

SURVEYS OF THE FISH RESOURCES OF NAMIBIA

Preliminary Report Cruise No 2/93

Part I

Surveys of the hake stocks

21 April - 25 May 1993

and

Part II

Surveys of the pelagic stocks

26 May - 19 June 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 Cooperation (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
"	1/93	20 January to 19 March 1993

Reports were submitted after the completion of each survey. This cruise report is the last in the series with the present RV 'Dr. Fridtjof Nansen', which will be replaced by a new vessel from January 1994.

PART I

SURVEYS OF THE HAKE STOCKS

21 April - 25 May 1993

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CHAPTER 1 INTRODUCTION

1.1 GENERAL OBJECTIVES

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

The purpose of the programme was agreed as follows:

The main objectives are descriptions of the distribution, composition and abundance of the most important fish resources. Small pelagic fish, including 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 in cooperation with FAO's Fisheries Department.

1.2 OBJECTIVES OF SURVEY 2/1993, PART 1

The objective was to cover the whole Namibian shelf, to study the distribution and abundance of hakes as well as less abundant but economically important species as the kingklip, monk, soles and large-eye dentex.

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

As part of a baseline study for a consequence analysis of oil spills in Namibia, four satellite trackable surface drifter buoys were released along a transect at 21 ° 10 S. The upper 20 cm

surface layer was also sampled for tar balls at every alternate trawl station for 10 minutes with a Neuston net with a mesh size of 0.245 mm.

1.3 PARTICIPATION

The scientific staff consisted of:

From Namibia, 21 April to 8 May:

Clemens Evenson, Lima Maartens, Victor Hashoango, Malakia Shimanda.

9 to 25 May:

Hashali Hamukuaya, Michael O'Toole, Filimon Dausab, Johnny Gamatham, Malakia Shimanda, Dawid Gaseb.

From Norway, 21 April to 8 May:

Oddgeir Alvheim, Terje Haugland and Erling Molvær.

7 to 26 May:

Tore Strømme, Oddgeir Alvheim, Terje Haugland and Erling Molvær.

1.4 NARRATIVE

The course tracks with the positions of the fishing and hydrographic stations, neuston hauls and drifter buoy release are shown in Figures 1 a-c.

After leaving Walvis Bay on 21 April the vessel steamed south to start work off Lüderitz the next day. The programme followed that of previous surveys and 61 bottom trawl stations were completed for the Southern Region, up to 25°S, by 2nd of May. Unfavourable weather conditions delayed the work by one day. The hydrographic profile off Panther head was worked on 25-26 April and that off Hottentot Point on 1 May.

Work in the Central Regions was interrupted by a visit to Walvis Bay 8-9 May for exchange of scientific staff. The Cape Cross section was worked on 12 May and the Central Region was completed at latitude of Ambrose Bay on the 16 May with a total of 70 trawl stations. The weather conditions were favourable during this part of the survey.

In the Northern region, rough bottom in shallower parts affected to some extent the distribution of trawl stations. The hydrographic stations in a section south of Cunene were worked out on 18-19 May. The coverage of the northern region was completed after a total of 69 successful fishing stations. The vessel arrived in Walvis Bay on 25th of May. Weather conditions during the second part of the survey were generally favourable.

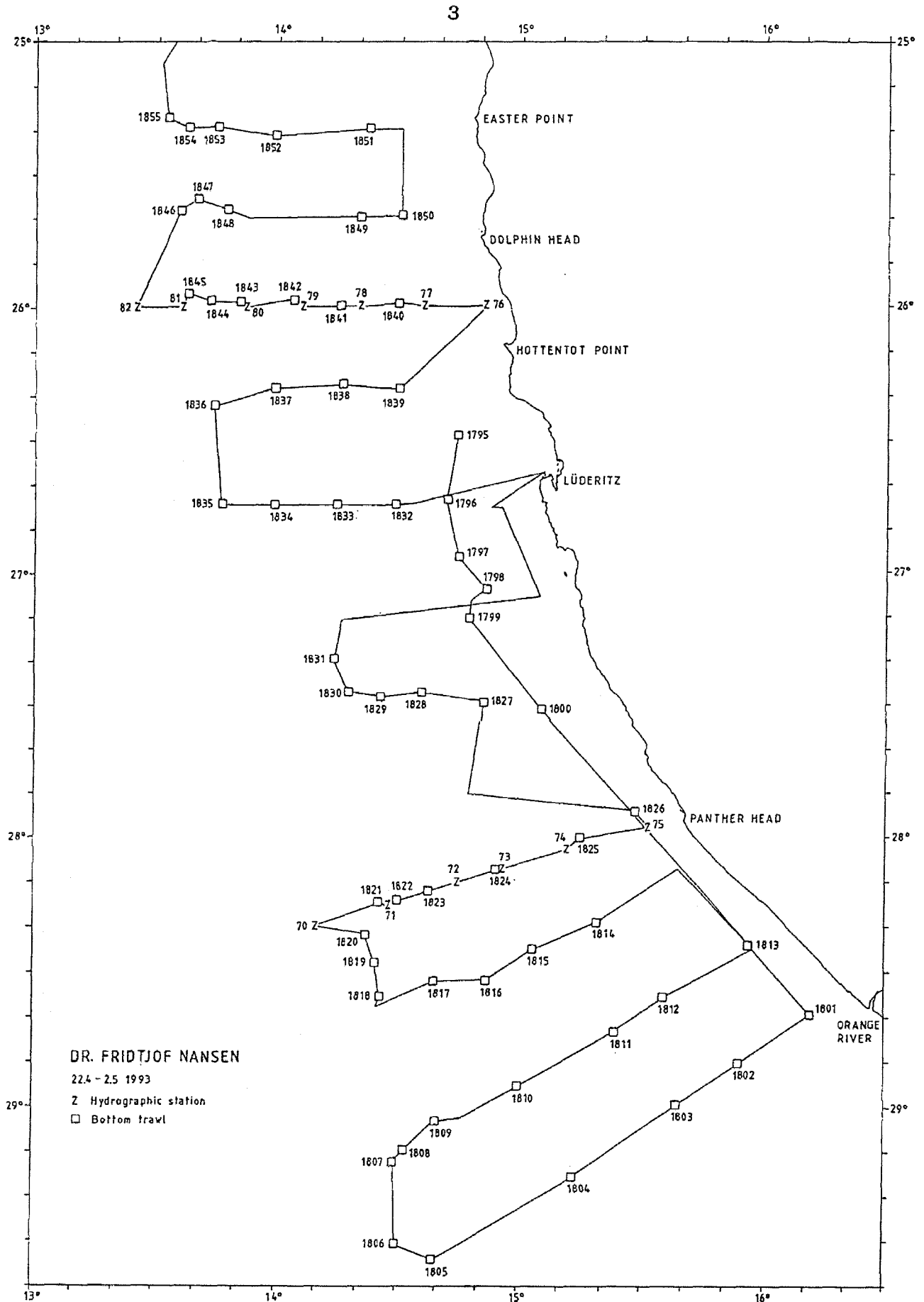


Figure 1a Orange River to St. Francis Bay. Course tracks, fishing stations and hydrographic profiles.

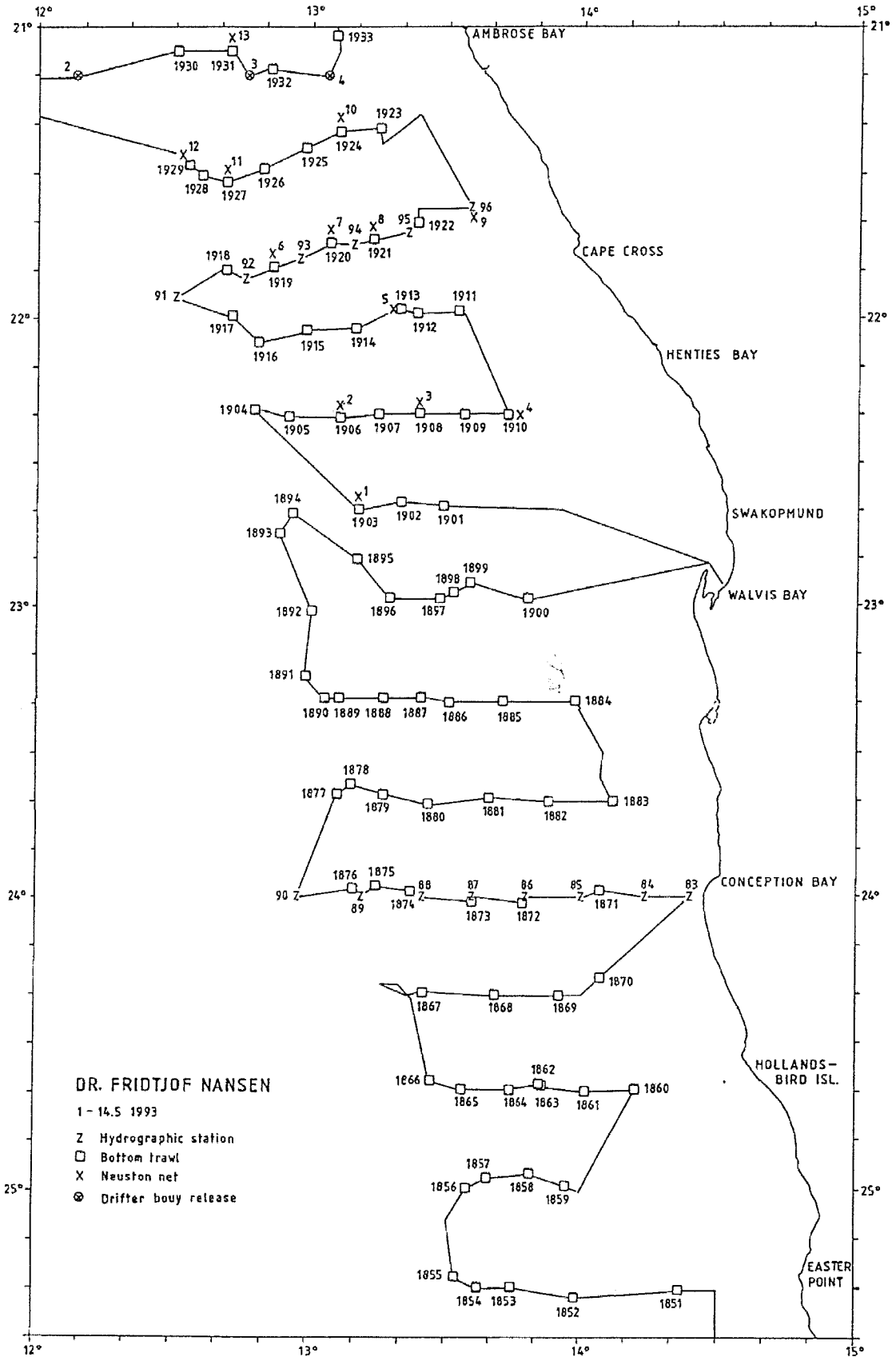


Figure 1b St. Francis Bay to Ambrose Bay. Course tracks, fishing stations and hydrographic profiles.

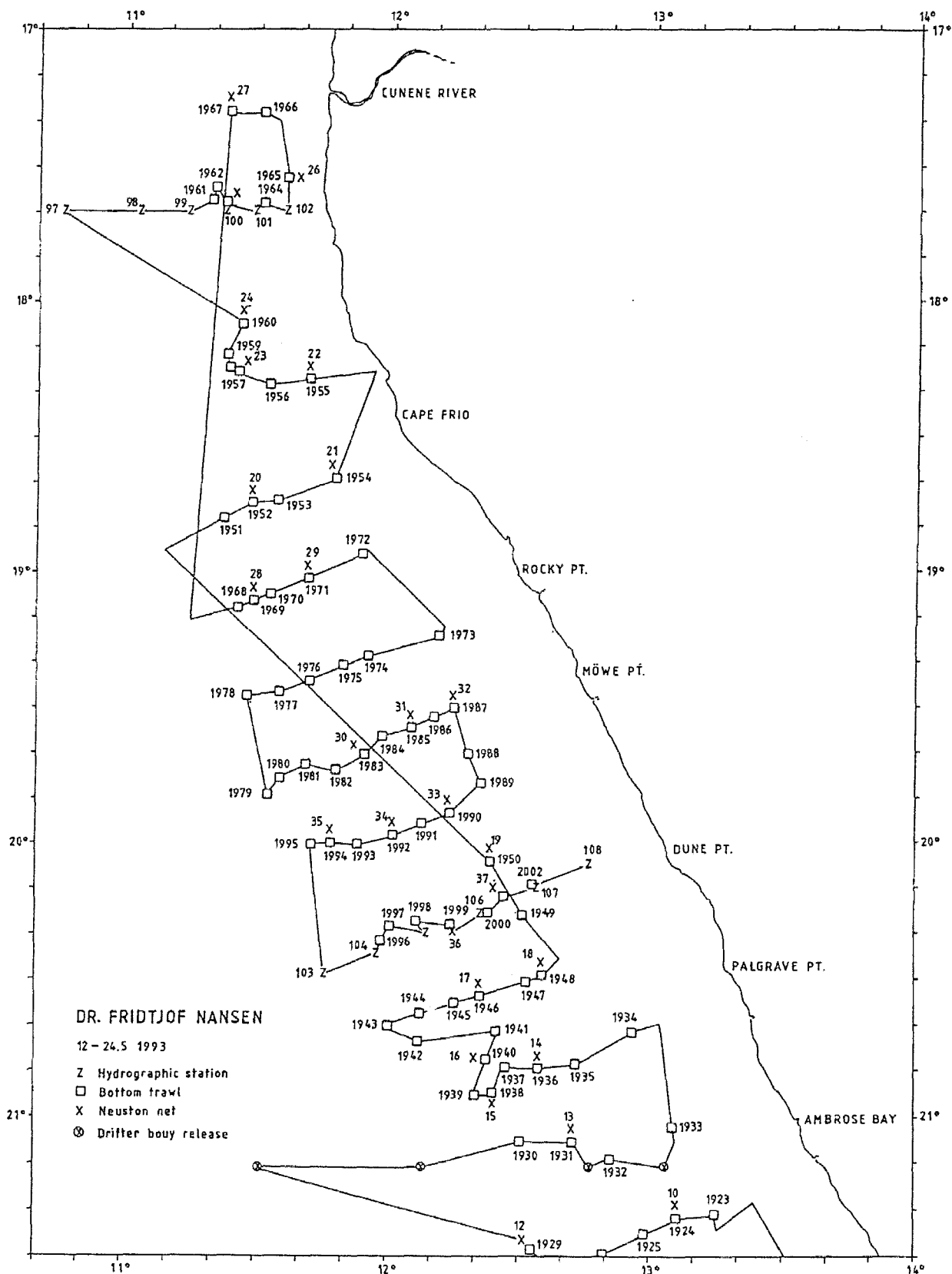


Figure 1c Ambrose Bay to Cunene River. Course tracks, fishing stations and hydrographic profiles.

CHAPTER 2 HYDROGRAPHY

The distribution of sea surface temperature at 4 m depth as observed from the ships thermograph is shown for the southern, central and northern sectors of the Namibian coast in Figures 2 a-c.

The vertical distribution of temperature and salinity along five hydrographic transect lines and oxygen along three transect lines are also shown in Figures 3 a-c.

In the southern region off Panther Head, warm 17° to 18°C water characterised much of the area apart from a well defined upwelling front with cold 14°C water close to the coast. Much of the shelf and coastal waters had high values of oxygen and the offshore water was relatively stable and defined by a strong thermocline at about 50m depth. Further to the north, off Hottentot Point, upwelling was intense with well mixed cool low salinity water (12°-15°C; 34.9-35.2 ‰) distributed over a wide area of the shelf.

In the central region, relatively warm well mixed 15° to 17°C water was found over much of the shelf. Upwelling was less intense and oxygen levels were generally high. In deeper waters, lower levels of oxygen were recorded with values of less than 0.5 ml/l being found near the bottom close to Cape Cross.

In northern waters, some upwelling was taking place off Cape Frio and Palgrave Point with features being very similar to those occurring in the central region. Further north off the Cunene River, remnants of warm well mixed high salinity Angolan Current water (17°-18°C; 35.4-35.5‰) dominated the upper layers. Oxygen values in the water column were high but decreased markedly to less than 1.0 ml/l below 150 m depth.

In comparison with hydrological conditions during January-February 1993 (Cruise 1/93) there was an overall increase in upwelling with colder water being more widespread near the coast. However, hydrological features including the presence of the upwelling front off Panther Head were generally similar for both periods.

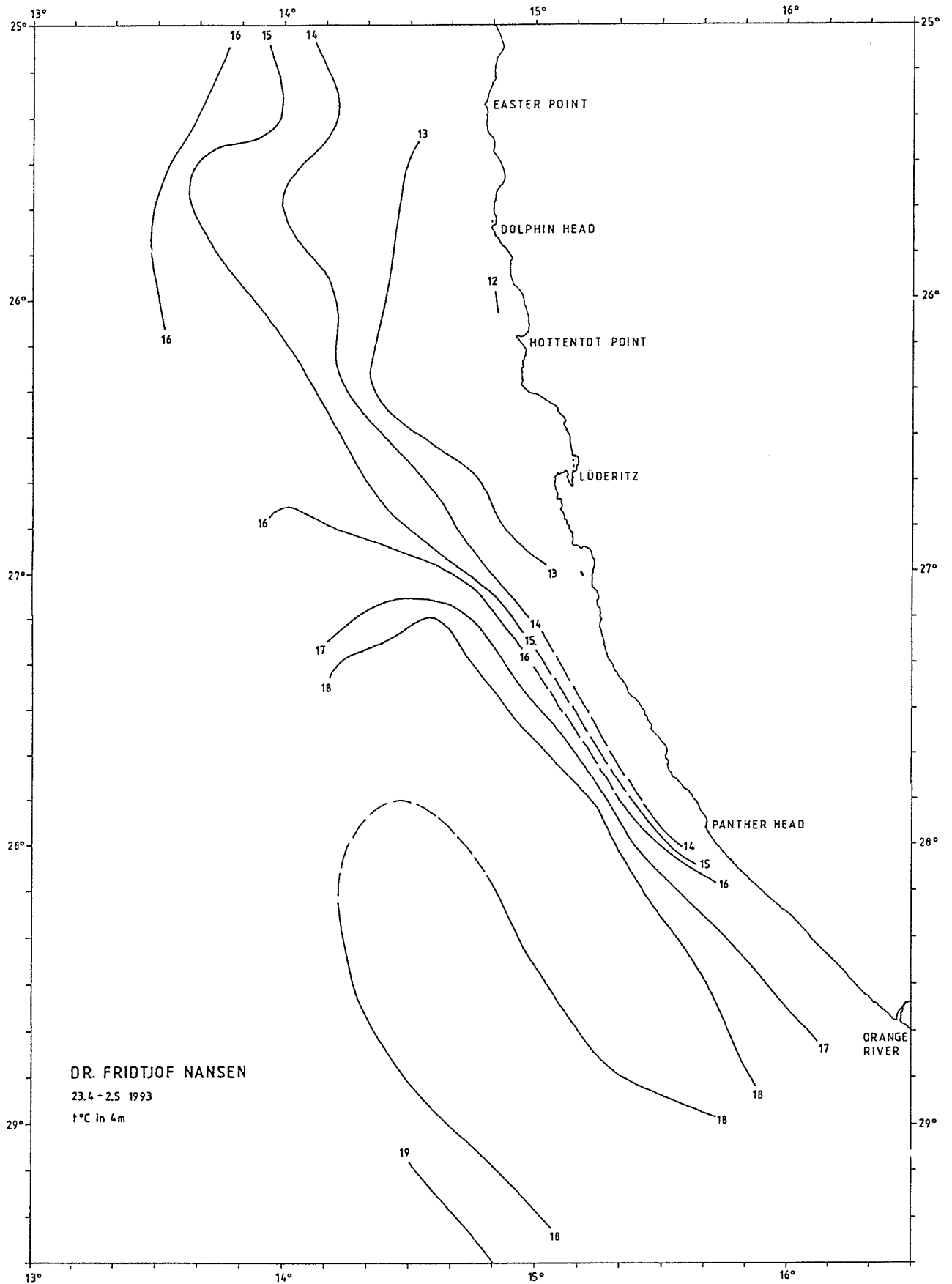


Figure 2a Distribution of sea temperature at 4m of depth based on observations of the ships thermograph.

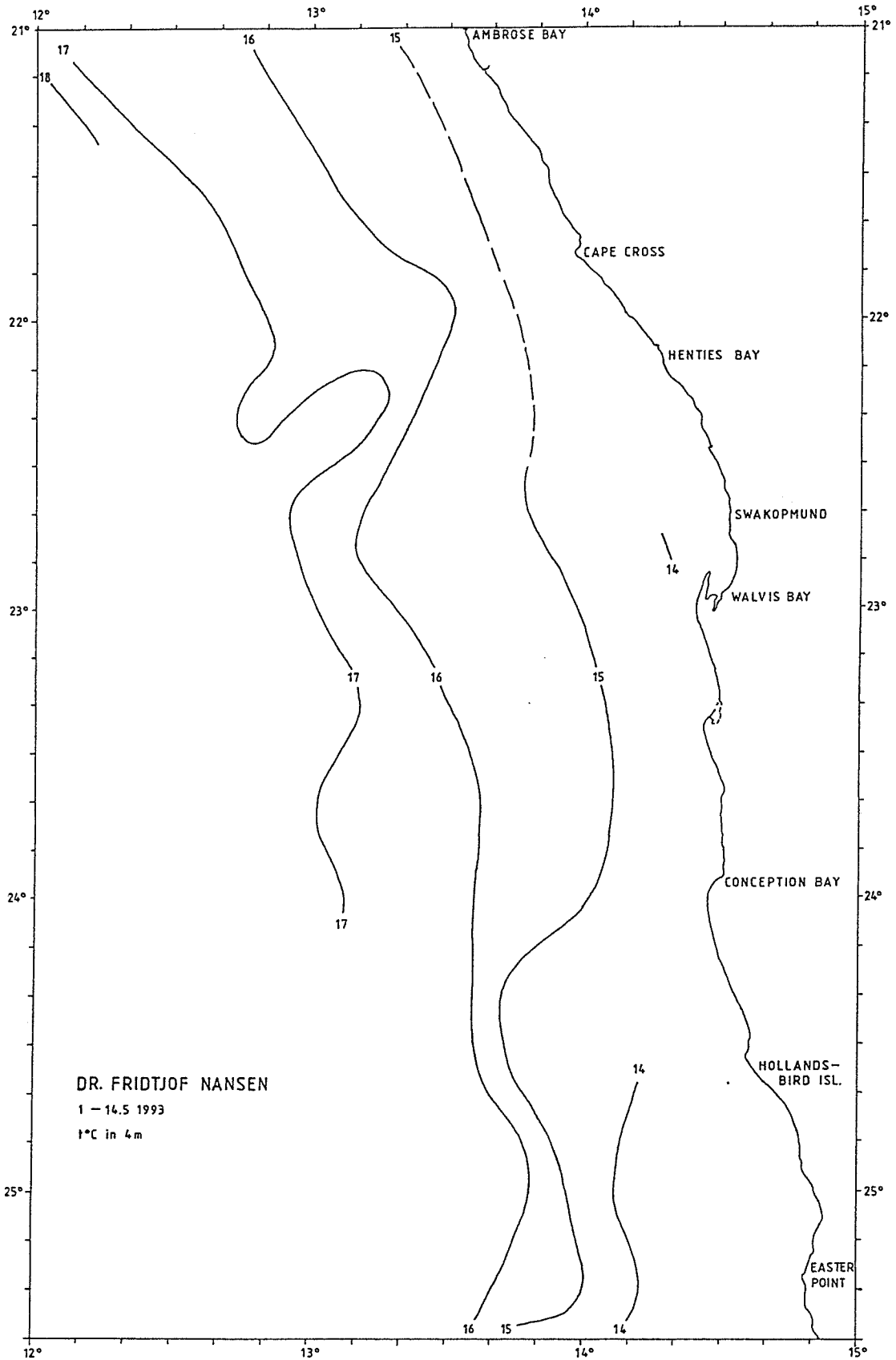


Figure 2b Distribution of sea temperature at 4m of depth based on observations of the ships thermograph.

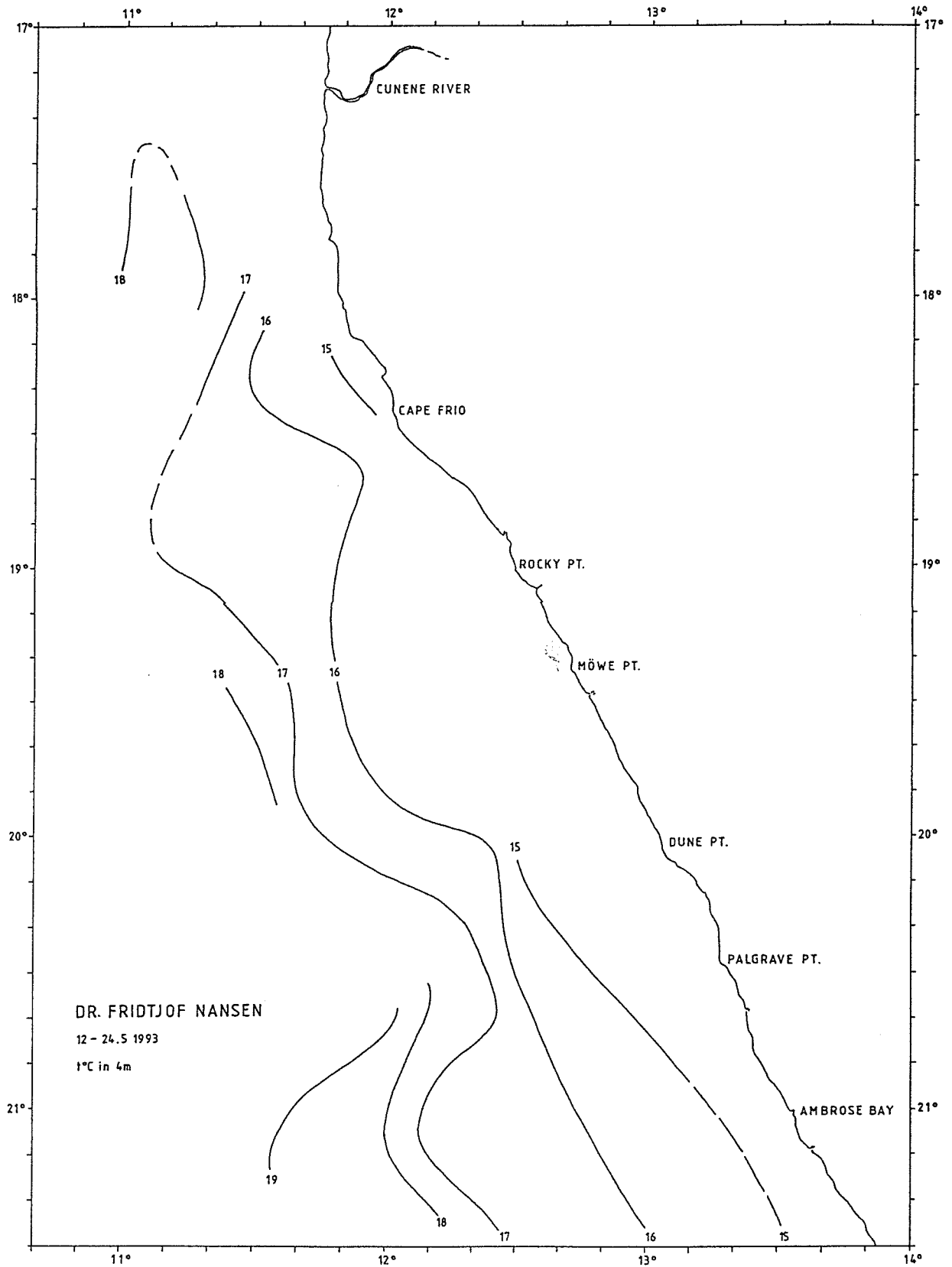


Figure 2c Distribution of sea temperature at 4m of depth based on observations of the ships thermograph.

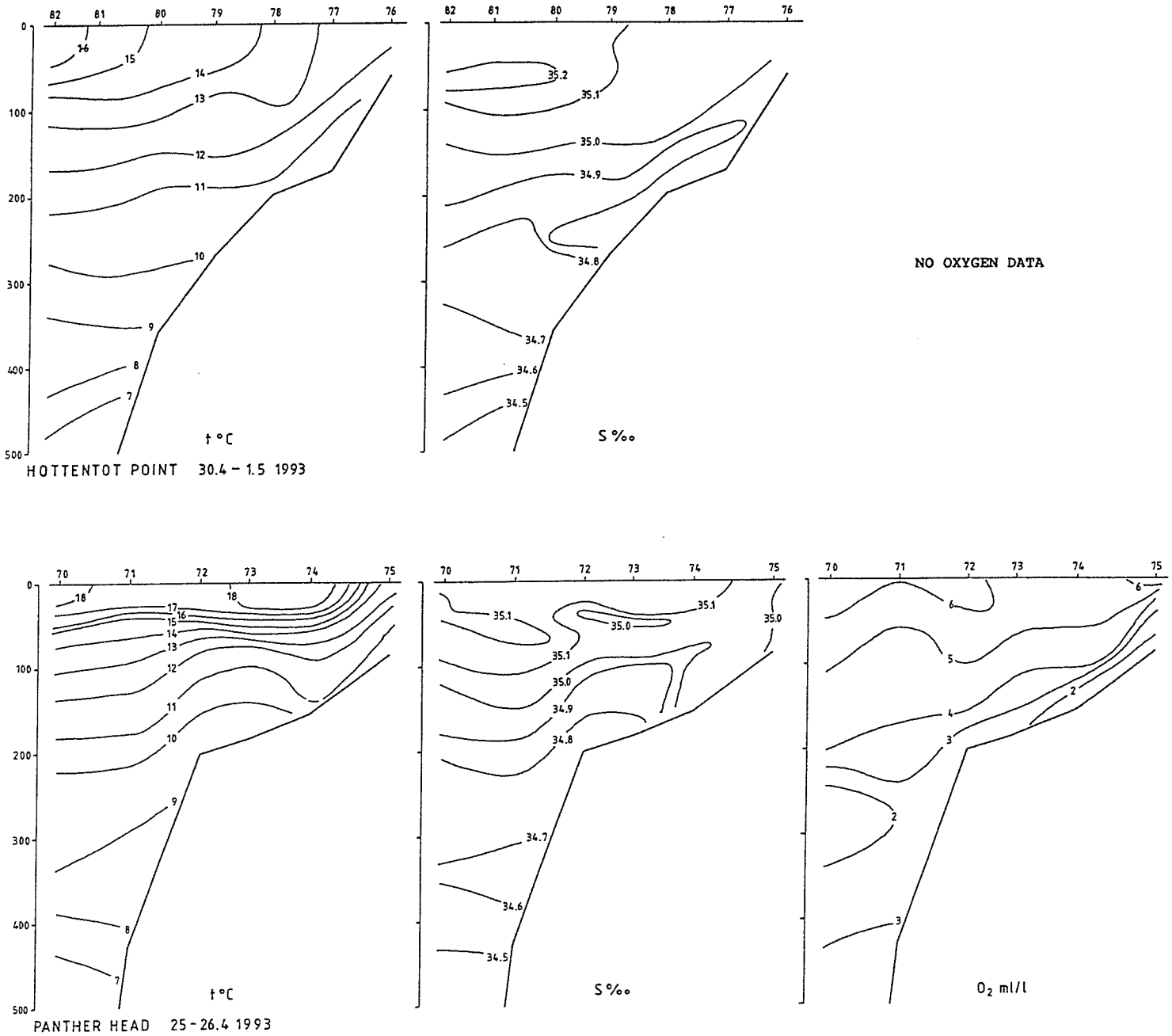


Figure 3a Orange River to St Francis Bay. Temperature, salinity and oxygen in the standard profiles worked.

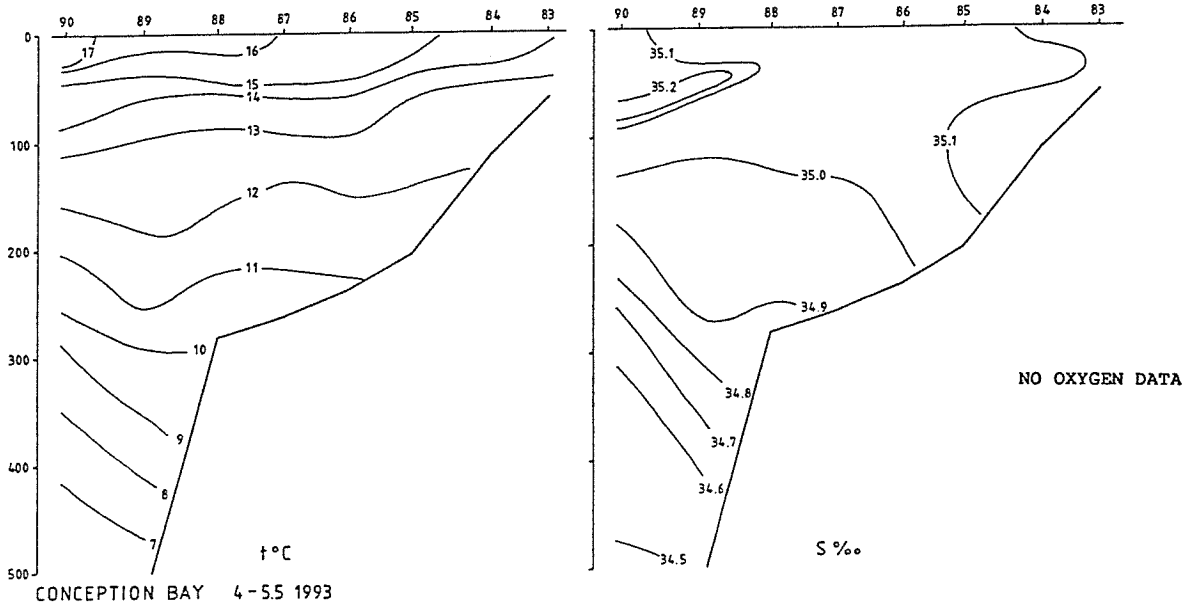
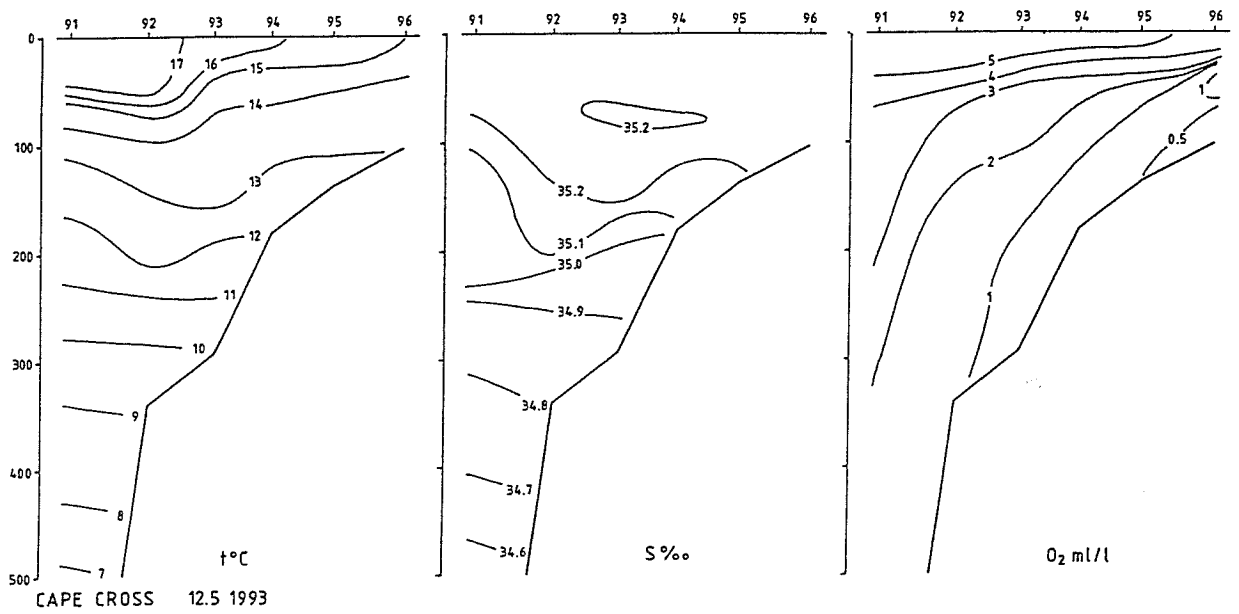


Figure 3b St Francis Bay to Ambrose Bay. Temperature, salinity and oxygen in the standard profiles worked.

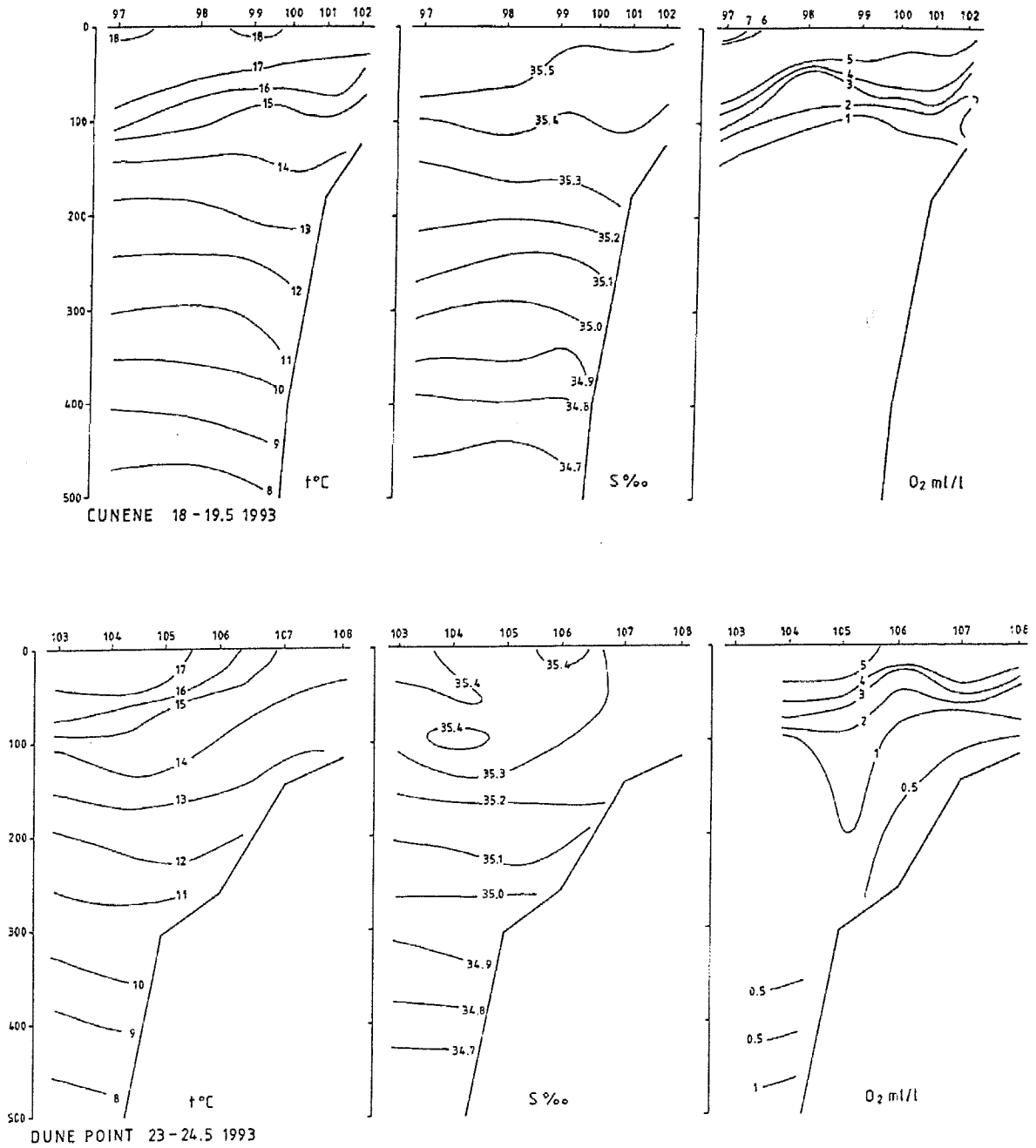


Figure 3c Ambrose Bay to Cunene River. Temperature, salinity and oxygen in the standard profiles worked.

CHAPTER 3 RESULTS OF THE ACOUSTIC AND TRAWL SURVEY

3.1 DISCUSSION OF METHODS

In the trawl survey programme all catches were sampled for composition by 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. the retention factor q is equal to 1.

The problem of mid-water occurrence of hake and its 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 has varied between the surveys. Mid-water occurrence during the night has always been observed, although with varying frequency. Fishing on the shelf 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, euphausiids and others often complicates the acoustic density estimates of hakes and prevents an ordinary acoustic biomass estimate of mid-water hake in the area. Wherever possible, attempts were made to separate and assess mid-water hake during trawling. The 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, which is

conducted at the same season as that of 1/92, April and May, pelagic occurrence was relatively high, with a mean acoustic correction in the northern region of 30% and an overall mean for all regions of 13% (Table 1).

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/nm ² .			
ORANGE RIVER - ST. FRANCIS BAY		DAY	NIGHT
Trawl			
No. stations		39	19
Mean density		18.9	20.1
Acoustic obs.			
No. stations		6	9
Mean density		11.4	13.5
Average acou.cor.		10%	32%
ST. FRANCIS BAY - AMBROSE BAY		DAY	NIGHT
Trawl			
No. stations		57	13
Mean density		28.8	9.0
Acoustic obs.			
No. stations		11	7
Mean density		8.4	12.1
Average acou.cor.		6%	72%
AMBROSE BAY - CUNENE RIVER		DAY	NIGHT
Trawl			
No. stations		60	8
Mean density		12.2	4.6
Acoustic obs.			
No. stations		25	4
Mean density		8.7	3.3
Average acou.cor.		30%	36%

In a number of stations, 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, a larger proportion of the hake lifts from the bottom and the acoustic density estimates often exceeded those from the swept area hauls.

The high rate of mid-water occurrence observed in the north during the present survey makes the biomass estimates less reliable. It seems probable that they have caused a negative bias and that the total stock biomass is thus underestimated.

3.2 SOUTHERN REGION, ORANGE RIVER TO ST. FRANCIS BAY

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

Table 2 shows the catch rates of the main commercial species standardized to kg/hour for the shelf and the slope separately. Compared with the previous survey the mean catch rates for the hakes are about 20% lower in the depth range 50-250m and 30% lower in the range 260-650m. For the less abundant species monk, kinglip and sole the catch rates remain low and the variability between surveys can for most part be explained by the presence/absence of a few coincidental relative high catches and are thus within the expected range of variation.

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

SHELF 50 - 259m

ST.NO.	DEP.	Hakes	Monk	Kinglip	Soles etc.	Squid	Other
1795	163	2.1					30.0
1796	206	4.1					60.0
1797	217	1003.8					96.4
1798	198	396.0					27.4
1799	248	550.4	3.5	1.3	5.0		19.7
1800	154	433.2		3.1			17.6
1801	98	54.2		22.7	6.0		130.8
1802	154	63.6			0.2	3.5	129.4
1803	175	330.4	3.7	3.1	1.5	53.2	60.1
1804	187	98.1	7.5		3.0	18.4	181.4
1809	231	51.0	13.8	9.0	3.0	5.3	85.6
1810	173	117.0		3.6	0.2	1.1	67.4
1811	181	126.9		0.5	2.1	48.4	138.0
1812	162	117.7				7.1	286.6
1813	102	485.4		0.6	2.6		0.3
1814	153	240.0			2.7	15.1	428.0
1815	167	198.8		0.4	1.5	17.1	83.9
1816	179	439.4	2.4	3.5	0.3	15.9	245.7
1817	163	203.0	15.4			3.6	219.5
1823	208	82.3					412.4
1824	187	77.3		2.1	6.0	6.1	79.8
1825	144	375.2			1.4	11.1	1.4
1826	93	226.3					
1839	250	1139.3					51.6
1840	181	527.0					26.8
1841	241	1216.4					34.2
1849	188	1750.3					79.9
1850	152	374.4					361.4
1851	153	583.8					230.4
1852	220	797.5	0.9	5.3		0.9	32.7
MEAN		402.2	1.6	1.8	1.2	6.9	120.6

Continued

SLOPE 260 - 700m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles etc.	Squid	Other
1805	373	180.6		12.3			82.2
1806	554	30.7				1.4	46.0
1807	409	13.2		6.7		2.5	3.1
1808	325	1107.7		56.8	8.4	10.3	320.8
1818	309	246.4			5.0	76.4	881.0
1819	426	1127.4		11.3		11.5	20.2
1820	578	142.8				21.2	80.7
1821	515	380.8				56.0	27.3
1822	404	574.2	3.3	20.8		13.2	112.2
1827	307	137.7		10.9		7.0	5.6
1828	348	1085.6				5.6	
1829	418	988.0		11.3			116.6
1830	545					6.0	22.5
1831	464	58.0				0.6	27.7
1832	300	1238.0		21.4		4.3	17.2
1833	361	875.2		7.1		49.9	150.5
1834	407	4301.7					94.5
1835	448	216.0				14.1	25.0
1836	405	2610.0					149.0
1837	351	585.0					79.4
1838	295	423.0					39.8
1842	289	467.9	26.7				62.3
1843	365	1172.8	2.4	20.0		8.6	130.6
1844	435	1002.3	5.4	3.5		5.6	58.0
1845	545	1065.6					156.0
1846	499	389.0				8.3	78.0
1847	404	487.4				15.2	90.8
1848	319	638.1		2.9		12.1	222.4
1853	306	610.8	15.3	2.7	0.4	6.5	194.8
1854	446	1058.0				21.4	175.3
1855	659	63.9				17.8	69.1
MEAN		750.9	1.7	6.1	0.5	12.1	114.2

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 lower than of the previous survey.

	100-250m	250-350m	350-450m	450-550m	550-650m	650-750m
Cape hake						
Density	11.0	18.2	4.7			
Catch rate	330	540	140			
Deep w. hake						
Density	0.1	5.1	31.5	12.1	2.9	2.0
Catch rate	4	150	950	360	90	60
No. of hauls	26	10	14	5	2	1

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 distribution pattern of the two species is similar to that found in the previous surveys with relatively high densities of Cape hake extending from 25°S to about 27°S.

Biomass estimates based on a poststratification of the densities as shown in Figure 4 and 5, give 180 000 tonnes for the Cape and 115 000 tonnes for the deep water hake (Table 4). For both species, the estimates are about 20% lower than during the previous survey. The 95% confidence limits give a range of $\pm 11\%$ of the estimate of the Cape hake.

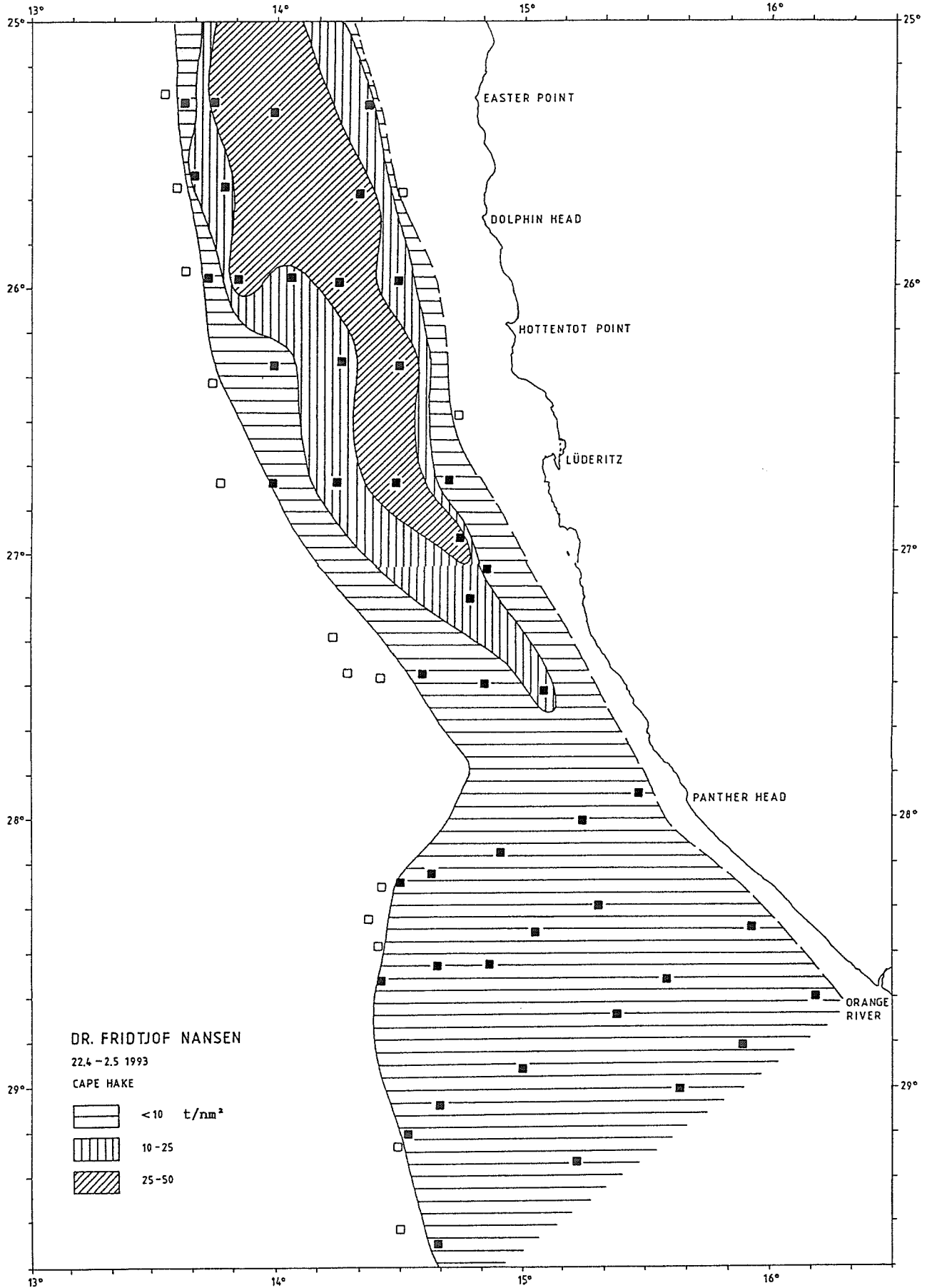


Figure 4 Orange River to St. Francis Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

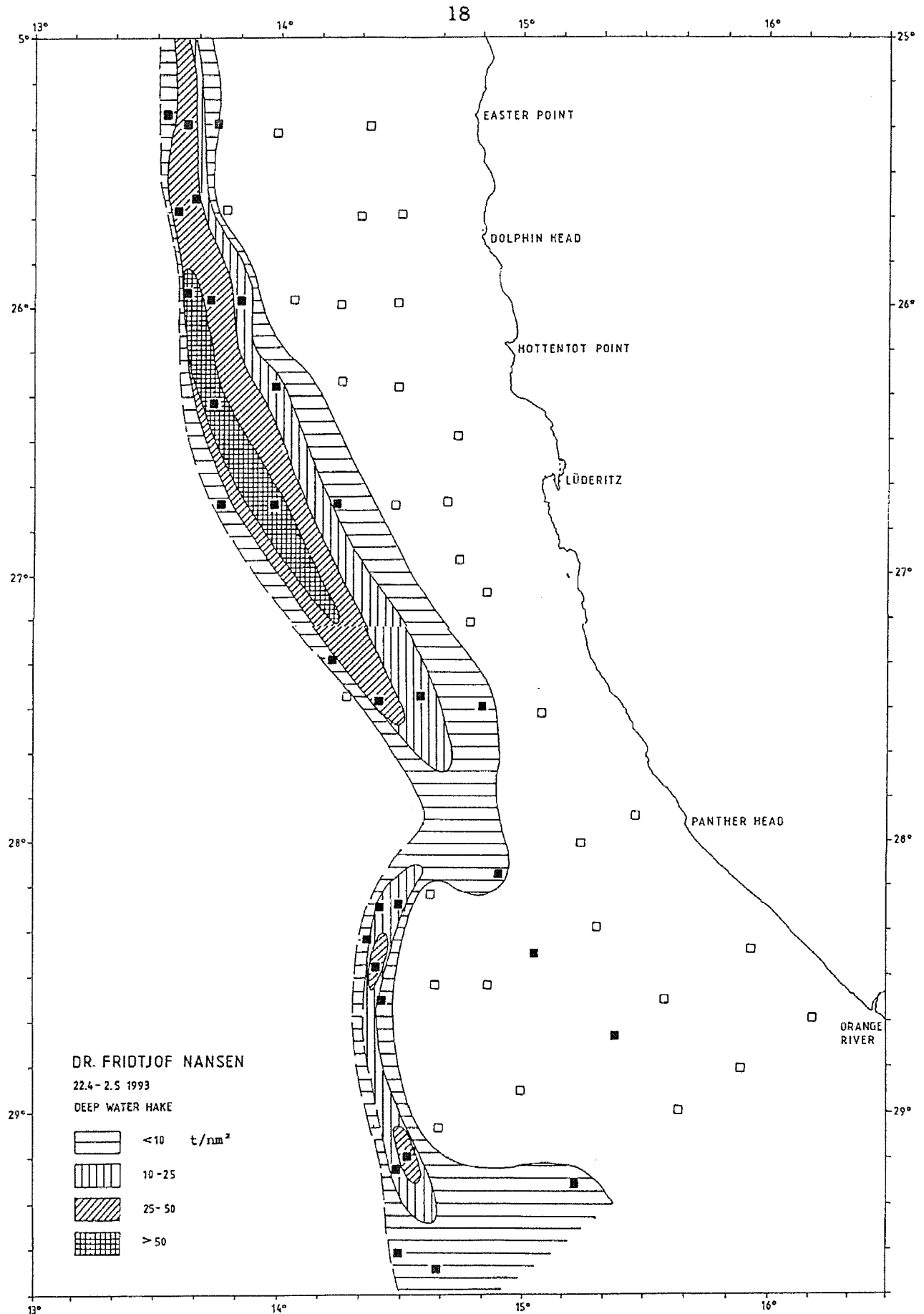


Figure 5 Orange River to St. Francis Bay. Distribution of deep water hake. Empty squares indicate stations where deep water hake was not caught.

Survey/Year	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
2/93	180	115

The size compositions of the Cape hake from pooled samples weighted by catch rates are shown for each region by depth ranges in Annex I. There is as usual an increase of size with depth. A cohort analysis on the length distribution was performed in the same way as during survey 2/92. The results are shown in Table 5.

Mean length	Sigma	Fraction of young fish	Fraction of all fish	Population million N
27	2.25	0.70	0.60	390
32	2.9	0.30	0.29	190

The dominating cohort with a modal size around 27 cm is assumed to be that found in this region in the October-November 1992 survey with a mode of 22.5 cm, while the 32 cm cohort was then depicted at 26.7 cm. The abundance index of the 27 cm cohort in the southern region is however reduced from 680 to 390 million fish since November.

The fishable part of the Cape hake in this region defined as fish 36 cm and larger is estimated at 14% by numbers and 52% by weight of the total stock. This corresponds to about 90 million fish with a biomass of 94 000 tonnes. This is a decrease from about 134 million fish and 115 000 tonnes in Survey 1/93. In survey 2/92 the estimate was 100 million fish and 75 000 tonnes. The mean body weight in the fishable biomass during the three last surveys is thus 0.75, 0.85 and 1.04 kg. This would correspond to average lengths of 48, 50 and 52 cm. That the fishable biomass thus shows signs of 'aging' could indicate that there is a lack of recruits coming in from the non fishable biomass, or that the individual growth is stimulated through lesser food competition by fewer individuals. Possible causes for this trend should be better examined.

The size composition of the deep water hake is shown in Annex I. The fishable part of this stock is 58% by numbers and 82% by weight corresponding to about 168 million fish with a biomass of 95 000 tonnes.

Some sampling was made of the state of maturity of the gonads of female fish using a scale of 1-5 (Annex II). The results can be summarized as follows:

	n	Stage	1	2	3	4	5
Cape hake	322	%	11	37	29	7	15
Deep w. hake	265	%	31	50	10	6	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 6 shows the catch composition for the shelf and the slope by main groups. The mean catch rates for hake are slightly higher than those obtained in the January-February 1993 survey, but considerably below the rates from survey 2/92. The by-catch rates for monk and squid are largely of the same level as other recent surveys.

Table 6 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
1858	248	875.9					475.9
1859	174	1857.1					171.2
1861	147	291.2					96.2
1862	255	294.8	6.9			4.0	136.7
1863	259	385.9	1.2		2.5	5.8	94.1
1869	249	493.4	38.3	0.6	5.0	0.4	192.0
1870	152	16.0					44.2
1871	178	2408.0					80.0
1872	242	980.7	16.0			9.4	430.9
1880	254	1200.8	6.0				152.2
1881	205	5365.2					2583.3
1882	169	5876.0					20.0
1883	143	0.6					60.0
1884	147	15.4					110.0
1885	152	199.1					114.7
1886	210	3409.5	5.5		2.4		298.5
1897	259	1460.9	55.0		2.0		246.4
1898	201	1194.0	36.4		12.7	1.9	577.5
1899	141	2121.6	67.0		3.0		179.2
1900	137	0.5					
1901	215	1791.8	4.3		1.0		173.6
1906	252	2548.0	28.0		2.7	14.8	277.2
1907	231	1121.3	1.6		6.1		40.6
1908	198	1825.9			1.9		4.5
1909	139	1415.0					244.0
1911	126	5.2					300.0
1912	160	170.0					71.3
1913	163	655.6					116.6
1920	247	522.7				3.0	38.8
1921	154	1385.4				1.7	171.4
1923	124	4.2					75.6
1924	150	1213.4					274.1
1925	253	1244.0					554.8
1933	122	318.2			3.0	0.9	152.0
MEAN		1254.9	7.8	0.02	1.2	1.2	251.7

Continued

SLOPE 260-700m

ST.NO.	DEP.	Hakes	Monk	Kingklip	Soles	Squid	Other
1856	513	647.6				71.4	165.3
1857	398	360.4	2.7			28.8	83.1
1864	348	107.4			1.5	3.4	59.2
1865	413	771.0				15.2	137.0
1866	546	157.3				39.3	162.3
1867	363	246.4				3.9	93.7
1868	314	557.1	1.9	3.9			119.5
1873	267	878.6	1.4			12.6	111.8
1874	292	823.5	1.1			67.8	234.0
1875	393	360.0	13.0	2.6		124.0	198.5
1876	554	522.1				186.5	155.0
1877	518	92.7	17.4			71.4	351.6
1878	416	205.3				28.2	188.5
1879	318	306.6	2.2			6.8	79.5
1887	277	1339.2	6.0			22.7	182.3
1888	361	94.6				6.3	89.1
1889	455	79.9	4.9			13.5	130.6
1890	550	3.1	1.3			2.8	42.6
1891	651	36.0				1.1	151.0
1892	497	100.9				21.5	108.6
1893	425	279.3	3.2			15.2	217.5
1894	321	415.8	2.9	2.0			121.0
1895	298	1433.1	9.3			28.0	130.0
1896	352	227.9	11.5				220.7
1902	265	113.7	1.0		0.9		82.6
1903	297	964.7	16.0			12.2	90.7
1904	443	323.0				7.4	289.9
1905	308	888.5	9.8				287.0
1916	354	371.4				6.2	62.4
1917	449	40.0				9.7	24.8
1918	418	204.7	23.1			38.0	183.5
1919	309	628.0	7.0		6.7	16.8	526.8
1926	308	203.4				14.9	154.6
1927	355	335.1				12.9	49.1
1928	447	151.2				17.6	172.5
1929	530	104.9				4.7	116.0
1930	461	182.0				4.7	91.3
1931	349	262.0	0.9			7.8	62.3
1932	305	205.2			0.8	35.8	233.2
MEAN		385.2	3.5	0.2	0.3	24.6	152.8

The density index by depth ranges of the two hake species is shown in Table 7. For the Cape hake the marked reduction in abundance in the shallow ranges between survey 2/92 and 1/93 is reconfirmed by this survey. There is no great change for the deep water hake.

