

Preliminary Report Cruise No. II - Surveys of the Fish Resources of Angola

CRUISE REPORTS "DR FRIDTJOF NANSEN"

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IMR, Bergen

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The programme will comprise several surveys. This cruise report describes the work and some of the findings of the second survey. Full reports will be issued after the completion of the programme.

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PART 1 - CUNENE to TOMBUA and TOMBUA to BENGUELA, 23-30 April 1989

1. Introduction

Objectives for the survey

The objectives for the 1989 surveys were discussed with the director and other representatives of the Centro de Investigação Pesqueira at a meeting in Luanda on 23 January 1989. The main purpose of the programme will be the same as that of the 1985/86 surveys, to provide as much information as possible about the composition, distribution and abundance of the components of the resources covered by the survey methodology. There is a special interest in obtaining new assessments of the stock biomasses of the important pelagic resources, described separately for the two groups: sardinellas and horse mackerels. The extent to which the southern pelagic stocks, sardine *Sardinops ocellata* and cape horse mackerel *Trachurus capensis* are shared between Angola and Namibia is of special interest and makes biomass estimates of these species in the southern region an important task. The main demersal species should be investigated by depth strata. Data on the component of juveniles of commercial species in bottom trawl catches are required for possible mesh regulations of the increasing Angolan fisheries for consume fishes. As regards work on the deep slope some fishing experiments should be made in important shrimping areas to test catch rates for rose shrimp *Parapenaeus longirostris*, striped red shrimp *Aristeus varidens* and hake *Merluccius polli* for comparison with similar data from the 1985/86 surveys. The hydrographic programme comprising surface temperature distribution and profiles in standard positions should be worked as before.

A first survey of the continental shelf of Angola was made in February-March this year and the results showed a marked decline in the stock biomasses of the sardinellas and the Cunene horse mackerel as compared to the 1985/86 survey results. Repeated assessments of these stocks represent therefore a task of high priority in the second survey. A detailed coverage of the Cunene-Tombua shelf to assess the joint stocks with Namibia will be repeated and extended to cover the shelf between Tombua and Namibe.

Participation

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Narrative

The vessel left Luanda 21 April and work commenced off Santa Marta 23 April. Seven days were spent to cover the shelf from Rio Cunene to Benguela, with an acoustic cum trawl survey and including an hydrographical profile off Baia dos Tigres and calibration of the acoustic instruments in the bay on 26 April. 1200 n.m. were steamed and 43 trawl stations worked. The weather conditions were favourable. Some few fishing vessels were observed, mostly in the area Cunene-Tombua. The shelf from Tombua to Benguela was passed from 28 to 30 April. Most parts of this coast has steep or rough bottom, inaccessible to bottom trawling. The acoustic observations indicated relatively high availability of horse mackerel along the edge from about Namibe southwards, but sampling is difficult because the fish avoid the midwater trawl even by night, and the use of bottom trawl is very restricted.

Figure 1 shows the course tracks with fishing stations and the hydrographic profiles.

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

2. Hydrography

Figure 2 shows the distribution of surface temperature observed with the thermograph at 4 m of depth and the distribution of temperature, salinity and oxygen in the profile off Baia dos Tigres. Comparison with earlier cruises at about the same time in 1985 and 1986 shows that the inshore surface water temperature is similar to that observed in 1986 but some 2°C colder than that found in 1985. The vertical section off Baia dos Tigres shows upwelling of subsurface water in the shelf area from about 75 m depth towards the surface.

3. Fish distribution and abundance from the acoustic system

The units of acoustic reflection is $0.1 \times \text{m}^2/\text{nm}^2$ reflecting surface. An arbitrary scale has been used to illustrate different levels of concentration. The integrator values were allocated to the following groups on the basis of trawl sampling and characteristic behaviour:

- Pelagic fish type 1, Clupeids and anchovies;
- Pelagic fish type 2, Carangids, scombrids, barracudas etc.;
- Demersal fish in mid water.

Cunene to Tombua

Figure 3 illustrates the distribution of fish as observed with the acoustic integration system. The pelagic type 2 species are nearly exclusively horse mackerels with a little hairtails in some areas. The Cape horse mackerel *Trachurus capensis* dominated on the outer shelf south of 16°30' S, whereas the Cunene horse mackerel is found in the shallow waters of Baia dos Tigres and on the northern shelf. The densest concentrations of horse mackerels are found on the shelf edge, and the distribution usually extended only one mile or less off the shelf during daytime. The horse mackerels were observed to feed on Euphaucides. The size composition of the cape horse mackerel on the outer shelf ranged up to about 33 cm with a prominent mode in the low 20 cm's, whereas the fish caught on the inner shelf were juveniles ranging from 5 cm to 11 cm, see ANNEX I. The length distribution of the Cunene horse mackerel has modes at 8 cm, 15 cm, and 21 cm at the inner shelf, whereas the fish caught at the outer shelf ranged from 17 cm to 30 cm. An estimate of total biomass of horse mackerel based on the acoustic integration data is 138 000 tonnes. The similar estimates for the same period of the year in 1985 and 1986 were 100 000 t and 37 000 t respectively. The similar estimate of the survey in February this year was 140 000 tonnes.

Pelagic type 1 species were only found close inshore in the Baia dos Tigres and up towards Tombua. Sampling with the bottom trawl in midwater by the use of floats on the headline gave a mixture of the sardine *Sardinops ocellata*, Cunene horse mackerels and some few specimens of *Sardinella maderensis*. Judging from the observed schooling behaviour it is thought that the sardine formed the main contributor to the biomass inside the bay, but the sardinella may be underestimated by these samples due to possible differences in the catchability of the pelagic species. The total biomass of this inshore aggregation of Pelagic 1 species is estimated at 22 000 tonnes, compared to 90 000 t in the previous survey. The sardine ranged from 23 cm to 27 cm.

The distribution of demersal fish recorded in midwater is shown in Figure 3. This is thought mainly to show fish that lifts off the bottom, particularly during night time.

Tombua to Benguela

As shown in Figure 3, significant recordings of fish were made between Tombua and Namibe and in the bay of Cuio. The fish distributions in the first part seem to represent an extension of those on the shelf further south. The pelagic 2 group in the Tombua-Namibe area had an estimated biomass of 22 000 t, whereas the biomass of the pelagic 2 fish on the Namibe-Benguela shelf was estimated at 2 000 t.

Pelagic type 1 species were found in dense schools in the inner part of the bay of Cuio (Fig. 3). Sampling with midwater trawl gave a mixture of *Sardinella aurita*, *Sardinella maderensis*, horse mackerel and some anchovies. Judging from the schooling behaviour observed during the sampling, it is assumed that the sardinella forms the main part of the fish biomass recorded as pelagic 1 type fish in this area. This biomass is estimated at 20 000 t. The sardinella ranged from 23 cm to 43 cm.

As in previous surveys extensive and dense recording were made of mesopelagic fish, myctophids over the slope along this coast (not shown in fish distribution map). They are usually found in a layer at about 200 m depth during the day, but rise towards the surface at night.

4. Results of the fishing experiments, catch compositions and swept area biomass estimates

The fishing forms part of a programme for "swept area" biomass estimation, and for this purpose the trawl stations are positioned in advance more or less randomly and with no intention of obtaining high catch rates. The catch rates thus do not simulate those of a commercial fishery.

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

Cunene to Tombua

There is some change of composition by depth and there is in addition a tendency for a size diversity by depth with smaller sized fish in shallow water. The trawl data are therefore, as in previous cruise, analysed for the inner- and outer shelf separately using the depth ranges 0-70 m and 70-150 m respectively.

Table 1 shows the catch rates standardized to kg/hour for the main groups of resources on the two parts of the shelf. Hauls with the pelagic trawl are not included. The highest catch rates for both demersal and pelagic fish including sharks were obtained on the outer shelf.

Table 1. Cunene to Tombua. Catch rates by main groups in bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	PEP.	Pelagic	Demersal	Sharks	Cephalopod	Other
196	55	58.29	188.58			72.00
200	70	835.00	875.00	60.00	5.00	27.40
207	70	112.20	951.90	16.80	42.00	151.20
211	37	66.40	102.00	10.00	400.00	30.00
215	37	5.00	33.00	11.00	45.00	43.54
216	51	71.40	239.40		8.54	8.40
MEAN		191.38	398.31	16.30	83.42	55.42

OUTER SHELF

ST. NO.	DEP.	Pelagic	Demersal	Sharks	Cephalopod	Other
192	96	8.00	56.40	5.60	196.80	37.60
193	114	194.20	560.80	6.80	52.00	121.40
195	84		88.00	24.00		258.00
197	108	263.40	1734.80	2685.00	101.32	212.60
198	125	1616.91	1601.74	33.00	13.20	196.83
201	101	1233.60	2212.40	86.00	41.40	62.00
202	136	50.00	309.00	4.00	9.00	134.00
203	100	3.00	622.50	22.50	40.50	76.50
204	76	43.20	1800.00	288.00	54.00	234.00
205	120	64.80	2511.00	75.60	75.60	405.00
206	137	8.40	618.80		30.80	204.40

212	74	31.60	2377.20	4.80		39.60
213	82		105.80	5.20	15.80	99.80
214	71	11.40	69.60	3.00	53.20	34.50
217	97	82.97	2254.97		15.43	217.38
MEAN		240.77	1128.20	216.23	46.94	155.57

The african cuttlefish *Sepia bertheloti* represented some 60 % of the cephalopod catches, while some 30% of the catches was the squid *Loligo vulgaris*. The size compositions of samples of these species are shown in ANNEX I. The pink cuttlefish *Sepia orbignyana* occurred in small amounts in the offshore catches. Some 90 % of the shark catches consisted of the bigeyed spurdog *Squalus megalops*.

Table 2 shows the catch rates of the pelagic species by families from the two parts of the shelf by bottom trawl. These data are not very meaningful as indices of abundance of these types of fish, but they give an indication of the availability of the various forms. Pelagic 1 type fish does not occur in the bottom hauls, while the horse mackerel are occasionally very abundant. Both species Cape- and Cunene horse mackerels occurred over the whole shelf, but while the Cape species dominated on the outer part and to the south, the Cunene species appeared to be most common inshore and in the northern part (Table 3). As mention previously there was a distinct difference in size composition for both of these species between the outer and inner shelf with small sizes juveniles dominating on the inner shelf, see ANNEX I.

Table 2. Cunene to Tombua. Catch rates by families of pelagic fish in pelagic and bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Clupeids	Anchovies	Carangids	Hairtails	Scomberids	Other
191	62			201.94			6.86
194	36						47.13
196	55			58.29			260.58
200	70			830.00	5.00		967.40
207	70			8.40	100.80	3.00	1161.90
208	19			10.15			83.08
209	15	103.15	0.23	86.77			40.50
210	17	3288.60		610.68			300.72
211	37			64.00		2.40	542.00
215	37			5.00			132.54
216	51			15.40	56.00		256.34
218	26			13.85			434.77
MEAN		282.65	0.02	158.71	13.48	0.45	352.82

OUTER SHELF

ST. NO.	DEP.	Clupeids	Anchovies	Carangids	Hairtails	Scomberids	Other
192	96			8.00			296.40
193	114			192.00	2.20		741.00
195	84						370.00
197	108			263.40			4733.72
198	125			1616.91			1844.77
199	170			17.76			12.11
201	101			1233.60			2401.80
202	136			35.00	15.00		456.00
203	100			3.00			762.00
204	76			43.20			2376.00
205	120			64.80			3067.20
206	137				8.40		854.00
212	74			31.60			2421.60
213	82						226.60
214	71			8.40		3.00	165.30
217	97			82.97			2487.78
MEAN				225.04	1.60	0.19	1451.02

Table 3. Cunene to Tombua. Catch rates of Cape horse mackerel and Cunene horse mackerel in pelagic and bottom trawl hauls, standardized to kg/hour.

ST. NO.	DEP.	Cape h. mac	Cunene h. m	Other
191	62	201.94		6.86
192	96	8.00		296.40
193	114	176.00	10.00	743.20
194	36			47.13
195	84			370.00
196	55	58.29		260.58
197	108	263.40		4733.72
198	125	1550.91	66.00	1844.77
199	170	17.76		12.11
200	70	830.00		972.40
201	101	1233.60		2401.80
202	136	35.00		471.00
203	100	3.00		762.00
204	76	43.20		2376.00
205	120	64.80		3067.20
206	137			862.40
207	70	8.40		1265.70
208	19	10.15		83.08
209	15		86.77	143.88
210	17		610.68	3589.32
211	37		64.00	544.40
212	74		31.60	2421.60
213	82			226.60
214	71		8.40	168.30
215	37		5.00	132.54
216	51		15.40	312.34
217	97		82.97	2487.78
218	26		13.85	434.77
MEAN		160.87	35.74	1108.50

Table 4 shows the catch rates of demersal fish in the successful bottom hauls by families. The large-eye dentex *Dentex macropthalmus* dominate completely the catches of seabreams in both areas. Also for this species the size compositions from the two parts differ with a predominance of small sized and juvenile fish on the inner shelf.

Table 4. Cunene to Tombua. Catch rates by families of demersal fish in bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Seabreams	Croakers	Hakes	Other
200	70	10.00	10.00		1782.40
207	70	794.10	36.00		444.00
211	37	102.00			506.40
215	37	25.50			112.04
216	51	236.60			91.14
MEAN		233.64	9.20		587.20

OUTER SHELF

ST. NO.	DEP.	Seabreams	Croakers	Hakes	Other
192	96	8.00	8.00		288.40
193	114	427.20	76.80	4.00	427.20
197	108	1175.20	81.00		3740.92
198	125	969.00	73.54	4.46	2414.68
201	101	1240.60	792.60	17.20	1585.00
202	136	137.00	3.00	5.00	361.00
203	100	469.50	7.50	7.50	280.50
204	76	3.60	32.40	3.60	2379.60
205	120	1350.00		324.00	1458.00
206	137	168.00	126.00	18.20	550.20
212	74	2189.00	37.80		226.40
213	82	47.80			178.80
214	71	29.40			147.30
217	97	2177.31		20.74	372.70
MEAN		742.26	88.47	28.91	1029.34

Croakers were common in many catches of the outer shelf and consist of 95 % African weakfish *Atractoscion aequidens* of large size and 5 % of Canary drum *Umbrina canariensis*.

Hakes appeared in small amounts in the southern parts of the outer shelf. The Cape hake *Merluccius capensis* contributed with 20 % and the Bequela hake *M. polli* with 80 % of the catches.

Table 5 shows the swept area estimates of mean densities by species and depth strata based on the 19 successful bottom trawl hauls made. The large-eye dentex has the highest density at all depths above 50 m. For most species the densities are highest in deeper waters. One should note that these calculations assume a value of the catchability quotient equal to 1.

Table 5. Cunene to Tombua. Swept area estimates of fish densities by species and depth ranges. Tonnes/nm².

SPECIES NAME	CATCH DISTRIBUTION BY KM/HM GROUPS						% incidence	Mean dens. t/nm ²	Mean densities by bottom depth strata t/nm ²			
	0-10	10-30	30-100	100-300	300-1000	>1000			0-50m	50-100m	100-200m	200-262
<i>Dentex macrophthalmus</i>	3	3	3	3	7		86	23.63	0.90	24.90	31.38	
<i>Squalus megalops</i>	3	3	2	1		1	48	7.62		1.65	20.25	
<i>Synagrops microlepis</i>	2		1		2		24	5.08		9.67	0.06	
<i>Pterothrissus belloci</i>	1	3	4	3			52	3.86		2.20	8.14	
<i>Trigla lyra</i>	2	5	3	1			52	2.18		0.78	5.31	
<i>Atractoscion aequidens</i>	3	3	2	1			43	2.05	0.16	0.20	5.75	
<i>Zeus faber</i>	10	4	2				76	0.94	0.01	0.67	1.76	
<i>Sepia bertheloti</i>	5	2	2				43	0.86	3.58	0.23	0.69	
<i>Scorpaena normani</i>	2	2	3				29	0.78		0.05	2.26	
<i>Loligo vulgaris</i>	3	3	2				67	0.77	1.22	0.77	0.57	
<i>Dicolocoglossa cuneata</i>	6	7	1				67	0.77	0.95	0.88	0.51	
<i>Chelidonichthys capensis</i>	6	3	1				57	0.69	0.10	0.67	0.96	
<i>Merluccius polli</i>	3	1		1			24	0.69		0.19	1.77	
<i>Sepia orbignyana</i>	5	3					38	0.44		0.47	0.57	
<i>Raja miraletus</i>	8	1	1				48	0.40	0.13	0.47	0.40	
<i>Raja straleni</i>			1				5	0.29			0.86	
<i>Umbrina canariensis</i>	4	3					33	0.28		0.35	0.31	
Gobiidae	4	2					29	0.28		0.51	0.03	
<i>Octopus vulgaris</i>	3		1				19	0.23		0.42	0.02	
<i>Ferulibatrachus eiminensis</i>	1		1				10	0.21		0.34	0.09	
<i>Lepidotrigla</i> sp			1				5	0.20		0.39		
<i>Citharus linguatula</i>	8	2					38	0.20		0.26	0.18	
<i>Paratomus saltatrix</i>			1				5	0.18		0.34		
<i>Zenopsis conchifer</i>	1	2					14	0.16			0.47	
<i>Spondyllosca cantharus</i>	2		1				14	0.16		0.31		
<i>Serranus cabrilla</i>	3	1					19	0.13	0.02	0.17	0.11	
<i>Mylicbatis aquila</i>	1	1					5	0.13	0.13	0.21		
<i>Pagellus bellottii</i>	6	1					33	0.12	0.15	0.06	0.21	
<i>Anthias anthias</i>		1					5	0.12		0.23		
<i>Arnoglossus capensis</i>	8						38	0.10	0.04	0.06	0.19	
<i>Chelidonichthys gabonensis</i>	2	1					14	0.09		0.17		
<i>Lithognathus normyrus</i>	5						24	0.09	0.22	0.11		
<i>Scorpaena angolensis</i>	2						10	0.09		0.09	0.12	
<i>Pontinus kuhli</i>		1					5	0.08			0.25	
<i>Mustelus mustelus</i>	4						19	0.07	0.26	0.07		
<i>Merluccius capensis</i>	5						24	0.06			0.18	
<i>Galeichthys feliceps</i>		1					5	0.06		0.11		
<i>Microchirus boscanion</i>	5						24	0.05		0.07	0.03	
<i>Balistes capriscus</i>	3						14	0.05	0.32	0.01		
Other fish								0.37	0.57	0.38	0.34	
Sum all species								54.56	8.76	48.46	83.77	
Number of stations included in analysis, total and by depth strata								21	3	11	7	

Table 6 shows the estimates of areal extension of the depth strata and the resulting biomasses for all demersal species (excluding sharks), and separately for the large-eye dentex and the two croaker species caught in some quantities, African weakfish *Atractoscion aequidens* and Canary drum *Umbrina canariensis*. All demersals are estimated at 66 400 tonnes compared to 26 800 tonnes for the same area in February. The croakers are also more abundant this time, 4 370 t against 1 570 t last time.

Table 6. Cunene to Tombua. Biomass estimates of groups of demersal fish by depth strata. Tonnes.

Shelf area	Total 1 670 nm ²	0 - 50 m 420 nm ²	50 - 100 m 620 nm ²	100 - 200 m 630 nm ²
Dentex mac.	35 400	400	15 000	20 000
Croakers	4 370	70	300	4 000
All demers.	66 400	1 400	27 000	38 000

Tombua - Benguela

Table 7 shows the catches of the main groups from Tombua to Namibe (St. no. 188-221) and from Namibe to Benguela. The demersals dominate in the catches. Some 60 % of the demersals were seabreams and 10 % croakers, the croakers being most abundant in the Tombua-Namibe area. One extraordinary large catch (St. No. 221) consisted of *Dentex macrophthalmus* mainly. Canary drum dominated the croakers. The thinlip split-fin *Synagrops microlepis* is dominating in the deeper water of the northern part. Most of the pelagic catch was horse mackerel and of the Cunene type only. The size composition of the horse mackerel has two modes, one at 14 cm another at 32 cm.

Table 7. Tombua to Benguela. Catch rates by main groups in bottom trawl, standardized to kg/hour.

ST. NO.	DEP.	Pelagic	Demersal	Sharks	Cephalopod	Other
188	33		299.10			9.78
189	81		602.40			94.20
190	107		504.40		2.60	76.60
221	97	388.74	5555.40			56.52
222	102	3.00	204.40	20.00	3.00	135.00
223	115		210.96			104.40
224	114	7.20	248.40			94.80
225	96	455.00	1461.60		14.40	124.40
226	48	655.00	462.50			60.00
227	73	93.60	419.40		3.60	100.98
228	101		2672.00			84.00
229	95	40.00	1376.00			155.00
MEAN		136.88	1168.05	1.67	1.97	91.31

ST. NO.	DEP.	Seabreams	Croakers	Grunts	Hakes	Splitfin	Other
180	33	207.20	77.00	7.70			16.98
189	81	446.40	132.00	24.00			94.20
190	107	265.20	239.20				79.20
221	97	5194.95	360.45				445.26
222	102	141.40	45.00			18.00	161.00
223	115	174.96	36.00				104.40
224	114	174.00	74.40				102.00
225	96	133.00	26.60			1281.00	614.80
226	48	27.50	15.00	420.00			715.00
227	73	21.60	25.20	12.60		360.00	198.18
228	101	352.00				2320.00	84.00
229	95	110.00	8.00		4.00	1204.00	245.00
MEAN		604.02	86.57	38.69	0.33	431.92	238.34

The shelf between Tombua and Namibe is partly inaccessible for bottom trawling and few successful bottom hauls were made. Based on three hauls the stock biomass of demersal species was estimated at an order of magnitude of 30 000 t, mostly seabreams. In the Namibe-Benguela part 7 successful hauls were made at depth 50-200 m. Based on these the biomass of demersal fish was estimated at 6 000 tonnes. The thinlip splitfin contributed to the stock by some 60 %, the seabreams by 20 %.

Figure 1. Course tracks, fishing stations and hydrographical profiles, Cunene to Tombua and Tombua to Benguela.

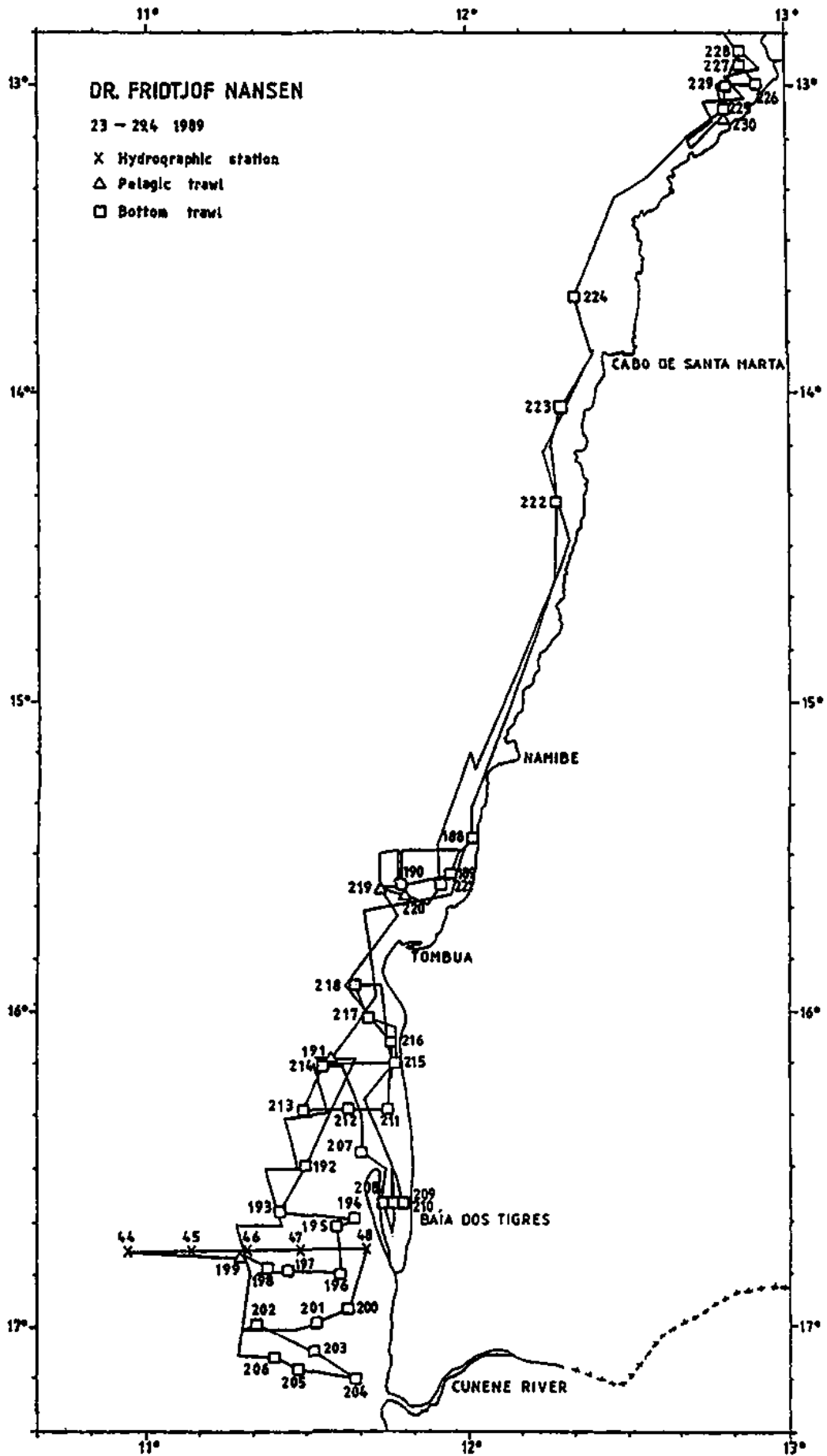
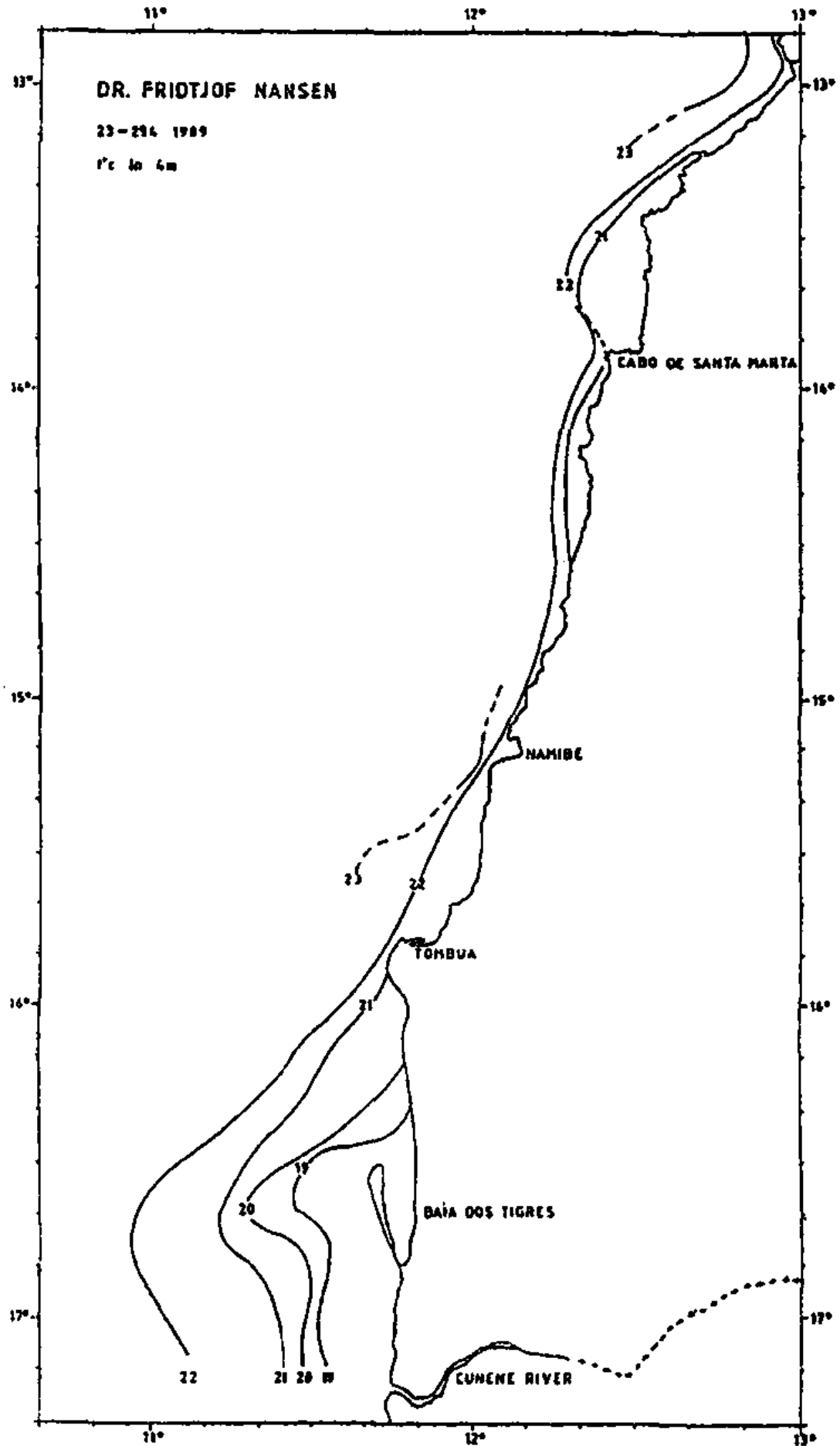


Figure 2. Temperature at sea surface and hydrographic profile Baia dos Tigres - west.



BAIA DOS TIGRES 25.4 1989

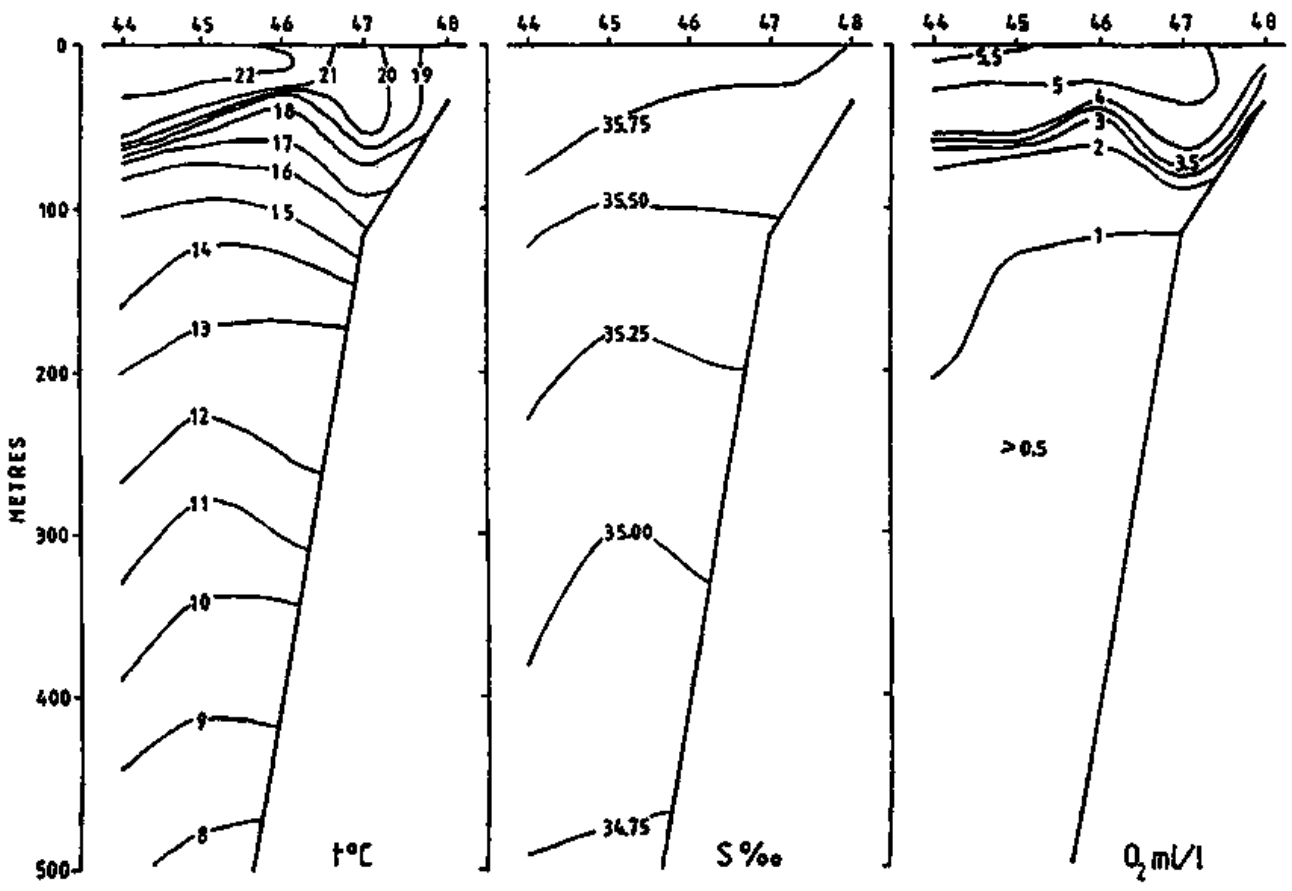
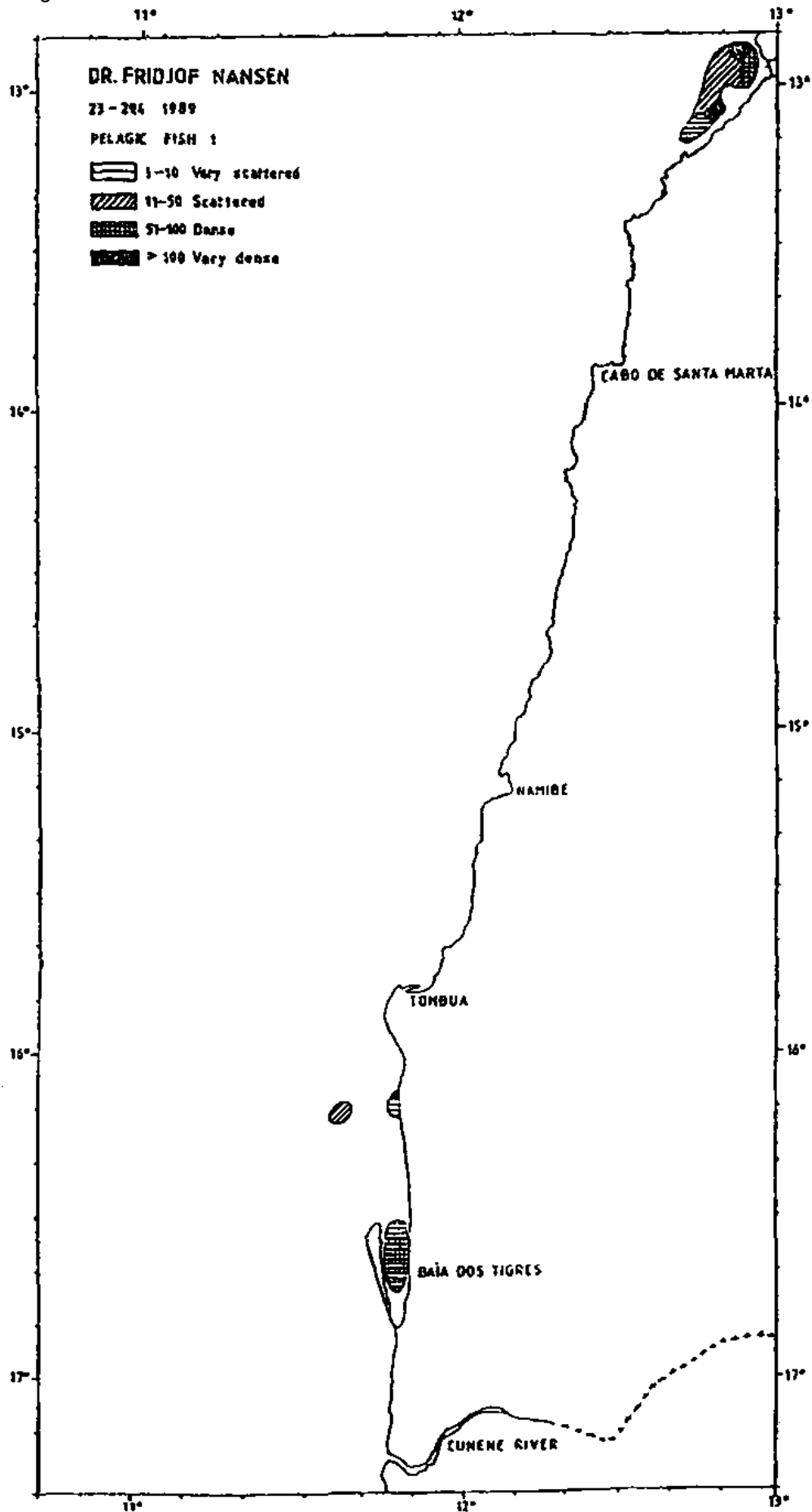
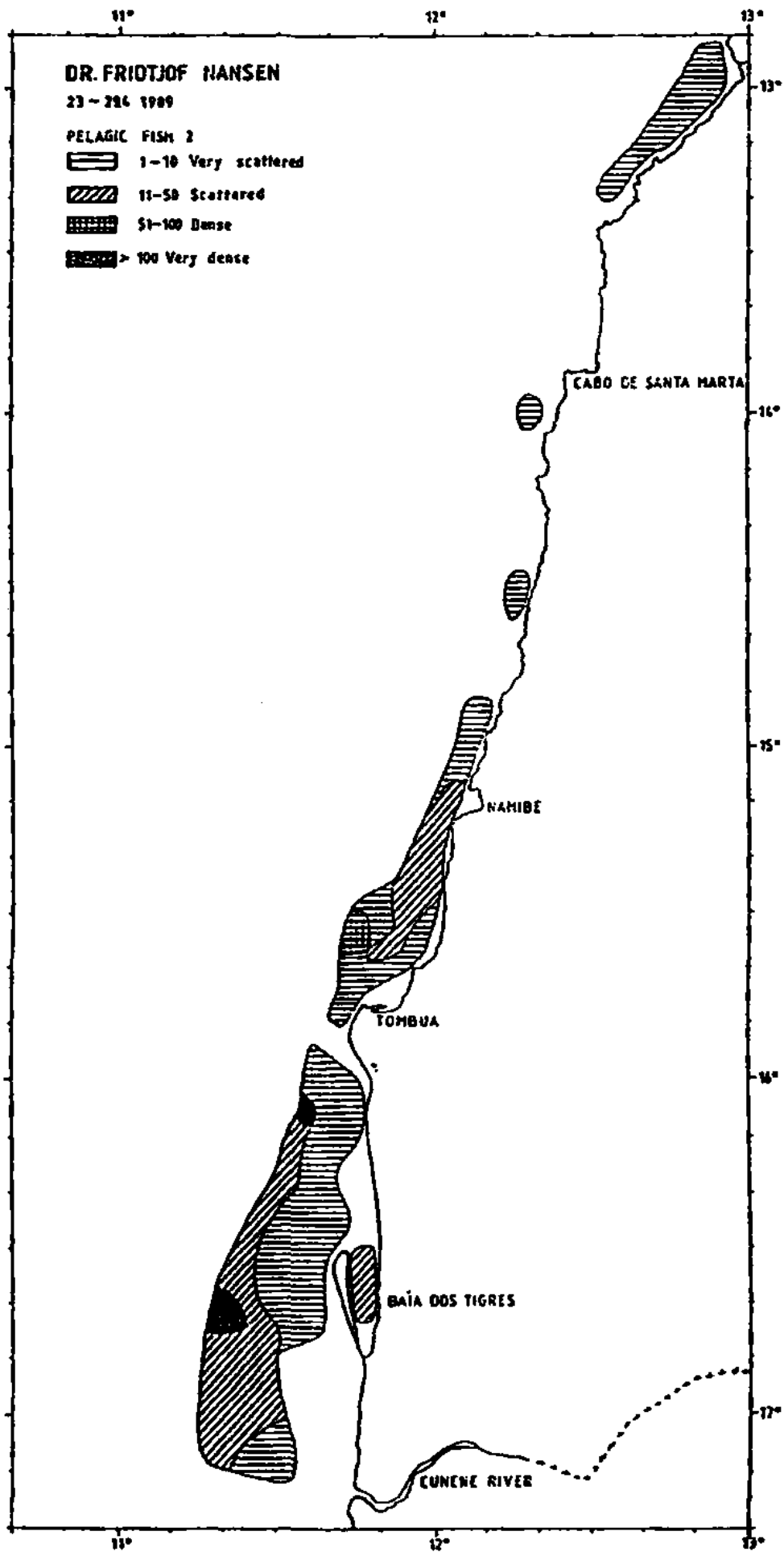
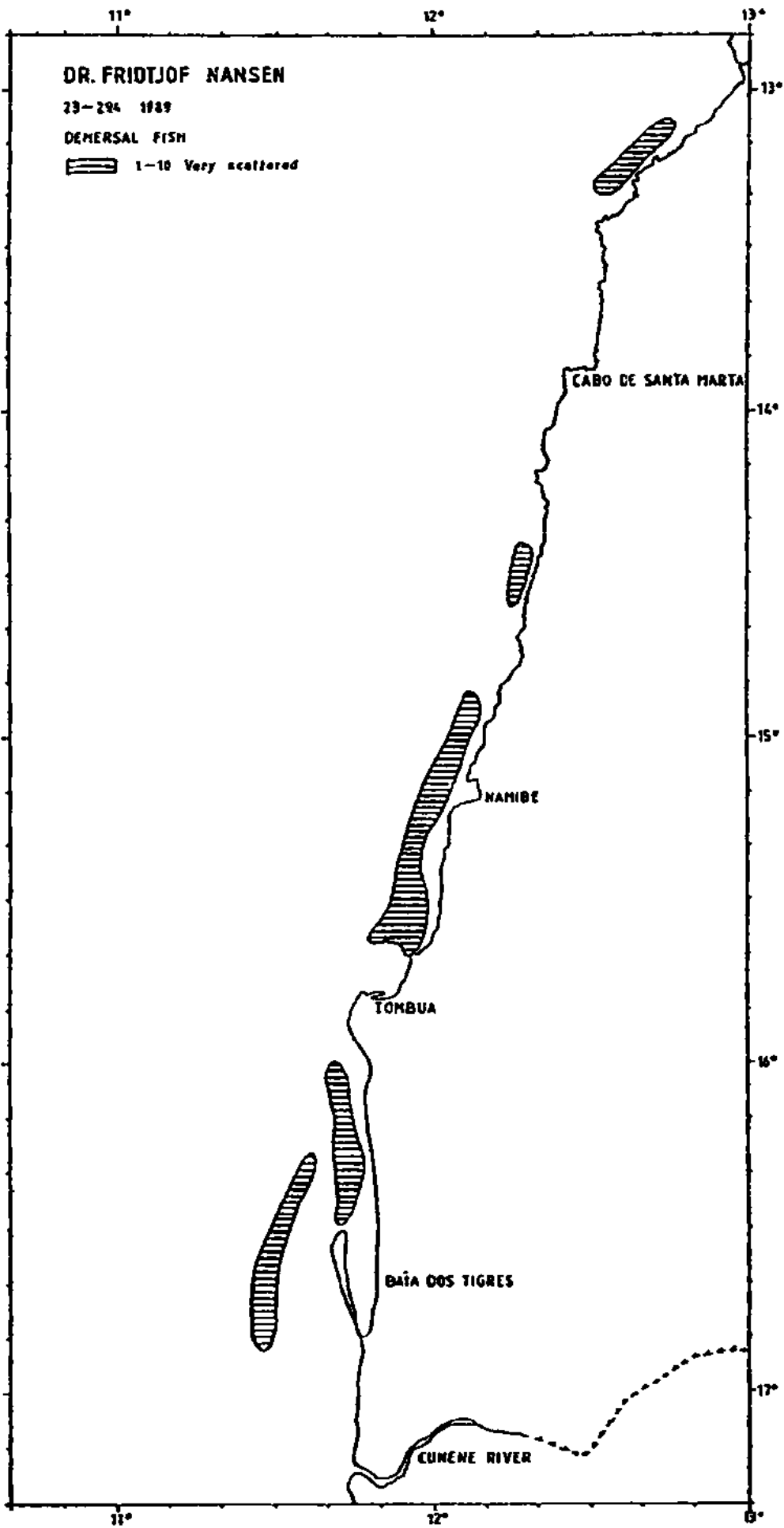


Figure 3. Distribution of pelagic type 1, pelagic fish type 2 and demersal fish, Cunene to Tombua and Tombua to Benguela

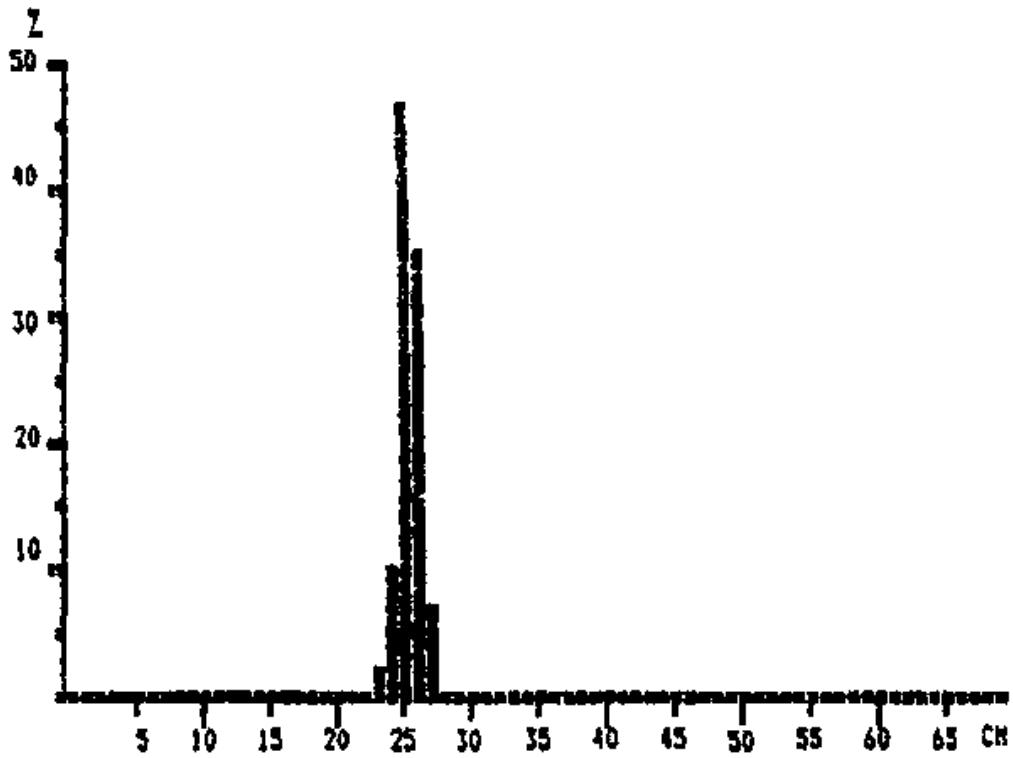






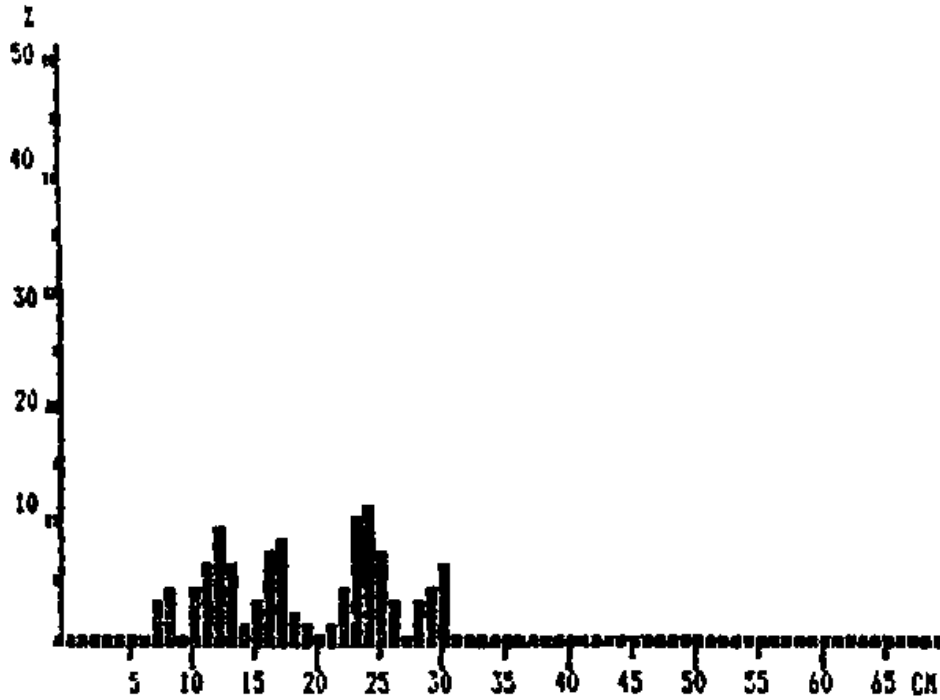
ANNEX I. CUNENE - BENGUELA. LENGTH DISTRIBUTIONS OF MAIN SPECIES

Sardinops ocellata, Cunene to Tombua



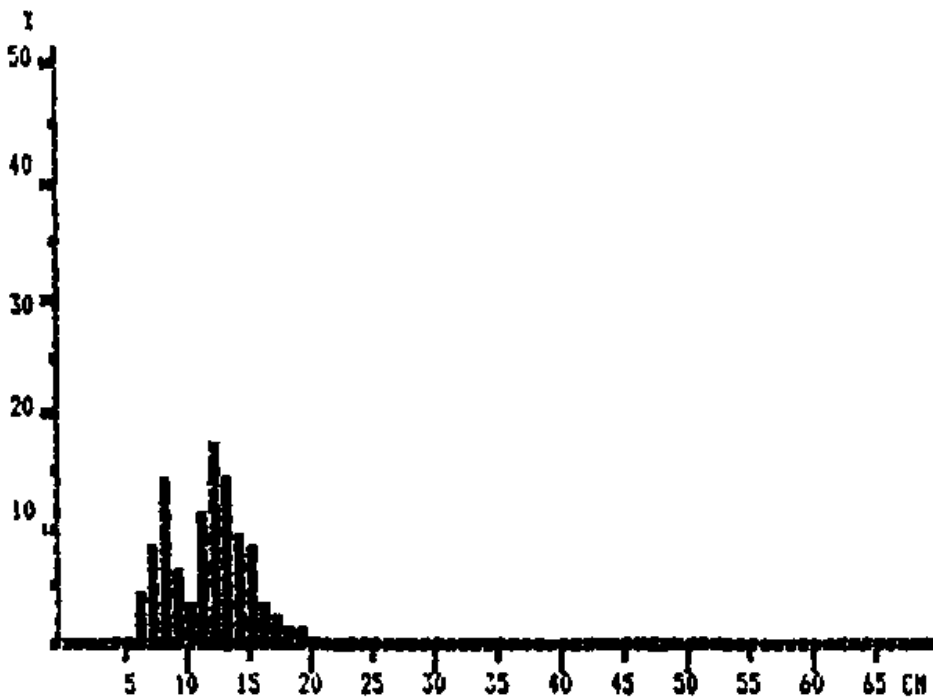
Pooled sample (simple adding)
MEAN LENGTH = 25.34 cm N = 107
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 305 AND 306.
SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Trachurus trecae, Cunene to Tombua < 70 m



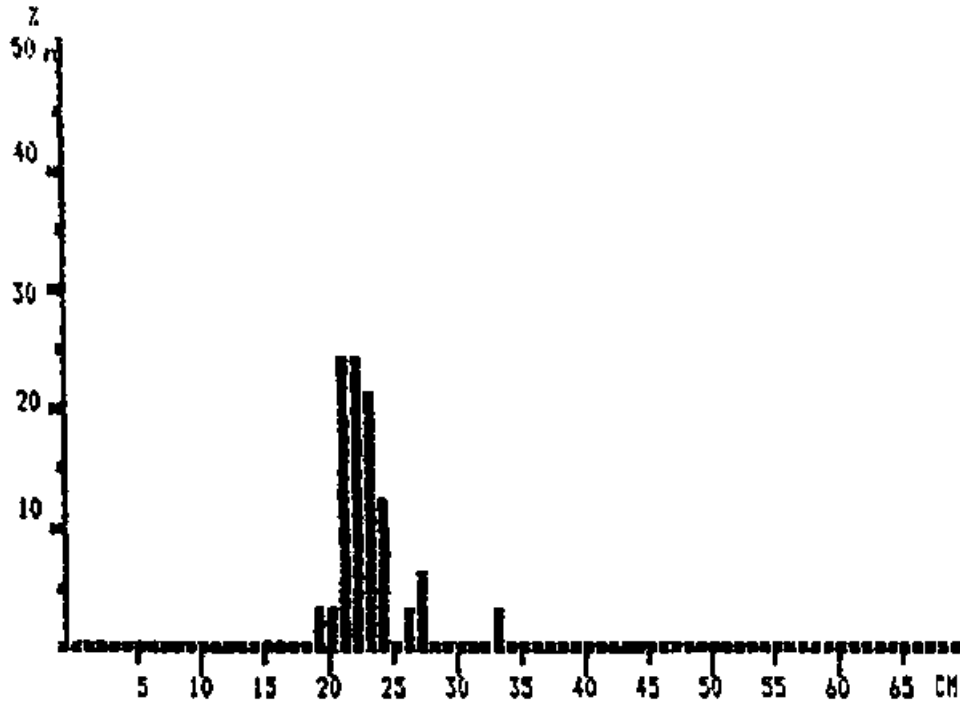
Pooled sample (simple adding)
MEAN LENGTH = 18.86 cm N = 103
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 305 AND 310.
SAMPLES SEARCHED BETWEEN ST. NO. 313 AND 313.

Trachurus trecae, Cunene to Tombua > 70 m



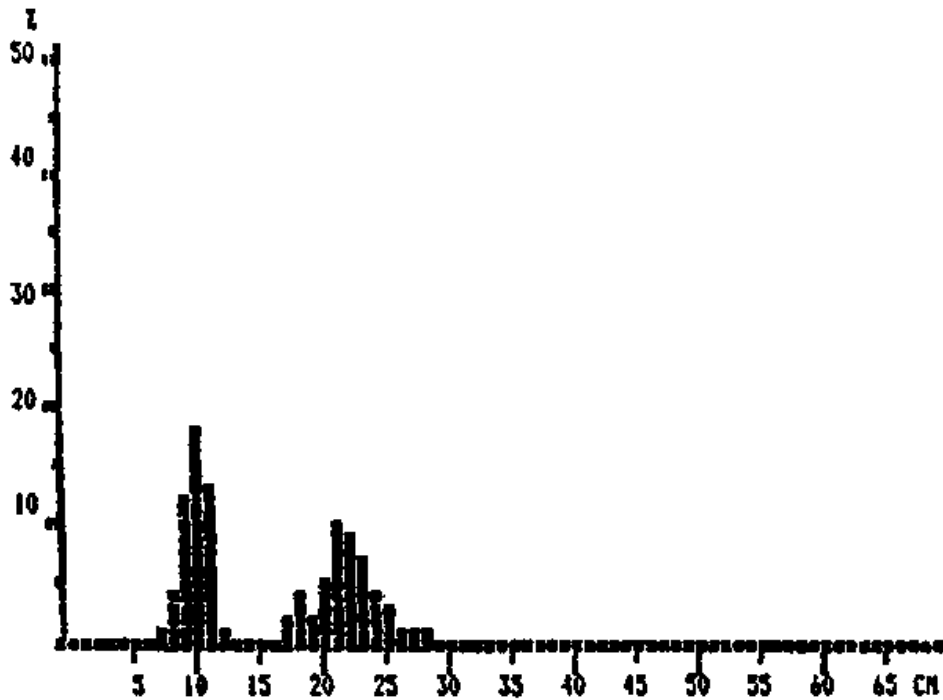
Pooled sample (simple adding)
MEAN LENGTH = 11.32 cm N = 157
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 307 AND 312.
SAMPLES SEARCHED BETWEEN ST. NO. 314 AND 314.

Trachurus capensis, Cunene to Tombua < 70 m



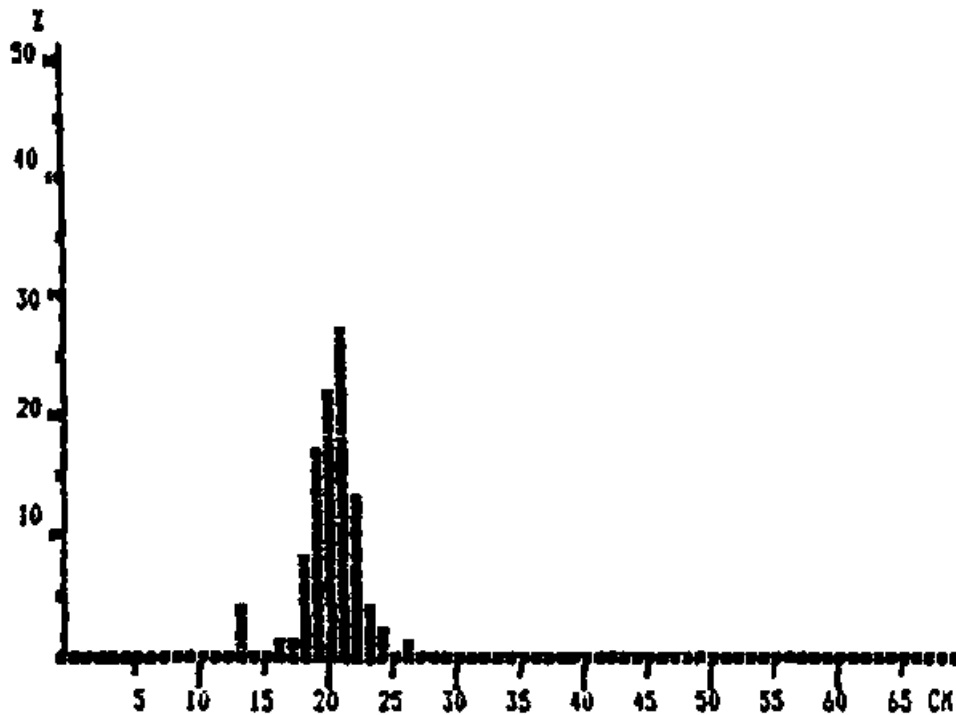
Pooled sample (simple adding)
MEAN LENGTH = 22.82 cm N = 33
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 295 AND 295.
SAMPLES SEARCHED BETWEEN ST. NO. 313 AND 313.

Trachurus capensis, Cunene to Tombua > 70 m



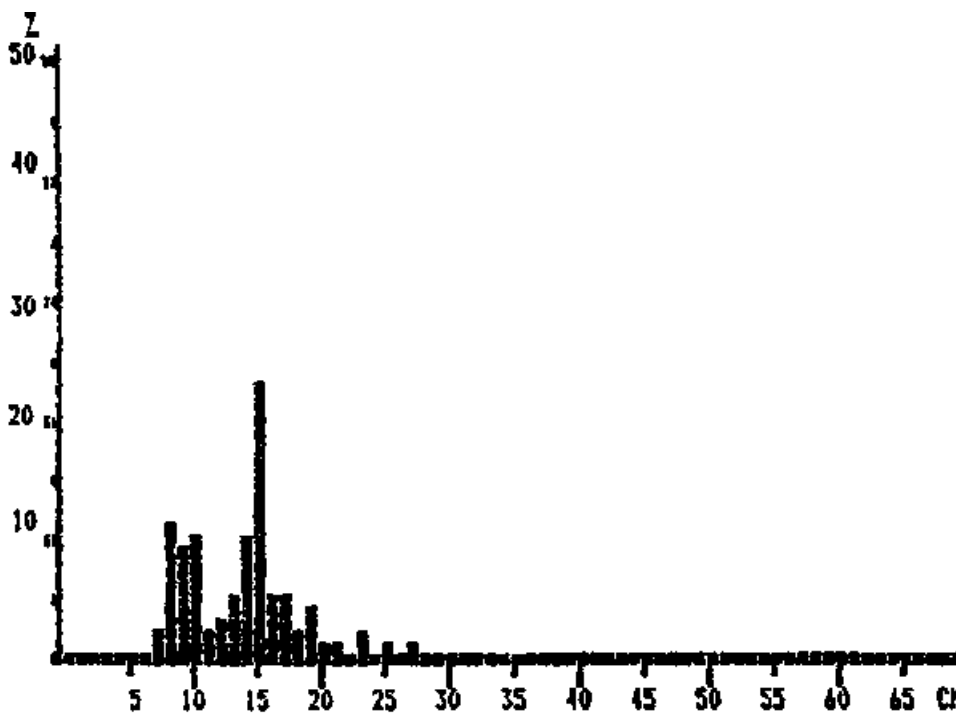
Pooled sample (simple adding)
MEAN LENGTH = 15.85 cm N = 474
NUMBER OF SUBSAMPLES: 7
SAMPLES FOUND BETWEEN ST. NO. 289 AND 300.
SAMPLES SEARCHED BETWEEN ST. NO. 314 AND 314.

Lithognathus mormyrus, Cunene to Tombua



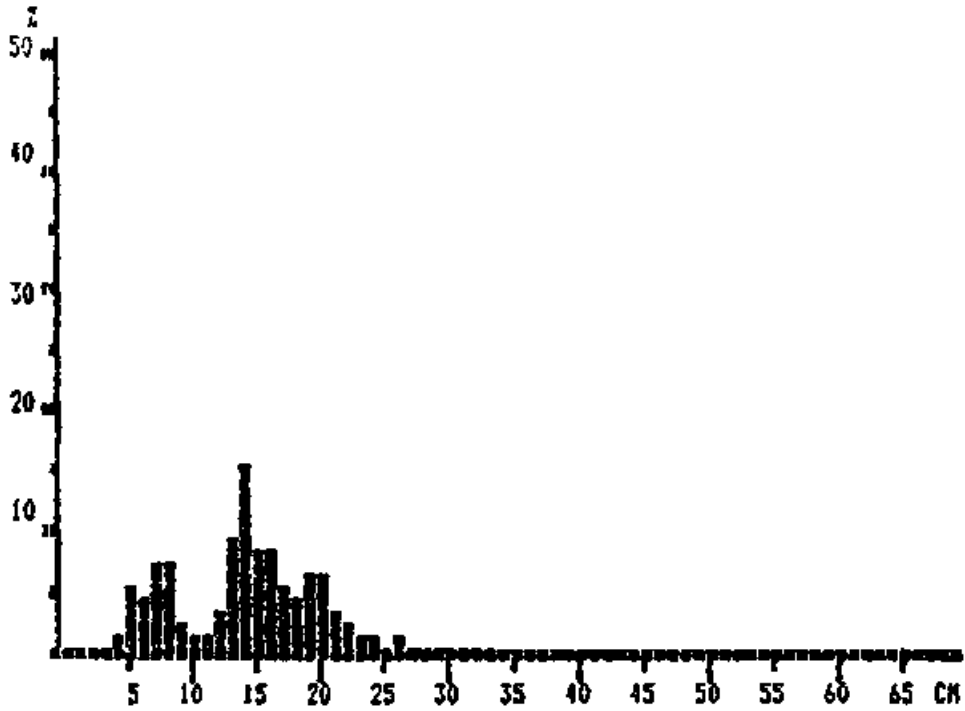
Pooled sample (simple adding)
 MEAN LENGTH = 20.14 cm N = 134
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 304 AND 304.
 SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Dentex macrophthalmus, Cunene to Tombua < 70 m



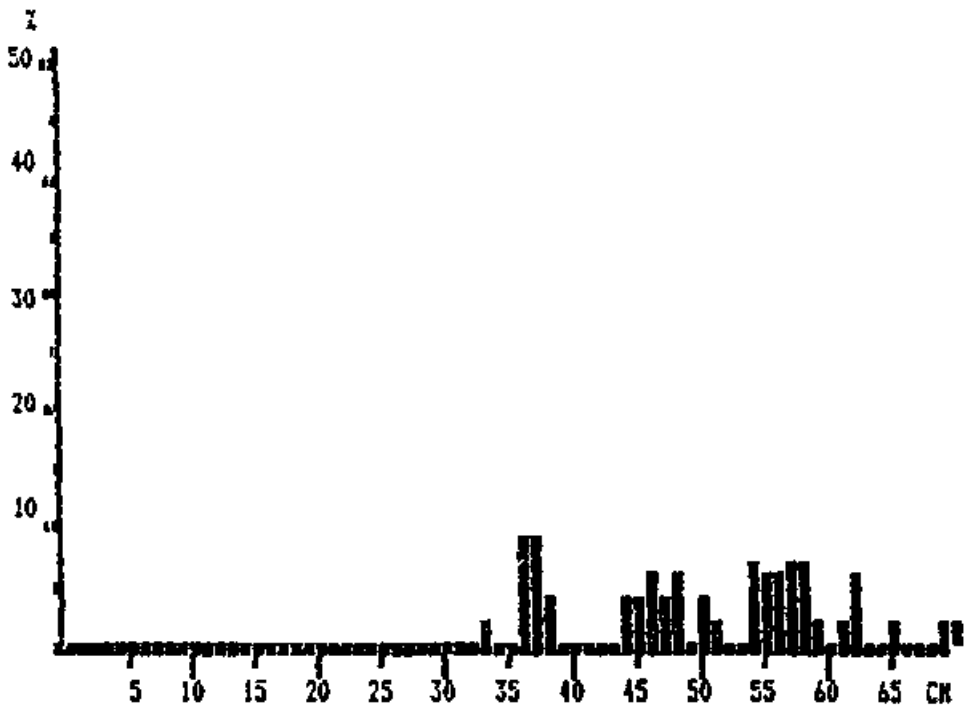
Pooled sample (simple adding)
 MEAN LENGTH = 13.57 cm N = 209
 NUMBER OF SUBSAMPLES: 3
 SAMPLES FOUND BETWEEN ST. NO. 302 AND 313.
 SAMPLES SEARCHED BETWEEN ST. NO. 313 AND 313.

Dentex macrophthalmus, Cunene to Tombua > 70 m



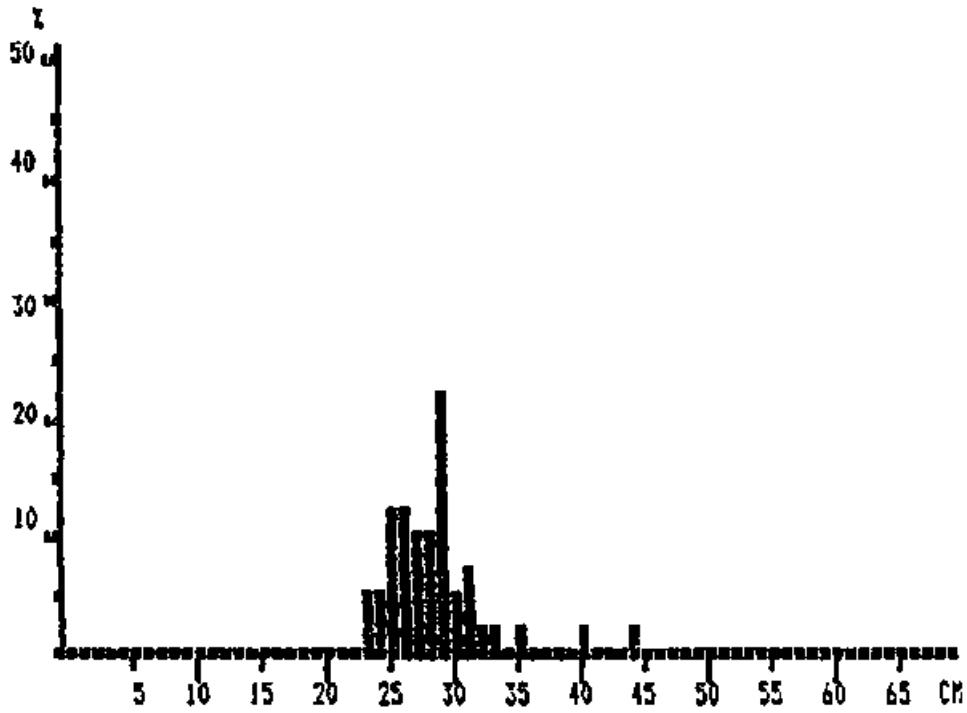
Pooled sample (simple adding)
 MEAN LENGTH = 13.95 cm N = 872
 NUMBER OF SUBSAMPLES: 10
 SAMPLES FOUND BETWEEN ST. NO. 289 AND 308.
 SAMPLES SEARCHED BETWEEN ST. NO. 314 AND 314.

