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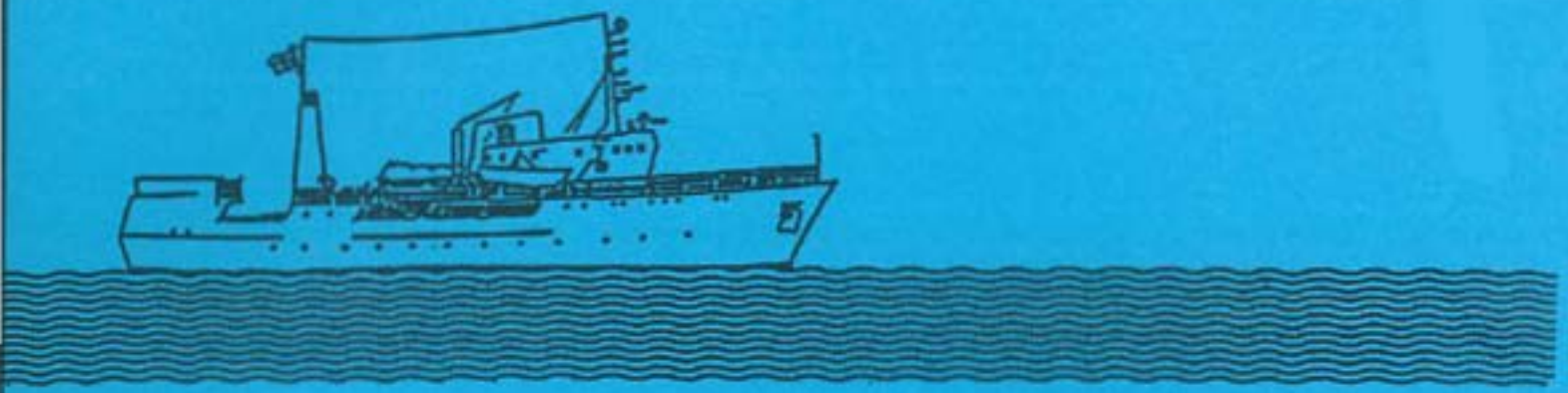
CRUISE REPORTS "DR. FRIDTJOF NANSEN"



SURVEYS OF THE FISH RESOURCES OF NAMIBIA

Preliminary Report Cruise No 1/93

Part I
Surveys of the hake stocks
20 January - 25 February 1993

and
Part II
Surveys of the pelagic stocks
28 February - 19 March 1993

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 Assistance NORAD, the Food and Agriculture Organization of the United Nations FAO, and the United Nations Development Programme UNDP. The programme in Namibia is being 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

Reports were submitted after the completion of each survey. This cruise report describes the work and some of the findings of Survey 1 1993.

PART I

SURVEYS OF THE HAKE STOCKS
20 January-6 February 1993

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PART I

CHAPTER 1 INTRODUCTION

1.1 GENERAL OBJECTIVES

Following an offer from NORAD extended through FAO and UNDP, an agreement was reached in Windhoek in January 1990 between the UNDP Resident Representative and Namibian authorities for the execution of a programme of surveys of the fish resources of the Namibian shelf with the R/V "DR. FRIDTJOF NANSEN".

The purpose of the programme was agreed as follows:

> The main objectives are descriptions of the distribution, composition and abundance of the most important resources of fish. The small pelagic fish horse mackerel, pilchard and anchovy will be investigated by the acoustic integration method combined with sampling with mid-water and bottom trawls. A swept area trawl survey programme will be used for the demersal stocks. All catches will be sampled to species by weight and numbers and biological sampling will be made of the commercially important stocks.
>
> Environmental studies will include recording of surface temperature on a continuous basis and occupation of hydrographic stations in a series of fixed profiles.
>
> Possible taxonomic problems will be studied by sampling and examination by experts in cooperation with FAO's Fisheries Department.

1.2 SPECIFIC OBJECTIVES OF PART 1

During the first part, 20 January to 26 February the objective is investigations of hakes and the "minor" species, kingklip, monk, soles and large eye dentex covering the whole Namibian shelf. Since the distribution of these stocks extend into southern Angola, the survey should include the Baia dos Tigres bank. This was agreed in consultations with CIP, Luanda and Angolan representation on board the vessel was arranged.

To improve sampling of bottom dwelling species, monk and soles a special trawl which was thought to have higher catchability of these species was brought along for testing.

The acoustic system will be used to observe possible mid-water occurrence of the hakes. The survey design for the swept area trawl programme will be based on a semi-random distribution of hauls intended to cover the depth ranges of the two hake species and with a density of stations adapted to the expected fish densities. Biomass estimates of Cape hake will be based on post stratification by density areas.

An ichthyoplankton survey covering the shelf from 20° to 18°S was a further special objective.

1.3 PARTICIPATION

The scientific staff were:

From Namibia, 20 January to 6 February:

Clemens Evenson, Johnny Gamatham, Hashali Hamukuaya, Lima Maartens, Willem Nauiseb and Benediktus Ushona.

7 to 26 February:

Michael O.Toole, Filimon Dausab, Johnny Gamathan, Malakia Shimanda, Dawid Gaseb.

From Angola:

Mario Rafael

From Norway, 20 January to 6 February:

Oddgeir Alvheim, Reidar Johannesen and Magnar Mjanger.

7 to 26 February:

Gunnar Saetersdal, Else Torstensen, Reidar Johannesen and Magnar Mjanger.

1.4 NARRATIVE

Figures 1 a-c show the course tracks with the positions of the fishing and hydrographic stations.

After leaving Walvis Bay on 20 January the vessel steamed south to start work off the Orange river on 22 January. The program followed that of previous surveys and was completed for the South Region, up to 25°S, by 2 February with 77 bottom trawl stations, five of which were test hauls with the special gear. Unfavourable weather conditions delayed the work, with three days being completely lost due to rough seas and force 7 - 8 winds. The hydrographic profile off Panther head was worked on 27 January and that off Hottentot Point on 30-31 January.

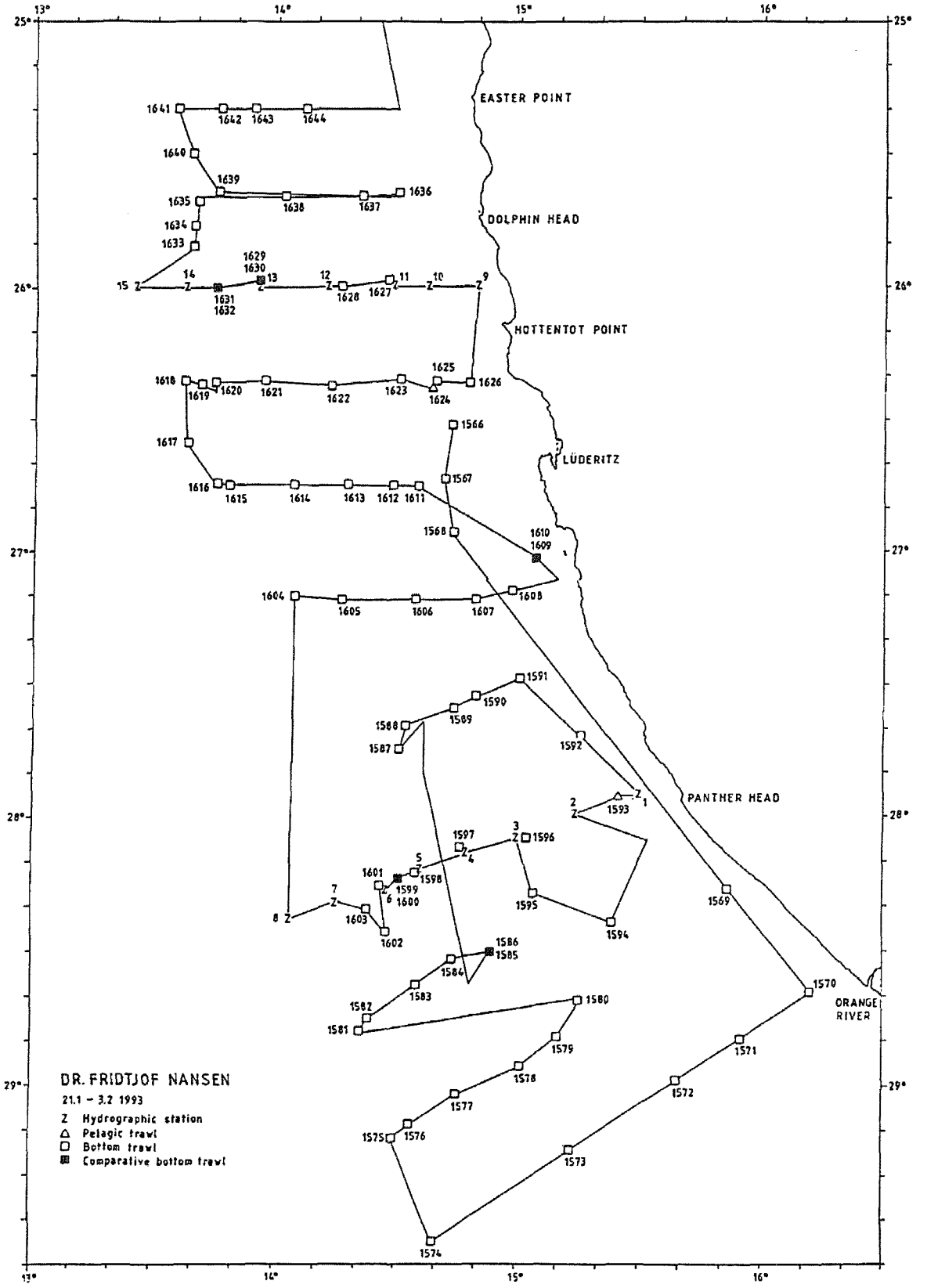


Figure 1a Orange River to St. Francis Bay. Course tracks, fishing stations and hydrographic profiles.

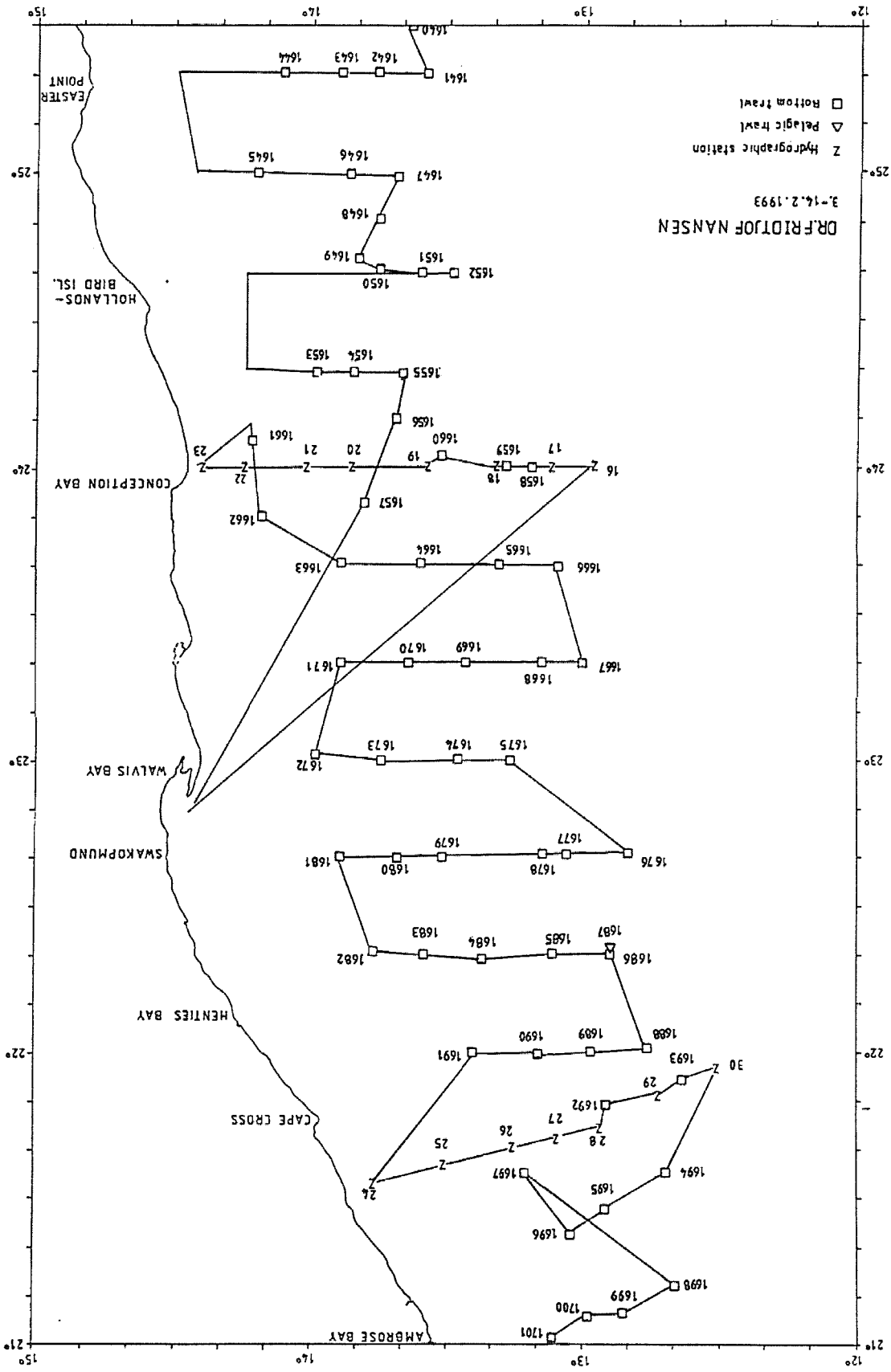


Figure 1b St. Francis Bay to Ambrose Bay. Course tracks, fishing stations and hydrographic profiles.

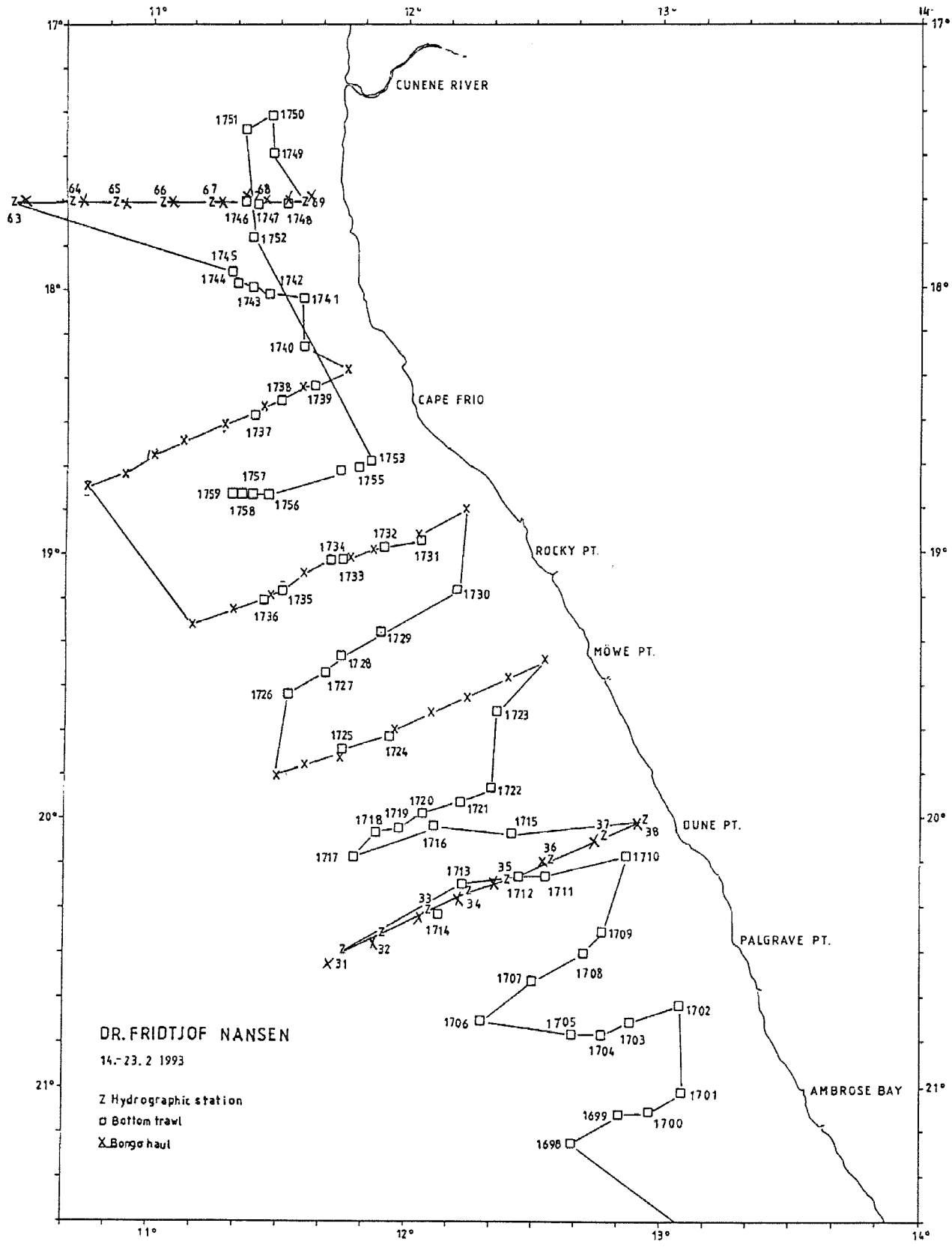


Figure 1c Ambrose Bay to Cunene River. Course tracks, fishing stations and hydrographic profiles.

Work in the Central Regions was disrupted by a visit to Walvis Bay 5-7 February for exchange of scientific staff and resumed with the occupation of the hydrographic stations in the section off Conception Bay on 8 February. After a few days of rough weather conditions improved and the survey work proceeded in good order northwards with the Cape Cross section worked on 13 February and the Central Region covered at Ambrose Bay on the 14th with a total of 57 trawl stations.

Weather conditions in the Northern Region were generally favourable. Rough bottom in shallower parts affects to some extent the distribution of trawl stations. The hydrographic stations in the Dune Point section were occupied on 15 - 16 February and this section was also the first of a series of ichthyoplankton lines with Bongo stations worked every 40nm northwards. The northernmost profile near Cunene was worked on 21 February. Survey of the southern Angolan shelf started on 22 February but was curtailed that evening due to a breakdown of navigational instruments. A line of trawl stations south of Cape Frio was fished on 23 February thus completing the coverage of the northern region with a total of 56 successful fishing stations. Walvis Bay was reached on 25 February.

CHAPTER 2 HYDROGRAPHY

Figures 2 a-c show the sea temperature at 4m of depth as observed with the ships thermograph and Figures 3 a-c show the distribution of temperature and salinity in the five hydrographic transects worked. Rough weather prevailed during the coverage in the south and this is reflected in the profiles from this part especially in that off Panther Head which shows intensive upwelling. Also the profile off Conception Bay demonstrates recent upwelling. Calmer weather prevailed in the north with presence of surface water with salinity exceeding 35.50 ‰ in the northernmost profile demonstrating intrusion of Angolan water.

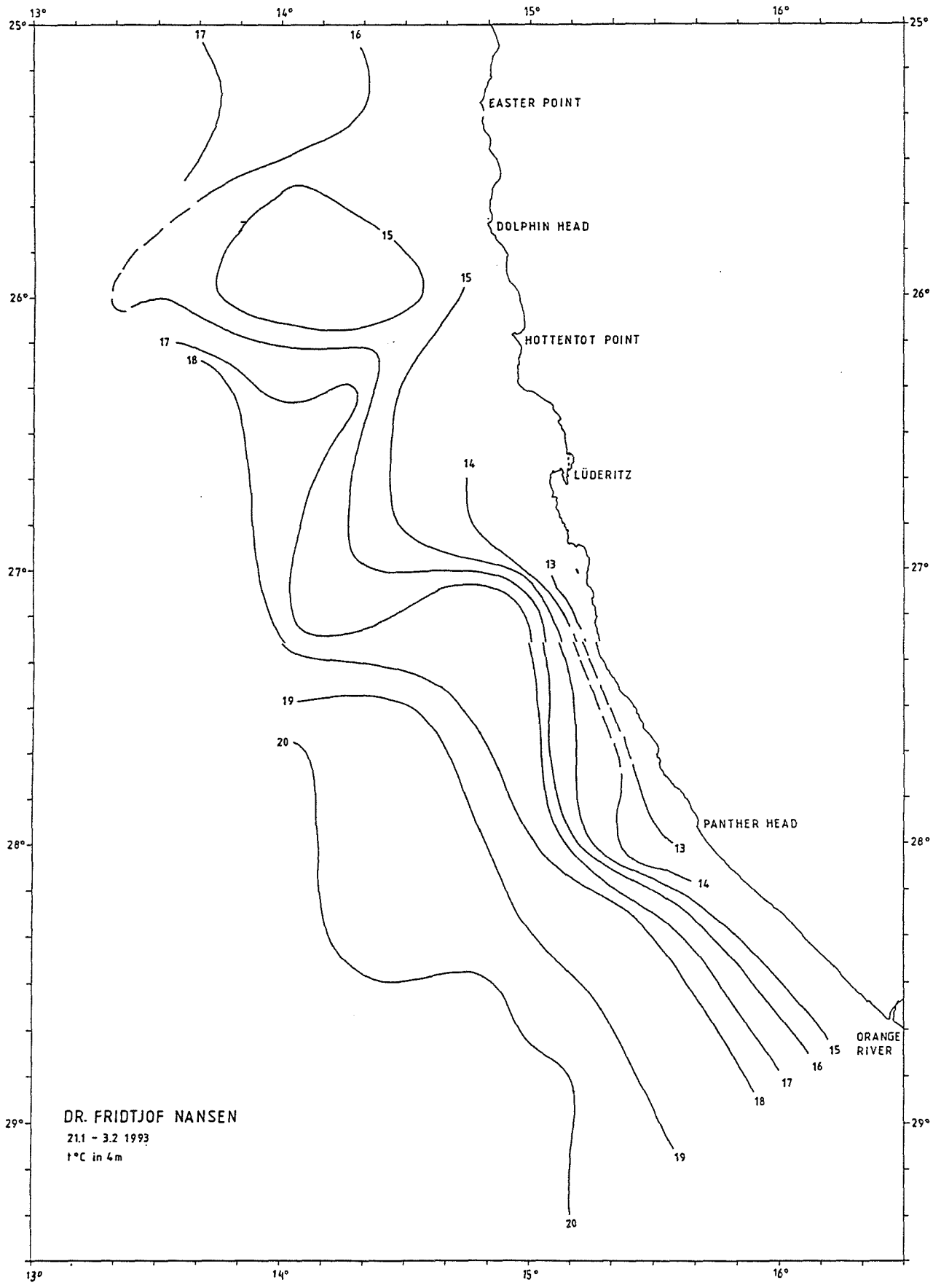


Figure 2a Distribution of sea temperature at 5m of depth based on observations of the ships thermograph.

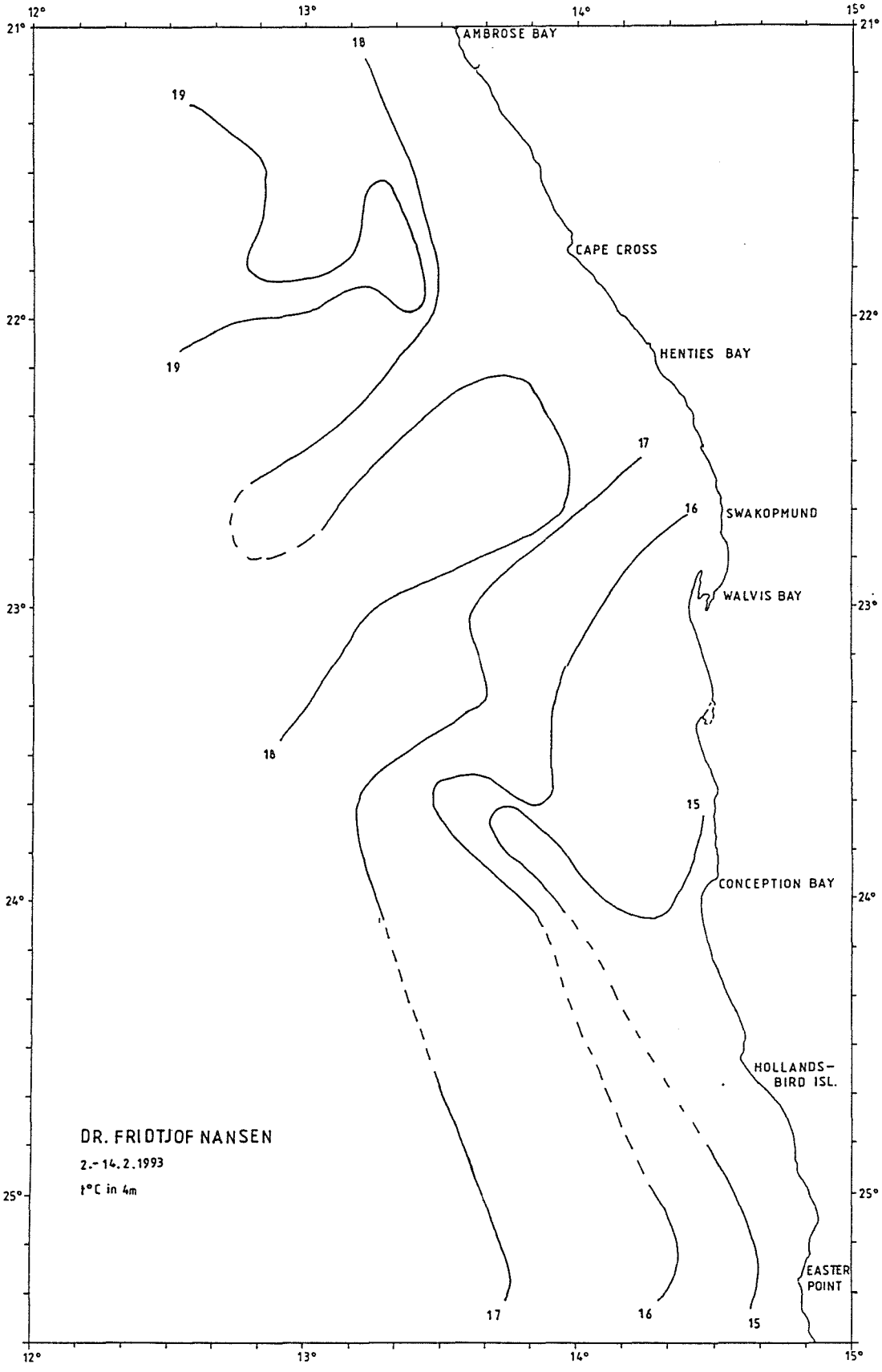

12°
13°
14°
15°
21°
22°
23°
24°
25°
AMBROSE BAY
CAPE CROSS
HENTIES BAY
SWAKOPMUND
WALVIS BAY
CONCEPTION BAY
HOLLANDS-
BIRD ISL.
EASTER
POINT
18
19
19
17
16
18
15
17
16
15
DR. FRIDTJOF NANSEN
2.-14.2.1993
t°C in 4m

Figure 2b

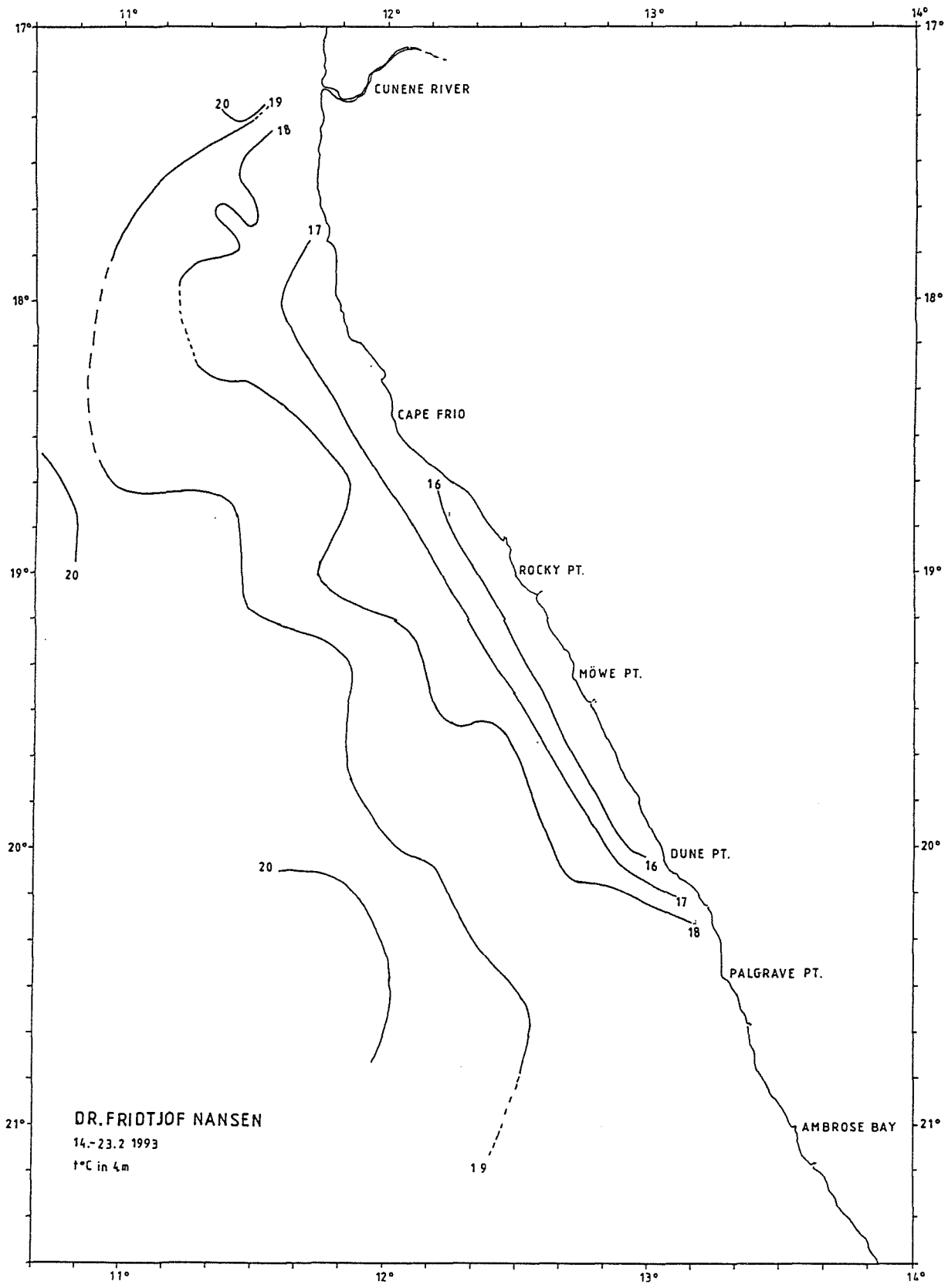

11°
12°
13°
14°
17°
18°
19°
20°
21°
CUNENE RIVER
20
19
18
17
CAPE FRIO
16
ROCKY PT.
MÖWE PT.
DUNE PT.
16
17
18
PALGRAVE PT.
AMBROSE BAY
20
20
19
DR. FRIDTJOF NANSEN
14.-23.2 1993
t°C in 4m

Figure 2c

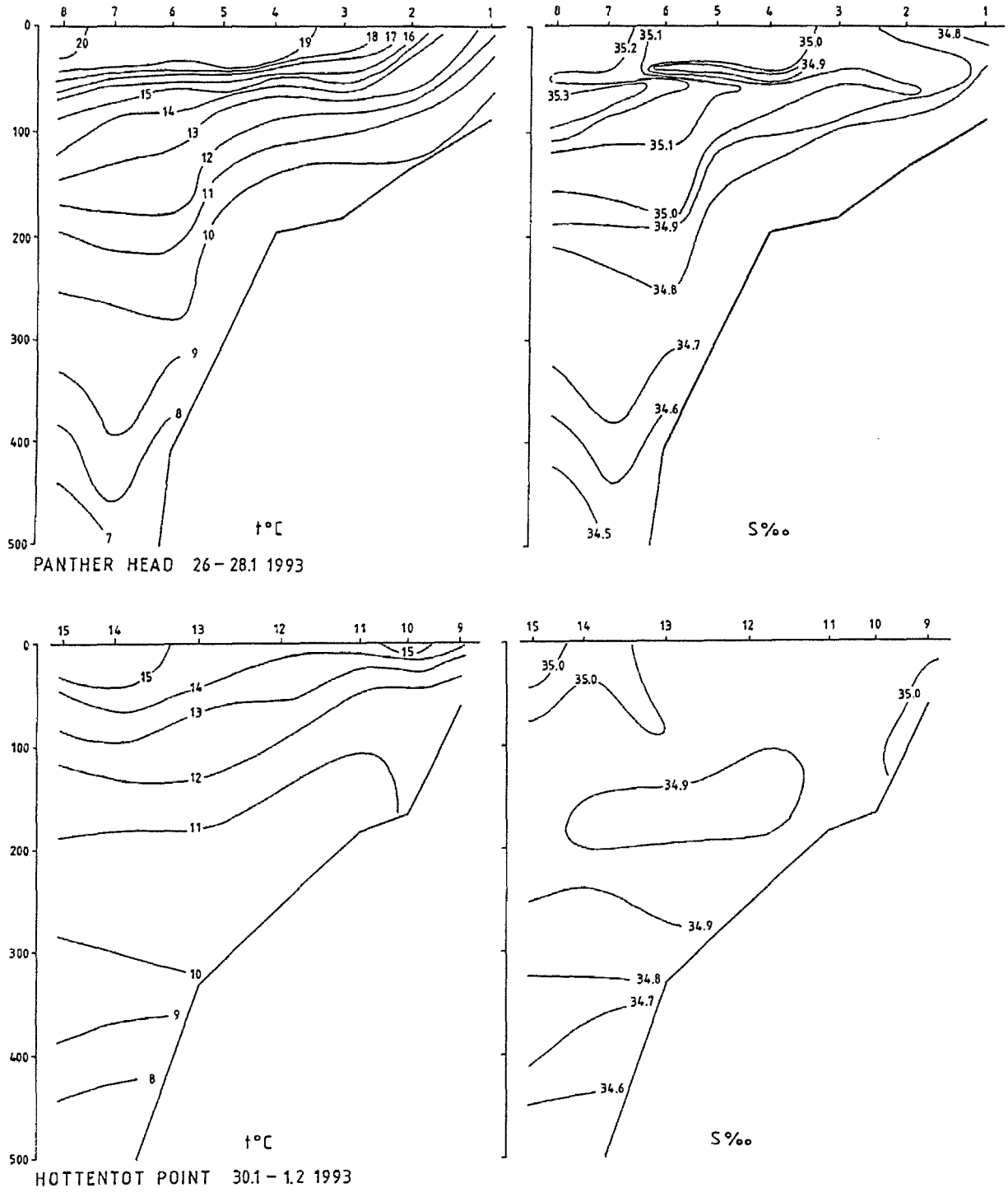


Figure 3a Orange River to St Francis Bay. Temperature and salinity in the standard profiles worked.

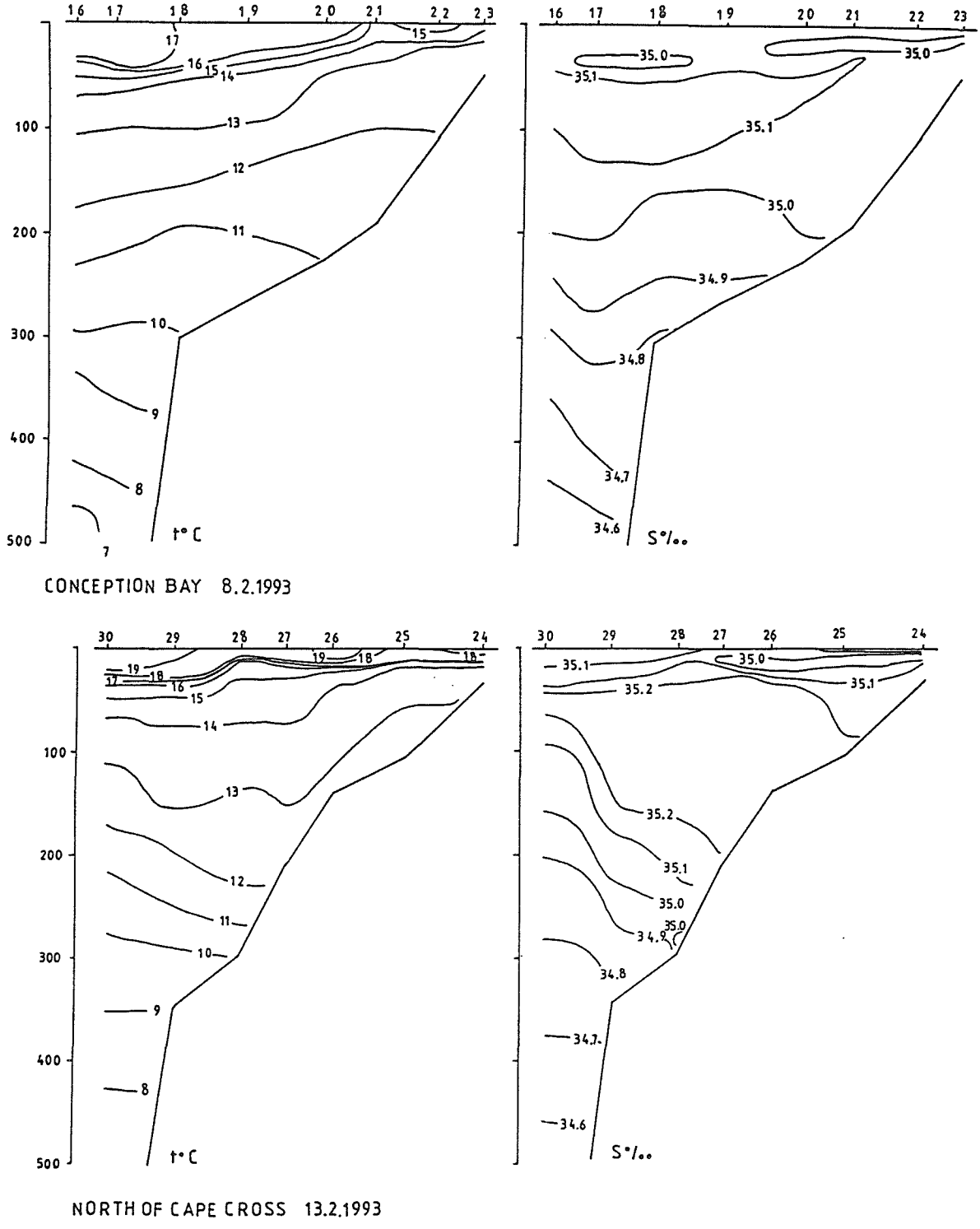


Figure 3b St Francis Bay to Ambrose Bay. Temperature and salinity in the standard profiles worked.

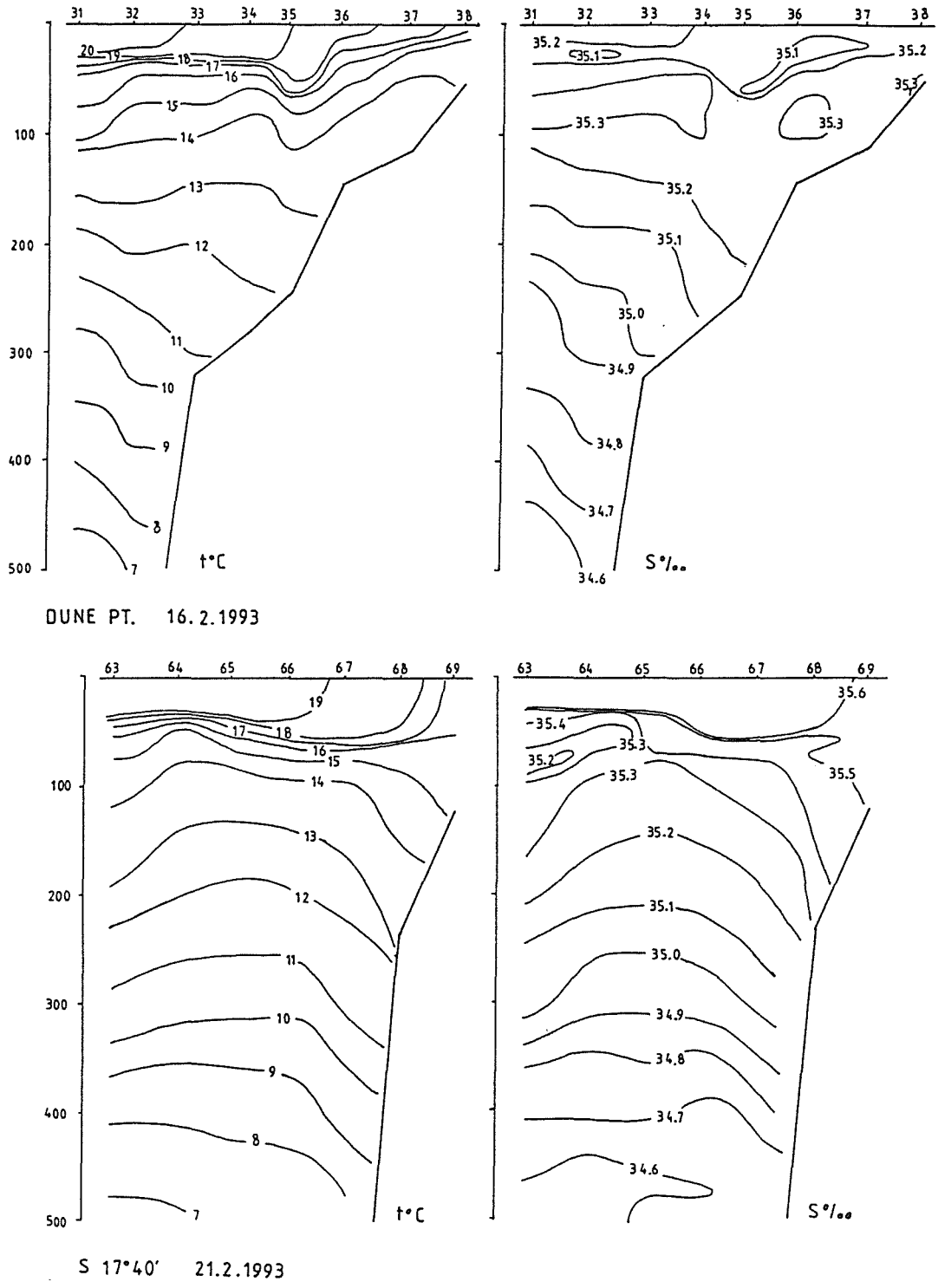


Figure 3c Ambrose Bay to Cunene River. Temperature and salinity in the standard profiles worked.

CHAPTER 3 RESULTS OF THE ACOUSTIC AND TRAWL SURVEY

3.1 DISCUSSION OF METHODS

In the trawl survey programme all catches were sampled for composition in weight and numbers by species. The bottom trawl has a headline of 31m (float line), footrope 47 m, estimated headline height 5m and distance between wings during towing about 18m. Observations on the geometry of this type of trawl were made during Survey 2/90 and are described in the corresponding report. For conversion of catch rates to fish densities the area between the wings is assumed to be the effective fishing area i.e. q is equal to 1.

The problem of mid-water occurrence of hake and the effect on the swept area assessments were discussed in the report of Survey 1/91. Fish occurring above the headline of the trawl, more than 5m from the bottom must be assumed to cause an under-estimate. The extent of this behaviour seems to have varied between the surveys. Mid-water occurrence during the night has always been observed although with varying frequency. Fishing has, however, been restricted to day time as much as possible, and mid-water occurrence during the day was first found as a problem for the assessment in the northern region during the September-October survey 1990 when abundant echo traces of hake above the bottom were observed both day and night. Quantification was, however, difficult with the instrumentation then available, but the new SIMRAD EK 500 system which was taken into use in the first 1991 survey provided improved means of observing and measuring the densities of hake in mid-water. A correction for the bias in the swept area estimates was then introduced using the acoustic estimates of fish found more than 5m from the bottom. The frequent presence of spurious recordings such as of myctophids, gobies, euphaucids and others often complicates the acoustic density estimates of hakes and prevents an ordinary acoustic biomass estimate of mid water hake in the area, but wherever possible, attempts were made to separate and assess mid-water hake during trawling. A target strength used for cod was applied, (with condition factor $c = 0.65$):

$$TS = 20 \log l - 68.$$

The observations of mid-water occurrence of hake made since survey 1/91 show that this type of behaviour has varied considerably. In survey 1/91 the mean acoustic addition to the density indices from the swept area daylight trawl hauls was quite high, 26% and 28% for the South and Central Regions respectively and 80% for the North Region with an average of 46%. In all of the three subsequent surveys 2/91, 1/92 and 2/92 the mean acoustic additions were low, 4, 5 and 8% only as an overall mean. For the present survey, see Table 1, which is conducted at the same season as that of 1/92, January and February, pelagic occurrence was again common, with a mean acoustic correction in the northern region of 23% and an overall mean for all regions of 11%.

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. Density tonnes/nm².

ORANGE RIVER - ST. FRANCIS BAY	DAY	NIGHT
Trawl		
No. stations	48	23
Mean density	32.6	16.3
Acoustic obs.		
No. stations	14	13
Mean density	5.5	4.8
Average acou.cor.	5%	16%
ST. FRANCIS BAY - AMBROSE BAY	DAY	NIGHT
Trawl		
No. stations	47	7
Mean density	24.0	9.7
Acoustic obs.		
No. stations	19	4
Mean density	3.4	12.2
Average acou.cor.	6%	73%<
AMBROSE BAY - CUNENE RIVER	DAY	NIGHT
Trawl		
No. stations	43	12
Mean density	17.2	14.2
Acoustic obs.		
No. stations	28	8
Mean density	6.0	15.6
Average acou.cor.	23%	73%

In addition to the cases recorded come a similar number of stations where mid water occurrence was suspected, but could not be clearly demonstrated or estimated due to spurious recordings of other organisms at the critical depths.

At night much more of the hake lifts off the bottom and the acoustic density estimates then often exceed those from the swept area hauls.

The high rate of mid water occurrence observed during the present survey makes the biomass estimates less reliable and it seems probable that they have cause a negative bias and that the total stock will thus be underestimated.

3.2 SOUTHERN REGION, ORANGE RIVER TO ST. FRANCIS BAY

The complete record of the fishing stations are shown in Annex III.

Table 2 shows the catch rates standardized to kg/hour by main groups for the shelf and the slope separately. The mean catch rates for the hakes are at about the level found in survey 1/92. For monk the rates are lower than in the two previous surveys, while for kingklip and squid they remain about the same.

The depth distribution of the two hake species based on the catch rates converted to densities are shown in Table 3. For both species the densities are similar to those of the last two surveys, but with an exceptionally high value for the deep water hake in the 250-350m range. This is caused by a few very heavy catches at 340m of depth in the area off Panther Head.

The distribution of the two hake species based on plots of densities by fishing stations are shown in Figures 4 and 5. These include the acoustic estimates of fish present above the 5 m bottom channel during trawling as discussed above. The distributions of the two species are similar to those found in Survey 1/92 with relatively high densities of Cape hake extending from 25°S to about 27°S. The deep water hake shows spots of high density in the steep slope in the south towards the border.

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

SHELF 50-259 m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles etc.	Squid	Other
1566	165	7.6					109.1
1567	205	190.5					21.8
1568	218	316.6					12.8
1569	87	39.3		4.8	1.2	8.2	30.7
1570	92	209.0		65.2	99.7		1188.8
1571	146	165.0	0.9	1.0	2.1	76.2	159.4
1572	173	216.2	3.2	1.8	2.1	1.1	97.9
1573	186	51.0		51.0	5.3	4.4	104.6
1577	217	115.3	21.6			8.0	427.0
1578	174	151.0		4.7		1.0	83.5
1579	160	127.8	12.2				1790.1
1580	163	267.3	0.8			19.4	437.2
1583	168	288.8	3.3				1610.1
1584	195	133.0	4.7	4.4		2.4	178.8
1585	177	124.0	14.5		1.3	2.2	182.0
1591	203	532.7			0.6	26.3	40.8
1592	121	71.0					1368.4
1594	155	406.6		76.8	4.3		18.7
1595	175	161.9		110.0	4.5		64.4
1596	181	326.3		0.3	1.8	30.6	138.7
1597	194	96.6	7.5		2.8	12.3	767.5
1598	184	1839.8					4455.6
1607	247	2743.6			1.8		27.3
1608	163	510.0					
1609	133	378.0		129.1		1.3	3.1
1611	251	2368.0					3.2
1625	189	21.0					112.2
1626	142						240.0
1627	183	14.5					581.8
1628	229	827.2			0.7		13.1
1636	151	831.1			1.2		306.6
1637	185	2157.1					107.3
1638	245	41.5				0.4	10.0
1643	239	1012.8	0.7				129.3
MEAN		524.2	2.1	13.2	3.8	5.7	437.0

SLOPE 260-650 m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles etc.	Squid	Other
1574	381	702.1	2.8	16.4	0.6	56.1	160.0
1575	421	3631.8		45.2		4.1	13.3
1576	297	671.8	9.7	4.3		26.0	1342.7
1581	517	68.6				3.3	13.7
1582	422	14.3		2.6		1.5	1.1
1587	544	23.6	4.9			2.0	125.9
1588	445	4.6		6.2		1.0	13.1
1589	327	291.7		6.0		2.3	4.7
1590	305	1601.7		3.6		18.0	33.9
1599	340	13637.0		6.8		25.9	352.0
1601	421	943.7		25.0		20.7	79.6
1602	365	2029.8				7.0	26.9
1603	567	19.4				1.1	25.9
1604	481	347.7				7.6	15.4
1605	395	272.4	2.3	1.9		31.6	40.3
1606	321	1468.7		10.5		27.1	32.5
1612	304	169.4		87.3		1.0	2.1
1613	355	741.2		8.8		2.6	30.6
1614	392	945.8		12.8		81.0	2.5
1615	441	160.4		2.6		30.0	26.0
1616	499	158.5				32.5	61.7
1617	609	308.4				13.9	77.0
1618	573	459.2					400.0
1619	438	229.8				12.1	71.5
1620	398	693.8		15.2		17.7	147.6
1621	372	4219.4		1.7			150.0
1622	321	2172.4	3.6			22.8	2.9
1623	276	86.4		21.9	2.5		25.1
1629	336	501.4	10.9			28.2	28.4
1631	403	846.0	18.0	44.4		41.2	109.6
1633	539	540.8				68.6	388.0
1634	477	684.0				51.8	71.5
1635	402	490.0		1.1		13.4	47.8
1639	347	244.0		7.6		16.2	64.6
1640	425	530.0	9.0			33.0	81.3
1641	501	565.6				6.6	214.6
1642	299	2535.2	23.2				126.9
MEAN		1162.5	2.3	9.0	0.1	19.2	119.2

Table 3. Depth distribution of the two hake species, Orange River to St. Francis Bay. Mean densities tonnes/nm² and mean catch rates kg/hour.