	100-250m	250-350m	350-450m	450-550m	550-650m	650-750m
Cape hake						
Density	34.4	23.8	4.6	0.5	1.2	
Catch rate	1 030	710	140	15	35	
Deep w. hake						
Density		0.6	4.6	6.3	8.2	1.3
Catch rate		20	140	190	250	40
No. of hauls	28	21	14	7	2	1

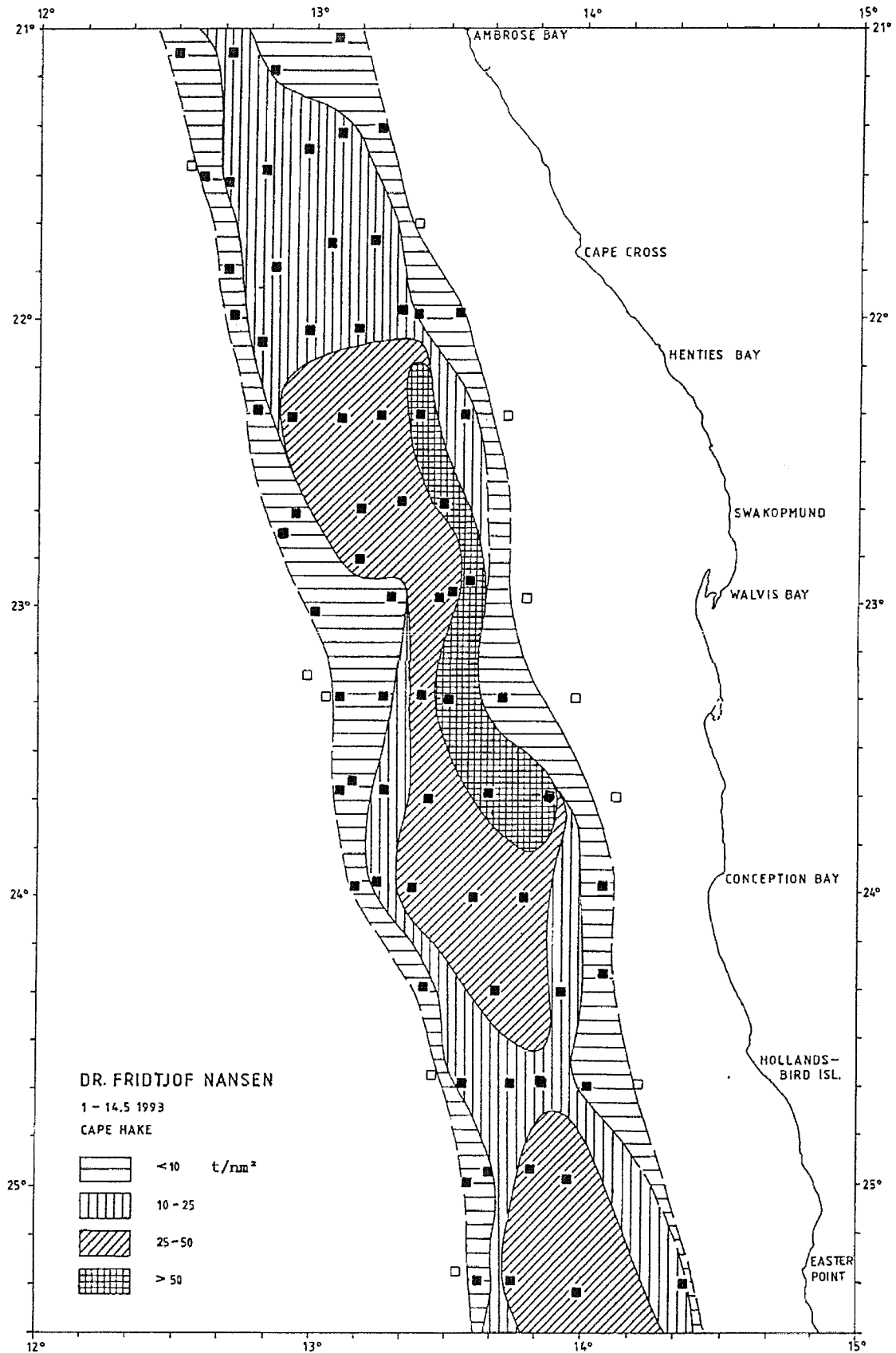


Figure 6 St. Francis Bay to Ambrose Bay. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught

Figure 6 shows the distribution of Cape hake over this region. This has the same main features as that of the last survey, but there has been a clear seaward migration of the fish from the shallower zone since the last survey, leaving the coastal areas virtually unpopulated by the young hake.

The size composition of pooled samples of Cape hake from fishing stations weighted by the catch rates are shown according to region and by depth ranges in Annex I. The juvenile group dominates in the shallow range with a modal peak length of about 25 cm as compared with a 22 cm and 24 cm modes in the two last surveys, respectively.

The results from a cohort analysis on the length distribution are shown in Table 8.

Table 8 Central Region. St. Francis to Ambrose Bay. Cape hake. Estimated age-cohorts from optimized length distributions.				
Mean length	Sigma	Fraction of young fish	Fraction of all fish	Population million N
25	2.05	0.91	0.85	1370
31	2.8	0.09	0.08	158

The dominating cohort with a mean length of 25 cm is assumed to be that found in this region in the October-November 1992 survey, and is identified as the 1991 yearclass. The 31 cm cohort was then located at 26.7 cm. The abundance index of the 25 cm cohort in the central region is, however, reduced from 3 500 to around 1 370 million fish since November. In survey 1/93 the same cohort was estimated to 1 230 million fish in a more approximate method, indicating the same level as now found. The present survey therefore supports the conclusions from the previous, and it seems likely that a mass mortality has hit a large fraction of the 1991 yearclass in the period December 1992 to February 1993. The 31 cm cohort is reduced during the same period from 880 million to 158 million fish, but part of this could be due to migration northwards.

The biomass estimate of Cape hake for this region, based on the post stratification shown in Figure 9, is 280 000 tonnes. The fishable part of this, measured as fish of 36 cm and larger is 6% by number and 42% by weight, corresponding to about 95 million fish with a biomass of 118 000 tonnes. The 95% confidence limits give a range of $\pm 16\%$ of the estimate for Cape hake. In the course of the three last surveys the estimates of the fishable biomass have dropped from 230 million fish (2/92), through 145 million fish (1/93) and to 95 million fish (2/93), while the mean body weight in the fishable stock at the same time has increased from 0.78 kg, through 1.03 kg to 1.25 kg. The same pattern was found in the southern region reported above, and a further analysis should reveal if this is a seasonal pattern where the recruitment is halted only temporarily.

Survey/Year	Cape hake	Deep water 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
2/93	280	20

The deep water hake was found in a narrow belt along the slope at 350-550m of depth. The size composition is shown in Annex I. Of the 20 000 tonnes biomass, 60% by numbers and 82% by weight was of fishable size.

Maturity sampling of female Cape hake of 30-70cm of length showed the following state:

n	Stage	1	2	3	4	5
263	%	5	35	32	3	25

Most of the specimens were thus in a resting condition.

3.4 NORTHERN REGION, AMBROSE BAY TO CUNENE RIVER

Table 10 shows the catch rates by main groups for the shelf and slope separately. The mean rate for hake has shown a declining trend for the two last surveys and the rates on the shelf and on the slope are now respectively 50% and 37% lower than in November 1992. On the other hand the dentex show a marked increase in the same period.

Table 11 shows the depth distribution of the hakes. As for the overall catch rates, there is a downward trend in all depth zones compared to the two previous surveys.

	100-250	250-350	350-450	450-550	550-650	650-750
Cape hake						
Density	9.3	16.5	12.8	2.3		
Catch rate	280	500	390	68		
Deep w.hake						
Density			0.6	3.2	0.9	
No of hauls	19	24	10	11	4	

Table 10 Northern Region. Catch rates by main groups by swept area bottom trawl for the shelf and slope.

SHELF 100-259m

ST.NO.	DEP.	Hakes	Monk	Dentex	Horse mck.	Squid	Other
1934	137	36.5			0.8		55.8
1949	225	706.3			358.8	0.8	0.8
1950	210	235.0			13.3		1.9
1953	246	196.1	6.4	82.5	63.8		86.9
1954	192	1167.2		544.0	17664.0		384.0
1955	136	236.0		1292.0	2189.6	38.2	160.0
1956	237	1495.0		853.3	19.2	1.7	645.9
1964	166	220.8		155.0	1378.0		137.4
1965	115	24.4		600.6	128.0	13.1	195.5
1966	141	169.8		14.0	44.0	4.0	315.4
1972	232	126.4		224.0	214.8		78.9
1973	168	83.8		1212.2	352.0		2.7
1986	232	70.2		3.1	48.0		
1987	189	12.0			5.4		1.0
1988	182	12.3			34.4		
1989	159	159.0			72.0		
1990	232	252.0			4.6		0.7
2000	251	7.7			2.3		0.1
2001	222	298.2			3.1		6.8
2002	147	242.4			584.0		13.0
MEAN		287.6	0.3	249.0	1159.0	2.9	104.3

SLOPE 260-750m

ST.NO.	DEP.	Hakes	Monk	Dentex	Horse mck.	Squid	Other
1935	303	122.0	3.8	24.6	16.0	1.7	36.3
1936	331	593.4				14.2	97.6
1937	353	579.1	5.6		8.4	19.1	108.4
1938	462	251.9				10.7	197.2
1939	541	79.6	1.8			18.3	195.7
1940	391	717.8				31.6	188.4
1941	311	458.6	3.1		18.0	3.6	126.3
1942	595	17.0				24.0	160.2
1943	706		9.0			7.8	70.6
1944	493	29.0				2.4	197.8
1945	326	564.6			7.7	5.8	107.6
1946	298	1170.2		15.0	6.6	2.3	106.5
1947	280	884.2	11.4	413.4	192.4		292.1
1948	269	467.4		80.6	22.6		46.0
1951	483	405.3	25.1				286.0
1952	287	726.6	2.9	47.2	10.8		396.4
1957	407	1020.2			4.2		324.8
1958	509	60.0					434.7
1959	603	20.4					153.7
1960	420	448.0				2.5	267.3
1961	549	218.1			7.0	8.7	437.9
1962	455	486.8	3.4		11.4	4.9	632.5
1963	343	1517.1			9.4	7.5	157.6
1967	263	1402.8		52.0	204.0	1.5	360.7
1968	457	169.8		0.8		3.7	93.1
1969	344	701.2	4.3	4.8	11.5	2.7	204.9
1970	290	546.0		204.0	16.1	7.2	431.5
1971	301	39.6	6.0	97.0	13.0		126.8
1974	285	10.1	1.6	3.1	3.4		11.1
1975	308	94.8	2.9		4.1		85.0
1976	344	588.0		11.0	6.5	11.4	152.4
1977	449	176.2				14.2	100.0
1978	552	7.6				1.0	300.7
1979	599	77.8				4.0	138.6
1980	499	180.6				3.8	106.5
1981	402	233.6				9.3	272.2
1982	362	534.9	8.0			3.4	147.7
1983	335	298.7	2.9		8.8	3.8	965.5
1984	311	557.7	8.7	3.1		3.6	91.5
1985	270	167.4			2.3		2.4
1991	275	112.1			3.4		0.1
1992	318	211.6		61.4			14.2
1993	375	46.2					
1994	433	30.4				1.2	43.1
1995	534	63.8	0.6			0.6	167.9
1996	505	85.6				1.2	49.9
1997	402	520.0				3.7	107.3
1998	304	1140.0	3.3	10.0		6.0	175.4
1999	285	680.0	0.1	296.2	14.0	2.0	77.0
MEAN		398.2	2.1	27.0	12.3	5.1	188.7

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 northwards to Cunene.

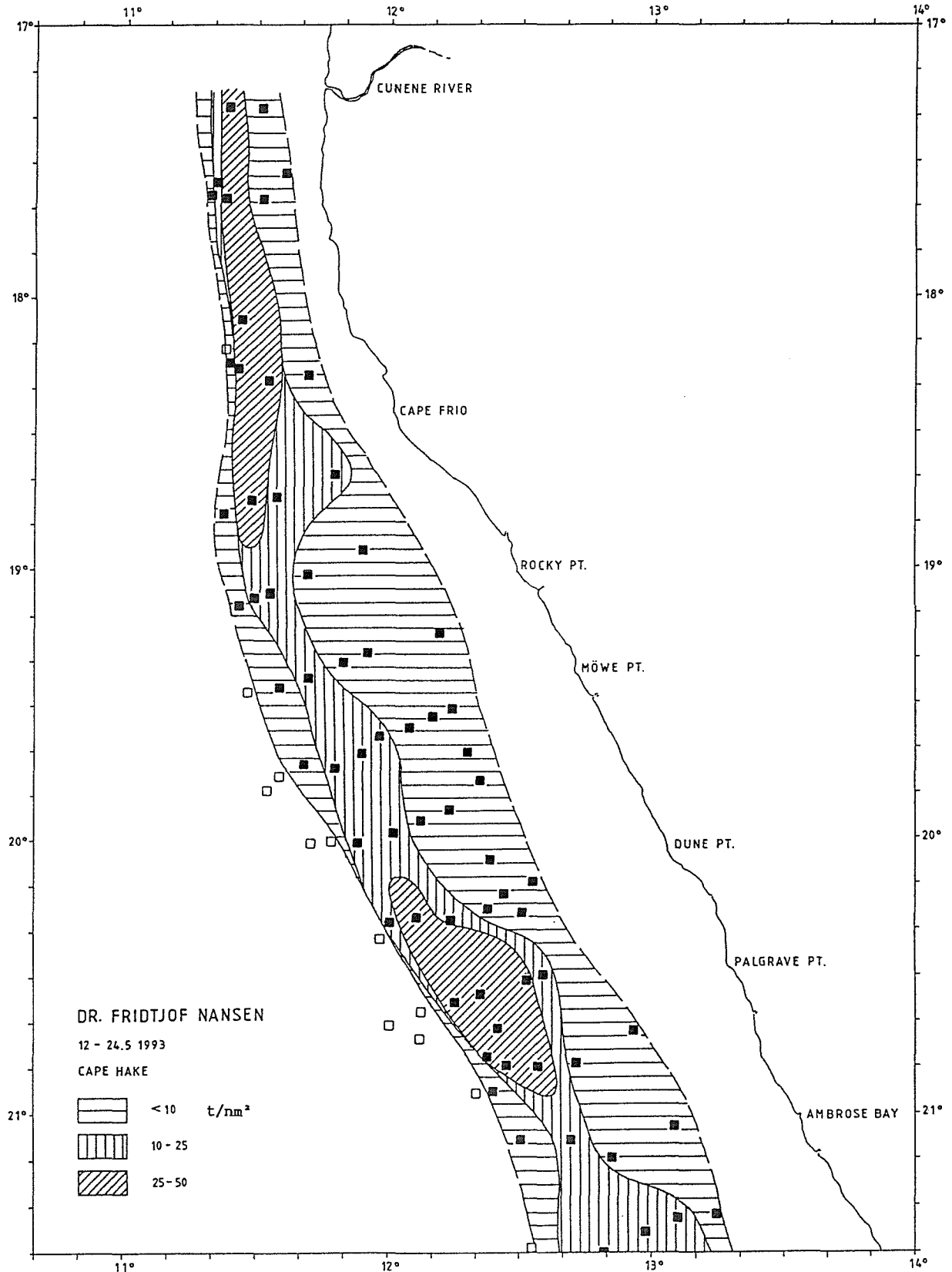


Figure 7 Ambrose Bay to Cunene River. Distribution of Cape hake. Empty squares indicate stations where Cape hake was not caught.

Biomass estimates give a total of 110 000 tonnes \pm 13% (95% confidence interval) (Table 12) with a fishable part (36cm and larger) of 88 000 tonnes (80%) representing 106 million fish, a decline of about 25 000 tonnes compared with the last survey, and 55 000 tonnes compared with survey 2/92. The mean body size in the fishable biomass is 0.7 kg, a decrease since the last survey from 0.81 kg, and an opposite trend to the one observed in the southern and central region. This could indicate that the recruitment into the fishable biomass is mainly occurring in the northern region at present.

Table 12 Northern region, Ambrose Bay to Cunene. Estimates of total biomass by surveys. 1 000 tonnes.		
Survey/Year	Cape hake	Deep water 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
2/93	110	6

The size compositions of the Cape hake is shown in Annex I. A cohort analysis was attempted on a pooled length frequency distribution to be representative for the whole population in the northern region. Normal distributed cohorts could not account for the complete distribution, but the results from the best fit are shown in Table 13. The group with a mode at about 27.6 cm is assumed to be the cohort with a mode of 23.5 cm in October-November. In that survey its numerical abundance was estimated at 310 million compared with a present estimate of 125 million fish. In survey 1/93 this cohort was estimated to 270 million in this region.

Table 13 Northern Region, Ambrose Bay to Cunene River Cape hake. Estimated age-cohorts from optimized length distributions.				
Mean length	Sigma	Fraction of young fish	Fraction of all fish	Population million N
27.6	2.7	0.89	0.51	125
33	3.1	0.11	0.06	15
40	4.1			

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

n	Stage	1	2	3	4	5
806	%	7	46	20	3	24

CHAPTER 4 CONSIDERATIONS ON THE SURVEY RESULTS

The present survey is the 8th 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 14 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 reduced that problem in the subsequent surveys, but in survey 1/1993 and in the present survey this behaviour is again thought to have caused some underestimate of biomass, especially in the northern region.

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
2/1992					
20/10-1/12	No. stations	64	78	50	192
	" samples	188	169	143	500
	" measured	13.1	13.4	7.8	34.3
1/1993					
20/1-25/2	No. stations	72	56	56	184
	" samples	197	162	118	477
	" measured	12.7	11.9	7.6	32.2
2/1993					
22/4-25/5	No. stations	61	78	69	208
	" samples	173	202	163	538
	" measured	10.8	13.9	10.2	34.9

The trends in the findings for the deep water hake seem 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 15. The difference in depth distribution between the two species is clearly demonstrated. There has 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 normally restricted to a depth range of about 130 to 200-250m. In the central region densities were high in this range in survey 2/1992, but with a marked reduction in the last two surveys, and the densities are now as in survey 1/92 in the central region and well below in the northern.

Table 15 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
2/93	11.0	18.2	4.7	
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
2/93	0.1	5.1	31.5	12.1
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
2/93	34.4	23.8	4.6	0.6
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
2/93		0.6	4.6	6.0
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
2/93	9.3	16.5	12.8	2.3

Table 16 shows the biomass estimates for the two stocks by regions and the corresponding data for the seven previous surveys. The most remarkable finding of the two last surveys is the decline of the total biomass of the Central Region from the Oct-Nov 1992 results of 540 000 tonnes to 280 000 tonnes. As discussed above this consists mainly in a reduced abundance of recruit fish below 36 cm of length from a level of 370 000 tonnes in the survey 2/92 through 130 000 tonnes in the last survey and 118 000 at present. Some survey variability may be involved, but the charts of biomass distribution from the three last surveys show clearly that the extended inshore high density area of juveniles of the Oct-Nov 1992 survey is now greatly reduced and that there has been a seaward movement of the 'gravity point' of the fish distribution. Extensive nearshore areas, previously densely populated are now practically free from hake recruits. The reduction by number is about 2000 million fish, or a reduction of 40% of its previous level in three months. No increase in the abundance of juveniles has been observed in the other regions. This would support the idea that the shelf region off Walvis Bay may be periodically subject to marked seasonal fluctuations in environmental conditions which could be responsible for mass mortalities of fish. Periodical mass mortalities of fish have been reported from the Walvis Bay area since the first half of the nineteenth century and most of these occur in the period December-January. Intrusion of upwelled oxygen deficient water onto the shallow shelf and sudden outburst of sulphur gas from the sediments have been suggested as causes, but the processes are not well understood. It is also the experience from the Nansen surveys that trawling in the mud belt off Walvis Bay at times gives large amounts of fish bones in the trawl, supporting the idea that this area could be an environmental trap.

	TOTAL BIOMASS							
	Feb-Mar 1990	Sep-Oct 1990	Jan-Feb 1991	Oct-Nov 1991	Apr-May 1992	Oct-Nov 1992	Jan-Feb 1993	Apr-May 1993
SOUTH REGION								
Cape hake	130	130	126	80	200	160	210	180
Deep w. hake	22	25	31	83	145	125	150	115
CENTR. REGION								
Cape hake	180	219	150	302	261	542	280	280
Deep w. hake	4	6	6	13	15	15	12	20
NORTH REGION								
Cape hake	180	105*	200	140	185	190	150	110
Deep w. hake				2	4	8	4	6
TOTAL	516		513	620	810	1040	810	710
TOT. FISHABLE	220		300	370	503	490	520	420

* unadjusted underestimate due to fish off the bottom.

The present estimate for the Cape hake is lower than the one obtained in the previous survey by 100 000 tonnes, 80 000 tonnes of which represent fishable biomass. This is a reduction in the fishable biomass of 21% over 3 months.

This difference could be ascribed to a real reduction in the fishable biomass or to random statistical variability as well as to sampling problems due to the pelagic behaviour of the hake and systematic sampling bias.

The pelagic behaviour is mainly a problem in the northern region and the consistent reduction in the estimates of fishable biomass by 18%, 21% and 25% in the southern, central and northern region respectively, suggests that this is not likely to be the reason of the observed reduction. The hypothesis of the presence of a systematic sampling bias in the last survey should also be excluded as sampling procedures and gear have remained unchanged during the period.

The trend in the estimates of fishable biomass of the two hake species, the recruits (both species combined) and the total are also shown in Figure 8. For the Cape hake there has been an increasing trend in the fishable biomass from early 1990 until end of 1992. The two recent surveys indicate at least stagnation in the rate of increase. It is however recommended to seek confirmation by other data. If the estimated trend signifies a true reduction in the standing stock this should also be reflected in the average CPUE from the commercial fleet. It is therefore strongly advised that an analysis of the development of the catch rates from a few selected fishing boats are analyzed, since at least May 1992, in order to check whether the same declining trend has occurred there.

The development in the fishable biomass of deep water hake (Fig. 8 b) shows a sudden increase during 1991 to a level around 100 000 tonnes in the last two years. The increase has mainly taken place in the southern region and the part of the stock in Namibian waters is only a fraction of the stock with its main distribution point further south. The increase in Namibian waters can be seen as either a northern shift in the distribution of the deep water hake in general or as an effect of a general increase in the stock. Data from recent investigations in South Africa should clarify this and it is recommended to make consultations.

The bulk of the biomass of deep water hake is as previously found in the southern region. The slight reduction in the stock estimate is totally within the survey variability.

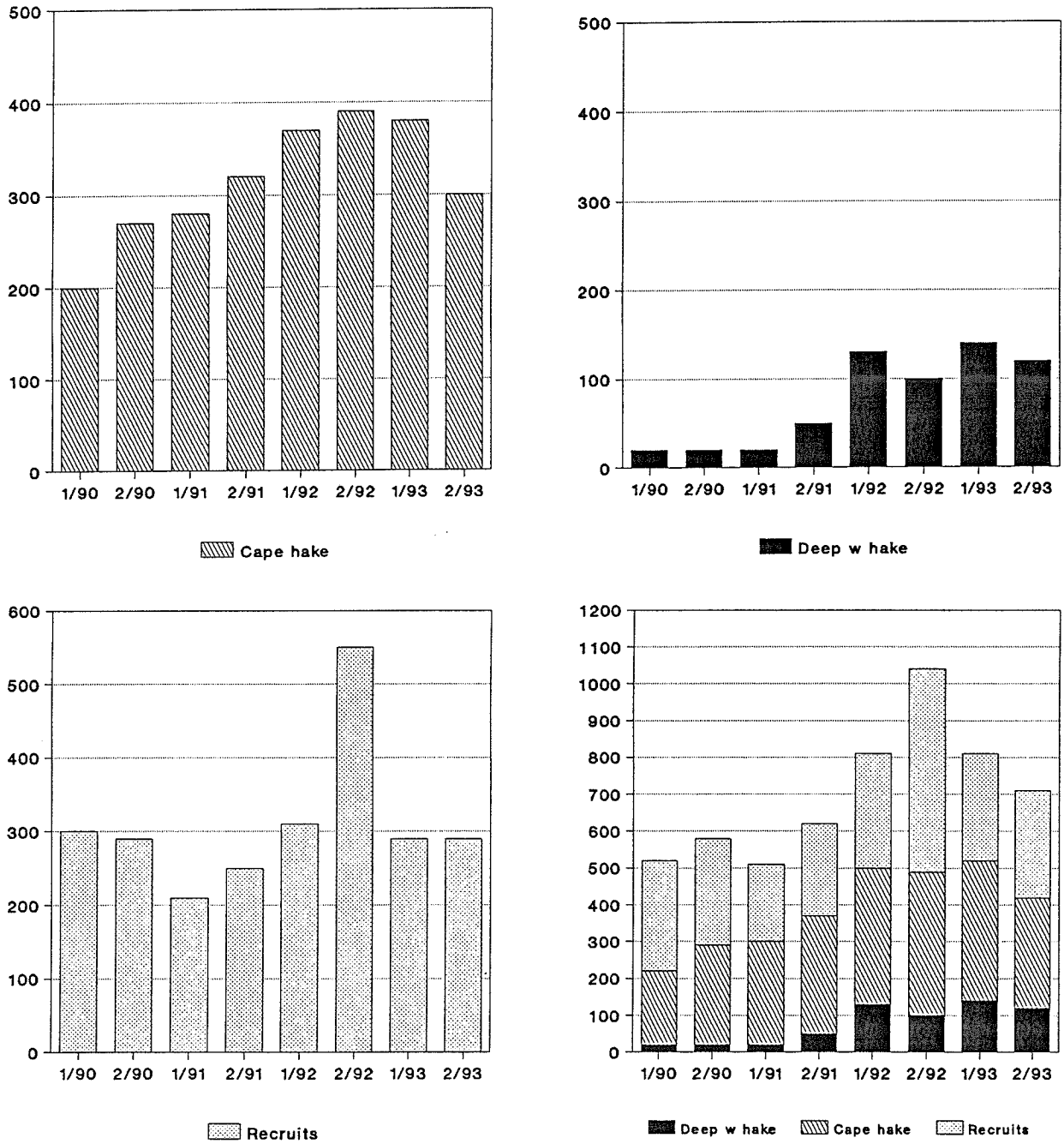


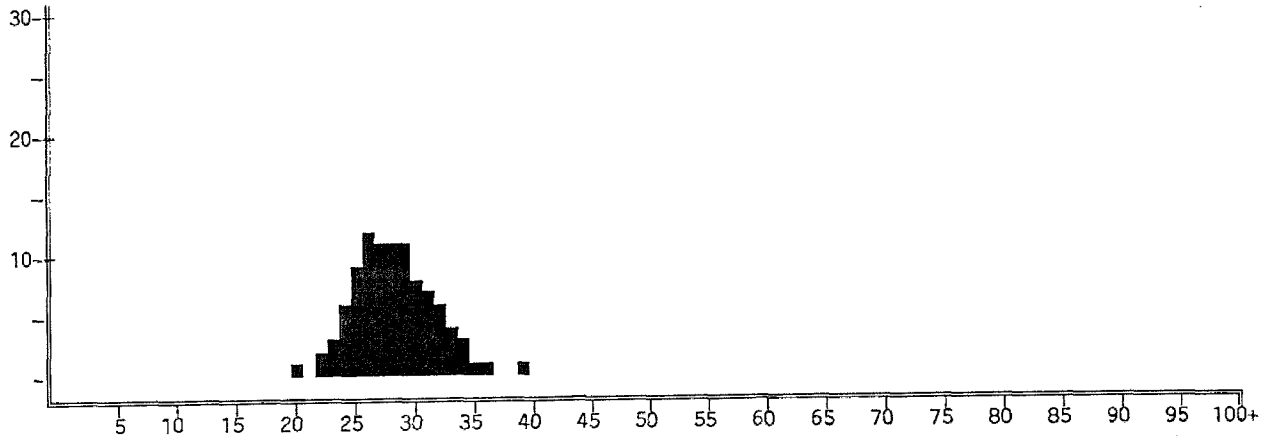
Figure 8 Trends in biomass estimates : a) Cape hake, 'fishable' stock, b) deep water hake, 'fishable' stock, c) recruits ('non-fishable' biomass) and d) total hake in Namibia. Thousand tonnes.

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 17 together with previous observations. In spite of its drastic reduction since November the abundance of the 1991 yearclass is now at a 'normal' level comparable to those of 1988 and 1990.

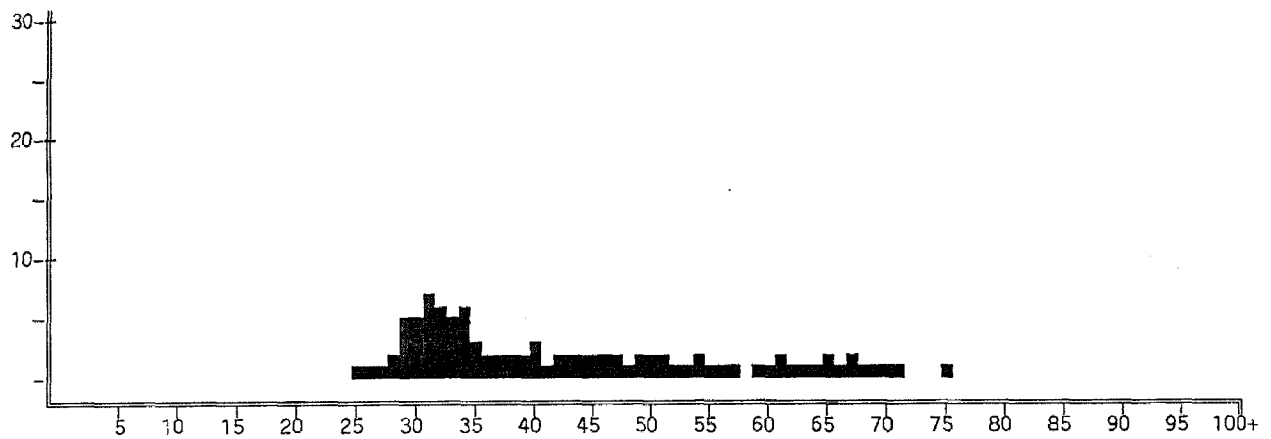
Table 17 Estimates of strength of recent yearclasses of Cape hake. Cohort population numbers at about two years of age for the groups assumed to have been spawned in 1988, 1989, 1990 and 1991. Millions of fish.							
Yearclass	1988	1989	1990	1990	1991	1991	1991
Region south	980	100	160	300	990	670	390
centre	1 320	170	1710	1620	3500	1230	1370
north	10	10	20	240	440	270	130
Total	2 310	280	1890	2160	4930	2170	1890
Survey/Year	1/90	1/91	2/91	1/92	2/92	1/93	2/93

However, a high reduction in the abundance of the hake cohorts between 25 and 35 cm may be a regular and stronger feature of the Namibian stocks in comparison with other hake species. A better understanding of the mechanisms behind this reduction should be given high priority and should involve a team effort from resource surveys, predator-prey relationship studies and biological oceanography.

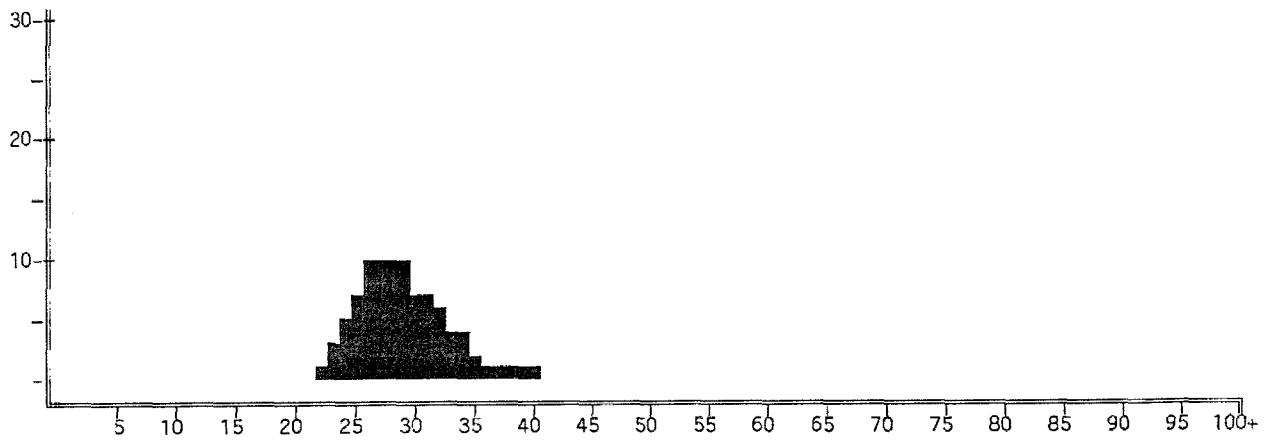
Annex I Size composition of main stocks



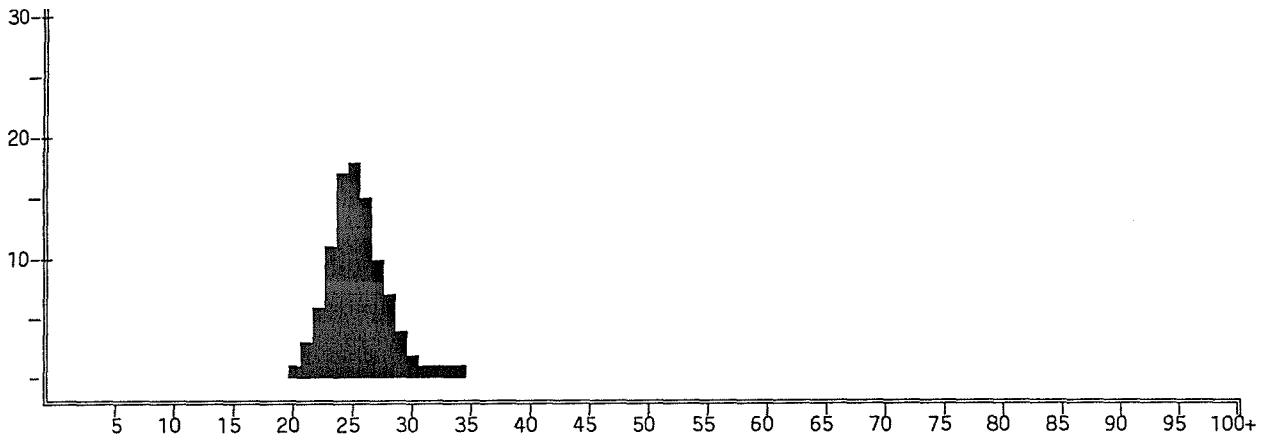
Merluccius capensis
SOUTHERN REGION 50 - 259m



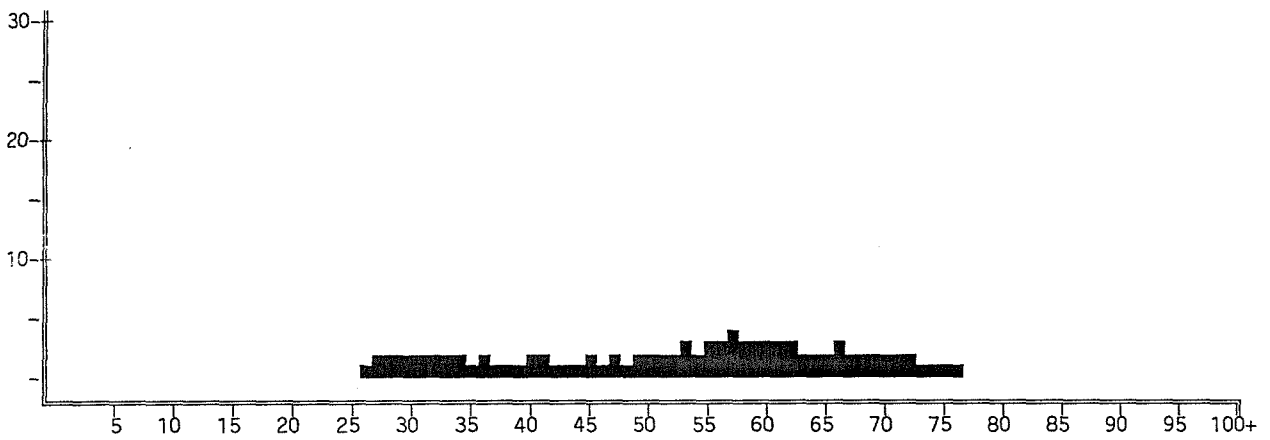
Merluccius capensis
SOUTHERN REGION 260 - 700m



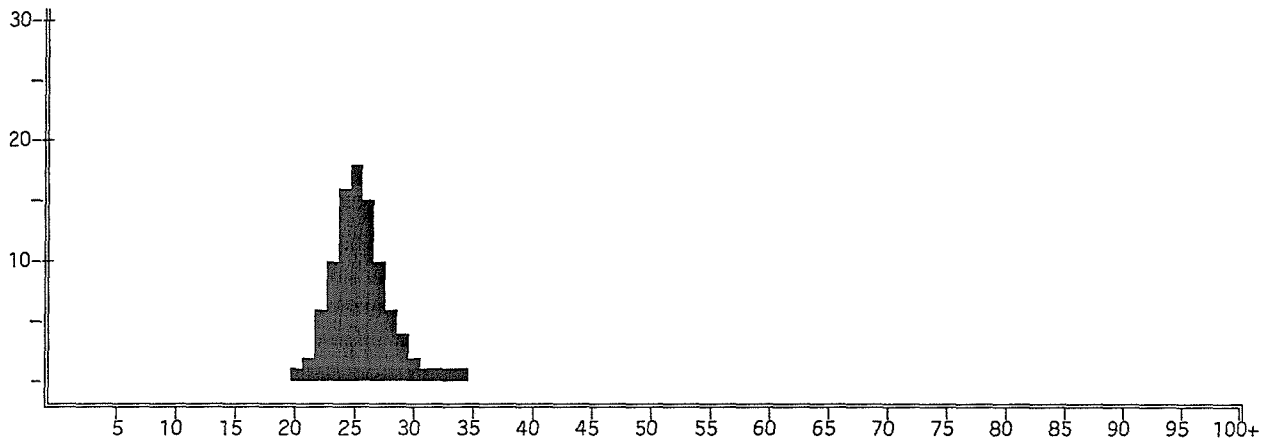
Merluccius capensis
SOUTHERN REGION Total



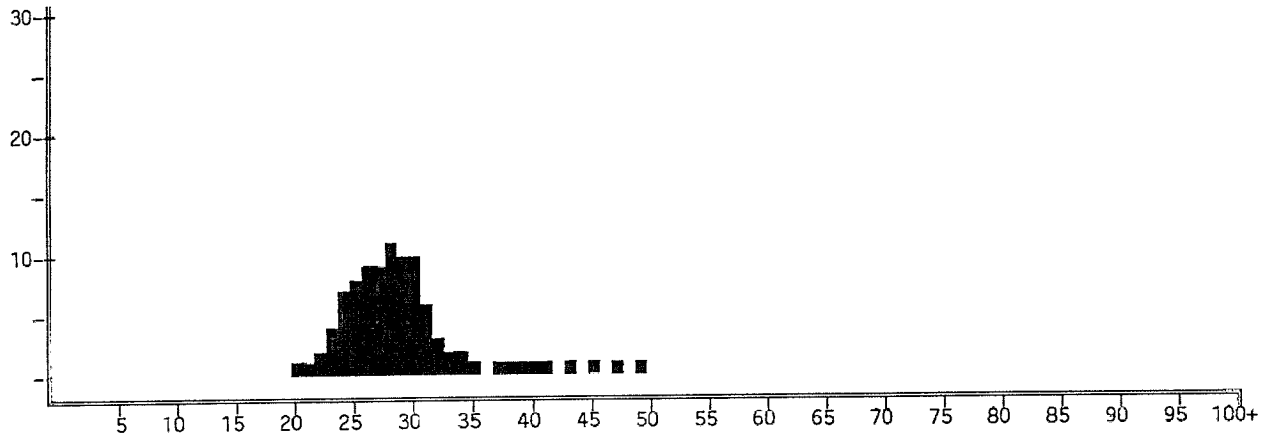
Merluccius capensis
CENTRAL REGION 100 - 259m



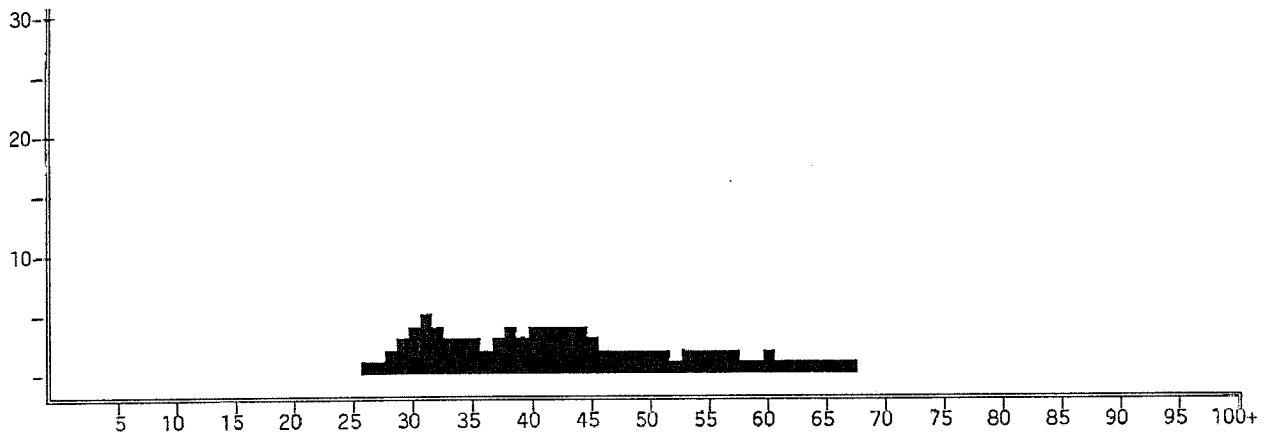
Merluccius capensis
CENTRAL REGION 260 - 700m



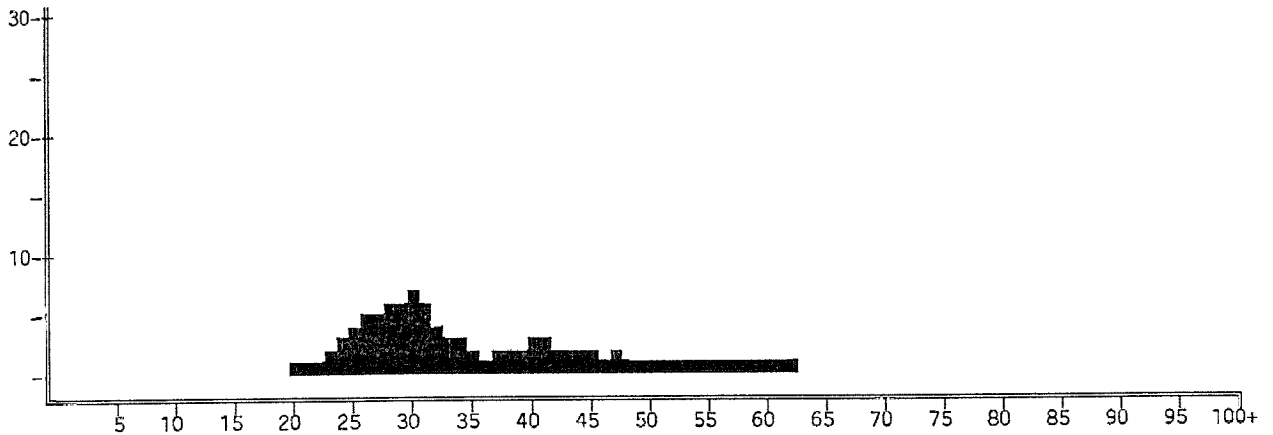
Merluccius capensis
CENTRAL REGION Total



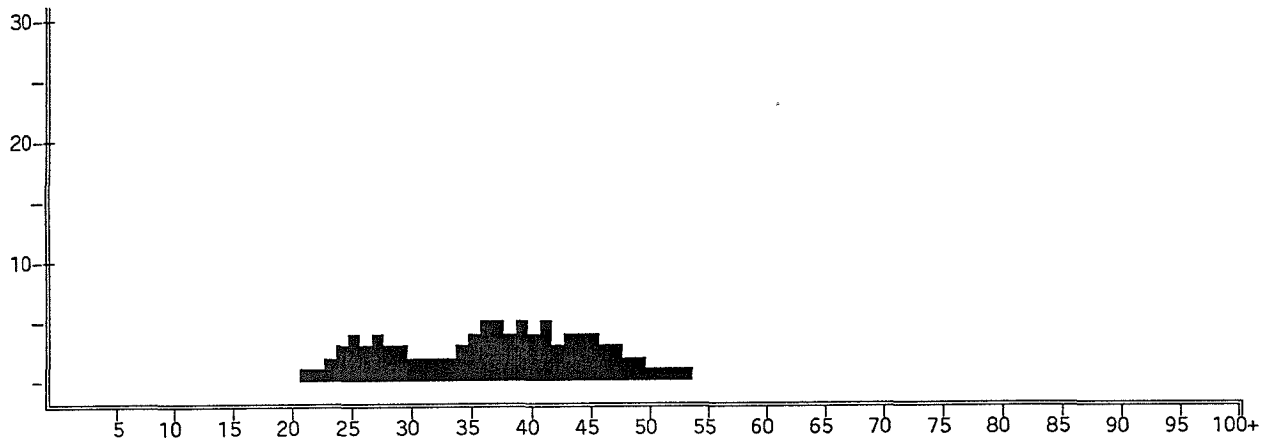
Merluccius capensis
NORTHERN REGION 100 - 259m



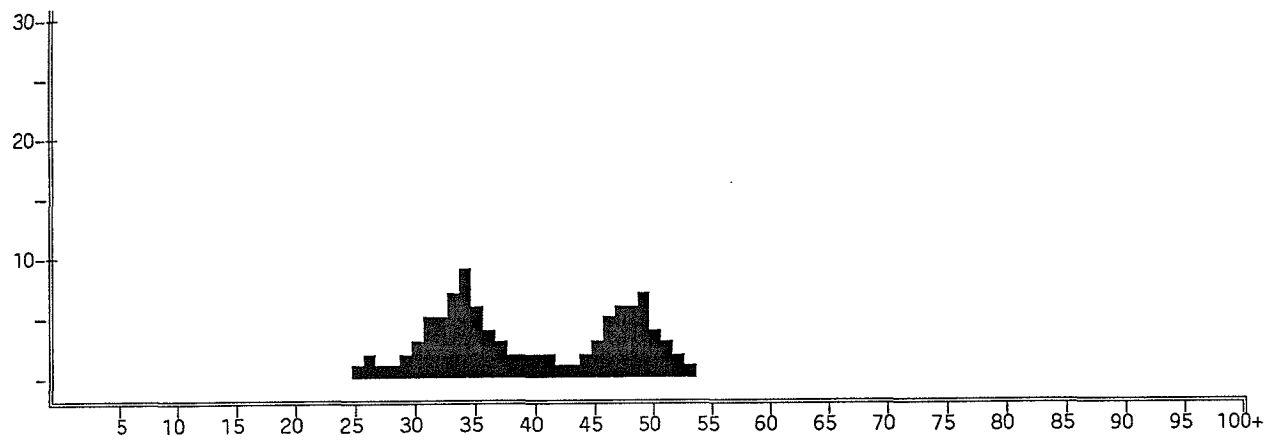
Merluccius capensis
NORTHERN REGION 260 - 750m



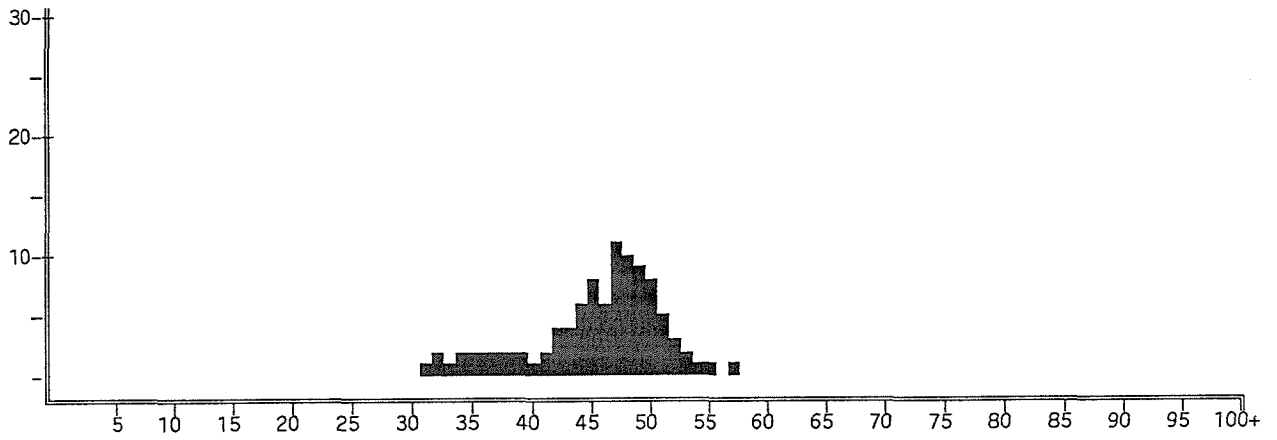
Merluccius capensis
NORTHERN REGION Total



Merluccius paradoxus
SOUTHERN REGION Total



Merluccius paradoxus
CENTRAL REGION Total



Merluccius paradoxus
NORTHERN 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 but large, flabby, prominently veined and often bloodshot.

Annex III Records of fishing stations

PROJECT STATION:1795				PROJECT STATION:1800			
DATE:22/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2630				DATE:22/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2732			
start stop duration Long E 1444				start stop duration Long E 1506			
TIME :08:38:00 09:08:00 30 (min) Purpose code: 3				TIME :22:05:00 22:35:00 30 (min) Purpose code: 3			
LOG :7519.00 7520.50 1.40 Area code : 1				LOG :7619.30 7620.90 1.80 Area code : 1			
FDEPTH: 165 161 GearCond.code: 8				FDEPTH: 149 159 GearCond.code: 8			
BDEPTH: 165 161 Validity code: 9				BDEPTH: 149 159 Validity code: 9			
Towing dir: 360 Wire out: 600 m Speed: 29 kn*10				Towing dir: 324 Wire out: 600 m Speed: 32 kn*10			
Sorted: 16 Kg Total catch: 16.09 CATCH/HOUR: 32.18				Sorted: 57 Kg Total catch: 226.97 CATCH/HOUR: 453.94			
SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.				SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.			
weight numbers				weight numbers			
Sufflogobius bibarbatu				Merluccius capensis, female			
30.00 144 93.23				256.00 1640 56.40 19			
Merluccius capensis, juveniles				Merluccius capensis, male			
2.14 144 6.65 1				168.00 1256 37.01 18			
				Sufflogobius bibarbatu			
				17.60 3.88			
Total				Merluccius capensis, juveniles			
32.14 99.88				9.20 528 2.03 20			
				Genypterus capensis			
				3.14 10 0.69 17			
				Total			
				453.94 100.01			
PROJECT STATION:1796				PROJECT STATION:1801			
DATE:22/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2644				DATE:23/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2840			
start stop duration Long E 1442				start stop duration Long E 1612			
TIME :11:20:00 11:50:00 30 (min) Purpose code: 3				TIME :07:54:00 08:24:00 30 (min) Purpose code: 3			
LOG :7538.80 7540.10 1.60 Area code : 1				LOG :7717.50 7719.10 1.70 Area code : 1			
FDEPTH: 207 204 GearCond.code: 8				FDEPTH: 97 98 GearCond.code: 8			
BDEPTH: 207 204 Validity code: 9				BDEPTH: 97 98 Validity code: 9			
Towing dir: 355 Wire out: 750 m Speed: 30 kn*10				Towing dir: 304 Wire out: 450 m Speed: 32 kn*10			
Sorted: 32 Kg Total catch: 32.06 CATCH/HOUR: 64.12				Sorted: 106 Kg Total catch: 106.86 CATCH/HOUR: 213.72			
SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.				SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.			
weight numbers				weight numbers			
Sufflogobius bibarbatu				Krill			
60.00 93.57				70.00 32.75			
Merluccius capensis, female				Merluccius capensis, female			
2.08 6 3.24 3				35.40 198 16.56 25			
Merluccius capensis, juveniles				Sufflogobius bibarbatu			
1.08 60 1.68 4				28.00 848 13.10 21			
Merluccius capensis, male				Thysites atun			
0.96 8 1.50 2				26.80 14 12.54 21			
Total				Genypterus capensis			
64.12 99.99				22.70 10 10.62 22			
				Merluccius capensis, male			
				18.00 134 8.42 24			
				Austroglossus microlepis			
				6.04 74 2.83 23			
				Squilla acuelata calmani			
				5.48 380 2.56 26			
				Merluccius capensis, juveniles			
				0.80 26 0.37 26			
				Chelidonichthys capensis			
				0.50 2 0.23 2			
				Total			
				213.72 99.98			
PROJECT STATION:1797				PROJECT STATION:1802			
DATE:22/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2657				DATE:23/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2851			
start stop duration Long E 1444				start stop duration Long E 1554			
TIME :13:57:00 14:27:00 30 (min) Purpose code: 3				TIME :10:34:00 11:04:00 30 (min) Purpose code: 3			
LOG :7558.30 7559.60 1.60 Area code : 1				LOG :7738.70 7740.30 1.50 Area code : 1			
FDEPTH: 217 216 GearCond.code: 8				FDEPTH: 153 155 GearCond.code: 8			
BDEPTH: 217 216 Validity code: 9				BDEPTH: 153 155 Validity code: 9			
Towing dir: 350 Wire out: 800 m Speed: 30 kn*10				Towing dir: 330 Wire out: 600 m Speed: 29 kn*10			
Sorted: 51 Kg Total catch: 550.10 CATCH/HOUR: 1100.20				Sorted: 47 Kg Total catch: 98.30 CATCH/HOUR: 196.60			
SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.				SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.			
weight numbers				weight numbers			
Merluccius capensis, female				Etrumeus whiteheadi			
552.00 3702 50.17 5				89.60 1096 45.57 32			
Merluccius capensis, male				Merluccius capensis, juveniles			
437.00 3312 39.72 6				36.16 1488 18.39 31			
Diaphus sp.				Brama brama			
88.40 63088 8.03				20.60 12 10.48 27			
Merluccius capensis, juveniles				Merluccius capensis, female			
14.80 482 1.35 7				18.60 62 9.46 30			
Brama brama				Thysites atun			
7.00 4 0.64				12.20 4 6.21 28			
Sufflogobius bibarbatu				Merluccius capensis, male			
1.00 252 0.09				8.80 30 4.48 29			
Total				Chelidonichthys capensis			
1100.20 100.00				5.12 16 2.60			
				Sepia australis			
				3.52 192 1.79			
				Lepidopus caudatus			
				0.88 16 0.45			
				Maurollicus muelleri			
				0.80 8 0.41			
				Cynoglossus capensis			
				0.16 8 0.08			
				Paracallionymus costatus			
				0.16 8 0.08			
				Total			
				196.60 100.00			
PROJECT STATION:1798				PROJECT STATION:1803			
DATE:22/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2704				DATE:23/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2859			
start stop duration Long E 1452				start stop duration Long E 1539			
TIME :16:12:00 16:42:00 30 (min) Purpose code: 3				TIME :13:11:00 13:41:00 30 (min) Purpose code: 3			
LOG :7574.20 7575.50 1.70 Area code : 1				LOG :7758.70 7760.10 1.80 Area code : 1			
FDEPTH: 194 201 GearCond.code: 8				FDEPTH: 174 175 GearCond.code: 8			
BDEPTH: 194 201 Validity code: 9				BDEPTH: 174 175 Validity code: 9			
Towing dir: 325 Wire out: 750 m Speed: 27 kn*10				Towing dir: 10 Wire out: 700 m Speed: 31 kn*10			
Sorted: 26 Kg Total catch: 211.68 CATCH/HOUR: 423.36				Sorted: 63 Kg Total catch: 226.00 CATCH/HOUR: 452.00			
SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.				SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.			
weight numbers				weight numbers			
Merluccius capensis, juveniles				Merluccius capensis, juveniles			
344.00 18108 81.25 10				252.00 9354 55.75 35			
Merluccius capensis, male				Merluccius capensis, female			
27.36 192 6.46 9				44.80 168 9.91 34			
Merluccius capensis, female				Sepia australis			
24.64 208 5.82 8				40.64 2268 8.99 34			
Sufflogobius bibarbatu				Merluccius capensis, male			
19.52 6882 4.61				33.60 40 7.43 33			
Diaphus sp.				Etrumeus whiteheadi			
7.84 6156 1.85				23.20 272 5.13 36			
Total				Brama brama			
423.36 99.99				11.00 4 2.43			
				Helicolenus dactylopterus			
				9.76 544 2.16			
				Todaropsis eblanae			
				7.20 208 1.59			
				Paracallionymus costatus			
				6.08 584 1.35			
				Todarodes sagittatus			
				5.36 8 1.19			
				Maurollicus muelleri			
				4.80 2100 1.06			
				Lophius vomerinus			
				3.68 8 0.81 39			
				Chelidonichthys capensis			
				3.44 8 0.76			
				Lepidopus caudatus			
				3.14 4 0.69			
				Genypterus capensis			
				1.84 48 0.41			
				Cynoglossus capensis			
				1.46 34 0.32 38			
				Total			
				452.00 99.98			
PROJECT STATION:1799				PROJECT STATION:1804			
DATE:22/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2711				DATE:23/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2859			
start stop duration Long E 1448				start stop duration Long E 1539			
TIME :18:10:00 18:40:00 30 (min) Purpose code: 3				TIME :13:11:00 13:41:00 30 (min) Purpose code: 3			
LOG :7587.00 7588.30 1.50 Area code : 1				LOG :7758.70 7760.10 1.80 Area code : 1			
FDEPTH: 248 248 GearCond.code: 8				FDEPTH: 174 175 GearCond.code: 8			
BDEPTH: 248 248 Validity code: 9				BDEPTH: 174 175 Validity code: 9			
Towing dir: 340 Wire out: 900 m Speed: 30 kn*10				Towing dir: 10 Wire out: 700 m Speed: 31 kn*10			
Sorted: 56 Kg Total catch: 289.96 CATCH/HOUR: 579.92				Sorted: 63 Kg Total catch: 226.00 CATCH/HOUR: 452.00			
SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.				SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.			
weight numbers				weight numbers			
Merluccius capensis, female				Merluccius capensis, juveniles			
368.50 1298 63.54 15				252.00 9354 55.75 35			
Merluccius capensis, male				Merluccius capensis, female			
170.50 792 29.40 14				44.80 168 9.91 34			
Sufflogobius bibarbatu				Sepia australis			
15.84 3852 2.73				40.64 2268 8.99 34			
Merluccius capensis, juveniles				Merluccius capensis, male			
11.40 716 1.97 16				33.60 40 7.43 33			
Austroglossus microlepis				Etrumeus whiteheadi			
4.98 4 0.86 11				23.20 272 5.13 36			
Lophius vomerinus				Brama brama			
3.52 2 0.61 13				11.00 4 2.43			
Trachurus capensis				Helicolenus dactylopterus			
2.40 12 0.41				9.76 544 2.16			
MYCTOPHIDAE				Todaropsis eblanae			
1.44 518 0.25				7.20 208 1.59			
Genypterus capensis				Paracallionymus costatus			
1.34 4 0.23 12				6.08 584 1.35			
Total				Todarodes sagittatus			
579.92 100.00				5.36 8 1.19			
				Maurollicus muelleri			
				4.80 2100 1.06			
				Lophius vomerinus			
				3.68 8 0.81 39			
				Chelidonichthys capensis			
				3.44 8 0.76			
				Lepidopus caudatus			
				3.14 4 0.69			
				Genypterus capensis			
				1.84 48 0.41			
				Cynoglossus capensis			
				1.46 34 0.32 38			
				Total			
				452.00 99.98			

PROJECT STATION:1804
 DATE:23/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2916 Long E 1513
 start stop duration
 TIME :17:08:00 17:38:00 30 (min) Purpose code: 3
 LOG :7792.40 7793.90 1.60 Area code : 1
 FDEPTH: 189 184 GearCond.code:
 BDEPTH: 189 184 Validity code:
 Towing dir: 350 Wire out: 800 m Speed: 33 kn*10

Sorted: 123 Kg Total catch: 154.17 CATCH/HOUR: 308.34

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brama brama	108.40	68	35.16	44
Merluccius capensis, female	40.00	76	12.97	41
Merluccius paradoxus, juvenile	27.90	2502	9.95	49
Helicolenus dactylopterus	23.40	512	7.59	43
Trachurus capensis	14.60	68	4.74	48
Merluccius paradoxus, female	12.00	132	3.89	43
Sepia australis	11.76	1306	3.81	43
Merluccius paradoxus, male	10.20	118	3.31	42
Etrumeus whiteheadi	6.38	96	2.78	40
Merluccius capensis, male	6.00	14	2.59	40
Lophius vomerinus	7.50	8	2.43	47
Thyrsites atun	7.50	2	2.43	45
Todarodes sagittatus	6.62	20	2.15	40
Emmelichthys nitidus	4.86	90	1.58	40
Zeus capensis	4.80	48	1.56	40
Chelidonichthys capensis	3.66	12	1.19	40
Lepidopus caudatus	3.12	54	1.01	46
Cynoglossus capensis	3.02	50	0.98	46
Holohalaelurus regani	2.34	18	0.76	46
Paracallionymus costatus	0.12	12	0.04	46
Total	308.38		100.02	

PROJECT STATION:1803
 DATE:24/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2910 Long E 1432
 start stop duration
 TIME :07:10:00 07:36:00 26 (min) Purpose code: 3
 LOG :7871.80 7872.80 1.40 Area code : 1
 FDEPTH: 328 322 GearCond.code:
 BDEPTH: 328 322 Validity code:
 Towing dir: 360 Wire out:1000 m Speed: 28 kn*10

Sorted: 132 Kg Total catch: 651.72 CATCH/HOUR: 1503.97

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, male	456.92	1828	30.38	64
Merluccius paradoxus, female	346.15	1122	23.02	65
Merluccius capensis, female	254.77	208	16.94	63
Zeus capensis	193.85	402	12.89	61
Epigonus pandionis	64.80	1230	4.31	60
Genypterus capensis	56.84	30	3.78	60
Merluccius capensis, male	49.85	42	3.31	62
Squalus megalops	22.46	14	1.43	62
Holohalaelurus regani	15.23	55	1.01	61
Malacocephalus laevis	11.49	55	0.76	61
Cynoglossus capensis	8.38	83	0.56	61
Helicolenus dactylopterus	8.03	42	0.53	61
Todarodes sagittatus	7.20	14	0.48	61
Coelorhynchus fasciatus	4.29	208	0.29	61
Todaropsis eblanae	3.05	28	0.20	61
Cyttus traversi	0.97	14	0.06	61
Paracallionymus costatus	0.69	55	0.05	61
Total	1503.97		100.00	

