

Preliminary Report Cruise No. II - Surveys of the Fish Resources in the Shelf Region between Colombia and Suriname - Part 3: Venezuela, North Coast from Bocas del Dragon to Golfo de Venezuela, 30 May to 14 June 1988

The research programme SURVEYS OF THE FISH RESOURCES IN THE SHELF REGION FROM COLOMBIA TO SURINAME is sponsored by The Norwegian Agency for Development Assistance NORAD, The Food and Agriculture Organization of the United Nations FAO, and the United Nations Development Programme UNDP. The programme is being planned jointly by the participating countries, FAO's Department of Fisheries and the Institute of Marine Research, Norway. Its execution is the responsibility of the Institute of Marine Research in cooperation with FAO and national fisheries administrations.

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

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1. Introduction.

Survey objectives.

The general objectives of the programme as discussed and agreed at the planning meeting in Trinidad, 12-14 January are summarized in the Preliminary Report of Cruise No. I Part I. In the following the objectives for Survey II are clarified and amended on the basis of experience from previous surveys and from discussions with representatives from the participating countries.

Oriente. In principle the programme should be a repetition of that of Survey I. The main aim of the acoustic work is an estimate of the distribution, composition and biomass of the sardine stock with emphasis on problem of catchability of sardinella, even at night. The following amendments of the programme should be made:

- 1) The hydrographic profile off Pta Caribe should be moved to a position between Margarita Isl. and Los Testigos. The survey track off the easternmost coast can then be limited to an inshore coverage.
- 2) Work hydrographic profile off Cabo Codera or La Guaira.
- 3) Otherwise the coverage and the course tracks can be as in Survey I except that the inshore shelf inside the Cariaco Trench west of Puerto La Cruz can be skipped or given a low priority.
- 4) Intensified work on squid is of interest Squids are at bottom during the day, at least in intermediate depths. Important areas are outside Margarita and perhaps also the edge off Los Testigos should be tried.
- 5) Fishing for Penaeid shrimp inshore at night should be tried in suitable locations to provide samples and by-catch data.
- 6) The small shelf around Blanquilla should be better covered.

Venezuela West coast and Gulf of Venezuela.

- 1) Add hydrographic profile off Golfo Triste.
- 2) Add night shrimping inshore where suitable
- 3) Follow programme Survey I, but with less coverage off La Guaira. Give emphasis to squid, positions where good catch rates during Survey I.

Participation.

The following scientific staff participated from Venezuela:

Port of Spain to La Guaira: Diana Zaera, Ayurami Alcalá, Ramon Guzman, Walter Gonzalez, Bladimir Rodriguez and Wilmer Rojas.

La Guaira to Punto Fijo: Ayurami Alcalá, Walter Gonzalez, Wilmer Rojas, Roberto Cipriani, Marco Tulio Badaracco and Diana Zaera.

From FAO:

Alvaro Abella.

The scientific staff from IMR was:

J. Hamre, H. Ullebust, M. Dahl and H. Vorren.

2. Narrative.

The vessels itinerary was as follows:

Departure Port of Spain: 30 May 00 hrs.
Call on La Guaira: 07 June
Arrival Pto. Fijo 14 June hrs.

Figures 1 and 2 show the course tracks and the fishing - and hydrographical stations worked. Little work was done in the eastern area over the shelf off the Paria Peninsula where the bottom conditions are difficult for demersal trawling. The survey effort was intensive from the Testigos Archipelago westwards past the Tortuga Island both along the inner and outer shelf parts. A hydrographical profile was worked northwards over the shelf off Pta. del Taquien between Margarita Isl. and Los Testigos. Another new hydrographical profile was worked northwards over the shelf off Cabo Codera and the suggested profile off Golfo Triste was positioned in the strait between Venezuela and Curacao. The sections off Puerto La Cruz and in the Gulf of Venezuela were repeated. The bottom trawl stations worked during daytime forms the basic data for swept area biomass estimation. Course tracks and section work were therefore adjusted so that most of the prepositioned trawling stations could be worked during daytime. It was however observed that schools of sardines occurred in surface layer during day hour but submerged to layer within the transducers range at night. Additional course tracks for acoustic biomass estimation were therefore run at night in areas of high sardin abundance. A dense net of prelocated trawl stations were positioned over the shelf off Margarita Island and in the Gulf of Venezuela during daytime to cover different areas and depth ranges. The shelf around Blanquilla was surveyed for trawlable bottom and two trawl stations made. The acoustic system was calibrated on 3 June in the Gulf of Cariaco using the coppersphere procedure. 113 trawl stations were worked and 2700 nm. were steamed.

3. Hydrography.

Figure 3 shows the distribution of temperature, salinity and oxygen in the profiles off Pta Taquien and Cabo Codera. Off Pta Taquien the surface temperatures on the inner- most station are 3° C lower than those off the shelf and seen together with the isolines for salinity and oxygen the profile gives a picture of clear upwelling of intermediate water being lifted over the shelf and transported to the surface inshore. Off Cabo Cadera there is an increase in temperature shorewards and the isolines for salinity and oxygen indicate no upwelling of intermediate water masses. In the Cariaco Trench profile (Figure 4) there is neither any lift in the isolines shorewards, but the section off Pta Sabana and that nonwestward from Cabo San Roman indicate slight upwelling in the upper 50 m. The section in the Gulf of Venezuela shows no sign of vertical movement in the water masses.

4. Fish distribution.

Figure 5 illustrates the distribution of all fish as observed with the acoustic integration system. This will mainly show the pelagic species, but some demersal fish which lift off the bottom, especially at night will also be included. The units of acoustic reflection is $0.1 \times \text{m}^2/\text{nm}^2$ reflecting surface. This unit is not directly proportional to fish density since small sized fish gives a higher acoustic reflection per unit weight than bigger fish, but in gross terms Figure 5 gives a fair picture of the main distributional features of the pelagic fish in the area. An arbitrary scale has been used to illustrate different levels of concentration. The acoustic data will later be used for biomass estimates.

The Oriente.

High densities of pelagic fish were observed at night along the coast southeast of Isla Margarita, and on the shelf outside the Margarita Island. The main contributors to these recordings were adult *Sardinella aurita* and *Etrumeus teres* inside and outside the Island respectively. Schools were seen at surface in day hour and dense schools were recorded on the echo sounder at night. Two large samples were obtained with pelagic trawl, one from inside (St. No. 465) and one from outside (St. No. 475) the Margarita Island. It is assumed that these catches represent the schools of sardines which were observed in surface layer during day. In the same areas juvenile sardines were caught together with carangids and scombrids in day hauls at bottom. The catches in these areas also included other pelagic fishes as barracudas, scombrids and carangids in addition to demersal fish. It is noted that the highest fish density is located in the cool upwelled water masses southeast of Isla Margarita, as can be seen by comparison with the temperature profile in Figure 3. Schools of anchovies were recorded inside and at the entrance of the Cariaco gulf. The present results thus confirm the findings during the previous coverage as reported in Preliminary Cruise Report I, Part 3.

Over most of the deeper parts of the shelf only scattered recordings were made indicating a general low level of fish density in mid water. The recordings usually consisted of traces of small schools or single fish not far off the bottom. Identification with bottom trawl showed that in addition to sardines they should be attributed to carangids, scombrids, barracudas and demersal fish lifting off the bottom.

Western part, from Cabo Codera to Península de Guajira.

In the western part the registration of pelagic fish was more scattered than farther to the east with two small areas of concentration of schooling fish in the central part of the Gulf of Venezuela (Figure 6). On the basis of the bottom trawl samples these schools were identified as anchovies and sardines mainly. Sardines were also caught at bottom in the inner and western part of the gulf but not recorded in any significant abundance on the echo sounder. This may however be due to blanking by a very dense scattering layer of planktonic organisms which occurred in that part of the gulf.

5. Results of fishing experiments.

The bottom trawl survey 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 and they are presented here merely to give a rough impression of the general occurrence, composition and abundance of fish on the shelf. The data from the prepositioned trawl hauls will later be used for estimates of biomass of demersal species.

The bottom trawl used is a shrimp-cum-fish trawl (see Annex 1) and it may not be as efficient for shrimp as specially designed shrimp-trawls.

Oriente.

The fish on the shelf between Bocas de Dragon and Cabo Codera is grouped as in the previous cruise report: an assemblage of the inner pan of the shelf, inside the Testigos Archipelago and the Margarita Island and on the coastal side of the Cariaco Trench in which cattish and croakers are the most common groups of the demersals; and one assemblage found over the outer parts of the shelf outside the Testigos and Margarita Island and westwards past the Tortuga Island where the demersal fish is dominated by snappers. This grouping is used in the following description of the composition and catch rates of the fishing experiments. The complete record of all hauls made are shown in Annex II. Stations 455 to 508 and the position of the stations can be seen in Figure 1.

Table 1 shows an analysis of catch rates (standardized to kg per hours towing) for all successful bottom trawl hauls by broad groups of fish and for the inner and outer shelf separately. “Pelagic” comprises Clupeidae(sardines), Engraulidae(anchovies), Carangidae, Scombridae, Sphyraenidae(barracuda) and Trichiuridae(hairtails). “Demersal” includes the families Sciaenidae(croakers), Lutjanidae(snappers), Pomadasidae(grunts), Serranidae(groupers), Ariidae(catfish) and Priacanthidae(glasseyes). Catch rates of demersal fish are high, averaging 361 kg/hour on the inner shelf and 180 kg/hour on the outer shelf, compared to the respective 200 kg/hour and 110 kg/hour obtained in the previous bottom trawl survey of these areas in February-March. Squids are present in nearly all catches at about the same rates as in the previous survey and shrimps are scarce. Table 2 shows the catch rates by families for the demersal fish by inner and outer shelf parts. As in previous survey catfish and croakers dominate the inner part and snappers the outer part of the shelf.

Table 1. ORIENTE. Catch rates for main groups in bottom trawl stations standardized to kg/hour.

INNER

ST. NO.	DEP.	Pelagic	Demersal	Shark	Squid	Shrimp	Other
455	61	105.90	4.80	15.60	14.10		106.20
456	65	2.40	284.80		8.00		129.60
462	33	18.30	12.30		17.00		1.60
463	37	5.43	37.29		31.43		11.28
464	35	252.10	19.00		40.00	3.00	65.50
466	43	107.40	213.00	16.00	40.00	4.00	169.60
467	33	8.00	107.60	10.00	84.00	6.20	114.00
484	65	171.60	511.00	80.60		5.60	171.60
485	20	858.00	2220.00				1059.60
486	71	368.00	911.20	36.80	12.00	3.30	252.30
488	49	11.88	398.16		10.80	1.08	12.72
490	149	108.80	456.00		65.60	49.60	179.20
491	111	144.40	800.90	5.00	60.80	1.80	87.70
492	81	22.34	87.90	40.00	13.50		60.78
493	41	5126.07	16.80				
494	43	25.94	28.34		9.60	1.20	21.00
495	78	17.70	39.00	11.40	12.00		83.22
MEAN		432.60	361.65	12.67	24.64	4.46	148.58

OUTER

ST. NO.	DEP.	Pelagic	Demersal	Shark	Squid	Shrimp	Other
458	71	201.60	115.40		24.60		42.20
460	61	15.00	157.00	7.40	11.00	1.00	139.00
461	35	82.00	19.60	22.00	27.20	0.20	43.00
468	44	35.80	28.00	0.70	12.50	0.30	32.30
469	65	1417.30	374.50	0.80	62.10		8.10
470	44	1501.70	3.10		28.60		17.10
471	73	717.50	832.40		17.20		85.90
472	28	15.90	2.70		15.30		20.70
473	49	315.00	171.00		61.80	1.20	74.00
474	26	67.20	56.40		81.60		69.60
477	148	6.00	44.40				50.16
478	59		46.92		1.20		145.92
479	77	140.80	351.50		9.90		235.40
480	69	371.40	421.40		98.00		134.40
481	50	175.20	221.80		157.20	1.60	182.40
482	91	10.50	372.15	42.00	10.50		225.75
483	96	105.60	317.60		2.40		43.40
496	81	80.00	166.50			0.40	54.50
499	97	193.90	188.20		11.20		42.50
500	99		74.28		3.36		13.20
501	128	274.80	100.98		0.90		21.00
502	78	99.25	14.66		6.68		31.88
503	92	0.60	1.50		7.80		13.00
504	33	0.80	457.90	12.40			351.90
505	71	102.40	344.40		2.40		15.40
506	75		1.00		0.80		7.36
507	77		136.61		2.31		3.46
508	72		25.00		2.80		10.20
MEAN		211.79	180.25	3.05	23.55	0.17	75.49

Table 3 shows the catch rates for the different types of pelagic fish. Catch rates of pelagic fish in bottom hauls are not very meaningful and as the Table shows the rates and composition of species vary considerably by stations. One large catch of anchovies was taken on the inner coast of the Cariaco trench (Annex II, St. No. 493) and one good sardine catch was obtained north of the Margarita Island (St. No. 470). Most of the pelagic catches were dominated by carangids with some good catches of hairtails, scombrids and barracudas. Present catch rates are higher but species composition of pelagic fish are mostly the same as observed in February-March.

Table 2. ORIENTE. Catch rates by families for demersal fish, kg/hour.

INNER

ST. NO.	DEP.	Croakers	Catfish	Grunts	Groupers	Glasseyes	Other
455	61	4.80					241.80
456	65			6.40	1.60	1.60	415.20
462	33			1.40	0.50		47.30
463	37			0.29	3.57	5.71	75.86
464	35	13.00	2.00	2.50	1.00	0.50	360.60
466	43	110.60	35.20	6.40	26.40	24.00	347.40
467	33	3.60		52.00	18.00	4.00	252.20
484	65	340.60		117.00	19.60		463.20
485	20	100.80	1690.00	191.80	159.40	78.00	1917.60
486	71	883.20		16.00	7.20	1.60	675.60
488	49	347.40	40.68	6.84	3.24		36.48
490	149	412.80					446.40

491	111	729.90			5.70	52.00	313.00
492	81			2.10		37.80	184.62
493	41	8.23	4.46			4.11	5126.07
494	43				1.04	2.10	82.94
495	78					9.00	154.32
MEAN		173.82	104.26	23.69	14.54	12.97	655.33

OUTER

ST. NO.	DEP.	Croakers	Snappers	Grunts	Groupers	Glasseyes	Other
458	71		101.60	3.60		10.20	268.40
460	61		139.00		1.50	16.50	173.40
461	35		19.60				174.40
468	44		26.20		1.80		81.60
469	65		165.00		34.00	175.50	1488.30
470	44				2.00	1.10	1547.40
471	73		724.40	25.80	56.40	25.80	820.60
472	28				2.70		51.90
473	49		136.80		30.60	3.60	452.00
474	26		2.40	17.20	32.40	4.40	218.40
477	148		3.36		41.04		56.16
478	59		1.92	10.80	0.60	33.60	147.12
479	77		185.40	99.40	66.70		386.10
480	69		403.20			18.20	603.80
481	50		178.00		40.80	3.00	516.40
482	91		342.30		29.85		288.75
483	96	19.20	265.60	25.60		7.20	151.40
496	81		131.00		0.50	35.00	134.90
499	97		145.20	4.20	36.40	2.40	247.60
500	99		9.36	52.44	12.48		16.56
501	128		97.50		0.48	3.00	296.70
502	78		11.57			3.09	137.81
503	92		0.50		1.00		21.40
504	33		373.90	4.40	5.00	74.60	365.10
505	71		149.20	195.20			120.20
506	75				1.00		8.16
507	77			135.23	1.38		5.77
508	72		21.20	3.80			13.00
MEAN		0.69	129.79	20.63	14.24	14.90	314.05

Western part, from Cabo Codera to Peninsula de Guajira.

Results of the bottom hauls between Cabo Codera and Cabo San Roman are summarized in Table 4. Mean catch rate of demersal is 90 kg/hour or about half the rate obtained on the outer Oriente coast. This catch rate is however more than twice that of the demersal fish catch obtained in the bottom trawl survey of the area in February-March. The record catch of 546 kg/hour (St. No. 517) was obtained at night on the small bank north of La Guaira, consisting of good sized snappers mainly. The poorest catches were encountered on the Cabo Codera coast (St. Nos. 513-515). 4 hauls were made on the slope from 200-300 m. to test the availability of deep sea shrimps, and the rates obtained are around 6 kg/hour. The pelagic species are also less abundant in the trawl catches than further to the east, and confirms the results of the acoustic stock measurements. The family composition of the pelagic and demersal species is shown in Tables 5 and 6 respectively. The latter is dominated by snappers whereas the pelagics consist of carangids, hairtails and sardines mainly.

Table 3. ORIENTE. Catch rates by families of pelagic fish in bottom trawl hauls, kg/hour.

INNER

ST. NO.	DEP.	Sardines	Hairtails	Carangids	Scombrids	Barracuda	Other
455	61	0.90	0.60	90.00	1.50	12.90	140.70
456	65			2.40			422.40
462	33	1.70		1.20		15.40	30.90
463	37			0.43	0.14	4.86	80.00
464	35	154.50		27.50	28.60	41.50	127.50
466	43	23.20	40.00	44.20			442.60
467	33	8.00					321.80
484	65	13.00	15.60	143.00			768.80
485	20			185.20	308.80	364.00	3279.60
486	71	5.60	260.80	54.40		47.20	1215.60
488	49	1.44	2.52	7.92			422.76
490	149		80.00	28.80			750.40
491	111		95.00	49.40			956.20
492	81		9.60	5.24		7.50	202.18
493	41		6.86	27.78		9.60	5098.63
494	43	7.80		1.64			76.64
495	78			13.50		4.20	145.62
MEAN		12.71	30.06	40.15	19.94	29.83	851.90

OUTER

ST. NO.	DEP.	Sardines	Hairtails	Carangids	Scombrids	Barracuda	Other
458	71	3.60		198.00			182.20
460	61			15.00			315.40
461	35	32.40		32.20	8.20	9.20	112.00
468	44			0.80	25.60	9.40	73.80
469	65	251.10		845.20	321.00		445.50
470	44	1471.80		29.90			48.80
471	73			717.50			935.50
472	28	3.90		4.50	7.50		38.70
473	49	291.60		9.00		14.40	308.00
474	26	29.60		23.20	8.00	6.40	207.60
477	148			6.00			94.56
478	59						194.04
479	77			140.80			596.80
480	69	4.20		347.20	20.00		653.80
481	50	7.20		129.60	38.40		563.00
482	91			8.40	2.10		650.40
483	96			104.00	1.60		363.40
496	81			35.00		45.00	221.40
499	97		8.40	185.50			241.90
500	99						90.84
501	128			274.80			122.88
502	78	0.51		83.31	15.43		53.22
503	92			0.60			22.30
504	33	0.10		0.70			822.20
505	71			102.40			362.20
506	75						9.16
507	77						142.38
508	72						38.00
MEAN		74.86	0.30	117.63	15.99	3.01	282.50

Table 4. VENEZUELA, WESTERN PART. Catch rates for main groups in bottom trawl stations standardized to kg/hour.

ST. NO.	DEP.	Pelagic	Demersal	Shark	Squid	Shrimp	Other
509	63		110.30	14.80	5.00		18.60
510	183	10.00	138.00		2.00		39.60
511	153	427.20	121.20	8.00	2.40		52.60
512	66	6.25	144.63		3.75		13.13
513	65	27.60	14.50		1.80		8.20
514	93	36.20	4.60		4.40		22.60
515	67	0.84	12.96		2.40		38.04
516	215	16.80	61.40		3.60	6.60	57.00
517	101	81.60	546.00				270.80
518	77	8.30	37.60		7.00		55.70
519	73	6.40	55.40	7.00	5.00		57.40
520	45	60.60	133.60				3.60
521	66	109.20	72.60		6.00		17.20
522	60	36.48	65.04		1.68		17.28
523	106	72.43	156.63		7.71		195.00
524	252	0.60			8.70	5.85	75.10
525	233		11.05		5.21	4.89	68.07
526	264	0.15			8.85	5.55	26.69
527	59	289.60	106.60		4.80		25.60
528	79	49.60	22.80		1.50		19.10
529	60	8.40	97.00		4.20		13.80
530	69	55.60	43.10		18.00		6.60
531	22	20.00	50.40		3.20		55.80
532	49	3.20	89.40		3.40		6.20
533	37	43.00	161.60		2.20		6.80
MEAN		54.80	90.26	1.19	4.51	0.92	46.82

Table 5. VENEZUELA, WESTERN PART. Catch rates by families for pelagic fish in bottom trawl hauls, kg/hour.

ST. NO.	DEP.	Sardines	Hairtails	Carangids	Scombrids	Barracudab	Other
509	63						148.70
510	183			10.00			179.60
511	153		426.00	1.20			184.20
512	66			6.25			161.51
513	65	1.00		26.60			24.50
514	93			35.80	0.40		31.60
515	67			0.84			53.40
516	215			16.80			128.60
517	101			81.60			816.80
518	77			8.30			100.30
519	73			6.40			124.80
520	45			6.60	9.00	45.00	137.20
521	66	65.60		43.60			95.80
522	60	3.12		32.64			84.72
523	106			60.86	11.57		359.34
524	252		0.60				89.65
525	233						89.22
526	264		0.15				41.09
527	59	157.20	3.20	72.40	55.60	1.20	137.00
528	79		2.60	32.10	14.90		43.40
529	60			7.40		1.00	115.00
530	69			55.40	0.20		67.70
531	22			17.60	2.40		109.40
532	49	0.80		1.00	0.40	1.00	99.00
533	37			32.60	10.40		170.60
MEAN		9.11	17.30	22.24	4.19	1.93	143.73

Table 6. VENEZUELA, WESTERN PART. Catch rates by families for demersal fish, kg./hour.

ST. NO.	DEP.	Croakers	Snappers	Grunts	Groupers	Glasseyes	Other
509	63		102.70				46.00
510	183		138.00				51.60
511	153		87.60		33.60		490.20
512	66		137.25			7.38	23.13
513	65		6.10			8.40	37.60
514	93		4.40			0.20	63.20
515	67		4.08			6.48	43.68
516	215	1.80	59.40		0.20		84.00
517	101		459.00		59.00	28.00	352.40
518	77	1.80	25.80			1.00	80.00
519	73		29.60			8.00	93.60
520	45		104.60			5.00	88.20
521	66		70.60			2.00	132.40
522	60		63.12		0.24		57.12
523	106		156.63				275.14
524	252						90.25
525	233		11.05				78.17
526	264						41.24
527	59		100.20			6.40	320.00
528	79		22.00			0.80	70.20
529	60		94.80				28.60
530	69		40.70			0.20	82.40
531	22		29.20			5.60	94.60
532	49		70.80	0.40		2.20	28.80
533	37		135.20			1.00	77.40
MEAN		0.14	78.11	0.02	3.72	3.31	113.20

In the Gulf of Venezuela the catch data have been grouped in an inner and outer part as in the previous survey in February-March, with a north/south dividing line from Punto Fijo and westward. The catch rate by broad groups are shown in Table 7. The average catch of demersals in the inner part is 52 kg/hour compared to 61 kg/hour obtained in the previous coverage. For the outer part of the gulf, the respective catch figures are 54 kg/hour and 24 kg/hour. The best catches of squids and shrimps were obtained in the inner part of the gulf, on the eastern and western side respectively. The record catch of squids is 54 kg/hour, and for shrimps the record is 57 kg/hour. Catch rate by family groups are shown in Tables 8 and 9 for pelagics and demersals respectively. The pelagics are dominated by carangids, the demersals by snappers(outer-) and croakers (inner part).

Pooled samples of the length compositions of the most common species are shown in Annex III.

Table 7. GULF OF VENEZUELA. Catch rates for main groups in bottom trawl stations standardized to kg/hour.

INNER PART

ST. NO.	DEP.	Pelagic	Demersal	Shark	Squid	Shrimp	Other
538	19	264.20	76.80		15.60	1.60	40.80
539	15	36.10	30.20	0.40	1.00	8.60	7.80
540	23	518.00	85.20	3.60		2.80	28.00
541	20	597.62	50.47	9.18		0.71	41.29
542	21	372.00	13.80		4.80		10.80
543	15	216.00	81.60	21.00	6.00	57.00	31.40
544	13	96.80	78.60	8.80		11.20	25.80
545	15	152.60	111.30		1.00	29.00	7.60
546	14	156.00	64.20		6.00	6.00	55.80
547	24	120.69	74.07			1.03	28.81
548	32	45.20	83.60		13.60	3.40	76.00

549	28	233.20	20.50		54.00		16.50
550	40	298.20	2.50		6.00		1.50
551	40	283.90	2.20		22.40		79.10
552	36	406.00	4.60		24.00		28.80
MEAN		253.10	51.98	2.87	10.29	8.09	32.00

OUTER PART

ST. NO.	DEP.	Pelagic	Demersal	Shark	Squids	Shrimp	Other
534	29		10.60			0.30	1.20
535	74	25.90	1.60		3.10		6.70
536	69	25.94	62.00		2.70		27.14
537	70	26.54	29.60		5.40		32.84
553	49	1163.70	4.50		23.60	0.20	237.40
554	50	699.40	100.40		11.70	0.30	39.40
555	43	400.40	9.60		42.00		12.60
656	45	26.72	2.73		10.36	0.09	11.19
557	56	96.60	81.20		2.40	0.60	57.40
558	17	15.60	27.40		3.60	13.60	68.40
559	12	62.90	23.00		1.00	4.80	19.60
560	54	49.30	2.10	3.80	4.60		3.50
561	59	77.70	2.40		3.80	0.60	11.30
562	60	174.00	95.00		4.00		63.70
563	61	28.24	44.40		5.00		79.00
564	52	472.64	235.09		4.36		89.45
565	29	2.80	38.00	2.00			91.40
566	15	58.00	75.80	2.00	1.00	4.80	108.80
567	70	19.50	180.30		4.00	3.00	44.00
MEAN		180.31	53.99	0.41	6.98	1.49	52.90

Table 8. GULF OF VENEZUELA. Catch rates by families for pelagic fish in bottom trawl hauls, kg/hour.

INNER PART

ST. NO.	DEP.	Sardines	Anchovies	Carangids	Hairtails	Barracudas	Other
538	19	212.40		35.00	16.80		134.80
539	15	10.50	5.90	0.50	19.20		48.00
540	23	121.80		95.20	301.00		119.60
541	20	158.29		352.15	87.18		101.65
542	21	31.20	1.20	295.20		21.60	52.20
543	15	52.00	68.00	20.00	62.00		211.00
544	13	37.20	15.60	16.00	28.00		124.40
545	15	41.60	17.00	5.00	89.00		148.90
546	14	108.60		36.60	3.60		139.20
547	24	50.06	28.80	28.11	6.86	6.86	103.91
548	32	32.40		11.20			178.20
549	28	27.00	24.00	164.70		17.00	91.50
550	40	133.00		154.00			21.20
551	40			225.00	6.40	51.80	104.40
552	36			399.20		1.80	62.40
MEAN		67.74	10.70	122.52	41.34	6.60	109.42

OUTER PART

ST. NO.	DEP.	Sardines	Scombrids	Carangids	Barracuda	Hairtails	Other
534	29						11.80
535	74	0.50		1.20	23.80	0.40	11.70
536	69	2.10	0.74	6.30	16.80		91.84
537	70	0.44	9.90	7.80	8.40		67.84
553	49	25.00	0.20	127.50	23.60	987.40	265.70
554	50	176.80	23.40	148.20	286.00	65.00	151.80
555	43	128.80	42.00	201.60	26.60		65.60
556	45	0.27	0.91	2.18	2.73		45.00
557	56		4.20	13.20	78.80	0.40	141.60
558	17	8.40	1.20	2.40			116.60
559	12	29.60	6.60	3.10		19.60	52.40
560	54	1.20	36.00	1.40	0.80	6.80	17.10
561	59	0.40	1.80	40.50	3.00	32.00	18.10
562	60	1.00	1.00	102.00	70.00		162.70
563	61	1.74	1.00	21.50	3.50		128.90
564	52	34.91	10.09	384.00	43.64		328.90
565	29	0.40		1.60	0.80		131.40
566	15	9.00	4.60	17.40	2.00	25.00	192.40
567	70	1.50	1.00	17.00			231.30
MEAN		22.21	7.61	57.84	31.08	59.82	117.51

Table 9. GULF OF VENEZUELA. Catch rates by families for demersal fish, kg./hour.

INNER PART

ST. NO.	DEP.	Croakers	Snappers	Grunts	Groupers	Perilus	Other
538	19	72.40	4.40			2.80	319.40
539	15	30.20				3.00	50.90
540	23	71.60	13.60			18.20	534.20
541	20	50.47				34.41	614.39
542	21		13.80			10.80	376.80
543	15	81.60				9.00	322.40
544	13	78.60					142.60
545	15	109.70	1.60			3.00	187.20
546	14	64.20					223.80
547	24	46.29	3.43	24.35			150.53
548	32	4.80		58.40	14.00		144.60
549	28	15.00		3.00	2.50		303.70
550	40						308.20
551	40	2.20				77.00	308.40
552	36		3.60			28.80	431.00
MEAN		41.80	2.70	5.72	1.10	12.47	294.54

OUTER PART

ST. NO.	DEP.	Croakers	Snappers	Grunts	Groupers	Glasseyes	Other
534	29						11.80
535	74		1.40		0.20	5.80	30.20
536	69		26.60	0.90	29.40	21.00	39.88
537	70		24.00	1.20	0.30	24.00	44.88
553	49		4.50			5.00	1419.90
554	50		90.00	10.40			750.80
555	43	6.00		2.20	1.40	5.60	449.40
556	45			2.73		1.82	46.54
557	56		58.40	17.80	1.40	44.00	116.60

Figure 2. Course tracks, fishing stations and hydrographic profiles. Western coasts.

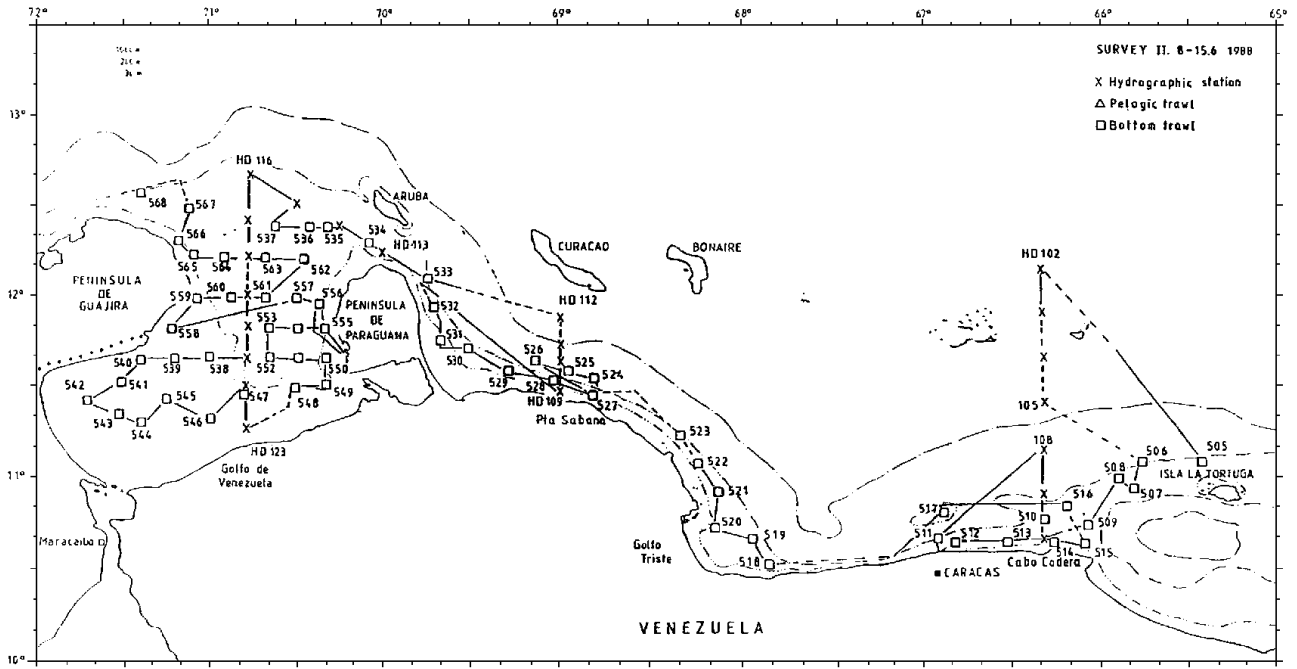


Figure 3. Hydrographic profiles. Oriente coast. - PTA DEL TAQUIEN 31.5-1.6 1988

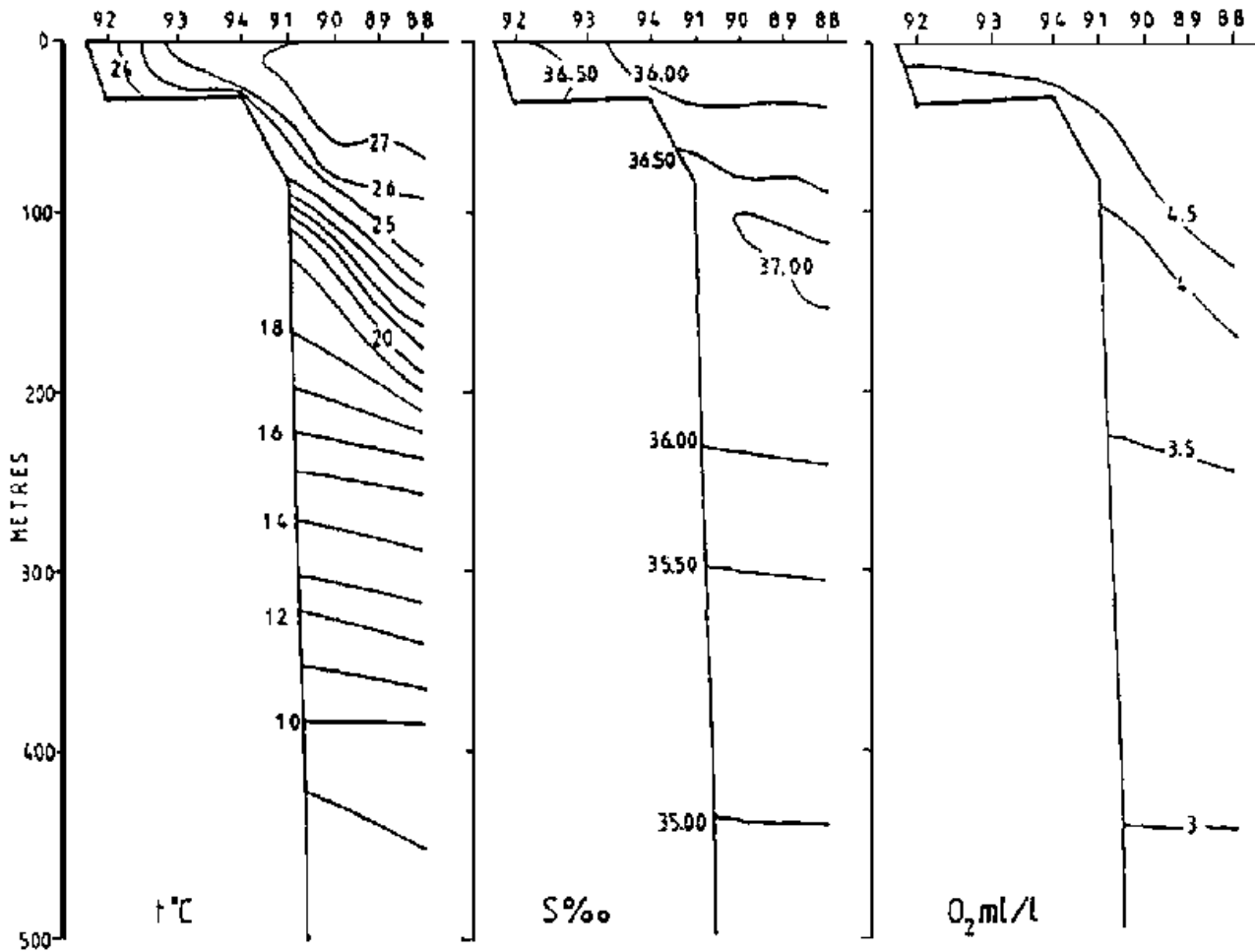


Figure 3. Hydrographic profiles. Oriente coast. - PUERTO LA CRUZ 3-4.6 1988

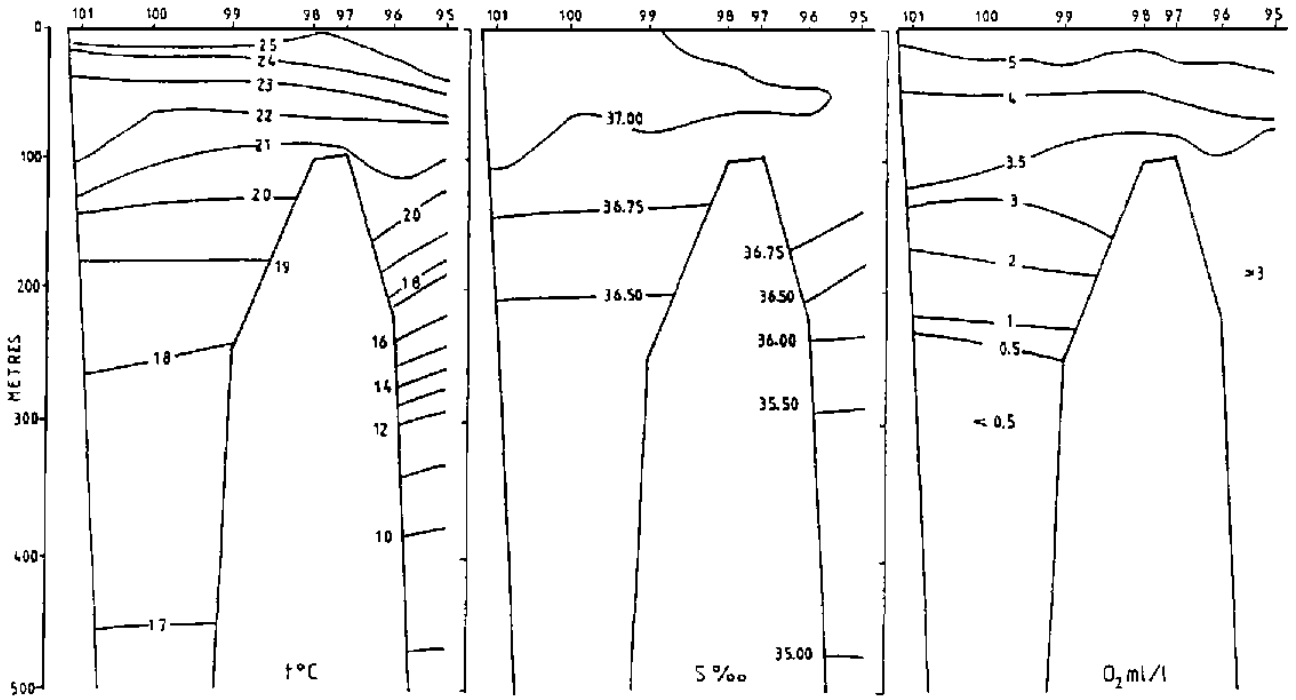


Figure 4a. Hydrographic profiles. Western coasts. - CABO CODERA 6-7.6 1988

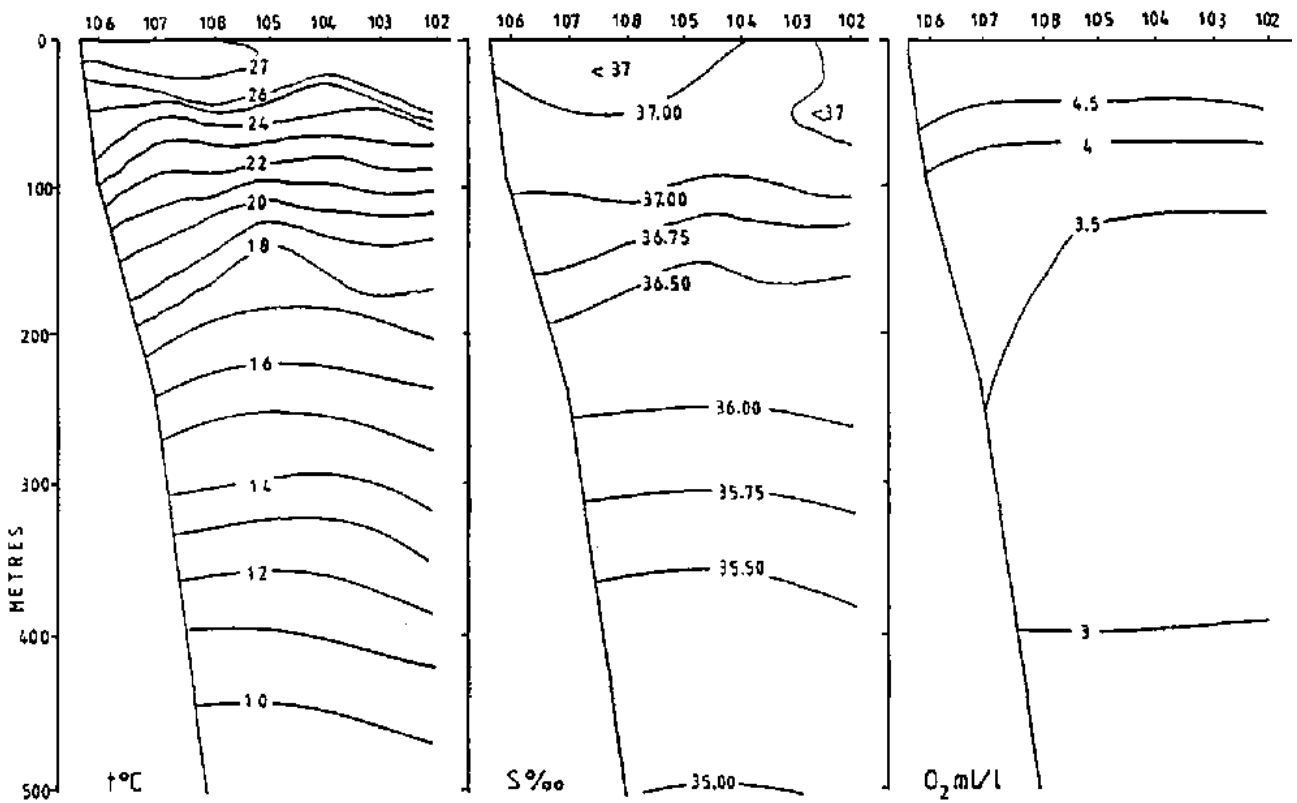


Figure 4a. Hydrographic profiles. Western coasts. - PTA SABANA 11.6 1988

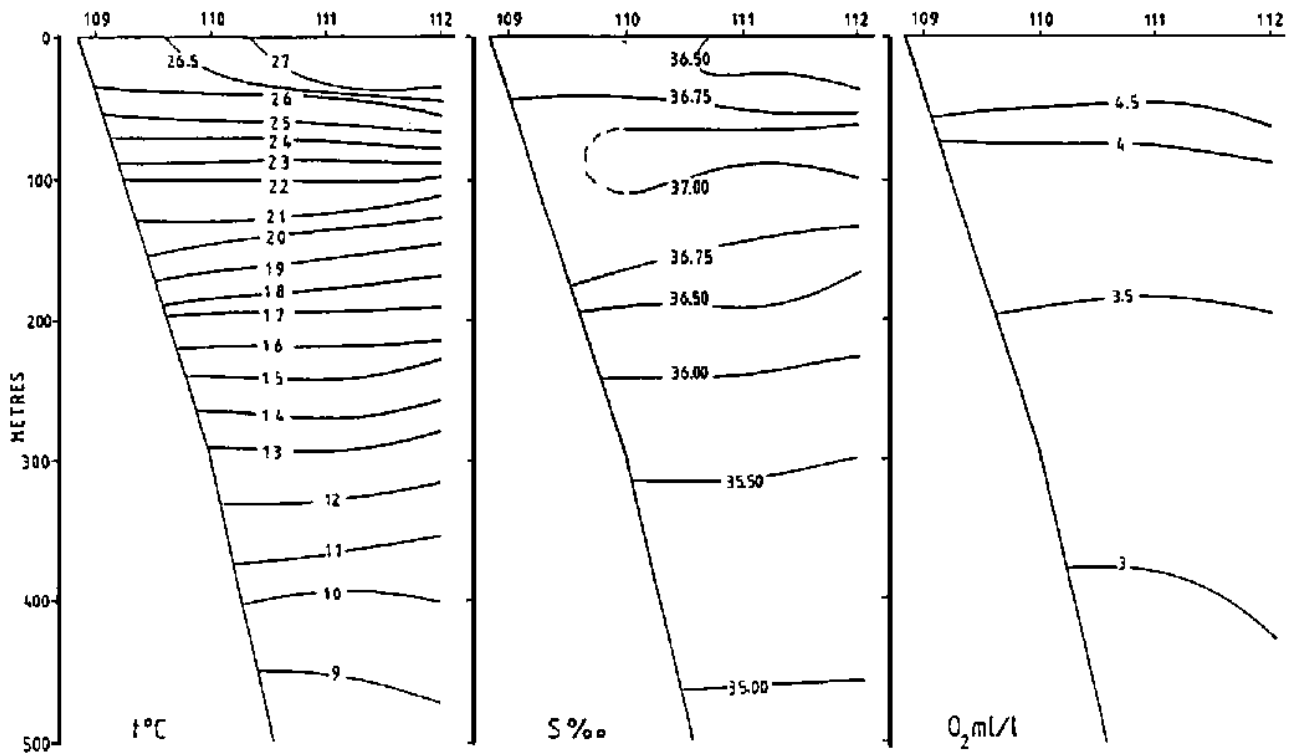


Figure 4b. Hydrographic profiles. Western coasts. - CABO SAN ROMAN 11.6 1988

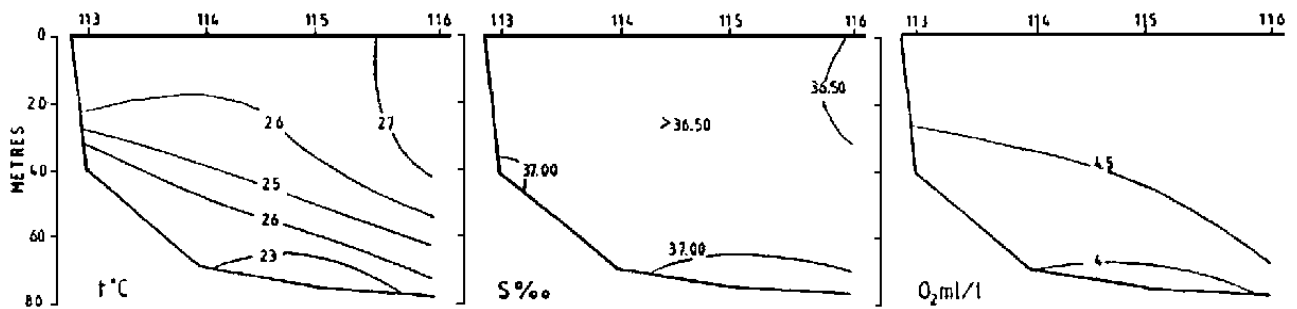


Figure 4b. Hydrographic profiles. Western coasts. - GULF OF VENEZUELA 11-13.6 1988

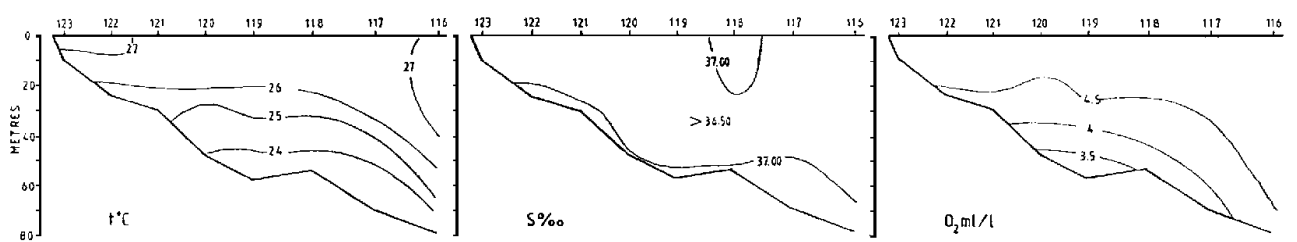


Figure 5. Distribution of pelagic fish from acoustic system. Oriente coast.

