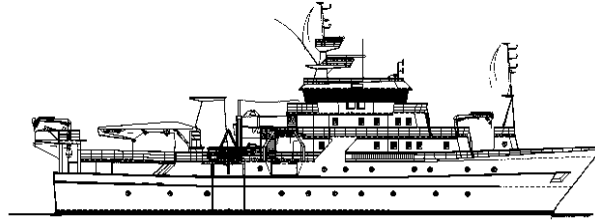


CRUISE REPORT >DR. FRIDTJOF NANSEN=



# DRAFT REPORT

## SURVEY OF THE FISH RESOURCES OF NAMIBIA

Cruise Report No 3/99

**BENEFIT Hake survey methodology**  
27 May - 12 June 1999

by

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**Institute of Marine Research**  
**Bergen, 1999**

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## CHAPTER 1 INTRODUCTION

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### 1.1 Objectives

The cruise had the following overall objective:

- To work towards a representative quantitative bottom trawl sampling system for hake

Specific objectives were:

- To find the optimal vertical opening for a hake survey bottom trawl
- To establish the amount and type of hake passing over the trawl head rope
- To compare an 8 m opening commercial hake trawl to the 5 m “Nansen” trawl
- To quantify hake area densities from night echograms and night bottom trawl catches
- To relate hake area densities from these night experiments to hake area densities from day-time trawl catches in order to establish a catchability function for the sampling trawl

The first and second specific objectives were to be met by trawling with an echosounder looking upwards from the headrope of the trawl, and supplementing these data by doing pelagic hauls near the bottom with the multisampler, to collect samples from the different layers above the headrope.

The third specific objective was to be met by comparing a borrowed commercial high (8 m) opening hake net with the Nansen trawl.

The fourth and fifth specific objectives were to be addressed by acoustically surveying the trawl path during the night at slow speed generating high resolution echograms where individual fish traces could be counted in order to establish fish area densities. A night trawl catch described the amount of fish remaining on the bottom. The area densities generated

from echogram counts and the night time trawl catches then were to be compared to the daytime trawl catches in order to establish catchability values for the different trawl catches with the view to either estimate an average  $q$ , or establish a diurnal  $q$  function.

## 1.2 Participation

The scientific staff consisted of:

From Namibia:

Titus ILENDE, Paul KAINGE, David KAMATI, Malakia SHIMANDA, Shaun WELLS

From South Africa:

Chris SMITH

From Norway:

Yngve FJELLSTAD, Ingvar HUSE, Magnar MJANGER, Jan Tore ØVREDAL

## 1.3 Narrative

The working areas are shown in Figure 1.

The vessel left Walvis Bay at 1800 h of 27 May and steamed south west. At S 24°25', E 13°40' at 320 m depth (Figure 1), good concentrations of cape hake and also some small deep water hake were found, and the work commenced here. The first trawl was shot at 0615 h in the morning, and the last was retrieved at sunset, around 1730 h. This area was worked for two days, after which the "Nansen" moved about 20 n. m. to the north west (Figure 1) to find greater depth (360 m) and more deep water hake. After two days here the ship had to return a sick technical assistant from NatMIRC to Walvis Bay, and a day was lost. On returning, an area further south, at position S 25°22', E 13°44' (depth 330 m) was fished for two days after which operations were moved to S 25°34', E 13°41' at 390 m. After two days at this position also the course was set north to meet with "Welwitchia" west of Walvis Bay at S 22°40', E 12°20' at 330 m depth. Fishing continued here for two days also until "Welwitchia" arrived 7 June in the evening. The following day was spent rigging the commercial trawl and training the "Welwitchia" team in the use of the acoustic equipment they were to borrow for horse mackerel avoidance studies. 9 June was spent doing comparative fishing with the commercial trawl and the "Nansen" standard bottom trawl, as

well as trying to improve the “Nansen” auto trawl system. During the night the ship moved further south (Figure 1) to find hake with a pronounced vertical distribution, and continued the comparative fishing until the evening of 11 June when the course was set for Walvis Bay, arriving there early 12 June. The weather was basically favourable during the whole cruise, and no time was lost due to the weather conditions.

Figure 1. The work areas.

## CHAPTER 2 HAKE SURVEY METHODOLOGY

### 2.1 Introduction

In Namibian hake bottom trawl surveys all catches are sampled for composition of weights and numbers by species. The bottom trawl has a headline of 31 m (float line), a footrope of 47 m, headline height of 5 m and a distance between the wings during towing of about 22 m. All trawl hauls are monitored by SCANMAR trawl sensors (headline height and distance between the doors). This technology allows the determination of the correct trawl bottom time. For conversion of catch rates to fish densities the area between the wings is assumed to be equal to the effective fishing area and the retention factor  $q$  is assumed to be equal to 1. This obviously is not correct, but as yet no data are readily available to estimate the catchability, the  $q$  is maintained at unity. The trawl doors are Thyborøn 7.9 m<sup>2</sup>, and the trawl is a simple two panel Gisund Super. The length of a haul over bottom, recorded as distance trawled, is normally measured by log pulses from the GPS, and checked against the lengths of the traces of the hauls on the GPS plot on the MacSea system. Catch data are given in Annex I.

The swept area of a trawl haul is a crucial parameter in swept area survey methodology, particularly if the survey is supposed to estimate total biomass rather than just give a yearly index. Swept distance is easy to measure, while the sweeping width is the difficult parameter. In Namibian hake surveys a swept width of 18.5 m is used. If the assumption for hake is that wing spread is the correct sweeping width, we are in other words overestimating the hake population as the true wing spread is 22 m. Some attempts have been made to estimate a catchability factor for hake, but this is a general problem in swept area assessment methodology all over the world, and the methodological aspects are very complicated, as it is almost impossible to isolate each parameter involved. The problem consists of assessing how much fish of different species and size groups are herded towards the trawl opening by doors, sand clouds stirred up by the doors, and the bridles which attach the net to the doors, and which are about 50 m long. In addition there is also potential escapement over and under the trawl. No one has yet succeeded in assessing the true efficiency of a trawl gear except in very shallow waters. Still the swept area methodology seems to give the most consistent results for assessing demersal fish. Hake definitely seem to be less herded than e.g. cod in the experiments carried out so far, and the use of a slightly reduced (18.5 m) swept width in the assessment as opposed to the measured 22 m wing spread compensates for escapement over and under the trawl. Still this problem needs to be further addressed, and will be during this

cruise. A data material will be collected, consisting of night time echograms of hake. Most of the hake will be pelagically distributed at night, and can be counted as single fish traces from the echograms. In addition, night time trawl catches will reveal how much hake still remain on the bottom. The sum of trace counts and trawl catches will then represent the total density in the area. These values will be compared to the day-time trawl catches to hopefully reveal a set of catchability factors. These factors can then either be averaged to come up with a mean value  $q$  for the trawl, or modelled over the daytime period to provide a  $q$  which is modulated by time of day. The data will have to undergo a thorough analysis, and should preferably form the basis of a thesis.

The problem of mid-water occurrence of hake and its effect on the swept area assessments has been discussed in earlier cruise reports. Mesopelagic fish quite often cover the pelagic zone close to the bottom in the daytime, making it impossible to correct for pelagic hake. Consequently the hake biomass may be underestimated if no correction is made for situations where the pelagic hake distribution is unknown due to shading by mesopelagic fish and plankton. Probably this problem is most pronounced in the north where the acoustic correction to the trawl index constitutes an average of about 10 % addition to the demersal biomass in the day hauls where the conditions allow it to be assessed. It is, however, uncertain whether hake actually migrate into the dense mesopelagic fish shoals. This will be investigated by means of pelagic trawling during this cruise.

Carrying the aspect of midwater occurrence of hake further, the vertical opening of the sampling trawl is the main focal point of this year's methodology cruise. There are several questions to be asked:

-Do the present sampling trawl catches represent the true size and species composition of the stocks to be investigated?

-Are the present sampling trawls used high enough to adequately sample the major part of the vertical hake distribution throughout the day (including dusk and dawn), as well as on days with low illumination/high phytoplankton biomass?

-What is the abundance, size- and species composition of the hake passing over the headrope of the present sampling trawls?

-Can alternative trawl designs help in alleviating potential problems in this regard?



## 2.2 Methods and materials

The main instrumentation component used in this experiment was an upward looking echo sounder mounted on the trawl head rope. It consisted of a Simrad EY 500 echo sounder with a laptop PC mounted in an underwater unit built for at least 400 m of depth, mounted on the trawl top panel close to the mid of the head rope. Power was supplied from a separate underwater container mounted close to the other container. The ES 3812 (38 kHz, 12°) transducer applied was mounted at the top mid of the head rope transmitting and receiving upwards towards the surface. The system was calibrated at 30 m bottom depth in Walvis Bay harbour 1 June.

The PC disk had the capacity to record sample data for 5-6 hours, well in excess of the 30 minute trawl hauls applied. The collected data were transferred to the “Dr. Fridtjof Nansen” network, normally after each trawl haul. The data files were subsequently transformed to EK 500 format and the files were post processed on the Bergen Echo Integrator system. Horizontal resolution applied was 0.1 n. m., while vertical resolution was 1 m.

Trawling took place between 320 and 390 m depth at four locations on the Namibian shelf (see Figure 1). Trawling was commenced at dawn (0615 h) and continued until dusk at around 1730 h. Two 30 minute 3 knot bottom tows were normally fished first, then a pelagic haul using the Multisampler. This device attaches to the extension piece of the pelagic trawl and can take three separate fish samples with washing out intervals between each sample, within each trawl haul. The depth intervals fished were: from 5 to 20 m above bottom; from 15 to 30 m above bottom; from 25 to 40 m above bottom. After this haul another bottom trawl haul was fished, and then another pelagic haul, with a final bottom trawl haul if time allowed. Different depths and latitudes were fished to cover regional aspects as well as hake species and length distributions. The 300-400 m depth region was, however, focused upon as this is where the two resident hake species (*Merluccius capensis* and *M. paradoxus*) both are most abundant and have the most extended vertical distribution within the 400 m depth limitation of the echo sounder system, as well as being the depth range most frequently fished by the commercial fleet.

Weight/area densities from trawl catches were calculated using the mean length of the trawl catch, and the weight/length relationship of the form:

$$W = a * L^b$$

where W is weight, L is length, constant a was set to 0.007846 and 0.006543, and constant b was set to 2.9759 and 3.0425 for *M. paradoxus* and *M. capensis* respectively (Payne et al., 1987). The sweeping width used in calculating the swept area was 25 m as no constraining rope was applied, and the measured wing spread was 25 m. The towing distance was calculated using the GPS log.

Weight/area densities for acoustic observations from the trawl head rope were calculated using the relations:

$$n = s_A * A * 10^{5.7} * L^{-2}$$

where n is number of fish,  $s_A$  is integrator value, A is area and L is fish length. This relationship is derived from the standard target strength/length relationship with a constant of 68. For a unit area of one nautical mile square the A is unity, and the n becomes number of fish per square nautical mile. Weight/area densities were then calculated using the weight/length relationships described above.

Towards the end of the experiment a comparison between the “Nansen” sampling bottom trawl and a commercial high opening hake trawl was carried out. Drawings of the trawls are presented in Appendix II. The vertical opening of the “Nansen” bottom trawl is five metres, while the commercial trawl had a vertical opening of about eight metres. Both trawls were fished with door spread restriction consisting of a 10 m rope between the warps 130 m in front of the doors to ensure stable door and wing spreads, and to have the same sweep angles for both trawls. Both codends were lined with 25 mm mesh netting.. The door spread, wing spread and trawl height were monitored for both trawls with Scanmar net monitoring equipment. Tow time was 30 minutes as in the other experiments, and towing speed was still 3 knots.

Altogether 32 hauls with the echo sounder mounted were fished, in addition to 15 pelagic trawl hauls, each with three samples. An additional 14 bottom trawl hauls were fished to investigate the potential of the eight meter opening commercial trawl as a hake sampling trawl, 7 hauls with the “Nansen” trawl, and 7 with the commercial trawl. Finally, 8 night hauls were fished for the data material collected to find a catchability function for the trawl.

## 2.3 Results

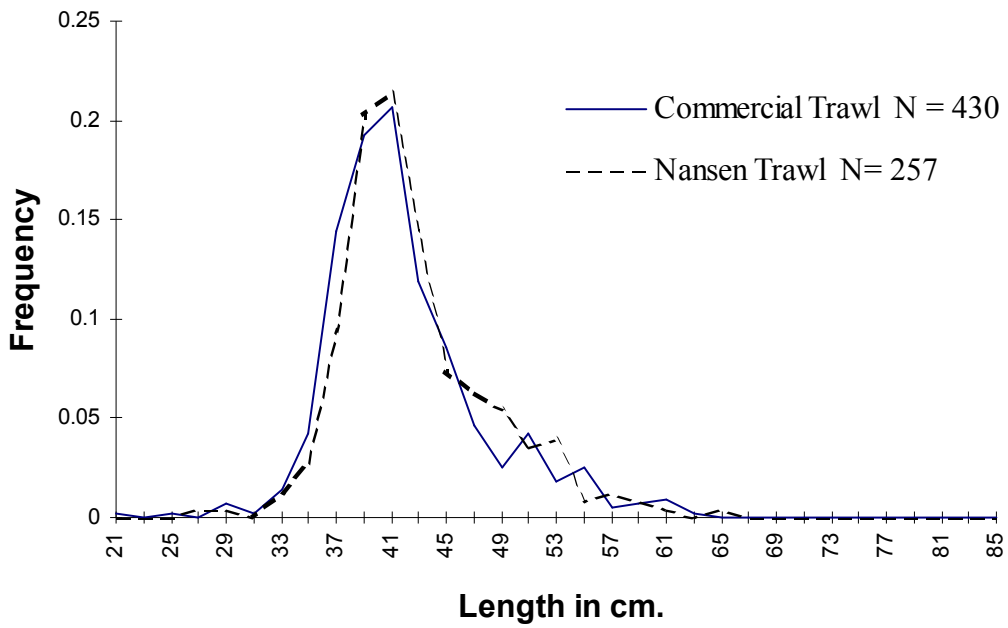
The area densities (kilograms per square nautical mile) calculated from trawl catches and head rope acoustics are presented in Figures 2 to 13, representing each of the five trawl lanes fished and the mean total. Catchability as a basis for the trawl based area densities was set to unity.