PROJECT STATION:1809
 DATE:24/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2904 Long E 1440
 start stop duration
 TIME :08:59:00 09:25:00 26 (min) Purpose code: 3
 LOG :7883.20 7884.40 1.40 Area code : 1
 FDEPTH: 231 231 GearCond.code:
 BDEPTH: 231 231 Validity code:
 Towing dir: 360 Wire out: 700 m Speed: 31 kn*10

Sorted: 72 Kg Total catch: 72.69 CATCH/HOUR: 167.75

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Helicolenus dactylopterus	48.46	339	28.89	66
Merluccius capensis, female	46.15	32	27.51	67
Lophius vomerinus	13.78	5	8.21	67
Lepidopus caudatus	11.12	35	6.63	71
Genypterus capensis	8.95	12	5.34	69
Thyrsites atun	7.73	9	4.61	69
Zeus capensis	7.36	21	4.39	69
Merluccius paradoxus, juvenile	4.89	330	2.92	69
Congloppodus torus	4.15	2	2.47	69
Todarodes sagittatus	3.74	7	2.23	70
Cynoglossus capensis	3.00	37	1.79	70
Trachurus capensis	2.38	14	1.42	70
Todaropsis eblanae	1.57	16	0.94	70
Chelidonichthys capensis	1.41	7	0.84	70
Holohalaelurus regani	1.20	2	0.72	70
Etrumeus whiteheadi	1.02	12	0.61	70
Beryx splendens	0.28	2	0.17	70
Notopogon macrosolea	0.25	5	0.15	70
Emmelichthys nitidus	0.25	5	0.15	70
Paracallionymus costatus	0.02	2	0.01	70
Sepia australis	0.02	7	0.01	70
Total	167.73		100.01	

PROJECT STATION:1805
 DATE:23/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2934 Long E 1440
 start stop duration
 TIME :21:25:00 21:55:00 30 (min) Purpose code: 3
 LOG :7830.80 7832.00 1.60 Area code : 1
 FDEPTH: 372 374 GearCond.code:
 BDEPTH: 372 374 Validity code:
 Towing dir: 330 Wire out:1200 m Speed: 31 kn*10

Sorted: 85 Kg Total catch: 137.59 CATCH/HOUR: 275.18

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	85.60	244	31.11	53
Merluccius paradoxus, male	58.40	156	21.22	52
Zeus capensis	49.00	74	17.81	51
Merluccius capensis, female	26.80	36	15.67	51
Malacocephalus laevis	12.34	2	4.48	54
Merluccius capensis, male	12.00	20	4.36	50
Holohalaelurus regani	10.00	20	3.63	50
Epigonus denticulatus	8.30	36	3.02	50
Helicolenus dactylopterus	5.40	86	1.96	50
Coelorhynchus fasciatus	3.80	46	1.38	50
Cyttus traversi	2.74	46	1.00	50
MYCTOPHIDAE	0.60	4	0.22	50
MYCTOPHIDAE	0.40		0.15	50
Total	275.18		100.01	

PROJECT STATION:1810
 DATE:24/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2856 Long E 1501
 start stop duration
 TIME :11:56:00 12:26:00 30 (min) Purpose code: 3
 LOG :7908.20 7909.50 1.40 Area code : 1
 FDEPTH: 172 173 GearCond.code:
 BDEPTH: 172 173 Validity code:
 Towing dir: 330 Wire out: 600 m Speed: 29 kn*10

Sorted: 94 Kg Total catch: 94.64 CATCH/HOUR: 189.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	102.00	74	53.89	73
Etrumeus whiteheadi	15.98	202	8.44	72
Merluccius capensis, male	15.00	18	8.92	72
Deania calcea	14.26	50	7.53	72
Chelidonichthys capensis	11.74	34	6.20	73
Trachurus capensis	6.46	40	3.41	75
Lepidopus caudatus	5.66	38	2.99	74
Callorhynchus capensis	5.00	4	2.64	74
Zeus capensis	4.40	34	2.32	74
Genypterus capensis	3.64	2	1.92	74
Emmelichthys nitidus	2.38	54	1.26	74
Holohalaelurus regani	1.34	5	0.71	74
Todaropsis eblanae	1.10	14	0.58	76
Cynoglossus capensis	0.16	2	0.08	76
Congloppodus spinifer	0.16	2	0.08	76
Total	189.28		99.97	

PROJECT STATION:1807
 DATE:24/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2912 Long E 1430
 start stop duration
 TIME :01:50:00 02:20:00 30 (min) Purpose code: 3
 LOG :7859.60 7861.00 1.60 Area code : 1
 FDEPTH: 412 406 GearCond.code:
 BDEPTH: 412 406 Validity code:
 Towing dir: 350 Wire out:1150 m Speed: 30 kn*10

Sorted: 12 Kg Total catch: 12.68 CATCH/HOUR: 25.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, male	8.10	14	31.94	57
Genypterus capensis	6.66	2	26.26	59
Merluccius paradoxus, female	5.08	12	20.03	58
Todarodes sagittatus	2.38	4	9.38	58
Coelorhynchus braueri	1.58	18	6.23	58
S H R I M P S	0.42	42	1.66	58
Malacocephalus laevis	0.32	4	1.26	58
Photichthys argenteus	0.28	22	1.10	58
Scomberesox saurus	0.16	2	0.63	58
Nezumia sp.	0.08	18	0.32	58
Sepia australis	0.08	2	0.32	58
Neoscolepis microchir	0.08	2	0.32	58
Physiculus capensis	0.06	2	0.24	58
Coelorhynchus fasciatus	0.06	4	0.24	58
Epigonus denticulatus	0.02	4	0.08	58
Total	25.36		100.01	

PROJECT STATION:1811
 DATE:24/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2844 Long E 1523
 start stop duration
 TIME :14:56:00 15:26:00 30 (min) Purpose code: 3
 LOG :7932.70 7934.10 1.50 Area code : 1
 FDEPTH: 180 182 GearCond.code:
 BDEPTH: 180 182 Validity code:
 Towing dir: 60 Wire out: 750 m Speed: 31 kn*10

Sorted: 68 Kg Total catch: 157.97 CATCH/HOUR: 315.94

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, juvenile	100.00	3794	31.65	77
Brama brama	98.00	58	27.85	77
Sepia australis	43.50	2486	13.77	77
Helicolenus dactylopterus	25.40	1314	8.04	77
Merluccius paradoxus, female	16.60	150	5.25	80
Etrumeus whiteheadi	13.80	160	4.37	77
Matrullolus muelleri	8.70	2372	2.35	77
Merluccius capensis, female	5.80	10	1.84	78
Todarodes sagittatus	4.92	8	1.56	78
Merluccius paradoxus, male	4.50	40	1.42	79
Cynoglossus capensis	2.10	50	0.66	82
Lepidopus caudatus	2.00	20	0.32	81
Paracallionymus costatus	0.60	60	0.19	81
Genypterus capensis	0.52	2	0.16	81
Zeus capensis	0.50	10	0.16	81
Total	315.94		99.99	

PROJECT STATION:1812
 DATE:24/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2836
 start stop duration Long E 1536
 TIME :17:08:00 17:38:00 30 (min) Purpose code: 3
 LOG :7948.60 7950.10 1.60 Area code : 1
 FDEPTH: 161 162 GearCond.code:
 BDEPTH: 161 162 Validity code:
 Towing dir: 330 Wire out: 700 m Speed: 32 kn*10
 Sorted: 159 Kg Total catch: 205.70 CATCH/HOUR: 411.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Thyrsites atun	172.00	48	86
Etrumeus whiteheadi	87.36	928	88
Merluccius capensis, female	78.00	170	84
Merluccius capensis, male	25.40	70	83
Merluccius paradoxus, juvenile	14.32	800	85
Brama brama	14.00	8	87
Sepia australis	6.16	384	
Maurollicus muelleri	4.00	8	
Chelidonichthys capensis	3.04	8	
Paracallionymus costatus	2.88	112	
Helicolenus dactylopterus	2.88	136	
Todaropsis eblanae	0.96	48	
Lepidopus caudatus	0.24	8	
Sufflogobius bibarbatu	0.16	8	
Total	411.40	99.99	

PROJECT STATION:1816
 DATE:25/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2832
 start stop duration Long E 1452
 TIME :12:02:00 12:32:00 30 (min) Purpose code: 3
 LOG :8067.40 8068.90 1.50 Area code : 1
 FDEPTH: 177 181 GearCond.code:
 BDEPTH: 177 181 Validity code:
 Towing dir: 340 Wire out: 650 m Speed: 31 kn*10
 Sorted: 92 Kg Total catch: 353.62 CATCH/HOUR: 707.24

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	290.00	200	108
Merluccius capensis, male	148.00	60	107
Trachurus capensis	140.00	590	112
Thyrsites atun	38.00	44	111
Scomber japonicus	15.40	10	
Callorhynchus capensis	15.10	10	
Lepidopus caudatus	13.10	180	
Todarodes sagittatus	11.18	18	
Zeus capensis	7.40	110	
Chelidonichthys capensis	5.40	10	
Deania calcea	4.80	20	
Etrumeus whiteheadi	4.60	60	
Sepia australis	3.70	280	
Genypterus capensis	3.52	8	110
Lophius vomerinus	2.44	6	114
Paracallionymus costatus	1.90	240	
Merluccius capensis, juveniles	1.40	180	109
Todaropsis eblanae	1.00	220	
Cynoglossus capensis	0.30	4	113
Total	707.24	100.01	

PROJECT STATION:1813
 DATE:24/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2824
 start stop duration Long E 1555
 TIME :20:15:00 20:46:00 31 (min) Purpose code: 3
 LOG :7974.00 7975.70 1.70 Area code : 1
 FDEPTH: 103 101 GearCond.code:
 BDEPTH: 103 101 Validity code:
 Towing dir: 142 Wire out: 450 m Speed: 31 kn*10
 Sorted: 32 Kg Total catch: 252.58 CATCH/HOUR: 488.86

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, male	252.39	1796	92
Merluccius capensis, female	224.52	1239	93
Merluccius capensis, juveniles	8.52	341	91
Austroglossus microlepis	2.55	14	89
Genypterus capensis	0.58	8	90
Sufflogobius bibarbatu	0.31	155	
Total	488.87	100.00	

PROJECT STATION:1817
 DATE:25/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2832
 start stop duration Long E 1440
 TIME :14:05:00 14:35:00 30 (min) Purpose code: 3
 LOG :8080.90 8082.40 1.60 Area code : 1
 FDEPTH: 163 163 GearCond.code:
 BDEPTH: 163 163 Validity code:
 Towing dir: 340 Wire out: 700 m Speed: 31 kn*10
 Sorted: 139 Kg Total catch: 220.75 CATCH/HOUR: 441.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	158.00	108	116
Emmelichthys nitidus	133.60	3356	115
Merluccius capensis, male	45.00	40	
Chelidonichthys capensis	39.04	88	
Zeus capensis	18.00	152	
Lophius vomerinus	15.42	10	117
Congiopodus spinifer	13.84	16	
Trachurus capensis	5.60	40	
Polyprion americanus	5.16	2	
Mustelus mustelus	3.68	8	
Todarodes sagittatus	3.60	8	
Helicolenus dactylopterus	0.56	8	
Total	441.50	100.00	

PROJECT STATION:1814
 DATE:25/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2820
 start stop duration Long E 1519
 TIME :07:12:00 07:42:00 30 (min) Purpose code: 3
 LOG :8033.60 8035.00 1.60 Area code : 1
 FDEPTH: 154 151 GearCond.code:
 BDEPTH: 154 151 Validity code:
 Towing dir: 340 Wire out: 600 m Speed: 32 kn*10
 Sorted: 166 Kg Total catch: 342.96 CATCH/HOUR: 685.92

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Chelidonichthys capensis	240.10	672	
Merluccius capensis, female	184.80	334	97
Galeorhinus galeus	112.00	8	
Merluccius capensis, male	52.00	130	96
Zeus capensis	32.06	392	
Sepia australis	14.70	784	
Etrumeus whiteheadi	11.90	140	
Trachurus capensis	11.06	14	
Thyrsites atun	11.04	12	94
Callorhynchus capensis	9.32	4	
Merluccius capensis, juveniles	3.22	140	98
Austroglossus microlepis	2.74	22	95
Congiopodus spinifer	0.56	4	
Todaropsis eblanae	0.42	14	
Total	685.92	99.98	

PROJECT STATION:1818
 DATE:25/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2835
 start stop duration Long E 1426
 TIME :17:01:00 17:31:00 30 (min) Purpose code: 3
 LOG :8102.50 8104.10 1.50 Area code : 1
 FDEPTH: 308 310 GearCond.code:
 BDEPTH: 308 310 Validity code:
 Towing dir: 180 Wire out:1000 m Speed: 35 kn*10
 Sorted: 87 Kg Total catch: 604.45 CATCH/HOUR: 1208.90

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Epigonus pandionis	812.00	22714	67.17
Merluccius paradoxus, male	117.60	938	9.73
Merluccius paradoxus, female	112.00	924	9.26
Todarodes sagittatus	76.02	168	6.29
Zeus capensis	30.24	56	2.50
Malacocephalus laevis	24.08	210	1.99
Merluccius capensis, female	16.24	14	1.34
Scyliorhinus capensis	6.58	14	0.54
Helicolenus dactylopterus	5.88	42	0.49
Cynoglossus capensis	5.04	70	0.42
Brama brama	2.24	2	0.19
Merluccius paradoxus, juvenile	0.56	28	0.05
Todaropsis eblanae	0.42	14	0.03
Total	1208.90	100.00	

PROJECT STATION:1815
 DATE:25/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2826
 start stop duration Long E 1504
 TIME :09:45:00 10:15:00 30 (min) Purpose code: 3
 LOG :8052.20 8053.70 1.70 Area code : 1
 FDEPTH: 166 168 GearCond.code:
 BDEPTH: 166 168 Validity code:
 Towing dir: 340 Wire out: 650 m Speed: 32 kn*10
 Sorted: 116 Kg Total catch: 150.83 CATCH/HOUR: 301.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	130.00	154	101
Lepidopus caudatus	43.20	864	
Merluccius paradoxus, juvenile	36.84	2878	106
Merluccius capensis, male	22.90	38	100
Thyrsites atun	11.96	8	99
Sepia australis	10.62	992	
Callorhynchus capensis	9.20	6	
Merluccius paradoxus, female	7.44	78	103
Todarodes sagittatus	5.98	10	
Zeus capensis	4.20	66	
Holohalaelurus regani	3.84	18	
Mustelus palumbes	3.84	2	
Mustelus mustelus	3.10	8	
Merluccius paradoxus, male	2.54	20	102
Etrumeus whiteheadi	2.28	24	
Cynoglossus capensis	1.48	12	104
Emmelichthys nitidus	0.90	2	
Trachurus capensis	0.56	10	
Todaropsis eblanae	0.48	30	
Helicolenus dactylopterus	0.48	66	
Coelorhynchus fasciatus	0.36	6	
Genypterus capensis	0.36	4	105
Total	301.66	99.99	

PROJECT STATION:1819
 DATE:25/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2829
 start stop duration Long E 1425
 TIME :18:42:00 19:12:00 30 (min) Purpose code: 3
 LOG :8112.30 8113.40 1.50 Area code : 1
 FDEPTH: 425 427 GearCond.code:
 BDEPTH: 425 427 Validity code:
 Towing dir: 15 Wire out:1100 m Speed: 29 kn*10
 Sorted: 179 Kg Total catch: 585.22 CATCH/HOUR: 1170.44

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	580.00	1026	124
Merluccius paradoxus, male	547.40	854	123
Coelorhynchus fasciatus	11.74	206	
Todarodes sagittatus	11.54	26	0.99
Genypterus capensis	11.28	6	0.96
Holohalaelurus regani	4.00	14	0.34
Helicolenus dactylopterus	2.74	14	0.23
Epigonus telescopus	1.00	54	0.09
Photichthys argenteus	0.74	106	0.06
Total	1170.44	99.99	

PROJECT STATION:1820
 DATE:25/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2822
 start stop duration Long E 1422
 TIME :20:15:00 20:45:00 30 (min) Purpose code: 3
 LOG :8119.80 8121.00 1.50 Area code : 1
 FDEPTH: 575 580 GearCond.code:
 BDEPTH: 575 580 Validity code:
 Towing dir: 30 Wire out:1500 m Speed: 31 kn*10

Sorted: 102 Kg Total catch: 122.37 CATCH/HOUR: 244.74

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius paradoxus, female	142.40	112	58.18
Neocyttus rhomboidalis	21.80	56	8.91
Todarodes sagittatus	21.20	48	8.66
Centrophorus squamosus	13.60	2	5.56
Allocyttus verrucosus	13.16	160	5.38
Coelorinchus braueri	7.56	92	3.09
Nezumia sp.	5.92	136	2.42
Photichthys argenteus	4.04	312	1.65
Deania calcea	3.14	2	1.28
Coelorinchus matamua	2.80	12	1.14
Notacanthus sexspinis	2.44	20	1.00
Centrosymnus crepidater	2.44	2	1.00
Raja confundens	1.76	4	0.72
Hydrolagus sp.	0.84	4	0.34
Hoplostethus atlanticus	0.76	4	0.31
Merluccius paradoxus, male	0.40	2	0.16
Ebinania costaeacanarie	0.32	4	0.13
Hoplostethus cadenati	0.16	4	0.07
Total	244.74		100.00

PROJECT STATION:1824
 DATE:26/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2807
 start stop duration Long E 1455
 TIME :12:14:00 12:44:00 30 (min) Purpose code: 3
 LOG :8190.10 8191.50 1.60 Area code : 1
 FDEPTH: 185 188 GearCond.code:
 BDEPTH: 185 188 Validity code:
 Towing dir: 360 Wire out: 700 m Speed: 32 kn*10

Sorted: 85 Kg Total catch: 85.66 CATCH/HOUR: 171.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius paradoxus, female	40.80	86	23.82
Trachurus capensis	24.80	132	14.48
Merluccius capensis, female	18.00	34	10.51
Deania calcea	12.24	30	7.14
Callorhynchus capensis	12.12	6	7.07
Lepidopus caudatus	10.60	118	6.19
Merluccius capensis, juveniles	8.30	404	4.84
Austroglossus microlepis	5.98	14	3.49
Merluccius capensis, male	5.20	20	3.04
Merluccius paradoxus, male	5.04	10	2.94
Todarodes sagittatus	5.02	10	2.93
Raja straeleni	4.94	2	2.88
Chelidionichthys capensis	4.94	12	2.88
Holohalaelurus regani	4.70	12	2.74
Zeus capensis	2.68	20	1.56
Scomber japonicus	2.38	2	1.39
Genypterus capensis	2.10	4	1.23
Todaropsis eblanae	0.56	20	0.33
Sepia australis	0.52	46	0.30
Congiopodus spinifer	0.22	2	0.13
Helicolenus dactylopterus	0.18	2	0.11
Total	171.32		100.00

PROJECT STATION:1821
 DATE:26/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2815
 start stop duration Long E 1426
 TIME :01:07:00 01:37:00 30 (min) Purpose code: 3
 LOG :8149.10 8150.70 1.70 Area code : 1
 FDEPTH: 513 517 GearCond.code:
 BDEPTH: 513 517 Validity code:
 Towing dir: 360 Wire out:1350 m Speed: 27 kn*10

Sorted: 92 Kg Total catch: 232.06 CATCH/HOUR: 464.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius paradoxus, female	332.00	394	71.53
Todarodes sagittatus	56.00	124	12.07
Merluccius paradoxus, male	48.80	64	10.51
Coelorinchus braueri	7.80	74	1.68
Photichthys argenteus	7.66	644	1.65
CHIMAERIDAE	5.50	10	1.19
Deania calcea	2.26	4	0.48
Diaphus sp.	2.00	1300	0.43
Nezumia sp.	1.00	24	0.22
Notacanthus sexspinis	0.60	10	0.13
S H R I M P S	0.24	84	0.05
Hoplostethus cadenati	0.20	4	0.04
Etmopterus sp.	0.06	14	0.01
Total	464.12		100.00

PROJECT STATION:1825
 DATE:26/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2801
 start stop duration Long E 1515
 TIME :17:04:00 17:24:00 20 (min) Purpose code: 3
 LOG :8218.90 8219.90 1.10 Area code : 1
 FDEPTH: 146 141 GearCond.code:
 BDEPTH: 146 141 Validity code:
 Towing dir: 360 Wire out: 650 m Speed: 33 kn*10

Sorted: 28 Kg Total catch: 129.63 CATCH/HOUR: 388.89

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius capensis, juveniles	243.60	12180	62.64
Merluccius capensis, male	66.09	573	16.99
Merluccius capensis, female	65.52	309	16.85
Todarodes sagittatus	9.09	15	2.34
Lepidopus caudatus	1.41	99	0.36
Todaropsis eblanae	1.41	42	0.36
Austroglossus microlepis	1.38	6	0.35
Sepia australis	0.57	15	0.15
Total	389.07		100.04

PROJECT STATION:1826
 DATE:26/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2756
 start stop duration Long E 1529
 TIME :20:10:00 20:40:00 30 (min) Purpose code: 3
 LOG :8240.50 8241.90 1.60 Area code : 1
 FDEPTH: 89 97 GearCond.code:
 BDEPTH: 89 97 Validity code:
 Towing dir: 324 Wire out: 350 m Speed: 32 kn*10

Sorted: 22 Kg Total catch: 113.15 CATCH/HOUR: 226.30

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius capensis, juveniles	223.00	10858	98.54
Merluccius capensis, female	3.30	30	1.46
Total	226.30		100.00

PROJECT STATION:1822
 DATE:26/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2814
 start stop duration Long E 1430
 TIME :07:15:00 07:37:00 22 (min) Purpose code: 3
 LOG :8162.20 8162.90 1.20 Area code : 1
 FDEPTH: 403 404 GearCond.code:
 BDEPTH: 403 404 Validity code:
 Towing dir: 30 Wire out:1150 m Speed: 30 kn*10

Sorted: 122 Kg Total catch: 265.29 CATCH/HOUR: 723.52

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius paradoxus, female	411.14	766	56.82
Merluccius paradoxus, male	157.09	447	21.71
MYCTOPHIDAE	67.50		9.33
Holohalaelurus regani	21.25	63	2.94
Genypterus capensis	20.81	8	2.88
Coelorinchus fasciatus	16.94	226	2.34
Todarodes sagittatus	13.15	30	1.82
Raja confundens	4.58	5	0.63
Merluccius capensis, male	4.15	5	0.57
Lophius vomerinus	3.25	3	0.45
Merluccius paradoxus, juvenile	1.77	74	0.24
Etmopterus pusillus	1.47	5	0.20
Coelorinchus braueri	0.44	5	0.06
Total	723.54		99.99

PROJECT STATION:1827
 DATE:27/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2731
 start stop duration Long E 1451
 TIME :07:15:00 07:45:00 30 (min) Purpose code: 3
 LOG :8306.70 8307.80 1.50 Area code : 1
 FDEPTH: 305 308 GearCond.code:
 BDEPTH: 305 308 Validity code:
 Towing dir: 360 Wire out: 900 m Speed: 32 kn*10

Sorted: 80 Kg Total catch: 80.63 CATCH/HOUR: 161.26

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius capensis, female	97.60	90	60.52
Merluccius paradoxus, female	20.00	176	12.40
Merluccius capensis, male	15.00	10	9.30
Genypterus capensis	10.94	10	6.78
Todarodes sagittatus	6.98	12	4.33
Merluccius paradoxus, male	4.72	56	2.93
Trachurus capensis	4.62	18	2.86
MYCTOPHIDAE	1.00		0.62
Merluccius paradoxus, juvenile	0.40		0.25
Total	161.26		99.99

PROJECT STATION:1823
 DATE:26/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2832
 start stop duration Long E 1438
 TIME :08:55:00 09:25:00 30 (min) Purpose code: 3
 LOG :8170.90 8172.10 1.60 Area code : 1
 FDEPTH: 203 213 GearCond.code:
 BDEPTH: 203 213 Validity code:
 Towing dir: 30 Wire out: 700 m Speed: 31 kn*10

Sorted: 75 Kg Total catch: 247.36 CATCH/HOUR: 494.72

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Lepidopus caudatus	404.40	312	81.74
Merluccius capensis, female	73.00	62	14.76
Merluccius capensis, male	9.34	8	1.89
Squalus megalops	7.44	12	1.50
Congiopodus torvus	0.54	2	0.11
Total	494.72		100.00

PROJECT STATION:1828
 DATE:27/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2728
 start stop duration Long E 1436
 TIME :09:46:00 10:16:00 30 (min) Purpose code: 3
 LOG :8321.40 8322.60 1.60 Area code : 1
 FDEPTH: 348 348 GearCond.code:
 BDEPTH: 348 348 Validity code:
 Towing dir: 330 Wire out:1000 m Speed: 32 kn*10

Sorted: 136 Kg Total catch: 545.60 CATCH/HOUR: 1091.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius paradoxus, female	472.00	2698	43.26
Merluccius capensis, female	416.00	328	38.12
Merluccius capensis, male	122.40	96	11.22
Merluccius paradoxus, male	75.20	694	6.89
Todarodes sagittatus	5.60	8	0.51
Total	1091.20		100.00

PROJECT STATION:1829
 DATE:27/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2729 Long E 1126
 start stop duration
 TIME :11:46:00 12:16:00 30 (min) Purpose code: 3
 LOG :8331.70 8332.90 1.50 Area code : 1
 FDEPTH: 414 422 GearCond.code:
 BDEPTH: 414 422 Validity code:
 Towing dir: 330 Wire out:1150 m Speed: 30 kn*10
 Sorted: 60 Kg Total catch: 557.94 CATCH/HOUR: 1115.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	648.00	2060	58.07	161
Merluccius paradoxus, male	340.00	1680	30.47	160
Diaphus sp.	50.20		4.50	
Krill	50.20		4.50	
Coelorinchus braueri	12.80	200	1.15	
Genypterus capensis	11.28	10	1.01	162
Helicolenus dactylopterus	3.20	40	0.29	
S H R I M P S	0.20	20	0.02	
Total	1115.88		100.01	

PROJECT STATION:1834
 DATE:29/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2646 Long E 1359
 start stop duration
 TIME :15:56:00 16:26:00 30 (min) Purpose code: 3
 LOG :8542.10 8543.50 1.50 Area code : 1
 FDEPTH: 403 410 GearCond.code:
 BDEPTH: 403 410 Validity code:
 Towing dir: 340 Wire out:1150 m Speed: 30 kn*10
 Sorted: 146 Kg Total catch: 2198.10 CATCH/HOUR: 4396.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	3618.00	8670	82.30	177
Merluccius paradoxus, male	534.00	1320	12.15	176
Coelorinchus fasciatus	88.20	540	2.01	
Merluccius capensis, female	83.10	30	1.89	175
Merluccius capensis, male	66.60	30	1.51	174
Nezumia sp.	6.30	90	0.14	
Total	4396.20		100.00	

PROJECT STATION:1830
 DATE:27/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2728 Long E 1418
 start stop duration
 TIME :13:41:00 14:11:00 30 (min) Purpose code: 3
 LOG :8339.10 8340.50 1.70 Area code : 1
 FDEPTH: 545 545 GearCond.code:
 BDEPTH: 545 545 Validity code:
 Towing dir: 330 Wire out:1450 m Speed: 33 kn*10
 Sorted: 14 Kg Total catch: 14.22 CATCH/HOUR: 28.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Photichthys argenteus	7.44	304	26.16	
Diaphus sp.	6.08		21.38	
Todarodes sagittatus	4.88	6	17.16	
MYCTOPHIDAE	4.00	334	14.06	
S H R I M P S	3.50	318	12.31	
Todaropsis eblanae	1.10	86	3.87	
Nansenia sp.	0.58	20	2.04	
Xenodermichthys copei	0.54	14	1.90	
Hoplostethus cadenati	0.24	18	0.84	
PARALEPIDDIDAE	0.06	6	0.21	
Nezumia sp.	0.02	8	0.07	
Krill	0.00			
Total	28.44		100.00	

PROJECT STATION:1835
 DATE:29/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2645 Long E 1346
 start stop duration
 TIME :18:33:00 19:03:00 30 (min) Purpose code: 3
 LOG :8556.00 8557.20 1.50 Area code : 1
 FDEPTH: 452 443 GearCond.code:
 BDEPTH: 452 443 Validity code:
 Towing dir: 360 Wire out:1250 m Speed: 30 kn*10
 Sorted: 127 Kg Total catch: 127.58 CATCH/HOUR: 255.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	182.00	330	71.33	179
Merluccius paradoxus, male	34.00	72	13.32	178
Helicolenus dactylopterus	14.40	46	5.64	
Todarodes sagittatus	14.14	24	5.54	
Nezumia sp.	4.80	164	1.88	
Coelorinchus fasciatus	3.36	48	1.32	
Selachophidium guentheri	1.32	22	0.52	
Galeus polli	0.60	6	0.24	
Photichthys argenteus	0.34	60	0.13	
Cyttus traversi	0.20	2	0.08	
Total	255.16		100.00	

PROJECT STATION:1831
 DATE:27/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2720 Long E 1414
 start stop duration
 TIME :15:34:00 16:04:00 30 (min) Purpose code: 3
 LOG :8346.50 8347.80 1.80 Area code : 1
 FDEPTH: 462 466 GearCond.code:
 BDEPTH: 462 466 Validity code:
 Towing dir: 330 Wire out:1250 m Speed: 29 kn*10
 Sorted: 43 Kg Total catch: 43.20 CATCH/HOUR: 86.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	53.00	106	61.34	164
S H R I M P S	15.36		17.78	
Krill	10.06		11.64	
Merluccius paradoxus, male	5.02	18	5.81	163
Photichthys argenteus	1.16	48	1.34	
Todaropsis eblanae	0.64	34	0.74	
Coelorinchus braueri	0.46	4	0.53	
MYCTOPHIDAE	0.38	34	0.44	
Diaphus sp.	0.22	24	0.25	
Nansenia sp.	0.10	2	0.12	
Total	86.40		99.99	

PROJECT STATION:1836
 DATE:29/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2623 Long E 1344
 start stop duration
 TIME :21:25:00 21:55:00 30 (min) Purpose code: 3
 LOG :8576.50 8577.80 1.30 Area code : 1
 FDEPTH: 405 405 GearCond.code:
 BDEPTH: 405 405 Validity code:
 Towing dir: 265 Wire out:1150 m Speed: 26 kn*10
 Sorted: 153 Kg Total catch: 1379.52 CATCH/HOUR: 2759.04

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	2214.00	4842	80.25	181
Merluccius paradoxus, male	396.00	864	14.35	180
Coelorinchus fasciatus	57.60	540	2.09	
Krill	36.00		1.30	
MYCTOPHIDAE	36.00		1.30	
Galeus polli	6.66	36	0.24	
Helicolenus dactylopterus	6.12	36	0.22	
Nezumia sp.	5.22	90	0.19	
Selachophidium guentheri	1.44	36	0.05	
Total	2759.04		99.99	

PROJECT STATION:1832
 DATE:29/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2645 Long E 1529
 start stop duration
 TIME :11:00:00 11:30:00 30 (min) Purpose code: 3
 LOG :8510.40 8511.70 1.60 Area code : 1
 FDEPTH: 300 300 GearCond.code:
 BDEPTH: 300 300 Validity code:
 Towing dir: 330 Wire out: 950 m Speed: 31 kn*10
 Sorted: 160 Kg Total catch: 640.45 CATCH/HOUR: 1280.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	1050.84	916	82.04	166
Merluccius capensis, male	184.80	470	14.43	165
Genypterus capensis	21.40	10	1.67	168
Helicolenus dactylopterus	5.80	8	0.45	
Trachurus capensis	5.04	8	0.39	
Todarodes sagittatus	4.28	8	0.33	
MYCTOPHIDAE	3.86	2578	0.30	
Sufflogobius bibarbatus	2.52	58	0.20	
Merluccius capensis, juveniles	2.36	110	0.18	167
Total	1280.90		99.99	

PROJECT STATION:1837
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2619 Long E 1359
 start stop duration
 TIME :00:35:00 01:05:00 30 (min) Purpose code: 3
 LOG :8594.70 8596.10 1.60 Area code : 1
 FDEPTH: 352 349 GearCond.code:
 BDEPTH: 352 349 Validity code:
 Towing dir: 330 Wire out:1050 m Speed: 30 kn*10
 Sorted: 60 Kg Total catch: 332.20 CATCH/HOUR: 664.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	333.30	1268	50.17	185
Merluccius capensis, female	185.90	220	27.98	183
Merluccius capensis, male	39.60	132	5.96	184
Helicolenus dactylopterus	36.30	374	5.46	
MYCTOPHIDAE	28.82	11870	4.34	
Merluccius capensis, male	26.18	66	3.94	182
Nezumia sp.	10.12	276	1.52	
Coelorinchus fasciatus	4.18	56	0.63	
Total	664.40		100.00	

PROJECT STATION:1833
 DATE:29/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2645 Long E 1414
 start stop duration
 TIME :13:18:00 13:48:00 30 (min) Purpose code: 3
 LOG :8526.60 8527.90 1.60 Area code : 1
 FDEPTH: 359 362 GearCond.code:
 BDEPTH: 359 362 Validity code:
 Towing dir: 350 Wire out:1050 m Speed: 34 kn*10
 Sorted: 96 Kg Total catch: 541.35 CATCH/HOUR: 1082.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	390.92	720	36.11	170
Merluccius paradoxus, female	244.76	522	22.61	172
Merluccius capensis, male	186.62	604	18.16	169
Diaphus sp.	70.76		6.54	
Krill	70.76		6.54	
Todarodes sagittatus	49.88	82	4.61	
Merluccius paradoxus, male	42.92	104	3.96	171
Genypterus capensis	7.14	6	0.66	173
Helicolenus dactylopterus	6.84	104	0.63	
Coelorinchus braueri	1.98	34	0.18	
Nezumia sp.	0.12	12	0.01	
Total	1082.70		100.01	

PROJECT STATION:1838
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2617 Long E 1416
 start stop duration
 TIME :04:31:00 05:01:00 30 (min) Purpose code: 3
 LOG :8615.40 8616.80 1.70 Area code : 1
 FDEPTH: 298 291 GearCond.code:
 BDEPTH: 298 291 Validity code:
 Towing dir: 340 Wire out: 950 m Speed: 32 kn*10
 Sorted: 51 Kg Total catch: 231.40 CATCH/HOUR: 462.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	300.60	882	64.95	187
Merluccius capensis, male	122.40	460	26.45	186
MYCTOPHIDAE	26.92	5176	5.82	
Coelorinchus fasciatus	11.44	180	2.47	
Sufflogobius bibarbatus	1.08	424	0.23	
Helicolenus dactylopterus	0.36	10	0.08	
Total	462.80		100.00	

PROJECT STATION:1839
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2619 Long E 1430
 start stop duration
 TIME :07:00:00 07:30:00 30 (min) Purpose code: 3
 LOG :8632.70 8633.90 1.40 Area code : 1
 FDEPTH: 265 235 GearCond.code:
 BDEPTH: 265 235 Validity code:
 Towing dir: 360 Wire out: 900 m Speed: 30 kn*10
 Sorted: 49 Kg Total catch: 595.44 CATCH/HOUR: 1190.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, male	585.60	2784	49.17	188
Merluccius capensis, female	552.00	2400	46.35	189
Maurolinchnus muelleri	31.20		2.62	
Coelorinchus fasciatus	10.56	216	0.89	
Sufflogobius bibarbatatus	5.04	1296	0.42	
Krill	4.80		0.40	
Merluccius capensis, juveniles	1.68	72	0.14	
Total	1190.88		99.99	

PROJECT STATION:1844
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2559 Long E 1343
 start stop duration
 TIME :22:53:00 23:23:00 30 (min) Purpose code: 3
 LOG :8740.00 8741.40 1.70 Area code : 1
 FDEPTH: 434 435 GearCond.code:
 BDEPTH: 434 435 Validity code:
 Towing dir: 360 Wire out:1150 m Speed: 31 kn*10
 Sorted: 168 Kg Total catch: 537.46 CATCH/HOUR: 1074.92

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	847.44	218	78.84	209
Merluccius paradoxus, male	107.58	1650	10.01	208
Merluccius capensis, female	47.28	20	4.40	207
Coelorinchus fasciatus	22.18	178	2.06	
Helicolenus dactylopterus	18.02	60	1.68	
Raja confundens	8.54	4	0.79	
Todarodes sagittatus	5.62	14	0.52	
Lophius vomerinus	5.42	2	0.50	211
Selachophidium guentheri	5.34	72	0.50	
Nezumia sp.	3.90	66	0.36	
Genypterus capensis	3.54	2	0.33	210
Deania profundorum	0.06	6	0.01	
Total	1074.92		100.00	

PROJECT STATION:1840
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2600 Long E 1429
 start stop duration
 TIME :13:20:00 13:50:00 30 (min) Purpose code: 3
 LOG :8684.60 8686.00 1.50 Area code : 1
 FDEPTH: 181 181 GearCond.code:
 BDEPTH: 181 181 Validity code:
 Towing dir: 350 Wire out: 700 m Speed: 29 kn*10
 Sorted: 50 Kg Total catch: 276.93 CATCH/HOUR: 553.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, male	302.50	1958	54.62	190
Merluccius capensis, female	198.00	1332	35.75	191
Sufflogobius bibarbatatus	26.84	6194	4.85	
Merluccius capensis, juveniles	26.52	616	4.79	192
Total	553.86		100.01	

PROJECT STATION:1845
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2558 Long E 1338
 start stop duration
 TIME :00:29:00 00:53:00 24 (min) Purpose code: 3
 LOG :8748.10 8749.10 1.20 Area code : 1
 FDEPTH: 547 542 GearCond.code:
 BDEPTH: 547 542 Validity code:
 Towing dir: 360 Wire out:1450 m Speed: 29 kn*10
 Sorted: 97 Kg Total catch: 488.65 CATCH/HOUR: 1221.63

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	1011.88	925	82.83	213
Deania profundorum	130.00	163	10.64	
Merluccius paradoxus, male	53.75	63	4.40	212
Selachophidium guentheri	10.50	100	0.86	
Coelorinchus fasciatus	9.88	38	0.81	
Photichthys argenteus	2.38	238	0.19	
Notacanthus sexspinis	2.25	50	0.18	
Hoplostethus cadenati	0.50	13	0.04	
ALEPOCEPHALIDAE	0.50	13	0.04	
Total	1221.64		99.99	

PROJECT STATION:1841
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2600 Long E 1415
 start stop duration
 TIME :16:02:00 16:32:00 30 (min) Purpose code: 3
 LOG :8702.30 8703.60 1.40 Area code : 1
 FDEPTH: 242 240 GearCond.code:
 BDEPTH: 242 240 Validity code:
 Towing dir: 360 Wire out: 850 m Speed: 29 kn*10
 Sorted: 156 Kg Total catch: 625.28 CATCH/HOUR: 1250.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, male	672.00	632	53.74	193
Merluccius capensis, female	536.80	1280	42.92	194
Sufflogobius bibarbatatus	34.16	4528	2.73	
Merluccius capensis, juveniles	7.60	208	0.61	195
Total	1250.56		100.00	

PROJECT STATION:1846
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2539 Long E 1336
 start stop duration
 TIME :07:07:00 07:37:00 30 (min) Purpose code: 3
 LOG :8790.10 8791.70 1.60 Area code : 1
 FDEPTH: 498 500 GearCond.code:
 BDEPTH: 498 500 Validity code:
 Towing dir: 355 Wire out:1300 m Speed: 31 kn*10
 Sorted: 96 Kg Total catch: 237.61 CATCH/HOUR: 475.22

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	351.50	856	73.97	215
Merluccius paradoxus, male	37.50	76	7.89	214
Nezumia sp.	21.16	350	4.45	
Trachyrhynchus scabrus	14.90	66	3.14	
Todarodes sagittatus	8.26	40	1.74	
Etmopterus pusillus	8.00	6	1.68	
Raja confundens	6.16	6	1.30	
Selachophidium guentheri	5.90	116	1.24	
Hoplostethus cadenati	5.30	226	1.12	
Krill	4.50		0.95	
Maurolinchnus muelleri	4.00		0.84	
MYCTOPHIDAE	4.00		0.84	
Notacanthus sexspinis	1.86	100	0.39	
Galeus polli	1.10	16	0.23	
Barbourisia rufa	1.08	2	0.23	
Total	475.22		100.01	

PROJECT STATION:1842
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2559 Long E 1404
 start stop duration
 TIME :18:28:00 18:58:00 30 (min) Purpose code: 3
 LOG :8716.00 8717.40 1.40 Area code : 1
 FDEPTH: 288 290 GearCond.code:
 BDEPTH: 288 290 Validity code:
 Towing dir: 360 Wire out: 900 m Speed: 28 kn*10
 Sorted: 278 Kg Total catch: 278.41 CATCH/HOUR: 556.82

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	404.40	338	72.63	197
Merluccius capensis, male	62.80	92	11.28	196
Sufflogobius bibarbatatus	60.00		10.78	
Lophius vomerinus	26.66		4.79	200
Trachurus capensis	2.28	4	0.41	
Merluccius capensis, juveniles	0.68	26	0.12	198
Total	556.82		100.01	

PROJECT STATION:1847
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2536 Long E 1340
 start stop duration
 TIME :08:31:00 09:01:00 30 (min) Purpose code: 3
 LOG :8796.10 8797.20 1.60 Area code : 1
 FDEPTH: 403 404 GearCond.code:
 BDEPTH: 403 404 Validity code:
 Towing dir: 360 Wire out:1150 m Speed: 31 kn*10
 Sorted: 161 Kg Total catch: 296.71 CATCH/HOUR: 593.42

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	269.20	528	45.36	219
Merluccius capensis, female	197.60	128	33.30	217
Krill	40.34		6.80	
Raja confundens	16.14	18	2.72	
Todarodes sagittatus	15.22	34	2.56	
Galeus polli	11.14	132	1.88	
Merluccius capensis, male	10.80	8	1.82	216
Merluccius paradoxus, male	9.80		1.65	218
Maurolinchnus muelleri	7.34		1.24	
Helicolenus dactylopterus	6.34	62	1.07	
Nezumia sp.	3.88	168	0.65	
Coelorinchus fasciatus	2.94	22	0.50	
Selachophidium guentheri	1.80	18	0.30	
Aristeus varidens	0.48	66	0.08	
Notacanthus sexspinis	0.40	12	0.07	
Total	593.42		100.00	

PROJECT STATION:1843
 DATE:30/ 4/93 GEAR TYPE: BT No:1 POSITION:Lat S 2559 Long E 1352
 start stop duration
 TIME :21:07:00 21:37:00 30 (min) Purpose code: 3
 LOG :8729.50 8730.90 1.50 Area code : 1
 FDEPTH: 363 367 GearCond.code:
 BDEPTH: 363 367 Validity code:
 Towing dir: 330 Wire out:1150 m Speed: 29 kn*10
 Sorted: 160 Kg Total catch: 667.20 CATCH/HOUR: 1334.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	567.60	624	42.54	204
Merluccius paradoxus, female	383.60	686	28.75	206
Merluccius capensis, male	198.00	264	14.84	203
Helicolenus dactylopterus	88.00	652	6.59	
Merluccius paradoxus, male	23.60	52	1.77	205
Genypterus capensis	19.98	14	1.50	202
Nezumia sp.	18.00	388	1.35	
Coelorinchus fasciatus	12.40	88	0.93	
Todarodes sagittatus	8.60	18	0.64	
Maurolinchnus muelleri	7.00		0.52	
MYCTOPHIDAE	5.20		0.39	
Lophius vomerinus	2.42	2	0.18	201
Total	1334.40		100.00	

PROJECT STATION:1848
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2538
 start stop duration Long E 1347
 TIME :10:11:00 10:31:00 20 (min) Purpose code: 3
 LOG :8805.60 8806.70 0.90 Area code : 1
 FDEPTH: 320 317 GearCond.code:
 BDEPTH: 320 317 Validity code:
 Towing dir: 129 Wire out:1000 m Speed: 26 kn*10

Sorted: 242 Kg Total catch: 291.84 CATCH/HOUR: 875.52

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	435.90	49.29	221
Merluccius capensis, male	202.20	23.09	220
Maurolinthus muelleri	126.00	14.39	
Helicolenus dactylopterus	63.00	7.20	
Krill	14.40	1.64	
Todarodes sagittatus	12.06	1.38	
Schedophilus huttoni	7.80	0.89	
Deania profundorum	7.20	0.82	
Raja confundens	3.48	0.40	
Gerypteris capensis	2.94	0.34	222
Epigonus denticulatus	0.54	0.06	
Total	875.52	100.00	

PROJECT STATION:1853
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2520
 start stop duration Long E 1345
 TIME :01:15:00 01:45:00 30 (min) Purpose code: 3
 LOG :8931.60 8933.10 1.60 Area code : 1
 FDEPTH: 309 303 GearCond.code:
 BDEPTH: 309 303 Validity code:
 Towing dir: 360 Wire out:1000 m Speed: 32 kn*10

Sorted: 109 Kg Total catch: 415.25 CATCH/HOUR: 830.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	464.62	55.94	236
Merluccius capensis, male	144.00	17.34	235
Helicolenus dactylopterus	78.80	9.49	
Selachophidium guentheri	57.46	6.92	
Coelorinchus fasciatus	25.96	3.13	
MYCTOPHIDAE	16.96	2.04	
Lophius vomerinus	15.32	1.84	240
Galeus polli	12.22	1.47	
Todarodes sagittatus	6.46	0.78	
Nezumia sp.	3.38	0.41	
Gerypteris capensis	2.70	0.33	238
Merluccius paradoxus, female	2.18	0.26	237
Cynoglossus capensis	0.44	0.05	239
Total	830.50	100.00	

PROJECT STATION:1849
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2540
 start stop duration Long E 1321
 TIME :14:00:00 14:30:00 30 (min) Purpose code: 3
 LOG :8840.20 8841.80 1.60 Area code : 1
 FDEPTH: 186 189 GearCond.code:
 BDEPTH: 186 189 Validity code:
 Towing dir: 280 Wire out: 750 m Speed: 31 kn*10

Sorted: 53 Kg Total catch: 915.11 CATCH/HOUR: 1830.22

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	901.00	49.23	224
Merluccius capensis, male	782.00	42.73	223
Merluccius capensis, juveniles	67.32	3.68	225
Sufflogobius bibarbatatus	50.66	2.77	
Chelidonichthys capensis	29.24	1.60	
Total	1830.22	100.01	

PROJECT STATION:1854
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2520
 start stop duration Long E 1338
 TIME :03:06:00 03:36:00 30 (min) Purpose code: 3
 LOG :8943.20 8944.60 1.60 Area code : 1
 FDEPTH: 446 445 GearCond.code:
 BDEPTH: 446 445 Validity code:
 Towing dir: 350 Wire out:1200 m Speed: 31 kn*10

Sorted: 64 Kg Total catch: 627.35 CATCH/HOUR: 1254.70

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	975.20	77.72	242
Hoplostethus cadenati	91.78	7.31	
Merluccius capensis, female	56.82	4.53	243
Nezumia sp.	46.00	3.67	
Merluccius paradoxus, male	26.00	2.07	241
Todarodes sagittatus	21.40	1.71	
MYCTOPHIDAE	13.34	1.06	
Selachophidium guentheri	12.42	0.99	
Galeus polli	10.58	0.84	
Notacanthus sexspinis	1.16	0.09	
Total	1254.70	99.99	

PROJECT STATION:1850
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2540
 start stop duration Long E 1430
 TIME :16:00:00 16:30:00 30 (min) Purpose code: 3
 LOG :8854.40 8856.00 1.50 Area code : 1
 FDEPTH: 152 151 GearCond.code:
 BDEPTH: 152 151 Validity code:
 Towing dir: 360 Wire out: 650 m Speed: 30 kn*10

Sorted: 28 Kg Total catch: 367.90 CATCH/HOUR: 735.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, juveniles	374.40	50.88	226
Sufflogobius bibarbatatus	348.40	47.35	
Chelidonichthys capensis	13.00	1.77	
Total	735.80	100.00	

PROJECT STATION:1855
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2518
 start stop duration Long E 1332
 TIME :04:53:00 05:23:00 30 (min) Purpose code: 3
 LOG :8952.80 8954.20 1.60 Area code : 1
 FDEPTH: 659 658 GearCond.code:
 BDEPTH: 659 658 Validity code:
 Towing dir: 360 Wire out:1700 m Speed: 31 kn*10

Sorted: 46 Kg Total catch: 75.40 CATCH/HOUR: 150.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	60.80	40.32	245
Deania calcea	33.60	22.28	
Todarodes sagittatus	17.82	11.82	
Deepwater fish mixture	16.20	10.74	
Hoplostethus cadenati	6.48	4.30	
Nezumia sp.	5.40	3.58	
Merluccius paradoxus, male	3.12	2.07	244
Dirolene interlongza	1.86	1.23	
Selachophidium guentheri	1.86	1.23	
Alloctylus verrucosus	1.20	0.80	
Coelorinchus braueri	1.02	0.68	
Serrivomer beanii	0.90	0.60	
MELANOSTOMIATIDAE	0.30	0.20	
Nansenia sp.	0.24	0.16	
Total	150.80	100.01	

PROJECT STATION:1851
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2520
 start stop duration Long E 1421
 TIME :19:44:00 20:14:00 30 (min) Purpose code: 3
 LOG :8887.20 8888.60 1.50 Area code : 1
 FDEPTH: 156 150 GearCond.code:
 BDEPTH: 156 150 Validity code:
 Towing dir: 90 Wire out: 900 m Speed: 30 kn*10

Sorted: 27 Kg Total catch: 407.10 CATCH/HOUR: 814.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Sufflogobius bibarbatatus	230.40	28.30	
Merluccius capensis, male	201.30	24.72	227
Merluccius capensis, female	192.60	23.66	228
Merluccius capensis, juveniles	189.90	23.32	229
Total	814.20	100.00	

PROJECT STATION:1856
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2500
 start stop duration Long E 1335
 TIME :08:43:00 09:13:00 30 (min) Purpose code: 3
 LOG :8972.80 8974.00 1.30 Area code : 1
 FDEPTH: 517 508 GearCond.code:
 BDEPTH: 517 508 Validity code:
 Towing dir: 360 Wire out:1300 m Speed: 27 kn*10

Sorted: 181 Kg Total catch: 442.14 CATCH/HOUR: 884.28

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	600.00	67.85	248
Hoplostethus cadenati	97.00	10.97	
Todarodes sagittatus	71.40	8.07	
Merluccius paradoxus, male	35.76	4.04	247
Trachyrhinus scabrus	19.30	2.18	
Yarella blackfordi	13.30	1.50	
Merluccius capensis, female	11.82	1.34	246
MYCTOPHIDAE	10.00	1.13	
Nezumia sp.	9.90	1.12	
Deania profundorum	6.20	0.70	
Selachophidium guentheri	4.80	0.54	
Galeus polli	2.70	0.31	
Shrimps, small, non comm.	1.90	0.21	
Photichthys argenteus	0.20	0.02	
Total	884.28	99.98	

PROJECT STATION:1852
 DATE: 1/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2522
 start stop duration Long E 1359
 TIME :22:56:00 23:20:00 24 (min) Purpose code: 3
 LOG :8914.50 8915.60 1.10 Area code : 1
 FDEPTH: 221 219 GearCond.code:
 BDEPTH: 221 219 Validity code:
 Towing dir: 360 Wire out: 800 m Speed: 30 kn*10

Sorted: 79 Kg Total catch: 334.90 CATCH/HOUR: 837.25

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	658.00	78.59	231
Merluccius capensis, male	139.23	16.63	230
Sufflogobius bibarbatatus	22.05	2.63	
Coelorinchus fasciatus	6.35	0.76	
Gerypteris capensis	5.30	0.63	233
MYCTOPHIDAE	4.30	0.51	
Lophius vomerinus	0.93	0.11	234
Todaropsis eblanae	0.85	0.10	
Merluccius capensis, juveniles	0.25	0.03	232
Total	837.26	99.99	

PROJECT STATION:1857
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2458 Long E 1339
 start stop duration
 TIME :08:20:00 09:56:00 30 (min) Purpose code: 3
 LOG :8979.30 8980.50 1.60 Area code : 2
 FDEPTH: 400 396 GearCond.code:
 BDEPTH: 400 396 Validity code:
 Towing dir: 360 Wire out:1150 m Speed: 31 kn*10
 Sorted: 216 Kg Total catch: 237.51 CATCH/HOUR: 475.02

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius capensis, female	235.40	184	49.56
Merluccius paradoxus, female	92.00	210	19.37
Merluccius capensis, male	29.20	26	6.15
Helicolenus dactylopterus	20.04	228	6.11
Todarodes sagittatus	28.80	58	6.06
Deepwater fish mixture	20.80	4	4.38
Galeus polli	20.00	4	4.21
Deania profundorum	4.28	8	0.90
Coelorinchus fasciatus	4.20	32	0.88
Merluccius paradoxus, male	3.80	12	0.80
Nezumia sp.	2.84	168	0.60
Lophius vomerinus	2.70	2	0.57
Selachophidium guentheri	1.12	12	0.24
Notacanthus sexspinis	0.84	12	0.18
Total	475.02		100.01

PROJECT STATION:1862
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2439 Long E 1351
 start stop duration
 TIME :19:40:00 20:10:00 30 (min) Purpose code: 3
 LOG :9056.30 9057.60 1.50 Area code : 2
 FDEPTH: 251 258 GearCond.code:
 BDEPTH: 251 258 Validity code:
 Towing dir: 360 Wire out: 850 m Speed: 32 kn*10
 Sorted: 110 Kg Total catch: 221.20 CATCH/HOUR: 442.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius capensis, female	206.00	408	46.56
Merluccius capensis, male	88.80	236	20.07
Coelorinchus fasciatus	84.80		19.17
Sufflogobius bibarbatu	40.00		9.04
Lophius vomerinus	6.88	12	1.56
Helicolenus dactylopterus	5.76	100	1.30
Todarodes sagittatus	4.00	8	0.90
Squalus megalops	3.08	4	0.70
Squilla aculeata calmani	2.88	84	0.65
Galeus polli	0.20	8	0.05
Total	442.40		100.00

PROJECT STATION:1858
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2457 Long E 1349
 start stop duration
 TIME :11:15:00 11:45:00 30 (min) Purpose code: 3
 LOG :8991.00 8992.10 1.60 Area code : 2
 FDEPTH: 247 248 GearCond.code:
 BDEPTH: 247 248 Validity code:
 Towing dir: 360 Wire out: 850 m Speed: 33 kn*10
 Sorted: 88 Kg Total catch: 675.86 CATCH/HOUR: 1351.72

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius capensis, female	658.00	1164	48.68
MYCTOPHIDAE	444.28	58460	32.87
Merluccius capensis, male	214.48	966	15.87
Coelorinchus fasciatus	11.50	76	0.85
Helicolenus dactylopterus	10.12	154	0.75
Sufflogobius bibarbatu	9.50	828	0.70
Merluccius capensis, juveniles	3.38	138	0.25
Squilla sp.	0.46	16	0.03
Total	1351.72		100.00

PROJECT STATION:1863
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2439 Long E 1351
 start stop duration
 TIME :07:10:00 07:40:00 30 (min) Purpose code: 3
 LOG :9067.00 9068.20 1.60 Area code : 2
 FDEPTH: 257 260 GearCond.code:
 BDEPTH: 257 260 Validity code:
 Towing dir: 360 Wire out: 850 m Speed: 32 kn*10
 Sorted: 108 Kg Total catch: 244.71 CATCH/HOUR: 489.42

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius capensis, female	231.26	370	59.49
Merluccius capensis, male	94.50	190	19.31
Coelorinchus fasciatus	61.66	704	12.60
Muraenichthys muelleri	11.26		2.30
Helicolenus dactylopterus	8.06	122	1.65
Todarodes sagittatus	5.80	8	1.19
MYCTOPHIDAE	4.96		1.01
Sufflogobius bibarbatu	4.42	664	0.90
Squilla aculeata calmani	2.66	86	0.54
Austroglossus microlepis	2.52	4	0.51
Lophius vomerinus	1.16	4	0.24
Galeus polli	1.04	10	0.21
Merluccius capensis, juveniles	0.22	14	0.04
Total	489.42		99.99

PROJECT STATION:1859
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2500 Long E 1357
 start stop duration
 TIME :13:11:00 13:41:00 30 (min) Purpose code: 3
 LOG :9003.90 9005.20 1.70 Area code : 1
 FDEPTH: 175 172 GearCond.code:
 BDEPTH: 175 172 Validity code:
 Towing dir: 360 Wire out: 700 m Speed: 31 kn*10
 Sorted: 57 Kg Total catch: 1014.17 CATCH/HOUR: 2028.34

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius capensis, male	922.26	8296	45.47
Merluccius capensis, female	857.50	5250	42.28
Trachurus capensis	146.66	980	7.23
Merluccius capensis, juveniles	77.36	3046	3.81
Sufflogobius bibarbatu	15.76	560	0.78
Chelidonichthys capensis	8.80	36	0.43
Total	2028.34		100.00

PROJECT STATION:1864
 DATE: 3/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2440 Long E 1344
 start stop duration
 TIME :08:57:00 09:27:00 30 (min) Purpose code: 3
 LOG :9078.00 9079.30 1.70 Area code : 2
 FDEPTH: 353 346 GearCond.code:
 BDEPTH: 350 346 Validity code:
 Towing dir: 360 Wire out:1050 m Speed: 31 kn*10
 Sorted: 85 Kg Total catch: 85.79 CATCH/HOUR: 171.58

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius capensis, female	88.00	54	51.29
Helicolenus dactylopterus	26.00	424	15.15
Merluccius capensis, male	12.56	10	7.32
Galeus polli	8.44	110	4.92
Merluccius paradoxus, female	6.86	12	4.00
Nezumia sp.	6.10	106	3.56
Muraenichthys muelleri	4.00		2.33
Coelorinchus fasciatus	3.52	34	2.05
Todarodes sagittatus	3.44	12	2.00
Deania profundorum	2.94	2	1.71
Hoplostethus cadonati	2.40	56	1.40
Neoharriotta pinnata	1.62	2	0.94
Notacanthus sexspinis	1.54	52	0.90
Austroglossus microlepis	1.50	2	0.87
Squilla aculeata calmani	1.43	36	0.82
MYCTOPHIDAE	1.03		0.58
Selachophidium guentheri	0.18	8	0.10
Shrimps, small, non comm.	0.04	8	0.02
Aristeus varidens	0.04	4	0.02
Total	171.58		99.98

PROJECT STATION:1866
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2439 Long E 1412
 start stop duration
 TIME :16:48:00 16:49:00 1 (min) Purpose code: 3
 LOG :9035.10 9035.10 Area code : 2
 FDEPTH: 141 141 GearCond.code: 9
 BDEPTH: 141 141 Validity code: 9
 Towing dir: 142 Wire out: 650 m Speed: 30 kn*10
 Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
N O C A T C H	3.00		
Total			

PROJECT STATION:1865
 DATE: 3/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2440 Long E 1333
 start stop duration
 TIME :11:04:00 11:34:00 30 (min) Purpose code: 3
 LOG :9091.40 9093.00 1.50 Area code : 2
 FDEPTH: 418 408 GearCond.code:
 BDEPTH: 418 408 Validity code:
 Towing dir: 360 Wire out:1150 m Speed: 30 kn*10
 Sorted: 115 Kg Total catch: 461.56 CATCH/HOUR: 923.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius paradoxus, female	500.00	1624	54.16
Merluccius capensis, female	221.66	144	24.01
MYCTOPHIDAE	92.80		10.05
Merluccius capensis, male	33.60	24	3.64
Merluccius paradoxus, male	15.76	72	1.71
Todarodes sagittatus	14.96	32	1.62
Helicolenus dactylopterus	12.96	160	1.40
Galeus polli	8.96	128	0.97
CHIMAERIDAE	8.40	8	0.91
Epigonus denticulatus	3.84	192	0.42
Hoplostethus cadonati	3.28	72	0.36
Selachophidium guentheri	2.88	56	0.31
Nezumia sp.	2.88	80	0.31
Coelorinchus fasciatus	0.80	8	0.09
Todaropsis oblanae	0.24	8	0.03
Coelorinchus braueri	0.16	8	0.02
Total	923.12		100.01

PROJECT STATION:1861
 DATE: 2/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2440 Long E 1402
 start stop duration
 TIME :18:10:00 18:30:00 20 (min) Purpose code: 3
 LOG :9046.10 9046.50 1.20 Area code : 2
 FDEPTH: 148 146 GearCond.code:
 BDEPTH: 148 146 Validity code:
 Towing dir: 270 Wire out: 500 m Speed: 31 kn*10
 Sorted: 25 Kg Total catch: 129.10 CATCH/HOUR: 387.30