	100-250m	250-350m	350-450m	450-550
Cape hake				
Density	14.2	25.7	7.2	0.3
Catch rate	430	770	220	10
Deep w. hake				
Density	0.2	44.2	26.3	10.3
Catch rate	10	1326	790	310
No. of hauls	32	12	16	9

Biomass estimates based on a poststratification of the estimated densities as shown in Figure 4 and 5, give 210 000 tonnes for the Cape and 150 000 tonnes for the deep water hake, see Table 4. These estimates are higher than those of previous recent surveys.

Table 4 Orange River to St Francis Bay. Estimates of total biomass by surveys, 1 000 tonnes.

	Cape hake	Deep water hake
1/90	130	22
3/90	130	25
1/91	113	31
2/91	80	82
1/92	200	145
2/92	160	125
1/93	210	150

The size compositions of the Cape hake from pooled samples weighted by catch rates are shown by depth ranges and total for the region in Annex I. There is as usual an increase of size with depth. The dominating cohort with a modal size around 25-26 cm must be identical to that found in this region in the October-November 1992 survey with a mode of 21-22cm.

The fishable part of the Cape hake in this region defined as fish 36cm and larger is estimated at 15% by numbers and 55% by weight. This corresponds to about 134 million fish with a biomass of 115 000 tonnes. This is an increase from about 100 million fish and 75 000 tonnes in Survey 2/92.

The recruit group of Cape hake in the 20cm range with a modal size of 25-26cm , assumed to have been spawned in 1991, has an abundance of about 670 million, about the same as estimated in the October-November 1992 survey.

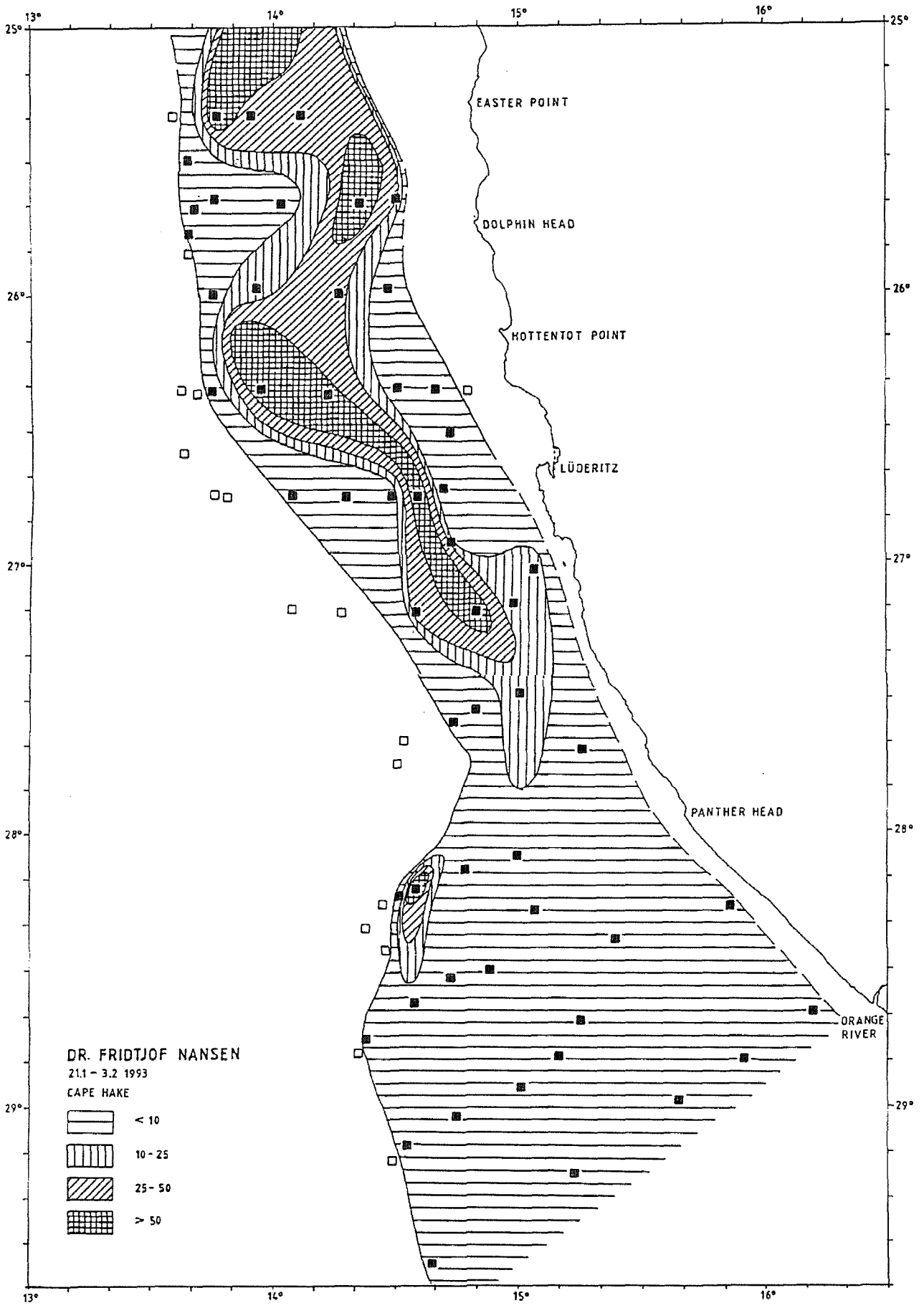


Figure 4 Orange River to St. Francis Bay. Distribution of Cape hake.

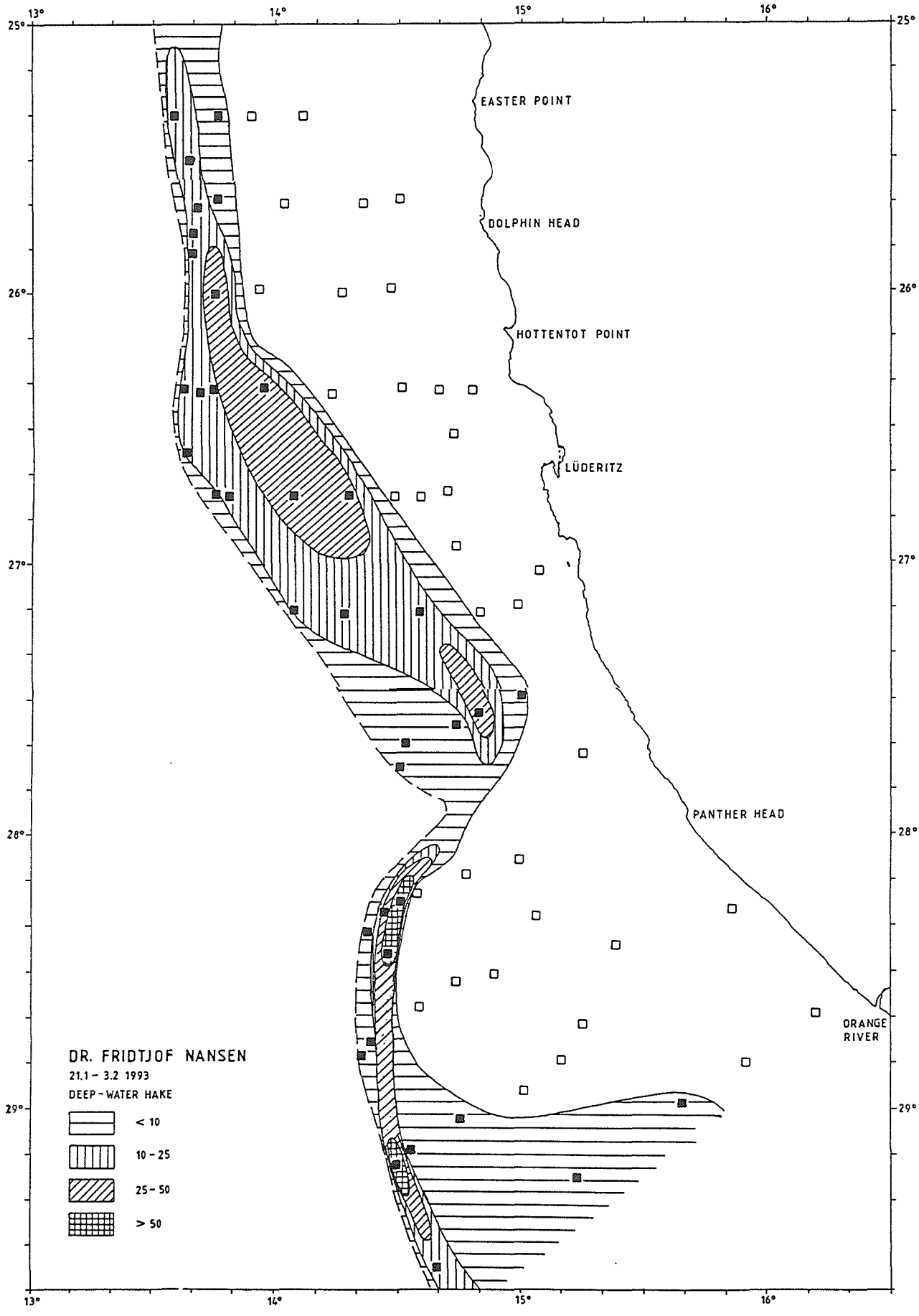


Figure 5 Orange River to St. Francis Bay. Distribution of deep water hake.

The size composition of the deep water hake, see Annex I is multimodal. The modes at 25 and 35cm can be related to those at about 20 and 30cm found in the October-November 1992 survey.

The fishable part of the stock is 53% by numbers and 82% by weight corresponding to about 200 million fish with a biomass of 123 000 tonnes.

Some sampling was made of the state of maturity of the gonads of female fish using a scale of 1-5, see Annex 2. The observations represented 19 samples with a total of 234 fish for Cape hake and 10 samples with 106 fish for deep water hake. The results can be summarized as follows:

Stage		1	2	3	4	5
Cape hake	%	6	63	27	0.1	4
Deep w. hake	%	12	76	9	0	3

For both species the majority of the fish was thus found to be in a resting condition

3.3 CENTRAL REGION, ST. FRANCIS BAY TO AMBROSE BAY

Table 5 shows the catch composition for the shelf and the slope by main groups. The mean catch rates for hake are considerably lower than those obtained in the October-November 1992 survey. The by-catch rates for monk and squid are largely unchanged from the most recent surveys.

The density by depth ranges of the two hake species is shown in Table 6. For the Cape hake there is a marked reduction in abundance in the shallow ranges compared with the findings of Survey 2/92. There is no great change for the deep water hake.

Table 5. Central Region. Catch rates by main groups in swept area bottom trawl hauls, kg/hour.

SHELF: 100-259m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles	Squid	Other
1645	161	970.66	0.50		16.80	1.60	573.20
1646	200	2113.46				2.30	701.04
1649	257	292.20	22.20	0.44			113.68
1653	207	343.00			2.46	2.80	44.70
1657	214	211.40	1.30				535.92
1661	122	33.60					177.92
1662	163	2487.84					5.18
1663	170	5125.12				1.40	83.42
1664	214	430.80	1.86				30.58
1669	259	546.40	11.86				100.88
1670	157	953.07	22.50		88.13		356.44
1671	151	2240.00					12.00
1672	134	1786.40			13.40	16.24	8.96
1673	143	759.90	32.88		3.96	12.96	127.68
1674	258	221.80	5.64			1.10	156.64
1679	179	2161.12	14.40			4.64	3231.20
1680	129	1390.08			2.40	3.36	31.84
1681	122	900.00					
1682	122	21.88				0.18	6.02
1683	135	354.71			0.79	0.50	92.67
1684	198	386.84			4.97	4.13	229.56
1685	249	913.76	3.06			1.12	284.02
1690	191	391.08	0.08			3.60	124.70
1691	153	309.74	5.66			1.76	15.06
1696	172	546.35					240.89
1697	147	643.06	0.54		13.00		53.54
1700	203	490.91					4707.27
1701	121	412.16					25.76
MEAN		979.91	4.37	0.02	5.21	2.06	431.10

SLOPE 260 - 650m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles	Squid	Other
1647	351	267.60	4.54	3.60		60.24	317.36
1648	300	162.34	17.96			2.10	124.84
1650	328	262.66	19.60				196.24
1651	395	297.00	1.44	1.14		12.94	64.48
1652	502	221.20		0.60		14.60	77.52
1654	277	136.80	0.80			2.66	103.94
1655	312	152.16	4.50				145.30
1656	272	206.07	6.38				221.25
1658	562	83.44	4.13	0.94			325.08
1659	344	189.76					118.00
1660	277	251.57	1.14			3.79	73.66
1665	295	360.10					111.96
1666	493	325.08	1.72	1.06		8.60	119.72
1667	602	29.20				9.80	120.44
1668	405	227.54	1.64	0.16		5.38	78.66
1675	354	353.65	9.93	4.55			34.48
1676	503	71.86	4.84			15.33	137.13
1677	304	280.00					85.06
1678	270	140.60	3.52			2.84	142.68
1686	319	304.00	5.60			8.72	323.16
1687	150						
1688	352	435.60	5.96			9.99	167.83
1689	308	543.64	1.11			2.49	54.77
1692	300	790.16				3.88	157.96
1693	499	93.90				14.42	261.90
1694	370	805.94				40.26	123.80
1695	278	326.52				14.48	140.65
1698	360	140.50				5.78	57.72
1699	293	191.60	2.20	0.08		1.22	74.66
MEAN		263.81	3.35	0.42		8.26	136.56

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

	100-250m	250-350m	350-450m	450-650m
Cape hake				
Density	34.1	9.5	8.9	0.3
Catch rate	1 020	285	265	10
Deep w. hake				
Density		0.3	2.8	4.3
Catch rate		10	85	130
No. of hauls	25	18	7	6

Figure 6 shows the distribution of Cape hake over this region. This has the same main features as that of the last survey, but the belt of high density towards the coast is drastically reduced.

The size composition of pooled samples of Cape hake from fishing stations weighted by the catch rates are shown by depth ranges and for the total region in Annex I. The juvenile group dominates in the shallow range with a modal peak length of about 24cm as compared with a 22cm mode in the last survey. In deeper waters an increase of the lowest mode can be recorded from 25-30cm to 30-35cm.

The biomass estimate of Cape hake for this region based on the post stratification shown in Figure 6 is 280 000 tonnes. The fishable part of this, measured as fish of 36cm and larger is 10% by number and 54% by weight corresponding to about 145 million fish with a biomass of 150 000 tonnes. As shown in Table 7 this surveys biomass estimate of hake in the central region is only about half of that of Survey 2/92. The main decline is found in the juvenile component, fish smaller than 36cm which is now estimated at about 130 000 tonnes compared with 370 000 tonnes in November 1992. The cause of this decline is uncertain. It seems unlikely that survey variability or emigration can be the explanation. Cannibalism could account for some decline, but hardly this drastic reduction. A possible cause could be shoreward displacement of oxygen deficient water which is known to occur in the mud belt where much of the juvenile hake is found and which may cause mass mortality oof fish..

There has been i minor decline in the adult fishable stock of Cape hake in the Central Region which now is 150 000 tonnes compared with about 180 000 tonnes in the last survey. This could be explained by migration towards the South Region where the biomass has increased. There was a tendency for the large sized fish to be found at shallower depths than previously and mixed with juvenile hake.

The deep water hake was found in a narrow belt along the slope at 350-550m of depth. The size composition , see Annex I, shows modal peaks at about 32cm and 47cm compared with 29cm and 44cm in the previous survey. Of the 12 000 tonnes biomass 48% by numbers and 74% by weight was of fishable size.

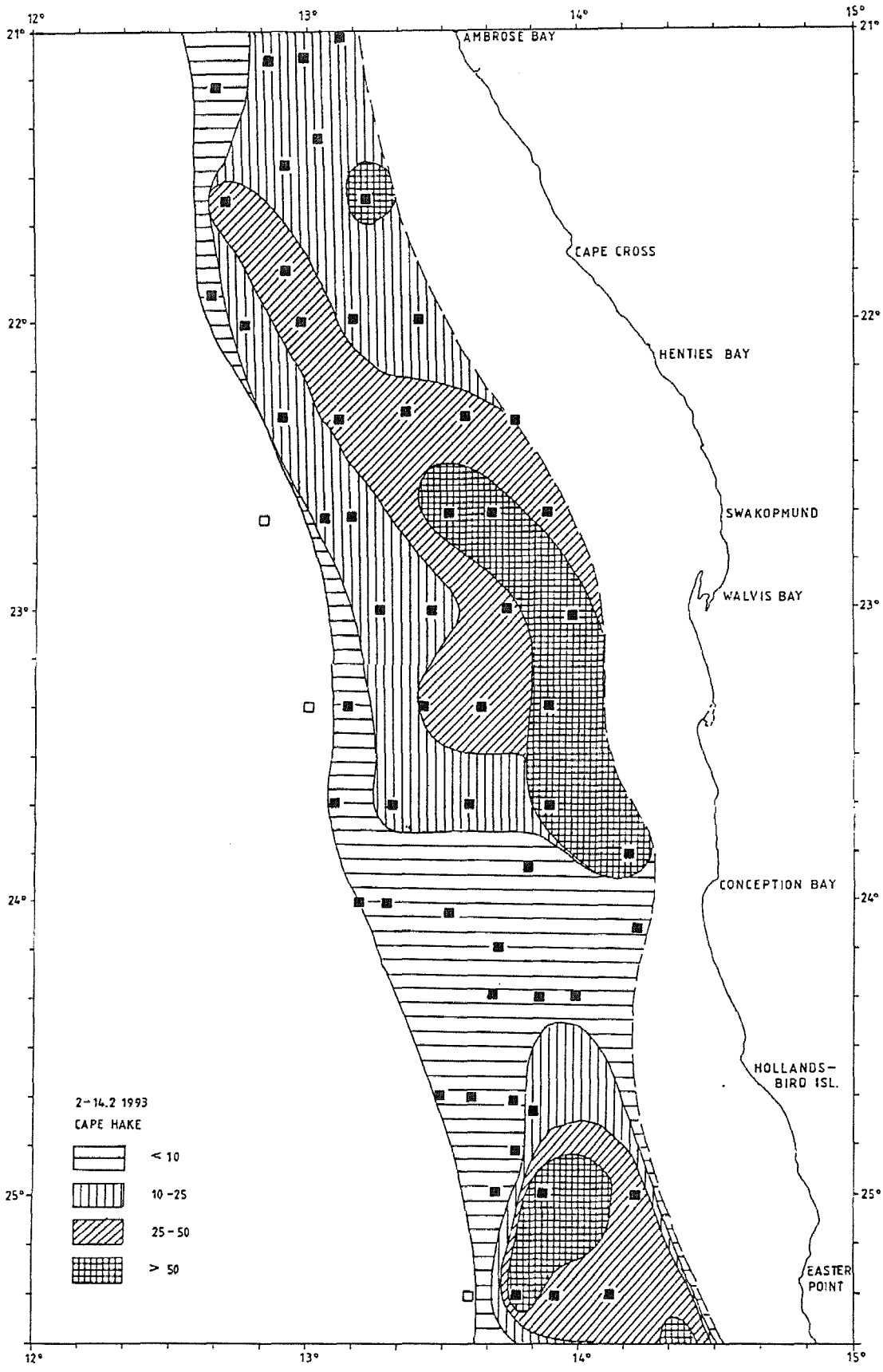


Figure 6 St. Francis Bay to Ambrose Bay. Distribution of Cape hake.

Table 7 Central Region. St Francis Bay to Ambrose Bay. Estimates of total biomass by surveys, 1 000 tonnes.

	Cape hake	Deep sea hake
1/90	180	4
3/90	219	6
1/91	150	6
2/91	302	13
1/92	261	15
2/92	542	15
1/93	280	12

Maturity sampling of female fish of Cape hake of 30-70cm of length from 14 stations comprising 449 observations showed the following state:

Maturity stage:	1	2	3	4	5	
%		9	32	24	27	8

This indicates that about 50 % of the adult fish in the Central Region was in a spawning or prespawning condition with the main other part resting.

3.4 NORTHERN REGION, AMBROSE BAY TO CUNENE RIVER.

Table 8 shows the catch rates by main groups for the shelf and slope separately. The mean rate for hake is lower on the shallow shelf than that of the two previous surveys. The rates for monk shows a slight increase as does those for squid in the slope. The abundance of the dentex will probably vary with the season.

Table 8 Northern region. Catch rates by main groups in bottom trawl hauls standardized to kg/hour.

SHELF 100-259 m

ST.NO.	DEP.	Hakes	Monk	Dentex	Horse mck.	Squid	Other
1701	121	412.16					25.76
1702	112	16.00					117.60
1703	157	506.00	0.36				56.28
1704	259	140.22	1.16		2.50		24.37
1708	213	978.00		272.00	49.20		21.20
1709	152	17.40		0.32	0.70		11.94
1710	123	186.80			4.02		2.82
1711	156	210.12			49.20		15.24
1712	225	171.75			888.39	0.52	81.87
1715	198	82.40	0.16	1.00	2.30	0.04	26.54
1721	249	183.40			44.00		26.88
1722	191	125.70				0.18	41.10
1723	226	3.92			2.36	0.04	65.22
1730	132	80.70		3.24	24.00		4.86
1731	159	100.45		84.48	12.10	0.77	28.33
1732	223	397.40			98.00		32.20
1738	249	482.65		59.15	5.26		425.03
1739	158	1585.16		34.22	432.77		
1740	171	573.00			949.60	30.40	275.40
1741	164	243.28		138.00	229.00	9.60	317.20
1742	248	586.07		68.28	17.75	8.82	310.46
1748	162	629.40		86.80	243.00		6.14
1749	165	2064.96		480.60	92.34		765.18
1750	169	418.52		611.46	171.66	6.06	1257.52
1753	151			819.72	5179.80	1.32	
1755	195	658.07		661.94	836.13		33.45
MEAN		417.44	0.06	127.74	359.00	2.22	152.79

SLOPE 260-700m

ST.NO.	DEP.	Hakes	Monk	Dentex	Horse mck.	Squid	Other
1705	316	129.10	30.30	7.06			21.90
1706	398	134.50	0.98			2.40	40.72
1707	303	357.37		45.38		0.84	7.13
1713	275	22.80	1.16				54.05
1714	314	285.09	0.54	53.81	2.63	0.23	186.89
1716	321	466.00	12.00	2.48	1.40		57.50
1717	494	44.32				5.22	129.42
1718	379	600.56				13.62	188.66
1719	333	3841.60	2.36	5.48		4.24	71.56
1720	301	741.00	2.42	1344.00	448.00		
1724	327	476.14	3.84	38.20	2.28	1.48	64.92
1725	373	110.12				0.74	54.60
1726	451	154.26	10.60			10.24	202.84
1727	352	774.02				13.96	127.66
1728	327	364.96	0.68	2.32		2.04	177.38
1729	290	82.00	1.08	34.64			154.68
1733	287	721.82		102.91		1.16	5.67
1734	300	918.00		80.00	3.84	2.56	161.84
1735	328	419.60	4.76			31.40	104.68
1736	409	384.91	0.72			39.91	308.87
1737	441	449.47	10.41		4.05	59.63	264.05
1743	331	139.24	0.17		3.10	3.85	351.81
1744	612	349.44				8.96	168.80
1747	297	768.80	28.20			1.80	225.40
1751	308	1044.80			1.44	0.40	14.44
1752	267	2593.55	8.42	8.71	8.90	3.48	145.84
1756	300	372.00			5.40	10.10	334.60
1757	401	878.48	51.84			62.87	451.11
1758	496	381.40					173.00
MEAN		623.87	5.88	59.48	16.59	10.72	155.58

Table 9 shows the depth distribution of the hakes. There is a decrease in the rate for Cape hake in the shallow range. The highest density was now found in the 250-350m range, but the distribution extended below 500m.

Table 9 Depth distribution of the hake species, Ambrose Bay to Cunene River. Mean densities: tonnes/nm² and mean catch rates, kg/hour.

	100-250	250-350	350-450	450-550	550-650	650-750
Cape hake						
Density	13.7	23.2	14.7	2.8	0.2	
Catch rate	410	700	440	84	6	
Deep w.hake						
Density			0.8	3.4	6.1	0.2
No of hauls	24	19	7	3	2	1

Figure 7 shows the distribution of Cape hake in the northern region by levels of density calculated from the catch rates and with adjustments for fish in mid-water. The pattern of distribution is similar to that found previously in this region with bands of high density in deeper waters extending right up to Cunene. There was also an area of relative high density of juvenile fish north of Cape Frio. These fish were mixed with horse mackerel and dentex.

Biomass estimates give a total of 150 000 tonnes, see Table 10 with a fishable part (36cm and larger) of 113 000 tonnes representing 140 million fish, a decline of about 30 000 tonnes compared with the last surveys. It seems probable, however, that the biomass is underestimated in this survey due to the high occurrence of hake in mid-water.

The size compositions of the Cape hake is shown in Annex I. The group with a mode at about 27cm is assumed to be identical with the cohort with a mode of 24-25 cm in October-November. In that survey its numerical abundance was estimated at 310 million compared with a present estimate of 270 million fish. A group around 40cm can also be identified, presumably corresponding to the 1990 yearclass. Because of the process of depth related size of hake the modal length of these larger fish can not be used for growth estimation or for simple identification of cohorts.

Table 10 Northern Region, Ambrose Bay to Cunene. Estimates of total biomass by surveys. 1 000 tonnes.

	Cape hake	Deep sea hake
1/90	180	
3/90	105+ midw.	
1/91	200	
2/91	140	2
1/92	185	4
2/92	190	8
1/93	150	4

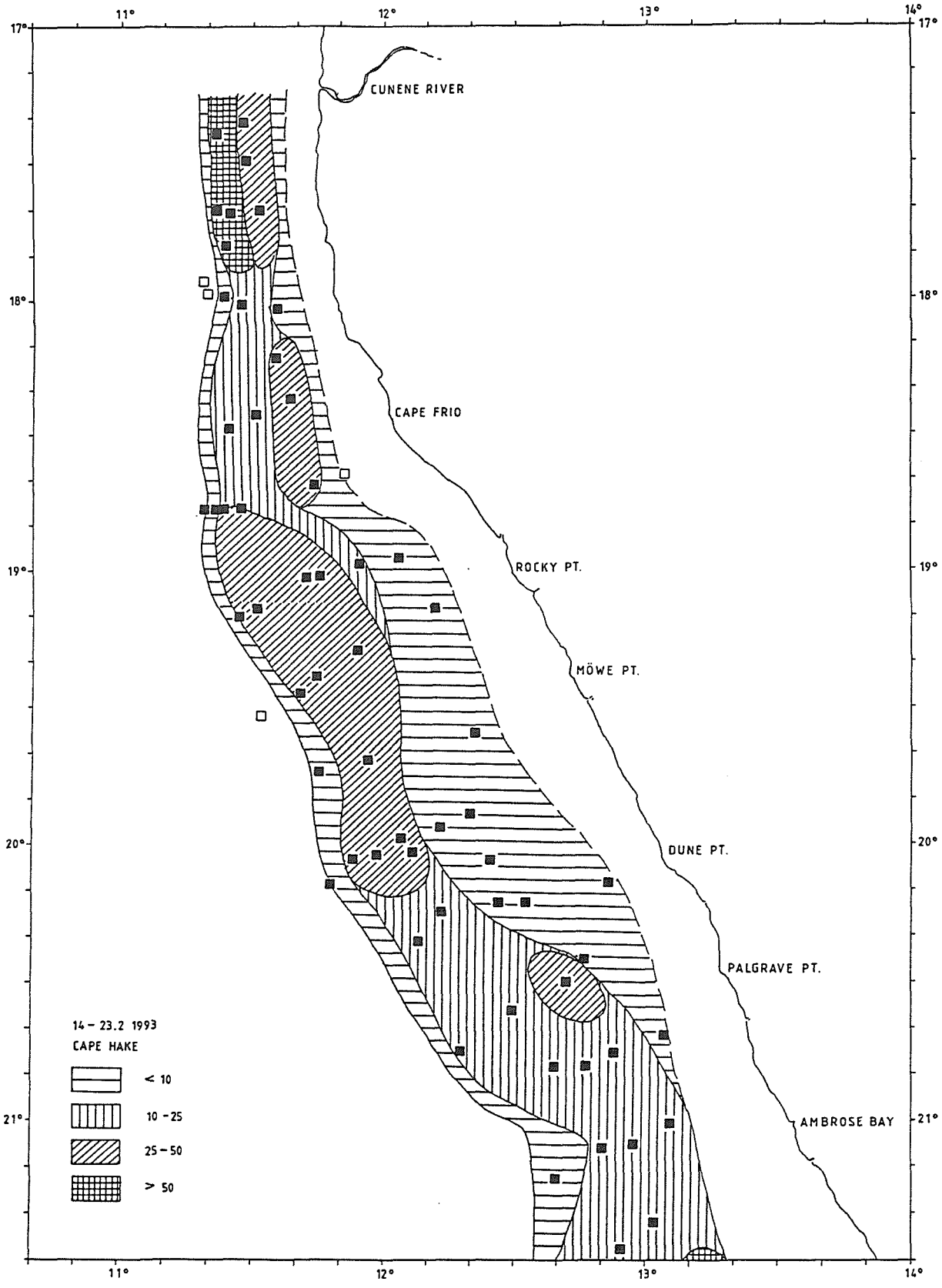


Figure 7 Ambrose Bay to Cunene River. Distribution of Cape hake.

Maturity sampling of a total of 806 female fish of Cape hake of 30-70cm of length from 18 fishing stations spread in the region showed the following state:

Maturity stage:	1	2	3	4	5
%	15	72	10	2	1

This indicates that the adult fish in the northern region is in a resting stage. Similar observations from previous surveys seem to demonstrate that this northern region represents a feeding area for the hake.

CHAPTER 4 CONSIDERATIONS OF THE SURVEY RESULTS

The present survey is the 7th in a series started in early 1990 and in each of which the distribution of the hake stocks over the whole Namibian shelf has been covered. Table 11 shows the effort that has been spent in these hake investigations. The mid-water behaviour of the hake caused a problem of biomass estimate in survey 3/1990. Improved acoustic instrumentation alleviated that problem in the subsequent surveys, but in survey 1/1993 this behaviour is again thought to have caused some underestimate of biomass, especially in the northern region.

Table 11 Effort in Namibian hake surveys 1990-1991. Number of swept area fishing stations, number of samples (mostly by sex) and number of length measurements in thousands.

Survey		Orange R.- St. Francis	St. Francis Ambrose	Ambrose-Cunene	Total
1/1990					
25/1-10/3	No. stations	59	73	37	169
	" samples	37	73	25	114
	" measured	6.0	10.7	2.6	18.6
3/1990					
11/9-6/10	No. stations	44	51	34	129
	" samples	68	106	77	251
	" measured	9.3	10.3	5.6	25.2
1/1991					
25/1-28/2	No. stations	41	77	56	174
	" samples	104	170	114	388
	" measured	6.8	13.3	6.9	27.0
2/1991					
23/10-21/11	No. stations	52	69	49	170
	" samples	110	132	110	352
	" measured	7.1	14.3	9.6	31.0
1/1992					
23/4-21/5	No. stations	57	60	47	164
	" samples	136	141	102	379
	" measured	9.0	11.2	8.2	28.4
2/1991					
20/10-1/12	No. stations	64	78	50	192
	" samples	188	169	143	500
	" measured	13.1	13.4	7.8	34.3
1/93					
20/1-25/2	No. stations	72	56	56	184
	" samples	197	162	118	477
	" measured	12.7	11.9	7.6	32.2

The trends in the findings for the deep water hake seems to indicate that this stock has received parts of its recruitment from areas outside the Namibian EEZ. This is evidently not the case for the Cape hake where recruitment cycles can be observed and described.

A summary of the estimates of the mean density of the hakes by depth strata is shown in Table 12. The difference in depth distribution between the two species is clearly demonstrated especially in the southern region where the deep water hake has its highest abundance. There as been a change in density by depth over the survey period with increasing densities at greater depths. This demonstrates an increasing amount of large sized hake in the stocks. For the Cape hake the density in the shallow range, 100-250m is mainly determined by the abundance of the young recruits, fish of less than about 30 cm of length which is restricted to a depth range of about 130 to 200-250m. In the central region densities were high in this range in the two surveys in 1992 and also in the northern region in survey 2/1992, but with a marked decline in survey 1/93.

Table 12 Depth distribution of the hake species. Mean densities in tonnes/nm^2.

	100-250m	250-350m	350-450m	450-550m
SOUTHERN REGION				
Cape hake				
1/90	21.9	4.4		
3/90	11.5	6.1	0.1	
1/91	11.3	8.8	0.9	
2/91	6.3	12.5	0.7	0.7
1/92	12.6	28.4	4.6	
2/92	11.6	12.2	1.1	0.2
1/93	14.2	25.7	7.2	0.3
Deep water hake				
1/90		1.4	5.0	1.2
3/90	0.1	6.3	1.2	0.4
1/91		4.4	6.0	1.1
2/91	0.3	8.9	14.9	4.9
1/92		8.9	34.8	4.0
2/92	1.7	7.9	23.8	14.2
1/93	0.2	44.2	26.3	10.3
CENTRAL REGION				
Cape hake				
1/90	27.1	7.4	0.4	
3/90	38.6	8.3	2.5	
1/91	14.5	9.1	2.2	
2/91	34.2	19.0	7.2	1.0
1/92	36.5	14.6	8.5	1.7
2/92	53.6	20.1	10.5	0.8
1/93	34.1	9.5	8.9	0.3
Deep water hake				
1/90			1.6	1.4
3/90	0.2	0.4	0.9	0.9
1/91	0.2	0.1	0.8	
2/91		0.3	5.3	5.6
1/92		1.3	6.8	1.6
2/92		0.3	3.1	4.1
1/93		0.3	2.8	4.3
NORTHERN REGION				
Cape hake				
1/90	41.3	20.9	1.0	
3/90	25.9	15.1		
1/91	15.0	27.0	11.5	
2/91	13.6	23.5	24.3	4.3
1/92	25.4	26.1	15.5	
2/92	29.6	18.6	17.6	
1/93	13.7	23.2	14.7	2.8

Table 13 shows the biomass estimates for the two stocks by regions and the corresponding data for the six previous surveys. The most remarkable finding of the present survey is the decline of the total biomass of the Central Region from the Oct-Nov 1992 results from 540 000 tonnnes to 280 000 tonnes. As discussed above this consists mainly in a reduced abundance of recruit fish below 36cm of length from a level of 370 000 tonnes in the last survey to 130 000 tonnes at present. Some survey variability may be involved, but the charts of biomass distribution show clearly that the extended inshore high density area of juveniles of the Oct-Nov 1992 survey is now greatly reduced and the mean catch rates from the shallow part of the central region dropped correspondingly. The reduction by number is some 2 000 million fish and there is no increase of juveniles in the other regions. Predation by cannibalism and otherwise could not account for this level of reduction and mass mortality caused by environmental disruptions seems the most likely cause. Intrusion of upwelled oxygen deficient water onto the shallow shelf is known to occur in this region.

Table 13 Summary of estimates of biomass of the two hake species by surveys and areas. 1000 tonnes.

	TOTAL BIOMASS						
	Feb-Mar 1990	Sept-Oct 1990	Jan-Feb 1991	Oct-Nov 1991	Apr-May 1992	Oct-Nov 1992	Jan-Feb 1993
SOUTH REGION							
Cape hake	130	130	126	80	200	160	210
Deep w.hake	22	25	31	83	145	125	150
CENTR.REGION							
Cape hake	180	219	150	302	261	542	280
Deep w.hake	4	6	6	13	15	15	12
NORTH REGION							
Cape hake	180	105*	200	140	185	190	150
Deep w.hake				2	4	8	4
TOTAL	516		513	620	810	1040	810
TOT.FISHABLE	220		300	370	503	490	520

Otherwise the present survey describes a state of the hake stocks similar to that of survey 2/92 with a total biomass of well over 800 000 tonnes and a fishable stock of about 500 000 tonnes. This probably represents an underestimate due to the frequent mid-water occurrence of the fish. There is an increase in the fishable stock in the southern region.

The bulk of the biomass of deep water hake is as previously found in the southern region. The stock estimate of about 160 000 tonnes is about the same as in Apr-May 1992.

The recruitment to the stock of Cape hake can be estimated from the numerical abundance of the 2 year old fish. The estimates for the 1991 yearclass based on the current survey data are shown in Table 14 together with previous observations. For the southern and northern

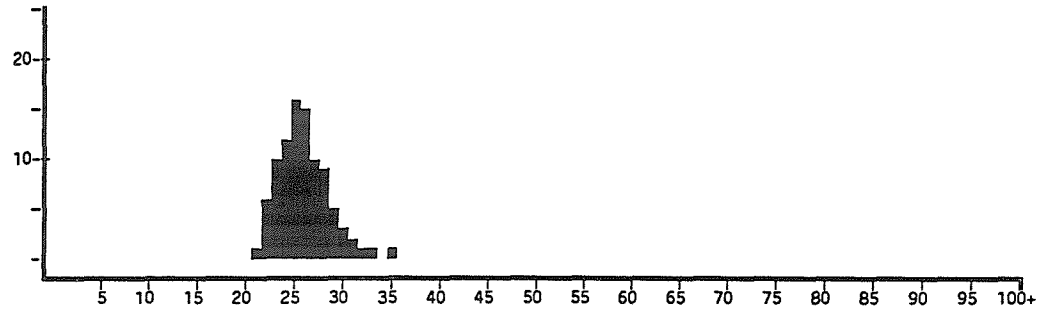
regions the new estimates of the 1991 yearclass are close to those of Oct-Nov 1992, but for the Central Region it is as discussed above reduced by some 60%. The 1991 yearclass is still at the same level of abundance as those of 1988 and 1990.

Table 14 Estimates of strength of recent yearclasses of Cape hake. Cohort population numbers at about two years of age for the groups assumed to have been spawned in 1988, 1989, 1990 and 1991. Millions of fish.

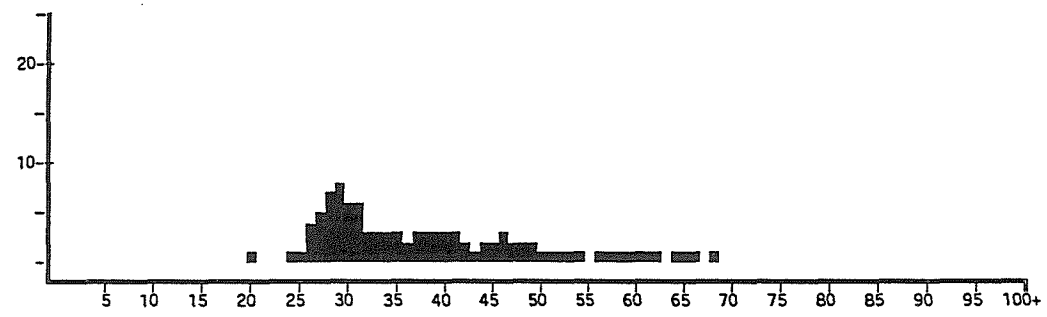
Yearclass	1988	1989	1990	1990	1991	1991
Region south	980	100	160	300	680	670
centre	1 320	170	1710	1620	3500	1230
north	10	10	20	240	310	270
Total	2 310	280	1890	2160	4490	2170
Survey/Year	1/90	1/91	2/91	1/92	2/92	1/93

Examination of gonad stages of adult female Cape hake in samples from all the three regions showed that the fish was predominantly in a resting stage in the southern and northern regions while about half of the fish in the central region were in a prespawning or spawning stage.

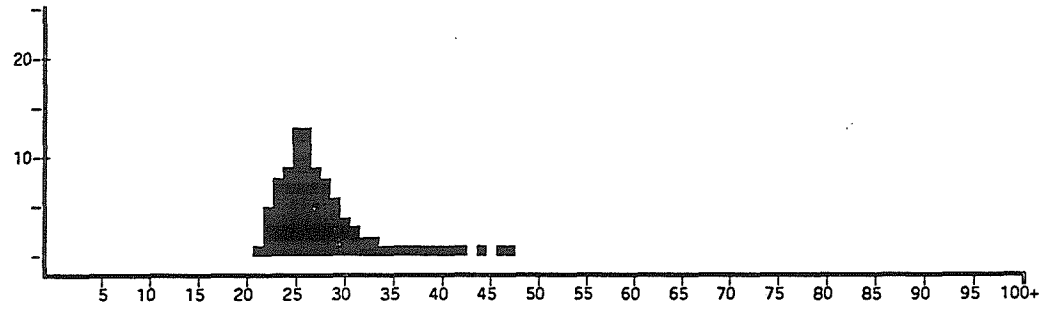
Annex I Size composition of main stocks



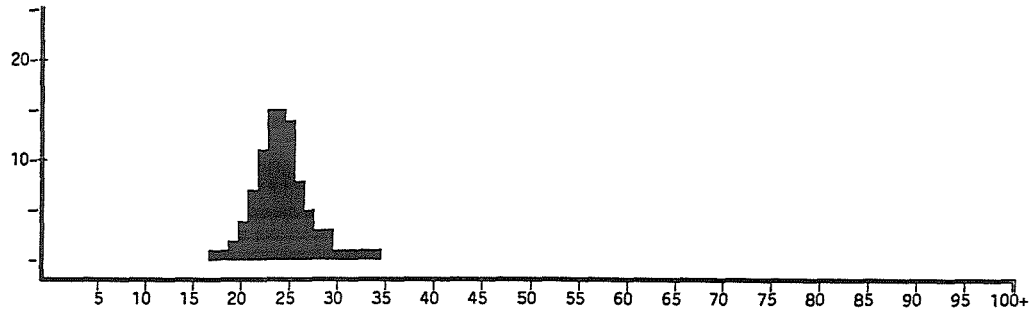
Merluccius capensis
SOUTHERN REGION 50-259m



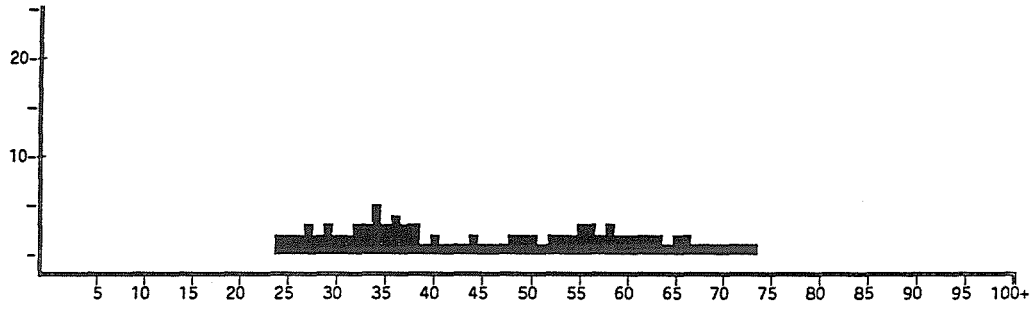
Merluccius capensis
SOUTHERN REGION >259m



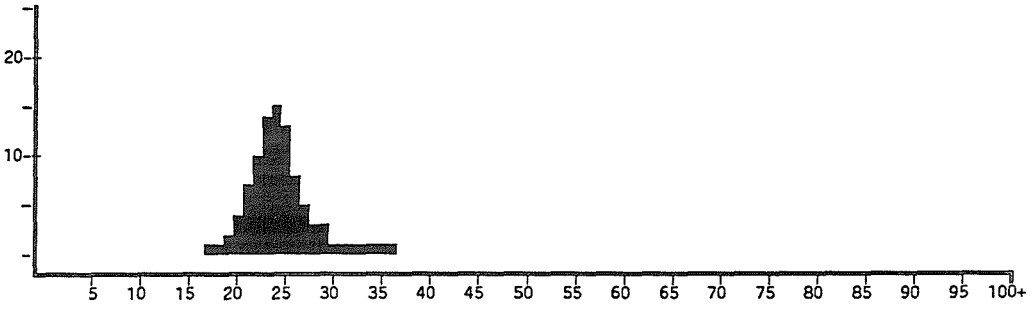
Merluccius capensis
SOUTHERN REGION TOTAL



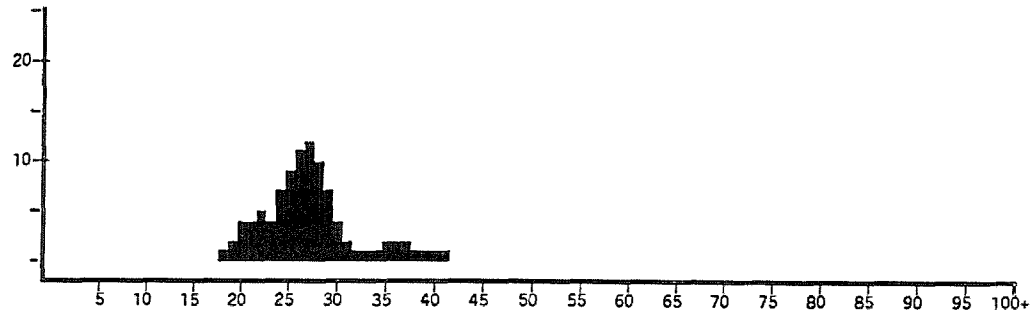
Merluccius capensis
CENTRAL REGION 50-259m



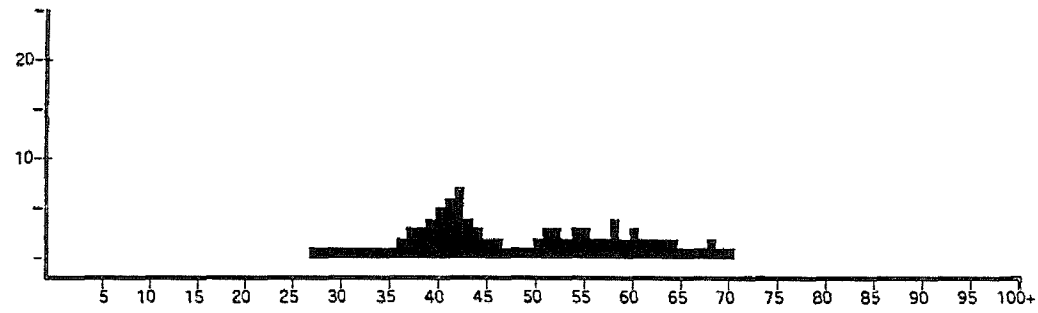
Merluccius capensis
CENTRAL REGION >259m



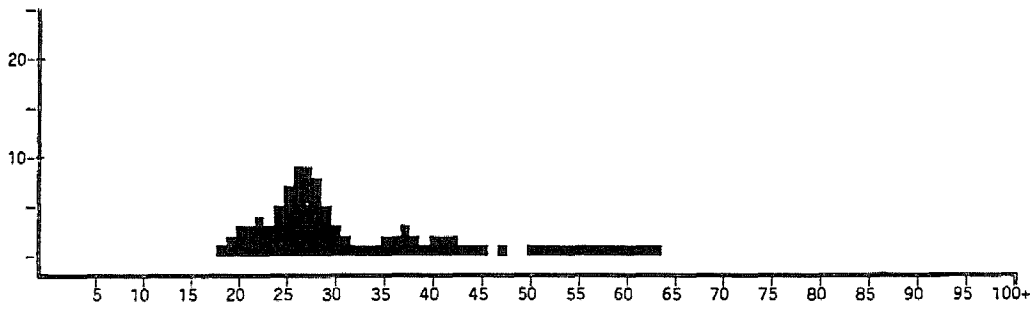
Merluccius capensis
CENTRAL REGION TOTAL



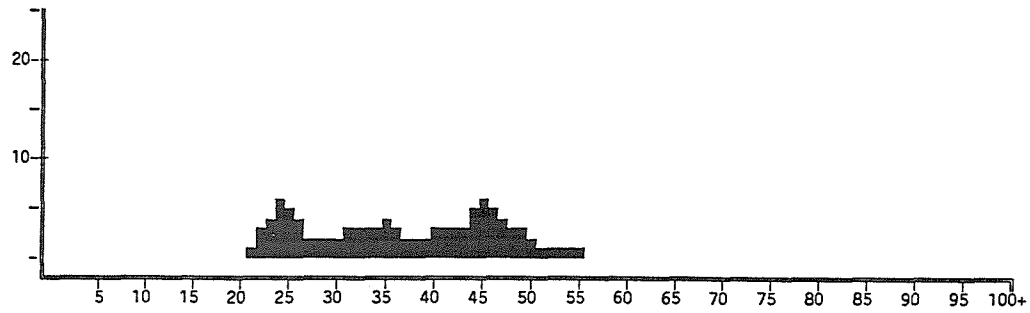
Merluccius capensis
NORTHERN REGION 50-259M



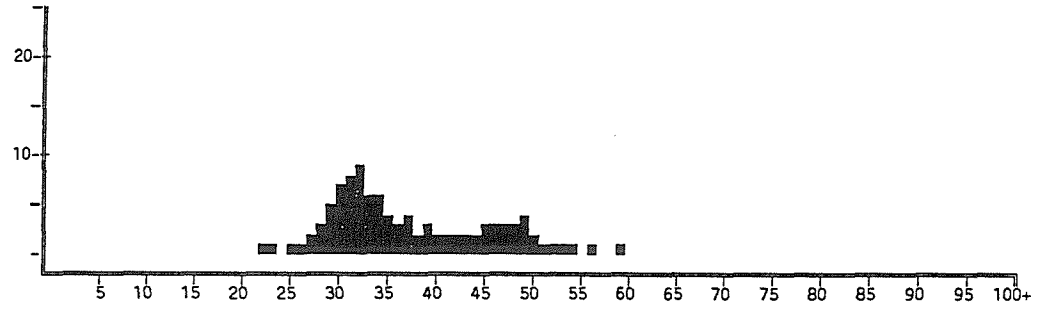
Merluccius capensis
NORTHERN REGION >259M



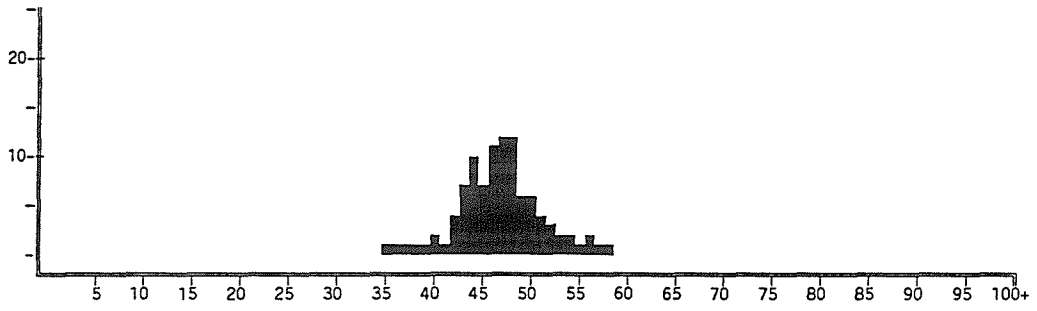
Merluccius capensis
NORTHERN REGION TOTAL



Merluccius paradoxus
SOUTHERN REGION TOTAL



Merluccius paradoxus
CENTRAL REGION TOTAL



Merluccius paradoxus
NORTHER REGION TOTAL

Annex II Maturity stages of female hake

1 **INACTIVE**
Ovaries small, slender, transparent, with no visible signs of eggs.