The species and length compositions of the headline acoustics and pelagic trawl catches are presented in Table 1.

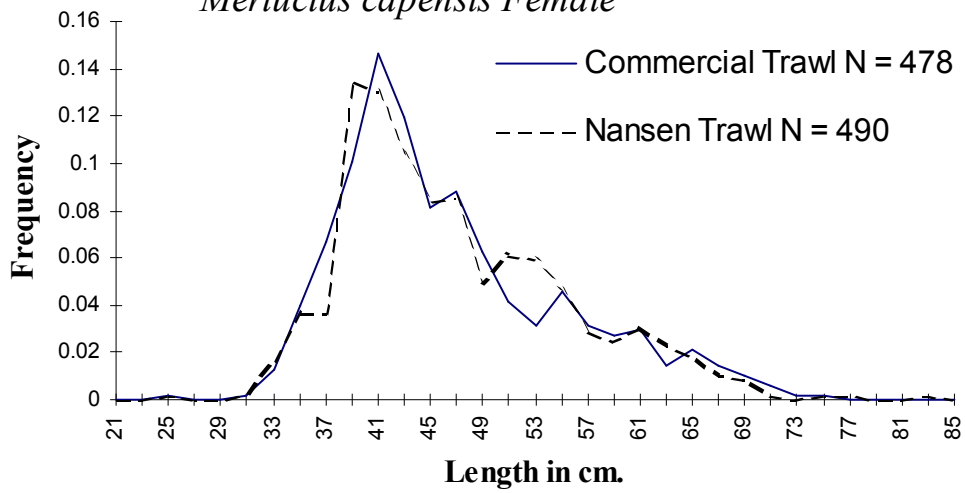
Table 1. Mean catches ( $\text{kg}\cdot\text{h}^{-1}$ ) and mean lengths of hake species/sexes.

Bottom trawl catches	Mean lengths Area 1	Mean lengths Area 2	Mean lengths Area 3	Mean lengths Area 4	Mean lengths Area 5	Mean lengths all areas	Mean catches (kg/h)
M.cap.m	34.9	50.2	34.9	44.0	50.9	37.8	180.6
M.cap.f	45.8	55.4	37.1	48.8	52.5	44.7	337.7
M.par.m	26.4	29.2	27.5	29.9	29.6	29.2	7.14
M.par.f	26.1	29.1	28.3	31.1	31.1	29.6	116.69
Pelagic trawl catches							
M.cap.m	33.8	42.8	33.0	37.5	32.5	36.8	
M.cap.f	36.6	45.2	34.4	40.2	52.3	39.5	
M.par.m	0	0	0	29.5	0	29.5	
M.par.f	31.5	30.8	29.3	29.7	28.2	29.8	

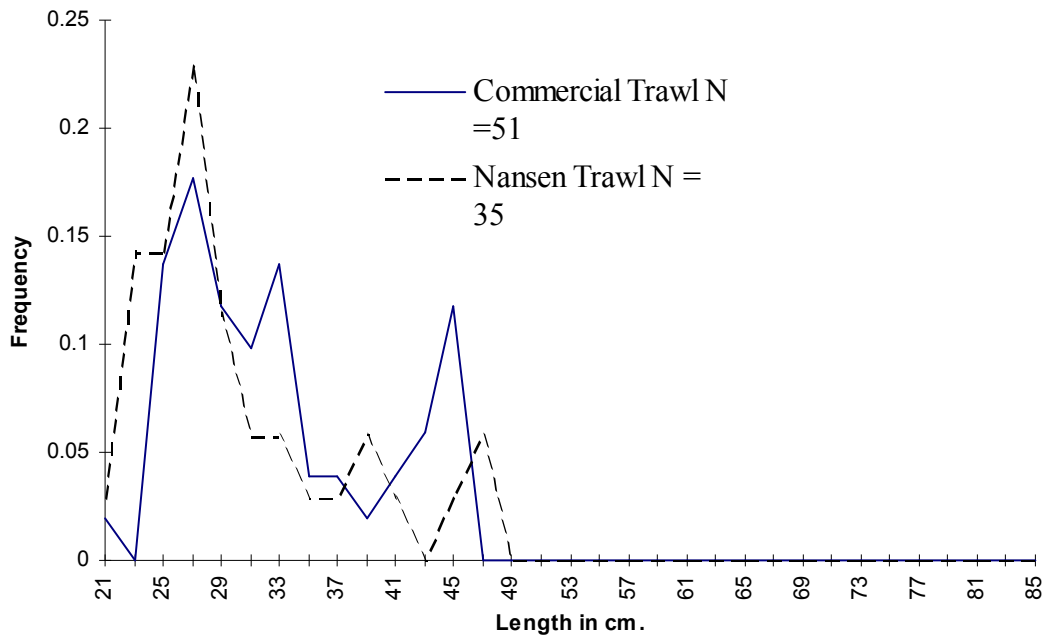
*Merluccius capensis* Male



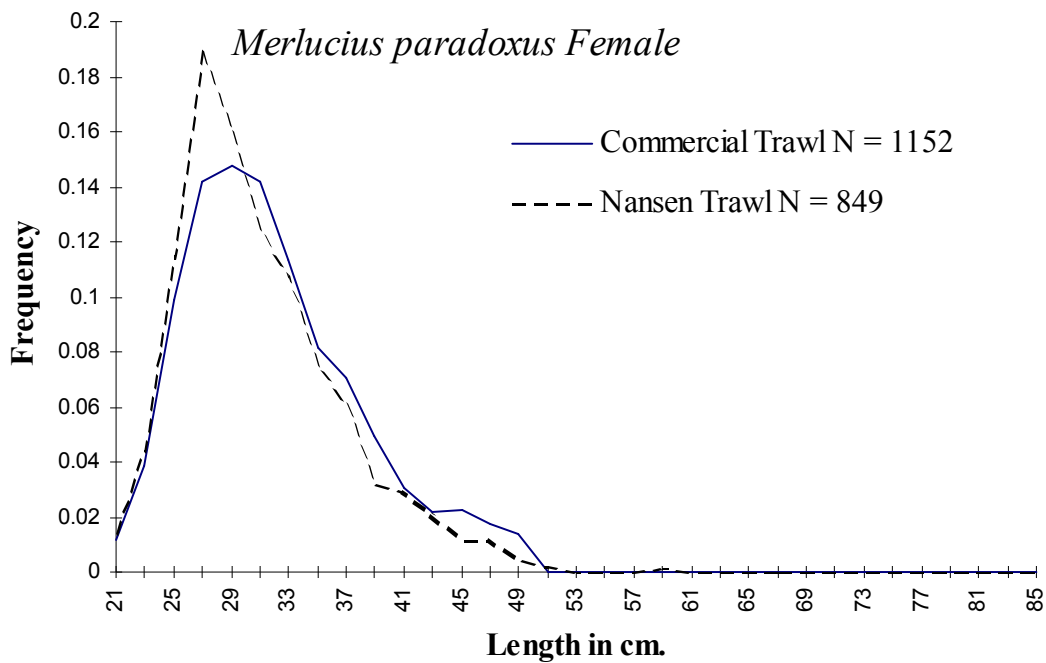
*Merluccius capensis* Female



*Merluccius paradoxus* Male



*Merluccius paradoxus* Female



The trawl geometry results of the comparison experiment between the “Nansen” trawl and the high opening commercial trawl are given in Table 2.

Table 2. Net comparison trawl geometry data

	Door spread	Wing Spread	Trawl Height	*Sweep Length	Sweep Angle
Nansen Trawl	51,3 m	20,6 m	4,7 m	49	18,3°
Commercial Trawl	61,0 m	24,0 m	8,4 m	59	18,3°

\* The backstrop length of 9 m included in the Sweep Length.

For the comparison experiment eight hauls were conducted with the commercial trawl and 6 with the “Nansen” trawl. The data for these trawls were standardised to units of fish density per square nautical mile for comparison purposes, and are presented in Table 3.

Table 3. Catch data (units of fish density in kg\*nm<sup>-2</sup>) for the comparative fishing experiments between the “Nansen” trawl and the high opening commercial trawl.

	Nansen Trawl		Commercial Trawl	
	Catch kg	Mean Length	Catch kg	Mean Length
<i>M. capensis male</i>	13 050	42,7	10 557	42,0
<i>M. capensis female</i>	29 784	46,8	16 696	46,6
<i>M. paradoxus male</i>	676	30,1	3 357	32,6
<i>M. paradoxus female</i>	29 431	30,9	18 268	31,9
Total Hake	52 845		48 878	
Deepwater mix	15 065		13 322	
<i>T. capensis</i>	594	32,7	1 085	32,1
Total	68 504		63 285	

## 2.4 Discussion

The mean catch results indicate that the experiments were carried out in areas with a normal representation of the two hake species at this depth range on the Namibian shelf. The absence of *M. paradoxus* males both in pelagic and demersal hauls at all the five trawl localities is remarkable. Hake of this size are about to become sexually mature, and it is a mystery why there is a geographic sex segregation in young/juvenile fish like these. Another possibility is of course a skewed sex ratio, but this has not been reported, and is not very likely. The explanation of this sexual segregation is therefore not known, and should be investigated. The answer is likely to be found within the realm of maximisation of reproductive fitness.

The most prominent information to be had from the calculated area densities was that the bottom trawl based densities were much higher than the acoustically generated densities. This is of course also to be expected as hake are demersal fish, and are mainly harvested by

demersal trawls and long lines. Although, when looking at the cumulative area densities for the whole water column from the headrope and up as far as hake were found, the pelagic hake on average constituted one fourth of the total hake. Considering the vertical extent of pelagic hake in the acoustically generated area densities, these numbers are totally dependent on the post processing of the acoustic data. In the present experiment the upward vertical extent of hake probably was exaggerated. Former investigations of the vertical extent of hake (e. g. Huse et al, 1998) have shown that except for juveniles, the vertical extent seldom exceeds 60 m from the bottom, and during the day probably much less than that. This indicates that the present data probably should have been re-scrutinised, and that more extensive pelagic trawl hauls should have been carried out to fully elucidate this aspect. Pelagic hauls into very dense daytime concentrations of mesopelagic fish pressing against the bottom indicated that hake do not enter these layers, probably due to the sheer density of mesopelagic fish.

Considering the primary objective of the investigation, the optimal vertical opening of the hake survey trawl, the data indicate that little is gained by increasing the opening beyond the presently applied 5 m. This really has already been indicated, as e. g. in intercalibration exercises between “Africana” (1.5-2 m vertical opening ) and “Nansen” only rather marginal differences have been identified. Remaining evidence that should be collected to facilitate a full evaluation of optimal vertical trawl opening pertains early morning and late afternoon hauls, and other situations of fishing where *in situ* illumination is low, causing hake to lift off the bottom. In such situations the catch of a higher trawl could potentially better represent the hake concentration. To make a definite difference the vertical opening then probably would have to be in the order of magnitude of 20 m. Rather than applying such a trawl, the vertical distribution of hake could be modelled as a function of *in situ* illumination, and this parameter could be measured or estimated during the cruises in order to compensate for vertical migration during situations of low *in situ* illumination.

The remaining consideration with regard to trawl vertical opening pertains the representativity of fish species and size in the catch. The trawl catches indicate that there is little or no difference in length from the bottom and up to 20-40 m for *M. capensis* males and *M. paradoxus* females. For *M. capensis* females the difference in mean length was about 5 cm, the larger on the bottom, while for *M. paradoxus* males the catches were too small to give any indication at all. This indicates that little or no special considerations pertaining species and size distributions may have to be made when compensating for pelagic distribution of hake in absolute abundance estimates.

The acoustic single fish data and night time trawl data collected to form the basis for a calculation of a catchability function for the trawl will be suggested used as a basis for a M. phil. Thesis for a Namibian student.

With the exception of *M. paradoxus* male, the “Nansen” trawl catches were consistently larger than that of the high opening commercial trawl. This could be the result of mesh selection taking place in the front part of the commercial trawl as the meshes in this part of the trawl were significantly larger than those of the “Nansen” trawl. This hypothesis was reinforced by the slightly larger mean length for both male and female *M. paradoxus*.

The length frequencies for both species of male and female followed the same trend with the exception of *M. paradoxus* male, but this was probably due to the small sample size

In the perspective of hake sampling trawl vertical opening, these data support the assumption that increasing the vertical opening will not readily and necessarily improve the representativity of the trawl samples obtained.

## **2.5 Conclusion**

There is little evidence to indicate that a major benefit is to be had from increasing the headline height in excess of 5 m for a hake sampling bottom trawl.

