6 (min) Purpose code: 1
LOG :5777.40 5777.50 0.10 Area code : 3
FDEPTH: 20 20 GearCond.code:
BDEPTH: 33 28 Validity code:
Towing dir: 90° Wire out: 150 m Speed: 3 kn*10

Sorted: 17 Kg Total catch: 17.51 CATCH/HOUR: 175.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Alopias vulpinus | 173.50 | 10 | 99.09 | |
| Trachurus, Juveniles | 1.20 | 408 | 0.69 | 1040 |
| Todarodes sagittatus | 0.40 | 10 | 0.23 | |
| Total | 175.10 | | 100.01 | |

PROJECT STATION: 379

DATE: 6/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 17
start stop duration Long E 1143
TIME :18:10:00 18:30:00 20 (min) Purpose code: 1
LOG :5801.40 5802.60 1.20 Area code : 3
FDEPTH: 15 14 GearCond.code:
BDEPTH: 15 14 Validity code:
Towing dir: ° Wire out: 150 m Speed: 36 kn*10

Sorted: 78 Kg Total catch: 1005.15 CATCH/HOUR: 3015.45

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Sardinops ocellatus | 2331.00 | 21525 | 77.30 | 1043 |
| Engraulis capensis | 169.74 | 14385 | 5.63 | 1044 |
| Callorhinchus capensis | 112.80 | 24 | 3.74 | |
| Galeichthys feliceps | 91.35 | 525 | 3.03 | |
| Trachurus capensis | 82.59 | 2904 | 2.74 | 1041 |
| Atractoscion aequidens | 59.70 | 12 | 1.98 | 1046 |
| Mustelus mustelus | 51.75 | 12 | 1.72 | |
| Etrumeus whiteheadi | 50.76 | 1890 | 1.68 | 1042 |
| Raja confundens | 34.50 | 3 | 1.14 | |
| Thyrsites atun | 18.90 | 42 | 0.63 | 1045 |
| Austroglossus microlepis | 7.68 | 48 | 0.25 | |
| Sepia orbignyana | 2.73 | 3 | 0.09 | |
| Raja straeleni | 1.05 | 3 | 0.03 | |
| Diplodus sargus capensis | 0.90 | 3 | 0.03 | |
| Total | 3015.45 | | 99.99 | |

PROJECT STATION: 380

DATE: 6/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 1652
start stop duration Long E 1142
TIME :22:30:00 23:00:00 30 (min) Purpose code: 1
LOG :5831.70 833.33 8.37 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 13 13 Validity code:
Towing dir: ° Wire out: 150 m Speed: 3 kn*10

Sorted: 95 Kg Total catch: 10000.00 CATCH/HOUR: 20000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Sardinops ocellatus | 19671.26 | 145938 | 98.36 | 1047 |
| Engraulis capensis | 201.00 | 15070 | 1.01 | 1048 |
| Etrumeus whiteheadi | 110.98 | 4188 | 0.55 | 1049 |
| Pagellus bellottii | 12.56 | 210 | 0.06 | |
| Trigla lyra | 4.18 | 210 | 0.02 | |
| Total | 19999.98 | | 100.00 | |

PROJECT STATION: 381

DATE: 7/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 1642
start stop duration Long E 1140
TIME :02:08:00 02:38:00 30 (min) Purpose code: 1
LOG :5859.80 5861.00 1.50 Area code : 3
FDEPTH: 10 10 GearCond.code:
BDEPTH: 21 18 Validity code:
Towing dir: 160° Wire out: 150 m Speed: 3 kn*10

Sorted: 15 Kg Total catch: 76.65 CATCH/HOUR: 153.30

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 141.00 | 4330 | 91.98 | 1051 |
| Sardinops ocellatus | 11.40 | 190 | 7.44 | 1050 |
| Trachurus trecae | 1.30 | 50 | 0.85 | 1052 |
| Engraulis capensis | 0.60 | 40 | 0.39 | |
| Todarodes sagittatus | 0.30 | 10 | 0.20 | |
| Total | 154.60 | | 100.86 | |

PROJECT STATION: 382

DATE: 7/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 1702
start stop duration Long E 1140
TIME :07:35:00 08:10:00 35 (min) Purpose code: 1
LOG :5911.20 913.00 8.20 Area code : 3
FDEPTH: 20 21 GearCond.code:
BDEPTH: 20 21 Validity code:
Towing dir: 180° Wire out: 150 m Speed: 4 kn*10

Sorted: 58 Kg Total catch: 417.38 CATCH/HOUR: 715.51

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 353.83 | 27792 | 49.45 | 1053 |
| Trachurus capensis | 130.63 | 8661 | 18.26 | 1054 |
| Etrumeus whiteheadi | 95.66 | 3487 | 13.37 | 1055 |
| Heptranchias perlo | 31.46 | 2 | 4.40 | |
| Callorhinchus capensis | 21.51 | 12 | 3.01 | |
| Pomatomus saltatrix | 21.17 | 103 | 2.96 | 1059 |
| Galeichthys feliceps | 13.37 | 72 | 1.87 | |
| Diplodus sargus capensis | 12.31 | 27 | 1.72 | |
| Argyrosomus hololepidotus | 10.03 | 3 | 1.40 | 1058 |
| Mustelus mustelus | 8.74 | 3 | 1.22 | |
| Thyrsites atun | 6.69 | 12 | 0.93 | 1056 |
| Chelidonichthys capensis | 5.91 | 7 | 0.83 | |
| Raja miraletus | 1.89 | 3 | 0.26 | |
| Todarodes sagittatus | 1.29 | 5 | 0.18 | |
| Sardinops ocellatus | 1.03 | 82 | 0.14 | 1057 |
| Total | 715.52 | | 100.00 | |

PROJECT STATION: 383

DATE: 7/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 1700
start stop duration Long E 1122
TIME :12:33:00 12:48:00 15 (min) Purpose code: 1
LOG :5941.10 5941.80 0.70 Area code : 3
FDEPTH: 133 130 GearCond.code:
BDEPTH: 133 130 Validity code:
Towing dir: 90° Wire out: 500 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 3000.00 CATCH/HOUR: 12000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 11996.40 | 489648 | 99.97 | 1060 |
| Mustelus mustelus | 14.80 | 4 | 0.12 | |
| Merluccius capensis, male | 12.16 | 32 | 0.10 | |
| Galeus polli | 4.00 | 4 | 0.03 | |
| Helicolenus dactylopterus | 3.52 | 28 | 0.03 | |
| Zeus faber | 2.96 | 8 | 0.02 | |
| Dentex macrophthalmus | 0.52 | 28 | | |
| Total | 12034.36 | | 100.27 | |

PROJECT STATION: 384

DATE: 7/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1700
start stop duration Long E 1114
TIME :15:05:00 15:35:00 30 (min) Purpose code: 1
LOG :5952.70 5954.10 1.40 Area code : 3
FDEPTH: 200 200 GearCond.code:
BDEPTH: 880 925 Validity code:
Towing dir: 270° Wire out: 600 m Speed: 3 kn*10

Sorted: 1 Kg Total catch: 2.56 CATCH/HOUR: 5.12

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| MYCTOPHIDAE | 3.32 | 1156 | 64.84 | 1061 |
| Zeus faber | 1.72 | 20 | 33.59 | |
| LEISE01 | 0.04 | 4 | 0.78 | |
| Trachurus capensis | 0.04 | 16 | 0.78 | |
| Total | 5.12 | | 99.99 | |

PROJECT STATION: 385

DATE: 7/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 1711
start stop duration Long E 1143
TIME :20:10:00 20:20:00 10 (min) Purpose code: 1
LOG :5996.20 5996.70 0.50 Area code : 3
FDEPTH: 10 10 GearCond.code: 1
BDEPTH: 23 25 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 50 Kg Total catch: 708.35 CATCH/HOUR: 4250.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 2133.60 | 134400 | 50.20 | 1065 |
| Sardinops ocellatus | 1810.20 | 24444 | 42.59 | 1063 |
| Etrumeus whiteheadi | 145.32 | 5376 | 3.42 | 1064 |
| Trachurus, Juveniles | 120.96 | 4368 | 2.85 | 1062 |
| Thyrsites atun | 27.90 | 78 | 0.66 | 1066 |
| Galeichthys feliceps | 8.46 | 18 | 0.20 | |
| Brama brama | 3.54 | 6 | 0.08 | |
| Lepidopus caudatus | 0.12 | 12 | | |
| Total | 4250.10 | | 100.00 | |

PROJECT STATION: 386

DATE: 8/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 1741
start stop duration Long E 1141
TIME :07:15:00 07:25:00 10 (min) Purpose code: 3
LOG :6102.40 6102.90 0.50 Area code : 3
FDEPTH: 85 85 GearCond.code:
BDEPTH: 85 85 Validity code:
Towing dir: ° Wire out: 400 m Speed: 3 kn*10

Sorted: 50 Kg Total catch: 7000.00 CATCH/HOUR: 42000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 40582.20 | 529548 | 96.62 | 1067 |
| Merluccius capensis | 1344.48 | 11550 | 3.20 | 1068 |
| Prionace glauca | 30.00 | 6 | 0.07 | |
| Galeichthys feliceps | 14.16 | 72 | 0.03 | |
| Chelidonichthys capensis | 13.92 | 72 | 0.03 | |
| Trigla lyra | 10.50 | 48 | 0.03 | |
| Thyrsites atun | 4.74 | 6 | 0.01 | |
| Total | 42000.00 | | 99.99 | |

PROJECT STATION: 387

DATE: 8/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1734
start stop duration Long E 1143
TIME :18:30:00 18:59:00 29 (min) Purpose code: 3
LOG :6188.70 6190.60 1.90 Area code : 3
FDEPTH: 16 15 GearCond.code: 1
BDEPTH: 36 46 Validity code:
Towing dir: 100° Wire out: 150 m Speed: 37 kn*10

Sorted: 51 Kg Total catch: 412.96 CATCH/HOUR: 854.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 229.55 | | 26.87 | 1073 |
| Etrumeus whiteheadi | 216.52 | | 25.34 | 1072 |
| Trachurus, Juveniles | 157.14 | | 18.39 | 1071 |
| Sardinops ocellatus | 116.59 | | 13.65 | 1069 |
| Argyrosomus hololepidotus | 63.62 | 12 | 7.45 | 1070 |
| Chelidonichthys capensis | 21.31 | 31 | 2.49 | |
| Mustelus mustelus | 20.69 | 2 | 2.42 | |
| Galeichthys feliceps | 20.57 | 101 | 2.41 | |
| Merluccius capensis | 4.66 | 174 | 0.55 | |
| Thyrsites atun | 3.04 | 6 | 0.36 | |
| S H R I M P S | 0.00 | | | |
| Total | 853.69 | | 99.93 | |

PROJECT STATION: 388

DATE: 9/ 6/94 GEAR TYPE: PT No:6 POSITION:Lat S 1813
start stop duration Long E 1150
TIME :03:13:00 03:37:00 24 (min) Purpose code: 1
LOG :5260.70 6262.00 1.30 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 33 47 Validity code:
Towing dir: 205° Wire out: 150 m Speed: 33 kn*10

Sorted: 24 Kg Total catch: 25.55 CATCH/HOUR: 63.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 45.25 | 8978 | 70.84 | 1077 |
| Sardinops ocellatus | 9.40 | 1560 | 14.72 | 1076 |
| Etrumeus whiteheadi | 4.73 | 260 | 7.40 | 1075 |
| Thyrsites atun | 2.73 | 3 | 4.27 | |
| Chelidonichthys capensis | 1.05 | 3 | 1.64 | |
| Todarodes sagittatus | 0.48 | 18 | 0.75 | |
| Trachurus, Juveniles | 0.25 | 48 | 0.39 | 1074 |
| Total | 63.89 | | 100.01 | |

PROJECT STATION: 389

DATE: 9/ 6/94 GEAR TYPE: PT No:5 POSITION:Lat S 1800
start stop duration Long E 1134
TIME :12:00:00 12:36:00 36 (min) Purpose code: 1
LOG :6327.20 6329.40 2.20 Area code : 3
FDEPTH: 50 50 GearCond.code: 3
BDEPTH: 186 180 Validity code: 4
Towing dir: 10° Wire out: 250 m Speed: 4 kn*10

Sorted: 1 Kg Total catch: 3.84 CATCH/HOUR: 6.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 6.40 | 737 | 100.00 | 1078 |
| Total | 6.40 | | 100.00 | |

PROJECT STATION: 390

DATE: 9/ 6/94 GEAR TYPE: PT No:5 POSITION:Lat S 1828
start stop duration Long E 1127
TIME :19:40:00 20:10:00 30 (min) Purpose code: 1
LOG :6379.00 6381.00 2.00 Area code : 3
FDEPTH: 0 0 GearCond.code: 3
BDEPTH: 313 Validity code:
Towing dir: 95° Wire out: m Speed: 3 kn*10

Sorted: 16 Kg Total catch: 16.75 CATCH/HOUR: 33.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| MYCTOPHIDAE | 20.00 | 11376 | 59.70 | 1079 |
| Ruvettus pretiosus | 7.94 | 2 | 23.70 | |
| Brama brama | 5.08 | 2 | 15.16 | |
| Synagrops microlepis | 0.24 | 16 | 0.72 | |
| Trachurus capensis | 0.24 | 2 | 0.72 | |
| Total | 33.50 | | 100.00 | |

PROJECT STATION: 391

DATE:10/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1838
start stop duration Long E 1202
TIME :01:17:00 01:32:00 15 (min) Purpose code: 1
LOG :6425.40 6426.30 0.90 Area code : 3
FDEPTH: 20 25 GearCond.code:
BDEPTH: 67 74 Validity code:
Towing dir: 290° Wire out: 150 m Speed: 4 kn*10

Sorted: 16 Kg Total catch: 1001.13 CATCH/HOUR: 4004.52

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 4000.00 | | 99.89 | 1080 |
| Merluccius capensis | 4.52 | 56 | 0.11 | 1081 |
| Total | 4004.52 | | 100.00 | |

PROJECT STATION: 392

DATE:10/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1857
start stop duration Long E 1223
TIME :08:57:00 09:27:00 30 (min) Purpose code: 1
LOG :6482.00 6483.90 1.90 Area code : 3
FDEPTH: 25 25 GearCond.code:
BDEPTH: 57 67 Validity code:
Towing dir: 295° Wire out: 200 m Speed: 38 kn*10

Sorted: 17 Kg Total catch: 210.00 CATCH/HOUR: 420.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 420.00 | 26544 | 100.00 | 1082 |
| Total | 420.00 | | 100.00 | |

PROJECT STATION: 393

DATE:10/ 6/94 GEAR TYPE: PT No:5 POSITION:Lat S 1925
start stop duration Long E 1155
TIME :20:27:00 20:57:00 30 (min) Purpose code: 1
LOG :6577.60 6579.60 2.00 Area code : 3
FDEPTH: 53 54 GearCond.code:
BDEPTH: 300 302 Validity code:
Towing dir: 200° Wire out: m Speed: 4 kn*10

Sorted: 5 Kg Total catch: 122.31 CATCH/HOUR: 244.62

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus, Juveniles | 240.00 | 8190 | 98.11 | 1083 |
| Thyrsites atun | 4.20 | 4 | 1.72 | 1084 |
| Todarodes sagittatus | 0.42 | 2 | 0.17 | |
| Total | 244.62 | | 100.00 | |

PROJECT STATION: 394

DATE:11/ 6/94 GEAR TYPE: PT No:5 POSITION:Lat S 1927
start stop duration Long E 1214
TIME :01:07:00 01:37:00 30 (min) Purpose code: 1
LOG :6605.20 6607.30 1.90 Area code : 3
FDEPTH: 30 35 GearCond.code:
BDEPTH: 180 172 Validity code:
Towing dir: 360° Wire out: 200 m Speed: 43 kn*10

Sorted: 13 Kg Total catch: 624.06 CATCH/HOUR: 1248.12

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 1200.00 | 43898 | 96.14 | 1085 |
| Thyrsites atun | 47.70 | 44 | 3.82 | |
| Todarodes sagittatus | 0.42 | 2 | 0.03 | |
| Total | 1248.12 | | 99.99 | |

PROJECT STATION: 395

DATE:11/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1919
start stop duration Long E 1237
TIME :05:23:00 05:33:00 10 (min) Purpose code: 1
LOG :6639.60 6640.20 0.60 Area code : 3
FDEPTH: 12 12 GearCond.code:
BDEPTH: 48 50 Validity code:
Towing dir: 314° Wire out:1504 m Speed: 43 kn*10

Sorted: 23 Kg Total catch: 23.70 CATCH/HOUR: 142.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus, Juveniles | 78.00 | 9834 | 54.85 | 1086 |
| Engraulis capensis | 60.60 | 4236 | 42.62 | 1087 |
| Merluccius capensis, juveniles | 2.76 | 96 | 1.94 | 1088 |
| Etrumeus whiteheadi | 0.48 | 84 | 0.34 | 1089 |
| Sardinops ocellatus | 0.36 | 54 | 0.25 | 1090 |
| Total | 142.20 | | 100.00 | |

PROJECT STATION: 396

DATE:11/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1905
start stop duration Long E 1230
TIME :07:50:00 08:20:00 30 (min) Purpose code: 1
LOG :6660.00 6662.10 2.10 Area code : 3
FDEPTH: 10 20 GearCond.code: 1
BDEPTH: 23 34 Validity code:
Towing dir: 152° Wire out: 150 m Speed: 42 kn*10

Sorted: 24 Kg Total catch: 178.05 CATCH/HOUR: 356.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 286.20 | 17172 | 80.37 | 1091 |
| Alopias vulpinus | 42.76 | 2 | 12.01 | |
| Sardinops ocellatus | 13.66 | 172 | 3.84 | 1092 |
| Etrumeus whiteheadi | 8.16 | 756 | 2.29 | 1095 |
| Thyrsites atun | 2.68 | 2 | 0.75 | |
| Trachurus, Juveniles | 2.28 | 240 | 0.64 | 1093 |
| Merluccius capensis, juveniles | 0.24 | 12 | 0.07 | 1094 |
| Lepidopus caudatus | 0.12 | 12 | 0.03 | |
| Total | 356.10 | | 100.00 | |

