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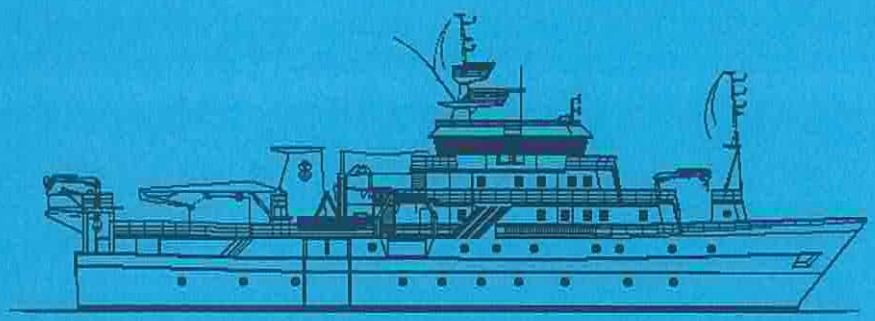
CRUISE REPORTS "DR. FRIDTJOF NANSEN"



SURVEYS OF THE FISH RESOURCES OF NAMIBIA

Cruise Report No 2/95

Part I
Surveys of the hake stocks
22 April - 28 May 1995

Part II
Surveys of the offshore and inshore horse mackerel stock
1 - 22 June 1995

Ministry of Fisheries & Marine Resources
Swakopmund
Republic of Namibia

Institute of Marine Research
Bergen
Norway

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

The programme has comprised the following surveys:

Survey	1/90	25 January to 19 March 1990
"	2/90	27 May to 20 June 1990
"	3/90	11 September to 6 October 1990
"	1/91	25 January to 23 March 1991
"	2/91	23 October to 16 December 1991
"	1/92	23 April to 21 June 1992
"	2/92	20 October to 16 December 1992
"	1/93	20 January to 19 March 1993
"	2/93	21 April to 25 May 1993
"	1/94	19 January to 21 February 1994 (First survey with the new R/V 'Dr. Fridtjof Nansen'.)
"	2/94	26 April to 24 June 1994
"	3/94	19 October to ?? December 1994
"	1/95	16 January to 19 February 1995

CRUISE REPORT 'DR. FRIDTJOF NANSEN'

SURVEY OF THE FISH RESOURCES OF NAMIBIA

Preliminary Report: Cruise No 2/95

Part I
Survey of the hake stocks
22 April - 28 May 1995

by

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Institute of Marine Research
Bergen, 1996

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CHAPTER 1 INTRODUCTION

1.1 GENERAL OBJECTIVES

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

The main objectives were agreed as follows:

> To describe the distribution, composition and abundance of the most important fish resources. Small pelagic fish, including horse mackerel, pilchard and anchovy would be investigated by the acoustic integration method combined with sampling with mid-water and bottom trawls. A swept area trawl survey programme would be used for the demersal stocks. All catches would be sampled by species, weight and numbers, including biological sampling of the commercially important stocks.
>
> To carry out environmental studies including recording of surface temperature on a continuous basis and hydrographic sampling on a series of fixed profiles.

1.2 OBJECTIVES OF SURVEY 2/1995

The main objectives were to continue to monitor the abundance, geographic distribution and size composition of the hake stocks within the Namibian EEZ and to describe the trends in development of the hake stocks. These objectives conform with the aim set by the Government White Paper of rebuilding the hake stocks. As secondary objectives, the lesser abundant, but commercial important species as monk, sole and kingklip would be studied in detail as these species form the bycatch of hake survey in Namibia. As part of the hake research, environment parameters, as temperature, salinity, dissolved oxygen where recorded at each trawling station in order to improve knowledge on the influence of the physical environment on the hake distribution. On this particular survey, an acoustic current Doppler profiler (ADCP) was also used to monitor the general current pattern in the survey area, and a current meter data rig holding three current meters was deployed for 18 days off Walvis Bay at position 23°00'S 13°34'E.

Apart from standardized catch rates of hake and other demersal fishes, the biological sampling programme included sampling of otoliths of hake and monk, individual length weight measurements, and also a series of morphometric characters on hake.

The acoustic system was used to observe possible mid-water occurrence of the hakes. The survey design for the swept-area trawl programme was based on a semi-random distribution of hauls along regular transects perpendicular to the coast. The transect distance was normally 20 nm, except in the very southern part where the distance was 30 nm due to a persistent lower density of fish observed during the previous period of the survey programme. On the slope the stations were laid out to cover the depth ranges of the two hake species. The on-shelf stations where laid out 10 to 15 nm apart until the zero density line for hake were found. Biomass estimates of hake were based on post stratification by depth and density aggregations. Different methods for correcting the bottom trawl estimate for hake above the headline of the bottom trawl are investigated. Additional research objectives on this particular survey included:

Optimize settings of the acoustic instruments in order to improve registration of hake in the pelagic region, in particular when mixed with plankton.

Carry out experiments to assess vertical avoidance of hake during the trawling process, to better understand how the bottom trawl density estimate should be accordingly corrected.

Carry out *in situ* target strength measurements of hake at selected stations where specific length groups of hake were trawled.

Monitor and record the trawl performance, in order to document the efficiency of the warp constraining method.

Special survey considerations:

A tickler chain was mounted to improve the catchability of monk and sole. In order to test its performance on the catchability of the main demersal species the chain was fitted on every second bottom trawl haul only (Annex 6).

1.3 PARTICIPATION

The scientific staff consisted of:

From Ministry of Fisheries & Marine Resources (MFMR), Swakopmund:

Hilma ASINO (until 12/5), Filimon DAUSAB, Johnny GAMATHAM, Hashali HAMUKUAYA (from 14/5), Heinrich LESCH, Lima MAARTENS (until 12/5), Heidrun PLARRE (from 14/5), Malakia SHIMHANDA, Lizette VOGES (until 12/5).

From Sea Fisheries Research Institute (SFRI), Cape Town:

Alan J. BOYD (until 27/4).

From Institute of Marine Research (IMR), Bergen:

Oddgeir ALVHEIM, Svein FLOEN, Terje HAUGLAND, Erling MOLVÆR, Egil ONA (until 12/5) and Tore STRØMME (from 12/5).

1.4 NARRATIVE

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

The vessel left Cape Town on the morning of 20 April. Calibration of the ADCP started during the steaming northwards to Orange River where the demersal survey commenced. Trawling was mainly carried out during daylight hours. CTD-stations were taken at most trawl stations in order to map environment conditions in relation to fish distribution. In the Orange Bank area the ADCP was collecting data on CTD stations, trawl stations and while steaming, in order to improve instrument settings for data collection. From Lüderitz to Cunene River ADCP profiles were collected on each CTD station and along selected transects across the shelf steaming at 8 knots. *In situ* target strength (TS) measurements were collected at several localities by lowering the a pressure stabilized 38 kHz transducer on 400 m split beam cable, the "TS sonde" to about 50 m above the fish, or until the fish was clearly separated in single fish traces. Investigations of fish vessel avoidance were conducted from a stationary skiff, using a portable Simrad EY-500 echosounder. Observations were made both while the main vessel were steaming and trawling past the stationary skiff. On 9 May a moored rig holding three current meters was deployed west off Walvis Bay in position 23°01.1'S 13°33.7'E. The ADCP was collecting data near the moored

rig for two hours immediately after the mooring and four CTD stations were made near the rig. On May 11, the vessel called on Walvis Bay for crew change.

The vessel left for the last leg of the survey on 14 May after some delay due to faults in the hydraulic system. The work was continued northwards following the standard grid pattern and the northern border was reached on 26 May. On return to Walvis Bay the moored buoy was retrieved and arrival in port was on the morning of 28 May.

For most part of the survey the weather conditions were favourable, and no regular work had to be interrupted. However, the abundance of jellyfish in Namibian waters has been increasing during the last year and caused about ten trawl stations to be aborted in this survey. Densest concentrations were observed on the inner shelf (150-250 m) between Lüderitz and Conception Bay where most trawl stations were cancelled. Occasionally the jellies also caused problems on the slope. The survey was completed with 35 sea-days and two days lost in port for extraordinary maintenance. 38-40 days must be considered as optimal for this survey task and would allow some additional time for experimental work. 184 bottom trawl 1 pelagic trawl and 184 CTD-stations were sampled.

One of the suggested objectives prior to the survey, namely to map the distribution of horse mackerel in the survey area of the hakes was partly omitted, as an optimum setting of the acoustic instruments for the detection of hake would not be obtained if the entire depth distribution of horse mackerel should be covered. The use of elevated ping rate and bottom locked, 250 m observation depth for all devices connected to the sounder, prevented a full coverage of the upper layers when working in deep waters.

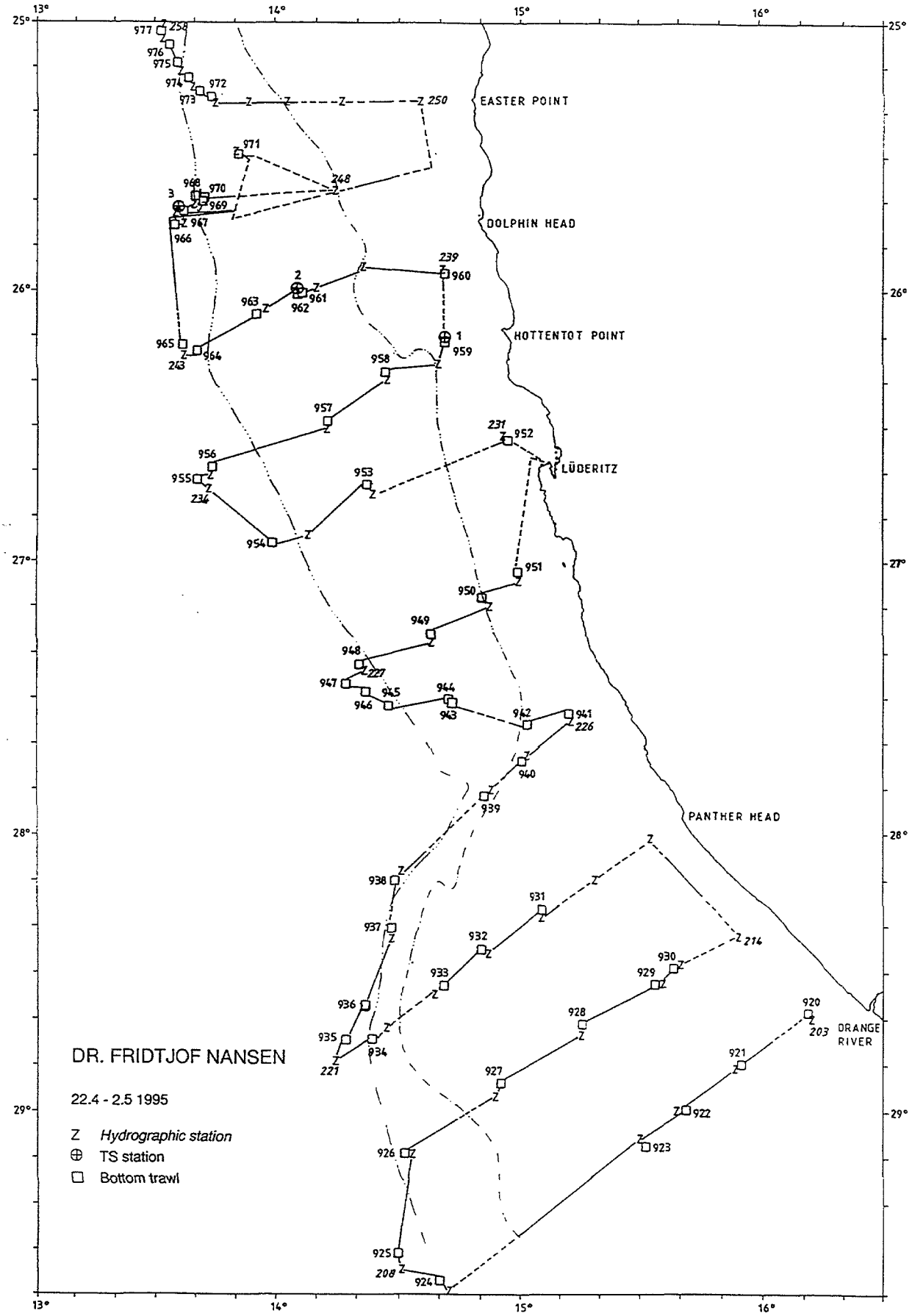


Figure 1a Southern Region (Orange River to St. Francis Bay). Course tracks, fishing stations and hydrographic stations.

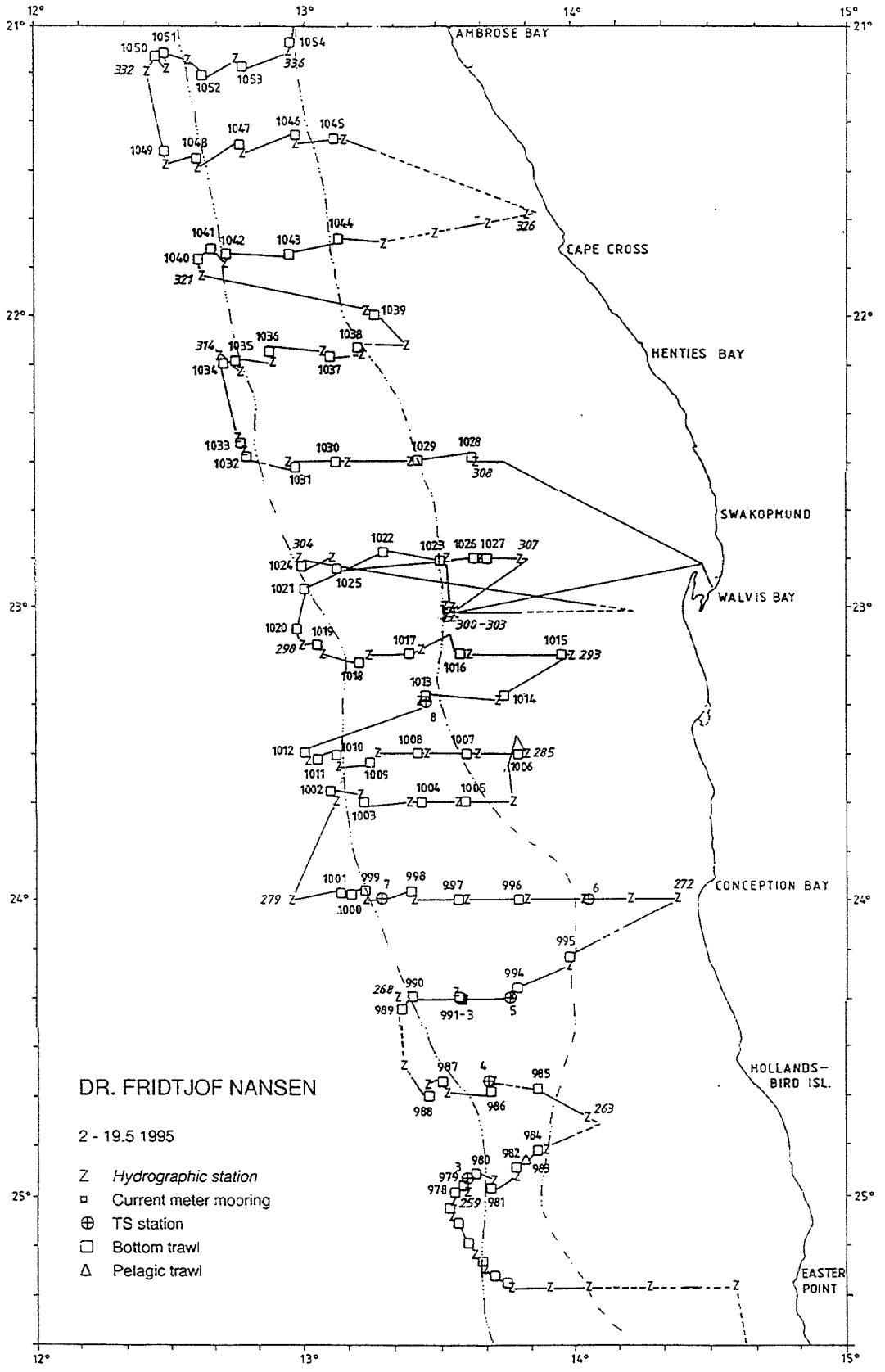


Figure 1b Central Region (St. Francis Bay to Ambrose Bay). Course tracks, fishing stations and hydrographic stations.

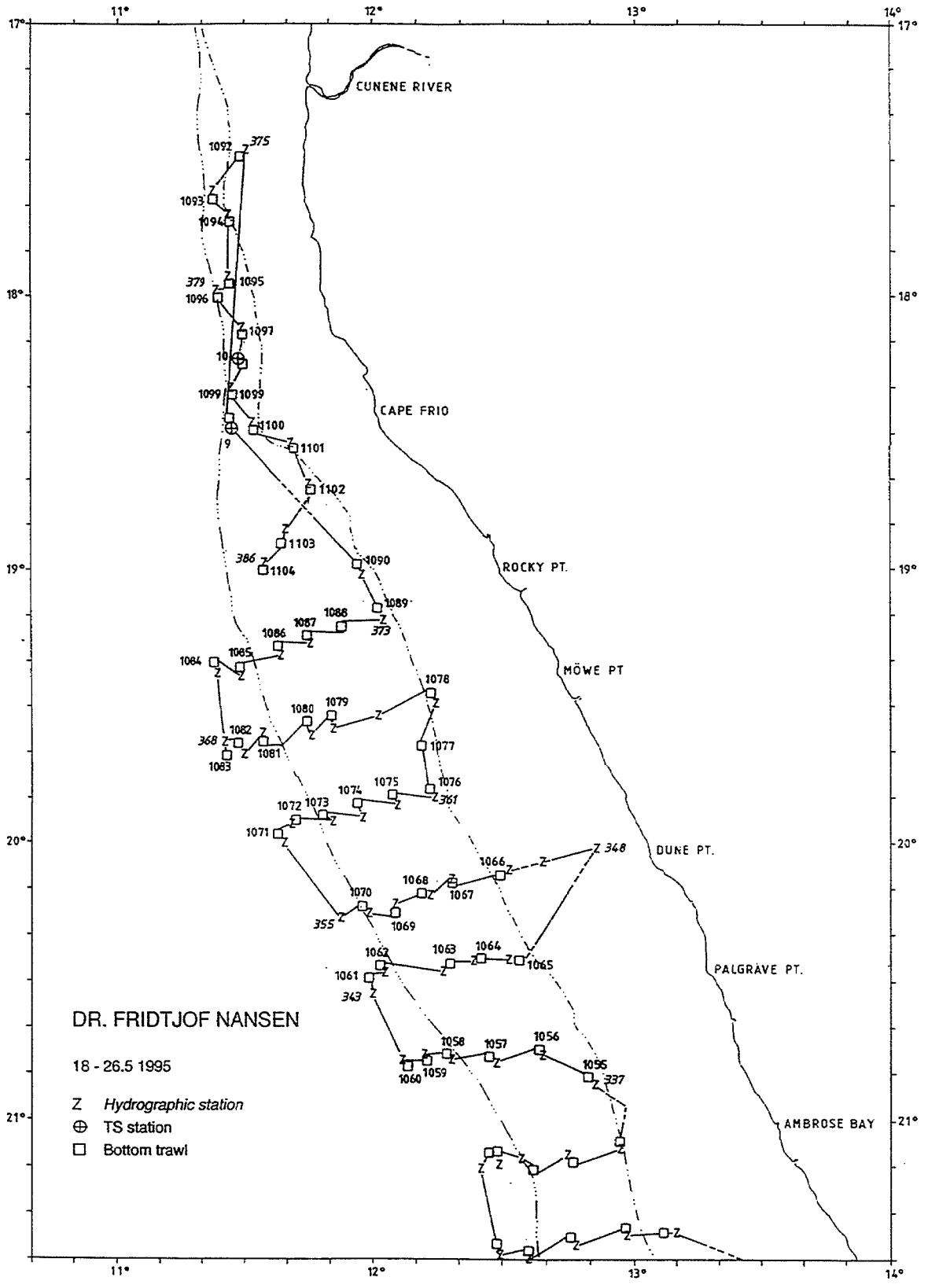


Figure 1c Northern Region (Ambrose Bay to Cunene River). Course tracks, fishing stations and hydrographic stations.

CHAPTER 2 HYDROGRAPHY

Sea temperature at 5 m depth was continuously recorded along the cruise track and is shown in Figures 3a-c. Strong southern winds prevailed during most of the survey making conditions favorable for upwelling. The minimum surface temperatures found near the coast indicate active upwelling, and the Lüderitz upwelling cell may be identified by near shore surface temperature below 13°C.

Note that the surface temperature generally is increasing northwards until Dune Point, where the gradient reverses. This is also probably due to upwelling; north of Dune Point the shelf is narrow, and prevailing upwelling favourable winds may provoke lifting of colder water masses from deeper levels than further south. However, this may also be due to a temporal rather than a spatial variation, as the northern part was surveyed some days after the central part, a steady upwelling favourable wind will also lift up water masses from increasingly deeper levels.

The relative more intense upwelling in the Northern Region is also confirmed by the vertical sections, shown in Figures 2a-b. Comparing the sections at Hottentot Point, close to the Lüderitz upwelling cell, and the Dune Point in the northern part, we note that the horizontal temperature gradient in the surface layers provoked by the upwelling is about twice as big in the northern section.

Oxygen profiles were recorded at all fishing stations on the shelf from Holland Bird Island and northwards. The distribution close to the bottom is shown in Figures 4a-c, and the vertical distribution in Figures 2a-b. Of particular interest is the bottom oxygen minimum layer (O_2<0:5ml/l) usually found between 100 and 200 m depth. The distribution of Cape hake, overlaid the bottom oxygen distribution given in Figures 4a-c, show the main part of the stock is found deeper than the oxygen minimum layer.

Some results from the ADCP current measurements south of Lüderitz (by A. Boyd)

On the central Orange Bank the currents converged in a southward flow on the southernmost line. Offshore currents were northerly (apparently strong on the shelf-edge). Data on line 2 were sparse but showed southerly flow inshore. The measurements on line 3 (offshore SW from 28°S) are reproduced in two vertical sections of N/S and E/W components in Figure 5. The north

component was strongest inshore and in an upper mid-water belt over the shelf edge, with isotachs following the bathymetry. At 150 m off the shelf edge a southerly core was observed. In the E/W profile a westerly core partly coincided with the southerly core subsurface whilst strong easterly (onshore) flow occurred in mid-water close to the coast. (Is this water moving onshore and then northwards to supply the Lüderitz upwelling cell to the north?) On the next two lines (not shown) northerly flow at 35 m was observed to predominate, reading 40 cm/s over the shelf edge in places. Weak southward flow in mid-water (at a 500 m shelfedge station) did not coincide with a low oxygen minimum or salinity maximum, but the flow core was restricted to above the thermocline at 50 m.

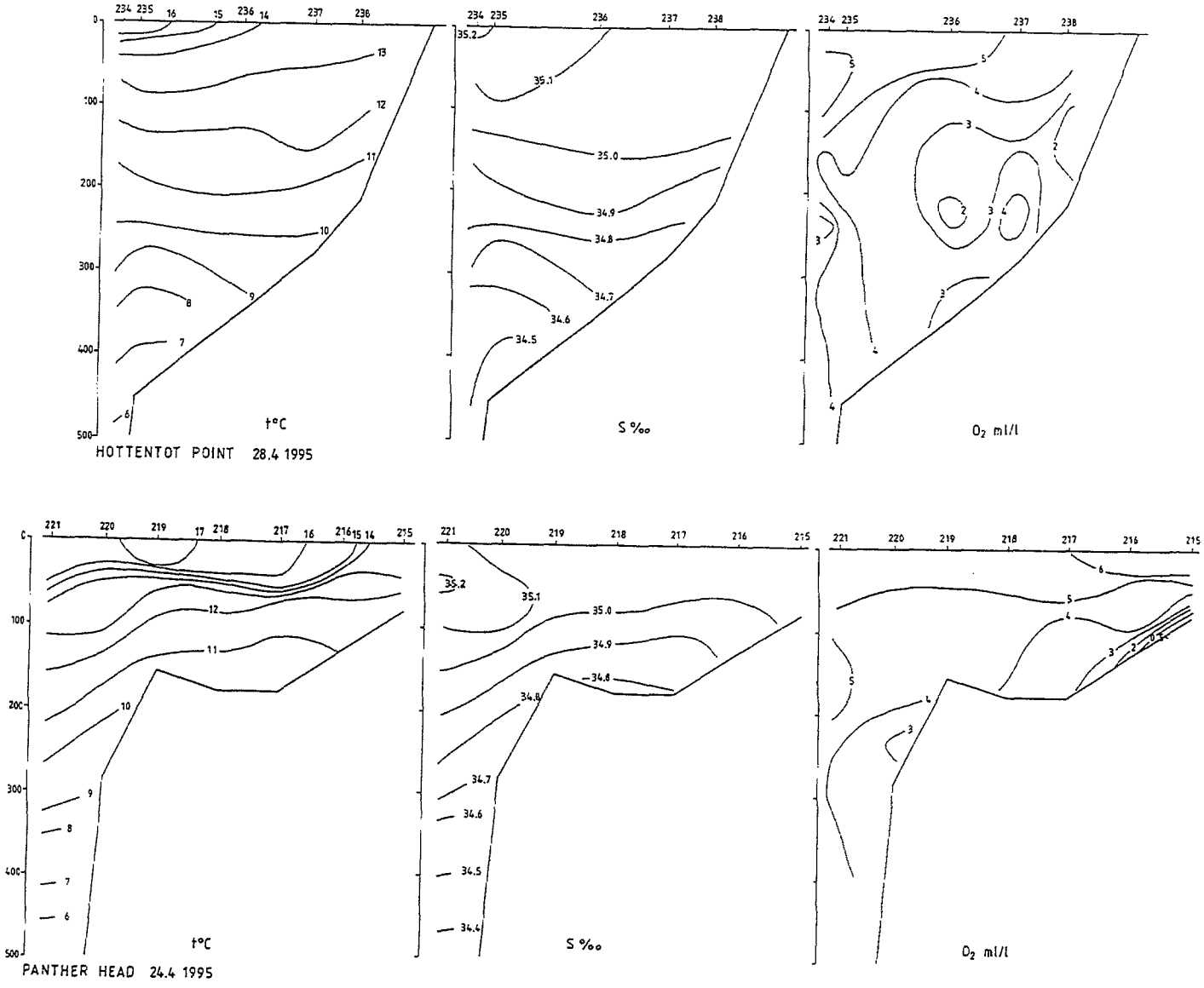


Figure 2a Temperature, salinity and oxygen in the standard profiles worked.

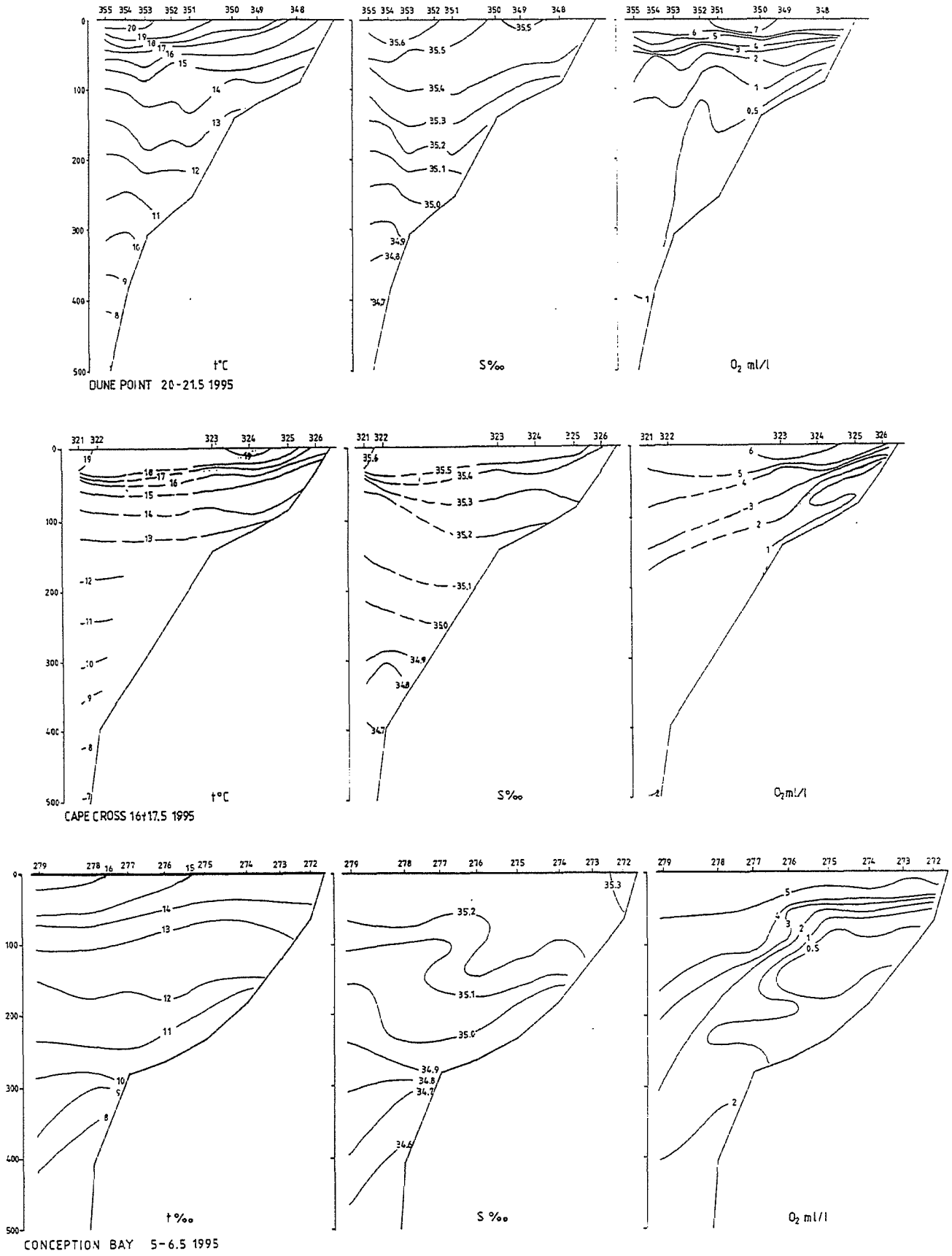


Figure 2b Temperature, salinity and oxygen in the standard profiles worked.

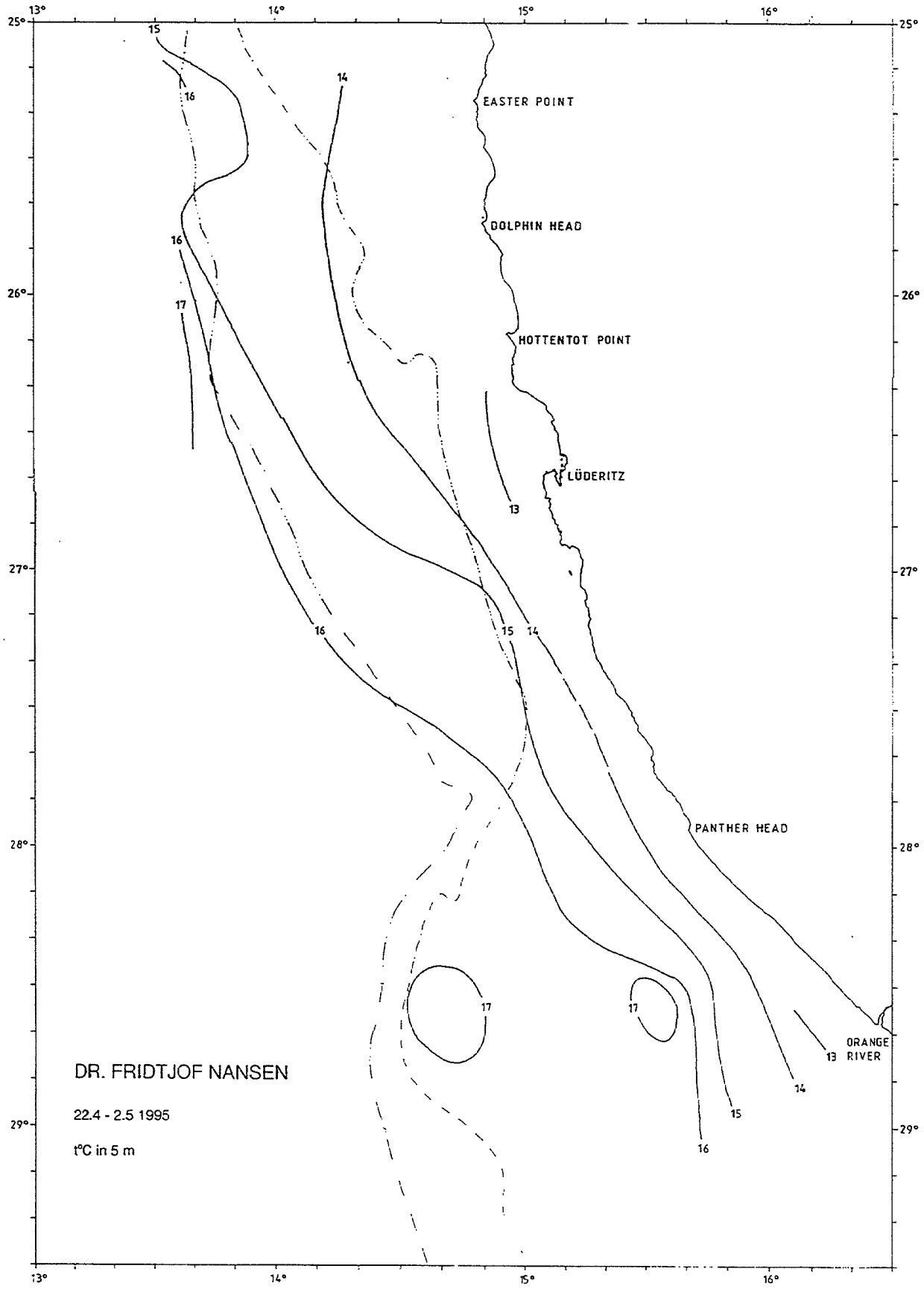


Figure 3a Orange River to St. Francis Bay. Distribution of sea temperature at 5 m depth.

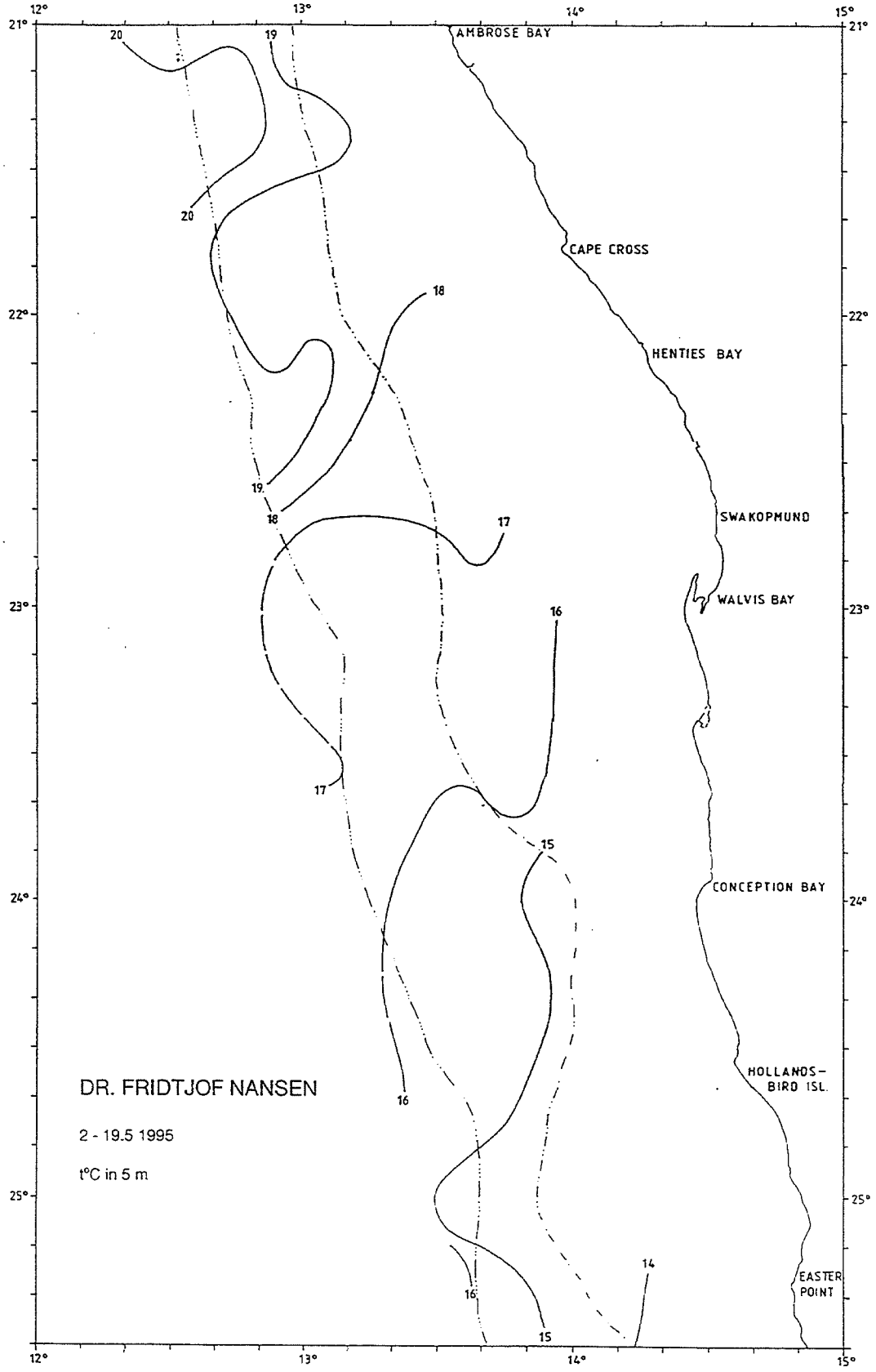


Figure 3b St. Francis Bay to Ambrose Bay. Distribution of sea temperature at 5 m depth.

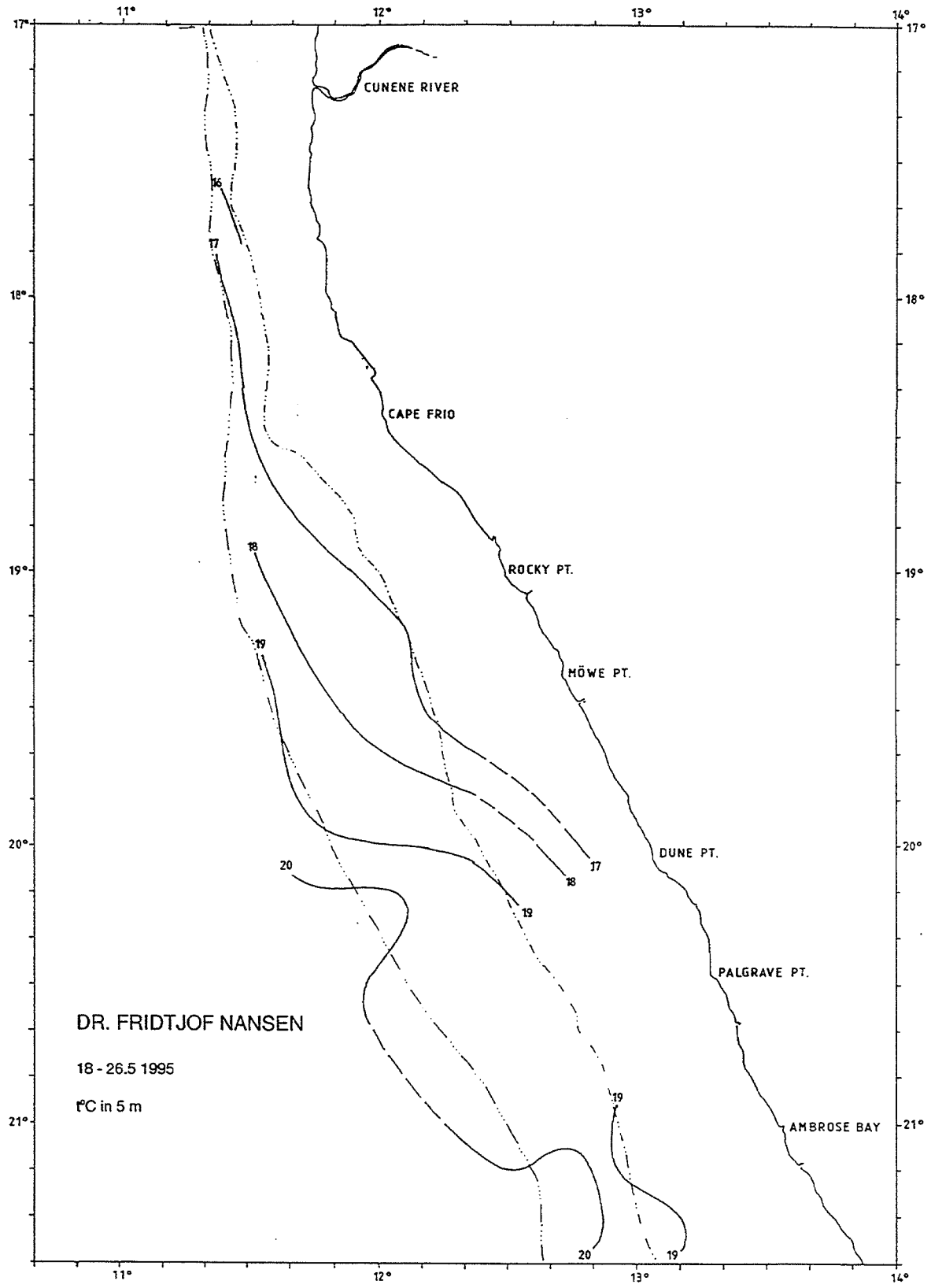


Figure 3c Ambrose Bay to Cunene River. Distribution of sea temperature at 5 m depth.

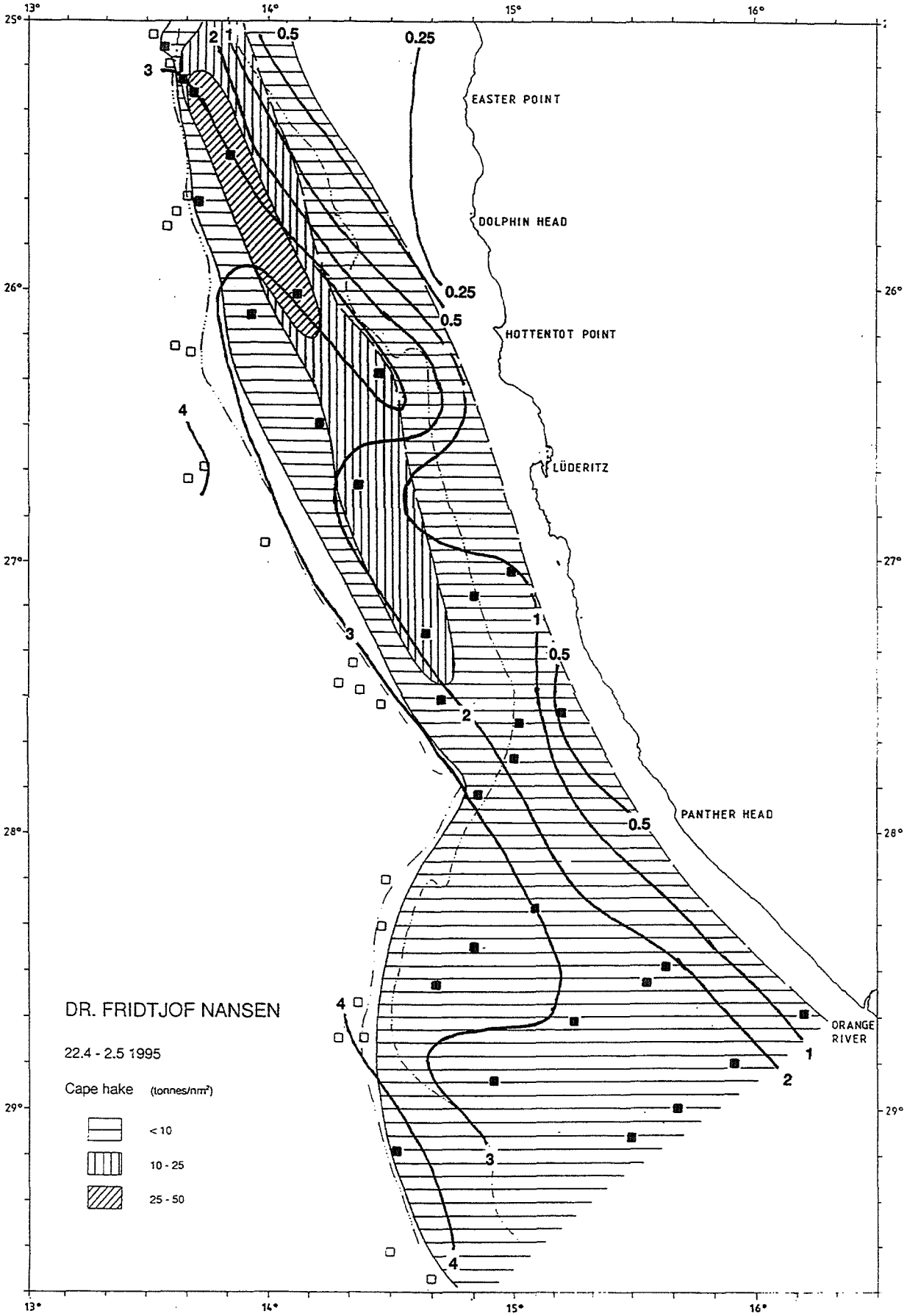


Figure 4a Orange River to St. Francis Bay. Distribution of Cape hake and oxygen (ml/l) near the bottom.

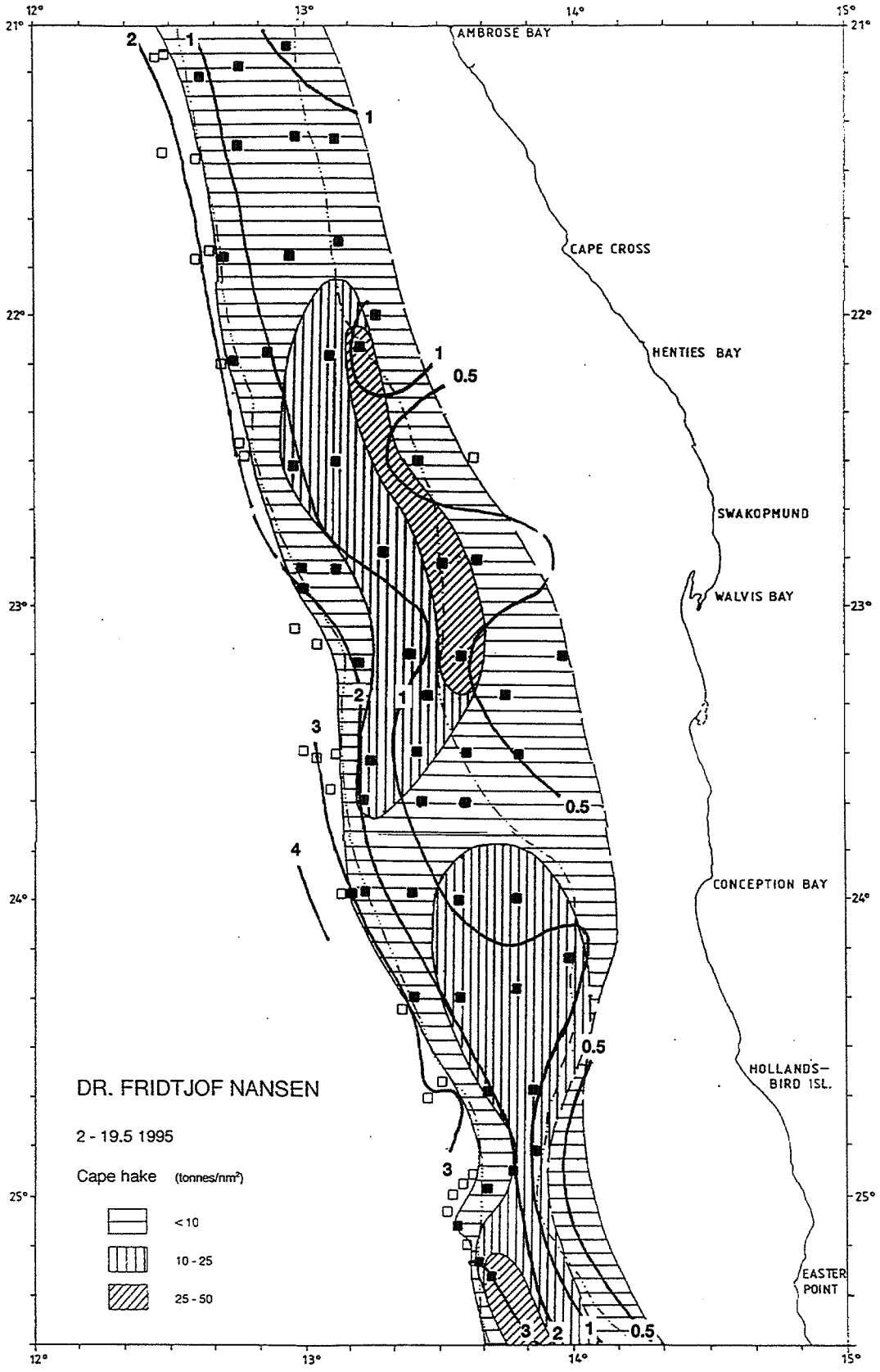


Figure 4b St. Francis Bay to Ambrose Bay. Distribution of Cape hake and oxygen (ml/l) near the bottom.

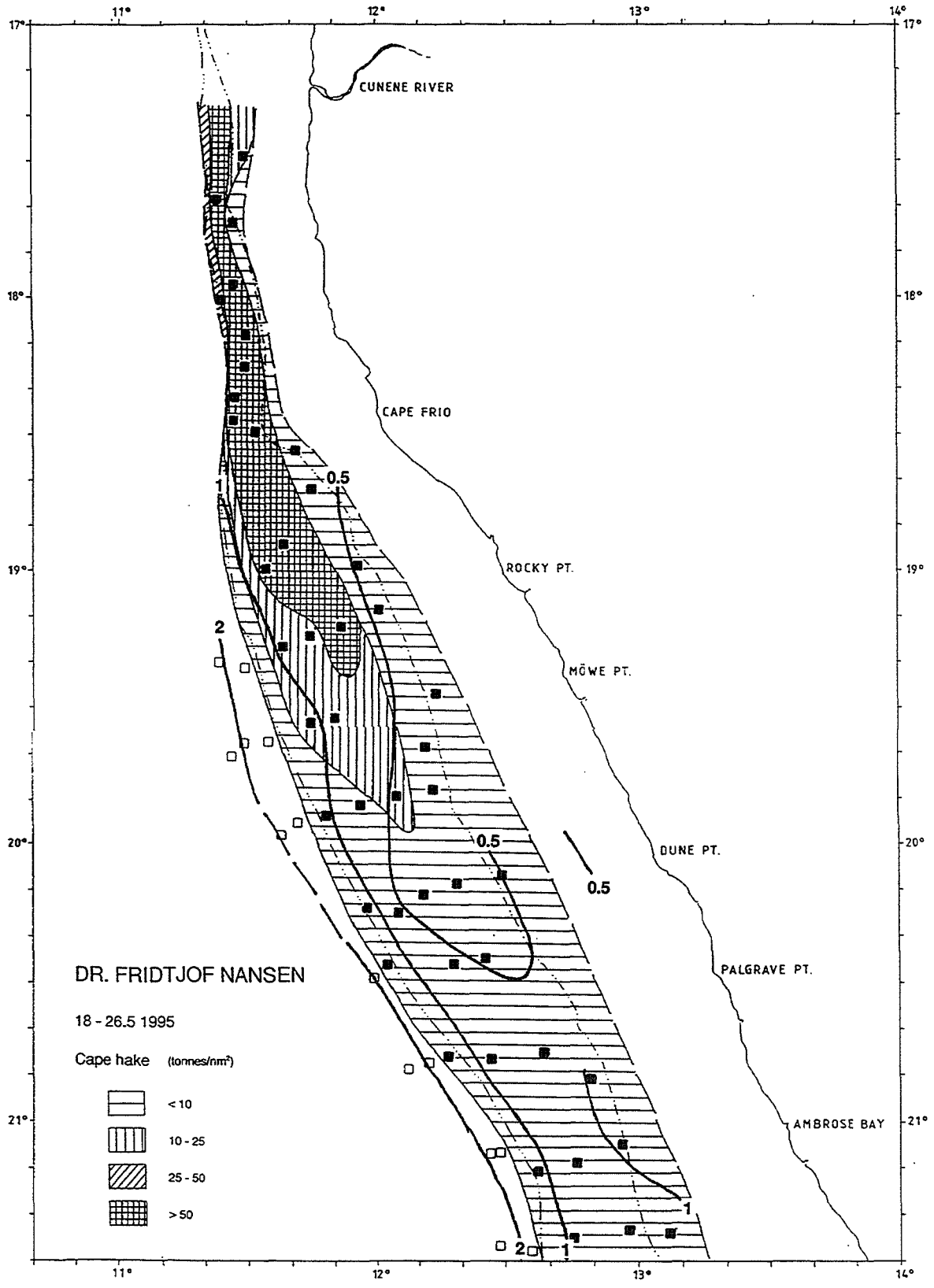


Figure 4c Ambrose Bay to Cunene River. Distribution of Cape hake and oxygen (ml/l) near the bottom.

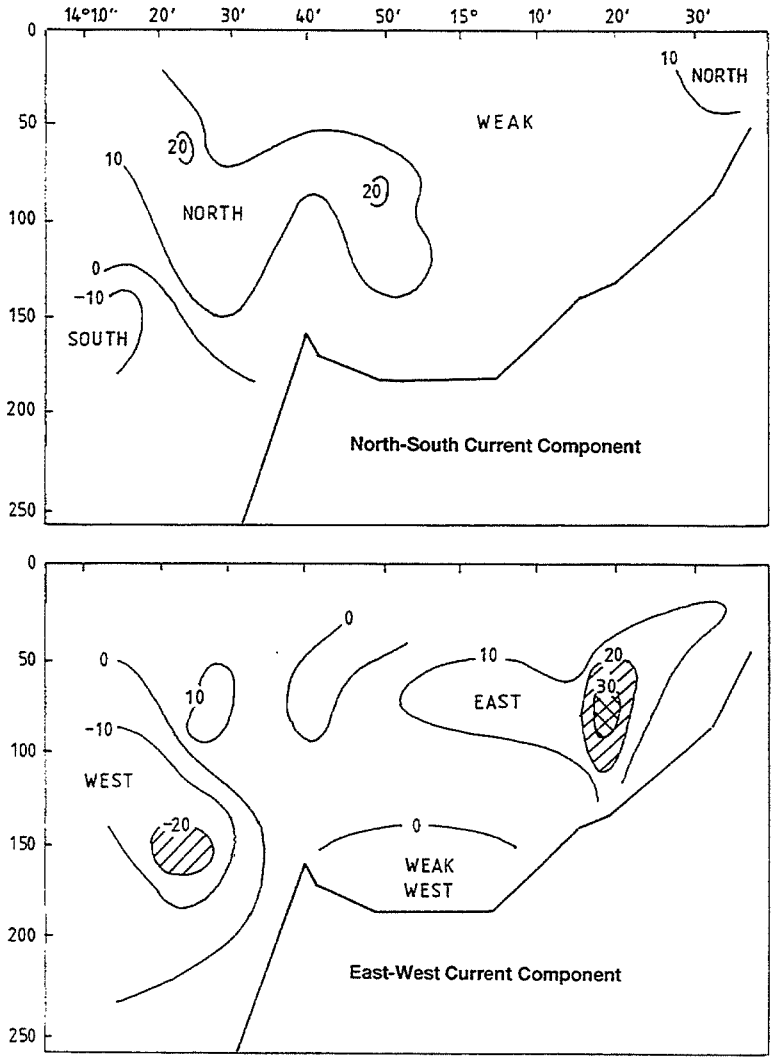


Figure 5 ADCP current measurements along the Panther Head transect.

CHAPTER 3 RESULTS OF THE ACOUSTIC AND TRAWL SURVEY

3.1 DISCUSSION OF METHODS

In the trawl survey programme all catches were sampled for composition in weight and numbers by species. The bottom trawl has a headline of 31 m (float line), a footrope of 47 m, headline height of 5-6 m and a distance between the wings during towing of about 21 m. All trawl hauls were monitored by SCANMAR trawl sensors (bottom contact, headline height, door spread and depth of restrictor). This technology allows to determine with improved accurracy the actual time the trawl is on the bottom, and also keep distances between the doors and the wings of the trawl constant. For conversion of catch rates to fish densities the area between the wings is assumed to be equal to the effective fishing area and the retention factor q is equal to 1 for all species and lengths.

With the new vessel, starting from January 1994, a new trawl gear was introduced with smaller bobbins. This gear has better bottom contact and higher catch rates for bottom dwelling species as monk and sole. For the hake species the new gear is assumed to have no difference in performance. From January 1995, a new set of bottom trawl doors, Tyborøn, type 7, (7.9 m^2) was introduced in the trawl surveys for improved bottom contact. The new doors were intercalibrated with the previously used doors, Waco, during a special gear methodology survey in January 1995. No significant changes in catch efficiency for hake were observed, and it is assumed that the new doors have the same fishing power as the old doors. It is however important to note that it is imperative to use warp restrictor on the new doors on all hauls. If the restrictor is not used, the trawl will be over-spread in deep water. Using the constraining technique, a stable, effective door spread of 50 m, a wing spread of 21 m, and a vertical height of 5.5 m was recorded on average at all depths, only varying slightly with bottom substrate. The distance trawled, was measured by the GPS. Time at bottom was defined as the time from bottom contact and a proper heigth was registered by the trawl height sensor.

The problem of mid-water occurrence of hake and its effect on the swept area assessments has been discussed in earlier cruise reports.

During this particular survey several alternative methods to correct the bottom trawl estimate for off bottom hake have been reviewed on the basis of detailed acoustic measurements of vertical availability to the trawl gear.

The settings of the EK500 echo sounder have been optimized for the display, detection and scrutinizing of hake. The main task has been to be able to identify the single fish traces of deep water hake within a layer of weak scatterers, and also to detect the presence of young hake distributed extremely close to the sea bed in the shallow areas of the survey. The first task has been solved by increasing the ping repetition frequency by using a fixed bottom locked display covering 250 m above the bottom at all depths, with a 10 m wide bottom locked expanded layer. The SV- colour threshold on the echosounder display has been fixed at -67 dB, and at -72 dB at the printer, both working at 20logR TVG. It is important to note that this is not integrator threshold, as the integrator threshold used in the BEI system can be varied independently of the colour threshold and the integrator threshold set on the echo sounder. The main purpose of setting a lower threshold on the printout is for identification of single hake traces in the pelagic region, within layers of weaker scatterers.

During scrutinizing, the dynamic colour range was interactively reduced to dark red at about -60 dB SV, and a hard threshold, SV = -66, was used to first identify a layer, and isolate single traces of hake. At this threshold level, a fair estimate of the contribution from large hake to the total backscattering from hake and plankton can be made. However, smaller hake, registered individually, and the weaker echoes of large hake will be strongly filtered away at this threshold level, and it is necesarry to increase the relative contribution of hake when storing the data at the non-threshold level, SV= -76 to -80. The actual effect of thresholding on the echo energy of hake could be learned from clean, non mixed, single fish registrations of hake at the same depths.

The single target rejection criteria in the EK500 were relaxed by the use of a high TS_{min}-limit, -45 dB, and a hard beam width threshold, maximum gain compensation -2.0 dB. With this setting the sounder accepts larger single fish echoes, and target strengths are computed even within plankton layers. It should be noticed that the target strength distribution is likely to be truncated in the lower end by this thresholding setting, and may therefore not be used to compute the average TS of the fish registered. This was a valuable tool as an index for fish size in the deeper hake layers, for the identification of single targets during the scrutinizing work.

For each 5 nautical mile, including at trawl stations, the echo energy from hake was isolated and stored to the database in 50 m pelagic channels, and one 10 m wide bottom locked integrator

channel. The bottom channel was further devided into 2 meter wide layers. Other fish and scatterers were roughly isolated and categorized, but should not be used for biomass estimation, as a full vertical coverage has not been made outside 200 m depth.

Measurements on pelagic hake

A standard method for correction of bottom trawl density estimates with acoustic estimates of fish off bottom have been applied with Dr. Fridtjof Nansen since 1991. During this survey several additional estimates have been made on hake biomass in order to elucidiate the relationship between trawl estimates and acoustic estimates. These additional estimates do not serve any management purpose at the present stage. The various estimates applied are explained in Annex V.

General comments on hake off bottom.

As in previous investigations off-bottom hake in mid-water constituted only a minor problem in the Southern and Central Region for the day-hauls on the shelf. For the deeper slope hauls carried out at night, the average correction was 39% in the Southern Region and 44% in the Central Region. In the north it made up an average 14% addition to the demersal biomass in the day hauls and in a more limited number of night hauls the average correction was 20% (Table 1). These corrections are higher than those applied for the same area in survey 3/94 and are believed to be representative (Table 1). Because of the generally very low densities encountered both in the bottom trawl and in the acoustic correction during the previous survey in

Table 1 Hakes. Frequency of observations of hake in mid-water during trawling. No. of trawl stations with swept area densities and no. of stations with observations of hake above 5 m from bottom with acoustic density estimate (tonnes/nm²).

ORANGE RIVER - ST. FRANCIS BAY	DAY	NIGHT
Trawl		
No. stations	28	23
Mean density	25.2	10.4
Acoustic obs.		
No. stations	6	12
Mean density	4.2	7.8
Average acou. corr.	4%	39%
ST. FRANCIS BAY - AMBROSE BAY		
Trawl		
No. stations	46	27
Mean density	12.2	8.9
Acoustic obs.		
No. stations	28	23
Mean density	2.5	
Average acou. corr.	12%	44%
AMBROSE BAY - CUNENE RIVER		
Trawl		
No. stations	37	12
Mean density	18.8	18.5
Acoustic obs.		
No. stations	28	12
Mean density	3.4	3.7
Average acou. corr.	14%	20%

November 94, special attention was applied in the present survey to scrutinize if there were possibilities that quantities of hake were masked in dense concentration of other fish or plankton. There were no signs of this and the acoustic system is assumed to have detected the major occurrences of hake off the bottom over the continental shelf down to 650 m.

Special measurements

The analysis of the special measurements on target strength, avoidance measurements and trawl geometry will be included in a special report on these topics.

3.2 SOUTHERN REGION, ORANGE RIVER TO ST. FRANCIS BAY

The complete record of the fishing stations is shown in Annex III. Table 2 shows the catch rates of the main commercial species standardized to kg/hour for the shelf and the slope separately. Compared with the survey 2/94 which took place in the same period last year the mean catch rates for the hakes are about 43% lower on the shelf and almost 60% lower on the slope. A similar trend but with stronger decline was observed between May and November last year and part of that decline was ascribed seasonal migration. The mean monk catch rates have decreased to about 30% of the level of the previous survey. The fluctuations for monk are associated with the seasonal behaviour of the species effecting the catchability. The catch rate of kingklip is down to 40% of the rate in the two previous surveys. This may not be statistically significant as the previous mean catch rate of kingklip is heavily influenced by a few catches beyond 100 kg/hour, catch rates absent during this survey.

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

SHELF 50-259 m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles	Squid	Other
920	88	0.9					76.6
921	147	148.8	6.1			46.5	362.4
922	173	37.6	5.0	1.8		16.4	517.1
923	175	357.0	3.5	1.0		103.4	130.8
927	173	315.8	15.6			162.6	156.2
928	161	339.1	2.1	0.2		25.4	688.6
929	157	93.9	0.8	12.9		1.3	32.0
930	139	204.3		41.1		0.2	11.6
931	175	896.8	2.1	1.5		154.0	83.2
932	182	188.3	2.3	1.2		11.4	129.6
933	171	149.8	17.9			4.4	1221.5
939	258	1982.1	7.6	1.7		49.0	1112.3
940	175	184.4		10.2	1.7	12.7	71.6
941	125	349.7					3.4
942	179	989.6		27.2	1.9		363.7
950	216	220.7		11.4	1.9	1.7	2.8
951	149	214.1					
958	237	407.0				3.6	4.1
MEAN		393.3	3.5	6.1	0.3	32.9	276.0

SLOPE 260-700 m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles	Squid	Other
924	391	139.8	6.1	6.2		0.6	53.5
925	566	30.9	10.4				267.4
926	329	288.4	11.0	5.0		7.8	1164.7
934	392	487.0		23.0		14.4	81.9
935	646	45.1				1.4	466.2
936	441	50.3		11.9		2.6	45.4
937	390	40.9					22.5
938	498	124.0		4.3		7.5	60.1
943	327	4.5					16.0
944	329	396.1	2.7	4.9		4.6	47.5
945	448	72.9	11.2	6.7		11.3	174.3
946	467	170.3		5.8		1.3	33.5
947	539	398.3				28.4	137.7
948	419	804.0	7.0	34.3		31.3	237.9
949	315	1758.2	26.1	19.1		51.8	219.9
953	330	255.6	2.0	26.5	1.8	4.5	18.5
954	421	427.4		2.8		12.6	69.0
955	627	1329.0				55.0	451.4
956	445	734.7		12.8		28.1	263.1
957	347	1362.9	35.2	54.6		115.4	271.3
961	276	1366.5	35.2			216.0	1066.8
963	339	374.0	61.0	29.3	4.7		308.5
964	469	139.4	4.2	13.5			459.6
965	577	736.9					1302.0
966	607	253.3				16.8	491.0
967	485	758.8	19.2			29.7	191.5
968	401	318.1	25.2	14.2		19.6	332.7
970	374	201.5	17.0	5.6		7.8	122.6
971	275	826.2	25.9			69.1	1981.2
973	323	2982.1				71.3	1190.0
974	403	3222.8	77.1	42.2		15.4	214.7
975	509	460.8				73.4	2037.6
976	580	669.7	7.5			161.5	997.4
977	667	669.8				128.8	529.2
MEAN		644.1	11.3	9.5	0.2	35.0	450.8

The depth distribution of the two hake species based on the catch rates converted to densities are shown in Table 3. Since the previous survey the young Cape hake in the 75-250 m zone have declined, while in the 250-350 m depth zone densities have increased. The shift is probably due to offshore migration since the previous survey. In spite of the recent increase in this depth zone, the densities are well below the figures of the May survey last year.

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

	75-250m	250-350m	350-450m	450-550m	550-700m
Cape hake					
Density	7.4	17.9	1.3		
Catch rate	220	540	40		
Deep w. hake					
Density	2.2	14.4	19.3	11.9	18.6
Catch rate	65	430	580	360	560
No. of hauls	17	11	11	6	7

The distribution of the two hake species based on plots of densities by fishing stations is shown in Figures 5 and 6. These include the acoustic estimates of fish present above the 5 m bottom channel during trawling as discussed above. The distribution pattern of Cape hake shows an improvement since the previous survey when the only aggregations were small clusters of fish in the shallow waters. However, comparing with the distribution charts of May last year one can see that the recovery has only been slight. The deep water hake follows its typical high density bands in the 350-450 bottom depth range but with a more northern shift in its distribution gravity point than usual.

Biomass estimates based on a post-stratification of the densities as shown in Figures 5 and 6, give 145 000 tonnes for the Cape and 140 000 tonnes for the deep water hake (Table 4), figures much in line with the findings of the previous survey. A serious drop in the biomass in the Southern Region since May 1994 is thus confirmed. The 95% confidence limits give a range of ±30% on the estimate of the Cape hake and ±33% of the deep water hake.

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

Year/Survey	Cape hake	Deep water hake
90/1	130	22
90/3	130	25
91/1	113	31
91/2	80	82
92/1	200	145
92/2	160	125
93/1	210	150
93/2	180	115
94/1	200	160
94/2	240	215
94/4	150	121
95/1	145	140

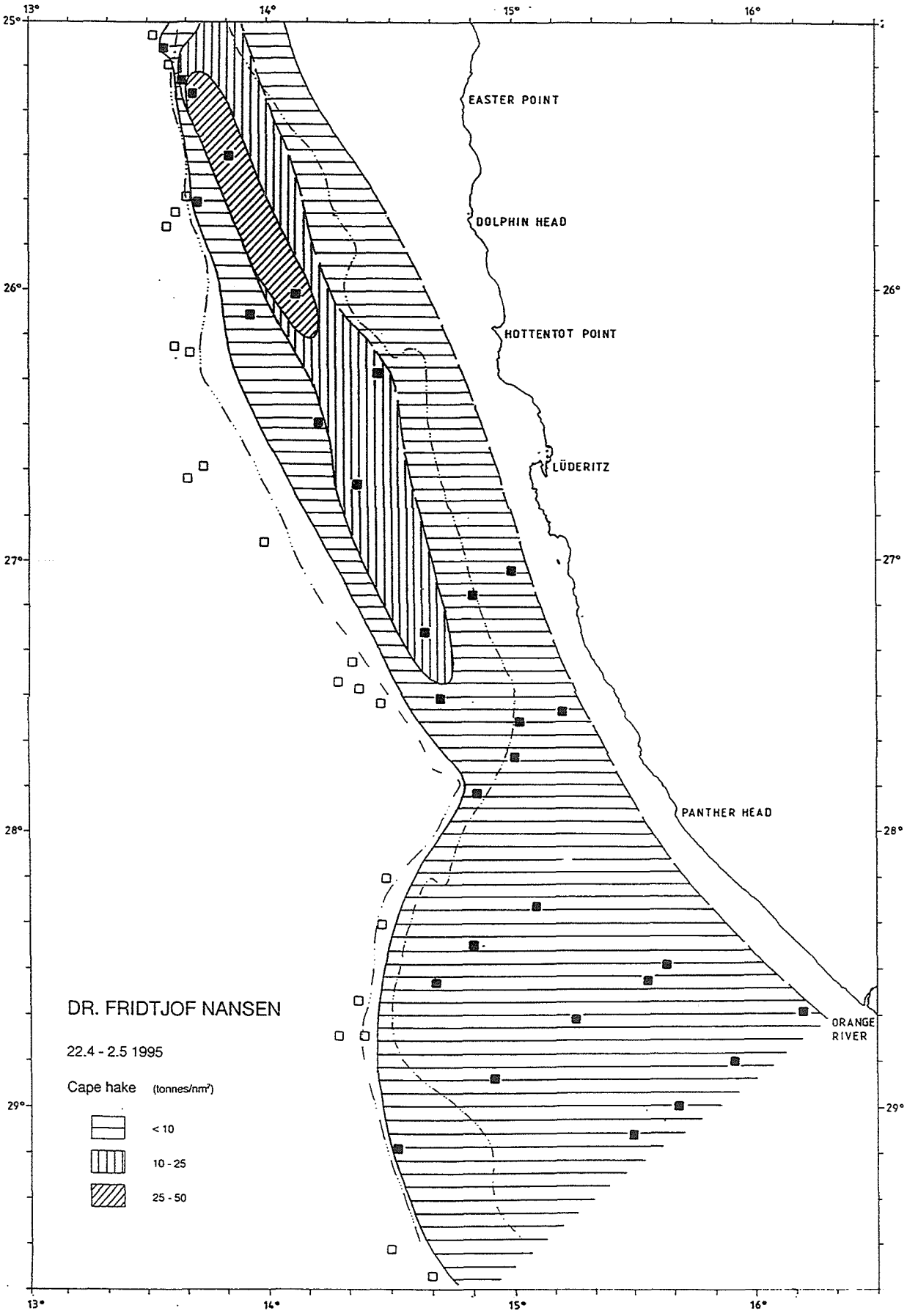


Figure 5 Orange River to Francis Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

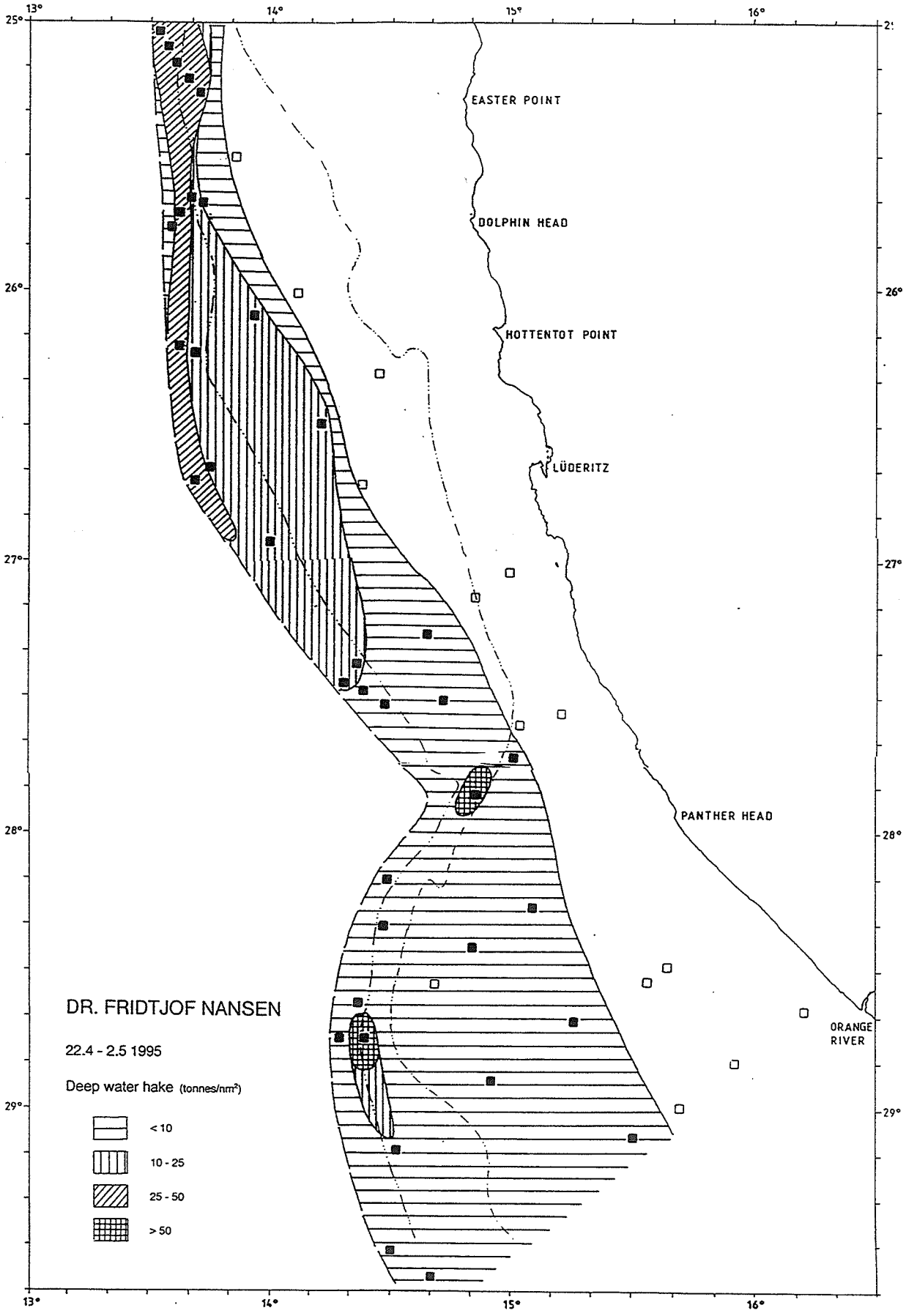


Figure 6 Orange River to St. Francis Bay. Distribution of deep water hake. Empty squares indicate stations where deep water hake was not caught.