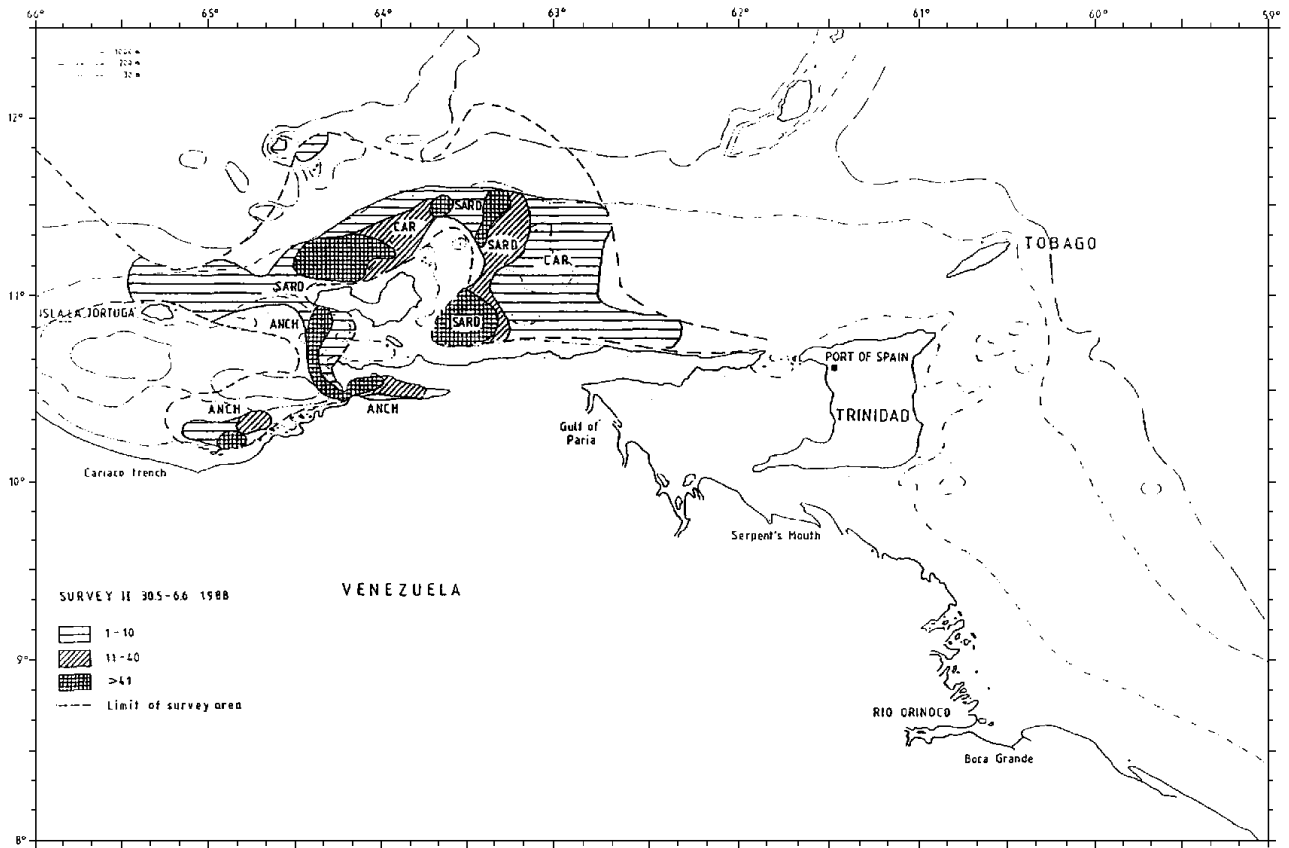
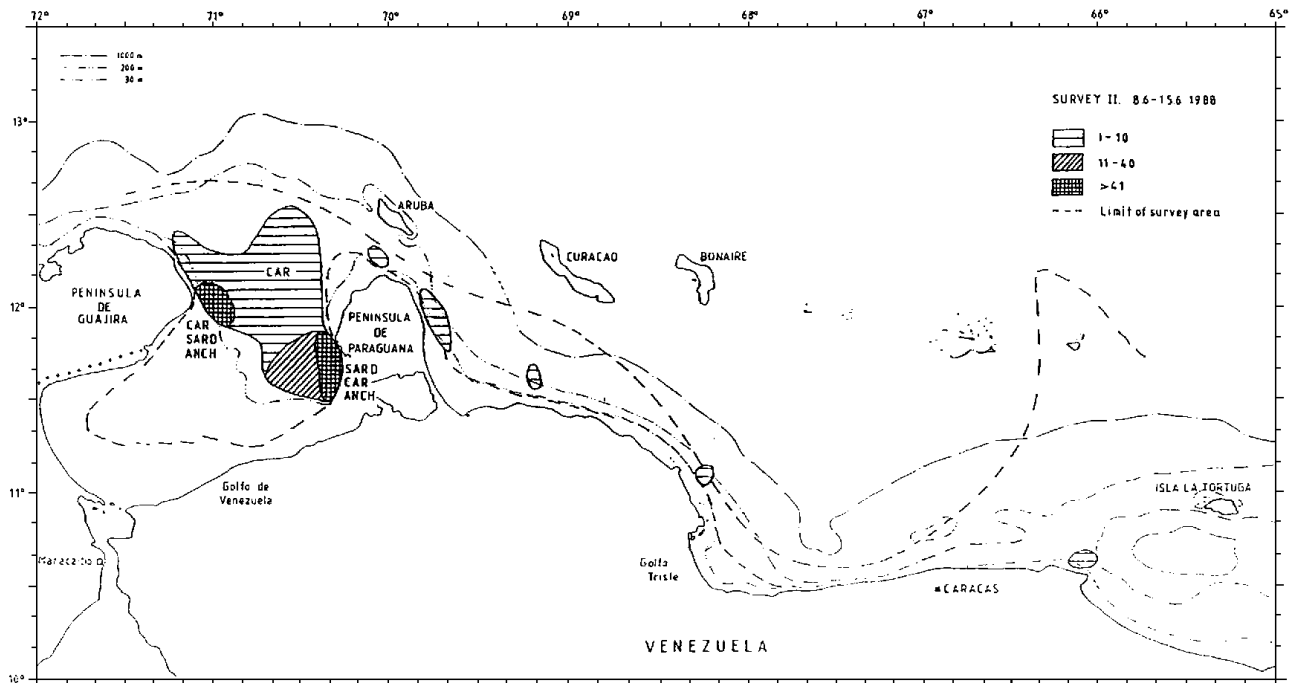
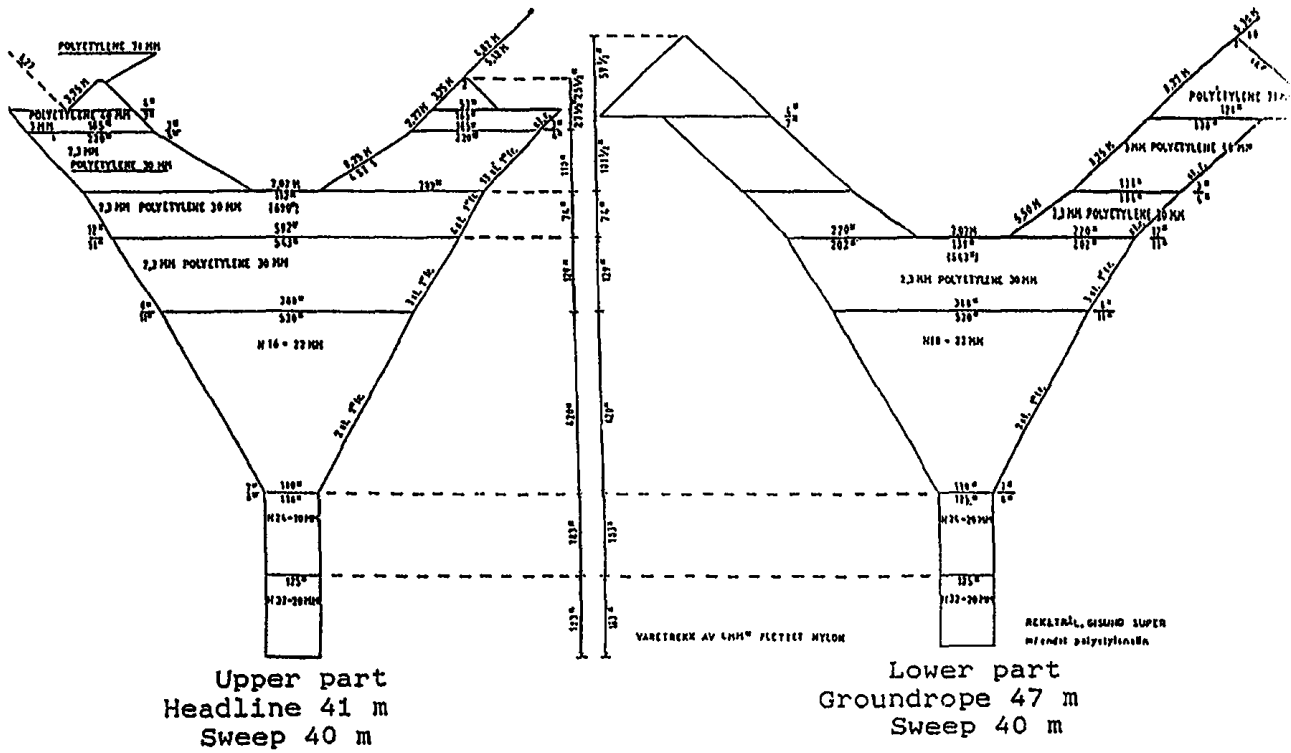


Figure 6. Distribution of pelagic fish from acoustic system. Western coasts.



ANNEX 1. DESCRIPTION OF TRAWL - APENDICE 1. DESCRIPCION DE RED DE ARRASTRE

Figure



PROJECT STATION: 457

DATE: 30/ 5/88 GEAR TYPE: BT No:1 POSITION: Lat N 1139
 start stop duration Long W 6253
 TIME :19:50:00 20:20:00 30 (min) Purpose code: 3
 LOG :1799.40 1799.40 Area code : 3
 FDEPTH: 520 540 GearCond.code:
 BDEPTH: 520 540 Validity code:
 Towing dir: 275° Wire out: 1500 m Speed: kn*10

Sorted: 4 Kg Total catch: 3.90 CATCH/HOUR: 7.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chauliodus sloani	2.00	84	25.64	
Bathynoeus giganteus	0.60	4	7.69	
Epigonus aacrops	0.60	6	7.69	
Hydrolagus alberti	0.60	2	7.69	
Gonostoma elongatum	0.50	24	6.41	
Glyphecragon sp	0.40	58	5.13	
Synegrops bellus	0.40	2	5.13	
PARALEPIDIDAE	0.40	2	5.13	
Ornithoteutis antillarum	0.40	6	5.13	
Benthodesmus tenuis	0.40	6	5.13	
Shrimps, small, non comm.	0.30	316	3.85	
Nezumia cyrano	0.30	6	3.85	
Physiculus sp.	0.30	2	3.85	
Aristeus viridens	0.20	6	2.56	
Acanthephyra sp.	0.20	4	2.56	
Raja sp	0.20	2	2.56	
TRACHICHTHYIDAE	0.00	8		
Malmcosteus niger	0.00	2		
Argyropelocum aculeatum	0.00	6		
Melanostosias sp.	0.00	6		
Total	7.80		100.00	

PROJECT STATION: 458

DATE: 31/ 5/88 GEAR TYPE: BT No:1 POSITION: Lat N 1134
 start stop duration Long W 6325
 TIME :06:55:00 07:25:00 30 (min) Purpose code: 3
 LOG :1879.80 1879.90 0.10 Area code : 3
 FDEPTH: 70 71 GearCond.code:
 BDEPTH: 70 71 Validity code:
 Towing dir: 270° Wire out: 400 m Speed: kn*10

Sorted: 31 Kg Total catch: 191.80 CATCH/HOUR: 383.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus lathami	196.80	6064	51.28	321
Pristipomoides macrophthalma	92.40	2952	24.08	322
Upeneus parvus	29.40	1416	7.66	323
Loligo paelei	16.20	268	4.22	
Priacanthus arenatus	10.20	36	2.66	
Rhomboplites aurorubens	9.20	42	2.40	
Loligo plei	8.40	84	2.19	
Caulolatilus intermedius	5.40	12	1.41	
Fistularia petiata	4.80	36	1.25	
Sardinella aurita	3.60	108	0.94	
Haemulon boschmae	2.40	132	0.63	
Synodus poeyi	1.20	24	0.31	
Haemulon aurolineatum	1.20	12	0.31	
Decapterus tabl	1.20	24	0.31	
Prionotus carolinus	0.60	12	0.16	
Ancylopsetta quadrocellata	0.60	2	0.16	
Syacius sp.	0.20	2	0.05	
Arionna regulus	0.00	12		
POLYCHADIDAE	0.00	36		
Total	383.80		100.02	

PROJECT STATION: 459

DATE: 31/ 5/88 GEAR TYPE: PT No:4 POSITION: Lat N 1132
 start stop duration Long W 6322
 TIME : 08:25:00 08:55:00 30 (min) Purpose code: 1
 LOG : 1885.70 1887.20 1.50 Area code : 3
 FDEPTH: 0 0 GearCond. code:
 BDEPTH: 69 66 Validity code:
 Towing dir: 108° Wire out: 50 m Speed: 30 kn*10

Sorted: Kg Total catch: CATCH/HOUR:

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
NO CATCH	0.00			
Total	-----	-----		

PROJECT STATION: 460

DATE: 31/ 5/88 GEAR TYPE: BT No:1 POSITION: Lat N 1128
 start stop duration Long W 6311
 TIME : 10:25:00 10:55:00 30 (min) Purpose code: 3
 LOG : 1898.40 1898.50 0.10 Area code : 3
 FDEPTH: 61 61 GearCond. code:
 BDEPTH: 61 61 Validity code:
 Towing dir: 213° Wire out: 350 m Speed: kn*10

Sorted: 32 Kg Total catch: 165.20 CATCH/HOUR: 330.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Upeneus parvus	125.00	9038	37.83	326
Pristipomoides macrophthalmus	124.00	6200	37.53	327
Priacanthus arenatus	16.50	480	4.99	
Rhomboplites aurorubens	15.00	660	4.54	325
Trachurus lathami	15.00	550	4.54	324
Loligo plei	9.00	220	2.72	
Mustelus canis	7.40	2	2.24	
Synodus pceyi	7.00	250	2.12	
Ariomma bondi	5.00	210	1.51	
Loligo paelai	2.00	40	0.61	
Diplectrus bivittatus	1.50	40	0.45	
Eucinostomus argenteus	1.00	10	0.30	
Penaeus brasiliensis	1.00	20	0.30	
Ariomma regulus	1.00	20	0.30	
Haemulon boschae	0.00	10		
Total	-----	-----	99.98	

PROJECT STATION: 461

DATE: 31/ 5/88 GEAR TYPE: BT No:1 POSITION: Lat N 1119
 start stop duration Long W 6318
 TIME : 12:20:00 12:50:00 30 (min) Purpose code: 3
 LOG : 1910.00 1911.30 1.30 Area code : 3
 FDEPTH: 36 33 GearCond.code:
 BDEPTH: 36 33 Validity code:
 Towing dir: 172° Wire out: 150 m Speed: 25 kn*10

Sorted: 10 Kg Total catch: 97.00 CATCH/HOUR: 194.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Loligo pealii	27.20	2414	14.02	
Strumeus tereus	26.40	10022	13.61	
Rhizoprionodon porosus	19.00	16	9.79	
Synodus poeyi	18.60	1114	9.59	
Caranx hippos	15.00	2	8.25	
Pristipomoides macrophtalmus	13.60	2618	7.01	
Caranx crybos	12.40	6	6.39	
Prionotus punctatus	8.40	25	4.33	
Scomberomorus cavalla	8.20	6	4.23	
Opisthoneca oglinum	6.00	312	3.09	
Lutjanus purpureus	6.00	-	3.09	
Sphyræna plicuilla	6.00	21	3.09	
Aluterus monoceros	3.60	6	1.86	
Upeneus parvus	3.20	424	1.65	
Eucinostomus gula	3.20	24	1.65	
Sphyræna guachancho	3.20	-	1.65	
Mutellus nigmani	3.00	4	1.55	
Selene vozer	3.00	2	1.55	
Porichthys sp	1.60	6	1.82	
Eucinostomus argenteus	1.60	16	1.82	
Acanthostracion quadricornis	1.40	6	0.72	
Dactylopterus volitans	1.40	-	0.72	
Trachurus lathami	0.80	32	1.41	
Pennæus brasiliensis	0.20	2	0.10	
Total	97.00		99.99	

PROJECT STATION: 462

DATE: 31/ 5/88 GEAR TYPE: BT No:1 POSITION: Lat N 1105
 start stop duration Long W 6319
 TIME : 14:40:00 15:10:00 30 (min) Purpose code: 3
 LOG : 1923.30 1923.30 Area code : 3
 FDEPTH: 32 34 GearCond.code:
 BDEPTH: 32 34 Validity code:
 Towing dir: 207° Wire out: 150 m Speed: kn*10

Sorted: 24 Kg Total catch: 24.60 CATCH/HOUR: 49.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Loligo piei	17.00	1216	34.55	328
Sphyræna guachancho	13.40	62	27.24	
Lutjanus purpureus	6.60	2	13.41	
Lutjanus analis	3.00	30	6.10	
Sphyræna plicuilla	2.00	2	4.07	
Strumeus tereus	1.40	44	2.85	
Orthopristis ruber	1.40	4	2.85	
Trachurus lathami	1.20	36	2.44	
Dactylopterus volitans	0.60	2	1.22	
Acanthostracion quadricornis	0.50	2	1.02	
Eucinostomus argenteus	0.40	8	0.81	
Lutjanus synæris	0.40	4	0.81	
Rhomboplites aurorubens	0.40	20	0.81	
Diplectrus civittatus	0.30	8	0.61	
Sardinella aurita	0.30	6	0.61	
Diplectrus formosus	0.20	2	0.41	
Synodus poeyi	0.10	6	0.20	
Total	24.60		100.01	

PROJECT STATION: 466

DATE: 1/ 6/98 GEAR TYPE: BT No:1 POSITION: Lat N 1053
 start stop duration Long W 6316
 TIME :00:35:00 01:05:00 30 (min) Purpose code: 3
 LOG :1995.90 1995.90 Area code : 3
 FDEPTH: 46 40 GearCond.code:
 BDEPTH: 46 40 Validity code:
 Towing dir: 323° Wire out: 200 m Speed: kn'10

Sorted: 31 Kg Total catch: 275.00 CATCH/HOUR: 550.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Synodus poeyi</i>	120.00	7500	21.82	
<i>Ctenosciena gracilicirrus</i>	64.00	1216	11.64	
<i>Trichiurus lepturus</i>	40.00	464	7.27	
<i>Caranx hippos</i>	36.20	6	6.58	
<i>Arius sp</i>	35.20	384	6.40	
<i>Cynoscion jamaicensis</i>	33.60	208	6.11	
<i>Loligo plei</i>	32.00	432	5.82	
<i>Priacanthus arenatus</i>	24.00	432	4.36	
<i>Mustelus higmani</i>	16.00	32	2.91	
<i>Forichthys sp</i>	16.00	560	2.91	
<i>Micropogonias furnieri</i>	13.00	12	2.36	
<i>Serranus phoebe</i>	12.80	784	2.33	
<i>Prionotus punctatus</i>	12.80	160	2.33	
<i>Chirocentron bleekeri</i>	12.80	912	2.33	
<i>Lepophidium sp</i>	11.20	640	2.04	
<i>Diplectrum fornosum</i>	9.60	124	1.75	
<i>Loligo paelei</i>	8.00	400	1.45	
<i>Pristipomoides macrophthalmus</i>	8.00	308	1.45	
<i>Trachurus lathami</i>	8.00	138	1.45	
<i>Sardinella aurita</i>	6.40	48	1.16	
<i>Eucinostomus argenteus</i>	6.40	32	1.16	
<i>Haemulon steindachneri</i>	4.80	32	0.87	
<i>Diplectrum bivittatum</i>	4.00	112	0.73	
<i>Pellona harroweri</i>	4.00	32	0.73	
<i>Penaeus brasiliensis</i>	4.00	68	0.73	332
<i>Dactylopterus volitans</i>	3.20	32	0.58	
<i>Lutjanus synagris</i>	2.40	16	0.44	
<i>Haemulon boschma</i>	1.60	32	0.29	
<i>Syacium micrurum</i>	0.00	16		
<i>Lagocephalus laevigatus</i>	0.00	16		
Total	550.00		100.00	

PROJECT STATION: 469

DATE: 1/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1133
 start stop duration Long W 6330
 TIME :08:15:00 08:45:00 30 (min) Purpose code: 3
 LOG :2041.60 2041.80 0.20 Area code : 3
 FDEPTH: 52 57 GearCond.code:
 SDEPTH: 52 57 Validity code:
 Towing dir: 260° Wire out: 350 m Speed: 4 kn*10

Sorted: 67 Kg Total catch: 931.40 CATCH/HOUR: 1862.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trachurus lathami	756.00	41744	40.58	338
Scomber japonicus	318.60	8778	17.10	339
Sardinella aurita	226.80	10044	12.18	340
Priacanthus arenatus	175.50	514	9.42	
Pristigaster macrophthalmus	81.00	4914	4.35	
Selar crumenophthalmus	75.60	1168	4.06	
Rhomboplites aurorubens	43.20	1674	2.32	
Loligo paelel	37.80	972	2.03	
Mycteroperca cidii	34.00	2	1.83	
Lutjanus purpureus	26.80	13	1.44	
Etrumeus teres	24.30	1080	1.30	
Loligo plei	24.30	432	1.30	
Lutjanus synagris	14.00	13	0.75	
Decapterus macarellus	10.80	108	0.58	
Upeneus parvus	8.10	432	0.43	
Uraspis secunda	2.80	2	0.15	
Scomberomorus cavalla	2.40	2	0.13	
Mustelus canis	0.80	4	0.04	
Synodus poeui	2.00	24		
Arionna bondi	0.00	108		
Caulolatilus intermedius	0.00	24		
Serranus atrobranchus	0.00	24		
Total	1862.80		99.99	

PROJECT STATION: 470

DATE: 1/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1124
 start stop duration Long W 6350
 TIME :10:20:00 10:50:00 30 (min) Purpose code: 3
 LOG :2054.90 2055.00 0.10 Area code : 3
 FDEPTH: 42 45 GearCond.code:
 SDEPTH: 42 45 Validity code:
 Towing dir: 270° Wire out: 250 m Speed: 4 kn*10

Sorted: 69 Kg Total catch: 775.30 CATCH/HOUR: 1550.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Etrumeus teres	1467.40	104184	94.63	341
Selene apixii	26.60	24	1.72	342
Loligo plei	22.00	594	1.42	
Dactylopterus volitans	6.60	22	0.43	
Ogcocephalus nasutus	6.60	44	0.43	
Loligo paelel	6.60	286	0.43	
Sardinella aurita	4.40	44	0.28	
Uraspis secunda	3.30	2	0.21	
Epinephelus flavolimbatus	1.20	2	0.08	
Synodus foetens	1.20	2	0.08	
Priacanthus arenatus	1.10	2	0.07	
Prionotus punctatus	1.00	2	0.06	
Caulolatilus intermedius	0.90	2	0.06	
Ancylometta quadrocellata	0.80	2	0.05	
Diplectrum bivittatum	0.80	2	0.05	
Forichthys pauciradiatus	0.00	22		
Serranus atrobranchus	0.00	22		
Total	1550.50		100.00	

PROJECT STATION: 471

DATE: 1/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1129
 start stop duration Long W 6401
 TIME :12:00:00 12:30:00 30 (min) Purpose code: 3
 LOG :2064.10 2084.10 Area code : 3
 FDEPTH: 70 76 GearCond.code:
 BDEPTH: 70 76 Validity code:
 Towing dir: 270° Wire out: 400 m Speed: kn'10

Sorted: 35 Kg Total catch: 826.50 CATCH/HOUR: 1653.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trachurus lathami	709.50	26690	42.92	343
Pristipomoides macrophthalmus	421.40	7416	25.49	344
Rhomboplites aurorubens	215.00	2796	13.01	
Gutjanus analis	88.00	14	5.32	
Mycteroperca cidi	53.00	2	3.21	
Synodus poeyi	25.80	86	1.56	
Priacanthus arenatus	25.80	44	1.56	
Haemulon steindachneri	25.80	86	1.56	
Upeneus parvus	21.50	66	1.30	
Scorpaena istanensis	12.90	150	0.78	
Lagocephalus laevigatus	12.90	172	0.78	
Loligo plei	8.60	86	0.52	
Loligo paelei	8.60	130	0.52	
Scorpaena agassizii	8.60	44	0.52	
Seriola zonata	8.00	2	0.48	
Fistularia petiata	4.20	2	0.25	
Serranus flaviventris	2.00	2	0.12	
Epinephelus niveatus	1.40	2	0.08	
Total	1653.00		99.98	

PROJECT STATION: 472

DATE: 1/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1111
 start stop duration Long W 6403
 TIME :14:33:00 15:03:00 30 (min) Purpose code: 3
 LOG :2082.40 2083.30 0.90 Area code : 3
 FDEPTH: 26 29 GearCond.code:
 BDEPTH: 26 29 Validity code:
 Towing dir: 062° Wire out: 150 m Speed: 20 kn'10

Sorted: 17 Kg Total catch: 57.30 CATCH/HOUR: 54.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Upeneus parvus	11.70	442	21.43	
Loligo plei	9.30	120	17.03	
Scorpaenopsis jaconicus	7.50	166	13.74	245
Synodus poeyi	6.00	390	10.99	
Trachurus lathami	4.50	169	8.24	
Sardinella aurita	3.90	82	7.14	
Loligo paelei	3.60	72	6.59	
CTOPODIDAE	2.40	2	4.40	
Diplecetrus formosus	2.40	16	4.40	
Paralichthys albigutta	2.40	4	4.40	
Prionotus sp	0.60	4	1.10	
Serranus phoebe	0.30	6	0.55	
Apogon niger	0.00	5		
Decapterus punctatus	0.00	4		
Priacanthus arenatus	0.00	4		
Total	57.30		100.01	

PROJECT STATION: 474

DATE: 1/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1107
 start stop duration Long W 6426
 TIME :17:43:00 18:13:00 30 (min) Purpose code: 3
 LOG :2100.50 2101.10 0.60 Area code : 3
 FDEPTH: 26 26 GearCond.code:
 BDEPTH: 26 26 Validity code:
 Towing dir: 255° Wire out: 150 m Speed: 20 kn*10

Sorted: 34 Kg Total catch: 137.40 CATCH/HOUR: 274.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Loligo plei	77.60	1032	28.24	349
Upeneus parvus	40.00	1856	14.56	350
Sardinella aurita	29.60	576	10.77	351
Diplectrus bivittatum	20.80	184	7.57	
Haemulon steindachneri	16.00	68	5.02	
Trachurus lathami	13.20	776	4.80	352
Synodus poeyi	12.00	704	4.37	
Diplectrus formosus	9.20	120	3.35	
Sphyræna picudilla	6.40	72	2.33	
Sarda sarda	5.60	24	2.04	
Synodus foetens	5.60	40	2.04	
Scorpsena brasiliensis	4.80	16	1.75	
Decapterus macarellus	4.40	124	1.60	
Priacanthus arenatus	4.40	96	1.60	
OCTOPODIDAE	4.00	8	1.46	
Chloroscombrus chrysurus	4.00	16	1.46	
Dactylopterus volitans	4.00	8	1.46	
Lutjanus analis	2.40	24	0.87	
Epinephelus flavoliabatus	2.40	8	0.87	
Euthynnus alletteratus	2.40	8	0.87	
LABRIDAE	1.60	8	0.58	
Bothus lunatus	1.60	24	0.58	
Alectis ciliaris	1.60	16	0.58	
Haemulon aurolineatum	1.20	8	0.44	
Pristigaster macrophthalmus	0.00	8		
Total	274.80		100.01	

PROJECT STATION: 475

DATE: 1/ 6/88 GEAR TYPE: PT No:2 POSITION: Lat N 1113
 start stop duration Long W 6420
 TIME :20:00:00 20:23:00 23 (min) Purpose code: 1
 LOG :2113.50 2116.70 1.20 Area code : 3
 FDEPTH: 15 15 GearCond.code:
 BDEPTH: 45 47 Validity code:
 Towing dir: 300° Wire out: 150 m Speed: 35 kn*10

Sorted: 36 Kg Total catch: 397.70 CATCH/HOUR: 1037.48

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinella aurita	889.57	18566	85.74	353
Etrumeus teres	60.26	2300	5.81	354
Scomber japonicus	57.39	545	5.53	355
Euthynnus alletteratus	18.65	68	1.80	
Selar crumenophthalmus	7.17	29	0.69	
Decapterus macarellus	4.30	115	0.41	
Total	1037.34		99.98	

PROJECT STATION: 476

DATE: 2/ 6/88 GEAR TYPE: PT No:2 POSITION:Lat N 1113
 start stop duration Long W 6455
 TIME :00:35:00 01:05:00 30 (min) Purpose code: 1
 LOG :2163.50 2164.20 0.70 Area code : 3
 FDEPTH: 5 8 GearCond.code:
 BDEPTH: 22 27 Validity code:
 Towing dir: 15° Wire out: 50 m Speed: 15 kn*10

Sorted: 10 Kg Total catch: 10.45 CATCH/HOUR: 20.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Anchoviella lepidentostole	11.00	1146	52.63	386
Loligo plei	3.00	760	14.05	
Synodus poeyi	2.00	234	9.57	
Etrumeus teres	1.00	142	4.78	
Sphyraena picudilla	0.80	2	3.83	
Sardinella aurita	0.80	40	3.83	
Trichiurus lepturus	0.60	2	2.87	
Engraulis eurystole	0.60	44	2.87	
Chirocentron bleekeri	0.60	74	2.87	
Remora sp.	0.20	4	0.96	
Anchoa lyolepis	0.20	20	0.96	
Selar crusenophthalmus	0.10	2	0.48	
Selene sp	0.00	4		
Cecapterus macarellus	0.00	2		
Trachurus lathami	0.00	4		
Haemulon boschae	0.00	6		
Total	20.90		100.00	

PROJECT STATION: 477

DATE: 2/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1154
 start stop duration Long W 6417
 TIME :07:00:00 07:25:00 25 (min) Purpose code: 3
 LOG :2213.00 2213.10 0.10 Area code : 3
 FDEPTH: 135 160 GearCond.code:
 BDEPTH: 135 160 Validity code:
 Towing dir: 235° Wire out: 700 m Speed: kn*10

Sorted: 42 Kg Total catch: 41.90 CATCH/HOUR: 100.56

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Antigonia capros	30.72	221	30.55	
Epinephelus niveatus	30.24	5	30.07	
Serranus phoebe	10.80	166	10.74	357
Caulolatilus cyanops	9.60	14	9.55	
Seriola rivolana	6.00	5	5.97	
Rhomboplites aurorubens	3.36	5	3.34	
Fistularia petimba	2.40	7	2.39	
Chaetodon gyanesis	1.68	38	1.67	
Lagocephalus laevigatus	1.32	2	1.31	
Synodus intermedius	1.32	22	1.31	
Ostichthys trachypoma	1.20	5	1.19	
Synodus poeyi	1.20	58	1.19	
Scorpaena plumieri	0.48	2	0.48	
Fistularia tabacaria	0.24	10	0.24	
Paranthias furcifer	0.00	3		
Total	100.56		100.00	

PROJECT STATION: 479

DATE: 2/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1124
 start stop duration Long W 6418
 TIME :13:34:00 14:04:00 30 (min) Purpose code: 3
 LOG :2266.40 2266.40 Area code : 3
 FDEPTH: 78 76 GearCond.code:
 BDEPTH: 78 76 Validity code:
 Towing dir: 200° Wire out: 350 m Speed: kn*10

Sorted: 28 Kg Total catch: 368.80 CATCH/HOUR: 737.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO
	weight	numbers		
Upeneus parvus	182.60	8108	24.76	
Trachurus lathami	138.60	5106	18.79	
Pristipomoides macrophthalmus	88.00	1650	11.93	
Rhomboplites aurorubens	77.00	72	10.44	
Haemulon boschme	70.40	2398	9.54	
Epinephelus niveatus	47.80	2	6.48	
Haemulon melanurum	29.00	210	3.93	
Lutjanus analis	20.40	2	2.77	
Epinephelus flavolimbatus	18.90	4	2.56	
Ariomma bondi	15.40	616	2.09	
Synodus poeyi	11.00	88	1.49	
Lagocephalus laevigatus	11.00	44	1.49	
Loligo paelei	9.90	132	1.34	
Caulolatilus cyanops	7.00	18	0.95	
Caulolatilus intermedius	4.40	4	0.60	
Aluterus monoceros	3.00	1	0.41	
Decapterus rabi	2.20	22	0.30	
Paralichthys tropicus	1.00	2	0.14	
Total	737.60		100.01	

PROJECT STATION: 480

DATE: 2/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1117
 start stop duration Long W 6421
 TIME :14:54:00 15:24:00 30 (min) Purpose code: 3
 LOG :2272.00 2272.80 0.80 Area code : 3
 FDEPTH: 70 68 GearCond.code:
 BDEPTH: 70 68 Validity code:
 Towing dir: 225° Wire out: 300 m Speed: 15 kn*10

Sorted: 36 Kg Total catch: 512.60 CATCH/HOUR: 1025.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pristipomoides macrophthalmus	403.20	8824	39.33	359
Trachurus lathami	347.20	1932	33.87	360
Loligo plei	98.00	812	9.55	361
Synodus poeyi	28.00	172	2.73	
Caulolatilus chrysops	22.40	112	2.18	
Scomber japonicus	20.00	120	1.95	358
Aluterus monoceros	19.60	28	1.91	
Upeneus parvus	19.60	700	1.91	
Priacanthus arenatus	18.20	420	1.78	
Prionotus punctatus	14.00	280	1.37	
Scorpaena agassizi	14.00	28	1.37	
Dactylopterus volitans	14.00	28	1.37	
Sardinella aurita	4.20	140	0.41	
Scorpaena istmensis	2.80	28	0.27	
Selar crumenophthalmus	0.00	28		
Total	1025.20		100.01	

PROJECT STATION: 484

DATE: 3/ 6/80 GEAR TYPE: BT No:1 POSITION: Lat N 10S6
 start stop duration Long W 0422
 TIME :04:15:00 04:45:00 30 (min) Purpose code: 3
 LCG :2361.00 2362.00 1.00 Area code : 3
 FDEPTH: 74 56 GearCond.code:
 BDEPTH: 74 56 Validity code:
 Towing dir: 90° Wire out: 350 m Speed: 25 kn/10

Sorted: 32 Kg Total catch: 470.20 CATCH/HOUR: 940.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus lathami	143.00	1690	15.21	
Micropogonias furnieri	93.60	106	9.95	
Otenosciana gracilicirrus	83.20	78	8.85	
Mustelus canis	90.60	156	8.57	
Micropogonias furnieri	90.60	906	8.57	
Haemulon steindschneri	75.40	754	8.02	
Prionotus punctatus	70.20	338	7.46	
Macrodon sp.	52.00	52	5.53	
Synodus poeyi	44.20	2100	4.70	
Orthopristis ruber	33.80	130	3.59	
Pristipomoides macropthalmus	33.80	1768	3.59	
Stellifer sp	31.20	858	3.32	
Upeneus parvus	20.80	910	2.21	
Upeneus parvus	18.20	52	1.94	
Trichiurus lepturus	15.60	182	1.66	
Serranus pnoebe	13.00	130	1.38	
Harengula sp	13.00	858	1.38	
Haemulon aurolineatum	7.80	26	0.83	
Penaeus notialis	5.40	102	0.57	366
Diplectrum radiale	5.20	130	0.55	
Eucinostomus argenteus	5.20	156	0.55	
Dactylopterus volitans	5.20	26	0.55	
Lepophidium sp	2.60	26	0.28	
Scorpaena agassizi	2.60	26	0.28	
Porichthys sp	2.60	78	0.28	
Serranus dewingeri	1.40	4	0.15	
Penaeus brasiliensis	0.20	26	0.02	367
Sardinella aurita	0.00	26		
Total	470.20		99.99	

PROJECT STATION: 486

DATE: 3/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1043
 start stop duration Long W 6415
 TIME :07:50:00 08:20:00 30 (min) Purpose code: 3
 LOG :2383.50 2383.50 Area code : 3
 FDEPTH: 71 71 GearCond.code:
 BDEPTH: 71 71 Validity code:
 Towing dir: 290° Wire out: 350 m Speed: kn*10

Sorted: 98 Kg Total catch: 791.80 CATCH/HOUR: 1583.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Otenosciens gracilicirrus	683.20	7408	43.14	372
Trichiurus lepturus	260.80	2712	16.47	
Micropogonias furnieri	200.00	112	12.63	
Peprilus paru	192.00	288	12.12	
Trachurus lathami	54.40	256	3.44	
Mustelus canis	36.80	32	2.32	
Sphyræna guacnacho	33.60	32	2.12	
Aluterus monoceros	16.00	16	1.01	
Orthopristis ruber	16.00	48	1.01	
Sphyræna picugilla	13.60	48	0.86	
Loligo sp	12.00		0.76	
Mylobatis freminvillei	7.60	4	0.48	
Upeneus parvus	6.40	64	0.40	
Chirocentron bleekeriensis	5.60	364	0.35	
Prionotus punctatus	5.60	32	0.35	
Paralichthys tropicus	5.50	4	0.35	
Fistularia petiata	4.80	16	0.30	
Synodus poeyi	4.80	112	0.30	
Scorpaena brasiliensis	4.80	16	0.30	
Liplectrum bivittatum	4.00	64	0.25	
Pristipomoides macropthalma	3.20	80	0.20	
Synodus intermedius	3.20	256	0.20	
Spinepneius niveatus	3.20	16	0.20	
Penaeus brasiliensis	2.50	90	0.16	373
Porichthys pauciradiatus	1.60	32	0.10	
Priacanthus arenatus	1.50	16	0.10	
Penaeus notialis	0.90	16	0.05	
Sardinella aurita	0.00	16		
Ancylopsetta quadrocellata	0.00	16		
Total	791.80	7408	100.00	

PROJECT STATION: 487

DATE: 3/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1033
 start stop duration Long W 6401
 TIME :16:25:40 17:05:00 29 (min) Purpose code: 3
 LOG :2417.50 2418.60 1.10 Area code : 3
 FDEPTH: 61 66 GearCond.code:
 BDEPTH: 61 66 Validity code: 9
 Towing dir: 114° Wire out: 200 m Speed: 20 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	0.00			

PROJECT STATION: 488

DATE: 3/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1030
 start stop duration Long W 6353
 TIME :18:00:00 18:25:00 25 (min) Purpose code: 3
 LOG :2424.90 2425.70 0.80 Area code : 3
 FDEPTH: 49 48 GearCond.code:
 BDEPTH: 49 48 Validity code:
 Towing dir: 106° Wire out: 200 m Speed: 20 kn*10

Sorted: 60 Kg Total catch: 181.10 CATCH/HOUR: 434.64

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	numbers		
Otenosciena gracilicirrhus	198.00	4867	45.55	374
Micropogonias furnieri	149.40	298	34.37	375
Arius spixii	40.68	346	9.36	376
Eucinostomus argenteus	7.92	202	1.82	
Trachurus lathami	7.92	576	1.82	
Orthopristis ruber	6.84	79	1.57	
Loligo paelei	6.48	468	1.49	
Loligo plei	4.32	94	0.99	
Paralichthys tropicus	2.64	2	0.61	
Trichiurus lepturus	2.52	101	0.58	
Fistularia petimba	2.16	7	0.50	
Serranus dewingeri	2.16	14	0.50	
Penaeus notialis	1.08	26	0.25	
Diploctrum vivittatum	1.08	7	0.25	
Etrumeus teres	0.72	130	0.17	
Chirocentron blocherianus	0.72	159	0.17	
Penaeus brasiliensis	0.00	2		
Total	434.64		100.00	

PROJECT STATION: 489

DATE: 3/ 6/88 GEAR TYPE: PT No:4 POSITION:Lat N 1031
 start stop duration Long W 6400
 TIME :21:00:00 21:30:00 30 (min) Purpose code: 1
 LOG :2448.30 2449.80 1.50 Area code : 3
 FDEPTH: 0 0 GearCond.code:
 BDEPTH: 63 55 Validity code:
 Towing dir: 240° Wire out: 50 m Speed: 30 kn*10