PROJECT STATION: 397

DATE:11/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 1903
start stop duration Long E 1227
TIME :10:06:40 10:06:40 (min) Purpose code: 1
LOG :6678.00 6678.50 0.50 Area code : 3
FDEPTH: 51 48 GearCond.code: 8
BDEPTH: 51 48 Validity code:
Towing dir: 12° Wire out: 300 m Speed: 3 kn*10

Sorted: 18 Kg Total catch: 107.45 CATCH/HOUR: 6447.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 6363.00 | 340440 | 98.70 | 1096 |
| Merluccius capensis | 42.00 | 1680 | 0.65 | 1097 |
| GOBIIDAE | 25.20 | 3360 | 0.39 | 1098 |
| SOLEIDAE | 16.80 | 420 | 0.26 | |
| Total | 6447.00 | | 100.00 | |

PROJECT STATION: 398

DATE:11/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1913
start stop duration Long E 1229
TIME :13:09:00 13:39:00 30 (min) Purpose code: 1
LOG :6696.30 6698.00 1.70 Area code : 3
FDEPTH: 20 40 GearCond.code:
BDEPTH: 78 87 Validity code:
Towing dir: 300° Wire out: 200 m Speed: 35 kn*10

Sorted: 29 Kg Total catch: 600.00 CATCH/HOUR: 1200.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 1200.00 | 201532 | 100.00 | 1099 |
| Total | 1200.00 | | 100.00 | |

PROJECT STATION: 399

DATE:12/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1939
start stop duration Long E 1247
TIME :03:43:00 03:58:00 15 (min) Purpose code: 1
LOG :6753.20 6754.20 1.00 Area code : 3
FDEPTH: 20 15 GearCond.code:
BDEPTH: 48 57 Validity code:
Towing dir: 290° Wire out: 150 m Speed: 4 kn*10

Sorted: 18 Kg Total catch: 90.38 CATCH/HOUR: 361.52

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 177.80 | 17780 | 49.18 | 1101 |
| Engraulis capensis | 145.40 | 9268 | 40.22 | 1102 |
| Merluccius capensis | 19.60 | 660 | 5.42 | 1100 |
| Etrumeus whiteheadi | 10.20 | 1260 | 2.82 | 1104 |
| Trigla lyra | 6.00 | 60 | 1.66 | |
| Galeichthys feliceps | 2.12 | 4 | 0.59 | |
| Sardinops ocellatus | 0.40 | 60 | 0.11 | 1103 |
| Total | 361.52 | | 100.00 | |

PROJECT STATION: 400

DATE:12/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1946
start stop duration Long E 1246
TIME :06:10:00 06:34:00 24 (min) Purpose code: 1
LOG :6773.50 6774.70 1.20 Area code : 3
FDEPTH: 37 41 GearCond.code: 1
BDEPTH: 79 89 Validity code:
Towing dir: 288° Wire out: 300 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 10002.89 CATCH/HOUR: 25007.23

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus, Juveniles | 25000.00 | 993150 | 99.97 | 1105 |
| Thyrsites atun | 7.23 | 5 | 0.03 | 1106 |
| Total | 25007.23 | | 100.00 | |

PROJECT STATION: 401

DATE:12/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 1951
start stop duration Long E 1255
TIME :08:55:00 09:25:00 30 (min) Purpose code: 1
LOG :6792.00 6793.80 1.80 Area code : 3
FDEPTH: 10 10 GearCond.code:
BDEPTH: 24 26 Validity code:
Towing dir: 330° Wire out: 100 m Speed: 36 kn*10

Sorted: 21 Kg Total catch: 242.67 CATCH/HOUR: 485.34

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus, Juveniles | 357.70 | 28222 | 73.70 | 1107 |
| Engraulis capensis | 100.54 | 7392 | 20.72 | 1108 |
| Etrumeus whiteheadi | 14.96 | 1518 | 3.08 | 1109 |
| Sardinops ocellatus | 7.04 | 418 | 1.45 | 1110 |
| Pomatomus saltatrix | 5.10 | 2 | 1.05 | 1111 |
| Total | 485.34 | | 100.00 | |

PROJECT STATION: 402

DATE:12/ 6/94 GEAR TYPE: PT No:5 POSITION:Lat S 2001
start stop duration Long E 1207
TIME :17:28:00 17:52:00 24 (min) Purpose code: 1
LOG :6862.40 6863.40 1.00 Area code : 3
FDEPTH: 100 85 GearCond.code: 8
BDEPTH: 287 285 Validity code: 9
Towing dir: 151° Wire out: 450 m Speed: 33 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Total | | | | |

PROJECT STATION: 403

DATE:13/ 6/94 GEAR TYPE: BT No:1 POSITION:Lat S 2028
start stop duration Long E 1210
TIME :00:16:00 00:31:00 15 (min) Purpose code: 1
LOG :6908.30 6909.10 0.80 Area code : 3
FDEPTH: 327 327 GearCond.code:
BDEPTH: 327 327 Validity code:
Towing dir: 331° Wire out:1200 m Speed: 35 kn*10

Sorted: 29 Kg Total catch: 238.47 CATCH/HOUR: 953.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, female | 386.20 | 412 | 40.49 | 1117 |
| Merluccius capensis, male | 184.80 | 228 | 19.37 | 1116 |
| Chlorophthalmus atlanticus | 164.64 | 5704 | 17.26 | 1112 |
| Helicolenus dactylopterus | 158.88 | 4916 | 16.66 | 1113 |
| Galeus polli | 23.28 | 264 | 2.44 | |
| Merluccius paradoxus, female | 12.84 | 48 | 1.35 | 1115 |
| RAJIDAE | 10.52 | 8 | 1.10 | |
| Lophius upsicephalus | 7.44 | 24 | 0.78 | |
| C R A B S | 2.16 | 48 | 0.23 | |
| Nezumia sp. | 1.68 | 120 | 0.18 | |
| MYCTOPHIDAE | 0.72 | 192 | 0.08 | |
| Merluccius paradoxus, male | 0.48 | 4 | 0.05 | 1114 |
| ATHAA00 | 0.24 | 48 | 0.03 | |
| Total | 953.88 | | 100.02 | |

PROJECT STATION: 404

DATE:13/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2028
start stop duration Long E 1242
TIME :04:16:00 04:21:00 5 (min) Purpose code: 1
LOG :6943.20 6943.40 0.20 Area code : 3
FDEPTH: 70 70 GearCond.code:
BDEPTH: 169 180 Validity code:
Towing dir: 300° Wire out: 300 m Speed: 35 kn*10

Sorted: 9 Kg Total catch: 148.67 CATCH/HOUR: 1784.04

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 1674.00 | 35688 | 93.83 | 1118 |
| Brama brama | 43.80 | 24 | 2.46 | |
| Thyrsites atun | 26.64 | 12 | 1.49 | |
| Merluccius capensis, juveniles | 23.40 | 1800 | 1.31 | 1119 |
| Etrumeus whiteheadi | 9.00 | 180 | 0.50 | |
| Engraulis capensis | 7.20 | 540 | 0.40 | 1120 |
| Total | 1784.04 | | 99.99 | |

PROJECT STATION: 405

DATE:13/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2018
start stop duration Long E 1312
TIME :09:30:00 10:00:00 30 (min) Purpose code: 1
LOG :6992.40 6994.10 1.70 Area code : 3
FDEPTH: 10 10 GearCond.code: 1
BDEPTH: 19 17 Validity code:
Towing dir: 150° Wire out: 200 m Speed: 34 kn*10

Sorted: 25 Kg Total catch: 364.76 CATCH/HOUR: 729.52

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 497.00 | 37268 | 68.13 | 1123 |
| Sardinops ocellatus | 166.60 | 8400 | 22.84 | 1121 |
| Etrumeus whiteheadi | 56.28 | 3192 | 7.71 | 1122 |
| Diplodus sargus capensis | 6.02 | 6 | 0.83 | 1125 |
| Trachurus capensis | 2.28 | 24 | 0.31 | 1124 |
| Todarodes sagittatus | 1.02 | 2 | 0.14 | |
| Helicolenus dactylopterus | 0.18 | 30 | 0.02 | |
| PORTUNIDAE | 0.14 | 24 | 0.02 | |
| Total | 729.52 | | 100.00 | |

PROJECT STATION: 406

DATE:13/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2016
start stop duration Long E 1308
TIME :11:53:00 12:08:00 15 (min) Purpose code: 1
LOG :6006.60 6007.40 0.80 Area code : 3
FDEPTH: 25 30 GearCond.code:
BDEPTH: 44 44 Validity code:
Towing dir: 148° Wire out: 150 m Speed: 42 kn*10

Sorted: 10 Kg Total catch: 20.96 CATCH/HOUR: 83.84

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 79.36 | 5204 | 94.66 | 1129 |
| Sardinops ocellatus | 2.00 | 104 | 2.39 | 1127 |
| Engraulis capensis | 1.04 | 80 | 1.24 | 1128 |
| Trachurus capensis | 0.72 | 112 | 0.86 | 1126 |
| Merluccius capensis, juveniles | 0.56 | 40 | 0.67 | |
| TRIGLIDAE | 0.16 | 16 | 0.19 | |
| Total | 83.84 | | 100.01 | |

PROJECT STATION: 407

DATE:13/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2006
start stop duration Long E 1259
TIME :14:19:00 14:39:00 20 (min) Purpose code: 1
LOG :7025.50 7026.70 1.20 Area code : 3
FDEPTH: 30 45 GearCond.code: 2
BDEPTH: 62 66 Validity code:
Towing dir: 292° Wire out: 200 m Speed: 32 kn*10

Sorted: 11 Kg Total catch: 46.36 CATCH/HOUR: 139.08

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 83.76 | 2964 | 60.22 | 1130 |
| Trachurus capensis | 54.00 | 7104 | 38.83 | 1131 |
| Sardinops ocellatus | 1.08 | 24 | 0.78 | |
| Merluccius capensis, juveniles | 0.24 | 12 | 0.17 | |
| Total | 139.08 | | 100.00 | |

PROJECT STATION: 408

DATE:13/ 6/94 GEAR TYPE: BT No:1 POSITION:Lat S 2004
start stop duration Long E 1253
TIME :16:40:00 16:55:00 15 (min) Purpose code: 1
LOG :7043.70 7044.50 0.80 Area code : 3
FDEPTH: 91 87 GearCond.code:
BDEPTH: 91 87 Validity code:
Towing dir: 65° Wire out: 350 m Speed: 34 kn*10

Sorted: 14 Kg Total catch: 144.60 CATCH/HOUR: 578.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 568.00 | 25244 | 98.20 | 1132 |
| Merluccius capensis, juveniles | 9.60 | 320 | 1.66 | |
| GOBIDAE juvenile | 0.80 | 280 | 0.14 | |
| Total | 578.40 | | 100.00 | |

PROJECT STATION: 409

DATE:13/ 6/94 GEAR TYPE: PT No:2 POSITION:Lat S 2014
start stop duration Long E 1311
TIME :21:25:00 21:58:00 33 (min) Purpose code: 1
LOG :7089.80 7091.50 1.70 Area code : 3
FDEPTH: 0 0 GearCond.code:
BDEPTH: 18 22 Validity code:
Towing dir: 320° Wire out: 100 m Speed: 33 kn*10

Sorted: 20 Kg Total catch: 424.45 CATCH/HOUR: 771.73

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 345.55 | 19473 | 44.78 | 1136 |
| Trachurus capensis | 118.36 | 1413 | 15.34 | 1133 |
| Sardinops ocellatus | 82.47 | 2367 | 10.69 | 1134 |
| Merluccius capensis, juveniles | 75.98 | 267 | 9.85 | 1138 |
| Trachurus, Juveniles | 74.07 | 7293 | 9.60 | 1137 |
| Etrumeus whiteheadi | 67.20 | 5536 | 8.71 | 1135 |
| Diplodus sargus capensis | 8.09 | 7 | 1.05 | 1139 |
| Total | 771.72 | | 100.02 | |

PROJECT STATION: 410

DATE:14/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2020
start stop duration Long E 1302
TIME :01:20:00 01:35:00 15 (min) Purpose code: 1
LOG :7106.60 7107.20 0.60 Area code : 3
FDEPTH: 55 55 GearCond.code:
BDEPTH: 96 94 Validity code:
Towing dir: 60° Wire out: 200 m Speed: 28 kn*10

Sorted: 9 Kg Total catch: 83.03 CATCH/HOUR: 332.12

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 306.00 | 15520 | 92.14 | 1140 |
| Merluccius paradoxus | 14.76 | 720 | 4.44 | |
| Chelidonichthys capensis | 6.68 | 12 | 2.01 | |
| Etrumeus whiteheadi | 4.68 | 144 | 1.41 | |
| Total | 332.12 | | 100.00 | |

PROJECT STATION: 411

DATE:14/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2038
start stop duration Long E 1315
TIME :05:37:00 05:52:00 15 (min) Purpose code: 1
LOG :7143.80 7144.90 1.10 Area code : 3
FDEPTH: 10 22 GearCond.code:
BDEPTH: 63 72 Validity code:
Towing dir: 295° Wire out: 100 m Speed: 4 kn*10

Sorted: 29 Kg Total catch: 146.10 CATCH/HOUR: 584.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 572.00 | 26480 | 97.88 | 1141 |
| Sardinops ocellatus | 6.00 | 180 | 1.03 | 1144 |
| Engraulis capensis | 3.20 | 180 | 0.55 | 1143 |
| Trachurus, Juveniles | 3.20 | 700 | 0.55 | 1142 |
| Total | 584.40 | | 100.01 | |

PROJECT STATION: 412

DATE:20/10/45 GEAR TYPE: PT No:1 POSITION:Lat S 2037
start stop duration Long E 1316
TIME :06:57:00 07:14:00 17 (min) Purpose code: 1
LOG :7151.10 7152.10 1.00 Area code : 3
FDEPTH: 17 19 GearCond.code:
BDEPTH: 41 47 Validity code:
Towing dir: 324° Wire out: 150 m Speed: 3 kn*10

Sorted: 23 Kg Total catch: 945.38 CATCH/HOUR: 3336.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 2837.65 | 138353 | 85.05 | 1146 |
| Sardinops ocellatus | 264.00 | 37694 | 7.91 | 1148 |
| Engraulis capensis | 194.82 | 30212 | 5.84 | 1145 |
| Trachurus, Juveniles | 31.06 | 2541 | 0.93 | 1147 |
| Merluccius capensis, juveniles | 2.82 | 141 | 0.08 | 1149 |
| TRIGLIDAE | 2.75 | 4 | 0.08 | |
| Galeichthys feliceps | 2.12 | 4 | 0.06 | |
| Trachurus capensis | 1.41 | 141 | 0.04 | |
| Total | 3336.63 | | 99.99 | |

PROJECT STATION: 413

DATE:14/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2059
start stop duration Long E 1326
TIME :11:45:00 11:55:00 10 (min) Purpose code: 1
LOG :7196.70 7197.20 0.50 Area code : 3
FDEPTH: 32 35 GearCond.code:
BDEPTH: 32 35 Validity code:
Towing dir: 286° Wire out: 200 m Speed: 3 kn*10

Sorted: 43 Kg Total catch: 2000.00 CATCH/HOUR: 12000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 4911.00 | 191892 | 40.93 | 1153 |
| Engraulis capensis | 4711.80 | 914118 | 39.27 | 1150 |
| Callorhinchus capensis | 1041.60 | 540 | 8.68 | |
| Argyrosomus hololepidotus | 424.80 | 126 | 3.54 | |
| Sardinops ocellatus | 320.40 | 46800 | 2.67 | 1152 |
| Chelidonichthys capensis | 188.40 | 1344 | 1.57 | |
| Galeichthys feliceps | 180.60 | 540 | 1.51 | |
| Etrumeus whiteheadi | 172.20 | 25836 | 1.44 | 1151 |
| Merluccius capensis, juveniles | 45.60 | 2154 | 0.38 | |
| GOBIIDAE | 3.00 | 540 | 0.03 | |
| Total | 11999.40 | | 100.02 | |

PROJECT STATION: 414

DATE:14/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2059
start stop duration Long E 1258
TIME :16:48:00 17:03:00 15 (min) Purpose code: 1
LOG :7231.20 7231.90 0.70 Area code : 3
FDEPTH: 171 171 GearCond.code:
BDEPTH: 171 171 Validity code:
Towing dir: 300° Wire out: 600 m Speed: 36 kn*10

Sorted: 49 Kg Total catch: 2463.65 CATCH/HOUR: 9854.60

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 8880.00 | 188400 | 90.11 | 1154 |
| Merluccius capensis | 968.00 | 17800 | 9.82 | 1155 |
| Sufflogobius bibarbatus | 4.00 | 1200 | 0.04 | |
| Dentex macrophthalmus | 1.92 | 8 | 0.02 | |
| Austroglossus microlepis | 0.68 | 4 | 0.01 | |
| Total | 9854.60 | | 100.00 | |

PROJECT STATION: 415

DATE:14/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2059
start stop duration Long E 1246
TIME :20:30:00 21:00:00 30 (min) Purpose code: 1
LOG :7256.80 7258.50 1.70 Area code : 3
FDEPTH: 319 314 GearCond.code: 1
BDEPTH: 319 314 Validity code:
Towing dir: 353° Wire out:1200 m Speed: 34 kn*10