Atractoscion aequidens, Cunene to Tombua



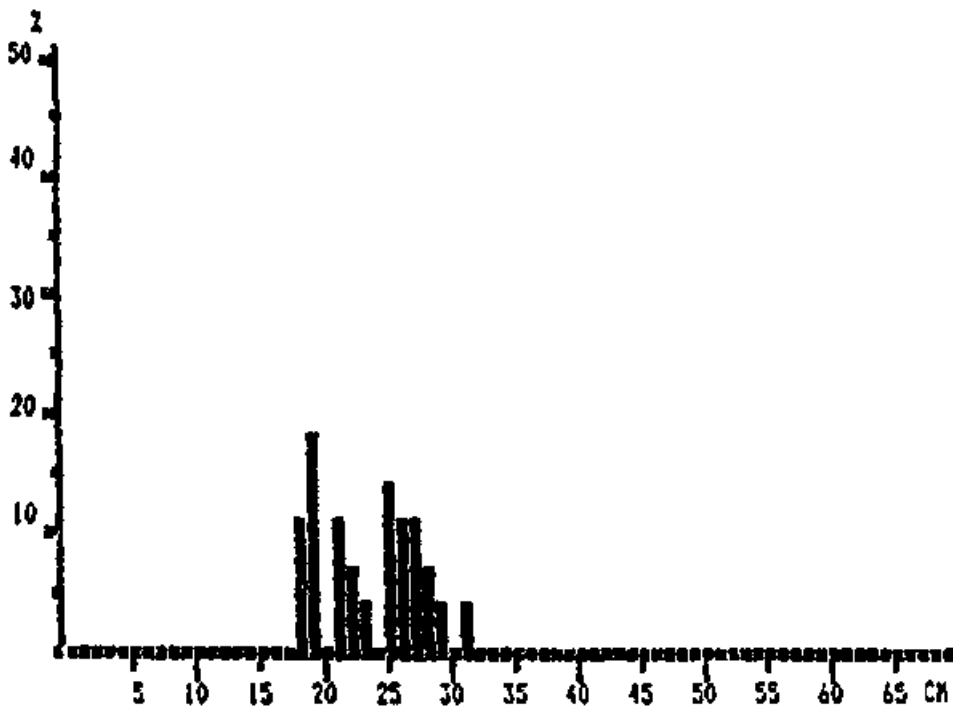
Pooled sample (simple adding)
 MEAN LENGTH = 49.96 cm N = 54
 NUMBER OF SUBSAMPLES: 3
 SAMPLES FOUND BETWEEN ST. NO. 294 AND 308.
 SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Dentex canariensis, Cunene to Tombua



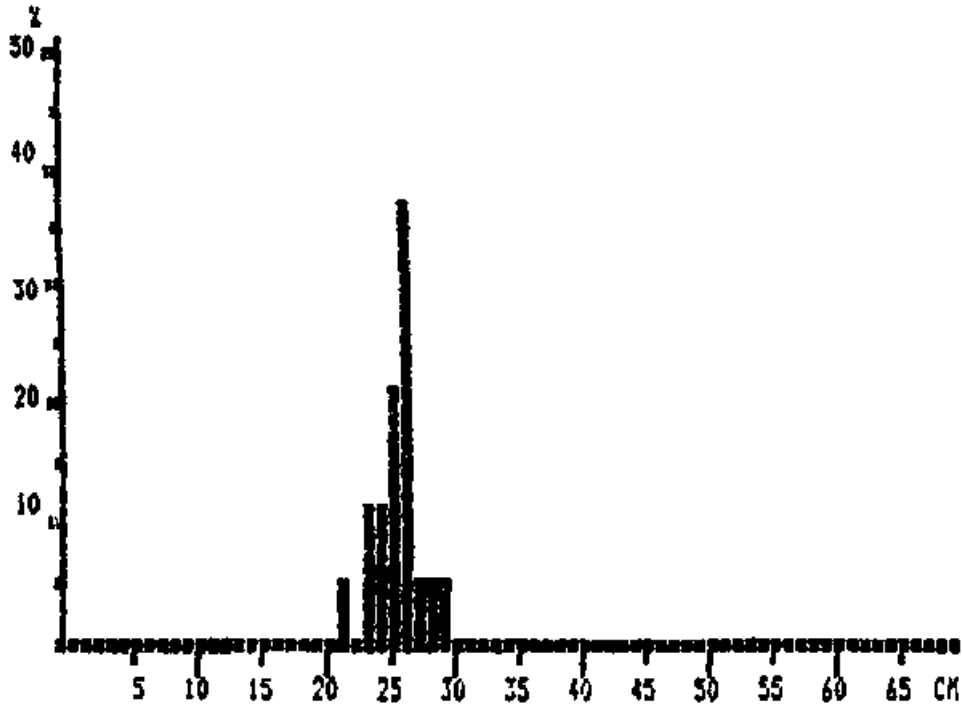
Pooled sample (simple adding)
 MEAN LENGTH = 28.46 cm N = 41
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 309 AND 309.
 SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Pagellus bellottii, Cunene to Tombua



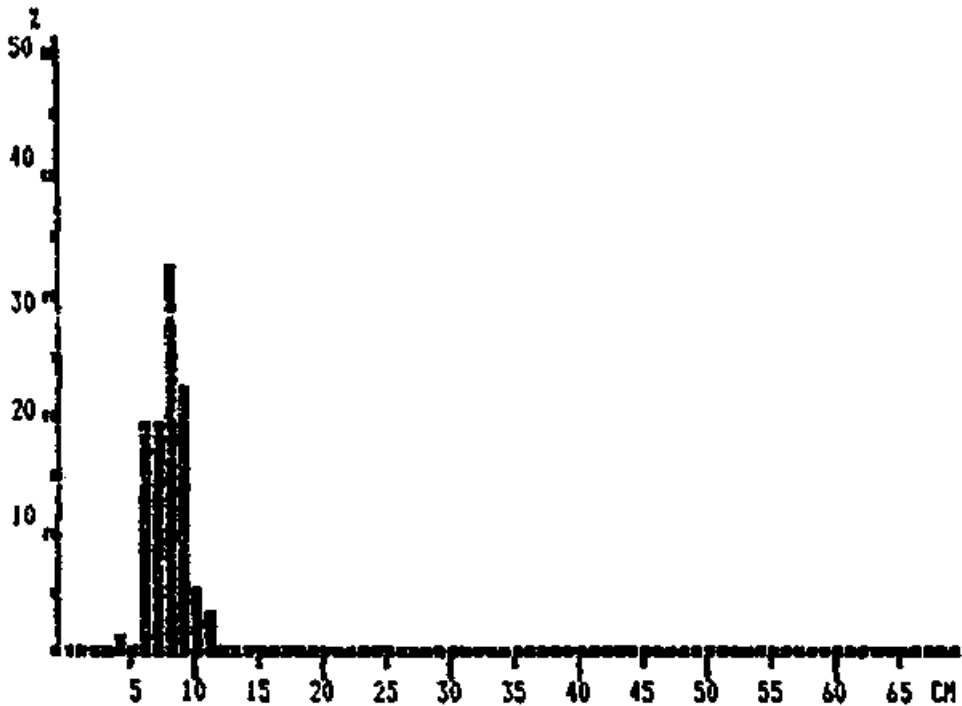
Pooled sample (simple adding)
 MEAN LENGTH = 23.36 cm N = 28
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 309 AND 309.
 SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Dicolocoglossa cuneata, Cunene to Tombua



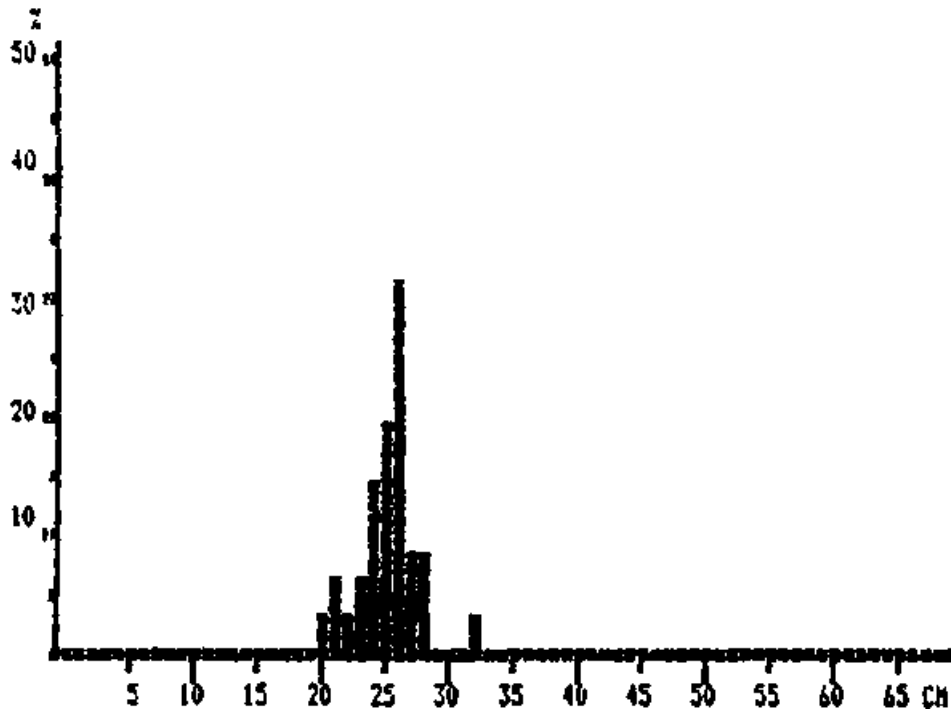
Pooled sample (simple adding)
MEAN LENGTH = 25.32 cm N = 19
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 309 AND 309.
SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Synagrops microlepis, Cunene to Tombua



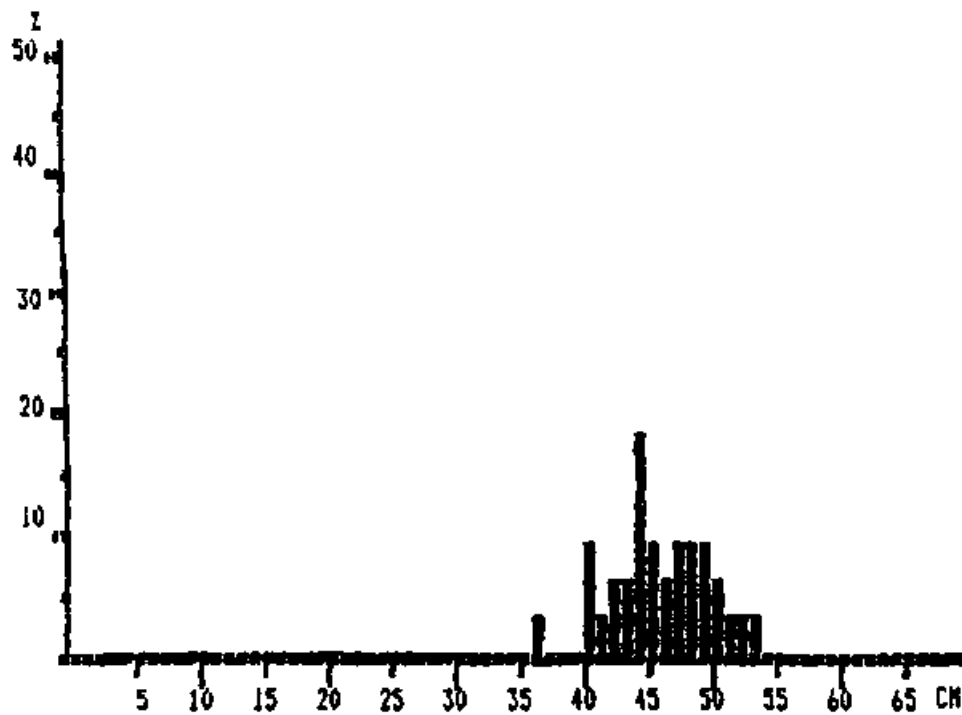
Pooled sample (simple adding)
MEAN LENGTH = 7.81 cm N = 118
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 296 AND 296.
SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Trigla lyra, Cunene to Tombua



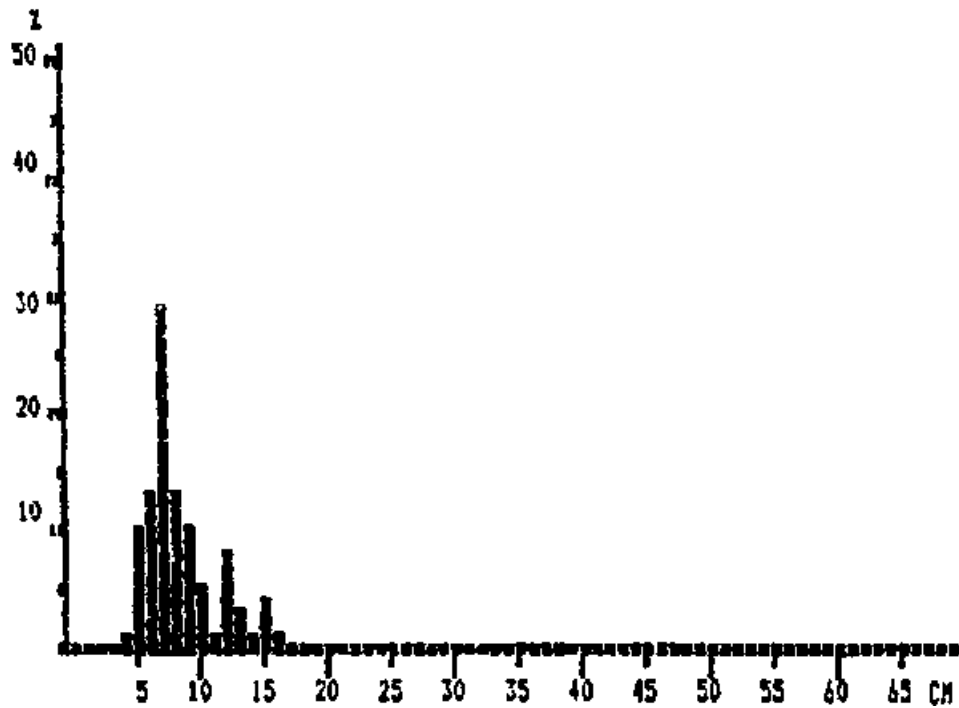
Pooled sample (simple adding)
MEAN LENGTH = 25.22 cm N = 36
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 294 AND 294.
SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Squalus megalops, Cunene to Tombua



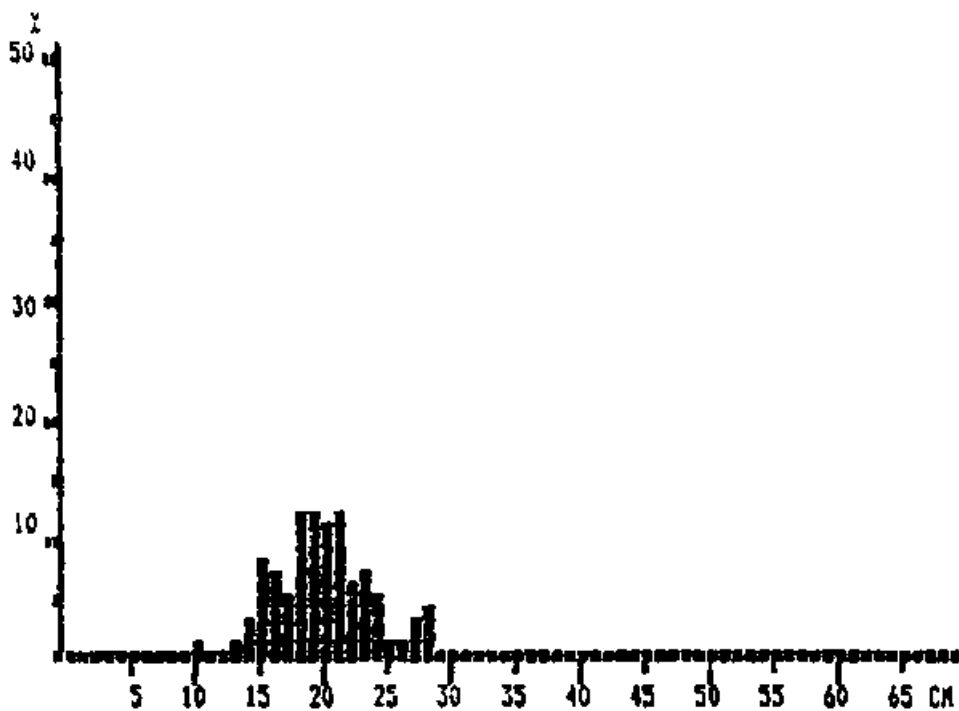
Pooled sample (simple adding)
MEAN LENGTH = 45.47 cm N = 14
NUMBER SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 293 AND 293.
SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Loligo vulgaris, Cunene to Tombua



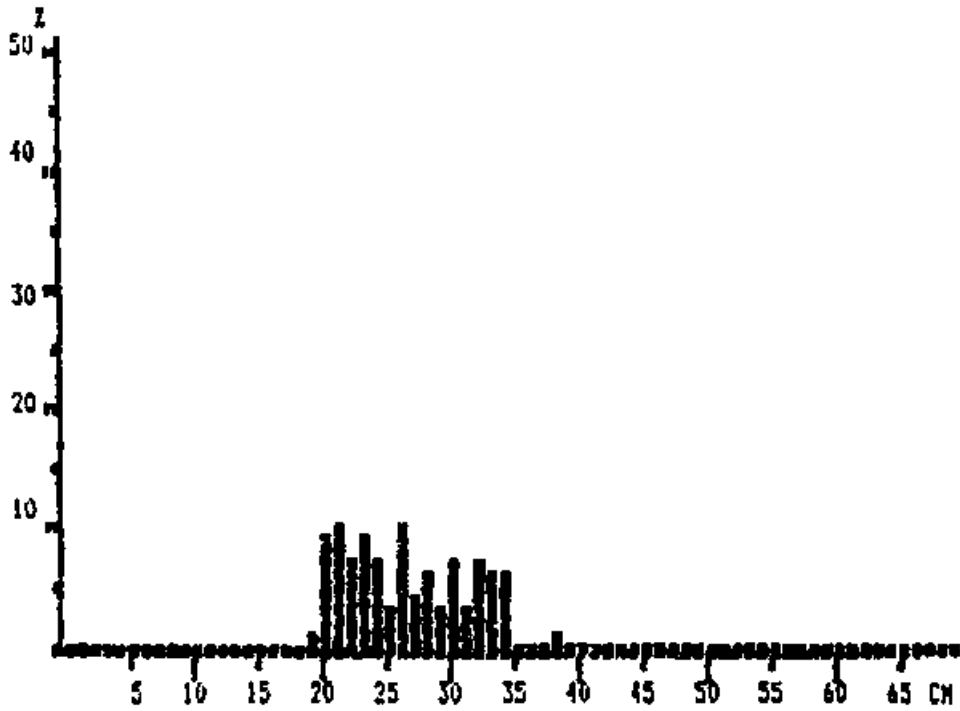
Pooled sample (simple adding)
MEAN LENGTH = 8.23 cm N = 77
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 288 AND 288.
SAMPLES SEARCHED BETWEEN ST. NO. 287 AND 314.

Dentex macrophthalmus, Tombua to Namibe



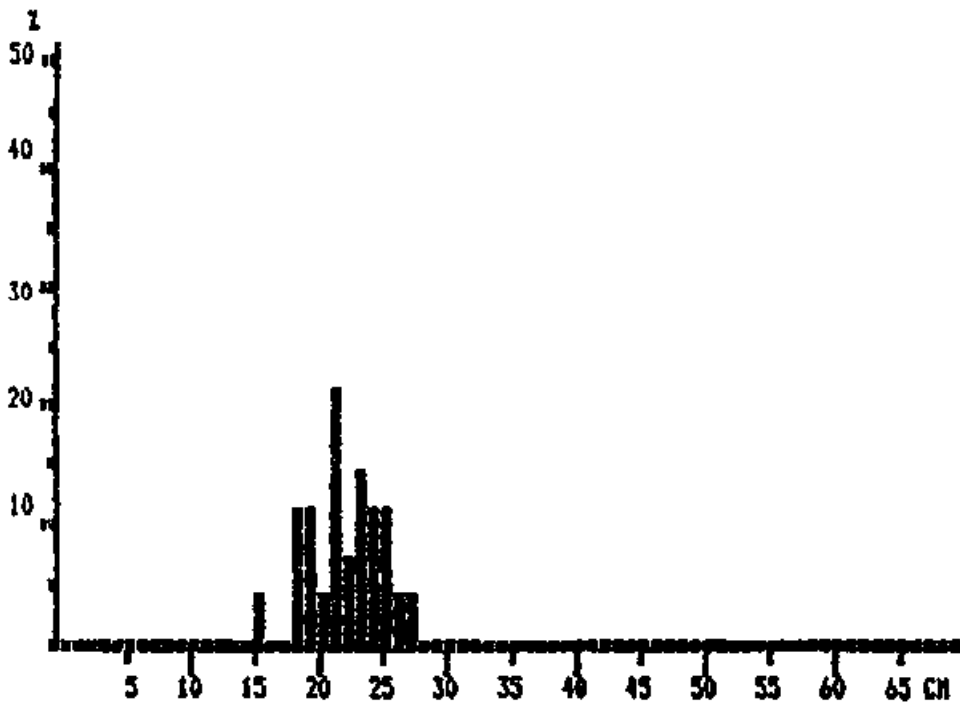
Pooled sample (simple adding)
MEAN LENGTH = 19.74 cm N = 145
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 286 AND 317.
SAMPLES SEARCHED BETWEEN ST. NO. 284 AND 286.

Dentex barnardi, Tombua to Namibe



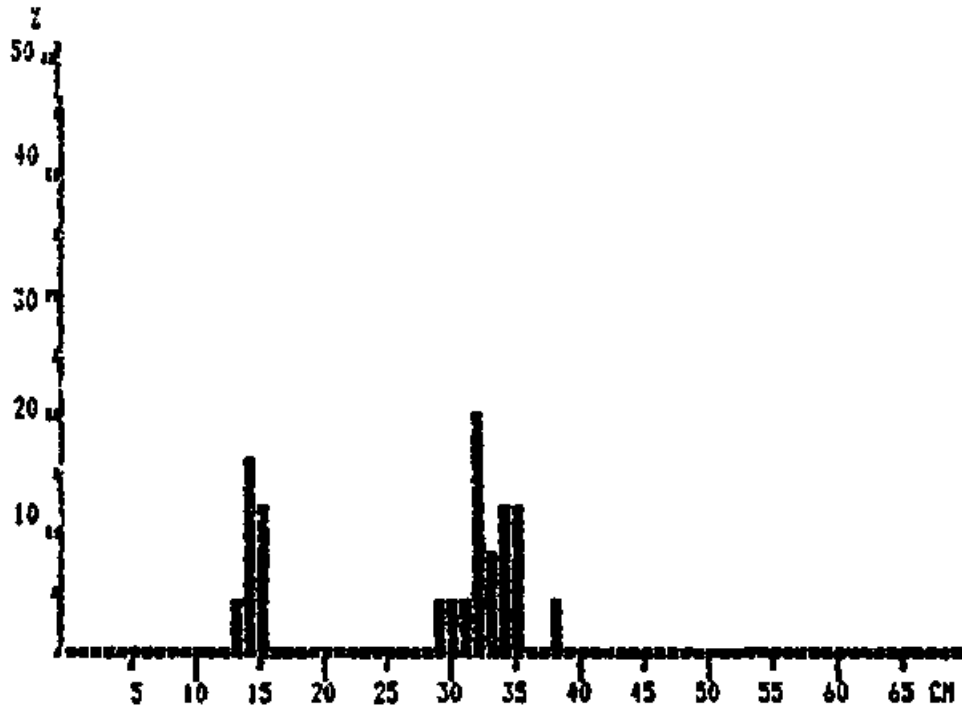
Pooled sample (simple adding)
MEAN LENGTH = 26.30 cm N = 69
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 284 AND 284.
SAMPLES SEARCHED BETWEEN ST. NO. 315 AND 317.

Pagellus bellottii, Tombua to Namibe



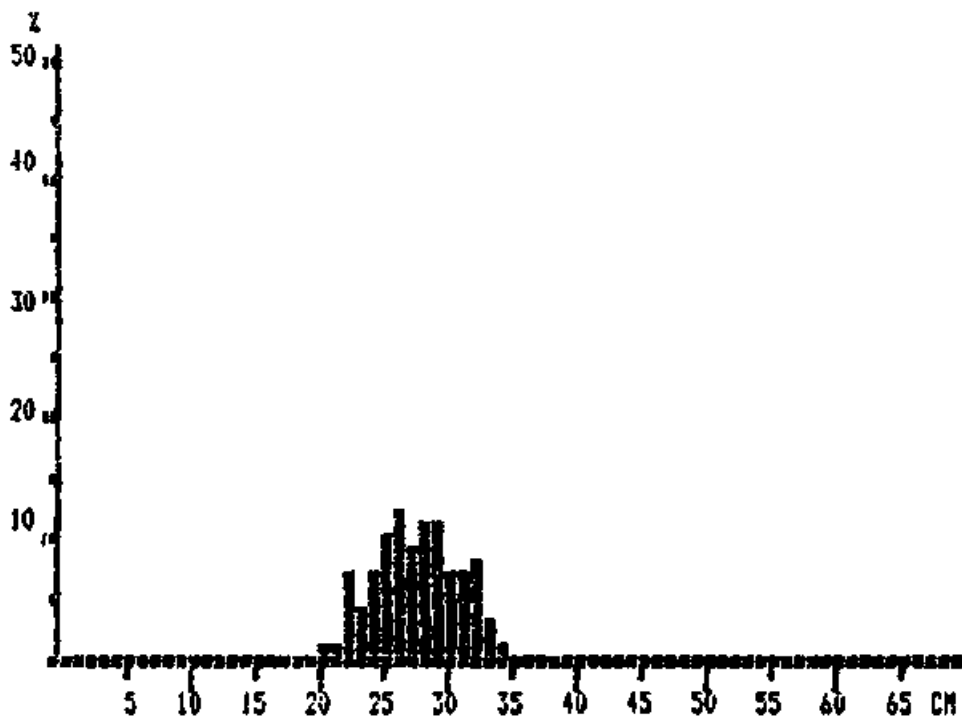
Pooled sample (simple adding)
MEAN LENGTH = 21.71 cm. N = 28
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 284 AND 284.
SAMPLES SEARCHED BETWEEN ST. NO. 284 AND 286.

Trachurus trecae, Tombua to Namibe



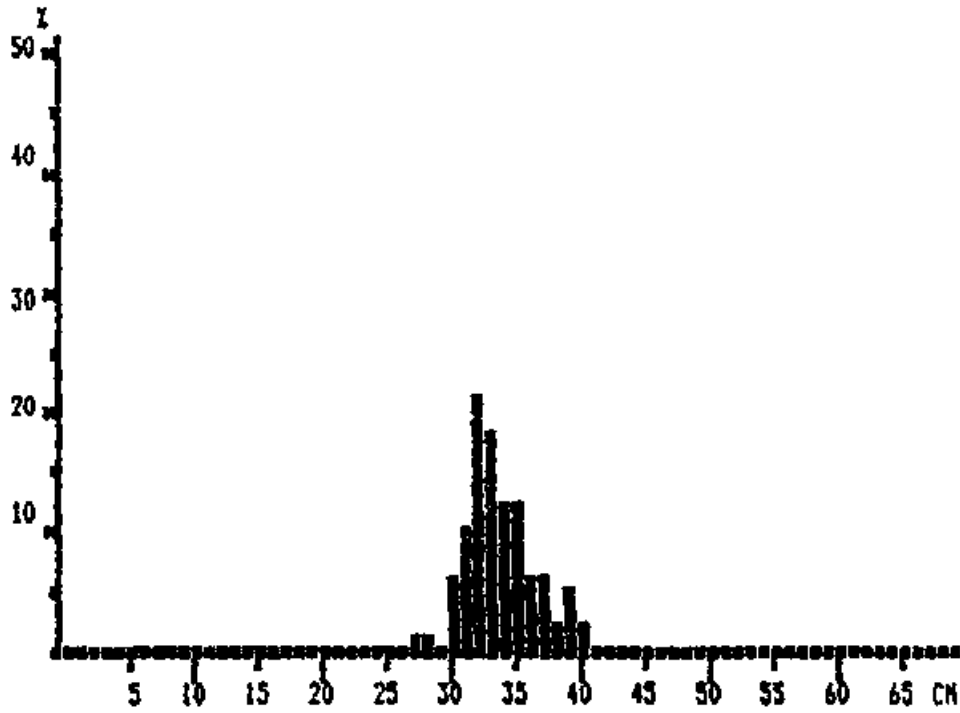
Pooled sample (simple adding)
 MEAN LENGTH = 27.00 cm N = 25
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 317 AND 317.
 SAMPLES SEARCHED BETWEEN ST. NO. 284 AND 286.

Umbrina canariensis, Tombua to Namibe



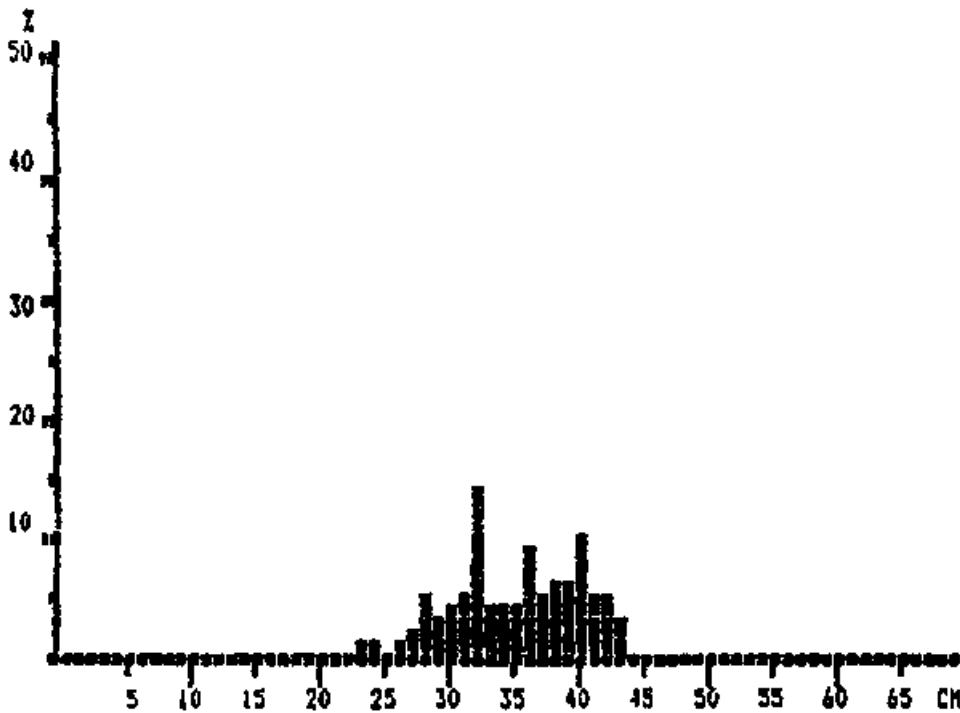
Pooled sample (simple adding)
 MEAN LENGTH = 27.36 cm N = 134
 NUMBER OF SUBSAMPLES: 2
 SAMPLES FOUND BETWEEN ST. NO. 284 AND 286.
 SAMPLES SEARCHED BETWEEN ST. NO. 284 AND 286.

Sardinella maderensis, Namibe to Benguela



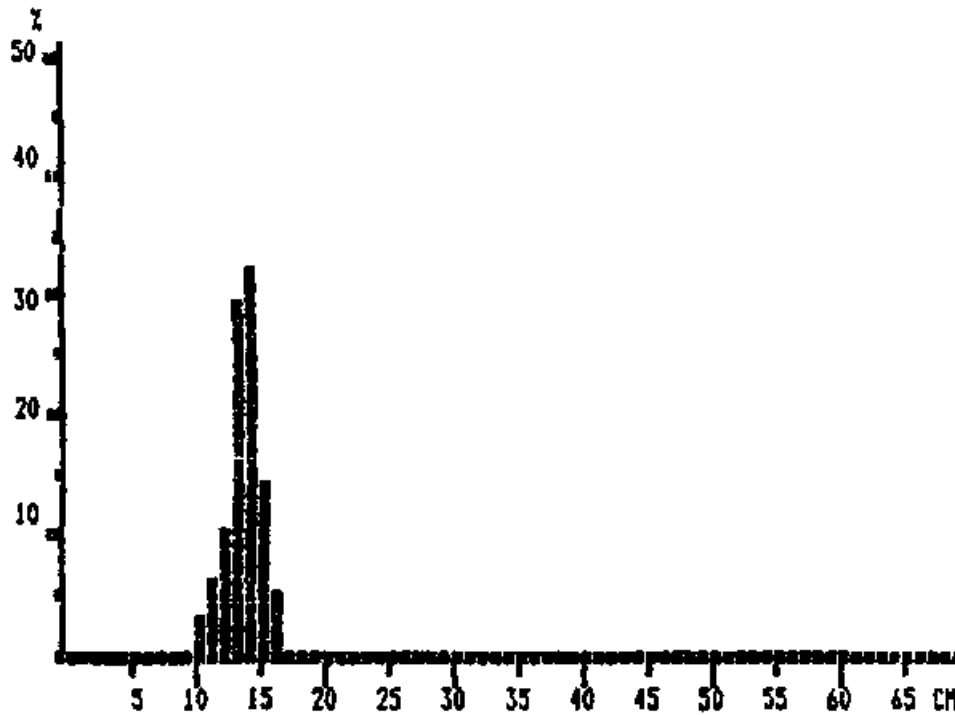
Pooled sample (simple adding)
MEAN LENGTH = 33.58 cm N = 107
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 326 AND 326.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

Sardinella aurita, Namibe to Benguela



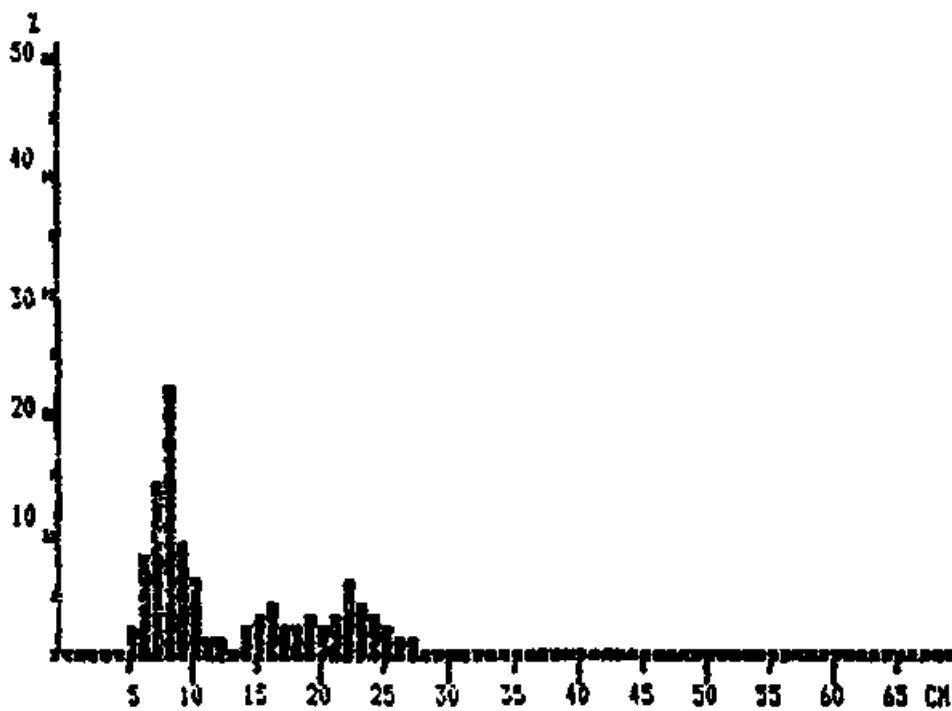
Pooled sample (simple adding)
MEAN LENGTH = 35.02 cm N = 94
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 326 AND 326.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

Trachurus trecae, Namibe to Benguela



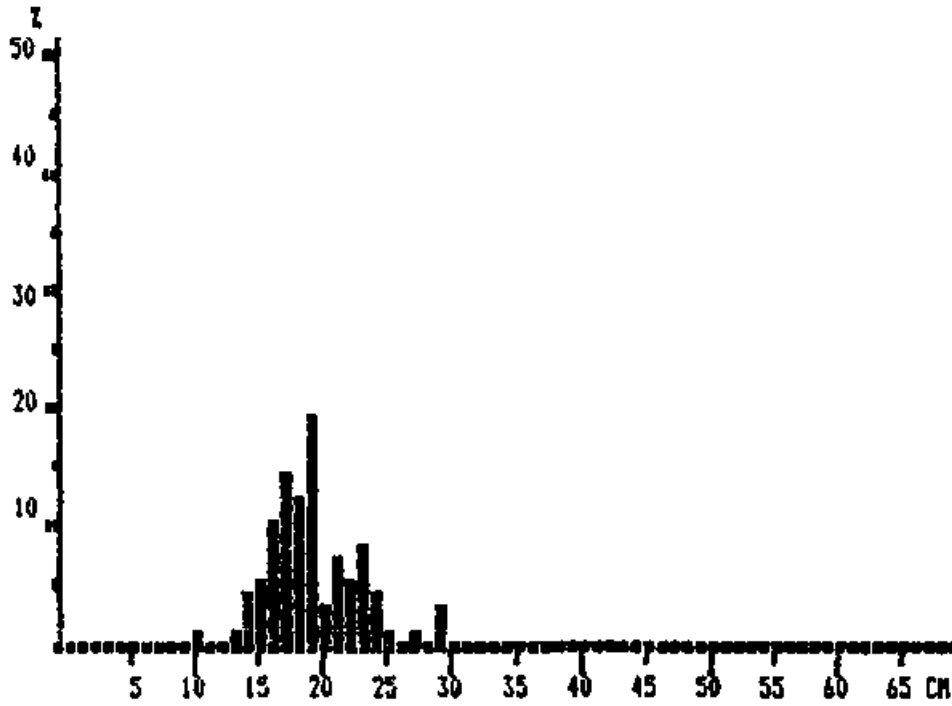
Pooled sample (simple adding)
MEAN LENGTH = 13.59 cm N = 266
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 321 AND 323.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

Dentex macrophthalmus, Namibe to Benguela



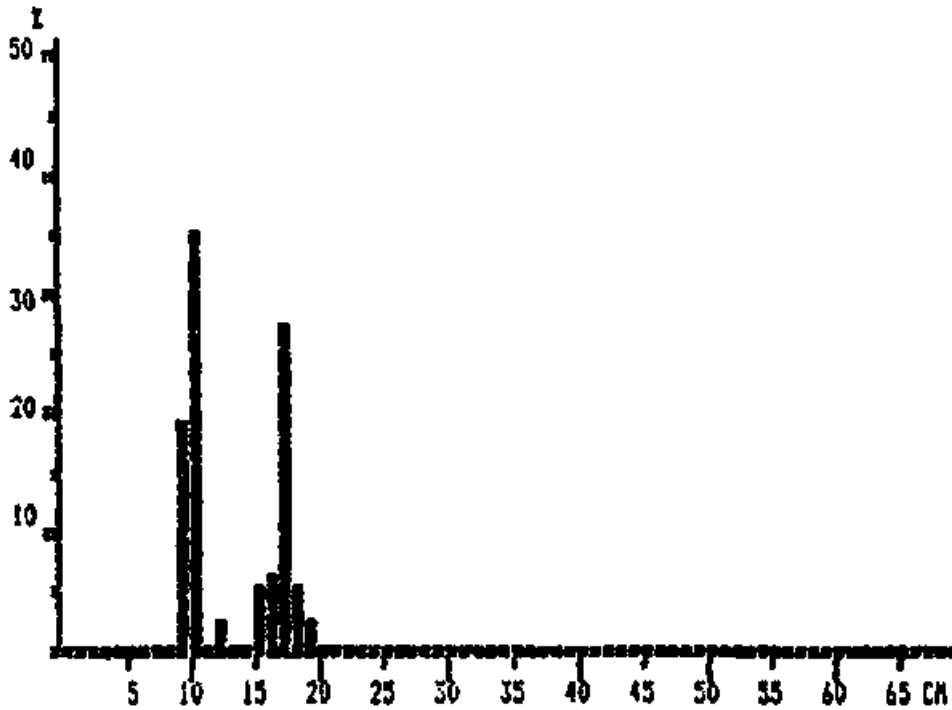
Pooled sample (simple adding)
MEAN LENGTH = 12.42 cm N = 130
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 318 AND 325.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

Pagellus bellottii, Namibe to Benguela



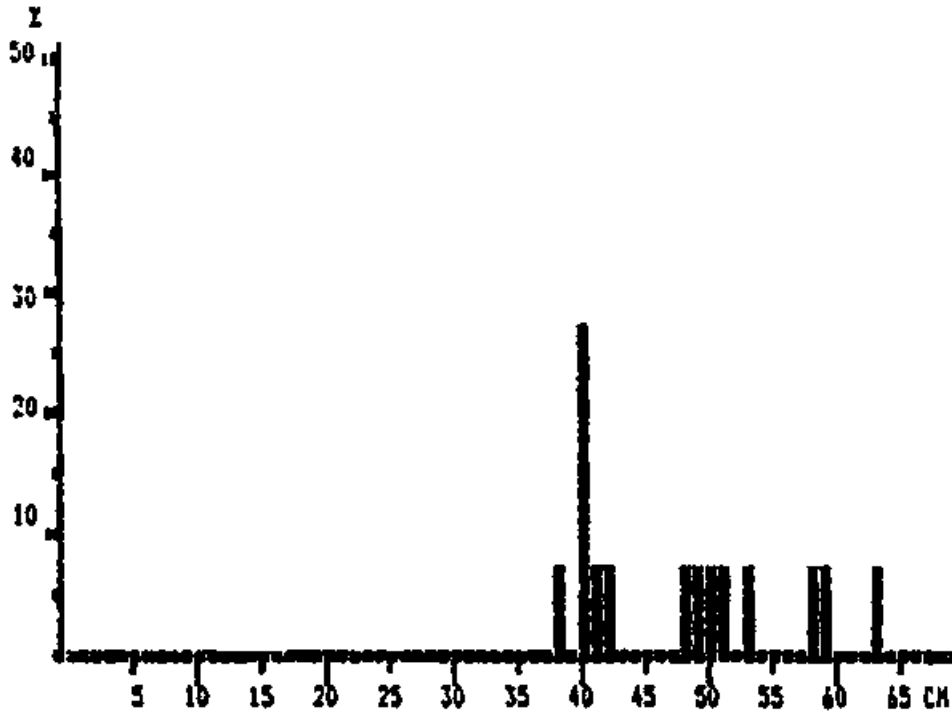
Pooled sample (simple adding)
MEAN LENGTH = 19.01 cm N = 73
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 318 AND 318.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

Brachydeuterus auritus, Namibe to Benguela



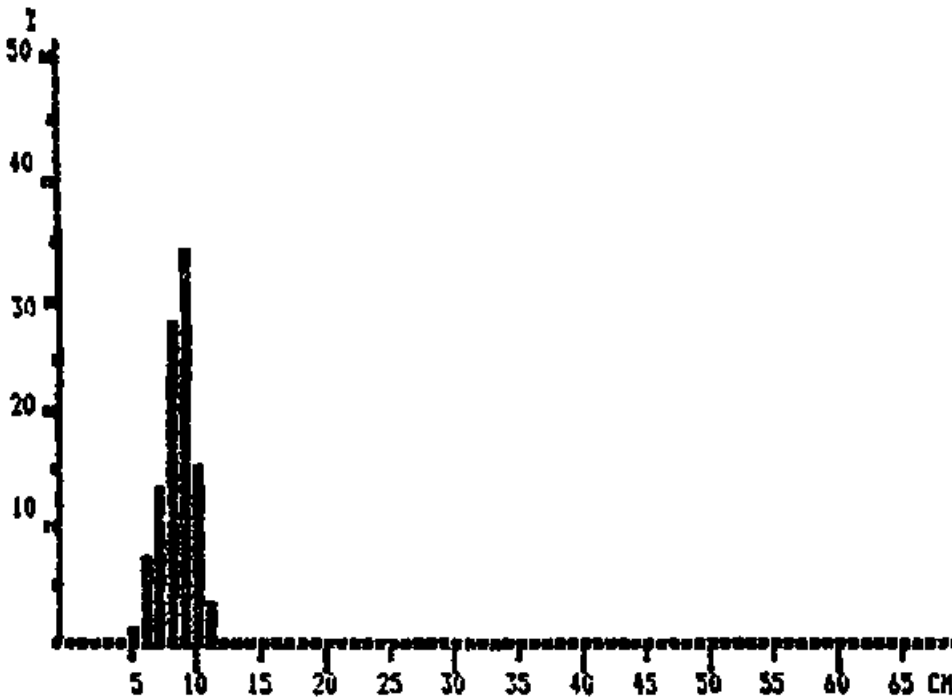
Pooled sample (simple adding)
MEAN LENGTH = 12.87 cm N = 63
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 322 AND 322.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

Brotula barbata, Namibe to Benguela



Pooled sample (simple adding)
MEAN LENGTH = 47.47 cm N = 15
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 321 AND 321.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

Synagrops microlepis, Namibe to Benguela



Pooled sample (simple adding)
MEAN LENGTH = 8.45 cm N = 184
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 321 AND 325.
SAMPLES SEARCHED BETWEEN ST. NO. 318 AND 326.

ANNEX II. CUNENE - BENGUELA. RECORDS OF FISHING STATIONS

PROJECT STATION 188

DATE: 23/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1526
 start stop duration Long E 1200
 TIME : 13:05:00 13:35:00 30 (min) Purpose code: 3
 LOG : 482.00 483.50 1.50 Area code : 2
 FDEPTH: 34 32 GearCond.code:
 BDEPTH: 34 32 Validity code: 1
 Towing dir: 5° Wire out: 200 m Speed: 3, kn*10
 Sorted: 43 Kg Total catch: 154.40 CATCH/HOUR: 308.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex barnardi	127.40	482	41.26	2
Umbrina canariensis	77.00	314	24.94	1
Pagellus bellottii	28.00	196	9.07	3
Diplodus sargus capensis	27.30	126	8.84	
Diplodus cervinus cervinus	21.00	62	6.80	
Plectorhynchus mediterraneus	7.70	28	2.49	
Epinephelus aeneus	7.20	2	2.33	
Pseudupeneus prayensis	4.90	20	1.59	
Boops boops	3.50	280	1.13	
Chromis cadenati	1.40	20	0.45	
Chromis liabatus	1.04	6	0.34	
Chaetodon hoefleri	1.04	6	0.34	
Chelidonichthys capensis	0.70	6	0.23	
Chaetodon marcellae	0.70	6	0.23	
Total	308.88		100.04	

PROJECT STATION 189

DATE: 23/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1534
 start stop duration Long E 1156
 TIME : 15:30:00 15:35:00 5 (min) Purpose code: 1
 LOG : 500.90 501.00 0.10 Area code : 2
 FDEPTH: 81 81 GearCond.code: 3
 BDEPTH: 81 81 Validity code: 1
 Towing dir: 20° Wire out: 400 m Speed: 3 kn*10
 Sorted: 58 Kg Total catch: 58.00 CATCH/HOUR: 696.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pagellus bellottii	303.60	1428	43.62	
Umbrina canariensis	132.00	540	18.97	
Dentex barnardi	99.60	276	14.31	
Zeus faber	46.80	48	6.72	
Chelidonichthys capensis	45.60	276	6.55	
Plectorhynchus mediterraneus	24.00	24	3.45	
Dentex angolensis	20.40	84	2.93	
Diplodus sargus capensis	9.60	48	1.38	
Diplodus cervinus cervinus	7.20	36	1.03	
Dentex macrophthalmus	6.00	24	0.86	
Chaetodon hoefleri	1.80	12	0.26	
Total	696.60		100.08	

PROJECT STATION 190

DATE: 23/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1536.
 start stop duration Long E 1148
 TIME :17:55:00 18:25:00 30 (min) Purpose code: 3
 LOG :6514.40 6515.90 1.50 Area code : 2
 FDEPTH: 106 107 GearCond.code:
 BDEPTH: 106 107 Validity code:
 Towing dir: * Wire out: 500 m Speed: 3 kn*10
 Sorted: 45 Kg Total catch: 291.80 CATCH/HOUR: 583.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Ubrina canariensis	239.20	1156	40.99	4
Dentex macrophthalmus	189.80	1986	32.52	5
Dentex angolensis	75.40	234	12.92	
Chelidonichthys capensis	39.00	312	6.68	
Brotula barbata	13.00	12	2.23	
Branchiostegus semifasciatus	13.00	12	2.23	
Lagocephalus laevigatus	6.60	12	1.13	
Sepia orbignyana	2.60	78	0.45	
Spicara alta	2.60	12	0.45	
Arnoglossus capensis	1.20	64	0.21	
Arnoglossus imperialis	1.20	90	0.21	
Total	583.60		100.02	

PROJECT STATION 191

DATE: 24/ 4/89 GEAR TYPE: PT No:2 POSITION: Lat S 1609
 start stop duration Long E 1136
 TIME :02:15:00 02:50:00 35 (min) Purpose code: 1
 LOG :6591.60 6593.30 1.70 Area code : 2
 FDEPTH: 68 55 GearCond.code:
 BDEPTH: 73 60 Validity code: 1
 Towing dir: 20° Wire out: 150 m Speed: 3 kn*10
 Sorted: 122 Kg Total catch: 121.80 CATCH/HOUR: 208.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	201.94	593	98.71	6
Atractoscion aequidens	6.86	3	3.29	
Total	208.80		100.00	

PROJECT STATION 192

DATE: 24/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1629
 start stop duration Long E 1130
 TIME : 06:25:00 06:55:00 30 (min) Purpose code: 3
 LOG : 6627.30 6628.80 1.50 Area code : 2
 FDZPTH: 97 94 GearCond.code:
 ROEPT#: 97 94 Validity code:
 Towing dir: 26° Wire out: 500 m Speed: 3 kn*10

Sorted: 38 Kg Total catch: 152.20 CATCH/HOUR: 304.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Loligo vulgaris</i>	120.00	5132	39.42	7
<i>Sepia orbignyana</i>	54.40	452	17.87	
<i>Scorpaena angolensis</i>	28.00	88	9.20	
<i>Octopus vulgaris</i>	22.40	16	7.36	
<i>Lepidotrigla cadmani</i>	19.20	176	6.31	
<i>Trigla lyra</i>	19.20	88	6.31	
<i>Trachurus capensis</i>	8.00	64	2.63	
<i>Atractoscion aequidens</i>	8.00	8	2.63	
<i>Squalus blainvillei</i>	5.60	8	1.84	
<i>Dentex macrophthalmus</i>	4.00	72	1.31	
<i>Pagellus bellottii</i>	4.00	32	1.31	
<i>Citharus linguatula</i>	4.00	40	1.31	
<i>Pogasa lascaris</i>	3.20	24	1.05	
<i>Zeus faber</i>	2.40	16	0.79	
<i>Chelidonichthys capensis</i>	2.00	16	0.66	
Total	<u>304.40</u>		<u>100.00</u>	

PROJECT STATION 193

DATE: 24/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1639
 start stop duration Long E 1128
 TIME : 08:37:00 09:07:00 30 (min) Purpose code: 3
 LOG : 6643.10 6644.50 1.40 Area code : 2
 FDEPTH: 115 112 GearCond.code:
 BDEPTH: 115 112 Validity code:
 Towing dir: 30° Wire out: 550 m Speed: 3 kn*10

Sorted: 57 Kg Total catch: 467.60 CATCH/HOUR: 935.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalms	427.20	6234	45.68	9
Trachurus capensis	176.00	2346	18.82	8
Atractoscion aequidens	76.80	48	8.21	
Pontinus kuhlii	48.00	400	5.13	
Trigla lyra	40.00	224	4.28	
Sepia bertheloti	24.00	224	2.57	
Scorpaena angolensis	24.00	64	2.57	
Loligo vulgaris	24.00	112	2.57	
Trachurus trecae	16.00	80	1.71	
Arnoglossus capensis	16.00	592	1.71	
Zeus faber	16.00	48	1.71	
Gsynotus centrina	8.00	2	0.86	
Pterothrissus belloci	8.00	48	0.86	
Scorpaena normani	4.80	32	0.51	
Lepidotrigla cadmani	4.80	64	0.51	
Octopus vulgaris	4.00	4	0.43	
Merluccius capensis	4.00	6	0.43	
Squatina oculata	3.60	2	0.38	
Squalus blainvillei	3.20	6	0.34	
Arnoglossus imperialis	2.40	80	0.26	
Trichiurus lepturus	2.20	4	0.24	
Raja miraletus	2.20	2	0.24	
Total	467.60		100.02	

PROJECT STATION 194

DATE: 24/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1639
 start stop duration Long E 1139
 TIME : 10:42:00 10:56:00 14 (min) Purpose code: 3
 LOG : 6658.20 6658.50 0.30 Area code : 2
 FDEPTH: 37 35 GearCond.code: 8
 BDEPTH: 37 35 Validity code: 4
 Towing dir: 350° Wire out: 150 m Speed: 2 kn*10

Sorted: 5 Kg Total catch: 11.00 CATCH/HOUR: 47.14

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pegusa lascaris	25.71	446	54.54	
Myxtriopsis rostellatus	8.57	17	18.18	
Atractoscion aequidens	6.00	9	12.73	
Raja miraletus	1.71	9	3.63	
Arnoglossus capensis	1.71	43	3.63	
Lithognathus morayrus	1.71	9	3.63	
Serranus cabrilla	0.86	17	1.82	
Arnoglossus imperialis	0.86	26	1.82	
Total	47.13		99.98	

PROJECT STATION 195

DATE: 24/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1641
 start stop duration Long E 1136
 TIME :11:54:00 11:57:00 3 (min) Purpose code: 3
 LOG :6663.90 6664.00 0.10 Area code : 2
 FDEPTH: 83 85 GearCond.code: 5
 BDEPTH: 83 85 Validity code: 4
 Towing dir: 320° Wire out: 400 m Speed: 3 kn*10

Sorted: 9 Kg Total catch: 18.50 CATCH/HOUR: 370.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pegusa lascaris	172.00	3640	46.49	
Dentex macrophthalus	52.00	1240	14.05	
Brotula barbata	40.00	200	10.81	
Pythonichthys microphthalmus	24.00	160	6.49	
Squalus megalops	24.00	80	6.49	
Pterothrissus belloti	24.00	200	6.49	
Raja miraletus	12.00	40	3.24	
Synagrops microlepis	8.00	960	2.16	
Arnoglossus capensis	6.00	80	1.62	
Merluccius capensis	4.00	120	1.08	
Zeus faber	4.00	120	1.08	
Total	370.00		100.00	

PROJECT STATION 196

DATE: 24/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1650
 start stop duration Long E 1650
 TIME :13:23:00 13:30:00 7 (min) Purpose code: 3
 LOG :6675.80 6676.00 0.20 Area code : 2
 FDEPTH: 55 55 GearCond.code: 5
 BDEPTH: 55 55 Validity code: 4
 Towing dir: 350° Wire out: 200 m Speed: 3 kn*10

Sorted: 9 Kg Total catch: 37.20 CATCH/HOUR: 318.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	154.29		48.39	
Trachurus capensis	58.29	8297	18.28	
GOBIIDAE	44.57		13.98	
Dentex macrophthalus	34.29	3291	10.75	
Pegusa lascaris	27.43	446	8.60	
Total	318.87		100.00	

PROJECT STATION 197

DATE: 24/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1649
 start stop duration Long E 1129
 TIME :15:30:00 16:00:00 30 (min) Purpose code: 3
 LOG :6687.20 6688.20 1.00 Area code : 2
 FDEPTH: 107 108 GearCond.code:
 BDEPTH: 107 108 Validity code: 1
 Towing dir: 345° Wire out: 400 m Speed: 3 kn*10

Sorted: 99 Kg Total catch: 2498.50 CATCH/HOUR: 4997.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Squalus megalops	2685.00	5538	53.73	12
Dentex macrophthalmus	1175.20	15354	23.52	11
Pterothriaxus balloei	278.60	386	5.58	
Trachurus capensis	263.40	496	5.27	10
Trigla lyra	177.20	246	3.55	
Atractoscion aequidens	81.00	30	1.62	
Scorpaena noronai	60.80	336	1.22	
Sepia bertheloti	60.80	454	1.22	
Zeus faber	50.60	202	1.01	
Raja miraletus	45.60	56	0.91	
Loligo vulgaris	40.52	380	0.81	
Pegusa lascaris	25.20	606	0.50	
Citharus linguatula	25.20	606	0.50	
Chelidonichthys capensis	22.80	126	0.46	
Arnoglossus capensis	5.00	2024	0.10	
Perulibatrachus rosignoli	0.20	2		
Total	4997.12		100.00	

PROJECT STATION 198

DATE: 24/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1649
 start stop duration Long E 1123
 TIME : 17:40:00 18:15:07 35 (min) Purpose code: 3
 LOG : 6701.80 6703.10 1.30 Area code : 2
 FDEPTH: 124 125 GearCond.code:
 BDEPTH: 124 123 Validity code:
 Towing dir: 25 Wire out: 500 m Speed: 2 kn*10
 Sorted: 52 Kg Total catch: 2019.00 CATCH/HOUR: 3461.14

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	1550.91	14217	44.81	13
Dentex macrophthalmus	936.00	11618	27.04	14
Trigla lyra	325.71	2376	9.41	15
Pterothrissus belloci	145.20	1121	4.20	
Scorpaena normani	97.71	725	2.82	
Chelidonichthys capensis	66.00	396	1.91	
Trachurus tracas	66.00	264	1.91	
Zeus faber	52.80	65	1.53	
Umbrina canariensis	46.11	264	1.33	
Squalus megalops	33.00	85	0.95	
Pagellus bellottii	33.00	65	0.95	
Atractoscion aequidens	27.43	21	0.79	16
Pagusa lascaris	26.40	197	0.76	
Serranus cabrilla	17.83	65	0.52	
Arnoglossus capensis	9.89	264	0.29	
Arnoglossus imperialis	6.60	197	0.19	
Sepia bertheloti	6.60	65	0.19	
Sepia orbignyana	6.60	65	0.19	
Merluccius capensis	4.46	5	0.13	
Branchiostegus semifasciatus	3.43	2	0.10	
Total	3461.68		100.02	

PROJECT STATION 199

DATE: 24/ 4/89 GEAR TYPE: PT No:2 POSITION: Lat S 1648
 start stop duration Long E 1119
 TIME : 20:11:00 21:00:00 49 (min) Purpose code: 1
 LOG : 6715.70 6717.00 1.30 Area code : 2
 FDEPTH: 160 180 GearCond.code:
 BDEPTH: 187 236 Validity code:
 Towing dir: ' Wire out: 500 m Speed: 2 kn*10
 Sorted: 24 Kg Total catch: 24.40 CATCH/HOUR: 29.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	17.76	208	59.44	17
MYCTOPHIDAE	6.86	6086	22.96	
CRANGONIDAE	1.71	9429	5.72	
Merluccius polii	1.22	7	4.08	
Sepia orbignyana	0.73	10	2.44	
Trigla lyra	0.61	4	2.04	
Dentex macrophthalmus	0.37	2	1.24	
Synagrops microlepis	0.24	6	0.80	
Zenopsis conchifer	0.24	5	0.80	
Todaropsis ebianae	0.06	1	0.20	
Chlorophthalmus atlanticus	0.06	1	0.20	
Parapanaeus longirostris	0.01	23	0.03	
Total	29.87		99.95	

PROJECT STATION 200

DATE: 25/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1657
 start stop duration Long E 1138
 TIME 07:25:00 07:55:00 30 (min) Purpose code: 3
 LOG 6800.50 6801.80 1.30 Area code: 2
 FDEPTH: 63 76 GearCond.code:
 BDEPTH: 63 76 Validity code:
 Towing dir: 270° Wire out: 250 m Speed: 2 kn*10

Sorted: 36 Kg Total catch: 901.20 CATCH/HOUR: 1802.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus capensis	830.00	105410	46.03	18
Synagrops microlepis	815.00	137384	45.22	19
Squalus megalops	60.00	150	3.33	
Pterothrissus belloci	40.00	250	2.22	
Zeus faber	15.00	50	0.83	
Umbrina canariensis	10.00	50	0.55	
Dentex macrophthalmus	10.00	1200	0.55	
Gobiidae	7.40	2100	0.41	
Trichiurus lepturus	5.00	50	0.28	
Citharus linguatula	5.00	50	0.28	
Loligo vulgaris	5.00	300	0.28	
Total	1802.40		100.00	

PROJECT STATION 201

DATE: 25/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1659
 start stop duration Long E 1132
 TIME 08:51:00 09:21:00 30 (min) Purpose code: 3
 LOG 6808.70 6810.10 1.40 Area code: 2
 FDEPTH: 100 102 GearCond.code:
 BDEPTH: 100 102 Validity code:
 Towing dir: 330° Wire out: 400 m Speed: 3 kn*10

Sorted: 105 Kg Total catch: 1817.00 CATCH/HOUR: 3634.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	1240.60	15162	34.14	20
Trachurus capensis	1233.60	14308	33.95	21
Atractoscion aequidens	792.60	620	21.81	22
Squalus megalops	86.00	240	2.37	
Chelidonichthys capensis	69.00	136	1.90	
Pterothrissus belloci	48.20	310	1.33	
Trigla lyra	44.80	344	1.23	
Zeus faber	44.80	206	1.23	
Sepia orbignyana	27.60	206	0.76	
Brotula barbata	17.20	34	0.47	
Merluccius capensis	17.20	34	0.47	
Loligo vulgaris	13.80	136	0.38	
Pythonichthys microphthalmus	0.00	68		
Total	3635.40		100.04	

PROJECT STATION 202

DATE: 25/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1659
 start stop duration Long E 1122
 TIME :11:23:00 11:53:00 30 (min) Purpose code: 3
 LOG :6828.50 6830.10 1.60 Area code : 2
 FDEPTH: 137 134 GearCend.code:
 BDEPTH: 137 134 Validity code:
 Towing dir: * Wire out: 550 m Speed: 3 kn*10

Sorted: 51 Kg Total catch: 253.00 CATCH/HOUR: 506.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	130.00	1550	25.69	24
Trigla lyra	80.00	710	15.81	
Pterothrissus belloci	80.00	720	15.81	
Scorpaena noronai	60.00	570	11.86	
Zenopsis conchifer	38.00	70	7.51	
Trachurus capensis	35.00	440	8.92	25
Zeus fabar	25.00	50	4.94	
Lepidopus caudatus	15.00	60	2.96	23
Sepia orbignyana	9.00	80	1.78	
Pegusa lascaris	9.00	70	1.78	
Dentex angolensis	7.00	10	1.38	
Merluccius capensis	5.00	10	0.99	
Chelidonichthys capensis	4.00	20	0.79	
Squalus megalops	4.00	10	0.79	
Uabrina canariensis	3.00	10	0.59	
Arnoglossus capensis	2.00	50	0.40	
Pythonichthys microphthalmus	0.00	10		
Total	506.00		100.00	

PROJECT STATION 203

DATE: 25/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1705
 start stop duration Long E 1133
 TIME : 13:35:00 13:45:00 10 (min) Purpose code: 3
 LOG : 6843.80 6843.90 0.10 Area code : 2
 FDEPTH: 100 100 GearCond.code: 5
 BDEPTH: 100 100 Validity code: 1
 Towing dir: 90° Wire out: 400 m Speed: 3 kn*10

Sorted: Si Kg Total catch: 127.50 CATCH/HOUR: 765.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	450.00	4500	58.82	26
Pterothrius balleci	67.50	552	8.82	
Trigle lyra	37.50	300	4.90	
Octopus vulgaris	22.50	12	2.94	
Perulibatrachus elminensis	22.50	72	2.94	
Squalus segalops	22.50	72	2.94	
Chelidonichthys capensis	22.50	60	2.94	
Zeus faber	21.00	102	2.75	
Spondyliosoma cantharus	19.50	12	2.85	
Pegusa lascaris	19.50	402	2.55	
Sepia orbignyana	18.00	150	2.35	
Sarranus cabrilla	10.50	72	1.37	
Galeichthys feliceps	7.50	12	0.98	
Merluccius polli	7.50	132	0.98	
Umbrina canariensis	7.50	42	0.98	
COBIIDAE	4.50	1382	0.59	
Trachurus capensis	3.00	30	0.39	
Brotula barbata	1.50	12	0.20	
Microchirus boscanion	0.00	72		
Pythonichthys microphthalmus	0.00	30		
Total	765.00		99.99	

PROJECT STATION 204

DATE:25/ 4/89 GEAR TYPE: BT No:1 POSITION:Lat S 1710
 start stop duration Long E 1130
 TIME :15:10:00 15:40:00 30 (min) Purpose code: 3
 LOG :6854.30 6855.50 1.20 Area code : 2
 FDEPTH: 70 81 GearCond.code:
 BDEPTH: 70 81 Validity code:
 Towing dir: 270° Wire out: 250 m Speed: 3 kn*10

Sorted: 67 Kg Total catch: 1209.60 CATCH/HOUR: 2419.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	1584.00	226284	65.48	
Squalus megalops	288.00	1044	11.90	
Pterothrissus belloci	189.20	1224	6.99	
Pomatomus saltatrix	90.00	30	3.72	
Myliobatis aquila	54.00	72	2.23	
Loligo vulgaris	46.80	324	1.93	
Zeus faber	43.20	252	1.79	
Trachurus capensis	43.20	3924	1.79	27
Umbria canariensis	32.40	180	1.34	
Pegusa lascaris	25.20	576	1.04	
Raja miraletus	18.00	72	0.74	
Trigla lyra	7.20	36	0.30	
Sepia orbignyana	7.20	36	0.30	
Merluccius polli	3.60	36	0.15	
Dentex macrophthalmus	3.60	288	0.15	
Gobiidae	3.60	1872	0.15	
Total	2419.20		100.00	

PROJECT STATION 205

DATE:25/ 4/89 GEAR TYPE: BT No:1 POSITION:Lat S 1710
 start stop duration Long E 1130
 TIME :16:45:00 17:05:00 20 (min) Purpose code: 3
 LOG :6864.30 6865.40 0.90 Area code : 2
 FDEPTH: 122 118 GearCond.code:
 BDEPTH: 122 118 Validity code:
 Towing dir: * Wire out: 500 m Speed: 3 kn*10

Sorted: 58 Kg Total catch: 1044.00 CATCH/HOUR: 3132.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	1350.00	11964	43.10	29
Pterothrissus belloci	648.00	14727	20.69	28
Merluccius polli	324.00	4482	10.34	
Trigla lyra	178.20	1458	5.69	
Raja straleni	162.00	54	5.17	
Zeus faber	108.00	378	3.45	
Squalus megalops	75.60	162	2.41	
Trachurus capensis	64.80	162	2.07	
Scorpaena normani	54.00	378	1.72	
Zenopsis conchifer	54.00	54	1.72	
Sepia orbignyana	48.60	324	1.55	
Sepia bertheloti	16.20	108	0.52	
Perulibatrachus eliminensis	16.20	54	0.52	
Loligo vulgaris	10.80	216	0.34	
Synagrops microlepis	10.80	2160	0.34	
Microchirus bocanion	5.40	162	0.17	
Gobiidae	5.40	1728	0.17	
Total	3132.00		99.97	

PROJECT STATION 206

DATE: 25/ 4/89 GEAR TYPE: ST No: 1 POSITION: Lat S 1707
 start stop duration Long E 1125
 TIME : 18:00:00 18:30:00 30 (min) Purpose code: 3
 LOC : 6871.90 6873.50 1.60 Area code : 2
 FDEPTH: 139 134 GearCond.code: '
 BDEPTH: 139 134 Validity code:
 Towing dir: 350° Wire out: 600 m Speed: 3 kn*10

Sorted: 62 Kg Total catch: 431.20 CATCH/HOUR: 662.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Pterothrissus belloci</i>	256.20	2176	29.71	
<i>Dentex macrophthalmus</i>	168.00	1628	19.48	30
<i>Scorpaena normani</i>	140.00	1140	16.23	
<i>Atractoscion aequidens</i>	126.00	98	14.61	
<i>Trigla lyra</i>	50.40	812	5.84	
<i>Pegusa lascaris</i>	28.00	364	3.25	
<i>Sepia orbignyana</i>	21.00	210	2.44	
<i>Raja miraletus</i>	14.00	14	1.62	
<i>Zeus faber</i>	14.00	28	1.62	
<i>Merluccius polli</i>	12.60	98	1.46	
<i>Lepidopus caudatus</i>	8.40	42	0.97	
<i>Loligo vulgaris</i>	7.00	28	0.81	
<i>Merluccius copensis</i>	5.60	14	0.65	
OPHIDIIDAE	4.20	140	0.49	
<i>Todaropsis eblanae</i>	2.80	28	0.32	
<i>Zanopsis conchifer</i>	2.80	56	0.32	
<i>Lophiodon kempi</i>	1.40	14	0.16	
<i>Arnoglossus imperialis</i>	0.00	14		
Total	862.40		99.98	

PROJECT STATION 207

DATE: 26/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1628
 start stop duration Long E 1140
 TIME : 06:41:00 07:01:00 20 (min) Purpose code: 3
 LOG : 6988.80 6989.70 0.90 Area code : 2
 FDEPTH: 70 70 GearCond.code:
 SDEPTH: 70 70 Validity code:
 Towing dir: ' Wire out: 300 m Speed: 3 kn*10

Sorted: Kg Total catch: 424.70 CATCH/HOUR: 1274.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	768.60	31062	60.32	31
Pterothrissus belloni	117.60	630	9.23	
Trichiurus lepturus	100.80	378	7.91	
GOBIIDAE	50.40	14364	3.96	
Sepia bertheloti	42.00	252	3.30	
Pegusa lascaris	42.00	924	3.30	
Lithognathus mormyrus	25.50	36	2.00	
Zeus feber	21.00	378	1.65	
Umrina canariensis	21.00	126	1.65	
Mustelus mustelus	16.80	42	1.32	
Atractoscion aequidens	15.00	39	1.18	
Citharus linguatula	12.60	168	0.99	
Trachurus capensis	8.40	1386	0.66	
Arnoglossus capensis	8.40	462	0.66	
Raja miralatus	8.40	84	0.66	
Pythonichthys microphthalmus	4.20	84	0.33	
Chelidonichthys capensis	4.20	42	0.33	
Arnoglossus imperialis	4.20	252	0.33	
Sarda sarda	3.00	3	0.24	
Total		1274.10	100.02	

PROJECT STATION 208

DATE: 26/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1636
 start stop duration Long E 1148
 TIME : 17:10:00 17:23:00 13 (min) Purpose code: 1
 LOG : 7011.20 7011.80 0.60 Area code : 2
 FDEPTH: 19 19 GearCond.code: '
 SDEPTH: 19 19 Validity code:
 Towing dir: 211° Wire out: 50 m Speed: 3 kn*10

Sorted: 20 Kg Total catch: 20.20 CATCH/HOUR: 93.23

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lithognathus mormyrus	72.00	618	77.23	32
Trachurus capensis	10.15	106	10.89	
Myliobatis aquila	4.15	5	4.43	
Pomadasys incisus	2.31	32	2.48	
Atractoscion aequidens	1.85	5	1.98	
Chelidonichthys capensis	1.85	5	1.98	
Pagellus baliottii	0.93	18	0.99	
Total		93.23	100.00	

PROJECT STATION 209

DATE: 26/ 4/89 GEAR TYPE: BT No: POSITION: Lat S 1636
 start stop duration Long E 1146
 TIME : 22:09:00 23:01:00 52 (min) Purpose code: 1
 LOG : 7043.10 7045.30 2.20 Area code : 2
 FDEPTH: 7 22 GearCond.code:
 BDEPTH: 21 22 Validity code:
 Towing dir: 357° Wire out: 150 m Speed: 3 kn*10

Sorted: 61 Kg Total catch: 200.00 CATCH/HOUR: 230.77

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Sardinops ocellata</i>	102.00	842	44.20	35
<i>Trachurus trecae</i>	78.81	547	34.15	33
<i>Mustelus mustelus</i>	38.08	3	16.50	
<i>Trachurus trecae</i>	7.96	796	3.45	34
<i>Pomadourys incius</i>	1.15	3	0.50	
<i>Sardinella maderensis</i>	1.15	3	0.50	
<i>Lithognathus mormyrus</i>	0.69	3	0.30	
<i>Pagellus bellottii</i>	0.58	3	0.25	
<i>Engraulis encrasicolus</i>	0.23	21	0.10	
Total	230.65		99.95	

PROJECT STATION 210

DATE: 27/ 4/89 GEAR TYPE: BT No: POSITION: Lat S 1637
 start stop duration Long E 1145
 TIME : 00:10:00 01:00:00 50 (min) Purpose code: 1
 LOG : 7051.20 7053.20 2.00 Area code : 2
 FDEPTH: 17 16 GearCond.code:
 BDEPTH: 17 16 Validity code:
 Towing dir: 357° Wire out: 125 m Speed: 3 kn*10

Sorted: 45 Kg Total catch: 3500.00 CATCH/HOUR: 4200.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Sardinops ocellata</i>	3288.60	18908	78.30	36
<i>Trachurus trecae</i>	610.08	14375	14.54	37
<i>Lithognathus mormyrus</i>	187.92	1502	4.47	
<i>Pomadourys incius</i>	93.96	751	2.24	
<i>Saurida brasiliensis</i>	18.84	751	0.45	
Total	4200.00		100.00	

PROJECT STATION 211

DATE: 27/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1619
 start stop duration Long E 1146
 TIME : 06:25:00 06:55:00 30 (min) Purpose code: 3
 LOG : 7089.70 7091.30 1.60 Area code : 2
 FDEPTH: 31 42 GearCond.code:
 BDEPTH: 31 42 Validity code:
 Towing dir: 270° Wire out: 150 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 304.20 CATCH/HOUR: 608.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Sepia bertheloti	300.00	420	49.31	
Loligo vulgaris	100.00	1800	16.44	
Dentex macrophthalus	86.00	21284	14.14	39
Trachurus trecae	64.00	3712	10.52	38
Pagellus bellottii	14.00	160	2.30	
Myliobatis aquila	12.00	20	1.97	
Pegusa jascaris	10.00	340	1.64	
Mustelus mustelus	10.00	20	1.64	
Balistas capriacus	6.00	20	0.99	
Sarda sarda	2.40	4	0.39	
Trachinus armatus	2.00	20	0.33	
Dentex bernardi	2.00	20	0.33	
Total	608.40		100.00	

PROJECT STATION 212

DATE: 27/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1619
 start stop duration Long E 1138
 TIME : 07:54:00 08:24:00 30 (min) Purpose code: 3
 LOG : 7097.80 7099.10 1.30 Area code : 2
 FDEPTH: 72 76 GearCond.code:
 BDEPTH: 72 76 Validity code:
 Towing dir: 270° Wire out: 300 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 1226.60 CATCH/HOUR: 2453.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Dentex macrophthalus	1455.00	35814	59.31	41
Dentex macrophthalus	711.60	95354	29.01	42
Lepidotrigla sp	110.80	1422	4.52	
Chelidonichthys capensis	39.60	156	1.61	
Citharus linguatula	39.60	474	1.61	
Atractoscion aequidens	37.00	48	1.51	40
Trachurus trecae	31.60	5376	1.29	
Sparus pagrus pagrus	11.80	78	0.48	
Squatina oculata	4.80	2	0.20	
Pagellus bellottii	3.60	8	0.15	
Spondyliocera cantharus	3.00	4	0.12	
Lithognathus mormyrus	2.00	4	0.08	
Dentex bernardi	2.00	6	0.08	
Umbrina canariensis	0.80	2	0.03	
Total	2453.20		100.00	

PROJECT STATION 213

DATE: 27/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1620
 start stop duration Long E 1131
 TIME : 09:52:00 10:22:00 30 (min) Purpose code: 3
 LOG : 7111.40 7113.00 1.60 Area code : 2
 FDEPTH: 83 80 GearCond.code:
 BDEPTH: 83 80 Validity code:
 Towing dir: 27° Wire out: 350 m Speed: 3 kn*10
 Sorted: 42 Kg Total catch: 113.30 CATCH/HOUR: 226.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Anthias anthias</i>	80.00	562	35.30	
<i>Chelidonichthys capensis</i>	52.00	208	22.95	
<i>Dentex canariensis</i>	24.00	82	10.59	43
<i>Pegusa lascaris</i>	12.00	76	5.30	45
<i>Pagellus bellottii</i>	11.00	56	4.85	44
<i>Dentex gibbosus</i>	10.60	20	4.68	
<i>Sepia bertheloti</i>	8.00	72	3.53	
<i>Loligo vulgaris</i>	4.80	40	2.12	
<i>Zeus faber</i>	4.40	8	1.94	
<i>Mustelus mustelus</i>	4.20	2	1.85	
<i>Octopus vulgaris</i>	3.00	2	1.32	
<i>Raja miraletus</i>	2.20	4	0.97	
<i>Spondyliosoma cantharus</i>	2.20	2	0.97	
<i>Chelidonichthys lastoviza</i>	2.00	8	0.88	
<i>Chelidonichthys gabonensis</i>	2.00	8	0.88	
<i>Serranus cabrilla</i>	2.00	16	0.88	
<i>Citharus linguatula</i>	1.20	32	0.53	
<i>Squalus megalops</i>	1.00	2	0.44	
Total	226.60		99.98	

PROJECT STATION 214

DATE: 27/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1610
 start stop duration Long E 1134
 TIME : 12:10:00 12:40:00 30 (min) Purpose code: 3
 LOG : 7128.00 7129.40 1.40 Area code : 2
 FDEPTH: 75 67 GearCond.code:
 BDEPTH: 75 67 Validity code:
 Towing dir: 25° Wire out: 300 m Speed: 3 kn*10
 Sorted: 29 Kg Total catch: 98.30 CATCH/HOUR: 176.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Chelidonichthys gabonensis</i>	36.00	666	20.39	
<i>Loligo vulgaris</i>	36.00	876	20.39	
<i>Dentex macrophthalmus</i>	29.40	3510	16.65	
<i>Sepia bertheloti</i>	21.00	210	11.89	
<i>Zeus faber</i>	12.00	30	6.80	
<i>Microchirus boscanion</i>	11.40	1044	6.46	
<i>Trachurus trecae</i>	8.40	318	4.76	46
<i>Chelidonichthys capensis</i>	4.20	24	2.38	
<i>Citharus linguatula</i>	4.20	84	2.38	
<i>Squalus megalops</i>	3.00	6	1.70	
<i>Sarda sarda</i>	3.00	6	1.70	
<i>Raja miraletus</i>	3.00	6	1.70	
<i>Fistularia petimba</i>	1.50	6	0.85	
<i>Arnoglossus imperialis</i>	1.20	54	0.68	
<i>Arnoglossus capensis</i>	1.20	60	0.68	
<i>Alloteuthis africana</i>	1.20	210	0.68	
<i>Saurida brasiliensis</i>	0.00	6		
Total	176.70		100.09	

PROJECT STATION 217

DATE: 27/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1656
 start stop duration
 TIME : 17:35:00 18:10:00 35 (min) Purpose code: 3
 LOG : 7165.20 7166.90 1.70 Area code : 2
 FDEPTH: 96 97 GearCond.code:
 BDEPTH: 96 97 Validity code:
 Towing dir: 5° Wire out: 400 m Speed: 3 kn*10

Sorted: 25 Kg Total catch: 1500.00 CATCH/HOUR: 2571.43

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	2177.31	417261	84.67	49
Raja miraletus	114.00	103	4.43	
Trachurus trecae	82.97	2280	3.23	
Pegusa lascaris	51.94	514	2.02	
Trigla lyra	41.49	103	1.61	
Merluccius polli	20.74	411	0.81	
Loligo vulgaris	15.43	103	0.60	
Scorpaena normani	15.43	206	0.60	
Chelidonichthys gabonensis	15.43	206	0.60	
Citharus linguatula	10.29	206	0.40	
Arnoglossus capensis	10.29	621	0.40	
Microchirus boscanion	10.29	933	0.40	
Arnoglossus imperialis	5.14	206	0.20	
Synagrops microlepis	0.00	103		
Total	2570.75		99.97	

PROJECT STATION 218

DATE: 27/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1606
 start stop duration Long E 1147
 TIME : 23:26:00 23:39:00 13 (min) Purpose code: 1
 LOG : 7204.10 7204.60 0.50 Area code : 2
 FDEPTH: 26 26 GearCond.code:
 BDEPTH: 26 26 Validity code:
 Towing dir: * Wire out: 100 m Speed: 3 kn*10

Sorted: 16 Kg Total catch: 97.20 CATCH/HOUR: 448.62

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pegusa lascaris	166.15	3988	37.04	
Balistes caprisicus	166.15	2465	37.04	
Pagellus bellottii	60.92	665	13.58	
Loligo vulgaris	13.85	33	3.09	
Trachurus trecae	13.85	1246	3.09	
Lithognathus mormyrus	11.08	111	2.47	
Parapenaeopsis atlantica	5.54	83	1.23	
Arnoglossus imperialis	5.54	55	1.23	
Dentex canariensis	5.54	55	1.23	
Total	448.62		100.00	

PROJECT STATION 219

DATE:28/ 4/89 GEAR TYPE: PT No:2 POSITION:Lat S 1537
 start stop duration Long E 1145
 TIME :03:55:00 04:30:00 35 (min) Purpose code: 1
 LOG :7244.40 7246.20 1.80 Area code : 2
 FDEPTH: 100 104 GearCond.code:
 BDEPTH: 110 116 Validity code:
 Towing dir: 167° Wire out: 250 m Speed: 3 kn*10

Sorted: 2 Kg Total catch: 2.00 CATCH/HOUR: 3.43

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	3.43	5	100.00	
Total	<u>3.43</u>		<u>100.00</u>	

PROJECT STATION 220

DATE:28/ 4/89 GEAR TYPE: PT No:2 POSITION:Lat S 1538
 start stop duration Long E 1147
 TIME :08:27:00 09:00:00 33 (min) Purpose code: 1
 LOG :7280.70 7281.80 1.10 Area code : 2
 FDEPTH: 85 89 GearCond.code:
 BDEPTH: 109 113 Validity code:
 Towing dir: 290° Wire out: 325 m Speed: 3 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	<u>0.00</u>			