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

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

Year class	Mean length	Sigma	Fraction of all fish	Population million N	Biomass 1 000 t
1993	22.5l	1.9	0.59	512	40
1992	28.0	2.5	0.24	237	35
1991	35.0	2.5	0.08	62	17
older			0.09	67	53

The dominating cohort is the 1993 year-class which is estimated to 59% of the total number of fish. The fishable part of the Cape hake in the region is estimated to 92 mill. fish with a biomass of 61 000 tonnes. This is about 40% increase in the adult biomass from 35 000 tonnes in November last year, it is however more than 50% less than the fishable biomass in May 1994 (130 000 tonnes).

The size composition of the deep water hake is shown in Annex I. Results from a length frequency analysis on the deep water hake is shown in Table 6. The fishable part of the stock in the region is estimated to about 116 mill. fish with a biomass of 65 000 tonnes, figures very close to the previous survey (120 mill. fish and 60 000 tonnes).

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

Year class	Mean length	Sigma	Fraction of all fish	Population million N	Biomass 1 000 t
1993	21.0	1.8	0.80	857	52
1992	28.4	2.5	0.55	64	9
1991	36.0	3.0	0.09	98	30
older			0.055	62	46

3.3 CENTRAL REGION, ST. FRANCIS BAY TO AMBROSE BAY

Table 7 shows the catch composition for the shelf and the slope by main groups. The mean catch rates for hakes on the shelf are remarkably close to the low mean rates obtained during the previous survey both in shallow and deeper waters. The mean catch rate of monk is reduced to about 25% of the November 1994 level, while kingklip remain low as normal for this region.

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

SHELF 100-259 m

ST.NO.	DEP.	Hake	Monk	Kingklip	Soles	Squid	Other
984	225	1104.2	3.5		1.8	34.9	49.1
985	246	430.2					
995	205	285.8					2.0
996	238	709.3					7212.6
1004	251	251.7				0.9	2476.3
1005	214	52.0					5599.8
1006	157	35.2					18.8
1007	188	42.8					22.2
1008	241	549.9	0.9		0.6	0.6	259.2
1013	231	93.6			1.6		23.4
1014	154	8.2				1.0	0.7
1015	138	1.9					0.5
1016	151	1919.6			11.7		28.1
1023	207	622.5	3.1				13.5
1026	134	260.8					10.7
1028	128						
1029	206	325.8				1.7	348.6
1037	246	576.9	4.0		0.7	7.3	262.1
1038	209	737.0	12.3			9.0	358.4
1039	167	167.0	1.7		0.8	0.6	637.8
1044	195	191.3	4.0		0.8	2.0	581.2
1045	153	251.5				1.1	4145.4
1046	254	251.1	2.2			0.2	16.9
1054	234	101.2	0.0		1.2		14.6
MEAN		373.7	1.3		0.80	2.5	920.1

SLOPE 260-700 m

ST.NO.	DEP.	Hake	Monk	Kingklip	Soles	Squid	Other
977	667	669.8				128.79	529.2
978	602	973.8	8.0			136.1	738.8
979	503	549.4				31.7	171.6
980	464	477.1	29.1	8.0		33.6	236.3
981	355	257.1	15.6	16.1		25.6	239.5
982	272	192.1	17.8			12.8	178.4
986	369	600.3		57.8			175.2
987	441	399.2	4.4			14.5	149.1
988	572	262.9	43.6			128.5	1189.4
989	504	169.7					
990	369	415.0	6.5			56.3	175.2
991	324	689.1		32.8		17.2	326.3
994	281	479.9	2.1	1.0	2.1	7.6	31.4
997	267	489.5		0.5		2.3	47.5
998	282	91.9			0.7	3.0	261.6
999	396	28.7	11.1	17.4		34.6	227.0
1000	506	130.7				22.0	563.8
1001	609	187.4	2.6			35.2	608.5
1002	452	103.5	1.2			29.5	514.1
1003	339	495.6				54.6	151.9
1009	330	490.4				26.0	211.2
1010	412	266.0	9.4	8.5		20.9	460.0
1011	554	149.5	1.0			19.0	116.4
1012	645	257.1	3.1			115.1	301.3
1017	311	544.9				4.8	261.0
1018	380	364.1		5.8		15.7	372.0
1019	499	196.0	1.7			17.8	164.3
1020	605	51.7				57.7	152.8
1021	430	136.8				22.1	310.6
1022	318	295.5		1.3		0.1	68.3
1024	366	48.0	5.7	1.2		37.3	232.9
1025	285	291.8	0.8		0.2	6.9	152.7
1030	277	435.1	40.1		1.4	34.8	748.1
1031	294	820.5	5.3	3.4	6.1	60.1	338.2
1032	494	375.5	36.2			21.2	596.9
1033	588	478.7	11.9			17.9	505.2
1034	545	190.7	5.4			1.2	107.4
1035	449	451.3	5.0			7.7	876.9
1036	346	312.3	11.9	1.3	1.0	2.0	141.1
1040	597	182.5	8.2			19.7	364.4
1041	498	222.5	20.3			12.6	406.1
1042	400	114.6	4.0			0.2	249.2
1043	295	81.0	7.2		2.8	2.3	48.1
1047	328	63.1	2.1		0.4	3.1	17.4
1048	430	332.9	20.6				358.3
1049	639	69.0	1.2			25.3	162.4
1050	593	20.9	8.3			5.5	63.1
1051	499	126.9	6.1			23.7	289.6
1052	378	125.2	6.7	10.2		3.0	209.1
1053	331	60.8	18.1		4.6	2.0	38.7
MEAN		304.4	7.7	3.3	0.4	27.2	296.8

The density index by depth ranges of the two hake species is shown in Table 8. In the previous survey in November a strong decline of Cape hake was observed in all depth strata since May 1994. This drop is confirmed in the present survey and a further drop in the 350-450 m depth zone is observed. On the other hand the deep water hake rates have been rather stable over several surveys and in the 350-450 m depth zone a slight increase is observed.

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

	100-250m	250-350m	350-450m	450-550m	550-650m
Cape hake					
Density	13.0	9.9	1.5	0.8	
Catch rate	390	300	45	20	
Deep w. hake					
Density		2.1	7.6	8.3	9.5
Catch rate		60	230	250	285
No. of hauls	22	18	13	10	11

The biomass estimate of Cape hake for the Central Region based on post stratification is 105 thousand tonnes (Table 9). This is a confirmation of the low figures estimated on the previous survey which fall into a pattern of decline since early 1993. The recent estimate is a new record low in the time series from the Central Region. The estimate on the deep water hake is 40 000 tonnes, the highest recorded in our time series. The 95% confidence limits on the estimates are ±23% on the Cape hake and ±18% on the deep water hake.

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

Year/Survey	Cape hake	Deep water hake
90/1	180	4
90/3	219	6
91/1	150	6
91/2	302	13
92/1	261	15
92/2	542	15
93/1	280	12
93/2	280	20
94/1	225	30
94/2	160	30
94/4	112	16
95/2	105	40

Figure 7 shows the distribution of Cape hake in this region. Areas with densities of more than 25 tonnes/nm², equivalent to 'Dr. Fridtjof Nansen' catches of more than 750 kg/hour, is restricted to one aggregation in the shallow waters holding young hake. Compared to the situation two years ago when thick and longitudinal bands of such aggregations between 200 and 500 m were the common feature, the changes are dramatic.

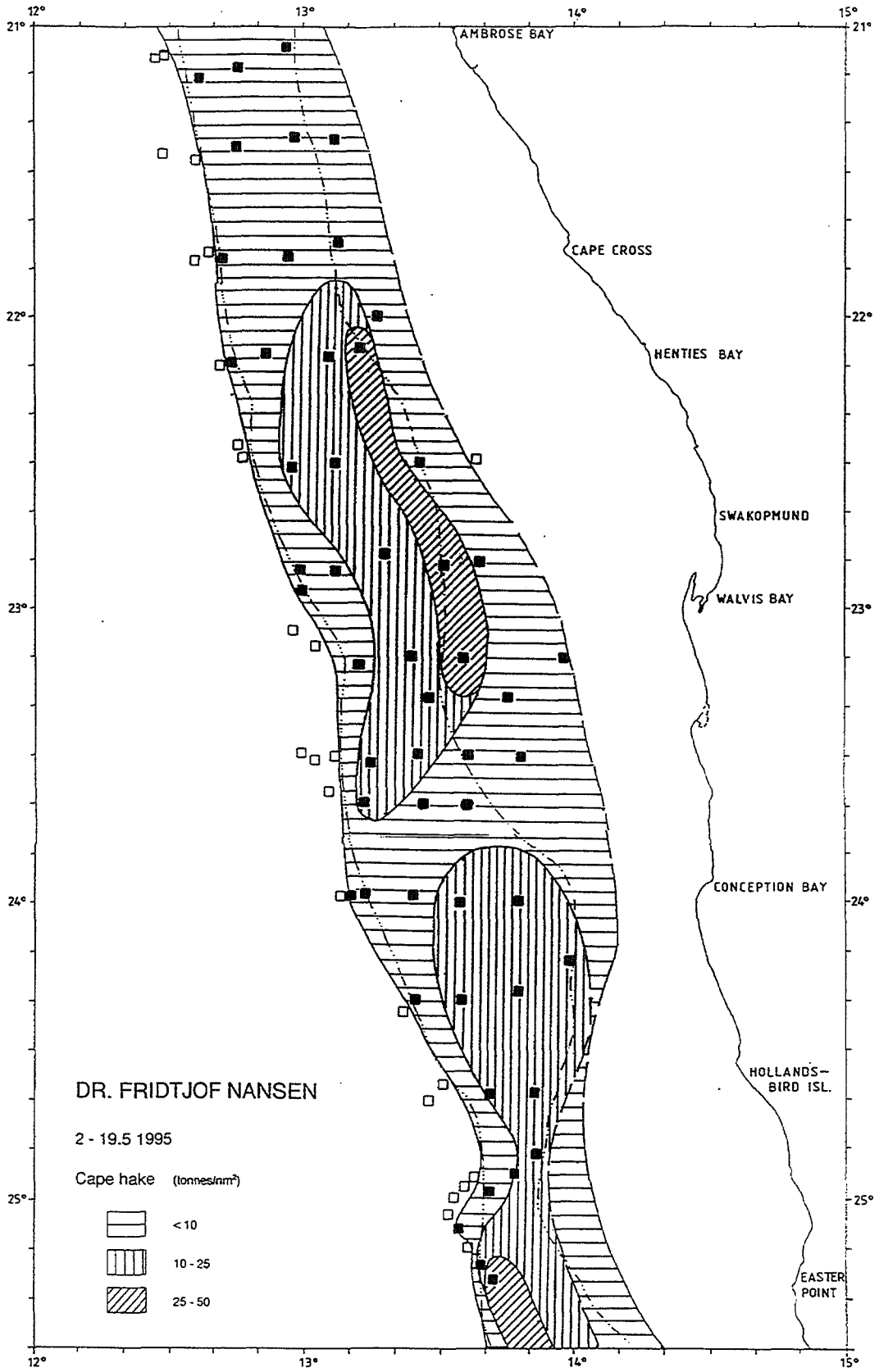


Figure 7 St. Francis Bay to Ambrose Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

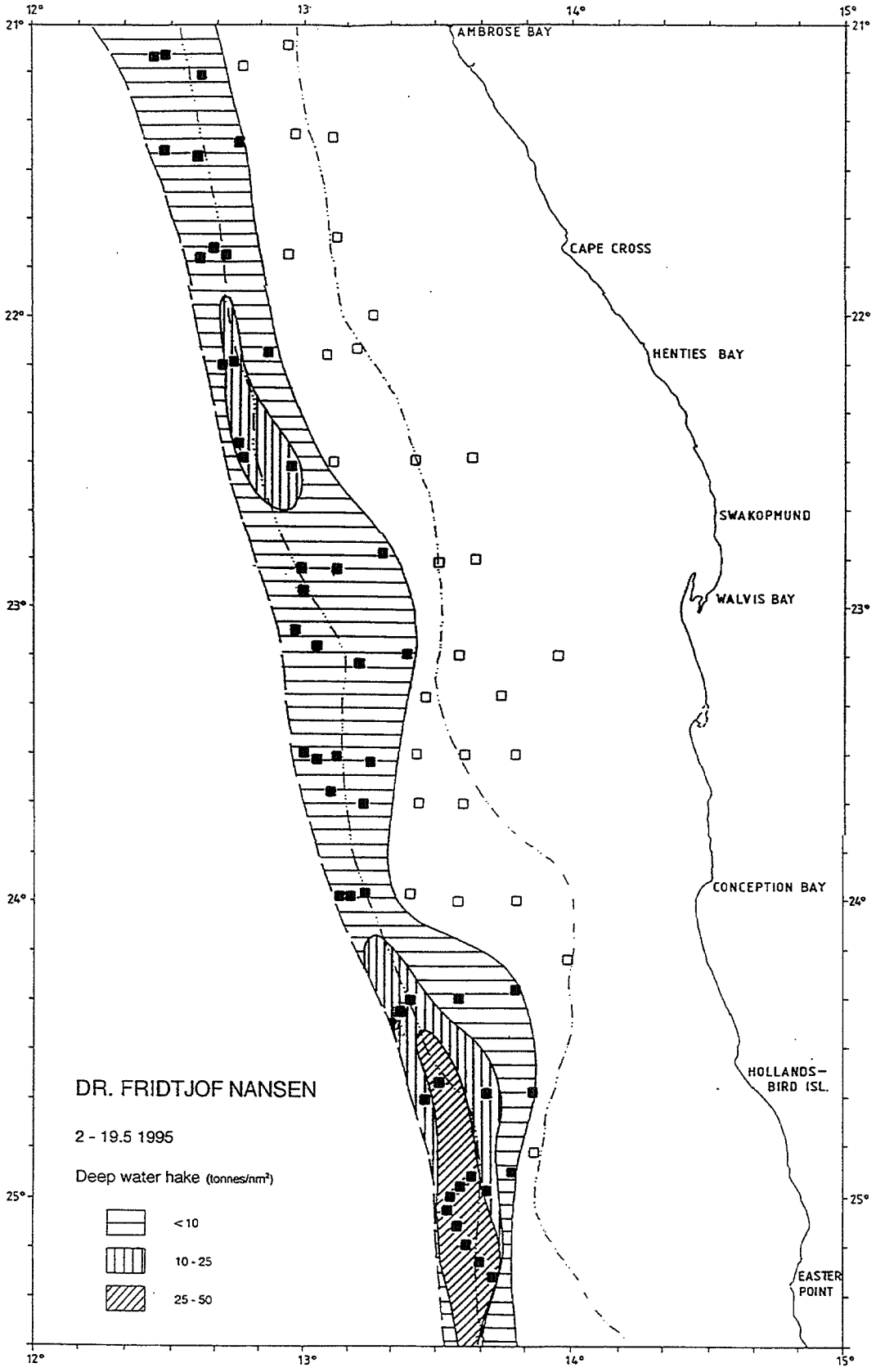


Figure 8 St. Francis Bay to Ambrose Bay. Distribution of deep water hake. Empty squares indicate stations where Cape hake was not caught.

Table 10 Central Region. Cape hake. Estimated age-cohorts from optimized length distributions.					
Year class	Mean length	Sigma	Fraction of all fish	Population million N	Biomass 1 000 t
1993	21.9	2.3	0.64	430	29
1992?	27.0	2.8	0.24	147	19
1991	36.0	3.0	0.05	31	10
older			0.08	45	47

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

The 1993 year-class dominates with 64% of the number of fish, followed by the 1992 year-class with 23%. The older fish, 4 years and older makes up 12% of the number of fish, but 54% of the biomass. The fishable part of the population is 63 mill. fish and 53 000 tonnes, a decrease in number (-9 mill.) and biomass (-4 000 tonnes) to the previous survey. The non-fishable biomass is estimated to 64 mill. fish with a biomass of 54 000 tonnes. This confirms the alarmingly low figures from November 1994, which set the recruitment potential of the fishable biomass considerably below the situation during in the previous years.

The more narrow distribution of deep water hake is presented in Figure 8. Results from the length frequency analysis for the deep water hake is shown in Table 11. In this population the fishable biomass is 34 000 tonnes and 50 mill. fish and makes up 70% of the number of fish while the remaining 30% are fish of size smaller than 36 cm and are estimated to 8 000 tonnes and 46 mill. fish.

Table 11 Central Region. Deep water hake. Estimated age-cohorts from optimized length distributions.					
Year class	Mean length	Sigma	Fraction of all fish	Population million N	Biomass 1 000 t
1993	25.4	2.5	0.15	14	1
1992	32.0	3.2	0.34	33	7
1991	38.0	3.5	0.15	14	5
1990	47.2	3.5	0.255	25	17
older			0.105	10	11

3.4 NORTHERN REGION, AMBROSE BAY TO CUNENE RIVER

Table 12 shows the catch rates by main groups for the shelf and slope separately. The mean rate for hakes shows a recovery since the previous survey with an increase of almost 100% in the deeper waters and 35% in the more shallow area. The monk catches are very close to the rates in November last year.

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

SHELF 100-259m

ST.NO.	DEP.	Hakes	Monk	Dentex	Horse mck.	Squid	Other
1055	254	29.8		3.3	0.7	1.0	4.4
1066	180	33.5		1.7	0.4		0.8
1067	251	11.4			0.1	0.04	1.5
1076	233	228.0			94.2		6.0
1077	234	141.7		0.5	2.4		1.7
1078	193	50.4			0.3		3.0
1089	229	247.0	3.5	462.4	380.2		49.7
1090	216	62.5	7.7	1.7	16.9		0.9
1092	160	411.5		234.3	376.2		301.0
1094	190	216.8		180.0	624.0		757.0
1095	254	2600.5	11.1	280.2	245.7		1379.1
1100	222	753.9	1.5	10.3	9.1		395.8
1101	189	47.6		151.2	1792.8		6.5
1102	222	124.4		168.0	3040.8		0.3
MEAN		354.2	1.7	106.7	470.3	0.1	207.7

SLOPE 260-700 m

ST.NO.	DEP.	Hakes	Monk	Dentex	Horse mck.	Squid	Other
1056	313	36.5	0.5	0.3	0.02	0.9	18.8
1057	334	264.2	15.3				59.0
1058	449	126.8	38.2			7.8	459.9
1059	548	263.3	20.1			50.8	552.7
1060	651	216.3	3.7			60.1	284.9
1061	595	232.1	11.3			19.2	530.9
1062	492	142.9	170.5				669.1
1063	298	28.0	5.1	16.8		1.4	9.0
1064	281	163.2	6.3	7.1	0.5		9.0
1068	283	90.8		12.1			1.6
1069	313	566.8	152.5	403.0			772.6
1070	390	218.7	52.0			19.0	842.1
1071	594	163.4	6.8			35.3	487.2
1072	491	490.8	25.7			2.0	534.7
1073	385	96.5	22.8				404.2
1074	340	33.8	1.2			0.5	15.8
1075	289	208.6	34.4	173.6	23.3		61.6
1079	326	679.7		69.4	23.3	1.6	66.0
1080	345	1160.6	45.3	8.8	33.9	7.4	251.5
1081	450	392.7				18.9	107.8
1082	555	134.2				8.0	106.7
1083	656	123.4	12.2			17.4	290.2
1084	602	283.0	40.5			83.8	174.3
1085	498	676.5	30.1			0.7	369.3
1086	345	547.0	82.4		3.8	7.1	316.9
1087	319	284.9	17.5	5.0	16.6	4.1	51.4
1088	285	1509.7	62.0	303.4	87.3		1122.4
1091	351	1328.4	19.0			5.7	270.7
1093	277	2707.2	123.5	254.4	315.3	3.2	880.4
1096	354	682.6	49.5		5.6	15.6	392.3
1097	308	1814.3	134.2	19.1	25.3		1029.2
1098	296	2124.0	9.7	9.9			1062.2
1099	352	1138.9	12.1				641.2
1103	281	1600.4	52.8	88.6	96.4		531.3
1104	269	909.3	17.1	312.6	4.3		337.0
MEAN		612.6	36.4	48.1	18.2	10.6	391.8

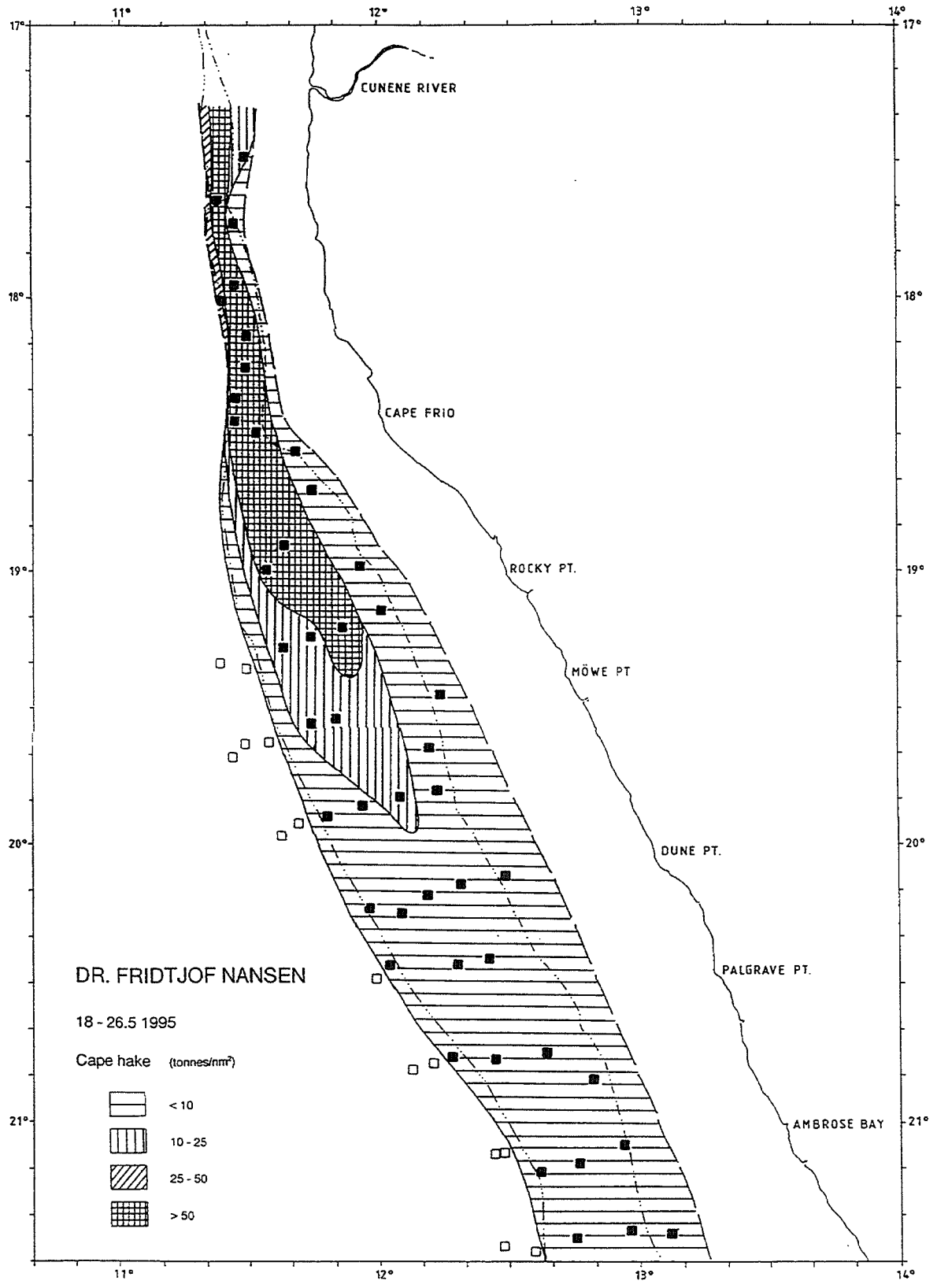


Figure 9 Ambrose Bay to Cunene River. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

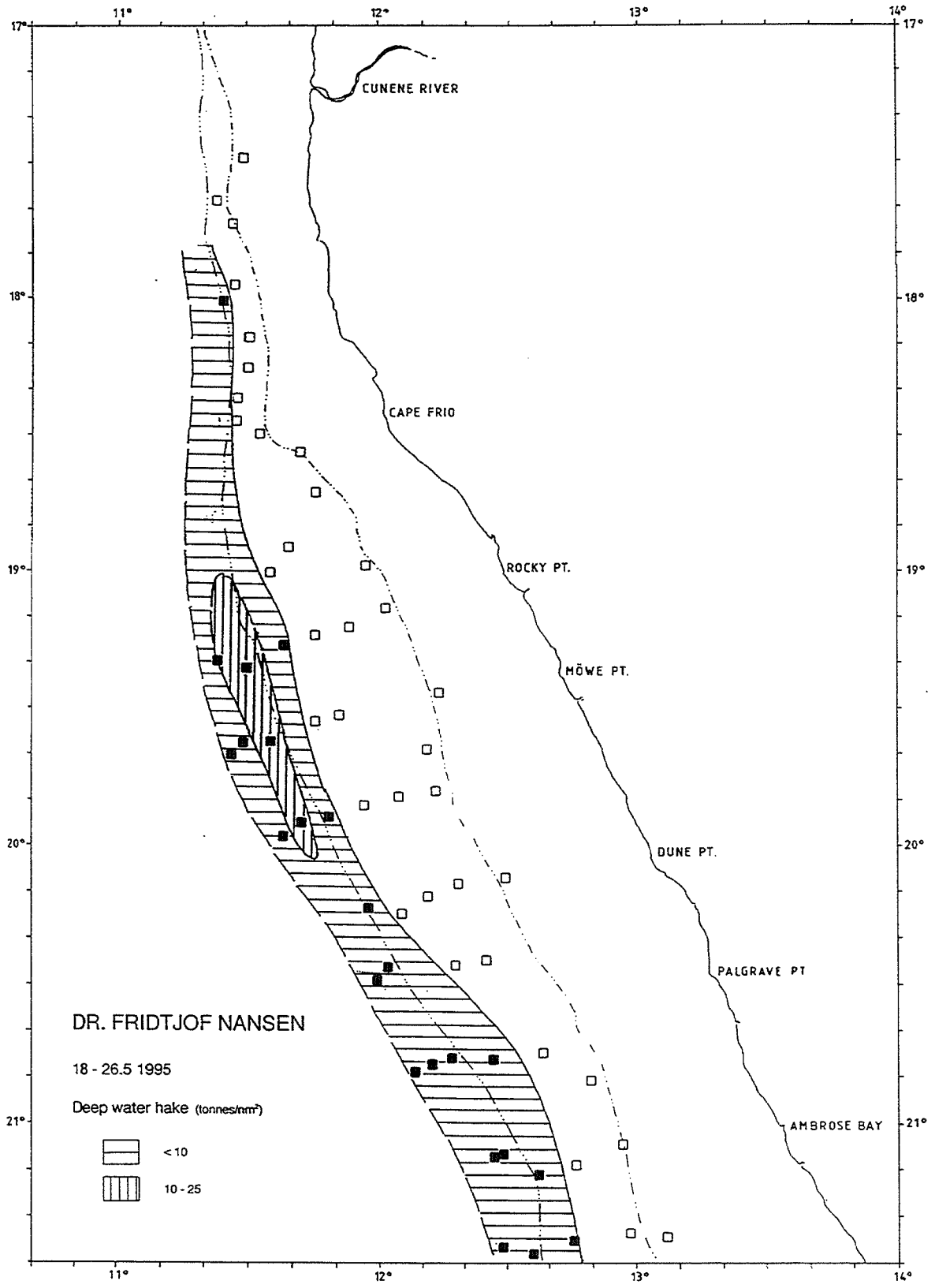


Figure 10 Ambrose Bay to Cunene River. Distribution of deep water hake. Empty squares indicate stations where deep water hake was not caught.

Figure 9 shows the distribution of Cape hake in the Northern Region by levels of density calculated from the catch rates and with correction for fish off bottom. Compared to the previous survey when high concentrations were restricted to between the Cunene and 18°S such densities were now observed continuously from the Cunene to Möve Point. The present distribution resembles much the situation in May 1994.

The depth distribution of the two hake species based on catch rates converted to densities are shown in Table 13. For Cape hake there was an increase in densities between 250 and 450 m bottom depth. The densities of deep water hake have increased with record high densities in the 450-550 m zone.

Table 13 Northern Region. Depth distribution of the two hake species. Mean densities in tonnes/nm² and mean catch rates kg/hour.

	100-250m	250-350m	350-450m	450-550m	550-700m
Cape hake					
Density	7.3	28.2	17.7	+	+
Catch rate	220	850	530	+	+
Deep w. hake					
Density		0.1	3.5	13.2	6.3
Catch rate		4	105	400	190
No. of hauls	11	21	7	4	6

Biomass estimates give a total of 117 000 tonnes of Cape hake and 24 000 tonnes of deep water hake (Table 14). For the Cape hake this represents a slight recovery since the last survey in May 1994. The deep water hake shows an increase from 10 to 24 000 tonnes. The 95% confidence limits on the estimates are ±19% on the Cape hake and ±24% on the deep water hake.

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

Year/Survey	Cape hake	Deep water hake
90/1	180	
90/3	105 *	
91/1	200	
91/2	140	2
92/1	185	4
92/2	190	8
93/1	150	4
93/2	110	6
94/1	90	20
94/2	130	15
94/4	90	10
95/2	117	24

* + hake in the mid-water

The size compositions of the two hake species are shown in Annex I. A cohort analysis was done on the pooled length distributions of Cape hake, while it was not possible to define

reasonable cohorts for the deep water hake. The so called 'fishable biomass' of Cape hake, representing fish of 36 cm and larger, constitutes 146 mill. fish with a biomass of 92 000 tonnes, compared to 63 000 tonnes in November 94. For the deep water hake the fishable biomass is 21 000 tonnes and 35 mill. fish.

Table 15 Northern Region. Cape hake. Estimated age-cohorts.

Year class	Mean length	Sigma	Fraction of all fish	Population million N	Biomass 1 000 t
1993	24.6	2.5	0.27	83	8
1992	31.0	3.0	0.24	75	15
1991	39.9	3.5	0.29	91	38
1990	49.5	3.5	0.14	44	35
older			0.06	15	20

CHAPTER 4 CONSIDERATIONS ON THE SURVEY RESULTS

Survey effort

The present survey is the 12th in a series started in early 1990, covering the distribution of the hake stocks over the whole Namibian shelf. Figure 11 shows the effort spent in these investigations. The survey was done with 35 sea-days, while two days were lost in port due to extraordinary maintenance. The optimal time required for a hake survey is 38-40 days, and would allow time for a few days for methodological investigations.

Mid-water behaviour of the hake can cause problems for the trawl survey methodology. However, improved acoustic technology has made it possible to establish a technique that can reduce the effect of this behaviour on the estimates. In previous surveys (1993 to Jan. 1994) the pelagic behaviour may have caused some underestimate in the biomass, especially in the Northern Region. During the recent survey the average acoustic corrections during day time were 4%, 12%

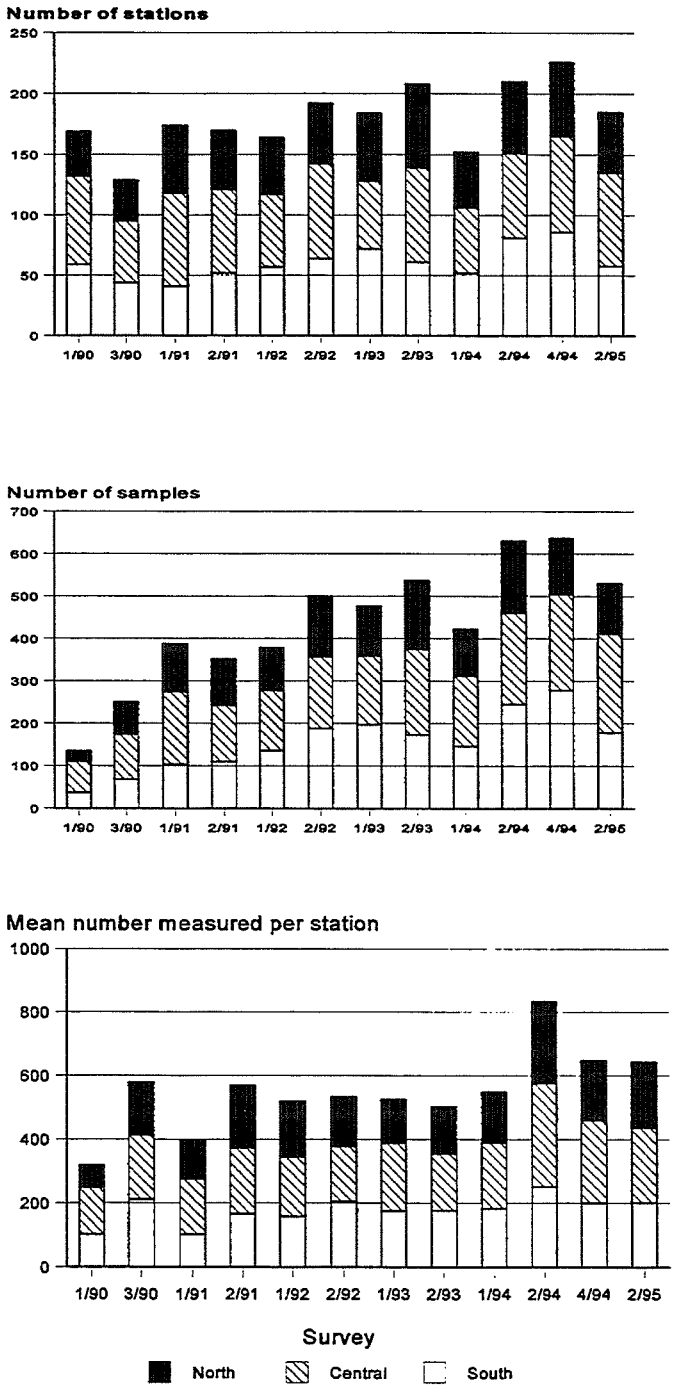


Figure 11 Hake survey effort 1990-95. a) Number of trawl stations by regions; b) Number of length frequency samples by regions; c) Mean number of fish in length sample.

and 14% for the Southern, Central and Northern Regions respectively. The pelagic behaviour of the hake did not constitute a major problem when assessing the stock, and there are no signs that major aggregations of hake have avoided acoustic detection.

Catch per unit effort

A summary of the estimates of the mean density of the hakes by depth strata is shown in Figure 12. After the previous survey in November it was noted that the mean densities of Cape hake have dropped in all depth zones and in all regions except for the southern shelf area 100-250m. Figure 12 shows that a slight recovery in the densities have taken place in the north and in the 250-350 m range in the south.

The densities in the shallow ranges 100-250 m mainly reflect the strength of the young fish, 2-3 years of age, that inhabit this zone. One should note that the densities in these nursery areas remain low and are considerably below the situation in 1990 when the programme for rebuilding the hake stocks started. It is therefore concluded that the recruitment to the fishable biomass will be low for the next two years.

Expected catch rates in fisheries will generally be proportional to the fish densities observed. As mentioned above, the densities in the Northern Region are relatively high, and this is also the area where the fishing fleet was most active during the survey. It is therefore important to keep in mind that CPUE from the fisheries can not be used as an index of the state of the stock, but only represents the situation in the limited fishing area.

Biomass estimates

Table 16 shows a summary of the biomass estimates for the two hake stocks by regions and surveys. Since May 1994, the estimated total biomass of hakes has dropped sharply from 790 000 to 490 000 tonnes in November, with signs of slight recovery to 575 000 tonnes in the recent survey. However, the general trend is of decline since mid 1993, as visualized in Figure 13d.

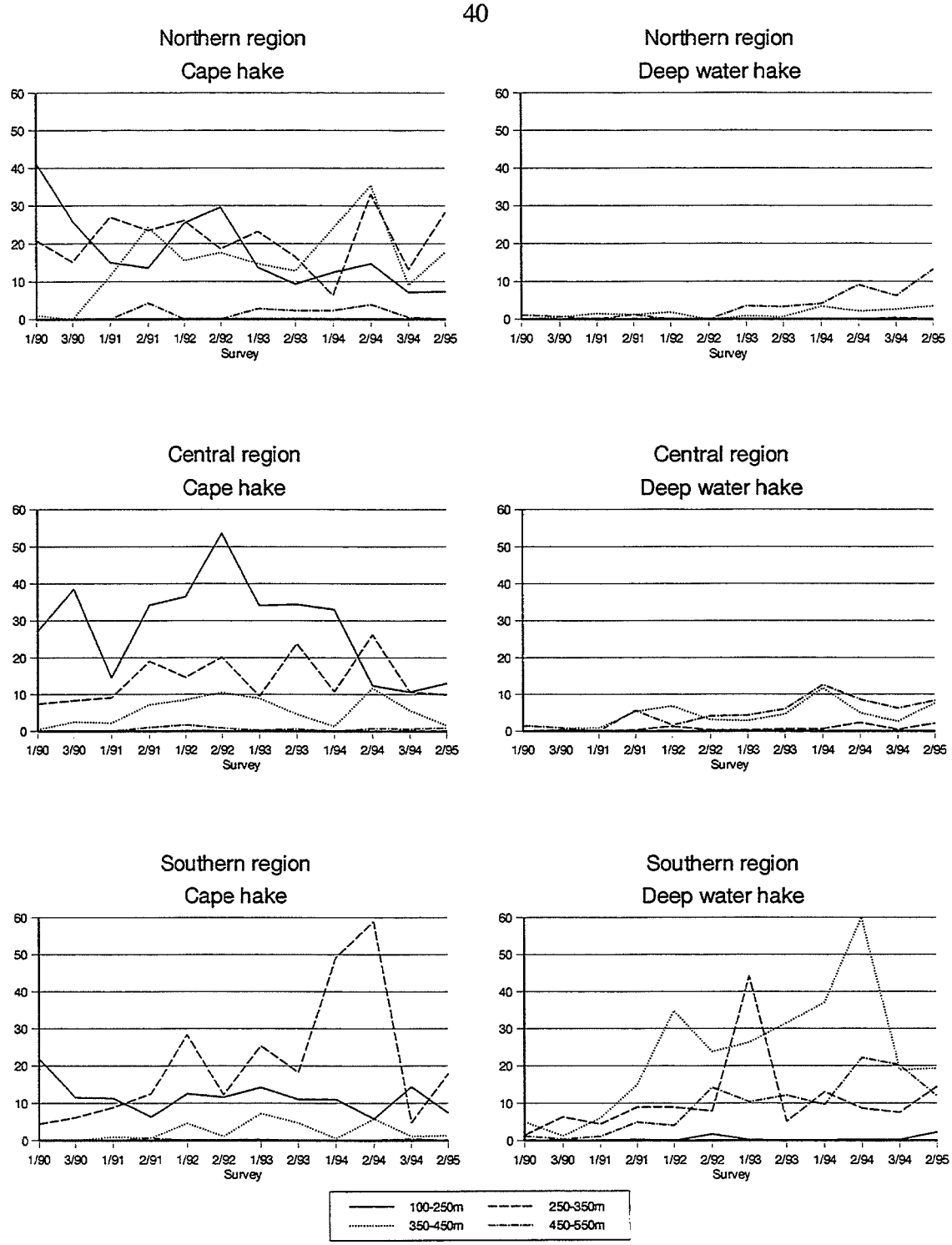


Figure 12 Estimated mean densities in depth strata by surveys. Mean densities in tonnes/nm^2.

When splitting the biomass by fishable/non-fishable categories the fishable stock of Cape hake shows the same trend of decline since 1993 as for the total biomass, and the adult stock of Cape hake is now lower than in 1990, Figure 13a. The deep water hake, Figure 13b, increased during the first years of the programme and have in the later years fluctuated between 120 000 and 200 000 tonnes with a sudden temporary drop in November, probably due to seasonal migration. Recruits or non-fishable biomass is below average (Figure 13c) and is also below the level in 1995. Generally one can therefore conclude that the state of the Cape hake is not better in 1995 than in 1990.

Table 16 Summary of total, fishable and non-fishable biomass estimates for the two hake species by surveys and areas. 1 000 tonnes.

	Feb-Mar 1990	Sep-Oct 1990	Jan-Feb 1991	Oct-Nov 1991	Apr-May 1992	Oct-Nov 1992	Jan-Feb 1993	Apr-May 1993	Jan-Feb 1994	Apr-May 1994	Oct-Nov 1994	Apr-June 1995
TOTAL BIOMASS												
SOUTHERN REGION												
Cape hake	130	130	126	80	200	160	210	180	200	240	150	145
Deep water hake	22	25	31	83	145	125	150	115	160	215	120	140
CENTRAL REGION												
Cape hake	180	219	150	302	261	542	280	280	225	160	110	105
Deep water hake	4	6	6	13	15	15	12	20	30	30	15	40
NORTHERN REGION												
Cape hake	180	105*	200	140	185	190	150	110	92	130	90	120
Deep water hake				2	4	8	4	6	20	15	10	25
TOTAL NAMIBIA												
Cape hake	490	450	480	520	650	890	640	570	520	530	350	370
Deep water hake	25	35	40	100	160	150	170	140	210	260	145	205
Both	516	485*	513	620	810	1040	810	710	737	790	495	575
FISHABLE BIOMASS												
SOUTHERN REGION												
Cape hake				42	145	75	115	94	112	130	35	62
Deep water hake				42	113	80	123	95	114	164	61	66
CENTRAL REGION												
Cape hake				140	85	170	150	118	50	65	58	54
Deep water hake				(13)	15	15	9	16	26	22	10	34
NORTHERN REGION												
Cape hake				135	143	143	113	88	74	102	63	93
Deep water hake				-	-	-	-	-	19	13	8	21
Cape hake	200	270*	280	320	370	390	380	300	240	300	156	209
Deep water hake	20	20*	20	50	130	100	140	120	160	200	79	121
TOTAL FISHABLE	220	290*	300	370	503	490	520	420	400	500	235	330
NON-FISHABLE BIOMASS												
Cape hake	290	180	200	200	280	500	260	270	280	230	193	161
Deep water hake	5	15	20	50	130	50	30	20	50	60	66	84
TOTAL NON-FISHABLE	295	195	220	250	410	550	290	290	330	290	259	245

* Unadjusted underestimate due to fish off the bottom.

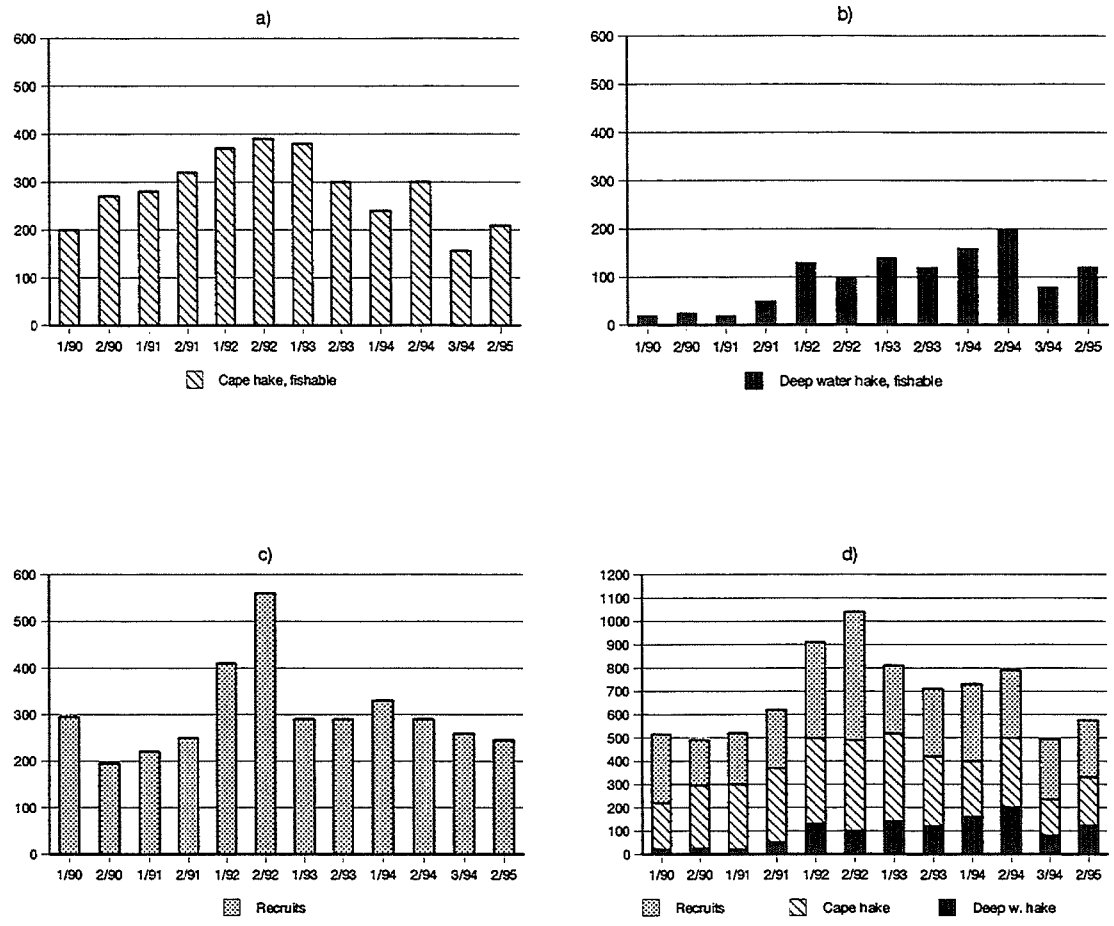


Figure 13 Trends in biomass estimates: a) Cape hake, 'fishable stock', b) deep water hake, 'fishable stock', c) recruits ('non-fishable' biomass) and d) total hake in Namibia. Thousand tonnes.

Geographic shift in the fishable biomass

Figure 14 shows the development of the relative share of the fishable biomass of Cape hake in the regions for last five years. The figure demonstrates that the Northern Region during the last survey hold 44% of the fishable biomass of Cape hake while the Central Region has only 26%. The figure also show that the Central Region's share has decreased considerably since 1993.

Recruitment potential

The recruitment to the stock of Cape hake can be estimated from the numerical abundance of the 1.5-2 year old fish. November is usually the month when one for the first time through trawl

surveys can estimate the strength of the year-class born the previous year, as it has then settled on bottom during the previous months. The estimates for the 1993 year-class, based on the current survey data, are shown in Table 17 together with previous observations. A 'normal' recruitment level after two years seems to be around 2 billion fish ±200 million (Table 17). The 1993 year-class is at present with 1.05 billion fish only half of the normal recruitment level. The 1992 year-class was estimated to 1.2 billion fish in May 1994, and is now reduced to 0.5 billion fish. Our data thus indicate two consecutive year classes with strength below normal. This indicates low recruitment to the fishery in the next two years.

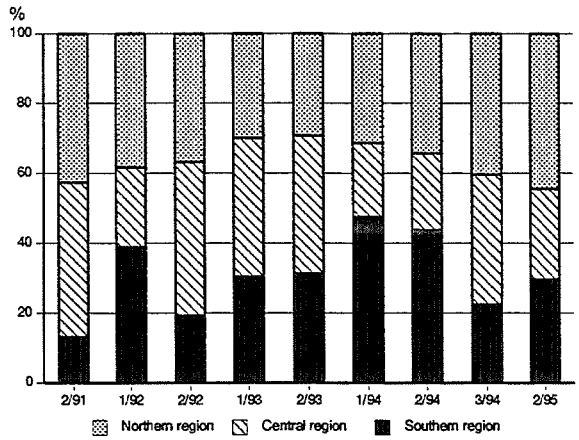


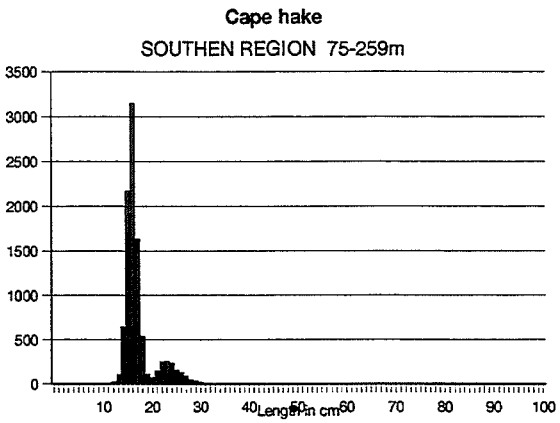
Figure 14 Relative regional share of fishable biomass of Cape hake 1991-95.

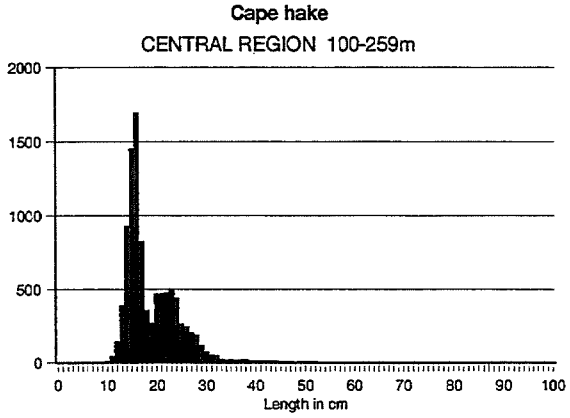
At several locations, juvenile hake with modal lengths around 15 cm were caught in high abundance in the bottom trawl during the survey. At that stage in the life cycle the normal habitat is the pelagic zone which was not sampled during the survey. The relatively good catches at bottom could indicate rich presence of the 1994 year-class in the pelagic zone, but the size of the class can not be estimated before it settles on bottom towards the end of the year. The 1994 year-class will, even if it proves to be strong later in the year, does not recruit to the fishery before 2.5-3 years from now, that is in the 1998 fishing season.

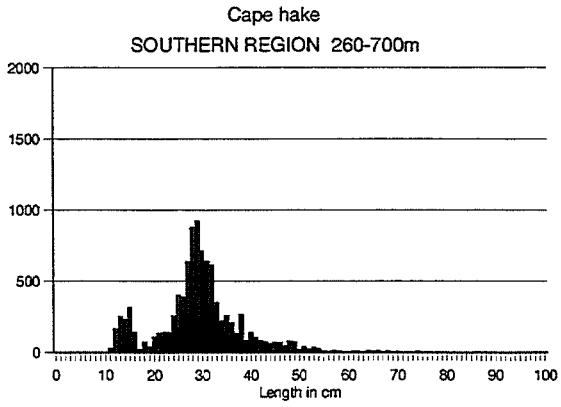
Table 17 Estimates of strength of recent year classes of Cape hake. Cohort population numbers at about two years of age for the groups assumed to have been spawned in 1988, 1989, 1990, 1991 and 1992. Millions of fish.

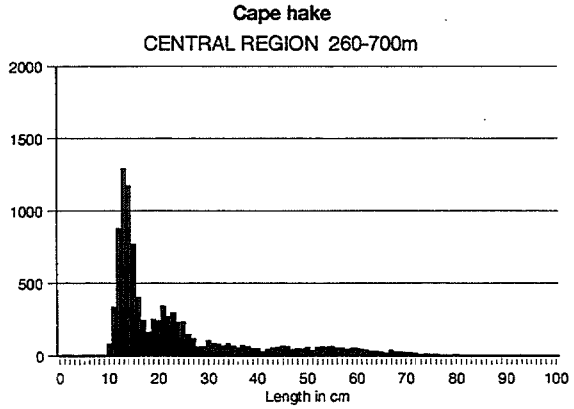
Year-class	1988	1989	1990	1991	1991	1991	1992	1992	1993	1993
Southern Region	980	100	300	990	670	390	250	2308	1730	510
Central Region	1 320	170	1 620	3 500	1 230	1 370	1 880	3017	490	430
Northern Region	10	10	240	440	270	130	70	5	190	80
Total	2 310	280	2 160	4 930	2 170	1 890	2 200	1235	2410	1020
Survey/Year	1/90	1/91	1/92	2/92	1/93	2/93	1/94	2/94	3/94	1/95

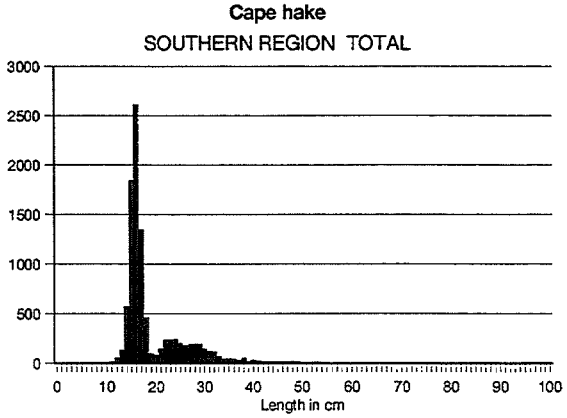
Annex I Size composition of main stocks

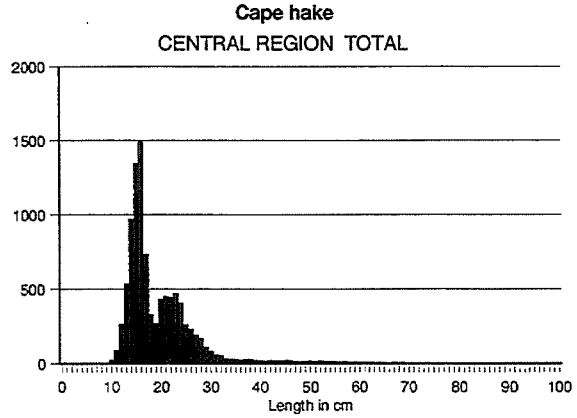






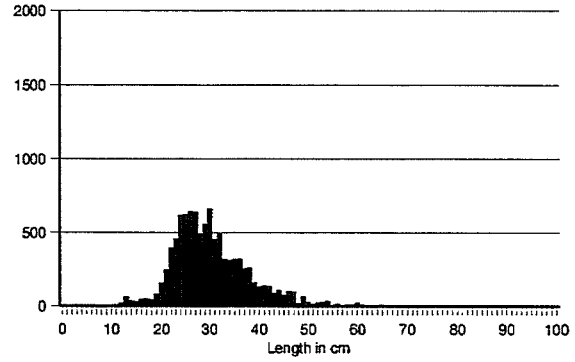






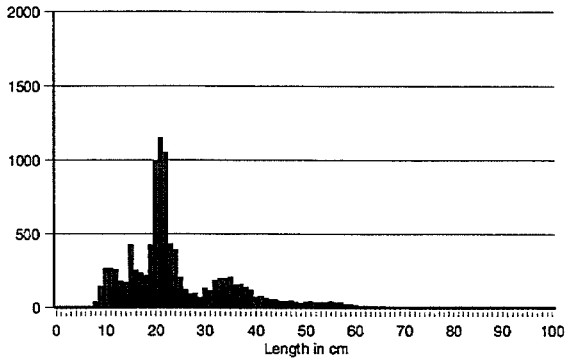
Cape hake

NORTHERN REGION 100-259m



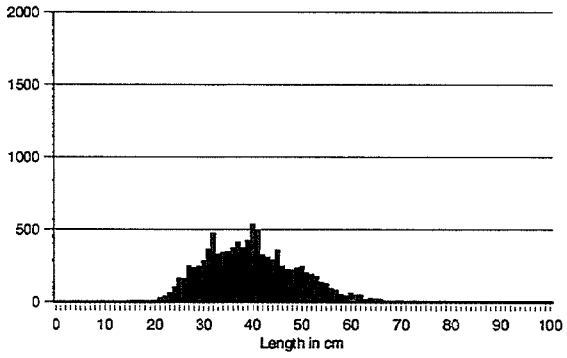
Deep water hake

SOUTHERN REGION TOTAL



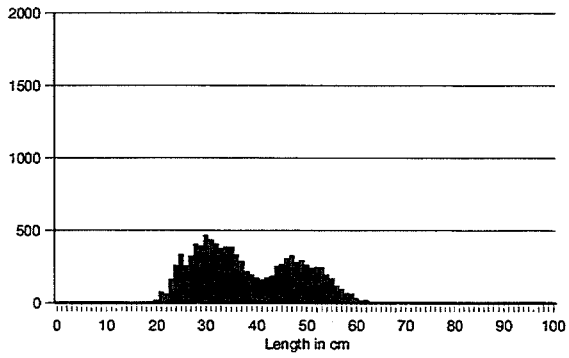
Cape hake

NORTHERN REGION 260-700m



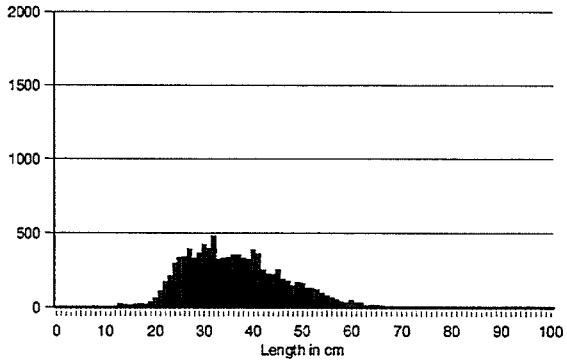
Deep water hake

CENTRAL REGION



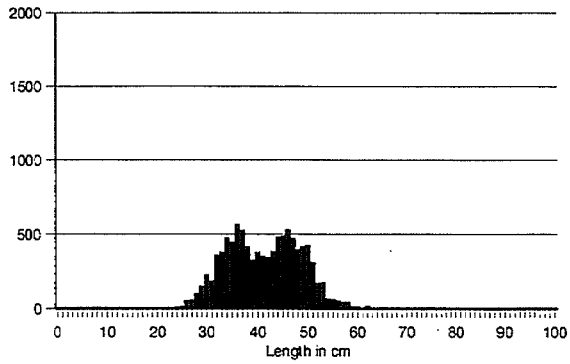
Cape hake

NORTHERN REGION TOTAL



Deep water hake

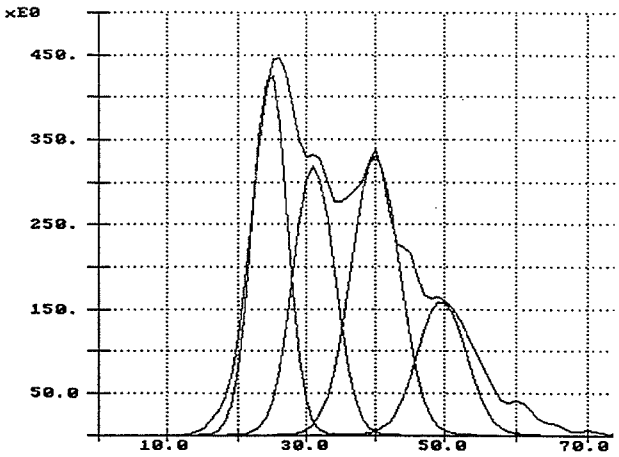
NORTHERN REGION

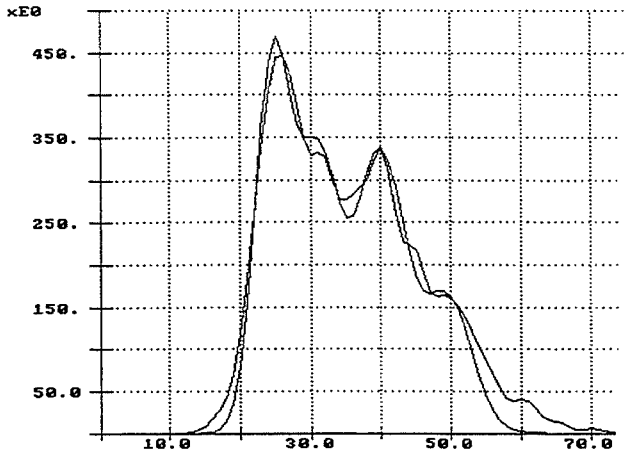


Annex II The size composition of the hake stocks split into length cohorts through optimizing techniques

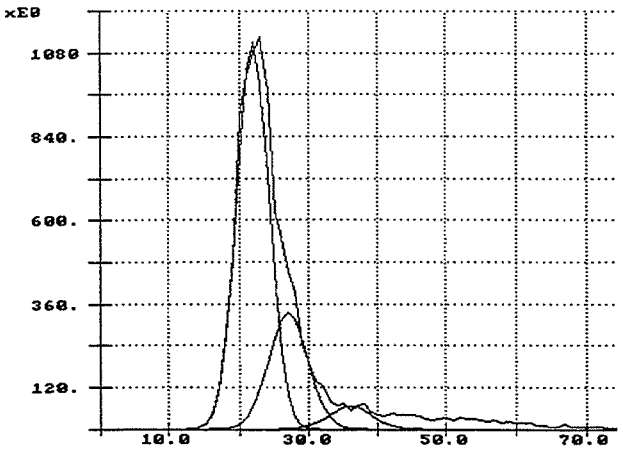
CAPE HAKE

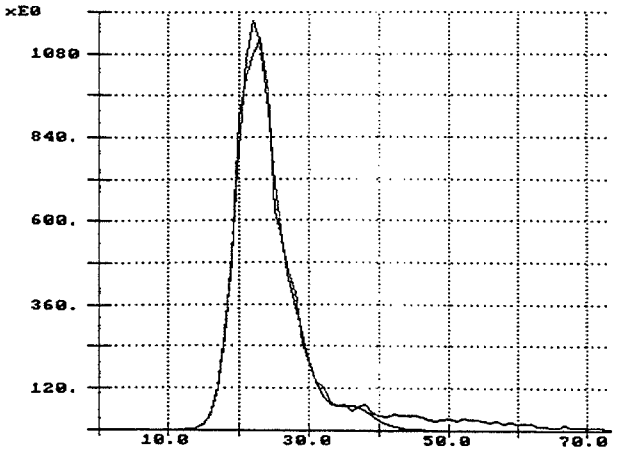
NORTHERN REGION



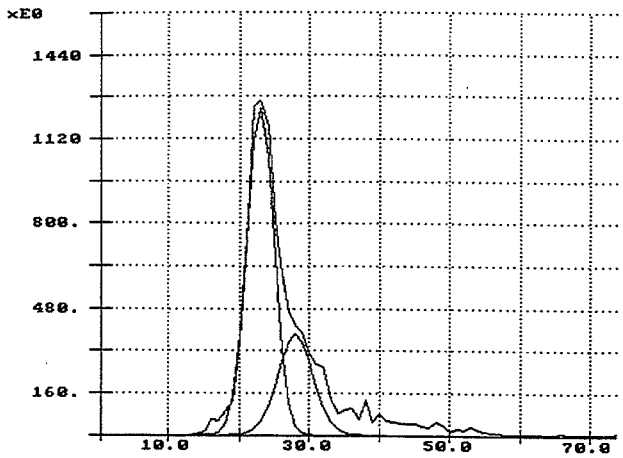


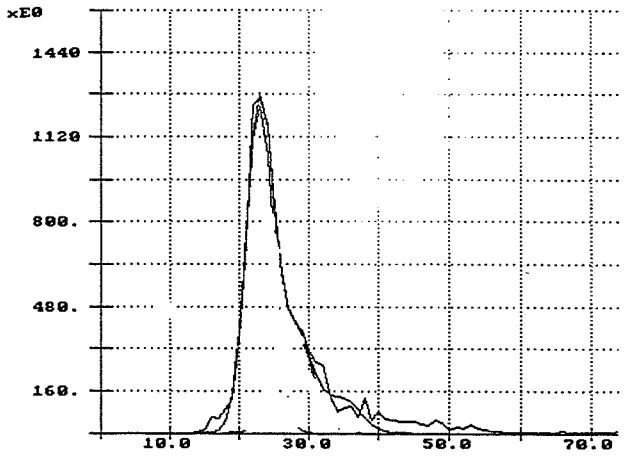
CENTRAL REGION





SOUTHERN REGION





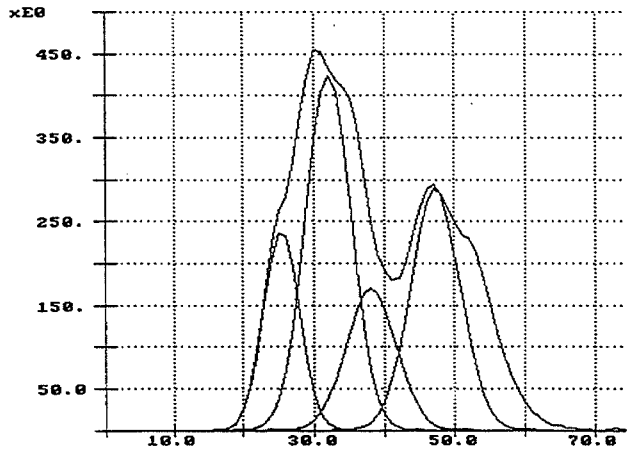
The length frequency distribution with the estimated cohorts.

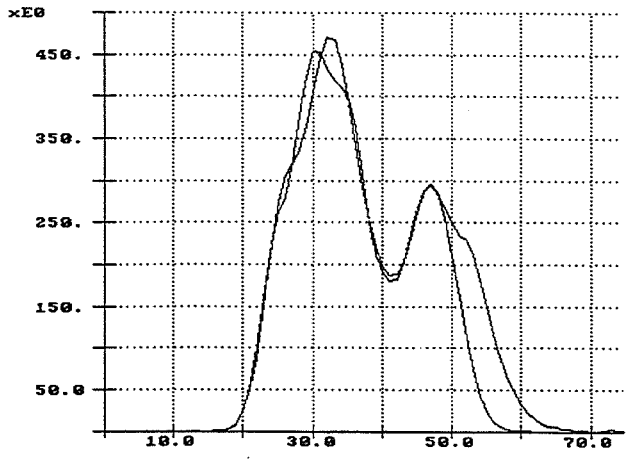
The length frequency distribution with the resultant distribution explained by the estimated cohorts.

DEEP WATER HAKE

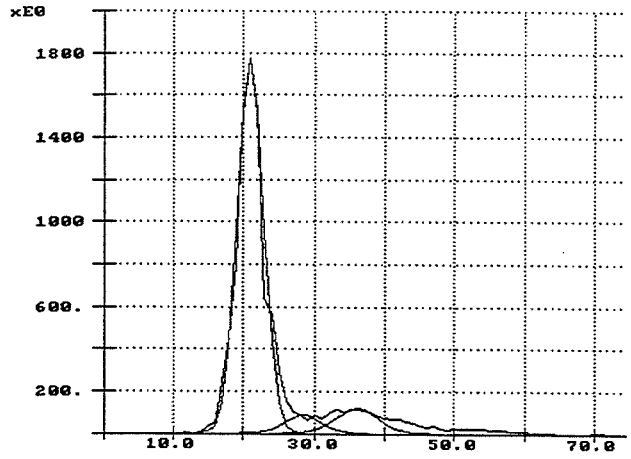
NORTHERN REGION

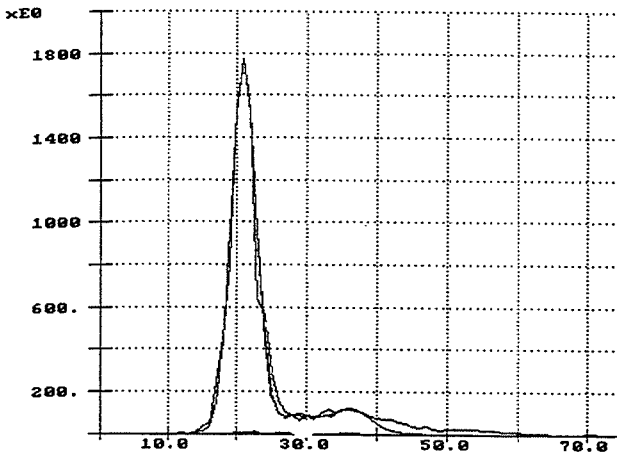
CENTRAL REGION





SOUTHERN REGION





The length frequency distribution with the estimated cohorts.