Sorted: 6 Kg Total catch: 150.76 CATCH/HOUR: 301.52

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, female | 147.20 | 282 | 48.82 | 1157 |
| Merluccius capensis, male | 50.60 | 114 | 16.78 | 1156 |
| Epigonus denticulatus | 33.60 | 1032 | 11.14 | |
| Lophius upsicephalus | 30.60 | | 10.15 | |
| Trachurus capensis | 11.36 | 64 | 3.77 | 1158 |
| Galeus polli | 10.72 | 176 | 3.56 | |
| Coelorinchus fasciatus | 8.16 | 312 | 2.71 | |
| Todarodes sagittatus | 4.02 | 6 | 1.33 | |
| Nezumia leonis | 1.76 | 168 | 0.58 | |
| Dentex macrophthalmus | 1.72 | 6 | 0.57 | |
| Austroglossus microlepis | 1.04 | 4 | 0.34 | |
| Pterothrissus belloci | 0.34 | 4 | 0.11 | |
| Helicolenus dactylopterus | 0.24 | 24 | 0.08 | |
| Solenocera africana | 0.16 | 72 | 0.05 | |
| Total | 301.52 | | 99.99 | |

PROJECT STATION: 416

DATE:15/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2059
start stop duration Long E 1253
TIME :03:26:00 03:56:00 30 (min) Purpose code: 1
LOG :7285.40 7286.80 1.40 Area code : 3
FDEPTH: 256 249 GearCond.code:
BDEPTH: 256 249 Validity code:
Towing dir: 360° Wire out: 249 m Speed: 34 kn*10

Sorted: 54 Kg Total catch: 146.19 CATCH/HOUR: 292.38

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis | 140.40 | 780 | 48.02 | 1162 |
| Trachurus capensis | 109.80 | 704 | 37.55 | 1160 |
| Dentex macrophthalmus | 35.20 | 138 | 12.04 | 1161 |
| Pterothrissus belloci | 2.50 | 86 | 0.86 | |
| Sufflogobius bibarbatus | 1.92 | 816 | 0.66 | 1159 |
| Nezumia leonis | 1.34 | 58 | 0.46 | |
| Trigla lyra | 0.90 | 6 | 0.31 | |
| Galeus polli | 0.32 | 10 | 0.11 | |
| Total | 292.38 | | 100.01 | |

PROJECT STATION: 417

DATE:15/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2102
start stop duration Long E 1253
TIME :05:23:00 05:38:00 15 (min) Purpose code: 1
LOG :7292.60 7293.30 0.70 Area code : 2
FDEPTH: 180 150 GearCond.code:
BDEPTH: 268 272 Validity code:
Towing dir: 180° Wire out: 500 m Speed: 28 kn*10

Sorted: 1 Kg Total catch: 0.76 CATCH/HOUR: 3.04

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 2.20 | 72 | 72.37 | 1165 |
| Synagrops microlepis | 0.36 | 144 | 11.84 | 1163 |
| Sufflogobius bibarbatus | 0.24 | 52 | 7.89 | 1164 |
| Trachurus, Juveniles | 0.08 | 28 | 2.63 | 1166 |
| Squalus megalops | 0.08 | 4 | 2.63 | |
| MYCTOPHIDAE | 0.04 | 8 | 1.32 | 1167 |
| Total | 3.00 | | 98.68 | |

PROJECT STATION: 418

DATE:15/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2117
start stop duration Long E 1252
TIME :07:55:00 08:30:00 35 (min) Purpose code: 1
LOG :7310.30 7312.00 1.70 Area code : 2
FDEPTH: 185 180 GearCond.code:
BDEPTH: 299 300 Validity code:
Towing dir: 360° Wire out: 600 m Speed: 32 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Total | | | | |

PROJECT STATION: 419

DATE:15/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2113
start stop duration Long E 1252
TIME :13:24:00 13:29:00 5 (min) Purpose code: 1
LOG :7340.20 7340.30 0.10 Area code : 2
FDEPTH: 210 180 GearCond.code:
BDEPTH: 296 297 Validity code:
Towing dir: 180° Wire out: 600 m Speed: 34 kn*10

Sorted: 1 Kg Total catch: 8.70 CATCH/HOUR: 104.40

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| MYCTOPHIDAE | 92.04 | 35820 | 88.16 | 1169 |
| Trachurus capensis | 12.36 | 132 | 11.84 | 1168 |
| Total | 104.40 | | 100.00 | |

PROJECT STATION: 420

DATE:15/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2112
start stop duration Long E 1252
TIME :14:18:00 14:33:00 15 (min) Purpose code: 1
LOG :7342.90 7343.40 0.50 Area code : 2
FDEPTH: 299 299 GearCond.code:
BDEPTH: 299 299 Validity code:
Towing dir: 360° Wire out: 900 m Speed: 32 kn*10

Sorted: 31 Kg Total catch: 31.87 CATCH/HOUR: 127.48

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis | 82.60 | 252 | 64.79 | 1172 |
| Nezumia sp. | 13.20 | 604 | 10.35 | 1175 |
| Trachurus capensis | 6.40 | 36 | 5.02 | 1170 |
| Lophius upsicephalus | 4.48 | 20 | 3.51 | |
| Galeus polli | 4.36 | 104 | 3.42 | |
| Sufflogobius bibarbatus | 3.40 | 760 | 2.67 | 1173 |
| Austroglossus microlepis | 2.28 | 4 | 1.79 | |
| Chlorophthalmus punctatus | 2.24 | 216 | 1.76 | 1174 |
| Neoharriotta pinnata | 2.00 | 4 | 1.57 | |
| Small squids | 0.88 | 8 | 0.69 | |
| Dentex macrophthalmus | 0.88 | 4 | 0.69 | |
| CONGRIDAE | 0.56 | 12 | 0.44 | |
| Synagrops microlepis | 0.44 | 56 | 0.35 | |
| Trigla lyra | 0.32 | 4 | 0.25 | |
| Trachurus, Juveniles | 0.04 | 28 | 0.03 | 1171 |
| MYCTOPHIDAE | 0.00 | 8 | | |
| Pterothrissus belloci | 0.00 | 8 | | |
| Total | 124.08 | | 97.33 | |

PROJECT STATION: 421

DATE:15/ 6/94 GEAR TYPE: PT No:2 POSITION:Lat S 2130
start stop duration Long E 1334
TIME :21:55:00 22:25:00 30 (min) Purpose code: 1
LOG :7398.00 7399.50 1.50 Area code : 2
FDEPTH: 0 0 GearCond.code:
BDEPTH: 95 99 Validity code:
Towing dir: 270° Wire out: 200 m Speed: 3 kn*10

Sorted: 2 Kg Total catch: 7.56 CATCH/HOUR: 15.12

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 9.92 | 2304 | 65.61 | 1180 |
| Trachurus, Juveniles | 4.88 | 1208 | 32.28 | 1176 |
| Sufflogobius bibarbatus | 0.08 | 8 | 0.53 | 1181 |
| MYCTOPHIDAE | 0.08 | 24 | 0.53 | 1179 |
| Sardinops ocellatus | 0.08 | 128 | 0.53 | 1178 |
| Merluccius capensis, juveniles | 0.08 | 40 | 0.53 | 1177 |
| Total | 15.12 | | 100.01 | |

PROJECT STATION: 422

DATE:16/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2110
start stop duration Long E 1332
TIME :01:29:00 01:39:00 10 (min) Purpose code: 1
LOG :7427.70 7428.00 0.30 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 34 35 Validity code:
Towing dir: 165° Wire out: 150 m Speed: 33 kn*10

Sorted: 8 Kg Total catch: 40.70 CATCH/HOUR: 244.20

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 76.20 | 6162 | 31.20 | 1185 |
| Etrumeus whiteheadi | 69.90 | 8928 | 28.62 | 1182 |
| Sardinops ocellatus | 64.20 | 10836 | 26.29 | 1184 |
| Galeichthys feliceps | 16.20 | 30 | 6.63 | |
| Engraulis capensis | 12.90 | 2550 | 5.28 | 1183 |
| Chelidonichthys capensis | 2.70 | 210 | 1.11 | |
| Merluccius paradoxus | 1.80 | 90 | 0.74 | |
| Sufflogobius bibarbatus | 0.30 | 30 | 0.12 | |
| Total | 244.20 | | 99.99 | |

PROJECT STATION: 423

DATE:16/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2104
start stop duration Long E 1330
TIME :02:41:00 02:51:00 10 (min) Purpose code: 1
LOG :7434.80 7435.30 0.50 Area code : 2
FDEPTH: 10 10 GearCond.code:
BDEPTH: 25 25 Validity code:
Towing dir: 342° Wire out: 150 m Speed: 34 kn*10

Sorted: 1 Kg Total catch: 1.28 CATCH/HOUR: 7.68

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Galeichthys feliceps | 3.49 | 7 | 45.44 | |
| Etrumeus whiteheadi | 3.36 | 144 | 43.75 | 1186 |
| Merluccius capensis, juveniles | 0.42 | 18 | 5.47 | |
| Engraulis capensis | 0.18 | 18 | 2.34 | |
| Chelidonichthys capensis | 0.18 | 6 | 2.34 | |
| Galeus polli | 0.06 | 6 | 0.78 | |
| Total | 7.69 | | 100.12 | |

PROJECT STATION: 424

DATE:16/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2112
start stop duration Long E 1332
TIME :05:15:00 05:30:00 15 (min) Purpose code: 1
LOG :7456.60 7457.40 0.80 Area code : 2
FDEPTH: 45 49 GearCond.code:
BDEPTH: 45 49 Validity code:
Towing dir: 45° Wire out: 49 m Speed: 33 kn*10

Sorted: Kg Total catch: 0.20 CATCH/HOUR: 0.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus capensis | 0.60 | 80 | 75.00 | 1187 |
| Etrumeus whiteheadi | 0.20 | 8 | 25.00 | 1188 |
| Total | 0.80 | | 100.00 | |

PROJECT STATION: 425

DATE:16/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2129
start stop duration Long E 1344
TIME :08:35:00 08:57:00 22 (min) Purpose code: 1
LOG :7484.90 7486.40 1.50 Area code : 2
FDEPTH: 10 15 GearCond.code:
BDEPTH: 41 47 Validity code:
Towing dir: 300° Wire out: 100 m Speed: 3 kn*10

Sorted: 42 Kg Total catch: 172.01 CATCH/HOUR: 469.12

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 459.71 | 11782 | 97.99 | 1190 |
| Sardinops ocellatus | 8.73 | 120 | 1.86 | 1189 |
| Trigla lyra | 0.22 | 22 | 0.05 | 1191 |
| Merluccius capensis, juveniles | 0.22 | 33 | 0.05 | 1192 |
| Galeichthys feliceps | 0.14 | 3 | 0.03 | |
| Trachurus, Juveniles | 0.11 | 11 | 0.02 | |
| Total | 469.13 | | 100.00 | |

PROJECT STATION: 426

DATE:16/ 6/94 GEAR TYPE: PT No:2 POSITION:Lat S 2206
start stop duration Long E 1407
TIME :15:03:00 15:20:00 17 (min) Purpose code: 1
LOG :7545.90 7546.70 0.80 Area code : 2
FDEPTH: 5 15 GearCond.code:
BDEPTH: 37 34 Validity code:
Towing dir: 360° Wire out: 200 m Speed: 33 kn*10

Sorted: 1 Kg Total catch: 11.07 CATCH/HOUR: 39.07

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Chelidonichthys capensis | 26.72 | 1493 | 68.39 | |
| Trachurus capensis | 6.56 | 1098 | 16.79 | |
| Galeichthys feliceps | 2.26 | 4 | 5.78 | |
| Engraulis capensis | 1.69 | 469 | 4.33 | 1195 |
| Etrumeus whiteheadi | 1.02 | 42 | 2.61 | 1193 |
| Sardinops ocellatus | 0.53 | 88 | 1.36 | 1194 |
| Merluccius capensis, juveniles | 0.11 | 21 | 0.28 | |
| Sufflogobius bibarbatus | 0.11 | 7 | 0.28 | |
| ARGENTINIDAE | 0.07 | 18 | 0.18 | |
| Total | 39.07 | | 100.00 | |

PROJECT STATION: 427

DATE:16/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2242
start stop duration Long E 1426
TIME :21:20:00 21:32:00 12 (min) Purpose code: 1
LOG :7601.00 7601.60 0.60 Area code : 2
FDEPTH: 35 33 GearCond.code:
BDEPTH: 35 33 Validity code:
Towing dir: 340° Wire out: 100 m Speed: 3 kn*10

Sorted: Kg Total catch: 3.00 CATCH/HOUR: 15.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 10.00 | 1000 | 66.67 | |
| Trachurus, Juveniles | 5.00 | 500 | 33.33 | |
| Total | 15.00 | | 100.00 | |

PROJECT STATION: 428

DATE:17/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2309
start stop duration Long E 1425
TIME :03:42:00 03:47:00 5 (min) Purpose code: 1
LOG :7657.30 7657.50 0.20 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 22 22 Validity code:
Towing dir: 210° Wire out: 150 m Speed: 28 kn*10

Sorted: 8 Kg Total catch: 69.99 CATCH/HOUR: 839.88

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 586.80 | 15660 | 69.87 | 1197 |
| Trachurus capensis | 114.00 | 19512 | 13.57 | 1198 |
| Etrumeus whiteheadi | 95.28 | 47664 | 11.34 | 1196 |
| Sardinops ocellatus | 37.20 | 16920 | 4.43 | 1199 |
| Merluccius capensis, juveniles | 5.52 | 984 | 0.66 | |
| TRIGLIDAE | 1.08 | 552 | 0.13 | |
| Total | 839.88 | | 100.00 | |

PROJECT STATION: 429

DATE:17/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2327
start stop duration Long E 1424
TIME :08:03:00 08:10:00 7 (min) Purpose code: 1
LOG :7688.90 7689.20 0.30 Area code : 2
FDEPTH: 33 33 GearCond.code:
BDEPTH: 33 33 Validity code:
Towing dir: 348° Wire out: 250 m Speed: 3 kn*10

Sorted: 1 Kg Total catch: 19.09 CATCH/HOUR: 163.63

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Callorhinchus capensis | 94.29 | 86 | 57.62 | |
| Mustelus palumbes | 20.57 | 9 | 12.57 | |
| Chelidonichthys capensis | 18.00 | 51 | 11.00 | |
| Merluccius capensis, juveniles | 13.37 | 617 | 8.17 | 1200 |
| Trachurus, Juveniles | 12.34 | 900 | 7.54 | 1201 |
| Sufflogobius bibarbatus | 4.89 | 643 | 2.99 | |
| Austroglossus microlepis | 0.09 | 9 | 0.06 | |
| Small squids | 0.00 | 51 | | |
| Shrimps, small, non comm. | 0.00 | 26 | | |
| Total | 163.55 | | 99.95 | |

PROJECT STATION: 430

DATE:17/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2319
start stop duration Long E 1424
TIME :09:00:00 09:10:00 10 (min) Purpose code: 1
LOG :7705.50 7705.90 0.40 Area code : 2
FDEPTH: 47 50 GearCond.code: 8
BDEPTH: 47 50 Validity code:
Towing dir: 338° Wire out: 200 m Speed: 3 kn*10

Sorted: 7 Kg Total catch: 54.53 CATCH/HOUR: 327.18

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus, Juveniles | 96.84 | 16056 | 29.60 | 1202 |
| Merluccius capensis, juveniles | 80.64 | 900 | 24.65 | 1204 |
| Sufflogobius bibarbatus | 58.68 | | 17.94 | |
| Callorhinchus capensis | 50.10 | 30 | 15.31 | |
| Etrumeus whiteheadi | 28.80 | 4536 | 8.80 | 1203 |
| Chelidonichthys capensis | 8.52 | 30 | 2.60 | |
| Small squids | 3.24 | 1368 | 0.99 | |
| Sardinops ocellatus | 0.36 | 36 | 0.11 | |
| Total | 327.18 | | 100.00 | |

PROJECT STATION: 431

DATE:17/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2339
start stop duration Long E 1427
TIME :18:22:00 18:41:00 19 (min) Purpose code: 1
LOG :1190.70 7791.60 0.90 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 26 22 Validity code:
Towing dir: 30° Wire out: 100 m Speed: 28 kn*10

Sorted: 1 Kg Total catch: 1.71 CATCH/HOUR: 5.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Engraulis capensis | 2.40 | 600 | 44.44 | 1206 |
| Trachurus, Juveniles | 1.77 | 316 | 32.78 | 1205 |
| Sardinops ocellatus | 0.57 | 32 | 10.56 | |
| Small squids | 0.22 | 120 | 4.07 | |
| Etrumeus whiteheadi | 0.19 | 88 | 3.52 | |
| Sufflogobius bibarbatus | 0.09 | 63 | 1.67 | |
| Chelidonichthys capensis | 0.06 | 63 | 1.11 | |
| Merluccius capensis, juveniles | 0.03 | 13 | 0.56 | |
| Total | 5.33 | | 98.71 | |

PROJECT STATION: 432

DATE:18/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2455
start stop duration Long E 1446
TIME :06:35:00 07:05:00 30 (min) Purpose code: 1
LOG :7913.80 7914.80 1.00 Area code : 2
FDEPTH: 0 0 GearCond.code:
BDEPTH: 24 28 Validity code:
Towing dir: 330° Wire out: 125 m Speed: 2 kn*10

Sorted: 3 Kg Total catch: 6.20 CATCH/HOUR: 12.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO |
|---|---|---|---|---|
| Etrumeus whiteheadi | 9.12 | 1488 | 73.55 | 1207 |
| Trachurus, Juveniles | 3.16 | 592 | 25.48 | 1208 |
| Engraulis capensis | 0.08 | 12 | 0.65 | |
| Merluccius capensis, juveniles | 0.04 | 4 | 0.32 | |
| Small squids | 0.04 | 4 | 0.32 | |
| Total | 12.44 | | 100.32 | |

PROJECT STATION: 433

DATE:18/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2507
start stop duration Long E 1450
TIME :09:08:00 09:39:00 31 (min) Purpose code: 1
LOG :7932.80 7934.50 1.70 Area code : 1
FDEPTH: 17 16 GearCond.code: 2
BDEPTH: 17 16 Validity code: 4
Towing dir: 10° Wire out: 100 m Speed: 34 kn*10