PROJECT STATION 221

DATE:28/ 4/89 GEAR TYPE: BT No:1 POSITION:Lat S 1537
 start stop duration Long E 1154
 TIME :11:31:00 11:51:00 20 (min) Purpose code: 3
 LOG :7299.50 7300.60 1.10 Area code : 2
 FDEPTH: 98 96 GearCond.code: 5
 BDEPTH: 98 96 Validity code: 3
 Towing dir: 14° Wire out: 400 m Speed: 3 kn*10

Sorted: 85 Kg Total catch: 2000.20 CATCH/HOUR: 6000.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex macrophthalmus	4622.46	35556	77.03	50
Trachurus trecae	388.74	1767	6.48	51
Umbrina canariensis	360.45	1200	6.01	
Pagellus bellottii	282.72	1272	4.71	
Dentex gibbosus	134.28	69	2.24	
Spondylisoma cantharus	70.68	69	1.18	
Zeus feber	56.52	69	0.94	
Sparus pagrus africanus	49.47	69	0.82	
Dentex angolensis	35.34	351	0.59	
Total	<u>6000.66</u>		<u>100.00</u>	

PROJECT STATION 222

DATE:28/ 4/89	GEAR TYPE: BT No:1		POSITION:Lat S 1423	
	start	stop	duration	Long E 1216
TIME :21:38:00	22:08:00	30 (min)		Purpose code: 3
LOG :7398.40	7400.00	1.60	Area code : 2	
FDEPTH: 99	104	GearCond.code:		Validity code:
BDEPTH: 99	104	Towing dir: 200° Wire out: 400 m Speed: 3 kn*10		

Sorted: 44 Kg Total catch: 182.70 CATCH/HOUR: 365.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pagellus bellottii	66.00	730	18.06	52
Chelidonichthys gabonensis	40.00	280	10.95	
Hoplunnis punctata	34.00	2184	9.30	
Atractoscion aequidens	30.00	10	8.21	
Dentex macrophthalmus	27.00	240	7.39	54
Zeus faber	25.00	30	6.84	
Dentex macrophthalmus	25.00	3850	6.84	53
Squatina oculata	20.00	10	5.47	
Synagrops microlepis	18.00	2520	4.93	
Umbrina canariensis	15.00	40	4.11	
Brotula barbata	13.00	22	3.56	
Boops boops	10.00	580	2.74	
Citharus linguatula	9.00	140	2.46	
Dentex angolensis	8.00	40	2.19	
Spondyliosoma cantharus	5.40	6	1.48	
Chelidonichthys capensis	4.00	20	1.09	
Spicara alta	4.00	8	1.09	
Parulibatrachus rosignoli	3.00	10	0.82	
Sepia bertheloti	3.00	30	0.82	
Trachurus trecae	3.00	140	0.82	
GOBIIDAE	1.00	720	0.27	
Arnoglossus capensis	1.00	120	0.27	
Arnoglossus imperialis	1.00	110	0.27	
Callapa pelli	0.00	10		
Parapenaeus longirostris	0.00	10		
MYCTOPHIDAE	0.00	10		
Total	365.40		99.98	

PROJECT STATION 223

DATE:29/ 4/89 GEAR TYPE: BT No:1 POSITION:Lat S 1403
 start stop duration Long E 1217
 TIME :00:40:00 01:05:00 25 (min) Purpose code: 3
 LOG :7422.50 7423.30 0.80 Area code : 2
 FDEPTH: 117 113 GearCond.code:
 BDEPTH: 117 113 Validity code:
 Towing dir: 15° Wire out: 500 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 131.50 CATCH/HOUR: 315.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Boops boops	104.16	2880	33.00	
Chelidonichthys capensis	72.00	696	22.81	
Pagellus bellottii	60.00	408	19.01	
Ubrina canariensis	36.00	144	11.41	
Hoplunnis punctata	10.80	108	3.42	
Dentex macrophthalmus	9.60	648	3.04	
Brotula barbata	7.20	24	2.28	
MURAENESOCIDAE	6.00	60	1.90	
Arnoglossus capensis	2.40	264	0.76	
Arnoglossus imperialis	2.40	132	0.76	
Hildebrandia sp	2.40	180	0.76	
Citharus linguatula	1.20	24	0.38	
Dentex angolensis	1.20	48	0.38	
Total	<u>315.36</u>		<u>99.91</u>	

PROJECT STATION 224

DATE:29/ 4/89 GEAR TYPE: BT No:1 POSITION:Lat S 1343
 start stop duration Long E 1221
 TIME :03:50:00 03:55:00 5 (min) Purpose code: 3
 LOG :7447.50 7447.60 0.10 Area code : 2
 FDEPTH: 115 112 GearCond.code: 5
 BDEPTH: 115 112 Validity code: 3
 Towing dir: * Wire out: 450 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 29.20 CATCH/HOUR: 350.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Ubrina canariensis	74.40	192	21.23	
Boops boops	72.00	1620	20.55	
Chelidonichthys capensis	52.80	432	15.07	
Dentex angolensis	42.00	156	11.99	
Dentex macrophthalmus	36.00	432	10.27	
Brotula barbata	15.60	24	4.45	
Hildebrandia sp.	12.00	96	3.42	
Dentex canariensis	9.60	12	2.74	
Trichiurus lepturus	7.20	12	2.05	
Dentex gibbosus	7.20	12	2.05	
Pagellus bellottii	7.20	24	2.05	
Zeus faber	6.00	12	1.71	
Arnoglossus imperialis	4.80	120	1.37	
Arnoglossus capensis	2.40	240	0.68	
Citharus linguatula	1.20	24	0.34	
Total	<u>350.40</u>		<u>99.97</u>	

PROJECT STATION 227

DATE: 29/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1257
 start stop duration Long E 1252
 TIME :14:10:00 14:40:00 30 (min) Purpose code: 3
 LOG :7529.60 7530.80 1.20 Area code : 2
 FDEPTH: 64 82 GearCond.code:
 BDEPTH: 64 82 Validity code:
 Towing dir: 320° Wire out: 250 m Speed: 3 kn*10

Sorted: 34 Kg Total catch: 308.79 CATCH/HOUR: 617.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Synagrops microlepis</i>	360.00	53484	58.29	
<i>Arius latiscutatus</i>	54.00	18	8.74	
<i>Trachurus trecae</i>	54.00	1872	8.74	61
<i>Selene dorsalis</i>	27.00	126	4.37	
<i>Raja miraletus</i>	18.00	54	2.91	
<i>Pagellus bellottii</i>	16.20	162	2.62	
<i>Ubrina canariensis</i>	14.40	126	2.33	
<i>Parapristipoma octolineatum</i>	12.60	18	2.04	
COBIIDAE	12.60	5040	2.04	
<i>Trichiurus lepturus</i>	12.60	432	2.04	
<i>Atractoscion aequidens</i>	10.80	54	1.75	
<i>Pontinus kuhlii</i>	5.40	54	0.87	
<i>Chaetodon hoefleri</i>	3.60	18	0.58	
<i>Boops boops</i>	3.60	108	0.58	
<i>Arnoglossus imperialis</i>	1.80	54	0.29	
<i>Citharus linguatula</i>	1.80	36	0.29	
<i>Alloteuthis africana</i>	1.80	126	0.29	
<i>Sepia bertheloti</i>	1.80	72	0.29	
<i>Dentex angolensis</i>	1.80	18	0.29	
<i>Parapenaeus longirostris</i>	1.80	180	0.29	
<i>Chelidonichthys capensis</i>	1.80	18	0.29	
<i>Zeus faber</i>	0.18	36	0.03	
<i>Saurida brasiliensis</i>	0.00	36		
Total	<u>617.58</u>		<u>99.96</u>	

PROJECT STATION 228

DATE: 29/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1254
 start stop duration Long E 1252
 TIME :15:40:00 16:10:00 30 (min) Purpose code: 3
 LOG :7536.40 7538.00 1.60 Area code : 2
 FDEPTH: 101 100 GearCond.code:
 BDEPTH: 101 100 Validity code:
 Towing dir: 32° Wire out: 400 m Speed: 3 kn*10

Sorted: 34 Kg Total catch: 1378.00 CATCH/HOUR: 2756.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Synagrops microlepis</i>	2320.00	290000	84.18	
<i>Dentex macrophthalmus</i>	240.00	2240	8.71	
<i>Dentex angolensis</i>	72.00	240	2.61	
<i>Boops boops</i>	40.00	720	1.45	
<i>Chelidonichthys capensis</i>	16.00	80	0.58	
<i>Chelidonichthys gabonensis</i>	16.00	160	0.58	
<i>Uranoscopus polli</i>	16.00	8	0.58	
<i>Pontinus kuhlii</i>	16.00	8	0.58	
<i>Xenomystax sp</i>	12.00	80	0.44	
<i>Citharus linguatula</i>	8.00	160	0.29	
<i>Saurida brasiliensis</i>	0.00	240		
Total	<u>2756.00</u>		<u>100.00</u>	

PROJECT STATION 229

DATE: 29/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1300
 start stop duration Long E 1249
 TIME : 17:55:00 18:25:00 30 (min) Purpose code: 3
 LOG : 7551.20 7552.80 1.60 Area code : 2
 FDEPTH: 96 93 GearCond.code:
 SDEPTH: 96 93 Validity code:
 Towing dir: 15° Wire out: 400 m Speed: 3 kh*10
 Sorted: 75 Kg Total catch: 705.50 CATCH/HOUR: 1571.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Synagrops microlepis</i>	1204.00	1410500	75.64	62
<i>Dentex macrophthalmus</i>	20.00	580	5.47	63
<i>Brotula barbata</i>	63.00	72	4.01	
<i>Pterothrissus belloci</i>	50.00	560	3.18	
GOBIIDAE	40.00	24000	2.58	
<i>Pagellus bellottii</i>	24.00	120	1.53	
<i>Trichiurus lepturus</i>	24.00	80	1.53	
<i>Parapenaeus longirostris</i>	20.00		1.27	
<i>Chelidonichthys gabonensis</i>	20.00	140	1.27	
<i>Trachurus trcae</i>	16.00	620	1.02	
<i>Pontinus kuhlii</i>	10.00	100	0.64	
<i>Umbrina canariensis</i>	8.00	20	0.51	
<i>Merluccius polli</i>	4.00	100	0.25	
<i>Citharus linguatula</i>	2.00	20	0.13	
MYCTOPHIDAE	0.00	220		
<i>Saurida brasiliensis</i>	0.00	40		
<i>Zeus faber</i>	0.00	20		
Total	1571.00		100.00	

PROJECT STATION 230

DATE: 29/ 4/89 GEAR TYPE: PT No:4 POSITION: Lat S 1306
 start stop duration Long E 1250
 TIME : 20:30:00 21:13:00 43 (min) Purpose code: 1
 LOG : 7568.10 7570.50 2.40 Area code : 2
 FDEPTH: 0 0 GearCond.code:
 SDEPTH: 63 71 Validity code:
 Towing dir: 260° Wire out: 200 m Speed: 4 kh*10
 Sorted: 83 Kg Total catch: 873.50 CATCH/HOUR: 1218.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Trachurus trcae</i>	484.05	15400	39.71	
<i>Trichiurus lepturus</i>	357.91	2431	29.36	
<i>Sardinella maderensis</i>	97.67	336	6.01	65
<i>Sardinella aurita</i>	88.74	253	7.28	64
<i>Sphyraena sphyraena</i>	75.25	93	6.18	
<i>Atractosteion equidens</i>	32.09	1	2.63	
<i>Belone dorsalis</i>	28.19	56	2.31	
<i>Uraspis secunda</i>	22.60	18	1.85	
<i>Brachydeuterus auritus</i>	9.35	93	0.77	
<i>Engraulis encrasicolus</i>	9.35	2901	0.77	
<i>Trechinotus ovatus</i>	7.53	18	0.62	
<i>Balistes caprisicus</i>	5.58	18	0.46	
Total	1218.41		99.95	

ANNEX III. INSTRUMENTS AND FISHING GEAR USED

Acoustic instruments

Two SIMRAD scientific echo sounders, EK 400/38 kHz and EK 400/120 kHz were used during the survey for estimation of fish density. The EK 400/38 was coupled to a digital integrator QD as well as to an analog integrator QM. The details of the instrument settings used are as follows:

	EK 400/38	EK 400/120
Range	0-100 m or 0-250 m	0-100 m
Transmitter	High (5000 W Nom)	High (1250 W Nom)
Bandwith	3.3 kHz	3.3 kHz
Pulselength	1.0 ms	1.0 ms
TVG	20 log R	20 log R
Attenuator	20 dB	0
Rec. gain	8 or 9	5
Transducer	split beam (ES)	Ceramic 10 cm

QD settings: Threshold 10 to 24 mv. Gain: -35.7 dB

QM settings: Gain 20 dB x 10. Threshold 7

A calibration experiment using standard copper spheres performed in Baia dos Tigres 26/4/89 gave the following results: 30x30 transducer, SL+VR: 141.46 dB, instr. constants 1 ms: 1.18, 0.5 ms: 2.30. ES transducer: SL+VR: 135.47 dB, instr. constant: 3.69. The result of the calibration showed that the 30x30 transducer was in-stable and hence the split beam transducer was used for integration.

Hydrography

Temperature, salinity and oxygen were sampled at standard depths with Nansen bottles. Oxygen was measured with the Winkler method and salinity determined with an inductive salinometer. Surface temperature was recorded at 4 m depth with a thermograph.

Fishing gear

Bottom trawl: High opening shrimp and fish trawl with net headline 31m (floatline), footrope 47m, gear with 12 cm diameter roller disks, 40 m sweeps, estimated headline hight 6 m and distance between wings during towing 18-20 m.

Pelagic trawl: Type "Harstadtrawl", width about 30 m, vertical opening 10-15m.

Cod ends of trawls with fine meshed inner lining.

Figures giving details of the trawls are attached.

PART 2 - BENGUELA to LUANDA and LUANDA to CABINDA, 30 April-29 May 1989

1. Introduction

For reference to previous surveys, objectives of the 1989 surveys and participation see part 1 of Preliminary Report Cruise No II, 1989.

Participation

The scientific staff from CIP, Luanda was:

from 30 April to 15 May:

Francisca Alberta Delgado, Lutuba N'silulu, Geraldina De Assuncao, Monica Do Ceu Ramos Da Cruz, and Abilio Jornal.

From 18 May to 28 May:

Antonio Bucu, Pedro Afonso Kingombo, Pedro Panzo, Florentina Pina, David Quissungu.

The scientific staff from IMR was:

Johannes Hamre (unto 15 May), Olle Hagstrøm (from 22 May), Terje Haugland, Kjell Strømsnes, Atle Totland and Helge Ullebust.

From Fao:

Wolfgang Schneider.

Narrative

Work was started off Benguela on 30 April. Sampling of pelagic fish with midwater trawl were made during nighttime, whereas attempts were made to cover important aggregations of small pelagic fish acoustically both by day and by night. The prepositioned bottom trawl hauls on the shelf were all made during daylight hours and distributed at intervals over the total accessible depth range. Most of the hauls in the deeper range of the slope were only made during night hours. South of Luanda two hydrographic profiles were worked, one off Lobito and another off Ponta Das Palmeirinhas. North of Luanda three profiles were carried out at Ponta da Moita Seca, at the northern boundary of Congo River Trench and at Cabinda. Three days stop was made in Luanda for change of Angolan scientists, and one day for change of cruise leader. The survey ended on 28 May at Cabinda where Angolan scientist disembarked. The vessel steamed 7100 nm, and 187 trawl stations were worked.

Figure 1 and 2 show the course track with fishing stations and the hydrographic profiles.

2. Hydrography

Benguela - Pta Palmeirinhas

Figure 3 shows the distribution of surface temperature observed with the thermograph at 4 m of depth and the distribution of temperature, salinity and oxygen in the profiles. The surface temperature distribution is characterized by an increase oceanwards, from about 25°C close to the shore increasing to 28°C off the shelf. In the two sections worked in the region there is a strong thermocline well demonstrated at 25-50 m depth followed by a gradual decrease of temperature towards deeper layers. A characteristic of the sections is the low salinity content of the surface waters, advected from the Congo river runoff by the southward flowing Angola current. The oxygen content over the shelf is relatively high, presenting values which are not likely to limit the distribution of fish on the shelf.

Pta. Palmeirinhas - Cabinda

Figure 4 shows the distribution of surface temperature observed with the thermograph at 4 m depth and the distribution of temperature, salinity and oxygen in the profiles. The surface temperature at the Pta da Moita Seca are about the same from the coast on to the slope area. The temperature decrease gradually with increasing depth and a thermocline is not developed. A strong halocline is developed at 10 m and the salinity is increasing offshore. The lower salinity close to the coast could indicate influence of the Congo River. The temperature profile at Cabinda is similar to the previously mentioned profile and a thermocline is not developed. The influence of the River Congo is demonstrated in the low salinity water at surface over the hole section and a strong halocline is shown at about 10 m. In the horizontal temperature chart a core of water with 25°C is observed all along the coast and the temperature increase to 27°C off the shelf.

The hydrographic profiles and current observation during trawling and steaming indicate that the dominating direction of the water movements are north to west. The southward flowing Angola current is not detected in the surveyed area.

The oxygen content over the shelf is relatively high and the values are not likely to limit the distribution of fish.

3. Fish distribution and abundance from the acoustic system

The units of acoustic reflection is $0.1 \times \text{m}^2/\text{nm}^2$ reflecting surface. An arbitrary scale has been used to illustrate different levels of concentration. The integrator values were allocated to the following groups on the basis of trawl sampling and characteristic behaviour:

- Pelagic fish type 1, Clupeids and anchovies;
- Pelagic fish type 2, Carangids, scombrids, barracudas etc.;
- Demersal fish in mid water.

Distribution Benguela to Luanda

Figure 5 shows the distribution of the two categories of pelagic fish as observed with the acoustic integrations system. Very little demersal fish is found in mid water in this region. The pelagic type 1 species, mainly sardinellas with small amounts of anchovies and ilisha were found in rather limited areas and with low density on the inner shelf. In the pelagic trawl catches worked at nighttime the sardinellas were often mixed with barracudas and hairtails. The pelagic 1 type schools were however identified through school characteristics recorded on the echointegrator. Both the round- and flat sardinella were of mixed sizes, see ANNEX I. In most of the previous surveys a schooling area of pelagic fish has been found off Pta. das Palmeirinhas which has consisted of both sardinellas and horse mackerels. No such aggregation of pelagic fish were recorded during this cruise. A fleet of large purse seiners was operating in the area.

The pelagic 2 types of fish were found to be distributed over wider parts of the shelf but also with low densities except for a small location south of Pta. do Morro. On the inner shelf the pelagic 2 types consisted of various carangids, lookdowns *Selene dorsalis*, bumpers *Chloroscombrus chrysurus* and a small amount of false scad *Decapterus rhoncus* in addition to barracudas and hairtails. Offshore the by far most common form was the Cunene horse mackerel *Trachurus trecae*. The horse mackerel was mostly of small size, with mode at 13 cm of length.

Fish Distribution Luanda to Cabinda

The distribution of the two categories of pelagic species detected by the acoustic system is given in Figure 6. In previous surveys the Pelagic 1 group have been very poorly represented in the area north of Luanda and when present mainly represented by *Ilisha*. The observation of sardinella have been very scarce and only in small patches mainly in the area of Luanda and Punta Palmeirinhas. The pelagic registration have been dominated by Pelagic 2 species as bumpers and lockdown (*Chloroscomberus chrysurus*, *Selene dorsalis*) in shallow waters and mainly Cunene horse mackerel (*Trachurus trecae*) in mid-shelf. The demersal species normally contributes very little to the acoustic registrations in this area.

The distribution of pelagic 2 species in this survey shows large similarities with previous findings and the species composition is the same with bumpers and lookdown in shallow waters and Cunene horse mackerel extensively distributed in mid-shelf from Luanda to the boarder of Congo. The mean length of the horse mackerel is about 15 cm or the same as obtained in previous survey. See APPENDIX I on pooled length frequency distributions. The contribution of demersal species are very limited and when present as scattered concentrations of bigeye grunt (*Brachydeuterus auritus*).

In contrast to survey I sardinella occurred in two areas: from Luanda to Ambrizete and Pta. da Moita Seca to the boarder of Congo. In the southern area the sardinella were distributed mostly near to the coast where as in the northern area the distribution extended over the shelf to about 120 m depth. At Cabinda sardinella shoals were observed at surface in very shallow waters less than 20 m. This shallow waters have not been adequately surveyed due to navigational reasons. In the area off Luanda round sardinella (*Sardinella aurita*) was most common where as in the northern area madeiran sardinella (*Sardinella maderensis*) dominated. The sardinella found in both areas were mature fish. Mean length of round and madeiran sardinella were 24 cm and 26 cm respectively.

Estimates of biomass

An estimate of the total biomass of the pelagic type 1 fish based on the acoustic integration technique is by regions:

	Benguela - Pta. Palmeirinhas	Pta. Palmeirinhas-Cabinda
Total pelagic 1	39 000	131 000

The corresponding estimates from previous surveys are:

First half 1985	200 000	205 000
First half 1986	135 000	120 000
February 1989	170 000	55 000

The biomass estimates of the pelagic 2 group are by regions:

	Benguela - Pta. Palmeirinhas	Pta. Palmeirinhas-Cabinda
Total pelagic 2	43 000	202 000
Februar 1989	100 000	80 000

The mean of the estimates of biomass of pelagic 2 fish from the six surveys in 1985/86 was 140 000 tonnes for the Benguela-Luanda region and 65 000 tonnes for Luanda-Cabinda.

The present acoustic estimates indicate a significant decline in the pelagic fish stock abundance of the Benguela-Luanda region, compared to the pelagic fish recordings in 1985/86 and in the February cruise this year as well. The new estimate of the stock of sardinella north of Pta Palmeirinhas is well above the February estimate and the result indicate northward displacement of the stock. The total estimate of sardinella 170 000 tonnes is lower than the February estimate and significantly lower than the 1985/86 level. The result strongly indicate that the stock are heavily exploited and the fishing mortality could be well above a level that will secure sustainable catches.

The estimate of pelagic 2 species north of Pta. Palmeirinhas are much higher than in February and at the same level as the 1985/86 estimates. The present estimate is, however, largely dependent of a small and very dense patch of false scad which gave 130 000 tonnes or about 75 % of the total estimate.

4. Results of the fishing experiments, catch compositions and swept area biomass estimates

The results of the fishing experiments are summarized in Table 1 to 4. One should note that most of the fishing forms part of a programme for "swept area" biomass estimation, and for this purpose the trawl stations are positioned in advance more or less randomly with the intention to estimate fish density in each depth strata and not to obtain high catch rates. The catch rates thus do not simulate those of a commercial fishery.

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

The composition of the fish fauna on the shelf north of Benguela changes by depth and a partition in an inner shelf down to 70 m depth and an outer shelf 70-200 m has been used as basis for the analyses. The catches in the slope from 200 m downward are characterized by the occurrence of the deepwater shrimps and have been grouped separately.

Benguela-Palmeirinhas

Table 1 shows the catch rates of successful bottom hauls standardized to kg/hour for the main groups of resources on the two parts of the shelf. Both for the inner- and the outer shelf the highest catch rates were obtained for the demersal species. Sharks and shrimps are scarce. The squids are most abundant on the outer shelf, where the common cuttlefish *Sepia officinalis* is dominating by some 50 % of the squid catches. The flying squid *Todarodes sagittus* is contributing by some 25 %.

Table 2 shows the catch rates of the pelagic species by families from the two parts of the shelf. The Table include both pelagic and botten hauls. These data are not very meaningful as indices of abundance of these types of fish, but they give an indication of the availability of the various forms. Clupeids were caught in small amount by pelagic trawl on the inner shelf, and 70 % where *Sardinella maderensis*. The carangids dominate the catches on the whole shelves, the catches from the inner shelf consisted of some 15 % lockdown, *Selene dorsalis*, 15 % bumper *Chloroscombrus chrysurus*, and the remainder was mainly Cunene horse mackerel. Nearly 100 % of the carangid catches from the outer shelf was Cunene horse mackerel dominated by small sized fish. The hairtails are abundant at some stations (231,237,275, 321) where as scombrides are scare. Most of the barracudas were caught on the inner shelf and consisted of the guachanche species *Sphyaena guachancho*, and some *S. spyraena*.

Table 3 shows the catch rates of demersal fish in 63 successful bottom hauls by families and zones. The grunts dominate the catches on the whole shelf and consisted mainly of the bigeye grunt *Brachydeuterus auritus*. Among the seabreams the red pandora *Pagellus bellottii* was most abundant and contributed with 60 %, the Angola dentex *Dentex angolensis* with 20 % of the sparids. The pooled size compositions of the species are shown in ANNEX I.

Table 1. Benguela to Pta. das Palmeirinhas. Catch rates by main groups in bottom trawl hauls, standartized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Pelagic	Demersal	Sharks	Cephalopod	Shrimp	Other
232	38	223.40					3.00
235	40	315.00	1456.00				109.40
239	25	90.72	1197.00			2.52	206.32
244	28	87.60	235.20		3.60		34.80
245	60	70.00	2620.00		2.50	5.00	95.00
250	66		72.00		66.00		81.00
252	25	99.20	73.60		3.20	3.20	50.40
253	60	1641.60	664.60		48.00		163.20
263	62	225.00	309.00		9.00		235.50
264	26	154.80	114.00				91.20
265	33	2.16	62.40		13.20		25.20
269	22	131.20	429.60	2.00	4.80	1.20	63.80
270	38	7.89	122.22		0.32		19.74
272	50	1.50	20.00		6.00		36.80
273	24	9.80	8.20		6.00		11.00
275	49	342.10	1387.06		12.44		55.98
281	37	91.80	414.00		3.60		63.00
284	30	55.60	130.40	6.40	8.00		34.40
288	69	1.40	76.00		17.60		28.60
289	27	27.50	7.20	11.00	3.20		4.40
290	23	1.10	2.40	2.00	8.00		4.40

291	60	9.00	51.60		8.10		20.26
298	50	10.40	0.20		0.30		97.60
299	22	3.60	2.40		7.20		10.60
300	18	0.20	20.40		2.40		36.60
301	66	2113.62	13885.80				
305	32	6.40	20.80		3.40		33.00
306	24	91.80	11.20				17.80
311	65	24.20	29.80		9.00		12.80
312	31	6.60	125.00				5.00
315	43		2.60		2.20		3.20
318	28	46.80	2.20				21.20
319	39	14.80	78.00		12.00		31.20
MEAN		178.99	716.09	0.65	7.88	0.36	51.71

OUTER SHELF

ST. NO.	DEP.	Pelagic	Demersal	Sharks	Cephalopod	Shrimps	Other
231	86	2063.27	1296.17				291.08
233	100		262.56		18.00		61.60
234	91	0.50	180.50		15.00		51.50
236	93		467.10		5.40		22.50
240	85	9.60	152.80		18.40		39.20
241	98		105.20		24.80		15.70
242	102	0.26	213.88		23.08		35.76
243	72	9.66	92.46		46.80		49.20
248	189		631.20	46.70	46.70		171.20
249	98	739.00	264.40		64.70		131.00
254	97	2.70	189.80		18.90		27.90
262	105	7.20	296.40		12.00		73.20
271	87	354.00	187.00	4.00			56.00
274	111	299.00	1090.20		23.00		167.90
276	197	20.00	47.50	25.50	6.00		26.00
279	110	150.40	265.80		14.40		41.00
280	78	241.92	3661.02	16.12			80.62
282	73	255.20	1038.40				114.40
283	96	627.90	150.60		18.20		85.80
287	122	1018.78	2185.24		96.50		134.94
292	96	53.90	88.00		15.40		50.60
293	151	4.88	749.82	2.88	40.36		106.38
296	199	1.71	822.00	8.57	2.57		48.87
297	90	12.80	216.00		3.80		9.00
304	80	96.00	60.00		4.00		10.00
307	78	11.44	1080.46				7.62
310	102	765.00	685.00		10.00		32.50
313	79	109.80	444.60		7.20		3.60
314	95	76.80	329.60	4.80			124.00
316	72	146.00	81.00				6.50
317	96	372.80	46.40		9.60		8.00
MEAN		240.34	560.68	3.50	17.57		67.21

Table 2. Benguela to Pta. das Palmeirinhas. Catch rates of main pelagic families in bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Clupeids	carangids	Hairtails	Barracudas	Scombrids	Other
232	38	2.40	100.00		116.00	5.00	3.00
235	40		238.00	77.00			1565.40
237	10	52.50	16.50	645.00	51.00		55.50
238	10	40.05	82.80	85.50	36.90		22.05
239	25		63.00		25.20		1408.36
244	28	1.20	8.40	15.60	12.00		324.00
245	60		45.00	25.00			2722.50
250	66						219.00
251	24			12.92			149.53
252	25		3.20				226.40
253	60		1632.00	9.60			875.80
263	62		225.00				553.50
264	26	7.20	94.80	1.20	48.00		208.80
265	33	0.24	0.72		1.20		100.80
266	15	15.60	50.40	2.00	10.40		67.40
267		14.80	12.40		6.40		28.40
268	23	24.00	627.60	12.00			36.00
269	22	14.20	36.00	26.40	51.60	3.00	501.40
270	38			3.47		4.42	142.28
272	50		1.50				62.80
273	24		6.80			3.00	25.20
275	49		37.32	304.78			1455.48
281	37	10.80	27.00	36.00	18.00		480.60
284	30	3.60	20.00	4.00	28.00		179.20
288	69	0.20	1.20				122.20
289	27		21.50		4.00	2.00	25.80
290	23		1.10				16.80
291	60		0.90	3.30	1.50	3.30	79.96
298	50			10.40			98.10
299	22		2.40		1.20		20.20
300	18		0.20				59.40
301	66	26.74	2086.88				13885.80
305	32		1.00	4.00		1.40	57.20
306	24		72.00	10.20	9.60		29.00
308	7	88.60	14.80		4.80		13.20
311	65		4.60	10.00	2.60	7.00	51.60
312	31		0.60	4.00	2.00		130.00
315	43						8.00
318	28		6.80		40.00		23.40
319	39		6.00	0.80	8.00		121.20
320	15	13.20	14.80	4.40	31.60		52.40
321	10			360.00			
MEAN		7.51	132.46	39.70	12.14	0.69	623.99

OUTER SHELF

ST. NO.	DEP.	Clupeids	carangids	Hairtails	Barracudas	Scombrids	Other
231	86		1588.36	474.91			1587.25
233	100						342.16
234	91		0.50				247.00
236	93						495.00
240	85		9.60				210.40
241	98						145.70
242	102		0.26				272.72
243	72		0.06	3.60	6.00		188.46
248	189						895.80
249	98		739.00				460.10
254	97				2.70		236.60
262	105		2.40	1.20		3.60	381.60
271	87		340.00	8.00		6.00	247.00
274	111		299.00				1281.10
276	197			20.00			105.00
279	110		150.40				321.20
280	78		241.92				3757.76
282	73		162.80	92.40			1152.80
283	96	1.30	624.00	2.60			254.60
287	122		1018.78				2416.68
292	96	1.10	52.80				154.00
293	151		2.88			2.00	899.44
296	199			1.71			882.01
297	90		9.80	3.00			228.80
302	96		86.40				55.20
304	80		94.00			2.00	74.00
307	78		11.44				1088.08
310	102		750.00		15.00		727.50
313	79		55.80	28.80	25.20		455.40
314	95		60.80	16.00			458.40
316	72		140.00	4.00	2.00		87.50
317	96		368.00			4.80	64.00
MEAN		0.08	212.78	20.51	1.59	0.58	630.41

Table 3. Benguela to Pta. das Palmeirinhas. Catch rates of main demersal families in bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Seabreams	Grunts	Croakers	Groupers	Hake	Other
232	38						226.40
235	40	84.00	1274.00	63.00	35.00		424.40
239	25	113.40	1076.04	7.56			299.56
244	28		222.00	13.20			126.00
245	60	85.00	2520.00	15.00			172.50
250	66	52.80			0.60		165.60
252	25	1.60	72.00				156.00
253	60	134.40	480.00		2.20		1900.80
263	62	39.00	255.00		1.50		483.00
264	26		91.20	22.80			246.00
265	33	36.24	2.40		2.16		62.16
269	22	1.00	370.60	58.00			203.00
270	38	62.85			44.53		42.79
272	50	0.40			9.00		54.90
273	24				6.00		29.00

275	49	24.88	1244.00	118.18			410.52
281	37		324.00	90.00			158.40
284	30	5.60	120.00		4.80		104.40
288	69	66.00	0.80				56.80
290	23	0.20	2.20				15.50
291	60	11.10	19.50		1.20		57.16
298	50	0.20					108.30
299	22	1.60	0.80				21.40
300	18	8.40	12.00				39.20
301	66	882.88	12842.40	160.52			2113.62
305	32	20.80					42.80
306	24	10.00	1.20				109.60
311	65	28.60			1.20		46.00
312	31	105.00	20.00				11.60
315	43	2.20					5.80
318	28	0.80			1.40		68.00
319	39	26.00	51.20				58.80
MEAN		56.40	656.29	17.13	3.42		250.63

OUTER SHELF

ST. NO.	DEP.	Seabreams	Grunts	Croakers	Groupers	Hake	Other
231	86	289.63	272.73	655.45	8.73		2423.98
233	100	174.00			3.00		165.16
234	91	55.50					192.00
236	93	259.20		180.00			55.80
240	85	96.80					123.20
241	98	85.60			0.20		59.90
242	102	174.28					98.70
243	72	36.06					162.06
248	189	248.22				93.42	554.16
249	98	156.00				1.80	1041.30
254	97	117.00			2.70		119.60
262	105	30.00				3.60	355.20
271	87	14.00	160.00				427.00
274	111	59.80	9.20				1511.10
276	197					26.00	99.00
279	110	221.80	19.20		12.00		218.60
280	78	88.68	3548.16	24.18			338.66
282	73	96.80	880.00	35.20			396.00
283	96	62.40	13.00	44.00			763.10
287	122	19.00					3416.46
292	96	30.80					177.10
293	151	14.42					889.90
296	199	18.85			651.43	42.86	170.58
297	90	95.00	8.00	107.00	3.80		27.80
304	80	58.00					110.00
307	78	1072.84	7.62	2.00			19.06
310	102	20.00	650.00				822.50
313	79	36.00	360.00	46.80			122.40
314	95		320.00				215.20
316	72	81.00					152.50
317	96	41.60					395.20
MEAN		121.07	201.55	35.31	22.00	5.41	503.97

SLOPE 200-600 M

ST. NO.	DEP.	Hake	Seabreams	Shrimps	Sharks	Cephalopod	Other
246	296	13.80		6.90	29.90	6.90	595.70
247	299	16.10		2.30	2.30		570.40
255	200	68.00		56.00	2.40	8.00	82.40
256	301			6.00		1.60	105.20
257	351	404.30		109.60	11.50		274.00
258	447	384.00		230.40	9.60		45.60
259	351	100.00		119.90	11.40	8.50	559.60
260	300	16.60		20.80		12.50	1249.50
261	200	96.00	7.20	19.20		38.64	556.00
277	396	54.60		159.60	9.60		69.60
278	304	14.54	14.54	18.18		10.90	341.76
285	302	14.80		38.30			995.30
286	448	4.00		23.20	1.00	1.60	16.80
294	451	545.30		17.39	1.55		45.14
295	500	42.00		21.60	1.80		80.40
303	542	18.00		8.40	0.80	1.20	63.60
MEAN		112.00	1.36	53.61	5.12	5.62	353.19

Croakers and groupers made more occasional contributions to the catches. The Canary drum *Umbrina canariensis* was mainly caught on the outer shelf and contributed with 50 % of the croakers. Some small catches of groupers were obtained both on the inner-and the outer shelf consisting most frequently of the white grouper *Epinephelus aeneus*, whereas the large catch of this group taken at station number 296 was the dungat grouper *Epinephelus goreensis*.

Table 3 shows the catch rates of 16 bottom hauls in the slope. The hake *Merluccius polli* was caught in the slope with the highest catch rates below 350 m depth. Most of the hauls were made by nighttime, but st. nos. 259 and 260 were worked in dayhours. The good catch of shrimps at st. no. 259 consisted mainly of spider shrimp *Nematocarcinus africanus* and narwal shrimp *Parapandalus narval*. The deepwater rose shrimp *Parapenaeus longirostris* was caught in small quantities in the dayhours. Good catches of the rose shrimp were obtained at st. nos. 257, 258 and 277. The red shrimps of the Aristeidae family were caught at rates up to 38 kg/hour at 450 m depth. The pooled size composition of the samples is shown in ANNEX I.

Table 4 shows the swept area estimates of mean densities by species and depth strata, based on 85 successful random bottom trawl hauls made. The bigeye grunts dominates both the 0-50 and 50-100 m bottom depth zone followed by the red pandora *Pagellus bellotti* and *Dentex angolensis* in the 50-100 m zone. The deeper waters (100-200 m) are dominated by the splitfin thinlip *Synagrops microlepis*. The catchability coefficient applied in the estimation is 1.0.

Table 4. Benguela to Pta. das Palmeirinhas. Swept area estimates of demersal fish densities by species and depth ranges.

SPECIES NAME	CATCH DISTRIBUTION BY KG/M GROUPS						% inci- dence	Mean dens. t/nm ²	Mean densities by bottom depth strata t/nm ²			
	<10	10-30	30-100	100-300	300-1000	>1000			- 50m	50-100m	100-200m	200-800
Brachydeuterus auritus	12	4	4	7	3	3	39	10.76	5.63	24.46	1.89	
Synagrops microlepis	6	4	5	4	1		24	2.54		0.02	13.71	3.41
Pagellus bellottii	29	16	2	1	1		56	1.29	0.48	3.17	0.09	
Chlorophthalmus atlanticus	10	4	2	3			22	0.89			0.24	4.83
Merluccius polli	10	4	4	3			25	0.81			0.91	3.84
Dentex angolensis	17	11	4				38	0.50		0.85	1.45	
Parapenaeus longirostris	19	3	3				29	0.31		0.04	0.44	1.31
Citharus linguatula	31	7	1				46	0.30	0.04	0.72	0.24	
Epinephelus goreensis	2			1			4	0.26			1.84	
Umbra canariensis	3	3	2				9	0.24		0.69		
Chelidonichthys gabonensis	19	4	2				29	0.22	0.01	0.54	0.17	
Sepia officinalis hierredda	33	5					44	0.20	0.08	0.37	0.34	
Chloroscombrus chrysurus	5	4	1				12	0.20	0.61			
Balistes capriscus	22	2	2				31	0.19	0.15	0.40		
Chelidonichthys capensis	22	5					32	0.18	0.03	0.44	0.10	
Dentex macrophthalus	11	1	2				16	0.18		0.34	0.35	0.03
Pentheroscion mbizi				1			1	0.17		0.48		
Pterothrissus belloci	19	2	1				26	0.16		0.06	0.58	0.33
Sphyræna guachancho	14	5					21	0.15	0.39	0.04	0.04	
Stromateus fiatola	6	2	1				11	0.14	0.21	0.22		
Pomadasys jubelini		1	1				2	0.13	0.05	0.31		
Galeoides decadactylus	6	4					12	0.13	0.38			
Saurida brasiliensis	27	3					35	0.12		0.15	0.50	
Pomadasys incisus	4	1	1				7	0.12	0.33	0.05		
Todarodes sagittatus	23	3					31	0.11	0.01	0.06	0.50	0.08
Laemonema sp	6	5					13	0.11				0.64
Malacocephalus occidentalis	6	1	1				9	0.09			0.05	0.44
Lagocephalus laevigatus	22	1					27	0.08	0.16	0.06	0.04	
Dentex canariensis	14	2					19	0.08	0.02	0.16	0.10	
Dentex barnardi	8	2					12	0.07	0.01	0.17	0.04	
Brotula barbata	5	2					8	0.07		0.08	0.32	
Lepidion sp.		1	1				2	0.07				0.37
Zeus faber	23						27	0.06	0.01	0.13	0.05	
Sphyræna sphyræna	5		1				7	0.06	0.17	0.01		
Prerescion peli	5	2					8	0.06	0.18			
Argyrosomus regius			1				1	0.06		0.18		
Sparus pagrus africanus	6	2					9	0.05	0.01	0.06	0.17	
Raja miraletus	16						19	0.05	0.02	0.10		0.03
Aristeus varidens	10						12	0.03				0.16
Penaus notialis	3	1					5	0.02	0.07			
Parapandalus narval		1					1	0.02				0.12
Nematocarcinus africanus		1					1	0.02				0.12
Plesiopenaeus edwardsianus	6						7	0.01				0.07
Other fish								1.15	1.46	0.78	1.27	1.34
Sum all species								22.46	10.51	35.12	25.43	17.12
Sum Snappers								0.01	0.02			
Sum Groupers								0.31	0.13	0.03	1.84	
Sum Grunts								11.04	6.09	24.81	1.89	
Sum Croakers								0.68	0.46	1.47		
Sum Seabreams								2.25	0.61	4.88	2.29	0.03
Sum Sharks								0.05	0.02		0.05	0.16
Sum Rays								0.13	0.21	0.10	0.10	0.03
Sum Squids								0.37	0.14	0.54	0.89	0.10
Sum												
Sum shrimps (excl. SHRAA01)								0.41	0.07	0.04	0.44	1.78
Number of stations included in analysis, total and by depth strata								85	28	30	12	15

Table 5 shows the estimated area of the shelf and the resulting biomasses for all demersal species and separately for the dominating species in each zone.

Table 5. Benguela to Palmeirinhas. Biomass estimates of groups of demersal fish by depth strata. Tonnes.

	Total	0-50 m	50-100 m	100-200 m
Shelf area nm ²	4 700	1 750	1 680	1 280
<i>Brachydeuterus auritus</i>	53 000	10 000	41 000	2 000
<i>Synagrops microlepis</i>	17 500			17 500
<i>Pagellus bellottii</i>	6 300		1 400	1 900
All demersal	126 000	19 000	7 000	38 000

The total estimate of demersals amounted to 126 000 tonnes compared to 61000 tonnes obtained in the previous survey in February. In the surveys in 1985-86 the estimated demersal biomass varied between 50 and 100 thousand tonnes with a mean value from six surveys of 70 thousand tonnes.

In the 200-600 m bottom depth zone 15 successful hauls were made. Dominating species were splitfin thinlip *Synagrops microlepis*, greeneyes *Chlorophthalmus atlanticus* and hake. The areal extension of this zone has been estimated to 1 300 nm². The following biomass figures were obtained:

Splitfin thinlip	4	400
	tonnes	
Greeneyes	6	300
	tonnes	
Hake	5	000
	tonnes	

These estimates are close to the corresponding estimates obtained in the previous survey.

Palmeirinhas - Cabinda

Table 6 shows the catch rates by main groups for the successful hauls in the region, and divided by inner shelf, outer shelf and the slope, as above. The mean catch rate in both inner and outer shelf of the pelagic species are reduced to about half of the values found south of Luanda. For demersal species the mean catch rates are reduced to one third. The catch rates of both pelagic and demersal species are however higher than those obtained in survey I. Sharks and shrimp are indicated to be more abundant on the inner shelf where as squid is more often caught on the outer shelf. The catch rates for all these groups are considerably lower than for the demersal and pelagic groups.

The pelagic group broken down to families are given in Table 7 for the inner and outer shelf. On the outer shelf the main pelagic family is the horse mackerel, with a modal length of 15 cm. See ANNEX I on length frequency distributions. The catch rates of the clupeids on the outer shelf are negligible. It should however be kept in mind that the bottom trawl catches reflects accessibility of pelagic species rather than abundance. For the abundance of pelagic species see section on acoustic estimates.

Table 6. Pta. das Palmeirinhas to Cabinda. Catch rates by main demersal families in bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Pelagic	Demersal	Sharks	Squids	Shrimp	Other
323	60	211.14	594.58		7.20		97.92
324	32	273.60	337.00			16.00	9.60
325	30	60.00	149.60			5.80	12.00
326	59	265.60	824.80				3.20
331	27	166.80	111.60	2.00	2.40	16.60	16.80
332	53	52.00	494.60				10.60
335	65	264.00	1476.00				
336	23	32.00	66.40			2.60	47.80
337	32	74.00	172.00			17.80	19.00
340	57	60.00	139.20		2.40		8.40
341	50	60.27	89.72				0.55
344	23	35.70	247.20			3.00	23.60
345	25	534.60	370.60				75.60

346	67	42.60	29.80	12.00	5.20		5.60
349	55	17.60	197.60	2.00	13.20		6.80
550	58	1.80	18.20		14.00		7.80
357	66	257.04	1030.08		4.80		25.20
358	24	259.20	230.40	48.00		9.00	43.20
359	23	371.20	63.40	54.40			9.20
360	65	105.30	367.20				10.80
368	66	44.80	144.00			21.60	29.60
374	41	87.60	171.60			6.00	21.20
382	70	27.00	19.20		11.40		3.60
383	35	17.20	15.60		2.20		5.80
388	18	10.40	21.60		2.40		9.60
389	26	6.20	71.20	16.00			19.00
390	66	14.00	92.50		19.50		7.00
393	82	36.40	168.40			0.20	1.40
394	68	9.00	88.50				3.50
403	63	10.40	91.20			0.40	4.80
404	30	43.20	180.80		0.80	10.40	16.60
409	54	1.80	40.60	9.80	1.00		4.80
410	38	58.40	136.80	8.00		1.20	3.20
411	31	16.00	206.80			35.20	53.10
412	34	7.80	121.80			13.80	50.40
413	13	45.00	179.00			6.00	10.00
416	52	28.00	148.40		0.70	4.00	8.40
MEAN		97.50	240.76	4.11	2.36	4.58	13.53

OUTER SHELF

ST. NO.	DEP.	Pelagic	Demersal	Sharks	Squid	Shrimp&Lob	Other
322	90	564.98	834.74				
327	102	429.00	134.20		4.40		6.60
333	91	232.00	302.00				2.00
334	92	162.40	32.90				14.70
342	103	34.00	96.60	4.00	11.00		6.30
343	94	389.20	28.00		15.40		7.00
348	89	7.50	148.40		11.20		4.50
351	91	25.80	55.68		15.00		89.40
356	100	111.60	40.80		0.60		30.00
361	99	594.00	59.40		4.40		
366	87	118.40	360.00		3.20		20.80
367	90	63.00	206.50		8.00		6.00
369	71	67.00	123.50			9.00	42.00
373	200	10.40	47.20		0.80	14.40	155.20
375	95	222.00	68.40			2.40	33.60
381	95	10.50	119.50		4.50		3.50
386	99	384.00	86.40		4.80		6.80
387	73	6.60	125.20		2.40		13.40
391	82	403.20	25.90		6.00		8.40
395	100	2.40	40.00		0.80		2.50
396	114	114.10	37.10	24.30	2.80		9.10
399	91	57.00	79.60			0.90	17.40
400	186	32.61	346.44		1.30		16.94
401	119	1.00	136.00				13.50
402	85	3.20	66.60		5.20		4.60
407	112	131.20	284.80				27.20
408	96	33.60	99.60		2.40	0.60	13.80
415	128	75.00	62.70		2.40	0.90	8.10
MEAN		153.06	144.58	1.01	3.81	1.01	20.12

Table 7. Pta. das Palmeirinhas to Cabinda. Catch rates by main pelagic families in bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Clupeids	Barracudas	Carangids	Hairtails	Scombrids	Other
323	60			27.54	183.60	61.20	638.50
324	32	112.80	45.60	19.20	96.00		362.60
325	30	31.20	8.00	11.26	9.60		167.40
326	59		108.80	54.40	102.40		828.00
331	27	43.20	42.00	69.60	12.00		149.40
332	53		15.00	17.00	20.00		505.20
335	65		108.00	156.00			1476.00
336	23	24.40	4.80	2.80			116.80
337	32	36.00	10.00	8.00	20.00		208.80
340	57	1.20	24.00	34.80			150.00
341	50	0.27	40.91	16.36	2.73		90.27
344	23	17.70	1.80	1.20	15.00		273.80
345	25	86.40	414.00	16.20	18.00		446.20
346	67	1.00	5.00	35.20	1.40		52.60
349	55		16.00	1.60			219.60
350	58		0.60	1.20			40.00
357	66		32.64	118.32	106.08	4.80	1055.28
358	24	131.20	32.00	67.20	28.80		330.60
359	23	36.80	6.40	324.80	3.20	8.40	118.60
360	65	0.90	52.20	32.40	19.80		378.00
368	66	1.60		3.20	40.00		195.20
374	41	21.60	1.20	10.80	54.00		198.80
382	70		16.00	6.40	4.60		34.20
383	35		11.00	6.20			23.60
388	18			10.40		1.00	32.60
389	26		3.60	2.60		2.00	104.20
390	66			11.00	3.00		119.00
393	32	1.40	22.00	9.00	4.00	1.40	168.60
394	68		1.00	8.00			92.00
403	63			2.40	8.00		96.40
404	30	8.80	10.40		24.00		208.60
409	54		1.20	0.60			56.20
410	38	8.00	24.00	26.40			149.20
411	31	10.00	1.00		5.00		295.10
412	34	1.20		0.60	6.00		186.00
416	52	1.40	4.20	1.40	21.00		161.50
MEAN		16.03	29.54	30.95	22.45	2.19	270.25

OUTER SHELF

ST. NO.	DEP.	Clupeids	Barracudas	Carangids	Hairtails	Scombrids	Other
322	90		35.62	122.16	407.20		834.74
327	102			418.00	11.00		145.20
333	91			232.00			304.00
334	92			154.00	8.40		47.60
342	103			34.00			117.90
343	94			389.20			50.40
348	89	1.50		6.00			164.10
351	91	3.00		22.80			160.08
356	100			96.00	15.60		71.40
361	99			550.00	44.00		63.80
366	87	4.80	16.00	83.20	14.40		384.00
367	90	1.00		60.00	2.00		220.50

369	71	1.00		4.00	62.00		174.50
373	200				10.40		217.60
375	95			6.00	216.00		104.40
391	95			10.50			127.50
386	99			384.00		1.60	96.40
387	73		2.40	4.20		4.20	136.80
391	82	39.20		364.00			40.30
395	100			2.40			43.30
396	114			112.00	2.10		73.30
399	91			10.80	46.20		97.90
400	186				32.61		364.68
401	119			1.00		3.50	146.00
402	85			1.80	1.40		76.40
407	112			28.80	102.40		312.00
408	96			31.80	1.80		116.40
415	128				75.00		74.10
MEAN		1.30	1.93	111.74	37.59	0.33	170.19

The catch rates of the main demersal families are shown in Table 8. The dominating group is the grunts, mainly the bigeye grunt, *Brachydeuterus auritus*. The bigeye grunt was distributed in two main areas one from Luanda to Ambriz and a northern area from Pta. da Moita Seca to the boarder and was most common in the depth range 50-200 m. Seabreams and croakers hold about equal shares in the total catch of demersal fish. Among the seabreams *Dentex* species and red pandora (*Pagellus bellottii*) were most abundant. The commercially important longneck croaker (*Pseudotolithus typus*) was most common among the coakers. The catch rates of southern pink shrimp (*Penaeus notalis*) did not exceed 25 kg/hour and the highest catch rates were obtained at about 35 m. The pink shrimp was also caught at 200 and 400 m.

On the outer shelf the seabreams and the grunts are the dominating groups followed by croakers. Different species of *Dentex* were most abundant among the seabreams. Only one catch of Benguela hake (*Merluccius polli*) was made at the outer shelf.

A total of 22 hauls were made at the slope area. The benguela hake dominated the catches in this area. Good catches in the range of 100-400 kg/hour were made at depth of 400-500 m from Pta. das Palmeirinhas to about 7°30' S. Particularly good catch were obtained at st. nos. 354, 376 and 377. Further north the catch rate of hake decreased to 5-15 kg/hour.

Table 8. Pta. das Palmeirinhas to Cabinda. Catch rates by main demersal families in bottom trawl hauls, standardized to kg/hour.

INNER SHELF

ST. NO.	DEP.	Seabreams	Grunts	Croakers	Groupers	Hake	Other
323	60	21.42	493.60	61.20			334.62
324	32		212.20	110.80			313.20
325	30		66.40	60.00			101.00
326	59	9.60	736.00	47.20			300.80
331	27		12.00	74.60			229.60
332	53	67.20	102.40	43.80	9.40		334.40
335	65	30.00	1440.00				270.00
336	23		36.80	16.80			95.20
337	32		72.00	70.00			140.80
340	57	27.60	111.60				70.80
341	50	0.82	81.81	6.00			61.91
344	23		98.60	29.20	60.00		121.70
345	25	27.00	145.30	26.40	22.00		759.60
346	67	28.60	1.20				65.40
349	55	161.60			36.00		39.60
350	58	17.80	0.40				23.60
357	66	101.52	890.16	23.28	2.16		300.00
358	24		112.00	81.60			396.20

359	23		44.80	6.40			447.00
360	65	153.00	172.80	7.20			150.30
368	66	26.40	31.60	30.40			101.60
374	41		57.60	104.40			124.40
382	70	19.20					42.00
383	35	3.80	2.60				34.40
388	18	17.00			4.00		23.00
389	26	67.60		1.60			43.20
390	66	90.00	2.50				40.50
393	32	4.40	1.00	134.00			67.00
394	68	83.50		5.00			12.50
403	63	28.40	60.00	2.80			15.60
404	30		75.20	58.40			118.20
409	54	18.40	2.20		20.00		17.40
410	38	11.20	54.40	21.60			120.40
411	31		113.00	44.00			154.10
416	52		105.00	43.40			41.10
MEAN		29.03	153.88	31.72	4.39		157.46

OUTER SHELF

ST. NO.	DEP.	Seabreams	Grunts	Croakers	Groupers	Hake	Other
322	90		788.94	45.80			564.98
327	102	6.60	114.40				453.20
333	91	26.00	270.00	2.00			238.00
334	92	32.90					177.10
342	103	76.00	0.40		20.00		55.50
343	94	28.00					411.60
348	89	124.40			24.00		23.20
351	91	34.80			20.88		130.20
356	100	28.20	5.40	7.20			142.20
361	99	59.40					598.40
366	87	321.60	17.60	20.80			142.40
367	90	113.50	87.00	6.00			77.00
369	71	6.00	70.00	32.00			133.50
373	200					23.20	204.80
375	95		58.80	2.40			265.20
381	95	119.50					18.50
396	99	75.20					406.80
387	73	93.20			32.00		22.40
391	82	16.10					427.40
395	100	40.00					5.70
396	114	35.00					152.40
399	91	12.00		55.80	4.00		83.10
400	186	24.26		7.83	14.35		350.85
401	119	125.00			10.00		15.50
402	85	66.60					13.00
407	112	8.00		268.80			166.40
408	96	14.40	11.40	63.60			60.60
415	128	7.80		39.00			102.30
MEAN		53.37	50.86	19.69	4.47	0.83	194.37

SLOPE 200-600 M

ST. NO.	DEP.	Hake	Seabreams	Shrimps	Sharks	Cephalopod	Other
352	252	21.00	7.00	9.80			431.20
353	349	162.00		118.80	45.90		479.25
354	451	349.92		297.43			52.47
355	550			60.00			62.00
362	500	12.00		96.90	1.20		47.40
363	401	126.00		252.00	0.90		43.20
364	300	154.00		47.60	2.80		187.60
365	201	33.00		3.00			121.80
370	500	90.00		59.00	2.40		16.50
371	401	192.00		78.60	20.40		43.80
372	303	84.00		2.80	2.10		324.80
376	203	276.00		41.40		6.90	476.10
377	452	396.00		20.30	7.20		88.20
378	350	208.00		19.20			216.80
379	594	7.80		113.28	9.00	6.00	37.26
380	205		1200.00			15.00	1461.50
384	591	7.50		14.00	3.25	1.00	44.87
385	225	30.00	8.00	13.00			220.00
392	599	12.80		5.60	0.80		91.20
397	212			28.86		23.08	1647.86
406	371	120.00		19.30			287.25
414	338	22.00		85.80			204.60
MEAN		104.73	53.23	63.03	4.36	2.36	299.35

Table 9 shows the swept area estimates of mean densities by species and depth strata, based on 85 successful random bottom trawl hauls made. The bigeye grunts dominates both the 0-50 and 50-100 m bottom depth zone followed by *Sphyræna guachancho* in the shallow waters and by *Dentex angolensis* in the 50-100 m zone. The deeper waters are dominated by thinlip splitfin *Synagrops microlepis*, but also relatively high densities of hake, *Dentex angolensis* and *Pteroscion peli* and spider shrimp (*Nematocarcinus africanus*). The catch rates of striped red shrimp (*Aristeus varidens*) ranged from 2 to 18 kg/hour when present.

Table 9. Pta. das Palmeirinhas to Cabinda. Swept area estimates of demersal fish densities by species and depth ranges.

SPECIES NAME	CATCH DISTRIBUTION BY KG/M GROUPS					% incidence	Mean dens. t/nm ²	Mean densities by bottom depth strata t/nm ²			
	<10	10-30	30-100	100-300	300-1000			>1000	- 50m	50-100m	100-200m
Brachydeuterus auritus	9	14	9	4	1	44	2.53	1.69	4.88	0.48	
Synagrops microlepis	3		2		2	8	1.25			1.15	4.42
Merluccius polli	8	3	7	2		24	0.91			0.10	3.49
Dentex angolensis	30	3			1	40	0.67		0.31	0.72	1.83
Pagellus bellottii	31	6	3			47	0.46	0.03	1.03	0.03	
Nematocarcinus africanus	4	6	4			16	0.46				1.78
Sphyraena guachancho	23	8	1	1		39	0.43	1.26	0.39		
Pteroscion peli	16	7	2			29	0.35	0.58	0.08	0.16	0.69
Chlorophthalmus agassizi	8	2	2	1		15	0.30				1.15
Pseudolithus typus	11	7	1			22	0.24	0.95	0.08		
Ilisha africana	11	4	2			20	0.22	1.01			
Saurida brasiliensis	20	1	2			27	0.21		0.12	0.11	0.57
Chloroscombrus chrysurus	12	2		1		18	0.19	0.86	0.03		
Pterothrissus belloci	17	2	2			25	0.19		0.02	0.30	0.61
Stromateus fiatola	15	1	1			20	0.17	0.25	0.26		
Galeoides decadactylus	20	3				27	0.15	0.55	0.07		
Dentex congoensis	11	5				19	0.14		0.27	0.25	
Pentheroscion abizi	3	1	1			6	0.14		0.07	1.09	0.02
Epinephelus aeneus	9	3				14	0.10	0.16	0.13	0.08	
Diaphus dumenli			1			1	0.09				0.33
Parapenaeus longirostris	20	1				25	0.07	0.07	0.01		0.18
Pomadasy incisus	10	2				14	0.07	0.18	0.08		
Chlorophthalmus atlanticus		1	1			2	0.07			0.61	0.05
Ariomma bondi	11		1			14	0.07		0.02	0.03	0.22
Scorpaenodes sp.		1	1			2	0.06				0.23
Dentex barnardi	12	1				15	0.05	0.02	0.09	0.06	
Penaeus notialis	15					18	0.05	0.15	0.02		0.02
Pomadasy peroteti	4		1			6	0.05	0.24	0.01		
Aristeus varidens	9					11	0.02	0.01			0.09
Plesiopenaeus edwardsianus	11					13	0.01			0.06	0.03
Solenocera africana	4					5					0.01
Glyphis barsuipialis	2					2					0.01
Penaeus kerathurus	3					4					0.01
Plesionika martia	6					7					0.01
Heterocarpus grimaldii	1					1					
Other fish							1.29	1.59	1.20	0.81	1.71
Sum all species							11.01	9.60	9.17	6.04	17.46
Sum Snappers							0.02	0.07	0.02		
Sum Groupers							0.11	0.16	0.14	0.18	
Sum Crunts							2.69	2.20	5.03	0.48	
Sum Croakers							0.84	1.58	0.45	1.32	0.71
Sum Seabreams							1.48	0.26	1.93	1.18	1.84
Sum Sharks							0.11	0.23	0.02	0.12	0.14
Sum Rays							0.03	0.10	0.04		0.01
Sum Squids							0.09	0.01	0.15	0.09	0.08
Sum											
Sum shrimps (excl. SHRAA01)							0.61	0.23	0.03	0.06	2.14
Number of stations included in analysis, total and by depth strata							85	18	37	8	22

The catchability coefficient applied in the estimation is 1.0.

Table 10 shows the estimated area of the shelf and the resulting biomasses for all demersal species and separately for the dominating species in each zone.

Table 10. Palmeirinhas to Cabinda. Biomass estimates of groups of demersal fish by depth strata. Tonnes.

	Total	0-50 m	50-100 m	100-200 m
Shelf area nm ²	6 400	2 500	2 100	1 800
<i>Brachydeuterus auritus</i>	11 700	2 900	200	600
<i>Dentex angolensis</i>	1 440		520	920
<i>Pagellus bellottii</i>	1 790	50	1 700	40
<i>Pseudolithus typus</i>	1 800	1 670	130	90
<i>Stomateus fiatola</i>	800	440	440	
All demersal	47 800	15 800	15 000	7 400

The total estimate is comparable to the estimate of 59 000 tonnes in February.

In the 200-800 m bottom depth zone 22 successful hauls were carried out. Dominating species were thinlip splitfin (*Synagrops*), hake and greeneyes (*Chloropthalmus*). The areal extension of this zone has been estimated to 2 100 nm², and the following biomass figures are indicated:

Thinlip splitfin 5 700 tonnes
 Hake 4 500 tonnes
 Greeneyes 1 500 tonnes

Figure 1. Course tracks, fishing stations and hydrographical profiles, Benguela to Pta. das Palmeirinhas.

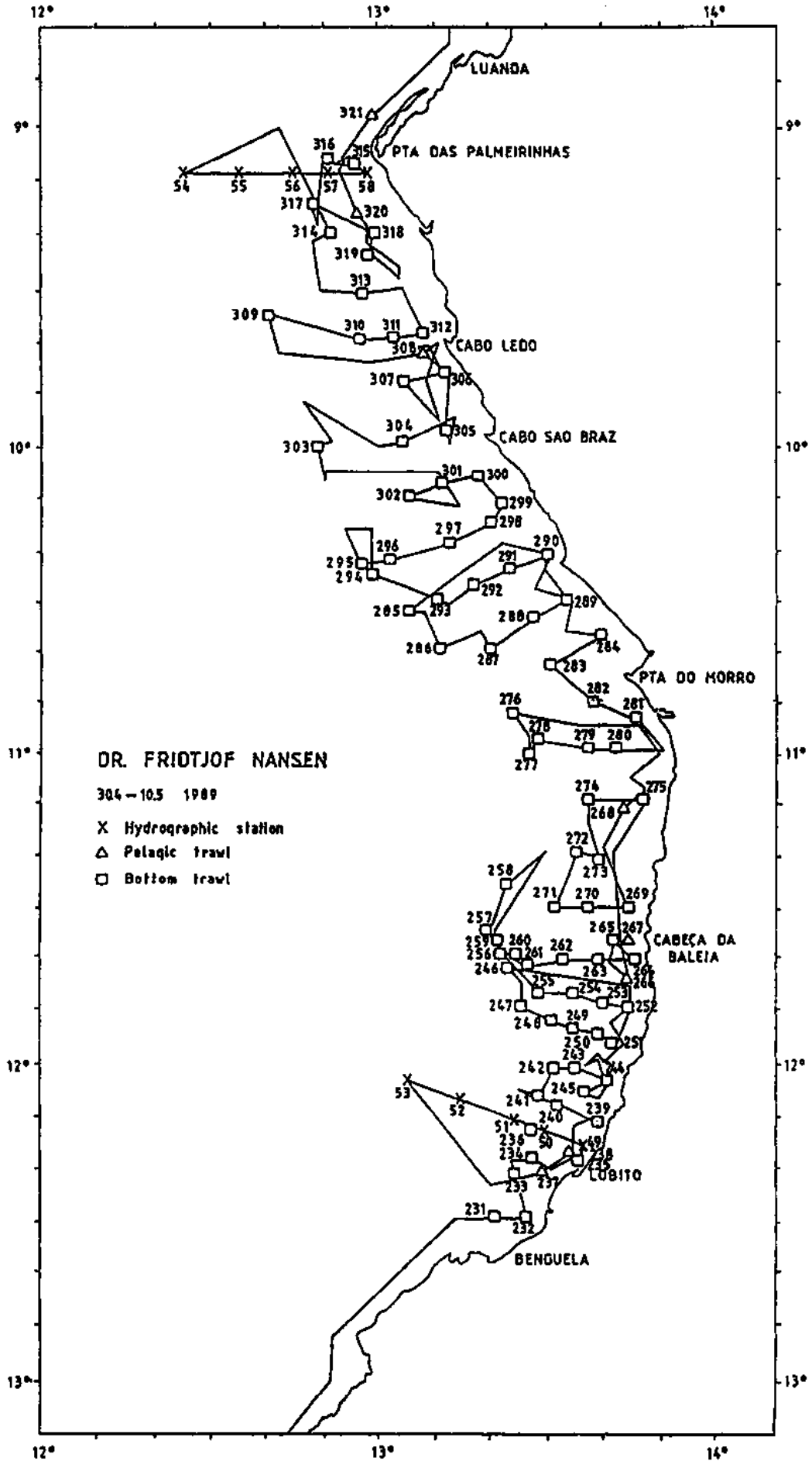


Figure 2. Course tracks, fishing stations and hydrographical profiles, Pta. das Parleirinhas to Cabinda.

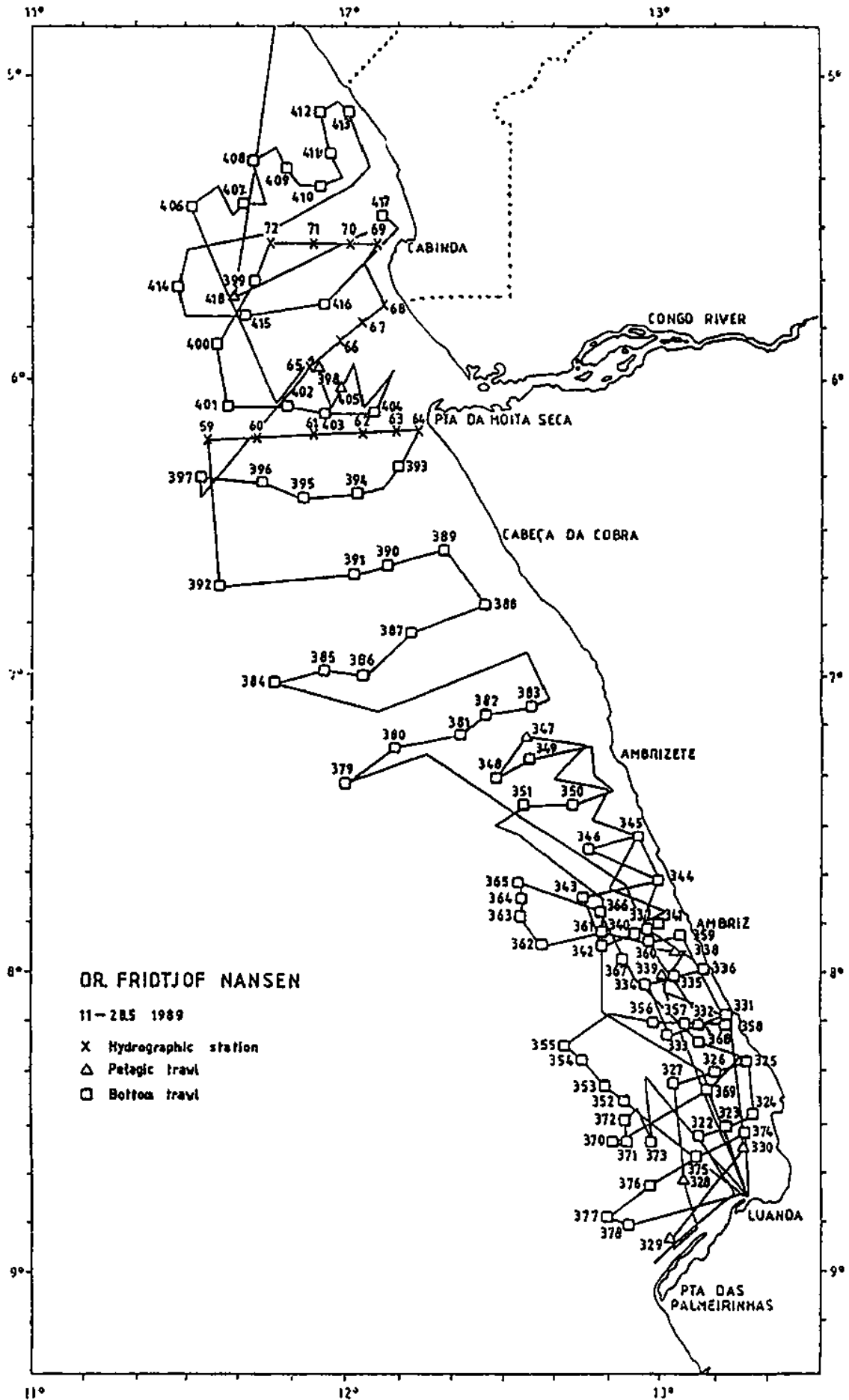
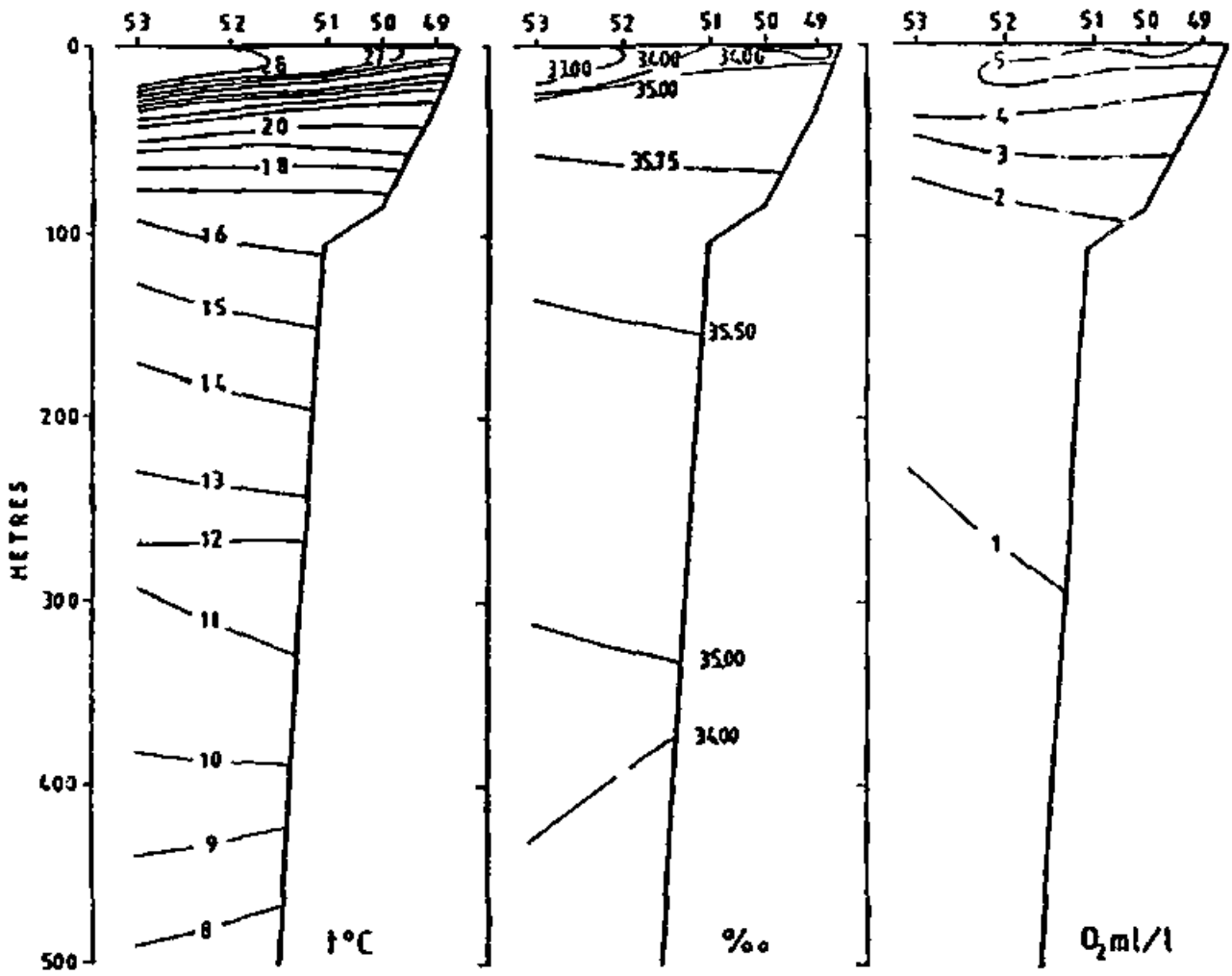
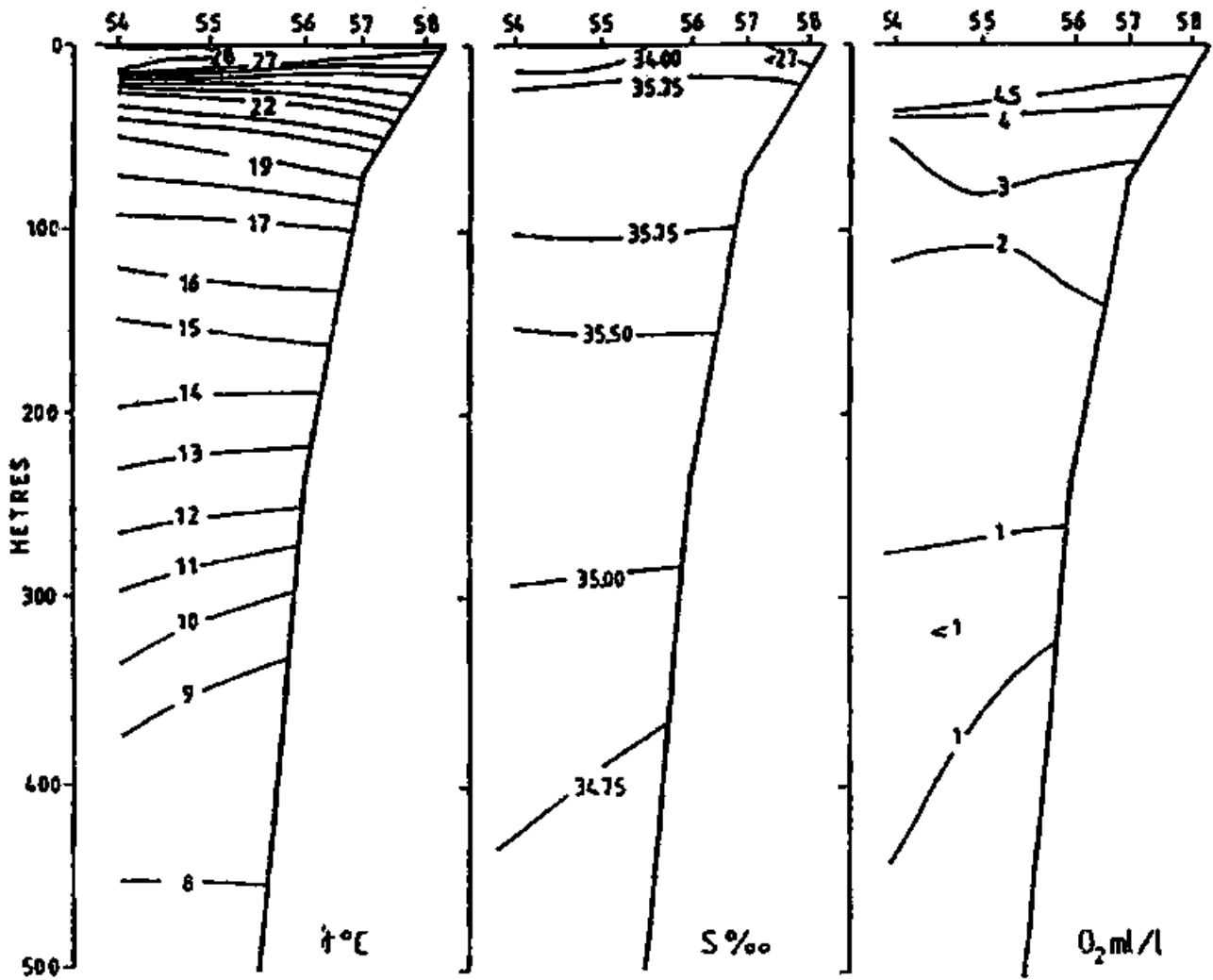


Figure 3. Temperature at sea surface and hydrographic profiles, Benguela to Pta. das Palmeirinhas.