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius capensis, female	195.00	1890	50.35
Merluccius capensis, male	85.50	870	22.09
Sufflogobius bibarbatu	60.90	6090	15.72
Trachurus capensis	28.85	210	7.71
Merluccius capensis, juveniles	10.65	463	2.75
Chelidonichthys capensis	5.40	15	1.39
Total	387.30		100.00

PROJECT STATION:1865
 DATE: 3/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2440 Long E 1333
 start stop duration
 TIME :11:04:00 11:34:00 30 (min) Purpose code: 3
 LOG :9091.40 9093.00 1.50 Area code : 2
 FDEPTH: 418 408 GearCond.code:
 BDEPTH: 418 408 Validity code:
 Towing dir: 360 Wire out:1150 m Speed: 30 kn*10
 Sorted: 115 Kg Total catch: 461.56 CATCH/HOUR: 923.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight	numbers	
Merluccius paradoxus, female	500.00	1624	54.16
Merluccius capensis, female	221.66	144	24.01
MYCTOPHIDAE	92.80		10.05
Merluccius capensis, male	33.60	24	3.64
Merluccius paradoxus, male	15.76	72	1.71
Todarodes sagittatus	14.96	32	1.62
Helicolenus dactylopterus	12.96	160	1.40
Galeus polli	8.96	128	0.97
CHIMAERIDAE	8.40	8	0.91
Epigonus denticulatus	3.84	192	0.42
Hoplostethus cadonati	3.28	72	0.36
Selachophidium guentheri	2.88	56	0.31
Nezumia sp.	2.88	80	0.31
Coelorinchus fasciatus	0.80	8	0.09
Todaropsis oblanae	0.24	8	0.03
Coelorinchus braueri	0.16	8	0.02
Total	923.12		100.01

PROJECT STATION:1866
 DATE: 3/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2438 Long E 1327
 start stop duration Purpose code: 3
 TIME :12:36:00 13:06:00 30 (min) Area code : 2
 LOG :9099.40 9100.60 1.60 GearCond.code:
 FDEPTH: 545 546 Validity code:
 BDEPTH: 545 546
 Towing dir: 340 Wire out:1450 m Speed: 28 kn*10

Sorted: 107 Kg Total catch: 179.43 CATCH/HOUR: 358.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	157.30	138	43.83	280
Deepwater fish mixture	91.00		25.36	
Todarodes sagittatus	39.28	78	10.95	
Nezumia sp.	33.10	1442	9.22	
Deania profundorum	16.46	14	4.59	
Coelorinchus braueri	11.34	50	3.16	
Hoplostethus cadenati	5.40	196	1.50	
S H R I M P S	4.48	350	1.25	
Selachophidium guentheri	0.50	8	0.14	
Total	358.86		100.00	

PROJECT STATION:1867
 DATE: 3/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2420 Long E 1324
 start stop duration Purpose code: 3
 TIME :20:47:00 21:17:00 30 (min) Area code : 2
 LOG :9135.50 9136.80 1.60 GearCond.code:
 FDEPTH: 369 357 Validity code:
 BDEPTH: 369 357
 Towing dir: 360 Wire out:1150 m Speed: 33 kn*10

Sorted: 139 Kg Total catch: 172.01 CATCH/HOUR: 344.02

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	214.80	300	62.44	282
Coelorinchus fasciatus	34.62	432	10.06	
Merluccius capensis, female	22.60	10	6.57	281
Helicolenus dactylopterus	18.90	350	5.49	
Epigonus telescopus	13.38	420	3.89	
Deania profundorum	13.08	18	3.80	
Merluccius paradoxus, male	9.00	14	2.62	282
MYCTOPHIDAE	6.00		1.74	
Todarodes sagittatus	3.90	18	1.13	
Nezumia sp.	3.72	108	1.08	
Etmopterus pusillus	2.76	6	0.80	
Krill	0.90		0.26	
Selachophidium guentheri	0.36	6	0.10	
Total	344.02		99.98	

PROJECT STATION:1868
 DATE: 3/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2420 Long E 1340
 start stop duration Purpose code: 3
 TIME :23:07:00 23:37:00 30 (min) Area code : 2
 LOG :9151.80 9153.10 1.50 GearCond.code:
 FDEPTH: 317 311 Validity code:
 BDEPTH: 317 311
 Towing dir: 311 Wire out:1000 m Speed: 30 kn*10

Sorted: 99 Kg Total catch: 341.24 CATCH/HOUR: 682.48

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	415.74	274	60.92	285
Merluccius capensis, male	141.40	126	20.72	284
Helicolenus dactylopterus	61.60	1226	9.03	
Coelorinchus fasciatus	43.82	428	6.42	
Galeus polli	12.26	134	1.80	
Genypterus capensis	3.86	4	0.57	287
Lophius vomerinus	1.94	4	0.28	286
C R A B S	1.06	42	0.16	
Notacanthus sexspinis	0.80	28	0.12	
Total	682.48		100.02	

PROJECT STATION:1869
 DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2421 Long E 1355
 start stop duration Purpose code: 3
 TIME :01:33:00 02:03:00 30 (min) Area code : 2
 LOG :9169.20 9170.80 1.70 GearCond.code:
 FDEPTH: 249 249 Validity code:
 BDEPTH: 249 249
 Towing dir: 360 Wire out: 900 m Speed: 30 kn*10

Sorted: 101 Kg Total catch: 364.87 CATCH/HOUR: 729.74

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	368.94	688	50.56	289
Sufflogobius bibarbatus	147.92	998	20.27	
Merluccius capensis, male	123.84	276	16.97	288
Lophius vomerinus	38.30	52	5.25	293
Coelorinchus fasciatus	35.94	508	4.93	
Trachurus capensis	5.94	18	0.81	
Austroglossus microlepis	4.98	8	0.68	291
Squilla sp.	2.20	94	0.30	
Genypterus capensis	0.64	4	0.09	292
Merluccius capensis, juveniles	0.60	34	0.08	290
Todaropsis eblanae	0.44	8	0.06	
Total	729.74		100.00	

PROJECT STATION:1870
 DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2417 Long E 1404
 start stop duration Purpose code: 3
 TIME :04:00:00 04:30:00 30 (min) Area code : 2
 LOG :9187.30 9188.70 1.50 GearCond.code:
 FDEPTH: 148 155 Validity code:
 BDEPTH: 148 155
 Towing dir: 350 Wire out: 550 m Speed: 31 kn*10

Sorted: 15 Kg Total catch: 30.12 CATCH/HOUR: 60.24

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sufflogobius bibarbatus	43.20	7004	71.71	
Merluccius capensis, juveniles	16.00	612	26.56	294
Squilla sp.	0.56	16	0.93	
Helicolenus dactylopterus	0.24	4	0.40	
Coelorinchus fasciatus	0.24	8	0.40	
Total	60.24		100.00	

PROJECT STATION:1871
 DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2359 Long E 1404
 start stop duration Purpose code: 3
 TIME :09:28:00 09:58:00 30 (min) Area code : 2
 LOG :9232.00 9233.50 1.70 GearCond.code:
 FDEPTH: 176 179 Validity code:
 BDEPTH: 176 179
 Towing dir: 360 Wire out: 750 m Speed: 33 kn*10

Sorted: 62 Kg Total catch: 1244.00 CATCH/HOUR: 2488.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, juveniles	2360.00	102362	94.86	296
Sufflogobius bibarbatus	80.00		1.22	
Merluccius capensis, female	48.00	280	1.93	295
Total	2488.00		100.01	

PROJECT STATION:1872
 DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2402 Long E 1347
 start stop duration Purpose code: 3
 TIME :13:00:00 13:30:00 30 (min) Area code : 2
 LOG :9253.50 9254.90 1.50 GearCond.code:
 FDEPTH: 244 240 Validity code:
 BDEPTH: 244 240
 Towing dir: 360 Wire out: 850 m Speed: 27 kn*10

Sorted: 62 Kg Total catch: 718.50 CATCH/HOUR: 1437.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	676.00	2314	47.04	298
Merluccius capensis, male	286.00	1378	19.90	297
Trachurus capensis	208.00	936	14.47	300
MYCTOPHIDAE	68.90	19136	4.79	
Coelorinchus fasciatus	63.80	1482	4.44	
Helicolenus dactylopterus	59.80	2340	4.16	
Sufflogobius bibarbatus	29.64	3120	2.06	
Merluccius capensis, juveniles	18.72	1118	1.30	299
Lophius vomerinus	16.00	18	1.11	301
Todaropsis eblanae	9.36	312	0.65	
Squilla sp.	0.78	52	0.05	
Total	1437.00		99.97	

PROJECT STATION:1873
 DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2402 Long E 1336
 start stop duration Purpose code: 3
 TIME :15:38:00 16:08:00 30 (min) Area code : 2
 LOG :9270.00 9271.50 1.50 GearCond.code:
 FDEPTH: 269 264 Validity code:
 BDEPTH: 269 264
 Towing dir: 360 Wire out: 900 m Speed: 31 kn*10

Sorted: 148 Kg Total catch: 502.19 CATCH/HOUR: 1004.38

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	716.04	564	71.29	303
Merluccius capensis, male	162.52	198	16.18	302
Helicolenus dactylopterus	62.22	1434	6.19	
Coelorinchus fasciatus	22.04	286	2.19	
MYCTOPHIDAE	16.18		1.61	
Todarodes sagittatus	12.58	20	1.25	
Sufflogobius bibarbatus	5.98	496	0.60	
Galeus polli	3.80	108	0.38	
Lophius vomerinus	1.44	2	0.14	304
C R A B S	0.96	48	0.10	
Squilla sp.	0.62	40	0.06	
Total	1004.38		99.99	

PROJECT STATION:1874
 DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2359 Long E 1322
 start stop duration Purpose code: 3
 TIME :18:11:00 18:41:00 30 (min) Area code : 2
 LOG :9285.90 9287.40 1.50 GearCond.code:
 FDEPTH: 292 292 Validity code:
 BDEPTH: 292 292
 Towing dir: 360 Wire out: 950 m Speed: 30 kn*10

Sorted: 143 Kg Total catch: 563.23 CATCH/HOUR: 1126.46

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	616.80	768	54.76	307
Merluccius capensis, male	162.00	288	14.38	306
Helicolenus dactylopterus	156.32	4376	13.88	
Todarodes sagittatus	67.84	98	6.02	
Merluccius paradoxus, female	43.68	180	3.88	309
MYCTOPHIDAE	39.32		3.49	
Coelorinchus fasciatus	28.52	540	2.53	
PORTUNIDAE	6.88		0.61	
Squilla aculeata calmani	1.48	98	0.13	
Galeus polli	1.48	50	0.13	
Lophius vomerinus	1.12	2	0.10	305
Merluccius paradoxus, male	1.02	6	0.09	308
Total	1126.46		100.00	

PROJECT STATION:1875
 DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2358 Long E 1314
 start stop duration Purpose code: 3
 TIME :19:58:00 20:28:00 30 (min) Area code : 2
 LOG :9296.80 9298.30 1.50 GearCond.code:
 FDEPTH: 404 382 Validity code:
 BDEPTH: 404 382
 Towing dir: 360 Wire out:1150 m Speed: 30 kn*10

Sorted: 156 Kg Total catch: 349.10 CATCH/HOUR: 698.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius paradoxus, female	190.00	240	27.21	314
Merluccius capensis, female	167.20	84	23.95	312
Todarodes sagittatus	124.00	148	17.76	
Helicolenus dactylopterus	81.60	710	11.69	
Hoplostethus cadenati	39.20	1056	5.61	
Deania profundorum	22.08	40	3.16	
Lophius vomerinus	13.04	12	1.87	311
Coelorinchus fasciatus	10.88	120	1.56	
Centrosynnus crepidater	7.68	8	1.10	
Galeus polli	7.12	88	1.02	
Epigonus pandionis	6.80	160	0.97	
Prionace glauca	6.00	2	0.86	
Etmopterus pusillus	4.48	16	0.64	
Varela blackfordi	4.40	216	0.63	
Nezumia sp.	3.60	104	0.53	
Merluccius paradoxus, male	2.84	4	0.41	313
Genypterus capensis	2.60	2	0.37	310
Aristeus varidens	2.36	268	0.34	
Selachophidium guentheri	2.24	48	0.32	
Total	698.20		100.00	

PROJECT STATION:1876
DATE: 4/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2359 Long E 1310
start stop duration Purpose code: 3
TIME :22:16:00 22:46:00 30 (min) Area code : 2
LOG :9306.00 9307.40 1.40 GearCond.code:
FDEPTH: 562 545 Validity code:
BDEPTH: 562 545
Towing dir: 360 Wire out:1500 m Speed: 28 kn*10

Sorted: 185 Kg Total catch: 431.82 CATCH/HOUR: 863.64

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius paradoxus, female	444.56	532	318
Todarodes sagittatus	183.14	210	
Deania calcea	66.64	42	
Merluccius capensis, female	58.48	24	316
Hoplostethus cadenati	22.50	810	
Nezumia sp.	17.84	672	
Shrimps, small, non comm.	15.80	1.83	
Merluccius paradoxus, male	10.76	14	317
Merluccius capensis, male	8.34	4	315
Trachyrhinus scabrus	7.04	18	
Selachophidium guentheri	6.06	46	
Centroscymnus crepidater	5.60	4	
Rossia sp.	3.40	10	
Beryx splendens	3.02	4	
Coelorinchus matamua	2.10	28	
Lithodes ferox	2.10	4	
Lamprogrammus exutus	1.64	46	
Yarella blackfordi	1.54	96	
MYCTOPHIDAE	1.03	150	
Aristeus varidens	0.80	60	
Dicrolene sp.	0.46	4	
Photichthys argenteus	0.38	14	
Epigonus denticulatus	0.24	4	
Stereomastix sculpata	0.10	10	
Squilla sp.	0.10	4	
Total	863.72	100.03	

PROJECT STATION:1880
DATE: 5/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2341 Long E 1326
start stop duration Purpose code: 3
TIME :13:39:00 14:09:00 30 (min) Area code : 2
LOG :9383.70 9385.30 1.80 GearCond.code:
FDEPTH: 254 254 Validity code:
BDEPTH: 254 254
Towing dir: 360 Wire out: 500 m Speed: 32 kn*10

Sorted: 153 Kg Total catch: 679.49 CATCH/HOUR: 1358.98

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius capensis, female	784.80	1044	331
Merluccius capensis, male	415.80	576	330
Trachurus capensis	88.20	316	334
Helicolenus dactylopterus	45.64	550	
Galeus polli	7.66	208	
Lophius vomerinus	5.99	6	333
Coelorinchus fasciatus	5.00	118	
MYCTOPHIDAE	4.80		
Sufflogobius bibarbatatus	0.64	118	
Squilla sp.	0.28	10	
Merluccius capensis, juveniles	0.18	18	332
Total	1358.98	100.00	

PROJECT STATION:1881
DATE: 5/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2340 Long E 1339
start stop duration Purpose code: 3
TIME :16:03:00 16:33:00 30 (min) Area code : 2
LOG :9401.80 9403.20 1.60 GearCond.code:
FDEPTH: 206 203 Validity code:
BDEPTH: 206 203
Towing dir: 360 Wire out: 800 m Speed: 31 kn*10

Sorted: 116 Kg Total catch: 3974.26 CATCH/HOUR: 7948.52

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius capensis, male	3964.40	4352	335
Trachurus capensis	2261.00	11900	337
Merluccius capensis, female	1400.80	7072	336
Helicolenus dactylopterus	208.08	5712	
Chelidonichthys capensis	99.96	204	
Sufflogobius bibarbatatus	8.84	884	
C R A B S	3.40	68	
Coelorinchus fasciatus	2.04	136	
Total	7948.52	100.01	

PROJECT STATION:1877
DATE: 5/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2339 Long E 1306
start stop duration Purpose code: 3
TIME :07:26:00 07:56:00 30 (min) Area code : 2
LOG :9346.90 9348.30 1.50 GearCond.code:
FDEPTH: 520 516 Validity code:
BDEPTH: 520 516
Towing dir: 10 Wire out:1400 m Speed: 30 kn*10

Sorted: 183 Kg Total catch: 266.53 CATCH/HOUR: 533.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Deania calcea	185.00	120	34.89
Merluccius paradoxus, female	82.00	98	15.38
Todarodes sagittatus	71.40	72	13.39
Nezumia sp.	50.04	2310	3.39
Hoplostethus cadenati	39.24	964	7.36
Centrophorus squamosus	34.50	30	6.47
Trachyrhinus scabrus	30.24	84	5.67
Lophius vomerinus	17.44	6	3.27
Merluccius capensis, female	10.66	4	2.09
Aristeus varidens	4.34	288	0.81
Selachophidium guentheri	3.84	60	0.72
Epigonus telescopus	1.20	24	0.23
Galeus polli	0.96	12	0.18
Notacanthus sexspinis	0.72	12	0.14
OPHICHTHIDAE	0.48	12	0.09
Total	533.06	99.99	

PROJECT STATION:1882
DATE: 5/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2340 Long E 1352
start stop duration Purpose code: 3
TIME :18:10:00 18:40:00 30 (min) Area code : 2
LOG :9416.40 9417.90 1.50 GearCond.code:
FDEPTH: 171 167 Validity code:
BDEPTH: 171 167
Towing dir: 93 Wire out: 700 m Speed: 29 kn*10

Sorted: 29 Kg Total catch: 2948.00 CATCH/HOUR: 5896.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius capensis, female	2700.00	23000	45.79
Merluccius capensis, male	2440.00	23400	41.38
Merluccius capensis, juveniles	736.00	25000	12.48
Sufflogobius bibarbatatus	20.00		0.34
Total	5896.00	99.99	

PROJECT STATION:1878
DATE: 5/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2337 Long E 1308
start stop duration Purpose code: 3
TIME :08:52:00 09:22:00 30 (min) Area code : 2
LOG :9352.80 9354.00 1.40 GearCond.code:
FDEPTH: 418 414 Validity code:
BDEPTH: 418 414
Towing dir: 360 Wire out:1150 m Speed: 28 kn*10

Sorted: 129 Kg Total catch: 211.03 CATCH/HOUR: 422.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius paradoxus, female	125.80	170	29.81
Merluccius capensis, female	74.40	28	17.63
Trachyrhinus scabrus	68.80	296	16.30
Galeus polli	31.44	294	7.45
Helicolenus dactylopterus	31.44	176	7.45
Todarodes sagittatus	28.24	56	6.69
Deania profundorum	24.00	40	5.69
MYCTOPHIDAE	8.00		1.90
Yarella blackfordi	5.76	472	1.36
Etmopterus pusillus	5.20	16	1.23
Merluccius paradoxus, male	5.14	8	1.22
Hoplostethus cadenati	3.92	224	0.93
Nezumia sp.	3.20	112	0.76
Shrimps, small, non comm.	2.24		0.53
Selachophidium guentheri	1.60	32	0.38
Aristeus varidens	1.44	104	0.34
Epigonus pandionis	1.04	8	0.25
Ebibanella costaeannarie	0.40	8	0.09
Total	422.06	100.01	

PROJECT STATION:1883
DATE: 5/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2340 Long E 1407
start stop duration Purpose code: 3
TIME :20:15:00 20:45:00 30 (min) Area code : 2
LOG :9430.50 9431.70 1.30 GearCond.code:
FDEPTH: 144 141 Validity code:
BDEPTH: 144 141
Towing dir: 93 Wire out: 650 m Speed: 27 kn*10

Sorted: 30 Kg Total catch: 30.29 CATCH/HOUR: 60.58

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sufflogobius bibarbatatus	60.00		99.04
Merluccius capensis, juveniles	0.58	20	0.96
Total	60.58	100.00	

PROJECT STATION:1884
DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320 Long E 1359
start stop duration Purpose code: 3
TIME :07:04:00 07:34:00 30 (min) Area code : 2
LOG :9450.00 9451.30 1.60 GearCond.code:
FDEPTH: 148 145 Validity code:
BDEPTH: 148 145
Towing dir: 270 Wire out: 700 m Speed: 32 kn*10

Sorted: 25 Kg Total catch: 62.70 CATCH/HOUR: 125.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sufflogobius bibarbatatus	110.00	39696	87.72
Merluccius capensis, juveniles	15.40	566	12.28
Total	125.40	100.00	

PROJECT STATION:1879
DATE: 5/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2339 Long E 1316
start stop duration Purpose code: 3
TIME :11:19:00 11:51:00 32 (min) Area code : 2
LOG :9367.40 9369.10 1.70 GearCond.code:
FDEPTH: 316 320 Validity code:
BDEPTH: 316 320
Towing dir: 360 Wire out:1000 m Speed: 33 kn*10

Sorted: 105 Kg Total catch: 210.73 CATCH/HOUR: 395.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Merluccius capensis, female	245.25	131	62.07
Helicolenus dactylopterus	58.50		14.81
Merluccius capensis, male	40.31	30	10.20
Merluccius paradoxus, female	21.08	83	5.34
MYCTOPHIDAE	9.56		2.42
Todarodes sagittatus	6.79	15	1.72
Galeus polli	4.16	41	1.05
Coelorinchus fasciatus	2.96	38	0.75
Trachurus capensis	2.36	4	0.60
Lophius vomerinus	2.19	2	0.55
Selachophidium guentheri	0.79	8	0.20
Nezumia sp.	0.45	15	0.11
Hoplostethus cadenati	0.41	8	0.10
Epigonus denticulatus	0.15	11	0.04
C R A B S	0.08	4	0.02
Malacocephalus laevis	0.08	4	0.02
Total	395.12	100.00	

PROJECT STATION:1885
DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320 Long E 1343
start stop duration Purpose code: 3
TIME :09:04:00 09:34:00 30 (min) Area code : 2
LOG :9464.20 9465.80 1.60 GearCond.code:
FDEPTH: 152 152 Validity code:
BDEPTH: 152 152
Towing dir: 270 Wire out: 650 m Speed: 32 kn*10

Sorted: 26 Kg Total catch: 156.90 CATCH/HOUR: 313.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sufflogobius bibarbatatus	114.72	13404	36.56
Merluccius capensis, juveniles	94.20	3452	30.92
Merluccius capensis, female	84.24	828	26.35
Merluccius capensis, male	20.64	228	6.58
Total	313.80	100.01	

PROJECT STATION:1886
 DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
 start stop duration Long E 1331
 TIME :10:45:00 11:15:00 30 (min) Purpose code: 3
 LOG :9475.30 9476.80 1.60 Area code : 2
 FDEPTH: 202 218 GearCond.code:
 BDEPTH: 202 218 Validity code:
 Towing dir: 270 Wire out: 750 m Speed: 31 kn*10

Sorted: 58 Kg Total catch: 1857.95 CATCH/HOUR: 3715.90

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, male	1795.20 17612	48.31	345
Merluccius capensis, female	1611.60 11016	43.37	346
Trachurus capensis	280.84 1836	7.56	350
Chelidonichthys capensis	13.60 68	0.37	
Lophius vomerinus	5.50 8	0.15	348
Helicolenus dactylopterus	4.08 204	0.11	
Merluccius capensis, juveniles	2.72 136	0.07	347
Austroglossus microlepis	2.36 4	0.06	349
Total	3715.90	100.00	

PROJECT STATION:1887
 DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
 start stop duration Long E 1324
 TIME :12:16:00 12:46:00 30 (min) Purpose code: 3
 LOG :9483.60 9484.90 1.70 Area code : 2
 FDEPTH: 272 282 GearCond.code:
 BDEPTH: 272 282 Validity code:
 Towing dir: 360 Wire out: 900 m Speed: 33 kn*10

Sorted: 151 Kg Total catch: 775.08 CATCH/HOUR: 1550.16

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	1082.64 1404	69.84	352
Merluccius capensis, male	255.84 416	16.50	351
Galeus polli	80.50 1550	5.19	
Helicolenus dactylopterus	39.72 1528	2.56	
Deepwater fish mixture	25.90		
Todarodes sagittatus	22.68 32	1.46	
Coelorinchus fasciatus	22.26 448	1.44	
Trachurus capensis	9.56 20	0.62	
Lophius vomerinus	5.96 8	0.38	354
Lepidopus caudatus	2.50 10	0.16	
Epigonus denticulatus	1.24 32	0.08	
Merluccius capensis, juveniles	0.74 42	0.05	353
C R A B S	0.62 10	0.04	
Total	1550.16	99.99	

PROJECT STATION:1888
 DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
 start stop duration Long E 1326
 TIME :14:08:00 14:38:00 30 (min) Purpose code: 3
 LOG :9495.40 9496.70 1.70 Area code : 2
 FDEPTH: 359 363 GearCond.code:
 BDEPTH: 359 363 Validity code:
 Towing dir: 360 Wire out:1050 m Speed: 32 kn*10

Sorted: 71 Kg Total catch: 95.02 CATCH/HOUR: 190.04

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	44.40 24	23.36	356
Galeus polli	38.48 492	20.25	
Merluccius paradoxus, female	34.60 72	18.21	357
Helicolenus dactylopterus	21.40 372	11.26	
Merluccius capensis, male	15.60 12	8.21	355
Deania profundorum	9.96 8	5.24	
SQUALIDAE	7.28 8	3.83	
Coelorinchus fasciatus	6.36 72	3.35	
Todarodes sagittatus	5.92 20	3.12	
Trachurus capensis	1.76 8	0.93	
Epigonus denticulatus	1.52 68	0.80	
Nezumia sp.	1.44 52	0.76	
OPHIIDAE	0.40 12	0.21	
Todaropsis eblanae	0.40 8	0.21	
S H R I M P S	0.20 52	0.11	
MYCTOPHIDAE	0.12 20	0.06	
C R A B S	0.12 4	0.06	
Hoplostethus cadenati	0.08 92	0.04	
Total	190.04	100.01	

PROJECT STATION:1889
 DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
 start stop duration Long E 1306
 TIME :16:08:00 16:38:00 30 (min) Purpose code: 3
 LOG :9508.40 9509.80 1.70 Area code : 2
 FDEPTH: 454 455 GearCond.code:
 BDEPTH: 454 455 Validity code:
 Towing dir: 360 Wire out:1200 m Speed: 32 kn*10

Sorted: 66 Kg Total catch: 114.49 CATCH/HOUR: 228.98

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Deania calcea	75.54 48	32.99	
Merluccius paradoxus, female	62.80 72	27.43	359
Trachyrinus scabrus	24.36 108	10.64	
Merluccius capensis, female	14.00 6	6.11	360
Todarodes sagittatus	13.50 30	5.90	
Helicolenus dactylopterus	11.28 84	4.93	
Lophius vomerinus	4.92 4	2.15	361
Hoplostethus cadenati	4.62 120	2.02	
Aristeus varidens	2.26 540	1.86	
Nezumia sp.	3.30 120	1.44	
MYCTOPHIDAE	3.18 234	1.39	
Merluccius paradoxus, male	3.14 4	1.37	358
Galeus polli	1.50 36	0.66	
Coelorinchus fasciatus	1.44 18	0.63	
Selachophidium guentheri	0.48 6	0.21	
Epigonus denticulatus	0.24 6	0.10	
S H R I M P S	0.24 18	0.10	
Notacanthus sexspinis	0.18 6	0.08	
Total	228.98	100.01	

PROJECT STATION:1890
 DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2320
 start stop duration Long E 1303
 TIME :17:43:00 18:13:00 30 (min) Purpose code: 3
 LOG :9516.30 9517.60 1.70 Area code : 2
 FDEPTH: 550 550 GearCond.code:
 BDEPTH: 550 550 Validity code:
 Towing dir: 360 Wire out:1450 m Speed: 32 kn*10

Sorted: 24 Kg Total catch: 24.90 CATCH/HOUR: 49.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Shrimps, small, non comm.	15.80 3762	31.73	
Deania calcea	12.24 6	24.58	
Hoplostethus cadenati	3.90 80	7.83	
Trachyrinus scabrus	3.36 12	6.75	
Merluccius paradoxus, female	3.10 2	6.22	362
Nezumia sp.	3.00 178	6.02	
Todarodes sagittatus	1.74 4	3.49	
Lophius vomerinus	1.52 2	2.65	363
Helicolenus dactylopterus	1.22 4	2.45	
Paradipliospinus gracilis	0.82 8	1.65	
Deepwater fish mixture	0.80	1.61	
C E P H A L O P O D A	0.52 6	1.04	
Rossia sp.	0.52 2	1.04	
Lamprogrammus exutus	0.36 4	0.72	
Photichthys argenteus	0.36 24	0.72	
Galeus polli	0.28 4	0.56	
Alloctytus verrucosus	0.26 6	0.52	
Yarella blackfordi	0.20 12	0.40	
Total	49.80	99.98	

PROJECT STATION:1891
 DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2315
 start stop duration Long E 1359
 TIME :19:20:00 19:50:00 30 (min) Purpose code: 3
 LOG :9523.30 9524.30 1.40 Area code : 2
 FDEPTH: 650 652 GearCond.code:
 BDEPTH: 650 652 Validity code:
 Towing dir: 360 Wire out:1650 m Speed: 29 kn*10

Sorted: 45 Kg Total catch: 94.06 CATCH/HOUR: 188.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Deania calcea	58.20 24	30.94	
Neocyttus rhomboidalis	48.00 102	25.52	
Merluccius paradoxus, female	36.00 22	19.14	364
Nezumia sp.	10.92 192	5.80	
Deepwater fish mixture	10.80	5.74	
Schedophilus huttoni	6.20 2	3.30	
Bathyrcoconger vicinus	4.80 18	2.55	
Dicrroleme intronigra	4.44 72	2.36	
ALEPOCEPHALIDAE	1.80 12	0.96	
Selachophidium guentheri	1.56 24	0.83	
Hoplostethus cadenati	1.14 36	0.61	
C E P H A L O P O D A	1.08 6	0.57	
ASTRONESTHIDAE	0.90 6	0.48	
Notacanthus sexspinis	0.84 6	0.45	
Hoplostethus atlanticus	0.78 6	0.41	
Coelorinchus matama	0.54 6	0.29	
Alloctytus verrucosus	0.12 6	0.06	
Total	188.12	100.01	

PROJECT STATION:1892
 DATE: 6/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2302
 start stop duration Long E 1300
 TIME :21:35:00 22:05:00 30 (min) Purpose code: 3
 LOG :9536.70 9537.90 1.50 Area code : 2
 FDEPTH: 493 500 GearCond.code:
 BDEPTH: 493 500 Validity code:
 Towing dir: 340 Wire out:1350 m Speed: 32 kn*10

Sorted: 72 Kg Total catch: 115.54 CATCH/HOUR: 231.08

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	84.20 100	36.44	367
Trachyrinus scabrus	35.40 102	15.32	
Deania calcea	35.40 24	15.32	
Todarodes sagittatus	21.54 42	9.32	
Merluccius capensis, female	15.00 8	6.49	365
Hoplostethus cadenati	8.76 168	3.79	
Centrosomus crepidater	6.60 6	2.86	
Nezumia sp.	6.54 258	2.83	
Shrimps, small, non comm.	3.90	1.69	
MYCTOPHIDAE	3.00 420	1.30	
Etmopterus pusillus	1.98 6	0.86	
Raja confundens	1.84 2	0.80	
Merluccius paradoxus, male	1.70 2	0.74	366
Yarella blackfordi	1.20 78	0.52	
Lamprogrammus exutus	1.14 12	0.49	
Aristeus varidens	0.72 24	0.31	
ASTRONESTHIDAE	0.72 12	0.31	
Scorpaenopsis saurus	0.48 6	0.21	
Galeus polli	0.36 12	0.16	
Notacanthus sexspinis	0.24 6	0.10	
Bathyrcoconger vicinus	0.24 6	0.10	
Photichthys argenteus	0.12 12	0.05	
Total	231.08	100.01	

PROJECT STATION:1893
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2244
 start stop duration Long E 1253
 TIME :00:29:00 00:59:00 30 (min) Purpose code: 3
 LOG :9557.90 9559.50 1.30 Area code : 2
 FDEPTH: 421 428 GearCond.code:
 BDEPTH: 421 428 Validity code:
 Towing dir: 180 Wire out:1150 m Speed: 26 kn*10

Sorted: 164 Kg Total catch: 257.62 CATCH/HOUR: 515.24

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	184.20 278	35.75	369
Merluccius capensis, female	92.70 46	17.99	370
Helicolenus dactylopterus	78.00 230	15.14	
Trachyrinus scabrus	74.00 370	14.36	
Epigonus denticulatus	29.00 170	5.63	
Hoplostethus cadenati	15.70 170	3.05	
Todarodes sagittatus	15.20 40	2.95	
Nezumia sp.	9.20 300	1.79	
Raja confundens	9.10 10	1.77	
Lophius vomerinus	3.24 2	0.63	371
Merluccius paradoxus, male	2.40 6	0.47	368
S H R I M P S	1.60 180	0.31	
Coelorinchus fasciatus	0.90 10	0.17	
Total	515.24	100.01	

PROJECT STATION:1894
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2241 Long E 1256
 start stop duration
 TIME :07:20:00 07:50:00 30 (min) Purpose code: 3
 LOG :9571.80 9573.20 1.80 Area code : 2
 FDEPTH: 319 323 GearCond.code:
 BDEPTH: 319 323 Validity code:
 Towing dir: 350 Wire out:1000 m Speed: 33 kn*10

Sorted: 222 Kg Total catch: 270.84 CATCH/HOUR: 541.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	251.20	140	46.37	375
Merluccius paradoxus, female	125.60	258	23.19	377
Helicolenus dactylopterus	61.00	1550	11.26	
Merluccius capensis, male	37.00	28	6.83	374
Galeus polli	19.40	230	3.58	
Krill	15.00	2.77		
Epigonus pandionis	9.50	340	1.75	
Coelorinchus fasciatus	8.40	260	1.55	
Nezumia sp.	3.50	110	0.65	
Lophius vomerinus	2.88	2	0.53	373
Chlorophthalmus atlanticus	2.10	80	0.39	
Merluccius paradoxus, male	2.00	4	0.37	376
Genypterus capensis	2.00	2	0.37	372
Shrimps, small, non comm.	1.70	430	0.31	
Hoplostethus cadenati	0.40	20	0.07	
Total	541.68		99.99	

PROJECT STATION:1898
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2258 Long E 1331
 start stop duration
 TIME :16:58:00 17:28:00 30 (min) Purpose code: 3
 LOG :9634.40 9635.90 1.60 Area code : 2
 FDEPTH: 202 200 GearCond.code:
 BDEPTH: 202 200 Validity code:
 Towing dir: 360 Wire out: 800 m Speed: 33 kn*10

Sorted: 125 Kg Total catch: 911.29 CATCH/HOUR: 1822.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	682.50	3500	37.45	397
Merluccius capensis, male	507.50	3098	27.85	396
Trachurus capensis	435.80		23.91	395
Pterothrissus belloci	94.50	718	5.18	
Lophius vomerinus	36.40	72	2.00	394
Chelidonichthys capensis	24.86	52	1.36	
Sufflogobius bibarbatatus	15.00	1890	0.82	
Austroglossus microlepis	12.70	28	0.70	393
Coelorinchus fasciatus	6.66	106	0.37	
Merluccius capensis, juveniles	4.02	280	0.22	398
Todaropsis eblanae	1.92	70	0.11	
PORTUNIDAE	0.36	18	0.02	
Galeus polli	0.36	36	0.02	
Total	1822.58		100.01	

PROJECT STATION:1895
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2251 Long E 1210
 start stop duration
 TIME :10:40:00 11:16:00 36 (min) Purpose code: 3
 LOG :9595.20 9597.00 1.90 Area code : 2
 FDEPTH: 293 302 GearCond.code:
 BDEPTH: 293 302 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 32 kn*10

Sorted: 164 Kg Total catch: 960.24 CATCH/HOUR: 1600.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	973.00	660	60.80	379
Merluccius capensis, male	241.00	250	15.06	378
Merluccius paradoxus, female	208.00	802	13.00	381
Galeus polli	53.00	1506	3.94	
Helicolenus dactylopterus	46.60	1130	2.91	
Todarodes sagittatus	28.00	40	1.75	
Coelorinchus fasciatus	12.20	350	0.76	
Merluccius paradoxus, male	11.10	40	0.69	380
Lophius vomerinus	9.30	10	0.58	382
Epigonus denticulatus	8.20	390	0.51	
Total	1600.40		100.00	

PROJECT STATION:1899
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2256 Long E 1334
 start stop duration
 TIME :18:13:00 18:43:00 30 (min) Purpose code: 3
 LOG :9639.50 9641.10 1.60 Area code : 2
 FDEPTH: 143 139 GearCond.code:
 BDEPTH: 143 139 Validity code:
 Towing dir: 30 Wire out: 650 m Speed: 32 kn*10

Sorted: 33 Kg Total catch: 1185.40 CATCH/HOUR: 2370.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	1120.00	8640	47.24	402
Merluccius capensis, male	992.00	8720	41.84	401
Pterothrissus belloci	113.60	1440	4.79	
Lophius vomerinus	67.00	220	2.83	400
Chelidonichthys capensis	43.20	160	1.82	
Sufflogobius bibarbatatus	22.40	3920	0.94	
Merluccius capensis, juveniles	9.60	480	0.40	
Austroglossus microlepis	3.00	18	0.13	399
Total	2370.80		99.99	

PROJECT STATION:1900
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2259 Long E 1347
 start stop duration
 TIME :20:32:00 21:02:00 30 (min) Purpose code: 3
 LOG :9656.00 9657.70 1.60 Area code : 2
 FDEPTH: 137 137 GearCond.code:
 BDEPTH: 137 137 Validity code:
 Towing dir: 30 Wire out: 650 m Speed: 31 kn*10

Sorted: Kg Total catch: 0.24 CATCH/HOUR: 0.48

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, juveniles	0.48	24	100.00	
Total	0.48		100.00	

PROJECT STATION:1896
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2259 Long E 1317
 start stop duration
 TIME :13:26:00 13:56:00 30 (min) Purpose code: 3
 LOG :9613.60 9615.00 1.70 Area code : 2
 FDEPTH: 352 352 GearCond.code:
 BDEPTH: 352 352 Validity code:
 Towing dir: 330 Wire out:1050 m Speed: 33 kn*10

Sorted: 90 Kg Total catch: 230.01 CATCH/HOUR: 460.02

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Schedophilus huttoni	102.00	20	22.17	
Merluccius capensis, female	100.56	96	21.86	384
Merluccius paradoxus, female	80.64	326	17.53	386
Epigonus denticulatus	57.36	1896	12.47	
Merluccius capensis, male	42.24	34	9.18	383
Galeus polli	21.50	340	4.67	
Coelorinchus fasciatus	13.54	172	2.94	
Lophius vomerinus	11.50	12	2.50	387
Krill	9.94		2.16	
Helicolenus dactylopterus	5.86	144	1.27	
Hoplostethus cadenati	5.62	116	1.22	
Merluccius paradoxus, male	4.42	24	0.96	385
Nezumia sp.	3.40	76	0.74	
Trachurus capensis	1.24	4	0.27	
Notacanthus sexspinis	0.20	4	0.04	
Total	460.02		99.98	

PROJECT STATION:1901
 DATE: 9/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2240 Long E 1329
 start stop duration
 TIME :17:57:00 18:27:00 30 (min) Purpose code: 3
 LOG :9772.30 9773.70 1.70 Area code : 2
 FDEPTH: 216 214 GearCond.code:
 BDEPTH: 216 214 Validity code:
 Towing dir: 360 Wire out: 800 m Speed: 33 kn*10

Sorted: 64 Kg Total catch: 985.39 CATCH/HOUR: 1970.78

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	973.40	6944	49.39	404
Merluccius capensis, male	812.20	6728	41.21	403
Trachurus capensis	83.70	528	4.25	406
Pterothrissus belloci	38.14	248	1.94	
Chelidonichthys capensis	37.82	94	1.92	
Merluccius capensis, juveniles	6.20	372	0.31	405
Coelorinchus fasciatus	4.96	62	0.25	
Sufflogobius bibarbatatus	4.66	434	0.24	
Lophius vomerinus	4.34	32	0.22	
Galeus polli	4.34	32	0.22	
Austroglossus microlepis	1.02	2	0.05	407
Total	1970.78		100.00	

PROJECT STATION:1897
 DATE: 7/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2259 Long E 1328
 start stop duration
 TIME :15:36:00 16:06:00 30 (min) Purpose code: 3
 LOG :9628.00 9629.60 1.60 Area code : 2
 FDEPTH: 262 256 GearCond.code:
 BDEPTH: 262 256 Validity code:
 Towing dir: 350 Wire out: 900 m Speed: 31 kn*10

Sorted: 161 Kg Total catch: 882.14 CATCH/HOUR: 1764.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	1138.56	1164	64.53	389
Merluccius capensis, male	321.92	550	18.25	388
Helicolenus dactylopterus	101.12	3546	5.73	
Lophius vomerinus	55.00	50	3.12	391
Trachurus capensis	52.36	230	2.97	392
Coelorinchus fasciatus	27.00	576	1.53	
Raja straeleni	16.00	12	0.91	
MYCTOPHIDAE	15.36		0.87	
Chlorophthalmus atlanticus	13.32	268	0.75	
Galeus polli	10.12	218	0.57	
Sufflogobius bibarbatatus	7.56	896	0.43	
S H R I M P S	2.94	652	0.17	
Austroglossus microlepis	2.00	2	0.11	390
Epigonus denticulatus	0.64	12	0.04	
Merluccius capensis, juveniles	0.38	26	0.02	
Total	1764.28		100.00	

PROJECT STATION:1902
 DATE:10/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2239 Long E 1319
 start stop duration
 TIME :07:10:00 07:40:00 30 (min) Purpose code: 3
 LOG :9788.70 9790.10 1.50 Area code : 2
 FDEPTH: 267 263 GearCond.code:
 BDEPTH: 267 263 Validity code:
 Towing dir: 350 Wire out: 900 m Speed: 31 kn*10

Sorted: 84 Kg Total catch: 99.10 CATCH/HOUR: 198.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius capensis, female	85.60	184	43.19	409
Helicolenus dactylopterus	63.30	2854	31.94	
Merluccius capensis, male	26.40	72	13.32	408
Solenocera africana	5.82	1892	2.94	
Pterothrissus belloci	4.38	28	2.21	
Coelorinchus fasciatus	4.14	216	2.09	
Merluccius capensis, juveniles	1.74	136	0.88	411
Dentex macrophthalmus	1.66	6	0.84	
Galeus polli	1.32	58	0.67	
Chelidonichthys capensis	1.20	4	0.61	
Lophius vomerinus	1.00	10	0.50	412
Austroglossus microlepis	0.88	2	0.44	410
Sufflogobius bibarbatatus	0.40	46	0.20	
Chlorophthalmus atlanticus	0.36	24	0.18	
Total	198.20		100.01	

PROJECT STATION:1903
 DATE:10/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2241
 start stop duration Long E 1310
 TIME :09:06:00 09:40:00 34 (min) Purpose code: 3
 LOG :9801.10 9802.60 1.60 Area code : 2
 FDEPTH: 300 294 GearCond.code:
 BDEPTH: 300 294 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 30 kn*10
 Sorted: 174 Kg Total catch: 614.01 CATCH/HOUR: 1083.55

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	777.71	427	71.77	415
Merluccius capensis, male	165.00	168	15.23	414
Helicolenus dactylopterus	27.37		2.53	
Galeus polli	26.86	466	2.48	
Merluccius paradoxus, female	22.01	116	2.03	416
Lophius vomerinus	16.01	5	1.48	413
Chlorophthalmus atlanticus	13.27	478	1.22	
Coelorinchus fasciatus	12.74	148	1.18	
MYCTOPHIDAE	10.41		0.96	
Todarodes sagittatus	8.61	7	0.79	
Todaropsis eblanae	3.56	12	0.33	
Total	1083.55		100.00	

PROJECT STATION:1904
 DATE:10/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2218
 start stop duration Long E 1247
 TIME :13:43:00 14:13:00 30 (min) Purpose code: 3
 LOG :9839.90 9841.30 1.60 Area code : 2
 FDEPTH: 441 444 GearCond.code:
 BDEPTH: 441 444 Validity code:
 Towing dir: 180 Wire out: 1200 m Speed: 31 kn*10
 Sorted: 189 Kg Total catch: 310.14 CATCH/HOUR: 620.28

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius paradoxus, female	216.80	334	34.95	419
Trachyrhinus scabrus	126.10	520	20.33	
Merluccius capensis, female	103.40	42	16.67	417
Etmopterus sp.	41.48	104	6.69	
Krill	39.00		6.29	
Deania profundorum	27.18	52	4.38	
Chlorophthalmus atlanticus	26.00	754	4.19	
Helicolenus dactylopterus	9.50	52	1.53	
Nezumia sp.	8.20	182	1.32	
Schedophilus huttoni	8.00	4	1.29	
Todarodes sagittatus	7.42	40	1.20	
Chlamydoselachus anguineus	4.40	2	0.71	
Merluccius paradoxus, male	2.80	10	0.45	418
Total	620.28		100.00	

PROJECT STATION:1905
 DATE:10/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2221
 start stop duration Long E 1255
 TIME :15:40:00 16:10:00 30 (min) Purpose code: 3
 LOG :9852.30 9853.80 1.40 Area code : 2
 FDEPTH: 305 310 GearCond.code:
 BDEPTH: 305 310 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 27 kn*10
 Sorted: 194 Kg Total catch: 592.67 CATCH/HOUR: 1185.34

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	660.00	466	55.68	422
Merluccius capensis, male	228.50	206	19.28	421
Helicolenus dactylopterus	165.60	4558	13.97	
Trachurus capensis	65.52	144	5.53	
Galeus polli	42.00	744	3.54	
Chlorophthalmus atlanticus	13.92	432	1.17	
Lophius vomerinus	9.80	12	0.83	420
Total	1185.34		100.00	

PROJECT STATION:1906
 DATE:10/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2222
 start stop duration Long E 1306
 TIME :17:49:00 18:19:00 30 (min) Purpose code: 3
 LOG :9867.60 9868.90 1.60 Area code : 2
 FDEPTH: 253 251 GearCond.code:
 BDEPTH: 253 251 Validity code:
 Towing dir: 360 Wire out: 900 m Speed: 31 kn*10
 Sorted: 331 Kg Total catch: 1435.20 CATCH/HOUR: 2870.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	1300.00	11120	45.29	425
Merluccius capensis, male	700.00	5680	24.39	426
Merluccius capensis, female	494.00	256	17.21	423
Trachurus capensis	166.40	1080	5.80	427
Galeus polli	66.40	3800	2.31	
Merluccius capensis, male	54.00	40	1.88	424
Coelorinchus fasciatus	37.20	920	1.30	
Lophius vomerinus	28.00	20	0.98	429
Ommastrephes pteropus	14.80	760	0.52	
Chlorophthalmus atlanticus	4.00	520	0.14	
Sufflogobius bibarbatatus	3.20	400	0.11	
Austroglossus microlepis	2.66	6	0.09	428
Total	2870.66		100.02	

PROJECT STATION:1907
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2219
 start stop duration Long E 1314
 TIME :07:31:00 08:03:00 32 (min) Purpose code: 3
 LOG :9888.00 9889.70 1.80 Area code : 2
 FDEPTH: 231 231 GearCond.code:
 BDEPTH: 231 231 Validity code:
 Towing dir: 160 Wire out: 850 m Speed: 34 kn*10
 Sorted: 45 Kg Total catch: 623.70 CATCH/HOUR: 1169.44

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, male	723.94	9303	61.90	431
Merluccius capensis, female	392.44	2784	33.56	430
Trachurus capensis	38.06	279	3.25	433
Austroglossus microlepis	6.09	32	0.52	434
Merluccius capensis, juveniles	4.88	281	0.42	432
Lophius vomerinus	1.59	6	0.14	435
Sufflogobius bibarbatatus	1.52	304	0.13	
Trachipterus jacksonensis	0.98	2	0.08	
Total	1169.50		100.00	

PROJECT STATION:1908
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2220
 start stop duration Long E 1322
 TIME :09:04:00 09:34:00 30 (min) Purpose code: 3
 LOG :9897.50 9899.00 1.50 Area code : 2
 FDEPTH: 203 193 GearCond.code:
 BDEPTH: 203 193 Validity code:
 Towing dir: 80 Wire out: 800 m Speed: 31 kn*10
 Sorted: 28 Kg Total catch: 916.20 CATCH/HOUR: 1832.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	972.80	8264	53.09	437
Merluccius capensis, male	851.20	8768	46.45	436
Sufflogobius bibarbatatus	4.48	640	0.24	
Merluccius capensis, juveniles	1.92	192	0.10	439
Austroglossus microlepis	1.92	4	0.10	438
Total	1832.32		99.98	

PROJECT STATION:1909
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2220
 start stop duration Long E 1332
 TIME :10:55:00 11:25:00 30 (min) Purpose code: 3
 LOG :9908.40 9910.10 1.70 Area code : 2
 FDEPTH: 143 135 GearCond.code:
 BDEPTH: 143 135 Validity code:
 Towing dir: 97 Wire out: 650 m Speed: 31 kn*10
 Sorted: 33 Kg Total catch: 829.50 CATCH/HOUR: 1659.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, juveniles	675.00	21278	40.69	442
Merluccius capensis, female	510.00	4950	30.74	441
Sufflogobius bibarbatatus	244.00	41480	14.71	
Merluccius capensis, male	230.00	2400	13.86	440
Total	1659.00		100.00	

PROJECT STATION:1910
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2020
 start stop duration Long E 1343
 TIME :12:39:00 12:42:00 3 (min) Purpose code: 3
 LOG :9919.00 9919.10 0.10 Area code : 2
 FDEPTH: 120 120 GearCond.code: 9
 BDEPTH: 120 120 Validity code: 9
 Towing dir: 90 Wire out: 400 m Speed: 30 kn*10
 Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:1911
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2159
 start stop duration Long E 1332
 TIME :15:33:00 16:03:00 30 (min) Purpose code: 3
 LOG :9944.90 9946.40 1.50 Area code : 2
 FDEPTH: 126 126 GearCond.code:
 BDEPTH: 126 126 Validity code:
 Towing dir: 360 Wire out: 500 m Speed: 32 kn*10
 Sorted: 152 Kg Total catch: 152.59 CATCH/HOUR: 305.18

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Sufflogobius bibarbatatus	300.00	72500	98.30	
Merluccius capensis, male	2.20	28	0.72	443
Merluccius capensis, juveniles	2.02	106	0.66	445
Merluccius capensis, female	0.96	12	0.31	444
Total	305.18		99.99	

PROJECT STATION:1912
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2200
 start stop duration Long E 1323
 TIME :17:17:00 17:47:00 30 (min) Purpose code: 3
 LOG :9956.30 9957.80 1.60 Area code : 2
 FDEPTH: 161 158 GearCond.code:
 BDEPTH: 161 158 Validity code:
 Towing dir: 360 Wire out: 650 m Speed: 31 kn*10
 Sorted: 60 Kg Total catch: 120.70 CATCH/HOUR: 241.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	100.40	784	41.59	446
Sufflogobius bibarbatatus	71.20	11680	29.49	
Merluccius capensis, male	44.80	452	18.56	447
Merluccius capensis, juveniles	24.80	996	10.27	448
Squilla aculeata calmani	0.12	8	0.05	
Total	241.32		99.96	

PROJECT STATION:1913
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2159
 start stop duration Long E 1319
 TIME :18:30:00 19:00:00 30 (min) Purpose code: 3
 LOG :9962.40 9963.70 1.40 Area code : 2
 FDEPTH: 164 161 GearCond.code:
 BDEPTH: 164 161 Validity code:
 Towing dir: 340 Wire out: 700 m Speed: 31 kn*10
 Sorted: 35 Kg Total catch: 386.10 CATCH/HOUR: 772.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	292.60	2728	37.89	449
Merluccius capensis, juveniles	242.00	9092	31.34	451
Merluccius capensis, male	121.00	1100	15.67	450
Sufflogobius bibarbatatus	116.60	23582	15.10	
Total	772.20		100.00	

PROJECT STATION:1914
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2203
 start stop duration Long E 1310
 TIME :20:44:00 21:14:00 30 (min) Purpose code: 3
 LOG : 9976.60 9978.10 1.70 Area code : 2
 FDEPTH: 210 215 GearCond.code: 2
 BDEPTH: 210 215 Validity code: 3
 Towing dir: 360 Wire out: 800 m Speed: 33 kn*10

Sorted: 42 Kg Total catch: 42.00 CATCH/HOUR: 84.00
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Merluccius capensis, female 51.00 550 60.71 452
 Merluccius capensis, male 27.20 306 32.38 453
 Merluccius capensis, juveniles 3.50 70 4.17 454
 Sufflogobius bibarbatatus 2.18 250 2.60 456
 Lophius vomerinus 0.08 2 0.10 455
 C R A B S 0.08 6 0.10
 Total 84.04 100.06

PROJECT STATION:1915
 DATE:11/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2203
 start stop duration Long E 1259
 TIME :22:33:00 23:03:00 30 (min) Purpose code: 3
 LOG : 9988.60 9990.10 1.60 Area code : 2
 FDEPTH: 298 301 GearCond.code: 2
 BDEPTH: 298 301 Validity code: 3
 Towing dir: 360 Wire out: 950 m Speed: 31 kn*10

Sorted: 26 Kg Total catch: 26.93 CATCH/HOUR: 53.86
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Solenocera africana 26.00 5506 48.27
 Merluccius capensis, female 7.78 12 14.44 457
 Lophius vomerinus 6.76 156 12.55 459
 Merluccius capensis, male 3.76 8 6.98 456
 Austroglossus microlepis 3.10 12 5.76 458
 Helicolenus dactylopterus 2.00 122 3.71
 Chlorophthalmus atlanticus 1.80 102 3.34
 Pterothrissus bellodi 1.34 24 2.49
 Trachurus capensis 0.66 4 1.23 460
 PORTUNIDAE 0.48 16 0.89
 Chelidonichthys capensis 0.18 4 0.33
 Total 53.86 99.99

PROJECT STATION:1916
 DATE:12/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2206
 start stop duration Long E 1248
 TIME :01:04:00 01:34:00 30 (min) Purpose code: 3
 LOG : 6.10 7.50 1.60 Area code : 2
 FDEPTH: 355 352 GearCond.code: 2
 BDEPTH: 355 352 Validity code: 3
 Towing dir: 360 Wire out:1050 m Speed: 32 kn*10

Sorted: 202 Kg Total catch: 219.98 CATCH/HOUR: 439.96
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Merluccius capensis, female 314.40 182 71.46 462
 Merluccius capensis, male 57.00 44 12.96 461
 Helicolenus dactylopterus 52.00 768 11.82
 Todarodes sagittatus 6.20 20 1.41
 Shrimps, small, non comm. 3.24 20 0.74
 Galeus polli 2.04 20 0.46
 Chlorophthalmus atlanticus 1.88 88 0.43
 Coelorinchus coelorinch. polli 1.76 40 0.40
 Epigonus telescopus 0.72 44 0.16
 Nezumia sp. 0.40 24 0.09
 PORTUNIDAE 0.32 8 0.07
 Total 439.96 100.00

PROJECT STATION:1917
 DATE:12/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2200
 start stop duration Long E 1242
 TIME :02:39:00 03:09:00 30 (min) Purpose code: 3
 LOG : 14.10 15.60 1.60 Area code : 2
 FDEPTH: 446 451 GearCond.code: 2
 BDEPTH: 446 451 Validity code: 3
 Towing dir: 350 Wire out:1200 m Speed: 32 kn*10

Sorted: 37 Kg Total catch: 37.25 CATCH/HOUR: 74.50
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Merluccius capensis, female 21.60 12 28.99 463
 Merluccius paradoxus, female 18.40 30 24.70 464
 Deepwater fish mixture 18.20 24 24.43
 Todarodes sagittatus 9.70 34 13.02
 Trachyrinus scabrus 3.10 16 4.16
 Helicolenus dactylopterus 1.40 10 1.88
 Deania profundorum 1.22 2 1.64
 Nezumia sp. 0.28 4 0.38
 Galeus polli 0.22 4 0.30
 Selachophidium guentheri 0.10 2 0.13
 Coelorinchus coelorinch. polli 0.10 2 0.13
 RAJIDAE 0.10 2 0.13
 Hoplostethus cadenati 0.08 2 0.11
 Total 74.50 100.00

PROJECT STATION:1918
 DATE:12/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2151
 start stop duration Long E 1241
 TIME :06:58:00 07:28:00 30 (min) Purpose code: 3
 LOG : 42.10 43.40 1.50 Area code : 2
 FDEPTH: 415 420 GearCond.code: 2
 BDEPTH: 415 420 Validity code: 3
 Towing dir: 360 Wire out:1150 m Speed: 30 kn*10

Sorted: 144 Kg Total catch: 224.60 CATCH/HOUR: 449.20
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Merluccius paradoxus, female 123.00 216 27.38 468
 Merluccius capensis, female 72.00 38 16.03 466
 Trachyrinus scabrus 64.00 424 14.25
 Helicolenus dactylopterus 45.60 256 10.15
 Todarodes sagittatus 38.00 104 8.46
 PHOTICHTHYIDAE 24.00 872 5.34
 Lophius vaillanti 23.10 8 5.14 469
 Galeus polli 16.00 176 3.56
 Ebinania costaecanarie 14.72 16 3.28
 Raja miraletus 7.00 2 1.56
 Merluccius capensis, male 5.20 4 1.16 465
 Deania profundorum 4.96 8 1.10
 Merluccius paradoxus, male 4.48 10 1.00 467
 Nezumia sp. 4.40 318 0.98
 Hoplostethus cadenati 2.80 176 0.62
 Total 449.26 100.01

PROJECT STATION:1919
 DATE:12/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2150
 start stop duration Long E 1251
 TIME :09:30:00 10:00:00 30 (min) Purpose code: 3
 LOG : 54.70 56.30 1.50 Area code : 2
 FDEPTH: 311 307 GearCond.code: 2
 BDEPTH: 311 307 Validity code: 2
 Towing dir: 65 Wire out:1000 m Speed: 32 kn*10

Sorted: 448 Kg Total catch: 592.66 CATCH/HOUR: 1185.32
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Merluccius capensis, female 470.00 452 39.65 472
 Chlorophthalmus atlanticus 219.60 14142 18.53
 Trachurus capensis 197.80 440 16.69 470
 Merluccius capensis, male 158.00 226 13.33 471
 Helicolenus dactylopterus 82.80 2860 6.99
 Galeus polli 26.64 1096 2.25
 Todarodes sagittatus 16.80 48 1.42
 Lophius vaillanti 7.00 4 0.59 474
 Austroglossus microlepis 6.68 12 0.56 473
 Total 1185.32 100.01

PROJECT STATION:1920
 DATE:12/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2145
 start stop duration Long E 1303
 TIME :12:13:00 12:43:00 30 (min) Purpose code: 3
 LOG : 69.40 70.80 1.70 Area code : 2
 FDEPTH: 255 238 GearCond.code: 2
 BDEPTH: 255 238 Validity code: 2
 Towing dir: 64 Wire out: 900 m Speed: 31 kn*10

Sorted: 82 Kg Total catch: 282.25 CATCH/HOUR: 564.50
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Merluccius capensis, female 282.00 1720 49.96 478
 Merluccius capensis, male 176.00 1120 31.18 477
 Merluccius capensis, female 48.40 32 8.57 476
 Trachurus capensis 36.00 150 6.38 479
 Merluccius capensis, male 15.70 14 2.78 475
 Todarodes sagittatus 3.00 60 0.53
 Galeus polli 1.70 150 0.30
 Sufflogobius bibarbatatus 0.60 230 0.11
 Merluccius capensis, juveniles 0.60 50 0.11
 Helicolenus dactylopterus 0.50 30 0.09
 Total 564.50 100.01

PROJECT STATION:1921
 DATE:12/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2144
 start stop duration Long E 1313
 TIME :15:01:00 15:31:00 30 (min) Purpose code: 3
 LOG : 83.30 84.70 1.60 Area code : 2
 FDEPTH: 154 154 GearCond.code: 2
 BDEPTH: 154 154 Validity code: 2
 Towing dir: 360 Wire out: 650 m Speed: 32 kn*10

Sorted: 27 Kg Total catch: 779.24 CATCH/HOUR: 1558.48
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Merluccius capensis, female 884.80 8624 56.77 481
 Merluccius capensis, male 346.08 3976 22.21 480
 Sufflogobius bibarbatatus 170.24 41012 10.92 482
 Merluccius capensis, juveniles 154.56 6328 9.92 482
 Todaropsis eblanae 1.68 112 0.11
 Galeus polli 1.12 56 0.07
 Total 1558.48 100.00

PROJECT STATION:1922
 DATE:12/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2141
 start stop duration Long E 1322
 TIME :17:53:00 17:57:00 4 (min) Purpose code: 3
 LOG : 101.50 101.60 0.20 Area code : 2
 FDEPTH: 134 133 GearCond.code: 2
 BDEPTH: 134 133 Validity code: 9
 Towing dir: 360 Wire out: 600 m Speed: 32 kn*10

Sorted: 21 Kg Total catch: 106.00 CATCH/HOUR: 1590.00
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Sufflogobius bibarbatatus 1147.50 260175 72.17
 Trachurus, juveniles 412.50 31395 25.94 483
 Merluccius capensis, juveniles 30.00 675 1.89 484
 Total 1590.00 100.00

PROJECT STATION:1923
 DATE:13/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2122
 start stop duration Long E 1314
 TIME :07:31:00 08:01:00 30 (min) Purpose code: 3
 LOG : 156.40 157.70 1.50 Area code : 2
 FDEPTH: 125 122 GearCond.code: 2
 BDEPTH: 125 122 Validity code: 2
 Towing dir: 360 Wire out: 550 m Speed: 33 kn*10