2 **ACTIVE**
Ovaries large and filling with small, pink to orange, opaque visible eggs.

3 **RIPE**
Ovaries very large, in relation to the fish size. Distended and filled with clearly visible opaque eggs - some eggs already transparent. Color of ovaries right orange to deep pink.

4 **RIPE-and-RUNNING**
Translucent eggs, can be extruded through the cloaca with slight abdominal pressure.

5 **SPENT**
Ovaries visually completely empty bur large, flabby, prominently veined and often bloodshot.

Annex III Records of fishing stations

PROJECT STATION:1566

DATE:21/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2632
start stop duration Long E 1444
TIME :12:32:00 13:05:00 33 (min) Purpose code: 3
LOG :8635.90 8637.60 1.75 Area code : 1
FDEPTH: 164 165 GearCond.code:
BDEPTH: 164 165 Validity code:
Towing dir: 350 Wire out: 700 m Speed: 32 kn*10

Sorted: 64 Kg Total catch: 64.20 CATCH/HOUR: 116.73

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	109.09		93.45	
Merluccius capensis, female	5.09	69	4.36	2
Merluccius capensis, male	2.55	40	2.18	1
Total	116.73		99.99	

PROJECT STATION:1567

DATE:21/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2644
start stop duration Long E 1442
TIME :15:18:00 15:49:00 31 (min) Purpose code: 3
LOG :8654.40 8655.70 1.74 Area code : 1
FDEPTH: 205 204 GearCond.code:
BDEPTH: 205 204 Validity code:
Towing dir: 360 Wire out: 750 m Speed: 34 kn*10

Sorted: 18 Kg Total catch: 109.68 CATCH/HOUR: 212.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	128.90	1080	60.72	4
Merluccius capensis, male	61.55	592	28.99	3
Sufflogobius bibarbatus	14.86		7.00	
MYCTOPHIDAE	6.74		3.18	
Squilla acuelata calmani	0.23	12	0.11	
Total	212.28		100.00	

PROJECT STATION:1568

DATE:21/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2656
start stop duration Long E 1444
TIME :18:35:00 19:05:00 30 (min) Purpose code: 3
LOG :8674.70 8675.90 1.20 Area code : 1
FDEPTH: 215 220 GearCond.code:
BDEPTH: 215 220 Validity code:
Towing dir: 350 Wire out: 800 m Speed: 35 kn*10

Sorted: 42 Kg Total catch: 164.70 CATCH/HOUR: 329.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	158.00	1080	47.97	8
Merluccius capensis, male	102.00	880	30.97	7
Merluccius capensis, female	46.20	34	14.03	6
Merluccius capensis, male	10.40	6	3.16	5
Chelidonichthys capensis	5.20	20	1.58	
Sufflogobius bibarbatus	4.20		1.28	
MYCTOPHIDAE	3.40		1.03	
Total	329.40		100.02	

PROJECT STATION:1569

DATE:22/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2817
start stop duration Long E 1552
TIME :12:29:00 12:59:00 30 (min) Purpose code: 3
LOG :8791.20 8792.80 1.58 Area code : 1
FDEPTH: 86 87 GearCond.code:
BDEPTH: 86 87 Validity code:
Towing dir: 323 Wire out: 450 m Speed: 31 kn*10

Sorted: 42 Kg Total catch: 42.11 CATCH/HOUR: 84.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	25.40	134	30.16	10
Merluccius capensis, male	13.80	80	16.39	9
Thyrsites atun	12.80	8	15.20	13
Scomber japonicus	8.00	4	9.50	
Etrumeus whiteheadi	7.04	100	8.36	12
Lolliguncula mercatoris	7.00		8.31	
Genypterus capensis	4.80	2	5.70	11
Trachurus capensis	1.72	14	2.04	14
Austroglossus microlepis	1.24	4	1.47	
Lepidopus caudatus	0.96	64	1.14	
Sepia australis	0.72	28	0.85	
Todaropsis eblanae	0.50	32	0.59	
Sufflogobius bibarbatus	0.10	10	0.12	
Merluccius capensis, juveniles	0.08	12	0.09	
Squilla acuelata calmani	0.06	4	0.07	
Total	84.22		99.99	

PROJECT STATION:1570

DATE:22/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2840
start stop duration Long E 1612
TIME :16:31:00 17:02:00 31 (min) Purpose code: 3
LOG :8827.60 8829.30 1.64 Area code : 1
FDEPTH: 96 87 GearCond.code:
BDEPTH: 96 87 Validity code:
Towing dir: 340 Wire out: 450 m Speed: 32 kn*10

Sorted: 169 Kg Total catch: 807.42 CATCH/HOUR: 1562.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Chelidonichthys capensis	1079.23	5148	69.06	
Merluccius capensis, female	137.81	797	8.82	17
Austroglossus microlepis	99.72	774	6.38	18
Callorhinchus capensis	85.55	68	5.47	
Merluccius capensis, male	71.23	526	4.56	16
Genypterus capensis	65.23	39	4.17	15
Sufflogobius bibarbatus	10.06	403	0.64	
Squilla acuelata calmani	9.45	666	0.60	
Trachurus capensis	4.49	15	0.29	
Total	1562.77		99.99	

PROJECT STATION:1571

DATE:22/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2851
start stop duration Long E 1554
TIME :19:37:00 20:07:00 30 (min) Purpose code: 3
LOG :8850.50 8851.70 1.86 Area code : 1
FDEPTH: 148 144 GearCond.code:
BDEPTH: 148 144 Validity code:
Towing dir: 20 Wire out: 600 m Speed: 33 kn*10

Sorted: 54 Kg Total catch: 202.28 CATCH/HOUR: 404.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	100.80	1344	24.92	24
Merluccius capensis, female	86.80	322	21.46	23
Sepia australis	76.16	6068	18.83	
Merluccius capensis, juveniles	40.40	952	9.99	21
Merluccius capensis, male	37.80	162	9.34	22
Sufflogobius bibarbatus	13.72		3.39	
Paracallionymus costatus	13.58	854	3.36	
Chelidonichthys capensis	10.16	28	2.51	
Callorhinchus capensis	8.00	4	1.98	
Maurolicus muelleri	3.92		0.97	
Lepidopus caudatus	2.80	14	0.69	
Thyrsites atun	2.50	2	0.62	
Austroglossus microlepis	2.10	42	0.52	
Squilla acuelata calmani	1.68	126	0.42	
Helicolenus dactylopterus	1.26	84	0.31	
Genypterus capensis	1.00	10	0.25	20
Congiopodus spinifer	0.98	14	0.24	
Lophius upsicephalus	0.90	4	0.22	19
Total	404.56		100.02	

PROJECT STATION:1572

DATE:22/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2859
start stop duration Long E 1539
TIME :22:35:00 23:05:00 30 (min) Purpose code: 3
LOG :8872.10 8873.20 1.71 Area code : 1
FDEPTH: 172 174 GearCond.code:
BDEPTH: 172 174 Validity code:
Towing dir: 10 Wire out: 700 m Speed: 32 kn*10

Sorted: 66 Kg Total catch: 161.17 CATCH/HOUR: 322.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus	136.00	1552	42.19	29
Maurolicus muelleri	73.28		22.73	
Merluccius capensis, female	70.20	88	21.78	28
Holohalaelurus regani	11.84	112	3.67	
Merluccius capensis, male	10.00	18	3.10	27
Chelidonichthys capensis	8.00	16	2.48	
Lophius upsicephalus	3.24	10	1.01	26
Paracallionymus costatus	2.88	304	0.89	
Austroglossus microlepis	2.08	80	0.65	
Genypterus capensis	1.78	10	0.55	25
Sepia australis	1.12	96	0.35	
Helicolenus dactylopterus	1.12	96	0.35	
Lepidopus caudatus	0.32	16	0.10	
Solenocera africana	0.32	96	0.10	
Squilla acuelata calmani	0.16	16	0.05	
Total	322.34		100.00	

PROJECT STATION:1573

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2916
start stop duration Long E 1514
TIME :02:30:00 03:00:00 30 (min) Purpose code: 3
LOG :8904.10 8905.60 1.68 Area code : 1
FDEPTH: 188 184 GearCond.code:
BDEPTH: 188 184 Validity code:
Towing dir: 350 Wire out: 750 m Speed: 34 kn*10

Sorted: 89 Kg Total catch: 108.15 CATCH/HOUR: 216.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Helicolenus dactylopterus	55.50		25.66	
Genypterus capensis	51.00	70	23.58	30
Merluccius paradoxus, female	33.20	24	15.35	33
Trachurus capensis	27.60	118	12.76	34
Merluccius paradoxus, male	9.40	6	4.35	32
Merluccius paradoxus, juvenile	8.36	160	3.87	31
Scomber japonicus	6.42	4	2.97	
S H A R K S	6.34	28	2.93	
Emmelichthys nitidus	6.06	16	2.80	
Austroglossus microlepis	5.26	106	2.43	35
Todarodes sagittatus	4.44	4	2.05	
Malacocephalus laevis	1.60	4	0.74	
Congiopodus spinifer	0.68	4	0.31	
Zeus capensis	0.44	4	0.20	
Total	216.30		100.00	

PROJECT STATION:1574

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2935
start stop duration Long E 1441
TIME :06:41:00 07:11:00 30 (min) Purpose code: 3
LOG :8940.60 8942.10 1.68 Area code : 1
FDEPTH: 380 382 GearCond.code:
BDEPTH: 380 382 Validity code:
Towing dir: 360 Wire out:1100 m Speed: 34 kn*10

Sorted: 159 Kg Total catch: 469.00 CATCH/HOUR: 938.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	352.10	1008	37.54	40
Merluccius paradoxus, male	306.60	714	32.69	39
Octopus vulgaris	50.80	10	5.42	
Merluccius capensis, female	43.40	22	4.63	38
Zeus capensis	42.08	50	4.49	
Scyliorhinus capensis	40.26	50	4.29	
Holohalaelurus regani	35.56	98	3.79	
Genypterus capensis	16.40	8	1.75	36
Squalus megalops	14.48	8	1.54	
Coelorinchus fasciatus	8.68	162	0.93	
Emmelichthys nitidus	4.48	8	0.48	
Lepidopus caudatus	4.16	8	0.44	
Helicolenus dactylopterus	4.06	28	0.43	
Malacocephalus laevis	3.44	14	0.37	
Lophius upsicephalus	2.76	2	0.29	37
Todarodes sagittatus	2.58	6	0.28	
Rossia sp.	2.24	64	0.24	
Hoplostethus mediterraneus	0.88	8	0.09	
MYCTOPHIDAE	0.70		0.07	
Austroglossus microlepis	0.64	8	0.07	41
Todaropsis eblanae	0.50	14	0.05	
Physiculus capensis	0.48	8	0.05	
Epigonus denticulatus	0.40	8	0.04	
PORTUNIDAE	0.16	8	0.02	
Paracallionymus costatus	0.08	8	0.01	
Xenolepidichthys dagleishi	0.08	8	0.01	
Total	938.00		100.01	

PROJECT STATION:1575

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2913
start stop duration Long E 1430
TIME :09:56:00 10:30:00 34 (min) Purpose code: 3
LOG :8967.30 8969.20 1.64 Area code : 1
FDEPTH: 416 425 GearCond.code:
BDEPTH: 416 425 Validity code:
Towing dir: 350 Wire out:1150 m Speed: 29 kn*10

Sorted: 208 Kg Total catch: 2093.47 CATCH/HOUR: 3694.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	3005.82	3665	81.36	44
Merluccius paradoxus, male	625.94	1029	16.94	43
Genypterus capensis	45.18	19	1.22	42
Todarodes sagittatus	4.13	9	0.11	
Coelorinchus fasciatus	4.06	41	0.11	
Brama brama	3.97	2	0.11	
Raja confundens	2.52	2	0.07	
Malacocephalus laevis	2.12	21	0.06	
Nezumia sp.	0.41	41	0.01	
Coelorinchus braueri	0.21	21	0.01	
Total	3694.36		100.00	

PROJECT STATION:1576

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2909
start stop duration Long E 1433
TIME :11:37:00 12:08:00 31 (min) Purpose code: 3
LOG :8975.80 8977.70 1.64 Area code : 1
FDEPTH: 302 291 GearCond.code:
BDEPTH: 302 291 Validity code:
Towing dir: 340 Wire out: 950 m Speed: 31 kn*10

Sorted: 154 Kg Total catch: 1061.46 CATCH/HOUR: 2054.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	997.80	4065	48.57	50
Merluccius capensis, female	425.81	242	20.73	47
Zeus capensis	139.37	370	6.78	
Lepidopus caudatus	93.68	170	4.56	
Merluccius paradoxus	88.43	753	4.30	48
Merluccius capensis, male	86.57	56	4.21	46
Merluccius paradoxus, female	70.97	43	3.45	49
Malacocephalus laevis	38.61	426	1.88	
Todarodes sagittatus	25.97	56	1.26	
Scyliorhinus capensis	24.14	29	1.18	
Coelorinchus fasciatus	21.72	242	1.06	
Helicolenus dactylopterus	20.01	114	0.97	
Lophius upsicephalus	9.68	2	0.47	
Brama brama	7.41	8	0.36	
Genypterus capensis	4.26	4	0.21	45
Total	2054.43		99.99	

PROJECT STATION:1577

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2903
start stop duration Long E 1446
TIME :13:56:00 14:28:00 32 (min) Purpose code: 3
LOG :8992.20 8994.20 1.72 Area code : 1
FDEPTH: 217 217 GearCond.code:
BDEPTH: 217 217 Validity code:
Towing dir: 332 Wire out: 800 m Speed: 32 kn*10

Sorted: 108 Kg Total catch: 304.97 CATCH/HOUR: 571.82

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	229.69	919	40.17	55
Merluccius capensis, female	88.88	53	15.54	52
Etrumeus whiteheadi	64.84	722	11.34	
Helicolenus dactylopterus	49.74	354	8.70	
Zeus capensis	34.65	171	6.06	
Lophius upsicephalus	21.56	9	3.77	53
Merluccius capensis, male	21.19	11	3.71	51
Emmelichthys nitidus	19.43	92	3.40	
Scyliorhinus capensis	8.14	13	1.42	
Todarodes sagittatus	8.01	79	1.40	
Merluccius paradoxus	5.25	144	0.92	54
Chelidonichthys capensis	4.73	13	0.83	
Congiopodus spinifer	4.73	39	0.83	
Callorhinchus capensis	3.99	2	0.70	
Thyrsites atun	3.83	2	0.67	
Brama brama	1.88	2	0.33	
Lepidopus caudatus	1.31	13	0.23	
Total	571.85		100.02	

PROJECT STATION:1578

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2856
start stop duration Long E 1501
TIME :16:17:00 16:48:00 31 (min) Purpose code: 3
LOG :9009.70 9011.30 1.76 Area code : 1
FDEPTH: 173 175 GearCond.code:
BDEPTH: 173 175 Validity code:
Towing dir: 340 Wire out: 700 m Speed: 33 kn*10

Sorted: 124 Kg Total catch: 124.03 CATCH/HOUR: 240.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	102.77	72	42.81	57
Merluccius capensis, male	48.19	31	20.07	56
Etrumeus whiteheadi	28.26	288	11.77	60
Emmelichthys nitidus	24.39	254	10.16	59
Trachurus capensis	13.55	66	5.64	61
Genypterus capensis	4.65	4	1.94	58
Chelidonichthys capensis	3.58	8	1.49	
Squalus megalops	3.29	10	1.37	
Mustelus palumbes	2.92	6	1.22	
Zeus capensis	2.90	31	1.21	
Lepidopus caudatus	2.52	37	1.05	
Scyliorhinus capensis	2.05	8	0.85	
Todarodes sagittatus	0.99	15	0.41	
Total	240.06		99.99	

PROJECT STATION:1579

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2850
start stop duration Long E 1510
TIME :18:03:00 18:33:00 30 (min) Purpose code: 3
LOG :9021.20 9022.60 1.81 Area code : 1
FDEPTH: 159 160 GearCond.code:
BDEPTH: 159 160 Validity code:
Towing dir: 350 Wire out: 650 m Speed: 36 kn*10

Sorted: 130 Kg Total catch: 965.07 CATCH/HOUR: 1930.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	1698.00	6902	87.97	65
Merluccius capensis, female	92.80	36	4.81	64
Merluccius capensis, male	35.00	16	1.81	63
Etrumeus whiteheadi	27.00	300	1.40	
Squalus megalops	22.50	60	1.17	
Emmelichthys nitidus	19.80	240	1.03	
Lophius upsicephalus	12.20	4	0.63	62
Holohalaelurus regani	6.60	30	0.34	
Zeus capensis	6.30	60	0.33	
Helicolenus dactylopterus	6.30	30	0.33	
Lepidopus caudatus	3.00	30	0.16	
Congiopodus spinifer	0.64	4	0.03	
Total	1930.14		100.01	

PROJECT STATION:1580

DATE:23/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2842
start stop duration Long E 1516
TIME :19:47:00 20:19:00 32 (min) Purpose code: 3
LOG :9031.40 9032.80 1.97 Area code : 1
FDEPTH: 161 164 GearCond.code:
BDEPTH: 161 164 Validity code:
Towing dir: 350 Wire out: 650 m Speed: 36 kn*10

Sorted: 152 Kg Total catch: 386.51 CATCH/HOUR: 724.71

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	376.31	2284	51.93	72
Merluccius capensis, female	159.00	120	21.94	69
Merluccius capensis, juveniles	47.25	8081	6.52	71
Merluccius capensis, male	40.88	36	5.64	68
Etrumeus whiteheadi	23.96	270	3.31	
Chelidonichthys capensis	14.68	34	2.03	
Sepia australis	10.80		1.49	
Merluccius capensis, female	10.80	47	1.49	67
Zeus capensis	10.63	118	1.47	
Merluccius capensis, male	9.38	38	1.29	66
Octopus vulgaris	8.63	2	1.19	
Squalus megalops	4.89	17	0.67	
Helicolenus dactylopterus	3.21	169	0.44	
Holohalaelurus regani	2.87	17	0.40	
Lophius upsicephalus	0.75	2	0.10	70
Congiopodus spinifer	0.51	17	0.07	
Solenocera africana	0.17	17	0.02	
Total	724.72		100.00	

PROJECT STATION:1581

DATE:24/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2850
start stop duration Long E 1421
TIME :02:20:00 02:50:00 30 (min) Purpose code: 3
LOG :9087.10 9087.80 1.56 Area code : 1
FDEPTH: 510 523 GearCond.code:
BDEPTH: 510 523 Validity code:
Towing dir: 10 Wire out:1400 m Speed: 32 kn*10

Sorted: 42 Kg Total catch: 42.79 CATCH/HOUR: 85.58

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	63.80	60	74.55	74
Merluccius paradoxus, male	4.80	8	5.61	73
Trachurus capensis	4.60	18	5.38	75
Todarodes sagittatus	3.28	8	3.83	
Raja clavata	3.24	4	3.79	
Coelorinchus fasciatus	2.00	32	2.34	
Hydrolagus sp.	1.58	2	1.85	
Shrimps, small, non comm.	1.04	130	1.22	
Etmopterus lucifer	0.60	20	0.70	
Photichthys argenteus	0.54	44	0.63	
MAJIDAE	0.10	2	0.12	
Total	85.58		100.02	

PROJECT STATION:1582

DATE:24/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2847
start stop duration Long E 1423
TIME :04:21:00 04:51:00 30 (min) Purpose code: 3
LOG :9094.00 9094.90 1.70 Area code : 1
FDEPTH: 410 434 GearCond.code:
BDEPTH: 410 434 Validity code:
Towing dir: 5 Wire out:1200 m Speed: 34 kn*10

Sorted: 10 Kg Total catch: 9.75 CATCH/HOUR: 19.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	6.46	12	33.13	78
Merluccius paradoxus, male	4.08	10	20.92	77
Merluccius capensis, female	3.74	2	19.18	76
Genypterus capensis	2.62	2	13.44	79
Todarodes sagittatus	1.46	4	7.49	
Helicolenus dactylopterus	0.64	4	3.28	
Coelorinchus sp.	0.20	2	1.03	
Epigonus denticulatus	0.12	2	0.62	
MYCTOPHIDAE	0.10	54	0.51	
Shrimps, small, non comm.	0.02	14	0.10	
Etmopterus lucifer	0.02	2	0.10	
Coelorinchus fasciatus	0.02	2	0.10	
CONGRIDAE	0.02	2	0.10	
Total	19.50		100.00	

PROJECT STATION:1583

DATE:24/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2838
start stop duration Long E 1436
TIME :07:39:00 08:10:00 31 (min) Purpose code: 3
LOG :9114.40 9116.00 1.83 Area code : 1
FDEPTH: 170 165 GearCond.code:
BDEPTH: 170 165 Validity code:
Towing dir: 350 Wire out: 650 m Speed: 35 kn*10

Sorted: 223 Kg Total catch: 982.79 CATCH/HOUR: 1902.17

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	1217.61	7442	64.01	85
Emmelichthys nitidus	287.42	22732	15.11	86
Merluccius capensis, male	153.10	103	8.05	83
Merluccius capensis, female	135.68	64	7.13	84
Thyrsites atun	43.55	31	2.29	81
Polyprion americanus	29.42	8	1.55	80
Zeus capensis	20.90	52	1.10	
Scomber japonicus	11.23	8	0.59	
Lophius upsicephalus	3.27	2	0.17	82
Total	1902.18		100.00	

PROJECT STATION:1584

DATE:24/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2833
start stop duration Long E 1445
TIME :10:18:00 10:48:00 30 (min) Purpose code: 3
LOG :9129.40 9131.20 1.70 Area code : 1
FDEPTH: 193 196 GearCond.code:
BDEPTH: 193 196 Validity code:
Towing dir: 350 Wire out: 700 m Speed: 33 kn*10

Sorted: 102 Kg Total catch: 161.65 CATCH/HOUR: 323.30

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	118.60	64	36.68	91
Trachurus capensis	62.40	348	19.30	93
Etrumeus whiteheadi	50.40	582	15.59	92
Lepidopus caudatus	14.94	204	4.62	
Merluccius capensis, male	14.40	16	4.45	90
Chelidonichthys capensis	13.44	30	4.16	
Zeus capensis	9.84	42	3.04	
Helicolenus dactylopterus	8.40	66	2.60	
Emmelichthys nitidus	7.38	324	2.28	
Holohalaelurus regani	4.80	18	1.48	
Lophius upsicephalus	4.66	4	1.44	87
Genypterus capensis	4.40	10	1.36	88
Squalus megalops	3.48	6	1.08	
Thyrsites atun	2.92	2	0.90	89
Todaropsis eblanae	2.40	120	0.74	
Congiopodus spinifer	0.66	6	0.20	
Paracallionymus costatus	0.18	12	0.06	
Total	323.30		99.98	

PROJECT STATION:1585

DATE:24/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2831
start stop duration Long E 1453
TIME :13:21:00 13:57:00 36 (min) Purpose code: 3
LOG :9143.80 9146.10 1.90 Area code : 1
FDEPTH: 177 176 GearCond.code:
BDEPTH: 177 176 Validity code:
Towing dir: 350 Wire out: 800 m Speed: 31 kn*10

Sorted: 194 Kg Total catch: 194.35 CATCH/HOUR: 323.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	103.33	53	31.90	98
Trachurus capensis	93.33	500	28.81	100
Lepidopus caudatus	41.67	262	12.86	
Zeus capensis	24.17	112	7.46	
Lophius upsicephalus	14.50	22	4.48	96
Merluccius capensis, male	13.17	8	4.07	97
Merluccius capensis, juveniles	7.52	122	2.32	99
Thyrsites atun	6.67	3	2.06	
Holohalaelurus regani	4.60	15	1.42	
Squalus megalops	3.25	10	1.00	
Chelidonichthys capensis	2.73	7	0.84	
Helicolenus dactylopterus	2.45	55	0.76	
Etrumeus whiteheadi	2.40	28	0.74	95
Sepia australis	1.35	27	0.42	
Austroglossus microlepis	1.25	27	0.39	94
Todarodes sagittatus	0.85	2	0.26	
Emmelichthys nitidus	0.58	22	0.18	
Congiopodus spinifer	0.10	2	0.03	
Total	323.92		100.00	

PROJECT STATION:1586

DATE:24/ 1/93 GEAR TYPE: BT No:3 POSITION:Lat S 2830
start stop duration Long E 1454
TIME :15:16:00 15:47:00 31 (min) Purpose code: 2
LOG :9151.20 9153.10 1.76 Area code : 1
FDEPTH: 177 178 GearCond.code:
BDEPTH: 177 178 Validity code:
Towing dir: 350 Wire out: 800 m Speed: 34 kn*10

Sorted: 150 Kg Total catch: 150.12 CATCH/HOUR: 290.55

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis	101.03	62	34.77	101
Trachurus capensis	63.68	298	21.92	103
Thyrsites atun	60.19	48	20.72	102
Zeus faber	21.29	290	7.33	
Lepidopus caudatus	13.95	99	4.80	
Holohalaelurus regani	7.65	25	2.63	
Lophius upsicephalus	7.45	14	2.56	104
Raja straeleni	4.55	4	1.57	
Chelidonichthys capensis	4.51	8	1.55	
Squalus megalops	4.01	10	1.38	
Sepia australis	0.97		0.33	
Etrumeus whiteheadi	0.75	12	0.26	
Helicolenus dactylopterus	0.23	6	0.08	
Genypterus capensis	0.19	2	0.07	105
Arnoglossus imperialis	0.10	4	0.03	
Total	290.55		100.00	

PROJECT STATION:1587

DATE:26/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2744
start stop duration Long E 1431
TIME :03:13:00 03:43:00 30 (min) Purpose code: 3
LOG :9267.10 9268.10 1.44 Area code : 1
FDEPTH: 550 538 GearCond.code:
BDEPTH: 550 538 Validity code:
Towing dir: 330 Wire out:1500 m Speed: 31 kn*10

Sorted: 78 Kg Total catch: 78.47 CATCH/HOUR: 156.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Coelorinchus fasciatus	104.00	1178	66.27	
Merluccius paradoxus, female	23.60	22	15.04	106
Malacocephalus laevis	5.86	34	3.73	
Lophius upsicephalus	4.86	2	3.10	107
S H R I M P S	4.32	466	2.75	
Helicolenus dactylopterus	3.86	16	2.46	
Nezumia sp.	3.06	38	1.95	
Todarodes sagittatus	2.60	6	1.66	
Hydrolagus sp.	1.86	2	1.19	
Deania profundorum	1.22	2	0.78	
Etmopterus pusillus	1.20	4	0.76	
Photichthys argenteus	0.46	30	0.29	
Raja confundens	0.04	2	0.03	
Total	156.94		100.01	

PROJECT STATION:1588

DATE:26/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2741
start stop duration Long E 1433
TIME :05:33:00 06:03:00 30 (min) Purpose code: 3
LOG :9274.20 9275.30 1.66 Area code : 1
FDEPTH: 445 445 GearCond.code:
BDEPTH: 445 445 Validity code:
Towing dir: 325 Wire out:1250 m Speed: 33 kn*10

Sorted: 12 Kg Total catch: 12.47 CATCH/HOUR: 24.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Genypterus capensis	6.20	4	24.86	110
Raja confundens	3.64	2	14.60	
Merluccius paradoxus, female	3.64	12	14.60	109
Coelorinchus braueri	3.44	76	13.79	
Helicolenus dactylopterus	2.04	8	8.18	
Coelorinchus fasciatus	1.64	24	6.58	
Todarodes sagittatus	1.00	4	4.01	
Merluccius paradoxus, male	0.98	2	3.93	108
Shrimps, small, non comm.	0.84		3.37	
MYCTOPHIDAE	0.52	108	2.09	
Malacocephalus laevis	0.40	4	1.60	
S H R I M P S	0.24	28	0.96	
Photichthys argenteus	0.14	30	0.56	
Nansenia problematica	0.06	4	0.24	
Epigonus denticulatus	0.06	6	0.24	
Hoplostethus mediterraneus	0.06	2	0.24	
Nezumia sp.	0.04	2	0.16	
Total	24.94		100.01	

PROJECT STATION:1589

DATE:26/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2736
start stop duration Long E 1445
TIME :08:07:00 08:41:00 34 (min) Purpose code: 3
LOG :9290.70 9291.90 2.04 Area code : 1
FDEPTH: 330 324 GearCond.code:
BDEPTH: 330 324 Validity code:
Towing dir: 340 Wire out:1000 m Speed: 37 kn*10

Sorted: 173 Kg Total catch: 172.68 CATCH/HOUR: 304.73

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	141.88	279	46.56	113
Merluccius paradoxus, male	140.47	293	46.10	112
Merluccius capensis, female	9.35	4	3.07	111
Genypterus capensis	5.98	2	1.96	114
Todarodes sagittatus	2.29	11	0.75	
MYCTOPHIDAE	1.73	326	0.57	
Helicolenus dactylopterus	1.29	16	0.42	
Coelorinchus fasciatus	0.72	4	0.24	
Coelorinchus braueri	0.56	5	0.18	
Beryx splendens	0.44	2	0.14	
Total	304.71		99.99	

PROJECT STATION:1590

DATE:26/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2733
start stop duration Long E 1450
TIME :09:53:00 10:26:00 33 (min) Purpose code: 3
LOG :9300.40 9301.90 1.87 Area code : 1
FDEPTH: 304 306 GearCond.code:
BDEPTH: 304 306 Validity code:
Towing dir: 350 Wire out: 950 m Speed: 34 kn*10

Sorted: 144 Kg Total catch: 911.51 CATCH/HOUR: 1657.29

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	1215.00	7020	73.31	118
Merluccius paradoxus, male	299.45	2147	18.07	117
Merluccius capensis, female	71.18	49	4.29	116
Todarodes sagittatus	18.04	25	1.09	
Merluccius capensis, male	16.07	13	0.97	115
Centrolophus niger	15.64	4	0.94	
Coelorinchus fasciatus	6.75	49	0.41	
MYCTOPHIDAE	5.51		0.33	
Genypterus capensis	3.64	2	0.22	119
Holohalaelurus regani	2.95	13	0.18	
Malacocephalus laevis	2.71	25	0.16	
Maurolicus muelleri	0.36		0.02	
Total	1657.30		99.99	

PROJECT STATION:1591

DATE:26/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2730
start stop duration Long E 1501
TIME :11:56:00 12:28:00 32 (min) Purpose code: 3
LOG :9313.50 9315.00 1.85 Area code : 1
FDEPTH: 200 205 GearCond.code:
BDEPTH: 200 205 Validity code:
Towing dir: 350 Wire out: 750 m Speed: 34 kn*10

Sorted: 72 Kg Total catch: 320.18 CATCH/HOUR: 600.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	309.38	1331	51.53	121
Merluccius capensis, male	211.41	1352	35.22	120
MYCTOPHIDAE	29.19	17516	4.86	
Todarodes sagittatus	26.25	64	4.37	
Merluccius paradoxus, female	9.81	135	1.63	123
Callorhinchus capensis	5.76	2	0.96	
Chelidonichthys capensis	4.13	11	0.69	
Merluccius paradoxus, male	2.06	21	0.34	122
Trachurus capensis	1.76	11	0.29	
Austroglossus microlepis	0.60	2	0.10	
Total	600.35		99.99	

PROJECT STATION:1592

DATE:26/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2741
start stop duration Long E 1515
TIME :14:46:00 15:16:00 30 (min) Purpose code: 3
LOG :9335.40 9336.90 1.48 Area code : 1
FDEPTH: 123 119 GearCond.code:
BDEPTH: 123 119 Validity code:
Towing dir: 140 Wire out: 550 m Speed: 30 kn*10

Sorted: 61 Kg Total catch: 719.71 CATCH/HOUR: 1439.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	1352.50	16338	93.96	124
Merluccius capensis, male	44.00	376	3.06	125
Merluccius capensis, female	27.00	76	1.88	126
Galeorhinus galeus	7.14	2	0.50	
Chelidonichthys capensis	3.76	26	0.26	
Sardinops ocellata	3.76	100	0.26	
Lepidopus caudatus	1.26	26	0.09	
Total	1439.42		100.01	

PROJECT STATION:1593

DATE:26/ 1/93 GEAR TYPE: PT No: POSITION:Lat S 2755
start stop duration Long E 1525
TIME :18:30:00 18:40:00 10 (min) Purpose code: 1
LOG :9363.90 9364.30 0.40 Area code : 1
FDEPTH: 100 100 GearCond.code:
BDEPTH: 111 111 Validity code:
Towing dir: 60 Wire out: 300 m Speed: 35 kn*10

Sorted: 35 Kg Total catch: 105.75 CATCH/HOUR: 634.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	610.20	6582	96.17	127
Lepidopus caudatus	24.30	432	3.83	
Total	634.50		100.00	

PROJECT STATION:1594

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2824
start stop duration Long E 1523
TIME :00:30:00 01:00:00 30 (min) Purpose code: 3
LOG :9417.50 9419.10 1.62 Area code : 1
FDEPTH: 157 152 GearCond.code:
BDEPTH: 157 152 Validity code:
Towing dir: 350 Wire out: 650 m Speed: 31 kn*10

Sorted: 127 Kg Total catch: 253.18 CATCH/HOUR: 506.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	332.50	566	65.66	131
Genypterus capensis	76.80	92	15.17	128
Merluccius capensis, male	58.00	210	11.45	130
Merluccius capensis, juveniles	16.06	746	3.17	129
Squalus megalops	5.96	16	1.18	
Callorhinchus capensis	5.36	2	1.06	
Cynoglossus capensis	4.30	54	0.85	
Holohalaelurus regani	2.46	10	0.49	
Trachurus capensis	2.36	16	0.47	
Congiopodus spinifer	0.90	10	0.18	
Shrimps, small, non comm.	0.86	160	0.17	
Helicolenus dactylopterus	0.80	50	0.16	
Total	506.36		100.01	

PROJECT STATION:1595

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2818
start stop duration Long E 1504
TIME :03:06:00 03:12:00 6 (min) Purpose code: 3
LOG :9438.50 9438.80 0.33 Area code : 1
FDEPTH: 177 173 GearCond.code: 5
BDEPTH: 177 173 Validity code:
Towing dir: 350 Wire out: 700 m Speed: 28 kn*10

Sorted: 34 Kg Total catch: 34.08 CATCH/HOUR: 340.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	152.00	200	44.60	134
Genypterus capensis	110.00	90	32.28	135
Helicolenus dactylopterus	35.90	690	10.53	
Holohalaelurus regani	12.70	70	3.73	
Merluccius capensis, male	7.80	70	2.29	133
Trachurus capensis	5.90	30	1.73	132
Cynoglossus capensis	4.50	60	1.32	
Raja straeleni	3.40	10	1.00	
Merluccius capensis, juveniles	2.10	330	0.62	
Lepidopus caudatus	2.10	30	0.62	
Congiopodus spinifer	2.00	10	0.59	
Zeus capensis	1.70	20	0.50	
C R A B S	0.70	10	0.21	
Total	340.80		100.02	

PROJECT STATION:1596

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2805
start stop duration Long E 1500
TIME :05:53:00 06:24:00 31 (min) Purpose code: 3
LOG :9456.30 9457.50 1.74 Area code : 1
FDEPTH: 180 182 GearCond.code:
BDEPTH: 180 182 Validity code:
Towing dir: 350 Wire out: 700 m Speed: 34 kn*10

Sorted: 124 Kg Total catch: 257.15 CATCH/HOUR: 497.71

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	285.68	362	57.40	138
Merluccius capensis, male	30.48	91	6.12	137
Zeus capensis	24.17	261	4.86	
Helicolenus dactylopterus	23.26	1200	4.67	
Callorhinchus capensis	22.84	15	4.59	
Sepia australis	21.77		4.37	
Trachurus capensis	20.48	101	4.11	140
Chelidonichthys capensis	16.76	48	3.37	
Squalus megalops	16.12	39	3.24	
Merluccius capensis, juveniles	10.10	1204	2.03	139
Octopus vulgaris	8.13	2	1.63	
Holohalaelurus regani	7.10	39	1.43	
Lepidopus caudatus	7.06	105	1.42	
Austroglossus microlepis	1.49	2	0.30	
Todaropsis eblanae	0.66	21	0.13	
Sufflogobius bibarbatus	0.62	161	0.12	
Cynoglossus capensis	0.35	2	0.07	
Genypterus capensis	0.31	4	0.06	136
Paracallionymus costatus	0.21	14	0.04	
Squilla aculeata calmani	0.10	4	0.02	
Total	497.69		99.98	

PROJECT STATION:1597

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2808
start stop duration Long E 1447
TIME :08:24:00 08:54:00 30 (min) Purpose code: 3
LOG :9470.70 9472.40 1.75 Area code : 1
FDEPTH: 195 193 GearCond.code:
BDEPTH: 195 193 Validity code:
Towing dir: 340 Wire out: 750 m Speed: 34 kn*10

Sorted: 104 Kg Total catch: 443.33 CATCH/HOUR: 886.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	618.00	3510	69.70	145
Merluccius capensis, female	94.60	52	10.67	142
Holohalaelurus regani	42.60	150	4.80	
Callorhinchus capensis	37.60	18	4.24	
Zeus faber	29.70	150	3.35	
Chelidonichthys capensis	17.70	30	2.00	
Squalus megalops	11.70	30	1.32	
Thyrsites atun	9.00	4	1.02	
Todaropsis eblanae	7.80	120	0.88	
Lophius upsicephalus	7.48	2	0.84	143
Todarodes sagittatus	4.50	12	0.51	
Austroglossus microlepis	2.76	2	0.31	144
Merluccius capensis, male	2.02	4	0.23	141
Emmelichthys nitidus	1.20	2	0.14	
Total	886.66		100.01	

PROJECT STATION:1598

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2813
start stop duration Long E 1436
TIME :10:38:00 10:52:00 14 (min) Purpose code: 3
LOG :9484.90 9485.50 0.80 Area code : 1
FDEPTH: 182 185 GearCond.code: 5
BDEPTH: 182 185 Validity code:
Towing dir: 280 Wire out:7503 m Speed: 37 kn*10

Sorted: 225 Kg Total catch: 1468.91 CATCH/HOUR: 6295.33

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	2133.69	8661	33.89	148
Merluccius capensis, female	1708.16	1161	27.13	147
Zeus capensis	1395.90		22.17	
Callorhinchus capensis	786.73	304	12.50	
Merluccius capensis, male	131.61	124	2.09	146
Galeorhinus galeus	87.43	4	1.39	
Squalus megalops	20.19	60	0.32	
Chelidonichthys capensis	18.99	30	0.30	
Congiopodus torvus	11.40	9	0.18	
Emmelichthys nitidus	1.24	30	0.02	
Total	6295.34		99.99	

PROJECT STATION:1599

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2814
start stop duration Long E 1431
TIME :11:47:00 12:17:00 30 (min) Purpose code: 3
LOG :9491.60 9493.10 1.48 Area code : 1
FDEPTH: 337 343 GearCond.code:
BDEPTH: 337 343 Validity code:
Towing dir: 20 Wire out:1000 m Speed: 30 kn*10

Sorted: 327 Kg Total catch: 7010.84 CATCH/HOUR: 14021.68

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	7287.00	9750	51.97	153
Merluccius paradoxus, male	6180.00	11100	44.07	152
Merluccius capensis, female	170.00	100	1.21	151
Coelorinchus fasciatus	102.50	800	0.73	
Callorhinchus capensis	74.00	50	0.53	
Scomber japonicus	67.50	50	0.48	
Brama brama	47.40	34	0.34	
Todarodes sagittatus	25.92	54	0.18	
Malacocephalus laevis	24.50	150	0.17	
Scyliorhinus capensis	12.00	50	0.09	
Thyrsites atun	11.02	6	0.08	149
Centrolophus niger	7.04	2	0.05	
Genypterus capensis	6.80	8	0.05	150
Helicolenus dactylopterus	6.00	100	0.04	
Total	14021.68		99.99	

PROJECT STATION:1600

DATE:27/ 1/93 GEAR TYPE: BT No:3 POSITION:Lat S 2814
start stop duration Long E 1431
TIME :13:56:00 14:28:00 32 (min) Purpose code: 2
LOG :9499.20 9501.20 1.92 Area code : 1
FDEPTH: 332 343 GearCond.code:
BDEPTH: 332 343 Validity code:
Towing dir: 50 Wire out:1000 m Speed: 34 kn*10

Sorted: 240 Kg Total catch: 4457.85 CATCH/HOUR: 8358.47

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	4992.19	5344	59.73	157
Merluccius paradoxus, male	2784.38	4114	33.31	156
Merluccius capensis, female	274.22	105	3.28	155
Brama brama	140.63	105	1.68	
Todarodes sagittatus	80.87	212	0.97	
Malacocephalus laevis	41.44	212	0.50	
Lepidopus caudatus	28.88	36	0.35	
Coelorinchus fasciatus	11.25	105	0.13	
Genypterus capensis	4.63	4	0.06	154
Total	8358.49		100.01	

PROJECT STATION:1601

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2818
start stop duration Long E 1428
TIME :16:22:00 16:53:00 31 (min) Purpose code: 3
LOG :9510.90 9512.30 1.67 Area code : 1
FDEPTH: 421 420 GearCond.code:
BDEPTH: 421 420 Validity code:
Towing dir: 20 Wire out:1200 m Speed: 32 kn*10

Sorted: 179 Kg Total catch: 552.29 CATCH/HOUR: 1068.95

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	606.08	1092	56.70	160
Merluccius paradoxus, male	337.59	526	31.58	159
Genypterus capensis	24.97	12	2.34	158
MYCTOPHIDAE	24.54	6817	2.30	
Todarodes sagittatus	20.71	45	1.94	
Coelorinchus fasciatus	13.16	99	1.23	
CONGRIDAE	12.83	19	1.20	
Hydrolagus sp.	11.90	14	1.11	
Malacocephalus laevis	10.34	46	0.97	
Scyliorhinus capensis	4.01	6	0.38	
Epigonus denticulatus	2.17	112	0.20	
Physiculus capensis	0.33	14	0.03	
Nezumia sp.	0.27	6	0.03	
C R A B S	0.06	6	0.01	
Total	1068.96		100.02	

PROJECT STATION:1602

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2820
start stop duration Long E 1428
TIME :19:20:00 19:50:00 30 (min) Purpose code: 3
LOG :9527.50 9528.90 1.70 Area code : 1
FDEPTH: 365 365 GearCond.code:
BDEPTH: 365 365 Validity code:
Towing dir: 360 Wire out:1000 m Speed: 33 kn*10

Sorted: 177 Kg Total catch: 1031.86 CATCH/HOUR: 2063.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	1117.60	2508	54.15	163
Merluccius paradoxus, male	802.60	1738	38.89	162
Merluccius capensis, female	109.60	58	5.31	161
Scyliorhinus capensis	13.64	24	0.66	
Todarodes sagittatus	7.00	36	0.34	
Coelorinchus fasciatus	4.78	24	0.23	
Helicolenus dactylopterus	3.96	12	0.19	
Epigonus denticulatus	1.98	152	0.10	
Malacocephalus laevis	1.28	24	0.06	
Maurolicus muelleri	1.04	444	0.05	
MYCTOPHIDAE	0.24		0.01	
Total	2063.72		99.99	

PROJECT STATION:1603

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2020
start stop duration Long E 1423
TIME :20:51:00 21:21:00 30 (min) Purpose code: 3
LOG :9535.20 9536.50 1.60 Area code : 1
FDEPTH: 560 573 GearCond.code:
BDEPTH: 560 573 Validity code:
Towing dir: 360 Wire out:1400 m Speed: 32 kn*10

Sorted: 23 Kg Total catch: 23.22 CATCH/HOUR: 46.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	19.20	16	41.34	165
Hoplostethus atlanticus	12.80	48	27.56	166
Coelorinchus braueri	5.58	66	12.02	
Nezumia sp.	3.66	40	7.88	
Deania profundorum	1.32	2	2.84	
Todarodes sagittatus	1.06	2	2.28	
Neocyttus rhomboidalis	0.98	2	2.11	
RAJIDAE	0.50	4	1.08	
Helicolenus dactylopterus	0.44	4	0.95	
Merluccius paradoxus, male	0.24	2	0.52	164
Ebinania costaecanarie	0.20	2	0.43	
Photichthys argenteus	0.14	6	0.30	
Neoscopelus macrolepidotus	0.14	4	0.30	
Selachophidium guentheri	0.10	2	0.22	
Notacanthus sexspinis	0.08	2	0.17	
Total	46.44		100.00	

PROJECT STATION:1604

DATE:27/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2709
start stop duration Long E 1404
TIME :08:06:00 08:36:00 30 (min) Purpose code: 3
LOG :9632.10 9633.40 1.73 Area code : 1
FDEPTH: 483 478 GearCond.code:
BDEPTH: 483 478 Validity code:
Towing dir: 340 Wire out:1350 m Speed: 34 kn*10

Sorted: 79 Kg Total catch: 185.36 CATCH/HOUR: 370.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	261.34	570	70.50	168
Merluccius paradoxus, male	86.34	210	23.29	167
Nezumia sp.	8.86	696	2.39	
Todarodes sagittatus	7.60	38	2.05	
Photichthys argenteus	2.48	126	0.67	
MYCTOPHIDAE	2.42		0.65	
Coelorinchus braueri	0.88	42	0.24	
Hoplostethus cadenati	0.56	66	0.15	
Ebinania costaecanarie	0.24	4	0.06	
Total	370.72		100.00	

PROJECT STATION:1605

DATE:28/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2712
start stop duration Long E 1417
TIME :10:44:00 11:17:00 33 (min) Purpose code: 3
LOG :9649.70 9651.40 1.81 Area code : 1
FDEPTH: 395 395 GearCond.code:
BDEPTH: 395 395 Validity code:
Towing dir: 360 Wire out:1100 m Speed: 33 kn*10

Sorted: 119 Kg Total catch: 191.63 CATCH/HOUR: 348.42

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	200.00	411	57.40	172
Merluccius paradoxus, male	72.36	131	20.77	171
Coelorinchus fasciatus	32.55	375	9.34	
Todarodes sagittatus	31.56	124	9.06	
Helicolenus dactylopterus	5.76	36	1.65	
Lophius upsicephalus	2.33	2	0.67	170
Genypterus capensis	1.91	2	0.55	169
MYCTOPHIDAE	1.36	818	0.39	
Nezumia sp.	0.53	15	0.15	
Photichthys argenteus	0.05	5	0.01	
Total	348.41		99.99	

PROJECT STATION:1606

DATE:28/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2712
start stop duration Long E 1435
TIME :14:04:00 14:35:00 31 (min) Purpose code: 3
LOG :9674.30 9675.80 1.74 Area code : 1
FDEPTH: 322 320 GearCond.code:
BDEPTH: 322 320 Validity code:
Towing dir: 360 Wire out:1050 m Speed: 32 kn*10

Sorted: 175 Kg Total catch: 795.00 CATCH/HOUR: 1538.71

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	821.03	397	53.36	174
Merluccius paradoxus, female	431.81	1788	28.06	176
Merluccius capensis, male	126.39	91	8.21	173
Merluccius paradoxus, male	89.42	352	5.81	175
Todarodes sagittatus	27.10	72	1.76	
Coelorinchus fasciatus	12.58	99	0.82	
Trachurus capensis	10.45	17	0.68	178
Genypterus capensis	10.45	6	0.68	177
Helicolenus dactylopterus	7.35	108	0.48	
C R A B S	1.26	10	0.08	
Galeus polli	0.87	10	0.06	
Total	1538.71		100.00	

PROJECT STATION:1607

DATE:28/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2713
start stop duration Long E 1450
TIME :16:46:00 17:16:00 30 (min) Purpose code: 3
LOG :9693.60 9695.10 1.74 Area code : 1
FDEPTH: 250 243 GearCond.code:
BDEPTH: 250 243 Validity code:
Towing dir: 350 Wire out: 900 m Speed: 33 kn*10

Sorted: 35 Kg Total catch: 1386.39 CATCH/HOUR: 2772.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1606.20	11750	57.93	181
Merluccius capensis, male	1137.40	8930	41.02	180
MYCTOPHIDAE	18.80		0.68	
Callorhinchus capensis	5.74	2	0.21	
Scomber japonicus	2.80	2	0.10	
Austroglossus microlepis	1.84	2	0.07	179
Total	2772.78		100.01	

PROJECT STATION:1608

DATE:28/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2710
start stop duration Long E 1459
TIME :18:51:00 19:21:00 30 (min) Purpose code: 3
LOG :9706.60 9708.00 1.84 Area code : 1
FDEPTH: 165 161 GearCond.code:
BDEPTH: 165 161 Validity code:
Towing dir: 360 Wire out: 650 m Speed: 36 kn*10

Sorted: 25 Kg Total catch: 255.00 CATCH/HOUR: 510.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	316.00	2940	61.96	183
Merluccius capensis, male	194.00	1920	38.04	182
Total	510.00		100.00	

PROJECT STATION:1609

DATE:28/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2702
start stop duration Long E 1505
TIME :21:19:00 21:48:00 29 (min) Purpose code: 3
LOG :9725.50 9726.80 1.63 Area code : 1
FDEPTH: 131 134 GearCond.code:
BDEPTH: 131 134 Validity code:
Towing dir: 330 Wire out: 550 m Speed: 34 kn*10

Sorted: 83 Kg Total catch: 247.22 CATCH/HOUR: 511.49

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	229.03	2104	44.78	186
Merluccius capensis, male	148.97	1471	29.12	185
Genypterus capensis	129.10	199	25.24	184
Raja straeleni	1.41	4	0.28	
Sufflogobius bibarbatus	1.30	168	0.25	
Todaropsis eblanae	0.74	37	0.14	
Sepia australis	0.56	19	0.11	
Lepidopus caudatus	0.37	74	0.07	
Total	511.48		99.99	

PROJECT STATION:1610

DATE:28/ 1/93 GEAR TYPE: BT No:3 POSITION:Lat S 2702
start stop duration Long E 1504
TIME :22:32:00 23:02:00 30 (min) Purpose code: 2
LOG :9730.60 9732.30 1.89 Area code : 1
FDEPTH: 131 130 GearCond.code:
BDEPTH: 131 130 Validity code:
Towing dir: 330 Wire out: 500 m Speed: 37 kn*10

