CRUISE REPORTS "DR. FRIDTJOF NANSEN"

# SURVEYS OF THE FISH RESOURCES OF NAMIBIA

Preliminary Cruise Report No 1/91

Part I
Surveys of the hake stocks
25 January-28 February 1991

and

Part II
Surveys of the inshore pelagic stocks
2-22 March 1991

Ministry of Fisheries
& Marine Resources
Republic of Namibia

Institute of Marine Research
Bergen
Norway

The "DR. FRIDTJOF NANSEN" RESEARCH PROGRAMME is sponsored by the Norwegian Agency for Development Assistance NORAD, the Food and Agriculture Organization of the United Nations FAO, and the United Nations Development Programme UNDP. The programme in Namibia is being conducted and planned under agreements between UNDP, 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 and Marine Resources of Namibia.

The programme comprised three surveys in 1990 as follows:

Survey 1 25 January to 19 March
" 2 27 May to 20 June
" 3 11 September to 6 October

For 1991 a programme of two surveys has been planned as follows:

Survey 1 25 January to 23 March
" 2 23 October to 18 December

Preliminary cruise reports were submitted after the completion of each of the previous surveys. This cruise report describes the work and some of the findings of Survey 1, 1991.

# PART 1

## SURVEY OF THE HAKE STOCKS

25 January - 28 February 1991

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## PART I

# 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 waters with the R/V "DR. FRIDTJOF NANSEN".

The purpose of the programme was agreed as follows:

The main objectives are descriptions of the distribution, composition and abundance of the most important resources of fish and shellfish (although little informations is expected to be obtained on lobster). The small pelagic fish, horse mackerel, pilchard and anchovy will be investigated by the acoustic integration method combined with sampling with mid-water and bottom trawls. A swept-area trawl survey programme will be used for the demersal stocks. All catches will be sampled to species by weight and numbers and biological sampling will be made of the commercially important stocks.

Environmental studies will include recording of surface temperature on a continuous basis and occupation of hydrographic stations in a series of fixed profiles. Possible taxonomic problems will be studied by sampling and examination by experts in cooperation with FAO's Fisheries Department.

## 1.2 SPECIFIC OBJECTIVES OF PART 1

During the first part, 25 January to 28 February the main objective is a survey of the hake stocks covering the whole shelf area. The acoustic system will be used to observe possible mid-water occurrence of the two species of hake, but the observations on other pelagic fish will not be processed. The swept area trawl survey programme will cover depths down to 500 m and deeper if necessary. The survey design will be based on a semi-random distribution of hauls designed to cover the depth ranges of the two hake species and with density of stations adapted to the expected fish densities. Biomass estimates of Cape hake will be based on post-stratification by density areas. Trawl selectivity experiments and tagging of hake will be included to the extent that time permits. Some mid-water sampling of pilchard will be made for observations of length compositions and growth.

## 1.3 PARTICIPATION

The scientific staff from Namibia were:

From Namibia: 25/1-8/2: G. Cloete, Bernatitus Birisamub, Johnny Gamatham, Sielfried Gowaseb, Serubabel Kahiha.
9/2-28/2: Ekkard Klingelhoeffer, Richardt Kharuchab, David Gawaseb, Malakia Shimhanda, Willem Nauiseb

From IMR : O. Alvheim, J. Hamre (1/3-23/3), T. Haugland, T. Mørk, G.Sætersdal (1/2-17/2) and D. Zaera.

## 1.4 NARRATIVE

Figures 1 a-c show the course tracks with the positions of the fishing and hydrographic stations. The vessel left Walvis Bay on 25 January and work started near the southern border on the 27th. After a call in Lüderitz on 1 February the work continued northwards. The positions of the trawl stations were determined at the beginning of the cruise, covering the depth range from 180 to 450 m. By 3 February the shelf up to 25°S had been covered with a total of 45 bottom trawl stations. Most of the stations were worked during daytime, but at depths of 400 m and beyond fishing was at times also done during the night. Application of the newly installed EK500 acoustic system showed that single fish layers of hake could be recorded down to 400-500 m. The system was adjusted to record integrator output in layers of 5, 10 and 20 m above the bottom to enable studies of the amount of hake lifting off the bottom.

Juvenile hake was found off Easter Point and Hollands Bird Islands in aggregations in the form of swarms extending higher up from the bottom over shelf depths of 160-200 m. The hydrographic profile off Conception Bay was worked on 4 February. As catches in deep water were consistently low, depth coverage was limited to 400 m. The coastward limit of the survey was determined by the belt of soft muddy bottom usually found inside the 130-150 m depth range. February 8 was spent in Walvis Bay for exchange of crew members and participants from the Ministry of Fisheries and Marine Resources. Survey work was resumed on 9 February from Walvis Bay northwards with daylight fishing stations and acoustics covering the depth range 140-400 m. Following some heavy catch rates at shallow depths a special coverage was made of the inner shelf 140-110 m from Walvis Bay to Cape Cross in order to determine the shoreward limit of the hake distribution in this area. Areas of high density of juvenile hake were found at 110-120 m of depth inside the distribution of larger fish. A pilchard school area was found 40-50 nm WSW of Cape Cross and a sample was obtained by night fishing. The hydrographic profile off Cape Cross was worked on 13/14 February and the fishing programme was completed up to Ambrose Bay by 15 February with 76 stations for the middle area from St. Francis Bay.

The area from Ambrose Bay to Cunene was covered from 15 to 23 February and after calibration of the acoustic instruments in Baia dos Tigres in Angola on 24 February a further two days were spent working southwards towards Walvis Bay. The hydrographical profile off Möwe Point was worked on 20 February and that north of Cape Frio on 23 February. Because of the predominant pelagic occurrence of the hake in this northern area attempts were made to obtain double survey coverage of the high density areas with a swept-area trawl programme during the day and acoustic survey during the night. On the return southwards some selectivity experiments were made as well as attempts to catch hake alive with mid-water trawl for tagging. 54 swept area trawl hauls were made north of the Ambrose Bay. The vessel arrived in Walvis Bay on 28 February.

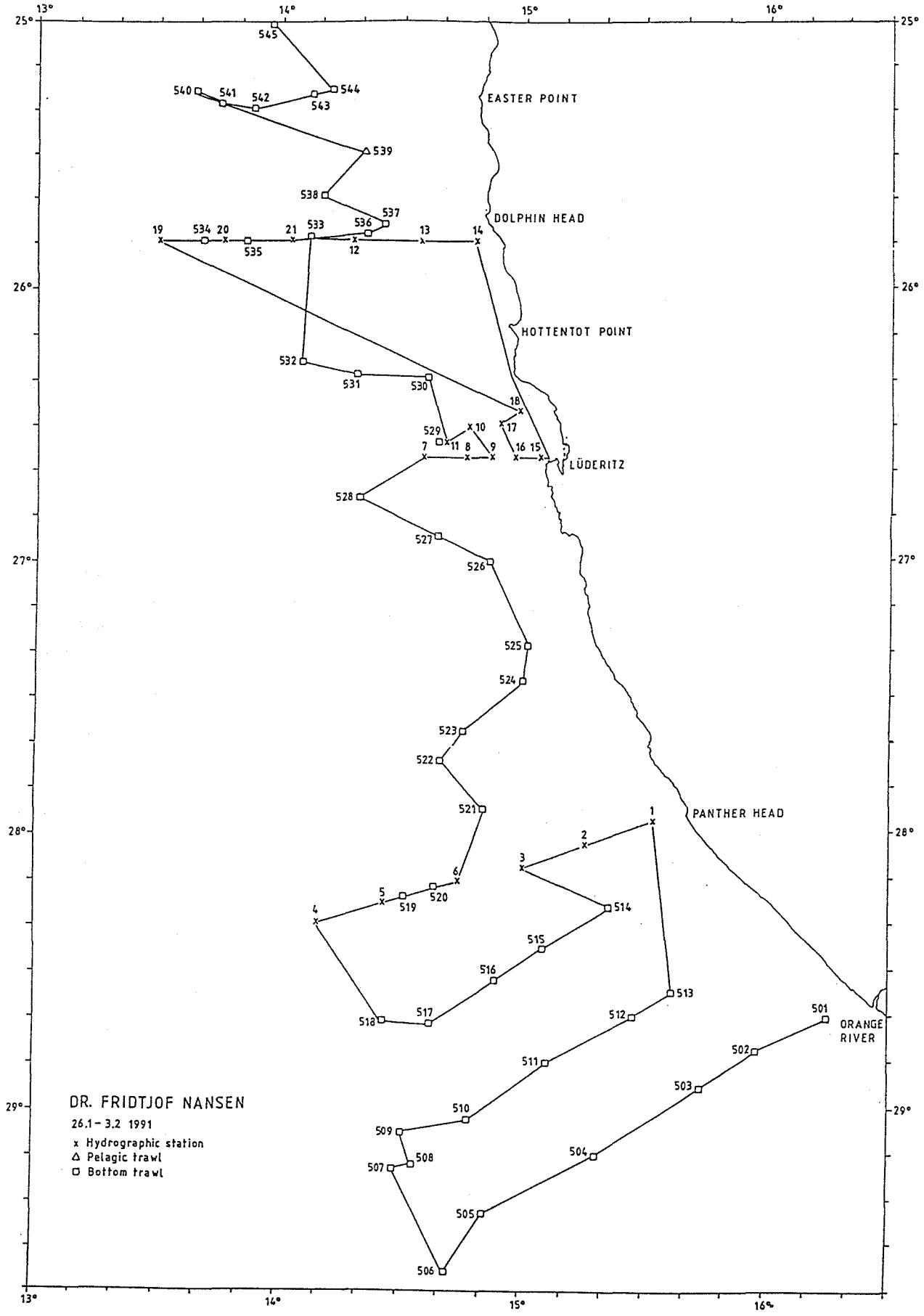



Figure 1a. Course tracks with fishing stations and hydrographic profiles, Orange River to St. Francis Bay.

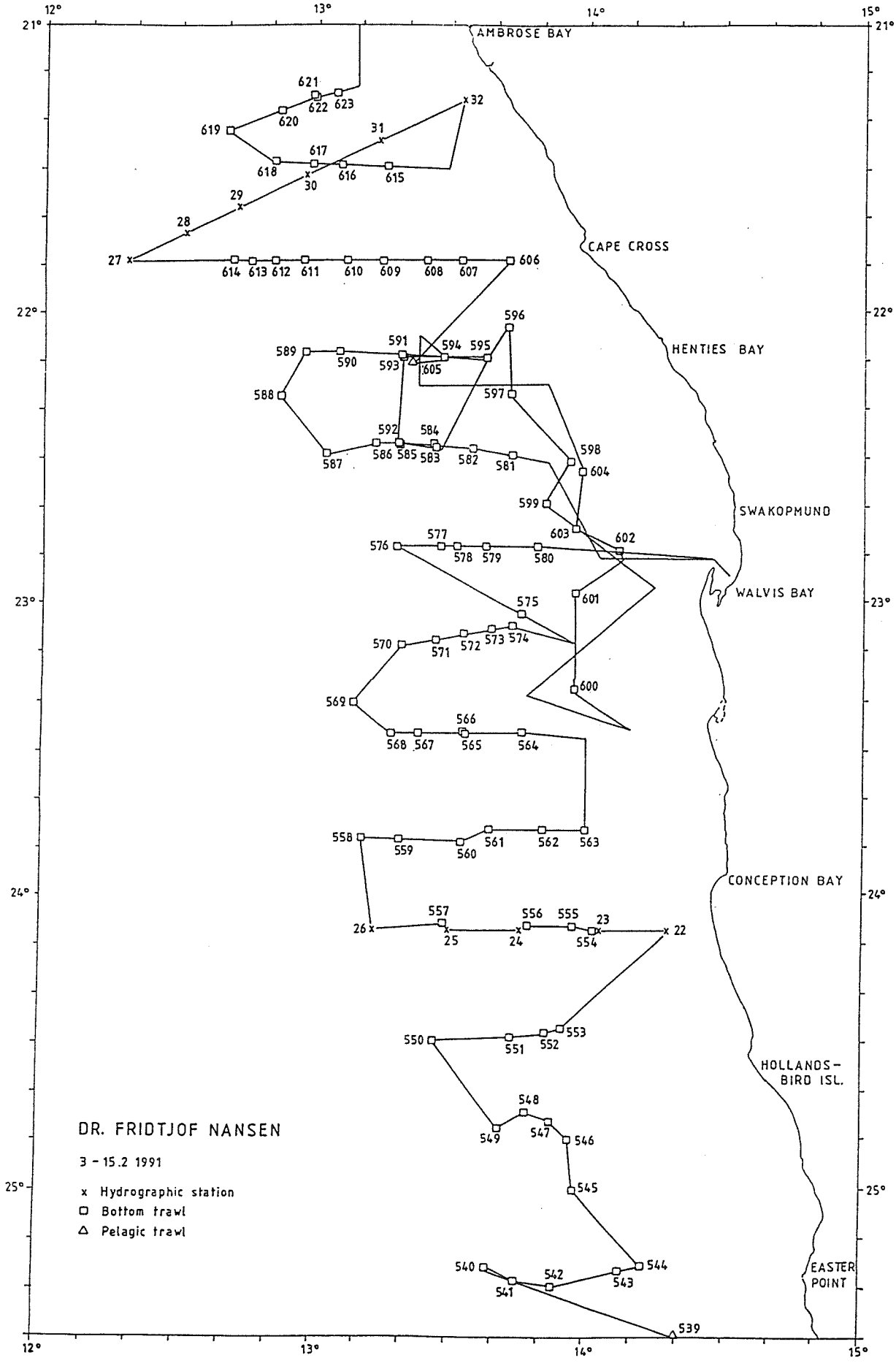



Figure 1b. Course tracks with fishing stations and hydrographic profiles, St. Francis Bay to Ambrose Bay.

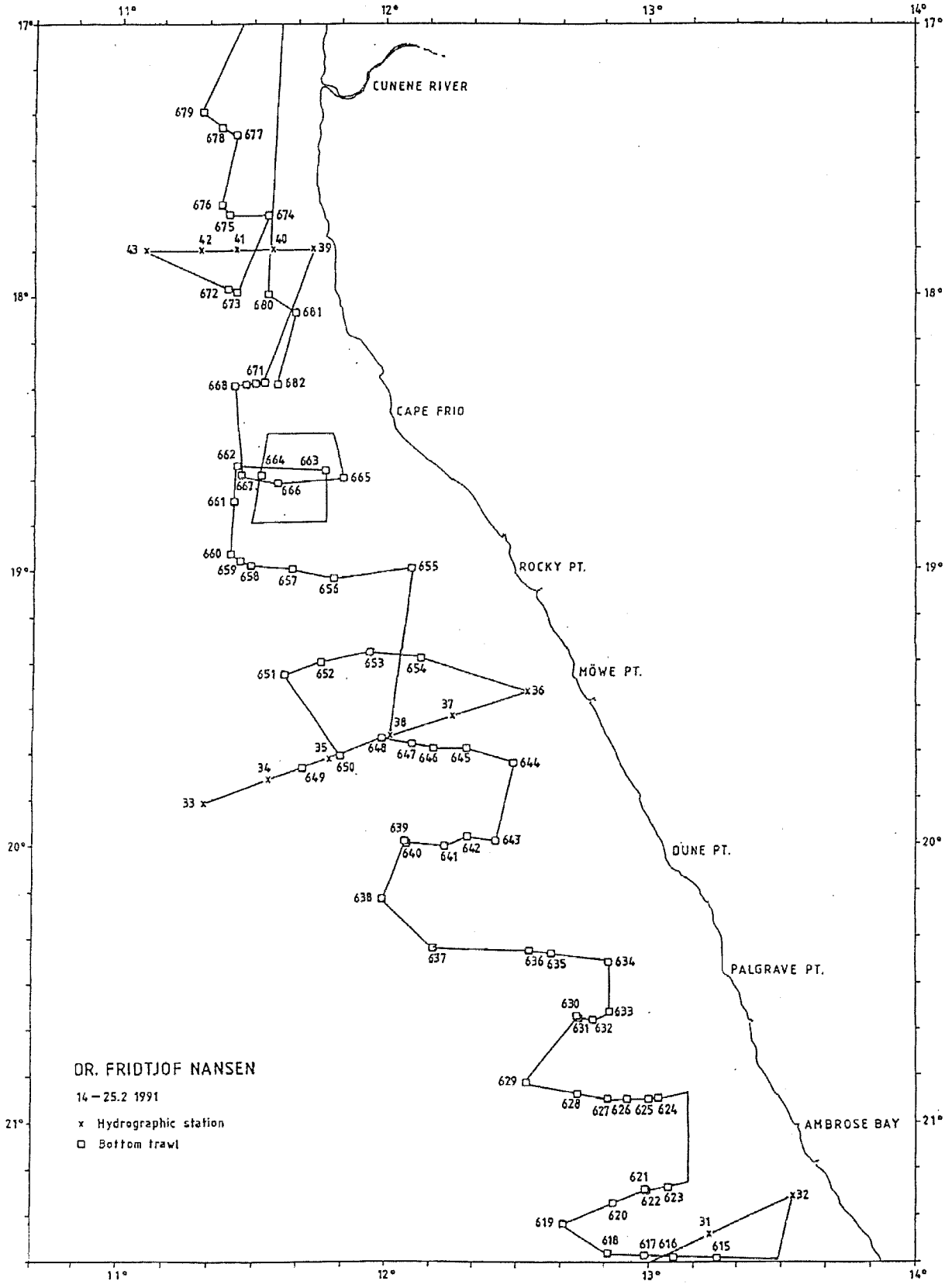



Figure 1c. Course tracks with fishing stations and hydrographic profiles, Ambrose Bay to Cunene River.

# CHAPTER 2 HYDROGRAPHY

Figures 2a-c show the sea temperature at 4 m of depth as observed with the ships thermograph and Figures 3a-e show the distribution of temperature, salinity and oxygen in the 5 hydrographic transects worked. The position of the transects are shown in Figure 1a-c.

The area south of Lüderitz was covered during a period of calm weather and this may explain the presence of oceanic water, 20°C and 35.5 ‰ salinity over the shelf edge. North of Lüderitz wind force 6-7 prevailed and may have contributed to the active upwelling conditions found in this area. The profile at 25°50' is similar to that of 6 February 1990, but with surface oceanic water even further offshore in this years observations. Also, the profile at 24°08' near Conception Bay demonstrated an active upwelling situation reflecting a period of wind and is similar to last years observations.

From Walvis Bay northwards the temperature at the sea surface was about 2°C lower than that found in Survey 1/90 at the same time of the year, but conditions near the shelf bottom seem largely similar. High salinity water > 35.5 ‰ is present near the surface southwards to the Möwe Point profile which is approximately as last years situation. This is an indicator of the intrusion of warm tropical water from the north and northwest.

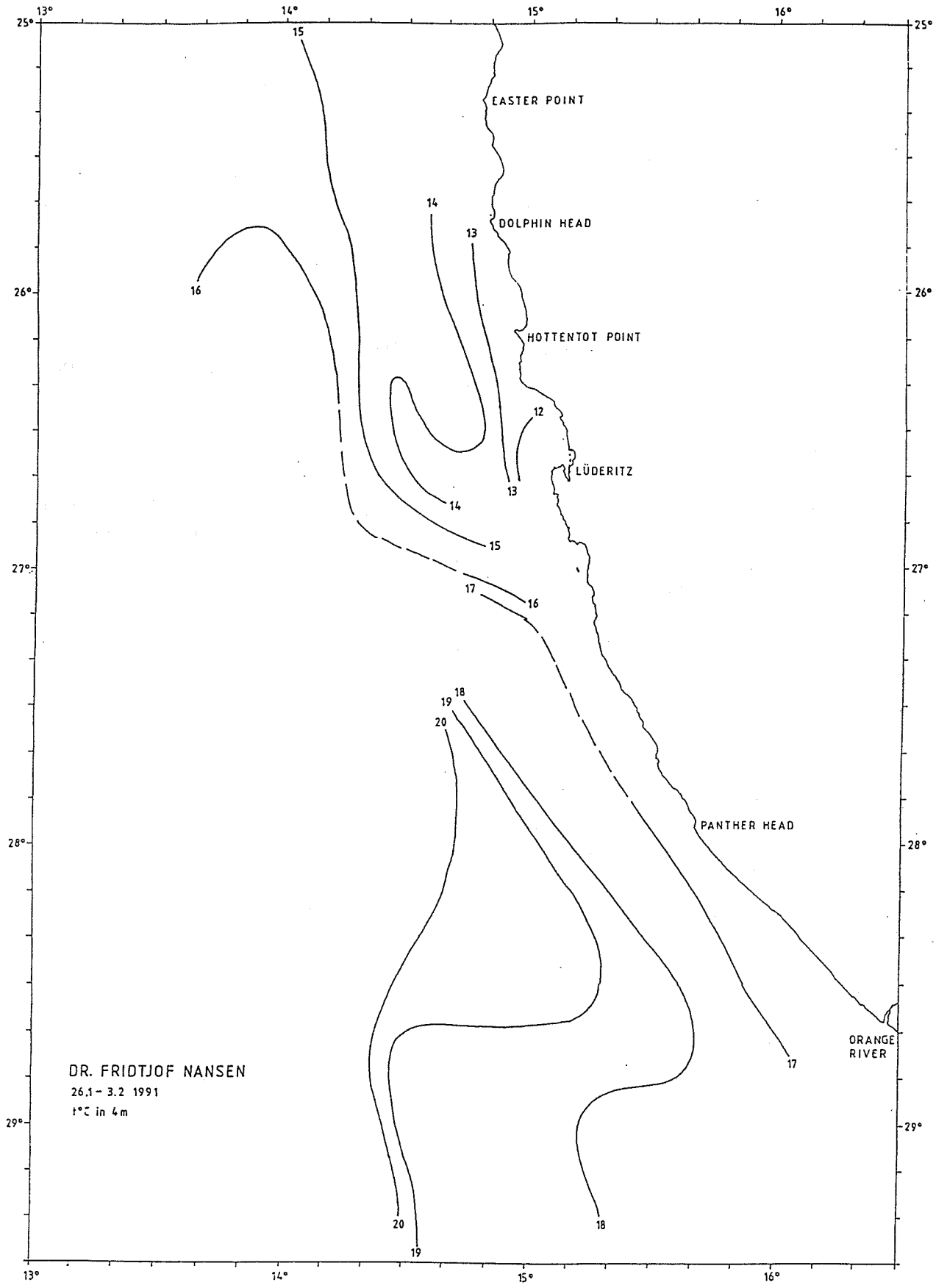



Figure 2a. Temperature at sea surface Orange River to St. Francis Bay.

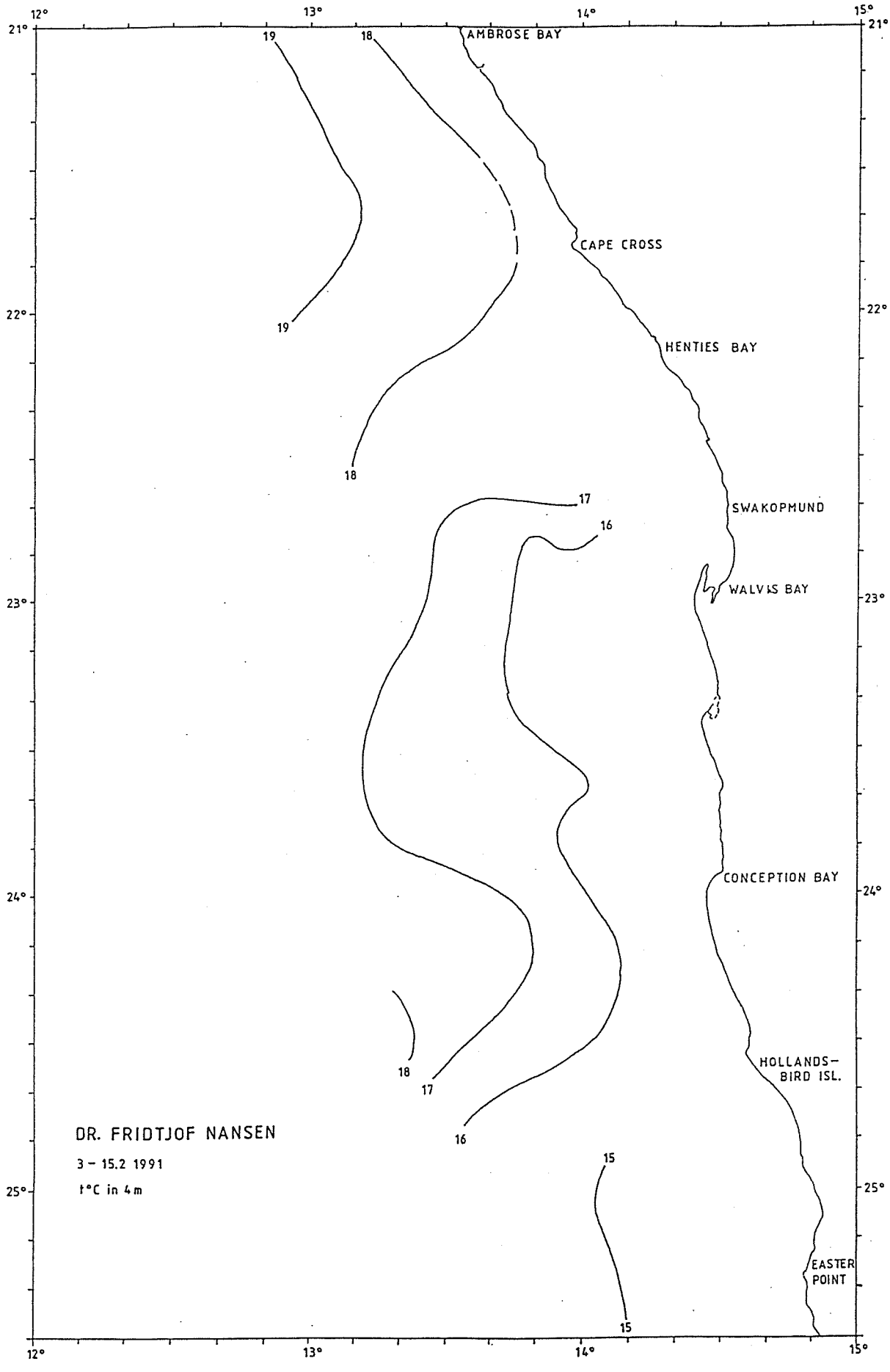



Figure 2b. Temperature at sea surface St. Francis Bay to Ambrose Bay.

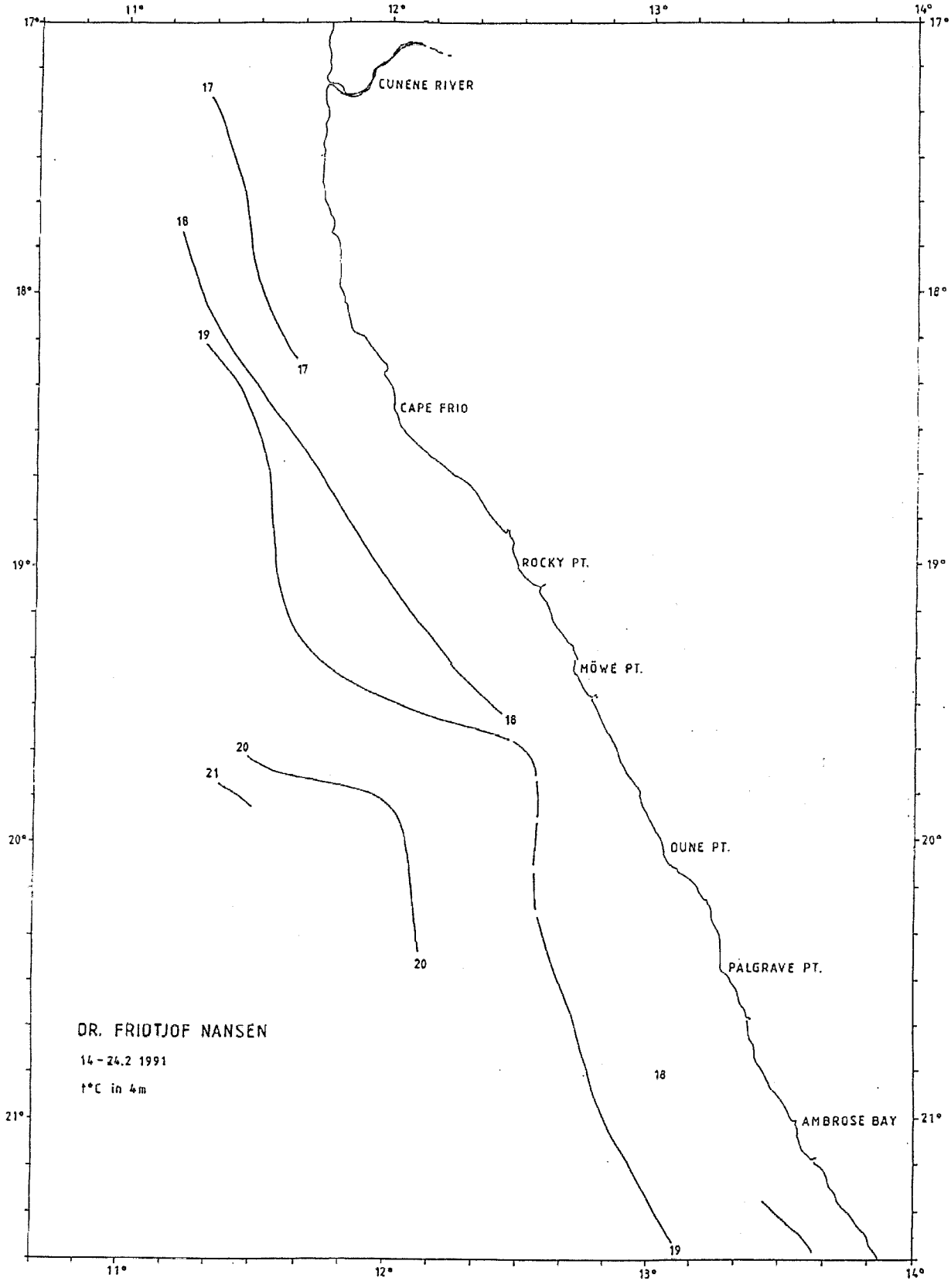



Figure 2c. Temperature at sea surface Ambrose Bay to Cunene River.

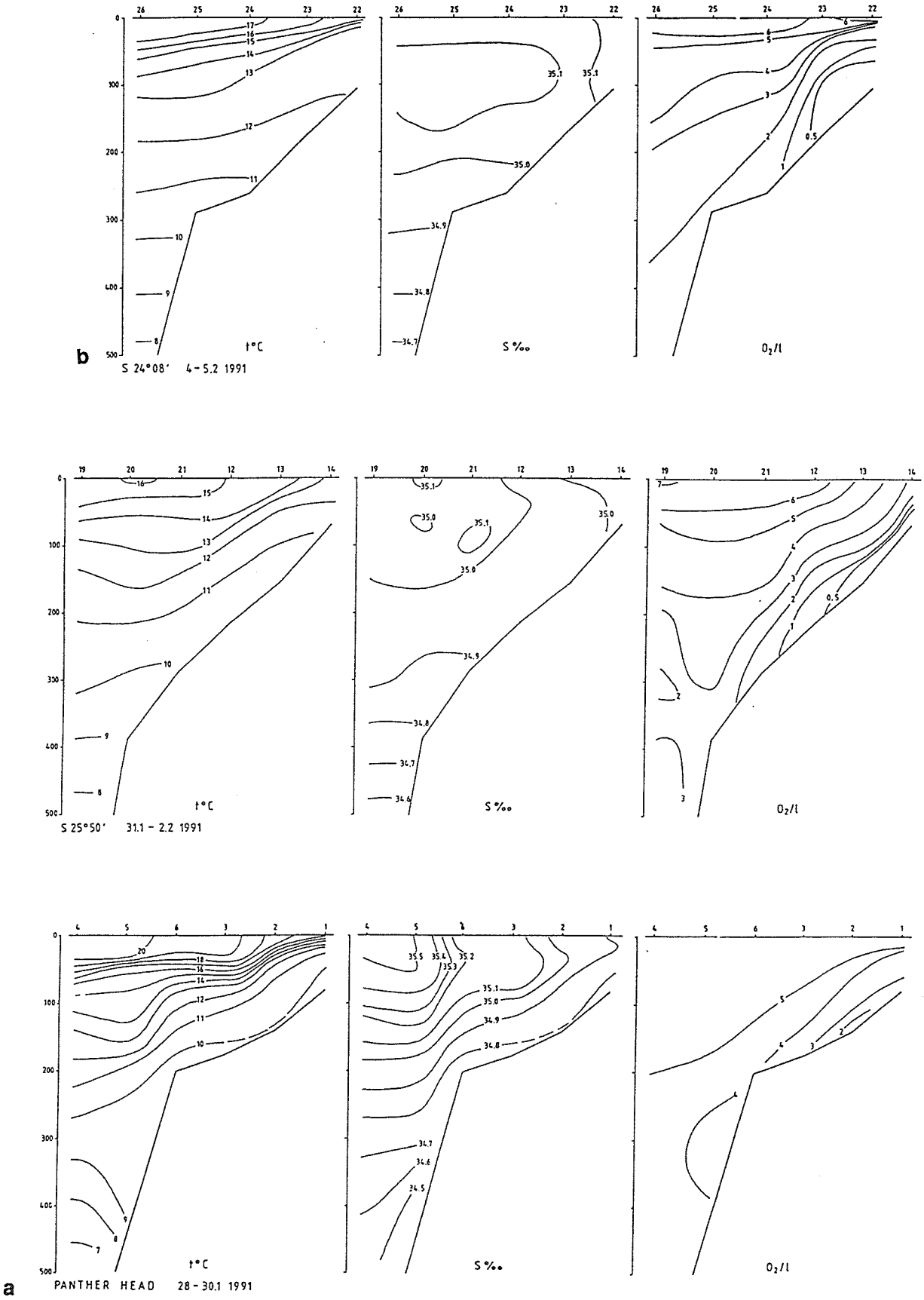
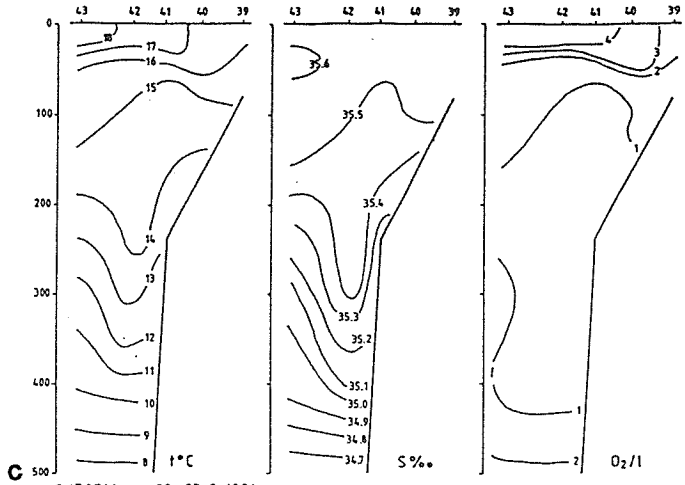



Figure 3. Hydrographic profiles. a: Orange River to St. Francis Bay, b: St. Francis Bay to Ambrose Bay, c: Ambrose Bay to Cunene River.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t°C
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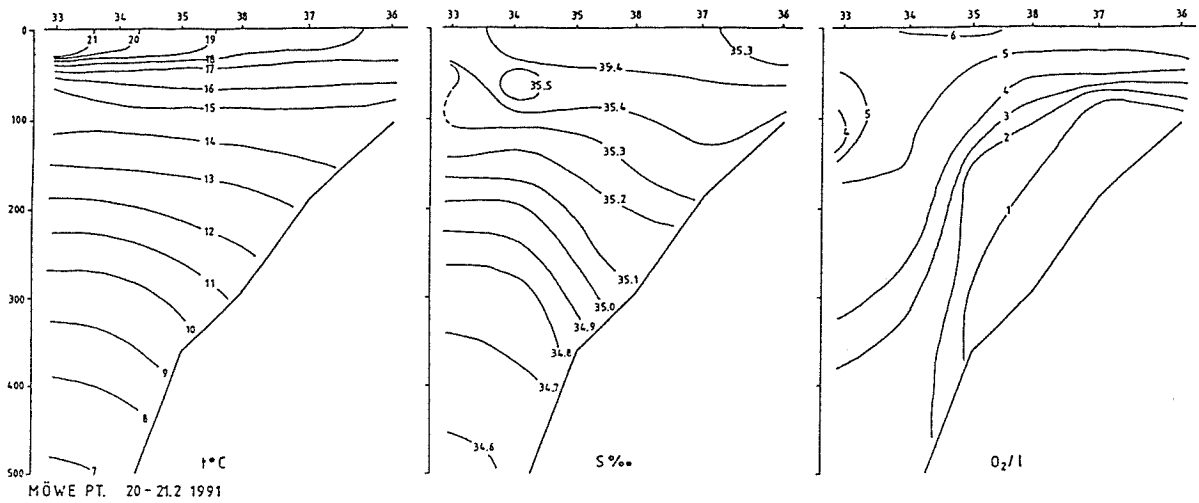
S 17°50'
22-23.2 1991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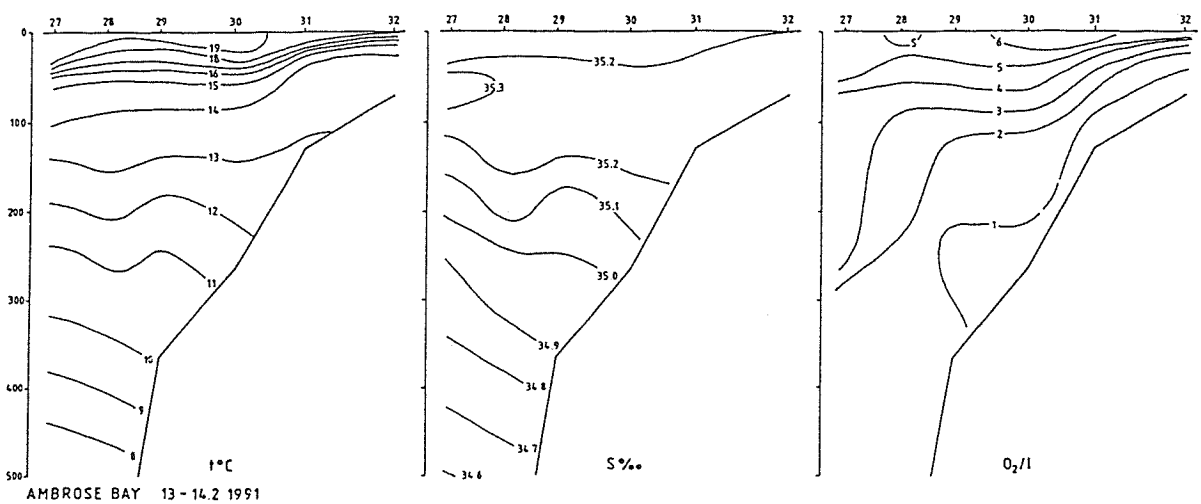
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AMBROSE BAY 13-14.2 1991

# CHAPTER 3 RESULTS OF THE FISHING EXPERIMENTS, CATCH COMPOSITIONS AND BIOMASS ESTIMATES OF THE HAKES

Some of the results of the fishing experiments are commented on below. One should note, however, that the catch rates do not simulate those of a commercial fishery.

All catches were sampled for composition in weight and numbers by species and size sampling was made of important species, using total length. The complete records of fishing stations are shown in ANNEX II.

## 3.1 MID-WATER OCCURRENCE OF THE HAKE AND THE EFFECT ON THE SWEPT AREA ASSESSMENTS

The new SIMRAD EK500 acoustic system installed in the vessel in January 1991 provides a tool for better observations and estimates of the density of hake in mid-water. This is of great importance for the method used in estimating the hake biomass. With an assumed headline hieght of 5 m, occurrence of hake above that level will cause an underestimate of the biomass in the swept area assessments.

Hakes are often described as mid-water feeders with swarms of krill as a main food source. In Namibia gobies, myctophids and horse mackerel are important potential food sources in mid-water in addition to the krill. Early estimates of the Namibian hake stocks were by acoustics (Cushing, 1968) while ICSEAF survey assessments have been by swept area. These latter have varied widely perhaps because of variability of hake behaviour.

During the "DR. FRIDTJOF NANSEN" survey January to March 1990, mid-water occurrence of the hake was expected and attempts were made to observe it, but significant amounts were only recorded in mid-water in some areas at night and high catch rates (during the day) were obtained with no recordings above the bottom or with some indications of fish echoes forming part of the bottom signals. It therefore seems that mid-water occurrence was not a great problem for the assessment of that survey.

During the survey in September-October 1990 the hake in the southern and central area was sometimes observed to lift off the bottom at night and sometimes not. Northwards, towards Ambrose Bay, abundant echo traces of hake were observed off the bottom at intermediate bottom depths, although closer to the bottom in daytime. From Ambrose Bay to Cunene hake was found to be distributed in mid-water both day and night and some attempts were made to estimate the densities. These indicated that the resulting underestimate of the swept area method was considerable, perhaps as much as 100%.

The calculations of hake density based on swept area results alone will to the extent that hake occurs above about 5 m, represent underestimates of the true densities. Acoustic observations of hake density in mid-water represents a method of correction for this bias. The presence of other fish, e.g. myctophids, gobies and horse mackerel, together with the mid-water hake at times complicate the acoustic density estimates of hake, but single fish layers and denser

aggregations of hake could be identified and their contribution to the integrator readouts measured in many areas. Figure 4 and 5 show examples of echo diagrams of hake above the bottom recorded during trawling during the day and at night.

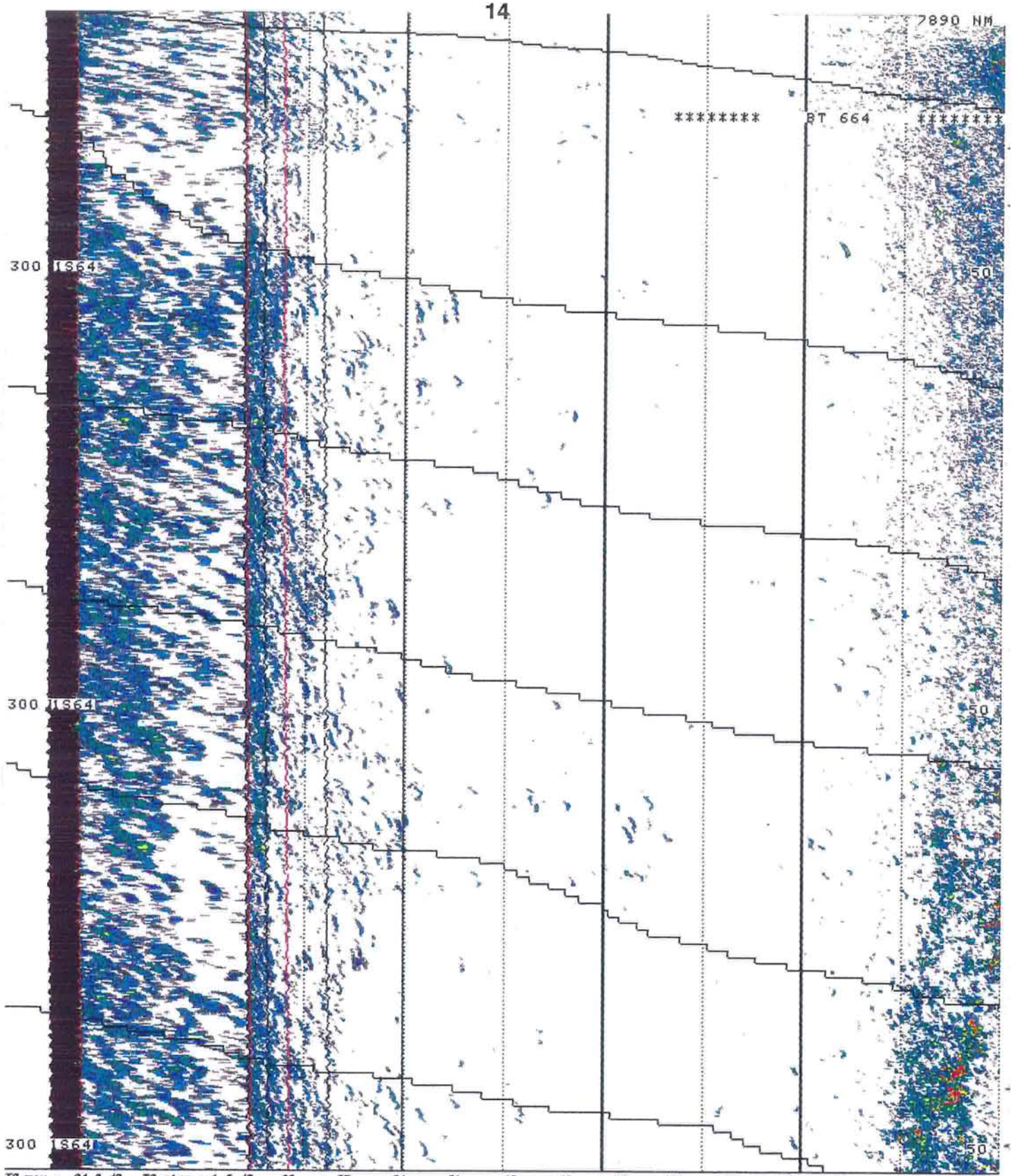
Ordinary acoustic assessments were made wherever the hake recordings could be separated from other records. The observations were recorded by channels related to the bottom, 0.5- 5 m, 0.5-10 m, 0.5 - 20 m above bottom as well as by depth intervals of 50 to 100 m. For estimation of densities a target strength used for cod was applied using the relationship TS = 20 log l - 69.5.

The frequent presence of spurious recordings prevented a proper acoustic biomass assessment to be made for the regions, but in some restricted areas especially in the north, series of observations were obtained. It is hoped that future use of the new Bergen Echo Integrator will result in significant improvements in the acoustic assessment of the hake.

The presence of the hake in mid-water was highest in the north. The data from all trawl stations with catch or with no catch, but with mid-water observation of hake during trawling are analysed in Table 1. For each region the number of stations and the mean density are shown by day and night hauls separately and for the two methods of observation separately; trawl and acoustics. Only about half the daylight hauls in the two southern regions showed fish above the 5 m channel and with moderate acoustic densities. For the Ambrose Bay-Cunene region, pelagic hake occurred at a majority of the stations and with high acoustic density.

Table 1. Cape hake. Analysis of stations with catch or acoustic observations. Estimates of fish density from swept area trawl stations and from simultaneous acoustic observations of fish in mid-water above 5 m from bottom. Density t/nm².

| ORANGE RIVER - ST FRANCIS BAY | DAY | NIGHT |
|---|---|---|
| Trawl | | |
| No. stations | 27 | 6 |
| Mean density | 12.0 | 3.7 |
| Acoustic obs. | | |
| No. stations | 13 | 5 |
| Mean density | 14.7 | 17.2 |
| **ST FRANCIS BAY - AMBROSE BAY** | **DAY** | **NIGHT** |
| Trawl | | |
| No. stations | 54 | 12 |
| Mean density | 10.6 | 12.5 |
| Acoustic obs. | | |
| No. stations | 23 | 12 |
| Mean density | 15.7 | 22.3 |
| **AMBROSE BAY - CUNENE RIVER** | **DAY** | **NIGHT** |
| Trawl | | |
| No. stations | 43 | 6 |
| Mean density | 24.1 | 9.7 |
| Acoustic obs. | | |
| No. stations | 36 | 5 |
| Mean density | 53.4 | 71.0 |




| TS-max = -24.0 dB | TS-step = 1.5 dB | -60 | -57 | -54 | -51 | -48 | -45 | -42 | -39 | -36 | -33 | -30 | -27 | -24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7891.0 38 | 1 Sur. 4.0 100.0 | 973 | 2 3 3 | 4 4 6 | 5 6 6 | 5 4 1 | 2 2 2 | 2 2 3 | 6 10 8 | 8 7 5 | 2 2 | | | |
| 91/02/22 kHz | 2 Sur. 100.0 150.0 | 3533 | 9 11 12 | 12 12 11 | 10 7 6 | 4 2 1 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | | | |
| 02.59.58 | 3 Sur. 150.0 200.0 | 4602 | 2 4 6 | 7 9 9 | 10 11 10 | 9 8 5 | 3 2 1 | 1 1 1 | 1 1 1 | 1 1 0 | 0 0 | | | |
| | 4 Sur. 200.0 250.0 | 2368 | 0 0 1 | 2 3 4 | 5 5 6 | 6 5 4 | 6 4 5 | 3 4 4 | 6 5 8 | 8 4 3 | | | | |
| | 7 Bot. 0.5 20.0 | 593 | 0 0 0 | 0 1 1 | 1 2 2 | 2 3 3 | 5 4 4 | 3 6 4 | 8 5 12 | 15 12 8 | | | | |
| | 8 Bot. 0.5 5.0 | 65 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 0 2 2 | 0 3 3 | 15 22 28 | 26 | | | |
| | 9 Bot. 0.5 10.0 | 158 | 0 0 0 | 0 0 0 | 0 0 0 | 0 1 2 | 2 3 1 | 3 1 1 | 1 3 4 | 13 21 25 | 20 | | | |
| | 10 Sur. 4.0 409.5 | 11489 | 4 5 6 | 7 8 8 | 9 8 7 | 6 5 3 | 3 2 1 | 1 2 2 | 2 2 2 | 3 2 1 | 1 | | | |

| 7891.0 38 | 10 Sur. -80 | 9 Bot. -80 | 8 Bot. -80 | 7 Bot. -80 | 6 Sur. -80 | 5 Sur. -80 | 4 Sur. -80 | 3 Sur. -80 | 2 Sur. -80 | 1 Sur. -80 |
|---|---|---|---|---|---|---|---|---|---|---|
| 91/02/22 kHz | 4.0 409.5 | 0.5 10.0 | 0.5 5.0 | 0.5 20.0 | 300.0 400.0 | 250.0 300.0 | 200.0 250.0 | 150.0 200.0 | 100.0 150.0 | 4.0 100.0 |
| 03.00.00 | 9556 235.6 | 583 9.5 | 411 4.5 | 752 19.5 | 0 0.0 | 0 0.0 | 282 30.1 | 41 50.0 | 28 50.0 | 8627 96.0 |

Figure. 4 Echo diagram showing hake in mid-water during trawling at station no. 664.
02:46 hour, Date: 22/2/91. Depth 240 m.

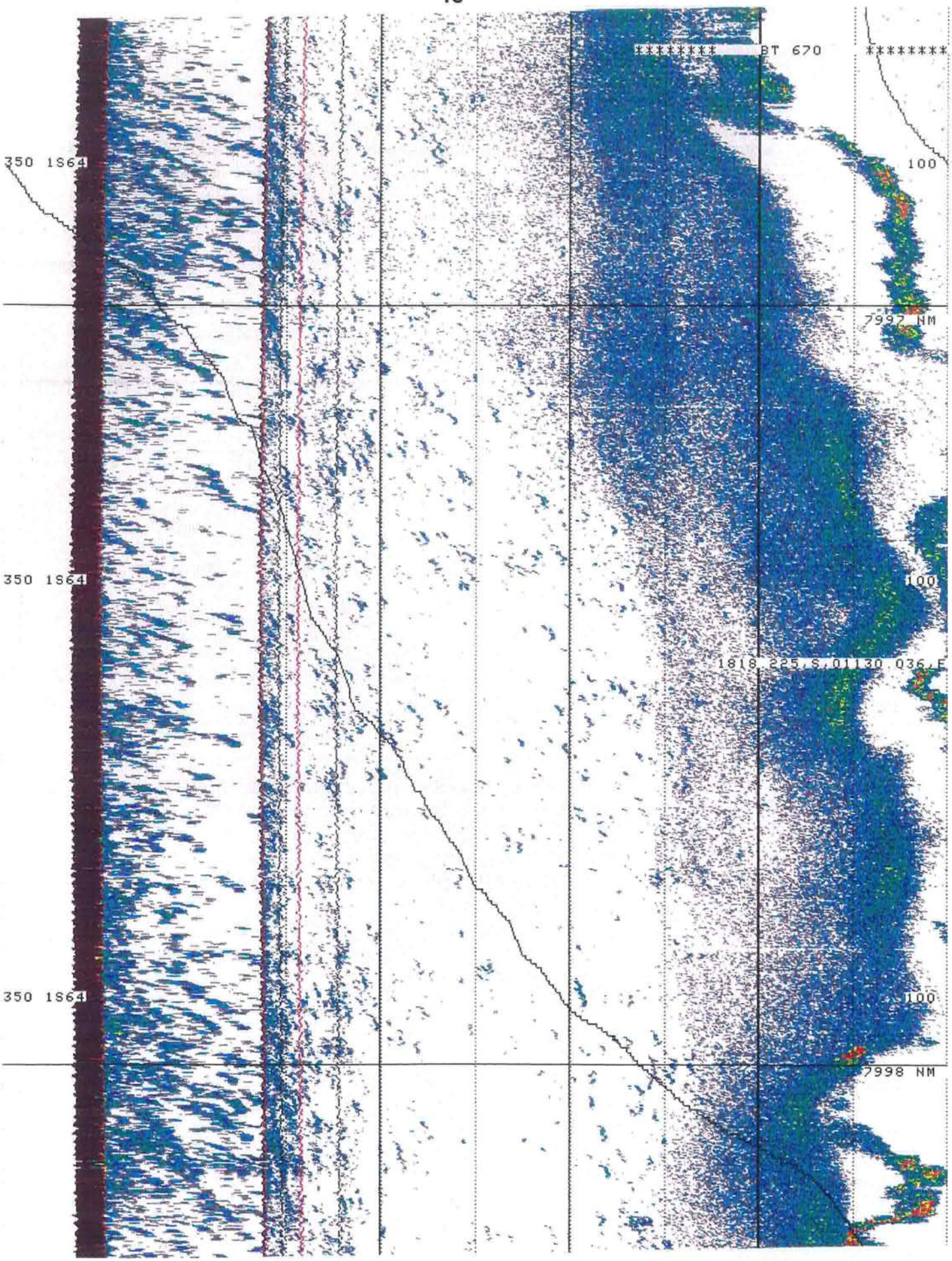



Figure. 5 Echo diagram showing hake in mid-water during trawling at station no. 670. 17:54 hour, Date: 22/2/91. Depth 280 m.

The two estimates of density, by swept area and from acoustic measurements, are independent and offer some possibilities for comparison. If it is assumed that all the hake lifts off the bottom at night acoustic integration may provide estimates of total density. These may be compared with swept area hauls from the same areas when all or part of the fish has moved towards the bottom. Such data are only available for restricted areas, see Table 2.

Table 2. Comparison of hake density from acoustic night observations and swept area trawl stations in the same area. Acoustic contribution from pelagic hake during trawling deducted.

| | | | | | |
|---|---|---|---|---|---|
| SW of Cape Cross | Acoustic, night | Fishing stations | | Acoustic when fishing | |
| | 480 | no. 664, | dens 30 | 300 | |
| | 500 | " 666 | " 113 | 350 | |
| | 410 | " 667 | " 211 | 350 | |
| | | Mean dens. | 118 | Mean resid. acoust. | 38 |
| W of Dune Point | 150 | " 639 | " 9 | 140 | |
| | 150 | " 640 | " 10 | 130 | |
| | | Mean dens. | 9 | Mean resid. acoust. | 5 |
| At 18°00' 18°20' | 270 | " 673 | " 59 | 50 | |
| | 200 | " 675 | " 73 | 130 | |
| | | Mean dens. | 66 | Mean resid. acoust. | 50 |
| NW of Swakop-mund | 100 | " 585 | " 15 | 80 | |
| | 130 | " 592 | " 10 | 110 | |
| | | Mean dens. | 13 | Mean resid. acoust. | 5 |
| W of Walvis Bay | 350 | " 574 | " 44 | 50 | |
| | 350 | " 575 | " 36 | 50 | |
| | 150 | | | | |
| | 150 | Mean dens. | 40 | Mean resid. acoust. | 36 |

The results show that the mean densities estimated from the catch rates in the swept area hauls in a general way correspond with those estimated from the acoustic observations at night less the acoustic contribution from pelagic hake observed during the actual trawling operations. This may be interpreted as a general support of this approach to obtaining an estimate of the total hake stock which include both the fish at the bottom and that remaining in mid-water during the day.

## 3.2 ORANGE RIVER TO ST.FRANCIS BAY

### Composition of catches

Table 3 shows the catch rates standardized to kg/hour by main groups for the shelf and the slope separately. The mean catch rates for hake are similar to those of Survey 3/91, but lower on the shelf than in Survey 1/91. Other demersals species caught, consisted almost solely of kingklip with a few catches of monk.

Table 3. Orange River to St. Francis Bay. Catch rates by main groups in bottom trawl hauls standardized to kg/hour for the shelf and slope.

SHELF 50-259 m

| ST.NO. | DEP. | Hakes | Other dem | Horse mck | Snoek | Squid | Other |
|---|---|---|---|---|---|---|---|
| 501 | 80 | 30.8 | | | | | 108.8 |
| 502 | 141 | 27.8 | 0.4 | | | | 23.6 |
| 503 | 165 | 25.0 | | 0.4 | | 5.8 | 30.0 |
| 504 | 177 | 46.6 | | | 44.0 | 2.6 | 263.8 |
| 505 | 236 | 58.2 | | | | 6.6 | 283.2 |
| 510 | 209 | 217.4 | | 1044.0 | 9.2 | 16.0 | 48.0 |
| 511 | 162 | 205.6 | 4.0 | 23.0 | | 1.2 | 67.4 |
| 512 | 178 | 73.0 | | 11.2 | | | 1109.4 |
| 513 | 157 | 72.6 | | | 2.2 | | 392.6 |
| 514 | 135 | 144.0 | 1.0 | | 31.4 | | 240.2 |
| 515 | 168 | 114.2 | | 1.6 | 3.2 | | 202.2 |
| 516 | 179 | 125.0 | 1.6 | 6.8 | 9.6 | | 104.8 |
| 517 | 164 | 22.5 | | 4.5 | | | 174.5 |
| 520 | 195 | 45.4 | | 6.8 | | 0.6 | 92.6 |
| 521 | 208 | 170.8 | 12.4 | 21.6 | 12.7 | 2.4 | 404.1 |
| 524 | 222 | 311.4 | | 5.7 | 18.2 | | 154.6 |
| 525 | 175 | 131.4 | | 506.0 | | | 88.0 |
| 526 | 191 | 150.0 | | 4.0 | | | 308.0 |
| 527 | 253 | 633.1 | | | | | 1.3 |
| 529 | 205 | | | | | | 60.0 |
| 530 | 247 | 54.8 | | 5.0 | | | 30.6 |
| 533 | 248 | 221.0 | | 3.0 | | 3.0 | 20.8 |
| 536 | 202 | 100.6 | | | | | 6.9 |
| 537 | 184 | 4545.0 | | | | | |
| 538 | 223 | 204.2 | | | | 1.4 | 40.0 |
| 542 | 250 | 124.8 | | | | 3.2 | 40.0 |
| 543 | 187 | 477.0 | | | | | 27.0 |
| 544 | 183 | 2300.0 | | | | | |
| 545 | 176 | 96.0 | | 0.4 | | | 24.0 |
| MEAN | | 369.9 | 0.6 | 56.6 | 4.5 | 1.4 | 149.8 |

SLOPE 260-600 m

| ST.NO. | DEP. | Hakes | Other dem | Horse mck | Snoek | Squid | Other |
|---|---|---|---|---|---|---|---|
| 506 | 385 | 106.0 | | | | | 19.0 |
| 507 | 434 | 48.0 | 5.6 | | | 3.8 | 6.0 |
| 508 | 321 | 134.6 | 34.0 | | | 0.8 | 63.0 |
| 509 | 296 | 313.0 | | 2.0 | | | 281.1 |
| 518 | 313 | 329.4 | | | 52.0 | | 1348.0 |
| 519 | 346 | 140.0 | 62.0 | | | 0.4 | 78.8 |
| 522 | 390 | 457.0 | | | | | 10.7 |
| 523 | 342 | 219.0 | 1.4 | 228.0 | | 8.4 | 52.6 |
| 528 | 346 | 378.7 | 16.6 | 2.0 | | 1.0 | 107.5 |
| 531 | 288 | 670.8 | | | | | 119.6 |
| 532 | 335 | 659.1 | | 63.7 | | | 22.1 |
| 534 | 453 | 33.0 | 5.0 | | | 17.0 | 47.5 |
| 535 | 349 | 246.0 | 2.6 | | | 29.0 | 121.4 |
| 540 | 413 | 184.2 | | | | 8.0 | 462.6 |
| 541 | 309 | 242.0 | 25.0 | | | 26.0 | 131.0 |
| MEAN | | 277.3 | 10.1 | 19.7 | 3.4 | 6.2 | 191.4 |

## The hakes

The depth distributions of the two species are shown in Table 4. The Cape hake has a somewhat deeper distribution than in the previous surveys. The deep water hake is found below about 300 m of depth with about the same density rates as previously.

Table 4. Depth distribution of the two hake species, Orange River to St.Francis Bay. Mean densities: t/nm$^2$ and mean catch rates, kg/hour.

| | 100-250m | 250-350m | 350-450m | 450-550m |
|---|---|---|---|---|
| Cape hake | | | | |
| Density | 11.3 | 8.8 | 0.9 | |
| Catch rate | 340 | 260 | 30 | |
| Deep w. hake | | | | |
| Density | | 4.4 | 6.0 | 1.1 |
| Catch rate | | 130 | 180 | 30 |
| No. of hauls | 24 | 11 | 4 | 1 |

The distribution of Cape hake based on plots of densities by fishing stations is shown in Figure 6. These include the acoustic estimates of fish present above the bottom during the stations as discussed above. The Cape hake was found in lower densities in this southern area than in the previous surveys, especially in the region south of Lüderitz. Spots of higher densities were only found towards the north.