LOBITO 30.4 1989



PONTA DAS PALMEIRINHAS 9-10.5 1989



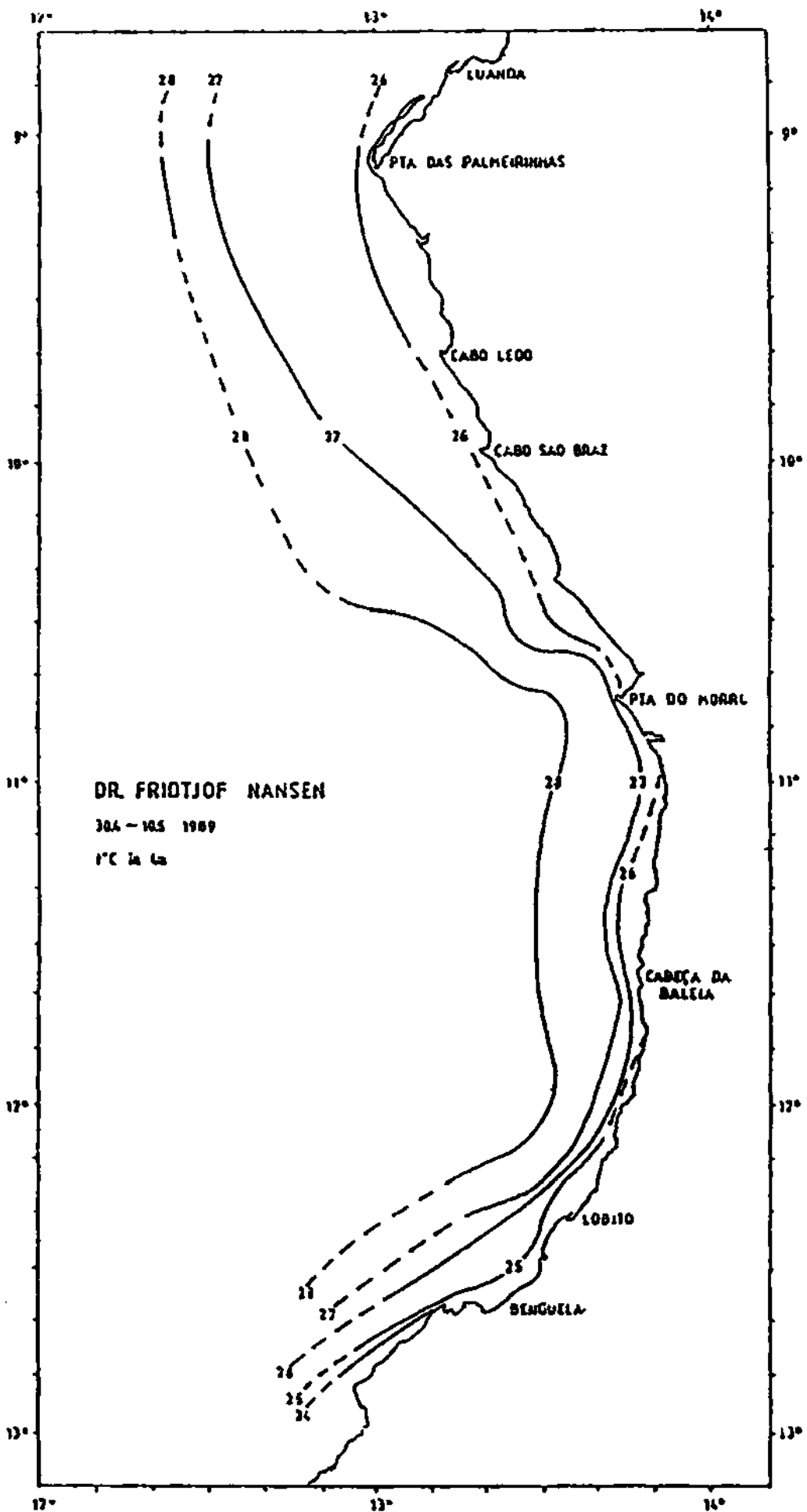


Figure 4. Temperature at sea surface and hydrographic profiles, Pta. das Palmeirinhas to Cabinda.

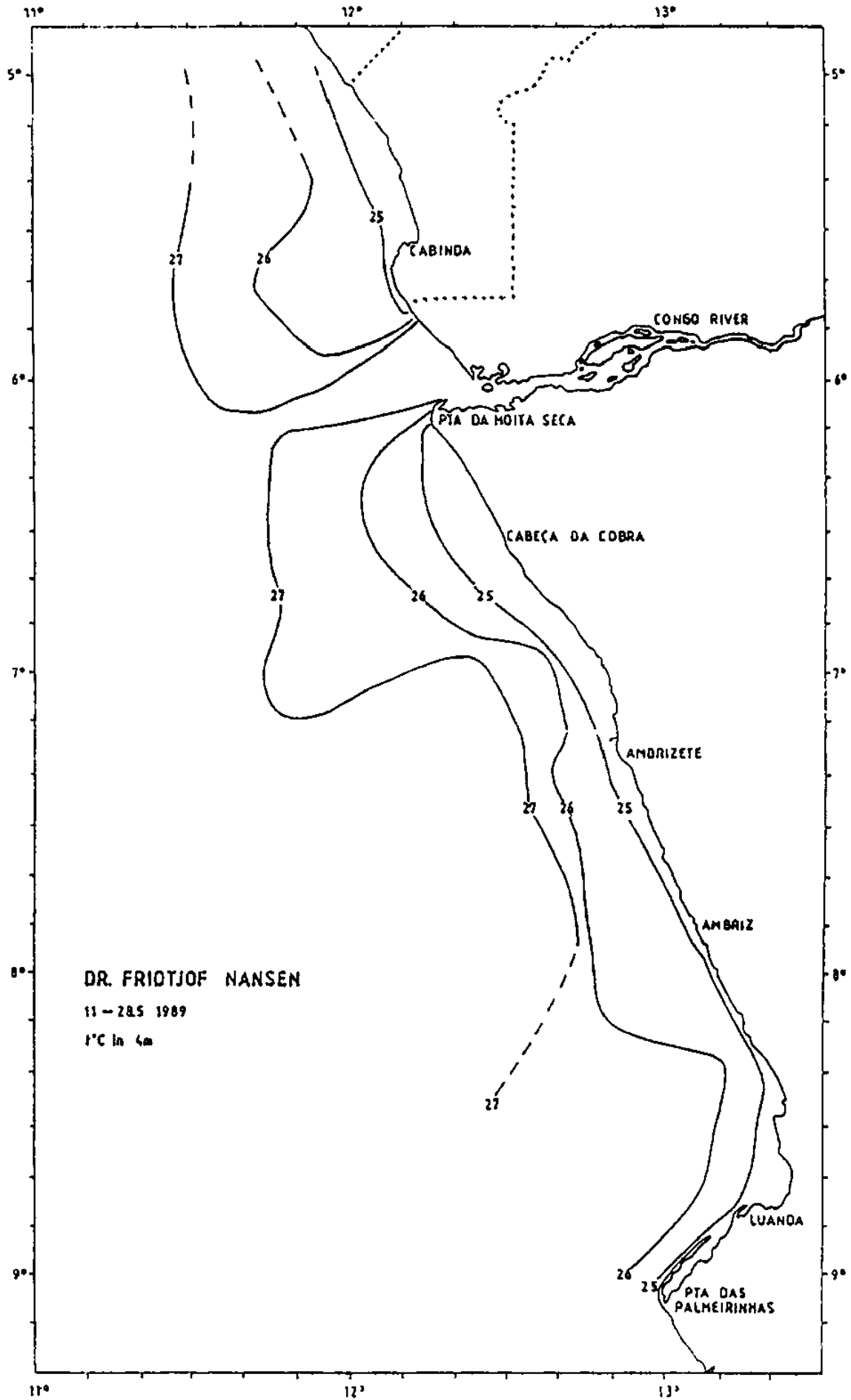
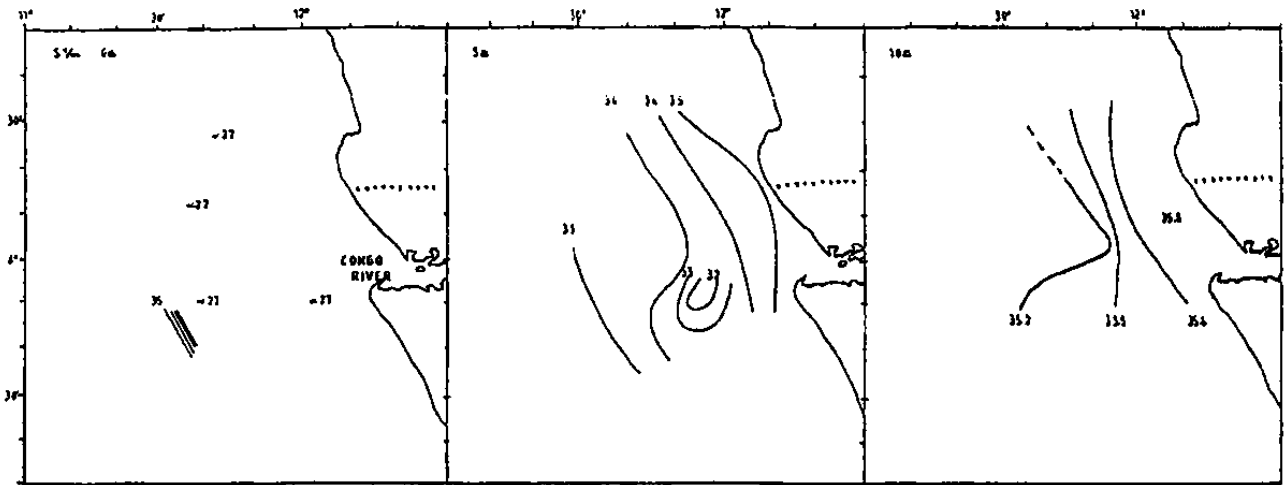
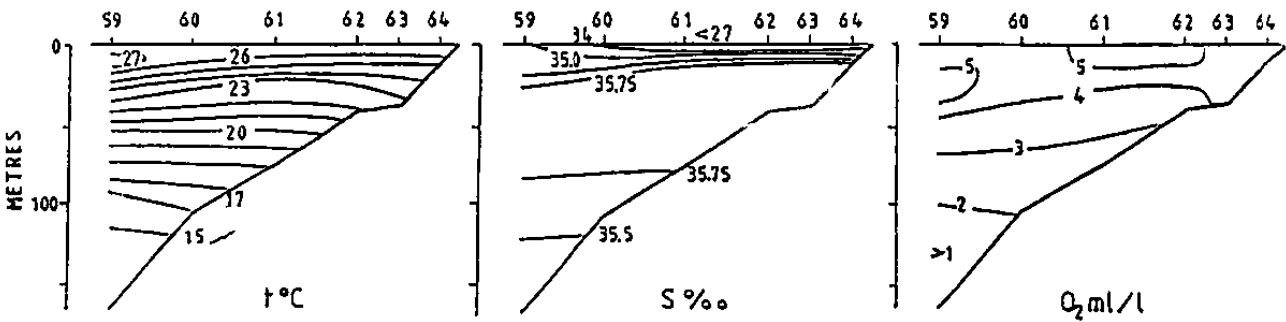


Figure 4. Temperature at sea surface and hydrographic profiles, Pta. das Palmeirinhas to Cabinda.



PONTA DA MOITA SECA 25.5 1989



CABINDA 26.5 1989

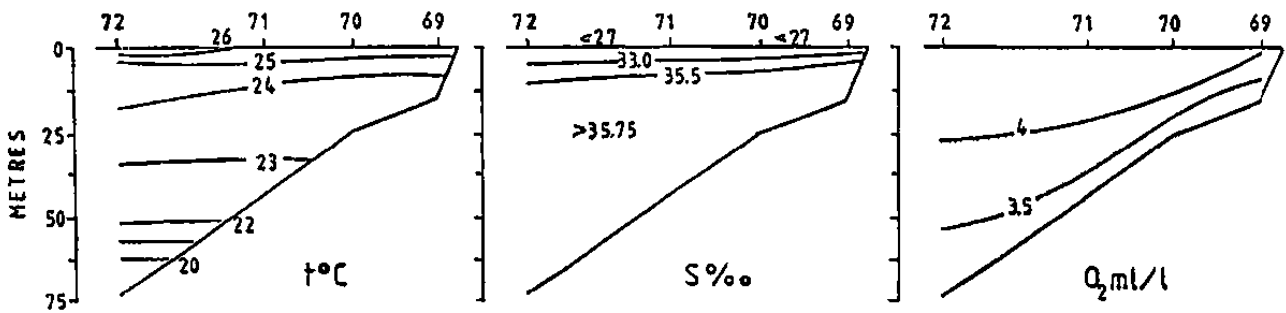
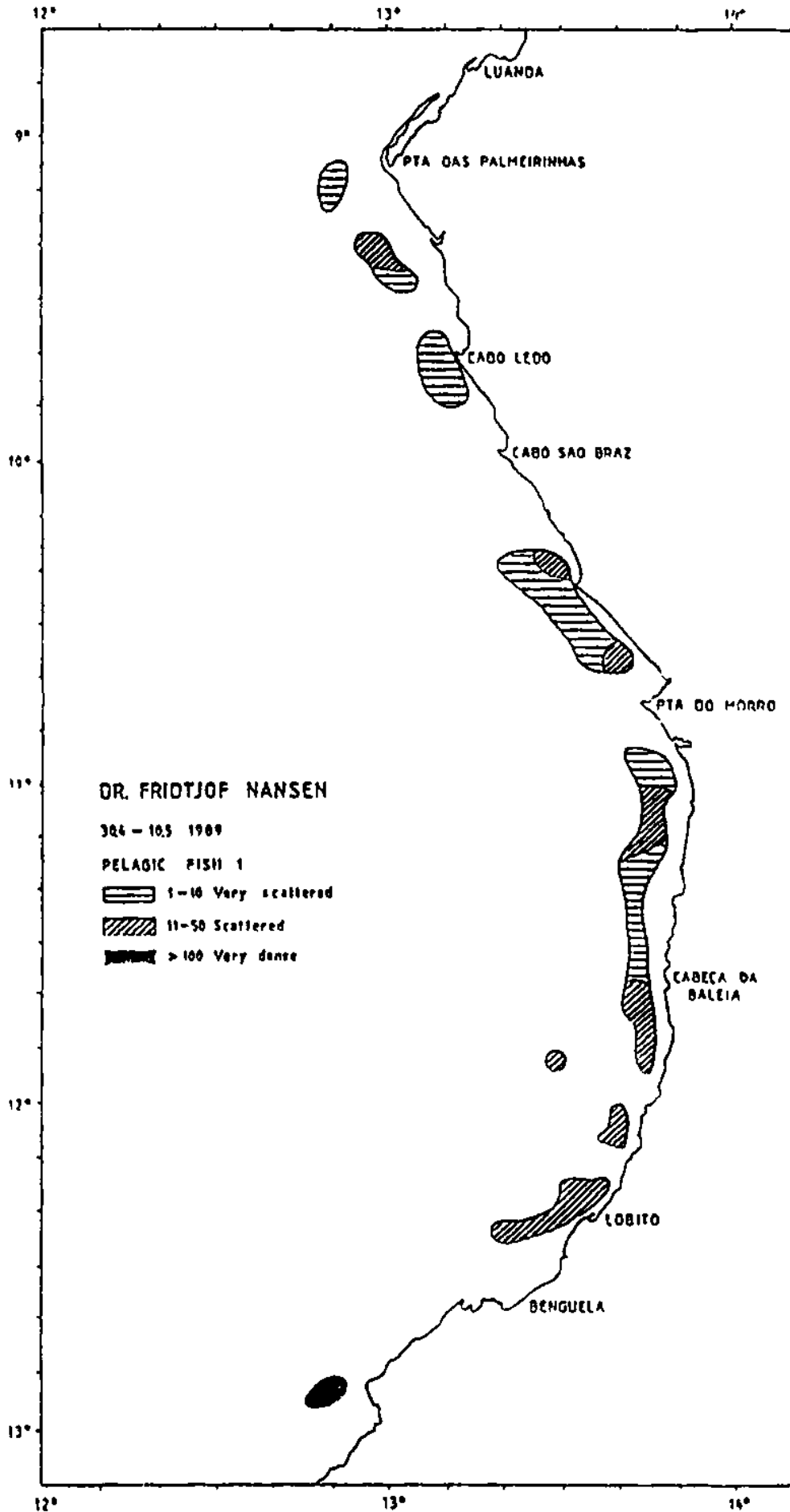


Figure 5. Distribution of pelagic fish type 1 and pelagic fish type 2, Benguela to Pta. das Palmeirinhas.



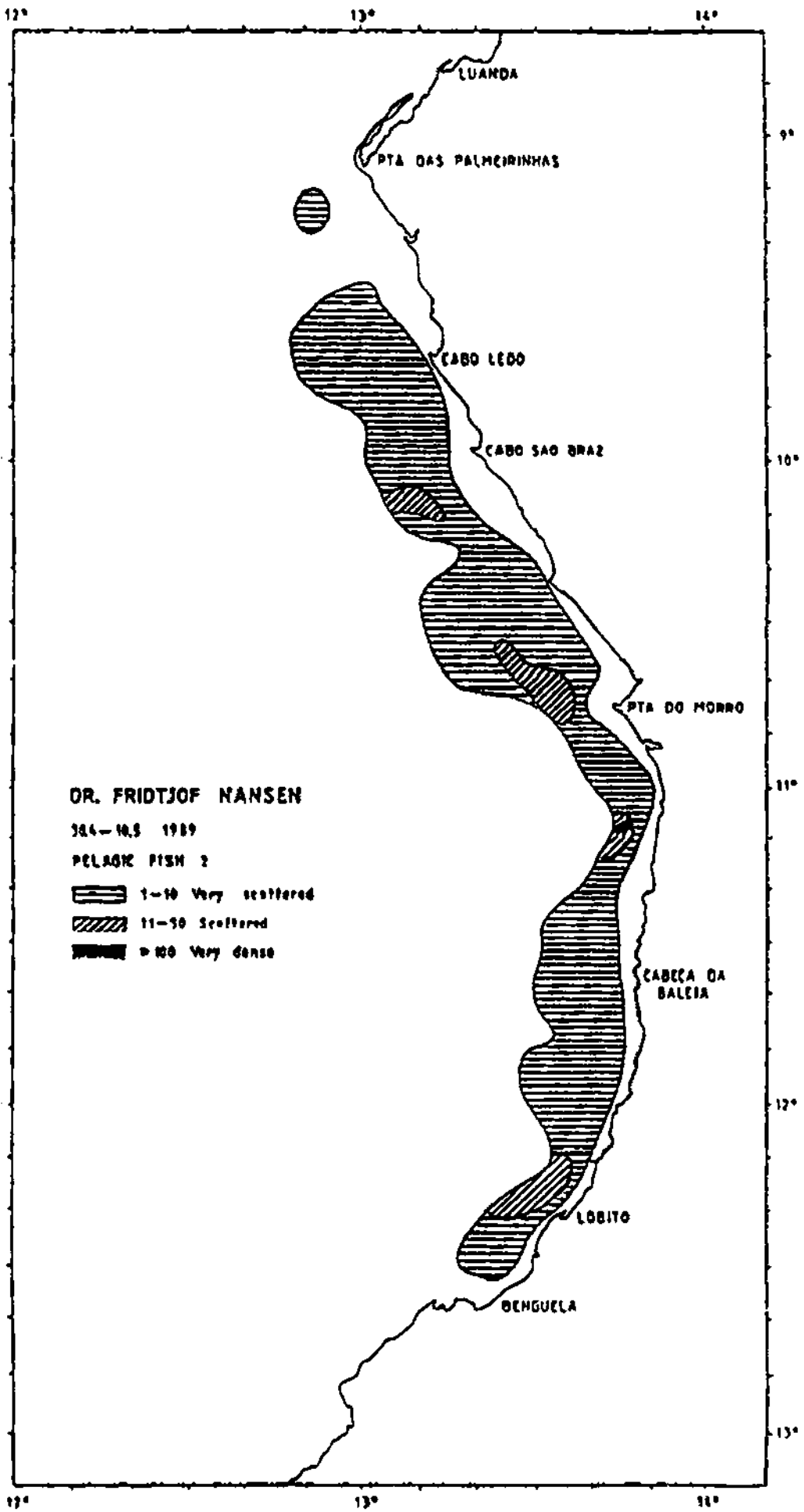
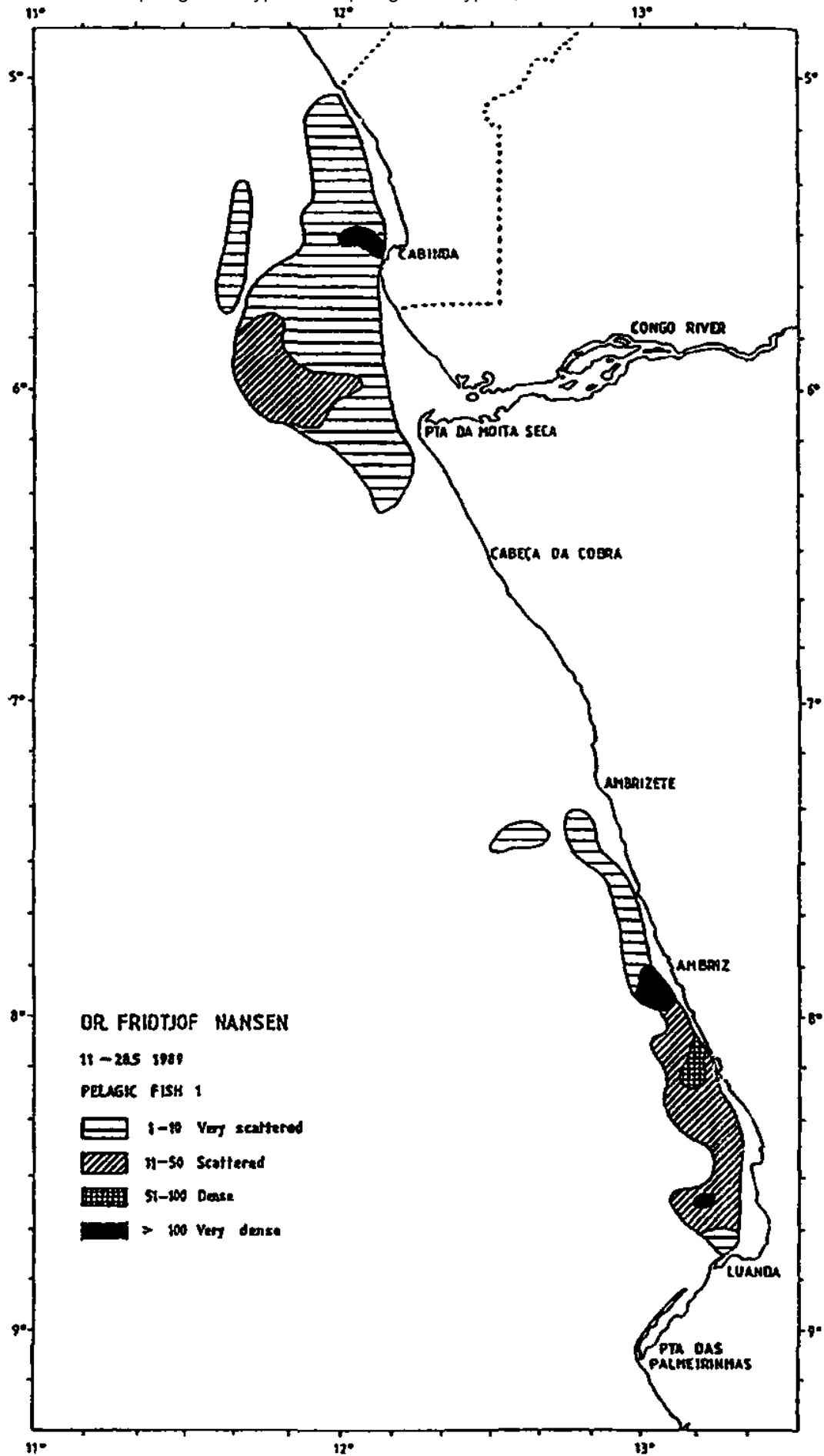
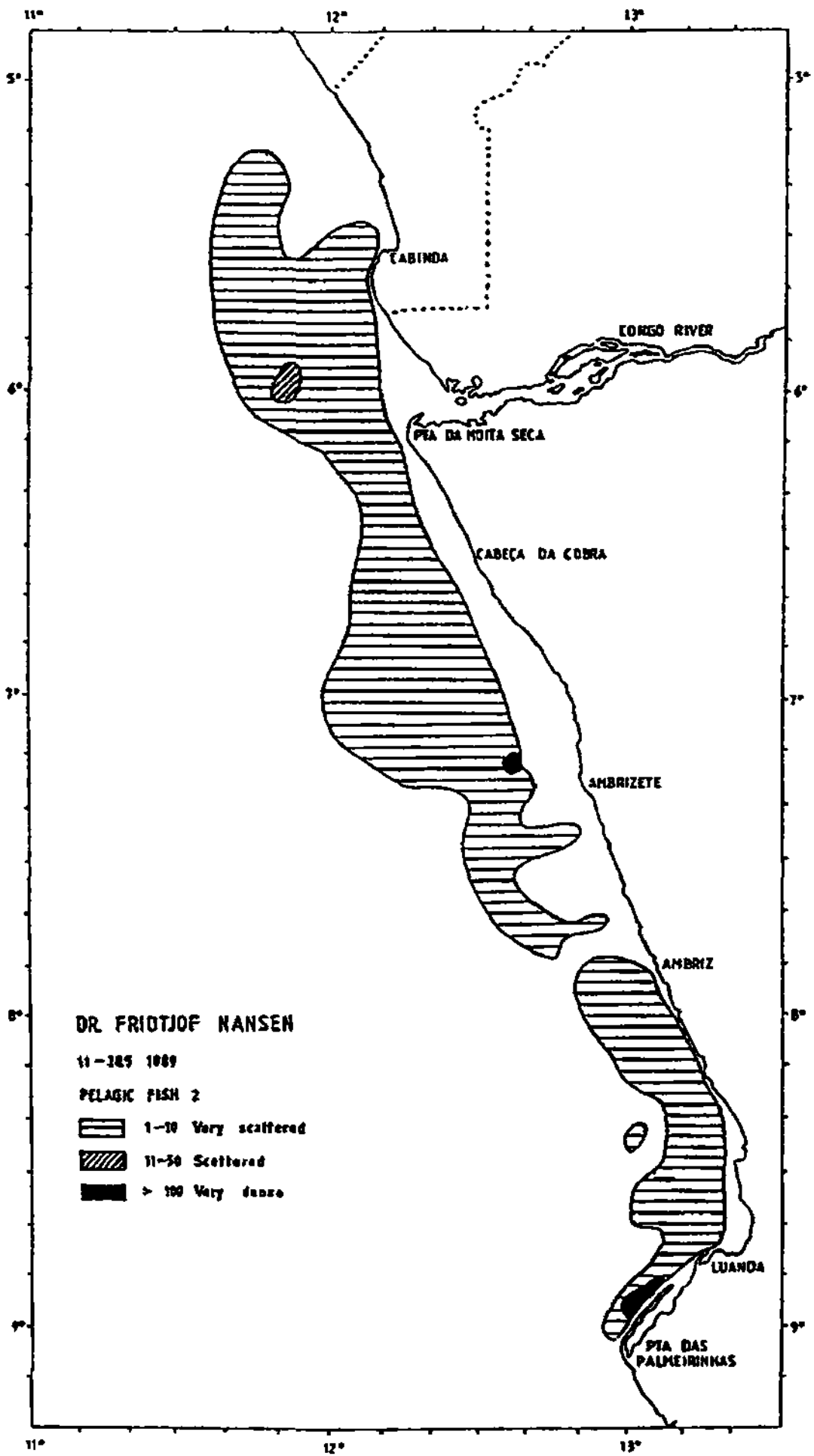


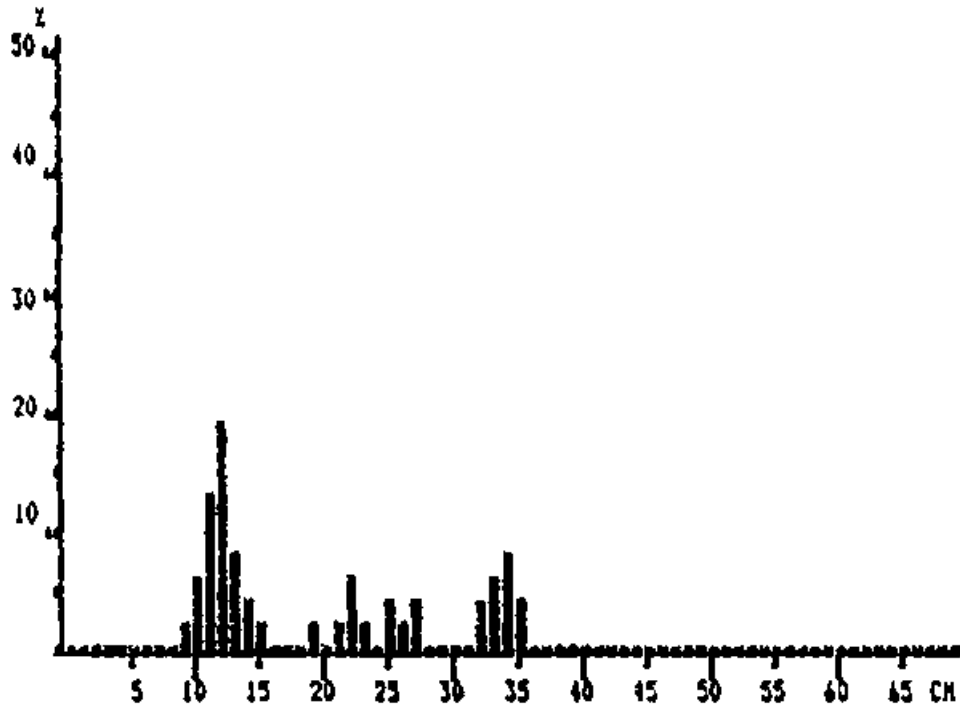
Figure 6. Distribution of pelagic fish type 1 and pelagic fish type 2, Pta. das Palmeirinhas to Cabinda.





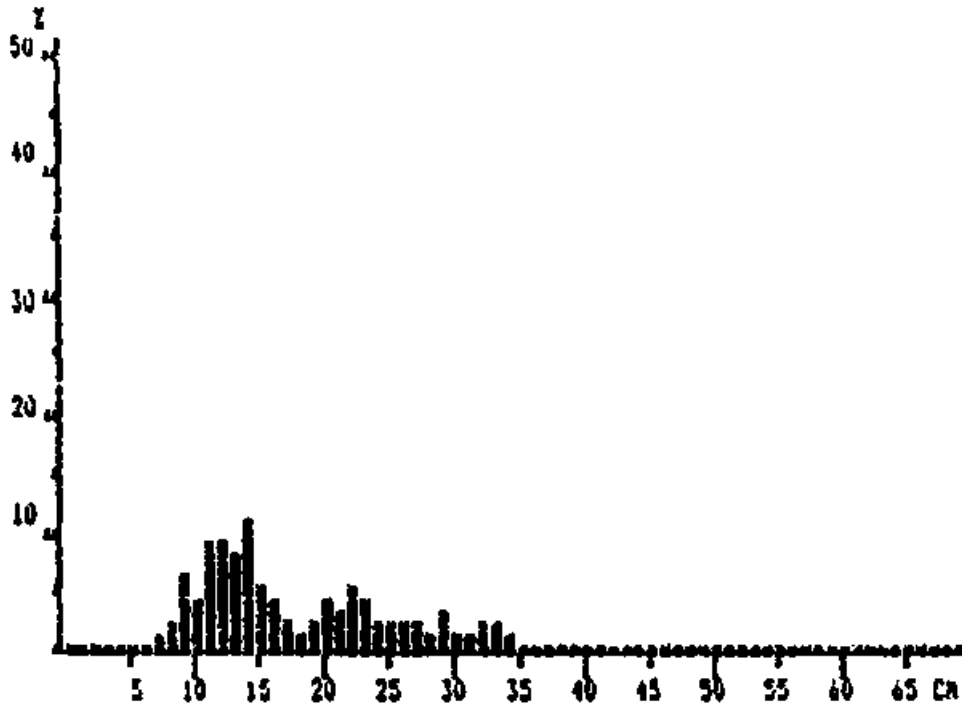
ANNEX I. BENGUELA - CABINDA. LENGTH DISTRIBUTION OF MAIN SPECIES

Sardinella aurita, Benguela - Palmeirinhas



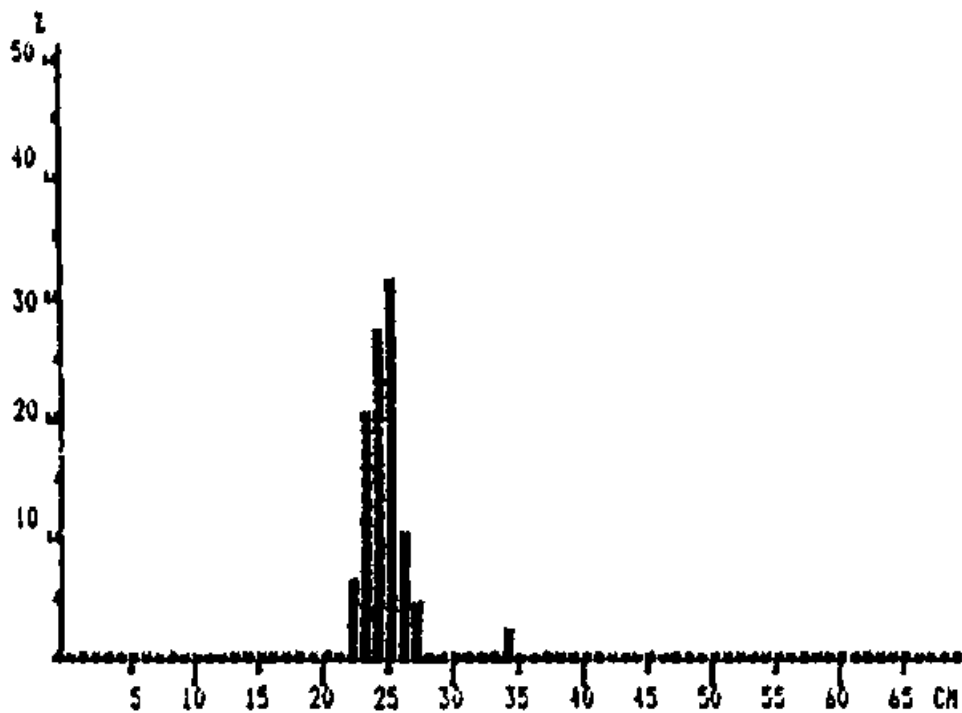
Pooled sample (simple adding)
MEAN LENGTH = 19.50 cm N = 48
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 333 AND 362.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Sardinella maderensis, Benguela - Palmeirinhas



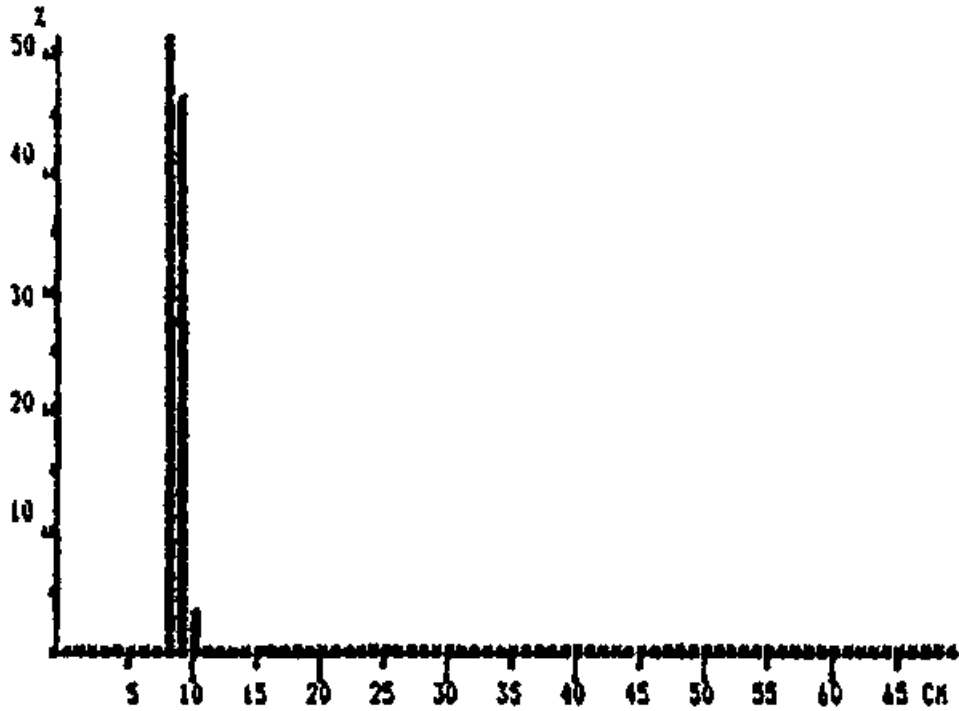
Pooled sample (simple adding)
MEAN LENGTH = 17.31 cm N = 340
NUMBER OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 334 AND 404.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Selene dorsalis, Benguela - Palmeirinhas



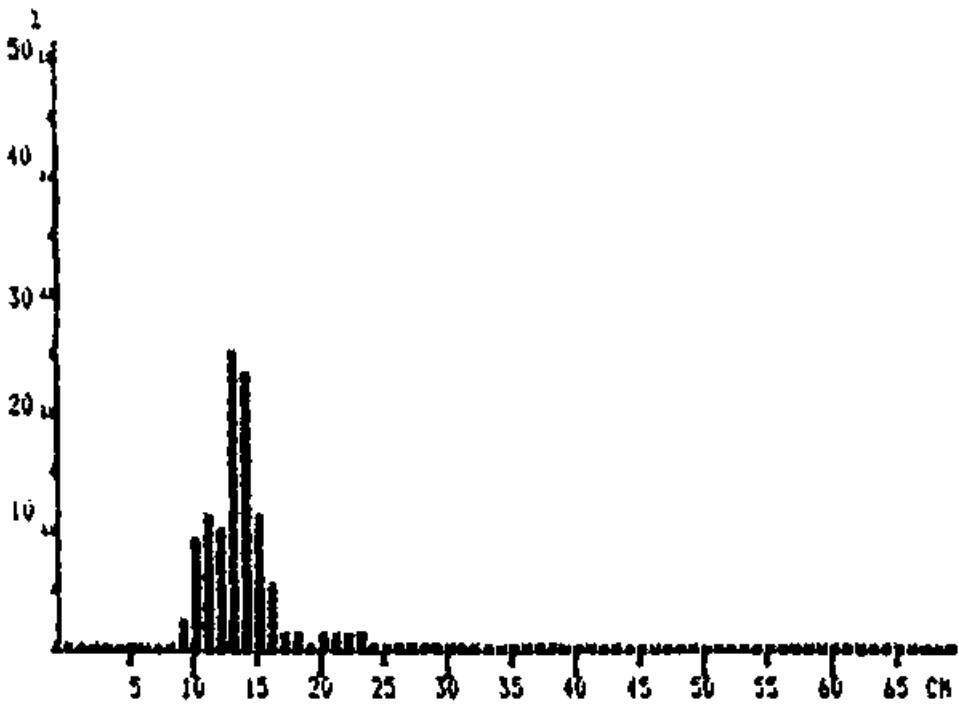
Pooled sample (simple adding)
MEAN LENGTH = 24.51 cm N = 51
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 327 AND 327.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Engraulis encrasicolus, Benguela - Palmeirinhas



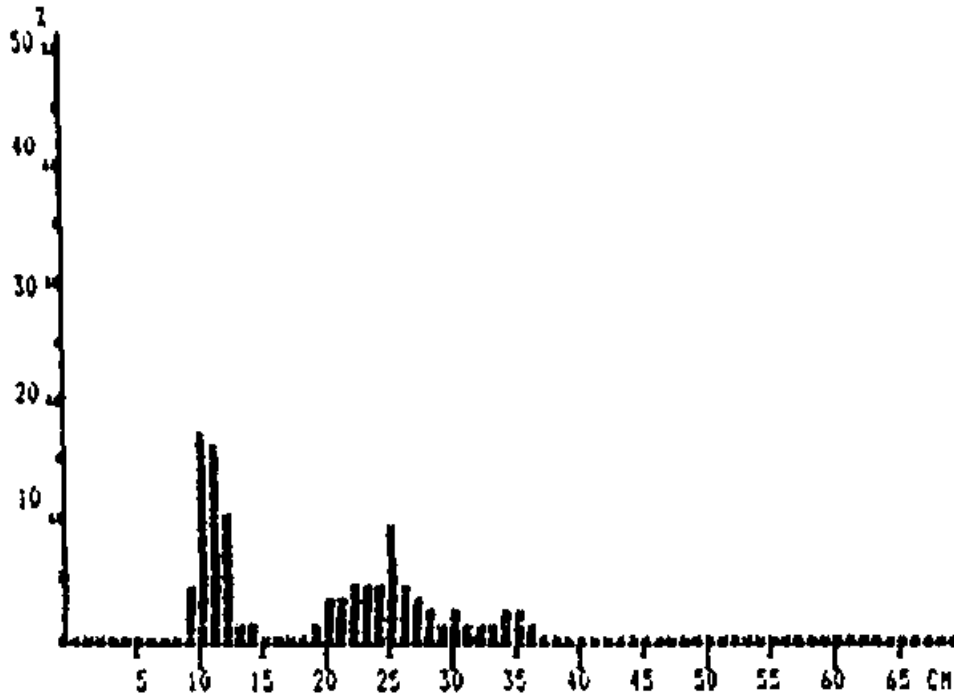
Pooled sample (simple adding)
 MEAN LENGTH = 8.52 cm N = 160
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 340 AND 340.
 SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Trachurus trecae, Benguela - Palmeirinhas



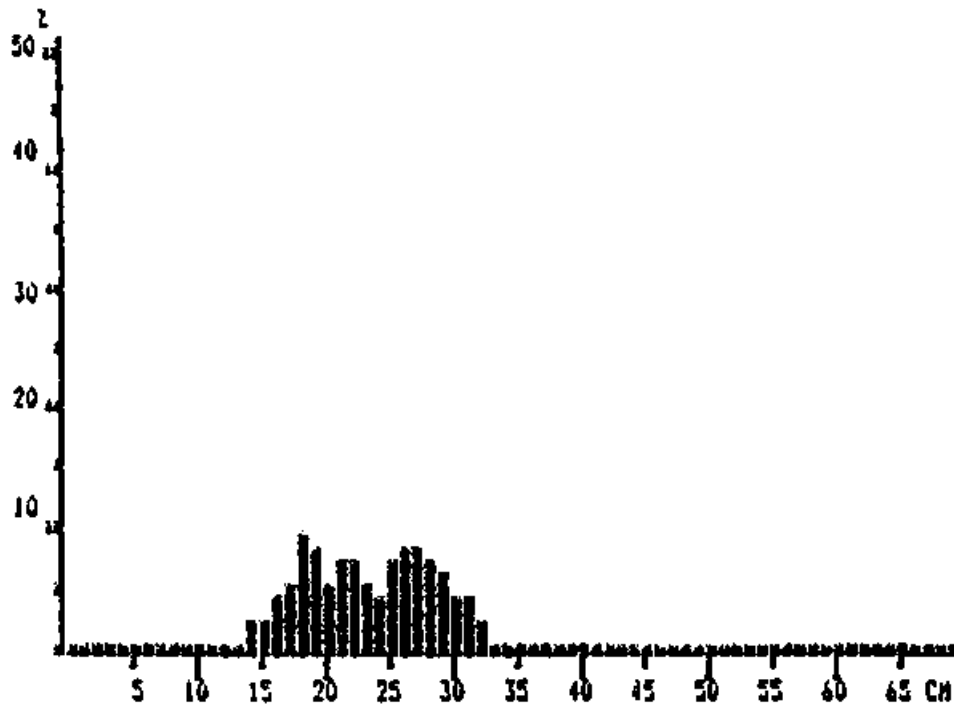
Pooled sample (simple adding)
 MEAN LENGTH = 13.31 cm N = 2128
 NUMBER OF SUBSAMPLES: 22
 SAMPLES FOUND BETWEEN ST. NO. 334 AND 413.
 SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Chloroscombrus chrysurus, Benguela - Palmeirinhas



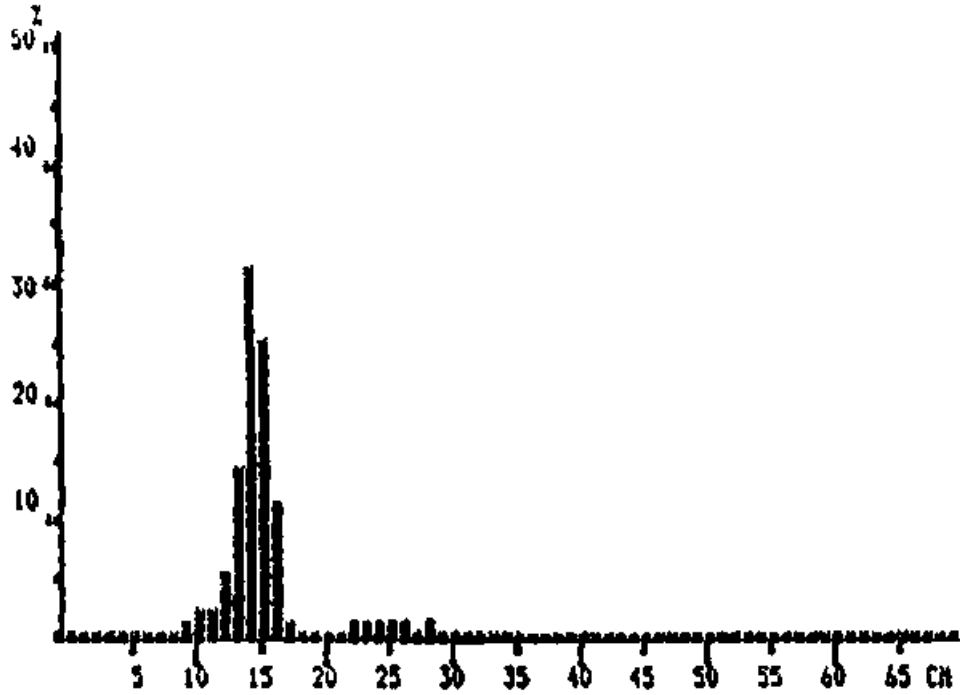
Pooled sample (simple adding)
MEAN LENGTH = 18.44 cm N = 405
NUMBER OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 328 AND 402.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Dentex angolensis, Benguela - Palmeirinhas



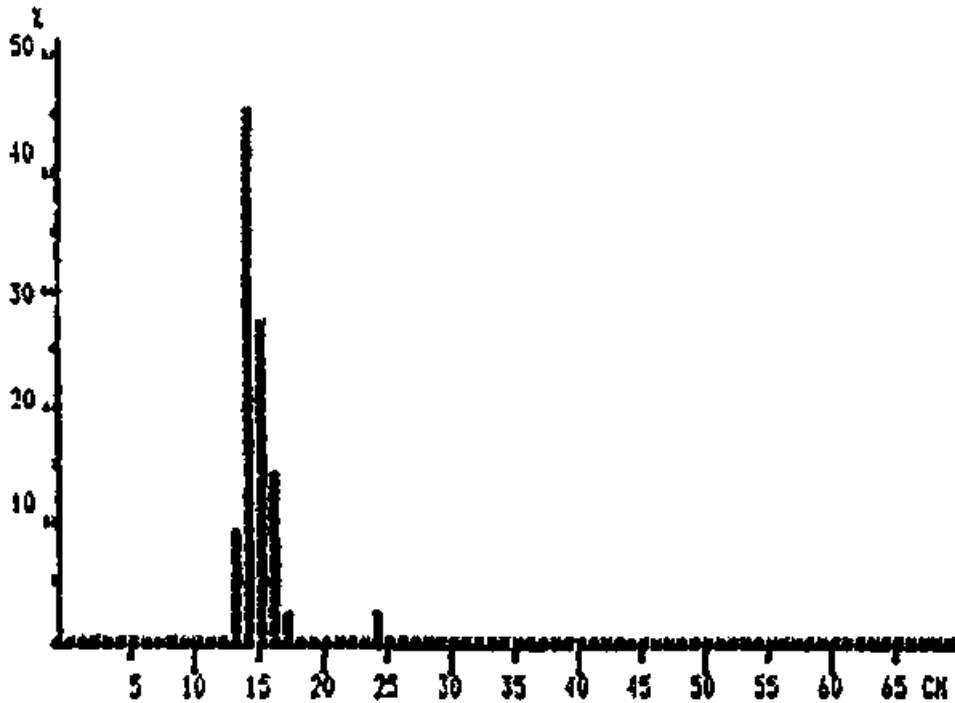
Pooled sample (simple adding)
MEAN LENGTH = 23.21 cm N = 399
NUMBER OF SUBSAMPLES: 11
SAMPLES FOUND BETWEEN ST. NO. 329 AND 413.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Dentex canariensis, Benguela - Palmeirinhas



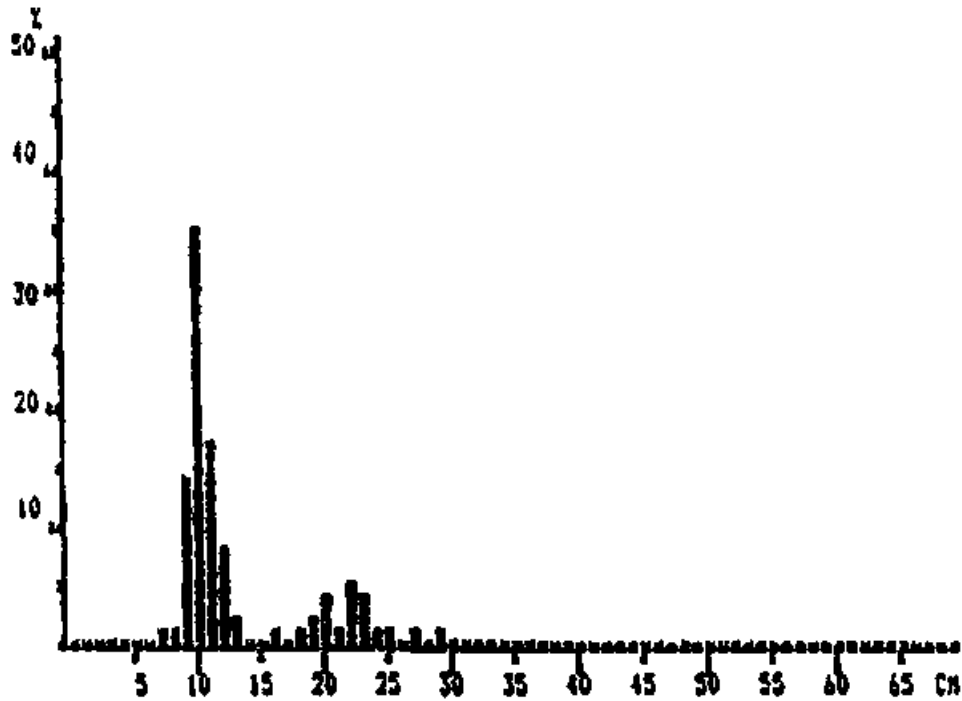
Pooled sample (simple adding)
MEAN LENGTH = 14.79 cm N = 140
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 361 AND 381.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Dentex barnardi, Benguela - Palmeirinhas



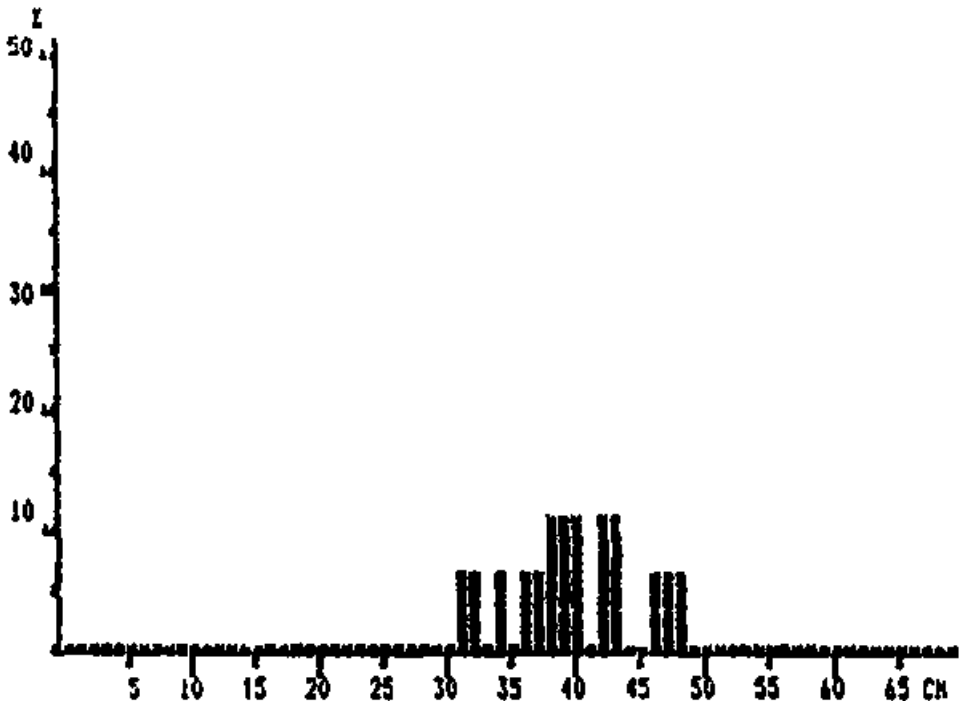
Pooled sample (simple adding)
MEAN LENGTH = 14.75 cm N = 44
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 346 AND 346.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AM 417.

Dentex macrophthalmus, Benguela - Palmeirinhas



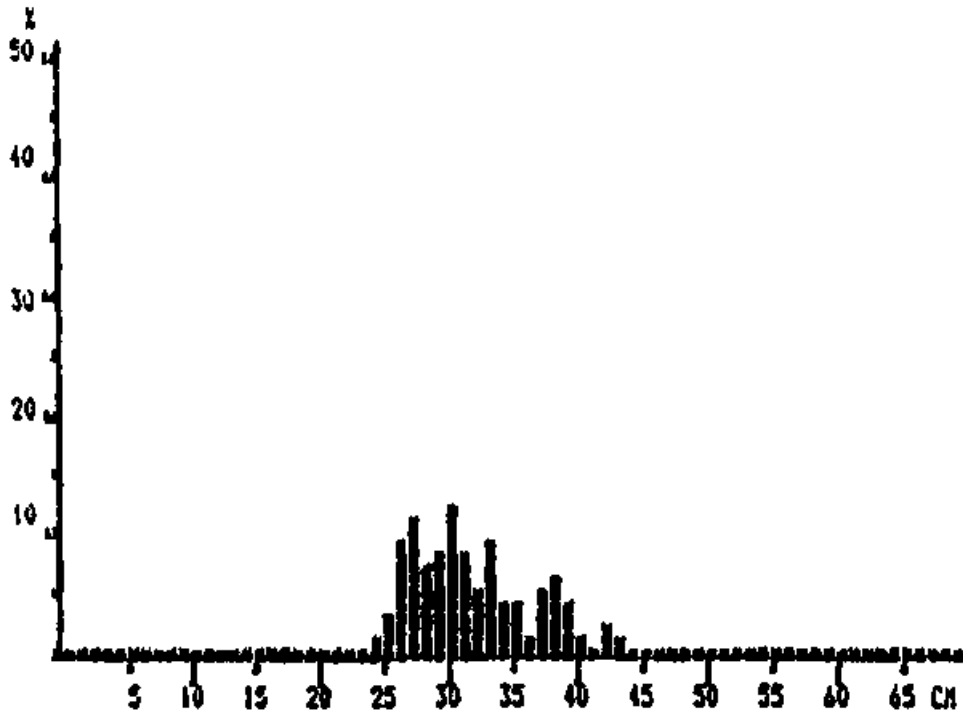
Pooled sample (simple adding)
 MEAN LENGTH = 12.79 cm N = 138
 NUMBER OF SUBSAMPLES: 3
 SAMPLES FOUND BETWEEN ST. NO. 336 AND 345.
 SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Sparus pagrus africanus, Benguela - Palmeirinhas



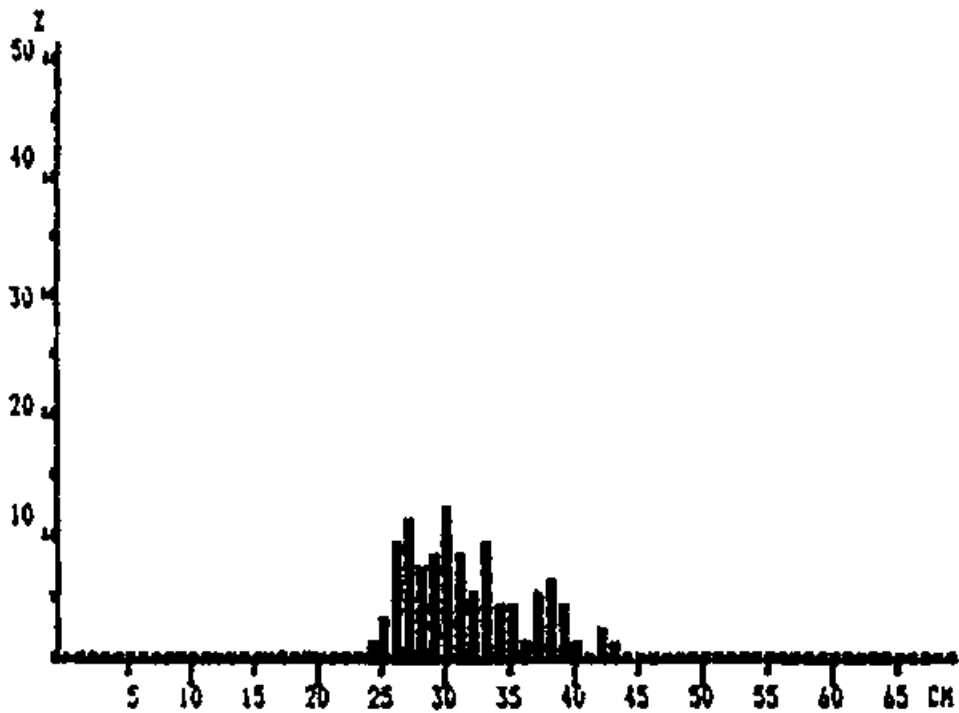
Pooled sample (simple adding)
 MEAN LENGTH = 39.72 cm N = 18
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 393 AND 393.
 SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Umbrina canariensis, Benguela - Palmeirinhas



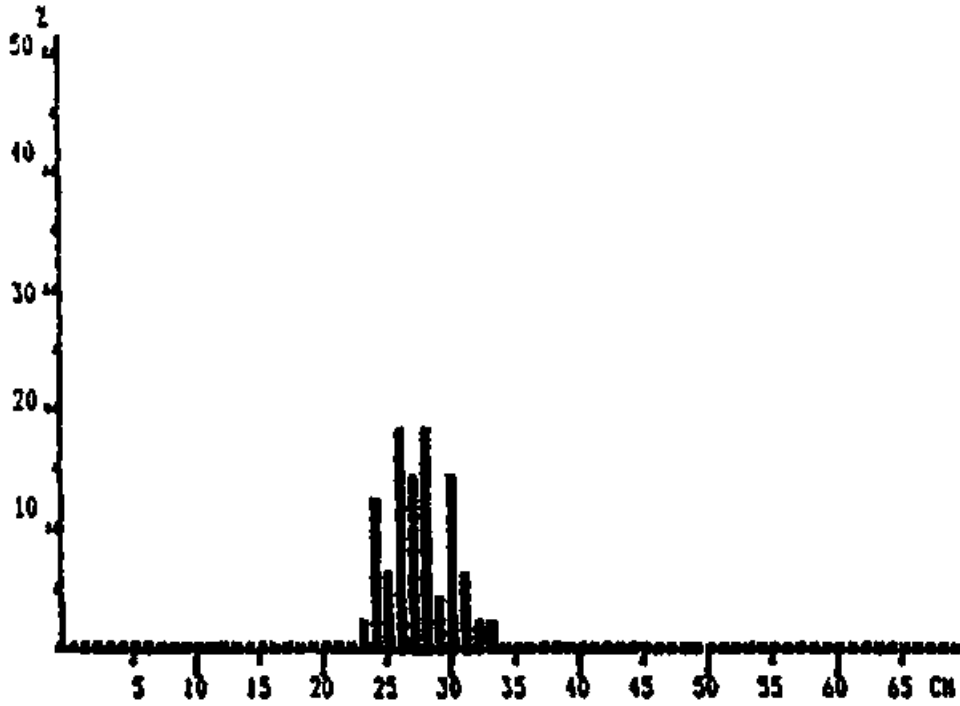
Pooled sample (simple adding)
MEAN LENGTH = 31.40 cm N = 101
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 332 AND 393.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Umbrina canariensis, Benguela - Palmeirinhas



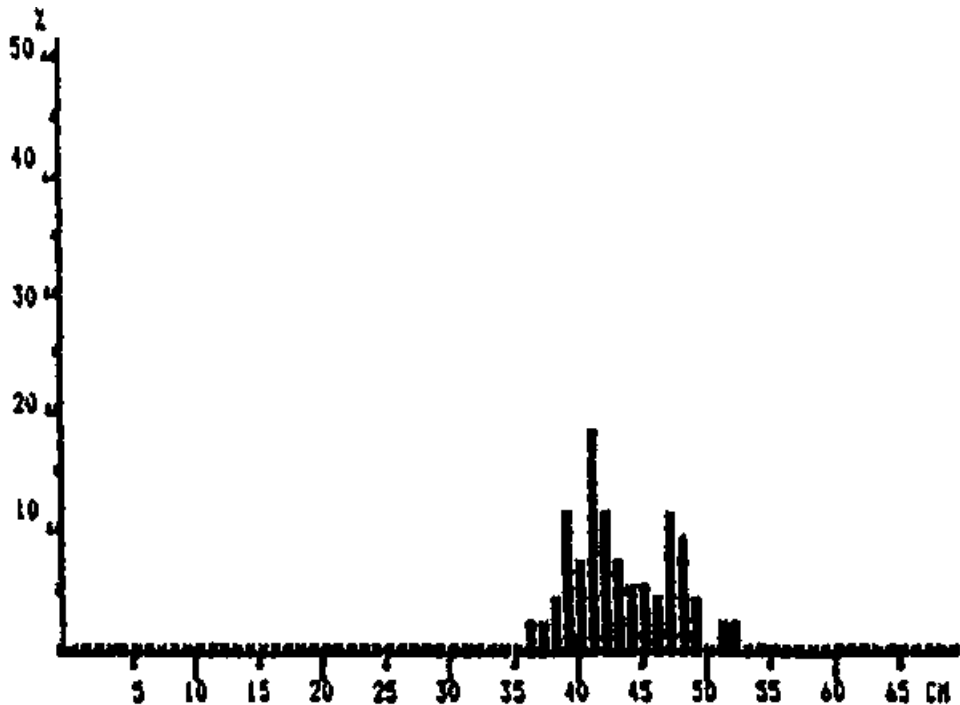
Pooled sample (simple adding)
MEAN LENGTH = 31.40 cm N = 101
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 332 AND 393.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Pentheroscion mbizi, Benguela - Palmeirinhas



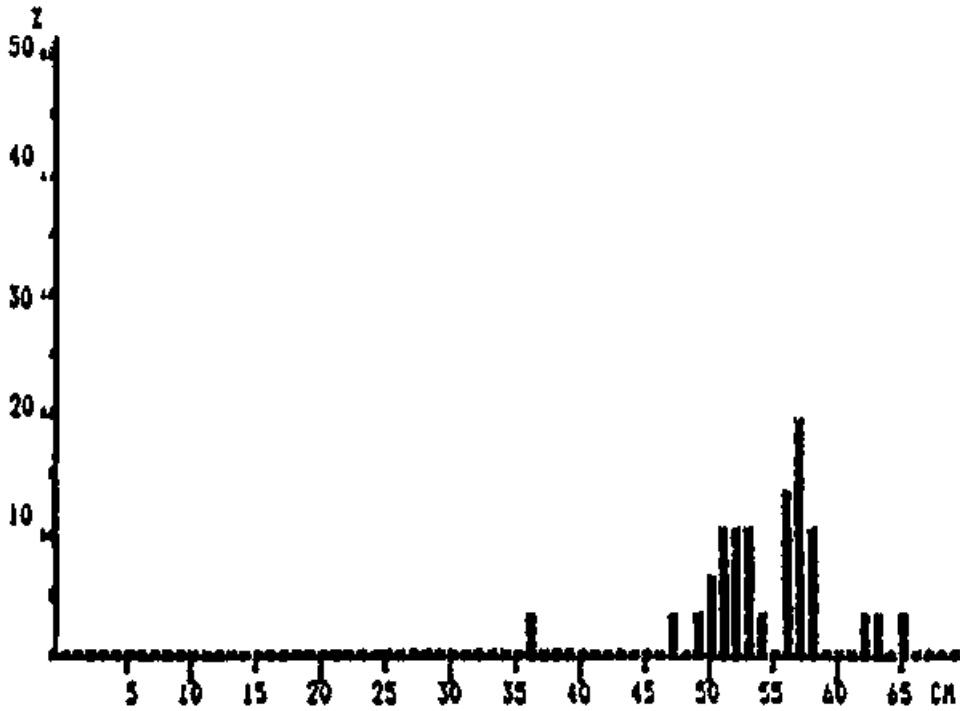
Pooled sample (simple adding)
MEAN LENGTH = 27.41 cm N = 49
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 327 AND 327.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Stromateus fiatola, Benguela - Palmeirinhas



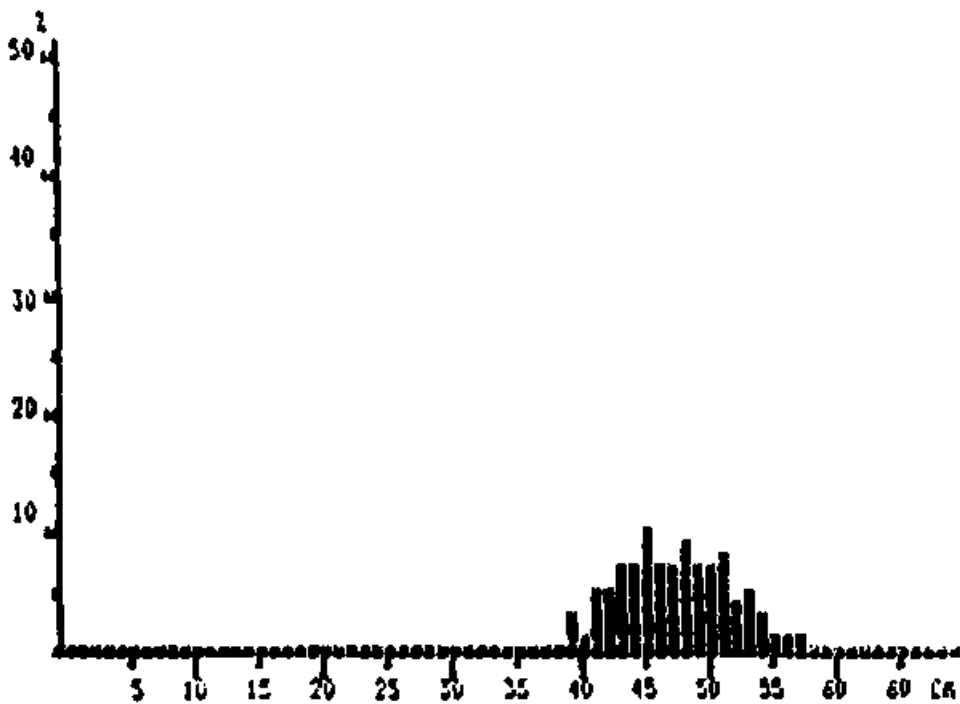
Pooled sample (simple adding)
MEAN LENGTH = 43.14 cm N = 57
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 327 AND 394.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Sphyraena sphyraena, Benguela - Palmeirinhas



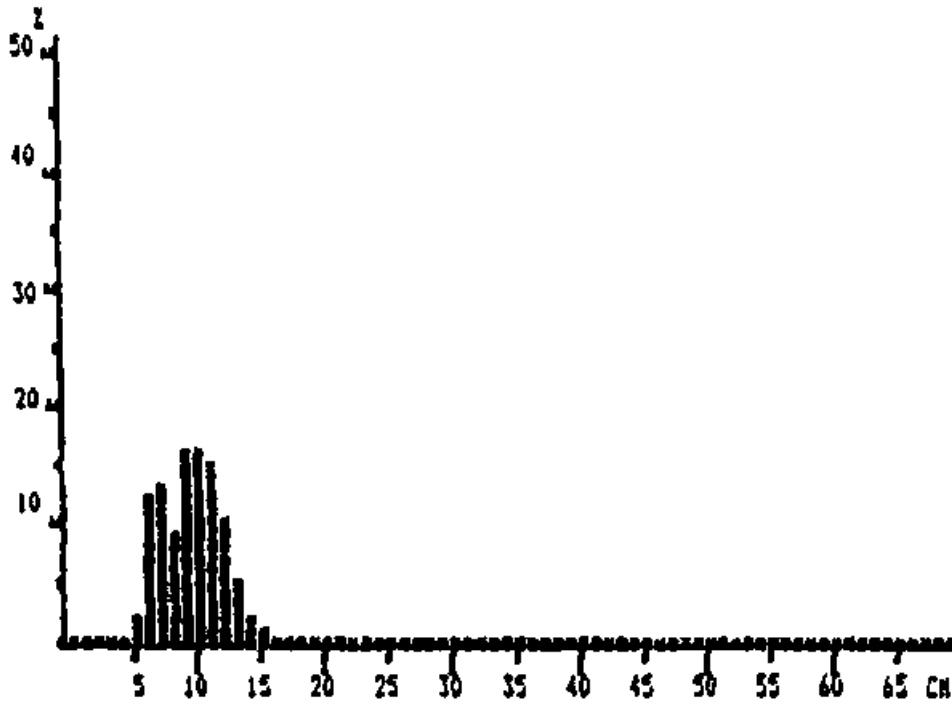
Pooled sample (simple adding)
MEAN LENGTH = 54.32 cm N = 31
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 328 AND 328.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Sphyraena guachancho, Benguela - Palmeirinhas



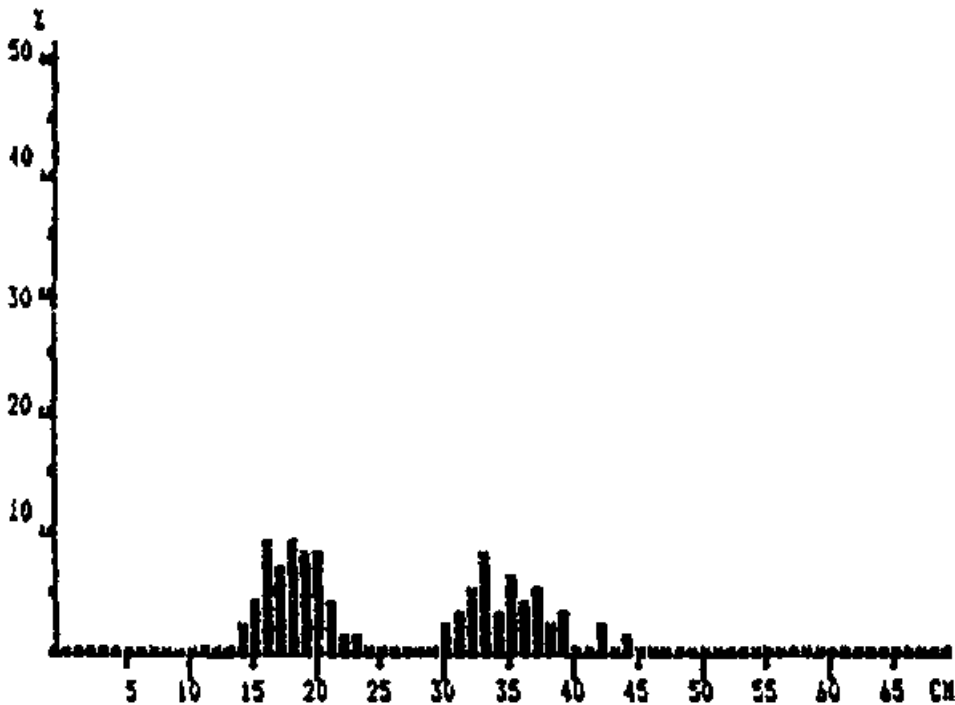
Pooled sample (simple adding)
MEAN LENGTH = 47.15 cm N = 147
NUMBER OF SUBSAMPLES: 4
SAMPLES FOUND BETWEEN ST. NO. 334 AND 414.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Synagrops microlepis, Benguela - Palmeirinhas



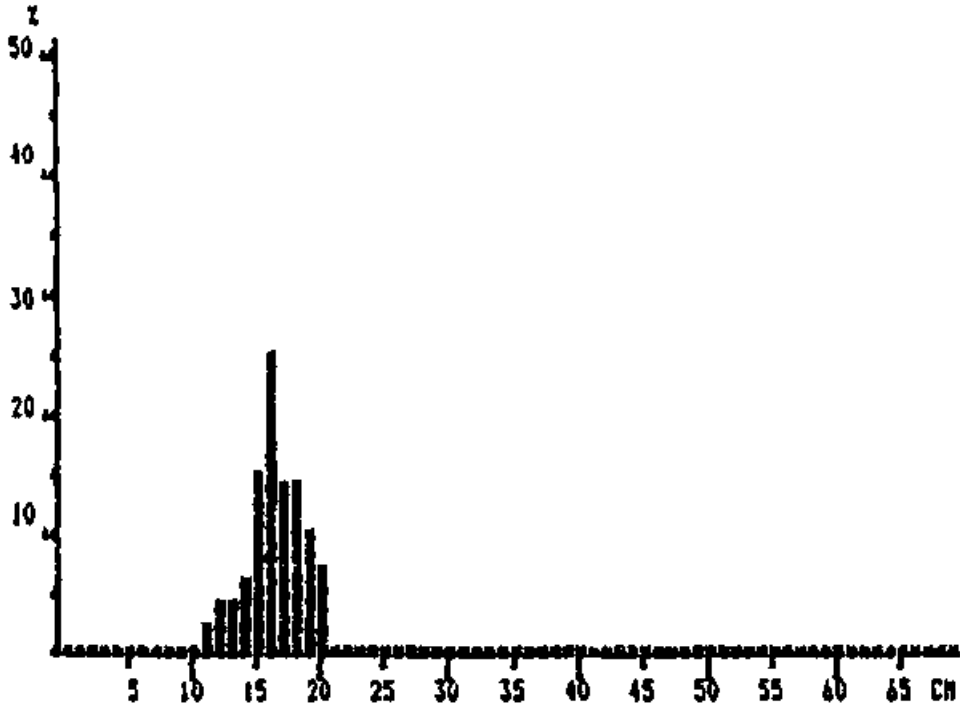
Pooled sample (simple adding)
MEAN LENGTH = 9.40 cm N = 1130
NUMBER OF SUBSAMPLES: 12
SAMPLES FOUND BETWEEN ST. NO. 342 AND 392.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Merluccius polli, Benguela - Palmeirinhas