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

Annex III Records of fishing stations

PROJECT STATION: 920

DATE:22/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2839

start stop duration Long E 1612

TIME :05:45:00 06:15:00 30 (min) Purpose code: 3

LOG : 566.50 568.20 1.70 Area code : 1

FDEPTH: 91 84 GearCond.code:

BDEPTH: 91 84 Validity code:

Towing dir: 332° Wire out: 400 m Speed: 3 kn*10

Sorted: 3 Kg Total catch: 38.76 CATCH/HOUR: 77.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sufflogobius bibarbatus	73.44	14514	94.74	
Squilla sp.	2.52	180	3.25	
Merluccius capensis, male	0.70	6	0.90	2896
Etrumeus whiteheadi	0.64	10	0.83	2895
Merluccius capensis, female	0.22	2	0.28	2897
Total	77.52		100.00	

PROJECT STATION: 921

DATE:22/ 4/95 GEAR TYPE: BT No:7 POSITION:Lat S 2850

start stop duration Long E 1554

TIME :09:33:00 10:03:00 30 (min) Purpose code: 3

LOG : 593.00 594.70 1.70 Area code : 1

FDEPTH: 149 144 GearCond.code:

BDEPTH: 149 144 Validity code:

Towing dir: 50° Wire out: 550 m Speed: 3 kn*10

Sorted: 115 Kg Total catch: 281.92 CATCH/HOUR: 563.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Etrumeus whiteheadi	194.40	2628	34.48	
Galeorhinus galeus	88.80	8	15.75	
Merluccius capensis	66.16	2854	11.73	2900
Merluccius capensis, female	54.90	216	9.74	2899
Sepia australis	45.98	2512	8.15	
Thyrsites atun	42.20	16	7.48	2901
Merluccius capensis, male	27.72	270	4.92	2898
Squalus megalops	14.22	18	2.52	
Chelidonichthys capensis	10.90	36	1.93	
Lophius vomerinus	6.10	20	1.08	2902
Congiopodus spinifer	3.88	28	0.69	
Lepidopus caudatus	3.70	298	0.66	
Chelidonichthys queketti	2.88	36	0.51	
Coelorinchus fasciatus	0.54	10	0.10	
Todaropsis eblanae	0.54	46	0.10	
Sufflogobius bibarbatus	0.46	18	0.08	
Paracallionymus costatus	0.46	18	0.08	
Total	563.84		100.00	

PROJECT STATION: 922

DATE:22/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2900

start stop duration Long E 1540

TIME :13:24:00 13:54:00 30 (min) Purpose code: 3

LOG : 617.40 619.10 1.70 Area code : 1

FDEPTH: 172 173 GearCond.code:

BDEPTH: 172 173 Validity code:

Towing dir: 60° Wire out: 600 m Speed: 34 kn*10

Sorted: 55 Kg Total catch: 288.91 CATCH/HOUR: 577.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Etrumeus whiteheadi	481.50	6102	83.33	
Merluccius capensis, female	18.90	192	3.27	2904
Sepia australis	15.66	1566	2.71	
Merluccius capensis, male	14.20	104	2.46	2903
Helicolenus dactylopterus	9.36	486	1.62	
Thyrsites atun	6.90	4	1.19	2905
Paracallionymus costatus	5.94	576	1.03	
Lophius vomerinus	5.00	16	0.87	2907
Merluccius capensis	4.50	150	0.78	2908
Holohalaelurus regani	4.50	36	0.78	
Chelidonichthys queketti	3.60	54	0.62	
Chelidonichthys capensis	3.60	18	0.62	
Genypterus capensis	1.76	14	0.30	2906
MYCTOPHIDAE	0.72	360	0.12	
Loligo vulgaris	0.72	90	0.12	
Sufflogobius bibarbatus	0.54	162	0.09	
Lepidopus caudatus	0.36	270	0.06	
Cynoglossus capensis	0.06	10	0.01	
Total	577.82		99.98	

PROJECT STATION: 923

DATE:22/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2906

start stop duration Long E 1529

TIME :16:18:00 16:48:00 30 (min) Purpose code: 3

LOG : 637.90 639.20 1.30 Area code : 1

FDEPTH: 174 175 GearCond.code:

BDEPTH: 174 175 Validity code:

Towing dir: 60° Wire out: 600 m Speed: 34 kn*10

Sorted: 82 Kg Total catch: 297.88 CATCH/HOUR: 595.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus	247.50	13694	41.54	2910
Sepia australis	99.76	11310	16.74	
Etrumeus whiteheadi	48.46	676	8.13	2909
Merluccius capensis, female	44.10	52	7.40	2912
Merluccius paradoxus, female	36.50	406	6.14	2914
Thyrsites atun	16.40	6	2.75	2915
Helicolenus dactylopterus	16.20	346	2.72	
Brama brama	16.00	8	2.69	
Merluccius capensis, male	15.60	22	2.62	2911
Merluccius paradoxus, male	13.20	106	2.22	2913
Holohalaelurus regani	10.20	60	1.71	
Lepidopus caudatus	8.70	166	1.46	
Chelidonichthys capensis	5.26	16	0.88	
Cynoglossus capensis	4.36	90	0.73	
Lophius vomerinus	3.50	2	0.59	2916
Trachurus capensis	2.56	16	0.43	
Paracallionymus costatus	2.40	120	0.40	
Todaropsis eblanae	1.96	30	0.33	
Todarodes sagittatus	1.70	2	0.29	
Genypterus capensis	1.00	2	0.17	
Bassanago albescens	0.30	16	0.05	
Total	595.76		99.99	

PROJECT STATION: 924

DATE:22/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2936

start stop duration Long E 1440

TIME :23:40:00 00:10:00 30 (min) Purpose code: 3

LOG : 703.40 704.60 1.20 Area code : 1

FDEPTH: 390 392 GearCond.code:

BDEPTH: 390 392 Validity code:

Towing dir: 315° Wire out:1100 m Speed: 3 kn*10

Sorted: 103 Kg Total catch: 103.10 CATCH/HOUR: 206.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, male	75.30	198	36.52	2919
Merluccius paradoxus, female	64.50	186	31.28	2920
Coelorinchus fasciatus	25.00	292	12.12	
Malacocephalus laevis	12.00	12	5.82	
Genypterus capensis	6.22	4	3.02	2917
Lophius vomerinus	6.10	4	2.96	2918
Epigonus denticulatus	4.90	64	2.38	
Helicolenus dactylopterus	4.68	36	2.27	
Etmopterus brachyurus	2.24	2	1.09	
Zeus capensis	1.36	2	0.66	
Holohalaelurus regani	1.34	10	0.65	
Chelidonichthys capensis	0.66	2	0.32	
Hoplostethus atlanticus	0.64	6	0.31	
Rossia enigmatica	0.28	8	0.14	
Tripterophycis gilchristi	0.20	10	0.10	
OMMASTREPHIDAE	0.20	6	0.10	
Sepia australis	0.14	6	0.07	
Paracallionymus costatus	0.14	16	0.07	
CONGRIDAE	0.12	2	0.06	
Yarrella blackfordi	0.08	6	0.04	
Cynoglossus capensis	0.06	2	0.03	
Nezumia sp.	0.04	4	0.02	
Total	206.20		100.03	

PROJECT STATION: 925

DATE:23/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2931

start stop duration Long E 1430

TIME :03:25:00 03:55:00 30 (min) Purpose code: 3

LOG : 714.40 715.80 1.40 Area code : 1

FDEPTH: 568 563 GearCond.code:

BDEPTH: 568 563 Validity code:

Towing dir: 360° Wire out:1500 m Speed: 29 kn*10

Sorted: 38 Kg Total catch: 154.35 CATCH/HOUR: 308.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	135.20	1872	43.80	
Merluccius paradoxus, female	30.90	26	10.01	2921
Raja caudaspinosa	23.36	16	7.57	
Nezumia sp.	20.00	512	6.48	
CHIMAERIDAE	18.40	32	5.96	
Selachophidium guentheri	16.00	224	5.18	
Raja leopardus	13.28	16	4.30	
Lophius vomerinus	10.44	2	3.38	2922
S H R I M P S	10.24	992	3.32	
Malacocephalus laevis	7.04	32	2.28	
Bassanago albescens	5.76	16	1.87	
Ebinania costaecanarie	3.84	16	1.24	
GONOSTOMATIDAE	3.04	112	0.98	
Stomias boa boa	2.24	16	0.73	
Helicolenus dactylopterus	2.08	16	0.67	
Lithodes ferox	1.42	2	0.46	
S H R I M P S	1.28	48	0.41	
Neoscopelus macrolepidotus	1.12	96	0.36	
MYCTOPHIDAE	0.96	112	0.31	
C R A B S	0.66	6	0.21	
Tripterophycis gilchristi	0.64	32	0.21	
Notacanthus sexspinis	0.48	16	0.16	
Yarrella blackfordi	0.32	16	0.10	
Total	308.70		99.99	

PROJECT STATION: 926

DATE:23/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2908
start stop duration Long E 1430
TIME :08:02:00 08:32:00 30 (min) Purpose code: 3
LOG : 742.90 744.40 1.50 Area code : 1
FDEPTH: 331 327 GearCond.code:
BDEPTH: 331 327 Validity code:
Towing dir: 130° Wire out: 950 m Speed: 3 kn*10

Sorted: 99 Kg Total catch: 738.46 CATCH/HOUR: 1476.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Zeus faber	678.50	1104	45.94	
Epigonus denticulatus	397.90	7292	26.94	
Merluccius paradoxus, female	126.74	1128	8.58	2929
Merluccius paradoxus, male	112.00	966	7.58	2928
Merluccius paradoxus, female	29.30	34	1.98	2925
Coelorinchus fasciatus	28.60	276	1.94	
Malacocephalus laevis	28.30	46	1.92	
Holohalaelurus regani	16.34	70	1.11	
Merluccius capensis, female	11.90	4	0.81	2923
Lophius vomerinus	11.00	6	0.74	2927
Merluccius paradoxus, male	8.50	14	0.58	2924
Helicolenus dactylopterus	6.68	24	0.45	
Brama brama	6.50	4	0.44	
Genypterus capensis	5.00	4	0.34	2926
Todarodes sagittatus	4.60	6	0.31	
Todaropsis eblanae	3.22	24	0.22	
Cynoglossus capensis	1.84	46	0.12	
Total	1476.92		100.00	

PROJECT STATION: 927

DATE:23/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2854
start stop duration Long E 1455
TIME :12:05:00 12:35:00 30 (min) Purpose code: 3
LOG : 773.20 774.90 1.70 Area code : 1
FDEPTH: 173 172 GearCond.code:
BDEPTH: 173 172 Validity code:
Towing dir: 360° Wire out: 510 m Speed: 3 kn*10

Sorted: 100 Kg Total catch: 325.11 CATCH/HOUR: 650.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sepia australis	156.00	25298	23.99	
Merluccius paradoxus, female	136.50	1800	20.99	2935
Merluccius capensis, female	93.30	60	14.35	2931
Zeus capensis	59.40	556	9.14	
Merluccius paradoxus	38.56	2236	5.93	2936
Merluccius paradoxus, male	29.86	496	4.59	2934
Chelidonichthys queketti	23.40	166	3.60	
Trachurus capensis	17.86	76	2.75	2933
Merluccius capensis, male	17.60	16	2.71	2930
Holohalaelurus regani	16.20	46	2.49	
Lophius vomerinus	15.60	18	2.40	2937
Etrumeus whiteheadi	14.70	196	2.26	
Etmopterus brachyurus	13.66	30	2.10	
Congiopodus spinifer	4.20	60	0.65	
Todarodes sagittatus	4.06	60	0.62	
Lepidopus caudatus	2.70	46	0.42	
Thyrsites atun	2.68	2	0.41	2932
Todarodes sagittatus	2.58	2	0.40	
Paracallionymus costatus	1.36	106	0.21	
Total	650.22		100.01	

PROJECT STATION: 928

DATE:23/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2841
start stop duration Long E 1515
TIME :15:10:00 15:17:00 7 (min) Purpose code: 3
LOG : 796.20 796.40 0.30 Area code : 1
FDEPTH: 160 162 GearCond.code:
BDEPTH: 160 162 Validity code:
Towing dir: 360° Wire out: 510 m Speed: 3 kn*10

Sorted: 123 Kg Total catch: 123.12 CATCH/HOUR: 1055.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Emmelichthys nitidus	528.00	806	50.03	
Merluccius capensis, female	124.71	180	11.82	2943
Merluccius paradoxus	89.57	5040	8.49	2946
Merluccius capensis, male	71.06	129	6.73	2942
Chelidonichthys capensis	67.29	111	6.38	
Merluccius paradoxus, female	43.97	660	4.17	2945
Etrumeus whiteheadi	28.11	317	2.66	
Sepia australis	24.60	1637	2.33	
Squalus megalops	14.14	43	1.34	
Trachurus capensis	12.43	69	1.18	2938
Chelidonichthys queketti	9.94	94	0.94	
Merluccius paradoxus, male	9.77	163	0.93	2944
Lepidopus caudatus	7.54	197	0.71	
Cynoglossus capensis	7.11	69	0.67	
Zeus capensis	4.20	137	0.40	
Helicolenus dactylopterus	3.09	103	0.29	
Paracallionymus costatus	2.31	154	0.22	
Lophius vomerinus	2.06	9	0.20	2939
Holohalaelurus regani	1.97	17	0.19	
Congiopodus spinifer	1.63	9	0.15	
Sardinops ocellatus	0.86	9	0.08	2941
Todaropsis eblanae	0.77	43	0.07	
Genypterus capensis	0.17	9	0.02	2940
Total	1055.30		100.00	

PROJECT STATION: 929

DATE:23/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2832
start stop duration Long E 1534
TIME :17:44:00 18:14:00 30 (min) Purpose code: 3
LOG : 818.50 820.10 1.60 Area code : 1
FDEPTH: 154 160 GearCond.code:
BDEPTH: 154 160 Validity code:
Towing dir: 240° Wire out: 510 m Speed: 3 kn*10

Sorted: 69 Kg Total catch: 70.43 CATCH/HOUR: 140.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	47.90	378	34.01	2949
Merluccius capensis, male	30.70	320	21.79	2948
Merluccius capensis	15.30	674	10.86	2947
Raja pullopunctata	13.80	2	9.80	
Genypterus capensis	12.90	24	9.16	2950
Callorhinchus capensis	8.82	4	6.26	
Thyrsites atun	4.70	2	3.34	
Holohalaelurus regani	3.42	16	2.43	
Sepia australis	1.28	58	0.91	
Lophius vomerinus	0.80	2	0.57	
Trachurus capensis	0.40	2	0.28	
Lepidopus caudatus	0.32	8	0.23	
Coelorinchus fasciatus	0.30	6	0.21	
Zeus capensis	0.14	4	0.10	
Chelidonichthys capensis	0.08	2	0.06	
Total	140.86		100.01	

PROJECT STATION: 930

DATE:23/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2829
start stop duration Long E 1538
TIME :19:48:00 20:08:00 20 (min) Purpose code: 3
LOG : 830.30 831.30 1.00 Area code : 1
FDEPTH: 137 140 GearCond.code:
BDEPTH: 137 140 Validity code:
Towing dir: 240° Wire out: 450 m Speed: 3 kn*10

Sorted: 85 Kg Total catch: 85.77 CATCH/HOUR: 257.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	120.00	1188	46.64	2952
Merluccius capensis, female	77.55	495	30.14	2953
Genypterus capensis	41.10	48	15.97	2954
Merluccius capensis	6.78	300	2.63	2951
Zeus faber	3.72	48	1.45	
Callorhinchus capensis	3.66	3	1.42	
Helicolenus dactylopterus	3.09	6	1.20	
Chelidonichthys capensis	0.75	3	0.29	
Congiopodus spinifer	0.42	3	0.16	
Sepia australis	0.24	9	0.09	
Total	257.31		99.99	

PROJECT STATION: 931

DATE:24/ 4/95 GEAR TYPE. BT No:6 POSITION:Lat S 2817
start stop duration Long E 1505
TIME :10:00:00 10:30:00 30 (min) Purpose code: 3
LOG : 918.90 920.70 1.80 Area code : 1
FDEPTH: 175 174 GearCond.code:
BDEPTH: 175 174 Validity code:
Towing dir: 40° Wire out 600 m Speed: 32 kn*10

Sorted: 142 Kg Total catch 568 82 CATCH/HOUR: 1137.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	338 30	5270	29.74	2960
Merluccius capensis, female	192 44	2210	16.92	2958
Merluccius capensis, female	156 60	142	13.77	2956
Sepia australis	147 22	7684	12.94	
Merluccius capensis, male	137 36	1122	12.07	2957
Galeorhinus galeus	41 40	2	3.64	
Merluccius capensis, male	24 50	28	2.15	2955
Merluccius paradoxus, male	24 14	340	2.12	2959
Merluccius capensis	23 46	986	2.06	2961
MYCTOPHIDAE	16 32	97920	1.43	
Sufflogobius bibarbatus	9 18	4828	0.81	
Chelidonichthys capensis	8 16	34	0.72	
Todarodes sagittatus	4.78	6	0.42	
Trachurus capensis	3 40	34	0.30	2964
Lophius vomerinus	2.10	4	0.18	2963
Todaropsis eblanae	2.04	68	0.18	
Lepidopus caudatus	2.04	34	0.18	
Holohalaelurus regani	1.70	34	0.15	
Genypterus capensis	1.48	12	0.13	2962
Zeus capensis	1.02	68	0.09	
Total	1137.64		100.00	

PROJECT STATION: 932

DATE:24/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2825

	start	stop	duration			Long E 1451
TIME	:12:50:00	13:20:00	30 (min)	Purpose code:	3	
LOG	: 939.30	941.00	1.70	Area code	: 1	
FDEPTH:	180	183		GearCond.code:		
BDEPTH:	180	183		Validity code:		

Towing dir: 300° Wire out: 610 m Speed: 3 kn*10

Sorted: 92 Kg Total catch: 166.42 CATCH/HOUR: 332.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	99.70	72	29.95	2970
Merluccius paradoxus, female	46.24	624	13.89	2973
Etmopterus brachyurus	23.84	56	7.16	
Zeus capensis	23.76	192	7.14	
Chelidonichthys capensis	20.80	56	6.25	
Lepidopus caudatus	19.84	280	5.96	
Merluccius paradoxus, male	19.76	312	5.94	2972
Merluccius capensis, male	16.00	14	4.81	2969
Thyrsites atun	13.70	10	4.12	2965
Mustelus palumbes	13.42	8	4.03	
Sepia australis	7.76	1096	2.33	
Merluccius paradoxus	6.64	424	1.99	2971
Holohalaelurus regani	6.32	24	1.90	
Congiopodus spinifer	2.96	16	0.89	
Lophius vomerinus	2.34	4	0.70	2968
Trachurus capensis	2.32	16	0.70	2966
Chelidonichthys queketti	2.24	16	0.67	
Todaropsis eblanae	2.08	32	0.62	
Todarodes sagittatus	1.54	2	0.46	
Genypterus capensis	1.16	4	0.35	2967
Helicolenus dactylopterus	0.24	56	0.07	
Sufflogobius bibarbatus	0.16	56	0.05	
Total	332.82		99.98	

PROJECT STATION: 933

DATE:24/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2832

	start	stop	duration			Long E 1440
TIME	:15:18:00	15:48:00	30 (min)	Purpose code:	3	
LOG	: 956.00	957.80	1.80	Area code	: 1	
FDEPTH:	164	177		GearCond.code:		
BDEPTH:	164	177		Validity code:		

Towing dir: 35° Wire out: 560 m Speed: 24 kn*10

Sorted: 145 Kg Total catch: 696.83 CATCH/HOUR: 1393.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Squalus megalops	654.16	1618	46.94	
Zeus capensis	195.30	988	14.01	
Merluccius capensis, female	110.00	52	7.89	2977
Emmelichthys nitidus	104.38	4242	7.49	
Lepidopus caudatus	87.16	106	6.25	
Callorhinchus capensis	45.16	42	3.24	
Chelidonichthys queketti	43.06	588	3.09	
Chelidonichthys capensis	40.74	64	2.92	
Merluccius capensis, male	39.80	22	2.86	2976
Trachurus capensis	24.78	148	1.78	2974
Lophius vomerinus	17.90	14	1.28	2975
Thyrsites atun	8.82	22	0.63	2978
Congiopodus spinifer	8.62	42	0.62	
Polyprion americanus *	6.40	2	0.46	
Sepia australis	4.42	316	0.32	
Holohalaelurus regani	1.48	22	0.11	
Etrumeus whiteheadi	1.48	22	0.11	
Total	1393.66		100.00	

PROJECT STATION: 934

DATE:24/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2845

	start	stop	duration			Long E 1424
TIME	:19:23:00	19:53:00	30 (min)	Purpose code:	3	
LOG	: 986.70	988.20	1.50	Area code	: 1	
FDEPTH:	389	394		GearCond.code:		
BDEPTH:	389	394		Validity code:		

Towing dir: 350° Wire out:1150 m Speed: 3 kn*10

Sorted: 199 Kg Total catch: 303.13 CATCH/HOUR: 606.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	246.20	520	40.61	2980
Merluccius paradoxus, male	240.80	570	39.72	2979
Coelorinchus fasciatus	47.50	832	7.83	
Genypterus capensis	23.00	14	3.79	2981
Helicolenus dactylopterus	18.10	82	2.99	
Octopus vulgaris	10.70	2	1.76	
Raja pullopunctata	7.40	2	1.22	
Todarodes sagittatus	3.70	10	0.61	
Holohalaelurus regani	3.10	10	0.51	
Raja confundens	2.70	2	0.45	
MYCTOPHIDAE	1.40	108	0.23	
Notacanthus sexspinis	0.48	4	0.08	
Malacocephalus laevis	0.30	16	0.05	
Etmopterus pusillus	0.24	4	0.04	
Chelidonichthys queketti	0.24	6	0.04	
Emmelichthys nitidus	0.12	4	0.02	
Zeus capensis	0.12	4	0.02	
Nezumia sp.	0.12	12	0.02	
Paracallionymus costatus	0.04	4	0.01	
Total	606.26		100.00	

PROJECT STATION: 935

DATE:24/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2843

	start	stop	duration			Long E 1417
TIME	:22:50:00	23:20:00	30 (min)	Purpose code:	3	
LOG	: 9.10	10.70	1.60	Area code	: 1	
FDEPTH:	645	646		GearCond.code:		
BDEPTH:	645	646		Validity code:		

Towing dir: 180° Wire out:1650 m Speed: 3 kn*10

Sorted: 65 Kg Total catch: 256.38 CATCH/HOUR: 512.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	155.10	1716	30.25	
Hoplostethus atlanticus	72.06	220	14.05	2983
Nezumia sp.	66.00	1266	12.87	
Merluccius paradoxus, female	45.10	26	8.80	2982
Neocyttus rhomboidalis	31.02	364	6.05	
Malacocephalus laevis	24.42	88	4.76	
Selachophidium guentheri	20.24	232	3.95	
Raja leopardus	13.20	88	2.57	
Photichthys argenteus	12.10	506	2.36	
Notacanthus sexspinis	10.34	144	2.02	
Hoplostethus cadenati	9.68	572	1.89	
Ebinania costaecanarie	9.02	78	1.76	
Deania profundorum	7.38	12	1.44	
Trachyscorpia capensis	6.28	34	1.22	
Neoscopelus macrolepidotus	5.18	188	1.01	
Shrimps, small, non comm.	4.18	924	0.82	
RAJIDAE	3.20	22	0.62	
Stomias boa boa	2.76	34	0.54	
Yarrella blackfordi	2.54	78	0.50	
Aristeus varidens	2.54	210	0.50	
STOMIIDAE	2.32	44	0.45	
CHIMAERIDAE	2.32	22	0.45	
Todaropsis eblanae	1.44	12	0.28	
MYCTOPHIDAE	1.10	110	0.21	
C R A B S	1.00	12	0.20	
Chauliodus sloani	0.78	44	0.15	
Tripterophycis gilchristi	0.78	12	0.15	
CONGRIDAE	0.34	12	0.07	
Halosaurus ovenii	0.34	12	0.07	
Total	512.76		100.01	

PROJECT STATION: 936

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2836

	start	stop	duration			Long E 1422
TIME	:01:16:00	01:46:00	30 (min)	Purpose code:	3	
LOG	: 25.30	26.80	1.50	Area code	: 1	
FDEPTH:	438	444		GearCond.code:		
BDEPTH:	438	444		Validity code:		

Towing dir: 190° Wire out:1250 m Speed: 30 kn*10

Sorted: 55 Kg Total catch: 55.09 CATCH/HOUR: 110.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	36.90	74	33.49	2985
Raja caudaspinosa	15.70	10	14.25	
Coelorinchus fasciatus	14.90	226	13.52	
Merluccius paradoxus, male	13.40	30	12.16	2984
Genypterus capensis	11.90	8	10.80	2986
Todarodes sagittatus	2.58	6	2.34	
MYCTOPHIDAE	2.48	374	2.25	
Callorhinchus capensis	2.34	2	2.12	
Nezumia sp.	1.92	130	1.74	
Aristeus varidens	1.58	330	1.43	
Krill	1.30		1.18	
Helicolenus dactylopterus	1.24	8	1.13	
Myxine capensis	0.94	26	0.85	
Trachyrincus scabrus	0.76	6	0.69	
Malacocephalus laevis	0.64	30	0.58	
Etmopterus lucifer	0.42	10	0.38	
Photichthys argenteus	0.30	24	0.27	
Ebinania costaecanarie	0.28	6	0.25	
Stomias boa boa	0.24	6	0.22	
Selachophidium guentheri	0.20	2	0.18	
Paracallionymus costatus	0.06	4	0.05	
Raja leopardus	0.06	2	0.05	
CONGRIDAE	0.04	2	0.04	
Total	110.18		99.97	

PROJECT STATION: 937

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2821

	start	stop	duration			Long E 1428
TIME	:04:30:00	04:53:00	23 (min)	Purpose code:	3	
LOG	: 45.00	46.00	1.00	Area code	: 1	
FDEPTH:	384	395		GearCond.code:		
BDEPTH:	384	395		Validity code:		

Towing dir: 5° Wire out:1150 m Speed: 30 kn*10

Sorted: 15 Kg Total catch: 24.27 CATCH/HOUR: 63.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, male	23.11	91	36.50	2987
Merluccius paradoxus, female	17.74	70	28.02	2988
Raja confundens	9.47	10	14.96	
Coelorinchus fasciatus	5.63	89	8.89	
Miscellaneous fishes	4.83		7.63	
MYCTOPHIDAE	0.83	248	1.31	
Coelorinchus braueri	0.65	5	1.03	
Malacocephalus laevis	0.44	16	0.69	
Plesionika martia	0.23	57	0.36	
Epigonus denticulatus	0.13	16	0.21	
Photichthys argenteus	0.13	10	0.21	
Myxine capensis	0.08	3	0.13	
Nezumia sp.	0.03	5	0.05	
Total	63.30		99.99	

PROJECT STATION: 938

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2809
start stop duration Long E 1429
TIME :07:27:00 07:57:00 30 (min) Purpose code: 3
LOG :1059.80 1061.30 1.50 Area code : 1
FDEPTH: 500 496 GearCond.code:
BDEPTH: 500 496 Validity code:
Towing dir: 185° Wire out:1250 m Speed: 30 kn*10

Sorted: 63 Kg Total catch: 97.97 CATCH/HOUR: 195.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	120.00	98	61.24	2989
Deepwater fish mixture	19.60		10.00	
Nezumia leonis	16.90	702	8.63	
Todarodes sagittatus	7.54	16	3.85	
Hydrolagus sp.	5.22	6	2.66	
Raja confundens	5.00	2	2.55	
Genypterus capensis	4.26	4	2.17	2991
Etmopterus pusillus	4.06	138	2.07	
Merluccius paradoxus, male	4.00	8	2.04	2990
Coelorinchus fasciatus	3.66	42	1.87	
Cruriraja parcomaculata	3.38	2	1.73	
Selachophidium guentheri	0.54	4	0.28	
Notacanthus sexspinis	0.46	14	0.23	
Photichthys argenteus	0.44	28	0.22	
Plesionika martia	0.38	48	0.19	
MYCTOPHIDAE	0.20	16	0.10	
Epigonus denticulatus	0.12	2	0.06	
Scopelosaurus meadi	0.10	2	0.05	
Yarrella blackfordi	0.08	2	0.04	
Total	195.94		99.98	

PROJECT STATION: 939

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2750
start stop duration Long E 1451
TIME :11:45:00 12:15:00 30 (min) Purpose code: 3
LOG : 95.80 97.40 1.60 Area code : 1
FDEPTH: 248 267 GearCond.code:
BDEPTH: 248 267 Validity code:
Towing dir: 220° Wire out: 800 m Speed: 30 kn*10

Sorted: 99 Kg Total catch: 1576.36 CATCH/HOUR: 3152.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	1618.50	24492	51.34	2995
Trachurus capensis	994.50	3822	31.54	2999
Merluccius paradoxus, male	265.98	3978	8.44	2994
Chelidonichthys capensis	81.90	156	2.60	
Merluccius capensis, female	69.96	122	2.22	2993
Sepia australis	39.00	1794	1.24	
Merluccius capensis, male	24.18	52	0.77	2992
Coelorinchus fasciatus	21.84	1872	0.69	
Todarodes sagittatus	10.02	22	0.32	
MYCTOPHIDAE	9.36	5070	0.30	
Lophius vomerinus	7.60	8	0.24	2996
Thyrsites atun	4.70	2	0.15	2998
Merluccius paradoxus, female	3.50	6	0.11	3000
Genypterus capensis	1.68	10	0.05	2997
Total	3152.72		100.01	

PROJECT STATION: 940

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2742
start stop duration Long E 1501
TIME :14:15:00 14:45:00 30 (min) Purpose code: 3
LOG : 113.50 115.00 1.50 Area code : 1
FDEPTH: 171 178 GearCond.code:
BDEPTH: 171 178 Validity code:
Towing dir: 237° Wire out: 600 m Speed: 30 kn*10

Sorted: 36 Kg Total catch: 140.28 CATCH/HOUR: 280.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	105.60	1034	37.64	3001
Chelidonichthys capensis	40.82	110	14.55	
Merluccius paradoxus, female	35.54	572	12.67	3004
Merluccius capensis, female	33.00	320	11.76	3002
Trachurus capensis	12.22	56	4.36	3007
Sepia australis	10.34	528	3.69	
Genypterus capensis	10.20	50	3.64	3005
Raja leopardus	9.90	6	3.53	
Merluccius capensis	7.82	408	2.79	3008
Sufflogobius bibarbatus	4.08	1134	1.45	
Callorhinchus capensis	3.68	2	1.31	
Merluccius paradoxus	2.42	144	0.86	3003
Austroglossus microlepis	1.72	8	0.61	3006
Todarodes sagittatus	1.56	2	0.56	
MYCTOPHIDAE	0.88	452	0.31	
Todaropsis eblanae	0.78	22	0.28	
Total	280.56		100.01	

PROJECT STATION: 941

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2734
start stop duration Long E 1512
TIME :16:40:00 17:10:00 30 (min) Purpose code: 3
LOG :1131.50 1133.00 1.50 Area code : 1
FDEPTH: 124 125 GearCond.code:
BDEPTH: 124 125 Validity code:
Towing dir: 330° Wire out: 500 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 176.55 CATCH/HOUR: 353.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	186.50	1530	52.82	3011
Merluccius capensis, male	138.00	1450	39.08	3010
Merluccius capensis	25.20	1230	7.14	3009
Sufflogobius bibarbatus	3.40	1310	0.96	
Total	353.10		100.00	

PROJECT STATION: 942

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2735
start stop duration Long E 1501
TIME :18:35:00 18:55:00 20 (min) Purpose code: 3
LOG :1144.70 1145.90 1.20 Area code : 1
FDEPTH: 179 178 GearCond.code:
BDEPTH: 179 178 Validity code:
Towing dir: 180° Wire out: 670 m Speed: 30 kn*10

Sorted: 103 Kg Total catch: 460.77 CATCH/HOUR: 1382.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	596.37	6510	43.14	3015
Merluccius capensis, female	365.04	2907	26.41	3016
Sufflogobius bibarbatus	165.00	31131	11.94	
Raja sp.	121.20	3	8.77	
MYCTOPHIDAE	58.20	48501	4.21	
Merluccius capensis	28.20	1071	2.04	3014
Genypterus capensis	27.15	120	1.96	3012
Chelidonichthys capensis	19.29	48	1.40	
Austroglossus microlepis	1.86	12	0.13	3013
Total	1382.31		100.00	

PROJECT STATION: 943

DATE:25/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2732
start stop duration Long E 1442
TIME :21:00:00 21:30:00 30 (min) Purpose code: 3
LOG :1165.30 1166.70 1.40 Area code : 1
FDEPTH: 327 327 GearCond.code:
BDEPTH: 327 327 Validity code:
Towing dir: 340° Wire out:1000 m Speed: 28 kn*10

Sorted: 2 Kg Total catch: 10.24 CATCH/HOUR: 20.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	16.00		78.13	
Merluccius capensis, female	2.52	2	12.30	3017
Merluccius paradoxus, female	1.40	16	6.84	3019
Merluccius paradoxus, male	0.56	6	2.73	3018
Total	20.48		100.00	

PROJECT STATION: 944

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2731
start stop duration Long E 1442
TIME :00:20:00 00:50:00 30 (min) Purpose code: 3
LOG :1176.90 1178.20 1.30 Area code : 1
FDEPTH: 329 329 GearCond.code:
BDEPTH: 329 329 Validity code:
Towing dir: 340° Wire out:1100 m Speed: 30 kn*10

Sorted: 83 Kg Total catch: 227.86 CATCH/HOUR: 455.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	161.78	834	35.50	3021
Merluccius capensis, female	141.94	284	31.15	3023
Merluccius capensis, male	46.18	102	10.13	3022
Merluccius paradoxus, male	46.18	294	10.13	3020
Deepwater fish mixture	28.62		6.28	
Coelorinchus fasciatus	8.22	334	1.80	
Helicolenus dactylopterus	6.40	90	1.40	
Genypterus capensis	4.88	10	1.07	3025
Todarodes sagittatus	4.58	12	1.01	
Lophius vomerinus	2.68	6	0.59	3024
Epigonus denticulatus	1.76	118	0.39	
Malacocephalus laevis	1.48	6	0.32	
Galeus polli	0.90	6	0.20	
Chlorophthalmus punctatus	0.12	6	0.03	
Total	455.72		100.00	

PROJECT STATION: 945

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2733
start stop duration Long E 1428
TIME :02:50:00 03:20:00 30 (min) Purpose code: 3
LOG :1192.90 1194.50 1.60 Area code : 1
FDEPTH: 450 445 GearCond.code:
BDEPTH: 450 445 Validity code:
Towing dir: 340° Wire out:1300 m Speed: 30 kn*10

Sorted: 72 Kg Total catch: 138.24 CATCH/HOUR: 276.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	62.30	84	22.53	3027
Coelorinchus fasciatus	49.00	672	17.72	
Nezumia sp.	28.70	1436	10.38	
Deepwater fish mixture	24.50		8.86	
Galeus polli	15.76	140	5.70	
Raja confundens	14.08	14	5.09	
Helicolenus dactylopterus	13.16	70	4.76	
RAJIDAE	13.16	8	4.76	
Todarodes sagittatus	11.34	22	4.10	
Lophius vomerinus	11.20	2	4.05	3028
Merluccius paradoxus, male	10.60	16	3.83	3026
Selachophidium guentheri	10.22	148	3.70	
Genypterus capensis	6.70	4	2.42	3029
Yarrella blackfordi	3.64	280	1.32	
Malacocephalus laevis	0.70	14	0.25	
Sphyraena guachancho	0.64	8	0.23	
CYNOGLOSSIDAE	0.64	8	0.23	
Trachyrincus scabrus	0.14	22	0.05	
Total	276.48		99.98	

PROJECT STATION: 946

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2729

	start	stop	duration			Long E 1422
TIME	:04:40:00	05:10:00	30	(min)	Purpose code:	3
LOG	:1200.50	1202.10	1.60		Area code :	1
FDEPTH:	475	459			GearCond.code:	
BDEPTH:	475	459			Validity code:	

Towing dir: 340° Wire out:1350 m Speed: 30 kn*10

Sorted: 88 Kg Total catch: 105.46 CATCH/HOUR: 210.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	148.30	166	70.31	3031
Merluccius paradoxus, male	22.00	30	10.43	3030
Coelorinchus fasciatus	5.94	60	2.82	
Genypterus capensis	5.82	2	2.76	3032
Raja confundens	5.22	4	2.47	
Deania profundorum	5.18	2	2.46	
Galeus polli	3.02	28	1.43	
Nezumia sp.	3.00	126	1.42	
Hydrolagus sp.	2.68	4	1.27	
Selachophidium guentheri	2.56	40	1.21	
Coelorinchus braueri	1.50	58	0.71	
Todarodes sagittatus	1.34	2	0.64	
MYCTOPHIDAE	1.04	130	0.49	
Deania calcea	1.00	2	0.47	
Photichthys argenteus	0.96	80	0.46	
Helicolenus dactylopterus	0.80	8	0.38	
Malacocephalus laevis	0.44	2	0.21	
Ebinania costaecanarie	0.12	2	0.06	
Total	210.92		100.00	

PROJECT STATION: 947

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2727

	start	stop	duration			Long E 1418
TIME	:06:24:00	06:54:00	30	(min)	Purpose code:	3
LOG	:1207.30	1208.80	1.50		Area code :	1
FDEPTH:	541	536			GearCond.code:	
BDEPTH:	541	536			Validity code:	

Towing dir: 325° Wire out:1500 m Speed: 28 kn*10

Sorted: 199 Kg Total catch: 282.16 CATCH/HOUR: 564.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	396.60	322	70.28	3034
Deania calcea	102.16	72	18.10	
Todarodes sagittatus	27.64	64	4.90	
Raja confundens	8.92	54	1.58	
Selachophidium guentheri	4.78	64	0.85	
Coelorinchus braueri	4.60	172	0.82	
Etmopterus lucifer	3.52	28	0.62	
Trachyscorpia capensis	3.42	18	0.61	
Nezumia sp.	2.98	144	0.53	
Ebinania costaecanarie	2.26	28	0.40	
Galeus polli	2.16	18	0.38	
Merluccius paradoxus, male	1.66	2	0.29	3033
Neoscopelus macrolepidotus	0.90	64	0.16	
Photichthys argenteus	0.90	64	0.16	
Todaropsis eblanae	0.72	10	0.13	
MYCTOPHIDAE	0.36	28	0.06	
Yarrella blackfordi	0.28	10	0.05	
Solenocera africana	0.28	36	0.05	
Notacanthus sexspinis	0.18	10	0.03	
Total	564.32		100.00	

PROJECT STATION: 948

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2723

	start	stop	duration			Long E 1421
TIME	:08:53:00	09:23:00	30	(min)	Purpose code:	3
LOG	:1216.70	1218.30	1.60		Area code :	1
FDEPTH:	419	419			GearCond.code:	
BDEPTH:	419	419			Validity code:	

Towing dir: 320° Wire out:1250 m Speed: 30 kn*10

Sorted: 167 Kg Total catch: 557.25 CATCH/HOUR: 1114.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	572.00	1368	51.32	3038
Merluccius paradoxus, male	232.00	578	20.82	3037
Coelorinchus fasciatus	168.36	1984	15.11	
Genypterus capensis	34.30	16	3.08	3035
Todarodes sagittatus	31.32	58	2.81	
Raja confundens	18.08	14	1.62	
Galeus polli	15.80	146	1.42	
Krill	13.20		1.18	
Helicolenus dactylopterus	7.40	36	0.66	
Lophius vomerinus	7.00	4	0.63	3036
MYCTOPHIDAE	5.12		0.46	
Photichthys argenteus	3.60	270	0.32	
Selachophidium guentheri	2.06	30	0.18	
Beryx splendens	0.96	8	0.09	
Myxine capensis	0.88	8	0.08	
Nezumia sp.	0.58	30	0.05	
Coelorinchus fasciatus	0.52	30	0.05	
Epigonus denticulatus	0.52	22	0.05	
Malacocephalus laevis	0.44	14	0.04	
MACROURIDAE	0.36	14	0.03	
Total	1114.50		100.00	

PROJECT STATION: 949

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2716

	start	stop	duration			Long E 1438
TIME	:13:50:00	14:00:00	10	(min)	Purpose code:	3
LOG	:1245.30	1246.00	0.70		Area code :	1
FDEPTH:	315	314			GearCond.code:	
BDEPTH:	315	314			Validity code:	

Towing dir: 45° Wire out:1100 m Speed: 30 kn*10

Sorted: 157 Kg Total catch: 345.86 CATCH/HOUR: 2075.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1058.40	2028	51.00	3042
Merluccius capensis, male	521.52	1134	25.13	3041
Deepwater fish mixture	165.00		7.95	
Merluccius paradoxus, female	151.92	660	7.32	3040
Todarodes sagittatus	51.84	96	2.50	
Coelorinchus fasciatus	50.82	1440	2.45	
Merluccius paradoxus, male	26.34	126	1.27	3039
Lophius vomerinus	26.10	18	1.26	3044
Genypterus capensis	19.14	24	0.92	3043
Helicolenus dactylopterus	2.40	12	0.12	
C R A B S	1.68	30	0.08	
Total	2075.16		100.00	

PROJECT STATION: 950

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2708

	start	stop	duration			Long E 1450
TIME	:16:45:00	17:15:00	30	(min)	Purpose code:	3
LOG	:1262.00	1263.50	1.50		Area code :	1
FDEPTH:	220	212			GearCond.code:	
BDEPTH:	220	212			Validity code:	

Towing dir: 345° Wire out: 750 m Speed: 30 kn*10

Sorted: 39 Kg Total catch: 119.28 CATCH/HOUR: 238.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	124.60	1114	52.23	3047
Merluccius capensis, female	95.56	826	40.06	3046
Genypterus capensis	11.40	32	4.78	3048
Austroglossus microlepis	1.94	2	0.81	
Todarodes sagittatus	1.68	4	0.70	
MYCTOPHIDAE	1.48	980	0.62	
Sufflogobius bibarbatus	1.34	288	0.56	
Merluccius capensis	0.56	28	0.23	3045
Total	238.56		99.99	

PROJECT STATION: 951

DATE:26/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2603

	start	stop	duration			Long E 1459
TIME	:19:39:00	19:59:00	20	(min)	Purpose code:	3
LOG	:1275.80	1276.80	1.00		Area code :	1
FDEPTH:	148	149			GearCond.code:	
BDEPTH:	148	149			Validity code:	

Towing dir: 340° Wire out: 550 m Speed: 30 kn*10

Sorted: 18 Kg Total catch: 71.36 CATCH/HOUR: 214.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	141.60	5100	66.14	3049
Merluccius capensis, female	36.48	336	17.04	3050
Merluccius capensis, male	36.00	408	16.82	3051
Total	214.08		100.00	

PROJECT STATION: 952

DATE:27/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2632

	start	stop	duration			Long E 1456
TIME	:09:40:00	09:42:00	2	(min)	Purpose code:	3
LOG	:1320.80	1320.90	0.10		Area code :	2
FDEPTH:	110	110			GearCond.code:	8
BDEPTH:	110	110			Validity code:	9

Towing dir: 130° Wire out: 350 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 30.00 CATCH/HOUR: 900.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sufflogobius bibarbatus	900.00		100.00	
Total	900.00		100.00	

PROJECT STATION: 953

DATE:27/ 4/95 GEAR TYPE: BT No:7 POSITION:Lat S 2643

	start	stop	duration			Long E 1423
TIME	:15:30:00	16:00:00	30	(min)	Purpose code:	3
LOG	:1359.10	1360.50	1.40		Area code :	1
FDEPTH:	329	330			GearCond.code:	
BDEPTH:	329	330			Validity code:	

Towing dir: 350° Wire out:1100 m Speed: 30 kn*10

Sorted: 154 Kg Total catch: 154.47 CATCH/HOUR: 308.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	175.30	296	56.74	3057
Merluccius capensis, male	76.20	256	24.66	3056
Genypterus capensis	26.50	20	8.58	3052
Helicolenus dactylopterus	10.70	56	3.46	
Coelorinchus fasciatus	7.04	46	2.28	
Todarodes sagittatus	4.52	8	1.46	
Merluccius capensis	4.12	224	1.33	3055
Lophius vomerinus	2.00	2	0.65	3054
Austroglossus microlepis	1.84	2	0.60	3053
Nezumia sp.	0.28	16	0.09	
Galeus polli	0.22	2	0.07	
Bathynectes piperitus	0.22	4	0.07	
Total	308.94		99.99	

PROJECT STATION: 954

DATE:27/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2656
start stop duration Long E 1359
TIME :22:09:00 22:39:00 30 (min) Purpose code: 3
LOG :1391.50 1393.10 1.60 Area code : 1
FDEPTH: 421 421 GearCond.code:
BDEPTH: 421 421 Validity code:
Towing dir: 340° Wire out:1300 m Speed: 28 kn*10

Sorted: Kg Total catch: 255.88 CATCH/HOUR: 511.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	328.70	1420	64.23	3059
Merluccius paradoxus, male	98.70	360	19.29	3058
Coelorinchus fasciatus	37.10	334	7.25	
Helicolenus dactylopterus	27.90	106	5.45	
Todarodes sagittatus	12.60	24	2.46	
Genypterus capensis	2.78	2	0.54	3060
Raja leopardus	2.66	2	0.52	
Selachophidium guentheri	1.00	16	0.20	
Nezumia sp.	0.20	4	0.04	
Galeus polli	0.12	2	0.02	
Total	511.76		100.00	

PROJECT STATION: 955

DATE:28/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2645
start stop duration Long E 1340
TIME :06:00:00 06:30:00 30 (min) Purpose code: 3
LOG :1427.70 1429.30 1.60 Area code : 1
FDEPTH: 634 620 GearCond.code:
BDEPTH: 634 620 Validity code:
Towing dir: 340° Wire out:1750 m Speed: 30 kn*10

Sorted: 96 Kg Total catch: 917.70 CATCH/HOUR: 1835.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	1329.00	836	72.41	3061
Deania calcea	142.60	96	7.77	
Coelorinchus braueri	90.20	1502	4.91	
Nezumia leonis	62.80	1368	3.42	
Todarodes sagittatus	55.00	96	3.00	
Coelorinchus matamua	40.80	172	2.22	
Shrimps, small, non comm.	36.00	7182	1.96	
Selachophidium guentheri	26.40	324	1.44	
Epigonus telescopus	17.00	20	0.93	
Etmopterus pusillus	10.00	58	0.54	
S H R I M P S	8.40	684	0.46	
Neolithodes asperrimus	7.00	2	0.38	
Photichthys argenteus	4.40	266	0.24	
Trachyscorpia capensis	3.40	38	0.19	
Raja confundens	1.40	20	0.08	
Notacanthus sexspinis	1.00	20	0.05	
Total	1835.40		100.00	

PROJECT STATION: 956

DATE:28/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2640
start stop duration Long E 1345
TIME :08:23:00 08:53:00 30 (min) Purpose code: 3
LOG :1436.00 1437.50 1.50 Area code : 1
FDEPTH: 446 444 GearCond.code:
BDEPTH: 446 444 Validity code:
Towing dir: 340° Wire out:1350 m Speed: 30 kn*10

Sorted: 167 Kg Total catch: 519.36 CATCH/HOUR: 1038.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	614.38	1258	59.15	3063
Coelorinchus fasciatus	150.28	2454	14.47	
Merluccius paradoxus, male	120.36	252	11.59	3062
Helicolenus dactylopterus	31.90	198	3.07	
Todarodes sagittatus	28.10	60	2.71	
Nezumia leonis	24.76	816	2.38	
Galeus polli	17.68	142	1.70	
Raja confundens	15.16	14	1.46	
Genypterus capensis	12.80	6	1.23	3064
Selachophidium guentheri	10.40	204	1.00	
MYCTOPHIDAE	8.56	1252	0.82	
Allocyttus verrucosus	2.18	14	0.21	
Photichthys argenteus	1.08	108	0.10	
Malacocephalus laevis	0.54	20	0.05	
Yarrella blackfordi	0.34	6	0.03	
Scopelosaurus meadi	0.20	6	0.02	
Total	1038.72		99.99	

PROJECT STATION: 957

DATE:28/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2630
start stop duration Long E 1413
TIME :13:25:00 13:55:00 30 (min) Purpose code: 3
LOG :1469.00 1470.50 1.50 Area code : 1
FDEPTH: 349 345 GearCond.code:
BDEPTH: 349 345 Validity code:
Towing dir: 360° Wire out:1150 m Speed: 30 kn*10

Sorted: 235 Kg Total catch: 919.65 CATCH/HOUR: 1839.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	909.90	6642	49.47	3068
Merluccius paradoxus, male	243.00	1674	13.21	3067
Merluccius capensis, female	208.00	96	11.31	3066
Coelorinchus fasciatus	144.90	2628	7.88	
Todarodes sagittatus	115.38	192	6.27	
Helicolenus dactylopterus	101.70	882	5.53	
Genypterus capensis	54.60	28	2.97	3069
Lophius vomerinus	35.20	16	1.91	3070
Nezumia sp.	12.42	396	0.68	
Bathynectes piperitus	9.72	216	0.53	
Merluccius capensis, male	1.96	2	0.11	3065
Epigonus denticulatus	1.08	54	0.06	
Galeus polli	1.08	18	0.06	
Lamprogrammus exutus	0.36	18	0.02	
Total	1839.30		100.01	

PROJECT STATION: 958

DATE:28/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2618
start stop duration Long E 1426
TIME :16:50:00 17:20:00 30 (min) Purpose code: 3
LOG :1488.00 1490.20 1.20 Area code : 1
FDEPTH: 254 220 GearCond.code:
BDEPTH: 254 220 Validity code:
Towing dir: 360° Wire out: 850 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 207.34 CATCH/HOUR: 414.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	224.70	1470	54.19	3071
Merluccius capensis, female	173.60	966	41.86	3073
Merluccius capensis	8.68	420	2.09	3072
Todarodes sagittatus	3.64	14	0.88	
Sufflogobius bibarbatus	2.66	154	0.64	
Coelorinchus fasciatus	0.70	42	0.17	
Squilla sp.	0.70	28	0.17	
Total	414.68		100.00	

PROJECT STATION: 959

DATE:28/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2611
start stop duration Long E 1441
TIME :21:05:00 21:06:00 1 (min) Purpose code: 3
LOG :1511.80 1511.90 0.10 Area code : 1
FDEPTH: 169 169 GearCond.code: 9
BDEPTH: 169 169 Validity code: 9
Towing dir: 350° Wire out: 550 m Speed: 30 kn*10

Sorted: 6 Kg Total catch: 60.00 CATCH/HOUR: 3600.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	3600.00	118560	100.00	3074
Total	3600.00		100.00	

PROJECT STATION: 960

DATE:29/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2555
start stop duration Long E 1441
TIME :05:34:00 05:38:00 4 (min) Purpose code: 3
LOG :1531.90 1532.10 0.20 Area code : 1
FDEPTH: 131 131 GearCond.code: 9
BDEPTH: 131 131 Validity code: 9
Towing dir: 180° Wire out: 500 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 961

DATE:29/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2600
start stop duration Long E 1407
TIME :14:00:00 14:30:00 30 (min) Purpose code: 3
LOG :1571.90 1573.50 1.60 Area code : 1
FDEPTH: 273 278 GearCond.code:
BDEPTH: 273 278 Validity code:
Towing dir: 220° Wire out: 900 m Speed: 30 kn*10

Sorted: 148 Kg Total catch: 1342.23 CATCH/HOUR: 2684.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	931.00		34.68	
Merluccius capensis, female	778.76	3606	29.01	3080
Merluccius capensis, male	465.50	2556	17.34	3079
Todarodes sagittatus	215.96	420	8.04	
Merluccius capensis, female	109.10	70	4.06	3076
Trachurus capensis	49.36	140	1.84	3077
Lophius vomerinus	35.20	52	1.31	3081
Galeus polli	27.66	596	1.03	
Schedophilus huttoni	19.60	36	0.73	
Coelorinchus fasciatus	14.36	420	0.53	
Sufflogobius bibarbatus	14.00	1086	0.52	
Squilla sp.	10.86	420	0.40	
Merluccius capensis, male	7.50	8	0.28	3075
Merluccius capensis	5.60	316	0.21	3078
Total	2684.46		99.98	

PROJECT STATION: 962

DATE:29/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2601
start stop duration Long E 1405
TIME :18:26:00 18:53:00 27 (min) Purpose code: 2
LOG :1582.80 1584.10 1.30 Area code : 1
FDEPTH: 283 282 GearCond.code:
BDEPTH: 283 282 Validity code:
Towing dir: 317° Wire out: 900 m Speed: 30 kn*10

Sorted: 114 Kg Total catch: 787.89 CATCH/HOUR: 1750.87

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	1238.89	5987	70.76	3085
Krill	248.62		14.20	
Merluccius capensis	115.11	62	6.57	3084
Coelorinchus fasciatus	85.42	1136	4.88	
Lophius vomerinus	39.78	22	2.27	3083
Galeus polli	5.42	111	0.31	
Todarodes sagittatus	4.22	4	0.24	
Trachurus capensis	3.89	13	0.22	
Squilla aculeata calmani	3.89	196	0.22	
Austroglossus microlepis	3.67	11	0.21	3082
Sufflogobius bibarbatus	1.96	98	0.11	
Total	1750.87		99.99	

PROJECT STATION: 963

DATE:30/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2605
start stop duration Long E 1356
TIME :00:10:00 00:35:00 25 (min) Purpose code: 3
LOG :1600.50 1601.80 1.30 Area code : 1
FDEPTH: 338 340 GearCond.code:
BDEPTH: 338 340 Validity code:
Towing dir: 240° Wire out:1100 m Speed: 30 kn*10

Sorted: 126 Kg Total catch: 323.95 CATCH/HOUR: 777.48

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	232.20	1236	29.87	3091
Coelorinchus fasciatus	142.20	3396	18.29	
Helicolenus dactylopterus	98.40	696	12.66	
Merluccius capensis, female	75.96	50	9.77	3087
Lophius vomerinus	60.96	34	7.84	3093
Merluccius paradoxus, male	40.20	216	5.17	3092
Deepwater fish mixture	35.64		4.58	
Genypterus capensis	29.28	12	3.77	3094
Nezumia sp.	24.36	816	3.13	
Merluccius capensis, male	12.00	36	1.54	3090
Merluccius capensis, male	6.48	7	0.83	3086
Bathynectes piperitus	5.28	84	0.68	
Merluccius paradoxus, female	4.97	5	0.64	3089
Austroglossus microlepis	4.68	2	0.60	3095
Merluccius paradoxus, male	2.23	2	0.29	3088
Galeus polli	1.56	12	0.20	
Squilla sp.	1.08	36	0.14	
Total	777.48		100.00	

PROJECT STATION: 964

DATE:30/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2613
start stop duration Long E 1341
TIME :02:50:00 03:20:00 30 (min) Purpose code: 3
LOG :1619.00 1620.60 1.60 Area code : 1
FDEPTH: 469 469 GearCond.code:
BDEPTH: 469 469 Validity code:
Towing dir: 180° Wire out:1350 m Speed: 30 kn*10

Sorted: 141 Kg Total catch: 308.33 CATCH/HOUR: 616.66

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Coelorinchus fasciatus	167.40	1350	27.15	
Merluccius paradoxus, female	132.20	136	21.44	3097
Bathyraja smithii	73.90	10	11.98	
Nezumia sp.	67.50	1296	10.95	
Selachophidium guentheri	34.92	468	5.66	
Notacanthus sexspinis	33.48	486	5.43	
Deania profundorum	32.76	18	5.31	
Etmopterus lucifer	18.72	90	3.04	
Genypterus capensis	13.50	4	2.19	3099
CONGRIDAE	7.56	18	1.23	
Merluccius paradoxus, male	7.20	14	1.17	3096
Myxine capensis	6.12	54	0.99	
Bathynectes piperitus	4.68	72	0.76	
Cruriraja parcomaculata	4.68	2	0.76	
Raja leopardus	4.42	2	0.72	
Lophius vomerinus	4.20	2	0.68	3098
Galeus polli	2.16	18	0.35	
C R A B S	0.90	18	0.15	
MYCTOPHIDAE	0.18	54	0.03	
S H R I M P S	0.18	18	0.03	
Total	616.66		100.02	

PROJECT STATION: 965

DATE:30/ 4/95 GEAR TYPE: BT No:6 POSITION:Lat S 2612
start stop duration Long E 1338
TIME :04:50:00 05:08:00 18 (min) Purpose code: 3
LOG :1625.40 1626.10 0.70 Area code : 1
FDEPTH: 570 583 GearCond.code:
BDEPTH: 570 583 Validity code:
Towing dir: 360° Wire out:1600 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 611.67 CATCH/HOUR: 2038.90

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	732.67	423	35.93	3101
Coelorinchus matamua	640.33	2267	31.41	
Epigonus telescopus	183.67	340	9.01	
Etmopterus lucifer	119.67	453	5.87	
Notacanthus sexspinis	107.00	1247	5.25	
Selachophidium guentheri	104.33	1417	5.12	
Trachyrincus scabrus	79.33	623	3.89	
Nezumia leonis	55.00	567	2.70	
Galeus polli	6.33	57	0.31	
Epigonus denticulatus	6.33	57	0.31	
Merluccius paradoxus, male	4.23	3	0.21	3100
Total	2038.89		100.01	

PROJECT STATION: 966

DATE:30/ 4/95 GEAR TYPE: BT No:8 POSITION:Lat S 2545
start stop duration Long E 1335
TIME :22:30:00 23:00:00 30 (min) Purpose code: 3
LOG :1693.60 1695.50 1.90 Area code : 1
FDEPTH: 603 611 GearCond.code:
BDEPTH: 603 611 Validity code:
Towing dir: 170° Wire out:1700 m Speed: 30 kn*10

Sorted: 166 Kg Total catch: 380.57 CATCH/HOUR: 761.14

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Raja confundens	258.40	352	33.95	
Merluccius paradoxus, female	253.30	208	33.28	3102
Nezumia sp.	107.20	2352	14.08	
Selachophidium guentheri	38.08	608	5.00	
Etmopterus brachyurus	37.28	16	4.90	
Todarodes sagittatus	16.80	32	2.21	
Neocyttus rhomboidalis	16.64	192	2.19	
Etmopterus lucifer	12.16	32	1.60	
S H R I M P S	11.68	3344	1.53	
MYCTOPHIDAE	6.24	400	0.82	
Hoplostethus cadenati	0.96	32	0.13	
Yarrella blackfordi	0.96	48	0.13	
Notacanthus sexspinis	0.80	32	0.11	
Nemichthys scolopaceus	0.64	16	0.08	
Total	761.14		100.01	

PROJECT STATION: 967

DATE: 1/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2544
start stop duration Long E 1338
TIME :00:45:00 01:15:00 30 (min) Purpose code: 3
LOG :1701.50 1702.80 1.30 Area code : 1
FDEPTH: 487 483 GearCond.code:
BDEPTH: 487 483 Validity code:
Towing dir: 360° Wire out:1450 m Speed: 30 kn*10

Sorted: 183 Kg Total catch: 499.60 CATCH/HOUR: 999.20

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	743.18	656	74.38	3104
Nezumia sp.	86.14	1552	8.62	
Raja confundens	36.54	74	3.66	
Todarodes sagittatus	29.74	102	2.98	
Selachophidium guentheri	26.00	464	2.60	
Lophius vomerinus	19.20	4	1.92	3105
Merluccius paradoxus, male	15.58	18	1.56	3103
S H R I M P S	12.12	2556	1.21	
Helicolenus dactylopterus	7.48	52	0.75	
Epigonus denticulatus	5.56	62	0.56	
MYCTOPHIDAE	4.88	278	0.49	
Trachyrincus scabrus	3.86	18	0.39	
Yarrella blackfordi	2.38	108	0.24	
Notacanthus sexspinis	2.20	34	0.22	
Raja doutrei	1.76	6	0.18	
Ebinania costaecanarie	1.52	6	0.15	
Hoplostethus cadenati	0.56	238	0.06	
Neocyttus rhomboidalis	0.50	6	0.05	
Total	999.20		100.02	

PROJECT STATION: 968

DATE: 1/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2540
start stop duration Long E 1340
TIME :02:40:00 03:05:00 25 (min) Purpose code: 3
LOG :1708.20 1709.30 1.10 Area code : 1
FDEPTH: 401 400 GearCond.code:
BDEPTH: 401 400 Validity code:
Towing dir: 360° Wire out:1200 m Speed: 30 kn*10

Sorted: 179 Kg Total catch: 295.72 CATCH/HOUR: 709.73

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	293.88	384	41.41	3107
Raja confundens	196.56	94	27.70	
Coelorinchus fasciatus	53.35	406	7.52	
Helicolenus dactylopterus	36.98	156	5.21	
Lophius vomerinus	25.20	7	3.55	3109
Merluccius paradoxus, male	24.24	46	3.42	3106
Todarodes sagittatus	19.56	46	2.76	
Nezumia sp.	18.41	391	2.59	
Genypterus capensis	14.16	5	2.00	3108
Galeus polli	6.55	235	0.92	
Deepwater fish mixture	5.62		0.79	
Notacanthus sexspinis	3.60	142	0.51	
Ebinania costaecanarie	3.29	17	0.46	
Bathynectes piperitus	2.18	48	0.31	
S H R I M P S	1.56	374	0.22	
Selachophidium guentheri	1.56	94	0.22	
Myxine capensis	1.10	17	0.15	
Lithodes ferox	0.98	2	0.14	
MYCTOPHIDAE	0.62	48	0.09	
Nephropsis atlantica	0.31	48	0.04	
Total	709.71		100.01	

PROJECT STATION: 969

DATE: 1/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2540
start stop duration Long E 1341
TIME :06:06:00 06:10:00 4 (min) Purpose code: 3
LOG :1716.40 1716.60 0.20 Area code : 1
FDEPTH: 378 378 GearCond.code:
BDEPTH: 378 378 Validity code: 9
Towing dir: 10° Wire out:1150 m Speed: 30 kn*10

Sorted: 24 Kg Total catch: 24.84 CATCH/HOUR: 372.60

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	177.00	270	47.50	3111
Helicolenus dactylopterus	76.95	285	20.65	
Merluccius paradoxus, male	48.00	120	12.88	3110
Merluccius capensis, female	27.45	15	7.37	3112
Genypterus capensis	16.65	15	4.47	3113
Raja sp.	16.50	15	4.43	
Trachurus capensis	5.55	15	1.49	
Nezumia leonis	4.50	75	1.21	
Total	372.60		100.00	

PROJECT STATION: 970

DATE: 1/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2540
start stop duration Long E 1342
TIME :07:21:00 07:44:00 23 (min) Purpose code: 3
LOG :1719.80 1720.90 1.10 Area code : 1
FDEPTH: 372 375 GearCond.code:
BDEPTH: 372 375 Validity code:
Towing dir: 180° Wire out:1125 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 135.87 CATCH/HOUR: 354.44

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	149.22	347	42.10	3114
Helicolenus dactylopterus	86.35	443	24.36	
Merluccius paradoxus, male	31.83	81	8.98	3115
Merluccius capensis, female	20.43	5	5.76	3116
Lophius vomerinus	16.96	5	4.79	3118
Krill	15.65		4.42	
Miscellaneous fishes	8.61		2.43	
Nezumia leonis	8.09	157	2.28	
Todarodes sagittatus	7.83	10	2.21	
Genypterus capensis	5.58	5	1.57	3117
Coelorinchus fasciatus	1.57	16	0.44	
Myxine capensis	0.63	5	0.18	
Galeus polli	0.52	10	0.15	
Notacanthus sexspinis	0.52	21	0.15	
MYCTOPHIDAE	0.47	57	0.13	
Epigonus denticulatus	0.21	5	0.06	
Total	354.47		100.01	

PROJECT STATION: 971

DATE: 1/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2530
start stop duration Long E 1351
TIME :16:20:00 16:25:00 5 (min) Purpose code: 3
LOG :1791.30 1791.50 0.20 Area code : 1
FDEPTH: 275 275 GearCond.code:
BDEPTH: 275 275 Validity code:
Towing dir: 90° Wire out: 900 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 241.87 CATCH/HOUR: 2902.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Krill	840.00		28.94	
MYCTOPHIDAE	792.00		27.29	
Merluccius capensis, female	493.20	2136	16.99	3119
Merluccius capensis, male	326.40	1848	11.25	3120
Coelorinchus fasciatus	186.00	240	6.41	
Helicolenus dactylopterus	163.20	900	5.62	
Todarodes sagittatus	69.12	132	2.38	
Lophius vomerinus	25.92	24	0.89	3122
Merluccius capensis	6.60	300	0.23	3121
Total	2902.44		100.00	

PROJECT STATION: 972

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2516
start stop duration Long E 1344
TIME :09:41:00 09:44:00 3 (min) Purpose code: 3
LOG :1922.40 1922.60 0.20 Area code : 1
FDEPTH: 300 300 GearCond.code: 9
BDEPTH: 300 300 Validity code: 9
Towing dir: 345° Wire out: 950 m Speed: 30 kn*10

Sorted: 73 Kg Total catch: 116.16 CATCH/HOUR: 2323.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	660.00		28.41	
Merluccius capensis, female	618.00	1240	26.60	3125
Merluccius capensis, male	320.00	1620	13.77	3124
Krill	276.00		11.88	
Helicolenus dactylopterus	189.00	2460	8.14	
Trachurus capensis	57.00	200	2.45	
Genypterus capensis	47.40	20	2.04	3126
Todarodes sagittatus	45.60	100	1.96	
Merluccius capensis	43.80	1860	1.89	3122
Coelorinchus fasciatus	37.80	300	1.63	
Nezumia leonis	18.00	360	0.77	
Merluccius paradoxus, female	6.40	20	0.28	3123
Galeus polli	4.20	60	0.18	
Total	2323.20		100.00	

PROJECT STATION: 973

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2514
start stop duration Long E 1341
TIME :10:37:00 10:47:00 10 (min) Purpose code: 3
LOG :1925.80 1926.40 0.60 Area code : 1
FDEPTH: 322 323 GearCond.code:
BDEPTH: 322 323 Validity code:
Towing dir: 270° Wire out:1000 m Speed: 32 kn*10

Sorted: 102 Kg Total catch: 707.22 CATCH/HOUR: 4243.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	1016.40		23.95	
Merluccius paradoxus, female	996.60	4362	23.49	3128
Merluccius capensis, male	887.70	3630	20.92	3129
Merluccius capensis, female	735.90	2442	17.34	3130
Merluccius capensis, female	209.10	108	4.93	3132
Merluccius paradoxus, male	85.80	396	2.02	3127
Nezumia sp.	73.26	1914	1.73	
Todarodes sagittatus	71.28	132	1.68	
Helicolenus dactylopterus	60.72	726	1.43	
Merluccius capensis, male	36.60	24	0.86	3131
Merluccius capensis	30.36	1584	0.72	3133
Coelorinchus fasciatus	30.36	264	0.72	
Galeus polli	9.24	132	0.22	
Total	4243.32		100.01	

PROJECT STATION: 974

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2512
start stop duration Long E 1339
TIME :12:10:00 12:23:00 13 (min) Purpose code: 3
LOG :1930.70 1931.30 0.60 Area code : 1
FDEPTH: 401 404 GearCond.code:
BDEPTH: 401 404 Validity code:
Towing dir: 360° Wire out:1200 m Speed: 30 kn*10

Sorted: 198 Kg Total catch: 773.97 CATCH/HOUR: 3572.17

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	2207.68	6692	61.80	3137
Merluccius paradoxus, male	509.63	1537	14.27	3136
Merluccius capensis, female	248.31	92	6.95	3135
Merluccius paradoxus, female	143.31	88	4.01	3139
Helicolenus dactylopterus	80.77	577	2.26	
Lophius vomerinus	77.08	18	2.16	3140
Merluccius capensis, female	73.06	78	2.05	3138
Genypterus capensis	42.23	14	1.18	3141
Merluccius capensis, male	40.85	18	1.14	3134
Deepwater fish mixture	38.86		1.09	
Nezumia sp.	30.37	577	0.85	
Notacanthus sexspinis	26.17	729	0.73	
Coelorinchus fasciatus	18.09	78	0.51	
Todarodes sagittatus	15.37	37	0.43	
Selachophidium guentheri	8.86	577	0.25	
Hoplostethus cadenati	5.77	1191	0.16	
Galeus polli	5.77	78	0.16	
Total	3572.18		100.00	

PROJECT STATION: 975

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2509
start stop duration Long E 1336
TIME :14:00:00 14:10:00 10 (min) Purpose code: 3
LOG :1935.00 1935.50 0.50 Area code : 1
FDEPTH: 507 511 GearCond.code:
BDEPTH: 507 511 Validity code:
Towing dir: 360° Wire out:1500 m Speed: 30 kn*10

Sorted: 106 Kg Total catch: 428.64 CATCH/HOUR: 2571.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	2494.00	58680	58.09	
Merluccius paradoxus, female	429.60	630	16.70	3143
Deania calcea	208.08	72	8.09	
Nezumia sp.	124.56	3240	4.84	
Trachyrincus scabrus	95.76	360	3.72	
Todarodes sagittatus	73.44	144	2.86	
Selachophidium guentheri	46.80	792	1.82	
Merluccius paradoxus, male	31.20	66	1.21	3142
Helicolenus dactylopterus	28.08	432	1.09	
MYCTOPHIDAE	10.80	936	0.42	
Deepwater fish mixture	9.36		0.36	
Epigonus denticulatus	9.36	72	0.36	
Galeus polli	5.04	72	0.20	
S H R I M P S	3.60	792	0.14	
GONOSTOMATIDAE	1.44	216	0.06	
Yarrella blackfordi	0.72	72	0.03	
Total	2571.84		99.99	

PROJECT STATION: 976

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2506
start stop duration Long E 1334
TIME :15:25:00 15:55:00 30 (min) Purpose code: 3
LOG :1938.70 1940.10 1.40 Area code : 1
FDEPTH: 574 585 GearCond.code:
BDEPTH: 574 585 Validity code:
Towing dir: 360° Wire out:1600 m Speed: 30 kn*10

Sorted: 441 Kg Total catch: 918.10 CATCH/HOUR: 1836.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	647.40	634	35.26	3147
Deania calcea	423.20	276	23.05	
Hoplostethus cadenati	372.60	13418	20.29	
Todarodes sagittatus	161.50	238	8.80	
Nezumia sp.	106.26	1978	5.79	
Neoharriotta pinnata	74.52	46	4.06	
Merluccius paradoxus, male	14.00	20	0.76	3146
Selachophidium guentheri	9.66	138	0.53	
Merluccius capensis, female	8.34	2	0.45	3145
Lophius vomerinus	7.54	2	0.41	3144
Raja confundens	7.50	46	0.41	
Notacanthus sexspinis	3.68	138	0.20	
Total	1836.20		100.01	

PROJECT STATION: 977

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2501
start stop duration Long E 1331
TIME :17:47:00 18:07:00 20 (min) Purpose code: 3
LOG :1944.00 1945.00 1.00 Area code : 1
FDEPTH: 669 665 GearCond.code:
BDEPTH: 669 665 Validity code:
Towing dir: ° Wire out:1750 m Speed: 30 kn*10

Sorted: 248 Kg Total catch: 442.58 CATCH/HOUR: 1327.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	652.20	678	49.12	3149
Hoplostethus cadenati	305.10		22.98	
Deania calcea	133.38	54	10.05	
Todarodes sagittatus	105.57	216	7.95	
Scymnodon squamulosus	31.86	27	2.40	
Nezumia sp.	24.03	1053	1.81	
Merluccius paradoxus, male	17.55	24	1.32	3148
Yarrella blackfordi	14.85	783	1.12	
Thysanoteuthis rhombus	14.31	27	1.08	
Selachophidium guentheri	11.07	135	0.83	
OPISTHOTEUTHIDAE	8.91	27	0.67	
Coelorinchus matamua	7.29	27	0.55	
Photichthys argenteus	0.81	81	0.06	
Stereomastis sp.	0.54	27	0.04	
MYCTOPHIDAE	0.27	27	0.02	
Total	1327.74		100.00	

PROJECT STATION: 978

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2459
start stop duration Long E 1333
TIME :19:51:00 20:01:00 10 (min) Purpose code: 3
LOG :1949.00 1949.60 0.60 Area code : 2
FDEPTH: 600 603 GearCond.code:
BDEPTH: 600 603 Validity code:
Towing dir: 90° Wire out:1700 m Speed: 32 kn*10

Sorted: 21 Kg Total catch: 309.44 CATCH/HOUR: 1856.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	938.40	978	50.54	3151
Hoplostethus cadenati	407.40	13020	21.94	
Trachyrincus scabrus	187.74	420	10.11	
Todarodes sagittatus	115.50	210	6.22	
Nezumia leonis	68.04	1470	3.66	
Yarrella blackfordi	42.84	2268	2.31	
Merluccius paradoxus, male	35.40	60	1.91	3150
Selachophidium guentheri	20.58	336	1.11	
OPISTHOTEUTHIDAE	20.58	42	1.11	
Coelorinchus braueri	10.08	42	0.54	
Lophius vomerinus	7.98	6	0.43	3152
Notacanthus sexspinis	1.26	42	0.07	
Bassanago albescens	0.84	42	0.05	
Total	1856.64		100.00	

PROJECT STATION: 979

DATE: 2/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2457
start stop duration Long E 1335
TIME :21:46:00 22:12:00 26 (min) Purpose code: 3
LOG :1955.10 1956.30 1.20 Area code : 2
FDEPTH: 504 501 GearCond.code:
BDEPTH: 504 501 Validity code:
Towing dir: 345° Wire out:1450 m Speed: 30 kn*10

Sorted: 251 Kg Total catch: 326.11 CATCH/HOUR: 752.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	519.12	602	68.98	3153
Trachyrincus scabrus	84.81	355	11.27	
Centroscymnus crepidater	38.45	32	5.11	
Todarodes sagittatus	31.66	65	4.21	
Merluccius paradoxus, male	30.23	42	4.02	3152
Hoplostethus cadenati	24.72	1373	3.28	
Selachophidium guentheri	10.50	226	1.40	
Notacanthus sexspinis	5.82	145	0.77	
S H R I M P S	2.91	711	0.39	
Photichthys argenteus	1.94	162	0.26	
Nezumia sp.	0.97	485	0.13	
Yarrella blackfordi	0.65	65	0.09	
GONOSTOMATIDAE	0.48	65	0.06	
MYCTOPHIDAE	0.32	32	0.04	
Total	752.58		100.01	

PROJECT STATION: 980

DATE: 3/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2456
start stop duration Long E 1337
TIME :02:20:00 02:50:00 30 (min) Purpose code: 3
LOG :1964.40 1965.70 1.30 Area code : 2
FDEPTH: 463 465 GearCond.code:
BDEPTH: 463 465 Validity code:
Towing dir: 360° Wire out:1350 m Speed: 30 kn*10

Sorted: 173 Kg Total catch: 392.05 CATCH/HOUR: 784.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	442.70	920	56.46	3155
Bathyraja smithii	88.00	10	11.22	
Raja confundens	47.50	50	6.06	
Merluccius paradoxus, male	34.40	78	4.39	3154
Todarodes sagittatus	33.60	60	4.29	
Nezumia sp.	29.60	600	3.78	
Lophius vomerinus	29.10	10	3.71	3156
Helicolenus dactylopterus	15.40	100	1.96	
Deania profundorum	13.90	10	1.77	
Notacanthus sexspinis	12.20	170	1.56	
Genypterus capensis	8.00	4	1.02	3157
Selachophidium guentheri	7.60	120	0.97	
Hoplostethus cadenati	6.80	460	0.87	
Raja leopardus	5.50	10	0.70	
Etmopterus pusillus	3.30	10	0.42	
Galeus polli	2.40	50	0.31	
MYCTOPHIDAE	1.60	130	0.20	
Deepwater fish mixture	1.10		0.14	
Yarrella blackfordi	0.70	110	0.09	
Epigonus denticulatus	0.50	10	0.06	
GONOSTOMATIDAE	0.20	20	0.03	
Total	784.10		100.01	

PROJECT STATION: 981

DATE: 3/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2458
start stop duration Long E 1341
TIME :06:04:00 06:34:00 30 (min) Purpose code: 3
LOG :1973.30 1974.80 1.50 Area code : 2
FDEPTH: 352 357 GearCond.code:
BDEPTH: 352 357 Validity code:
Towing dir: 180° Wire out:1050 m Speed: 30 kn*10

Sorted: 161 Kg Total catch: 276.96 CATCH/HOUR: 553.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	187.60	488	33.87	3162
Hoplostethus cadenati	123.20	8146	22.24	
Helicolenus dactylopterus	46.56	432	8.41	
Nezumia sp.	39.04	1104	7.05	
Merluccius capensis, female	35.10	16	6.34	3160
Merluccius paradoxus, male	34.40	98	6.21	3161
Todarodes sagittatus	25.60	48	4.62	
Genypterus capensis	16.10	10	2.91	3159
Lophius vomerinus	15.60	2	2.82	3158
Coelorinchus fasciatus	12.80	96	2.31	
Raja confundens	11.20	16	2.02	
Galeus polli	2.72	48	0.49	
Yarrella blackfordi	2.24	176	0.40	
Ebinania costaecanarie	0.80	16	0.14	
Notacanthus sexspinis	0.80	80	0.14	
MYCTOPHIDAE	0.16	80	0.03	
Total	553.92		100.00	

PROJECT STATION: 982

DATE: 3/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2455
start stop duration Long E 1347
TIME :08:12:00 08:27:00 15 (min) Purpose code: 3
LOG :1983.40 1984.10 0.70 Area code : 2
FDEPTH: 272 272 GearCond.code:
BDEPTH: 272 272 Validity code:
Towing dir: 5° Wire out: 900 m Speed: 28 kn*10

Sorted: 7 Kg Total catch: 100.28 CATCH/HOUR: 401.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	82.20	228	20.49	3164
Trachurus capensis	72.00	200	17.95	
Merluccius capensis	70.00	3080	17.45	3165
Helicolenus dactylopterus	60.40	1000	15.06	
Merluccius capensis, male	38.00	168	9.47	3163
Coelorinchus fasciatus	32.00	440	7.98	
Lophius vomerinus	17.84	8	4.45	3168
Nezumia leonis	14.00	720	3.49	
Todarodes sagittatus	12.80	40	3.19	
Merluccius paradoxus, female	1.36	4	0.34	3167
Merluccius paradoxus, male	0.52	4	0.13	3166
Total	401.12		100.00	

PROJECT STATION: 983

DATE: 3/ 5/95 GEAR TYPE: PT No:5 POSITION:Lat S 2452
start stop duration Long E 1348
TIME :10:53:00 11:00:00 7 (min) Purpose code: 1
LOG :1995.10 1995.40 0.30 Area code : 2
FDEPTH: 230 230 GearCond.code:
BDEPTH: 257 257 Validity code:
Towing dir: 68° Wire out: 520 m Speed: 30 kn*10

Sorted: 5 Kg Total catch: 4.86 CATCH/HOUR: 41.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachipterus jacksonensis	29.91	17	71.80	
Merluccius capensis, male	4.89	26	11.74	3178
Trachurus capensis	3.26	9	7.83	3180
Merluccius capensis, female	1.89	9	4.54	3179
Centrolophus niger	1.71	9	4.10	
Total	41.66		100.01	

PROJECT STATION: 984

DATE: 3/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2451
start stop duration Long E 1352
TIME :12:30:00 12:50:00 20 (min) Purpose code: 3
LOG :2001.80 2002.80 1.00 Area code : 2
FDEPTH: 219 231 GearCond.code:
BDEPTH: 219 231 Validity code:
Towing dir: 250° Wire out: 700 m Speed: 30 kn*10

Sorted: 58 Kg Total catch: 397.85 CATCH/HOUR: 1193.55

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	585.90	4032	49.09	3182
Merluccius capensis, male	481.95	3801	40.38	3181
Merluccius capensis	36.33	2184	3.04	3184
Todarodes sagittatus	34.86	42	2.92	
Trachurus capensis	21.21	105	1.78	3183
Chelidonichthys capensis	17.43	42	1.46	
Sufflogobius bibarbatus	5.46	693	0.46	
Coelorinchus fasciatus	3.57	42	0.30	
Lophius vomerinus	3.54	6	0.30	3185
Austroglossus microlepis	1.83	3	0.15	3186
MYCTOPHIDAE	1.47	1050	0.12	
Total	1193.55		100.00	

PROJECT STATION: 985

DATE: 3/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2439
start stop duration Long E 1352
TIME :16:38:00 16:45:00 7 (min) Purpose code: 3
LOG :2031.00 2031.40 0.40 Area code : 2
FDEPTH: 240 251 GearCond.code:
BDEPTH: 240 251 Validity code:
Towing dir: 298° Wire out: 750 m Speed: 30 kn*10

Sorted: 50 Kg Total catch: 50.19 CATCH/HOUR: 430.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	259.29	1277	60.27	3187
Merluccius capensis, male	167.14	943	38.85	3188
Merluccius paradoxus, female	3.77	34	0.88	3189
Total	430.20		100.00	

PROJECT STATION: 986

DATE: 3/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2438
start stop duration Long E 1341
TIME :22:03:00 22:33:00 30 (min) Purpose code: 3
LOG :2044.70 2046.20 1.50 Area code : 2
FDEPTH: 367 370 GearCond.code:
BDEPTH: 367 370 Validity code:
Towing dir: 180° Wire out:1100 m Speed: 30 kn*10

Sorted: 351 Kg Total catch: 416.65 CATCH/HOUR: 833.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	356.50	428	42.78	3193
Merluccius capensis, female	199.70	88	23.96	3191
Nezumia sp.	63.60	1744	7.63	
Helicolenus dactylopterus	59.20	552	7.10	
Genypterus capensis	57.80	34	6.94	3194
Merluccius capensis, male	30.90	14	3.71	3190
Merluccius paradoxus, male	13.20	40	1.58	3192
Notacanthus sexspinis	12.56	640	1.51	
Deepwater fish mixture	11.84		1.42	
Coelorinchus fasciatus	9.92	144	1.19	
Galeus polli	7.28	232	0.87	
Etmopterus brachyurus	2.96	8	0.36	
S H R I M P S	2.48	768	0.30	
Selachophidium guentheri	2.40	208	0.29	
Hoplostethus cadenati	1.28	168	0.15	
Bathynectes piperitus	0.88	24	0.11	
Ebinania costaecanarie	0.40	32	0.05	
Epigonus denticulatus	0.40	8	0.05	
Total	833.30		100.00	

PROJECT STATION: 987

DATE: 4/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2438
start stop duration Long E 1330
TIME :00:45:00 01:15:00 30 (min) Purpose code: 3
LOG :2059.20 2060.50 1.30 Area code : 2
FDEPTH: 451 431 GearCond.code:
BDEPTH: 451 431 Validity code:
Towing dir: 360° Wire out:1350 m Speed: 30 kn*10

Sorted: 239 Kg Total catch: 283.65 CATCH/HOUR: 567.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	380.50	482	67.07	3196
Trachyrincus scabrus	75.00	386	13.22	
Nezumia sp.	45.00	170	7.93	
Merluccius paradoxus, male	18.70	28	3.30	3195
Deepwater fish mixture	15.10		2.66	
Todarodes sagittatus	14.54	26	2.56	
Helicolenus dactylopterus	5.36	46	0.94	
Lophius vomerinus	4.44	2	0.78	3197
Deania profundorum	2.76	6	0.49	
Coelorinchus fasciatus	2.40	20	0.42	
Notacanthus sexspinis	1.40	40	0.25	
Epigonus denticulatus	1.40	20	0.25	
Hoplostethus cadenati	0.30	20	0.05	
GONOSTOMATIDAE	0.20	16	0.04	
Selachophidium guentheri	0.20	10	0.04	
Total	567.30		100.00	

PROJECT STATION: 988

DATE: 4/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2440
start stop duration Long E 1327
TIME :03:50:00 04:20:00 30 (min) Purpose code: 3
LOG :2066.50 2067.90 1.40 Area code : 2
FDEPTH: 566 577 GearCond.code:
BDEPTH: 566 577 Validity code:
Towing dir: 180° Wire out:1650 m Speed: 28 kn*10