Sorted: 7 Kg Total catch: 39.90 CATCH/HOUR: 79.80
 SPECIES CATCH/HOUR % OF TOT. C SAMP.NO.
 weight numbers
 Sufflogobius bibarbatatus 75.60 13744 94.74
 Merluccius capensis, male 2.48 18 3.11 485
 Merluccius capensis, juveniles 1.48 60 1.85 487
 Merluccius capensis, female 0.20 2 0.25 486
 Total 79.76 99.95

PROJECT STATION:1924
 DATE:13/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2122
 start stop duration Long E 1306
 TIME :09:02:00 09:32:00 30 (min) Purpose code: 3
 LOG : 166.10 167.60 1.70 Area code : 2
 FDEPTH: 150 150 GearCond.code:
 BDEPTH: 150 150 Validity code:
 Towing dir: 320 Wire out: 650 m Speed: 33 kn*10
 Sorted: 72 Kg Total catch: 743.70 CATCH/HOUR: 1487.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, juveniles	453.20	14188	30.47	490
Merluccius capensis, female	385.20	3152	25.90	488
Merluccius capensis, male	375.00	2844	25.21	489
Trachurus capensis	154.60	1072	10.39	491
Chelidonichthys capensis	96.20	370	6.47	
Sufflogobius bibarbatus	20.60	3048	1.38	
Squalus megalops	2.68	20	0.18	
Total	1487.48	100.00		

PROJECT STATION:1929
 DATE:13/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2129
 start stop duration Long E 1233
 TIME :17:50:00 18:50:00 60 (min) Purpose code: 3
 LOG : 217.90 221.10 3.00 Area code : 2
 FDEPTH: 530 529 GearCond.code:
 BDEPTH: 530 529 Validity code:
 Towing dir: 360 Wire out:1400 m Speed: 29 kn*10
 Sorted: 129 Kg Total catch: 225.50 CATCH/HOUR: 225.50

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius paradoxus, female	104.10	117	46.16	506
Trachyrhinus scabrus	65.00		28.82	
Hoplostethus cadenati	26.50		11.75	
Nezumia sp.	22.90	1313	10.16	
Todarodes sagittatus	4.65	10	2.06	
Raja leopardus	1.45	5	0.64	
Merluccius paradoxus, male	0.79	1	0.35	505
Selachophidium guentheri	0.15	5	0.07	
Total	225.54	100.01		

PROJECT STATION:1925
 DATE:13/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2125
 start stop duration Long E 1258
 TIME :10:58:00 11:13:00 15 (min) Purpose code: 3
 LOG : 177.60 178.30 0.80 Area code : 2
 FDEPTH: 250 256 GearCond.code:
 BDEPTH: 250 256 Validity code:
 Towing dir: 320 Wire out: 900 m Speed: 33 kn*10
 Sorted: 84 Kg Total catch: 449.70 CATCH/HOUR: 1798.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	785.20	2092	43.65	493
Trachurus capensis	478.00	1600	26.57	495
Merluccius capensis, male	458.80	1964	25.51	492
Dentex macrophthalmus	45.60	172	2.54	495
Chlorophthalmus atlanticus	22.40	1664	1.25	
Pterothrissus belloci	8.80	44	0.49	
Total	1798.80	100.01		

PROJECT STATION:1930
 DATE:14/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2106
 start stop duration Long E 1230
 TIME :06:29:00 06:59:00 30 (min) Purpose code: 3
 LOG : 336.60 338.10 1.60 Area code : 2
 FDEPTH: 470 451 GearCond.code:
 BDEPTH: 470 451 Validity code:
 Towing dir: 350 Wire out:1200 m Speed: 31 kn*10
 Sorted: 100 Kg Total catch: 139.00 CATCH/HOUR: 278.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius paradoxus, female	115.80	178	41.65	509
Merluccius capensis, female	59.40	34	21.37	507
Trachyrhinus scabrus	58.00	270	20.86	
Centrolophus niger	9.20	4	3.31	
Deepwater fish mixture	8.86		3.19	
Hoplostethus cadenati	6.42	290	2.31	
Helicolenus dactylopterus	5.54	28	1.99	
Merluccius capensis, male	5.50	4	1.98	508
Todarodes sagittatus	4.74	12	1.71	
Merluccius paradoxus, male	1.28	2	0.46	510
Deania profundorum	1.12	2	0.40	
Nezumia sp.	1.04	58	0.37	
Galeus polli	0.70	6	0.25	
Shrimps, small, non comm.	0.22	34	0.08	
RAJIDAE	0.12	2	0.04	
NEMICHTHYIDAE	0.06	6	0.02	
Total	278.00	99.99		

PROJECT STATION:1926
 DATE:13/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2130
 start stop duration Long E 1249
 TIME :12:50:00 13:20:00 30 (min) Purpose code: 3
 LOG : 191.20 192.70 1.70 Area code : 2
 FDEPTH: 307 308 GearCond.code:
 BDEPTH: 307 308 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 32 kn*10
 Sorted: 142 Kg Total catch: 186.46 CATCH/HOUR: 372.92

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	155.80	132	41.78	497
MYCTOPHIDAE	88.50		23.73	
Merluccius capensis, male	47.60	58	12.76	496
Trachurus capensis	38.00	94	10.19	498
Chlorophthalmus atlanticus	22.26	1228	5.97	
Todarodes sagittatus	14.94	54	4.01	
Squalus megalops	3.24	6	0.87	
Helicolenus dactylopterus	2.58	90	0.69	
Total	372.92	100.00		

PROJECT STATION:1931
 DATE:14/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2106
 start stop duration Long E 1242
 TIME :09:00:00 09:30:00 30 (min) Purpose code: 3
 LOG : 353.20 354.70 1.80 Area code : 2
 FDEPTH: 348 350 GearCond.code:
 BDEPTH: 348 350 Validity code:
 Towing dir: 350 Wire out:1050 m Speed: 34 kn*10
 Sorted: 166 Kg Total catch: 166.50 CATCH/HOUR: 333.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	190.00	158	57.06	511
Merluccius capensis, male	72.00	70	21.62	512
Helicolenus dactylopterus	32.60	590	9.79	
Galeus polli	12.20	250	3.66	
Todarodes sagittatus	7.76	20	2.33	
Centrolophus niger	7.44	2	2.23	
Nezumia sp.	3.14	154	0.94	
Chlorophthalmus atlanticus	2.04	56	0.61	
Scyllorhinus canicula	1.20	2	0.36	
Coelorrhinus fasciatus	1.20	20	0.36	
Squalus megalops	1.00	2	0.30	
Lophius vomerinus	0.90	2	0.27	513
Epigonus denticulatus	0.50	22	0.15	
Malaccocephalus occidentalis	0.50	80	0.15	
MOLIDAE	0.40	6	0.12	
Ebinania costaeacanarie	0.10	16	0.03	
Munida sp.	0.02	8	0.01	
Total	333.00	99.99		

PROJECT STATION:1927
 DATE:13/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2132
 start stop duration Long E 1241
 TIME :14:46:00 15:16:00 30 (min) Purpose code: 3
 LOG : 203.80 205.30 1.70 Area code : 2
 FDEPTH: 357 353 GearCond.code:
 BDEPTH: 357 353 Validity code:
 Towing dir: 360 Wire out:1200 m Speed: 31 kn*10
 Sorted: 189 Kg Total catch: 198.55 CATCH/HOUR: 397.10

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius capensis, female	247.60	170	62.35	500
Merluccius capensis, male	84.40	74	21.25	499
Helicolenus dactylopterus	26.76	404	6.74	
Todarodes sagittatus	12.98	38	3.24	
Schedophilus huttoni	12.80	4	3.22	
Krill	7.60		1.91	
Merluccius paradoxus, female	3.10	4	0.78	501
Chlorophthalmus atlanticus	0.72	32	0.18	
Selachophidium guentheri	0.52	8	0.13	
Galeus polli	0.32	4	0.08	
Hoplostethus cadenati	0.20	20	0.05	
Nezumia sp.	0.20	12	0.05	
Total	397.10	99.98		

PROJECT STATION:1932
 DATE:14/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2110
 start stop duration Long E 1251
 TIME :11:35:00 12:05:00 30 (min) Purpose code: 3
 LOG : 369.90 371.30 1.60 Area code : 2
 FDEPTH: 305 305 GearCond.code:
 BDEPTH: 305 305 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 31 kn*10
 Sorted: 137 Kg Total catch: 237.51 CATCH/HOUR: 475.02

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
MYCTOPHIDAE	200.00		42.10	
Merluccius capensis, female	151.20	210	31.83	515
Merluccius capensis, male	54.00	126	11.37	514
Todarodes sagittatus	35.84	168	7.54	
Chlorophthalmus atlanticus	20.96	992	4.41	
Krill	8.00		1.68	
Trachurus capensis	3.26	14	0.69	516
Austrogladius microlepis	0.80	2	0.17	517
Helicolenus dactylopterus	0.64	24	0.13	
Munida sp.	0.16	16	0.03	
PARALEPIDIDAE	0.08	8	0.02	
Nemichthys scolopacea	0.08	8	0.02	
Total	475.02	99.99		

PROJECT STATION:1928
 DATE:13/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2131
 start stop duration Long E 1236
 TIME :16:32:00 17:02:00 30 (min) Purpose code: 3
 LOG : 212.50 214.10 1.60 Area code : 2
 FDEPTH: 446 448 GearCond.code:
 BDEPTH: 446 448 Validity code:
 Towing dir: 360 Wire out:1200 m Speed: 30 kn*10
 Sorted: 103 Kg Total catch: 170.64 CATCH/HOUR: 341.28

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
	weight numbers			
Merluccius paradoxus, female	93.20	192	27.31	504
Trachyrhinus scabrus	65.60	272	19.22	
Merluccius capensis, female	49.60	28	14.53	503
Hoplostethus cadenati	39.80	1890	11.66	
Todarodes sagittatus	17.60	72	5.16	
Helicolenus dactylopterus	14.56	80	4.27	
Shrimps, small, non comm.	14.24		4.17	
Deania profundorum	13.76	24	4.03	
Merluccius capensis, male	8.40	6	2.46	502
Centrolophus niger	6.00	2	1.76	
Deepwater fish mixture	5.92		1.73	
Chlamydoselachus anguineus	5.00	2	1.47	
Epigonus denticulatus	2.96	160	0.87	
Galeus polli	2.80	32	0.82	
Nezumia sp.	1.52	176	0.45	
Ebinania costaeacanarie	0.32	8	0.09	
Aristeus varidens	0.00	8		
Total	341.28	100.00		

PROJECT STATION:1933
 DATE:14/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2102 Long E 1305
 start stop duration
 TIME :14:54:00 15:24:00 30 (min) Purpose code: 3
 LOG : 396.40 397.90 1.30 Area code : 2
 FDEPTH: 121 122 GearCond.code:
 BDEPTH: 121 122 Validity code:
 Towing dir: 170 Wire out: 450 m Speed: 29 kn*10
 Sorted: 60 Kg Total catch: 237.02 CATCH/HOUR: 474.04

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, male	149.60 1208	31.56	519
Merluccius capensis, female	147.20 1024	31.05	520
Sufflogobius bibarbatus	118.40 16182	24.98	
Trachurus capensis	28.64 4348	6.04	
Merluccius capensis, juveniles	21.36 624	4.51	521
Chelidonichthys capensis	4.96 16	1.05	
Austroglossus microlepis	3.00 18	0.63	518
Todaropsis eblanae	0.88 56	0.19	
Total	474.04	100.01	

PROJECT STATION:1937
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2050 Long E 1228
 start stop duration
 TIME :11:06:00 11:36:00 30 (min) Purpose code: 3
 LOG : 486.50 487.80 1.80 Area code : 2
 FDEPTH: 353 353 GearCond.code:
 BDEPTH: 353 353 Validity code:
 Towing dir: 310 Wire out:1050 m Speed: 34 kn*10
 Sorted: 327 Kg Total catch: 360.33 CATCH/HOUR: 720.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	465.00 294	64.52	536
Merluccius capensis, male	113.20 88	15.71	535
Helicolenus dactylopterus	84.50 1322	11.73	
Todarodes sagittatus	19.10 120	2.65	
Schedophilus huttoni	14.00 4	1.94	
Trachurus capensis	8.42 32	1.17	538
Lophius vomerinus	5.62 2	0.78	539
Raja confundens	3.30 4	0.46	
Nezumia sp.	2.90 100	0.40	
Galeus polli	2.50 346	0.35	
Merluccius paradoxus, female	0.88 4	0.12	537
Coelorinchus coelorinch. polli	0.64 20	0.09	
Hoplostethus cadenati	0.30 10	0.04	
Ebinania costaeacanarie	0.30 6	0.04	
Total	720.66	100.00	

PROJECT STATION:1934
 DATE:14/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2042 Long E 1256
 start stop duration
 TIME :18:30:00 18:56:00 26 (min) Purpose code: 3
 LOG : 427.70 428.80 1.50 Area code : 2
 FDEPTH: 139 134 GearCond.code:
 BDEPTH: 139 134 Validity code:
 Towing dir: 360 Wire out: 650 m Speed: 34 kn*10
 Sorted: 6 Kg Total catch: 40.34 CATCH/HOUR: 93.09

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Sufflogobius bibarbatus	55.38 3921	59.49	
Merluccius capensis, juveniles	30.23 1108	32.47	524
Merluccius capensis, female	3.88 28	4.17	522
Merluccius capensis, male	2.35 14	2.52	523
Trachurus capensis	0.83 14	0.89	525
Lepidopus caudatus	0.42 14	0.45	
Total	93.09	99.99	

PROJECT STATION:1938
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2055 Long E 1224
 start stop duration
 TIME :13:13:00 13:43:00 30 (min) Purpose code: 3
 LOG : 497.20 498.60 1.60 Area code : 2
 FDEPTH: 466 458 GearCond.code:
 BDEPTH: 466 458 Validity code:
 Towing dir: 356 Wire out:1250 m Speed: 30 kn*10
 Sorted: 162 Kg Total catch: 229.91 CATCH/HOUR: 459.82

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	186.80 318	40.62	543
Hoplostethus cadenati	120.00 7804	26.10	
Merluccius capensis, female	50.00 30	10.87	541
Trachyrinus scabrus	30.80 184	6.70	
Ruvettus pretiosus	21.80 2	4.74	
Merluccius capensis, male	12.00 8	2.61	540
Todarodes sagittatus	10.72 64	2.33	
Shrimps, small, non comm.	7.52 16	1.64	
Helicolenus dactylopterus	6.00 56	1.30	
Schedophilus huttoni	3.80 2	0.83	
Merluccius paradoxus, male	3.10 4	0.67	542
Raja confundens	1.90 2	0.41	
Neoharriotta pinnata	1.70 2	0.37	
MYCTOPHIDAE	1.52 16	0.33	
Galeus polli	1.12 16	0.24	
Laemonema laureysi	0.80 8	0.17	
Nezumia sp.	0.24 64	0.05	
Total	459.82	99.98	

PROJECT STATION:1935
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2049 Long E 1243
 start stop duration
 TIME :07:30:00 08:00:00 30 (min) Purpose code: 3
 LOG : 467.10 468.30 1.60 Area code : 2
 FDEPTH: 305 301 GearCond.code:
 BDEPTH: 305 301 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 32 kn*10
 Sorted: 102 Kg Total catch: 102.40 CATCH/HOUR: 204.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	89.00 114	43.46	526
Merluccius capensis, male	33.00 78	16.11	527
Dentex macrophthalmus	24.60 90	12.01	529
Chlorophthalmus atlanticus	23.00 1308	11.23	
Trachurus capensis	16.00 62	7.81	528
Pterothrissus belloci	5.22 22	2.55	
Lophius vomerinus	3.76 14	1.84	531
Chelidonichthys capensis	2.20 16	1.07	
Todarodes sagittatus	1.72 6	0.84	
Coelorinchus fasciatus	1.56 34	0.76	
Shrimps, small, non comm.	1.42 294	0.69	
Galeus polli	1.00 4	0.49	
Austroglossus microlepis	0.76 4	0.37	530
Synagrops microlepis	0.54 44	0.26	
Helicolenus dactylopterus	0.44 14	0.21	
C R A B S	0.20 8	0.10	
Total	204.42	99.80	

PROJECT STATION:1939
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2056 Long E 1220
 start stop duration
 TIME :15:13:00 15:43:00 30 (min) Purpose code: 3
 LOG : 506.40 507.90 1.60 Area code : 2
 FDEPTH: 542 539 GearCond.code:
 BDEPTH: 542 539 Validity code:
 Towing dir: 350 Wire out:1450 m Speed: 30 kn*10
 Sorted: 72 Kg Total catch: 147.74 CATCH/HOUR: 295.48

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachyrinus scabrus	128.00 538	43.32	
Merluccius paradoxus, female	79.00 90	26.74	545
Hoplostethus cadenati	23.60 1056	7.99	
Todarodes sagittatus	18.32 112	6.20	
Deania calcea	14.20 2	4.81	
Nezumia sp.	11.84 120	4.01	
MYCTOPHIDAE	6.08 206	2.06	
Deepwater fish mixture	5.52 187	1.87	
Shrimps, small, non comm.	3.20 2	1.08	
Lophius vomerinus	1.80 2	0.61	546
Nemichthys scolopacea	1.28 16	0.43	
Selachophidium guentheri	0.72 16	0.24	
Yarella blackfordi	0.72 2	0.24	
Merluccius paradoxus, male	0.64 2	0.22	544
Epigonus pandionis	0.56 8	0.19	
Total	295.48	100.01	

PROJECT STATION:1936
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2050 Long E 1235
 start stop duration
 TIME :09:17:00 09:47:00 30 (min) Purpose code: 3
 LOG : 477.90 479.40 1.80 Area code : 2
 FDEPTH: 332 329 GearCond.code:
 BDEPTH: 332 329 Validity code:
 Towing dir: 330 Wire out:1050 m Speed: 33 kn*10
 Sorted: 189 Kg Total catch: 352.60 CATCH/HOUR: 705.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	436.40 376	61.88	532
Merluccius capensis, male	152.00 148	21.55	533
Helicolenus dactylopterus	63.20 276	8.96	
Galeus polli	15.20 250	2.16	
Todarodes sagittatus	14.20 48	2.01	
Centrolophus niger	7.80 4	1.11	
Merluccius paradoxus, female	5.00 18	0.71	534
Coelorinchus coelorinch. polli	3.20 50	0.45	
Nezumia sp.	3.00 124	0.43	
Chlorophthalmus atlanticus	2.20 84	0.31	
Epigonus denticulatus	2.20 110	0.31	
Laemonema laureysi	0.40 8	0.06	
C R A B S	0.20 6	0.03	
Malacocephalus occidentalis	0.20 6	0.03	
Total	705.20	100.00	

PROJECT STATION:1940
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2048 Long E 1222
 start stop duration
 TIME :17:04:00 17:34:00 30 (min) Purpose code: 3
 LOG : 516.10 517.50 1.60 Area code : 2
 FDEPTH: 396 385 GearCond.code:
 BDEPTH: 396 385 Validity code:
 Towing dir: 340 Wire out:1150 m Speed: 29 kn*10
 Sorted: 182 Kg Total catch: 468.90 CATCH/HOUR: 937.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	551.80 396	58.84	547
Merluccius capensis, male	159.40 142	17.00	548
Trachyrinus scabrus	95.20 884	10.15	
Helicolenus dactylopterus	36.00 216	3.84	
Todarodes sagittatus	31.60 128	3.37	
Centrolophus niger	23.00 10	2.45	
Hoplostethus cadenati	13.20 564	1.41	
Squalus megalops	9.20 6	0.98	
Merluccius paradoxus, female	6.60 16	0.70	549
Epigonus denticulatus	6.32 354	0.67	
Nezumia sp.	2.80 162	0.30	
Ebinania costaeacanarie	0.78 16	0.08	
MORIDAE	0.46 6	0.05	
Malacocephalus occidentalis	0.46 6	0.05	
Galeus polli	0.36 6	0.04	
C R A B S	0.36 6	0.04	
NEMICHTHYIDAE	0.30 16	0.03	
Total	937.84	100.00	

PROJECT STATION:1941
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2042
 start stop duration Long E 1224
 TIME :18:46:00 19:16:00 30 (min) Purpose code: 3
 LOG : 524.30 525.50 1.60 Area code : 2
 FDEPTH: 315 307 GearCond.code:
 BDEPTH: 315 307 Validity code:
 Towing dir: 360 Wire out:1050 m Speed: 32 kn*10

Sorted: 193 Kg Total catch: 304.80 CATCH/HOUR: 609.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	368.60	312	60.47
Merluccius dactylopterus	90.00	2838	14.76
Merluccius capensis, male	90.00	104	14.76
Chlorophthalmus atlanticus	22.60	2294	3.71
Trachurus capensis	18.00	76	2.95
Galeus polli	7.70	154	1.26
Todarodes sagittatus	3.60	10	0.59
Lophius vomerinus	3.08	4	0.51
Squalus megalops	3.00	4	0.49
Coelorinchus sp.	1.10	44	0.18
C R A B S	0.94	22	0.15
Malacocephalus occidentalis	0.48	6	0.08
Nezumia sp.	0.38	26	0.06
Laemonema laureysi	0.12	6	0.02
Total	609.60	99.99	

PROJECT STATION:1945
 DATE:16/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2036
 start stop duration Long E 1216
 TIME :07:31:00 08:01:00 30 (min) Purpose code: 3
 LOG : 579.00 580.50 1.60 Area code : 2
 FDEPTH: 328 323 GearCond.code:
 BDEPTH: 328 323 Validity code:
 Towing dir: 330 Wire out:1000 m Speed: 33 kn*10

Sorted: 184 Kg Total catch: 342.80 CATCH/HOUR: 685.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	371.40	368	54.17
Merluccius capensis, male	193.20	212	28.18
Merluccius dactylopterus	92.80	2462	13.54
Galeus polli	10.20	128	1.49
Trachurus capensis	7.68	14	1.12
Todarodes sagittatus	5.80	16	0.85
Coelorinchus sp.	1.48	26	0.22
Chlorophthalmus punctatus	1.08	44	0.16
Laemonema laureysi	1.04	22	0.15
Malacocephalus occidentalis	0.56	12	0.08
Nezumia sp.	0.40	26	0.06
C R A B S	0.04	4	0.01
Total	685.68	100.03	

PROJECT STATION:1942
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2044
 start stop duration Long E 1208
 TIME :21:36:00 22:36:00 60 (min) Purpose code: 3
 LOG : 543.40 546.10 3.10 Area code : 2
 FDEPTH: 592 597 GearCond.code:
 BDEPTH: 592 597 Validity code:
 Towing dir: 330 Wire out:1600 m Speed: 31 kn*10

Sorted: 43 Kg Total catch: 201.00 CATCH/HOUR: 201.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachyrinus scabrus	77.00	223	38.31
Hoplostethus cadenati	77.00	249	22.89
Todarodes sagittatus	24.00	99	11.94
Merluccius paradoxus, female	17.00	14	8.46
Deepwater fish mixture	15.00		7.46
Phrynychthys wedli	9.94	2	4.95
Nezumia sp.	9.00	569	4.48
Neoharriotta pinnata	1.42	1	0.71
R A Y S	0.91	14	0.45
Ebinania costaecanarie	0.70	14	0.35
Laemonema laureysi	0.21	7	0.10
Total	201.18	100.10	

PROJECT STATION:1946
 DATE:16/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2034
 start stop duration Long E 1221
 TIME :08:11:00 08:41:00 30 (min) Purpose code: 3
 LOG : 588.20 589.70 1.70 Area code : 2
 FDEPTH: 298 297 GearCond.code:
 BDEPTH: 298 297 Validity code:
 Towing dir: 330 Wire out: 950 m Speed: 33 kn*10

Sorted: 197 Kg Total catch: 650.30 CATCH/HOUR: 1300.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	863.40	796	66.38
Merluccius capensis, male	306.80	446	23.59
Chlorophthalmus punctatus	75.60	3932	5.81
Merluccius dactylopterus	20.20	1000	1.55
Dentex macrophthalmus	15.00	34	1.15
Trachurus capensis	6.60	20	0.51
Raja leoparcus	4.40	6	0.34
Synagrops microlepis	2.44	172	0.19
Todarodes sagittatus	2.30	14	0.18
Solenocera africana	1.70	352	0.13
Galeus polli	1.44	26	0.11
Coelorinchus sp.	0.46	6	0.04
Munida sp.	0.26	52	0.02
Total	1300.60	100.00	

PROJECT STATION:1943
 DATE:15/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2041
 start stop duration Long E 1201
 TIME :23:50:00 00:50:00 60 (min) Purpose code: 3
 LOG : 553.00 555.70 3.10 Area code : 2
 FDEPTH: 702 709 GearCond.code:
 BDEPTH: 702 709 Validity code:
 Towing dir: 330 Wire out:1750 m Speed: 32 kn*10

Sorted: 28 Kg Total catch: 87.36 CATCH/HOUR: 87.36

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Nezumia sp.	17.72	572	20.28
Lophius vaillanti	9.00	1	10.30
Alepocephalus sp.	7.52	48	8.61
Aristeus varidens	7.32		8.38
Dicrolene intransigra	5.44	100	6.23
Todarodes sagittatus	5.04	16	5.77
Shrimps, small, non comm.	4.00		4.58
Deepwater fish mixture	4.00		4.58
Phrynychthys wedli	3.92	12	4.49
Etmopterus pusillus	3.68	4	4.21
Yarella blackfordi	3.52	116	4.03
Trachyrinus scabrus	3.20	8	3.66
ORISPHOTYRHIDAE	2.72	4	3.11
RAJIDAE	2.20	20	2.52
Selachophidium guentheri	1.84	24	2.11
MYCTOPHIDAE	1.60	168	1.83
CONGRIDAE	1.08	12	1.24
Heterocarpus grimaldii	1.00	60	1.14
Bathylagus glacialis	0.60	12	0.69
GONOSTOMATIDAE	0.52	12	0.60
Paradiplospinus gracilis	0.52	4	0.60
Notacanthus sexspinis	0.48	4	0.55
Alloctytus verrucosus	0.20	8	0.23
Halosaurus ovenii	0.12	4	0.14
Stereomastis sculpta	0.08	12	0.09
Photichthys argenteus	0.04	4	0.05
Total	87.36	100.02	

PROJECT STATION:1947
 DATE:16/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2031
 start stop duration Long E 1231
 TIME :11:24:00 11:54:00 30 (min) Purpose code: 3
 LOG : 601.50 603.10 1.60 Area code : 2
 FDEPTH: 282 278 GearCond.code:
 BDEPTH: 282 278 Validity code:
 Towing dir: 84 Wire out: 950 m Speed: 30 kn*10

Sorted: 240 Kg Total catch: 896.71 CATCH/HOUR: 1793.42

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Dentex macrophthalmus	413.40	1430	23.05
Merluccius capensis, female	344.50	1378	19.21
Merluccius capensis, male	256.40	160	14.30
Trachurus capensis	192.40	754	10.73
Merluccius capensis, male	189.28	806	10.55
Pterothrissus belloci	150.80	1430	8.41
Merluccius capensis, male	94.00	64	5.24
Galeus polli	67.86	1768	3.78
Neoharriotta pinnata	24.00	12	1.34
Sufflogobius bibarbatatus	14.30	2262	0.80
Chlorophthalmus atlanticus	12.48	858	0.70
Lophius vomerinus	11.38	4	0.63
Synagrops microlepis	8.58	728	0.48
MYCTOPHIDAE	6.76		0.38
Austroglossus microlepis	3.90	26	0.22
Coelorinchus fasciatus	2.86	104	0.16
PORTUNIDAE	0.52	26	0.03
Total	1793.42	100.01	

PROJECT STATION:1944
 DATE:16/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2038
 start stop duration Long E 1208
 TIME :02:28:00 02:58:00 30 (min) Purpose code: 3
 LOG : 566.40 567.70 1.60 Area code : 2
 FDEPTH: 497 489 GearCond.code:
 BDEPTH: 497 489 Validity code:
 Towing dir: 325 Wire out:1350 m Speed: 32 kn*10

Sorted: 34 Kg Total catch: 114.60 CATCH/HOUR: 229.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachyrinus scabrus	85.00	372	37.09
Hoplostethus cadenati	82.00	3534	35.78
Merluccius paradoxus, female	29.00	38	12.65
Nezumia sp.	11.60	800	5.06
Deepwater fish mixture	9.00		3.93
Yarella blackfordi	4.60	580	2.01
Todarodes sagittatus	2.40	10	1.05
Shrimps, small, non comm.	2.00		0.87
Helicolenus dactylopterus	1.80	10	0.79
Galeus polli	1.00	10	0.44
MELANOSTOMIATIDAE	0.40	30	0.17
PARALEPIDIDAE	0.20	10	0.09
Epigonus denticulatus	0.20	10	0.09
Total	229.20	100.02	

PROJECT STATION:1948
 DATE:16/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2030
 start stop duration Long E 1234
 TIME :12:46:00 13:16:00 30 (min) Purpose code: 3
 LOG : 607.30 608.70 1.40 Area code : 2
 FDEPTH: 269 268 GearCond.code:
 BDEPTH: 269 268 Validity code:
 Towing dir: 350 Wire out: 900 m Speed: 31 kn*10

Sorted: 81 Kg Total catch: 308.30 CATCH/HOUR: 616.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	268.40	950	43.53
Merluccius capensis, male	197.80	990	32.08
Dentex macrophthalmus	80.60	330	13.07
Sufflogobius bibarbatatus	35.40	9956	5.74
Trachurus capensis	22.60	116	3.67
Pterothrissus belloci	5.80	38	0.94
Neoharriotta pinnata	4.32	2	0.70
Merluccius capensis, juveniles	1.20	146	0.19
Galeus polli	0.32	8	0.05
PORTUNIDAE	0.16	8	0.03
Total	616.60	100.00	

PROJECT STATION:1949
 DATE:16/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2015 Long E 1230
 start stop duration Purpose code: 3
 TIME :16:08:00 16:38:00 30 (min) Area code : 2
 LOG : 633.10 634.50 1.40 GearCond.code:
 FDEPTH: 224 226 Validity code:
 BDEPTH: 224 226
 Towing dir: 150 Wire out: 800 m Speed: 32 kn*10
 Sorted: 87 Kg Total catch: 533.40 CATCH/HOUR: 1066.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, male	480.00 3168	44.99	576
Trachurus capensis	358.80 2350	33.63	578
Merluccius capensis, female	213.60 1260	20.02	577
Merluccius capensis, juveniles	12.72 24	1.19	
Todaropsis eblanæ	0.84 2	0.08	
Pterothrissus bellotti	0.48 2	0.04	
Galeus polli	0.36 24	0.03	
Total	1066.80	99.98	

PROJECT STATION:1954
 DATE:17/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1840 Long E 1148
 start stop duration Purpose code: 3
 TIME :14:00:00 14:30:00 30 (min) Area code : 3
 LOG : 805.40 806.90 1.50 GearCond.code:
 FDEPTH: 193 190 Validity code:
 BDEPTH: 193 190
 Towing dir: 320 Wire out: 750 m Speed: 30 kn*10
 Sorted: 115 Kg Total catch: 9879.60 CATCH/HOUR: 19759.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachurus capensis	17664.00 158164	89.40	601
Merluccius capensis, female	768.00 3480	3.89	600
Dentex macrophthalmus	544.00 3520	2.75	
Merluccius capensis, male	380.00 2300	1.92	599
Pterothrissus bellotti	332.80 2880	1.68	
Synagrops microlepis	51.20 7360	0.26	
Merluccius polli	19.20 320	0.10	
Total	19759.20	100.00	

PROJECT STATION:1950
 DATE:16/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2004 Long E 1223
 start stop duration Purpose code: 3
 TIME :18:12:00 18:42:00 30 (min) Area code : 2
 LOG : 648.10 649.50 1.50 GearCond.code:
 FDEPTH: 210 209 Validity code:
 BDEPTH: 210 209
 Towing dir: 325 Wire out: 800 m Speed: 32 kn*10
 Sorted: 50 Kg Total catch: 125.10 CATCH/HOUR: 250.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, male	140.00 810	55.96	579
Merluccius capensis, female	95.00 516	37.97	580
Trachurus capensis	13.26 100	5.30	581
Sufflogobius bibarbatu	1.90 290	0.76	
Total	250.26	99.99	

PROJECT STATION:1955
 DATE:18/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1817 Long E 1141
 start stop duration Purpose code: 3
 TIME :09:50:00 10:05:00 15 (min) Area code : 3
 LOG : 850.20 851.00 0.90 GearCond.code:
 FDEPTH: 138 133 Validity code:
 BDEPTH: 138 133
 Towing dir: 90 Wire out: 650 m Speed: 32 kn*10
 Sorted: 59 Kg Total catch: 978.90 CATCH/HOUR: 3915.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachurus capensis	2189.60 16900	55.92	602
Dentex macrophthalmus	1292.00 8772	33.00	603
Merluccius capensis, female	213.60 476	5.46	604
Synagrops microlepis	128.00 18724	3.27	
Pterothrissus bellotti	32.00 340	0.82	
Sepia sp.	23.20 136	0.59	
Merluccius capensis, male	22.44 136	0.57	605
Sepia australis	14.96 136	0.38	
Total	3915.60	100.01	

PROJECT STATION:1951
 DATE:17/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1849 Long E 1122
 start stop duration Purpose code: 3
 TIME :07:38:00 08:08:00 30 (min) Area code : 3
 LOG : 764.20 765.70 1.60 GearCond.code:
 FDEPTH: 482 484 Validity code:
 BDEPTH: 482 484
 Towing dir: 10 Wire out:1250 m Speed: 29 kn*10
 Sorted: 239 Kg Total catch: 358.20 CATCH/HOUR: 716.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	219.80 304	30.68	584
Trachyrinus scabrus	156.00 864	21.78	
Merluccius capensis, female	151.60 122	21.16	582
Nezumia sp.	72.00 2356	10.05	
Merluccius capensis, male	32.00 26	4.47	583
Hoplostethus cadenati	21.40 1322	2.99	
Lophius vaillanti	20.60 8	2.88	586
Helicolenus dactylopterus	15.60 120	2.18	
Etmopterus brachyurus	9.60 12	1.34	
Notacanthus sexspinis	5.28 36	0.74	
Lophius vomerinus	4.54 2	0.63	587
Galeus polli	2.52 24	0.35	
Merluccius paradoxus, male	1.86 4	0.26	585
Laemonema laureysi	1.80 24	0.25	
Halosaurus omei	0.96 48	0.13	
Ebinania costae-canarie	0.84 24	0.12	
Total	716.40	100.01	

PROJECT STATION:1956
 DATE:18/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1818 Long E 1132
 start stop duration Purpose code: 3
 TIME :11:43:00 12:13:00 30 (min) Area code : 3
 LOG : 863.00 864.20 1.70 GearCond.code:
 FDEPTH: 238 235 Validity code:
 BDEPTH: 238 235
 Towing dir: 180 Wire out: 850 m Speed: 33 kn*10
 Sorted: 278 Kg Total catch: 1507.57 CATCH/HOUR: 3015.14

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	1395.50 1644	44.62	607
Dentex macrophthalmus	853.30 3478	28.30	608
Chlorophthalmus atlanticus	241.50 7946	8.01	
Merluccius capensis, male	149.50 300	4.96	606
Helicolenus dactylopterus	143.76 477	4.77	
Pterothrissus bellotti	113.96 552	3.78	
Hexanchus griseus	38.60 2	1.28	
MYCTOPHIDAE	38.52 12	1.28	
RAJIDAE	22.20 12	0.74	
Trachurus capensis	19.20 138	0.64	
Synagrops microlepis	17.48 1276	0.59	
Squalus megalops	16.10 24	0.53	
Hyperoglyphe mosellii	12.30 12	0.41	
Todarodes sagittatus	1.72 12	0.06	
Parapenaeus longirostris	0.80 150	0.03	
Coelorrhinchus coelorrinch. polli	0.58 24	0.02	
Malacocephalus occidentalis	0.12 12		
Total	3015.14	100.01	

PROJECT STATION:1952
 DATE:17/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1846 Long E 1128
 start stop duration Purpose code: 3
 TIME :09:20:00 09:50:00 30 (min) Area code : 3
 LOG : 772.90 774.40 1.50 GearCond.code:
 FDEPTH: 289 284 Validity code:
 BDEPTH: 289 284
 Towing dir: 360 Wire out: 950 m Speed: 30 kn*10
 Sorted: 380 Kg Total catch: 592.00 CATCH/HOUR: 1184.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	542.20 680	45.79	588
Chlorophthalmus punctatus	330.00 16182	27.87	
Merluccius capensis, male	184.40 328	15.57	589
Helicolenus dactylopterus	60.00 2376	5.07	
Dentex macrophthalmus	47.20 150	3.99	592
Trachurus capensis	10.80 30	0.91	591
Galeus polli	5.20 62	0.44	
Lophius vomerinus	2.88 4	0.24	590
Synagrops microlepis	1.20 60	0.10	
Total	1183.88	99.98	

PROJECT STATION:1957
 DATE:18/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1817 Long E 1126
 start stop duration Purpose code: 3
 TIME :13:25:00 13:55:00 30 (min) Area code : 3
 LOG : 873.10 874.60 1.60 GearCond.code:
 FDEPTH: 405 409 Validity code:
 BDEPTH: 405 409
 Towing dir: 5 Wire out:1150 m Speed: 31 kn*10
 Sorted: 151 Kg Total catch: 674.58 CATCH/HOUR: 1349.16

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	827.20 856	61.31	610
Merluccius capensis, male	176.00 248	13.05	609
Hoplostethus cadenati	136.00 4128	10.08	
Helicolenus dactylopterus	70.72 544	5.24	
Shrimp, small, non comm.	44.80 332	3.32	
Laemonema laureysi	21.76 272	1.61	
Merluccius polli, female	17.04 16	1.26	611
Galeus polli	10.56 112	0.78	
Epigonus denticulatus	10.40 272	0.77	
Trachyrinus scabrus	8.48 48	0.63	
Nezumia sp.	7.52 176	0.56	
Centrophorus granulosus	7.00 2	0.52	
Trachurus capensis	4.16 32	0.31	
RAJIDAE	3.36 16	0.25	
Synagrops microlepis	2.24 128	0.17	
Aristeus varidens	1.44 192	0.11	
Coelorrhinchus coelorrinch. polli	0.48 16	0.04	
Total	1349.16	100.01	

PROJECT STATION:1953
 DATE:17/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1844 Long E 1135
 start stop duration Purpose code: 3
 TIME :11:27:00 11:57:00 30 (min) Area code : 3
 LOG : 786.00 787.70 1.70 GearCond.code:
 FDEPTH: 247 244 Validity code:
 BDEPTH: 247 244
 Towing dir: 263 Wire out: 900 m Speed: 32 kn*10
 Sorted: 118 Kg Total catch: 217.84 CATCH/HOUR: 435.68

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	145.88 462	33.48	596
Dentex macrophthalmus	82.50 334	18.94	598
Trachurus capensis	63.76 318	14.63	597
Pterothrissus bellotti	57.48 530	13.19	
Merluccius capensis, male	50.26 188	11.54	595
Synagrops microlepis	11.02 986	2.53	
Lophius vomerinus	6.38 4	1.46	593
Chlorophthalmus atlanticus	4.16 292	0.35	
Helicolenus dactylopterus	4.08 202	0.94	
Austroglossus microlepis	2.58 20	0.59	594
Hyperoglyphe mosellii	2.52 4	0.58	
Squalus megalops	2.20 4	0.50	
Raja miraletus	2.14 2	0.49	
Sufflogobius bibarbatu	0.72 102	0.17	
Total	435.68	99.99	

PROJECT STATION:1958
DATE:18/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1815 Long E 1124
start stop duration
TIME :15:00:00 15:30:00 30 (min) Purpose code: 3
LOG : 879.90 881.40 1.60 Area code : 3
FDEPTH: 512 505 GearCond.code:
BDEPTH: 512 505 Validity code:
Towing dir: 20 Wire out:1350 m Speed: 30 kn*10

Sorted: 61 Kg Total catch: 247.30 CATCH/HOUR: 494.60

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Nezumia sp.	107.24 1586	21.68	
Hoplostethus cadenati	94.22 5218	19.05	
Deania calcea	77.84 42	15.74	
Trachyrhinus scabrus	77.00 392	15.57	
Helicolenus dactylopterus	40.60 154	8.21	
Merluccius paradoxus, female	30.00 40	6.07	614
Shrimps, small, non comm.	24.50 4	4.95	
Merluccius capensis, female	14.32 20	2.90	613
Merluccius polli, female	9.80 12	1.98	615
Merluccius capensis, male	5.88 6	1.19	612
Nemichthys scolopacea	3.50 14	0.71	
Ebinania costaeacanarie	1.82 70	0.37	
MELANOSTOMIATIDAE	1.70 2	0.34	
Galeus polli	1.54 42	0.31	
Notacanthus sexspinis	1.54 14	0.31	
Chloropthalmus atlanticus	1.12 14	0.23	
Aristeus validens	0.84 28	0.17	
Epigonus denticulatus	0.70 42	0.14	
	0.56 14	0.11	
Total	494.72	100.03	

PROJECT STATION:1962
DATE:19/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1735 Long E 1120
start stop duration
TIME :06:55:00 07:25:00 30 (min) Purpose code: 3
LOG : 984.60 986.00 1.50 Area code : 3
FDEPTH: 465 445 GearCond.code:
BDEPTH: 465 445 Validity code:
Towing dir: 360 Wire out:1200 m Speed: 29 kn*10

Sorted: 142 Kg Total catch: 569.50 CATCH/HOUR: 1139.00

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	295.20 480	25.92	625
Epigonus denticulatus	179.20 5208	15.73	
Trachyrhinus scabrus	145.60 630	12.78	
Nezumia sp.	89.20 1418	7.83	
Merluccius polli	82.00 112	7.20	628
Hoplostethus cadenati	79.20 5100	6.95	
Helicolenus dactylopterus	59.00 388	6.06	
Merluccius capensis, male	56.00 88	4.92	626
Merluccius paradoxus, female	53.60 72	4.71	627
Deepwater fish mixture	39.20 3	3.35	
Aristeus validens	13.28 1730	1.17	
Trachurus capensis	11.36 104	1.00	630
Laemonema laureysi	7.28 112	0.64	
Todarodes sagittatus	4.88 16	0.43	
Deania quadrispinosum	4.60 8	0.40	
Lophius vaillanti	3.36 8	0.29	629
Etmopterus lucifer	2.80 16	0.25	
Galeus polli	2.60 32	0.23	
Malacocephalus occidentalis	1.12 8	0.10	
Chloropthalmus atlanticus	0.40 32	0.04	
Total	1138.98	100.00	

PROJECT STATION:1959
DATE:18/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1812 Long E 1123
start stop duration
TIME :16:19:00 16:49:00 30 (min) Purpose code: 3
LOG : 884.60 886.00 1.70 Area code : 3
FDEPTH: 609 597 GearCond.code:
BDEPTH: 609 597 Validity code:
Towing dir: 10 Wire out:1600 m Speed: 32 kn*10

Sorted: 45 Kg Total catch: 87.05 CATCH/HOUR: 174.10

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Hoplostethus cadenati	48.00 2	27.57	
Centrophorus squamosus	28.60 2	16.43	
Merluccius paradoxus, female	20.40 20	11.72	616
Trachyrhinus scabrus	18.66 72	10.72	
Nezumia sp.	15.90 9	9.13	
Neoharriotta pinnata	12.66 12	7.27	
Deania calcea	11.58 6	6.65	
Helicolenus dactylopterus	3.78 12	2.17	
Shrimps, small, non comm.	3.60 4	2.07	
MELANOSTOMIATIDAE	3.36 162	1.93	
Deepwater fish mixture	2.16 1	1.24	
Bathylagus glacialis	2.04 282	1.17	
RAJIDAE	1.62 12	0.93	
Sampogorammus exutus	1.02 36	0.59	
Nemichthys scolopacea	0.30 12	0.17	
Yarellia blackfordi	0.24 6	0.14	
ALEPOCEPHALIDAE	0.18 6	0.10	
Total	174.10	100.05	

PROJECT STATION:1963
DATE:19/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1738 Long E 1122
start stop duration
TIME :09:24:00 09:56:00 32 (min) Purpose code: 3
LOG : 994.80 996.60 1.80 Area code : 3
FDEPTH: 332 353 GearCond.code:
BDEPTH: 332 353 Validity code:
Towing dir: 300 Wire out:1050 m Speed: 33 kn*10

Sorted: 115 Kg Total catch: 902.13 CATCH/HOUR: 1691.49

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	1180.31 2004	69.78	631
Merluccius capensis, male	324.38 598	19.18	632
Helicolenus dactylopterus	95.63 782	5.65	
Laemonema laureysi	48.75 728	2.88	
Merluccius polli	12.38 15	0.73	634
Trachurus capensis	9.38 45	0.55	633
Todarodes sagittatus	7.50 15	0.44	
Coccolrinchus fasciatus	3.66 103	0.22	
Chloropthalmus atlanticus	3.51 88	0.21	
Galeus polli	2.93 30	0.17	
Malacocephalus occidentalis	2.06 45	0.12	
Synagrops microlepis	1.03 45	0.06	
Total	1691.52	99.99	

PROJECT STATION:1960
DATE:18/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1806 Long E 1126
start stop duration
TIME :17:57:00 18:27:00 30 (min) Purpose code: 3
LOG : 892.30 893.80 1.50 Area code : 3
FDEPTH: 432 408 GearCond.code:
BDEPTH: 432 408 Validity code:
Towing dir: 10 Wire out:1200 m Speed: 28 kn*10

Sorted: 138 Kg Total catch: 359.00 CATCH/HOUR: 718.00

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Merluccius capensis, female	318.00 332	44.29	617
Merluccius capensis, male	130.00 156	18.11	618
Helicolenus dactylopterus	104.00 898	14.48	
Hoplostethus cadenati	68.00 2892	9.47	
Laemonema laureysi	28.00 314	3.90	
Shrimps, small, non comm.	13.80 1	1.92	
Epigonus denticulatus	12.40 448	1.73	
Nezumia sp.	10.40 176	1.45	
Squalus megalops	8.84 16	1.23	
Trachyrhinus scabrus	8.00 36	1.11	
Coccolrinchus coccolrinch. polli	4.48 98	0.62	
Aristeus validens	4.42 540	0.62	
Chloropthalmus atlanticus	3.20 94	0.45	
Sepia sp.	2.50 42	0.35	
Centrosyllium fabricii	1.04 6	0.14	
Malacocephalus occidentalis	0.42 6	0.06	
Synagrops microlepis	0.26 16	0.04	
Total	717.76	99.97	

PROJECT STATION:1964
DATE:19/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1739 Long E 1131
start stop duration
TIME :12:04:00 12:34:00 30 (min) Purpose code: 3
LOG :1007.90 1009.50 1.60 Area code : 3
FDEPTH: 168 163 GearCond.code:
BDEPTH: 168 163 Validity code:
Towing dir: 18 Wire out: 800 m Speed: 32 kn*10

Sorted: 142 Kg Total catch: 945.56 CATCH/HOUR: 1891.12

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Trachurus capensis	1378.00 35920	72.87	637
Merluccius capensis, female	198.20 354	10.48	636
Dentex macrophthalmus	154.96 1092	8.19	638
Helicolenus dactylopterus	67.60 1300	3.57	
Synagrops microlepis	26.00 2652	1.37	
Merluccius capensis, male	22.60 50	1.20	635
Zeus faber	15.60 52	0.82	
Squalus megalops	15.60 52	0.82	
Lepidopus caudatus	11.96 52	0.63	
Austroglossus microlepis	0.60 8	0.03	
Total	1891.12	99.98	

PROJECT STATION:1961
DATE:19/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1738 Long E 1120
start stop duration
TIME :04:56:00 05:56:00 60 (min) Purpose code: 3
LOG : 977.20 980.30 3.20 Area code : 3
FDEPTH: 543 555 GearCond.code:
BDEPTH: 543 555 Validity code:
Towing dir: 360 Wire out:1450 m Speed: 31 kn*10

Sorted: 139 Kg Total catch: 671.70 CATCH/HOUR: 671.70

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Nezumia sp.	142.60 3152	21.23	
Trachyrhinus scabrus	120.00 488	17.87	
Merluccius paradoxus, female	90.70 96	13.50	624
Merluccius polli	55.20 72	8.22	622
Merluccius capensis, female	49.00 76	7.29	619
Helicolenus dactylopterus	35.00 240	5.21	
Etmopterus brachyurus	34.50 14	5.14	
Deepwater fish mixture	30.50 4	4.54	
Geryon maritae	28.80 130	4.29	
Merluccius capensis, male	19.20 29	2.86	620
Hoplostethus cadenati	17.00 577	2.53	
Todarodes sagittatus	8.70 24	1.30	
Trachurus capensis	7.00 70	1.04	623
Lamprogrammus exutus	6.00 125	0.89	
Laemonema laureysi	6.00 78	0.89	
Aristeus validens	5.52 382	0.82	
Ebinania costaeacanarie	5.30 5	0.79	
Merluccius paradoxus, male	4.00 5	0.60	621
Neoharriotta pinnata	2.80 5	0.42	
PORTUNIDAE	2.10 59	0.31	
Chloropthalmus atlanticus	0.96 29	0.14	
NAJIDAE	0.58 19	0.09	
NEMICHTHYIDAE	0.24 5	0.04	
Total	671.70	100.01	

PROJECT STATION:1965
DATE:19/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1732 Long E 1136
start stop duration
TIME :14:39:00 15:09:00 30 (min) Purpose code: 3
LOG :1025.10 1026.60 1.30 Area code : 3
FDEPTH: 112 118 GearCond.code:
BDEPTH: 112 118 Validity code:
Towing dir: 194 Wire out: 400 m Speed: 28 kn*10

Sorted: 145 Kg Total catch: 480.83 CATCH/HOUR: 961.66

SPECIES	CATCH/HOUR weight	% OF TOT. C	SAMP.NO.
Dentex macrophthalmus	600.60 6220	52.45	642
Trachurus capensis	128.00 4456	13.31	643
Thyrsites atun	103.60 84	10.77	641
Zeus faber	30.38 80	3.16	
Merluccius capensis, female	22.00 66	2.29	640
Mustelus mustelus	17.40 2	1.81	
Mustelus palumbes	14.74 12	1.53	
Loligo vulgaris	11.40 148	1.19	
Squalus megalops	10.32 12	1.07	
Trigla lyra	8.62 46	0.90	
Helicolenus dactylopterus	5.66 46	0.59	
Merluccius capensis, male	2.44 16	0.25	639
Spondylionom cantharus	1.66 4	0.17	
Umbrina canariensis	1.36 12	0.14	
Pterothissus belloci	1.24 12	0.13	
Todarodes sagittatus	1.00 12	0.10	
Todaropsis eblanae	0.68 12	0.07	
Etmopterus whiteheadi	0.56 12	0.06	
Total	961.66	99.99	

PROJECT STATION:1966
 DATE:19/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1719 Long E 1131
 start stop duration
 TIME :17:10:00 17:40:00 30 (min) Purpose code: 3
 LOG :1043.80 1045.20 1.70 Area code : 3
 FDEPTH: 141 140 GearCond.code:
 BDEPTH: 141 140 Validity code:
 Towing dir: 360 Wire out: 550 m Speed: 34 kn*10
 Sorted: 78 Kg Total catch: 273.60 CATCH/HOUR: 547.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Chelidonichthys capensis	112.00	710	20.47
Merluccius capensis, female	102.40	1280	18.71
Synagrops microlepis	77.00	11930	14.07
Merluccius capensis, male	51.00	638	9.32
Trachurus capensis	44.00	1416	8.04
Pterothrissus belloci	42.60	500	7.79
Callorhynchus capensis	37.20	22	6.80
Merluccius capensis, juveniles	16.40	788	3.00
Dentex macrophthalumus	14.00	126	2.56
Zeus capensis	10.20	22	1.86
Galeorhinus galeus	10.00	8	1.83
Chlorophthalmus atlanticus	7.00	958	1.28
Helicolenus dactylopterus	6.60	98	1.21
Raja miraletus	5.20	8	0.95
Lepidopus caudatus	3.64	218	0.67
OMMASTREPHIDAE	3.30	22	0.60
Squalus megalops	2.32	8	0.42
Etrumeus whiteheadi	1.60	84	0.29
Sepia sp.	0.70	36	0.13
Total	547.16	100.00	

PROJECT STATION:1970
 DATE:20/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1906 Long E 1133
 start stop duration
 TIME :12:48:00 13:18:00 30 (min) Purpose code: 3
 LOG :1203.10 1204.40 1.70 Area code : 3
 FDEPTH: 291 288 GearCond.code:
 BDEPTH: 291 288 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 33 kn*10
 Sorted: 141 Kg Total catch: 602.40 CATCH/HOUR: 1204.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	423.00	612	35.11
Chlorophthalmus atlanticus	294.60	12366	24.45
Dentex macrophthalumus	204.00	618	16.93
Merluccius capensis, male	123.00	246	10.21
Helicolenus dactylopterus	99.20	3306	8.23
MYCTOPHIDAE	26.20		2.17
Trachurus capensis	16.14	54	1.34
Synagrops microlepis	10.46	720	0.87
Todarodes sagittatus	7.20	32	0.60
Coelorinchus coelorinch. polli	1.00	66	0.08
Total	1204.80	99.99	

PROJECT STATION:1971
 DATE:20/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1902 Long E 1142
 start stop duration
 TIME :14:50:00 15:20:00 30 (min) Purpose code: 3
 LOG :1216.20 1217.70 1.70 Area code : 3
 FDEPTH: 302 300 GearCond.code:
 BDEPTH: 302 300 Validity code:
 Towing dir: 360 Wire out: 950 m Speed: 32 kn*10
 Sorted: 80 Kg Total catch: 141.20 CATCH/HOUR: 282.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Dentex macrophthalumus	97.00	364	34.35
Helicolenus dactylopterus	95.20	4820	33.71
Merluccius capensis, female	23.00	54	8.14
Synagrops microlepis	19.00	1812	6.73
Merluccius capensis, male	16.60	40	5.88
Trachurus capensis	13.00	68	4.60
Chlorophthalmus atlanticus	7.40	660	2.62
Lophius vomerinus	6.00	8	2.12
Solenocera africana	2.80	618	0.99
Coelorinchus coelorinch. polli	2.40	82	0.85
Total	282.40	99.99	

PROJECT STATION:1967
 DATE:19/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1719 Long E 1123
 start stop duration
 TIME :18:47:00 19:17:00 30 (min) Purpose code: 3
 LOG :1053.50 1054.80 1.80 Area code : 3
 FDEPTH: 257 269 GearCond.code:
 BDEPTH: 257 269 Validity code:
 Towing dir: 350 Wire out: 900 m Speed: 34 kn*10
 Sorted: 163 Kg Total catch: 1010.50 CATCH/HOUR: 2021.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	1224.00	1604	60.56
Chlorophthalmus atlanticus	220.00	6808	11.38
Trachurus capensis	204.00	1322	10.09
Merluccius capensis, male	178.80	370	8.85
Pterothrissus belloci	60.60	296	3.00
Dentex macrophthalumus	52.00	188	2.57
Helicolenus dactylopterus	45.60	666	2.26
Laemonema laureysi	14.20	420	0.70
Chelidonichthys capensis	3.58	12	0.18
Aristeus varidens	3.46	890	0.17
Synagrops microlepis	1.74	212	0.09
Galeus polli	1.48	12	0.07
Sepia sp.	1.48	50	0.07
Total	2020.94	99.99	

PROJECT STATION:1972
 DATE:20/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1857 Long E 1154
 start stop duration
 TIME :17:19:00 17:49:00 30 (min) Purpose code: 3
 LOG :1232.70 1234.20 1.70 Area code : 3
 FDEPTH: 233 230 GearCond.code:
 BDEPTH: 233 230 Validity code:
 Towing dir: 340 Wire out: 800 m Speed: 34 kn*10
 Sorted: 123 Kg Total catch: 322.10 CATCH/HOUR: 644.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Dentex macrophthalumus	224.00	1312	34.77
Trachurus capensis	214.80	1722	33.34
Merluccius capensis, female	93.60	286	14.53
Pterothrissus belloci	69.20	618	10.74
Merluccius capensis, male	32.80	166	5.09
Synagrops microlepis	7.82	2466	1.21
Sufflogobius bibarbatatus	1.88	506	0.29
Total	644.10	99.97	

PROJECT STATION:1968
 DATE:20/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1909 Long E 1126
 start stop duration
 TIME :09:19:00 09:49:00 30 (min) Purpose code: 3
 LOG :1186.80 1188.00 1.40 Area code : 3
 FDEPTH: 454 459 GearCond.code:
 BDEPTH: 454 459 Validity code:
 Towing dir: 90 Wire out:1200 m Speed: 31 kn*10
 Sorted: 133 Kg Total catch: 133.70 CATCH/HOUR: 267.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	97.60	150	36.50
Merluccius capensis, female	52.20	44	19.52
Deepwater fish mixture	22.60		8.45
Hoplostethus cadonati	21.60	1068	8.08
Merluccius capensis, male	20.00	20	7.48
Nezumia sp.	17.82	1504	6.66
Helicolenus dactylopterus	12.00	72	4.49
Trachyrinus scabrus	9.86	70	3.69
Trachipterus jacksonensis	4.84	4	1.81
Todarodes sagittatus	3.72	6	1.39
Epigonus denticulatus	1.64	64	0.61
Neoharriotta pinata	1.24	2	0.46
Dentex macrophthalumus	0.80	2	0.30
Chlorophthalmus atlanticus	0.56	16	0.21
Ebinania costaeacanazie	0.50	10	0.19
Laemonema laureysi	0.42	4	0.16
Total	267.40	100.00	

PROJECT STATION:1973
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1914 Long E 1211
 start stop duration
 TIME :07:26:00 07:56:00 30 (min) Purpose code: 3
 LOG :1274.50 1275.90 1.60 Area code : 3
 FDEPTH: 166 170 GearCond.code:
 BDEPTH: 166 170 Validity code:
 Towing dir: 330 Wire out: 700 m Speed: 31 kn*10
 Sorted: 105 Kg Total catch: 825.30 CATCH/HOUR: 1650.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Dentex macrophthalumus	1212.20	7980	73.44
Trachurus capensis	352.00	3200	21.33
Merluccius capensis, female	61.62	436	3.73
Merluccius capensis, male	22.20	234	1.34
Sufflogobius bibarbatatus	1.88	330	0.11
Pterothrissus belloci	0.62	16	0.04
Synagrops microlepis	0.16	80	0.01
Total	1650.68	100.00	

PROJECT STATION:1969
 DATE:20/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1907 Long E 1129
 start stop duration
 TIME :10:57:00 11:27:00 30 (min) Purpose code: 3
 LOG :1194.20 1195.50 1.60 Area code : 3
 FDEPTH: 345 343 GearCond.code:
 BDEPTH: 345 343 Validity code:
 Towing dir: 360 Wire out:1050 m Speed: 32 kn*10
 Sorted: 170 Kg Total catch: 464.70 CATCH/HOUR: 929.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	562.60	656	60.53
Helicolenus dactylopterus	147.20	1572	15.84
Merluccius capensis, male	138.60	218	14.91
Laemonema laureysi	21.12	352	2.27
Trachurus capensis	11.52	32	1.24
Raja straeleni	9.64	4	1.04
Dentex macrophthalumus	4.80	6	0.52
Nezumia sp.	4.48	148	0.48
Chlorophthalmus atlanticus	4.40	134	0.47
Lophius vomerinus	4.30	4	0.46
Synagrops microlepis	4.22	250	0.45
Coelorinchus coelorinch. polli	3.84	128	0.41
Galeus polli	3.80	38	0.41
Coelorinchus fasciatus	3.40	58	0.37
Genypterus capensis	2.80	2	0.30
Todarodes sagittatus	2.68	12	0.29
Total	929.40	99.99	

PROJECT STATION:1974
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1919 Long E 1155
 start stop duration
 TIME :10:03:00 10:33:00 30 (min) Purpose code: 3
 LOG :1293.50 1295.00 1.50 Area code : 3
 FDEPTH: 285 285 GearCond.code:
 BDEPTH: 285 285 Validity code:
 Towing dir: 226 Wire out: 950 m Speed: 30 kn*10
 Sorted: 14 Kg Total catch: 14.72 CATCH/HOUR: 29.44

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Pterothrissus belloci	8.48	56	28.80
Merluccius capensis, female	7.48	22	25.41
Trachurus capensis	3.44	26	11.68
Dentex macrophthalumus	3.14	18	10.67
Merluccius capensis, male	2.64	8	8.97
Austroglossus microlepis	2.22	12	7.54
Lophius vaillanti	1.62	4	5.50
Synagrops microlepis	0.32	24	1.09
Sufflogobius bibarbatatus	0.10	10	0.34
Total	29.44	100.00	

PROJECT STATION:1975
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1921 Long E 1159
 start stop duration
 TIME :11:34:00 12:04:00 30 (min) Purpose code: 3
 LOG :1301.10 1302.70 1.60 Area code : 5
 FDEPTH: 307 309 GearCond.code:
 BDEPTH: 307 309 Validity code:
 Towing dir: 330 Wire out:1000 m Speed: 31 kn*10
 Sorted: 60 Kg Total catch: 93.38 CATCH/HOUR: 186.76