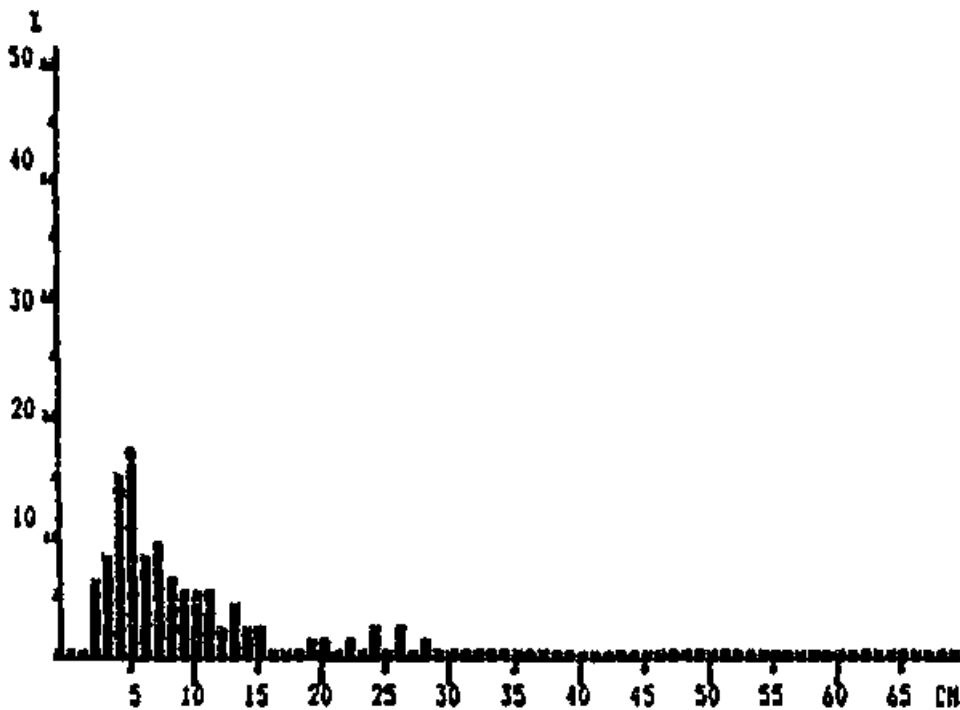
Pooled sample (simple adding)
MEAN LENGTH = 25.90 cm N = 441
NUMBER OF SUBSAMPLES: 9
SAMPLES FOUND BETWEEN ST. NO. 351 AND 405.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Chlorophthalmus atlanticus, Benguela - Palmeirinhas



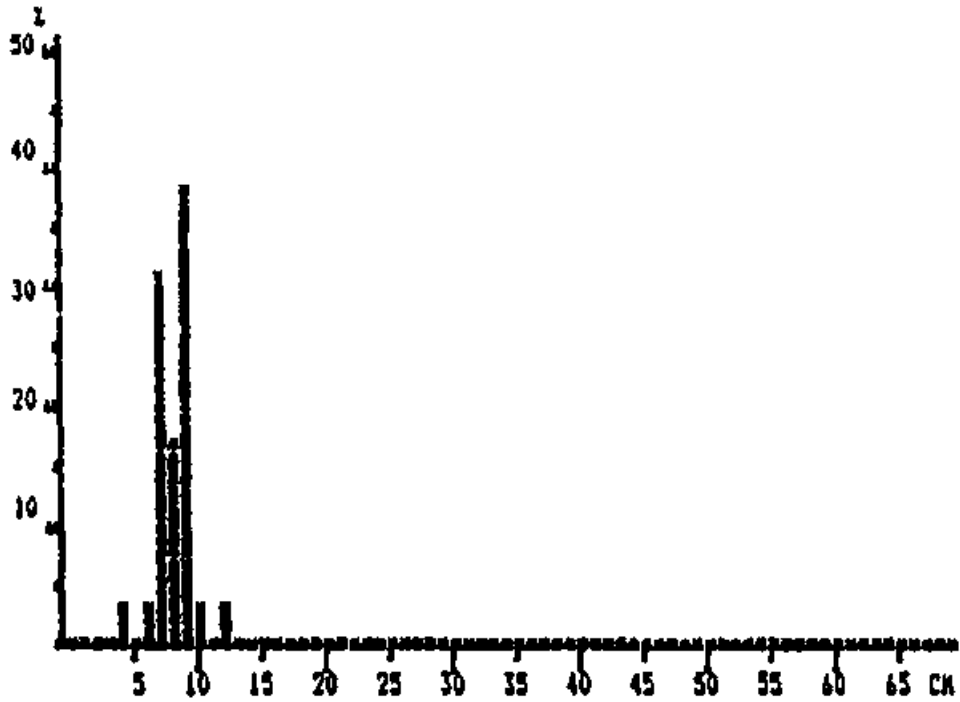
Pooled sample (simple adding)
MEAN LENGTH = 16.38 cm N = 191
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 342 AND 381.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Sepia officinalis hierredda, Benguela - Palmeirinhas



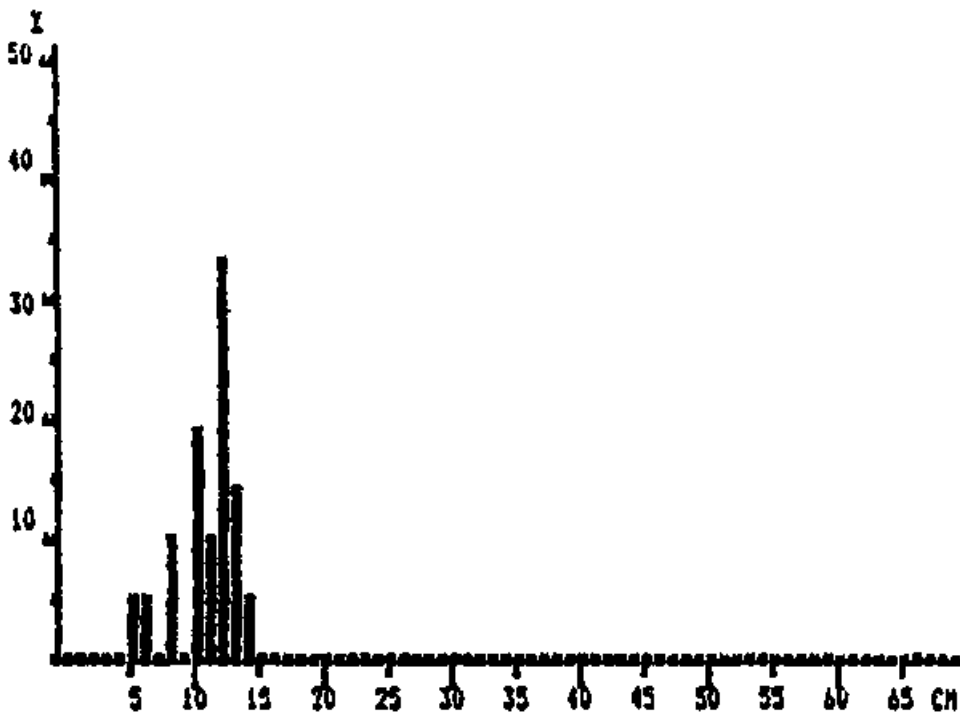
Pooled sample (simple adding)
MEAN LENGTH = 7.67 cm N = 129
NUMBER OF SUBSAMPLES: 4
SAMPLES FOUND BETWEEN ST. NO. 336 AND 346.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

***Illex coindetii*, Benguela - Palmeirinhas**



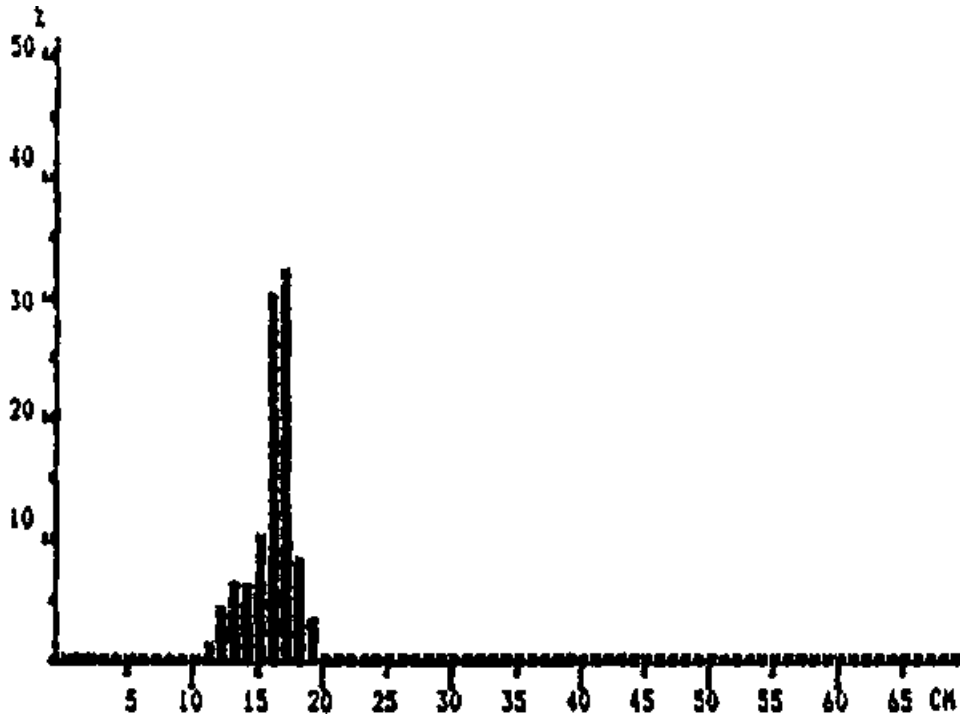
Pooled sample (simple adding)
MEAN LENGTH = 8.07 cm N = 29
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 336 AND 336.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

***Todarodes sagittatus*, Benguela - Palmeirinhas**



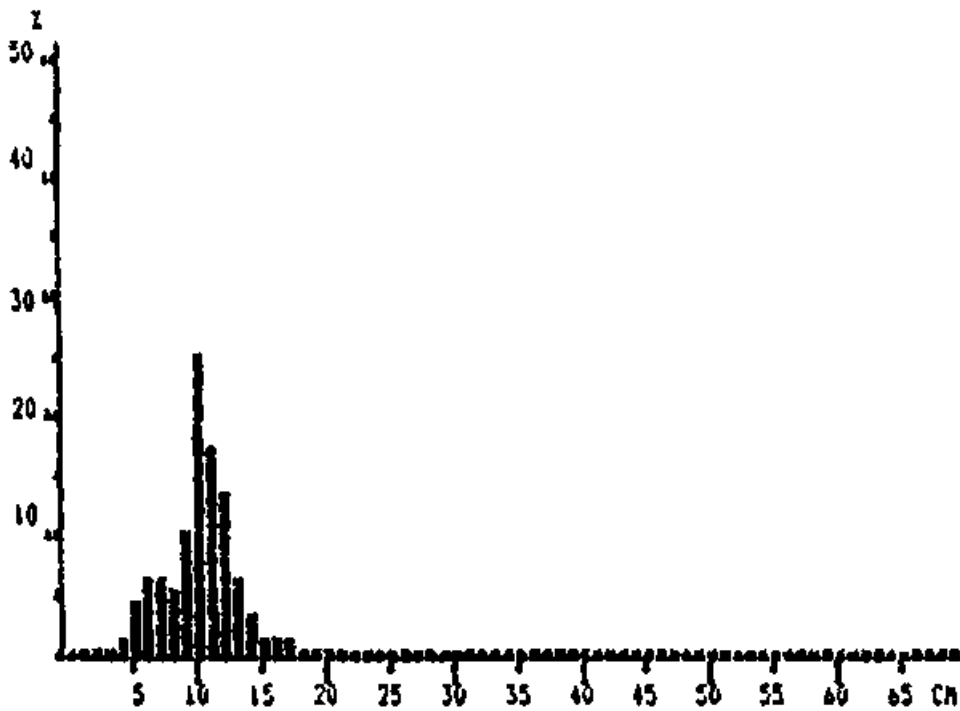
Pooled sample (simple adding)
MEAN LENGTH = 10.76 cm N = 21
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 389 AND 389.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Aristeus varidens, Benguela - Palmeirinhas



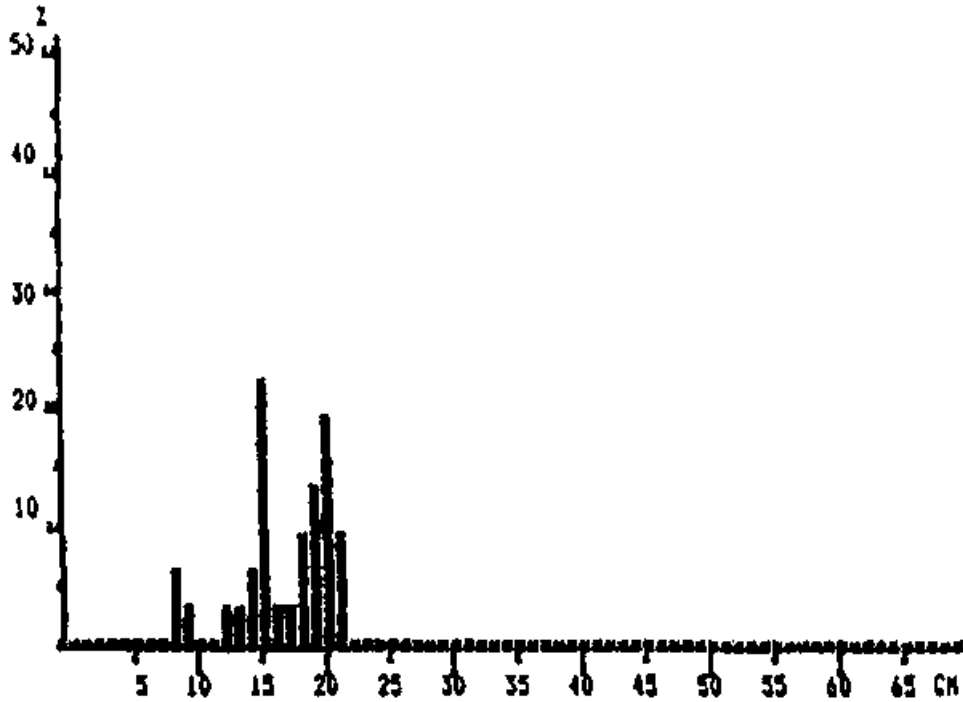
Pooled sample (simple adding)
MEAN LENGTH = 15.98 cm N = 403
NUMBER OF SUBSAMPLES: 4
SAMPLES FOUND BETWEEN ST. NO. 382 AND 405.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Parapenaeus longirostris, Benguela - Palmeirinhas



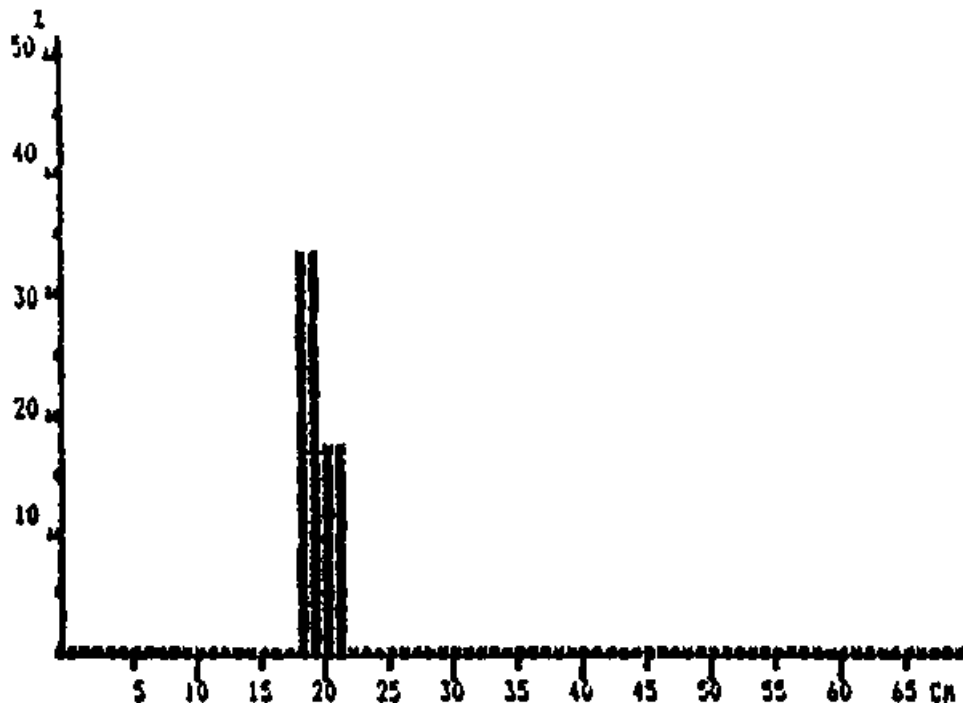
Pooled sample (simple adding)
MEAN LENGTH = 10.00 cm N = 498
NUMBER OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 344 AND 391.
SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Penaeus notialis, Benguela - Palmeirinhas



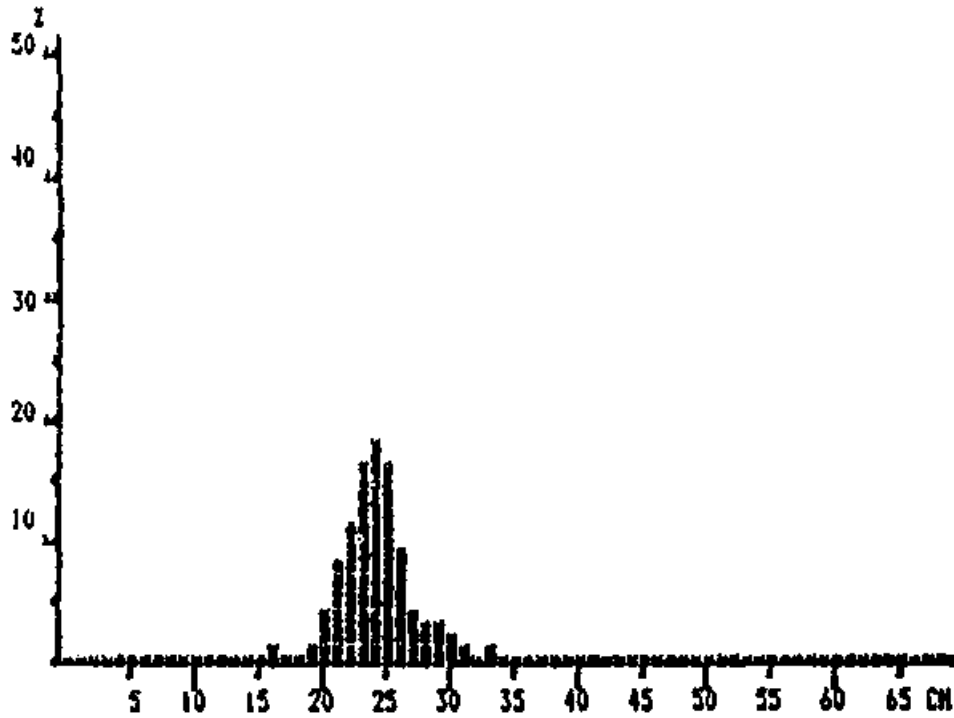
Pooled sample (simple adding)
 MEAN LENGTH = 16.53 cm N = 32
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 347 AND 347.
 SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Plesiopenaeus edwardsianus, Benguela - Palmeirinhas



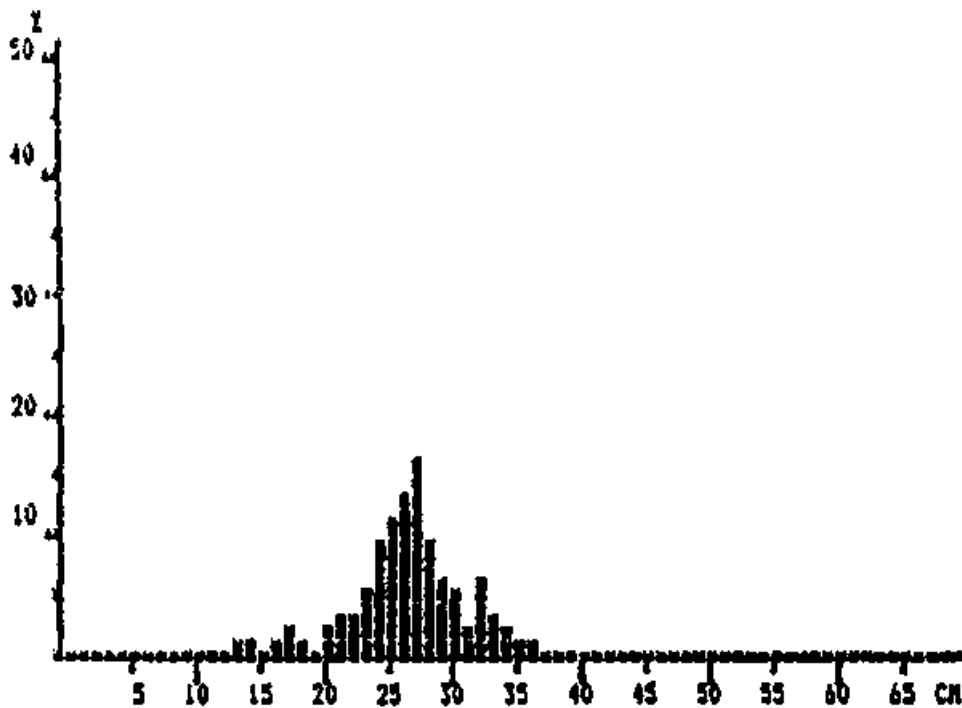
Pooled sample (simple adding)
 MEAN LENGTH = 19.17 cm N = 6
 NUMBER OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 382 AND 382.
 SAMPLES SEARCHED BETWEEN ST. NO. 327 AND 417.

Sardinella maderensis, Luanda to Cabinda



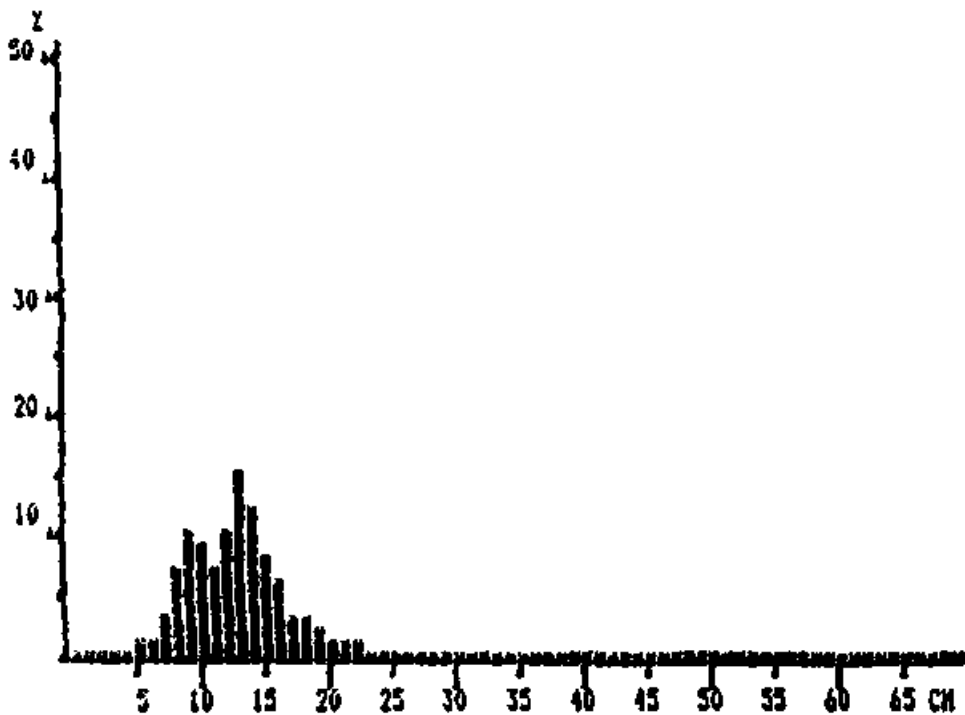
Pooled sample (simple adding)
MEAN LENGTH = 24.11 cm N = 404
NUMBER OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 426 AND 513.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Sardinella aurita, Luanda to Cabinda



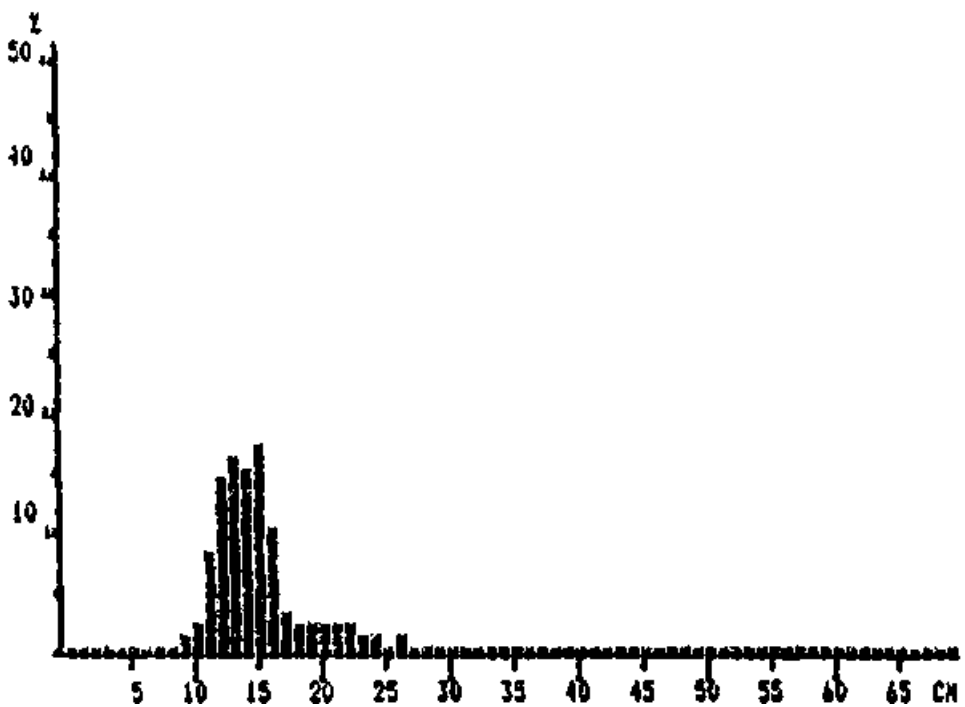
Pooled sample (simple adding)
MEAN LENGTH = 26.31 cm N = 261
NUMBER OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 426 AND 513.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

***Ilisha africana*, Luanda to Cabinda**



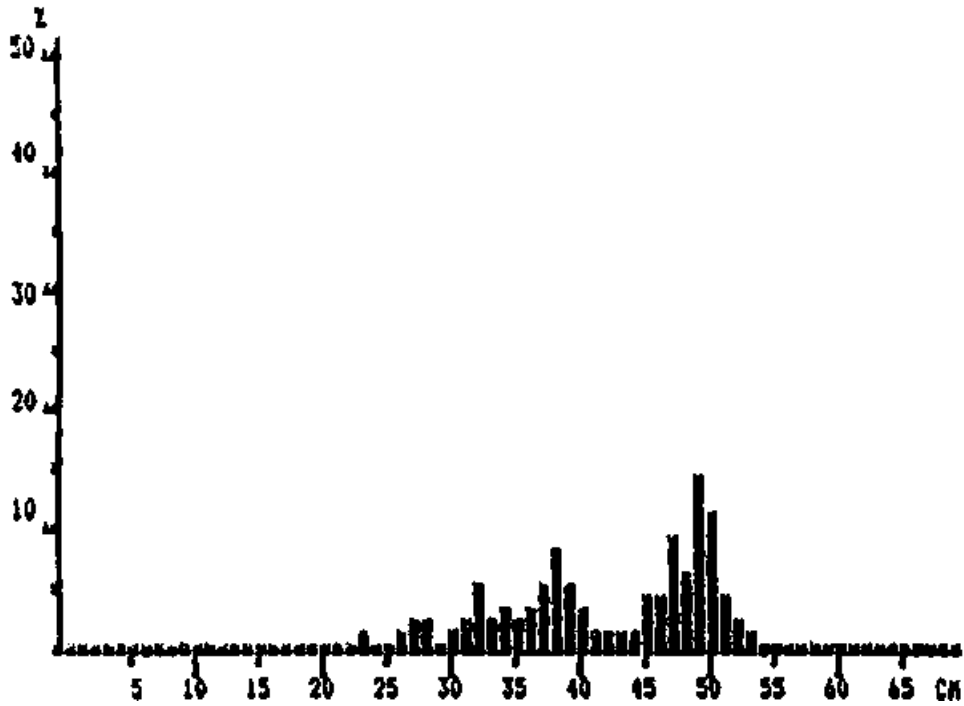
Pooled sample (simple adding)
 MEAN LENGTH = 12.61 cm N = 1077
 NUMBER OF SUBSAMPLES: 10
 SAMPLES FOUND BETWEEN ST. NO. 421 AND 500.
 SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

***Trachurus trecae*, Luanda to Cabinda**



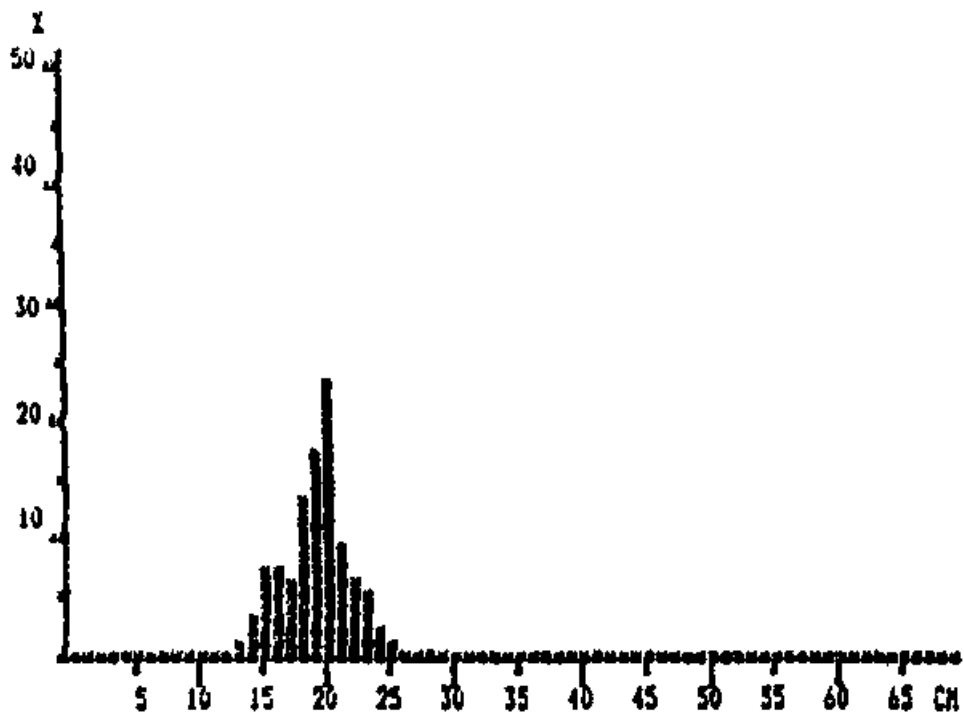
Pooled sample (simple adding)
 MEAN LENGTH = 14.69 cm N = 1830
 NUMBER OF SUBSAMPLES: 26
 SAMPLES FOUND BETWEEN ST. NO. 418 AND 506.
 SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Dacapterus rhonchus, Luanda to Cabinda



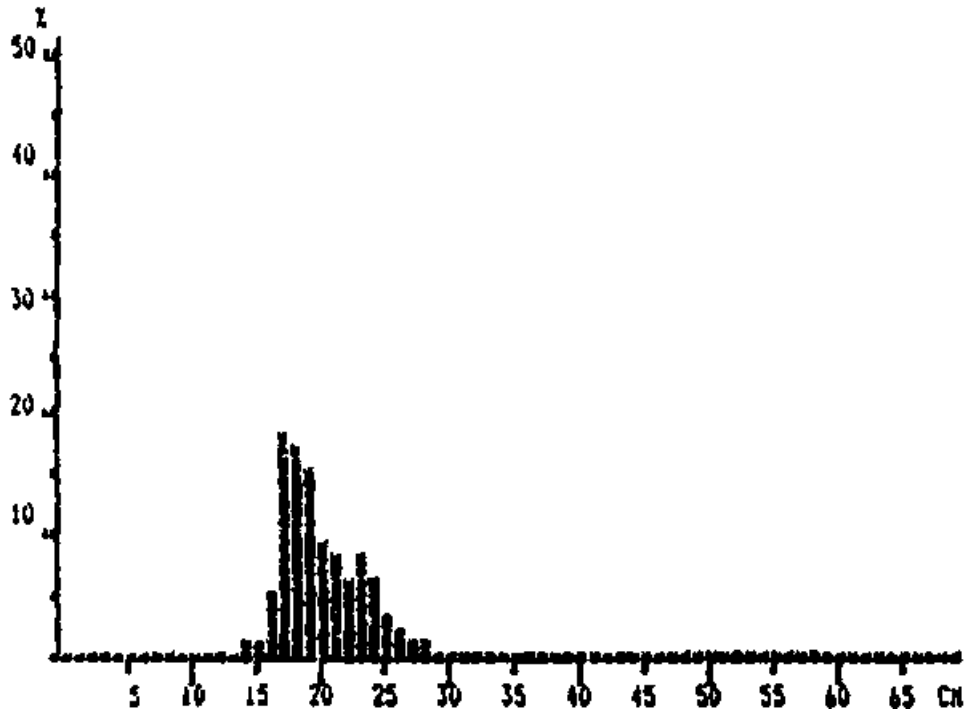
Pooled sample (simple adding)
MEAN LENGTH = 42.66 cm N = 194
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 425 AND 443.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Chloroscombrus chrysurus, Luanda to Cabinda



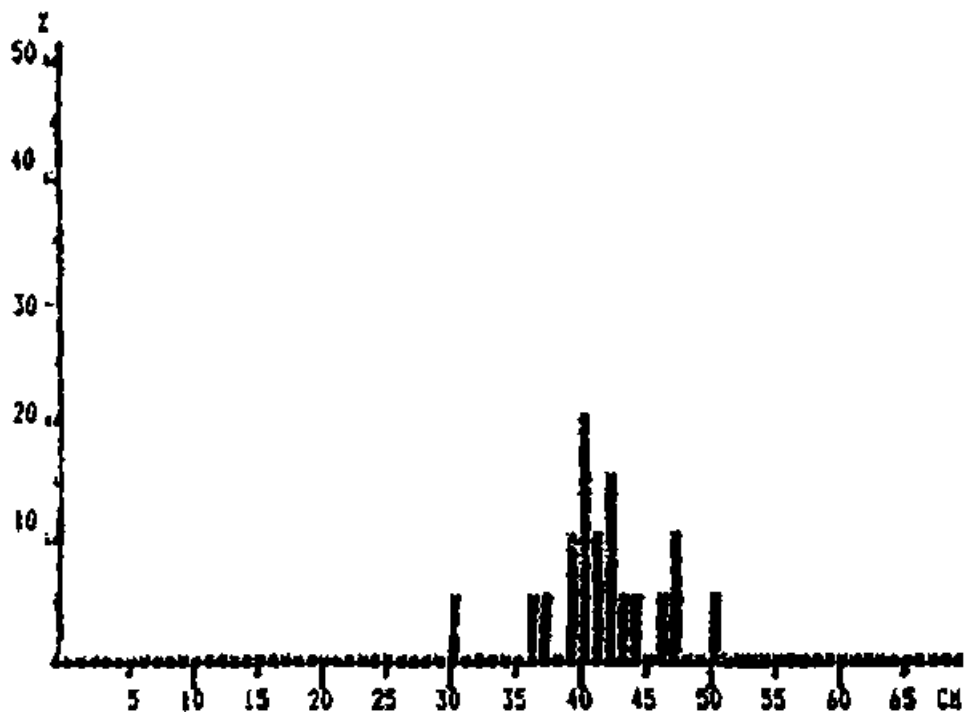
Pooled sample (simple adding)
MEAN LENGTH = 18.98 cm N = 339
NUMBER OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 426 AND 513.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Selene dorsalis, Luanda to Cabinda



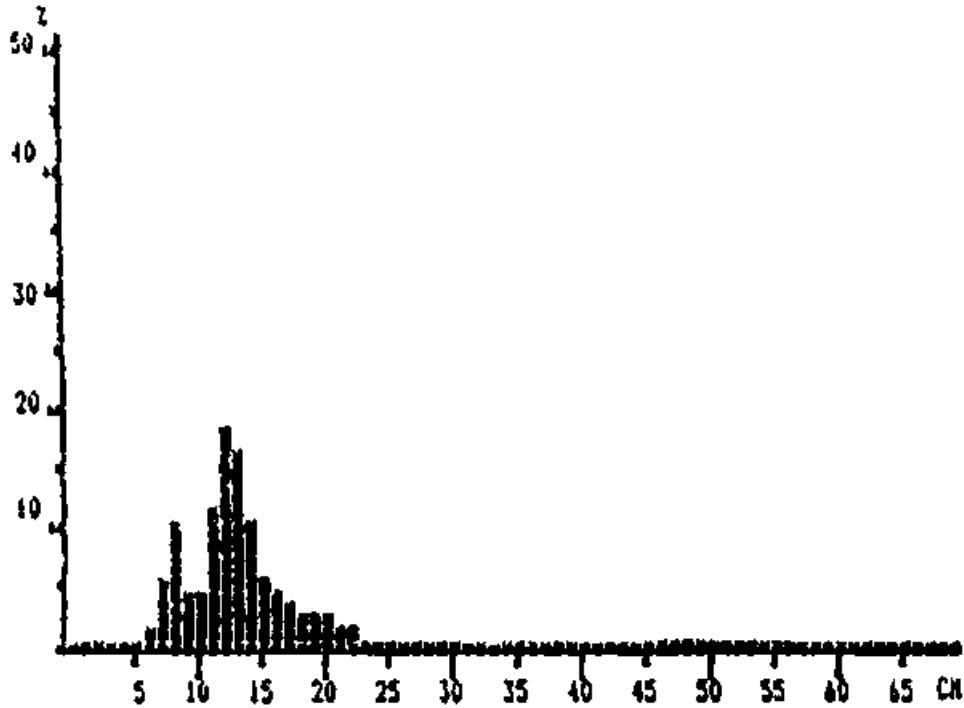
Pooled sample (simple adding)
MEAN LENGTH = 19.76 cm N = 191
NUMBER OF SUBSAMPLES: 4
SAMPLES FOUND BETWEEN ST. NO. 435 AND 494.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Sphyaena guachancho, Luanda to Cabinda



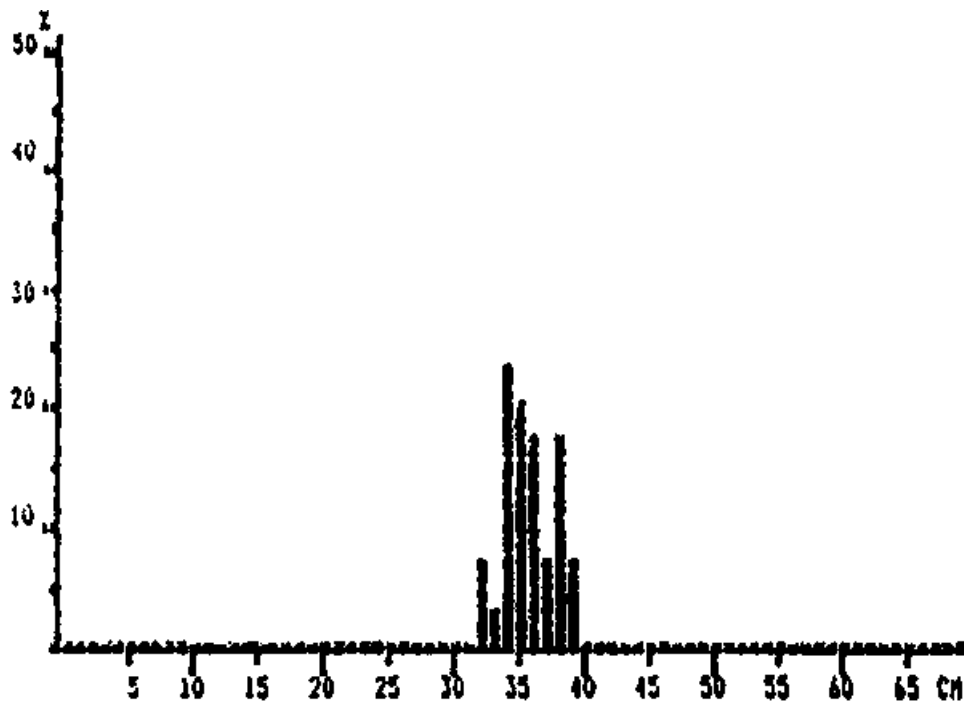
Pooled sample (simple adding)
MEAN LENGTH = 41.30 cm N = 20
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 489 AND 489.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Brachydeuterus auritus, Luanda to Cabinda



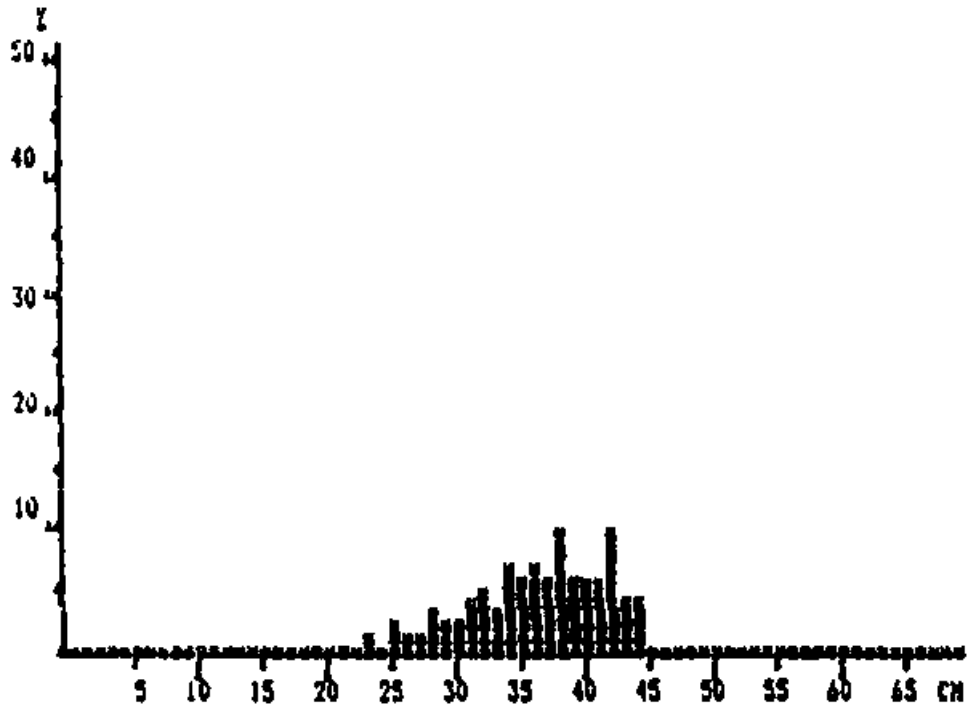
Pooled sample (simple adding)
MEAN LENGTH = 12.43 cm N = 1572
NUMBER OF SUBSAMPLES: 19
SAMPLES FOUND BETWEEN ST. NO. 418 AND 512.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Pomadasys jubelini, Luanda to Cabinda



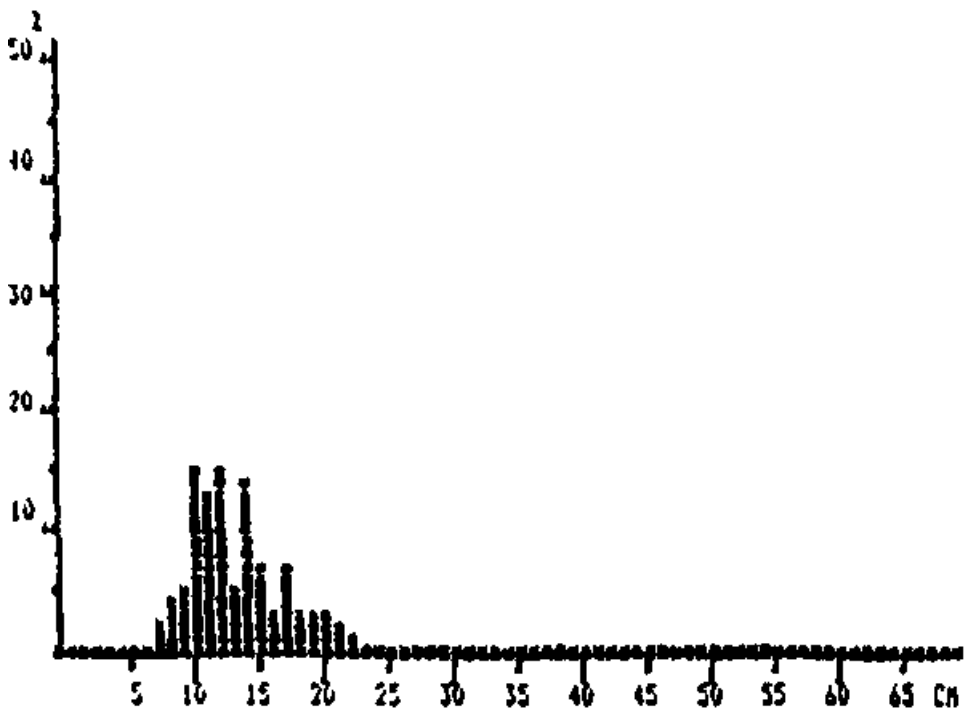
Pooled sample (simple adding)
MEAN LENGTH = 35.57 cm N = 30
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 453 AND 453.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Pomadasys peroteti, Luanda to Cabinda



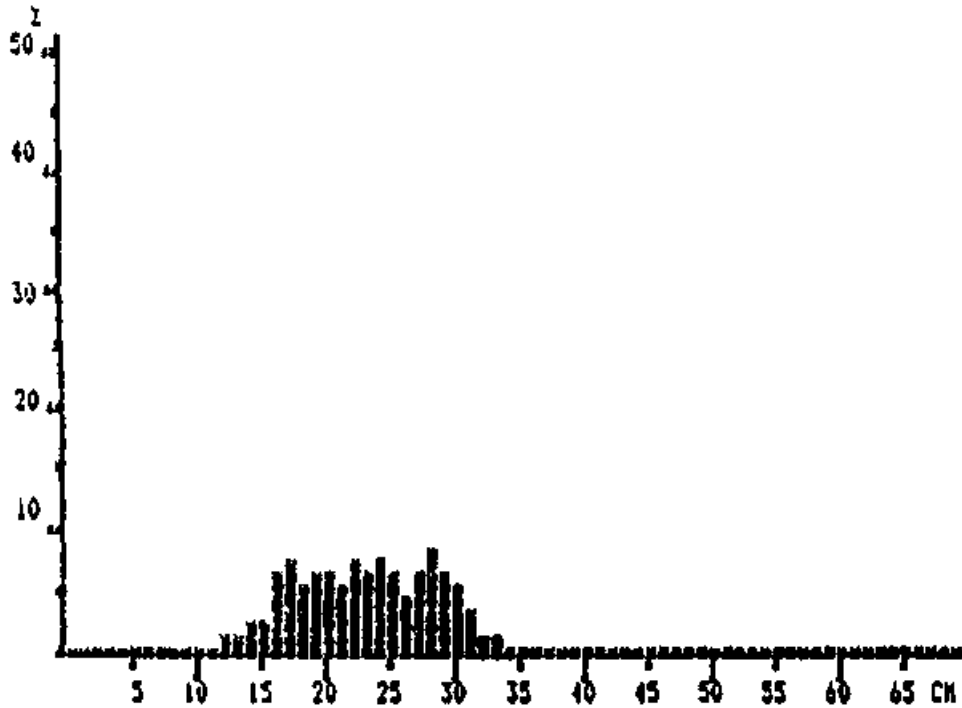
Pooled sample (simple adding)
MEAN LENGTH = 36.39 cm N = 94
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 420 AND 440.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Dentex macrophthalmus, Luanda to Cabinda



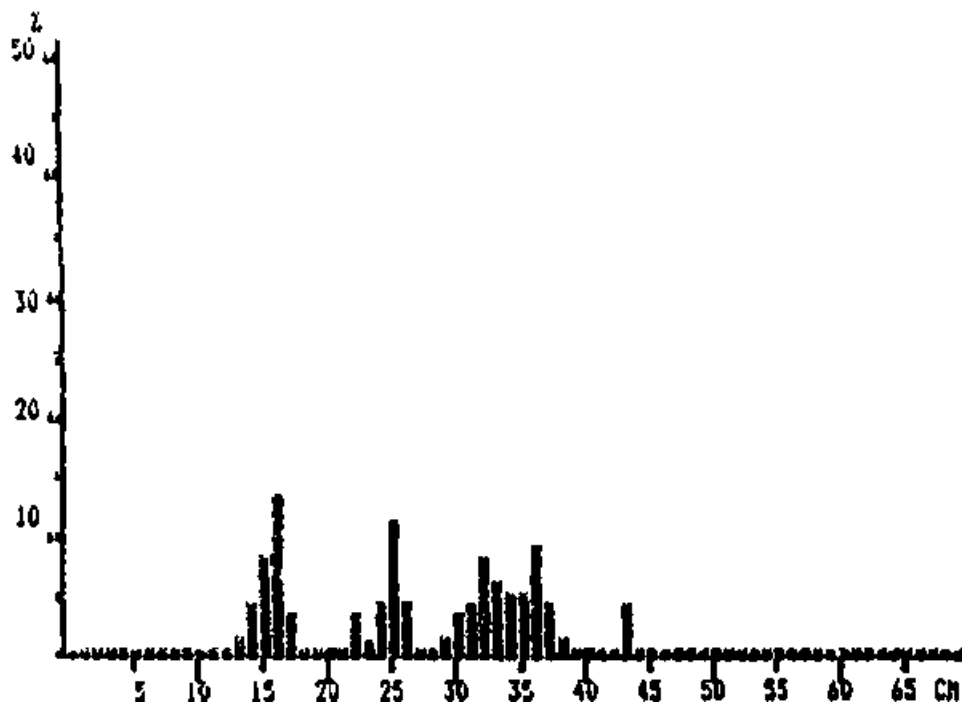
Pooled sample (simple adding)
MEAN LENGTH = 13.01 cm N = 117
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 442 AND 444.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Dentex angolensis, Luanda to Cabinda



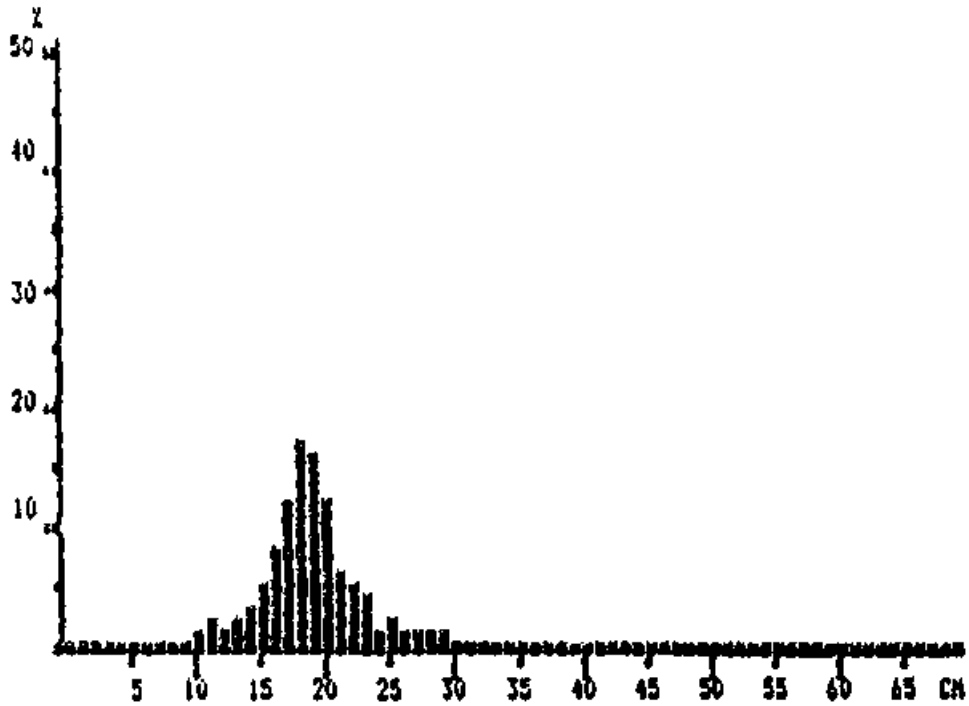
Pooled sample (simple adding)
MEAN LENGTH = 22.88 cm N = 480
NUMBER OF SUBSAMPLES: 13
SAMPLES FOUND BETWEEN ST. NO. 430 AND 505.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Dentex barnardi, Luanda to Cabinda



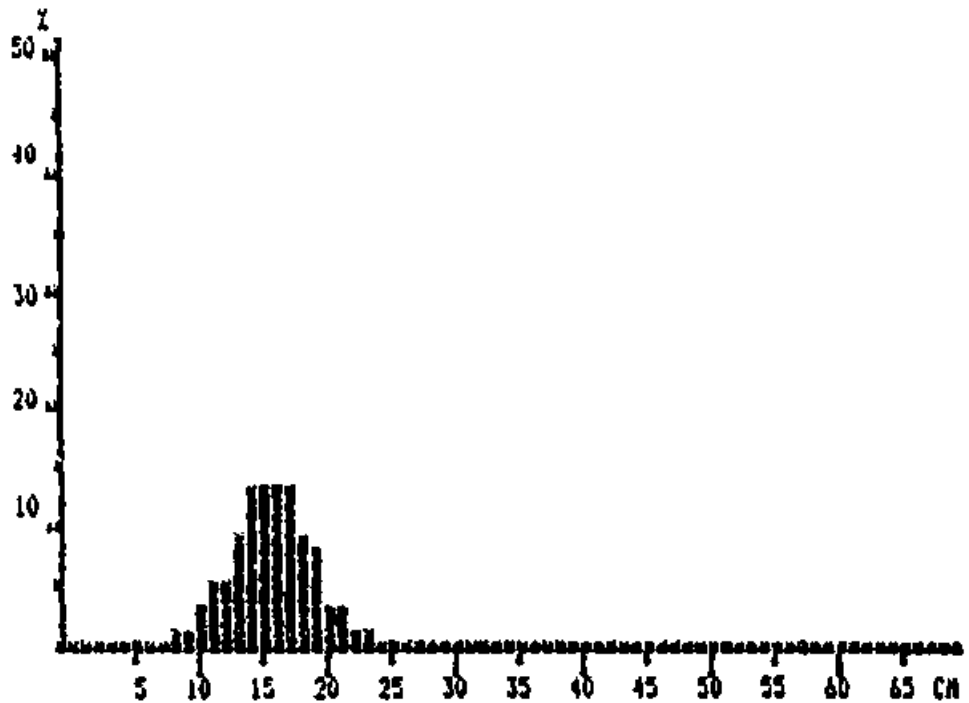
Pooled sample (simple adding)
MEAN LENGTH = 26.91 cm N = 79
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 438 AND 464.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Pagellus bellottii, Luanda to Cabinda



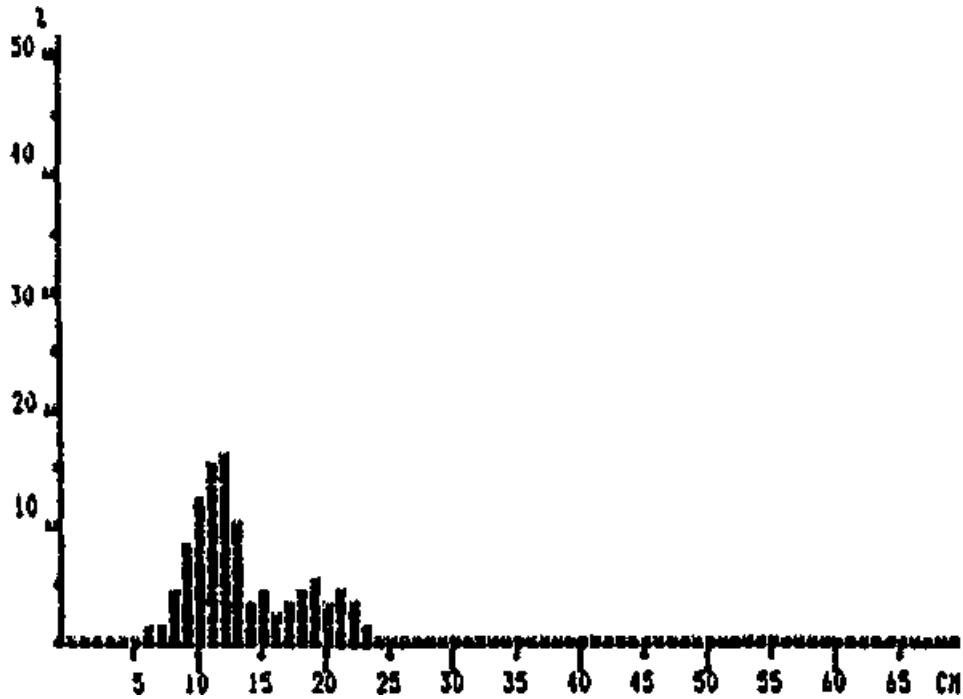
Pooled sample (simple adding)
MEAN LENGTH = 18.56 cm N = 620
NUMBER OF SUBSAMPLES: 12
SAMPLES FOUND BETWEEN ST. NO. 444 AND 499.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Dentex congoensis, Luanda to Cabinda



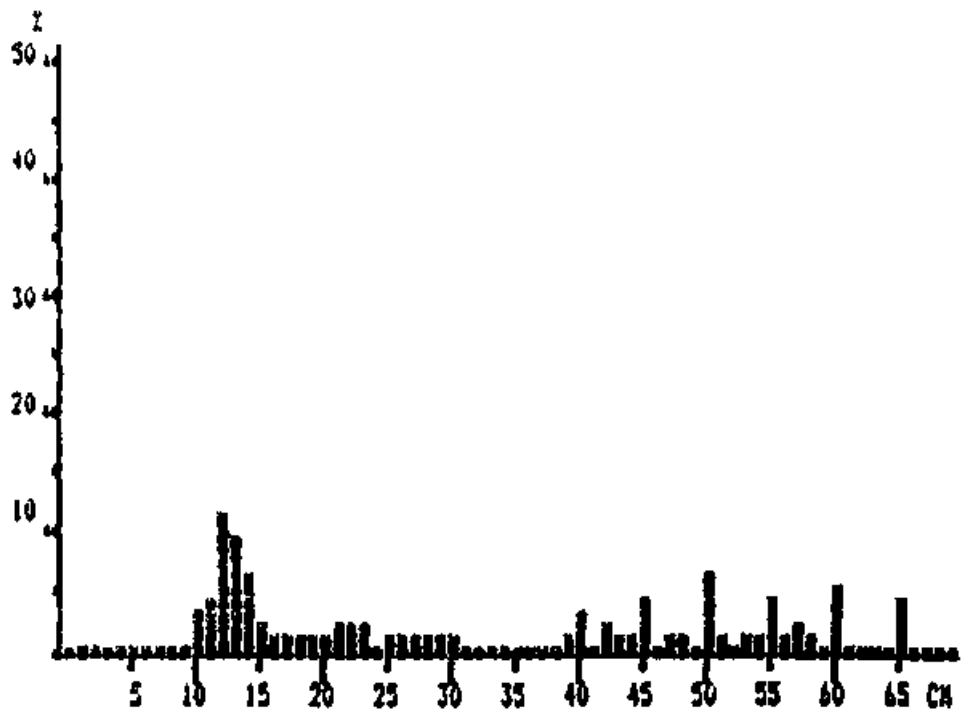
Pooled sample (simple adding)
MEAN LENGTH = 15.42 cm N = 394
NUMBER OF SUBSAMPLES: 7
SAMPLES FOUND BETWEEN ST. NO. 463 AND 498.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Pteroscion peli, Luanda to Cabinda



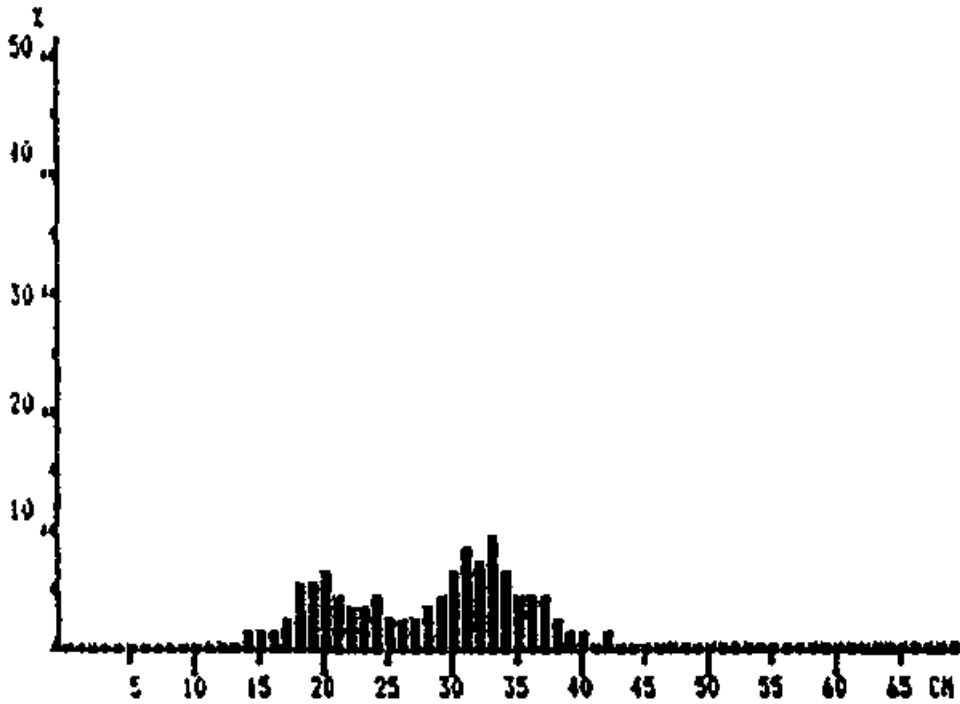
Pooled sample (simple adding)
MEAN LENGTH = 13.22 cm N = 448
NUMBER OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 433 AND 511.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Pseudotolithus typus, Luanda to Cabinda



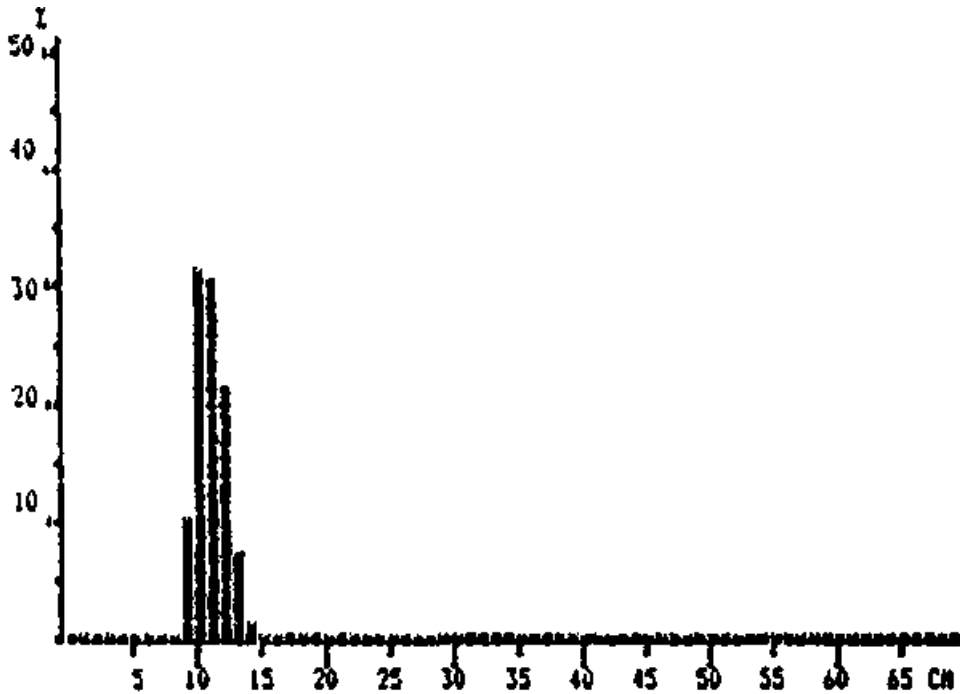
Pooled sample (simple adding)
MEAN LENGTH = 32.22 cm N = 279
NUMBER OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 420 AND 501.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Merluccius polli, Luanda to Cabinda



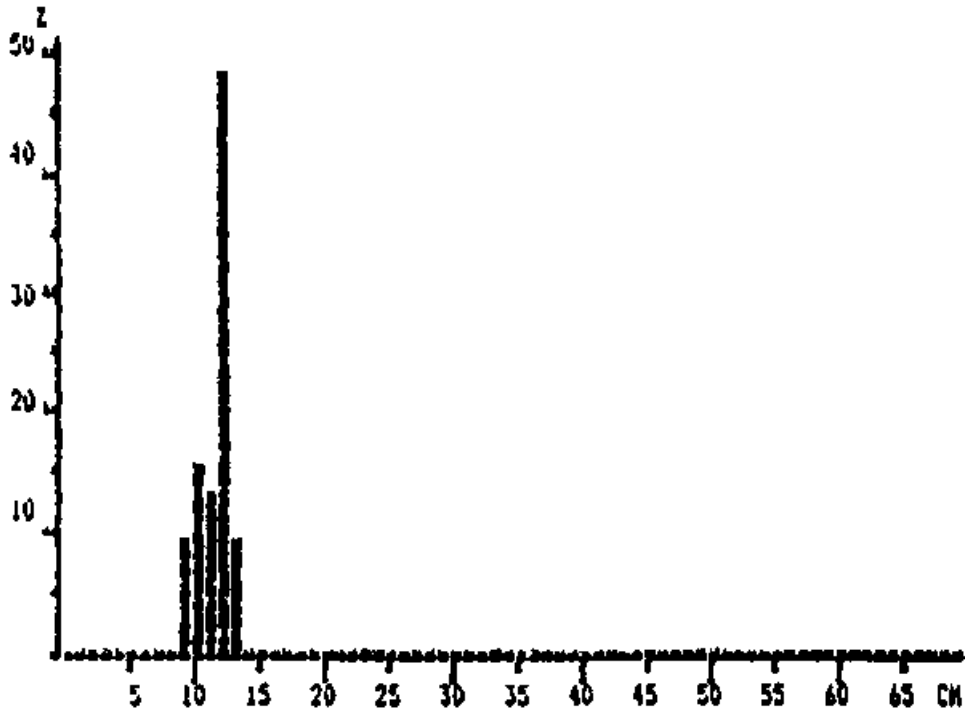
Pooled sample (simple adding)
MEAN LENGTH = 28.10 cm N = 579
NUMBER OF SUBSAMPLES: 13
SAMPLES FOUND BETWEEN ST. NO. 449 AND 502.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Synagrops microlepis, Luanda to Cabinda



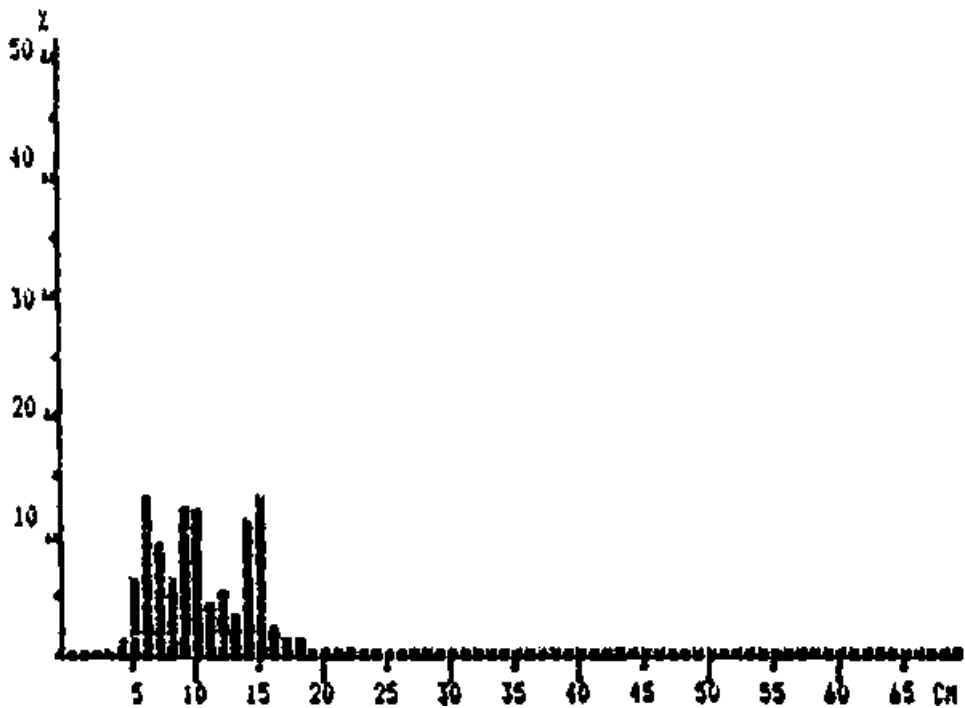
Pooled sample (simple adding)
MEAN LENGTH = 10.84 cm N = 283
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 476 AND 496.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Chlorophthalmus agassizi, Luanda to Cabinda



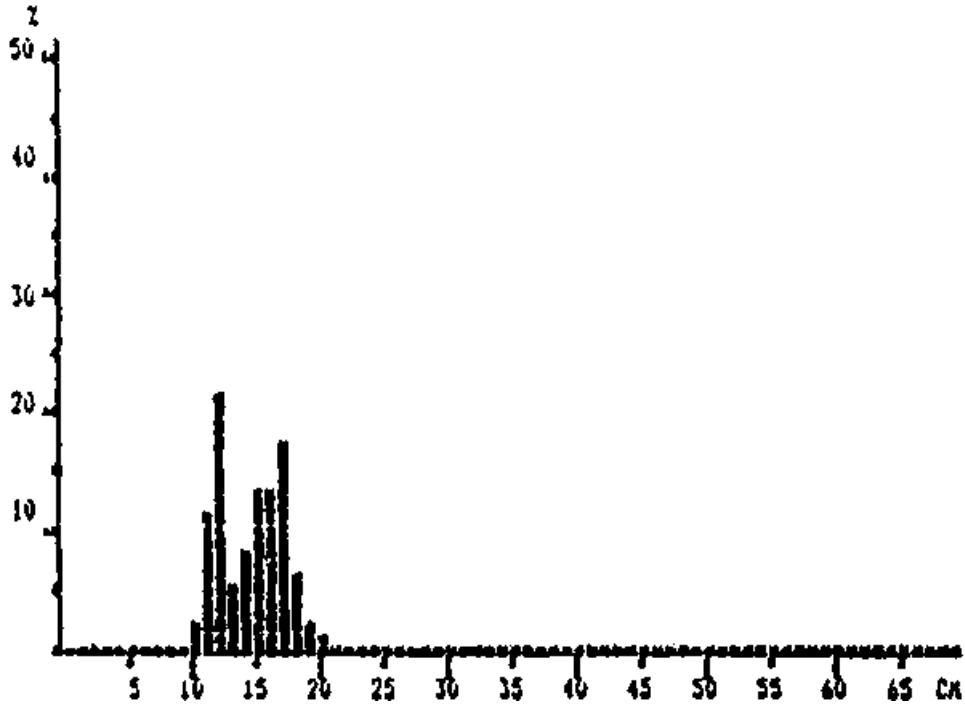
Pooled sample (simple adding)
MEAN LENGTH = 11.40 cm N = 47
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 472 AND 472.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Parapenaeus longirostris, Luanda to Cabinda



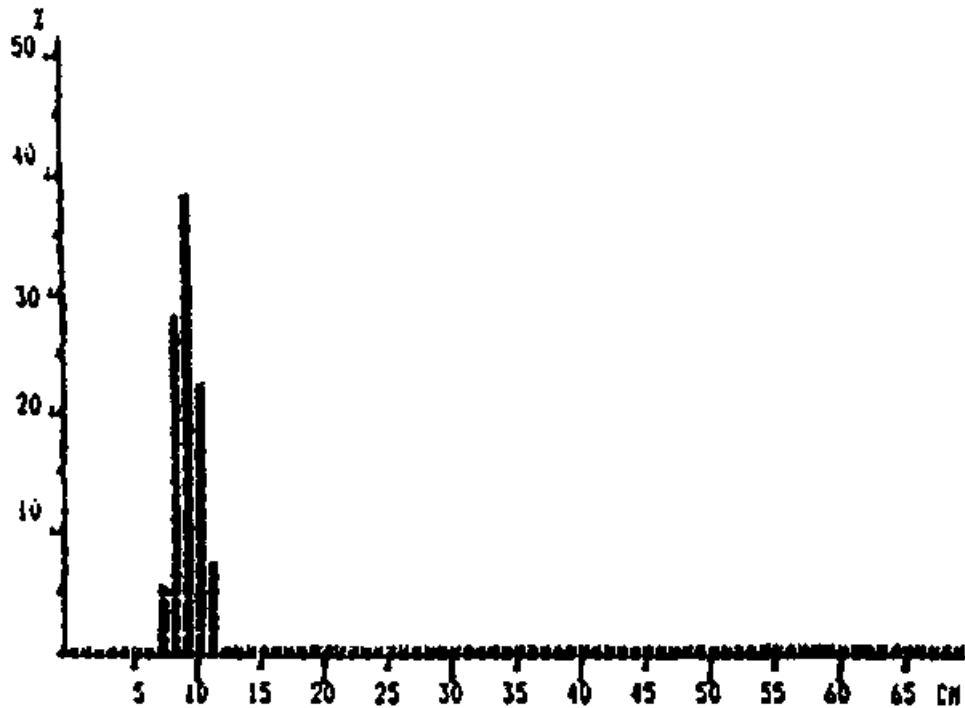
Pooled sample (simple adding)
MEAN LENGTH = 10.15 cm N = 351
NUMBER OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 427 AND 510.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Aristeus varidens, Luanda to Cabinda



Pooled sample (simple adding)
MEAN LENGTH = 14.39 cm N = 543
NUMBER OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 458 AND 488.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

Nematocarcinus africanus, Luanda to Cabinda



Pooled sample (simple adding)
MEAN LENGTH = 8.97 cm N = 60
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 475 AND 475.
SAMPLES SEARCHED BETWEEN ST. NO. 418 AND 513.