The size compositions of Cape hake are shown in Annex 1 (juveniles not included). In shallow water the compositions are strongly affected by the varying strength of the new recruiting year-classes, but in deeper waters the size compositions are modified by a size dependent depth distribution and age groups can no longer be identified. The modal groups at about 30 and 20 cm found in this survey were present at about 27 and 17 cm in Survey 3/90 and at 23 and 11 cm in Survey 1/90. They probably represent the year-classes from 1988 and 1989 respectively. From their relative abundance in the size compositions over this period, one can deduce that the 1988 year-class was far more abundant than that from 1989.

Only part of the Cape hake is available to the commercial fishery. Assuming a trawl mesh size of 110 mm and a selection factor of 3.3 with a range of 20 cm between the 10% and 90% retention lengths, a selection curve was applied to the total length distribution of the stock in this area and its equivalent weight distribution. The fishable part of the stock would, according to this estimate, be about 21% by numbers and 38% by weight. The main part of the hake in this southern area was thus undersized fish.

The estimates of fish biomass are based on the swept area trawl hauls with a post-stratification shown in Figure 6. The assumptions for the calculations of density are that the trawl width is 18.5 m and that all fish in the path of the trawl are caught: q = 1. As discussed in the previous reports this is likely to cause an underestimate. It is further assumed that the trawl will catch fish up to 5 m from the bottom. As discussed under 4.1 above in the cases where hake was observed above 5 m from the bottom during the fishing stations attempts were made to raise the estimated trawl density by adding an estimate of density based on observations from the acoustic integration system. The resulting total biomass of Cape hake in the southern area with this approach is 113 000 tonnes. This is slightly lower than in the previous surveys. The biomass of the deep sea hake is estimated at 31 000 tonnes, somewhat higher than that found in Survey 3/90.

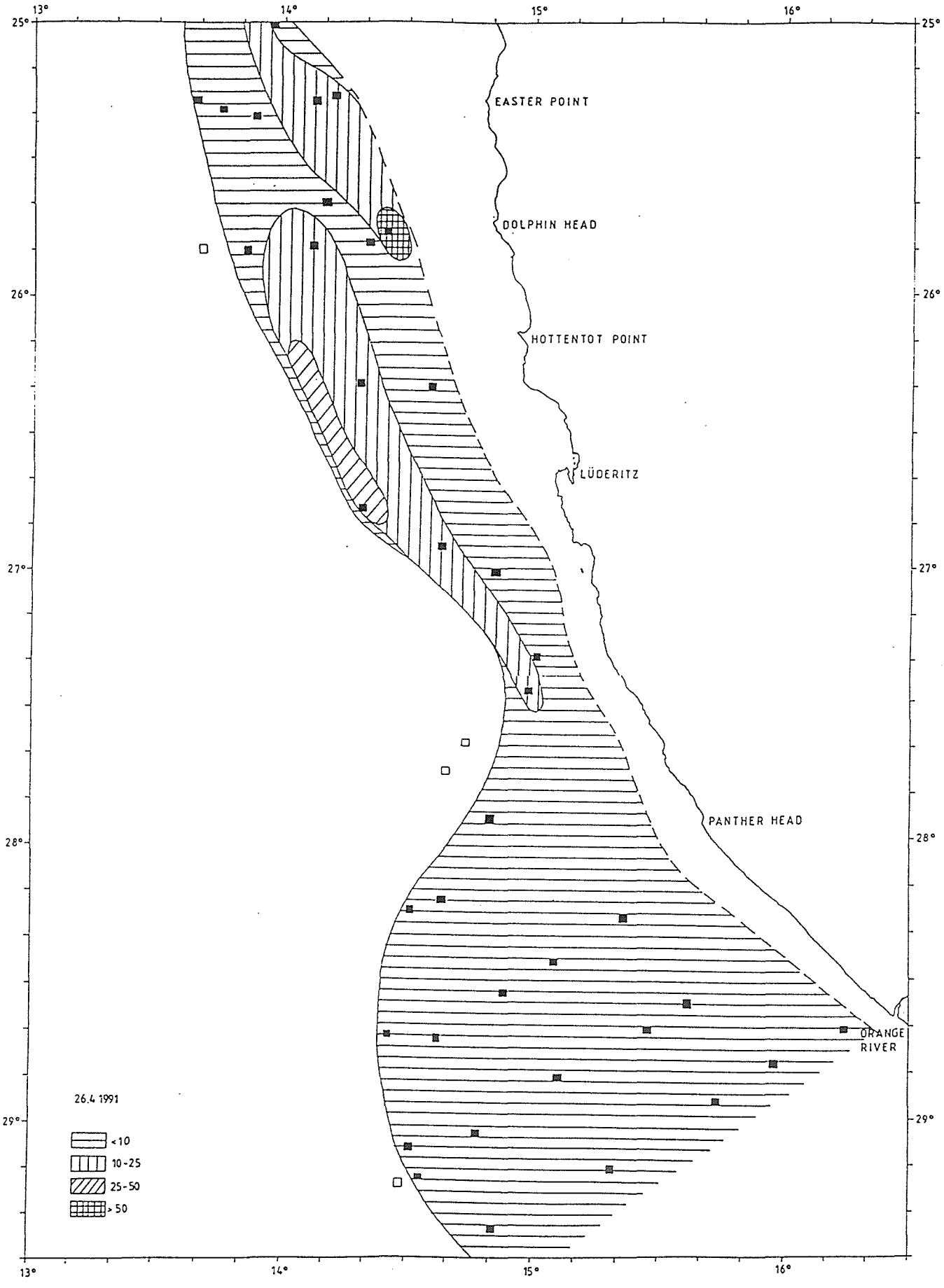



Figure 6. Orange River to St. Francis Bay. Distribution of Cape hake. Density strata based on catch rates at fishing stations and acoustic density > 5 m from bottom.

## 3.3 ST. FRANCIS BAY TO AMBROSE BAY

### Composition of catches

Table 5 shows the catch rates by main groups for the shelf and the slope separately. The mean catch rates for hake are approximately as in Survey 1/90. The group "other demersal" are mainly monk. Horse mackerel gave high catch rates at shallower depths.

Table 5. St. Francis Bay to Ambrose Bay. Catch rates by main groups in bottom trawl hauls standardized to kg/hour for the shelf and slope.

SHELF 50-259 m

| ST.NO. | DEP. | Hakes | Other dem | Horse mck | Squid | Other |
|---|---|---|---|---|---|---|
| 546 | 167 | 1600.0 | | | | 16.0 |
| 547 | 226 | 1702.4 | | | | |
| 553 | 230 | 330.0 | | | | 8.4 |
| 554 | 183 | 351.4 | | 205.0 | | |
| 555 | 224 | 469.2 | 6.0 | 216.0 | | 40.8 |
| 556 | 258 | 261.0 | | | | 77.4 |
| 560 | 250 | 147.7 | 2.8 | 128.4 | 5.2 | 29.6 |
| 561 | 221 | 278.8 | | 361.6 | | 18.6 |
| 562 | 191 | 102.4 | | 122.6 | 1.0 | 5.8 |
| 563 | 178 | 194.0 | | 80.0 | | 1.2 |
| 564 | 155 | 165.0 | 1.2 | 1.8 | | 5.6 |
| 565 | 199 | 119.4 | | 16.0 | | 31.4 |
| 566 | 199 | 179.4 | | 408.6 | 9.0 | 25.8 |
| 572 | 197 | 105.6 | | 245.0 | 3.4 | 24.0 |
| 573 | 150 | 758.0 | | 5242.0 | | |
| 574 | 148 | 1321.2 | | 177.6 | | 9.4 |
| 575 | 146 | 1086.8 | | 114.4 | | 60.8 |
| 577 | 249 | 62.4 | 3.2 | 96.0 | | 10.2 |
| 578 | 209 | 355.4 | 16.0 | 732.0 | | |
| 579 | 136 | 307.8 | 34.0 | 4064.0 | | 578.0 |
| 580 | 129 | 798.0 | | 304.8 | | |
| 581 | 124 | 278.4 | | 818.1 | | 3.8 |
| 582 | 132 | 190.0 | | 176.0 | | 3.8 |
| 583 | 198 | 343.4 | 3.0 | 24.6 | | 13.4 |
| 584 | 195 | 351.5 | 1.6 | 137.8 | 1.2 | 10.5 |
| 585 | 237 | 462.6 | 5.0 | 222.0 | 0.6 | 9.2 |
| 586 | 247 | 532.0 | | 372.8 | 5.0 | 1.0 |
| 590 | 249 | 130.6 | | 55.0 | | 5.2 |
| 591 | 193 | 33.6 | 0.7 | 11.7 | | 16.5 |
| 592 | 236 | 291.2 | | 5.4 | | 31.2 |
| 593 | 201 | 151.4 | 0.4 | 314.4 | 2.4 | 20.0 |
| 594 | 150 | 342.6 | 3.0 | 140.2 | 1.0 | 5.7 |
| 595 | 124 | 300.0 | | | | 6.6 |
| 596 | 113 | 7.2 | | | | 149.4 |
| 597 | 121 | 517.2 | | | | 42.2 |
| 598 | 113 | 660.0 | | | | 1.6 |
| 599 | 125 | 515.0 | 4.0 | 16.5 | | 24.5 |
| 600 | 146 | 446.4 | | | | 0.8 |
| 601 | 131 | 2925.0 | | 20.0 | | 11.0 |
| 602 | 113 | | | | | |
| 603 | 124 | 114.4 | | | | 2.8 |
| 604 | 114 | 166.4 | | | | |
| 606 | 97 | | | | | 20.0 |
| 607 | 122 | 1600.0 | | | | |
| 608 | 142 | 1.0 | | 30.0 | | 0.5 |
| 609 | 155 | 93.6 | | 1306.8 | | 4.4 |
| 610 | 200 | 41.2 | | 754.0 | | 10.4 |
| 615 | 133 | 120.0 | | 3864.0 | | 3.2 |
| 616 | 181 | 268.0 | | 37.0 | | 7.6 |
| 617 | 256 | 138.0 | | 70.0 | | 4.8 |
| 621 | 231 | 57.0 | 0.1 | 15.5 | | 9.6 |
| 622 | 225 | 116.8 | 1.6 | 26.8 | | 32.4 |
| 623 | 152 | 124.4 | | 254.0 | | |
| MEAN | | 415.3 | 1.5 | 399.7 | 0.5 | 26.3 |

Table 5. Continued

SLOPE 260-600 m

| ST.NO. | DEP. | Hakes | Other dem | Horse mck | Squid | Other |
|---|---|---|---|---|---|---|
| 548 | 300 | 215.5 | 1.0 | | | 14.0 |
| 549 | 376 | 190.5 | | | 67.0 | 29.5 |
| 550 | 401 | 18.0 | | | 13.4 | 48.3 |
| 551 | 331 | 244.0 | 5.0 | | 7.4 | 40.7 |
| 552 | 278 | 304.8 | | | | 1038.0 |
| 557 | 285 | 450.0 | 1.4 | | | 27.9 |
| 558 | 400 | 67.8 | 4.8 | | 22.0 | 143.0 |
| 559 | 300 | 756.8 | | | 3.2 | 29.3 |
| 567 | 276 | 302.8 | | | 8.6 | 67.8 |
| 568 | 333 | 387.7 | 17.2 | | 27.4 | 277.3 |
| 569 | 400 | 68.8 | 0.6 | | 16.0 | 62.8 |
| 570 | 348 | 47.0 | 0.6 | 2.8 | 9.6 | 144.0 |
| 571 | 267 | 172.6 | 1.8 | 71.2 | 6.6 | 36.6 |
| 576 | 312 | 92.0 | 1.6 | | 1.6 | 22.2 |
| 587 | 282 | 325.6 | 2.0 | 288.0 | 7.0 | 9.6 |
| 588 | 359 | 124.6 | 4.2 | 3.0 | 10.0 | 39.3 |
| 589 | 300 | 309.8 | | 1.2 | 3.4 | 22.9 |
| 611 | 292 | 801.2 | 32.6 | 307.6 | 22.0 | 49.0 |
| 612 | 311 | 86.2 | | 1.4 | | 16.8 |
| 613 | 328 | 317.2 | 5.4 | | 3.6 | 62.2 |
| 614 | 416 | 115.2 | 7.6 | | 9.8 | 124.4 |
| 618 | 302 | 91.8 | | 4.2 | 5.0 | 122.8 |
| 619 | 349 | 97.0 | | | 6.5 | 12.1 |
| 620 | 299 | 140.0 | 32.2 | | 2.0 | 34.5 |
| MEAN | | 238.6 | 4.9 | 28.3 | 10.5 | 103.1 |

## The hakes

The depth distributions of the two species are shown in Table 6. The density of Cape hake in shallow waters is considerably lower than that found in the two previous surveys. The deep water hake was poorly represented and the trawl survey was not extended beyond the 350-450 m depth range.

Table 6. Depth distribution of the two hake species, St.Francis Bay to Ambrose Bay. Mean densities: t/nm² and mean catch rates, kg/hour.

| | 100-250m | 250-350m | 350-450m | 450-550m |
|---|---|---|---|---|
| Cape hake | | | | |
| Density | 14.5 | 9.1 | 2.2 | |
| Catch rate | 435 | 270 | 70 | |
| Deep w. hake | | | | |
| Density | 0.2 | 0.1 | 0.8 | |
| Catch rate | 5 | 3 | 20 | |
| No. of hauls | 50 | 20 | 6 | 0 |

Figure 7 shows the distribution of Cape hake over the shelf (acoustic estimates of pelagic hake are included). High density areas were located only in spots whereas in the previous surveys a more or less continuous belt of dense fish was found between 100 and 200 m of depth. This change in distribution pattern may be an effect of the main bulk of fish growing beyond the size where they aggregate in relatively shallow water.

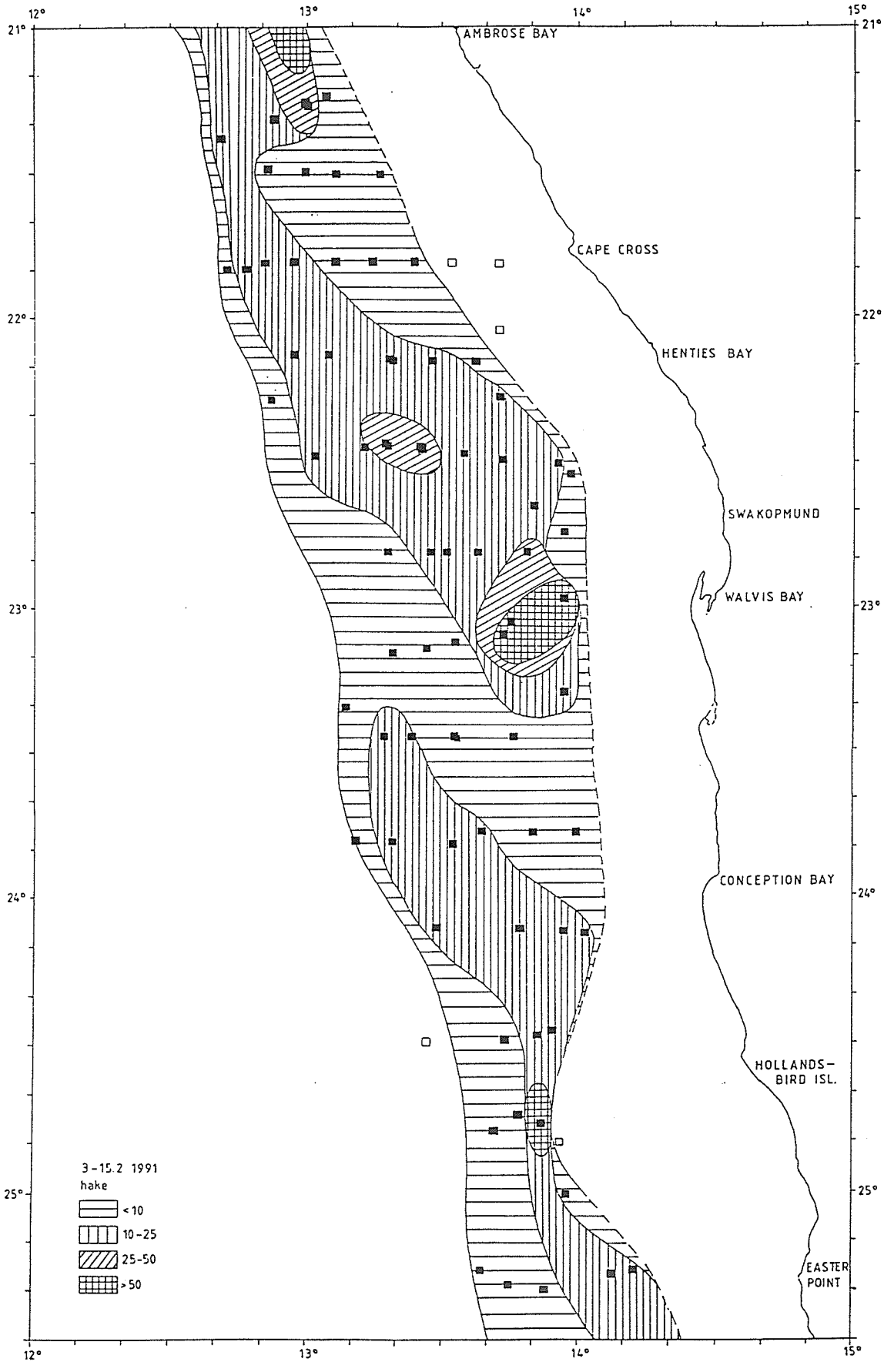



Figure 7. St. Francis Bay to Ambrose Bay. Distribution of Cape hake. Density strata based on catch rates at fishing stations and acoustic density > 5 m from bottom.

The size distributions for this region are shown in Annex 1. The modal group at about 30 cm of fish length found in the southern region was not evident in the shallow water samples here, but 30-35 cm was the dominating fish size at greater depths. The process of size selective depth distribution may thus have affected the size composition in shallow water.

The application of a mesh selection of a 110 mm trawl shows that 17% by numbers and 41% by weight would be available to the commercial fishery in this area, approximately the same proportion as found in the previous surveys.

A biomass estimate of the Cape hake based on post-stratified observations as shown in Figure 7 and adjusted for fish present in mid-water gives a total of 150 000 tonnes for this region. This is significantly lower than the estimates for the two previous surveys, the difference being reduced high density areas of small sized fish in the shallower parts of the shelf.

The full depth range of the deep water hake was not covered in this survey. An estimate of the biomass of this species down to 400 m of depth is 1 500 tonnes.

## 3.4 AMBROSE BAY TO CUNENE RIVER

### Composition of catches

Table 7 shows the catch rates by main groups for the shelf and the slope. Catch rates of hake are considerably higher in deeper waters than in the previous surveys. Large-eye dentex is the main contributor to the group "other demersals". Very high catch rates were obtained for horse mackerel on the shelf.

Table 7. Ambrose Bay to Cunene River. Catch rates by main groups in bottom trawl hauls standardized to kg/hour for the shelf and slope.

SHELF 50-259 m

| ST.NO. | DEP. | Hakes | Other dem. | Horse mck. | Squid | Other |
|---|---|---|---|---|---|---|
| 624 | 126 | | | | | |
| 625 | 153 | 20.2 | | | | 12.6 |
| 626 | 193 | 4256.0 | 56.0 | 84.0 | | 224.0 |
| 627 | 254 | 1568.0 | | 16.8 | | 28.0 |
| 630 | 259 | 25.8 | | 2.1 | | 4.8 |
| 631 | 259 | 35.7 | 0.4 | 2.0 | | 13.2 |
| 632 | 179 | 348.0 | 46.0 | 4440.0 | | 30.0 |
| 633 | 152 | | | 30000.0 | | |
| 634 | 129 | | | 785.7 | | |
| 635 | 197 | 416.4 | | 3304.8 | | |
| 636 | 252 | 31.8 | | 170.6 | | 2.2 |
| 641 | 250 | 102.2 | | 467.2 | | 4.0 |
| 642 | 213 | 219.0 | 233.7 | 1557.0 | | 10.5 |
| 643 | 185 | 79.8 | 1435.2 | 1140.8 | | 27.6 |
| 644 | 128 | 195.3 | 615.6 | 6583.2 | | 482.6 |
| 645 | 178 | 32.6 | | | | 0.2 |
| 646 | 234 | 162.2 | 15.0 | 13.6 | | 8.0 |
| 654 | 216 | 89.5 | | 0.5 | | 10.5 |
| 655 | 149 | 2.2 | 12.0 | | | 5.6 |
| 663 | 200 | 54.0 | 94.2 | 1.7 | 4.2 | 12.6 |
| 664 | 238 | 903.6 | 86.8 | 6.4 | | 27.8 |
| 665 | 179 | 10.6 | 10.0 | | | 4.0 |
| 666 | 238 | 3396.2 | 72.8 | 1456.0 | | 24.8 |
| 671 | 235 | 241.5 | 41.7 | 1.5 | 6.9 | 316.5 |
| 674 | 157 | | | 9600.0 | | |
| 675 | 257 | 2188.2 | | | | 94.6 |
| 677 | 212 | 791.7 | 46.2 | 205.8 | 5.4 | 34.8 |
| 680 | 200 | 11.4 | | 365.2 | | 62.2 |
| 681 | 126 | | | 24000.0 | | |
| 682 | 182 | 216.4 | 72.0 | 1171.2 | | 230.8 |
| MEAN | | 513.28 | 94.5 | 2845.8 | 0.5 | 55.7 |

Total number of stations : 30

Table 7. Continued

SLOPE 260-500 m

| ST.NO. | DEP. | Hakes | Other dem. | Horse mck. | Squid | Other |
|---|---|---|---|---|---|---|
| 628 | 323 | 247.4 | 13.6 | 266.0 | 5.8 | 36.9 |
| 629 | 344 | 164.0 | | 7.0 | | 12.2 |
| 637 | 299 | 606.8 | 14.4 | 6.8 | | 29.4 |
| 638 | 352 | 267.0 | 24.0 | | | 126.7 |
| 639 | 301 | 273.0 | 2.6 | | | 40.2 |
| 640 | 302 | 288.4 | 5.6 | 1.2 | 1.8 | 62.4 |
| 647 | 272 | 92.8 | | 1.0 | | 9.6 |
| 648 | 307 | 119.4 | 15.1 | 17.0 | | 42.1 |
| 649 | 403 | 6.0 | | | | 0.1 |
| 650 | 351 | 334.6 | 8.4 | 1.6 | 8.0 | 61.2 |
| 651 | 376 | 463.6 | | 10.0 | 9.4 | 118.5 |
| 652 | 325 | 413.8 | 11.8 | 4.6 | 20.0 | 53.6 |
| 653 | 275 | 371.6 | 22.8 | 1.0 | 2.3 | 45.6 |
| 656 | 283 | 210.0 | 6.6 | | 1.8 | 241.2 |
| 657 | 287 | 343.0 | 128.0 | 20.9 | 12.0 | 28.3 |
| 658 | 303 | 457.4 | 31.0 | 8.8 | 20.8 | 69.0 |
| 659 | 360 | 267.6 | | | 13.0 | 120.8 |
| 660 | 411 | 71.4 | | | 16.8 | 153.2 |
| 661 | 374 | 277.0 | | | 25.4 | 66.8 |
| 662 | 319 | 936.0 | | | 18.0 | 101.6 |
| 667 | 287 | 6333.6 | | 82.4 | | 170.8 |
| 668 | 402 | 729.2 | | 5.6 | 31.4 | 82.8 |
| 669 | 351 | 1382.0 | | | 42.8 | 88.8 |
| 670 | 281 | 1861.2 | 34.2 | 3.6 | 11.4 | 57.8 |
| 672 | 411 | 225.2 | | | 22.0 | 171.6 |
| 673 | 301 | 1769.4 | | | 7.4 | 279.0 |
| 676 | 356 | 417.0 | | | 67.8 | 342.9 |
| 678 | 306 | 555.0 | | | 6.9 | 32.4 |
| 679 | 406 | 371.4 | | | 3.0 | 69.6 |
| MEAN | | 684.6 | 10.9 | 15.0 | 11.9 | 93.6 |

Total number of stations : 29

## The hakes

Minor amounts of Angola hake, Merluccius polli is found in the northern part of this region. Table 8 shows the depth distribution of the Cape and Angola hakes. The Cape hake shows a clear shift towards greater depths as compared with the two previous surveys in which there was hardly any fish below 350 m of depth. This is most probably related to the larger fish size present during this survey.

Table 8. Depth distribution of hake species. Ambrose Bay-Cunene River. Mean densities: t/nm$^2$ and mean catch rates, kg/hour.

| | 100-250m | 250-350m | 350-450m | 450-550m |
|---|---|---|---|---|
| Cape hake | | | | |
| Density | 15.0 | 27.0 | 11.5 | |
| Catch rate | 450 | 810 | 345 | |
| Angola hake | | | | |
| Density | | 0.2 | 1.5 | |
| Catch rate | | 5 | 45 | |
| No. of hauls | 22 | 22 | 12 | 0 |

Figure 8 shows destribution of Cape hake in this region. The pattern is similar to that found in the two previous surveys with a high densities in a belt from Palgrave Point northwards to the Cunene River. As mentioned above, a substantial part of the fish was found in mid-water in these high density areas even during the day.

The size compositions are shown in Annex 1. Also in this area there is a demonstration of depth dependent size distribution. The size of the Cape hake in this northern region has in all three surveys been larger than in the southern regions and a consistent increase of size has taken place through Surveys 1/90, 3/90 to 1/91. It seems unlikely that this can be accounted for through the growth of the fish in a possible local stock. It is more probably the effect of size selective migrations of fish from the southern regions northwards. This may fit with the observation that the hake from Ambrose Bay northwards was found to have resting gonads both in Survey 3/90 and Survey 1/91. This indicates a general pattern of a feeding migration towards the north which must be followed by migrations southward for spawning. In general this would fit the Benguela regime with a surface current flowing northward providing transport for egg and larvae.

Applying the selection of a 110 mm trawl mesh to the estimated total size distribution of this northern region shows that most of this fish, 75% by numbers and 85% by weight would be available to commercial fsihing.

A biomass estimate based on the post-stratified data on densities of Cape hake shown in Figure 8 is 200 000 tonnes. A considerable part of this biomass was found in mid-water also during daytime. This adds to the lack of precision of the estimate. This is an increase over the previous surveys when, however, no account was taken of the fish in mid-water.

### 3.5 JUVENILE CAPE HAKE

From Survey 1/90 juvenile hake was reported to occur in dense aggregations in mid-water in a few locations in the two southernmost regions at depths of 120-150 m. The group appeared only occasionally in the swept area hauls. In Survey 3/90 this group was found in low abundance in some of the catches at depths shallower than 250 m. In Survey 1/91 a new group of juvenile hake appeared in catches over a much wider area than in the previous surveys. Usually they represented only a small part of the catch, but in restricted locations along the coast at depths of 120-150 m very dense patches were found mostly in mid-water which contained only small sized hake. These occurred particularly off Easter Point-Hollandsbird Island and off Walvis Bay-Cape Cross, see Figure 9. The densities in these aggregations were very high. The catch rates in the fishing stations shown in Figure 9 ranged between 1 and 2 tons/hour, but most of fish were distributed in swarms or layers in mid-water extending over several nautical miles. The estimated densities of four such aggregations located in the survey ranged from 40 to about 200 tonnes/nm$^2$, each observation representing a mean over 5 nm. A rough estimate shows that each aggregation may contain several billion specimens. This indicates that the high density areas may contain significant parts of the total recruitment.

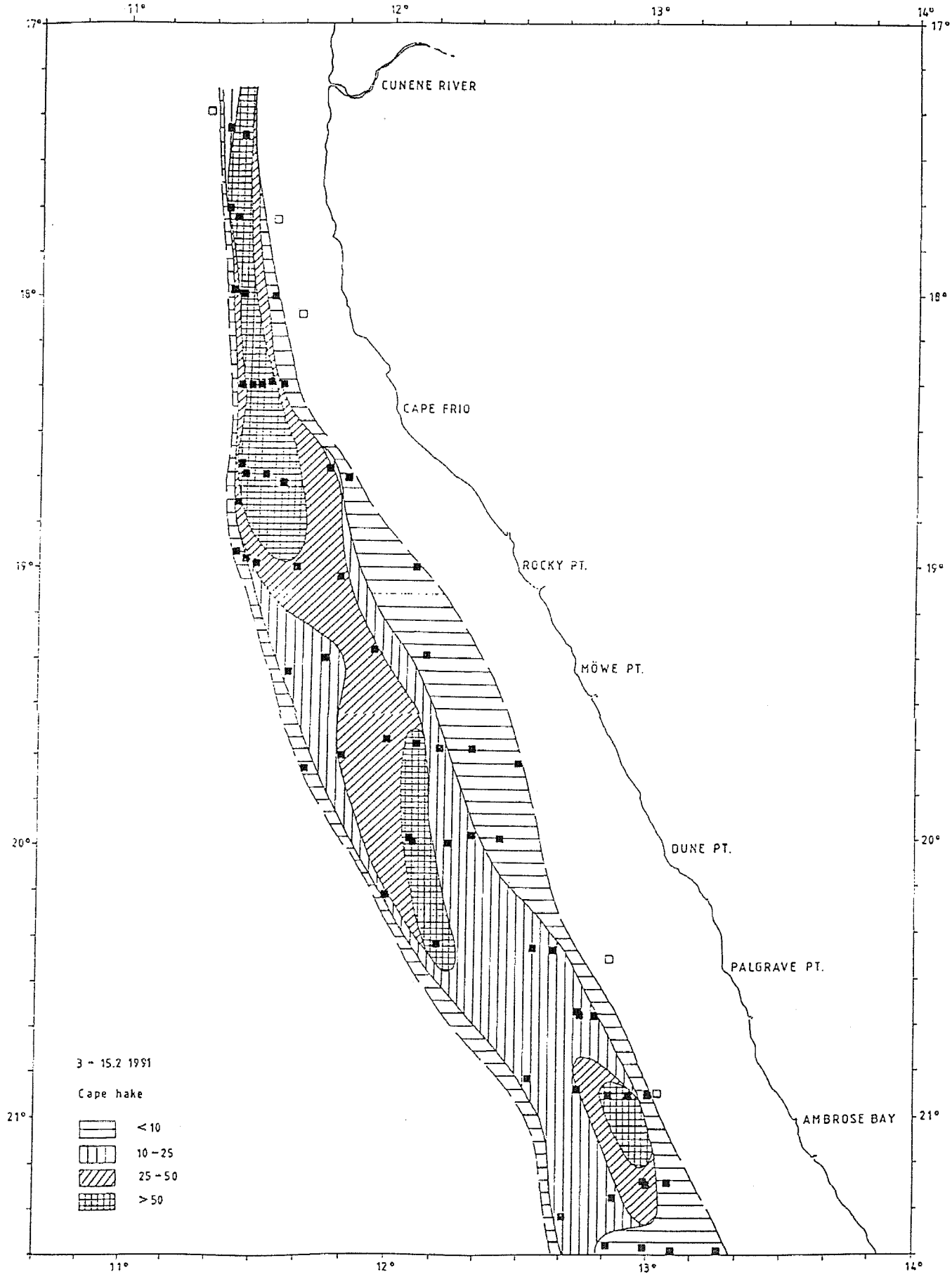



Figure 8. Ambrose Bay to Cunene River. Distribution of Cape hake. Density strata based on catch rates at fishing stations and acoustic density > 5 m from bottom.

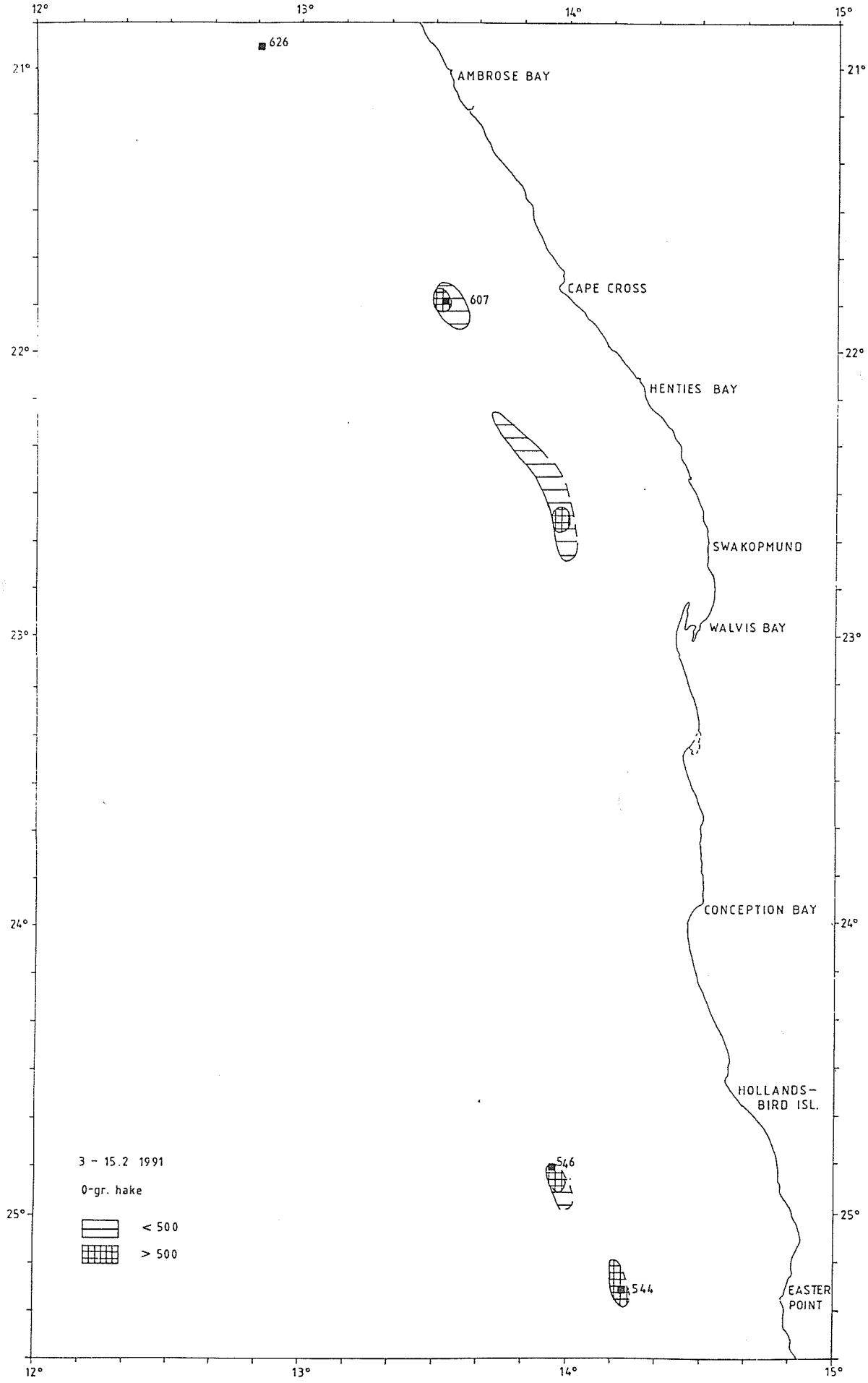



Figure 9. Areas with high acoustic density of juvenile hake and fishing stations with high catch of juveniles.

The size compositions of the juveniles in the three surveys are shown in Figure 10. The group with modal length of 12-13 cm in Survey 1/90 were evidently derived from spawning in 1989 and had grown to a modal size of 16-17 cm in Survey 3/90. The new group at a modal size of 12 cm in Survey 1/91 then represents the 1990 year-class.

The data obtained during this survey on the new recruitment does not permit an estimate of the absolute abundance of the 1990 year-class. There are clear indications, however, that this year-class is considerable stronger than that from 1989 which was observed during survey 1/90. More data on the 1990 year-class may become available from survey efforts later this year and can be expected from next years summer survey when the group will be available to sample trawls in shallow water. In the future special surveys should be directed towards the mid-water occurrence of the juvenile hake with a special further developed detailed acoustic and mid-water sampling programme for assessment of the absolute or at least relative abundance of the O-group fish.

## CHAPTER 4 CONSIDERATIONS OF THE SURVEY RESULTS

The main objective of the programme, the hake survey, was successfully accomplished with a total of 175 swept area trawl stations. Acoustic observations with the new SIMRAD EK500 system showed the well known pattern of hake lifting off the bottom at night, but also that substantial amounts of fish remained off the bottom during the day, especially in the northern part Ambrose Bay to Cunene. A similar behaviour was observed during Survey 3/90, but the indications are that the pelagic occurrence was more pronounced in the present survey.

The analysis of data from successive surveys may, in addition to data on fish distribution, composition and abundance and biological parameters, also provide information on stock structure and biological history of the hake. Figure 11 shows the estimated size compositions for the total stocks in each of the sub-areas and for each of the three surveys. In the two first surveys the size compositions are dominated by fish of 25-30 cm assumed to derive from high survival from the spawning in 1988. This group is also partly apparent in the compositions from Survey 1/91, but these also reflect the effect of another process than fish growth; viz. a northward shift of larger sized fish. There is in all surveys a tendency for the hake in the Ambrose - Cunene region to be larger sized than further south and this is more pronounced in Survey 1/91. The mid-water occurrence of this fish and their state of resting gonads indicate, as discussed under section 3.4 above, a regime of feeding migrations towards the north of the adult fish. These findings are not consistent with a concept of two separate stocks of Cape hake in Namibian waters, but there is a need for further studies of the structure of the stock.

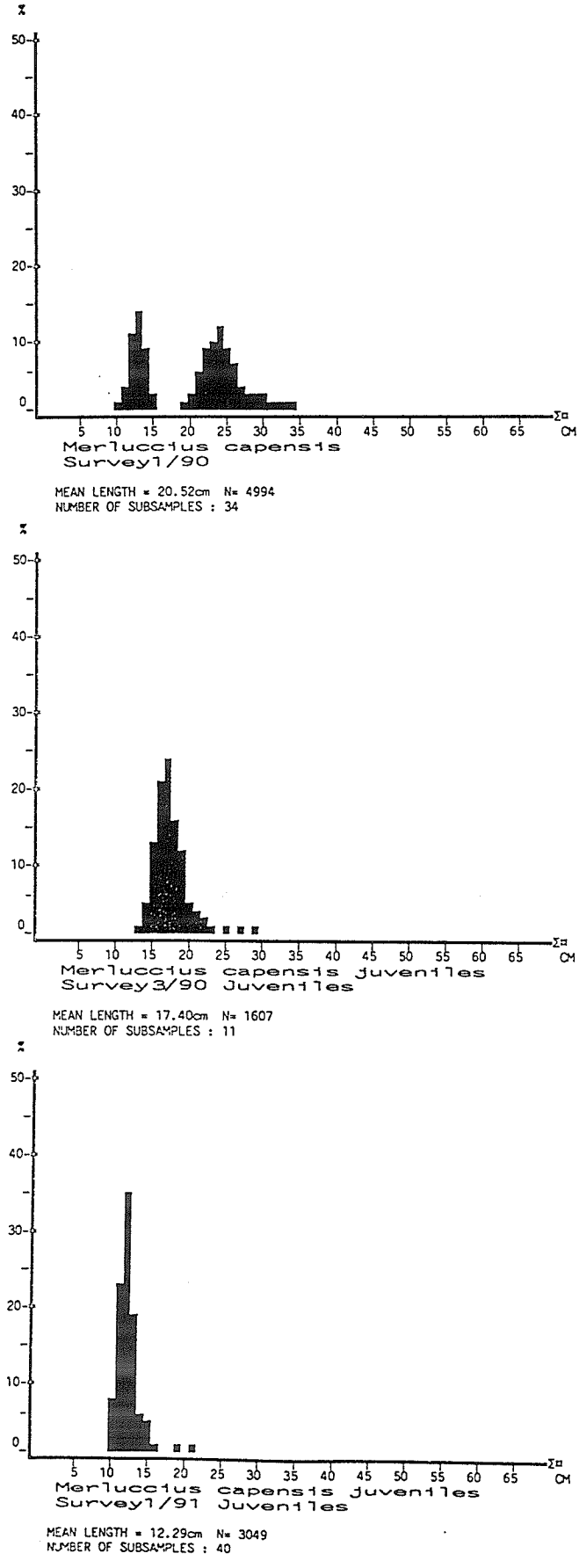



Figure 10. Size composition of samples of juvenile hake in the three surveys.

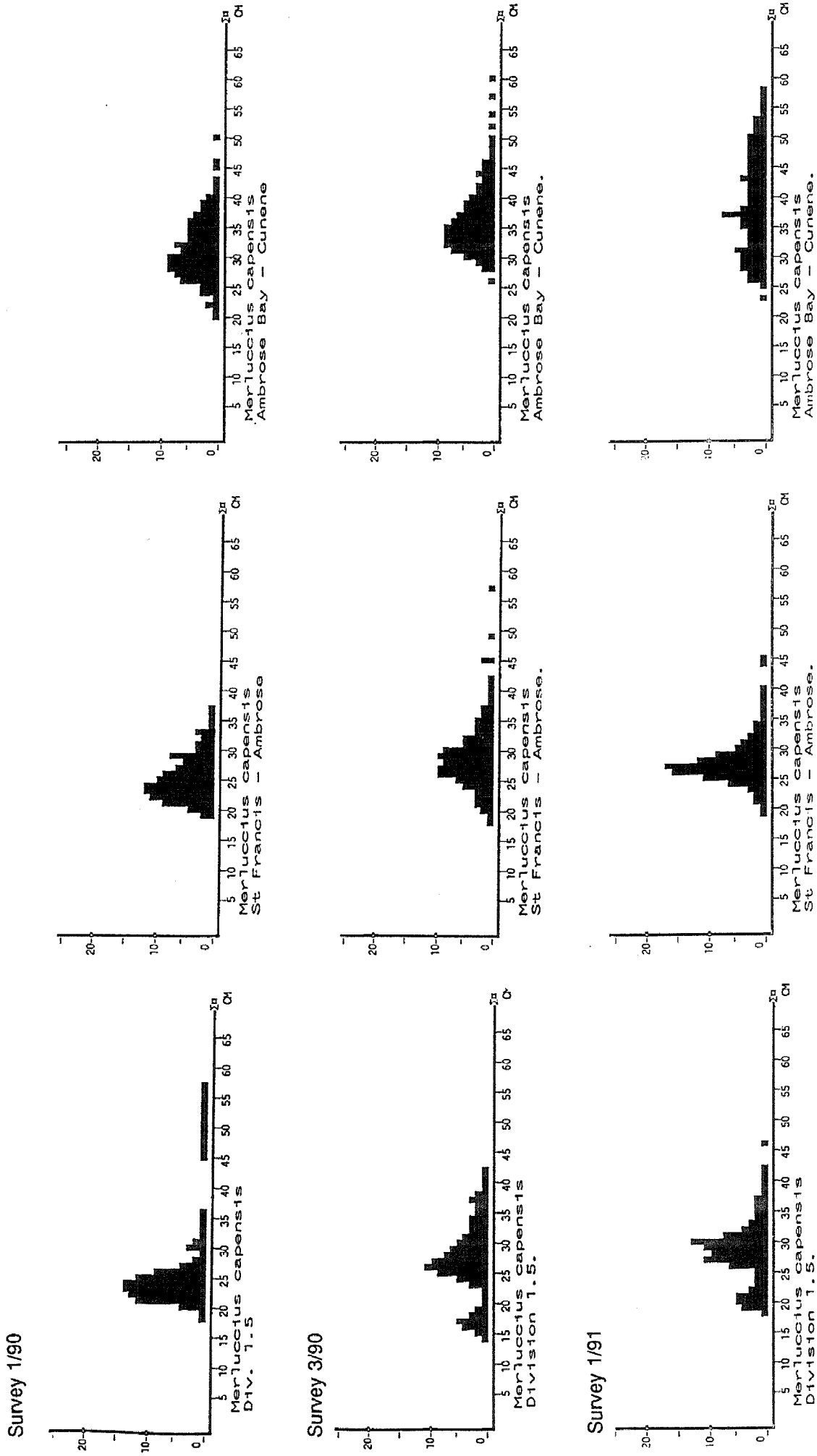


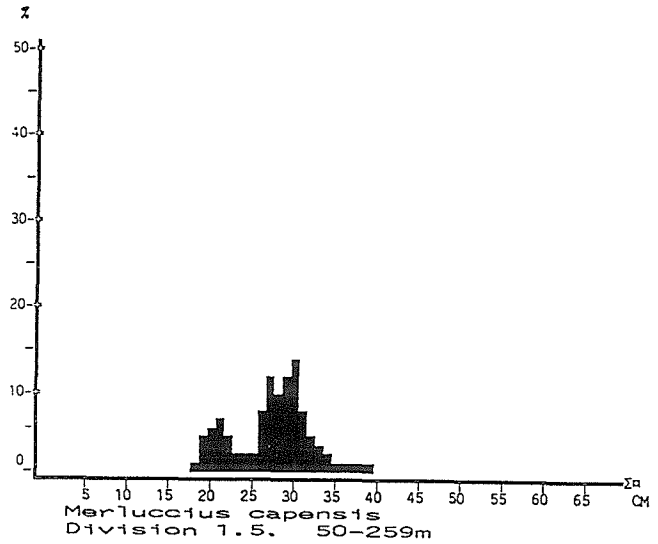

Figure 11. Estimated size compositions for the stocks in each of the sub-areas and for each survey.

Table 9 shows a summary of the biomass estimates from each of the three surveys. The low estimate from Ambrose Bay-Cunene in September-October 1990 does not include the biomass of fish observed to occur in mid-water. One should perhaps have expected an increase of the total stock from 1990 to 1991, but this could be hidden by the relatively low precision of the estimates. Also the removal by the 1990 fishery must be taken into account. This is unknown, but could be around 100 000 tons. One may conclude that the surveys show a biomass level of the Cape hake of 0.5 million tons. There is an increasing availability of larger sized commercial fish and the relatively abundant 1988 year-class is expected to result in a further increase of the fishable stock over 1991-92.

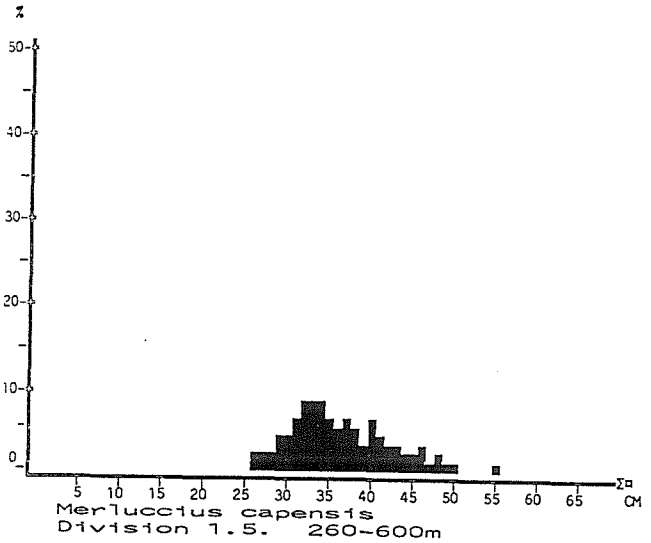
Table 9. Summary of estimates of biomass of the two hake species by survey and area. Tons.

| | Total biomass | | |
|---|---|---|---|
| | Feb-March 1990 | Sep-Oct 1990 | Jan Feb 1991 |
| Orange River-St.Francis Bay | | | |
| Cape hake | 130 000 | 130 000 | 113 000 |
| Deep w. hake | 22 000 | 25 000 | 31 000 |
| St Francis Bay-Ambrose Bay | | | |
| Cape hake | 180 000 | 219 000 | 150 000 |
| Deep w. hake | 4 000 | 6 000 | 1 500 |
| Ambrose Bay-Cunene River | | | |
| Cape hake | 180 000 | 105 000+ | 200 000 |

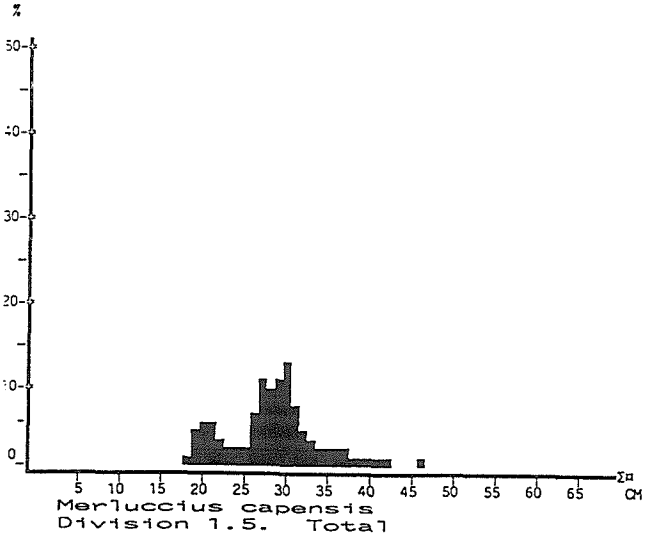
# ANNEX I SIZE COMPOSITIONS OF MAIN STOCKS



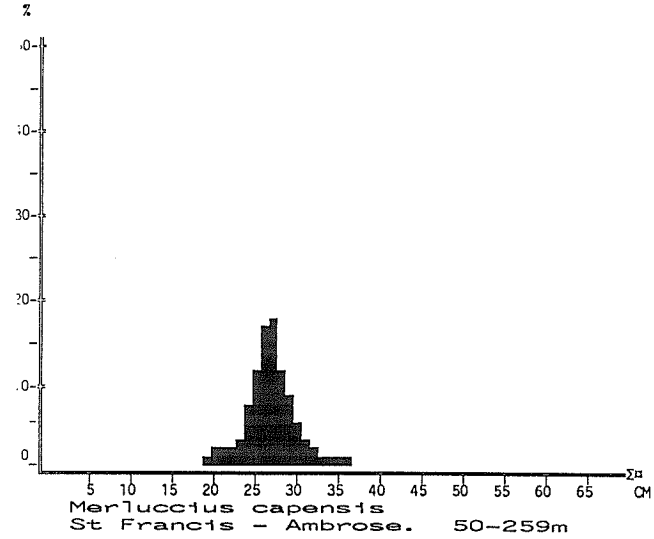

MEAN LENGTH = 27.94cm N= 3512
NUMBER OF SUBSAMPLES : 52



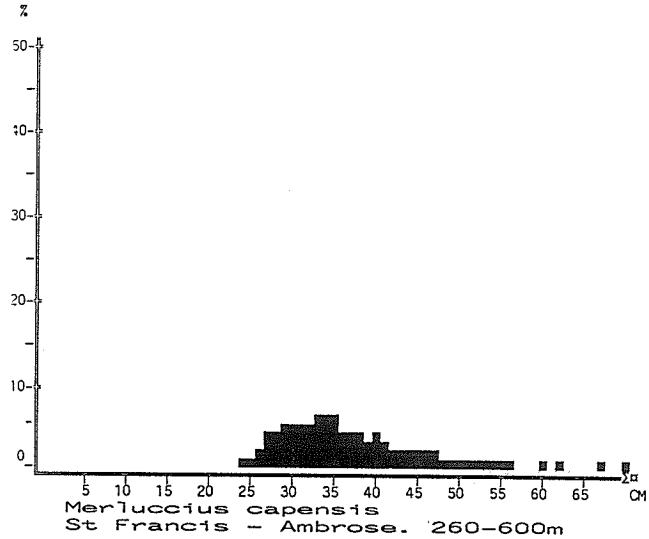

MEAN LENGTH = 36.83cm N= 1025
NUMBER OF SUBSAMPLES : 19



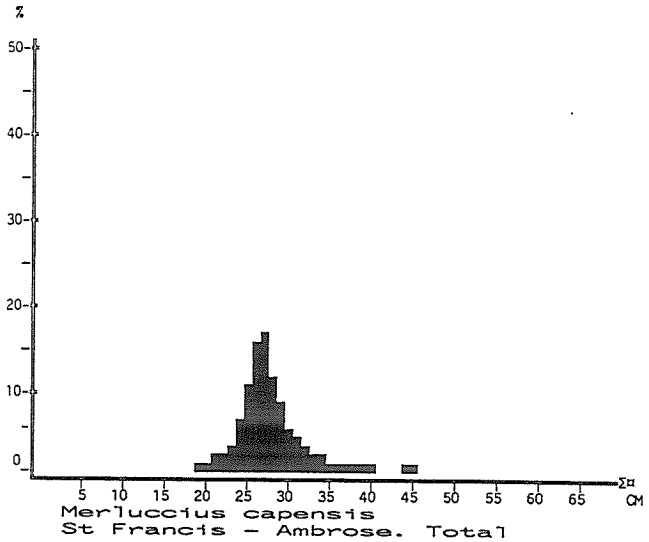

MEAN LENGTH = 28.95cm N= 4537
NUMBER OF SUBSAMPLES : 71



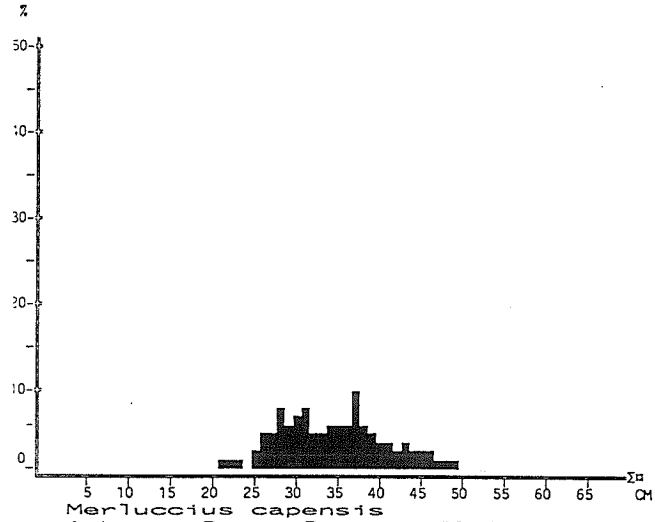

MEAN LENGTH = 27.61cm N= 8719
NUMBER OF SUBSAMPLES : 93




MEAN LENGTH = 37.93cm N= 2827
NUMBER OF SUBSAMPLES : 44

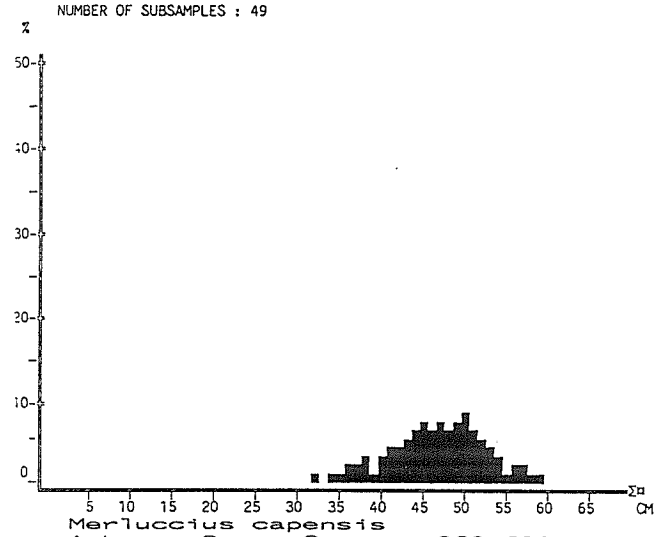



MEAN LENGTH = 28.63cm N=11546
NUMBER OF SUBSAMPLES :137



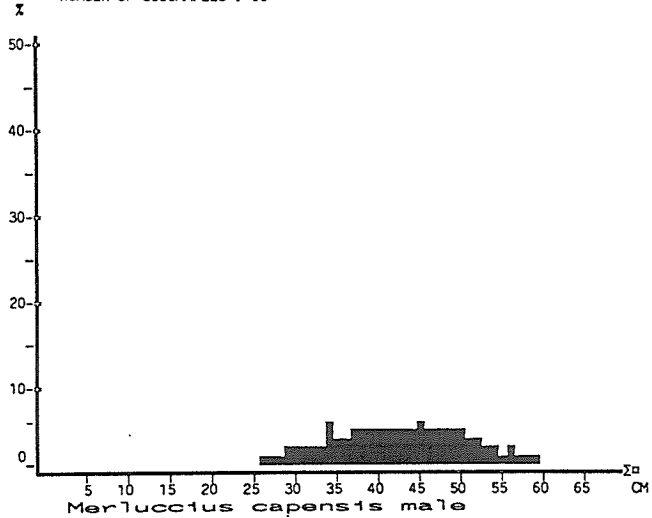

Merluccius capensis
Ambrose Bay - Cunene. 50-259m

MEAN LENGTH = 34.94cm N= 2776
NUMBER OF SUBSAMPLES : 49



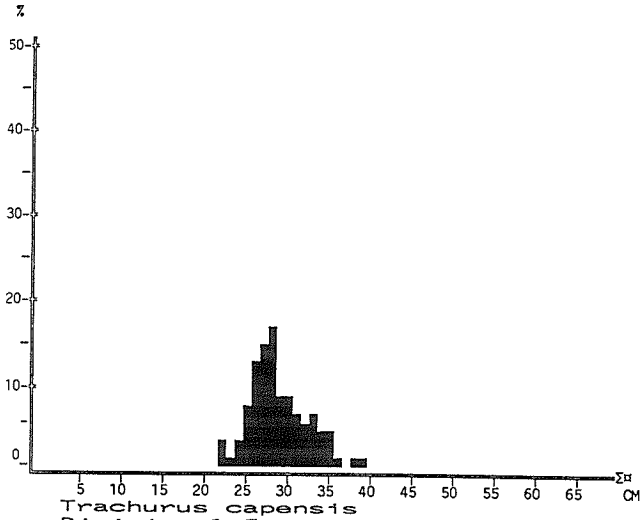

Merluccius capensis
Ambrose Bay - Cunene. 260-600m

MEAN LENGTH = 46.81cm N= 3201
NUMBER OF SUBSAMPLES : 55



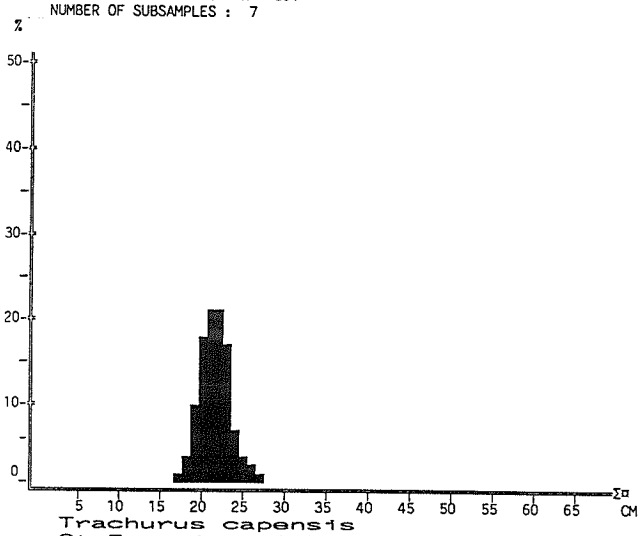

Merluccius capensis male
Ambrose Bay - Cunene. Total

Pooled sample ( simple adding)
MEAN LENGTH = 42.46cm N= 371
NUMBER OF SUBSAMPLES : 1