Sorted: 59 Kg Total catch: 107.22 CATCH/HOUR: 214.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	90.00	870	41.97	189
Genypterus capensis	69.60	118	32.46	187
Merluccius capensis, male	52.20	540	24.34	188
Chelidonichthys capensis	1.14	6	0.53	
Sufflogobius bibarbatus	0.96	90	0.45	
Sepia australis	0.30	12	0.14	
Lepidopus caudatus	0.24	24	0.11	
Squilla acuelata calmani	0.00	6		
Total	214.44		100.00	

PROJECT STATION:1611

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2646
start stop duration Long E 1436
TIME :05:52:00 06:22:00 30 (min) Purpose code: 3
LOG :9767.60 9768.90 1.56 Area code : 1
FDEPTH: 251 251 GearCond.code:
BDEPTH: 251 251 Validity code:
Towing dir: 360 Wire out: 900 m Speed: 31 kn*10

Sorted: 68 Kg Total catch: 1185.60 CATCH/HOUR: 2371.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1408.00	11840	59.38	193
Merluccius capensis, male	880.00	7760	37.11	192
Merluccius capensis, female	62.40	68	2.63	191
Merluccius capensis, male	17.60	14	0.74	190
MYCTOPHIDAE	1.60	240	0.07	
Sufflogobius bibarbatus	1.60	160	0.07	
Total	2371.20		100.00	

PROJECT STATION:1612

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2645
start stop duration Long E 1429
TIME :07:26:00 07:56:00 30 (min) Purpose code: 3
LOG :9776.30 9777.60 1.59 Area code : 1
FDEPTH: 303 305 GearCond.code:
BDEPTH: 303 305 Validity code:
Towing dir: 345 Wire out: 950 m Speed: 32 kn*10

Sorted: 89 Kg Total catch: 129.92 CATCH/HOUR: 259.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Genypterus capensis	87.28	116	33.59	194
Merluccius capensis, female	76.60	68	29.48	196
Merluccius capensis, female	51.00	304	19.63	198
Merluccius capensis, male	27.40	210	10.54	197
Merluccius capensis, male	14.40	12	5.54	195
Coelorinchus fasciatus	1.60	16	0.62	
Todarodes sagittatus	1.04	4	0.40	
Helicolenus dactylopterus	0.52	4	0.20	
Total	259.84		100.00	

PROJECT STATION:1613

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2646
start stop duration Long E 1418
TIME :09:21:00 09:51:00 30 (min) Purpose code: 3
LOG :9787.70 9789.20 1.56 Area code : 1
FDEPTH: 356 353 GearCond.code:
BDEPTH: 356 353 Validity code:
Towing dir: 345 Wire out:1050 m Speed: 32 kn*10

Sorted: 170 Kg Total catch: 391.59 CATCH/HOUR: 783.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	619.20	924	79.06	202
Merluccius paradoxus, male	77.80	172	9.93	201
Merluccius capensis, female	44.20	32	5.64	200
Krill	16.00		2.04	
Helicolenus dactylopterus	9.00	168	1.15	
Genypterus capensis	8.80	6	1.12	199
Todarodes sagittatus	2.60	122	0.33	
MYCTOPHIDAE	2.40		0.31	
Nezumia sp.	1.30	18	0.17	
Coelorinchus fasciatus	0.76	4	0.10	
Galeus polli	0.72	8	0.09	
Selachophidium guentheri	0.16	4	0.02	
PORTUNIDAE	0.12	4	0.02	
Coelorinchus braueri	0.08	8	0.01	
Epigonus denticulatus	0.04	4	0.01	
Total	783.18		100.00	

PROJECT STATION:1614

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2646
start stop duration Long E 1404
TIME :11:31:00 12:01:00 30 (min) Purpose code: 3
LOG :9802.20 9804.00 1.43 Area code : 1
FDEPTH: 392 392 GearCond.code:
BDEPTH: 392 392 Validity code:
Towing dir: 340 Wire out:1100 m Speed: 28 kn*10

Sorted: 186 Kg Total catch: 521.06 CATCH/HOUR: 1042.12

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	764.40	2646	73.35	205
Merluccius paradoxus, male	180.20	660	17.29	204
Todarodes sagittatus	81.00	474	7.77	
Genypterus capensis	12.80	6	1.23	203
Coelorinchus fasciatus	1.56	14	0.15	
Merluccius capensis	1.20	6	0.12	
Nezumia sp.	0.96	28	0.09	
Total	1042.12		100.00	

PROJECT STATION:1615

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2647
start stop duration Long E 1348
TIME :14:06:00 14:36:00 30 (min) Purpose code: 3
LOG :9821.90 9823.50 1.44 Area code : 1
FDEPTH: 444 437 GearCond.code:
BDEPTH: 444 437 Validity code:
Towing dir: 355 Wire out:1200 m Speed: 28 kn*10

Sorted: 109 Kg Total catch: 109.51 CATCH/HOUR: 219.02

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	127.80	216	58.35	207
Merluccius paradoxus, male	32.60	52	14.88	206
Todarodes sagittatus	30.00		13.70	
Helicolenus dactylopterus	12.24	44	5.59	
Scomberesox saurus	6.46	146	2.95	
Squalus megalops	2.66	4	1.21	
Genypterus capensis	2.60	2	1.19	208
Nezumia sp.	2.40	96	1.10	
Coelorinchus fasciatus	2.02	28	0.92	
Photichthys argenteus	0.24	22	0.11	
Total	219.02		100.00	

PROJECT STATION:1616

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2645
start stop duration Long E 1345
TIME :15:45:00 16:16:00 31 (min) Purpose code: 3
LOG :9830.70 9832.30 1.53 Area code : 1
FDEPTH: 500 497 GearCond.code:
BDEPTH: 500 497 Validity code:
Towing dir: 340 Wire out:1400 m Speed: 29 kn*10

Sorted: 130 Kg Total catch: 130.58 CATCH/HOUR: 252.74

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	137.03	192	54.22	210
Deania calcea	32.71	21	12.94	
Todarodes sagittatus	32.52	68	12.87	
Merluccius paradoxus, male	21.48	33	8.50	209
Helicolenus dactylopterus	10.53	23	4.17	
Nezumia sp.	5.94	252	2.35	
Coelorinchus braueri	3.06	68	1.21	
Coelorinchus fasciatus	2.42	27	0.96	
Hydrolagus sp.	2.28	4	0.90	
Selachophidium guentheri	2.17	27	0.86	
Squalus megalops	1.55	6	0.61	
Photichthys argenteus	0.37	23	0.15	
Raja confundens	0.29	2	0.11	
Notacanthus sexspinis	0.23	4	0.09	
PORTUNIDAE	0.15	8	0.06	
Total	252.73		100.00	

PROJECT STATION:1617

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2636
start stop duration Long E 1338
TIME :17:47:00 18:19:00 32 (min) Purpose code: 3
LOG :9843.20 9845.00 1.67 Area code : 1
FDEPTH: 598 620 GearCond.code:
BDEPTH: 598 620 Validity code:
Towing dir: 340 Wire out:1600 m Speed: 31 kn*10

Sorted: 85 Kg Total catch: 213.00 CATCH/HOUR: 399.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	270.47	309	67.72	212
Merluccius paradoxus, male	37.97	47	9.51	211
Nezumia sp.	31.13	234	7.79	
Deania calcea	24.38	15	6.10	
Todarodes sagittatus	13.93	28	3.49	
Coelorinchus braueri	7.41	109	1.86	
Hoplostethus cadenati	4.65	324	1.16	
Etmopterus pusillus	2.72	9	0.68	
Helicolenus dactylopterus	1.78	6	0.45	
Hydrolagus sp.	1.69	6	0.42	
Selachophidium guentheri	1.46	15	0.37	
MYCTOPHIDAE	0.99	137	0.25	
Photichthys argenteus	0.81	81	0.20	
Total	399.39		100.00	

PROJECT STATION:1618

DATE:29/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2621
start stop duration Long E 1337
TIME :20:12:00 20:42:00 30 (min) Purpose code: 3
LOG :9858.20 9859.70 1.63 Area code : 1
FDEPTH: 566 579 GearCond.code:
BDEPTH: 566 579 Validity code:
Towing dir: 360 Wire out:1450 m Speed: 32 kn*10

Sorted: 107 Kg Total catch: 429.60 CATCH/HOUR: 859.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Deepwater fish mixture	400.00		46.55	
Merluccius paradoxus, female	384.80	352	44.79	214
Merluccius paradoxus, male	74.40	72	8.66	213
Total	859.20		100.00	

PROJECT STATION:1619

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2623
start stop duration Long E 1340
TIME :00:58:00 01:28:00 30 (min) Purpose code: 3
LOG :9868.00 9869.60 1.58 Area code : 1
FDEPTH: 440 436 GearCond.code:
BDEPTH: 440 436 Validity code:
Towing dir: 360 Wire out:1200 m Speed: 31 kn*10

Sorted: 122 Kg Total catch: 156.72 CATCH/HOUR: 313.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	197.80	340	63.11	216
Coelorinchus fasciatus	35.52	456	11.33	
Merluccius paradoxus, male	32.00	54	10.21	215
Todarodes sagittatus	12.12	72	3.87	
Galeus polli	11.52	72	3.68	
Nezumia sp.	8.76	180	2.79	
Selachophidium guentheri	5.76	72	1.84	
Photichthys argenteus	5.76	1200	1.84	
Etmopterus lucifer	1.32	12	0.42	
PORTUNIDAE	1.32	12	0.42	
Shrimps, small, non comm.	1.32	180	0.42	
Coelorinchus braueri	0.24	24	0.08	
Total	313.44		100.01	

PROJECT STATION:1620

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2623
start stop duration Long E 1345
TIME :05:56:00 06:26:00 30 (min) Purpose code: 3
LOG :9879.30 9880.70 1.66 Area code : 1
FDEPTH: 400 396 GearCond.code:
BDEPTH: 400 396 Validity code:
Towing dir: 360 Wire out:1150 m Speed: 32 kn*10

Sorted: 147 Kg Total catch: 437.11 CATCH/HOUR: 874.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	510.26	1048	58.37	220
Merluccius capensis, female	112.84	50	12.91	218
Coelorinchus fasciatus	81.84		9.36	
Merluccius paradoxus, male	70.68	162	8.08	219
Nezumia sp.	24.24	198	2.77	
Galeus polli	19.60	142	2.24	
Todarodes sagittatus	17.68	56	2.02	
Krill	16.12		1.84	
Genypterus capensis	15.20	14	1.74	217
Selachophidium guentheri	3.28	100	0.38	
Helicolenus dactylopterus	2.30	80	0.26	
Epigonus denticulatus	0.18	6	0.02	
Total	874.22		99.99	

PROJECT STATION:1621

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2622
start stop duration Long E 1357
TIME :08:13:00 08:43:00 30 (min) Purpose code: 3
LOG :9893.40 9895.00 1.51 Area code : 1
FDEPTH: 373 370 GearCond.code:
BDEPTH: 373 370 Validity code:
Towing dir: 360 Wire out:1050 m Speed: 30 kn*10

Sorted: 171 Kg Total catch: 2185.53 CATCH/HOUR: 4371.06

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	2104.60	3004	48.15	222
Merluccius paradoxus, female	1042.00	3260	23.84	224
Merluccius capensis, male	764.80	1258	17.50	221
Merluccius paradoxus, male	308.00	898	7.05	223
Krill	128.40		2.94	
Helicolenus dactylopterus	11.00	78	0.25	
Galeus polli	4.40	52	0.10	
Selachophidium guentheri	3.40	52	0.08	
Nezumia sp.	2.00	52	0.05	
Genypterus capensis	1.66	2	0.04	
Coelorinchus fasciatus	0.80	26	0.02	
Total	4371.06		100.02	

PROJECT STATION:1622

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2623
start stop duration Long E 1413
TIME :10:46:00 11:15:00 29 (min) Purpose code: 3
LOG :9911.90 9913.20 1.51 Area code : 1
FDEPTH: 325 317 GearCond.code:
BDEPTH: 325 317 Validity code:
Towing dir: 55 Wire out:1000 m Speed: 31 kn*10

Sorted: 55 Kg Total catch: 1064.16 CATCH/HOUR: 2201.71

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1233.10	4966	56.01	226
Merluccius capensis, male	939.31	5214	42.66	225
Todarodes sagittatus	22.76	41	1.03	
Lophius upsicephalus	3.64	2	0.17	
Helicolenus dactylopterus	2.90	41	0.13	
Total	2201.71		100.00	

PROJECT STATION:1623

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2622
start stop duration Long E 1431
TIME :13:25:00 13:55:00 30 (min) Purpose code: 3
LOG :9931.70 9933.20 1.60 Area code : 1
FDEPTH: 278 274 GearCond.code:
BDEPTH: 278 274 Validity code:
Towing dir: 350 Wire out: 900 m Speed: 32 kn*10

Sorted: 68 Kg Total catch: 67.94 CATCH/HOUR: 135.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	60.40	210	44.45	229
Merluccius capensis, male	26.00	126	19.13	228
Genypterus capensis	21.90	22	16.12	227
Coelorinchus fasciatus	21.26	248	15.65	
Austroglossus microlepis	2.50	2	1.84	230
Photichthys argenteus	1.82	778	1.34	
Sufflogobius bibarbatus	1.18	156	0.87	
Squilla acuelata calmani	0.40	14	0.29	
Trachurus capensis	0.34	2	0.25	
Lepidopus caudatus	0.08	2	0.06	
Total	135.88		100.00	

PROJECT STATION:1624

DATE:30/ 1/93 GEAR TYPE: PT No: POSITION:Lat S 2623
start stop duration Long E 1439
TIME :15:30:00 15:34:00 4 (min) Purpose code: 1
LOG :9944.70 9944.90 0.20 Area code : 1
FDEPTH: 60 60 GearCond.code:
BDEPTH: 200 212 Validity code:
Towing dir: 260 Wire out: 200 m Speed: 33 kn*10

Sorted: 30 Kg Total catch: 30.00 CATCH/HOUR: 450.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
MYCTOPHIDAE	450.00		100.00	
Total	450.00		100.00	

PROJECT STATION:1625

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2622
start stop duration Long E 1440
TIME :16:10:00 16:40:00 30 (min) Purpose code: 3
LOG :9948.50 9950.30 1.35 Area code : 1
FDEPTH: 183 194 GearCond.code:
BDEPTH: 183 194 Validity code:
Towing dir: 350 Wire out: 750 m Speed: 27 kn*10

Sorted: 29 Kg Total catch: 66.60 CATCH/HOUR: 133.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	112.20	17574	84.23	
Merluccius capensis, female	14.60	84	10.96	232
Merluccius capensis, male	6.40	44	4.80	231
Total	133.20		99.99	

PROJECT STATION:1626

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2622
start stop duration Long E 1448
TIME :17:52:00 18:22:00 30 (min) Purpose code: 3
LOG :9959.40 9961.10 1.43 Area code : 1
FDEPTH: 143 141 GearCond.code:
BDEPTH: 143 141 Validity code:
Towing dir: 360 Wire out: 600 m Speed: 29 kn*10

Sorted: 120 Kg Total catch: 120.00 CATCH/HOUR: 240.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	240.00		100.00	
Total	240.00		100.00	

PROJECT STATION:1627

DATE:30/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2559
start stop duration Long E 1429
TIME :23:33:00 00:06:00 33 (min) Purpose code: 3
LOG : 4.20 5.90 1.90 Area code : 1
FDEPTH: 183 183 GearCond.code:
BDEPTH: 183 183 Validity code:
Towing dir: 350 Wire out: 700 m Speed: 34 kn*10

Sorted: 328 Kg Total catch: 327.97 CATCH/HOUR: 596.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	581.82		97.57	
Merluccius capensis, female	11.27	60	1.89	234
Merluccius capensis, male	3.22	20	0.54	233
Total	596.31		100.00	

PROJECT STATION:1628

DATE:31/ 1/93 GEAR TYPE: BT No:1 POSITION:Lat S 2601
start stop duration Long E 1416
TIME :05:51:00 06:21:00 30 (min) Purpose code: 3
LOG : 18.80 20.00 1.64 Area code : 1
FDEPTH: 218 239 GearCond.code:
BDEPTH: 218 239 Validity code:
Towing dir: 360 Wire out: 800 m Speed: 33 kn*10

Sorted: 53 Kg Total catch: 420.52 CATCH/HOUR: 841.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	484.80	2912	57.64	237
Merluccius capensis, male	342.40	2416	40.71	236
Sufflogobius bibarbatus	13.12	1574	1.56	
Austroglossus microlepis	0.72	2	0.09	235
Total	841.04		100.00	

PROJECT STATION:1629

DATE: 1/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2600
start stop duration Long E 1356
TIME :08:36:00 09:06:00 30 (min) Purpose code: 3
LOG : 77.30 78.80 1.48 Area code : 1
FDEPTH: 335 336 GearCond.code:
BDEPTH: 335 336 Validity code:
Towing dir: 360 Wire out:1000 m Speed: 29 kn*10

Sorted: 112 Kg Total catch: 284.45 CATCH/HOUR: 568.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	402.20	630	70.70	239
Merluccius capensis, male	99.20	262	17.44	238
Todarodes sagittatus	28.20	68	4.96	
Helicolenus dactylopterus	18.80	232	3.30	
Lophius upsicephalus	10.90	10	1.92	
Coelorinchus fasciatus	6.60	120	1.16	
Galeus polli	1.30	136	0.23	
Trachurus capensis	1.20	6	0.21	
Nezumia sp.	0.30	26	0.05	
Squilla aculeata calmani	0.20	16	0.04	
Total	568.90		100.01	

PROJECT STATION:1630

DATE: 1/ 2/93 GEAR TYPE: BT No:3 POSITION:Lat S 2600
start stop duration Long E 1356
TIME :10:09:00 10:39:00 30 (min) Purpose code: 2
LOG : 83.00 84.60 1.56 Area code : 1
FDEPTH: 337 342 GearCond.code:
BDEPTH: 337 342 Validity code:
Towing dir: 360 Wire out:1000 m Speed: 30 kn*10

Sorted: 111 Kg Total catch: 110.64 CATCH/HOUR: 221.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	178.80	146	80.80	241
Merluccius capensis, male	13.80	32	6.24	240
Helicolenus dactylopterus	12.80	136	5.78	
Todarodes sagittatus	8.52	24	3.85	
Neoharriotta pinnata	3.78	2	1.71	
Lophius upsicephalus	2.42	2	1.09	
Coelorinchus fasciatus	0.86	6	0.39	
Nezumia sp.	0.16	2	0.07	
PORTUNIDAE	0.14	4	0.06	
Total	221.28		99.99	

PROJECT STATION:1631

DATE: 1/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2601
start stop duration Long E 1345
TIME :12:16:00 12:46:00 30 (min) Purpose code: 3
LOG : 95.70 97.10 1.42 Area code : 1
FDEPTH: 400 405 GearCond.code:
BDEPTH: 400 405 Validity code:
Towing dir: 355 Wire out:1200 m Speed: 28 kn*10

Sorted: 214 Kg Total catch: 529.60 CATCH/HOUR: 1059.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	642.20	982	60.63	243
Merluccius paradoxus, male	124.60	218	11.76	244
Merluccius capensis, female	79.20	52	7.48	242
Helicolenus dactylopterus	55.60	206	5.25	
Genypterus capensis	44.40	14	4.19	245
Todarodes sagittatus	41.20	110	3.89	
Raja confundens	26.80		2.53	
Nezumia sp.	19.00	224	1.79	
Lophius upsicephalus	18.00	4	1.70	246
Coelorinchus fasciatus	8.20	56	0.77	
Total	1059.20		99.99	

PROJECT STATION:1632

DATE: 1/ 2/93 GEAR TYPE: BT No:3 POSITION:Lat S 2601
start stop duration Long E 1345
TIME :13:45:00 14:16:00 31 (min) Purpose code: 2
LOG : 101.80 103.70 1.85 Area code : 1
FDEPTH: 402 404 GearCond.code:
BDEPTH: 402 404 Validity code:
Towing dir: 360 Wire out:1200 m Speed: 35 kn*10

Sorted: 48 Kg Total catch: 48.50 CATCH/HOUR: 93.87

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	46.65	72	49.70	248
Merluccius capensis, female	12.39	4	13.20	247
Helicolenus dactylopterus	10.99	50	11.71	
Merluccius paradoxus, male	9.29	14	9.90	249
Todarodes sagittatus	5.26	17	5.60	
Raja confundens	3.72	2	3.96	
Nezumia sp.	3.50	41	3.73	
Coelorinchus fasciatus	2.05	10	2.18	
Total	93.85		99.98	

PROJECT STATION:1633

DATE: 1/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2552
start stop duration Long E 1338
TIME :19:16:00 19:46:00 30 (min) Purpose code: 3
LOG : 139.60 141.10 1.45 Area code : 1
FDEPTH: 540 538 GearCond.code:
BDEPTH: 540 538 Validity code:
Towing dir: 360 Wire out:1400 m Speed: 29 kn*10

Sorted: 89 Kg Total catch: 498.68 CATCH/HOUR: 997.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	491.20	616	49.25	251
Hoplostethus cadenati	162.24	8362	16.27	
Nezumia sp.	110.08	4586	11.04	
Todarodes sagittatus	68.56	120	6.87	
Trachyrinus scabrus	66.56	192	6.67	
Merluccius paradoxus, male	49.60	64	4.97	250
Deania calcea	13.44	32	1.35	
Raja confundens	12.64	8	1.27	
Neocyttus rhomboidalis	11.20	192	1.12	
Notacanthus sexspinis	6.72	224	0.67	
Selachophidium guentheri	5.12	64	0.51	
Total	997.36		99.99	

PROJECT STATION:1634

DATE: 1/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2547
start stop duration Long E 1339
TIME :20:39:00 21:09:00 30 (min) Purpose code: 3
LOG : 144.90 146.40 1.34 Area code : 1
FDEPTH: 475 478 GearCond.code:
BDEPTH: 475 478 Validity code:
Towing dir: 350 Wire out:1250 m Speed: 27 kn*10

Sorted: 173 Kg Total catch: 403.67 CATCH/HOUR: 807.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	542.20	794	67.16	254
Merluccius paradoxus, male	71.80	122	8.89	253
Merluccius capensis, female	70.00	32	8.67	252
Todarodes sagittatus	51.80	112	6.42	
Selachophidium guentheri	17.64	268	2.18	
Coelorinchus fasciatus	12.04	94	1.49	
Nezumia sp.	10.08	130	1.25	
Deania calcea	6.34	10	0.79	
Centroscymnus crepidater	4.72	4	0.58	
Yarella blackfordi	4.66	304	0.58	
Hoplostethus cadenati	4.52	196	0.56	
Helicolenus dactylopterus	2.94	14	0.36	
Hydrolagus sp.	2.56	4	0.32	
Raja confundens	1.76	4	0.22	
Trachyrinus scabrus	1.44	32	0.18	
Etmopterus pusillus	1.36	4	0.17	
Notacanthus sexspinis	0.88	24	0.11	
MYCTOPHIDAE	0.60	80	0.07	
Total	807.34		100.00	

PROJECT STATION:1635

DATE: 1/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2542
start stop duration Long E 1341
TIME :22:22:00 22:52:00 30 (min) Purpose code: 3
LOG : 152.40 154.00 1.49 Area code : 1
FDEPTH: 398 406 GearCond.code:
BDEPTH: 398 406 Validity code:
Towing dir: 350 Wire out:1100 m Speed: 29 kn*10

Sorted: 166 Kg Total catch: 276.12 CATCH/HOUR: 552.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	251.34	404	45.51	258
Merluccius capensis, female	195.00	130	35.31	256
Merluccius capensis, male	27.66	20	5.01	255
Merluccius paradoxus, male	16.00	20	2.90	257
Raja caudaspinosa	13.90	10	2.52	
Todarodes sagittatus	13.36	20	2.42	
Helicolenus dactylopterus	10.16	54	1.84	
Coelorinchus fasciatus	5.84	40	1.06	
RAJIDAE	5.16	4	0.93	
Deania profundorum	4.00	6	0.72	
Nezumia sp.	2.56	74	0.46	
Lithodes ferox	2.24	2	0.41	
Etmopterus pusillus	1.96	20	0.35	
MYCTOPHIDAE	1.10	130	0.20	
Genypterus capensis	1.06	2	0.19	
Galeus polli	0.66	90	0.12	
Selachophidium guentheri	0.24	4	0.04	
Total	552.24		99.99	

PROJECT STATION:1636

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2540
start stop duration Long E 1430
TIME :04:17:00 04:48:00 31 (min) Purpose code: 3
LOG : 203.10 204.50 1.53 Area code : 1
FDEPTH: 152 150 GearCond.code:
BDEPTH: 152 150 Validity code:
Towing dir: 360 Wire out: 600 m Speed: 30 kn*10

Sorted: 52 Kg Total catch: 588.43 CATCH/HOUR: 1138.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	601.26	3604	52.79	260
Sufflogobius bibarbatus	304.97	76245	26.78	
Merluccius capensis, male	229.84	1674	20.18	259
Galeus polli	1.66	19	0.15	
Austroglossus microlepis	1.16	6	0.10	261
Total	1138.89		100.00	

PROJECT STATION:1637

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2540
start stop duration Long E 1422
TIME :05:57:00 06:27:00 30 (min) Purpose code: 3
LOG : 213.10 214.40 1.60 Area code : 1
FDEPTH: 182 187 GearCond.code:
BDEPTH: 182 187 Validity code:
Towing dir: 280 Wire out: 750 m Speed: 31 kn*10

Sorted: 31 Kg Total catch: 1132.20 CATCH/HOUR: 2264.40

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1166.40	10656	51.51	263
Merluccius capensis, male	986.40	9936	43.56	262
Sufflogobius bibarbatus	95.76	2664	4.23	
Trachurus capensis	11.52	72	0.51	
Merluccius capensis, juveniles	4.32	360	0.19	264
Total	2264.40		100.00	

PROJECT STATION:1638

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2540
start stop duration Long E 1403
TIME :08:38:00 08:49:00 11 (min) Purpose code: 3
LOG : 232.80 233.10 0.50 Area code : 1
FDEPTH: 249 241 GearCond.code:
BDEPTH: 249 241 Validity code:
Towing dir: 270 Wire out: 800 m Speed: 32 kn*10

Sorted: 9 Kg Total catch: 9.51 CATCH/HOUR: 51.87

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	27.27	158	52.57	266
Merluccius capensis, male	14.18	76	27.34	265
Diaphus sp.	9.93		19.14	
Todarodes sagittatus	0.44	16	0.85	
Sufflogobius bibarbatus	0.05	11	0.10	
Total	51.87		100.00	

PROJECT STATION:1639

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2539
start stop duration Long E 1345
TIME :10:42:00 11:12:00 30 (min) Purpose code: 3
LOG : 248.90 250.00 1.51 Area code : 1
FDEPTH: 343 351 GearCond.code:
BDEPTH: 343 351 Validity code:
Towing dir: 350 Wire out:1000 m Speed: 33 kn*10

Sorted: 131 Kg Total catch: 166.21 CATCH/HOUR: 332.42

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	151.40	88	45.54	267
Helicolenus dactylopterus	54.80	480	16.49	
Merluccius paradoxus, female	51.60	208	15.52	269
Merluccius capensis, male	33.00	30	9.93	266
Todarodes sagittatus	16.20	32	4.87	
Merluccius paradoxus, male	8.00	46	2.41	268
Genypterus capensis	7.58	6	2.28	270
Nezumia sp.	5.00	144	1.50	
Diplophos sp.	3.40	418	1.02	
Coelorinchus fasciatus	1.30	14	0.39	
Yarella blackfordi	0.14	14	0.04	
Total	332.42		99.99	

PROJECT STATION:1640

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2530
start stop duration Long E 1339
TIME :12:25:00 12:55:00 30 (min) Purpose code: 3
LOG : 258.90 259.90 1.62 Area code : 1
FDEPTH: 423 426 GearCond.code:
BDEPTH: 423 426 Validity code:
Towing dir: 10 Wire out:1200 m Speed: 32 kn*10

Sorted: 121 Kg Total catch: 326.65 CATCH/HOUR: 653.30

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	470.00	936	71.94	271
Todarodes sagittatus	33.00	100	5.05	
Merluccius capensis, female	32.40	16	4.96	273
Merluccius paradoxus, male	27.60	66	4.22	272
Helicolenus dactylopterus	25.00	110	3.83	
Galeus polli	17.20	172	2.63	
Selachophidium guentheri	11.00	126	1.68	
Nezumia sp.	10.20	174	1.56	
Lophius upsicephalus	9.00	2	1.38	274
RAJIDAE	7.80	6	1.19	
Deania profundorum	7.40	12	1.13	
Etmopterus pusillus	1.60	6	0.24	
S H R I M P S	0.56	68	0.09	
Notacanthus sexspinis	0.54	16	0.08	
Total	653.30		99.98	

PROJECT STATION:1641

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2520
start stop duration Long E 1336
TIME :14:11:00 14:41:00 30 (min) Purpose code: 3
LOG : 268.80 270.20 1.60 Area code : 1
FDEPTH: 500 501 GearCond.code:
BDEPTH: 500 501 Validity code:
Towing dir: 15 Wire out:1400 m Speed: 31 kn*10

Sorted: 93 Kg Total catch: 393.40 CATCH/HOUR: 786.80

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	528.00	998	67.11	275
Trachyrinus scabrus	94.40	238	12.00	
Hoplostethus cadenati	45.20	1162	5.74	
Merluccius paradoxus, male	37.60	64	4.78	276
Centrophorus squamosus	32.00	2	4.07	
Nezumia sp.	26.60	432	3.38	
Raja confundens	7.80	4	0.99	
Todarodes sagittatus	6.64	24	0.84	
Galeus polli	6.00	64	0.76	
Selachophidium guentheri	1.52	24	0.19	
Notacanthus sexspinis	1.04	48	0.13	
Total	786.80		99.99	

PROJECT STATION:1642

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2520
start stop duration Long E 1346
TIME :16:27:00 16:57:00 30 (min) Purpose code: 3
LOG : 283.30 284.90 1.60 Area code : 1
FDEPTH: 301 296 GearCond.code:
BDEPTH: 301 296 Validity code:
Towing dir: 360 Wire out: 950 m Speed: 31 kn*10

Sorted: 162 Kg Total catch: 1342.66 CATCH/HOUR: 2685.32

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1867.96	3034	69.56	278
Merluccius capensis, male	649.44	1230	24.18	277
Helicolenus dactylopterus	68.88	1164	2.57	
Trachurus capensis	34.44	114	1.28	281
Galeus polli	23.60	706	0.88	
Lophius upsicephalus	23.20	10	0.86	280
Merluccius paradoxus, female	17.80	66	0.66	279
Total	2685.32		99.99	

PROJECT STATION:1643

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2521
start stop duration Long E 1354
TIME :18:21:00 18:51:00 30 (min) Purpose code: 3
LOG : 296.10 297.80 1.53 Area code : 1
FDEPTH: 240 237 GearCond.code:
BDEPTH: 240 237 Validity code:
Towing dir: 360 Wire out: 850 m Speed: 29 kn*10

Sorted: 113 Kg Total catch: 571.37 CATCH/HOUR: 1142.74

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	457.60	2880	40.04	284
Merluccius capensis, male	390.40	2816	34.16	283
Merluccius capensis, female	138.00	100	12.08	282
Trachurus capensis	56.32	128	4.93	286
Sufflogobius bibarbatus	46.40	2080	4.06	
Merluccius capensis, male	26.80	24	2.35	285
Diaphus sp.	15.04		1.32	
Coelorinchus fasciatus	6.40	64	0.56	
Galeus polli	4.80	384	0.42	
Lophius upsicephalus	0.66	2	0.06	
Squilla sp.	0.32	32	0.03	
Total	1142.74		100.01	

PROJECT STATION:1644

DATE: 2/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2520
start stop duration Long E 1407
TIME :20:37:00 21:07:00 30 (min) Purpose code: 3
LOG : 312.50 313.90 1.45 Area code : 1
FDEPTH: 189 186 GearCond.code: 8
BDEPTH: 189 186 Validity code: 1
Towing dir: 360 Wire out: 700 m Speed: 31 kn*10

Sorted: 88 Kg Total catch: 558.72 CATCH/HOUR: 1117.44

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	570.00	3534	51.01	290
Merluccius capensis, male	387.60	3040	34.69	289
Merluccius capensis, female	116.20	112	10.40	288
Trachurus capensis	26.22	76	2.35	291
Merluccius capensis, male	7.20	16	0.64	287
Galeus polli	4.56	190	0.41	
Sufflogobius bibarbatus	3.80	608	0.34	
Coelorinchus fasciatus	1.52	38	0.14	
Lophius upsicephalus	0.34	2	0.03	
Total	1117.44		100.01	

PROJECT STATION:1645

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2500
start stop duration Long E 1412
TIME :06:24:00 06:54:00 30 (min) Purpose code: 3
LOG : 373.30 374.70 1.66 Area code : 1
FDEPTH: 161 160 GearCond.code: 8
BDEPTH: 161 160 Validity code: 1
Towing dir: 360 Wire out: 650 m Speed: 33 kn*10

Sorted: 66 Kg Total catch: 781.38 CATCH/HOUR: 1562.76

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	591.30	3700	37.84	295
Merluccius capensis, male	367.20	2916	23.50	294
Trachurus capensis	307.80	1702	19.70	297
Chelidonichthys capensis	248.40	844	15.89	
Sufflogobius bibarbatus	17.00	4320	1.09	
Austroglossus microlepis	16.80	92	1.08	292
Merluccius capensis, juveniles	12.16	730	0.78	296
Todaropsis eblanae	1.60	54	0.10	
Lophius upsicephalus	0.50	2	0.03	293
Total	1562.76		100.01	

PROJECT STATION:1646

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2500
start stop duration Long E 1352
TIME :09:25:00 09:55:00 30 (min) Purpose code: 3
LOG : 394.70 396.10 1.58 Area code : 1
FDEPTH: 196 203 GearCond.code:
BDEPTH: 196 203 Validity code:
Towing dir: 360 Wire out: 750 m Speed: 32 kn*10

Sorted: 106 Kg Total catch: 1408.40 CATCH/HOUR: 2816.80

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, male	1140.80	12466	40.50	300
Merluccius capensis, female	846.40	8326	30.05	301
Trachurus capensis	690.00	4094	24.50	302
Merluccius capensis, female	70.00	50	2.49	299
Merluccius capensis, juveniles	32.66	1932	1.16	303
Merluccius capensis, male	23.60	20	0.84	298
Sufflogobius bibarbatus	11.04	782	0.39	
Todaropsis eblanae	2.30	92	0.08	
Total	2816.80		100.01	

PROJECT STATION:1647

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2500
start stop duration Long E 1342
TIME :11:20:00 11:50:00 30 (min) Purpose code: 3
LOG : 407.20 408.70 1.61 Area code : 1
FDEPTH: 349 353 GearCond.code:
BDEPTH: 349 353 Validity code:
Towing dir: 360 Wire out:1050 m Speed: 31 kn*10

Sorted: 173 Kg Total catch: 326.67 CATCH/HOUR: 653.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	190.60	126	29.17	305
Helicolenus dactylopterus	158.40		24.24	
Galeus polli	66.24	1094	10.14	
Todarodes sagittatus	60.24	84	9.22	
S H R I M P S	45.60		6.98	
Merluccius capensis, male	42.00	36	6.43	304
Merluccius paradoxus, female	33.00	134	5.05	307
Squilla sp.	16.44	792	2.52	
Trachipterus jacksonensis	11.60	2	1.78	
Coelorinchus fasciatus	10.80	108	1.65	
Nezumia sp.	5.52	132	0.84	
Lophius upsicephalus	4.54	4	0.69	308
Selachophidium guentheri	3.60	72	0.55	
Hoplostethus cadenati	2.76	48	0.42	
Merluccius paradoxus, male	2.00	12	0.31	306
Total	653.34		99.99	

PROJECT STATION:1648

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2451
start stop duration Long E 1345
TIME :13:09:00 13:39:00 30 (min) Purpose code: 3
LOG : 417.80 419.40 1.47 Area code : 2
FDEPTH: 299 301 GearCond.code:
BDEPTH: 299 301 Validity code:
Towing dir: 30 Wire out:1000 m Speed: 29 kn*10

Sorted: 154 Kg Total catch: 153.62 CATCH/HOUR: 307.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	131.20	124	42.70	310
Helicolenus dactylopterus	64.00	1116	20.83	
Coelorinchus fasciatus	43.60	546	14.19	
Merluccius capensis, male	29.20	32	9.50	309
Lophius upsicephalus	17.96	16	5.85	312
Galeus polli	8.34	186	2.71	
Trachurus capensis	4.22	6	1.37	313
Centrolophus niger	2.18	2	0.71	
Todarodes sagittatus	2.10	2	0.68	
Merluccius paradoxus, female	1.94	10	0.63	311
Lepidopus caudatus	1.34	8	0.44	
Nezumia sp.	1.16	42	0.38	
Total	307.24		99.99	

PROJECT STATION:1649

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2443
start stop duration Long E 1350
TIME :14:49:00 15:19:00 30 (min) Purpose code: 3
LOG : 427.80 429.30 1.53 Area code : 2
FDEPTH: 250 263 GearCond.code:
BDEPTH: 250 263 Validity code:
Towing dir: 360 Wire out: 900 m Speed: 30 kn*10

Sorted: 214 Kg Total catch: 214.26 CATCH/HOUR: 428.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	225.80	458	52.69	315
Merluccius capensis, male	66.40	166	15.50	314
Coelorinchus fasciatus	36.00	404	8.40	
Sufflogobius bibarbatus	33.60	2438	7.84	
Helicolenus dactylopterus	28.00	380	6.53	
Lophius upsicephalus	22.20	4	5.18	317
Trachurus capensis	15.60	28	3.64	316
Squilla acuelata calmani	0.48	16	0.11	
Genypterus capensis	0.44	2	0.10	
Total	428.52		99.99	

PROJECT STATION:1650

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2441
start stop duration Long E 1346
TIME :16:13:00 16:43:00 30 (min) Purpose code: 3
LOG : 433.90 435.50 1.62 Area code : 2
FDEPTH: 325 331 GearCond.code:
BDEPTH: 325 331 Validity code:
Towing dir: 360 Wire out:1000 m Speed: 32 kn*10

Sorted: 168 Kg Total catch: 239.25 CATCH/HOUR: 478.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	195.80	160	40.92	319
Galeus polli	63.20	2658	13.21	
Helicolenus dactylopterus	54.40	1088	11.37	
Coelorinchus fasciatus	48.00	640	10.03	
Merluccius capensis, male	39.80	58	8.32	318
Merluccius paradoxus, female	24.80	98	5.18	321
Lophius upsicephalus	19.60	14	4.10	
Squilla acuelata calmani	19.20	888	4.01	
RAJIDAE	6.32	2	1.32	
Lepidopus caudatus	4.00	24	0.84	
Merluccius paradoxus, male	2.26	14	0.47	320
Sufflogobius bibarbatus	0.64	48	0.13	
C R A B S	0.48	8	0.10	
Total	478.50		100.00	

PROJECT STATION:1651

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2440
start stop duration Long E 1337
TIME :18:15:00 18:45:00 30 (min) Purpose code: 3
LOG : 445.20 446.70 1.52 Area code : 2
FDEPTH: 397 392 GearCond.code:
BDEPTH: 397 392 Validity code:
Towing dir: 360 Wire out:1150 m Speed: 29 kn*10

Sorted: 188 Kg Total catch: 188.50 CATCH/HOUR: 377.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	172.40	472	45.73	325
Merluccius capensis, female	99.20	56	26.31	323
Helicolenus dactylopterus	44.00	320	11.67	
Merluccius paradoxus, male	17.80	64	4.72	324
Todarodes sagittatus	12.94	18	3.43	
Centrophorus granulosus	9.60	2	2.55	
Merluccius capensis, male	7.60	4	2.02	322
Deania profundorum	4.84	8	1.28	
Nezumia sp.	3.44	60	0.91	
Lophius upsicephalus	1.44	2	0.38	326
Selachophidium guentheri	1.14	18	0.30	
Galeus polli	0.96	46	0.25	
Coelorinchus fasciatus	0.80	8	0.21	
Epigonus telescopus	0.30	14	0.08	
MYCTOPHIDAE	0.18	26	0.05	
C R A B S	0.14	2	0.04	
Notacanthus sexspinis	0.12	2	0.03	
Trachyrinus scabrus	0.06	2	0.02	
Squilla sp.	0.04	4	0.01	
Total	377.00		99.99	

PROJECT STATION:1652

DATE: 3/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2440
start stop duration Long E 1329
TIME :20:09:00 20:39:00 30 (min) Purpose code: 3
LOG : 455.80 457.30 1.55 Area code : 2
FDEPTH: 503 501 GearCond.code:
BDEPTH: 503 501 Validity code:
Towing dir: 360 Wire out:1350 m Speed: 30 kn*10

Sorted: 157 Kg Total catch: 156.96 CATCH/HOUR: 313.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	178.60	292	56.89	329
Deania calcea	37.20	38	11.85	
Merluccius capensis, female	25.00	10	7.96	327
Trachyrinus scabrus	20.60	56	6.56	
Merluccius paradoxus, male	17.60	32	5.61	328
Todarodes sagittatus	14.60	20	4.65	
Nezumia sp.	4.80	112	1.53	
Epigonus denticulatus	4.60	104	1.47	
Hoplostethus cadenati	4.56	100	1.45	
RAJIDAE	2.90	2	0.92	
Coelorinchus fasciatus	1.16	8	0.37	
Beryx splendens	1.00	2	0.32	
Notacanthus sexspinis	0.70	4	0.22	
Selachophidium guentheri	0.60	8	0.19	
Total	313.92		99.99	

PROJECT STATION:1653

DATE: 4/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2420
start stop duration Long E 1359
TIME :06:30:00 07:00:00 30 (min) Purpose code: 3
LOG : 534.80 536.10 1.71 Area code : 2
FDEPTH: 203 210 GearCond.code:
BDEPTH: 203 210 Validity code:
Towing dir: 360 Wire out: 750 m Speed: 34 kn*10

Sorted: 82 Kg Total catch: 196.48 CATCH/HOUR: 392.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	138.00	1100	35.12	333
Merluccius capensis, male	91.00	860	23.16	332
Merluccius capensis, female	70.40	46	17.92	331
Sufflogobius bibarbatus	38.60	2428	9.82	
Merluccius capensis, male	33.20	30	8.45	330
Merluccius capensis, juveniles	10.40	690	2.65	334
Chelidonichthys capensis	6.10	20	1.55	
Todaropsis eblanae	2.80	100	0.71	
Austroglossus microlepis	2.46	6	0.63	
Total	392.96		100.01	

PROJECT STATION:1654

DATE: 4/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2420
start stop duration Long E 1351
TIME :09:08:00 09:38:00 30 (min) Purpose code: 3
LOG : 544.60 545.90 1.60 Area code : 2
FDEPTH: 277 276 GearCond.code:
BDEPTH: 277 276 Validity code:
Towing dir: 360 Wire out: 900 m Speed: 33 kn*10

Sorted: 77 Kg Total catch: 122.10 CATCH/HOUR: 244.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	101.60	140	41.61	336
Merluccius capensis, male	35.20	80	14.41	335
Helicolenus dactylopterus	34.80	62	14.25	
Coelorinchus fasciatus	28.60	404	11.71	
Squilla sp.	19.44	1022	7.96	
Galeus polli	8.20	302	3.36	
AAAA00	5.80	44	2.38	
Sufflogobius bibarbatus	5.60	748	2.29	
Trachurus capensis	1.50	6	0.61	337
Todarodes sagittatus	1.46	4	0.60	
Todaropsis eblanae	1.20	28	0.49	
Lophius upsicephalus	0.80	6	0.33	
Total	244.20		100.00	

PROJECT STATION:1655

DATE: 4/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2420
start stop duration Long E 1340
TIME :13:03:00 13:33:00 30 (min) Purpose code: 3
LOG : 559.70 561.20 1.62 Area code : 2
FDEPTH: 314 310 GearCond.code:
BDEPTH: 314 310 Validity code:
Towing dir: 360 Wire out:1000 m Speed: 31 kn*10

Sorted: 151 Kg Total catch: 150.98 CATCH/HOUR: 301.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Helicolenus dactylopterus	84.60		28.02	
Merluccius paradoxus, female	70.00	350	23.18	340
Merluccius capensis, female	64.00	50	21.19	338
Galeus polli	41.40		13.71	
Merluccius capensis, male	17.00	14	5.63	339
Coelorinchus fasciatus	12.00	162	3.97	
Lophius upsicephalus	4.50	4	1.49	342
Raja straeleni	4.18	2	1.38	
Lepidopus caudatus	1.34	8	0.44	
Merluccius paradoxus, male	1.16	6	0.38	341
Squilla aculata calmani	0.88	44	0.29	
Trachurus capensis	0.80	6	0.26	343
Nezumia sp.	0.10	2	0.03	
Total	301.96		99.97	

PROJECT STATION:1656

DATE: 4/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2410
start stop duration Long E 1343
TIME :15:28:00 16:00:00 32 (min) Purpose code: 3
LOG : 570.80 572.50 1.65 Area code : 2
FDEPTH: 273 270 GearCond.code:
BDEPTH: 273 270 Validity code:
Towing dir: 10 Wire out: 850 m Speed: 31 kn*10

Sorted: 231 Kg Total catch: 231.30 CATCH/HOUR: 433.69

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Deepwater fish mixture	168.75		38.91	
Merluccius capensis, female	147.94	540	34.11	344
Merluccius capensis, male	58.13	311	13.40	345
Trachurus capensis	52.50	103	12.11	347
Lophius upsicephalus	6.38	6	1.47	346
Total	433.70		100.00	

PROJECT STATION:1657

DATE: 4/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2353
start stop duration Long E 1348
TIME :18:43:00 19:13:00 30 (min) Purpose code: 3
LOG : 589.90 591.40 1.62 Area code : 2
FDEPTH: 216 212 GearCond.code:
BDEPTH: 216 212 Validity code:
Towing dir: 360 Wire out: 800 m Speed: 32 kn*10

Sorted: 131 Kg Total catch: 374.31 CATCH/HOUR: 748.62

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	440.00	2222	58.77	350
Merluccius capensis, female	120.20	88	16.06	349
Merluccius capensis, male	91.20	124	12.18	348
Helicolenus dactylopterus	68.42	2640	9.14	
Sufflogobius bibarbatus	27.06	2288	3.61	
Lophius upsicephalus	1.30	4	0.17	
Galeus polli	0.44	44	0.06	
Total	748.62		99.99	

PROJECT STATION:1658

DATE: 8/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2402
start stop duration Long E 1311
TIME :10:12:00 10:44:00 32 (min) Purpose code: 3
LOG : 805.50 807.10 1.52 Area code : 2
FDEPTH: 570 553 GearCond.code:
BDEPTH: 570 553 Validity code:
Towing dir: 360 Wire out:1500 m Speed: 29 kn*10

Sorted: 32 Kg Total catch: 220.57 CATCH/HOUR: 413.57

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Deania profundorum	246.47	114	59.60	
Merluccius paradoxus, female	79.69	88	19.27	352
Hoplostethus cadenati	47.44	2672	11.47	
SQUALIDAE	16.71	32	4.04	
Deepwater fish mixture	10.84	990	2.62	
Lophius upsicephalus	4.13	2	1.00	
Merluccius capensis, female	3.75	4	0.91	351
Shrimps, small, non comm.	3.62	238	0.88	
OPHIDIIDAE	0.94	11	0.23	
Total	413.59		100.02	

PROJECT STATION:1659

DATE: 8/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2403
start stop duration Long E 1318
TIME :13:26:00 13:56:00 30 (min) Purpose code: 3
LOG : 817.00 818.60 1.43 Area code : 2
FDEPTH: 345 342 GearCond.code:
BDEPTH: 345 342 Validity code:
Towing dir: 350 Wire out:1100 m Speed: 27 kn*10

Sorted: 29 Kg Total catch: 153.88 CATCH/HOUR: 307.76

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	144.80	96	47.05	353
Helicolenus dactylopterus	73.20	1168	23.78	
Merluccius capensis, male	24.00	16	7.80	354
Merluccius paradoxus, female	18.80	46	6.11	355
SQUALIDAE	9.08	24	2.95	
Centroscyllium fabricii	8.84	8	2.87	
RAJIDAE	8.00	4	2.60	
Etmopterus pusillus	7.56	24	2.46	
Coelorinchus fasciatus	7.16	68	2.33	
Merluccius paradoxus, male	2.16	6	0.70	356
CHLOROPHTHALMIDAE	2.00	12	0.65	
Nezumia sp.	1.92	16	0.62	
Notacanthus sexspinis	0.24	4	0.08	
Total	307.76		100.00	

PROJECT STATION:1660

DATE: 8/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2404
start stop duration Long E 1332
TIME :19:22:00 19:54:00 32 (min) Purpose code: 3
LOG : 841.70 843.30 1.59 Area code : 2
FDEPTH: 278 275 GearCond.code:
BDEPTH: 278 275 Validity code:
Towing dir: 360 Wire out: 900 m Speed: 30 kn*10

Sorted: 21 Kg Total catch: 176.08 CATCH/HOUR: 330.15

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	192.56	321	58.33	358
Helicolenus dactylopterus	64.31	1496	19.48	
Merluccius capensis, male	50.44	128	15.28	357
Merluccius paradoxus, female	7.58	38	2.30	360
Galeus polli	3.90	94	1.18	
Todaropsis eblanae	3.79	4	1.15	
Coelorinchus fasciatus	2.44	53	0.74	
Lophius upsicephalus	1.14	2	0.35	
Centroscymnus crepidater	1.01	4	0.31	
Merluccius paradoxus, male	0.99	4	0.30	359
Sufflogobius bibarbatus	0.94	94	0.28	
Lepidopus caudatus	0.49	4	0.15	
NNNNN00	0.23	11	0.07	
PORTUNIDAE	0.19	4	0.06	
Chlorophthalmus punctatus	0.15	8	0.05	
MYCTOPHIDAE	0.00	8		
Shrimps, small, non comm.	0.00	8		
Total	330.16		100.03	

PROJECT STATION:1661

DATE: 9/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2406
start stop duration Long E 1413
TIME :06:47:00 07:02:00 15 (min) Purpose code: 3
LOG : 914.10 914.90 0.78 Area code : 2
FDEPTH: 122 122 GearCond.code:
BDEPTH: 122 122 Validity code:
Towing dir: 360 Wire out: 450 m Speed: 29 kn*10