Sorted: 9 Kg Total catch: 253.74 CATCH/HOUR: 491.11

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Chelidonichthys capensis | 154.84 | 310 | 31.53 | |
| Thyrsites atun | 79.55 | 283 | 16.20 | 1210 |
| Lithognathus aureti | 74.52 | 37 | 15.17 | 1212 |
| Shrimps, small, non comm. | 52.65 | 35110 | 10.72 | |
| Trachurus, Juveniles | 50.71 | 2981 | 10.33 | 1213 |
| Etrumeus whiteheadi | 33.68 | 4065 | 6.86 | 1209 |
| Small squids | 14.32 | 7161 | 2.92 | |
| Merluccius capensis | 10.84 | 503 | 2.21 | 1211 |
| Engraulis capensis | 10.45 | 1471 | 2.13 | 1214 |
| Hyperoglyphe moselii | 4.94 | 4 | 1.01 | |
| Sardinops ocellatus | 2.32 | 426 | 0.47 | |
| Austroglossus microlepis | 1.16 | 39 | 0.24 | |
| Trichiurus lepturus | 0.75 | 2 | 0.15 | |
| Sufflogobius bibarbatus | 0.39 | 271 | 0.08 | |
| Total | 491.12 | | 100.02 | |

PROJECT STATION: 434

DATE:19/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2501
start stop duration Long E 1425
TIME :09:42:00 09:52:00 10 (min) Purpose code: 1
LOG :8140.80 8141.30 0.50 Area code : 1
FDEPTH: 120 120 GearCond.code: 2
BDEPTH: 120 120 Validity code:
Towing dir: 115° Wire out: 500 m Speed: 3 kn*10

Sorted: 3 Kg Total catch: 30.82 CATCH/HOUR: 184.92

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 180.00 | 4896 | 97.34 | 1215 |
| Sufflogobius bibarbatus | 3.00 | 3600 | 1.62 | |
| MYCTOPHIDAE | 1.20 | 600 | 0.65 | |
| Trachurus, Juveniles | 0.72 | 72 | 0.39 | |
| Total | 184.92 | | 100.00 | |

PROJECT STATION: 435

DATE:19/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2423
start stop duration Long E 1342
TIME :15:21:00 15:31:00 10 (min) Purpose code: 1
LOG :8194.10 8194.50 0.40 Area code : 2
FDEPTH: 150 150 GearCond.code:
BDEPTH: 325 324 Validity code:
Towing dir: 313° Wire out: 500 m Speed: 3 kn*10

Sorted: 2 Kg Total catch: 2.00 CATCH/HOUR: 12.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| MYCTOPHIDAE | 12.00 | | 100.00 | |
| Total | 12.00 | | 100.00 | |

PROJECT STATION: 436

DATE:19/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2400
start stop duration Long E 1319
TIME :19:32:00 20:02:00 30 (min) Purpose code: 1
LOG :8229.60 8231.00 1.40 Area code : 2
FDEPTH: 321 325 GearCond.code: 1
BDEPTH: 321 325 Validity code:
Towing dir: 330° Wire out:1200 m Speed: 28 kn*10

Sorted: 126 Kg Total catch: 611.35 CATCH/HOUR: 1222.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, female | 682.00 | 824 | 55.78 | 1218 |
| Helicolenus dactylopterus | 185.00 | 3020 | 15.13 | |
| Merluccius capensis, male | 120.00 | 224 | 9.81 | 1219 |
| Merluccius paradoxus, female | 98.80 | 352 | 8.08 | 1216 |
| Lophius upsicephalus | 48.70 | 32 | 3.98 | |
| Coelorinchus fasciatus | 25.20 | 880 | 2.06 | |
| Galeus polli | 13.40 | 300 | 1.10 | |
| Solenocera africana | 10.00 | | 0.82 | |
| Nezumia leonis | 9.80 | 640 | 0.80 | |
| Epigonus denticulatus | 5.60 | 180 | 0.46 | |
| PORTUNIDAE | 5.20 | 320 | 0.43 | |
| Lepidopus caudatus | 3.70 | 8 | 0.30 | |
| Merluccius paradoxus, male | 3.20 | 8 | 0.26 | 1217 |
| Genypterus capensis | 2.94 | 6 | 0.24 | |
| Todarodes sagittatus | 2.58 | 4 | 0.21 | |
| Coelorinchus coelorhinc. polli | 2.00 | 20 | 0.16 | |
| MYCTOPHIDAE | 2.00 | 240 | 0.16 | |
| Schedophilus huttoni | 1.26 | 2 | 0.10 | |
| Trachurus capensis | 0.92 | 4 | 0.08 | |
| Austroglossus microlepis | 0.40 | 6 | 0.03 | |
| Total | 1222.70 | | 99.99 | |

PROJECT STATION: 437

DATE:20/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2258
start stop duration Long E 1309
TIME :16:00:00 16:36:00 36 (min) Purpose code: 2
LOG :8398.40 8400.00 1.60 Area code : 2
FDEPTH: 299 293 GearCond.code:
BDEPTH: 299 293 Validity code: 5
Towing dir: 360° Wire out: 940 m Speed: 30 kn*10

Sorted: 94 Kg Total catch: 232.10 CATCH/HOUR: 386.83

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius paradoxus, female | 141.38 | 543 | 36.55 | 1221 |
| Trachurus capensis | 101.43 | 188 | 26.22 | 1220 |
| Merluccius paradoxus, male | 53.07 | 83 | 13.72 | 1222 |
| Helicolenus dactylopterus | 28.95 | 765 | 7.48 | 1223 |
| Nezumia leonis | 13.20 | 360 | 3.41 | |
| Brama brama | 12.60 | 8 | 3.26 | 1224 |
| Galeus polli | 8.85 | 293 | 2.29 | |
| Lophius upsicephalus | 6.78 | 2 | 1.75 | |
| Todarodes sagittatus | 6.60 | 23 | 1.71 | |
| Epigonus denticulatus | 5.70 | 263 | 1.47 | |
| Squalus megalops | 3.23 | 8 | 0.83 | |
| CHLOROPHTHALMIDAE | 3.08 | 120 | 0.80 | |
| PORTUNIDAE | 1.95 | 60 | 0.50 | |
| Total | 386.82 | | 99.99 | |

PROJECT STATION: 438

DATE:20/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2248
start stop duration Long E 1310
TIME :23:10:00 23:40:00 30 (min) Purpose code: 1
LOG :8410.60 8412.10 1.50 Area code : 2
FDEPTH: 313 313 GearCond.code: 1
BDEPTH: 313 313 Validity code:
Towing dir: 355° Wire out: 900 m Speed: 36 kn*10

Sorted: 205 Kg Total catch: 446.22 CATCH/HOUR: 892.44

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, female | 455.60 | 436 | 51.05 | 1228 |
| Merluccius capensis, male | 202.40 | 300 | 22.68 | 1227 |
| Merluccius paradoxus, female | 61.20 | 340 | 6.86 | 1226 |
| Helicolenus dactylopterus | 52.40 | 1320 | 5.87 | 1229 |
| Trachurus capensis | 28.08 | 70 | 3.15 | 1230 |
| Todarodes sagittatus | 24.72 | 36 | 2.77 | |
| Nezumia leonis | 24.64 | 262 | 2.76 | |
| Lophius upsicephalus | 20.30 | 28 | 2.27 | |
| CHLOROPHTHALMIDAE | 9.46 | 378 | 1.06 | |
| Galeus polli | 8.12 | 204 | 0.91 | |
| Epigonus denticulatus | 3.08 | 162 | 0.35 | |
| Merluccius paradoxus, male | 2.36 | 16 | 0.26 | 1225 |
| Merluccius capensis, juveniles | 0.08 | 8 | 0.01 | |
| Total | 892.44 | | 100.00 | |

PROJECT STATION: 439

DATE:21/ 6/94 GEAR TYPE: PT No:2 POSITION:Lat S 2306
start stop duration Long E 1424
TIME :09:18:00 09:29:00 11 (min) Purpose code: 1
LOG :8492.70 8493.40 0.70 Area code :
FDEPTH: 10 10 GearCond.code:
BDEPTH: 26 28 Validity code:
Towing dir: 340° Wire out: 100 m Speed: 3 kn*10

Sorted: 17 Kg Total catch: 153.13 CATCH/HOUR: 835.25

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Trachurus, Juveniles | 417.27 | 88020 | 49.96 | 1232 |
| Etrumeus whiteheadi | 287.18 | 76336 | 34.38 | 1231 |
| Engraulis capensis | 80.51 | 11967 | 9.64 | 1234 |
| Thyrsites atun | 21.82 | 5 | 2.61 | |
| Sardinops ocellatus | 21.60 | 3976 | 2.59 | 1233 |
| TRIGLIDAE | 4.42 | 2553 | 0.53 | |
| Sufflogobius bibarbatus | 1.47 | 393 | 0.18 | |
| Small squids | 0.98 | 393 | 0.12 | |
| Total | 835.25 | | 100.01 | |

PROJECT STATION: 440

DATE:21/ 6/94 GEAR TYPE: PT No:5 POSITION:Lat S 2253
start stop duration Long E 1409
TIME :16:29:00 16:34:00 5 (min) Purpose code: 1
LOG :8549.90 8550.10 0.20 Area code : 2
FDEPTH: 70 70 GearCond.code:
BDEPTH: 112 110 Validity code:
Towing dir: 304° Wire out: 250 m Speed: 35 kn*10

Sorted: Kg Total catch: 0.80 CATCH/HOUR: 9.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 6.00 | 3312 | 62.50 | 1235 |
| Merluccius capensis, juveniles | 2.04 | 948 | 21.25 | 1236 |
| Trachurus, Juveniles | 1.20 | 372 | 12.50 | 1237 |
| Small squids | 0.36 | 36 | 3.75 | |
| Total | 9.60 | | 100.00 | |

PROJECT STATION: 441

DATE:22/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2212
start stop duration Long E 1300
TIME :01:03:00 01:23:00 20 (min) Purpose code: 1
LOG :8635.50 8636.60 1.10 Area code : 2
FDEPTH: 150 150 GearCond.code:
BDEPTH: 280 285 Validity code:
Towing dir: 311° Wire out: 500 m Speed: 33 kn*10

Sorted: Kg Total catch: 0.75 CATCH/HOUR: 2.25

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 1.44 | 36 | 64.00 | 1238 |
| Trachurus capensis | 0.81 | 9 | 36.00 | |
| Total | 2.25 | | 100.00 | |

PROJECT STATION: 442

DATE:22/ 6/94 GEAR TYPE: BT No:6 POSITION:Lat S 2200
start stop duration Long E 1353
TIME :10:10:00 10:45:00 35 (min) Purpose code: 1
LOG :8717.00 8718.50 1.50 Area code : 2
FDEPTH: 78 78 GearCond.code:
BDEPTH: 78 78 Validity code:
Towing dir: 90° Wire out: 240 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Total | | | | |

PROJECT STATION: 443

DATE:22/ 6/94 GEAR TYPE: PT No:1 POSITION:Lat S 2144
start stop duration Long E 1333
TIME :17:44:00 17:48:00 4 (min) Purpose code: 1
LOG :8782.80 8783.10 0.30 Area code : 2
FDEPTH: 10 10 GearCond.code:
BDEPTH: 114 114 Validity code:
Towing dir: 270° Wire out: 150 m Speed: 41 kn*10

Sorted: Kg Total catch: 0.19 CATCH/HOUR: 2.85

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 2.70 | 1605 | 94.74 | 1240 |
| Trachurus, Juveniles | 0.15 | 30 | 5.26 | 1239 |
| Total | 2.85 | | 100.00 | |

PROJECT STATION: 444

DATE:22/ 6/94 GEAR TYPE: PT No:2 POSITION:Lat S 2143
start stop duration Long E 1322
TIME :19:00:00 19:10:00 10 (min) Purpose code: 1
LOG :8786.00 8786.60 0.70 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 116 112 Validity code:
Towing dir: 32° Wire out: 150 m Speed: 4 kn*10

Sorted: Kg Total catch: 0.07 CATCH/HOUR: 0.42

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Merluccius capensis, juveniles | 0.24 | 102 | 57.14 | 1242 |
| Trachurus, Juveniles | 0.18 | 72 | 42.86 | 1241 |
| Total | 0.42 | | 100.00 | |

PROJECT STATION: 445

DATE:23/ 6/94 GEAR TYPE: PT No:7 POSITION:Lat S 2213
start stop duration Long E 1354
TIME :00:15:00 00:30:00 15 (min) Purpose code: 1
LOG :8832.80 8833.70 0.90 Area code : 2
FDEPTH: 10 10 GearCond.code:
BDEPTH: 98 98 Validity code:
Towing dir: 324° Wire out: 150 m Speed: 41 kn*10

Sorted: 6 Kg Total catch: 119.00 CATCH/HOUR: 476.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP.NO. |
|---|---|---|---|---|
| Etrumeus whiteheadi | 260.80 | 61768 | 54.79 | 1244 |
| Engraulis capensis | 176.00 | 18972 | 36.97 | 1243 |
| Trachurus capensis | 34.40 | 1360 | 7.23 | 1246 |
| Merluccius capensis, juveniles | 2.40 | 1520 | 0.50 | 1247 |
| Sardinops ocellatus | 2.40 | 1520 | 0.50 | 1245 |
| Total | 476.00 | | 99.99 | |

# Annex V Biomass and numbers

Total biomass (tonnes) of pilchard, *Sardinops ocellatus*, and total number per 1 cm length class ( in millions) per area.

| Area | | Baía dos Tigres | 16°40-17°15 | 17°15-17°45 | 18°00-21°00 | 23°00-23°30 |
|---|---|---|---|---|---|---|
| Size of the Area ($nm^2$) | | 35.4 | 166.7 | 99 | 668 | 144 |
| Mean Sa value ($m^2/nm^2$) | | 14432 | 3530 | 756 | 46 | |
| Total biomass (tonnes) | | 108325 | 131190 | 16206 | 3127 | 712 |
| No. per length class (millions): | 6 | | | | | 78 |
| | 7 | | | | | 97 |
| | 8 | | | 5 | 48 | 14 |
| | 9 | | | 34 | 144 | 34 |
| | 10 | | 3 | 9 | 82 | 37 |
| | 11 | | 5 | 7 | 4 | |
| | 12 | | 8 | 7 | 1 | |
| | 13 | | 6 | 1 | 15 | |
| | 14 | | | 1 | 47 | |
| | 15 | | | | 11 | |
| | 16 | | | 1 | 3 | |
| | 17 | | | 2 | 1 | |
| | 18 | | 1 | 2 | | |
| | 19 | | 1 | 5 | | |
| | 20 | 53 | 1 | 16 | | |
| | 21 | 552 | 127 | 52 | | |
| | 22 | 539 | 450 | 45 | | |
| | 23 | 184 | 553 | 33 | | |
| | 24 | 39 | 261 | 16 | | |
| | 25 | | 22 | 8 | | |
| | 26 | | 8 | 2 | | |
| | 27 | | 3 | 1 | | |
| Sum | | 1367 | 1449 | 247 | 356 | 260 |

Total biomass (tonnes) of round herring, *Etrumeus whiteheadi*, and total number per 1 cm length class (in millions) per area.

| Area | | 16°40-17°15 | 17°15-19°15 | 19°50-21° | 23°00-25°15 |
|---|---|---|---|---|---|
| Size of the Area ($nm^2$) | | 128 | 328 | 645 | 869 |
| Mean Sa value ($m^2/nm^2$) | | 109 | 50 | 648 | |
| Total biomass (tonnes) | | 1762 | 1783 | 50299 | 17638 |
| No. per length class (millions): | 6 | | | | 1183 |
| | 7 | | | | 1797 |
| | 8 | | | 2 | 2054 |
| | 9 | | | 18 | 854 |
| | 10 | | 1 | 35 | 234 |
| | 11 | | 4 | 100 | 34 |
| | 12 | | 7 | 314 | 40 |
| | 13 | | 4 | 321 | 32 |
| | 14 | 2 | 13 | 185 | 11 |
| | 15 | 8 | 37 | 188 | |
| | 16 | 24 | 27 | 440 | |
| | 17 | 67 | 3 | 466 | |
| | 18 | 27 | | 204 | |
| | 19 | | | 62 | |
| | 20 | | | 17 | |
| Sum | | 128 | 96 | 2352 | 6239 |

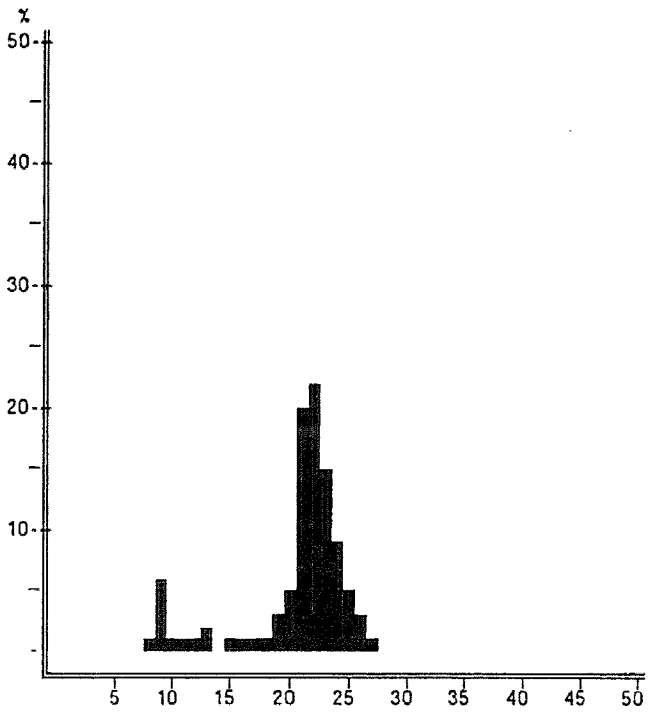
Total biomass (tonnes) of anchovy, *Engraulis capensis*, and total number per 1 cm length class ( in millions) per area.