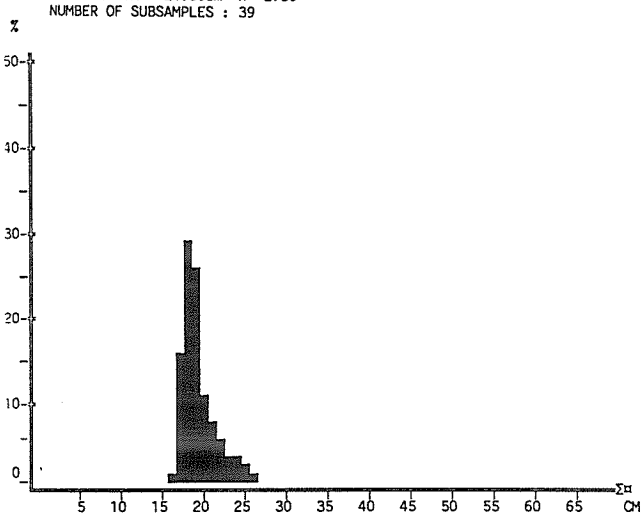

Trachurus capensis
Division 1.5

MEAN LENGTH = 28.69cm N= 391
NUMBER OF SUBSAMPLES : 7




Trachurus capensis
St Francis - Ambrose Bay

MEAN LENGTH = 21.85cm N= 2736
NUMBER OF SUBSAMPLES : 39




Trachurus capensis
Ambrose Bay - Cunene River

MEAN LENGTH = 19.31cm N= 1406
NUMBER OF SUBSAMPLES : 18

# ANNEX II RECORDS OF FISHING STATIONS

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 501
DATE :27/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°40.02
start stop duration Lon E 16°13.98
TIME :07:00:00 07:30:00 30.0 (min) Purpose : 3
LOG : 3992.20 3993.40 1.5 Region : 1
FDEPTH: 81 78 Gear cond.: 0
BDEPTH: 81 78 Validity : 0
Towing dir: 138° Wire out : 400 m Speed : 3.0 kn
Sorted : 70 Total catch: 69.80 Catch/hour: 139.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Chelidonichthys capensis | 67.80 | 360 | 48.57 | |
| Merluccius capensis, female | 23.00 | 122 | 16.48 | 2 |
| Krill | 20.00 | 0 | 14.33 | |
| Callorhinchus capensis | 8.60 | 10 | 6.16 | |
| Jasus lalandii | 5.00 | 46 | 3.58 | |
| Merluccius capensis, male | 4.60 | 24 | 3.30 | 1 |
| Austroglossus microlepis | 4.20 | 26 | 3.01 | |
| Sufflogobius bibarbatus | 3.20 | 450 | 2.29 | |
| Merluccius capensis, juvenile | 3.20 | 150 | 2.29 | 3 |
| Trachurus capensis | 0.00 | 2 | 0.00 | |
| Etrumeus whiteheadi | 0.00 | 42 | 0.00 | |
| Engraulis capensis | 0.00 | 6 | 0.00 | |
| Total | 139.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 502
DATE :27/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°48.00
start stop duration Lon E 15°58.98
TIME :09:20:00 09:50:00 30.0 (min) Purpose : 3
LOG : 4008.40 4009.40 1.4 Region : 1
FDEPTH: 139 142 Gear cond.: 0
BDEPTH: 139 142 Validity : 0
Towing dir: 247° Wire out : 600 m Speed : 2.9 kn
Sorted : 26 Total catch: 25.90 Catch/hour: 51.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 17.80 | 92 | 34.36 | 4 |
| Merluccius capensis, male | 9.20 | 54 | 17.76 | 5 |
| Brama brama | 6.60 | 4 | 12.74 | |
| Sufflogobius bibarbatus | 6.60 | 1518 | 12.74 | |
| Jasus lalandii | 4.40 | 40 | 8.49 | |
| Etrumeus whiteheadi | 2.00 | 26 | 3.86 | |
| Chelidonichthys capensis | 2.00 | 8 | 3.86 | |
| Todaropsis eblanae | 1.00 | 242 | 1.93 | |
| Lepidopus caudatus | 1.00 | 42 | 1.93 | |
| Merluccius capensis | 0.80 | 16 | 1.54 | 6 |
| Genypterus capensis | 0.40 | 2 | 0.77 | |
| Trachurus capensis | 0.00 | 2 | 0.00 | |
| Lampanyctodes hectoris | 0.00 | 28 | 0.00 | |
| Austroglossus microlepis | 0.00 | 2 | 0.00 | |
| LOLIGINIDAE | 0.00 | 48 | 0.00 | |
| Sepia australis | 0.00 | 6 | 0.00 | |
| Zeus capensis | 0.00 | 2 | 0.00 | |
| Total | 51.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 503
DATE :27/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°55.02
start stop duration Lon E 15°43.02
TIME :11:42:00 12:12:00 30.0 (min) Purpose : 3
LOG : 4025.30 4026.40 1.5 Region : 1
FDEPTH: 165 165 Gear cond.: 0
BDEPTH: 165 165 Validity : 0
Towing dir: 160° Wire out : 750 m Speed : 3.1 kn
Sorted : 31 Total catch: 30.60 Catch/hour: 61.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 13.60 | 72 | 22.22 | 8 |
| Etrumeus whiteheadi | 13.00 | 168 | 21.24 | 10 |
| Merluccius capensis | 9.00 | 208 | 14.71 | 9 |
| Lampanyctodes hectoris | 5.00 | 23000 | 8.17 | |
| Sepia australis | 5.00 | 330 | 8.17 | |
| Sufflogobius bibarbatus | 3.00 | 140 | 4.90 | |
| Helicolenus dactylopterus | 3.00 | 172 | 4.90 | |
| Jasus lalandii | 2.40 | 20 | 3.92 | |
| Merluccius capensis, male | 2.40 | 22 | 3.92 | 7 |
| Cynoglossus zanzibarensis | 2.00 | 50 | 3.27 | |
| Lepidopus caudatus | 1.20 | 40 | 1.96 | |
| Todarodes sagittatus | 0.80 | 2 | 1.31 | |
| Paracallionymus costatus | 0.40 | 20 | 0.65 | |
| Trachurus capensis | 0.40 | 8 | 0.65 | |
| Caelorinchus simorhynchus | 0.00 | 2 | 0.00 | |
| Genypterus capensis | 0.00 | 2 | 0.00 | |
| LOLIGINIDAE | 0.00 | 40 | 0.00 | |
| Todaropsis eblanae | 0.00 | 4 | 0.00 | |
| Total | 61.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 504
DATE :27/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 29°10.02
start stop duration Lon E 15°19.02
TIME :15:04:00 15:34:00 30.0 (min) Purpose : 3
LOG : 4046.20 4047.70 1.5 Region : 1
FDEPTH: 175 178 Gear cond.: 0
BDEPTH: 175 178 Validity : 0
Towing dir: 240° Wire out : 750 m Speed : 3.1 kn
Sorted : 179 Total catch: 178.50 Catch/hour: 357.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Emmelichthys nitidus | 98.00 | 236 | 27.45 | 15 |
| Brama brama | 68.00 | 40 | 19.05 | 11 |
| Thyrsites atun | 44.00 | 34 | 12.32 | 16 |
| Etrumeus whiteheadi | 42.00 | 560 | 11.76 | 14 |
| Merluccius capensis, female | 33.60 | 54 | 9.41 | 13 |
| Galeorhinus galeus | 29.40 | 2 | 8.24 | |
| Merluccius capensis, male | 13.00 | 24 | 3.64 | 12 |
| Helicolenus dactylopterus | 12.00 | 182 | 3.36 | |
| Squalus blainvillei | 8.60 | 4 | 2.41 | |
| Zeus capensis | 3.40 | 66 | 0.95 | |
| Todarodes sagittatus | 2.60 | 4 | 0.73 | |
| Holohalaelurus regani | 1.80 | 4 | 0.50 | |
| Caelorinchus simorhynchus | 0.40 | 2 | 0.11 | |
| Congiopodus spinifer | 0.20 | 6 | 0.06 | |
| Cynoglossus zanzibarensis | 0.00 | 6 | 0.00 | |
| Lepidopus caudatus | 0.00 | 4 | 0.00 | |
| Total | 357.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 505
DATE :27/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 29°22.98
start stop duration Lon E 14°51.00
TIME :18:20:00 18:30:00 10.0 (min) Purpose : 3
LOG : 4073.60 4073.80 0.2 Region : 1
FDEPTH: 237 235 Gear cond.: 8
BDEPTH: 237 235 Validity : 9
Towing dir: 248° Wire out : 850 m Speed : 0.3 kn
Sorted : 58 Total catch: 58.00 Catch/hour: 348.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Lepidopus caudatus | 159.60 | 1752 | 45.86 | |
| Helicolenus dactylopterus | 67.80 | 636 | 19.48 | 18 |
| Merluccius capensis, female | 58.20 | 24 | 16.72 | 17 |
| Zeus capensis | 37.80 | 252 | 10.86 | |
| Callorhinchus capensis | 15.00 | 6 | 4.31 | |
| Todarodes sagittatus | 6.60 | 6 | 1.90 | |
| Callanthias legras | 1.80 | 12 | 0.52 | |
| Holohalaelurus regani | 1.20 | 6 | 0.34 | |
| Total | 348.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 506
DATE :27/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 29°37.02
start stop duration Lon E 14°42.00
TIME :23:30:00 00:00:00 30.0 (min) Purpose : 3
LOG : 4095.80 4097.00 1.4 Region : 1
FDEPTH: 386 383 Gear cond.: 0
BDEPTH: 386 383 Validity : 0
Towing dir: 335° Wire out : 1200 m Speed : 2.9 kn
Sorted : 63 Total catch: 62.50 Catch/hour: 125.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 89.20 | 172 | 71.36 | 19 |
| Merluccius paradoxus, male | 16.80 | 54 | 13.44 | 20 |
| Helicolenus dactylopterus | 5.60 | 88 | 4.48 | |
| Holohalaelurus regani | 4.40 | 12 | 3.52 | |
| Malacocephalus laevis | 4.20 | 36 | 3.36 | |
| C R A B S | 2.60 | 92 | 2.08 | |
| Caelorinchus simorhynchus | 1.60 | 32 | 1.28 | |
| Bembrops heterurus | 0.60 | 20 | 0.48 | |
| Trachyrincus scabrus | 0.00 | 2 | 0.00 | |
| MYCTOPHIDAE | 0.00 | 4 | 0.00 | |
| Total | 125.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 507
DATE :28/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 29°13.02
start stop duration Lon E 14°28.98
TIME :02:39:00 03:09:00 30.0 (min) Purpose : 3
LOG : 4119.00 4120.00 1.7 Region : 1
FDEPTH: 430 438 Gear cond.: 0
BDEPTH: 430 438 Validity : 0
Towing dir: 356° Wire out : 1250 m Speed : 3.3 kn
Sorted : 32 Total catch: 31.70 Catch/hour: 63.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 39.00 | 100 | 61.51 | 21 |
| Merluccius paradoxus, male | 9.00 | 20 | 14.20 | 22 |
| Genypterus capensis | 5.60 | 2 | 8.83 | |
| Todarodes sagittatus | 3.80 | 4 | 5.99 | |
| Raja caudaspinosa | 3.20 | 2 | 5.05 | |
| Helicolenus dactylopterus | 1.00 | 12 | 1.58 | |
| Etmopterus brachyurus | 0.60 | 12 | 0.95 | |
| C R A B S | 0.20 | 8 | 0.32 | |
| Caelorinchus simorhynchus | 0.20 | 2 | 0.32 | |
| Trachyrincus scabrus | 0.20 | 8 | 0.32 | |
| Physiculus capensis | 0.20 | 10 | 0.32 | |
| Bembrops heterurus | 0.20 | 10 | 0.32 | |
| Holohalaelurus regani | 0.20 | 6 | 0.32 | |
| Total | 63.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 508
DATE :28/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 29°13.02
start stop duration Lon E 14°34.02
TIME :06:27:00 06:57:00 30.0 (min) Purpose : 3
LOG : 4131.90 4132.90 1.0 Region : 1
FDEPTH: 321 321 Gear cond.: 0
BDEPTH: 321 321 Validity : 0
Towing dir: 345° Wire out : 1050 m Speed : 2.0 kn
Sorted : 116 Total catch: 116.20 Catch/hour: 232.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 100.00 | 268 | 43.03 | 24 |
| Merluccius paradoxus | 41.00 | 468 | 17.64 | 25 |
| Genypterus capensis | 34.00 | 12 | 14.63 | 27 |
| Merluccius paradoxus, male | 21.60 | 64 | 9.29 | 23 |
| Merluccius capensis, female | 13.00 | 2 | 5.59 | 26 |
| Holohalaelurus regani | 7.00 | 20 | 3.01 | |
| Squalus acanthias | 3.20 | 2 | 1.38 | |
| Malacocephalus laevis | 3.00 | 18 | 1.29 | |
| Helicolenus dactylopterus | 3.00 | 30 | 1.29 | |
| Caelorinchus simorhynchus | 2.00 | 28 | 0.86 | |
| Squalus megalops | 1.40 | 2 | 0.60 | |
| MYCTOPHIDAE | 1.00 | 0 | 0.43 | |
| Todarodes sagittatus | 0.80 | 2 | 0.34 | |
| Cynoglossus zanzibarensis | 0.60 | 16 | 0.26 | |
| Paracallionymus costatus | 0.40 | 50 | 0.17 | |
| Epigonus denticulatus | 0.20 | 52 | 0.09 | |
| Rossia sp. | 0.20 | 6 | 0.09 | |
| Total | 232.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 509
DATE :28/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 29°7.02
start stop duration Lon E 14°31.02
TIME :08:10:00 08:40:00 30.0 (min) Purpose : 3
LOG : 4138.00 4139.00 1.4 Region : 1
FDEPTH: 292 300 Gear cond.: 0
BDEPTH: 292 300 Validity : 0
Towing dir: 345° Wire out : 950 m Speed : 2.7 kn
Sorted : 60 Total catch: 298.05 Catch/hour: 596.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus | 263.00 | 2806 | 44.12 | 30 |
| Merluccius paradoxus, female | 154.00 | 470 | 25.83 | 29 |
| Merluccius capensis, female | 91.00 | 70 | 15.27 | 32 |
| Merluccius paradoxus, male | 37.00 | 150 | 6.21 | 28 |
| Merluccius capensis, male | 31.00 | 40 | 5.20 | 31 |
| Raja wallacei | 6.60 | 2 | 1.11 | |
| Caelorinchus simorhynchus | 4.00 | 140 | 0.67 | |
| Epigonus denticulatus | 3.00 | 110 | 0.50 | |
| Holohalaelurus regani | 3.00 | 10 | 0.50 | |
| Trachurus capensis | 2.00 | 10 | 0.34 | |
| Paracallionymus costatus | 0.50 | 50 | 0.08 | |
| Cynoglossus zanzibarensis | 0.50 | 20 | 0.08 | |
| Helicolenus dactylopterus | 0.50 | 30 | 0.08 | |
| Sepia australis | 0.00 | 10 | 0.00 | |
| Total | 596.10 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 510
DATE :28/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 29°3.00
start stop duration Lon E 14°46.98
TIME :10:45:00 11:15:00 30.0 (min) Purpose : 3
LOG : 4157.30 4159.00 1.4 Region : 1
FDEPTH: 210 208 Gear cond.: 0
BDEPTH: 210 208 Validity : 0
Towing dir: 340° Wire out : 800 m Speed : 2.8 kn
Sorted : 28 Total catch: 667.30 Catch/hour: 1334.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1044.00 | 5160 | 78.23 | 36 |
| Merluccius capensis, female | 200.00 | 130 | 14.99 | 33 |
| Merluccius capensis, male | 16.00 | 10 | 1.20 | 34 |
| Loligo vulgaris | 16.00 | 80 | 1.20 | |
| Todarodes sagittatus | 16.00 | 40 | 1.20 | |
| Helicolenus dactylopterus | 12.00 | 120 | 0.90 | |
| Zeus capensis | 12.00 | 40 | 0.90 | |
| Thyrsites atun | 9.20 | 6 | 0.69 | |
| Emmelichthys nitidus | 4.00 | 40 | 0.30 | |
| Lepidopus caudatus | 4.00 | 40 | 0.30 | |
| Merluccius paradoxus, female | 1.40 | 6 | 0.10 | 35 |
| Total | 1334.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 511
DATE :28/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°51.00
start stop duration Lon E 15°7.02
TIME :13:53:00 14:23:00 30.0 (min) Purpose : 3
LOG : 4182.00 4183.60 1.4 Region : 1
FDEPTH: 162 162 Gear cond.: 0
BDEPTH: 162 162 Validity : 0
Towing dir: 340° Wire out : 700 m Speed : 2.9 kn
Sorted : 151 Total catch: 150.60 Catch/hour: 301.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 142.40 | 130 | 47.28 | 38 |
| Merluccius capensis, male | 63.20 | 74 | 20.98 | 37 |
| Trachurus capensis | 23.00 | 124 | 7.64 | 39 |
| Helicolenus dactylopterus | 21.00 | 134 | 6.97 | |
| Callorhinchus capensis | 14.40 | 10 | 4.78 | |
| Chelidonichthys capensis | 10.80 | 26 | 3.59 | |
| Mustelus palumbes | 9.00 | 6 | 2.99 | |
| Squalus blainvillei | 7.00 | 18 | 2.32 | |
| Lophius vomerinus | 4.00 | 4 | 1.33 | |
| Loligo vulgaris | 3.00 | 12 | 1.00 | |
| Todarodes sagittatus | 1.20 | 18 | 0.40 | |
| Holohalaelurus regani | 0.80 | 2 | 0.27 | |
| Lepidopus caudatus | 0.40 | 8 | 0.13 | |
| Zeus capensis | 0.40 | 4 | 0.13 | |
| Paracallionymus costatus | 0.20 | 12 | 0.07 | |
| Congiopodus spinifer | 0.20 | 2 | 0.07 | |
| Emmelichthys nitidus | 0.20 | 10 | 0.07 | |
| Total | 301.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 512
DATE :28/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°40.98
start stop duration Lon E 15°27.00
TIME :16:23:00 16:53:00 30.0 (min) Purpose : 3
LOG : 4202.50 4203.80 1.6 Region : 1
FDEPTH: 178 178 Gear cond.: 0
BDEPTH: 178 178 Validity : 0
Towing dir: 65° Wire out : 750 m Speed : 3.3 kn
Sorted : 35 Total catch: 596.80 Catch/hour: 1193.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Etrumeus whiteheadi | 912.80 | 11380 | 76.47 | 42 |
| Galeorhinus galeus | 138.40 | 8 | 11.60 | |
| Merluccius capensis, female | 57.60 | 82 | 4.83 | 41 |
| MYCTOPHIDAE | 33.60 | 10080 | 2.82 | |
| Merluccius capensis, male | 15.40 | 26 | 1.29 | 40 |
| Brama brama | 12.00 | 6 | 1.01 | |
| Trachurus capensis | 11.20 | 28 | 0.94 | |
| Helicolenus dactylopterus | 5.60 | 140 | 0.47 | |
| Callorhinchus capensis | 4.20 | 4 | 0.35 | |
| Sufflogobius bibarbatus | 2.80 | 252 | 0.23 | |
| Sepia australis | 0.00 | 56 | 0.00 | |
| Total | 1193.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 513
DATE :28/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°36.00
start stop duration Lon E 15°37.02
TIME :18:10:00 18:40:00 30.0 (min) Purpose : 3
LOG : 4213.50 4214.70 1.5 Region : 1
FDEPTH: 158 155 Gear cond.: 0
BDEPTH: 158 155 Validity : 0
Towing dir: 342° Wire out : 700 m Speed : 2.9 kn
Sorted : 33 Total catch: 233.70 Catch/hour: 467.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Etrumeus whiteheadi | 375.60 | 4748 | 80.36 | 46 |
| Merluccius capensis, female | 59.80 | 136 | 12.79 | 44 |
| Merluccius capensis, male | 10.40 | 32 | 2.23 | 43 |
| Lepidopus caudatus | 4.80 | 168 | 1.03 | |
| Lolligoncula mercatoris | 3.60 | 0 | 0.77 | |
| Todaropsis eblanae | 3.60 | 72 | 0.77 | |
| Merluccius capensis, juvenile | 2.40 | 180 | 0.51 | 45 |
| MYCTOPHIDAE | 2.40 | 0 | 0.51 | |
| Thyrsites atun | 2.20 | 2 | 0.47 | |
| Sufflogobius bibarbatus | 1.20 | 408 | 0.26 | |
| Holohalaelurus regani | 0.80 | 2 | 0.17 | |
| Helicolenus dactylopterus | 0.60 | 24 | 0.13 | |
| Total | 467.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 514
DATE :29/01/1990 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°16.98
start stop duration Lon E 15°21.00
TIME :06:15:00 06:45:00 30.0 (min) Purpose : 3
LOG : 4300.60 4301.50 1.4 Region : 1
FDEPTH: 138 132 Gear cond.: 0
BDEPTH: 138 132 Validity : 0
Towing dir: 340° Wire out : 650 m Speed : 2.6 kn
Sorted : 33 Total catch: 208.30 Catch/hour: 416.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Etrumeus whiteheadi | 199.50 | 3560 | 47.89 | 50 |
| Merluccius capensis, male | 115.20 | 460 | 27.65 | 48 |
| Thyrsites atun | 31.40 | 16 | 7.54 | 49 |
| Merluccius capensis, male | 28.80 | 138 | 6.91 | 47 |
| Chelidonichthys capensis | 9.80 | 36 | 2.35 | |
| Sufflogobius bibarbatus | 9.10 | 1778 | 2.18 | |
| Lolligoncula mercatoris | 7.00 | 0 | 1.68 | |
| Brama brama | 6.40 | 4 | 1.54 | |
| Raja straeleni | 4.20 | 2 | 1.01 | |
| Lepidopus caudatus | 2.80 | 92 | 0.67 | |
| Genypterus capensis | 1.00 | 4 | 0.24 | |
| Todaropsis eblanae | 0.70 | 56 | 0.17 | |
| Zeus capensis | 0.70 | 8 | 0.17 | |
| Sepia australis | 0.00 | 8 | 0.00 | |
| Total | 416.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 515
DATE :29/01/1990 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°25.02
start stop duration Lon E 15°6.00
TIME :08:35:00 09:05:00 30.0 (min) Purpose : 3
LOG : 4316.90 4318.00 1.4 Region : 1
FDEPTH: 170 166 Gear cond.: 0
BDEPTH: 170 166 Validity : 0
Towing dir: 232° Wire out : 750 m Speed : 2.9 kn
Sorted : 15 Total catch: 160.60 Catch/hour: 321.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Galeorhinus galeus | 140.00 | 8 | 43.59 | |
| Merluccius capensis, female | 88.60 | 228 | 27.58 | 52 |
| Lepidopus caudatus | 33.20 | 0 | 10.34 | |
| Merluccius capensis, male | 25.40 | 74 | 7.91 | 51 |
| Etrumeus whiteheadi | 16.00 | 192 | 4.98 | |
| Thyrsites atun | 3.20 | 2 | 1.00 | |
| Chelidonichthys capensis | 3.20 | 12 | 1.00 | |
| Callorhinchus capensis | 3.00 | 2 | 0.93 | |
| Helicolenus dactylopterus | 2.80 | 12 | 0.87 | |
| Lolligoncula mercatoris | 2.40 | 0 | 0.75 | |
| Trachurus capensis | 1.60 | 8 | 0.50 | |
| Cynoglossus zanzibarensis | 0.80 | 4 | 0.25 | |
| Zeus capensis | 0.40 | 12 | 0.12 | |
| Congiopodus spinifer | 0.20 | 2 | 0.06 | |
| Merluccius capensis, juvenile | 0.20 | 52 | 0.06 | 53 |
| Todaropsis eblanae | 0.20 | 12 | 0.06 | |
| Paracallionymus costatus | 0.00 | 4 | 0.00 | |
| Total | 321.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 516
DATE :29/01/1990 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°31.98
start stop duration Lon E 14°52.98
TIME :10:35:00 11:05:00 30.0 (min) Purpose : 3
LOG : 4329.10 4330.20 1.4 Region : 1
FDEPTH: 177 181 Gear cond.: 0
BDEPTH: 177 181 Validity : 0
Towing dir: 240° Wire out : 750 m Speed : 3.0 kn
Sorted : 26 Total catch: 123.90 Catch/hour: 247.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 106.60 | 112 | 43.02 | 55 |
| Etrumeus whiteheadi | 46.00 | 610 | 18.56 | 57 |
| Lepidopus caudatus | 36.00 | 900 | 14.53 | |
| Merluccius capensis, male | 17.60 | 24 | 7.10 | 54 |
| Thyrsites atun | 9.60 | 6 | 3.87 | |
| Trachurus capensis | 6.80 | 40 | 2.74 | 58 |
| Chelidonichthys capensis | 6.40 | 8 | 2.58 | |
| Callorhinchus capensis | 6.00 | 4 | 2.42 | |
| Lolligoncula mercatoris | 3.20 | 0 | 1.29 | |
| Paracallionymus costatus | 2.80 | 276 | 1.13 | |
| Lophius vomerinus | 1.60 | 2 | 0.65 | |
| Holohalaelurus regani | 1.40 | 4 | 0.56 | |
| Sardinops ocellatus | 1.20 | 8 | 0.48 | |
| Merluccius capensis | 0.80 | 64 | 0.32 | 56 |
| Raja straeleni | 0.80 | 2 | 0.32 | |
| Helicolenus dactylopterus | 0.40 | 32 | 0.16 | |
| Zeus capensis | 0.40 | 12 | 0.16 | |
| Todaropsis eblanae | 0.20 | 8 | 0.08 | |
| Bassanago albescens | 0.00 | 4 | 0.00 | |
| Sufflogobius bibarbatus | 0.00 | 12 | 0.00 | |
| Sepia australis | 0.00 | 4 | 0.00 | |
| Total | 247.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 517
DATE :29/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°42.00
start stop duration Lon E 14°37.98
TIME :12:55:00 13:07:00 12.0 (min) Purpose : 3
LOG : 4345.60 4346.30 0.7 Region : 1
FDEPTH: 157 170 Gear cond.: 9
BDEPTH: 157 170 Validity : 0
Towing dir: 353° Wire out : 700 m Speed : 3.2 kn
Sorted : 40 Total catch: 40.30 Catch/hour: 201.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Congiopodus spinifer | 59.00 | 70 | 29.28 | |
| Zeus capensis | 43.50 | 140 | 21.59 | |
| Etrumeus whiteheadi | 35.00 | 395 | 17.37 | 60 |
| Merluccius capensis, female | 22.50 | 10 | 11.17 | 59 |
| Helicolenus dactylopterus | 17.50 | 120 | 8.68 | |
| Callanthias legras | 7.50 | 85 | 3.72 | |
| Notopogon macrosolen | 5.50 | 385 | 2.73 | |
| Trachurus capensis | 4.50 | 10 | 2.23 | |
| Chelidonichthys capensis | 3.00 | 5 | 1.49 | |
| Octopus vulgaris | 2.00 | 5 | 0.99 | |
| Emmelichthys nitidus | 1.50 | 50 | 0.74 | |
| Total | 201.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 518
DATE :29/01/1990 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°42.00
start stop duration Lon E 14°27.00
TIME :14:48:00 15:18:00 30.0 (min) Purpose : 3
LOG : 4359.80 4361.40 1.6 Region : 1
FDEPTH: 300 325 Gear cond.: 0
BDEPTH: 300 325 Validity : 0
Towing dir: 360° Wire out : 950 m Speed : 3.1 kn
Sorted : 35 Total catch: 864.70 Catch/hour: 1729.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Epigonus denticulatus | 1060.00 | 63070 | 61.29 | |
| Merluccius paradoxus, female | 166.00 | 634 | 9.60 | 64 |
| Merluccius paradoxus, male | 155.40 | 436 | 8.99 | 63 |
| Scyliorhinus capensis | 136.00 | 160 | 7.86 | |
| Thyrsites atun | 52.00 | 40 | 3.01 | |
| Brama brama | 48.00 | 40 | 2.78 | |
| Helicolenus dactylopterus | 48.00 | 240 | 2.78 | |
| Emmelichthys nitidus | 28.00 | 40 | 1.62 | |
| Zeus capensis | 16.00 | 40 | 0.93 | |
| Congiopodus spinifer | 8.00 | 40 | 0.46 | |
| Merluccius capensis, female | 5.00 | 14 | 0.29 | 61 |
| Cynoglossus zanzibarensis | 4.00 | 40 | 0.23 | |
| Merluccius capensis, male | 3.00 | 14 | 0.17 | 62 |
| Total | 1729.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 519
DATE :29/01/1990 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°13.98
start stop duration Lon E 14°31.02
TIME :21:10:00 21:40:00 30.0 (min) Purpose : 3
LOG : 4406.30 4407.40 1.5 Region : 1
FDEPTH: 343 348 Gear cond.: 0
BDEPTH: 343 348 Validity : 0
Towing dir: 25° Wire out : 1100 m Speed : 3.1 kn
Sorted : 20 Total catch: 140.60 Catch/hour: 281.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Genypterus capensis | 62.00 | 32 | 22.05 | 69 |
| Merluccius paradoxus, female | 60.00 | 120 | 21.34 | 67 |
| Merluccius capensis, female | 51.00 | 46 | 18.14 | 65 |
| Scyliorhinus capensis | 36.00 | 92 | 12.80 | |
| Merluccius capensis, male | 18.00 | 22 | 6.40 | 66 |
| Caelorinchus simorhynchus | 16.00 | 112 | 5.69 | |
| Merluccius paradoxus, male | 11.00 | 30 | 3.91 | 68 |
| Sufflogobius bibarbatus | 8.00 | 0 | 2.84 | |
| MYCTOPHIDAE | 8.00 | 0 | 2.84 | |
| Zeus capensis | 6.80 | 8 | 2.42 | |
| Malacocephalus laevis | 2.40 | 8 | 0.85 | |
| Notacanthus sexspinis | 1.20 | 20 | 0.43 | |
| Helicolenus dactylopterus | 0.40 | 4 | 0.14 | |
| Todarodes sagittatus | 0.40 | 4 | 0.14 | |
| C R A B S | 0.00 | 12 | 0.00 | |
| Notopogon macrosolen | 0.00 | 8 | 0.00 | |
| Total | 281.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 520
DATE :29/01/1990 GEAR TYPE: BT NO: 1 POSITION:Lat S 28°13.02
start stop duration Lon E 14°39.00
TIME :22:55:00 23:25:00 30.0 (min) Purpose : 1
LOG : 4415.80 4416.90 1.6 Region : 1
FDEPTH: 190 200 Gear cond.: 0
BDEPTH: 190 200 Validity : 0
Towing dir: 330° Wire out : 800 m Speed : 3.3 kn
Sorted : 73 Total catch: 72.70 Catch/hour: 145.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Zeus capensis | 70.60 | 474 | 48.56 | |
| Merluccius capensis, female | 33.60 | 76 | 23.11 | 71 |
| Merluccius capensis, male | 11.80 | 34 | 8.12 | 70 |
| Squalus blainvillei | 7.80 | 26 | 5.36 | |
| Trachurus capensis | 6.80 | 38 | 4.68 | |
| Trigla lyra | 5.80 | 24 | 3.99 | |
| Chelidonichthys capensis | 3.20 | 4 | 2.20 | |
| Holohalaelurus regani | 3.00 | 12 | 2.06 | |
| Lepidopus caudatus | 1.00 | 28 | 0.69 | |
| Sepia australis | 0.60 | 54 | 0.41 | |
| Cynoglossus zanzibarensis | 0.40 | 4 | 0.28 | |
| Emmelichthys nitidus | 0.40 | 2 | 0.28 | |
| Helicolenus dactylopterus | 0.40 | 56 | 0.28 | |
| Paracallionymus costatus | 0.00 | 2 | 0.00 | |
| Sufflogobius bibarbatus | 0.00 | 34 | 0.00 | |
| Total | 145.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 521
DATE :30/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 27°55.98
start stop duration Lon E 14°49.98
TIME :06:20:00 06:45:00 25.0 (min) Purpose : 3
LOG : 4452.70 4453.70 1.5 Region : 1
FDEPTH: 202 213 Gear cond.: 9
BDEPTH: 202 213 Validity : 1
Towing dir: 15° Wire out : 800 m Speed : 3.0 kn
Sorted : 260 Total catch: 260.10 Catch/hour: 624.24

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Galeorhinus galeus | 228.00 | 14 | 36.52 | |
| Merluccius capensis, female | 127.92 | 442 | 20.49 | 73 |
| Callorhinchus capensis | 120.00 | 110 | 19.22 | |
| Merluccius capensis, male | 42.96 | 137 | 6.88 | 72 |
| Trachurus capensis | 21.60 | 86 | 3.46 | 74 |
| Etrumeus whiteheadi | 18.48 | 187 | 2.96 | 75 |
| Thyrsites atun | 12.72 | 7 | 2.04 | |
| Genypterus capensis | 12.48 | 17 | 2.00 | 76 |
| Chelidonichthys capensis | 12.00 | 24 | 1.92 | |
| Emmelichthys nitidus | 7.20 | 24 | 1.15 | |
| Zeus capensis | 6.00 | 36 | 0.96 | |
| Raja wallacei | 5.76 | 2 | 0.92 | |
| Sufflogobius bibarbatus | 2.88 | 0 | 0.46 | |
| Todarodes sagittatus | 1.44 | 2 | 0.23 | |
| Lepidopus caudatus | 1.20 | 36 | 0.19 | |
| Squalus megalops | 1.08 | 2 | 0.17 | |
| Lolligoncula mercatoris | 0.96 | 0 | 0.15 | |
| Sepia australis | 0.96 | 41 | 0.15 | |
| MYCTOPHIDAE | 0.48 | 0 | 0.08 | |
| Helicolenus dactylopterus | 0.12 | 14 | 0.02 | |
| Todaropsis eblanae | 0.00 | 2 | 0.00 | |
| Total | 624.24 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 522
DATE :30/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 27°43.98
start stop duration Lon E 14°40.02
TIME :08:20:00 08:50:00 30.0 (min) Purpose : 3
LOG : 4465.70 4466.80 1.4 Region : 1
FDEPTH: 393 387 Gear cond.: 0
BDEPTH: 393 387 Validity : 0
Towing dir: 315° Wire out : 1200 m Speed : 3.0 kn
Sorted : 88 Total catch: 233.85 Catch/hour: 467.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 382.40 | 982 | 81.76 | 78 |
| Merluccius paradoxus, male | 74.60 | 218 | 15.95 | 77 |
| Caelorinchus simorhynchus | 5.80 | 134 | 1.24 | |
| Malacocephalus laevis | 2.20 | 48 | 0.47 | |
| Helicolenus dactylopterus | 1.60 | 54 | 0.34 | |
| Paracallionymus costatus | 0.50 | 22 | 0.11 | |
| Epigonus denticulatus | 0.20 | 60 | 0.04 | |
| MYCTOPHIDAE | 0.20 | 80 | 0.04 | |
| Todaropsis eblanae | 0.20 | 12 | 0.04 | |
| Total | 467.70 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 523
DATE :30/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 27°39.00
start stop duration Lon E 14°45.00
TIME :10:15:00 10:45:00 30.0 (min) Purpose : 3
LOG : 4476.60 4477.80 1.5 Region : 1
FDEPTH: 344 340 Gear cond.: 0
BDEPTH: 344 340 Validity : 0
Towing dir: 335° Wire out : 1100 m Speed : 3.0 kn
Sorted : 77 Total catch: 254.70 Catch/hour: 509.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 228.00 | 894 | 44.76 | 79 |
| Merluccius paradoxus, female | 178.80 | 906 | 35.10 | 81 |
| Merluccius paradoxus, male | 40.20 | 258 | 7.89 | 80 |
| Brama brama | 26.80 | 16 | 5.26 | |
| Centrolophus niger | 18.60 | 12 | 3.65 | |
| Todarodes sagittatus | 8.40 | 18 | 1.65 | |
| Lepidopus caudatus | 6.60 | 12 | 1.30 | |
| Genypterus capensis | 1.40 | 2 | 0.27 | |
| Caelorinchus simorhynchus | 0.60 | 6 | 0.12 | |
| Total | 509.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 524
DATE :30/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 27°28.02
start stop duration Lon E 14°58.98
TIME :13:24:00 13:54:00 30.0 (min) Purpose : 3
LOG : 4501.90 4503.20 1.6 Region : 1
FDEPTH: 222 221 Gear cond.: 0
BDEPTH: 222 221 Validity : 0
Towing dir: 360° Wire out : 850 m Speed : 3.2 kn
Sorted : 80 Total catch: 245.04 Catch/hour: 490.08

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 200.20 | 660 | 40.85 | 83 |
| Merluccius capensis, male | 111.28 | 452 | 22.71 | 82 |
| Galeorhinus galeus | 72.00 | 6 | 14.69 | |
| Chelidonichthys queketti | 50.96 | 124 | 10.40 | |
| Thyrsites atun | 18.20 | 16 | 3.71 | |
| Callorhinchus capensis | 18.20 | 32 | 3.71 | |
| Lepidopus caudatus | 7.28 | 406 | 1.49 | |
| Trachurus capensis | 5.72 | 26 | 1.17 | |
| Sufflogobius bibarbatus | 3.64 | 0 | 0.74 | |
| Etrumeus whiteheadi | 2.60 | 20 | 0.53 | |
| Total | 490.08 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 525
DATE :30/01/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 27°19.98
start stop duration Lon E 15°1.02
TIME :15:05:00 15:35:00 30.0 (min) Purpose : 3
LOG : 4512.00 4513.20 1.6 Region : 1
FDEPTH: 178 172 Gear cond.: 0
BDEPTH: 178 172 Validity : 0
Towing dir: 334° Wire out : 750 m Speed : 3.2 kn
Sorted : 27 Total catch: 362.70 Catch/hour: 725.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 506.00 | 1936 | 69.75 | 86 |
| Merluccius capensis, female | 107.60 | 454 | 14.83 | 85 |
| Chelidonichthys capensis | 55.00 | 242 | 7.58 | |
| Callorhinchus capensis | 33.00 | 22 | 4.55 | |
| Merluccius capensis, male | 23.80 | 110 | 3.28 | 84 |
| Total | 725.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 526
DATE :30/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 27°1.02
start stop duration Lon E 14°51.00
TIME :17:24:00 17:54:00 30.0 (min)  Purpose : 3
LOG : 4530.30 4531.60 1.5  Region : 1
FDEPTH: 191 190  Gear cond.: 0
BDEPTH: 191 190  Validity : 0
Towing dir: 340°  Wire out : 800 m  Speed : 3.0 kn
Sorted : 23  Total catch: 231.00  Catch/hour: 462.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 308.00 | 99000 | 66.67 | |
| Merluccius capensis, juvenile | 150.00 | 14084 | 32.47 | 87 |
| Trachurus capensis | 4.00 | 20 | 0.87 | |
| Total | 462.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 527
DATE :30/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 26°55.98
start stop duration Lon E 14°37.98
TIME :19:35:00 20:05:00 30.0 (min)  Purpose : 3
LOG : 4545.40 4546.60 1.5  Region : 1
FDEPTH: 254 251  Gear cond.: 0
BDEPTH: 254 251  Validity : 0
Towing dir: 0°  Wire out : 900 m  Speed : 2.9 kn
Sorted : 49  Total catch: 317.20  Catch/hour: 634.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 473.20 | 2354 | 74.59 | 89 |
| Merluccius capensis, male | 159.90 | 910 | 25.20 | 88 |
| Sufflogobius bibarbatus | 1.30 | 286 | 0.20 | |
| Total | 634.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 528
DATE :30/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 26°46.02
start stop duration Lon E 14°19.02
TIME :22:27:00 22:57:00 30.0 (min)  Purpose : 3
LOG : 4566.70 4567.90 1.2  Region : 1
FDEPTH: 345 347  Gear cond.: 0
BDEPTH: 345 347  Validity : 0
Towing dir: 345°  Wire out : 1100 m  Speed : 2.8 kn
Sorted : 52  Total catch: 253.02  Catch/hour: 506.04

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 325.24 | 604 | 64.27 | 92 |
| Deepwater fish mixture | 100.00 | 0 | 19.76 | |
| Merluccius capensis, male | 52.50 | 110 | 10.37 | 91 |
| Genypterus capensis | 16.60 | 6 | 3.28 | 90 |
| Nezumia micronychodon | 3.50 | 86 | 0.69 | |
| Trachurus capensis | 2.00 | 6 | 0.40 | |
| Galeus polli | 2.00 | 30 | 0.40 | |
| Merluccius paradoxus | 1.20 | 6 | 0.24 | 93 |
| Caelorinchus simorhynchus | 1.00 | 40 | 0.20 | |
| Helicolenus dactylopterus | 1.00 | 6 | 0.20 | |
| Todarodes sagittatus | 1.00 | 6 | 0.20 | |
| C R A B S | 0.00 | 6 | 0.00 | |
| Total | 506.04 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 529
DATE :31/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 26°36.00
start stop duration Lon E 14°40.02
TIME :06:48:00 07:18:00 30.0 (min)  Purpose : 3
LOG : 4618.30 4619.40 1.5  Region : 1
FDEPTH: 204 206  Gear cond.: 0
BDEPTH: 204 206  Validity : 0
Towing dir: 350°  Wire out : 800 m  Speed : 3.0 kn
Sorted : 30  Total catch: 30.00  Catch/hour: 60.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 60.00 | 19230 | 100.00 | |
| Merluccius capensis | 0.00 | 6 | 0.00 | |
| Total | 60.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 530
DATE :31/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 26°21.00
start stop duration Lon E 14°36.00
TIME :08:55:00 09:25:00 30.0 (min)  Purpose : 3
LOG : 4631.10 4632.40 1.5  Region : 1
FDEPTH: 246 247  Gear cond.: 0
BDEPTH: 246 247  Validity : 0
Towing dir: 300°  Wire out : 900 m  Speed : 3.0 kn
Sorted : 45  Total catch: 45.20  Catch/hour: 90.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 42.60 | 176 | 47.12 | 95 |
| Sufflogobius bibarbatus | 30.00 | 9000 | 33.19 | |
| Merluccius capensis, male | 12.20 | 78 | 13.50 | 94 |
| Trachurus capensis | 5.00 | 32 | 5.53 | 96 |
| Chelidonichthys capensis | 0.60 | 2 | 0.66 | |
| Merluccius capensis | 0.00 | 2 | 0.00 | |
| Total | 90.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 531
DATE :31/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 26°19.98
start stop duration Lon E 14°19.02
TIME :11:15:00 11:45:00 30.0 (min)  Purpose : 3
LOG : 4646.90 4648.20 1.5  Region : 1
FDEPTH: 291 285  Gear cond.: 0
BDEPTH: 291 285  Validity : 0
Towing dir: 325°  Wire out : 1000 m  Speed : 3.1 kn
Sorted : 58  Total catch: 395.24  Catch/hour: 790.48

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 480.00 | 1356 | 60.72 | 98 |
| Merluccius capensis, male | 190.80 | 612 | 24.14 | 97 |
| MYCTOPHIDAE | 59.84 | 0 | 7.57 | |
| Krill | 48.96 | 0 | 6.19 | |
| Sufflogobius bibarbatus | 10.88 | 0 | 1.38 | |
| Total | 790.48 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 532
DATE :31/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 26°16.98
start stop duration Lon E 14°4.02
TIME :13:25:00 13:55:00 30.0 (min)  Purpose : 3
LOG : 4661.70 4662.90 1.6  Region : 1
FDEPTH: 335 335  Gear cond.: 0
BDEPTH: 335 335  Validity : 0
Towing dir: 360°  Wire out : 1050 m  Speed : 3.1 kn
Sorted : 57  Total catch: 372.45  Catch/hour: 744.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 369.20 | 806 | 49.56 | 100 |
| Merluccius capensis, male | 289.90 | 872 | 38.92 | 99 |
| Trachurus capensis | 63.70 | 182 | 8.55 | |
| MYCTOPHIDAE | 22.10 | 0 | 2.97 | |
| Nezumia micronychodon | 0.00 | 14 | 0.00 | |
| Helicolenus dactylopterus | 0.00 | 14 | 0.00 | |
| Total | 744.90 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 533
DATE :31/01/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 25°49.02
start stop duration Lon E 14°7.02
TIME :16:32:00 17:02:00 30.0 (min)  Purpose : 3
LOG : 4687.60 4688.90 1.5  Region : 1
FDEPTH: 249 247  Gear cond.: 0
BDEPTH: 249 247  Validity : 0
Towing dir: 360°  Wire out : 900 m  Speed : 3.2 kn
Sorted : 48  Total catch: 123.90  Catch/hour: 247.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 155.00 | 416 | 62.55 | 102 |
| Merluccius capensis, male | 66.00 | 276 | 26.63 | 101 |
| Sufflogobius bibarbatus | 18.00 | 0 | 7.26 | |
| Trachurus capensis | 3.00 | 10 | 1.21 | |
| Todarodes sagittatus | 3.00 | 6 | 1.21 | |
| Lepidopus caudatus | 1.80 | 10 | 0.73 | |
| MYCTOPHIDAE | 1.00 | 0 | 0.40 | |
| Merluccius capensis | 0.00 | 10 | 0.00 | |
| Total | 247.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 534
DATE :02/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 25°49.02
start stop duration Lon E 13°40.02
TIME :07:15:00 07:45:00 30.0 (min)  Purpose : 3
LOG : 4930.50 4931.60 1.5  Region : 1
FDEPTH: 448 458  Gear cond.: 0
BDEPTH: 448 458  Validity : 0
Towing dir: 350°  Wire out : 1300 m  Speed : 3.0 kn
Sorted : 7  Total catch: 51.25  Catch/hour: 102.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 33.00 | 38 | 32.20 | 103 |
| Todarodes sagittatus | 17.00 | 74 | 16.59 | |
| Bathyraja smithii | 13.00 | 2 | 12.68 | |
| Nezumia milleri | 9.20 | 220 | 8.98 | |
| Caelorinchus simorhynchus | 6.80 | 24 | 6.63 | |
| Deania calcea | 6.40 | 2 | 6.24 | |
| Hoplostethus cadenati | 5.20 | 388 | 5.07 | |
| Lophius vomerinus | 5.00 | 2 | 4.88 | |
| Photichthys argenteus | 1.80 | 84 | 1.76 | |
| Nansenia problematica * | 1.60 | 12 | 1.56 | |
| Etmopterus pusillus | 1.40 | 4 | 1.37 | |
| Selachophidium guentheri | 0.80 | 12 | 0.78 | |
| Ebinania costaecanarie | 0.80 | 4 | 0.78 | |
| Notacanthus sexspinis | 0.40 | 12 | 0.39 | |
| Epigonus denticulatus | 0.10 | 4 | 0.10 | |
| Chlorophthalmus punctatus | 0.00 | 4 | 0.00 | |
| MYCTOPHIDAE | 0.00 | 4 | 0.00 | |
| Helicolenus dactylopterus | 0.00 | 4 | 0.00 | |
| Stomias boa boa | 0.00 | 4 | 0.00 | |
| Total | 102.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 535
DATE :02/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 25°49.98
start stop duration Lon E 13°51.00
TIME :10:20:00 10:50:00 30.0 (min)  Purpose : 3
LOG : 4946.70 4947.90 1.5  Region : 1
FDEPTH: 349 349  Gear cond.: 0
BDEPTH: 349 349  Validity : 0
Towing dir: 345°  Wire out : 1100 m  Speed : 3.1 kn
Sorted : 200  Total catch: 199.50  Catch/hour: 399.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 128.00 | 410 | 32.08 | 104 |
| Helicolenus dactylopterus | 101.80 | 288 | 25.51 | 108 |
| Merluccius capensis, female | 83.40 | 140 | 20.90 | 106 |
| Todarodes sagittatus | 29.00 | 76 | 7.27 | |
| Merluccius capensis, male | 25.20 | 46 | 6.32 | 107 |
| Merluccius paradoxus, male | 9.40 | 10 | 2.36 | 105 |
| MYCTOPHIDAE | 5.00 | 0 | 1.25 | |
| Deania calcea | 4.40 | 2 | 1.10 | |
| Krill | 4.00 | 0 | 1.00 | |
| Deania profundorum | 3.80 | 8 | 0.95 | |
| Genypterus capensis | 2.60 | 2 | 0.65 | |
| Etmopterus pusillus | 1.00 | 2 | 0.25 | |
| Nezumia milleri | 0.60 | 16 | 0.15 | |
| Galeus polli | 0.40 | 2 | 0.10 | |
| C R A B S | 0.20 | 6 | 0.05 | |
| Nezumia sp. | 0.20 | 4 | 0.05 | |
| Epigonus denticulatus | 0.00 | 2 | 0.00 | |
| Chlorophthalmus punctatus | 0.00 | 2 | 0.00 | |
| Notacanthus sexspinis | 0.00 | 2 | 0.00 | |
| Selachophidium guentheri | 0.00 | 4 | 0.00 | |
| Hoplostethus cadenati | 0.00 | 6 | 0.00 | |
| Total | 399.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 536
DATE :02/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat S 25°49.02
start stop duration Lon E 14°21.00
TIME :14:42:00 15:12:00 30.0 (min)  Purpose : 3
LOG : 4980.70 4981.90 1.4  Region : 1
FDEPTH: 202 202  Gear cond.: 0
BDEPTH: 202 202  Validity : 0
Towing dir: 360°  Wire out : 800 m  Speed : 2.9 kn
Sorted : 54  Total catch: 53.75  Catch/hour: 107.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 64.00 | 276 | 59.53 | 109 |
| Merluccius capensis, male | 29.00 | 148 | 26.98 | 110 |
| Merluccius capensis, juvenile | 7.60 | 604 | 7.07 | 111 |
| Sufflogobius bibarbatus | 6.30 | 1540 | 5.86 | |
| Chelidonichthys capensis | 0.60 | 2 | 0.56 | |
| Total | 107.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 537
DATE :02/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°46.98
start stop duration Lon E 14°25.02
TIME :17:39:00 17:59:00 20.0 (min) Purpose : 3
LOG : 4995.20 4996.00 0.9 Region : 1
FDEPTH: 182 186 Gear cond.: 9
BDEPTH: 182 186 Validity : 1
Towing dir: 270° Wire out : 750 m Speed : 2.8 kn
Sorted : 51 Total catch: 1515.00 Catch/hour: 4545.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 2826.00 | 12960 | 62.18 | 113 |
| Merluccius capensis, male | 1719.00 | 9630 | 37.82 | 112 |
| Total | 4545.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 538
DATE :02/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°40.02
start stop duration Lon E 14°10.02
TIME :19:35:00 20:05:00 30.0 (min) Purpose : 3
LOG : 5010.50 5012.00 1.5 Region : 1
FDEPTH: 220 225 Gear cond.: 0
BDEPTH: 220 225 Validity : 0
Towing dir: 270° Wire out : 850 m Speed : 3.0 kn
Sorted : 123 Total catch: 122.80 Catch/hour: 245.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 168.80 | 346 | 68.73 | 115 |
| Sufflogobius bibarbatus | 40.00 | 0 | 16.29 | |
| Merluccius capensis, male | 35.40 | 106 | 14.41 | 114 |
| Todarodes sagittatus | 1.40 | 2 | 0.57 | |
| Total | 245.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 539
DATE :02/02/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 25°30.00
start stop duration Lon E 14°19.98
TIME :22:35:00 22:55:00 20.0 (min) Purpose : 1
LOG : 5028.00 5028.90 0.9 Region : 1
FDEPTH: 30 50 Gear cond.: 0
BDEPTH: 178 178 Validity : 0
Towing dir: 350° Wire out : 100 m Speed : 2.5 kn
Sorted : 200 Total catch: 200.00 Catch/hour: 600.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| MYCTOPHIDAE | 600.00 | 0 | 100.00 | |
| Total | 600.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 540
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°18.00
start stop duration Lon E 13°39.00
TIME :06:30:00 07:00:00 30.0 (min) Purpose : 3
LOG : 5072.60 5074.00 1.5 Region : 1
FDEPTH: 410 415 Gear cond.: 0
BDEPTH: 410 415 Validity : 0
Towing dir: 360° Wire out : 1200 m Speed : 3.0 kn
Sorted : 24 Total catch: 327.40 Catch/hour: 654.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Hoplostethus cadenati | 432.00 | 8738 | 65.97 | |
| Merluccius capensis, female | 93.20 | 130 | 14.23 | 117 |
| Merluccius paradoxus, female | 72.00 | 122 | 11.00 | 118 |
| Merluccius capensis, male | 19.00 | 30 | 2.90 | 116 |
| Selachophidium guentheri | 8.00 | 100 | 1.22 | |
| Galeus polli | 8.00 | 80 | 1.22 | |
| Todarodes sagittatus | 8.00 | 20 | 1.22 | |
| Nezumia milleri | 6.00 | 100 | 0.92 | |
| Notacanthus sexspinis | 4.00 | 60 | 0.61 | |
| Helicolenus dactylopterus | 4.00 | 20 | 0.61 | |
| MYCTOPHIDAE | 0.40 | 100 | 0.06 | |
| Yarrella blackfordi | 0.20 | 20 | 0.03 | |
| Epigonus denticulatus | 0.00 | 20 | 0.00 | |
| C R A B S | 0.00 | 20 | 0.00 | |
| Total | 654.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 541
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°19.98
start stop duration Lon E 13°45.00
TIME :08:40:00 09:10:00 30.0 (min) Purpose : 3
LOG : 5084.60 5085.80 1.5 Region : 1
FDEPTH: 309 308 Gear cond.: 0
BDEPTH: 309 308 Validity : 0
Towing dir: 340° Wire out : 1050 m Speed : 2.9 kn
Sorted : 158 Total catch: 212.00 Catch/hour: 424.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 178.00 | 506 | 41.98 | 120 |
| Caelorinchus simorhynchus | 90.00 | 2600 | 21.23 | |
| Merluccius capensis, male | 64.00 | 304 | 15.09 | 119 |
| Todarodes sagittatus | 26.00 | 62 | 6.13 | |
| Lophius vomerinus | 25.00 | 34 | 5.90 | |
| Helicolenus dactylopterus | 14.00 | 240 | 3.30 | |
| Schedophilus huttoni | 12.00 | 6 | 2.83 | |
| Galeus polli | 9.00 | 600 | 2.12 | |
| Nezumia milleri | 4.00 | 100 | 0.94 | |
| Lepidopus caudatus | 2.00 | 60 | 0.47 | |
| Total | 424.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 542
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°21.00
start stop duration Lon E 13°52.98
TIME :10:40:00 10:55:00 15.0 (min) Purpose : 3
LOG : 5096.30 5096.90 0.8 Region : 1
FDEPTH: 249 251 Gear cond.: 9
BDEPTH: 249 251 Validity : 1
Towing dir: 350° Wire out : 900 m Speed : 2.9 kn
Sorted : 42 Total catch: 42.00 Catch/hour: 168.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 86.00 | 448 | 51.19 | 122 |
| Sufflogobius bibarbatus | 40.00 | 0 | 23.81 | |
| Merluccius capensis, male | 38.80 | 232 | 23.10 | 121 |
| Todarodes sagittatus | 3.20 | 8 | 1.90 | |
| Total | 168.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 543
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°18.00
start stop duration Lon E 14°7.98
TIME :12:55:00 13:25:00 30.0 (min) Purpose : 3
LOG : 5114.30 5115.40 1.5 Region : 1
FDEPTH: 189 185 Gear cond.: 0
BDEPTH: 189 185 Validity : 0
Towing dir: 360° Wire out : 800 m Speed : 3.0 kn
Sorted : 28 Total catch: 252.00 Catch/hour: 504.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 315.00 | 2628 | 62.50 | 124 |
| Merluccius capensis, male | 162.00 | 1674 | 32.14 | 123 |
| MYCTOPHIDAE | 27.00 | 0 | 5.36 | |
| Total | 504.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 544
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°16.98
start stop duration Lon E 14°12.00
TIME :14:35:00 14:50:00 15.0 (min) Purpose : 3
LOG : 5123.10 5123.60 0.7 Region : 1
FDEPTH: 182 183 Gear cond.: 0
BDEPTH: 182 183 Validity : 0
Towing dir: 190° Wire out : 750 m Speed : 2.8 kn
Sorted : 25 Total catch: 575.00 Catch/hour: 2300.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juvenile | 1922.80 | 155024 | 83.60 | 125 |
| Merluccius capensis, female | 202.40 | 3404 | 8.80 | 127 |
| Merluccius capensis, male | 174.80 | 3220 | 7.60 | 126 |
| Total | 2300.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 545
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°1.02
start stop duration Lon E 13°58.02
TIME :18:52:00 19:22:00 30.0 (min) Purpose : 3
LOG : 5159.70 5160.90 1.6 Region : 1
FDEPTH: 176 176 Gear cond.: 0
BDEPTH: 176 176 Validity : 0
Towing dir: 315° Wire out : 750 m Speed : 3.0 kn
Sorted : 15 Total catch: 60.20 Catch/hour: 120.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 39.20 | 656 | 32.56 | 129 |
| Merluccius capensis, male | 35.20 | 496 | 29.24 | 128 |
| Sufflogobius bibarbatus | 24.00 | 2712 | 19.93 | |
| Merluccius capensis, juvenile | 21.60 | 2102 | 17.94 | 130 |
| Trachurus capensis | 0.40 | 8 | 0.33 | |
| Total | 120.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 546
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°51.00
start stop duration Lon E 13°57.00
TIME :20:33:00 20:48:00 15.0 (min) Purpose : 3
LOG : 5169.10 5169.90 0.6 Region : 2
FDEPTH: 165 168 Gear cond.: 9
BDEPTH: 165 168 Validity : 1
Towing dir: 360° Wire out : 750 m Speed : 2.8 kn
Sorted : 2 Total catch: 404.00 Catch/hour: 1616.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juvenile | 1600.00 | 154668 | 99.01 | 131 |
| Sufflogobius bibarbatus | 16.00 | 0 | 0.99 | |
| Total | 1616.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 547
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°48.00
start stop duration Lon E 13°52.02
TIME :21:45:00 22:15:00 30.0 (min) Purpose : 3
LOG : 5175.20 5176.70 1.4 Region : 2
FDEPTH: 227 225 Gear cond.: 0
BDEPTH: 227 225 Validity : 0
Towing dir: 30° Wire out : 850 m Speed : 2.8 kn
Sorted : 27 Total catch: 851.20 Catch/hour: 1702.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1062.40 | 8704 | 62.41 | 133 |
| Merluccius capensis, male | 640.00 | 6144 | 37.59 | 132 |
| Total | 1702.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 548
DATE :03/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°46.98
start stop duration Lon E 13°46.98
TIME :23:25:00 23:55:00 30.0 (min) Purpose : 3
LOG : 5183.30 5185.00 1.5 Region : 2
FDEPTH: 300 300 Gear cond.: 0
BDEPTH: 300 300 Validity : 0
Towing dir: 30° Wire out : 1000 m Speed : 2.8 kn
Sorted : 46 Total catch: 115.25 Catch/hour: 230.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 113.00 | 416 | 49.02 | 135 |
| Merluccius capensis, male | 102.50 | 476 | 44.47 | 134 |
| Caelorinchus simorhynchus | 14.00 | 310 | 6.07 | |
| Lophius vomerinus | 1.00 | 2 | 0.43 | |
| Squilla sp. | 0.00 | 16 | 0.00 | |
| Merluccius capensis | 0.00 | 26 | 0.00 | |
| Notacanthus sexspinis | 0.00 | 10 | 0.00 | |
| Total | 230.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 549
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°49.02
start stop duration Lon E 13°40.98
TIME :01:20:00 01:50:00 30.0 (min) Purpose : 3
LOG : 5194.70 5196.60 1.5 Region : 2
FDEPTH: 377 375 Gear cond.: 0
BDEPTH: 377 375 Validity : 0
Towing dir: 25° Wire out : 1150 m Speed : 3.0 kn
Sorted : 57 Total catch: 143.50 Catch/hour: 287.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 116.50 | 210 | 40.59 | 137 |
| Todarodes sagittatus | 67.00 | 136 | 23.34 | |
| Merluccius capensis, male | 47.50 | 90 | 16.55 | 136 |
| Merluccius paradoxus | 26.50 | 32 | 9.23 | |
| Caelorinchus simorhynchus | 11.00 | 120 | 3.83 | |
| Centrolophus niger | 7.50 | 6 | 2.61 | |
| Helicolenus dactylopterus | 6.00 | 116 | 2.09 | |
| Galeus polli | 3.50 | 30 | 1.22 | |
| Notacanthus sexspinis | 1.50 | 20 | 0.52 | |
| Total | 287.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 550
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°31.02
start stop duration Lon E 13°28.02
TIME :06:35:00 07:05:00 30.0 (min) Purpose : 3
LOG : 5226.50 5227.90 1.5 Region : 2
FDEPTH: 401 400 Gear cond.: 0
BDEPTH: 401 400 Validity : 0
Towing dir: 330° Wire out : 1200 m Speed : 3.0 kn
Sorted : 40 Total catch: 39.85 Catch/hour: 79.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 18.00 | 34 | 22.58 | 138 |
| Todarodes sagittatus | 13.40 | 22 | 16.81 | |
| Helicolenus dactylopterus | 13.20 | 84 | 16.56 | |
| Schedophilus huttoni | 10.20 | 6 | 12.80 | |
| Caelorinchus simorhynchus | 9.80 | 0 | 12.30 | |
| Nezumia milleri | 6.80 | 0 | 8.53 | |
| Deania profundorum | 4.60 | 8 | 5.77 | |
| Zenopsis conchifer | 2.20 | 2 | 2.76 | |
| Epigonus denticulatus | 0.40 | 14 | 0.50 | |
| Galeus polli | 0.40 | 4 | 0.50 | |
| Etmopterus pusillus | 0.40 | 2 | 0.50 | |
| Photichthys argenteus | 0.20 | 38 | 0.25 | |
| Selachophidium guentheri | 0.10 | 2 | 0.13 | |
| Notacanthus sexspinis | 0.00 | 2 | 0.00 | |
| Histioteuthis reversa | 0.00 | 2 | 0.00 | |
| Total | 79.70 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 551
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°30.00
start stop duration Lon E 13°43.98
TIME :09:15:00 09:45:00 30.0 (min) Purpose : 3
LOG : 5245.20 5246.50 1.4 Region : 2
FDEPTH: 331 331 Gear cond.: 0
BDEPTH: 331 331 Validity : 0
Towing dir: 340° Wire out : 1050 m Speed : 2.9 kn
Sorted : 149 Total catch: 148.55 Catch/hour: 297.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 162.00 | 226 | 54.53 | 140 |
| Merluccius capensis, male | 82.00 | 174 | 27.60 | 139 |
| Krill | 16.00 | 0 | 5.39 | |
| Todarodes sagittatus | 7.40 | 12 | 2.49 | |
| Helicolenus dactylopterus | 6.20 | 176 | 2.09 | |
| Caelorinchus simorhynchus | 5.40 | 114 | 1.82 | |
| Lophius vomerinus | 5.00 | 6 | 1.68 | |
| Schedophilus huttoni | 4.80 | 2 | 1.62 | |
| MYCTOPHIDAE | 4.00 | 0 | 1.35 | |
| Raja leopardus | 2.00 | 2 | 0.67 | |
| Nezumia milleri | 0.80 | 18 | 0.27 | |
| Lepidopus caudatus | 0.80 | 2 | 0.27 | |
| Galeus polli | 0.60 | 12 | 0.20 | |
| Merluccius paradoxus | 0.10 | 6 | 0.03 | |
| Total | 297.10 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 552
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°28.98
start stop duration Lon E 13°52.02
TIME :11:00:00 11:30:00 30.0 (min) Purpose : 3
LOG : 5255.20 5256.20 1.5 Region : 2
FDEPTH: 279 276 Gear cond.: 0
BDEPTH: 279 276 Validity : 0
Towing dir: 360° Wire out : 950 m Speed : 3.0 kn
Sorted : 112 Total catch: 671.40 Catch/hour: 1342.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Krill | 642.00 | 0 | 47.81 | |
| Sufflogobius bibarbatus | 320.40 | 48060 | 23.86 | |
| Merluccius capensis, female | 164.40 | 648 | 12.24 | 142 |
| Merluccius capensis, male | 132.00 | 648 | 9.83 | 141 |
| MYCTOPHIDAE | 63.60 | 16536 | 4.74 | |
| Squilla acuelata calmani | 12.00 | 480 | 0.89 | |
| Merluccius capensis, juvenile | 8.40 | 660 | 0.63 | 143 |
| Total | 1342.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 553
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°28.02
start stop duration Lon E 13°55.02
TIME :12:23:00 12:53:00 30.0 (min) Purpose : 3
LOG : 5261.50 5263.10 1.6 Region : 2
FDEPTH: 227 232 Gear cond.: 0
BDEPTH: 227 232 Validity : 0
Towing dir: 360° Wire out : 850 m Speed : 2.8 kn
Sorted : 28 Total catch: 169.20 Catch/hour: 338.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 156.00 | 972 | 46.10 | 145 |
| Merluccius capensis, male | 140.40 | 972 | 41.49 | 144 |
| Merluccius capensis, juvenile | 33.60 | 2340 | 9.93 | 146 |
| Sufflogobius bibarbatus | 8.40 | 936 | 2.48 | |
| Total | 338.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 554
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°7.98
start stop duration Lon E 14°3.00
TIME :18:32:00 19:02:00 30.0 (min) Purpose : 3
LOG : 5314.60 5315.70 1.4 Region : 2
FDEPTH: 182 184 Gear cond.: 0
BDEPTH: 182 184 Validity : 0
Towing dir: 350° Wire out : 750 m Speed : 2.9 kn
Sorted : 56 Total catch: 278.20 Catch/hour: 556.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 238.40 | 1400 | 42.85 | 148 |
| Trachurus capensis | 205.00 | 1686 | 36.84 | 149 |
| Merluccius capensis, male | 113.00 | 810 | 20.31 | 147 |
| Total | 556.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 555
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°7.02
start stop duration Lon E 13°57.00
TIME :20:00:00 20:30:00 30.0 (min) Purpose : 3
LOG : 5322.70 5323.80 1.5 Region : 2
FDEPTH: 225 223 Gear cond.: 0
BDEPTH: 225 223 Validity : 0
Towing dir: 360° Wire out : 850 m Speed : 3.0 kn
Sorted : 61 Total catch: 366.00 Catch/hour: 732.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 343.20 | 1584 | 46.89 | 151 |
| Trachurus capensis | 216.00 | 1296 | 29.51 | 152 |
| Merluccius capensis, male | 126.00 | 792 | 17.21 | 150 |
| Sufflogobius bibarbatus | 38.40 | 7152 | 5.25 | |
| Lophius vomerinus | 6.00 | 12 | 0.82 | |
| Caelorinchus simorhynchus | 2.40 | 60 | 0.33 | |
| Squilla acuelata calmani | 0.00 | 24 | 0.00 | |
| Total | 732.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 556
DATE :04/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°7.02
start stop duration Lon E 13°46.98
TIME :22:03:00 22:33:00 30.0 (min) Purpose : 3
LOG : 5335.00 5336.00 1.4 Region : 2
FDEPTH: 258 258 Gear cond.: 0
BDEPTH: 258 258 Validity : 0
Towing dir: 360° Wire out : 900 m Speed : 2.9 kn
Sorted : 56 Total catch: 169.20 Catch/hour: 338.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 157.20 | 762 | 46.45 | 154 |
| Merluccius capensis, male | 103.80 | 582 | 30.67 | 153 |
| Sufflogobius bibarbatus | 75.00 | 8718 | 22.16 | |
| Caelorinchus simorhynchus | 1.20 | 108 | 0.35 | |
| Helicolenus dactylopterus | 1.20 | 102 | 0.35 | |
| PORTUNIDAE | 0.00 | 6 | 0.00 | |
| Squilla acuelata calmani | 0.00 | 30 | 0.00 | |
| Todaropsis eblanae | 0.00 | 6 | 0.00 | |
| Lepidopus caudatus | 0.00 | 6 | 0.00 | |
| Total | 338.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 557
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°7.02
start stop duration Lon E 13°30.00
TIME :01:50:00 02:20:00 30.0 (min) Purpose : 3
LOG : 5355.30 5356.60 1.5 Region : 2
FDEPTH: 286 283 Gear cond.: 0
BDEPTH: 286 283 Validity : 0
Towing dir: 360° Wire out : 950 m Speed : 3.0 kn
Sorted : 53 Total catch: 239.65 Catch/hour: 479.30