Sorted: 3 Kg Total catch: 52.20 CATCH/HOUR: 104.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	numbers		
Engraulis eurystole	70.20	3172	67.24	377
Etrumeus teres	29.80	2258	23.54	378
Trichiurus lepturus	4.40	2	4.21	
Total	104.40		99.99	

PROJECT STATION: 493

DATE: 4/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1012
 start stop duration Long W 6449
 TIME :09:55:00 10:30:00 35 (min) Purpose code: 3
 LOG :2545.60 2547.00 1.40 Area code : 3
 FDEPTH: 40 41 GearCond.code:
 BDEPTH: 40 41 Validity code:
 Towing dir: 283° Wire out: 200 m Speed: 20 kn*10

Sorted: 78 Kg Total catch: 3000.00 CATCH/HOUR: 5142.86

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Engraulis eurystole	4532.40	570943	88.13	385
Anchoviella lepidentostole	549.43	127215	10.68	386
Selene vomer	10.29	10	0.20	
Oligoplites saliens	9.26	7	0.18	
Micropogonias furnieri	8.23	7	0.16	
Sphyræna guachancho	7.20	14	0.14	
Trichiurus lepturus	6.86	14	0.13	
Chloroscombrus chrysurus	4.80	34	0.09	
Bagre marinus	4.46	3	0.09	
Priacanthus arenatus	4.11	7	0.08	
Hemicaranx amblyrhynchus	3.43	14	0.07	
Sphyræna picudilla	2.40	10	0.05	
Total	5142.87		100.00	

PROJECT STATION: 494

DATE: 4/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1015
 start stop duration Long W 6500
 TIME :11:35:00 12:05:00 30 (min) Purpose code: 3
 LOG :2555.00 2556.30 1.30 Area code : 3
 FDEPTH: 43 43 GearCond.code:
 BDEPTH: 43 43 Validity code:
 Towing dir: 280° Wire out: 250 m Speed: 25 kn*10

Sorted: 25 Kg Total catch: 43.04 CATCH/HOUR: 86.08

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pristipomoides macrophthalmus	25.20	1898	29.28	
Anchoa lyolepis	16.50	1014	19.17	387
Synodus poeyi	9.60	442	11.15	
Pecten sp	8.70	986	10.11	
Sardinella aurita	7.80	120	9.06	388
Loligo plei	6.90	100	9.02	
Loligo paelei	2.70	64	3.14	
Upeneus parvus	2.40	108	2.79	
Priacanthus arenatus	2.10	166	2.44	
Penaeus notialis	1.20	6	1.39	
Selar crumenophthalmus	0.90	4	1.05	
Trachurus lathami	0.74	18	0.86	
Diplectrum bivittatum	0.60	6	0.70	
Fistularia petiata	0.30	18	0.35	
Diplectrum radiata	0.30	14	0.35	
Serranus phoebe	0.14	12	0.16	
Total	86.08		100.02	

PROJECT STATION: 500

DATE: 5/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1102
 start stop duration Long W 6451
 TIME :08:20:00 08:45:00 25 (min) Purpose code: 3
 LOG :2711.80 2712.30 0.50 Area code : 3
 FDEPTH: 94 104 GearCond.code:
 BDEPTH: 94 104 Validity code:
 Towing dir: 270° Wire out: 550 m Speed: 2 kn*10

Sorted: 38 Kg Total catch: 37.85 CATCH/HOUR: 90.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Haemulon striatum	48.60	509	53.50	396
Mycteroperca cidi	12.48	2	13.74	
Rhomboplites aurorubens	5.04	17	5.55	
Caulolatilus chrysops	3.96	2	4.36	
Haemulon flavolineatus	3.84	12	4.23	
Aluterus monoceros	3.48	2	3.83	
Lutjanus buccanella	3.36	5	3.70	
Calamus bajonado	3.24	2	3.57	
Loligo paelei	1.92		2.11	
Loligo plei	1.44	50	1.59	
Pristipomoides macrophthalmus	0.96	12	1.06	
Caulolatilus cyanops	0.60	2	0.66	
Chromis sp.	0.48	10	0.53	
Synodus poeyi	0.48	2	0.53	
Scorpaena plusieri	0.36	2	0.40	
Upeneus parvus	0.36	31	0.40	
Arionna bondi	0.24	14	0.26	
Canthigaster rostrata	0.00	2		
Apogon pseudosaculatus	0.00	2		
Total	90.84		100.02	

PROJECT STATION: 501

DATE: 5/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1054
 start stop duration Long W 6501
 TIME :11:00:00 11:30:00 30 (min) Purpose code: 3
 LOG :2733.20 2734.20 1.00 Area code : 3
 FDEPTH: 130 125 GearCond.code:
 BDEPTH: 130 125 Validity code:
 Towing dir: 260° Wire out: 650 m Speed: 25 kn*10

Sorted: 66 Kg Total catch: 198.84 CATCH/HOUR: 397.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus lathami	274.80	2574	69.10	396
Pristipomoides macrophthalmus	96.00	904	24.14	397
Pagrus pagrus	17.40	30	4.38	
Caulolatilus cyanops	3.60	6	0.91	
Priacanthus arenatus	3.00	30	0.75	
Rhomboplites aurorubens	1.50	6	0.30	
Loligo paelei	0.90	36	0.23	
Serranus dewingeri	0.48	6	0.12	
Total	397.68		100.01	

PROJECT STATION: 502

DATE: 5/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1002
 start stop duration Long W 6500
 TIME :12:34:00 13:09:00 35 (min) Purpose code: 3
 LOG :2741.70 2742.10 0.40 Area code : 3
 FDEPTH: 30 75 GearCond.code:
 BDEPTH: 30 75 Validity code:
 Towing dir: 316° Wire out: 400 m Speed: 8 kn*10

Sorted: 59 Kg Total catch: 68.95 CATCH/HOUR: 152.49

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus lathami	83.31	482	54.63	398
Upeneus parvus	27.51	722	18.04	399
Scomber japonicus	15.43	183	10.12	400
Rhomboplites aurorubens	9.00	75	5.90	401
Aluterus monoceros	4.37	3	2.87	
Loligo plei	4.37	98	2.87	
Priacanthus arenatus	3.09	19	2.03	
Pristipomoides macrophthalmus	2.57	29	1.69	
Loligo paelei	2.31	29	1.51	
Sardinella aurita	0.51	9	0.33	
Total	152.47		99.99	

PROJECT STATION: 503

DATE: 5/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1107
 start stop duration Long W 6505
 TIME :14:35:00 15:05:00 30 (min) Purpose code: 3
 LOG :2753.00 2754.00 1.00 Area code : 3
 FDEPTH: 94 90 GearCond.code:
 BDEPTH: 94 90 Validity code:
 Towing dir: 238° Wire out: 450 m Speed: 20 kn*10

Sorted: 11 Kg Total catch: 11.45 CATCH/HOUR: 22.90

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Aluterus monoceros	9.00	4	39.30	
Loligo plei	7.00	172	30.57	402
Ariomma bondi	2.00	70	8.73	
Upeneus parvus	1.40	58	6.11	
Sarranus flaviventris	1.00	6	4.37	
Loligo paelei	0.80	14	3.49	
Fistularia petiata	0.60	2	2.62	
Decapterus tabl	0.60	4	2.62	
Pristipomoides macrophthalmus	0.50	2	2.18	
Total	22.90		99.99	

PROJECT STATION: 505

DATE: 5/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1105
 start stop duration Long W 6525
 TIME :10:00:00 18:30:00 30 (min) Purpose code: 3
 LOG :2774.60 2775.90 1.30 Area code : 3
 FDEPTH: 70 72 GearCond.code:
 BDEPTH: 70 72 Validity code:
 Towing dir: 270° Wire out: 350 m Speed: 20 kn*10

Sorted: 26 Kg Total catch: 232.30 CATCH/HOUR: 464.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Haemulon boschae	155.20	7824	33.41	
Rhomboplites aurorubens	123.20	3984	26.52	406
Trachurus lathami	80.00	4000	17.22	407
Haemulon flavolineatus	40.00	928	8.61	
Decapterus macarellus	20.00	354	4.30	
Lutjanus griseus	19.20	2	4.13	
Stenotomus chrysops	13.60	2	2.93	
Lutjanus purpureus	6.80	2	1.46	
Loligo plei	2.40	32	0.52	
Decapterus tabl	2.40	32	0.52	
Fistularia petiaba	1.80	4	0.39	
Total	464.60		100.01	

PROJECT STATION: 506

DATE: 6/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1105
 start stop duration Long W 6545
 TIME :12:22:00 12:52:00 30 (min) Purpose code: 3
 LOG :2948.30 2949.80 1.50 Area code : 3
 FDEPTH: 82 67 GearCond.code:
 BDEPTH: 82 67 Validity code: 1
 Towing dir: 205° Wire out: 400 m Speed: 30 kn*10

Sorted: 4 Kg Total catch: 4.58 CATCH/HOUR: 9.16

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Calamus pennatula	2.46	6	26.86	
Caulolatilus intermedius	1.40	2	15.28	
Fistularia tabacaria	1.40	2	15.28	
Synodus sp	1.00	16	10.92	
Serranus phoebe	1.00	16	10.92	
Loligo plei	0.80	14	8.73	
Fistularia petiaba	0.60	6	6.55	
Acanthostracion quadricornis	0.30	2	3.28	
Trachinocephalus myops	0.20	2	2.18	
Total	9.16		100.00	

PROJECT STATION: 509

DATE: 6/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1044
 start stop duration Long W 8604
 TIME :17:53:00 18:23:00 30 (min) Purpose code: 3
 LOG :2987.20 2988.00 0.80 Area code : 3
 FDEPTH: 63 63 GearCond.code:
 BDEPTH: 63 63 Validity code:
 Towing dir: 42° Wire out: 300 m Speed: 15 kn*10

Sorted: 74 Kg Total catch: 74.35 CATCH/HOUR: 148.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lutjanus apodus	102.40	30	68.86	411
Mustelus sp	14.80	6	9.95	
Pagrus pagrus	7.60	10	5.11	
Aluterus monoceros	6.80	4	4.57	
Balistes vetula	5.40	2	3.63	
Loligo plei	5.00	38	3.36	412
Acanthostracion quadricornis	4.80	4	3.23	
Fistularia petimba	1.00	4	0.67	
Chilomycterus antillarum	0.60	2	0.40	
Lutjanus synagris	0.30	2	0.20	
Total	148.70		99.98	

PROJECT STATION: 510

DATE: 6/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1045
 start stop duration Long W 6619
 TIME :21:57:00 22:27:00 30 (min) Purpose code: 3
 LOG :3017.70 3019.20 1.50 Area code : 3
 FDEPTH: 182 184 GearCond.code:
 BDEPTH: 182 184 Validity code:
 Towing dir: 260° Wire out: 700 m Speed: 30 kn*10

Sorted: 47 Kg Total catch: 94.80 CATCH/HOUR: 189.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Pristipomoides macrophthalmus	138.00	1624	72.78	
Prionotus beani	13.60	196	7.17	
Trachurus lathamii	10.00	40	5.27	
Aluterus monoceros	6.40	4	3.38	
Upeneus parvus	3.60	80	1.90	
Peristedion sp	3.60	120	1.90	
Lepophidium profundorum	2.80	60	1.48	
Saurida caribbaeus	2.40	16	1.27	
Loligo plei	2.00	28	1.05	
Brotula barbata	2.00	4	1.05	
Antennarius radiosus	1.20	4	0.63	
Pontinus longispinnis	0.80	20	0.42	
Trichopsatta ventralis	0.80	20	0.42	
Decodon puellaris	0.60	8	0.32	
Scorpaena agassizii	0.40	20	0.21	
Pseudupeneus maculatus	0.40	4	0.21	
Spheroides pachygaster	0.40	8	0.21	
Porichthys bathoiketes	0.40	8	0.21	
Synchiropus agassizii	0.20	4	0.11	
MORIDAE	0.00	20		
Hildebrandia sp.	0.00	4		
Hoplunnis sp	0.00	16		
Serranus atrobranchus	0.00	4		
Total	189.60		99.99	

PROJECT STATION: 511

DATE: 7/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1039
start stop duration Long W 6657
TIME :06:30:00 07:00:00 30 (min) Purpose code: 3
LOG :3096.50 3097.80 1.30 Area code : 3
FDEPTH: 154 151 GearCond.code:
BDEPTH: 154 151 Validity code:
Towing dir: 260° Wire out: 650 m Speed: 25 kn*10

Sorted: 47 Kg Total catch: 305.70 CATCH/HOUR: 611.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trichiurus lepturus	426.00	468	69.68	
Rhomboplites aurorubens	58.80	420	9.62	413
Mylobatis freminvillei	40.00	10	6.54	
Hemanthias leptus	33.60	72	5.50	
Pristipomoides macrophthalmus	28.80	204	4.71	
Hexanchus griseus	8.00	2	1.31	
Fistularia petimba	4.80	24	0.79	
Upeneus parvus	4.80	72	0.79	
Paralichthys tropicus	3.00	2	0.49	
Loligo paelei	2.40	72	0.39	
Trachurus lathamii	1.20	12	0.20	
Peneus brasiliensis	0.00	12		
Total	611.40		100.02	

PROJECT STATION: 512

DATE: 8/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1038
start stop duration Long W 6648
TIME :08:53:00 09:17:00 24 (min) Purpose code: 3
LOG :3114.20 3115.30 1.10 Area code : 3
FDEPTH: 69 63 GearCond.code:
BDEPTH: 69 63 Validity code:
Towing dir: 95° Wire out: 350 m Speed: 20 kn*10

Sorted: 67 Kg Total catch: 67.10 CATCH/HOUR: 167.75

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lutjanus purpureus	127.00	375	75.71	414
Mylobatis freminvillei	7.50	8	4.47	
Priacanthus arenatus	7.38	15	4.40	
Lutjanus synagris	6.25	5	3.73	
Seriola rivolana	6.25	3	3.73	
Loligo plei	3.75	210	2.24	
Pristipomoides macrophthalmus	2.50	20	1.49	
Albula nemoptera	1.63	3	0.97	
Rhomboplites aurorubens	1.50	23	0.89	
Fistularia petimba	1.50	3	0.89	
Eucinostomus argenteus	1.25	30	0.75	
Prionotus punctatus	0.75	3	0.45	
Upeneus parvus	0.50	23	0.30	
Synodus poeyi	0.00	5		
Total	167.76		100.02	

PROJECT STATION: 513

DATE: 8/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1039
 start stop duration Long W 6632
 TIME :12:05:00 12:35:00 30 (min) Purpose code: 3
 LOG :3130.90 3132.40 1.50 Area code : 3
 FDEPTH: 67 63 GearCond.code:
 BDEPTH: 67 63 Validity code:
 Towing dir: 275° Wire out: 350 m Speed: 30 kn*10

Sorted: 26 Kg Total catch: 26.05 CATCH/HOUR: 52.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	numbers		
Trachurus lathami	21.00	1996	40.31	415
Priacanthus arenatus	8.40	24	16.12	
Upeneus parvus	3.40	520	6.53	
Rhomboplites aurorubens	2.80	62	5.37	416
Lagocephalus laevigatus	2.00	4	3.84	
Decapterus macarellus	2.00	64	3.84	
Lutjanus purpureus	1.90	6	3.65	
Loligo plei	1.80	50	3.45	
Seriola rivolana	1.60	2	3.07	
Prionotus punctatus	1.60	2	3.07	
Pristipomoides macrophthalmus	1.40	12	2.69	
Fistularia petimba	1.20	6	2.30	
Alectis ciliaris	1.00	2	1.92	
Decapterus punctatus	1.00	22	1.92	
Sardinella aurita	1.00	28	1.92	
Diplectrum bivittatum	0.00	4		
Synodus poeyi	0.00	6		
Total	52.10		100.00	

PROJECT STATION: 514

DATE: 8/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1039
 start stop duration Long W 6617
 TIME :14:49:00 15:19:00 30 (min) Purpose code: 3
 LOG :3152.50 3153.90 1.40 Area code : 3
 FDEPTH: 91 95 GearCond.code:
 BDEPTH: 91 95 Validity code:
 Towing dir: 270° Wire out: 400 m Speed: 28 kn*10

Sorted: 34 Kg Total catch: 33.90 CATCH/HOUR: 67.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	Weight	numbers		
Selar crumenophthalmus	35.00	426	51.62	417
Upeneus parvus	8.60	356	12.68	
Eucinostomus argenteus	8.00	176	11.80	
Loligo paelel	4.40	60	6.49	418
Pristipomoides macrophthalmus	4.00	44	5.90	
Aluterus monoceros	2.60	3	3.83	
Ariomma bondi	1.80	40	2.65	
Cyclopaetta chittendeni	1.60	2	2.36	
Trachurus lathami	0.80	2	1.18	
Rhomboplites aurorubens	0.40	4	0.55	
Scomber japonicus	0.40	2	0.59	
Priacanthus arenatus	0.20	4	0.29	
Total	67.80		99.98	

PROJECT STATION: 515

DATE: 8/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1039
start stop duration Long W 6604
TIME :17:20:00 17:45:00 25 (min) Purpose code: 3
LOG :3169.90 3171.70 1.80 Area code : 3
FDEPTH: 70 64 GearCond.code:
BDEPTH: 70 64 Validity code:
Towing dir: 278° Wire out: 350 m Speed: 36 kn*10

Sorted: 22 Kg Total catch: 22.60 CATCH/HOUR: 54.24

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Eucinostomus argenteus	16.80	343	30.97	419
Upeneus parvus	7.68	216	14.16	420
Priacanthus arenatus	6.48	17	11.95	
Dactylopterus volitans	6.00	12	11.06	
Fistularia petiata	3.84	24	7.08	
Pristipomoides macrophthalmus	3.60	36	6.64	
Acanthostracion quadricornis	2.64	5	4.87	
Calamus penna	2.40	2	4.42	
Loligo plei	1.20	46	2.21	
Loligo paelei	1.20	29	2.21	
Acanthostracion polygonos	0.96	2	1.77	
Selar crumenophthalmus	0.60	7	1.11	
Rhomboplites aurorubens	0.48	10	0.88	
Trachurus lathami	0.24	10	0.44	
Ariomma bondi	0.12	12	0.22	
Synodus poeyi	0.00	2		
Total	54.24		99.99	

PROJECT STATION: 517

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1050
 start stop duration Long W 6654
 TIME :00:32:00 01:02:00 30 (min) Purpose code: 3
 LOG :3135.10 3237.20 2.10 Area code : 3
 FDEPTH: 100 98 GearCond.code:
 SDEPTH: 100 98 Validity code:
 Towing dir: 243° Wire out: 500 m Speed: 35 kn¹⁰

Sorted: 28 Kg Total catch: 449.20 CATCH/HOUR: 898.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Rhomboplites aurorubens</i>	400.00	736	44.52	423
<i>Oxyatis</i> sp	240.00	2	26.71	
<i>Lutjanus vivanus</i>	59.00	6	6.57	
<i>Mycteroperca cidi</i>	57.00	2	6.34	
<i>Cecapterus tabi</i>	49.60	396	5.52	
<i>Seriola rivolana</i>	32.00	4	3.56	
<i>Priacanthus arenatus</i>	22.00	20	2.45	
<i>Ariomma bondi</i>	15.20	272	1.69	
<i>Myripristis jacobus</i>	8.00	44	0.89	
<i>Pristigenys atlas</i>	6.00	12	0.67	
<i>Cactvlopterus volitans</i>	2.80	4	0.31	
<i>Serranus phoebe</i>	1.60	24	0.18	
<i>Fistularia petimba</i>	1.20	4	0.13	
<i>Scorpaena agassizi</i>	1.20	12	0.13	
<i>Prionotus stearnsi</i>	0.80	4	0.09	
<i>Pontinus longispinnis</i>	0.80	4	0.09	
<i>Hoplunnis</i> sp	0.60	3	0.07	
<i>Pronotograsus eos</i>	0.40	16	0.04	
<i>Apogon pseudomaculatus</i>	0.20	4	0.02	
<i>Kenolepidichthys daigleishi</i>	0.00	4		
<i>Lepophidius profundorum</i>	0.00	4		
<i>Chaetodon guyanensis</i>	0.00	3		
Total	449.20		99.98	

PROJECT STATION: 519

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1040
 start stop duration Long W 6756
 TIME :09:40:00 10:10:00 30 (min) Purpose code: 3
 LOG :3311.10 3312.30 1.20 Area code : 3
 FDEPTH: 73 73 GearCond.code:
 SDEPTH: 73 73 Validity code:
 Towing dir: 322° Wire out: 400 m Speed: 25 kn*10

Sorted: 65 Kg Total catch: 65.60 CATCH/HOUR: 131.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Eucinostomus argenteus	41.00	1066	31.25	428
Calanus pennatula	17.80	34	13.57	430
Lutjanus analis	12.40	4	9.45	
Rhomboplites aurorubens	10.00	128	7.62	431
Priacanthus arenatus	8.00	72	6.10	429
Saurida noronai	7.00	96	5.34	
Mustelus canis	7.00	4	5.34	
Upeneus parvus	5.40	140	4.12	
Loligo plei	5.00	346	3.81	
Priestipomoides macrophthalmus	5.00	74	3.81	
Seriola rivolana	3.60	4	2.74	
Aluterus monoceros	3.20	6	2.44	
Trachurus lathami	2.80	238	2.13	
Lutjanus purpureus	2.20	6	1.68	
Fistularia petimba	0.60	2	0.46	
Fistularia tabacaria	0.20	6	0.15	
Decapterus macarellus	0.00	4		
Apionna bondi	0.00	10		
Diplectrum bivittatum	0.00	4		
Total	131.20		100.01	

PROJECT STATION: 520

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1043
 start stop duration Long W 6805
 TIME :11:42:00 12:12:00 30 (min) Purpose code: 3
 LOG :3324.70 3325.90 1.20 Area code : 3
 FDEPTH: 42 47 GearCond.code:
 SDEPTH: 42 47 Validity code:
 Towing dir: 10° Wire out: 250 m Speed: 26 kn*10

Sorted: 99 Kg Total catch: 99.90 CATCH/HOUR: 197.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lutjanus analis	64.00	10	32.36	432
Ephyræna guachancho	45.00	76	22.75	433
Calanus pennatula	24.00	54	12.13	
Lutjanus purpureus	21.60	2	10.92	
Lutjanus synægris	17.00	16	9.59	434
Ecomberomus cavalla	9.00	2	4.55	
Priacanthus arenatus	5.00	3	2.53	
Selene spixii	4.40	3	2.22	
Aluterus monoceros	3.00	2	1.52	
Chloroscombrus chrysurus	2.20	10	1.11	
Rhomboplites aurorubens	2.00	6	1.01	
Reora sp.	0.40	2	0.20	
Fistularia petimba	0.20	2	0.10	
Total	197.80		99.99	

PROJECT STATION: 521

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1056
 start stop duration Long W 6808
 TIME :13:30:00 14:00:00 30 (min) Purpose code: 3
 LOG :3336.90 3337.80 0.90 Area code 3
 FDEPTH: 67 65 GearCond.code:
 BDEPTH: 67 65 Validity code:
 Towing dir: 325° Wire out: 300 m Speed: 22 kn*10

Sorted: 33 Kg Total catch: 102.50 CATCH/HOUR: 205.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinella aurita	65.60	1180	32.00	436
Lutjanus synagris	44.80	74	21.85	435
Lutjanus griseus	10.60	4	11.02	
Chloroscombrus chrysurus	14.80	308	7.22	
Eucinostomus argenteus	12.40	248	6.05	
Seriola rivolana	6.80	4	4.29	
Decapterus punctatus	8.00	208	3.90	
Loligo plei	6.00	152	2.93	
Caranx latus	4.00	4	1.95	
Selene spixii	4.00	4	1.95	
Decapterus macarellus	3.60	72	1.76	
Lutjanus analis	2.80	2	1.37	
Aluterus monoceros	2.40	2	1.17	
Priacanthus arenatus	2.00	4	0.98	
Upeneus parvus	1.20	32	0.59	
Caulolatilus guppyi	0.80	4	0.39	
Pristipomoides macrophthalmus	0.40	4	0.20	
Trachurus lathami	0.40	12	0.20	
Ariomma bondi	0.40	12	0.20	
Etrumeus teres	0.00	4		
Total	102.50		100.02	

PROJECT STATION: 522

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1105
 start stop duration Long W 6814
 TIME :15:02:00 15:32:00 30 (min) Purpose code: 3
 LOG :3346.30 3346.50 0.20 Area code : 3
 FDEPTH: 55 55 GearCond.code:
 BDEPTH: 05 55 Validity code:
 Towing dir: 312° Wire out: 300 m Speed: 1 kn*10

Sorted: 28 Kg Total catch: 60.24 CATCH/HOUR: 120.48

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lutjanus analis	49.00	10	80.67	
Peprilus paru	12.72	70	10.56	
Selene spixii	10.08	20	6.37	
Lutjanus purpureus	7.20	48	5.98	
Trachurus lathami	7.20	392	5.98	
Chloroscombrus chrysurus	7.20	74	5.98	
Lutjanus synagris	5.00	3	4.15	
Selar crumenophthalmus	4.08	78	3.39	
Sardinella aurita	3.12	200	2.59	
Decapterus macarellus	3.12	166	2.59	437
Albula vulpes	2.68	0	2.59	
Calamus penna	1.68	4	1.39	
Loligo plei	1.68	122	1.39	438
Albula namoptera	1.68	1	1.39	
Pristipomoides macropthalmus	1.44	10	1.20	
Anchoa sp	0.72	100	0.60	
Decapterus punctatus	0.72	12	0.60	
Rhomboplites aurorubens	0.48	4	0.40	
Decapterus tabl	0.24	4	0.20	
Diplectrus bivittatus	0.24	4	0.20	
Total	120.48		100.02	

PROJECT STATION: 523

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION:Lat N 1114
 start stop duration Long W 6820
 TIME :16:40:00 17:08:00 28 (min) Purpose code: 3
 LOG :3355.90 3356.30 0.40 Area code : 3
 FDEPTH: 28 123 GearCond.code:
 BDEPTH: 28 123 Validity code:
 Towing dir: 300° Wire out: 450 m Speed: 8 kn*10

Sorted: 32 Kg Total catch: 201.50 CATCH/HOUR: 431.79

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Aluterus monoceros	195.00	118	45.16	
Lutjanus analis	75.64	24	17.52	439
Seriola rivolana	60.86	41	14.09	
Rhomboplites aurorubens	42.86	596	9.93	
Rhomboplites aurorubens	18.64	19	4.32	
Scomberomorus cavalla	11.57	2	2.68	
Lutjanus vivanus	8.14	3	1.89	
Loligo plei	7.71	471	1.79	
Lutjanus vivanus	7.71	21	1.79	
Lutjanus purpureus	2.14	2	0.50	
Lutjanus buccanella	1.50	2	0.35	
Total	431.77		100.02	

PROJECT STATION: 524

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1132
 start stop duration Long W 6847
 TIME :21:10:00 22:10:00 60 (min) Purpose code: 3
 LOG :3396.10 3397.90 1.80 Area code : 3
 FDEPTH: 2-8 256 GearCond.code:
 BDEPTH: 2-8 256 Validity code:
 Towing dir: 290° Wire out:1050 m Speed: 20 kn*10

Sorted: 30 Kg Total catch: 90.25 CATCH/HOUR: 90.25

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops bellus	46.50	147	51.52	
Steindachneria argente	10.50	352	11.63	
Coelorrhynchus caribbeus	7.50	210	8.31	
Illex coindatti	3.60	36	3.99	
Solenocera sp	3.60	180	3.99	440
Pontinus longispinnis	3.00	24	3.32	
LEPIDOTEUTHIDAE	2.70	120	2.99	
LOLIGINIDAE	2.40	18	2.66	
PENAEIDAE	2.10	306	2.33	
Lepophidium profundorum	1.90	21	2.11	
Bembrops sp	1.50	21	1.66	
Brotula barbata	1.20	3	1.33	
Peristedion sp	1.20	11	1.33	
Hoplunnis sp	0.90	25	1.00	
Lepidopus caudatus	0.60	6	0.66	
Argentina sp.	0.60	23	0.66	
Neopinnula americana	0.30	6	0.33	
Plesionika edwardsii	0.15	33	0.17	
Poecilopaetta albomarginata	0.00	6		
Monolene sp	0.00	6		
Laliotus mcgintyi	0.00	18		
MORIDAE	0.00	18		
Total	90.25		96.99	

PROJECT STATION: 525

DATE: 9/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1135
start stop duration Long W 6857
TIME :23:15:00 23:53:00 38 (min) Purpose code: 3
LOG :3404.60 3405.90 1.30 Area code : 3
FDEPTH: 232 233 GearCond.code:
BDEPTH: 232 233 Validity code:
Towing dir: 290° Wire out:1000 m Speed: 20 kn²10

Sorted: 28 Kg Total catch: 56.50 CATCH/HOUR: 89.21

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops bellus	27.79	249	31.15	
Pristipomoides macrophthalmus	11.05	76	12.39	
Lepophidius profundorum	7.89	66	8.84	
Steindachneria argenta	7.89	196	8.84	
Pontinus longispinnis	5.37	95	6.02	
Neocipinnula americana	4.11	28	4.61	
Illex coindetti	3.16	19	3.54	
Hoplunnis sp	3.16	278	3.54	
Argentina sp.	2.53	107	2.84	
Coelorhynchus caribbeus	2.21	47	2.48	
Gephyroberyx darwini	2.21	3	2.48	
LEPIDOTEUTHIDAE	2.05	98	2.30	
Solenocera sp	1.89	120	2.12	441
Plesionika edwardsii	1.58	123	1.77	
Peristedion sp	1.58	25	1.77	
PENARIDAE	1.42	101	1.59	
Synodus poeyi	1.26	19	1.41	
Antigonia capros	0.95	6	1.06	
Brotula barbata	0.32	51	0.36	
Monolene sp	0.32	25	0.36	
Ariomma bondi	0.32	3	0.36	
Sembrops sp	0.16	5	0.18	
Bronisculus imberbis	0.00	3		
Synagrops sp.	0.00	25		
Polymixia lowei	0.00	9		
APOGONIDAE	0.00	19		
Zalieutes mcgintvi	0.00	3		
MYCTOPHIDAE	0.00	19		
Prionotus stearnsi	0.00	3		
Total	89.22		100.01	

PROJECT STATION: 529

DATE: 10/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1136
 start stop duration Long W 6917
 TIME : 10:35:00 11:05:00 30 (min) Purpose code: 3
 LOG : 3479.50 3480.60 1.10 Area code : 3
 FDEPTH: 62 58 GearCond. code:
 BDEPTH: 62 58 Validity code:
 Towing dir: 290° Wire out: 300 m Speed: 20 kn*10

Sorted: 62 Kg Total catch: 61.70 CATCH/HOUR: 123.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Lutjanus synagris	44.60	76	36.14	448
Lutjanus purpureus	25.40	140	20.58	449
Lutjanus analis	21.40	8	17.34	
Eucinostomus argenteus	12.60	222	10.21	450
Loligo plei	3.60	244	2.92	451
Selene vomer	3.60	6	2.92	
Rhomboplites aurorubens	3.00	36	2.43	
Selene apixii	2.60	3	2.11	
Chloroscombrus chrysurus	1.20	8	0.97	
Calamus pennatula	1.20	2	0.97	
Calamus penna	1.00	2	0.81	
Sphyræna picudilla	1.00	4	0.81	
Cyclopaetta chittendeni	0.80	2	0.65	
Loligo paelei	0.60	50	0.49	
Caulolatilus intermedius	0.40	2	0.32	
Pristipomoides macrophthalmus	0.40	4	0.32	
Upeneus parvus	0.00	2		
Diplectrum bivittatum	0.00	2		
Total	123.40		99.99	

PROJECT STATION: 530

DATE: 10/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1143
 start stop duration Long W 6931
 TIME : 12:34:00 13:04:00 30 (min) Purpose code: 3
 LOG : 3493.70 3494.50 0.80 Area code : 3
 FDEPTH: 70 68 GearCond. code:
 BDEPTH: 70 68 Validity code:
 Towing dir: 316° Wire out: 350 m Speed: 20 kn*10

Sorted: 62 Kg Total catch: 61.65 CATCH/HOUR: 123.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Seriola rivolana	36.00	20	29.20	
Lutjanus analis	27.00	8	21.90	
Loligo plei	18.00	1800	14.60	
Trachurus lathami	17.00	1060	13.79	452
Lutjanus synagris	11.40	18	9.25	
Eucinostomus argenteus	3.80	76	3.08	
Fistularia petimba	2.60	6	2.11	
Calamus pennatula	2.20	4	1.78	
Selar crumenophthalmus	2.20	76	1.78	
Rhomboplites aurorubens	1.80	30	1.46	
Pristipomoides macrophthalmus	0.50	14	0.41	
Upeneus parvus	0.20	16	0.16	
Decapterus macarellus	0.20	6	0.16	
Scomber japonicus	0.20	8	0.16	
Priacanthus arenatus	0.20	4	0.16	
Diplectrum bivittatum	0.00	2		
Synodus poeyi	0.00	2		
Total	123.30		100.00	

PROJECT STATION: 533

DATE: 11/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1206
 start stop duration Long W 6945
 TIME : 10:50:00 11:20:00 30 (min) Purpose code: 3
 LOG : 3667.30 3667.30 Area code : 3
 FDEPTH: 46 29 GearCond.code:
 BDEPTH: 46 29 Validity code:
 Towing dir: 330° Wire out: 250 m Speed: kn*10

Sorted: 197 kg Total catch: 106.80 CATCH/HOUR: 353.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO
	weight	numbers		
Lutjanus analis	104.00	96	98.69	454
Calamus penna	23.40	30	10.96	455
Selar crumenophtalmus	19.60	82	9.18	457
Lutjanus vivanus	12.60	166	5.90	456
Seriola rivolana	12.40	12	5.81	
Scomberomorus cavalla	10.40	8	4.87	
Lutjanus purpureus	9.60	42	4.49	458
Rhomboplites aurorubens	5.40	50	2.53	459
Lutjanus synagris	3.60	6	1.69	
Upeneus parvus	2.40	268	1.12	
Loligo plei	3.20	210	1.03	460
Calamus pennatula	2.00	2	0.94	
Lactophirys trigonus	2.00	6	0.94	
Acanthostracion quadricornis	1.40	4	0.66	
Eucinostomus argenteus	1.00	10	0.47	
Priacanthus arenatus	1.00	2	0.47	
Decapterus macarellus	0.40	44	0.19	
Selar crumenophtalmus	0.20	20	0.09	
Decapterus punctatus	0.00	2		
Total	213.60		100.03	

PROJECT STATION: 534

DATE: 11/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1218
 start stop duration Long W 7005
 TIME : 13:25:00 13:55:00 30 (min) Purpose code: 3
 LOG : 3684.50 3684.60 0.10 Area code : 3
 FDEPTH: 31 27 GearCond.code:
 BDEPTH: 31 27 Validity code:
 Towing dir: 291° Wire out: 150 m Speed: 2 kn*10

Sorted: 6 kg Total catch: 5.90 CATCH/HOUR: 11.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Calamus penna	8.60	44	72.88	
Calamus pennatula	2.00	14	16.95	
Diodon sp.	0.90	2	6.78	
Pseudupeneus maculatus	0.40	2	3.39	
Total	11.80		100.00	

PROJECT STATION: 535

DATE: 11/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1223
 start stop duration Long W 7019
 TIME : 15:28:00 15:58:00 30 (min) Purpose code: 3
 LOG : 3695.60 3695.90 0.30 Area code : 3
 FDEPTH: 70 75 GearCond. code:
 BDEPTH: 70 75 Validity code:
 Towing dir: 270° Wire out: 300 m Speed: 6 kn*10

Sorted: 12 Kg Total catch: 18.80 CATCH/HOUR: 37.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Sphyræna picudilla	19.20	100	51.06	461
Priacanthus arenatus	5.80	100	15.43	462
Sphyræna guachancho	4.60	8	12.23	
Loligo paelei	2.80	256	7.45	463
Pristipomoides macrophthalmaus	1.40	13	3.72	
Selar crumenophthalmaus	1.00	4	2.66	
Etrusæus tereæ	0.50	14	1.33	
Prionotus stearnsi	0.40	12	1.06	
Trichiurus lepturus	0.40	13	1.06	
Loligo plei	0.30	4	0.80	
Penæus notialis	0.30	3	0.80	
Upeneus parvus	0.30	6	0.80	
Serranus phoebe	0.20	6	0.53	
Gynodus pœyi	0.20	14	0.53	
Trachurus lathami	0.20	4	0.53	
Total	18.80	463	37.60	

PROJECT STATION: 536

DATE: 11/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1223
 start stop duration Long W 7027
 TIME : 16:46:00 17:16:00 30 (min) Purpose code: 3
 LOG : 3701.50 3702.20 0.70 Area code : 3
 FDEPTH: 69 68 GearCond. code:
 BDEPTH: 69 68 Validity code:
 Towing dir: 265° Wire out: 350 m Speed: 15 kn*10

Sorted: 26 Kg Total catch: 58.89 CATCH/HOUR: 117.78

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Mycteroperca interstitialis	29.40	8	24.96	
Priacanthus arenatus	21.00	318	17.83	464
Sphyræna picudilla	16.80	73	14.26	465
Pristipomoides macrophthalmaus	9.00	132	7.64	466
Rhomboplites aurorubens	7.20	36	6.11	467
Trachurus lathami	5.70	238	4.84	468
Lutjanus analis	5.40	3	4.58	
Pagrus pagrus	4.20	13	3.57	
Lutjanus purpureus	3.60	1	3.06	
Gynodus pœyi	2.70	12	2.29	
Loligo plei	2.70	16	2.29	
Etrusæus tereæ	2.10	76	1.78	
Eucinostomus argenteus	1.80	14	1.53	
Lutjanus synagris	1.40	2	1.19	
Upeneus parvus	1.04	34	0.88	
Haemulon steindachneri	0.90	4	0.76	
Calamus penne	0.90	6	0.76	
Scomber japonicus	0.74	12	0.63	
Ancylopsetta quadrocellata	0.60	4	0.51	
Selar crumenophthalmaus	0.60	4	0.51	
Total	58.89	468	117.78	

PROJECT STATION: 537

DATE: 11/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1223
 start stop duration Long W 7038
 TIME : 18:20:00 18:50:00 30 (min) Purpose code: 3
 LOG : 3710.00 3711.30 1.30 Area code : 3
 FDEPTH: 69 71 GearCond.code:
 BDEPTH: 69 71 Validity code:
 Towing dir: 270° Wire out: 350 m Speed: 25 kn*10

Sorted: 16 Ke Total catch: 47.19 CATCH/HOUR: 94.38

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Priacanthus arenatus	24.00	352	25.43	471
Lutjanus synagris	9.90	14	10.49	
Pristipomoides macropphthalmus	9.90	214	10.49	470
Scomber japonicus	9.90	382	10.49	469
Trachurus lathami	6.90	516	7.31	472
Sphyræna picudilla	6.00	28	6.36	
Loligo plei	5.40	64	5.72	
Synodus foetens	3.90	18	4.13	
Pagrus pagrus	3.20	6	3.39	
Lutjanus analis	2.70	2	2.86	
Eucinostomus argenteus	2.70	66	2.86	
Sphyræna guachancho	2.40	4	2.54	
Rhomboplites aurorubens	1.50	16	1.59	
Haemulon steindachneri	1.20	12	1.27	
Selar cruenophthalmus	0.90	12	0.95	
Upeneus parvus	0.90	36	0.95	
Calamus pennatula	0.60	~	0.64	
Caulolatilus intermedius	0.60	~	0.64	
Strusæus teres	0.44	14	0.47	
Fistularia tabacaria	0.44	6	0.47	
Calamus cervigoni	0.30	~	0.32	
Diplectrus bivittatus	0.30	6	0.32	
Dactylopterus volitans	0.30	~	0.32	
Sardinella aurita	0.00	4		
Sphæroides dorsalis	0.00	~		
Total	94.38		100.01	

PROJECT STATION: 539

DATE: 12/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1139
start stop duration Long W 7111
TIME : 08:08:00 08:38:00 30 (min) Purpose code: 3
LOG : 3827.70 3829.20 1.50 Area code : 3
FDEPTH: 14 15 GearCond.code:
BDEPTH: 14 15 Validity code:
Towing dir: 270° Wire out: 100 m Speed: 30 kn*10

Sorted: 42 Kg Total catch: 42.05 CATCH/HOUR: 84.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trichiurus lepturus	19.20	154	22.83	
Micropogonias furnieri	9.60	62	11.41	475
Chirocentrodon bleekerianus	7.80	1608	9.27	
Cynoscion sp	6.90	868	8.20	
Bairdiella sp	6.90	1646	8.20	
Anchoa spinifer	5.90	572	7.02	
Xiphopenaeus kroeyeri	5.40	1162	6.42	
Nebris microps	3.00	10	3.57	
Nematopalaemon schmitti	3.00		3.57	
Peprilus paru	3.00	50	3.57	
Chaetodipterus faber	2.80	4	3.33	
Macrodon ancylodon	2.00	12	2.38	
Larimus breviceps	1.40	2	1.66	
Porichthys pauciradiatus	1.00	30	1.19	
Diapterus rhombus	1.00	30	1.19	
Harengula clupeioides	1.00	30	1.19	
Loligo paeleii	1.00	286	1.19	
Pellona narroweri	1.00	100	1.19	
Opisthonema oxilina	0.70	2	0.83	
Chloroscombrus chrysurus	0.50	70	0.59	
Cynoscion microlepidotus	0.40	2	0.48	
Rhizoprionodon lalandei	0.40	2	0.48	
Penaeus notialis	0.20	4	0.24	
Symphurus plagiusa	0.00	10		
Penaeus schmitti	0.00	6		
Total	84.10		100.00	

PROJECT STATION: 540

DATE: 12/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1139
 start stop duration Long W 7124
 TIME : 10:00:00 10:30:00 30 (min) Purpose code: 3
 LOG : 2842.80 3844.30 1.50 Area code : 3
 FDEPTH: 23 22 GearCond.code:
 SDEPTH: 23 22 Validity code:
 Towing dir: 216° Wire out: 150 m Speed: 30 kn*10

Sorted: 41 Kg Total catch: 318.80 CATCH/HOUR: 637.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trichiurus lepturus	301.00	6230	77.21	
Chloroscomorus chrysurus	91.00	1806	14.27	476
Pellona narroweri	81.20	8218	12.74	
Micropogonias furnieri	32.00	56	5.02	479
Chirocentron bleekermanus	23.80	4452	3.73	
Peprilus paru	18.20	238	2.85	
Micropogonias furnieri	16.80	182	2.63	477
Lutjanus synagris	13.60	16	2.13	
Cynoscion leiarchus	13.00	24	2.04	478
Opisthonema oglinum	11.20	24	1.76	
Cynoscion microlepidotus	9.80	266	1.54	
Diapterus rhombus	5.60	210	0.88	
Harengula clupeioides	5.60	182	0.88	
Selene spixii	4.20	56	0.66	
Rhizoprionodon lalandei	3.60	6	0.56	
Penaeus schmitti	2.80	56	0.44	
Elops saurus	1.80	2	0.28	
Chaetodipterus fater	1.60	2	0.25	
Dasyatis guttata	0.80	2	0.13	
Anchoa spinifer	0.00	28		
Loligo paelei	0.00	140		
Ctenosciana gracilicirrus	0.00	56		
Total	637.60		100.00	

PROJECT STATION: 541

DATE: 12/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1130
 start stop duration Long W 7130
 TIME : 11:36:00 12:10:00 34 (min) Purpose code: 3
 LOG : 3853.80 3855.50 1.70 Area code : 3
 FDEPTH: 19 20 GearCond.code:
 BDEPTH: 19 20 Validity code:
 Towing dir: 250° Wire out: 100 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 396.25 CATCH/HOUR: 699.26