| Area | | 17°07-17°15 | 17°15-18°15 | 19°-21° | 21°00-23°30 |
|---|---|---|---|---|---|
| Size of the Area ($nm^2$) | | 122 | 289 | 783 | 429 |
| Mean Sa value ($m^2/nm^2$) | | 459 | 282 | 298 | |
| Total biomass (tonnes) | | 6630 | 6904 | 22394 | 17000 |
| No. per length class (millions): | 7 | | | | 251 |
| | 8 | 7 | 38 | 15 | 700 |
| | 9 | 5 | 195 | 31 | 1498 |
| | 10 | 34 | 53 | 84 | 1002 |
| | 11 | 75 | 71 | 97 | 92 |
| | 12 | 76 | 126 | 82 | |
| | 13 | 126 | 154 | 322 | |
| | 14 | 184 | 115 | 917 | |
| | 15 | 11 | 18 | 105 | |
| | 16 | 1 | | 4 | |
| Sum: | | 519 | 770 | 1657 | 3543 |

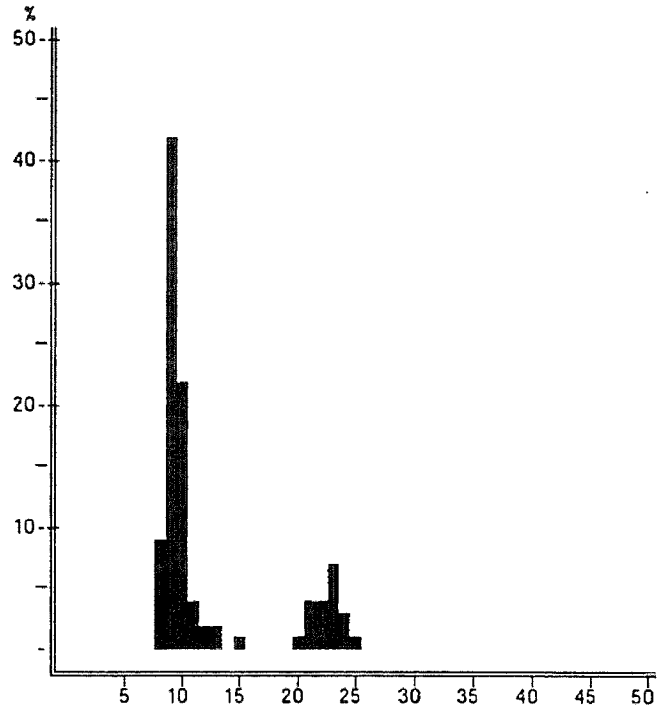
Total biomass (tonnes) of horse mackerel, Trachurus capensis, and total number per 1 cm length class (in millions) per area.

| Area | | 16°40'-17°15' | 17°15'-21°00' | 21°00'-21°40' | 23°00'-25°15' | Sum |
|---|---|---|---|---|---|---|
| Size of the area ($nm^2$) | | 730 | 9 224 | 2 560 | 796 | 13 310 |
| Mean Sa value ($m^2/nm^2$) | | 606 | 1 003 | 255 | 124 | |
| Total Biomass (tonnes) | | 61 589 | 1 331 835 | 101 873 | 10 485 | 1 505 782 |
| No. per length class (mill.) | 6 | | | 3 | 8 | 11 |
| | 7 | 10 | 2 480 | 4 | 251 | 2 745 |
| | 8 | 13 | 3 370 | 18 | 801 | 4 202 |
| | 9 | 18 | 5 660 | 26 | 230 | 5 934 |
| | 10 | 19 | 3 750 | 2 | 1 | 3 772 |
| | 11 | 11 | 3 000 | | 19 | 3 030 |
| | 12 | 26 | 4 070 | 54 | 14 | 4 164 |
| | 13 | 431 | 8 050 | 258 | 14 | 8 753 |
| | 14 | 1 540 | 13 500 | 649 | 29 | 15 718 |
| | 15 | 519 | 9 020 | 426 | 6 | 9 971 |
| | 16 | 73 | 4 220 | 235 | 15 | 4 543 |
| | 17 | 23 | 2 060 | 552 | 12 | 2 647 |
| | 18 | 19 | 1 230 | 475 | 50 | 1 774 |
| | 19 | 19 | 674 | 266 | 12 | 971 |
| | 20 | 1 | 382 | 90 | | 473 |
| | 21 | | 274 | 51 | | 325 |
| | 22 | 17 | 490 | | | 507 |
| | 23 | 17 | 528 | 22 | | 567 |
| | 24 | | 598 | 9 | | 607 |
| | 25 | | 216 | 1 | | 217 |
| | 26 | | 70 | 1 | | 71 |
| Sum | | 2 756 | 63 642 | 3 142 | 1 472 | 71 012 |

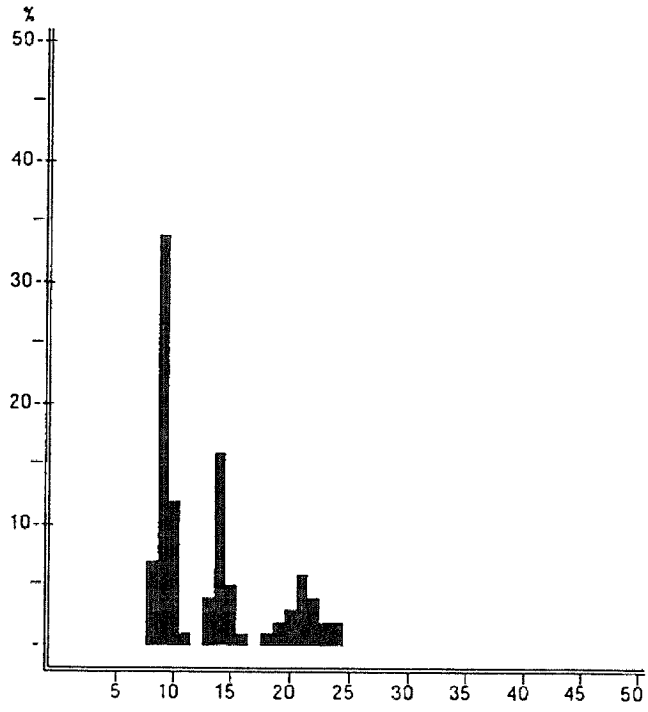
# Annex VI Length frequencies of different areas