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 261.00 | 576 | 54.45 | 156 |
| Merluccius capensis, male | 189.00 | 640 | 39.43 | 155 |
| Helicolenus dactylopterus | 25.20 | 954 | 5.26 | |
| Lophius vomerinus | 1.40 | 2 | 0.29 | |
| Sufflogobius bibarbatus | 0.90 | 118 | 0.19 | |
| Caelorinchus simorhynchus | 0.90 | 54 | 0.19 | |
| MYCTOPHIDAE | 0.90 | 0 | 0.19 | |
| PORTUNIDAE | 0.00 | 10 | 0.00 | |
| Squilla acuelata calmani | 0.00 | 18 | 0.00 | |
| Merluccius capensis | 0.00 | 64 | 0.00 | |
| Galeus polli | 0.00 | 18 | 0.00 | |
| Total | 479.30 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 558
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°49.02
start stop duration Lon E 13°10.98
TIME :06:30:00 07:00:00 30.0 (min) Purpose : 3
LOG : 5993.20 5994.50 1.8 Region : 2
FDEPTH: 400 400 Gear cond.: 0
BDEPTH: 400 400 Validity : 0
Towing dir: 360° Wire out : 1200 m Speed : 3.5 kn
Sorted : 21 Total catch: 118.80 Catch/hour: 237.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Helicolenus dactylopterus | 53.60 | 256 | 22.56 | |
| Merluccius capensis, female | 32.40 | 44 | 13.64 | 158 |
| Deania profundorum | 24.80 | 40 | 10.44 | |
| Merluccius paradoxus, female | 24.00 | 32 | 10.10 | 160 |
| Todarodes sagittatus | 22.00 | 56 | 9.26 | |
| Etmopterus pusillus | 12.80 | 24 | 5.39 | |
| Merluccius capensis, male | 9.60 | 16 | 4.04 | 157 |
| Hoplostethus cadenati | 9.60 | 448 | 4.04 | |
| MYCTOPHIDAE | 8.00 | 0 | 3.37 | |
| Yarrella blackfordi | 8.00 | 472 | 3.37 | |
| Lophius vomerinus | 4.80 | 8 | 2.02 | |
| Caelorinchus simorhynchus | 4.80 | 88 | 2.02 | |
| Raja caudaspinosa | 4.20 | 4 | 1.77 | |
| Nezumia milleri | 4.00 | 120 | 1.68 | |
| Galeus polli | 4.00 | 32 | 1.68 | |
| S H R I M P S | 4.00 | 0 | 1.68 | |
| Merluccius paradoxus, male | 1.80 | 2 | 0.76 | 159 |
| Selachophidium guentheri | 1.60 | 56 | 0.67 | |
| Tetragonurus cuvieri | 1.60 | 8 | 0.67 | |
| Trachyrincus scabrus | 0.80 | 8 | 0.34 | |
| Aristeus varidens | 0.80 | 312 | 0.34 | |
| Epigonus denticulatus | 0.40 | 24 | 0.17 | |
| Notacanthus sexspinis | 0.00 | 8 | 0.00 | |
| Ebinania costaecanarie | 0.00 | 8 | 0.00 | |
| Total | 237.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 559
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°49.98
start stop duration Lon E 13°19.02
TIME :08:28:00 08:58:00 30.0 (min) Purpose : 3
LOG : 5404.90 5406.40 1.5 Region : 2
FDEPTH: 300 300 Gear cond.: 0
BDEPTH: 300 300 Validity : 0
Towing dir: 360° Wire out : 1000 m Speed : 3.0 kn
Sorted : 111 Total catch: 394.68 Catch/hour: 789.36

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 609.80 | 820 | 77.25 | 162 |
| Merluccius capensis, male | 147.00 | 540 | 18.62 | 161 |
| Helicolenus dactylopterus | 12.60 | 498 | 1.60 | |
| Trachipterus trachypterus | 8.00 | 2 | 1.01 | |
| MYCTOPHIDAE | 3.50 | 0 | 0.44 | |
| Todarodes sagittatus | 3.20 | 8 | 0.41 | |
| Zenopsis conchifer | 2.00 | 2 | 0.25 | |
| Galeus polli | 1.60 | 8 | 0.20 | |
| Caelorinchus simorhynchus | 0.80 | 22 | 0.10 | |
| Chlorophthalmus punctatus | 0.70 | 50 | 0.09 | |
| Malacocephalus laevis | 0.16 | 8 | 0.02 | |
| Squilla acuelata calmani | 0.00 | 8 | 0.00 | |
| Total | 789.36 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 560
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°49.98
start stop duration Lon E 13°31.98
TIME :10:55:00 11:25:00 30.0 (min) Purpose : 3
LOG : 5422.20 5423.60 1.4 Region : 2
FDEPTH: 250 250 Gear cond.: 0
BDEPTH: 250 250 Validity : 0
Towing dir: 360° Wire out : 900 m Speed : 2.9 kn
Sorted : 86 Total catch: 156.85 Catch/hour: 313.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 128.40 | 232 | 40.93 | 165 |
| Merluccius capensis, female | 94.50 | 234 | 30.12 | 164 |
| Merluccius capensis, male | 53.20 | 158 | 16.96 | 163 |
| Trachipterus trachypterus | 8.00 | 4 | 2.55 | |
| Chlorophthalmus punctatus | 7.00 | 0 | 2.23 | |
| Todarodes sagittatus | 5.20 | 10 | 1.66 | |
| Sufflogobius bibarbatus | 5.00 | 0 | 1.59 | |
| Brama brama | 4.00 | 2 | 1.28 | |
| Lophius vomerinus | 2.80 | 8 | 0.89 | |
| Helicolenus dactylopterus | 2.10 | 164 | 0.67 | |
| Galeus polli | 2.10 | 38 | 0.67 | |
| Caelorinchus simorhynchus | 1.00 | 32 | 0.32 | |
| Lepidopus caudatus | 0.40 | 4 | 0.13 | |
| Squilla acuelata calmani | 0.00 | 4 | 0.00 | |
| Total | 313.70 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 561
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°46.98
start stop duration Lon E 13°39.00
TIME :12:45:00 13:15:00 30.0 (min) Purpose : 3
LOG : 5433.20 5434.70 1.5 Region : 2
FDEPTH: 222 219 Gear cond.: 0
BDEPTH: 222 219 Validity : 0
Towing dir: 360° Wire out : 850 m Speed : 3.1 kn
Sorted : 24 Total catch: 329.50 Catch/hour: 659.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 361.60 | 1616 | 54.87 | 168 |
| Merluccius capensis, female | 168.80 | 730 | 25.61 | 167 |
| Merluccius capensis, male | 110.00 | 430 | 16.69 | 166 |
| Sufflogobius bibarbatus | 8.00 | 816 | 1.21 | |
| Helicolenus dactylopterus | 8.00 | 928 | 1.21 | |
| Chlorophthalmus punctatus | 1.60 | 224 | 0.24 | |
| Brama brama | 1.00 | 2 | 0.15 | |
| Caelorinchus simorhynchus | 0.00 | 48 | 0.00 | |
| Merluccius capensis | 0.00 | 176 | 0.00 | |
| Galeus polli | 0.00 | 16 | 0.00 | |
| Total | 659.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 562
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°46.98
start stop duration Lon E 13°51.00
TIME :15:00:00 15:30:00 30.0 (min) Purpose : 3
LOG : 5449.00 5450.50 1.6 Region : 2
FDEPTH: 193 189 Gear cond.: 0
BDEPTH: 193 189 Validity : 0
Towing dir: 360° Wire out : 800 m Speed : 3.1 kn
Sorted : 116 Total catch: 115.90 Catch/hour: 231.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 122.60 | 800 | 52.89 | 172 |
| Merluccius capensis, female | 56.00 | 132 | 24.16 | 170 |
| Merluccius capensis, male | 44.00 | 228 | 18.98 | 169 |
| Sufflogobius bibarbatus | 5.00 | 592 | 2.16 | |
| Merluccius capensis, juvenile | 2.40 | 262 | 1.04 | 171 |
| Todarodes sagittatus | 1.00 | 2 | 0.43 | |
| Helicolenus dactylopterus | 0.40 | 22 | 0.17 | |
| Lepidopus caudatus | 0.40 | 6 | 0.17 | |
| Caelorinchus simorhynchus | 0.00 | 4 | 0.00 | |
| Total | 231.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 563
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°46.98
start stop duration Lon E 14°0.00
TIME :16:55:00 17:25:00 30.0 (min) Purpose : 3
LOG : 5461.90 5463.40 1.6 Region : 2
FDEPTH: 178 178 Gear cond.: 0
BDEPTH: 178 178 Validity : 0
Towing dir: 360° Wire out : 750 m Speed : 3.1 kn
Sorted : 138 Total catch: 137.60 Catch/hour: 275.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 115.20 | 676 | 41.86 | 174 |
| Trachurus capensis | 80.00 | 520 | 29.07 | 176 |
| Merluccius capensis, male | 78.20 | 652 | 28.42 | 173 |
| Sufflogobius bibarbatus | 1.20 | 120 | 0.44 | |
| Merluccius capensis, juvenile | 0.60 | 54 | 0.22 | 175 |
| Squilla acuelata calmani | 0.00 | 2 | 0.00 | |
| Todaropsis eblanae | 0.00 | 2 | 0.00 | |
| Total | 275.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 564
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°27.00
start stop duration Lon E 13°46.02
TIME :20:30:00 21:00:00 30.0 (min) Purpose : 3
LOG : 5493.90 5495.20 1.5 Region : 2
FDEPTH: 156 154 Gear cond.: 0
BDEPTH: 156 154 Validity : 0
Towing dir: 360° Wire out : 700 m Speed : 3.0 kn
Sorted : 29 Total catch: 86.85 Catch/hour: 173.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 90.00 | 684 | 51.81 | 177 |
| Merluccius capensis, female | 75.00 | 390 | 43.18 | 178 |
| Sufflogobius bibarbatus | 3.00 | 636 | 1.73 | |
| Pterothrissus belloci | 2.40 | 12 | 1.38 | |
| Trachurus capensis | 1.80 | 18 | 1.04 | |
| Lophius vomerinus | 1.20 | 2 | 0.69 | |
| Caelorinchus simorhynchus | 0.18 | 12 | 0.10 | |
| Merluccius capensis, juvenile | 0.06 | 30 | 0.03 | 179 |
| Todaropsis eblanae | 0.06 | 12 | 0.03 | |
| Total | 173.70 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 565
DATE :05/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°28.02
start stop duration Lon E 13°33.00
TIME :22:40:00 23:10:00 30.0 (min) Purpose : 3
LOG : 5509.30 5510.70 1.4 Region : 2
FDEPTH: 200 197 Gear cond.: 0
BDEPTH: 200 197 Validity : 0
Towing dir: 360° Wire out : 800 m Speed : 2.8 kn
Sorted : 83 Total catch: 83.40 Catch/hour: 166.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 60.40 | 184 | 36.21 | 181 |
| Merluccius capensis, male | 59.00 | 256 | 35.37 | 180 |
| Trachurus capensis | 16.00 | 110 | 9.59 | 182 |
| Sufflogobius bibarbatus | 8.80 | 728 | 5.28 | |
| Chlorophthalmus punctatus | 8.00 | 1430 | 4.80 | |
| Lepidopus caudatus | 4.60 | 40 | 2.76 | |
| Caelorinchus simorhynchus | 3.60 | 76 | 2.16 | |
| PORTUNIDAE | 2.00 | 66 | 1.20 | |
| Helicolenus dactylopterus | 1.80 | 186 | 1.08 | |
| Galeus polli | 1.60 | 70 | 0.96 | |
| Solenocera africana | 1.00 | 58 | 0.60 | |
| Pterothrissus belloci | 0.00 | 6 | 0.00 | |
| Lophius vomerinus | 0.00 | 18 | 0.00 | |
| Scomberesox saurus | 0.00 | 2 | 0.00 | |
| Todaropsis eblanae | 0.00 | 8 | 0.00 | |
| Total | 166.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 566
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°28.98
start stop duration Lon E 13°33.00
TIME :06:28:00 06:58:00 30.0 (min) Purpose : 3
LOG : 5522.10 5523.30 1.4 Region : 2
FDEPTH: 200 197 Gear cond.: 0
BDEPTH: 200 197 Validity : 0
Towing dir: 360° Wire out : 800 m Speed : 2.9 kn
Sorted : 104 Total catch: 311.40 Catch/hour: 622.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 408.60 | 2954 | 65.61 | 183 |
| Merluccius capensis, female | 109.80 | 252 | 17.63 | 185 |
| Merluccius capensis, male | 67.20 | 288 | 10.79 | 184 |
| Todarodes sagittatus | 9.00 | 12 | 1.45 | |
| Sufflogobius bibarbatus | 7.80 | 790 | 1.25 | |
| Chlorophthalmus punctatus | 5.40 | 958 | 0.87 | |
| PORTUNIDAE | 3.00 | 114 | 0.48 | |
| Lepidopus caudatus | 3.00 | 36 | 0.48 | |
| Caelorinchus simorhynchus | 2.40 | 78 | 0.39 | |
| Merluccius capensis, juvenile | 2.40 | 324 | 0.39 | 186 |
| Helicolenus dactylopterus | 2.40 | 246 | 0.39 | |
| Pterothrissus belloci | 1.20 | 12 | 0.19 | |
| Galeus polli | 0.60 | 24 | 0.10 | |
| Total | 622.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 567
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°28.02
start stop duration Lon E 13°22.02
TIME :08:25:00 08:55:00 30.0 (min) Purpose : 3
LOG : 5535.50 5536.90 1.4 Region : 2
FDEPTH: 276 276 Gear cond.: 0
BDEPTH: 276 276 Validity : 0
Towing dir: 30° Wire out : 950 m Speed : 2.9 kn
Sorted : 190 Total catch: 189.60 Catch/hour: 379.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 212.80 | 278 | 56.12 | 188 |
| Merluccius capensis, male | 90.00 | 166 | 23.73 | 187 |
| MYCTOPHIDAE | 16.00 | 0 | 4.22 | |
| Trachipterus trachypterus | 15.80 | 6 | 4.17 | |
| Chlorophthalmus punctatus | 12.80 | 538 | 3.38 | |
| Centrolophus niger | 10.60 | 4 | 2.80 | |
| Todarodes sagittatus | 8.60 | 16 | 2.27 | |
| Schedophilus huttoni | 6.00 | 2 | 1.58 | |
| Helicolenus dactylopterus | 2.40 | 98 | 0.63 | |
| Zenopsis conchifer | 1.40 | 2 | 0.37 | |
| Caelorinchus simorhynchus | 1.20 | 32 | 0.32 | |
| Squilla acuelata calmani | 0.60 | 28 | 0.16 | |
| Lepidopus caudatus | 0.60 | 4 | 0.16 | |
| Galeus polli | 0.20 | 6 | 0.05 | |
| PORTUNIDAE | 0.10 | 4 | 0.03 | |
| Sufflogobius bibarbatus | 0.10 | 16 | 0.03 | |
| Total | 379.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 568
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°25.98
start stop duration Lon E 13°16.98
TIME :09:58:00 10:28:00 30.0 (min) Purpose : 3
LOG : 5543.80 5545.30 1.5 Region : 2
FDEPTH: 332 334 Gear cond.: 0
BDEPTH: 332 334 Validity : 0
Towing dir: 30° Wire out : 1050 m Speed : 2.9 kn
Sorted : 99 Total catch: 354.98 Catch/hour: 709.96

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 258.06 | 290 | 36.35 | 190 |
| Schedophilus huttoni | 180.00 | 74 | 25.35 | |
| Merluccius capensis, male | 112.70 | 212 | 15.87 | 189 |
| Krill | 46.00 | 0 | 6.48 | |
| Todarodes sagittatus | 27.40 | 48 | 3.86 | |
| Lophius vomerinus | 17.20 | 4 | 2.42 | |
| Merluccius paradoxus, female | 16.10 | 18 | 2.27 | 192 |
| Centrolophus niger | 15.80 | 10 | 2.23 | |
| Trachipterus trachypterus | 11.60 | 2 | 1.63 | |
| Galeus polli | 7.36 | 82 | 1.04 | |
| Caelorinchus simorhynchus | 4.14 | 124 | 0.58 | |
| Helicolenus dactylopterus | 3.22 | 156 | 0.45 | |
| Brama brama | 3.20 | 2 | 0.45 | |
| Beryx splendens | 2.76 | 24 | 0.39 | |
| MYCTOPHIDAE | 1.84 | 240 | 0.26 | |
| Merluccius paradoxus, male | 1.20 | 6 | 0.17 | 191 |
| Chlorophthalmus punctatus | 0.92 | 32 | 0.13 | |
| Nezumia milleri | 0.46 | 10 | 0.06 | |
| Total | 709.96 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 569
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°21.00
start stop duration Lon E 13°9.00
TIME :11:50:00 12:20:00 30.0 (min) Purpose : 3
LOG : 5554.60 5556.10 1.5 Region : 2
FDEPTH: 400 400 Gear cond.: 0
BDEPTH: 400 400 Validity : 0
Towing dir: 25° Wire out : 1200 m Speed : 3.1 kn
Sorted : 74 Total catch: 74.10 Catch/hour: 148.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 68.80 | 88 | 46.42 | 193 |
| Helicolenus dactylopterus | 26.80 | 160 | 18.08 | |
| Todarodes sagittatus | 16.00 | 28 | 10.80 | |
| Caelorinchus simorhynchus | 10.00 | 174 | 6.75 | |
| Krill | 8.00 | 0 | 5.40 | |
| Hoplostethus cadenati | 6.40 | 82 | 4.32 | |
| Schedophilus huttoni | 3.00 | 2 | 2.02 | |
| Centroscyllium fabricii | 2.20 | 4 | 1.48 | |
| Galeus polli | 2.00 | 18 | 1.35 | |
| Nezumia milleri | 1.80 | 48 | 1.21 | |
| Deania calcea | 1.80 | 6 | 1.21 | |
| Lophius vomerinus | 0.60 | 2 | 0.40 | |
| Selachophidium guentheri | 0.40 | 16 | 0.27 | |
| Diplophos sp. | 0.20 | 28 | 0.13 | |
| Ebinania costaecanarie | 0.20 | 4 | 0.13 | |
| Epigonus denticulatus | 0.00 | 24 | 0.00 | |
| Chlorophthalmus punctatus | 0.00 | 10 | 0.00 | |
| Yarrella blackfordi | 0.00 | 4 | 0.00 | |
| Argyropelecus aculeatus | 0.00 | 2 | 0.00 | |
| Total | 148.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 570
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°10.02
start stop duration Lon E 13°19.02
TIME :14:12:00 14:42:00 30.0 (min) Purpose : 3
LOG : 5570.20 5571.80 1.6 Region : 2
FDEPTH: 346 349 Gear cond.: 0
BDEPTH: 346 349 Validity : 0
Towing dir: 360° Wire out : 1100 m Speed : 3.1 kn
Sorted : 102 Total catch: 102.00 Catch/hour: 204.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Schedophilus huttoni | 133.20 | 54 | 65.29 | |
| Merluccius capensis, female | 24.00 | 20 | 11.76 | 196 |
| Merluccius paradoxus, female | 22.00 | 24 | 10.78 | 194 |
| Todarodes sagittatus | 9.60 | 14 | 4.71 | |
| Helicolenus dactylopterus | 3.60 | 68 | 1.76 | |
| Trachurus capensis | 2.80 | 6 | 1.37 | |
| Caelorinchus simorhynchus | 2.40 | 42 | 1.18 | |
| Galeus polli | 2.00 | 26 | 0.98 | |
| Raja caudaspinosa | 1.20 | 2 | 0.59 | |
| Merluccius capensis, male | 1.00 | 4 | 0.49 | 195 |
| Hoplostethus cadenati | 1.00 | 20 | 0.49 | |
| Epigonus denticulatus | 0.60 | 24 | 0.29 | |
| Lophius vomerinus | 0.60 | 2 | 0.29 | |
| Scomberesox saurus | 0.00 | 4 | 0.00 | |
| Total | 204.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 571
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°9.00
start stop duration Lon E 13°27.00
TIME :16:12:00 16:42:00 30.0 (min) Purpose : 3
LOG : 5582.30 5584.00 1.6 Region : 2
FDEPTH: 264 269 Gear cond.: 0
BDEPTH: 264 269 Validity : 0
Towing dir: 360° Wire out : 900 m Speed : 3.1 kn
Sorted : 144 Total catch: 144.40 Catch/hour: 288.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 98.60 | 266 | 34.14 | 198 |
| Merluccius capensis, female | 74.00 | 234 | 25.62 | 199 |
| Trachurus capensis | 71.20 | 160 | 24.65 | 197 |
| Regalecus glesne | 12.00 | 12 | 4.16 | |
| MYCTOPHIDAE | 8.00 | 0 | 2.77 | |
| Brama brama | 7.00 | 4 | 2.42 | |
| Todarodes sagittatus | 6.60 | 10 | 2.29 | |
| Krill | 4.00 | 0 | 1.39 | |
| Epigonus denticulatus | 2.20 | 106 | 0.76 | |
| Lophius vomerinus | 1.80 | 2 | 0.62 | |
| Zenopsis conchifer | 1.80 | 2 | 0.62 | |
| Sufflogobius bibarbatus | 1.00 | 126 | 0.35 | |
| Caelorinchus simorhynchus | 0.40 | 8 | 0.14 | |
| Galeus polli | 0.20 | 4 | 0.07 | |
| Nezumia milleri | 0.00 | 4 | 0.00 | |
| Helicolenus dactylopterus | 0.00 | 10 | 0.00 | |
| Total | 288.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 572
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°7.98
start stop duration Lon E 13°31.98
TIME :17:42:00 18:12:00 30.0 (min) Purpose : 3
LOG : 5590.60 5592.10 1.6 Region : 2
FDEPTH: 197 197 Gear cond.: 0
BDEPTH: 197 197 Validity : 0
Towing dir: 360° Wire out : 800 m Speed : 3.1 kn
Sorted : 53 Total catch: 189.00 Catch/hour: 378.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 245.00 | 1392 | 64.81 | 202 |
| Merluccius capensis, female | 60.40 | 252 | 15.98 | 201 |
| Merluccius capensis, male | 45.20 | 204 | 11.96 | 200 |
| Sufflogobius bibarbatus | 15.00 | 1758 | 3.97 | |
| Todarodes sagittatus | 3.40 | 4 | 0.90 | |
| Todaropsis eblanae | 3.00 | 50 | 0.79 | |
| Helicolenus dactylopterus | 2.50 | 160 | 0.66 | |
| Caelorinchus simorhynchus | 2.00 | 50 | 0.53 | |
| Chlorophthalmus punctatus | 1.00 | 160 | 0.26 | |
| PORTUNIDAE | 0.50 | 20 | 0.13 | |
| Merluccius capensis | 0.00 | 12 | 0.00 | |
| Galeus polli | 0.00 | 10 | 0.00 | |
| Total | 378.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 573
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°7.02
start stop duration Lon E 13°39.00
TIME :19:20:00 19:50:00 30.0 (min) Purpose : 3
LOG : 5599.70 5601.00 1.5 Region : 2
FDEPTH: 150 149 Gear cond.: 0
BDEPTH: 150 149 Validity : 0
Towing dir: 360° Wire out : 650 m Speed : 3.1 kn
Sorted : 151 Total catch: 3000.00 Catch/hour: 6000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 5242.00 | 46542 | 87.37 | 203 |
| Merluccius capensis, female | 516.00 | 2024 | 8.60 | 204 |
| Merluccius capensis, male | 242.00 | 1548 | 4.03 | 205 |
| Total | 6000.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 574
DATE :06/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°7.02
start stop duration Lon E 13°43.98
TIME :21:15:00 21:45:00 30.0 (min) Purpose : 3
LOG : 5607.30 5608.40 1.4 Region : 2
FDEPTH: 149 147 Gear cond.: 0
BDEPTH: 149 147 Validity : 0
Towing dir: 360° Wire out : 650 m Speed : 3.0 kn
Sorted : 31 Total catch: 754.10 Catch/hour: 1508.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 768.00 | 6000 | 50.92 | 206 |
| Merluccius capensis, female | 552.00 | 3984 | 36.60 | 207 |
| Trachurus capensis | 177.60 | 1728 | 11.78 | 208 |
| Scomber japonicus | 7.00 | 4 | 0.46 | |
| Lepidopus caudatus | 2.40 | 48 | 0.16 | |
| Merluccius capensis | 1.20 | 192 | 0.08 | |
| Total | 1508.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 575
DATE :07/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°4.02
start stop duration Lon E 13°45.00
TIME :00:30:00 01:00:00 30.0 (min) Purpose : 3
LOG : 5634.20 5635.70 1.5 Region : 2
FDEPTH: 146 145 Gear cond.: 0
BDEPTH: 146 145 Validity : 0
Towing dir: 360° Wire out : 650 m Speed : 3.1 kn
Sorted : 28 Total catch: 631.00 Catch/hour: 1262.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 624.80 | 3916 | 49.51 | 212 |
| Merluccius capensis, male | 440.00 | 3608 | 34.87 | 211 |
| Trachurus capensis | 114.40 | 1100 | 9.06 | 210 |
| Galeorhinus galeus | 37.40 | 2 | 2.96 | |
| Merluccius capensis, juvenile | 22.00 | 792 | 1.74 | 209 |
| Lepidopus caudatus | 22.00 | 220 | 1.74 | |
| Sufflogobius bibarbatus | 1.40 | 572 | 0.11 | |
| PORTUNIDAE | 0.00 | 44 | 0.00 | |
| Lophius vomerinus | 0.00 | 44 | 0.00 | |
| Todarodes sagittatus | 0.00 | 44 | 0.00 | |
| Total | 1262.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 576
DATE :07/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°49.02
start stop duration Lon E 13°19.02
TIME :06:30:00 07:00:00 30.0 (min) Purpose : 3
LOG : 5672.70 5674.00 1.4 Region : 2
FDEPTH: 315 308 Gear cond.: 0
BDEPTH: 315 308 Validity : 0
Towing dir: 20° Wire out : 1050 m Speed : 2.7 kn
Sorted : 59 Total catch: 58.70 Catch/hour: 117.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 69.40 | 108 | 59.11 | 214 |
| Merluccius capensis, male | 22.60 | 74 | 19.25 | 213 |
| Schedophilus huttoni | 12.60 | 4 | 10.73 | |
| Caelorinchus simorhynchus | 3.80 | 98 | 3.24 | |
| Helicolenus dactylopterus | 2.80 | 222 | 2.39 | |
| Lophius vomerinus | 1.60 | 4 | 1.36 | |
| Galeus polli | 1.60 | 18 | 1.36 | |
| Todarodes sagittatus | 1.60 | 2 | 1.36 | |
| Chlorophthalmus punctatus | 0.60 | 26 | 0.51 | |
| Lepidopus caudatus | 0.40 | 10 | 0.34 | |
| Nezumia milleri | 0.20 | 2 | 0.17 | |
| MYCTOPHIDAE | 0.10 | 40 | 0.09 | |
| Ebinania costaecanarie | 0.10 | 2 | 0.09 | |
| Total | 117.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 577
DATE :07/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°49.98
start stop duration Lon E 13°28.02
TIME :08:30:00 09:00:00 30.0 (min) Purpose : 3
LOG : 5684.10 5685.70 1.5 Region : 2
FDEPTH: 250 248 Gear cond.: 0
BDEPTH: 250 248 Validity : 0
Towing dir: 360° Wire out : 900 m Speed : 2.8 kn
Sorted : 13 Total catch: 85.90 Catch/hour: 171.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 96.00 | 632 | 55.88 | 217 |
| Merluccius capensis, female | 40.60 | 90 | 23.63 | 216 |
| Merluccius capensis, male | 21.80 | 80 | 12.69 | 215 |
| Chlorophthalmus punctatus | 5.60 | 336 | 3.26 | |
| Lophius vomerinus | 1.80 | 2 | 1.05 | |
| Sufflogobius bibarbatus | 1.60 | 328 | 0.93 | |
| Caelorinchus simorhynchus | 1.60 | 32 | 0.93 | |
| Genypterus capensis | 1.40 | 2 | 0.81 | |
| Helicolenus dactylopterus | 0.80 | 56 | 0.47 | |
| Solenocera africana | 0.40 | 136 | 0.23 | |
| Galeus polli | 0.20 | 16 | 0.12 | |
| Total | 171.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 578
DATE :07/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°48.00
start stop duration Lon E 13°31.02
TIME :09:50:00 10:20:00 30.0 (min) Purpose : 3
LOG : 5690.30 5691.60 1.3 Region : 2
FDEPTH: 206 212 Gear cond.: 0
BDEPTH: 206 212 Validity : 0
Towing dir: 340° Wire out : 800 m Speed : 2.6 kn
Sorted : 33 Total catch: 551.70 Catch/hour: 1103.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 732.00 | 5710 | 66.34 | 218 |
| Merluccius capensis | 355.40 | 1204 | 32.21 | |
| Lophius vomerinus | 16.00 | 14 | 1.45 | |
| Total | 1103.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 579
DATE :07/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°49.02
start stop duration Lon E 13°37.98
TIME :11:35:00 12:05:00 30.0 (min) Purpose : 3
LOG : 5700.70 5702.10 1.6 Region : 2
FDEPTH: 136 135 Gear cond.: 0
BDEPTH: 136 135 Validity : 0
Towing dir: 360° Wire out : 650 m Speed : 3.0 kn
Sorted : 84 Total catch: 2492.00 Catch/hour: 4984.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 4064.00 | 42818 | 81.54 | 221 |
| Lepidopus caudatus | 510.00 | 7650 | 10.23 | |
| Merluccius capensis, female | 181.60 | 770 | 3.64 | 220 |
| Merluccius capensis, male | 126.20 | 956 | 2.53 | 219 |
| Pterothrissus belloci | 68.00 | 510 | 1.36 | |
| Lophius vomerinus | 34.00 | 170 | 0.68 | |
| Sufflogobius bibarbatus | 0.00 | 850 | 0.00 | |
| Total | 4983.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 580
DATE :07/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°49.02
start stop duration Lon E 13°49.02
TIME :13:30:00 14:00:00 30.0 (min) Purpose : 3
LOG : 5713.60 5715.10 1.5 Region : 2
FDEPTH: 129 129 Gear cond.: 0
BDEPTH: 129 129 Validity : 0
Towing dir: 360° Wire out : 600 m Speed : 3.1 kn
Sorted : 82 Total catch: 551.40 Catch/hour: 1102.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 518.00 | 2394 | 46.97 | 224 |
| Trachurus capensis | 304.80 | 2836 | 27.64 | 222 |
| Merluccius capensis, male | 280.00 | 2254 | 25.39 | 223 |
| Total | 1102.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 581
DATE :09/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°30.00
start stop duration Lon E 13°43.02
TIME :17:58:00 18:20:00 22.0 (min) Purpose : 3
LOG : 5820.90 5821.90 1.0 Region : 2
FDEPTH: 124 124 Gear cond.: 9
BDEPTH: 124 124 Validity : 1
Towing dir: 360° Wire out : 550 m Speed : 3.3 kn
Sorted : 67 Total catch: 403.50 Catch/hour: 1100.45

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 818.18 | 8332 | 74.35 | 228 |
| Merluccius capensis, female | 169.36 | 728 | 15.39 | 226 |
| Merluccius capensis, male | 81.82 | 535 | 7.43 | 225 |
| Merluccius capensis, juvenile | 27.27 | 2564 | 2.48 | 227 |
| Pterothrissus belloci | 1.64 | 8 | 0.15 | |
| Chelidonichthys capensis | 1.36 | 5 | 0.12 | |
| Austroglossus microlepis | 0.82 | 3 | 0.07 | |
| Engraulis capensis | 0.00 | 109 | 0.00 | |
| Sufflogobius bibarbatus | 0.00 | 273 | 0.00 | |
| Total | 1100.45 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 582
DATE :09/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°28.98
start stop duration Lon E 13°34.98
TIME :19:25:00 19:55:00 30.0 (min) Purpose : 3
LOG : 5830.20 5831.80 1.6 Region : 2
FDEPTH: 131 132 Gear cond.: 0
BDEPTH: 131 132 Validity : 0
Towing dir: 350° Wire out : 600 m Speed : 3.3 kn
Sorted : 33 Total catch: 184.90 Catch/hour: 369.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 176.00 | 1880 | 47.59 | 232 |
| Merluccius capensis, male | 87.40 | 664 | 23.63 | 229 |
| Merluccius capensis, female | 72.60 | 384 | 19.63 | 230 |
| Merluccius capensis, juvenile | 30.00 | 1420 | 8.11 | 231 |
| Chelidonichthys capensis | 1.20 | 4 | 0.32 | |
| Sufflogobius bibarbatus | 1.00 | 280 | 0.27 | |
| Pterothrissus belloci | 0.60 | 2 | 0.16 | |
| Dentex macrophthalmus | 0.60 | 2 | 0.16 | |
| Engraulis capensis | 0.20 | 20 | 0.05 | |
| Todaropsis eblanae | 0.20 | 20 | 0.05 | |
| Total | 369.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 583
DATE :09/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°28.98
start stop duration Lon E 13°27.00
TIME :21:04:00 21:34:00 30.0 (min) Purpose : 3
LOG : 5840.20 5841.70 1.6 Region : 2
FDEPTH: 199 196 Gear cond.: 0
BDEPTH: 199 196 Validity : 0
Towing dir: 180° Wire out : 700 m Speed : 3.1 kn
Sorted : 110 Total catch: 192.20 Catch/hour: 384.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 293.00 | 396 | 76.22 | 234 |
| Merluccius capensis, male | 50.40 | 178 | 13.11 | 233 |
| Trachurus capensis | 24.60 | 172 | 6.40 | 235 |
| Chlorophthalmus punctatus | 4.00 | 470 | 1.04 | |
| Lophius vomerinus | 3.00 | 6 | 0.78 | |
| Sufflogobius bibarbatus | 2.00 | 290 | 0.52 | |
| Solenocera africana | 2.00 | 164 | 0.52 | |
| Lepidopus caudatus | 2.00 | 14 | 0.52 | |
| Caelorinchus simorhynchus | 1.80 | 38 | 0.47 | |
| PORTUNIDAE | 0.40 | 4 | 0.10 | |
| Engraulis capensis | 0.40 | 32 | 0.10 | |
| Galeus polli | 0.40 | 4 | 0.10 | |
| Todaropsis eblanae | 0.40 | 8 | 0.10 | |
| Total | 384.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 584
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°28.02
start stop duration Lon E 13°27.00
TIME :06:50:00 07:20:00 30.0 (min) Purpose : 3
LOG : 5848.90 5850.40 1.6 Region : 2
FDEPTH: 197 193 Gear cond.: 0
BDEPTH: 197 193 Validity : 0
Towing dir: 350° Wire out : 800 m Speed : 3.1 kn
Sorted : 111 Total catch: 251.30 Catch/hour: 502.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 208.00 | 392 | 41.38 | 237 |
| Merluccius capensis, male | 139.50 | 572 | 27.76 | 236 |
| Trachurus capensis | 137.80 | 1296 | 27.42 | 239 |
| Merluccius capensis, juvenile | 4.00 | 356 | 0.80 | 238 |
| Chlorophthalmus punctatus | 3.60 | 796 | 0.72 | |
| Sufflogobius bibarbatus | 3.00 | 730 | 0.60 | |
| Squalus megalops | 1.80 | 4 | 0.36 | |
| Lophius vomerinus | 1.60 | 4 | 0.32 | |
| Todarodes sagittatus | 1.20 | 2 | 0.24 | |
| Chelidonichthys capensis | 1.20 | 2 | 0.24 | |
| PORTUNIDAE | 0.20 | 18 | 0.04 | |
| Caelorinchus simorhynchus | 0.20 | 18 | 0.04 | |
| Solenocera africana | 0.20 | 68 | 0.04 | |
| Lepidopus caudatus | 0.20 | 4 | 0.04 | |
| Todaropsis eblanae | 0.10 | 12 | 0.02 | |
| Total | 502.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 585
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°28.02
start stop duration Lon E 13°18.00
TIME :08:38:00 09:08:00 30.0 (min) Purpose : 3
LOG : 5860.00 5861.50 1.6 Region : 2
FDEPTH: 238 235 Gear cond.: 0
BDEPTH: 238 235 Validity : 0
Towing dir: 360° Wire out : 850 m Speed : 3.0 kn
Sorted : 116 Total catch: 349.70 Catch/hour: 699.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 300.60 | 456 | 42.98 | 241 |
| Trachurus capensis | 222.00 | 1006 | 31.74 | 242 |
| Merluccius capensis, male | 162.00 | 486 | 23.16 | 240 |
| Lophius vomerinus | 5.00 | 2 | 0.71 | |
| Lepidopus caudatus | 2.40 | 6 | 0.34 | |
| Chlorophthalmus punctatus | 1.80 | 78 | 0.26 | |
| Sufflogobius bibarbatus | 1.20 | 138 | 0.17 | |
| Caelorinchus simorhynchus | 1.20 | 36 | 0.17 | |
| Galeus polli | 1.20 | 18 | 0.17 | |
| Solenocera africana | 1.20 | 306 | 0.17 | |
| Todarodes sagittatus | 0.60 | 2 | 0.09 | |
| Helicolenus dactylopterus | 0.20 | 12 | 0.03 | |
| Total | 699.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 586
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°28.02
start stop duration Lon E 13°13.02
TIME :10:10:00 10:40:00 30.0 (min) Purpose : 3
LOG : 5868.40 5869.70 1.5 Region : 2
FDEPTH: 250 243 Gear cond.: 0
BDEPTH: 250 243 Validity : 0
Towing dir: 360° Wire out : 850 m Speed : 3.0 kn
Sorted : 113 Total catch: 455.40 Catch/hour: 910.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 372.80 | 846 | 40.93 | 245 |
| Merluccius capensis, female | 356.00 | 592 | 39.09 | 244 |
| Merluccius capensis, male | 176.00 | 600 | 19.32 | 243 |
| Todarodes sagittatus | 5.00 | 6 | 0.55 | |
| Chlorophthalmus punctatus | 0.20 | 40 | 0.02 | |
| Sufflogobius bibarbatus | 0.20 | 32 | 0.02 | |
| Caelorinchus simorhynchus | 0.20 | 16 | 0.02 | |
| Helicolenus dactylopterus | 0.20 | 88 | 0.02 | |
| Galeus polli | 0.20 | 16 | 0.02 | |
| Solenocera africana | 0.00 | 40 | 0.00 | |
| Total | 910.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 587
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°30.00
start stop duration Lon E 13°1.98
TIME :12:22:00 12:52:00 30.0 (min) Purpose : 3
LOG : 5884.00 5885.40 1.7 Region : 2
FDEPTH: 283 281 Gear cond.: 0
BDEPTH: 283 281 Validity : 0
Towing dir: 350° Wire out : 950 m Speed : 3.3 kn
Sorted : 24 Total catch: 316.10 Catch/hour: 632.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 288.00 | 660 | 45.56 | 247 |
| Merluccius capensis, female | 269.20 | 256 | 42.58 | 246 |
| Merluccius capensis | 56.40 | 0 | 8.92 | |
| Lepidopus caudatus | 9.60 | 16 | 1.52 | |
| Todarodes sagittatus | 7.00 | 12 | 1.11 | |
| Zeus faber | 2.00 | 2 | 0.32 | |
| Chlorophthalmus punctatus | 0.00 | 12 | 0.00 | |
| Helicolenus dactylopterus | 0.00 | 36 | 0.00 | |
| Total | 632.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 588
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°18.00
start stop duration Lon E 12°52.02
TIME :14:28:00 14:58:00 30.0 (min) Purpose : 3
LOG : 5898.60 5900.00 1.6 Region : 2
FDEPTH: 359 358 Gear cond.: 0
BDEPTH: 359 358 Validity : 0
Towing dir: 350° Wire out : 1100 m Speed : 3.2 kn
Sorted : 91 Total catch: 90.55 Catch/hour: 181.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 62.00 | 158 | 34.24 | 249 |
| Merluccius capensis, male | 52.00 | 150 | 28.71 | 248 |
| Helicolenus dactylopterus | 25.40 | 26 | 14.03 | |
| Merluccius paradoxus, female | 10.60 | 16 | 5.85 | 250 |
| Todarodes sagittatus | 10.00 | 22 | 5.52 | |
| Neoharriotta pinnata | 7.80 | 2 | 4.31 | |
| Chlorophthalmus punctatus | 3.20 | 128 | 1.77 | |
| Trachurus capensis | 3.00 | 6 | 1.66 | |
| Lophius vomerinus | 3.00 | 4 | 1.66 | |
| MYCTOPHIDAE | 1.20 | 0 | 0.66 | |
| Zeus faber | 1.20 | 2 | 0.66 | |
| Beryx splendens | 0.40 | 4 | 0.22 | |
| Galeus polli | 0.40 | 6 | 0.22 | |
| Hoplostethus cadenati | 0.40 | 10 | 0.22 | |
| Krill | 0.20 | 0 | 0.11 | |
| Nezumia milleri | 0.20 | 6 | 0.11 | |
| Caelorinchus simorhynchus | 0.10 | 2 | 0.06 | |
| Epigonus denticulatus | 0.00 | 4 | 0.00 | |
| Solenocera africana | 0.00 | 8 | 0.00 | |
| Total | 181.10 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 589
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°9.00
start stop duration Lon E 12°58.02
TIME :16:21:00 16:51:00 30.0 (min) Purpose : 3
LOG : 5909.90 5911.30 1.6 Region : 2
FDEPTH: 299 300 Gear cond.: 0
BDEPTH: 299 300 Validity : 0
Towing dir: 360° Wire out : 1000 m Speed : 3.2 kn
Sorted : 169 Total catch: 168.66 Catch/hour: 337.32

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 242.80 | 346 | 71.98 | 252 |
| Merluccius capensis, male | 67.00 | 194 | 19.86 | 251 |
| Chlorophthalmus punctatus | 14.00 | 708 | 4.15 | |
| Todarodes sagittatus | 3.40 | 6 | 1.01 | |
| Helicolenus dactylopterus | 3.20 | 132 | 0.95 | |
| Trachipterus trachypterus | 3.00 | 2 | 0.89 | |
| Trachurus capensis | 1.20 | 2 | 0.36 | |
| Squalus megalops | 1.00 | 2 | 0.30 | |
| Zenopsis conchifer | 1.00 | 2 | 0.30 | |
| Lepidopus caudatus | 0.60 | 4 | 0.18 | |
| Galeus polli | 0.10 | 4 | 0.03 | |
| Solenocera africana | 0.02 | 12 | 0.01 | |
| Squilla acuelata calmani | 0.00 | 2 | 0.00 | |
| Caelorinchus simorhynchus | 0.00 | 2 | 0.00 | |
| Total | 337.32 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 590
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°9.00
start stop duration Lon E 13°4.98
TIME :18:05:00 18:35:00 30.0 (min) Purpose : 3
LOG : 5920.00 5921.20 1.6 Region : 2
FDEPTH: 248 250 Gear cond.: 0
BDEPTH: 248 250 Validity : 0
Towing dir: 360° Wire out : 900 m Speed : 3.1 kn
Sorted : 95 Total catch: 95.45 Catch/hour: 190.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 92.60 | 370 | 48.51 | 253 |
| Trachurus capensis | 55.00 | 384 | 28.81 | 255 |
| Merluccius capensis, female | 38.00 | 78 | 19.91 | 254 |
| Solenocera africana | 3.00 | 750 | 1.57 | |
| Pterothrissus belloci | 1.20 | 8 | 0.63 | |
| Sufflogobius bibarbatus | 0.80 | 120 | 0.42 | |
| Caelorinchus simorhynchus | 0.20 | 6 | 0.10 | |
| Chlorophthalmus punctatus | 0.04 | 12 | 0.02 | |
| Helicolenus dactylopterus | 0.04 | 10 | 0.02 | |
| Merluccius capensis | 0.02 | 6 | 0.01 | |
| Total | 190.90 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 591
DATE :10/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°10.02
start stop duration Lon E 13°19.02
TIME :21:40:00 22:05:00 25.0 (min) Purpose : 3
LOG : 5943.80 5945.00 1.5 Region : 2
FDEPTH: 193 192 Gear cond.: 9
BDEPTH: 193 192 Validity : 1
Towing dir: 350° Wire out : 800 m Speed : 3.4 kn
Sorted : 26 Total catch: 26.10 Catch/hour: 62.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 28.80 | 55 | 45.98 | 257 |
| Trachurus capensis | 11.76 | 91 | 18.77 | 258 |
| Sardinops ocellatus | 6.96 | 60 | 11.11 | 259 |
| Chlorophthalmus punctatus | 4.80 | 533 | 7.66 | |
| Merluccius capensis, male | 4.80 | 24 | 7.66 | 256 |
| Sufflogobius bibarbatus | 1.92 | 461 | 3.07 | |
| Solenocera africana | 1.20 | 202 | 1.92 | |
| Pterothrissus belloci | 0.72 | 5 | 1.15 | |
| Engraulis capensis | 0.72 | 29 | 1.15 | |
| Lophius vomerinus | 0.72 | 12 | 1.15 | |
| Trigla lyra | 0.24 | 2 | 0.38 | |
| Total | 62.64 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 592
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°28.02
start stop duration Lon E 13°18.00
TIME :03:29:00 03:59:00 30.0 (min) Purpose : 3
LOG : 5995.00 5996.60 1.6 Region : 2
FDEPTH: 238 234 Gear cond.: 0
BDEPTH: 238 234 Validity : 0
Towing dir: 360° Wire out : 850 m Speed : 3.1 kn
Sorted : 73 Total catch: 163.90 Catch/hour: 327.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 208.00 | 448 | 63.45 | 261 |
| Merluccius capensis, male | 83.20 | 288 | 25.38 | 260 |
| Caelorinchus simorhynchus | 8.20 | 280 | 2.50 | |
| Chlorophthalmus punctatus | 7.40 | 456 | 2.26 | |
| Trachurus capensis | 5.40 | 24 | 1.65 | |
| Galeus polli | 5.20 | 136 | 1.59 | |
| Solenocera africana | 4.20 | 728 | 1.28 | |
| Sufflogobius bibarbatus | 2.80 | 454 | 0.85 | |
| Lepidopus caudatus | 2.40 | 8 | 0.73 | |
| PORTUNIDAE | 0.60 | 60 | 0.18 | |
| Nezumia milleri | 0.40 | 16 | 0.12 | |
| Lophius vomerinus | 0.00 | 4 | 0.00 | |
| Helicolenus dactylopterus | 0.00 | 2 | 0.00 | |
| Total | 327.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 593
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°10.98
start stop duration Lon E 13°19.02
TIME :06:54:00 07:24:00 30.0 (min) Purpose : 3
LOG : 6012.50 6014.10 1.6 Region : 2
FDEPTH: 199 202 Gear cond.: 0
BDEPTH: 199 202 Validity : 0
Towing dir: 360° Wire out : 750 m Speed : 3.1 kn
Sorted : 101 Total catch: 244.30 Catch/hour: 488.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 314.40 | 3264 | 64.35 | 265 |
| Merluccius capensis, female | 100.60 | 212 | 20.59 | 263 |
| Merluccius capensis, male | 46.00 | 192 | 9.41 | 262 |
| Chlorophthalmus punctatus | 10.80 | 1212 | 2.21 | |
| Merluccius capensis, juvenile | 4.80 | 492 | 0.98 | 264 |
| Sufflogobius bibarbatus | 3.60 | 1008 | 0.74 | |
| Todarodes sagittatus | 2.40 | 2 | 0.49 | |
| Chelidonichthys capensis | 2.40 | 4 | 0.49 | |
| Solenocera africana | 1.20 | 288 | 0.25 | |
| Pterothrissus belloci | 1.00 | 2 | 0.20 | |
| Caelorinchus simorhynchus | 0.60 | 48 | 0.12 | |
| Chatrabus melanurus | 0.40 | 2 | 0.08 | |
| Lophius vomerinus | 0.40 | 4 | 0.08 | |
| Synagrops microlepis | 0.00 | 12 | 0.00 | |
| PORTUNIDAE | 0.00 | 36 | 0.00 | |
| Galeus polli | 0.00 | 12 | 0.00 | |
| Total | 488.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 594
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°10.02
start stop duration Lon E 13°28.02
TIME :08:41:00 09:11:00 30.0 (min) Purpose : 3
LOG : 6024.30 6026.00 1.6 Region : 2
FDEPTH: 149 151 Gear cond.: 0
BDEPTH: 149 151 Validity : 0
Towing dir: 350° Wire out : 650 m Speed : 3.2 kn
Sorted : 91 Total catch: 246.29 Catch/hour: 492.58