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscombrus chrysurus	344.12	3233	49.21	480
Trichiurus lepturus	87.18	2156	12.47	481
Pellona harroweri	80.29	6371	11.48	482
Opisthonema oglinus	68.82	528	9.84	483
Micropogonias furnieri	39.00	459	5.58	
Peprilus paru	34.41	321	4.92	
Cynoscion microlepidotus	11.47	275	1.64	
Harangula jaguana	9.18	229	1.31	
Rhizoprionodon lalandei	9.18	46	1.31	
Selene spixii	9.03	138	1.15	
Eucinostomus gula	4.59	69	0.66	
Synodus poeyi	2.29	23	0.33	
Penaeus schmitti	0.53	9	0.08	
Penaeus notialis	0.18	2	0.03	
Total	699.27		100.01	

PROJECT STATION: 542

DATE: 12/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1126
 start stop duration Long W 7142
 TIME : 13:25:00 13:55:00 30 (min) Purpose code: 3
 LOG : 3867.30 3868.70 1.40 Area code : 3
 FDEPTH: 21 21 GearCond.code:
 BDEPTH: 21 21 Validity code:
 Towing dir: 252° Wire out: 100 m Speed: 30 kn*10

Sorted: 32 Kg Total catch: 200.70 CATCH/HOUR: 401.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscombrus chrysurus	249.60	1546	62.18	484
Chloroscombrus chrysurus	34.80	4036	8.67	485
Opisthonema oglinus	30.00	300	7.47	486
Scomberomorus regalis	22.80	36	5.68	
Sphyraena guachancho	21.60	132	5.38	
Lutjanus synagris	13.80	14	3.44	
Peprilus paru	10.80	36	2.69	
Caranx hippos	6.00	2	1.49	
Selene vomer	4.80	12	1.20	
Lolligoncula brevis	4.80	564	1.20	
Anchoa mitchilli	1.20	408	0.30	
Opisthonema oglinus	1.20	168	0.30	
Total	401.40		100.00	

PROJECT STATION: 544

DATE: 12/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1117
 start stop duration Long W 7124
 TIME 16:55:00 17:25:00 30 (min) Purpose code: 3
 LOG :3892.70 3894.30 1.60 Area code : 3
 FDEPTH: 13 13 GearCond.code:
 SDEPTH: 13 13 Validity code:
 Towing dir: 100° Wire out: 100 m Speed: 32 kn*10

Sorted: 21 Kg Total catch: 110.60 CATCH/HOUR: 221.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trichiurus lepturus	28.00	376	12.66	
Micropogonias furnieri	27.40	52	12.39	491
Macrodon ancylodon	22.40	304	10.13	492
Pellona narroweri	19.60	1176	5.86	
Anchoa spinifer	15.60	1936	7.05	
Chaetodipterus faber	12.80	8	5.79	
Sciaenidae juveniles	12.40	630	5.61	
Micropogonias furnieri	12.00	176	5.42	493
Rhinoptera bonasus	11.00	2	4.97	
Xiphopenaeus kroyeri	10.80	2288	4.88	
Chirocentron bleekeriaianus	10.80	1952	4.86	
Chloroscombrus chrysurus	9.20	64	4.16	
Sphyrna tudes	8.00	4	3.62	
Chloroscombrus chrysurus	6.80	160	3.07	
Opisthonema oglinum	4.80	32	2.17	
Harangula clupeiola	2.00	90	0.90	
Cynoscion sp	2.00	64	0.90	
Daasyatis guttata	2.00	2	0.90	
Isopiathus parvipinis	1.20	24	0.54	
Larimus breviceps	1.20	88	0.54	
Rhizoprionodon lalandei	0.80	2	0.36	
Panaeus schmitti	0.40	10	0.18	
Peprilus paru	0.00	8		
Selene spixii	0.00	8		
Loligo paelei	0.00	60		
Total	221.20		99.98	

PROJECT STATION: 547

DATE: 12/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1128
start stop duration Long W 7047
TIME : 23:30:00 24:05:00 35 (min) Purpose code: 3
LOG : 3942.30 3943.60 1.30 Area code : 3
FDEPTH: 24 23 GearCond.code:
SDEPTH: 24 23 Validity code:
Towing dir: 180° Wire out: 100 m Speed: 2.8 kn*10

Sorted: 26 Kg Total catch: 131.00 CATCH/HOUR: 224.57

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	Weight	numbers		
Enicentrodon bleakerianus	50.06	27813	22.29	
Gynoscion similis	34.80	34	15.50	498
Anchoa lyolepis	28.80	14469	12.82	
Chloroscombrus chrysurus	14.40	1872	6.41	
Synodus pœvi	13.03	117	5.80	
Haemulon aurolineatum	10.29	1577	4.58	
Prionotus punctatus	10.29	27	4.58	
Chloroscombrus chrysurus	9.60	41	4.27	
Orthopristis ruber	9.60	41	4.27	
Trichiurus lepturus	6.86	21	3.05	
Sphyraena guachancho	6.86	7	3.05	
Lepopidius profundus	5.49	343	2.44	
Conodon nobilis	4.46	5	1.99	
Micropogonias furnieri	4.29	5	1.91	
Hemicaranx smolvrhynchus	4.11	7	1.83	
Menticirrhus americanus	3.77	7	1.68	
Micropogonias furnieri	3.43	21	1.53	
Lutjanus synagris	3.43	7	1.53	
Penaeus notialis	1.03	26	0.46	
Eucinostomus gula	0.00	7		
Opisthonema oglinum	0.00	21		
Sardinella aurita	0.00	7		
Lolligoncula brevis	0.00	48		
Porichthys sp	0.00	14		
Total	224.60		99.99	

PROJECT STATION: 549

DATE: 13/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1131
 start stop duration Long W 7020
 TIME : 06:37:00 07:07:00 30 (min) Purpose code: 3
 LOG : 3991.80 3993.50 1.70 Area code : 3
 FDEPTH: 28 28 GearCond.code:
 BDEPTH: 28 28 Validity code:
 Towing dir: 360° Wire out: 150 m Speed: 32 kn*10

Sorted: 30 Kg Total catch: 162.10 CATCH/HOUR: 324.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscombrus chrysurus	162.00	1160	49.97	502
Loligo plei	54.00	2250	16.66	503
Opisthonema oglinus	18.00	430	5.55	
Cynoscion leiarchus	15.00	16	4.63	
Engraulis eurystole	13.00	2280	4.01	504
Anchoa lyolepis	11.00	1410	3.39	505
Sardinella aurita	9.00	270	2.78	
Sphyraena guachancho	9.00	16	2.78	
Eucinostomus argenteus	8.00	230	2.47	
Sphyraena picudilla	8.00	100	2.47	
Orthopristis ruber	3.00	10	0.93	
Paralichthys tropicus	3.00	10	0.93	
Diplectrum bivittatum	2.50	10	0.77	
Dactylopterus volitans	2.00	10	0.62	
Upeneus parvus	1.50	20	0.46	
Prionotus punctatus	1.50	20	0.46	
Trachinotus carolinus	1.20	2	0.37	
Selene spixii	1.00	10	0.31	
Saurida normani	0.50	10	0.15	
Decapterus macarellus	0.50	10	0.15	
Scomber japonicus	0.50	10	0.15	
Total	324.20		100.01	

PROJECT STATION: 550

DATE: 13/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1139
 start stop duration Long W 7021
 TIME : 08:10:00 08:40:00 30 (min) Purpose code: 3
 LOG : 4002.30 4003.70 1.40 Area code : 3
 FDEPTH: 39 41 GearCond.code:
 BDEPTH: 39 41 Validity code:
 Towing dir: 270° Wire out: 200 m Speed: 30 kn*10

Sorted: 30 Kg Total catch: 154.10 CATCH/HOUR: 308.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscombrus chrysurus	150.00	2140	48.67	506
Opisthonema oglinus	80.00	1020	25.96	507
Sardinella aurita	53.00	690	17.20	508
Scomberomorus cavalla	9.00	2	2.92	
Loligo plei	6.00	180	1.95	
Selene spixii	3.00	130	0.97	
Priacanthus arenatus	2.50	70	0.81	
Pomatomus saltatrix	1.50	10	0.49	
Sarda sarda	1.20	2	0.39	
Scomber japonicus	1.00	10	0.32	
Selar crumenophthalmus	1.00	10	0.32	
Total	308.20		100.00	

PROJECT STATION: 555

DATE: 13/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1148
 start stop duration Long W 7023
 TIME : 15:30:00 16:00:00 30 (min) Purpose code: 3
 LOG : 4047.40 4049.00 1.60 Area code : 3
 FDEPTH: 44 41 GearCond.code:
 BDEPTH: 44 41 Validity code:
 Towing dir: 94° Wire out: 250 m Speed: 32 kn*10

Sorted: 33 Kg Total catch: 232.30 CATCH/HOUR: 464.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Trachurus lathami	182.00	8238	39.17	
Sardinella aurita	119.00	2066	25.61	
Scomber japonicus	42.00	756	9.04	
Sphyræna picudilla	26.60	210	5.73	
Loligo plei	25.20	252	5.42	
Loligo paelei	16.80	196	3.62	
Chloroscombrus chrysurus	14.00	56	3.01	
Opisthonema oglinum	9.80	56	2.11	
Micropogonias furnieri	6.00	4	1.29	
Priacanthus arenatus	5.60	42	1.21	
Selene spixii	5.60	70	1.21	
Synodus pceyi	5.60	28	1.21	
Fistularia petimba	1.40	14	0.30	
Anchoa lyolepis	1.40	56	0.30	
Diplectrus bivittatus	1.40	14	0.30	
Haemulon aurolineatum	1.40	14	0.30	
Orthopristis ruber	0.80	2	0.17	
Total	464.60		100.00	

PROJECT STATION: 556

DATE: 14/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1156
 start stop duration Long W 7023
 TIME : 17:20:00 17:53:00 33 (min) Purpose code: 3
 LOG : 4080.20 4081.80 1.60 Area code : 3
 FDEPTH: 41 49 GearCond.code:
 BDEPTH: 41 49 Validity code:
 Towing dir: 293° Wire out: 200 m Speed: 32 kn*10

Sorted: 28 Kg Total catch: 23.10 CATCH/HOUR: 51.09

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Anchoa lyolepis	20.18	1816	39.50	522
Loligo plei	9.09	196	17.79	523
Synodus foetens	4.00	22	7.83	
Peprilus paru	3.64	7	7.12	
Orthopristis ruber	2.73	11	5.34	
Sphyræna picudilla	2.73	24	5.34	
Priacanthus arenatus	1.82	15	3.56	
Selar crumenophthalmus	1.82	15	3.56	
Loligo paelei	1.27	11	2.49	
Scomber japonicus	0.91	18	1.78	
Lagocephalus laevigatus	0.73	4	1.43	
Paralichthys tropicus	0.73	2	1.43	
Engraulis eurystole	0.45	42	0.88	
Chloroscombrus chrysurus	0.36	2	0.70	
Strumeus teres	0.27	16	0.53	
Eucinostomus argenteus	0.18	11	0.35	
Penaeus brasiliensis	0.09	4	0.18	
Upeneus parvus	0.09	4	0.18	
Total	51.09		99.99	

PROJECT STATION: 558

DATE: 15/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1150
 start stop duration Long W 7114
 TIME : 01:20:00 01:50:00 30 (min) Purpose code: 3
 LOG : 4133.10 4134.40 1.30 Area code : 3
 FDEPTH: 17 16 GearCond.code:
 BDEPTH: 17 16 Validity code:
 Towing dir: 38° Wire out: 100 m Speed: 25 kn*10

Sorted: 64 Kg Total catch: 64.30 CATCH/HOUR: 128.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Dasyatis guttata	56.00	14	43.55	
Micropogonias furnieri	20.60	76	16.02	527
Shrimps, small, non comm.	7.20	2456	5.60	
Xiphopenaeus kroyeri	6.00	40	4.67	
Opisthonema oglinum	4.80	666	3.73	
Lolligancula sp	3.60	378	2.80	
Anchoa sp	3.60	2362	2.80	
Chirocentrodon bleekermanus	3.60	614	2.80	
Lepophidium profundorum	2.40	14	1.87	
Synodus poeyi	2.40	28	1.87	
Cynoscion sp	2.40	212	1.87	
Chloroscombrus chrysurus	2.40	240	1.87	
Eucinostomus argenteus	2.40	86	1.87	
Lutjanus synagris	2.40	6	1.87	
Prionotus punctatus	1.20	56	0.93	
Porichthys sp	1.20	226	0.93	
Ctenosciana gracilicirrus	1.20	312	0.93	
Scomberomorus regalis	1.20	2	0.93	
Centropomus undecimalis	0.80	2	0.62	
Cynoscion jamaicensis	0.80	2	0.62	
RHINOBATIIDAE	0.80	2	0.62	
Eucinostomus gula	0.60	56	0.47	
Sphoeroides testudineus	0.60	56	0.47	
Peneus notialis	0.20	8	0.16	
Peneus schmitti	0.20	4	0.16	
Haemulon sp	0.00	2		
Total	128.60		100.03	

PROJECT STATION: 560

DATE: 15/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1200
start stop duration Long W 7053
TIME : 06:07:00 06:37:00 30 (min) Purpose code: 3
LOG : 4159.00 4160.50 1.50 Area code : 3
FDEPTH: 33 35 GearCond.code:
BDEPTH: 33 35 Validity code:
Towing dir: 70° Wire out: 250 m Speed: 30 kn/10

Sorted: 32 Kg Total catch: 31.65 CATCH/HOUR: 63.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Scomberomorus cavalla	36.00	78	16.87	529
Trichiurus lepturus	6.80	174	10.74	
Rhizoprionodon laiapetai	3.00	2	6.00	
Loligo plei	3.00	252	6.00	530
Cynoscion leiarchus	1.30	2	2.84	
Engraulis eurvatole	1.60	244	2.53	
Anchoa sp	1.40	264	2.21	
Synodus poeyi	1.20	98	1.90	
Opisthonema oglinus	1.20	40	1.90	
Lolligoncula brevis	0.80	66	1.26	
Sphyrna plicatilis	0.80	12	1.26	
Chloroscombrus chrysurus	0.80	2	1.26	
Lagocephalus laevigatus	0.70	2	1.11	
Synodus foetens	0.60	6	0.95	
Trachurus lathami	0.40	18	0.63	
Pomadasys corvinaeformis	0.30	4	0.47	
Diapterus rhombus	0.30	2	0.47	
Priacanthus arenatus	0.30	4	0.47	
Eucinostomus argenteus	0.20	2	0.32	
Selene spixii	0.20	6	0.32	
Upeneus parvus	0.20	6	0.32	
Lycengraulis grossidens	0.10	2	0.16	
Penaeus notialis	0.00	2		
Scomber japonicus	0.00	2		
Selar crumenophthalmus	0.00	2		
Total	63.30		99.99	

PROJECT STATION: 562

DATE: 15/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1213
 start stop duration Long W 7027
 TIME : 11:10:00 11:40:00 30 (min) Purpose code: 3
 LOG : 4200.80 4202.40 1.50 Area code : 3
 FDEPTH: 50 59 GearCond.code:
 BDEPTH: 60 59 Validity code:
 Towing dir: 180° Wire out: 300 m Speed: 30 kn+10

Sorted: 25 Kg Total catch: 168.35 CATCH/HOUR: 336.70

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Trachurus lathami	100.00	5000	29.70	534
Sphyræna picudilla	70.00	600	20.79	533
Priacanthus arenatus	25.00	110	7.43	
Lutjanus analis	24.40	4	7.25	
Rhomboplites aurorutens	22.00	160	6.53	532
Eucinostomus argenteus	19.00	320	5.64	
Myxeroperca bonaci	16.20	4	4.81	
Pagrus pagrus	11.00	24	3.27	
Synodus poeui	10.00	60	2.97	
Lutjanus synagris	9.40	16	2.79	
Haemulon steindachneri	5.00	40	1.49	
Pristipomoides macrophthalmus	5.00	110	1.49	
Loligo paelei	4.00	50	1.19	
Upeneus parvus	3.00	140	0.89	
Lagocephalus laevicatus	2.50	19	0.74	
Lachnolaimus maximus	2.40	2	0.71	
Haemulon boschma	2.00	60	0.59	
Selar crumenophthalmus	2.00	10	0.59	
Paralichthys lethostigma	1.60	2	0.53	
Etrumeus teres	1.00	20	0.30	
Scomber japonicus	1.00	10	0.30	
Lolligancula sp	0.00	20		
LABRIDAE	2.00	10		
Total	336.70		100.00	

PROJECT STATION: 565

DATE: 15/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1214
 start stop duration Long W 7104
 TIME : 16:36:00 17:06:00 30 (min) Purpose code: 3
 LOG : 238.70 4240.10 1.40 Area code : 3
 FDEPTH: 30 28 GearCond.code:
 BDEPTH: 30 29 Validity code:
 Towing dir: 360° Wire out: 150 m Speed: 25 kn*10

Sorted: 26 Kg Total catch: 67.10 CATCH/HOUR: 134.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
<i>Upeneus parvus</i>	29.20	602	21.76	544
<i>Lutianus synagris</i>	28.80	60	21.46	543
<i>Eucinostomus argenteus</i>	28.00	426	20.86	545
<i>Priscanthus arenatus</i>	13.60	60	10.13	
<i>Balistes capricornus</i>	13.60	28	10.13	
<i>Calamus penna</i>	5.60	20	4.17	
<i>Balistes vetula</i>	3.20	4	2.38	
<i>Anisotremus virginicus</i>	2.00	4	1.49	
<i>Mustelus canis</i>	2.00	2	1.49	
<i>Orthopristis ruber</i>	1.60	4	1.19	
<i>Fistularia tabacaria</i>	1.60	16	1.19	
<i>Sphyræna picudilla</i>	0.80	4	0.60	
<i>Synodus poeyi</i>	0.80	4	0.60	
<i>Chloroscombrus chrysurus</i>	0.80	16	0.60	
<i>Selar crumenophthalmus</i>	0.80	16	0.60	
<i>Prionotus punctatus</i>	0.60	4	0.45	
<i>Posoacanthus arcuatus</i>	0.40	4	0.30	
<i>Cyanothorax ocellatus</i>	0.40	4	0.30	
<i>Sardinella aurita</i>	0.40	16	0.30	
Total	134.20		100.00	

PROJECT STATION: 566

DATE: 15/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1217
 start stop duration Long W 7110
 TIME : 17:48:00 18:16:00 30 (min) Purpose code: 3
 LOG : 4245.60 4246.90 1.30 Area code : 3
 FDEPTH: 14 15 GearCond.code:
 BDEPTH: 14 15 Validity code:
 Towing dir: 298° Wire out: 100 m Speed: 30 kn*10

Sorted: 49 Kg Total catch: 125.20 CATCH/HOUR: 250.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Polydactylus oligodon	30.00	176	11.98	
Lutjanus analis	29.60	36	11.82	546
Trichiurus lepturus	25.00	116	9.98	
Diapterus rhombus	19.60	70	7.83	
Albula vulpes	19.60	70	7.83	
Anisotremus virginicus	15.00	36	5.99	
Selene spixii	14.60	250	5.83	
Conodon nobilis	12.00	36	4.79	
Haemulon plumieri	9.60	20	3.83	
Centropomus undecimalis	9.60	6	3.83	
Balistes vetula	9.60	10	3.83	
Elops saurus	9.60	16	3.83	
Harengula clupeiola	5.00	520	2.00	
Panulirus argus	4.80	4	1.92	
Scomberomorus brasiliensis	4.60	10	1.84	
Peprilus paru	4.60	36	1.84	
Micropogonias furnieri	3.00	36	1.20	
Eucinostomus argenteus	2.60	16	1.04	
Priacanthus arenatus	2.60	6	1.04	
Chirocentron bleekeriianus	2.00	360	0.80	
Rhizoprionodon lalandei	2.00	10	0.80	
Geyurus chrysurus	2.00	6	0.80	
Opisthonema oglinum	2.00	20	0.80	
Selene vomer	2.00	6	0.80	
Ephyaena guachancho	2.00	6	0.80	
Calamus penna	2.00	10	0.80	
Loligo plei	1.00	40	0.40	
Ctenosciens gracilicirrus	1.00	96	0.40	
Pomadasys corvinaeformis	1.00	10	0.40	
Upeneus parvus	1.00	16	0.40	
Chloroscombrus chrysurus	0.80	6	0.32	
Cynoscion microlepidotus	0.60	6	0.24	
Lolligancula sp	0.00	10		
Lycengraulis grossidens	0.00	6		
Pellona harroweri	0.00	16		
Total	250.40		100.01	

PROJECT STATION: 568

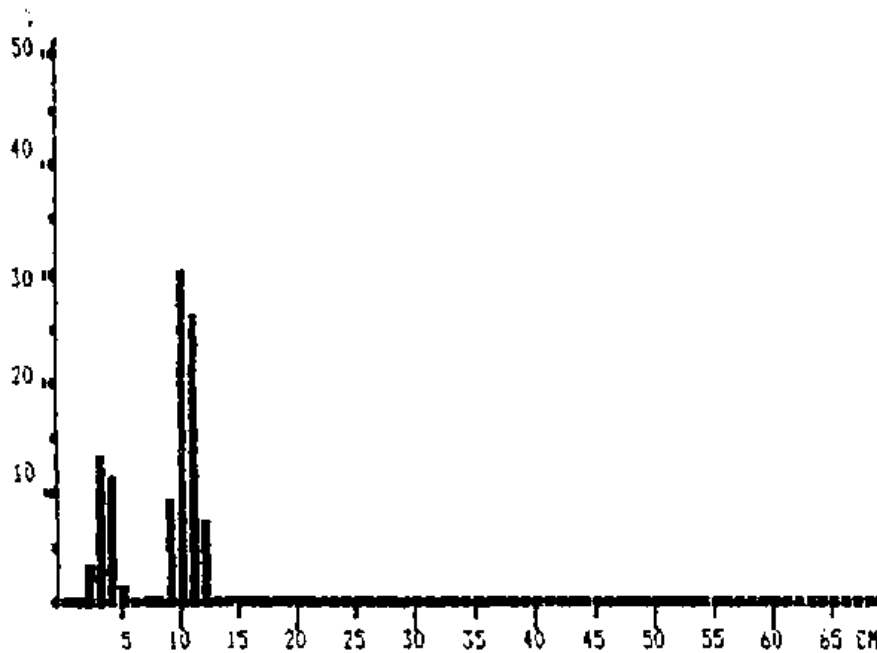
DATE: 16/ 5/88 GEAR TYPE: BT No:1 POSITION: Lat N 1234
start stop duration Long W 7127
TIME : 00:23:00 01:23:00 60 (min) Purpose code: 3
LOG : 4302.90 4303.50 0.60 Area code : 5
FDEPTH: 455 451 GearCond.code:
BDEPTH: 455 451 Validity code:
Towing dir: 258° Wire out: 1400 m Speed: 6 kn*10

Sorted: 22 Kg Total catch: 100.30 CATCH/HOUR: 100.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Synagrops bellus	30.80	502	30.71	
Nezumia cyrano	24.00	749	23.93	
CRANGONIDAE	12.80	3602	12.76	
Pleuropenaeus edwardsianus	7.00	273	6.98	552
Solenocera sp	6.70	179	6.68	551
Benthodesmus tenuis	6.00	152	5.98	
Coelorhynchus caribbeus	2.80	80	2.79	
Miscellaneous fish	2.00		1.99	
GEMPYLIDAE	2.00	4	1.99	
ISOPODS	1.20	4	1.20	
Peristedion sp	1.20	20	1.20	
Cyttopsis roseus	1.20	12	1.20	
Rossia sp	0.80	6	0.80	
MYCTOPHIDAE	0.60	32	0.60	
SEPIOLIDAE	0.40	4	0.40	
Hoplunnis diomedianus	0.40	20	0.40	
Sternoptyx pseudobacura	0.40	24	0.40	
Total	100.30		100.01	

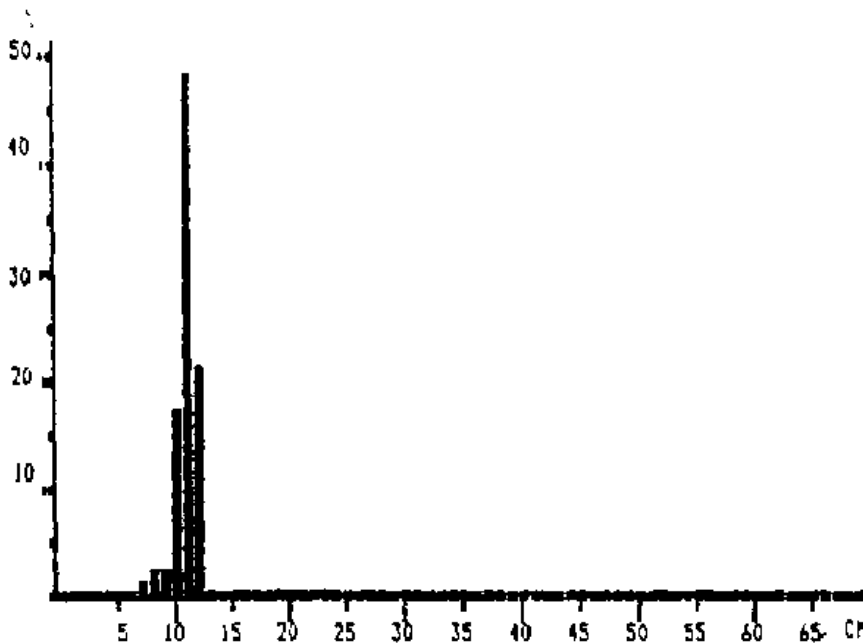
ANNEX 3. POOLED LENGTH DISTRIBUTIONS OF MAIN SPECIES CAUGHT. Venezuela

Engraulis eurystole - East of Cabo Cadera



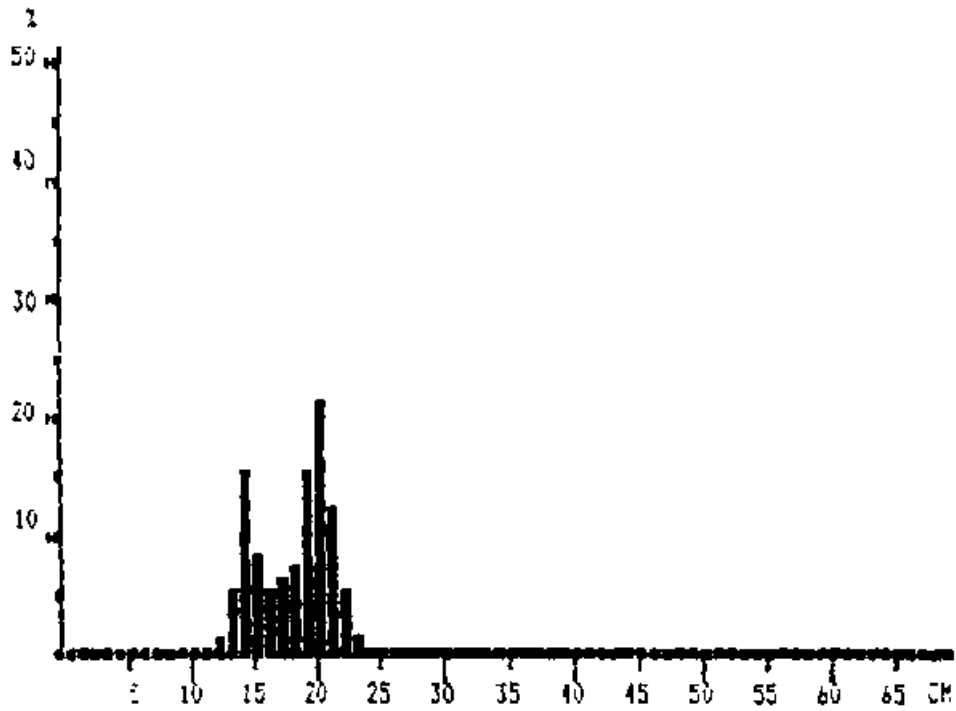
Pooled sample (simple adding)
 MEAN LENGTH = 8.50cm N= 404
 NUMBERS OF SUBSAMPLES: 3
 SAMPLES FOUND BETWEEN ST. NO. 489 AND 498.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Anchoa lyolepis - East of Cabo Cadera



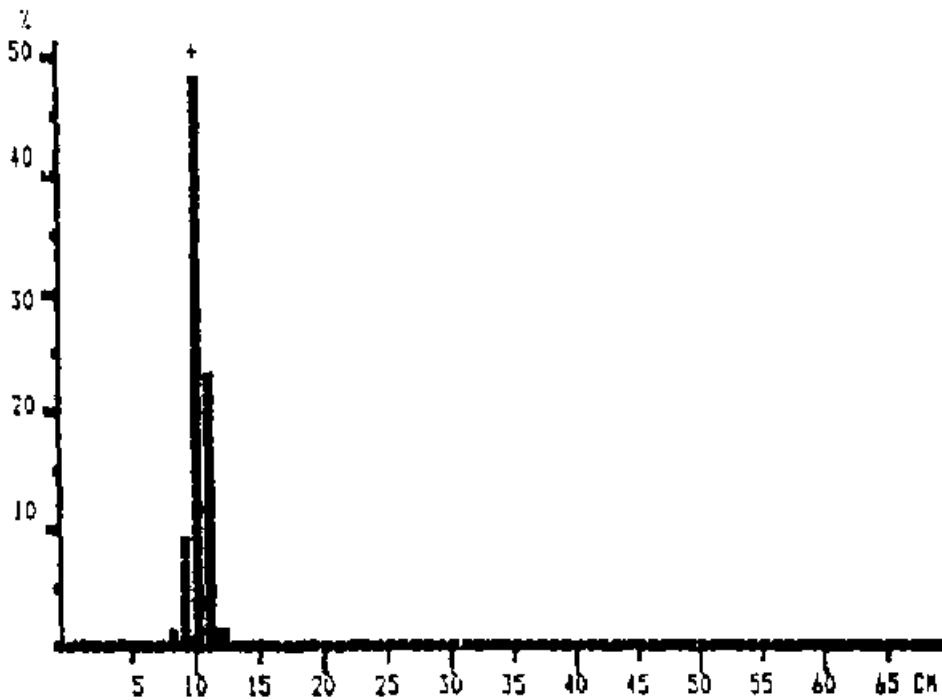
Pooled sample (simple adding)
 MEAN LENGTH = 10.87cm N= 86
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 494 AND 494.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Sardinella aurita - East of Cabo Cadera



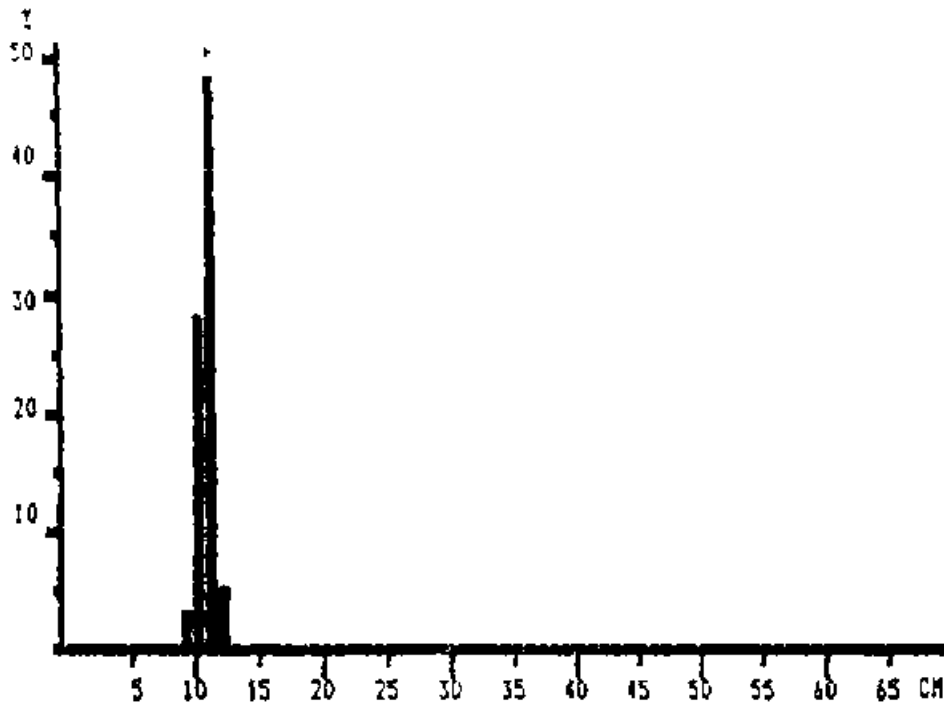
Pooled sample (simple adding)
 MEAN LENGTH = 17.89cm N= 823
 NUMBERS OF SUBSAMPLES: 6
 SAMPLES FOUND BETWEEN ST. NO. 464 AND 494.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Engraulis eurystole - West of Cabo Cadera



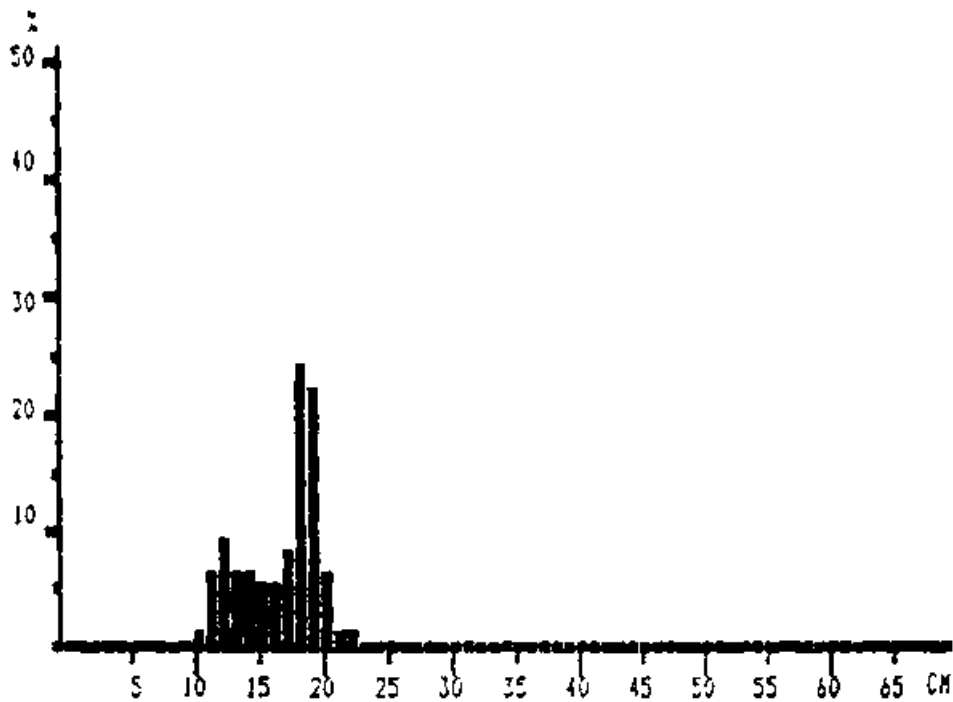
Pooled sample (simple adding)
 MEAN LENGTH = 10.14cm N= 105
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 549 AND 549.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Anchoa lyolepis - West of Cabo Cadera



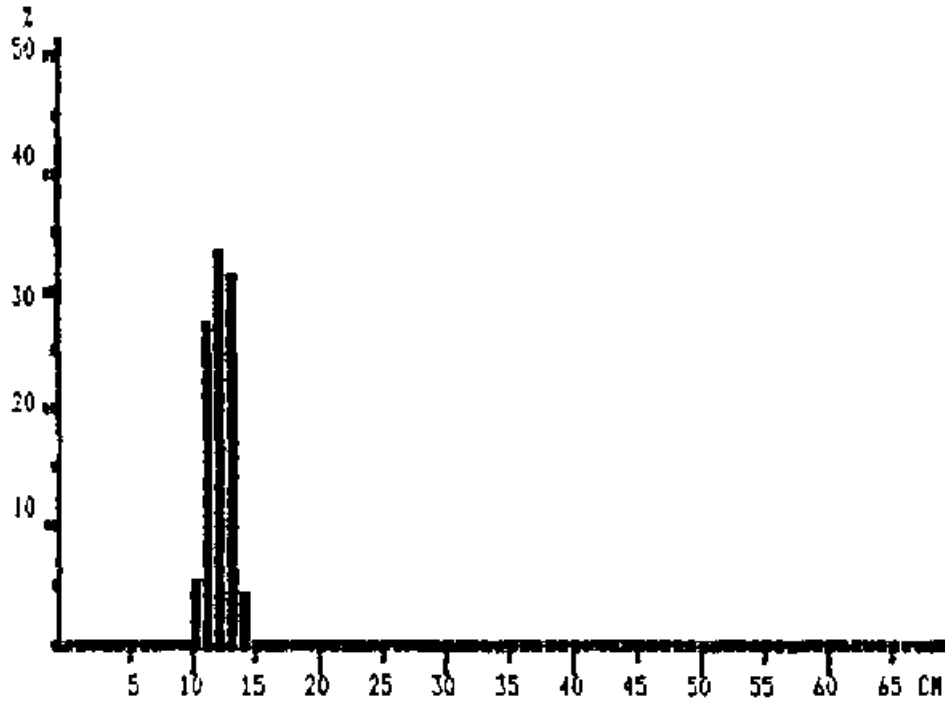
Pooled sample (simple adding)
MEAN LENGTH = 10.72cm N= 158
NUMBERS OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 549 AND 556.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Sardinella aurita - West of Cabo Cadera



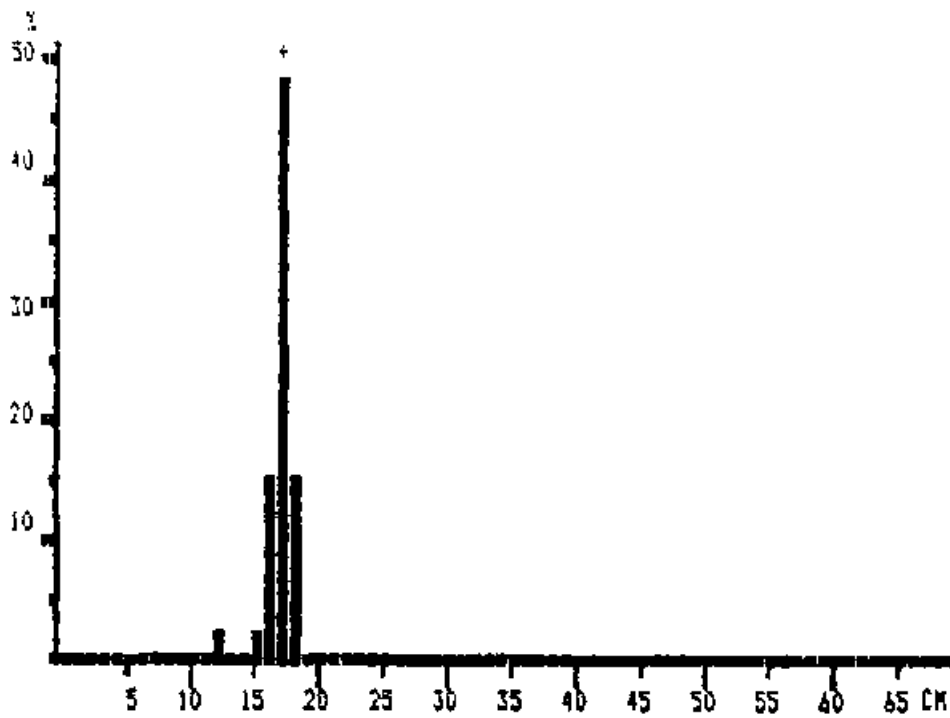
Pooled sample (simple adding)
MEAN LENGTH = 16.47cm N= 394
NUMBERS OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 521 AND 564.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Etrumeus teres - East of Cabo Cadera



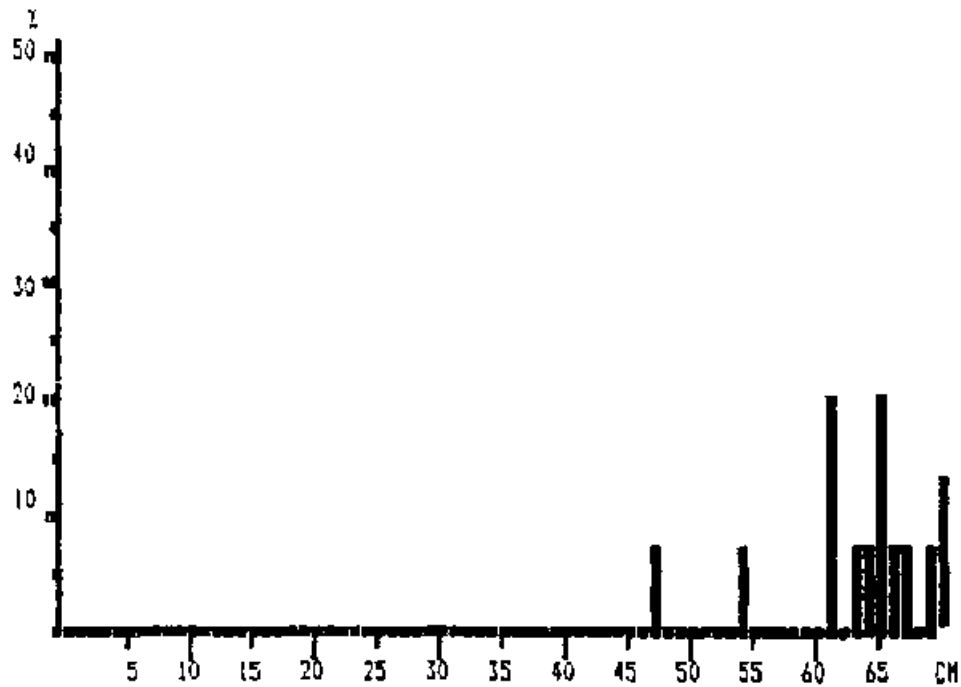
Pooled sample (simple adding)
 MEAN LENGTH = 12.04cm N= 529
 NUMBERS OF SUBSAMPLES: 4
 SAMPLES FOUND BETWEEN ST. NO. 470 AND 489.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Harengula clupeiola - East of Cabo Cadera



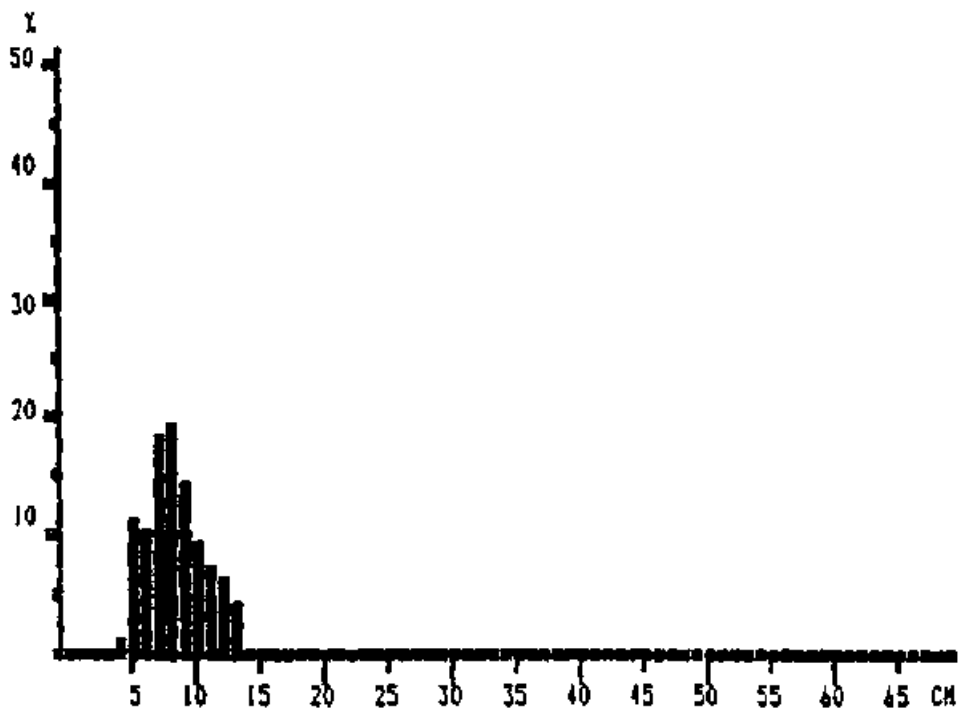
Pooled sample (simple adding)
 MEAN LENGTH = 16.87cm N= 55
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 464 AND 464.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Lutjanus apodus - East of Cabo Cadera