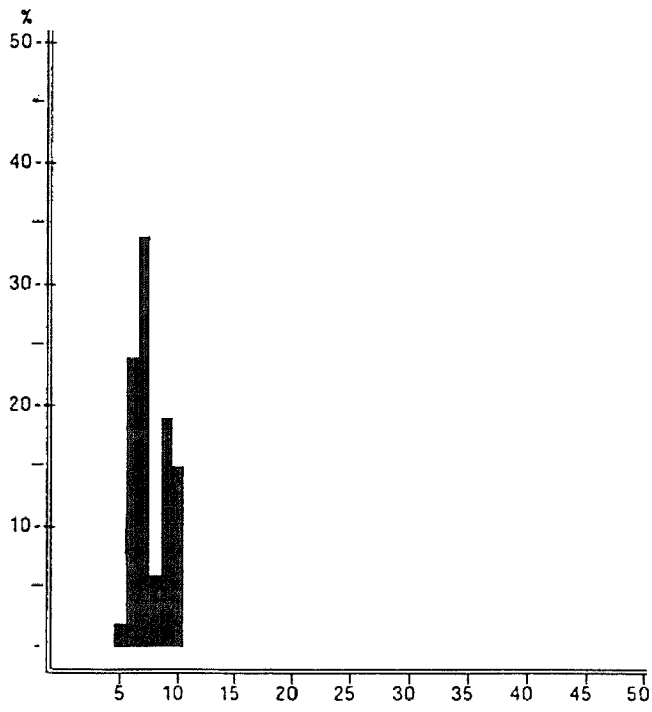

Sardinops ocellatus
Area 16,00° - 18,00°



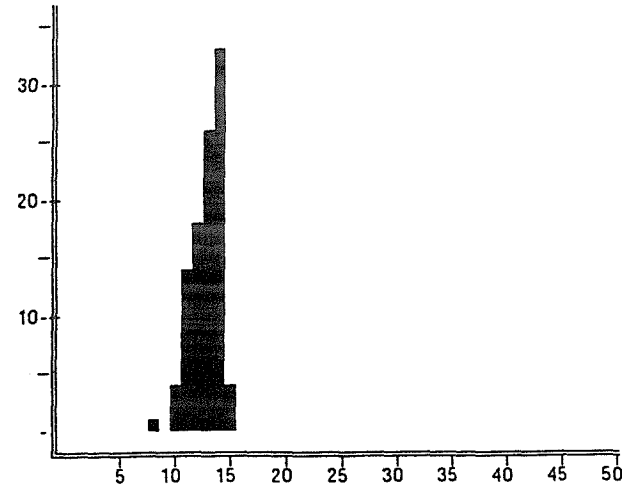

Sardinops ocellatus
Area 18,00° - 20,00°



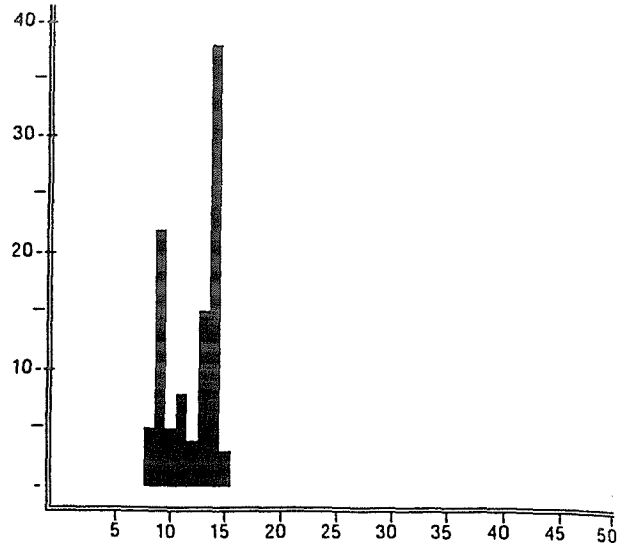

Sardinops ocellatus
Area 20°00 - 22°00



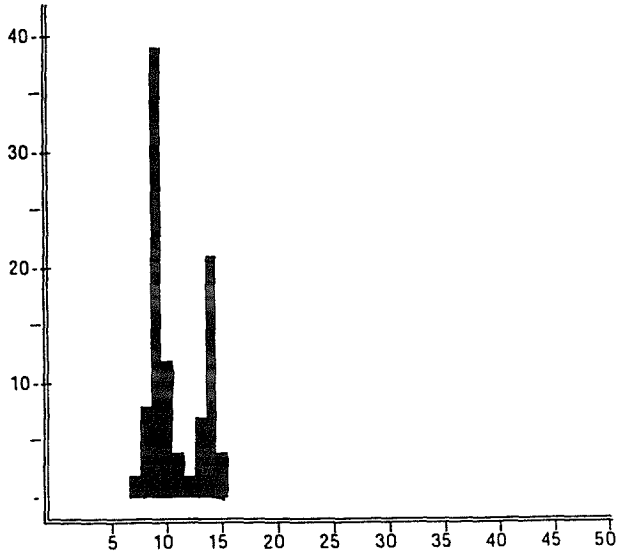

Sardinops ocellatus
Area 22°00 - 24°00



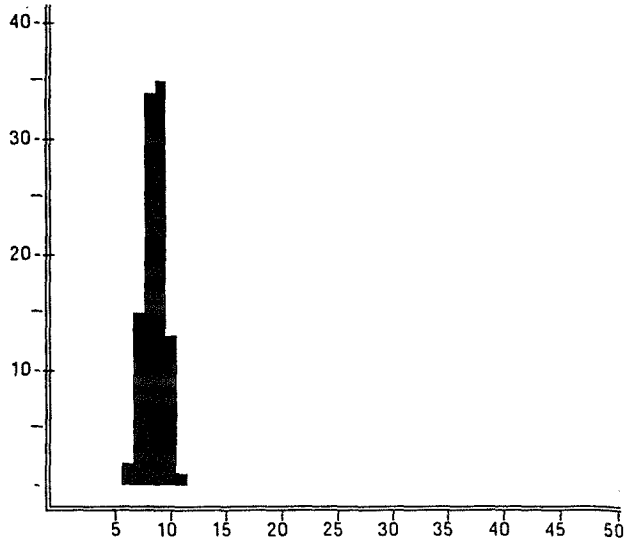

Engraulis capensis
Area 16,00° - 18,00°



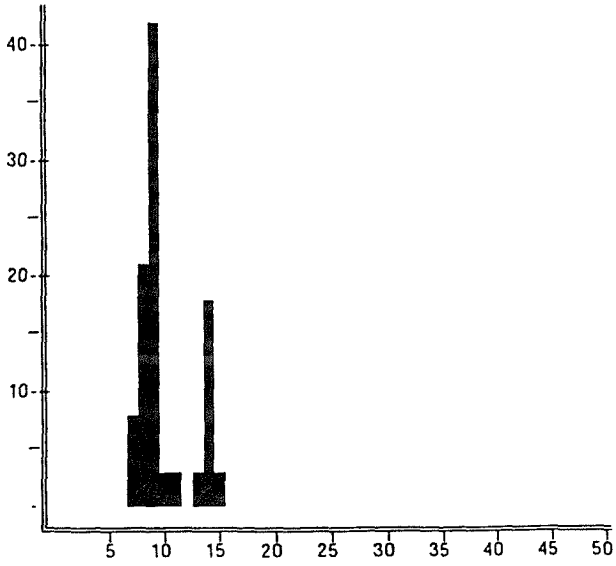

Engraulis capensis
Area 18,00° - 20,00°



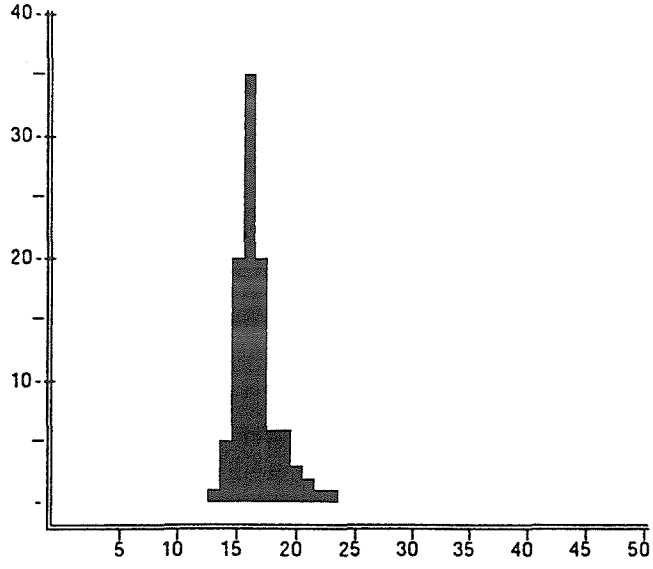

Engraulis capensis
Area 20°00 - 22°00



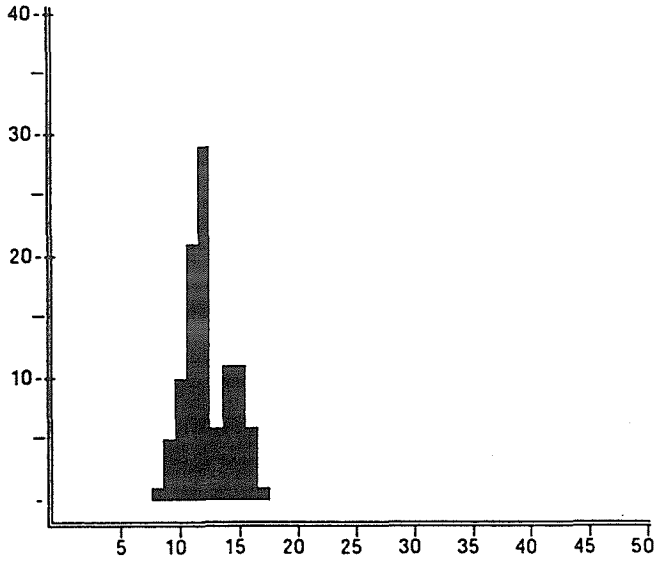

Engraulis capensis
Area 22°00 - 24°00



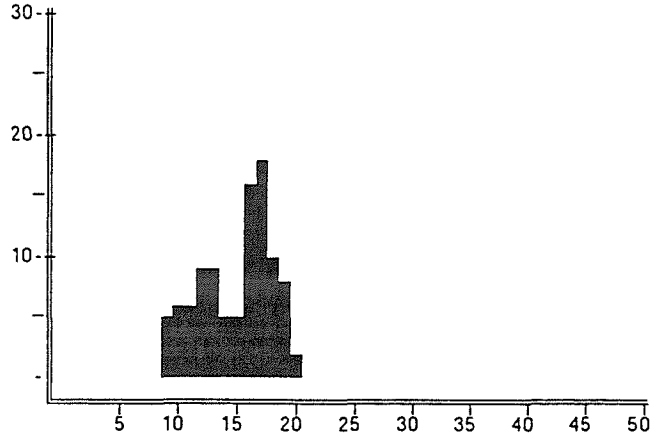

Engraulis capensis
Area 24°00 - 26°00



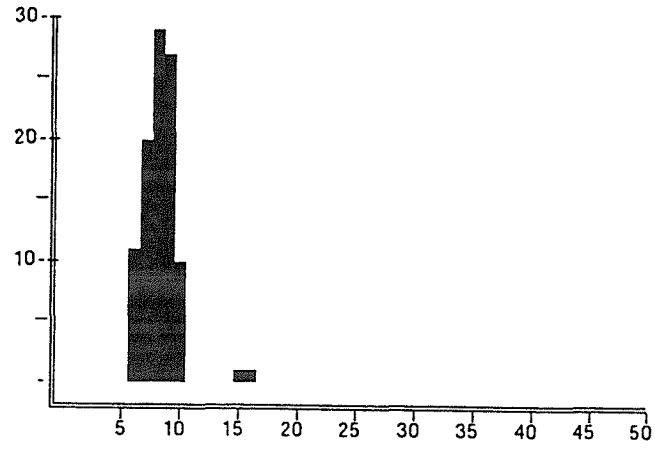

Etrumeus whiteheadi
Area 16,00° - 18,00°



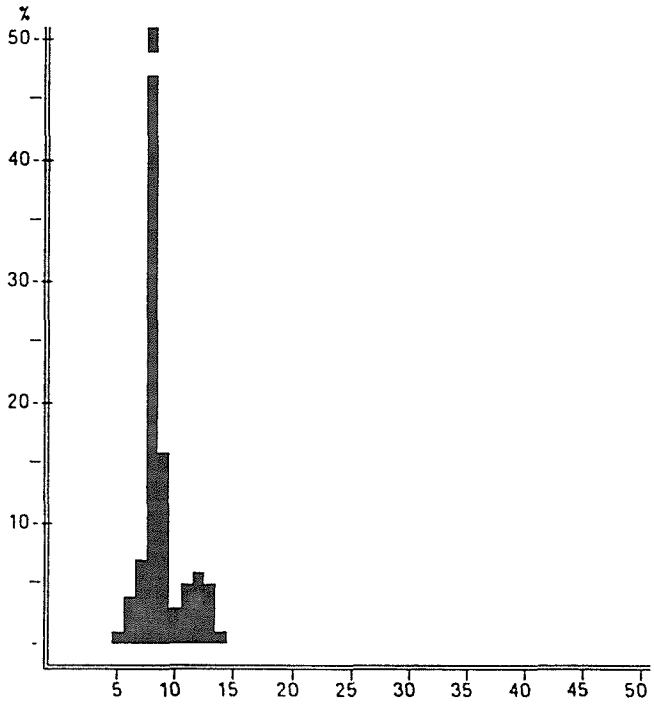

Etrumeus whiteheadi
Area 18,00° - 20,00°



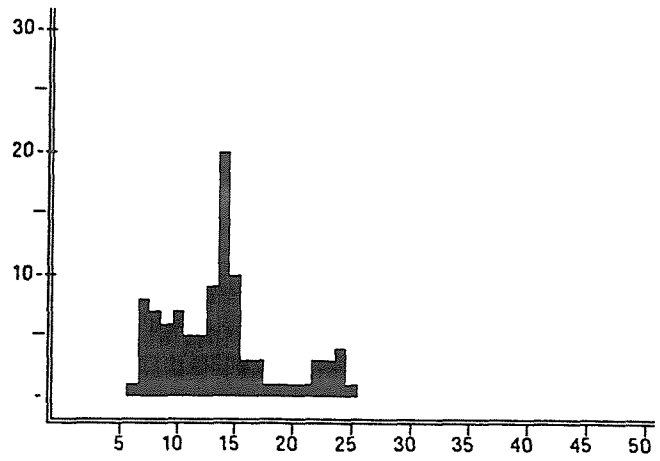

Etrumeus whiteheadi
Area 20°00 - 22°00



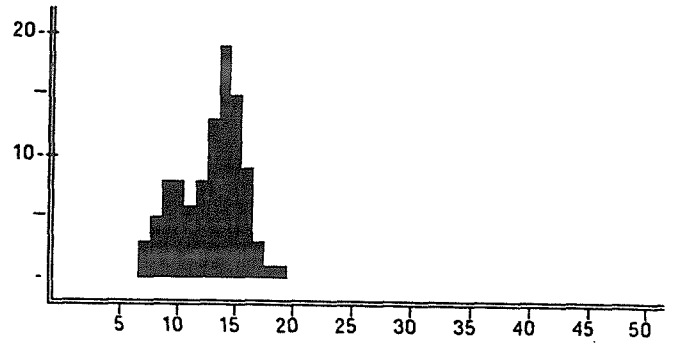

Etrumeus whiteheadi
Area 22°00 - 24°00



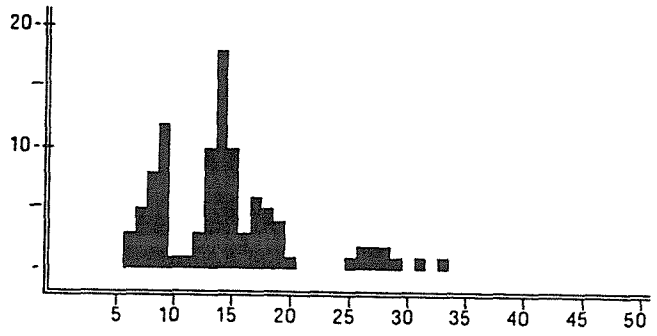

Etrumeus whiteheadi
Area 24°00 - 26°00



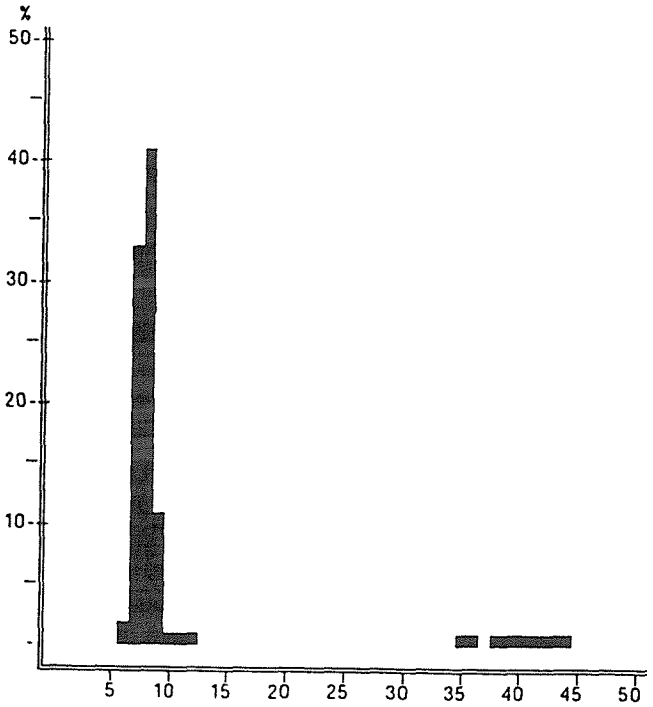

Trachurus capensis
AREA 16°00 - 18°00



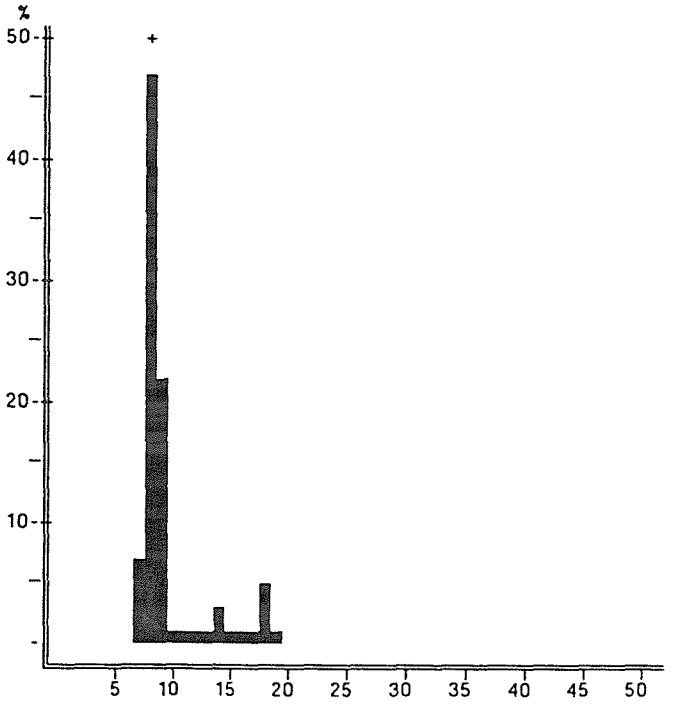

Trachurus capensis
Area 18°00 - 20°00




Trachurus capensis
Area 20°00 - 22°00

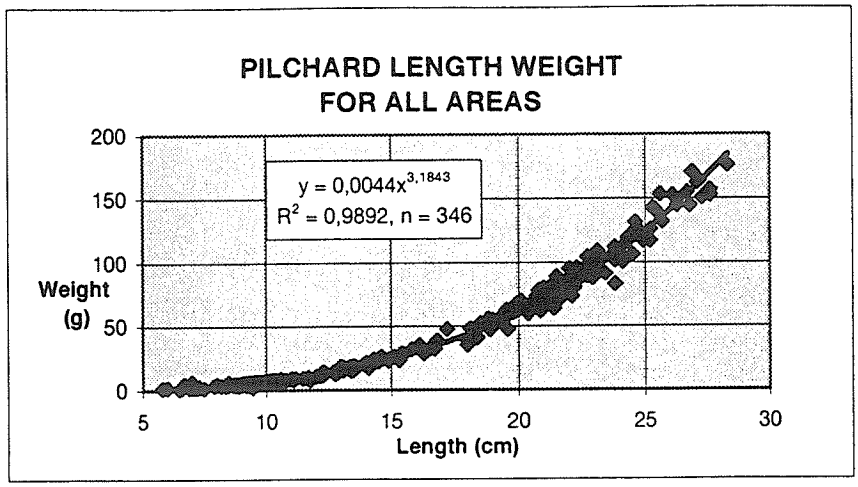


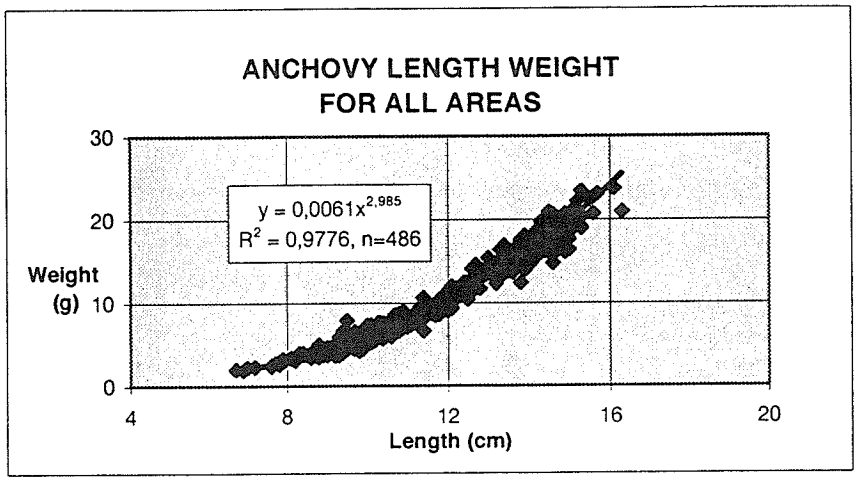

Trachurus capensis
Area 22°00 - 24°00

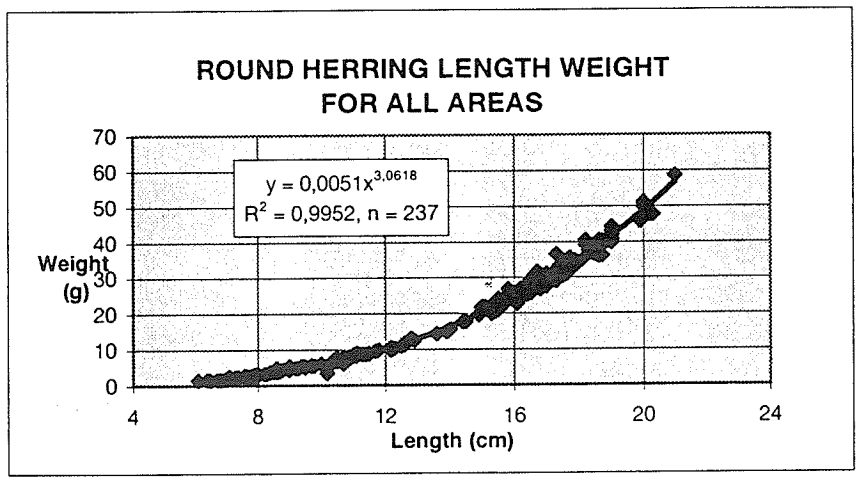


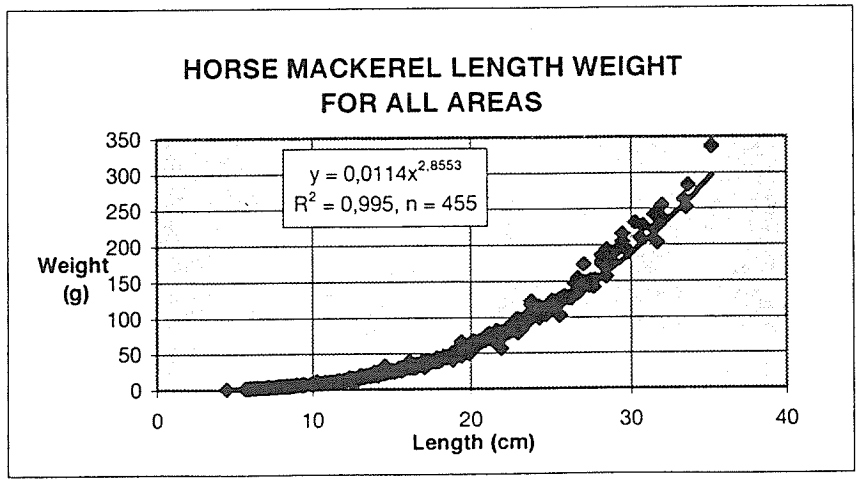

Trachurus, Juveniles
Area 24°00 - 26°00

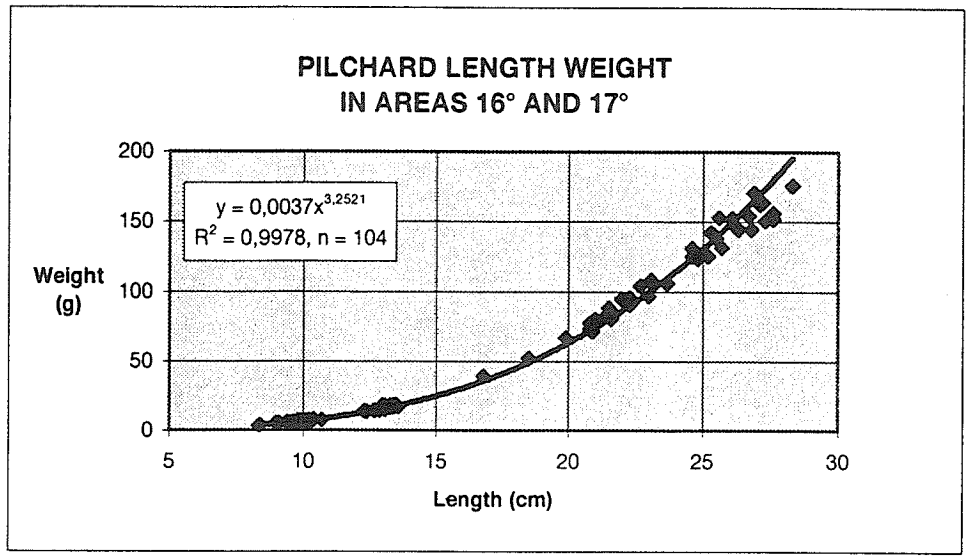
# Annex VII Length-weight relations

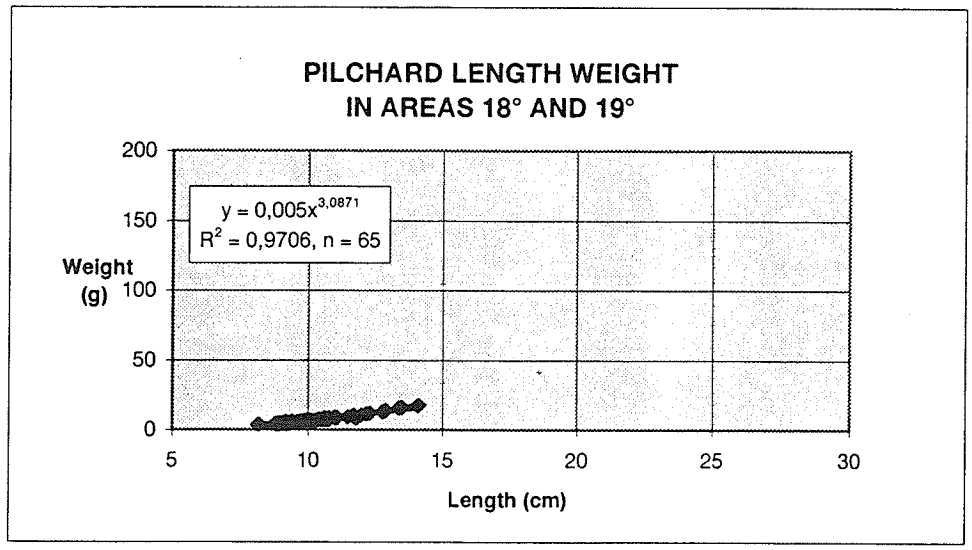


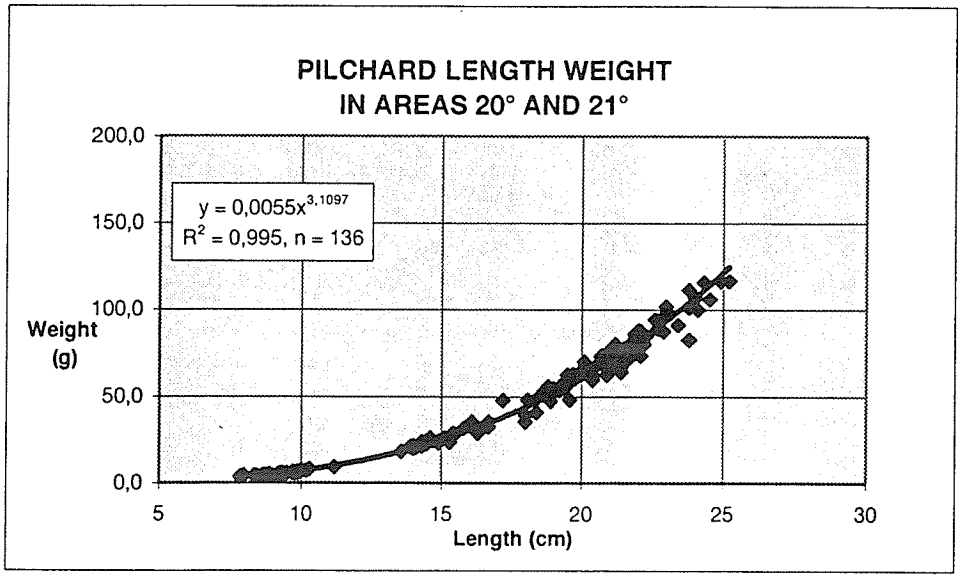



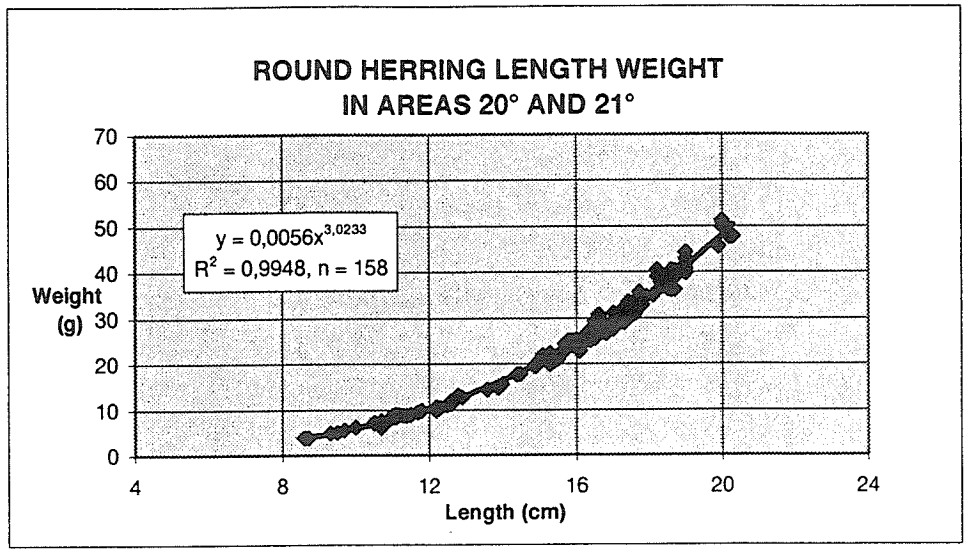



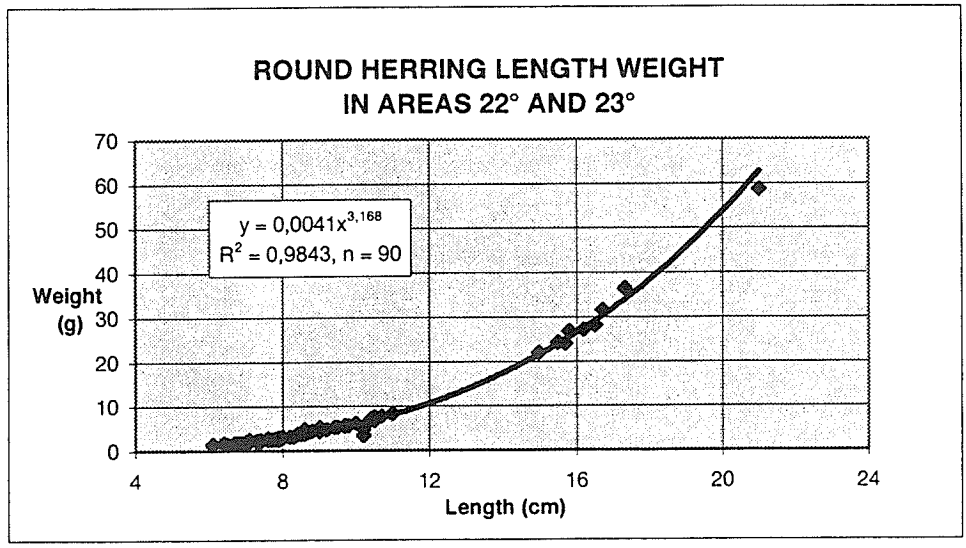