Sorted: 22 Kg Total catch: 52.88 CATCH/HOUR: 211.52

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	177.60	64544	83.96	364
Merluccius capensis, female	16.44	116	7.77	361
Merluccius capensis, male	10.64	80	5.03	362
Merluccius capensis, juveniles	6.52	576	3.08	363
Helicolenus dactylopterus	0.32	16	0.15	
Total	211.52		99.99	

PROJECT STATION:1662

DATE: 9/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2349
start stop duration Long E 1405
TIME :09:20:00 09:50:00 30 (min) Purpose code: 3
LOG : 932.10 933.50 1.30 Area code : 2
FDEPTH: 162 164 GearCond.code:
BDEPTH: 162 164 Validity code:
Towing dir: 360 Wire out: 450 m Speed: 29 kn*10

Sorted: 52 Kg Total catch: 1246.50 CATCH/HOUR: 2493.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1412.36	14006	56.65	365
Merluccius capensis, male	1022.26	10998	41.01	366
Merluccius capensis, juveniles	29.14	2820	1.17	367
Merluccius capensis, female	21.00	18	0.84	368
Sufflogobius bibarbatus	5.18	1740	0.21	
Merluccius capensis, male	3.08	2	0.12	369
Total	2493.02		100.00	

PROJECT STATION:1663

DATE: 9/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2341
start stop duration Long E 1354
TIME :11:51:00 12:21:00 30 (min) Purpose code: 3
LOG : 949.80 951.10 1.60 Area code : 2
FDEPTH: 171 169 GearCond.code:
BDEPTH: 171 169 Validity code:
Towing dir: 340 Wire out: 650 m Speed: 31 kn*10

Sorted: 148 Kg Total catch: 2605.00 CATCH/HOUR: 5210.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	2872.32	5350	55.13	370
Merluccius capensis, male	2252.80	9328	43.24	371
Trachurus capensis	77.44	458	1.49	372
Coelorinchus fasciatus	2.12	36	0.04	
PORTUNIDAE	1.40	70	0.03	
Small squids	1.40	70	0.03	
Sufflogobius bibarbatus	1.40	140	0.03	
Lepidopus caudatus	1.06	36	0.02	
Total	5209.94		100.01	

PROJECT STATION:1664

DATE: 9/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2340
start stop duration Long E 1336
TIME :14:33:00 15:03:00 30 (min) Purpose code: 3
LOG : 969.00 970.50 1.63 Area code : 2
FDEPTH: 215 212 GearCond.code:
BDEPTH: 215 212 Validity code:
Towing dir: 360 Wire out: 800 m Speed: 31 kn*10

Sorted: 231 Kg Total catch: 231.62 CATCH/HOUR: 463.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	327.00	378	70.59	373
Merluccius capensis, male	103.80	202	22.41	374
Trachurus capensis	18.40	40	3.97	375
Helicolenus dactylopterus	5.88	180	1.27	
Sufflogobius bibarbatus	2.76	252	0.60	
Lophius upsicephalus	1.86	6	0.40	
Lepidopus caudatus	1.68	12	0.36	
Galeus polli	1.62	48	0.35	
PORTUNIDAE	0.24	6	0.05	
Total	463.24		100.00	

PROJECT STATION:1665

DATE: 9/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2340
start stop duration Long E 1318
TIME :17:13:00 17:43:00 30 (min) Purpose code: 3
LOG : 988.80 990.40 1.54 Area code : 2
FDEPTH: 295 294 GearCond.code:
BDEPTH: 295 294 Validity code:
Towing dir: 10 Wire out:1000 m Speed: 31 kn*10

Sorted: 32 Kg Total catch: 236.00 CATCH/HOUR: 472.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	294.90	216	62.48	377
Helicolenus dactylopterus	83.26	1986	17.64	
Merluccius capensis, male	46.60	46	9.87	376
Merluccius paradoxus, female	18.00	48	3.81	378
Centrolophus niger	14.22	4	3.01	
Zenopsis conchifer	2.82	2	0.60	
Galeus polli	2.70	34	0.57	
Shrimps, small, non comm.	2.44		0.52	
Coelorinchus fasciatus	2.38	36	0.50	
Chlorophthalmus punctatus	1.78	70	0.38	
Epigonus pandionis	1.24	48	0.26	
MYCTOPHIDAE	1.02	622	0.22	
Merluccius paradoxus, male	0.60	2	0.13	379
CARIDEA	0.10	18	0.02	
Total	472.06		100.01	

PROJECT STATION:1666

DATE: 9/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2339
start stop duration Long E 1306
TIME :19:25:00 19:55:00 30 (min) Purpose code: 3
LOG :1003.40 1005.10 1.46 Area code : 2
FDEPTH: 495 490 GearCond.code:
BDEPTH: 495 490 Validity code:
Towing dir: 350 Wire out:1300 m Speed: 29 kn*10

Sorted: 26 Kg Total catch: 228.05 CATCH/HOUR: 456.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	297.28	536	65.18	381
Hoplostethus cadenati	55.76	3956	12.23	
Merluccius capensis, female	24.00	8	5.26	382
Helicolenus dactylopterus	17.76	96	3.89	
Coelorinchus braueri	17.00	46	3.73	
Deania calcea	16.06	16	3.52	
Nezumia aequalis	8.76	640	1.92	
Todarodes sagittatus	8.60	16	1.89	
Merluccius paradoxus, male	3.80	12	0.83	380
Epigonus pandionis	2.26	50	0.50	
Lophius upsicephalus	1.72	2	0.38	
Etmopterus sp.	1.56	6	0.34	
Selachophidium guentheri	1.06	10	0.23	
Aristeus varidens	0.30	26	0.07	
MYCTOPHIDAE	0.20	46	0.04	
Galeus polli	0.06	6	0.01	
Total	456.18		100.02	

PROJECT STATION:1667

DATE: 9/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
start stop duration Long E 1301
TIME :22:27:00 22:57:00 30 (min) Purpose code: 3
LOG :1024.00 1025.40 1.51 Area code : 2
FDEPTH: 602 601 GearCond.code:
BDEPTH: 602 601 Validity code:
Towing dir: 355 Wire out:1550 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 79.72 CATCH/HOUR: 159.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Deania profundorum	66.00	28	41.39	
Merluccius paradoxus, female	29.20	20	18.31	383
STERNOPTYCHIDAE	27.28	1000	17.11	
Nezumia sp.	11.96	480	7.50	
C E P H A L O P O D A	9.80	20	6.15	
Shrimps, small, non comm.	5.28	1120	3.31	
Hoplostethus cadenati	3.84	220	2.41	
Oreosome atlanticum	3.52	16	2.21	
MELANOCETIDAE	1.28	24	0.80	
Aristeus varidens	1.04	48	0.65	
CONGRIDAE	0.24	8	0.15	
Total	159.44		99.99	

PROJECT STATION:1668

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
start stop duration Long E 1309
TIME :06:38:00 07:08:00 30 (min) Purpose code: 3
LOG :1038.50 1040.00 1.52 Area code : 2
FDEPTH: 403 407 GearCond.code:
BDEPTH: 403 407 Validity code:
Towing dir: 360 Wire out:1100 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 156.69 CATCH/HOUR: 313.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	108.60	64	34.65	386
Merluccius paradoxus, female	102.60	264	32.74	384
Helicolenus dactylopterus	29.82	3360	9.52	
Deania profundorum	16.92	34	5.40	
Epigonus pandionis	15.16	418	4.84	
Merluccius capensis, male	14.10	12	4.50	387
Shrimps, small, non comm.	6.60		2.11	
Todarodes sagittatus	4.54	18	1.45	
Nezumia sp.	3.60	66	1.15	
Coelorinchus fasciatus	3.16	40	1.01	
Merluccius paradoxus, male	2.24	4	0.71	385
Lophius upsicephalus	1.64	2	0.52	
Hoplostethus cadenati	1.56	54	0.50	
Galeus polli	0.96	10	0.31	
Histioteuthis dofleini	0.84	10	0.27	
Zenopsis conchifer	0.78	4	0.25	
Selachophidium guentheri	0.16	4	0.05	
Aristeus varidens	0.10	10	0.03	
Total	313.38		100.01	

PROJECT STATION:1669

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
start stop duration Long E 1326
TIME :09:12:00 09:42:00 30 (min) Purpose code: 3
LOG :1058.00 1059.50 1.54 Area code : 2
FDEPTH: 255 263 GearCond.code:
BDEPTH: 255 263 Validity code:
Towing dir: 360 Wire out: 850 m Speed: 30 kn*10

Sorted: 34 Kg Total catch: 329.57 CATCH/HOUR: 659.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	402.40	270	61.05	388
Merluccius capensis, male	144.00	116	21.85	389
Helicolenus dactylopterus	76.20	4572	11.56	
Lophius upsicephalus	11.86	12	1.80	
Centrolophus niger	6.54	2	0.99	
Galeus polli	5.98	72	0.91	
Chlorophthalmus punctatus	4.74	192	0.72	
Zenopsis conchifer	3.50	2	0.53	
Nezumia sp.	1.54	42	0.23	
Trachurus capensis	1.26	4	0.19	
Sufflogobius bibarbatus	0.54	114	0.08	
PENAEIDAE	0.34	70	0.05	
MYCTOPHIDAE	0.24	130	0.04	
Total	659.14		100.00	

PROJECT STATION:1670

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2321
start stop duration Long E 1339
TIME :11:26:00 11:58:00 32 (min) Purpose code: 3
LOG :1073.50 1075.10 1.61 Area code : 2
FDEPTH: 159 154 GearCond.code:
BDEPTH: 159 154 Validity code:
Towing dir: 40 Wire out: 650 m Speed: 31 kn*10

Sorted: 8 Kg Total catch: 757.40 CATCH/HOUR: 1420.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, male	498.75	8010	35.12	392
Trachurus capensis	345.00	2130	24.29	395
Merluccius capensis, female	195.00	1710	13.73	393
Merluccius capensis, male	154.69	139	10.89	391
Merluccius capensis, female	104.63	69	7.37	390
Austroglossus microlepis	88.13	210	6.21	394
Lophius upsicephalus	22.50	30	1.58	
Dentex macrophthalmus	6.94	30	0.49	
TRIGLIDAE	3.00	30	0.21	
Sufflogobius bibarbatus	1.50	900	0.11	
Total	1420.14		100.00	

PROJECT STATION:1671

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
start stop duration Long E 1354
TIME :13:38:00 14:08:00 30 (min) Purpose code: 3
LOG :1089.70 1091.10 1.61 Area code : 2
FDEPTH: 152 150 GearCond.code:
BDEPTH: 152 150 Validity code:
Towing dir: 360 Wire out: 650 m Speed: 32 kn*10

Sorted: 33 Kg Total catch: 1126.00 CATCH/HOUR: 2252.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1278.00	8840	56.75	397
Merluccius capensis, male	918.00	9996	40.76	396
Merluccius capensis, juveniles	44.00	3944	1.95	398
Sufflogobius bibarbatus	12.00	2312	0.53	
Total	2252.00		99.99	

PROJECT STATION:1672

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2301
start stop duration Long E 1358
TIME :15:59:00 16:29:00 30 (min) Purpose code: 3
LOG :1108.20 1109.70 1.67 Area code : 2
FDEPTH: 135 133 GearCond.code:
BDEPTH: 135 133 Validity code:
Towing dir: 10 Wire out: 600 m Speed: 32 kn*10

Sorted: 33 Kg Total catch: 912.50 CATCH/HOUR: 1825.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	968.80	11160	53.08	400
Merluccius capensis, male	806.40	9632	44.19	399
Small squids	16.24	336	0.89	
Austroglossus microlepis	13.40	56	0.73	
Merluccius capensis, juveniles	11.20	504	0.61	401
Sufflogobius bibarbatus	8.96	2296	0.49	
Total	1825.00		99.99	

PROJECT STATION:1673

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2300
start stop duration Long E 1344
TIME :18:11:00 18:41:00 30 (min) Purpose code: 3
LOG :1124.30 1125.70 1.64 Area code : 2
FDEPTH: 142 143 GearCond.code:
BDEPTH: 142 143 Validity code:
Towing dir: 300 Wire out: 600 m Speed: 33 kn*10

Sorted: 66 Kg Total catch: 468.69 CATCH/HOUR: 937.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, juveniles	616.80	924	65.80	404
Merluccius capensis, female	104.90	98	11.19	402
Sufflogobius bibarbatus	53.52	7728	5.71	
Trachurus capensis	39.48	264	4.21	405
Merluccius capensis, male	38.20	34	4.08	403
Lophius upsicephalus	32.86	60	3.51	
Trigla lyra	30.96	84	3.30	
Small squids	12.96	384	1.38	
Austroglossus microlepis	3.96	24	0.42	
Pterothrissus belloci	3.72	12	0.40	
Total	937.36		100.00	

PROJECT STATION:1674

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2259
start stop duration Long E 1328
TIME :20:25:00 20:55:00 30 (min) Purpose code: 3
LOG :1140.50 1141.90 1.64 Area code : 2
FDEPTH: 258 258 GearCond.code:
BDEPTH: 258 258 Validity code:
Towing dir: 345 Wire out: 900 m Speed: 33 kn*10

Sorted: 31 Kg Total catch: 192.59 CATCH/HOUR: 385.18

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	185.80	116	48.24	406
Helicolenus dactylopterus	134.00	5106	34.79	
Merluccius capensis, male	36.00	34	9.35	407
Lophius upsicephalus	5.64	6	1.46	
Chlorophthalmus atlanticus	5.46	220	1.42	
Sufflogobius bibarbatus	5.16	860	1.34	
Raja sp.	4.34	2	1.13	
Shrimps, small, non comm.	2.20	506	0.57	
Galeus polli	1.96	26	0.51	
Deania profundorum	1.86	6	0.48	
Small squids	1.10	30	0.29	
Nezumia sp.	0.86	30	0.22	
MYCTOPHIDAE	0.80	760	0.21	
Total	385.18		100.01	

PROJECT STATION:1675

DATE:10/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2300
start stop duration Long E 1316
TIME :22:29:00 22:58:00 29 (min) Purpose code: 3
LOG :1153.90 1155.30 1.45 Area code : 2
FDEPTH: 355 353 GearCond.code:
BDEPTH: 355 353 Validity code:
Towing dir: 300 Wire out:1050 m Speed: 29 kn*10

Sorted: 36 Kg Total catch: 194.59 CATCH/HOUR: 402.60

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	234.62	157	58.28	408
Merluccius paradoxus, female	62.48	112	15.52	410
Merluccius capensis, male	55.45	43	13.77	409
Helicolenus dactylopterus	17.59	348	4.37	
Lophius upsicephalus	9.93	10	2.47	
Galeus polli	6.25	62	1.55	
Genypterus capensis	4.55	2	1.13	
Coelorinchus fasciatus	4.39	46	1.09	
Nezumia sp.	2.21	23	0.55	
Trachurus capensis	1.43	2	0.36	
Notacanthus sexspinis	1.34	19	0.33	
Merluccius paradoxus, male	1.10	2	0.27	411
MYCTOPHIDAE	1.06	114	0.26	
Ebinania costaecanarie	0.21	12	0.05	
Total	402.61		100.00	

PROJECT STATION:1676

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2241
start stop duration Long E 1250
TIME :06:44:00 07:13:00 29 (min) Purpose code: 3
LOG :1192.30 1193.70 1.45 Area code : 2
FDEPTH: 506 499 GearCond.code:
BDEPTH: 506 499 Validity code:
Towing dir: 340 Wire out:1350 m Speed: 30 kn*10

Sorted: 24 Kg Total catch: 110.76 CATCH/HOUR: 229.16

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	70.74	95	30.87	412
Coelorinchus fasciatus	58.97	273	25.73	
Hoplostethus cadenati	22.16	552	9.67	
Nezumia sp.	20.92	466	9.13	
Aristeus varidens	18.43	1297	8.04	
Todarodes sagittatus	15.33	25	6.69	
Centrolophus niger	5.42	2	2.37	
Lophius upsicephalus	4.84	6	2.11	
MYCTOPHIDAE	4.03	341	1.76	
Helicolenus dactylopterus	3.60	12	1.57	
Deania calcea	1.80	6	0.79	
Merluccius paradoxus, male	1.12	2	0.49	413
Epigonus pandionis	1.06	31	0.46	
Oreosoma atlanticum	0.31	6	0.14	
Lepidopus caudatus	0.25	6	0.11	
Notacanthus sexspinis	0.06	6	0.03	
Shrimps, small, non comm.	0.06	31	0.03	
NEMICHTHYIDAE	0.06	12	0.03	
Total	229.16		100.02	

PROJECT STATION:1677

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2241
start stop duration Long E 1304
TIME :09:09:00 09:39:00 30 (min) Purpose code: 3
LOG :1209.40 1211.00 1.44 Area code : 2
FDEPTH: 304 304 GearCond.code:
BDEPTH: 304 304 Validity code:
Towing dir: 50 Wire out: 950 m Speed: 29 kn*10

Sorted: 28 Kg Total catch: 182.53 CATCH/HOUR: 365.06

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	213.50	150	58.48	414
Merluccius capensis, male	50.20	42	13.75	415
Helicolenus dactylopterus	41.80	1194	11.45	
Centrolophus niger	19.10	6	5.23	
Merluccius capensis, female	10.76	62	2.95	416
Deepwater fish mixture	9.40	2	2.57	
Trachurus capensis	3.94	8	1.08	
Chlorophthalmus punctatus	3.90	138	1.07	
Merluccius paradoxus, female	3.50	10	0.96	418
Merluccius capensis, male	2.04	24	0.56	417
Coelorinchus fasciatus	2.02	4	0.55	
Nezumia sp.	1.56	28	0.43	
MYCTOPHIDAE	1.12	498	0.31	
Raja miraletus	1.12	2	0.31	
Galeus polli	0.74	8	0.20	
Shrimps, small, non comm.	0.20	32	0.05	
Oreosoma atlanticum	0.10	2	0.03	
Aristeus varidens	0.04	4	0.01	
Notacanthus sexspinis	0.02	2	0.01	
Total	365.06		100.00	

PROJECT STATION:1678

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2241
start stop duration Long E 1319
TIME :11:16:00 11:46:00 30 (min) Purpose code: 3
LOG :1224.50 1226.10 1.51 Area code : 2
FDEPTH: 272 268 GearCond.code:
BDEPTH: 272 268 Validity code:
Towing dir: 80 Wire out: 900 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 144.82 CATCH/HOUR: 289.64

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	105.40	116	36.39	420
Helicolenus dactylopterus	51.20	2968	17.68	
Merluccius capensis, male	35.20	40	12.15	419
Chlorophthalmus punctatus	32.00	1728	11.05	
Trachurus capensis	29.60	74	10.22	421
Lampanyctodes hectoris	28.04	5608	9.68	
Lophius upsicephalus	3.52	8	1.22	422
Small squids	2.84	184	0.98	
Coelorinchus fasciatus	1.16	48	0.40	
Lepidopus caudatus	0.36	4	0.12	
Galeus polli	0.24	8	0.08	
Shrimps, small, non comm.	0.08	12	0.03	
Total	289.64		100.00	

PROJECT STATION:1679

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2240
start stop duration Long E 1331
TIME :13:13:00 13:43:00 30 (min) Purpose code: 3
LOG :1237.90 1239.30 1.36 Area code : 2
FDEPTH: 179 178 GearCond.code:
BDEPTH: 179 178 Validity code:
Towing dir: 350 Wire out: 700 m Speed: 27 kn*10

Sorted: 2 Kg Total catch: 2705.66 CATCH/HOUR: 5411.32

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	3212.00	20074	59.36	425
Merluccius capensis, male	1440.00	5488	26.61	423
Merluccius capensis, female	720.00	3488	13.31	424
Lophius upsicephalus	14.40	10	0.27	426
Trigla lyra	9.28	16	0.17	
Sufflogobius bibarbatus	5.92	816	0.11	
Small squids	4.64	288	0.09	
Galeus polli	2.24	80	0.04	
Merluccius capensis, juveniles	1.12	112	0.02	
Coelorinchus fasciatus	0.96	16	0.02	
PORTUNIDAE	0.80	16	0.01	
Total	5411.36		100.01	

PROJECT STATION:1680

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2240
start stop duration Long E 1341
TIME :15:07:00 15:37:00 30 (min) Purpose code: 3
LOG :1251.30 1252.90 1.57 Area code : 2
FDEPTH: 129 129 GearCond.code:
BDEPTH: 129 129 Validity code:
Towing dir: 360 Wire out: 550 m Speed: 31 kn*10

Sorted: 2 Kg Total catch: 713.84 CATCH/HOUR: 1427.68

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	705.60	7584	49.42	427
Merluccius capensis, male	681.60	7488	47.74	428
Trachurus capensis	23.04	240	1.61	429
Sufflogobius bibarbatus	8.80	1200	0.62	
Small squids	3.36	72	0.24	
Merluccius capensis, juveniles	2.88	432	0.20	
Austroglossus microlepis	2.40	24	0.17	
Total	1427.68		100.00	

PROJECT STATION:1681

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2240
start stop duration Long E 1354
TIME :17:08:00 17:38:00 30 (min) Purpose code: 3
LOG :1266.90 1268.50 1.53 Area code : 2
FDEPTH: 122 121 GearCond.code:
BDEPTH: 122 121 Validity code:
Towing dir: 5 Wire out: 500 m Speed: 30 kn*10

Sorted: Kg Total catch: 450.00 CATCH/HOUR: 900.00

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis	900.00		100.00	
Total	900.00		100.00	

PROJECT STATION:1682

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2226
start stop duration Long E 1347
TIME :19:20:00 19:50:00 30 (min) Purpose code: 3
LOG :1283.40 1284.90 1.46 Area code : 2
FDEPTH: 122 122 GearCond.code:
BDEPTH: 122 122 Validity code:
Towing dir: 335 Wire out: 500 m Speed: 30 kn*10

Sorted: Kg Total catch: 14.04 CATCH/HOUR: 28.08

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	14.62	104	52.07	432
Merluccius capensis, male	6.66	64	23.72	431
Sufflogobius bibarbatus	6.02	1112	21.44	
Merluccius capensis, juveniles	0.60	38	2.14	430
Todaropsis eblanae	0.18	4	0.64	
Total	28.08		100.01	

PROJECT STATION:1683

DATE:11/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2220
start stop duration Long E 1335
TIME :21:20:00 21:49:00 29 (min) Purpose code: 3
LOG :1297.60 1299.20 1.55 Area code : 2
FDEPTH: 132 138 GearCond.code:
BDEPTH: 132 138 Validity code:
Towing dir: 280 Wire out: 550 m Speed: 32 kn*10

Sorted: 61 Kg Total catch: 216.85 CATCH/HOUR: 448.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	203.69	1862	45.40	433
Merluccius capensis, male	147.50	1564	32.88	434
Sufflogobius bibarbatus	90.52	19392	20.18	
Merluccius capensis, female	3.52	4	0.78	435
Prionace glauca	2.15	2	0.48	
Austroglossus microlepis	0.79	8	0.18	
Todaropsis eblanae	0.50	14	0.11	
Shrimps, small, non comm.	0.00	8		
Total	448.67		100.01	

PROJECT STATION:1684

DATE:12/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2218
start stop duration Long E 1322
TIME :06:42:00 07:14:00 32 (min) Purpose code: 3
LOG :1314.70 1316.20 1.69 Area code : 2
FDEPTH: 198 197 GearCond.code:
BDEPTH: 198 197 Validity code:
Towing dir: 350 Wire out: 750 m Speed: 31 kn*10

Sorted: 56 Kg Total catch: 333.59 CATCH/HOUR: 625.48

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	198.28	1292	31.70	440
Merluccius capensis, male	158.63	1384	25.36	439
Merluccius capensis, female	98.25	38	15.71	436
Merluccius capensis, female	73.14	566	11.69	438
Merluccius capensis, male	55.13	141	8.81	437
Pterothrissus belloci	11.91	34	1.90	
Shrimps, small, non comm.	6.32	1283	1.01	
Austroglossus microlepis	4.97	9	0.79	
Sufflogobius bibarbatus	4.46	1140	0.71	
Todaropsis eblanae	4.13	161	0.66	
Trigla lyra	3.96	9	0.63	
Synagrops microlepis	2.53	101	0.40	
Dentex macrophthalmus	1.93	9	0.31	
Merluccius capensis, juveniles	1.69	169	0.27	441
PORTUNIDAE	0.17	9	0.03	
Total	625.50		99.98	

PROJECT STATION:1685

DATE:12/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2220
start stop duration Long E 1307
TIME :08:55:00 09:25:00 30 (min) Purpose code: 3
LOG :1330.80 1332.20 1.57 Area code : 2
FDEPTH: 247 250 GearCond.code:
BDEPTH: 247 250 Validity code:
Towing dir: 280 Wire out: 850 m Speed: 31 kn*10

Sorted: 75 Kg Total catch: 600.98 CATCH/HOUR: 1201.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	369.02	430	30.70	
Trachurus capensis	206.02	532	17.14	442
Merluccius capensis, female	205.30	178	17.08	444
Merluccius capensis, male	199.78	350	16.62	
Merluccius capensis, male	99.50	122	8.28	443
Dentex macrophthalmus	45.04	136	3.75	
Merluccius capensis, male	22.40	90	1.86	445
Merluccius capensis, female	17.76	82	1.48	446
Chlorophthalmus punctatus	13.24	804	1.10	
Coelorinchus fasciatus	6.22	56	0.52	
Galeus polli	4.74	148	0.39	
MYCTOPHIDAE	3.72	1144	0.31	
Helicolenus dactylopterus	3.38	192	0.28	
Lophius upsicephalus	3.06	2	0.25	
Todaropsis eblanae	1.12	14	0.09	
Sufflogobius bibarbatus	1.00	238	0.08	
Shrimps, small, non comm.	0.66	124	0.05	
Total	1201.96		99.98	

PROJECT STATION:1686

DATE:12/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2220
start stop duration Long E 1255
TIME :10:49:00 11:19:00 30 (min) Purpose code: 3
LOG :1343.30 1344.60 1.39 Area code : 2
FDEPTH: 314 324 GearCond.code:
BDEPTH: 314 324 Validity code:
Towing dir: 350 Wire out: 950 m Speed: 29 kn*10

Sorted: 23 Kg Total catch: 320.70 CATCH/HOUR: 641.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	169.40	116	26.41	448
Merluccius capensis, male	134.60	70	20.99	449
Trachurus capensis	100.00	312	15.59	447
Helicolenus dactylopterus	96.00	3040	14.97	
Chlorophthalmus punctatus	68.00	2120	10.60	
Centrolophus niger	48.80	20	7.61	
C E P H A L O P O D A	8.72	16	1.36	
Lampanyctodes hectoris	7.68	1040	1.20	
Lophius upsicephalus	5.60	4	0.87	
Galeus polli	1.12	24	0.17	
PASIPHAEIDAE	1.08	24	0.17	
PENAEIDAE	0.16	32	0.02	
Nezumia sp.	0.16	8	0.02	
Coelorinchus fasciatus	0.16	8	0.02	
Total	641.48		100.00	

PROJECT STATION:1687

DATE:12/ 2/93 GEAR TYPE: PT No:1 POSITION:Lat S 2219
start stop duration Long E 1255
TIME :12:17:00 12:38:00 21 (min) Purpose code: 1
LOG :1347.30 1348.60 1.23 Area code : 2
FDEPTH: 150 150 GearCond.code:
BDEPTH: 317 307 Validity code:
Towing dir: 165 Wire out: 350 m Speed: 35 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
N O C A T C H	0.00			
Total				

PROJECT STATION:1688

DATE:12/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2201
start stop duration Long E 1246
TIME :15:07:00 15:38:00 31 (min) Purpose code: 3
LOG :1371.80 1373.30 1.49 Area code : 2
FDEPTH: 353 350 GearCond.code:
BDEPTH: 353 350 Validity code:
Towing dir: 360 Wire out:1050 m Speed: 28 kn*10

Sorted: 36 Kg Total catch: 320.00 CATCH/HOUR: 619.35

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	316.18	265	51.05	451
Merluccius capensis, male	100.26	95	16.19	450
Helicolenus dactylopterus	90.19	914	14.56	
Squalus mitsukurii	34.84	23	5.63	
Centrolophus niger	25.16	10	4.06	
Merluccius paradoxus	19.16	75	3.09	452
C E P H A L O P O D A	9.99	23	1.61	
Trachurus capensis	8.17	31	1.32	454
Lophius upsicephalus	5.96	10	0.96	453
Neoharriotta pinnata	3.48	2	0.56	
Krill	3.33		0.54	
Nezumia sp.	1.43	35	0.23	
Coelorinchus fasciatus	0.54	15	0.09	
Galeus polli	0.46	19	0.07	
Ebinania costaecanarie	0.23	4	0.04	
Total	619.38		100.00	

PROJECT STATION:1689

DATE:12/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2200
start stop duration Long E 1258
TIME :17:22:00 17:54:00 32 (min) Purpose code: 3
LOG :1387.80 1389.40 1.63 Area code : 2
FDEPTH: 306 309 GearCond.code:
BDEPTH: 306 309 Validity code:
Towing dir: 360 Wire out: 950 m Speed: 30 kn*10

Sorted: 51 Kg Total catch: 321.07 CATCH/HOUR: 602.01

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	260.53	184	43.28	
Merluccius capensis, female	208.22	201	34.59	456
Merluccius capensis, male	56.06	92	9.31	455
Chlorophthalmus punctatus	27.75	1202	4.61	
Helicolenus dactylopterus	20.61	703	3.42	
Merluccius capensis, male	18.83	39	3.13	
Trachurus capensis	3.54	8	0.59	
Todarodes sagittatus	2.49	8	0.41	
MYCTOPHIDAE	2.16	454	0.36	
Lophius upsicephalus	1.11	2	0.18	
Coelorinchus fasciatus	0.71	8	0.12	
Total	602.01		100.00	

PROJECT STATION:1690

DATE:12/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2159
start stop duration Long E 1310
TIME :19:45:00 20:15:00 30 (min) Purpose code: 3
LOG :1404.20 1405.70 1.58 Area code : 2
FDEPTH: 193 189 GearCond.code:
BDEPTH: 193 189 Validity code:
Towing dir: 350 Wire out: 750 m Speed: 31 kn*10

Sorted: 47 Kg Total catch: 259.73 CATCH/HOUR: 519.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	154.34	964	29.71	460
Merluccius capensis, male	151.64	1216	29.19	459
Dentex macrophthalmus	51.02	226	9.82	
Merluccius capensis, female	50.50	52	9.72	457
Merluccius capensis, male	34.60	34	6.66	458
Trigla lyra	14.84	10	2.86	
Shrimps, small, non comm.	14.48	2818	2.79	
Sufflogobius bibarbatus	14.22	4978	2.74	
Trachurus capensis	12.42	72	2.39	
Pterothrissus belloci	11.34	54	2.18	
Synagrops microlepis	4.94	316	0.95	
Todaropsis eblanae	3.60	90	0.69	
Chlorophthalmus punctatus	1.44	136	0.28	
Lophius upsicephalus	0.08	46	0.02	
Total	519.46		100.00	

PROJECT STATION:1691

DATE:12/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2200
start stop duration Long E 1324
TIME :22:06:00 22:36:00 30 (min) Purpose code: 3
LOG :1421.30 1422.80 1.62 Area code : 2
FDEPTH: 154 152 GearCond.code:
BDEPTH: 154 152 Validity code:
Towing dir: 360 Wire out: 650 m Speed: 32 kn*10

Sorted: 30 Kg Total catch: 166.11 CATCH/HOUR: 332.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	188.64	1012	56.78	461
Merluccius capensis, male	119.90	1882	36.09	462
Lophius upsicephalus	5.66	36	1.70	
Pterothrissus belloci	3.96	78	1.19	
Shrimps, small, non comm.	3.40	892	1.02	
Sufflogobius bibarbatus	3.30	1672	0.99	
Dentex macrophthalmus	2.86	12	0.86	
Todaropsis eblanae	1.76	78	0.53	
Trachurus capensis	1.54	12	0.46	
Merluccius capensis, juveniles	1.20	44	0.36	
Total	332.22		99.98	

PROJECT STATION:1692

DATE:13/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2149
start stop duration Long E 1255
TIME :07:30:00 08:00:00 30 (min) Purpose code: 3
LOG :1509.30 1510.90 1.48 Area code : 2
FDEPTH: 300 300 GearCond.code:
BDEPTH: 300 300 Validity code:
Towing dir: 335 Wire out: 950 m Speed: 30 kn*10

Sorted: 53 Kg Total catch: 476.00 CATCH/HOUR: 952.00

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	462.50	338	48.58	
Merluccius capensis, female	220.70	156	23.18	463
Trachurus capensis	72.62	188	7.63	465
Merluccius capensis, male	62.60	60	6.58	464
Chlorophthalmus punctatus	49.36	1800	5.18	
Merluccius capensis, male	44.36	76	4.66	
Helicolenus dactylopterus	21.74	1226	2.28	
MYCTOPHIDAE	14.12	3312	1.48	
Todarodes sagittatus	3.88	8	0.41	
Shrimps, small, non comm.	0.12	50	0.01	
Total	952.00		99.99	

PROJECT STATION:1693

DATE:13/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2154
start stop duration Long E 1239
TIME :10:16:00 10:46:00 30 (min) Purpose code: 3
LOG :1527.90 1529.40 1.37 Area code : 2
FDEPTH: 500 498 GearCond.code:
BDEPTH: 500 498 Validity code:
Towing dir: 5 Wire out:1350 m Speed: 27 kn*10

Sorted: 26 Kg Total catch: 185.11 CATCH/HOUR: 370.22

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	93.90	110	25.36	471
Coelorinchus fasciatus	72.00	270	19.45	
Hoplostethus cadenati	58.80	2100	15.88	
Helicolenus dactylopterus	27.50	50	7.43	
Neoharriotta pinnata	26.50	30	7.16	
Nezumia sp.	21.60	800	5.83	
Aristeus varidens	14.00	1030	3.78	
Todarodes sagittatus	12.42	36	3.35	
Deepwater fish mixture	10.40	1050	2.81	
Shrimps, small, non comm.	8.70	3070	2.35	
Deania calcea	6.70	10	1.81	
Raja sp.	6.30	10	1.70	
Chlamydoselachus anguineus	4.60	2	1.24	
Galeus polli	2.90	30	0.78	
Small squids	2.00	40	0.54	
Lepidopus caudatus	1.90	20	0.51	
Total	370.22		99.98	

PROJECT STATION:1694

DATE:13/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2135
start stop duration Long E 2141
TIME :14:47:00 15:18:00 31 (min) Purpose code: 3
LOG :1564.30 1565.90 1.55 Area code : 2
FDEPTH: 370 369 GearCond.code:
BDEPTH: 370 369 Validity code:
Towing dir: 350 Wire out:1100 m Speed: 29 kn*10

Sorted: 66 Kg Total catch: 501.14 CATCH/HOUR: 969.95

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	429.68	352	44.30	466
Merluccius paradoxus, female	221.61	300	22.85	468
Merluccius capensis, male	154.65	153	15.94	467
Helicolenus dactylopterus	90.97	519	9.38	
Todaropsis eblanae	40.26	105	4.15	
PASIPHAEIDAE	23.69		2.44	
Chlorophthalmus punctatus	4.88	205	0.50	
Galeus polli	2.17	23	0.22	
Nezumia sp.	1.59	23	0.16	
Shrimps, small, non comm.	0.50	43	0.05	
Total	970.00		99.99	

PROJECT STATION:1695

DATE:13/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2128
start stop duration Long E 1255
TIME :17:10:00 17:41:00 31 (min) Purpose code: 3
LOG :1581.80 1583.60 1.64 Area code : 2
FDEPTH: 278 277 GearCond.code:
BDEPTH: 278 277 Validity code:
Towing dir: 360 Wire out: 900 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 248.85 CATCH/HOUR: 481.65

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	274.94	221	57.08	469
Chlorophthalmus punctatus	105.48	4845	21.90	
Merluccius capensis, male	51.58	95	10.71	470
Helicolenus dactylopterus	14.61	455	3.03	
Todarodes sagittatus	13.51	29	2.80	
Trachurus capensis	6.04	19	1.25	
Hexanchus griseus	4.47	2	0.93	
Dentex macrophthalmus	3.48	15	0.72	
Shrimps, small, non comm.	3.43	567	0.71	
Galeus polli	2.13	93	0.44	
Sufflogobius bibarbatus	1.01	315	0.21	
Todaropsis eblanae	0.97	35	0.20	
Total	481.65		99.98	

PROJECT STATION:1696

DATE:13/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2122
start stop duration Long E 1303
TIME :18:58:00 19:29:00 31 (min) Purpose code: 3
LOG :1593.00 1594.50 1.62 Area code : 2
FDEPTH: 172 172 GearCond.code:
BDEPTH: 172 172 Validity code:
Towing dir: 330 Wire out: 650 m Speed: 31 kn*10

Sorted: 29 Kg Total catch: 406.74 CATCH/HOUR: 787.24

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	276.39	1951	35.11	473
Merluccius capensis, male	254.71	1843	32.35	474
Trachurus capensis	119.50	867	15.18	475
Dentex macrophthalmus	61.78	325	7.85	
Trigla lyra	55.55	135	7.06	
Merluccius capensis, female	10.10	10	1.28	472
Merluccius capensis, juveniles	5.15	515	0.65	476
Pterothrissus belloci	2.17	54	0.28	
Sufflogobius bibarbatus	0.81	271	0.10	
Solenocera africana	0.54	244	0.07	
Synagrops microlepis	0.54	81	0.07	
Total	787.24		100.00	

PROJECT STATION:1697

DATE:13/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2135
start stop duration Long E 2316
TIME :22:46:00 23:16:00 30 (min) Purpose code: 3
LOG :1625.10 1626.30 1.68 Area code : 2
FDEPTH: 148 146 GearCond.code:
BDEPTH: 148 146 Validity code:
Towing dir: 360 Wire out: 600 m Speed: 34 kn*10

Sorted: 31 Kg Total catch: 355.07 CATCH/HOUR: 710.14

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	374.00	3410	52.67	477
Merluccius capensis, male	264.00	2640	37.18	478
Pterothrissus belloci	31.24	770	4.40	
Austroglossus microlepis	13.00	102	1.83	479
Trachurus capensis	9.02	66	1.27	
Prionace glauca	5.80	2	0.82	
Merluccius capensis, juveniles	5.06	66	0.71	
Solenocera africana	3.96	1232	0.56	
Sufflogobius bibarbatus	3.30	1760	0.46	
Lophius upsicephalus	0.54	4	0.08	480
POMATOMIDAE	0.22	22	0.03	
Total	710.14		100.01	

PROJECT STATION:1698

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2112
start stop duration Long E 1240
TIME :07:08:00 07:38:00 30 (min) Purpose code: 3
LOG :1671.00 1672.40 1.66 Area code : 2
FDEPTH: 357 363 GearCond.code:
BDEPTH: 357 363 Validity code:
Towing dir: 10 Wire out:1050 m Speed: 33 kn*10

Sorted: 102 Kg Total catch: 102.00 CATCH/HOUR: 204.00

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	107.74	86	52.81	481
Helicolenus dactylopterus	40.60	404	19.90	
Merluccius capensis, male	31.26	28	15.32	482
Centrolophus niger	6.20	2	3.04	
Todaropsis eblanae	5.68	16	2.78	
MYCTOPHIDAE	4.26	2844	2.09	
Galeus polli	2.72	30	1.33	
Nezumia sp.	1.24	44	0.61	
Chlorophthalmus punctatus	1.14	32	0.56	
Merluccius paradoxus, female	0.96	6	0.47	483
Trachurus capensis	0.82	6	0.40	
Merluccius paradoxus, male	0.54	2	0.26	
Pterothrissus belloci	0.30	4	0.15	
Coelorinchus fasciatus	0.22	6	0.11	
Deepwater fish mixture	0.12	14	0.06	
Small squids	0.10	34	0.05	
Solenocera africana	0.04	20	0.02	
Shrimps, small, non comm.	0.02	18	0.01	
Sufflogobius bibarbatus	0.02	8	0.01	
PORTUNIDAE	0.02	2	0.01	
Total	204.00		99.99	

PROJECT STATION:1699

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2106
start stop duration Long E 1251
TIME :10:05:00 10:35:00 30 (min) Purpose code: 3
LOG :1687.30 1688.90 1.51 Area code : 2
FDEPTH: 295 291 GearCond.code:
BDEPTH: 295 291 Validity code:
Towing dir: 360 Wire out: 950 m Speed: 30 kn*10

Sorted: 25 Kg Total catch: 134.88 CATCH/HOUR: 269.76

SPECIES	CATCH/HOUR weight	CATCH/HOUR numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	166.70	144	61.80	484
Chlorophthalmus punctatus	32.24	1518	11.95	
Merluccius capensis, male	24.90	56	9.23	485
Helicolenus dactylopterus	13.40	508	4.97	
Pterothrissus belloci	7.26	34	2.69	
Dentex macrophthalmus	7.14	30	2.65	
Trachurus capensis	6.26	30	2.32	
Galeus polli	6.02	514	2.23	
Lophius upsicephalus	2.20	6	0.82	
Solenocera africana	1.92	342	0.71	
Todaropsis eblanae	1.22	64	0.45	
Sufflogobius bibarbatus	0.24	42	0.09	
Synagrops microlepis	0.18	10	0.07	
Ophidion sp.	0.08	4	0.03	
Total	269.76		100.01	

PROJECT STATION:1700

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2105
start stop duration Long E 1259
TIME :11:54:00 12:16:00 22 (min) Purpose code: 3
LOG :1698.60 1699.70 1.19 Area code : 2
FDEPTH: 201 205 GearCond.code:
BDEPTH: 201 205 Validity code:
Towing dir: 345 Wire out: 750 m Speed: 31 kn*10

Sorted: 59 Kg Total catch: 1906.00 CATCH/HOUR: 5198.18

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	4707.27	29092	90.56	488
Merluccius capensis, female	294.55	2013	5.67	487
Merluccius capensis, male	196.36	1767	3.78	486
Total	5198.18		100.01	

PROJECT STATION:1701

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2101
start stop duration Long E 1306
TIME :13:27:00 13:57:00 30 (min) Purpose code: 3
LOG :1708.90 1710.40 1.65 Area code : 2
FDEPTH: 120 122 GearCond.code:
BDEPTH: 120 122 Validity code:
Towing dir: 360 Wire out: 500 m Speed: 32 kn*10

Sorted: 31 Kg Total catch: 218.96 CATCH/HOUR: 437.92

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	271.60	2142	62.02	489
Merluccius capensis, male	121.80	1204	27.81	490
Sufflogobius bibarbatus	25.76	3808	5.88	
Merluccius capensis, juveniles	18.76	1050	4.28	491
Total	437.92		99.99	

PROJECT STATION:1702

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2042
start stop duration Long E 1307
TIME :16:05:00 16:35:00 30 (min) Purpose code: 3
LOG :1731.60 1733.00 1.74 Area code : 2
FDEPTH: 111 112 GearCond.code:
BDEPTH: 111 112 Validity code:
Towing dir: 360 Wire out: 450 m Speed: 33 kn*10

Sorted: 1 Kg Total catch: 66.80 CATCH/HOUR: 133.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	117.60	29400	88.02	
Merluccius capensis, female	8.60	44	6.44	492
Merluccius capensis, male	7.40	40	5.54	493
Total	133.60		100.00	

PROJECT STATION:1703

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2045
start stop duration Long E 1255
TIME :18:16:00 18:46:00 30 (min) Purpose code: 3
LOG :1747.10 1748.60 1.58 Area code : 2
FDEPTH: 158 155 GearCond.code:
BDEPTH: 158 155 Validity code:
Towing dir: 350 Wire out: 600 m Speed: 31 kn*10

Sorted: 25 Kg Total catch: 281.32 CATCH/HOUR: 562.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	280.50	3674	49.85	494
Merluccius capensis, male	195.80	2530	34.80	495
Pterothrissus belloci	47.08	1276	8.37	
Merluccius capensis, juveniles	29.70	880	5.28	496
Sufflogobius bibarbatus	4.40	2178	0.78	
Austroglossus microlepis	3.48	34	0.62	497
Solenocera africana	1.32	704	0.23	
Lophius upsicephalus	0.36	2	0.06	
Total	562.64		99.99	

PROJECT STATION:1704

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2048
start stop duration Long E 1248
TIME :20:38:00 21:09:00 31 (min) Purpose code: 3
LOG :1760.80 1762.30 1.70 Area code : 2
FDEPTH: 257 261 GearCond.code:
BDEPTH: 257 261 Validity code:
Towing dir: 340 Wire out: 850 m Speed: 33 kn*10

Sorted: 29 Kg Total catch: 86.93 CATCH/HOUR: 168.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, male	74.90	395	44.52	499
Merluccius capensis, female	65.32	302	38.82	498
Pterothrissus belloci	16.26	99	9.66	
Sufflogobius bibarbatus	4.65	836	2.76	
Trachurus capensis	2.50	12	1.49	
Solenocera africana	1.97	354	1.17	
Austroglossus microlepis	1.43	2	0.85	
Lophius upsicephalus	1.16	21	0.69	
Chlorophthalmus punctatus	0.06	6	0.04	
Total	168.25		100.00	

PROJECT STATION:1705

DATE:14/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2048
start stop duration Long E 1241
TIME :22:11:00 22:41:00 30 (min) Purpose code: 3
LOG :1769.40 1771.00 1.40 Area code : 2
FDEPTH: 315 316 GearCond.code:
BDEPTH: 315 316 Validity code:
Towing dir: 330 Wire out:1000 m Speed: 29 kn*10

Sorted: 94 Kg Total catch: 94.18 CATCH/HOUR: 188.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	111.20	70	59.04	500
Lophius upsicephalus	30.30	164	16.09	
Merluccius capensis, male	17.90	20	9.50	501
Solenocera africana	8.54	1708	4.53	
Dentex macrophthalmus	7.06	28	3.75	
Helicolenus dactylopterus	5.40	306	2.87	
Chlorophthalmus punctatus	4.00	222	2.12	
Pterothrissus belloci	2.64	12	1.40	
Austroglossus microlepis	1.14	2	0.61	
Sufflogobius bibarbatus	0.08	24	0.04	
Galeus polli	0.08	10	0.04	
MYXINIDAE	0.02	10	0.01	
Total	188.36		100.00	

PROJECT STATION:1706

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2045
start stop duration Long E 1219
TIME :07:14:00 07:44:00 30 (min) Purpose code: 3
LOG :1803.40 1804.80 1.70 Area code : 2
FDEPTH: 400 395 GearCond.code:
BDEPTH: 400 395 Validity code:
Towing dir: 325 Wire out:1150 m Speed: 32 kn*10

Sorted: 89 Kg Total catch: 89.30 CATCH/HOUR: 178.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	88.20	64	49.38	503
Merluccius capensis, male	45.90	40	25.70	502
Helicolenus dactylopterus	18.80		10.53	
Deepwater fish mixture	7.08	1042	3.96	
Centrolophus niger	3.94	2	2.21	
Shrimps, small, non comm.	3.94	1712	2.21	
Todarodes sagittatus	2.18	4	1.22	
Coelorinchus fasciatus	2.16	22	1.21	
Hoplostethus cadenati	1.44	80	0.81	
Galeus polli	1.18	22	0.66	
Nezumia sp.	1.10	52	0.62	
Lophius upsicephalus	0.98	8	0.55	
Solenocera africana	0.98	208	0.55	
Merluccius capensis, juveniles	0.40	4	0.22	
Small squids	0.22	22	0.12	
Pterothrissus belloci	0.10	4	0.06	
Total	178.60		100.01	

PROJECT STATION:1707

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2036
start stop duration Long E 1230
TIME :09:50:00 10:22:00 32 (min) Purpose code: 3
LOG :1822.30 1823.90 1.69 Area code : 2
FDEPTH: 304 301 GearCond.code:
BDEPTH: 304 301 Validity code:
Towing dir: 340 Wire out: 950 m Speed: 31 kn*10

Sorted: 219 Kg Total catch: 219.05 CATCH/HOUR: 410.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	307.03	270	74.75	506
Merluccius capensis, male	50.34	79	12.26	505
Dentex macrophthalmus	45.38	135	11.05	504
Solenocera africana	4.11	673	1.00	
Chlorophthalmus punctatus	1.95	77	0.47	
Todarodes sagittatus	0.84	49	0.20	
MYCTOPHIDAE	0.58	169	0.14	
Coelorinchus fasciatus	0.38	4	0.09	
Sufflogobius bibarbatus	0.11	45	0.03	
Total	410.72		99.99	

PROJECT STATION:1708

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2030
start stop duration Long E 1242
TIME :12:10:00 12:40:00 30 (min) Purpose code: 3
LOG :1839.10 1840.60 1.59 Area code : 2
FDEPTH: 214 211 GearCond.code:
BDEPTH: 214 211 Validity code:
Towing dir: 340 Wire out: 800 m Speed: 31 kn*10

Sorted: 20 Kg Total catch: 660.20 CATCH/HOUR: 1320.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, male	644.00	5152	48.77	507
Merluccius capensis, female	334.00	2300	25.30	508
Dentex macrophtalmus	272.00	1264	20.60	509
Trachurus capensis	49.20	322	3.73	510
Austroglossus microlepis	12.00	44	0.91	511
Trigla lyra	9.20	46	0.70	
Total	1320.40		100.01	

PROJECT STATION:1709

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2027
start stop duration Long E 1246
TIME :13:52:00 14:22:00 30 (min) Purpose code: 3
LOG :1849.50 1851.00 1.80 Area code : 2
FDEPTH: 152 152 GearCond.code:
BDEPTH: 152 152 Validity code:
Towing dir: 340 Wire out: 600 m Speed: 34 kn*10

Sorted: 4 Kg Total catch: 15.18 CATCH/HOUR: 30.36

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	9.06	2382	29.84	
Merluccius capensis, female	8.78	96	28.92	513
Merluccius capensis, male	7.46	98	24.57	512
Austroglossus microlepis	1.68	16	5.53	515
Trigla lyra	1.20	4	3.95	
Merluccius capensis, juveniles	1.16	132	3.82	514
Trachurus capensis	0.70	6	2.31	
Dentex macrophthalmus	0.32	2	1.05	
Total	30.36		99.99	

PROJECT STATION:1710

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2009
start stop duration Long E 1241
TIME :16:22:00 16:52:00 30 (min) Purpose code: 3
LOG :1869.70 1871.10 1.74 Area code : 2
FDEPTH: 124 121 GearCond.code:
BDEPTH: 124 121 Validity code:
Towing dir: 5 Wire out: 550 m Speed: 34 kn*10

Sorted: 3 Kg Total catch: 96.82 CATCH/HOUR: 193.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	115.60	968	59.70	517
Merluccius capensis, male	71.20	620	36.77	516
Trachurus capensis	4.02	4	2.08	
Sufflogobius bibarbatus	1.92	372	0.99	
Trigla lyra	0.90	2	0.46	
Total	193.64		100.00	