Sorted: 185 Kg Total catch: 812.22 CATCH/HOUR: 1624.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deania calcea	291.06	168	17.92	
Merluccius paradoxus, female	260.10	224	16.01	3199
Nezumia sp.	243.60	9618	15.00	
Lithodes ferox	216.30	504	13.32	
Trachyrincus scabrus	141.54	504	8.71	
Hoplostethus cadenati	130.62	4410	8.04	
Todarodes sagittatus	128.52	336	7.91	
Coelorinchus coelorhinc. polli	73.08	252	4.50	
Lophius vomerinus	43.60	4	2.68	3200
Centroscymnus crepidater	41.58	42	2.56	
Selachophidium guentheri	21.42	252	1.32	
Deepwater fish mixture	14.28		0.88	
Etmopterus lucifer	10.08	42	0.62	
Notacanthus sexspinis	5.88	210	0.36	
Merluccius paradoxus, male	2.78	4	0.17	3198
Total	1624.44		100.00	

PROJECT STATION: 989

DATE: 4/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2421
start stop duration Long E 1321
TIME :07:31:00 07:43:00 12 (min) Purpose code: 3
LOG :2092.70 2093.20 0.50 Area code : 2
FDEPTH: 503 504 GearCond.code:
BDEPTH: 503 504 Validity code:
Towing dir: 150° Wire out:1400 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 33.93 CATCH/HOUR: 169.65

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	166.50	165	98.14	3202
Merluccius paradoxus, male	3.15	5	1.86	3201
Total	169.65		100.00	

PROJECT STATION: 990

DATE: 4/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2419
start stop duration Long E 1324
TIME :14:08:00 14:38:00 30 (min) Purpose code: 3
LOG :2119.30 2120.80 1.50 Area code : 2
FDEPTH: 365 373 GearCond.code:
BDEPTH: 365 373 Validity code:
Towing dir: 170° Wire out:1050 m Speed: 30 kn*10

Sorted: 110 Kg Total catch: 326.52 CATCH/HOUR: 653.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	347.34	1214	53.19	3204
Todarodes sagittatus	56.34	126	8.63	
Merluccius paradoxus, male	39.00	154	5.97	3203
Helicolenus dactylopterus	37.20	314	5.70	
RAJIDAE	33.06	26	5.06	
Merluccius capensis, female	28.70	16	4.39	3205
Coelorinchus fasciatus	27.98	406	4.28	
Deepwater fish mixture	17.60		2.70	
Nezumia sp.	17.00	654	2.60	
Epigonus denticulatus	12.94	506	1.98	
Galeus polli	12.66	300	1.94	
Etmopterus brachyurus	10.80	34	1.65	
Lophius vomerinus	6.50	4	1.00	3207
Trachurus capensis	4.86	14	0.74	3206
S H R I M P S	0.40	106	0.06	
SPHYRAENIDAE	0.26	6	0.04	
GONOSTOMATIDAE	0.26	6	0.04	
Selachophidium guentheri	0.14	14	0.02	
Total	653.04		99.99	

PROJECT STATION: 991

DATE: 4/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2420
start stop duration Long E 1336
TIME :16:40:00 17:10:00 30 (min) Purpose code: 3
LOG :2134.30 2135.80 1.50 Area code : 2
FDEPTH: 326 322 GearCond.code:
BDEPTH: 326 322 Validity code:
Towing dir: 340° Wire out:1050 m Speed: 30 kn*10

Sorted: 389 Kg Total catch: 532.70 CATCH/HOUR: 1065.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	477.50	236	44.82	3210
Helicolenus dactylopterus	250.80	4260	23.54	
Merluccius paradoxus, female	152.80	590	14.34	3209
Merluccius capensis, male	45.90	52	4.31	3211
Genypterus capensis	32.80	22	3.08	3212
Centrolophus niger	27.12	12	2.55	
Coelorinchus fasciatus	19.20	360	1.80	
Todarodes sagittatus	17.16	60	1.61	
Merluccius paradoxus, male	12.86	66	1.21	3208
Nezumia leonis	11.28	492	1.06	
Raja confundens	9.72	12	0.91	
MYCTOPHIDAE	3.12	336	0.29	
Galeus polli	2.16	48	0.20	
Epigonus denticulatus	1.44	72	0.14	
Beryx splendens	1.20	12	0.11	
Chlorophthalmus atlanticus	0.24	12	0.02	
Total	1065.30		99.99	

PROJECT STATION: 992

DATE: 4/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2419
start stop duration Long E 1335
TIME :18:57:00 19:19:00 22 (min) Purpose code: 2
LOG :2141.10 2142.20 1.10 Area code : 2
FDEPTH: 325 325 GearCond.code:
BDEPTH: 325 325 Validity code:
Towing dir: 154° Wire out:1000 m Speed: 30 kn*10

Sorted: 451 Kg Total catch: 530.58 CATCH/HOUR: 1447.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	775.36	616	53.58	3217
Merluccius paradoxus, female	193.09	638	13.34	3219
Helicolenus dactylopterus	181.09	3374	12.51	
Merluccius capensis, male	106.36	136	7.35	3215
Lophius vomerinus	39.27	25	2.71	3213
Coelorinchus fasciatus	28.25	556	1.95	
Krill	21.82		1.51	
MYCTOPHIDAE	20.73	3818	1.43	
Genypterus capensis	18.41	11	1.27	3214
Todarodes sagittatus	17.02	44	1.18	
Merluccius paradoxus, male	14.45	57	1.00	3218
Nezumia sp.	13.20	524	0.91	
Merluccius capensis, female	6.19	16	0.43	3216
Trachipterus trachypterus	5.45	3	0.38	
S H R I M P S	3.93	1200	0.27	
Galeus polli	1.96	87	0.14	
Epigonus denticulatus	0.44	11	0.03	
Total	1447.02		99.99	

PROJECT STATION: 993

DATE: 4/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2420
start stop duration Long E 1335
TIME :20:24:00 20:46:00 22 (min) Purpose code: 2
LOG :2145.20 2146.30 1.10 Area code : 2
FDEPTH: 325 325 GearCond.code:
BDEPTH: 325 325 Validity code:
Towing dir: 90° Wire out:1000 m Speed: 30 kn*10

Sorted: 195 Kg Total catch: 221.74 CATCH/HOUR: 604.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	394.64	183	65.26	3220
Helicolenus dactylopterus	100.58	1653	16.63	
Merluccius paradoxus, female	33.68	44	5.57	3222
Merluccius capensis, male	33.41	27	5.52	3221
Genypterus capensis	13.50	5	2.23	3224
Lophius vomerinus	10.23	14	1.69	3225
Coelorinchus fasciatus	5.67	55	0.94	
MYCTOPHIDAE	4.99	622	0.83	
Nezumia leonis	4.04	145	0.67	
Trachurus capensis	1.91	8	0.32	
Merluccius paradoxus, male	0.98	3	0.16	3223
Galeus polli	0.68	35	0.11	
Selachophidium guentheri	0.22	8	0.04	
Shrimps, small, non comm.	0.22	136	0.04	
Total	604.75		100.01	

PROJECT STATION: 994

DATE: 5/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2418
start stop duration Long E 1349
TIME :01:40:00 02:05:00 25 (min) Purpose code: 3
LOG :2161.10 2162.30 1.20 Area code : 2
FDEPTH: 283 278 GearCond.code:
BDEPTH: 283 278 Validity code:
Towing dir: 20° Wire out: 900 m Speed: 30 kn*10

Sorted: 114 Kg Total catch: 218.36 CATCH/HOUR: 524.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	169.32	192	32.31	3227
Merluccius capensis, female	141.60	996	27.02	3231
Merluccius capensis, male	94.20	840	17.98	3230
Merluccius capensis	36.48	1764	6.96	3229
Merluccius capensis, male	36.48	53	6.96	3226
Raja leopardus	12.72	12	2.43	
Todarodes sagittatus	7.56	12	1.44	
Coelorinchus fasciatus	7.08	192	1.35	
Chelidonichthys capensis	5.64	12	1.08	
Helicolenus dactylopterus	3.60	60	0.69	
Austroglossus microlepis	2.09	2	0.40	3234
Lophius vomerinus	2.09	7	0.40	3232
Merluccius paradoxus, female	1.82	5	0.35	3228
Sufflogobius bibarbatus	1.08	480	0.21	
Genypterus capensis	0.98	2	0.19	3233
Squilla sp.	0.72	36	0.14	
Deepwater fish mixture	0.60		0.11	
Total	524.06		100.02	

PROJECT STATION: 995

DATE: 5/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2412

	start	stop	duration			Long E 1400
TIME	:03:50:00	03:58:00	8 (min)	Purpose code:	3	
LOG	:2173.40	2173.80	0.40	Area code :	2	
FDEPTH:	205	205		GearCond.code:		
BDEPTH:	205	205		Validity code:		

Towing dir: 306° Wire out: 700 m Speed: 30 kn*10

Sorted: 10 Kg Total catch: 38.36 CATCH/HOUR: 287.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	137.25	5993	47.71	3237
Merluccius capensis, female	84.45	960	29.35	3236
Merluccius capensis, male	64.05	1185	22.26	3235
Sufflogobius bibarbatus	1.13	248	0.39	
Trachurus capensis	0.53	218	0.18	3238
Lepidopus caudatus	0.30	83	0.10	
Total	287.71		99.99	

PROJECT STATION: 996

DATE: 5/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2400

	start	stop	duration			Long E 1349
TIME	:13:00:00	13:30:00	30 (min)	Purpose code:	3	
LOG	:2237.20	2238.70	1.50	Area code :	2	
FDEPTH:	236	240		GearCond.code:		
BDEPTH:	236	240		Validity code:		

Towing dir: 270° Wire out: 800 m Speed: 30 kn*10

Sorted: 116 Kg Total catch: 3960.96 CATCH/HOUR: 7921.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	7201.96	47482	90.91	3245
Merluccius capensis, male	360.44	5054	4.55	3241
Merluccius capensis, female	215.46	3326	2.72	3242
Merluccius capensis, female	96.00	96	1.21	3240
Merluccius capensis, male	20.10	34	0.25	3239
Merluccius capensis	17.30	1064	0.22	3243
Sufflogobius bibarbatus	9.32	2128	0.12	
Trachurus capensis, juvenile	1.34	266	0.02	3244
Total	7921.92		100.00	

PROJECT STATION: 997

DATE: 5/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2400

	start	stop	duration			Long E 1336
TIME	:15:20:00	15:50:00	30 (min)	Purpose code:	3	
LOG	:2250.00	2251.70	1.70	Area code :	2	
FDEPTH:	265	268		GearCond.code:		
BDEPTH:	265	268		Validity code:		

Towing dir: 270° Wire out: 850 m Speed: 30 kn*10

Sorted: 87 Kg Total catch: 269.89 CATCH/HOUR: 539.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	245.60	1782	45.50	3249
Merluccius capensis, male	193.60	1840	35.87	3248
Merluccius capensis, female	37.20	26	6.89	3247
Trachurus capensis	19.06	110	3.53	3251
Coelorinchus fasciatus	18.70	404	3.46	
Merluccius capensis	13.06	954	2.42	3250
Sufflogobius bibarbatus	5.58	580	1.03	
Chelidonichthys capensis	3.92	8	0.73	
Todarodes sagittatus	2.32	8	0.43	
Genypterus capensis	0.46	2	0.09	3246
Squilla sp.	0.28	8	0.05	
Total	539.78		100.00	

PROJECT STATION: 998

DATE: 5/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2358

	start	stop	duration			Long E 1324
TIME	:17:34:00	18:04:00	30 (min)	Purpose code:	3	
LOG	:2262.30	2263.80	1.50	Area code :	2	
FDEPTH:	282	282		GearCond.code:		
BDEPTH:	282	282		Validity code:		

Towing dir: 340° Wire out: 900 m Speed: 30 kn*10

Sorted: 73 Kg Total catch: 178.58 CATCH/HOUR: 357.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	257.00	850	71.96	3254
Merluccius capensis, female	62.90	196	17.61	3253
Merluccius capensis, male	29.00	144	8.12	3252
Chlorophthalmus atlanticus	4.10	240	1.15	
Todarodes sagittatus	3.00	10	0.84	
Austroglossus microlepis	0.66	2	0.18	3255
MYCTOPHIDAE	0.50	270	0.14	
Total	357.16		100.00	

PROJECT STATION: 999

DATE: 5/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2359

	start	stop	duration			Long E 1314
TIME	:22:47:00	23:17:00	30 (min)	Purpose code:	3	
LOG	:2283.90	2285.30	1.40	Area code :	1	
FDEPTH:	398	393		GearCond.code:		
BDEPTH:	398	393		Validity code:		

Towing dir: 335° Wire out:1200 m Speed: 30 kn*10

Sorted: 61 Kg Total catch: 159.41 CATCH/HOUR: 318.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Helicolenus dactylopterus	106.00	728	33.25	
Todarodes sagittatus	34.64	104	10.87	
Deepwater fish mixture	29.04	3816	9.11	
Centroscymnus crepidater	22.48	8	7.05	
Merluccius paradoxus, female	20.20	30	6.34	3257
Genypterus capensis	17.40	8	5.46	3259
Deania profundorum	11.04	24	3.46	
Raja confundens	10.32	16	3.24	
S H R I M P S	9.68	2752	3.04	
Ebinania costaecanarie	9.52	16	2.99	
Merluccius capensis, female	8.52	4	2.67	3256
Nezumia sp.	6.88	256	2.16	
Lophius vomerinus	6.60	4	2.07	3260
Coelorinchus fasciatus	4.96	64	1.56	
Trachurus capensis	4.56	16	1.43	3258
Lophius vaillanti	4.50	2	1.41	3261
Selachophidium guentheri	4.16	48	1.30	
GONOSTOMATIDAE	2.96	432	0.93	
MYCTOPHIDAE	1.92	944	0.60	
Epigonus denticulatus	1.44	48	0.45	
Etmopterus brachyurus	1.36	8	0.43	
Hoplostethus cadenati	0.56	32	0.18	
Deepwater fish mixture	0.08	8	0.03	
Total	318.82		100.03	

PROJECT STATION:1000

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2358

	start	stop	duration			Long E 1311
TIME	:00:30:00	01:00:00	30 (min)	Purpose code:	3	
LOG	:2290.80	2292.20	1.40	Area code :	2	
FDEPTH:	506	506		GearCond.code:		
BDEPTH:	506	506		Validity code:		

Towing dir: 170° Wire out:1500 m Speed: 30 kn*10

Sorted: 94 Kg Total catch: 358.23 CATCH/HOUR: 716.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	220.00	9540	30.71	
Trachyrincus scabrus	136.00	520	18.98	
Merluccius paradoxus, female	119.44	144	16.67	3263
Photichthys argenteus	65.00	3880	9.07	
Nezumia sp.	52.80	3040	7.37	
Raja confundens	22.60	40	3.15	
Todarodes sagittatus	22.00	80	3.07	
Helicolenus dactylopterus	14.20	20	1.98	
Deania profundorum	12.80	20	1.79	
Epigonus denticulatus	8.00	240	1.12	
Selachophidium guentheri	7.80	180	1.09	
STOMIIDAE	7.20	760	1.00	
Merluccius paradoxus, male	5.98	8	0.83	3262
Merluccius capensis, female	5.28	2	0.74	3264
Coelorinchus fasciatus	5.00	40	0.70	
S H R I M P S	3.00	760	0.42	
Deepwater fish mixture	2.60		0.36	
MYCTOPHIDAE	2.40	280	0.33	
Galeus polli	2.20	40	0.31	
Notacanthus sexspinis	1.40	60	0.20	
Munida sp.	0.40	80	0.06	
Stereomastis sp.	0.20	20	0.03	
Yarrella blackfordi	0.20	20	0.03	
Total	716.50		100.01	

PROJECT STATION:1001

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2359

	start	stop	duration			Long E 1309
TIME	:02:10:00	02:40:00	30 (min)	Purpose code:	3	
LOG	:2297.00	2298.40	1.40	Area code :	2	
FDEPTH:	604	614		GearCond.code:		
BDEPTH:	604	614		Validity code:		

Towing dir: 330° Wire out:1700 m Speed: 30 kn*10

Sorted: 126 Kg Total catch: 416.85 CATCH/HOUR: 833.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Hoplostethus cadenati	340.00	11800	40.78	
Merluccius paradoxus, female	181.30	214	21.75	3266
Yarrella blackfordi	123.00	8880	14.75	
Nezumia sp.	53.60	2440	6.43	
Deania calcea	36.80	20	4.41	
Todarodes sagittatus	35.20	80	4.22	
Deania profundorum	12.20	20	1.46	
Deepwater fish mixture	8.60	660	1.03	
Merluccius paradoxus, male	6.08	8	0.73	3265
Selachophidium guentheri	5.80	100	0.70	
Lamprogrammus exutus	5.40	160	0.65	
S H R I M P S	5.00	1640	0.60	
Coelorinchus coelorhinc. polli	4.40	20	0.53	
STOMIIDAE	3.60	540	0.43	
Lophius vomerinus	2.64	4	0.32	3267
Coelorinchus fasciatus	2.40	20	0.29	
Notacanthus sexspinis	2.20	40	0.26	
MYCTOPHIDAE	1.20	180	0.14	
Neoscopelus macrolepidotus	1.00	100	0.12	
MYCTOPHIDAE	0.80	100	0.10	
Beryx splendens	0.68	2	0.08	
Yarrella blackfordi	0.60	40	0.07	
CONGRIDAE	0.60	20	0.07	
Alepocephalus sp.	0.40	40	0.05	
Stereomastis sp.	0.20	20	0.02	
Total	833.70		99.99	

PROJECT STATION:1002

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2338

	start	stop	duration			Long E 1307
TIME	:07:40:00	08:10:00	30	(min)	Purpose code:	3
LOG	:2334.10	2335.60	1.50		Area code :	2
FDEPTH:	451	452			GearCond.code:	
BDEPTH:	451	452			Validity code:	

Towing dir: 345° Wire out:1350 m Speed: 30 kn*10

Sorted: Kg Total catch: 324.16 CATCH/HOUR: 648.32

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	204.60	748	31.56	
Helicolenus dactylopterus	102.30	748	15.78	
Merluccius paradoxus, female	99.70	102	15.38	3269
Plesionika martia	60.28	32890	9.30	
Nezumia leonis	60.06	2002	9.26	
Todarodes sagittatus	29.48	88	4.55	
Deania profundorum	26.84	44	4.14	
Yarrella blackfordi	18.70	1430	2.88	
Hoplostethus cadenati	12.76	1826	1.97	
Epigonus denticulatus	7.48	110	1.15	
Coelorinchus fasciatus	5.72	22	0.88	
Beryx splendens	4.84	22	0.75	
Centrolophus niger	4.18	22	0.64	
Merluccius paradoxus, male	3.82	4	0.59	3268
Selachophidium guentheri	3.08	66	0.48	
Galeus polli	2.42	110	0.37	
Lophius vomerinus	1.18	2	0.18	3270
Lamprogrammus exutus	0.88	22	0.14	
Total	648.32		100.00	

PROJECT STATION:1003

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2339

	start	stop	duration			Long E 1313
TIME	:09:48:00	10:18:00	30	(min)	Purpose code:	3
LOG	:2343.40	2344.90	1.50		Area code :	2
FDEPTH:	343	334			GearCond.code:	
BDEPTH:	343	334			Validity code:	

Towing dir: 170° Wire out:1050 m Speed: 30 kn*10

Sorted: 289 Kg Total catch: 351.03 CATCH/HOUR: 702.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	282.00	196	40.17	3271
Merluccius paradoxus, female	159.70	404	22.75	3273
Deepwater fish mixture	62.80		8.95	
MYCTOPHIDAE	51.76	4660	7.37	
Todarodes sagittatus	51.50	210	7.34	
Merluccius capensis, male	44.20	40	6.30	3270
Helicolenus dactylopterus	28.50	416	4.06	
Merluccius paradoxus, male	9.70	26	1.38	3272
Small squids	3.10	676	0.44	
Nezumia sp.	2.86	170	0.41	
Epigonus denticulatus	2.36	110	0.34	
Galeus polli	1.06	20	0.15	
Beryx splendens	0.90	4	0.13	
Coelorinchus fasciatus	0.86	20	0.12	
Selachophidium guentheri	0.36	30	0.05	
Shrimps, small, non comm.	0.20	30	0.03	
Lepidopus caudatus	0.10	6	0.01	
Notacanthus sexspinis	0.10	6	0.01	
Total	702.06		100.01	

PROJECT STATION:1004

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2340

	start	stop	duration			Long E 1326
TIME	:12:10:00	12:40:00	30	(min)	Purpose code:	3
LOG	:2355.60	2357.10	1.50		Area code :	2
FDEPTH:	255	247			GearCond.code:	
BDEPTH:	255	247			Validity code:	

Towing dir: 90° Wire out: 850 m Speed: 30 kn*10

Sorted: 154 Kg Total catch: 1364.47 CATCH/HOUR: 2728.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	2446.40	8976	89.65	3276
Merluccius capensis, male	133.90	326	4.91	3274
Merluccius capensis, female	117.40	206	4.30	3275
Sufflogobius bibarbatus	29.92	4224	1.10	
Small squids	0.88	264	0.03	
Merluccius capensis	0.44	22	0.02	3277
Total	2728.94		100.01	

PROJECT STATION:1005

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2340

	start	stop	duration			Long E 1336
TIME	:14:14:00	14:24:00	10	(min)	Purpose code:	3
LOG	:2364.50	2365.10	0.40		Area code :	2
FDEPTH:	215	213			GearCond.code:	
BDEPTH:	215	213			Validity code:	

Towing dir: 90° Wire out: 700 m Speed: 30 kn*10

Sorted: 36 Kg Total catch: 941.97 CATCH/HOUR: 5651.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	5569.20	40188	98.54	3280
Merluccius capensis, male	38.10	390	0.67	3278
Sufflogobius bibarbatus	30.60	9792	0.54	
Merluccius capensis, female	12.66	102	0.22	3279
Merluccius capensis	1.26	78	0.02	3281
Total	5651.82		99.99	

PROJECT STATION:1006

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2230

	start	stop	duration			Long E 1348
TIME	:06:08:00	06:23:00	15	(min)	Purpose code:	3
LOG	:2410.30	2411.10	0.80		Area code :	2
FDEPTH:	156	157			GearCond.code:	
BDEPTH:	156	157			Validity code:	

Towing dir: 270° Wire out: 500 m Speed: 30 kn*10

Sorted: 13 Kg Total catch: 13.49 CATCH/HOUR: 53.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	20.20	788	37.44	3284
Trachurus capensis	18.00	136	33.36	3285
Merluccius capensis, female	8.20	112	15.20	3283
Merluccius capensis, male	6.76	104	12.53	3282
Hyperoglyphe moselii	0.40	4	0.74	
Sufflogobius bibarbatus	0.40	124	0.74	
Total	53.96		100.01	

PROJECT STATION:1007

DATE: 6/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2330

	start	stop	duration			Long E 1337
TIME	:08:03:00	08:33:00	30	(min)	Purpose code:	3
LOG	:2421.10	2422.60	1.50		Area code :	2
FDEPTH:	185	190			GearCond.code:	
BDEPTH:	185	190			Validity code:	

Towing dir: 270° Wire out: 600 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 32.53 CATCH/HOUR: 65.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	20.50	212	31.51	3287
Sufflogobius bibarbatus	20.00	5130	30.74	
Merluccius capensis, male	17.10	234	26.28	3286
Merluccius capensis	5.24	228	8.05	3289
Trachurus capensis	1.56	14	2.40	3288
Centrolophus niger	0.66	2	1.01	
Total	65.06		99.99	

PROJECT STATION:1008

DATE: 7/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2330

	start	stop	duration			Long E 1326
TIME	:10:03:00	10:33:00	30	(min)	Purpose code:	3
LOG	:2431.60	2432.90	1.30		Area code :	2
FDEPTH:	235	246			GearCond.code:	
BDEPTH:	235	246			Validity code:	

Towing dir: 270° Wire out: 700 m Speed: 28 kn*10

Sorted: 182 Kg Total catch: 405.57 CATCH/HOUR: 811.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	182.60	186	22.51	3293
Trachurus capensis	179.56	1122	22.14	3294
Merluccius capensis, female	168.16	1226	20.73	3291
Merluccius capensis, male	123.02	970	15.17	3290
Merluccius capensis, male	62.50	82	7.71	3292
Pterothrissus belloci	47.78	704	5.89	
Sufflogobius bibarbatus	23.76	4018	2.93	
Merluccius capensis	13.58	666	1.67	3295
Coelorinchus fasciatus	3.62	124	0.45	
Chelidonichthys capensis	3.14	10	0.39	
Galeus polli	1.34	58	0.17	
Lophius vomerinus	0.94	2	0.12	3296
Small squids	0.58	20	0.07	
Austroglossus microlepis	0.56	4	0.07	3297
Total	811.14		100.02	

PROJECT STATION:1009

DATE: 7/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2331

	start	stop	duration			Long E 1316
TIME	:12:10:00	12:40:00	30	(min)	Purpose code:	3
LOG	:2442.10	2423.50	1.40		Area code :	2
FDEPTH:	329	331			GearCond.code:	
BDEPTH:	329	331			Validity code:	

Towing dir: 200° Wire out:1000 m Speed: 30 kn*10

Sorted: 274 Kg Total catch: 363.81 CATCH/HOUR: 727.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	308.00	290	42.33	3303
MYCTOPHIDAE	158.80	15656	21.82	
Merluccius paradoxus, female	124.00	486	17.04	3301
Merluccius capensis, male	51.30	70	7.05	3302
Trachurus capensis	40.96	144	5.63	3298
Todarodes sagittatus	26.00	88	3.57	
Merluccius paradoxus, male	6.00	34	0.82	3300
Nezumia sp.	2.64	104	0.36	
Helicolenus dactylopterus	2.48	32	0.34	
Coelorinchus fasciatus	2.40	48	0.33	
Centrolophus niger	1.52	8	0.21	
Epigonus denticulatus	1.52	64	0.21	
Merluccius capensis	1.12	64	0.15	3299
Galeus polli	0.64	8	0.09	
GEMPYLIDAE	0.16	8	0.02	
Selachophidium guentheri	0.08	16	0.01	
Total	727.62		99.98	

PROJECT STATION:1010

DATE: 7/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2331
start stop duration Long E 1308
TIME :14:25:00 14:55:00 30 (min) Purpose code: 3
LOG :2453.20 2454.60 1.40 Area code : 2
FDEPTH: 413 411 GearCond.code:
BDEPTH: 413 411 Validity code:
Towing dir: 360° Wire out:1300 m Speed: 30 kn*10

Sorted: 176 Kg Total catch: 382.40 CATCH/HOUR: 764.80

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	262.40	348	34.31	3305
Helicolenus dactylopterus	213.50	1806	27.92	
Cubiceps caerulus	125.30	476	16.38	
Nezumia sp.	28.14	910	3.68	
Todarodes sagittatus	20.86	56	2.73	
Deepwater fish mixture	14.70		1.92	
Selachophidium guentheri	11.34	322	1.48	
Raja confundens	10.54	14	1.39	
Trachyrincus scabrus	10.22	84	1.34	
Lophius vomerinus	9.40	6	1.23	3308
Trachurus capensis	9.38	56	1.23	3306
Genypterus capensis	8.50	4	1.11	3307
Deania profundorum	8.26	14	1.08	
Schedophilus huttoni	7.28	28	0.95	
Yarrella blackfordi	6.72	644	0.88	
MYCTOPHIDAE	6.02	756	0.79	
Epigonus denticulatus	3.92	1078	0.51	
Merluccius paradoxus, male	3.60	8	0.47	3304
Galeus polli	2.24	42	0.29	
S H R I M P S	0.84	322	0.11	
Coelorinchus coelorhinc. polli	0.42	14	0.05	
Photichthys argenteus	0.28	644	0.04	
MYCTOPHIDAE	0.28	84	0.04	
NEOSCOPELIDAE	0.28	56	0.04	
Coelorinchus fasciatus	0.28	14	0.04	
Total	764.80		100.01	

PROJECT STATION:1011

DATE: 7/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2330
start stop duration Long E 1303
TIME :16:14:00 16:44:00 30 (min) Purpose code: 3
LOG :2461.50 2463.00 1.50 Area code : 2
FDEPTH: 549 559 GearCond.code:
BDEPTH: 549 559 Validity code:
Towing dir: 180° Wire out:1600 m Speed: 30 kn*10

Sorted: 109 Kg Total catch: 142.93 CATCH/HOUR: 285.86

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	149.50	176	52.30	3310
Deania calcea	54.00	28	18.89	
Nezumia leonis	14.52	68	5.08	
Todarodes sagittatus	14.48	32	5.07	
Selachophidium guentheri	11.36	252	3.97	
Helicolenus dactylopterus	9.84	20	3.44	
Yarrella blackfordi	8.04	340	2.81	
Hoplostethus cadenati	6.20	268	2.17	
Raja confundens	5.56	12	1.95	
OPISTHOTEUTHIDAE	4.52	16	1.58	
Coelorinchus fasciatus	2.68	12	0.94	
Galeus polli	2.12	128	0.74	
Shrimps, small, non comm.	0.96	308	0.34	
Lophius vomerinus	0.96	2	0.34	3309
Trachyrincus scabrus	0.88	4	0.31	
Photichthys argenteus	0.20	24	0.07	
POLYCHAELIDAE	0.04	4	0.01	
Total	285.86		100.01	

PROJECT STATION:1012

DATE: 7/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2330
start stop duration Long E 1300
TIME :18:30:00 19:00:00 30 (min) Purpose code: 3
LOG :2468.50 2470.00 1.50 Area code : 2
FDEPTH: 646 644 GearCond.code:
BDEPTH: 646 644 Validity code:
Towing dir: 360° Wire out:1750 m Speed: 30 kn*10

Sorted: 223 Kg Total catch: 338.32 CATCH/HOUR: 676.64

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	255.50	218	37.76	3312
Deania calcea	174.36	78	25.77	
Todarodes sagittatus	115.10	200	17.01	
ALEPOCEPHALIDAE	34.54	78	5.10	
Nezumia leonis	27.84	1200	4.11	
Centroscymnus coelolepis	21.80	2	3.22	
Hoplostethus cadenati	14.74	386	2.18	
Yarrella blackfordi	6.72	320	0.99	
Selachophidium guentheri	6.06	110	0.90	
Coelorinchus matamua	3.42	12	0.51	
Allocyttus verrucosus	3.42	34	0.51	
Lamprogrammus exutus	3.30	12	0.49	
Lophius vomerinus	3.12	4	0.46	3313
Merluccius paradoxus, male	1.62	2	0.24	3311
Shrimps, small, non comm.	1.00	286	0.15	
Dicrolene intronigra	0.88	22	0.13	
Heterocarpus grimaldii	0.78	66	0.12	
POLYCHAELIDAE	0.66	44	0.10	
Notacanthus sexspinis	0.66	12	0.10	
Raja confundens	0.56	12	0.08	
Ebinania costaecanarie	0.56	12	0.08	
Total	676.64		100.01	

PROJECT STATION:1013

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2319
start stop duration Long E 1328
TIME :01:57:00 02:07:00 10 (min) Purpose code: 3
LOG :2506.50 2506.90 0.40 Area code : 2
FDEPTH: 230 231 GearCond.code:
BDEPTH: 230 231 Validity code:
Towing dir: 20° Wire out: 700 m Speed: 30 kn*10

Sorted: 17 Kg Total catch: 19.76 CATCH/HOUR: 118.56

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius capensis, female	53.10	276	44.79	3315
Merluccius capensis, male	40.50	396	34.16	3314
Sufflogobius bibarbatus	14.40	3078	12.15	
Pterothrissus belloci	9.00	90	7.59	
Austroglossus microlepis	1.56	12	1.32	3316
Total	118.56		100.01	

PROJECT STATION:1014

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2318
start stop duration Long E 1344
TIME :04:16:00 04:46:00 30 (min) Purpose code: 3
LOG :2524.20 2525.50 1.30 Area code : 2
FDEPTH: 155 152 GearCond.code:
BDEPTH: 155 152 Validity code:
Towing dir: 45° Wire out: 500 m Speed: 30 kn*10

Sorted: 4 Kg Total catch: 4.92 CATCH/HOUR: 9.84

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius capensis	5.42	204	55.08	3319
Merluccius capensis, male	1.72	26	17.48	3317
Merluccius capensis, female	1.12	20	11.38	3318
Todarodes sagittatus	0.96	2	9.76	
Trachurus capensis	0.62	4	6.30	3321
Merluccius capensis, juveniles	0.06	4	0.61	3320
Sufflogobius bibarbatus	0.04	8	0.41	
Trachurus capensis, juvenile	0.02	8	0.20	
Total	9.96		101.22	

PROJECT STATION:1015

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2310
start stop duration Long E 1358
TIME :07:16:00 07:46:00 30 (min) Purpose code: 3
LOG :2543.80 2545.10 1.30 Area code : 2
FDEPTH: 136 140 GearCond.code:
BDEPTH: 136 140 Validity code:
Towing dir: 270° Wire out: 450 m Speed: 30 kn*10

Sorted: 1 Kg Total catch: 1.22 CATCH/HOUR: 2.44

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius capensis	1.12	56	45.90	3323
Merluccius capensis, female	0.56	12	22.95	3325
Sufflogobius bibarbatus	0.44	102	18.03	
Merluccius capensis, male	0.22	8	9.02	3324
Trachurus capensis, juvenile	0.10	34	4.10	3322
Total	2.44		100.00	

PROJECT STATION:1016

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2310
start stop duration Long E 1336
TIME :10:14:00 10:24:00 10 (min) Purpose code: 3
LOG :2565.20 2565.70 0.50 Area code : 2
FDEPTH: 150 152 GearCond.code:
BDEPTH: 150 152 Validity code:
Towing dir: 270° Wire out 500 m Speed: 30 kn*10

Sorted: 24 Kg Total catch 326 56 CATCH/HOUR: 1959.36

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius capensis	1387 68	50148	70.82	3328
Merluccius capensis, male	278 34	4158	14.21	3326
Merluccius capensis, female	253 56	3522	12.94	3327
Sufflogobius bibarbatus	28 08	5616	1.43	
Austroglossus microlepis	11 70	78	0.60	3329
Total	1959.36		100.00	

PROJECT STATION:1017

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2309
start stop duration Long E 1324
TIME :13:50:00 14:12:00 22 (min) Purpose code: 3
LOG :2582.80 2583.60 0.80 Area code : 2
FDEPTH: 306 316 GearCond.code:
BDEPTH: 306 316 Validity code:
Towing dir: 280° Wire out: 900 m Speed: 30 kn*10

Sorted: Kg Total catch: 297.25 CATCH/HOUR: 810.68

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius capensis, female	394.77	360	48.70	3332
Trachurus capensis	248.86	856	30.70	3335
Merluccius capensis, male	62.32	101	7.69	3333
Merluccius paradoxus, female	49.77	284	6.14	3331
Merluccius capensis	23.32	1388	2.88	3334
Trachipterus jacksonensis	12.14	3	1.50	
Merluccius capensis, female	6.00	60	0.74	3343
Todarodes sagittatus	4.77	8	0.59	
Merluccius capensis, male	4.36	55	0.54	3342
Merluccius paradoxus, male	4.36	25	0.54	3330
Total	810.67		100.02	

PROJECT STATION:1018

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2311

	start	stop	duration			Long E 1314
TIME	:16:10:00	16:40:00	30	(min)	Purpose code:	3
LOG	:2593.20	2594.70	1.50		Area code :	2
FDEPTH:	376	383			GearCond.code:	
BDEPTH:	376	383			Validity code:	

Towing dir: 270° Wire out:1100 m Speed: 30 kn*10

Sorted: 218 Kg Total catch: 378.80 CATCH/HOUR: 757.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	187.70	226	24.78	3339
Merluccius capensis, female	171.80	50	22.68	3337
Helicolenus dactylopterus	141.00	5208	18.61	
Galeus polli	68.28	1056	9.01	
Nezumia leonis	27.96	780	3.69	
Etmopterus pusillus	25.08	72	3.31	
Deepwater fish mixture	24.24		3.20	
Etmopterus sp.	24.12	36	3.18	
Todarodes sagittatus	15.72	36	2.07	
Raja confundens	14.52	12	1.92	
Coelorinchus fasciatus	10.20	96	1.35	
Epigonus denticulatus	9.72	312	1.28	
Yarrella blackfordi	6.36	264	0.84	
Genypterus capensis	5.84	4	0.77	3340
Bassanago albescens	3.84	12	0.51	
Shrimps, small, non comm.	3.60	996	0.48	
Merluccius capensis, male	3.44	4	0.45	3336
MYCTOPHIDAE	3.24	408	0.43	
Hoplostethus cadenati	3.12	36	0.41	
Guentherus altivela	2.40	12	0.32	
Trachurus capensis	2.14	6	0.28	3341
Selachophidium guentheri	1.20	156	0.16	
Merluccius paradoxus, male	1.12	2	0.15	3338
Laemonema laureysi	0.96	12	0.13	
Total	757.60		100.01	

PROJECT STATION:1019

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2308

	start	stop	duration			Long E 1303
TIME	:18:39:00	19:09:00	30	(min)	Purpose code:	3
LOG	:2604.40	2605.70	1.30		Area code :	2
FDEPTH:	500	497			GearCond.code:	
BDEPTH:	500	497			Validity code:	

Towing dir: 350° Wire out:1450 m Speed: 30 kn*10

Sorted: 124 Kg Total catch: 189.89 CATCH/HOUR: 379.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	193.00	252	50.82	3345
Trachyrincus scabrus	44.10	154	11.61	
Helicolenus dactylopterus	28.90	98	7.61	
Nezumia sp.	28.60	1008	7.53	
Todarodes sagittatus	17.80	42	4.69	
Raja confundens	16.80	22	4.42	
Ebinania costaecanarie	9.36	8	2.46	
Deania profundorum	8.20	14	2.16	
Hoplostethus cadenati	7.70	252	2.03	
Allocyttus verrucosus	6.10	22	1.61	
Shrimps, small, non comm.	3.70	992	0.97	
Merluccius paradoxus, male	3.00	8	0.79	3344
Selachophidium guentheri	2.80	56	0.74	
Yarrella blackfordi	2.38	176	0.63	
Notacanthus sexspinis	2.38	28	0.63	
Lophius vomerinus	1.72	2	0.45	3346
MYCTOPHIDAE	1.40	210	0.37	
Galeus polli	0.90	28	0.24	
Aristeus varidens	0.50	64	0.13	
Lamprogrammus exutus	0.24	8	0.06	
GONOSTOMATIDAE	0.20	14	0.05	
Total	379.78		100.00	

PROJECT STATION:1020

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2305

	start	stop	duration			Long E 1258
TIME	:21:00:00	21:30:00	30	(min)	Purpose code:	3
LOG	:2611.50	2613.00	1.50		Area code :	2
FDEPTH:	604	606			GearCond.code:	
BDEPTH:	604	605			Validity code:	

Towing dir: 350° Wire out:1650 m Speed: 30 kn*10

Sorted: 56 Kg Total catch: 131.10 CATCH/HOUR: 262.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Todarodes sagittatus	56.70	92	21.62	
Merluccius paradoxus, female	51.70	52	19.72	3347
Deania calcea	35.98	28	13.72	
Nezumia sp.	32.90	1502	12.55	
Deepwater fish mixture	24.92		9.50	
Yarrella blackfordi	17.20	834	6.56	
Trachyrincus scabrus	9.20	22	3.51	
Bathylagus glacilis	6.30	470	2.40	
Shrimps, small, non comm.	5.46	1592	2.08	
Hoplostethus cadenati	5.00	266	1.91	
ALEPOCEPHALIDAE	3.60	126	1.37	
MYCTOPHIDAE	3.44	484	1.31	
Coelorinchus matamua	2.56	8	0.98	
Allocyttus verrucosus	2.20	42	0.84	
Selachophidium guentheri	1.12	22	0.43	
Hoplostethus atlanticus	1.04	2	0.40	
Thysanoteuthis rhombus	0.98	36	0.37	
Lamprogrammus exutus	0.84	28	0.32	
Aristeus varidens	0.36	28	0.14	
Stereomastis sp.	0.28	22	0.11	
Nephropsis atlantica	0.20	14	0.08	
Heterocarpus grimaldii	0.14	14	0.05	
Scopelosaurus meadi	0.08	8	0.03	
Total	262.20		100.00	

PROJECT STATION:1021

DATE: 8/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2257

	start	stop	duration			Long E 1300
TIME	:23:30:00	00:00:00	30	(min)	Purpose code:	3
LOG	:2621.40	2622.70	1.30		Area code :	2
FDEPTH:	433	426			GearCond.code:	
BDEPTH:	433	426			Validity code:	

Towing dir: 350° Wire out:1350 m Speed: 28 kn*10

Sorted: 101 Kg Total catch: 234.71 CATCH/HOUR: 469.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	129.30	192	27.54	3349
Trachyrincus scabrus	118.20	840	25.18	
Helicolenus dactylopterus	92.40	1068	19.68	
Nezumia sp.	38.76	1416	8.26	
Todarodes sagittatus	22.08	60	4.70	
Deepwater fish mixture	12.84		2.74	
Prionace glauca	12.60	2	2.68	
Epigonus denticulatus	11.40	72	2.43	
Hoplostethus cadenati	9.60	168	2.05	
Selachophidium guentheri	5.88	120	1.25	
Merluccius capensis, female	3.96	4	0.84	3350
Merluccius paradoxus, male	3.52	8	0.75	3348
MYCTOPHIDAE	2.52	360	0.54	
Galeus polli	2.04	48	0.43	
Yarrella blackfordi	1.80	96	0.38	
Notacanthus sexspinis	1.44	36	0.31	
Shrimps, small, non comm.	1.08	168	0.23	
Total	469.42		99.99	

PROJECT STATION:1022

DATE: 9/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2249

	start	stop	duration			Long E 1317
TIME	:05:36:00	06:06:00	30	(min)	Purpose code:	3
LOG	:2642.20	2643.70	1.50		Area code :	2
FDEPTH:	322	314			GearCond.code:	
BDEPTH:	322	314			Validity code:	

Towing dir: 105° Wire out:1000 m Speed: 30 kn*10

Sorted: 135 Kg Total catch: 182.61 CATCH/HOUR: 365.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	175.10	114	47.94	3352
Merluccius paradoxus, female	37.90	750	10.38	3356
Merluccius capensis, female	37.90	46	10.38	3354
Schedophilus huttoni	30.70	10	8.41	
Merluccius capensis, male	27.72	34	7.59	3351
Deepwater fish mixture	14.36		3.93	
Trachipterus jacksonensis	13.06	6	3.58	
Merluccius paradoxus, male	11.50	50	3.15	3357
Merluccius paradoxus, female	5.40	4	1.48	3355
Coelorinchus fasciatus	2.80	50	0.77	
Epigonus denticulatus	2.20	156	0.60	
Centrolophus niger	1.46	6	0.40	
Genypterus capensis	1.30	2	0.36	3353
Nezumia leonis	1.00	46	0.27	
Malacocephalus laevis	0.96	20	0.26	
Coelorinchus coelorhinc. polli	0.70	30	0.19	
Galeus polli	0.40	6	0.11	
Chlorophthalmus atlanticus	0.36	20	0.10	
Ebinania costaecanarie	0.30	10	0.08	
Todaropsis eblanae	0.10	6	0.03	
Total	365.22		100.01	

PROJECT STATION:1023

DATE: 9/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2250

	start	stop	duration			Long E 1330
TIME	:08:25:00	08:45:00	20	(min)	Purpose code:	3
LOG	:2656.00	2656.90	0.90		Area code :	2
FDEPTH:	217	196			GearCond.code:	
BDEPTH:	217	196			Validity code:	

Towing dir: 110° Wire out: 650 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 213.03 CATCH/HOUR: 639.09

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	294.54	4080	46.09	3359
Merluccius capensis, female	233.34	3393	36.51	3358
Merluccius capensis	94.62	4821	14.81	3360
Sufflogobius bibarbatus	13.53	5484	2.12	
Lophius vomerinus	3.06	3	0.48	3361
Total	639.09		100.01	

PROJECT STATION:1024

DATE:10/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2251

	start	stop	duration			Long E 1259
TIME	:06:00:00	06:50:00	50	(min)	Purpose code:	3
LOG	:2796.30	2798.70	2.40		Area code :	2
FDEPTH:	363	368			GearCond.code:	
BDEPTH:	363	368			Validity code:	

Towing dir: 150° Wire out:1080 m Speed: 30 kn*10

Sorted: 74 Kg Total catch: 271.01 CATCH/HOUR: 325.21

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Helicolenus dactylopterus	138.24	1728	42.51	
THYSANOTEUTHIDAE	32.16	10	9.89	
Nezumia leonis	31.01	912	9.54	
Merluccius capensis, female	28.50	18	8.76	3362
Schedophilus huttoni	15.84	10	4.87	
Merluccius paradoxus, female	15.54	62	4.78	3365
Selachophidium guentheri	14.69	374	4.52	
Raja confundens	11.04	10	3.39	
Epigonus denticulatus	7.30	346	2.24	
Coelorinchus fasciatus	6.14	125	1.89	
Lophius vomerinus	5.74	2	1.77	3367
Coelorinchus coelorhinc. polli	4.80	115	1.48	
Todarodes sagittatus	4.22	29	1.30	
Merluccius capensis, male	2.86	2	0.88	3363
Genypterus capensis	1.22	1	0.38	3368
MYCTOPHIDAE	1.15	144	0.35	
Yarrella blackfordi	1.15	125	0.35	
Merluccius paradoxus, male	1.10	4	0.34	3366
Histioteuthis reversa	0.96	10	0.30	
Shrimps, small, non comm.	0.67	154	0.21	
Trachurus capensis	0.49	1	0.15	3364
Notacanthus sexspinis	0.38	10	0.12	
Total	325.20		100.02	

PROJECT STATION:1025

DATE:10/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2251
start stop duration Long E 1308
TIME :08:45:00 09:15:00 30 (min) Purpose code: 3
LOG :2808.50 2810.00 1.50 Area code : 2
FDEPTH: 286 283 GearCond.code:
BDEPTH: 286 283 Validity code:
Towing dir: 160° Wire out: 900 m Speed: 30 kn*10

Sorted: 212 Kg Total catch: 226.19 CATCH/HOUR: 452.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	193.00	214	42.66	3370
Trachurus capensis	76.30	148	16.87	3373
Merluccius capensis, male	68.00	92	15.03	3369
Deepwater fish mixture	43.96		9.72	
Merluccius paradoxus, female	30.30	144	6.70	3372
Chlorophthalmus atlanticus	16.02	1234	3.54	
Galeus polli	8.40	190	1.86	
Todarodes sagittatus	6.90	12	1.53	
Coelorinchus fasciatus	3.78	90	0.84	
MYCTOPHIDAE	1.48	204	0.33	
Synagrops microlepis	1.42	172	0.31	
Lophius vomerinus	0.84	2	0.19	3375
Dentex macrophthalmus	0.54	2	0.12	3374
Merluccius paradoxus, male	0.48	2	0.11	3371
Trigla lyra	0.34	4	0.08	
Austroglossus microlepis	0.20	2	0.04	3376
Helicolenus dactylopterus	0.18	6	0.04	
Coelorinchus coelorhinc. polli	0.18	6	0.04	
Shrimps, small, non comm.	0.06	12	0.01	
Total	452.38		100.02	

PROJECT STATION:1026

DATE:10/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2250
start stop duration Long E 1338
TIME :12:25:00 12:35:00 10 (min) Purpose code: 3
LOG :2839.80 2840.30 0.50 Area code : 2
FDEPTH: 134 134 GearCond.code:
BDEPTH: 134 134 Validity code:
Towing dir: 90° Wire out: 400 m Speed:300 kn*10

Sorted: 18 Kg Total catch: 45.24 CATCH/HOUR: 271.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	135.78	5910	50.02	3377
Merluccius capensis, male	64.20	1050	23.65	3378
Merluccius capensis, female	60.78	1188	22.39	3379
Sufflogobius bibarbatus	8.58	2190	3.16	
Schedophilus huttoni	1.14	6	0.42	
Chelidonichthys queketti	0.90	6	0.33	
Chlorophthalmus punctatus	0.06	6	0.02	
Total	271.44		99.99	

PROJECT STATION:1027

DATE:10/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 2250
start stop duration Long E 1341
TIME :13:20:00 14:20:00 60 (min) Purpose code: 2
LOG :2841.90 2844.60 2.50 Area code : 2
FDEPTH: 132 136 GearCond.code: 5
BDEPTH: 132 136 Validity code: 9
Towing dir: 90° Wire out: 400 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:1028

DATE:15/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2228
start stop duration Long E 1328
TIME :05:47:00 06:07:00 20 (min) Purpose code: 3
LOG :3014.00 3015.00 1.00 Area code : 2
FDEPTH: 128 128 GearCond.code:
BDEPTH: 128 128 Validity code:
Towing dir: 153° Wire out: 420 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:1029

DATE:15/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2230
start stop duration Long E 1326
TIME :09:02:00 09:14:00 12 (min) Purpose code: 3
LOG :3034.40 3035.10 0.70 Area code : 2
FDEPTH: 207 205 GearCond.code:
BDEPTH: 207 205 Validity code:
Towing dir: 128° Wire out: 700 m Speed: 32 kn*10

Sorted: 42 Kg Total catch: 135.20 CATCH/HOUR: 676.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	342.05	2550	50.60	3380
Merluccius capensis, female	208.00	2000	30.77	3382
Merluccius capensis, male	117.80	1510	17.43	3381
Squalus megalops	3.75	15	0.55	
Sufflogobius bibarbatus	2.75	455	0.41	
Todaropsis eblanae	1.65	50	0.24	
Total	676.00		100.00	

PROJECT STATION:1030

DATE:15/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2230
start stop duration Long E 1308
TIME :11:41:00 12:01:00 20 (min) Purpose code: 3
LOG :3053.80 3054.90 1.10 Area code : 2
FDEPTH: 275 278 GearCond.code:
BDEPTH: 275 278 Validity code:
Towing dir: 268° Wire out: 900 m Speed: 30 kn*10

Sorted: 131 Kg Total catch: 419.78 CATCH/HOUR: 1259.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	616.50	1458	48.95	3390
Merluccius capensis, female	160.14	141	12.72	3384
Merluccius capensis	154.80	6198	12.29	3387
Merluccius capensis, female	83.70	630	6.65	3389
Coelorinchus fasciatus	59.40	1620	4.72	
Lophius vomerinus	40.05	42	3.18	3385
Merluccius capensis, male	29.70	414	2.36	3388
Todaropsis eblanae	22.32	738	1.77	
Synagrops microlepis	21.24	4572	1.69	
Galeus polli	20.52	774	1.63	
Todarodes sagittatus	12.45	21	0.99	
Krill	8.46		0.67	
Merluccius capensis, male	6.75	6	0.54	3383
Pterothrissus belloci	6.66	558	0.53	
Sufflogobius bibarbatus	5.94	774	0.47	
Chlorophthalmus atlanticus	4.32	414	0.34	
MYCTOPHIDAE	3.06	918	0.24	
Austroglossus microlepis	1.35	6	0.11	3386
Trigla lyra	1.26	18	0.10	
C R A B S	0.72	18	0.06	
Total	1259.34		100.01	

PROJECT STATION:1031

DATE:15/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2230
start stop duration Long E 1258
TIME :14:01:00 14:25:00 24 (min) Purpose code: 3
LOG :3066.10 3067.30 1.20 Area code : 2
FDEPTH: 293 294 GearCond.code:
BDEPTH: 293 294 Validity code:
Towing dir: 160° Wire out: 960 m Speed: 30 kn*10

Sorted: 198 Kg Total catch: 493.37 CATCH/HOUR: 1233.43

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	426.13	2835	34.55	3397
Merluccius capensis, female	229.75	150	18.63	3391
Helicolenus dactylopterus	91.35	2785	7.41	
Merluccius capensis, female	90.65	280	7.35	3399
Chlorophthalmus atlanticus	67.55	3555	5.48	
MYCTOPHIDAE	65.63		5.32	
Todarodes sagittatus	54.63	98	4.43	
Merluccius capensis, male	37.88	33	3.07	3392
Brama brama	36.75	23	2.98	
Merluccius capensis, male	21.53	105	1.75	3401
Trachurus capensis	20.48	53	1.66	3400
Squalus megalops	15.58	35	2.26	
Coelorinchus coelorhinc. polli	14.88	630	1.21	
Merluccius paradoxus, male	11.38	70	0.92	3398
Trachipterus jacksonensis	10.25	3	0.83	
Galeus polli	9.63	193	0.78	
Austroglossus microlepis	6.13	13	0.50	3396
Todaropsis eblanae	5.43	228	0.44	
Lophius vomerinus	5.25	3	0.43	3395
Genypterus capensis	3.38	3	0.27	3394
Merluccius paradoxus, female	3.13	3	0.25	3393
Bassanago albescens	2.28	35	0.18	
Coelorinchus fasciatus	2.10	88	0.17	
Malacocephalus laevis	1.75	18	0.14	
Total	1233.50		100.01	

PROJECT STATION:1032

DATE:15/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2229
start stop duration Long E 1247
TIME :16:40:00 17:10:00 30 (min) Purpose code: 3
LOG :3084.90 3086.50 1.60 Area code : 2
FDEPTH: 488 500 GearCond.code:
BDEPTH: 488 500 Validity code:
Towing dir: 360° Wire out:1450 m Speed: 30 kn*10

Sorted: 233 Kg Total catch: 514.85 CATCH/HOUR: 1029.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	443.90	1904	43.11	
Merluccius paradoxus, female	373.30	354	36.25	3403
Nezumia sp.	55.20	1472	5.36	
Epigonus telescopus	38.40	344	3.73	
Helicolenus dactylopterus	31.74	116	3.08	
Todarodes sagittatus	21.16	70	2.05	
Lophius vomerinus	20.30	8	1.97	3404
Lophius vaillanti	15.90	2	1.54	3405
Deepwater fish mixture	12.66		1.23	
Selachophidium guentheri	9.66	184	0.94	
Merluccius paradoxus, male	2.18	2	0.21	3402
Shrimps, small, non comm.	1.38	322	0.13	
MYCTOPHIDAE	1.16	116	0.11	
Yarrella blackfordi	1.16	116	0.11	
Hoplostethus cadenati	1.16	70	0.11	
Raja confundens	0.44	22	0.04	
Total	1029.70		99.97	

PROJECT STATION:1033

DATE:15/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2227
start stop duration Long E 1246
TIME :18:57:00 19:27:00 30 (min) Purpose code: 3
LOG :3094.10 3095.70 1.60 Area code : 2
FDEPTH: 595 580 GearCond.code:
BDEPTH: 595 580 Validity code:
Towing dir: 10° Wire out:1750 m Speed: 32 kn*10

Sorted: 272 Kg Total catch: 506.84 CATCH/HOUR: 1013.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	477.06	464	47.06	3407
Deania calcea	230.40	224	22.73	
Nezumia sp.	86.40	1264	8.52	
Deepwater fish mixture	63.84		6.30	
Centroscymnus crepidater	57.28	80	5.65	
Todarodes sagittatus	17.92	48	1.77	
Notacanthus sexspinis	14.40	240	1.42	
Selachophidium guentheri	14.08	224	1.39	
Lophius vomerinus	11.86	2	1.17	3408
Coelorinchus matamua	10.24	32	1.01	
Etmopterus lucifer	9.12	32	0.90	
Epigonus telescopus	5.60	48	0.55	
Raja confundens	4.80	32	0.47	
Hoplostethus cadenati	3.84	128	0.38	
Allocyttus verrucosus	2.88	32	0.28	
Shrimps, small, non comm.	2.24	880	0.22	
Merluccius paradoxus, male	1.62	2	0.16	3406
Plesiopenaeus edwardsianus	0.10	2	0.01	
Total	1013.68		99.99	

PROJECT STATION:1034

DATE:15/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2210
start stop duration Long E 1242
TIME :22:09:00 23:09:00 60 (min) Purpose code: 3
LOG :3113.30 3116.00 2.70 Area code : 2
FDEPTH: 542 548 GearCond.code:
BDEPTH: 542 548 Validity code:
Towing dir: 330° Wire out:1600 m Speed: 30 kn*10

Sorted: 223 Kg Total catch: 304.74 CATCH/HOUR: 304.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	187.10	215	61.40	3409
Trachyrincus scabrus	41.80	176	13.72	
Nezumia sp.	16.04	1314	5.26	
Shrimps, small, non comm.	12.72	11085	4.17	
Hoplostethus cadenati	12.08	1726	3.96	
Photichthys argenteus	8.64	1404	2.84	
Deania profundorum	7.76	8	2.55	
Lophius vaillanti	5.40	1	1.77	3411
Merluccius paradoxus, male	3.60	5	1.18	3410
Helicolenus dactylopterus	3.00	4	0.98	
Laemonema laureysi	2.32	52	0.76	
Epigonus denticulatus	1.64	48	0.54	
Todarodes sagittatus	1.20	4	0.39	
NEMICHTHYIDAE	0.40	4	0.13	
Yarrella blackfordi	0.28	28	0.09	
Aristeus varidens	0.24	32	0.08	
C R U S T A C E A N S	0.16	8	0.05	
Notacanthus sexspinis	0.16	4	0.05	
Ebinania costaecanarie	0.12	4	0.04	
MORIDAE	0.08	4	0.03	
Total	304.74		99.99	

PROJECT STATION:1035

DATE:16/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2209
start stop duration Long E 1244
TIME :05:50:00 06:20:00 30 (min) Purpose code: 3
LOG :3133.40 3135.00 1.60 Area code : 2
FDEPTH: 447 450 GearCond.code:
BDEPTH: 447 450 Validity code:
Towing dir: 335° Wire out:1350 m Speed: 32 kn*10

Sorted: 258 Kg Total catch: 670.42 CATCH/HOUR: 1340.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	549.10	4814	40.95	
Merluccius paradoxus, female	429.90	730	32.06	3414
Helicolenus dactylopterus	196.52	2006	14.66	
Deepwater fish mixture	58.48		4.36	
Nezumia sp.	39.78	986	2.97	
Merluccius paradoxus, male	13.90	50	1.04	3413
Etmopterus pusillus	8.84	34	0.66	
Todarodes sagittatus	7.66	16	0.57	
Merluccius capensis, female	7.52	2	0.56	3412
Aristeus varidens	6.46	680	0.48	
Epigonus telescopus	5.44	68	0.41	
Lophius vomerinus	5.00	4	0.37	3415
Laemonema laureysi	4.08	34	0.30	
Hoplostethus cadenati	3.74	238	0.28	
Selachophidium guentheri	2.38	34	0.18	
Notacanthus sexspinis	2.04	102	0.15	
Total	1340.84		100.00	

PROJECT STATION:1036

DATE:16/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2207
start stop duration Long E 1252
TIME :08:16:00 08:46:00 30 (min) Purpose code: 3
LOG :3146.10 3147.70 1.60 Area code : 2
FDEPTH: 353 338 GearCond.code:
BDEPTH: 353 338 Validity code:
Towing dir: 352° Wire out:1050 m Speed: 31 kn*10

Sorted: 234 Kg Total catch: 234.73 CATCH/HOUR: 469.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	247.40	190	52.70	3417
Scomber japonicus	75.50	44	16.08	3423
Merluccius paradoxus, female	47.80	248	10.18	3419
Helicolenus dactylopterus	25.10	442	5.35	
Merluccius capensis, male	15.50	14	3.30	3416
Lophius vomerinus	11.90	8	2.53	3420
Krill	9.00		1.92	
Chlorophthalmus atlanticus	7.84	310	1.67	
Centrolophus niger	6.02	2	1.28	
Galeus polli	3.42	72	0.73	
Lepidopus caudatus	3.18	4	0.68	
Trachyrincus scabrus	2.46	16	0.52	
Zenopsis conchifer	2.44	4	0.52	
Todarodes sagittatus	1.96	4	0.42	
Nezumia sp.	1.94	82	0.41	
MYCTOPHIDAE	1.68		0.36	
Merluccius paradoxus, male	1.56	8	0.33	3418
Genypterus capensis	1.26	2	0.27	3422
Coelorinchus fasciatus	1.06	34	0.23	
Austroglossus microlepis	1.00	4	0.21	3421
Synagrops microlepis	0.56	44	0.12	
Epigonus denticulatus	0.54	36	0.12	
Coelorinchus coelorhinc. polli	0.34	18	0.07	
Total	469.46		100.00	

PROJECT STATION:1037

DATE:16/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2208
start stop duration Long E 1304
TIME :10:48:00 11:22:00 34 (min) Purpose code: 3
LOG :3161.70 3163.60 1.90 Area code : 2
FDEPTH: 249 243 GearCond.code:
BDEPTH: 249 243 Validity code:
Towing dir: 120° Wire out: 800 m Speed: 30 kn*10

Sorted: 180 Kg Total catch: 482.25 CATCH/HOUR: 851.03

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	311.47	685	36.60	3427
Merluccius capensis, female	244.09	798	28.68	3426
Trachurus capensis	160.54	639	18.86	3429
Pterothrissus belloci	49.75	2084	5.85	
Sufflogobius bibarbatus	41.15	8231	4.84	
Merluccius capensis	21.35	681	2.51	3428
Galeus polli	8.54	311	1.00	
Todaropsis eblanae	6.42	2381	0.75	
Lophius vomerinus	3.97	12	0.47	3424
Coelorinchus fasciatus	1.16	32	0.14	
Todarodes sagittatus	0.85	2	0.10	
Synagrops microlepis	0.79	94	0.09	
Austroglossus microlepis	0.72	2	0.08	3425
C R A B S	0.21	5	0.02	
Total	851.01		99.99	

PROJECT STATION:1038

DATE:16/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2207
start stop duration Long E 1312
TIME :13:15:00 13:33:00 18 (min) Purpose code: 3
LOG :3176.00 3176.80 0.80 Area code : 2
FDEPTH: 211 206 GearCond.code:
BDEPTH: 211 206 Validity code:
Towing dir: 356° Wire out: 750 m Speed: 30 kn*10

Sorted: 114 Kg Total catch: 335.02 CATCH/HOUR: 1116.73

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	447.00	2830	40.03	3430
Merluccius capensis, male	278.00	2510	24.89	3431
Trachurus capensis	222.50	1620	19.92	3434
Pterothrissus belloci	93.00	917	8.33	
Sufflogobius bibarbatus	28.60	5753	2.56	
Lophius vomerinus	12.33	10	1.10	3435
Merluccius capensis	12.00	440	1.07	3432
Todaropsis eblanae	9.00	250	0.81	
Dentex macrophthalmus	7.70	30	0.69	3433
Squalus megalops	3.50	10	0.31	
Lepidopus caudatus	2.80	20	0.25	
Galeus polli	0.30	10	0.03	
Total	1116.73		99.99	

PROJECT STATION:1039

DATE:16/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2200
start stop duration Long E 1317
TIME :16:32:00 17:07:00 35 (min) Purpose code: 3
LOG :3196.30 3198.00 1.70 Area code : 2
FDEPTH: 167 166 GearCond.code:
BDEPTH: 167 166 Validity code:
Towing dir: 300° Wire out: 620 m Speed: 30 kn*10

Sorted: 105 Kg Total catch: 471.26 CATCH/HOUR: 807.87

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	635.66	7699	78.68	3443
Merluccius capensis, female	72.00	751	8.91	3442
Merluccius capensis, female	47.57	91	5.89	3440
Merluccius capensis, male	43.71	504	5.41	3441
Merluccius capensis, male	3.69	12	0.46	3439
Sufflogobius bibarbatus	2.16	309	0.27	
Lophius vomerinus	1.71	2	0.21	3437
Austroglossus microlepis	0.75	2	0.09	3438
Todaropsis eblanae	0.62	21	0.08	
Total	807.87		100.00	

PROJECT STATION:1040

DATE:16/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2149
start stop duration Long E 1249
TIME :21:41:00 22:11:00 30 (min) Purpose code: 3
LOG :3239.20 3240.80 1.60 Area code : 2
FDEPTH: 597 596 GearCond.code:
BDEPTH: 597 596 Validity code:
Towing dir: 358° Wire out:1750 m Speed: 31 kn*10

Sorted: 121 Kg Total catch: 287.41 CATCH/HOUR: 574.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	179.30	194	31.19	3445
Hoplostethus cadenati	137.40	18588	23.90	
Trachyrincus scabrus	100.80	300	17.54	
Deania calcea	90.00	12	15.66	
Nezumia sp.	23.52	864	4.09	
Todarodes sagittatus	19.68	50	3.42	
Yarrella blackfordi	9.72	1224	1.69	
Lophius vomerinus	8.24	4	1.43	3444
Merluccius paradoxus, male	3.16	4	0.55	3446
MYCTOPHIDAE	1.92	636	0.33	
Shrimps, small, non comm.	0.60	264	0.10	
Photichthys argenteus	0.36	24	0.06	
Epigonus denticulatus	0.12	12	0.02	
RAJIDAE	0.00	2		
Total	574.82		99.98	

PROJECT STATION:1041

DATE:16/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2147
start stop duration Long E 1239
TIME :23:36:00 00:06:00 30 (min) Purpose code: 3
LOG :3247.20 3248.80 1.60 Area code : 2
FDEPTH: 500 496 GearCond.code:
BDEPTH: 500 496 Validity code:
Towing dir: 355° Wire out:1450 m Speed: 30 kn*10

Sorted: 145 Kg Total catch: 330.74 CATCH/HOUR: 661.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	286.20	1566	43.27	
Merluccius paradoxus, female	212.10	392	32.06	3447
Hoplostethus cadenati	48.78	6966	7.37	
Nezumia sp.	25.92	1998	3.92	
Lophius vomerinus	20.30	14	3.07	3449
Helicolenus dactylopterus	19.98	54	3.02	
Todarodes sagittatus	12.60	36	1.90	
Yarrella blackfordi	11.16	1836	1.69	
Merluccius paradoxus, male	10.40	24	1.57	3448
Shrimps, small, non comm.	9.18	4230	1.39	
Epigonus denticulatus	2.88	144	0.44	
MYCTOPHIDAE	1.26	414	0.19	
Solenocera africana	0.72	72	0.11	
Notacanthus sexspinis	0.02	18		
Total	661.50		100.00	

PROJECT STATION:1042

DATE:17/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2149
start stop duration Long E 1242
TIME :01:50:00 02:20:00 30 (min) Purpose code: 3
LOG :3256.80 3258.50 1.60 Area code : 2
FDEPTH: 400 400 GearCond.code:
BDEPTH: 400 400 Validity code:
Towing dir: 360° Wire out:1200 m Speed: 30 kn*10

Sorted: 91 Kg Total catch: 184.02 CATCH/HOUR: 368.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Helicolenus dactylopterus	190.80		51.84	
Merluccius paradoxus, female	100.40	212	27.28	3451
Krill	15.20		4.13	
Merluccius capensis, female	13.64	8	3.71	3450
Galeus polli	9.36	104	2.54	
Nezumia sp.	7.76	272	2.11	
Solenocera africana	4.80	704	1.30	
Lophius vomerinus	4.00	8	1.09	3453
Trachyrincus scabrus	3.92	16	1.07	
Coelorinchus coelorhinc. polli	3.36	72	0.91	
Selachophidium guentheri	3.20	128	0.87	
Ebinania costaecanarie	2.96	24	0.80	
S H R I M P S	2.56	704	0.70	
Hoplostethus cadenati	2.08	384	0.57	
Yarrella blackfordi	1.20	200	0.33	
Epigonus denticulatus	0.64	88	0.17	
Notacanthus sexspinis	0.64	40	0.17	
Merluccius paradoxus, male	0.64	2	0.17	3452
MYCTOPHIDAE	0.48	152	0.13	
RAJIDAE	0.24	8	0.07	
Todaropsis eblanae	0.16	8	0.04	
Total	368.04		100.00	

PROJECT STATION:1043

DATE:17/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2148
start stop duration Long E 1257
TIME :05:36:00 06:06:00 30 (min) Purpose code: 3
LOG :3280.50 3282.20 1.70 Area code : 2
FDEPTH: 294 296 GearCond.code:
BDEPTH: 294 296 Validity code:
Towing dir: 310° Wire out: 950 m Speed: 30 kn*10

Sorted: 70 Kg Total catch: 70.67 CATCH/HOUR: 141.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	71.80	98	50.80	3455
Coelorinchus fasciatus	19.90	574	14.08	
Merluccius capensis, male	8.00	28	5.66	3454
Galeus polli	7.74	162	5.48	
Lophius vomerinus	7.20	24	5.09	3458
Squalus megalops	6.86	2	4.85	
Chlorophthalmus atlanticus	3.76	224	2.66	
Pterothrissus belloci	2.82	16	2.00	
Austroglossus microlepis	2.76	16	1.95	3457
Helicolenus dactylopterus	1.88	20	1.33	
Synagrops microlepis	1.86	236	1.32	
Todaropsis eblanae	1.46	38	1.03	
Merluccius capensis	1.16	50	0.82	3456
MYCTOPHIDAE	1.10	392	0.78	
Todarodes sagittatus	0.84	2	0.59	
Sufflogobius bibarbatus	0.78	166	0.55	
Dentex macrophthalmus	0.64	2	0.45	
Krill	0.60		0.42	
Solenocera africana	0.14	30	0.10	
Bathynectes piperitus	0.04	2	0.03	
Total	141.34		99.99	

PROJECT STATION:1044

DATE:17/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2144
start stop duration Long E 1307
TIME :07:54:00 08:16:00 22 (min) Purpose code: 3
LOG :3296.70 3297.90 1.20 Area code : 2
FDEPTH: 195 195 GearCond.code:
BDEPTH: 195 195 Validity code:
Towing dir: 360° Wire out: 740 m Speed: 30 kn*10

Sorted: 108 Kg Total catch: 285.73 CATCH/HOUR: 779.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	573.27	5318	73.57	3465
Merluccius capensis, female	71.05	120	9.12	3462
Merluccius capensis, female	58.64	581	7.53	3464
Merluccius capensis, male	48.55	510	6.23	3463
Merluccius capensis, male	11.73	33	1.51	3461
Lophius vomerinus	3.98	3	0.51	3459
Galeus polli	3.11	74	0.40	
Todaropsis eblanae	1.99	55	0.26	
Sufflogobius bibarbatus	1.91	273	0.25	
Lepidopus caudatus	1.42	8	0.18	
Merluccius capensis	1.28	46	0.16	3466
Pterothrissus belloci	1.28	27	0.16	
Austroglossus microlepis	0.82	3	0.11	3460
Trigla lyra	0.25	8	0.03	
Total	779.28		100.02	

PROJECT STATION:1045

DATE:18/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2124
start stop duration Long E 1307
TIME :11:41:00 12:11:00 30 (min) Purpose code: 3
LOG :3394.50 3396.00 1.50 Area code : 2
FDEPTH: 149 157 GearCond.code:
BDEPTH: 149 157 Validity code:
Towing dir: 265° Wire out: 550 m Speed: 30 kn*10

Sorted: 119 Kg Total catch: 2199.06 CATCH/HOUR: 4398.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	4138.40	47658	94.09	3470
Merluccius capensis, female	167.24	1036	3.80	3467
Merluccius capensis, male	83.98	924	1.91	3468
Sufflogobius bibarbatus	7.04	630	0.16	
Todaropsis eblanae	1.10	36	0.03	
Merluccius capensis	0.36	36	0.01	3469
Total	4398.12		100.00	

PROJECT STATION:1046

DATE:18/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2124
start stop duration Long E 1258
TIME :13:36:00 14:06:00 30 (min) Purpose code: 3
LOG :3404.90 3406.60 1.70 Area code : 2
FDEPTH: 255 252 GearCond.code:
BDEPTH: 255 252 Validity code:
Towing dir: 355° Wire out: 850 m Speed: 30 kn*10

Sorted: 135 Kg Total catch: 135.21 CATCH/HOUR: 270.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	163.30	524	60.39	3471
Merluccius capensis, male	82.50	396	30.51	3472
Dentex macrophthalmus	9.50	34	3.51	3474
Merluccius capensis	5.26	212	1.95	3473
Sufflogobius bibarbatus	3.72	886	1.38	
Lophius vomerinus	2.24	2	0.83	3475
MYCTOPHIDAE	1.74	916	0.64	
Pterothrissus belloci	0.72	36	0.27	
Krill	0.68		0.25	
Synagrops microlepis	0.46	72	0.17	
Todaropsis eblanae	0.20	6	0.07	
Galeus polli	0.06	2	0.02	
Chlorophthalmus atlanticus	0.04	4	0.01	
Total	270.42		100.00	

PROJECT STATION:1047

DATE:18/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2125
start stop duration Long E 1246
TIME :16:23:00 16:53:00 30 (min) Purpose code: 3
LOG :3422.10 3423.70 1.60 Area code : 2
FDEPTH: 327 329 GearCond.code:
BDEPTH: 327 329 Validity code:
Towing dir: 350° Wire out:1050 m Speed: 30 kn*10

Sorted: 35 Kg Total catch: 43.07 CATCH/HOUR: 86.14

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius capensis, female	46.50	42	53.98	3477
Merluccius capensis, male	15.50	24	17.99	3476
Chlorophthalmus atlanticus	6.72	264	7.80	
Coelorinchus fasciatus	3.04	112	3.53	
Todarodes sagittatus	2.48	8	2.88	
Nezumia sp.	2.40	88	2.79	
Galeus polli	2.16	16	2.51	
Lophius vomerinus	2.10	2	2.44	3479
Coelorinchus coelorhinc. polli	1.20	8	1.39	
Merluccius paradoxus, female	1.14	8	1.32	3478
Synagrops microlepis	0.96	80	1.11	
Todaropsis eblanae	0.64	16	0.74	
Austroglossus microlepis	0.42	2	0.49	3480
MYCTOPHIDAE	0.40	224	0.46	
Hoplostethus cadenati	0.40	8	0.46	
Solenocera africana	0.08	24	0.09	
Total	86.14		99.98	

PROJECT STATION:1048

DATE:18/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2128
start stop duration Long E 1236
TIME :18:57:00 19:27:00 30 (min) Purpose code: 3
LOG :3438.00 3439.60 1.60 Area code : 2
FDEPTH: 430 430 GearCond.code:
BDEPTH: 430 430 Validity code:
Towing dir: 350° Wire out:1350 m Speed: 31 kn*10

Sorted: 204 Kg Total catch: 355.89 CATCH/HOUR: 711.78

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	319.40	664	44.87	3482
Trachyrincus scabrus	165.20	3648	23.21	
Helicolenus dactylopterus	110.04	804	15.46	
Nezumia sp.	26.46	896	3.72	
Lophius vomerinus	20.60	10	2.89	3483
Deania profundorum	14.70	12	2.07	
Merluccius paradoxus, male	13.50	36	1.90	3481
Epigonus telescopus	7.98	630	1.12	
Raja confundens	7.16	12	1.01	
Notacanthus sexspinis	5.74	210	0.81	
Epigonus denticulatus	5.04	182	0.71	
Selachophidium guentheri	4.76	140	0.67	
Shrimps, small, non comm.	3.08	882	0.43	
MYCTOPHIDAE	2.94	644	0.41	
Laemonema laureysi	2.94	42	0.41	
Aristeus varidens	2.24	252	0.31	
Total	711.78		100.00	

PROJECT STATION:1049

DATE:18/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2127
start stop duration Long E 1228
TIME :21:19:00 21:54:00 35 (min) Purpose code: 3
LOG :3449.50 3451.20 1.70 Area code : 2
FDEPTH: 639 638 GearCond.code:
BDEPTH: 639 638 Validity code:
Towing dir: 340° Wire out:1800 m Speed: 30 kn*10