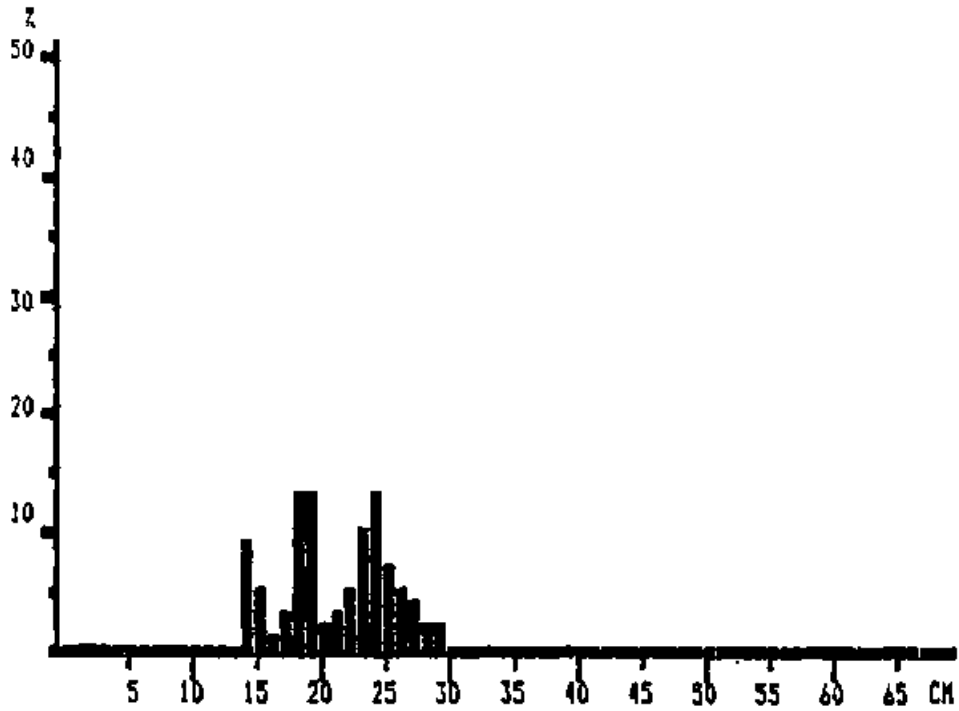
Pooled sample (simple adding)
 MEAN LENGTH = 63.20cm N= 15
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 509 AND 509.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Anchoa spinifer - West of Cabo Cadera



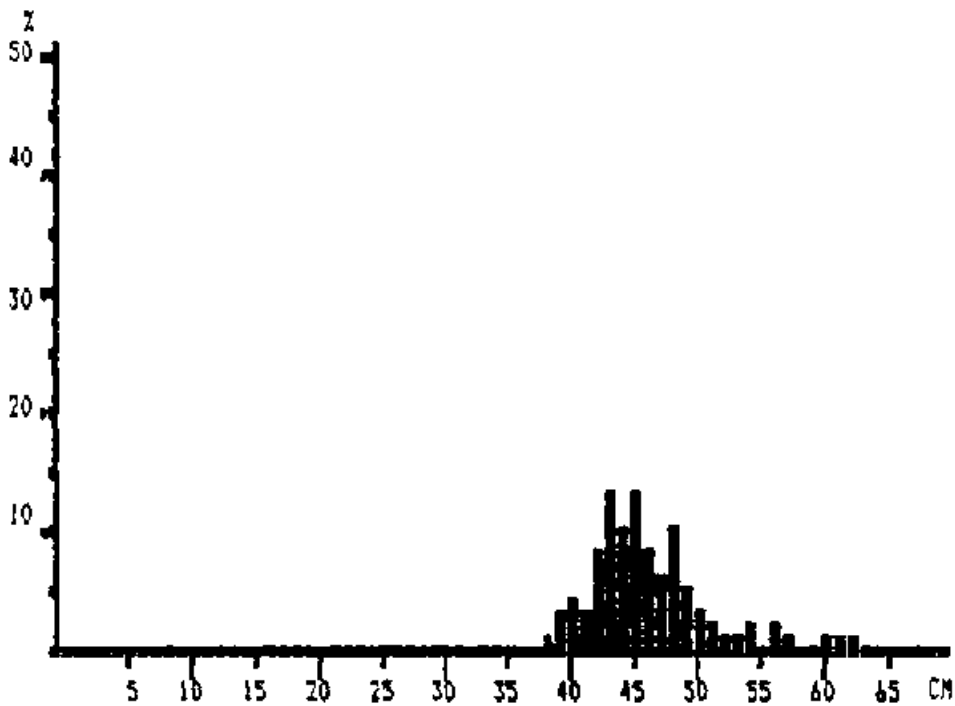
Pooled sample (simple adding)
 MEAN LENGTH = 8.26cm N= 234
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 543 AND 543.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Opisthonema oglinum - West of Cabo Cadera



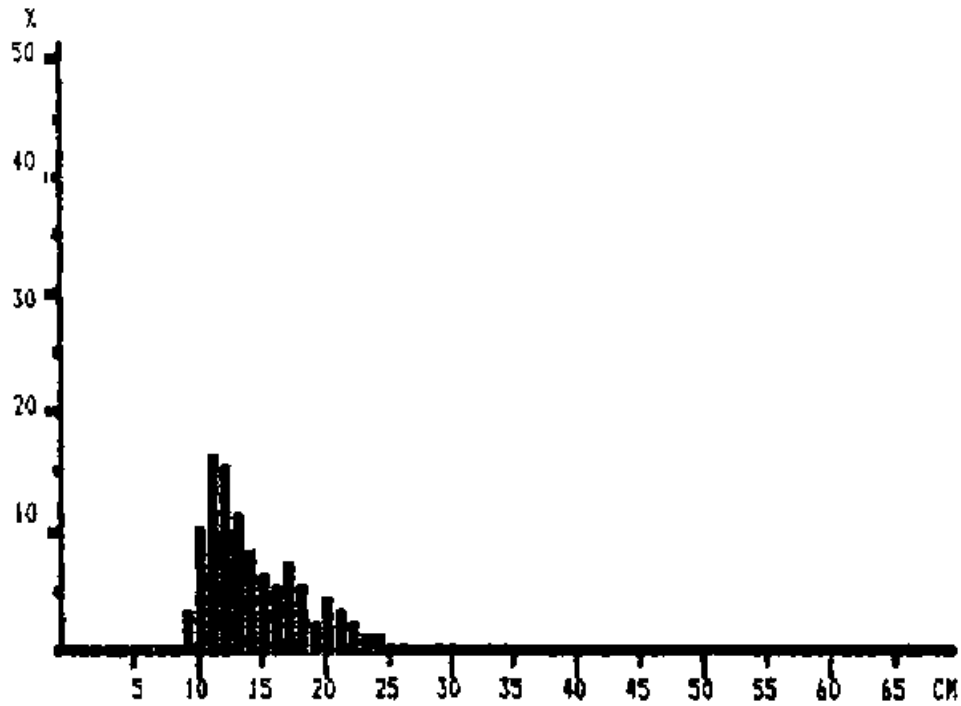
Pooled sample (simple adding)
MEAN LENGTH = 20.85cm N= 239
NUMBERS OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 541 AND 550.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Lutjanus purpureus - West of Cabo Cadera



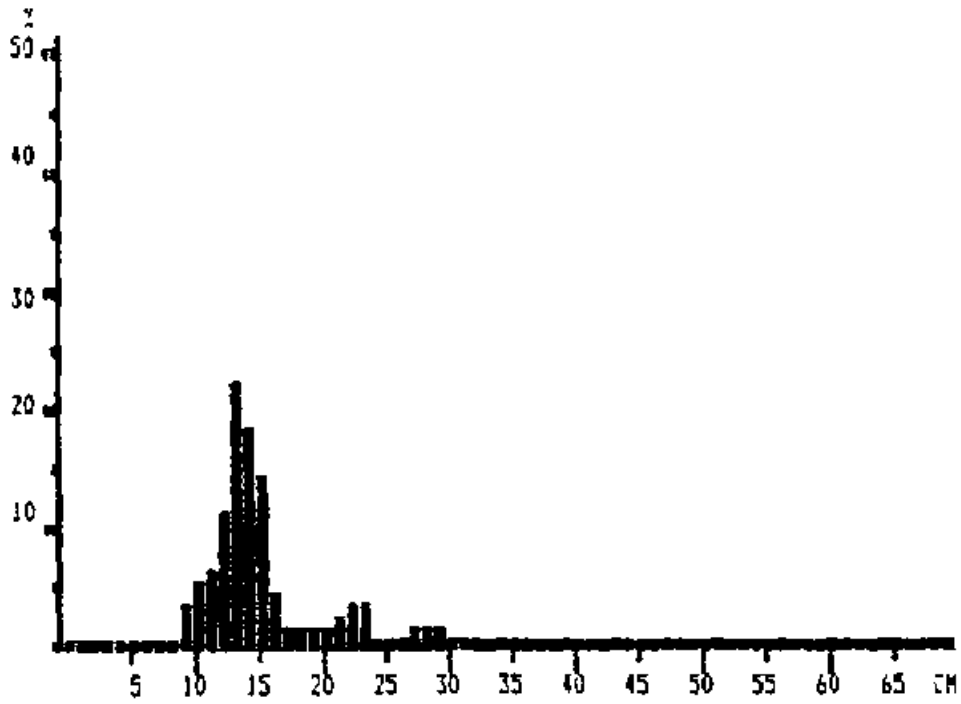
Pooled sample (simple adding)
MEAN LENGTH = 26.55cm N= 241
NUMBERS OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 512 AND 533.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Ocyurus chrysurus - East of Cabo Cadera



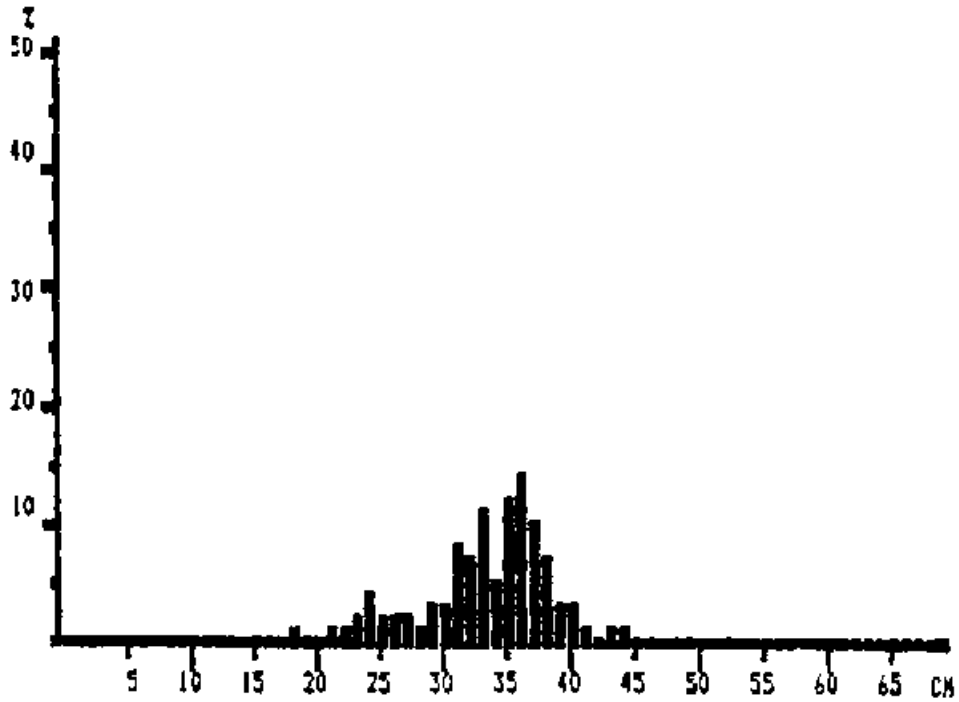
Pooled sample (simple adding)
MEAN LENGTH = 46.04cm N= 93
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 504 AND 504.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Pristipomoides macrophthalmus - East of Cabo Cadera



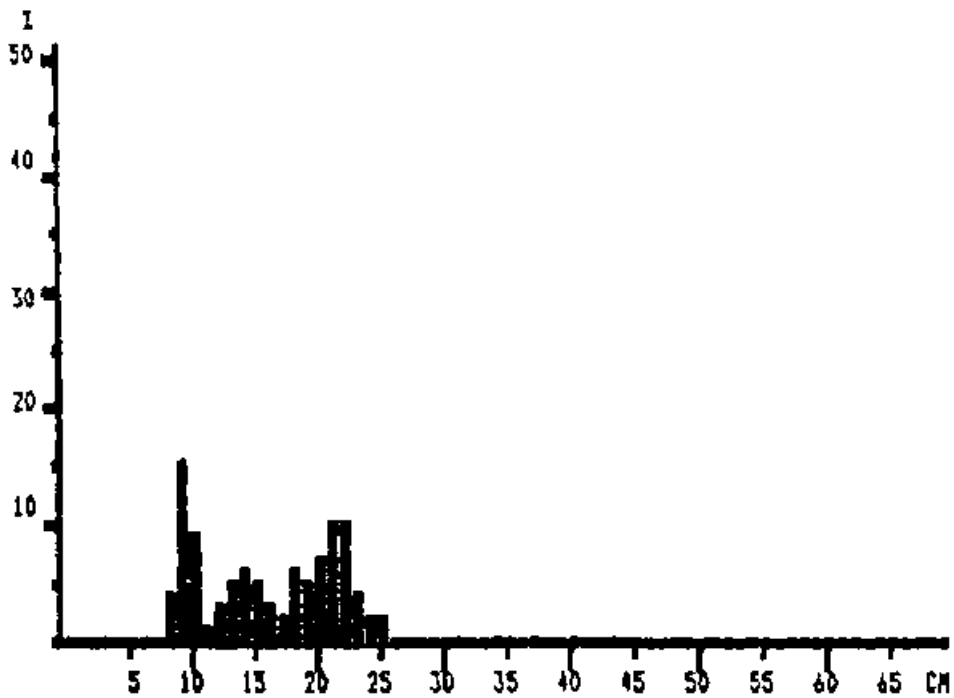
Pooled sample (simple adding)
MEAN LENGTH = 14.23cm N= 810
NUMBERS OF SUBSAMPLES: 11
SAMPLES FOUND BETWEEN ST. NO. 458 AND 501.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Rhomboplites aurorubens - East of Cabo Cadera



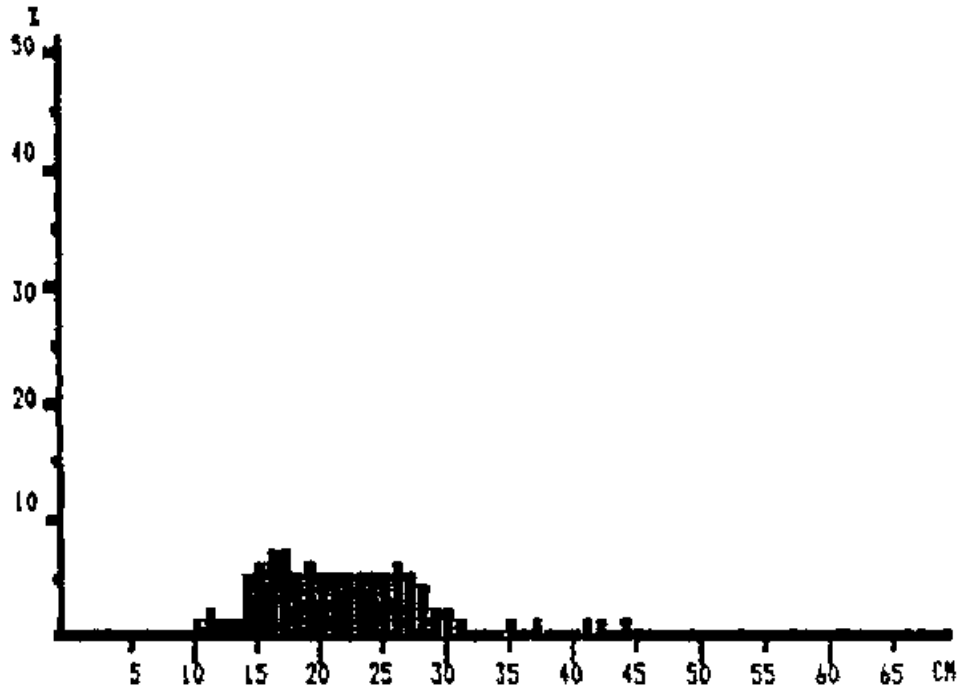
Pooled sample (simple adding)
MEAN LENGTH = 14.56cm N= 284
NUMBERS OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 460 AND 508.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Lutjanus synagris - West of Cabo Cadera



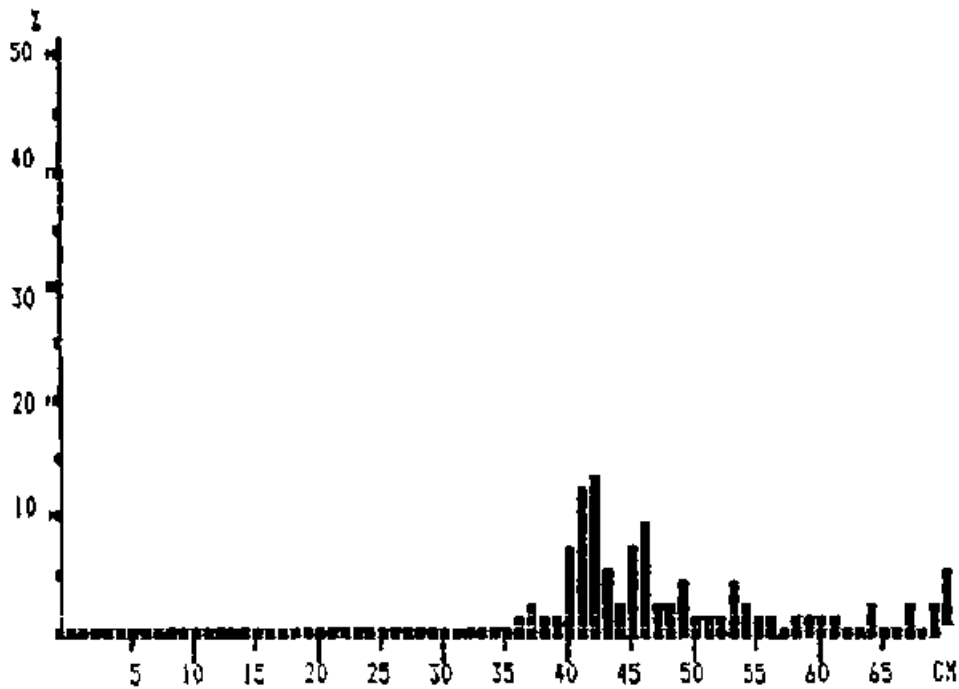
Pooled sample (simple adding)
MEAN LENGTH = 33.42cm N= 190
NUMBERS OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 520 AND 565.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Pristipomoides macrophthalmus - West of Cabo Cadera



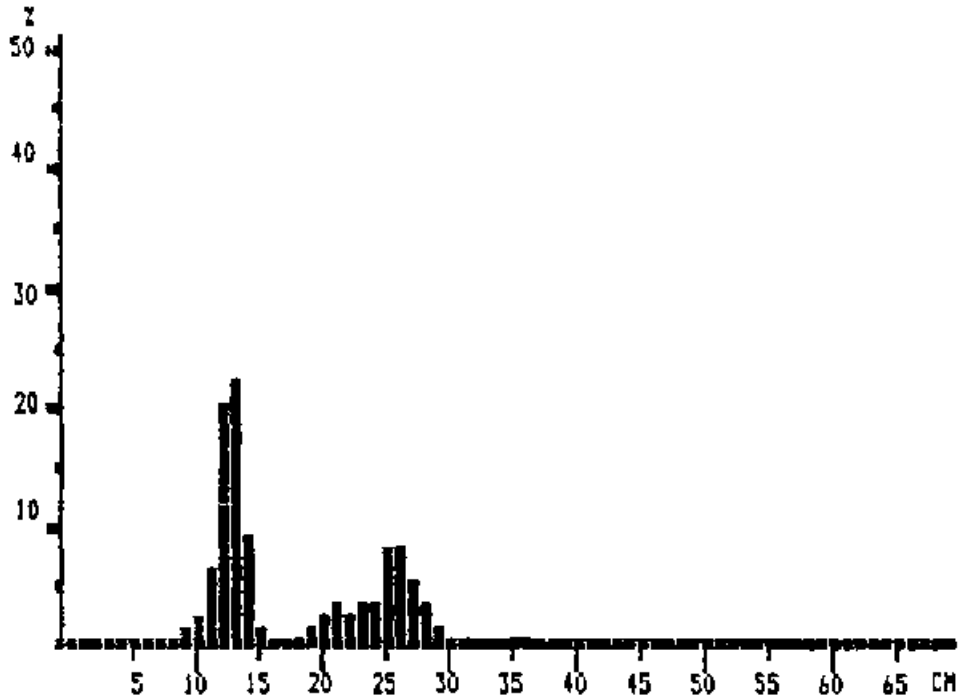
Pooled sample (simple adding)
MEAN LENGTH = 16.00cm N= 206
NUMBERS OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 516 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Rhomboplites aurorubens - West of Cabo Cadera



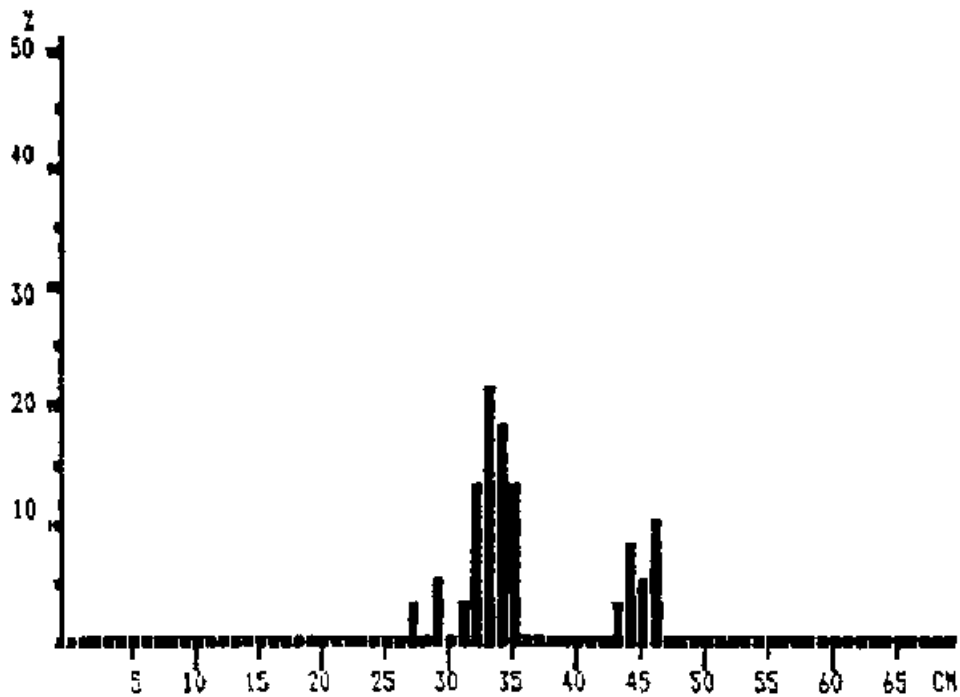
Pooled sample (simple adding)
MEAN LENGTH = 22.07cm N= 647
NUMBERS OF SUBSAMPLES: 11
SAMPLES FOUND BETWEEN ST. NO. 511 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Lutjanus analis - West of Cabo Cadera



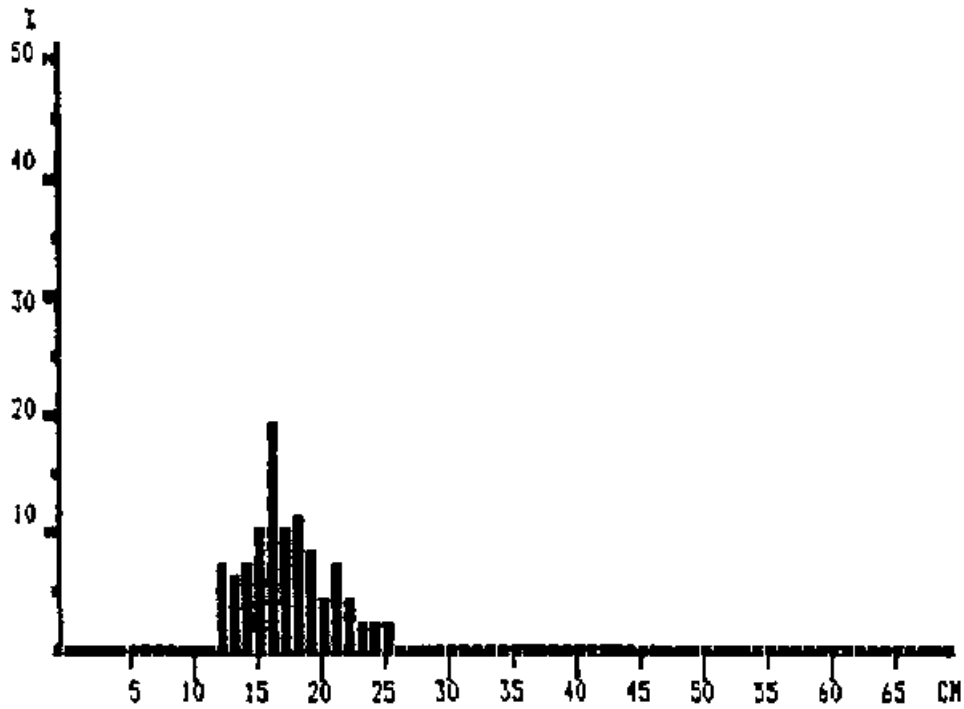
Pooled sample (simple adding)
 MEAN LENGTH = 48.01cm N= 82
 NUMBERS OF SUBSAMPLES: 5
 SAMPLES FOUND BETWEEN ST. NO. 520 AND 566.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Trachurus lathami - East of Cabo Cadera



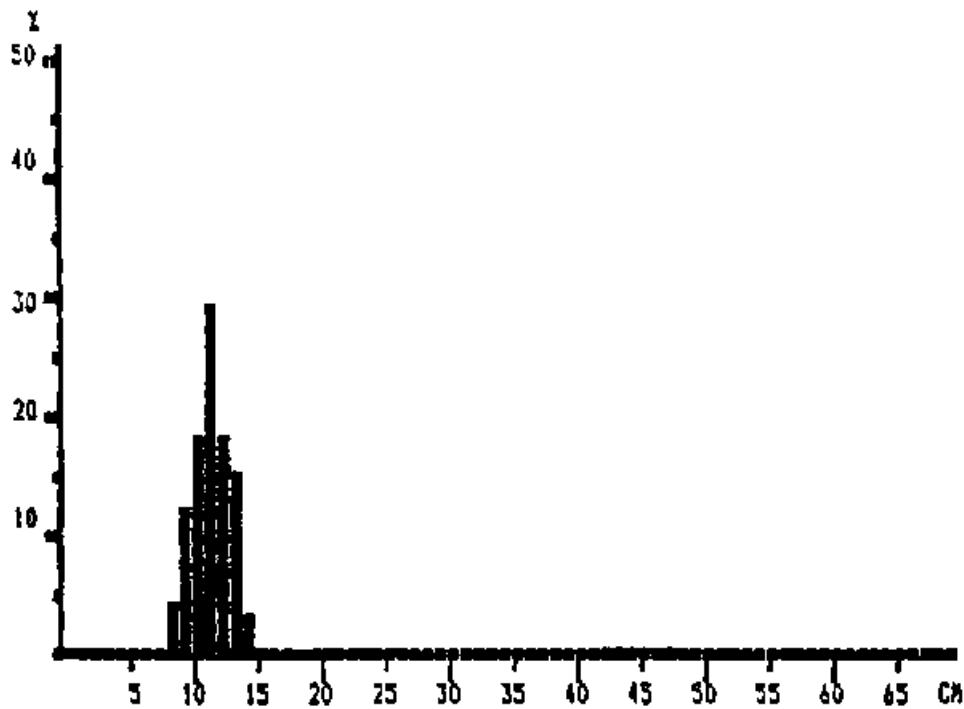
Pooled sample (simple adding)
 MEAN LENGTH = 17.30cm N= 994
 NUMBERS OF SUBSAMPLES: 13
 SAMPLES FOUND BETWEEN ST. NO. 458 AND 505.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Selene spixii - East of Cabo Cadera



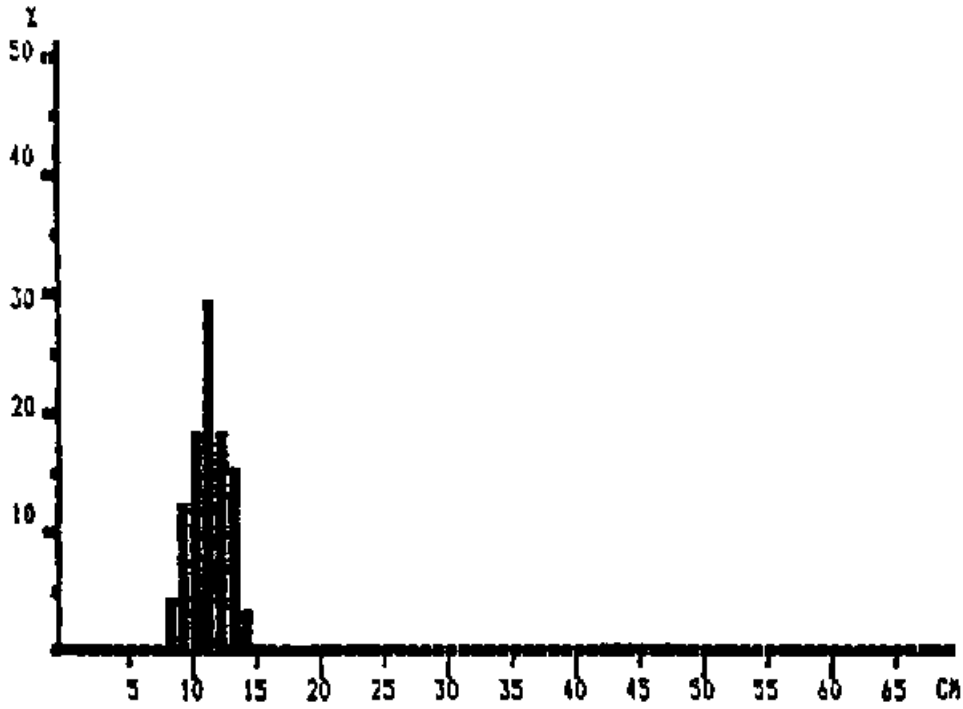
Pooled sample (simple adding)
 MEAN LENGTH = 35.95cm N= 39
 NUMBERS OF SUBSAMPLES: 2
 SAMPLES FOUND BETWEEN ST. NO. 455 AND 470.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Lutjanus vivanus - West of Cabo Cadera



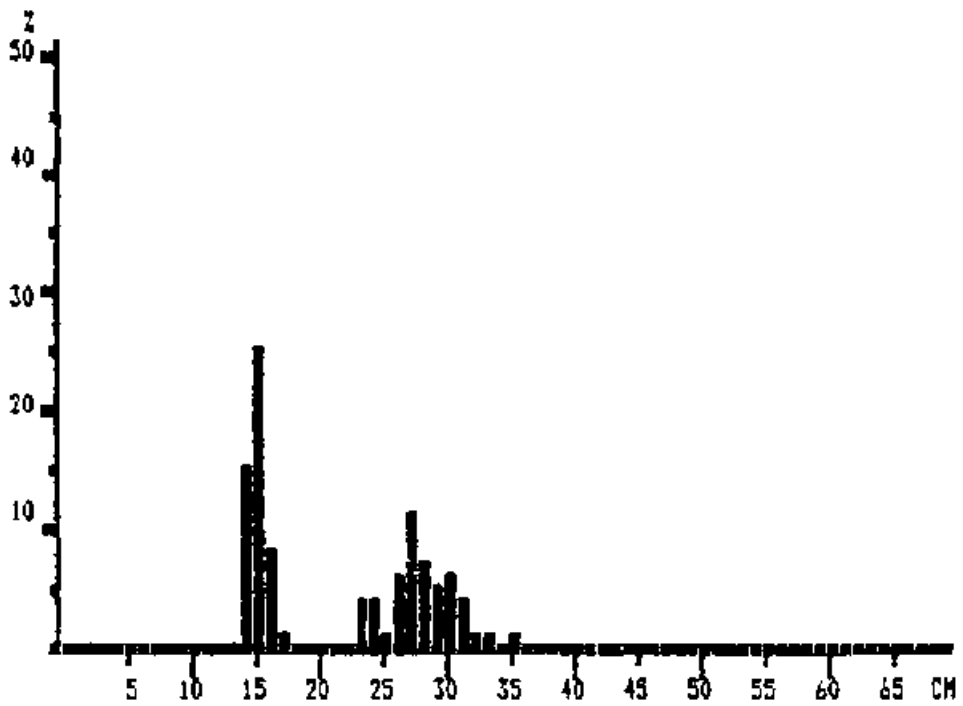
Pooled sample (simple adding)
 MEAN LENGTH = 17.16cm N= 83
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 533 AND 533.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Trachurus lathami - West of Cabo Cadera



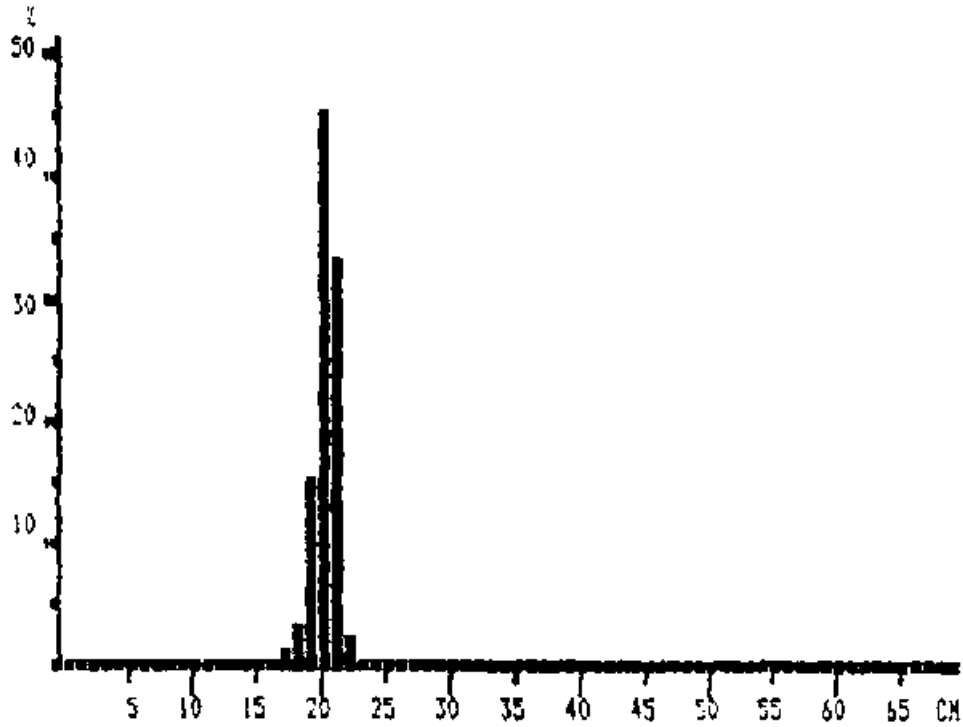
Pooled sample (simple adding)
 MEAN LENGTH = 11.10cm N= 617
 NUMBERS OF SUBSAMPLES: 6
 SAMPLES FOUND BETWEEN ST. NO. 513 AND 562.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Selene spixii - West of Cabo Cadera



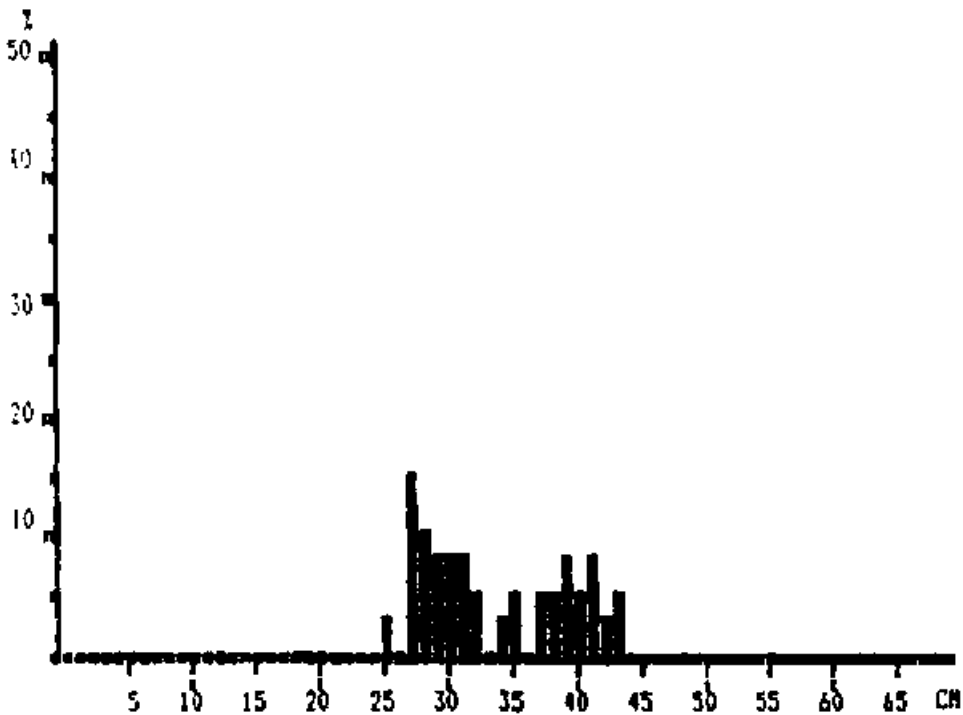
Pooled sample (simple adding)
 MEAN LENGTH = 21.33cm N= 84
 NUMBERS OF SUBSAMPLES: 3
 SAMPLES FOUND BETWEEN ST. NO. 527 AND 553.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Haemulon striatum - East of Cabo Cadera



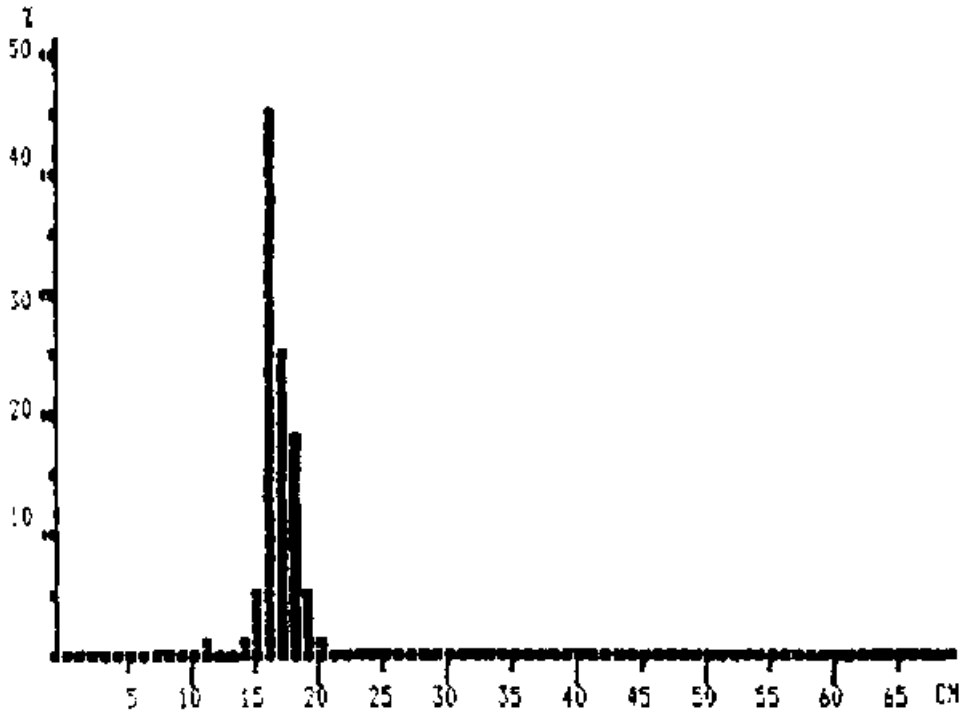
Pooled sample (simple adding)
MEAN LENGTH = 20.12cm N= 91
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 500 AND 500.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Micropogonias furnieri - East of Cabo Cadera



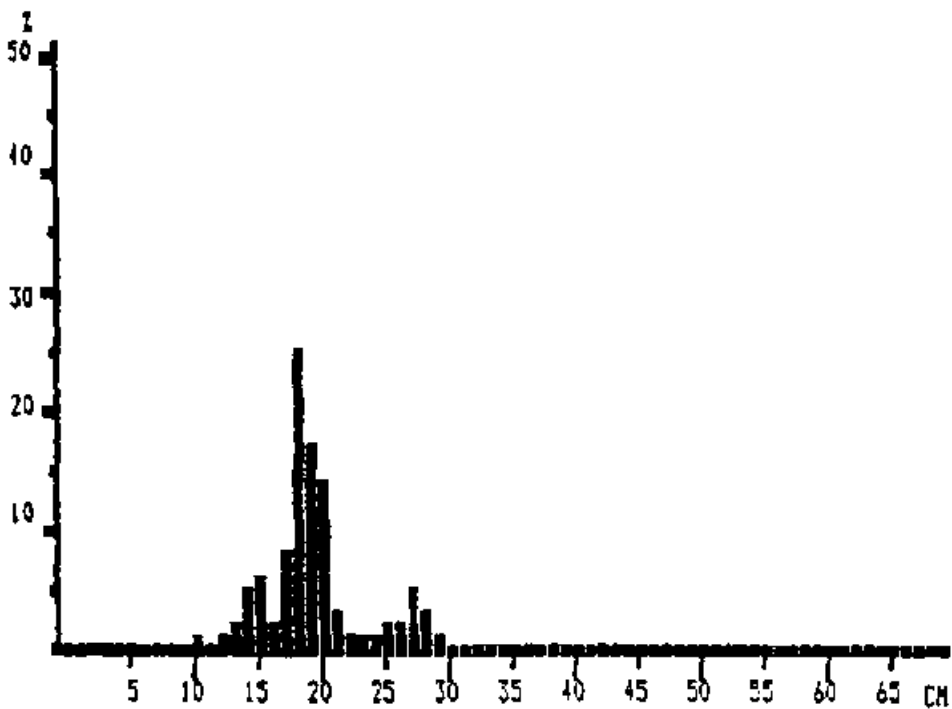
Pooled sample (simple adding)
MEAN LENGTH = 33.38cm N= 40
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 488 AND 488.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Ctenosciena gracilicirrus



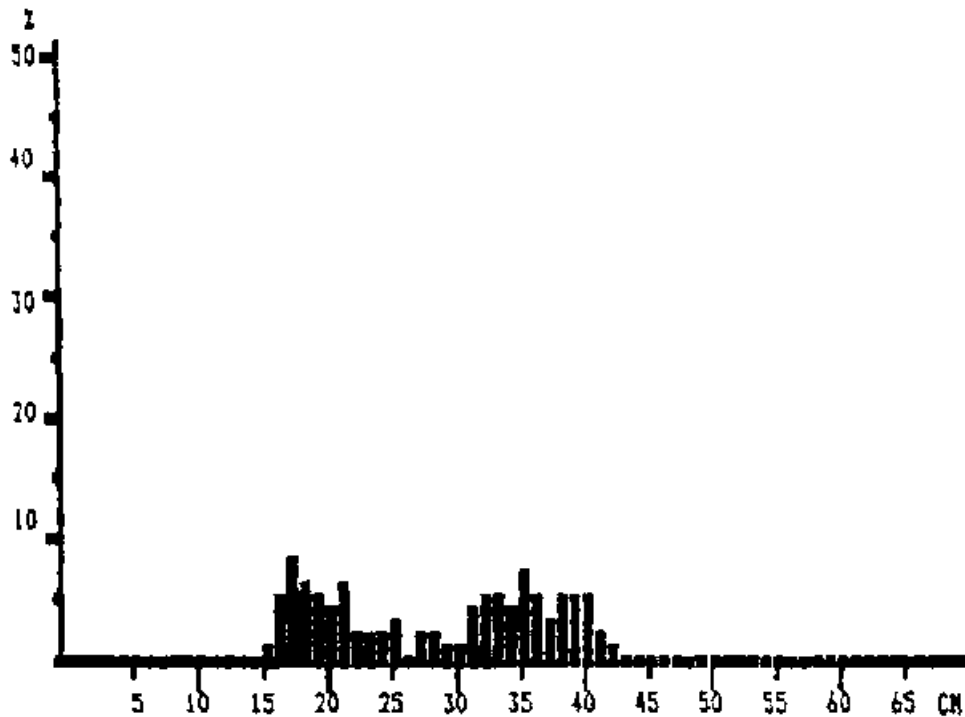
Pooled sample (simple adding)
MEAN LENGTH = 16.66cm N= 154
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 486 AND 486.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Selar crumenophthalmus - West of Cabo Cadera