PROJECT STATION:1711

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2012
start stop duration Long E 1233
TIME :18:38:00 18:48:00 10 (min) Purpose code: 3
LOG :1884.60 1885.10 0.54 Area code : 2
FDEPTH: 155 156 GearCond.code:
BDEPTH: 155 156 Validity code:
Towing dir: 340 Wire out: 650 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 45.76 CATCH/HOUR: 274.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	88.62	894	32.28	518
Merluccius capensis, male	88.20	702	32.12	519
Trachurus capensis	49.20	318	17.92	520
Merluccius capensis, juveniles	33.30	3582	12.13	521
Sufflogobius bibarbatus	5.76	1254	2.10	
Galeichthys feliceps	4.74	12	1.73	
Trigla lyra	4.74	18	1.73	
Trachurus, Juveniles	0.00	120		
Total	274.56		100.01	

PROJECT STATION:1712

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2012
start stop duration Long E 1227
TIME :19:45:00 20:16:00 31 (min) Purpose code: 3
LOG :1892.00 1893.60 1.72 Area code : 2
FDEPTH: 226 224 GearCond.code:
BDEPTH: 226 224 Validity code:
Towing dir: 340 Wire out: 800 m Speed: 33 kn*10

Sorted: 65 Kg Total catch: 590.31 CATCH/HOUR: 1142.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	888.39	5766	77.76	522
Merluccius capensis, female	101.03	819	8.84	524
Merluccius capensis, male	58.53	488	5.12	523
Sufflogobius bibarbatus	46.86	8431	4.10	
Pterothrissus belloci	31.53	401	2.76	
Merluccius capensis, juveniles	12.19	540	1.07	525
Austroglossus microlepis	2.61	15	0.23	
Solenocera africana	0.87	244	0.08	
Todaropsis eblanae	0.52	17	0.05	
Total	1142.53		100.01	

PROJECT STATION:1713

DATE:15/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2014
start stop duration Long E 1214
TIME :22:00:00 22:16:00 16 (min) Purpose code: 3
LOG :1907.40 1908.20 0.96 Area code : 2
FDEPTH: 274 275 GearCond.code:
BDEPTH: 274 275 Validity code:
Towing dir: 350 Wire out: 900 m Speed: 33 kn*10

Sorted: 3 Kg Total catch: 20.80 CATCH/HOUR: 78.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Pterothrissus belloci	28.84	304	36.97	
Sufflogobius bibarbatus	21.94	3221	28.13	
Merluccius capensis, female	11.59	49	14.86	527
Merluccius capensis, male	11.21	30	14.37	526
Solenocera africana	2.63	585	3.37	
Lophius upsicephalus	1.16	8	1.49	
Austroglossus microlepis	0.64	4	0.82	
Small squids	0.00	4		
Total	78.01		100.01	

PROJECT STATION:1714

DATE:16/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2021
start stop duration Long E 1207
TIME :07:07:00 07:38:00 31 (min) Purpose code: 3
LOG :1967.90 1969.70 1.73 Area code : 2
FDEPTH: 315 313 GearCond.code:
BDEPTH: 315 313 Validity code:
Towing dir: 345 Wire out: 950 m Speed: 32 kn*10

Sorted: 32 Kg Total catch: 273.42 CATCH/HOUR: 529.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	234.48	225	44.31	528
Helicolenus dactylopterus	102.97	3244	19.46	
Chlorophthalmus punctatus	78.58	3507	14.85	
Dentex macrophthalmus	53.81	194	10.17	
Merluccius capensis, male	50.61	70	9.56	529
Trachurus capensis	2.63	8	0.50	
Galeus polli	2.48	116	0.47	
Solenocera africana	1.63	325	0.31	
MYCTOPHIDAE	1.08	697	0.20	
Lophius upsicephalus	0.54	8	0.10	
Todaropsis eblanae	0.23	8	0.04	
Synagrops microlepis	0.15	8	0.03	
Total	529.19		100.00	

PROJECT STATION:1715

DATE:16/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2004
start stop duration Long E 1225
TIME :19:37:00 20:07:00 30 (min) Purpose code: 3
LOG :2061.00 2062.60 1.68 Area code : 2
FDEPTH: 198 197 GearCond.code:
BDEPTH: 198 197 Validity code:
Towing dir: 335 Wire out: 750 m Speed: 33 kn*10

Sorted: 32 Kg Total catch: 56.22 CATCH/HOUR: 112.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, juveniles	51.86	3388	46.12	532
Sufflogobius bibarbatus	22.84	3028	20.31	
Merluccius capensis, female	21.24	242	18.89	530
Merluccius capensis, male	9.30	106	8.27	531
Trachurus capensis	2.30	18	2.05	
Raja miraletus	1.36	4	1.21	
Dentex macrophthalmus	1.00	4	0.89	
Helicolenus dactylopterus	0.76	38	0.68	
Austroglossus microlepis	0.44	4	0.39	
Squalus megalops	0.42	4	0.37	
Galeus polli	0.42	36	0.37	
Lophius upsicephalus	0.16	8	0.14	
Solenocera africana	0.16	38	0.14	
Pterothrissus belloci	0.14	8	0.12	
Todaropsis eblanae	0.04	4	0.04	
Total	112.44		99.99	

PROJECT STATION:1716

DATE:16/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2006
start stop duration Long E 1202
TIME :22:49:00 23:19:00 30 (min) Purpose code: 3
LOG :2085.30 2086.60 1.75 Area code : 2
FDEPTH: 319 323 GearCond.code:
BDEPTH: 319 323 Validity code:
Towing dir: 350 Wire out:1000 m Speed: 36 kn*10

Sorted: 30 Kg Total catch: 269.69 CATCH/HOUR: 539.38

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	382.00	280	70.82	534
Merluccius capensis, male	84.00	88	15.57	535
Helicolenus dactylopterus	29.00	990	5.38	
Chlorophthalmus punctatus	20.20	720	3.75	
Lophius upsicephalus	12.00	8	2.22	537
Lampanyctodes hectoris	5.90	828	1.09	
Dentex macrophthalmus	2.48	6	0.46	
Galeus polli	1.90	54	0.35	
Trachurus capensis	1.40	4	0.26	536
Coelorinchus fasciatus	0.50	6	0.09	
Total	539.38		99.99	

PROJECT STATION:1717

DATE:17/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2008
start stop duration Long E 1149
TIME :07:18:00 07:48:00 30 (min) Purpose code: 3
LOG :2105.80 2107.40 1.43 Area code : 2
FDEPTH: 495 493 GearCond.code:
BDEPTH: 495 493 Validity code:
Towing dir: 320 Wire out:1350 m Speed: 27 kn*10

Sorted: 22 Kg Total catch: 89.48 CATCH/HOUR: 178.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Coelorinchus fasciatus	67.50	276	37.72	
Merluccius paradoxus, female	32.04	40	17.90	538
Hoplostethus cadenati	31.08	600	17.37	
Nezumia sp.	9.78	576	5.46	
Deepwater fish mixture	9.42	1110	5.26	
Merluccius capensis, male	9.30	4	5.20	539
Helicolenus dactylopterus	7.80	48	4.36	
Todarodes sagittatus	4.26	4	2.38	
Merluccius capensis, female	2.98	2	1.67	
Etmopterus pusillus	1.50	6	0.84	
Shrimps, small, non comm.	1.14	1200	0.64	
Todaropsis eblanae	0.96	12	0.54	
Epigonus pandionis	0.54	24	0.30	
Raja sp.	0.36	6	0.20	
Aristeus varidens	0.30	30	0.17	
Small squids	0.00	6		
Total	178.96		100.01	

PROJECT STATION:1718

DATE:17/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2003
start stop duration Long E 1153
TIME :09:03:00 09:33:00 30 (min) Purpose code: 3
LOG :2115.00 2116.50 1.53 Area code : 2
FDEPTH: 378 379 GearCond.code:
BDEPTH: 378 379 Validity code:
Towing dir: 340 Wire out:1050 m Speed: 30 kn*10

Sorted: 144 Kg Total catch: 401.42 CATCH/HOUR: 802.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO
Merluccius capensis, female	386.14	346	48.10	542
Merluccius capensis, male	154.98	148	19.30	541
Helicolenus dactylopterus	91.20	1572	11.36	
Merluccius paradoxus, female	54.44	60	6.78	540
Shrimps, small, non comm.	47.10	26580	5.87	
Deepwater fish mixture	19.32	4560	2.41	
Todarodes sagittatus	9.66	30	1.20	
Hoplostethus cadenati	9.06	462	1.13	
Aristeus varidens	6.00	504	0.75	
Merluccius paradoxus, male	5.00	6	0.62	
Chlorophthalmus punctatus	4.32	126	0.54	
Small squids	3.96	234	0.49	
Galeus polli	3.96	48	0.49	
Raja sp.	3.60	12	0.45	
Epigonus pandionis	2.72	120	0.34	
Nezumia sp.	0.84	42	0.10	
Coelorinchus fasciatus	0.54	6	0.07	
Total	802.84		100.00	

PROJECT STATION:1719

DATE:17/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 2002
start stop duration Long E 1159
TIME :11:00:00 11:30:00 30 (min) Purpose code: 3
LOG :2126.00 2127.60 1.63 Area code : 2
FDEPTH: 330 335 GearCond.code:
BDEPTH: 330 335 Validity code:
Towing dir: 340 Wire out:1000 m Speed: 31 kn*10

Sorted: 27 Kg Total catch: 1962.62 CATCH/HOUR: 3925.24

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	3118.00	1876	79.43	543
Merluccius capensis, male	723.60	570	18.43	544
Helicolenus dactylopterus	40.40	972	1.03	
Centrolophus niger	16.80	6	0.43	
Galeus polli	8.00	196	0.20	
Dentex macrophthalmus	5.48	14	0.14	
Chlorophthalmus punctatus	5.40	196	0.14	
Small squids	4.24	8	0.11	
Lophius upsicephalus	2.36	8	0.06	
Nezumia sp.	0.72	24	0.02	
Coelorinchus fasciatus	0.24	4	0.01	
Total	3925.24		100.00	

PROJECT STATION:1720

DATE:17/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1959
start stop duration Long E 1204
TIME :12:50:00 13:20:00 30 (min) Purpose code: 3
LOG :2136.10 2137.60 1.60 Area code : 3
FDEPTH: 301 301 GearCond.code:
BDEPTH: 301 301 Validity code:
Towing dir: 360 Wire out: 950 m Speed: 32 kn*10

Sorted: 2 Kg Total catch: 1267.70 CATCH/HOUR: 2535.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Dentex macrophthalmus	1344.00	3616	53.01	547
Merluccius capensis, female	559.00	618	22.05	545
Trachurus capensis	448.00	2080	17.67	546
Merluccius capensis, male	182.00	146	7.18	548
Lophius upsicephalus	2.42	4	0.10	
Total	2535.42		100.01	

PROJECT STATION:1721

DATE:17/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1957
start stop duration Long E 1212
TIME :15:01:00 15:31:00 30 (min) Purpose code: 3
LOG :2148.20 2149.90 1.71 Area code : 3
FDEPTH: 250 247 GearCond.code:
BDEPTH: 250 247 Validity code:
Towing dir: 360 Wire out: 850 m Speed: 32 kn*10

Sorted: 13 Kg Total catch: 127.14 CATCH/HOUR: 254.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	115.20	704	45.30	549
Merluccius capensis, male	68.20	340	26.82	552
Trachurus capensis	44.00	248	17.30	550
Sufflogobius bibarbatus	22.22	3442	8.74	
S H R I M P S	3.08	748	1.21	
Austroglossus microlepis	1.32	16	0.52	551
Austroglossus pectoralis	0.26	2	0.10	
Total	254.28		99.99	

PROJECT STATION:1722

DATE:17/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1953
start stop duration Long E 1220
TIME :17:18:00 17:48:00 30 (min) Purpose code: 3
LOG :2160.80 2162.40 1.70 Area code : 3
FDEPTH: 191 190 GearCond.code:
BDEPTH: 191 190 Validity code:
Towing dir: 360 Wire out: 750 m Speed: 33 kn*10

Sorted: 28 Kg Total catch: 83.49 CATCH/HOUR: 166.98

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	71.82	726	43.01	553
Merluccius capensis, male	36.66	360	21.95	554
Sufflogobius bibarbatus	35.28	4986	21.13	
Merluccius capensis, juveniles	17.22	1044	10.31	555
Trigla lyra	2.70	6	1.62	
Austroglossus microlepis	1.74	6	1.04	
Pterothrissus belloci	1.20	36	0.72	
Todaropsis eblanae	0.18	12	0.11	
Aristeus varidens	0.18	42	0.11	
Total	166.98		100.00	

PROJECT STATION:1723

DATE:17/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1937
start stop duration Long E 1212
TIME :19:52:00 20:22:00 30 (min) Purpose code: 3
LOG :2178.70 2180.30 1.68 Area code : 3
FDEPTH: 224 227 GearCond.code:
BDEPTH: 224 227 Validity code:
Towing dir: 335 Wire out: 800 m Speed: 34 kn*10

Sorted: 22 Kg Total catch: 35.77 CATCH/HOUR: 71.54

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	47.54	7414	66.45	
Pterothrissus belloci	8.18	220	11.43	
Austroglossus microlepis	5.20	40	7.27	
Solenocera africana	4.10	1432	5.73	
Trachurus capensis	2.36	18	3.30	
Merluccius capensis, female	2.06	12	2.88	
Merluccius capensis, male	1.74	18	2.43	
Trigla lyra	0.12	16	0.17	
Merluccius capensis, juveniles	0.12	16	0.17	
Galeus polli	0.08	4	0.11	
Todaropsis eblanae	0.04	4	0.06	
Total	71.54		100.00	

PROJECT STATION:1724

DATE:18/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1941
start stop duration Long E 1156
TIME :07:12:00 07:42:00 30 (min) Purpose code: 3
LOG :2251.10 2252.60 1.76 Area code : 3
FDEPTH: 327 327 GearCond.code:
BDEPTH: 327 327 Validity code:
Towing dir: 340 Wire out:1000 m Speed: 34 kn*10

Sorted: 137 Kg Total catch: 293.43 CATCH/HOUR: 586.86

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	366.96	284	62.53	556
Merluccius capensis, male	109.18	98	18.60	557
Dentex macrophthalmus	38.20	132	6.51	
Helicolenus dactylopterus	34.40	1784	5.86	
Chlorophthalmus punctatus	14.56	616	2.48	
Neoharriotta pinnata	6.52	6	1.11	
Galeus polli	5.04	88	0.86	
Lophius upsicephalus	3.84	6	0.65	
Trachurus capensis	2.28	12	0.39	
Todaropsis eblanae	1.40	4	0.24	
Trigla lyra	1.36	12	0.23	
Solenocera africana	1.12	228	0.19	
Synagrops microlepis	1.08	76	0.18	
MYCTOPHIDAE	0.52	176	0.09	
Nezumia sp.	0.32	12	0.05	
Todarodes sagittatus	0.08	8	0.01	
Total	586.86		99.98	

PROJECT STATION:1725

DATE:18/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1944
start stop duration Long E 1145
TIME :09:15:00 09:45:00 30 (min) Purpose code: 3
LOG :2263.80 2265.10 1.58 Area code : 3
FDEPTH: 372 374 GearCond.code:
BDEPTH: 372 374 Validity code:
Towing dir: 340 Wire out:1100 m Speed: 32 kn*10

Sorted: 56 Kg Total catch: 82.73 CATCH/HOUR: 165.46

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	64.80	52	39.16	559
Merluccius capensis, male	43.80	38	26.47	558
Helicolenus dactylopterus	26.80	2870	16.20	
Neoharriotta pinnata	9.24	6	5.58	
Deepwater fish mixture	8.06	2246	4.87	
Shrimps, small, non comm.	7.28		4.40	
Chlorophthalmus punctatus	2.04	68	1.23	
Merluccius paradoxus, male	1.52	2	0.92	
Todarodes sagittatus	0.58	4	0.35	
Epigonus denticulatus	0.36	8	0.22	
Hoplostethus cadenati	0.32	14	0.19	
Solenocera africana	0.20	36	0.12	
Galeus polli	0.20	8	0.12	
Small squids	0.16	46	0.10	
Nezumia sp.	0.10	8	0.06	
Total	165.46		99.99	

PROJECT STATION:1726

DATE:18/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1932
start stop duration Long E 1134
TIME :14:34:00 15:04:00 30 (min) Purpose code: 3
LOG :2300.60 2302.30 1.49 Area code : 3
FDEPTH: 450 452 GearCond.code:
BDEPTH: 450 452 Validity code:
Towing dir: S Wire out:1250 m Speed: 30 kn*10

Sorted: 111 Kg Total catch: 188.97 CATCH/HOUR: 377.94

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	151.80	218	40.17	560
Hoplostethus cadenati	100.80	2288	26.67	
Helicolenus dactylopterus	40.00	184	10.58	
Centrophorus squamosus	31.00	2	8.20	
Deania calcea	13.40	2	3.55	
Lophius upsicephalus	10.60	2	2.80	
Sepia sp.	10.24	32	2.71	
Chlorophthalmus punctatus	6.80	216	1.80	
Nezumia sp.	3.20	128	0.85	
Shrimps, small, non comm.	3.04		0.80	
Merluccius capensis, male	2.46	2	0.65	
Trichiurus sp.	1.88	2	0.50	
Nemichthys curvirostris	0.96	32	0.25	
Galeus polli	0.96	32	0.25	
Raja sp.	0.80	8	0.21	
Total	377.94		99.99	

PROJECT STATION:1727

DATE:18/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1927
start stop duration Long E 1141
TIME :16:34:00 17:04:00 30 (min) Purpose code: 3
LOG :2312.40 2314.00 1.56 Area code : 3
FDEPTH: 352 351 GearCond.code:
BDEPTH: 352 351 Validity code:
Towing dir: 355 Wire out:1050 m Speed: 31 kn*10

Sorted: 197 Kg Total catch: 457.82 CATCH/HOUR: 915.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	599.74	428	65.50	562
Merluccius capensis, male	116.50	102	12.72	561
Helicolenus dactylopterus	92.00	1448	10.05	
Merluccius paradoxus, female	57.78	88	6.31	563
Ruvettus pretiosus	19.30	2	2.11	
Small squids	13.96	48	1.52	
Chlorophthalmus punctatus	8.20	264	0.90	
Galeus polli	7.04	720	0.77	
Nezumia sp.	1.12	20	0.12	
Total	915.64		100.00	

PROJECT STATION:1728

DATE:18/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1923
start stop duration Long E 1146
TIME :18:11:00 18:42:00 31 (min) Purpose code: 3
LOG :2321.50 2323.10 1.66 Area code : 3
FDEPTH: 326 327 GearCond.code:
BDEPTH: 326 327 Validity code:
Towing dir: 345 Wire out:1000 m Speed: 32 kn*10

Sorted: 146 Kg Total catch: 282.81 CATCH/HOUR: 547.37

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	271.63	240	49.62	565
Helicolenus dactylopterus	139.74	4953	25.53	
Merluccius capensis, male	93.33	128	17.05	564
Hexanchus griseus	25.16	2	4.60	
Chlorophthalmus punctatus	5.11	215	0.93	
Galeus polli	4.59	58	0.84	
Dentex macrophthalmus	2.32	6	0.42	
MYCTOPHIDAE	1.74	441	0.32	
Todarodes sagittatus	1.63	6	0.30	
Lophius upsicephalus	0.68	2	0.12	
Synagrops microlepis	0.52	29	0.09	
Small squids	0.41	52	0.07	
Nemichthys curvirostris	0.29	12	0.05	
Nezumia sp.	0.17	12	0.03	
Shrimps, small, non comm.	0.06	81	0.01	
Total	547.38		99.98	

PROJECT STATION:1729

DATE:18/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1919
start stop duration Long E 1154
TIME :20:12:00 20:42:00 30 (min) Purpose code: 3
LOG :2334.50 2336.20 1.65 Area code : 3
FDEPTH: 289 290 GearCond.code:
BDEPTH: 289 290 Validity code:
Towing dir: 345 Wire out: 900 m Speed: 33 kn*10

Sorted: 24 Kg Total catch: 136.20 CATCH/HOUR: 272.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Pterothrissus belloci	146.80	1616	53.89	
Merluccius capensis, female	67.20	72	24.67	566
Dentex macrophthalmus	34.64	136	12.72	
Merluccius capensis, male	14.80	28	5.43	567
Solenocera africana	3.20	672	1.17	
Helicolenus dactylopterus	1.44	40	0.53	
MYCTOPHIDAE	1.28	832	0.47	
Lophius upsicephalus	1.08	12	0.40	
Sufflogobius bibarbatus	1.04	184	0.38	
Austroglossus microlepis	0.92	4	0.34	
Total	272.40		100.00	

PROJECT STATION:1730

DATE:18/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1908
start stop duration Long E 1213
TIME :23:27:00 23:47:00 20 (min) Purpose code: 3
LOG :2361.00 2362.00 1.09 Area code : 3
FDEPTH: 132 131 GearCond.code:
BDEPTH: 132 131 Validity code:
Towing dir: 340 Wire out: 550 m Speed: 31 kn*10

Sorted: 3 Kg Total catch: 37.60 CATCH/HOUR: 112.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	52.50	345	46.54	568
Merluccius capensis, male	28.20	192	25.00	569
Trachurus capensis	24.00	162	21.28	570
Chatrabus melanurus	4.50	27	3.99	
Dentex macrophthalmus	3.24	12	2.87	
Sufflogobius bibarbatus	0.36	45	0.32	
Total	112.80		100.00	

PROJECT STATION:1731

DATE:19/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1859
start stop duration Long E 1203
TIME :07:14:00 07:45:00 31 (min) Purpose code: 3
LOG :2396.80 2398.40 1.76 Area code : 3
FDEPTH: 160 157 GearCond.code:
BDEPTH: 160 157 Validity code:
Towing dir: 330 Wire out: 650 m Speed: 34 kn*10

Sorted: 23 Kg Total catch: 116.84 CATCH/HOUR: 226.14

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Dentex macrophthalmus	84.48	590	37.36	
Merluccius capensis, female	66.39	513	29.36	571
Merluccius capensis, male	29.03	223	12.84	572
Trachurus capensis	12.10	87	5.35	
Pterothrissus belloci	10.16	106	4.49	
Sufflogobius bibarbatus	8.32	1403	3.68	
Merluccius capensis, juveniles	5.03	106	2.22	573
Trigla lyra	4.26	10	1.88	
Raja miraletus	2.79	4	1.23	
Batrachoides sp.	2.61	10	1.15	
Todaropsis eblanae	0.77	29	0.34	
Synagrops microlepis	0.19	48	0.08	
Total	226.13		99.98	

PROJECT STATION:1732

DATE:19/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1858
start stop duration Long E 1155
TIME :08:54:00 09:27:00 33 (min) Purpose code: 3
LOG :2406.80 2408.40 1.88 Area code : 3
FDEPTH: 225 221 GearCond.code:
BDEPTH: 225 221 Validity code:
Towing dir: 340 Wire out: 800 m Speed: 33 kn*10

Sorted: 26 Kg Total catch: 290.18 CATCH/HOUR: 527.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	283.80	1900	53.79	574
Merluccius capensis, male	113.60	820	21.53	575
Trachurus capensis	98.00	740	18.57	
Sufflogobius bibarbatus	32.00	7820	6.07	
Synagrops microlepis	0.20	20	0.04	
Trachurus, Juveniles	0.00	60		
Total	527.60		100.00	

PROJECT STATION:1733

DATE:19/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1901
start stop duration Long E 1146
TIME :11:34:00 12:07:00 33 (min) Purpose code: 3
LOG :2420.20 2421.90 1.81 Area code : 3
FDEPTH: 288 285 GearCond.code:
BDEPTH: 288 285 Validity code:
Towing dir: 345 Wire out: 900 m Speed: 33 kn*10

Sorted: 244 Kg Total catch: 457.58 CATCH/HOUR: 831.96

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	569.82	1247	68.49	576
Merluccius capensis, male	152.00	378	18.27	577
Dentex macrophthalmus	102.91	302	12.37	578
Austroglossus microlepis	2.47	7	0.30	
Helicolenus dactylopterus	1.42	80	0.17	
MYCTOPHIDAE	1.31		0.16	
Sepia sp.	1.16	4	0.14	
Chlorophthalmus punctatus	0.47	2	0.06	
Total	831.56		99.96	

PROJECT STATION:1734

DATE:19/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1901
start stop duration Long E 1142
TIME :13:02:00 13:32:00 30 (min) Purpose code: 3
LOG :2427.20 2428.60 1.64 Area code : 3
FDEPTH: 302 297 GearCond.code:
BDEPTH: 302 297 Validity code:
Towing dir: 350 Wire out: 950 m Speed: 31 kn*10

Sorted: 165 Kg Total catch: 582.82 CATCH/HOUR: 1165.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	720.00	1184	61.77	579
Merluccius capensis, male	198.00	416	16.99	580
Helicolenus dactylopterus	101.60	4320	8.72	
Dentex macrophthalmus	80.00	248	6.86	581
MYCTOPHIDAE	42.32		3.63	
Chlorophthalmus punctatus	9.84	544	0.84	
Trachipterus trachypterus	5.76	8	0.49	
Trachurus capensis	3.84	8	0.33	
Sepia sp.	2.56	8	0.22	
Galeus polli	1.60	24	0.14	
Coelorinchus fasciatus	0.72	16	0.06	
Total	1166.24		100.05	

PROJECT STATION:1735

DATE:19/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1908
start stop duration Long E 1130
TIME :15:52:00 16:22:00 30 (min) Purpose code: 3
LOG :2445.80 2447.20 1.50 Area code : 3
FDEPTH: 328 327 GearCond.code:
BDEPTH: 328 327 Validity code:
Towing dir: 360 Wire out:1000 m Speed: 30 kn*10

Sorted: 37 Kg Total catch: 280.22 CATCH/HOUR: 560.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	303.60	260	54.17	582
Merluccius capensis, male	116.00	108	20.70	583
Helicolenus dactylopterus	75.20	1200	13.42	
Sepia sp.	31.40	112	5.60	
MYCTOPHIDAE	13.28		2.37	
Chlorophthalmus punctatus	10.20	728	1.82	
Lophius upsicephalus	4.76	48	0.85	
Trachipterus trachypterus	2.40	4	0.43	
Centrolophus niger	1.80	4	0.32	
Coelorinchus fasciatus	1.24	48	0.22	
Galeus polli	0.56	8	0.10	
Total	560.44		100.00	

PROJECT STATION:1736

DATE:19/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1910
start stop duration Long E 1128
TIME :17:47:00 18:18:00 31 (min) Purpose code: 3
LOG :2454.70 2456.20 1.50 Area code : 3
FDEPTH: 402 416 GearCond.code:
BDEPTH: 402 416 Validity code:
Towing dir: 350 Wire out:1150 m Speed: 32 kn*10

Sorted: 155 Kg Total catch: 379.44 CATCH/HOUR: 734.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	280.14	192	38.15	587
Helicolenus dactylopterus	201.72	2162	27.47	
Merluccius capensis, male	85.63	62	11.66	586
Todarodes sagittatus	39.91	225	5.43	
Hoplostethus cadenati	30.23	1608	4.12	
Shrimps, small, non comm.	25.43	19992	3.46	
Aristeus varidens	17.98	1672	2.45	
Merluccius paradoxus, female	16.76	37	2.28	585
Nezumia sp.	13.30	416	1.81	
Chlorophthalmus punctatus	5.85	182	0.80	
Etmopterus pusillus	4.90	12	0.67	
Epigonus pandionis	4.68	170	0.64	
Galeus polli	2.98	33	0.41	
Merluccius paradoxus, male	2.38	4	0.32	
Deepwater fish mixture	1.80	298	0.25	
Lophius upsicephalus	0.72	2	0.10	
Total	734.41		100.02	

PROJECT STATION:1737

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1828
start stop duration Long E 1125
TIME :07:16:00 07:48:00 32 (min) Purpose code: 3
LOG :2565.60 2567.30 1.52 Area code : 3
FDEPTH: 445 437 GearCond.code:
BDEPTH: 445 437 Validity code:
Towing dir: 10 Wire out:1200 m Speed: 28 kn*10

Sorted: 149 Kg Total catch: 421.97 CATCH/HOUR: 791.19

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	322.31	206	40.74	588
Helicolenus dactylopterus	105.19	394	13.30	
Merluccius capensis, male	92.06	71	11.64	589
Todarodes sagittatus	59.63	225	7.54	
Hoplostethus cadenati	46.13	1159	5.83	
Merluccius paradoxus, female	35.10	56	4.44	590
Coelorinchus fasciatus	23.40	180	2.96	
Epigonus pandionis	20.14	866	2.55	
Chlorophthalmus punctatus	20.14	675	2.55	
Nezumia sp.	19.91	1676	2.52	
Lophius upsicephalus	10.41	6	1.32	
Shrimps, small, non comm.	6.98	2903	0.88	
Centrophorus squamosus	5.40	4	0.68	
Malacocephalus occidentalis	5.06	56	0.64	
Galeus polli	4.39	34	0.55	
Aristeus varidens	4.16	945	0.53	
Trachurus capensis	4.05	34	0.51	
Deepwater fish mixture	3.15	529	0.40	
Total	787.61		99.58	

PROJECT STATION:1738

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1825
start stop duration Long E 1131
TIME :09:23:00 09:54:00 31 (min) Purpose code: 3
LOG :2575.20 2576.90 1.62 Area code : 3
FDEPTH: 247 250 GearCond.code:
BDEPTH: 247 250 Validity code:
Towing dir: 5 Wire out: 850 m Speed: 31 kn*10

Sorted: 131 Kg Total catch: 502.25 CATCH/HOUR: 972.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	408.39	470	42.01	591
Helicolenus dactylopterus	270.19	4877	27.79	
Chlorophthalmus punctatus	75.56	2710	7.77	
Merluccius capensis, male	72.58	93	7.47	592
Dentex macrophthalmus	59.15	201	6.08	
Pterothrissus belloci	34.84	170	3.58	
Synagrops microlepis	13.63	1022	1.40	
Squalus megalops	10.84	15	1.12	
Trigla lyra	9.60	31	0.99	
Hoplostethus cadenati	6.35	1130	0.65	
Trachurus capensis	5.26	15	0.54	
Coelorinchus fasciatus	1.70	15	0.17	
Merluccius paradoxus, male	1.68	6	0.17	
Galeus polli	1.24	15	0.13	
Nezumia sp.	0.93	46	0.10	
Sufflogobius bibarbatus	0.15	15	0.02	
Total	972.09		99.99	

PROJECT STATION:1739

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1822
start stop duration Long E 1138
TIME :11:29:00 12:00:00 31 (min) Purpose code: 3
LOG :2586.60 2588.10 1.63 Area code : 3
FDEPTH: 157 158 GearCond.code:
BDEPTH: 157 158 Validity code:
Towing dir: 345 Wire out: 650 m Speed: 32 kn*10

Sorted: 40 Kg Total catch: 1060.28 CATCH/HOUR: 2052.15

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1031.61	7548	50.27	594
Merluccius capensis, male	553.55	3674	26.97	593
Trachurus capensis	432.77	3120	21.09	595
Dentex macrophthalmus	34.22	252	1.67	596
Total	2052.15		100.00	

PROJECT STATION:1740

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1814
start stop duration Long E 1136
TIME :14:32:00 15:02:00 30 (min) Purpose code: 3
LOG :2609.30 2610.60 1.60 Area code : 3
FDEPTH: 170 172 GearCond.code:
BDEPTH: 170 172 Validity code:
Towing dir: 360 Wire out: 700 m Speed: 31 kn*10

Sorted: 153 Kg Total catch: 914.20 CATCH/HOUR: 1828.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	949.60	6724	51.94	599
Merluccius capensis, female	306.20	2320	16.75	598
Merluccius capensis, male	266.80	1694	14.59	597
Helicolenus dactylopterus	138.60	2388	7.58	
Chlorophthalmus punctatus	98.60		5.39	
Sepia sp.	30.40	1740	1.66	
Trigla lyra	30.40	92	1.66	
MYCTOPHIDAE	7.80	24	0.43	
Total	1828.40		100.00	

PROJECT STATION:1741

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1802
start stop duration Long E 1136
TIME :16:11:00 16:41:00 30 (min) Purpose code: 3
LOG :2620.10 2621.60 1.73 Area code : 3
FDEPTH: 157 171 GearCond.code:
BDEPTH: 157 171 Validity code:
Towing dir: 355 Wire out: 650 m Speed: 33 kn*10

Sorted: 147 Kg Total catch: 468.54 CATCH/HOUR: 937.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	229.00	1480	24.44	602
Trigla lyra	180.20	426	19.23	
Merluccius capensis, female	149.00	1066	15.90	601
Dentex macrophthalmus	138.00	960	14.73	603
Helicolenus dactylopterus	87.20	1866	9.31	
Merluccius capensis, male	81.80	628	8.73	600
MYCTOPHIDAE	49.80		5.31	
Merluccius capensis, juveniles	12.48	330	1.33	604
Sepia sp.	9.60	86	1.02	
Total	937.08		100.00	

PROJECT STATION:1742

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1801
start stop duration Long E 1128
TIME :17:48:00 18:17:00 29 (min) Purpose code: 3
LOG :2630.00 2631.30 1.53 Area code : 3
FDEPTH: 248 248 GearCond.code:
BDEPTH: 248 248 Validity code:
Towing dir: 355 Wire out: 850 m Speed: 32 kn*10

Sorted: 159 Kg Total catch: 479.17 CATCH/HOUR: 991.39

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	513.93	499	51.84	605
Helicolenus dactylopterus	204.83	2967	20.66	
Merluccius capensis, male	72.14	108	7.28	606
Dentex macrophthalmus	68.28	236	6.89	
Pterothrissus belloci	57.48	273	5.80	
Raja sp.	19.24	12	1.94	
Trachurus capensis	17.75	74	1.79	
Todarodes sagittatus	7.45	12	0.75	
MYCTOPHIDAE	7.32	4581	0.74	
Solenocera africana	6.33	1788	0.64	
Synagrops microlepis	5.83	422	0.59	
Squalus megalops	5.09	25	0.51	
Chlorophthalmus punctatus	4.34	149	0.44	
Sepia orbignyana	1.37	12	0.14	
Total	991.38		100.01	

PROJECT STATION:1743

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1759
start stop duration Long E 1124
TIME :19:07:00 19:36:00 29 (min) Purpose code: 3
LOG :2636.20 2637.70 1.53 Area code : 3
FDEPTH: 316 345 GearCond.code:
BDEPTH: 316 345 Validity code:
Towing dir: 350 Wire out: 850 m Speed: 31 kn*10

Sorted: 29 Kg Total catch: 240.70 CATCH/HOUR: 498.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Hoplostethus cadenati	250.76	14661	50.35	
Merluccius capensis, female	97.03	91	19.48	608
Helicolenus dactylopterus	58.34	869	11.71	
Merluccius capensis, male	39.21	43	7.87	607
Pterothrissus belloci	17.63	74	3.54	
Nezumia sp.	16.14	1279	3.24	
Squalus megalops	6.21	12	1.25	
Sepia orbignyana	3.85	112	0.77	
Trachurus capensis	3.10	12	0.62	
Merluccius polli, female	3.00	4	0.60	
Shrimps, small, non comm.	0.99	658	0.20	
Galeus polli	0.74	12	0.15	
Chlorophthalmus punctatus	0.50	25	0.10	
MYCTOPHIDAE	0.25	323	0.05	
Solenocera africana	0.25	87	0.05	
Lophius upsicephalus	0.17	2	0.03	
Total	498.17		100.01	

PROJECT STATION:1744

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1758
start stop duration Long E 1120
TIME :20:34:00 21:04:00 30 (min) Purpose code: 3
LOG :2642.50 2644.00 1.56 Area code : 3
FDEPTH: 600 624 GearCond.code:
BDEPTH: 600 624 Validity code:
Towing dir: 350 Wire out:1550 m Speed: 31 kn*10

Sorted: 147 Kg Total catch: 263.60 CATCH/HOUR: 527.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius paradoxus, female	291.06	316	55.21	610
Merluccius polli, female	56.70	68	10.75	609
Nezumia sp.	55.20	1968	10.47	
Coelorinchus fasciatus	46.64	176	8.85	
Centrophorus squamosus	40.56	16	7.69	
Hoplostethus cadenati	12.08	288	2.29	
Deepwater fish mixture	10.64	1120	2.02	
Todarodes sagittatus	8.96	24	1.70	
Merluccius paradoxus, male	1.68	2	0.32	
Chlorophthalmus punctatus	1.60	48	0.30	
Shrimps, small, non comm.	1.12	136	0.21	
Bathyuroconger vicinus	0.40	16	0.08	
PENAEIDAE	0.32	16	0.06	
MORIDAE	0.16	8	0.03	
Aristeus varidens	0.08	16	0.02	
Total	527.20		100.00	

PROJECT STATION:1745

DATE:20/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1756
start stop duration Long E 1119
TIME :22:01:00 22:31:00 30 (min) Purpose code: 3
LOG :2647.20 2648.90 1.30 Area code : 3
FDEPTH: 697 741 GearCond.code:
BDEPTH: 697 741 Validity code:
Towing dir: 350 Wire out:1700 m Speed: 25 kn*10

Sorted: 23 Kg Total catch: 75.14 CATCH/HOUR: 150.28

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Nezumia sp.	45.48	972	30.26	
Deepwater fish mixture	34.86	1914	23.20	
Deania quadrispinosum	21.84	12	14.53	
Todarodes sagittatus	14.10	36	9.38	
Raja sp.	12.00	36	7.99	
Merluccius polli, female	8.50	10	5.66	
Hoplostethus cadenati	3.84	108	2.56	
Merluccius paradoxus, female	3.72	4	2.48	
Phrynichthys wedli	2.04	6	1.36	
Shrimps, small, non comm.	1.26	552	0.84	
Small squids	1.02	18	0.68	
Aristeus varidens	0.84	90	0.56	
PENAEIDAE	0.48	30	0.32	
Chlorophthalmus punctatus	0.18	6	0.12	
Nemichthys scolopacea	0.12	12	0.08	
Total	150.28		100.02	

PROJECT STATION:1746

DATE:21/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1740
start stop duration Long E 1121
TIME :11:53:00 12:23:00 30 (min) Purpose code: 3
LOG :2748.00 2749.60 1.45 Area code : 3
FDEPTH: 448 433 GearCond.code:
BDEPTH: 448 433 Validity code: 9
Towing dir: 360 Wire out:1250 m Speed: 29 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Total				

PROJECT STATION:1747

DATE:21/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1741
start stop duration Long E 1123
TIME :14:17:00 14:47:00 30 (min) Purpose code: 3
LOG :2457.40 2759.00 1.36 Area code : 3
FDEPTH: 305 288 GearCond.code:
BDEPTH: 305 288 Validity code:
Towing dir: 35 Wire out: 950 m Speed: 27 kn*10

Sorted: 181 Kg Total catch: 512.10 CATCH/HOUR: 1024.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	656.80	520	64.13	612
Helicolenus dactylopterus	137.00	1730	13.38	
Merluccius capensis, male	112.00	112	10.94	611
Chlorophthalmus punctatus	62.20	2120	6.07	
Lophius upsicephalus	28.20	20	2.75	
Galeus polli	12.40	110	1.21	
Squalus megalops	7.20	30	0.70	
Laemonema laureysi	6.60	120	0.64	
Sepia sp.	1.80	20	0.18	
Total	1024.20		100.00	

PROJECT STATION:1748

DATE:21/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1741
start stop duration Long E 1132
TIME :16:29:00 16:59:00 30 (min) Purpose code: 3
LOG :2769.40 2771.40 1.50 Area code : 3
FDEPTH: 162 162 GearCond.code:
BDEPTH: 162 162 Validity code:
Towing dir: 355 Wire out: 650 m Speed: 30 kn*10

Sorted: 31 Kg Total catch: 482.67 CATCH/HOUR: 965.34

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	446.40	1862	46.24	614
Trachurus capensis	243.00	1412	25.17	615
Merluccius capensis, male	173.60	966	17.98	613
Dentex macrophthalmus	86.80	482	8.99	616
Merluccius capensis, juveniles	9.40	284	0.97	617
Trigla lyra	3.46	36	0.36	
Zeus capensis	2.68	28	0.28	
Total	965.34		99.99	

PROJECT STATION:1749

DATE:21/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1729
start stop duration Long E 1129
TIME :19:24:00 19:44:00 20 (min) Purpose code: 3
LOG :2790.30 2791.30 1.00 Area code : 3
FDEPTH: 165 164 GearCond.code:
BDEPTH: 165 164 Validity code:
Towing dir: 350 Wire out: 650 m Speed: 30 kn*10

Sorted: 63 Kg Total catch: 1134.36 CATCH/HOUR: 3403.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1566.00	3888	46.02	618
Merluccius capensis, male	491.40	1350	14.44	619
Dentex macrophthalmus	480.60	3078	14.12	
Trigla lyra	345.60	2592	10.16	
Pterothrissus belloci	243.00	1728	7.14	
Trachurus capensis	92.34	594	2.71	
Helicolenus dactylopterus	51.30	918	1.51	
Raja miraletus	44.82	54	1.32	
Chlorophthalmus punctatus	39.96	3402	1.17	
Zenopsis conchifer	17.82	108	0.52	
Zeus faber	11.34	54	0.33	
Squalus megalops	11.34	54	0.33	
Merluccius capensis, juveniles	7.56	432	0.22	
Small squids	0.00	108		
Shrimps, small, non comm.	0.00	540		
Total	3403.08		99.99	

PROJECT STATION:1750

DATE:21/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1721
start stop duration Long E 1128
TIME :20:47:00 21:17:00 30 (min) Purpose code: 3
LOG :2798.20 2799.80 1.54 Area code : 3
FDEPTH: 168 169 GearCond.code:
BDEPTH: 168 169 Validity code:
Towing dir: 350 Wire out: 650 m Speed: 30 kn*10

Sorted: 97 Kg Total catch: 1232.61 CATCH/HOUR: 2465.22

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Dentex macrophthalmus	611.46	3646	24.80	623
Pterothrissus belloci	469.68	2734	19.05	
Chlorophthalmus punctatus	426.64	23370	17.31	
Merluccius capensis, female	275.98	658	11.19	620
Trachurus capensis	171.66	1164	6.96	
Helicolenus dactylopterus	134.94	2126	5.47	
Trigla lyra	130.38	936	5.29	
Merluccius capensis, male	120.26	278	4.88	621
Squalus megalops	57.22	278	2.32	
Merluccius capensis, juveniles	22.28	1216	0.90	622
Raja miraletus	17.20	26	0.70	
Lepidopus caudatus	12.90	76	0.52	
Sepia orbignyana	6.06	126	0.25	
Synagrops microlepis	5.82	506	0.24	
Perulibatrachus rossignoli	1.76	50	0.07	
Shrimps, small, non comm.	0.74	354	0.03	
MYCTOPHIDAE	0.24	102	0.01	
Total	2465.22		99.99	

PROJECT STATION:1751

DATE:21/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1724
start stop duration Long E 1122
TIME :23:29:00 23:59:00 30 (min) Purpose code: 3
LOG :2809.20 2810.90 1.45 Area code : 3
FDEPTH: 310 305 GearCond.code:
BDEPTH: 310 305 Validity code:
Towing dir: 10 Wire out: 950 m Speed: 28 kn*10

Sorted: 8 Kg Total catch: 530.54 CATCH/HOUR: 1061.08

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	840.00	1380	79.16	625
Merluccius capensis, male	204.80	310	19.30	624
Helicolenus dactylopterus	8.72	252	0.82	
Chlorophthalmus punctatus	3.28	104	0.31	
Laemonema laureysi	1.64	36	0.15	
Trachurus capensis	1.44	8	0.14	
Trigla lyra	0.80	8	0.08	
Sepia sp.	0.40	4	0.04	
Total	1061.08		100.00	

PROJECT STATION:1752

DATE:22/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1748
start stop duration Long E 1124
TIME :23:12:00 23:43:00 31 (min) Purpose code: 3
LOG :2953.70 2955.20 1.62 Area code : 3
FDEPTH: 267 266 GearCond.code:
BDEPTH: 267 266 Validity code:
Towing dir: 360 Wire out: 900 m Speed: 31 kn*10

Sorted: 91 Kg Total catch: 1430.60 CATCH/HOUR: 2768.90

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	2322.58	1471	83.88	648
Merluccius capensis, male	270.97	174	9.79	647
Helicolenus dactylopterus	117.10	2232	4.23	
Chlorophthalmus punctatus	24.19	619	0.87	
Trachurus capensis	8.90	39	0.32	
Dentex macrophthalmus	8.71	29	0.31	
Lophius upsicephalus	8.42	10	0.30	
Sepia sp.	3.48	10	0.13	
Shrimps, small, non comm.	2.71	600	0.10	
Galeus polli	1.84	10	0.07	
Total	2768.90		100.00	

PROJECT STATION:1753

DATE:23/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1839
start stop duration Long E 1152
TIME :07:16:00 07:46:00 30 (min) Purpose code: 3
LOG :3014.80 3016.30 1.54 Area code : 3
FDEPTH: 156 146 GearCond.code:
BDEPTH: 156 146 Validity code:
Towing dir: 335 Wire out: 650 m Speed: 30 kn*10

Sorted: 90 Kg Total catch: 3000.32 CATCH/HOUR: 6000.64

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	5179.80	57952	86.32	649
Dentex macrophthalmus	819.72	5420	13.66	650
Small squids	0.66	66	0.01	
Todaropsis eblanae	0.66	66	0.01	
Total	6000.84		100.00	

PROJECT STATION:1754

DATE:23/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1841
start stop duration Long E 1144
TIME :08:59:00 09:29:00 30 (min) Purpose code: 3
LOG :3025.60 3027.20 1.49 Area code : 3
FDEPTH: 224 219 GearCond.code: 8
BDEPTH: 224 219 Validity code: 9
Towing dir: 330 Wire out: 800 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
N O C A T C H	0.00			
Total				

PROJECT STATION:1755

DATE:23/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1841
start stop duration Long E 1148
TIME :11:51:00 12:22:00 31 (min) Purpose code: 3
LOG :3034.00 3035.80 1.52 Area code : 3
FDEPTH: 194 195 GearCond.code:
BDEPTH: 194 195 Validity code:
Towing dir: 325 Wire out: 750 m Speed: 29 kn*10

Sorted: 1 Kg Total catch: 1131.28 CATCH/HOUR: 2189.57

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	836.13	5435	38.19	654
Dentex macrophthalmus	661.94	3867	30.23	653
Merluccius capensis, female	361.94	2265	16.53	652
Merluccius capensis, male	296.13	1846	13.52	651
Krill	33.45		1.53	
Total	2189.59		100.00	

PROJECT STATION:1756

DATE:23/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1847
start stop duration Long E 1128
TIME :14:57:00 15:27:00 30 (min) Purpose code: 3
LOG :3058.80 3060.50 1.37 Area code : 3
FDEPTH: 299 300 GearCond.code:
BDEPTH: 299 300 Validity code:
Towing dir: 350 Wire out: 950 m Speed: 27 kn*10

Sorted: 175 Kg Total catch: 361.05 CATCH/HOUR: 722.10

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	304.00	232	42.10	656
Helicolenus dactylopterus	228.00	7010	31.57	
Merluccius capensis, male	68.00	56	9.42	655
Chlorophthalmus punctatus	64.90	1990	8.99	
Synagrops microlepis	18.20	1670	2.52	
Shrimps, small, non comm.	12.80		1.77	
Hoplostethus cadenati	10.70	700	1.48	
Sepia sp.	10.10	60	1.40	
Trachurus capensis	5.40	20	0.75	
Total	722.10		100.00	

PROJECT STATION:1757

DATE:23/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1848

start stop duration Long E 1124

TIME :16:29:00 17:01:00 32 (min) Purpose code: 3

LOG :3066.70 3068.50 1.71 Area code : 3

FDEPTH: 403 399 GearCond.code:

BDEPTH: 403 399 Validity code:

Towing dir: 355 Wire out:1150 m Speed: 31 kn*10

Sorted: 336 Kg Total catch: 770.30 CATCH/HOUR: 1444.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	737.61	456	51.07	658
Helicolenus dactylopterus	343.22	3688	23.76	
Merluccius capensis, male	140.87	105	9.75	657
Todarodes sagittatus	62.87	276	4.35	
Hoplostethus cadenati	53.55	2441	3.71	
Lophius upsicephalus	51.84	13	3.59	
Deania calcea	12.73	13	0.88	
Centrolophus niger	11.68	131	0.81	
Chlorophthalmus punctatus	8.79	276	0.61	
Shrimps, small, non comm.	8.14	2441	0.56	
Deepwater fish mixture	3.68	249	0.25	
Nezumia sp.	2.49	184	0.17	
Epigonus pandionis	2.49	39	0.17	
Malacocephalus occidentalis	1.44	13	0.10	
Synagrops microlepis	1.31	53	0.09	
Galeus polli	1.31	13	0.09	
Aristeus varidens	0.28	47	0.02	
Total	1444.30		99.98	

PROJECT STATION:1758

DATE:23/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1847

start stop duration Long E 1122

TIME :18:03:00 18:33:00 30 (min) Purpose code: 3

LOG :3074.30 3075.80 1.51 Area code : 3

FDEPTH: 496 495 GearCond.code:

BDEPTH: 496 495 Validity code:

Towing dir: 5 Wire out:1300 m Speed: 30 kn*10

Sorted: 22 Kg Total catch: 277.20 CATCH/HOUR: 554.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	198.50	120	35.80	660
Merluccius paradoxus, female	122.70	192	22.13	661
Coelorinchus fasciatus	100.00	512	18.04	
Merluccius capensis, male	41.60	30	7.50	659
Hoplostethus cadenati	29.68	816	5.35	
Deania calcea	20.48	8	3.69	
Merluccius polli, female	10.78	12	1.94	
Helicolenus dactylopterus	9.36	40	1.69	
Merluccius paradoxus, male	7.82	10	1.41	
Nezumia sp.	5.12	240	0.92	
Deepwater fish mixture	3.12	352	0.56	
Epigonus pandionis	1.60	40	0.29	
Chlorophthalmus punctatus	1.44	32	0.26	
Shrimps, small, non comm.	1.20		0.22	
Aristeus varidens	0.76	52	0.14	
Raja sp.	0.24	8	0.04	
Total	554.40		99.98	

PROJECT STATION:1759

DATE:23/ 2/93 GEAR TYPE: BT No:1 POSITION:Lat S 1848

start stop duration Long E 1119

TIME :20:28:00 20:59:00 31 (min) Purpose code: 3

LOG :3082.20 3083.80 1.41 Area code : 3

FDEPTH: 600 600 GearCond.code:

BDEPTH: 600 600 Validity code:

Towing dir: 5 Wire out:1550 m Speed: 27 kn*10

Sorted: 25 Kg Total catch: 195.52 CATCH/HOUR: 378.43

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Hoplostethus cadenati	97.78	1405	25.84	
Merluccius paradoxus, female	76.65	75	20.25	662
Nezumia sp.	59.34	1800	15.68	
Coelorinchus fasciatus	45.29	174	11.97	
Todarodes sagittatus	29.85	70	7.89	
Deepwater fish mixture	28.80	1649	7.61	
Deania calcea	23.34	35	6.17	
Merluccius capensis, female	8.42	4	2.22	
Galeus polli	5.57	58	1.47	
Merluccius polli, female	1.76	2	0.47	
Raja sp.	1.16	12	0.31	
Shrimps, small, non comm.	0.46	337	0.12	
Total	378.42		100.00	

PART II

SURVEYS OF THE PELAGIC STOCKS

28 February - 19 March 1993

TABLE OF CONTENTS

PART II

CHAPTER 1 INTRODUCTION

1.1 OBJECTIVES OF THE CRUISE

To produce a biomass estimate for pilchard *Sardinops ocellata* and map the geographical distribution of anchovy *Engraulis capensis* and round herring *Entrumeus whiteheadi*.