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 203.50 | 820 | 41.31 | 267 |
| Trachurus capensis | 140.20 | 1192 | 28.46 | 269 |
| Merluccius capensis, male | 126.50 | 786 | 25.68 | 266 |
| Merluccius capensis, juvenile | 12.60 | 1606 | 2.56 | 268 |
| Lophius vomerinus | 3.00 | 8 | 0.61 | |
| Sufflogobius bibarbatus | 2.80 | 858 | 0.57 | |
| Pterothrissus belloci | 2.00 | 10 | 0.41 | |
| Todarodes sagittatus | 1.00 | 2 | 0.20 | |
| Austroglossus microlepis | 0.80 | 4 | 0.16 | |
| Todaropsis eblanae | 0.12 | 6 | 0.02 | |
| Solenocera africana | 0.06 | 24 | 0.01 | |
| PORTUNIDAE | 0.00 | 16 | 0.00 | |
| Squilla acuelata calmani | 0.00 | 6 | 0.00 | |
| Galeus polli | 0.00 | 6 | 0.00 | |
| Total | 492.58 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 595
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°10.02
start stop duration Lon E 13°37.98
TIME :10:32:00 11:02:00 30.0 (min) Purpose : 3
LOG : 6037.40 6038.80 1.5 Region : 2
FDEPTH: 123 124 Gear cond.: 0
BDEPTH: 123 124 Validity : 0
Towing dir: 350° Wire out : 500 m Speed : 3.2 kn
Sorted : 31 Total catch: 153.30 Catch/hour: 306.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 201.00 | 1090 | 65.56 | 271 |
| Merluccius capensis, male | 93.00 | 490 | 30.33 | 270 |
| Sufflogobius bibarbatus | 6.00 | 1950 | 1.96 | |
| Merluccius capensis, juvenile | 6.00 | 530 | 1.96 | 272 |
| Schedophilus huttoni | 0.60 | 2 | 0.20 | |
| Total | 306.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 596
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°3.00
start stop duration Lon E 13°43.02
TIME :12:39:00 13:09:00 30.0 (min) Purpose : 3
LOG : 6053.00 6054.60 1.6 Region : 2
FDEPTH: 111 115 Gear cond.: 0
BDEPTH: 111 115 Validity : 0
Towing dir: 220° Wire out : 500 m Speed : 3.2 kn
Sorted : 9 Total catch: 78.30 Catch/hour: 156.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 149.40 | 4634 | 95.40 | |
| Merluccius capensis, juvenile | 7.20 | 594 | 4.60 | 273 |
| Total | 156.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 597
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°16.98
start stop duration Lon E 13°42.00
TIME :14:43:00 15:13:00 30.0 (min) Purpose : 3
LOG : 6067.70 6069.30 1.6 Region : 2
FDEPTH: 122 120 Gear cond.: 0
BDEPTH: 122 120 Validity : 0
Towing dir: 180° Wire out : 550 m Speed : 3.1 kn
Sorted : 47 Total catch: 279.70 Catch/hour: 559.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 290.40 | 1740 | 51.91 | 275 |
| Merluccius capensis, male | 219.60 | 1404 | 39.26 | 274 |
| Sufflogobius bibarbatus | 42.00 | 11340 | 7.51 | |
| Merluccius capensis, juvenile | 7.20 | 516 | 1.29 | 276 |
| Engraulis capensis | 0.20 | 108 | 0.04 | |
| Lophius vomerinus | 0.00 | 12 | 0.00 | |
| Total | 559.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 598
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°30.00
start stop duration Lon E 13°55.02
TIME :17:42:00 18:12:00 30.0 (min) Purpose : 3
LOG : 6085.10 6086.70 1.5 Region : 2
FDEPTH: 112 114 Gear cond.: 0
BDEPTH: 112 114 Validity : 0
Towing dir: 145° Wire out : 500 m Speed : 3.1 kn
Sorted : 30 Total catch: 330.80 Catch/hour: 661.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 352.00 | 2354 | 53.20 | 278 |
| Merluccius capensis, male | 286.00 | 2178 | 43.23 | 277 |
| Merluccius capensis, juvenile | 22.00 | 2266 | 3.33 | 279 |
| Austroglossus microlepis | 0.80 | 6 | 0.12 | |
| Sufflogobius bibarbatus | 0.40 | 264 | 0.06 | |
| Chelidonichthys capensis | 0.40 | 2 | 0.06 | |
| Total | 661.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 599
DATE :11/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°39.00
start stop duration Lon E 13°49.98
TIME :19:25:00 19:55:00 30.0 (min) Purpose : 3
LOG : 6096.90 6098.50 1.7 Region : 2
FDEPTH: 124 125 Gear cond.: 0
BDEPTH: 124 125 Validity : 0
Towing dir: 170° Wire out : 550 m Speed : 3.2 kn
Sorted : 56 Total catch: 280.00 Catch/hour: 560.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 300.00 | 1650 | 53.57 | 281 |
| Merluccius capensis, male | 185.00 | 1290 | 33.04 | 280 |
| Merluccius capensis, juvenile | 30.00 | 2434 | 5.36 | 282 |
| Chelidonichthys capensis | 18.00 | 100 | 3.21 | |
| Trachurus capensis | 16.50 | 180 | 2.95 | 283 |
| Pterothrissus belloci | 4.00 | 20 | 0.71 | |
| Lophius vomerinus | 4.00 | 10 | 0.71 | |
| Sufflogobius bibarbatus | 2.50 | 620 | 0.45 | |
| Total | 560.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 600
DATE :12/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 23°18.00
start stop duration Lon E 13°57.00
TIME :06:42:00 07:12:00 30.0 (min) Purpose : 3
LOG : 6195.10 6196.70 1.6 Region : 2
FDEPTH: 145 147 Gear cond.: 0
BDEPTH: 145 147 Validity : 0
Towing dir: 350° Wire out : 650 m Speed : 3.2 kn
Sorted : 28 Total catch: 223.60 Catch/hour: 447.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 352.00 | 1872 | 78.71 | 285 |
| Merluccius capensis, male | 92.80 | 464 | 20.75 | 284 |
| Merluccius capensis, juvenile | 1.60 | 208 | 0.36 | 286 |
| Sufflogobius bibarbatus | 0.80 | 288 | 0.18 | |
| Total | 447.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 601
DATE :12/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°58.98
start stop duration Lon E 13°57.00
TIME :09:11:00 09:41:00 30.0 (min) Purpose : 3
LOG : 6215.30 6216.80 1.5 Region : 2
FDEPTH: 132 130 Gear cond.: 0
BDEPTH: 132 130 Validity : 0
Towing dir: 3° Wire out : 550 m Speed : 2.9 kn
Sorted : 59 Total catch: 1478.00 Catch/hour: 2956.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1875.00 | 10950 | 63.43 | 288 |
| Merluccius capensis, male | 1050.00 | 7200 | 35.52 | 287 |
| Trachurus capensis | 20.00 | 200 | 0.68 | |
| Chelidonichthys capensis | 7.50 | 50 | 0.25 | |
| Sufflogobius bibarbatus | 2.50 | 1300 | 0.08 | |
| Austroglossus microlepis | 1.00 | 6 | 0.03 | |
| Total | 2956.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 602
DATE :12/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°49.98
start stop duration Lon E 14°7.02
TIME :11:23:00 11:36:00 13.0 (min) Purpose : 3
LOG : 6231.70 6232.10 0.4 Region : 2
FDEPTH: 113 113 Gear cond.: 9
BDEPTH: 113 113 Validity : 1
Towing dir: 360° Wire out : 550 m Speed : 2.6 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 603
DATE :12/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°46.02
start stop duration Lon E 13°57.00
TIME :12:48:00 13:18:00 30.0 (min) Purpose : 3
LOG : 6242.10 6243.90 1.8 Region : 2
FDEPTH: 123 124 Gear cond.: 0
BDEPTH: 123 124 Validity : 0
Towing dir: 330° Wire out : 500 m Speed : 3.2 kn
Sorted : 39 Total catch: 59.00 Catch/hour: 118.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 68.00 | 616 | 57.63 | 290 |
| Merluccius capensis, male | 46.00 | 288 | 38.98 | 289 |
| Sufflogobius bibarbatus | 2.80 | 710 | 2.37 | |
| Merluccius capensis, juvenile | 1.20 | 142 | 1.02 | 291 |
| Total | 118.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 604
DATE :12/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 22°33.00
start stop duration Lon E 13°58.98
TIME :14:45:00 15:15:00 30.0 (min) Purpose : 3
LOG : 6256.30 6258.00 1.6 Region : 2
FDEPTH: 114 114 Gear cond.: 0
BDEPTH: 114 114 Validity : 0
Towing dir: 350° Wire out : 500 m Speed : 3.2 kn
Sorted : 21 Total catch: 83.20 Catch/hour: 166.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 70.40 | 448 | 42.31 | 293 |
| Merluccius capensis, male | 53.60 | 384 | 32.21 | 292 |
| Merluccius capensis, juvenile | 42.40 | 4006 | 25.48 | 294 |
| Total | 166.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 605
DATE :12/02/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 22°10.98
start stop duration Lon E 13°19.98
TIME :23:25:00 23:55:00 30.0 (min) Purpose : 1
LOG : 6332.40 6334.40 1.8 Region : 2
FDEPTH: 25 25 Gear cond.: 0
BDEPTH: 194 185 Validity : 0
Towing dir: 90° Wire out : 100 m Speed : 3.7 kn
Sorted : 47 Total catch: 46.60 Catch/hour: 93.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sardinops ocellatus | 68.80 | 648 | 73.82 | 296 |
| Trachurus capensis | 13.80 | 140 | 14.81 | 295 |
| Merluccius capensis, female | 5.00 | 8 | 5.36 | 298 |
| Engraulis capensis | 3.20 | 158 | 3.43 | 297 |
| Merluccius capensis, juvenile | 2.40 | 60 | 2.58 | 299 |
| Total | 93.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 606
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.98
start stop duration Lon E 13°42.00
TIME :06:52:00 07:22:00 30.0 (min) Purpose : 3
LOG : 6364.20 6365.40 1.7 Region : 2
FDEPTH: 98 95 Gear cond.: 0
BDEPTH: 98 95 Validity : 0
Towing dir: 5° Wire out : 450 m Speed : 3.1 kn
Sorted : 0 Total catch: 10.00 Catch/hour: 20.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 20.00 | 0 | 100.00 | |
| Total | 20.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 607
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.98
start stop duration Lon E 13°31.98
TIME :08:48:00 09:03:00 15.0 (min) Purpose : 3
LOG : 6377.40 6378.10 0.7 Region : 2
FDEPTH: 122 122 Gear cond.: 9
BDEPTH: 122 122 Validity : 1
Towing dir: 350° Wire out : 500 m Speed : 3.2 kn
Sorted : 1 Total catch: 400.00 Catch/hour: 1600.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juvenile | 1600.00 | 147200 | 100.00 | 300 |
| Total | 1600.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 608
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.98
start stop duration Lon E 13°24.00
TIME :10:07:00 10:37:00 30.0 (min) Purpose : 3
LOG : 6386.70 6388.10 1.6 Region : 2
FDEPTH: 141 142 Gear cond.: 0
BDEPTH: 141 142 Validity : 0
Towing dir: 350° Wire out : 600 m Speed : 3.3 kn
Sorted : 16 Total catch: 15.75 Catch/hour: 31.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 30.00 | 340 | 95.24 | 301 |
| Merluccius capensis, male | 0.80 | 6 | 2.54 | 302 |
| Pterothrissus belloci | 0.50 | 4 | 1.59 | |
| Merluccius capensis, female | 0.20 | 2 | 0.63 | 303 |
| Total | 31.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 609
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.98
start stop duration Lon E 13°15.00
TIME :11:45:00 12:15:00 30.0 (min) Purpose : 3
LOG : 6397.20 6398.60 1.6 Region : 2
FDEPTH: 155 155 Gear cond.: 0
BDEPTH: 155 155 Validity : 0
Towing dir: 335° Wire out : 650 m Speed : 3.3 kn
Sorted : 30 Total catch: 702.40 Catch/hour: 1404.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1306.80 | 15682 | 93.02 | 306 |
| Merluccius capensis, female | 71.00 | 230 | 5.05 | 305 |
| Merluccius capensis, male | 22.60 | 138 | 1.61 | 304 |
| Pterothrissus belloci | 4.40 | 44 | 0.31 | |
| Total | 1404.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 610
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.02
start stop duration Lon E 13°7.02
TIME :13:19:00 13:49:00 30.0 (min) Purpose : 3
LOG : 6406.40 6407.80 1.6 Region : 2
FDEPTH: 200 200 Gear cond.: 0
BDEPTH: 200 200 Validity : 0
Towing dir: 360° Wire out : 750 m Speed : 3.2 kn
Sorted : 29 Total catch: 402.80 Catch/hour: 805.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 754.00 | 4992 | 93.59 | 309 |
| Merluccius capensis, female | 23.00 | 82 | 2.86 | 308 |
| Merluccius capensis, male | 18.20 | 86 | 2.26 | 307 |
| Pterothrissus belloci | 2.60 | 26 | 0.32 | |
| PORTUNIDAE | 2.60 | 130 | 0.32 | |
| Sufflogobius bibarbatus | 2.60 | 520 | 0.32 | |
| Solenocera africana | 2.60 | 416 | 0.32 | |
| Total | 805.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 611
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.02
start stop duration Lon E 12°58.02
TIME :15:03:00 15:33:00 30.0 (min) Purpose : 3
LOG : 6417.10 6418.50 1.6 Region : 2
FDEPTH: 292 291 Gear cond.: 0
BDEPTH: 292 291 Validity : 0
Towing dir: 360° Wire out : 1000 m Speed : 3.1 kn
Sorted : 116 Total catch: 606.20 Catch/hour: 1212.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 630.00 | 980 | 51.96 | 311 |
| Trachurus capensis | 307.60 | 960 | 25.37 | 312 |
| Merluccius capensis, male | 171.20 | 420 | 14.12 | 310 |
| Chlorophthalmus punctatus | 32.60 | 2022 | 2.69 | |
| Lophius vomerinus | 32.60 | 10 | 2.69 | |
| Todarodes sagittatus | 22.00 | 32 | 1.81 | |
| Helicolenus dactylopterus | 6.20 | 274 | 0.51 | |
| Dentex macrophthalmus | 5.20 | 10 | 0.43 | |
| Galeus polli | 2.00 | 74 | 0.16 | |
| Solenocera africana | 2.00 | 326 | 0.16 | |
| Caelorinchus simorhynchus | 1.00 | 22 | 0.08 | |
| PORTUNIDAE | 0.00 | 52 | 0.00 | |
| Total | 1212.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 612
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.98
start stop duration Lon E 12°51.00
TIME :16:40:00 17:10:00 30.0 (min) Purpose : 3
LOG : 6426.30 6427.60 1.7 Region : 2
FDEPTH: 311 311 Gear cond.: 0
BDEPTH: 311 311 Validity : 0
Towing dir: 335° Wire out : 1000 m Speed : 3.3 kn
Sorted : 52 Total catch: 52.20 Catch/hour: 104.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 65.20 | 70 | 62.45 | 314 |
| Merluccius capensis, male | 21.00 | 34 | 20.11 | 313 |
| MYCTOPHIDAE | 10.00 | 0 | 9.58 | |
| Schedophilus huttoni | 4.00 | 2 | 3.83 | |
| Brama brama | 2.80 | 2 | 2.68 | |
| Trachurus capensis | 1.40 | 8 | 1.34 | |
| Total | 104.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 613
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.98
start stop duration Lon E 12°45.00
TIME :18:10:00 18:40:00 30.0 (min) Purpose : 3
LOG : 6433.90 6435.40 1.5 Region : 2
FDEPTH: 334 322 Gear cond.: 0
BDEPTH: 334 322 Validity : 0
Towing dir: 50° Wire out : 1100 m Speed : 3.3 kn
Sorted : 78 Total catch: 194.20 Catch/hour: 388.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 181.20 | 362 | 46.65 | 316 |
| Merluccius capensis, male | 136.00 | 352 | 35.02 | 315 |
| Chlorophthalmus atlanticus | 37.00 | 0 | 9.53 | |
| Helicolenus dactylopterus | 13.00 | 274 | 3.35 | |
| Krill | 6.60 | 0 | 1.70 | |
| Lophius vomerinus | 5.40 | 2 | 1.39 | |
| Todarodes sagittatus | 3.60 | 8 | 0.93 | |
| Caelorinchus simorhynchus | 2.00 | 66 | 0.51 | |
| Galeus polli | 2.00 | 26 | 0.51 | |
| MYCTOPHIDAE | 1.40 | 0 | 0.36 | |
| Solenocera africana | 0.20 | 100 | 0.05 | |
| Total | 388.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 614
DATE :13/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°49.02
start stop duration Lon E 12°40.98
TIME :19:34:00 20:04:00 30.0 (min) Purpose : 3
LOG : 6440.90 6442.40 1.6 Region : 2
FDEPTH: 414 417 Gear cond.: 0
BDEPTH: 414 417 Validity : 0
Towing dir: 360° Wire out : 1200 m Speed : 3.1 kn
Sorted : 87 Total catch: 128.50 Catch/hour: 257.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius paradoxus, female | 80.00 | 114 | 31.13 | 320 |
| Trachyrincus scabrus | 37.20 | 264 | 14.47 | |
| Merluccius capensis, female | 28.00 | 36 | 10.89 | 318 |
| Galeus polli | 26.40 | 306 | 10.27 | |
| Helicolenus dactylopterus | 18.60 | 90 | 7.24 | |
| Todarodes sagittatus | 9.80 | 26 | 3.81 | |
| Chlorophthalmus atlanticus | 9.00 | 306 | 3.50 | |
| Aristeus varidens | 7.80 | 1032 | 3.04 | |
| Lophius vomerinus | 7.60 | 10 | 2.96 | |
| Hoplostethus cadenati | 5.40 | 180 | 2.10 | |
| Merluccius capensis, male | 5.20 | 8 | 2.02 | 317 |
| Nezumia milleri | 4.80 | 180 | 1.87 | |
| Deania profundorum | 4.20 | 6 | 1.63 | |
| Epigonus denticulatus | 3.60 | 132 | 1.40 | |
| Deepwater fish mixture | 3.60 | 0 | 1.40 | |
| Merluccius paradoxus, male | 2.00 | 2 | 0.78 | 319 |
| Yarrella blackfordi | 1.20 | 126 | 0.47 | |
| Shrimps, small, non comm. | 1.20 | 0 | 0.47 | |
| Lepidopus caudatus | 1.20 | 18 | 0.47 | |
| Stomias boa boa | 0.20 | 36 | 0.08 | |
| Total | 257.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 615
DATE :14/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°30.00
start stop duration Lon E 13°15.00
TIME :10:43:00 11:13:00 30.0 (min) Purpose : 3
LOG : 6565.90 6567.40 1.6 Region : 2
FDEPTH: 134 131 Gear cond.: 0
BDEPTH: 134 131 Validity : 0
Towing dir: 360° Wire out : 550 m Speed : 3.1 kn
Sorted : 8 Total catch: 1993.60 Catch/hour: 3987.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 3864.00 | 53820 | 96.91 | 321 |
| Merluccius capensis | 120.00 | 0 | 3.01 | |
| Prionace glauca | 3.20 | 2 | 0.08 | |
| Total | 3987.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 616
DATE :14/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°30.00
start stop duration Lon E 13°6.00
TIME :12:37:00 13:07:00 30.0 (min) Purpose : 3
LOG : 6578.70 6580.10 1.6 Region : 2
FDEPTH: 185 176 Gear cond.: 0
BDEPTH: 185 176 Validity : 0
Towing dir: 350° Wire out : 800 m Speed : 3.3 kn
Sorted : 47 Total catch: 156.30 Catch/hour: 312.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 148.00 | 924 | 47.34 | 322 |
| Merluccius capensis, female | 120.00 | 634 | 38.39 | 323 |
| Trachurus capensis | 37.00 | 410 | 11.84 | 324 |
| Chelidonichthys capensis | 4.60 | 20 | 1.47 | |
| Pterothrissus belloci | 2.00 | 20 | 0.64 | |
| Dentex macrophthalmus | 1.00 | 6 | 0.32 | |
| PORTUNIDAE | 0.00 | 20 | 0.00 | |
| Total | 312.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 617
DATE :14/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°28.98
start stop duration Lon E 12°58.98
TIME :14:15:00 14:45:00 30.0 (min) Purpose : 3
LOG : 6588.30 6589.80 1.7 Region : 2
FDEPTH: 255 256 Gear cond.: 0
BDEPTH: 255 256 Validity : 0
Towing dir: 350° Wire out : 900 m Speed : 3.2 kn
Sorted : 53 Total catch: 106.40 Catch/hour: 212.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 80.80 | 316 | 37.97 | 326 |
| Trachurus capensis | 70.00 | 742 | 32.89 | 327 |
| Merluccius capensis, male | 57.20 | 276 | 26.88 | 325 |
| PORTUNIDAE | 3.20 | 84 | 1.50 | |
| Solenocera africana | 1.20 | 272 | 0.56 | |
| Lepidopus caudatus | 0.40 | 8 | 0.19 | |
| Sufflogobius bibarbatus | 0.00 | 20 | 0.00 | |
| Total | 212.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 618
DATE :14/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°28.98
start stop duration Lon E 12°51.00
TIME :15:57:00 16:27:00 30.0 (min) Purpose : 3
LOG : 6598.50 6599.80 1.6 Region : 2
FDEPTH: 300 303 Gear cond.: 0
BDEPTH: 300 303 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 3.2 kn
Sorted : 112 Total catch: 111.90 Catch/hour: 223.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachipterus trachypterus | 89.60 | 26 | 40.04 | |
| Merluccius capensis, female | 70.60 | 136 | 31.55 | 329 |
| Merluccius capensis, male | 21.20 | 62 | 9.47 | 328 |
| Schedophilus huttoni | 15.60 | 6 | 6.97 | |
| Krill | 8.00 | 0 | 3.57 | |
| Chlorophthalmus atlanticus | 6.60 | 264 | 2.95 | |
| Todarodes sagittatus | 5.00 | 8 | 2.23 | |
| Trachurus capensis | 4.20 | 62 | 1.88 | |
| Solenocera africana | 1.60 | 122 | 0.71 | |
| Helicolenus dactylopterus | 0.80 | 36 | 0.36 | |
| Dentex macrophthalmus | 0.40 | 2 | 0.18 | |
| Galeus polli | 0.20 | 4 | 0.09 | |
| PORTUNIDAE | 0.00 | 4 | 0.00 | |
| Caelorinchus simorhynchus | 0.00 | 2 | 0.00 | |
| Total | 223.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 619
DATE :14/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°22.98
start stop duration Lon E 12°40.02
TIME :17:50:00 18:20:00 30.0 (min) Purpose : 3
LOG : 6610.40 6611.60 1.5 Region : 2
FDEPTH: 349 348 Gear cond.: 0
BDEPTH: 349 348 Validity : 0
Towing dir: 5° Wire out : 1100 m Speed : 3.1 kn
Sorted : 58 Total catch: 57.83 Catch/hour: 115.66

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 66.00 | 84 | 57.06 | 331 |
| Merluccius capensis, male | 31.00 | 50 | 26.80 | 330 |
| Todarodes sagittatus | 6.50 | 12 | 5.62 | |
| Chlorophthalmus atlanticus | 5.00 | 164 | 4.32 | |
| Helicolenus dactylopterus | 5.00 | 88 | 4.32 | |
| Caelorinchus simorhynchus | 1.00 | 24 | 0.86 | |
| Galeus polli | 0.40 | 10 | 0.35 | |
| Hoplostethus cadenati | 0.40 | 10 | 0.35 | |
| Plesionika martia | 0.20 | 0 | 0.17 | |
| Nezumia milleri | 0.10 | 4 | 0.09 | |
| Ebinania costaecanarie | 0.04 | 2 | 0.03 | |
| Histioteuthis reversa | 0.02 | 2 | 0.02 | |
| Solenocera africana | 0.00 | 4 | 0.00 | |
| Total | 115.66 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 620
DATE :14/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°19.02
start stop duration Lon E 12°52.02
TIME :19:44:00 20:14:00 30.0 (min) Purpose : 3
LOG : 6622.90 6624.50 1.4 Region : 2
FDEPTH: 301 296 Gear cond.: 0
BDEPTH: 301 296 Validity : 0
Towing dir: 70° Wire out : 1000 m Speed : 2.9 kn
Sorted : 104 Total catch: 104.37 Catch/hour: 208.74

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 92.00 | 174 | 44.07 | 333 |
| Merluccius capensis, male | 48.00 | 130 | 23.00 | 332 |
| Lophius vomerinus | 32.20 | 30 | 15.43 | |
| Chlorophthalmus atlanticus | 18.20 | 1034 | 8.72 | |
| Solenocera africana | 5.40 | 1012 | 2.59 | |
| Helicolenus dactylopterus | 5.00 | 304 | 2.40 | |
| Galeus polli | 3.60 | 92 | 1.72 | |
| Todarodes sagittatus | 2.00 | 4 | 0.96 | |
| Dentex macrophthalmus | 1.00 | 2 | 0.48 | |
| Caelorinchus simorhynchus | 0.70 | 14 | 0.34 | |
| Synagrops microlepis | 0.50 | 22 | 0.24 | |
| Sufflogobius bibarbatus | 0.08 | 22 | 0.04 | |
| Cryptopsaras couesii | 0.02 | 2 | 0.01 | |
| Caelorinchus coelorhinc. polli | 0.02 | 4 | 0.01 | |
| MYCTOPHIDAE | 0.02 | 4 | 0.01 | |
| Todaropsis eblanae | 0.00 | 2 | 0.00 | |
| Total | 208.74 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 621
DATE :14/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°15.00
start stop duration Lon E 12°58.98
TIME :21:32:00 22:32:00 60.0 (min) Purpose : 3
LOG : 6633.40 6636.00 3.0 Region : 2
FDEPTH: 226 235 Gear cond.: 0
BDEPTH: 226 235 Validity : 0
Towing dir: 350° Wire out : 850 m Speed : 3.0 kn
Sorted : 82 Total catch: 82.27 Catch/hour: 82.27

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 29.00 | 166 | 35.25 | 334 |
| Merluccius capensis, female | 28.00 | 151 | 34.03 | 335 |
| Trachurus capensis | 15.50 | 190 | 18.84 | 336 |
| Prionace glauca | 5.00 | 1 | 6.08 | |
| Austroglossus microlepis | 1.40 | 6 | 1.70 | |
| Dentex macrophthalmus | 1.30 | 9 | 1.58 | |
| Solenocera africana | 1.10 | 334 | 1.34 | |
| Pterothrissus belloci | 0.40 | 4 | 0.49 | |
| Sufflogobius bibarbatus | 0.15 | 42 | 0.18 | |
| Schedophilus huttoni | 0.10 | 1 | 0.12 | |
| PORTUNIDAE | 0.10 | 6 | 0.12 | |
| Lophius vomerinus | 0.10 | 4 | 0.12 | |
| Helicolenus dactylopterus | 0.05 | 1 | 0.06 | |
| Galeus polli | 0.05 | 1 | 0.06 | |
| Chlorophthalmus atlanticus | 0.02 | 2 | 0.02 | |
| Total | 82.27 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 622
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°15.00
start stop duration Lon E 12°58.98
TIME :07:00:00 07:30:00 30.0 (min) Purpose : 3
LOG : 6649.60 6651.30 1.5 Region : 2
FDEPTH: 226 224 Gear cond.: 0
BDEPTH: 226 224 Validity : 0
Towing dir: 350° Wire out : 850 m Speed : 3.0 kn
Sorted : 89 Total catch: 88.80 Catch/hour: 177.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 63.60 | 340 | 35.81 | 338 |
| Merluccius capensis, male | 51.00 | 308 | 28.72 | 337 |
| Trachurus capensis | 26.80 | 310 | 15.09 | 340 |
| Pterothrissus belloci | 17.00 | 104 | 9.57 | |
| Dentex macrophthalmus | 4.00 | 24 | 2.25 | |
| Austroglossus microlepis | 2.80 | 10 | 1.58 | |
| Chelidonichthys capensis | 2.60 | 10 | 1.46 | |
| Sufflogobius bibarbatus | 2.20 | 366 | 1.24 | |
| Merluccius capensis, juvenile | 2.20 | 202 | 1.24 | 339 |
| Lophius vomerinus | 1.60 | 6 | 0.90 | |
| PORTUNIDAE | 1.20 | 48 | 0.68 | |
| Synagrops microlepis | 0.80 | 42 | 0.45 | |
| Solenocera africana | 0.80 | 144 | 0.45 | |
| Chlorophthalmus atlanticus | 0.60 | 70 | 0.34 | |
| Trigla lyra | 0.40 | 4 | 0.23 | |
| Helicolenus dactylopterus | 0.00 | 4 | 0.00 | |
| Total | 177.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 623
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 21°15.00
start stop duration Lon E 13°4.02
TIME :08:38:00 09:08:00 30.0 (min) Purpose : 3
LOG : 6659.80 6661.40 1.6 Region : 2
FDEPTH: 152 152 Gear cond.: 0
BDEPTH: 152 152 Validity : 0
Towing dir: 350° Wire out : 650 m Speed : 3.1 kn
Sorted : 189 Total catch: 189.20 Catch/hour: 378.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 254.00 | 2888 | 67.12 | 344 |
| Merluccius capensis, female | 63.60 | 442 | 16.81 | 342 |
| Merluccius capensis, male | 58.00 | 472 | 15.33 | 341 |
| Merluccius capensis, juvenile | 2.80 | 146 | 0.74 | 343 |
| Total | 378.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 624
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°55.02
start stop duration Lon E 13°1.98
TIME :12:36:00 13:06:00 30.0 (min) Purpose : 3
LOG : 6693.90 6695.40 1.5 Region : 3
FDEPTH: 125 127 Gear cond.: 0
BDEPTH: 125 127 Validity : 0
Towing dir: 350° Wire out : 550 m Speed : 3.0 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 625
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°55.02
start stop duration Lon E 13°0.00
TIME :13:57:00 14:27:00 30.0 (min) Purpose : 3
LOG : 6700.90 6702.30 1.5 Region : 3
FDEPTH: 155 150 Gear cond.: 0
BDEPTH: 155 150 Validity : 0
Towing dir: 350° Wire out : 650 m Speed : 3.0 kn
Sorted : 16 Total catch: 16.40 Catch/hour: 32.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 9.40 | 264 | 28.66 | 347 |
| Sufflogobius bibarbatus | 8.00 | 0 | 24.39 | |
| Merluccius capensis, female | 5.60 | 24 | 17.07 | 346 |
| Merluccius capensis, male | 5.20 | 26 | 15.85 | 345 |
| Chatrabus melanurus | 4.60 | 4 | 14.02 | |
| Total | 32.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 626
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°55.98
start stop duration Lon E 12°55.02
TIME :15:34:00 16:04:00 30.0 (min) Purpose : 3
LOG : 6710.10 6711.70 1.7 Region : 3
FDEPTH: 199 186 Gear cond.: 0
BDEPTH: 199 186 Validity : 0
Towing dir: 360° Wire out : 750 m Speed : 3.3 kn
Sorted : 33 Total catch: 2310.00 Catch/hour: 4620.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1750.00 | 10640 | 37.88 | 349 |
| Merluccius capensis, male | 1540.00 | 8820 | 33.33 | 348 |
| Merluccius capensis | 966.00 | 20300 | 20.91 | 350 |
| Pterothrissus belloci | 224.00 | 2380 | 4.85 | |
| Trachurus capensis | 84.00 | 1120 | 1.82 | |
| Dentex macrophthalmus | 56.00 | 280 | 1.21 | |
| PORTUNIDAE | 0.00 | 280 | 0.00 | |
| Total | 4620.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 627
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°55.02
start stop duration Lon E 12°51.00
TIME :17:00:00 17:30:00 30.0 (min) Purpose : 3
LOG : 6717.50 6719.10 1.7 Region : 3
FDEPTH: 256 252 Gear cond.: 0
BDEPTH: 256 252 Validity : 0
Towing dir: 350° Wire out : 900 m Speed : 3.3 kn
Sorted : 58 Total catch: 806.40 Catch/hour: 1612.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 980.00 | 5264 | 60.76 | 351 |
| Merluccius capensis, female | 588.00 | 2436 | 36.46 | 352 |
| Trachurus capensis | 16.80 | 224 | 1.04 | |
| Solenocera africana | 14.00 | 2856 | 0.87 | |
| Pterothrissus belloci | 11.20 | 56 | 0.69 | |
| Sufflogobius bibarbatus | 2.80 | 728 | 0.17 | |
| Total | 1612.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 628
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°54.00
start stop duration Lon E 12°43.02
TIME :18:45:00 19:15:00 30.0 (min) Purpose : 3
LOG : 6728.20 6729.80 1.6 Region : 3
FDEPTH: 322 323 Gear cond.: 0
BDEPTH: 322 323 Validity : 0
Towing dir: 350° Wire out : 1050 m Speed : 3.2 kn
Sorted : 166 Total catch: 284.85 Catch/hour: 569.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 266.00 | 980 | 46.69 | 355 |
| Merluccius capensis, female | 186.00 | 290 | 32.65 | 354 |
| Merluccius capensis, male | 61.40 | 144 | 10.78 | 353 |
| Lophius vomerinus | 13.60 | 22 | 2.39 | |
| Chlorophthalmus atlanticus | 13.00 | 640 | 2.28 | |
| Galeus polli | 10.00 | 190 | 1.76 | |
| Todarodes sagittatus | 5.80 | 12 | 1.02 | |
| Solenocera africana | 4.00 | 610 | 0.70 | |
| Helicolenus dactylopterus | 3.50 | 320 | 0.61 | |
| Neoharriotta pinnata | 2.80 | 2 | 0.49 | |
| Hexanchus griseus | 2.40 | 2 | 0.42 | |
| Lepidopus caudatus | 1.00 | 10 | 0.18 | |
| Synagrops microlepis | 0.20 | 50 | 0.04 | |
| Nezumia milleri | 0.00 | 10 | 0.00 | |
| Total | 569.70 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 629
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°52.02
start stop duration Lon E 12°31.98
TIME :20:46:00 21:16:00 30.0 (min) Purpose : 3
LOG : 6741.20 6742.60 1.7 Region : 3
FDEPTH: 347 340 Gear cond.: 0
BDEPTH: 347 340 Validity : 0
Towing dir: 340° Wire out : 1100 m Speed : 3.3 kn
Sorted : 92 Total catch: 91.60 Catch/hour: 183.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 116.00 | 176 | 63.32 | 357 |
| Merluccius capensis, male | 48.00 | 102 | 26.20 | 356 |
| Trachurus capensis | 7.00 | 36 | 3.82 | |
| Caelorinchus simorhynchus | 4.00 | 96 | 2.18 | |
| Helicolenus dactylopterus | 3.20 | 126 | 1.75 | |
| Galeus polli | 2.80 | 106 | 1.53 | |
| Chlorophthalmus atlanticus | 2.20 | 76 | 1.20 | |
| PORTUNIDAE | 0.00 | 2 | 0.00 | |
| Total | 183.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 630
DATE :15/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°37.98
start stop duration Lon E 12°43.02
TIME :23:32:00 23:52:00 20.0 (min) Purpose : 3
LOG : 6759.90 6760.80 1.0 Region : 3
FDEPTH: 260 257 Gear cond.: 9
BDEPTH: 260 257 Validity : 1
Towing dir: 350° Wire out : 900 m Speed : 3.0 kn
Sorted : 11 Total catch: 10.90 Catch/hour: 32.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 13.20 | 36 | 40.37 | 359 |
| Merluccius capensis, male | 12.60 | 39 | 38.53 | 358 |
| Sufflogobius bibarbatus | 2.70 | 561 | 8.26 | |
| Trachurus capensis | 2.10 | 18 | 6.42 | |
| Galeus polli | 0.90 | 42 | 2.75 | |
| Chlorophthalmus atlanticus | 0.30 | 9 | 0.92 | |
| PORTUNIDAE | 0.30 | 12 | 0.92 | |
| Caelorinchus simorhynchus | 0.30 | 6 | 0.92 | |
| Helicolenus dactylopterus | 0.30 | 15 | 0.92 | |
| Total | 32.70 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 631
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°37.98
start stop duration Lon E 12°43.02
TIME :07:08:00 07:34:00 26.0 (min) Purpose : 3
LOG : 6769.60 6770.70 1.3 Region : 3
FDEPTH: 260 257 Gear cond.: 9
BDEPTH: 260 257 Validity : 1
Towing dir: 350° Wire out : 900 m Speed : 3.0 kn
Sorted : 22 Total catch: 22.35 Catch/hour: 51.58

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, male | 24.23 | 102 | 46.98 | 360 |
| Sufflogobius bibarbatus | 12.00 | 2476 | 23.27 | |
| Merluccius capensis, female | 11.54 | 35 | 22.37 | 361 |
| Trachurus capensis | 2.08 | 16 | 4.03 | |
| Pterothrissus belloci | 0.46 | 2 | 0.89 | |
| PORTUNIDAE | 0.46 | 25 | 0.89 | |
| Dentex macrophthalmus | 0.46 | 2 | 0.89 | |
| Chlorophthalmus atlanticus | 0.23 | 9 | 0.45 | |
| Helicolenus dactylopterus | 0.12 | 2 | 0.22 | |
| Total | 51.58 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 632
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°39.00
start stop duration Lon E 12°48.00
TIME :08:50:00 09:20:00 30.0 (min) Purpose : 3
LOG : 6779.40 6780.90 1.5 Region : 3
FDEPTH: 181 177 Gear cond.: 0
BDEPTH: 181 177 Validity : 0
Towing dir: 350° Wire out : 700 m Speed : 2.8 kn
Sorted : 122 Total catch: 2432.00 Catch/hour: 4864.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 4440.00 | 41440 | 91.28 | 362 |
| Merluccius capensis, male | 240.00 | 1080 | 4.93 | 363 |
| Merluccius capensis, female | 108.00 | 360 | 2.22 | 364 |
| Dentex macrophthalmus | 46.00 | 240 | 0.95 | |
| PORTUNIDAE | 18.00 | 1000 | 0.37 | |
| Pterothrissus belloci | 12.00 | 80 | 0.25 | |
| Total | 4864.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 633
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°37.02
start stop duration Lon E 12°52.02
TIME :10:21:00 10:41:00 20.0 (min) Purpose : 1
LOG : 6787.40 6788.30 1.0 Region : 3
FDEPTH: 151 153 Gear cond.: 0
BDEPTH: 151 153 Validity : 3
Towing dir: 350° Wire out : 600 m Speed : 3.0 kn
Sorted : 30 Total catch: 10000.00 Catch/hour: 30000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 30000.00 | 406452 | 100.00 | 365 |
| Merluccius capensis | 0.00 | 0 | 0.00 | |
| Dentex macrophthalmus | 0.00 | 0 | 0.00 | |
| Total | 30000.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 634
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°24.00
start stop duration Lon E 12°51.00
TIME :12:50:00 13:18:00 28.0 (min) Purpose : 3
LOG : 6802.60 6804.00 1.4 Region : 3
FDEPTH: 125 133 Gear cond.: 0
BDEPTH: 125 133 Validity : 0
Towing dir: 170° Wire out : 500 m Speed : 3.0 kn
Sorted : 367 Total catch: 366.70 Catch/hour: 785.79

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 785.79 | 9885 | 100.00 | 366 |
| Total | 785.79 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 635
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°24.00
start stop duration Lon E 12°37.98
TIME :14:54:00 15:14:00 20.0 (min) Purpose : 3
LOG : 6818.30 6819.50 1.1 Region : 3
FDEPTH: 198 195 Gear cond.: 9
BDEPTH: 198 195 Validity : 1
Towing dir: 330° Wire out : 800 m Speed : 3.3 kn
Sorted : 86 Total catch: 1240.40 Catch/hour: 3721.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 3304.80 | 30261 | 88.81 | 369 |
| Merluccius capensis, female | 215.40 | 1095 | 5.79 | 368 |
| Merluccius capensis, male | 201.00 | 990 | 5.40 | 367 |
| Total | 3721.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 636
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°22.98
start stop duration Lon E 12°33.00
TIME :16:19:00 16:49:00 30.0 (min) Purpose : 3
LOG : 6826.10 6827.70 1.6 Region : 3
FDEPTH: 253 251 Gear cond.: 0
BDEPTH: 253 251 Validity : 0
Towing dir: 350° Wire out : 900 m Speed : 3.2 kn
Sorted : 102 Total catch: 102.30 Catch/hour: 204.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 170.60 | 1726 | 83.38 | 372 |
| Merluccius capensis, female | 18.60 | 76 | 9.09 | 371 |
| Merluccius capensis, male | 13.20 | 62 | 6.45 | 370 |
| Sufflogobius bibarbatus | 1.80 | 340 | 0.88 | |
| PORTUNIDAE | 0.40 | 20 | 0.20 | |
| Total | 204.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 637
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°22.02
start stop duration Lon E 12°10.98
TIME :19:09:00 19:39:00 30.0 (min) Purpose : 3
LOG : 6849.10 6850.60 1.5 Region : 3
FDEPTH: 300 298 Gear cond.: 0
BDEPTH: 300 298 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 3.0 kn
Sorted : 137 Total catch: 328.70 Catch/hour: 657.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 502.60 | 566 | 76.45 | 374 |
| Merluccius capensis, male | 104.20 | 172 | 15.85 | 373 |
| Pterothrissus belloci | 26.00 | 158 | 3.95 | |
| Dentex macrophthalmus | 14.40 | 58 | 2.19 | |
| Trachurus capensis | 6.80 | 24 | 1.03 | |
| Solenocera africana | 2.00 | 518 | 0.30 | |
| Neoharriotta pinnata | 1.00 | 2 | 0.15 | |
| PORTUNIDAE | 0.40 | 8 | 0.06 | |
| Total | 657.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 638
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°12.00
start stop duration Lon E 12°0.00
TIME :21:20:00 21:50:00 30.0 (min) Purpose : 3
LOG : 6863.70 6865.20 1.5 Region : 3
FDEPTH: 350 353 Gear cond.: 0
BDEPTH: 350 353 Validity : 0
Towing dir: 340° Wire out : 1100 m Speed : 3.1 kn
Sorted : 167 Total catch: 208.86 Catch/hour: 417.72

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 180.00 | 242 | 43.09 | 376 |
| Helicolenus dactylopterus | 90.00 | 1644 | 21.55 | |
| Merluccius capensis, male | 87.00 | 150 | 20.83 | 375 |
| Lophius vomerinus | 24.00 | 44 | 5.75 | |
| Caelorinchus simorhynchus | 14.40 | 414 | 3.45 | |
| Chlorophthalmus atlanticus | 10.80 | 432 | 2.59 | |
| Galeus polli | 9.60 | 126 | 2.30 | |
| Plesionika acanthurus | 1.20 | 654 | 0.29 | |
| PORTUNIDAE | 0.30 | 12 | 0.07 | |
| Hoplostethus cadenati | 0.30 | 12 | 0.07 | |
| Nezumia milleri | 0.12 | 6 | 0.03 | |
| Synagrops microlepis | 0.00 | 6 | 0.00 | |
| Total | 417.72 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 639
DATE :16/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°0.00
start stop duration Lon E 12°4.02
TIME :23:28:00 23:58:00 30.0 (min) Purpose : 3
LOG : 6877.30 6878.90 1.5 Region : 3
FDEPTH: 301 301 Gear cond.: 0
BDEPTH: 301 301 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 3.1 kn
Sorted : 158 Total catch: 157.90 Catch/hour: 315.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 185.40 | 372 | 58.71 | 378 |
| Merluccius capensis, male | 87.60 | 188 | 27.74 | 377 |
| Pterothrissus belloci | 33.60 | 182 | 10.64 | |
| Solenocera africana | 3.40 | 584 | 1.08 | |
| Lophius vomerinus | 2.60 | 12 | 0.82 | |
| Helicolenus dactylopterus | 1.80 | 38 | 0.57 | |
| Cynoglossus zanzibarensis | 0.60 | 2 | 0.19 | |
| Galeus polli | 0.60 | 8 | 0.19 | |
| Chlorophthalmus atlanticus | 0.20 | 8 | 0.06 | |
| PORTUNIDAE | 0.00 | 6 | 0.00 | |
| Sufflogobius bibarbatus | 0.00 | 4 | 0.00 | |
| Total | 315.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 640
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°0.00
start stop duration Lon E 12°4.02
TIME :07:02:00 07:32:00 30.0 (min) Purpose : 3
LOG : 6884.90 6886.30 1.4 Region : 3
FDEPTH: 301 303 Gear cond.: 0
BDEPTH: 301 303 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 3.0 kn
Sorted : 180 Total catch: 179.70 Catch/hour: 359.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 247.40 | 308 | 68.84 | 380 |
| Pterothrissus belloci | 48.00 | 262 | 13.36 | |
| Merluccius capensis, male | 41.00 | 74 | 11.41 | 379 |
| Solenocera africana | 5.60 | 878 | 1.56 | |
| Callorhinchus capensis | 4.80 | 4 | 1.34 | |
| Dentex macrophthalmus | 3.00 | 14 | 0.83 | |
| Austroglossus microlepis | 1.80 | 8 | 0.50 | |
| Todarodes sagittatus | 1.80 | 4 | 0.50 | |
| Synagrops microlepis | 1.40 | 88 | 0.39 | |
| Trachurus capensis | 1.20 | 4 | 0.33 | |
| Chlorophthalmus atlanticus | 1.00 | 170 | 0.28 | |
| Lophius vomerinus | 0.80 | 6 | 0.22 | |
| Schedophilus huttoni | 0.60 | 2 | 0.17 | |
| PORTUNIDAE | 0.40 | 16 | 0.11 | |
| Sufflogobius bibarbatus | 0.40 | 50 | 0.11 | |
| Galeus polli | 0.10 | 2 | 0.03 | |
| Trigla lyra | 0.10 | 2 | 0.03 | |
| Total | 359.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 641
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°1.02
start stop duration Lon E 12°13.02
TIME :09:00:00 09:30:00 30.0 (min) Purpose : 3
LOG : 6898.00 6899.60 1.6 Region : 3
FDEPTH: 250 250 Gear cond.: 0
BDEPTH: 250 250 Validity : 0
Towing dir: 350° Wire out : 900 m Speed : 3.0 kn
Sorted : 81 Total catch: 286.70 Catch/hour: 573.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 467.20 | 3828 | 81.48 | 383 |
| Merluccius capensis, male | 54.00 | 200 | 9.42 | 381 |
| Merluccius capensis, female | 48.20 | 122 | 8.41 | 382 |
| Solenocera africana | 3.20 | 0 | 0.56 | |
| Sufflogobius bibarbatus | 0.80 | 96 | 0.14 | |
| PORTUNIDAE | 0.00 | 16 | 0.00 | |
| Total | 573.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 642
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°58.98
start stop duration Lon E 12°19.02
TIME :10:35:00 10:55:00 20.0 (min) Purpose : 3
LOG : 6907.20 6908.10 1.0 Region : 3
FDEPTH: 214 211 Gear cond.: 9
BDEPTH: 214 211 Validity : 1
Towing dir: 350° Wire out : 800 m Speed : 3.1 kn
Sorted : 673 Total catch: 673.40 Catch/hour: 2020.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1557.00 | 14904 | 77.07 | 386 |
| Dentex macrophthalmus | 233.70 | 1143 | 11.57 | |
| Merluccius capensis, male | 114.00 | 393 | 5.64 | 384 |
| Merluccius capensis, female | 105.00 | 204 | 5.20 | 385 |
| Pterothrissus belloci | 10.50 | 51 | 0.52 | |
| PORTUNIDAE | 0.00 | 51 | 0.00 | |
| Total | 2020.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 643
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°0.00
start stop duration Lon E 12°25.98
TIME :12:33:00 13:03:00 30.0 (min) Purpose : 3
LOG : 6921.30 6922.70 1.6 Region : 3
FDEPTH: 185 185 Gear cond.: 0
BDEPTH: 185 185 Validity : 0
Towing dir: 350° Wire out : 700 m Speed : 3.1 kn
Sorted : 28 Total catch: 1341.70 Catch/hour: 2683.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 1435.20 | 7894 | 53.48 | |
| Trachurus capensis | 1140.80 | 13784 | 42.51 | 389 |
| Merluccius capensis, female | 51.40 | 148 | 1.92 | 388 |
| Merluccius capensis, male | 28.40 | 96 | 1.06 | 387 |
| Pterothrissus belloci | 18.40 | 184 | 0.69 | |
| Lepidopus caudatus | 9.20 | 92 | 0.34 | |
| Total | 2683.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 644
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°43.02
start stop duration Lon E 12°28.98
TIME :14:45:00 15:10:00 25.0 (min) Purpose : 3
LOG : 6937.60 6939.00 1.4 Region : 3
FDEPTH: 128 128 Gear cond.: 9
BDEPTH: 128 128 Validity : 1
Towing dir: 14° Wire out : 550 m Speed : 3.1 kn
Sorted : 29 Total catch: 3282.00 Catch/hour: 7876.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 6583.20 | 83904 | 83.58 | 392 |
| Dentex macrophthalmus | 615.60 | 5352 | 7.82 | |
| Pterothrissus belloci | 374.64 | 3211 | 4.76 | |
| Merluccius capensis, female | 162.72 | 238 | 2.07 | 391 |
| Lepidopus caudatus | 108.00 | 804 | 1.37 | |
| Merluccius capensis, male | 32.64 | 60 | 0.41 | 390 |
| Total | 7876.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 645
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°40.02
start stop duration Lon E 12°19.02
TIME :16:35:00 17:05:00 30.0 (min) Purpose : 3
LOG : 6951.30 6952.70 1.6 Region : 3
FDEPTH: 179 177 Gear cond.: 0
BDEPTH: 179 177 Validity : 0
Towing dir: 350° Wire out : 750 m Speed : 3.3 kn
Sorted : 16 Total catch: 16.40 Catch/hour: 32.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 29.20 | 56 | 89.02 | 394 |
| Merluccius capensis, male | 3.40 | 8 | 10.37 | 393 |
| Chatrabus melanurus | 0.20 | 2 | 0.61 | |
| Total | 32.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 646
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°40.02
start stop duration Lon E 12°10.98
TIME :18:05:00 18:35:00 30.0 (min) Purpose : 3
LOG : 6960.50 6962.00 1.5 Region : 3
FDEPTH: 231 236 Gear cond.: 0
BDEPTH: 231 236 Validity : 0
Towing dir: 350° Wire out : 850 m Speed : 3.2 kn
Sorted : 99 Total catch: 99.40 Catch/hour: 198.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 120.40 | 330 | 60.56 | 396 |
| Merluccius capensis, male | 38.80 | 164 | 19.52 | 395 |
| Dentex macrophthalmus | 15.00 | 86 | 7.55 | |
| Trachurus capensis | 13.60 | 142 | 6.84 | 398 |
| Pterothrissus belloci | 7.00 | 60 | 3.52 | |
| Merluccius capensis, juvenile | 3.00 | 192 | 1.51 | 397 |
| Synagrops microlepis | 0.70 | 60 | 0.35 | |
| PORTUNIDAE | 0.10 | 2 | 0.05 | |
| Sufflogobius bibarbatus | 0.10 | 32 | 0.05 | |
| Solenocera africana | 0.06 | 20 | 0.03 | |
| Trachurus capensis | 0.04 | 20 | 0.02 | |
| Total | 198.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 647
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°39.00
start stop duration Lon E 12°6.00
TIME :19:28:00 19:58:00 30.0 (min) Purpose : 3
LOG : 6967.90 6969.50 1.6 Region : 3
FDEPTH: 272 272 Gear cond.: 0
BDEPTH: 272 272 Validity : 0
Towing dir: 350° Wire out : 950 m Speed : 3.3 kn
Sorted : 52 Total catch: 51.70 Catch/hour: 103.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 74.00 | 148 | 71.57 | 400 |
| Merluccius capensis, male | 18.80 | 50 | 18.18 | 399 |
| Pterothrissus belloci | 5.20 | 36 | 5.03 | |
| Sufflogobius bibarbatus | 3.60 | 518 | 3.48 | |
| Trachurus capensis | 1.00 | 14 | 0.97 | |
| Solenocera africana | 0.80 | 260 | 0.77 | |
| Total | 103.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 648
DATE :17/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°37.98
start stop duration Lon E 11°58.98
TIME :21:19:00 21:49:00 30.0 (min) Purpose : 3
LOG : 6978.40 6980.00 1.5 Region : 3
FDEPTH: 307 307 Gear cond.: 0
BDEPTH: 307 307 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 3.0 kn
Sorted : 97 Total catch: 96.80 Catch/hour: 193.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 98.00 | 116 | 50.62 | 402 |
| Pterothrissus belloci | 34.00 | 150 | 17.56 | |
| Merluccius capensis, male | 21.40 | 34 | 11.05 | 401 |
| Trachurus capensis | 17.00 | 220 | 8.78 | 403 |
| Dentex macrophthalmus | 14.00 | 44 | 7.23 | |
| Solenocera africana | 7.00 | 1232 | 3.62 | |
| Austroglossus microlepis | 1.00 | 2 | 0.52 | |
| Helicolenus dactylopterus | 0.80 | 78 | 0.41 | |
| Galeus polli | 0.20 | 4 | 0.10 | |
| Chlorophthalmus atlanticus | 0.10 | 16 | 0.05 | |
| Lophius vomerinus | 0.10 | 6 | 0.05 | |
| Synagrops microlepis | 0.00 | 8 | 0.00 | |
| PORTUNIDAE | 0.00 | 2 | 0.00 | |
| Caelorinchus coelorhinc. polli | 0.00 | 2 | 0.00 | |
| Total | 193.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 649
DATE :20/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°43.98
start stop duration Lon E 11°40.98
TIME :06:55:00 07:25:00 30.0 (min) Purpose : 3
LOG : 7572.10 7573.40 1.4 Region : 3
FDEPTH: 403 402 Gear cond.: 0
BDEPTH: 403 402 Validity : 0
Towing dir: 350° Wire out : 1200 m Speed : 2.8 kn
Sorted : 3 Total catch: 3.05 Catch/hour: 6.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 5.00 | 6 | 81.97 | 405 |
| Merluccius capensis, male | 1.00 | 2 | 16.39 | 404 |
| MYCTOPHIDAE | 0.10 | 0 | 1.64 | |
| Lestidiops sp. | 0.00 | 4 | 0.00 | |
| Lycoteuthis diadema * | 0.00 | 4 | 0.00 | |
| Todarodes sagittatus | 0.00 | 2 | 0.00 | |
| Total | 6.10 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 650
DATE :20/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°42.00
start stop duration Lon E 11°49.98
TIME :09:32:00 10:02:00 30.0 (min) Purpose : 3
LOG : 7586.00 7587.30 1.5 Region : 3
FDEPTH: 353 349 Gear cond.: 0
BDEPTH: 353 349 Validity : 0
Towing dir: 350° Wire out : 1100 m Speed : 3.0 kn
Sorted : 185 Total catch: 206.90 Catch/hour: 413.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 272.80 | 248 | 65.93 | 407 |
| Merluccius capensis, male | 61.80 | 68 | 14.93 | 406 |
| Helicolenus dactylopterus | 25.00 | 810 | 6.04 | |
| Chlorophthalmus atlanticus | 21.00 | 920 | 5.07 | |
| Lophius vomerinus | 8.40 | 16 | 2.03 | |
| Todarodes sagittatus | 8.00 | 16 | 1.93 | |
| Galeus polli | 5.00 | 70 | 1.21 | |
| Neoharriotta pinnata | 4.20 | 2 | 1.01 | |
| Caelorinchus coelorhinc. polli | 3.00 | 110 | 0.72 | |
| Cruriraja parcomaculata | 2.00 | 2 | 0.48 | |
| Trachurus capensis | 1.60 | 4 | 0.39 | |
| Nezumia milleri | 1.00 | 30 | 0.24 | |
| PORTUNIDAE | 0.00 | 10 | 0.00 | |
| Ebinania costaecanarie | 0.00 | 10 | 0.00 | |
| Solenocera africana | 0.00 | 10 | 0.00 | |
| Total | 413.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 651
DATE :20/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°22.98
start stop duration Lon E 11°37.02
TIME :12:17:00 12:47:00 30.0 (min) Purpose : 3
LOG : 7607.80 7609.20 1.5 Region : 3
FDEPTH: 375 376 Gear cond.: 0
BDEPTH: 375 376 Validity : 0
Towing dir: 350° Wire out : 1200 m Speed : 3.0 kn
Sorted : 108 Total catch: 300.80 Catch/hour: 601.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 305.80 | 396 | 50.83 | 409 |
| Merluccius capensis, male | 157.86 | 236 | 26.24 | 408 |
| Helicolenus dactylopterus | 82.50 | 998 | 13.71 | |
| MYCTOPHIDAE | 20.40 | 0 | 3.39 | |
| Trachurus capensis | 10.00 | 16 | 1.66 | |
| Todarodes sagittatus | 9.40 | 22 | 1.56 | |
| Centrolophus niger | 7.20 | 2 | 1.20 | |
| Galeus polli | 6.60 | 34 | 1.10 | |
| Caelorinchus simorhynchus | 0.60 | 12 | 0.10 | |
| Caelorinchus coelorhinc. polli | 0.60 | 12 | 0.10 | |
| Lycoteuthis diadema * | 0.60 | 16 | 0.10 | |
| Chlorophthalmus atlanticus | 0.00 | 6 | 0.00 | |
| PORTUNIDAE | 0.00 | 6 | 0.00 | |
| Nezumia milleri | 0.00 | 6 | 0.00 | |
| Todaropsis eblanae | 0.00 | 6 | 0.00 | |
| Total | 601.56 | | 99.99 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 652
DATE :20/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°21.00
start stop duration Lon E 11°45.00
TIME :14:15:00 14:45:00 30.0 (min) Purpose : 3
LOG : 7619.90 7621.50 1.5 Region : 3
FDEPTH: 325 325 Gear cond.: 0
BDEPTH: 325 325 Validity : 0
Towing dir: 350° Wire out : 1100 m Speed : 3.0 kn
Sorted : 76 Total catch: 251.90 Catch/hour: 503.80

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 307.80 | 420 | 61.10 | 411 |
| Merluccius capensis, male | 106.00 | 206 | 21.04 | 410 |
| Helicolenus dactylopterus | 42.00 | 2146 | 8.34 | |
| Todarodes sagittatus | 18.00 | 26 | 3.57 | |
| Dentex macrophthalmus | 9.20 | 20 | 1.83 | |
| Trachurus capensis | 4.60 | 52 | 0.91 | |
| Chlorophthalmus atlanticus | 4.60 | 200 | 0.91 | |
| MYCTOPHIDAE | 4.00 | 0 | 0.79 | |
| Lophius vomerinus | 2.60 | 6 | 0.52 | |
| Todaropsis eblanae | 2.00 | 166 | 0.40 | |
| Caelorinchus simorhynchus | 1.20 | 46 | 0.24 | |
| Galeus polli | 1.20 | 14 | 0.24 | |
| Solenocera africana | 0.60 | 120 | 0.12 | |
| PORTUNIDAE | 0.00 | 14 | 0.00 | |
| Hoplostethus cadenati | 0.00 | 6 | 0.00 | |
| Total | 503.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 653
DATE :20/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°19.02
start stop duration Lon E 11°57.00
TIME :16:37:00 17:00:00 23.0 (min) Purpose : 3
LOG : 7637.10 7638.30 1.2 Region : 3
FDEPTH: 275 274 Gear cond.: 9
BDEPTH: 275 274 Validity : 1
Towing dir: 350° Wire out : 900 m Speed : 3.0 kn
Sorted : 51 Total catch: 170.00 Catch/hour: 443.48

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 272.09 | 540 | 61.35 | 413 |
| Merluccius capensis, male | 99.52 | 248 | 22.44 | 412 |
| Pterothrissus belloci | 36.52 | 292 | 8.24 | |
| Dentex macrophthalmus | 22.83 | 110 | 5.15 | |
| Neoharriotta pinnata | 4.70 | 3 | 1.06 | |
| Solenocera africana | 3.65 | 877 | 0.82 | |
| Todarodes sagittatus | 2.35 | 3 | 0.53 | |
| Trachurus capensis | 1.04 | 10 | 0.24 | |
| Raja miraletus | 0.78 | 3 | 0.18 | |
| Synagrops microlepis | 0.00 | 73 | 0.00 | |
| PORTUNIDAE | 0.00 | 10 | 0.00 | |
| Galeus polli | 0.00 | 10 | 0.00 | |
| Total | 443.48 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 654
DATE :20/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°19.98
start stop duration Lon E 12°7.98
TIME :18:52:00 19:04:00 12.0 (min) Purpose : 3
LOG : 7652.60 7653.30 0.7 Region : 3
FDEPTH: 212 220 Gear cond.: 9
BDEPTH: 212 220 Validity : 1
Towing dir: 340° Wire out : 750 m Speed : 3.1 kn
Sorted : 20 Total catch: 20.10 Catch/hour: 100.50

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 55.50 | 230 | 55.22 | 415 |
| Merluccius capensis, male | 25.00 | 135 | 24.88 | 414 |
| Sufflogobius bibarbatus | 10.00 | 0 | 9.95 | |
| Merluccius capensis | 9.00 | 290 | 8.96 | 416 |
| Trachurus capensis | 0.50 | 5 | 0.50 | |
| PORTUNIDAE | 0.50 | 20 | 0.50 | |
| Total | 100.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 655
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°1.02
start stop duration Lon E 12°6.00
TIME :07:08:00 07:38:00 30.0 (min) Purpose : 3
LOG : 7753.00 7754.50 1.5 Region : 3
FDEPTH: 150 147 Gear cond.: 0
BDEPTH: 150 147 Validity : 0
Towing dir: 340° Wire out : 600 m Speed : 3.0 kn
Sorted : 10 Total catch: 9.95 Catch/hour: 19.90

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 12.00 | 104 | 60.30 | |
| Perulibatrachus rossignoli | 3.80 | 14 | 19.10 | |
| Merluccius capensis, juvenile | 1.20 | 58 | 6.03 | 418 |
| Squalus megalops | 1.20 | 4 | 6.03 | |
| Merluccius capensis, female | 1.00 | 8 | 5.03 | 417 |
| Sufflogobius bibarbatus | 0.60 | 36 | 3.02 | |
| Trigla lyra | 0.06 | 2 | 0.30 | |
| Austroglossus microlepis | 0.04 | 2 | 0.20 | |
| PORTUNIDAE | 0.00 | 2 | 0.00 | |
| Total | 19.90 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 656
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°1.98
start stop duration Lon E 11°48.00
TIME :09:45:00 09:55:00 10.0 (min) Purpose : 3
LOG : 7774.20 7774.70 0.5 Region : 3
FDEPTH: 283 283 Gear cond.: 9
BDEPTH: 283 283 Validity : 1
Towing dir: 350° Wire out : 1000 m Speed : 3.3 kn
Sorted : 77 Total catch: 76.61 Catch/hour: 459.66

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Pterothrissus belloci | 205.80 | 1962 | 44.77 | |
| Merluccius capensis, female | 147.00 | 360 | 31.98 | 420 |
| Merluccius capensis, male | 63.00 | 174 | 13.71 | 419 |
| Krill | 30.00 | 0 | 6.53 | |
| Dentex macrophthalmus | 6.60 | 42 | 1.44 | |
| Synagrops microlepis | 2.40 | 228 | 0.52 | |
| Todarodes sagittatus | 1.80 | 6 | 0.39 | |
| Sufflogobius bibarbatus | 1.20 | 0 | 0.26 | |
| Galeus polli | 1.20 | 24 | 0.26 | |
| Solenocera africana | 0.60 | 180 | 0.13 | |
| Merluccius capensis | 0.06 | 6 | 0.01 | |
| PORTUNIDAE | 0.00 | 6 | 0.00 | |
| Helicolenus dactylopterus | 0.00 | 6 | 0.00 | |
| Total | 459.66 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 657
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°1.02
start stop duration Lon E 11°39.00
TIME :11:11:00 11:46:00 35.0 (min) Purpose : 3
LOG : 7784.60 7786.50 1.8 Region : 3
FDEPTH: 287 286 Gear cond.: 0
BDEPTH: 287 286 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 3.1 kn
Sorted : 84 Total catch: 310.50 Catch/hour: 532.29

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 271.37 | 399 | 50.98 | 423 |
| Dentex macrophthalmus | 128.06 | 514 | 24.06 | 421 |
| Merluccius capensis, male | 71.66 | 165 | 13.46 | 422 |
| Trachurus capensis | 20.91 | 228 | 3.93 | 424 |
| Helicolenus dactylopterus | 15.94 | 1116 | 3.00 | |
| Todarodes sagittatus | 12.00 | 33 | 2.25 | |
| Solenocera africana | 4.46 | 780 | 0.84 | |
| Synagrops microlepis | 3.26 | 197 | 0.61 | |
| Chlorophthalmus atlanticus | 3.26 | 202 | 0.61 | |
| Centrolophus niger | 0.69 | 2 | 0.13 | |
| Caelorinchus simorhynchus | 0.69 | 7 | 0.13 | |
| Trachurus capensis | 0.00 | 7 | 0.00 | |
| Total | 532.29 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 658
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°0.00
start stop duration Lon E 11°28.98
TIME :13:11:00 13:41:00 30.0 (min) Purpose : 3
LOG : 7797.50 7799.00 1.6 Region : 3
FDEPTH: 303 303 Gear cond.: 0
BDEPTH: 303 303 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 3.1 kn
Sorted : 79 Total catch: 293.50 Catch/hour: 587.00

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 313.80 | 362 | 53.46 | 426 |
| Merluccius capensis, male | 143.60 | 236 | 24.46 | 425 |
| Helicolenus dactylopterus | 37.00 | 1480 | 6.30 | |
| Dentex macrophthalmus | 31.00 | 96 | 5.28 | |
| Todarodes sagittatus | 20.80 | 66 | 3.54 | |
| Chlorophthalmus atlanticus | 10.40 | 340 | 1.77 | |
| Squalus megalops | 9.60 | 14 | 1.64 | |
| Trachurus capensis | 8.80 | 38 | 1.50 | |
| MYCTOPHIDAE | 7.40 | 0 | 1.26 | |
| Caelorinchus simorhynchus | 2.20 | 66 | 0.37 | |
| Synagrops microlepis | 0.80 | 38 | 0.14 | |
| Nezumia milleri | 0.80 | 14 | 0.14 | |
| Solenocera africana | 0.80 | 140 | 0.14 | |
| GONOSTOMATIDAE | 0.00 | 22 | 0.00 | |
| Total | 587.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 659
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°58.98
start stop duration Lon E 11°27.00
TIME :14:32:00 15:02:00 30.0 (min) Purpose : 3
LOG : 7803.10 7804.60 1.5 Region : 3
FDEPTH: 360 359 Gear cond.: 0
BDEPTH: 360 359 Validity : 0
Towing dir: 340° Wire out : 1100 m Speed : 3.0 kn
Sorted : 29 Total catch: 200.70 Catch/hour: 401.40

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 198.00 | 218 | 49.33 | 428 |
| Helicolenus dactylopterus | 104.40 | 2042 | 26.01 | |
| Merluccius capensis, male | 69.60 | 82 | 17.34 | 427 |
| Todarodes sagittatus | 13.00 | 28 | 3.24 | |
| Caelorinchus simorhynchus | 4.80 | 172 | 1.20 | |
| Centrolophus niger | 3.80 | 2 | 0.95 | |
| MYCTOPHIDAE | 2.80 | 0 | 0.70 | |
| Physiculus capensis | 1.60 | 32 | 0.40 | |
| Chlorophthalmus punctatus | 1.20 | 44 | 0.30 | |
| Nezumia milleri | 0.80 | 36 | 0.20 | |
| Synagrops microlepis | 0.40 | 16 | 0.10 | |
| Squilla mantis | 0.40 | 4 | 0.10 | |
| Galeus polli | 0.40 | 16 | 0.10 | |
| PORTUNIDAE | 0.20 | 8 | 0.05 | |
| Solenocera africana | 0.00 | 16 | 0.00 | |
| Todaropsis eblanae | 0.00 | 4 | 0.00 | |
| Total | 401.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 660
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°57.00
start stop duration Lon E 11°25.02
TIME :16:02:00 16:32:00 30.0 (min) Purpose : 3
LOG : 7809.60 7811.30 1.6 Region : 3
FDEPTH: 409 413 Gear cond.: 0
BDEPTH: 409 413 Validity : 0
Towing dir: 355° Wire out : 1200 m Speed : 3.1 kn
Sorted : 65 Total catch: 120.70 Catch/hour: 241.40