## **References**

- Huse, I., Hamukuaya, H., Boyer, D, C., Malan, P.,E and Strømme, T., 1998. The diurnal vertical dynamics of Cape hake and their potential prey. S. Afr. J. mar. Sci. **19**: 365-376.
- Payne, A.I.L., Rose, B. and Leslie, R.W. 1987. Feeding of hake and a first attempt at determining their trophic role in the South African west coast marine environment. In: Payne, A.I.L., Gulland, J.A. and Brink, K.H (Eds.) The Benguela and Comparable Ecosystems. S. Afr. J. mar. Sci. 4: 219-229.



PROJECT STATION: 254  
 DATE:28/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2419  
 start stop duration Long E 1340  
 TIME :07:22:00 07:52:00 30 (min) Purpose code: 2  
 LOG :9827.00 9828.00 1.30 Area code : 2  
 FDEPTH: 325 322 GearCond.code:  
 BDEPTH: 325 322 Validity code:  
 Towing dir: 342ø Wire out: 950 m Speed: 30 kn\*10  
 Sorted: 26 Kg Total catch: 495.15 CATCH/HOUR: 990.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	468.96	584	47.36	4240
Deepwater fish mixture	312.00		31.51	
Merluccius capensis, male	158.48	420	16.00	4239
Merluccius paradoxus, female	50.36	418	5.09	4238
Merluccius paradoxus, male	0.50	6	0.05	4237
Total	990.30		100.01	

PROJECT STATION: 255  
 DATE:28/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :10:06:00 10:35:00 30 (min) Purpose code: 2  
 LOG :9835.00 9837.00 1.30 Area code : 2  
 FDEPTH: 328 325 GearCond.code:  
 BDEPTH: 328 325 Validity code:  
 Towing dir: 342ø Wire out: 950 m Speed: 30 kn\*10  
 Sorted: 192 Kg Total catch: 446.19 CATCH/HOUR: 892.38

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	484.54	732	54.30	4243
Merluccius capensis, male	196.00	652	21.96	4242
Deepwater fish mixture	173.26		19.42	
Merluccius paradoxus, female	38.58	326	4.32	4241
Total	892.38		100.00	

PROJECT STATION: 256  
 DATE:28/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :12:12:00 12:28:00 16 (min) Purpose code: 2  
 LOG :9842.00 9843.00 0.90 Area code : 2  
 FDEPTH: 305 310 GearCond.code:  
 BDEPTH: 328 326 Validity code:  
 Towing dir: 340ø Wire out: 800 m Speed: 32 kn\*10  
 Sorted: Kg Total catch: 122.98 CATCH/HOUR: 461.18

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	233.48	473	50.63	4244
Merluccius capensis, male	139.35	431	30.22	4245
Deepwater fish mixture	81.75		17.73	
Trachurus capensis	3.49	15	0.76	4247
Merluccius paradoxus, female	3.11	15	0.67	4246
Total	461.18		100.01	

PROJECT STATION: 257  
 DATE:28/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2419  
 start stop duration Long E 1339  
 TIME :12:30:00 12:46:00 15 (min) Purpose code: 2  
 LOG :9843.00 9844.00 0.90 Area code : 2  
 FDEPTH: 300 295 GearCond.code:  
 BDEPTH: 325 322 Validity code:  
 Towing dir: 340ø Wire out: 800 m Speed: 32 kn\*10  
 Sorted: 68 Kg Total catch: 68.04 CATCH/HOUR: 272.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	90.08	308	33.10	4249
Merluccius capensis, male	68.24	284	25.07	4250
Trachurus capensis	58.96	276	21.66	4248
Deepwater fish mixture	54.88		20.16	
Total	272.16		99.99	

PROJECT STATION: 258  
 DATE:28/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2418  
 start stop duration Long E 1339  
 TIME :12:48:00 13:03:00 15 (min) Purpose code: 2  
 LOG :9844.00 9845.00 0.90 Area code : 2  
 FDEPTH: 275 275 GearCond.code:  
 BDEPTH: 322 320 Validity code:  
 Towing dir: 340ø Wire out: 800 m Speed: 33 kn\*10  
 Sorted: Kg Total catch: 16.42 CATCH/HOUR: 65.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, male	30.76	132	46.83	4252
Merluccius capensis, female	19.92	84	30.33	4251

Deepwater fish mixture	15.00	22.84
Total	65.68	100.00

PROJECT STATION: 259  
 DATE:28/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :14:53:00 15:23:00 30 (min) Purpose code: 2  
 LOG :9852.00 9853.00 1.30 Area code : 2  
 FDEPTH: 328 325 GearCond.code:  
 BDEPTH: 328 325 Validity code:  
 Towing dir: 340ø Wire out: 950 m Speed: 30 kn\*10  
 Sorted: 27 Kg Total catch: 336.06 CATCH/HOUR: 672.12

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	274.92	270	40.90	4254
Deepwater fish mixture	274.00		40.77	
Merluccius capensis, male	68.60	188	10.21	4253
Merluccius paradoxus, female	51.36	434	7.64	4255
Merluccius paradoxus, male	3.24	24	0.48	4256
Total	672.12		100.00	

PROJECT STATION: 260  
 DATE:28/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1339  
 TIME :16:28:00 16:58:00 30 (min) Purpose code: 2  
 LOG :9858.00 9860.00 1.40 Area code : 2  
 FDEPTH: 329 323 GearCond.code:  
 BDEPTH: 329 323 Validity code:  
 Towing dir: 350ø Wire out: 950 m Speed: 30 kn\*10  
 Sorted: 37 Kg Total catch: 382.43 CATCH/HOUR: 764.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	524.44		68.57	
Merluccius capensis, female	195.32	134	25.54	4257
Merluccius capensis, male	30.12	30	3.94	4258
Merluccius paradoxus, female	14.76	116	1.93	4260
Merluccius paradoxus, male	0.22	2	0.03	4259
Total	764.86		100.01	

PROJECT STATION: 261  
 DATE:29/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :23:32:00 00:02:00 30 (min) Purpose code: 2  
 LOG :9881.00 9883.00 1.50 Area code : 2  
 FDEPTH: 327 323 GearCond.code:  
 BDEPTH: 327 323 Validity code:  
 Towing dir: 340ø Wire out: 950 m Speed: 30 kn\*10  
 Sorted: 35 Kg Total catch: 443.43 CATCH/HOUR: 886.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	423.84		47.79	
Merluccius capensis, female	405.68	310	45.74	4264
Merluccius capensis, male	42.08	62	4.74	4263
Merluccius paradoxus, female	15.02	92	1.69	4262
Merluccius paradoxus, male	0.24	2	0.03	4261
Total	886.86		99.99	

PROJECT STATION: 262  
 DATE:29/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :05:38:00 06:09:00 31 (min) Purpose code: 2  
 LOG :9902.00 9903.00 1.30 Area code : 2  
 FDEPTH: 327 324 GearCond.code:  
 BDEPTH: 327 324 Validity code:  
 Towing dir: 340ø Wire out: 950 m Speed: 30 kn\*10  
 Sorted: 114 Kg Total catch: 400.45 CATCH/HOUR: 775.06

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	423.25		54.61	
Merluccius capensis, female	228.37	352	29.46	4265
Merluccius capensis, male	102.31	341	13.20	4267
Merluccius paradoxus, female	20.54	184	2.65	4266
Merluccius paradoxus, male	0.60	6	0.08	4268
Total	775.07		100.00	

PROJECT STATION: 263  
 DATE:29/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :07:40:00 08:10:00 30 (min) Purpose code: 2  
 LOG :9908.00 9910.00 1.40 Area code : 2  
 FDEPTH: 327 323 GearCond.code:  
 BDEPTH: 327 323 Validity code:  
 Towing dir: 340ø Wire out: 950 m Speed: 30 kn\*10  
 Sorted: Kg Total catch: 670.78 CATCH/HOUR: 1341.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	645.74	870	48.13	4269
Deepwater fish mixture	445.96		33.24	

Merluccius capensis, male	221.08	906	16.48	4270
Merluccius paradoxus, female	27.90	220	2.08	4271
Merluccius paradoxus, male	0.88	6	0.07	4272

Total 1341.56 100.00

PROJECT STATION: 264  
 DATE:29/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2419  
 start stop duration Long E 1339  
 TIME :09:58:00 10:13:00 15 (min) Purpose code: 2  
 LOG :9916.00 9917.00 0.80 Area code : 2  
 FDEPTH: 305 305 GearCond.code:  
 BDEPTH: 326 324 Validity code:  
 Towing dir: 340° Wire out: 780 m Speed: 30 kn\*10

Sorted: 37 Kg Total catch: 37.38 CATCH/HOUR: 149.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	52.96	144	35.42	4276
Deepwater fish mixture	35.04		23.43	
Merluccius capensis, male	32.88	108	21.99	4275
Trachurus capensis	27.76	120	18.57	4273
Merluccius paradoxus, female	0.88	4	0.59	4274
Total	149.52		100.00	

PROJECT STATION: 265  
 DATE:29/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2418  
 start stop duration Long E 1339  
 TIME :10:17:00 10:31:00 14 (min) Purpose code: 2  
 LOG :9917.00 9918.00 0.70 Area code : 2  
 FDEPTH: 290 290 GearCond.code:  
 BDEPTH: 323 322 Validity code:  
 Towing dir: 340° Wire out: 775 m Speed: 30 kn\*10

Sorted: 44 Kg Total catch: 216.28 CATCH/HOUR: 926.91

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus capensis	859.20	3900	92.70	4279
Merluccius capensis, male	36.00	171	3.88	4277
Merluccius capensis, female	31.71	133	3.42	4278
Total	926.91		100.00	

PROJECT STATION: 266  
 DATE:29/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2417  
 start stop duration Long E 1339  
 TIME :10:35:00 10:50:00 15 (min) Purpose code: 2  
 LOG :9918.00 9919.00 0.80 Area code : 2  
 FDEPTH: 280 280 GearCond.code:  
 BDEPTH: 321 318 Validity code:  
 Towing dir: 340° Wire out: 770 m Speed: 30 kn\*10

Sorted: 21 Kg Total catch: 21.14 CATCH/HOUR: 84.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	45.52		53.83	
Merluccius capensis, male	24.56	108	29.04	4281
Merluccius capensis, female	14.48	56	17.12	4280
Total	84.56		99.99	

PROJECT STATION: 267  
 DATE:29/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :12:31:00 13:01:00 30 (min) Purpose code: 2  
 LOG :9928.00 9929.00 1.60 Area code : 2  
 FDEPTH: 328 324 GearCond.code:  
 BDEPTH: 328 324 Validity code:  
 Towing dir: 340° Wire out: 950 m Speed: 30 kn\*10

Sorted: 196 Kg Total catch: 735.30 CATCH/HOUR: 1470.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	748.20	1152	50.88	4282
Deepwater fish mixture	372.30		25.32	
Merluccius capensis, male	331.20	1192	22.52	4283
Merluccius paradoxus, female	16.88	150	1.15	4285
Merluccius paradoxus, male	2.02	22	0.14	4284
Total	1470.60		100.01	

PROJECT STATION: 268  
 DATE:29/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2420  
 start stop duration Long E 1340  
 TIME :20:59:00 21:29:00 30 (min) Purpose code: 2  
 LOG :9957.00 9959.00 1.50 Area code : 2  
 FDEPTH: 327 324 GearCond.code:  
 BDEPTH: 327 324 Validity code:  
 Towing dir: 340° Wire out: 950 m Speed: 30 kn\*10

Sorted: 89 Kg Total catch: 295.19 CATCH/HOUR: 590.38

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	266.38	250	45.12	4286
Deepwater fish mixture	212.66		36.02	
Merluccius capensis, male	93.06	126	15.76	4287
Merluccius paradoxus, female	18.28	118	3.10	4288
Total	590.38		100.00	

PROJECT STATION: 269  
 DATE:30/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2406  
 start stop duration Long E 1318  
 TIME :05:35:30 06:06:01 31 (min) Purpose code: 2

LOG :9998.13 9999.50 1.40 Area code : 2  
 FDEPTH: 365 368 GearCond.code:  
 BDEPTH: 365 368 Validity code:  
 Towing dir: 340ø Wire out:1000 m Speed: 30 kn\*10  
 Sorted: 180 Kg Total catch: 444.02 CATCH/HOUR: 859.39

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	520.88		60.61	
Merluccius capensis, female	166.57	118	19.38	4289
Merluccius paradoxus, female	117.25	753	13.64	4291
Merluccius capensis, male	48.70	50	5.67	4290
Merluccius paradoxus, male	6.00	41	0.70	4292
Total	859.40		100.00	

PROJECT STATION: 270  
 DATE:30/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2405  
 start stop duration Long E 1318  
 TIME :07:35:00 08:05:00 30 (min) Purpose code: 2  
 LOG : 5.00 6.00 1.30 Area code : 2  
 FDEPTH: 364 364 GearCond.code:  
 BDEPTH: 364 364 Validity code:  
 Towing dir: 340ø Wire out:1000 m Speed: 30 kn\*10

Sorted: 175 Kg Total catch: 668.53 CATCH/HOUR: 1337.06

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	497.90	360	37.24	4294
Deepwater fish mixture	403.38		30.17	
Merluccius paradoxus, female	282.12	1784	21.10	4295
Merluccius capensis, male	148.60	160	11.11	4293
Merluccius paradoxus, male	5.06	30	0.38	4296
Total	1337.06		100.00	

PROJECT STATION: 271  
 DATE:30/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2405  
 start stop duration Long E 1318  
 TIME :09:29:00 09:45:00 15 (min) Purpose code: 2  
 LOG : 12.00 13.00 0.80 Area code : 2  
 FDEPTH: 340 340 GearCond.code:  
 BDEPTH: 362 361 Validity code:  
 Towing dir: 340ø Wire out: 810 m Speed: 30 kn\*10