1.2 PARTICIPATION

The scientific staff from Namibia on the "DR. FRIDTJOF NANSEN" were:
Janet Coetzee, Dawid Gaseb, Clemens Evenson, Rudi Cloete

From Angola the following scientists participated:
Nkosi Luyeye, Teodoro Guilherme Camarada

The scientific staff from the Institute of Marine Research were:
Reidar Toresen, Magnar Mjanger, Oddgeir Alvheim and Reidar Johannesen.

CHAPTER 2 METHODS

From the general knowledge of pelagic fish distribution and from reports of commercial fishing vessels, the survey area is in general limited to the area from Dolphin Head (26°00'S) to the Cunene River (17°15'S) and from the shore to the 120 m bathometric line. The southern limit is formed by the cold and oxygen deficient upwelling region centred around Lüderitz and the northern boundary in the area off Tombua (Angola) at 16°00'S at the front of the warm Angolan current. Since the pelagic fish distribution also extends into Angolan waters, permission was obtained from Angolan authorities to extend the present survey northward to the area west of Tombua. To allow comparison with previous "DR. FRIDTJOF NANSEN" surveys, the region was divided into three areas:

1 26°00' to 21°00' Dolphin Head to Ambrose Bay
2 21°00' to 17°15' Ambrose Bay to Cunene River
3 17°15' to 16°00' Cunene River to Tombua

The "DR FRIDTJOF NANSEN" left Walvis Bay at 10h30 on 28 February and surveyed the shallow coastal water southward to Dolphin Head and returned to Walvis Bay to exchange Norwegian officers and Namibian scientific staff on 6 March. She departed at 10h30 on 7 March. and surveyed the northern region including Angolan waters north to Tombua. Here, in addition to the acoustic survey of the pelagic stocks, 19 bottom trawl stations were worked to map and estimate demersal fish species in the area to complete the sampling of the previouns bottom trawl survey. The vessel arrived in Walvis Bay on 19 March. 3700 nautical miles were steamed and 58 trawl stations worked.

The course tracks with the fishing stations from Dolphin Head to Ambrose Bay, from Ambrose Bay to Cunene River and from Cunene River to Tombua are shown in Figures 1a-c. Additional southward coverages of the shallow coastal area Cunene River to Ambrose Bay and Ambrose Bay to Sandwich Harbour are shown in Figures 1d and 1e.

All catches were sampled for composition by weight and numbers of each species and the size distribution of commercially important species, using total length, was determined. The length frequencies of these species are given in Annex I. The complete records of fishing stations are shown in Annex II.

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

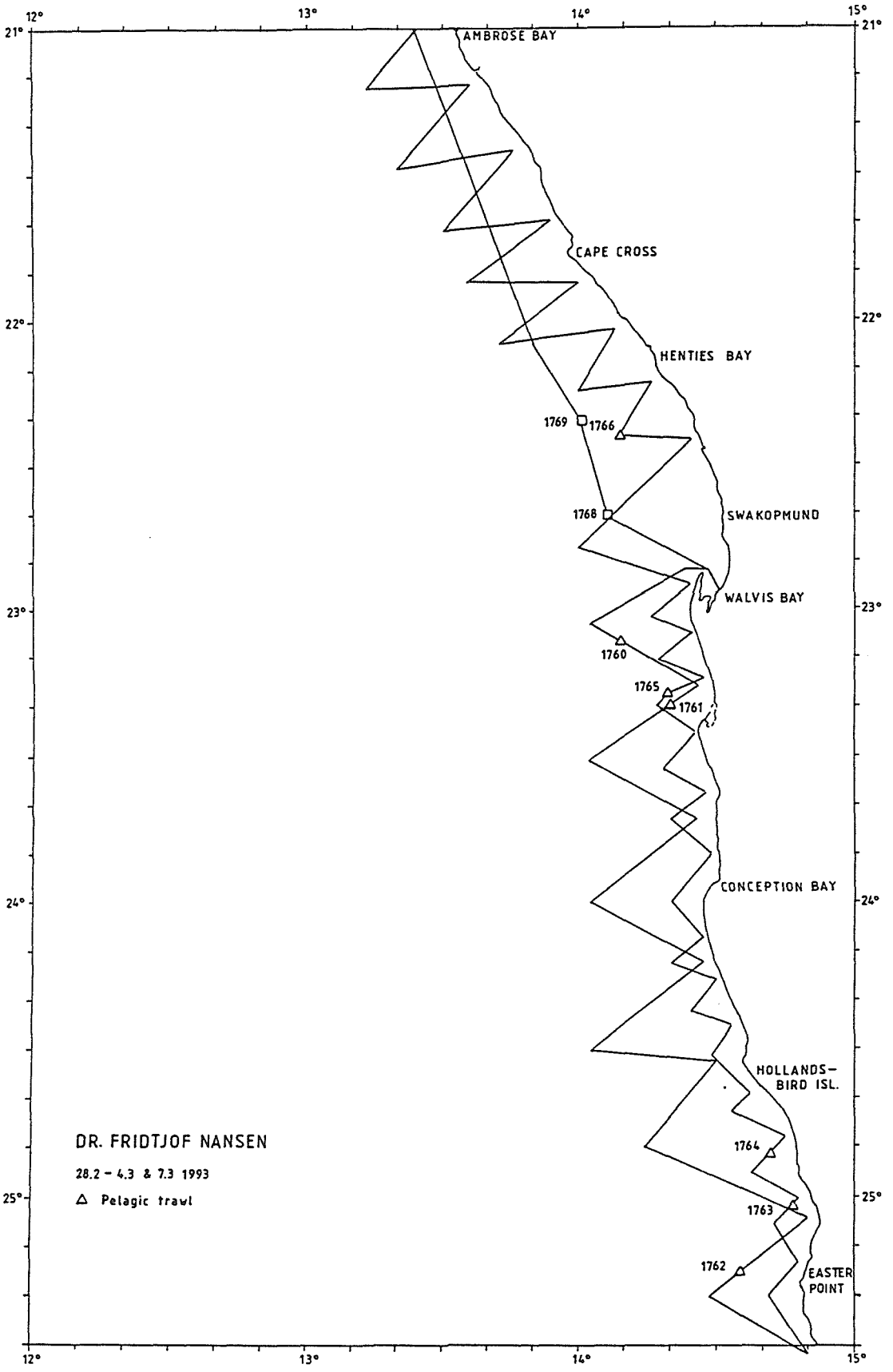


Figure 1a Course tracks and fishing stations, Dolphin Head to Ambrose Bay.

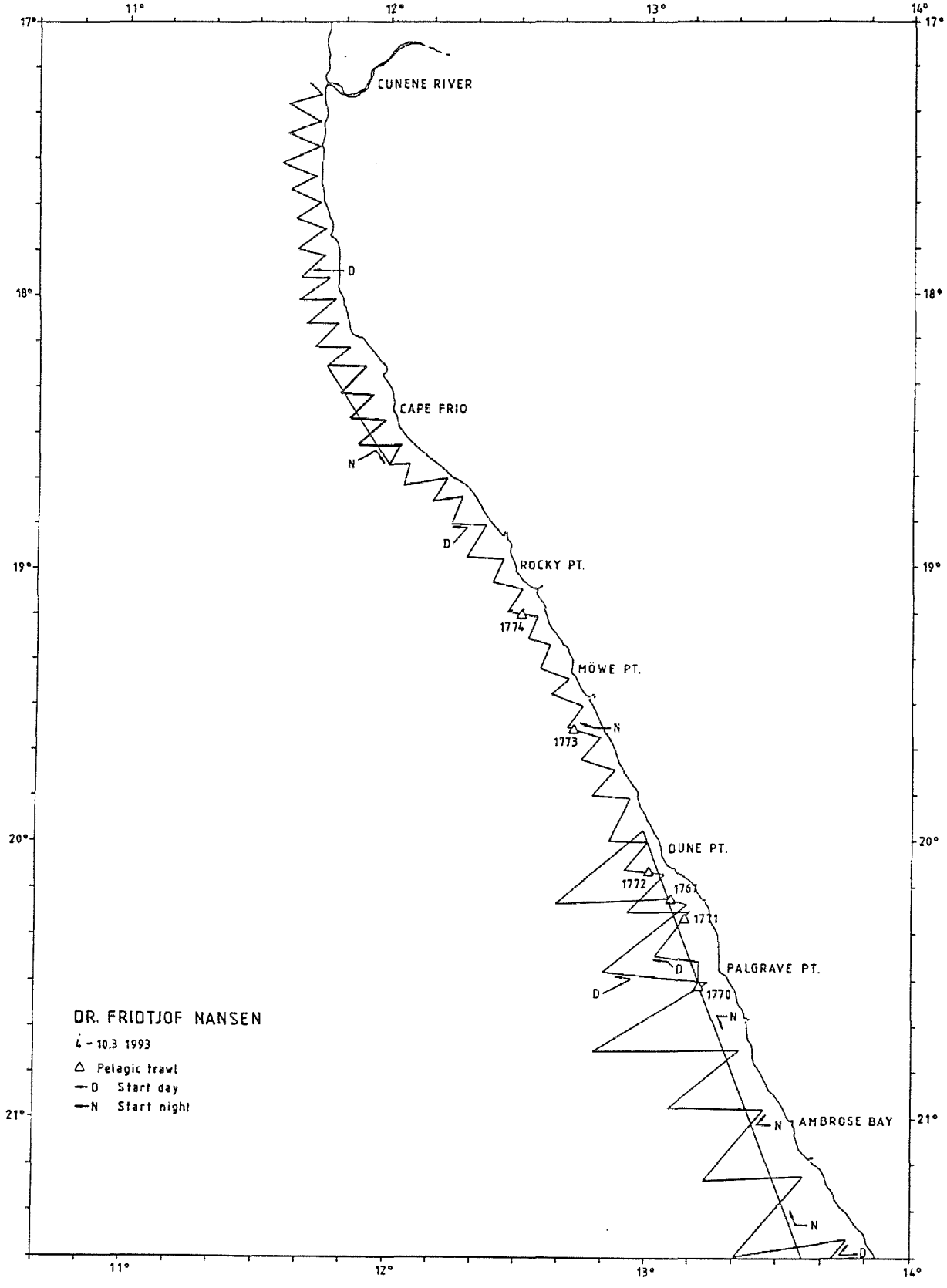


Figure 1b Course tracks and fishing stations, Ambrose Bay to Cunene River. Northward coverage.

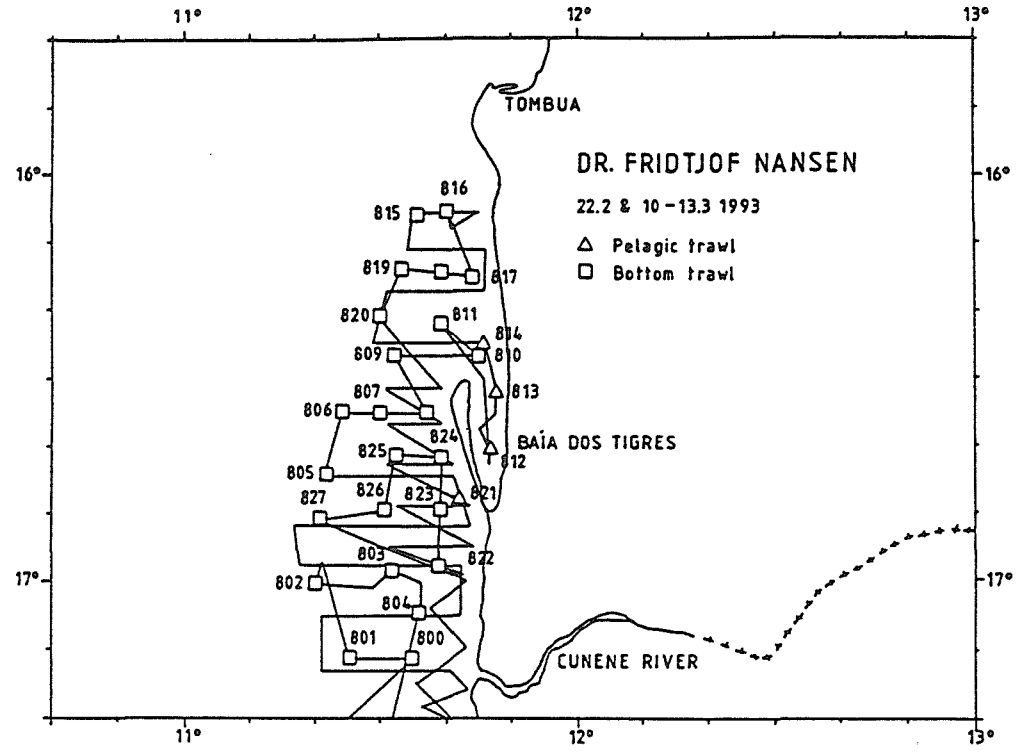


Figure 1c Course tracks and fishing stations, Cunene River to Tombua.

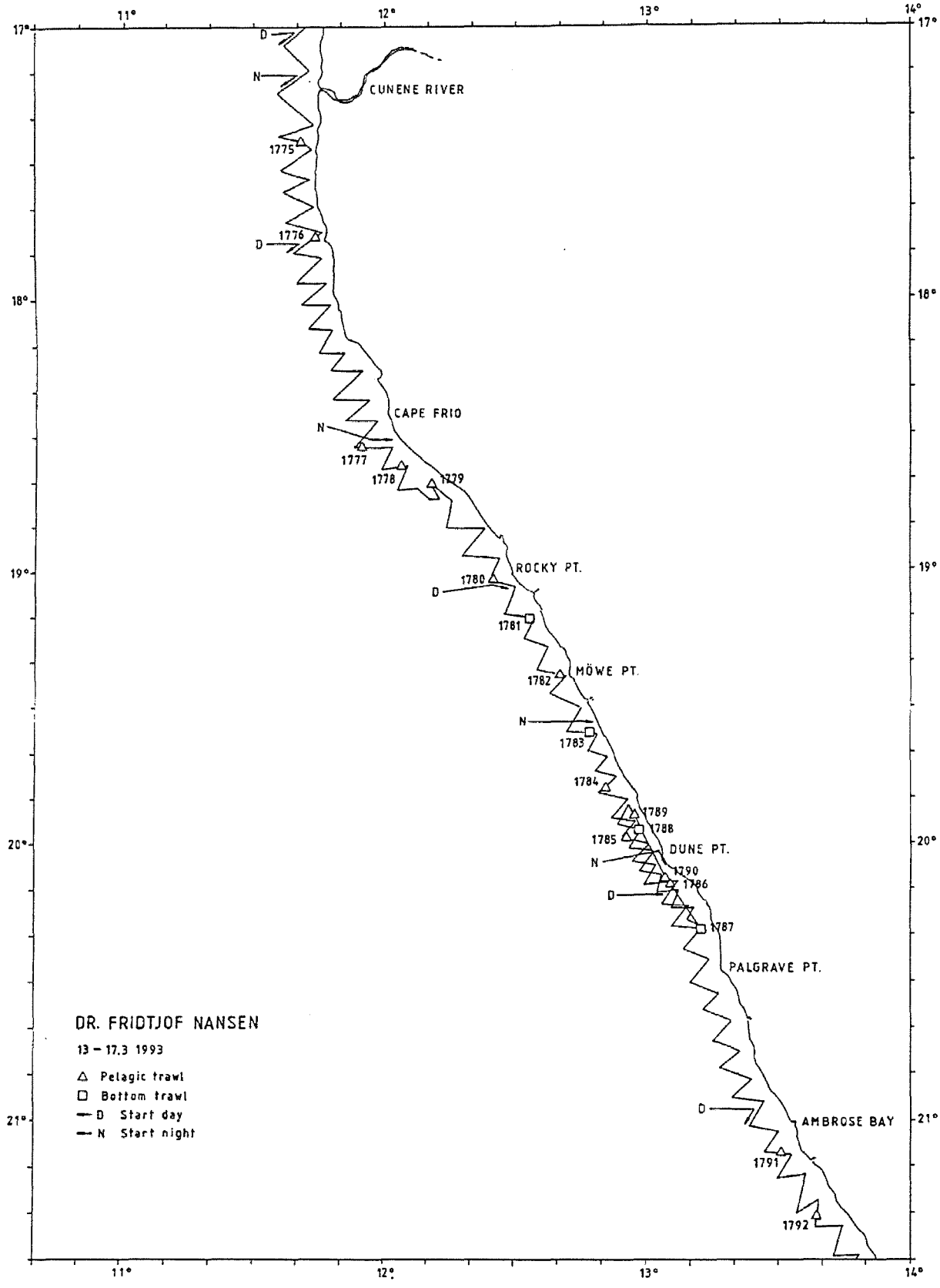


Figure 1d Course tracks and fishing stations, Ambrose Bay to Cunene River. Southward coverage.

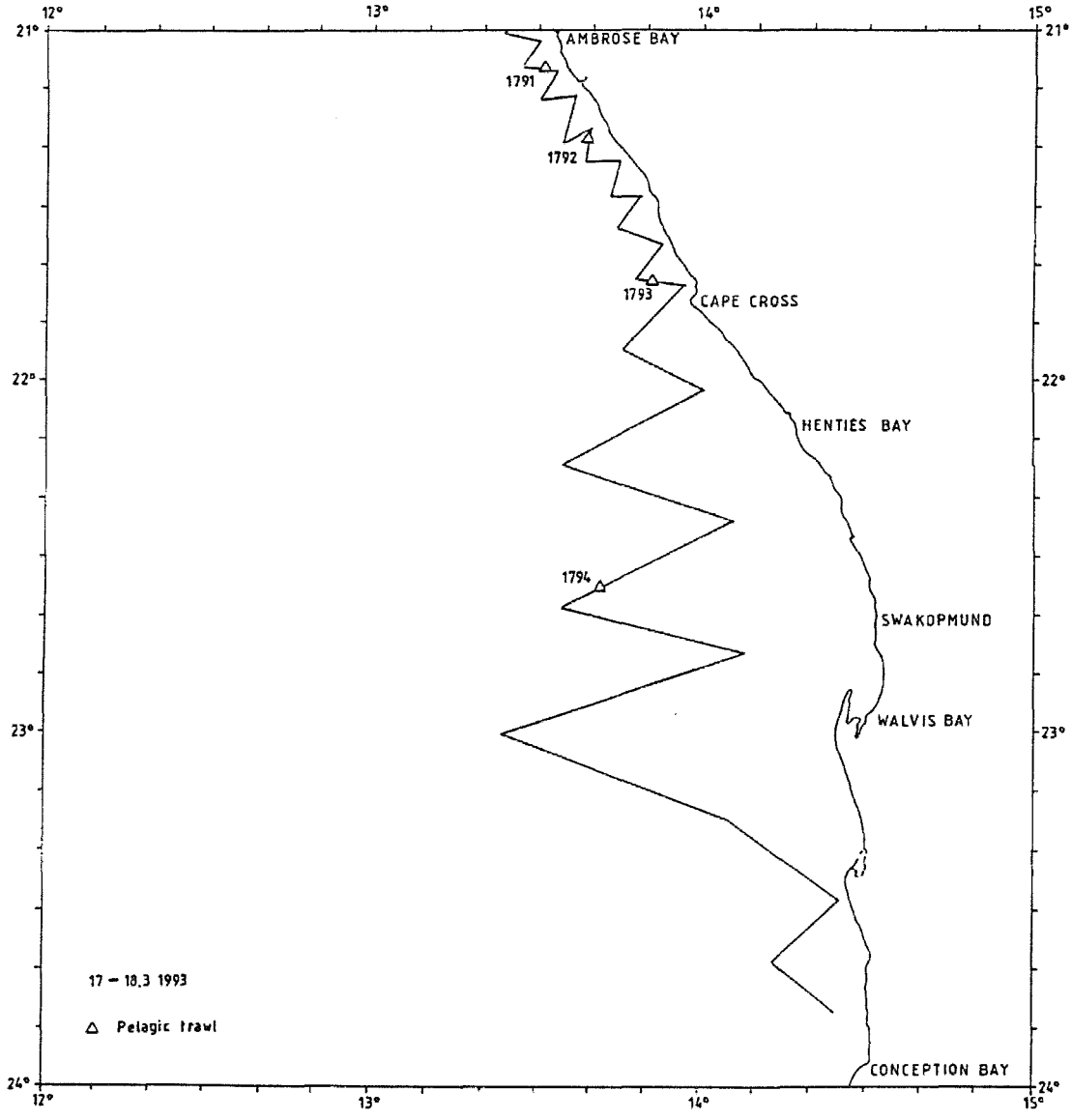


Figure 1e Course tracks and fishing stations, Sandwich Harbour to Ambrose Bay.

The following target strength (TS) function was applied to convert S_A-values to number of fish (pilchard, anchovy and round herring):

$$TS = 20 \log L - 72 \text{ dB} \qquad (1)$$

or on the form

$$C_F = 1.26 \cdot 10^6 \cdot L^{-2} \qquad (2)$$

where L is total length. The following formula was applied to calculate the number of fish in each length frequency group (cm) in an area:

$$N_i = A \cdot S_A \cdot \frac{p_i}{\sum_{i=1}^{n} \frac{p_i}{C_{Fi}}} \qquad (3)$$

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 (formulae 2) applying the length of fish in length group i

The number per length group were then summed and the total number of fish obtained. The biomass of fish was calculated applying the condition factor to get weight at length and multiplied by number of fish in each length group.

Surface temperature was measured continuously at 4 m depth by the thermograph.

The weather was favourable for an acoustic survey during the whole cruise.

CHAPTER 3 HYDROGRAPHY

The sea surface temperature inshore measured at 4 m isolines is shown in Figures 2a - c.

A comparison with the temperature in the same area measured during previous surveys at the same time of the year indicate significantly higher temperatures during this cruise. The surface temperature is 2 - 3°C higher in the whole region from Easter Point to Tombua (Angola). The extensive longshore upwelling seems to be far less profound this year than in the previous ones.

CHAPTER 4 DISTRIBUTION AND ABUNDANCE OF PELAGIC FISH

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

Pilchard *Sardinops ocellata*

Pelagic fish type 1: Clupeidae (round herring), round sardinella *Sardinella aurita*
Engraulidae (anchovy)

Pelagic fish type 2: Carangidae (horse mackerel).

Plankton

The allocation of pelagic fish type 1 to species were done applying relevant trawl catches.

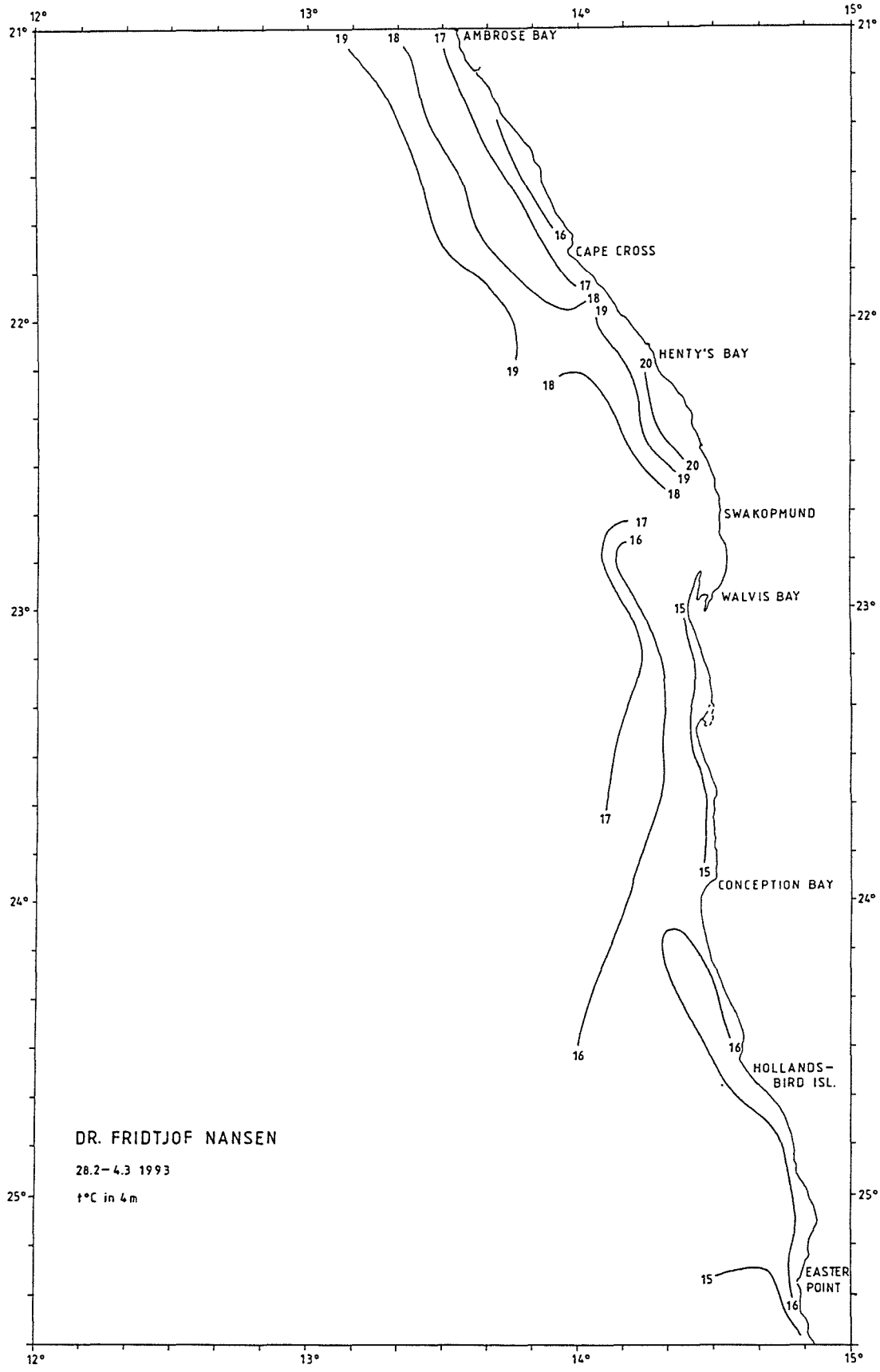


Figure 2a Distribution of sea temperature at 4 m of depth based on observations of the ships thermograph, Dolphin Head to Ambrose Bay.

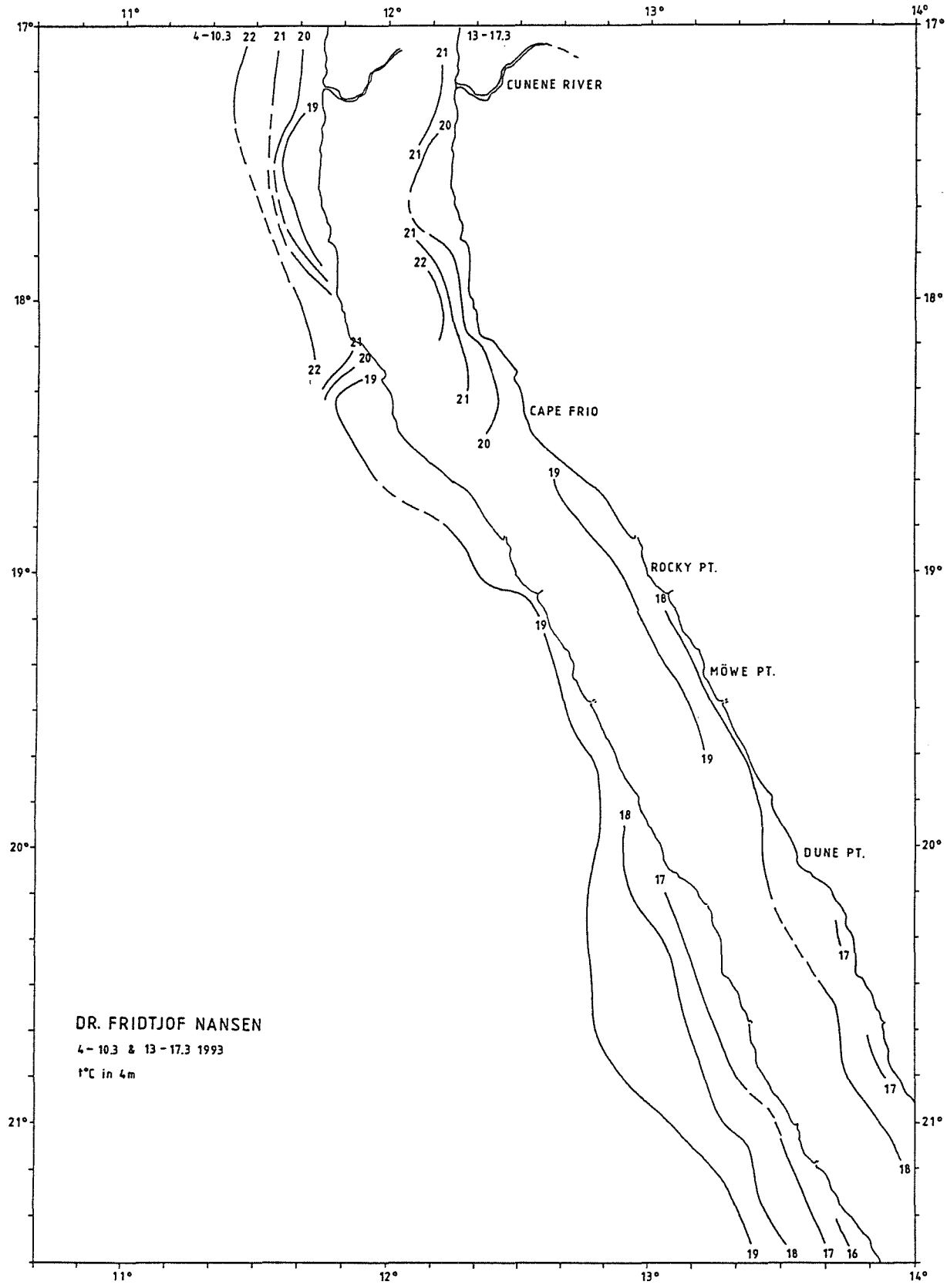


Figure 2b Distribution of sea temperature at 4 m of depth based on observations of the ships thermograph, Ambrose Bay to Cunene River.

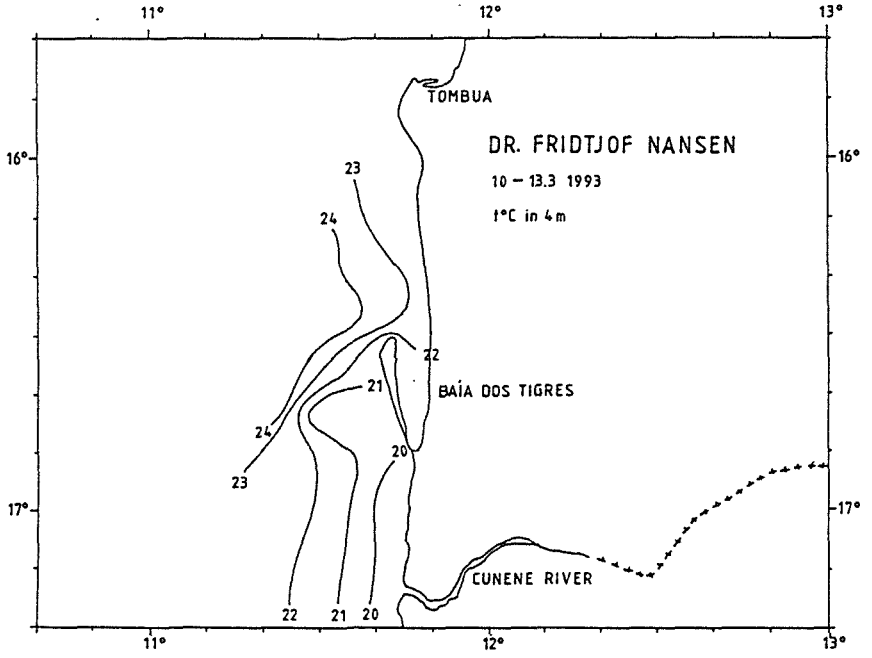


Figure 2c Distribution of sea temperature at 4 m of depth based on observations of the ships thermograph, Cunene River to Tombua.

4.1 DISTRIBUTION OF PELAGIC FISH

In summary, pilchard was only recorded in limited areas north of Walvis Bay. Anchovy and round herring were recorded in two areas south of Walvis Bay and two areas north of Walvis Bay. Horse mackerel were recorded in most of the surveyed area. Layers of recordings, consisting mainly of jellyfish, small pelagic gobies, lanternfish and other planktonic organisms were recorded in offshore waters.

Pilchard, anchovy and round herring were often recorded at the same locations making it difficult to separate the pilchard from the two other species on the basis of echo traces alone. In such cases the species composition of the nearest trawl catches were used. Sampling of fish was generally successful.

The distributions of pilchard and other clupeids (including engraulids) are shown in Figures 3a-e. An arbitrary scale was used in the distribution charts to illustrate different levels of density.

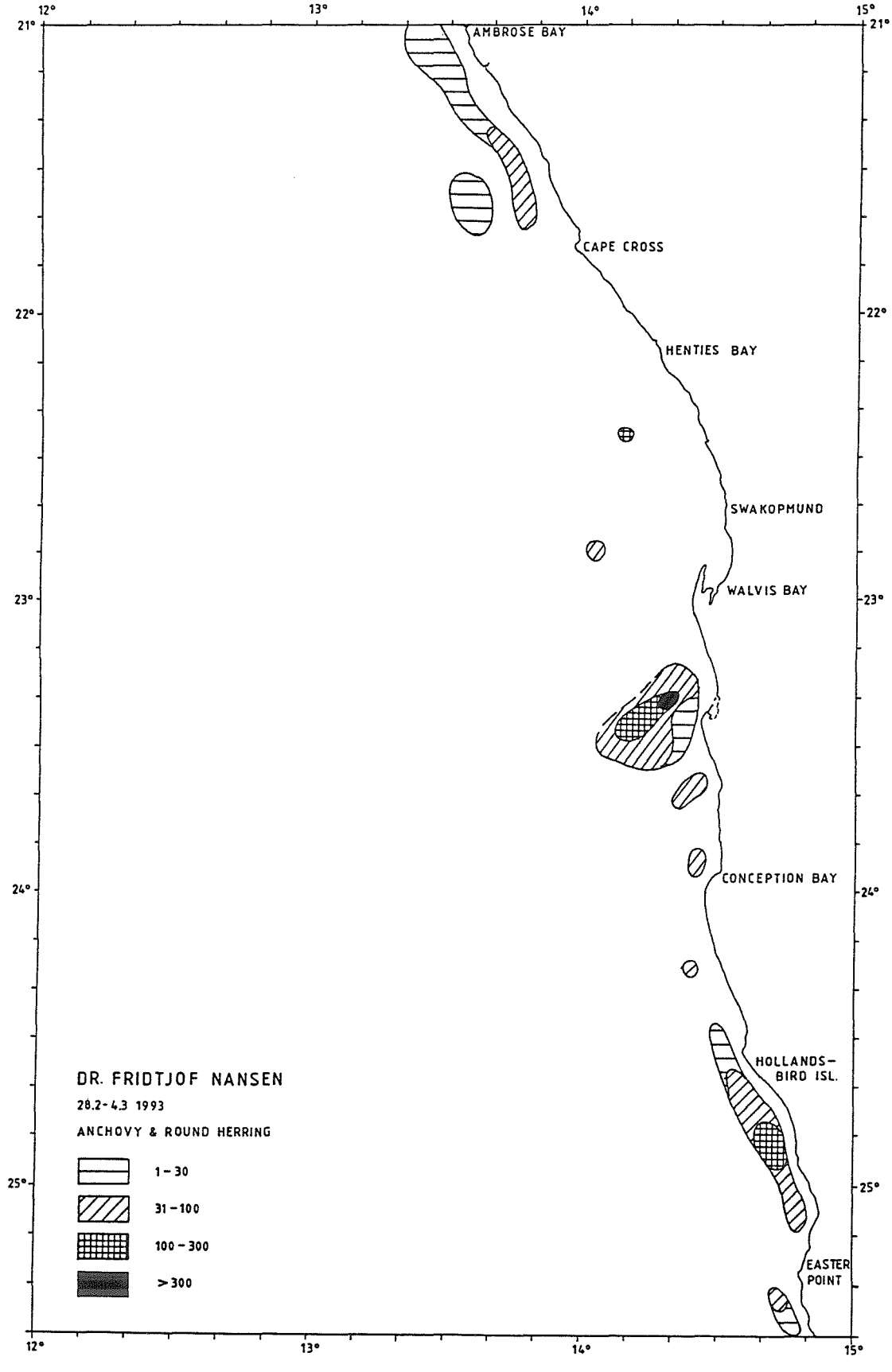


Figure 3a Distribution of anchovy and round herring, Dolphin Head to Ambrose Bay.

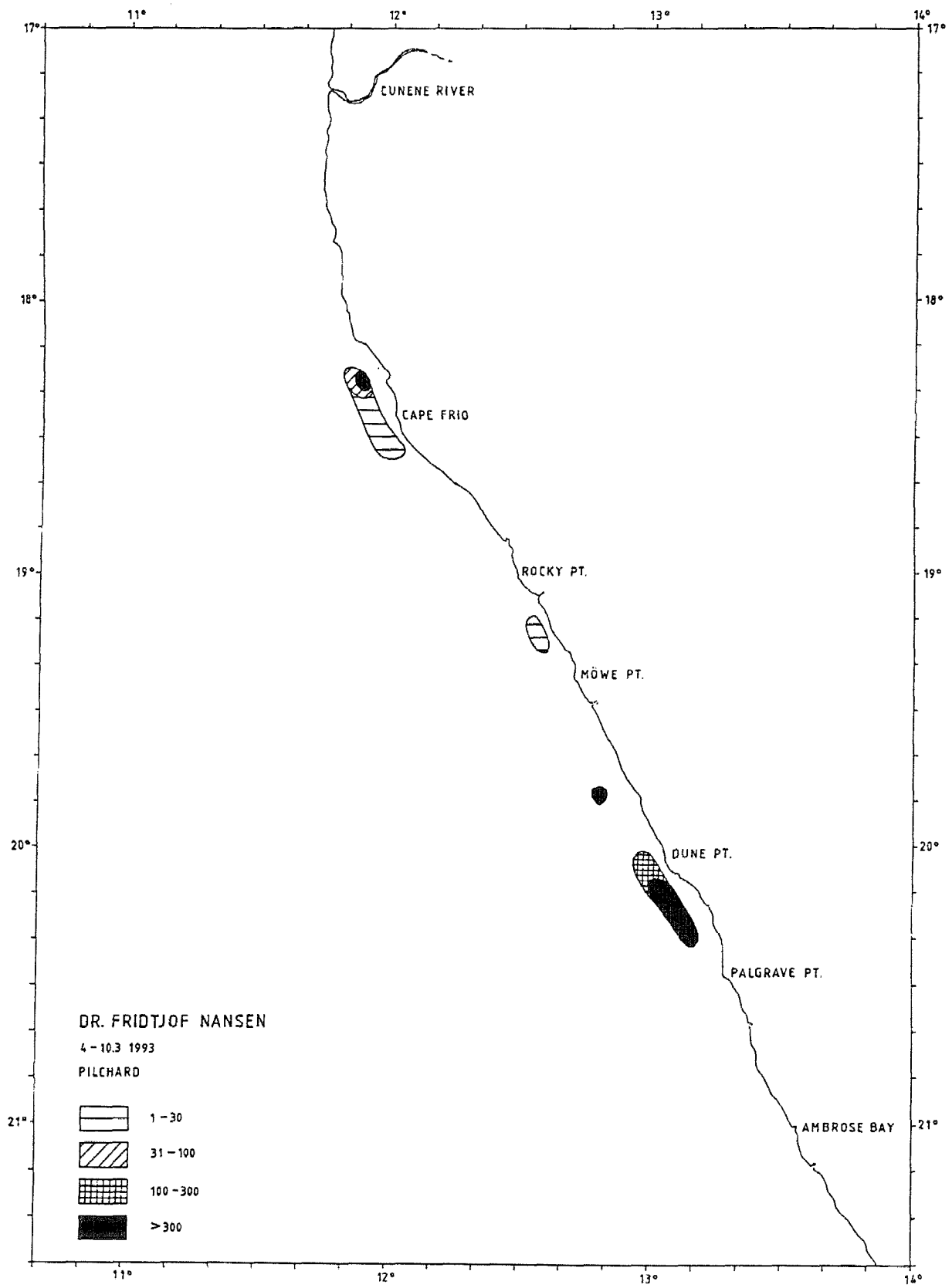


Figure 3b Distribution of pilchard, Ambrose Bay to Cunene River.

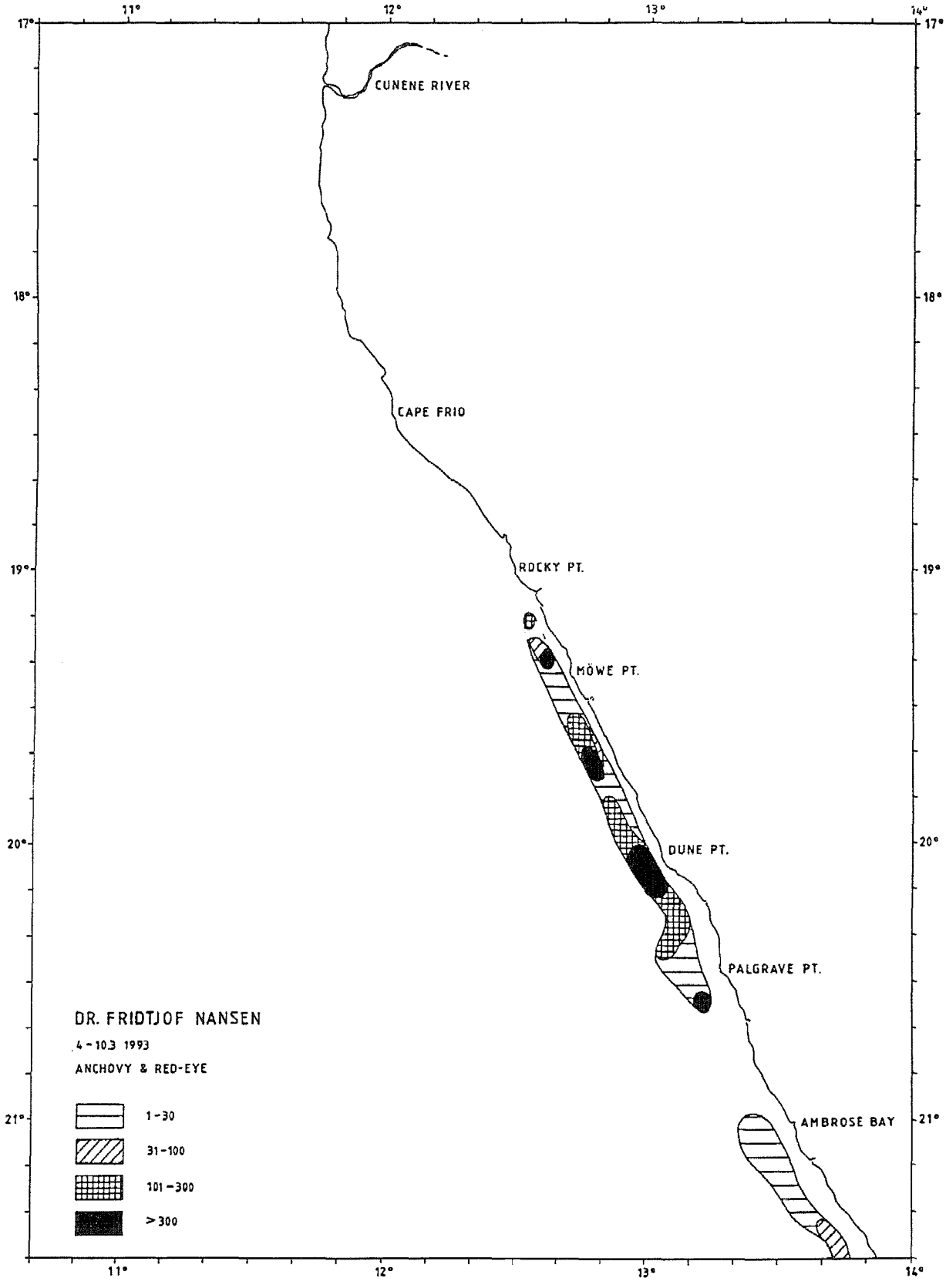


Figure 3c Distribution of anchovy and round herring, Ambrose Bay to Cunene River.

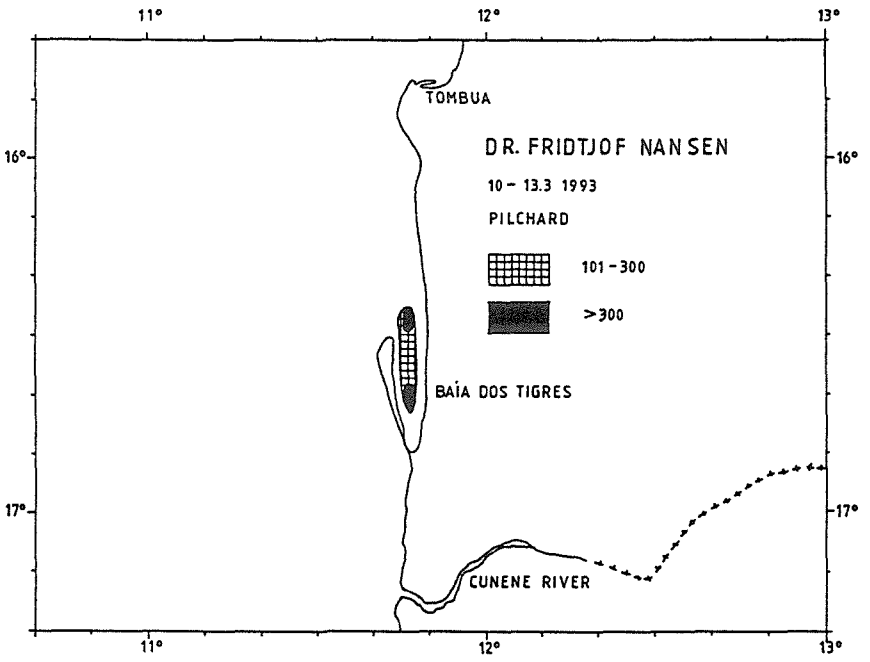


Figure 3d Distribution of pilchard, Cunene River to Tombua.

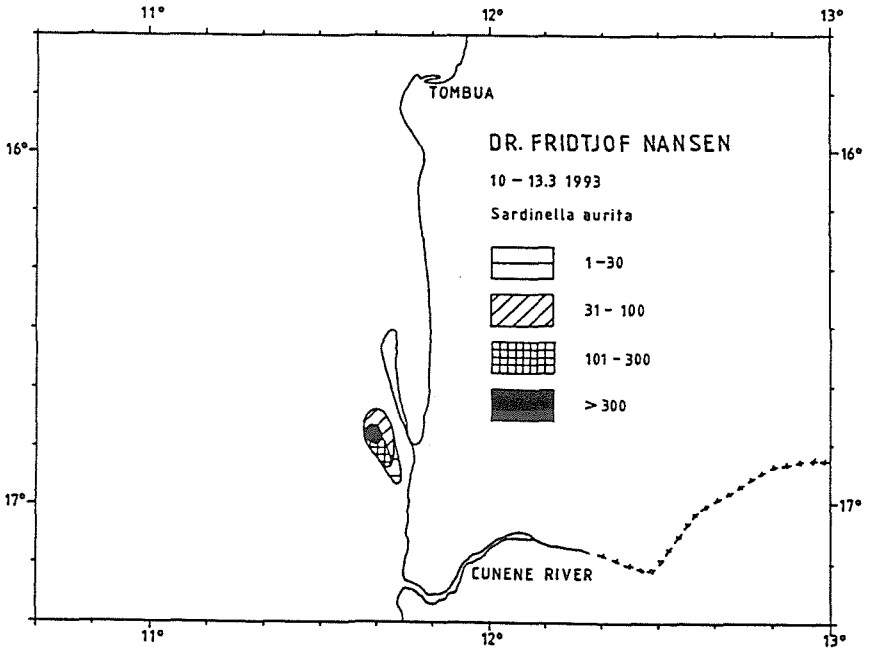


Figure 3e Distribution of round sardinella, Cunene River to Tombua.

Dolphin Head to Ambrose Bay

In this area, no pilchard was detected.

South of Walvis Bay, two main concentrations of pelagic fish type 1 was delineated, one off Hollandsbird Isl. and another off Sandwich Harbour. In addition a few smaller aggregations of pelagic fish type 1 was recorded (Figure 3a). The concentrations near Sandwich Harbour consisted mainly of anchovy with a modal length of 13 cm. However, round herring were mixed with anchovy in varying proportions. The modal length of the round herring was also 13 cm. North of Walvis Bay, anchovy and round herring were found mixed in the area between Cape Cross and Ambrose Bay. Also here these species dominated and were found in varying proportions. Few other pelagic fish of commercial value was found in this area, except for large snoek *Thyrsites atun* which were caught in a few of the hauls in this region.

Ambrose Bay to Cunene River

Three main concentrations of pilchard was recorded on the way north, one between Palgrave Pt. and Dune Pt., the second between Möwe Pt. and Rocky Pt., and the third off Cape Frio. The one at Dune Pt. was by far the most dense. Here huge shoals of pilchard concentrated close to shore fairly high up in the water column (around 20 - 30 m) in areas with bottom depth of 40 - 50m. The modal length of pilchard was 18 cm but a smaller cohort with a modal length of 11 cm was also caught. Except for the pilchard off Cape Frio, it was found very well mixed with anchovy and round herring in the other two areas and the recordings of these species were often very difficult to distinguish between.