PROJECT STATION:1973
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1950 Long E 1132
 start stop duration
 TIME :21:41:00 22:11:00 30 (min) Purpose code: 3
 LOG :1365.80 1367.20 1.70 Area code : 3
 FDEPTH: 598 600 GearCond.code:
 BDEPTH: 599 600 Validity code:
 Towing dir: 330 Wire out:1600 m Speed: 32 kn*10
 Sorted: 110 Kg Total catch: 110.30 CATCH/HOUR: 220.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Helicolenus dactylopterus	61.20 3088	32.77	
Merluccius capensis, female	55.00 100	29.45	686
Merluccius capensis, male	39.80 70	21.31	685
Chlorophthalmus atlanticus	11.04 808	5.91	
Pterothrissus belloni	8.96 40	4.80	
Trachurus capensis	4.08 40	2.18	
Lophius vomerinus	2.88 6	1.54	687
Hyperoglyphe moselli	0.92 2	0.49	
Synagrops microlepis	0.72 32	0.39	
Trigla lyra	0.56 8	0.30	
Selenocera africana	0.48 96	0.26	
Coelorinchus fasciatus	0.48 16	0.26	
Coelorinchus coelorinch. polli	0.48 24	0.26	
Falcapeneus longirostris	0.16 16	0.09	
Total	186.76	100.01	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	77.80 82	35.27	694
Trachyrhinus scabrus	64.00 174	29.01	
Duania calcea	26.40 4	11.97	
Deepwater fish mixture	12.00	5.44	
Nezumia sp.	11.82 372	5.36	
Raja leopards	10.80 4	4.96	
Todarodes sagittatus	3.96 12	1.80	
Alepocephalus sp.	3.44 110	1.56	
Tetragonus atlanticus	2.60 19	1.18	
Lamprogrammus exutus	2.30 12	1.04	
Yarella blackfordi	1.84 14	0.83	
Hoplostethus cadenati	1.02 22	0.46	
Nemichthys curvirostris	0.58 10	0.26	
NEMICHTHYIDAE	0.44 30	0.20	
Laemonema laureysi	0.32 4	0.15	
Notacanthus sexspinis	0.30 2	0.14	
Galeus polli	0.20 2	0.09	
Lycopus pinnatus	0.20 4	0.09	
Dibranchius atlanticus	0.20 2	0.09	
Phrynchthys wedli	0.14 2	0.06	
Argyropepecus affinis	0.00 4		
Total	220.36	99.90	

PROJECT STATION:1976
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1924 Long E 1142
 start stop duration
 TIME :13:29:00 13:59:00 30 (min) Purpose code: 3
 LOG :1312.40 1313.80 1.80 Area code : 3
 FDEPTH: 342 345 GearCond.code:
 BDEPTH: 342 345 Validity code:
 Towing dir: 340 Wire out:1000 m Speed: 33 kn*10
 Sorted: 155 Kg Total catch: 384.64 CATCH/HOUR: 769.28

PROJECT STATION:1980
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1946 Long E 1135
 start stop duration
 TIME :23:25:00 23:55:00 30 (min) Purpose code: 3
 LOG :1373.10 1374.40 1.70 Area code : 3
 FDEPTH: 501 497 GearCond.code:
 BDEPTH: 501 497 Validity code:
 Towing dir: 330 Wire out:1350 m Speed: 33 kn*10
 Sorted: 112 Kg Total catch: 145.42 CATCH/HOUR: 290.84

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	498.80 494	64.84	689
Helicolenus dactylopterus	109.00 2446	14.17	
Merluccius capensis, male	89.20 122	11.60	688
Galeus polli	31.20 408	4.06	
Todarodes sagittatus	11.40 50	1.48	
Dentex macrophthalmus	11.00 22	1.43	
Trachurus capensis	6.50 18	0.84	
Trachipterus jacksonensis	4.72 2	0.61	
Squalus megalops	3.40 8	0.44	
Chlorophthalmus atlanticus	2.16 50	0.28	
Hoplostethus cadenati	1.90 64	0.25	
Total	769.28	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius paradoxus, female	179.00 194	61.55	696
Trachyrhinus scabrus	52.00 210	17.88	
Deepwater fish mixture	22.80	7.74	
Hoplostethus cadenati	13.56 240	4.66	
Helicolenus dactylopterus	8.90 66	3.06	
Yarella blackfordi	4.00 10	1.38	
Todarodes sagittatus	2.60 10	0.93	
Nezumia sp.	2.20 110	0.76	
Merluccius paradoxus, male	1.56 2	0.54	695
Thysanoteuthis rhombus	1.20 16	0.41	
Odontostomias micropogon	0.90 40	0.31	
Lamprogrammus exutus	0.56 26	0.19	
Galeus polli	0.54 6	0.19	
Aristeus varidens	0.46 36	0.16	
Lycopus sp.	0.30 6	0.10	
Nemichthys scolopacea	0.26 26	0.09	
Ebriania costaeacanarie	0.18 6	0.06	
Epigonus denticulatus	0.12 6	0.04	
Total	290.84	100.01	

PROJECT STATION:1977
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1928 Long E 1134
 start stop duration
 TIME :15:30:00 16:00:00 30 (min) Purpose code: 3
 LOG :1324.50 1325.90 1.70 Area code : 3
 FDEPTH: 446 452 GearCond.code:
 BDEPTH: 446 452 Validity code:
 Towing dir: 350 Wire out:1200 m Speed: 34 kn*10
 Sorted: 104 Kg Total catch: 145.22 CATCH/HOUR: 290.44

PROJECT STATION:1981
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1943 Long E 1141
 start stop duration
 TIME :01:31:00 01:45:00 30 (min) Purpose code: 3
 LOG :1382.40 1383.80 1.70 Area code : 3
 FDEPTH: 402 402 GearCond.code:
 BDEPTH: 402 402 Validity code:
 Towing dir: 325 Wire out:1150 m Speed: 33 kn*10
 Sorted: 132 Kg Total catch: 257.56 CATCH/HOUR: 515.12

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	80.40 64	27.68	691
Merluccius paradoxus, female	66.60 88	22.93	692
Hoplostethus cadenati	41.58 1538	14.32	
Merluccius capensis, male	29.20 26	10.05	690
Helicolenus dactylopterus	23.02 118	7.93	
Todarodes sagittatus	14.20 26	4.89	
Deepwater fish mixture	12.60	4.34	
Nezumia sp.	7.22 370	2.49	
Shrimps, small, non comm.	5.04	1.74	
Schedophilus huttoni	3.80 2	1.31	
Neoharriotta pinnata	2.00 2	0.69	
Zenopsis conchifer	2.00 2	0.69	
Galeus polli	1.42 16	0.49	
Nemichthys scolopacea	0.68 50	0.23	
Coelorinchus coelorinch. polli	0.26 16	0.09	
Epigonus denticulatus	0.26 8	0.09	
Selachophidium guentheri	0.16 8	0.06	
Total	290.44	100.02	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Helicolenus dactylopterus	220.00 1600	42.71	
Merluccius capensis, female	105.60 56	20.50	698
Merluccius paradoxus, female	97.20 172	18.87	699
Merluccius capensis, male	30.80 22	5.98	697
Hoplostethus cadenati	19.40 360	3.77	
Deepwater fish mixture	14.00	2.72	
Galeus polli	11.80 100	2.29	
Todarodes sagittatus	9.28 28	1.80	
Aristeus varidens	2.00 240	0.39	
Nezumia sp.	1.60 80	0.31	
Geryon maritae	1.04 4	0.20	
Nemichthys scolopacea	1.00 80	0.19	
Coelorinchus coelorinch. polli	1.00 20	0.19	
Trachyrhinus scabrus	0.20 20	0.04	
Epigonus denticulatus	0.20 20	0.04	
Total	515.12	100.00	

PROJECT STATION:1978
 DATE:21/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1928 Long E 1128
 start stop duration
 TIME :17:15:00 17:45:00 30 (min) Purpose code: 3
 LOG :1335.80 1335.90 1.70 Area code : 3
 FDEPTH: 550 553 GearCond.code:
 BDEPTH: 550 553 Validity code:
 Towing dir: 355 Wire out:1450 m Speed: 33 kn*10
 Sorted: 25 Kg Total catch: 155.00 CATCH/HOUR: 310.00

PROJECT STATION:1982
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1944 Long E 1143
 start stop duration
 TIME :07:31:00 08:01:00 30 (min) Purpose code: 3
 LOG :1394.30 1395.70 1.40 Area code : 3
 FDEPTH: 365 360 GearCond.code:
 BDEPTH: 365 360 Validity code:
 Towing dir: 350 Wire out:1050 m Speed: 28 kn*10
 Sorted: 160 Kg Total catch: 347.60 CATCH/HOUR: 694.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Hoplostethus cadenati	147.00 2488	47.42	
Trachyrhinus scabrus	106.40 392	34.32	
Nezumia sp.	16.20 902	5.23	
Deepwater fish mixture	12.60	4.06	
Lamprogrammus exutus	9.00 336	2.90	
Merluccius paradoxus, female	7.64 8	2.46	693
Tetragonus atlanticus	2.80 14	0.90	
Helicolenus dactylopterus	2.24 14	0.72	
Raja sp.	1.40 28	0.45	
Ebriania costaeacanarie	1.26 14	0.41	
Sepia sp.	0.98 14	0.32	
PHOTICHTHYIDAE	0.84 56	0.27	
Laemonema laureysi	0.56 14	0.18	
OPHICHTHYIDAE	0.42 14	0.14	
Total	309.34	99.78	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	426.00 299	61.38	701
Helicolenus dactylopterus	119.60 1852	16.37	
Merluccius capensis, male	104.00 100	14.99	702
Galeus polli	8.20 100	1.18	
Raja conifidens	8.00 8	1.15	
Lophius vomerinus	8.00 4	1.15	703
Nezumia sp.	5.92 276	0.80	
Merluccius paradoxus, female	4.90 14	0.71	700
Todarodes sagittatus	3.36 8	0.48	
Hoplostethus cadenati	2.86 70	0.41	
Coelorinchus fasciatus	2.80 60	0.40	
Chlorophthalmus atlanticus	2.40 94	0.35	
Epigonus denticulatus	1.90 80	0.27	
Laemonema laureysi	1.60 22	0.23	
Malacocephalus occidentalis	0.64 8	0.09	
Ebriania costaeacanarie	0.16 28	0.02	
Total	693.94	99.98	

PROJECT STATION:1983
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1941
 start stop duration Long E 1154
 TIME :09:12:00 09:42:00 30 (min) Purpose code: 3
 LOG :1403.70 1405.10 1.60 Area code : 3
 FDEPTH: 336 334 GearCond.code:
 BDEPTH: 336 334 Validity code:
 Towing dir: 350 Wire out:1050 m Speed: 31 kn*10

Sorted: 192 Kg Total catch: 640.00 CATCH/HOUR: 1280.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Helicolenus dactylopterus	948.00	3600	74.06
Merluccius capensis, female	201.90	170	15.77
Merluccius capensis, male	96.80	118	7.56
Trachurus capensis	8.80	1524	0.69
Chlorophthalmus atlanticus	6.00	254	0.47
Synagrops microlepis	5.10	312	0.40
Todarodes sagittatus	3.84	16	0.36
Lophius vomerinus	2.90	6	0.23
Galeus polli	1.80	16	0.14
Raja leopardus	1.44	4	0.11
Coelorinchus fasciatus	1.32	28	0.10
Nezumia sp.	0.88	36	0.07
Hoplostethus cadanati	0.58	22	0.05
Shrimps, small, non comm.	0.42	130	0.03
Total	1279.78	99.98	

PROJECT STATION:1988
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1940
 start stop duration Long E 1218
 TIME :18:35:00 19:05:00 30 (min) Purpose code: 3
 LOG :1458.50 1460.00 1.40 Area code : 3
 FDEPTH: 182 181 GearCond.code:
 BDEPTH: 182 181 Validity code:
 Towing dir: 160 Wire out: 750 m Speed: 29 kn*10

Sorted: 23 Kg Total catch: 23.40 CATCH/HOUR: 46.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Trachurus capensis	34.40	734	73.50
Merluccius capensis, female	7.42	60	15.85
Merluccius capensis, male	3.60	28	7.69
Merluccius capensis, juveniles	1.32	38	2.82
Total	46.74	99.86	

PROJECT STATION:1989
 DATE:23/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1948
 start stop duration Long E 1221
 TIME :07:26:00 07:56:00 30 (min) Purpose code: 3
 LOG :1481.90 1483.20 1.30 Area code : 3
 FDEPTH: 161 157 GearCond.code:
 BDEPTH: 161 157 Validity code:
 Towing dir: 350 Wire out: 650 m Speed: 26 kn*10

Sorted: 71 Kg Total catch: 115.50 CATCH/HOUR: 231.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	95.40	816	41.30
Trachurus capensis	72.00	840	31.17
Merluccius capensis, male	45.00	420	19.48
Merluccius capensis, juveniles	18.60	366	8.05
Total	231.00	100.00	

PROJECT STATION:1984
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1937
 start stop duration Long E 1158
 TIME :10:58:00 11:28:00 30 (min) Purpose code: 3
 LOG :1412.30 1414.00 1.70 Area code : 3
 FDEPTH: 312 309 GearCond.code:
 BDEPTH: 312 309 Validity code:
 Towing dir: 350 Wire out:1000 m Speed: 33 kn*10

Sorted: 145 Kg Total catch: 332.33 CATCH/HOUR: 664.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	434.20	606	65.33
Merluccius capensis, male	123.50	234	18.58
Chlorophthalmus atlanticus	46.28		6.96
Helicolenus dactylopterus	23.92		3.60
Lophius vomerinus	8.66	12	1.30
Coelorinchus coelorinch. polli	5.20	190	0.78
Synagrops microlepis	4.76	346	0.72
Pterothrissus belloci	4.42	18	0.67
Trigla lyra	4.24	26	0.64
Dentex macrophthalmus	3.12	8	0.47
Todarodes sagittatus	3.04	8	0.46
Austroglossus microlepis	1.84	4	0.28
Galeus polli	0.70	8	0.11
Todaropsis eblanae	0.60	18	0.09
PORTUNIDAE	0.18	8	0.03
Total	664.66	100.02	

PROJECT STATION:1990
 DATE:23/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1954
 start stop duration Long E 1214
 TIME :09:30:00 10:00:00 30 (min) Purpose code: 3
 LOG :1495.90 1497.50 1.70 Area code : 3
 FDEPTH: 230 234 GearCond.code:
 BDEPTH: 230 234 Validity code:
 Towing dir: 330 Wire out: 850 m Speed: 33 kn*10

Sorted: 51 Kg Total catch: 128.60 CATCH/HOUR: 257.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	160.00	1006	62.21
Merluccius capensis, male	92.00	620	35.77
Trachurus capensis	4.60	112	1.79
Sufflogobius bibarbatatus	0.66	156	0.26
Total	257.26	100.03	

PROJECT STATION:1985
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1935
 start stop duration Long E 1205
 TIME :12:45:00 13:15:00 30 (min) Purpose code: 3
 LOG :1422.90 1424.30 1.60 Area code : 3
 FDEPTH: 270 269 GearCond.code:
 BDEPTH: 270 269 Validity code:
 Towing dir: 355 Wire out: 800 m Speed: 31 kn*10

Sorted: 84 Kg Total catch: 86.05 CATCH/HOUR: 172.10

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	110.20	520	64.03
Merluccius capensis, male	57.20	296	33.24
Sufflogobius bibarbatatus	2.40	480	1.39
Trachurus capensis	2.30	10	1.34
Total	172.10	100.00	

PROJECT STATION:1991
 DATE:23/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1956
 start stop duration Long E 1208
 TIME :11:25:00 11:55:00 30 (min) Purpose code: 3
 LOG :1506.50 1508.00 1.50 Area code : 3
 FDEPTH: 273 277 GearCond.code:
 BDEPTH: 273 277 Validity code:
 Towing dir: 330 Wire out: 900 m Speed: 29 kn*10

Sorted: 57 Kg Total catch: 57.80 CATCH/HOUR: 115.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	68.60	342	59.34
Merluccius capensis, male	42.00	230	36.33
Trachurus capensis	3.40	24	2.94
Merluccius capensis, juveniles	1.50	80	1.30
Sufflogobius bibarbatatus	0.10	16	0.09
Total	115.60	100.00	

PROJECT STATION:1986
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1933
 start stop duration Long E 1210
 TIME :14:36:00 15:06:00 30 (min) Purpose code: 3
 LOG :1433.40 1434.80 1.70 Area code : 3
 FDEPTH: 229 234 GearCond.code:
 BDEPTH: 229 234 Validity code:
 Towing dir: 330 Wire out: 800 m Speed: 31 kn*10

Sorted: 40 Kg Total catch: 60.65 CATCH/HOUR: 121.30

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Trachurus capensis	48.00	364	39.57
Merluccius capensis, female	46.50	322	38.33
Merluccius capensis, male	23.40	198	19.29
Dentex macrophthalmus	3.12	10	2.57
Merluccius capensis, juveniles	0.28	10	0.23
Total	121.30	99.99	

PROJECT STATION:1992
 DATE:23/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1959
 start stop duration Long E 1201
 TIME :13:08:00 13:38:00 30 (min) Purpose code: 3
 LOG :1516.30 1517.80 1.60 Area code : 3
 FDEPTH: 316 319 GearCond.code:
 BDEPTH: 316 319 Validity code:
 Towing dir: 355 Wire out: 950 m Speed: 28 kn*10

Sorted: 143 Kg Total catch: 143.49 CATCH/HOUR: 286.98

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	131.60	468	45.86
Merluccius capensis, male	80.00	364	27.88
Dentex macrophthalmus	61.40	154	21.40
Neoharriotta pinna	8.72	6	3.04
Pterothrissus belloci	3.18	18	1.11
Austroglossus microlepis	1.82	6	0.63
Trigla lyra	0.32	2	0.11
Helicolenus dactylopterus	0.14	6	0.05
Total	287.18	100.08	

PROJECT STATION:1987
 DATE:22/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 1931
 start stop duration Long E 1215
 TIME :16:12:00 16:42:00 30 (min) Purpose code: 3
 LOG :1442.70 1444.20 2.00 Area code : 3
 FDEPTH: 185 192 GearCond.code:
 BDEPTH: 185 192 Validity code:
 Towing dir: 330 Wire out: 750 m Speed: 32 kn*10

Sorted: 9 Kg Total catch: 9.21 CATCH/HOUR: 18.42

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	8.50	66	46.15
Trachurus capensis	5.40	90	29.32
Merluccius capensis, male	2.76	32	14.98
Perulibatrachus rossignoli	1.00	2	5.43
Merluccius capensis, juveniles	0.76	26	4.13
Total	18.42	100.01	

PROJECT STATION:1993
 DATE:23/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2001
 start stop duration Long E 1153
 TIME :15:18:00 15:49:00 30 (min) Purpose code: 3
 LOG :1529.40 1530.60 1.30 Area code : 2
 FDEPTH: 375 375 GearCond.code:
 BDEPTH: 375 375 Validity code:
 Towing dir: 355 Wire out:1100 m Speed: 33 kn*10

Sorted: 23 Kg Total catch: 23.10 CATCH/HOUR: 46.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP. NO.
	weight numbers		
Merluccius capensis, female	40.60	22	87.88
Merluccius capensis, male	5.60	6	12.12
Total	46.20	100.00	

PROJECT STATION:1994
 DATE:23/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2001 Long E 1148
 start stop duration Purpose code: 3
 TIME :16:49:00 17:19:00 30 (min) Area code : 2
 LOG :1536.70 1538.00 1.70 GearCond.code:
 FDEPTH: 431 434 Validity code:
 BDEPTH: 431 434
 Towing dir: 340 Wire out:1200 m Speed: 33 kn*10
 Sorted: 37 Kg Total catch: 37.30 CATCH/HOUR: 74.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Merluccius paradoxus, female	28.80	32	38.61	743
Trachyrhinus scabrus	16.00	102	21.45	
Helicolenus dactylopterus	12.60	78	16.89	
Trachipterus jacksonensis	4.08	2	5.47	
Neoharriotta pinnata	3.90	4	5.23	
Nezumia sp.	1.98	40	2.65	
Merluccius paradoxus, male	1.62	2	2.17	742
Raja confundus	1.60		2.14	
Hoplostethus cadonati	1.28	24	1.72	
MYCTOPHIDAE	0.68		0.91	
Todarodes sagittatus	0.62	4	0.83	
Lamprogrammus exutus	0.60	12	0.80	
Thysanoteuthis rhombus	0.58	6	0.78	
Aristeus varidens	0.20	22	0.27	
Epigonus denticulatus	0.14	2	0.19	
Total	74.68		100.11	

PROJECT STATION:1998
 DATE:24/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2018 Long E 1207
 start stop duration Purpose code: 3
 TIME :07:29:00 07:59:00 30 (min) Area code : 2
 LOG :1617.10 1618.70 1.70 GearCond.code:
 FDEPTH: 305 303 Validity code:
 BDEPTH: 305 303
 Towing dir: 330 Wire out: 950 m Speed: 32 kn*10
 Sorted: 149 Kg Total catch: 667.30 CATCH/HOUR: 1334.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Merluccius capensis, female	928.00	828	69.53	752
Merluccius capensis, male	212.00	378	15.88	753
Epigonus denticulatus	128.00	6292	9.59	
Helicolenus dactylopterus	34.80	1414	2.61	
Dentex macrophthalmus	10.00	30	0.75	754
Todarodes sagittatus	6.00	18	0.45	
Synagrops microlepis	6.00	352	0.45	
Galeus polli	3.40	74	0.25	
Lophius vomerinus	3.30	4	0.25	754
Coelorinchus coelorinch. polli	2.52	64	0.19	
Aristeus varidens	0.64	144	0.05	
Total	1334.66		100.00	

PROJECT STATION:1995
 DATE:23/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2001 Long E 1142
 start stop duration Purpose code: 3
 TIME :18:37:00 19:07:00 30 (min) Area code : 2
 LOG :1544.60 1545.70 1.50 GearCond.code:
 FDEPTH: 330 338 Validity code:
 BDEPTH: 330 338
 Towing dir: 330 Wire out:1400 m Speed: 32 kn*10
 Sorted: 53 Kg Total catch: 116.40 CATCH/HOUR: 232.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Trachyrhinus scabrus	96.00	432	41.24	
Merluccius paradoxus, female	62.00	68	26.63	744
Centroscyllium fabricii	28.00	16	12.03	
Nezumia sp.	16.48	760	7.08	
Deepwater fish mixture	5.28	2	2.27	
Helicolenus dactylopterus	4.88	32	2.10	
Lamprogrammus exutus	4.80	80	2.06	
Alepocephalus sp.	3.20	96	1.37	
Hoplostethus cadonati	2.56	40	1.10	
Aristeus varidens	2.00	184	0.86	
Merluccius paradoxus, male	1.76	2	0.76	745
Yarella blackfordi *	1.60	88	0.69	
Galeus polli	1.52	16	0.65	
Notacanthus sexspinis	1.12	16	0.48	
Lophius vomerinus	0.62	2	0.27	746
Todarodes sagittatus	0.56	8	0.24	
NEMICHTHYRIDAE	0.48	8	0.21	
Total	232.86		100.04	

PROJECT STATION:2018
 DATE:24/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2018 Long E 1213
 start stop duration Purpose code: 3
 TIME :09:04:00 09:34:00 30 (min) Area code : 2
 LOG :1625.90 1627.20 1.50 GearCond.code:
 FDEPTH: 286 283 Validity code:
 BDEPTH: 286 283
 Towing dir: 105 Wire out: 950 m Speed: 29 kn*10
 Sorted: 152 Kg Total catch: 594.60 CATCH/HOUR: 1069.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Merluccius capensis, female	540.00	1114	50.51	756
Dentex macrophthalmus	296.20	1044	27.70	758
Merluccius capensis, male	140.00	462	13.09	757
Synagrops microlepis	44.00	3330	4.12	
Pterothrissus belloni	31.00	176	2.99	
Trachurus capensis	14.00	28	1.31	759
Sepia sp.	1.96	224	0.18	
Chelidonichthys capensis	1.20	8	0.11	
Galeus polli	0.78	14	0.07	
Lophius vomerinus	0.06	2	0.01	760
Total	1069.20		100.00	

PROJECT STATION:1996
 DATE:24/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2022 Long E 1158
 start stop duration Purpose code: 3
 TIME :02:09:00 02:39:00 30 (min) Area code : 2
 LOG :1596.00 1597.40 1.70 GearCond.code:
 FDEPTH: 502 507 Validity code:
 BDEPTH: 502 507
 Towing dir: 335 Wire out:1350 m Speed: 33 kn*10
 Sorted: 68 Kg Total catch: 68.33 CATCH/HOUR: 136.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Merluccius paradoxus, female	84.30	98	61.47	748
Trachyrhinus scabrus	28.00	122	20.49	
MYCTOPHIDAE	8.00		5.85	
Prionace glauca	4.54	2	3.32	
Hoplostethus cadonati	4.34	86	3.18	
Nezumia sp.	2.34	62	1.71	
Merluccius paradoxus, male	1.60	2	1.17	747
Shrimps, small, non comm.	1.20		0.88	
Thysanoteuthis rhombus	0.64	8	0.47	
Todarodes sagittatus	0.54	2	0.40	
Centropristis squamatus	0.50	2	0.37	
Epigonus telescopus	0.40	4	0.29	
Galeus polli	0.34	4	0.25	
Notacanthus sexspinis	0.14	4	0.10	
Aristeus varidens	0.04	10	0.03	
Lampadena sp.	0.02	6	0.01	
Nemichthys scolopacea	0.02	6	0.01	
Total	136.66		100.00	

PROJECT STATION:2000
 DATE:24/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2015 Long E 1222
 start stop duration Purpose code: 3
 TIME :11:30:00 12:00:00 30 (min) Area code : 2
 LOG :1635.50 1636.80 1.60 GearCond.code:
 FDEPTH: 253 249 Validity code:
 BDEPTH: 253 249
 Towing dir: 90 Wire out: 650 m Speed: 32 kn*10
 Sorted: 5 Kg Total catch: 5.03 CATCH/HOUR: 10.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Merluccius capensis, female	4.74	26	47.12	762
Merluccius capensis, male	2.96	18	29.42	761
Trachurus capensis	2.28	14	22.66	763
PORTUNIDAE	0.08	2	0.80	
Total	10.06		100.00	

PROJECT STATION:2001
 DATE:24/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2012 Long E 1227
 start stop duration Purpose code: 3
 TIME :12:48:00 13:18:00 30 (min) Area code : 2
 LOG :1642.30 1643.80 1.70 GearCond.code:
 FDEPTH: 224 219 Validity code:
 BDEPTH: 224 219
 Towing dir: 326 Wire out: 800 m Speed: 34 kn*10
 Sorted: 77 Kg Total catch: 154.00 CATCH/HOUR: 308.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Merluccius capensis, male	156.40	992	50.78	765
Merluccius capensis, female	141.60	808	45.97	764
Sufflogobius bibarbatatus	6.76	1304	2.19	
Trachurus capensis	3.08	72	1.00	766
Merluccius capensis, juveniles	0.24	8	0.08	767
Total	308.08		100.02	

PROJECT STATION:1997
 DATE:24/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2019 Long E 1200
 start stop duration Purpose code: 3
 TIME :03:43:00 04:13:00 30 (min) Area code : 2
 LOG :1603.20 1604.80 1.70 GearCond.code:
 FDEPTH: 402 401 Validity code:
 BDEPTH: 402 401
 Towing dir: 340 Wire out:1150 m Speed: 32 kn*10
 Sorted: 137 Kg Total catch: 319.53 CATCH/HOUR: 639.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Merluccius capensis, female	422.40	326	66.93	750
Merluccius capensis, male	93.20	86	14.77	749
Trachyrhinus scabrus	44.20	368	7.00	
Helicolenus dactylopterus	30.30	364	4.80	
Hoplostethus cadonati	13.66	280	2.16	
Nezumia sp.	7.48	266	1.18	
Merluccius paradoxus, female	4.40	8	0.70	751
Todarodes sagittatus	3.26	6	0.52	
Aristeus varidens	3.18	514	0.50	
MYCTOPHIDAE	3.12		0.49	
Galeus polli	2.22	26	0.35	
Epigonus denticulatus	1.30	58	0.21	
Lampadena sp.	1.04	248	0.16	
Thysanoteuthis rhombus	0.46	14	0.07	
Laemonema laureysi	0.40	6	0.06	
Shrimps, small, non comm.	0.32		0.05	
Nemichthys scolopacea	0.06	14	0.01	
Yarella blackfordi	0.36	6	0.01	
Total	639.06		99.98	

PROJECT STATION:2002
 DATE:24/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2010 Long E 1234
 start stop duration Purpose code: 3
 TIME :15:17:00 15:47:00 30 (min) Area code : 2
 LOG :1656.30 1657.80 1.60 GearCond.code:
 FDEPTH: 145 149 Validity code:
 BDEPTH: 145 149
 Towing dir: 330 Wire out: 650 m Speed: 34 kn*10
 Sorted: 49 Kg Total catch: 419.70 CATCH/HOUR: 839.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.	
weight	numbers			
Trachurus capensis	584.00	4226	69.57	768
Merluccius capensis, male	142.00	1038	16.92	770
Merluccius capensis, female	84.40	664	10.05	769
Merluccius capensis, juveniles	16.00	392	1.91	771
Sufflogobius bibarbatatus	13.00	2190	1.55	
Total	839.40		100.00	

PART II

SURVEYS OF THE PELAGIC STOCKS
26 May - 19 June 1993

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1 INTRODUCTION

1.1 Objectives of the Cruise

To produce biomass estimates for four of the commercially important pelagic fish species; pilchard *Sardinops ocellatus*, anchovy *Engraulis capensis*, round herring *Etrumeus whiteheadi* and juvenile (inshore) Cape horse mackerel *Trachurus capensis*.

Assist the RV 'Benguela' to survey adult (offshore) Cape horse mackerel.

1.2 Participation

The scientific staff from Namibia were:

Rudolph Cloete (until 4 June), David Boyer (from 5 June), Benediktus Ushona (until 4 June), Clemens Evenson (from 5 June) and Sielfried Gowaseb.

From Angola:

Rafael Fortunato (from 5 June) and Buco Antonio (from 5 June).

From the Institute of Marine Research:

Johannes Hamre, Terje Haugland, Valantine Anthonypillai and Erling Molvær.

2 METHODS

From the general knowledge of pelagic fish distribution and from reports of commercial fishing vessels, the survey area has previously been 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 was formed by the cold and oxygen deficient upwelling region centred around Lüderitz and the northern boundary by Namibia's border with Angola. Environmental conditions between December 1992 and March 1993 resembled an El Niño-type event. One of the indicators of this phenomenon is the breakdown of the upwelling cell around Lüderitz, effectively removing the environmental barrier which separates the

southern and northern regions of the Benguela ecosystem. This has previously resulted in the transport of large quantities of pelagic fish between the two parts of the Benguela ecosystem. It was therefore decided to extend the survey to the Orange River to assess the status of the pelagic fish stocks immediately south of the upwelling cell in order to determine if any migration of fish has occurred. In addition, the South African research vessel 'Africana' was surveying the pelagic fish stocks off the western coast of South Africa, and was due to finish the survey at the border with Namibia at the end of May. This gave an opportunity to obtain a synoptic coverage of the pelagic fish stocks of the entire Benguela system. Since the pelagic fish distribution also extends into Angolan waters, permission was obtained from the Angolan authorities to extend the present survey northward to the area west of Tombua (16°00'S).

To allow comparison with the previous RV 'Dr. Fridtjof Nansen' surveys, the region was divided into four areas:

- | | | |
|---|------------------|------------------------------|
| 1 | 29°00' to 26°00' | Orange River to Dolphin Head |
| 2 | 26°00' to 21°00' | Dolphin Head to Ambrose Bay |
| 3 | 21°00' to 17°15' | Ambrose Bay to Cunene River |
| 4 | 17°15' to 16°00' | Cunene River to Tombua |

The RV 'Dr. Fridtjof Nansen' left Walvis Bay at 1000 hrs on 26th May and surveyed the shallow coastal water from Walvis Bay southward to Orange River and returned to Walvis Bay to exchange Namibian scientific staff at 1200 hrs on June 4th. On this first part she was assisted by the Namibian purse seiner 'Wildekus', which served as a scouting vessel. RV 'Dr. Fridtjof Nansen' departed Walvis Bay at 0900 hrs on June 6th and surveyed the northern region including Angolan waters north to Tombua. This part of the survey was carried out in cooperation with RV 'Benguela', which covered the distribution area of mid-water [offshore] horse mackerel, and the purse seiners 'Torsver' (to 9th June) and 'Fiskesjer' (from 10th to 14th June). The RV 'Dr. Fridtjof Nansen' arrived in Walvis Bay on 19th June at 1000 hrs; 4 800 nautical miles were steamed and 88 trawl stations worked.

The course tracks with the fishing stations for the four areas are shown in Figures 1a, 1b, 1c and 1d respectively. Additional coverages of the shallow coastal area from Orange River to Panther Head are shown as in sets.

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.

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

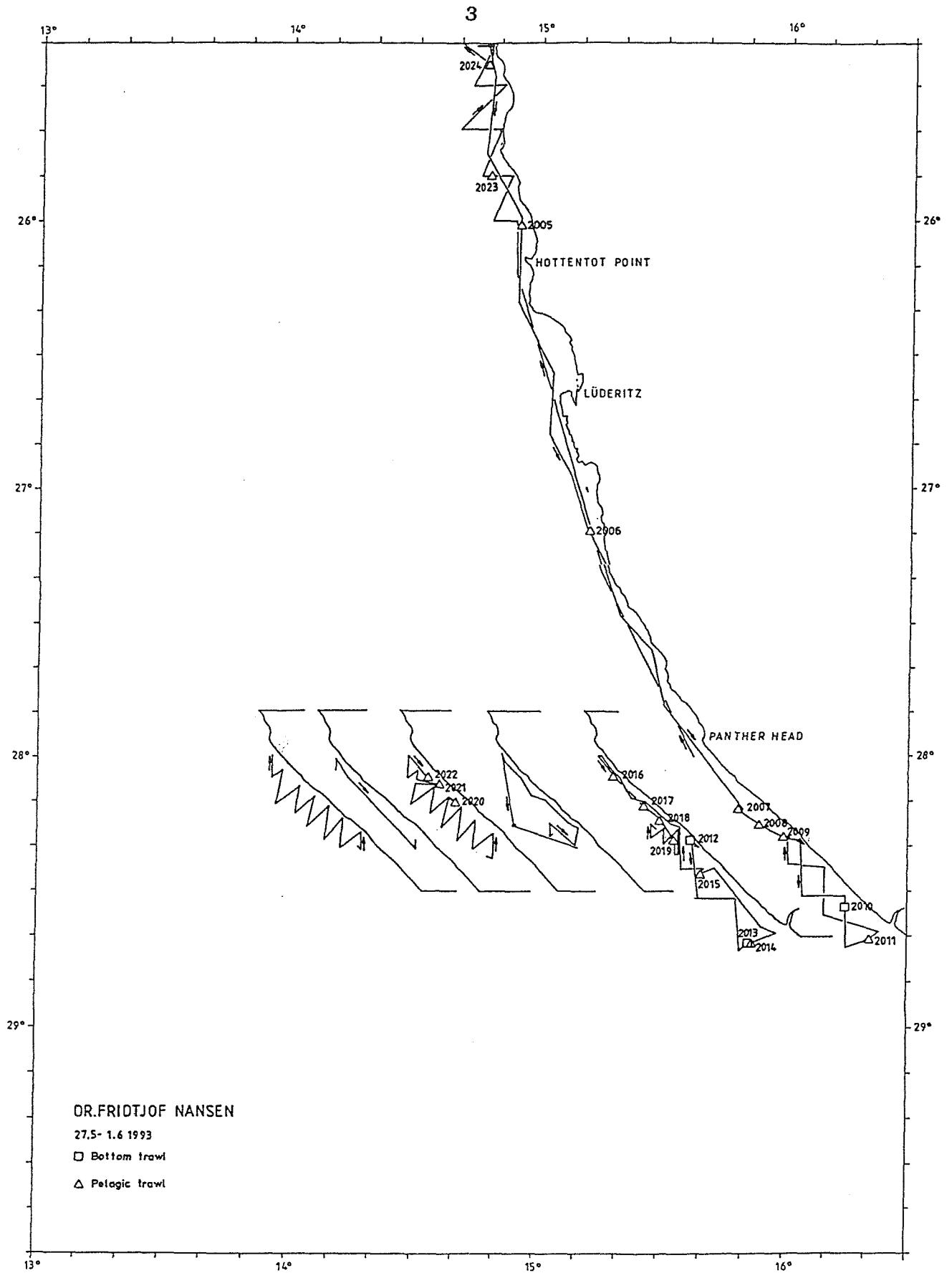


Figure 1a Course track and fishing stations, Orange River to Dolphin Head.

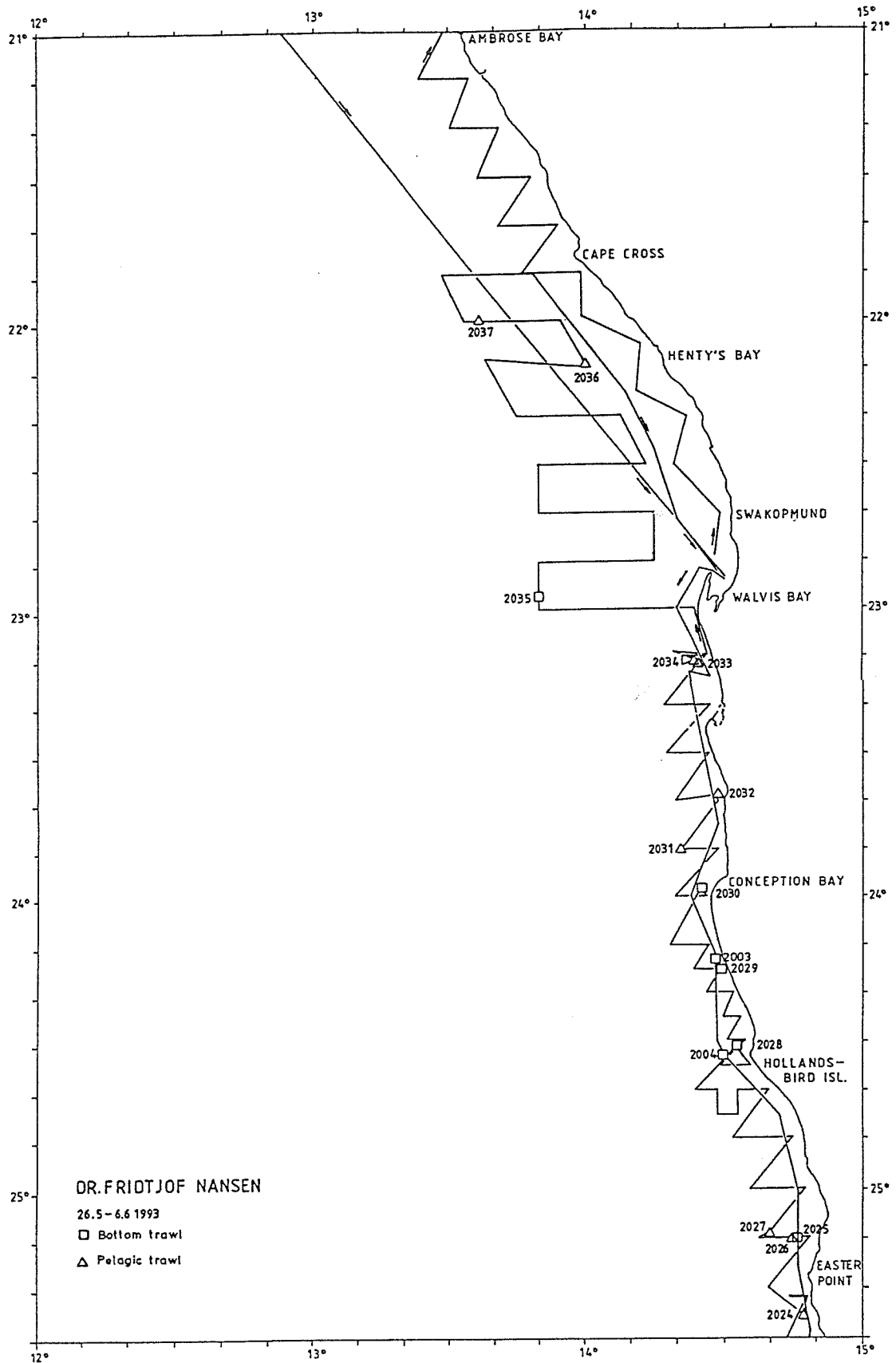


Figure 1b Course track and fishing stations, Dolphin Head to Ambrose Bay.

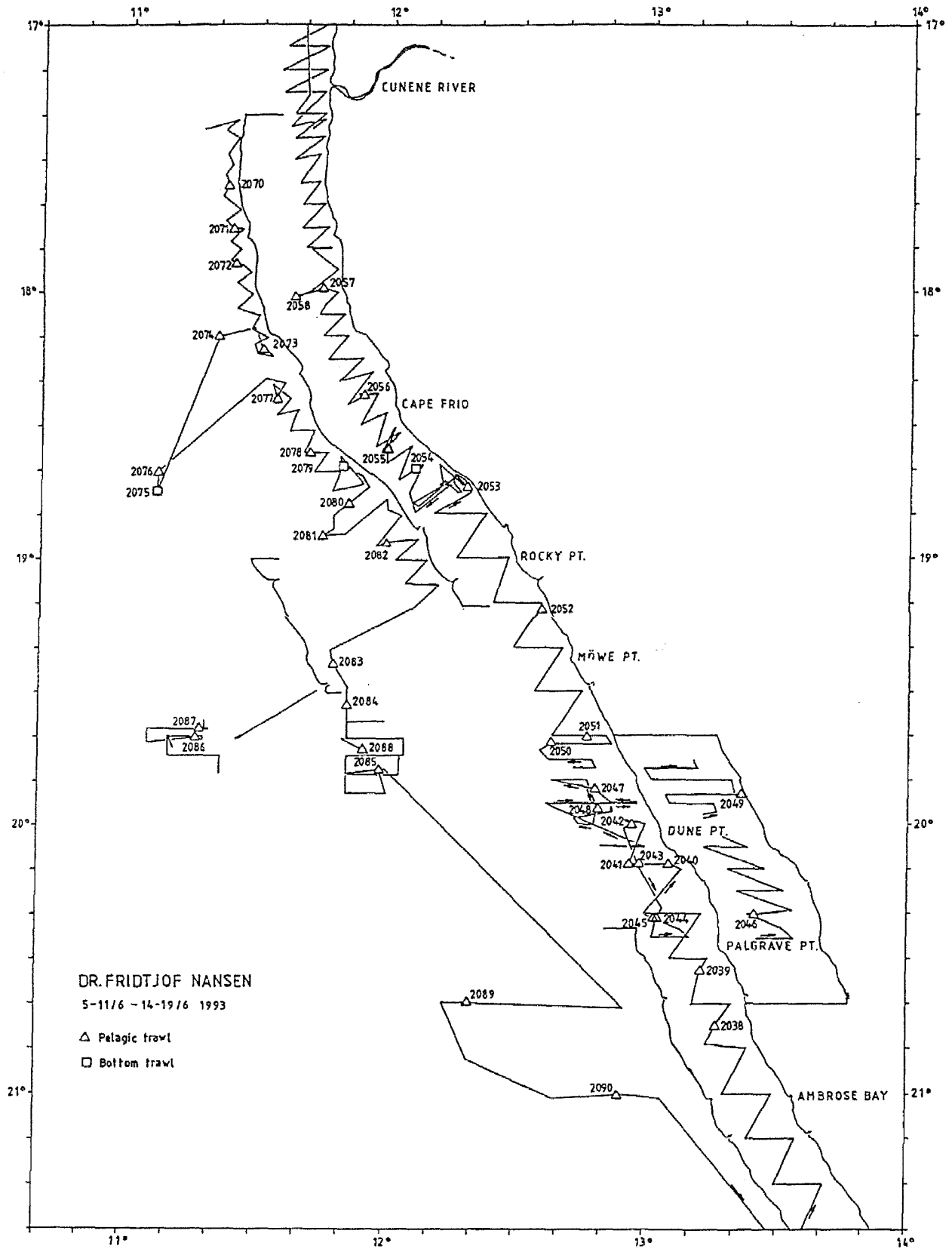


Figure 1c Course track and fishing stations, Ambrose Bay to Cunene River.

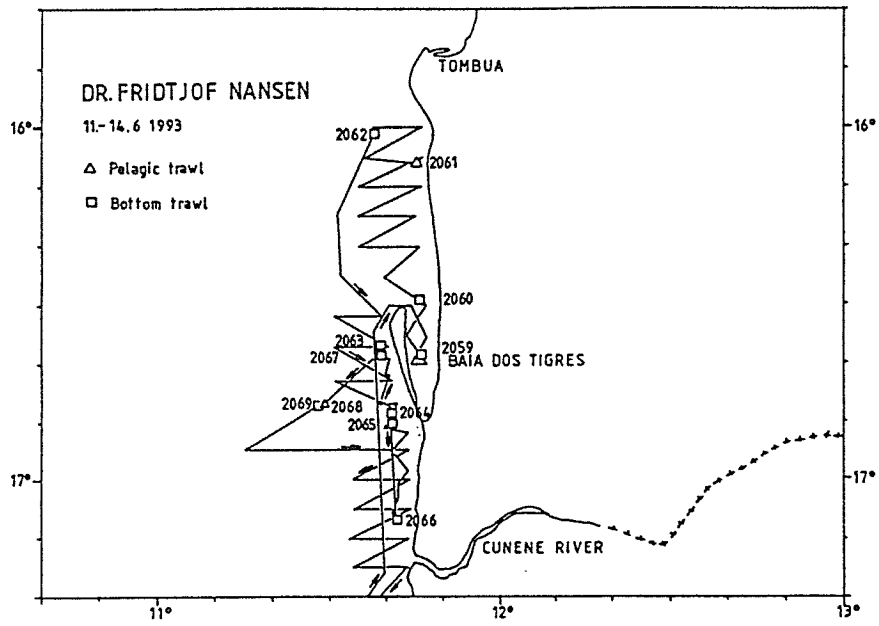


Figure 1d Course track and fishing stations, Cunene River to Tombua.

3 DISTRIBUTION AND ABUNDANCE OF PELAGIC FISH

The acoustic integration system provided observations of fish densities averaged, usually, over 5 nm distances, but in areas of high fish concentrations over 1 nm. The unit of acoustic reflection used was $0.1 \times \text{m}^2/\text{nm}^2$ 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

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

Pelagic fish type-2: Carangidae (horse mackerel).

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

The allocation of pelagic type-1 fish to species was judged on the basis of the relevant trawl catches.

3.1 DISTRIBUTION

In summary, three main areas of dense pelagic fish concentrations were found. One, in the south between Orange River and Panther Head, consisted of juvenile pilchard and anchovy, while the others, in offshore waters between $19^{\circ}30'S$ and $20^{\circ}30'S$ and in Angolan waters, both consisting of adult pilchard. Scattered mixed shoals of round herring and anchovy occurred throughout the region from Dolphin Head to the Cunene River including, at least in the north, into deep offshore waters. A number of these shoals were mixed with juvenile pilchard and horse mackerel, with the proportion of juvenile horse mackerel increasing in the offshore waters. Determining the species composition of these mixed shoals from the echo recordings was generally not possible and trawl catches were used for identification. Sampling of fish was generally successful, and few hauls were disrupted by high concentrations of jellyfish, as has been experienced in previous surveys.

The distributions of pilchard are in Figures 2a-d, the anchovy and round herring combined in Figures 2e-h and the of carangids in Figures 2i-j. An arbitrary scale was used in the distribution charts to illustrate different levels of density.

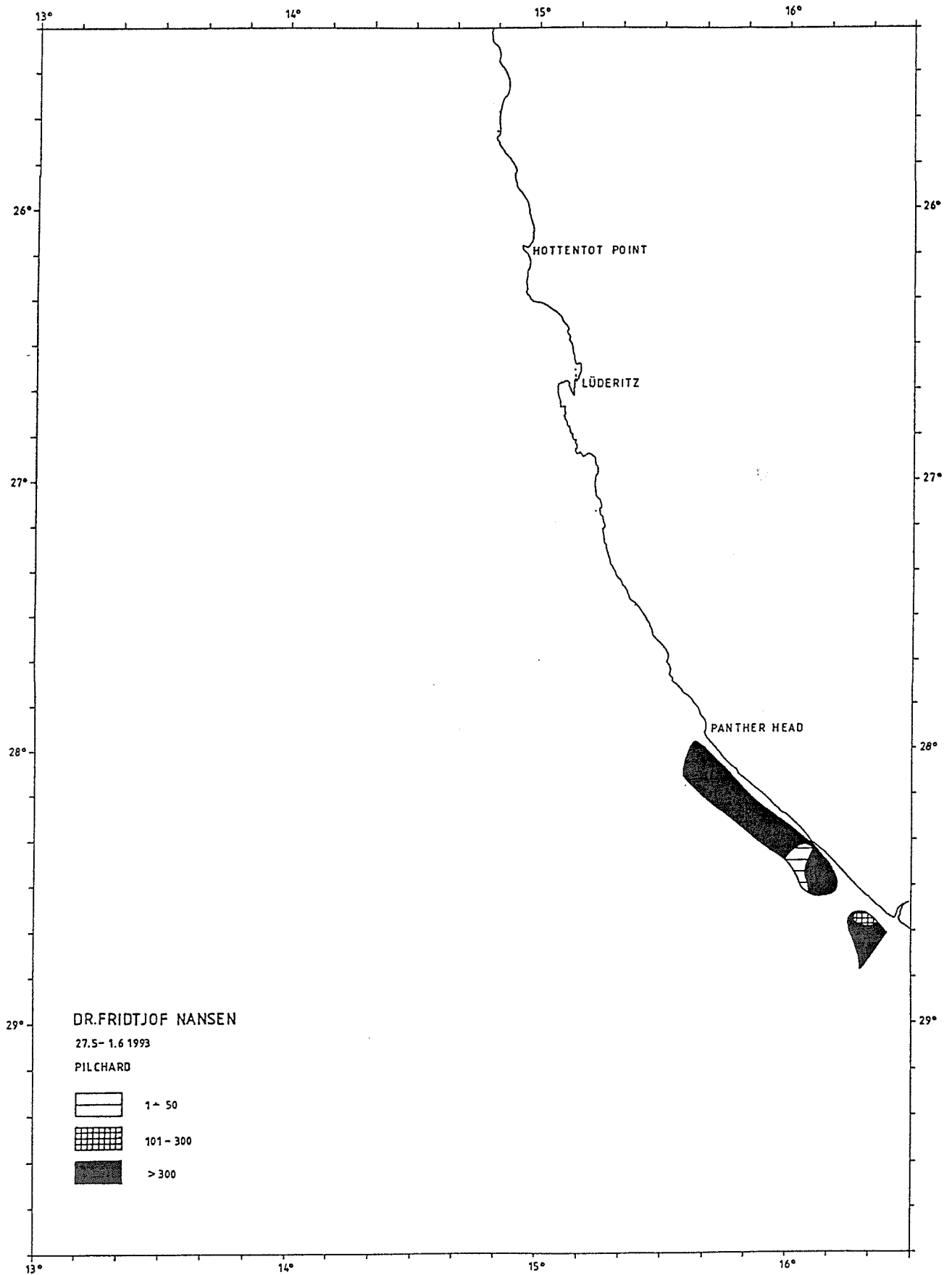


Figure 2a Distribution of pilchard, Orange River to Dolphin Head.

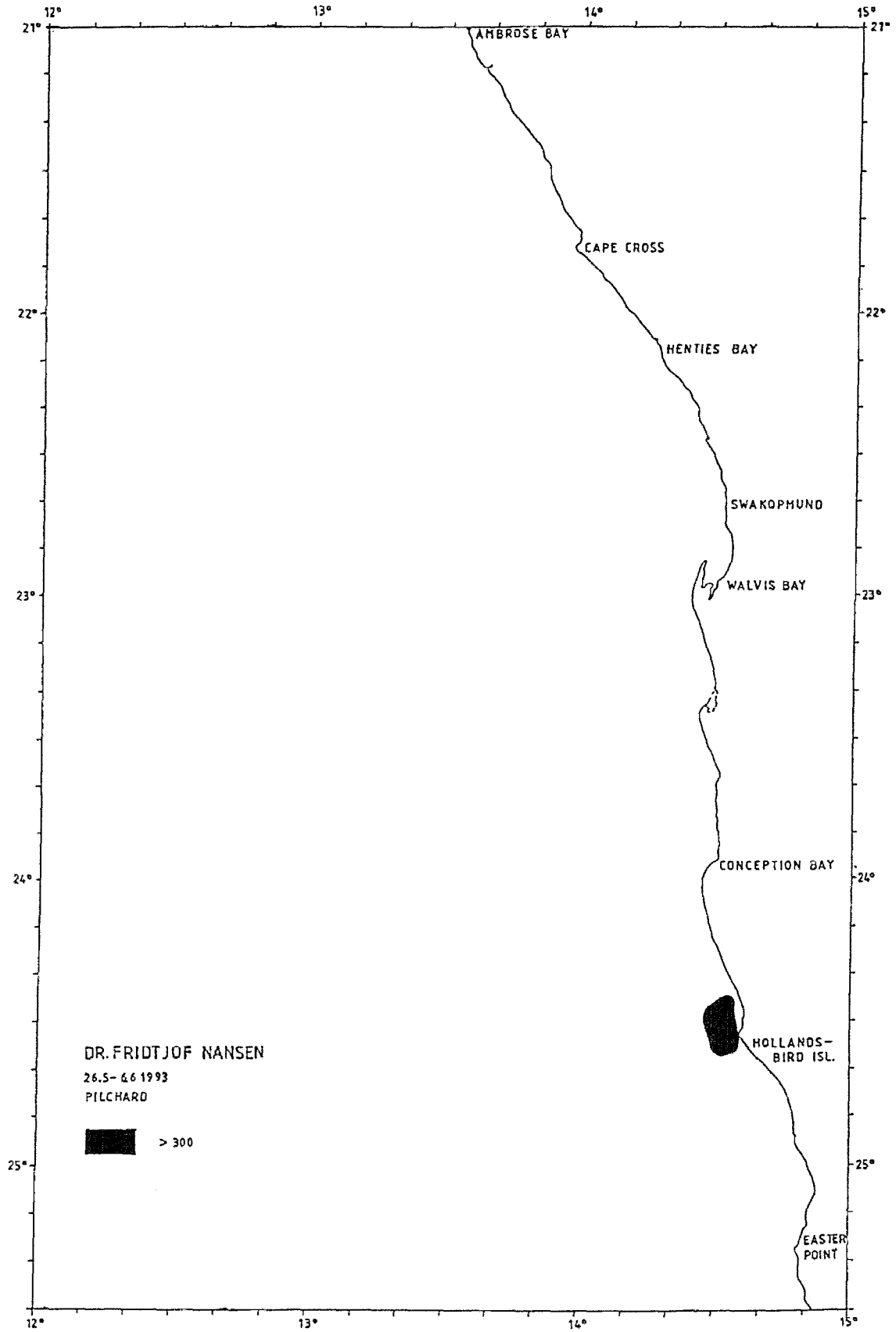


Figure 2b Distribution of pilchard, Easter Point to Ambrose Bay.

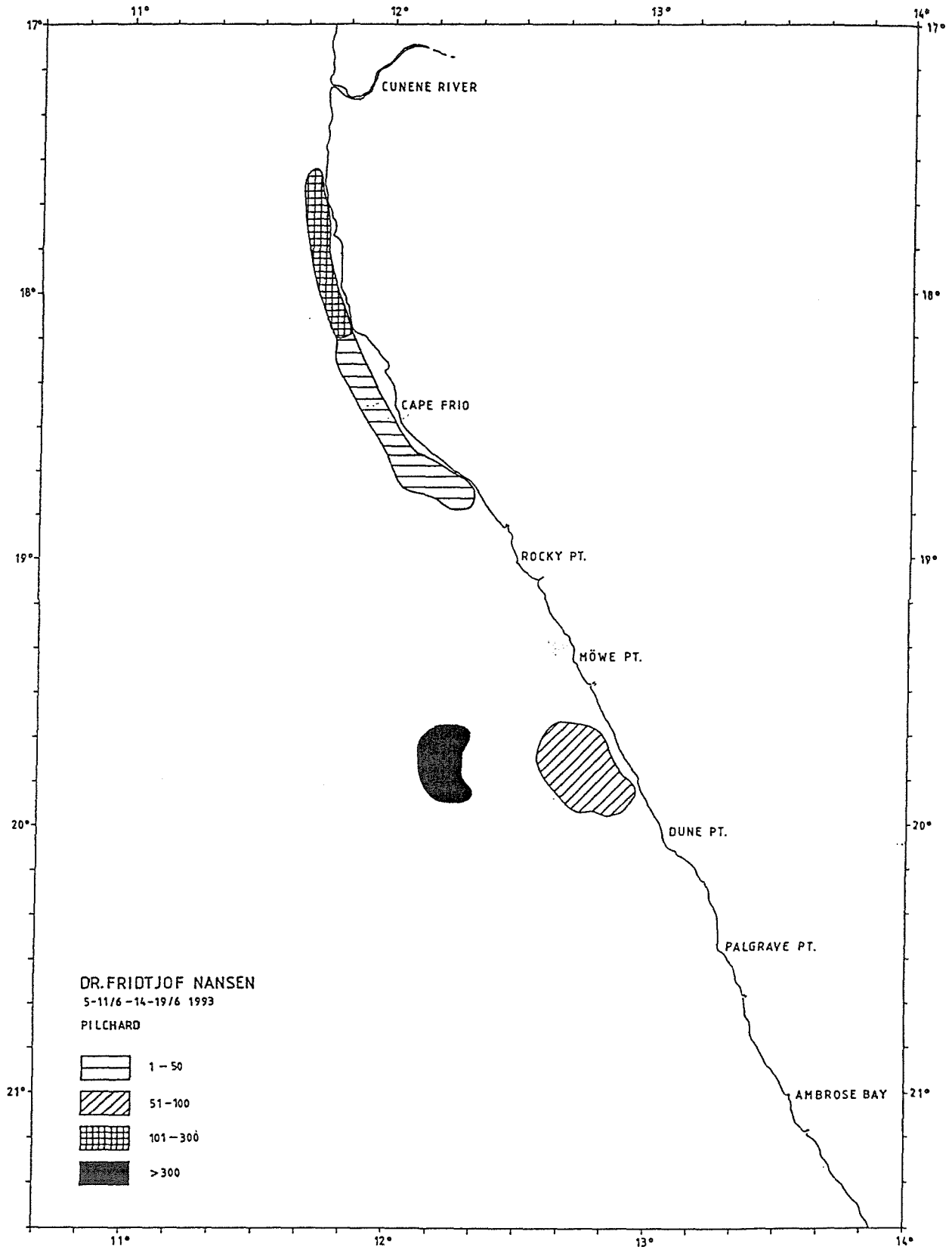


Figure 2c Distribution of pilchard, Ambrose Bay to Cunene River.

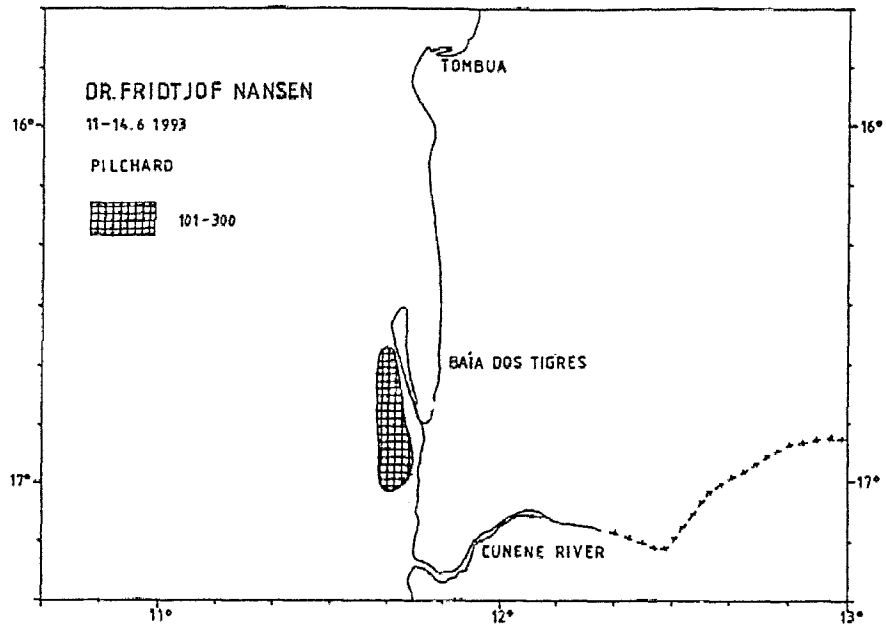


Figure 2d Distribution of pilchard, Cunene River to Tombua.