Sorted: 115 Kg Total catch: 115.27 CATCH/HOUR: 461.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	241.04	292	52.28	4299
Merluccius capensis, male	129.28	200	28.04	4298
Trachurus capensis	51.36	136	11.14	4300
Merluccius paradoxus, female	23.80	116	5.16	4297
Deepwater fish mixture	15.60		3.38	
Total	461.08		100.00	

PROJECT STATION: 272  
 DATE:30/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2404  
 start stop duration Long E 1318  
 TIME :09:48:00 10:03:00 16 (min) Purpose code: 2  
 LOG : 13.00 14.00 0.80 Area code : 2  
 FDEPTH: 330 330 GearCond.code:  
 BDEPTH: 361 361 Validity code:  
 Towing dir: 340ø Wire out: 800 m Speed: 30 kn\*10

Sorted: 74 Kg Total catch: 73.81 CATCH/HOUR: 276.79

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	109.73	210	39.64	4303
Merluccius capensis, male	78.00	161	28.18	4301
Trachurus capensis	66.38	251	23.98	4304
Deepwater fish mixture	14.85		5.37	
Merluccius paradoxus, female	7.84	38	2.83	4302
Total	276.80		100.00	

PROJECT STATION: 273  
 DATE:30/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2403  
 start stop duration Long E 1317  
 TIME :10:06:00 10:22:00 16 (min) Purpose code: 2  
 LOG : 14.00 15.00 0.80 Area code : 2  
 FDEPTH: 320 320 GearCond.code:  
 BDEPTH: 360 360 Validity code:  
 Towing dir: 340ø Wire out: 800 m Speed: 30 kn\*10

Sorted: 23 Kg Total catch: 22.51 CATCH/HOUR: 84.41

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	34.73	68	41.14	4307
Merluccius capensis, male	25.20	53	29.85	4305
Trachurus capensis	15.56	56	18.43	4308
Merluccius paradoxus, female	5.21	26	6.17	4306
Deepwater fish mixture	3.71		4.40	
Total	84.41		99.99	

PROJECT STATION: 274  
 DATE:30/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2406  
 start stop duration Long E 1318  
 TIME :12:14:00 12:44:00 30 (min) Purpose code: 2  
 LOG : 22.00 24.00 1.50 Area code : 2  
 FDEPTH: 364 366 GearCond.code:  
 BDEPTH: 364 366 Validity code:  
 Towing dir: 340ø Wire out:1020 m Speed: 31 kn\*10

Sorted: 174 Kg Total catch: 577.13 CATCH/HOUR: 1154.26

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	448.56		38.86	
Merluccius paradoxus, female	292.84	1654	25.37	4312

Merluccius capensis, female	254.44	238	22.04	4309
Merluccius capensis, male	149.20	172	12.93	4310
Merluccius paradoxus, male	9.22	64	0.80	4311
Total	1154.26		100.00	

PROJECT STATION: 275  
DATE:30/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2405  
start stop duration Long E 1318  
TIME :14:01:00 14:16:00 15 (min) Purpose code: 2  
LOG : 30.00 31.00 0.80 Area code : 2  
FDEPTH: 340 340 GearCond.code:  
BDEPTH: 363 363 Validity code:  
Towing dir: 340° Wire out: 850 m Speed: 32 kn\*10  
Sorted: 38 Kg Total catch: 37.07 CATCH/HOUR: 148.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus capensis	90.16	404	60.80	4314
Merluccius capensis, male	24.64	60	16.62	4315
Merluccius capensis, female	20.84	36	14.05	4313
Merluccius paradoxus, female	10.64	60	7.18	4316
Deepwater fish mixture	2.00		1.35	
Total	148.28		100.00	

PROJECT STATION: 276  
DATE:30/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2404  
start stop duration Long E 1318  
TIME :14:20:00 14:36:00 16 (min) Purpose code: 2  
LOG : 31.00 32.00 0.80 Area code : 2  
FDEPTH: 330 330 GearCond.code:  
BDEPTH: 364 363 Validity code:  
Towing dir: 340° Wire out: 850 m Speed: 32 kn\*10  
Sorted: 25 Kg Total catch: 25.47 CATCH/HOUR: 95.51

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus capensis	73.05	319	76.48	4319
Deepwater fish mixture	16.61		17.39	
Merluccius paradoxus, female	4.54	23	4.75	4317
Merluccius capensis, male	1.31	4	1.37	4318
Total	95.51		99.99	

PROJECT STATION: 277  
DATE:30/ 5/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2403  
start stop duration Long E 1317  
TIME :14:38:00 14:54:00 16 (min) Purpose code: 2  
LOG : 32.00 33.00 0.90 Area code : 2  
FDEPTH: 320 320 GearCond.code:  
BDEPTH: 364 366 Validity code:  
Towing dir: 340° Wire out: 850 m Speed: 33 kn\*10  
Sorted: 5 Kg Total catch: 4.82 CATCH/HOUR: 18.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus capensis	9.45	34	52.27	4323
Deepwater fish mixture	5.21		28.82	
Merluccius capensis, male	1.50	4	8.30	4322
Merluccius capensis, female	1.35	4	7.47	4321
Merluccius paradoxus, female	0.56	4	3.10	4320
Total	18.07		99.96	

PROJECT STATION: 278  
DATE:30/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2405  
start stop duration Long E 1318  
TIME :16:07:00 16:37:00 30 (min) Purpose code: 2  
LOG : 40.00 41.00 1.60 Area code : 2  
FDEPTH: 364 362 GearCond.code:  
BDEPTH: 364 362 Validity code:  
Towing dir: 340° Wire out:1020 m Speed: 30 kn\*10  
Sorted: 174 Kg Total catch: 314.31 CATCH/HOUR: 628.62

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	278.88		44.36	
Merluccius capensis, female	161.08	136	25.62	4324
Merluccius paradoxus, female	122.54	690	19.49	4326
Merluccius capensis, male	61.12	86	9.72	4325
Merluccius paradoxus, male	5.00	32	0.80	4327
Total	628.62		99.99	

PROJECT STATION: 279  
DATE:30/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2405  
start stop duration Long E 1318  
TIME :21:05:00 21:37:00 32 (min) Purpose code: 2  
LOG : 57.00 58.00 1.50 Area code : 2  
FDEPTH: 368 364 GearCond.code:  
BDEPTH: 368 364 Validity code:  
Towing dir: 340° Wire out:1020 m Speed: 30 kn\*10  
Sorted: 130 Kg Total catch: 356.55 CATCH/HOUR: 668.53

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	421.05		62.98	
Merluccius paradoxus, female	124.16	662	18.57	4331
Merluccius capensis, female	95.21	62	14.24	4328
Merluccius capensis, male	22.73	23	3.40	4329
Merluccius paradoxus, male	5.38	28	0.80	4330
Total	668.53		99.99	

PROJECT STATION: 280  
DATE:31/ 5/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2405  
start stop duration Long E 1318  
TIME :05:38:00 06:09:00 30 (min) Purpose code: 2

LOG : 82.00 83.00 1.40 Area code : 2  
 FDEPTH: 366 369 GearCond.code:  
 BDEPTH: 366 369 Validity code:  
 Towing dir: 340ø Wire out:1020 m Speed: 30 kn\*10

Sorted: 235 Kg Total catch: 381.56 CATCH/HOUR: 763.12

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	351.84		46.11	
Merluccius paradoxus, female	190.24	1024	24.93	4334
Merluccius capensis, female	189.32	106	24.81	4332
Merluccius capensis, male	25.88	26	3.39	4333
Merluccius paradoxus, male	5.84	38	0.77	4335
Total	763.12		100.01	

DATE:31/ 5/99 GEAR TYPE: BT No: 8 PROJECT STATION: 281  
 start stop duration POSITION:Lat S 2405  
 TIME :07:41:00 08:11:00 29 (min) Purpose code: 2  
 LOG : 90.00 91.00 1.30 Area code : 2  
 FDEPTH: 367 369 GearCond.code:  
 BDEPTH: 367 369 Validity code:  
 Towing dir: 340ø Wire out:1020 m Speed: 30 kn\*10

Sorted: 178 Kg Total catch: 623.34 CATCH/HOUR: 1289.67

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	470.69		36.50	
Merluccius capensis, female	398.71	275	30.92	4337
Merluccius paradoxus, female	295.88	1963	22.94	4338
Merluccius capensis, male	75.21	68	5.83	4336
Merluccius paradoxus, male	26.44	139	2.05	4339
Trachurus capensis	22.74	87	1.76	4340
Total	1289.67		100.00	

DATE:31/ 5/99 GEAR TYPE: PT No: 1 PROJECT STATION: 282  
 start stop duration POSITION:Lat S 2405  
 TIME :09:40:00 09:56:00 16 (min) Purpose code: 2  
 LOG : 97.00 98.00 0.90 Area code : 2  
 FDEPTH: 345 345 GearCond.code:  
 BDEPTH: 368 369 Validity code:  
 Towing dir: 340ø Wire out: 820 m Speed: 30 kn\*10

Sorted: 7 Kg Total catch: 6.82 CATCH/HOUR: 25.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, male	9.79	15	38.27	4342
Merluccius capensis, female	8.89	15	34.75	4341
Trachurus capensis	4.80	19	18.76	4343
Deepwater fish mixture	2.10		8.21	
Total	25.58		99.99	

DATE:31/ 5/99 GEAR TYPE: PT No: 1 PROJECT STATION: 283  
 start stop duration POSITION:Lat S 2404  
 TIME :09:58:00 10:14:00 16 (min) Purpose code: 2  
 LOG : 98.00 99.00 0.90 Area code : 2  
 FDEPTH: 335 335 GearCond.code:  
 BDEPTH: 369 369 Validity code:  
 Towing dir: 340ø Wire out: 820 m Speed: 30 kn\*10

Sorted: 2 Kg Total catch: 1.99 CATCH/HOUR: 7.46

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Trachurus capensis	4.31	19	57.77	4345
Deepwater fish mixture	2.33		31.23	
Merluccius paradoxus, female	0.83	4	11.13	4344
Total	7.47		100.13	

DATE:31/ 5/99 GEAR TYPE: PT No: 1 PROJECT STATION: 284  
 start stop duration POSITION:Lat S 2403  
 TIME :10:17:00 10:33:00 17 (min) Purpose code: 2  
 LOG : 99.00 100.00 0.90 Area code : 2  
 FDEPTH: 325 325 GearCond.code:  
 BDEPTH: 368 369 Validity code:  
 Towing dir: 340ø Wire out: 800 m Speed: 30 kn\*10

Sorted: 1 Kg Total catch: 0.65 CATCH/HOUR: 2.29

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	2.29		100.00	
Total	2.29		100.00	

DATE:31/ 5/99 GEAR TYPE: BT No: 8 PROJECT STATION: 285  
 start stop duration POSITION:Lat S 2405  
 TIME :12:06:00 12:36:00 30 (min) Purpose code: 2  
 LOG : 108.00 110.00 1.60 Area code : 2  
 FDEPTH: 361 361 GearCond.code:  
 BDEPTH: 361 361 Validity code:  
 Towing dir: 340ø Wire out:1020 m Speed: 30 kn\*10

Sorted: 138 Kg Total catch: 691.90 CATCH/HOUR: 1383.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	383.60	2630	27.72	4348
Merluccius capensis, female	355.60	450	25.70	4346
Deepwater fish mixture	352.40		25.47	
Merluccius capensis, male	163.80	270	11.84	4347

Trachurus capensis	102.20		7.39	
Merluccius paradoxus, male	26.20	100	1.89	4349
Total	1388.80		100.01	

PROJECT STATION: 286  
DATE: 31/ 5/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2405  
start stop duration Long E 1319  
TIME :13:56:33 14:11:14 16 (min) Purpose code: 2  
LOG : 116.02 116.84 0.82 Area code : 2  
FDEPTH: 340 340 GearCond.code:  
BDEPTH: 361 361 Validity code:  
Towing dir: 340° Wire out: 850 m Speed: 32 kn\*10  
Sorted: 32 Kg Total catch: 32.43 CATCH/HOUR: 121.61

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	60.75	116	49.95	4351
Merluccius capensis, male	40.65	86	33.43	4352
Trachurus capensis	13.20	49	10.85	4353
Deepwater fish mixture	5.93		4.88	
Merluccius paradoxus, female	1.09	8	0.90	4350
Total	121.62		100.01	

PROJECT STATION: 287  
DATE: 31/ 5/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2404  
start stop duration Long E 1318  
TIME :14:16:00 14:32:00 16 (min) Purpose code: 2  
LOG : 117.10 118.00 0.90 Area code : 2  
FDEPTH: 330 330 GearCond.code:  
BDEPTH: 361 361 Validity code:  
Towing dir: 340° Wire out: 850 m Speed: 35 kn\*10  
Sorted: 17 Kg Total catch: 16.70 CATCH/HOUR: 62.63

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	23.48	45	37.49	4354
Trachurus capensis	20.55	90	32.81	4357
Merluccius capensis, male	15.34	34	24.49	4355
Merluccius paradoxus, female	2.06	15	3.29	4356
Deepwater fish mixture	1.20		1.92	
Total	62.63		100.00	

PROJECT STATION: 288  
DATE: 31/ 5/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2403  
start stop duration Long E 1317  
TIME :14:40:00 14:55:00 15 (min) Purpose code: 2  
LOG : 119.00 119.00 0.80 Area code : 2  
FDEPTH: 320 320 GearCond.code:  
BDEPTH: 360 360 Validity code:  
Towing dir: 340° Wire out: 850 m Speed: 35 kn\*10  
Sorted: 17 Kg Total catch: 16.67 CATCH/HOUR: 66.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	28.00	60	41.99	4359
Merluccius capensis, male	24.00	56	35.99	4360
Merluccius paradoxus, female	12.56	64	18.84	4358
Deepwater fish mixture	2.12		3.18	
Total	66.68		100.00	