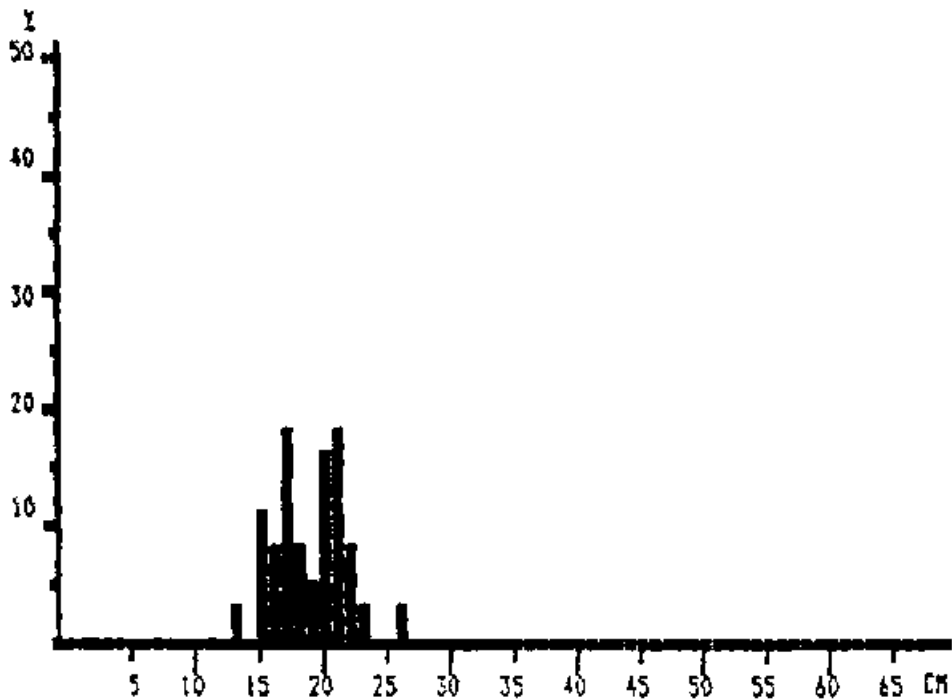
Pooled sample (simple adding)
MEAN LENGTH = 19.14cm N= 283
NUMBERS OF SUBSAMPLES: 4
SAMPLES FOUND BETWEEN ST. NO. 514 AND 561.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Micropogonias furnieri - West of Cabo Cadera



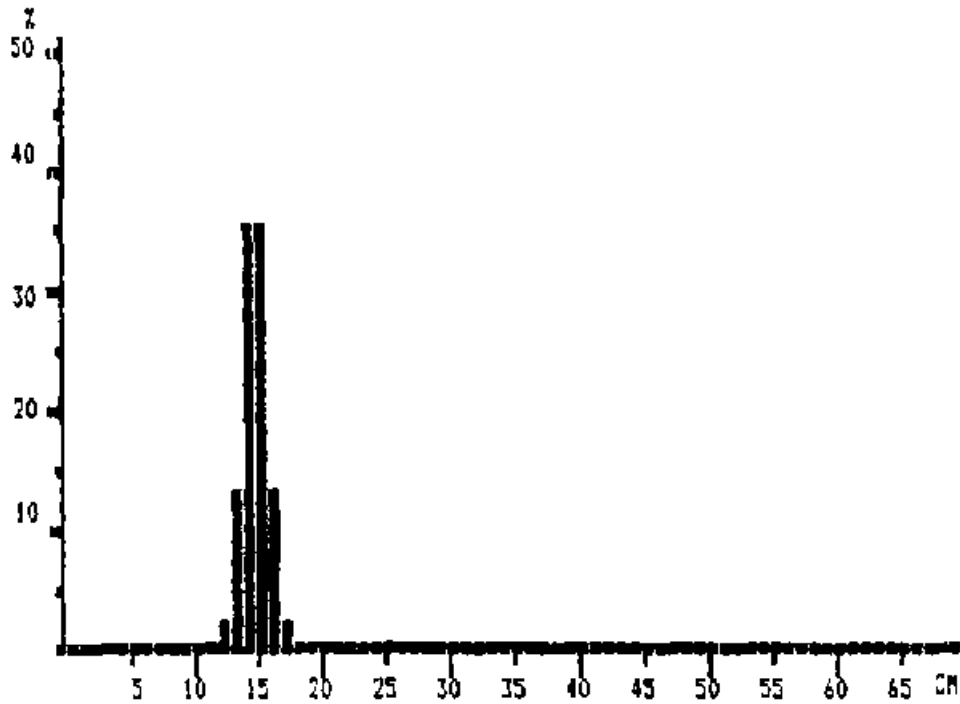
Pooled sample (simple adding)
 MEAN LENGTH = 28.31cm N= 266
 NUMBERS OF SUBSAMPLES: 11
 SAMPLES FOUND BETWEEN ST. NO. 538 AND 558.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Macrodon ancylodon - West of Cabo Cadera



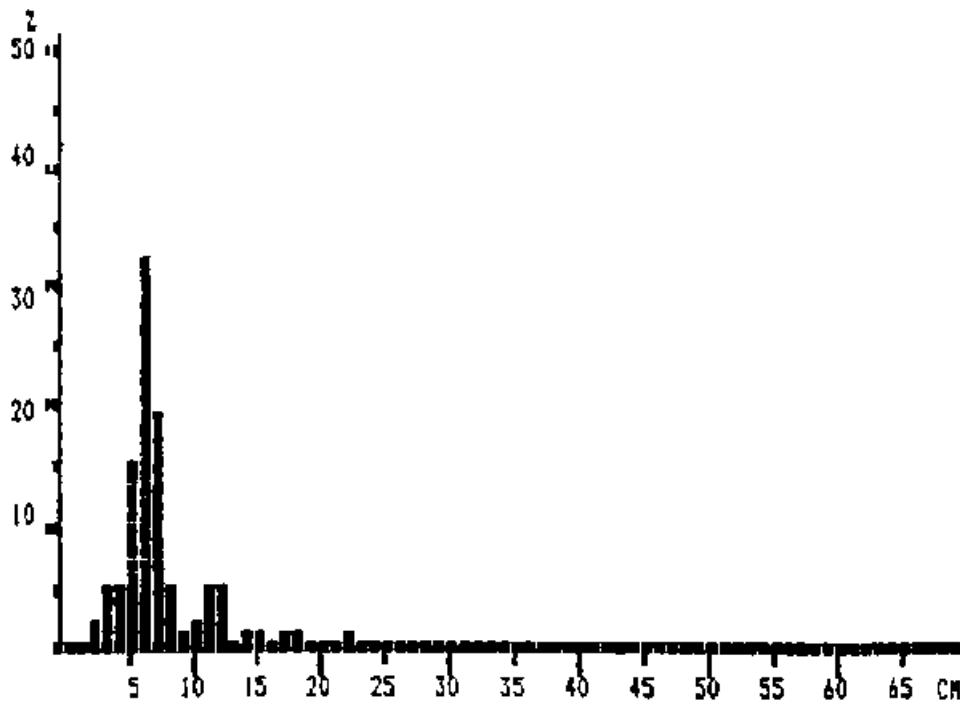
Pooled sample (simple adding)
 MEAN LENGTH = 18.79cm N= 38
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 544 AND 544.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Scomber japonicus - West of Cabo Cadera



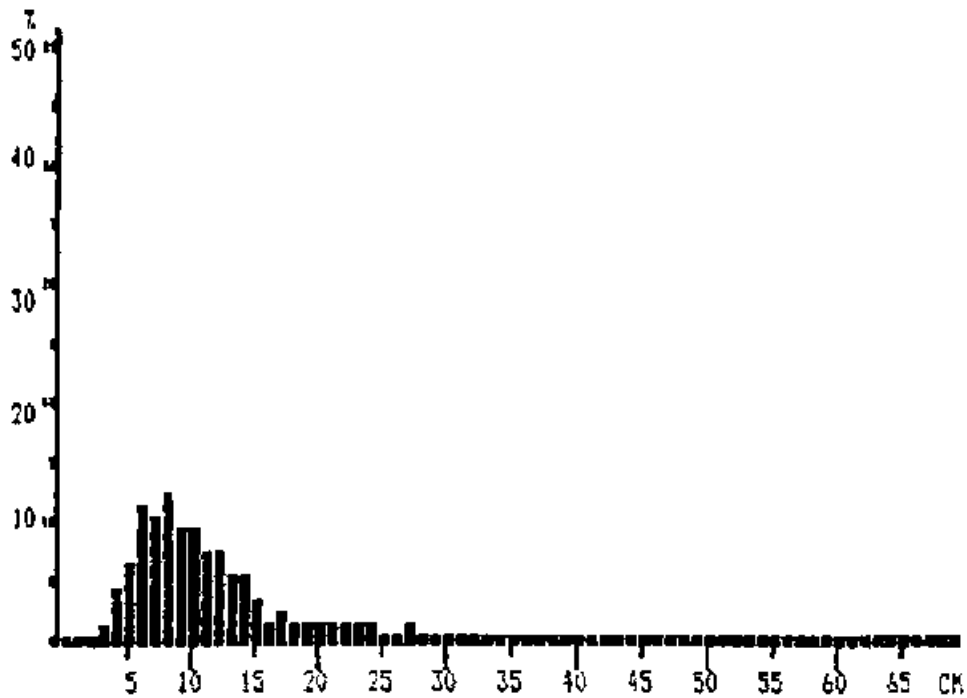
Pooled sample (simple adding)
MEAN LENGTH = 14.50cm N= 127
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 537 AND 537.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Loligo paelei - East of Cabo Cadera



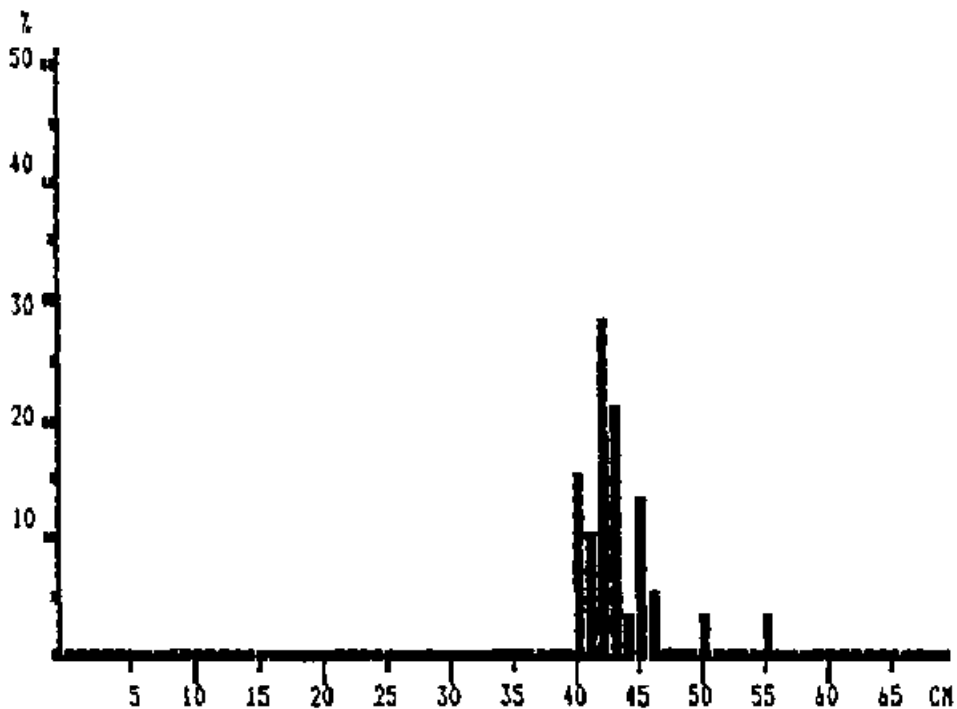
Pooled sample (simple adding)
MEAN LENGTH = 7.08cm N= 88
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 492 AND 492.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Loligo plei - East of Cabo Cadera



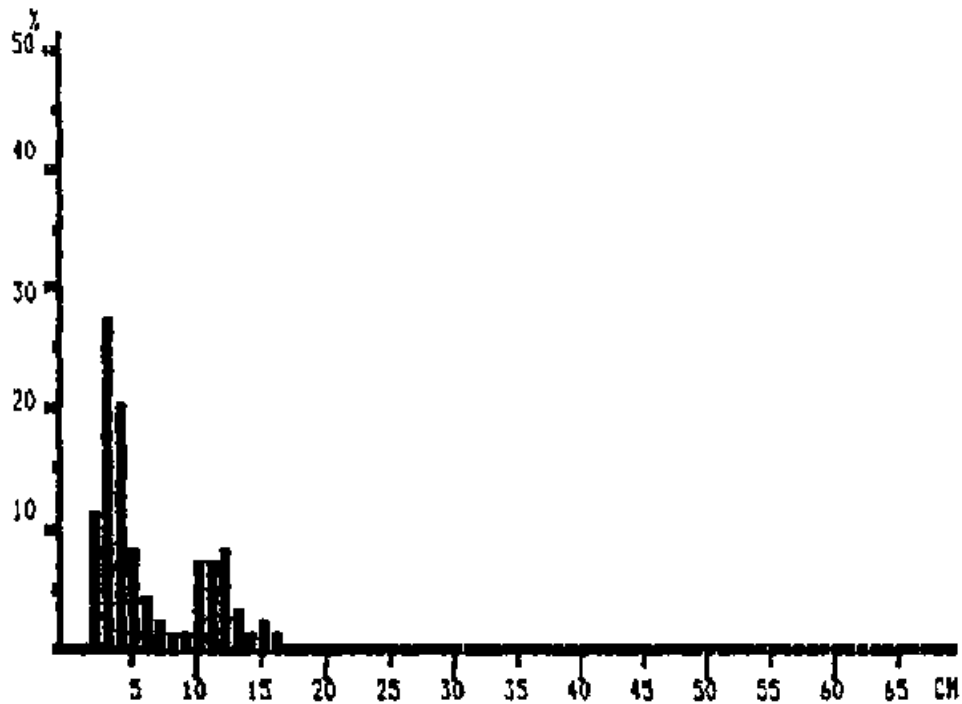
Pooled sample (simple adding)
 MEAN LENGTH = 10.26cm N= 689
 NUMBERS OF SUBSAMPLES: 8
 SAMPLES FOUND BETWEEN ST. NO. 462 AND 509.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Scomberomorus cavalla - West of Cabo Cadera



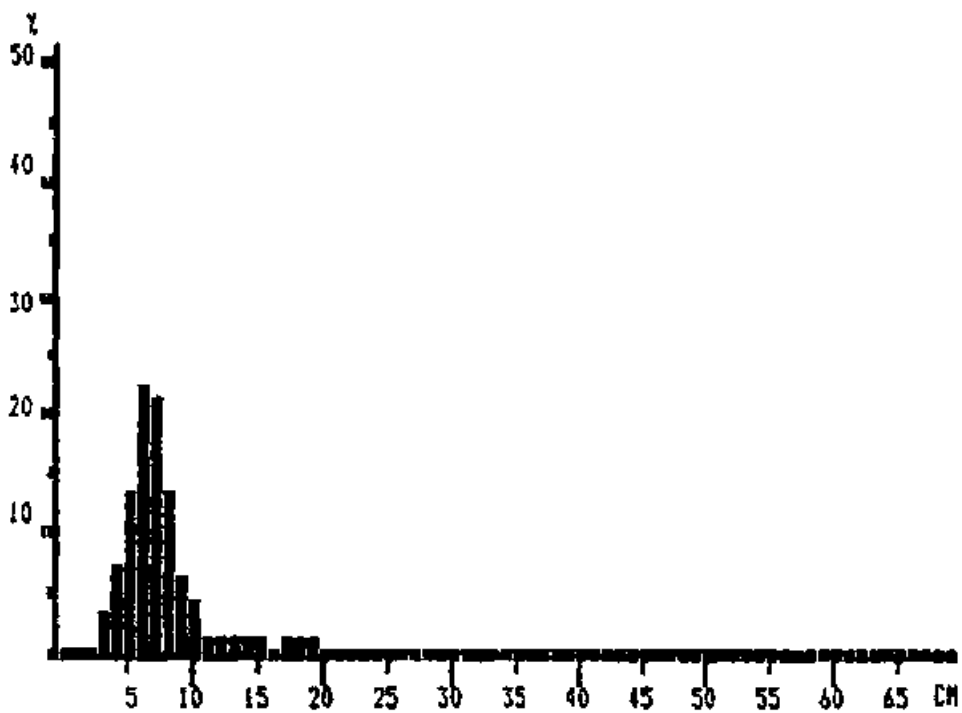
Pooled sample (simple adding)
 MEAN LENGTH = 42.97cm N= 39
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 560 AND 560.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Loligo paelei - West of Cabo Cadera



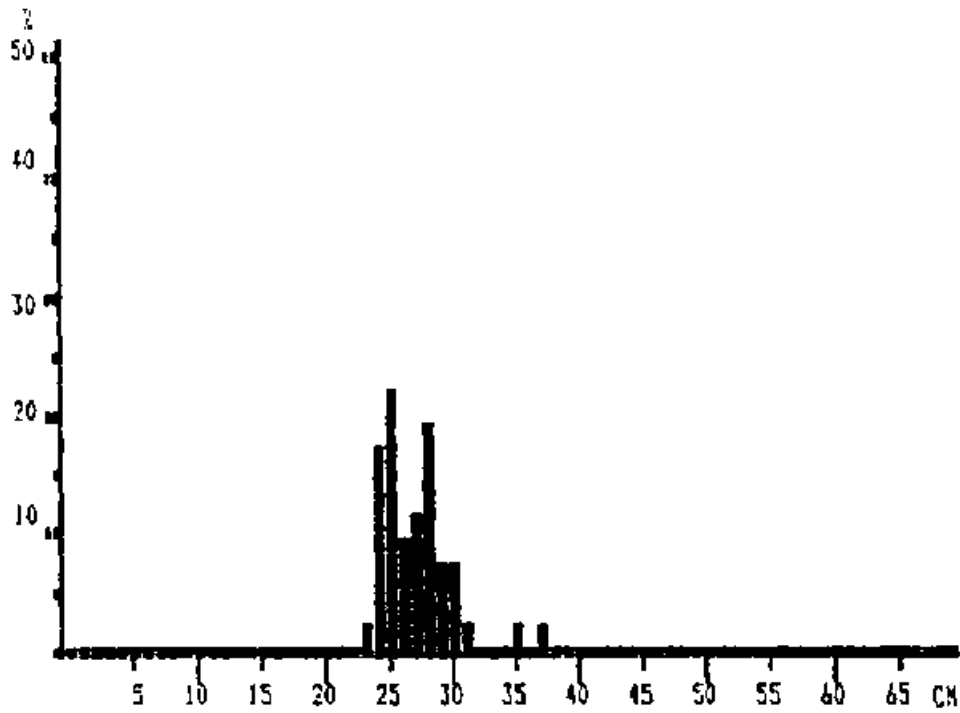
Pooled sample (simple adding)
MEAN LENGTH = 6.00cm N= 168
NUMBERS OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 514 AND 535.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Loligo plei - West of Cabo Cadera



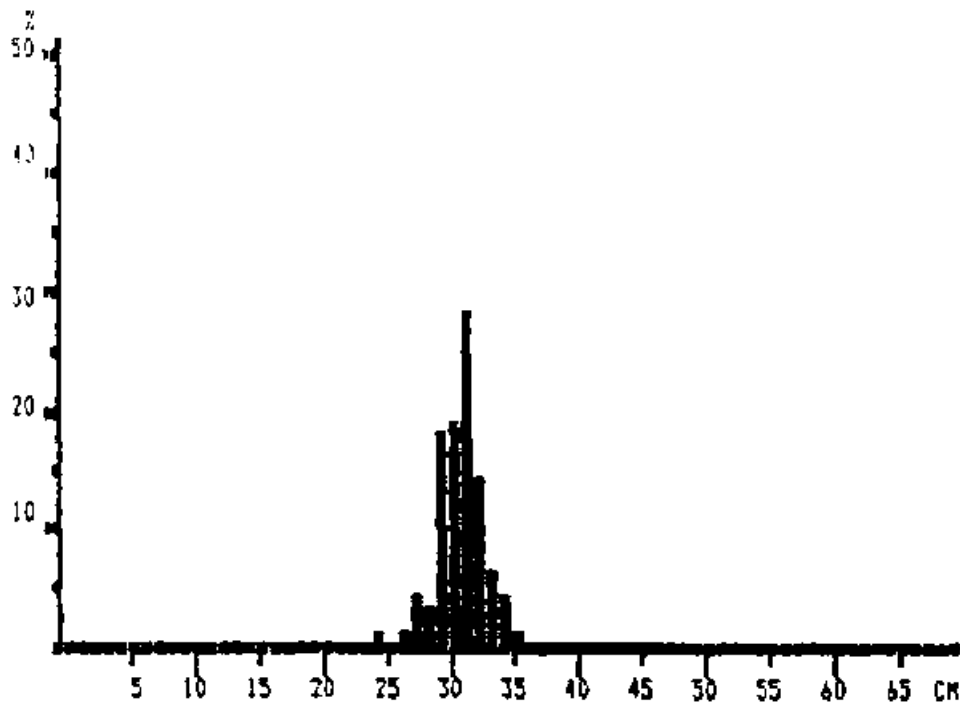
Pooled sample (simple adding)
MEAN LENGTH = 7.37cm N= 883
NUMBERS OF SUBSAMPLES: 9
SAMPLES FOUND BETWEEN ST. NO. 518 AND 560.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Sphyraena picudilla - East of Cabo Cadera



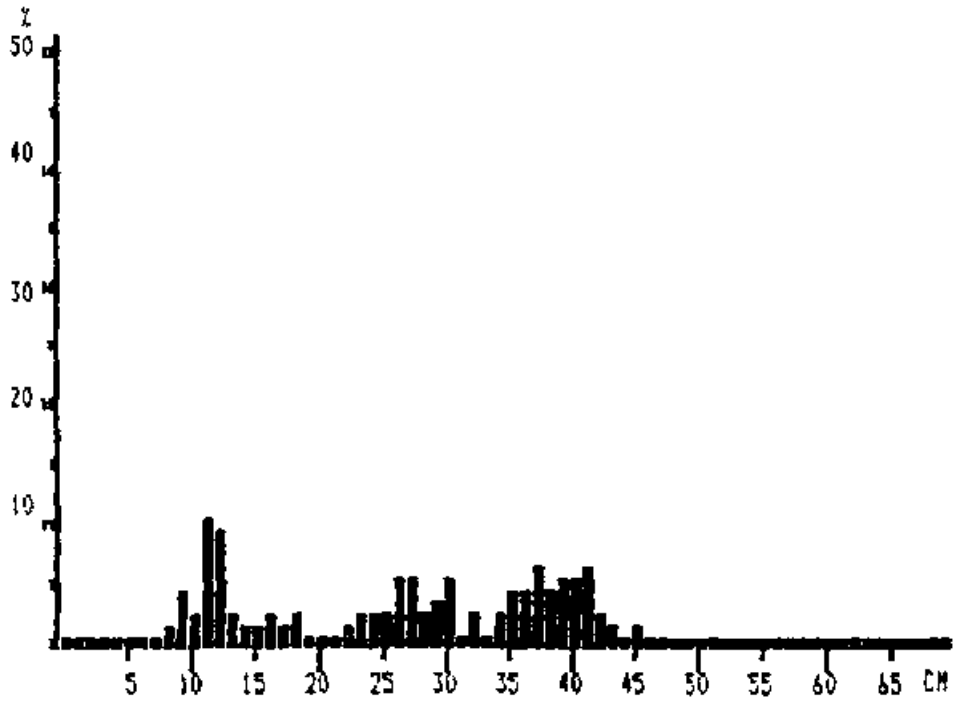
Pooled sample (simple adding)
MEAN LENGTH = 26.85cm N= 54
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 485 AND 485.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Peprilus paru East of Cabo Cadera



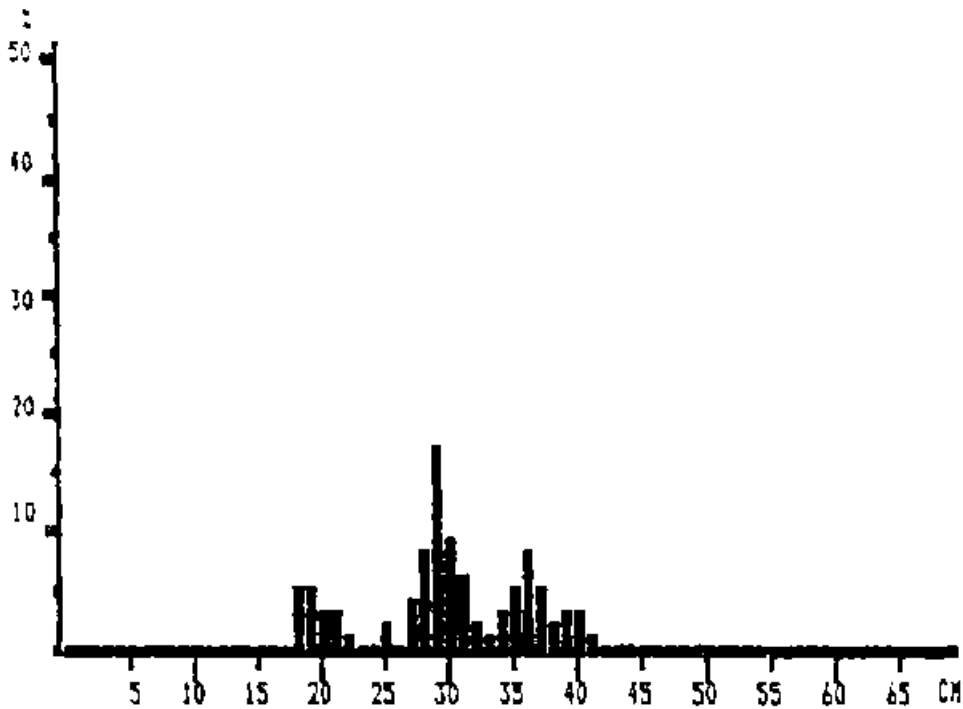
Pooled sample (simple adding)
MEAN LENGTH = 30.46cm N= 72
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 455 AND 455.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Priacanthus arenatus - East of Cabo Cadera



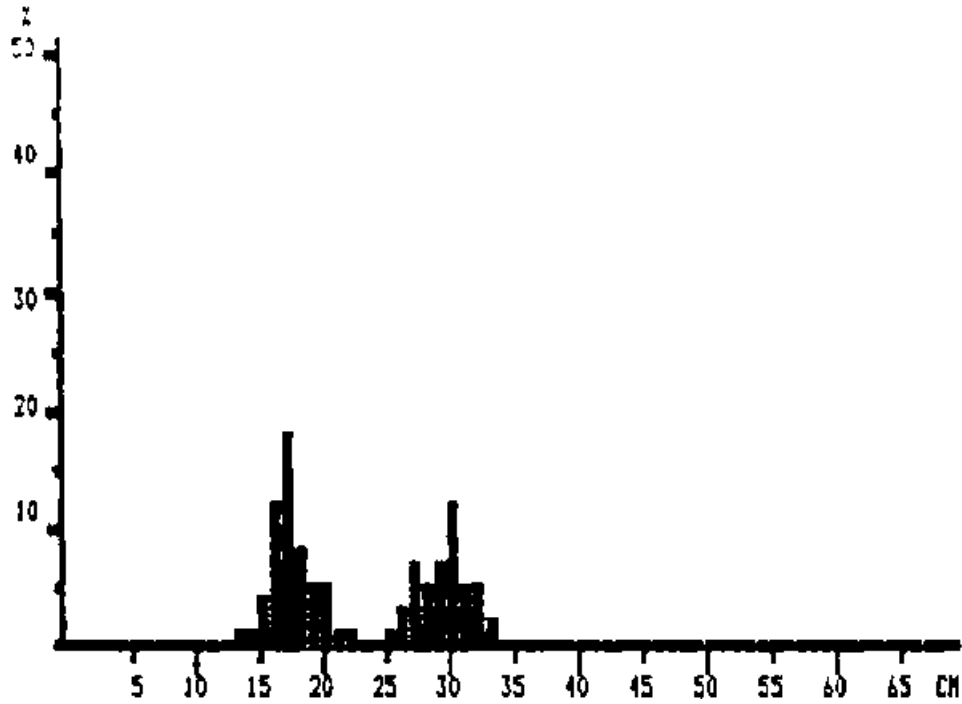
Pooled sample (simple adding)
 MEAN LENGTH = 26.58cm N= 129
 NUMBERS OF SUBSAMPLES: 2
 SAMPLES FOUND BETWEEN ST. NO. 492 AND 504.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Sphyraena picudilla - West of Cabo Cadera



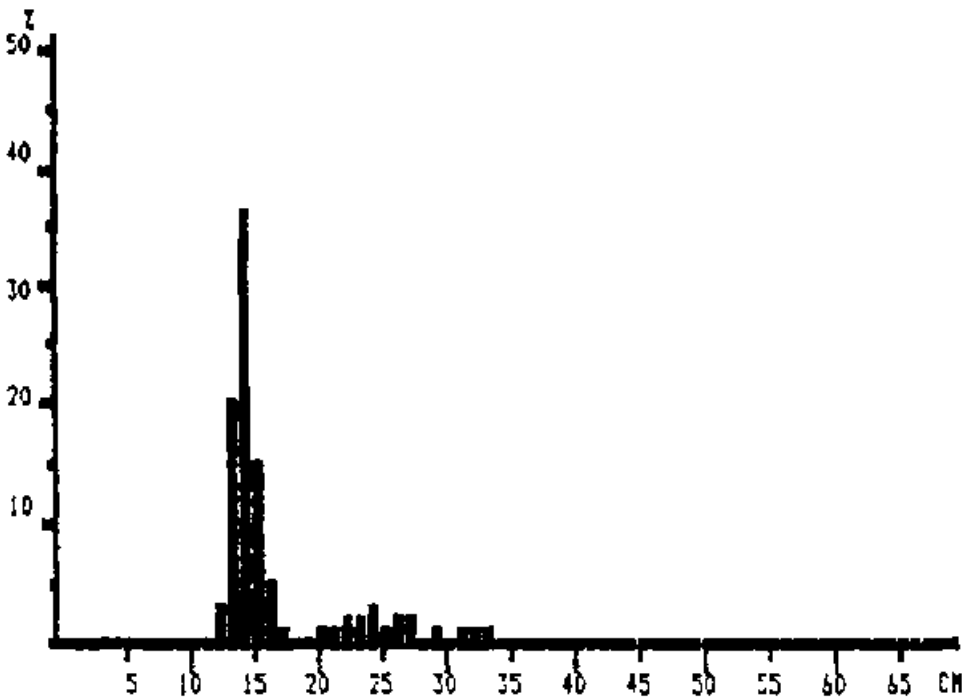
Pooled sample (simple adding)
 MEAN LENGTH = 29.94cm N= 259
 NUMBERS OF SUBSAMPLES: 5
 SAMPLES FOUND BETWEEN ST. NO. 535 AND 567.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Peprilus paru - West of Cabo Cadera



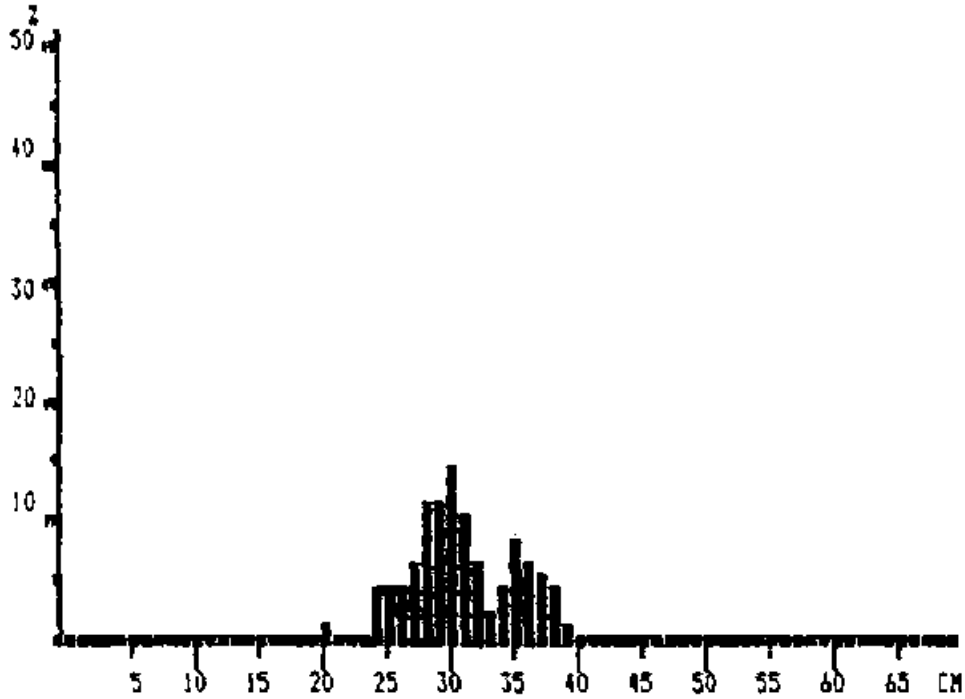
Pooled sample (simple adding)
MEAN LENGTH = 22.70cm N= 106
NUMBERS OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 551 AND 553.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Priacanthus arenatus - East of Cabo Cadera



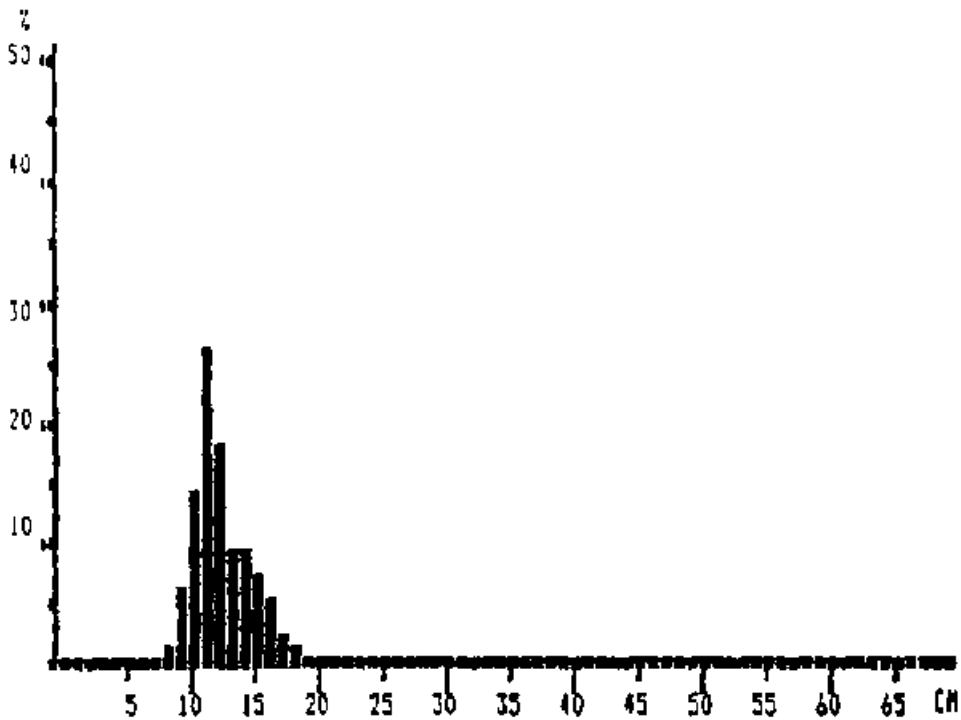
Pooled sample (simple adding)
MEAN LENGTH = 16.42cm N= 409
NUMBERS OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 519 AND 519.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Calamus pennatula - East of Cabo Cadera



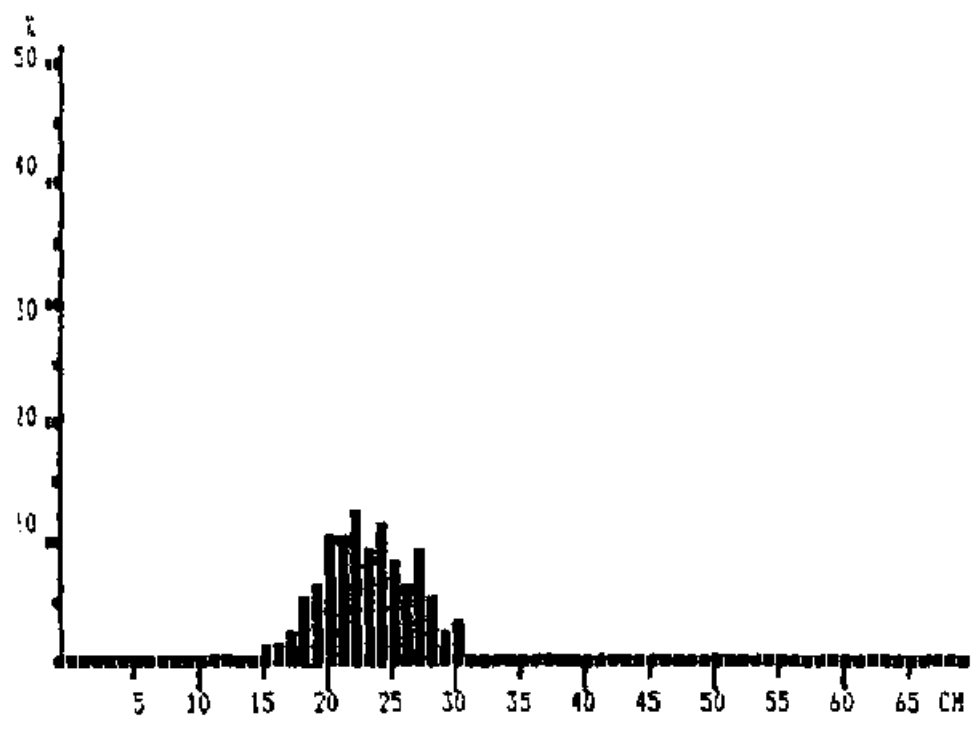
Pooled sample (simple adding)
MEAN LENGTH = 30.74cm N= 106
NUMBERS OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 504 AND 504.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Upeneus parvus - East of Cabo Cadera



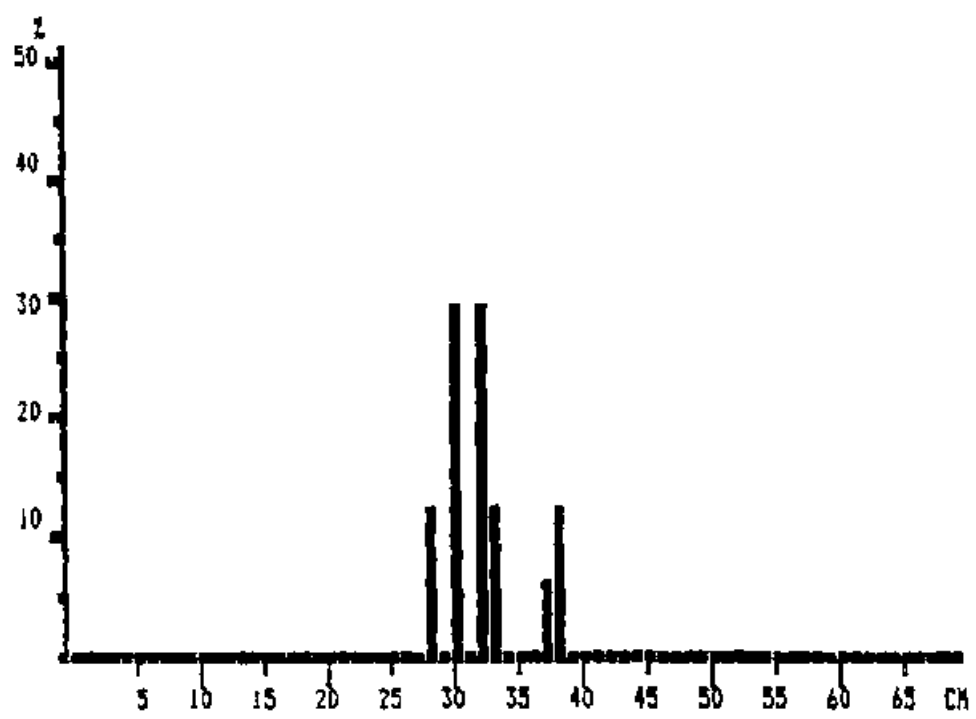
Pooled sample (simple adding)
MEAN LENGTH = 12.17cm N= 676
NUMBERS OF SUBSAMPLES: 7
SAMPLES FOUND BETWEEN ST. NO. 458 AND 502.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Arius spixii - East of Cabo Cadera



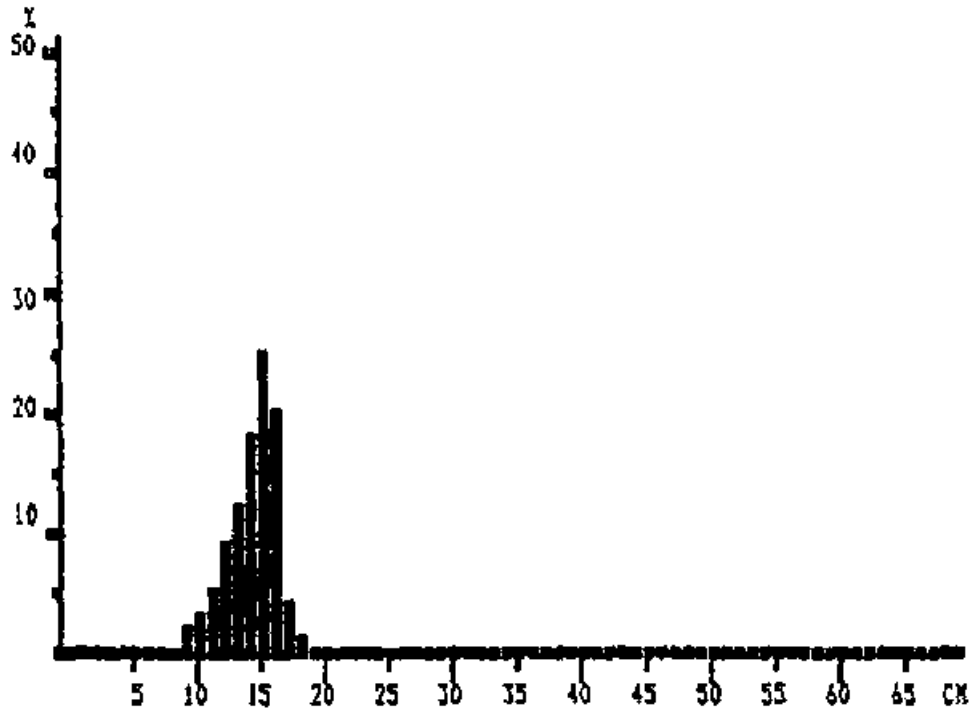
Pooled sample (simple adding)
 MEAN LENGTH = 22.99cm N= 176
 NUMBERS OF SUBSAMPLES: 2
 SAMPLES FOUND BETWEEN ST. NO. 485 AND 488.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Calamus pennatula - West of Cabo Cadera