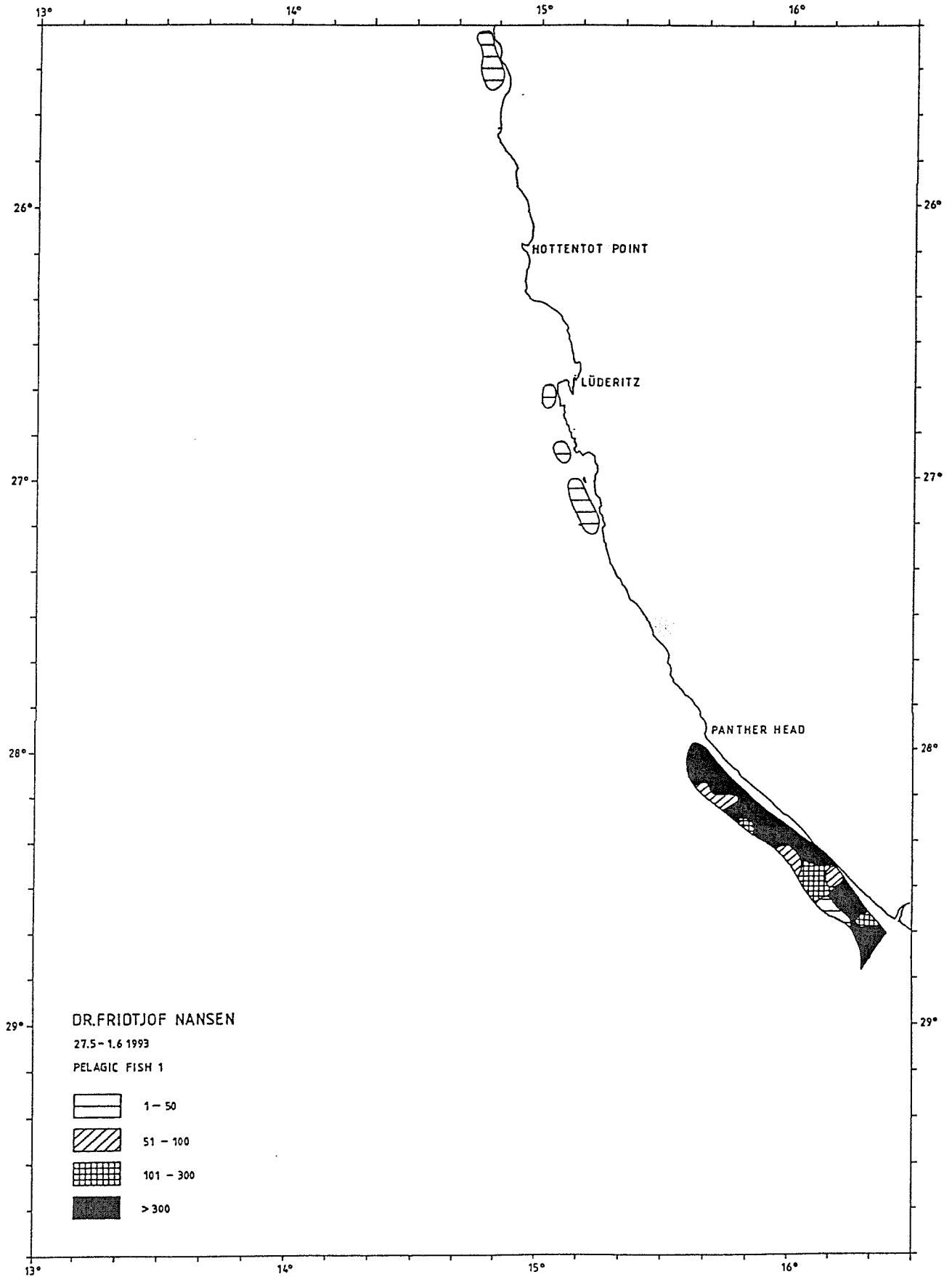


Figure 2e Distribution of pelagic fish type-1: anchovy and round herring, Orange River to Dolphin Head.

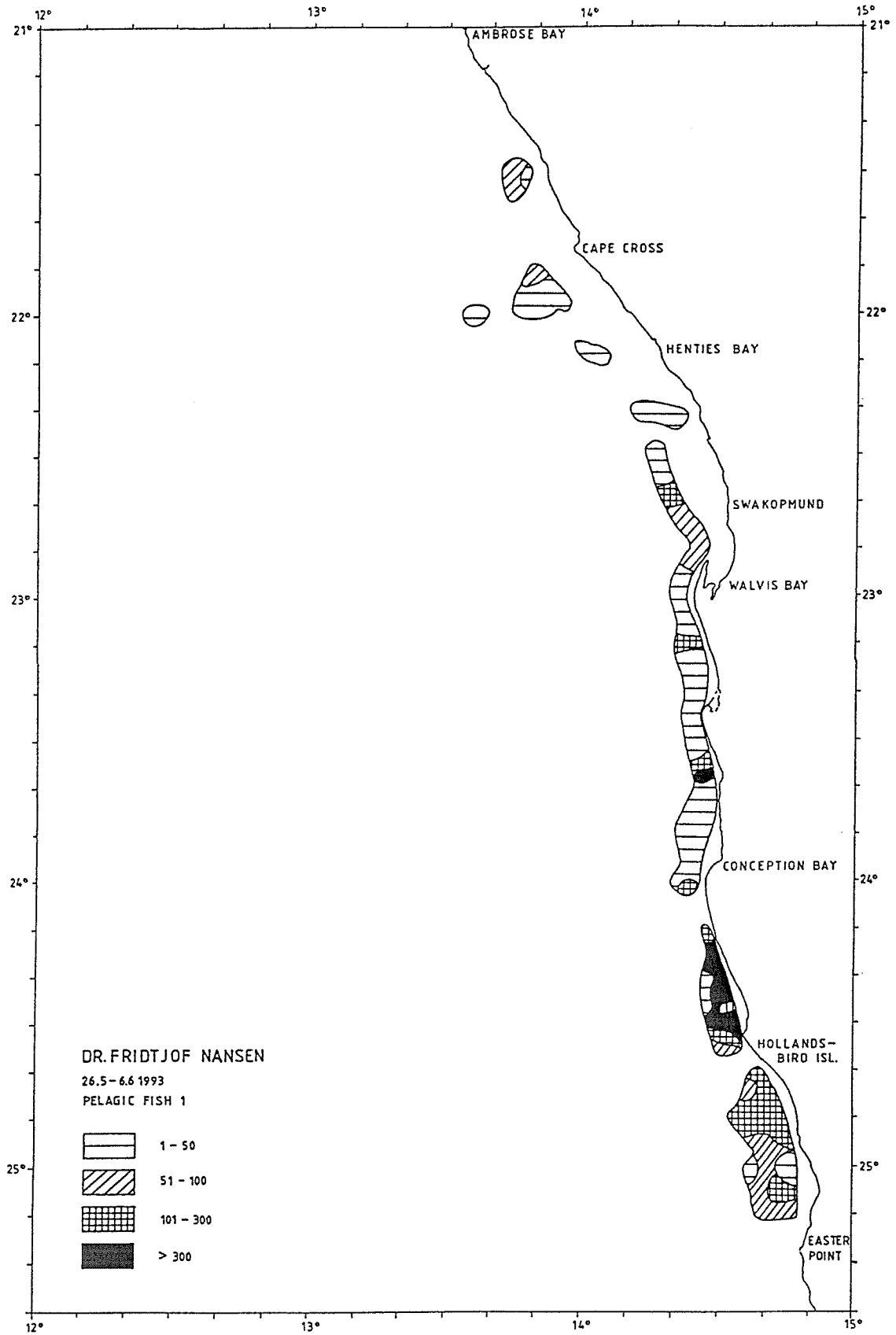


Figure 2f Distribution of pelagic fish type-1: anchovy and round herring, Easter Point to Ambrose Bay.

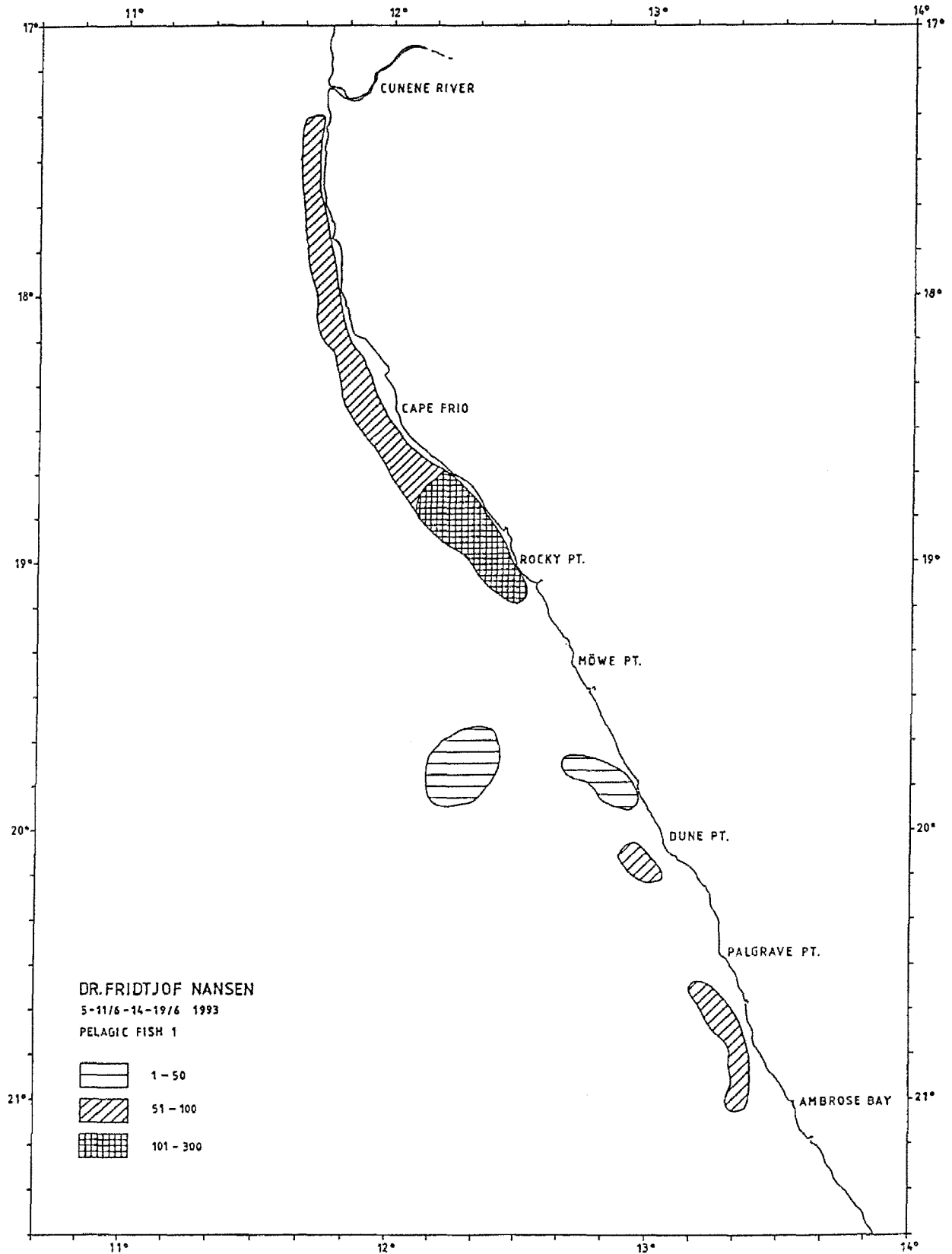


Figure 2g Distribution of pelagic fish type-1: anchovy and round herring, Ambrose Bay to Cunene River.

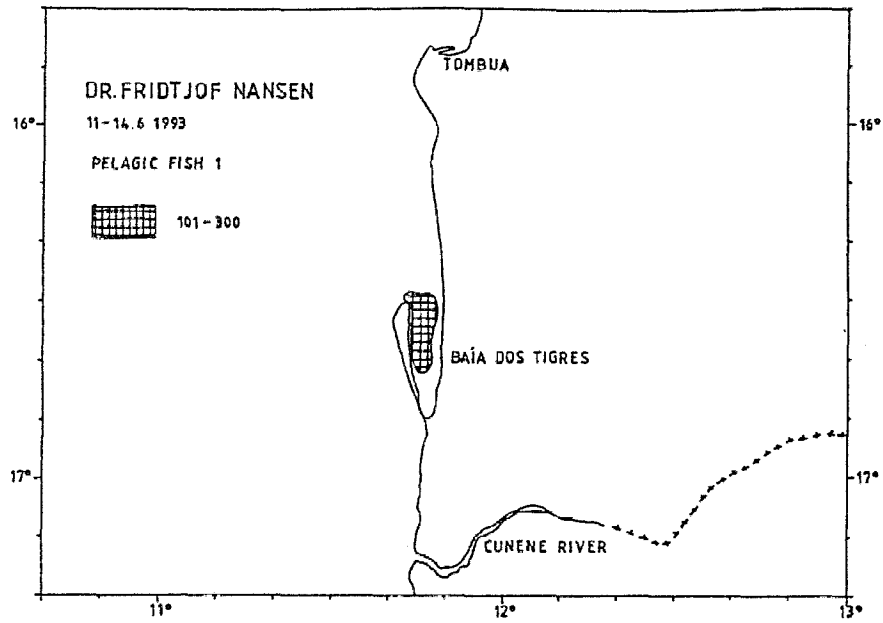


Figure 2h Distribution of pelagic fish type-1: anchovy and round herring, Cunene River to Tombua.

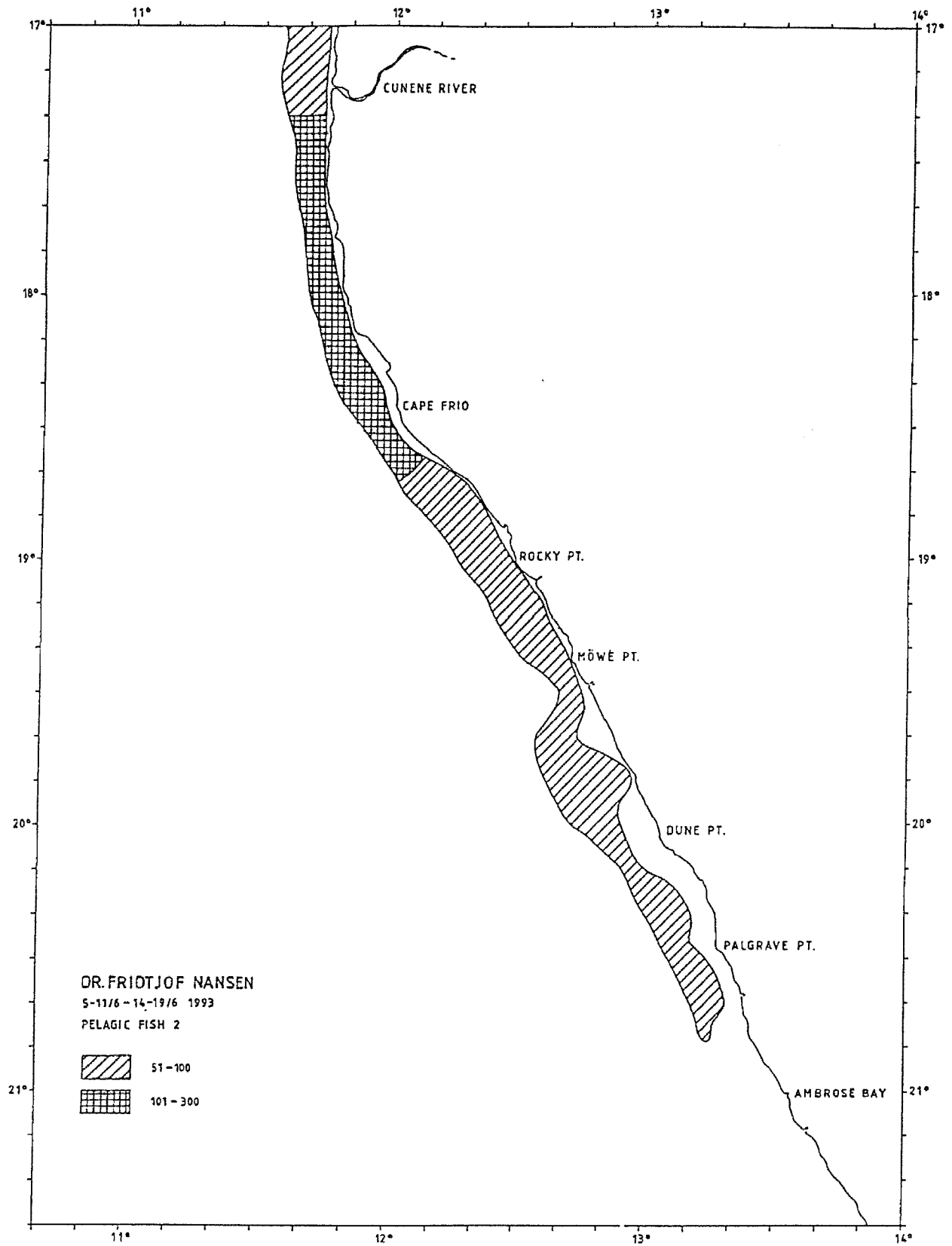


Figure 2i Distribution of horse mackerel, Ambrose Bay to Cunene River.

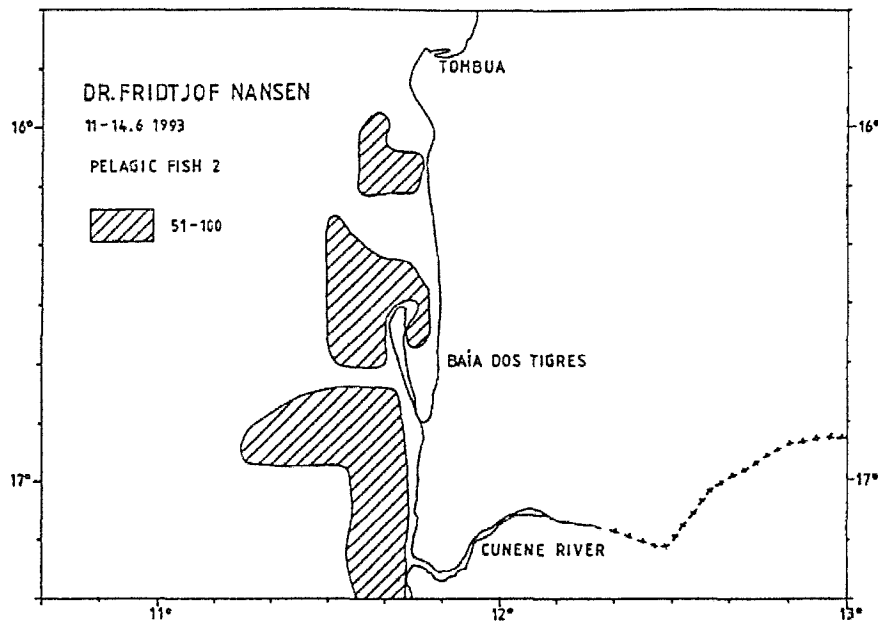


Figure 2j Distribution of horse mackerel, Cunene River to Tombua.

3.1.1 Orange River to Dolphin Head

Shoals of juvenile pilchard and anchovy were recorded from the Orange River to Panther Head, in depths between 30 m and 80 m. The shoals occurred close to the bottom during the day and were occasionally very dense. They moved some few miles out from the coast (see Figure 3) and ascended to the surface layer during night, but appeared to remain within the transducer range at all times. The shoals could be separated to species, although some of the catches were mixed, but these were assumed to consist of more than one shoal. The catches indicated that pilchard shoals were dominant in the depth zone from 50 m to 80 m, while anchovy occurred in shallower water. Some few specimens of round herring were also caught. The modal length of pilchard and anchovy were 11 cm and 8 cm respectively.

No fish was found between Panther Head and Dolphin Head.

3.1.2 Dolphin Head to Ambrose Bay

Dispersed shoals of round herring were recorded between Dolphin Head and Walvis Bay in depths between 20 m and 80 m. North of Hollands Bird Is. ($24^{\circ}30' - 24^{\circ}40'S$) a small area of fish consisting of pilchard and anchovy with a modal length of 8 cm to 10 cm were found in shallow waters from 15 m to 25 m. Few pelagic fish of commercial value were found in the area from Walvis Bay to Ambrose Bay. As in previous surveys of this region, most of the reflected echo intensity was allocated to layers of plankton, gobies and lantern fish.

3.1.3 Ambrose Bay to Cunene River

On the northwards coverage one small area of dense shoals of adult pilchard was recorded north of Palgrave Point (20°30'S) at 90 m depth. The shoals were being fished by several purse seiners, which reported that the fish was moving north. Nine days later adult pilchard were found some 50 nm further to the north-west in 190 m to 250 m of water, and it is believed that this was the same fish. Anchovy and round herring were recorded in the inshore waters off Palgrave Point extending out to the area of offshore pilchard.

A small area of dense shoals of anchovy was found in shallow water (20 m - 25 m) 25 nm north of Rocky Point. Small shoals of mixed species (adult anchovy, and juvenile round herring, pilchard and horse mackerel) were recorded between Cape Frio (18°30'S) and the Cunene River in depths between 20 m and 80 m. Some dense shoals of pilchard with a modal length of 20 cm were found near Cape Frio, otherwise the mixed shoals of round herring and anchovy were dominant. The weather during the northward coverage was however not suitable for surveying the Cape Frio to Cunene River region and the area was therefore surveyed several days later on the way south.

Juvenile horse mackerel with a modal length of 9 cm occurred along the coast from north of Ambrose Bay (20°50'S) to the Cunene River (19°00'S) and extending offshore throughout all areas which were surveyed.

3.1.4 Cunene River to Tombua

Dense shoals of pilchard with a modal length of 23 cm were recorded in shallow waters (13 m - 25 m) outside of Baia dos Tigres. The shoals occurred occasionally in the surface layer both during day and night. Some few small shoals of anchovy were found in inshore waters north of Baia dos Tigres and in the outer part of the bay itself. Dispersed shoals of horse mackerel were recorded in most of the surveyed area, both inshore and in deeper waters. North of 16°40'S trawl samples indicated that the horse mackerel were entirely large *Trachurus trecae*, while to the south only juvenile *Trachurus capensis* was found.

3.2 ABUNDANCE OF PELAGIC FISH

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

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

or on the form $C_F = 1.26 \cdot 10^6 \cdot L^{-2} \quad (2)$

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:

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

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 by applying a condition factor to obtain weight at length. The stock assessment was carried out by the use of the computer program NAN-SIS.

A simplified version of the same formula has been used in previous assessment reports:

$$\text{Biomass} = A \cdot I \cdot 0.167 \cdot L/17$$

applying a condition factor of 0.78, normalised to a 17 cm fish,

where

A	=	Area (nm ²)
I	=	Integrator value
L	=	Length of fish

This formula has been used in the RV 'Dr. Fridtjof Nansen surveys since December 1991, whereas the formula used before December 1991 assumed a fish condition factor = 1.0 and therefore gave approximately 25% higher biomass estimates.

The biomass estimates for the clupeids, anchovy and juvenile horse mackerel are shown in Table 1.

Table 1 Species composition and biomass estimates (in tonnes) of pelagic fish				
Area	Pilchard	Anchovy	Round herring	Juvenile horse mackerel
Tombua-Cunene River	98 000	6 000	-	86 000
Cunene River-Ambrose Bay	253 000	50 000	26 000	278 000
Ambrose Bay-Dolphin Head	10 000	7 000	65 000	-
Dolphin Head-Orange River	197 000	84 000	-	-
Total Luderitz to Cunene River	263 000	57 000	91 000	278 000
Total Luderitz to Angola	361 000	63 000	91 000	364 000
Total Orange R. to Angola	558 000	147 000	91 000	364 000

3.2.1 Pilchard, anchovy and round herring

As in previous surveys a vertical migration of type-1 pelagic fish was noted to occur at night, but judging from the echo traces most of the fish seemed to be distributed within the transducer range, especially during the first two weeks of the cruise when the moon was in 2nd and 3rd quarter. Several areas were surveyed more than once, both during night-time and during the day, and for one of these areas both the night-time and day-time data are given for comparison (Figure 3). The observations show that the surveys during night gave much lower biomass estimates even under moonlit conditions. As in previous reports, the day-time data have therefore as far as possible been used for assessment purposes.

The dense concentration of pilchard and anchovy north of the Orange River was surveyed several times, and based on the day values, almost 300 000 tonnes was estimated to occur in the area. A total of 40 000 tonnes of round herring was found between Eastern Point and Holland Bird Is. and another 23 000 tonnes north of Conception Bay, while 19 000 tonnes of mixed shoals occurred between Holland Bird and Conception Bay.

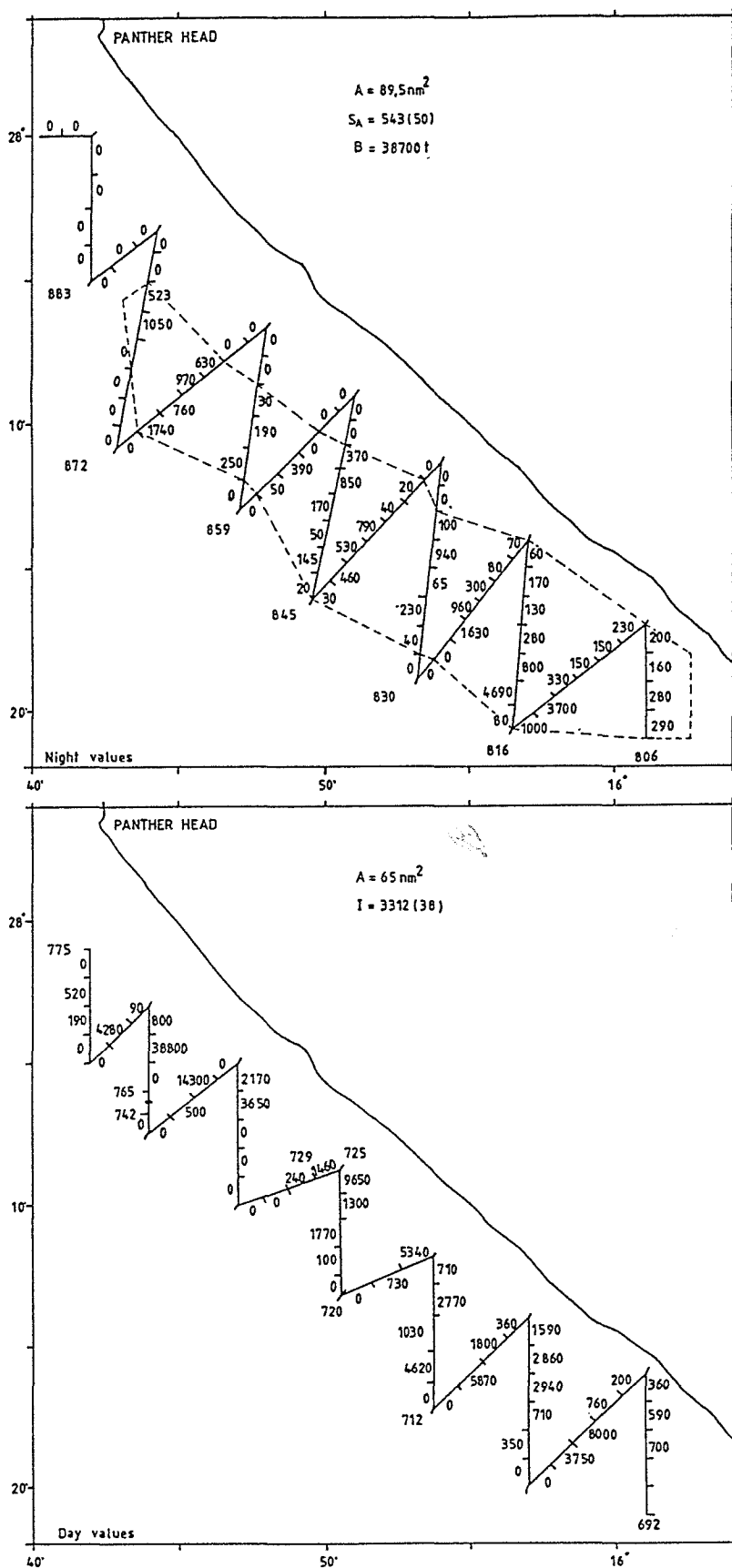


Figure 3 Distribution of integrator-values for a day and night survey of pilchard and anchovy at Panther Head.

The dense shoals of pilchard recorded offshore of Palgrave Point was originally assessed at between 250 000 tonnes and 300 000 tonnes. This value was based largely on one very dense large shoal. The region was surveyed more intensively some nine days later and an estimated 156 000 tonnes was derived. Owing to the density of the grid the western side of the distribution was still being surveyed when the fish shoals ascended to the surface and dispersed at sunset. While the second estimate is certainly more accurate than the first, it is a minimum as the entire area of distribution was not covered. The biomass of this concentration is assumed to be in the order of 200 000 tonnes. Over 6 000 tonnes of round herring was estimated to occur as dispersed shoals between the dense pilchard shoals. The extent of this distribution was not determined and therefore this estimate may also be an underestimate.

The dispersed, but mixed, concentrations of anchovy and round herring between Ambrose Bay and the Cunene River gave a total biomass of about 75 000 tonnes. From the trawl records 50 000 tonnes was assumed to be anchovy and the remainder round herring.

3.2.2 Pelagic horse mackerel

The widely dispersed pelagic horse mackerel between Ambrose Bay and the Cunene River was estimated at 250 000 tonnes, while between the Cunene River and 16°40' another 86 000 tonnes was found. North of 16°40'S 63 000 tonnes of *Trachurus trecae* was recorded.

4 CONCLUDING REMARKS

The pilchard abundance for the northern Benguela system, that is the Namibian region north of Lüderitz and southern Angola, is below 500 000 tonnes, and possibly less than 400 000 tonnes. Sampled fish have yet to be aged, but the length-frequency distribution indicates that most of the adult pilchard found during this survey were one and two-year olds. This confirms the trends documented during the previous three surveys; that the cohorts spawned between 1988 and 1990 have largely been lost. The remaining cohort, spawned in the summer of 1991/92 accounts for most of the present stock.

Large amounts of juvenile pilchard and, to a lesser extent, anchovy were found south of Lüderitz. As these fish are south of the upwelling cell which forms the environmental barrier between the southern and northern Benguela systems, these fish should be considered part of the southern Benguela system, despite being in Namibian waters. The origin of this fish

is uncertain, but as this is an important concentration it should be tracked until it enters either the South African or Namibian fishable stock.

The anchovy and round herring biomasses are similar to previous surveys, although extensive dispersed layers were found in deep offshore waters. These waters were not surveyed and therefore the reported estimate may be an underestimate.

Juvenile horse mackerel occurred extensively throughout the region north of Ambrose Bay, both in the areas surveyed and out into deeper waters. The estimate presented is also a minimum.

Almost 100 000 tonnes of pilchard were recorded outside Baía dos Tigres, as they were shoaling almost entirely in waters less than 20 m deep this concentration was almost overlooked. This highlights the difficulty of surveying this species and the importance of using purse seiners to determine the distribution of the fish.

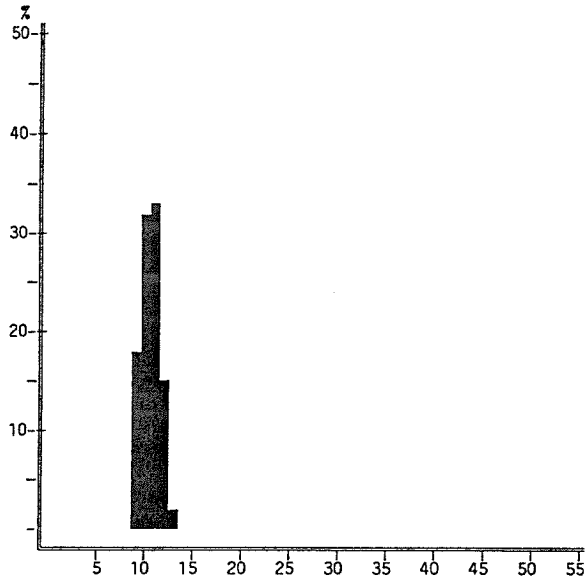
Further underestimates probably resulted from the behaviour of the pelagic fish of migrating to surface waters at night. Low night time values indicated that much of the fish were rising above transducer level. While most of the biomass estimates were made using day values, large areas were searched during darkness and it is possible that some concentrations of fish which were dispersed at the surface may have been missed.

As noted most of the estimates were made during day coverages. Pilchard tend to shoal very densely in day-light which is far from ideal for acoustic surveys. Such distributions are often difficult to find, while obtaining a representative acoustic sample is also problematic.

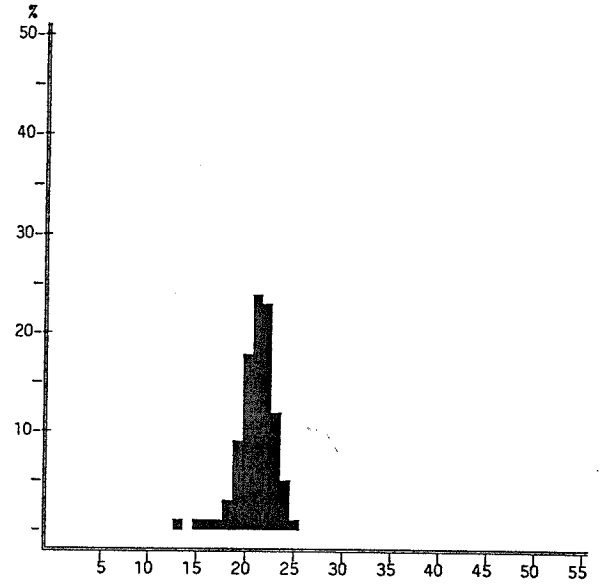
The offshore region is normally surveyed during the mid-water horse mackerel and hake surveys, and no pelagic fish have been previously been reported outside of about 150 m. Dense pilchard shoals and dispersed anchovy, round herring and juvenile horse mackerel were found during this survey as far offshore as 250 m water depth. It is possible that all the major concentrations of pilchard were found, although generally the accompanying purse seiners only searched out to the 200 m bathymetric line and any other concentrations of fish would have been missed. It is not possible for two vessels to search the entire area to beyond 200 m bathymetric depth in the time available, especially when the fish occur in few very dense, but widely scattered shoals.

In recent months much of the older part of the pilchard stock has been lost, while most of a strong young hake cohort has also disappeared. Fewer mid-water horse mackerel were recorded during the survey by the RV 'Benguela', while during the same survey large areas of very low oxygen water were recorded north of Cape Frio. In addition large amounts of pilchard, anchovy, round herring and juvenile horse mackerel have been recorded in waters far beyond their normal distribution. These phenomena indicate a large-scale environmental perturbation which requires immediate investigation.

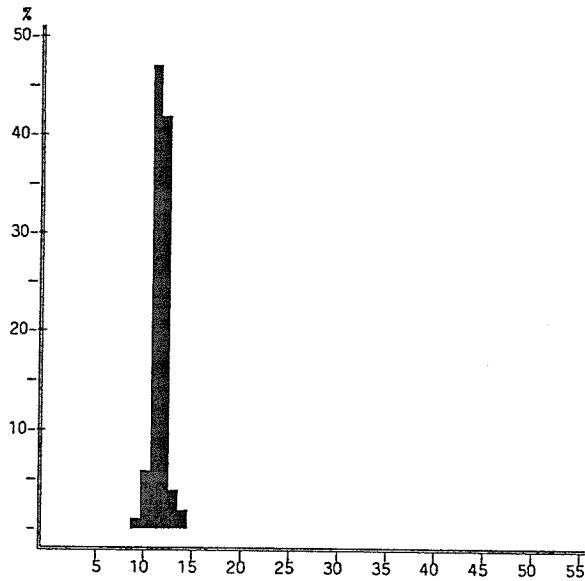
Annex I Size composition of main stocks



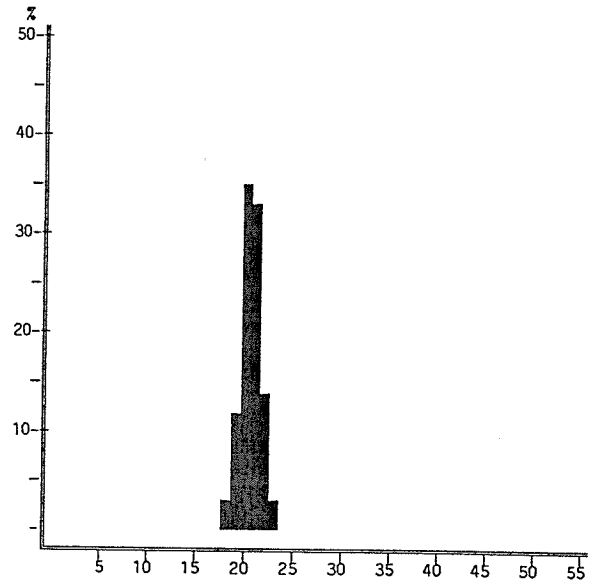
Sardinops ocellata
Orange River - Panther Head



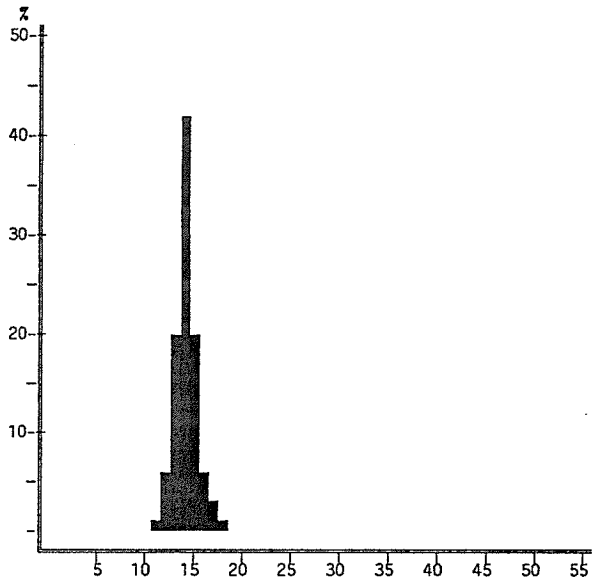
Sardinops ocellata
Dune Point - Møve Point



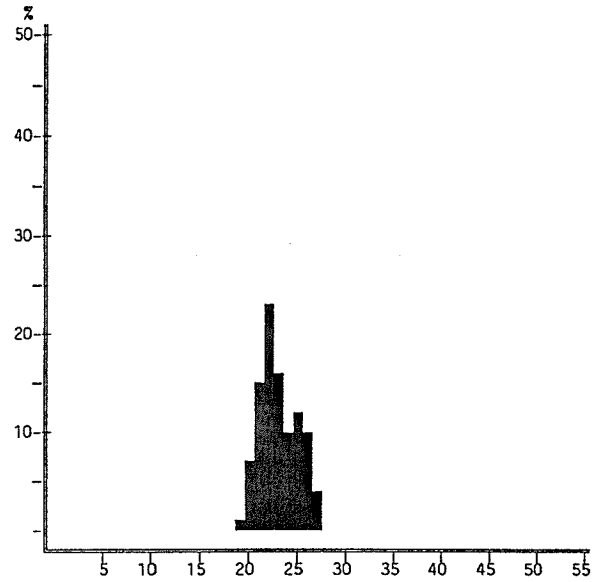
Sardinops ocellata
Hollandsbird Island



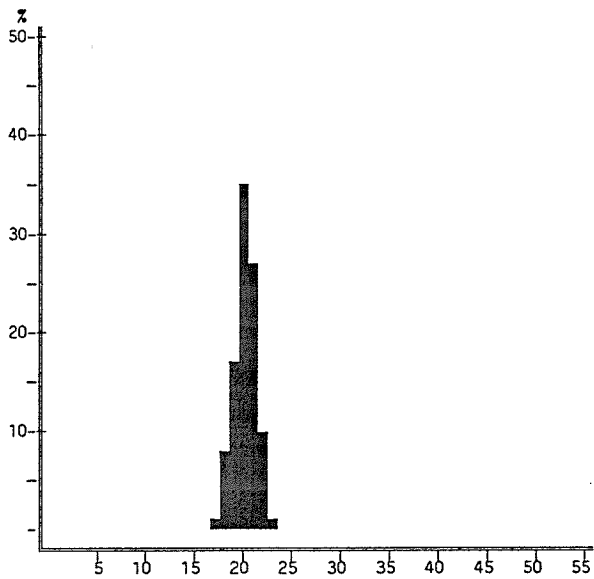
Sardinops ocellata
Dune Pt - Møve Pt Offshore



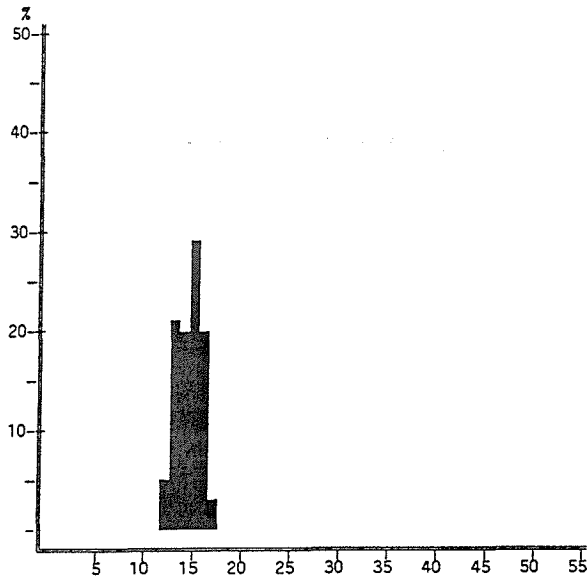
Sardinops ocellata
Cape Frio - Cunene R. North



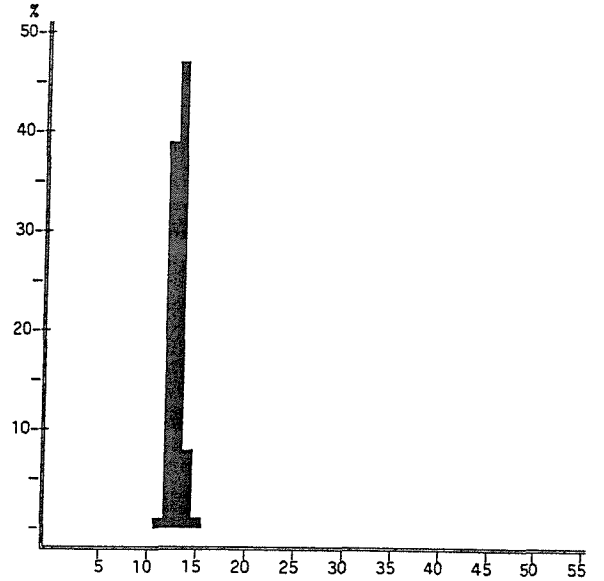
Sardinops ocellata
Outside Baia dos Tigres



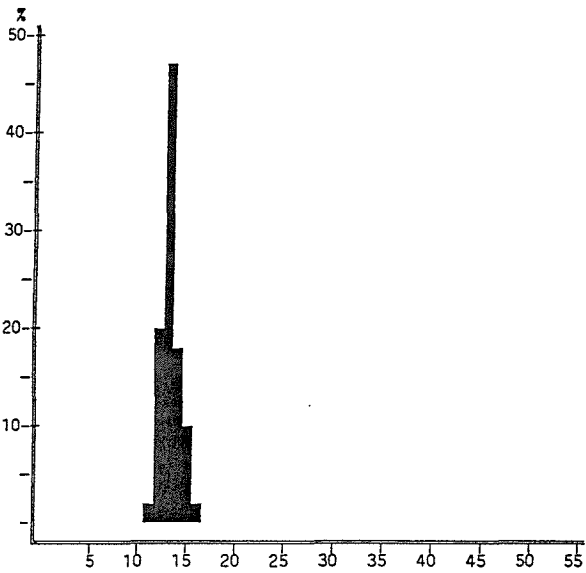
Sardinops ocellata
Cape Frio - Cunene R. South



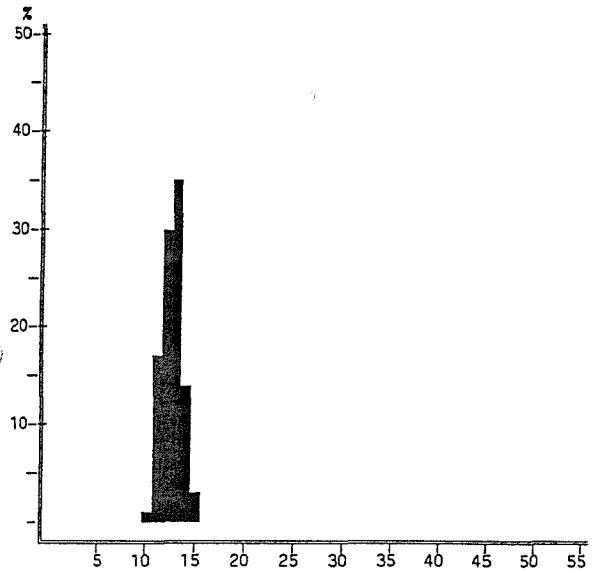
Etrumeus whiteheadi
Dolphin Head - Ambrose Bay



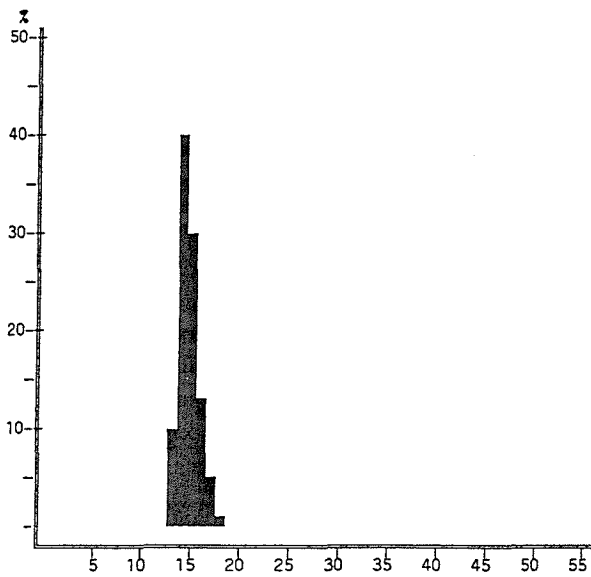
Etrumeus whiteheadi
Rocky pt. - Cunene R. North



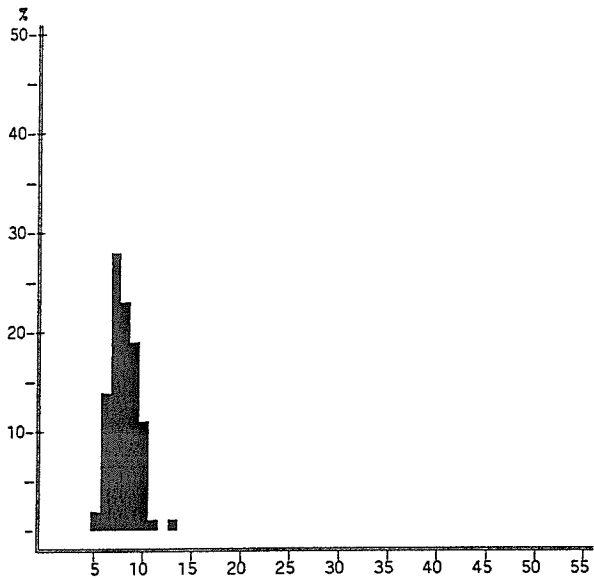
Etrumeus whiteheadi
Ambrose Bay - Rocky Pt. North



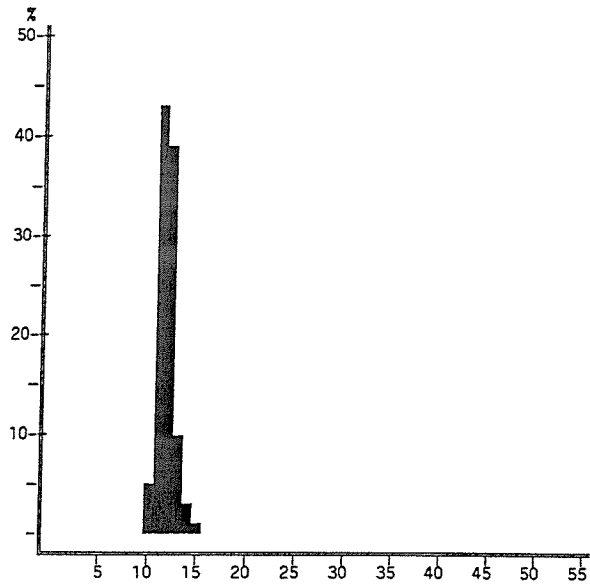
Etrumeus whiteheadi
Rocky pt. - Cunene R. South



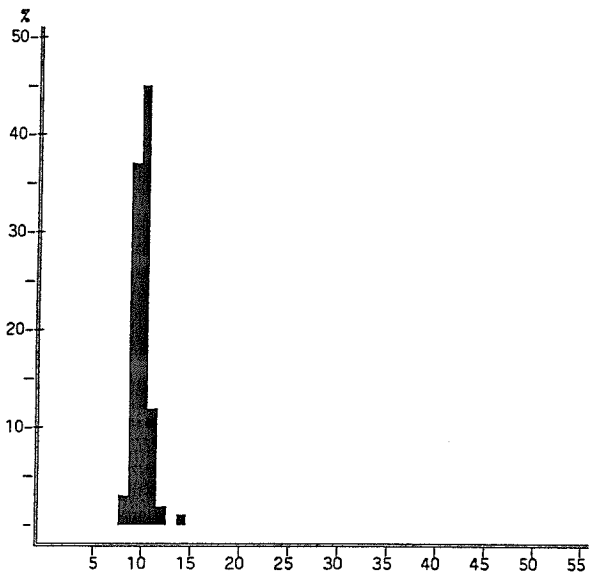
Etrumeus whiteheadi
Dune Pt. - Møwe Pt. Offshore



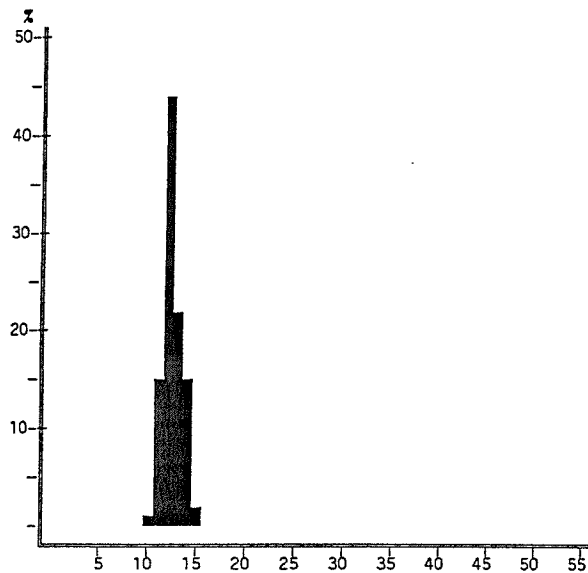
Engraulis capensis
Orange River - Dolphin Head



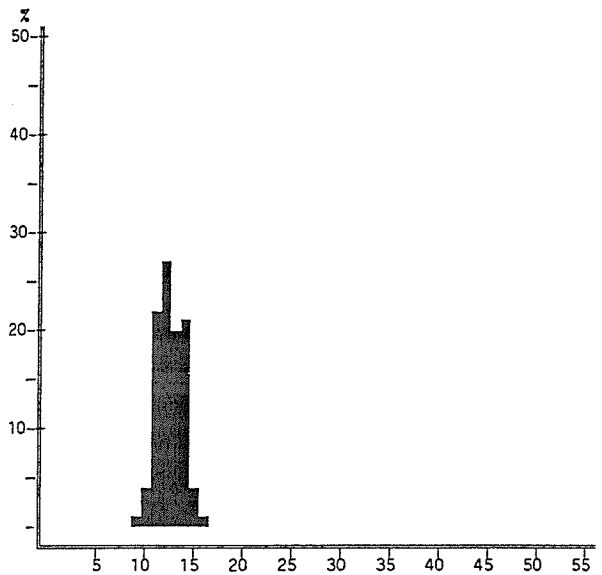
Engraulis capensis
Rocky pt. - Cunene R. North



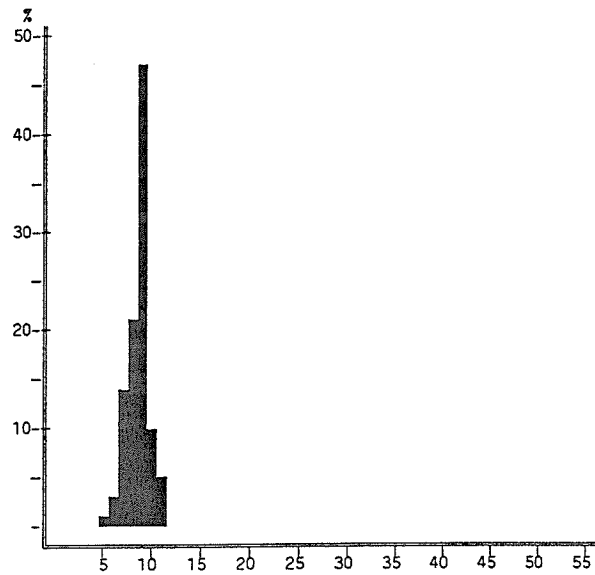
Engraulis capensis
Dolphin Head - Ambrose Bay



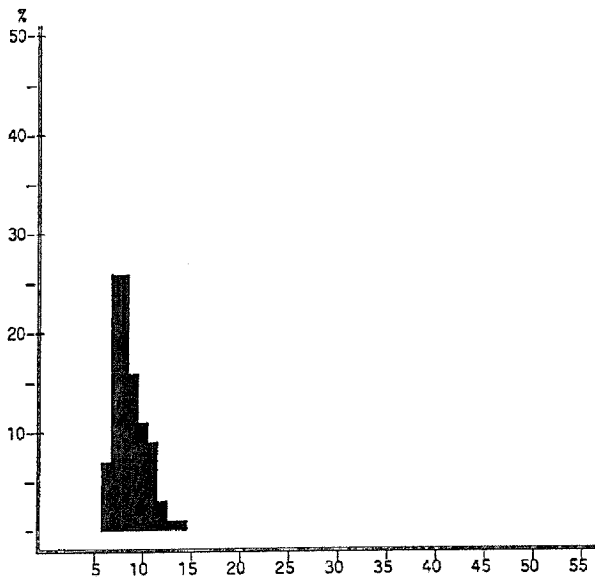
Engraulis capensis
Rocky pt. - Cunene R. South



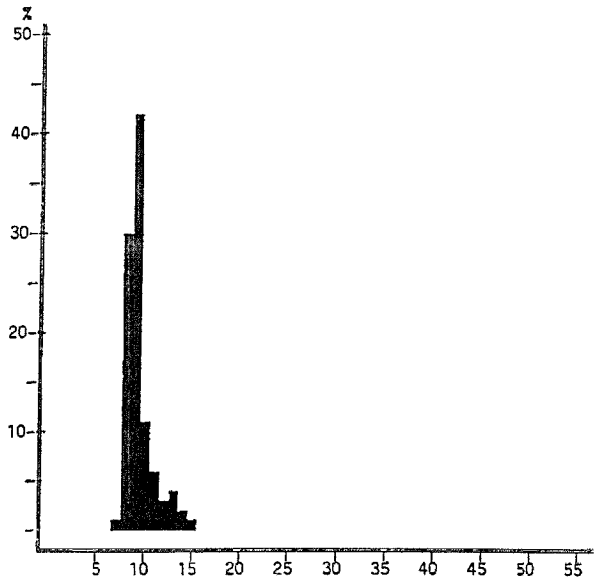
Engraulis capensis
Ambrose Bay - Rocky Pt. North



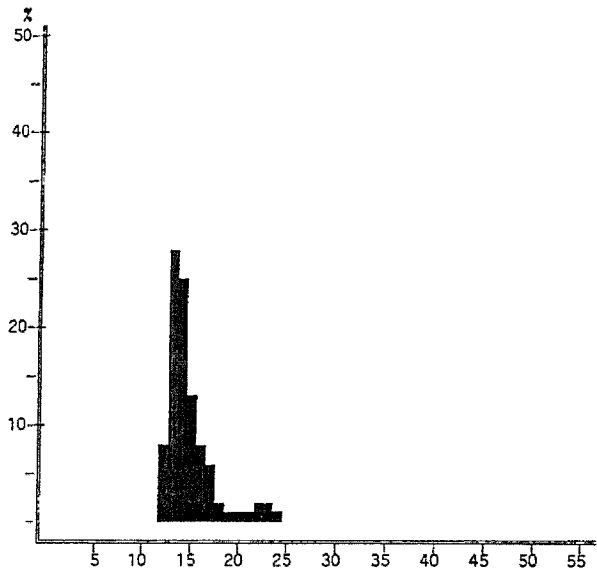
Engraulis capensis
Cunene River - Tombua



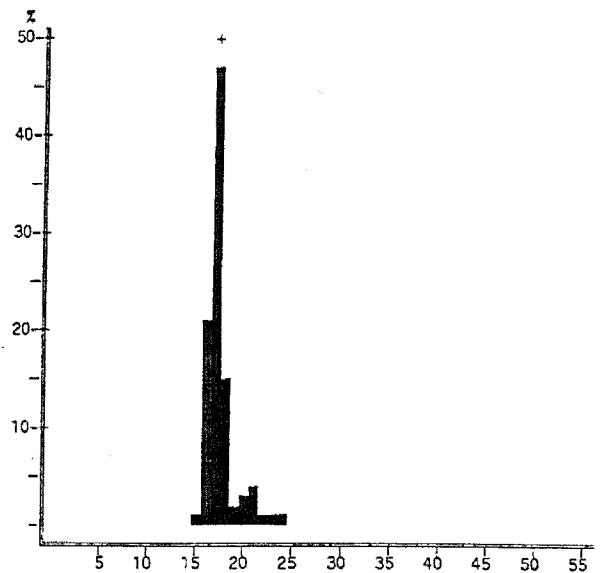
Trachurus, Juveniles
Ambrose B.- Cunene R. Inshore



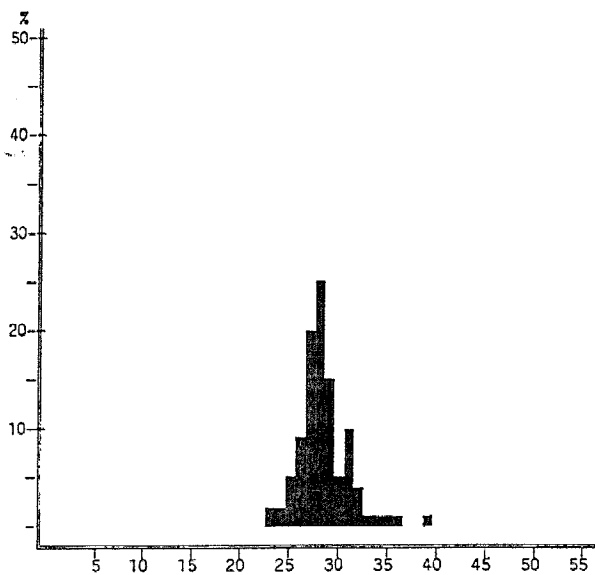
Trachurus, Juveniles
Cunene River - Tombua



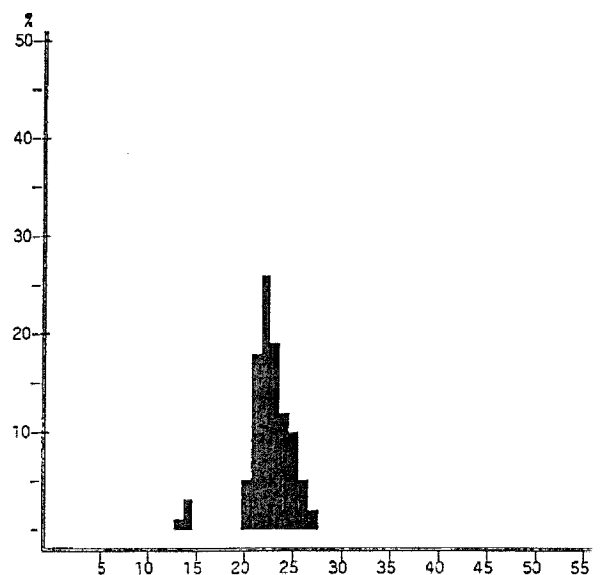
Trachurus capensis
Ambrose B.- Cunene R. Inshore



Trachurus capensis
Cunene River - Tombua



Trachurus capensis
Ambrose B.- Cunene R. Outshore



Trachurus trecae
Cunene River - Tombua

Annex II Records of fishing stations

PROJECT STATION:2003
POSITION:Lat S 2413
Long E 1428

DATE:26/ 5/93 GEAR TYPE: PT No: start stop duration
TIME :20:45:00 21:00:00 15 (min) Purpose code: 1
LOG :1986.10 1986.80 0.70 Area code : 2
FDEPTH: 5 5 GearCond.code:
BDEPTH: 21 20 Validity code:
Towing dir: 177 Wire out: 100 m Speed: 30 kn*10

Sorted: 1 Kg Total catch: 0.96 CATCH/HOUR: 3.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Engraulis capensis	2.52	452	65.63	772
Etrumeus whiteheadi	0.52	104	13.54	773
Trachurus capensis	0.44	24	11.46	774
Merluccius capensis, juveniles	0.32	16	8.33	775
GOBIDAE juvenile	0.04	8	1.04	
Total	3.84	100.00		

PROJECT STATION:2008
POSITION:Lat S 2815
Long E 1554

DATE:28/ 5/93 GEAR TYPE: PT No:1 start stop duration
TIME :07:55:00 08:12:00 17 (min) Purpose code: 1
LOG :2305.20 2306.40 1.20 Area code : 1
FDEPTH: 10 10 GearCond.code:
BDEPTH: 74 73 Validity code:
Towing dir: 301 Wire out: 150 m Speed: 46 kn*10