PROJECT STATION: 289  
DATE: 31/ 5/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2405  
start stop duration Long E 1318  
TIME :16:10:00 16:40:00 30 (min) Purpose code: 2  
LOG : 126.00 128.00 1.50 Area code : 2  
FDEPTH: 367 361 GearCond.code:  
BDEPTH: 367 361 Validity code:  
Towing dir: 340° Wire out: 1020 m Speed: 30 kn\*10  
Sorted: 107 Kg Total catch: 177.82 CATCH/HOUR: 355.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	212.04		59.62	
Merluccius capensis, female	82.92	52	23.32	4363
Merluccius paradoxus, female	34.16	214	9.61	4362
Merluccius capensis, male	25.40	22	7.14	4364
Merluccius paradoxus, male	1.12	8	0.31	4361
Total	355.64		100.00	

PROJECT STATION: 290  
DATE: 31/ 5/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2405  
start stop duration Long E 1318  
TIME :21:18:00 21:48:00 29 (min) Purpose code: 2  
LOG : 142.00 144.00 1.40 Area code : 2  
FDEPTH: 364 359 GearCond.code:  
BDEPTH: 364 359 Validity code:  
Towing dir: 340° Wire out: 1020 m Speed: 30 kn\*10  
Sorted: 84 Kg Total catch: 187.50 CATCH/HOUR: 387.93

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	285.02		73.47	
Merluccius capensis, female	48.70	39	12.55	4365
Merluccius paradoxus, female	43.24	267	11.15	4367
Merluccius capensis, male	10.34	12	2.67	4366
Merluccius paradoxus, male	0.62	4	0.16	4368
Total	387.92		100.00	

PROJECT STATION: 291  
DATE: 2/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2522  
start stop duration Long E 1345

TIME :10:41:00 11:11:00 30 (min) Purpose code: 2  
 LOG : 424.00 425.00 1.40 Area code : 2  
 FDEPTH: 329 328 GearCond.code:  
 BDEPTH: 329 328 Validity code:  
 Towing dir: 347ø Wire out: 950 m Speed: 30 kn\*10

Sorted: Kg Total catch: 2282.80 CATCH/HOUR: 4565.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, male	1585.86	5254	34.73	4370
Merluccius capensis, female	1541.56	4430	33.76	4369
Deepwater fish mixture	1100.22		24.10	
Merluccius paradoxus, female	294.80	1932	6.46	4371
Trachurus capensis	31.24	142	0.68	4373
Merluccius paradoxus, male	11.92	86	0.26	4372
Total	4565.60		99.99	

PROJECT STATION: 292  
 DATE: 2/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2522  
 start stop duration Long E 1345  
 TIME :12:13:00 12:43:00 30 (min) Purpose code: 2  
 LOG : 430.00 432.00 1.60 Area code : 2  
 FDEPTH: 329 329 GearCond.code:  
 BDEPTH: 329 329 Validity code:  
 Towing dir: 347ø Wire out: 960 m Speed: 30 kn\*10

Sorted: Kg Total catch: 1979.26 CATCH/HOUR: 3958.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1689.08	5402	42.67	4376
Merluccius capensis, male	1318.40	4454	33.31	4377
Deepwater fish mixture	641.02		16.19	
Trachurus capensis	163.84	614	4.14	4378
Merluccius paradoxus, female	139.26	922	3.52	4374
Merluccius paradoxus, male	6.92	52	0.17	4375
Total	3958.52		100.00	

PROJECT STATION: 293  
 DATE: 2/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2522  
 start stop duration Long E 1345  
 TIME :14:02:00 14:17:00 15 (min) Purpose code: 2  
 LOG : 438.00 439.00 0.70 Area code : 2  
 FDEPTH: 320 312 GearCond.code:  
 BDEPTH: 330 329 Validity code:  
 Towing dir: 347ø Wire out: 800 m Speed: 32 kn\*10

Sorted: 61 Kg Total catch: 145.49 CATCH/HOUR: 581.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	338.00		58.08	
Merluccius capensis, female	122.40	440	21.03	4379
Merluccius capensis, male	69.52	276	11.95	4380
Trachurus capensis	45.20	152	7.77	4382
Merluccius paradoxus, female	6.84	40	1.18	4381
Total	581.96		100.01	

PROJECT STATION: 294  
 DATE: 2/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2521  
 start stop duration Long E 1344  
 TIME :14:21:00 14:38:00 16 (min) Purpose code: 2  
 LOG : 439.00 440.00 0.90 Area code : 2  
 FDEPTH: 320 300 GearCond.code:  
 BDEPTH: 329 328 Validity code:  
 Towing dir: 347ø Wire out: 800 m Speed: 33 kn\*10

Sorted: Kg Total catch: 111.24 CATCH/HOUR: 417.15

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	417.15		100.00	
Total	417.15		100.00	

PROJECT STATION: 295  
 DATE: 2/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2520  
 start stop duration Long E 1344  
 TIME :14:42:00 14:58:00 16 (min) Purpose code: 2  
 LOG : 440.00 441.00 0.90 Area code : 2  
 FDEPTH: 290 290 GearCond.code:  
 BDEPTH: 328 326 Validity code:  
 Towing dir: 347ø Wire out: 800 m Speed: 34 kn\*10

Sorted: Kg Total catch: 53.68 CATCH/HOUR: 201.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	201.30		100.00	
Total	201.30		100.00	

PROJECT STATION: 296  
 DATE: 2/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2522  
 start stop duration Long E 1345  
 TIME :16:17:00 16:47:00 30 (min) Purpose code: 2  
 LOG : 448.00 449.00 1.50 Area code : 2  
 FDEPTH: 330 329 GearCond.code:  
 BDEPTH: 330 329 Validity code:  
 Towing dir: 347ø Wire out: 950 m Speed: 31 kn\*10

Sorted: 159 Kg Total catch: 776.93 CATCH/HOUR: 1553.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	627.26		40.37	
Merluccius capensis, female	611.90	1172	39.38	4383
Merluccius capensis, male	264.76	778	17.04	4385
Merluccius paradoxus, female	47.74	322	3.07	4386
Trachurus capensis	2.20	10	0.14	4384



Total 1553.86 100.00

PROJECT STATION: 297  
DATE: 2/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2522  
start stop duration Long E 1345  
TIME :21:28:00 21:58:00 29 (min) Purpose code: 2  
LOG : 463.00 464.00 1.40 Area code : 2  
FDEPTH: 329 328 GearCond.code:  
BDEPTH: 329 328 Validity code:  
Towing dir: 347ø Wire out: 950 m Speed: 30 kn\*10

Sorted: 151 Kg Total catch: 817.24 CATCH/HOUR: 1690.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	695.15	1196	41.11	4387
Deepwater fish mixture	575.38		34.03	
Merluccius capensis, male	398.63	972	23.58	4388
Trachurus capensis	11.07	33	0.65	4390
Merluccius paradoxus, female	10.61	79	0.63	4389
Total	1690.84		100.00	

PROJECT STATION: 298  
DATE: 3/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2522  
start stop duration Long E 1344  
TIME :05:44:00 06:14:00 30 (min) Purpose code: 2  
LOG : 487.00 488.00 1.50 Area code : 2  
FDEPTH: 329 326 GearCond.code:  
BDEPTH: 329 326 Validity code:  
Towing dir: 347ø Wire out: 950 m Speed: 30 kn\*10

Sorted: 185 Kg Total catch: 1911.78 CATCH/HOUR: 3823.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1772.22	4546	46.35	4391
Merluccius capensis, male	1039.20	3926	27.18	4392
Deepwater fish mixture	824.74		21.57	
Merluccius paradoxus, female	140.08	950	3.66	4393
Trachurus capensis	38.64	144	1.01	4394
Merluccius capensis, juveniles	8.68	268	0.23	4395
Total	3823.56		100.00	

PROJECT STATION: 299  
DATE: 3/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2522  
start stop duration Long E 1345  
TIME :07:45:00 08:15:00 30 (min) Purpose code: 2  
LOG : 494.00 496.00 1.50 Area code : 2  
FDEPTH: 329 327 GearCond.code:  
BDEPTH: 329 327 Validity code:  
Towing dir: 347ø Wire out: 950 m Speed: 30 kn\*10

Sorted: 155 Kg Total catch: 1754.45 CATCH/HOUR: 3508.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1360.52	4068	38.77	4396
Merluccius capensis, male	1058.14	3888	30.16	4399
Deepwater fish mixture	815.40		23.24	
Trachurus capensis	214.70	724	6.12	4397
Merluccius paradoxus, female	54.70	474	1.56	4398
Merluccius paradoxus, male	3.40	22	0.10	4400
Merluccius capensis, juveniles	2.04		0.06	
Total	3508.90		100.01	

PROJECT STATION: 300  
DATE: 3/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2522  
start stop duration Long E 1344  
TIME :09:40:00 09:50:00 10 (min) Purpose code: 2  
LOG : 501.00 502.00 0.50 Area code : 1  
FDEPTH: 307 307 GearCond.code:  
BDEPTH: 330 329 Validity code:  
Towing dir: 348ø Wire out: 780 m Speed: 30 kn\*10

Sorted: 88 Kg Total catch: 87.00 CATCH/HOUR: 522.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	481.56		92.25	
Brama brama	40.44		7.75	
Total	522.00		100.00	

PROJECT STATION: 301  
DATE: 3/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2521  
start stop duration Long E 1344  
TIME :09:52:00 10:02:00 10 (min) Purpose code: 2  
LOG : 502.00 502.00 0.50 Area code : 1  
FDEPTH: 297 297 GearCond.code:  
BDEPTH: 329 329 Validity code:  
Towing dir: 348ø Wire out: 780 m Speed: 30 kn\*10

Sorted: 72 Kg Total catch: 72.25 CATCH/HOUR: 433.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	431.40		99.52	
Trachurus capensis	2.10	6	0.48	
Total	433.50		100.00	

PROJECT STATION: 302  
DATE: 3/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2520  
start stop duration Long E 1344

TIME :10:07:00 10:17:00 10 (min) Purpose code: 2  
 LOG : 503.00 503.00 0.20 Area code : 1  
 FDEPTH: 287 287 GearCond.code:  
 BDEPTH: 328 327 Validity code:  
 Towing dir: 348ø Wire out: 770 m Speed: 30 kn\*10  
 Sorted: 69 Kg Total catch: 68.88 CATCH/HOUR: 413.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	297.24		71.92	
Brama brama	116.04		28.08	
Total	413.28		100.00	

PROJECT STATION: 303  
 DATE: 3/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2522  
 start stop duration Long E 1345  
 TIME :12:12:00 12:42:00 30 (min) Purpose code: 2  
 LOG : 510.00 512.00 1.50 Area code : 1  
 FDEPTH: 329 328 GearCond.code:  
 BDEPTH: 329 328 Validity code:  
 Towing dir: 348ø Wire out: 960 m Speed: 30 kn\*10  
 Sorted: 161 Kg Total catch: 2743.00 CATCH/HOUR: 5486.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	2142.00		39.04	
Merluccius capensis, female	1870.00	4998	34.09	4403
Merluccius capensis, male	1374.00	4794	25.05	4402
Trachurus capensis	62.00	204	1.13	4404
Merluccius paradoxus, female	38.00	306	0.69	4401
Total	5486.00		100.00	

PROJECT STATION: 304  
 DATE: 3/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2522  
 start stop duration Long E 1345  
 TIME :14:00:00 14:16:00 16 (min) Purpose code: 2  
 LOG : 517.00 518.00 0.90 Area code : 1  
 FDEPTH: 310 312 GearCond.code:  
 BDEPTH: 329 329 Validity code:  
 Towing dir: 347ø Wire out: 850 m Speed: 32 kn\*10  
 Sorted: 103 Kg Total catch: 102.88 CATCH/HOUR: 385.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	382.50		99.14	
Merluccius capensis, female	1.58	4	0.41	
Trachurus capensis	1.13	4	0.29	
Merluccius capensis, male	0.60	4	0.16	
Total	385.81		100.00	

PROJECT STATION: 305  
 DATE: 3/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2521  
 start stop duration Long E 1344  
 TIME :14:21:00 14:37:00 16 (min) Purpose code: 2  
 LOG : 519.00 519.00 0.90 Area code : 1  
 FDEPTH: 300 300 GearCond.code:  
 BDEPTH: 328 328 Validity code:  
 Towing dir: 347ø Wire out: 850 m Speed: 34 kn\*10  
 Sorted: 83 Kg Total catch: 82.90 CATCH/HOUR: 310.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	303.75		97.71	
Brama brama	7.13		2.29	
Total	310.88		100.00	

PROJECT STATION: 306  
 DATE: 3/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2520  
 start stop duration Long E 1344  
 TIME :14:41:00 14:57:00 15 (min) Purpose code: 2  
 LOG : 520.00 521.00 0.90 Area code : 1  
 FDEPTH: 290 290 GearCond.code:  
 BDEPTH: 327 326 Validity code:  
 Towing dir: 347ø Wire out: 850 m Speed: 36 kn\*10  
 Sorted: 49 Kg Total catch: 49.00 CATCH/HOUR: 196.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	111.44		56.86	
Brama brama	84.56		43.14	
Total	196.00		100.00	