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Hoplostethus cadenati | 58.80 | 8736 | 24.36 | |
| Helicolenus dactylopterus | 39.60 | 636 | 16.40 | |
| Merluccius polli, female | 38.60 | 42 | 15.99 | 430 |
| Merluccius capensis, female | 32.80 | 32 | 13.59 | 429 |
| Parapandalus brevipes | 18.00 | 8280 | 7.46 | |
| Todarodes sagittatus | 16.80 | 52 | 6.96 | |
| Schedophilus huttoni | 10.80 | 6 | 4.47 | |
| Malacocephalus laevis | 8.40 | 192 | 3.48 | |
| Neoharriotta pinnata | 8.00 | 4 | 3.31 | |
| Nezumia milleri | 4.80 | 144 | 1.99 | |
| Galeus polli | 2.40 | 24 | 0.99 | |
| Caelorinchus simorhynchus | 1.20 | 24 | 0.50 | |
| Solenocera africana | 1.20 | 240 | 0.50 | |
| Nemichthys scolopaceus | 0.00 | 24 | 0.00 | |
| Ebinania costaecanarie | 0.00 | 24 | 0.00 | |
| Total | 241.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 661
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°46.02
start stop duration Lon E 11°25.02
TIME :18:00:00 18:30:00 30.0 (min) Purpose : 3
LOG : 7821.00 7822.50 1.5 Region : 3
FDEPTH: 371 377 Gear cond.: 0
BDEPTH: 371 377 Validity : 0
Towing dir: 360° Wire out : 1150 m Speed : 3.2 kn
Sorted : 110 Total catch: 184.60 Catch/hour: 369.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 214.60 | 242 | 58.13 | 432 |
| Merluccius capensis, male | 62.40 | 66 | 16.90 | 431 |
| Helicolenus dactylopterus | 38.60 | 676 | 10.46 | |
| Todarodes sagittatus | 25.40 | 72 | 6.88 | |
| Plesionika martia | 7.00 | 0 | 1.90 | |
| Galeus polli | 6.60 | 64 | 1.79 | |
| Neoharriotta pinnata | 4.20 | 2 | 1.14 | |
| Caelorinchus coelorhinc. polli | 3.50 | 144 | 0.95 | |
| Nezumia milleri | 3.50 | 162 | 0.95 | |
| Hoplostethus cadenati | 1.40 | 52 | 0.38 | |
| Laemonema laureysi | 0.80 | 24 | 0.22 | |
| Chlorophthalmus atlanticus | 0.40 | 12 | 0.11 | |
| Malacocephalus laevis | 0.40 | 12 | 0.11 | |
| MYCTOPHIDAE | 0.20 | 120 | 0.05 | |
| Nemichthys scolopaceus | 0.20 | 12 | 0.05 | |
| Total | 369.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 662
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°37.98
start stop duration Lon E 11°27.00
TIME :19:30:00 20:00:00 30.0 (min) Purpose : 3
LOG : 7828.60 7830.00 1.5 Region : 3
FDEPTH: 307 330 Gear cond.: 0
BDEPTH: 307 330 Validity : 0
Towing dir: 360° Wire out : 1000 m Speed : 3.0 kn
Sorted : 149 Total catch: 527.80 Catch/hour: 1055.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 645.40 | 736 | 61.14 | 434 |
| Merluccius capensis, male | 290.60 | 322 | 27.53 | 433 |
| Helicolenus dactylopterus | 67.20 | 0 | 6.37 | |
| Chlorophthalmus atlanticus | 19.20 | 592 | 1.82 | |
| Todarodes sagittatus | 18.00 | 50 | 1.71 | |
| MYCTOPHIDAE | 8.00 | 0 | 0.76 | |
| Caelorinchus coelorhinc. polli | 3.20 | 112 | 0.30 | |
| Galeus polli | 3.20 | 32 | 0.30 | |
| Nemichthys scolopaceus | 0.80 | 64 | 0.08 | |
| Synagrops microlepis | 0.00 | 16 | 0.00 | |
| Solenocera africana | 0.00 | 16 | 0.00 | |
| Total | 1055.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 663
DATE :21/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°39.00
start stop duration Lon E 11°46.02
TIME :22:26:00 22:50:00 24.0 (min) Purpose : 3
LOG : 7851.40 7852.60 1.1 Region : 3
FDEPTH: 200 200 Gear cond.: 9
BDEPTH: 200 200 Validity : 1
Towing dir: 340° Wire out : 750 m Speed : 3.0 kn
Sorted : 67 Total catch: 66.76 Catch/hour: 166.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 93.25 | 668 | 55.87 | |
| Merluccius capensis, female | 39.00 | 142 | 23.37 | 436 |
| Merluccius capensis, male | 14.75 | 52 | 8.84 | 435 |
| Pterothrissus belloci | 5.75 | 40 | 3.45 | |
| Todarodes sagittatus | 4.25 | 10 | 2.55 | |
| Ophisurus serpens | 2.50 | 18 | 1.50 | |
| Raja miraletus | 2.50 | 2 | 1.50 | |
| Trachurus capensis | 1.75 | 10 | 1.05 | |
| Sufflogobius bibarbatus | 1.25 | 138 | 0.75 | |
| Austroglossus microlepis | 1.00 | 2 | 0.60 | |
| Solenocera africana | 0.50 | 300 | 0.30 | |
| Merluccius capensis | 0.25 | 18 | 0.15 | |
| Helicolenus dactylopterus | 0.10 | 8 | 0.06 | |
| Chlorophthalmus atlanticus | 0.05 | 2 | 0.03 | |
| Synagrops microlepis | 0.00 | 2 | 0.00 | |
| PORTUNIDAE | 0.00 | 2 | 0.00 | |
| Total | 166.90 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 664
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°40.02
start stop duration Lon E 11°31.02
TIME :02:46:00 03:16:00 30.0 (min) Purpose : 3
LOG : 7890.30 7891.80 1.6 Region : 3
FDEPTH: 240 236 Gear cond.: 0
BDEPTH: 240 236 Validity : 0
Towing dir: 10° Wire out : 900 m Speed : 3.2 kn
Sorted : 81 Total catch: 512.30 Catch/hour: 1024.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 657.80 | 982 | 64.20 | 438 |
| Merluccius capensis, male | 245.80 | 478 | 23.99 | 437 |
| Dentex macrophthalmus | 78.00 | 466 | 7.61 | |
| Helicolenus dactylopterus | 10.00 | 454 | 0.98 | |
| Lophius vomerinus | 8.80 | 38 | 0.86 | |
| Trachurus capensis | 6.40 | 76 | 0.62 | |
| Chlorophthalmus atlanticus | 6.40 | 290 | 0.62 | |
| Galeus polli | 6.40 | 26 | 0.62 | |
| Zeus capensis | 3.80 | 12 | 0.37 | |
| Solenocera africana | 1.20 | 126 | 0.12 | |
| Synagrops microlepis | 0.00 | 12 | 0.00 | |
| Caelorinchus simorhynchus | 0.00 | 12 | 0.00 | |
| Total | 1024.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 665
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°40.98
start stop duration Lon E 11°49.98
TIME :07:08:00 07:38:00 30.0 (min) Purpose : 3
LOG : 7927.70 7929.20 1.5 Region : 3
FDEPTH: 182 176 Gear cond.: 0
BDEPTH: 182 176 Validity : 0
Towing dir: 350° Wire out : 750 m Speed : 3.0 kn
Sorted : 12 Total catch: 12.30 Catch/hour: 24.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 10.00 | 74 | 40.65 | |
| Merluccius capensis, female | 4.80 | 22 | 19.51 | 440 |
| Merluccius capensis, juvenile | 3.60 | 334 | 14.63 | 441 |
| Ebinania costaecanarie | 2.40 | 6 | 9.76 | |
| Merluccius capensis, male | 2.20 | 14 | 8.94 | 439 |
| Sufflogobius bibarbatus | 1.00 | 116 | 4.07 | |
| PORTUNIDAE | 0.20 | 10 | 0.81 | |
| Ophisurus serpens | 0.20 | 2 | 0.81 | |
| Helicolenus dactylopterus | 0.20 | 6 | 0.81 | |
| Total | 24.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 666
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°42.00
start stop duration Lon E 11°34.98
TIME :09:53:00 10:23:00 30.0 (min) Purpose : 3
LOG : 7947.60 7949.20 1.6 Region : 3
FDEPTH: 239 236 Gear cond.: 0
BDEPTH: 239 236 Validity : 0
Towing dir: 340° Wire out : 850 m Speed : 3.2 kn
Sorted : 142 Total catch: 2475.00 Catch/hour: 4950.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 2719.00 | 6020 | 54.93 | 443 |
| Trachurus capensis | 1456.00 | 9360 | 29.41 | 444 |
| Merluccius capensis, male | 677.20 | 3078 | 13.68 | 442 |
| Dentex macrophthalmus | 72.80 | 582 | 1.47 | |
| Synagrops microlepis | 22.00 | 874 | 0.44 | |
| Zenopsis conchifer | 2.80 | 2 | 0.06 | |
| Total | 4949.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 667
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°40.02
start stop duration Lon E 11°27.00
TIME :11:39:00 12:09:00 30.0 (min) Purpose : 3
LOG : 7957.80 7959.30 1.6 Region : 3
FDEPTH: 281 293 Gear cond.: 0
BDEPTH: 281 293 Validity : 0
Towing dir: 350° Wire out : 950 m Speed : 3.2 kn
Sorted : 104 Total catch: 3294.00 Catch/hour: 6588.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 4539.40 | 5326 | 68.90 | 446 |
| Merluccius capensis, male | 1794.20 | 2220 | 27.23 | 445 |
| Zenopsis conchifer | 133.20 | 318 | 2.02 | |
| Trachurus capensis | 82.40 | 190 | 1.25 | |
| Helicolenus dactylopterus | 12.60 | 760 | 0.19 | |
| Galeus polli | 12.60 | 64 | 0.19 | |
| Synagrops microlepis | 6.20 | 254 | 0.09 | |
| Chlorophthalmus atlanticus | 6.20 | 254 | 0.09 | |
| Total | 6586.80 | | 99.98 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 668
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°19.98
start stop duration Lon E 11°25.98
TIME :14:48:00 15:18:00 30.0 (min) Purpose : 3
LOG : 7982.00 7983.50 1.6 Region : 3
FDEPTH: 404 399 Gear cond.: 0
BDEPTH: 404 399 Validity : 0
Towing dir: 10° Wire out : 1200 m Speed : 3.1 kn
Sorted : 76 Total catch: 424.50 Catch/hour: 849.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 566.80 | 560 | 66.76 | 448 |
| Merluccius capensis, male | 162.40 | 168 | 19.13 | 447 |
| Helicolenus dactylopterus | 41.40 | 246 | 4.88 | |
| Todarodes sagittatus | 31.40 | 56 | 3.70 | |
| Centrolophus niger | 24.60 | 12 | 2.90 | |
| Trachurus capensis | 5.60 | 12 | 0.66 | |
| Trachyrincus scabrus | 3.40 | 12 | 0.40 | |
| Galeus polli | 3.40 | 34 | 0.40 | |
| Chlorophthalmus atlanticus | 2.20 | 78 | 0.26 | |
| Nezumia micronychodon | 2.20 | 78 | 0.26 | |
| Raja straeleni | 2.20 | 12 | 0.26 | |
| Etmopterus lucifer | 2.20 | 12 | 0.26 | |
| Physiculus capensis | 1.20 | 12 | 0.14 | |
| Total | 849.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 669
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°19.98
start stop duration Lon E 11°28.02
TIME :16:21:00 16:51:00 30.0 (min) Purpose : 3
LOG : 7989.20 7990.80 1.6 Region : 3
FDEPTH: 350 352 Gear cond.: 0
BDEPTH: 350 352 Validity : 0
Towing dir: 360° Wire out : 1100 m Speed : 3.1 kn
Sorted : 81 Total catch: 756.80 Catch/hour: 1513.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1010.00 | 1098 | 66.73 | 450 |
| Merluccius capensis, male | 372.00 | 410 | 24.58 | 449 |
| Helicolenus dactylopterus | 70.60 | 1224 | 4.66 | |
| Todarodes sagittatus | 42.80 | 74 | 2.83 | |
| Caelorinchus simorhynchus | 7.60 | 168 | 0.50 | |
| Synagrops microlepis | 5.60 | 316 | 0.37 | |
| Chlorophthalmus atlanticus | 2.00 | 74 | 0.13 | |
| Galeus polli | 2.00 | 20 | 0.13 | |
| Physiculus capensis | 1.00 | 38 | 0.07 | |
| Nezumia milleri | 0.00 | 38 | 0.00 | |
| Ebinania costaecanarie | 0.00 | 20 | 0.00 | |
| Total | 1513.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 670
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°19.02
start stop duration Lon E 11°30.00
TIME :17:54:00 18:24:00 30.0 (min) Purpose : 3
LOG : 7996.70 7998.30 1.6 Region : 3
FDEPTH: 280 281 Gear cond.: 0
BDEPTH: 280 281 Validity : 0
Towing dir: 10° Wire out : 950 m Speed : 3.0 kn
Sorted : 109 Total catch: 984.00 Catch/hour: 1968.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1497.60 | 1854 | 76.10 | 452 |
| Merluccius capensis, male | 363.60 | 468 | 18.48 | 451 |
| Helicolenus dactylopterus | 34.20 | 774 | 1.74 | |
| Dentex macrophthalmus | 34.20 | 36 | 1.74 | |
| Chlorophthalmus atlanticus | 12.60 | 486 | 0.64 | |
| Todarodes sagittatus | 11.40 | 26 | 0.58 | |
| Synagrops microlepis | 5.40 | 288 | 0.27 | |
| Trachurus capensis | 3.60 | 54 | 0.18 | |
| Squalus megalops | 2.00 | 4 | 0.10 | |
| Caelorinchus coelorhinc. polli | 1.80 | 108 | 0.09 | |
| Malacocephalus laevis | 1.80 | 54 | 0.09 | |
| Solenocera africana | 0.04 | 12 | 0.00 | |
| Total | 1968.24 | | 100.01 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 671
DATE :22/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°19.02
start stop duration Lon E 11°31.98
TIME :19:14:00 19:34:00 20.0 (min) Purpose : 3
LOG : 8003.40 8004.40 0.9 Region : 3
FDEPTH: 233 236 Gear cond.: 9
BDEPTH: 233 236 Validity : 1
Towing dir: 360° Wire out : 850 m Speed : 2.8 kn
Sorted : 88 Total catch: 202.70 Catch/hour: 608.10

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 189.00 | 261 | 31.08 | 454 |
| Pterothrissus belloci | 169.80 | 780 | 27.92 | |
| Chlorophthalmus atlanticus | 71.70 | 2688 | 11.79 | |
| Merluccius capensis, male | 52.50 | 84 | 8.63 | 453 |
| Dentex macrophthalmus | 38.10 | 180 | 6.27 | |
| Helicolenus dactylopterus | 37.20 | 1785 | 6.12 | |
| Raja straeleni | 18.00 | 27 | 2.96 | |
| Todarodes sagittatus | 6.90 | 21 | 1.13 | |
| Munida sp. * | 4.80 | 525 | 0.79 | |
| Synagrops microlepis | 3.60 | 222 | 0.59 | |
| Centrolophus niger | 3.60 | 6 | 0.59 | |
| Lophius vomerinus | 3.60 | 15 | 0.59 | |
| Trigla lyra | 3.60 | 15 | 0.59 | |
| Caelorinchus coelorhinc. polli | 2.10 | 69 | 0.35 | |
| Trachurus capensis | 1.50 | 6 | 0.25 | |
| Solenocera africana | 1.50 | 261 | 0.25 | |
| Galeus polli | 0.60 | 6 | 0.10 | |
| Total | 608.10 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 672
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°58.98
start stop duration Lon E 11°22.98
TIME :07:13:00 07:43:00 30.0 (min) Purpose : 3
LOG : 8092.10 8093.30 1.5 Region : 3
FDEPTH: 400 422 Gear cond.: 0
BDEPTH: 400 422 Validity : 0
Towing dir: 340° Wire out : 1250 m Speed : 3.1 kn
Sorted : 82 Total catch: 209.40 Catch/hour: 418.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius polli, female | 152.00 | 228 | 36.29 | 458 |
| Plesionika martia | 104.00 | 0 | 24.83 | |
| Merluccius capensis, female | 60.00 | 68 | 14.33 | 456 |
| Hoplostethus cadenati | 28.80 | 6864 | 6.88 | |
| Todarodes sagittatus | 22.00 | 44 | 5.25 | |
| Neoharriotta pinnata | 12.00 | 4 | 2.87 | |
| Merluccius capensis, male | 10.00 | 12 | 2.39 | 455 |
| Schedophilus huttoni | 9.20 | 4 | 2.20 | |
| Helicolenus dactylopterus | 8.00 | 48 | 1.91 | |
| Nezumia milleri | 3.20 | 320 | 0.76 | |
| Merluccius polli, male | 3.20 | 4 | 0.76 | 457 |
| Aristeus varidens | 3.20 | 640 | 0.76 | |
| Chlorophthalmus atlanticus | 0.80 | 48 | 0.19 | |
| Caelorinchus coelorhinc. polli | 0.80 | 64 | 0.19 | |
| Malacocephalus laevis | 0.80 | 32 | 0.19 | |
| Galeus polli | 0.80 | 32 | 0.19 | |
| Epigonus denticulatus | 0.00 | 16 | 0.00 | |
| Munida sp. * | 0.00 | 16 | 0.00 | |
| Total | 418.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 673
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°0.00
start stop duration Lon E 11°25.02
TIME :08:58:00 09:28:00 30.0 (min) Purpose : 3
LOG : 8100.70 8102.00 1.6 Region : 3
FDEPTH: 302 300 Gear cond.: 0
BDEPTH: 302 300 Validity : 0
Towing dir: 350° Wire out : 1100 m Speed : 3.0 kn
Sorted : 118 Total catch: 1028.30 Catch/hour: 2056.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1391.40 | 1566 | 67.66 | 460 |
| Merluccius capensis, male | 378.00 | 468 | 18.38 | 459 |
| Chlorophthalmus atlanticus | 223.20 | 5384 | 10.85 | |
| Helicolenus dactylopterus | 54.00 | 1098 | 2.63 | |
| Todarodes sagittatus | 7.40 | 14 | 0.36 | |
| Synagrops microlepis | 1.80 | 144 | 0.09 | |
| Total | 2055.80 | | 99.96 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 674
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°43.02
start stop duration Lon E 11°33.00
TIME :11:40:00 12:10:00 30.0 (min) Purpose : 3
LOG : 8120.20 8121.80 1.7 Region : 3
FDEPTH: 157 157 Gear cond.: 0
BDEPTH: 157 157 Validity : 0
Towing dir: 350° Wire out : 700 m Speed : 3.4 kn
Sorted : 29 Total catch: 4800.00 Catch/hour: 9600.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 9600.00 | 138000 | 100.00 | 461 |
| Total | 9600.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 675
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°43.02
start stop duration Lon E 11°24.00
TIME :13:32:00 14:02:00 30.0 (min) Purpose : 3
LOG : 8132.20 8133.70 1.6 Region : 3
FDEPTH: 258 256 Gear cond.: 0
BDEPTH: 258 256 Validity : 0
Towing dir: 350° Wire out : 850 m Speed : 3.1 kn
Sorted : 109 Total catch: 1141.40 Catch/hour: 2282.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 1453.20 | 2142 | 63.66 | 463 |
| Merluccius capensis, male | 735.00 | 1156 | 32.20 | 462 |
| Helicolenus dactylopterus | 44.00 | 840 | 1.93 | |
| Chlorophthalmus atlanticus | 23.20 | 756 | 1.02 | |
| Krill | 8.40 | 0 | 0.37 | |
| MYCTOPHIDAE | 6.40 | 0 | 0.28 | |
| Galeus polli | 6.40 | 22 | 0.28 | |
| Munida sp. * | 4.20 | 378 | 0.18 | |
| Synagrops microlepis | 2.00 | 168 | 0.09 | |
| Merluccius capensis | 0.00 | 22 | 0.00 | |
| Solenocera africana | 0.00 | 42 | 0.00 | |
| Trichiurus lepturus | 0.00 | 64 | 0.00 | |
| Total | 2282.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 676
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°40.98
start stop duration Lon E 11°22.02
TIME :14:55:00 15:15:00 20.0 (min) Purpose : 3
LOG : 8138.20 8139.10 1.0 Region : 3
FDEPTH: 357 355 Gear cond.: 9
BDEPTH: 357 355 Validity : 1
Towing dir: 360° Wire out : 1100 m Speed : 3.0 kn
Sorted : 115 Total catch: 275.90 Catch/hour: 827.70

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 337.80 | 525 | 40.81 | 465 |
| Hoplostethus cadenati | 138.90 | 8889 | 16.78 | |
| Helicolenus dactylopterus | 115.80 | 597 | 13.99 | |
| Merluccius capensis, male | 79.20 | 114 | 9.57 | 464 |
| Todarodes sagittatus | 67.80 | 252 | 8.19 | |
| Nezumia milleri | 15.00 | 330 | 1.81 | |
| Centrophorus squamosus | 13.80 | 6 | 1.67 | |
| Caelorinchus simorhynchus | 13.50 | 294 | 1.63 | |
| Shrimps, small, non comm. | 12.00 | 0 | 1.45 | |
| Solenocera africana | 8.70 | 1188 | 1.05 | |
| Centrolophus niger | 5.10 | 6 | 0.62 | |
| Chlorophthalmus atlanticus | 4.20 | 144 | 0.51 | |
| Ebinania costaecanarie | 3.60 | 6 | 0.43 | |
| Synagrops microlepis | 3.00 | 186 | 0.36 | |
| Epigonus denticulatus | 3.00 | 114 | 0.36 | |
| Galeus polli | 3.00 | 30 | 0.36 | |
| Physiculus capensis | 2.10 | 42 | 0.25 | |
| Etmopterus lucifer | 0.60 | 6 | 0.07 | |
| Munida sp. * | 0.30 | 36 | 0.04 | |
| Yarrella blackfordi | 0.30 | 51 | 0.04 | |
| Total | 827.70 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 677
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°25.02
start stop duration Lon E 11°25.98
TIME :16:58:00 17:18:00 20.0 (min) Purpose : 3
LOG : 8154.20 8155.30 1.1 Region : 3
FDEPTH: 209 215 Gear cond.: 9
BDEPTH: 209 215 Validity : 1
Towing dir: 350° Wire out : 800 m Speed : 3.3 kn
Sorted : 103 Total catch: 361.30 Catch/hour: 1083.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 665.70 | 831 | 61.42 | 467 |
| Trachurus capensis | 205.80 | 462 | 18.99 | 468 |
| Merluccius capensis, male | 126.00 | 222 | 11.62 | 466 |
| Dentex macrophthalmus | 46.20 | 201 | 4.26 | |
| Chlorophthalmus atlanticus | 15.90 | 1008 | 1.47 | |
| Synagrops microlepis | 8.40 | 672 | 0.77 | |
| Pterothrissus belloci | 8.40 | 42 | 0.77 | |
| Todarodes sagittatus | 5.40 | 12 | 0.50 | |
| Helicolenus dactylopterus | 2.10 | 33 | 0.19 | |
| Parapandalus brevipes | 0.00 | 54 | 0.00 | |
| Sepia sp. | 0.00 | 21 | 0.00 | |
| Total | 1083.90 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 678
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°22.98
start stop duration Lon E 11°22.02
TIME :18:12:00 18:32:00 20.0 (min) Purpose : 3
LOG : 8160.30 8161.40 1.0 Region : 3
FDEPTH: 310 302 Gear cond.: 9
BDEPTH: 310 302 Validity : 1
Towing dir: 15° Wire out : 1100 m Speed : 3.3 kn
Sorted : 113 Total catch: 198.10 Catch/hour: 594.30

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, female | 299.40 | 420 | 50.38 | 470 |
| Merluccius polli, female | 99.90 | 357 | 16.81 | 472 |
| Merluccius capensis, male | 99.90 | 174 | 16.81 | 469 |
| Merluccius polli, male | 55.80 | 174 | 9.39 | 471 |
| Helicolenus dactylopterus | 14.70 | 315 | 2.47 | |
| Krill | 7.80 | 0 | 1.31 | |
| Chlorophthalmus atlanticus | 7.50 | 225 | 1.26 | |
| Todarodes sagittatus | 6.90 | 15 | 1.16 | |
| MYCTOPHIDAE | 1.20 | 0 | 0.20 | |
| Synagrops microlepis | 0.60 | 78 | 0.10 | |
| Laemonema laureysi | 0.60 | 15 | 0.10 | |
| Caelorinchus coelorhinc. polli | 0.00 | 12 | 0.00 | |
| Total | 594.30 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 679
DATE :23/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°19.98
start stop duration Lon E 11°18.00
TIME :19:25:00 19:45:00 20.0 (min) Purpose : 3
LOG : 8166.20 8167.30 1.1 Region : 3
FDEPTH: 402 409 Gear cond.: 9
BDEPTH: 402 409 Validity : 1
Towing dir: 10° Wire out : 1250 m Speed : 3.2 kn
Sorted : 12 Total catch: 148.00 Catch/hour: 444.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius polli, female | 371.40 | 579 | 83.65 | 473 |
| Helicolenus dactylopterus | 41.40 | 258 | 9.32 | |
| Chlorophthalmus atlanticus | 15.00 | 498 | 3.38 | |
| Laemonema laureysi | 3.00 | 36 | 0.68 | |
| Todarodes sagittatus | 3.00 | 12 | 0.68 | |
| Solenocera africana | 2.40 | 330 | 0.54 | |
| Caelorinchus coelorhinc. polli | 1.80 | 78 | 0.41 | |
| MYCTOPHIDAE | 1.80 | 0 | 0.41 | |
| Epigonus denticulatus | 1.20 | 42 | 0.27 | |
| Krill | 1.20 | 0 | 0.27 | |
| Shrimps, small, non comm. | 1.20 | 0 | 0.27 | |
| Caelorinchus simorhynchus | 0.30 | 18 | 0.07 | |
| Yarrella blackfordi | 0.30 | 18 | 0.07 | |
| Nemichthys scolopaceus | 0.00 | 12 | 0.00 | |
| Total | 444.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 680
DATE :25/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°1.02
start stop duration Lon E 11°33.00
TIME :07:15:00 07:45:00 30.0 (min) Purpose : 3
LOG : 8337.80 8339.10 1.4 Region : 3
FDEPTH: 202 197 Gear cond.: 0
BDEPTH: 202 197 Validity : 0
Towing dir: 360° Wire out : 750 m Speed : 2.9 kn
Sorted : 36 Total catch: 219.40 Catch/hour: 438.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 365.20 | 5600 | 83.23 | 477 |
| Helicolenus dactylopterus | 36.40 | 1274 | 8.30 | |
| Pterothrissus belloci | 14.40 | 112 | 3.28 | |
| Merluccius capensis, female | 5.80 | 20 | 1.32 | 475 |
| Chlorophthalmus atlanticus | 5.60 | 490 | 1.28 | |
| Merluccius capensis, male | 4.20 | 18 | 0.96 | 474 |
| Synagrops microlepis | 3.50 | 658 | 0.80 | |
| Merluccius capensis, juvenile | 1.40 | 182 | 0.32 | 476 |
| Sepia orbignyana | 1.40 | 28 | 0.32 | |
| Parapenaeus longirostris | 0.70 | 154 | 0.16 | |
| Squalus megalops | 0.20 | 2 | 0.05 | |
| Total | 438.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 681
DATE :25/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°4.02
start stop duration Lon E 11°39.00
TIME :09:07:00 09:32:00 25.0 (min) Purpose : 3
LOG : 8349.50 8350.50 1.3 Region : 3
FDEPTH: 127 124 Gear cond.: 9
BDEPTH: 127 124 Validity : 1
Towing dir: 350° Wire out : 600 m Speed : 3.2 kn
Sorted : 6 Total catch: 10000.00 Catch/hour: 24000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 24000.00 | 364286 | 100.00 | 478 |
| Total | 24000.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 682
DATE :25/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°19.98
start stop duration Lon E 11°34.98
TIME :12:23:00 12:38:00 15.0 (min) Purpose : 3
LOG : 8372.00 8372.60 0.6 Region : 3
FDEPTH: 182 181 Gear cond.: 9
BDEPTH: 182 181 Validity : 1
Towing dir: 360° Wire out : 700 m Speed : 2.4 kn
Sorted : 31 Total catch: 422.60 Catch/hour: 1690.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1171.20 | 14160 | 69.29 | 481 |
| Merluccius capensis, female | 163.20 | 296 | 9.65 | 480 |
| Synagrops microlepis | 96.00 | 8504 | 5.68 | |
| Helicolenus dactylopterus | 72.00 | 3744 | 4.26 | |
| Dentex macrophthalmus | 72.00 | 528 | 4.26 | |
| Merluccius capensis, male | 53.20 | 112 | 3.15 | 479 |
| Chelidonichthys capensis | 28.80 | 48 | 1.70 | |
| Pterothrissus belloci | 24.00 | 192 | 1.42 | |
| Bassanago albescens | 10.00 | 16 | 0.59 | |
| Total | 1690.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 683
DATE :25/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°51.00
start stop duration Lon E 11°54.00
TIME :16:45:00 17:00:00 15.0 (min) Purpose : 2
LOG : 8412.20 8413.00 0.8 Region : 3
FDEPTH: 205 205 Gear cond.: 0
BDEPTH: 205 205 Validity : 0
Towing dir: 330° Wire out : 800 m Speed : 3.3 kn
Sorted : 18 Total catch: 17.90 Catch/hour: 71.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 44.00 | 320 | 61.45 | 482 |
| Merluccius capensis | 27.20 | 80 | 37.99 | 483 |
| Sufflogobius bibarbatus | 0.40 | 92 | 0.56 | |
| Helicolenus dactylopterus | 0.00 | 4 | 0.00 | |
| Total | 71.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 684
DATE :25/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°49.02
start stop duration Lon E 11°49.98
TIME :17:58:00 18:13:00 15.0 (min) Purpose : 2
LOG : 8417.70 8418.50 0.8 Region : 3
FDEPTH: 226 223 Gear cond.: 0
BDEPTH: 226 223 Validity : 0
Towing dir: 350° Wire out : 850 m Speed : 3.0 kn
Sorted : 25 Total catch: 25.20 Catch/hour: 100.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 52.00 | 196 | 51.59 | 485 |
| Merluccius capensis | 46.80 | 224 | 46.43 | 484 |
| Dentex macrophthalmus | 1.20 | 4 | 1.19 | |
| Ophisurus serpens | 0.80 | 4 | 0.79 | |
| Sufflogobius bibarbatus | 0.00 | 4 | 0.00 | |
| Total | 100.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 685
DATE :25/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°49.98
start stop duration Lon E 11°48.00
TIME :19:09:00 19:29:00 20.0 (min) Purpose : 2
LOG : 8424.00 8425.10 1.1 Region : 3
FDEPTH: 241 239 Gear cond.: 0
BDEPTH: 241 239 Validity : 0
Towing dir: 350° Wire out : 900 m Speed : 3.0 kn
Sorted : 13 Total catch: 12.50 Catch/hour: 37.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 27.60 | 105 | 73.60 | 486 |
| Merluccius capensis | 9.90 | 45 | 26.40 | 487 |
| Total | 37.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 686
DATE :25/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°58.02
start stop duration Lon E 11°30.00
TIME :22:04:00 22:19:00 15.0 (min) Purpose : 2
LOG : 8447.30 8448.00 0.7 Region : 3
FDEPTH: 286 284 Gear cond.: 0
BDEPTH: 286 284 Validity : 0
Towing dir: 360° Wire out : 950 m Speed : 3.0 kn
Sorted : 267 Total catch: 267.26 Catch/hour: 1069.04

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 778.80 | 932 | 72.85 | 489 |
| Merluccius capensis | 173.20 | 244 | 16.20 | 488 |
| Chlorophthalmus atlanticus | 57.00 | 1928 | 5.33 | |
| Helicolenus dactylopterus | 27.00 | 1648 | 2.53 | |
| Lophius vomerinus | 10.00 | 4 | 0.94 | |
| Caelorinchus coelorhinc. polli | 9.20 | 404 | 0.86 | |
| Todarodes sagittatus | 4.80 | 8 | 0.45 | |
| Chilomycterus reticulatus | 4.00 | 4 | 0.37 | |
| Dentex macrophthalmus | 1.80 | 8 | 0.17 | |
| Synagrops microlepis | 1.60 | 4 | 0.15 | |
| Malacocephalus laevis | 1.20 | 24 | 0.11 | |
| Galeus polli | 0.20 | 4 | 0.02 | |
| Solenocera africana | 0.20 | 92 | 0.02 | |
| Trigla lyra | 0.04 | 12 | 0.00 | |
| MYCTOPHIDAE | 0.00 | 4 | 0.00 | |
| Total | 1069.04 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 687
DATE :26/02/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°1.02
start stop duration Lon E 11°45.00
TIME :00:35:00 00:50:00 15.0 (min) Purpose : 2
LOG : 8465.50 8466.20 0.7 Region : 3
FDEPTH: 150 150 Gear cond.: 0
BDEPTH: 298 297 Validity : 0
Towing dir: 325° Wire out : 300 m Speed : 2.9 kn
Sorted : 8 Total catch: 8.30 Catch/hour: 33.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 30.40 | 320 | 91.57 | 490 |
| Squalus megalops | 2.80 | 4 | 8.43 | |
| Synagrops microlepis | 0.00 | 32 | 0.00 | |
| Total | 33.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 688
DATE :26/02/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 19°7.98
start stop duration Lon E 12°1.02
TIME :03:40:00 04:03:00 23.0 (min) Purpose : 2
LOG : 8488.40 8489.70 1.5 Region : 3
FDEPTH: 170 175 Gear cond.: 0
BDEPTH: 225 233 Validity : 0
Towing dir: 300° Wire out : 600 m Speed : 3.7 kn
Sorted : 2 Total catch: 1.60 Catch/hour: 4.17

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 2.87 | 18 | 68.75 | 491 |
| Squalus megalops | 0.78 | 5 | 18.75 | |
| Pterothrissus belloci | 0.13 | 3 | 3.13 | |
| Trachurus capensis | 0.13 | 3 | 3.13 | |
| Merluccius capensis | 0.13 | 3 | 3.13 | 492 |
| Helicolenus dactylopterus | 0.13 | 5 | 3.13 | |
| Sufflogobius bibarbatus | 0.00 | 10 | 0.00 | |
| Ebinania costaecanarie | 0.00 | 3 | 0.00 | |
| Total | 4.17 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 689
DATE :26/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°28.98
start stop duration Lon E 12°1.02
TIME :07:25:00 07:40:00 15.0 (min) Purpose : 2
LOG : 8519.70 8520.60 0.8 Region : 3
FDEPTH: 280 280 Gear cond.: 0
BDEPTH: 280 280 Validity : 0
Towing dir: 350° Wire out : 1000 m Speed : 2.7 kn
Sorted : 30 Total catch: 30.00 Catch/hour: 120.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 55.60 | 108 | 46.33 | 493 |
| Merluccius capensis | 46.80 | 108 | 39.00 | 494 |
| Pterothrissus belloci | 11.20 | 108 | 9.33 | |
| Solenocera africana | 3.60 | 652 | 3.00 | |
| Dentex macrophthalmus | 2.40 | 8 | 2.00 | |
| Sufflogobius bibarbatus | 0.40 | 76 | 0.33 | |
| Synagrops microlepis | 0.00 | 4 | 0.00 | |
| Total | 120.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991401 STATION: 690
DATE :26/02/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°49.02
start stop duration Lon E 12°7.98
TIME :10:30:00 11:00:00 30.0 (min) Purpose : 2
LOG : 8546.60 8547.90 1.6 Region : 3
FDEPTH: 265 271 Gear cond.: 0
BDEPTH: 265 271 Validity : 0
Towing dir: 340° Wire out : 900 m Speed : 30.1 kn
Sorted : 145 Total catch: 144.50 Catch/hour: 289.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 186.80 | 376 | 64.64 | 496 |
| Merluccius capensis | 86.60 | 260 | 29.97 | 495 |
| Pterothrissus belloci | 12.30 | 80 | 4.26 | |
| Solenocera africana | 1.20 | 66 | 0.42 | |
| Sufflogobius bibarbatus | 0.80 | 66 | 0.28 | |
| Synagrops microlepis | 0.60 | 2 | 0.21 | |
| Trachurus capensis | 0.50 | 2 | 0.17 | |
| Lophius vomerinus | 0.10 | 2 | 0.03 | |
| Austroglossus microlepis | 0.10 | 2 | 0.03 | |
| Total | 289.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 691
DATE :26/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat  S 20°55.02
start stop duration  Lon  E 12°55.02
TIME :19:01:00 19:16:00 15.0 (min)  Purpose : 2
LOG : 8635.60 8636.30 1.0  Region : 3
FDEPTH: 194 189  Gear cond.: 8
BDEPTH: 194 189  Validity : 0
Towing dir: 360°  Wire out : 750 m  Speed : 3.2 kn
Sorted : 20  Total catch: 19.85  Catch/hour: 79.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 30.40 | 220 | 38.29 | 499 |
| Trachurus capensis | 20.00 | 124 | 25.19 | 500 |
| Merluccius capensis | 12.40 | 176 | 15.62 | 497 |
| Merluccius capensis | 10.00 | 44 | 12.59 | 498 |
| Pterothrissus belloci | 5.20 | 52 | 6.55 | |
| Lophius vomerinus | 0.80 | 8 | 1.01 | |
| Solenocera africana | 0.40 | 140 | 0.50 | |
| PORTUNIDAE | 0.20 | 28 | 0.25 | |
| Sufflogobius bibarbatus | 0.00 | 4 | 0.00 | |
| Total | 79.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 692
DATE :26/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat  S 20°55.98
start stop duration  Lon  E 12°51.00
TIME :21:13:00 21:33:00 20.0 (min)  Purpose : 2
LOG : 8642.60 8643.50 1.1  Region : 3
FDEPTH: 262 261  Gear cond.: 0
BDEPTH: 262 261  Validity : 0
Towing dir: 350°  Wire out : 900 m  Speed : 3.2 kn
Sorted : 7  Total catch: 6.80  Catch/hour: 20.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Pterothrissus belloci | 6.00 | 27 | 29.41 | |
| Merluccius capensis | 3.90 | 9 | 19.12 | 502 |
| Solenocera africana | 3.75 | 858 | 18.38 | |
| Merluccius capensis | 3.30 | 12 | 16.18 | 501 |
| Lophius vomerinus | 3.00 | 6 | 14.71 | |
| Dentex macrophthalmus | 0.30 | 3 | 1.47 | |
| Sufflogobius bibarbatus | 0.15 | 33 | 0.74 | |
| PORTUNIDAE | 0.00 | 15 | 0.00 | |
| Total | 20.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 693
DATE :26/02/1991  GEAR TYPE: PT NO: 6  POSITION:Lat  S 21°4.02
start stop duration  Lon  E 12°58.98
TIME :23:40:00 23:55:00 15.0 (min)  Purpose : 1
LOG : 8658.90 8659.70 0.8  Region : 2
FDEPTH: 25 25  Gear cond.: 0
BDEPTH: 196 196  Validity : 0
Towing dir: 350°  Wire out : 150 m  Speed : 3.2 kn
Sorted : 0  Total catch: 0.00  Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 694
DATE :27/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat  S 22°4.98
start stop duration  Lon  E 13°28.98
TIME :16:10:00 16:25:00 15.0 (min)  Purpose : 1
LOG : 8821.70 8822.50 0.8  Region : 2
FDEPTH: 144 140  Gear cond.: 8
BDEPTH: 144 140  Validity : 0
Towing dir: 350°  Wire out : 650 m  Speed : 3.4 kn
Sorted : 39  Total catch: 2000.00  Catch/hour: 8000.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis, juvenile | 8000.00 | 579200 | 100.00 | 503 |
| Merluccius capensis | 0.40 | 4 | 0.01 | |
| Total | 8000.40 | | 100.01 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 695
DATE :27/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat  S 22°10.02
start stop duration  Lon  E 13°28.02
TIME :17:55:00 18:15:00 20.0 (min)  Purpose : 2
LOG : 8833.80 8834.70 1.2  Region : 2
FDEPTH: 150 150  Gear cond.: 0
BDEPTH: 150 150  Validity : 0
Towing dir: 360°  Wire out : 600 m  Speed : 3.4 kn
Sorted : 0  Total catch: 0.00  Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991401  STATION: 696
DATE :27/02/1991  GEAR TYPE: BT NO: 1  POSITION:Lat  S 22°0.00
start stop duration  Lon  E 13°19.02
TIME :19:47:00 20:02:00 15.0 (min)  Purpose : 2
LOG : 8845.70 8846.40 0.9  Region : 2
FDEPTH: 168 164  Gear cond.: 0
BDEPTH: 168 164  Validity : 0
Towing dir: 340°  Wire out : 750 m  Speed : 3.5 kn
Sorted : 23  Total catch: 22.65  Catch/hour: 90.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 56.40 | 792 | 62.25 | 504 |
| Trachurus capensis | 18.00 | 216 | 19.87 | |
| Merluccius capensis | 14.80 | 88 | 16.34 | 505 |
| Lophius vomerinus | 1.20 | 28 | 1.32 | |
| Pterothrissus belloci | 0.20 | 4 | 0.22 | |
| Total | 90.60 | | 100.00.20 | |

100.00

# PART II

# SURVEYS OF THE INSHORE PELAGIC STOCKS

2-22 March 1991

## TABLE OF CONTENTS
## PART II

# CHAPTER 1 INTRODUCTION

## 1.1 GENERAL OBJECTIVES. SEE PART I

## 1.2 SPECIFIC OBJECTIVES OF PART 2, SURVEY 1/91

1.2.1 To produce a biomass estimate for three of the commercially important pelagic fish species; pilchard *Sardinops ocellata*, anchovy *Engraulis capensis* and round herring *Etrumeus whiteheadi*.

1.2.2 To conduct target strength measurements on horse mackerel.

1.2.3 To determine the distribution of pelagic horse mackerel *Trachurus capensis* and to produce a biomass estimate of this stock.

1.2.4 To obtain environmental data to enable correlations between fish distribution and the environment.

1.2.5 To provide training for Namibian scientific and technical staff.

## 1.3 PARTICIPATION

The scientific staff from Namibia on the "DR. FRIDTJOF NANSEN" were: from 2nd to 8th March - Helen Boyer, Bernatitus Birisamub, Sielfried Gowaseb and Nghidipo Nghishongwa, and from 8th to 22nd March - David Boyer, Frikkie Botes, Malakia Shimhanda, Serubabel Kahiha, Nghidipo Nghishongwa and Richard Kharuchab.

The scientific staff from the Institute of Marine Research were: Johannes Hamre, Ingvald Svellingen, Diana Zaera and Tore Mørk.

# CHAPTER 2 METHODS

From the general knowledge of pelagic fish distribution and from reports of commercial fishing vessels, the survey area was limited to the area from Dolphin Head (26°00') to the Cunene River (17°15') and from the shore to the 120 m bathymetric line. The southern limit was formed by the cold and oxygen deficient upwelling region centred around Lüderitz and the northern boundary by Namibia's border with Angola. The demersal survey of the "DR. FRIDTJOF NANSEN" undertaken immediately prior to this survey failed to detect significant concentrations of clupeids or anchovy in water depths greater than 120 m. It was therefore decided unnecessary to survey beyond this depth, although environmental lines were extended to a depth of approximately 500 m.

To allow comparison with the previous "DR. FRIDTJOF NANSEN" surveys, the region was divided into two areas;

| | | |
|---|---|---|
| 1 | 26°00' to 21°00' | Dolphin Head to Ambrose Bay |
| 2 | 21°00' to 17°15' | Ambrose Bay to Cunene River |

The "DR FRIDTJOF NANSEN" left Walvis Bay at 11h00 on 2nd March and surveyed the area south of Walvis Bay returning to Walvis to exchange Namibian scientific staff at 11h00 on 8th March. She departed at 16h00 on the same day, surveyed the northern region and returned on 22nd March at 10h00. Four thousand nautical miles were steamed and 69 trawl stations worked. Nine hydrographic profiles were made.

The course tracks with the fishing and hydrographical stations from Dolphin Head (26°00') to Ambrose Bay (21°00') are shown in Figure 1a. The northward and southward coverage from Ambrose Bay to Cunene River (17°15') are shown in Figures 1b and 1c respectively. As suggested in previous cruise reports, the frequency of transects was increased in areas of high fish density, and special efforts were made to survey shallow inshore areas during darkness, when fish tend to move offshore and thus become more available for abundance estimates. Consistent with this approch, the large amount of pelagic fish found off of Walvyes Bay-Swakopmund during the northwards coverage of this area was later re-surveyed more intensively (Figure 1d).

The distribution and biomass of off-shore horse mackerel were broadly assessed from some few transects sailed to the outer edge of this species distribution and on hydrographic lines.

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 I. The complete records of fishing stations are shown in ANNEX II.

Hydrographical data were collected to standard depths at stations 2, 5, 10, 15, 25, 35, 50 and 75 nm from the coast on all full degree lines of latitude between 26°00' and 23°00', while the lines from 22°00' to 18°00' were sampled to 50 nm. In addition the 20°00' was extended to 125 nm to determine the position of the warm oceanic/cold Benguela current front.

The acoustical instruments were calibrated in an experiment in Baia dos Tigres, Angola immediately prior to the survey on 25th February.

ANNEX III gives a description of the instruments and the fishing gear used.

Data on horse mackerel target strengths were collected during the normal course of the cruise when the fish distributions were suitably dispersed in the water column.

Assistance in searching for and determining the precise distribution of pelagic fish was requested from the Namibian Research Vessel BENGUELA and commercial purse seiners. This was not forthcoming, although full use was made of information received from purse seiners during their normal fishing activities.

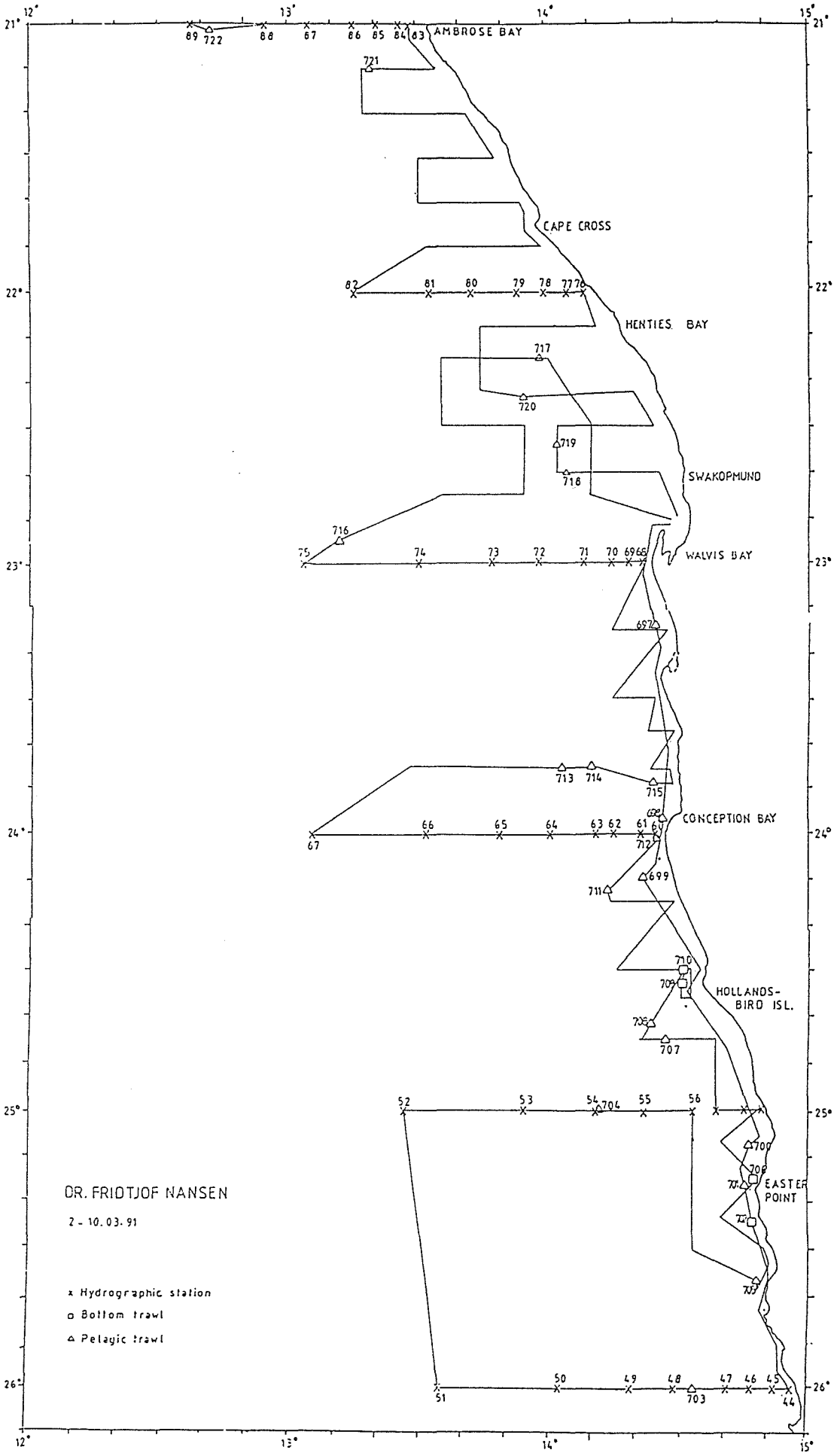



Figure 1a. Course track, fishing stations and hydrographic profiles. Dolphin Head to Ambrose Bay (northwards coverage).

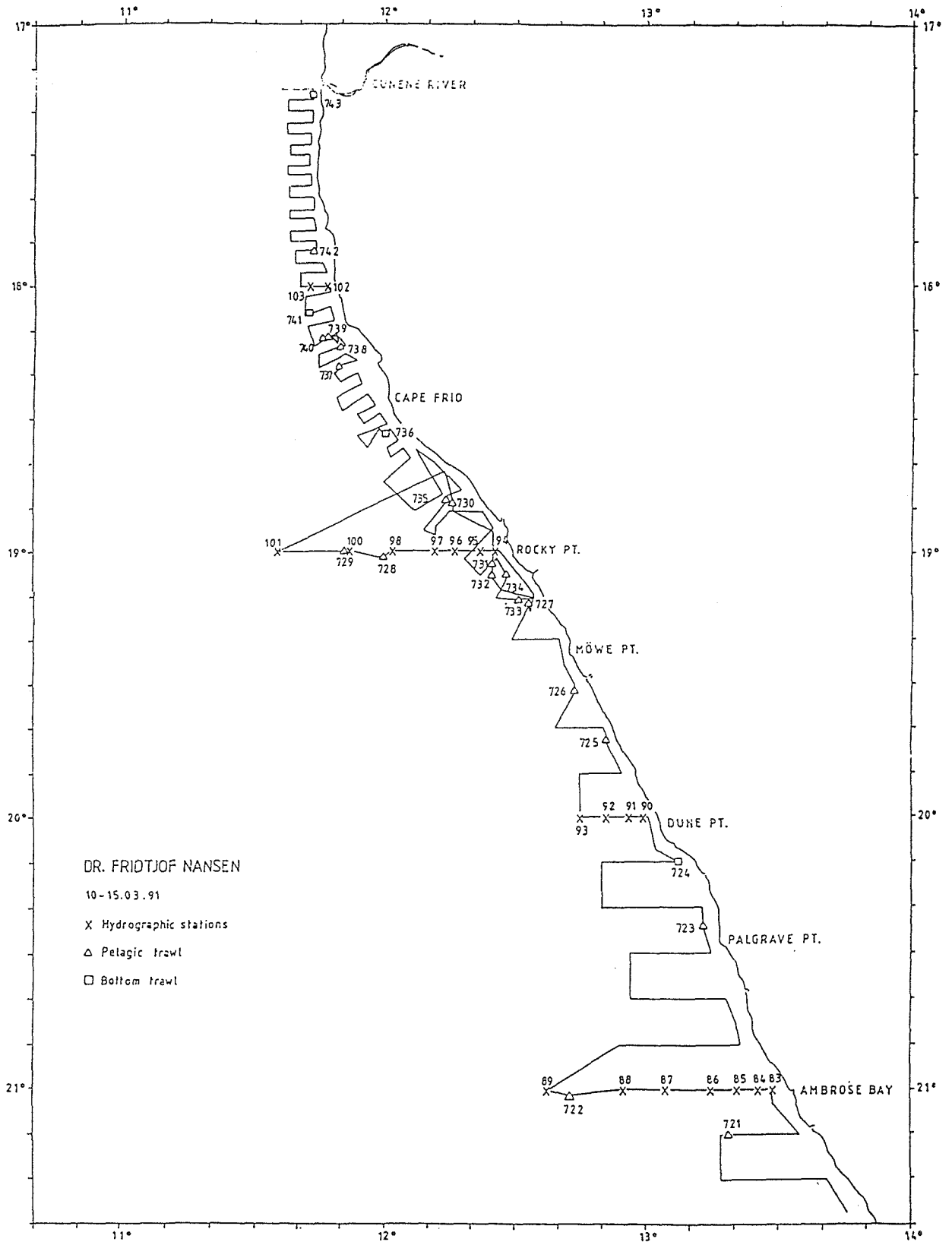



Figure 1b. Course track, fishing stations and hydrographic profiles. Ambrose Bay to Cunene River (northwards coverage).

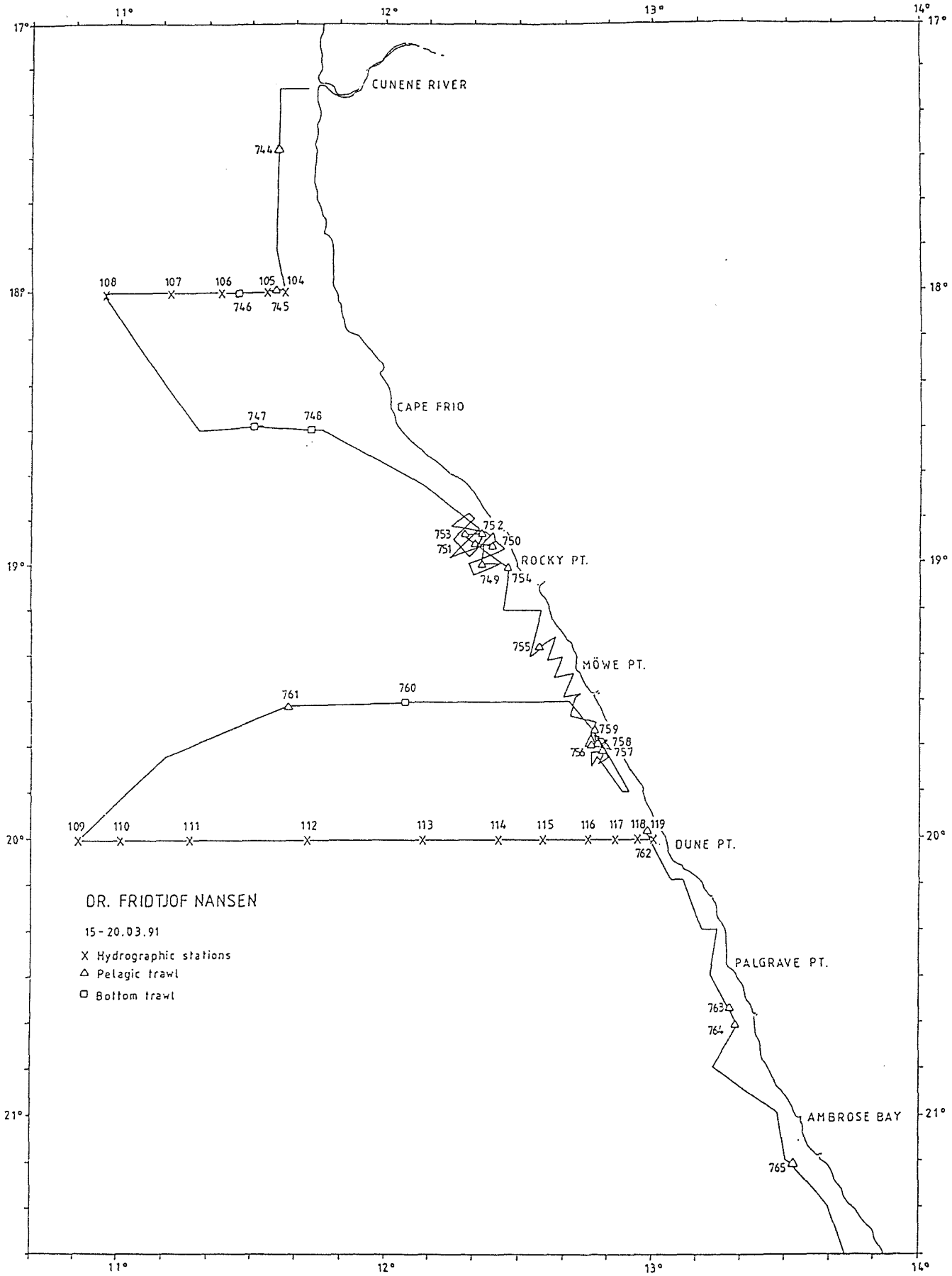



Figure 1c. Course track, fishing stations and hydrographic profiles. Ambrose Bay to Cunene River (southwards coverage).

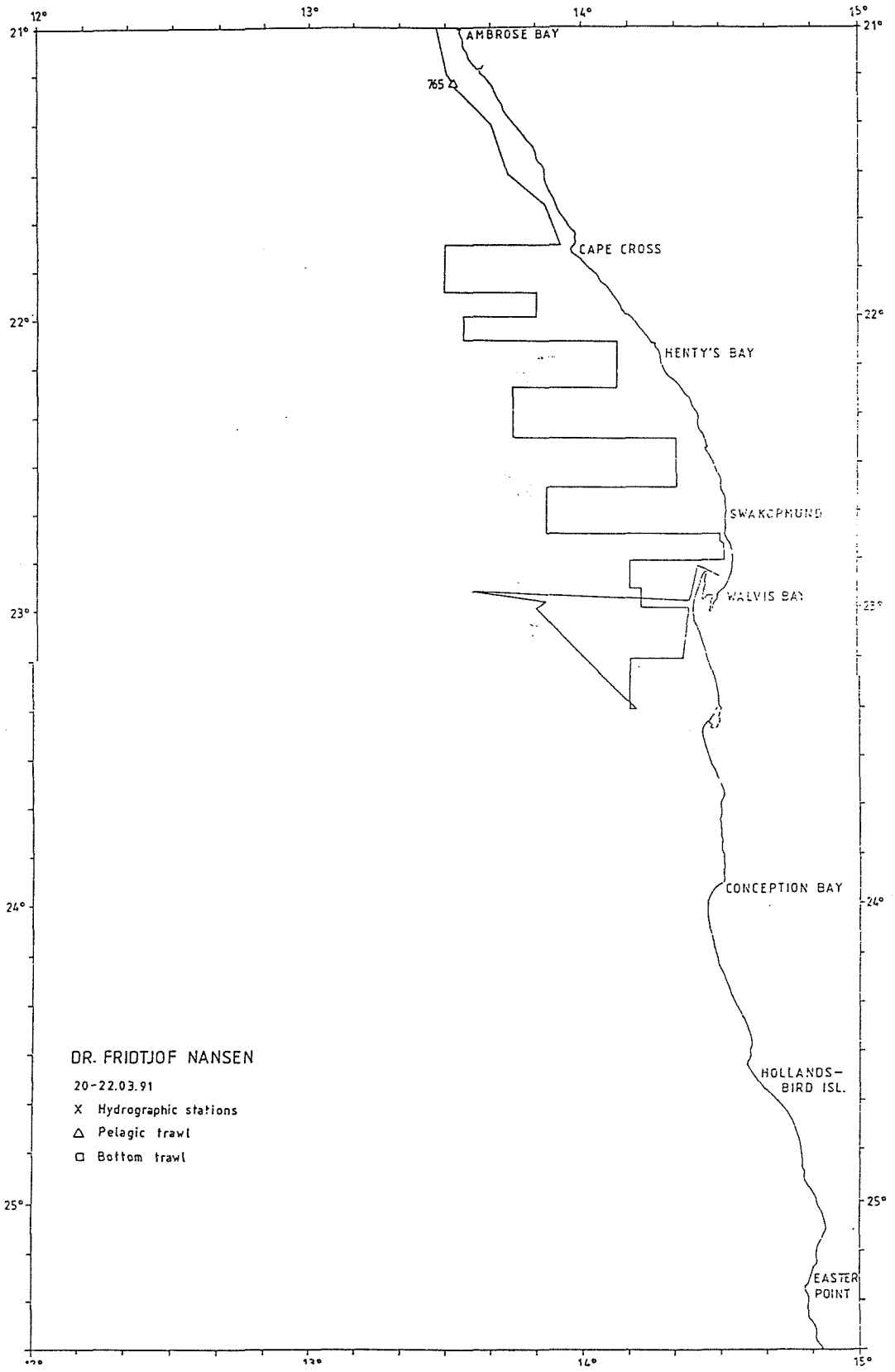



Figure 1d. Course track, fishing stations and hydrographic profiles. Dolphin Head to Ambrose Bay (southwards coverage).

# CHAPTER 3 THE ENVIRONMENT

## 3.1 BATHYMETRY

A brief description of the bathymetry of the Namibian continental shelf is given in the "DR. FRIDTJOF NANSEN" Cruise Report No.1.

## 3.2 HYDROGRAPHY

Figures 2a, 2b and 2c show the temperature, salinity and oxygen profiles of the nine hydrographic transects worked. The positions of the transects are shown in Figures 1a, 1b and 1c.

The period of hydrographic observations cover almost three weeks and the data are therefore not synoptic.

The hydrography of the Namibian near-shore region of the continental shelf during this cruise was characterised by its uniformity along the entire coastline, with slight differences in the region north of 20°00'.

The sections between Dolphin Head (26°00') and Ambrose Bay (21°00') showed fairly strong upwelling from a depth of over 400 m. Temperatures were low close to the shoreline, about 12 to 14°C, while further offshore they rose to 16 or 17°C and even as high as 19°C at 26°00'. The water column was moderately layered, with signs of a thermocline at about 50 m. Dissolved oxygen levels were low inshore and near the ocean bed, but rose to 6 ml/l and more offshore in the south, and 4 to 5 ml/l north of 23°00'. Low oxygen waters were apparently being transported up from below 400 m, thus the entire shelf bottom was exposed to water with a dissolved oxygen content of below 2 ml/l. The waters north of 23°00' were more oxygen depleted than the area further south.

The sections from 20°00' to 18°00' showed slight upwelling. Oxygen values were similar to those from the southern sections, except from the 18°00' section where the entire water column was oxygen deficient, especially below 100 m. The water temperatures of these sections were slightly higher than those from the south.

Salinity levels were, in general, higher in the north, rising from surface values of 35.0‰ on the sections south of 23°00' to 35.6‰ at 18°00'. Within each section the salinity level was virtually homogeneous throughout the water column, with slightly lower concentrations in deeper waters.