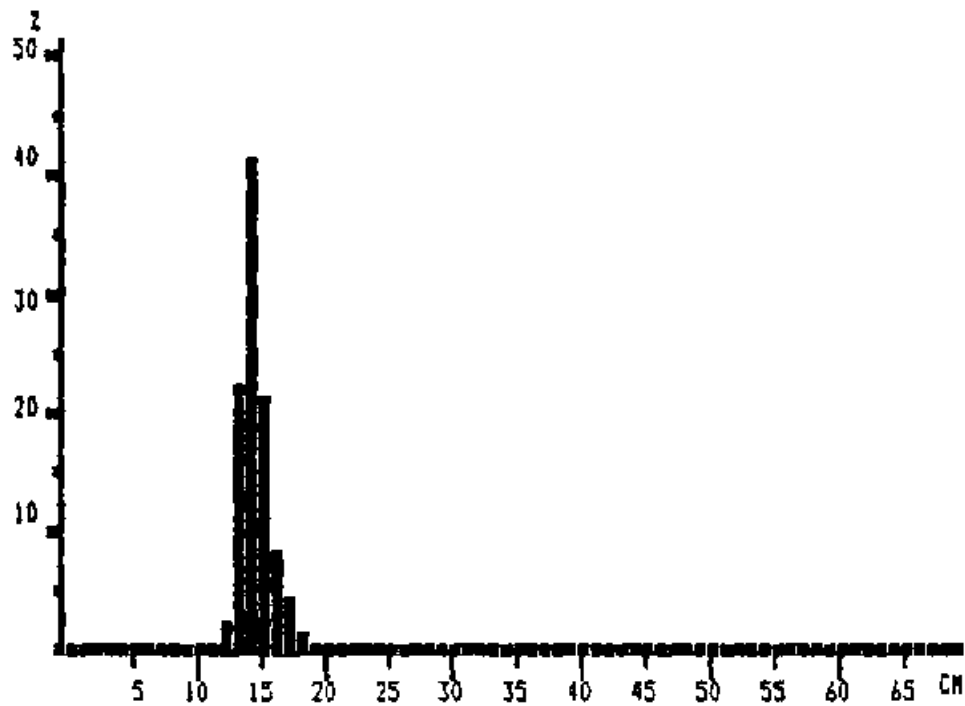
Pooled sample (simple adding)
 MEAN LENGTH = 32.06cm N= 17
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 519 AND 519.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Upeneus parvus - West of Cabo Cadera



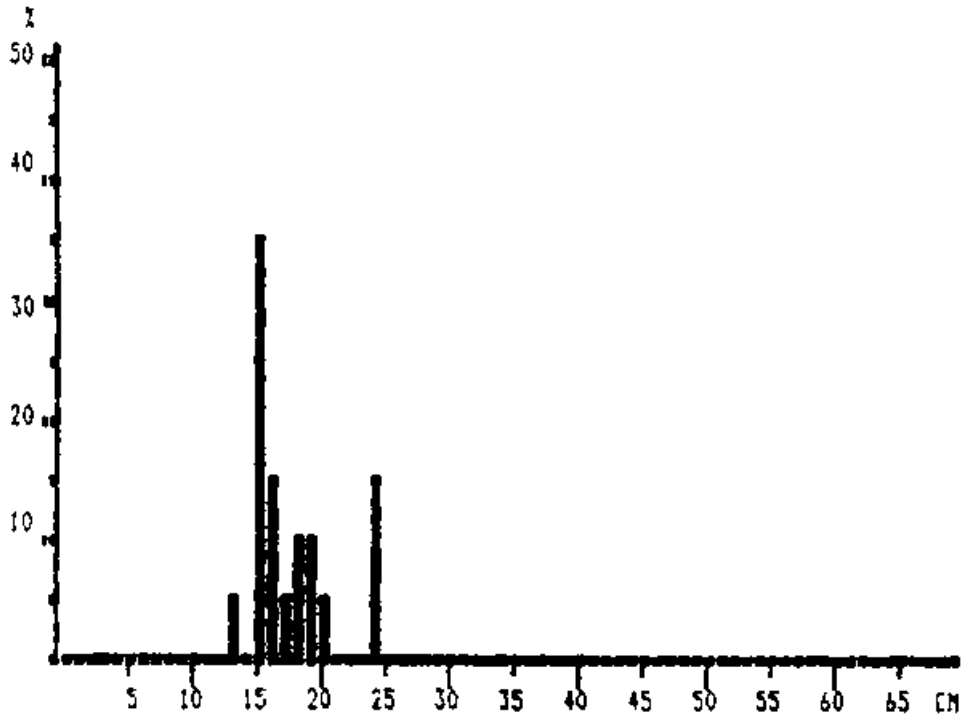
Pooled sample (simple adding)
MEAN LENGTH = 14.27cm N= 228
NUMBERS OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 515 AND 565.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Eucinostomus argenteus - West of Cabo Cadera



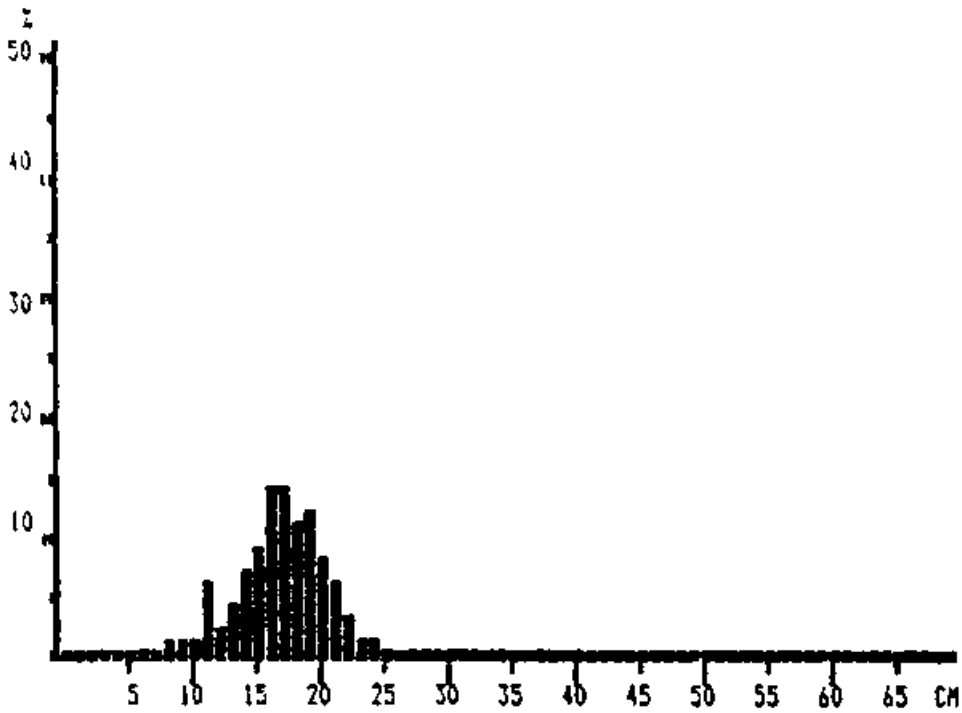
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MEAN LENGTH = 14.33cm N= 497
NUMBERS OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 515 AND 565.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Penaeus subtilis - East of Cabo Cadera



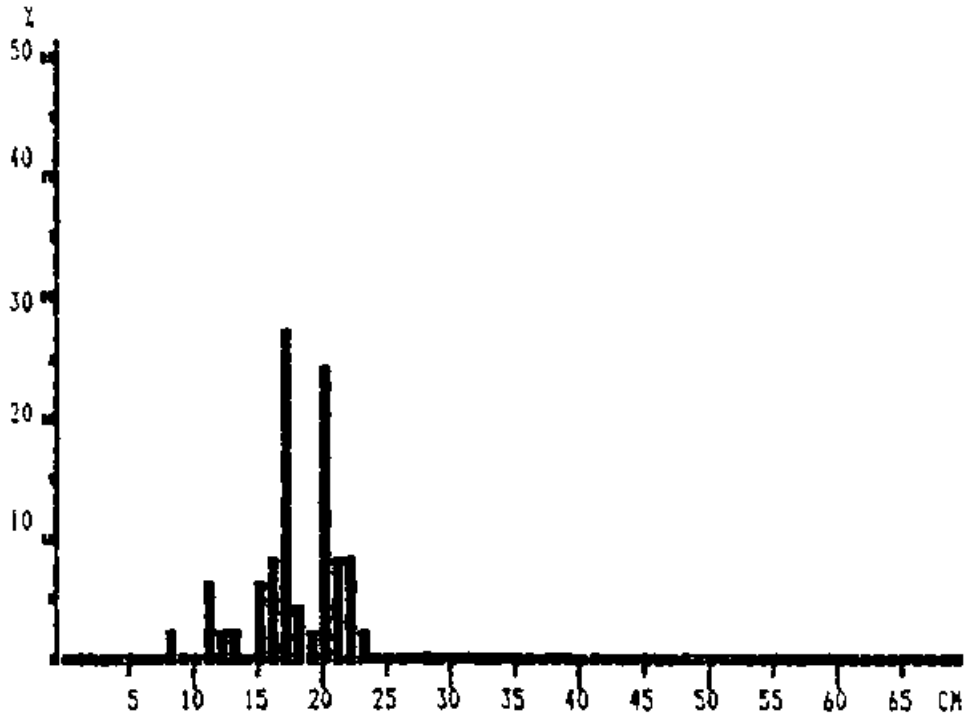
Pooled sample (simple adding)
 MEAN LENGTH = 17.45cm N= 20
 NUMBERS OF SUBSAMPLES: 1
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 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Penaeus brasiliensis - East of Cabo Cadera



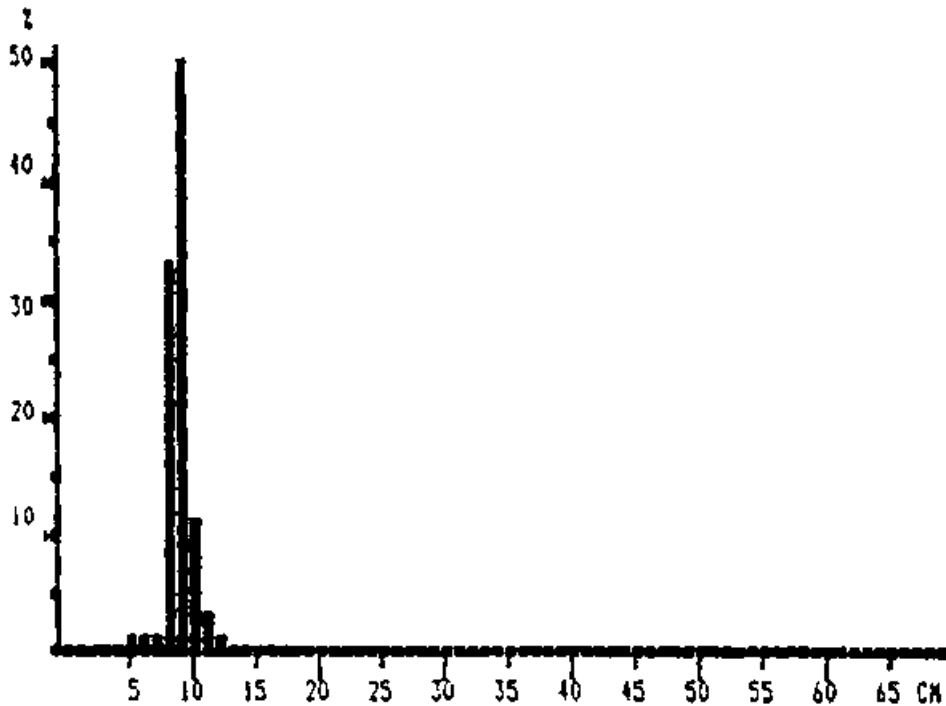
Pooled sample (simple adding)
 MEAN LENGTH = 16.77cm N= 154
 NUMBERS OF SUBSAMPLES: 5
 SAMPLES FOUND BETWEEN ST. NO. 466 AND 486.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Penaeus notialis - East of Cabo Cadera



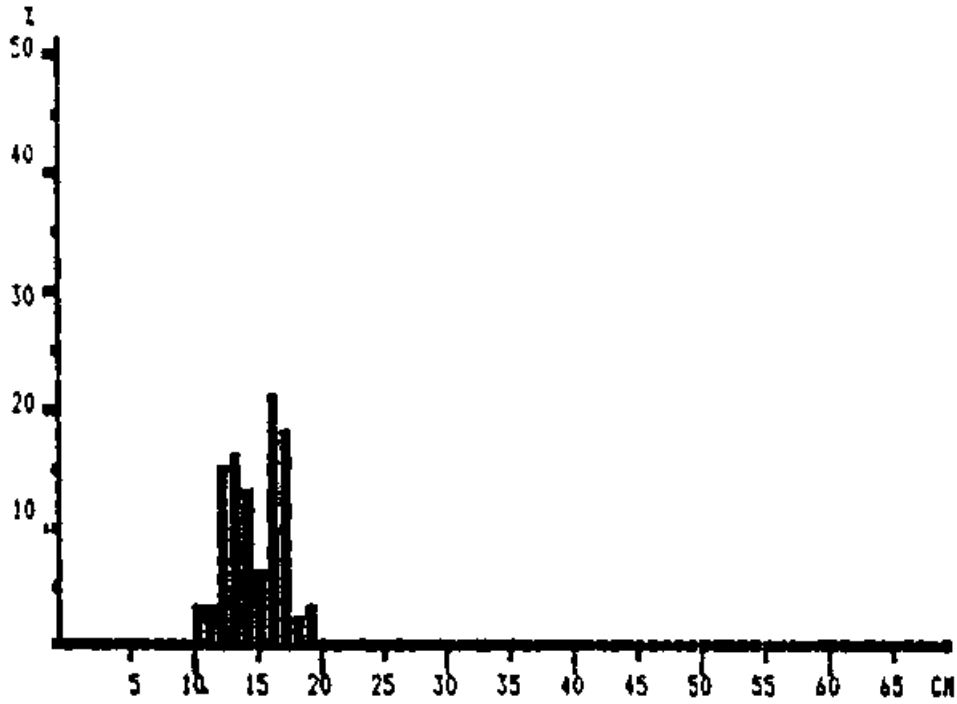
Pooled sample (simple adding)
 MEAN LENGTH = 17.71cm N= 51
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 484 AND 484.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Xiphopenaeus kroyeri - West of Cabo Cadera



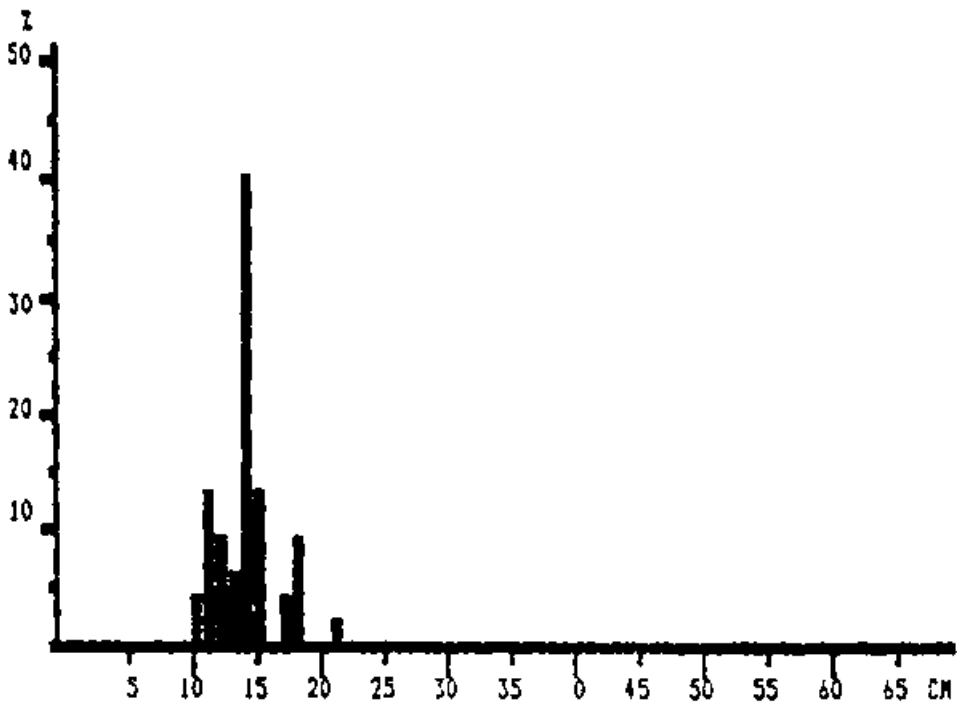
Pooled sample (simple adding)
 MEAN LENGTH = 8.77cm N= 228
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 543 AND 543.
 SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Penaeus brasiliensis - West of Cabo Cadera



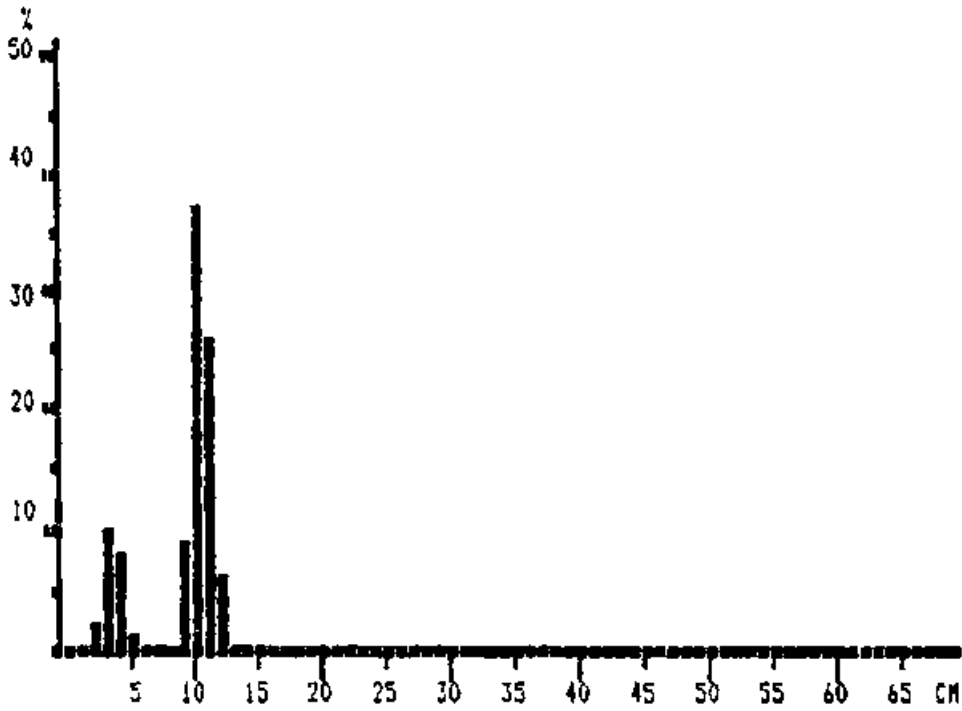
Pooled sample (simple adding)
MEAN LENGTH = 14.56cm N= 62
NUMBERS OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 548 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Penaeus notialis - West of Cabo Cadera



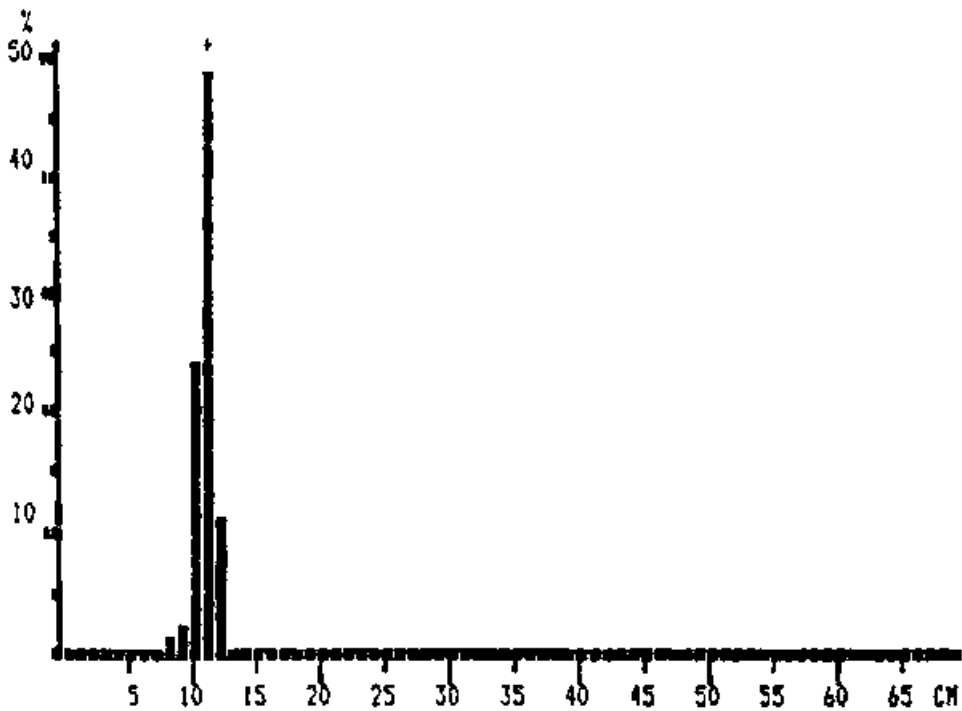
Pooled sample (simple adding)
MEAN LENGTH = 13.96cm N= 47
NUMBERS OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 538 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 510 AND 567.

Engraulis eurystole - TOTAL



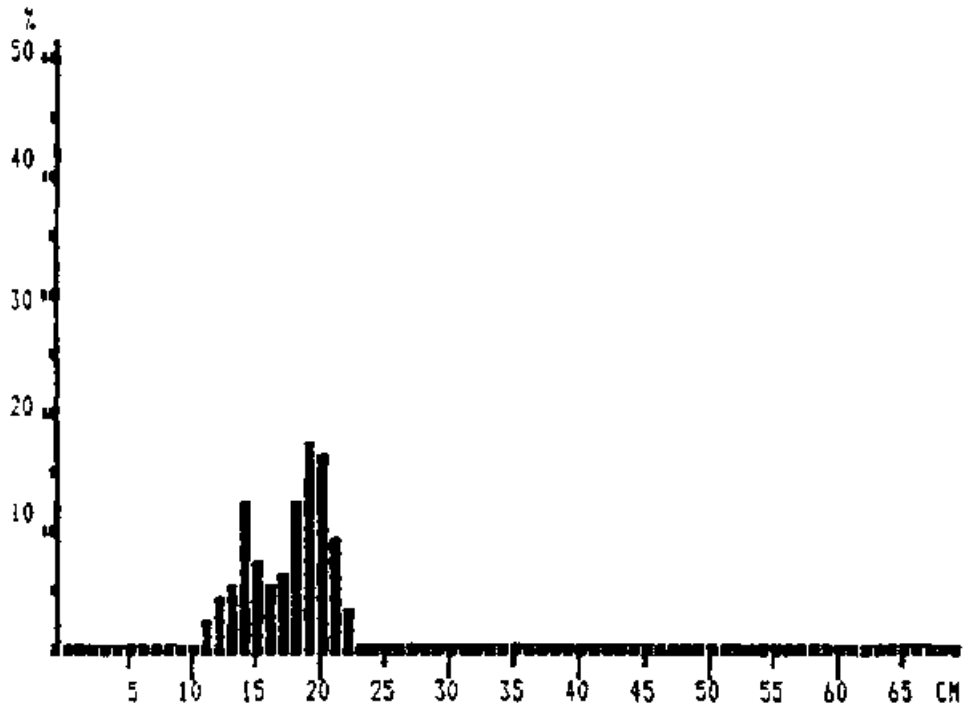
Pooled sample (simple adding)
 MEAN LENGTH = 8.83cm N= 509
 NUMBERS OF SUBSAMPLES: 4
 SAMPLES FOUND BETWEEN ST. NO. 489 AND 549.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Anchoa lyolepis - TOTAL



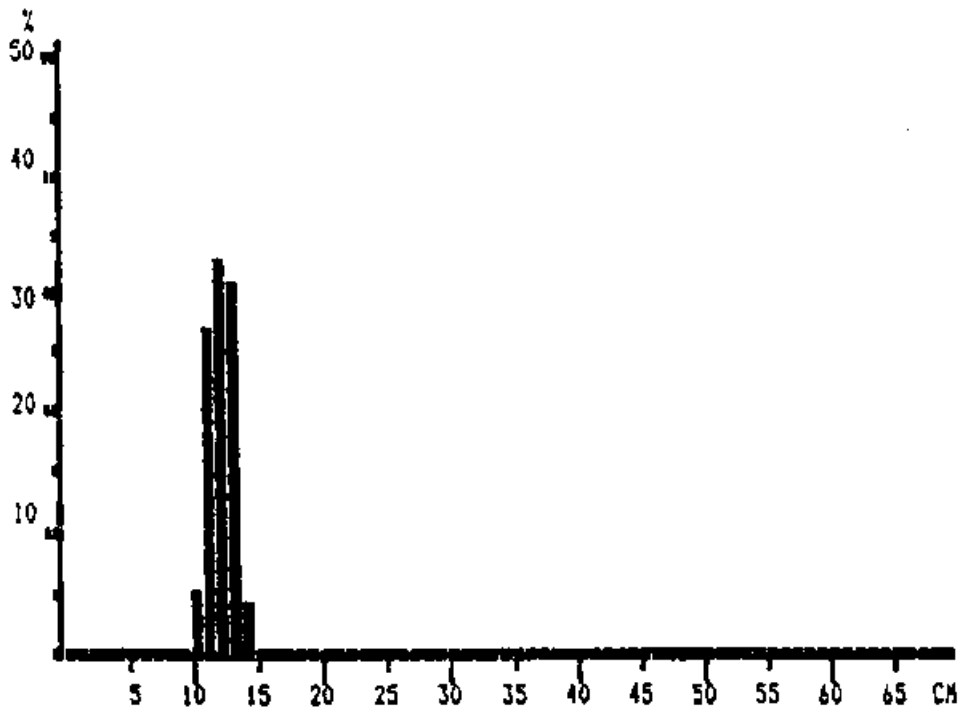
Pooled sample (simple adding)
 MEAN LENGTH = 10.77cm N= 244
 NUMBERS OF SUBSAMPLES: 3
 SAMPLES FOUND BETWEEN ST. NO. 494 AND 556.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Sardinella aurita - TOTAL



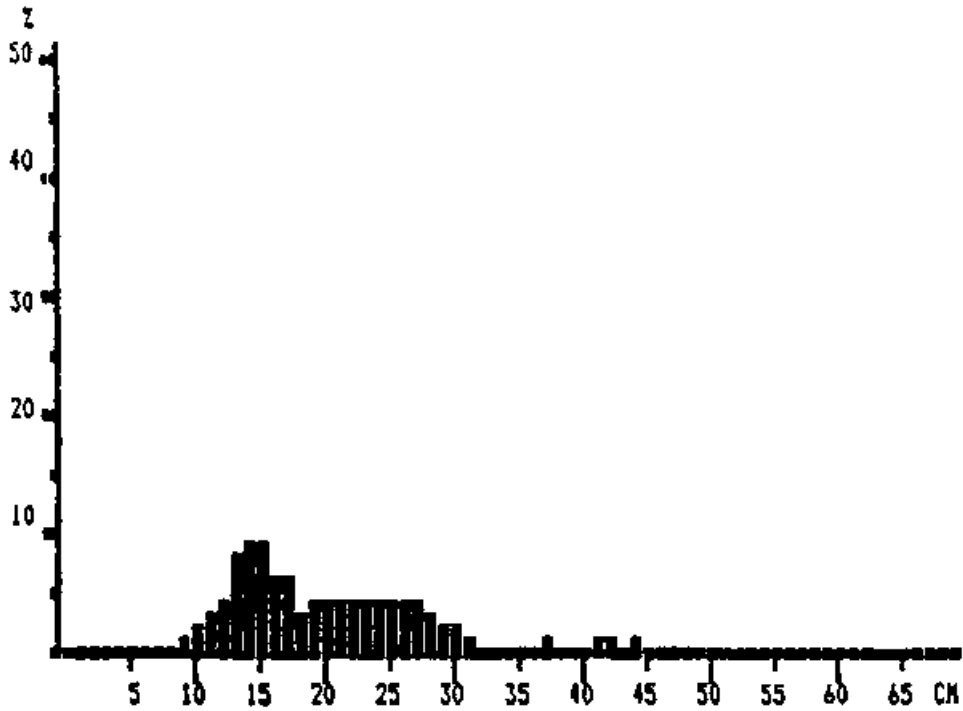
Pooled sample (simple adding)
MEAN LENGTH = 17.43cm N= 1217
NUMBERS OF SUBSAMPLES: 11
SAMPLES FOUND BETWEEN ST. NO. 464 AND 564.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Etrumeus teres - TOTAL



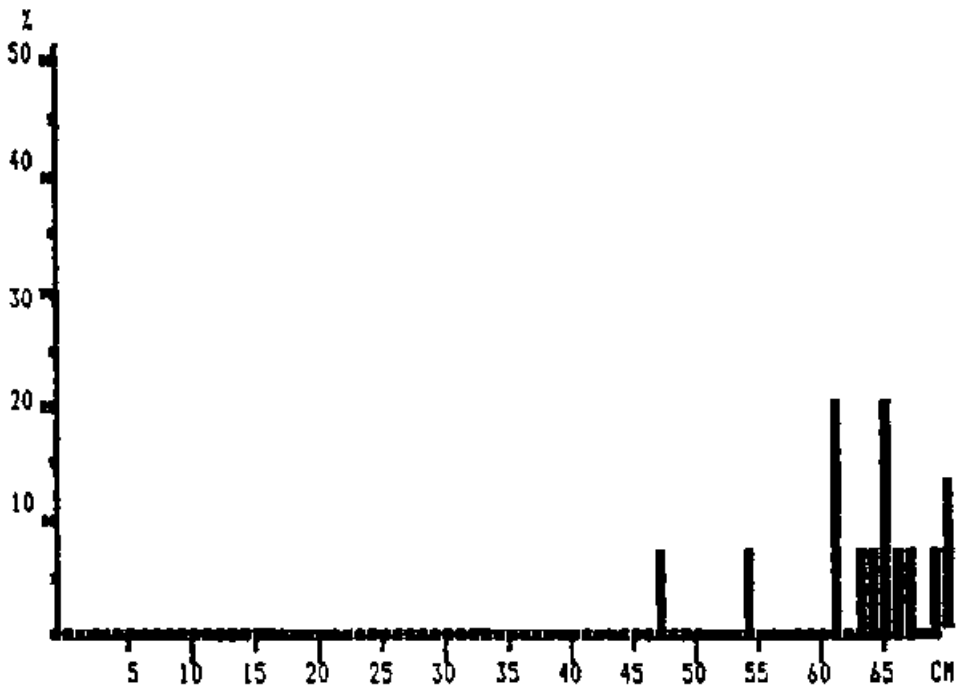
Pooled sample (simple adding)
MEAN LENGTH = 12.04cm N= 529
NUMBERS OF SUBSAMPLES: 4
SAMPLES FOUND BETWEEN ST. NO. 470 AND 489.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Rhomboplites aurorubens - TOTAL



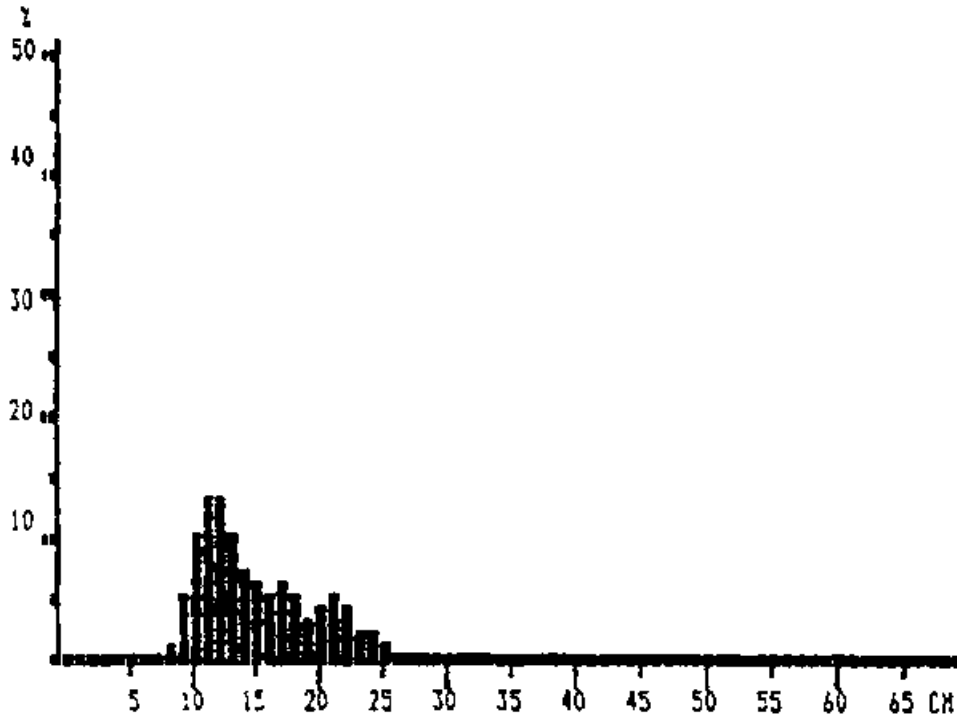
Pooled sample (simple adding)
 MEAN LENGTH = 19.78cm N= 931
 NUMBERS OF SUBSAMPLES: 16
 SAMPLES FOUND BETWEEN ST. NO. 460 AND 567.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Lutjanus apodus - TOTAL



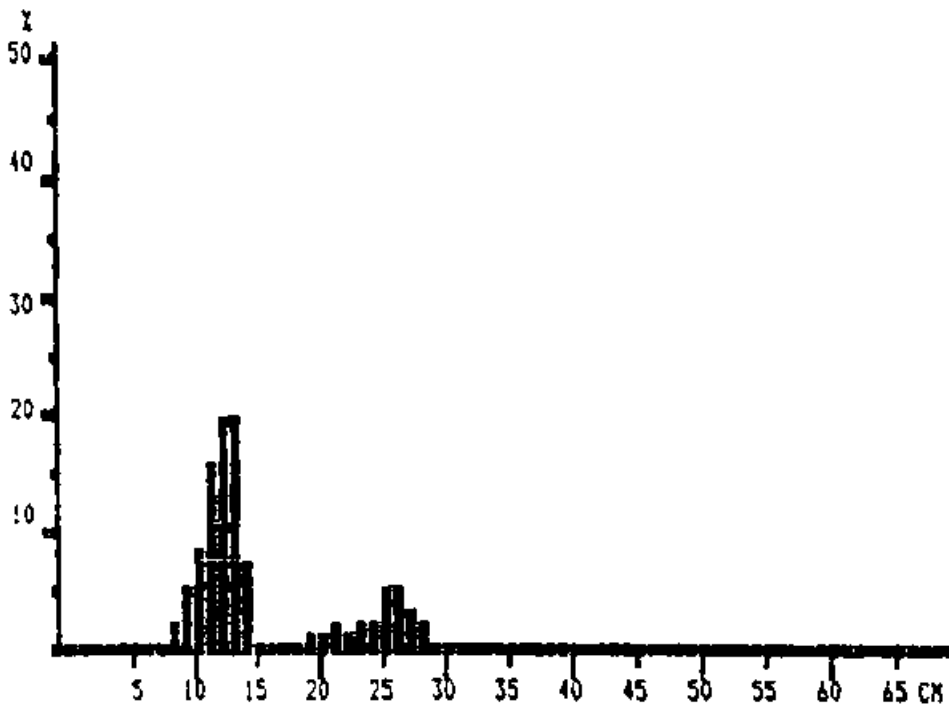
Pooled sample (simple adding)
 MEAN LENGTH = 63.20cm N= 15
 NUMBERS OF SUBSAMPLES: 1
 SAMPLES FOUND BETWEEN ST. NO. 509 AND 509.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 509.

Pristipomoides macrophthalmus - TOTAL



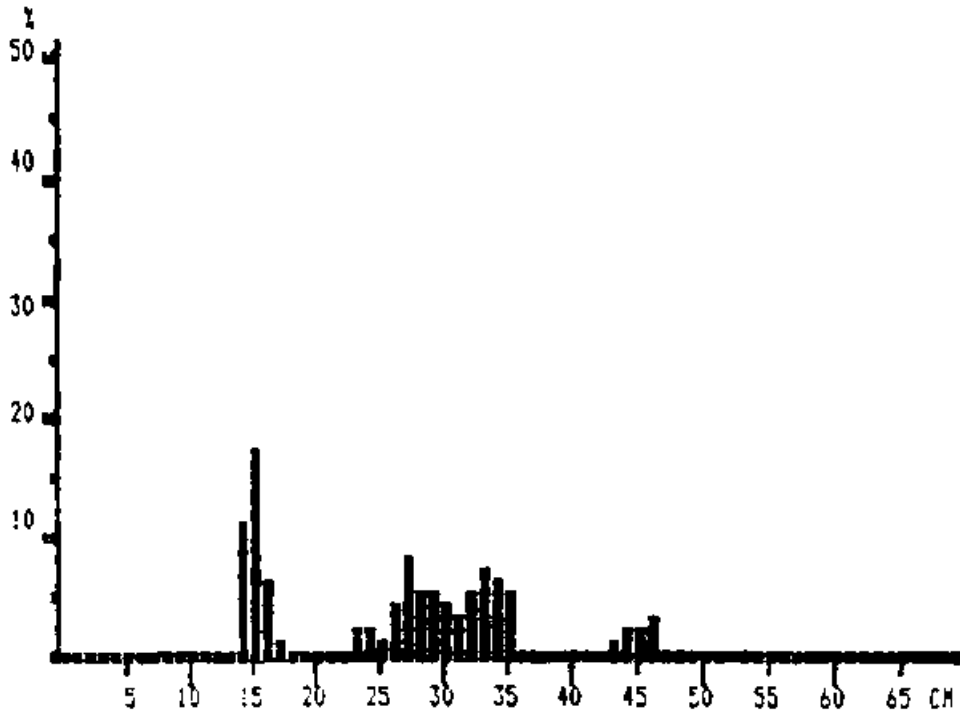
Pooled sample (simple adding)
MEAN LENGTH = 14.59cm N= 1016
NUMBERS OF SUBSAMPLES: 14
SAMPLES FOUND BETWEEN ST. NO. 458 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Trachurus lathami - TOTAL



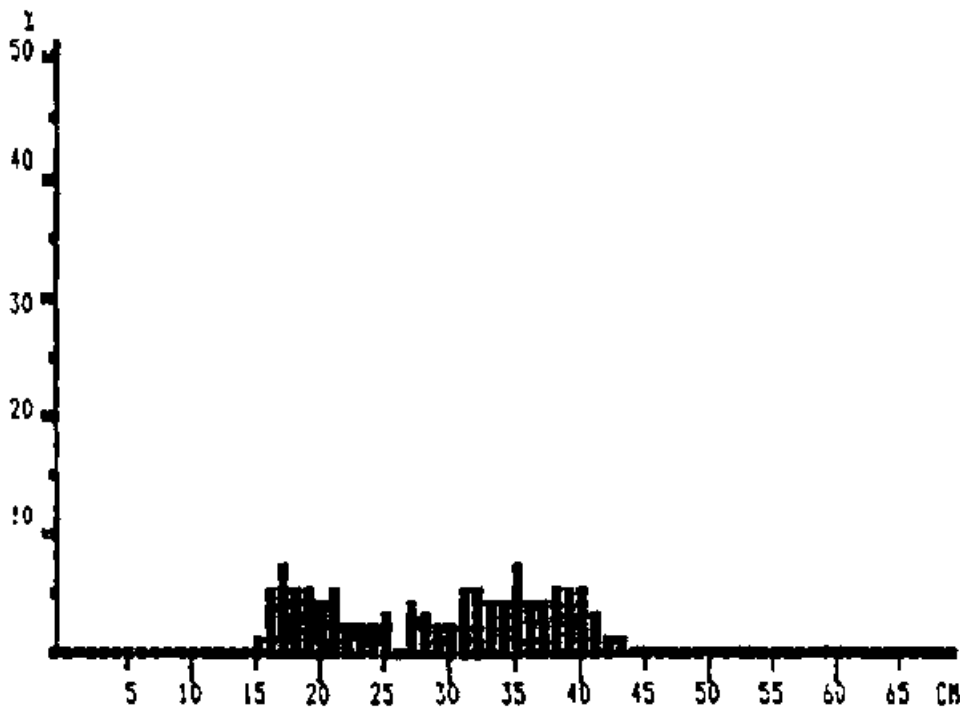
Pooled sample (simple adding)
MEAN LENGTH = 14.93cm N= 1611
NUMBERS OF SUBSAMPLES: 19
SAMPLES FOUND BETWEEN ST. NO. 458 AND 562.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Selene spixii - TOTAL



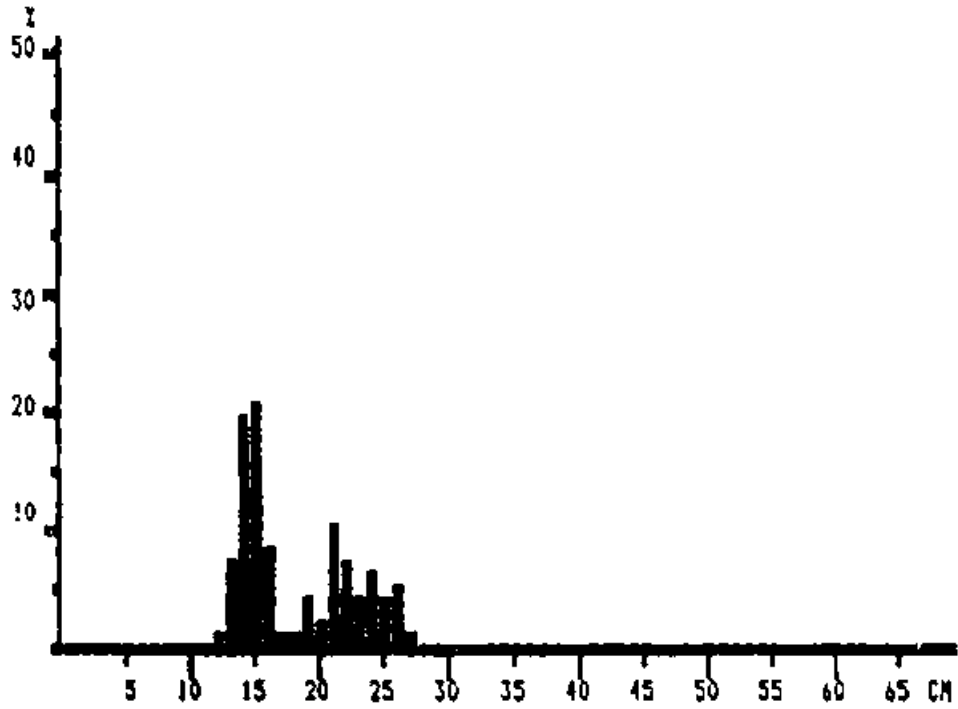
Pooled sample (simple adding)
 MEAN LENGTH = 25.97cm N= 123
 NUMBERS OF SUBSAMPLES: 5
 SAMPLES FOUND BETWEEN ST. NO. 455 AND 553.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Micropogonias furnieri - TOTAL



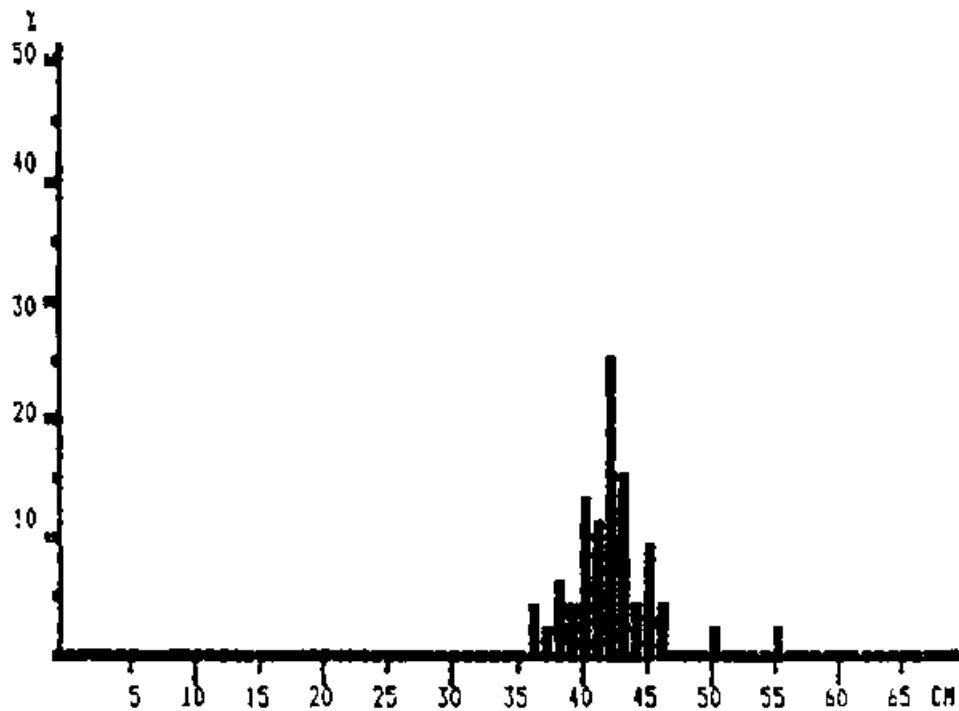
Pooled sample (simple adding)
 MEAN LENGTH = 28.97cm N= 306
 NUMBERS OF SUBSAMPLES: 12
 SAMPLES FOUND BETWEEN ST. NO. 488 AND 558.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Scomber japonicus - TOTAL