ANNEX II. BENGUELA - CABINDA. RECORDS OF FISHING STATIONS

PROJECT STATION 231

DATE: 30/ 4/69 GEAR TYPE: BT No:1 POSITION: Lat S 1230
 start stop duration Long E 1221
 TIME 107:07:00 07:40:00 33 (min) Purpose code: 3
 LCG :7659.10 7660.70 1.60 Area code : 2
 FDEPTH: 54 16 GearCond.code:
 BDEPTH: 00 86 Validity code:
 Towing dir: 54° Wire out: 350 m Speed: 3 kn*10

Sorted: 92 Kg Total catch: 2008.00 CATCH/HOUR: 3650.91

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Selene dorsalis</i>	1533.45	8002	42.85	66
<i>Trichurus lepturus</i>	474.91	1571	13.01	67
<i>Pentheroncion mizii</i>	418.18	1709	11.45	68
<i>Pogonias lubellii</i>	272.73	364	7.47	70
<i>Umbrina canariensis</i>	237.27	627	6.50	
<i>Dentex macrophthalmus</i>	157.09	1605	4.30	
<i>Stromateus fiatola</i>	145.45	135	3.98	69
<i>Pagellus bellottii</i>	69.82	384	1.91	
<i>Citharus linguatula</i>	69.82	1047	1.91	
<i>Dentex angolensis</i>	59.27	418	1.62	
<i>Trachurus trachurus</i>	34.91	364	0.86	
<i>Chelidonichthys capensis</i>	31.27	244	0.86	
<i>Uranoscopus polli</i>	24.36	104	0.67	
<i>Pontinus kuhlii</i>	20.91	207	0.57	
<i>Pterochirus belloci</i>	20.91	313	0.57	
<i>Chelidonichthys gazonensis</i>	17.45	138	0.48	
<i>Zeus faber</i>	17.45	104	0.48	
<i>Serranus cabrilla</i>	8.73	69	0.24	
<i>Galietas capricus</i>	8.73	35	0.19	
<i>Scorpaena normani</i>	5.09	25	0.14	
<i>Ueggs boops</i>	3.45	35	0.06	
<i>Echeneis naucrates</i>	1.09	2	0.03	
Total	2008.00	6000	99.98	

PROJECT STATION 232

DATE: 30/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1229
 start stop duration Long E 1326
 TIME 08:44:00 09:14:00 30 (min) Purpose code: 3
 LOG : 7666.50 7667.00 1.40 Area code : 2
 FDEPTH: 32 43 GearCond.code:
 BDEPTH: 32 43 Validity code:
 Towing dir: Wire out: 125 m Speed: 3 kn*10
 Sorted: Kg Total catch: 113.20 CATCH/HOUR: 226.40

SPECIES	CATCH/HOUR		% OF TOT. C.	SAMP. NO.
	weight	numbers		
<i>Sphyraena sphyraena</i>	116.00	162	51.24	72
<i>Chloroscombrus chrysurus</i>	72.00	320	31.80	71
<i>Uraspia secunda</i>	28.00	24	12.37	73
<i>Scorpaenopus tritor</i>	5.00	4	3.21	
<i>Stromateus fiatola</i>	3.00	8	1.32	
<i>Sardinella maderensis</i>	2.40	2	1.06	
Total	226.40		100.01	

PROJECT STATION 233

DATE: 30/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1222
 start stop duration Long E 1324
 TIME 10:20:00 10:50:00 30 (min) Purpose code: 3
 LOG : 7674.00 7675.00 1.30 Area code : 2
 FDEPTH: 99 100 GearCond.code:
 BDEPTH: 99 100 Validity code:
 Towing dir: 18° Wire out: 450 m Speed: 3 kn*10
 Sorted: 28 Kg Total catch: 171.08 CATCH/HOUR: 342.16

SPECIES	CATCH/HOUR		% OF TOT. C.	SAMP. NO.
	weight	numbers		
<i>Dentex angolensis</i>	96.00	480	26.06	74
<i>Chelidonichthys gabonensis</i>	73.88	816	21.80	
<i>Pagellus bellocii</i>	54.00	528	15.78	75
<i>Dentex macrophtalmus</i>	24.00	144	7.01	
<i>Sepia officinalis hierredda</i>	18.00	60	5.26	
<i>Citharus linguatula</i>	15.60	324	4.36	
<i>Chelidonichthys capensis</i>	12.00	60	3.51	
<i>Lagocephalus laevigatus</i>	12.00	24	3.51	
<i>Zeus faber</i>	12.00	48	3.51	
<i>Brotula barbata</i>	8.40	12	2.45	
<i>Uranoscopus polli</i>	8.40	48	2.45	
<i>Branchiostegus semifasciatus</i>	3.40	4	0.99	
<i>Epinaphelus senes</i>	3.00	2	0.88	
<i>Arnoglossus imperialis</i>	1.80	72	0.53	
<i>Saurida brasiliensis</i>	0.00	36		
Total	342.16		100.00	

PROJECT STATION 234

DATE: 30/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1216
 start stop duration Long E 1327
 TIME : 11:58:00 12:28:00 30 (min) Purpose code: 3
 LOG : 7694.20 7695.30 1.10 Area code : 2
 FDEPTH: 90 92 GearCond.code:
 BDEPTH: 90 92 Validity code:
 Towing dir: 10° Wire cut: 400 m Speed: 3 kn'10

Sorted: 25 Kg Total catch: 123.75 CATCH/HOUR: 247.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Chelidonichthys gabonensis</i>	100.00	1220	40.40	
<i>Pagellus bellottii</i>	30.00	770	12.12	77
<i>Chelidonichthys capensis</i>	25.00	160	10.10	
<i>Dentex angolensis</i>	25.00	220	10.10	76
<i>Citharus linguatula</i>	20.00	510	8.08	
<i>Branchiostegus semifasciatus</i>	13.00	10	5.25	
<i>Uranoscopus polli</i>	10.00	40	4.04	
<i>Sepia officinalis hierredda</i>	10.00	200	4.04	
<i>Todaropsis eblanae</i>	5.00	520	2.02	
<i>Cinetodon hoefleri</i>	3.00	10	1.21	
<i>Zeus fater</i>	3.00	30	1.21	
<i>Saurida brasiliensis</i>	1.00	240	0.40	
<i>Scorpaena noronai</i>	1.00	10	0.40	
<i>Doops doops</i>	0.50	10	0.20	
<i>Arnoglossus imperialis</i>	0.50	30	0.20	
<i>Trachurus trecae</i>	0.50	20	0.20	
Total	247.50		99.97	

PROJECT STATION 235

DATE: 30/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1216
 start stop duration Long E 1334
 TIME : 13:50:00 14:20:00 30 (min) Purpose code: 3
 LOG : 7694.40 7695.90 1.50 Area code : 2
 FDEPTH: 42 37 GearCond.code:
 BDEPTH: 42 37 Validity code:
 Towing dir: 50° Wire out: 150 m Speed: 3 kn'10

Sorted: 27 Kg Total catch: 940.20 CATCH/HOUR: 180.0

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Brachydeuteron auritus</i>	1085.00	26600	57.70	
<i>Chloroscybopus chrysurus</i>	210.00	1750	11.17	76
<i>Pomadourus incisus</i>	180.00	1250	10.08	
<i>Trichlurus lepturus</i>	77.00	3710	4.09	
<i>Osteoides decadactylus</i>	70.00	1050	3.72	
<i>Pteroscion pall</i>	63.00	3150	3.35	
<i>Pagellus bellottii</i>	49.00	510	2.61	
<i>Epinniphelus dimous</i>	38.00	70	1.86	
<i>Lithognathus mormyrus</i>	28.00	70	1.49	
<i>Trachurus trecae</i>	21.00	1750	1.12	
<i>Citharus linguatula</i>	14.00	350	0.74	
<i>Galistes capricorn</i>	14.00	70	0.74	
<i>Gymnura micrura</i>	9.80	2	0.52	
<i>Selene dorsalis</i>	7.00	400	0.37	
<i>Dentex canariensis</i>	7.00	280	0.37	
<i>Rhinobarus albomaculatus</i>	1.60	2	0.09	
Total	1880.20		99.99	

PROJECT STATION 236

DATE: 30/ 4/89 GEAR TYPE: BT No:1 POSITION: Lat S 1213
 start stop duration Long E 1328
 TIME :16:38:00 17:08:00 30 (min) Purpose code: 3
 LCO :7707.70 7708.00 1.30 Area code: 2
 FDEPTH: 93 92 GearCond.code:
 BDEPTH: 93 92 Validity code:
 Towing dir: 28' Wire out: 400 m Speed: 3 kn*10
 Sorted: 55 Kg Total catch: 247.50 CATCH/HOUR: 49.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Umbrina canariensis	180.00	548	36.36	80
Dentex angolensis	151.20	504	30.55	79
Pagellus bellottii	63.00	494	12.73	
Dentex barnardi	45.60	108	9.09	
Chelidonichthys capensis	17.10	126	3.45	
Chelidonichthys gabonensis	10.60	96	2.18	
Raja miralotus	6.10	6	1.64	
Lagocephalus laevigatus	6.30	8	1.27	
Sepia officinalis hierredda	3.60	62	0.73	
Saurida brasiliensis	2.70	342	0.55	
Chaetodon hoefleri	2.70	18	0.55	
Cotopus vulgaris	1.80	8	0.36	
Zeus faber	1.60	18	0.36	
Citharus linguatula	0.60	8	0.18	
Total	445.00		100.00	

PROJECT STATION 237

DATE: 1/ 5/89 GEAR TYPE: PT No:4 POSITION: Lat S 1221
 start stop duration Long E 1329
 TIME :01:30:00 02:30:00 60 (min) Purpose code: 3
 LCO :7771.60 7774.90 3.30 Area code: 2
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 70 54 Validity code:
 Towing dir: 60' Wire out: 200 m Speed: 3 kn*10
 Sorted: 34 Kg Total catch: 620.50 CATCH/HOUR: 62.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trichiurus lepturus	645.00	1860	78.61	
Sardinella aurita	52.50	465	6.40	31
Sphyræna guachancho	51.00	78	6.22	
Brachydeuterus auritus	37.80	1878	4.57	
Stromateus fiatola	15.00	15	1.03	
Trachurus trache	15.00	540	1.83	
Balistes capricornis	3.00	15	0.37	
Chloroscombrus chrysurus	1.50	30	0.18	
Total	620.50		100.01	

PROJECT STATION 238

DATE: 1/ 5/89 GEAR TYPE: PT No:4 POSITION: Lat S 1217
 START stop duration Long S 1355
 TIME 104:00:00 05:00:00 60 (min) Purpose code: 3
 LOG 17778.40 7780.90 2.50 Area code : 2
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 42 37 Validity code:
 Towing dir: 30° Wire out: 200 m Speed: 3 kn*10
 Sorted: 59 Kg Total catch: 267.30 CATCH/HOUR: 207.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trichiurus lepturus	85.50	603	31.99	
Chloroscombrus chrysurus	47.25	360	17.68	65
Sphyrna guachancho	36.90	85	13.80	64
Sardinella maderensis	36.00	146	13.47	63
Trachurus trecae	34.65	3168	12.96	62
Brachydeuterus suricus	18.00	2280	6.73	
Sardinella maderensis	2.25	175	0.84	
Sepia orblanynna	2.25	9	0.84	
Pseudocaranx parototi	1.00	4	0.37	
Sardinella aurita	1.35	4	0.51	
Salene dorsalis	0.90	13	0.34	
Ilisha africana	0.45	4	0.17	
Total	267.30		100.00	

PROJECT STATION 239

DATE: 17 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1211
 start stop duration Long E 1338
 TIME :06:28:00 06:58:00 30 (min) Purpose code: 3
 LOG :7791.40 7792.80 1.40 Area code : 2
 FDEPTH: 25 25 GearCode: 1
 BDEPTH: 25 25 Validity code:
 Towing dir: 20° Wire out: 150 m Speed: 3 kn'10

Sorted: 59 Kg Total catch: 748.28 CATCH/HOUR: 1496.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Brachydeuterus auritus	982.64	99152	64.32	86
Pagellus bellottii	85.68	1184	5.73	
Galeoides decadactylus	75.60	2547	5.05	
Pomadourys incisus	63.00	402	4.21	
Dasyatis margarita	45.36	24	3.03	
Salene oorsalis	37.80	1008	2.53	
Pomadourys jubelini	37.80	100	2.53	
Balistes capriscus	37.80	176	2.53	
Sphyraena guachancho	25.20	50	1.68	
Lichognathus mormyrus	25.20	74	1.68	
Trachurus trachurus	25.20	2596	1.68	97
Rhinogatos albomaculatus	20.16	24	1.35	
Pomadourys paroteti	12.60	24	0.84	
Pseudupeneus prayensis	7.56	74	0.51	
Pteroscion palli	7.56	150	0.51	
Dicologlossa cuneata	7.56	100	0.51	
Chaetodon hoefleri	7.56	74	0.51	
Faneus notialis	2.52	150	0.17	
Dentex canariensis	2.52	50	0.17	
Citharus linguatula	2.52	24	0.17	
Engraulis encrasicolus	2.52	378	0.17	
Panulirus regius	2.20	2	0.15	
Total	1496.56		100.03	

PROJECT STATION 240

DATE: 1/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1208
 start stop duration Long E 1331
 TIME :08:30:00 09:00:00 30 (min) Purpose code: 3
 LOG :7903.20 7804.60 1.40 Area code : 2
 FDEPTH: 86 84 GearCond.code:
 SDEPTH: 86 84 Validity code:
 Towing dir: 25° Wire out: 400 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 110.00 CATCH/HOUR: 220.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Pagellus bellottii</i>	68.00	1738	31.27	06
<i>Chelidonichthys gabonensis</i>	44.00	1320	20.00	
<i>Saurida brasiliensis</i>	15.20	4964	6.91	
<i>Dentex macrophthalmus</i>	12.00	640	5.82	92
<i>Chelidonichthys capensis</i>	12.00	88	5.45	
<i>Sepia officinalis hierraada</i>	12.00	112	5.45	90
<i>Trachurus trache</i>	9.60	656	4.36	89
<i>Citharus linguatula</i>	8.00	336	3.64	
<i>Dentex angolensis</i>	7.20	56	3.27	
<i>Lagocephalus laevigatus</i>	6.40	8	2.91	
<i>Zeus faber</i>	4.80	32	2.18	
<i>Fistularia petiata</i>	4.00	8	1.82	
<i>Dentex gibbosus</i>	4.00	16	1.82	
<i>Dentex barnardi</i>	4.00	16	1.82	
<i>Illex coindetii</i>	4.00	224	1.82	91
<i>Alloteuthis africana</i>	2.40	480	1.09	
<i>Arnoglossus imperialis</i>	0.40	16	0.18	
<i>Spicara alta</i>	0.40	32	0.18	
Total	220.00		99.99	

PROJECT STATION 241

DATE: 1/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1207
 start stop duration Long E 1328
 TIME :10:17:00 10:47:00 30 (min) Purpose code: 3
 LOG. :7814.40 7815.90 1.50 Area code : 2
 FDEPTH: 100 96 GearCond.code:
 BDEPTH: 100 96 Validity code:
 Towing dir: 25° Wire out: 450 m Speed: 3 kn*10

Sorted: Kg Total catch: 71.75 CATCH/HOUR: 143.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	numbers		
Dentax angolensis	41.00	198	28.57	
Dentax carnardi	20.80	64	14.49	
Chelidonichthys capensis	18.80	160	13.10	
Sepia officinalis hiarredda	15.80	150	11.01	94
Pagellus belletii	12.20	274	8.50	93
Sparus pagrus africanus	8.20	22	5.71	
Branchiostegus semifasciatus	6.60	6	4.60	
Allotretus africana	6.00	430	4.18	
Octopus vulgaris	3.00	10	2.09	
Dicelocoglossa hexophthalma	2.40	2	1.67	
Dentax canariensis	2.40	2	1.67	
Zeus ficer	2.00	8	1.39	
Citharus linguatula	1.80	50	1.25	
Raja miraletus	1.20	2	0.84	
Dentax gibbosus	0.60	2	0.42	
Chelidonichthys gabonensis	0.60	6	0.42	
Perulibatrachus rosignoli	0.40	2	0.28	
Lagocephalus laevigatus	0.40	2	0.28	
Arnoglossus imperialis	0.40	56	0.28	
Dentax macrophthalma	0.40	4	0.28	
Arnoglossus capensis	0.30	48	0.21	
Serranus africana	0.20	12	0.14	
Saurida brasiliensis	0.20	26	0.14	
Total	145.70		101.52	

PROJECT STATION 242

DATE: 1/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1201
 start stop duration Long S 1331
 TIME :11:45:00 12:15:00 30 (min) Purpose code: 3
 LOG :7822.40 7823.80 1.40 Area code : 2
 FDEPTH: 101 103 GearCond.code:
 BDEPTH: 101 103 Validity code:
 Towing dir: 20° Wire out: 450 m Speed: 3 kn*10

Sorted: 50 Kg Total catch: 136.56 CATCH/HOUR: 273.12

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sparus psgrus africanus	56.64	154	20.74	96
Dentex canariensis	34.64	4	12.60	
Dentex angolensis	30.24	126	11.07	95
Chelidonichthys gatonensis	28.60	510	10.47	
Dentex zircosus	24.74	32	9.06	
Sepia officinalis hierredda	19.24	26	7.04	
Lagocephalus laevigatus	14.84	22	5.43	
Dentex barnardi	13.74	26	5.03	
Chelidonichthys capensis	11.00	70	4.03	
Pagellus bellettii	8.24	104	3.02	
Dentex congolensis	6.04	48	2.21	
Saurida brasiliensis	4.94	620	1.81	
Citharus linguatula	4.40	70	1.61	
Alloteuthis africana	3.84	104	1.41	
Branchiostegus semifasciatus	3.84	4	1.41	
Chaetodon hoelleri	2.20	10	0.81	
Scorpaena normani	2.20	4	0.81	
Xenopus (fish)	1.64	4	0.60	
Uranoscopus polli	1.64	10	0.60	
Trachurus trachurus	0.26	4	0.10	
Spicara alta	0.06	4	0.02	
Total	-----	273.98	-----	99.96

PROJECT STATION 243

DATE: 1/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1201
 Long E 1335
 start stop Duration
 TIME :13:10:00 13:40:00 30 (min) Purpose code: 3
 LCG :7829.00 7631.10 1.30 Area code : 2
 FDEPTH: 74 70 GearCond.code:
 BDEPTH: 74 70 Validity code:
 Towing dir: 20° Wire out: 300 m Speed: 3 kn*10

Sorted: 33 Kg Total catch: 99.06 CATCH/HOUR: 198.12

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	Numbers		
<i>Chelidonichthys capensis</i>	51.00	462	25.74	
<i>Pagellus bellottii</i>	30.00	1224	15.14	97
<i>Sepia officinalis hierreda</i>	30.00	102	15.14	
<i>Citharus linguatula</i>	25.80	960	13.02	
<i>Alloceuthis africana</i>	12.00	516	6.06	
<i>Dentex barnardi</i>	6.00	72	3.03	
<i>Sphyræna sphyraena</i>	6.00	18	3.03	
<i>Chelidonichthys gabonensis</i>	5.40	150	2.73	
<i>Lagocephalus laevisatus</i>	5.40	12	2.73	
<i>Balistes capricus</i>	4.80	24	2.42	
<i>Raja miraletus</i>	4.80	12	2.42	
<i>Zeus faber</i>	3.60	18	1.82	
<i>Trichiurus lepturus</i>	3.60	6	1.82	
<i>Todarodes sagittatus</i>	2.40	66	1.21	
<i>Octopus vulgaris</i>	2.40	0	1.21	
<i>Pseudupeneus prayensis</i>	2.40	12	1.21	
<i>Saurida brasiliensis</i>	1.20	78	0.61	
<i>Fistularia petimba</i>	0.60	12	0.30	
<i>Chaetodon boefferi</i>	0.60	6	0.30	
<i>Trachurus trecae</i>	0.06	6	0.03	
<i>Boops boops</i>	0.06	6	0.03	
<i>Arnoglossus imperialis</i>	0.00	12		
<i>Arnoglossus capensis</i>	0.00	12		
<i>Spicara alta</i>	0.00	12		
<i>Microchirus boscanion</i>	0.00	12		
Total	198.12		100.00	

PROJECT STATION 244

DATE: 1/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 1204
 start stop duration Long E 1341
 TIME :14:30:00 15:00:00 30 (min) Purpose code: 3
 LOG :7838.00 7839.20 1.20 Area code : 2
 FDEPTH: 29 27 GearCond.code:
 BDEPTH: 29 27 Validity code:
 Towing dir: 20° Wire out: 100 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 180.60 CATCH/HOUR: 361.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	222.00	16548	61.46	96
Engraulis encrasicolus	50.40	6164	13.95	99
Balistes capricus	16.80	72	4.68	
Galeoides decadactylus	15.60	48	4.32	
Trichiurus lepturus	15.60	1080	4.32	
Pseudotolithus senegalensis	12.00	24	3.32	
Sphyræna guachancho	12.00	24	3.32	
Salene dorsalis	6.00	1560	1.66	
Sepia orbignyana	3.60	12	1.00	
Trachurus trachæ	2.40	144	0.66	
Sardinella maderensis	1.20	12	0.33	
Fistularia petimba	1.20	12	0.33	
Pteroscion cell	1.20	24	0.33	
Lagocephalus laevigatus	1.20	24	0.33	
Total	180.60	36120	100.00	

PROJECT STATION 245

DATE: 1/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 1207
 start stop duration Long E 1336
 TIME :16:05:00 16:35:00 30 (min) Purpose code: 3
 LOG :7848.20 7849.40 1.20 Area code : 2
 FDEPTH: 61 59 GearCond.code:
 BDEPTH: 61 59 Validity code:
 Towing dir: 20° Wire out: 250 m Speed: 3 kn*10

Sorted: 56 Kg Total catch: 1396.25 CATCH/HOUR: 2792.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	2500.00	156250	89.83	100
Pagellus bellottii	60.00	1250	2.15	
Trachurus trachæ	35.00	1650	1.25	
Balistes capricus	30.00	150	1.07	
Citharus linguatula	25.00	500	0.90	
Dentex canariensis	25.00	550	0.90	
Trichiurus lepturus	25.00	250	0.90	
Pomadourys incisus	20.00	150	0.72	
Raja miraletus	20.00	50	0.72	
Grammoplites gruvelli	20.00	250	0.72	
Umbrina canariensis	15.00	150	0.54	
Salene dorsalis	10.00	100	0.36	
Parapenaeus longirostris	5.00	350	0.18	
Sepia orbignyana	2.50	50	0.09	
Total	2792.50	100000	100.00	

PROJECT STATION 246

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 1143
 start stop duration Long E 1323
 TIME :00:15:00 01:15:00 60 (min) Purpose code: 3
 LOG :7922.00 7925.00 3.00 Area code : 2
 FDEPTH: 299 293 GearCond.code:
 BDEPTH: 299 293 Validity code:
 Towing dir: 345° Wire out:1000 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 653.20 CATCH/HOUR: 653.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	241.50	17250	36.97	101
Chlorophthalmus atlanticus	184.00	6072	28.17	102
Lepidion sp.	101.20	1840	15.45	
Scorpaena normani	41.40	759	6.34	
Squalus megalops	29.90	782	4.58	
Pterothrissus belloci	16.10	115	2.46	
Merluccius polli	13.00	115	2.11	
Loligo vulgaris	0.90	26	1.06	
Pythonichthys microphtalmus	0.90	92	1.06	
Parapenaeus longirostris	0.90	874	1.06	
Ocellorhynchus coelorhynchus	4.60	69	0.70	
Total	653.20		100.00	

PROJECT STATION 247

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 1150
 start stop duration Long E 1326
 TIME :03:05:00 04:05:00 60 (min) Purpose code: 3
 LOG :7939.30 7941.70 3.00 Area code : 2
 FDEPTH: 300 293 GearCond.code:
 BDEPTH: 300 293 Validity code:
 Towing dir: 343° Wire out:1000 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 591.10 CATCH/HOUR: 591.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chlorophthalmus atlanticus	402.50	10733	68.06	104
Synagrops microlepis	99.70	42159	15.18	103
Lepidion sp.	64.40	1219	10.89	105
Merluccius polli	16.10	46	2.72	
Scorpaena normani	11.50	230	1.95	
Squalus megalops	2.30	89	0.39	
Pythonichthys microphtalmus	2.30	23	0.39	
Parapenaeus longirostris	2.30	475	0.39	
Total	591.10		100.00	

PROJECT STATION 248

DATE: 2/ 5/89 GEAR TYPE: DT No:1 POSITION:Lat 1153
 start stop duration LONG 1031
 TIME :07:04:00 07:34:00 30 (min) Purpose code: 3
 LOG :7954.40 7955.90 1.50 Area code : 2
 FDEPTH: 100 100 GearCond.code:
 SDEPTH: 100 100 Validity code:
 Towing dir: 337° Wire out: 750 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 447.90 CATCH/HOUR: 895.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	264.60	18820	29.55	109
Dentex angolensis	126.78	404	14.15	106
Dentex macrophthalmus	121.44	684	13.56	107
Merluccius polli	93.42	1432	10.43	
Parapaneus longirostris	46.70	5662	5.21	108
Zenopsis conchifer	46.70	570	5.21	
Spicara alta	43.50	154	4.86	
Todarodes sagittatus	37.36	528	4.17	
Chlorophthalmus atlanticus	34.24	3114	3.82	
Gembrops grayi	24.90	248	2.78	
Pterotrissus talloei	21.78	124	2.43	
Sepia officinalis hierrada	9.34	216	1.04	
Malacocephalus occidentalis	9.34	342	1.04	
Foncinus kuhlii	6.22	30	0.69	
Ammoglossus capensis	6.22	186	0.69	
Trigla lyra	3.10	36	0.35	
Peristredion cataphractum	0.00	36		
Total	447.90		895.80	

PROJECT STATION 249

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1154
 start stop duration Long E 1334
 TIME :08:45:00 09:15:00 30 (min) Purpose code: 3
 LON :7963.10 7964.40 1.50 Area code : 2
 FDEPTH: 98 98 GearCond.code:
 SDEPTH: 98 98 Validity code:
 Towing dir: 24' Wire out: 450 m Speed: 2 kn*10

Sorted: 31 Kg Total catch: 599.50 CATCH/HOUR: 1199.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trcae	739.00	29670	61.63	110
Chelidonichthys gabonensis	95.20	2742	7.94	
Dentex macrophthalmus	87.60	2704	7.31	111
Citharus linguatula	43.60	1408	3.80	
Epia officinalis hierredus	41.90	532	3.49	112
Dentex angolensis	41.80	342	3.49	
Saurida brasiliensis	38.00	2096	3.17	
Pagellus bellottii	26.60	380	2.22	
Zeus faber	22.80	152	1.90	
Todarodes sagittatus	22.80	952	1.90	
Spicara alta	19.00	190	1.58	
Chelidonichthys capensis	7.60	38	0.63	
OPHIDIIDAE	3.80	38	0.32	
Pterotrissus belloti	3.80	38	0.32	
Merluccius polli	1.90	38	0.15	
GOBIIDAE	1.90	952	0.15	
Arnoglossus imperialis	0.00	38		
Total	1199.50	100000	100.00	

PROJECT STATION 250

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1155
 start stop duration Long E 1339
 TIME :10:13:00 10:43:00 30 (min) Purpose code: 3
 LOG :9970.20 9971.40 1.50 Area code : 2
 FDEPTH: 07 05 GearCond.code:
 BDEPTH: 07 05 Validity code:
 Towing dir: 15' Wire out: 300 m Speed: 2 Kn*10

Sorted: 37 Kg Total catch: 109.50 CATCH/HOUR: 219.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Sepia officinalis</i> <i>hierredda</i>	60.00	156	27.40	115
<i>Citharus linguatula</i>	45.60	908	20.82	
<i>Pagellus bellottii</i>	28.80	684	13.15	114
<i>Raja miraletus</i>	21.00	30	9.59	
<i>Chelidonichthys capensis</i>	15.60	144	7.12	
<i>Dentex barnardi</i>	12.60	264	5.75	113
<i>Balistes capricornis</i>	9.60	48	4.38	
<i>Dentex angolensis</i>	7.80	66	3.56	
<i>Alloteuthis africana</i>	5.40	1162	2.47	
<i>Zeus faber</i>	3.00	12	1.37	
<i>Chelidonichthys gatorensis</i>	3.00	120	1.37	
<i>Dentex gibbosus</i>	2.40	6	1.10	
<i>Dentex macrophtalmus</i>	1.20	42	0.55	
<i>Chaetodon noefleri</i>	1.20	6	0.55	
<i>Serranus cabrilla</i>	0.60	6	0.27	
<i>Todarodes sagittatus</i>	0.60	12	0.27	
<i>Saurida brasiliensis</i>	0.60	120	0.27	
<i>Sparus pagrus africanus</i>	0.00	6		
<i>Arnoglossus capensis</i>	0.00	12		
<i>Fistularia petiata</i>	0.00	12		
<i>Arnoglossus imperialis</i>	0.00	12		
Total	109.50	2190	99.99	

PROJECT STATION 253

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1146
 start stop duration Long E 1340
 TIME :14:25:00 14:55:00 30 (min) Purpose code: 3
 LOG :7993.00 7994.00 1.50 Area code : 2
 FDEPTH: 61 59 GearCond.code:
 BDEPTH: 61 59 Validity code:
 Towing dir: 5° Wire out: 250 m Speed: 2 kn*10
 Sorted: 26 Kg Total catch: 1258.70 CATCH/HOUR: 2517.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trachurus trachus	1632.00	76160	64.83	117
Brachydeuterus auritus	480.00	10642	19.07	118
Balistes capricornis	96.00	480	3.81	
Pagellus bellottii	86.40	1152	3.43	
Chelidonichthys capensis	48.00	288	1.91	
Dentex bernardus	48.00	288	1.91	
Sepia officinalis nierredae	48.00	480	1.91	
Citharus linguatula	38.40	1344	1.53	
Grammolites gruvelli	19.20	288	0.76	
Saurida brasiliensis	9.60	672	0.38	
Trichiurus lepturus	9.60	96	0.38	
Epinephelus aeneus	2.20	2	0.09	
Total	1258.70	2517.40	100.01	

PROJECT STATION 254

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1147
 start stop duration Long E 1334
 TIME :16:00:00 16:30:00 30 (min) Purpose code: 3
 LOG :8002.50 8004.20 1.50 Area code : 2
 FDEPTH: 98 96 GearCond.code:
 BDEPTH: 98 96 Validity code:
 Towing dir: 355° Wire out: 400 m Speed: 3 kn*10
 Sorted: 27 Kg Total catch: 119.70 CATCH/HOUR: 239.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Dentex angolensis	64.80	306	27.07	119
Chelidonichthys capensis	56.60	476	23.64	
Dentex canariensis	27.00	8	11.28	
Chelidonichthys gabonensis	13.50	324	5.64	
Octopus vulgaris	13.50	630	5.64	
Dentex macrophthalmus	10.80	44	4.51	
Pagellus bellottii	9.00	198	3.76	
Citharus linguatula	9.00	342	3.76	
Zaus faber	9.00	8	3.76	
Uranoscopus polli	6.30	26	2.63	
Sepia officinalis nierredae	5.40	80	2.26	
Sparus pagrus africanus	5.40	8	2.26	
Serranus cabrilla	2.70	8	1.13	
Sphyræna sphyraena	2.70	8	1.13	
Laemonema sp	1.80	8	0.75	
Saurida brasiliensis	0.90	80	0.38	
Arnoglossus imperialis	0.90	20	0.38	
Total	119.70	239.40	99.68	

PROJECT STATION 255

DATE: 07/5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1148
 Start Stop duration Long E 1338
 TIME 17:38:00 18:08:00 30 (min) Purpose code: 3
 LOG 8013.00 8014.50 1.50 Area code : 2
 FDEPTH: 200 199 GearCond.code:
 SDEPTH: 200 199 Validity code:
 Towing dir: 337° Wire out: 900 m Speed: 3 kn'10

Sorted: 27 Kg Total catch: 109.20 CATCH/HOUR: 218.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Merluccius polli</i>	68.00	1196	31.14	120
<i>Parapenaeus longirostris</i>	56.00	45640	25.64	121
<i>Synagrops microlepis</i>	38.40	3428	17.58	
<i>Chlorophtalmus atlanticus</i>	23.20	2552	10.62	
<i>Malacocephalus occidentalis</i>	8.00	208	3.66	
<i>Todarodes sagittatus</i>	7.20	128	3.30	
<i>Zenopsis conchifer</i>	6.40	64	2.93	
<i>Scylliorhinus stellaris</i>	2.40	64	1.10	
<i>Hoplunnis punctata</i>	1.60	16	0.73	
<i>Pterochrysis calloci</i>	1.60	16	0.73	
<i>Bamborops greyi</i>	0.80	16	0.37	
<i>Peristegion cataphractus</i>	0.80	48	0.37	
<i>Pontinus kunlil</i>	0.80	8	0.37	
<i>Sepia officinalis hierredda</i>	0.80	48	0.37	
<i>Arnoglossus capensis</i>	0.80	80	0.37	
CONGRIDAE	0.00			
<i>Squilla mantis</i>	0.00	8		
NYCTOPHIDAE	0.00	16		
<i>Saurida brasiliensis</i>	0.00	8		
Total	218.80		99.28	

PROJECT STATION 256

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1142
 start stop duration Long E 1324
 TIME :19:35:00 20:35:00 60 (min) Purpose code: 3
 LOC :8024.90 8028.00 3.00 Area code : 2
 FDEPTH: 301 300 GearCond.code:
 BDEPTH: 301 300 Validity code:
 Towing dir: 353° Wire out:1000 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 112.80 CATCH/HOUR: 112.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Chlorophthalmus atlanticus</i>	62.80	3425	55.67	
<i>Synagrops microlepis</i>	24.00	1650	21.28	
<i>Laemonema</i> sp	9.20	43	8.16	
<i>Parapenaeus longirostris</i>	6.00	4890	5.32	
<i>Callinectes</i> sp	2.40	40	2.17	
POLYCHAELIDAE	2.00	10	1.77	
<i>Centrarchops chapini</i>	2.00	16	1.77	
<i>Todarodes sagittatus</i>	1.60	24	1.42	
<i>Pontinus kunlii</i>	1.20	24	1.06	
<i>Pterothrissus belloci</i>	0.80	4	0.71	
<i>Trichiurus lepturus</i>	0.40	8	0.35	
<i>Malacocephalus laevis</i>	0.40	4	0.35	
<i>Coeloclinchus coeloclinchus</i>	0.00	4		
<i>Aristeus varidans</i>	0.00	4		
<i>Hoplunnis punctata</i>	0.00	4		
Total	112.80		99.99	

PROJECT STATION 257

DATE: 2/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1136
 start stop duration Long E 1320
 TIME :21:50:00 22:50:00 60 (min) Purpose code: 3
 LOC :8035.50 8038.60 3.00 Area code : 2
 FDEPTH: 350 351 GearCond.code:
 BDEPTH: 350 351 Validity code:
 Towing dir: 350° Wire out:1050 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 799.40 CATCH/HOUR: 799.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Merluccius polli</i>	404.30	1707	50.58	
<i>Parapenaeus longirostris</i>	103.90	42599	13.00	
<i>Malacocephalus occidentalis</i>	86.60	6350	10.83	
<i>Laemonema</i> sp	80.80	1326	10.11	
<i>Chlorophthalmus atlanticus</i>	43.30	980	5.42	
<i>Pterothrissus belloci</i>	31.70	144	3.97	
<i>Synagrops microlepis</i>	17.30	1384	2.16	
<i>Centroscymnus orepidater</i>	11.50	288	1.44	
<i>Callinectes</i> sp	11.50	173	1.44	
<i>Aristeus varidans</i>	5.70	230	0.71	
<i>Malacocephalus laevis</i>	2.90	28	0.35	
<i>Scyllorhinus stellaris</i>	0.00	28		
Total	799.40		100.01	

PROJECT STATION 258

DATE: 3/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1127
 start stop duration Long E 1323
 TIME :06:35:00 01:00:00 25 (min) Purpose code: 3
 LOG :8051.10 8052.10 1.25 Area code : 2
 FDEPTH: 448 446 GearCond.code: 5
 BDEPTH: 448 446 Validity code: 1
 Towing dir: 35° Wire out:1350 m Speed: 3 kn*10
 Sorted: 28 Kg Total catch: 279.00 CATCH/HOUR: 669.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius polli	384.00	1200	57.35	122
Parapenaeus longirostris	192.00	15648	28.67	
Aristeus varidens	21.60	936	3.23	
Plesiopeanaeus edwardsianus	16.80	792	2.51	
Coelorrhinus coelorrhinus	14.40	336	2.15	
Laemonea sp	12.00	720	1.79	
Squalus aegialops	9.60	192	1.63	
CADIDAE	9.60	312	1.43	
Lopholopes kempii	4.80	96	0.72	
Chlorophthalmus atlanticus	4.80	96	0.72	
Total	669.60		100.00	

PROJECT STATION 259

DATE: 3/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1136
 start stop duration Long E 1321
 TIME :06:40:00 07:40:00 60 (min) Purpose code: 3
 LOG :8064.10 8067.20 3.00 Area code : ?
 FDEPTH: 351 351 GearCond.code:
 BDEPTH: 351 351 Validity code:
 Towing dir: 350° Wire out:1050 m Speed: 3 kn*10
 Sorted: 26 Kg Total catch: 799.96 CATCH/HOUR: 799.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	267.10	15030	32.14	
Malacocephalus occidentalis	102.80	11022	12.85	
Merluccius polli	100.00	942	12.50	
Pterothrissus belloci	71.40	514	8.93	
Chlorophthalmus atlanticus	57.10	1314	7.14	
Nematocarcinus africanus	52.85	32132	6.61	
Parapandalus narval	52.85	32132	6.61	
Laemonea sp	51.40	942	6.43	
Parapenaeus longirostris	14.20	714	1.78	123
Centroscymnus crepidater	11.40	200	1.43	
Todarodes sagittatus	6.50	57	1.06	
Coelorrhinus coelorrhinus	6.50	55	1.06	
Callinectes sp	5.70	55	0.71	
Pontinus kuhlii	2.80	28	0.35	
MYCTOPHIDAE	2.80	1000	0.35	
Total	799.40		99.95	

PROJECT STATION 260

DATE: 3/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1142
 start stop duration Long E 1323
 TIME :09:15:00 10:15:00 60 (min) Purpose code: 3
 LOG :8098.50 8101.70 3.00 Area code : 2
 FDEPTH: 300 300 GearCond.code:
 BDEPTH: 300 300 Validity code:
 Towing dir: 350° Wire out:1000 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 1299.80 CATCH/HOUR: 1299.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	779.00	57362	59.93	124
Chlorophthalmus atlanticus	374.90	10364	28.84	
Laemonea sp	32.30	500	2.56	
Parapenaeus longirostris	20.80	3166	1.60	125
Coelorhynchus coelorhynchus	20.80	333	1.60	
Zenopsis conchifer	20.80	41	1.60	
Merluccius polli	18.60	166	1.28	
Todarodes sagittatus	12.50	125	0.96	
Portinus kuhlii	8.30	63	0.64	
Pterothrissus belloci	8.30	41	0.64	
Malacocephalus occidentalis	4.10	83	0.32	
Total	1299.40		99.97	

PROJECT STATION 261

DATE: 3/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1142
 start stop duration Long E 1326
 TIME :11:23:00 11:53:00 30 (min) Purpose code: 3
 LOG :8108.30 8109.70 1.50 Area code : 2
 FDEPTH: 200 200 GearCond.code:
 BDEPTH: 200 200 Validity code:
 Towing dir: 160° Wire cut: 800 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 358.52 CATCH/HOUR: 717.04

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	528.00	57582	73.64	126
Merluccius polli	96.00	1920	13.39	127
Todarodes sagittatus	38.40	960	5.36	
Parapenaeus longirostris	19.20	4248	2.68	
Zenopsis conchifer	16.60	264	2.34	
Dentex angolensis	7.20	24	1.00	
Chlorophthalmus atlanticus	4.80	456	0.67	
Sarda sarda	4.00	4	0.56	
Trichiurus lepturus	2.40	24	0.33	
Octopus vulgaris	0.24	24	0.03	
Total	717.04		100.00	

PROJECT STATION 262

DATE: 3/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 1141
 start stop duration Long S 1332
 TIME :12:58:00 13:28:00 30 (min) Purpose code: 3
 LOG :6117.10 6118.60 1.50 Area code : 2
 FDEPTH: 105 104 GearCond.code:
 BDEPTH: 105 104 Validity code:
 Towing dir: * Wire out: 450 m Speed: 3 kn*10
 Sorted: 32 Kg Total catch: 194.40 CATCH/HOUR: 386.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	240.00	92560	61.73	128
Saurida brasiliensis	27.60	3072	7.10	
Citharus linguatula	24.00	480	6.17	
Dentex angolensis	16.80	120	4.32	
Bretula barbata	12.00	12	3.09	
Chelidonichthys gabonensis	10.80	180	2.78	
Pagellus bellottii	9.60	66	2.47	
Chelidonichthys capensis	9.60	48	2.47	
Octopus vulgaris	7.20	72	1.85	
Pontinus kuhlii	4.80	36	1.23	
Zeus faber	4.80	36	1.23	
Todarodes sagittatus	4.80	144	1.23	
Auxis thazard	3.60	12	0.93	
Dentex macrophthalmus	3.60	48	0.93	
Merluccius polli	3.60	48	0.93	
Pterothrissus belloci	2.40	12	0.62	
Trachurus traca	2.40	36	0.62	
Trichiurus lepturus	1.20	12	0.31	
Total	386.80		100.01	

PROJECT STATION 263

DATE: 3/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 1141
 start stop duration Long E 1339
 TIME :14:33:00 15:03:00 30 (min) Purpose code: 3
 LOG :8127.00 8128.10 1.50 Area code : 2
 FDEPTH: 64 60 GearCond.code:
 SDEPTH: 64 60 Validity code:
 Towing dir: 350° Wire out: 250 m Speed: 3 kn*10

Sorted: 52 Kg Total catch: 778.50 CATCH/HOUR: 778.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Brachydeuterus auritus	255.00	1650	32.76	130
Trachurus crecae	195.00	10114	25.05	129
Balistes capricus	180.00	1110	23.12	
Selene dorsalis	30.00	224	3.85	
Citharus linguatula	22.50	584	2.89	
Ugerrus pallidus	21.00	914	2.70	
Raja miraletus	13.50	30	1.73	
Dentex congolensis	12.00	164	1.54	
Lagocephalus laevis	12.00	30	1.54	
Chelidonichthys capensis	10.50	60	1.35	
Dentax angolensis	6.00	270	0.77	
Octopus vulgaris	4.50	14	0.58	
Todarodes sagittatus	4.50	60	0.58	
Branchiostegus semifasciatus	4.50	14	0.58	
Saurias brasiliensis	3.00	150	0.39	
Chelidonichthys gabonensis	3.00	74	0.39	
Serranus caeruleus	1.50	14	0.19	
Fistularia petimba	0.00	14		
Total	778.50		100.01	

PROJECT STATION 264

DATE: 01/09/89 GEAR TYPE: BT No:1 POSITION: Lat S 1142
 start stop duration Long E 1345
 TIME : 16:05:00 16:35:00 30 (min) Purpose code: 3
 LOG : 7136.90 7138.00 1.50 Area code : 2
 DEPTH: 25 26 GearCond. code:
 WDEPTH: 25 26 Validity code:
 Towing dir: 340° Wire out: 125 m Speed: 3 kn/10

Sorted: 30 Kg Total catch: 180.00 CATCH/HOUR: 360.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Onlorhynchus chrysurus</i>	90.00	2260	25.00	131
<i>Brachydeuterus auritus</i>	82.80	3250	23.00	
<i>Arius neudolei</i>	36.00	24	10.00	
<i>Sphyrana guacnacho</i>	36.00	84	10.00	
<i>Galeorhinus decadactylus</i>	30.00	516	6.33	
<i>Pseudotolithus typus</i>	22.80	12	6.33	
<i>Rhinoplatys alcomaculatus</i>	12.00	12	3.33	
<i>Sphyrana sphyrana</i>	12.00	108	3.33	
<i>Pomadourys incisus</i>	6.40	48	2.33	
<i>Ballistes capriscus</i>	7.20	36	2.00	
<i>Cynoglossus canariensis</i>	6.00	12	1.67	
<i>Sardinella aurita</i>	4.80	24	1.33	
<i>Engraulis encrasicolus</i>	3.60	312	1.00	
<i>Salene dorsalis</i>	2.40	168	0.67	
<i>Sardinella sardensis</i>	2.40	48	0.67	
<i>Trachurus trachurus</i>	2.40	132	0.67	
<i>Trichiurus lepturus</i>	1.20	120	0.33	
Total	360.00		99.96	

PROJECT STATION 265

DATE: 07/29/89 GEAR TYPE: BT No:1 POSITION: Lat S 1137
 start stop duration Long E 1342
 TIME : 17:15:00 17:40:00 25 (min) Purpose code: 3
 LON : 0142.50 0142.50 1.25 Area code : 2
 FDEPTH: 33 33 GearCond.code: 5
 BDEPTH: 33 33 Validity code: 1
 Towing dir: 330° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 42.90 CATCH/HOUR: 102.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Fagellus colloctii</i>	29.76	612	26.90	132
<i>Oreidonichthys capensis</i>	21.60	137	20.98	
<i>Lagocephalus laevigatus</i>	6.40	12	6.16	
<i>Sepia officinalis hierreddi</i>	7.20	29	6.99	
<i>Balistes capricornis</i>	6.24	31	6.06	
<i>Aliciautnia africana</i>	6.00	1440	5.83	
<i>Dentex canariensis</i>	5.04	98	4.90	133
<i>Plectornynchus mediterraneus</i>	2.40	2	2.33	
<i>Pseudupeneus prayensis</i>	2.40	12	2.33	
<i>Epinephelus aeneus</i>	1.92	2	1.86	
<i>Sparus caeruleostictus</i>	1.44	2	1.40	
<i>Sycaeus micurus</i>	1.20	10	1.17	
<i>Fistularia petimba</i>	1.20	48	1.17	
<i>Trachinus armatus</i>	1.20	14	1.17	
<i>Sphyræna sphyraena</i>	1.20	2	1.17	
<i>Onsetodon hoefleri</i>	0.96	10	0.93	
<i>Cynoglossus canariensis</i>	0.96	2	0.93	
<i>Seriola carpenteri</i>	0.72	2	0.70	
TETRAODONTIDAE	0.72	19	0.70	
<i>Gramacoptes gruvelli</i>	0.72	7	0.70	
<i>Dicologlossa cuneata</i>	0.48	2	0.47	
<i>Epinephelus alexandrinus</i>	0.24	2	0.23	
<i>Scorpaena angolensis</i>	0.24	2	0.23	
<i>Sardinella maderensis</i>	0.24	2	0.23	
<i>Arnoglossus capensis</i>	0.24	10	0.23	
<i>Arnoglossus imperialis</i>	0.24	10	0.23	
Total	102.96		100.00	

PROJECT STATION 266

DATE: 3/ 5/89 GEAR TYPE: PT No: POSITION: Lat S 1144
 start stop duration Long S 1345
 TIME :20:31:00 21:31:00 60 (min) Purpose code: 1
 LOG :8158.80 8162.00 3.40 Area code : 2
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 25 24 Validity code:
 Towing dir: 6' Wire out: 150 m Speed: 3 kn*10
 Sorted: 36 Kg Total catch: 145.80 CATCH/HOUR: 145.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Brachydeuterus auritus	60.00	7320	41.15	
Chloroscombrus chrysurus	48.00	3808	32.92	134
Sphyraena guachancho	10.40	24	7.13	
Sardinella maderensis	8.40	424	5.76	135
Sardinella aurita	6.00	68	4.12	136
Rossetta incisa	3.20	8	2.19	
Sepia officinalis hierredda	2.00	4	1.37	
Trichurus lepturus	2.00	72	1.37	
Selene dorsalis	2.00	132	1.37	
Ilisha africana	1.20	5	0.82	
Agellus bellottii	1.00	4	0.69	
Hemiramphus calio	0.80	4	0.55	
Trachurus trcae	0.40	12	0.27	
Pseudis noctalis	0.40	8	0.27	
Total	145.80		99.98	

PROJECT STATION 267

DATE: 3/ 5/89 GEAR TYPE: PT No:14 POSITION: Lat S 1137
 start stop duration Long S 1342
 TIME :22:30:00 23:30:00 60 (min) Purpose code: 1
 LOG :8165.80 8168.80 3.00 Area code : 2
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 33 33 Validity code:
 Towing dir: * Wire out: 150 m Speed: 3 kn*10
 Sorted: 15 Kg Total catch: 62.00 CATCH/HOUR: 62.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Brachydeuterus auritus	25.20	3150	40.65	
Sardinella maderensis	12.80	404	20.65	137
Chloroscombrus chrysurus	10.00	616	16.13	
Sphyraena sphyraena	3.60	16	5.81	
Saurida brasiliensis	2.80	1020	4.52	
Sphyraena guachancho	2.80	92	4.52	
Ilisha africana	2.00	26	3.23	
Selene dorsalis	1.60	20	2.58	
Trachurus trcae	0.80	24	1.28	
Allothenia africana	0.40	92	0.65	
Total	62.00		100.03	

PROJECT STATION 268

DATE: 4/ 5/69 GEAR TYPE: PT No.2 POSITION: Lat S 1111
 start stop duration Long E 1343
 TIME : 04:10:00 04:40:00 30 (min) Purpose code: 1
 LOG : 8202.40 8203.90 1.50 Area code : 2
 FDEPTH: 25 15 GearCond.code:
 BDEPTH: 88 66 Validity code:
 Towing dir: 29° Wire out: 100 m Speed: 3 kn±10

Sorted: 58 Kg Total catch: 349.80 CATCH/HOUR: 699.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trcaae	600.00	5808	65.76	136
Sardinella aduereensis	24.00	108	3.43	139
Sepia officinalis nierredda	21.60	12	3.09	
Chloroscombrus chryseurus	21.60	180	3.09	
Brachydeuterus suritus	12.00	108	1.72	
Trichiurus lepturus	12.00	144	1.72	
Selene dorsalis	8.00	36	0.86	
Mesiramphus brasiliensis	2.40	12	0.34	
Total	----- 699.60		----- 100.01	

PROJECT STATION 269

DATE: 4/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1130
 start stop Duration Long E 1344
 TIME :07:36:00 08:06:00 30 (min) Purpose code: 3
 LOG :8231.70 8233.20 1.50 Area code : 2
 FDEPTH: 18 25 GearCond.code:
 GDEPTH: 18 25 Validity code:
 Towing dir: 270° Wire out: 200 m Speed: 3 kn*10

Sorted: 46 Kg Total catch: 317.30 CATCH/HOUR: 634.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	366.00	53374	57.67	
Pterorcion pelli	42.00	7620	6.62	
Sphyræna guachancho	40.80	74	6.43	140
Caletides decadactylus	34.80	744	5.48	
Trichiurus lepturus	26.40	288	4.16	
Selene dorsalis	16.80	188	2.65	
Pseudolithus typus	16.00	22	2.52	
Stromateus fiatola	13.00	16	2.05	
Sphyræna guachancho	10.80	444	1.70	
Selene dorsalis	10.80	3852	1.70	
Chloroscombrus chrysurus	8.40	240	1.32	
Ilisha africana	8.40	432	1.32	
Cynoglossus canariensis	7.20	36	1.13	
Sepia officinalis hierredda	4.80	12	0.76	
Sardinella maderensis	4.80	216	0.76	
Balistes capricus	3.60	12	0.57	
Pomadourys incisus	3.60	24	0.57	
Scomberomorus tritor	3.00	2	0.47	
Eucinostomus melanopterus	2.40	12	0.38	
Arius parkii	2.40	2	0.38	
Carcharinus signatus	2.00	2	0.32	
Penaeus notialis	1.20	12	0.19	
Pomadourys paroteti	1.00	2	0.16	
Lithognathus morayrus	1.00	2	0.16	
Sardinella maderensis	1.00	4	0.16	
Pegusa lascaris	0.40	4	0.06	
Total	632.60		99.89	

PROJECT STATION 270

DATE: 4/ 5/89 GEAR TYPE: BT No.1 POSITION: Lat S 1130
 start stop duration Long E 1337
 TIME :08:53:00 09:12:00 19 (min) Purpose code: 3
 LCG :8238.50 8239.30 1.00 Area code : 2
 FDEPTH: 38 38 GearCend.code:
 BDEPTH: 38 38 Validity code:
 Towing dir: 4° Wire out: 200 m Speed: 3 kn*10

Sorted: Kg Total catch: 47.55 CATCH/HOUR: 150.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
Pagellus bellottii	33.16	347	22.08	141
Epinephelus guaza	25.26	3	16.82	
Lutjanus gomeensis	13.69	16	9.25	
Epinephelus aeneus	12.95	6	8.62	
Dentex bernardii	10.11	18	6.73	
Sparus pagrus africanus	9.47	10	6.31	
Epinephelus alexandrinus	6.32	6	4.21	
Dentex canariensis	5.37	58	3.58	142
Sparus auriga	4.74	3	3.16	
Axius thazard	4.42	6	2.94	
Zeus faber	3.79	3	2.52	
Chaetodon hoefleri	3.79	22	2.52	
Trichlurus lepturus	3.47	3	2.31	
Bodianus speciosus	3.16	9	2.10	
Ballistes capricus	3.16	9	2.10	
Pseudupeneus prayensis	2.21	19	1.47	
Fistularia petimba	1.58	6	1.05	
TETRAODONTIDAE	1.58	41	1.05	
Chelidonichthys capensis	0.95	3	0.63	
Trachinus armatus	0.47	3	0.31	
Alloteuthis africana	0.32	161	0.21	
Spondyllosoma cantharus	0.00	3		
Total	150.17		99.97	

PROJECT STATION 271

DATE: 4/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat 1130
 start stop duration Long 1331
 TIME :10:30:00 11:00:00 30 (min) Purpose code: 3
 LOC :8248.40 8249.90 1.50 Area code : 2
 FDEPTH: 87 87 GearCond.code:
 BDEPTH: 87 87 Validity code:
 Towing dir: 340° Wire out: 400 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 300.50 CATCH/HOUR: 601.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Trachurus trache</i>	340.00	12580	56.57	143
<i>Brachydeuterus auritus</i>	160.00	3060	26.62	144
<i>Citharus linguatula</i>	24.00	280	3.99	
<i>Saurius brasiliensis</i>	20.00	2800	3.33	
<i>Dantex angolensis</i>	14.00	50	2.33	
<i>Synagrops microlepis</i>	10.00	1100	1.66	
CUBIIDAE	10.00	5000	1.66	
<i>Trichlurus lepturus</i>	8.00	180	1.33	
<i>Auxis thazard</i>	6.00	20	1.00	
<i>Parapenaeus longirostris</i>	4.00	720	0.67	
<i>Chelidonicichys gabonensis</i>	3.00	20	0.50	
<i>Zeus faber</i>	2.00	20	0.33	
Total	601.00		99.99	

PROJECT STATION 272

DATE: 4/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 1119
 start stop duration Long E 1335
 TIME :12:20:00 13:10:00 30 (min) Purpose code: 3
 LOC :8260.70 8263.20 1.50 Area code : 2
 FDEPTH: 52 47 GearCond.code: 5
 BDEPTH: 52 47 Validity code: 1
 Towing dir: 90° Wire out: 250 m Speed: 3 kn*10

Sorted: Kg Total catch: 32.15 CATCH/HOUR: 64.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Lagocephalus laevigatus</i>	21.00	36	32.66	
<i>Chelidonicichys gabonensis</i>	10.60	116	16.49	
<i>Epinephelus bananus</i>	9.00	4	14.00	
<i>Sepia officinalis Merredjo</i>	6.00	8	9.33	
<i>Trachinus armatus</i>	5.60	104	8.71	
<i>Torpedo torpedo</i>	2.40	2	3.73	
TETRAODONTIDAE	2.00	98	3.11	
<i>Zeus faber</i>	2.00	4	3.11	
<i>Seriola carpenteri</i>	1.40	4	2.16	
<i>Bothus podas africanus</i>	1.00	18	1.56	
<i>Chaetodon hoefleri</i>	0.80	4	1.24	
<i>Uranoscopus polli</i>	0.60	2	0.93	
<i>Citharus linguatula</i>	0.60	10	0.93	
<i>Pagellus bellocii</i>	0.40	16	0.62	
<i>Saurida brasiliensis</i>	0.40	26	0.62	
<i>Oleobotocoglossa naxosptenaima</i>	0.20	2	0.31	
<i>Fistularia petimba</i>	0.20	2	0.31	
<i>Trachurus trache</i>	0.10	2	0.16	
Total	64.30		100.00	

PROJECT STATION 273

DATE: 4/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1121
 start stop duration Long E 1340

TIME :14:08:00 14:38:00 30 (min) Purpose code: 3
 LOC :8270.10 8271.10 1.50 Area code : 2
 FDEPTH: 25 22 GearCond.code:
 BDEPTH: 25 22 Validity code:
 Towing dir: 350° Wire out: 125 m Speed: 3 kn*10

Sorted: Kg Total catch: 17.50 CATCH/HOUR: 35.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Alectis alexandrinus</i>	6.80	10	19.43	
<i>Sepia officinalis hierredda</i>	6.00	6	17.14	
<i>Epinephelus guaza</i>	6.00	2	17.14	
<i>Lagocephalus laevigatus</i>	5.00	6	14.29	
<i>Scomberomorus tritor</i>	3.00	4	8.57	
<i>Chelidonichthys capensis</i>	2.20	12	6.29	
<i>Cynoglossus canariensis</i>	1.80	4	5.14	
<i>Syacium micrurus</i>	1.60	8	4.57	
<i>Cynoglossus senegalensis</i>	1.00	2	2.86	
<i>Pegusa lascaris</i>	0.60	2	1.71	
<i>Trachinus armatus</i>	0.60	6	1.71	
<i>Balistes capricus</i>	0.40	2	1.14	
Total	35.00		99.99	

PROJECT STATION 274

DATE: 4/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1110
 start stop duration Long E 1337

TIME :15:50:00 16:20:00 30 (min) Purpose code: 3
 LOC :8282.20 8283.30 1.50 Area code : 2
 FDEPTH: 112 109 GearCond.code:
 BDEPTH: 112 109 Validity code:
 Towing dir: 180° Wire out: 450 m Speed: 3 kn*10

Sorted: 34 Kg Total catch: 790.05 CATCH/HOUR: 1580.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Synagrops microlepis</i>	874.00	178256	55.31	145
<i>Trachurus trachae</i>	299.00	12172	18.92	146
<i>Pterothrissus belloci</i>	138.00	1702	8.73	
<i>Brotula barbata</i>	69.00	92	4.37	
<i>Dentax angolensis</i>	59.80	552	3.78	
<i>Branchiostegus semifasciatus</i>	46.00	46	2.91	
<i>Sepia officinalis hierredda</i>	23.00	92	1.46	
<i>Citharus linguatula</i>	18.40	230	1.16	
<i>Uranoscopus cadonati</i>	13.80	92	0.87	
<i>Scorpaena normani</i>	13.80	184	0.87	
<i>Chelidonichthys gabonensis</i>	9.20	92	0.58	
<i>Brachydautarus auritus</i>	9.20	46	0.58	
<i>Baetrops heterurus</i>	4.60	46	0.29	
<i>Zeus faber</i>	2.30	46	0.15	
Total	1580.10		99.98	

PROJECT STATION 275

DATE: 4/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1110
 start stop duration Long S 1347
 TIME :17:35:00 18:05:00 30 (min) Purpose code: 3
 LCG :8293.20 8294.80 1.50 Area code : 2
 FDEPTH: 50 48 GearCond.code:
 BDEPTH: 50 48 Validity code:
 Towing dir: 20° Wire out: 200 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 898.79 CATCH/HOUR: 1797.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	1244.00	52870	69.20	147
Trichiurus lepturus	304.78	1928	16.96	
Argyrosomus hololepidotus	93.30	314	5.19	
CUBIIDAE	31.10	19404	1.73	
Trachurus trachus	31.10	434	1.73	
Pteroscion peli	24.88	434	1.38	
Pagellus bellottii	24.88	124	1.38	
Galeoides decadactylus	12.44	124	0.69	
Grammolites gruvelli	6.22	62	0.35	
Sepia officinalis hierredda	6.22	188	0.35	
Todarodes sagittatus	6.22	62	0.35	
Citharus linguatula	6.22	62	0.35	
Selene dorsalis	6.22	124	0.35	
Parapenaeus longirostris	0.00	440		
Dentex canariensis	0.00	62		
Total	1797.58		100.01	

PROJECT STATION 276

DATE: 4/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1052
 start stop duration Long S 1324
 TIME :23:30:00 00:30:00 60 (min) Purpose code: 3
 LCG :8340.90 8343.20 3.00 Area code : 2
 FDEPTH: 198 196 GearCond.code:
 BDEPTH: 198 196 Validity code:
 Towing dir: 320° Wire out: 800 m Speed: 3 kn*10

Sorted: 25 Kg Total catch: 125.00 CATCH/HOUR: 125.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Parapenaeus longirostris	25.50	5100	20.40	
Merluccius polli	23.50	280	18.80	148
Chlorophthalmus atlanticus	22.50	1607	18.00	
Synagrops microlepis	20.00	360	16.00	149
Trichiurus lepturus	20.00	520	16.00	
Todarodes sagittatus	6.00	9	4.80	
Conger conger	2.50	25	2.00	
Macrurus sp.	2.50	105	2.00	
Pterothrissus belloci	1.50	10	1.20	
Zenopsis conchifer	0.50	5	0.40	
Malacocephalus laevis	0.50	60	0.40	
Total	125.00		100.00	

PROJECT STATION 277

DATE: 5/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1059
 start stop duration Long E 1327
 TIME :02:20:00 03:20:00 60 (min) Purpose code: 3
 LOG :8357.80 8359.50 3.00 Area code : 2
 FDEPTH: 400 392 GearCond.code:
 BDEPTH: 400 392 Validity code:
 Towing dir: 315° Wire out:1250 m Speed: 3 kn*10

Sorted: 24 Kg Total catch: 290.40 CATCH/HOUR: 290.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Parapenaeus longirostris	156.00	3900	53.72	
Merluccius polli	54.60	204	18.80	
Dibranchius atlanticus	27.60	2004	9.50	
Coelorinchus coelorhincus	12.00	624	4.13	
Gadella maraldi	9.60	132	3.31	
Squalus magalops	9.60	744	3.31	
MACROURIDAE	8.40	216	2.89	
Chlorophthalmus atlanticus	4.80	120	1.65	
Aristeus varidens	3.60	72	1.24	
Paraconger notialis	3.60	84	1.24	
Malacocephalus laevis	2.40	24	0.83	
Arnoglossus capensis	1.20	48	0.41	
Total	293.40		101.03	

PROJECT STATION 278

DATE: 5/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1056
 start stop duration Long E 1327
 TIME :04:35:00 05:35:00 60 (min) Purpose code: 3
 LOG :8363.50 8366.60 3.00 Area code : 2
 FDEPTH: 307 300 GearCond.code:
 BDEPTH: 307 300 Validity code:
 Towing dir: 140° Wire out:1000 m Speed: 3 kn*10

Sorted: 11 Kg Total catch: 399.96 CATCH/HOUR: 399.96

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chlorophthalmus atlanticus	181.80	4145	45.45	
Synagrops microlepis	47.26	3126	11.82	
Laemonea sp	36.36	545	9.09	
Parapenaeus longirostris	18.18	3272	4.55	
Pontinus kuhlii	18.18	181	4.55	
Prerotrissus bellocci	18.18	72	4.55	
POLYCHAETIDAE	18.18	2545	4.55	
Dantex macrophthalmus	14.54	36	3.64	
Merluccius polli	14.54	72	3.64	
MACROURIDAE	10.90	218	2.73	
Todarodes sagittatus	10.90	72	2.73	
Trichiurus lepturus	7.27	72	1.82	
Lophiodes keapi	3.63	36	0.91	
Buglossidium sp.	0.00	109		
Dibranchius atlanticus	0.00	145		
Coelorinchus coelorhincus	0.00	109		
Total	399.92		100.03	

PROJECT STATION 279

DATE: 5/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1100
 start stop duration Long E 1337
 TIME :07:21:00 08:01:00 30 (min) Purpose code: 3
 LOG :6379.50 6381.00 1.50 Area code : 2
 FDEPTH: 110 110 GearCond.code:
 BDEPTH: 110 110 Validity code:
 Towing dir: 350° Wire out: 500 m Speed: 3 kn*10

Sorted: 14 Kg Total catch: 235.60 CATCH/HOUR: 471.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex angolensis	218.20	544	46.31	150
Trachurus trachus	150.40	6016	31.92	151
Brachydeuterus auritus	19.20	112	4.07	
Brotula barbata	17.00	14	3.61	
Epinephelus goreensis	12.00	2	2.55	
Zeus faber	9.60	16	2.04	
Sepia orbignyana	6.00	96	1.70	
Todarodes sagittatus	6.40	64	1.36	
Citharus linguatula	6.40	96	1.36	
Chelidonichthys gazonensis	6.40	36	1.36	
Pterotrissus belloci	6.40	16	1.36	
Saurida brasiliensis	6.40	928	1.36	
Pagellus bellocii	3.60	16	0.76	
Monolepis microstoma	1.60	48	0.34	
Uranoscopus polli	0.00	16		
Total	471.60		100.10	

PROJECT STATION 280

DATE: 5/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1050
 start stop duration Long E 1342
 TIME :09:12:00 09:42:00 30 (min) Purpose code: 3
 LOG :6389.70 6391.20 1.50 Area code : 2
 FDEPTH: 71 84 GearCond.code:
 BDEPTH: 71 84 Validity code:
 Towing dir: 285° Wire out: 350 m Speed: 3 kn*10

Sorted: 25 Kg Total catch: 1999.87 CATCH/HOUR: 3999.74

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	3546.16	64458	88.71	152
Trachurus trachus	241.92	15320	6.05	153
Citharus linguatula	64.50	322	1.61	
Pagellus bellocii	64.50	322	1.61	
Umpina canariensis	24.18	322	0.60	
Dentex canariensis	24.18	2256	0.60	
Parapenaeus longirostris	16.12	2094	0.40	
COBIIDAE	16.12	322	0.40	
Total	3999.88		99.98	

PROJECT STATION 281

DATE: 5/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1053
 start stop duration Long E 1346
 TIME :11:50:00 12:20:00 30 (min) Purpose code: 3
 LCG :8409.70 8411.30 1.50 Area code : 2
 FDEPTH: 35 39 GearCond.code:
 BDEPTH: 35 39 Validity code:
 Towing dir: 294° Wire out: 175 m Speed: 3 kn*10

Sorted: 32 Kg Total catch: 296.20 CATCH/HOUR: 572.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	324.00	35050	56.60	154
Pseudotolithus sp	81.00	162	14.15	
Galeoides decadactylus	48.60	162	6.49	
Trichiurus lepturus	36.00	8352	6.29	
Selene dorsalis	23.40	756	4.09	
Sphyrana guachancho	18.00	54	3.14	
Ilisha africana	10.80	144	1.89	
Pterocacion peli	9.00	288	1.57	
Cynoglossus canariensis	5.40	36	0.94	
Sepia officinalis niarredua	3.60	18	0.63	
Chloroscomorus chrysurus	3.60	36	0.63	
Dicologlossa cuneata	3.60	72	0.63	
Citharus linguatula	3.60	36	0.63	
Grammoplites gruvelli	1.80	18	0.31	
Total	572.40		99.99	

PROJECT STATION 282

DATE: 5/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1050
 start stop duration Long E 1328
 TIME :13:10:00 13:50:00 30 (min) Purpose code: 3
 LCG :8419.00 8420.90 1.50 Area code : 2
 FDEPTH: 72 73 GearCond.code:
 BDEPTH: 72 73 Validity code:
 Towing dir: 334° Wire out: 300 m Speed: 3 kn*10

Sorted: 32 Kg Total catch: 704.00 CATCH/HOUR: 1408.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	680.00	13932	62.50	156
Trachurus trachurus	154.00	7964	10.64	155
Trichiurus lepturus	92.40	616	6.56	
Pagellus bellottii	52.80	1804	3.75	
Citharus linguatula	48.40	836	3.44	
Stromateus fiatola	44.00	44	3.13	
Umbrina canariensis	35.20	440	2.50	
Dentex angolensis	30.80	352	2.19	
Balistes capricornis	17.60	88	1.25	
Pterothrissus balloei	13.20	176	0.94	
Chalidionichthys capensis	13.20	44	0.64	
Selene dorsalis	8.80	44	0.63	
Dentex canariensis	8.80	88	0.63	
Uranoscopus polli	4.40	44	0.31	
Sparus pagrus africanus	4.40	44	0.31	
Total	1408.00		100.02	

PROJECT STATION 284

DATE: 5/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1036
 start stop duration Long E 1340
 TIME :17:05:00 17:35:00 30 (min) Purpose code: 3
 LOG :8446.30 8448.20 1.50 Area code : 2
 SDEPTH: 30 29 GearCond.code:
 BDEPTH: 30 29 Validity code:
 Towing dir: 335° Wire out: 125 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 117.40 CATCH/HOUR: 234.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	Numbers		
<i>Brachydeuterus auritus</i>	120.00	13128	51.11	150
<i>Sphyræna guachancho</i>	28.00	48	11.03	
<i>Coleoides decadactylus</i>	13.60	200	5.79	
<i>Arius parkii</i>	12.00	8	5.11	
<i>Chloroscomorus crysurus</i>	11.20	416	4.77	
<i>Sepia officinalis hierredda</i>	8.00	8	3.41	
<i>Leptocharias smithii</i>	6.40	8	2.73	
<i>Selene dorsalis</i>	6.40	176	2.73	
<i>Cynoglossus canariensis</i>	5.60	16	2.39	
<i>Pagellus bellottii</i>	5.60	40	2.39	
<i>Epinephelus senous</i>	4.80	8	2.04	
<i>Trichiurus lepturus</i>	4.00	128	1.70	
<i>Syacium micrurus</i>	1.60	8	0.68	
<i>Ilisha africana</i>	1.60	16	0.68	
<i>Trachurus trcae</i>	1.20	24	0.51	
<i>Dacaptus rhonchus</i>	1.20	24	0.51	
<i>Sardinella asderensis</i>	1.20	56	0.51	
<i>Dicolocoglossa cuneata</i>	0.80	8	0.34	
<i>Grammatites gruvelli</i>	0.80	16	0.34	
<i>Sardinella aurita</i>	0.80	8	0.34	
Total	234.80		100.01	

PROJECT STATION 285

DATE: 6/ 5/69 GEAR TYPE: BT No.1 POSITION: Lat S 1032
 start stop duration Long E 1307
 TIME :00:55:00 02:15:00 60 (min) Purpose code: 3
 LOG :8516.60 8520.30 3.00 Area code : 2
 FDEPTH: 304 300 GearCond.code: 5
 BDEPTH: 304 300 Validity code: 1
 Towing dir: 145° Wire out:1000 m Speed: 3.kn*10.