The inshore part of the 20°00' section was sampled in sequence with the other sections, and then the entire section out to 125 nm was sampled one week later. Active upwelling was occurring at this latitude, similar to all other sections, during the first sampling period. When the section was sampled later, upwelling had ceased, while salinity levels and temperature had increased. The second sampling period occurred following several days of low wind

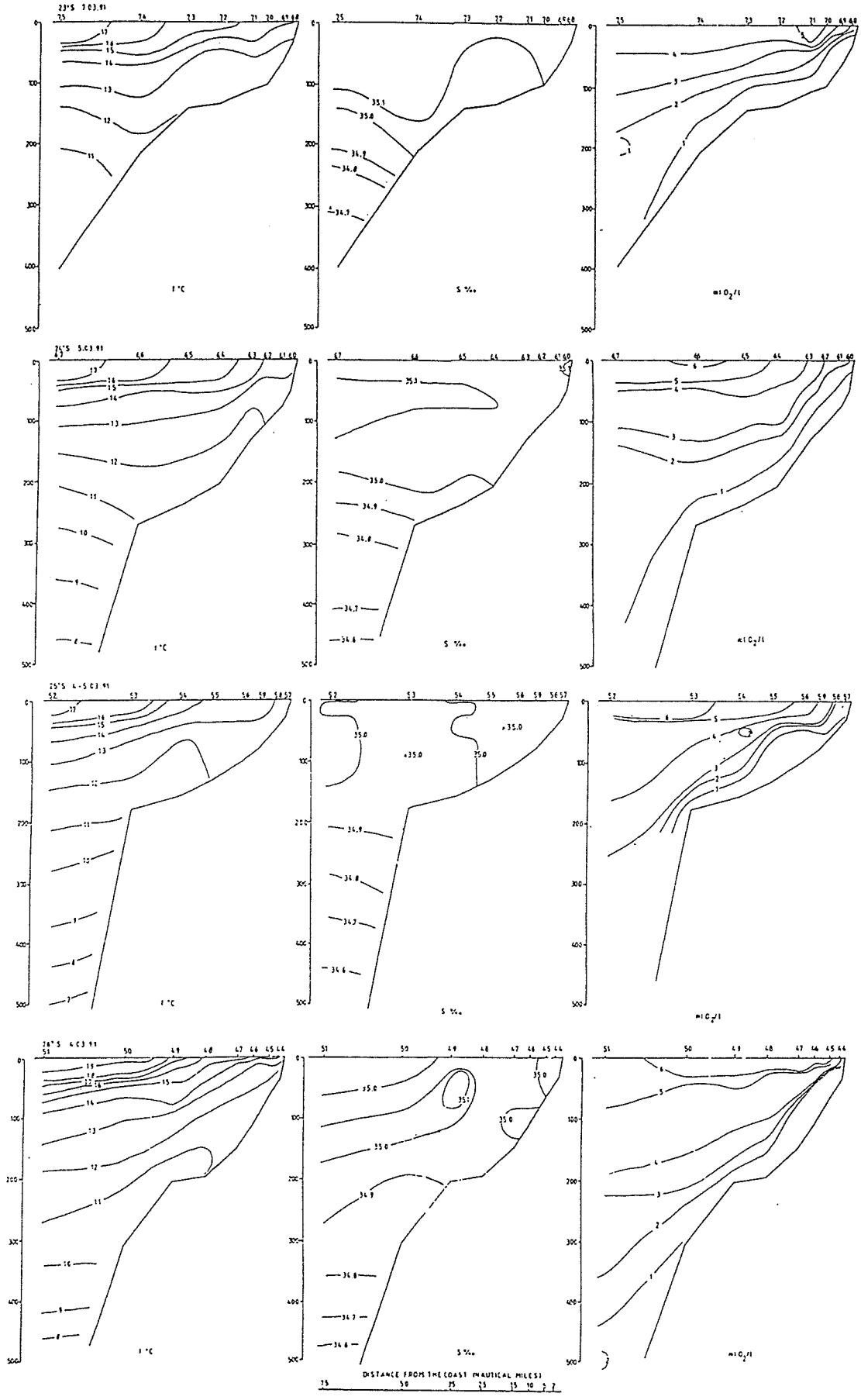



Figure 2a. Hydrographic profiles. Dolphin Head to Conception Bay.

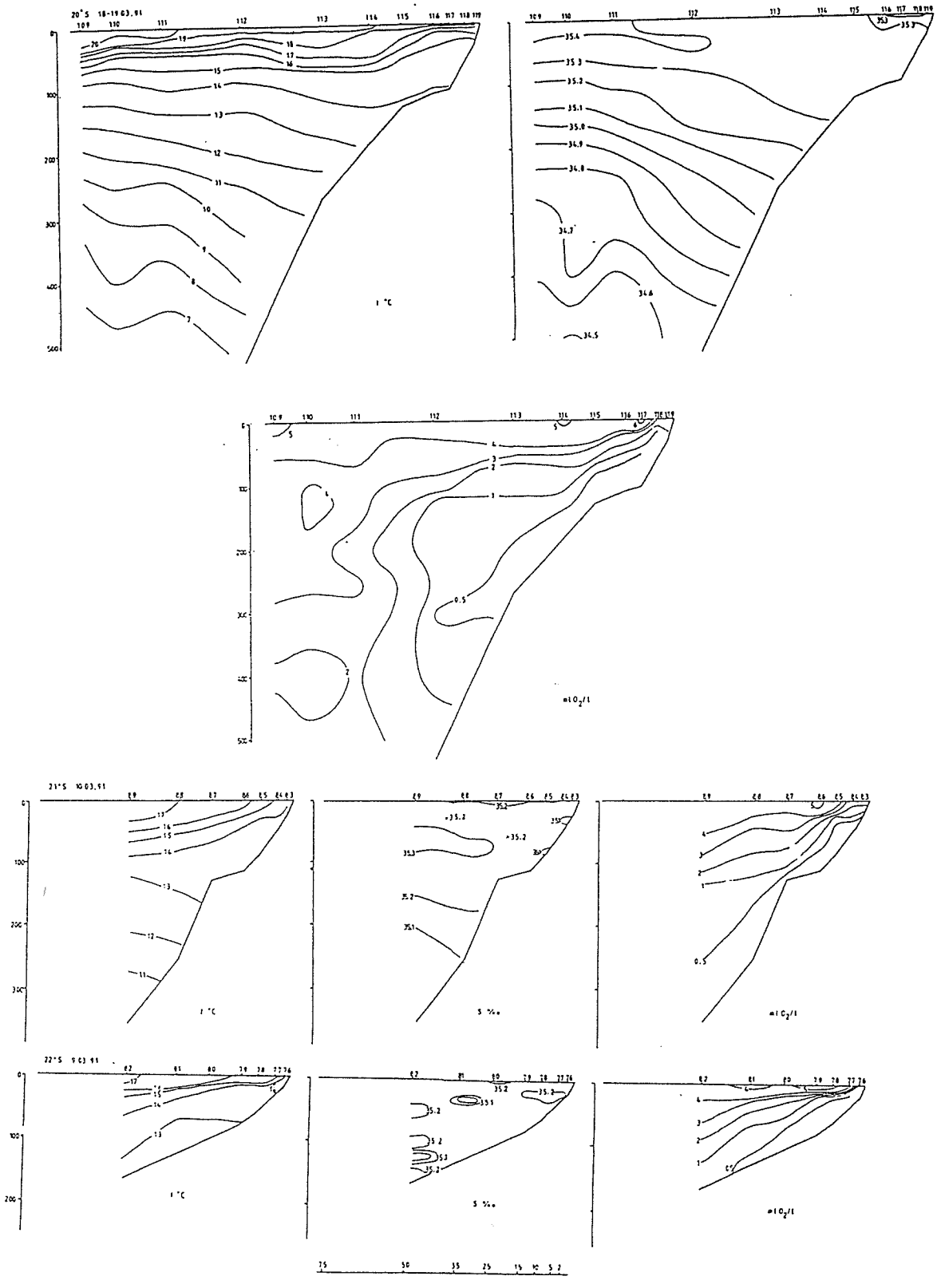


Figure 2b. Hydrographic profiles. Walvis Bay to Ambrose Bay.

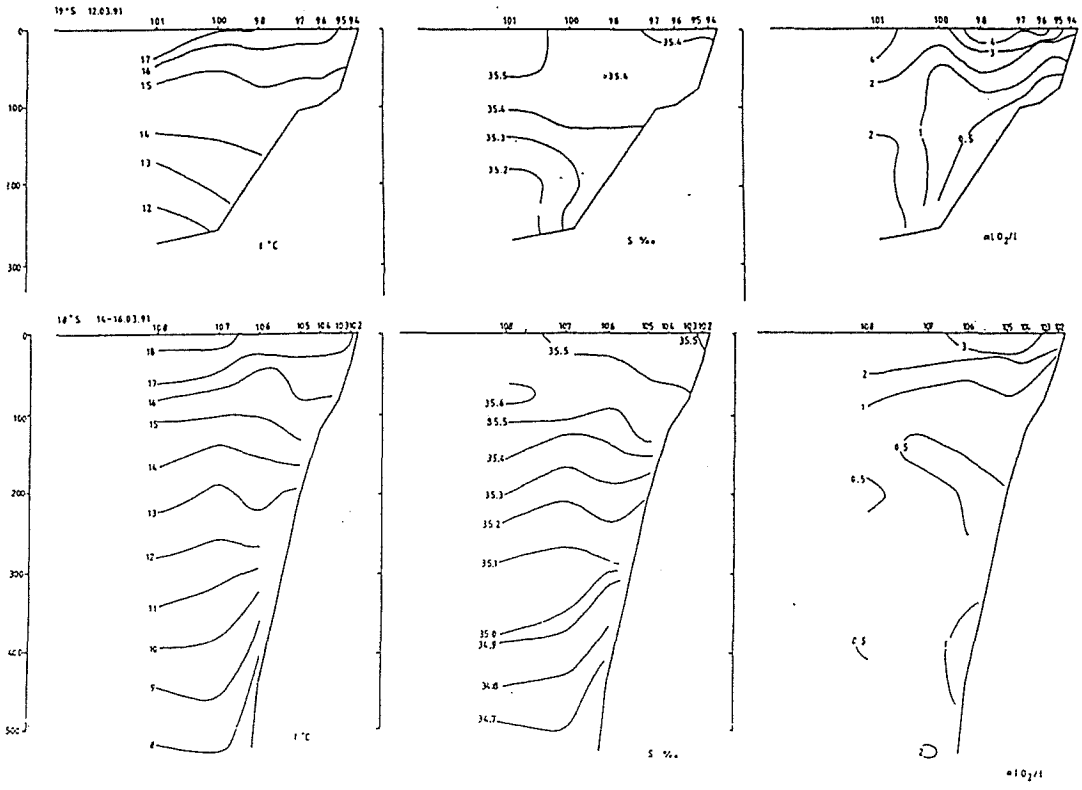


Figure 2c. Hydrographic profiles. Ambrose Bay to Cunene River.

strengths. A weak thermocline was found between the oceanic waters and the near-shore Benguela current on the 20°00' line at about 90 nm from the coast. The thermocline was more marked on the 19°30' transect, occurring at 75 nm offshore.

The sea surface temperature (measured at -4 m) isolines, shown in Figures 3a and 3b, confirm the occurrence of extensive longshore upwelling throughout the region. Upwelling is more active in the south, with an upwelling cell centred around Easter Point (24°40'). A second upwelling centre occurred between Möwe Point and Rocky Point (19°10').

A comparison with the hydrography of the same area taken during the previous cruise, in the winter period, shows that the strength of upwelling was similar, and that, in general, hydrography of the region was likewise similar. Surface temperatures were slightly higher, while surface oxygen concentrations were also slightly greater. When compared to the hydrography of the previous summer, the strength of upwelling was again similar, except that surface temperatures were much higher in the north during the 1990 survey. For example sea surface temperatures are approximately 1°C lower in the south, and up to 3°C in the north. This indicates that the tropical Angolan current may have had a lesser impact on the hydrography of the Namibian coast during 1991, than in 1990.

# CHAPTER 4 DISTRIBUTION AND ABUNDANCE OF PELAGIC FISH

The acoustic integration system provided observations of fish densities averaged, usually, over 5 nm distances, but in areas of high fish concentrations over 1 nm. The unit of acoustic reflection used was 0.1 x $mm^2/nm^2$ reflecting surface. The integrator values from fish targets were allocated to the following groups on the basis of trawl sampling and characteristic behaviour recognised from the echo recordings:

Pelagic fish type 1: Clupeidae (pilchard and round herring) and Engraulidae (anchovy).

Pelagic fish type 2: Carangidae (horse mackerel).

Non-commercial pelagic fish and plankton: myctophids, gobies and, primarily, jellyfish.

## 4.1 DISTRIBUTION

The weather was favourable to hydroacoustical surveying during this cruise. In summary, only one area of pelagic fish was found south of Ambrose Bay (21°00'), while further north several regions with extremely dense shoals of pilchard, in association with other pelagic species, were surveyed. No type-1 pelagic fish were reported in shallow waters during the period of this survey. Layers of plankton, consisting largely of jellyfish, with pelagic gobies in the south, made the allocation of acoustic signals difficult in many areas. Sampling of fish was generally successful, except for some hauls which were disrupted by high concentrations of jellyfish.

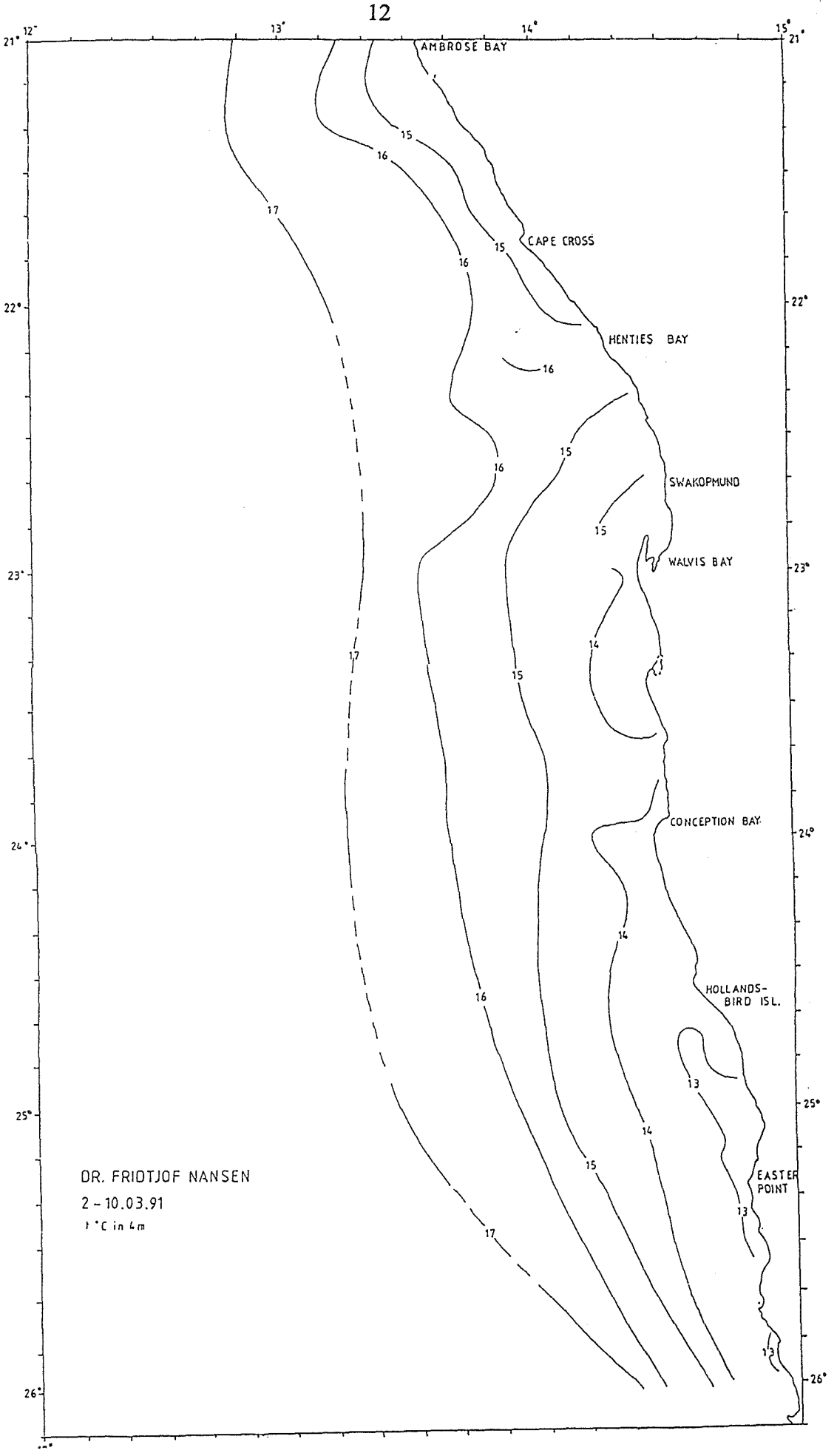



Figure 3a. Sea surface temperatures. Dolphin Head to Ambrose Bay.

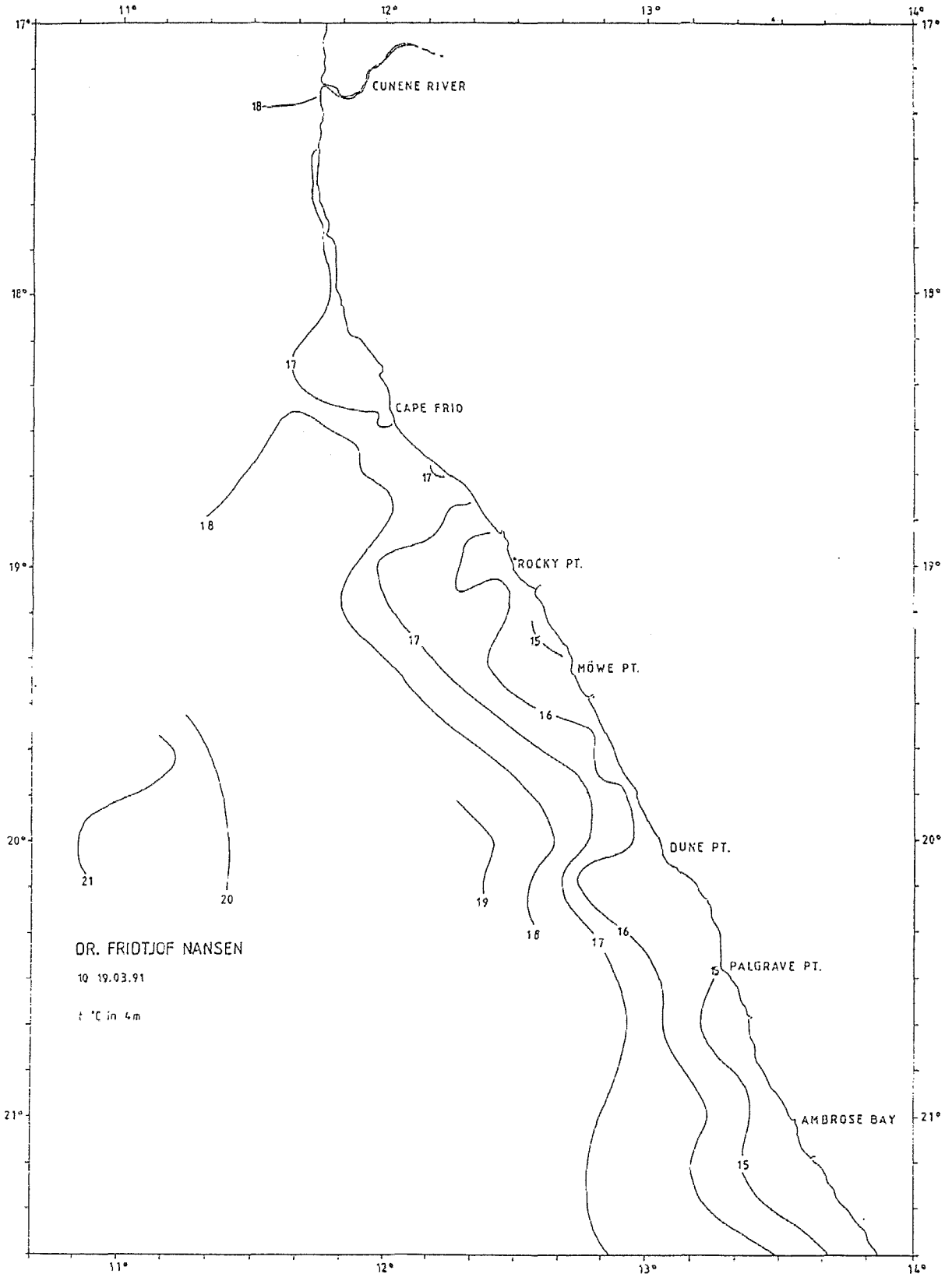



Figure 3b. Sea surface temperatures. Ambrose Bay to Cunene River.

The distributions of clupeids and engraulids are shown in Figures 4a and 4b, and the distribution of carangids in Figure 5. Additional maps of areas of high density of pilchard are given in Figures 6a, 6b and 6c. The distribution of the very dense layer of organisms occurring in the south, consisting mainly of plankton, gobies and jellyfish, is shown in Figure 7. An arbitrary scale was used in the distribution charts to illustrate different levels of concentration.

### 4.1.1 Dolphin Head to Ambrose Bay

Scattered, but dense, shoals of pilchard and anchovy occurred in a large region in waters of 80 m to 120 m deep offshore of Swakopmund (22°44') and northwards to Cape Cross (21°45'). The fish of both species were large, with modal peaks of 13.5 to 14.5 cm and 22.5 to 24.5 cm respectively, although some few smaller pilchard (14.5 cm) were trawled with the anchovy.

The area between Cape Cross and south of Walvis Bay (23°10') was re-surveyed during the southwards part of the cruise, in order to improve the precision of the biomass estimates, but the fish was not found. Fishing boats reported a strong southwards movement of shoals and it is assumed that the greater part of the fish had moved beyond the area searched, at least as far as 23°10'. This represents a shift in distribution of more than 50 nm in the intervening 10 days.

Very few pelagic fish of commercial value were found in the area south of Walvis Bay (23°00'). Near Easter Point, between 25°25' and 25°35', a few scattered shoals with an acoustical appearance of type-1 pelagic fish occurred. Trawling was disrupted by jellyfish concentrations and the determination of species composition was not possible. A small concentration of fish, mainly represented by one dense shoal of anchovy, occurred off Hollandsbird Island (24°30'). These fish had a modal length of 11.5 to 12.0 cm.

Large amounts of small pelagic goby (modal length of 3.5 to 4.5 cm) were found throughout the entire area as far north as Cape Cross (21°45'), mainly in water depths of 40 m to 150 m, while a few trawls also contained larger gobies. Lantern fish were found in waters deeper than 150 m (Figure 6). Large snoek *Thyrsites atun* were also caught in many of the trawls throughout this region, and cape gurnard *Chelidonichthys capensis* were caught south of Walvis Bay. Jellyfish was found in large concentrations throughout this region, but to what extent the jellyfish contributed to the reflected echo intensity is unknown.

### 4.1.2 Ambrose Bay to Cunene River

The approximate distribution of areas with high fish concentrations was determined during the northwards part of the cruise and these areas were re-surveyed intensively on the return trip southwards.

In general, the distribution of pilchard in this region was similar to that found during the May/June 1990 survey.

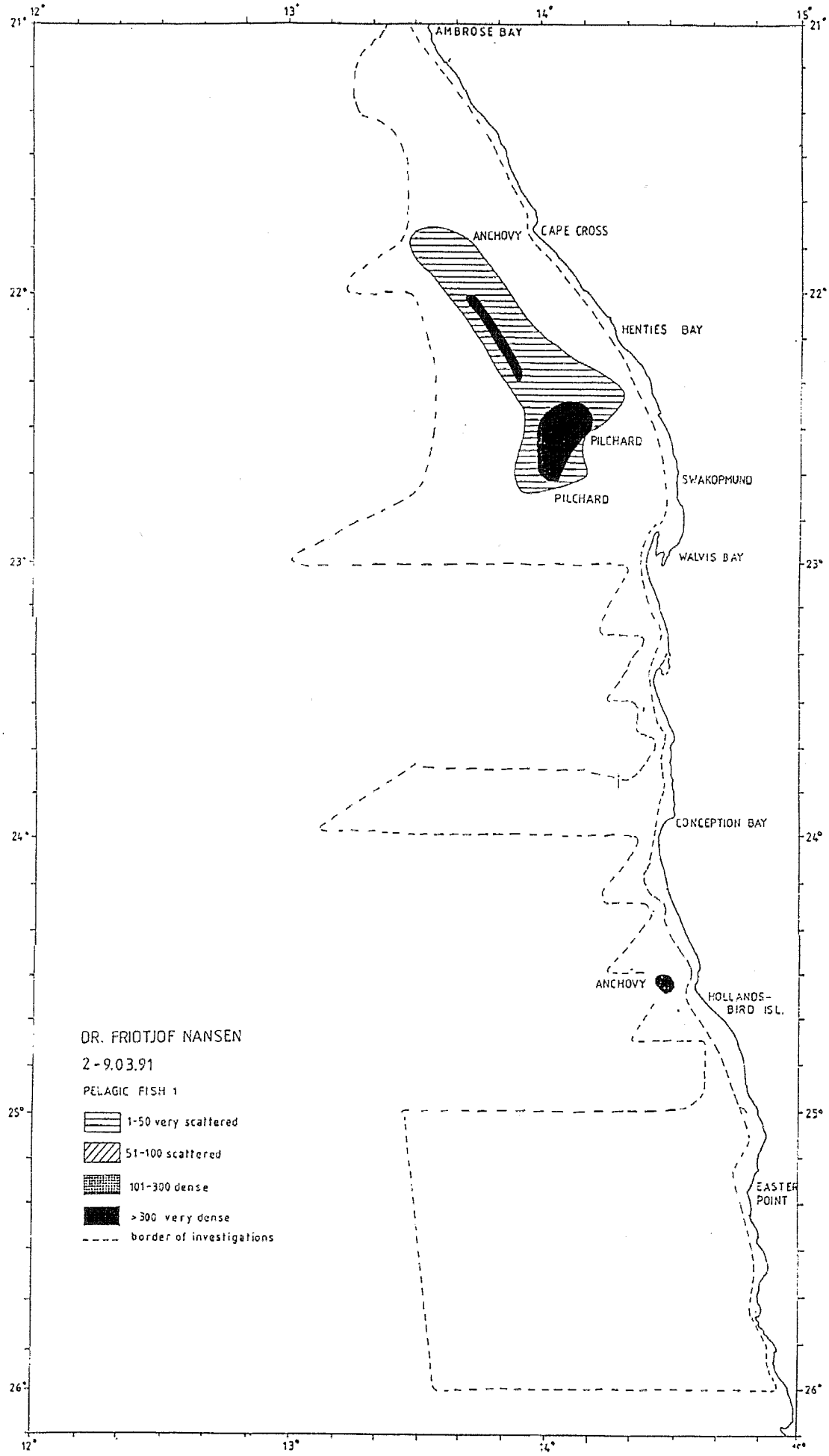



Figure 4a. Distribution of pelagic fish type 1, clupeids and anchovy. Dolphin Head to Ambrose Bay.

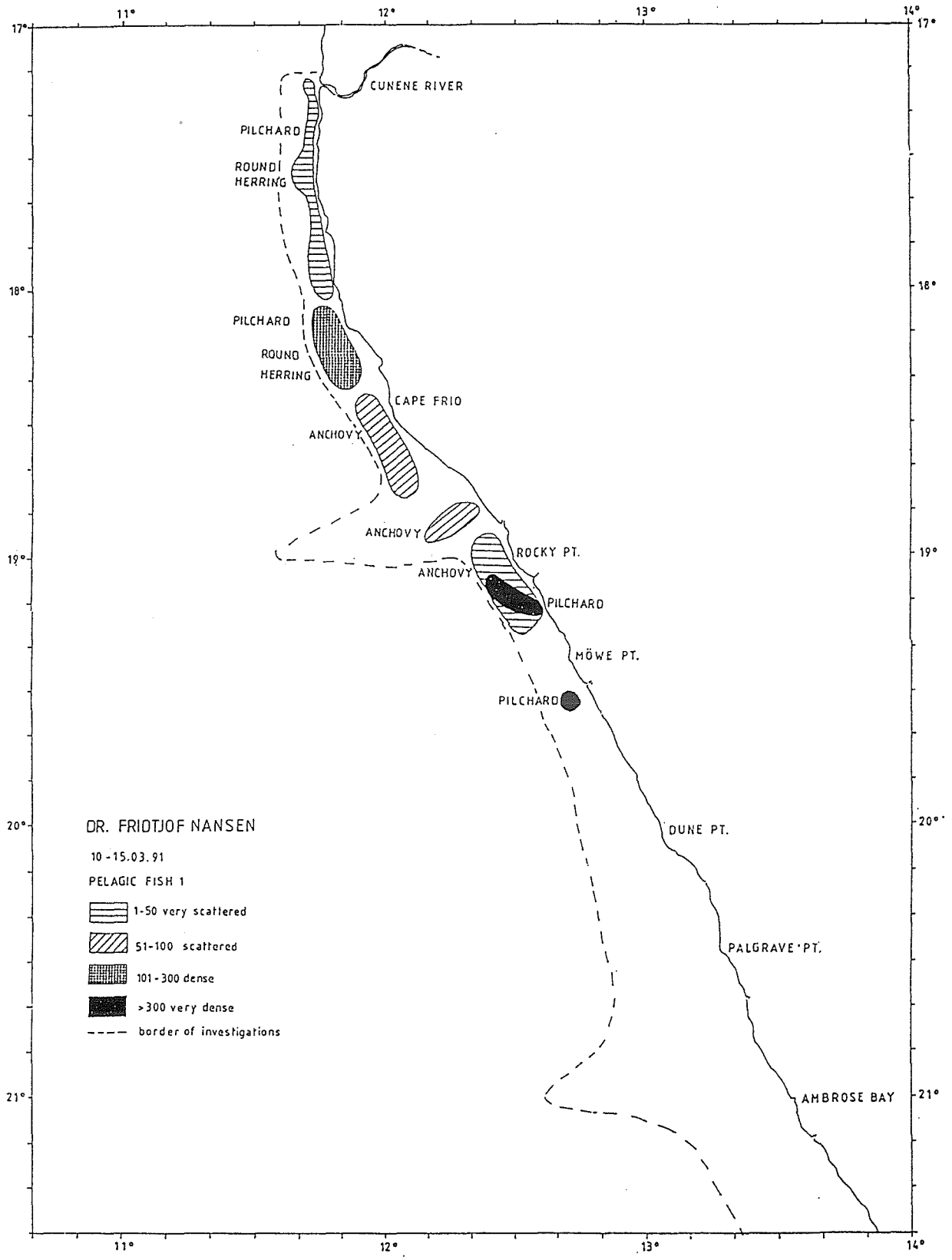



Figure 4b. Distribution of pelagic fish type 1, clupeids and anchovy. Ambrose Bay to Cunene River.

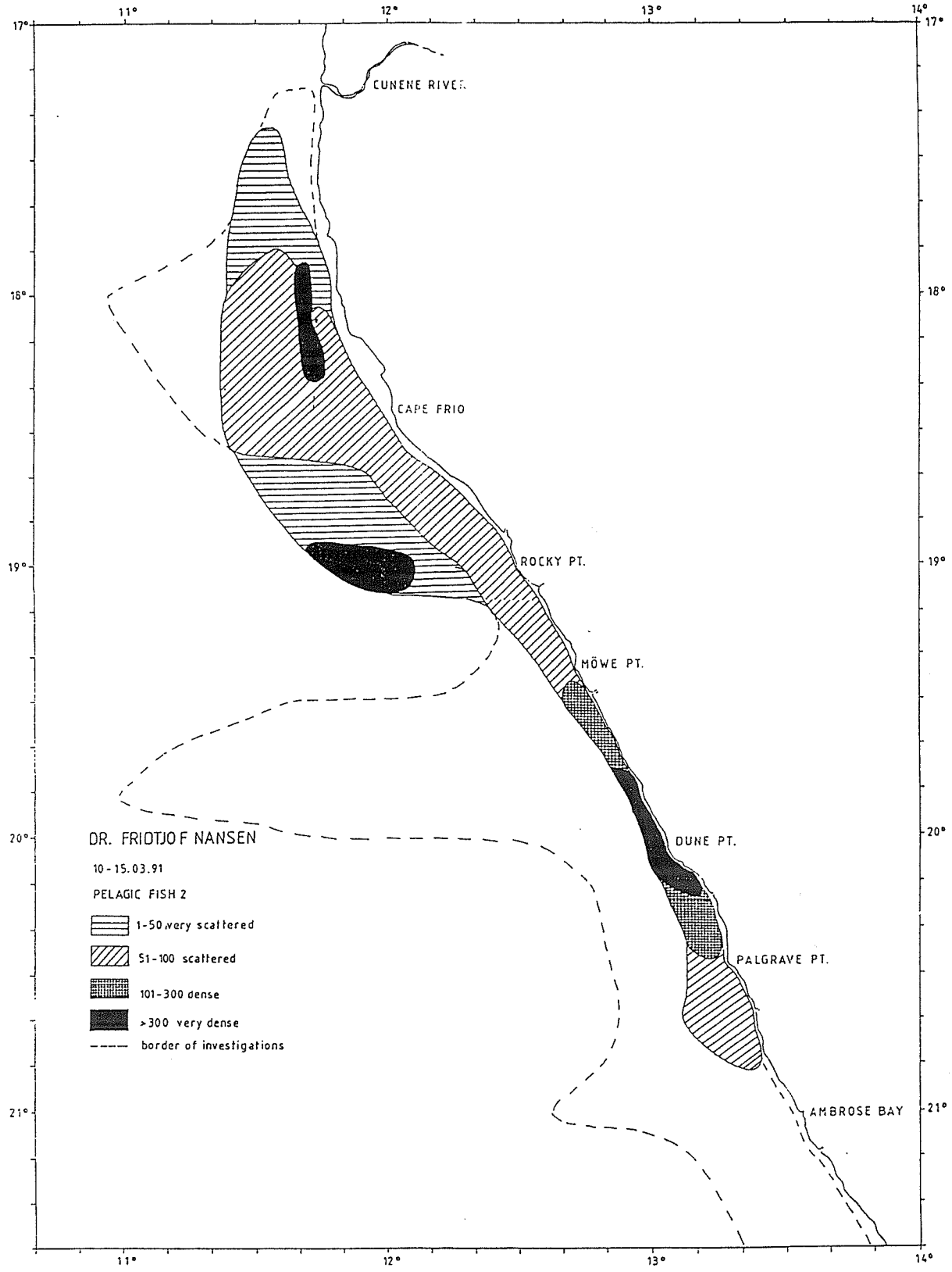



Figure 5. Distribution of pelagic fish type 2, horse mackerel. Ambrose Bay to Cunene River.

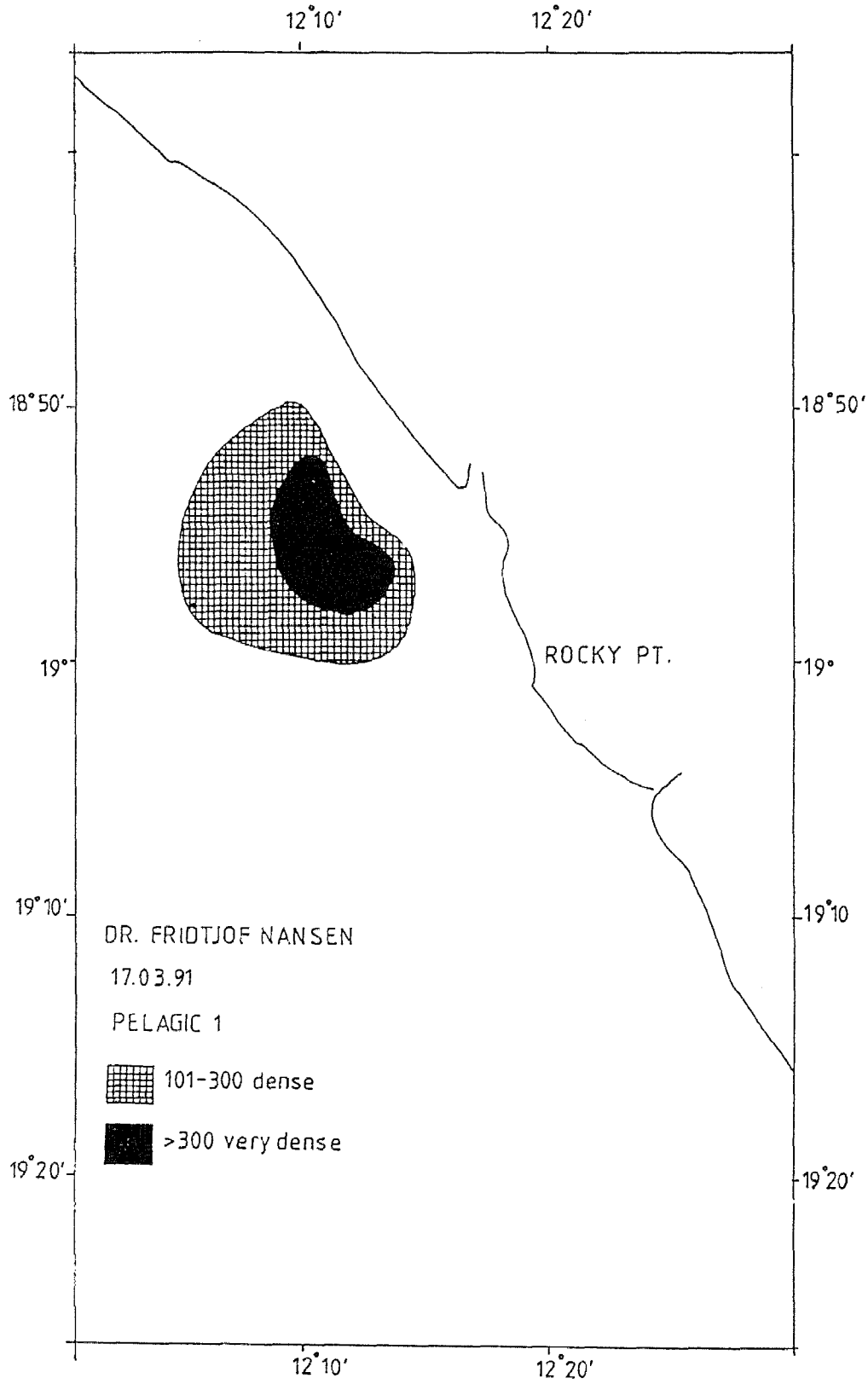



Figure 6a. Distribution of pilchard. Rocky Point.

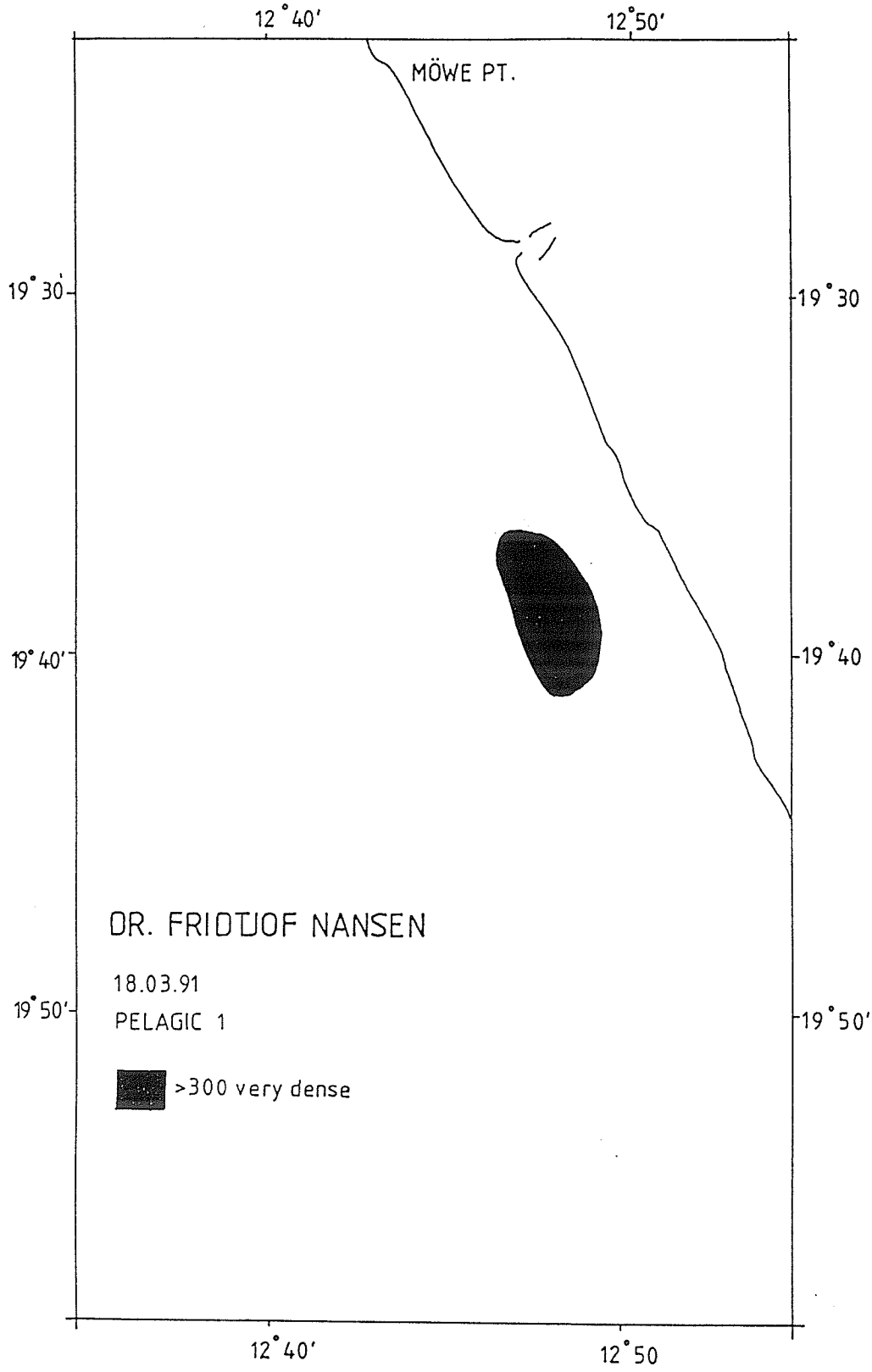



Figure 6b. Distribution of pilchard. Möwe Point.

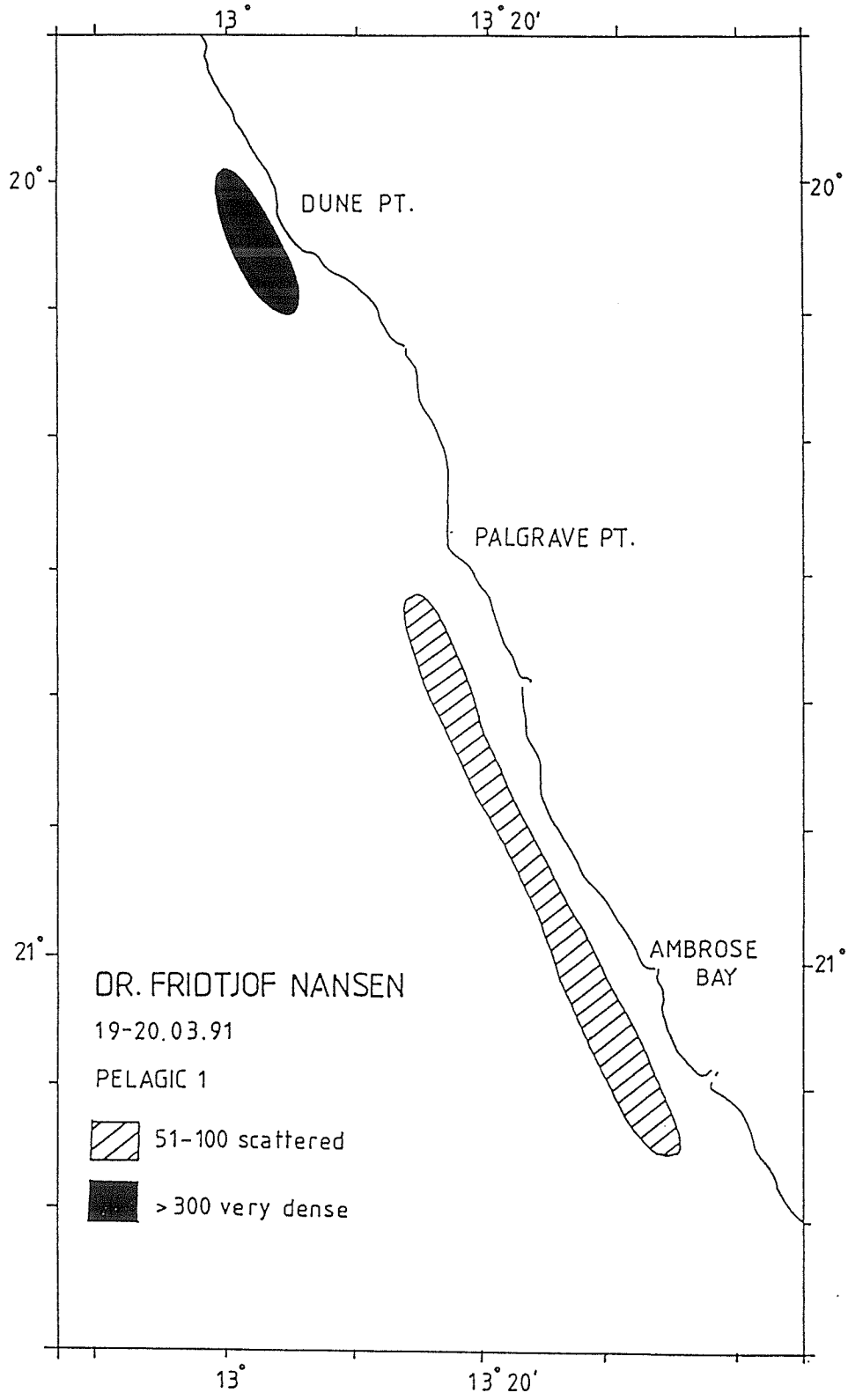



Figure 6c. Distribution of pilchard. Dune Point to Ambrose Bay.

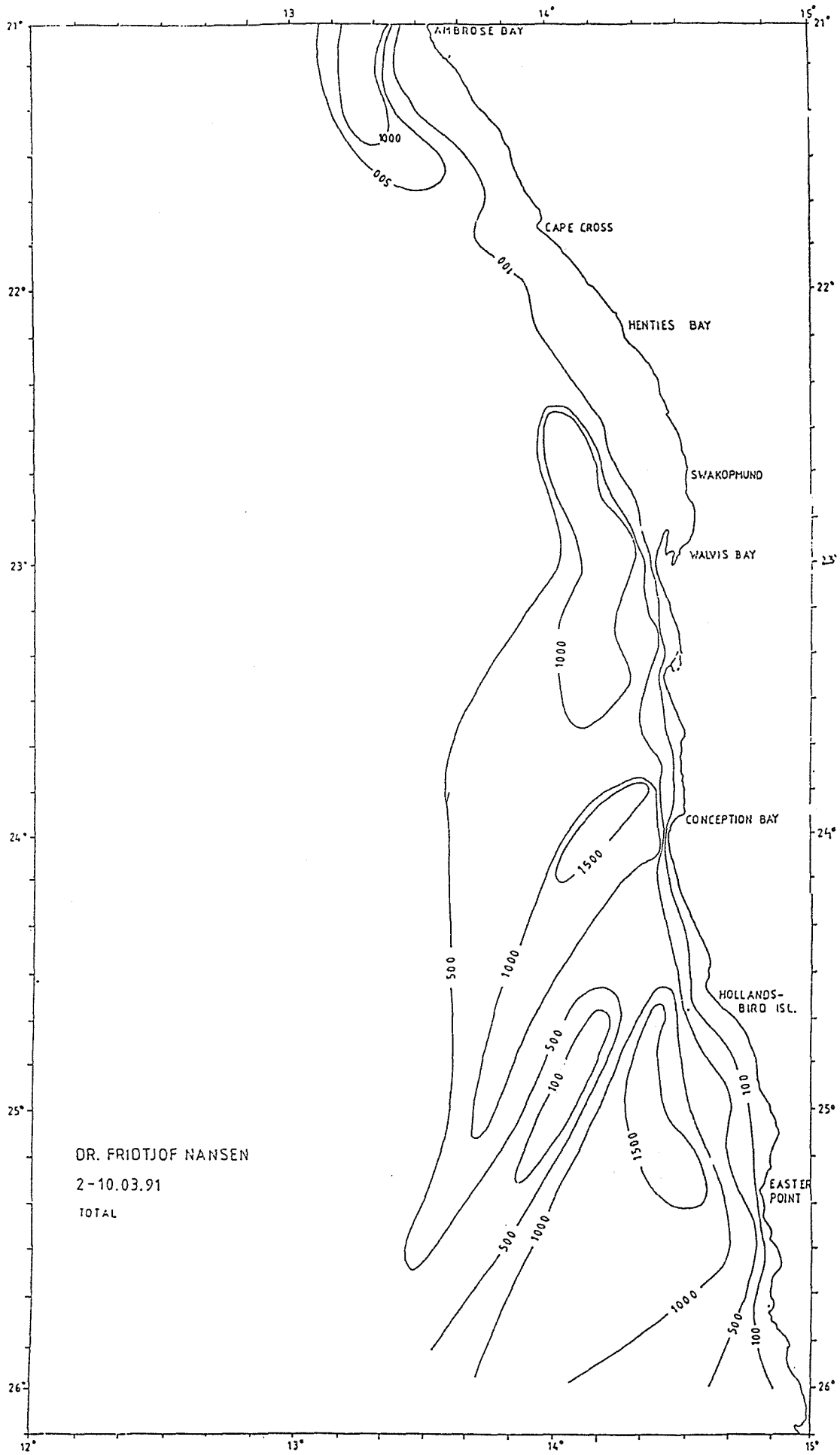



Figure 7. Total back-scattering volume values. Dolphin Head to Ambrose Bay.

A large area of dense shoals occurred at Rocky Point (19°00'). Many of these shoals were extremely large, being several cables in diameter, although their vertical extension was not as great as has been previously recorded. This concentration of pilchard occurred south of Rocky Point (19°10' to 19°00') during the preliminary survey, but was found to have moved about 15 nm northwards when it was re-surveyed three days later. The shoals were less dense during the second survey, particularly during the early part of the night.

Several dense shoals of pilchard, near Möwe Point (19°30'), were later re-surveyed intensively. The fish had moved some 10 nm southwards in the intervening four days, and were mixed with horse mackerel. Initially, the two species appeared to be completely mixed, but in the early morning some separation occurred. From trawl records and the acoustic appearance of the shoals, the species composition was determined to be approximately 75% pilchard and 25% horse mackerel (as measured by back scattering volume).

In addition to this dense area of pilchard, small, but dense, shoals occurred less frequently throughout the region from south of Rocky Point (19°10') to the Cunene River (17°15'). A number of widely dispersed small shoals of pilchard also occurred between Dune Point (20°00') and south of Ambrose Bay (21°15'). It is assumed that these shoals were distributed in a continuous narrow band throughout this area.

Most of the pilchard sampled in this region were large with modal peak of 22 to 23 cm (see Annex 1). From previous ageing studies, these are assumed to be Group-2 and older fish. Only a few recruits were found, while a small number of Group-1 (15 to 18 cm) fish were also surveyed.

Anchovy occurred in an extensive belt between 18°00' and 19°00', giving high registrations in the Rocky Point region, concurrent with the area of dense pilchard occurrence. These fish were almost entirely adult fish with a modal length of 13 to 14 cm.

An extensive area of horse mackerel occurred along the coast from north of Ambrose Bay (20°50') to the Cunene River. The density was particularly high close inshore in the region of Dune Point (20°15' to 19°45').

A few transects determined the distribution of horse mackerel in offshore waters (see Figure 1b). Horse mackerel were found beyond the 100 m depth isoline only to the north of Rocky Point. In this area, the distribution extended to 30 nm from the coast.

The size distribution of horse mackerel tended to be greater in deeper waters than inshore. In waters less than 100 m deep the horse mackerel had a bimodal size distribution, with modal peaks at 6 to 8 cm and 17 to 19 cm ranges. Samples collected in waters of 100 m deep and more consisted of 18 cm and larger fish.

Few myctophids or gobies were found in the area north of Ambrose Bay and jellyfish concentrations were considerably less than those in the south.

## 4.2 ABUNDANCE OF PELAGIC FISH

The biomass estimates are based on the acoustic integration technique, similar to that used in previous assessments of the same stocks. The survey coverage was assessed as being ample with increased sampling in areas of high density. The North Sea herring target strength was used for all type-1 pelagic fish.

The biomass estimates for the clupeids and anchovy are shown in Tables 1 and 2.

Owing to the uncertainty of the most appropriate horse mackerel target strength to be used during acoustic biomass estimation, a biomass range is presented. The range corresponds to the values of target strength for the North Sea Herring (lower limit) and the TS proposed by Svellingen (upper limit) for horse mackerel (see "DR. FRIDTJOF NANSEN" Cruise Report No.1). Table 3 shows the estimates for the present cruise.

Individual target strengths and length frequency of horse mackerel were logged during the cruise. These data will be analyzed later to provide a more precise mean target strength for this species.

### 4.2.1 Pilchard, anchovy and round herring

The biomass of pilchard and anchovy between Swakopmund and Cape Cross was estimated as about 640 000 tonnes, of which about 535 000 tonnes was considered to be pilchard and 105 000 tonnes anchovy. This relatively large concentration of fish was surveyed rather briefly (see previous section) and therefore these figures may be rather imprecise.

A further 10 000 tonnes of anchovy occurred off Hollandsbird Island, but the amount of fish at Easter Point, which appeared to be anchovy, was considered too small to make a reasonable biomass estimate.

During the northwards survey, 80 000 tonnes of pilchard were estimated as occurring at Dune Point, while 236 000 tonnes, mainly pilchard, was estimated for the Rocky Point region. A further 83 000 tonnes of mixed pilchard and round herring was found north of Cape Frio to the Cunene River. It was not possible to accurately estimate the species composition of these shoals and so separate figures cannot be attributed to each species.

Thirty thousand tonnes of anchovy were estimated to occur in a narrow belt north of Rocky Point and extending to the Cunene River.

Table 1. Species composition and biomass estimates of pelagic type-1 fish by area. In tonnes.

| Area | Total Biomass 1st estimate | 2nd estimate | Percentage Pilchard | Other Species |
|---|---|---|---|---|
| Hollandsbird Island | 10 000 | - | 0 | Anchovy |
| Swakopmund-Cape Cross | 640 000 | - | 85 | Anchovy |
| Dune Point | 80 000 | 60 000 | 100 | - |
| Dune Point-Ambrose | 50 000 | - | 100 | - |
| Rocky Point | 236 000 | 172 000 | 95 | Anchovy |
| Cape Frio-Cunene River | 83 000 | 80 000 | ? | Round herr. |
| Cape Frio-Cunene River | 30 000 | - | 0 | Anchovy |

It was decided to survey the areas with large dense, but dispersed, shoals more intensively during the southwards part of the cruise. These areas were off Rocky Point and at Dune Point. In addition, some few shoals of pilchard were found between Dune Point and Ambrose Bay and were also surveyed on this southwards part of the cruise.

The second and intensive survey of the Rocky Point area yielded an estimate of 172 000 tonnes, mostly pilchard, or some 64 000 tonnes less than during the northwards survey. Owing to the increased surveying intensity and the more open distribution of the fish within the shoals during the second survey of this area, the second estimate is presented with considerably more confidence than the first. Anchovy was estimated to contribute less than 10% to the total biomass on both surveys of this area, being in the order of magnitude of 10 000 tonnes.

The second survey of the Dune Point area indicated that approximately 60 000 tonnes of pilchard occurred in the area, and that the original estimate of 80 000 tonnes was an over-estimate due to insufficient coverage of the area.

The narrow belt of pilchard shoals occurring between Dune Point and Ambrose Bay was surveyed rather briefly and only a rough estimation of the biomass occurring in this area was possible. This was assessed to be in the order of 50 000 tonnes.

Table 2. Total estimated biomass of pilchard and mixed shoals of clupeids and anchovy. In tonnes.

| | Dolphin Head-Ambrose Bay | Ambrose Bay-Cunene River | Total |
|---|---|---|---|
| Pilchard | 535 000 | 270 000 | 805 000 |
| Anchovy/R.herring | 115 000 | 40 000 | 155 000 |
| Pilchard/R.herring | - | 80 000 | 80 000 |
| Total | 650 000 | 390 000 | 1 040 000 |

### 4.2.2 Horse mackerel

The present survey failed to find any horse mackerel in the inshore waters south of Ambrose Bay, while northwards over 1.5 to 3.0 million tonnes were recorded. The horse mackerel in the inshore region constituted approximately half of the total, with over 0.5 to 1.0 million tonnes occurring between Möwe Point and Ambrose Bay. The estimate for the offshore stocks is presented with caution, as the widely-spaced transects yielded few data points from which the biomass calculation was made. During Part I of the survey horse mackerel was found to be present over a much wider part of the shelf than that covered in Part II, particularly in the southern region. The estimate presented here thus represents only a part of the total stock.

Table 3. Biomass estimates of pelagic (sub-adult) Cape horse mackerel. Reported in millions of tonnes.

| Dolphin Head-Ambrose Bay | Ambrose Bay - Cunene River | Total |
|---|---|---|
| - | 1.5 - 3.0 | 1.5 - 3.0 |

## CHAPTER 5 CONCLUDING REMARKS

Some surveying difficulties were encountered during the present and previous surveys of pelagic fish stocks in Namibian waters using acoustic methods. In general, however, the present survey was considered thorough and all figures are reported with a fair degree of confidence and should be considered to be reasonably accurate.

Previously noted problems, which were also encountered during the present survey, included the occurrence of large concentrations of jellyfish hampering the determination of species composition by trawling and the occurrence of widely dispersed shoals requiring tightly spaced transects to ensure an accurate coverage of such regions (see also "DR. FRIDTJOF NANSEN" Cruise Report No.2, 1990).

An additional problem occurred with the few extremely large and dense shoals of pilchard found in the Rocky Point/Cape Frio area. These are not well suited to the type of sampling used during acoustic surveys, because of the highly clumped distribution characteristic of the fish. During the present intensive survey of these shoals, the fish became more dispersed for several hours immediately after sunset. As this dispersion occurred during the period when the most dense region was surveyed, the calculated biomass estimate should be more precise than previous estimates.

Determining species composition was difficult in several areas, notably with the fish shoals occurring at Dune Point and north of Cape Frio. During certain parts of the diurnal cycle these shoals, particularly those of pilchard and horse mackerel, tended to separate, allowing an estimate of the species proportions to be made.

Round herring frequently have a similar acoustical appearance to pilchard and, during the period of the survey, were occasionally caught in the purse seine nets of commercial fishing boats during the period of the survey, particularly in the area between Dune Point and Ambrose Bay. Round herring are known to exhibit a high degree of net avoidance, and the fact that this species were largely absent from the "DR. FRIDTJOF NANSEN" trawling statistics may have resulted in an under-estimate of the biomass of this species. This may have resulted in concurrent over-estimate of pilchard biomass, but as the total round herring population is not large, this inaccuracy is probably insignificant.

Previous surveys have reported large concentrations of fish occurring in shallow waters, while other fish migrated at night to surface waters above transducer level, and thus were not available to be surveyed. Apart from a small part of the horse mackerel stock occurring in shallow waters, these behavioral traids were not detected in any of the target species during this survey.

Much time was spent searching for fish and determining the precise distribution of areas of high density, prior to an intensive survey of such areas. Commercial fishing vessels are well suited to this type of work and have been used successfully in previous cruises (see "DR. FRIDTJOF NANSEN" Cruise Report No. 2). Future acoustic biomass surveys should, if possible, make full use of such assistance.

In general, adult horse mackerel and anchovy were well dispersed and suited to biomass determination by acoustic methods, while the limitations noted above, must be placed on the pilchard estimates.

The two "DR. FRIDTJOF NANSEN" surveys of pelagic fish undertaken in 1990 reported pilchard biomasses of 235 000 tonnes and 750 000 tonnes (Table 4). The increased biomass figure of 750 000 tonnes was thought to be due to the inclusion of the large amount of pilchard, 435 000 tonnes, between Rocky Point and Cape Frio. This concentration has largely been absent from earlier surveys, probably due to its behaviour of shoaling very densely in shallow waters and thus avoiding detection.

Table 4. Comparison of biomass estimates of pelagic stocks made by "DR. FRIDTJOF NANSEN" during 1990 and 1991. Reported in thousands of tonnes

| | Dolphin Head-Ambrose Bay | Ambrose Bay - Cunene River | Total |
|---|---|---|---|
| PILCHARD | | | |
| March 1990 | 75 | 160 | 235 |
| June 1990 | 265 | 485 | 750 |
| March 1991 | 535 | 273 | 805 |
| ANCHOVY/ROUND HERRING | | | |
| March 1990 | 125 | 90 | 215 |
| June 1990 | 115 | 70 | 185 |
| March 1991 | 115 | 120 | 235 |
| HORSE MACKEREL | | | |
| March 1990 | 660-1 200 | 780-1 500 | 1 400-2 700 |
| June 1990 | 400- 750 | 1 600-3 000 | 2 000-3 750 |
| March 1991 | 0 | 1 500-3 000 | 1 500-3 000 |

All pilchard stocks were found in discrete areas. Shoals were very dense and, within these areas, were occasionally widely scattered. The estimated 270 000 tonnes occurring in the north is considerably less than the 485 000 tonnes estimated in June 1990. Several problems encountered during the 1990 survey notably the movement of fish into shallow waters and the occurrence of a small number of extremely large dense shoals (see"DR.FRIDTJOF NANSEN" Cruise Report No.2) suggests that the present figure may be more reliable. Alternatively, the increased figure for the southern area could represent a southwards movement of part of the northern stock.

Almost the entire pilchard stock consisted of adult fish. No recruits were sampled. 61% (by number) of all pilchard sampled were in the 21 to 25 cm length classes, with a lesser number having a modal peak of 19 cm (see Annex 1). These length classes correspond to the modal peaks recorded during the 1990 surveys of 22 cm and 16 to 17 cm respectively. A younger cohort was recorded during the present survey, with a modal peak length of 15 to 17 cm. This represented about 20% of the fish sampled and was assumed to have come from the 1990 spawning season. While the 1991 total stock biomass may be similar to the 1990 biomass, it consists of fewer, older fish. The absence of recruits from the recent austral spring/summer period may indicate poor recruitment for 1991, although this survey may be too early in the year to determine this fact.

The size of the pilchard stock is large compared to the estimates of stock size made during the eighties. However, the small proportion of young fish and narrow age range means that this stock must be considered to be in a vulnerable state.