Sorted: 9 Kg Total catch: 12.64 CATCH/HOUR: 44.61

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Thyrsites atun	23.29	64	52.21	786
Engraulis capensis	21.18	23294	47.48	787
Sepia orbigynana	0.14	11	0.31	
Total	44.61	100.00		

PROJECT STATION:2004
POSITION:Lat S 2432
Long E 1430

DATE:26/ 5/93 GEAR TYPE: PT No: start stop duration
TIME :23:35:00 23:42:00 7 (min) Purpose code: 1
LOG :2010.10 2010.40 0.30 Area code : 2
FDEPTH: 10 10 GearCond.code:
BDEPTH: 22 27 Validity code:
Towing dir: 360 Wire out: 100 m Speed: 30 kn*10

Sorted: 33 Kg Total catch: 832.53 CATCH/HOUR: 7135.97

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	2892.86	234643	40.54	777
Engraulis capensis	2700.00	368571	37.84	778
Etrumeus whiteheadi	1542.86	86357	21.62	776
Trachurus capensis	0.26	214	0.21	779
Total	7135.98	100.00		

PROJECT STATION:2009
POSITION:Lat S 2818
Long E 1600

DATE:28/ 5/93 GEAR TYPE: PT No:1 start stop duration
TIME :08:38:00 08:58:00 20 (min) Purpose code: 1
LOG :2316.70 2318.00 1.30 Area code : 1
FDEPTH: 45 45 GearCond.code:
BDEPTH: 60 62 Validity code:
Towing dir: 299 Wire out: 250 m Speed: 40 kn*10

Sorted: 32 Kg Total catch: 986.40 CATCH/HOUR: 2959.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	2880.00	219282	97.32	788
Engraulis capensis	72.90	20610	2.46	789
Trachurus capensis	6.30	1530	0.21	790
Total	2959.20	99.99		

PROJECT STATION:2005
POSITION:Lat S 2601
Long E 1455

DATE:27/ 5/93 GEAR TYPE: PT No:1 start stop duration
TIME :10:45:00 10:57:00 12 (min) Purpose code: 1
LOG :2119.20 2120.00 0.80 Area code : 1
FDEPTH: 15 10 GearCond.code:
BDEPTH: 36 36 Validity code:
Towing dir: 360 Wire out: 150 m Speed: 44 kn*10

Sorted: 24 Kg Total catch: 336.00 CATCH/HOUR: 1680.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chelidonichthys capensis	1680.00	7000	100.00	780
Total	1680.00	100.00		

PROJECT STATION:2010
POSITION:Lat S 2833
Long E 1615

DATE:28/ 5/93 GEAR TYPE: PT No: start stop duration
TIME :12:21:00 12:41:00 20 (min) Purpose code: 1
LOG :2348.80 2350.10 1.30 Area code : 1
FDEPTH: 15 20 GearCond.code:
BDEPTH: 20 21 Validity code:
Towing dir: 180 Wire out: 75 m Speed: 30 kn*10

Sorted: 1 Kg Total catch: 20.33 CATCH/HOUR: 60.99

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Engraulis capensis	34.98	13476	57.35	792
Thyrsites atun	13.20	48	21.64	791
Trachurus, juveniles	9.99	1278	16.38	793
Callorhynchus capensis	2.40	3	3.94	
Merluccius capensis, juveniles	0.30	9	0.49	794
Etrumeus whiteheadi	0.12	240	0.20	
Total	60.99	100.00		

PROJECT STATION:2006
POSITION:Lat S 2709
Long E 1512

DATE:27/ 5/93 GEAR TYPE: PT No:1 start stop duration
TIME :19:35:00 20:05:00 30 (min) Purpose code: 1
LOG :2202.90 2205.10 2.20 Area code : 1
FDEPTH: 25 0 GearCond.code:
BDEPTH: 66 74 Validity code:
Towing dir: 332 Wire out: 200 m Speed: 48 kn*10

Sorted: 24 Kg Total catch: 24.82 CATCH/HOUR: 49.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Etrumeus whiteheadi	43.00	2172	86.62	781
Chelidonichthys capensis	4.68	20	9.43	784
Thyrsites atun	1.26	10	2.54	783
Engraulis capensis	0.70	248	1.41	782
Total	49.64	100.00		

PROJECT STATION:2011
POSITION:Lat S 2841
Long E 1621

DATE:28/ 5/93 GEAR TYPE: PT No:1 start stop duration
TIME :14:41:00 15:11:00 30 (min) Purpose code: 1
LOG :2366.00 2368.10 2.10 Area code : 1
FDEPTH: 10 15 GearCond.code: 8
BDEPTH: 28 33 Validity code: 4
Towing dir: 140 Wire out: 75 m Speed: 43 kn*10

Sorted: 1 Kg Total catch: 9.56 CATCH/HOUR: 19.12

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Thyrsites atun	15.60	20	81.59	795
Engraulis capensis	2.00	348	10.46	798
Sardinops ocellata	0.84	82	4.39	796
Trachurus, juveniles	0.62	90	3.24	797
Etrumeus whiteheadi	0.06	6	0.31	
Total	19.12	99.99		

PROJECT STATION:2007
POSITION:Lat S 2812
Long E 1549

DATE:28/ 5/93 GEAR TYPE: PT No:1 start stop duration
TIME :04:44:00 05:14:00 30 (min) Purpose code: 1
LOG :2291.30 2293.10 1.80 Area code : 1
FDEPTH: 10 10 GearCond.code:
BDEPTH: 82 84 Validity code:
Towing dir: 301 Wire out: 150 m Speed: 30 kn*10

Sorted: 10 Kg Total catch: 11.21 CATCH/HOUR: 22.42

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Thyrsites atun	21.60	92	96.34	785
Sepia orbigynana	0.80	40	3.57	
Engraulis capensis	0.02	4	0.09	
Total	22.42	100.00		

PROJECT STATION:2012
POSITION:Lat S 2828
Long E 1604

DATE:28/ 5/93 GEAR TYPE: PT No: start stop duration
TIME :21:03:00 21:35:00 32 (min) Purpose code: 1
LOG :2425.90 2427.60 1.70 Area code : 1
FDEPTH: 0 0 GearCond.code: 8
BDEPTH: 61 53 Validity code: 9
Towing dir: 360 Wire out: 100 m Speed: 33 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:2013
 DATE:29/ 5/93 GEAR TYPE: PT No: POSITION:Lat S 2841
 start stop duration Long E 1617
 TIME :01:51:00 02:06:00 15 (min) Purpose code: 1
 LOG :2460.50 2461.20 0.70 Area code : 1
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 61 71 Validity code: 4
 Towing dir: 270 Wire out: 150 m Speed: 32 kn*10
 Sorted: 4 Kg Total catch: 4.05 CATCH/HOUR: 16.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Chelidonichthys capensis	14.40	152	88.89
Etrumeus whiteheadi	0.80		799
Trachurus, Juveniles	0.40		801
Engraulis capensis	0.28		800
Todaropsis eblanae	0.20	100	1.23
Sufflogobius bibarbatu	0.12	12	0.74
Total	16.20		100.00

PROJECT STATION:2018
 DATE:29/ 5/93 GEAR TYPE: PT No:2 POSITION:Lat S 2814
 start stop duration Long E 1557
 TIME :18:20:00 18:45:00 25 (min) Purpose code: 1
 LOG :2586.60 2587.60 1.00 Area code : 1
 FDEPTH: 15 10 GearCond.code:
 BDEPTH: 40 41 Validity code:
 Towing dir: 310 Wire out: 100 m Speed: 30 kn*10
 Sorted: 37 Kg Total catch: 37.82 CATCH/HOUR: 90.77

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Engraulis capensis	79.20	76150	87.25
Sardinops ocellata	5.42	684	5.97
Trachurus, Juveniles	4.56	1130	5.02
Thyrsites atun	1.58	2	1.74
Total	90.76		99.98

PROJECT STATION:2014
 DATE:29/ 5/93 GEAR TYPE: PT No:1 POSITION:Lat S 2841
 start stop duration Long E 1617
 TIME :03:16:00 03:40:00 24 (min) Purpose code: 1
 LOG :2467.20 2469.00 1.80 Area code : 1
 FDEPTH: 10 10 GearCond.code: 8
 BDEPTH: 61 54 Validity code:
 Towing dir: 350 Wire out: 100 m Speed: 45 kn*10
 Sorted: 7 Kg Total catch: 7.01 CATCH/HOUR: 17.53

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Engraulis capensis	13.15	3563	75.01
Chelidonichthys capensis	2.98	45	17.00
Thyrsites atun	0.95	5	5.42
Merluccius capensis, juveniles	0.20	8	1.14
Etrumeus whiteheadi	0.13	20	0.74
Trachurus, Juveniles	0.08	13	0.46
Sardinops ocellata	0.03	3	0.17
Sufflogobius bibarbatu	0.03	5	0.17
Total	17.55		100.11

PROJECT STATION:2019
 DATE:29/ 5/93 GEAR TYPE: PT No:2 POSITION:Lat S 2819
 start stop duration Long E 1600
 TIME :20:14:00 20:17:00 3 (min) Purpose code: 1
 LOG :2598.10 2598.20 0.10 Area code : 1
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 60 60 Validity code:
 Towing dir: 350 Wire out: 50 m Speed: 30 kn*10
 Sorted: 34 Kg Total catch: 892.58 CATCH/HOUR: 17851.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sardinops ocellata	17680.00	1633460	99.04
Engraulis capensis	171.60	24440	0.96
Total	17851.60		100.00

PROJECT STATION:2020
 DATE:30/ 5/93 GEAR TYPE: BT No:1 POSITION:Lat S 2810
 start stop duration Long E 1551
 TIME :11:42:00 11:55:00 13 (min) Purpose code: 1
 LOG :2727.80 2728.00 0.20 Area code : 1
 FDEPTH: 20 20 GearCond.code:
 BDEPTH: 20 20 Validity code:
 Towing dir: 350 Wire out: 100 m Speed: 30 kn*10
 Sorted: 18 Kg Total catch: 8000.00 CATCH/HOUR: 36923.08

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sardinops ocellata	35561.54	4480694	96.31
Engraulis capensis	1361.54	254008	3.69
Total	36923.08		100.00

PROJECT STATION:2015
 DATE:29/ 5/93 GEAR TYPE: PT No:1 POSITION:Lat S 2826
 start stop duration Long E 1606
 TIME :07:55:00 08:20:00 25 (min) Purpose code: 1
 LOG :2506.80 2508.20 1.40 Area code : 1
 FDEPTH: 20 25 GearCond.code:
 BDEPTH: 48 40 Validity code:
 Towing dir: 140 Wire out: 150 m Speed: 52 kn*10
 Sorted: 20 Kg Total catch: 30.47 CATCH/HOUR: 73.13

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Chelidonichthys capensis	33.60	218	45.95
Thyrsites atun	20.16	34	27.57
Engraulis capensis	7.97	4733	10.90
Trachurus, Juveniles	4.75	612	6.50
Merluccius capensis, juveniles	2.18	72	2.98
Callorhynchus capensis	1.75	2	2.39
Sardinops ocellata	1.20	125	1.64
Etrumeus whiteheadi	0.72	43	0.98
Sufflogobius bibarbatu	0.70	19	0.96
Sepia sp.	0.10	36	0.14
Total	73.13		100.01

PROJECT STATION:2021
 DATE:30/ 5/93 GEAR TYPE: PT No:2 POSITION:Lat S 2807
 start stop duration Long E 1547
 TIME :15:53:00 16:03:00 10 (min) Purpose code: 1
 LOG :2762.40 2763.00 0.60 Area code : 1
 FDEPTH: 40 45 GearCond.code:
 BDEPTH: 51 51 Validity code:
 Towing dir: 310 Wire out: 150 m Speed: 40 kn*10
 Sorted: 15 Kg Total catch: 303.80 CATCH/HOUR: 1822.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Engraulis capensis	1476.00	510276	80.97
Sardinops ocellata	330.00	47544	18.10
Trachurus, Juveniles	16.80	4680	0.92
Total	1822.80		99.99

PROJECT STATION:2016
 DATE:29/ 5/93 GEAR TYPE: PT No:2 POSITION:Lat S 2804
 start stop duration Long E 1545
 TIME :13:32:00 14:02:00 30 (min) Purpose code: 1
 LOG :2556.39 2558.10 1.80 Area code : 1
 FDEPTH: 15 25 GearCond.code:
 BDEPTH: 37 57 Validity code:
 Towing dir: 330 Wire out: 75 m Speed: 40 kn*10
 Sorted: 4 Kg Total catch: 22.35 CATCH/HOUR: 44.70

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Engraulis capensis	35.80	12090	80.09
Trachurus, Juveniles	3.60	706	8.05
Thyrsites atun	3.20	2	7.16
Trachurus capensis	1.50	10	3.36
Etrumeus whiteheadi	0.40	190	0.89
Sardinops ocellata	0.20	50	0.45
Total	44.70		100.00

PROJECT STATION:2022
 DATE:30/ 5/93 GEAR TYPE: PT No:2 POSITION:Lat S 2805
 start stop duration Long E 1545
 TIME :18:25:00 18:30:00 5 (min) Purpose code: 1
 LOG :2782.00 2782.50 0.50 Area code : 1
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 57 52 Validity code:
 Towing dir: 310 Wire out: 100 m Speed: 38 kn*10
 Sorted: 34 Kg Total catch: 381.81 CATCH/HOUR: 4581.72

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sardinops ocellata	3352.80	254448	73.18
Engraulis capensis	1036.20	295452	22.62
Trachurus, Juveniles	165.00	34296	3.60
Thyrsites atun	27.72	132	0.61
Total	4581.72		100.01

PROJECT STATION:2017
 DATE:29/ 5/93 GEAR TYPE: PT No:2 POSITION:Lat S 2811
 start stop duration Long E 1552
 TIME :16:19:00 16:42:00 23 (min) Purpose code: 1
 LOG :2573.90 2575.10 1.20 Area code : 1
 FDEPTH: 30 35 GearCond.code:
 BDEPTH: 38 42 Validity code:
 Towing dir: 320 Wire out: 100 m Speed: 38 kn*10
 Sorted: 5 Kg Total catch: 199.86 CATCH/HOUR: 521.37

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Thyrsites atun	310.17	363	59.49
Engraulis capensis	190.33	49888	36.51
Trachurus, Juveniles	16.28	3468	3.12
Chelidonichthys capensis	2.45	13	0.47
Sardinops ocellata	1.67	292	0.32
Etrumeus whiteheadi	0.42	42	0.08
Merluccius capensis, juveniles	0.05	5	0.01
Total	521.37		100.00

PROJECT STATION:2023
 DATE:31/ 5/93 GEAR TYPE: PT No:2 POSITION:Lat S 2550
 start stop duration Long E 1447
 TIME :20:30:00 20:35:00 5 (min) Purpose code: 1
 LOG :3046.40 3046.80 0.40 Area code : 1
 FDEPTH: 30 30 GearCond.code:
 BDEPTH: 87 83 Validity code:
 Towing dir: 90 Wire out: 150 m Speed: 40 kn*10
 Sorted: Kg Total catch: 15.00 CATCH/HOUR: 180.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Diaphus sp.	180.00		100.00
Total	180.00		100.00

PROJECT STATION:2024
 DATE: 1/ 6/93 GEAR TYPE: PT No:2 POSITION:Lat S 2525 Long E 1447
 start stop duration
 TIME :03:27:00 03:49:00 22 (min) Purpose code: 1
 LOG :3116.30 3117.40 1.10 Area code : 1
 FDEPTH: 20 20 GearCond.code:
 BDEPTH: 40 32 Validity code:
 Towing dir: 337 Wire out: 75 m Speed: 32 kn*10
 Sorted: Kg Total catch: 49.18 CATCH/HOUR: 134.13

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Chelidonichthys capensis	61.36	164	45.75	
Etrumeus whiteheadi	61.36	2315	45.75	829
Callorhynchus capensis	6.55	3	4.88	
Thyrsites atun	4.36	5	3.25	
Engraulis capensis	0.49	16	0.37	
Total	134.12		100.00	

PROJECT STATION:2025
 DATE: 1/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 2510 Long E 1445
 start stop duration
 TIME :06:55:00 07:15:00 20 (min) Purpose code: 1
 LOG :3143.00 3144.00 1.00 Area code : 1
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 47 50 Validity code:
 Towing dir: 270 Wire out: 100 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 R	0.00			
Total				

PROJECT STATION:2030
 DATE: 2/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2402 Long E 1425
 start stop duration
 TIME :06:40:00 07:07:00 27 (min) Purpose code: 1
 LOG :3349.50 3351.30 1.80 Area code : 2
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 46 55 Validity code:
 Towing dir: 214 Wire out: 100 m Speed: 47 kn*10
 Sorted: 18 Kg Total catch: 1700.00 CATCH/HOUR: 3777.78

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	3777.78	233773	100.00	837
Total	3777.78		100.00	

PROJECT STATION:2031
 DATE: 2/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2350 Long E 1421
 start stop duration
 TIME :11:03:00 11:15:00 12 (min) Purpose code: 1
 LOG :3386.00 3386.80 0.80 Area code : 2
 FDEPTH: 30 30 GearCond.code:
 BDEPTH: 78 74 Validity code:
 Towing dir: 90 Wire out: 200 m Speed: 45 kn*10
 Sorted: 5 Kg Total catch: 30.00 CATCH/HOUR: 150.00

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	148.30	11635	98.87	838
Sufflogobius bibarbatu	1.40	8960	0.93	
Engraulis capensis	0.30	90	0.20	
Total	150.00		100.00	

PROJECT STATION:2026
 DATE: 1/ 6/93 GEAR TYPE: PT No:2 POSITION:Lat S 2510 Long E 1444
 start stop duration
 TIME :09:43:00 09:53:00 10 (min) Purpose code: 1
 LOG :3158.20 3158.70 0.50 Area code : 1
 FDEPTH: 30 30 GearCond.code:
 BDEPTH: 50 47 Validity code:
 Towing dir: 90 Wire out: 150 m Speed: 38 kn*10
 Sorted: 28 Kg Total catch: 230.40 CATCH/HOUR: 1382.40

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	1382.40	49578	100.00	830
Total	1382.40		100.00	

PROJECT STATION:2032
 DATE: 2/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2341 Long E 1427
 start stop duration
 TIME :13:31:00 13:49:00 18 (min) Purpose code: 1
 LOG :3404.60 3405.90 1.30 Area code : 2
 FDEPTH: 20 20 GearCond.code:
 BDEPTH: 27 28 Validity code:
 Towing dir: 350 Wire out: 75 m Speed: 47 kn*10
 Sorted: 28 Kg Total catch: 217.22 CATCH/HOUR: 724.07

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	674.67	31323	93.18	839
Engraulis capensis	25.33	3597	3.50	841
Sardinops ocellata	19.73	747	2.72	840
Chelidonichthys capensis	4.33	13	0.60	
Total	724.06		100.00	

PROJECT STATION:2027
 DATE: 1/ 6/93 GEAR TYPE: PT No:2 POSITION:Lat S 2509 Long E 1440
 start stop duration
 TIME :11:18:00 11:25:00 7 (min) Purpose code: 1
 LOG :3169.20 3169.60 0.40 Area code : 1
 FDEPTH: 45 45 GearCond.code:
 BDEPTH: 67 69 Validity code:
 Towing dir: 225 Wire out: 200 m Speed: 40 kn*10
 Sorted: 47 Kg Total catch: 587.00 CATCH/HOUR: 5031.43

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	4860.00	200880	96.59	831
Thyrsites atun	171.43	51	3.41	
Total	5031.43		100.00	

PROJECT STATION:2033
 DATE: 2/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2312 Long E 1424
 start stop duration
 TIME :20:20:00 20:32:00 12 (min) Purpose code: 1
 LOG :3469.60 3470.20 0.60 Area code : 2
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 34 40 Validity code:
 Towing dir: 219 Wire out: 100 m Speed: 46 kn*10
 Sorted: 1 Kg Total catch: 1.23 CATCH/HOUR: 6.15

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Callorhynchus capensis	4.45	5	72.36	
Etrumeus whiteheadi	1.55	70	25.20	
Merluccius capensis, juveniles	0.10	10	1.63	
Trachurus, Juveniles	0.05	10	0.81	
Total	6.15		100.00	

PROJECT STATION:2028
 DATE: 1/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 2431 Long E 1433
 start stop duration
 TIME :21:39:00 21:50:00 11 (min) Purpose code: 1
 LOG :3271.50 3272.10 0.60 Area code : 2
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 18 16 Validity code:
 Towing dir: 225 Wire out: 100 m Speed: 40 kn*10
 Sorted: 12 Kg Total catch: 103.28 CATCH/HOUR: 563.35

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Sardinops ocellata	453.82	26695	80.56	832
Engraulis capensis	88.15	14449	15.65	833
Trachurus, Juveniles	13.53	742	2.40	834
Thyrsites atun	5.67	44	1.01	
Etrumeus whiteheadi	2.18	305	0.39	
Total	563.35		100.01	

PROJECT STATION:2034
 DATE: 2/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2311 Long E 1424
 start stop duration
 TIME :22:17:00 22:34:00 17 (min) Purpose code: 1
 LOG :3484.60 3485.60 1.00 Area code : 2
 FDEPTH: 5 5 GearCond.code:
 BDEPTH: 34 45 Validity code:
 Towing dir: 240 Wire out: 100 m Speed: 40 kn*10
 Sorted: 5 Kg Total catch: 5.50 CATCH/HOUR: 19.41

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	19.41	798	100.00	842
Total	19.41		100.00	

PROJECT STATION:2029
 DATE: 2/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 2415 Long E 1429
 start stop duration
 TIME :02:50:00 03:05:00 15 (min) Purpose code: 1
 LOG :3319.10 3319.90 0.80 Area code : 2
 FDEPTH: 5 5 GearCond.code:
 BDEPTH: 20 28 Validity code:
 Towing dir: 270 Wire out: 100 m Speed: 33 kn*10
 Sorted: 2 Kg Total catch: 2.71 CATCH/HOUR: 10.84

SPECIES	CATCH/HOUR weight	numbers	% OF TOT. C	SAMP.NO.
Etrumeus whiteheadi	5.40	292	49.82	835
Neoharriotta pinnata	3.60	4	33.21	
Trachurus, Juveniles	1.68	88	15.50	836
Engraulis capensis	0.16	16	1.48	
Total	10.84		100.01	

PROJECT STATION:2035
 DATE: 3/ 6/93 GEAR TYPE: BT No:1 POSITION:Lat S 2256 Long E 1350
 start stop duration
 TIME :04:00:00 04:30:00 30 (min) Purpose code: 1
 LOG :3540.00 3541.60 1.60 Area code : 2
 FDEPTH: 135 135 GearCond.code:
 BDEPTH: 135 135 Validity code:
 Towing dir: 360 Wire out: 600 m Speed: 32 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 R	0.00			
Total				

PROJECT STATION:2036
 DATE: 3/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2209 Long E 1400
 start stop duration Purpose code: 1
 TIME :21:15:00 21:35:00 20 (min) Area code : 2
 LOG :3707.30 3708.60 1.30 GearCond.code:
 FDEPTH: 5 5 Validity code:
 BDEPTH: 76 75
 Towing dir: 146 Wire out: 100 m Speed: 42 kn*10
 Sorted: Kg Total catch: 3.07 CATCH/HOUR: 9.21

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Callorhynchus capensis	7.65	3	83.06
Chelidonichthys capensis	1.50	3	16.29
Trachurus, Juveniles	0.06	18	0.65
Total	9.21	100.00	

PROJECT STATION:2042
 DATE: 6/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2000 Long E 1256
 start stop duration Purpose code: 1
 TIME :23:45:00 24:00:00 15 (min) Area code : 2
 LOG :4216.50 4217.30 0.80 GearCond.code:
 FDEPTH: 10 10 Validity code:
 BDEPTH: 52 64
 Towing dir: 90 Wire out: 100 m Speed: 35 kn*10
 Sorted: 30 Kg Total catch: 394.43 CATCH/HOUR: 1577.72

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sardinops ocellata	1560.00	37856	98.88
Squalus megalops	6.80	4	0.43
Trachurus, Juveniles	5.72	312	0.36
Pomatomus saltatrix	5.20	4	0.33
Total	1577.72	100.00	

PROJECT STATION:2037
 DATE: 4/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2200 Long E 1337
 start stop duration Purpose code: 1
 TIME :00:53:00 01:08:00 15 (min) Area code : 2
 LOG :3737.80 3739.00 1.20 GearCond.code:
 FDEPTH: 5 5 Validity code:
 BDEPTH: 112 113
 Towing dir: 90 Wire out: 75 m Speed: 45 kn*10
 Sorted: 25 Kg Total catch: 233.84 CATCH/HOUR: 935.36

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Engraulis capensis	770.28	105676	82.35
Sardinops ocellata	165.08	14464	17.65
Total	935.36	100.00	

PROJECT STATION:2043
 DATE: 7/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2009 Long E 1258
 start stop duration Purpose code: 1
 TIME :01:48:00 02:18:00 30 (min) Area code : 2
 LOG :4228.90 4231.10 2.20 GearCond.code:
 FDEPTH: 15 20 Validity code:
 BDEPTH: 84 88
 Towing dir: 290 Wire out: 100 m Speed: 43 kn*10
 Sorted: 3 Kg Total catch: 39.16 CATCH/HOUR: 78.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Thyrsites atun	41.00	20	52.35
Trachurus, Juveniles	22.44	4344	28.65
Etrumeus whiteheadi	11.76	756	15.02
Sardinops ocellata	2.76	60	3.52
Chatrabus melanurus	0.36	2	0.46
Merluccius capensis, juveniles	0.36	12	0.46
Total	78.68	100.46	

PROJECT STATION:2038
 DATE: 6/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2045 Long E 1316
 start stop duration Purpose code: 1
 TIME :09:15:00 09:21:00 6 (min) Area code : 2
 LOG :4096.39 4096.50 0.20 GearCond.code:
 FDEPTH: 35 35 Validity code:
 BDEPTH: 80 82
 Towing dir: 208 Wire out: 150 m Speed: 45 kn*10
 Sorted: 24 Kg Total catch: 73.20 CATCH/HOUR: 732.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Trachurus, Juveniles	732.00	68390	100.00
Total	732.00	100.00	

PROJECT STATION:2044
 DATE: 7/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2021 Long E 1303
 start stop duration Purpose code: 1
 TIME :04:42:00 05:22:00 40 (min) Area code : 2
 LOG :4250.50 4253.10 2.60 GearCond.code:
 FDEPTH: 15 40 Validity code:
 BDEPTH: 92 81
 Towing dir: 15 Wire out: 100 m Speed: 45 kn*10
 Sorted: 1 Kg Total catch: 11.35 CATCH/HOUR: 17.03

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Thyrsites atun	10.50	6	61.66
Chelidonichthys capensis	4.14	5	24.31
Trachurus, Juveniles	2.30	257	13.51
Etrumeus whiteheadi	0.09	5	0.53
Total	17.03	100.01	

PROJECT STATION:2039
 DATE: 6/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2033 Long E 1313
 start stop duration Purpose code: 1
 TIME :12:13:00 12:58:00 45 (min) Area code : 2
 LOG :4121.09 4124.39 3.30 GearCond.code:
 FDEPTH: 25 15 Validity code:
 BDEPTH: 67 75
 Towing dir: 200 Wire out: 150 m Speed: 45 kn*10
 Sorted: 18 Kg Total catch: 286.01 CATCH/HOUR: 381.35

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Trachurus, Juveniles	264.13	25505	69.26
Etrumeus whiteheadi	89.56	4024	23.48
Sufflogobius bibarbatius	27.65	3301	7.25
Total	381.34	99.99	

PROJECT STATION:2045
 DATE: 7/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2021 Long E 1303
 start stop duration Purpose code: 1
 TIME :06:23:00 07:01:00 38 (min) Area code : 2
 LOG :4257.70 4260.10 2.40 GearCond.code:
 FDEPTH: 15 15 Validity code:
 BDEPTH: 94 103
 Towing dir: 193 Wire out: 100 m Speed: 44 kn*10
 Sorted: 5 Kg Total catch: 27.77 CATCH/HOUR: 43.85

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Trachurus, Juveniles	40.66	3069	92.73
Thyrsites atun	2.84	2	6.48
Zu elongatus	0.35	2	0.80
Total	43.85	100.01	

PROJECT STATION:2040
 DATE: 6/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2009 Long E 1305
 start stop duration Purpose code: 1
 TIME :18:50:00 19:10:00 20 (min) Area code : 2
 LOG :4181.40 4182.70 1.30 GearCond.code:
 FDEPTH: 5 5 Validity code:
 BDEPTH: 36 31
 Towing dir: 90 Wire out: 100 m Speed: 40 kn*10
 Sorted: 25 Kg Total catch: 196.11 CATCH/HOUR: 588.33

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Engraulis capensis	282.96	22980	48.10
Pomatomus saltatrix	156.60	108	26.62
Sardinops ocellata	131.94	2037	22.43
Etrumeus whiteheadi	16.20	1185	2.75
Thyrsites atun	0.63	3	0.11
Total	588.33	100.01	

PROJECT STATION:2046
 DATE: 7/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2020 Long E 1301
 start stop duration Purpose code: 1
 TIME :09:37:00 09:47:00 10 (min) Area code : 2
 LOG :4281.20 4282.00 0.80 GearCond.code:
 FDEPTH: 10 10 Validity code:
 BDEPTH: 99 96
 Towing dir: 115 Wire out: 100 m Speed: 48 kn*10
 Sorted: 15 Kg Total catch: 153.20 CATCH/HOUR: 919.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Trachurus, Juveniles	918.00	7220	99.87
Etrumeus whiteheadi	1.20	60	0.13
Total	919.20	100.00	

PROJECT STATION:2041
 DATE: 6/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2009 Long E 1256
 start stop duration Purpose code: 1
 TIME :20:45:00 21:15:00 30 (min) Area code : 2
 LOG :4194.40 4196.30 1.90 GearCond.code:
 FDEPTH: 0 0 Validity code:
 BDEPTH: 92 83
 Towing dir: 27 Wire out: 100 m Speed: 38 kn*10
 Sorted: 28 Kg Total catch: 651.10 CATCH/HOUR: 1302.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Trachurus, Juveniles	1040.00	200972	79.86
Thyrsites atun	147.80	74	11.35
Etrumeus whiteheadi	89.60	6116	6.88
Merluccius sp.	24.80	736	1.90
Total	1302.20	99.99	

PROJECT STATION:2047
 DATE: 8/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1952 Long E 1248
 start stop duration Purpose code: 1
 TIME :00:16:00 00:55:00 39 (min) Area code : 3
 LOG :4417.80 4420.90 3.10 GearCond.code:
 FDEPTH: 15 15 Validity code:
 BDEPTH: 88 73
 Towing dir: 110 Wire out: 100 m Speed: 45 kn*10
 Sorted: 19 Kg Total catch: 783.70 CATCH/HOUR: 1205.69

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
weight	numbers		
Sardinops ocellata	1188.74	13952	98.59
Engraulis capensis	11.26	875	0.93
Thyrsites atun	5.69	3	0.47
Total	1205.69	99.99	

PROJECT STATION:2048
 DATE: 8/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1956 Long E 1249
 TIME :05:34:00 05:58:00 24 (min) Purpose code: 1
 LOG :4462.40 4464.20 1.80 Area code : 3
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 91 84 Validity code:
 Towing dir: 45 Wire out: 100 m Speed: 45 kn*10

Sorted: 26 Kg Total catch: 339.60 CATCH/HOUR: 849.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	432.00	5903	50.88	863
Engraulis capensis	177.50	11405	20.91	866
Trachurus, Juveniles	140.50	40628	16.55	865
Etrumeus whiteheadi	99.00	6930	11.66	864
Total	849.00		100.00	

PROJECT STATION:2054
 DATE: 9/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 1840 Long E 1206
 TIME :22:30:00 23:00:00 30 (min) Purpose code: 1
 LOG :4834.90 4836.30 1.40 Area code : 3
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 42 71 Validity code:
 Towing dir: 234 Wire out: 100 m Speed: 28 kn*10

Sorted: 7 Kg Total catch: 15.00 CATCH/HOUR: 30.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	10.80	236	36.00	884
Engraulis capensis	9.80	840	32.67	882
Trachurus, Juveniles	8.48	2492	28.27	881
Etrumeus whiteheadi	0.64	40	2.13	883
Merluccius sp.	0.28	16	0.93	
Total	30.00		100.00	

PROJECT STATION:2049
 DATE: 8/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1953 Long E 1258
 TIME :13:05:00 13:25:00 20 (min) Purpose code: 1
 LOG :4525.90 4527.50 1.60 Area code : 3
 FDEPTH: 25 45 GearCond.code:
 BDEPTH: 40 59 Validity code:
 Towing dir: 270 Wire out: 150 m Speed: 45 kn*10

Sorted: 8 Kg Total catch: 360.80 CATCH/HOUR: 1082.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	422.61	74088	39.04	868
Engraulis capensis	224.34	18129	20.73	870
Sardinops ocellata	185.22	3129	17.11	869
Trachurus capensis	163.05	5349	15.06	867
Etrumeus whiteheadi	84.78	7956	7.83	871
Merluccius capensis, juveniles	1.20	39	0.11	
Galeichthys feliceps	0.90	3	0.08	
Todaropsis eblanae	0.30	36	0.03	
Total	1082.40		99.99	

PROJECT STATION:2055
 DATE:10/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1835 Long E 1159
 TIME :02:04:00 02:17:00 13 (min) Purpose code: 1
 LOG :4858.70 4859.50 0.80 Area code : 3
 FDEPTH: 50 50 GearCond.code:
 BDEPTH: 80 85 Validity code:
 Towing dir: 200 Wire out: 200 m Speed: 36 kn*10

Sorted: 17 Kg Total catch: 500.00 CATCH/HOUR: 2307.69

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	2295.51	24037	99.47	885
Merluccius capensis, juveniles	10.80	406	0.47	
Engraulis capensis	1.34	134	0.06	
Total	2307.65		100.00	

PROJECT STATION:2050
 DATE: 8/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1942 Long E 1238
 TIME :19:33:00 19:46:00 13 (min) Purpose code: 1
 LOG :4585.00 4585.70 0.70 Area code : 3
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 102 106 Validity code:
 Towing dir: 270 Wire out: 100 m Speed: 47 kn*10

Sorted: 31 Kg Total catch: 1504.69 CATCH/HOUR: 6944.72

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	6929.98	282462	99.69	872
Thyrsites atun	20.77	9	0.30	
Merluccius capensis	0.88	5	0.01	
Total	6944.73		100.00	

PROJECT STATION:2056
 DATE:10/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1823 Long E 1153
 TIME :11:16:00 11:23:00 7 (min) Purpose code: 1
 LOG :4913.80 4914.10 0.30 Area code : 3
 FDEPTH: 20 40 GearCond.code:
 BDEPTH: 52 48 Validity code:
 Towing dir: 60 Wire out: 150 m Speed: 45 kn*10

Sorted: 17 Kg Total catch: 135.00 CATCH/HOUR: 1157.14

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Etrumeus whiteheadi	549.43	41657	47.48	888
Trachurus, Juveniles	372.94	107263	32.23	889
Engraulis capensis	179.74	16303	15.53	887
Sardinops ocellata	55.03	4089	4.76	886
Total	1157.14		100.00	

PROJECT STATION:2051
 DATE: 8/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1940 Long E 1246
 TIME :22:30:00 23:05:00 35 (min) Purpose code: 1
 LOG :4609.30 4611.50 2.20 Area code : 3
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 60 47 Validity code:
 Towing dir: 90 Wire out: 100 m Speed: 45 kn*10

Sorted: 25 Kg Total catch: 89.39 CATCH/HOUR: 153.24

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	102.86	1101	67.12	873
Thyrsites atun	19.37	9	12.64	
Engraulis capensis	10.49	813	6.85	874
Merluccius capensis, juveniles	9.98	324	6.51	876
Trachurus, Juveniles	6.79	905	4.43	875
Pomatomus saltatrix	3.75	2	2.45	
Total	153.24		100.00	

PROJECT STATION:2057
 DATE:10/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1759 Long E 1144
 TIME :19:50:00 20:13:00 23 (min) Purpose code: 1
 LOG :4990.40 4991.60 1.20 Area code : 3
 FDEPTH: 25 25 GearCond.code:
 BDEPTH: 75 68 Validity code:
 Towing dir: 340 Wire out: 100 m Speed: 38 kn*10

Sorted: 2 Kg Total catch: 13.37 CATCH/HOUR: 34.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	22.96	7122	65.83	890
Engraulis capensis	9.00	691	25.80	891
Lepidopus caudatus	2.40	10	6.88	
Sardinops ocellata	0.52	26	1.49	
Raja sp.	0.00	3		
Total	34.88		100.00	

PROJECT STATION:2052
 DATE: 9/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1911 Long E 1235
 TIME :06:25:00 06:31:00 6 (min) Purpose code: 1
 LOG :4681.60 4682.00 0.40 Area code : 3
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 33 36 Validity code:
 Towing dir: 210 Wire out: 100 m Speed: 45 kn*10

Sorted: 25 Kg Total catch: 331.80 CATCH/HOUR: 3318.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	3100.00	93460	93.43	877
Engraulis capensis	185.00	11230	5.58	878
Sardinops ocellata	19.00	510	0.57	
Thyrsites atun	14.40	10	0.43	
Total	3318.40		100.01	

PROJECT STATION:2058
 DATE:10/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1801 Long E 1138
 TIME :21:57:00 22:20:00 23 (min) Purpose code: 1
 LOG :5002.10 5003.50 1.40 Area code : 3
 FDEPTH: 115 100 GearCond.code:
 BDEPTH: 127 119 Validity code:
 Towing dir: 336 Wire out: 450 m Speed: 39 kn*10

Sorted: 27 Kg Total catch: 3382.00 CATCH/HOUR: 8822.61

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	8804.35	92254	99.79	892
Beryx splendens	12.26	391	0.14	
Trigla lyra	6.52	65	0.07	
Total	8823.13		100.00	

PROJECT STATION:2053
 DATE: 9/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1844 Long E 1217
 TIME :18:17:00 18:26:00 9 (min) Purpose code: 1
 LOG :4796.40 4797.00 0.60 Area code : 3
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 24 24 Validity code:
 Towing dir: 145 Wire out: 75 m Speed: 47 kn*10

Sorted: 65 Kg Total catch: 1647.75 CATCH/HOUR: 10985.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Engraulis capensis	9916.67	661113	90.27	879
Sardinops ocellata	1068.33	49200	9.73	880
Total	10985.00		100.00	

PROJECT STATION:2059
 DATE:11/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 1638 Long E 1146
 TIME :18:05:00 18:29:00 24 (min) Purpose code: 1
 LOG :5183.50 5184.50 1.00 Area code : 3
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 13 17 Validity code:
 Towing dir: 325 Wire out: 100 m Speed: 29 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:2060
 DATE:11/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 1629 Long E 1146
 start stop duration
 TIME :19:50:00 20:10:00 20 (min) Purpose code: 1
 LOG :5195.80 5196.60 0.80 Area code : 3
 FDEPTH: 5 5 GearCond.code:
 BDEPTH: 11 11 Validity code:
 Towing dir: 128 Wire out: 100 m Speed: 29 kn*10
 Sorted: 18 Kg Total catch: 221.56 CATCH/HOUR: 664.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Engraulis capensis	362.88	50616	54.59	894
Trachurus trecae	266.40	2484	40.08	893
C E P H A L O P O D A	22.68	324	3.41	
Lepidopus caudatus	12.30	60	1.85	
Sardinops ocellata	0.42	3	0.06	
Total	664.68		99.99	

PROJECT STATION:2066
 DATE:13/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1707 Long E 1142
 start stop duration
 TIME :07:45:00 07:58:00 13 (min) Purpose code: 1
 LOG :5490.40 5491.40 1.00 Area code : 3
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 32 34 Validity code:
 Towing dir: 360 Wire out: 100 m Speed: 52 kn*10
 Sorted: 26 Kg Total catch: 26.25 CATCH/HOUR: 121.15

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	61.38	600	50.66	899
Thyrsites atun	47.54	55	39.24	
Pomatomus saltatrix	4.75	9	3.92	
Stromateus fiatola	4.71	9	3.89	
Loligo vulgaris	1.80	23	1.49	
Etrumeus whiteheadi	0.42	32	0.35	
Sepia sp.	0.28	5	0.23	
Engraulis capensis	0.28	23	0.23	
Total	121.16		100.01	

PROJECT STATION:2061
 DATE:12/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1616 Long E 1145
 start stop duration
 TIME :06:30:00 06:47:00 17 (min) Purpose code: 1
 LOG :5280.30 5281.20 0.90 Area code : 3
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 34 34 Validity code:
 Towing dir: 180 Wire out: 125 m Speed: 42 kn*10
 Sorted: 16 Kg Total catch: 144.16 CATCH/HOUR: 508.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trecae	508.24	4108	99.89	895
C E P H A L O P O D A	0.56	14	0.11	
Total	508.80		100.00	

PROJECT STATION:2067
 DATE:13/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 1638 Long E 1139
 start stop duration
 TIME :12:51:00 13:21:00 30 (min) Purpose code: 1
 LOG :5534.60 5536.30 1.70 Area code : 3
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 32 18 Validity code:
 Towing dir: 360 Wire out: 150 m Speed: 36 kn*10
 Sorted: 24 Kg Total catch: 50.60 CATCH/HOUR: 101.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Diplodus sargus capensis	96.00	432	94.86	900
Sarda sarda	4.00	6	3.95	901
Pomatomus saltatrix	1.20	4	1.19	
Total	101.20		100.00	

PROJECT STATION:2062
 DATE:12/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1601 Long E 1138
 start stop duration
 TIME :10:30:00 10:45:00 15 (min) Purpose code: 1
 LOG :5314.40 5315.40 1.00 Area code : 3
 FDEPTH: 30 40 GearCond.code:
 BDEPTH: 113 110 Validity code:
 Towing dir: 20 Wire out: 150 m Speed: 42 kn*10
 Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION:2068
 DATE:13/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1647 Long E 1129
 start stop duration
 TIME :15:39:00 16:12:00 33 (min) Purpose code: 1
 LOG :5553.30 5555.70 2.40 Area code : 3
 FDEPTH: 10 15 GearCond.code:
 BDEPTH: 109 102 Validity code:
 Towing dir: 75 Wire out: 100 m Speed: 37 kn*10
 Sorted: 18 Kg Total catch: 150.00 CATCH/HOUR: 272.73

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	272.73	33455	100.00	902
Total	272.73		100.00	

PROJECT STATION:2063
 DATE:12/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1637 Long E 1139
 start stop duration
 TIME :17:22:00 17:44:00 22 (min) Purpose code: 1
 LOG :5371.80 5373.50 1.70 Area code : 3
 FDEPTH: 25 40 GearCond.code:
 BDEPTH: 42 43 Validity code:
 Towing dir: 360 Wire out: 175 m Speed: 40 kn*10
 Sorted: 20 Kg Total catch: 362.16 CATCH/HOUR: 987.71

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trecae	981.82	9897	99.40	896
Scomber japonicus	5.89	49	0.60	
Total	987.71		100.00	

PROJECT STATION:2069
 DATE:13/ 6/93 GEAR TYPE: BT No:1 POSITION:Lat S 1647 Long E 1128
 start stop duration
 TIME :17:12:00 17:37:00 25 (min) Purpose code: 1
 LOG :5562.60 5563.80 1.20 Area code : 3
 FDEPTH: 110 105 GearCond.code:
 BDEPTH: 110 105 Validity code:
 Towing dir: 60 Wire out: 500 m Speed: 32 kn*10
 Sorted: 22 Kg Total catch: 1848.14 CATCH/HOUR: 4435.54

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	352.00	7903	80.08	903
Dentex macrophthalmus	819.84	10944	18.48	
Merluccius capensis	51.48	125	1.16	904
Squalus megalops	6.00	14	0.14	
SPARIDAE	2.52	2	0.06	
Mustelus mustelus	2.04	2	0.05	
Zeus faber	1.63	5	0.04	
Todaropsis eblanae	0.02	2		
Raja miraletus	0.00	2		
Hexanchus griseus	0.00	2		
Total	4435.55		100.01	

PROJECT STATION:2064
 DATE:12/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 1648 Long E 1141
 start stop duration
 TIME :22:15:00 22:30:00 15 (min) Purpose code: 1
 LOG :5415.40 5416.00 0.60 Area code : 3
 FDEPTH: 5 5 GearCond.code:
 BDEPTH: 23 19 Validity code:
 Towing dir: 90 Wire out: 100 m Speed: 32 kn*10
 Sorted: 26 Kg Total catch: 3000.00 CATCH/HOUR: 12000.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	12000.00	129144	100.00	897
Total	12000.00		100.00	

PROJECT STATION:2070
 DATE:14/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1735 Long E 1142
 start stop duration
 TIME :10:23:00 10:37:00 14 (min) Purpose code: 1
 LOG :5739.00 5739.90 0.90 Area code : 3
 FDEPTH: 20 20 GearCond.code:
 BDEPTH: 46 52 Validity code:
 Towing dir: 323 Wire out: 100 m Speed: 41 kn*10
 Sorted: 16 Kg Total catch: 50.25 CATCH/HOUR: 215.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	78.43	2657	36.42	905
Engraulis capensis	65.57	5859	30.45	906
Etrumeus whiteheadi	61.71	4123	28.65	907
Thyrsites atun	7.71	9	3.58	
Diplodus sargus capensis	1.20	4	0.56	
Trachurus, juveniles	0.51	64	0.24	
Lepidopus caudatus	0.21	4	0.10	
Total	215.34		100.00	

PROJECT STATION:2065
 DATE:13/ 6/93 GEAR TYPE: PT No: POSITION:Lat S 1650 Long E 1141
 start stop duration
 TIME :03:18:00 03:48:00 30 (min) Purpose code: 1
 LOG :5456.80 5458.40 1.60 Area code : 3
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 22 19 Validity code:
 Towing dir: 30 Wire out: 150 m Speed: 30 kn*10
 Sorted: 28 Kg Total catch: 5001.91 CATCH/HOUR: 10003.82

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	10000.00	63972	99.96	898
Mustelus mustelus	3.60	2	0.04	
Galeichthys feliceps	0.22	2		
Total	10003.82		100.00	

PROJECT STATION:2071
 DATE:14/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1745 Long E 1144
 start stop duration
 TIME :12:52:00 13:14:00 22 (min) Purpose code: 1
 LOG :5758.90 5760.40 1.50 Area code : 3
 FDEPTH: 15 20 GearCond.code:
 BDEPTH: 35 50 Validity code:
 Towing dir: 360 Wire out: 100 m Speed: 35 kn*10
 Sorted: 31 Kg Total catch: 79.42 CATCH/HOUR: 216.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Engraulis capensis	174.22 14236	80.43	910
Sardinops ocellata	22.17 663	10.24	908
Etrumeus whiteheadi	17.32 1282	8.00	909
Todaropsis eblanae	2.05 136	0.95	
Trachurus capensis	0.49 8	0.23	
Trachurus, Juveniles	0.35 27	0.16	
Total	216.60	100.01	

PROJECT STATION:2076
 DATE:15/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1840 Long E 1125
 start stop duration
 TIME :05:32:00 06:02:00 30 (min) Purpose code: 1
 LOG :5891.10 5893.70 2.60 Area code : 3
 FDEPTH: 75 120 GearCond.code: 3
 BDEPTH: 250 280 Validity code: 4
 Towing dir: 220 Wire out: 300 m Speed: 48 kn*10
 Sorted: Kg Total catch: 3.88 CATCH/HOUR: 7.76

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Synagrops microlepis	4.02 542	51.80	
Trachurus capensis	3.66 22	47.16	926
Trachurus, Juveniles	0.08 10	1.03	925
Total	7.76	99.99	

PROJECT STATION:2077
 DATE:15/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1823 Long E 1153
 start stop duration
 TIME :10:46:00 11:30:00 44 (min) Purpose code: 1
 LOG :5937.20 5939.50 2.30 Area code : 3
 FDEPTH: 30 45 GearCond.code:
 BDEPTH: 53 72 Validity code:
 Towing dir: 288 Wire out: 150 m Speed: 40 kn*10
 Sorted: 19 Kg Total catch: 19.42 CATCH/HOUR: 26.48

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Etrumeus whiteheadi	16.64 903	62.84	928
Todaropsis eblanae	3.55 72	13.41	
Engraulis capensis	3.49 262	13.18	927
Trachurus, Juveniles	1.00 59	3.78	930
Sardinops ocellata	0.72 8	2.72	929
Lepidopus caudatus	0.42 18	1.59	
Trachurus capensis	0.41 3	1.55	
Sepia orbignyana	0.15 1	0.57	
Zeus faber	0.11 3	0.42	
Total	26.49	100.06	

PROJECT STATION:2072
 DATE:14/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1753 Long E 1144
 start stop duration
 TIME :15:22:00 15:49:00 27 (min) Purpose code: 1
 LOG :5777.50 5779.20 1.70 Area code : 3
 FDEPTH: 10 60 GearCond.code:
 BDEPTH: 61 62 Validity code:
 Towing dir: 360 Wire out: 200 m Speed: 40 kn*10
 Sorted: 25 Kg Total catch: 310.25 CATCH/HOUR: 689.44

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Engraulis capensis	488.89 36393	70.91	912
Sardinops ocellata	64.78 1996	9.40	911
Thyrsites atun	48.89 58	7.09	915
Etrumeus whiteheadi	45.47 2493	6.60	913
Trachurus capensis	23.33 71	3.38	916
Trachurus, Juveniles	18.09 2004	2.62	914
Total	689.45	100.00	

PROJECT STATION:2078
 DATE:15/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1836 Long E 1201
 start stop duration
 TIME :15:27:00 15:42:00 15 (min) Purpose code: 1
 LOG :5974.90 5975.80 0.90 Area code : 3
 FDEPTH: 60 70 GearCond.code:
 BDEPTH: 75 82 Validity code:
 Towing dir: 270 Wire out: 250 m Speed: 37 kn*10
 Sorted: 25 Kg Total catch: 129.75 CATCH/HOUR: 519.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachurus capensis	420.00 4900	80.92	932
Trachurus, Juveniles	35.00 3560	6.74	931
Engraulis capensis	28.60 2000	5.51	934
Merluccius paradoxus, juvenile	20.40 460	3.93	
Trigla lyra	8.80 16	1.70	
Todaropsis eblanae	4.00	0.77	
Sardinops ocellata	1.60 100	0.31	933
Lepidopus caudatus	0.60	0.12	
Total	519.00	100.00	

PROJECT STATION:2073
 DATE:14/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1812 Long E 1150
 start stop duration
 TIME :20:48:00 20:51:00 11 (min) Purpose code: 1
 LOG :5823.60 5824.00 0.40 Area code : 3
 FDEPTH: 12 12 GearCond.code:
 BDEPTH: 30 30 Validity code:
 Towing dir: 140 Wire out: 75 m Speed: 5 kn*10
 Sorted: 10 Kg Total catch: 15000.00 CATCH/HOUR: 81818.18

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Sardinops ocellata	80000.00 4349856	97.78	917
Total	80000.00	97.78	

PROJECT STATION:2079
 DATE:15/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1838 Long E 1209
 start stop duration
 TIME :20:13:00 20:43:00 30 (min) Purpose code: 1
 LOG :6018.60 6020.20 1.60 Area code : 3
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 25 25 Validity code:
 Towing dir: 125 Wire out: 100 m Speed: 37 kn*10
 Sorted: Kg Total catch: 0.77 CATCH/HOUR: 1.54

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachurus capensis	0.64 14	41.56	936
Sardinops ocellata	0.50 6	32.47	935
Thyrsites atun	0.38 2	24.68	
Engraulis capensis	0.02 2	1.30	
Total	1.54	100.01	

PROJECT STATION:2074
 DATE:14/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1810 Long E 1140
 start stop duration
 TIME :22:58:00 23:12:00 14 (min) Purpose code: 1
 LOG :5839.80 5840.80 1.00 Area code : 3
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 131 124 Validity code:
 Towing dir: 80 Wire out: 75 m Speed: 46 kn*10
 Sorted: 14 Kg Total catch: 59.36 CATCH/HOUR: 254.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachurus, Juveniles	225.43 61067	88.61	918
Engraulis capensis	24.51 2091	9.63	920
Etrumeus whiteheadi	2.23 137	0.88	921
Sardinops ocellata	2.23 69	0.88	919
Total	254.40	100.00	

PROJECT STATION:2080
 DATE:16/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1847 Long E 1210
 start stop duration
 TIME :09:22:00 09:42:00 20 (min) Purpose code: 1
 LOG :6034.70 6035.80 1.10 Area code : 3
 FDEPTH: 40 40 GearCond.code:
 BDEPTH: 85 75 Validity code:
 Towing dir: 255 Wire out: 100 m Speed: 50 kn*10
 Sorted: 21 Kg Total catch: 107.70 CATCH/HOUR: 323.10

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Engraulis capensis	243.75 17640	75.44	937
Trachurus, Juveniles	57.45 13266	17.78	939
Sardinops ocellata	19.50 870	6.04	940
Etrumeus whiteheadi	1.50 150	0.46	938
Merluccius sp.	0.90 30	0.28	
Total	323.10	100.00	

PROJECT STATION:2075
 DATE:15/ 6/93 GEAR TYPE: BT No:1 POSITION:Lat S 1844 Long E 1226
 start stop duration
 TIME :03:41:00 04:11:00 30 (min) Purpose code: 1
 LOG :5883.90 5885.20 1.30 Area code : 3
 FDEPTH: 306 286 GearCond.code:
 BDEPTH: 306 286 Validity code:
 Towing dir: 42 Wire out: 1000 m Speed: 32 kn*10
 Sorted: 81 Kg Total catch: 1370.20 CATCH/HOUR: 2740.40

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Merluccius capensis, female	1214.00 1434	44.30	923
Helicolenus dactylopterus	774.00 18434	28.24	
Merluccius capensis, male	440.00 632	16.06	922
Chlorophthalmus punctatus	251.00 9066	9.16	
Trachyrinus scabrus	24.34 800	0.89	
Epigonus denticulatus	16.00 634	0.58	
Galeus pollii	10.00 134	0.36	
Raja straeleni	2.16 6	0.08	
Trachurus capensis	2.14 8	0.08	924
Lophius upsicephalus	2.00 6	0.07	
PORTUNIDAE	1.32 34	0.05	
Todarodes sagittatus	1.00 4	0.04	
Laemonema laureysi	0.66 66	0.02	
Todaropsis eblanae	0.34 34	0.01	
Total	2738.96	99.94	

PROJECT STATION:2081
 DATE:16/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1854 Long E 1204
 start stop duration
 TIME :10:23:00 10:43:00 20 (min) Purpose code: 1
 LOG :6046.20 6047.40 1.20 Area code : 3
 FDEPTH: 20 20 GearCond.code:
 BDEPTH: 123 118 Validity code:
 Towing dir: 40 Wire out: 100 m Speed: 44 kn*10
 Sorted: 7 Kg Total catch: 30.28 CATCH/HOUR: 90.84

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP.NO.
	weight numbers		
Trachurus, Juveniles	90.84 21411	100.00	941
Total	90.84	100.00	

PROJECT STATION:2082
 DATE:16/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1856 Long E 1219
 start stop duration
 TIME :14:51:00 15:01:00 10 (min) Purpose code: 1
 LOG :6085.80 6086.30 0.50 Area code : 3
 FDEPTH: 50 50 GearCond.code:
 BDEPTH: 85 85 Validity code:
 Towing dir: 255 Wire out: 200 m Speed: 45 kn*10
 Sorted: 13 Kg Total catch: 66.45 CATCH/HOUR: 398.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	287.10	57012	72.01	942
Etrumeus whiteheadi	82.80	7014	20.77	943
Engraulis capensis	22.50	1980	5.64	944
Sardinops ocellata	5.10	330	1.28	945
Galeichthys feliceps	1.20	6	0.30	
Total	398.70		100.00	

PROJECT STATION:2088
 DATE:17/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1942 Long E 1219
 start stop duration
 TIME :22:30:00 22:34:00 4 (min) Purpose code: 1
 LOG :6360.40 6360.70 0.30 Area code : 3
 FDEPTH: 16 16 GearCond.code:
 BDEPTH: 217 219 Validity code:
 Towing dir: 272 Wire out: 100 m Speed: 42 kn*10
 Sorted: 34 Kg Total catch: 4081.65 CATCH/HOUR: 61224.75

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinops ocellata	6120.00	768600	99.96	956
Thyrsites atun	24.75	15	0.04	
Total	61224.75		100.00	

PROJECT STATION:2083
 DATE:16/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1923 Long E 1208
 start stop duration
 TIME :22:32:00 23:02:00 30 (min) Purpose code: 1
 LOG :6158.60 6160.40 1.80 Area code : 3
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 223 223 Validity code:
 Towing dir: 142 Wire out: 75 m Speed: 46 kn*10
 Sorted: 19 Kg Total catch: 172.95 CATCH/HOUR: 344.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	249.30	18090	72.32	946
Engraulis capensis	47.88	3384	13.89	949
Sardinops ocellata	23.40	1260	6.79	948
Merluccius sp.	14.40	126	4.18	
Etrumeus whiteheadi	9.72	432	2.82	947
Total	344.70		100.00	

PROJECT STATION:2089
 DATE:18/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2039 Long E 1338
 start stop duration
 TIME :11:25:00 11:55:00 30 (min) Purpose code: 1
 LOG :6485.40 6486.60 1.20 Area code : 2
 FDEPTH: 260 260 GearCond.code:
 BDEPTH: 290 280 Validity code:
 Towing dir: 50 Wire out: 700 m Speed: 30 kn*10
 Sorted: 26 Kg Total catch: 26.01 CATCH/HOUR: 52.02

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	38.00	192	73.05	957
Merluccius capensis, female	9.40	20	18.07	959
Merluccius capensis, male	3.80	16	7.30	958
Todarodes sagittatus	0.82	2	1.58	
MYCTOPHIDAE	0.00	6		
Total	52.02		100.00	

PROJECT STATION:2090
 DATE:18/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 2059 Long E 1313
 start stop duration
 TIME :19:43:00 19:57:00 14 (min) Purpose code: 1
 LOG :6548.60 6549.20 0.60 Area code : 2
 FDEPTH: 25 25 GearCond.code:
 BDEPTH: 115 108 Validity code:
 Towing dir: 330 Wire out: 150 m Speed: 37 kn*10
 Sorted: Kg Total catch: 20.00 CATCH/HOUR: 85.71

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
GOBIDAE juvenile	85.71		100.00	
Total	85.71		100.00	

PROJECT STATION:2084
 DATE:17/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1932 Long E 1211
 start stop duration
 TIME :00:59:00 01:29:00 30 (min) Purpose code: 1
 LOG :6174.20 6175.70 1.50 Area code : 3
 FDEPTH: 80 100 GearCond.code: 3
 BDEPTH: 226 225 Validity code: 4
 Towing dir: 360 Wire out: 250 m Speed: 40 kn*10
 Sorted: Kg Total catch: 0.20 CATCH/HOUR: 0.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	0.40		100.00	
Total	0.40		100.00	

PROJECT STATION:2085
 DATE:17/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1947 Long E 1218
 start stop duration
 TIME :07:40:00 07:50:00 10 (min) Purpose code: 1
 LOG :6229.80 6230.40 0.60 Area code : 3
 FDEPTH: 20 20 GearCond.code: 3
 BDEPTH: 190 195 Validity code: 4
 Towing dir: 270 Wire out: 150 m Speed: 36 kn*10
 Sorted: 14 Kg Total catch: 88.74 CATCH/HOUR: 532.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	433.80	68220	81.47	950
Etrumeus whiteheadi	94.32	5256	17.71	951
Sardinops ocellata	3.60	72	0.60	
Engraulis capensis	0.72	36	0.14	
Total	532.44		100.00	

PROJECT STATION:2086
 DATE:17/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1941 Long E 1217
 start stop duration
 TIME :15:15:00 15:36:00 21 (min) Purpose code: 1
 LOG :6300.80 6302.20 1.40 Area code : 3
 FDEPTH: 25 50 GearCond.code:
 BDEPTH: 191 179 Validity code:
 Towing dir: 80 Wire out: 100 m Speed: 43 kn*10
 Sorted: 26 Kg Total catch: 546.26 CATCH/HOUR: 1560.74

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	1362.86	185400	87.32	952
Etrumeus whiteheadi	180.00		11.53	953
Sardinops ocellata	17.32	289	1.11	954
Argonauta argo	0.57	3	0.04	
Total	1560.74		100.00	

PROJECT STATION:2087
 DATE:17/ 6/93 GEAR TYPE: PT No:1 POSITION:Lat S 1938 Long E 1218
 start stop duration
 TIME :19:30:00 19:35:00 5 (min) Purpose code: 1
 LOG :6336.80 6337.20 0.40 Area code : 3
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 180 177 Validity code:
 Towing dir: 307 Wire out: 100 m Speed: 50 kn*10
 Sorted: 25 Kg Total catch: 375.00 CATCH/HOUR: 4500.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus, Juveniles	4500.00	541596	100.00	955
Total	4500.00		100.00	

Annex III Instruments and fishing gear used

ACOUSTIC INSTRUMENTS

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

Based on a calibration experiment using a standard copper sphere in Baia dos Tigres on 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.