Sorted: 123 Kg Total catch: 150.42 CATCH/HOUR: 257.86

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	80.23	207	31.11	
Merluccius paradoxus, female	69.00	69	26.76	3484
Nezumia sp.	35.11	1118	13.62	
Todarodes sagittatus	25.30	69	9.81	
Deepwater fish mixture	10.01		3.88	
Bathyraja smithii	9.12	2	3.54	
Hoplostethus cadenati	8.85	322	3.43	
Raja confundens	7.25	5	2.81	
Heterocarpus grimaldii	2.95	315	1.14	
Yarrella blackfordi	2.81	240	1.09	
Selachophidium guentheri	2.47	69	0.96	
Lophius vomerinus	1.20	2	0.47	3485
Epigonus telescopus	1.03	27	0.40	
Notacanthus sexspinis	0.69	21	0.27	
MYCTOPHIDAE	0.69	219	0.27	
Bathyuroconger vicinus	0.55	7	0.21	
Photichthys argenteus	0.27	21	0.10	
Melanocetus johnsoni	0.21	21	0.08	
Lamprogrammus exutus	0.14	14	0.05	
Total	257.88		100.00	

PROJECT STATION:1050

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2107
start stop duration Long E 1224
TIME :00:42:00 01:02:00 20 (min) Purpose code: 3
LOG :3470.40 3471.30 0.90 Area code : 2
FDEPTH: 593 593 GearCond.code:
BDEPTH: 593 593 Validity code:
Towing dir: 330° Wire out:1750 m Speed: 30 kn*10

Sorted: 32 Kg Total catch: 32.59 CATCH/HOUR: 97.77

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	36.15	117	36.97	
Merluccius paradoxus, female	20.85	27	21.33	3486
Nezumia sp.	10.17	396	10.40	
Lophius vaillanti	8.28	3	8.47	3487
Deania calcea	6.81	3	6.97	
Todarodes sagittatus	5.34	18	5.46	
Photichthys argenteus	3.66	423	3.74	
Schedophilus huttoni	1.92	3	1.96	
Hoplostethus cadenati	1.77	123	1.81	
MYCTOPHIDAE	1.11	186	1.14	
Epigonus telescopus	0.45	15	0.46	
Ebinania costaecanarie	0.30	6	0.31	
Nephropsis atlantica	0.27	12	0.28	
Yarrella blackfordi	0.21	9	0.21	
Ommastrephes pteropus	0.18	6	0.18	
S H R I M P S	0.18	18	0.18	
Nemichthys curvirostris	0.06	3	0.06	
Stereomastis sculpta	0.06	3	0.06	
Phrynichthys wedli	0.00	3		
Total	97.77		99.99	

PROJECT STATION:1051

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2107
start stop duration Long E 1228
TIME :02:51:00 03:21:00 30 (min) Purpose code: 3
LOG :3480.00 3481.40 1.40 Area code : 2
FDEPTH: 500 498 GearCond.code:
BDEPTH: 500 498 Validity code:
Towing dir: 340° Wire out:1500 m Speed: 30 kn*10

Sorted: 106 Kg Total catch: 223.16 CATCH/HOUR: 446.32

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	183.40	1000	41.09	
Merluccius paradoxus, female	125.84	194	28.20	3488
Deania calcea	40.00	8	8.96	
Todarodes sagittatus	23.66	84	5.30	
Nezumia sp.	21.28	1064	4.77	
Raja confundens	16.52	70	3.70	
Helicolenus dactylopterus	15.82	112	3.54	
MYCTOPHIDAE	7.00	1520	1.57	
Lophius vomerinus	6.10	4	1.37	3490
Photichthys argenteus	2.80	336	0.63	
Hoplostethus cadenati	1.54	84	0.35	
Merluccius paradoxus, male	1.10	2	0.25	3489
S H R I M P S	0.56	350	0.13	
Epigonus telescopus	0.42	14	0.09	
Selachophidium guentheri	0.28	14	0.06	
Total	446.32		100.01	

PROJECT STATION:1052

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2109
start stop duration Long E 1237
TIME :05:39:00 06:09:00 30 (min) Purpose code: 3
LOG :3492.60 3494.30 1.70 Area code : 2
FDEPTH: 378 378 GearCond.code:
BDEPTH: 378 378 Validity code:
Towing dir: 180° Wire out:1200 m Speed: 30 kn*10

Sorted: 98 Kg Total catch: 177.12 CATCH/HOUR: 354.24

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Helicolenus dactylopterus	151.60	2158	42.80	
Merluccius capensis, female	72.90	42	20.58	3492
Merluccius paradoxus, female	45.50	80	12.84	3494
Nezumia sp.	13.52	632	3.82	
Genypterus capensis	10.16	10	2.87	3495
Galeus polli	9.12	128	2.57	
Raja confundens	8.00	8	2.26	
Lophius vomerinus	6.70	14	1.89	3496
Epigonus denticulatus	6.32	368	1.78	
Shrimps, small, non comm.	6.16	2632	1.74	
Coelorinchus coelorhinc. polli	4.64	152	1.31	
Deania profundorum	3.84	8	1.08	
Merluccius paradoxus, male	3.42	10	0.97	3493
Merluccius capensis, male	3.40	2	0.96	3491
Todarodes sagittatus	3.04	8	0.86	
Selachophidium guentheri	2.08	112	0.59	
Bathynectes piperitus	1.28	16	0.36	
Notacanthus sexspinis	1.12	48	0.32	
Hoplostethus cadenati	0.64	16	0.18	
Coelorinchus fasciatus	0.40	8	0.11	
Ebinania costaecanarie	0.16	16	0.05	
Nemichthys scolopaceus	0.16	8	0.05	
Photichthys argenteus	0.08	8	0.02	
Total	354.24		100.01	

PROJECT STATION:1053

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2108

	start	stop	duration			Long E 1245
TIME	:07:52:00	08:22:00	30	(min)	Purpose code:	3
LOG	:3505.00	3506.70	1.70		Area code :	2
FDEPTH:	332	329			GearCond.code:	
BDEPTH:	332	329			Validity code:	

Towing dir: 150° Wire out:1050 m Speed: 32 kn*10

Sorted: 15 Kg Total catch: 62.08 CATCH/HOUR: 124.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	41.80	50	33.67	3498
Merluccius capensis, male	19.00	32	15.30	3497
Lophius vomerinus	18.14	18	14.61	3500
Hexanchus griseus	11.30	2	9.10	
Raja confundens	8.14	10	6.56	
Helicolenus dactylopterus	7.68	258	6.19	
Chlorophthalmus atlanticus	5.50	270	4.43	
Austroglossus microlepis	4.56	14	3.67	3499
Coelorinchus coelorhinc. polli	3.36	184	2.71	
Todarodes sagittatus	1.98	6	1.59	
Coelorinchus fasciatus	1.92	64	1.55	
MYCTOPHIDAE	0.18	72	0.14	
Solenocera africana	0.16	30	0.13	
Galeus polli	0.16	4	0.13	
Selachophidium guentheri	0.10	10	0.08	
Bassanago albescens	0.06	4	0.05	
GALATHEIDAE	0.06	48	0.05	
Ebinania costaecanarie	0.04	4	0.03	
Notacanthus sexspinis	0.04	4	0.03	
Total	124.18		100.02	

PROJECT STATION:1054

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2104

	start	stop	duration			Long E 1257
TIME	:10:07:00	10:27:00	20	(min)	Purpose code:	3
LOG	:3519.60	3520.60	1.00		Area code :	2
FDEPTH:	235	232			GearCond.code:	
BDEPTH:	235	232			Validity code:	

Towing dir: 350° Wire out: 800 m Speed: 30 kn*10

Sorted: 38 Kg Total catch: 38.97 CATCH/HOUR: 116.91

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	66.75	396	57.10	3505
Merluccius capensis, male	32.10	333	27.46	3501
Dentex macrophthalmus	12.81	51	10.96	3503
Merluccius capensis	2.31	93	1.98	3502
Trachurus capensis	1.17	6	1.00	3532
Austroglossus microlepis	1.17	3	1.00	3504
Pterothrissus belloci	0.54	9	0.46	
Lophius vomerinus	0.03	3	0.03	
Sufflogobius bibarbatus	0.03	3	0.03	
Total	116.91		100.02	

PROJECT STATION:1055

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2051

	start	stop	duration			Long E 1250
TIME	:13:16:00	13:46:00	30	(min)	Purpose code:	3
LOG	:3537.30	3538.70	1.40		Area code :	3
FDEPTH:	253	254			GearCond.code:	
BDEPTH:	253	254			Validity code:	

Towing dir: 350° Wire out: 800 m Speed: 30 kn*10

Sorted: 19 Kg Total catch: 19.64 CATCH/HOUR: 39.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	16.50	106	42.01	3506
Merluccius capensis, female	13.34	84	33.96	3509
Dentex macrophthalmus	3.28	12	8.35	3508
MYCTOPHIDAE	2.40	2400	6.11	
Pterothrissus belloci	1.22	18	3.11	
Todarodes sagittatus	1.00	6	2.55	
Trachurus capensis	0.74	2	1.88	3507
Krill	0.62		1.58	
Sufflogobius bibarbatus	0.12	18	0.31	
Synagrops microlepis	0.06	6	0.15	
Total	39.28		100.01	

PROJECT STATION:1056

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2045

	start	stop	duration			Long E 1239
TIME	:15:38:00	16:08:00	30	(min)	Purpose code:	3
LOG	:3549.80	3551.10	1.30		Area code :	3
FDEPTH:	315	312			GearCond.code:	
BDEPTH:	315	312			Validity code:	

Towing dir: 350° Wire out:1050 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 28.52 CATCH/HOUR: 57.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	20.80	40	36.47	3512
Merluccius capensis, female	15.60	40	27.35	3513
Pterothrissus belloci	6.92	144	12.13	
Squalus acanthias	4.54	2	7.96	
Chlorophthalmus atlanticus	2.42	166	4.24	
Neoharriotta pinnata	2.32	2	4.07	
Austroglossus microlepis	1.12	6	1.96	3510
Todarodes sagittatus	0.90	4	1.58	
Synagrops microlepis	0.58	104	1.02	
Lophius vomerinus	0.52	2	0.91	
Solenocera africana	0.30	64	0.53	
Dentex macrophthalmus	0.30	2	0.53	3511
Chelidonichthys capensis	0.24	2	0.42	
Bassanago albescens	0.18	2	0.32	
Sufflogobius bibarbatus	0.16	12	0.28	
MYCTOPHIDAE	0.06	30	0.11	
Merluccius capensis	0.06	4	0.11	3514
Trachurus capensis	0.02	8	0.04	3515
Total	57.04		100.03	

PROJECT STATION:1057

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2045

	start	stop	duration			Long E 1226
TIME	:17:57:00	18:27:00	30	(min)	Purpose code:	3
LOG	:3562.70	3564.20	1.50		Area code :	3
FDEPTH:	335	333			GearCond.code:	
BDEPTH:	335	333			Validity code:	

Towing dir: 330° Wire out:1100 m Speed: 30 kn*10

Sorted: 155 Kg Total catch: 169.25 CATCH/HOUR: 338.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	208.00	136	61.45	3517
Helicolenus dactylopterus	35.40	1300	10.46	
Merluccius paradoxus, female	28.40	52	8.39	3519
Merluccius capensis, male	26.40	32	7.80	3516
Lophius vomerinus	15.32	10	4.53	3520
Galeus polli	7.52	156	2.22	
Coelorinchus fasciatus	7.16	112	2.12	
Nezumia sp.	4.08	272	1.21	
Austroglossus microlepis	1.78	2	0.53	3521
Coelorinchus coelorhinc. polli	1.40	40	0.41	
Merluccius paradoxus, male	1.40	6	0.41	3518
MYCTOPHIDAE	0.52	128	0.15	
Chlorophthalmus atlanticus	0.36	12	0.11	
Shrimps, small, non comm.	0.20	68	0.06	
Ebinania costaecanarie	0.20	12	0.06	
Bassanago albescens	0.12	4	0.04	
Malacocephalus occidentalis	0.12	8	0.04	
Epigonus denticulatus	0.12	4	0.04	
Total	338.50		100.03	

PROJECT STATION:1058

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2045

	start	stop	duration			Long E 1217
TIME	:20:21:00	20:51:00	30	(min)	Purpose code:	3
LOG	:3575.90	3577.30	1.40		Area code :	3
FDEPTH:	449	449			GearCond.code:	
BDEPTH:	449	449			Validity code:	

Towing dir: 340° Wire out:1400 m Speed: 29 kn*10

Sorted: 110 Kg Total catch: 316.33 CATCH/HOUR: 632.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	346.80	4154	54.82	
Merluccius paradoxus, female	115.00	362	18.18	3524
Nezumia sp.	45.36	2040	7.17	
Lophius vomerinus	38.20	22	6.04	3525
Helicolenus dactylopterus	29.52	456	4.67	
Raja doutrei	10.10	2	1.60	
Deania profundorum	9.12	24	1.44	
Merluccius paradoxus, male	8.90	28	1.41	3523
Hoplostethus cadenati	8.40	336	1.33	
Todarodes sagittatus	7.76	16	1.23	
Yarrella blackfordi	5.52	240	0.87	
Merluccius capensis, female	2.94	2	0.46	3522
Shrimps, small, non comm.	2.40	696	0.38	
GONOSTOMATIDAE	1.20	192	0.19	
Ebinania costaecanarie	1.20	24	0.19	
Bathynectes piperitus	0.24	24	0.04	
Total	632.66		100.02	

PROJECT STATION:1059

DATE:19/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2048

	start	stop	duration			Long E 1213
TIME	:23:34:00	23:54:00	20	(min)	Purpose code:	3
LOG	:3588.10	3589.10	1.00		Area code :	3
FDEPTH:	549	547			GearCond.code:	
BDEPTH:	549	547			Validity code:	

Towing dir: 340° Wire out:1600 m Speed: 30 kn*10

Sorted: 117 Kg Total catch: 295.60 CATCH/HOUR: 886.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	398.25	1512	44.91	
Merluccius paradoxus, female	259.20	366	29.23	3526
Nezumia sp.	108.27	2997	12.21	
Todarodes sagittatus	50.76	243	5.72	
Hoplostethus cadenati	21.87	783	2.47	
Lophius vomerinus	20.10	6	2.27	3528
Helicolenus dactylopterus	11.88	108	1.34	
Merluccius paradoxus, male	4.05	9	0.46	3527
Epigonus denticulatus	2.70	27	0.30	
TRACHICHTHYIDAE	2.43	54	0.27	
Raja confundens	2.43	27	0.27	
Yarrella blackfordi	1.89	81	0.21	
Notacanthus sexspinis	1.62	81	0.18	
Selachophidium guentheri	1.35	27	0.15	
Total	886.80		99.99	

PROJECT STATION:1060

DATE:20/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2048
start stop duration Long E 1208
TIME :01:46:00 02:16:00 30 (min) Purpose code: 3
LOG :3596.90 3598.50 1.60 Area code : 3
FDEPTH: 654 648 GearCond.code:
BDEPTH: 654 648 Validity code:
Towing dir: 130° Wire out:1750 m Speed: 30 kn*10

Sorted: 139 Kg Total catch: 282.50 CATCH/HOUR: 565.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	214.00	242	37.88	3529
Deania calcea	68.40	12	12.11	
Trachyrincus scabrus	62.40	216	11.04	
Todarodes sagittatus	60.12	156	10.64	
Nezumia sp.	45.60	3000	8.07	
Yarrella blackfordi	43.20	3348	7.65	
Hoplostethus cadenati	22.92	792	4.06	
Raja confundens	15.12	12	2.68	
Lamprogrammus exutus	9.00	84	1.59	
Solenocera africana	7.08	648	1.25	
Deepwater fish mixture	4.92		0.87	
Lophius vaillanti	3.66	2	0.65	3531
Bassanago albescens	2.40	36	0.42	
Merluccius paradoxus, male	2.34	4	0.41	3530
Notacanthus sexspinis	0.96	12	0.17	
Ebinania costaecanarie	0.72	12	0.13	
PHOTICHTHYIDAE	0.60	12	0.11	
Diplophos sp.	0.60	12	0.11	
Stomias boa boa	0.60	72	0.11	
Galeus polli	0.36	12	0.06	
Total	565.00		100.01	

PROJECT STATION:1061

DATE:20/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2030
start stop duration Long E 1159
TIME :05:52:00 06:22:00 30 (min) Purpose code: 3
LOG :3621.80 3623.40 1.60 Area code : 3
FDEPTH: 594 595 GearCond.code:
BDEPTH: 594 595 Validity code:
Towing dir: 335° Wire out:1800 m Speed: 32 kn*10

Sorted: 27 Kg Total catch: 396.79 CATCH/HOUR: 793.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	229.50	236	28.92	3574
Trachyrincus scabrus	158.40	528	19.96	
Hoplostethus cadenati	102.72	3960	12.94	
Deania calcea	95.52	48	12.04	
Nezumia sp.	83.76	4752	10.55	
Alepocephalus sp.	33.60	768	4.23	
Lamprogrammus exutus	20.88	240	2.63	
Todarodes sagittatus	19.20	24	2.42	
Trachipterus jacksonensis	19.00	4	2.39	
Lophius vomerinus	11.32	4	1.43	3575
Yarrella blackfordi	6.00	312	0.76	
Selachophidium guentheri	3.36	96	0.42	
Merluccius paradoxus, male	2.64	4	0.33	3573
Raja confundens	1.44	48	0.18	
Bathyuroconger vicinus	1.44	48	0.18	
Ebinania costaecanarie	1.44	24	0.18	
Shrimps, small, non comm.	1.20	264	0.15	
Neoscopelus macrolepidotus	1.20	24	0.15	
Aristeus varidens	0.96	72	0.12	
Total	793.58		99.98	

PROJECT STATION:1062

DATE:20/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2027
start stop duration Long W 1201
TIME :07:55:00 08:20:00 25 (min) Purpose code: 3
LOG :3629.70 3631.10 1.40 Area code : 3
FDEPTH: 493 491 GearCond.code:
BDEPTH: 493 491 Validity code:
Towing dir: 330° Wire out:1500 m Speed: 30 kn*10

Sorted: 158 Kg Total catch: 409.41 CATCH/HOUR: 982.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	314.40	2318	32.00	
Lophius vomerinus	138.36	77	14.08	3579
Merluccius paradoxus, female	134.88	319	13.73	3576
Nezumia sp.	128.40	6550	13.07	
Deania calcea	115.68	24	11.77	
Lophius vaillanti	32.16	10	3.27	3580
Neoharriotta pinnata	24.72	24	2.52	
Helicolenus dactylopterus	23.04	168	2.34	
Shrimps, small, non comm.	22.80	6384	2.32	
Hoplostethus cadenati	17.04	1224	1.73	
Epigonus telescopus	12.24	720	1.25	
Merluccius capensis, female	4.58	2	0.47	3578
Yarrella blackfordi	3.84	528	0.39	
Merluccius paradoxus, male	3.48	12	0.35	3577
Raja confundens	3.36	24	0.34	
Alepocephalus sp.	1.44	264	0.15	
Macroparalepis macrogeneion	0.96	24	0.10	
Selachophidium guentheri	0.72	24	0.07	
Nemichthys scolopaceus	0.48	48	0.05	
Total	982.58		100.00	

PROJECT STATION:1063

DATE:20/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2026
start stop duration Long E 1218
TIME :10:41:00 10:56:00 15 (min) Purpose code: 3
LOG :3648.20 3648.90 0.70 Area code : 3
FDEPTH: 298 297 GearCond.code:
BDEPTH: 298 297 Validity code:
Towing dir: 35° Wire out: 900 m Speed: 19 kn*10

Sorted: 15 Kg Total catch: 15.10 CATCH/HOUR: 60.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	16.84	72	27.88	3583
Merluccius capensis, female	14.80	32	24.50	3581
Merluccius capensis, male	13.20	44	21.85	3582
Raja confundens	5.20	8	8.61	
Lophius vomerinus	5.12	4	8.48	3584
Pterothrissus belloci	3.84	44	6.36	
Todarodes sagittatus	1.40	4	2.32	
Total	60.40		100.00	

PROJECT STATION:1064

DATE:20/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2025
start stop duration Long E 1225
TIME :12:19:00 12:49:00 30 (min) Purpose code: 3
LOG :3654.90 3656.40 1.50 Area code : 3
FDEPTH: 283 279 GearCond.code:
BDEPTH: 283 279 Validity code:
Towing dir: 85° Wire out: 950 m Speed: 30 kn*10

Sorted: 93 Kg Total catch: 93.08 CATCH/HOUR: 186.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	87.00	420	46.73	3586
Merluccius capensis, male	75.70	378	40.66	3585
Dentex macrophthalmus	7.10	32	3.81	3591
Sufflogobius bibarbatus	7.04	748	3.78	
Lophius vomerinus	6.30	2	3.38	3588
MYCTOPHIDAE	0.92	690	0.49	
Austroglossus microlepis	0.70	2	0.38	3589
Merluccius capensis	0.52	18	0.28	3587
Trachurus capensis	0.52	4	0.28	3592
Krill	0.16		0.09	
Raja confundens	0.10	4	0.05	
Nemichthys curvirostris	0.06	18	0.03	
Pterothrissus belloci	0.02	4	0.01	
Trachurus capensis, juvenile	0.02	10	0.01	3590
Total	186.16		99.98	

PROJECT STATION:1065

DATE:20/ 5/95 GEAR TYPE: BT No:6 POSITION:Lat S 2025
start stop duration Long E 1233
TIME :14:12:00 14:42:00 30 (min) Purpose code: 3
LOG :3662.00 3663.50 1.50 Area code : 3
FDEPTH: 259 252 GearCond.code: 8
BDEPTH: 259 252 Validity code: 9
Towing dir: 85° Wire out: 900 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:1066

DATE:21/ 5/95 GEAR TYPE. BT No: POSITION:Lat S 2008
start stop duration Long E 1229
TIME :05:31:00 05:52:00 21 (min) Purpose code: 3
LOG :3740.50 3741.50 1.00 Area code : 3
FDEPTH: 180 179 GearCond.code:
BDEPTH: 180 179 Validity code:
Towing dir: 345° Wire out 630 m Speed: 30 kn*10

Sorted: 12 Kg Total catch: 12.76 CATCH/HOUR: 36.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	19.91	154	54.61	3594
Merluccius capensis, male	13.60	109	37.30	3593
Dentex macrophthalmus	1.74	6	4.77	3595
Sufflogobius bibarbatus	0.80	129	2.19	
Trachurus capensis	0.40	140	1.10	3596
Total	36.45		99.97	

PROJECT STATION:1067

DATE:21/ 5/95 GEAR TYPE BT No: POSITION:Lat S 2009
start stop duration Long E 1218
TIME :07:13:00 07:43:00 30 (min) Purpose code: 3
LOG :3752.00 3753.50 1.50 Area code : 3
FDEPTH: 248 253 GearCond.code:
BDEPTH: 248 253 Validity code:
Towing dir: 248° Wire out 830 m Speed: 30 kn*10

Sorted: 6 Kg Total catch 6 55 CATCH/HOUR: 13.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, male	6.54	58	49.92	3598
Merluccius capensis, female	4 88	40	37.25	3597
Sufflogobius bibarbatus	1.52	336	11.60	
Trachurus capensis, juvenile	0.10	36	0.76	3599
Todaropsis eblanae	0.04	4	0.31	
Pterothrissus belloci	0.02	2	0.15	
Total	13.10		99.99	

PROJECT STATION:1068

DATE:21/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 2011
start stop duration Long E 1211
TIME :09:11:00 09:41:00 30 (min) Purpose code: 3
LOG :3759.90 3761.40 1.50 Area code : 3
FDEPTH: 280 286 GearCond.code:
BDEPTH: 280 286 Validity code:
Towing dir: 260° Wire out: 900 m Speed: 30 kn*10

Sorted: 52 Kg Total catch: 52.23 CATCH/HOUR: 104.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	52.80	410	50.55	3601
Merluccius capensis, male	37.00	308	35.42	3600
Dentex macrophthalmus	12.10	30	11.58	3603
Sufflogobius bibarbatus	1.56	266	1.49	
Merluccius capensis	1.00	42	0.96	3602
Total	104.46		100.00	

PROJECT STATION:1069

DATE:21/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 2014
start stop duration Long E 1205
TIME :10:56:00 11:26:00 30 (min) Purpose code: 3
LOG :3767.90 3769.40 1.50 Area code : 3
FDEPTH: 310 315 GearCond.code:
BDEPTH: 310 315 Validity code:
Towing dir: 180° Wire out:1030 m Speed: 30 kn*10

Sorted: 239 Kg Total catch: 947.46 CATCH/HOUR: 1894.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	403.00	1780	21.27	3614
Merluccius capensis, female	389.28	698	20.54	3609
Pterothrissus belloci	266.40	3450	14.06	
Merluccius capensis, male	177.50	470	9.37	3610
Lophius vomerinus	150.20	288	7.93	3611
Helicolenus dactylopterus	106.20	4036	5.60	
PORTUNIDAE	104.60	2788	5.52	
Chlorophthalmus atlanticus	104.40	5668	5.51	
Austroglossus microlepis	55.60	206	2.93	3612
Deepwater fish mixture	52.40		2.77	
Synagrops microlepis	39.60	4500	2.09	
Solenocera africana	21.40	4938	1.13	
Coelorinchus fasciatus	11.20	340	0.59	
Galeus polli	4.20	140	0.22	
Munida sp.	2.80	260	0.15	
Chelidonichthys queketti	2.80	160	0.15	
Lophius vaillanti	2.34	2	0.12	3613
NEMICHTHYIDAE	1.00	20	0.05	
Total	1894.92		100.00	

PROJECT STATION:1070

DATE:21/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 2014
start stop duration Long E 1158
TIME :12:56:00 13:26:00 30 (min) Purpose code: 3
LOG :3776.50 3778.20 1.70 Area code : 3
FDEPTH: 389 391 GearCond.code:
BDEPTH: 389 391 Validity code:
Towing dir: 340° Wire out:1250 m Speed: 30 kn*10

Sorted: 158 Kg Total catch: 565.89 CATCH/HOUR: 1131.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Plesionika sp.	463.60	185440	40.96	
Helicolenus dactylopterus	130.34	2394	11.52	
Merluccius capensis, female	105.20	74	9.30	3615
Merluccius paradoxus, female	102.40	328	9.05	3617
Hoplostethus cadenati	83.60	4940	7.39	
Nezumia sp.	64.22	3078	5.67	
Galeus polli	47.88	646	4.23	
Lophius vomerinus	37.10	28	3.28	3619
Hyperoglyphe moselii	24.32	38	2.15	
Todarodes sagittatus	19.00	38	1.68	
Lophius vaillanti	14.90	6	1.32	3620
Solenocera africana	10.26	1786	0.91	
Epigonus telescopus	7.60	456	0.67	
Merluccius paradoxus, male	7.20	18	0.64	3618
Laemonema laureysi	4.94	342	0.44	
Coelorinchus fasciatus	4.18	114	0.37	
Merluccius capensis, male	3.90	4	0.34	3616
Trachipterus jacksonensis	1.14	2	0.10	
Total	1131.78		100.02	

PROJECT STATION:1071

DATE:21/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1958
start stop duration Long E 1137
TIME :17:47:00 18:17:00 30 (min) Purpose code: 3
LOG :3808.60 3510.40 1.80 Area code : 3
FDEPTH: 596 592 GearCond.code:
BDEPTH: 596 592 Validity code:
Towing dir: 330° Wire out:1750 m Speed: 33 kn*10

Sorted: 125 Kg Total catch: 346.34 CATCH/HOUR: 692.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachyrincus scabrus	249.00	924	35.95	
Merluccius paradoxus, female	159.20	186	22.98	3622
Nezumia sp.	104.40	3560	15.07	
Todarodes sagittatus	29.90	96	4.32	
Yarrella blackfordi	21.20	640	3.06	
Deepwater fish mixture	17.20		2.48	
Deania calcea	17.00	40	2.45	
Raja confundens	14.40	60	2.08	
ALEPOCEPHALIDAE	10.80	20	1.56	
Hoplostethus cadenati	10.50	220	1.53	
Bathylagus glacilis	8.20	1200	1.18	
Lamprogrammus exutus	8.00	20	1.15	
Lophius vomerinus	6.80	4	0.98	3623
Helicolenus dactylopterus	6.20	40	0.90	
Thysanoteuthis rhombus	5.40	60	0.78	
Galeus polli	5.00	60	0.72	
Merluccius paradoxus, male	4.20	6	0.61	3621
Shrimps, small, non comm.	3.40	1260	0.49	
MYCTOPHIDAE	3.20	880	0.46	
GONOSTOMATIDAE	2.60	80	0.38	
Notacanthus sexspinis	2.00	20	0.29	
Bathyuroconger vicinus	1.20	20	0.17	
Lyconus pinnatus	1.00	40	0.14	
Stereomastis sp.	0.80	40	0.12	
Gadella imberbis	0.60	20	0.09	
Aristeus varidens	0.20	20	0.03	
Chaceon maritae	0.18	2	0.03	
Total	692.68		100.00	

PROJECT STATION:1072

DATE:21/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1955
start stop duration Long E 1141
TIME :20:49:00 21:19:00 30 (min) Purpose code: 3
LOG :3820.20 3821.50 1.30 Area code : 3
FDEPTH: 492 490 GearCond.code:
BDEPTH: 492 490 Validity code:
Towing dir: 154° Wire out:1550 m Speed: 26 kn*10

Sorted: 283 Kg Total catch: 526.63 CATCH/HOUR: 1053.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	478.20	878	45.40	3625
Trachyrincus scabrus	325.60	2480	30.91	
Nezumia sp.	64.90	1716	6.16	
Deania calcea	55.66	22	5.28	
Helicolenus dactylopterus	46.86	484	4.45	
Hoplostethus cadenati	22.00	352	2.09	
Lophius vaillanti	13.78	4	1.31	3627
Merluccius paradoxus, male	12.60	30	1.20	3624
Lophius vomerinus	11.96	6	1.14	3626
Epigonus telescopus	9.46	132	0.90	
MYCTOPHIDAE	2.64	528	0.25	
Lycoteuthis diadema	1.98	22	0.19	
Galeus polli	1.76	22	0.17	
Ebinania costaecanarie	1.76	44	0.17	
Chaceon maritae	1.46	4	0.14	
Aristeus varidens	1.32	132	0.13	
Yarrella blackfordi	0.66	66	0.06	
Notacanthus sexspinis	0.44	22	0.04	
Selachophidium guentheri	0.22	22	0.02	
Total	1053.26		100.01	

PROJECT STATION:1073

DATE:22/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1954
start stop duration Long E 1149
TIME :05:40:00 06:10:00 30 (min) Purpose code: 3
LOG :3843.60 3845.00 1.40 Area code : 3
FDEPTH: 385 385 GearCond.code:
BDEPTH: 385 385 Validity code:
Towing dir: 345° Wire out:1290 m Speed: 28 kn*10

Sorted: 29 Kg Total catch: 261.73 CATCH/HOUR: 523.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Helicolenus dactylopterus	194.60	332	37.18	
Merluccius capensis, female	76.00	64	14.52	3631
Raja confundens	58.66	42	11.21	
Deania calcea	35.84	14	6.85	
Nezumia sp.	33.04	1554	6.31	
Lophius vomerinus	22.80	24	4.36	3632
Deepwater fish mixture	16.80		3.21	
Merluccius paradoxus, female	14.70	50	2.81	3629
Shrimps, small, non comm.	13.30	684	2.54	
Schedophilus huttoni	13.30	14	2.54	
Squalus megalops	11.20	28	2.14	
Coelorinchus coelorhinc. polli	9.52	490	1.82	
Epigonus denticulatus	6.86	448	1.31	
Merluccius capensis, male	5.06	6	0.97	3630
Galeus polli	3.78	56	0.72	
Ebinania costaecanarie	2.10	126	0.40	
Coelorinchus fasciatus	1.68	42	0.32	
Aristeus varidens	1.68	210	0.32	
Chlorophthalmus atlanticus	0.98	28	0.19	
Merluccius paradoxus, male	0.72	2	0.14	3628
Selachophidium guentheri	0.56	28	0.11	
Macroparalepis macrogeneion	0.28	14	0.05	
Total	523.46		100.02	

PROJECT STATION:1074

DATE:22/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1952
start stop duration Long E 1157
TIME :09:02:00 09:32:00 30 (min) Purpose code: 3
LOG :3858.60 3860.00 1.40 Area code : 3
FDEPTH: 338 341 GearCond.code:
BDEPTH: 338 341 Validity code:
Towing dir: 345° Wire out:1100 m Speed: 28 kn*10

Sorted: 25 Kg Total catch: 25.68 CATCH/HOUR: 51.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	30.10	32	58.61	3633
Helicolenus dactylopterus	5.00	146	9.74	
Merluccius capensis, male	3.74	6	7.28	3634
Chlorophthalmus atlanticus	3.42	114	6.66	
Nezumia sp.	1.38	58	2.69	
Raja confundens	1.30	2	2.53	
Lophius vomerinus	1.18	2	2.30	3635
Synagrops microlepis	1.10	70	2.14	
Coelorinchus coelorhinc. polli	0.66	18	1.29	
Galeus polli	0.66	4	1.29	
MYCTOPHIDAE	0.64	204	1.25	
Shrimps, small, non comm.	0.58	64	1.13	
Bathynectes piperitus	0.54	10	1.05	
Todaropsis eblanae	0.54	8	1.05	
Coelorinchus fasciatus	0.52	4	1.01	
Total	51.36		100.02	

PROJECT STATION:1075

DATE:22/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1950
start stop duration Long E 1203
TIME :12:06:00 12:26:00 20 (min) Purpose code: 3
LOG :3873.70 3874.50 0.80 Area code : 3
FDEPTH: 287 290 GearCond.code:
BDEPTH: 287 290 Validity code:
Towing dir: 345° Wire out: 920 m Speed: 32 kn*10

Sorted: 98 Kg Total catch: 167.20 CATCH/HOUR: 501.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	173.64	795	34.62	3639
Merluccius capensis, female	120.99	348	24.12	3637
Merluccius capensis, male	87.60	180	17.46	3636
Pterothrissus belloci	52.20	600	10.41	
Lophius vomerinus	34.44	24	6.87	3638
Trachurus capensis	23.34	195	4.65	3640
Galeus polli	9.39	225	1.87	
Total	501.60		100.00	

PROJECT STATION:1076

DATE:22/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1949
start stop duration Long E 1213
TIME :14:34:00 15:04:00 30 (min) Purpose code: 3
LOG :3886.70 3888.20 1.50 Area code : 3
FDEPTH: 229 236 GearCond.code:
BDEPTH: 229 236 Validity code:
Towing dir: 338° Wire out: 800 m Speed: 31 kn*10

Sorted: 55 Kg Total catch: 164.10 CATCH/HOUR: 328.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	133.50	1332	40.68	3641
Merluccius capensis, male	94.50	1026	28.79	3642
Trachurus capensis	94.20	1396	28.70	3643
Sufflogobius bibarbatus	5.46	2868	1.66	
Chatrabus melanurus	0.30	6	0.09	
Galeus polli	0.24	6	0.07	
Trachurus capensis, juvenile	0.02	6	0.01	
Total	328.22		100.00	

PROJECT STATION:1077

DATE:22/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1940
start stop duration Long E 1211
TIME :16:22:00 16:52:00 30 (min) Purpose code: 3
LOG :3896.40 3897.90 1.50 Area code : 3
FDEPTH: 231 236 GearCond.code:
BDEPTH: 231 236 Validity code:
Towing dir: 350° Wire out: 800 m Speed: 32 kn*10

Sorted: 52 Kg Total catch: 73.11 CATCH/HOUR: 146.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	83.50	808	57.11	3646
Merluccius capensis, male	58.00	612	39.67	3645
Trachurus capensis	2.26	32	1.55	3648
Sufflogobius bibarbatus	1.60	290	1.09	
Dentex macrophthalmus	0.48	2	0.33	
Merluccius capensis	0.16	8	0.11	3647
Chatrabus melanurus	0.12	2	0.08	
Trachurus capensis, juvenile	0.10	16	0.07	3649
Total	146.22		100.01	

PROJECT STATION:1078

DATE:23/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1927
start stop duration Long E 1213
TIME :05:34:00 06:04:00 30 (min) Purpose code: 3
LOG :3932.60 3934.10 1.50 Area code : 3
FDEPTH: 194 192 GearCond.code:
BDEPTH: 194 192 Validity code:
Towing dir: 345° Wire out: 680 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 26.83 CATCH/HOUR: 53.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	29.10	326	54.23	3650
Merluccius capensis, male	21.20	288	39.51	3651
Sufflogobius bibarbatus	1.40	238	2.61	
Chatrabus melanurus	1.18	4	2.20	
Synagrops microlepis	0.40	56	0.75	
Trachurus capensis	0.20	2	0.37	3653
Merluccius capensis	0.12	6	0.22	3652
Trachurus capensis, juvenile	0.06	10	0.11	3654
Total	53.66		100.00	

PROJECT STATION:1079

DATE:23/ 5/95 GEAR TYPE: BT No:8 POSITION:Lat S 1933
start stop duration Long E 1151
TIME :11:07:00 11:37:00 30 (min) Purpose code: 3
LOG :3961.40 3962.90 1.50 Area code : 3
FDEPTH: 327 324 GearCond.code:
BDEPTH: 327 324 Validity code:
Towing dir: 340° Wire out:1050 m Speed: 30 kn*10

Sorted: 196 Kg Total catch: 420.04 CATCH/HOUR: 840.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	512.40	616	60.99	3655
Merluccius capensis, male	167.34	274	19.92	3656
Dentex macrophthalmus	69.42	210	8.26	3657
Helicolenus dactylopterus	26.90	1110	3.20	
Trachurus capensis	23.34	76	2.78	3658
Chlorophthalmus atlanticus	14.20	524	1.69	
Krill	9.54		1.14	
Synagrops microlepis	8.86	770	1.05	
Hyperoglyphe moselii	3.16	4	0.38	
Todarodes sagittatus	1.58	4	0.19	
Pterothrissus belloci	1.24	4	0.15	
Galeus polli	1.12	12	0.13	
Coelorinchus coelorhinc. polli	0.58	20	0.07	
MYCTOPHIDAE	0.22	132	0.03	
Nezumia sp.	0.22	14	0.03	
Total	840.12		100.01	

PROJECT STATION:1080

DATE:23/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1934
start stop duration Long E 1145
TIME :13:34:00 14:04:00 30 (min) Purpose code: 3
LOG :3971.90 3973.40 1.50 Area code : 3
FDEPTH: 345 345 GearCond.code:
BDEPTH: 345 345 Validity code:
Towing dir: 350° Wire out:1100 m Speed: 30 kn*10

Sorted: 238 Kg Total catch: 753.69 CATCH/HOUR: 1507.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	887.18	928	58.86	3659
Merluccius capensis, male	266.60	338	17.69	3660
Helicolenus dactylopterus	108.34	2468	7.19	
Deepwater fish mixture	46.50		3.08	
Lophius vomerinus	45.30	38	3.01	3664
Trachurus capensis	33.88	100	2.25	3662
Chlorophthalmus atlanticus	27.32	832	1.81	
Galeus polli	26.98	344	1.79	
Coelorinchus coelorhinc. polli	21.44	1056	1.42	
Nezumia sp.	9.98	576	0.66	
Dentex macrophthalmus	8.76	10	0.58	3663
Todarodes sagittatus	7.36	14	0.49	
Merluccius paradoxus, female	6.84	28	0.45	3661
Synagrops microlepis	5.00	322	0.33	
PORTUNIDAE	3.34	200	0.22	
NEMICHTHYIDAE	1.00	200	0.07	
Ebinania costaecanarie	0.66	10	0.04	
Malacocephalus laevis	0.56	22	0.04	
Epigonus telescopus	0.34	22	0.02	
Total	1507.38		100.00	

PROJECT STATION:1081

DATE:23/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1938
start stop duration Long E 1135
TIME :16:17:00 16:47:00 30 (min) Purpose code: 3
LOG :3988.60 3990.00 1.40 Area code : 3
FDEPTH: 452 448 GearCond.code:
BDEPTH: 452 448 Validity code:
Towing dir: 350° Wire out:1350 m Speed: 30 kn*10

Sorted: 95 Kg Total catch: 259.72 CATCH/HOUR: 519.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	374.70	936	72.14	3666
Trachyrincus scabrus	55.50	426	10.68	
Helicolenus dactylopterus	23.10	192	4.45	
Merluccius paradoxus, male	18.00	54	3.47	3665
Deepwater fish mixture	11.10		2.14	
Todarodes sagittatus	9.56	18	1.84	
Vitreledonella richardi	9.36	6	1.80	
Nezumia sp.	5.70	204	1.10	
Yarrella blackfordi	4.62	924	0.89	
Trachipterus jacksonensis	4.38	6	0.84	
Galeus polli	1.32	18	0.25	
Aristeus varidens	0.60	72	0.12	
Coelorinchus coelorhinc. polli	0.60	36	0.12	
Bathynectes piperitus	0.30	24	0.06	
Hoplostethus cadenati	0.24	156	0.05	
Shrimps, small, non comm.	0.18	60	0.03	
Epigonus denticulatus	0.18	6	0.03	
Total	519.44		100.01	

PROJECT STATION:1082

DATE:23/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1938
start stop duration Long E 1129
TIME :19:17:00 19:47:00 30 (min) Purpose code: 3
LOG :4000.70 4002.00 1.30 Area code : 3
FDEPTH: 554 555 GearCond.code:
BDEPTH: 554 555 Validity code:
Towing dir: 344° Wire out:1650 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 124.47 CATCH/HOUR: 248.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	134.20	172	53.91	3667
Trachyrincus scabrus	41.60	188	16.71	
Deania profundorum	16.56	4	6.65	
Deepwater fish mixture	13.28		5.33	
Hoplostethus cadenati	9.16	436	3.68	
Nezumia sp.	9.12	300	3.66	
Todarodes sagittatus	7.50	20	3.01	
Yarrella blackfordi	6.00	344	2.41	
Helicolenus dactylopterus	4.72	36	1.90	
GONOSTOMATIDAE	3.00	440	1.21	
MELANOSTOMIATIDAE	1.00	60	0.40	
Ebinania costaecanarie	0.64	4	0.26	
Histioteuthis reversa	0.36	4	0.14	
PHOTICHTHYIDAE	0.28	40	0.11	
MYCTOPHIDAE	0.28	68	0.11	
Selachophidium guentheri	0.28	4	0.11	
Shrimps, small, non comm.	0.24	112	0.10	
Thysanoteuthis rhombus	0.16	4	0.06	
Raja confundens	0.16	4	0.06	
Aphanopus sp.	0.12	4	0.05	
ASTRONESTHIDAE	0.12	12	0.05	
Lamprogrammus exutus	0.08	4	0.03	
Melanocetus johnsoni	0.04	4	0.02	
Lyconus pinnatus	0.04	4	0.02	
Total	248.94		99.99	

PROJECT STATION:1083

DATE:23/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1940

start stop duration Long E 1126

TIME :21:33:00 22:03:00 30 (min) Purpose code: 3

LOG :4009.20 4010.60 1.40 Area code : 3

FDEPTH: 653 658 GearCond.code:

BDEPTH: 653 658 Validity code:

Towing dir: 166° Wire out:1800 m Speed: 29 kn*10

Sorted: 100 Kg Total catch: 221.59 CATCH/HOUR: 443.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	123.40	114	27.84	3668
Nezumia sp.	99.20	3400	22.38	
Deania calcea	38.72	48	8.74	
Yarrella blackfordi	32.16	1424	7.26	
Phrynichthys wedli	21.92	256	4.95	
Raja confundens	20.80	32	4.69	
Ommastrephes pteropus	15.04	16	3.39	
Selachophidium guentheri	12.80	176	2.89	
Lophius vaillanti	12.20	4	2.75	3669
ALEPOCEPHALIDAE	12.00	112	2.71	
Hoplostethus cadenati	11.20	368	2.53	
Trachyrincus scabrus	10.48	384	2.36	
SQUALIDAE	8.10	2	1.83	
MYCTOPHIDAE	7.36	1024	1.66	
Raja caudaspinosa	4.96	32	1.12	
Chaceon maritae	3.30	14	0.74	
Heterocarpus grimaldii	3.04	178	0.69	
Todarodes sagittatus	2.34	6	0.53	
Notacanthus sexspinis	1.44	16	0.32	
Dicrolene intronigra	0.80	48	0.18	
Bassanago albescens	0.80	16	0.18	
Shrimps, small, non comm.	0.48	48	0.11	
Nephropsis atlantica	0.32	16	0.07	
Stomias boa boa	0.32	32	0.07	
Total	443.18		99.99	

PROJECT STATION:1086

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1917

start stop duration Long E 1139

TIME :07:11:00 07:45:00 34 (min) Purpose code: 3

LOG :4062.60 4064.30 1.70 Area code : 3

FDEPTH: 345 344 GearCond.code:

BDEPTH: 345 344 Validity code:

Towing dir: 344° Wire out:1130 m Speed: 30 kn*10

Sorted: 31 Kg Total catch: 542.36 CATCH/HOUR: 957.11

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	443.12	386	46.30	3679
Helicolenus dactylopterus	210.18	5347	21.96	
Lophius vomerinus	68.74	56	7.18	3683
Merluccius capensis, male	64.94	71	6.79	3681
Merluccius paradoxus, female	37.50	141	3.92	3680
Coelorinchus coelorhinc. polli	30.18	1271	3.15	
Shrimps, small, non comm.	15.99		1.67	
Squalus megalops	14.72	21	1.54	
Lophius vaillanti	13.61	5	1.42	3684
Galeus polli	13.45	53	1.41	
Schedophilus huttoni	11.86	11	1.24	
Todarodes sagittatus	7.09	11	0.74	
Chlorophthalmus atlanticus	7.09	222	0.74	
Nezumia sp.	5.29	328	0.55	
Bathynectes piperitus	3.81	275	0.40	
Trachurus capensis	3.81	11	0.40	
Ebinania costaecanarie	2.22	42	0.23	
Merluccius paradoxus, male	1.39	9	0.15	3682
Epigonus denticulatus	0.74	53	0.08	
Bassanago albescens	0.53	11	0.05	
Lampadena sp.	0.53	32	0.06	
GALATHEIDAE	0.32	11	0.03	
Total	957.11		100.02	

PROJECT STATION:1084

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1921

start stop duration Long E 1123

TIME :01:24:00 01:54:00 30 (min) Purpose code: 3

LOG :4034.10 4035.60 1.50 Area code : 3

FDEPTH: 603 600 GearCond.code:

BDEPTH: 603 600 Validity code:

Towing dir: 355° Wire out:1700 m Speed: 30 kn*10

Sorted: 187 Kg Total catch: 290.83 CATCH/HOUR: 581.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	276.00	340	47.45	3671
Todarodes sagittatus	83.80	220	14.41	
Trachyrincus scabrus	72.00	250	12.38	
Nezumia sp.	30.40	1580	5.23	
Hoplostethus cadenati	27.90	1060	4.80	
Lophius vaillanti	22.70	8	3.90	3673
Raja confundens	22.00	130	3.78	
Lophius vomerinus	17.80	4	3.06	
ALEPOCEPHALIDAE	7.20	190	1.24	
Merluccius paradoxus, male	5.20	8	0.89	3672
Yarrella blackfordi	4.60	290	0.79	
Ebinania costaecanarie	2.40	30	0.41	
Selachophidium guentheri	2.00	40	0.34	
Merluccius polli, female	1.84	2	0.32	3670
Galeus polli	1.40	10	0.24	
Shrimps, small, non comm.	1.20	580	0.21	
MYCTOPHIDAE	0.80	170	0.14	
Lamprogrammus exutus	0.70	30	0.12	
Chaceon maritae	0.62	2	0.11	
Stomias boa boa	0.50	40	0.09	
Melanocetus johnsoni	0.40	10	0.07	
Heterocarpus grimaldii	0.20	10	0.03	
Total	581.66		100.01	

PROJECT STATION:1087

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1914

start stop duration Long E 1145

TIME :09:31:00 10:01:00 30 (min) Purpose code: 3

LOG :4075.10 4076.60 1.50 Area code : 3

FDEPTH: 318 319 GearCond.code:

BDEPTH: 318 319 Validity code:

Towing dir: 344° Wire out:1030 m Speed: 30 kn*10

Sorted: 173 Kg Total catch: 189.71 CATCH/HOUR: 379.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	214.30	290	56.48	3685
Merluccius capensis, male	70.60	120	18.61	3686
Coelorinchus coelorhinc. polli	19.92	1244	5.25	
Lophius vomerinus	17.50	16	4.61	3687
Trachurus capensis	16.62	52	4.38	3690
Helicolenus dactylopterus	15.18	438	4.00	
Chlorophthalmus atlanticus	6.18	308	1.63	
Dentex macrophthalmus	4.96	14	1.31	3689
Todarodes sagittatus	4.06	10	1.07	
Austroglossus microlepis	3.36	6	0.89	3688
Synagrops microlepis	2.86	390	0.75	
Galeus polli	2.70	46	0.71	
C R A B S	0.48	28	0.13	
Malacocephalus laevis	0.42	28	0.11	
Nezumia sp.	0.14	10	0.04	
Coelorinchus fasciatus	0.14	4	0.04	
Total	379.42		100.01	

PROJECT STATION:1085

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1923

start stop duration Long E 1130

TIME :04:18:00 04:48:00 30 (min) Purpose code: 3

LOG :4047.80 4049.40 1.60 Area code : 3

FDEPTH: 497 499 GearCond.code:

BDEPTH: 497 499 Validity code:

Towing dir: 350° Wire out:1500 m Speed: 30 kn*10

Sorted: 180 Kg Total catch: 538.29 CATCH/HOUR: 1076.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius paradoxus, female	674.50	1044	62.65	3676
Trachyrincus scabrus	193.80	1564	18.00	
Nezumia sp.	58.90	1994	5.47	
Helicolenus dactylopterus	38.00	368	3.53	
Hoplostethus cadenati	30.90	2432	2.87	
Lophius vomerinus	22.90	12	2.13	3677
Deepwater fish mixture	18.88		1.75	
Raja confundens	10.20	70	0.95	
Lophius vaillanti	7.20	2	0.67	3678
Yarrella blackfordi	6.26	520	0.58	
Galeus polli	3.74	38	0.35	
Aristeus varidens	2.22	158	0.21	
Merluccius paradoxus, male	1.96	6	0.18	3675
Selachophidium guentheri	1.90	38	0.18	
Epigonus denticulatus	1.52	126	0.14	
Laemonema laureysi	1.20	12	0.11	
Todarodes sagittatus	0.56	6	0.05	
Ebinania costaecanarie	0.56	12	0.05	
Gadella imberbis	0.38	26	0.04	
Benthodesmus tenuis	0.38	6	0.04	
Shrimps, small, non comm.	0.26	94	0.02	
Thysanoteuthis rhombus	0.18	6	0.02	
Stomias boa boa	0.18	12	0.02	
Total	1076.58		100.01	

PROJECT STATION:1088

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1913

start stop duration Long E 1153

TIME :11:32:00 12:02:00 30 (min) Purpose code: 3

LOG :4086.90 4088.60 1.70 Area code : 3

FDEPTH: 285 285 GearCond.code:

BDEPTH: 285 285 Validity code:

Towing dir: 350° Wire out: 920 m Speed: 30 kn*10

Sorted: 203 Kg Total catch: 1542.40 CATCH/HOUR: 3084.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1190.46	2402	38.59	3691
Pterothrissus belloci	986.40	14378	31.98	
Merluccius capensis, male	318.66	1378	10.33	3692
Dentex macrophthalmus	303.40	1184	9.84	3696
Trachurus capensis	85.84	408	2.78	3697
Lophius vomerinus	61.96	68	2.01	3694
Synagrops microlepis	53.28	4550	1.73	
Chlorophthalmus atlanticus	37.00	2626	1.20	
Austroglossus microlepis	22.80	54	0.74	3695
Galeus polli	16.64	296	0.54	
Chelidonichthys queketti	3.34	334	0.11	
Trachurus capensis, juvenile	1.48	814	0.05	3698
Sufflogobius bibarbatus	1.12	150	0.04	
Malacocephalus laevis	1.12	38	0.04	
MYCTOPHIDAE	0.74	480	0.02	
Merluccius capensis	0.56	18	0.02	3693
Total	3084.80		100.02	

PROJECT STATION:1089

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1909
start stop duration Long E 1201
TIME :14:06:00 14:36:00 30 (min) Purpose code: 3
LOG :4100.80 4102.50 1.70 Area code : 3
FDEPTH: 230 228 GearCond.code:
BDEPTH: 230 228 Validity code:
Towing dir: 340° Wire out: 760 m Speed: 32 kn*10

Sorted: 107 Kg Total catch: 571.39 CATCH/HOUR: 1142.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	462.40	2548	40.46	3703
Trachurus capensis	379.98	4212	33.25	3701
Merluccius capensis, female	143.76	962	12.58	3699
Merluccius capensis, male	65.24	544	5.71	3700
Merluccius capensis, female	31.10	48	2.72	3706
Synagrops microlepis	30.90	4828	2.70	
Pterothrissus belloci	17.74	380	1.55	
Merluccius capensis, male	6.60	12	0.58	3707
Lophius vomerinus	3.48	6	0.30	3704
Austroglossus microlepis	0.68	2	0.06	3705
Sufflogobius bibarbatus	0.38	38	0.03	
Merluccius capensis	0.26	12	0.02	
Trachurus capensis, juvenile	0.26	168	0.02	3702
Total	1142.78		99.98	

PROJECT STATION:1090

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1859
start stop duration Long E 1157
TIME :16:06:00 16:36:00 30 (min) Purpose code: 3
LOG :4111.30 4112.90 1.60 Area code : 3
FDEPTH: 217 214 GearCond.code:
BDEPTH: 217 214 Validity code:
Towing dir: 340° Wire out: 740 m Speed: 32 kn*10

Sorted: 44 Kg Total catch: 44.86 CATCH/HOUR: 89.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	44.00	322	49.04	3708
Merluccius capensis, male	17.60	160	19.62	3709
Trachurus capensis	16.90	230	18.84	3711
Lophius vomerinus	7.70	8	8.58	3713
Dentex macrophthalmus	1.70	10	1.89	3714
Merluccius capensis	0.80	32	0.89	3710
Synagrops microlepis	0.46	86	0.51	
Pterothrissus belloci	0.26	8	0.29	
Sufflogobius bibarbatus	0.16	34	0.18	
Merluccius polli	0.08	6	0.09	3712
Chatrabus melanurus	0.06	2	0.07	
Bregmaceros sp.	0.00	4		
Total	89.72		100.00	

PROJECT STATION:1091

DATE:24/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1827
start stop duration Long E 1127
TIME :23:01:00 23:21:00 20 (min) Purpose code: 3
LOG :4159.10 4160.30 0.80 Area code : 3
FDEPTH: 343 358 GearCond.code:
BDEPTH: 343 358 Validity code:
Towing dir: 350° Wire out:1080 m Speed: 32 kn*10

Sorted: 223 Kg Total catch: 541.22 CATCH/HOUR: 1623.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1228.14	1338	75.64	3715
Helicolenus dactylopterus	130.95	2181	8.07	
Merluccius capensis, male	100.23	123	6.17	3716
Nezumia sp.	46.02	2130	2.83	
Coelorinchus coelorhinc. polli	38.46	1815	2.37	
Laemonema laureysi	18.63	393	1.15	
Lophius vomerinus	14.76	18	0.91	3717
Ebinania costaecanarie	13.50	471	0.83	
Epigonus denticulatus	9.18	444	0.57	
Todarodes sagittatus	5.67	12	0.35	
Galeus polli	4.71	39	0.29	
Lophius vaillanti	4.20	3	0.26	3718
C R A B S	3.78	69	0.23	
Malacocephalus laevis	3.24	27	0.20	
S H R I M P S	1.23	273	0.08	
Chlorophthalmus atlanticus	0.96	27	0.06	
Total	1623.66		100.01	

PROJECT STATION:1092

DATE:25/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1728
start stop duration Long E 1129
TIME :05:45:00 06:15:00 30 (min) Purpose code: 3
LOG :4220.00 4221.50 1.50 Area code : 3
FDEPTH: 159 160 GearCond.code:
BDEPTH: 159 160 Validity code:
Towing dir: 358° Wire out: 500 m Speed: 30 kn*10

Sorted: 65 Kg Total catch: 661.51 CATCH/HOUR: 1323.02

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	376.20	760	28.43	3723
Merluccius capensis, female	354.20	440	26.77	3720
Dentex macrophthalmus	234.30	5874	17.71	3722
Squalus megalops	114.18	496	8.63	
Pterothrissus belloci	80.20	1386	6.06	
Merluccius capensis, male	55.00	484	4.16	3724
Synagrops microlepis	51.16	7458	3.87	
Helicolenus dactylopterus	26.08	430	1.97	
Trigla lyra	13.86	66	1.05	
Zenopsis conchifer	7.92	34	0.60	
Chlorophthalmus atlanticus	4.62	792	0.35	
Austroglossus pectoralis	2.98	66	0.23	3721
Merluccius polli	2.32	110	0.18	3719
Total	1323.02		100.01	

PROJECT STATION:1093

DATE:25/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1737
start stop duration Long E 1113
TIME :07:52:00 08:12:00 20 (min) Purpose code: 3
LOG :4232.10 4233.10 1.00 Area code : 3
FDEPTH: 276 277 GearCond.code:
BDEPTH: 276 277 Validity code:
Towing dir: 170° Wire out: 870 m Speed: 30 kn*10

Sorted: 170 Kg Total catch: 1428.00 CATCH/HOUR: 4284.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1963.65	4134	45.84	3727
Merluccius capensis, male	735.36	2385	17.17	3726
Trachurus capensis	315.30	1377	7.36	3730
Chlorophthalmus atlanticus	303.60	7497	7.09	
Dentex macrophthalmus	254.40	6360	5.94	
Squalus megalops	211.80	582	4.94	
Helicolenus dactylopterus	201.30	5085	4.70	
Lophius vaillanti	104.55	36	2.44	3729
Coelorinchus coelorhinc. polli	67.83	2172	1.58	
Laemonema laureysi	29.16	636	0.68	
Lophius vomerinus	18.90	9	0.44	3728
Galeus polli	18.54	264	0.43	
BATHYLAGIDAE	17.49	900	0.41	
Synagrops microlepis	16.95	1428	0.40	
Merluccius polli	8.22	237	0.19	3725
Trigla lyra	7.95	105	0.19	
Parapenaeus longirostris	4.23	264	0.10	
Sepia sp.	3.18	54	0.07	
Malacocephalus occidentalis	1.05	51	0.02	
GALATHEIDAE	0.54	108	0.01	
Total	4284.00		100.00	

PROJECT STATION:1094

DATE:25/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1742
start stop duration Long E 1126
TIME :09:25:00 09:55:00 30 (min) Purpose code: 3
LOG :4238.90 4240.30 1.40 Area code : 3
FDEPTH: 190 189 GearCond.code:
BDEPTH: 190 189 Validity code:
Towing dir: 170° Wire out: 650 m Speed: 28 kn*10

Sorted: 141 Kg Total catch: 888.91 CATCH/HOUR: 1777.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	624.00	3744	35.10	3733
Chlorophthalmus atlanticus	463.20	32656	26.05	
Dentex macrophthalmus	180.00	1392	10.12	3734
Merluccius capensis, female	157.20	478	8.84	3731
Helicolenus dactylopterus	88.40	1536	4.97	
Squalus megalops	71.52	240	4.02	
Merluccius capensis, male	59.50	226	3.35	3732
Pterothrissus belloci	38.88	336	2.19	
Trigla lyra	26.88	144	1.51	
Lepidopus caudatus	20.64	192	1.16	
Synagrops microlepis	19.68	2880	1.11	
SCORPAENIDAE	17.76	144	1.00	
SPARIDAE	6.72	48	0.38	
BATHYLAGIDAE	1.92	192	0.11	
Zenopsis conchifer	1.44	48	0.08	
Merluccius capensis	0.08	2		
Total	1777.82		99.99	

PROJECT STATION:1095

DATE:25/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1757
start stop duration Long E 1127
TIME :12:10:00 12:40:00 30 (min) Purpose code: 3
LOG :4256.30 4257.70 1.40 Area code : 3
FDEPTH: 253 255 GearCond.code:
BDEPTH: 253 255 Validity code:
Towing dir: 160° Wire out: 820 m Speed: 31 kn*10

Sorted: 209 Kg Total catch: 2258.26 CATCH/HOUR: 4516.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1941.40	4538	42.98	3735
Chlorophthalmus atlanticus	788.80	23200	17.46	
Merluccius capensis, male	654.50	2312	14.49	3736
Dentex macrophthalmus	280.20	1176	6.20	3741
Trachurus capensis	245.66	1088	5.44	3738
Helicolenus dactylopterus	192.66	4378	4.27	
Coelorinchus fasciatus	104.00	4606	2.30	
Synagrops microlepis	102.46	8938	2.27	
Trigla lyra	74.40	316	1.65	
Pterothrissus belloci	66.20	316	1.47	
Zeus faber	21.20	44	0.47	
Squalus megalops	14.00	44	0.31	
Lophius vaillanti	7.10	2	0.16	3740
Malacocephalus laevis	6.78	452	0.15	
Merluccius capensis	4.58	186	0.10	3737
Galeus polli	4.06	58	0.09	
Lophius vomerinus	4.00	6	0.09	3739
PORTUNIDAE	2.72	226	0.06	
Shrimps, small, non comm.	1.80	404	0.04	
Total	4516.52		100.00	

PROJECT STATION:1096

DATE:25/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1800
start stop duration Long E 1124
TIME :14:05:00 14:35:00 30 (min) Purpose code: 3
LOG :4263.80 4265.20 1.40 Area code : 3
FDEPTH: 354 353 GearCond.code:
BDEPTH: 354 353 Validity code:
Towing dir: 160° Wire out:1100 m Speed: 30 kn*10

Sorted: 402 Kg Total catch: 572.85 CATCH/HOUR: 1145.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	526.20	622	45.93	3742
Helicolenus dactylopterus	130.20	1440	11.36	
Merluccius capensis, male	87.40	130	7.63	3743
Squalus megalops	70.20	98	6.13	
Shrimps, small, non comm.	66.78	29680	5.83	
Merluccius paradoxus, female	64.20	236	5.60	3745
Laemonema laureysi	46.48	952	4.06	
Lophius vomerinus	45.80	20	4.00	3746
Coelorinchus fasciatus	32.76	1106	2.86	
Galeus polli	25.34	308	2.21	
Todarodes sagittatus	15.60	32	1.36	
Trachurus capensis	5.60	14	0.49	3749
Malacocephalus laevis	4.90	70	0.43	
Epigonus denticulatus	4.48	196	0.39	
Lophius vaillanti	3.74	4	0.33	3747
Ebinania costaecanarie	3.50	14	0.31	
Merluccius paradoxus, male	3.38	12	0.30	3744
MYCTOPHIDAE	3.22	1260	0.28	
Nezumia sp.	3.22	84	0.28	
Merluccius polli, female	1.44	2	0.13	3748
Hoplostethus cadenati	0.98	840	0.09	
C R A B S	0.28	14	0.02	
Total	1145.70		100.02	

PROJECT STATION:1097

DATE:25/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1800
start stop duration Long E 1130
TIME :16:12:00 16:42:00 30 (min) Purpose code: 3
LOG :4274.10 4275.70 1.60 Area code : 3
FDEPTH: 301 314 GearCond.code:
BDEPTH: 301 314 Validity code:
Towing dir: 180° Wire out: 900 m Speed: 30 kn*10

Sorted: 161 Kg Total catch: 1511.06 CATCH/HOUR: 3022.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1407.32	2296	46.57	3755
Helicolenus dactylopterus	627.00	8250	20.75	
Merluccius capensis, male	407.00	908	13.47	3754
Coelorinchus coelorhinc. polli	147.40	6710	4.88	
Lophius vomerinus	121.50	134	4.02	3752
Trigla lyra	106.34	514	3.52	
Bathynectes piperitus	88.00	1796	2.91	
Chlorophthalmus atlanticus	26.04	624	0.86	
Trachurus capensis	25.30	110	0.84	3751
Dentex macrophthalmus	19.06	74	0.63	3750
Raja confundens	13.56	36	0.45	
Lophius vaillanti	12.70	8	0.42	3753
Galeus polli	9.54	110	0.32	
Laemonema laureysi	5.86	256	0.19	
Malacocephalus occidentalis	3.66	146	0.12	
Shrimps, small, non comm.	1.84	844	0.06	
Total	3022.12		100.01	

PROJECT STATION:1098

DATE:25/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1814
start stop duration Long E 1130
TIME :22:44:00 23:05:00 21 (min) Purpose code: 3
LOG :4296.00 4297.00 1.00 Area code : 3
FDEPTH: 294 297 GearCond.code:
BDEPTH: 294 297 Validity code:
Towing dir: 170° Wire out: 970 m Speed: 30 kn*10

Sorted: 199 Kg Total catch: 1122.02 CATCH/HOUR: 3205.77

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1638.66	2843	51.12	3756
Helicolenus dactylopterus	768.00	15194	23.96	
Merluccius capensis, male	485.34	966	15.14	3757
Coelorinchus fasciatus	135.43	7663	4.22	
Chlorophthalmus atlanticus	50.74	1337	1.58	
Galeus polli	36.34	514	1.13	
Trigla lyra	20.91	514	0.65	
Raja leopardus	15.77	34	0.49	
Pterothrissus belloci	13.71	34	0.43	
Malacocephalus laevis	10.63	446	0.33	
Dentex macrophthalmus	9.94	34	0.31	3759
Lophius vomerinus	9.66	9	0.30	3758
C R A B S	6.51	137	0.20	
Laemonema laureysi	2.74	103	0.09	
Synagrops microlepis	1.37	69	0.04	
Total	3205.75		99.99	

PROJECT STATION:1099

DATE:26/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1821
start stop duration Long E 1127
TIME :05:41:00 06:11:00 30 (min) Purpose code: 3
LOG :4318.30 4319.70 1.40 Area code : 3
FDEPTH: 353 351 GearCond.code:
BDEPTH: 353 351 Validity code:
Towing dir: 175° Wire out:1060 m Speed: 28 kn*10

Sorted: 174 Kg Total catch: 896.04 CATCH/HOUR: 1792.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1020.28	1062	56.93	3761
Helicolenus dactylopterus	292.64	4310	16.33	
Merluccius capensis, male	118.58	156	6.62	3760
Nezumia sp.	70.68	3442	3.94	
Squalus megalops	54.26	94	3.03	
Coelorinchus coelorhinc. polli	51.16	2574	2.85	
Neoharriotta pinnata	49.30	32	2.75	
Ebinania costaecanarie	38.14	558	2.13	
Laemonema laureysi	33.18	3354	1.85	
Raja confundens	14.88	32	0.83	
Centrophorus sp.	14.26	32	0.80	
Lophius vomerinus	9.56	12	0.53	3763
Bathynectes piperitus	7.14	218	0.40	
Galeus polli	6.52	94	0.36	
Synagrops microlepis	5.58	434	0.31	
Lophius vaillanti	2.50	2	0.14	3762
S H R I M P S	1.56	806	0.09	
Malacocephalus occidentalis	1.24	62	0.07	
Bassanago albescens	0.62	32	0.03	
Total	1792.08		99.99	

PROJECT STATION:1100

DATE:26/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1829
start stop duration Long E 1132
TIME :07:48:00 08:19:00 31 (min) Purpose code: 3
LOG :4329.10 4330.70 1.40 Area code : 3
FDEPTH: 223 221 GearCond.code:
BDEPTH: 223 221 Validity code:
Towing dir: 170° Wire out: 760 m Speed: 28 kn*10

Sorted: 102 Kg Total catch: 604.79 CATCH/HOUR: 1170.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	495.29	1545	42.31	3765
Merluccius capensis, male	256.65	894	21.93	3764
Synagrops microlepis	208.45	29590	17.81	
Helicolenus dactylopterus	83.03	894	7.09	
Raja straeleni	53.42	58	4.56	
Pterothrissus belloci	20.32	232	1.74	
Trigla lyra	16.72	58	1.43	
Dentex macrophthalmus	10.34	70	0.88	3768
Trachurus capensis	9.06	58	0.77	3767
Chlorophthalmus atlanticus	8.59	732	0.73	
Bathynectes piperitus	4.30	395	0.37	
Merluccius capensis	1.97	105	0.17	3769
Lophius vomerinus	1.47	2	0.13	3766
Austroglossus microlepis	0.95	15	0.08	3770
Total	1170.56		100.00	

PROJECT STATION:1101

DATE:26/ 5/95 GEAR TYPE BT No: POSITION:Lat S 1832
start stop duration Long E 1141
TIME :09:53:00 10:03:00 10 (min) Purpose code: 3
LOG :4340.80 4341.20 0.40 Area code : 3
FDEPTH: 189 188 GearCond.code:
BDEPTH: 189 188 Validity code:
Towing dir: 145° Wire out 830 m Speed: 28 kn*10

Sorted: 62 Kg Total catch 333.02 CATCH/HOUR: 1998.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	1792.80	17664	89.72	3771
Dentex macrophthalmus	151.20	1152	7.57	3775
Merluccius capensis, female	34.80	234	1.74	3772
Merluccius capensis, male	12.66	120	0.63	3773
Bathynectes piperitus	6.48	584	0.32	
Merluccius capensis	0.18	24	0.01	3774
Total	1998.12		99.99	

PROJECT STATION:1102

DATE:26/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1824
start stop duration Long E 1145
TIME :12:06:00 12:21:00 15 (min) Purpose code: 3
LOG :4355.80 4356.50 0.70 Area code : 3
FDEPTH: 221 223 GearCond.code:
BDEPTH: 221 223 Validity code:
Towing dir: 165° Wire out: 750 m Speed: 30 kn*10

Sorted: 60 Kg Total catch: 833.37 CATCH/HOUR: 3333.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	3040.80	25872	91.22	3779
Dentex macrophthalmus	168.00	1120	5.04	3780
Merluccius capensis, female	94.80	404	2.84	3776
Merluccius capensis, male	29.60	172	0.89	3777
Austroglossus microlepis	0.28	4	0.01	3778
Total	3333.48		100.00	

PROJECT STATION:1103

DATE:26/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1855

start stop duration Long E 1139

TIME :14:26:00 14:36:00 10 (min) Purpose code: 3

LOG :4371.40 4371.80 0.40 Area code : 3

FDEPTH: 280 281 GearCond.code:

BDEPTH: 280 281 Validity code:

Towing dir: 170° Wire out: 920 m Speed: 30 kn*10

Sorted: 342 Kg Total catch: 394.90 CATCH/HOUR: 2369.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, female	1281.42	1548	54.08	3786
Pterothrissus belloci	324.78	1878	13.71	
Merluccius capensis, male	318.60	720	13.45	3787
Trachurus capensis	96.36	366	4.07	3785
MYCTOPHIDAE	92.16	35310	3.89	
Dentex macrophthalmus	88.56	342	3.74	3784
Lophius vomerinus	52.80	54	2.23	3783
Synagrops microlepis	51.54	4848	2.18	
Austroglossus microlepis	27.90	54	1.18	3781
Chlorophthalmus atlanticus	15.96	1134	0.67	
Galeus polli	11.58	234	0.49	
Raja leopardus	3.66	6	0.15	
Trigla lyra	2.64	12	0.11	
C R A B S	0.42	132	0.02	
Merluccius capensis	0.36	18	0.02	3782
S H R I M P S	0.36	144	0.02	
Coelorinchus coelorhinc. polli	0.18	12	0.01	
Scopelosaurus meadi	0.12	12	0.01	
Total	2369.40		100.03	

PROJECT STATION:1104

DATE:26/ 5/95 GEAR TYPE: BT No: POSITION:Lat S 1900

start stop duration Long E 1135

TIME :15:55:00 16:15:00 20 (min) Purpose code: 3

LOG :4378.30 4379.30 1.00 Area code : 3

FDEPTH: 269 269 GearCond.code:

BDEPTH: 269 269 Validity code:

Towing dir: 170° Wire out: 900 m Speed: 31 kn*10

Sorted: 214 Kg Total catch: 526.75 CATCH/HOUR: 1580.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	909.27	2289	57.54	3790
Dentex macrophthalmus	312.57	1476	19.78	3788
Pterothrissus belloci	210.18	1218	13.30	
Chlorophthalmus atlanticus	49.92	2739	3.16	
Helicolenus dactylopterus	25.35	684	1.60	
Trigla lyra	20.04	96	1.27	
Lophius vomerinus	17.10	9	1.08	3791
Synagrops microlepis	15.87	1458	1.00	
Coelorinchus coelorhinc. polli	5.76	327	0.36	
Trachurus capensis	4.29	15	0.27	3789
Austroglossus microlepis	3.99	9	0.25	3792
Galeus polli	3.36	57	0.21	
Coelorinchus fasciatus	1.68	30	0.11	
Bathynectes piperitus	0.51	45	0.03	
MYCTOPHIDAE	0.36	108	0.02	
Total	1580.25		99.98	

Annex IV Instruments and fishing gear used

Acoustic instruments

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

Transceiver settings:

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

Printer settings:

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

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

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

Glossary:

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

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

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

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

Hydrography

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

Fishing gear

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

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

The following drawings show the size of these trawls.

F/F Dr. Fridtjof Nansen

OVER/UNDER/SIDER

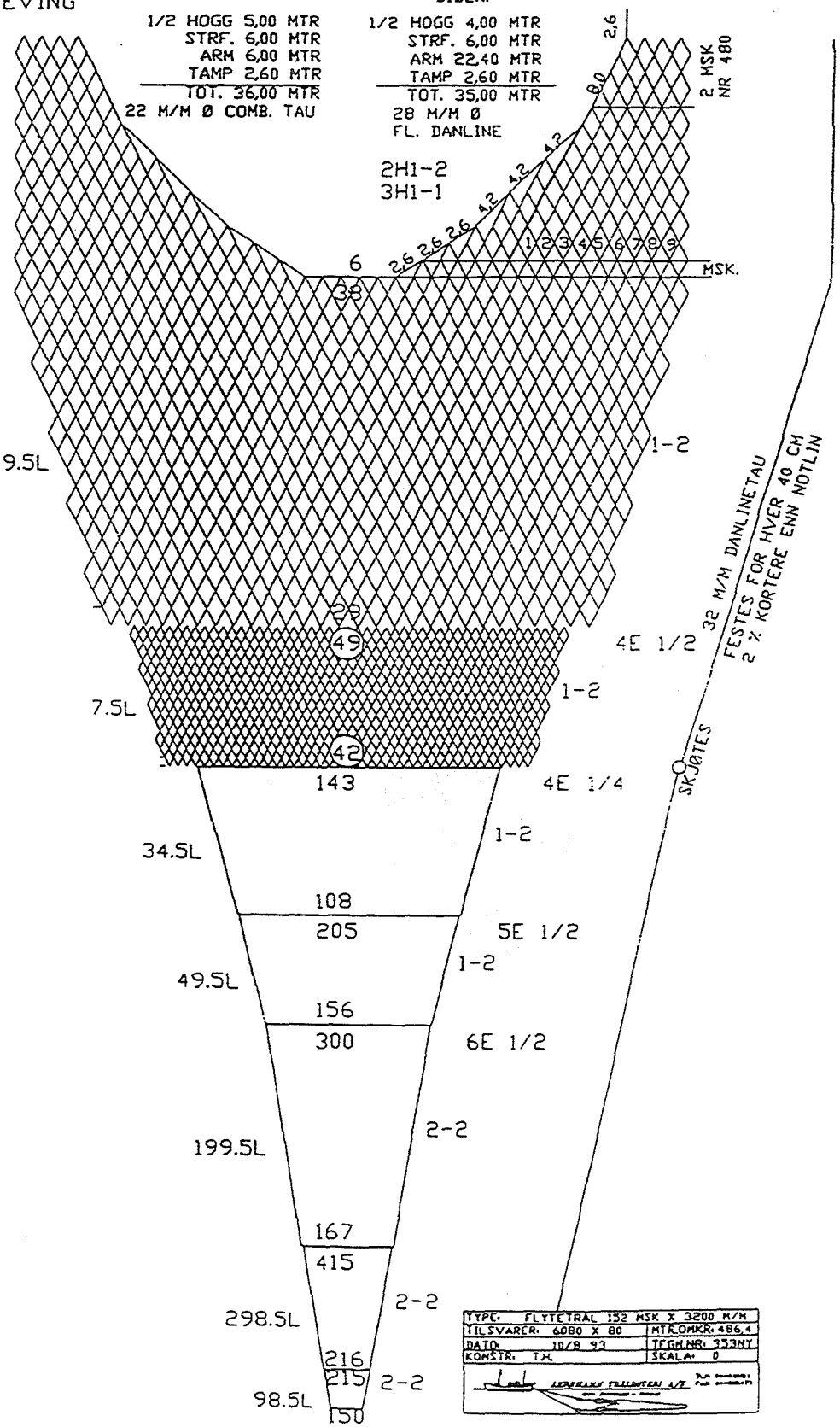
OVERDEL:
50 STK 11" PLASTKULER
UNDERDEL
14 M/M WIRE OMSP. MED
14 M/M BLYTAU
+ KJETTING.
TOTAL VEKT UNDER 400 KG.