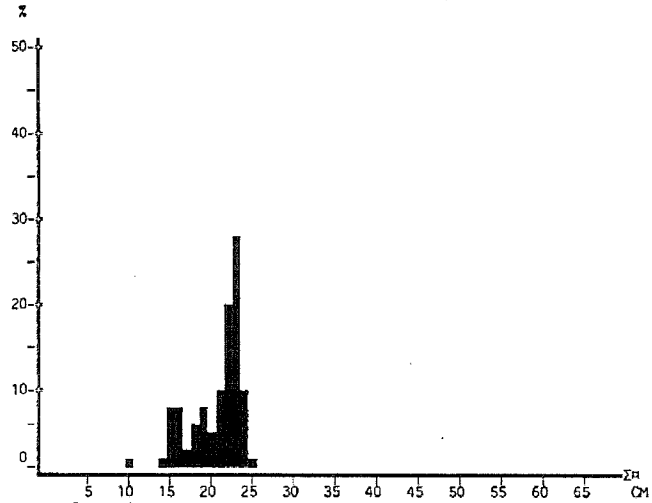
Owing to the mixed shoaling behaviour of anchovy and round herring, it has not been possible to report their biomasses separately. The total stock of these two species was estimated as being 215 000 tonnes and 185 000 tonnes during the 1990 "DR. FRIDTJOF NANSEN" surveys. The present figure of 235 000 tonnes also included a small amount of pilchard. The total combined biomass of anchovy and round herring must therefore be considered similar to the 1990 biomass estimate. The dominant anchove length class of 14

cm corresponds to the 11 to 13 cm cohort recorded in 1990. Few juvenile anchovy occurred and may be some cause for concern.

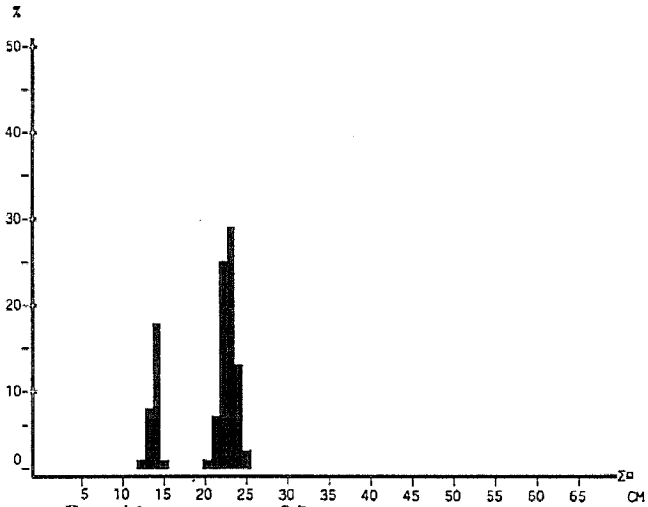
The previous horse mackerel biomass estimate made by the "DR. FRIDTJOF NANSEN" indicated a total biomass of 2.00 to 3.75 million tonnes depending on which TS-value is used. The offshore region south of Ambrose Bay was not surveyed during the present cruise and this is likely to have caused the present reduced total stock biomass.

The length-frequency distribution of horse mackerel exhibited three peaks. The 14 to 15 cm and 18 to 19 cm groups corresponded cohorts of the previous year measured at 10 to 11 cm and 14 to 16 cm respectively. A strong cohort of fich smaller than 11 cm indicated good recruitment from the recent austral spring/summer period.

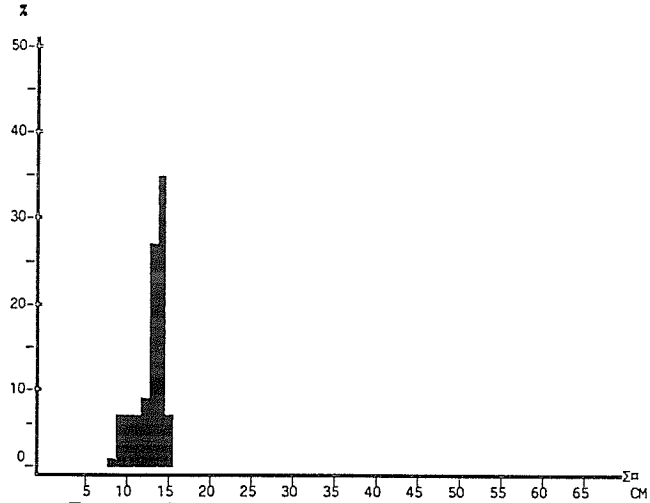
# ANNEX I SIZE COMPOSITIONS OF MAIN SPECIES




Pooled sample ( simple adding)
MEAN LENGTH = 20.67cm N= 1442
NUMBER OF SUBSAMPLES : 14

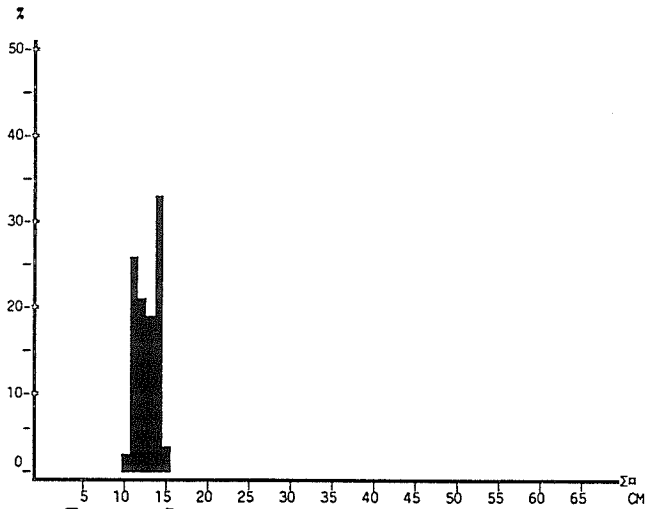



Pooled sample ( simple adding)
MEAN LENGTH = 20.21cm N= 312
NUMBER OF SUBSAMPLES : 3



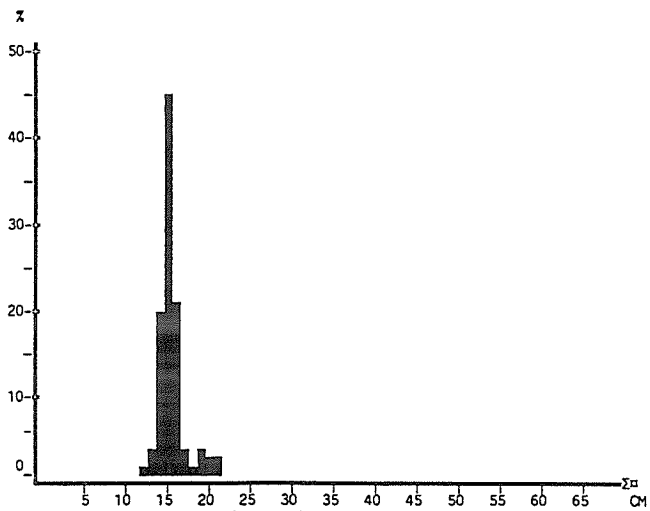

Engraulis capensis
Ambrose-Cunene

Pooled sample ( simple adding)
MEAN LENGTH = 12.80cm N= 770
NUMBER OF SUBSAMPLES : 14



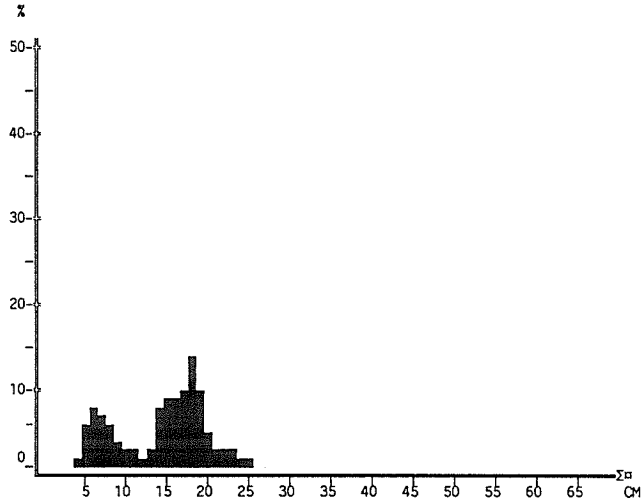

Engraulis capensis
Easter Pt-Ambrose

Pooled sample ( simple adding)
MEAN LENGTH = 12.61cm N= 277
NUMBER OF SUBSAMPLES : 3



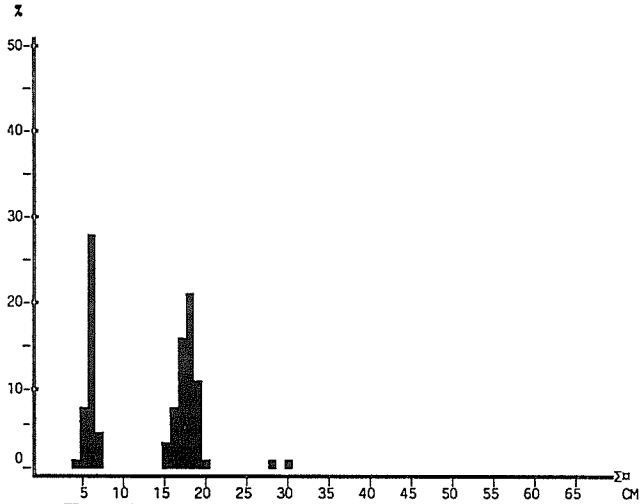

Etrumeus whiteheadi
Ambrose-Cunene

Pooled sample ( simple adding)
MEAN LENGTH = 15.42cm N= 372
NUMBER OF SUBSAMPLES : 7




Trachurus capensis
Ambrose-Cunene

Pooled sample ( simple adding)
MEAN LENGTH = 14.35cm N= 5830
NUMBER OF SUBSAMPLES : 39




Trachurus capensis
Easter Pt-Ambrose

Pooled sample ( simple adding)
MEAN LENGTH = 13.37cm N= 289
NUMBER OF SUBSAMPLES : 3

# ANNEX II RECORDS OF FISHING STATIONS

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 697
DATE :02/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 23°13.98
start stop duration Lon E 14°25.02
TIME :13:34:00 13:44:00 10.0 (min) Purpose : 1
LOG : 9029.50 9029.90 0.4 Region : 2
FDEPTH: 15 15 Gear cond.: 0
BDEPTH: 34 33 Validity : 0
Towing dir: 355° Wire out : 50 m Speed : 2.8 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 698
DATE :02/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 23°49.98
start stop duration Lon E 14°25.98
TIME :18:37:00 18:47:00 10.0 (min) Purpose : 1
LOG : 9075.80 9076.40 0.6 Region : 2
FDEPTH: 10 15 Gear cond.: 1
BDEPTH: 34 35 Validity : 3
Towing dir: 10° Wire out : 100 m Speed : 3.0 kn
Sorted : 1 Total catch: 10.00 Catch/hour: 60.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 60.00 | 118200 | 100.00 | 507 |
| Total | 60.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 699
DATE :02/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 24°10.02
start stop duration Lon E 14°27.00
TIME :21:09:00 21:19:00 10.0 (min) Purpose : 1
LOG : 9095.60 9096.20 0.6 Region : 2
FDEPTH: 15 15 Gear cond.: 0
BDEPTH: 45 43 Validity : 0
Towing dir: 160° Wire out : 100 m Speed : 3.0 kn
Sorted : 1 Total catch: 60.00 Catch/hour: 360.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 360.00 | 669600 | 100.00 | 508 |
| Total | 360.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 700
DATE :03/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 25°7.98
start stop duration Lon E 14°48.00
TIME :03:56:00 04:11:00 15.0 (min) Purpose : 1
LOG : 9163.00 9163.90 0.9 Region : 1
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 33 31 Validity : 0
Towing dir: 30° Wire out : 100 m Speed : 3.5 kn
Sorted : 22 Total catch: 22.25 Catch/hour: 89.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Chelidonichthys capensis | 89.00 | 592 | 100.00 | |
| Total | 89.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 701
DATE :03/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 25°16.98
start stop duration Lon E 14°46.02
TIME :05:45:00 05:55:00 10.0 (min) Purpose : 1
LOG : 9175.40 9175.00 0.6 Region : 1
FDEPTH: 10 10 Gear cond.: 8
BDEPTH: 32 33 Validity : 9
Towing dir: 340° Wire out : 100 m Speed : 3.5 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 702
DATE :03/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°27.00
start stop duration Lon E 14°46.98
TIME :07:48:00 08:03:00 15.0 (min) Purpose : 1
LOG : 9189.60 9190.40 0.8 Region : 1
FDEPTH: 49 51 Gear cond.: 1
BDEPTH: 49 51 Validity : 3
Towing dir: 340° Wire out : 250 m Speed : 3.2 kn
Sorted : 3 Total catch: 60.00 Catch/hour: 240.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 240.00 | 17800 | 100.00 | 509 |
| Total | 240.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 703
DATE :03/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 26°0.00
start stop duration Lon E 14°33.00
TIME :15:30:00 15:43:00 13.0 (min) Purpose : 1
LOG : 9248.50 9249.20 0.8 Region : 1
FDEPTH: 125 155 Gear cond.: 0
BDEPTH: 178 177 Validity : 0
Towing dir: 90° Wire out : 450 m Speed : 2.8 kn
Sorted : 72 Total catch: 81.20 Catch/hour: 374.77

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Thyrsites atun | 328.62 | 83 | 87.68 | 510 |
| Sufflogobius bibarbatus | 41.08 | 5898 | 10.96 | 511 |
| Merluccius capensis, juvenile | 2.77 | 231 | 0.74 | 512 |
| Todarodes sagittatus | 1.85 | 115 | 0.49 | |
| MYCTOPHIDAE | 0.46 | 2446 | 0.12 | |
| Total | 374.77 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 704
DATE :04/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 25°0.00
start stop duration Lon E 14°10.98
TIME :10:17:00 10:27:00 10.0 (min) Purpose : 1
LOG : 9404.20 9404.60 0.4 Region : 1
FDEPTH: 38 40 Gear cond.: 0
BDEPTH: 162 162 Validity : 0
Towing dir: 360° Wire out : 150 m Speed : 2.5 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 705
DATE :04/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 25°37.02
start stop duration Lon E 14°46.98
TIME :19:38:00 19:46:00 8.0 (min) Purpose : 1
LOG : 9474.40 9474.65 0.3 Region : 1
FDEPTH: 15 15 Gear cond.: 0
BDEPTH: 52 41 Validity : 0
Towing dir: 100° Wire out : 100 m Speed : 2.4 kn
Sorted : 3 Total catch: 90.00 Catch/hour: 675.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Chelidonichthys capensis | 675.00 | 4320 | 100.00 | 513 |
| Total | 675.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 706
DATE :05/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 25°15.00
start stop duration Lon E 14°46.98
TIME :00:36:00 00:46:00 10.0 (min) Purpose : 1
LOG : 9513.90 9514.40 0.6 Region : 1
FDEPTH: 27 27 Gear cond.: 0
BDEPTH: 27 27 Validity : 0
Towing dir: 360° Wire out : 200 m Speed : 3.5 kn
Sorted : 30 Total catch: 594.00 Catch/hour: 3564.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 2256.00 | 223560 | 63.30 | 514 |
| Chelidonichthys capensis | 1308.00 | 7320 | 36.70 | 515 |
| Total | 3564.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 707
DATE :05/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 24°45.00
start stop duration Lon E 14°28.02
TIME :06:58:00 07:08:00 10.0 (min) Purpose : 1
LOG : 9566.70 9567.30 0.6 Region : 2
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 62 77 Validity : 0
Towing dir: 270° Wire out : 100 m Speed : 3.5 kn
Sorted : 1 Total catch: 0.70 Catch/hour: 4.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Chelidonichthys capensis | 4.20 | 18 | 100.00 | |
| Total | 4.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 708
DATE :05/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 24°40.98
start stop duration Lon E 14°24.00
TIME :08:36:00 08:39:00 3.0 (min) Purpose : 1
LOG : 9576.90 9577.00 0.1 Region : 2
FDEPTH: 20 20 Gear cond.: 0
BDEPTH: 88 88 Validity : 0
Towing dir: 34° Wire out : 100 m Speed : 3.0 kn
Sorted : 1 Total catch: 0.70 Catch/hour: 14.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 8.00 | 0 | 57.14 | |
| Chelidonichthys capensis | 6.00 | 40 | 42.86 | |
| Total | 14.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 709
DATE :05/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°33.00
start stop duration Lon E 14°30.00
TIME :11:28:00 11:36:00 8.0 (min) Purpose : 1
LOG : 9599.30 9599.70 0.4 Region : 2
FDEPTH: 24 24 Gear cond.: 5
BDEPTH: 24 24 Validity : 3
Towing dir: 37° Wire out : 150 m Speed : 3.0 kn
Sorted : 10 Total catch: 59.86 Catch/hour: 448.95

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Engraulis capensis | 316.50 | 27120 | 70.50 | 516 |
| Chelidonichthys capensis | 132.00 | 428 | 29.40 | 518 |
| Merluccius capensis, juvenile | 0.45 | 232 | 0.10 | 517 |
| Total | 448.95 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 710
DATE :05/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 24°30.00
start stop duration Lon E 14°31.02
TIME :13:57:00 14:07:00 10.0 (min) Purpose : 1
LOG : 9618.90 9619.40 0.6 Region : 2
FDEPTH: 24 24 Gear cond.: 0
BDEPTH: 24 24 Validity : 0
Towing dir: 90° Wire out : 150 m Speed : 3.4 kn
Sorted : 1 Total catch: 5.00 Catch/hour: 30.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sufflogobius bibarbatus | 30.00 | 39372 | 100.00 | 519 |
| Total | 30.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 711
DATE :05/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 24°13.02
start stop duration Lon E 14°16.02
TIME :19:25:00 19:32:00 7.0 (min) Purpose : 1
LOG : 9688.20 9688.60 0.4 Region : 2
FDEPTH: 35 20 Gear cond.: 0
BDEPTH: 114 114 Validity : 0
Towing dir: 15° Wire out : 150 m Speed : 3.1 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| N O C A T C H | 0.00 | 0 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 712
DATE :05/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 24°1.02
start stop duration Lon E 14°25.02
TIME :21:25:00 21:35:00 10.0 (min) Purpose : 1
LOG : 9682.80 9683.40 0.6 Region : 2
FDEPTH: 8 8 Gear cond.: 1
BDEPTH: 44 42 Validity : 3
Towing dir: 40° Wire out : 50 m Speed : 3.7 kn
Sorted : 1 Total catch: 4.20 Catch/hour: 25.20

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Sufflogobius bibarbatus | 25.20 | 31752 100.00 | 520 |
| Total | 25.20 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 713
DATE :06/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 23°45.00
start stop duration Lon E 14°4.02
TIME :14:49:00 15:09:00 20.0 (min) Purpose : 1
LOG : 9824.00 9825.00 1.0 Region : 2
FDEPTH: 85 75 Gear cond.: 2
BDEPTH: 163 167 Validity : 3
Towing dir: 270° Wire out : 350 m Speed : 3.3 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| N O C A T C H | 0.00 | 0 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 714
DATE :06/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 23°45.00
start stop duration Lon E 14°10.02
TIME :16:20:00 16:40:00 20.0 (min) Purpose : 1
LOG : 9832.50 9833.40 1.0 Region : 2
FDEPTH: 70 40 Gear cond.: 0
BDEPTH: 139 136 Validity : 0
Towing dir: 90° Wire out : 350 m Speed : 2.9 kn
Sorted : 2 Total catch: 54.08 Catch/hour: 162.24

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Thyrsites atun | 143.10 | 39 88.20 | 521 |
| Sufflogobius bibarbatus | 18.00 | 21600 11.09 | 522 |
| Trachipterus trachypterus | 0.60 | 3 0.37 | |
| Todarodes sagittatus | 0.45 | 18 0.28 | |
| Merluccius capensis, juvenile | 0.09 | 27 0.06 | 523 |
| Total | 162.24 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 715
DATE :06/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 23°49.02
start stop duration Lon E 14°25.02
TIME :18:36:00 18:41:00 5.0 (min) Purpose : 1
LOG : 9848.60 9848.80 0.2 Region : 2
FDEPTH: 15 15 Gear cond.: 0
BDEPTH: 54 50 Validity : 0
Towing dir: 110° Wire out : 100 m Speed : 3.5 kn
Sorted : 0 Total catch: 10.00 Catch/hour: 120.00

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Sufflogobius bibarbatus | 120.00 | 0 100.00 | 524 |
| Total | 120.00 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 716
DATE :07/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 22°55.02
start stop duration Lon E 13°12.00
TIME :15:25:00 15:45:00 20.0 (min) Purpose : 1
LOG : 28.55 29.37 1.0 Region : 2
FDEPTH: 295 278 Gear cond.: 0
BDEPTH: 314 300 Validity : 0
Towing dir: 245° Wire out : 800 m Speed : 2.9 kn
Sorted : 4 Total catch: 142.60 Catch/hour: 427.80

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Brama brama | 227.70 | 156 53.23 | 525 |
| MYCTOPHIDAE | 150.00 | 52500 35.06 | |
| Merluccius capensis | 29.70 | 63 6.94 | 526 |
| Trachipterus trachypterus | 20.40 | 3 4.77 | |
| Total | 427.80 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 717
DATE :08/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 22°15.00
start stop duration Lon E 13°57.00
TIME :02:58:00 03:13:00 15.0 (min) Purpose : 1
LOG : 141.40 142.30 0.9 Region : 2
FDEPTH: 20 10 Gear cond.: 0
BDEPTH: 95 93 Validity : 0
Towing dir: 90° Wire out : 100 m Speed : 3.6 kn
Sorted : 13 Total catch: 12.52 Catch/hour: 50.08

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Thyrsites atun | 44.00 | 12 87.86 | 528 |
| Engraulis capensis | 6.00 | 336 11.98 | 527 |
| Etrumeus whiteheadi | 0.08 | 4 0.16 | |
| Total | 50.08 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 718
DATE :08/03/1991 GEAR TYPE: PT NO: 4 POSITION:Lat S 22°40.02
start stop duration Lon E 14°4.98
TIME :20:37:00 20:42:00 5.0 (min) Purpose : 1
LOG : 243.90 244.15 0.3 Region : 2
FDEPTH: 0 0 Gear cond.: 0
BDEPTH: 108 108 Validity : 0
Towing dir: 90° Wire out : 150 m Speed : 3.0 kn
Sorted : 523 Total catch: 522.56 Catch/hour: 6270.72

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Sufflogobius bibarbatus | 6000.00 | 4736832 95.68 | |
| Thyrsites atun | 230.40 | 72 3.67 | |
| Sardinops ocellatus | 28.80 | 300 0.46 | 530 |
| Merluccius capensis, juvenile | 9.96 | 1740 0.16 | 529 |
| Trachipterus trachypterus | 1.32 | 12 0.02 | |
| Engraulis capensis | 0.12 | 12 0.00 | |
| Trichiurus lepturus | 0.12 | 12 0.00 | |
| Todarodes sagittatus | 0.00 | 12 0.00 | |
| Total | 6270.72 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 719
DATE :08/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 22°34.02
start stop duration Lon E 14°1.98
TIME :22:10:00 22:16:00 6.0 (min) Purpose : 1
LOG : 255.20 255.50 0.3 Region : 2
FDEPTH: 10 10 Gear cond.: 1
BDEPTH: 108 108 Validity : 3
Towing dir: 188° Wire out : 50 m Speed : 2.8 kn
Sorted : 27 Total catch: 6000.00 Catch/hour: 60000.00

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Sardinops ocellatus | 60000.00 | 457780 100.00 | 531 |
| Total | 60000.00 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 720
DATE :09/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 22°22.98
start stop duration Lon E 13°55.02
TIME :04:21:00 04:31:00 10.0 (min) Purpose : 1
LOG : 315.30 316.10 0.8 Region : 2
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 108 107 Validity : 0
Towing dir: 90° Wire out : 100 m Speed : 3.3 kn
Sorted : 6 Total catch: 5.50 Catch/hour: 33.00

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Engraulis capensis | 26.40 | 2412 80.00 | 533 |
| Sardinops ocellatus | 4.80 | 486 14.55 | 532 |
| Centrolophus niger | 1.20 | 6 3.64 | |
| Thyrsites atun | 0.60 | 6 1.82 | |
| Total | 33.00 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 721
DATE :10/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 21°10.02
start stop duration Lon E 13°19.02
TIME :08:20:00 08:30:00 10.0 (min) Purpose : 1
LOG : 581.80 582.20 0.5 Region : 2
FDEPTH: 10 25 Gear cond.: 0
BDEPTH: 105 106 Validity : 0
Towing dir: 270° Wire out : 125 m Speed : 2.8 kn
Sorted : 26 Total catch: 25.67 Catch/hour: 154.02

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Sufflogobius bibarbatus | 150.00 | 0 97.39 | |
| Todarodes sagittatus | 2.40 | 90 1.56 | |
| Trachurus capensis | 1.62 | 684 1.05 | 534 |
| OCTOPODIDAE | 0.00 | 6 0.00 | |
| TRIGLIDAE | 0.00 | 12 0.00 | |
| Lepidopus caudatus | 0.00 | 48 0.00 | |
| Total | 154.02 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 722
DATE :10/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 21°1.02
start stop duration Lon E 12°42.00
TIME :17:55:00 18:15:00 20.0 (min) Purpose : 1
LOG : 657.80 658.90 1.1 Region : 2
FDEPTH: 315 315 Gear cond.: 0
BDEPTH: 345 349 Validity : 0
Towing dir: 281° Wire out : 750 m Speed : 3.3 kn
Sorted : 55 Total catch: 55.30 Catch/hour: 165.90

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| MYCTOPHIDAE | 60.00 | 0 36.17 | |
| Merluccius capensis, female | 45.00 | 99 27.12 | 536 |
| Merluccius capensis, male | 42.00 | 102 25.32 | 535 |
| Trachurus capensis | 9.90 | 33 5.97 | 537 |
| CARANGIDAE | 6.90 | 3 4.16 | |
| Todarodes sagittatus | 2.10 | 3 1.27 | |
| IDIACANTHIDAE | 0.00 | 9 0.00 | |
| Total | 165.90 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 723
DATE :10/03/1991 GEAR TYPE: PT NO: 4 POSITION:Lat S 20°22.98
start stop duration Lon E 13°12.00
TIME :06:48:00 07:08:00 20.0 (min) Purpose : 1
LOG : 776.70 777.60 0.9 Region : 3
FDEPTH: 6 6 Gear cond.: 1
BDEPTH: 25 20 Validity : 3
Towing dir: 180° Wire out : 150 m Speed : 3.0 kn
Sorted : 83 Total catch: 1270.47 Catch/hour: 3811.41

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Trachurus capensis | 3607.50 | 54405 94.65 | 538 |
| Argyrosomus hololepidotus | 179.40 | 111 4.71 | 539 |
| Callorhinchus capensis | 7.20 | 3 0.19 | |
| Galeichthys feliceps | 6.90 | 12 0.18 | |
| Chelidonichthys capensis | 6.90 | 12 0.18 | |
| Engraulis capensis | 3.51 | 702 0.09 | 540 |
| Total | 3811.41 | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 724
DATE :11/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 20°10.02
start stop duration Lon E 13°7.02
TIME :12:47:00 12:54:00 7.0 (min) Purpose : 1
LOG : 834.20 834.50 0.3 Region : 3
FDEPTH: 22 19 Gear cond.: 0
BDEPTH: 22 19 Validity : 0
Towing dir: 315° Wire out : 125 m Speed : 2.9 kn
Sorted : 32 Total catch: 2500.00 Catch/hour: 21428.57

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 21428.57 | 576926 | 100.00 | 541 |
| Total | 21428.57 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 725
DATE :11/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 19°43.02
start stop duration Lon E 12°52.02
TIME :20:17:00 20:32:00 15.0 (min) Purpose : 1
LOG : 894.80 895.60 0.8 Region : 3
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 23 22 Validity : 0
Towing dir: 335° Wire out : 150 m Speed : 3.2 kn
Sorted : 93 Total catch: 420.40 Catch/hour: 1681.60

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1200.00 | 24200 | 71.36 | 542 |
| Callorhinchus capensis | 440.00 | 236 | 26.17 | |
| Argyrosomus hololepidotus | 27.20 | 4 | 1.62 | |
| Chelidonichthys capensis | 11.20 | 8 | 0.67 | |
| Galeichthys feliceps | 3.20 | 8 | 0.19 | |
| Total | 1681.60 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 726
DATE :11/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 19°31.02
start stop duration Lon E 12°43.98
TIME :23:15:00 23:28:00 13.0 (min) Purpose : 1
LOG : 920.20 920.90 0.7 Region : 3
FDEPTH: 15 10 Gear cond.: 0
BDEPTH: 38 43 Validity : 0
Towing dir: 220° Wire out : 100 m Speed : 3.4 kn
Sorted : 23 Total catch: 1844.00 Catch/hour: 8510.77

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sardinops ocellatus | 8307.69 | 103366 | 97.61 | 543 |
| Callorhinchus capensis | 96.92 | 69 | 1.14 | |
| Argyrosomus hololepidotus | 64.62 | 14 | 0.76 | |
| Etrumeus whiteheadi | 34.62 | 1149 | 0.41 | |
| Galeichthys feliceps | 2.31 | 5 | 0.03 | |
| Trachipterus trachypterus | 1.85 | 5 | 0.02 | |
| Trachurus capensis | 0.00 | 383 | 0.00 | |
| Engraulis capensis | 0.00 | 383 | 0.00 | |
| Total | 8508.00 | | 99.97 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 727
DATE :12/03/1991 GEAR TYPE: PT NO: 4 POSITION:Lat S 19°12.00
start stop duration Lon E 12°34.02
TIME :03:48:00 04:18:00 30.0 (min) Purpose : 1
LOG : 957.90 958.90 1.0 Region : 3
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 42 51 Validity : 0
Towing dir: 208° Wire out : 150 m Speed : 2.2 kn
Sorted : 20 Total catch: 402.00 Catch/hour: 804.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 744.00 | 18290 | 92.54 | 544 |
| Etrumeus whiteheadi | 24.00 | 800 | 2.99 | 545 |
| Engraulis capensis | 24.00 | 1600 | 2.99 | 546 |
| Sardinops ocellatus | 12.00 | 240 | 1.49 | 547 |
| Cynoglossus zanzibarensis | 0.00 | 40 | 0.00 | |
| Sufflogobius bibarbatus | 0.00 | 40 | 0.00 | |
| Total | 804.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 728
DATE :12/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°1.02
start stop duration Lon E 12°1.02
TIME :11:25:00 11:45:00 20.0 (min) Purpose : 1
LOG : 1004.60 1005.40 0.8 Region : 3
FDEPTH: 160 100 Gear cond.: 0
BDEPTH: 197 189 Validity : 0
Towing dir: 85° Wire out : 400 m Speed : 2.5 kn
Sorted : 19 Total catch: 1500.00 Catch/hour: 4500.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 4500.00 | 73566 | 100.00 | 548 |
| Total | 4500.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 729
DATE :12/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°0.00
start stop duration Lon E 11°51.00
TIME :14:14:00 14:34:00 20.0 (min) Purpose : 1
LOG : 1020.00 1020.90 0.9 Region : 3
FDEPTH: 200 220 Gear cond.: 0
BDEPTH: 258 253 Validity : 0
Towing dir: 90° Wire out : 550 m Speed : 2.7 kn
Sorted : 34 Total catch: 197.40 Catch/hour: 592.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dentex macrophthalmus | 293.10 | 1827 | 49.49 | |
| Trachurus capensis | 274.80 | 4230 | 46.40 | 549 |
| Merluccius capensis | 16.50 | 51 | 2.79 | 550 |
| C E P H A L O P O D A | 7.80 | 297 | 1.32 | |
| Total | 592.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 730
DATE :12/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 18°49.98
start stop duration Lon E 12°16.98
TIME :22:46:00 22:56:00 10.0 (min) Purpose : 1
LOG : 1092.60 1093.20 0.6 Region : 3
FDEPTH: 12 30 Gear cond.: 0
BDEPTH: 60 55 Validity : 0
Towing dir: 360° Wire out : 50 m Speed : 3.5 kn
Sorted : 2 Total catch: 1.93 Catch/hour: 11.58

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 8.40 | 1584 | 72.54 | 551 |
| Engraulis capensis | 1.38 | 234 | 11.92 | 553 |
| Dentex macrophthalmus | 1.20 | 6 | 10.36 | |
| Sardinops ocellatus | 0.36 | 42 | 3.11 | 552 |
| Etrumeus whiteheadi | 0.24 | 12 | 2.07 | 554 |
| Total | 11.58 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 731
DATE :13/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°3.00
start stop duration Lon E 12°25.98
TIME :01:31:00 01:56:00 25.0 (min) Purpose : 1
LOG : 1115.30 1116.10 0.8 Region : 3
FDEPTH: 8 10 Gear cond.: 3
BDEPTH: 68 65 Validity : 0
Towing dir: 360° Wire out : 50 m Speed : 2.0 kn
Sorted : 0 Total catch: 0.15 Catch/hour: 0.36

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis, juvenile | 0.36 | 106 | 0.00 | 555 |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 732
DATE :13/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°4.98
start stop duration Lon E 12°25.98
TIME :02:54:00 03:08:00 14.0 (min) Purpose : 1
LOG : 1121.50 1122.00 0.5 Region : 3
FDEPTH: 5 5 Gear cond.: 8
BDEPTH: 77 76 Validity : 0
Towing dir: 360° Wire out : 50 m Speed : 2.8 kn
Sorted : 10 Total catch: 9.55 Catch/hour: 40.93

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sardinops ocellatus | 27.86 | 266 | 68.06 | 556 |
| Engraulis capensis | 4.50 | 197 | 10.99 | 558 |
| Trachurus capensis | 4.29 | 1234 | 10.47 | 559 |
| Trachurus capensis | 3.00 | 47 | 7.33 | 557 |
| Trachipterus trachypterus | 1.29 | 4 | 3.14 | |
| Etrumeus whiteheadi | 0.00 | 4 | 0.00 | |
| Total | 40.93 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 733
DATE :13/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°10.98
start stop duration Lon E 12°31.98
TIME :05:40:00 06:00:00 20.0 (min) Purpose : 1
LOG : 1141.70 1142.60 0.9 Region : 3
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 53 44 Validity : 0
Towing dir: 270° Wire out : 75 m Speed : 3.0 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 734
DATE :13/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°4.98
start stop duration Lon E 12°28.02
TIME :07:59:00 08:14:00 15.0 (min) Purpose : 1
LOG : 1157.80 1158.50 0.7 Region : 3
FDEPTH: 25 25 Gear cond.: 1
BDEPTH: 49 47 Validity : 3
Towing dir: 140° Wire out : 100 m Speed : 3.0 kn
Sorted : 24 Total catch: 202.60 Catch/hour: 810.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 800.00 | 13944 | 98.72 | 560 |
| Argyrosomus hololepidotus | 10.40 | 4 | 1.28 | |
| Total | 810.40 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 735
DATE :13/03/1991 GEAR TYPE: PT NO: 4 POSITION:Lat S 18°48.00
start stop duration Lon E 12°16.98
TIME :14:43:00 15:03:00 20.0 (min) Purpose : 1
LOG : 1218.80 1219.40 0.6 Region : 3
FDEPTH: 0 0 Gear cond.: 0
BDEPTH: 45 52 Validity : 0
Towing dir: 230° Wire out : 50 m Speed : 1.8 kn
Sorted : 1 Total catch: 0.51 Catch/hour: 1.53

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis, juvenile | 1.35 | 4929 | 88.24 | 561 |
| Zeus faber | 0.12 | 3 | 7.84 | |
| Trachurus capensis | 0.06 | 3 | 3.92 | 562 |
| Total | 1.53 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 736
DATE :13/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°34.02
start stop duration Lon E 12°1.02
TIME :22:55:00 23:10:00 15.0 (min) Purpose : 1
LOG : 1296.40 1297.30 0.9 Region : 3
FDEPTH: 58 59 Gear cond.: 0
BDEPTH: 58 59 Validity : 0
Towing dir: 330° Wire out : 300 m Speed : 3.4 kn
Sorted : 8 Total catch: 23.91 Catch/hour: 95.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Callorhinchus capensis | 56.40 | 84 | 58.97 | |
| Trachurus capensis | 32.40 | 708 | 33.88 | 564 |
| Engraulis capensis | 6.00 | 276 | 6.27 | 563 |
| Sardinops ocellatus | 0.60 | 24 | 0.63 | |
| Etrumeus whiteheadi | 0.24 | 12 | 0.25 | |
| Total | 95.64 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 737
DATE :14/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 18°19.02
start stop duration Lon E 11°51.00
TIME :05:48:00 05:58:00 10.0 (min) Purpose : 1
LOG : 1359.90 1360.30 0.4 Region : 3
FDEPTH: 30 45 Gear cond.: 0
BDEPTH: 61 73 Validity : 0
Towing dir: 360° Wire out : 125 m Speed : 2.5 kn
Sorted : 4 Total catch: 14.50 Catch/hour: 87.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Chelidonichthys capensis | 42.00 | 36 | 48.28 | |
| Etrumeus whiteheadi | 39.60 | 1800 | 45.52 | 565 |
| Trachurus capensis | 3.60 | 432 | 4.14 | 566 |
| Thyrsites atun | 1.80 | 12 | 2.07 | |
| Total | 87.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 738
DATE :14/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 18°13.02
start stop duration Lon E 11°51.00
TIME :09:05:00 09:10:00 5.0 (min) Purpose : 1
LOG : 1385.80 1386.30 0.5 Region : 3
FDEPTH: 6 6 Gear cond.: 0
BDEPTH: 32 32 Validity : 0
Towing dir: 270° Wire out : 100 m Speed : 2.8 kn
Sorted : 0 Total catch: 1.00 Catch/hour: 12.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 12.00 | 7140 | 100.00 | 567 |
| Total | 12.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 739
DATE :14/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 18°10.98
start stop duration Lon E 11°49.02
TIME :11:15:00 11:35:00 20.0 (min) Purpose : 1
LOG : 1402.90 1403.80 0.9 Region : 3
FDEPTH: 40 58 Gear cond.: 0
BDEPTH: 47 58 Validity : 0
Towing dir: 220° Wire out : 150 m Speed : 2.7 kn
Sorted : 1 Total catch: 1.44 Catch/hour: 4.32

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 4.20 | 792 | 97.22 | 570 |
| Sardinops ocellatus | 0.09 | 33 | 2.08 | 569 |
| Etrumeus whiteheadi | 0.03 | 18 | 0.69 | 568 |
| Engraulis capensis | 0.00 | 3 | 0.00 | |
| Todarodes sagittatus | 0.00 | 3 | 0.00 | |
| Sepia sp. | 0.00 | 3 | 0.00 | |
| Total | 4.32 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 740
DATE :14/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 18°10.98
start stop duration Lon E 11°46.98
TIME :12:23:00 12:48:00 25.0 (min) Purpose : 1
LOG : 1406.60 1407.80 1.2 Region : 3
FDEPTH: 70 80 Gear cond.: 0
BDEPTH: 75 88 Validity : 0
Towing dir: 270° Wire out : 250 m Speed : 2.8 kn
Sorted : 59 Total catch: 411.81 Catch/hour: 988.34

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sardinops ocellatus | 972.72 | 19289 | 98.42 | 571 |
| Etrumeus whiteheadi | 14.28 | 638 | 1.44 | 572 |
| Engraulis capensis | 0.84 | 84 | 0.08 | 573 |
| Trachurus capensis | 0.50 | 84 | 0.05 | 574 |
| Total | 988.34 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 741
DATE :14/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°7.02
start stop duration Lon E 11°43.02
TIME :15:58:00 16:19:00 21.0 (min) Purpose : 1
LOG : 1437.10 1438.20 1.1 Region : 3
FDEPTH: 100 100 Gear cond.: 0
BDEPTH: 100 100 Validity : 0
Towing dir: 345° Wire out : 500 m Speed : 3.1 kn
Sorted : 59 Total catch: 2364.65 Catch/hour: 6756.14

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 6285.71 | 102994 | 93.04 | 575 |
| Dentex macrophthalmus | 163.43 | 2514 | 2.42 | 578 |
| Merluccius capensis | 125.71 | 489 | 1.86 | 576 |
| Pterothrissus belloci | 100.57 | 2640 | 1.49 | |
| Synagrops microlepis | 44.00 | 5909 | 0.65 | |
| Mustelus palumbes | 14.14 | 6 | 0.21 | |
| Merluccius capensis, juvenile | 10.00 | 1006 | 0.15 | 579 |
| Engraulis capensis | 6.29 | 629 | 0.09 | 577 |
| Todarodes sagittatus | 6.29 | 377 | 0.09 | |
| Total | 6756.14 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 742
DATE :14/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 17°52.02
start stop duration Lon E 11°43.98
TIME :22:16:00 22:28:00 12.0 (min) Purpose : 1
LOG : 1489.40 1490.00 0.6 Region : 3
FDEPTH: 15 25 Gear cond.: 1
BDEPTH: 72 77 Validity : 0
Towing dir: 320° Wire out : 100 m Speed : 3.0 kn
Sorted : 15 Total catch: 309.00 Catch/hour: 1545.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Engraulis capensis | 1500.00 | 79125 | 97.09 | 580 |
| CARCHARHINIDAE | 45.00 | 5 | 2.91 | |
| Total | 1545.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 743
DATE :15/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 17°16.02
start stop duration Lon E 11°43.98
TIME :11:18:00 11:32:00 14.0 (min) Purpose : 1
LOG : 1618.70 1619.40 0.6 Region : 3
FDEPTH: 21 17 Gear cond.: 0
BDEPTH: 21 17 Validity : 0
Towing dir: 180° Wire out : 100 m Speed : 2.5 kn
Sorted : 32 Total catch: 519.30 Catch/hour: 2225.57

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1401.43 | 34586 | 62.97 | 583 |
| Etrumeus whiteheadi | 327.86 | 9836 | 14.73 | 581 |
| Engraulis capensis | 284.79 | 16071 | 12.80 | 582 |
| Mustelus mustelus | 40.29 | 17 | 1.81 | |
| Myliobatis aquila | 29.14 | 9 | 1.31 | |
| Raja sp. | 23.14 | 4 | 1.04 | |
| Pomatomus saltatrix | 22.71 | 9 | 1.02 | |
| Chrysoblephus laticeps | 18.43 | 4 | 0.83 | |
| Callorhinchus capensis | 17.57 | 9 | 0.79 | |
| Zeus faber | 16.29 | 34 | 0.73 | |
| Mustelus palumbes | 14.57 | 9 | 0.65 | |
| TORPEDINIDAE | 10.71 | 4 | 0.48 | |
| Sardinops ocellatus | 9.64 | 129 | 0.43 | 584 |
| Galeichthys feliceps | 3.43 | 17 | 0.15 | |
| Diplodus sargus capensis | 3.00 | 4 | 0.13 | |
| Trichiurus lepturus | 2.57 | 643 | 0.12 | |
| Raja miraletus | 0.00 | 4 | 0.00 | |
| Dicologoglossa cuneata | 0.00 | 64 | 0.00 | |
| Total | 2225.57 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 744
DATE :15/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 17°28.02
start stop duration Lon E 11°36.00
TIME :14:45:00 14:55:00 10.0 (min) Purpose : 1
LOG : 1646.90 1647.30 0.4 Region : 3
FDEPTH: 30 40 Gear cond.: 0
BDEPTH: 111 113 Validity : 0
Towing dir: 360° Wire out : 150 m Speed : 2.5 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 745
DATE :15/03/1991 GEAR TYPE: PT NO: 1 POSITION:Lat S 17°58.02
start stop duration Lon E 11°36.00
TIME :20:45:00 21:20:00 35.0 (min) Purpose : 1
LOG : 1694.40 1696.00 1.6 Region : 3
FDEPTH: 90 120 Gear cond.: 2
BDEPTH: 154 153 Validity : 3
Towing dir: 360° Wire out : 350 m Speed : 3.0 kn
Sorted : 15 Total catch: 112.00 Catch/hour: 192.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 183.60 | 2652 | 95.63 | 585 |
| Chelidonichthys capensis | 7.20 | 60 | 3.75 | |
| Lampanyctodes hectoris | 1.20 | 420 | 0.63 | |
| Total | 192.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 746
DATE :15/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°1.02
start stop duration Lon E 11°28.02
TIME :23:40:00 00:30:00 50.0 (min) Purpose : 1
LOG : 1708.60 1711.10 2.5 Region : 3
FDEPTH: 260 269 Gear cond.: 0
BDEPTH: 260 269 Validity : 0
Towing dir: 330° Wire out : 950 m Speed : 3.1 kn
Sorted : 142 Total catch: 142.20 Catch/hour: 170.64

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 123.84 | 0 | 72.57 | |
| Helicolenus dactylopterus | 30.00 | 0 | 17.58 | |
| Trachurus capensis | 12.00 | 0 | 7.03 | |
| Etmopterus sp. | 4.80 | 1 | 2.81 | |
| Total | 170.64 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 747
DATE :16/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°28.98
start stop duration Lon E 11°31.98
TIME :11:11:00 11:31:00 20.0 (min) Purpose : 1
LOG : 1794.50 1795.40 1.0 Region : 3
FDEPTH: 225 240 Gear cond.: 0
BDEPTH: 225 240 Validity : 0
Towing dir: 290° Wire out : 850 m Speed : 3.3 kn
Sorted : 30 Total catch: 2100.75 Catch/hour: 6302.25

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 5949.60 | 52884 | 94.40 | 586 |
| Merluccius capensis | 269.10 | 0 | 4.27 | |
| Dentex macrophthalmus | 80.40 | 402 | 1.28 | |
| Zeus faber | 3.15 | 0 | 0.05 | |
| Total | 6302.25 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 748
DATE :16/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 18°30.00
start stop duration Lon E 11°43.02
TIME :13:25:00 13:40:00 15.0 (min) Purpose : 1
LOG : 1809.70 1810.50 0.8 Region : 3
FDEPTH: 170 170 Gear cond.: 0
BDEPTH: 170 170 Validity : 0
Towing dir: 345° Wire out : 700 m Speed : 3.1 kn
Sorted : 45 Total catch: 111.80 Catch/hour: 447.20

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 308.00 | 2496 | 68.87 | 587 |
| Dentex macrophthalmus | 127.20 | 952 | 28.44 | 588 |
| Merluccius capensis | 10.40 | 32 | 2.33 | |
| Perulibatrachus rossignoli | 1.00 | 12 | 0.22 | |
| Squalus megalops | 0.60 | 4 | 0.13 | |
| Trachurus capensis, juvenile | 0.00 | 60 | 0.00 | 589 |
| Total | 447.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 749
DATE :17/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°0.00
start stop duration Lon E 12°22.02
TIME :03:12:00 03:26:00 14.0 (min) Purpose : 1
LOG : 1943.20 1943.60 0.4 Region : 3
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 82 78 Validity : 0
Towing dir: 90° Wire out : 50 m Speed : 2.5 kn
Sorted : 22 Total catch: 22.21 Catch/hour: 95.19

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sardinops ocellatus | 74.14 | 600 | 77.89 | 590 |
| Thyrsites atun | 12.43 | 4 | 13.06 | |
| Trachurus capensis | 7.11 | 137 | 7.47 | 592 |
| Trachurus capensis, juvenile | 1.50 | 77 | 1.58 | 591 |
| Total | 95.19 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 750
DATE :17/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 18°55.98
start stop duration Lon E 12°22.98
TIME :04:15:00 04:23:00 8.0 (min) Purpose : 1
LOG : 1949.30 1949.60 0.3 Region : 3
FDEPTH: 20 20 Gear cond.: 0
BDEPTH: 54 61 Validity : 0
Towing dir: 250° Wire out : 100 m Speed : 2.5 kn
Sorted : 42 Total catch: 424.00 Catch/hour: 3180.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Engraulis capensis | 1830.00 | 92422 | 57.55 | 593 |
| Sardinops ocellatus | 1185.00 | 15652 | 37.26 | 594 |
| Trachurus capensis | 165.00 | 2850 | 5.19 | 595 |
| Total | 3180.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 751
DATE :17/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 18°55.02
start stop duration Lon E 12°19.98
TIME :05:00:00 05:16:00 16.0 (min) Purpose : 1
LOG : 1953.30 1954.10 0.8 Region : 3
FDEPTH: 20 20 Gear cond.: 0
BDEPTH: 77 68 Validity : 0
Towing dir: 90° Wire out : 100 m Speed : 3.0 kn
Sorted : 7 Total catch: 68.86 Catch/hour: 258.23

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis, juvenile | 243.00 | 49590 | 94.10 | 597 |
| Engraulis capensis | 15.00 | 2175 | 5.81 | 596 |
| Sardinops ocellatus | 0.19 | 75 | 0.07 | |
| Dicologoglossa cuneata | 0.04 | 4 | 0.01 | |
| Total | 258.23 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 752
DATE :17/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 18°52.02
start stop duration Lon E 12°19.98
TIME :05:55:00 06:05:00 10.0 (min) Purpose : 1
LOG : 1958.00 1958.40 0.4 Region : 3
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 55 52 Validity : 0
Towing dir: 100° Wire out : 100 m Speed : 2.4 kn
Sorted : 18 Total catch: 701.54 Catch/hour: 4209.24

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sardinops ocellatus | 4200.00 | 39462 | 99.78 | 598 |
| Trachurus capensis | 4.62 | 2076 | 0.11 | |
| Engraulis capensis | 4.62 | 924 | 0.11 | |
| Total | 4209.24 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 753
DATE :17/03/1991 GEAR TYPE: PT NO: 0 POSITION:Lat S 18°52.02
start stop duration Lon E 12°19.02
TIME :06:52:00 07:00:00 8.0 (min) Purpose : 1
LOG : 1964.00 1964.30 0.3 Region : 3
FDEPTH: 15 15 Gear cond.: 0
BDEPTH: 66 62 Validity : 0
Towing dir: 90° Wire out : 100 m Speed : 2.5 kn
Sorted : 2 Total catch: 5.40 Catch/hour: 40.50

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Engraulis capensis | 22.50 | 1800 | 55.56 | 599 |
| Trachurus capensis | 18.00 | 2880 | 44.44 | 600 |
| Total | 40.50 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 754
DATE :17/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°1.02
start stop duration Lon E 12°27.00
TIME :09:33:00 09:52:00 19.0 (min) Purpose : 1
LOG : 1983.60 1984.70 1.1 Region : 3
FDEPTH: 25 20 Gear cond.: 0
BDEPTH: 43 36 Validity : 0
Towing dir: 5° Wire out : 150 m Speed : 3.2 kn
Sorted : 10 Total catch: 303.10 Catch/hour: 957.16

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 947.37 | 28911 | 98.98 | 601 |
| Thyrsites atun | 8.21 | 3 | 0.86 | |
| Galeichthys feliceps | 1.58 | 3 | 0.16 | |
| Total | 957.16 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 755
DATE :17/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°18.00
start stop duration Lon E 12°34.98
TIME :13:40:00 14:10:00 30.0 (min) Purpose : 1
LOG : 2020.30 2021.60 1.3 Region : 3
FDEPTH: 20 38 Gear cond.: 0
BDEPTH: 63 65 Validity : 0
Towing dir: 230° Wire out : 100 m Speed : 2.6 kn
Sorted : 8 Total catch: 11.89 Catch/hour: 23.78

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 23.70 | 1714 | 99.66 | 602 |
| Engraulis capensis | 0.06 | 42 | 0.25 | 603 |
| Sardinops ocellatus | 0.02 | 16 | 0.08 | 604 |
| Total | 23.78 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 756
DATE :17/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°40.02
start stop duration Lon E 12°46.02
TIME :20:25:00 20:33:00 8.0 (min) Purpose : 1
LOG : 2081.30 2081.60 0.3 Region : 3
FDEPTH: 20 20 Gear cond.: 0
BDEPTH: 60 59 Validity : 0
Towing dir: 325° Wire out : 100 m Speed : 2.1 kn
Sorted : 10 Total catch: 500.00 Catch/hour: 3750.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 3750.00 | 64875 | 100.00 | 605 |
| Total | 3750.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 757
DATE :18/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°40.98
start stop duration Lon E 12°49.98
TIME :02:00:00 02:20:00 20.0 (min) Purpose : 1
LOG : 2134.60 2135.50 0.9 Region : 3
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 37 43 Validity : 0
Towing dir: 215° Wire out : 50 m Speed : 2.7 kn
Sorted : 24 Total catch: 57.97 Catch/hour: 173.91

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 129.60 | 5541 | 74.52 | 606 |
| Argyrosomus hololepidotus | 23.70 | 3 | 13.63 | |
| Sardinops ocellatus | 15.60 | 144 | 8.97 | 607 |
| Callorhinchus capensis | 3.00 | 3 | 1.73 | |
| Engraulis capensis | 0.90 | 36 | 0.52 | 608 |
| Galeichthys feliceps | 0.63 | 9 | 0.36 | |
| Etrumeus whiteheadi | 0.48 | 18 | 0.28 | 609 |
| Total | 173.91 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 758
DATE :18/03/1991 GEAR TYPE: PT NO: 4 POSITION:Lat S 19°40.02
start stop duration Lon E 12°48.00
TIME :03:53:00 04:09:00 16.0 (min) Purpose : 1
LOG : 2146.60 2147.30 0.7 Region : 3
FDEPTH: 5 5 Gear cond.: 0
BDEPTH: 49 50 Validity : 0
Towing dir: 330° Wire out : 150 m Speed : 2.6 kn
Sorted : 39 Total catch: 3013.40 Catch/hour: 11300.25

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sardinops ocellatus | 9513.75 | 71944 | 84.19 | 611 |
| Trachurus capensis | 1761.38 | 58714 | 15.59 | 610 |
| Argyrosomus hololepidotus | 13.88 | 4 | 0.12 | |
| Engraulis capensis | 11.25 | 1155 | 0.10 | |
| Total | 11300.25 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 759
DATE :18/03/1991 GEAR TYPE: PT NO: 2 POSITION:Lat S 19°36.00
start stop duration Lon E 12°46.98
TIME :08:06:00 08:36:00 30.0 (min) Purpose : 1
LOG : 2178.20 2179.90 1.7 Region : 3
FDEPTH: 20 20 Gear cond.: 0
BDEPTH: 39 33 Validity : 0
Towing dir: 63° Wire out : 100 m Speed : 3.3 kn
Sorted : 18 Total catch: 300.00 Catch/hour: 600.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 600.00 | 20024 | 100.00 | 612 |
| Total | 600.00 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN" SURVEY:1991402 STATION: 760
DATE :18/03/1991 GEAR TYPE: BT NO: 1 POSITION:Lat S 19°30.00
start stop duration Lon E 12°6.00
TIME :13:06:00 13:36:00 30.0 (min) Purpose : 1
LOG : 2223.68 2225.08 1.6 Region : 3
FDEPTH: 252 253 Gear cond.: 0
BDEPTH: 252 253 Validity : 0
Towing dir: 350° Wire out : 900 m Speed : 3.2 kn
Sorted : 44 Total catch: 65.45 Catch/hour: 130.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 118.00 | 430 | 90.15 | 614 |
| Trachurus capensis | 12.90 | 130 | 9.85 | 613 |
| MYCTOPHIDAE | 0.00 | 2 | 0.00 | |
| Total | 130.90 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991402  STATION:  761
DATE  :18/03/1991  GEAR TYPE: PT NO:  0  POSITION:Lat  S 19°30.00
start  stop  duration  Lon  E 11°39.00
TIME  :16:26:00 17:26:00  60.0 (min)  Purpose  : 1
LOG  : 2250.26  2253.07  2.2  Region  : 3
FDEPTH:  200  424  Gear cond.: 0
BDEPTH:  376  424  Validity  : 0
Towing dir: 250°  Wire out  : 1200 m  Speed  : 2.2 kn
Sorted  :  66  Total catch: 98.10  Catch/hour: 98.10

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Merluccius capensis | 38.00 | 46 | 38.74 | 615 |
| Helicolenus dactylopterus | 36.20 | 168 | 36.90 | |
| Merluccius paradoxus | 8.40 | 8 | 8.56 | 616 |
| Neoharriotta pinnata | 3.60 | 6 | 3.67 | |
| Schedophilus huttoni | 2.60 | 1 | 2.65 | |
| Chlorophthalmus punctatus | 1.80 | 63 | 1.83 | |
| Ebinania costaecanarie | 1.80 | 27 | 1.83 | |
| Todarodes sagittatus | 1.80 | 3 | 1.83 | |
| PHOTICHTHYIDAE | 1.00 | 220 | 1.02 | |
| Plesionika martia | 1.00 | 490 | 1.02 | |
| MACROURIDAE | 0.60 | 15 | 0.61 | |
| Lampanyctodes hectoris | 0.50 | 150 | 0.51 | |
| Lepidopus caudatus | 0.50 | 1 | 0.51 | |
| Epigonus denticulatus | 0.30 | 18 | 0.31 | |
| Total | 98.10 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991402  STATION:  762
DATE  :19/03/1991  GEAR TYPE: PT NO:  2  POSITION:Lat  S 19°58.98
start  stop  duration  Lon  E 12°58.98
TIME  :15:30:00 15:45:00  15.0 (min)  Purpose  : 1
LOG  : 2434.00  2434.63  0.6  Region  : 3
FDEPTH:  10  17  Gear cond.: 0
BDEPTH:  35  34  Validity  : 0
Towing dir: 340°  Wire out  : 50  m  Speed  : 2.6 kn
Sorted  :  9  Total catch: 8.70  Catch/hour: 34.80

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 34.80 | 932 | 100.00 | 617 |
| Total | 34.80 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991402  STATION:  763
DATE  :19/03/1991  GEAR TYPE: PT NO:  2  POSITION:Lat  S 20°37.98
start  stop  duration  Lon  E 13°19.02
TIME  :21:12:00 21:35:00  23.0 (min)  Purpose  : 1
LOG  : 2488.80  2489.80  1.0  Region  : 3
FDEPTH:  5  15  Gear cond.: 1
BDEPTH:  31  34  Validity  : 2
Towing dir: 330°  Wire out  : 100  m  Speed  : 2.5 kn
Sorted  : 151  Total catch: 1015.00  Catch/hour: 2647.83

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 1565.22 | 35572 | 59.11 | 619 |
| Sardinops ocellatus | 1043.48 | 14703 | 39.41 | 618 |
| Thyrsites atun | 34.43 | 55 | 1.30 | |
| Galeichthys feliceps | 4.70 | 8 | 0.18 | |
| Total | 2647.83 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991402  STATION:  764
DATE  :19/03/1991  GEAR TYPE: PT NO:  2  POSITION:Lat  S 20°40.98
start  stop  duration  Lon  E 13°19.02
TIME  :22:55:00 23:10:00  15.0 (min)  Purpose  : 1
LOG  : 2497.70  2498.40  0.7  Region  : 3
FDEPTH:  12  14  Gear cond.: 0
BDEPTH:  31  32  Validity  : 0
Towing dir: 350°  Wire out  : 75  m  Speed  : 2.8 kn
Sorted  :  26  Total catch: 507.30  Catch/hour: 2029.20

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 2000.00 | 41392 | 98.56 | 620 |
| Thyrsites atun | 29.20 | 12 | 1.44 | |
| Galeichthys feliceps | 0.00 | 0 | 0.00 | |
| Sardinops ocellatus | 0.00 | 0 | 0.00 | |
| Callorhinchus capensis | 0.00 | 0 | 0.00 | |
| TRIAKIDAE | 0.00 | 4 | 0.00 | |
| Chelidonichthys capensis | 0.00 | 0 | 0.00 | |
| Total | 2029.20 | | 100.00 | |

R/V "DR. FRIDTJOF NANSEN"  SURVEY:1991402  STATION:  765
DATE  :20/03/1991  GEAR TYPE: PT NO:  2  POSITION:Lat  S 21°10.98
start  stop  duration  Lon  E 13°31.98
TIME  :03:20:00 03:40:00  20.0 (min)  Purpose  : 1
LOG  : 2536.90  2538.10  1.2  Region  : 2
FDEPTH:  10  10  Gear cond.: 3
BDEPTH:  47  40  Validity  : 0
Towing dir: 315°  Wire out  : 75  m  Speed  : 3.0 kn
Sorted  :  27  Total catch: 40.13  Catch/hour: 120.39

| SPECIES | CATCH/HOUR weight | CATCH/HOUR numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trachurus capensis | 120.39 | 2271 | 100.00 | 621 |
| Total | 120.39 | | 100.00 | |

## ANNEX III INSTRUMENTS AND FISHING GEAR USED

### ACOUSTIC INSTRUMENTS

A SIMRAD scientific echo sounder, EK 500/38kHz, was used during the survey for estimation of fish density.

Based on a calibration experiment using a standard copper sphere in Baia dos Tigres on 25th February 1991, the following settings were used:

| | |
|---|---|
| Absorption coeff. | 10 dB/km |
| Pulse length | Medium |
| Bandwidth | Wide |
| Max. power | 2000 W |
| Angle sensitivity | 21.9 |
| 2-way beam angle | -21.0 dB |
| Sv transd. gain | 28.0 dB |
| Ts transd. gain | 28.0 dB |
| 3 dB beamwidth | 6.9° |
| Along-ship offset | 0° |
| Athwart-ship | 0° |

### HYDROGRAPHY

Temperature, salinity and oxygen were sampled at standard depths with Nansen bottles. Oxygen was measured with the Winkler method and salinity determined with an inductive salinometer.

### FISHING GEAR

Bottom trawl: High opening shrimp and fish trawl with net headline 31 m (floatline), footrope 47 m, gear with 12 cm diameter roller disks, 40 m sweeps, estimated headline height 6 m and distance between wings during towing 18-20 m. This gear was also used for some of the mid-water trawls.

Pelagic trawl: Type Modified "Harstadtrawl" with a vertical opening of 20-25 m.

Cod ends of trawls with fine meshed inner lining.