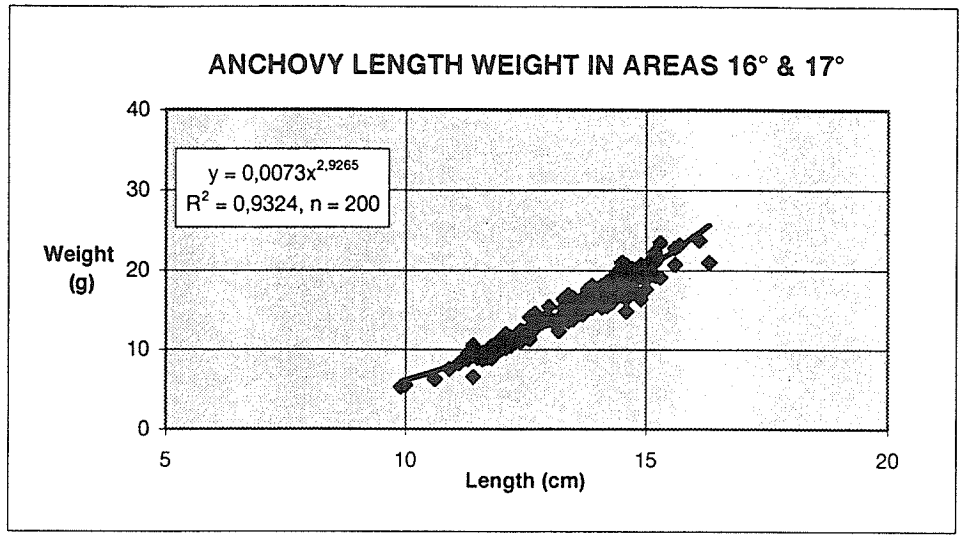

PILCHARD LENGTH WEIGHT
IN AREAS 16° AND 17°
y = 0,0037x^3,2521
R² = 0,9978, n = 104
Weight (g)
Length (cm)
0
50
100
150
200
5
10
15
20
25
30

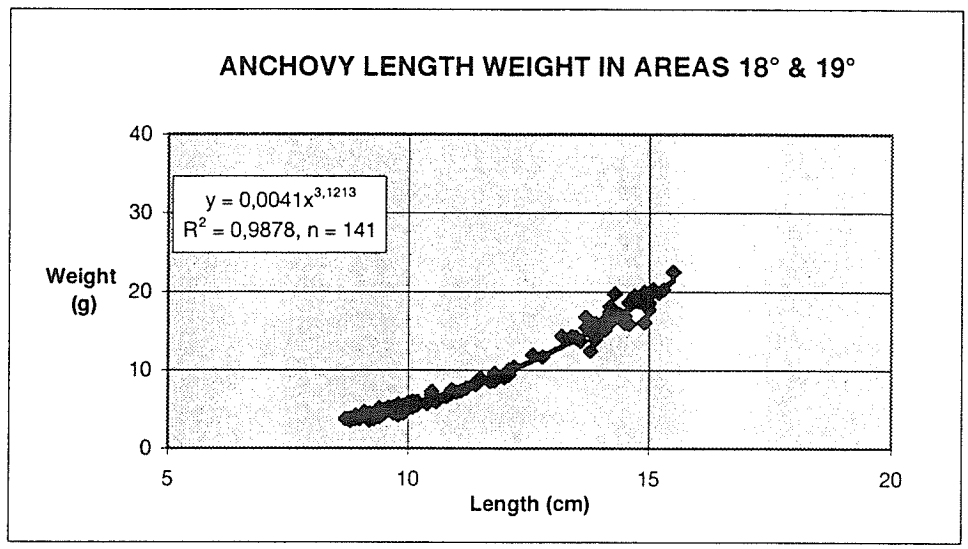

PILCHARD LENGTH WEIGHT
IN AREAS 18° AND 19°
y = 0,005x^3,0871
R² = 0,9706, n = 65
Weight (g)
Length (cm)
0
50
100
150
200
5
10
15
20
25
30

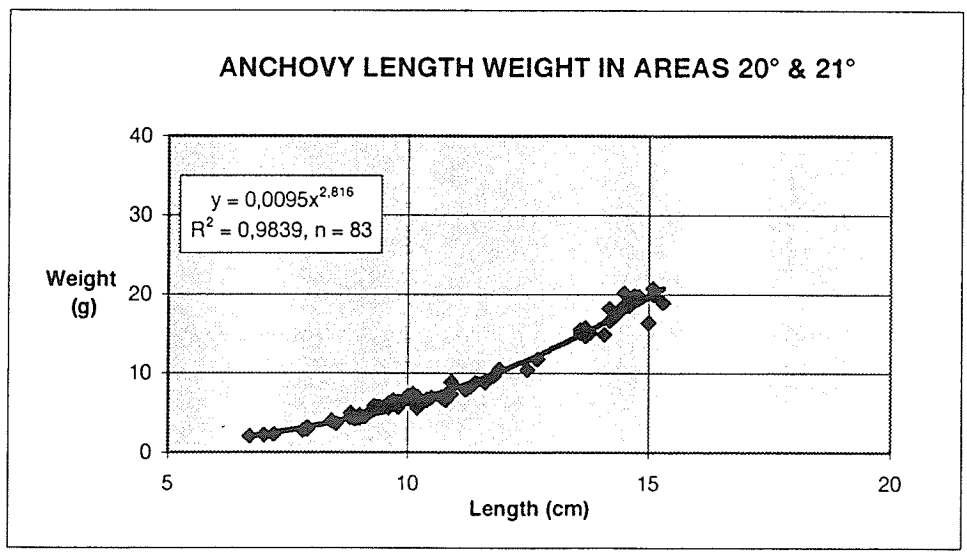

PILCHARD LENGTH WEIGHT
IN AREAS 20° AND 21°
y = 0,0055x^3,1097
R² = 0,995, n = 136
Weight (g)
Length (cm)
0,0
50,0
100,0
150,0
200,0
5
10
15
20
25
30

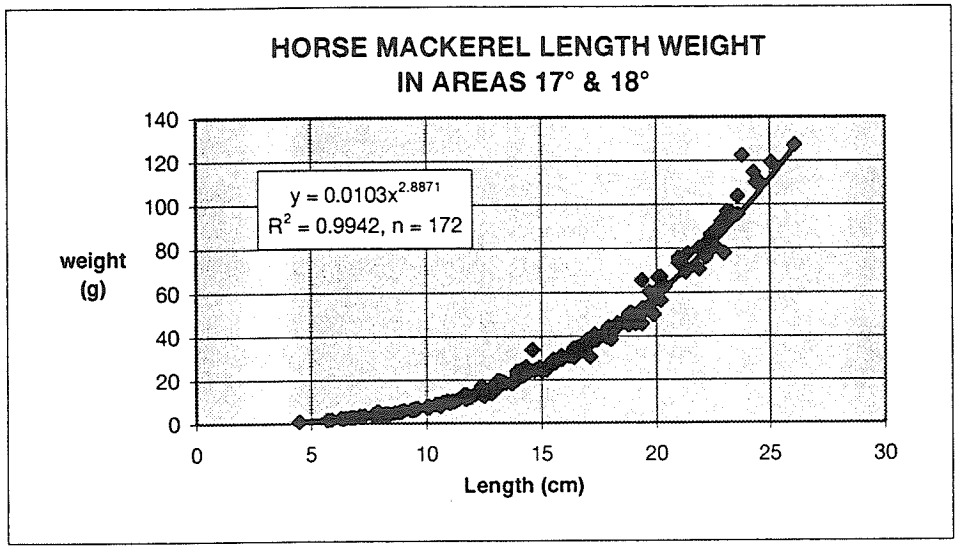

ROUND HERRING LENGTH WEIGHT
IN AREAS 20° AND 21°
y = 0,0056x^3,0233
R^2 = 0,9948, n = 158
Weight (g)
70
60
50
40
30
20
10
0
4
8
12
16
20
24
Length (cm)

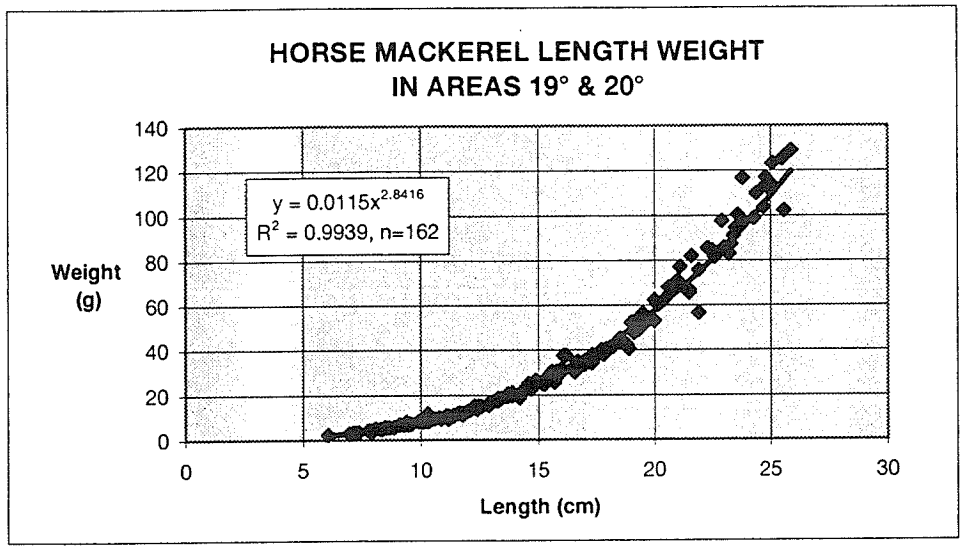

ROUND HERRING LENGTH WEIGHT
IN AREAS 22° AND 23°
y = 0,0041x^3,168
R^2 = 0,9843, n = 90
Weight (g)
70
60
50
40
30
20
10
0
4
8
12
16
20
24
Length (cm)

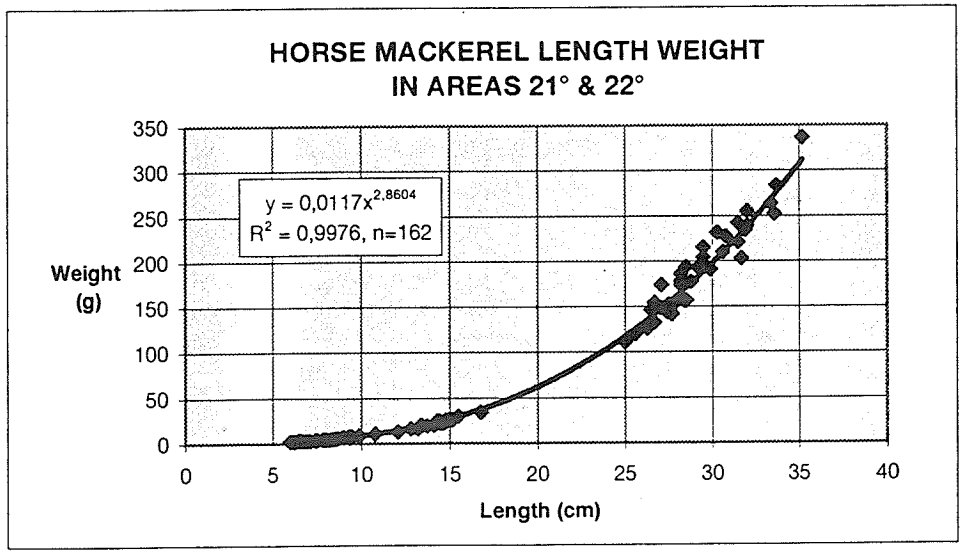

ANCHOVY LENGTH WEIGHT IN AREAS 16° & 17°
y = 0,0073x^2,9265
R^2 = 0,9324, n = 200
Weight (g)
Length (cm)
0
10
20
30
40
5
10
15
20


ANCHOVY LENGTH WEIGHT IN AREAS 18° & 19°
y = 0,0041x^3,1213
R^2 = 0,9878, n = 141
Weight (g)
Length (cm)
0
10
20
30
40
5
10
15
20


ANCHOVY LENGTH WEIGHT IN AREAS 20° & 21°
y = 0,0095x^2,816
R^2 = 0,9839, n = 83
Weight (g)
Length (cm)
0
10
20
30
40
5
10
15
20


HORSE MACKEREL LENGTH WEIGHT
IN AREAS 17° & 18°
y = 0.0103x^2.8871
R^2 = 0.9942, n = 172
weight (g)
Length (cm)
0
20
40
60
80
100
120
140
0
5
10
15
20
25
30


HORSE MACKEREL LENGTH WEIGHT
IN AREAS 19° & 20°
y = 0.0115x^2.8416
R^2 = 0.9939, n=162
Weight (g)
Length (cm)
0
20
40
60
80
100
120
140
0
5
10
15
20
25
30


HORSE MACKEREL LENGTH WEIGHT
IN AREAS 21° & 22°
y = 0,0117x^2.8604
R^2 = 0,9976, n=162
Weight (g)
Length (cm)
0
50
100
150
200
250
300
350
0
5
10
15
20
25
30
35
40