SIDER.

1/2 HOGG 5,00 MTR
STRF. 6,00 MTR
ARM 6,00 MTR
TAMP 2,60 MTR
TOT. 36,00 MTR
22 M/M Ø COMB. TAU

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

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



TYPE: FLYTETRÅL 152 MSK X 3200 M/M	
TILSVARER: 6080 X 80	MTR.OMKR: 486,4
DATO: 10/8 93	TEGN.NR: 253NY
KONSTR: TH	SKALA: 0

F/F Dr. Fridtjof Nansen

MASKER M/M	TRAAD NR.	LENGDE I MTR.	MASKER I EVING	
1620.0	160	19.4	4	
1620.0	160	25.9	4	15.5L
400.0	48	14.0	4	34.5L
200.0	32	10.00	4	49.5L
100.0	24	20.0	4	199.5L
38.0	12	11.4	4	298.5L
36.0	18	3.76	4	98.5L

OVER/UNDER

OVERDEL:
50 STK 11" KULER
OMSLUTTET AV NETT.
UNDERDEL:
14 M/M WIRE OMSP. MED
14 M/M BLYTAU.
+ KJETTING.
TOT. VEKT UNDER 400 KG.

1/2 HOGG 3,20 MTR
STRF. 4,50 MTR
ARML. 19,40 MTR
TAMP. 1,90 MTR
TOT. 29,00 MTR
22 M.M. COMB. TAU.

4 MSK NR 240
7,5 L
HASKING
4HI-2
4HI-1
9
57
42
143
1-2
4E 1/4
108
205
5E 1/2
156
300
6E 1/2
2-2
167
415
216
215
150
L90

SKJØTES

32 M/M BIDANLINETAU FESTES FOR HVER 40 CM 2 ½ KORTERE ENN MOTLIN

SIDER

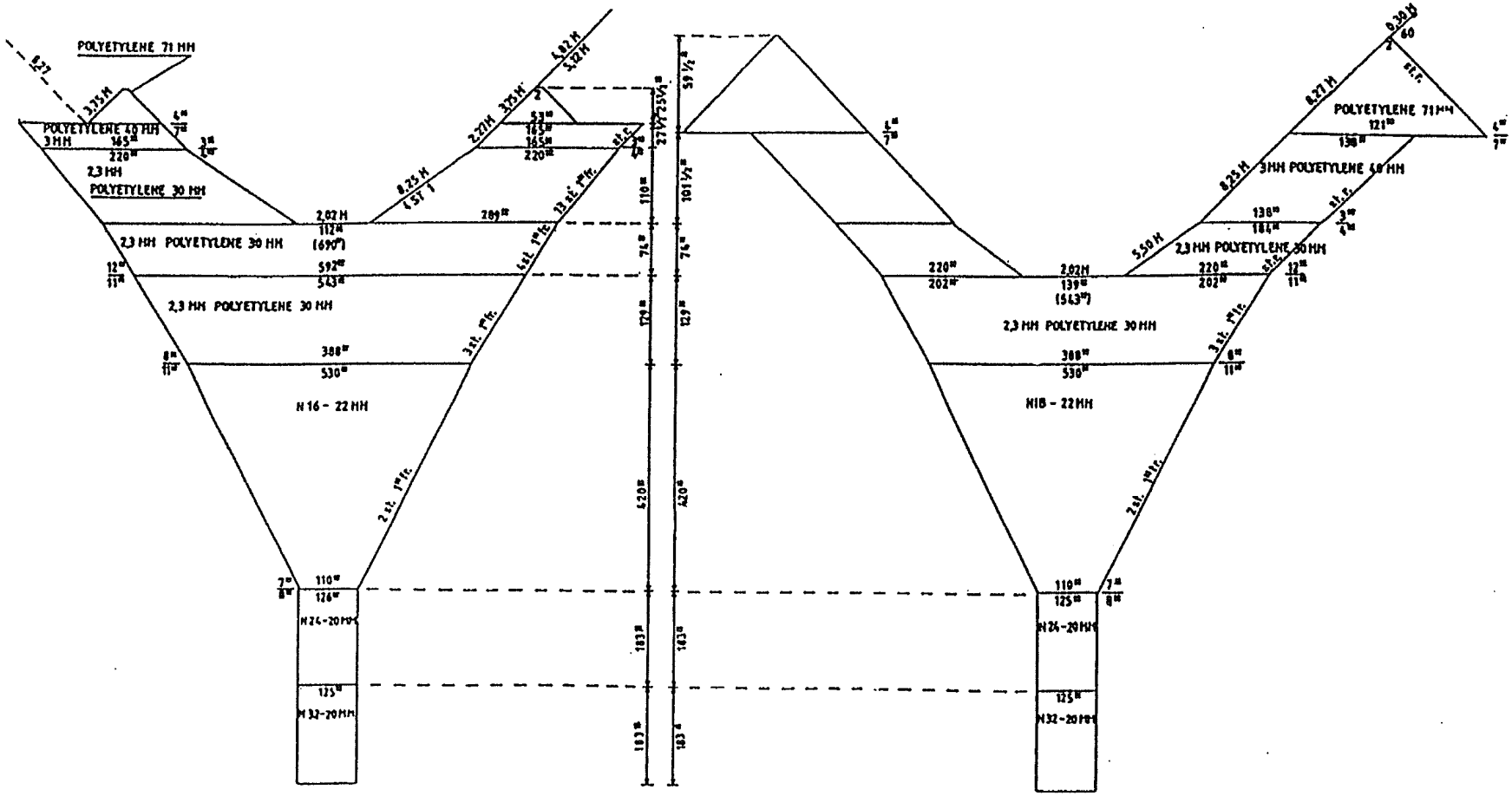
1/2 HOGG 0.40 MTR
STF. 2.50 MTR
ARML. 19,40 MTR
TAMP. 1,90 MTR
TOT. 24,20 MTR
28 M/M Ø
FL. DANLINE

4 MSK NR 240
7,5 L
HASKING
4HI-2
42
143
15.5L
1-2
5E 1/4
108
205
5E 1/2
156
300
6E 1/2
2-2
167
415
216
215
150
L90

TYPE:	FLYTETRÅL 198 MSK X 1620 M/M		
TILSVARER:	4010 X 80	MTR.OMKR:	320
DATO:	23/6 93	TEGN.NR:	510
KONSTR:	T-H	SKALA:	0

ÅKREHAMN TRÅLVERKSTEDET A/S

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



Annex V Various attempts to combine trawl estimates and acoustic estimates of pelagic hake.

A: Bottom trawl estimate plus acoustic estimate of pelagic hake (BT + ACP)

This estimate is the standard hake estimate presented in all surveys. The semi random trawl stations are post-stratified into 3-4 density levels following bottom depth and judged distribution patterns. Hake more than 6 m off bottom during trawling are assessed by acoustic methods and are added to the trawl density per station using the target strength relationship TS=20 Logl-68. The mean density and area for each subarea is calculated and summed into regional estimates by the Southern, Central and Northern Regions. The length frequency distributions (LFQ) from each trawl station are pooled together by strata using CPUE of the species at each station as weighting factor. The LFQ's are further grouped together into regional estimates, using the biomass in each stratum as weighting factor, obtaining a regional representative length distribution. These length distributions are applied on the biomass per region to get total estimates in number and weight for each cm length group. The conversion from total biomass to biomass per length group can be explained in six simple steps:

- The length distribution is normalized to 10000 fish.
- The weight of this 'sample' is calculated by using a length/weight relationship obtained during the survey or more easily by applying a condition factor of 0.67. The average condition factor varies between 0.66 and 0.68 for all previous surveys and applying the value 0.67 gives only minor deviations from the empirical length/weight table.
- The total biomass figure is divided by the weight of the 10 000 fish sample, obtaining a raising factor for the sample.
- The raising factor is multiplied with the length frequency distribution and the product will be the length distribution in absolute numbers.
- The number in each length class is transferred into weight using the length/weight key or the condition factor.
- The absolute distributions of numbers and biomass are split by the 35 cm group into 'fishable' and 'non-fishable' biomass.

Critique Common critical arguments against the method are:

- The effective trawling width and height of the trawl is not accurately known. Applying a retention factor of 1.0 for the area between the wings of the trawl is likely overestimating the big size fish, as preliminary studies indicate that this fish

is herded into the trawl path by the bridles. This subject is under close investigation both in Norway and Namibia and length dependent correction factors will likely be applied in the near future.

- As a vessel passes over a fish distribution the fish tends to dive towards the bottom before the trawl passes. This effect is depth dependent. Under such circumstances one runs the risk of counting the fish twice, once in the acoustic layer and later as catch in the trawl. Several experiments are carried out to put more light on this effect. This effect tends to overestimate the biomass in the survey area.
- The post-stratification technique has its followers and sceptics. Post-stratification involves a subjective element avoided by many. We prefer the method as it accounts for natural fish aggregations forming clusters with low variance. The method has proven to be quite consistent and comparisons with automatic interpolation methods (in preparation) shows remarkable similarity both in distribution pattern detected and in the abundance estimates calculated. These were typically within 10% deviation.

B: Bottom trawl estimate (BT): This is a pure bottom trawl estimate, stratified by depth zones and degrees of latitude. The average catch rate of hake from the semi-random trawl stations, computed as [kg/h], is converted to density [tonnes/nm^2] and multiplied with the strata area. Stratification was done in 100 m depth bins and within element areas, 1° in latitude, limited by the 100 m and 700 m depth contours.

Critique:
This estimate is a minimum estimate of the hake stocks (assuming that the effective swept width of the trawl is correct), as hake in the pelagic region not is accounted for. Furthermore as the stations are automatically applied to the strata, one or a few stations can be representative for big areas, making variance estimation impossible.

C: Corrected bottom trawl estimate (BTC).
The acoustic system is used to compute the vertical availability at each trawl station, but also as an average in the stratum. Vertical availability is measured as the area backscattering coefficient (s_{AB}) of hake registered in the 10 m bottom layer, divided by the total hake s_{AT}, or the sum of bottom and off bottom acoustic density:

$$q=\frac{s_{AB}}{s_{AT}}$$

q is now an index for how much of the hake is available to the bottom trawl, taking values between 0 and 1. If all fish is registered acoustically within the 10 m bottom channel, q=1, and if all the fish is registered off bottom, above 10 meters off bottom, q = 0.

The average availability is computed for each depth strata, and the average density from the bottom trawl survey, corrected for availability.

$$btc_{i,j}=\frac{<bt>}{<q>}$$

Critique:
If the fish is registered extremely close to the bottom, the corrected estimate will be the same as the bottom trawl estimate. However if the fish is registered both as off bottom, and at the same time very close to the bottom, the acoustic estimate of bottom density will be underestimated, and hence, the availability underestimated, causing too large corrections.

A parallel assumption in this method is that when fish is registered as available to the trawl, comparable fish density estimates should be obtained by acoustics and trawling. So far, on hake, this is not the case, the bottom trawl estimates of density being significantly higher than the acoustic density, when compared. The cause of this discrepancy is so far not fully understood, but three alternative solutions may be obvious:

1. The effective swept width of the trawl is larger than assumed, 18 m.
2. The effective fishing height of the trawl is significantly higher than 6 m, caused by the fish avoiding the vessel vertically during trawling and compressing within the trawl height zone.
3. Large quantities of fish is situated within the acoustic deadzone, and this density is non-correlated with the density in the lowest 1 m next to the bottom.

D: Bottom trawl estimate plus acoustic density estimate of the hake are added, (BT + ACP).
All acoustic data from the pelagic region within the strata are used to compute the acoustic estimate of the off bottom hake. The strata are the same as applied in method B. The root mean

square length of all hake within the strata are used to determine the average target strength and the average backscattering cross section using a length target strength to equation for hake equal:

$$TS=20logL-68[dB]$$

after the method described in Cruise Rep No. 2/1994, part 2.

The splitting of the acoustic density estimate for *M. capensis* and *M. paradoxus* were made separately for each stratum, according to relative catch rates at trawl stations.

Critique:
This estimate should in principle nearly fit the standard estimate method applied, where acoustic density only at stations were used for the computation of density of off bottom hake. Because of the high number of strata involved with few stations in each, method D will however be subject to a higher variance.

A critical assumption in this estimate is that the fish does not move vertically during the trawling operation. General assumptions as regards the bottom trawl survey method is of cause also valid.

E: Acoustic total estimate (AC)
This is a pure acoustic estimate, covering both the pelagic and bottom channels, using the same stratification system as earlier mentioned.

Critique:
Hake in deep water (250-500 m) may to a large extent be measured by this method, with relatively small deadzone problems. The shallower part is severely underestimated by this method, as these were covered mainly during daytime. In daytime the fish, mainly the younger ones were distributed extremely close to the seabed, and no deadzone correction could be applied. Only marginal improvements of their detection was achieved when running the 120 kHz system at 0.1 ms pulse length. If the shallow areas were surveyed during nighttime, a significant improvement in this estimate may be achieved, but then at the cost of the bottom trawl estimate.

The following tables are showing the results from the computations grouped by latitude and depth zones. These data will be subject for a later thorough statistical analysis.

Biomass estimates on Cape hake (*Merluccius capensis*) by degrees latitude in the central region. Tonnes.							
Area	Estimate	101-200 m	201-300 m	301-400 m	401-500 m	>500 m	Total
21°-22°	BT	4 463	2 508	1 378	0	0	8 349
	BTC	4 463	3 135	2 600	0	0	10 199
	BT+ACP	4 463	2 573	2 443	0	0	9 479
	ACT	131	311	2 066	0	0	2 508
22°-23°	BT	3 415	15 812	3 893	18	0	23 137
	BTC	3 415	16 821	5 898	51	0	26 185
	BT+ACP	3 415	15 990	5 406	27	0	24 838
	ACT	80	1 178	2 382	14	0	3 654
23°-24°	BT	17 260	10 971	6 498	0	14	34 743
	BTC	17 260	15 673	10 829	0	17	43 780
	BT+ACP	17 260	11 771	7 850	0	17	36 898
	ACT	261	2 312	2 609	0	8	5 190
24°-25°	BT	0	14 220	4 586	0	0	53 549
	BTC	0	26 830	10 666	0	0	81276
	BT+ACP	614	16 052	6 159	0	0	57 568
	ACT	2 246	3 352	2 710	0	0	8 309
21°-25°	BT	25 138	43 511	16 355	18	14	85 036
	BTC	25 138	62 459	29 993	51	17	117 660
	BT+ACP	25 752	46 386	21 858	27	17	94 040
	ACT	2 718	7 153	9 767	14	8	19 660
	BT+ACP*						104 515

Biomass estimates on Cape hake (*Merluccius capensis*) by degrees latitude in the southern region. Tonnes.							
Area	Estimate	100-200 m	200-300 m	300-400 m	400-500 m	>500 m	Total
25°-26°	BT	10 888	33 781	15 916	455	33	61 073
	BTC	13 958	39 742	37 015	1 057	67	91 839
	BT+ACP	11 150	34 288	17 482	455	44	63 419
	ACT	1 141	2 445	2 337	0	18	5 941
26°-27°	BT	31 044	27 552	9 924	0	0	68 520
	BTC	37 859	47 503	31 014	0	0	116 106
	BT+ACP	31 669	29 250	13 521	0	0	74 440
	ACT	3 651	3 714	4 699	0	0	12 064
27°-28°	BT	17 002	2 833	20 048	0	0	39 883
	BTC	27 422	3 777	26 731	0	0	57 929
	BT+ACP	18 080	2 902	22 483	0	0	43 465
	ACT	2 373	145	4 299	0	0	6 817
28°-29°30'	BT	24 904	1 856	54	0	0	26 814
	BTC	27 367	2 263	123	0	0	29 754
	BT+ACP	25 270	2 001	113	0	0	27 384
	ACT	2 073	248	75	0	0	2 396
25°-29°30'	BT	83 838	66 022	45 942	455	33	196 290
	BTC	106 606	93 285	94 883	1 057	67	295 897
	BT+ACP	86 169	68 441	53 599	455	44	208 708
	ACT	9 238	6 552	11 410	0	18	27 218
	BT+ACP*						145 317

Biomass estimates on deep water hake (*Merluccius paradoxus*) by degrees latitude in the central region. Tonnes.							
Area	Estimate	101-200 m	201-300 m	301-400 m	401-500 m	>500 m	Total
21°-22°	BT	0	0	1 013	1 351	1 365	3 728
	BTC	0	0	1 911	3 215	2 132	7 729
	BT+ACP	0	0	1 795	2 156	2 036	5 987
	ACT	0	0	1 518	1 383	1 495	4 396
22°-23°	BT	0	3 705	1 148	1 381	3 481	9 715
	BTC	0	3 942	1 739	3 947	7 911	17 538
	BT+ACP	0	3 747	1 594	2 059	4 241	11 641
	ACT	0	276	702	1 047	1 295	3320
23°-24°	BT	0	0	2 443	1 469	1 802	5 714
	BTC	0	0	4 071	1 959	2 310	8 340
	BT+ACP	0	0	2 951	1 847	2 201	6 999
	ACT	0	0	981	971	1 041	2 993
24°-25°	BT	0	52	6 401	3 718	3 881	14 051
	BTC	0	98	14 886	7 436	8 820	31 239
	BT+ACP	0	59	8 597	5 827	4 936	19 418
	ACT	0	12	3 783	3 882	1 918	9 595
21°-25°	BT	0	3 757	11 005	7 919	10 529	33 208
	BTC	0	4 040	22 607	16 557	21 173	64 377
	BT+ACP	0	3 806	14 937	11 889	13 414	44 044
	ACT	0	288	6 984	7 283	5 749	20 304
	BT+ACP*						41 729

Biomass estimates on deep water hake (*Merluccius paradoxus*) by degrees latitude in the southern region. Tonnes.							
Area	Estimate	100-200 m	200-300 m	300-400 m	400-500 m	>500 m	Total
25°-26°	BT	0	0	10 829	4 868	6 830	22 528
	BTC	0	0	25 184	11 321	13 661	50 166
	BT+ACP	0	0	11 894	5 494	9 007	26 396
	ACT	0	0	1 590	1 074	3 580	6 244
26°-27°	BT	0	0	24 616	6 134	13 926	44 675
	BTC	0	0	76 926	9 736	17 627	104 289
	BT+ACP	0	0	33 538	7 694	14 763	55 994
	ACT	0	0	11 655	3 147	2 218	17 020
27°-28°	BT	429	16 225	5 460	3 030	4 190	29 333
	BTC	692	21 633	7 279	3 030	4 190	36 824
	BT+ACP	458	16 619	6 123	3 030	4 190	30 419
	ACT	64	831	1 171	1 112	763	3 940
28°-29°30'	BT	17 760	4 270	4 444	754	625	27 854
	BTC	19 517	5 208	10 101	1 371	679	36 876
	BT+ACP	18 021	4 607	9 263	1 671	1 927	35 489
	ACT	1 478	574	6 133	1 558	2 020	11 763
25°-29°30'	BT	18 189	20 495	45 349	14 786	25 571	124 390
	BTC	20 209	26 841	119 490	25 548	36 157	228 155
	BT+ACP	18 479	21 226	60 818	17 889	29 887	148 299
	ACT	1 542	1 405	20 549	6 891	8 581	38 968
	BT+ACP*						137 523

Annex VI Differences in catchability of demersal fish due to the presence of a tickler chain

(by Gabriella Bianchi)

In the course of the present survey a tickler chain was fitted to the footrope of the bottom trawl, every second haul. The presence of the chain is believed to increase the catchability of sedentary fish or fish living very close to the bottom and of bottom invertebrates.

Statistical tests were performed to check the effect of the chain on two important components of the catches in the bottom trawl survey, i.e. the hakes and the monk.

1. Hakes

A total of 168 successful trawl stations were sampled during this survey and were used to perform this analysis. The catch rates of both species (*Merluccius capensis* and *M. paradoxus*) were combined for each trawl were they occurred jointly. Table 1 shows the summary statistics for the variables used in the analysis.

Table 1. Summary statistics for hake catch rates (kg/h) in shallow stations without and with chain (nch < 250, ch < 250) and in deep stations without and with chain (nch > 250, ch > 250).

Variable	N	Mean	Med.	SD	Min.	Max.
nch < 250	27	300.0	228.0	242.3	0.9	834.0
ch < 250	21	341.0	132.0	474.0	0.0	1920.0
nch > 250	57	444.3	288.0	462.6	30.0	2487.0
ch > 250	63	588.2	285.0	736.0	12.0	3492.0

Figures 1 and 2 show the histograms of the catch rates (kg/h) for stations shallower than 250 m and stations deeper than 250 m, respectively.

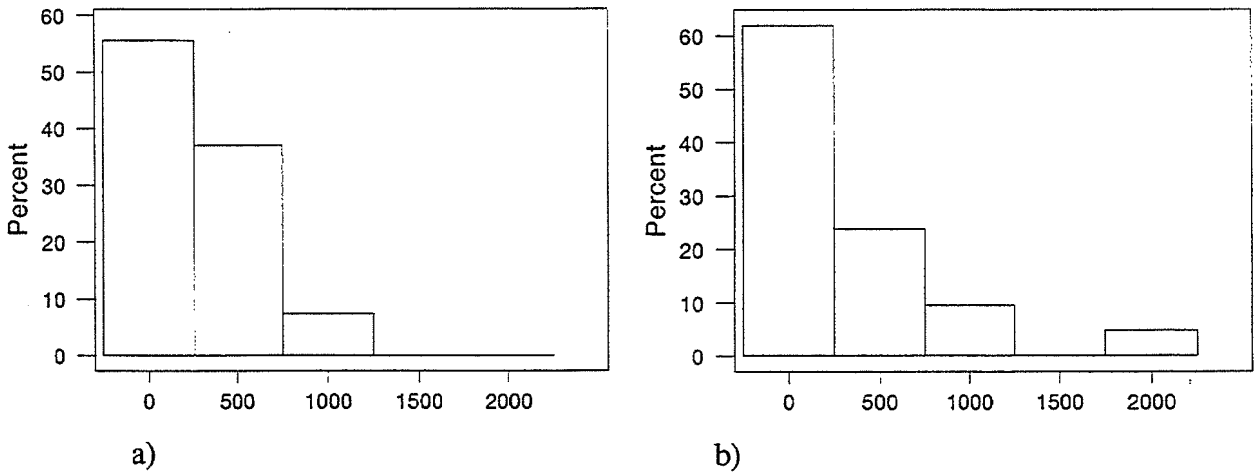


Fig. 1 Histogram of catch rates (kg/h) for stations <250 m; a) without chain, b) with chain

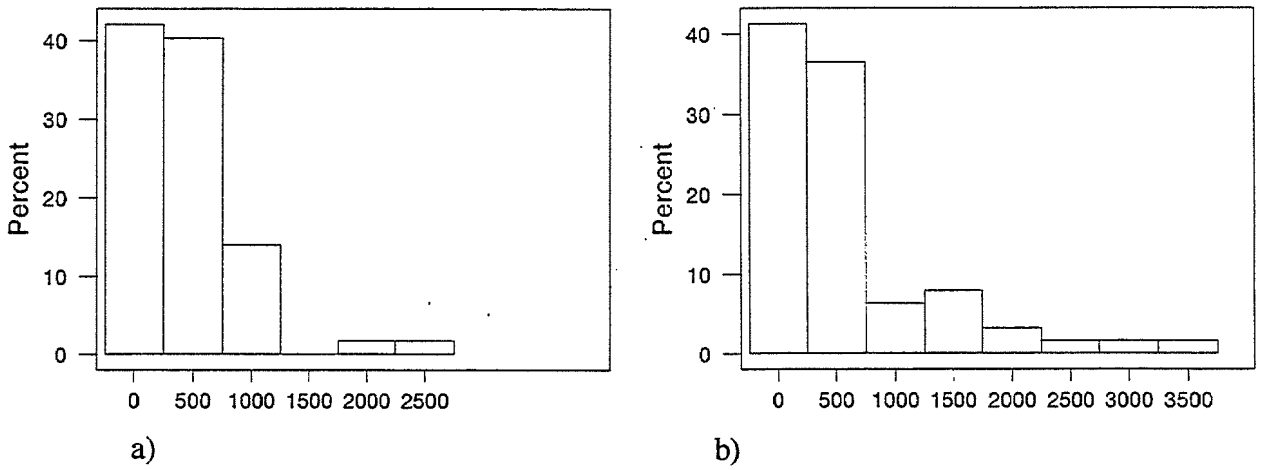


Fig. 2 Histogram of catch rates (kg/h) for stations >250 m; a) without chain, b) with chain

The distribution of the cath rates is highly skewed. A log transformation was attempted, but this resulted in skewed distributions that could not be considered as approaching normality. For this reason it was decided to utilize the Mann-Whitney rank-sum test. This is a non-parametric procedure for comparing two populations that tests the null hypothesis of equality of the medians.

In addition, a bootstrapping technique was utilized to test the equality of the means of the catch rates with chains and without chains, for each depth interval. Given two samples **z** and **y** from possibly different probability distributions the difference between their means is $t(\mathbf{x}) = z - y$. By the bootstrapping techniques we seek an achieved significance level $ASL = Prob_{Ho}\{ t(\mathbf{x}^*) \geq t(\mathbf{x})\}$, where $t(\mathbf{x}^*)$ is the random variable and $t(\mathbf{x})$ is fixed at the observed value.

The algorithm used includes sampling the combined samples (i.e. the set of stations with chains and the set without chain), with replacement, to produce 1000 samples of size $n+m$ (with n and m the size of the two station sets to be compared). Each of the bootstrapped samples were split again into two samples of the same size as the original ones and the difference between their means calculated. In this way, a distribution of the difference between the means was obtained, assuming that the two samples available came from the same population. The achieved significance level was calculated as follows:

$ASL_{boot} = \#\{ t(\mathbf{x}^{*b}) \geq t_{obs}\}/ B$ where:

ASL_{boot} : Achieved significance level after bootstrapping
$t(\mathbf{x}^{*b})$: the difference in the means of the bootstrapped samples
t_{obs} : the observed differences between the means
B : the number of samples obtained by the bootstrapping

In other words, we try to find the probability that the random variable produced through the bootstrapping is higher than our observed value. If we set a significance level of 0.05, any probability value below this would lead to the rejection of the null hypothesis of equality of the means.

An alternative bootstrapping algorithm consists in producing a number of new samples (1000) by random sampling with replacement of the original samples. The 95% confidence limits of the catch rate estimates can be obtained by taking the 2.5% and 97.5% percentiles of the distribution obtained by the bootstrapping procedure. A comparison of the confidence limits of the two distributions allows

to draw conclusions on the equality of the means. See Efron & Tibshirani for more information on bootstrapping techniques.

1.1 Results from the Mann-Whitney test

The point estimate for the difference in the medians of nch<250 and ch<250 was 63 kg/h. The test resulted significant at 0.37, i.e. the null hypothesis cannot be rejected at α=0.05.

As regards the deep stations, the point estimate of the difference between the medians of nch>250 and ch>250 was 6 and the test resulted significant at 0.8975. Again, the null hypothesis of equality cannot be rejected at α=0.05.

From the above test, we can draw the conclusion that the catch rates of the hakes in hauls with and without tickler chains were not significantly different.

1.3 Results from the bootstrapping procedure

The bootstrapping algorithm presented above gave the following results :

shallow waters (< 250m) : $ASL_{boot} = 0.34$
deep waters (> 250m) : $ASL_{boot} = 0.20$

Also according to this test the null hypothesis of equality cannot be rejected at α=0.05.

Figures 3 a and b show the distributions of the means obtained by bootstrapping, for the shallow and deep water hauls, respectively.

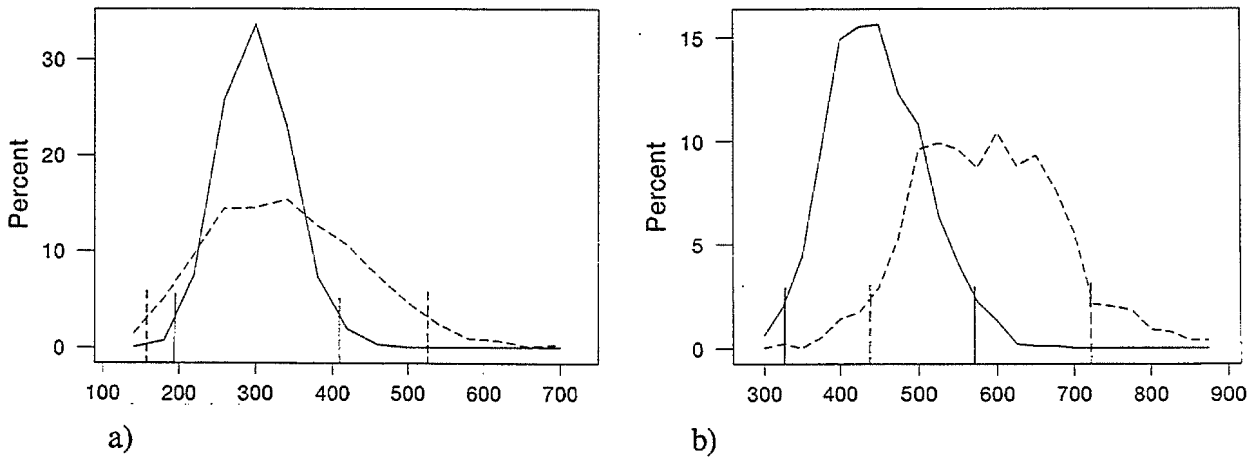


Fig 3. Frequency distributions of means (kg/h) for the hakes a) shallow-water stations and b) deep-water stations
----- without chain, - - - - with chain

These figures also show the positions of the 2.5 and 97.5 percentiles. The distributions widely overlap in both cases. As regards the stations >250 m, the distribution of the means with chain is shifted to the right, but the confidence limits overlap also if the confidence level is reduced to 90%.

All the above tests lead to the conclusion of no difference between the mean catch rate when using chains as compared to hauls without chain. There is however still some uncertainty on the results of the test due to the sampling strategy, i.e. the sampling stations were in different areas. This leads to an additional element of increased variance between the two groups, which may partly cover existing true differences. The test would have resulted more reliable if based on pair trawling.

2. Monks

Two species are caught in Namibian waters, *Lophius vomerinus* and *L. vaillanti*. The two species were analyzed jointly because of their anatomical and behavioral similarities.

Two tests were applied in this case, i.e the Mann-Whitney and the bootstrapping based on comparison of the confidence limits of distribution of the means (for a description of the methods see under the section on hakes). The depth stratification was however abandoned because of the limited number of stations with non 0 catches in the shallower stratum.

Table 2 presents the summary statistics for the hauls without and with chain.

Table 2. Summary statistics for catch rates for the monks (kg/h) in shallow stations without and with chain (nch, ch respectively).

Variable	N	Mean	Med.	SD	Min.	Max.
nch	84	6.0	0.9	11.6	0.0	61.0
ch	86	19.0	6.6	33.3	0.0	170.5

Figure 4, a and b, show the histrograms of the catch rates without chain and with chain, respectively.

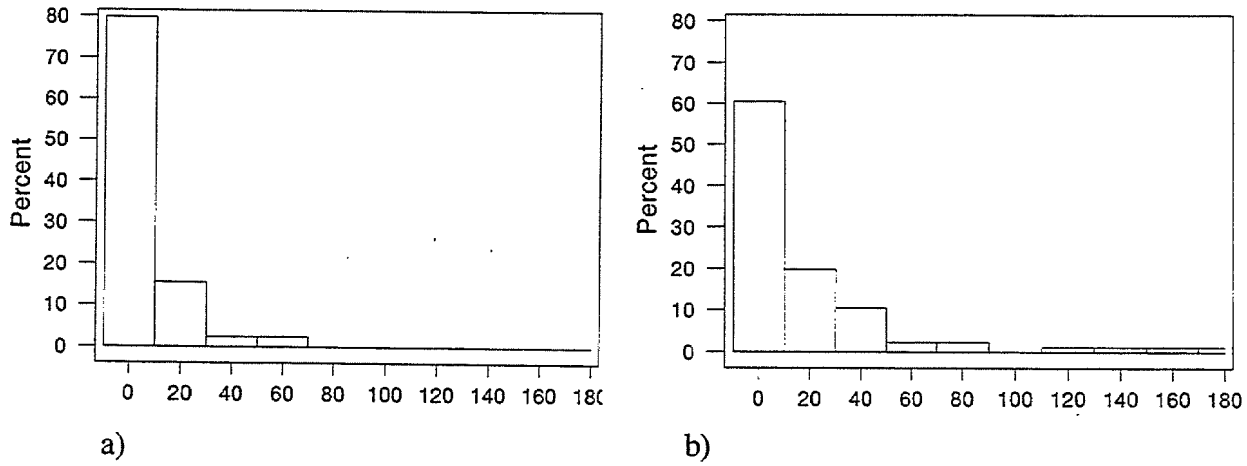


Fig. 4 Histograms of catch rates for the monks (kg/h); a) without chain, b) with chain

2.1 Results from the mann-Whitney test

The point estimates for the difference in the medians was 2.6 kg/h. The test resulted significant at 0.0003 indicating that we can reject the null hypothesis of equality of the medians at α=0.05.

2.2 Results from the bootstrapping procedure

Figure 5 shows the distribution of the means resulted form the bootstrapping.

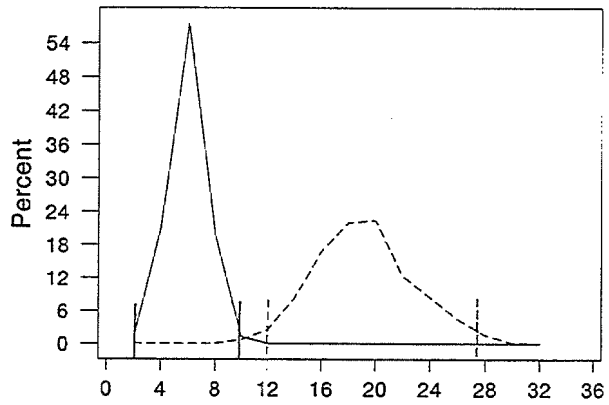


Fig 5. Frequency distributions of means (kg/h) for the monks
----- without chain, - - - - with chain

The positions of the 2.5 and 97.5 percentiles are also shown. The difference between the two groups is quite clear. The presence of the chain, as expected, improves the catchability of the monks. When analyzing time series of survey results of monks and sedentary species in general, the catch rates of surveys without the chain should be raised by a suitable factor. This should be calculated through a new experiment with paired trawling.

References

Efron, B. & Tibshirani, R.J. (1993). An introduction to the bootstrap. Chapman & Hall, New York, 436 p.

CRUISE REPORT 'DR. FRIDTJOF NANSEN'

SURVEYS OF THE FISH RESOURCES OF NAMIBIA

Preliminary Report: Cruise No 3/95

Part II
Survey of the offshore and inshore horse mackerel
1 - 22 June 1995

by

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Bergen, 1996

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CHAPTER 1 INTRODUCTION

1.1 OBJECTIVES

The main objective of this survey was to carry out an acoustic investigation of the adult horse mackerel (from age 2+) in order to determine its present abundance and distribution. More specific objectives can be summed up as follows:

- To estimate acoustically the abundance and size composition of the offshore adult horse mackerel (*Trachurus capensis).*
- To determine the biological condition of the horse mackerel with regards to: length, weight, reproductive stage and condition factor.
- To conduct an intercalibration of the scientific acoustical systems of the RV 'Dr. Fridtjof Nansen' and RV 'Welwitschia'.
- To conduct a sphere calibration at Baía dos Tigres.
- To collect data on basic oceanographic parameters, namely dissolved oxygen, temperature and salinity, for correlation with pelagic fish distribution and densities.
- To obtain data on the distribution of phytoplanktonic food in relation to hydrography and planktivorous fish.
- To obtain data on vertical distribution of phytoplankton in order to assess the applicability of the satellite sea surface biomass estimation programme (SEAWIFS).

The acoustic data of the inshore juvenile horse mackerel, surveyed by the RV 'Welwitschia', would be combined with the acoustic data set of the offshore adult horse mackerel (2+) surveyed by the RV 'Dr. Fridtjof Nansen'.

1.2 PARTICIPATION

The scientific staff from the National Marine Information and Research Centre, Swakopmund, Namibia on the RV 'Dr. Fridtjof Nansen' were:

Ekkehard Klingelhoeffer, Jan Botha, Anke Lehmensiek, Anja Risser, Deon Louw, Michael Evenson, Jeremia Titus and Sakeus Nakambunda.

From Angola:

No representative from Angola was able to participate in this survey.

The scientific staff from the Institute of Marine Research, Bergen, Norway, were:

Johannes Hamre (Cruise Leader), Svein Floen, Terje Haugland and Erling Molvær.

1.3 SURVEY AREA

The limits of the survey area were determined from the previous data of pelagic fish distribution i.e. the area from Easter Point (25°00'S) into Angolan waters to the west of Tombua (16°00'S) was surveyed. The survey followed a systematic parallel grid of 20 nm apart from 25°00' to 19°00'S and 15 nm apart from 19°00' to 16°00'S, due to the greater abundance of horse mackerel in the region north of 19°00'S. On the full degree lines the inshore limit was 2 nm from the shore to approximately 500 m bottom depth (up to 100 nm off-shore). The other transects covered the area between the 100 m and 500 m isobaths.

To allow comparison with previous pelagic fish surveys, the region was divided into three areas:

25°00' to 21°00'S	Easter Point to Ambrose Bay
21°00' to 17°15'S	Ambrose Bay to Cunene River
17°15' to 16°00'S	Cunene River to Tombua

The course tracks with the trawling and CTD stations for the three areas are shown in Figures 1a-b, respectively.

1.4 NARRATIVE

The RV 'Dr. Fridtjof Nansen' left Walvis Bay at 10h00 on 31 May and steamed southward to 25°00'S, Easter Point, where the actual survey work started at 04h00 on 1 June 1995. The survey followed a systematic parallel grid of 20 nm apart from 25°00'S - 19°00'S and 15 nm apart from 19°00' - 16°00'S between 100 and 500 m bottom depth.

The RV 'Dr. Fridtjof Nansen' met with the RV 'Welwitschia' on 15 June at Baía dos Tigres. The 18, 38 and 120 kHz echo-sounders and the split-beam sonde were calibrated using standard

targets in Baía dos Tigres on 15 June. (Annex I). An intercalibration exercise was conducted with the RV 'Welwitschia' on 17 June off the Cunene River and on the 19-20 June offshore between 21°30' and 23°00'S.

The RV 'Dr. Fridtjof Nansen' arrived in Walvis Bay on 22 June at 08h00. A total of 4 078 nautical miles were steamed.

Since the present project began in 1990, this survey was the first survey dedicated entirely to the mid-water adult horse mackerel stock, from Easter Point to Tombua in southern Angola. Inshore surveys were however conducted to assist the RV 'Welwitschia' covering the pelagic fish type 1 and pelagic fish type 2. The data collected and results obtained from this survey are reported in the RV 'Welwitschia' cruise report.

1.5 SURVEY EFFORT

The course track with the trawl stations and hydrographic profiles is presented in Figures 1a-b.

The number of hauls by area and number of CTD stations were:

	Bottom trawls	Mid-water trawls	Total	CTD
25°00'-21°15'S	2	19	21	33
21°15'-17°15'S	9	32	41	23
17°15'-16°00'S	4	5	9	14
Total	15	56	71	70

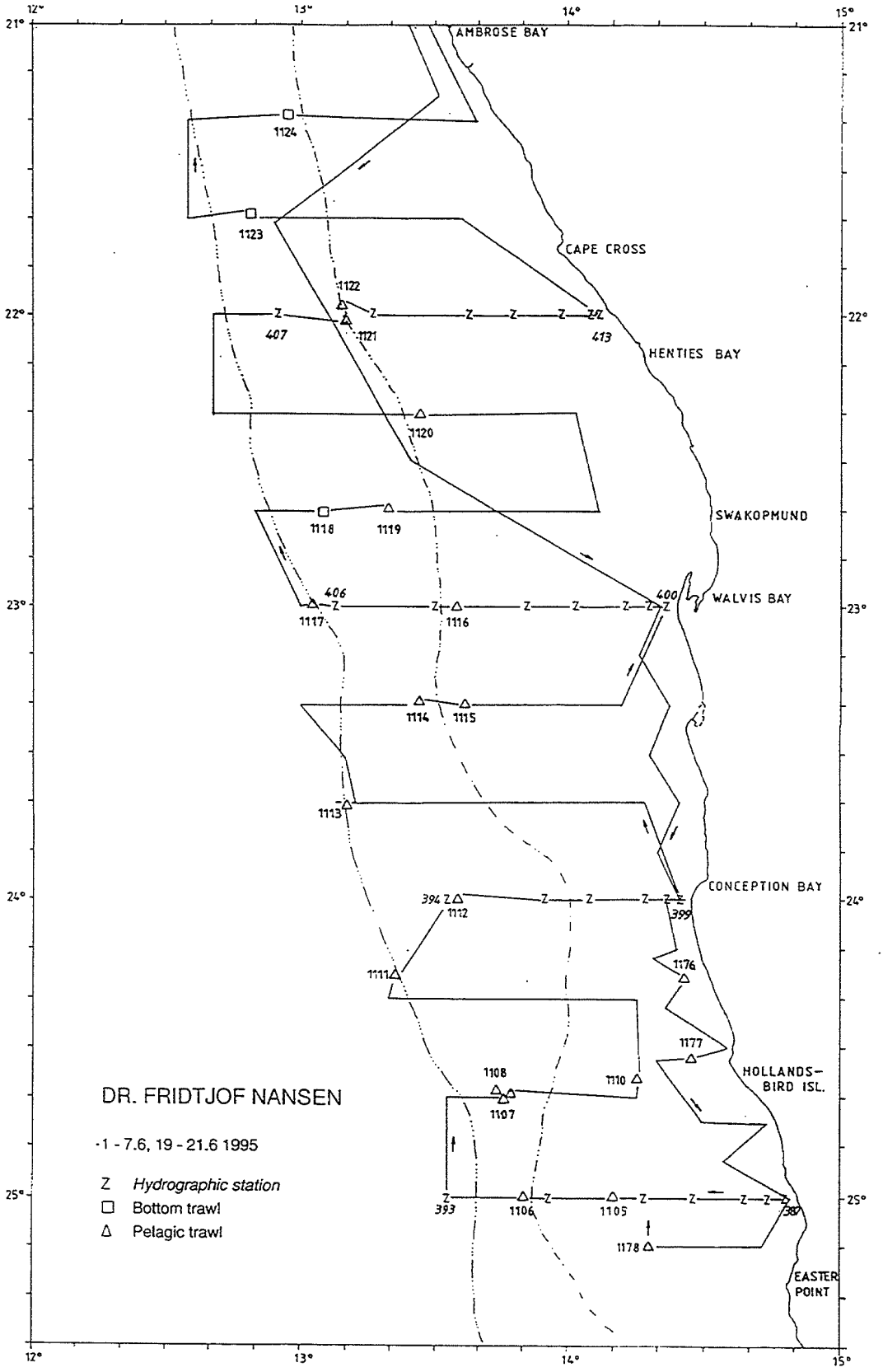


Figure 1a Course track and fishing stations, Easter Point to Ambrose Bay.

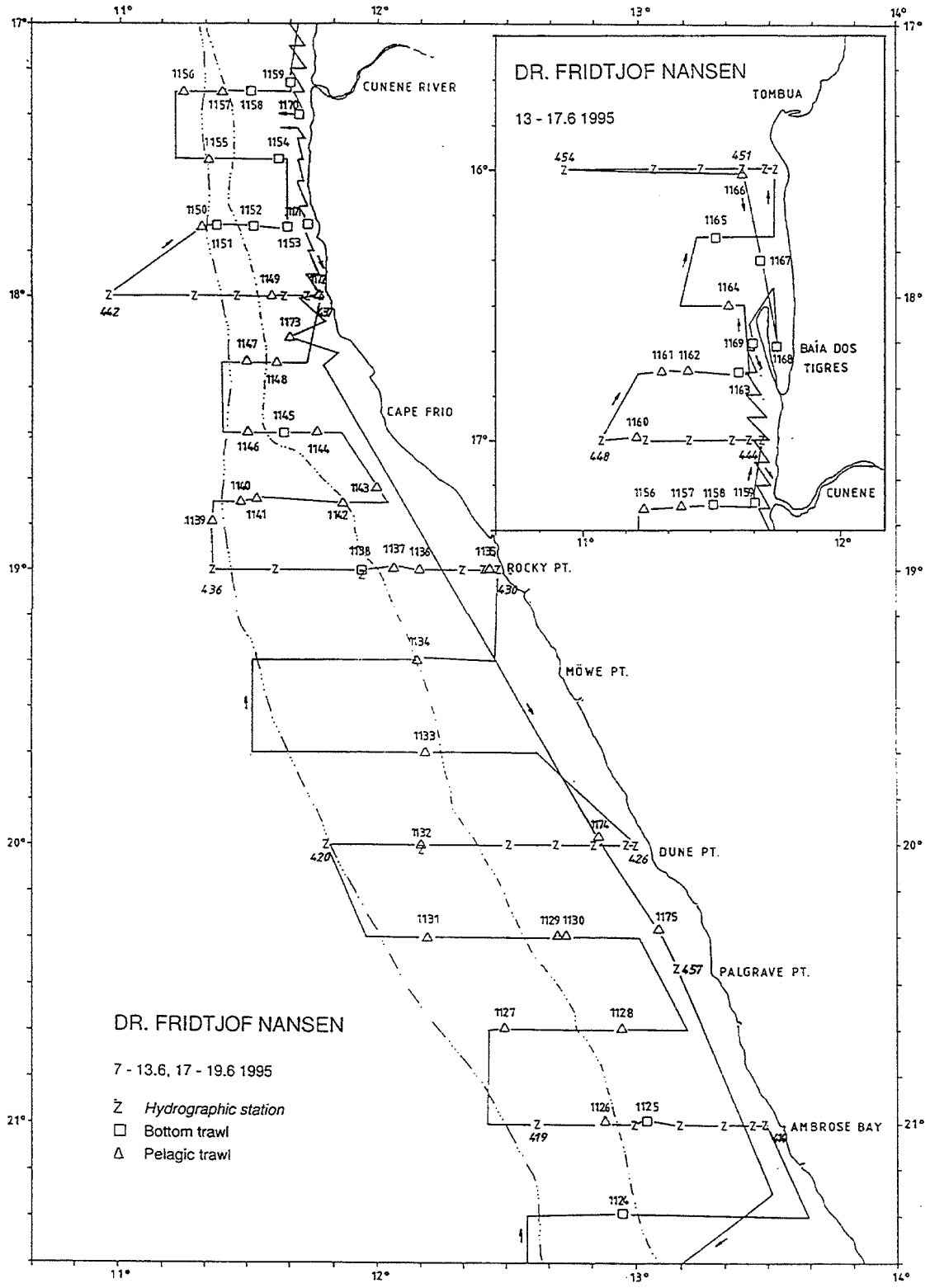


Figure 1b Course track and fishing stations, Ambrose Bay to Tombua.

CHAPTER 2 METHODS

2.1 HYDROGRAPHIC SAMPLING

A total of 65 hydrographic profiles were worked along 10 hydrographic sections from 25° to 16°S (Annex II) using a Seabird 911+ CTD probe, also carrying a sensor for dissolved oxygen. At each degree latitude CTD stations were carried out at the following distances from the coast: 2, 5, 10, 20, 30, 50 and in some instances a further station at 70 nm. At each station, water samples were taken near the surface and at the bottom. In order to calibrate the sensor, these were analysed for dissolved oxygen using the Winkler method. Earlier calibration factors between sensor and Winkler seemed to fit well with the measurements made.

An additional three CTD stations were taken at 19°40'S and two at Baía dos Tigres and one off Palgrave Point where a red tide occurred.

2.2 PLANKTON SAMPLING

Rosette water bottle samples were obtained at all the CTD stations, and bucket samples at the trawl stations and at 38 additional sites. A Sea Tech *in situ* fluorometer attached to the CTD, supplied depth profiles of algal fluorescence. The water samples were taken for calibration of the *in situ* fluorescence sensor, and for particle size and biomass analysis.

Chlorophyll was measured with a Turner 10-AU fluorometer, after extraction in acetone. 102 gut fluorescence analyses were done on especially pelagic fish. Particle size analysis of water samples was done with a Coulter Multisizer II, weather permitting.

Light penetration profiles were obtained at the CTD stations (with a Biosperical P.A.R. sensor) for information on the eutrophic depth.

2.3 ACOUSTIC SAMPLING

A description of the acoustic instruments and their standard settings are given in Annex I. Included is a description of the fishing gear used and the results of the sphere calibration performed at Baía dos Tigres 15 June 1995. The results of the intercalibration of the scientific

acoustical systems of the RV 'Dr. Fridtjof Nansen' and RV 'Welwitschia' and other experiments conducted at Baía dos Tigres will appear in the RV 'Welwitschia' cruise report.

The catches were sampled for species composition, by weight and numbers (Annex III and IV). Biological samples, i.e. length and weight compositions were taken for the target species. The acoustic echo-integration system provided measurements of fish area densities of 1 nm, averaged over 5 nm distance in offshore water. An output over one nautical mile was used when surveying inshore water from 50 to 15 m bottom depth.

The integrator data from fish targets were allocated to the following groups on the basis of trawl sampling and acoustic character, as recognized from the echo recordings:

Horse mackerel (2+)
Pelagic 1 (pilchard, anchovy and round herring)
Pelagic 2 (juvenile horse mackerel and other carangids)
Pelagic mix
Other demersal species, e.g. hake
Plankton and mesopelagic
Mesopelagic
Gobies

The surveyed area was divided into smaller units according to the distribution and density of the horse mackerel and a comparison of the average lengths of the fish, obtained from trawl samples in a specific area. Different trawl samples in the same unit, containing horse mackerel with great difference in length frequencies, were weighted according to the S_A-values where necessary. The average S_A-values within an unit were then obtained by averaging all data measured during the coverage of that area, excluding those values obtained during trawling.

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

$$TS = 20 \log L - 72 \quad [dB]$$

or in the form

$$C_F = 1.26x10^6 x L^{-2.0}$$

where L is the total length (cm) and C_F is the fish conversion factor. The following formula was applied to calculate the number of fish in each length frequency group (cm) in an area:

$$N_i = S_A \times A \times \frac{P_i}{\sum_{i=1}^{n} \frac{P_i}{C_{Fi}}}$$

where
- N_i = number of fish in length group i
- A = area in nm^2
- S_A = mean integrator value in the area
- p_i = proportion of fish in length group I in samples from the area
- C_{Fi} = fish conversion factor for length group I

The number per length group was then summed and the total number of fish obtained. The total biomass of fish was computed using the mean weight per length group obtained from trawl samples.

2.4 BIOLOGICAL SAMPLING

2.4.1 Trawl data and size composition

All catches were sampled for composition by weight and numbers of each species and the size distribution (total length) of the commercially important species was determined. The size composition of the adult and juvenile horse mackerel was pooled per two degree latitude (Annex V). However, length frequencies of the other pelagic and demersal commercially important species (Annex V), were pooled by simple adding which included all stations trawled during the survey. The above station and size composition data were entered into the NAN-SIS data base.

2.4.2 Biological data

The following biological data were recorded for the horse mackerel and pilchard:

Total length (Lt.) to the nearest mm, body weight and gutted weight (for condition factor) to the nearest mg.

Sex and reproductive stage were described, scoring each individually sampled fish according to the following categories:

1 Juvenile
2 Inactive
3 Active
4 Ripe
5 Spawning
6 Spent
7 Recovering

In addition, otoliths of the horse mackerel were removed for ageing and diameter measurements, at a future date.

Sampling was standardized across 2° latitudinal intervals according to the following rules:

1 Up to 5 individuals were sampled per 1.0 cm length class in each 2° latitude interval.
2 Not more than 3 individuals were sampled per 1.0 cm length class per trawl.

The actual length-weight relationship for the horse mackerel were determined by fitting power curves to the regressions of weight against length. These relationships were determined for the whole region, as well as for each two latitude interval.

The length-weight data (Annex VI) of horse mackerel was also used to calculate the fish condition factor, (weight X 100)/length^3, of the horse mackerel. The condition factors of individual samples were pooled and averaged for each 2° latitude interval, as listed below:

25°00' - 23°00'S
23°00' - 21°00'S
21°00' - 19°00'S
19°00' - 17°00'S
17°00' - 16°00'S

The data were entered into an EXCEL spreadsheet, and processed accordingly.

CHAPTER 3 RESULTS

3.1 HYDROGRAPHY AND PLANKTON

Annexes II and VII show sections and distribution maps of temperature, salinity, oxygen and fluorescence obtained during the cruise, respectively.

The surface temperature varies between 14°C north of Easter Point (25°S) and 18°C at the Cunene (17°S) up to 20°C at Tombua (16°S). Water masses are weakly stratified in the southern parts (25°S to 22°S), becoming progressively more stratified in northern parts.

The salinity is very homogeneous in the upper 200 m, especially in the southern area. However, north of the Cunene the halocline becomes more pronounced.

The surface oxygen concentration is above 4 ml/l throughout the surveyed area. Bottom values are less than 1 ml/l along the continental slope, but generally increase to 1 ml/l off the shelf.

The water characteristics indicate upwelling at some of the sections. This is most clearly seen in the oxygen distribution by the upward tilt of the isolines approaching the coast, but it is also indicated by the temperature and salinity distributions. The most typical upwelling situation is seen in the section taken at Walvis Bay (23°S), where the surface oxygen concentration is less than 2 ml/l close to the shore. Strong upwelling also seems to have occurred at the Rocky Point section (19°S). There is evidence for upwelling also at the other sections, except the northernmost one at Cunene.

Three additional CTD stations were taken at 19°40'S (Dune Point) to investigate the abrupt displacement of near surface plankton to deeper levels. (Annex II).

The ca. 230 pigment extractions that were done during the cruise, yielded values ranging between 0.2 and 30.3 μg/l. The highest values were measured during a red tide off Palgrave Point, an area where we recorded a biomass level of less than 5 μg/l two weeks before, on the journey north. High chlorophyll values (>15μg/l) were also recorded in Baía dos Tigres. An example of the food particle size distribution in this area is shown in Annex VIII.

3.2 FISH DISTRIBUTION

The distributions of horse mackerel and the pelagic fish type 2, consisting mainly of juvenile horse mackerel, are shown in Figures 2a-b and 3a-b, respectively. The scale used in the distribution charts to illustrate different levels of density is in absolute acoustic units, the mean integrator value S_A for a given area.

The data obtained by the RV 'Welwitschia' for pelagic fish type 2 are included in the distribution pattern. Presentation of the distribution and density of the pelagic fish type 1 are given in the RV 'Welwitschia' cruise report.

3.2.1 Easter Point to Ambrose Bay

In this region, horse mackerel were distributed from Hollandsbird Island to Cape Cross between the 150 m and 500 m isobaths and also in a smaller area around Ambrose Bay from 150 - 200 m bottom depth. Between Hollandsbird Island and Cape Cross a low density of fish was recorded in most of the distribution area with a fairly dense concentration of horse mackerel found only at the southern tip of the area. Off the Ambrose Bay a smaller shoal with a higher density occurred.

Horse mackerel between Hollandsbird Island and Cape Cross decreased in size from an average total length of 33 cm at Conception Bay to an average total length of 28 cm at Cape Cross. This decrease in size frequency from south towards north is common in the Benguela system and indicates that maturing fishes migrate southwards for spawning, and juveniles in turn drift northwards with the Benguela Current to the feeding area. Around Ambrose Bay the horse mackerel had an average total length of 22 cm.

Pelagic fish type 2 were mainly recorded in the area between Walvis Bay and Ambrose Bay. Fish occurred close inshore with fairly dense shoals occurring between Swakopmund and Cape Cross. Scattered shoals were found between Easter Point and Conception Bay. The fish occurred to 500 m bottom depth in the south. In the southern area the density of the fish was fairly low.

RV 'Dr. Fridtjof Nansen' recorded pelagic fish type 1 between Hollandsbird Island and Walvis Bay up to approximately 200 m bottom depth. A fairly high concentration was recorded inshore off Conception Bay and two scattered areas near Hollandsbird Island also had a fairly high

3.2.2 Ambrose Bay to Cunene River

From Dune Point, horse mackerel were found all the way up to the Cunene River between the 200 m and 500 m isobaths. Fairly high concentrations of horse mackerel occurred in the area off Rocky Point and the Cunene River. The average total length in this area ranged between 20 and 29 cm (see also the RV 'Welwitschia' cruise report). Between the coast and the 200 m isobath most fishes had a total length between 10 and 20 cm and were therefore recorded as pelagic fish type 2. High concentrations of pelagic fish type 2 were encountered between Möwe Point and Cape Frio.

3.2.3 Cunene River to Tombua

Horse mackerel occurred throughout the region between 200 m and 500 m bottom depth, whereas pelagic fish type 2, i.e. juvenile horse mackerel occurred throughout the inshore part of the region. Fairly high concentrations of pelagic fish type 2 were recorded outside Baía dos Tigres. Transects to assess the mid-water stocks were not conducted north of 16°00'S, but it is likely that some mid-water horse mackerel also occurred north of this line. Trawl samples taken inshore north of 16°30'S consisted almost entirely of Cunene horse mackerel *Trachurus trecae*, while further south only Cape horse mackerel *T. capensis* was caught. The Cape horse mackerel, was however dominant offshore up to the 16°00'S transect.

The average total length of the horse mackerel ranged between 17 cm in the inshore region and 24 cm in the offshore region.

Dense concentration of pelagic fish type 1, mainly pilchard were found south of the Cunene (18°00'S) to Baía dos Tigres, including inside the bay (see also RV 'Welwitschia' cruise report).

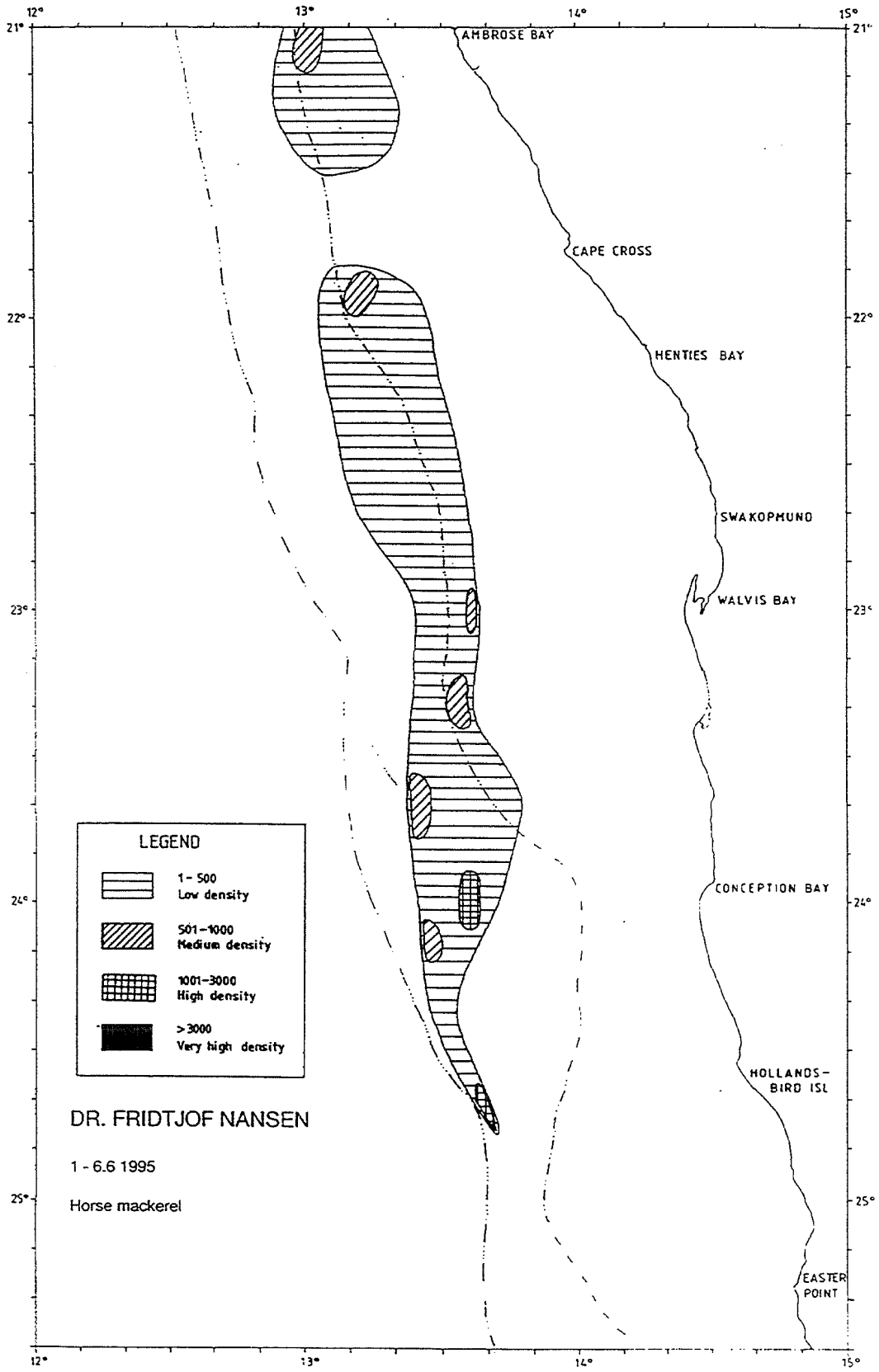


Figure 2a Distribution of mid-water horse mackerel, Easter Point to Ambrose Bay.

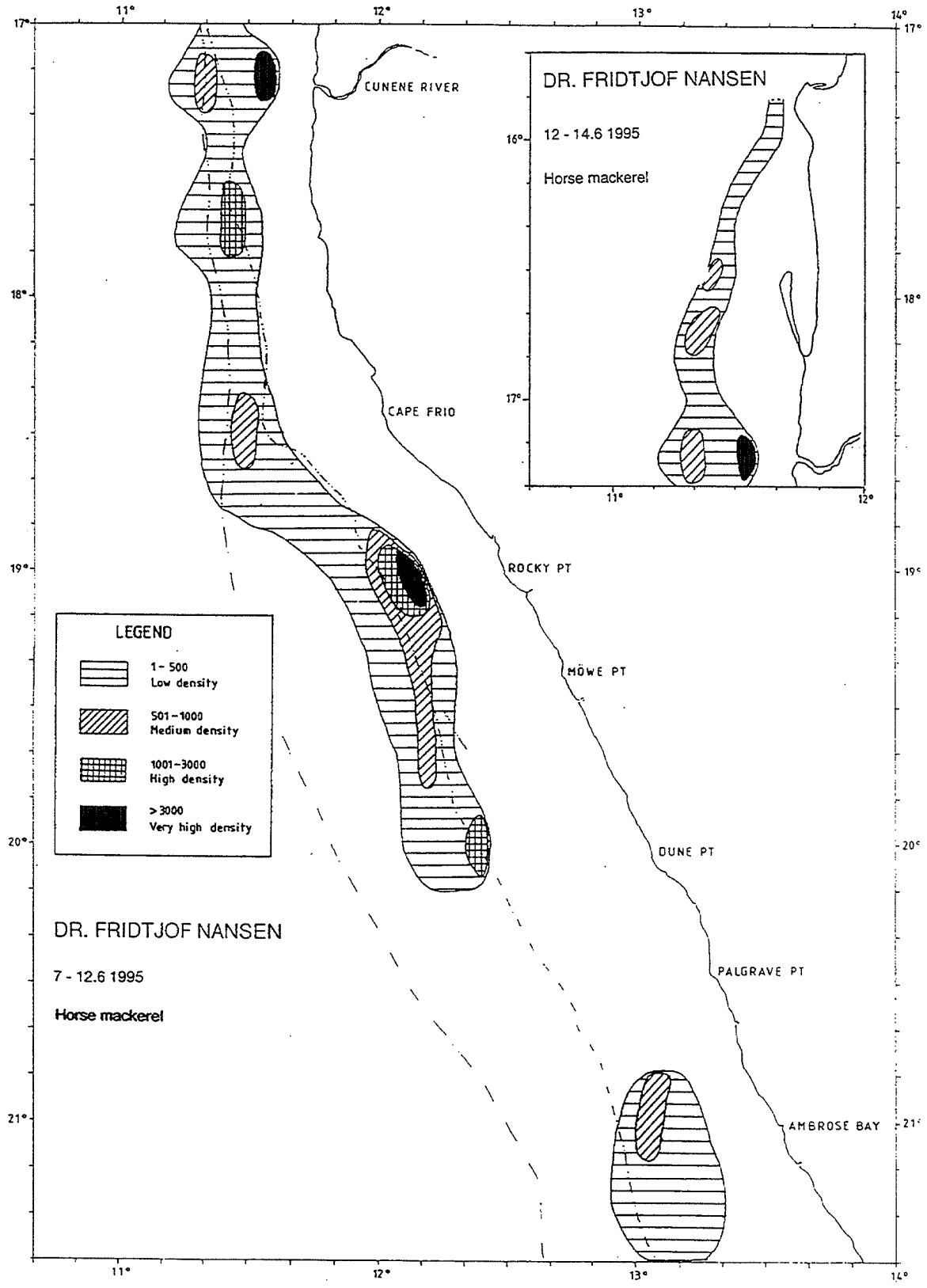


Figure 2b Distribution of mid-water horse mackerel, Ambrose Bay to Tombua.

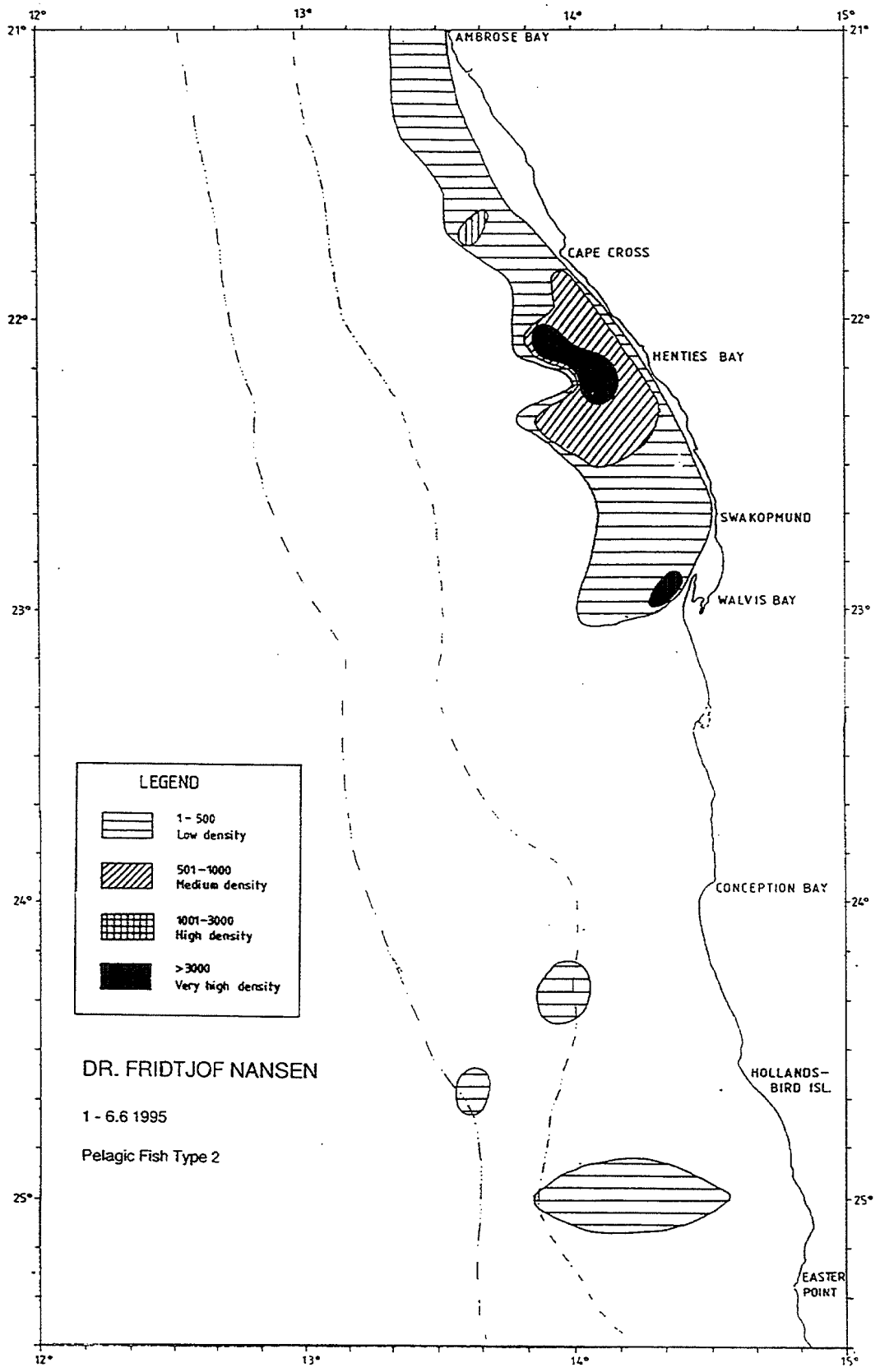


Figure 3a Distribution of pelagic fish type 2, Easter Point to Ambrose Bay.

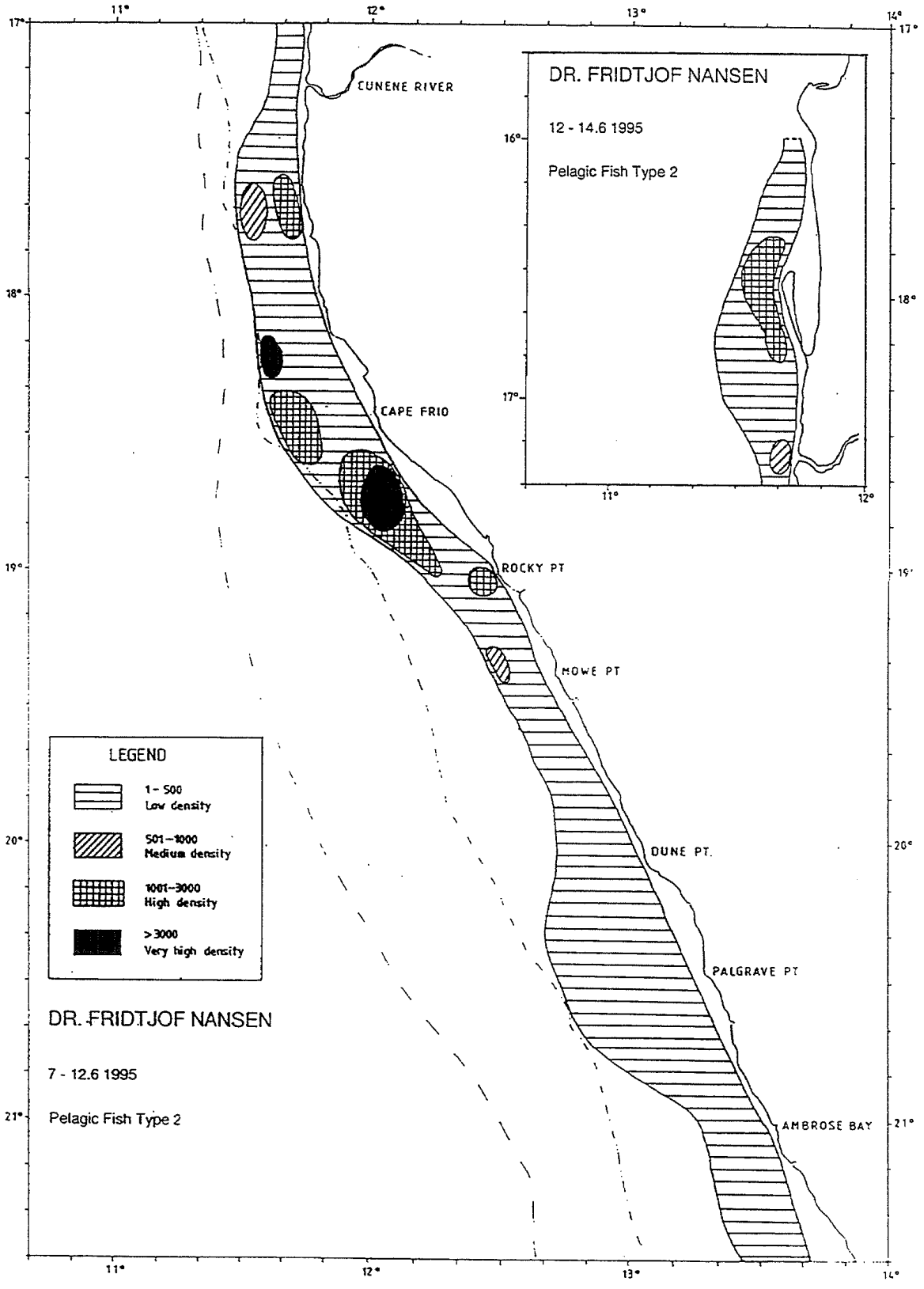


Figure 3b Distribution of pelagic fish type 2, Ambrose Bay to Tombua.

3.3 ABUNDANCE

The total estimated biomass of adult (2+) and juvenile horse mackerel found in Namibia and southern Angola is summarized in Table 1. The biomass assessment was made by region and offshore/inshore areas, the boundary of areas was determined according to the mean length of fish in the trawl catches. The recordings of fish above 20 cm were allocated the offshore area and assessed as the adult stock. Annex IX shows total biomass and total number per 1 cm length group of *Trachurus capensis*.

To calculate the biomass of the smaller than 20 cm horse mackerel, S_A-values obtained by the RV 'Welwitschia' were added to those obtained by the RV 'Dr. Fridtjof Nansen' in the inshore area, and a combined estimate was obtained. Using this method the biomass was estimated to 454 270 tonnes between the Cunene River and Ambrose Bay. As a control an average S_A-value was obtained by adding the S_A-values of both surveys along the parallel transects of RV 'Dr. Fridtjof Nansen' only. This method gave a biomass estimate of 481 330 tonnes.

Table 1. The biomass estimates (in tonnes) per area of adult horse mackerel (2+) and the smaller juvenile horse mackerel.

Area	> 20 cm	< 20 cm	Total
Tombua-Cunene River	55 000	41 000	96 000
Cunene River-Ambrose Bay	392 000	454 000	846 000
Ambrose Bay-Easter Point	291 000	243 000	534 000
Total Angola	55 000	41 000	96 000
Total Namibia	683 000	697 000	1 380 000
Total northern Benguela	738 000	738 000	1 476 000

The total biomass of horse mackerel in Namibian water was estimated at 1 380 000 tonnes compared to 1 440 000 tonnes obtained in the RV 'Dr. Fridtjof Nansen' survey in June 1994. For the total northern Benguela system the figures are 1 476 000 tonnes and 1 500 000 tonnes respectively.