Anchovy and round herring were found mixed in the area between Palgrave Pt. and Rocky Pt. Some shoals were very dense and often difficult to distinguish from shoals of pilchard. These species were concentrated in more or less the same depth as the pilchard and in the same distance from the shore. However, shoals of pilchard were often denser than shoals of the other two species, but this was not always the rule. Another way to distinguish shoals of pilchard from the other ones were to study their form. Pilchard shoals were often more restricted in area distribution while the other ones often formed wider aggregations. The modal length of anchovy in this area was 10 cm while the round herring had a modal length of 14 cm.

Horse mackerel was also recorded in this region, but it was not as difficult to separate recordings of this species from the recordings of the other pelagic fish. Much of the horse mackerel caught in these trawls were small with modal lengths of less than 10 cm.

On the way south, recordings of all pelagic fish were much lower. There is a possibility that it might have moved even closer to shore. The coverage southward was denser in the areas where fish were recorded on the way north.

Cunene River to Tombua

In this area pilchard was recorded in Baia dos Tigres and the recordings extended somewhat to the north of the bay (Figure 3d). During night the pilchard was recorded as a more or less dense layer mixed with horse mackerel. The pilchard had a modal length of 26 cm.

Outside the bay, to the southwest of Peninsula dos Tigres round sardinella (*Sardinella aurita*) was recorded. The modal length of this fish was 32 cm and it was mixed with horse mackerel.

No anchovy or round herring was recorded in this area.

4.2 ABUNDANCE OF PELAGIC FISH

The biomass estimates are based on the acoustic integration technique, similar to that used in previous assessments of the same stock. The target strength (TS), the factor to convert the integrator values (S_A) to fish density and the formulae by which the number by length group is calculated is shown in the section about the methods, formulae 1, 2 and 3.

The behaviour of the fish was favourable for acoustic abundance estimation, especially during daytime. At night the shoals of pilchard became less dense and were more difficult to separate from shoals of the other pelagic species.

The biomass estimates for pilchard, anchovy and round herring and round sardinella are shown in Table 1.

No attempt was made to estimate the abundance of horse mackerel.

Table 1 Species composition and biomass estimates (in tonnes) of pilchard and pelagic type-1 fish by area.

Area	Pilchard	Anchovy & round herring	Sardinella	Total
Baia dos Tigres-Cunene River	45 000		40 000	95 000
Cunene River-Cape Frio	10 000			10 000
Palgrave Point-Rocky Point	315 000	150 000		465 000
Cape Cross-Ambrose Bay		25 000		25 000
Conception Bay-Walvis Bay		100 000		100 000
Easter Point-Hollandsbird Island		60 000		60 000
Total	370 000	335 000	40 000	755 000
Total Namibia	325 000	335 000		660 000

Pilchard

The estimate of pilchard in the three areas is shown in Table 2. The total estimate in terms of biomass is 370 000 tonnes. About 85 % of this was estimated to occur at Dune Pt. while 12 % was estimated at Baia dos Tigres. Only 3 % of the total was estimated at Cape Frio. The largest part of the estimated number (95 %) was estimated in the length groups 15 - 24 cm. About 4 % were estimated in the length groups 25 - 29 cm while only 1 % was estimated to the length interval 10 - 14 cm.

The estimate is based on the northward coverage only. On the southward coverage much less pelagic fish were recorded both night and day. The estimate is also solely based on the coverage of the inshore areas shallower than about 100 m. Pilchard in a migratory stage could be outside the survey area, on migration to spawning areas south of Walvis Bay. Reports from fishermen support that pilchard has migrated southwards to spawn as the fishery for large pilchard in these areas increased significantly during the last week of the survey. On the last day of the survey a few transects were sailed in the area between Walvis Bay and Conception Bay. Here dense shoals of pilchard were observed. However, due to lack of time it was impossible to work out any estimate in this area. If the migration hypothesis is correct, this could the explain the very limited recordings on the southward coverage, and could also explain why our total estimate is relatively low.

Table 2 Combined estimate of pilchard. Number in millions, weight in thousand tonnes.

	Dune Pt.	Cape Frio	B. d. Tigres	Total
L (cm)	N	N	N	N
10	1			1
11	23			23
12	4			4
13	12			12
14	2	2		4
15	12	56		68
16	22	139		161
17	548	95		643
18	1538	15		1553
19	1290	2		1292
20	828			828
21	714			714
22	439		2	441
23	110		9	119
24			47	47
25			65	65
26			84	84
27			58	58
28			39	39
29			9	9
30				
Sum N:	5533	309	313	6155
W	315	10	45	370

The estimates are affected by sources of error. The allocation of the integrator values (S_A) to species is usually difficult when investigating mixed species in dense and fast migrating shoals. Frequent sampling and most careful studies of the echo traces and their level is important to avoid severe bias of the estimates. This source of error will always be present in varying degree, but the problem has probably not had a great impact on the level of the estimate of pilchard during this survey. Another problem is the shadowing effect in the shoals. The density of fish in many of the shoals was extremly high and in such shoals strong shadowing effects occur. When large parts of the total estimate of pilchard is based on such shoals the stock will be underestimated. The problem is valid for both day and night registrations.

However, this kind of error has not been accounted for previously in Namibian waters so if the density in the shoals have not changed significantly through the last years the estimates should be comparable. This source of error could perhaps explain some of the variability detected in estimates of this stock in recent years.

Table 3 shows the estimates of the pilchard stock since 1990.

Table 3 Biomass estimates of pilchard in 1 000 tonnes, all surveys. NS = not surveyed.

Month/Year	Namibia	Angola	Total
Jan-Mar 1990	235	NS	235
May-Jun 1990	750	NS	750
Mar 1991	805	NS	805
Nov-Dec 1991	601	122	723
May-Jun 1992	530	40	570
Sep 1992	NS	210*	
Dec 1992	450	NS	450
Feb-Mar 1993	325	45	370

* From Angola survey 1992

There has been a decline in estimated biomass of this stock since March 1991. The abundance is now about half of the level estimated in 1991.

Anchovy and round herring

Separate estimates of the two stocks were not made. Separating the species from the characteristics of the echo recordings is difficult and using the composition of the trawl samples is also problematic, depending on the frequency of trawling and the catchability of the two species. A combined estimate of the two stocks were worked out resulting in a total of 335 000 tonnes. This is the largest estimate of biomass of the two stocks since these investigations started. About half of this was found south of Walvis bay, while the other half was estimated in the area between Rocky Point and Walvis Bay (Table 1).

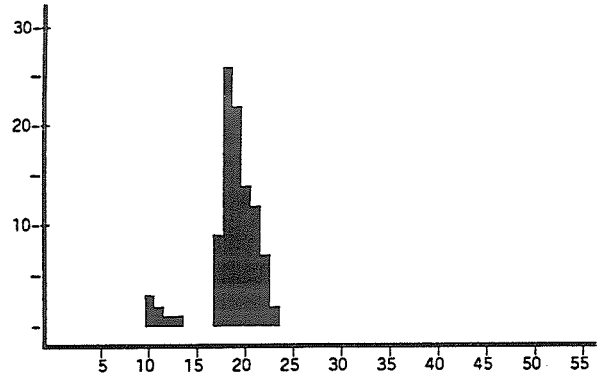
Similar sources of error mentioned for pilchard also affect the estimate of other pelagic shoaling species. However, the shadowing effect is probably not as serious for anchovy and round herring as for the pilchard, since the shoals of these are less dense.

CHAPTER 5 CONCLUDING REMARKS

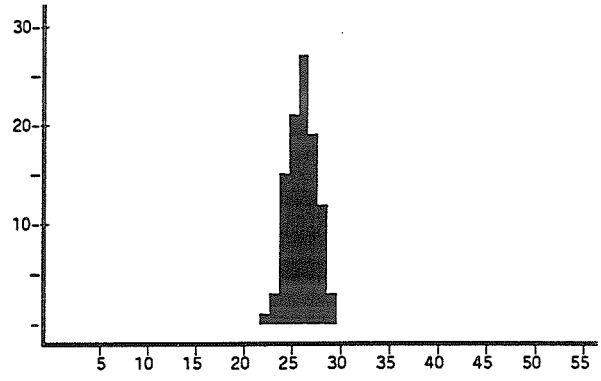
The estimates of biomass obtained during this survey are based on one coverage, considered to be the most complete of the ones carred out. Also, the estimate of pilchard is based on the observations from a very limited area as 85 % of the estimated stock was found off Dune Point. In this area a few shoals contribute largely to the total estimate. This is not the ideal distribution pattern for acoustic abundance estimation. An estimate of a stock of this size should preferably be based on more positive acoustic samples. In the survey area the sampling intensity is fairly good and of the same level as of previous surveys. However, the question remains whether there are significant quantities of fish outside the survey area. Information from the fishing fleet supports this view but it was not possible to sample and estimate the abundance of this migrating fish.

It must be concluded that the spawning season is not favourable for acoustic abundance estimation on the pilchard. The recent estimates have indicated a decreasing level of abundance of the pilchard stock, but the final conclusion should await until a later survey in a non-migratoy season could confirm this.

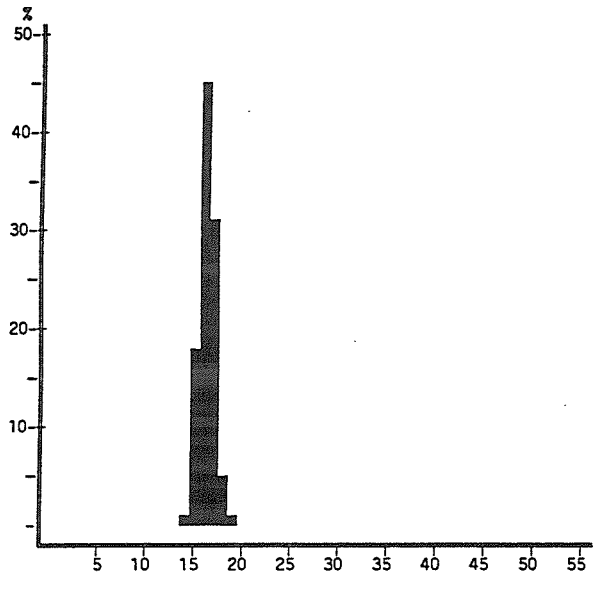
Annex I Size composition of main stocks



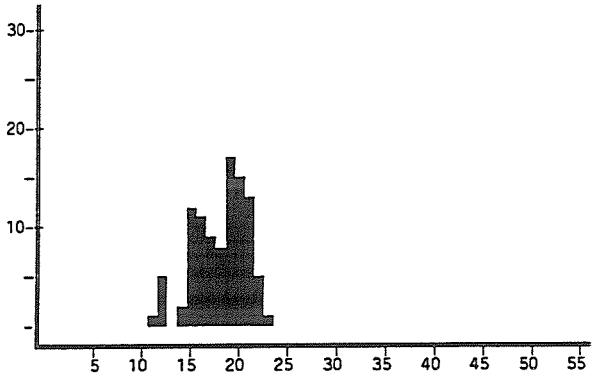
Sardinops ocellata
Dune Point North



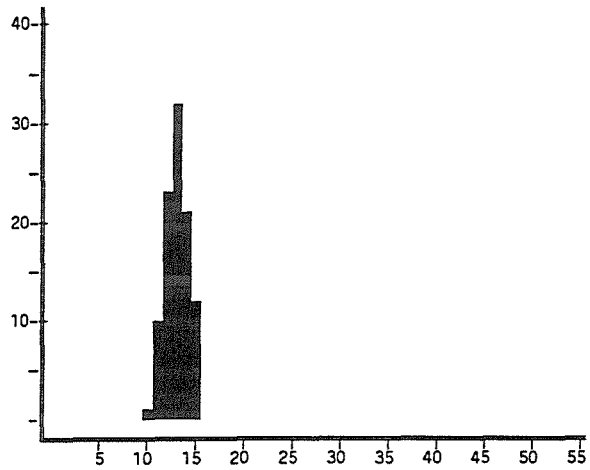
Sardinops ocellata
Baia dos Tigres



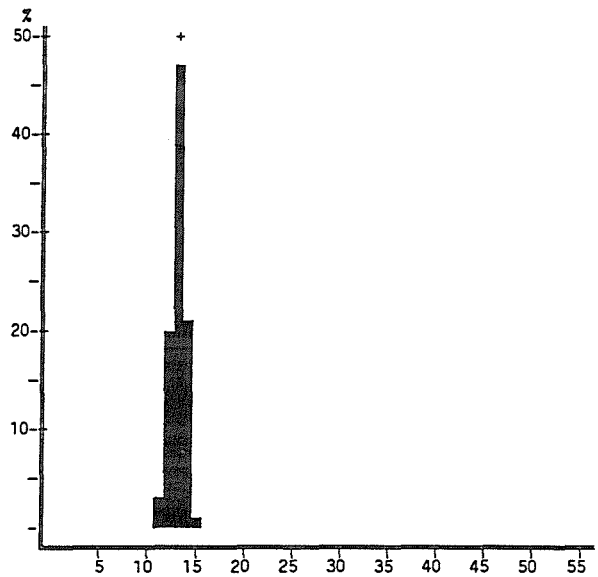
Sardinops ocellata
Cunene R. - Cape Frio South



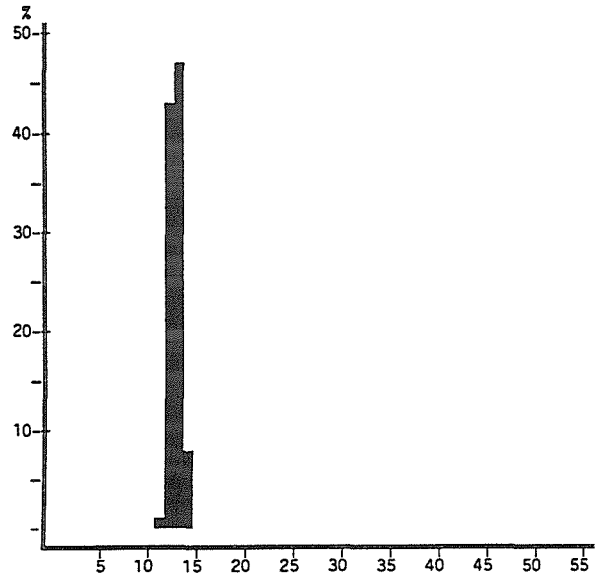
Sardinops ocellata
Rocky Pt. - Ambrose Bay South



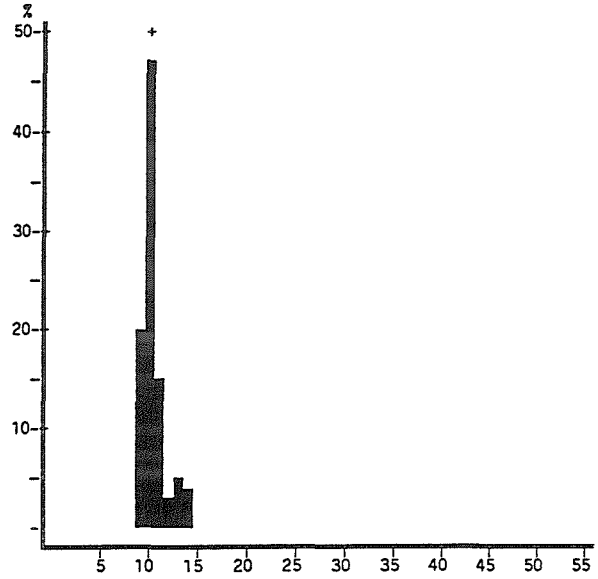
Etrumeus whiteheadi
Easter Point - Ambrose Bay



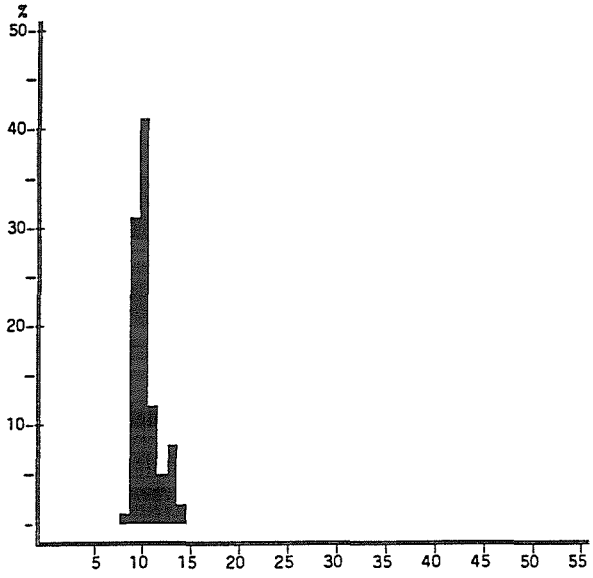
Etrumeus whiteheadi
Rocky Pt. - Ambrose Bay South



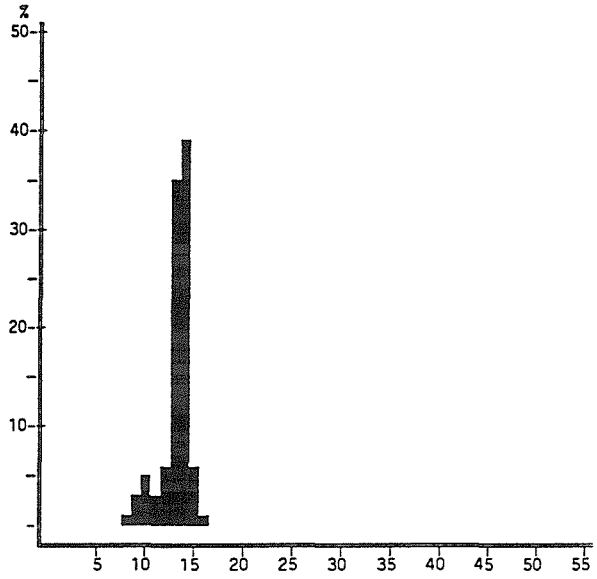
Engraulis capensis
Easter Point - Ambrose Bay



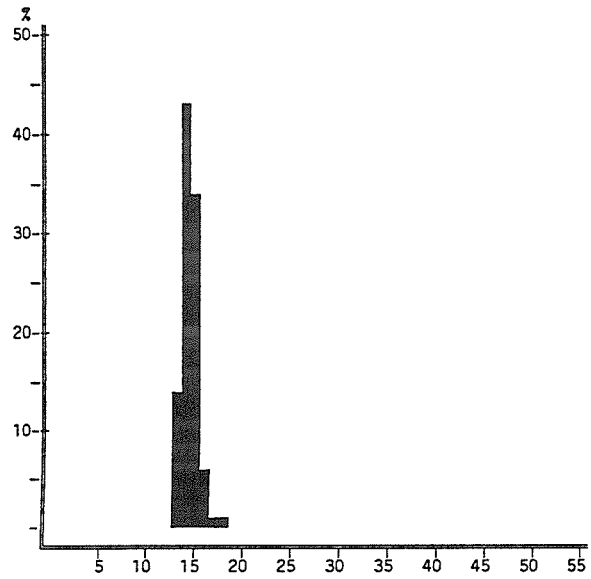
Engraulis capensis
Cunene R. - Cape Frio South



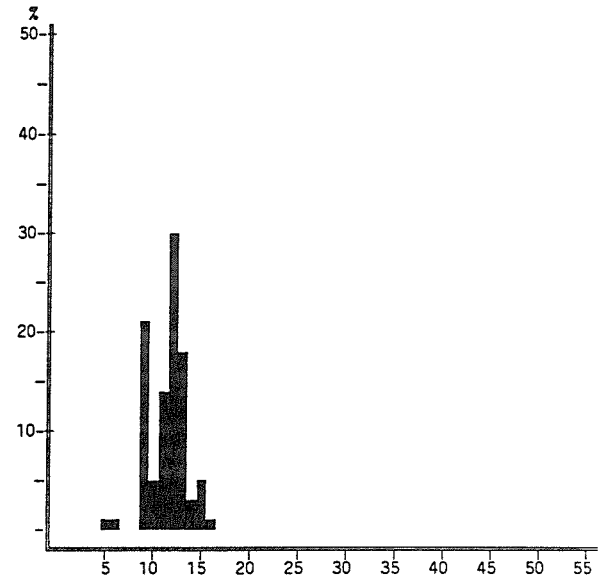
Engraulis capensis
Palgrave Pt.-Rocky Pt. North



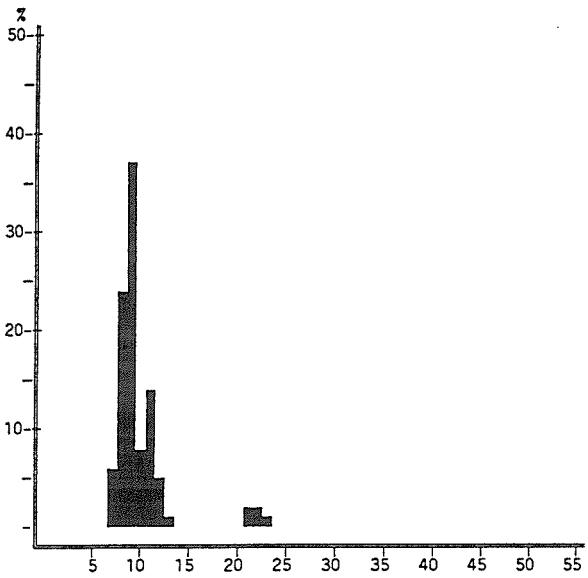
Engraulis capensis
Rocky Pt. - Ambrose Bay South



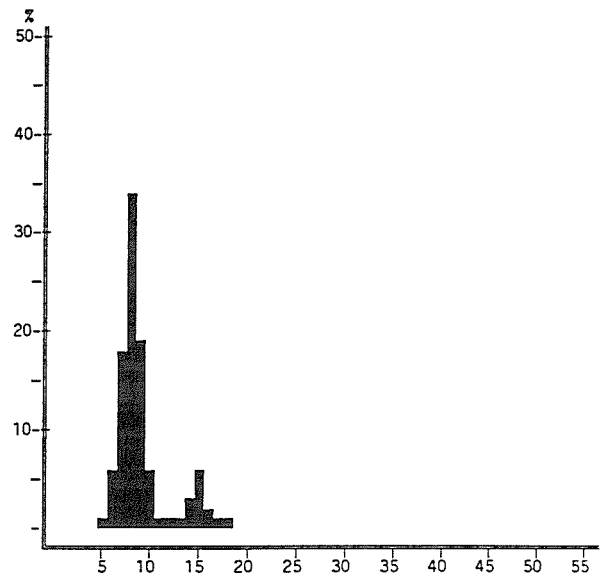
Trachurus capensis
Easter Point - Ambrose Bay



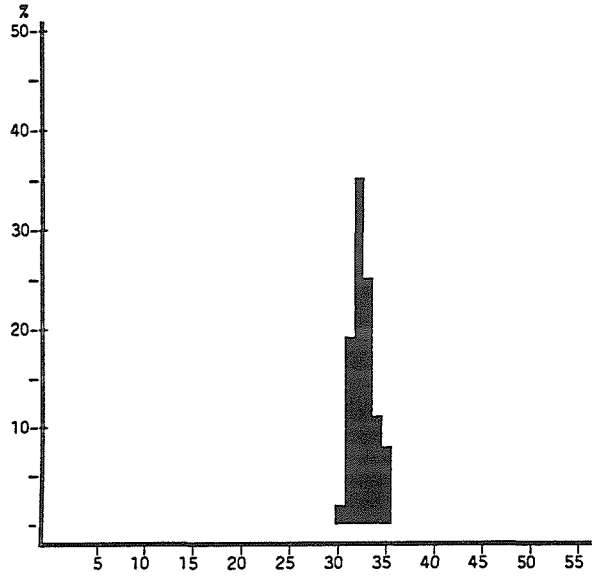
Trachurus capensis
Cunene R. - Cape Frio South



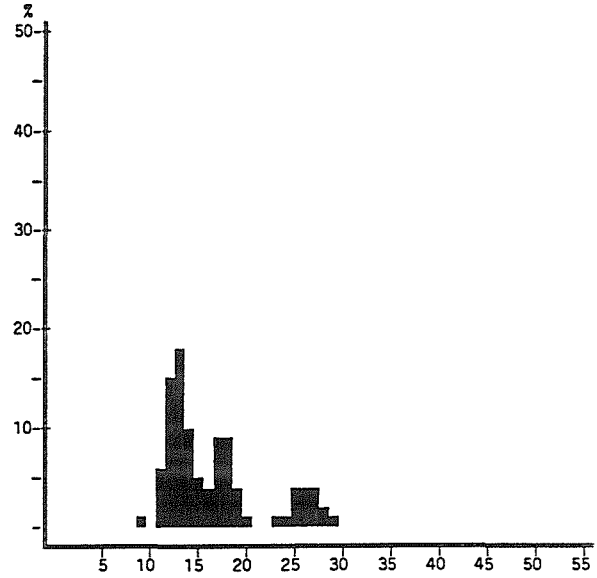
Trachurus capensis
Palgrave Pt.-Rocky Pt. North



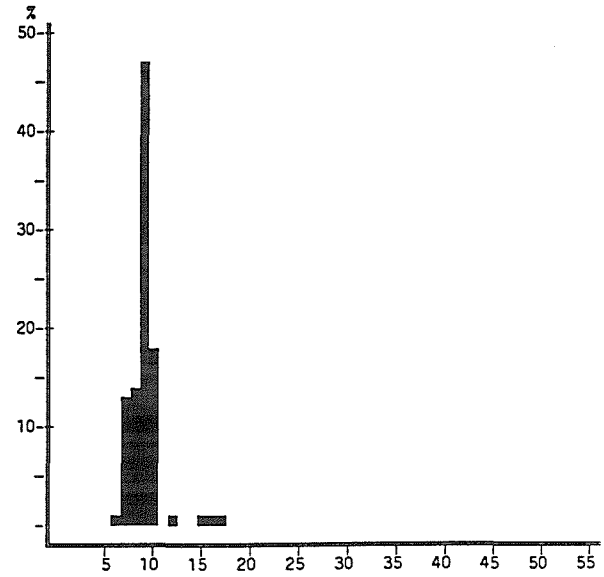
Trachurus capensis
Rocky Pt. - Ambrose Bay South



Sardinella aurita
West off Baia dos Tigres



Trachurus capensis
Cunene R. - Tombua



Trachurus trecae
Cunene R. - Tombua

Annex II Records of fishing stations

PROJECT STATION:1760

DATE:28/ 2/93 GEAR TYPE: PT No:3 POSITION:Lat S 2307
start stop duration Long E 1410
TIME :15:19:00 16:01:00 42 (min) Purpose code: 1
LOG :3442.30 3445.60 2.73 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 112 118 Validity code:
Towing dir: 300 Wire out: 150 m Speed: 38 kn*10

Sorted: 29 Kg Total catch: 235.76 CATCH/HOUR: 336.80

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	324.57	12171	96.37	663
Engraulis capensis	7.31	446	2.17	665
Etrumeus whiteheadi	4.91	263	1.46	664
Total	336.79		100.00	

PROJECT STATION:1761

DATE:28/ 2/93 GEAR TYPE: PT No:3 POSITION:Lat S 2321
start stop duration Long E 1418
TIME :19:46:00 20:16:00 30 (min) Purpose code: 1
LOG :3479.40 3481.30 1.90 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 82 77 Validity code:
Towing dir: 50 Wire out: 150 m Speed: 38 kn*10

Sorted: 22 Kg Total catch: 87.44 CATCH/HOUR: 174.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	153.60	9312	87.83	666
Etrumeus whiteheadi	18.56	1128	10.61	667
Sufflogobius bibarbatus	2.72	672	1.56	
Total	174.88		100.00	

PROJECT STATION:1762

DATE: 1/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2515
start stop duration Long E 1434
TIME :19:39:00 20:08:00 29 (min) Purpose code: 1
LOG :3720.90 3722.60 1.70 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 112 104 Validity code:
Towing dir: 233 Wire out: 150 m Speed: 36 kn*10

Sorted: 23 Kg Total catch: 308.40 CATCH/HOUR: 638.07

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	605.79	201931	94.94	
Todaropsis eblanae	14.57	728	2.28	
Thyrsites atun	9.10	2	1.43	668
Merluccius capensis, juveniles	5.96	1092	0.93	669
Todarodes sagittatus	2.65	132	0.42	
Total	638.07		100.00	

PROJECT STATION:1763

DATE: 2/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2501
start stop duration Long E 1447
TIME :04:18:00 04:32:00 14 (min) Purpose code: 1
LOG :3798.40 3799.30 0.95 Area code : 1
FDEPTH: 5 5 GearCond.code:
BDEPTH: 35 40 Validity code:
Towing dir: 230 Wire out: 100 m Speed: 39 kn*10

Sorted: Kg Total catch: 0.30 CATCH/HOUR: 1.29

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Chelidonichthys capensis	1.29	4	100.00	
Total	1.29		100.00	

PROJECT STATION:1764

DATE: 2/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2451
start stop duration Long E 1441
TIME :07:29:00 07:59:00 30 (min) Purpose code: 1
LOG :3824.90 3826.50 1.82 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 41 57 Validity code:
Towing dir: 210 Wire out: 100 m Speed: 36 kn*10

Sorted: 18 Kg Total catch: 145.20 CATCH/HOUR: 290.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	259.20	19958	89.26	
Thyrsites atun	12.00	2	4.13	
Chelidonichthys capensis	9.60	24	3.31	
Todaropsis eblanae	7.20	60	2.48	
Etrumeus whiteheadi	2.16	144	0.74	
Merluccius capensis, juveniles	0.24	24	0.08	
Total	290.40		100.00	

PROJECT STATION:1765

DATE: 2/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2318
start stop duration Long E 1419
TIME :23:17:00 23:47:00 30 (min) Purpose code: 1
LOG :3980.40 3982.10 1.87 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 78 90 Validity code:
Towing dir: 230 Wire out: 150 m Speed: 38 kn*10

Sorted: 23 Kg Total catch: 34.02 CATCH/HOUR: 68.04

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	35.60	10866	52.32	
Thyrsites atun	24.60	6	36.16	672
Merluccius capensis, juveniles	3.60	36	5.29	670
Engraulis capensis	2.00	108	2.94	
Todaropsis eblanae	1.76	108	2.59	
Trachurus capensis	0.28	8	0.41	671
Etrumeus whiteheadi	0.20	8	0.29	
Total	68.04		100.00	

PROJECT STATION:1766

DATE: 3/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2224
start stop duration Long E 1409
TIME :13:58:00 14:26:00 28 (min) Purpose code: 1
LOG :4104.80 4106.40 1.67 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 74 80 Validity code:
Towing dir: 210 Wire out: 100 m Speed: 34 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
N O C A T C H	0.00			
Total				

PROJECT STATION:1767

DATE: 5/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2013
start stop duration Long E 1307
TIME :11:05:00 11:10:00 5 (min) Purpose code: 1
LOG :4527.10 4527.30 0.20 Area code : 2
FDEPTH: 10 10 GearCond.code:
BDEPTH: 43 43 Validity code:
Towing dir: 330 Wire out: 100 m Speed: 36 kn*10

Sorted: 79 Kg Total catch: 3590.10 CATCH/HOUR: 43081.20

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sardinops ocellata	30240.00	464124	70.19	673
Etrumeus whiteheadi	11580.00	573024	26.88	674
Trachurus capensis	1158.00	14400	2.69	675
Argyrosomus hololepidotus	85.20	24	0.20	
Engraulis capensis	18.00	1200	0.04	
Total	43081.20		100.00	

PROJECT STATION:1768

DATE: 7/ 3/93 GEAR TYPE: BT No:1 POSITION:Lat S 2241
start stop duration Long E 1406
TIME :13:37:00 14:07:00 30 (min) Purpose code: 3
LOG :4814.50 4815.70 1.52 Area code : 2
FDEPTH: 107 103 GearCond.code:
BDEPTH: 107 103 Validity code:
Towing dir: 115 Wire out: 500 m Speed: 31 kn*10

Sorted: 240 Kg Total catch: 240.00 CATCH/HOUR: 480.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	480.00		100.00	
Total	480.00		100.00	

PROJECT STATION:1769

DATE: 7/ 3/93 GEAR TYPE: BT No:1 POSITION:Lat S 2221
start stop duration Long E 1401
TIME :16:44:00 17:14:00 30 (min) Purpose code: 3
LOG :4839.50 4841.30 1.59 Area code : 2
FDEPTH: 95 95 GearCond.code:
BDEPTH: 95 95 Validity code:
Towing dir: 157 Wire out: 450 m Speed: 31 kn*10

Sorted: 30 Kg Total catch: 30.00 CATCH/HOUR: 60.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sufflogobius bibarbatus	60.00		100.00	
Total	60.00		100.00	

PROJECT STATION:1770

DATE: 8/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2030
start stop duration Long E 1312
TIME :05:27:00 05:50:00 23 (min) Purpose code: 1
LOG :4967.30 4968.70 1.51 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 53 60 Validity code:
Towing dir: 175 Wire out: 100 m Speed: 38 kn*10

Sorted: 30 Kg Total catch: 150.40 CATCH/HOUR: 392.35

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	241.30	13670	61.50	676
Engraulis capensis	147.39	8984	37.57	677
Sardinops ocellata	3.13	65	0.80	
Trachurus capensis	0.52	78	0.13	
Total	392.34		100.00	

PROJECT STATION:1771

DATE: 8/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2015
start stop duration Long E 1310
TIME :09:21:00 09:39:00 18 (min) Purpose code: 1
LOG :4999.20 5000.30 1.10 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 39 45 Validity code:
Towing dir: 230 Wire out: 100 m Speed: 37 kn*10

Sorted: 5 Kg Total catch: 63.00 CATCH/HOUR: 210.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sardinops ocellata	210.00	4657	100.00	678
Total	210.00		100.00	

PROJECT STATION:1772

DATE: 8/ 3/93 GEAR TYPE: PT No:1 POSITION:Lat S 2006
start stop duration Long E 1301
TIME :13:11:00 13:25:00 14 (min) Purpose code: 1
LOG :5030.50 5031.30 0.80 Area code : 2
FDEPTH: 20 30 GearCond.code:
BDEPTH: 44 51 Validity code:
Towing dir: 280 Wire out: 100 m Speed: 33 kn*10

Sorted: 66 Kg Total catch: 1000.00 CATCH/HOUR: 4285.71

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	3493.80	213814	81.52	682
Sardinops ocellata	532.29	13770	12.42	680
Trachurus capensis	123.43	3154	2.88	681
Engraulis capensis	121.93	12536	2.85	679
Chelidonichthys capensis	8.91	69	0.21	
Small squids	4.11	206	0.10	
Merluccius capensis, juveniles	1.37	137	0.03	
Total	4285.84		100.01	

PROJECT STATION:1773

DATE: 8/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 1936
start stop duration Long E 1243
TIME :20:32:00 20:48:00 16 (min) Purpose code: 1
LOG :5099.80 5100.60 1.00 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 68 63 Validity code:
Towing dir: 110 Wire out: 100 m Speed: 37 kn*10

Sorted: 20 Kg Total catch: 30.31 CATCH/HOUR: 113.66

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	95.63	6000	84.14	683
Trachurus capensis	14.85	266	13.07	684
Etrumeus whiteheadi	1.35	101	1.19	
Merluccius capensis	0.90	8	0.79	
Loligo vulgaris	0.34	11	0.30	
Sardinops ocellata	0.34	11	0.30	
Illex coindetii	0.19	19	0.17	
Lepidopus caudatus	0.08	11	0.07	
Total	113.68		100.03	

PROJECT STATION:1774

DATE: 9/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 1910
start stop duration Long E 1231
TIME :02:18:00 02:48:00 30 (min) Purpose code: 1
LOG :5151.70 5153.70 2.00 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 55 52 Validity code:
Towing dir: 100 Wire out: 100 m Speed: 40 kn*10

Sorted: 17 Kg Total catch: 3997.50 CATCH/HOUR: 7995.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	2917.20	362046	36.49	687
Trachurus capensis	2402.40	303072	30.05	685
Etrumeus whiteheadi	2199.60	198120	27.51	686
Sardinops ocellata	452.40	35880	5.66	688
Trachurus capensis	23.40	26	0.29	689
Total	7995.00		100.00	

PROJECT STATION:1775

DATE:14/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 1726
start stop duration Long E 1140
TIME :00:31:00 01:01:00 30 (min) Purpose code: 1
LOG :6184.40 6186.30 1.75 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 75 59 Validity code:
Towing dir: 360 Wire out: 100 m Speed: 35 kn*10

Sorted: 33 Kg Total catch: 100.50 CATCH/HOUR: 201.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	158.40	21654	78.81	756
Synagrops microlepis	17.04	1092	8.48	
Trachurus capensis	9.00	294	4.48	755
Sepia officinalis hierredda	6.96	228	3.46	
Etrumeus whiteheadi	6.78	102	3.37	757
Lepidopus caudatus	2.04	282	1.01	
Loligo vulgaris	0.78	18	0.39	
Total	201.00		100.00	

PROJECT STATION:1776

DATE:14/ 3/93 GEAR TYPE: PT No: POSITION:Lat S 1747
start stop duration Long E 1144
TIME :06:31:00 06:46:00 15 (min) Purpose code: 1
LOG :6237.90 6238.50 0.60 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 60 74 Validity code:
Towing dir: 255 Wire out: 100 m Speed: 36 kn*10

Sorted: 28 Kg Total catch: 1400.00 CATCH/HOUR: 5600.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	5600.00	403200	100.00	758
Total	5600.00		100.00	

PROJECT STATION:1777

DATE:14/ 3/93 GEAR TYPE: PT No:1 POSITION:Lat S 1833
start stop duration Long E 1157
TIME :19:47:00 20:22:00 35 (min) Purpose code: 1
LOG :6363.80 6365.80 2.17 Area code : 3
FDEPTH: 20 10 GearCond.code:
BDEPTH: 93 109 Validity code:
Towing dir: 270 Wire out: 100 m Speed: 38 kn*10

Sorted: 28 Kg Total catch: 107.55 CATCH/HOUR: 184.37

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	181.71	2697	98.56	759
Sarda sarda	2.66	2	1.44	
Total	184.37		100.00	

PROJECT STATION:1778

DATE:14/ 3/93 GEAR TYPE: PT No: POSITION:Lat S 1839
start stop duration Long E 1205
TIME :23:06:00 23:15:00 9 (min) Purpose code: 1
LOG :6388.80 6389.20 0.44 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 42 48 Validity code:
Towing dir: 205 Wire out: 100 m Speed: 27 kn*10

Sorted: 15 Kg Total catch: 300.80 CATCH/HOUR: 2005.33

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sardinops ocellata	1933.33	55800	96.41	760
Trachurus capensis	72.00	3333	3.59	761
Total	2005.33		100.00	

PROJECT STATION:1779

DATE:15/ 3/93 GEAR TYPE: PT No: POSITION:Lat S 1841
start stop duration Long E 1211
TIME :01:18:00 01:28:00 10 (min) Purpose code: 1
LOG :6407.20 6407.60 0.50 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 31 27 Validity code:
Towing dir: 130 Wire out: 100 m Speed: 30 kn*10

Sorted: 3 Kg Total catch: 19.74 CATCH/HOUR: 118.44

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	78.84	11370	66.57	762
Engraulis capensis	39.60	4068	33.43	763
Total	118.44		100.00	

PROJECT STATION:1780

DATE:15/ 3/93 GEAR TYPE: PT No: POSITION:Lat S 1904
start stop duration Long E 1226
TIME :06:32:00 06:58:00 26 (min) Purpose code: 1
LOG :6454.60 6456.00 1.52 Area code : 3
FDEPTH: 35 35 GearCond.code:
BDEPTH: 72 78 Validity code:
Towing dir: 280 Wire out: 125 m Speed: 36 kn*10

Sorted: 2 Kg Total catch: 3.60 CATCH/HOUR: 8.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	8.08	194	97.23	764
Loligo vulgaris	0.23	5	2.77	
Total	8.31		100.00	

PROJECT STATION:1781

DATE:15/ 3/93 GEAR TYPE: BT No:1 POSITION:Lat S 1911
start stop duration Long E 1235
TIME :09:39:00 10:09:00 30 (min) Purpose code: 1
LOG :6478.80 6480.10 1.48 Area code : 3
FDEPTH: 39 45 GearCond.code:
BDEPTH: 39 45 Validity code:
Towing dir: 210 Wire out: 125 m Speed: 31 kn*10

Sorted: 203 Kg Total catch: 362.00 CATCH/HOUR: 724.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Argyrosomus hololepidotus	360.00	126	49.72	765
Trachurus capensis	204.80	20056	28.29	766
Engraulis capensis	65.60	3628	9.06	767
Chelidonichthys capensis	57.60	96	7.96	
Galeichthys feliceps	20.80	160	2.87	
Loligo vulgaris	12.00	448	1.66	
Pterothrissus belloci	1.60	16	0.22	
Dicologoglossa cuneata	1.60	16	0.22	
Total	724.00		100.00	

PROJECT STATION:1782

DATE:15/ 3/93 GEAR TYPE: PT No: POSITION:Lat S 1923
start stop duration Long E 1241
TIME :12:56:00 13:09:00 13 (min) Purpose code: 1
LOG :6504.00 6504.50 0.50 Area code : 3
FDEPTH: 20 20 GearCond.code:
BDEPTH: 36 42 Validity code:
Towing dir: 285 Wire out: 100 m Speed: 30 kn*10

Sorted: 9 Kg Total catch: 9.60 CATCH/HOUR: 44.31

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Thyrsites atun	44.31	18	100.00	768
Total	44.31		100.00	

PROJECT STATION:1783

DATE:15/ 3/93 GEAR TYPE: BT No:1 POSITION:Lat S 1936
start stop duration Long E 1248
TIME :16:57:00 17:27:00 30 (min) Purpose code: 1
LOG :6534.90 6536.10 1.73 Area code : 3
FDEPTH: 30 35 GearCond.code:
BDEPTH: 30 35 Validity code:
Towing dir: 300 Wire out: 150 m Speed: 34 kn*10

Sorted: 559 Kg Total catch: 1178.36 CATCH/HOUR: 2356.72

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Argyrosomus hololepidotus	1003.24	362	42.57	769
Engraulis capensis	516.00	34400	21.89	773
Trachurus capensis	314.00	14644	13.32	771
Etrumeus whiteheadi	269.60	21636	11.44	774
Sardinops ocellata	97.60	3480	4.14	772
Callorhinchus capensis	54.80	40	2.33	
Lithognathus aureti	44.68	8	1.90	770
Chelidonichthys capensis	24.40	40	1.04	
Galeichthys feliceps	23.60	120	1.00	
Pomatomus saltatrix	4.80	2	0.20	
Loligo vulgaris	4.00	120	0.17	
Total	2356.72		100.00	

PROJECT STATION:1784

DATE:15/ 3/93 GEAR TYPE: PT No: POSITION:Lat S 1949
start stop duration Long E 1251
TIME :23:00:00 23:27:00 27 (min) Purpose code: 1
LOG :6566.60 6567.90 1.43 Area code : 3
FDEPTH: 10 10 GearCond.code:
BDEPTH: 62 54 Validity code:
Towing dir: 30 Wire out: 100 m Speed: 30 kn*10

Sorted: 5 Kg Total catch: 9.68 CATCH/HOUR: 21.51

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	10.00	582	46.49	775
Trachurus capensis	8.98	307	41.75	776
Sardinops ocellata	2.53	27	11.76	777
Total	21.51		100.00	

PROJECT STATION:1785

DATE:16/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 1959
start stop duration Long E 1256
TIME :02:52:00 02:58:00 6 (min) Purpose code: 1
LOG :6596.80 6597.00 0.30 Area code : 3
FDEPTH: 5 5 GearCond.code:
BDEPTH: 61 64 Validity code:
Towing dir: 290 Wire out: 100 m Speed: 35 kn*10

Sorted: 24 Kg Total catch: 97.36 CATCH/HOUR: 973.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	960.00	48670	98.60	778
Trachurus capensis	13.60	160	1.40	779
Total	973.60		100.00	

PROJECT STATION:1786

DATE:16/ 3/93 GEAR TYPE: PT No: POSITION:Lat S 2009
start stop duration Long E 1305
TIME :06:40:00 06:56:00 16 (min) Purpose code: 1
LOG :6628.80 6629.40 0.60 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 27 31 Validity code:
Towing dir: 260 Wire out: 100 m Speed: 30 kn*10

Sorted: 13 Kg Total catch: 269.40 CATCH/HOUR: 1010.25

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	918.75	61800	90.94	780
Sardinops ocellata	84.00	2100	8.31	781
Galeichthys feliceps	7.50	75	0.74	
Total	1010.25		99.99	

PROJECT STATION:1787

DATE:16/ 3/93 GEAR TYPE: BT No:1 POSITION:Lat S 2018
start stop duration Long E 1312
TIME :09:53:00 10:13:00 20 (min) Purpose code: 1
LOG :6656.60 6657.80 1.30 Area code : 2
FDEPTH: 23 27 GearCond.code:
BDEPTH: 23 27 Validity code:
Towing dir: 300 Wire out: 75 m Speed: 38 kn*10

Sorted: 4 Kg Total catch: 4.87 CATCH/HOUR: 14.61

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	6.96	1158	47.64	782
Pomatomus saltatrix	6.75	3	46.20	
Etrumeus whiteheadi	0.54	36	3.70	
Loligo vulgaris	0.24	6	1.64	
Engraulis capensis	0.12	12	0.82	
Total	14.61		100.00	

PROJECT STATION:1788

DATE:16/ 3/93 GEAR TYPE: BT No:1 POSITION:Lat S 1956
start stop duration Long E 1258
TIME :15:38:00 15:40:00 2 (min) Purpose code: 1
LOG :6710.10 6710.20 0.14 Area code : 3
FDEPTH: 28 28 GearCond.code:
BDEPTH: 28 28 Validity code:
Towing dir: 320 Wire out: 150 m Speed: 26 kn*10

Sorted: 30 Kg Total catch: 90.42 CATCH/HOUR: 2712.60

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	1665.00	53520	61.38	783
Galeichthys feliceps	456.30	2610	16.82	
Chelidonichthys capensis	299.70	810	11.05	
Raja miraletus	103.50	90	3.82	
Austroglossus microlepis	82.80	1980	3.05	
Etrumeus whiteheadi	69.30	4050	2.55	784
Sardinops ocellata	21.60	540	0.80	
Engraulis capensis	14.40	720	0.53	
Total	2712.60		100.00	

PROJECT STATION:1789

DATE:16/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 1954
start stop duration Long E 1257
TIME :17:30:00 18:02:00 32 (min) Purpose code: 1
LOG :6723.70 6726.00 2.20 Area code : 3
FDEPTH: 0 0 GearCond.code:
BDEPTH: 30 29 Validity code:
Towing dir: 330 Wire out: 50 m Speed: 41 kn*10

Sorted: 219 Kg Total catch: 979.50 CATCH/HOUR: 1836.56

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	890.63	62696	48.49	786
Engraulis capensis	423.75	30399	23.07	787
Alopias vulpinus	281.25	6	15.31	
Sardinops ocellata	170.63	5578	9.29	788
Sarda sarda	49.69	24	2.71	785
Lithognathus aureti	20.63	4	1.12	
Total	1836.58		99.99	

PROJECT STATION:1790

DATE:16/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2009
start stop duration Long E 1303
TIME :20:39:00 20:59:00 20 (min) Purpose code: 1
LOG :6748.20 6749.30 1.22 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 44 49 Validity code:
Towing dir: 320 Wire out: 100 m Speed: 35 kn*10

Sorted: 31 Kg Total catch: 1097.25 CATCH/HOUR: 3291.75

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	2016.00	121863	61.24	789
Sardinops ocellata	1039.50	14805	31.58	790
Trachurus capensis	179.55	26622	5.45	791
Etrumeus whiteheadi	56.70	3255	1.72	792
Total	3291.75		99.99	

PROJECT STATION:1791

DATE:17/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2107
start stop duration Long E 1331
TIME :08:43:00 08:59:00 16 (min) Purpose code: 1
LOG :6862.10 6863.10 0.99 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 30 34 Validity code:
Towing dir: 330 Wire out: 75 m Speed: 37 kn*10

Sorted: 30 Kg Total catch: 450.00 CATCH/HOUR: 1687.50

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Trachurus capensis	1687.50	355841	100.00	793
Total	1687.50		100.00	

PROJECT STATION:1792

DATE:17/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2121
start stop duration Long E 1339
TIME :12:44:00 13:27:00 43 (min) Purpose code: 1
LOG :6895.50 6899.00 3.50 Area code : 2
FDEPTH: 0 0 GearCond.code:
BDEPTH: 46 54 Validity code:
Towing dir: 10 Wire out: 100 m Speed: 40 kn*10

Sorted: 305 Kg Total catch: 4000.00 CATCH/HOUR: 5581.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Thyrsites atun	4186.05	2004	75.00	794
Trachurus capensis	1297.26	261349	23.24	795
Engraulis capensis	98.09	18985	1.76	796
Pomatomus saltatrix	0.00	3		
Total	5581.40		100.00	

PROJECT STATION:1793

DATE:17/ 3/93 GEAR TYPE: PT No:3 POSITION:Lat S 2144
start stop duration Long E 1351
TIME :19:03:00 19:32:00 29 (min) Purpose code: 1
LOG :6944.90 6946.50 1.67 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 43 51 Validity code:
Towing dir: 280 Wire out: 75 m Speed: 34 kn*10

Sorted: 12 Kg Total catch: 31.84 CATCH/HOUR: 65.88

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Engraulis capensis	41.96	8741	63.69	797
Trachurus capensis	17.50	3085	26.56	798
Thyrsites atun	4.92	2	7.47	
Loligo vulgaris	1.37	31	2.08	
Sardinops ocellata	0.12	50	0.18	
Total	65.87		99.98	

ANNEX III INSTRUMENTS AND FISHING GEAR USED

ACOUSTIC INSTRUMENTS

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

Based on a calibration experiment using a standard copper sphere in Baia dos Tigres on 26th November 1991, the following settings were used:

Absorption Coeff.	10 dB/km
Pulse length	Medium
Bandwidth	Wide
Max. Power	2000 W
Angle sensitivity	21.9
2-way Beam Angle	-21.0 dB
Sv Transd. Gain	28.0 dB
Ts Transd. Gain	28.0 dB
3 dB Beamwidth	6.9°
Along-ship Offset	0°
Athwart-ship	0°

FISHING GEAR

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 height 6m and distance between wings during towing 18-20m. This gear was also used for some of the mid-water trawls.

Pelagic trawl: Swedish type mid-water trawl with a vertical opening of 20-25m.

Cod ends of trawls with fine meshed inner lining.