# Annex VIII Reproductive status

**PILCHARD BIOLOGICAL DATA**

**16° - 17°S**

| *Length Class* | *n* | *Mean Weight* | *Sex Ratio* | *% per Maturity Stage* | | | | | *Mean Gonad Weight* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *1* | *2* | *3* | *4* | *5* | |
| 14,0 - 19,9 | insufficient number of observations | | | | | | | | |
| 19,0 - 19,9 | 12 | 60,64 | 0,67 | 25 | 50 | 25 | | | 1,38 |
| 20,0 - 20,9 | 13 | 70,93 | 0,46 | 38 | 16 | 23 | 15 | 8 | 1,11 |
| 21,0 -21,9 | 20 | 80,45 | 0,60 | 45 | 40 | 10 | 5 | | 1,15 |
| 22,0 - 22,9 | 20 | 90,47 | 0,60 | 10 | 15 | 30 | 30 | 15 | 2,19 |
| 23,0 - 23,9 | 20 | 102,35 | 0,65 | 5 | 5 | 30 | 35 | 25 | 3,04 |
| 24,0 - 24,9 | 11 | 115,28 | 0,36 | | 18 | 36 | 36 | 9 | 3,43 |
| 25,0 - 28,9 | insufficient number of observations | | | | | | | | |

**20° - 21°S**

| *Length Class* | *n* | *Mean Weight* | *Sex Ratio* | *% per Maturity Stage* | | | | | *Mean Gonad Weight* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *1* | *2* | *3* | *4* | *5* | |
| 14,0 - 14,9 | 11 | 22,50 | 0,70 | 91 | | 9 | | | 0,03 |
| 15,0 - 18,9 | insufficient number of observations | | | | | | | | |
| 19,0 - 19,9 | 10 | 55,62 | 0,80 | 30 | 50 | 10 | 10 | | 1,31 |
| 20,0 - 20,9 | 15 | 66,37 | 0,73 | 33 | 33 | 33 | | | 0,87 |
| 21,0 -21,9 | 15 | 74,95 | 0,53 | 13 | 47 | 20 | 7 | 13 | 1,14 |
| 22,0 - 22,9 | 11 | 85,00 | 0,36 | 9 | 27 | 18 | 18 | 27 | 1,41 |
| 23,0 - 25,9 | insufficient number of observations | | | | | | | | |

**ANCHOVY BIOLOGICAL DATA**

**16° - 17°S**

| *Length Class* | *n* | *Mean Weight* | *Sex Ratio* | *% per Maturity Stage* | | | | | *Mean Gonad Weight* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *1* | *2* | *3* | *4* | *5* | |
| 10,0 - 10,9 | insufficient number of observations | | | | | | | | |
| 11,0 - 11,9 | 14 | 9,10 | 0,80 | 100 | | | | | 0,00 |
| 12,0 - 12,9 | 18 | 12,08 | 0,50 | 72 | 17 | 11 | | | 0,08 |
| 13,0 - 13,9 | 20 | 15,22 | 0,40 | 65 | 20 | 15 | | | 0,12 |
| 14,0 - 14,9 | 20 | 17,56 | 0,18 | 70 | 15 | 15 | | | 0,14 |
| 15,0 - 15,9 | 13 | 20,65 | 0,30 | 54 | 15 | 31 | | | 0,25 |
| 16,0 - 16,9 | insufficient number of observations | | | | | | | | |

**18° - 19°S**

| *Length Class* | *n* | *Mean Weight* | *Sex Ratio* | *% per Maturity Stage* | | | | | *Mean Gonad Weight* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *1* | *2* | *3* | *4* | *5* | |
| 10,0 - 12,9 | insufficient number of observations | | | | | | | | |
| 13,0 - 13,9 | 13 | 14,87 | 0,62 | 92 | 8 | | | | 0,02 |
| 14,0 - 14,9 | 20 | 17,50 | 0,33 | 100 | | | | | 0,06 |
| 15,0 - 15,9 | 11 | 19,63 | 0,30 | 73 | 27 | | | | 0,13 |
| 16,0 - 16,9 | insufficient number of observations | | | | | | | | |

**20° - 21°S**

| *Length Class* | *n* | *Mean Weight* | *Sex Ratio* | *% per Maturity Stage* | | | | | *Mean Gonad Weight* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *1* | *2* | *3* | *4* | *5* | |
| 10,0 - 10,9 | 11 | 6,59 | - | 100 | | | | | |
| 11,0 - 11,9 | insufficient number of observations | | | | | | | | |
| 14,0 - 14,9 | 12 | 18,14 | 0,08 | 17 | 42 | 25 | | 16 | 0,14 |
| 15,0 - 16,9 | insufficient number of observations | | | | | | | | |

# Annex IX Fish condition factor

Pilchard condition per area: number of samples (n), mean, variance ($s^2$), and standard deviation (s).

| Area | n | mean condition factor | $s^2$ | s |
|---|---|---|---|---|
| 16° - 17° | 138 | 0,803 | 0,0028 | 0,053 |
| 20° - 21° | 100 | 0,747 | 0,0023 | 0,048 |

Anchovy condition per area: number of samples (n), mean, variance ($s^2$), and standard deviation (s).

| Area | n | mean condition factor | $s^2$ | s |
|---|---|---|---|---|
| 16° - 17° | 90 | 0,600 | 0,0022 | 0,0471 |
| 18° - 19° | 62 | 0,572 | 0,0011 | 0,0338 |
| 20° - 21° | 43 | 0,579 | 0,0020 | 0,0452 |

Analysis of variance (ANOVA) of pilchard condition per 2° latitude interval: degrees of freedom (df), sum of squares (SS), mean squares (MS), and F value ($F_s$).

| Source of Variation | df | SS | MS | Fs |
|---|---|---|---|---|
| Among Areas | 2 | 0,0324 | 0,01619 | 8,811** |
| 16°-17°S vs 18°-19°S | 1 | 0,0294 | 0,02940 | 15,999** |
| 16°-17°S vs 20°-21°S | 1 | 0,0128 | 0,01280 | 6,967* |
| 18°-19°S vs 20°-21°S | 1 | 0,0014 | 0,00136 | 0,741 (ns) |
| Within Areas | 192 | 0,3528 | 0,00184 | |
| Total | 194 | 0,3852 | | |

$F_{0,05(2,192)}$ =3,07
$F_{0,01(2,192)}$=4,79

** = P <= 0,01
* = P <= 0,05
ns = not significant

See text for explanations

# Annex X Results of intercalibration experiment

## Intercalibration report

An intercalibration of the 38 kHz Simrad EK-500 echo sounder / integrator systems on the R/V Dr. Fridjof Nansen (57m, 2700HP), and R/V Welwitchia (47m ,1500HP), was conducted on June 8, 1994, from position 1745S 1138E to 1730S 1125E. The acoustic recordings mainly consisted of plankton and mesopelagic fish. The intercalibration was performed in the standard manner, (Foote et. al 1987), Nansen sailing 0.5 nautical miles in front and to the port of Welwitchia. Both echo sounder systems had recently been calibrated using standard targets according to Foote et al. (1987), adjusted to split beam systems after Nes (1991). The vessel log on the following vessel, Welwitchia, was adjusted to Nansen's log, ensuring pairwise outputs of the integrator, relative to ground.

Contributions from fish and plankton were integrated and averaged over one nautical miles in 8 pelagic channels covering the depth interval from 5 to 500 meters. The integrator output, $s_A$, varied from 1 to 22000 [ $m^2/nm^2$] throughout the intercalibration. The threshold and color settings of the instruments were the same in the two vessels, Table 1, and depth layers were adjusted according to the relative draft of the transducer mountings on the vessels.

The echo recordings was after the intercalibration transferred to one of the vessels, and carefully scrutinized by the instrument chiefs on the two vessels in order to validate the datasets log by log, with the intention to remove miles where the acoustic recordings were different because of the horizontal distance between the vessels. A few nautical miles was removed because of obvious log differences after a 90 degree course change, and some because of air bubble attenuation on Welwichia. A total of 58 valid pairvise observations have been included in the comparison.

Fig.1 show the area backscattering coefficients recorded during the intercalibration, and Fig.2 show a regression on the two datasets, with 95% confidence belts for the regression line indicated. Forcing the regression through the origo 0,0 yields an estimate of the slope of 1.038, indicating that Welwitcia's values are slightly higher than Nansens. In a pairvise test, however, the difference is not significant (p=0.28). The observed difference is within the expected accuracy of the sphere calibration method, 0.1 dB.

| Table 1 Settings of the echo sounder / echo integrators during the intercalibration. | | | |
|---|---|---|---|
| Echo sounder setting | *R.V.Dr. Fridtjof Nansen* | *R.V.Velwitschia* | Comments |
| 2 way beam angle | -21.0 | -20.8 | Spec. from Simrad |
| $S_V$ Transducer gain | 28.1 | 27.9 | |
| TS Transducer gain | 28.1 | 27.9 | Does not affect integration |
| -3 dB beam angle | 6.8 | 6.7 | Does not affect integration |
| Offsets | 0.00, 0.04 | 0.0, -0.01 | Does not affect integration |
| Integrator threshold All channels | -80 dB SV | -80 dB SV | |
| SV colour minimum | -75 dB SV | -75 dB SV | |

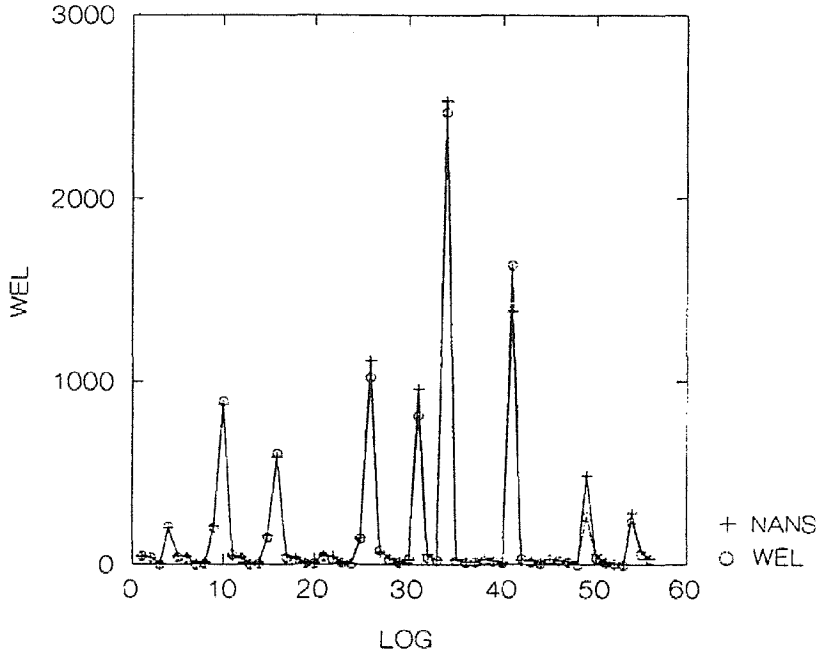



Fig.1. Area backscattering coefficients from R/V Dr. Fridjof Nansen and R/V Welwitchia during the intercalibration survey track. Two large values are omitted from the plot.

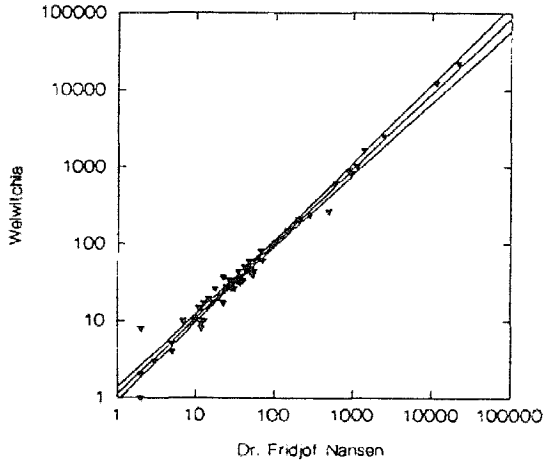
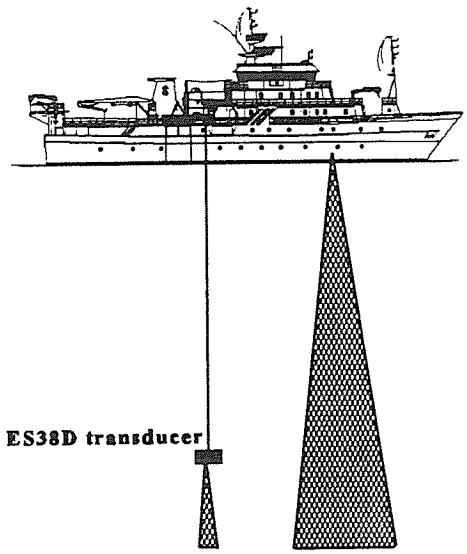



Fig.2. Linear regression between the area backscattering coefficients with 95% confidence belts indicated. Logarithmic scale.

# Annex XI Additional experiments

## In situ target strength measurements

Target strength measurements in situ was conducted on horse mackerel and hake using the split beam sonde, at depths up to 300 meters. The basic setup during these measurements is shown below:




**TS sonde, R/V Dr. Fridjof Nansen**

The main advantage with this system is its ability to resolve layers and shoals into single fish by reducing the pulse volume compared to the hull mounted transducer. This ensures a high signal to noise ratio for the target strength measurement, as well as reducing the probability for multiple target to be accepted as single targets. When sufficiently pure concentrations of fish occurred during the survey, 1–3 hours were spent on one TS–station, indicated in the station charts. High resolution target strength data on hake closer than one meter from the seabed was recorded at 300 m depth, and experiments on close bottom echo integration on single hake, 0.2–0.5 meters from the bottom was successfully conducted using the TS–sonde. The data will be analyzed and presented at a later stage.

**School measurements with the SA–950 multibeam sonar**

The Simrad SA–950 sonar was run during most of the survey. The sonar was connected to a HP–9000/712 computer, logging detected school data via the ethernet. The sonar was used in side looking mode, producing a hardcopy output of schools detected within 50–150 or 50–300 m starboard. All detected schools were measured by the school recognition software developed at IMR by Misund and Totland (1993), and stored to file for later analysis.

*Quantitative measurements*

The sonar was calibrated in Baía dos Tigres, Angola, using a target of 10 air filled, hard, plastic 11 inch diameter trawlfloats. One of these floats was measured to be –23.5 dB (SD=0.5 dB) using the 120 kHz split beam echo sounder. Having almost the same wavelength–to size ratio to the large–air filled target, it is reasonable to believe that the TS at 95 kHz is close to the target strength measured at 120 kHz. The total target of 10 should then be about TS=–23.5+10logn=–13.5 dB. Several passes were made, recording this target by the school recognition software. Within the recognition software a computation the target and approximate echo strength is made, simply by adding each colour pixel value (1–64) over the entire school area. This parameter, in the output files called count, could be calibrated to approximate absolute SV, using the measured TS of the calibration target.

*Comparative measurements*

From the vertical echo sounder, the average school size in an area is determined by echo integration. The echo sounder has a very low sampling volume at the depths where the bulk of the pilchard was recorded during the survey, 4–30 m, and the biomass estimate will be sensitive towards school avoidance reactions during the survey. Analysing the area density of schools detected by the sonar in the area covered to the starboard of the vessel, from 50–150 m, computations of comparative biomass estimates may be made using the previously computed average school size.

The data will be analyzed and presented later.

## School measurements with the SA–950 multibeam sonar

The Simrad SA–950 sonar was run during most of the survey. The sonar was connected to a HP–9000/712 computer, logging detected school data via the ethernet. The sonar was used in side looking mode, producing a hardcopy output of schools detected within 50–150 or 50–300 m starboard. All detected schools were measured by the school recognition software developed at IMR by Misund and Totland (1993), and stored to file for later analysis.

*Quantitative measurements*

The sonar was calibrated in Baía dos Tigres, Angola, using a target of 10 air filled, hard, plastic 11 inch diameter trawlfloats. One of these floats was measured to be –23.5 dB (SD=0.5 dB) using the 120 kHz split beam echo sounder. Having almost the same wavelength–to size ratio to the large–air filled target, it is reasonable to believe that the TS at 95 kHz is close to the target strength measured at 120 kHz. The total target of 10 should then be about TS=–23.5+10logn=–13.5 dB. Several passes were made, recording this target by the school recognition software. Within the recognition software a computation the target and approximate echo strength is made, simply by adding each colour pixel value (1–64) over the entire school area. This parameter, in the output files called count, could be calibrated to approximate absolute SV, using the measured TS of the calibration target.

*Comparative measurements*

From the vertical echo sounder, the average school size in an area is determined by echo integration. The echo sounder has a very low sampling volume at the depths where the bulk of the pilchard was recorded during the survey, 4–30 m, and the biomass estimate will be sensitive towards school avoidance reactions during the survey. Analysing the area density of schools detected by the sonar in the area covered to the starboard of the vessel, from 50–150 m, computations of comparative biomass estimates may be made using the previously computed average school size.

The data will be analyzed and presented later.

## Trawl experiments

Experiments using the constraint technique on bottom trawl doors have been conducted using the 7.8 $m^2$ Tyborøn trawldoors on the Gisund Super bottom trawl, holding 40 m sweeps. The method is described by Engås & Ona (1991 and 1993).

A constant doorspread of about 52 m was achieved at all depths sampled, Figure 1, compared to a varying doorspread of 52–69 m, increasing with depth, when the trawl was shot without constraining rope between the warps. The results from the trials will be reported to the Catch Division, IMR.

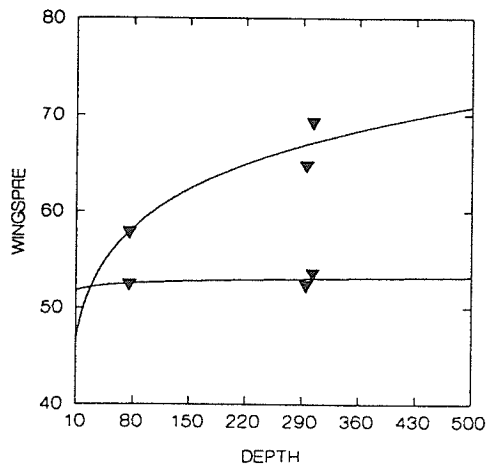



Figure 1 Door door spread as a function of depth for Gisund Super, Tyborøn doors.
Upper curve: normal spread
Lower curve: with constraining rope