All pelagic fish type 1 biomass estimates are presented in the RV 'Welwitschia' cruise report.

3.4 BIOLOGICAL ANALYSIS OF FISH

3.4.1 Length-frequency

Annex V shows the length-frequency of the Cape horse mackerel by 2 degree intervals, starting from 25°S. It is evident from the size composition that the 30+ cm fish were scarce. This confirms reports received from the mid-water trawlers that offshore adult horse mackerel (30+ cm) were mostly absent from trawls.

The dominant size class range of the offshore horse mackerel surveyed was between 17 and 20 cm. The size composition of the inshore juvenile horse mackerel, which were surveyed largely by the RV 'Welwitschia', will appear in the cruise report of the RV 'Welwitschia'.

Length data of pilchard, anchovy, round herring, hake and Cunene horse mackerel are presented in Annex V. Adult pilchard with a modal peak of 24 cm were found inshore north of 17°S. Further interpretation of this data will appear in the cruise report of the RV 'Welwitschia'.

3.4.2 Length - Weight

Length-weight curves and regression equations for the Cape horse mackerel per two degree latitude interval, may be found in Annex VI.

3.4.3 Reproductive Status

Results were tabulated for the Cape horse mackerel per two degree latitude interval (see Annex X). It was difficult to draw any conclusions from these results. Nevertheless the following was noted:

1 Sex ratio: the greater portion of the stock in most regions consisted of females.
2 Spawning: no spawning was recorded amongst the adult stock throughout the region.

3.4.4 Condition

Mean condition factor, and related parameters for the adult horse mackerel, are presented for the entire region in Annex XI.

CHAPTER 4 CONCLUDING REMARKS

In general, conditions were favourable for surveying the offshore stock of horse mackerel acoustically. Weather conditions were acceptable, and the fish distributions occurred to be within the range covered by the acoustic equipment. Previous surveys have reported that the offshore horse mackerel migrated to surface water and above transducer range at night, but no such problems were encountered. Dense concentrations of jellyfish occurred, particularly in the central and southern region. These hampered trawling and in some cases broke the net. These difficulties are however of minor importance to the stock estimate. The result that the relative size of the horse mackerel stock in the northern Benguela system is in an order of magnitude of 1.5 mill. tons should therefore be considered to be reasonably accurate.

Experiments conducted during previous surveys indicate that the target strength used to calculate this estimate may be too low. This means that the actual size of the present and previous estimated stocks are correspondingly less than reported. This possible error may however be corrected for when an adequate estimate of the true target strength of the fish is available.

The horse mackerel stock in the northern Benguela system has since 1990 been assessed by acoustic method, the estimates ranging between 1.2 mill. tonnes and 2.1 mill. tonnes (Table 3). The present estimate of 1.5 mill. tonnes is close to the average of these values. Taking into account the relative high proportion of juvenile fish in the present estimate, it is concluded that the stock seems to be in a steady state.

Table 3 Biomass estimates of horse mackerel, 1990 to 1995, in the northern Benguela system.

Survey	Vessel	Horse mackerel
March 1990	Nansen	1 200 000
June 1990	Nansen	1 700 000
March 1991	Nansen	1 300 000
August 1991	Benguela	-
November 1991	Nansen/Benguela	1 400 000
June 1992	Nansen/Benguela	2 100 000
August 1992	Benguela	-
November 1992	Benguela	-
March 1993	Nansen	-
June 1993	Nansen	-
August 1993	Benguela	-
November 1993	Benguela	-
June 1994	Nansen	1 500 000
June 1995	Nansen	1 500 000

Annex I Instruments and fishing gear

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

Transceiver-1 menu	Transducer depth	0.0 m
	Absorbtion coeff.	10 dB/km
	Pulse length	medium
	Bandwidth	wide
	Max Power	2000 W
	2-way beam angle	-21.0 dB
	SV transducer gain	28.0 dB
	TS transducer gain	27.9 dB
	Angle sensitivity	21.9
	3 dB beamwidth	6.8 deg
	Alongship offset	0.00 deg
	Athwardship offset	0.04 deg
Display menu	Echogram	1
	Bottom range	12 m
	Bottom start	10 m
	TVG	20 log R
	SV Colour minimum	-67 dB
	TS Colour minimum	-50 dB
Printer settings	Range	0-100 or 0-250 m
	TVG	20 log R
	Sv Colour minimum	-72 dB
Bottom detection menu	-50 dB	

A calibration experiment using a standard copper sphere, performed in Baia dos Tigres 15 June 1995 gave the following results :

Sv Transducer gain 28.1 dB
Ts Transducer gain 28.0 dB

Hydrography

Conductivity, temperature, density and dissolved oxygen were sampled regularly at CTD stations with a Seabird 911+ CTD sonde. The salinity is computed from the data on conductivity by the software retrieving data from the sensors.

Fishing gear

The vessel has two different sized "Åkrehamn" pelagic trawls and one "Gisund super" bottom trawl. For all trawls, the Tyborøn, 7.8 m^2 (1670 kg) trawl doors were used. Complete drawings of the trawls used are included.

F/F Dr. Fridtjof Nansen

OVER/UNDER/SIDER

OVERDEL:
50 STK 11" PLASTKULER

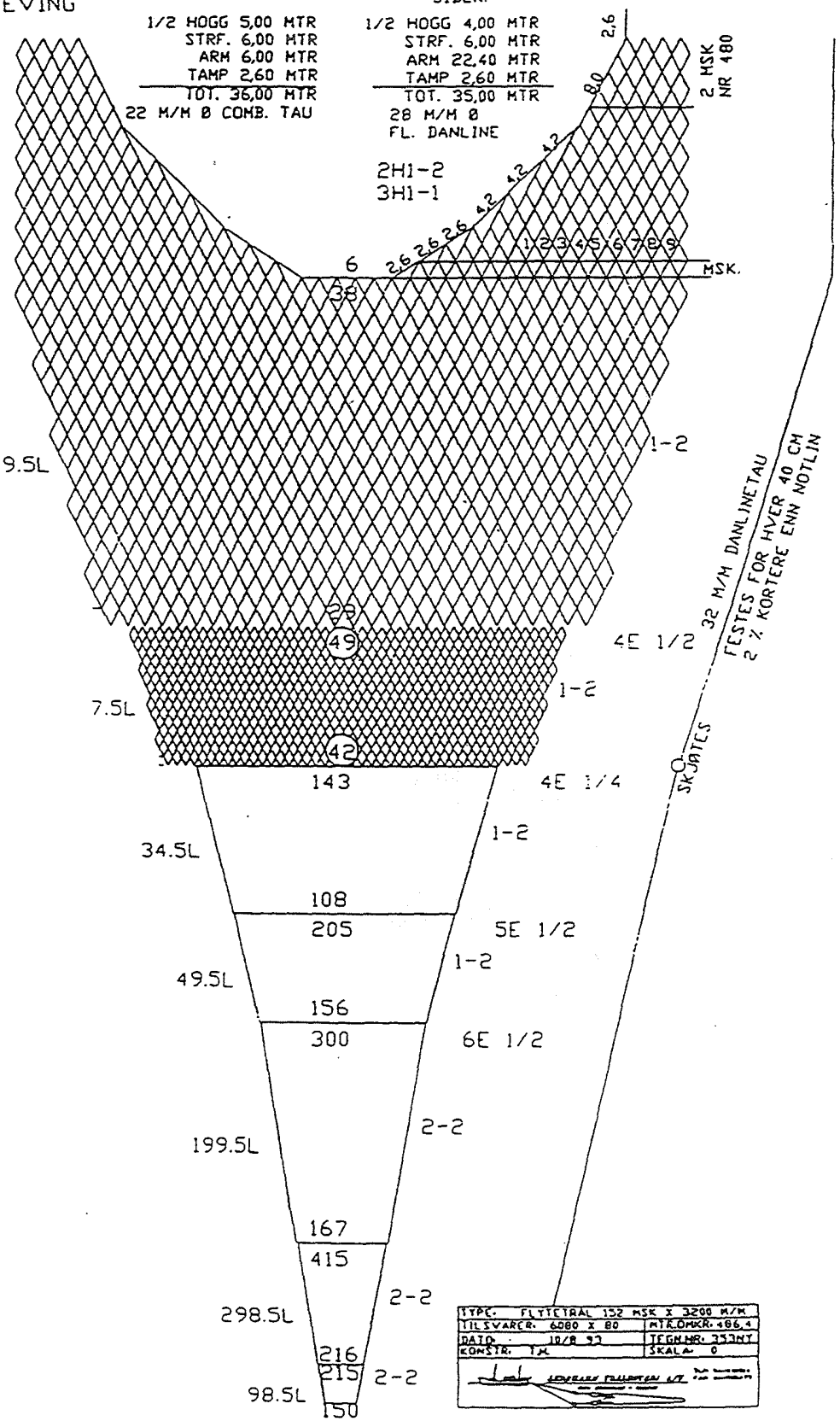
UNDERDEL
14 M/M WIRE OMSP. MED
14 M/M BLYTAU
+ KJETTING.
TOTAL VEKT UNDER 400 KG.

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

1/2 HOGG 5,00 MTR
STRF. 6,00 MTR
ARM 6,00 MTR
TAMP 2,60 MTR
TOT. 36,00 MTR
22 M/M Ø COMB. TAU

SIDER.

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



F/F Dr. Fridtjof Nansen

MASKER M/H	TRAAD NR.	LENGDE I MTR.	MASKER I EVING	
1620.0	160	19.4	4	
1620.0	160	25.9	4	15.5L
400.0	48	14.0	4	34.5L
200.0	32	10.00	4	49.5L
100.0	24	20.0	4	199.5L
38.0	12	11.4	4	298.5L
36.0	18	3.76	4	98.5L

OVER/UNDER

OVERDEL:
50 STK 11" KULER
OMSLUTTET AV NETT.
UNDERDEL:
14 M/H VIRE OMSP. MED
14 M/H BLYTAU.
+ KJETTING.
TOT. VEKT UNDER 400 KG.

1/2 HOGG 3,20 MTR
STRF. 4,50 MTR
ARML. 19,40 MTR
TAMP. 1,90 MTR
TOT. 29,00 MTR
22 M.M. COMB. TAU.

4 MSK NR 240
7,5 L
HASKING
4III-2
4III-1
9
57
1-2
42
143
4E 1/4
1-2
108
205
5E 1/2
1-2
156
300
6E 1/2
2-2
167
415
2-2
216
215
2-2
150

32 M/M BOMLINE TAU FESTES FOR HVER 40 CM. 2 ½ KORTERE ENN NOTLIN

SKJØTES

SIDER

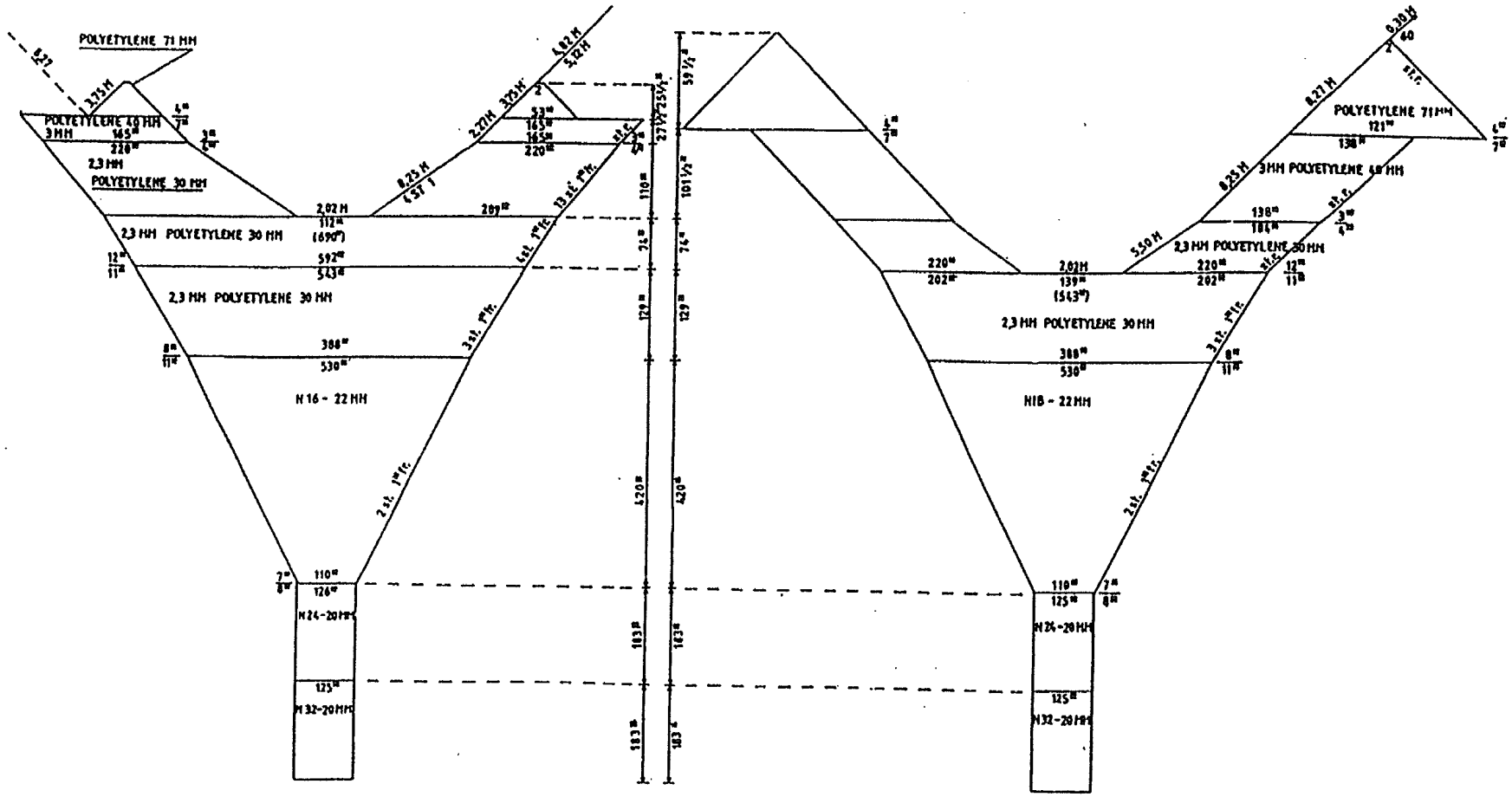
1/2 HOGG 0,40 MTR
STR. 2,50 MTR
ARML. 19,40 MTR
TAMP. 1,90 MTR
TOT. 24,20 MTR
28 M/M Ø
FL. BOMLINE

4 MSK NR 240
4HI-2
7,5 L
HASKING
42
15.5L
42
143
5E 1/4
1-2
108
205
5E 1/2
1-2
156
300
6E 1/2
2-2
167
415
2-2
216
215
2-2
150

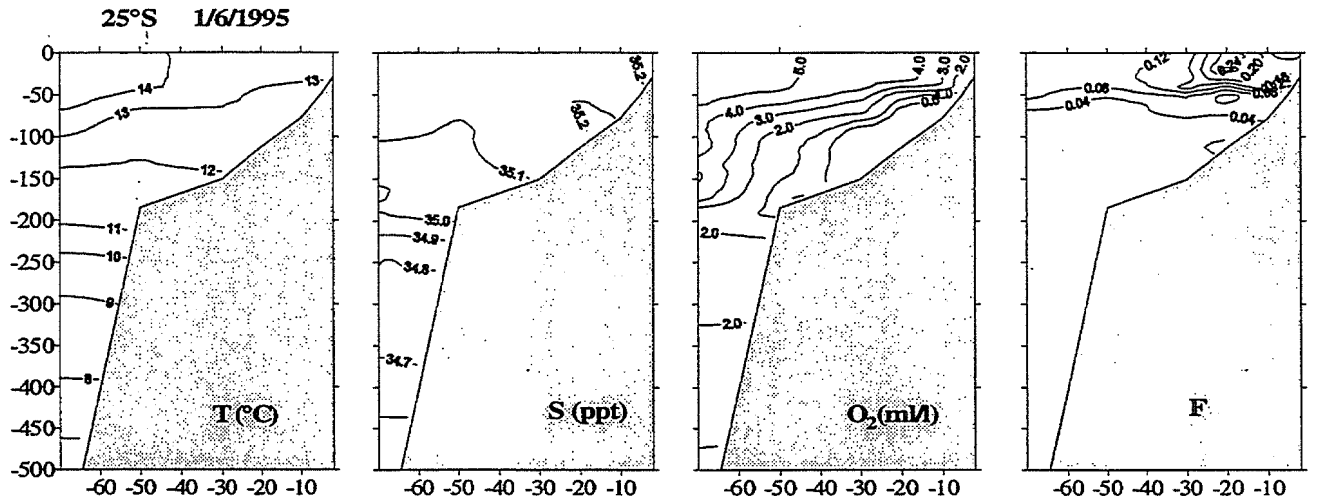
TYPE:	FLYTETRÅL 198 MSK X 1620 M/M	
TILSVARER:	4010 X 80	MTR.OMKR: 320
DATO:	23/6 93	TEGN.NR: 510
KONSTR:	T-H	SKALA: 0

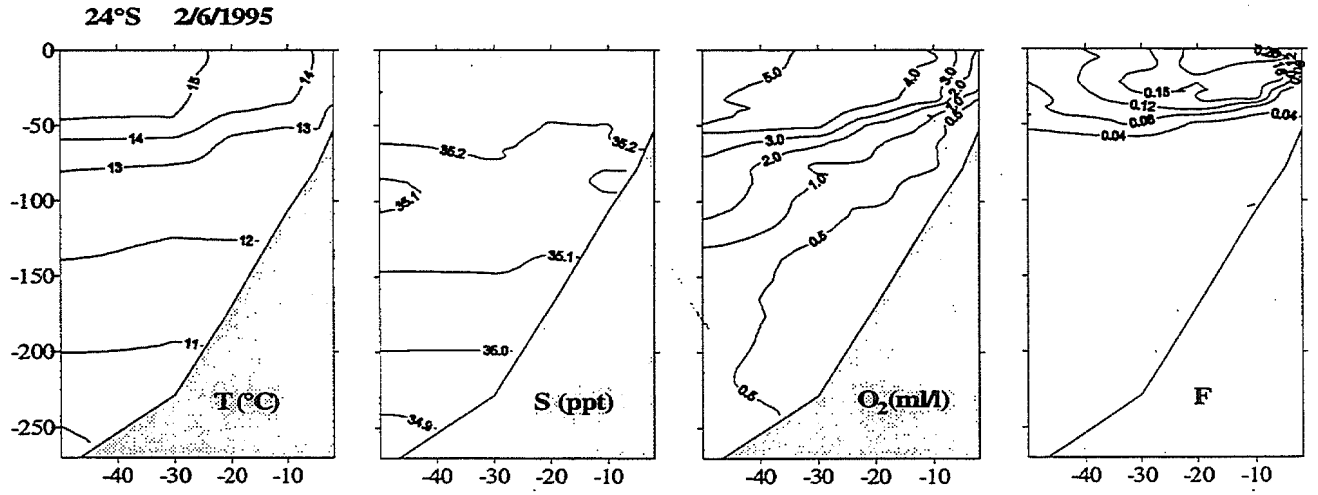
ÅKREFANN TRÅLDEPERNI A/S

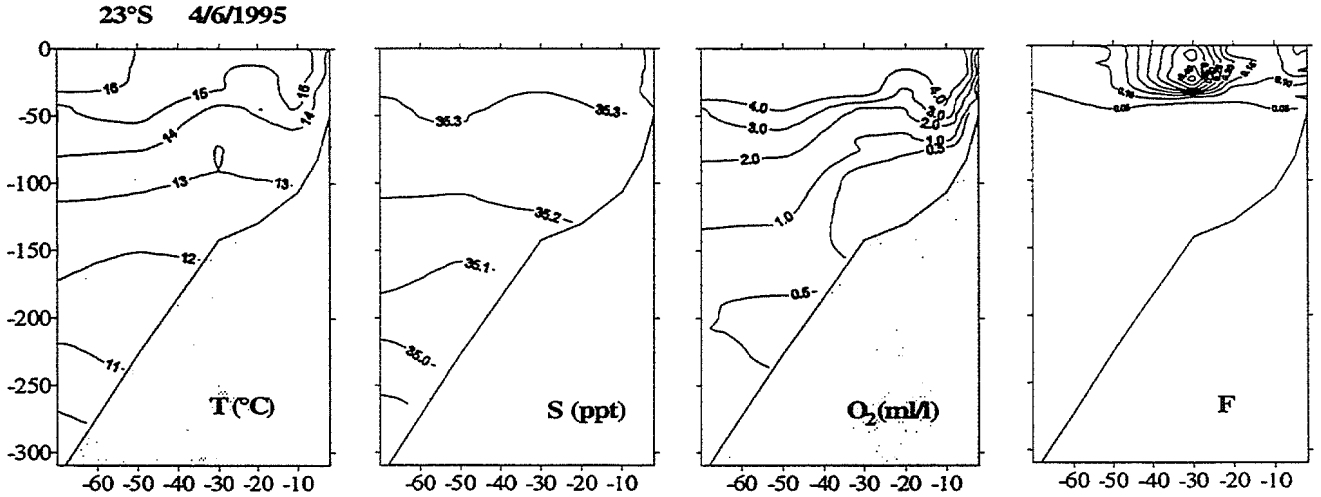
Bottom trawl: High opening shrimp and fish trawl with net headline 31m (floatline),foot-rope 47m, gear with 12 cm diameter roller disks, 40 m sweeps, estimated headline hight 6m and distance between wings during towing 18-20m.

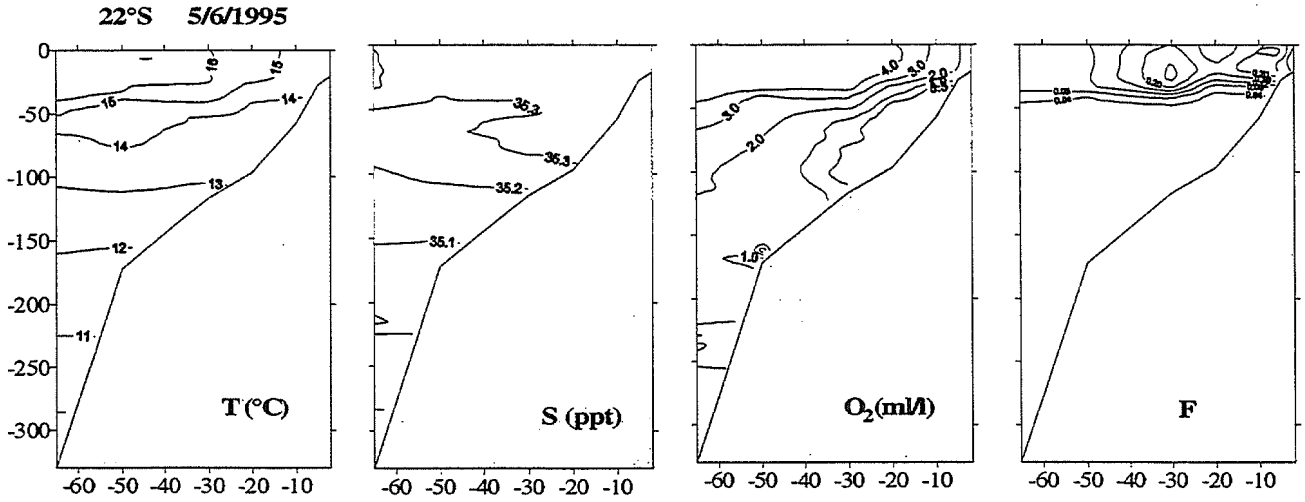


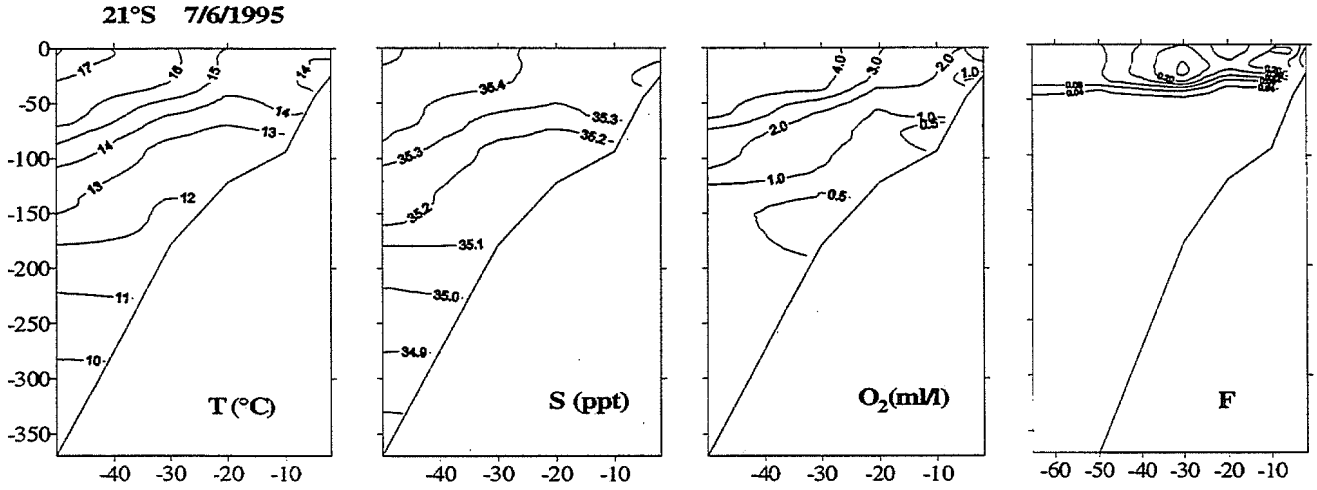
Annex II Hydrographic and Plankton Profiles

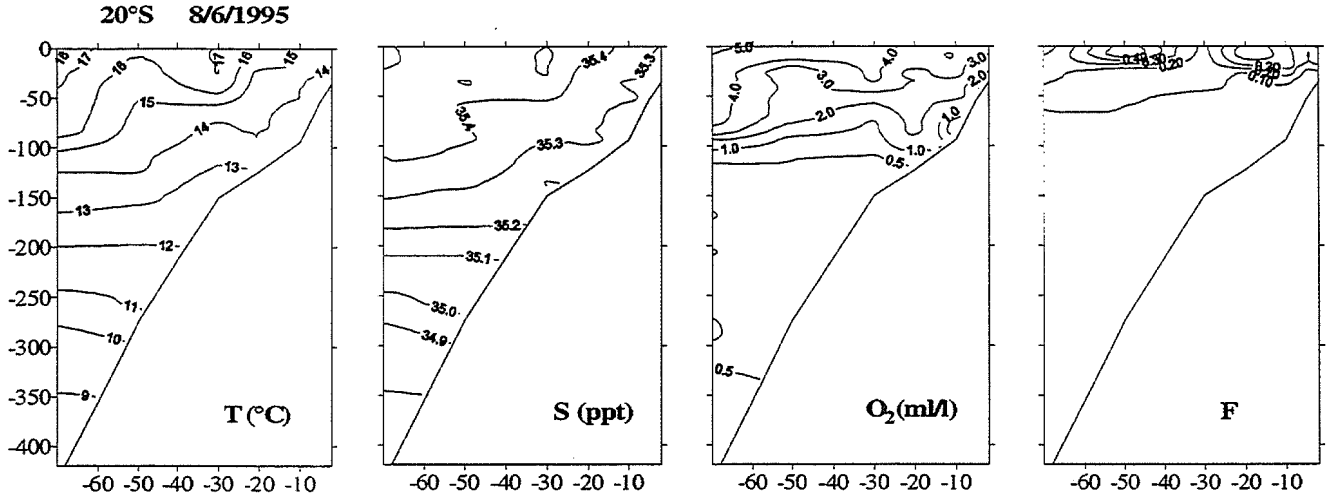


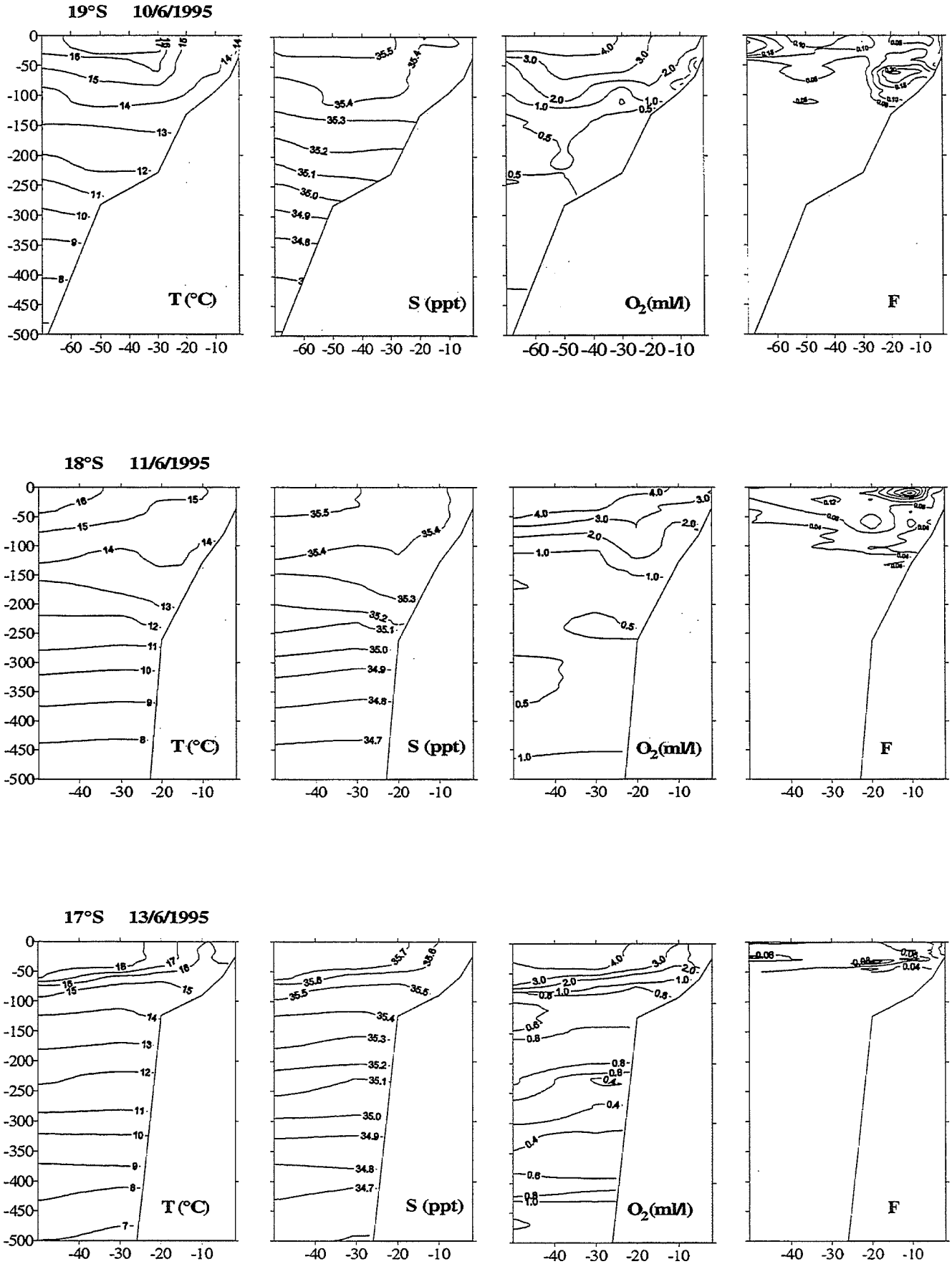


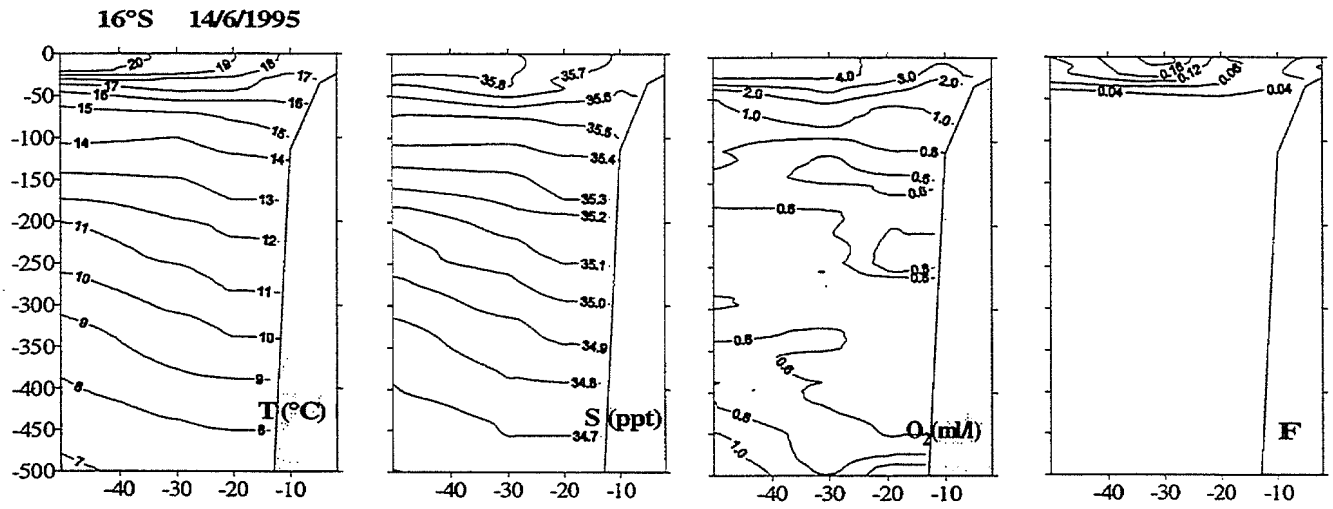



22°S 5/6/1995
T (°C)
S (ppt)
O2(ml/l)
F

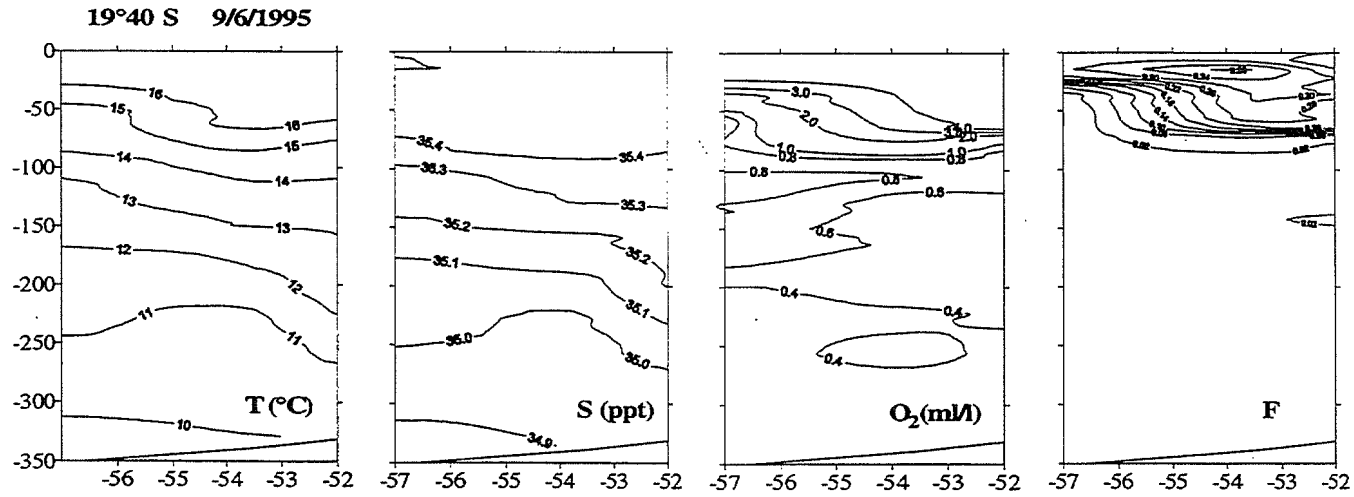

21°S 7/6/1995
T (°C)
S (ppt)
O2(ml/l)
F


20°S 8/6/1995
T (°C)
S (ppt)
O2(ml/l)
F


19°S 10/6/1995
T (°C)
S (ppt)
O2(ml/l)
F
18°S 11/6/1995
T (°C)
S (ppt)
O2(ml/l)
F
17°S 13/6/1995
T (°C)
S (ppt)
O2(ml/l)
F



Summary of additional CTD stations taken at 19° 40 S (Dune Point).



Annex III Summary of fishing stations

Trawl Number	Latitude (°S)	Bottom Depth (m)	Headrope Depth (m)	Catch by Species (% of total catch)				Total Catch (kg)
				Trachurus c.	*Trachurus t.*	*Merluccius c.*	*Sardinops*	
1105	25.00	165	75	100	0	0	0	25.03
1106	25.00	214	165	0.74	0	0	0	6.75
1107	24.40	333	175	0	0	0	0	34.73
1108	24.39	333	223	0	0	0	0	17.79
1109	24.44	325	130	0	0	0	0	61.93
1110	24.36	125	25	0.09	0	0	0.83	216.47
1111	24.15	360	110	0	0	0	0	4.5
1112	23.59	261	202	21.87	0	76.1	0	40.47
1113	23.40	402	175	0	0	0	0	49.11
1114	23.20	223	175	90.59	0	0.28	0	43.13
1115	23.19	158	110	3.06	0	83.62	0	4.58
1116	23.00	142	115	0	0	27.58	0	5.04
1117	22.59	416	260	0	0	0	0	93.37
1118	22.40	306	306	0	0	0	0	37.24
1119	22.39	266	202	0	0	55.90	0	10.50
1120	22.19	172	130	0	0	0	0	No catch
1121	22.01	260	115	0	0	71.34	0	1.99
1122	21.59	197	110	71.45	0	26.54	0	25.85
1123	21.40	305	305	0	0	24.50	0	34.53
1124	21.19	248	100	69.67	0	27.15	0	43.64
1125	20.59	142	142	98.49	0	1.51	0	192.91
1126	20.59	273	180	0	0	0	0	1004.18
1127	20.40	310	140	0	0	0	0	15.00
1128	20.40	135	95	20.51	0	1.70	0	8.16
1129	20.20	135	100	0	0	0	0	No catch
1130	20.20	113	90	4.79	0	3.29	0	2.06
1131	20.19	296	125	0.32	0	0	0	15.79
1132	20.00	261	160	99.91	0	0.09	0	350.32
1133	19.40	240	135	74.97	0	25.03	0	34.72
1134	19.20	214	150	078.63	0	20.97	0	33.90
1135	18.59	31	5	19.19	0	0	0.03	693.18
1136	18.59	121	80	99.41	0	0	0	633.71
1137	18.59	159	118	100.00	0	0	0	2.75
1138	18.59	224	224	34.07	0	4.85	0	1547.00
1139	18.48	492	300	0.72	0	0	0	90.87
1140	18.44	295	150	2.76	0	0.67	0	14.88
1141	18.45	243	160	50.53	0	11.16	0	29.41
1142	18.45	191	75	79.72	0	12.28	0	3.56
1143	18.42	106	90	100.00	0	0	0	1400.00
1144	18.29	131	90	99.79	0	0	0	619.31
1145	18.29	181	181	20.73	0	19.75	0	709.00
1146	18.29	251	200	98.15	0	0	0	427.90
1147	18.14	251	190	20.79	0	5.58	0	45.35
1148	18.14	155	110	87.44	0	0	0	200.13
1149	17.59	159	100	4.14	0	6.55	0	32.16
1150	17.45	609	300	11.73	0	0	0	81.81
1151	17.44	269	269	22.42	0	47.71	0	322.16
1152	17.44	160	160	46.03	0	12.76	0	369.65
1153	17.45	106	106	79.74	0	1.77	0	1413.28
1154	17.30	100	100	92.52	0	1.51	0	1367.28
1155	18.00	390	200	77.07	0	4.35	0	223.13
1156	17.15	525	0	0	0	0	0	5.79
1157	17.15	241	130	50.24	0	0	0	4.20
1158	17.14	126	126	72.62	0	0.05	0	532.74
1159	17.14	62	62	96.34	0	0	0	2517.10
1160	17.00	1063	275	0	0	0	0	50.00

Trawl Number	Latitude (°S)	Bottom Depth (m)	Headrope Depth (m)	Catch by Species (% of total catch)				**Total Catch (kg)**
				Trachurus c.	*Trachurus t.*	*Merluccius* c.	*Sardinops*	
1161	16.44	168	120	44.72	0	0.31	0	31.75
1162	16.43	115	60	100.00	0	0	0	2.09
1163	16.45	80	80	86.08	0	0	0	2526.62
1164	16.30	81	35	96.26	0.89	0	0	103.88
1165	16.14	97	97	65.17	1.92	0	0	78.10
1166	16.02	96	55	54.76	29.64	0	0	21.22
1167	16.21	50	50	12.24	56.39	0	0	151.99
1168	16.31	14	14	0	0.84	0	97.81	237.15
1169	16.38	17	5	0	52.11	0	5.26	1.90
1170	17.21	24	5	0	0	0	99.00	2200.00
1171	17.44	14	10	0	0.40	0	97.80	599.20
1172	17.59	41	10	0.06	0	0	43.56	348.95
1173	18.09	125	50	55.10	0	0	10.00	6500.00
1174	18.58	87	50	100.00	0	0	0	280.80
1175	20.18	81	40	90.86	0	0	0	361.00

Annex IV Records of fishing stations

PROJECT STATION:1105

DATE: 1/ 6/95 GEAR TYPE: PT No:1 POSITION:Lat S 2500

	start	stop	duration			Long	E	1410
TIME	:08:35:00	08:45:00	10	(min)	Purpose code:	1		
LOG	:4928.00	4928.50	0.50		Area code :	2		
FDEPTH:	75	75			GearCond.code:			
BDEPTH:	165	165			Validity code:			

Towing dir: 270° Wire out: 300 m Speed: 3 kn*10

Sorted: Kg Total catch: 25.03 CATCH/HOUR: 150.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	150.00	28926	100.00	3793
GOBIDAE juvenile	0.18	198	0.12	
Total	150.18		100.12	

PROJECT STATION:1106

DATE: 1/ 6/95 GEAR TYPE: PT No:1 POSITION:Lat S 2500

	start	stop	duration			Long	E	1350
TIME	:12:14:00	12:44:00	30	(min)	Purpose code:	1		
LOG	:4951.90	4953.40	1.50		Area code :	2		
FDEPTH:	165	170			GearCond.code:			
BDEPTH:	214	204			Validity code:	4		

Towing dir: 90° Wire out: 550 m Speed: 3 kn*10

Sorted: 6 Kg Total catch: 6.75 CATCH/HOUR: 13.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brama brama	12.40	8	91.85	
MYCTOPHIDAE	1.00	1236	7.41	
Trachurus capensis, juvenile	0.10	20	0.74	
Total	13.50		100.00	

PROJECT STATION:1107

DATE: 1/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2440

	start	stop	duration			Long	E	1346
TIME	:20:35:00	20:45:00	10	(min)	Purpose code:	1		
LOG	:5017.10	5017.90	0.80		Area code :	2		
FDEPTH:	175	175			GearCond.code:			
BDEPTH:	333	336			Validity code:			

Towing dir: 270° Wire out: 550 m Speed: 3 kn*10

Sorted: 3 Kg Total catch: 34.73 CATCH/HOUR: 208.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	180.00	45600	86.38	
Trachipterus jacksonensis	28.38	6	13.62	
Total	208.38		100.00	

PROJECT STATION:1108

DATE: 1/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2439

	start	stop	duration			Long	E	1345
TIME	:21:54:00	22:04:00	10	(min)	Purpose code:	1		
LOG	:5023.00	5023.50	0.50		Area code :	2		
FDEPTH:	223	223			GearCond.code:			
BDEPTH:	333	331			Validity code:			

Towing dir: 160° Wire out: 675 m Speed: 3 kn*10

Sorted: 2 Kg Total catch: 17.79 CATCH/HOUR: 106.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	60.60	30300	56.77	
Krill	29.40	9798	27.54	
Trachipterus jacksonensis	15.36	6	14.39	
Beryx splendens	1.26	12	1.18	
Merluccius paradoxus, juvenile	0.12	6	0.11	
Total	106.74		99.99	

PROJECT STATION:1109

DATE: 1/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2444

	start	stop	duration			Long	E	1346
TIME	:23:20:00	00:00:00	40	(min)	Purpose code:	1		
LOG	:5028.80	5031.20	2.40		Area code :	2		
FDEPTH:	130	150			GearCond.code:	3		
BDEPTH:	325	255			Validity code:			

Towing dir: 20° Wire out: 400 m Speed: 3 kn*10

Sorted: 35 Kg Total catch: 61.93 CATCH/HOUR: 92.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachipterus jacksonensis	46.50	12	50.05	
MYCTOPHIDAE	43.50	18590	46.82	
Krill	1.50	2250	1.61	
Centrolophus niger	1.23	2	1.32	
Beryx splendens	0.17	2	0.18	
Total	92.90		99.98	

PROJECT STATION:1110

DATE: 2/ 6/95 GEAR TYPE: PT No:1 POSITION:Lat S 2436

	start	stop	duration			Long	E	1416
TIME	:03:47:00	04:15:00	28	(min)	Purpose code:	1		
LOG	:5063.70	5065.20	1.50		Area code :	2		
FDEPTH:	25	20			GearCond.code:			
BDEPTH:	125	127			Validity code:			

Towing dir: 180° Wire out: 120 m Speed: 3 kn*10

Sorted: 5 Kg Total catch: 216.47 CATCH/HOUR: 463.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Etrumeus whiteheadi	450.00	12347	97.01	3794
Engraulis capensis	6.00	386	1.29	3796
Sardinops ocellatus	3.84	116	0.83	3795
Chelidonichthys capensis	3.32	11	0.72	
Trachurus capensis, juvenile	0.41	103	0.09	3797
Hyperoglyphe moselii	0.32	2	0.07	
Total	463.89		100.01	

PROJECT STATION:1111

DATE: 2/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2415

	start	stop	duration			Long	E	1322
TIME	:12:21:00	12:47:00	26	(min)	Purpose code:	1		
LOG	:5147.50	5148.90	1.40		Area code :	2		
FDEPTH:	110	90			GearCond.code:	2		
BDEPTH:	360	399			Validity code:			

Towing dir: 211° Wire out: 320 m Speed: 3 kn*10

Sorted: 1 Kg Total catch: 4.50 CATCH/HOUR: 10.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Krill	6.23	38942	60.02	
MYCTOPHIDAE	4.15	6108	39.98	
Total	10.38		100.00	

PROJECT STATION:1112

DATE: 2/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2359

	start	stop	duration			Long	E	1336
TIME	:16:38:00	17:07:00	29	(min)	Purpose code:	1		
LOG	:5176.30	5177.90	1.60		Area code :	2		
FDEPTH:	202	250			GearCond.code:			
BDEPTH:	261	264			Validity code:			

Towing dir: 270° Wire out: 700 m Speed: 3 kn*10

Sorted: 16 Kg Total catch: 40.47 CATCH/HOUR: 83.73

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	63.72	559	76.10	3799
Trachurus capensis	18.31	64	21.87	3798
Todarodes sagittatus	1.70	4	2.03	
Total	83.73		100.00	

PROJECT STATION:1113

DATE: 3/ 6/95 GEAR TYPE: PT No:1 POSITION:Lat S 2340

	start	stop	duration			Long	E	1310
TIME	:08:16:00	08:46:00	30	(min)	Purpose code:	1		
LOG	:5313.40	5315.20	1.80		Area code :	2		
FDEPTH:	175	175			GearCond.code:			
BDEPTH:	402	365			Validity code:			

Towing dir: 90° Wire out: 500 m Speed: 3 kn*10

Sorted: 17 Kg Total catch: 49.11 CATCH/HOUR: 98.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	64.40	102312	65.57	
Brama brama	33.82	50	34.43	
Total	98.22		100.00	

PROJECT STATION:1114

DATE: 3/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2320

	start	stop	duration			Long	E	1329
TIME	:14:39:00	15:28:00	49	(min)	Purpose code:	1		
LOG	:5369.90	5372.50	2.60		Area code :	2		
FDEPTH:	175	210			GearCond.code:	2		
BDEPTH:	223				Validity code:			

Towing dir: 270° Wire out: 620 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 43.13 CATCH/HOUR: 52.81

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	47.84	227	90.59	3800
Brama brama	4.22	2	7.99	
Trigla lyra	0.53	1	1.00	
Merluccius capensis	0.15	1	0.28	
CENTROLOPHIDAE	0.07	1	0.13	
Total	52.81		99.99	

PROJECT STATION:1115

DATE: 3/ 6/95 GEAR TYPE: PT No:1 POSITION:Lat S 2319
start stop duration Long E 1338
TIME :17:28:00 17:58:00 30 (min) Purpose code: 1
LOG :5387.50 5389.00 1.50 Area code : 2
FDEPTH: 110 110 GearCond.code:
BDEPTH: 158 165 Validity code:
Towing dir: 270° Wire out: 320 m Speed: 3 kn*10

Sorted: 4 Kg Total catch: 4.58 CATCH/HOUR: 9.16

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, juveniles	7.66	266	83.62	3801
Trigla lyra	1.22	2	13.32	
Trachurus capensis	0.28	4	3.06	
Total	9.16		100.00	

PROJECT STATION:1116

DATE: 4/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2300
start stop duration Long E 1335
TIME :06:00:00 06:12:00 12 (min) Purpose code: 1
LOG :5491.10 5491.70 0.60 Area code : 2
FDEPTH: 115 115 GearCond.code:
BDEPTH: 142 141 Validity code:
Towing dir: 90° Wire out: 350 m Speed: 3 kn*10

Sorted: 5 Kg Total catch: 5.04 CATCH/HOUR: 25.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trigla lyra	18.25	60	72.42	
Merluccius capensis, juveniles	6.95	140	27.58	3802
Total	25.20		100.00	

PROJECT STATION:1117

DATE: 4/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2259
start stop duration Long E 1302
TIME :10:14:00 10:34:00 20 (min) Purpose code: 1
LOG :5530.20 5531.30 1.10 Area code : 2
FDEPTH: 260 260 GearCond.code:
BDEPTH: 416 379 Validity code:
Towing dir: 330° Wire out: 820 m Speed: 3 kn*10

Sorted: 5 Kg Total catch: 93.37 CATCH/HOUR: 280.11

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	270.00	198153	96.39	
Brama brama	7.98	9	2.85	
Krill	1.68	6033	0.60	
PHOTICHTHYIDAE	0.33	36	0.12	
Todarodes sagittatus	0.15	3	0.05	
Total	280.14		100.01	

PROJECT STATION:1118

DATE: 4/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 2240
start stop duration Long E 1306
TIME :15:13:00 15:26:00 13 (min) Purpose code: 1
LOG :5573.40 5574.10 0.70 Area code : 2
FDEPTH: 306 307 GearCond.code:
BDEPTH: 306 307 Validity code:
Towing dir: 270° Wire out: 960 m Speed: 3 kn*10

Sorted: 7 Kg Total catch: 37.24 CATCH/HOUR: 171.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	138.46	107331	80.56	
Brama brama	33.42	18	19.44	
Total	171.88		100.00	

PROJECT STATION:1119

DATE: 4/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2239
start stop duration Long E 1320
TIME :17:53:00 18:23:00 30 (min) Purpose code: 1
LOG :5593.00 5594.70 1.70 Area code : 2
FDEPTH: 202 202 GearCond.code:
BDEPTH: 266 271 Validity code:
Towing dir: 260° Wire out: 600 m Speed: 3 kn*10

Sorted: Kg Total catch: 10.50 CATCH/HOUR: 21.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	11.74	314	55.90	3803
MYCTOPHIDAE	8.72	6342	41.52	
Sufflogobius bibarbatus	0.40	134	1.90	
Solenocera africana	0.04	6	0.19	
Todarodes sagittatus	0.04	2	0.19	
Chlorophthalmus atlanticus	0.02	2	0.10	
TRICHIURIDAE	0.02	2	0.10	
PHOTICHTHYIDAE	0.02	2	0.10	
Total	21.00		100.00	

PROJECT STATION:1120

DATE: 5/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2219
start stop duration Long E 1326
TIME :05:29:00 05:55:00 26 (min) Purpose code: 1
LOG :5702.80 5704.40 1.60 Area code : 2
FDEPTH: 130 130 GearCond.code:
BDEPTH: 172 163 Validity code:
Towing dir: 90° Wire out: 375 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:1121

DATE: 5/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2201
start stop duration Long E 1310
TIME :18:11:00 18:36:00 25 (min) Purpose code: 1
LOG :5804.90 5806.50 1.60 Area code : 2
FDEPTH: 115 115 GearCond.code:
BDEPTH: 206 197 Validity code:
Towing dir: 356° Wire out: 375 m Speed: 3 kn*10

Sorted: 2 Kg Total catch: 1.99 CATCH/HOUR: 4.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis, juveniles	3.41	67	71.34	3804
C E P H A L O P O D A	0.82	2	17.15	
Squalus megalops	0.55	2	11.51	
Total	4.78		100.00	

PROJECT STATION:1122

DATE: 5/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2159
start stop duration Long E 1309
TIME :19:50:00 20:35:00 45 (min) Purpose code: 1
LOG :5811.20 5814.80 2.80 Area code : 2
FDEPTH: 110 110 GearCond.code:
BDEPTH: 197 197 Validity code:
Towing dir: ° Wire out: 440 m Speed: 4 kn*10

Sorted: 25 Kg Total catch: 25.85 CATCH/HOUR: 34.47

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	24.63	144	71.45	3806
Merluccius capensis	9.15	113	26.54	3805
Lophius vomerinus	0.69	1	2.00	
Total	34.47		99.99	

PROJECT STATION:1123

DATE: 6/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 2140
start stop duration Long E 1250
TIME :14:18:00 14:48:00 30 (min) Purpose code: 1
LOG :5959.50 5961.00 1.50 Area code : 2
FDEPTH: 305 306 GearCond.code:
BDEPTH: 305 306 Validity code:
Towing dir: 360° Wire out: 980 m Speed: 3 kn*10

Sorted: Kg Total catch: 34.53 CATCH/HOUR: 69.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Brama brama	20.50	14	29.68	
Merluccius capensis	16.92	20	24.50	3807
Krill	16.00	41738	23.17	
MYCTOPHIDAE	14.00	10980	20.27	
Helicolenus dactylopterus	0.74	18	1.07	
Coelorinchus fasciatus	0.32	4	0.46	
Callorhinchus capensis	0.32	16	0.46	
Squalus megalops	0.14	2	0.20	
Synagrops microlepis	0.10	6	0.14	
Nezumia sp.	0.02	2	0.03	
Total	69.06		99.98	

PROJECT STATION:1124

DATE: 6/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2119
start stop duration Long E 1257
TIME :21:28:00 22:02:00 34 (min) Purpose code: 1
LOG :6021.90 6024.00 2.10 Area code : 2
FDEPTH: 100 160 GearCond.code:
BDEPTH: 248 273 Validity code:
Towing dir: 270° Wire out: 380 m Speed: 4 kn*10

Sorted: Kg Total catch: 43.64 CATCH/HOUR: 77.01

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	51.51	544	66.89	3809
Merluccius capensis, juveniles	20.91	275	27.15	3810
Trachurus capensis, juvenile	2.14	561	2.78	3808
Lophius vomerinus	1.38	2	1.79	
Todarodes sagittatus	0.99		1.29	
ARGONAUTIDAE	0.09		0.12	
Total	77.02		100.02	

PROJECT STATION:1125

DATE: 7/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 2059
start stop duration Long E 1301
TIME :07:31:00 07:46:00 15 (min) Purpose code: 1
LOG :6106.80 6107.40 0.60 Area code : 3
FDEPTH: 142 129 GearCond.code:
BDEPTH: 142 129 Validity code:
Towing dir: 90° Wire out: 500 m Speed: 2 kn*10

Sorted: 10 Kg Total catch: 192.91 CATCH/HOUR: 771.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	760.00	10944	98.49	3812
Merluccius capensis, juveniles	11.64	84	1.51	3811
Total	771.64		100.00	

PROJECT STATION:1126

DATE: 7/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2059
start stop duration Long E 1251
TIME :10:15:00 10:25:00 10 (min) Purpose code: 1
LOG :6126.20 6126.60 0.50 Area code : 3
FDEPTH: 180 180 GearCond.code:
BDEPTH: 273 268 Validity code:
Towing dir: 90° Wire out: 600 m Speed: 3 kn*10

Sorted: Kg Total catch: 1004.48 CATCH/HOUR: 6026.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	6000.00	4411764	99.55	
Brama brama	23.22	24	0.39	
Zeus faber	3.66	6	0.06	
Total	6026.88		100.00	

PROJECT STATION:1127

DATE: 7/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2040
start stop duration Long E 1225
TIME :16:59:00 17:09:00 10 (min) Purpose code: 1
LOG :6182.50 6183.00 0.50 Area code : 3
FDEPTH: 140 140 GearCond.code:
BDEPTH: 310 311 Validity code:
Towing dir: 270° Wire out: 400 m Speed: 3 kn*10

Sorted: Kg Total catch: 15.00 CATCH/HOUR: 90.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	90.00	70866	100.00	
Total	90.00		100.00	

PROJECT STATION:1128

DATE: 7/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2040
start stop duration Long E 1257
TIME :20:25:00 20:42:00 17 (min) Purpose code: 1
LOG :6211.50 6212.80 1.30 Area code : 3
FDEPTH: 95 95 GearCond.code:
BDEPTH: 135 134 Validity code:
Towing dir: 270° Wire out: 320 m Speed: 4 kn*10

Sorted: 8 Kg Total catch: 8.16 CATCH/HOUR: 28.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	21.46	660	74.51	3813
Brama brama	4.80	7	16.67	
Synagrops microlepis	1.66	371	5.76	
Merluccius capensis, juveniles	0.49	14	1.70	
Etrumeus whiteheadi	0.32	7	1.11	
Todarodes sagittatus	0.07	4	0.24	
Total	28.80		99.99	

PROJECT STATION:1129

DATE: 8/ 6/95 GEAR TYPE: PT No:1 POSITION:Lat S 2020
start stop duration Long E 1241
TIME :02:46:00 03:36:00 50 (min) Purpose code: 1
LOG :5271.20 5274.30 3.10 Area code : 3
FDEPTH: 100 80 GearCond.code: 3
BDEPTH: 135 117 Validity code: 9
Towing dir: 95° Wire out: 280 m Speed: 3 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:1130

DATE: 8/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2020
start stop duration Long E 1244
TIME :04:23:00 05:00:00 37 (min) Purpose code: 1
LOG :5276.50 5278.20 1.70 Area code : 3
FDEPTH: 90 110 GearCond.code:
BDEPTH: 113 133 Validity code:
Towing dir: 270° Wire out: 300 m Speed: 3 kn*10

Sorted: Kg Total catch: 2.06 CATCH/HOUR: 3.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Callorhinchus capensis	2.14	2	64.07	
Lophius vomerinus	0.62	2	18.56	
Synagrops microlepis	0.28	6	8.38	
Trachurus capensis, juvenile	0.16	45	4.79	3814
Merluccius capensis, juveniles	0.11	13	3.29	
Lepidopus caudatus	0.03	2	0.90	
Total	3.34		99.99	

PROJECT STATION:1131

DATE: 8/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2019
start stop duration Long E 1211
TIME :08:51:00 09:04:00 13 (min) Purpose code: 1
LOG :6313.60 6314.40 0.80 Area code : 3
FDEPTH: 125 125 GearCond.code:
BDEPTH: 296 296 Validity code:
Towing dir: 270° Wire out: 450 m Speed: 4 kn*10

Sorted: Kg Total catch: 15.79 CATCH/HOUR: 72.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	69.23	49449	94.99	
Brama brama	3.18	5	4.36	
Trachurus capensis, juvenile	0.23	60	0.32	3815
CENTROLOPHIDAE	0.18	5	0.25	
Total	72.82		99.92	

PROJECT STATION:1132

DATE: 8/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2000
start stop duration Long E 1211
TIME :16:12:00 16:29:00 17 (min) Purpose code: 1
LOG :6377.90 6378.70 0.80 Area code : 3
FDEPTH: 160 160 GearCond.code:
BDEPTH: 261 266 Validity code:
Towing dir: 270° Wire out: 500 m Speed: 3 kn*10

Sorted: 9 Kg Total catch: 350.32 CATCH/HOUR: 1236.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	1235.29	13514	99.91	3815
Merluccius capensis	1.13	7	0.09	
Total	1236.42		100.00	

PROJECT STATION:1133

DATE: 9/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1940
start stop duration Long E 1210
TIME :04:26:00 05:01:00 35 (min) Purpose code: 1
LOG :6488.80 6490.80 2.00 Area code : 3
FDEPTH: 135 120 GearCond.code:
BDEPTH: 240 226 Validity code:
Towing dir: 90° Wire out: 350 m Speed: 4 kn*10

Sorted: 34 Kg Total catch: 34.72 CATCH/HOUR: 59.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	44.62	651	74.97	3816
Merluccius capensis, juveniles	14.90	173	25.03	3817
Total	59.52		100.00	

PROJECT STATION:1134

DATE: 9/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1920
start stop duration Long E 1208
TIME :20:05:00 20:20:00 15 (min) Purpose code: 1
LOG :6608.40 6609.10 0.70 Area code : 3
FDEPTH: 150 170 GearCond.code:
BDEPTH: 214 214 Validity code:
Towing dir: * Wire out: 500 m Speed: 4 kn*10

Sorted: 17 Kg Total catch: 33.09 CATCH/HOUR: 132.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	104.08	1140	78.63	3819
Merluccius capensis, juveniles	27.76	324	20.97	3818
Synagrops microlepis	0.52	88	0.39	
Total	132.36		99.99	

PROJECT STATION:1135

DATE:10/ 6/95 GEAR TYPE: PT No:2 POSITION:Lat S 1859
start stop duration Long E 1226
TIME :02:05:00 02:20:00 15 (min) Purpose code: 1
LOG :5651.20 5652.10 0.90 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 31 30 Validity code:
Towing dir: 180° Wire out: 150 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 693.18 CATCH/HOUR: 2772.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Engraulis capensis	1820.00	78400	65.64	3820
Trachurus capensis, juvenile	532.00	14112	19.19	3822
Etrumeus whiteheadi	420.00	1232	15.15	3821
Sardinops ocellatus	0.72	28	0.03	
Total	2772.72		100.01	

PROJECT STATION:1136

DATE:10/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1859
start stop duration Long E 1209
TIME :05:25:00 05:50:00 25 (min) Purpose code: 1
LOG :6672.40 6673.90 1.50 Area code : 3
FDEPTH: 80 80 GearCond.code:
BDEPTH: 121 112 Validity code:
Towing dir: 270° Wire out: 250 m Speed: 3 kn*10

Sorted: 8 Kg Total catch: 633.71 CATCH/HOUR: 1520.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	1512.00	33900	99.41	3823
R A Y S	6.12	2	0.40	
Trigla lyra	1.44	2	0.09	
Galeichthys feliceps	1.34	2	0.09	
Total	1520.90		99.99	

PROJECT STATION:1137

DATE:10/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1859
start stop duration Long E 1203
TIME :07:35:00 07:47:00 12 (min) Purpose code: 1
LOG :6684.80 6685.50 0.80 Area code : 3
FDEPTH: 118 118 GearCond.code:
BDEPTH: 159 153 Validity code:
Towing dir: 90° Wire out: 350 m Speed: 4 kn*10

Sorted: Kg Total catch: 2.75 CATCH/HOUR: 13.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	13.75	215	100.00	3824
Total	13.75		100.00	

PROJECT STATION:1138

DATE:10/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1859
start stop duration Long E 1156
TIME :09:48:00 10:03:00 15 (min) Purpose code: 1
LOG :6697.80 6698.50 0.70 Area code : 3
FDEPTH: 224 217 GearCond.code:
BDEPTH: 224 217 Validity code:
Towing dir: 90° Wire out: 750 m Speed: 3 kn*10
Sorted: 55 Kg Total catch: 1547.00 CATCH/HOUR: 6188.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	3720.00	18716	60.12	
Trachurus capensis	2108.00	14848	34.07	3825
Merluccius capensis	300.00	2028	4.85	3826
Synagrops microlepis	60.00	8724	0.97	
Total	6188.00		100.01	

PROJECT STATION:1139

DATE:10/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1848
start stop duration Long E 1122
TIME :16:29:00 16:49:00 20 (min) Purpose code: 1
LOG :6749.70 6750.80 1.80 Area code : 3
FDEPTH: 300 275 GearCond.code:
BDEPTH: 492 501 Validity code:
Towing dir: 180° Wire out: 850 m Speed: 3 kn*10

Sorted: 20 Kg Total catch: 90.87 CATCH/HOUR: 272.61

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
CRURR00	132.00	206250	48.42	
MYCTOPHIDAE	78.00	20001	28.61	
Trachipterus trachypterus	55.71	51	20.44	
Octopus sp.	2.85	3	1.05	
Trachurus capensis	1.95	9	0.72	
Squalus megalops	1.08	3	0.40	
Todarodes sagittatus	0.93	3	0.34	
Macroparalepis macrogeneion	0.09	9	0.03	
Total	272.61		100.01	

PROJECT STATION:1140

DATE:10/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1844
start stop duration Long E 1126
TIME :18:55:00 19:15:00 20 (min) Purpose code: 1
LOG :6764.40 6765.60 1.20 Area code : 3
FDEPTH: 150 170 GearCond.code:
BDEPTH: 295 323 Validity code:
Towing dir: 90° Wire out: 570 m Speed: 4 kn*10

Sorted: 1 Kg Total catch: 14.88 CATCH/HOUR: 44.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Krill	18.21	26556	40.79	
MYCTOPHIDAE	12.15	8208	27.22	
Squalus megalops	5.49	9	12.30	
Octopus sp.	4.92	6	11.02	
Trachurus capensis	1.23	9	2.76	
Small squids	0.99	1500	2.22	
Synagrops microlepis	0.72	78	1.61	
Hoplostethus cadenati	0.63	306	1.41	
Merluccius capensis, juveniles	0.30	3	0.67	
Total	44.64		100.00	

PROJECT STATION:1141

DATE:10/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1845
start stop duration Long E 1131
TIME :20:59:00 21:30:00 31 (min) Purpose code: 1
LOG :6776.50 6778.20 1.70 Area code : 3
FDEPTH: 160 160 GearCond.code:
BDEPTH: 243 245 Validity code:
Towing dir: 270° Wire out: 600 m Speed: 3 kn*10

Sorted: Kg Total catch: 29.41 CATCH/HOUR: 56.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	28.76	203	50.53	3829
Deepwater fish mixture	15.83		27.81	
Merluccius capensis, juveniles	6.35	110	11.16	3828
Lophius vomerinus	4.28	6	7.52	
Squalus megalops	1.70	6	2.99	
Total	56.92		100.01	

PROJECT STATION:1142

DATE:11/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1845
start stop duration Long E 1152
TIME :00:37:00 01:15:00 38 (min) Purpose code: 1
LOG :6802.90 6805.60 2.70 Area code : 3
FDEPTH: 75 105 GearCond.code:
BDEPTH: 191 162 Validity code:
Towing dir: 90° Wire out: 250 m Speed: 3 kn*10

Sorted: Kg Total catch: 3.56 CATCH/HOUR: 5.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	4.48	81	79.72	3831
Merluccius capensis	0.69	46	12.28	3830
Synagrops microlepis	0.44	62	7.83	
Total	5.61		99.83	

PROJECT STATION:1143

DATE:11/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1842
start stop duration Long E 1200
TIME :03:01:00 03:28:00 27 (min) Purpose code: 1
LOG :6816.70 6818.20 1.50 Area code : 3
FDEPTH: 90 60 GearCond.code:
BDEPTH: 106 108 Validity code:
Towing dir: 328° Wire out: 200 m Speed: 3 kn*10

Sorted: 15 Kg Total catch: 1400.00 CATCH/HOUR: 3111.11

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	3111.11	75911	100.00	3832
Total	3111.11		100.00	

PROJECT STATION:1144

DATE:11/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1829
start stop duration Long E 1147
TIME :06:00:00 06:14:00 14 (min) Purpose code: 1
LOG :6837.80 6838.60 0.80 Area code : 3
FDEPTH: 90 90 GearCond.code:
BDEPTH: 131 131 Validity code:
Towing dir: 90° Wire out: 270 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 619.31 CATCH/HOUR: 2654.19

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	2648.61	44554	99.79	3833
Squalus megalops	5.57	4	0.21	
Total	2654.18		100.00	

PROJECT STATION:1145

DATE:11/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1829
start stop duration Long E 2138
TIME :08:16:00 08:26:00 10 (min) Purpose code: 1
LOG :6851.70 6852.20 0.50 Area code : 3
FDEPTH: 181 178 GearCond.code:
BDEPTH: 181 178 Validity code:
Towing dir: 90° Wire out: 630 m Speed: 3 kn*10

Sorted: Kg Total catch: 709.00 CATCH/HOUR: 4254.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Dentex macrophthalmus	1932.00	9594	45.42	
Trachurus capensis	882.00	85332	20.73	3834
Merluccius capensis	840.00	3084	19.75	
Synagrops microlepis	468.00	80700	11.00	
Pterothrissus belloci	108.00	1824	2.54	
Chlorophthalmus atlanticus	24.00	3426	0.56	
Total	4254.00		100.00	

PROJECT STATION:1146

DATE:11/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1829
start stop duration Long E 1130
TIME :10:28:00 10:40:00 12 (min) Purpose code: 1
LOG :6868.90 6869.60 0.70 Area code : 3
FDEPTH: 200 200 GearCond.code:
BDEPTH: 251 240 Validity code:
Towing dir: 270° Wire out: 630 m Speed: 4 kn*10

Sorted: 40 Kg Total catch: 427.90 CATCH/HOUR: 2139.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	2100.00	11880	98.15	3835
Brama brama	36.25	20	1.69	
Zenopsis conchifer	3.25	5	0.15	
Total	2139.50		99.99	

PROJECT STATION:1147

DATE:11/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1814
start stop duration Long E 1131
TIME :14:42:00 15:08:00 26 (min) Purpose code: 1
LOG :6903.50 6905.00 1.50 Area code : 3
FDEPTH: 190 200 GearCond.code:
BDEPTH: 251 290 Validity code:
Towing dir: 270° Wire out: 600 m Speed: 3 kn*10

Sorted: 1 Kg Total catch: 45.35 CATCH/HOUR: 104.65

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	50.28	35917	48.05	
Trachurus capensis	21.76	136	20.79	3836
Zenopsis conchifer	13.04	28	12.46	
Trachipterus trachypterus	7.55	7	7.21	
Merluccius capensis	5.84	7	5.58	
Krill	3.21	8019	3.07	
Dentex macrophthalmus	1.71	7	1.63	
Synagrops microlepis	1.27	125	1.21	
Total	104.66		100.00	

PROJECT STATION:1148

DATE:11/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1814
start stop duration Long E 1137
TIME :16:46:00 17:00:00 14 (min) Purpose code: 1
LOG :6916.00 6916.80 0.80 Area code : 3
FDEPTH: 110 150 GearCond.code:
BDEPTH: 155 165 Validity code:
Towing dir: 270° Wire out: 350 m Speed: 3 kn*10

Sorted: Kg Total catch: 200.13 CATCH/HOUR: 857.70

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	750.00	13817	87.44	3837
Squalus megalops	82.41	13	9.61	
Synagrops microlepis	25.29	5949	2.95	
Total	857.70		100.00	

PROJECT STATION:1149

DATE:11/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1759
start stop duration Long E 1135
TIME :21:50:00 22:11:00 21 (min) Purpose code: 1
LOG :6953.30 9954.60 1.30 Area code : 3
FDEPTH: 100 100 GearCond.code:
BDEPTH: 159 129 Validity code:
Towing dir: 270° Wire out: 300 m Speed: 4 kn*10

Sorted: Kg Total catch: 32.16 CATCH/HOUR: 91.89

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Etrumeus whiteheadi	50.63	974	55.10	3840
Synagrops microlepis	22.94		24.96	
MYCTOPHIDAE	7.86		8.55	
Merluccius capensis	3.31	77	3.60	3839
Trachurus capensis	3.14	40	3.42	3838
Merluccius capensis, juveniles	2.71	669	2.95	
Trachurus capensis, juvenile	0.66	363	0.72	
Trigla lyra	0.54	3	0.59	
Trachipterus jacksonensis	0.09	9	0.10	
Total	91.88		99.99	

PROJECT STATION:1150

DATE:12/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1745
start stop duration Long E 1119
TIME :06:49:00 07:06:00 17 (min) Purpose code: 1
LOG :7026.70 7027.50 0.80 Area code : 3
FDEPTH: 300 300 GearCond.code:
BDEPTH: 609 718 Validity code:
Towing dir: 235° Wire out: 900 m Speed: 3 kn*10

Sorted: 4 Kg Total catch: 84.81 CATCH/HOUR: 299.33

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	219.88	311199	73.46	
Trachurus capensis	35.12	219	11.73	3841
Zenopsis conchifer	9.64	18	3.22	
Vitreledonella richardi	9.04	4	3.02	
Squalus megalops	5.51	7	1.84	
Trachipterus trachypterus	5.47	7	1.83	
Lampadena sp.	3.71	187	1.24	
Photonectes braueri	3.71	54	1.24	
Krill	3.71	6364	1.24	
Macroparalepis macrogeneion	1.76	942	0.59	
Small squids	1.76	60	0.59	
TRICHIURIDAE	0.04	7	0.01	
Total	299.35		100.01	

PROJECT STATION:1151

DATE:12/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1744
start stop duration Long E 1123
TIME :08:44:00 09:04:00 20 (min) Purpose code: 1
LOG :7036.60 7037.60 1.00 Area code : 3
FDEPTH: 269 299 GearCond.code:
BDEPTH: 269 299 Validity code:
Towing dir: 270° Wire out: 800 m Speed: 3 kn*10

Sorted: Kg Total catch: 322.16 CATCH/HOUR: 966.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Merluccius capensis	444.90	804	46.03	3842
Trachurus capensis	216.72	1104	22.42	3843
Chlorophthalmus punctatus	120.66	3462	12.48	
Helicolenus dactylopterus	101.16	2781	10.47	
Dentex macrophthalmus	42.12	198	4.36	
Merluccius capensis, juveniles	16.20	159	1.68	
Synagrops microlepis	12.90	1314	1.33	
Squalus megalops	5.46	18	0.56	
Physiculus capensis	2.52	93	0.26	
Pterothrissus belloci	2.22	12	0.23	
Galeus polli	1.32	18	0.14	
Coelorinchus fasciatus	0.30	30	0.03	
Deepwater fish mixture	0.00			
Total	966.48		99.99	

PROJECT STATION:1152

DATE:12/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1744
start stop duration Long E 1132
TIME :10:52:00 11:05:00 13 (min) Purpose code: 1
LOG :7051.70 7052.40 0.70 Area code : 3
FDEPTH: 160 167 GearCond.code:
BDEPTH: 160 167 Validity code:
Towing dir: 270° Wire out: 520 m Speed: 3 kn*10

Sorted: 45 Kg Total catch: 369.35 CATCH/HOUR: 1704.69

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	784.62	10103	46.03	3845
Synagrops microlepis	366.46	654365	21.50	
Dentex macrophthalmus	318.00	4251	18.65	
Merluccius capensis	217.48	1186	12.76	3844
Helicolenus dactylopterus	11.86	263	0.70	
Trigla lyra	4.94	32	0.29	
Pterothrissus belloci	1.34	97	0.08	
Total	1704.70		100.01	