PROJECT STATION: 307  
 DATE: 3/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2522  
 start stop duration Long E 1345  
 TIME :16:09:00 16:39:00 30 (min) Purpose code: 2  
 LOG : 528.00 529.00 1.40 Area code : 1  
 FDEPTH: 330 329 GearCond.code:  
 BDEPTH: 330 329 Validity code:  
 Towing dir: 347ø Wire out: 965 m Speed: 30 kn\*10  
 Sorted: Kg Total catch: 1403.80 CATCH/HOUR: 2807.60

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

Merluccius capensis, female	1100.92	2332	39.21	4406
Deepwater fish mixture	962.94		34.30	
Merluccius capensis, male	678.30	1842	24.16	4408
Merluccius paradoxus, female	53.02	376	1.89	4407
Merluccius paradoxus, male	10.16	76	0.36	4405
Merluccius capensis, juveniles	1.70		0.06	
Trachurus capensis	0.56		0.02	
Total	2807.60		100.00	

PROJECT STATION: 308  
DATE: 3/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2522  
start stop duration Long E 1345  
TIME :21:26:00 21:39:00 13 (min) Purpose code: 2  
LOG : 543.00 543.00 0.50 Area code : 1  
FDEPTH: 329 328 GearCond.code:  
BDEPTH: 329 328 Validity code:  
Towing dir: 347ø Wire out: 950 m Speed: 30 kn\*10  
Sorted: 88 Kg Total catch: 996.89 CATCH/HOUR: 4601.03

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	2034.00	4902	44.21	4411
Deepwater fish mixture	1437.37		31.24	
Merluccius capensis, male	1009.71	2972	21.95	4412
Merluccius paradoxus, female	103.80	729	2.26	4410
Merluccius paradoxus, male	16.15	106	0.35	4409
Total	4601.03		100.01	

PROJECT STATION: 309  
DATE: 4/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2528  
start stop duration Long E 1343  
TIME :05:42:26 06:13:40 31 (min) Purpose code: 2  
LOG : 575.85 577.28 1.44 Area code : 1  
FDEPTH: 360 361 GearCond.code: 9  
BDEPTH: 360 361 Validity code: 9  
Towing dir: 348ø Wire out:1020 m Speed: 30 kn\*10  
Sorted: Kg Total catch: CATCH/HOUR:

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

PROJECT STATION: 310  
DATE: 4/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2535  
start stop duration Long E 1341  
TIME :09:10:00 09:40:00 30 (min) Purpose code: 2  
LOG : 592.00 593.00 1.60 Area code : 1  
FDEPTH: 387 390 GearCond.code:  
BDEPTH: 387 390 Validity code:  
Towing dir: 360ø Wire out:1100 m Speed: 30 kn\*10  
Sorted: 178 Kg Total catch: 1066.02 CATCH/HOUR: 2132.04

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	883.20	732	41.43	4413
Deepwater fish mixture	473.52		22.21	
Merluccius paradoxus, female	413.04	1860	19.37	4415
Merluccius capensis, male	321.00	396	15.06	4414
Merluccius paradoxus, male	41.28	192	1.94	4416
Total	2132.04		100.01	

PROJECT STATION: 311  
DATE: 4/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2534  
start stop duration Long E 1341  
TIME :11:01:00 11:09:00 8 (min) Purpose code: 2  
LOG : 599.00 599.00 0.40 Area code : 1  
FDEPTH: 365 365 GearCond.code:  
BDEPTH: 388 389 Validity code:  
Towing dir: 360ø Wire out: 920 m Speed: 31 kn\*10  
Sorted: 106 Kg Total catch: 105.51 CATCH/HOUR: 791.33

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	278.25	1515	35.16	4417
Merluccius capensis, female	225.45	465	28.49	4419
Merluccius capensis, male	141.00	353	17.82	4420
Deepwater fish mixture	110.70		13.99	
Merluccius paradoxus, male	35.93	195	4.54	4418
Total	791.33		100.00	

PROJECT STATION: 312  
DATE: 4/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2533  
start stop duration Long E 1341  
TIME :11:14:00 11:24:00 10 (min) Purpose code: 2  
LOG : 599.00 600.00 0.60 Area code : 1  
FDEPTH: 355 355 GearCond.code:  
BDEPTH: 390 391 Validity code:  
Towing dir: 360ø Wire out: 920 m Speed: 32 kn\*10  
Sorted: 14 Kg Total catch: 14.08 CATCH/HOUR: 84.48

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	76.68		90.77	
Merluccius paradoxus, female	5.52	30	6.53	4422
Merluccius capensis, female	2.28	6	2.70	4421
Total	84.48		100.00	

PROJECT STATION: 313  
DATE: 4/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2532

start stop duration Long E 1341  
 TIME :11:29:00 11:44:00 15 (min) Purpose code: 2  
 LOG : 600.00 601.00 0.80 Area code : 1  
 FDEPTH: 350 350 GearCond.code:  
 BDEPTH: 391 393 Validity code:  
 Towing dir: 360° Wire out: 920 m Speed: 33 kn\*10

Sorted: 14 Kg Total catch: 14.07 CATCH/HOUR: 56.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	36.80		65.39	
Merluccius paradoxus, female	8.80	44	15.64	4425
Merluccius capensis, female	7.48	20	13.29	4424
Merluccius capensis, male	1.96	8	3.48	4426
Merluccius paradoxus, male	1.24	8	2.20	4423
Total	56.28		100.00	

PROJECT STATION: 314  
 DATE: 4/ 6/99 GEAR TYPE: BT No: POSITION:Lat S 2534  
 start stop duration Long E 1341  
 TIME :13:06:00 13:36:00 30 (min) Purpose code: 2  
 LOG : 608.00 610.00 1.60 Area code : 1  
 FDEPTH: 390 390 GearCond.code:  
 BDEPTH: 390 390 Validity code:  
 Towing dir: 360° Wire out:1060 m Speed: 31 kn\*10

Sorted: 147 Kg Total catch: 1368.44 CATCH/HOUR: 2736.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1599.60	1734	58.45	4427
Merluccius paradoxus, female	443.08	2116	16.19	4430
Deepwater fish mixture	369.46		13.50	
Merluccius capensis, male	294.46	534	10.76	4429
Merluccius paradoxus, male	30.28	172	1.11	4428
Total	2736.88		100.01	

PROJECT STATION: 315  
 DATE: 4/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2534  
 start stop duration Long E 1341  
 TIME :15:14:00 15:29:00 15 (min) Purpose code: 2  
 LOG : 617.00 618.00 0.90 Area code : 1  
 FDEPTH: 274 375 GearCond.code:  
 BDEPTH: 389 389 Validity code:  
 Towing dir: 360° Wire out: 900 m Speed: 31 kn\*10

Sorted: 59 Kg Total catch: 148.45 CATCH/HOUR: 593.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	231.20	372	38.94	4431
Merluccius paradoxus, female	197.00	1012	33.18	4433
Merluccius capensis, male	109.00	220	18.36	4432
Deepwater fish mixture	36.20		6.10	
Merluccius paradoxus, male	20.40	100	3.44	4434
Total	593.80		100.02	

PROJECT STATION: 316  
 DATE: 4/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2533  
 start stop duration Long E 1341  
 TIME :15:00:00 15:00:00 15 (min) Purpose code: 2  
 LOG : 618.00 619.00 0.80 Area code : 1  
 FDEPTH: 365 365 GearCond.code:  
 BDEPTH: 390 391 Validity code:  
 Towing dir: 360° Wire out: 900 m Speed: 32 kn\*10

Sorted: 72 Kg Total catch: 71.49 CATCH/HOUR: 285.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	98.80	540	34.55	4437
Merluccius capensis, female	81.04	200	28.34	4436
Merluccius capensis, male	70.80	188	24.76	4435
Deepwater fish mixture	23.28		8.14	
Merluccius paradoxus, male	12.04	68	4.21	4438
Total	285.96		100.00	

PROJECT STATION: 317  
 DATE: 4/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2532  
 start stop duration Long E 1341  
 TIME :15:00:00 15:01:00 15 (min) Purpose code: 2  
 LOG : 619.00 620.00 0.80 Area code : 1  
 FDEPTH: 358 358 GearCond.code:  
 BDEPTH: 392 394 Validity code:  
 Towing dir: 360° Wire out: 900 m Speed: 32 kn\*10

Sorted: 41 Kg Total catch: 40.54 CATCH/HOUR: 162.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	81.28	424	50.12	4441
Merluccius capensis, male	27.44	84	16.92	4440
Deepwater fish mixture	24.04		14.82	
Merluccius capensis, female	21.84	56	13.47	4439
Merluccius paradoxus, male	7.56	44	4.66	4442
Total	162.16		99.95	

PROJECT STATION: 318  
 DATE: 4/ 6/99 GEAR TYPE: BT No: POSITION:Lat S 2534  
 start stop duration Long E 1341  
 TIME :21:00:00 21:26:00 26 (min) Purpose code: 2  
 LOG : 637.00 638.00 1.20 Area code : 1  
 FDEPTH: 390 393 GearCond.code:  
 BDEPTH: 390 393 Validity code:  
 Towing dir: 360° Wire out:1100 m Speed: 30 kn\*10

Sorted: 118 Kg Total catch: 1151.10 CATCH/HOUR: 2656.38

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1502.56	1396	56.56	4443
Deepwater fish mixture	606.60		22.84	
Merluccius capensis, male	453.16	496	17.06	4444
Merluccius paradoxus, female	94.06	406	3.54	4445
<b>Total</b>	<b>2656.38</b>		<b>100.00</b>	

PROJECT STATION: 319  
 DATE: 5/ 6/99 GEAR TYPE: BT No: POSITION:Lat S 2535  
 start stop duration Long E 1341  
 TIME :05:43:00 06:13:00 30 (min) Purpose code: 2  
 LOG : 659.00 661.00 1.60 Area code : 1  
 FDEPTH: 390 400 GearCond.code:  
 BDEPTH: 390 400 Validity code:  
 Towing dir: 360° Wire out:1100 m Speed: 30 kn\*10

Sorted: 206 Kg Total catch: 266.26 CATCH/HOUR: 532.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	345.88	376	64.95	4446
Merluccius capensis, male	118.22	178	22.20	4449
Deepwater fish mixture	35.82		6.73	
Merluccius paradoxus, female	31.64	116	5.94	4448
Merluccius paradoxus, male	0.96	6	0.18	4447
<b>Total</b>	<b>532.52</b>		<b>100.00</b>	

PROJECT STATION: 320  
 DATE: 5/ 6/99 GEAR TYPE: BT No: POSITION:Lat S 2534  
 start stop duration Long E 1341  
 TIME :08:03:00 08:34:00 31 (min) Purpose code: 2  
 LOG : 667.00 669.00 1.60 Area code : 1  
 FDEPTH: 388 397 GearCond.code:  
 BDEPTH: 388 397 Validity code:  
 Towing dir: 360° Wire out:1100 m Speed: 30 kn\*10

Sorted: 232 Kg Total catch: 231.65 CATCH/HOUR: 448.35

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	236.73	308	52.80	4450
Merluccius capensis, male	90.27	161	20.13	4452
Deepwater fish mixture	66.74		14.89	
Merluccius paradoxus, female	52.05	155	11.61	4453
Merluccius paradoxus, male	2.57	10	0.57	4451
<b>Total</b>	<b>448.36</b>		<b>100.00</b>	

PROJECT STATION: 321  
 DATE: 5/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2534  
 start stop duration Long E 1341  
 TIME :10:32:00 10:46:00 14 (min) Purpose code: 2  
 LOG : 676.00 677.00 0.70 Area code : 1  
 FDEPTH: 370 371 GearCond.code:  
 BDEPTH: 394 400 Validity code:  
 Towing dir: 350° Wire out: 924 m Speed: 30 kn\*10

Sorted: 73 Kg Total catch: 183.44 CATCH/HOUR: 786.17

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	292.84	1556	37.25	4456
Merluccius capensis, female	228.00	514	29.00	4454
Merluccius capensis, male	156.86	407	19.95	4455
Deepwater fish mixture	84.56		10.76	
Merluccius paradoxus, male	23.91	141	3.04	4457
<b>Total</b>	<b>786.17</b>		<b>100.00</b>	

PROJECT STATION: 322  
 DATE: 5/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2533  
 start stop duration Long E 1341  
 TIME :10:49:00 11:05:00 16 (min) Purpose code: 2  
 LOG : 677.00 678.00 0.80 Area code : 1  
 FDEPTH: 365 365 GearCond.code:  
 BDEPTH: 401 409 Validity code:  
 Towing dir: 350° Wire out: 920 m Speed: 32 kn\*10

Sorted: 68 Kg Total catch: 170.43 CATCH/HOUR: 639.11

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	197.06	893	30.83	4460
Merluccius capensis, female	183.94	386	28.78	4458
Deepwater fish mixture	142.13		22.24	
Merluccius capensis, male	101.81	281	15.93	4459
Merluccius paradoxus, male	14.18	75	2.22	4461
<b>Total</b>	<b>639.12</b>		<b>100.00</b>	

PROJECT STATION: 323  
 DATE: 5/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2532  
 start stop duration Long E 1340  
 TIME :11:07:00 11:23:00 16 (min) Purpose code: 2  
 LOG : 678.00 678.00 0.70 Area code : 1  
 FDEPTH: 365 370 GearCond.code:  
 BDEPTH: 411 419 Validity code:  
 Towing dir: 350° Wire out: 920 m Speed: 33 kn\*10