Sorted: 28 Kg Total catch: 1048.40 CATCH/HOUR: 1048.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Chlorophthalmus atlanticus</i>	851.00	15601	81.17	160
<i>Synagrops microlapis</i>	77.70	4070	7.41	159
<i>Parapenaeus longirostris</i>	37.00	6660	3.53	
<i>Laemonema laureysi</i>	25.90	370	2.47	
<i>Merluccius polli</i>	14.80	111	1.41	
<i>Scorpaena normani</i>	11.10	111	1.06	
<i>Zenopsis conchifar</i>	7.40	37	0.71	
<i>Grammoplichtes gruvelli</i>	3.70	37	0.35	
<i>Pterothrissus balloei</i>	3.70	37	0.35	
<i>Coelorinchus coelorrhincus</i>	3.70	74	0.35	
<i>Trichiurus lepturus</i>	3.70	111	0.35	
<i>Aristeus varidens</i>	1.30	66	0.12	
Total	1048.00		99.28	

PROJECT STATION 286

DATE: 6/ 5/69 GEAR TYPE: BT No.1 POSITION: Lat S 1040
 start stop duration Long E 1311
 TIME :03:45:00 04:45:00 60 (min) Purpose code: 3
 LOG :8528.80 8531.30 3.00 Area code : 2
 FDEPTH: 451 445 GearCond.code:
 BDEPTH: 451 445 Validity code:
 Towing dir: 140° Wire out:1350 m Speed: 3 kn*10

Sorted: 23 Kg Total catch: 46.60 CATCH/HOUR: 46.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Parapenaeus longirostris</i>	17.00	3060	36.48	
<i>Laemonema laureysi</i>	10.00	112	21.46	
<i>Aristeus varidens</i>	5.80	296	12.45	161
<i>Merluccius polli</i>	4.00	16	8.58	
<i>Malacocephalus laevis</i>	2.00	94	4.29	
<i>Loligo vulgaris</i>	1.60	12	3.43	
<i>Coelorinchus coelorrhincus</i>	1.60	28	3.43	
<i>Chaunax pictus</i>	1.40	28	3.00	
<i>Conger conger</i>	1.40	44	3.00	
<i>Squalus aegialops</i>	1.00	22	2.15	
<i>Pleuropenaeus edwardsianus</i>	0.40	12	0.86	162
<i>Dibranchius atlanticus</i>	0.40	14	0.86	
Total	46.60		99.99	

PROJECT STATION 287

DATE: 6/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1040
 start stop duration Long E 1320
 TIME :06:45:00 07:35:00 30 (min) Purpose code: 3
 LOC :0546.40 0549.00 1.50 Area code : 2
 FDEPTH: 121 122 GearCond.code:
 BDEPTH: 121 122 Validity code:
 Towing dir: 315° Wire out: 550 m Speed: 3 kn*10

Sorted: 32 Kg Total catch: 1717.75 CATCH/HOUR: 3435.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	2144.00	288356	62.43	164
Trachurus treceae	1018.78	45116	29.65	163
Saurida brasiliensis	85.78	10402	2.50	
Sepia officinalis hierredda	50.62	536	1.56	
Todarodes sagittatus	42.88	442	1.25	
Peristedion cataphractus	21.44	214	0.62	
Pterothrissus belloci	21.44	214	0.62	
Dentex angolensis	19.00	84	0.55	165
Broctula barosta	17.00	18	0.49	
Citharus linguatula	10.72	320	0.31	
Gibranchus atlanticus	0.00	106		
Total	3435.46		99.98	

PROJECT STATION 288

DATE: 6/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1034
 SCAFF stop Duration Long E 1327
 TIME :09:00:00 09:30:00 30 (min) Purpose code: 3
 LOC :8559.90 8561.50 1.50 Area code : 2
 FDEPTH: 69 69 GearCond.code:
 DDEPTH: 69 69 Validity code:
 Towing dir: 335° Wire out: 300 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 61.80 CATCH/HOUR: 123.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex angolensis	32.00	228	25.89	166
Fagellus balleotii	18.00	1308	14.56	168
Citharus linguatula	16.00	272	12.94	169
Sepia officinalis hierreda	14.00	12	11.33	
Dentex canariensis	14.00	272	11.33	167
Chelidonicthys capensis	9.20	68	7.44	
Zaus faber	6.00	28	4.85	
Spheroidea sp	2.40	164	1.94	
Sepia officinalis hierreda	2.00	64	1.62	
Dentex macropthalmus	2.00	4	1.62	
Alloteuthis africana	1.60	1676	1.29	
Raja miraletus	1.20	4	0.97	
Pegusa lascaris	1.00	4	0.81	
Braconydeuterus auritus	0.80	24	0.65	
Selene dorsalis	0.80	4	0.65	
Balistes capricus	0.80	4	0.65	
Chaetodon hoefleri	0.80	4	0.65	
Gammoplites gruvell	0.40	8	0.32	
Trachurus tracas	0.40	16	0.32	
Sardinella aurita	0.20	4	0.16	
Fistularia petimba	0.00	4		
Boops boops	0.00	12		
Total	----- 123.60		----- 99.99	

PROJECT STATION 289

DATE: 6/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1030
 start stop duration Long E 1333
 TIME :10:50:00 11:20:00 30 (min) Purpose code: 3
 LOG :5571.60 8572.90 1.50 Area code : 2
 FDEPTH: 24 29 GearCond.code:
 RDEPTH: 24 29 Validity code:
 Towing dir: 300° Wire out: 100 m Speed: 3 kn*10

Sorted: Kg Total catch: 26.65 CATCH/HOUR: 53.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Salene dorsalis</i>	11.40	30	21.36	
<i>Leptocharias saithii</i>	11.00	12	20.64	
<i>Alectis alexandrinus</i>	6.20	6	11.63	
<i>Sphyrana guachancho</i>	4.00	4	7.50	
<i>Pagellus baliottii</i>	3.40	52	6.38	
<i>Balistes capricus</i>	2.40	8	4.50	
<i>Pseudasys peroteti</i>	2.40	6	4.50	
<i>Sepia officinalis hierredda</i>	2.00	2	3.75	
<i>Scorpaenomorrus tritor</i>	2.00	2	3.75	
<i>Chloroscombrus chrysurus</i>	1.60	5	3.00	
<i>Brachydeuterus auritus</i>	1.40	400	2.63	
<i>Alloteuthis africana</i>	1.20	318	2.25	
<i>Caranx senegalensis</i>	1.20	2	2.25	
<i>Raja miraletus</i>	1.00	2	1.88	
<i>Trachinotus goreensis</i>	1.00	2	1.88	
<i>Lagocephalus laevigatus</i>	0.80	2	1.50	
<i>Citharus linguatula</i>	0.20	8	0.38	
<i>Dacapturus rhynchus</i>	0.10	2	0.19	
Total	53.30		100.00	

PROJECT STATION 290

DATE: 6/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1021
 start stop duration Long E 1330
 TIME :12:35:00 13:05:00 30 (min) Purpose code: 3
 LOG :6583.40 8585.00 1.50 Area code : 2
 FDEPTH: 23 22 GearCond.code:
 RDEPTH: 23 22 Validity code:
 Towing dir: 350° Wire out: 100 m Speed: 3 kn*10

Sorted: Kg Total catch: 8.95 CATCH/HOUR: 17.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Sepia orbignyana</i>	8.00	12	44.69	
<i>Lagocephalus laevigatus</i>	3.00	4	16.76	
<i>Brachydeuterus auritus</i>	2.20	1100	12.29	
<i>Mustelus austelus</i>	2.00	2	11.17	
<i>Alectis alexandrinus</i>	1.00	2	5.59	
<i>Cynoglossus canariensis</i>	1.00	2	5.59	
<i>Dicologlossa cuneata</i>	0.40	4	2.23	
<i>Pagellus baliottii</i>	0.20	2	1.12	
<i>Trachurus trachurus</i>	0.10	2	0.56	
Total	17.90		100.00	

PROJECT STATION 292

DATE: 6/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1027
 start stop duration Long E 1317
 TIME :15:42:00 16:12:00 30 (min) Purpose code: 3
 LOG :8603.90 8605.20 1.50 Area code : 2
 FDEPTH: 95 96 GearCond.code:
 BDEPTH: 95 96 Validity code:
 Towing dir: 318° Wire out: 400 m Speed: 3 kn*10

Sorted: 9 Kg Total catch: 103.95 CATCH/HOUR: 207.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trecae	52.80	2402	25.40	171
Chelidonichthys gabonensis	44.00	814	21.16	
Pagellus bellottii	30.80	858	14.81	
Citharus linguatula	22.00	594	10.58	
Zeus faber	11.00	22	5.29	
Saurida brasiliensis	11.00	1144	5.29	
Todarodes sagittatus	8.80	44	4.23	
Chelidonichthys capensis	8.80	66	4.23	
Sepia officinalis hierredda	6.60	66	3.17	
Raja miralatus	6.60	22	3.17	
Pterothrissus belloci	4.40	22	2.12	
Sardinella aurita	1.10	22	0.53	
Scoops scoops	0.00	22		
Total	207.90		99.99	

PROJECT STATION 293

DATE: 6/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1030
 start stop duration Long E 1319
 TIME :17:28:00 17:58:00 30 (min) Purpose code: 3
 LOG :8615.80 8615.80 1.50 Area code : 2
 FDEPTH: 150 151 GearCond.code:
 BDEPTH: 150 151 Validity code:
 Towing dir: 335° Wire out: 650 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 452.20 CATCH/HOUR: 904.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops microlepis	721.00	59342	79.72	172
Saurida brasiliensis	54.78	5450	6.06	
Todarodes sagittatus	25.94	604	2.87	173
Citharus linguatula	23.06	258	2.55	
Sepia officinalis hierredda	14.42	144	1.59	
Squatina oculata	14.42	28	1.59	
Dentex angolensis	14.42	56	1.59	
Pterothrissus belloci	11.52	114	1.27	
Bemrops greyi	5.76	56	0.64	
Chelidonichthys gabonensis	2.88	28	0.32	
Uranoscopus polli	2.88	28	0.32	
Chlorophthalmus agassizi	2.88	1470	0.32	
Trachurus trecae	2.88	28	0.32	
Parapanaeus longirostris	2.88	402	0.32	
Echeneis naucrates	2.60	4	0.29	
Euchynnus alletteratus	2.00	2	0.22	
Total	904.32		99.99	

PROJECT STATION 294

DATE: 6/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1025
 start stop duration Long E 1259
 TIME : 21:12:00 22:12:00 60 (min) Purpose code: 3
 LOG : 8630.90 8634.00 3.00 Area code : 2
 FDEPTH: 451 450 GearCond.code:
 BDEPTH: 451 450 Validity code:
 Towing dir: 335° Wire out: 1350 m Speed: 3 kn*10

Sorted: 39 Kg Total catch: 609.43 CATCH/HOUR: 609.43

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius polli	545.30	1160	89.48	175
Laemonema sp	15.58	171	2.56	
Aristeus varidans	9.60	494	1.58	174
Plesionectes edwardsianus	7.79	124	1.28	
Chaunax pictus	6.23	93	1.02	
Coelorhynchus coelorhynchus	6.23	77	1.02	
Malacocephalus occidentalis	4.67	202	0.77	
Dibranchius atlanticus	4.67	467	0.77	
Yarella blackfordi	3.11	311	0.51	
POLYCHAELIDAE	1.55	77	0.25	
Malacocephalus laevis	1.55	15	0.25	
Chlorophthalmus atlanticus	1.55	31	0.25	
MYCTOPHIDAE	0.00	31		
Total	607.83		99.74	

PROJECT STATION 295

DATE: 7/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1023
 start stop duration Long E 1257
 TIME : 01:05:00 02:05:00 60 (min) Purpose code: 3
 LOG : 8657.00 8659.70 3.00 Area code : 2
 FDEPTH: 500 500 GearCond.code:
 BDEPTH: 500 500 Validity code:
 Towing dir: 325° Wire out: 1500 m Speed: 3 kn*10

Sorted: 24 Kg Total catch: 145.80 CATCH/HOUR: 145.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius polli	42.00	102	28.81	176
Laemonema sp	36.00	318	24.69	177
Trichiurus lepturus	12.00	414	8.23	
Aristeus varidans	10.80	486	7.41	178
Yarella blackfordi	10.20	348	7.00	
Parapenaeus longirostris	9.00	370	6.17	179
Chaunax pictus	4.80	36	3.29	
MELANOSTOMIATIDAE	3.00	72	2.06	
Coelorhynchus coelorhynchus	3.00	36	2.06	
Dibranchius atlanticus	2.40	114	1.65	
Plesionectes edwardsianus	1.80	36	1.23	
Squalus aegleops	1.80	36	1.23	
Chlorophthalmus atlanticus	1.20	18	0.82	
Malacocephalus laevis	1.20	24	0.82	
Conger conger	0.60	12	0.41	
Total	139.80		95.86	

PROJECT STATION 296

DATE: 7/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 1022
 start stop duration Long N 1303
TIME : 03:35:00 04:10:00 35 (min) Purpose code: 3
LCS : 8669.70 8671.00 1.75 Area code : 2
NDEPTH: 200 197 GearCond.code: 5
SDEPTH: 200 197 Validity code: 1
Towing dir: 313° Wire out: 600 m Speed: 3 kn/10

Sorted: 103 Kg Total catch: 515.50 CATCH/HOUR: 883.71

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Spinaphelus gorenensis	651.43	34	73.72	
Synagrops microlepis	102.86	6171	11.64	180
Merluccius polli	42.86	566	4.85	181
Dentex angolensis	17.14	51	1.94	
Uranoscopus polli	12.86	146	1.46	
Priacanthus arenatus	9.43	9	1.07	
Parapanaeus longirostris	8.57	1680	0.97	
Bembrops grayi	8.57	129	0.97	
Torpedo torpedo	6.00	9	0.68	
Spicara alta	4.29	17	0.48	
Pterothrissus delloei	4.29	34	0.48	
Todarodes sagittatus	2.57	26	0.29	
Chlorophthalmus atlanticus	2.57	266	0.29	
Bembrops heterurus	2.57	9	0.29	
Dentex macrophthalmus	1.71	6	0.19	
Chelidonichthys gabonensis	1.71	9	0.19	
Trichurus lepturus	1.71	51	0.19	
Malacocephalus occidentalis	0.86	17	0.10	
Dibranchius atlanticus	0.86	60	0.10	
Zenopsis concifer	0.43	9	0.05	
Scorpaena noronhai	0.43	9	0.05	
Total	----- 883.72	-----	----- 100.02	

PROJECT STATION 297

DATE: 7/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1019
 start stop duration LONG E 1312
 TIME :09:12:00 09:42:00 30 (min) Purpose code: 3
 LOG :8086.30 8587.80 1.50 Area code : 2
 FDEPTH: 90 90 GearCond.code:
 BDEPTH: 90 90 Validity code:
 Towing dir: 320° Wire out: 450 m Speed: 3 kn*10

Sorted: Kg Total catch: 120.80 CATCH/HOUR: 241.60

SPECIES	CATCH/HOUR		P OF TOT. C	SAMP.NO.
	weight	numbers		
Atractoscion aequidens	67.00	30	27.73	
Umbrina canariensis	40.00	82	16.56	183
Sparus pagrus africanus	34.00	36	14.07	182
Pagellus bellottii	20.00	340	2.28	185
Boops boops	14.00	700	5.79	186
Pagellus bellottii	14.00	40	5.79	184
Dentex gibbosus	10.00	6	4.14	
Seriola carpenteri	9.00	2	3.73	
Epinephelus aeneus	3.80	2	1.57	
Trichurus lepturus	3.00	2	1.24	
Erythrocles monodi	2.20	4	0.91	
Torpedo torpedo	2.00	6	0.83	
Sepia officinalis hierredda	2.00	10	0.83	
Dentex canariensis	2.00	4	0.83	
Todarodes sagittatus	1.80	96	0.75	
Zeus lucor	1.60	6	0.66	
Chelidonichthys gabonensis	1.20	10	0.50	
Fistularia picta	1.00	4	0.41	
Chelidonichthys capensis	1.00	4	0.41	
Dentex angolensis	1.00	10	0.41	
Anthias anthias	1.00	40	0.41	
Saurida orasiliensis	0.80	126	0.33	
Trachurus crecae	0.80	40	0.33	
Citharus linguatula	0.20	2	0.08	
Chaetodon marcoliae	0.20	2	0.08	
Oibranchius atlanticus	0.00	4		
Total	233.80		96.67	

PROJECT STATION 298

DATE: 7/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 1015
 start stop duration Long E 1320
 TIME :10:55:00 11:25:00 30 (min) Purpose code: 3
 LOG :8697.20 8698.00 1.50 Area code : 2
 FDEPTH: 50 49 GearCond.code:
 BDEPTH: 50 49 Validity code:
 Towing dir: 320° Wire out: 250 m Speed: 3 kn*10

Sorted: Kg Total catch: 54.25 CATCH/HOUR: 108.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Stromateus fiatola</i>	38.00	116	31.11	187
<i>Triclinurus lepturus</i>	10.40	22	9.59	
<i>Raja miraletus</i>	4.60	10	6.24	
<i>Lagocephalus laevigatus</i>	2.40	4	2.21	
<i>Cynoglossus canariensis</i>	1.60	6	1.47	
<i>Galistes capricornis</i>	1.00	4	0.92	
<i>Todarodes sagittatus</i>	0.30	4	0.28	
<i>Pagellus bellottii</i>	0.20	2	0.18	
Total	54.25	188	100.00	

PROJECT STATION 299

DATE: 7/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 1012
 start stop duration Long E 1322
 TIME :12:20:00 12:50:00 30 (min) Purpose code: 3
 LOG :8704.20 8706.00 1.50 Area code : 2
 FDEPTH: 23 21 GearCond.code:
 BDEPTH: 23 21 Validity code:
 Towing dir: 315° Wire out: 125 m Speed: 3 kn*10

Sorted: Kg Total catch: 11.90 CATCH/HOUR: 23.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Lagocephalus laevigatus</i>	6.00	8	25.21	
<i>Sepia officinalis hierredda</i>	5.00	8	21.01	
<i>Alloteuthis africana</i>	2.00	300	8.40	
<i>Raja miraletus</i>	2.00	2	8.40	
<i>Selene dorsalis</i>	2.00	2	8.40	
<i>Sphyræna guanchano</i>	1.20	2	5.04	
<i>Callinectes libinia</i>	1.00	2	4.20	
<i>Brachydeuterus auritus</i>	0.80	454	3.36	
<i>Syacium micrurus</i>	0.80	6	3.36	
<i>Pagellus bellottii</i>	0.80	14	3.36	
<i>Sparus pagrus africanus</i>	0.80	2	3.36	
<i>Decapterus rhonchus</i>	0.40	4	1.68	
<i>Cynoglossus canariensis</i>	0.40	2	1.68	
<i>Todarodes sagittatus</i>	0.20	4	0.84	
<i>Citharus linguatula</i>	0.20	2	0.84	
<i>Dicologlossa cuneata</i>	0.20	2	0.84	
<i>Peristedion cataphractus</i>	0.00	2		
Total	11.90	1000	100.00	

PROJECT STATION 300

DATE: 7/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1006
 start stop duration Long E 1217
 TIME :13:35:00 14:05:00 30 (min) Purpose code: 3
 LOG :8711.60 8712.60 1.50 Area code : 2
 FDEPTH: 19 17 GearCond.code:
 BDEPTH: 19 17 Validity code:
 Towing dir: 300° Wire out: 100 m Speed: 3 kn*10

Sorted: Kg Total catch: 29.80 CATCH/HOUR: 59.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lagocephalus laevigatus	34.00	42	57.05	
Pomadourys rogeri	12.00	24	20.13	188
Pagellus bellottii	8.40	92	14.09	188
Sepia officinalis hierredda	1.80	6	3.02	
Callinectes sp	1.20	2	2.01	
Balistes capriacus	1.00	4	1.68	
Alloteuthis africana	0.60	40	1.01	
Syacium micrurus	0.40	2	0.67	
Decapterus rhonchus	0.20	2	0.34	
Total	59.60		100.00	

PROJECT STATION 301

DATE: 7/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1006
 start stop duration Long E 1211
 TIME :15:15:00 15:45:00 30 (min) Purpose code: 3
 LOG :8722.40 8723.30 1.50 Area code : 2
 FDEPTH: 67 64 GearCond.code:
 BDEPTH: 67 64 Validity code:
 Towing dir: 325° Wire out: 300 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 7999.74 CATCH/HOUR: 15999.48

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	12842.40	250426	80.27	190
Trachurus trcae	1805.30	64746	10.03	191
Pagellus bellottii	802.64	35850	5.02	
Selene dorsalis	481.58	5886	3.01	
Argyrosemus regius	160.52	534	1.00	
Boops boops	53.80	534	0.33	
Sardinella aurita	26.74	534	0.17	
Dentex canariensis	26.74	534	0.17	
Total	15999.42		100.00	

PROJECT STATION 302

DATE: 7/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 1010
 start stop duration Long E 1305
 TIME :17:25:00 17:30:00 5 (min) Purpose code: 3
 LOG :8735.30 8735.50 0.25 Area code : 2
 FDEPTH: 96 95 GearCond.code: 8
 BDEPTH: 96 95 Validity code: 3
 Towing dir: 196° Wire out: 400 m Speed: 3 kn*10

Sorted: Kg Total catch: 11.80 CATCH/HOUR: 141.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	numbers		
Trachurus trcae	86.40	4680	61.02	
Sepia officinalis hierreda	24.00	12	16.98	
Saurida brasiliensis	14.40	2568	10.17	
Brachydeuterus auritus	6.00	108	4.24	
Dentex angolensis	6.00	12	4.24	
Boops boops	3.60	48	2.54	
Citharus linguatula	1.20	12	0.88	
Total	141.60		100.01	

PROJECT STATION 303

DATE: 8/ 5/89 GEAR TYPE: BT, No:1 POSITION: Lat S 1000
 start stop duration Long E 1249
 TIME :01:50:00 02:05:00 15 (min) Purpose code: 3
 LOG :8793.90 8794.40 0.75 Area code : 2
 FDEPTH: 518 565 GearCond.code: 5
 BDEPTH: 518 565 Validity code: 1
 Towing dir: 340° Wire out: 1500 m Speed: 3 kn*10

Sorted: Kg Total catch: 23.00 CATCH/HOUR: 92.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
MELANOSTOMIATIDAE	30.00	548	32.61	
Merluccius polli	18.00	48	19.57	192
Deepwater fish mixture	12.00	1200	13.04	
Yarelia blackfordi	8.40	236	9.13	
Trichiurus lepturus	6.80	196	7.39	
Plesiopeneus edwardsianus	5.20	384	5.65	192
Parapeneus longirostris	2.00	68	2.17	
Laemonema sp	2.00	24	2.17	
Chaunax pictus	1.60	8	1.74	
Cadella maraldi	1.20	20	1.30	
Aristeus varidens	1.20	36	1.30	
Todarodes sagittatus	1.20	4	1.30	
Squalus megalops	0.80	12	0.87	
Chlorophthalmus atlanticus	0.80	12	0.87	
Synagrops microlepis	0.40	8	0.43	
Melacocephalus laevis	0.40	8	0.43	
Total	92.00		99.97	

PROJECT STATION 304

DATE: 8/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 959
 start stop duration Long E 1304
 TIME :07:05:00 07:35:00 30 (min) Purpose code: 3
 LOG :8832.40 8833.60 1.50 Area code : 2
 FDEPTH: 60 60 GearCond.code:
 DDEPTH: 80 80 Validity code:
 Towing dir: 345° Wire out: 350 m Speed: 3 kn*10

Sorted: 17 Kg Total catch: 85.00 CATCH/HOUR: 170.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trcaae	90.00	4920	52.94	194
Pagellus bellottii	55.00	200	32.35	195
Pseudupeneus prayensis	5.00	60	2.94	
Selene dorsalis	4.00	30	2.35	
Sepia officinalis hierreda	3.00	10	1.76	
Zeus faber	3.00	20	1.76	
Dentex canariensis	2.00	30	1.18	
Yarella blackfordi	2.00	80	1.18	
Sarda sarda	2.00	2	1.18	
Umbrina canariensis	2.00	10	1.18	
Todarodes sagittatus	1.00	10	0.59	
Boops boops	1.00	20	0.59	
Stereomastis sp	0.00	10		
Saurida brasiliensis	0.00	10		
Total	170.00		100.00	

PROJECT STATION 305

DATE: 8/ 5/89 GEAR TYPE: BT No:1 POSITION:Lat S 957
 start stop duration Long E 1312
 TIME :11:50:00 12:20:00 30 (min) Purpose code: 3
 LOG :8853.30 8854.30 1.50 Area code : 2
 FDEPTH: 33 31 GearCond.code:
 DDEPTH: 33 31 Validity code:
 Towing dir: 357° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 31.80 CATCH/HOUR: 63.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lagocephalus laevigatus	30.00	36	47.17	
Pagellus bellottii	20.00	202	32.70	196
Trichiurus lepturus	4.00	4	6.29	
Balistes capricus	3.00	6	4.72	
Alloteuthis africana	2.00	496	3.14	
Euthynnus alletteratus	1.40	2	2.20	
Sepia officinalis hierreda	1.40	2	2.20	
Dacapterus rnonchus	0.80	8	1.26	
Trachurus trcaae	0.20	12	0.31	
Total	63.60		99.99	

PROJECT STATION 306

DATE: 8/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 947
 start stop duration Long E 1312
 TIME :15:15:00 15:45:00 30 (min) Purpose code: 3
 LOC :8878.50 8880.30 1.50 Area code : 2
 FDEPTH: 25 23 GearCond.code:
 BDEPTH: 25 23 Validity code:
 Towing dir: 163° Wire out: 100 m Speed: 3 kn*10

Sorted: Kg Total catch: 30.40 CATCH/HOUR: 120.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscomberus chrysurus	48.00	338	39.74	197
Alectis alexandrinus	18.00	10	14.90	
Cynoglossus canariensis	13.20	4	10.93	
Trichiurus lepturus	10.20	18	8.44	
Pagellus bellottii	10.00	50	8.28	199
Sphyraena guachancho	9.60	18	7.95	
Lagocephalus laevigatus	4.60	4	3.81	
Decapterus rhonchus	3.00	124	2.48	198
Salene dorsalis	3.00	46	2.48	
Pomadasys paroteti	1.20	2	0.99	
Total	120.80		100.00	

PROJECT STATION 307

DATE: 8/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 948
 start stop duration Long E 1304
 TIME :17:25:00 17:55:00 30 (min) Purpose code: 3
 LOC :8892.30 8893.40 1.50 Area code : 2
 FDEPTH: 80 76 GearCond.code:
 BDEPTH: 80 76 Validity code:
 Towing dir: 10° Wire out: 350 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 549.79 CATCH/HOUR: 1099.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pagellus bellottii	1069.04	9244	97.22	200
Trachurus trachus	11.44	228	1.04	
Zeus faber	7.62	38	0.69	
Brachycauterus auritus	7.62	38	0.69	
Dentex angolensis	3.80	38	0.35	
Total	1099.52		99.99	

PROJECT STATION 308

DATE: 8/ 5/89 GEAR TYPE: PT No:4 POSITION: Lat S 943
 start stop duration Long E 1308
 TIME :22:00:00 23:00:00 60 (min) Purpose code: 1
 LOG :8929.40 8932.00 2.60 Area code : 2
 FDEPTH: 7 7 GearCond.code:
 BDEPTH: 35 33 Validity code:
 Towing dir: 350° Wire out: 150 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 121.40 CATCH/HOUR: 121.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Sardinella maderensis</i>	90.00	1028	65.90	202
<i>Dacapterus rhonchus</i>	12.80	532	10.54	201
<i>Sardinella aurita</i>	7.20	48	5.93	
<i>Lagocephalus laevigatus</i>	6.00	4	4.94	
<i>Pomadourys peroteti</i>	5.60	8	4.61	
<i>Sphyræna guachancho</i>	4.80	196	3.95	
<i>Trachinotus ovatus</i>	1.20	4	0.99	
<i>Sardinella maderensis</i>	0.60	64	0.66	
<i>Brachydeuterus auritus</i>	0.60	56	0.66	
<i>Selene dorsalis</i>	0.60	28	0.66	
<i>Sardinella aurita</i>	0.60	48	0.49	
<i>Pteroscion peli</i>	0.40	4	0.33	
<i>Saurida brasiliensis</i>	0.40	80	0.33	
<i>Boops boops</i>	0.00	12		
Total	121.40		99.99	

PROJECT STATION 309

DATE: 9/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 935
 start stop duration Long E 1240
 TIME :03:35:00 04:35:00 60 (min) Purpose code: 3
 LOG :8974.00 8977.00 3.00 Area code : 2
 FDEPTH: 444 450 GearCond.code:
 BDEPTH: 444 450 Validity code:
 Towing dir: 165° Wire out: 1300 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 177.80 CATCH/HOUR: 177.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Merluccius polli</i>	98.00	268	65.18	203
<i>Raja miraletus</i>	14.70	7	8.27	
<i>Leaonema sp</i>	12.60	203	7.09	
<i>Aristeus varidens</i>	11.90	427	4.69	204
<i>Yarella blackfordi</i>	7.70	189	4.33	
<i>Coelorhynchus coelorhynchus</i>	7.00	108	3.94	
<i>Chaunax pictus</i>	4.90	70	2.76	
Deepwater fish mixture	4.20	308	2.26	
<i>Parapenaeus longirostris</i>	3.80	343	1.97	
<i>Squalus megalops</i>	3.50	56	1.97	
<i>Chlorophthalmus atlanticus</i>	2.10	28	1.18	
<i>Plesionopaeus edwardsianus</i>	1.40	21	0.79	
MELANOSTOMIATIDAE	1.40	7	0.79	
<i>Gadella maraldi</i>	1.40	21	0.79	
<i>Dibranchius atlanticus</i>	1.40	98	0.79	
<i>Malacocephalus occidentalis</i>	1.40	63	0.79	
<i>Trichiurus lapturus</i>	0.70	21	0.39	
Total	177.80		100.02	

PROJECT STATION 310

DATE: 9/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 940
 start stop duration Long E 1257
 TIME :07:15:00 07:55:00 30 (min) Purpose code: 3
 LOC :9000.00 9001.80 1.50 Area code : 2
 FDEPTH: 101 102 GearCond.code:
 BDEPTH: 101 102 Validity code:
 Towing dir: 335° Wire out: 450 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 746.25 CATCH/HOUR: 1492.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus tracas	750.00	43332	50.25	206
Brachydeuterus auritus	650.00	4372	43.85	205
Torpedo torpedo	30.00	50	2.01	
Chelidonicthys capensis	15.00	50	1.01	
Sphyraena guacnacho	15.00	50	1.01	
Todarodes sagittatus	10.00	200	0.67	
Pagellus bellottii	10.00	50	0.67	
Dentex angolensis	10.00	100	0.67	
Syacium micrurus	2.50	50	0.17	
Saurida brasiliensis	0.00	250		
Total	1492.50		100.01	

PROJECT STATION 311

DATE: 9/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 939
 start stop duration Long E 1203
 TIME :09:14:00 09:44:00 30 (min) Purpose code: 3
 LOC :9012.20 9013.20 1.50 Area code : 2
 FDEPTH: 65 64 GearCond.code:
 BDEPTH: 65 64 Validity code:
 Towing dir: 343° Wire out: 300 m Speed: 3 kn*10

Sorted: 38 Kg Total catch: 37.90 CATCH/HOUR: 75.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pagellus bellottii	10.80	80	14.25	208
Trichiurus lepturus	10.00	16	13.19	
Dentex angolensis	7.80	74	10.29	209
Alloteuthis africana	7.20	5760	9.50	
Dentex gibbosus	7.00	16	9.23	
Sarda sarda	7.00	6	9.23	
Branchiostegus semifasciatus	5.00	6	6.60	
Raja miraletus	4.00	6	5.28	
Dentex barnardi	3.00	18	3.96	
Seriola carpenteri	2.80	2	3.69	
Sphyraena guacnacho	2.60	4	3.43	
Fistularia petiata	2.00	2	2.64	
Octopus vulgaris	1.80	4	2.37	
Decapterus rhonchus	1.80	36	2.37	207
Chaetodon hoefleri	1.40	12	1.85	
Epinephelus banus	1.20	2	1.58	
Balistes capriscus	0.40	2	0.53	
Total	75.80		99.99	

PROJECT STATION 312

DATE: 9/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 939
 start stop duration Long E 1308
 TIME :11:00:00 11:30:00 30 (min) Purpose code: 3
 LOG :9022.90 9024.10 1.50 Area code : 2
 FDEPTH: 30 32 GearCond.code:
 SDEPTH: 30 32 Validity code:
 Towing dir: 340° Wire out: 125 m Speed: 3 kn*10

Sorted: 68 Kg Total catch: 68.30 CATCH/HOUR: 136.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Pagellus bellottii</i>	100.00	742	73.21	210
<i>Pomadourys rogeri</i>	20.00	28	14.64	
<i>Dentex gibbosus</i>	5.00	8	3.66	
<i>Lagocephalus laevigatus</i>	5.00	10	3.66	
<i>Trichiurus lepturus</i>	4.00	6	2.93	
<i>Sphyræna sphyræna</i>	2.00	10	1.46	
<i>Decapterus rhonchus</i>	0.60	4	0.44	
Total	136.60		100.00	

PROJECT STATION 313

DATE: 9/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 931
 start stop duration Long E 1257
 TIME :13:00:00 14:00:00 30 (min) Purpose code: 3
 LOG :9042.20 9043.30 1.50 Area code : 2
 FDEPTH: 80 78 GearCond.code:
 SDEPTH: 80 78 Validity code:
 Towing dir: 350° Wire out: 350 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 282.60 CATCH/HOUR: 565.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Brachydeuterus suritus</i>	360.00	4356	63.69	211
<i>Umorina canariensis</i>	46.80	414	8.28	
<i>Pagellus bellottii</i>	32.40	198	5.73	
<i>Trachurus trachurus</i>	28.80	1044	5.10	212
<i>Trichiurus lepturus</i>	28.80	54	5.10	
<i>Seriola carpenteri</i>	27.00	18	4.78	
<i>Sphyræna gutturancho</i>	25.20	36	4.46	
<i>Sepia officinalis hiarreda</i>	7.20	36	1.27	
<i>Dentex angolensis</i>	3.60	36	0.64	
<i>Crammoplites gruvelli</i>	3.60	18	0.64	
<i>Chelidonichthys capensis</i>	1.80	18	0.32	
<i>Saurida brasiliensis</i>	0.00	72		
Total	565.20		100.00	

PROJECT STATION 314

DATE: 9/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 920
 start stop duration Long E 1251
 TIME : 16:35:00 17:05:00 30 (min) Purpose code: 3
 LOC : 9065.90 9067.10 1.50 Area code : 2
 FDEPTH: 55 94 GearCond.code:
 SDEPTH: 95 94 Validity code:
 Towing dir: 20° Wire out: 400 m Speed: 3 kn*10

Sorted: 33 Kg Total catch: 267.60 CATCH/HOUR: 535.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	220.00	3776	59.79	214
Cicharus linguatula	100.80	32	18.83	
Trachurus trcaae	60.80	2352	11.36	213
Trichiurus lepturus	16.00	512	2.99	
Uranoscopus albasca	11.20	48	2.09	
Brotula narosa	9.60	16	1.79	
Synagrops microlepis	4.80	752	0.90	
Pterothrissus balloci	4.80	16	0.90	
Parapenaeus longirostris	4.80	432	0.90	
GOBIIDAE	1.60	240	0.30	
Saurica brasiliensis	0.80	32	0.15	
Total	535.20		100.00	

PROJECT STATION 315

DATE: 10/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 906
 start stop duration Long E 1255
 TIME : 06:46:00 07:16:00 30 (min) Purpose code: 3
 LOC : 9165.50 9167.10 1.50 Area code : 2
 FDEPTH: 37 49 GearCond.code:
 SDEPTH: 37 49 Validity code:
 Towing dir: 210° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 4.00 CATCH/HOUR: 8.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pagellus bellottii	2.20	104	27.50	
Raja miraletus	2.00	4	25.00	
Alleteuthis africana	1.60	1280	20.00	
Uranoscopus polli	1.00	4	12.50	
Sepia officinalis hierredda	0.60	2	7.50	
Chelidonichthys capensis	0.40	2	5.00	
Grassoplites gruvelli	0.20	2	2.50	
Chilomycterus spinosus mauret.	0.00	2		
Total	8.00		100.00	

PROJECT STATION 316

DATE: 10/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 909
 start stop duration Long E 1251
 TIME : 09:15:00 09:45:00 30 (min) Purpose code: 3
 LCG : 9181.20 9182.40 1.50 Area code : 2
 FLDEPTH: 70 73 GearCond.code:
 BDEPTH: 70 73 Validity code:
 Towing dir: 320° Wire out: 350 m Speed: 3 kn*10

Sorted: 23 Kg Total catch: 116.75 CATCH/HOUR: 233.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trachurus trecae	140.00	5336	59.96	213
Pagellus calloccii	46.00	1040	19.70	216
Dentex angolensis	25.00	710	10.71	
Scopelogadus	6.00	230	2.57	
Spicara alta	6.00	540	2.57	
Trichurus lepturus	4.00	40	1.71	
Dentex baccardii	3.00	10	1.28	
Sphyrxena guacnacho	2.00	10	0.86	
Dentex macrophthalmus	1.00	50	0.43	
Citharus linguatula	0.50	20	0.21	
Saurida brasiliensis	0.00	50		
Microchirus coscanion	0.00	10		
Chelidonichthys gabonensis	0.00	20		
Total	233.50		100.00	

PROJECT STATION 317

DATE: 10/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 913
 start stop duration Long E 1248
 TIME : 13:15:00 13:45:00 30 (min) Purpose code: 3
 LCG : 9199.30 9200.50 1.50 Area code : 2
 FDEPTH: 97 95 GearCond.code:
 BDEPTH: 97 95 Validity code:
 Towing dir: 355° Wire out: 400 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 218.40 CATCH/HOUR: 436.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trachurus trecae	368.00	13166	84.25	217
Dentex angolensis	41.60	352	9.52	218
Todarodes sagittatus	9.60	432	2.20	
Sarda sarda	4.80	16	1.10	
Chelidonichthys gabonensis	4.80	48	1.10	
Saurida brasiliensis	4.80	192	1.10	
Spicara alta	3.20	336	0.73	
Total	436.80		100.00	

PROJECT STATION 318

DATE: 10/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 920
 start stop duration Long E 1259
 TIME : 15:45:00 16:15:00 30 (min) Purpose code: 3
 LOG : 9218.00 9219.00 1.50 Area code : 2
 FDEPTH: 28 27 GearCond.code:
 BDEPTH: 28 27 Validity code:
 Towing dir: 340° Wire out: 125 m Speed: 3 kn*10

Sorted: Kg Total catch: 35.10 CATCH/HOUR: 70.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Sphyræna guachancho</i>	40.00	108	86.98	219
<i>Stromateus fiatola</i>	16.00	10	22.79	
<i>Alectis alexandrinus</i>	3.80	2	5.41	
<i>Selene dorsalis</i>	3.00	8	4.27	
<i>Panulirus regius</i>	2.00	2	2.85	
<i>Lagocephalus laevigatus</i>	1.40	4	1.99	
<i>Epinephelus beneus</i>	1.40	2	1.99	
<i>Balistes capricus</i>	1.00	2	1.42	
<i>Pagellus bellottii</i>	0.80	2	1.14	
<i>Raja miraletus</i>	0.80	2	1.14	
Total	70.20		99.98	

PROJECT STATION 319

DATE: 10/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 922
 start stop duration Long E 1259
 TIME : 17:35:00 18:05:00 30 (min) Purpose code: 3
 LOG : 9230.10 9230.90 1.50 Area code : 2
 FDEPTH: 40 37 GearCond.code:
 BDEPTH: 40 37 Validity code:
 Towing dir: 347° Wire out: 175 m Speed: 3 kn*10

Sorted: 23 Kg Total catch: 68.00 CATCH/HOUR: 136.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Brachydeuterus auritus</i>	28.80	160	21.18	221
<i>Pagellus bellottii</i>	26.00	160	19.12	220
<i>Stromateus fiatola</i>	26.00	30	19.12	
<i>Pomadourys rogeri</i>	18.00	24	13.24	
<i>Alloteuthis africana</i>	12.00	5040	8.82	
<i>Sphyræna guachancho</i>	8.00	28	5.88	
<i>Pomadourys incisus</i>	4.40	8	3.24	
<i>Caranx crysos</i>	4.00	4	2.94	
<i>Lagocephalus laevigatus</i>	4.00	4	2.94	
<i>Decapterus rhonchus</i>	2.00	44	1.47	
<i>Citharus linguatula</i>	0.80	4	0.59	
<i>Chelidonichthys capensis</i>	0.80	4	0.59	
<i>Trichiurus lepturus</i>	0.80	4	0.59	
<i>Fistularia petiata</i>	0.40	4	0.29	
Total	136.00		100.01	

PROJECT STATION 320

DATE: 10/ 5/89 GEAR TYPE: PT No:4 POSITION: Lat S 917
 start stop duration Long E 1258
 TIME : 23:51:00 00:51:00 60 (min) Purpose code: 1
 LOC : 9276.40 9279.00 3.00 Area code : 2
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 36 70 Validity code:
 Towing dir: 308° Wire out: 150 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 116.40 CATCH/HOUR: 116.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	44.00	5866	37.80	222
Sphyræna guachancho	31.80	72	27.15	
Sardinella maderensis	12.80	1104	10.31	
Caranx crysos	8.40	4	7.22	
Selene dorsalis	5.20	196	4.47	
Stromateus fistola	4.80	8	4.12	
Trichiurus lepturus	4.40	28	3.78	
Saurida brasiliensis	3.60	324	3.07	
Galeoides decadactylus	3.60	64	3.07	
Trachurus trcae	3.20	4	2.75	
Ilisha africana	3.20	20	2.75	
Engraulis encrasicolus	0.40	264	0.34	
Total	116.40		99.99	

PROJECT STATION 321

DATE: 11/ 5/89 GEAR TYPE: PT No:4 POSITION: Lat S 858
 start stop duration Long E 1258
 TIME : 04:30:00 04:35:00 5 (min) Purpose code: 1
 LOC : 9304.00 9304.20 0.20 Area code : 2
 FDEPTH: 10 10 GearCond.code: 6
 BDEPTH: 180 200 Validity code: 3
 Towing dir: 290° Wire out: 150 m Speed: 2 kn*10

Sorted: Kg Total catch: 360.00 CATCH/HOUR: 360.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trichiurus lepturus	360.00	2124	100.00	
Total	360.00		100.00	

PROJECT STATION 322

DATE: 11/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 833
 start stop duration Long E 1307
 TIME : 08:17:00 -> 09:43:00 30 (min) Purpose code: 3
 LOG : 0339.10 -> 0340.50 1.50 Area code : 2
 FDEPTH: 50 89 GearCond.code:
 BDEPTH: 90 89 Validity code:
 Towing dir: 10° Wire out: 450 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 699.86 CATCH/HOUR: 1399.72

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	788.94	18056	56.34	223
Trichiurus lepturus	407.20	2340	29.09	224
Trachurus trachae	71.26	2290	5.09	225
Selene dorsalis	50.90	508	3.64	
Sphyrapoda maculata	35.62	50	2.54	
Pteroscience peli	25.44	3002	1.02	
Pentheroscience abasi	20.36	50	1.45	
Total	1399.72		96.99	

PROJECT STATION 323

DATE: 11/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 830
 start stop duration Long E 1313
 TIME : 09:40:00 -> 10:10:00 30 (min) Purpose code: 3
 LOG : 0347.10 -> 0348.50 1.50 Area code : 2
 FDEPTH: 50 60 GearCond.code:
 BDEPTH: 50 60 Validity code:
 Towing dir: 3° Wire out: 300 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 455.42 CATCH/HOUR: 910.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	489.60	8440	53.75	226
Trichiurus lepturus	183.60	918	20.16	
Sarda sarda	51.20	60	6.72	
Branchiostegus semifasciatus	27.54	30	3.02	
Pagallus callottii	21.42	60	2.35	
Umbra canariensis	21.42	60	2.35	
Pseudotolithus typus	18.36	30	2.02	
Scromateus fistola	18.36	30	2.02	
Atractoscion equinans	12.24	30	1.34	
Chloroscombrus chrysurus	12.24	90	1.34	
Cynoponticus ferox	9.18	30	1.01	
Argyrosomus regius	9.18	30	1.01	
Trachurus trachae	9.18	90	1.01	
Sepia officinalis hierreda	7.20	6	0.79	
Selene dorsalis	6.12	90	0.67	
Pomadasys peroteti	4.00	4	0.44	
Total	910.84		100.00	

PROJECT STATION 324

DATE: 11/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 820
 start stop duration Long E 1317
 TIME : 11:09:00 11:39:00 30 (min) Purpose code: 3
 LOG : 9355.50 9356.90 1.50 Area code : 2
 FDEPTH: 31 32 GearCond.code:
 LDEPTH: 31 32 Validity code:
 Towing dir: 355° Wire out: 150 m Speed: 3 kn*10

Sorted: 12 kg Total catch: 318.10 CATCH/HOUR: 636.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Brachydeuterus auritus</i>	187.20	7410	29.42	229
<i>Ilisha africana</i>	103.20	6240	16.22	
<i>Trichurus lepturus</i>	96.00	528	15.09	
<i>Pterocacion pell</i>	67.20	2880	10.56	
<i>Sphyraena guachancho</i>	45.60	192	7.17	
<i>Pseudotolithus typos</i>	41.60	62	6.54	228
<i>Pomadourys poroceti</i>	25.00	52	3.93	227
<i>Penaeus notialis</i>	16.00	814	2.51	
<i>Chloroscobrus chrysurus</i>	12.00	160	1.89	
<i>Bardinella maderensis</i>	9.60	696	1.51	
<i>Galeoides decadactylus</i>	9.00	18	1.41	
<i>Eucinostomus melanopterus</i>	7.20	48	1.13	
<i>Salena dorsalis</i>	7.20	192	1.13	
<i>Stromateus fiatola</i>	5.00	8	0.78	
<i>Dicocloglossa cuneata</i>	2.40	24	0.36	
<i>Umbrina canariensis</i>	2.00	2	0.31	
Total	636.20		99.99	

PROJECT STATION 325

DATE: 11/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 818
 start stop duration Long E 1316
 TIME : 13:40:00 13:10:00 30 (min) Purpose code: 3
 LOG : 9355.30 9355.40 1.50 Area code : 2
 FDEPTH: 50 29 GearCond.code:
 BDEPTH: 50 29 Validity code:
 Towing dir: 353° Wire out: 125 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 113.70 CATCH/HOUR: 227.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	66.40	2564	29.20	230
Pseudolithus typus	40.00	328	17.59	231
Ilisha africana	28.00	1504	12.66	232
Pteroscion pelli	20.00	1164	8.80	
Galeoides decadactylus	18.40	80	8.09	
Trichiurus lepturus	9.60	296	4.22	
Sphyraena guachancho	8.00	24	3.52	
Panaeus noctialis	5.80	238	2.55	
Chloroscombrus chrysurus	5.60	64	2.46	
Cynoglossus canariensis	4.80	16	2.11	
Stromateus pistolis	4.80	16	2.11	
Selene dorsalis	4.80	56	2.11	
Dasyatis margarita	4.00	8	1.76	
Oicococloglossa cuneata	3.20	40	1.41	
Sardinella maderensis	2.40	16	1.06	
Aleccis alexandrinus	0.80	40	0.35	
Total	113.70		100.00	

PROJECT STATION 326

DATE: 11/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 820
 start stop duration Long E 1310
 TIME : 14:10:00 14:40:00 30 (min) Purpose code: 3
 LOG : 9374.40 9375.50 1.50 Area code : 2
 FDEPTH: 59 59 GearCond.code:
 BDEPTH: 59 59 Validity code:
 Towing dir: 343° Wire out: 250 m Speed: 3 kn*10

Sorted: 33 Kg Total catch: 546.80 CATCH/HOUR: 1093.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	736.00	26250	67.30	233
Sphyraena guachancho	108.80	224	9.95	
Trichiurus lepturus	102.40	960	9.36	
Argyrosomus holciapiotus	44.00	2	4.02	
Galeoides decadactylus	32.00	256	2.93	
Selene dorsalis	22.40	352	2.05	
Trachurus trachurus	19.20	224	1.76	
Chloroscombrus chrysurus	12.80	96	1.17	
Pagellus ballottii	9.60	64	0.88	
Umbrina canariensis	3.20	32	0.29	
Crammoplites grueveli	1.60	32	0.15	
Citharus linguatula	1.60	32	0.15	
Parapanaeus longirostris	0.00	64		
Total	546.80		100.01	

PROJECT STATION 327

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DATE:11/ 5/89          GEAR TYPE: BT No:1    POSITION:Lat  S  022
                        start  stop  duration           Long  E  1363
TIME :16:00:00 16:30:00 30 (min) Purpose code: 3
LOG  :9386.30 9387.40 1.50      Area code  : 2
FDEPTH: 102   102      GearCond.code:
BDEPTH: 102   102      Validity code:
                        Towing dir: 330° Wire out: 400 m Speed: 3 kn*10

Sorted: 26 Kg      Total catch: 287.10  CATCH/HOUR: 574.20
  
```

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trectae	418.00	20494	72.00	234
Brachydeuterus auritus	114.40	4208	19.92	235
Pterothrissus balloei	13.20	286	2.30	
Trichiurus lepturus	11.00	22	1.92	
Saurida brasiliensis	6.60	374	1.15	
Ucops ucops	4.40	110	0.77	
Todarodes sagittatus	4.40	44	0.77	
Pagellus bellottii	2.20	22	0.38	
Total	<u>574.20</u>		<u>100.01</u>	

PROJECT STATION 328

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DATE:11/ 5/89          GEAR TYPE: FT No:2    POSITION:Lat  E  042
                        start  stop  duration           Long  E  1304
TIME :19:25:00 19:55:00 30 (min) Purpose code: 1
LOG  :9413.60 9414.80 1.40      Area code  : 2
FDEPTH: 40    40      GearCond.code:
BDEPTH: 108   112      Validity code:
                        Towing dir: 345° Wire out: 100 m Speed: 3 kn*10

Sorted:      Kg      Total catch: 200.00  CATCH/HOUR: 400.00
  
```

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	400.00	4160	100.00	234
Total	<u>400.00</u>		<u>100.00</u>	

PROJECT STATION 329

DATE: 11/ 5/89 GEAR TYPE: FT No:2 POSITION: Lat S 855
 start stop duration Long E 1302
 TIME : 23:30:00 23:50:00 20 (min) Purpose code: 1
 LOG : 9443.50 9444.50 1.00 Area code : 2
 FDEPTH: 80 80 GearCond.code:
 BDEPTH: 106 113 Validity code:
 Towing dir: ' Wire out: 250 m Speed: 3 kn*10
 Sorted: Kg Total catch: 168.00 CATCH/HOUR: 504.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Decapterus rhonchus	279.00	315	55.36	235
Mola mola	105.00	3	20.83	
Sphyræna guachancho	66.00	3	13.10	
Trichiurus lepturus	54.00	96	10.71	
Total	504.00		100.00	

PROJECT STATION 330

DATE: 12/ 5/89 GEAR TYPE: FT No:4 POSITION: Lat S 835
 start stop duration Long E 1315
 TIME : 03:00:00 04:00:00 30 (min) Purpose code: 1
 LOG : 9469.50 9472.60 1.70 Area code : 2
 FDEPTH: 7 7 GearCond.code: 5
 BDEPTH: 52 59 Validity code: 3
 Towing dir: 220° Wire out: 150 m Speed: 3 kn*10
 Sorted: 28 Kg Total catch: 186.90 CATCH/HOUR: 373.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscombrus chrysurus	144.00	2374	38.52	236
Sardinella aurita	86.40	384	23.11	237
Sphyræna guachancho	34.00	2	9.10	
Brachydeuterus auritus	25.20	660	6.74	
Sphyræna guachancho	24.00	60	6.42	
Sardinella maderensis	19.20	96	5.14	238
Selene dorsalis	14.40	264	3.85	
Sepia orbignyana	7.20	24	1.93	
Trichiurus lepturus	6.00	108	1.61	
Trachurus tracas	6.00	48	1.61	
Galeoides decadactylus	3.60	12	0.96	
Panaeus notialis	1.40	42	0.37	
Pteroscion peli	1.20	12	0.32	
Ilisha africana	1.20	12	0.32	
Total	373.80		100.00	

PROJECT STATION 331

DATE: 12/ 5/69 GEAR TYPE: BT NO:1 POSITION: Lat S 808
 Start 07:12:00 Stop 07:43:00 Duration 30 (min) Long E 1313
 Time 1953.20 1954.60 1.50 Purpose code: 3
 Depth: 21 29 Area code: 2
 Current: 15 29 GearCond.code:
 Towing dir: 320° Wire out: 125 m Speed: 3 kn*10
 Sorted: 23 kg Total catch: 155.10 CATCH/HOUR: 316.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Pterodroma peti	65.00	2942	20.87	
Chloroceryle chrysurus	54.00	702	17.08	239
Filiera alicata	43.00	2258	13.66	240
Sphyrapicus guianensis	42.00	144	13.28	
Scopelogadus fuscus	14.00	24	4.43	
Parasphaleus longirostris	12.00	4620	3.80	241
Trichurus lepturus	12.00	572	3.80	
Urocyonotus auritus	12.00	564	3.60	
Selene dorsalis	12.00	192	3.60	
Galapagus desudatus	11.00	42	3.40	
Pagrus auratus	6.60	32	2.72	
Sphippium guttifer	6.40	12	2.66	
Penaeus notialis	4.60	164	1.45	242
Uyana bicolor	3.60	12	1.14	
Macropodus chinensis	3.60	24	1.14	
Caranx crysos	3.60	12	1.14	
Sepia officinalis merrilli	2.40	140	0.70	
Caranx ignatus	2.00	2	0.63	
Dicentrarchus labrax	1.20	12	0.38	
Micropodops	0.00	12		
TOTAL	155.10		100.02	

PROJECT STATION 332

DATE: 12/ 9/89 GEAR TYPE: BT No: 1 POSITION: Lat S 008
 9037E 800P duration Long E 1306
 Time 10:31:00 UP: 15:00 30 (min) Purpose code: 3
 LOG 13510.40 9512.20 1.50 Area code : 2
 FURFTN: 53 53 GearCond. code:
 HOOKFT: 50 53 Validity code:
 towing dir: 340° Wire out: 250 m Speed: 3 kn*10

Force: 44 kg Total catch: 278.60 CATCH/HOUR: 557.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Scombreus fiatola</i>	250.00	470	44.67	
<i>Brachydeuterus auritus</i>	85.00	4452	15.25	243
<i>Argyroscaus acrolepidocus</i>	41.20	6	7.36	
<i>Pagrus collottii</i>	22.00	130	3.95	
<i>Trachurus lepturus</i>	20.00	310	3.59	
<i>Lutjanus kasmira</i>	16.00	2	3.02	
<i>Sphyrapoda guachancho</i>	15.00	80	2.66	
<i>Sparus chaerulaostictus</i>	13.00	14	2.33	
<i>Decapterus rhombus</i>	12.00	120	2.15	
<i>Dentex angolensis</i>	10.00	30	1.79	
<i>Morone chrysops</i>	10.00	60	1.76	
<i>Sparus aurata</i>	8.80	6	1.53	
<i>Epinephelus aeneus</i>	8.60	2	1.54	
<i>Sparus pagrus africanus</i>	5.00	2	0.90	
<i>Raja airsiates</i>	5.00	10	0.90	
<i>Corpus carpio</i>	5.00	10	0.90	
<i>Solea dorsalis</i>	5.00	60	0.90	
<i>Dentex barnardi</i>	5.00	10	0.90	
<i>Morone perocoti</i>	4.60	6	0.72	
<i>Plectrochelys macrolepis</i>	3.40	4	0.61	
<i>Diplodus cervinus cervinus</i>	3.40	4	0.61	
<i>Scorpaenopsis diabolus</i>	3.00	40	0.54	
<i>Morone morone</i>	2.60	2	0.47	
<i>Urophycis parvif</i>	2.00	10	0.36	
<i>Epinephelus aeneus</i>	0.80	2	0.14	
<i>Pseudupeneus prayensis</i>	0.60	4	0.11	
Total	557.20		100.00	

PROJECT STATION 333

DATE: 12/ 9/69 GEAR TYPE: BT No:1 POSITION: Lat S 012
 START stop Duration Long E 1302
 TIME 10:27:00 10:27:00 30 (min) Purpose code: 3
 LOG 9521.90 9523.30 1.50 Area code : 2
 SURPTH: 90 92 GearCond.code:
 BURPTH: 90 92 Validity code:
 Towing dir: 330° Wire out: 450 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 268.00 CATCH/HOUR: 536.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Brachyabotarus auritus</i>	270.00	2192	50.37	245
<i>Trachurus trache</i>	232.00	12442	43.28	244
<i>Dentax bernardi</i>	6.00	6	1.49	
<i>Scops Scops</i>	6.00	140	1.49	
<i>Dentax angolensis</i>	6.00	40	1.12	
<i>Pagellus collettii</i>	4.00	40	0.75	
<i>Parotrichius Deloii</i>	4.00	26	0.75	
<i>Chelidonichthys capensis</i>	2.00	20	0.37	
<i>Umbra canariensis</i>	2.00	20	0.37	
Total	536.00		99.99	

PROJECT STATION 334

DATE: 12/ 9/69 GEAR TYPE: BT No:1 POSITION: Lat S 803
 START stop Duration Long E 1257
 TIME 12:05:00 12:35:00 30 (min) Purpose code: 3
 LOG 9521.70 9522.90 1.50 Area code : 2
 SURPTH: 91 92 GearCond.code:
 BURPTH: 91 92 Validity code:
 Towing dir: 330° Wire out: 400 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 105.00 CATCH/HOUR: 210.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Trachurus trache</i>	154.00	6228	73.33	246
<i>Dentax angolensis</i>	25.90	252	12.33	247
<i>Zeus faber</i>	12.60	48	6.00	
<i>Trichurus lepturus</i>	8.40	28	4.00	
<i>Scops Scops</i>	2.80	48	1.33	
<i>Chelidonichthys gomonensis</i>	2.10	14	1.00	
<i>Pagellus collettii</i>	2.10	20	1.00	
<i>Dentax angolensis</i>	2.10	28	1.00	
Total	210.00		99.99	

PROJECT STATION 335

DATE: 12/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 861
 start stop duration Long E 1303
 TIME : 13:45:00 14:15:00 30 (min) Purpose code: 3
 LOG : 9541.70 9542.90 1.50 Area code : 2
 FDEPTH: 64 65 GearCond.code:
 BDEPTH: 64 65 Validity code:
 Towing dir: 340° Wire out: 300 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 870.00 CATCH/HOUR: 1740.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Brachydeuterus auritus</i>	1440.00	80064	82.76	248
<i>Trachurus trachus</i>	126.00	3420	7.24	249
<i>Sphyræna guachancho</i>	90.00	180	8.17	
<i>Selene dorsalis</i>	30.00	360	1.72	
<i>Pagellus baltotii</i>	30.00	300	1.72	
<i>Sphyræna sphyræna</i>	18.00	60	1.03	
<i>Calceoides decadactylus</i>	6.00	60	0.34	
Total	1740.00		99.98	

PROJECT STATION 336

DATE: 12/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 756
 start stop duration Long E 1309
 TIME : 15:17:00 15:47:00 30 (min) Purpose code: 3
 LOG : 9551.80 9552.50 1.50 Area code : 2
 FDEPTH: 24 22 GearCond.code:
 BDEPTH: 24 22 Validity code:
 Towing dir: 340° Wire out: 125 m Speed: 3 kn*10

Sorted: 18 Kg Total catch: 74.40 CATCH/HOUR: 148.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Brachydeuterus auritus</i>	36.80	1472	24.73	251
<i>Cynoglossus canariensis</i>	36.20	296	23.66	
<i>Ilisha africana</i>	24.00	652	16.13	250
<i>Pseudocolithus typus</i>	12.00	56	8.08	
<i>Dicolocoglossa cuneata</i>	11.20	240	7.53	
<i>Calceoides decadactylus</i>	5.60	16	3.76	
<i>Stromateus fiatola</i>	4.80	8	3.23	
<i>Sphyræna guachancho</i>	4.80	8	3.23	
<i>Pteronacion peli</i>	4.80	168	3.23	
<i>Aristeus varidans</i>	2.60	68	1.75	
<i>Pentaneus quinquarius</i>	2.40	32	1.61	
<i>Selene dorsalis</i>	1.60	16	1.08	
<i>Alectis alexandrinus</i>	0.80	24	0.54	
<i>Calappa rubroguttata</i>	0.60	4	0.40	
<i>Pisodonophis semicinctus</i>	0.40	2	0.27	
<i>Hystriophis rostellatus</i>	0.40	2	0.27	
<i>Sardinella maderensis</i>	0.40	16	0.27	
<i>Chloroscombrus chrysurus</i>	0.40	8	0.27	
Total	148.60		100.02	

PROJECT STATION 337

DATE: 12/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 751
 start stop duration Long E 1302
 TIME : 16:45:00 17:15:00 30 (min) Purpose code: 3
 LOC : 9559.40 9560.50 1.50 Area code : 2
 FDEPTH: 31 33 GearCond.code:
 BDEPTH: 31 33 Validity code:
 Towing dir: 320° Wire out: 150 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 141.40 CATCH/HOUR: 282.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	72.00	3040	25.46	
Pteroscion pall	40.00	1780	14.14	253
Illina africana	36.00	1830	12.73	252
Pseudolithus cyrus	30.00	120	10.61	
Galathea decadactylus	20.00	120	7.07	
Trichurus lepturus	20.00	430	7.07	
Cynoglossus canariensis	13.00	70	4.60	
Penaeus notialis	12.00	358	4.53	254
Sphyræna guachancho	10.00	40	3.54	
Stromateus fiatola	10.00	10	3.54	
Discoloboglossa cuneata	6.00	60	2.12	
Parapenaeus longirostris	5.00	1050	1.77	
Chloroscombrus chrysurus	4.00	30	1.41	
Selene dorsalis	4.00	60	1.41	
Total	282.80		100.00	

PROJECT STATION 338

DATE: 12/ 5/89 GEAR TYPE: PT No:4 POSITION: Lat S 755
 start stop duration Long E 1303
 TIME : 20:30:00 21:15:00 45 (min) Purpose code: 1
 LOC : 9580.20 9582.10 1.90 Area code : 2
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 43 55 Validity code:
 Towing dir: 275° Wire out: 200 m Speed: 3 kn*10

Sorted: 36 Kg Total catch: 627.95 CATCH/HOUR: 837.27

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinella aurita	383.07	2140	45.75	257
Sardinella maderensis	180.27	1757	21.53	256
Sphyræna guachancho	130.69	405	15.61	
Selene dorsalis	40.56	631	4.84	
Chloroscombrus chrysurus	38.31	437	4.58	255
Sarda sarda	17.33	21	2.07	
Lutjanus agennes	13.33	1	1.59	
Brachydeuterus auritus	9.01	157	1.08	
Trachurus trachurus	6.76	69	0.81	
Sphyræna sphyraena	6.76	21	0.81	
Stromateus fiatola	6.67	9	0.80	
Penaeus notialis	2.25	21	0.27	
Illina africana	2.25	21	0.27	
Total	627.26		100.01	

PROJECT STATION 339

DATE: 12/ 9/89 GEAR TYPE: PT No:4 POSITION: Lat S 802
 start stop duration Long E 1302
 TIME : 23:28:00 00:35:00 67 (min) Purpose code: 1
 LOG : 9598.10 9601.30 3.20 Area code : 2
 FDEPTH: 10 10 GearCond.code:
 BDEPTH: 63 53 Validity code:
 Towing dir: 15° Wire out: 200 m Speed: 3 kn*10
 Retard: 54 Kg Total catch: 518.10 CATCH/HOUR: 463.97

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Selene dorsalis</i>	192.63	2150	41.52	258
<i>Sardinella maderensis</i>	96.72	1040	20.85	260
<i>Sphyræna guachancho</i>	68.51	266	14.77	
<i>Sardinella aurita</i>	58.84	427	12.68	259
<i>Lutjanus agennes</i>	29.55	3	6.37	
<i>Brachydeuterus auritus</i>	6.45	6448	1.39	
<i>Onchoscopus chrysurus</i>	5.64	89	1.22	
<i>Trachurus trache</i>	4.03	81	0.87	
<i>Saurida brasiliensis</i>	1.61	137	0.35	
Total	463.98		100.02	

PROJECT STATION 340

DATE: 12/ 9/89 GEAR TYPE: BT No:1 POSITION: Lat S 752
 start stop duration Long E 1257
 TIME : 06:40:00 06:45:00 5 (min) Purpose code: 3
 LOG : 9654.80 9655.00 0.20 Area code : 2
 FDEPTH: 57 57 GearCond.code:
 BDEPTH: 57 57 Validity code:
 Towing dir: 320° Wire out: 250 m Speed: 3 kn*10
 Retard: 28 Total catch: 17.50 CATCH/HOUR: 210.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Brachydeuterus auritus</i>	87.60	3024	41.71	
<i>Trachurus trache</i>	25.20	624	12.00	
<i>Pagellus calliopteri</i>	24.00	120	11.43	
<i>Pomadasys incisus</i>	24.00	180	11.43	
<i>Sphyræna guachancho</i>	24.00	132	11.43	
<i>Decapterus rhencus</i>	9.60	372	4.57	
<i>Raja miraletus</i>	8.40	12	4.00	
<i>Oxentis angolensis</i>	3.60	12	1.71	
<i>Allotautnia africana</i>	2.40	1008	1.14	
<i>Sardinella aurita</i>	1.20	72	0.57	
<i>Sardinella maderensis</i>	0.00	12		
Total	210.00		99.98	

PROJECT STATION 341

DATE: 13/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 752
 HOURS: 07:25:00 stop duration Long E 1259
 TIME: 07:25:00 07:47:00 22 (min) Purpose code: 3
 LOG: 9007.00 9055.20 1.10 Area code: 2
 FDEPTH: 51 49 GearCond.code:
 SDEPTH: 51 49 Validity code:
 Towing dir: 320° Wire out: 200 m Speed: 3 kn*10

Sortes: Kg Total catch: 55.20 CATCH/HOUR: 150.55

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	number		
<i>Brachydeuterus surinus</i>	25.45	1385	43.47	261
<i>Sphyræna gusmano</i>	40.91	74	27.17	
<i>Isolene notialis</i>	14.45	210	9.60	262
<i>Pomadourys incisus</i>	0.10	52	5.43	
<i>Pomadourys jocalini</i>	0.10	16	5.43	
<i>Argyrodon regius</i>	4.64	3	3.00	
<i>Trichurus lepturus</i>	2.73	98	1.01	
<i>Trachurus trache</i>	1.64	27	1.00	
<i>Uncinia canariensis</i>	1.36	3	0.90	
<i>Galathea dactyloctenylus</i>	1.09	9	0.72	
<i>Pagellus caletii</i>	0.02	3	0.54	
<i>Chaetodon noelieri</i>	0.55	3	0.37	
<i>Sardinella maderensis</i>	0.27	33	0.18	
<i>Decapodera phocinus</i>	0.27	8	0.18	
Total	150.54		99.97	

PROJECT STATION 342

DATE: 13/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 795
 start stop duration Long E 1249
 TIME : 09:35:00 10:05:00 30 (min) Purpose code: 3
 LOG : 9672.60 9674.20 1.50 Area code : 2
 FDEPTH: 102 102 GearCond.code:
 BDEPTH: 102 103 Validity code:
 Towing dir: 130° Wire out: 500 m Speed: 3 kn*10

Sorted: Kg Total catch: 75.95 CATCH/HOUR: 151.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dentex angolensis	36.00	170	23.70	265
Trachurus tracas	34.00	1530	22.38	263
Epinephelus aeneus	20.00	4	13.17	
Dentex gibbosus	15.00	16	9.87	
Dentex barnardi	14.00	48	9.22	264
Sepia officinalis hierreda	10.00	8	6.58	
Pagellus balleotti	5.00	48	3.29	
Squatina oculata	4.00	2	2.63	
Dentex macrophthalmus	2.40	34	1.58	
Sparus pagrus africanus	2.00	2	1.32	
Zeus faber	2.00	6	1.32	
Disticharia perla	1.00	4	1.05	
Sparus thalassicticus	1.40	2	0.92	
Lagarodon sagittatus	1.00	22	0.66	
Spicara alba	1.00	62	0.66	
Gadus aoteanus	0.80	2	0.53	
Chaetodon noefleri	0.60	4	0.39	
Pomadasys incisus	0.40	2	0.26	
BLENNIIDAE	0.20	2	0.13	
Ariculus bondi	0.20	2	0.13	
Scops scops	0.20	4	0.13	
Citharus linguatula	0.10	2	0.07	
Total	151.90		99.99	

PROJECT STATION 343

DATE: 13/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 745
 start stop duration Long E 1246
 TIME : 11:15:00 11:45:00 30 (min) Purpose code: 3
 LOG : 9683.10 9684.60 1.50 Area code : 2
 FDEPTH: 94 93 GearCond.code:
 BDEPTH: 94 93 Validity code:
 Towing dir: 130° Wire out: 400 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 219.60 CATCH/HOUR: 439.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus tracas	364.00	14344	82.80	266
Seriola carpenteri	25.20	14	5.73	
Sepia officinalis hierreda	15.40	28	3.50	
Pagellus balleotti	15.40	322	3.50	
Dentex angolensis	7.00	168	1.59	
Scops scops	5.60	182	1.27	
Lagocephalus laevigatus	4.20	14	0.96	
Zeus faber	2.80	14	0.64	
Total	439.60		99.99	

PROJECT STATION 344

DATE: 13/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 741
 start stop duration Long E 1259
 TIME : 13:50:00 14:20:00 30 (min) Purpose code: 3
 LOG : 9703.30 9704.50 1.50 Area code : 2
 FDEPTH: 23 22 GearCond.code:
 BDEPTH: 23 22 Validity code:
 Towing dir: 333° Wire out: 100 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 154.75 CATCH/HOUR: 309.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Pomadasys peroteti</i>	98.00	136	31.66	269
<i>Epinephelus aeneus</i>	60.00	6	19.39	
<i>Pseudoclitrus typus</i>	28.00	30	9.05	268
<i>Calocidus decadactylus</i>	25.80	76	8.34	
<i>Stromateus fiatola</i>	19.80	72	6.40	
<i>Ilisha africana</i>	17.40	1152	9.62	267
<i>Trichiurus lepturus</i>	15.00	570	4.88	
<i>Pentaneus quinquarius</i>	13.80	240	4.46	
<i>Drepane africana</i>	6.60	12	2.13	
<i>Cynoglossus senegalensis</i>	6.00	6	1.94	
<i>Torpedo marmorata</i>	6.00	6	1.94	
<i>Parapenaeus longirostris</i>	3.00	366	0.97	
<i>Panulirus regius</i>	2.60	4	0.84	
<i>Cynoglossus canariensis</i>	2.40	6	0.78	
<i>Sphyrana guschnacho</i>	1.80	6	0.58	
<i>Pteroscion poli</i>	1.20	24	0.39	
<i>Trachurus traca</i>	0.60	6	0.29	
<i>Brachydeuterus auritus</i>	0.60	6	0.19	
<i>Sardinella maderensis</i>	0.30	12	0.10	
<i>Chloroscombrus chrysurus</i>	0.30	12	0.10	
Total	309.50		100.02	

PROJECT STATION 345

DATE: 13/ 5/89 GEAR TYPE: BT No: 1 POSITION: Lat S 733
 LONG E 1255
 TIME : 15:20:00 16:03:00 30 (min) Purpose code: 3
 LOG : 9712.70 9714.60 1.50 Area code : 2
 DURPTI: 20 24 GearCond. code: 6
 DURPMI: 20 24 Validity code: 1
 Towing dir: 133° Wire out: 125 m Speed: 3 kn*10
 Sorted: 52 Kg Total catch: 490.40 CATCH/HOUR: 980.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Sphyrana lewini	414.00	1386	42.21	
Ilisha africana	61.00	5626	8.26	270
Osteoides decadactylus	81.00	1098	6.26	
Panulirus rogersi	75.60	126	7.71	
Pomadourus incisus	75.60	666	7.71	
Brachydeuterus auritus	70.20	2340	7.16	
Stromateus fiascia	45.00	90	4.55	
Sparus sal. diabolus	27.00	54	2.73	
Arius parkii	23.40	18	2.39	
Epinephelus zonus	22.00	4	2.24	
Trichiurus lepturus	18.00	728	1.84	
Pseudotolithus typus	17.20	130	1.75	271
Selene dorsalis	9.00	126	0.92	
Pterocacion pall	7.20	126	0.73	
Sardinella maderensis	5.40	468	0.55	
Chloroscombrus chrysurus	5.40	54	0.55	
Umbrina sp	2.00	2	0.20	
Aloctis alexandrinus	1.80	72	0.18	
Total	490.40	980.80	100.00	

PROJECT STATION 349

DATE: 14/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 718
 start stop duration Long E 1236
 TIME : 09:15:00 09:45:00 30 (min) Purpose code: 3
 LOG : 9860.90 9862.40 1.50 Area code : 2
 FDEPTH: 56 53 GearCond.code:
 SDEPTH: 56 53 Validity code:
 Towing dir: 320° Wire out: 250 m Speed: 3 kn*10

Sorted: 50 Kg Total catch: 118.60 CATCH/HOUR: 237.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pagellus bellottii	94.00	308	39.63	279
Dentex barnardi	48.00	140	20.24	280
Epinephelus aeneus	36.00	14	13.18	
Sphyræna guachancho	16.00	64	6.75	
Sparus caeruleostictus	14.00	24	5.50	
Allotauhis africana	12.00	7320	5.06	
Dentex gibbosus	5.60	4	2.36	
Leptocharias smithii	2.00	4	0.84	
Bodianus spaciatus	2.00	4	0.84	
Raja miraletus	1.60	4	0.67	
Sepia officinalis hierreda	1.20	4	0.51	
Decapterus rhonchus	1.20	4	0.51	
Zeus faber	1.20	4	0.51	
Chelidonichthys capensis	0.80	4	0.34	
Fistularia petimba	0.40	4	0.17	
Chaetodon hoefleri	0.40	4	0.17	
Pseudupeneus prayensis	0.40	4	0.17	
Trachurus traciae	0.20	4	0.08	
Decapterus punctatus	0.20	4	0.08	
Boops boops	0.00	9		
Total	237.20		100.01	

PROJECT STATION 350

DATE: 14/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 726
 start stop duration Long E 1244
 TIME : 13:30:00 14:00:00 30 (min) Purpose code: 3
 LOG : 9896.00 9898.00 1.50 Area code : 2
 FDEPTH: 57 58 GearCond.code:
 SDEPTH: 57 58 Validity code:
 Towing dir: 225° Wire out: 250 m Speed: 3 kn*10

Sorted: Kg Total catch: 20.90 CATCH/HOUR: 41.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pagellus bellottii	17.00	206	40.67	281
Allotauhis africana	9.40	5734	22.49	
Fistularia petimba	5.00	24	11.96	
Sepia officinalis hierreda	4.60	14	11.00	
Raja miraletus	2.60	4	6.22	
Seriola lalandi	1.20	2	2.87	
Dentex congolensis	0.80	23	1.91	
Sphyræna guachancho	0.60	2	1.44	
Brachydeuterus auritus	0.40	2	0.96	
Chelidonichthys gabonensis	0.20	2	0.48	
Total	41.80		100.00	

PROJECT STATION 351

DATE: 14/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 726
 start stop duration Long E 1234
 TIME : 15:10:00 15:35:00 25 (min) Purpose code: 3
 LOG : 9908.40 9908.30 1.25 Area code : 2
 FDEPTH: 91 90 GearCond.code:
 BDEPTH: 91 90 Validity code:
 Towing dir: 320° Wire out: 500 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 77.45 CATCH/HOUR: 185.88

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Saurida brasiliensis</i>	84.00	12000	45.19	
<i>Trachurus traca</i>	22.80	737	12.27	282
<i>Epinephelus aeneus</i>	20.88	2	11.23	
<i>Pagellus bellottii</i>	20.40	473	10.97	
<i>Sapia officinalis hierredda</i>	15.00	41	8.07	
<i>Dentex congolensis</i>	13.80	529	7.42	
<i>Sardinella aurita</i>	3.00	77	1.61	
<i>Fistularia patiba</i>	2.40	12	1.29	
<i>Chelidonichthys gabonensis</i>	1.80	24	0.97	
<i>Spicara bita</i>	1.20	156	0.68	
<i>Dentex angolensis</i>	0.60	5	0.32	
Total	-----	-----	-----	
	185.88		69.99	

PROJECT STATION 352

DATE: 10/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 826
 start stop duration Long E 1254
 TIME : 18:50:00 19:50:00 60 (min) Purpose code: 3
 LOG : 80.80 83.80 3.00 Area code : 2
 FDEPTH: 253 250 GearCond.code:
 BDEPTH: 253 250 Validity code:
 Towing dir: 345° Wire out: 750 m Speed: 3 kn*10

Sorted: 34 Kg Total catch: 469.00 CATCH/HOUR: 469.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Pteroscion pali</i>	231.00	17058	49.25	283
<i>Chlorophthalmus agassizi</i>	98.00	2227	20.90	
<i>Pterothrissus balloei</i>	92.40	798	19.70	
<i>Merluccius polli</i>	21.00	378	4.48	
<i>Parapanaeus longirostris</i>	9.80	2042	2.09	284
<i>Dentex macrophthalmus</i>	7.00	14	1.49	
<i>Pontinus kuhlii</i>	4.20	126	0.90	
<i>Laemonea sp</i>	4.20	42	0.90	
<i>Gadella maraldi</i>	1.40	14	0.30	
<i>Peristemon cataphractum</i>	0.00	42		
Total	-----	-----	-----	
	469.00		100.01	

PROJECT STATION 353

DATE: 10/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 623
 start stop duration Long E 1251
 TIME : 20:52:00 21:52:00 60 (min) Purpose code: 3
 LOG : 69.20 72.10 3.00 Area code : 2
 FDEPTH: 349 349 GearCond.code:
 BDEPTH: 349 349 Validity code:
 Towing dir: 340° Wire out: 1050 m Speed: 2 kn*10

Sorted: 30 Kg Total catch: 805.95 CATCH/HOUR: 805.95

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Chlorophthalmus agassizi</i>	364.50	3743	45.23	
<i>Merluccius polli</i>	162.00	827	20.10	286
<i>Nematocarcinus africanus</i>	110.70	53136	13.74	
<i>Pteroscion peli</i>	64.80	3726	8.04	
<i>Centrophorus granulatus</i>	40.50	27	5.03	
<i>Hymenocephalus italicus</i>	18.90	1566	2.35	
<i>Dibranchius atlanticus</i>	8.10	702	1.01	
<i>Laemonema</i> sp	8.10	54	1.01	
<i>Galeus melastomus</i>	5.40	27	0.67	
<i>Malacocephalus occidentalis</i>	5.40	27	0.67	
<i>Pterothrissus dalloei</i>	5.40	27	0.67	
<i>Parapenaeus longirostris</i>	5.40	594	0.67	285
<i>Chaunax pictus</i>	2.70	267	0.34	
OPHICHTHIDAE	1.35	27	0.17	
<i>Solenocera africana</i>	1.35	54	0.17	
<i>Plesionika bartis</i>	1.35	162	0.17	
<i>Peristodion cataphractus</i>	0.00	27		
Total	805.95		100.04	