PROJECT STATION:1153

DATE:12/ 6/95 GEAR TYPE BT No:8 POSITION:Lat S 1745
start stop duration Long E 1140
TIME :12:37:00 12:52:00 15 (min) Purpose code: 1
LOG :7062.90 7063.80 0.90 Area code : 3
FDEPTH: 105 110 GearCond.code:
BDEPTH: 105 110 Validity code:
Towing dir: 270° Wire out: 400 m Speed: 3 kn*10

Sorted: Kg Total catch: 1413.28 CATCH/HOUR: 5653.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	4508.00	103180	79.74	3846
Dentex macrophthalmus	924.48	2312	16.35	
Merluccius capensis	99.84	600	1.77	
Trigla lyra	41.08	256	0.73	
Argyrosomus hololepidotus	32.88	24	0.58	
Pterothrissus belloci	16.28	256	0.29	
SOLEIDAE	11.96	172	0.21	
Squalus megalops	5.40	4	0.10	
Octopus vulgaris	4.32	4	0.08	
Raja pullopunctata	3.72	4	0.07	
TRICHIURIDAE	3.44	512	0.06	
Synagrops microlepis	1.72	344	0.03	
Total	5653.12		100.01	

PROJECT STATION:1154

DATE:12/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1730
start stop duration Long E 1138
TIME :14:58:00 15:08:00 10 (min) Purpose code: 1
LOG :7080.90 7081.50 0.60 Area code : 3
FDEPTH: 100 107 GearCond.code:
BDEPTH: 100 107 Validity code:
Towing dir: 270° Wire out: 400 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 1367.28 CATCH/HOUR: 8203.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	7590.00	179928	92.52	3847
Dentex macrophthalmus	250.80	4836	3.06	
Merluccius capensis	123.96	9072	1.51	
Pterothrissus belloci	75.60	2218	0.92	
Argyrosomus hololepidotus	55.38	36	0.68	
Synagrops microlepis	54.42	13608	0.66	
Trigla lyra	20.28	36	0.25	
SOLEIDAE	12.12	300	0.15	
Lepidopus caudatus	12.06	606	0.15	
GOBIIDAE	9.06	1512	0.11	
Total	8203.68		100.01	

PROJECT STATION:1155

DATE:12/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1800
start stop duration Long E 1120
TIME :17:30:00 18:00:00 30 (min) Purpose code: 1
LOG :7100.90 7102.50 1.60 Area code : 3
FDEPTH: 200 200 GearCond.code:
BDEPTH: 390 297 Validity code:
Towing dir: 270° Wire out: 620 m Speed: 3 kn*10

Sorted: 25 Kg Total catch: 223.13 CATCH/HOUR: 446.26

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	343.94	2464	77.07	3848
Krill	71.20	38888	15.95	
Merluccius capensis, juveniles	19.40	642	4.35	3849
MYCTOPHIDAE	8.80	7794	1.97	
Squalus megalops	2.46	6	0.55	
Lepidopus caudatus	0.36	6	0.08	
Zeus capensis	0.06	2	0.01	
Synagrops microlepis	0.04	4	0.01	
Total	446.26		99.99	

PROJECT STATION:1156

DATE:12/ 6/95 GEAR TYPE: PT No:2 POSITION:Lat S 1715
start stop duration Long E 1115
TIME :21:22:00 21:52:00 30 (min) Purpose code: 1
LOG :7133.50 7135.30 1.80 Area code : 3
FDEPTH: 0 0 GearCond.code:
BDEPTH: 525 627 Validity code:
Towing dir: 270° Wire out: 180 m Speed: 6 kn*10

Sorted: Kg Total catch: 5.79 CATCH/HOUR: 11.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	10.50		90.67	
Krill	0.78	3900	6.74	
MYCTOPHIDAE	0.18	140	1.55	
Lepidopus caudatus	0.10	4	0.86	
C E P H A L O P O D A	0.02	4	0.17	
Total	11.58		99.99	

PROJECT STATION:1157

DATE:12/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1715
start stop duration Long E 1124
TIME :23:47:00 00:07:00 20 (min) Purpose code: 1
LOG :7148.70 7150.10 1.40 Area code : 3
FDEPTH: 130 150 GearCond.code:
BDEPTH: 241 289 Validity code:
Towing dir: 270° Wire out: 420 m Speed: 3 kn*10

Sorted: Kg Total catch: 4.20 CATCH/HOUR: 12.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	6.33	48	50.24	3850
MYCTOPHIDAE	5.61		44.52	
Synagrops microlepis	0.66	69	5.24	
Total	12.60		100.00	

PROJECT STATION:1158

DATE:13/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1714
start stop duration Long E 1131
TIME :01:52:00 02:07:00 15 (min) Purpose code: 1
LOG :7161.90 7162.70 0.80 Area code : 3
FDEPTH: 126 130 GearCond.code:
BDEPTH: 126 130 Validity code:
Towing dir: 270° Wire out: 450 m Speed: 3 kn*10

Sorted: 42 Kg Total catch: 532.74 CATCH/HOUR: 2130.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	1547.48	18216	72.62	3851
Dentex macrophthalmus	571.12	7128	26.80	
Trigla lyra	10.56	132	0.50	
Merluccius capensis, juveniles	1.04	44	0.05	
Sepia elegans	0.40	4	0.02	
Zeus faber	0.20	4	0.01	
TRICHIURIDAE	0.16	12	0.01	
Total	2130.96		100.01	

PROJECT STATION:1159

DATE:13/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1714
start stop duration Long E 1140
TIME :03:53:00 04:08:00 15 (min) Purpose code: 1
LOG :7175.20 7176.00 0.80 Area code : 3
FDEPTH: 62 61 GearCond.code:
BDEPTH: 62 61 Validity code:
Towing dir: 4° Wire out: 250 m Speed: 3 kn*10

Sorted: Kg Total catch: 2517.10 CATCH/HOUR: 10068.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	9700.00	353076	96.34	3852
Trigla lyra	200.00	768	1.99	
Galeichthys feliceps	50.00	452	0.50	
TRICHIURIDAE	50.00	1668	0.50	
Argyrosomus hololepidotus	30.48	24	0.30	
Squalus megalops	15.00	8	0.15	
Callorhinchus capensis	8.92	8	0.09	
Diplodus sargus capensis	7.48	24	0.07	
Pomatomus saltatrix	2.76	4	0.03	
Zeus faber	2.12	4	0.02	
Todarodes sagittatus	1.32	4	0.01	
SOLEIDAE	0.32	4		
Total	10068.40		100.00	

PROJECT STATION:1160

DATE:13/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1700
start stop duration Long E 1114
TIME :10:42:00 11:02:00 20 (min) Purpose code: 1
LOG :7225.50 7226.80 1.30 Area code : 3
FDEPTH: 275 300 GearCond.code:
BDEPTH: 1063 909 Validity code:
Towing dir: 90° Wire out: 900 m Speed: 3 kn*10

Sorted: Kg Total catch: 50.00 CATCH/HOUR: 150.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
MYCTOPHIDAE	150.00		100.00	
Total	150.00		100.00	

PROJECT STATION:1161

DATE:13/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1644
start stop duration Long E 1119
TIME :18:11:00 18:36:00 25 (min) Purpose code: 1
LOG :6283.70 6285.00 1.30 Area code : 3
FDEPTH: 120 120 GearCond.code:
BDEPTH: 168 373 Validity code:
Towing dir: 270° Wire out: 300 m Speed: 3 kn*10

Sorted: Kg Total catch: 31.75 CATCH/HOUR: 76.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Deepwater fish mixture	34.80		45.67	
Trachurus capensis	34.08	3396	44.72	3853
MYCTOPHIDAE	5.28	12	6.93	
C E P H A L O P O D A	1.20	24	1.57	
Krill	0.48	528	0.63	
Merluccius capensis, juveniles	0.24	12	0.31	
Synagrops microlepis	0.12	24	0.16	
Total	76.20		99.99	

PROJECT STATION:1162

DATE:13/ 6/95 GEAR TYPE: PT No:1 POSITION:Lat S 1643
start stop duration Long E 1125
TIME :20:48:00 21:18:00 30 (min) Purpose code: 1
LOG :7296.40 7298.20 1.80 Area code : 3
FDEPTH: 60 15 GearCond.code:
BDEPTH: 115 117 Validity code:
Towing dir: 270° Wire out: 220 m Speed: 3 kn*10

Sorted: Kg Total catch: 2.09 CATCH/HOUR: 4.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	4.18	66	100.00	3854
Total	4.18		100.00	

PROJECT STATION:1163

DATE:14/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1645
start stop duration Long E 1137
TIME :00:01:00 00:16:00 15 (min) Purpose code: 1
LOG :7314.70 7315.60 0.90 Area code : 3
FDEPTH: 80 72 GearCond.code:
BDEPTH: 80 72 Validity code:
Towing dir: 90° Wire out: 320 m Speed: 3 kn*10

Sorted: 25 Kg Total catch: 2526.62 CATCH/HOUR: 10106.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	8700.00	232432	86.08	3855
Dentex macrophthalmus	1300.00	26244	12.86	
Lepidopus caudatus	80.00	18180	0.79	
Sepia australis	12.40	4	0.12	
Argyrosomus hololepidotus	10.48	4	0.10	
Lithognathus aureti	3.60	4	0.04	
Total	10106.48		99.99	

PROJECT STATION:1164

DATE:14/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1630
start stop duration Long E 1135
TIME :02:57:00 03:17:00 20 (min) Purpose code: 1
LOG :7335.00 7336.30 1.30 Area code : 3
FDEPTH: 35 40 GearCond.code:
BDEPTH: 81 85 Validity code:
Towing dir: 270° Wire out: 120 m Speed: 3 kn*10

Sorted: Kg Total catch: 103.88 CATCH/HOUR: 311.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	300.00	5727	96.26	3856
Argonauta argo	4.20	18	1.35	
Trachurus trecae, juvenile	2.76	54	0.89	
Trigla lyra	2.76	54	0.89	
Todarodes sagittatus	0.72	9	0.23	
Etrumeus whiteheadi	0.60	18	0.19	
Trachipterus trachypterus	0.60	3	0.19	
Total	311.64		100.00	

PROJECT STATION:1165

DATE:14/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1614
start stop duration Long E 1131
TIME :07:45:00 07:55:00 10 (min) Purpose code: 1
LOG :7370.80 7371.40 0.60 Area code : 3
FDEPTH: 97 128 GearCond.code:
BDEPTH: 97 128 Validity code:
Towing dir: 270° Wire out: 350 m Speed: 3 kn*10

Sorted: Kg Total catch: 78.10 CATCH/HOUR: 468.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	305.40	4878	65.17	3857
Dentex macrophthalmus	121.50	7746	25.93	
Zeus faber	31.50	120	6.72	
Trachurus trecae	9.00	138	1.92	3858
Sepia australis	1.20	18	0.26	
Total	468.60		100.00	

PROJECT STATION:1166

DATE:15/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1602
start stop duration Long E 1138
TIME :00:07:00 00:37:00 30 (min) Purpose code: 1
LOG :7499.80 7501.30 1.50 Area code : 3
FDEPTH: 55 95 GearCond.code:
BDEPTH: 96 185 Validity code:
Towing dir: 280° Wire out: 260 m Speed: 3 kn*10

Sorted: Kg Total catch: 21.22 CATCH/HOUR: 42.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis	23.24	322	54.76	3859
Trachurus trecae	12.58	160	29.64	3860
MYCTOPHIDAE	4.64	2120	10.93	
Krill	1.16	1988	2.73	
Dentex macrophthalmus	0.28	2	0.66	
Trachurus, Juveniles	0.20	248	0.47	
Synagrops microlepis	0.14	2	0.33	
Todarodes sagittatus	0.12	14	0.28	
C E P H A L O P O D A	0.08	6	0.19	
Total	42.44		99.99	

PROJECT STATION:1167

DATE:15/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1621
start stop duration Long E 1142
TIME :04:05:00 04:20:00 15 (min) Purpose code: 1
LOG :7529.90 7530.50 0.60 Area code : 3
FDEPTH: 50 52 GearCond.code:
BDEPTH: 50 52 Validity code:
Towing dir: 340° Wire out: 200 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 151.99 CATCH/HOUR: 607.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	342.80	15744	56.39	3862
Dentex macrophthalmus	163.40	11504	26.88	
Trachurus capensis	74.40	1300	12.24	3861
Todarodes sagittatus	8.56	64	1.41	
C E P H A L O P O D A	7.20	920	1.18	
Sepia australis	6.16	20	1.01	
Trigla lyra	3.80	40	0.63	
Argyrosomus hololepidotus	1.04	4	0.17	
SOLEIDAE	0.60	80	0.10	
Total	607.96		100.01	

PROJECT STATION:1168

DATE:15/ 6/95 GEAR TYPE: BT No:8 POSITION:Lat S 1631
start stop duration Long E 1145
TIME :22:57:00 23:14:00 17 (min) Purpose code: 1
LOG :7591.90 7592.70 0.80 Area code : 3
FDEPTH: 14 14 GearCond.code:
BDEPTH: 14 14 Validity code:
Towing dir: 160° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 237.15 CATCH/HOUR: 837.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinops ocellatus	818.65	6134	97.81	3863
Trachurus trecae, juvenile	7.06	600	0.84	3864
Sardinella maderensis	6.35	706	0.76	
Argyrosomus hololepidotus	1.94	194	0.23	
Synagrops microlepis	1.94	194	0.23	
Lithognathus mormyrus	0.53	35	0.06	
Sepia sp.	0.35	18	0.04	
Engraulis capensis	0.18	18	0.02	
Total	837.00		99.99	

PROJECT STATION:1169

DATE:16/ 6/95 GEAR TYPE: PT No:7 POSITION:Lat S 1638
start stop duration Long E 1140
TIME :23:45:00 24:00:00 15 (min) Purpose code: 1
LOG :7686.70 7687.40 0.70 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 17 17 Validity code:
Towing dir: 160° Wire out: 120 m Speed: 3 kn*10

Sorted: 2 Kg Total catch: 1.90 CATCH/HOUR: 7.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus trecae, juvenile	3.96	192	52.11	3865
Sardinops ocellatus	1.92	16	25.26	3866
Lepidopus caudatus	1.00	12	13.16	
Hyperoglyphe moselii	0.44	8	5.79	
SPHSP03	0.28	16	3.68	
Total	7.60		100.00	

PROJECT STATION:1170

DATE:17/ 6/95 GEAR TYPE: PT No:7 POSITION:Lat S 1721
start stop duration Long E 1143
TIME :11:13:00 11:43:00 30 (min) Purpose code: 1
LOG :7781.00 7782.60 1.60 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 24 24 Validity code:
Towing dir: 350° Wire out: m Speed:200 kn*10

Sorted: Kg Total catch: 2200.00 CATCH/HOUR: 4400.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinops ocellatus	4356.00	36852	99.00	3867
Etrumeus whiteheadi	44.00	1980	1.00	
Total	4400.00		100.00	

PROJECT STATION:1171

DATE:18/ 6/95 GEAR TYPE: PT No:7 POSITION:Lat S 1744
start stop duration Long E 1145
TIME :07:10:00 07:27:00 17 (min) Purpose code: 1
LOG :7951.30 7952.30 1.00 Area code : 3
FDEPTH: 10 10 GearCond.code:
BDEPTH: 14 26 Validity code:
Towing dir: " Wire out: 200 m Speed: 3 kn*10

Sorted: 20 Kg Total catch: 599.20 CATCH/HOUR: 2114.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinops ocellatus	2068.24	23841	97.80	3868
Etrumeus whiteheadi	33.88	1747	1.60	
Trachurus trecae	8.47	187	0.40	
Engraulis capensis	4.24	318	0.20	
Total	2114.83		100.00	

PROJECT STATION:1172

DATE:18/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1759
start stop duration Long E 1146
TIME :11:57:00 12:17:00 20 (min) Purpose code: 1
LOG :7986.40 7987.50 1.10 Area code : 3
FDEPTH: 10 45 GearCond.code:
BDEPTH: 41 50 Validity code:
Towing dir: 350° Wire out: 110 m Speed: 3 kn*10

Sorted: 40 Kg Total catch: 348.95 CATCH/HOUR: 1046.85

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Sardinops ocellatus	456.00	6450	43.56	3870
Engraulis capensis	407.10	20355	38.89	3871
Etrumeus whiteheadi	160.50	6978	15.33	3869
Stromateus fiatola	17.25	21	1.65	
Hyperoglyphe moselii	3.60	30	0.34	
Sepia sp.	1.50	30	0.14	
Trachurus, Juveniles	0.60	150	0.06	
TRICHIURIDAE	0.30	60	0.03	
Total	1046.85		100.00	

PROJECT STATION:1173

DATE:18/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1809

start stop duration Long E 1114

TIME :15:05:00 15:16:00 11 (min) Purpose code: 1

LOG :8010.90 8011.50 0.60 Area code : 3

FDEPTH: 50 75 GearCond.code:

BDEPTH: 125 128 Validity code:

Towing dir: 300° Wire out: 220 m Speed: 3 kn*10

Sorted: 60 Kg Total catch: 6500.00 CATCH/HOUR: 35454.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	19500.00	2954542	55.00	3873
Etrumeus whiteheadi	12409.09	649718	35.00	3874
Sardinops ocellatus	3545.45	55516	10.00	3872
Total	35454.54		100.00	

PROJECT STATION:1174

DATE:19/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 1858

start stop duration Long E 1251

TIME :05:16:00 05:36:00 20 (min) Purpose code: 1

LOG :8151.00 8151.90 0.90 Area code : 3

FDEPTH: 50 50 GearCond.code:

BDEPTH: 87 86 Validity code:

Towing dir: 330° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 280.00 CATCH/HOUR: 840.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	840.00	30000	100.00	3875
Total	840.00		100.00	

PROJECT STATION:1175

DATE:19/ 6/95 GEAR TYPE: PT No:5 POSITION:Lat S 2018

start stop duration Long E 1304

TIME :09:06:00 09:17:00 11 (min) Purpose code: 1

LOG :8177.10 8177.80 0.70 Area code : 3

FDEPTH: 40 40 GearCond.code:

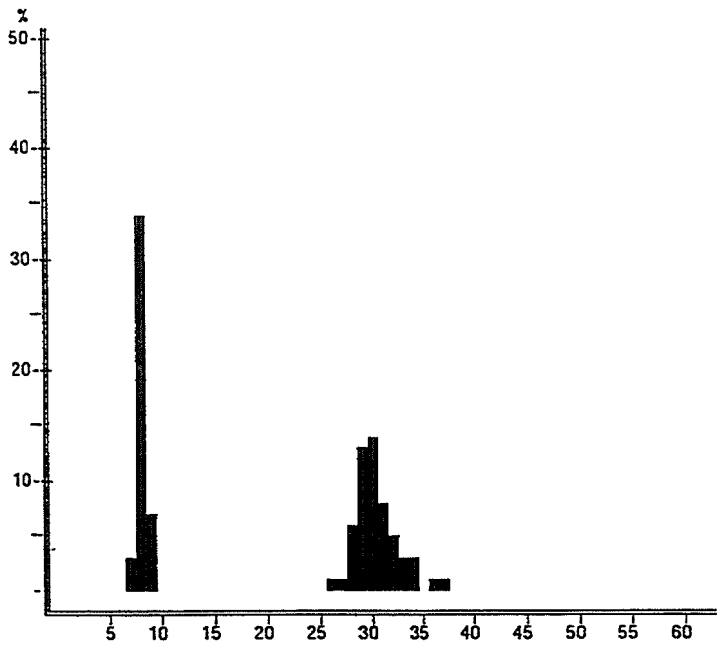
BDEPTH: 81 81 Validity code:

Towing dir: 150° Wire out: 150 m Speed: 4 kn*10

Sorted: 19 Kg Total catch: 361.00 CATCH/HOUR: 1969.09

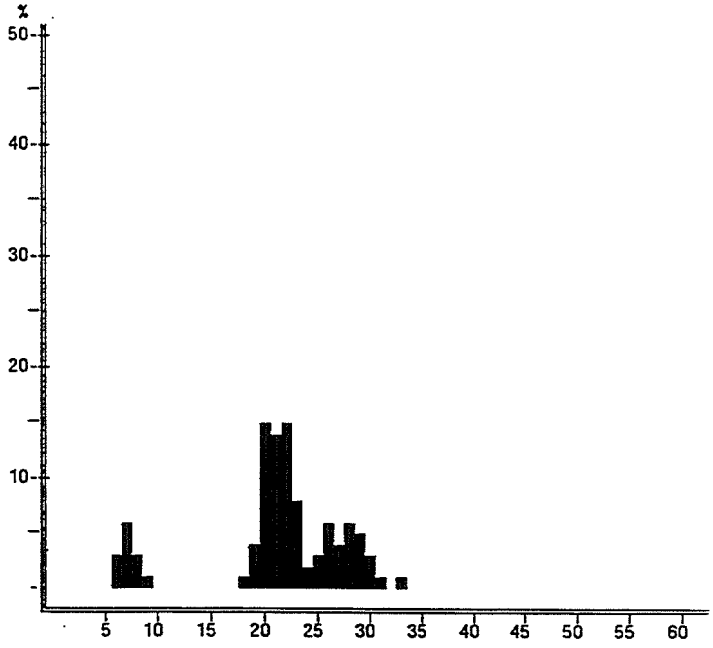
SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP
Trachurus capensis, juvenile	1789.09	197307	90.86	3878
Etrumeus whiteheadi	130.91	7015	6.65	3876
Engraulis capensis	49.09	2962	2.49	3877
Total	1969.09		100.00	

Annex V Length frequencies of different areas



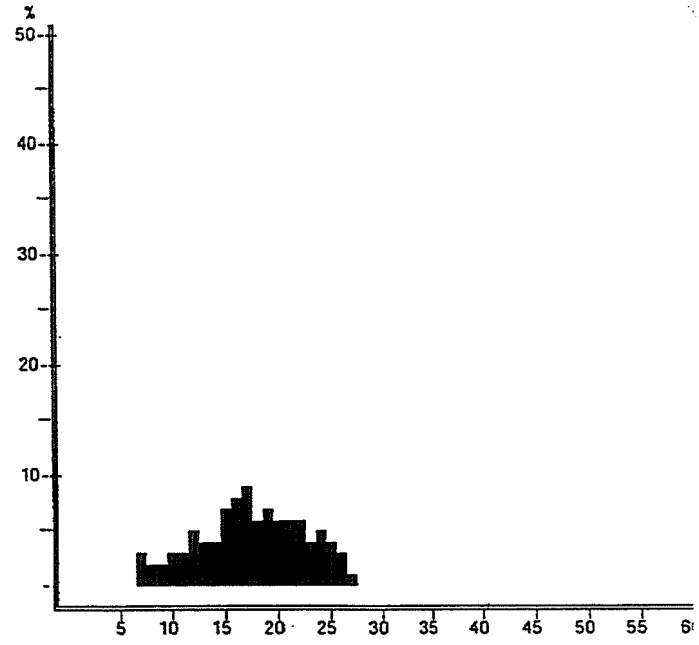
Trachurus capensis
25° – 23°
Pooled sample (simple adding).

MEAN LENGTH = 20.93cm N= 262
NUMBER OF SUBSAMPLES : 4
SAMPLES FOUND BETWEEN ST. NO.1105 AND 1114.
SAMPLES SEARCHED BETWEEN ST. NO.1105 AND 1121 .



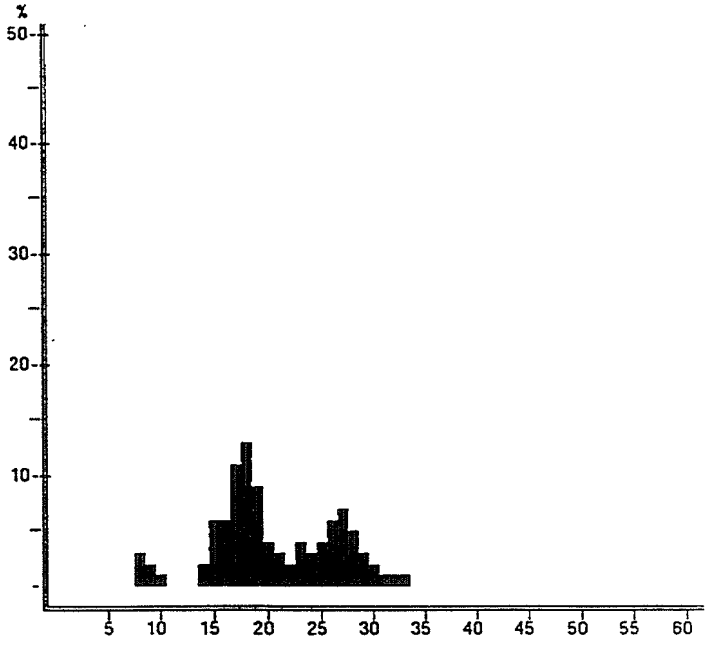
Trachurus capensis
23°– 21°
Pooled sample (simple adding).

MEAN LENGTH = 21.73cm N= 371
NUMBER OF SUBSAMPLES : 4
SAMPLES FOUND BETWEEN ST. NO.1122 AND 1125.
SAMPLES SEARCHED BETWEEN ST. NO.1122 AND 1125 .



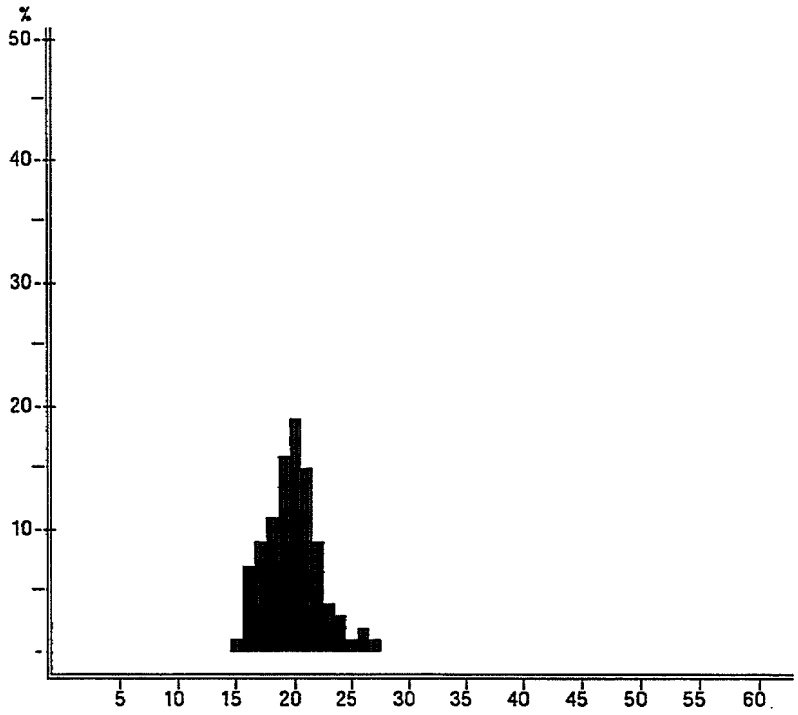
Trachurus capensis
21° – 19°
Pooled sample (simple adding).

MEAN LENGTH = 17.92cm N= 1147
NUMBER OF SUBSAMPLES : 12
SAMPLES FOUND BETWEEN ST. NO.1128 AND 1175.
SAMPLES SEARCHED BETWEEN ST. NO.1128 AND 1138 .



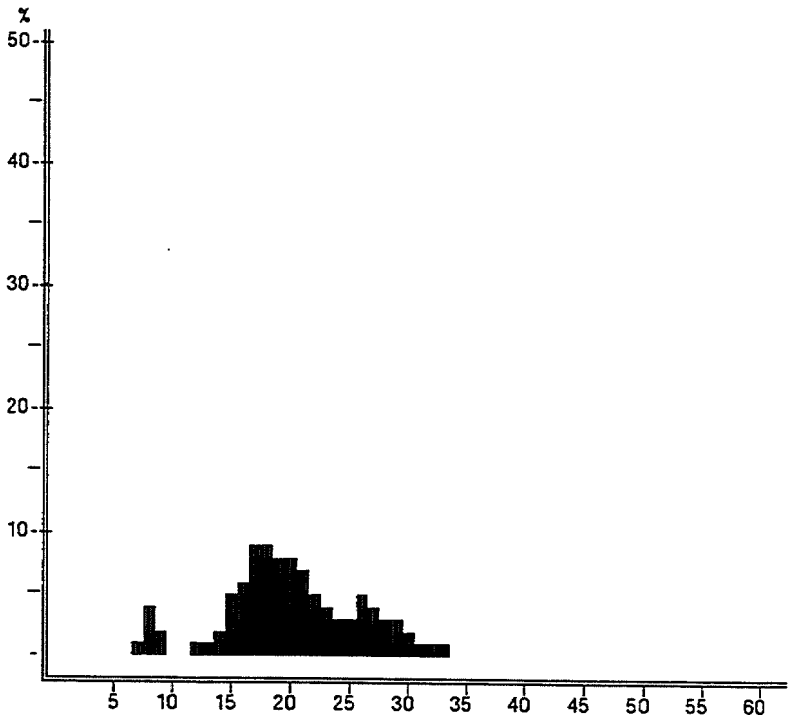
Trachurus capensis
19° – 17°
Pooled sample (simple adding).

MEAN LENGTH = 21.11cm N= 1690
NUMBER OF SUBSAMPLES : 19
SAMPLES FOUND BETWEEN ST. NO.1141 AND 1173.
SAMPLES SEARCHED BETWEEN ST. NO.1141 AND 1159 .



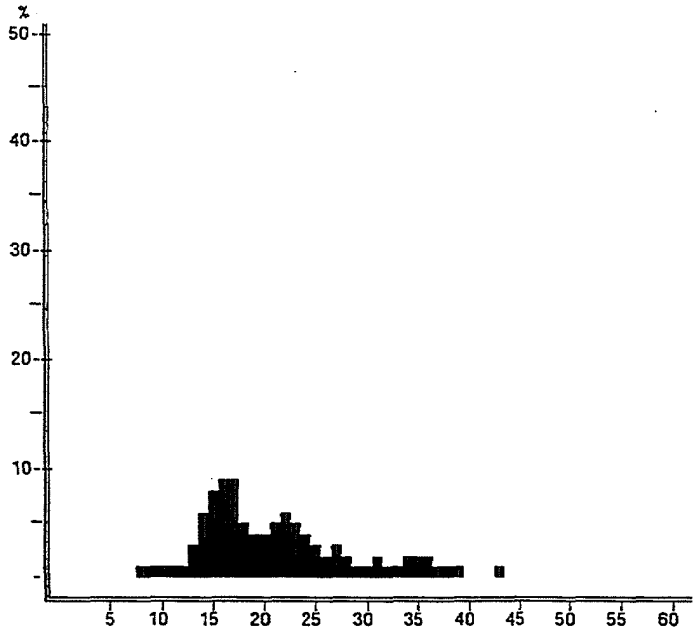
Trachurus capensis
17° – 16°
Pooled sample (simple adding).

MEAN LENGTH = 20.28cm N= 623
NUMBER OF SUBSAMPLES : 7
SAMPLES FOUND BETWEEN ST. NO.1161 AND 1167.
SAMPLES SEARCHED BETWEEN ST. NO.1161 AND 1170 .



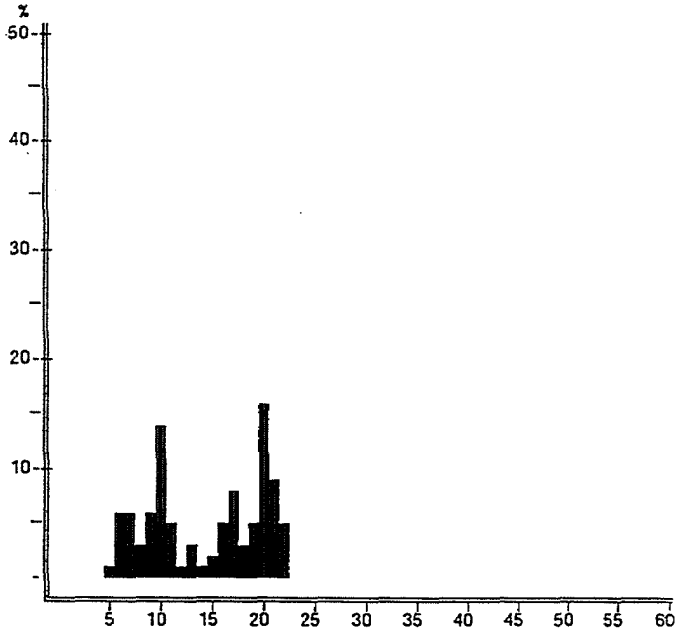
Trachurus capensis
25° – 16°
Pooled sample (simple adding).

MEAN LENGTH = 20.40cm N= 3990
NUMBER OF SUBSAMPLES : 46
SAMPLES FOUND BETWEEN ST. NO.1105 AND 1174.
SAMPLES SEARCHED BETWEEN ST. NO.1105 AND 1174 .



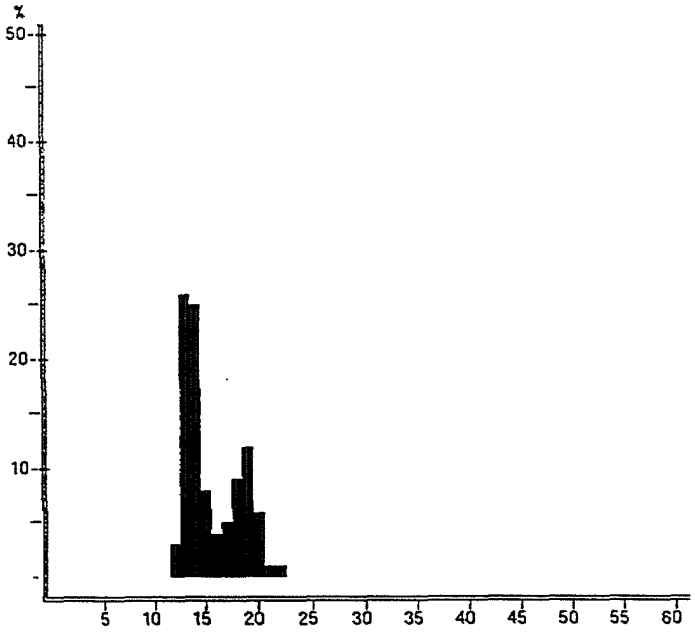
Merluccius capensis
25° - 16°
Pooled sample (simple adding).

MEAN LENGTH = 22.11cm N= 1183
NUMBER OF SUBSAMPLES : 17
SAMPLES FOUND BETWEEN ST. NO.1112 AND 1155.
SAMPLES SEARCHED BETWEEN ST. NO.1105 AND 1175 .



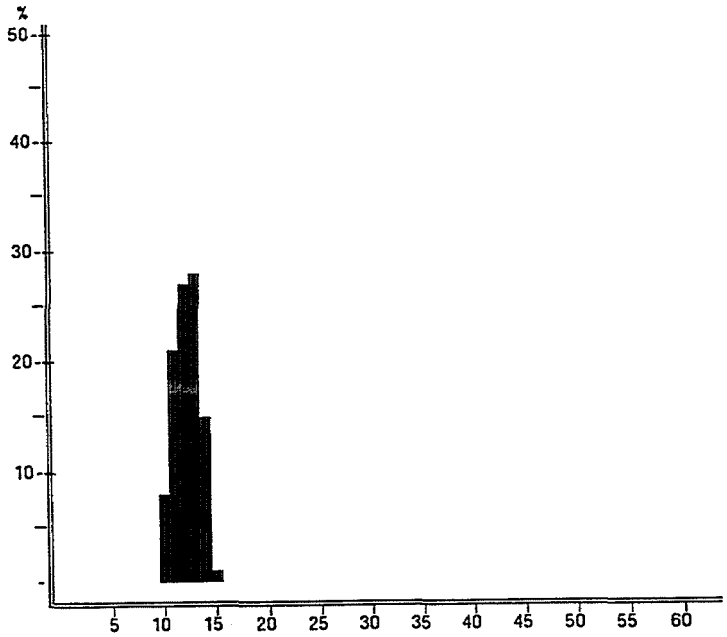
Trachurus trecae
17° - 16°
Pooled sample (simple adding).

MEAN LENGTH = 14.95cm N= 280
NUMBER OF SUBSAMPLES : 5
SAMPLES FOUND BETWEEN ST. NO.1165 AND 1169.
SAMPLES SEARCHED BETWEEN ST. NO.1105 AND 1175 .



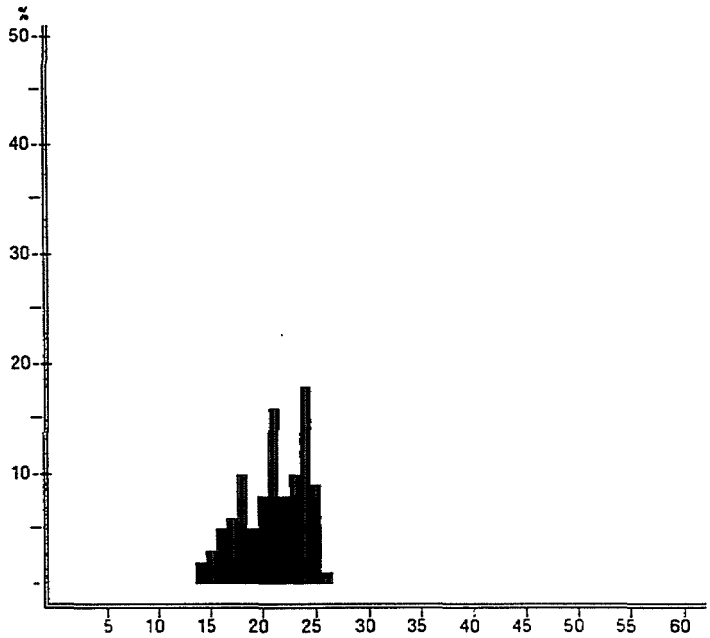
Etrumeus whiteheadi
25° - 16°
Pooled sample (simple adding).

MEAN LENGTH = 15.95cm N= 613
NUMBER OF SUBSAMPLES : 6
SAMPLES FOUND BETWEEN ST. NO.1110 AND 1175.
SAMPLES SEARCHED BETWEEN ST. NO.1105 AND 1175 .



Engraulis capensis
25° - 16°
Pooled sample (simple adding).

MEAN LENGTH = 12.74cm N= 268
NUMBER OF SUBSAMPLES : 4
SAMPLES FOUND BETWEEN ST. NO.1110 AND 1175.
SAMPLES SEARCHED BETWEEN ST. NO.1105 AND 1175 .



Sardinops ocellatus
25° - 16°
Pooled sample (simple adding).

MEAN LENGTH = 21.43cm N= 542
NUMBER OF SUBSAMPLES : 7
SAMPLES FOUND BETWEEN ST. NO.1110 AND 1173.
SAMPLES SEARCHED BETWEEN ST. NO.1105 AND 1175 .

Annex VI Length-weight relations

Cape horse mackerel biological data

AREA 25°-23° NO. FISH	LENGTH CLASS (cm)	TOTAL WEIGHT (g)	NET WEIGHT (g)
4	7.8	3.5	3.2
19	8.5	5.2	3.7
5	9.4	6.9	*
1	26.7	155.5	139.9
1	27.8	202.2	177.2
5	28.6	191.6	168.3
7	29.5	207.7	185.1
10	30.5	225.5	205.5
10	31.3	240.5	219.4
9	32.3	255.7	233.7
8	33.3	284.1	263.6
5	34.4	298.1	277
1	35.5	310.4	283.7
2	36.6	386.2	356.9
4	37.3	391.1	360.8
1	39.5	470	436.8

AREA 23°-21° NO. FISH	LENGTH CLASS (cm)	TOTAL WEIGHT (g)	NET WEIGHT (g)
3	6.7	2.7	2.4
4	7.7	4.1	3.6
6	8.4	5.4	5
1	19.9	55.1	51.5
15	20.5	68.4	63.2
11	21.5	77.9	72.4
17	22.5	87.8	81.8
10	23.3	100.8	91.7
3	24.4	112.6	105
3	25.5	138.2	128.2
14	26.4	145	134.5
10	27.3	159.8	147.1
16	28.6	184.7	169.3
23	29.4	204.3	185.3
6	31.2	239.3	219.6
2	32	258.7	266.9

Cape horse mackerel biological data

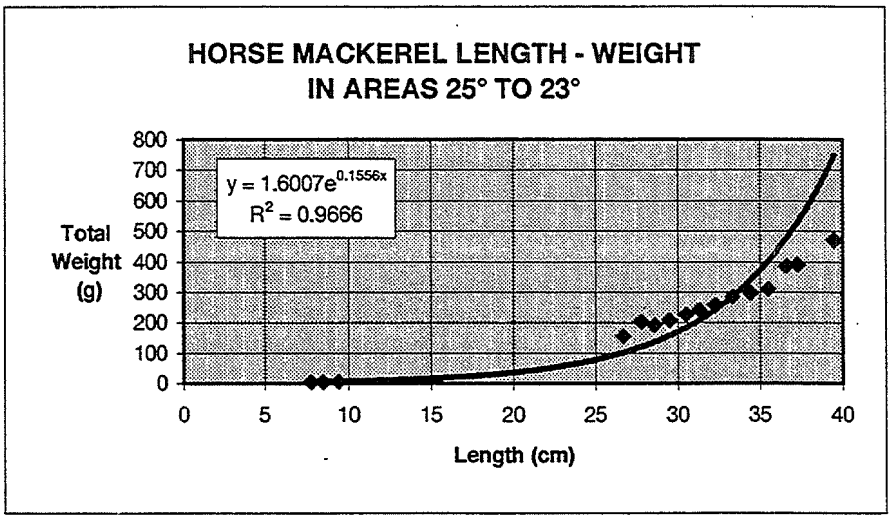
AREA 21°-19° NO. FISH	LENGTH CLASS (cm)	TOTAL WEIGHT (g)	NET WEIGHT (g)
1	5.7	1.4	1.1
5	6.5	2.3	2.1
31	7.4	3.5	3.2
15	8.4	4.8	4.3
6	9.6	6.8	6.2
5	10.2	8.4	7.8
10	11.5	12	11.1
8	12.3	14.7	13.8
3	13.6	19.6	18.3
4	14.3	22.6	21
14	15.6	31.7	28.3
24	16.5	36.6	33.4
18	17.4	41.6	37.2
22	18.4	47.8	44.5
16	19.4	56.6	52.6
9	20.6	69.7	64.1
13	21.3	79.7	73.9
25	22.4	88.5	81.3
14	23.5	98.7	91.1
18	24.5	110	102.5
13	25.3	119.2	110.7
10	26.5	130.6	121.8
5	27.3	154	144.4
2	28.2	156.3	147.7
1	29.2	165.5	155

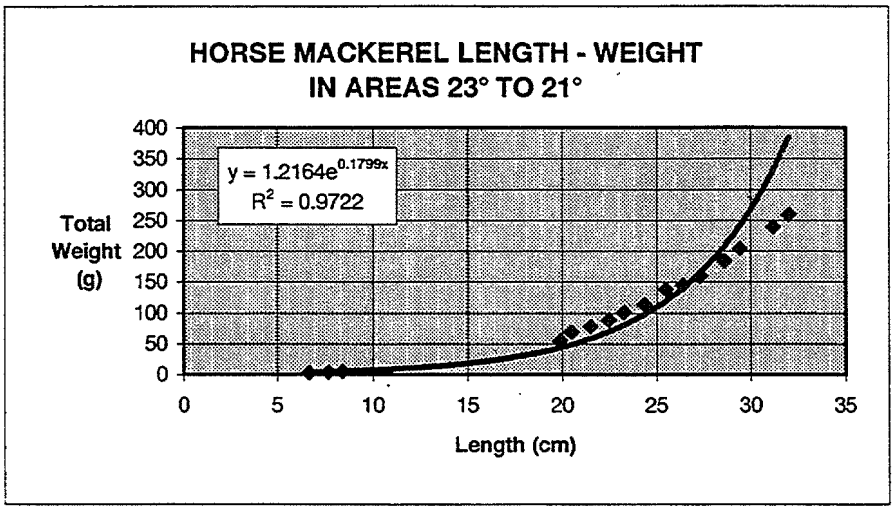
AREA 19°-17° NO. FISH	LENGTH CLASS (cm)	TOTAL WEIGHT (g)	NET WEIGHT (g)
5	8.4	4.9	4.5
6	9.4	6.4	5.9
7	10.3	8.6	8
4	11.6	12.1	11.2
3	12.3	14.2	13.1
2	13.6	18.7	17.6
3	14.7	25.1	23.5
19	15.5	28.3	26.4
13	16.5	34.1	31.9
43	17.1	40.2	37.4
55	18.4	47.4	44.5
26	19.3	53.2	50.1
17	20.3	63.7	60.1
13	21.4	71.1	81.5
8	22.5	86.5	81.5
11	23.5	96.3	91.3
13	24.4	102.1	91.9
16	25.3	115.7	109.6
26	26.4	130.5	123.3
29	27.4	152.9	144.9
13	28.4	163.7	154.8
17	29.4	182.8	172.9
11	30.5	201.2	188.2
4	31.3	228.6	191.4
5	32.3	234.4	221.4
6	33.3	261.4	249.1
5	34.2	277.8	259.1
5	35.2	294.8	280.2
6	36.6	339.5	323.4
1	37.3	386.6	369.2
1	38.2	372.6	358.4

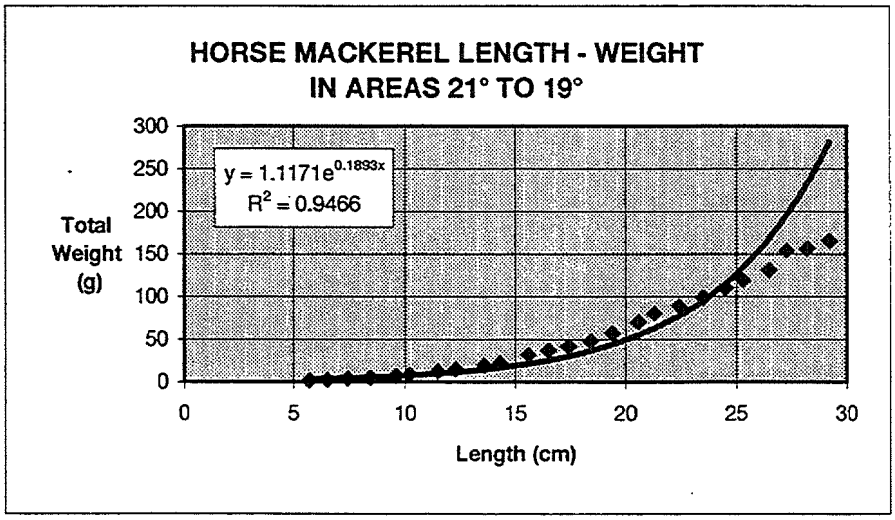
Cape horse mackerel biological data

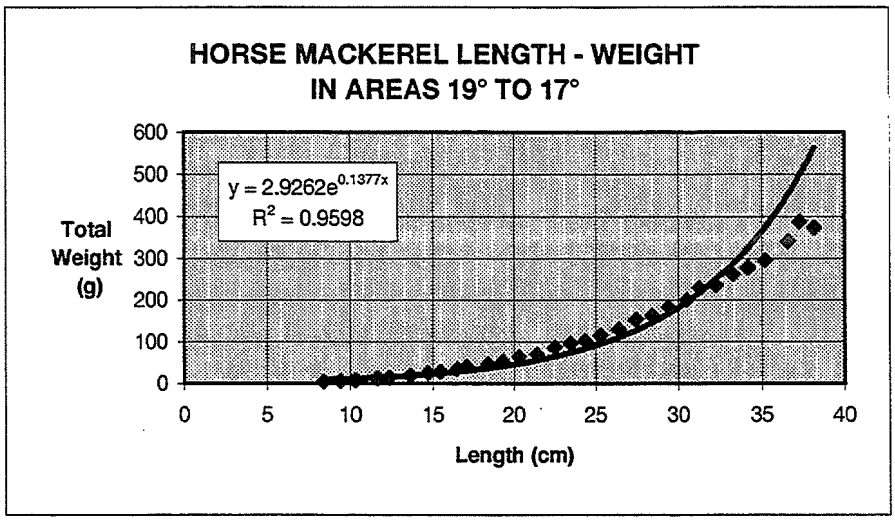
AREA 17°-16° NO. FISH	LENGTH CLASS (cm)	TOTAL WEIGHT (g)	NET WEIGHT (g)
3	13.6	19.6	18.3
3	14.2	22.3	20.7
6	15.5	30.5	28.4
4	16.5	35.2	33
13	17.3	39.2	37.9
14	18.4	48.7	45.1
23	19.5	58.5	54.4
15	20.2	62.9	58.8
20	21.5	73.9	69.5
10	22.4	85	79.8
4	23.4	92.6	88.8
6	24.4	105.9	100.4
3	25.5	123.9	117.6
1	27.3	154.1	145.9
1	31.5	235.3	200.3

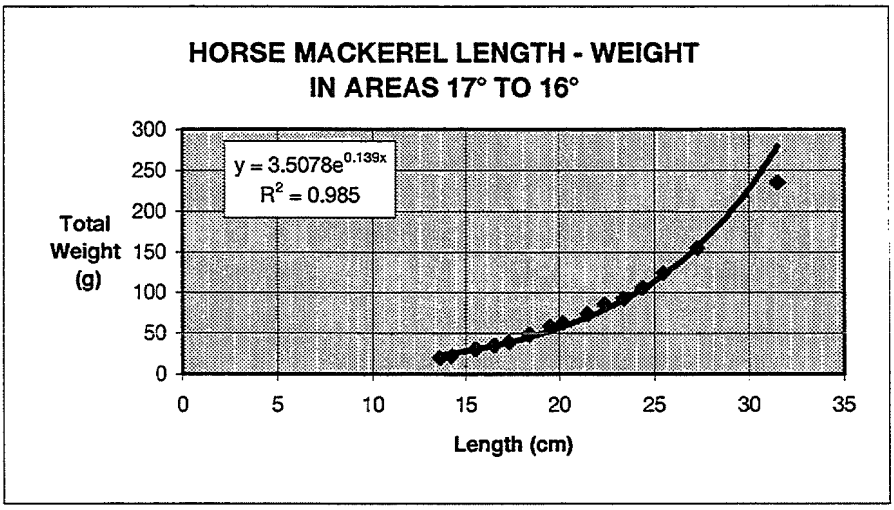
AREA 25°-16° NO. FISH	LENGTH CLASS (cm)	TOTAL WEIGHT (g)	NET WEIGHT (g)
2	5.5	1.25	1.05
8	6.6	2.45	2.19
33	7.5	3.55	3.15
34	8.5	5.16	4.45
17	9.4	6.68	6.06
12	10.2	8.53	7.91
14	11.5	12	11.16
11	12.3	14.57	13.61
5	13.6	19.22	17.98
7	14.5	23.64	22.05
31	15.5	29.29	27.25
37	16.5	35.74	32.85
61	17.5	41.21	37.88
76	18.4	47.57	44.56
43	19.3	54.5	51.04
42	20.4	66.8	62.12
36	21.4	76.11	71.08
50	22.5	87.92	81.52
33	23.5	98.88	91.55
34	24.4	107.18	98.66
31	25.3	118.65	111.26
47	26.4	133.67	125.42
40	27.4	150.14	140.89
32	28.4	172.48	159.75
36	29.4	195.76	180.4
21	30.5	212.77	195.03
14	31.3	237.54	211.81
13	32.3	250.69	232.49
14	33.4	274.35	257.36
10	34.3	287.92	268.07
6	35.2	297.42	280.07
8	36.5	351.2	331.33
3	37.6	384	361.33

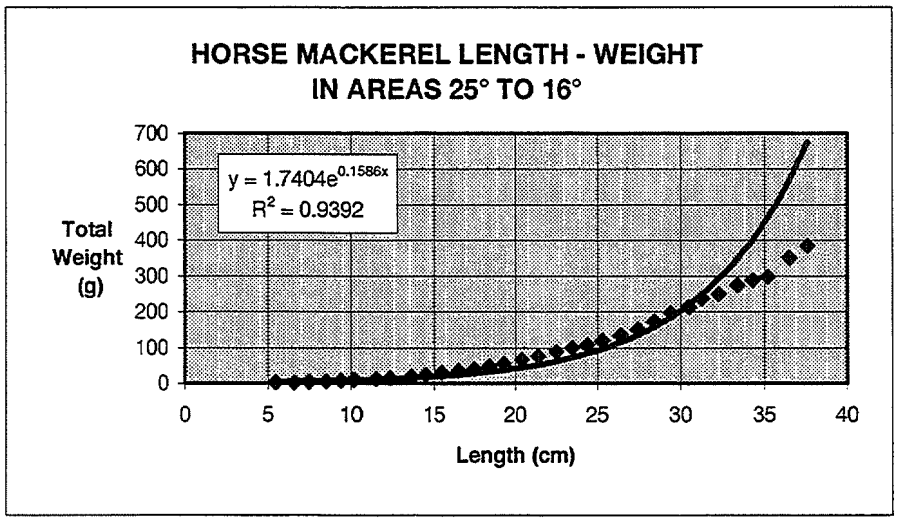

HORSE MACKEREL LENGTH - WEIGHT
IN AREAS 25° TO 23°
y = 1.6007e^0.1556x
R² = 0.9666
Total Weight (g)
800
700
600
500
400
300
200
100
0
0
5
10
15
20
25
30
35
40
Length (cm)


HORSE MACKEREL LENGTH - WEIGHT
IN AREAS 23° TO 21°
y = 1.2164e^0.1799x
R² = 0.9722
Total Weight (g)
400
350
300
250
200
150
100
50
0
0
5
10
15
20
25
30
35
Length (cm)


HORSE MACKEREL LENGTH - WEIGHT
IN AREAS 21° TO 19°
y = 1.1171e^0.1893x
R² = 0.9466
Total Weight (g)
300
250
200
150
100
50
0
0
5
10
15
20
25
30
Length (cm)

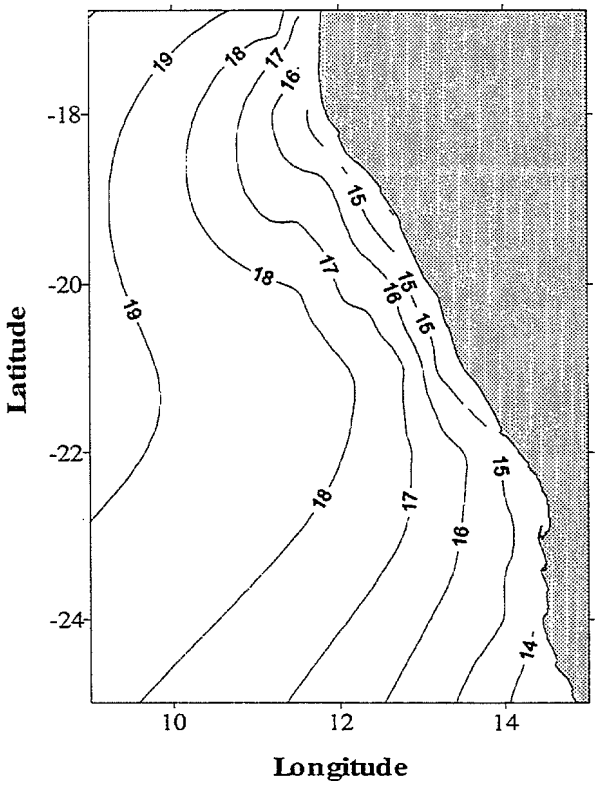

HORSE MACKEREL LENGTH - WEIGHT
IN AREAS 19° TO 17°
y = 2.9262e^0.1377x
R² = 0.9598
Total Weight (g)
Length (cm)
0
100
200
300
400
500
600
0
5
10
15
20
25
30
35
40


HORSE MACKEREL LENGTH - WEIGHT
IN AREAS 17° TO 16°
y = 3.5078e^0.139x
R² = 0.985
Total Weight (g)
Length (cm)
0
50
100
150
200
250
300
0
5
10
15
20
25
30
35

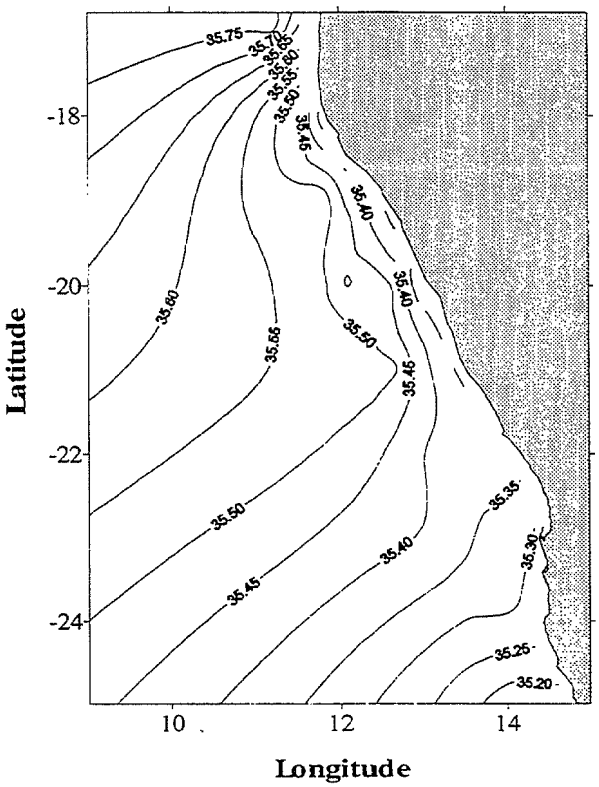

HORSE MACKEREL LENGTH - WEIGHT
IN AREAS 25° TO 16°
y = 1.7404e^0.1586x
R² = 0.9392
Total Weight (g)
Length (cm)
0
100
200
300
400
500
600
700
0
5
10
15
20
25
30
35
40

Annex VII Distribution of near surface environmental parameters

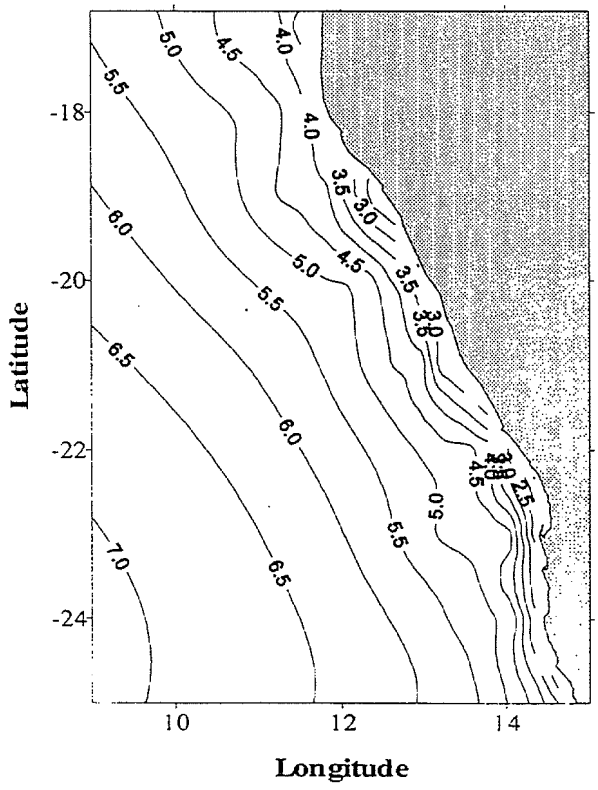
Temperature (°C) June 1995



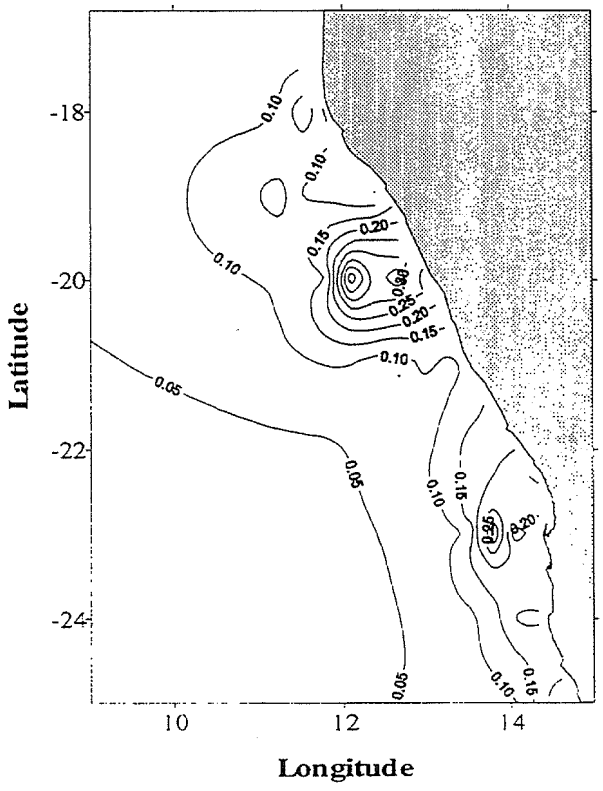
Salinity (ppt) June 1995



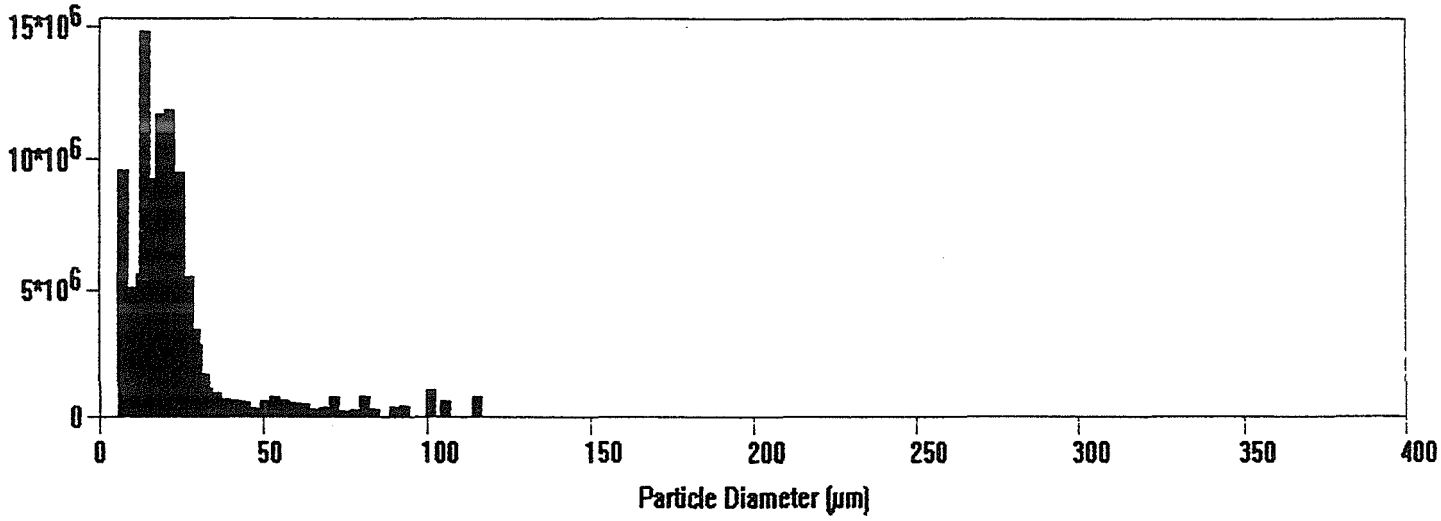
Oxygen (ml/l) June 1995



Fluore scence, June 1995



Annex VIII Food particle size distribution



Plankton particle size distribution and volume at trawl station BT1168 in Baia dos Tigres.

Annex IX Biomass and numbers

Total biomass (tonnes) of > 20 cm horse mackerel, *Trachurus capensis*, and total number per 1 cm length class (in millions) per area.

Area		16°00'-17°15'	17°15'-17°50'	17°50'-18°50'	18°50'-19°10'	19°10'-20°30'	20°30'-21°30'	21°30'-23°30'	23°30'-25°00'	Sum
Size of the area (nm^2)		474	737	921	2470	921	789	2099	1088	9499
Mean Sa value (m^2/nm^2)		521	659	248	394	407	234	164	429	
Total Biomass (tonnes)		54 680	126 940	63 580	126 320	75 240	38 480	101 530	151 290	738 060
No. per length class (mill.)	20	148	30		246	184	121			729
	21	126	85	1	130	187	116			645
	22	89	85	10	328	204	123	3		842
	23	58	118	4	143	110	60	5		498
	24	49	54	31	239	90	12	5		480
	25	26	68	54	41	45	10	18		262
	26	30	86	68	123	16		58		381
	27	20	91	81	20		2	41		255
	28	10	45	62	7		2	89		215
	29	3	31	32	2		2	119		189
	30	3	34	19				102	31	189
	31	3	24	10				48	52	137
	32		17	6				15	98	136
	33		32					5	134	171
	34		16	2				3	98	119
	35		9							9
	36		9	1					31	41
	37		6						52	58
	38		9							9
	39								15	15
	40									
Sum		565	849	381	1279	836	448	511	511	5380

Total biomass (tonnes) of < 20 cm horse mackerel, *Trachurus capensis*, and total number per 1 cm length class (in millions) per area.

Area		16° 00'- 17° 15'	17° 15'- 18° 10'	18°10'- 19°30'	19° 30'- 21° 30'	21° 30'- 23° 00'	24°10'- 25°00'	Sum
Size of the area (nm^2)		737	658	1316	2211	1868	1026	
Mean Sa value (m^2/nm^2)		420	501	1794	214	943	153	
Total Biomass (tonnes)		40 650	41 760	367 900	71 210	228 650	14 310	
No. per length class (mill.)	5				4			4
	6							
	7			194	96	66	98	454
	8			557	246	116	2077	2996
	9	7		231	313	909	470	1930
	10	7	6	183	379	2215		2790
	11	4		280	238	2728		3250
	12		3	337	104	3306		3750
	13		14	347	79	2860		3300
	14	7	108	619	225	1240		2199
	15	33	256	868	525	546		2228
	16	157	185	1207	446	149		2144
	17	201	242	1774	254	116		2587
	18	252	157	2119	63	50		2641
	19	208	105	1312	108			1733
Sum		876	1 076	10 028	3 080	14 301	2 645	32 006

Annex X Reproductive status

Cape horse mackerel biological data

AREA	LENGTH CLASS	NO. FISH SAMPLED	MEAN WEIGHT	JUVENILE	MALE	FEMALE	1	2	3	4	5	6	7
25°-23°	5.0-13.9	28	5.3	28	0	0	28						
	14.0-19.9	0	0	0	0	0							
	20.0-20.9	0	0	0	0	0							
	21.0-21.9	0	0	0	0	0							
	22.0-22.9	0	0	0	0	0							
	23.0-23.9	0	0	0	0	0							
	24.0-24.9	0	0	0	0	0							
	25.0-25.9	0	0	0	0	0							
	26.0-26.9	1	155.5	0	1	0							1
	27.0-27.9	1	202.2	0	0	1						1	
	28.0-28.9	5	191.6	0	3	2				1		1	3
	29.0-29.9	7	207.7	0	3	4				1		3	3
	30.0-30.9	10	225.5	0	9	1						3	7
	31.0-31.9	10	240.5	0	4	6						2	8
	32.0-32.9	9	255.7	0	6	3						1	8
	33.0-33.9	8	284.1	0	5	3				1		1	6
	34.0-34.9	5	298.1	0	2	3						1	5
	35.0-35.9	1	310.4	0	1	0					5		
	36.0-36.9	2	386.2	0	0	2							2
	37.0-37.9	4	391.1	0	0	4						1	3
	38.0-38.9	0	0	0	0	0							
	39.0-39.9	1	470	0	0	1							1
TOTAL		92	*	28	34	30	28			3	5	14	47

Cape horse mackerel biological data

AREA	LENGTH CLASS	NO. FISH TOTAL	MEAN WEIGHT	JUVENILE	MALE	FEMALE	1	2	3	4	5	6	7
23° - 21°	5.0-13.9	13	4.4	13	0	0	13						
	14.0-19.9	1	55.1	0	0	1		1					
	20.0-20.9	15	68.4	0	7	8		1	2				12
	21.0-21.9	11	77.9	0	9	2				1			10
	22.0-22.9	17	87.8	0	8	9			1			2	14
	23.0-23.9	10	100.8	0	5	5			1			1	8
	24.0-24.9	3	112.6	0	0	3	1					2	
	25.0-25.9	3	138.2	0	3	0							3
	26.0-26.9	14	145	0	4	10			6			2	6
	27.0-27.9	10	159.8	0	0	10			2			.	8
	28.0-28.9	16	184.7	0	4	12			10	2			4
	29.0-29.9	23	204.3	0	6	17			6			7	10
	30.0-30.9	0	0	0	0	0							
	31.0-31.9	6	239.3	0	4	2						2	4
	32.0-32.9	2	285.7	0	0	2						2	
	33.0-33.9	0	0	0	0	0							
	34.0-34.9	0	0	0	0	0							
	35.0-35.9	0	0	0	0	0							
	36.0-36.9	0	0	0	0	0							
	37.0-37.9	0	0	0	0	0							
	38.0-38.9	0	0	0	0	0							
	39.0-39.9	0	0	0	0	0							
		144	*	13	50	81	14	2	28	3		18	79

Cape horse mackerel biological data

AREA	LENGTH CLASS	NO. FISH TOTAL	MEAN WEIGHT	JUVENILE	MALE	FEMALE	1	2	3	4	5	6	7
21° - 19°	5.0-13.9	84	6.8	84	0	0	84						
	14.0-19.9	98	42	7	36	55	4	13	12	2	1	13	48
	20.0-20.9	9	69.7	0	5	4			1			2	6
	21.0-21.9	13	79.7	0	8	5		1	1			3	8
	22.0-22.9	25	88.5	0	10	15		3	1			7	14
	23.0-23.9	14	98.7	0	6	9			1			5	8
	24.0-24.9	18	110	0	8	10		1				10	7
	25.0-25.9	13	119.2	0	7	6						9	4
	26.0-26.9	10	130.6	0	4	6						5	5
	27.0-27.9	5	154	0	1	4			1			1	3
	28.0-28.9	0	0	0	0	0							
	29.0-29.9	0	0	0	0	0							
	30.0-30.9	0	0	0	0	0							
	31.0-31.9	0	0	0	0	0							
	32.0-32.9	0	0	0	0	0							
	33.0-33.9	0	0	0	0	0							
	34.0-34.9	0	0	0	0	0							
	35.0-35.9	0	0	0	0	0							
	36.0-36.9	0	0	0	0	0							
	37.0-37.9	0	0	0	0	0							
	38.0-38.9	0	0	0	0	0							
	39.0-39.9	0	0	0	0	0							
		289	*	91	85	114	88	18	17	2	1	55	103

Cape horse mackerel biological data

AREA	LENGTH CLASS	NO. FISH TOTAL	MEAN WEIGHT	JUVENILE	MALE	FEMALE	1	2	3	4	5	6	7
19° -17°	5.0-13.9	27	9.3	25	1	1	26	1					
	14.0-19.9	159	42.6	0	66	93		14	15		47	28	55
	20.0-20.9	17	63.7	0	4	13						3	14
	21.0-21.9	13	71.1	0	6	7		1				3	9
	22.0-22.9	8	86.5	0	4	4			1			4	3
	23.0-23.9	11	96.3	0	6	5						2	9
	24.0-24.9	13	102.1	0	8	5						6	7
	25.0-25.9	16	115.7	0	8	8			1			8	7
	26.0-26.9	26	130.5	0	12	14			4			9	13
	27.0-27.9	29	152.9	0	11	18	1		2			8	18
	28.0-28.9	13	163.7	0	6	7			1			5	7
	29.0-29.9	17	182.8	0	5	12						8	9
	30.0-30.9	11	201.2	0	3	8			3			3	4
	31.0-31.9	4	228.6	0	1	3							4
	32.0-32.9	5	234.4	0	1	4			1			2	2
	33.0-33.9	6	261.4	0	3	3						4	2
	34.0-34.9	5	277.8	0	2	3						1	4
	35.0-35.9	5	294.8	0	1	4						3	2
	36.0-36.9	6	339.5	0	2	4			1			2	3
	37.0-37.9	1	386.6	0	0	1							1
	38.0-38.9	1	372.6	0	0	1						1	
	39.0-39.9												
		393	*	25	150	218	27	16	29		47	100	173

Cape horse mackerel biological data

AREA	LENGTH CLASS	NO. FISH TOTAL	MEAN WEIGHT	JUVENILE	MALE	FEMALE	1	2	3	4	5	6	7
17° - 16°	5.0-13.9	3	19.6	3	0	0	3						
	14.0-19.9	63	44.3	4	36	23	4	3	25	13	2	2	14
	20.0-20.9	15	62.9	0	8	7			5	1		2	7
	21.0-21.9	20	73.9	0	8	12			2	1		5	12
	22.0-22.9	10	85	0	6	4			2			1	7
	23.0-23.9	4	92.6	0	4								4
	24.0-24.9	6	105.9	0	4	2			2				4
	25.0-25.9	3	123.9	0	0	3							3
	26.0-26.9	1	154.1	0	1	0				1			
	27.0-27.9	1	235.3	0	0	1			1				
	28.0-28.9	0	0	0	0	0							
	29.0-29.9	0	0	0	0	0							
	30.0-30.9	0	0	0	0	0							
	31.0-31.9	0	0	0	0	0							
	32.0-32.9	0	0	0	0	0							
	33.0-33.9	0	0	0	0	0							
	34.0-34.9	0	0	0	0	0							
	35.0-35.9	0	0	0	0	0							
	36.0-36.9	0	0	0	0	0							
	37.0-37.9	0	0	0	0	0							
	38.0-38.9	0	0	0	0	0							
	39.0-39.9	0	0	0	0	0							
		126	**997.5**	**7**	**67**	**52**	**7**	**3**	**37**	**16**	**2**	**10**	**51**

Annex XI Fish condition factor

Cape horse mackerel average condition factor for all areas.

AVERAGE LENGTH CLASS (cm)	25°-16° NO. FISH	AVERAGE TOTAL WEIGHT (g)	AVERAGE NET WEIGHT (g)	AV COND FAC TOT. WEIGHT	AV COND FAC NET WEIGHT
5.5	2	1.25	1.05	0.751	0.631
6.6	8	2.45	2.19	0.852	0.762
7.5	33	3.55	3.15	0.841	0.747
8.5	34	5.16	4.54	0.840	0.739
9.4	17	6.69	6.20	0.805	0.746
10.2	12	8.53	7.91	0.804	0.745
11.5	14	12.00	11.16	0.789	0.734
12.3	11	14.57	13.61	0.783	0.731
13.6	5	19.22	17.98	0.764	0.715
14.5	7	23.64	22.06	0.775	0.724
15.5	31	29.29	27.25	0.787	0.732
16.5	37	35.74	32.85	0.796	0.731
17.5	61	41.21	37.88	0.769	0.707
18.4	76	47.57	44.56	0.764	0.715
19.3	43	54.50	51.04	0.758	0.710
20.4	42	66.80	62.12	0.787	0.732
21.4	36	76.11	71.08	0.777	0.725
22.5	50	87.92	81.52	0.772	0.716
23.5	33	98.88	91.55	0.762	0.705
24.4	34	107.18	98.66	0.738	0.679
25.3	31	118.65	111.26	0.733	0.687
26.4	47	133.67	125.42	0.726	0.682
27.4	40	150.14	140.89	0.730	0.685
28.4	32	172.48	159.75	0.753	0.697
29.4	36	195.76	180.40	0.770	0.710
30.5	21	212.77	195.03	0.750	0.687
31.3	14	237.54	211.81	0.775	0.691
32.3	13	250.69	232.49	0.744	0.690
33.4	14	274.35	257.36	0.736	0.691
34.3	10	287.92	268.07	0.713	0.664
35.2	6	297.42	280.97	0.682	0.644
36.5	8	351.20	331.79	0.722	0.682
37.6	3	384.00	361.30	0.722	0.680