Sorted: 64 Kg Total catch: 64.34 CATCH/HOUR: 241.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	133.20		55.21	
Merluccius capensis, female	45.86	101	19.01	4464
Merluccius capensis, male	36.53	94	15.14	4465
Merluccius paradoxus, female	24.90	139	10.32	4462
Merluccius paradoxus, male	0.79	4	0.33	4463

Total 241.28 100.01  
 PROJECT STATION: 324  
 DATE: 5/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2535  
 start stop duration Long E 1341  
 TIME :13:10:00 13:40:00 30 (min) Purpose code: 2  
 LOG : 687.00 688.00 1.50 Area code : 1  
 FDEPTH: 390 395 GearCond.code:  
 BDEPTH: 390 395 Validity code:  
 Towing dir: 350° Wire out:1065 m Speed: 31 kn\*10  
 Sorted: 900 Kg Total catch: 899.76 CATCH/HOUR: 1799.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	684.72	3360	38.05	4468
Merluccius capensis, female	559.92	732	31.11	4467
Deepwater fish mixture	266.16		14.79	
Merluccius capensis, male	215.04	444	11.95	4466
Merluccius paradoxus, male	73.68	408	4.09	4469
Total	1799.52		99.99	

PROJECT STATION: 325  
 DATE: 5/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2534  
 start stop duration Long E 1342  
 TIME :14:56:00 15:28:00 33 (min) Purpose code: 2  
 LOG : 694.00 696.00 1.80 Area code : 1  
 FDEPTH: 386 392 GearCond.code:  
 BDEPTH: 386 392 Validity code:  
 Towing dir: 350° Wire out:1065 m Speed: 31 kn\*10  
 Sorted: 121 Kg Total catch: 120.79 CATCH/HOUR: 219.62

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	107.82	135	49.09	4470
Deepwater fish mixture	59.24		26.97	
Merluccius capensis, male	35.65	58	16.23	4471
Merluccius paradoxus, female	14.87	64	6.77	4472
Merluccius paradoxus, male	2.04	5	0.93	4473
Total	219.62		99.99	

PROJECT STATION: 326  
 DATE: 6/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2240  
 start stop duration Long E 1254  
 TIME :11:55:00 12:25:00 30 (min) Purpose code: 2  
 LOG : 900.00 902.00 1.70 Area code : 2  
 FDEPTH: 351 355 GearCond.code:  
 BDEPTH: 351 355 Validity code:  
 Towing dir: 340° Wire out:1040 m Speed: 30 kn\*10  
 Sorted: 161 Kg Total catch: 1124.27 CATCH/HOUR: 2248.54

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	1663.48	5598	73.98	4475
Deepwater fish mixture	400.12		17.79	
Merluccius capensis, female	132.16	98	5.88	4476
Merluccius paradoxus, male	35.70	210	1.59	4474
Merluccius capensis, male	17.08	14	0.76	4477
Total	2248.54		100.00	

PROJECT STATION: 327  
 DATE: 6/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2241  
 start stop duration Long E 1255  
 TIME :14:14:00 14:44:00 30 (min) Purpose code: 2  
 LOG : 909.00 911.00 1.60 Area code : 2  
 FDEPTH: 353 356 GearCond.code:  
 BDEPTH: 353 356 Validity code:  
 Towing dir: 340° Wire out: 104 m Speed: 30 kn\*10  
 Sorted: 97 Kg Total catch: 681.31 CATCH/HOUR: 1362.62

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	780.08	4088	57.25	4480
Merluccius capensis, female	278.32	210	20.43	4478
Deepwater fish mixture	238.56		17.51	
Merluccius paradoxus, male	40.18	210	2.95	4481
Merluccius capensis, male	25.48	28	1.87	4479
Total	1362.62		100.01	

PROJECT STATION: 328  
 DATE: 6/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2240  
 start stop duration Long E 1254  
 TIME :15:58:00 16:14:00 15 (min) Purpose code: 2  
 LOG : 916.00 917.00 0.80 Area code : 2  
 FDEPTH: 330 330 GearCond.code:  
 BDEPTH: 357 358 Validity code:  
 Towing dir: 340° Wire out: 820 m Speed: 30 kn\*10  
 Sorted: 7 Kg Total catch: 6.52 CATCH/HOUR: 26.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	26.08		100.00	
Total	26.08		100.00	

PROJECT STATION: 329  
 DATE: 6/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2239  
 start stop duration Long E 1254  
 TIME :16:19:00 16:36:00 17 (min) Purpose code: 2  
 LOG : 918.00 918.00 0.80 Area code : 2  
 FDEPTH: 330 330 GearCond.code:

BDEPTH: 359 361 Validity code:  
 Towing dir: 340° Wire out: 820 m Speed: 34 kn\*10  
 Sorted: 7 Kg Total catch: 6.89 CATCH/HOUR: 24.32

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	11.08	7	45.56	4482
Deepwater fish mixture	8.75		35.98	
Merluccius paradoxus, female	4.48	18	18.42	4483
Total	24.31		99.96	

PROJECT STATION: 330  
 DATE: 6/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2238  
 start stop duration Long E 1253  
 TIME :16:40:00 16:40:00 15 (min) Purpose code: 2  
 LOG : 919.00 919.00 0.80 Area code : 2  
 FDEPTH: 325 325 GearCond.code:  
 BDEPTH: 362 373 Validity code:  
 Towing dir: 340° Wire out: 820 m Speed: 30 kn\*10  
 Sorted: 3 Kg Total catch: 2.71 CATCH/HOUR: 10.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	7.08	8	65.31	4484
Merluccius paradoxus, female	3.76	24	34.69	4485
Total	10.84		100.00	

PROJECT STATION: 331  
 DATE: 6/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2240  
 start stop duration Long E 1254  
 TIME :20:00:00 21:41:00 29 (min) Purpose code: 2  
 LOG : 934.00 935.00 1.50 Area code : 2  
 FDEPTH: 355 353 GearCond.code:  
 BDEPTH: 355 353 Validity code:  
 Towing dir: 340° Wire out:1000 m Speed: 30 kn\*10  
 Sorted: 208 Kg Total catch: 207.72 CATCH/HOUR: 429.77

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	270.79		63.01	
Merluccius paradoxus, female	113.63	544	26.44	4489
Merluccius capensis, female	37.82	37	8.80	4486
Merluccius capensis, male	5.50	6	1.28	4487
Merluccius paradoxus, male	2.03	10	0.47	4488
Total	429.77		100.00	

PROJECT STATION: 332  
 DATE: 7/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2240  
 start stop duration Long E 1254  
 TIME :05:39:00 06:11:00 32 (min) Purpose code: 2  
 LOG : 959.00 961.00 1.60 Area code : 2  
 FDEPTH: 355 355 GearCond.code:  
 BDEPTH: 355 355 Validity code:  
 Towing dir: 340° Wire out:1020 m Speed: 30 kn\*10  
 Sorted: 121 Kg Total catch: 423.82 CATCH/HOUR: 794.66

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	294.13	1869	37.01	4490
Merluccius capensis, female	285.60	296	35.94	4492
Deepwater fish mixture	146.34		18.42	
Merluccius capensis, male	63.13	66	7.94	4493
Merluccius paradoxus, male	5.46	39	0.69	4491
Total	794.66		100.00	

PROJECT STATION: 333  
 DATE: 7/ 6/99 GEAR TYPE: BT No: 8 POSITION:Lat S 2240  
 start stop duration Long E 1254  
 TIME :07:33:00 08:02:00 28 (min) Purpose code: 2  
 LOG : 966.00 967.00 1.20 Area code : 2  
 FDEPTH: 356 355 GearCond.code:  
 BDEPTH: 356 355 Validity code:  
 Towing dir: 340° Wire out:1020 m Speed: 30 kn\*10  
 Sorted: 153 Kg Total catch: 366.83 CATCH/HOUR: 786.06

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	328.52	371	41.79	4494
Merluccius capensis, male	161.08	150	20.49	4495
Deepwater fish mixture	160.24		20.39	
Merluccius paradoxus, female	128.46	606	16.34	4496
Merluccius paradoxus, male	7.76	47	0.99	4497
Total	786.06		100.00	

PROJECT STATION: 334  
 DATE: 7/ 6/99 GEAR TYPE: PT No: 1 POSITION:Lat S 2241  
 start stop duration Long E 1254  
 TIME :09:39:00 09:54:00 15 (min) Purpose code: 2  
 LOG : 974.00 975.00 0.80 Area code : 2  
 FDEPTH: 332 332 GearCond.code:  
 BDEPTH: 354 353 Validity code:  
 Towing dir: 340° Wire out: 820 m Speed: 30 kn\*10  
 Sorted: 13 Kg Total catch: 12.84 CATCH/HOUR: 51.36

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

Deepwater fish mixture	51.36	100.00
Total	<u>51.36</u>	<u>100.00</u>

PROJECT STATION: 335  
 DATE: 7/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2240  
 start stop duration Long E 1254  
 TIME :09:56:00 10:11:00 15 (min) Purpose code: 2  
 LOG : 975.00 976.00 0.80 Area code : 2  
 FDEPTH: 322 322 GearCond.code:  
 BDEPTH: 354 355 Validity code:  
 Towing dir: 340ø Wire out: 820 m Speed: 30 kn\*10  
 Sorted: 1 Kg Total catch: 1.40 CATCH/HOUR: 5.60

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight	numbers	
Deepwater fish mixture	5.60	100.00	
Total	<u>5.60</u>	<u>100.00</u>	

PROJECT STATION: 336  
 DATE: 7/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2239  
 start stop duration Long E 1254  
 TIME :10:15:00 10:30:00 14 (min) Purpose code: 2  
 LOG : 976.00 977.00 0.80 Area code : 2  
 FDEPTH: 312 312 GearCond.code:  
 BDEPTH: 355 356 Validity code:  
 Towing dir: 340ø Wire out: 805 m Speed: 30 kn\*10  
 Sorted: 2 Kg Total catch: 2.34 CATCH/HOUR: 10.03

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight	numbers	
Deepwater fish mixture	10.03	100.00	
Total	<u>10.03</u>	<u>100.00</u>	

PROJECT STATION: 337  
 DATE: 7/ 6/99 GEAR TYPE: BT No: 2 POSITION: Lat S 2240  
 start stop duration Long E 1254  
 TIME :11:47:00 12:16:00 30 (min) Purpose code: 2  
 LOG : 984.00 985.00 1.70 Area code : 2  
 FDEPTH: 355 357 GearCond.code:  
 BDEPTH: 355 357 Validity code:  
 Towing dir: 340ø Wire out:1030 m Speed: 30 kn\*10  
 Sorted: 122 Kg Total catch: 487.16 CATCH/HOUR: 974.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight	numbers	
Merluccius paradoxus, female	611.20	2208	4498
Deepwater fish mixture	260.16	26.70	
Merluccius capensis, female	73.28	72	4500
Merluccius capensis, male	24.00	24	4501
Merluccius paradoxus, male	5.68	24	4499
Total	<u>974.32</u>	<u>99.99</u>	

PROJECT STATION: 338  
 DATE: 7/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2240  
 start stop duration Long E 1254  
 TIME :13:33:00 13:48:00 16 (min) Purpose code: 2  
 LOG : 991.00 992.00 0.80 Area code : 2  
 FDEPTH: 335 338 GearCond.code:  
 BDEPTH: 356 354 Validity code:  
 Towing dir: 340ø Wire out: 930 m Speed: 32 kn\*10  
 Sorted: Kg Total catch: 0.19 CATCH/HOUR: 0.71

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight	numbers	
Deepwater fish mixture	0.71	100.00	
Total	<u>0.71</u>	<u>100.00</u>	

PROJECT STATION: 339  
 DATE: 7/ 6/99 GEAR TYPE: PT No: 1 POSITION: Lat S 2239  
 start stop duration Long E 1254  
 TIME :13:52:00 14:10:00 18 (min) Purpose code: 2  
 LOG : 992.00 993.00 0.90 Area code : 2  
 FDEPTH: 330 330 GearCond.code:  
 BDEPTH: 354 352 Validity code:  
 Towing dir: 340ø Wire out: 830 m Speed: 33 kn\*10  
 Sorted: 2 Kg Total catch: 1.55 CATCH/HOUR: 5.17

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight	numbers	
Deepwater fish mixture	5.17	100.00	
Total	<u>5.17</u>	<u>100.00</u>	

PROJECT STATION: 340  
 DATE: 7/ 6/99 GEAR TYPE: BT No: 8 POSITION: Lat S 2241  
 start stop duration Long E 1254  
 TIME :15:27:00 15:58:00 30 (min) Purpose code: 2  
 LOG :1000.00 1001.00 1.50 Area code : 2  
 FDEPTH: 355 358 GearCond.code:  
 BDEPTH: 355 358 Validity code:  
 Towing dir: 340ø Wire out:1035 m Speed: 30 kn\*10  
 Sorted: 121 Kg Total catch: 363.60 CATCH/HOUR: 727.20



SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	274.92	1554	37.81	4503
Deepwater fish mixture	189.96		26.12	
Merluccius capensis, female	164.52	192	22.62	4504
Merluccius capensis, male	86.52	96	11.90	4505
Merluccius paradoxus, male	11.28	78	1.55	4502
Total	727.20		100.00	