PROJECT STATION 354

DATE: 10/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 818
 start stop duration Long E 1247
 TIME : 23:07:00 00:07:00 60 (min) Purpose code: 3
 LOG : 78.00 80.90 3.00 Area code : 2
 FDEPTH: 451 450 GearCond.code:
 BDEPTH: 451 450 Validity code:
 Towing dir: 345° Wire out: 1350 m Speed: 3 kn*10

Sorted: 24 Kg Total catch: 699.84 CATCH/HOUR: 699.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Merluccius polli</i>	349.92	1224	50.00	287
<i>Nematocarcinus africanus</i>	291.60	97200	41.67	
<i>Laemonema</i> sp	17.49	174	2.50	
<i>Pteroscion peli</i>	14.58	524	2.08	
<i>Chaunax pictus</i>	11.66	116	1.67	
<i>Plesiopeanaeus edwardsianus</i>	5.83	204	0.83	
<i>Dibranchius atlanticus</i>	5.83	233	0.83	
<i>Chlorophthalmus agassizi</i>	2.91	29	0.42	
<i>Hymenocephalus italicus</i>	0.00	29		
Total	699.82		100.00	

PROJECT STATION 355

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 814
 start stop duration Long E 1242
 TIME : 01:10:00 02:10:00 60 (min) Purpose code: 3
 LOG : 85.60 98.10 2.50 Area code : 2
 FDEPTH: 550 550 GearCond.code:
 BDEPTH: 550 550 Validity code:
 Towing dir: 335° Wire out: 1500 m Speed: 3 kn*10

Sorted: 24 Kg Total catch: 122.00 CATCH/HOUR: 122.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Nematocarcinus africanus	55.00	10333	45.08	
Conostoma elongatum	30.00	400	24.59	
Boreostomias alzens	17.50	2167	14.34	
Bathygadus sp	10.00	460	8.20	
Fenacis kerathurus	3.00	50	2.46	
Sternoptyx sp	2.00	75	1.64	
Plesiopeanaeus edwardsianus	2.00	35	1.64	
Melanostomias sp.	1.00	105	0.82	
Trichiurus lepturus	1.00	45	0.82	
Pteroscion palli	0.50	40	0.41	
Total	122.00		100.00	

PROJECT STATION 356

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 810
 start stop duration Long E 1259
 TIME : 06:35:00 07:05:00 30 (min) Purpose code: 3
 LOG : 110.10 111.50 1.50 Area code : 2
 FDEPTH: 99 100 GearCond.code:
 BDEPTH: 99 100 Validity code:
 Towing dir: 330° Wire out: 450 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 91.50 CATCH/HOUR: 183.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trcaae	96.00	5139	52.46	288
Saurida brasiliensis	25.20	4032	13.77	
Trichiurus lepturus	15.60	60	8.52	
Dentex angolensis	13.20	60	7.21	
Atractoscion aequidens	7.20	12	3.93	
Brachydeuterus auritus	5.40	60	2.95	
Dentex macrophtalaus	4.20	12	2.30	
Pagellus bellottii	4.20	54	2.30	
Dentex barnardi	3.60	12	1.97	
Chelidonichthys gabonensis	3.00	24	1.64	
Boops boops	3.00	108	1.64	
Fistularia petiata	1.20	6	0.66	
Citharus linguatula	0.60	6	0.33	
Todarodes sagittatus	0.60	12	0.33	
Nemichthys scolopacea	0.00	6		
Total	183.00		100.01	

PROJECT STATION 357

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 809
 start stop duration Long E 1305
 TIME : 08:35:00 09:00:00 25 (min) Purpose code: 3
 LOC : 121.70 122.70 1.20 Area code : 2
 FDEPTH: 65 66 GearCond.code:
 BDEPTH: 65 66 Validity code:
 Towing dir: 330° Wire out: 250 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 548.60 CATCH/HOUR: 1317.12

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Brachycauterus auritus</i>	816.00	21946	61.95	260
<i>Trichiurus lepturus</i>	106.08	326	8.05	
<i>Pagellus ballottii</i>	65.28	694	4.96	
<i>Salena dorsalis</i>	61.20	449	4.65	
<i>Trachurus trcae</i>	48.96	1342	3.72	
<i>Pomadasys jubelini</i>	38.40	72	2.92	290
<i>Sphyræna guachancho</i>	32.64	41	2.48	
<i>Pomadasys incisus</i>	32.64	204	2.48	
<i>Pseudupeneus prayensis</i>	20.40	122	1.55	
<i>Dentex angolensis</i>	20.40	41	1.55	
<i>Atractoscion aequidens</i>	15.12	10	1.15	
<i>Dentex barnardi</i>	12.24	41	0.93	
<i>Decapterus rhonchus</i>	8.16	32	0.62	
<i>Galeoides decadactylus</i>	8.16	41	0.62	
<i>Umbrina canariensis</i>	8.16	41	0.62	
<i>Sepia officinalis hierrredda</i>	4.80	2	0.36	
<i>Sarda sarda</i>	4.80	5	0.36	
<i>Stromateus fiatola</i>	4.80	5	0.36	
<i>Sparus caeruleostictus</i>	3.60	2	0.27	
<i>Plectorhynchus mediterraneus</i>	3.12	2	0.24	
<i>Epinephelus aeneus</i>	2.16	2	0.16	
Total	548.60	1317.12	100.00	

PROJECT STATION 359

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 752
 start stop duration Long E 1304
 TIME 13:15:00 13:45:00 30 (min) Purpose code: 3
 LOC : 152.00 153.00 1.50 Area code : 2
 FDEPTH: 24 22 GearCond.code:
 BDEPTH: 24 22 Validity code:
 Towing dir: 334° Wire out: 125 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 249.10 CATCH/HOUR: 498.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Chloroscombrus chrysurus</i>	320.00	6640	64.23	293
<i>Carcharhinus brevipinna</i>	54.40	16	10.92	
<i>Brachydeuterus auritus</i>	44.80	2238	8.99	
<i>Iliaena africana</i>	36.80	2080	7.39	294
<i>Calectias decadactylus</i>	9.60	48	1.93	
<i>Sphyraena guachancho</i>	6.40	32	1.28	
<i>Scomberomorus tritor</i>	6.40	6	1.28	
<i>Pseudotolithus typus</i>	6.40	32	1.28	
<i>Caranx bicolor</i>	3.20	16	0.64	
<i>Trichiurus lepturus</i>	3.20	64	0.64	
<i>Stromateus fiatola</i>	2.60	6	0.52	
<i>Sarda sarda</i>	2.00	2	0.40	
<i>Salpa dorsalis</i>	1.60	48	0.32	
<i>Pisodenopsis samicinctus</i>	0.80	2	0.16	
<i>Sardinella maderensis</i>	0.00	32		
Total	498.20		99.98	

PROJECT STATION 360

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 754
 start stop duration Long E 1357
 TIME : 14:55:00 15:15:00 20 (min) Purpose code: 3
 LOG : 163.10 164.10 1.00 Area code : 2
 FDEPTH: 65 65 GearCond.code:
 BDEPTH: 65 65 Validity code:
 Towing dir: 330° Wire out: 300 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 161.10 CATCH/HOUR: 483.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Brachydeuterus auritus	162.00	8100	33.52	
Pagellus bellottii	126.00	1116	26.07	296
Sphyraena guachancho	52.20	18	10.80	
Dentex angolensis	27.00	90	5.59	
Trachurus trcae	19.80	222	4.10	295
Trichiurus lepturus	19.80	54	4.10	
Jalcoides decadactylus	18.00	234	3.72	
Stromateus fiatola	10.80	18	2.23	
Pomadourys incisus	10.80	90	2.23	
Salene dorsalis	9.00	150	1.86	
Umbrina canariensis	7.20	36	1.46	
Arius naudeloti	5.40	18	1.12	
Chelidonichthys capensis	5.40	18	1.12	
Chaetodon hoefleri	3.60	18	0.74	
Chloroscombrus chrysurus	3.60	18	0.74	
Saurida brasiliensis	1.80	144	0.37	
Sardinella aurita	0.90	36	0.19	
Decapterus rhonchus	0.00	18		
Total	483.30		99.99	

PROJECT STATION 361

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 754
 start stop duration Long E 1250
 TIME : 16:30:00 17:00:00 30 (min) Purpose code: 3
 LOG : 173.70 174.90 1.50 Area code : 2
 FDEPTH: 99 99 GearCond.code:
 BDEPTH: 99 99 Validity code:
 Towing dir: 330° Wire out: 400 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 328.80 CATCH/HOUR: 657.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus trcae	550.00	26766	83.61	297
Trichiurus lepturus	44.00	88	6.69	
Pagellus bellottii	22.00	198	3.34	
Dentex macrophthalmus	19.80	462	3.01	
Dentex angolensis	15.40	154	2.34	
Todarodes sagittatus	4.40	110	0.67	
Boops boops	2.20	66	0.33	
Total	657.80		99.99	

PROJECT STATION 362

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 755
 start stop duration Long E 1237
 TIME : 18:55:00 19:55:00 60 (min) Purpose code: 3
 LOG : 191.20 193.80 3.00 Area code : 2
 FDEPTH: 500 500 GearCond.code:
 BDEPTH: 500 500 Validity code:
 Towing dir: 350° Wire out: 1400 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 157.50 CATCH/HOUR: 157.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Nematocarcinus africanus	84.00	19488	53.33	
Diplophos sp.	30.00	18	19.05	
Merluccius polli	12.00	30	7.62	
Aristeus varidens	12.00	744	7.62	298
Bathygadus melanobranchus	6.00	396	3.81	
Bromiculus laberbis	3.00	60	1.90	
Hoplostethus mediterraneus	3.00	156	1.90	
Nezumia aequalis	1.80	12	1.14	
Ganthodesmus tenuis	1.20	30	0.76	
Stmopterus spinax	1.20	18	0.76	
Yarella blackfordi	1.20	24	0.76	
Plesionaeus edwardsianus	0.90	18	0.57	
Stereomastix sculpta	0.60	78	0.38	
Diceratias pileatus	0.30	12	0.19	
Stomias affinis	0.30	12	0.19	
Lampadena sp	0.00	6		
Plesionika martia	0.00	42		
Dibranchus atlanticus	0.00	6		
Total	157.50		99.98	

PROJECT STATION 363

DATE: 19/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 749
 start stop duration Long E 1235
 TIME : 22:25:00 23:25:00 60 (min) Purpose code: 3
 LOG : 208.00 208.90 3.00 Area code : 2
 FDEPTH: 400 401 GearCond.code:
 BDEPTH: 400 401 Validity code:
 Towing dir: 170° Wire out: 1200 m Speed: 3 kn*10

Sorted: 24 Kg Total catch: 422.10 CATCH/HOUR: 422.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Nematocarcinus africanus	252.00	62000	59.70	
Merluccius polli	126.00	468	29.85	299
Dibranchus atlanticus	18.00	2142	4.26	
Laemonea sp	9.00	72	2.13	
Malacocephalus occidentalis	5.40	18	1.28	
Chaunax pictus	5.40	72	1.28	
Zenopsis conchifer	3.60	18	0.85	
Synagrops microlepis	1.80	90	0.43	
Stmopterus spinax	0.90	36	0.21	
Plesionika martia	0.00	90		
Xenolepidichthys dagleishi	0.00	18		
Total	422.10		99.99	

PROJECT STATION 364

DATE: 20/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 748
 start stop duration Long E 1236
 TIME : 00:30:00 01:30:00 60 (min) Purpose code: 3
 LOG : 212.80 215.30 3.00 Area code : 2
 FDEPTH: 300 300 GearCond.code:
 BDEPTH: 300 300 Validity code:
 Towing dir: 330° Wire out: 1000 m Speed: 3 kn*10
 Sorted: 28 Kg Total catch: 392.00 CATCH/HOUR: 392.00

SPECIIS	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius polli	154.00	994	39.29	300
Saurida brasiliensis	114.80	2296	29.29	
Nematocarcinus africanus	46.20	10640	11.79	
Chlorophthalmus agassizi	28.00	1526	7.14	
Coelorrinchus sp	21.00	322	5.36	
Pontinus kuhlii	9.80	126	2.50	
Malacocephalus laevis	4.20	98	1.07	
Chelidonichthys capensis	2.80	14	0.71	
Squalus megalops	2.80	42	0.71	
Dibranchius atlanticus	2.80	322	0.71	
Trichiurus lepturus	2.80	84	0.71	
Plesiopeanaeus edwardsianus	1.40	70	0.36	
Malacocephalus occidentalis	1.40	98	0.36	
Total	392.00		100.00	

PROJECT STATION 365

DATE: 20/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 743
 start stop duration Long E 1233
 TIME : 02:20:00 03:20:00 60 (min) Purpose code: 3
 LOG : 218.30 220.90 3.00 Area code : 2
 FDEPTH: 201 201 GearCond.code:
 BDEPTH: 201 201 Validity code:
 Towing dir: 330° Wire out: 800 m Speed: 3 kn*10
 Sorted: 26 Kg Total catch: 157.80 CATCH/HOUR: 157.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chlorophthalmus agassizi	72.00	4000	45.63	301
Merluccius polli	33.00	408	20.91	
Uranoscopus polli	26.40	2640	16.73	
Trichiurus lepturus	6.60	210	4.18	
Trachinus armatus	6.00	210	3.80	
Brotula barbata	6.00	336	3.80	
Nystriophis rostellatus	3.00	102	1.90	
Nematocarcinus africanus	3.00	378	1.90	
Zeus faber	0.60	6	0.38	
Saurida brasiliensis	0.60	12	0.38	
Pontinus kuhlii	0.60	12	0.38	
Total	157.80		99.99	

PROJECT STATION 366

DATE: 20/ 9/89 GEAR TYPE: BT No:1 POSITION: Lat S 749
 #start stop duration Long E 1250
 TIME : 07:55:00 08:25:00 30 (min) Purpose code: 3
 LOG : 247.40 248.80 1.50 Area code : 2
 FDEPTH: 35 30 GearCond.code:
 SDEPTH: 35 30 Validity code:
 Towing dir: 320° Wire out: 400 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 251.20 CATCH/HOUR: 502.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Pagellus delisottii	235.20	2700	48.82	302
Trachurus trachurus	78.80	4098	15.29	303
Dentex congolensis	75.20	1616	14.97	
Plectornynchus mediterraneus	17.60	16	3.50	
Sphyræna guachancho	16.00	16	3.18	
Umorina canariensis	14.40	16	2.87	
Trichurus lepturus	14.40	48	2.87	
Zeus fater	8.00	16	1.59	
Boops boops	8.00	368	1.59	
Fistularia petimba	8.00	16	1.59	
Atractosteion sequigens	6.40	16	1.27	
Decapterus rufonchus	4.80	64	0.96	
Chaetodon noefleri	4.80	16	0.96	
Sardinella aurita	4.80	160	0.96	
Todarodes sagittatus	3.20	960	0.64	
Dentex angolensis	3.20	32	0.64	
Decapterus punctatus	1.60	32	0.32	
Aricama oondi	0.00	16		
Saurida trawillensis	0.00	48		
Peristodion cataphractum	0.00	16		
Total	502.40		100.02	

PROJECT STATION 368

DATE: 20/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 014
 start stop duration Long E 1307
 TIME : 13:25:00 13:55:00 30 (min) Purpose code: 3
 LOC : 280.00 289.50 1.50 Area code : 2
 FDEPTH: 68 64 GearCond.code:
 BDEPTH: 68 64 Validity code:
 Towing dir: 103° Wire out: 275 m Speed: 3 kn*10

Sorted: 30 kg Total catch: 120.00 CATCH/HOUR: 240.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Brachydeuterus surrus	80.00	2932	33.33	308
Trichiurus lepturus	40.00	672	16.67	
Panaxus notialis	17.60	568	7.33	309
Pseudotoilithus typus	16.00	24	6.67	
Dentex angolensis	13.60	56	5.67	
Citharus linguatula	12.00	248	5.00	
Uapris canariensis	10.40	144	4.33	
Dentex barnardi	8.80	176	3.67	307
Fagusa lascaris	6.40	56	2.67	
Galeoides decussatus	5.60	64	2.33	
Brotula barbata	5.60	32	2.33	
Parapenaeus longirostris	4.00	768	1.67	
Fagallus bellotti	4.00	40	1.67	
Preroscion palli	4.00	112	1.67	
Grammolites gruy.	4.00	56	1.67	
Pomadourys incisus	1.60	24	0.67	
Ilisha africana	1.60	16	0.67	
Trachurus trachurus	1.60	40	0.67	
Selena dorsalis	1.60	16	0.67	
Lopholates kemp	0.80	8	0.33	
Torpedo torpedo	0.80	8	0.33	
Total	240.00		100.02	

PROJECT STATION 370

H/V DR. FRIDTJOF HANSEN CATCH DATA
PROJECT: A2

DATE: 20/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 834
 START stop duration Long E 1252
 TIME : 19:18:00 20:18:00 60 (min) Purpose code: 3
 LOG : 336.20 339.20 3.00 Area code : 2
 VDEPTH: 500 500 GearCond.code:
 WDEPTH: 500 500 Validity code:
 Towing dir: 160° Wire out: 1400 m Speed: 3 kn*10

Sorted: 16 MA TOTAL CATCH: 167.50 CATCH/HOUR: 167.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Merluccius polli	90.00	300	53.60	314
Nematocarcinus africanus	51.00	9160	30.35	
Aristeus varidens	7.20	648	4.29	312
Melanostoeias sp.	3.00	30	1.79	
Dachygdus melanotranicus	3.00	132	1.79	
Chaunax pictus	2.40	30	1.43	
Yarella blackfordi	2.40	66	1.43	
Etmopterus polli	2.40	30	1.43	
Hoplostethus mediterraneus	1.20	36	0.71	
Stereocastis sculpta	1.20	78	0.71	
Nesunia aequalis	0.90	12	0.54	
Coelorhynchus coelorhynchus	0.90	12	0.54	
Xenodermichthys socialis	0.60	60	0.36	
Benthodesmus tenuis	0.60	12	0.36	
Plesiopaneus edwardsianus	0.50	15	0.30	313
Stomias affinis	0.30	12	0.18	
Plesionika martia	0.30	156	0.18	
Halosaurus oventi	0.00	6		
Nesunia sp	0.00	6		
Nemichthys scolopacea	0.00	6		
Dibranchius atlanticus	0.00	6		
Total	167.50		100.02	

PROJECT STATION 371

DATE: 20/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 035
 start stop duration Long E 1254
 TIME : 21:39:00 22:39:00 60 (min) Purpose code: 3
 LOG : 346.20 349.20 3.00 Area code : 2
 FDEPTH: 400 401 GearCond.code:
 BDEPTH: 400 401 Validity code:
 Towing dir: 155° Wire out: 1200 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 334.80 CATCH/HOUR: 334.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Merluccius polli	192.00	998	57.35	316
Nematocarcinus africanus	60.00	37200	17.92	
Aristeus varidens	18.00	1128	5.38	315
Galeus polli	13.20	336	3.94	
Dibranchius atlanticus	12.00	744	3.58	
Malacocephalus occidentalis	9.60	48	2.87	
Laesonema sp	6.00	72	1.79	
Chaunax pictus	6.00	168	1.79	
Pterothrissus balloei	4.80	24	1.43	
Centroscymnus crepidater	3.60	12	1.08	
Stoapterus polli	3.60	36	1.08	
Coelorhynchus coelorhynchus	2.40	72	0.72	
Benthodesmus tenuis	1.20	24	0.36	
Chlorophthalmus agassizi	1.20	12	0.36	
Halosaurus sp	0.60	36	0.18	
Panxus noctialis	0.60	36	0.18	
Selenocera africana	0.00	12		
Flesichika marcia	0.00	240		
Total	334.80		100.01	

PROJECT STATION 372

DATE: 21/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 029
 start stop duration Long E 1254
 TIME : 01:15:00 02:15:00 60 (min) Purpose code: 3
 LOG : 362.70 364.80 3.00 Area code : 2
 FDEPTH: 300 306 GearCond.code:
 BDEPTH: 300 306 Validity code:
 Towing dir: 335° Wire out: 950 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 413.70 CATCH/HOUR: 413.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Saurida brasiliensis	238.00	5652	57.53	317
Merluccius polli	84.00	322	20.30	316
Chlorophthalmus atlanticus	32.20	1666	7.78	
Malacocephalus laevis	30.80	532	7.43	
Pterothrissus balloei	14.00	112	3.38	
Zeus faber	7.00	14	1.69	
Plesiopomus edwardsianus	2.80	140	0.68	
Galeus polli	1.40	14	0.34	
Chelidonicthys cspensis	1.40	14	0.34	
Nezumia aequalis	1.40	42	0.34	
Squalus megalops	0.70	14	0.17	
Total	413.70		100.00	

PROJECT STATION 373

DATE: 01/ 5/99 GEAR TYPE: BT No:1 POSITION: Lat S 034
 start stop duration Long E 1250
 TIME : 03:55:00 04:55:00 60 (min) Purpose code: 3
 LOG : 377.90 379.90 3.00 Area code : 2
 FDEPTH: 199 200 GearCond.code:
 BDEPTH: 199 200 Validity code:
 Towing dir: 350° Wire out: 800 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 228.00 CATCH/HOUR: 228.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Chlorophthalmus atlanticus</i>	148.70	2150	64.21	
<i>Pterothrissus ballooi</i>	24.00	232	10.53	319
<i>Merluccius polli</i>	23.20	272	10.18	318
<i>Plesionenceus edwardsianus</i>	14.40	2400	6.32	
<i>Trichiurus lepturus</i>	10.40	32	4.56	
<i>Chaliconichtys capensis</i>	2.40	72	1.05	
<i>Zeus faber</i>	2.40	32	1.05	
<i>Saurida brasiliensis</i>	1.60	136	0.70	
<i>Erotula barbata</i>	1.60	32	0.70	
<i>Ombastropes pteropus</i>	0.80	16	0.35	
<i>Hystriophis rostellatus</i>	0.80	24	0.35	
Total	228.00		100.00	

PROJECT STATION 374

DATE: 21/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 832
 start stop duration Long E 1216
 TIME : 12:35:00 13:05:00 30 (min) Purpose code: 3
 LOG : 442.10 443.40 1.50 Area code : 2
 FDEPTH: 41 41 GearCond.code:
 BDEPTH: 41 41 Validity code:
 Towing dir: S* Wire out: 150 m Speed: 3 kn*10

Sorted: 22 Kg Total catch: 143.20 CATCH/HOUR: 286.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	Numbers		
Trichiurus lepturus	54.00	1224	18.85	
Pseudocolithus typus	51.60	166	18.02	
Brachycauterus auritus	50.40	1482	17.60	
Pteroscion pelli	48.00	2180	16.76	
Ilisha africana	21.60	528	7.54	321
Colooides decadactylus	9.60	24	3.35	
Pomadasys jubalini	7.20	12	2.51	
Dasyatis marmorata	6.60	2	2.30	
Panaeus notialis	6.00	248	2.09	322
Dicologlossa cuneata	6.00	132	2.09	
Dasyatis sp	5.00	2	1.75	
Argyroscopus nololepidotus	4.80	12	1.68	
Selene dorsalis	3.60	48	1.26	
Chloroscyttarus chrysurus	3.60	36	1.26	
Grammolites gruvelli	3.60	72	1.26	
Trochurus trecae	3.60	24	1.26	
Sphyrana guanchano	1.20	12	0.42	
Scyllarus pasteli	0.00	12		
Alectis alexandrinus	0.00	12		
Paralichthys cataphractus	0.00	12		
Total	286.40		100.00	

PROJECT STATION 375

DATE: 21/ 5/99 GEAR TYPE: BT No:1 POSITION: Lat S 837
 start stop duration Long E 1307
 TIME : 14:40:00 15:10:00 30 (min) Purpose code: 3
 LOG : 457.60 458.60 1.00 Area code : 2
 FDEPTH: 95 95 GearCond.code:
 HDEPTH: 95 95 Validity code:
 Towing dir: * Wire out: 400 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 163.20 CATCH/HOUR: 326.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trichiurus lepturus	216.00	1140	66.18	323
Brachydeuterus auritus	58.80	4900	18.01	
Arotula carinata	13.20	24	4.04	
Pterothrius belloci	7.20	48	2.21	
Trachurus trachurus	6.00	60	1.84	
Scorpaena noronhai	4.80	36	1.47	
Citharus linguatula	4.80	60	1.47	
Uranoscopus albesca	3.60	24	1.10	
Parapenaeus longirostris	2.40	444	0.74	
COBIIDAE	2.40	216	0.74	
Saurida brasiliensis	2.40	312	0.74	
Umbrina canariensis	2.40	12	0.74	
Fegusa lascaris	2.40	12	0.74	
Scops scops	0.00	12		
Total	326.40		100.02	

PROJECT STATION 376

DATE: 21/ 5/99 GEAR TYPE: BT No:1 POSITION: Lat S 840
 start stop duration Long E 1259
 TIME : 17:10:00 18:10:00 60 (min) Purpose code: 3
 LOG : 474.50 476.70 3.00 Area code : 2
 FDEPTH: 204 201 GearCond.code:
 HDEPTH: 204 201 Validity code:
 Towing dir: 355° Wire out: 800 m Speed: 3 kn*10

Sorted: 35 Kg Total catch: 800.40 CATCH/HOUR: 800.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Merluccius polli	276.00	4140	34.48	324
Diaphus dumoni	218.50	98325	27.30	
Pteronotus peli	138.00	10212	17.24	325
Chlorophthalmus gissiszi	80.50	6305	10.06	326
Parapenaeus longirostris	41.40	7700	5.17	327
Pterothrius belloci	25.30	253	3.16	
Trichiurus lepturus	6.90	23	0.86	
Sepia elegans	4.60	506	0.57	
Hexagrama aequalis	4.60	230	0.57	
Pedunculus sagittatus	2.30	23	0.29	
Zenopsis conchifer	2.30	23	0.29	
unident. sp.	0.00	207		
Total	800.40		99.99	

PROJECT STATION 377

DATE: 21/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 649
 start stop duration Long E 1250
 TIME : 20:26:00 21:26:00 60 (min) Purpose code: 3
 LOG : 495.00 497.20 3.00 Area code : 2
 FDEPTH: 452 452 GearCond.code:
 BDEPTH: 452 452 Validity code:
 Towing dir: 5° Wire out: 1350 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 511.70 CATCH/HOUR: 511.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Merluccius polli</i>	396.00	1350	77.39	328
<i>Cubiceps</i> sp	18.00	18	3.52	
<i>Triplophos</i> sp	16.20	4860	3.17	
<i>Chaunax pictus</i>	14.40	342	2.81	
<i>Laemonema lauroysi</i>	10.80	108	2.11	
<i>Nematocarcinus africanus</i>	10.80	2592	2.11	
<i>Centroscyllium crepidater</i>	5.40	18	1.06	
<i>Malacocephalus occidentalis</i>	5.40	18	1.06	
<i>Plesionika martia</i>	5.40	2808	1.06	
<i>Oibranchus atlanticus</i>	5.40	360	1.06	
<i>Bathygadus melanobranchus</i>	3.60	18	0.70	
<i>Coelorinchus coelorhincus</i>	3.60	54	0.70	
<i>Cynopenticus ferox</i>	3.60	36	0.70	
<i>Chlorophthalmus agassizi</i>	3.60	54	0.70	
<i>Plesiopanaeus edwardsianus</i>	2.40	65	0.47	330
<i>Melanostomias</i> sp.	1.80	18	0.35	
<i>Benthodesmus tenuis</i>	1.80	36	0.35	
<i>Stenopterus polli</i>	1.80	18	0.35	
<i>Aristeus varidens</i>	1.70	102	0.33	329
<i>Halosaurus</i> sp	0.00	18		
Total	511.70		100.00	

PROJECT STATION 378

DATE: 21/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 851
 start stop duration Long E 1284
 TIME : 23:03:00 00:03:00 60 (min) Purpose code: 3
 LOC : 508.60 508.70 3.00 Area code : 2
 FDEPTH: 351 349 GearCond.code:
 BDEPTH: 351 349 Validity code:
 Towing dir: 15° Hire cut: 1050 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 444.00 CATCH/HOUR: 444.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Merluccius polli</i>	208.00	1490	46.85	331
<i>Chlorophthalmus agassizi</i>	94.40	1920	21.26	
<i>Pterothrissus bellotti</i>	70.40	496	15.86	332
<i>Parapenaeus longirostris</i>	16.00	1632	3.60	
<i>Syngnathus microlepis</i>	11.20	480	2.52	
<i>Malacocephalus occidentalis</i>	9.60	64	2.16	
<i>Limnionus laureysi</i>	9.60	176	2.16	
<i>Cheunax pictus</i>	6.40	112	1.44	
<i>Dibranchius atlanticus</i>	6.40	592	1.44	
<i>Hymenocephalus italicus</i>	3.20	144	0.72	
<i>Cynoponticus ferox</i>	3.20	112	0.72	
<i>Aristeus varidens</i>	3.20	176	0.72	
<i>Coelorhynchus coelorhynchus</i>	1.60	16	0.36	
<i>Nezumia aequalis</i>	0.80	16	0.18	
Total	444.00		99.99	

PROJECT STATION 379

DATE: 23/ 5/89 GEAR TYPE: BT No:3 POSITION: Lat 5 722
 start stop duration Long 5 1200
 TIME : 05:45:00 06:45:00 60 (min) Purpose code: 3
 LOG : 674.80 677.30 3.00 Area code : 2
 PDEPTH: 592 596 GearCond.code:
 BDEPTH: 592 596 Validity code:
 Towing dir: 335° Wire out: 1700 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 173.34 CATCH/HOUR: 173.34

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
Nematocarcinus africanus	102.00	20400	58.84	334
Hymenocephalus italicus	10.20	36	5.86	
Aristeus varidens	9.00	330	5.19	333
Mariuccius polli	7.80	18	4.50	
Taningia sp	6.00	12	3.46	
Gentodossius tenuis	4.80	126	2.77	
Hydrolagus sp.	4.20	6	2.42	
Stereomastis sculpta	3.00	300	1.73	
Triplophos sp	3.00	450	1.73	
Oadella maraldi	2.40	60	1.38	
Cynopentacus ferox	2.40	30	1.38	
Etmopterus polli	2.40	6	1.38	
Deania profundorum	2.40	24	1.38	
Nezumia aequalis	2.40	42	1.38	
Xenodermichthys socialis	1.80	48	1.04	
Yarella blackfordi	1.80	18	1.04	
Plasiopaneus edwardsianus	1.80	46	1.04	
Lophius vaillanti	1.50	1	0.87	
Geryon marisae	1.50	3	0.87	
Melanostomias sp.	1.20	12	0.69	
Raja clavata	0.60	6	0.35	
Bathygadus melanobranchus	0.60	6	0.35	
Heterocarpus grimaldii	0.48	18	0.28	
Dibranchius atlanticus	0.06	30	0.03	
Nemichthys scolopacea	0.00	12		
Hoploteichus mediterraneus	0.00	6		
Total	173.34		98.98	

PROJECT STATION 380

DATE: 23/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 714
 start stop duration Long E 1209
 TIME : 08:51:00 09:51:00 60 (min) Purpose code: 3
 LOG : 893.00 895.40 3.00 Area code : 2
 FDEPTH: 201 209 GearCond.code:
 BDEPTH: 201 209 Validity code:
 Towing dir: 310° Wire out: 800 m Speed: 3 kn*10

Sorted: 59 Kg Total catch: 2676.50 CATCH/HOUR: 2676.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Synagrops microlepis	1300.00	174200	48.57	335
Dentex angolensis	1200.00	3570	44.83	337
Arionna bondi	125.00	2250	4.67	336
Chelidonichthys gabonensis	20.00	100	0.75	
Zenopsis conchifer	15.00	10	0.56	
Todarodes sagittatus	15.00	200	0.56	
Urotula barbata	1.50	1	0.06	
Parapenaeus longirostris	0.00	50		
Saurida brasiliensis	0.00	50		
Chlorophthalmus agassizi	0.00	50		
Total	2676.50		100.00	

PROJECT STATION 381

DATE: 23/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 712
 start stop duration Long E 1222
 TIME : 12:10:00 12:40:00 30 (min) Purpose code: 3
 LOG : 715.70 716.60 1.50 Area code : 2
 FDEPTH: 95 95 GearCond.code:
 BDEPTH: 95 95 Validity code:
 Towing dir: 315° Wire out: 400 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 69.00 CATCH/HOUR: 138.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Dentex congolensis	56.00	1746	40.58	340
Pagellus callottii	45.00	608	32.61	341
Dentex angolensis	15.00	160	10.67	339
Trachurus traca	9.00	310	6.52	338
Todarodes sagittatus	4.50	74	3.26	
Dentex gibbosus	3.50	4	2.54	
Zeus faber	2.50	4	1.81	
Decapterus rhonchus	1.50	10	1.09	
Chelidonichthys gabonensis	1.00	10	0.72	
Total	138.00		100.00	

PROJECT STATION 382

DATE: 23/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 708
 start stop duration Long E 1227
 TIME : 14:00:00 14:30:00 30 (min) Purpose code: 3
 LOG : 727.30 728.10 1.50 Area code : 2
 FDEPTH: 70 69 GearCond.code:
 EDEPTH: 70 69 Validity code:
 Towing dir: 350° Wire out: 300 m Speed: 3 kn*10

Sorted: Kg Total catch: 30.60 CATCH/HOUR: 61.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Sphyræna guachancho	16.00	28	26.14	
Alloceuchis africana	6.40	2132	10.46	
Dentex atlanticus	5.40	10	8.82	
Sepia officinalis hierredda	5.00	4	8.17	
Trichiurus lepturus	4.60	6	7.52	
Dentex canariensis	3.80	22	6.21	
Dentex angolensis	3.80	16	6.21	
Pagellus bellottii	3.80	28	6.21	342
Scoræpa dorsalis	3.60	10	5.88	
Seriola lalandi	2.60	4	4.25	
Sparus caeruleostictus	2.40	8	3.92	
Fistularia petimba	2.20	10	3.59	
Chelidonichthys capensis	1.40	6	2.29	
Decapcterus punctatus	0.20	4	0.33	
Todarodes sagittatus	0.00	2		
Trachurus trécaë	0.00	2		
Total	61.20		100.00	

PROJECT STATION 384

DATE: 23/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 701
 start stop duration Long E 1146
 TIME : 00:46:00 00:48:00 60 (min) Purpose code: 3
 LOC : 815.60 818.30 3.00 Area code : 2
 FDEPTH: 592 599 GearCond.code:
 BDEPTH: 592 599 Validity code:
 Towing dir: 195° Wire out: 1650 m Speed: 3 kn*10

Sortes: 28 Kg Total catch: 70.62 CATCH/HOUR: 70.62

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
Banthodesmus tenuis	11.25	316	15.93	
Nematocarcinus africanus	10.00	2000	14.16	
Triplophos sp	8.50	1430	12.04	
Merluccius polli	7.50	30	10.62	
Stereomastis sculpta	7.50	750	10.62	
Melanostomias sp.	5.00	82	7.08	
Hymenocephalus italicus	4.00	30	5.66	
Etmopterus polli	3.25	47	4.60	
Malacocephalus occidentalis	2.75	52	3.89	
Aristeus varidens	2.25	107	3.19	
Cubicaps sp	1.50	2	2.12	
Glyphus arcuipalis	1.25	62	1.77	
Taningia sp	1.00	7	1.42	
Chaunax pictus	1.00	10	1.42	
Hoplostethus mediterraneus	1.00	30	1.42	
Yarella blackfordi	1.00	10	1.42	
Xenodermichthys socialis	0.75	67	1.06	
Plesiopeneus edwardsianus	0.50	2	0.71	
Raja clavata	0.25	2	0.35	
Halosaurus sp	0.25	2	0.35	
Gibranchus atlanticus	0.12	5	0.17	
Carcharhinus limbatus	0.00	2		
Total	70.62		100.00	

PROJECT STATION 385

DATE: 24/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 700
 start stop duration Long E 1156
 TIME : 02:45:00 03:15:00 30 (min) Purpose code: 3
 LOG : 832.00 833.00 1.50 Area code : 2
 FDEPTH: 225 225 GearCond.code:
 BDEPTH: 225 225 Validity code:
 Towing dir: 335° Wire out: 650 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 135.50 CATCH/HOUR: 271.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Synagrops microlepis</i>	160.00	8000	59.04	
<i>Merluccius polli</i>	30.00	170	11.07	
<i>Saurida brasiliensis</i>	20.00	1320	7.38	
<i>Brotula barbata</i>	15.00	10	5.54	
<i>Ponaxius notialis</i>	13.00	1940	4.80	
<i>Dentex angolensis</i>	8.00	20	2.95	
<i>Chelidonichthys capensis</i>	8.00	630	2.95	
<i>Uranoscopus polli</i>	4.00	50	1.48	
<i>Zeus fater</i>	4.00	20	1.48	
<i>Pterothrissus belloci</i>	3.00	10	1.11	
<i>Stereomastis sculpta</i>	3.00	50	1.11	
<i>Trichiurus lepturus</i>	2.00	10	0.74	
<i>Malacocephalus occidentalis</i>	1.00	10	0.37	
Total	271.00		100.02	

PROJECT STATION 386

DATE: 24/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 656
 start stop duration Long E 1203
 TIME : 06:35:00 07:05:00 30 (min) Purpose code: 3
 LOG : 851.90 853.20 1.50 Area code : 2
 FDEPTH: 99 99 GearCond.code:
 BDEPTH: 99 99 Validity code:
 Towing dir: 67° Wire out: 450 m Speed: 3 kn*10

Sorted: 30 Kg Total catch: 241.00 CATCH/HOUR: 482.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Trachurus tracas</i>	364.00	12288	79.67	343
<i>Dentex congocensis</i>	59.20	1746	12.28	344
<i>Pagellus bellottii</i>	11.20	240	2.32	
<i>Aricama bondi</i>	11.20	256	2.32	
<i>Todarodes sagittatus</i>	4.80	128	1.00	
<i>Dentex angolensis</i>	4.80	32	1.00	
<i>Chelidonichthys gabonensis</i>	3.20	48	0.66	
<i>Peristedion cataphractum</i>	1.60	64	0.33	
<i>Sarda sarda</i>	1.60	2	0.33	
<i>Fistularia petiata</i>	0.40	2	0.08	
<i>Saurida brasiliensis</i>	0.00	64		
Total	482.00		99.99	

PROJECT STATION 387

DATE: 24/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 652
 start stop duration Long E 1212
 TIME : 09:00:00 09:30:00 30 (min) Purpose code: 2
 LOG : 658.20 669.50 1.50 Area code : 2
 FDEPTH: 71 74 GearCond.code:
 BDEPTH: 71 74 Validity code:
 Towing dir: 330° Wire out: 350 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 73.00 CATCH/HOUR: 147.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Pagellus bellottii	72.00	806	48.72	345
Epinephelus aeneus	32.00	18	21.68	
Dentex angolensis	18.00	72	12.20	346
Priacanthus arenatus	5.20	8	3.82	
Sarda sarda	4.20	6	2.85	
Chaetodon ncofleri	4.00	20	2.71	
Dentex congoensis	3.20	56	2.17	
Sphyræna guachancho	2.40	12	1.63	
Todarodes sagittatus	2.00	240	1.36	
Seriola lalandi	2.00	2	1.36	
Decapterus rhonchus	1.20	20	0.81	
Trachurus tracas	0.80	16	0.54	
Alloteuthis africana	0.40	128	0.27	
Decapterus punctatus	0.20	4	0.14	
Ariomma bondi	0.00	4		
Peristedion cataphractum	0.00	4		
Total	147.60		100.02	

PROJECT STATION 388

DATE: 24/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 645
 start stop duration Long E 1226
 TIME : 12:03:00 12:33:00 30 (min) Purpose code: 3
 LOC : 892.50 893.60 1.50 Area code : 2
 FDEPTH: 18 18 GearCond.code:
 BDEPTH: 18 18 Validity code:
 Towing dir: 330' Wire out: 100 m Speed: 3 kn*10

Sorted: 22 Kg Total catch: 22.00 CATCH/HOUR: 44.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Dentex barnardii	8.00	14	18.18	
Sperus caeruleostictus	6.00	10	13.64	
Alutera scripta	6.00	8	13.64	
Caranx crysos	5.00	6	11.36	
Alectis alexandrinus	5.00	6	11.36	
Epinephelus aeneus	4.00	2	9.09	
Sparus pagrus africanus	3.00	2	6.82	
Sepia officinalis hierredda	2.40	2	5.45	
Balistes punctatus	1.60	2	3.64	
Scorpaenomorus tritor	1.00	2	2.27	
Rhypticus saponaceus	0.60	2	1.36	
Albula vulpes	0.60	2	1.36	
Decapterus punctatus	0.40	30	0.91	
Fistularia petimba	0.40	2	0.91	
Echeneis naucrates	0.00	2		
Decapterus rhencus	0.00	2		
Total	44.00		99.99	

PROJECT STATION 389

DATE: 24/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 634
 start stop duration Long E 1219
 TIME : 14:00:00 14:30:00 30 (min) Purpose code: 3
 LOC : 906.30 907.90 1.50 Area code : 2
 FDEPTH: 26 25 GearCond.code:
 BDEPTH: 26 25 Validity code:
 Towing dir: 193° Wire out: 150 m Speed: 3 kn*10

Sorted: 56 Kg Total catch: 56.20 CATCH/HOUR: 112.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Dentex canariensis</i>	44.00	92	39.15	348
<i>Sparus caeruleostictus</i>	10.00	58	16.01	347
<i>Paragalax pectoralis</i>	16.00	8	14.23	
<i>Bodianus speciosus</i>	4.40	6	3.91	
<i>Acanthurus monroviae</i>	4.00	4	3.56	
<i>Sparus auriga</i>	3.60	2	3.20	
<i>Sphyræna quachancho</i>	3.60	10	3.20	
<i>Pistularia petimba</i>	3.00	12	2.67	
<i>Selene dorsalis</i>	2.60	4	2.31	
<i>Raja miralecus</i>	2.60	4	2.31	
<i>Pagellus callottii</i>	2.00	4	1.78	
<i>Stromateus fiatola</i>	2.00	2	1.78	
<i>Scomberomorus tritor</i>	2.00	2	1.78	
<i>Pseudolithus typus</i>	1.60	2	1.42	
<i>Alutera scripta</i>	0.80	2	0.71	
<i>Monolana microstoma</i>	0.80	4	0.71	
<i>Chilomycterus spinosus mauret.</i>	0.60	2	0.53	
<i>Chaetodon robustus</i>	0.40	2	0.36	
<i>Balistes caprisicus</i>	0.40	2	0.36	
Total	112.40		99.98	

PROJECT STATION 390

DATE: 24/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 637
 start stop duration Long E 1208
 TIME : 15:55:00 16:25:00 30 (min) Purpose code: 3
 LOC : 919.90 921.10 1.50 Area code : 2
 FDEPTH: 65 66 GearCond.code:
 BDEPTH: 65 66 Validity code:
 Towing dir: 355° Wire out: 300 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 66.50 CATCH/HOUR: 103.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Pagellus bellottii</i>	90.00	390	67.67	349
<i>Alloteuthis africana</i>	18.50	2774	13.91	
<i>Alectis ciliaris</i>	7.50	4	5.64	
<i>Trachurus trachae</i>	3.50	70	2.63	
<i>Trichurus lepturus</i>	3.00	4	2.26	
<i>Chelidonichthys capensis</i>	3.00	24	2.26	
<i>Brachydeuterus auritus</i>	2.50	14	1.98	
<i>Pistularia petimba</i>	1.50	4	1.13	
<i>Trachinus radiatus</i>	1.50	4	1.13	
<i>Stephanolepis setifer</i>	1.00	4	0.75	
<i>Todarodes sagittatus</i>	1.00	10	0.75	
Total	153.00		100.01	

PROJECT STATION 392

DATE: 24/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 642
 start stop duration Long E 1136
 TIME : 21:05:00 22:05:00 60 (min) Purpose code: 3
 LOG : 960.90 963.40 3.00 Area code : 2
 FDEPTH: 600 597 GearCond. code:
 BDEPTH: 600 597 Validity code:
 Towing dir: 330° Hira out: 1600 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 110.40 CATCH/HOUR: 110.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Hoplostethus mediterraneus</i>	32.00	256	28.99	
<i>Merluccius polli</i>	12.80	24	11.59	
<i>Urophycis exilis</i>	12.00	32	10.87	
<i>Triplophos sp</i>	8.00	260	7.25	
<i>Epinanta costsecanarie</i>	6.80	4	6.16	
<i>Monomitus sp</i>	5.20	63	4.71	
<i>Malacocephalus occidentalis</i>	4.80	72	4.35	
<i>Geryon maritae</i>	4.40	8	3.99	
<i>Bathygadus sp</i>	4.00	12	3.62	
<i>Arieteus varidens</i>	3.50	130	3.17	353
<i>Halosaurus sp</i>	3.20	40	2.90	
<i>Synaphobranchus kaupii</i>	2.00	32	1.81	
<i>Laemonea laureysi</i>	2.00	12	1.81	
<i>Glypnus marsupialis</i>	2.00	72	1.81	352
<i>Yarella blackfordi</i>	1.60	20	1.45	
<i>Xenodermichthys socialis</i>	1.20	20	1.09	
<i>Stereomastix sculpta</i>	1.00	89	0.91	
<i>Bathyrhynchus vicinus</i>	0.80	4	0.72	
<i>Melanostomias sp.</i>	0.80	12	0.72	
<i>Atractopus polli</i>	0.80	4	0.72	
<i>Benthodermus tenuis</i>	0.60	8	0.54	
<i>Chlorophthalmus agassizi</i>	0.40	4	0.36	
<i>Bathygadus melanobranchus</i>	0.40	4	0.36	
<i>Plesionectes edwardsianus</i>	0.10	1	0.09	
Total	110.40		99.99	

PROJECT STATION 393

DATE: 25/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 616
 start stop duration Long E 1209
 TIME : 07:27:00 07:57:00 30 (min) Purpose code: 3
 LOG : 1041.30 1042.60 1.50 Area code : 2
 FDEPTH: 31 32 GearCond.code:
 BDEPTH: 31 32 Validity code:
 Towing dir: 348° Wire out: 150 m Speed: 3 kn*10

Sorted: Kg Total catch: 103.20 CATCH/HOUR: 206.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Pseudolithus tyus</i>	134.00	126	64.92	354
<i>Oaleoides decadactylus</i>	26.00	60	12.60	
<i>Sphyraena guachancho</i>	22.00	58	10.66	356
<i>Selene dorsalis</i>	9.00	58	4.36	358
<i>Trichiurus lepturus</i>	4.00	6	1.94	
<i>Sparus caeruleostictus</i>	4.00	6	1.94	
<i>Arius latiscutatus</i>	3.00	2	1.48	
<i>Scomberomus tritor</i>	1.40	2	0.68	
<i>Drachydeuteros curitus</i>	1.00	10	0.48	
<i>Sardinella maderensis</i>	1.00	60	0.48	
<i>Pagellus bellottii</i>	0.40	2	0.19	
<i>Ilisha africana</i>	0.40	4	0.19	
<i>Penaeus notialis</i>	0.20	4	0.10	
Total	206.40		99.99	

PROJECT STATION 394

DATE: 25/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 623
 start stop duration Long E 1202
 TIME : 09:35:00 10:05:00 30 (min) Purpose code: 3
 LOG : 1055.40 1056.60 1.50 Area code : 2
 FDEPTH: 63 68 GearCond.code:
 BDEPTH: 63 69 Validity code:
 Towing dir: 333° Wire out: 300 m Speed: 3 kn*10

Sorted: 20 Kg Total catch: 50.50 CATCH/HOUR: 101.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Pagellus bellottii</i>	65.00	650	64.36	357
<i>Dentex angolensis</i>	11.50	70	11.39	
<i>Trachurus trachurus</i>	6.50	70	6.44	359
<i>Umbra canariensis</i>	5.00	10	4.95	
<i>Dentex barnardi</i>	3.50	14	3.47	
<i>Dentex congoensis</i>	3.50	60	3.47	
<i>Chaetodon noelkeri</i>	2.50	10	2.48	
<i>Selene dorsalis</i>	1.50	4	1.49	
<i>Pseudupeneus prayansis</i>	1.00	4	0.99	
<i>Sphyraena guachancho</i>	1.00	4	0.99	
Total	101.00		100.03	

PROJECT STATION 395

DATE: 25/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 624
 start stop duration Long E 1152
 TIME : 11:37:00 12:07:00 30 (min) Purpose code: 3
 LOC : 1069.60 1071.20 1.50 Area code : 2
 FDEPTH: 100 100 GearCond.code:
 BDEPTH: 100 100 Validity code:
 Towing dir: 320° Wire out: 450 m Speed: 3 kn*10

Sorted: Kg Total catch: 22.85 CATCH/HOUR: 45.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
Dentex angolensis	28.00	112	61.27	359
Sparus caeruleostictus	4.60	2	10.07	
Dentex congolensis	4.40	58	9.63	361
Trachurus trachus	2.40	68	5.25	360
Pagellus bellottii	1.60	12	3.50	
Zeus faber	1.20	4	2.63	
Raja miraletus	1.20	2	2.63	
Dentex gibbosus	1.00	2	2.19	
Todarodes sagittatus	0.80	42	1.75	
Dentex barnardi	0.40	2	0.88	
Chelidonichthys gaborensis	0.10	2	0.22	
Total	45.70		100.02	

PROJECT STATION 396

DATE: 25/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 621
 start stop duration Long E 1144
 TIME : 13:20:00 13:50:00 30 (min) Purpose code: 3
 LOC : 1080.40 1082.00 1.50 Area code : 2
 FDEPTH: 114 113 GearCond.code:
 BDEPTH: 114 113 Validity code:
 Towing dir: 350° Wire out: 450 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 93.70 CATCH/HOUR: 187.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
Trachurus trachus	112.00	3024	59.77	362
Squalus megalops	18.90	6	10.09	
Dentex angolensis	17.50	188	9.34	363
Dentex congolensis	14.00	272	7.47	364
Chelidonichthys gaborensis	9.10	244	4.86	
Squatinia oculata	5.40	2	2.88	
Scopa scopa	3.50	62	1.87	
Todarodes sagittatus	2.80	104	1.49	
Trichiurus lepturus	2.10	6	1.12	
Pterothrissus celloci	1.40	6	0.75	
Ariomma bondi	0.70	6	0.37	
Saurida brasiliensis	0.00	6		
Total	187.40		100.01	

PROJECT STATION 397

DATE: 25/ 5/69 GEAR TYPE: BT No:1 POSITION: Lat S 620
 start stop duration Long E 1134
 TIME : 15:20:00 16:20:00 60 (min) Purpose code: 3
 LOG : 1096.40 1097.10 3.00 Area code : 2
 FDEPTH: 214 209 GearCond.code:
 BDEPTH: 214 209 Validity code:
 Towing dir: 320° Wire out: 850 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 1699.85 CATCH/HOUR: 1699.85

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Synagrops microlepis</i>	1443.00	95959	84.89	365
<i>Trichiurus lepturus</i>	69.26	346	4.07	
<i>Zenopsis conchifer</i>	69.25	115	4.07	
<i>Parapannaus longirostris</i>	29.86	4386	1.70	
<i>Todarodes sagittatus</i>	23.08	346	1.36	
<i>Arizema bondi</i>	17.31	173	1.02	
<i>Pterothrissus calloei</i>	17.31	173	1.02	
<i>Chalidonicthys gatonensis</i>	17.31	115	1.02	
<i>Pentheroscion abizi</i>	11.54	57	0.68	
<i>Peristodion cataphractus</i>	2.88	57	0.17	
<i>Saurida brasiliensis</i>	0.00	57		
<i>Chlorophthalmus agassizi</i>	0.00	115		
Total	1699.80		100.00	

PROJECT STATION 398

DATE: 25/ 5/69 GEAR TYPE: PT No:4 POSITION: Lat S 559
 start stop duration Long E 1153
 TIME : 22:20:00 23:02:00 36 (min) Purpose code: 1
 LOG : 1139.40 1141.10 1.70 Area code : 2
 FDEPTH: 34 24 GearCond.code:
 BDEPTH: 69 71 Validity code:
 Towing dir: 325° Wire out: 300 m Speed: 3 kn*10

Sorted: 49 Kg Total catch: 68.20 CATCH/HOUR: 147.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Trachurus trachus</i>	50.00	375	34.01	367
<i>Selene dorsalis</i>	47.50	510	32.31	366
<i>Chloroscombrus chrysurus</i>	15.00	192	10.20	370
<i>Sardinella aurita</i>	13.75	72	9.35	368
<i>Sardinella maderensis</i>	6.75	52	5.95	369
<i>Sphyraena guachancho</i>	3.75	12	2.55	
<i>Trichiurus lepturus</i>	3.25	12	2.21	
MYCTOPHIDAE	2.50	690	1.70	
<i>Scomber japonicus</i>	1.75	2	1.19	
<i>Lepidopus caudatus</i>	0.75	3	0.51	
Total	147.00		99.99	

PROJECT STATION 399

DATE: 26/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 541
 start stop duration Long E 1143
 TIME : 07:11:00 07:41:00 30 (min) Purpose code: 3
 LOG : 1205.40 1206.90 1.50 Area code : 2
 FDEPTH: 91 91 GearCond.code:
 BDEPTH: 91 91 Validity code:
 Towing dir: 357° Wire out: 400 m Speed: 3 kn*10

Sorted: 25 Kg Total catch: 77.45 CATCH/HOUR: 154.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Pterodon pelli</i>	52.20	1044	33.70	371
<i>Trichurus lepturus</i>	46.20	1058	29.83	
<i>Dentex angolensis</i>	12.00	76	7.75	373
<i>Trachurus trachurus</i>	9.00	100	5.81	372
<i>Pterotrissus callocci</i>	7.80	54	5.04	
<i>Brotula barbata</i>	5.40	6	3.49	
<i>Epinaphelus aeneus</i>	4.00	2	2.58	
<i>Chelidonichthys gabonensis</i>	3.60	42	2.32	
<i>Raja miraletus</i>	2.40	6	1.55	
<i>Citharus linguatula</i>	2.40	60	1.55	
<i>Uranoscopus polli</i>	1.80	18	1.16	
<i>Miracorvina angolensis</i>	1.80	6	1.16	
<i>Uaprisa canariensis</i>	1.80	6	1.16	
<i>Selene dorsalis</i>	1.80	6	1.16	
<i>Saurida brasiliensis</i>	1.20	180	0.77	
<i>Parapenseus longirostris</i>	0.90	60	0.58	
<i>Physiculus sp</i>	0.60	6	0.39	
<i>Syacium micrurum</i>	0.00	6		
COBIIDAE	0.00	18		
Total	154.90		100.00	

PROJECT STATION 400

DATE: 26/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 554
 start stop duration Long E 1135
 TIME : 10:20:00 10:43:00 23 (min) Purpose code: 3
 LOG : 1231.70 1232.80 1.20 Area code : 2
 FDEPTH: 175 196 GearCond.code:
 BDEPTH: 175 196 Validity code:
 Towing dir: 172° Wire out: 850 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 152.30 CATCH/HOUR: 397.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Synagrops microlepis</i>	280.43	15517	70.58	374
<i>Trichurus lepturus</i>	32.61	157	8.21	
<i>Dentex angolensis</i>	24.26	81	6.11	375
<i>Pterotrissus callocci</i>	19.57	130	4.93	
<i>Epinaphelus gersensis</i>	14.35	3	3.61	
<i>Brotula barbata</i>	13.04	10	3.28	
<i>Pterodon pelli</i>	7.83	78	1.97	
<i>Epigonus telescopus</i>	1.30	13	0.33	
<i>Zenopsis conchifer</i>	1.30	13	0.33	
<i>Todarodes sagittatus</i>	1.30	26	0.33	
<i>Chelidonichthys capensis</i>	1.30	13	0.33	
Total	397.29		100.01	

PROJECT STATION 403

DATE: 26/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 606
 start stop duration Long E 1156
 TIME : 16:17:00 16:47:00 30 (min) Purpose code: 3
 LOG : 1274.30 1275.70 1.50 Area code : 2
 FDEPTH: 62 64 GearCond. code:
 BDEPTH: 62 64 Validity code:
 Towing dir: 340° Wire out: 250 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 53.40 CATCH/HOUR: 106.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Brachydeuterus auritus</i>	50.00	1636	56.18	380
<i>Pagellus bellottii</i>	18.40	200	17.23	351
<i>Lentex angolensis</i>	8.00	44	7.46	
<i>Trichiurus lepturus</i>	8.00	104	7.49	
<i>Saurida brasiliensis</i>	4.00	660	3.75	
<i>Trachurus trachurus</i>	2.40	36	2.25	
<i>Lentex congolensis</i>	2.00	24	1.87	
<i>Umorina canariensis</i>	2.00	16	1.87	
<i>Citharus linguatula</i>	0.80	20	0.75	
<i>Miracorvina angolensis</i>	0.80	4	0.75	
<i>Parapanaeus longirostris</i>	0.40	64	0.37	
Total	106.80		100.00	

PROJECT STATION 404

DATE: 26/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 607
 start stop duration Long E 1205
 TIME : 17:54:00 18:24:00 30 (min) Purpose code: 3
 LOG : 1295.70 1286.60 1.50 Area code : 2
 FDEPTH: 31 28 GearCond. code:
 BDEPTH: 31 28 Validity code:
 Towing dir: 93° Wire out: 150 m Speed: 3 kn*10

Sorted: 31 Kg Total catch: 125.90 CATCH/HOUR: 251.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Brachydeuterus auritus</i>	72.00	1570	28.59	362
<i>Calcoides decadactylus</i>	47.20	272	18.75	
<i>Pseudotolithus typus</i>	37.60	48	14.93	
<i>Trichiurus lepturus</i>	24.00	232	9.53	
<i>Argyrosomus nobilolapideus</i>	10.40	8	4.13	
<i>Sphyraena guichenoti</i>	10.40	16	4.13	
<i>Pterocacion palli</i>	10.40	600	4.13	
<i>Ilisha africana</i>	8.80	112	3.49	383
<i>Ephippion guttifer</i>	8.00	8	3.18	
<i>Parapanaeus longirostris</i>	5.60	2800	2.22	
<i>Uranoscopus polli</i>	4.00	8	1.59	
<i>Panaeus notialis</i>	4.00	72	1.59	
<i>Fomadasys incisus</i>	3.20	8	1.27	
<i>Portunus validus</i>	2.00	4	0.79	
<i>Panulirus regius</i>	2.00	2	0.79	
<i>Todarodes sagittatus</i>	0.80	8	0.32	
<i>Panaeus kerathurus</i>	0.80	8	0.32	
<i>Syacium micrurus</i>	0.80	6	0.24	
<i>Sardinella maderensis</i>	0.00	8		
Total	251.80		99.99	

PROJECT STATION 405

DATE: 26/ 5/89 GEAR TYPE: PT No:4 POSITION: Lat S 602
 start stop duration Long E 1159
 TIME : 22:27:00 23:27:00 60 (min) Purpose code: 1
 LOC : 1322.50 1325.40 2.90 Area code : 2
 FDEPTH: 9 9 GearCond.code:
 BDEPTH: 500 55 Validity code:
 Towing dir: 23° Wire cut: 200 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 235.00 CATCH/HOUR: 235.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Sardinella maderensis</i>	72.00	432	30.64	364
<i>Trichiurus lepturus</i>	56.00	816	23.83	
<i>Selene dorsalis</i>	24.00	168	10.21	
<i>Pseudolithus typus</i>	16.00	872	6.81	385
<i>Sphyræna afra</i>	11.00	1	4.68	
<i>Sargestes</i> sp.	10.40	2080	4.43	
MYCTOPHIDAE	10.40	3680	4.43	
<i>Ilisha africana</i>	8.80	136	3.74	
<i>Chloroscyptus chrysurus</i>	8.80	144	3.74	
<i>Sphyræna guachancho</i>	6.40	16	2.72	
<i>Trachurus trecae</i>	4.80	24	2.04	
<i>Sardinella aurita</i>	3.20	9	1.36	
<i>Auxis thazard</i>	3.20	8	1.36	
Total	235.00		99.99	

PROJECT STATION 406

DATE: 27/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 526
 start stop duration Long E 1132
 TIME : 07:19:00 08:19:00 60 (min) Purpose code: 3
 LOC : 1403.00 1405.00 2.00 Area code : 2
 FDEPTH: 370 371 GearCond.code:
 BDEPTH: 370 371 Validity code:
 Towing dir: 195° Wire cut: 1100 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 426.55 CATCH/HOUR: 426.55

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Stenopodopsis</i> sp.	120.00	3540	28.13	
<i>Merluccius polli</i>	120.00	690	28.13	386
<i>Merluccius polli</i>	67.50	450	15.82	
<i>Trichiurus lepturus</i>	52.50	1125	12.31	
<i>Merluccius polli</i>	18.00	3840	4.22	
<i>Merluccius polli</i>	12.00	135	2.81	
<i>Merluccius polli</i>	10.50	105	2.46	
<i>Merluccius polli</i>	7.50	30	1.76	
<i>Merluccius polli</i>	4.50	105	1.05	
<i>Merluccius polli</i>	4.50	15	1.05	
<i>Merluccius polli</i>	3.00	180	0.70	
<i>Merluccius polli</i>	2.25	45	0.53	
<i>Merluccius polli</i>	1.50	15	0.35	
<i>Merluccius polli</i>	1.50	30	0.35	
<i>Solenocera africana</i>	0.90	65	0.21	387
<i>Parapenaeus longirostris</i>	0.40	19	0.09	
<i>Parapenaeus longirostris</i>	0.00	15		
Total	426.55		99.97	

PROJECT STATION 407

DATE: 17/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 526
 start stop duration Long E 1141
 TIME : 10:49:00 11:19:00 30 (min) Purpose code: 3
 LID : 1436.60 1427.50 1.20 Area code : 2
 DEPTH: 109 115 GearCond. code:
 DEPTH: 109 115 Validity code:
 Towing dir: 340 Wire out: 550 m Speed: 2 kn*10

Sorted: 26 Kg Total catch: 221.60 CATCH/HOUR: 443.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Pentheroscion abidi	262.40	4408	59.21	369
Trichurus lepturus	102.40	1074	23.10	
Trachurus trache	24.00	282	5.42	388
Saurida brasiliensis	16.00	1776	3.61	
Gentex angolensis	8.00	48	1.81	
Micropogonias angolensis	6.40	32	1.44	
Urechis caupo	4.80	16	1.08	
Parastichius callosi	4.80	32	1.08	
Scorpaenopsis	4.80	16	1.08	
Zoex fiber	3.20	16	0.72	
Ardisia canda	3.20	32	0.72	
Syngnathus	1.60	48	0.36	
Chelidonichthys gabonensis	1.60	16	0.36	
LOBIFIDAE	0.00	32		
TOTAL	443.20		99.99	

PROJECT STATION 408

DATE: 27/ 6/84 GEAR TYPE: BT No:1 POSITION: Lat S 517
 Start Stop Duration Long E 1142
 TIME 12:50:00 13:50:00 30 (min) Purpose code: 3
 AREA 1440.20 1441.20 1.50 Area code : 2
 SDEPTH: 95 97 GearCond.code:
 BDEPTH: 95 97 Validity code:
 Towing dir: 350° Wire out: 400 m Speed: 3 kn*10

Sorted: 85 Kg Total catch: 75.00 CATCH/HOUR: 150.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
<i>Panorpaecia abini</i>	60.00	1402	40.00	391
<i>Trachurus trachus</i>	31.80	534	21.20	390
<i>Dentex angolensis</i>	12.00	66	8.00	
<i>Brachybaetulus auritus</i>	11.40	558	7.60	
<i>Merluccius bilinearis</i>	8.00	48	4.00	
<i>Saurida trossiliensis</i>	4.80	942	3.20	
<i>Ariopsis canis</i>	4.20	66	2.80	
<i>Urophycis regia</i>	2.40	6	1.60	
<i>Urophycis canariensis</i>	2.40	18	1.60	
<i>Pagellus bellottii</i>	2.40	6	1.60	
<i>Inelidonichthys gatonensis</i>	2.40	18	1.60	
<i>Trichurus lepturus</i>	1.80	18	1.20	
<i>Citharus linguatula</i>	1.80	24	1.20	
<i>Microporvina angolensis</i>	1.20	6	0.80	
<i>Sepia officinalis hierreddus</i>	1.20	6	0.80	
<i>Urophycis albesca</i>	1.20	12	0.80	
<i>Todarodes sagittatus</i>	1.20	12	0.80	
<i>Cynoglossus canariensis</i>	1.20	6	0.80	
<i>Parapercis longirostris</i>	0.60	60	0.40	
Total	150.00		100.00	

PROJECT STATION 409

DATE: 27/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 518
 start stop duration Long E 1149
 TIME : 14:55:00 15:25:00 30 (min) Purpose code: 3
 LOG : 1454.80 1426.80 1.50 Area code : 2
 FDEPTH: 52 56 GearCond.code:
 SDEPTH: 52 56 Validity code:
 Towing dir: 090° Wire out: 250 m Speed: 3 kn*10

Sorted: 29 Kg Total catch: 29.00 CATCH/HOUR: 58.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Spinopneustes senegalensis</i>	20.00	10	34.48	
<i>Micropodops scutus</i>	9.00	2	13.79	
<i>Dentex angolensis</i>	9.00	58	13.79	392
<i>Sparus caeruleoscirtus</i>	4.80	6	9.28	
<i>Pageillus leilottii</i>	3.80	28	6.55	
<i>Neys microlepis</i>	2.40	6	4.14	
<i>Brachydeuterus suritus</i>	2.20	18	3.79	
<i>Mustelus mustelus</i>	1.80	2	3.10	
<i>Dentex bernardus</i>	1.80	4	3.10	
<i>Sphyræna guachancho</i>	1.20	6	2.07	
<i>Alloctenus africanus</i>	1.00	420	1.72	
<i>Priacanthus arenatus</i>	1.00	2	1.72	
<i>Branchiostegus semifasciatus</i>	0.80	2	1.38	
<i>Chelidonicichthys capensis</i>	0.60	2	1.03	
<i>Decapterus rhonchus</i>	0.60	6	1.03	
<i>Selar crumenophthalmus</i>	0.00	2		
<i>Dentex longiensis</i>	0.00	2		
TOTAL	58.00		58.97	

PROJECT STATION 410

DATE: 27/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat 5 522
 start stop duration Long 5 1155
 TIME :16:55:00 17:25:00 30 (min) Purpose code: 3
 LOG :1468.90 1470.10 1.50 Area code : 2
 FDEPTH: 38 38 GearCond.code:
 BDEPTH: 38 38 Validity code:
 Towing dir: 330° Wire out: 200 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 103.80 CATCH/HOUR: 207.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	Numbers		
Brachydauterus auritus	48.00	1264	23.12	393
Arius heudeloti	32.80	40	15.80	
Sphyraena guachancho	24.00	120	11.56	
Pseudotolithus typus	20.00	80	9.63	
Trachurus trecae	17.60	184	8.48	394
Megastomus decapodi	11.20	72	5.39	
Calcoides decadactylus	10.40	56	5.01	
Paragalaxias pectoralis	8.00	8	2.85	
Selene dorsalis	8.00	144	3.85	
Ilisha africana	8.00	296	3.85	
Pomadourys paroteti	6.40	8	2.08	
Stromateus fiatola	6.40	16	3.08	
Panulirus regius	1.60	2	0.77	
Cynoglossus canariensis	1.60	8	0.77	
Pteroscion peli	1.60	24	0.77	
Pennaeus notialis	1.20	36	0.58	
Chloroscombrus chrysurus	0.80	8	0.38	
Total	207.60		99.98	

PROJECT STATION 412

DATE: 27/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat 3 508
 start stop duration Long E 1156
 TIME : 20:28:00 20:58:00 30 (min) Purpose code: 1
 LOG : 1492.40 1494.20 1.50 Area code : 2
 FDEPTH: 35 32 GearCond.code:
 BDEPTH: 35 32 Validity code:
 Towing dir: 160° Wire out: 150 m Speed: 3 kn*10

Sorted: 32 Kg Total catch: 96.80 CATCH/HOUR: 193.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
Brachydeuterus auritus	57.00	2442	29.41	
Pagellus baltictii	24.00	156	12.38	
Dasyatis magerita	19.80	36	10.22	
Pteronotus peli	18.00	432	9.29	
Pseudotolithus typus	11.40	42	5.88	
Cynoglossus canariensis	10.80	78	5.87	
Psenes notialis	7.80	216	4.02	
Parapsenes longirostris	6.00	3600	3.10	
Trichiurus lepturus	6.00	42	3.10	
Galeoides decadactylus	6.00	80	3.10	
Syacium microrus	4.80	132	2.48	
Rucinostomus melanopterus	3.60	48	1.86	
Pomadourys jubelini	3.60	12	1.86	
Raja miraleterus	3.00	6	1.55	
Dicologlossa cuneata	2.40	42	1.24	
Uranoscopus polli	2.40	12	1.24	
Grammoplites gruvelli	1.80	66	0.93	
Arius heudeloti	1.80	6	0.93	
Torpedo torpedo	1.20	30	0.62	
Ilisha africana	1.20	72	0.62	
Lagocephalus laevigatus	0.60	6	0.31	
Selene dorsalis	0.60	6	0.31	
Squilla mantis	0.00	6		
Total	96.80		100.02	

PROJECT STATION 414

DATE: 28/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 541
 start stop duration Long E 1129
 TIME :06:00:00 07:00:00 60 (min) Purpose code: 3
 LOC :1573.60 1576.10 3.00 Area code : 2
 FDEPTH: 305 370 GearCond.code:
 BDEPTH: 305 370 Validity code:
 Towing dir: 25° Wire out: 1000 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 312.40 CATCH/HOUR: 312.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Pterotrissus belloci</i>	99.00	770	31.69	
<i>Neohemichromis africanus</i>	66.00	13464	21.13	
<i>Trichiurus lepturus</i>	38.50	781	12.32	
<i>Scorpaenodes</i> sp.	33.00	1419	10.56	
<i>Merluccius polli</i>	22.00	110	7.04	
<i>Parapanaeus longirostris</i>	16.50	1111	5.28	396
<i>Chlorophthalmus agassisi</i>	14.30	278	4.58	
<i>Epigonus telescopus</i>	7.70	77	2.46	
<i>Pteroscion palli</i>	5.50	55	1.76	
<i>Solonocera africana</i>	3.30	231	1.06	
<i>Coelorhynchus coelorhynchus</i>	2.20	11	0.70	
<i>Liemonax</i> sp	2.20	11	0.70	
<i>Chaunax pictus</i>	2.20	69	0.70	
Total	312.40		99.98	

PROJECT STATION 415

DATE: 28/ 5/89 GEAR TYPE: BT No:1 POSITION: Lat S 548
 start stop duration Long E 1141
 TIME :09:55:00 10:25:00 30 (min) Purpose code: 3
 LOC :1601.90 1603.10 1.50 Area code : 2
 FDEPTH: 115 141 GearCond.code:
 BDEPTH: 115 141 Validity code:
 Towing dir: 255° Wire out: 800 m Speed: 3 kn*10

Sorted: 25 Kg Total catch: 74.55 CATCH/HOUR: 149.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Trichiurus lepturus</i>	75.00	1312	50.30	
<i>Pteroscion palli</i>	30.00	408	20.12	397
<i>Umbra canariensis</i>	9.00	30	6.04	
<i>Pterotrissus belloci</i>	9.00	72	6.04	
<i>Dentex angolensis</i>	7.80	42	5.23	
<i>Syngnathus microlepis</i>	6.00	492	4.02	
<i>Arnoglossus imparialis</i>	3.00	96	2.01	
<i>Chelidonichthys gabonensis</i>	3.00	26	2.01	
<i>Todarodes sagittatus</i>	2.40	42	1.61	
<i>Uranoscopus caduati</i>	1.20	6	0.80	
<i>Ariomas bondi</i>	0.90	6	0.60	
<i>Saurida brasiliensis</i>	0.90	90	0.60	
<i>Parapanaeus longirostris</i>	0.90	48	0.60	
Total	149.10		99.98	

PROJECT STATION 416

DATE: 28/ 5/89 GEAR TYPE: ST No: POSITION: Lat S 546
 start stop duration Long E 1156
 TIME : 12:55:00 13:25:00 30 (min) Purpose code: 3
 LOG : 1625.60 1626.40 1.50 Area code : 2
 FDEPTH: 50 54 GearCond.code:
 BDEPTH: 50 54 Validity code:
 Towing dir: 345° Wire out: 225 m Speed: 3 kn*10

Sorted: 26 Kg Total catch: 94.75 CATCH/HOUR: 189.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Brachydeuterus auritus	105.00	12936	55.41	399
Pseudolithus typus	38.50	140	20.32	
Trichiurus lepturus	21.00	274	11.08	
Sphyraena guachancho	4.20	14	2.22	
Panaeus notialis	4.00	88	2.11	
Pteroscion pelli	3.50	154	1.85	
Cynoglossus canariensis	3.50	28	1.85	
Dicoleocoglossa cuneata	2.80	56	1.48	
Pentheroscion abisi	1.40	6	0.74	
Chloroscombrus chrysurus	1.40	6	0.74	
Ilisha africana	1.40	14	0.74	
Raja miraletus	1.40	6	0.74	
Todarodes sagittatus	0.70	6	0.37	
Grammolites gruvelli	0.70	6	0.37	
Total	189.50		100.02	

PROJECT STATION 417

DATE: 28/ 5/89 GEAR TYPE: PT No: POSITION: Lat S 530
 start stop duration Long E 1207
 TIME : 20:03:00 20:33:00 30 (min) Purpose code: 1
 LOG : 1660.30 1661.60 1.30 Area code : 2
 FDEPTH: 2 2 GearCond.code:
 BDEPTH: 13 14 Validity code:
 Towing dir: 15° Wire out: 125 m Speed: 3 kn*10

Sorted: 27 Kg Total catch: 159.70 CATCH/HOUR: 319.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Chloroscombrus chrysurus	233.00	4992	72.95	399
Sardinella maderensis	24.00	228	7.51	409
Lutjanus goreensis	22.00	2	6.89	
Ilisha africana	12.00	630	3.76	
Scoaromerus tritor	8.00	10	2.50	
Trichiurus lepturus	8.00	20	1.57	
Sphyraena guachancho	4.00	10	1.25	
Brachydeuterus auritus	4.00	60	1.25	
Hemicaranx bicolor	3.00	50	0.94	
Sardinella aurita	2.40	16	0.75	401
Stromateus fiatola	2.00	10	0.63	
Total	319.40		100.00	

PROJECT STATION 418

DATE: 29/ 5/89 GEAR TYPE: PT No.4 POSITION: Lat S 544
 start stop duration Long E 1149
 TIME : 00:10:00 00:40:00 30 (min) Purpose code: 1
 LOG : 1695.00 1697.00 1.10 Area code : 2
 FDEPTH: 12 12 GearCond.code:
 BDEPTH: 110 122 Validity code:
 Towing dir: 300° Wire out: 300 m Speed: 3 kn*10

Sorted: 28 Kg Total catch: 84.00 CATCH/HOUR: 168.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Sardinella maderensis</i>	102.00	564	60.71	402
<i>Selene dorsalis</i>	30.00	210	17.86	
<i>Trichiurus lepturus</i>	21.00	204	12.50	
<i>Sardinella aurita</i>	12.00	78	7.14	402
<i>Scomber japonicus</i>	1.80	12	1.07	
<i>Trachurus trcae</i>	1.20	6	0.71	
Total	168.00		99.99	