PROJECT STATION: 341  
DATE: 9/ 6/99 GEAR TYPE: BT No: POSITION:Lat S 2239  
start stop duration Long E 1254  
TIME :05:40:00 05:55:00 15 (min) Purpose code: 2  
LOG :1055.00 1056.00 0.80 Area code : 2  
FDEPTH: 352 352 GearCond.code:  
BDEPTH: 352 352 Validity code:  
Towing dir: 160° Wire out: m Speed: 30 kn\*10  
Sorted: 133 Kg Total catch: 132.95 CATCH/HOUR: 531.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Deepwater fish mixture	203.44		38.25	
Merluccius paradoxus, female	177.68	1212	33.41	4508
Merluccius capensis, female	129.36	132	24.32	4506
Merluccius capensis, male	15.92	20	2.99	4507
Trachurus capensis	2.72	8	0.51	4510
Merluccius paradoxus, male	2.68	24	0.50	4509
Total	531.80		99.98	

PROJECT STATION: 342  
DATE: 9/ 6/99 GEAR TYPE: BT No: POSITION:Lat S 2240  
start stop duration Long E 1254  
TIME :07:37:00 08:11:00 34 (min) Purpose code: 2  
LOG :1061.00 1063.00 1.70 Area code : 2  
FDEPTH: 357 360 GearCond.code:  
BDEPTH: 357 360 Validity code:  
Towing dir: 340° Wire out:1035 m Speed: 30 kn\*10  
Sorted: 120 Kg Total catch: 358.56 CATCH/HOUR: 632.75

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	247.66	1514	39.14	4513
Merluccius capensis, female	176.93	159	27.96	4511
Deepwater fish mixture	144.85		22.89	
Merluccius capensis, male	44.79	48	7.08	4512
Merluccius paradoxus, male	9.79	53	1.55	4514
Trachurus capensis	8.74	16	1.38	4515
Total	632.76		100.00	

PROJECT STATION: 343  
DATE: 9/ 6/99 GEAR TYPE: BT No: 2 POSITION:Lat S 2240  
start stop duration Long E 1254  
TIME :09:15:00 09:45:00 30 (min) Purpose code: 2  
LOG :1068.00 1069.00 1.30 Area code : 2  
FDEPTH: 357 355 GearCond.code:  
BDEPTH: 357 355 Validity code:  
Towing dir: 340° Wire out:1015 m Speed: 30 kn\*10  
Sorted: 133 Kg Total catch: 464.88 CATCH/HOUR: 929.76

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	556.92	2500	59.90	4519
Merluccius capensis, female	166.18	154	17.87	4516
Deepwater fish mixture	142.10		15.28	
Merluccius paradoxus, male	31.30	134	3.37	4518
Merluccius capensis, male	25.34	28	2.73	4517
Trachurus capensis	7.92	22	0.85	4520
Total	929.76		100.00	

PROJECT STATION: 344  
DATE: 9/ 6/99 GEAR TYPE: BT No: 2 POSITION:Lat S 2240  
start stop duration Long E 1254  
TIME :10:58:00 11:30:00 32 (min) Purpose code: 2  
LOG :1075.00 1077.00 1.60 Area code : 2  
FDEPTH: 356 356 GearCond.code:  
BDEPTH: 356 356 Validity code:  
Towing dir: 340° Wire out:1015 m Speed: 30 kn\*10  
Sorted: 127 Kg Total catch: 697.12 CATCH/HOUR: 1307.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	713.21	2289	54.56	4523
Deepwater fish mixture	330.62		25.29	
Merluccius capensis, female	186.24	176	14.25	4522
Merluccius capensis, male	43.93	41	3.36	4521
Merluccius paradoxus, male	33.09	83	2.53	4524
Total	1307.09		99.99	

PROJECT STATION: 345  
DATE: 9/ 6/99 GEAR TYPE: BT No: 1 POSITION:Lat S 2239  
start stop duration Long E 1253  
TIME :12:30:00 13:00:00 30 (min) Purpose code: 2  
LOG :1081.00 1083.00 1.60 Area code : 2  
FDEPTH: 360 358 GearCond.code:  
BDEPTH: 360 358 Validity code:  
Towing dir: 340° Wire out: m Speed: 30 kn\*10  
Sorted: 158 Kg Total catch: 2769.38 CATCH/HOUR: 5538.76

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	4291.70	14596	77.48	4527
Deepwater fish mixture	688.46		12.43	
Merluccius capensis, female	458.50	350	8.28	4526

Merluccius paradoxus, male	68.60	140	1.24	4528
Merluccius capensis, male	31.50	36	0.57	4525
Total	5538.76		100.00	

PROJECT STATION: 346  
 DATE: 9/ 6/99 GEAR TYPE: BT No: POSITION: Lat S 2240  
 start stop duration Long E 1254  
 TIME :14:51:00 15:21:00 30 (min) Purpose code: 2  
 LOG :1091.00 1092.00 1.60 Area code : 2  
 FDEPTH: 358 359 GearCond.code:  
 BDEPTH: 358 359 Validity code:  
 Towing dir: 340ø Wire out:1015 m Speed: 30 kn\*10

Sorted: 131 Kg Total catch: 1571.88 CATCH/HOUR: 3143.76

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius paradoxus, female	2423.52	7176	77.09	4529
Deepwater fish mixture	369.60		11.76	
Merluccius capensis, female	230.88	216	7.34	4531
Merluccius paradoxus, male	119.76	336	3.81	4530
Total	3143.76		100.00	

PROJECT STATION: 347  
 DATE:10/ 6/99 GEAR TYPE: B1 No: 2 POSITION: Lat S 2357  
 start stop duration Long E 1316  
 TIME :07:14:00 07:44:00 29 (min) Purpose code: 2  
 LOG :1204.00 1206.00 1.40 Area code : 2  
 FDEPTH: 348 354 GearCond.code:  
 BDEPTH: 348 354 Validity code:  
 Towing dir: 335ø Wire out:1005 m Speed: 30 kn\*10

Sorted: 155 Kg Total catch: 1180.58 CATCH/HOUR: 2442.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1145.03	1446	46.88	4534
Merluccius capensis, male	558.83	1053	22.88	4533
Deepwater fish mixture	449.71		18.41	
Merluccius paradoxus, female	208.82	1303	8.55	4532
Trachurus capensis	80.19	283	3.28	4535
Total	2442.58		100.00	

PROJECT STATION: 348  
 DATE:10/ 6/99 GEAR TYPE: BT No: POSITION: Lat S 2358  
 start stop duration Long E 1316  
 TIME :08:59:00 09:29:00 30 (min) Purpose code: 2  
 LOG :1211.00 1213.00 1.50 Area code : 2  
 FDEPTH: 348 356 GearCond.code:  
 BDEPTH: 348 356 Validity code:  
 Towing dir: 335ø Wire out:1005 m Speed: 30 kn\*10

Sorted: 153 Kg Total catch: 1218.32 CATCH/HOUR: 2436.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	990.08	1456	40.63	4537
Merluccius capensis, male	638.08	1296	26.19	4536
Deepwater fish mixture	413.76		16.98	
Merluccius paradoxus, female	194.56	1136	7.98	4539
Trachurus capensis	186.24	704	7.64	4538
Merluccius paradoxus, male	13.92	96	0.57	4540
Total	2436.64		99.99	

PROJECT STATION: 349  
 DATE:10/ 6/99 GEAR TYPE: B1 No: 2 POSITION: Lat S 2358  
 start stop duration Long E 1316  
 TIME :10:36:00 11:05:00 30 (min) Purpose code: 2  
 LOG :1218.00 1219.00 1.40 Area code : 2  
 FDEPTH: 350 358 GearCond.code:  
 BDEPTH: 350 358 Validity code:  
 Towing dir: 335ø Wire out:1005 m Speed: 30 kn\*10

Sorted: 158 Kg Total catch: 1929.80 CATCH/HOUR: 3859.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	2002.02	3050	51.87	4541
Merluccius capensis, male	850.10	1732	22.03	4542
Deepwater fish mixture	508.00		13.16	
Merluccius paradoxus, female	467.02	2806	12.10	4544
Trachurus capensis	19.28	74	0.50	4543
Merluccius paradoxus, male	13.18	98	0.34	4545
Total	3859.60		100.00	

PROJECT STATION: 350  
 DATE:10/ 6/99 GEAR TYPE: B1 No: 2 POSITION: Lat S 2357  
 start stop duration Long E 1316  
 TIME :14:21:00 14:51:00 30 (min) Purpose code: 2  
 LOG :1227.00 1228.00 1.50 Area code : 2  
 FDEPTH: 349 354 GearCond.code:  
 BDEPTH: 349 354 Validity code:  
 Towing dir: 335ø Wire out:1005 m Speed: 30 kn\*10

Sorted: 150 Kg Total catch: 1525.82 CATCH/HOUR: 3051.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1460.24	1876	47.85	4548
Merluccius capensis, male	831.50	1774	27.25	4549
Deepwater fish mixture	487.56		15.98	

Merluccius paradoxus, female	230.92	1244	7.57	4546
Trachurus capensis	36.52	102	1.20	4550
Merluccius paradoxus, male	4.90	40	0.16	4547
<b>Total</b>	<b>3051.64</b>		<b>100.01</b>	

PROJECT STATION: 351  
DATE:11/ 6/99 GEAR TYPE: B1 No: 2 POSITION:Lat S 2358  
start stop duration Long E 1316  
TIME :07:16:00 07:46:00 30 (min) Purpose code: 2  
LOG :1260.00 1262.00 1.50 Area code : 2  
FDEPTH: 347 353 GearCond.code:  
BDEPTH: 347 353 Validity code:  
Towing dir: 335ø Wire out:1005 m Speed: 30 kn\*10  
Sorted: 157 Kg Total catch: 1322.17 CATCH/HOUR: 2644.34

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1038.92	1276	39.29	4552
Merluccius capensis, male	832.28	1664	31.47	4553
Deepwater fish mixture	553.06		20.91	
Merluccius paradoxus, female	220.08	1294	8.32	4551
<b>Total</b>	<b>2644.34</b>		<b>99.99</b>	

PROJECT STATION: 352  
DATE:11/ 6/99 GEAR TYPE: B1 No: 2 POSITION:Lat S 2357  
start stop duration Long E 1316  
TIME :09:00:00 09:30:00 30 (min) Purpose code: 2  
LOG :1267.00 1269.00 1.50 Area code : 2  
FDEPTH: 350 357 GearCond.code:  
BDEPTH: 350 357 Validity code:  
Towing dir: 335ø Wire out:1005 m Speed: 30 kn\*10  
Sorted: 151 Kg Total catch: 1264.52 CATCH/HOUR: 2529.04

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	925.00	1176	36.58	4556
Deepwater fish mixture	731.80		28.94	
Merluccius capensis, male	510.04	840	20.17	4554
Merluccius paradoxus, female	352.12	2302	13.92	4555
Merluccius paradoxus, male	10.08	68	0.40	4557
<b>Total</b>	<b>2529.04</b>		<b>100.01</b>	

PROJECT STATION: 353  
DATE:11/ 6/99 GEAR TYPE: B1 No: 2 POSITION:Lat S 2357  
start stop duration Long E 1316  
TIME :10:32:00 11:02:00 30 (min) Purpose code: 2  
LOG :1274.00 1275.00 1.50 Area code : 2  
FDEPTH: 348 356 GearCond.code:  
BDEPTH: 348 356 Validity code:  
Towing dir: 335ø Wire out:1005 m Speed: 30 kn\*10  
Sorted: 157 Kg Total catch: 1753.25 CATCH/HOUR: 3506.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1236.48	1814	35.26	4560
Deepwater fish mixture	1035.78		29.54	
Merluccius capensis, male	840.44	1612	23.97	4559
Merluccius paradoxus, female	324.36	1904	9.25	4558
Trachurus capensis	53.76	180	1.53	4562
Merluccius paradoxus, male	15.68	90	0.45	4561
<b>Total</b>	<b>3506.50</b>		<b>100.00</b>	

PROJECT STATION: 354  
DATE:11/ 6/99 GEAR TYPE: B1 No: 2 POSITION:Lat S 2357  
start stop duration Long E 1316  
TIME :11:58:00 12:28:00 29 (min) Purpose code: 2  
LOG :1280.00 1281.00 1.40 Area code : 2  
FDEPTH: 351 353 GearCond.code:  
BDEPTH: 351 353 Validity code:  
Towing dir: 335ø Wire out:1010 m Speed: 30 kn\*10  
Sorted: 153 Kg Total catch: 1103.33 CATCH/HOUR: 2282.75

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis, female	1090.43	1415	47.77	4563
Merluccius capensis, male	549.08	954	24.05	4565
Deepwater fish mixture	449.59		19.70	
Merluccius paradoxus, female	173.69	1072	7.61	4566
Merluccius paradoxus, male	11.32	60	0.50	4564
Trachurus capensis	8.65	29	0.38	4567
<b>Total</b>	<b>2282.76</b>		<b>100.01</b>	

PROJECT STATION: 355  
DATE:11/ 6/99 GEAR TYPE: B1 No: 2 POSITION:Lat S 2357  
start stop duration Long E 1316  
TIME :13:25:00 13:55:00 30 (min) Purpose code: 2  
LOG :1285.00 1287.00 1.40 Area code : 2  
FDEPTH: 351 357 GearCond.code:  
BDEPTH: 351 357 Validity code:  
Towing dir: 335ø Wire out:1010 m Speed: 30 kn\*10  
Sorted: 157 Kg Total catch: 1383.53 CATCH/HOUR: 2767.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
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	weight	numbers		
Merluccius capensis, female	998.98	1444	36.10	4568
Merluccius capensis, male	797.98	1372	28.84	4571
Deepwater fish mixture	745.54		26.94	
Merluccius paradoxus, female	171.42	898	6.20	4570
Trachurus capensis	44.52	158	1.61	4572
Merluccius paradoxus, male	8.62	124	0.31	4569
Total	<u>2767.06</u>		<u>100.00</u>	