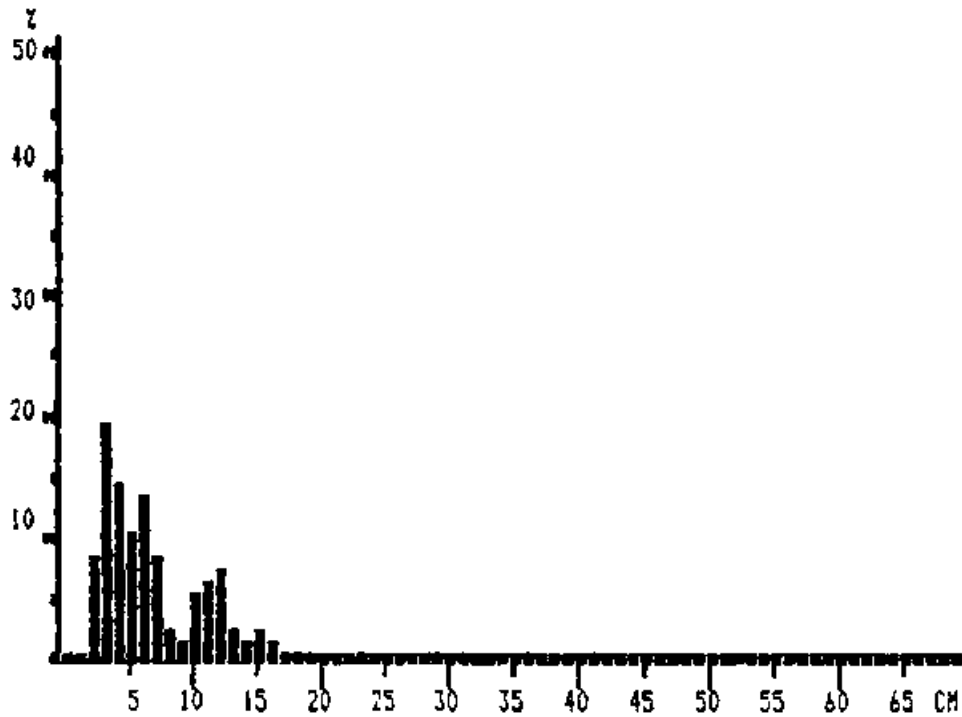
Pooled sample (simple adding)
MEAN LENGTH = 18.03cm N= 374
NUMBERS OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 469 AND 537.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Scomberomorus cavalla - TOTAL



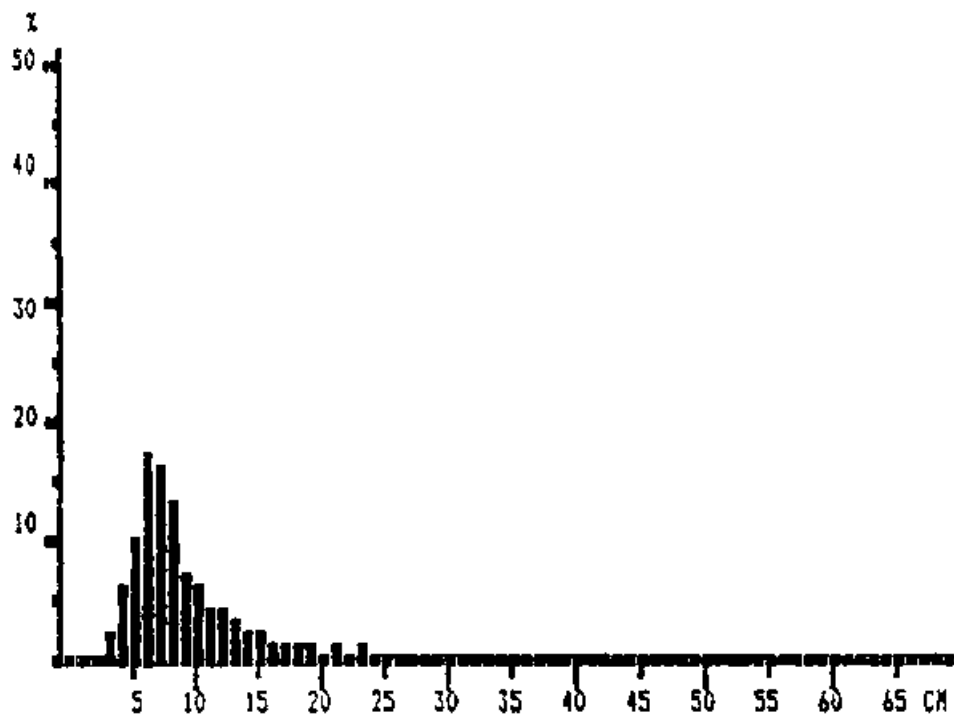
Pooled sample (simple adding)
MEAN LENGTH = 42.02cm N= 53
NUMBERS OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 485 AND 560.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Loligo paelei - TOTAL



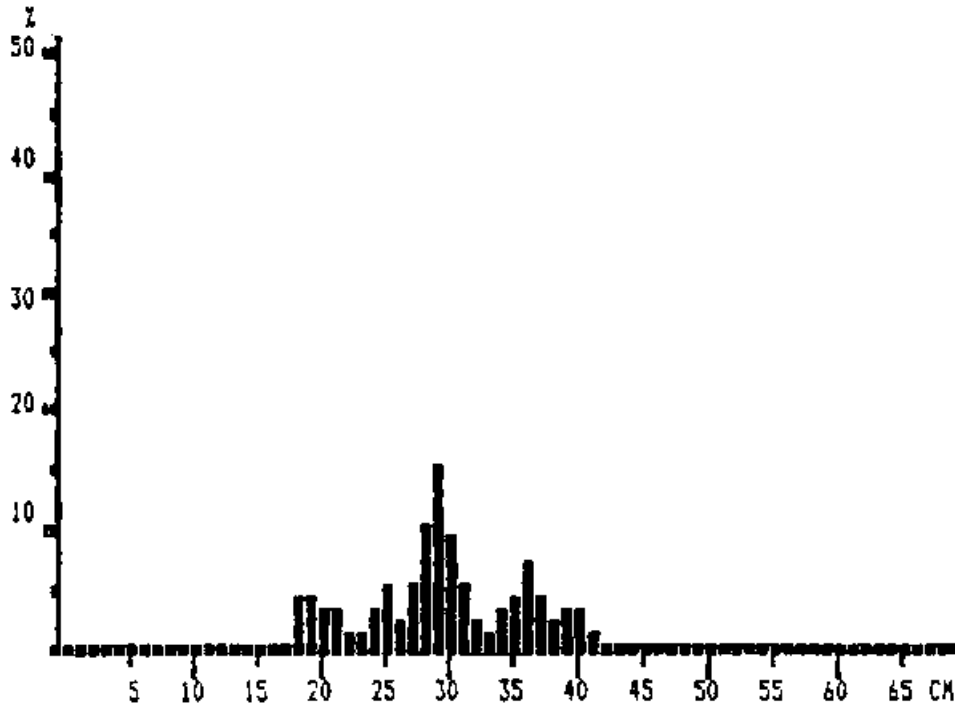
Pooled sample (simple adding)
MEAN LENGTH = 6.37cm N= 256
NUMBERS OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 492 AND 535.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Loligo plei - TOTAL



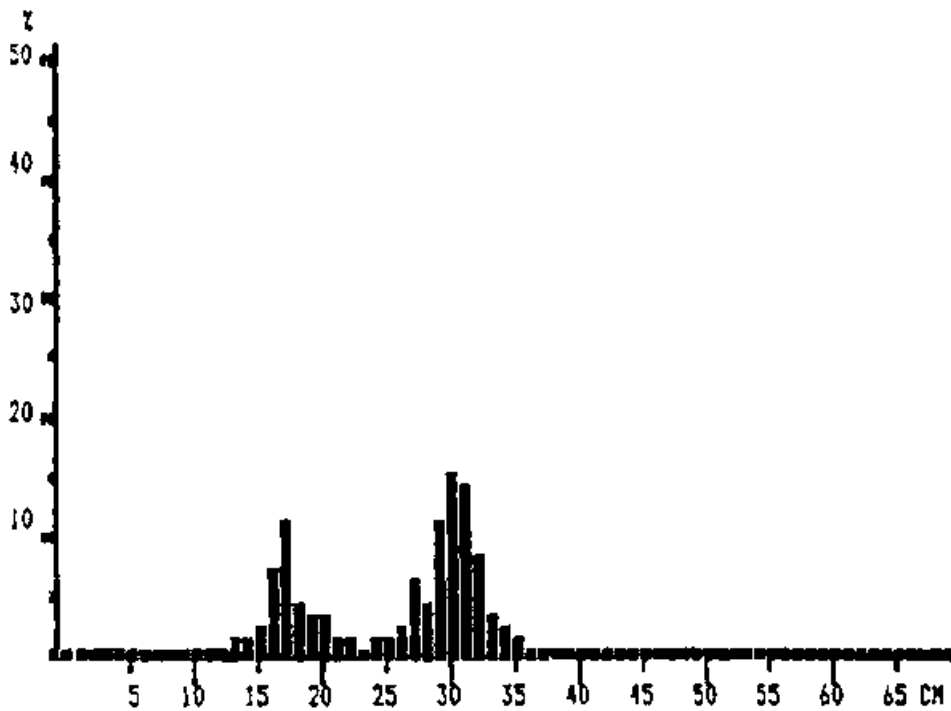
Pooled sample (simple adding)
MEAN LENGTH = 8.64cm N= 1572
NUMBERS OF SUBSAMPLES: 17
SAMPLES FOUND BETWEEN ST. NO. 462 AND 560.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Sphyraena picudilla - TOTAL



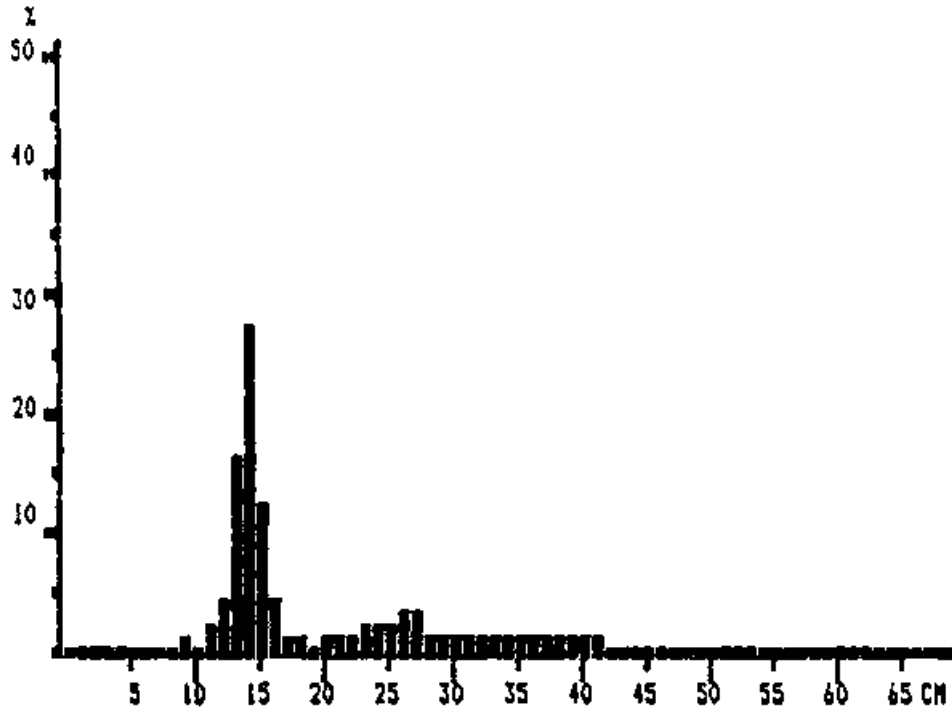
Pooled sample (simple adding)
MEAN LENGTH = 29.41cm N= 313
NUMBERS OF SUBSAMPLES: 6
SAMPLES FOUND BETWEEN ST. NO. 485 AND 562.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Peprilus paru - TOTAL



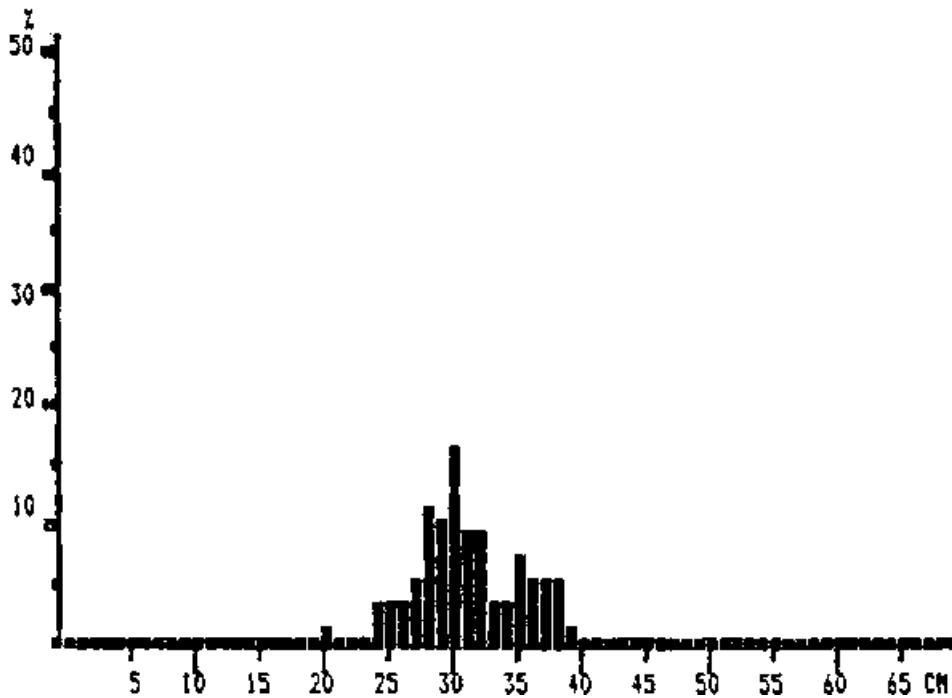
Pooled sample (simple adding)
MEAN LENGTH = 25.84cm N= 178
NUMBERS OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 455 AND 553.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Priacanthus arenatus - TOTAL



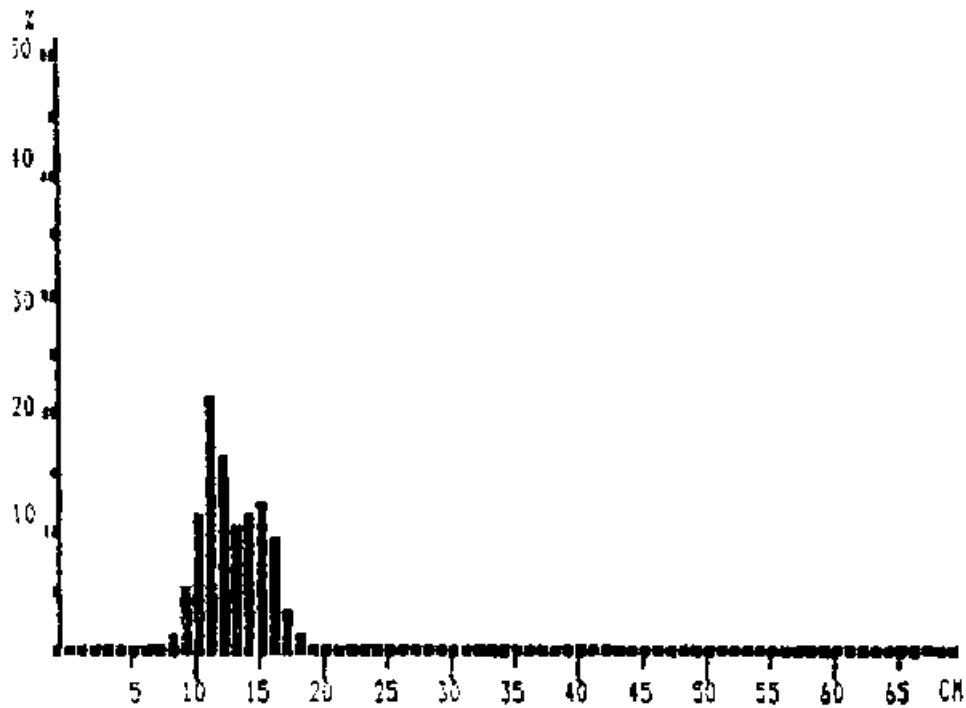
Pooled sample (simple adding)
 MEAN LENGTH = 18.85cm N= 538
 NUMBERS OF SUBSAMPLES: 8
 SAMPLES FOUND BETWEEN ST. NO. 492 AND 463.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Calamus pennatula - TOTAL



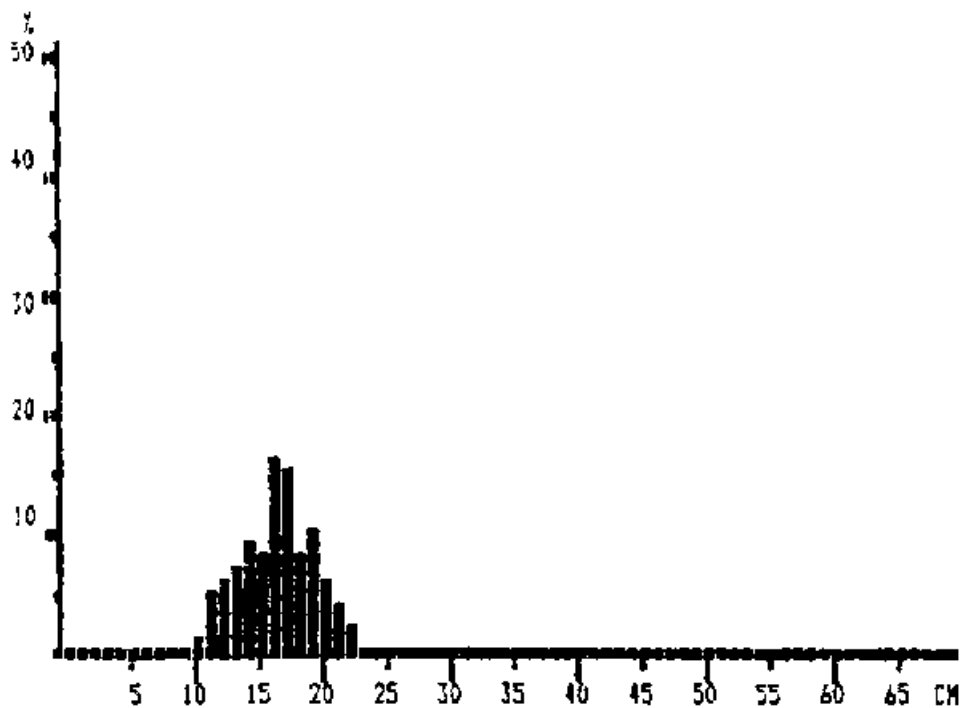
Pooled sample (simple adding)
 MEAN LENGTH = 30.92cm N= 123
 NUMBERS OF SUBSAMPLES: 2
 SAMPLES FOUND BETWEEN ST. NO. 504 AND 519.
 SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Upeneus parvus - TOTAL



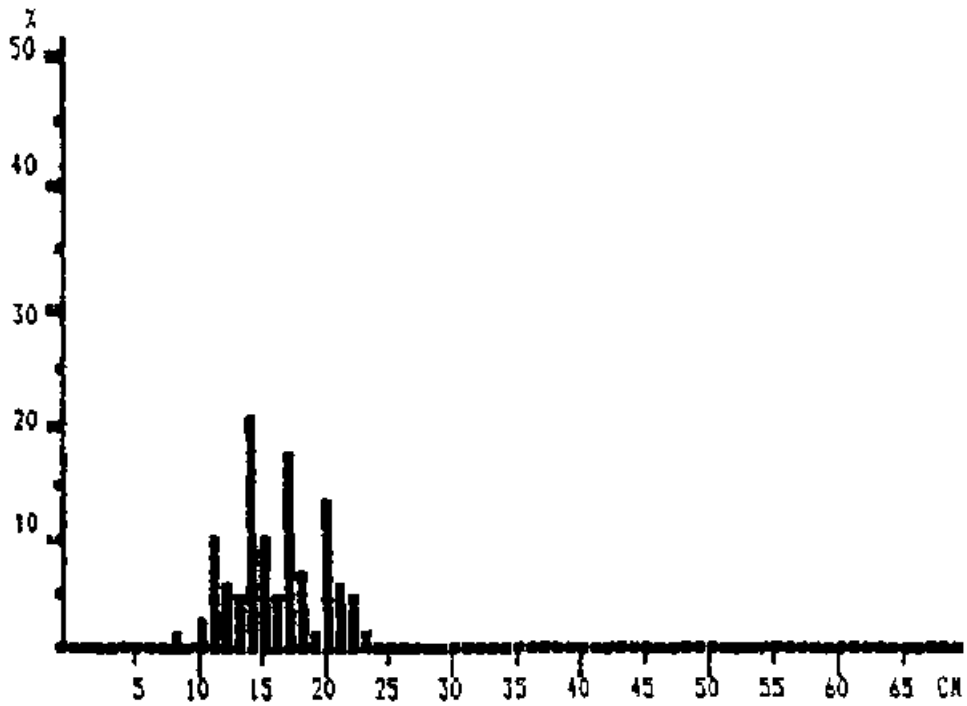
Pooled sample (simple adding)
MEAN LENGTH = 12.70cm N= 904
NUMBERS OF SUBSAMPLES: 10
SAMPLES FOUND BETWEEN ST. NO. 458 AND 565.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Penaeus brasiliensis - TOTAL



Pooled sample (simple adding)
MEAN LENGTH = 16.14cm N= 216
NUMBERS OF SUBSAMPLES: 7
SAMPLES FOUND BETWEEN ST. NO. 466 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Penaeus notialis - TOTAL



Pooled sample (simple adding)
MEAN LENGTH = 15.91cm N= 98
NUMBERS OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 484 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 455 AND 567.

Preliminary Report Cruise No II. - Surveys of the Fish Resources in the Shelf Region between Colombia and Suriname - Part 4: Colombia from the Guajira Peninsula to The Coast off Cartagena. 14 - 21 June 1988.

CRUISE REPORTS "DR FRIDTJOF NANSEN"

NORAD - FAO/UNDP GLO 82/001

IMR, Bergen

The research programme SURVEYS OF THE FISH RESOURCES IN THE SHELF REGION FROM COLOMBIA TO SURINAME is sponsored by The Norwegian Agency for Development Assistance NORAD, The Food and Agriculture Organization of the United Nations FAO, and the United Nations Development Programme UNDP. The programme is being planned jointly by the participating countries, FAO's Department of Fisheries and the Institute of Marine Research, Norway. Its execution is the responsibility of the Institute of Marine Research in cooperation with FAO and national fisheries administrations.

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

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1. Introduction

Survey objectives.

The general objectives of the programme as discussed and agreed at the planning meeting in Trinidad, 12-14 January are summarized in the Preliminary Report of Cruise No. I, Part I. In the following the objectives for Survey II are further clarified and amended on the basis of experience from Survey I and from discussions with representatives from the participating countries. Due to unforeseen problems with the vessels maintenance in the repair yard in Curacao the start of Survey II had to be postponed and although the cruise was prolonged, the cruise time had to be cut by 5 days compared with the original plan. During Survey I a fault in the hydraulic system resulted in that no trawling were carried out after passing the Peninsula of Guajira until Santa Marta. It was therefore agreed that the fishing should be intensified in the second coverage of this area. Under these circumstances it was realized that the coverage of the Colombian shelf could not be complete. It was agreed that priority should be given to the investigation of the shelf area east of Santa Marta, and that the programme should be extended westward so far as time permitted. The Colombian participants should however be consulted about details of the programme.

Participation.

The following scientific staff participated from Colombia:

- From Punto Fijo to Santa Marta: Jorge Mercado, Jorge Infante, Carlos Guerrero.

From Venezuela the following participated from Punto Fijo to Santa Marta:

- Diana Zaera, Luisa Franco, Wilmer Rojas

From FAO:

- Alvaro Abella.

From IMR the staff was:

- J. Hamre, H. Ullebust, M. Dahl, and H. Vorren.

2. Narrative

The vessels itinerary was as follows:

- Departure Punto Fijo: 14 June
- Arrival Santa Marta: 21 June

Figure 1 shows the course tracks and the fishing - and hydrographical stations worked. From departure Punto Fijo the work started with a coverage of the mouth of the Gulf of Venezuela, both the Venezuelan and Colombian side. This part of the activities are reported in Cruise Report II, Part 3. The hydrographical profile off the Peninsula Guajira northwards was repeated and two new sections were worked, one off Riohacha and another off the Rosario Island. The cruise ended in the shelf area of Golfo de Morrosquillo. The bottom trawl stations worked during daytime form the basic data for swept area biomass estimation. Course tracks and section work were therefore adjusted so that most of the prepositioned trawl stations could be worked in day hours. Trawling fore deep sea shrimps at depth from 200m downwards was planed in various areas and 6 hauls were made. Several hours of searching for acceptable bottom conditions was spent on the slope without successful result, specially between Santa Marta and Cartagena. In the shelf area beyond Cartagena muddy and coraline bottom did hamper the station work considerably. 40 trawl stations were worked and 900 nm steemed.

3. Hydrography

Figure 2 shows the hydrographical sections off the Peninsula of Guajira, off Riohacha and off the Rosario Island. The profile off Guajira shows evidence of a light upwelling, whereas the isolines of the Riohacha section show no sign of vertical movements of the water masses. In the Rosario section the hydrographical situation is characterized by an upper layer of light water inshore with low salinity and high temperature, probably effected by the discharge from the Magdalena river.

4. Fish distribution

Figure 3 illustrates the distribution of all fish as observed with the acoustic integration system. This will mainly show the pelagic species, but some demersal fish which lifts off the bottom, especially at night, will also be included. The units of acoustic reflection is $0.1 \times \text{m}^2/\text{nm}^2$ reflecting surface. This unit is not directly proportional to fish density, since small sized fish gives a higher acoustic reflection per unit weight than bigger fish, but in gross terms the figures give a fair picture of the main distributional features of the pelagic fish in the area. An arbitrary scale has been used to illustrate different levels of concentration. The acoustic data will later be used for biomass estimates.

On the basis of the bottom trawl samples, the acoustic registrations around the Guajira Peninsula were identified as sardines, various species of carangids and mackerels. The resources were not substantial, and formed more occasional patches than uniform aggregations of greater extent. Further west the acoustic registrations were scarce, with no patches exceeding a very scattered general picture.

5. Results of fishing experiments

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 and with no intention of obtaining high catches. The catch rates thus do not simulate those of a commercial fishery, and they are presented here merely to give a rough impression of the general occurrence, composition and abundance of fish on the shelf. The results may thus not be comparable to catch rates from previous fishing surveys. The data from the prepositioned trawl hauls will later be used for estimates of biomass of groups of demersal species.

The bottom trawl used is a shrimp-cum-fish trawl (see Annex 1) and it may not be as efficient for shrimp as specially designed shrimp-trawls.

Table 1 shows all hauls carried out on the shelf from the Guajira Peninsula to Santa Marta, and grouped according to main categories. The demersal group comprises the families Lutjanidae (snappers), Serranidae (groupers), Sciaenidae (croakers), Priacanthidae (glasseyes) and Pomadasidae (grunts). Pelagic group includes Clupeidae (sardines), Carangidae, Scombridae, Sphyraenidae (barracuda) and Trichiuridae (hairtails). The average catch of demersals is abt. 76 kg/hour, while pelagic fish is 174 kg/hour. Squids and shrimps are scarce in shallow waters, but in the hauls below 200m depth the catch rates of shrimps range from 6 kg/hour to 26 kg/hour. Other fish, generally with a low market value, is at average caught at 72 kg/hour. The total mean catch rate was abt. 335 kg/hour, which is some 50% above the catch rate obtained on the western part of the Venezuela coast. The catch composition by family groups is shown in Table 2 and 3 for demersal and pelagic fish respectively. Demersals are dominated by snappers, the pelagic by sardines and carangids. Anchovies are absent. This family composition is mostly the same as that found in the catches off the Venezuela west coast.

Table 1. COLOMBIA, EASTERN PART. Catch rates for main groups in bottom trawl stations standardized to kg/hour.

ST. NO.	DEP.	Pelagic	Demersal	Shark	Squid	Shrimp	Other
568	453	6.00			1.20	26.50	66.60
569	67	32.20	134.60		0.60		25.40
570	24	86.30	2.00				1.80
571	70	77.00	91.00		2.60		18.00
572	66	188.10	270.90	28.00	14.40		9.90
573	164	5.20	20.40	26.00	7.60		44.40
574	44	24.90	114.08	3.00	9.00	0.14	17.62
575	59	235.90	146.50		1.40		65.80
576	255	3.90	1.80	1.20	0.60	25.20	101.40
577	252	5.60	18.60	4.40	6.00	12.60	79.00
578	309	16.40		58.80	3.20	6.10	60.40
579	404	21.82				15.71	238.34
580	70	80.74	140.74	2.40			83.31
581	45	1510.20	47.60				51.20
582	67	172.00	285.40			5.00	27.00
583	36	232.50	25.20		10.00		54.70
584	71	286.40	110.44				154.00
585	33	1.00	15.00				86.30
586	62	423.40	113.80				32.60
587	23	32.80	6.40				152.20
588	22	722.80	79.60	6.40			156.20
589	69	8.80	168.40		1.80		222.40
590	61	185.00	31.00				36.00
591	110	2.61	51.92				16.30
592	100	0.20	33.40		2.40		22.50
MEAN		174.47	76.35	5.21	2.43	3.65	72.93

Table 2. COLOMBIA, EASTERN PART. Catch rates by families for demersal fish, kg/hour.

ST. NO.	DEP.	Croakers	Snappers	Grunts	Groupers	Glasseyes	Other
569	67		84.60		44.00	18.00	46.20
570	24		2.00				88.10
571	70		87.80			4.80	96.00
572	66	270.00	0.90				240.40
573	164	0.80	18.80		0.80		83.20
574	44		105.94	3.90	0.14	0.44	58.32
575	59		94.90	32.20	18.00	12.60	291.90
580	70		81.08	58.63	56.57		110.91
581	45		47.60			10.00	1551.40
582	67		214.00	10.00	43.40		222.00
583	36		20.70		1.00	2.00	298.70
584	71		64.64	94.40	18.60		373.20
585	33		2.00			4.20	96.10
586	62		94.60				475.20
587	23		0.40		0.40	1.20	189.40
588	22		70.00				895.00
589	69		157.20	180.00			64.20
590	61		31.00			15.00	206.00
591	110		48.01				22.82
592	100		33.40	0.10		2.30	22.70
MEAN		13.54	62.98	18.96	9.15	3.53	271.59

Table 3. COLOMBIA, EASTERN PART. Catch rates by families of pelagic fish in bottom trawl hauls, kg/hour.

ST. NO.	DEP.	Sardines	Hairtails	Carangids	Scombrids	Barracuda	Other
569	67	4.40	1.80	16.40	14.00		160.60
570	24			80.60	1.30		3.80
571	70	1.40	6.00	53.60	15.20	0.80	111.60
572	66		16.20	171.00		0.90	323.20
573	164		5.20				98.40
574	44	4.20		13.20	6.60	0.90	143.84
575	59	112.00		60.20	0.70	63.00	213.70
580	70	19.54		57.09	4.11		226.45
581	45	1282.60		227.60			98.80
582	67	66.00		102.00	4.00		317.40
583	36	156.00		70.50	6.00		89.90
584	71	88.00		198.40			264.44
585	33					1.00	101.30
586	62	244.80		178.60			146.40
587	23	11.60		5.20	16.00		158.60
588	22	720.00			2.80		242.20
589	69			8.80			392.60
590	61	21.00		148.50	6.50	9.00	67.00
591	110		2.61				68.22
592	100			0.20			58.30
MEAN		136.58	1.59	69.59	3.86	3.78	164.34

Table 4 summarizes the catch rates by broad groups for the shelf area between Santa Marta and Golfo de Morrosquillo. The total mean catch rate is 75 kg/hour only, and seen in light of the general hydrographical condition of the area (Fig. 2c) the result of the fishing experiments confirms that this is a region of very low production.

The complete record of all hauls made are shown in Annex II, and pooled length samples of the most common species caught are shown in Annex III.

Table 4. COLOMBIA, WESTERN PART. Catch rates for main groups in bottom trawl stations standardized to kg/hour.

ST. NO.	DEP.	Pelagic	Demersal	Shark	Squid	Shrimp	Other
593	97	4.20	57.80		1.80	9.60	25.90
594	240	0.39	46.96	1.95		1.30	15.25
595	44	6.70	6.60			1.20	24.00
596	101	2.20	24.40		1.20	1.40	8.40
597	30		0.30		0.20		5.30
598	46	12.00	42.90	3.00			15.40
599	35	1.00	65.70		0.20		21.60
600	51	136.84	45.00		2.10	0.48	51.10
601	170	3.18	31.41	2.47	6.00	0.35	12.54
602	64	10.50	24.10	6.80	12.40		20.10
603	39	3.00	0.60		1.20	2.40	7.20
604	71	8.40	4.70	15.20	4.40	0.10	12.30
605	58	6.00	24.00		6.00		28.00
606	80	3.50	15.50	1.40	5.60	0.80	11.20
607	28	10.60	7.20				26.00
608	22	0.23	29.53				29.08
MEAN		13.05	26.67	1.93	2.57	1.10	19.59

Done in Santa Marta
21 June 1988

Figure 1. Course tracks, fishing stations and hydrographic profiles.

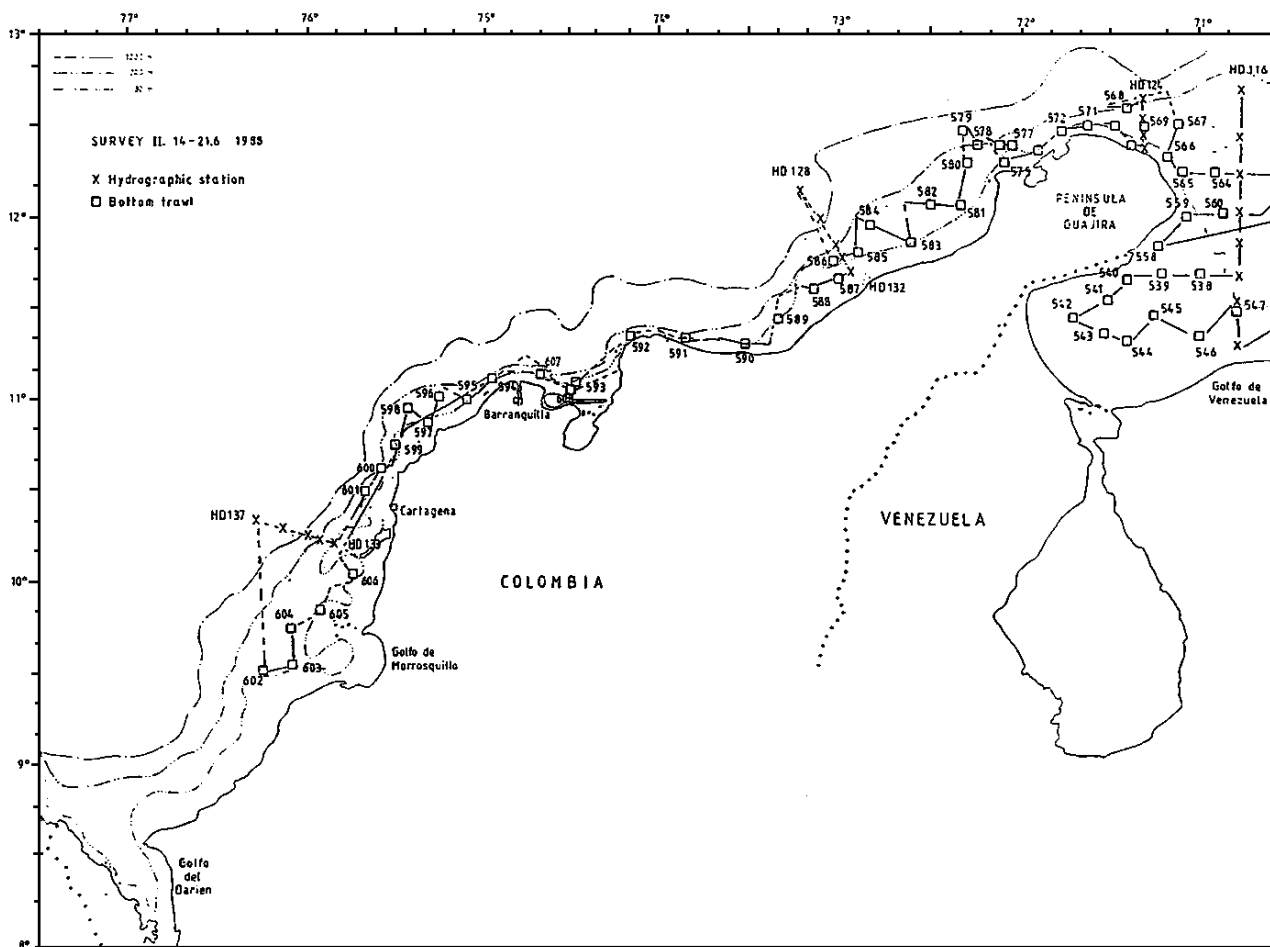
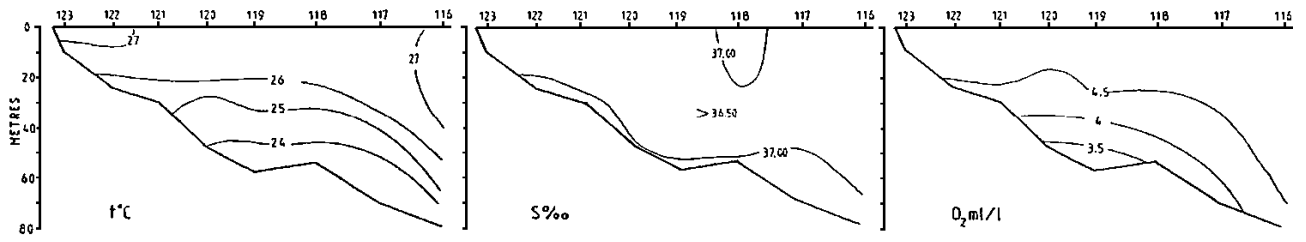


Figure 2a. Hydrographic profiles.

GULF OF VENEZUELA 11 - 13.6 1988



PENINSULA DE LA GUAJIRA 16.6 1988

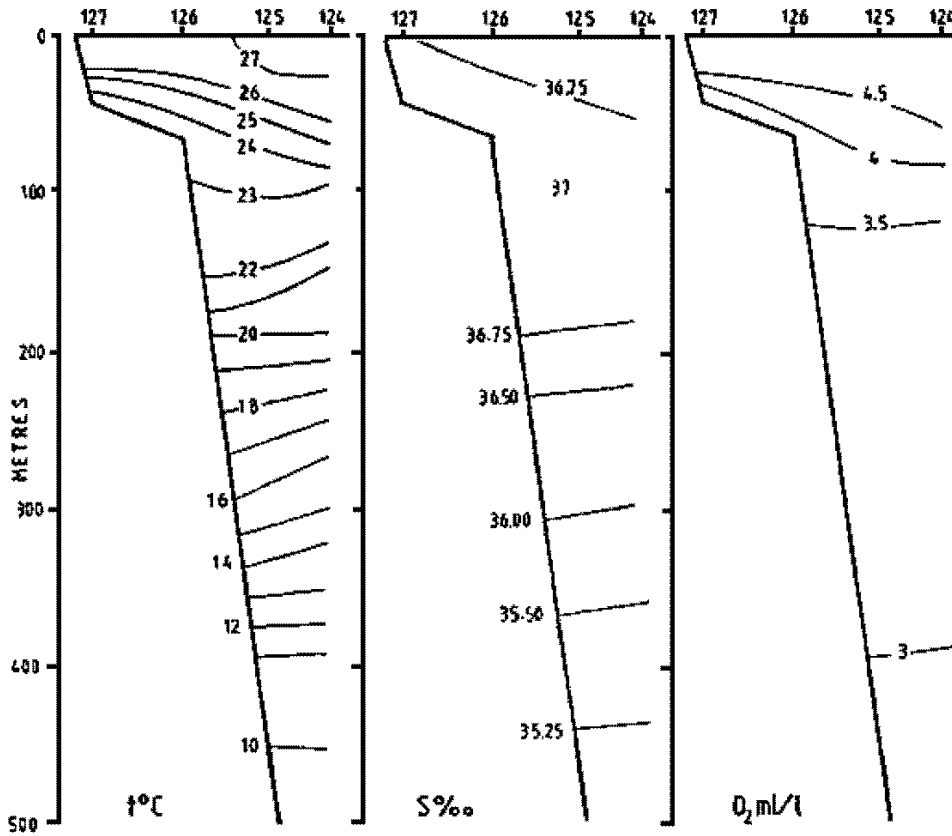
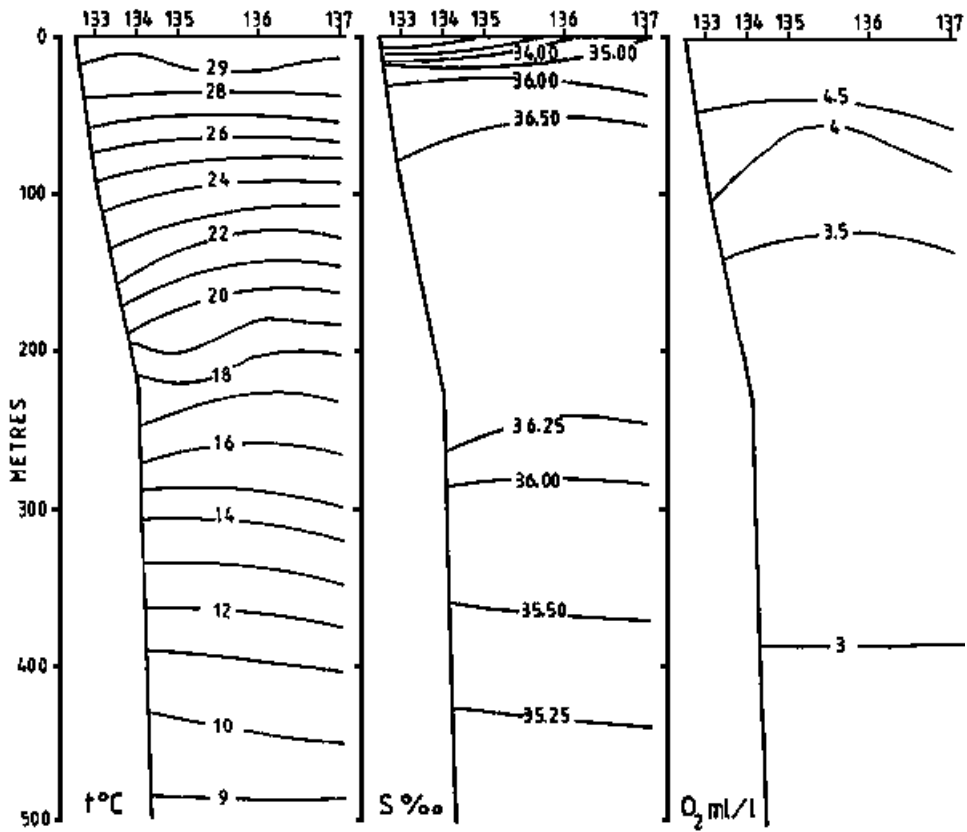


Figure 2b. Hydrographic profiles.

ISLAS DEL ROSARIO 19 - 20.6 1988



RIOHACHA 17 - 18.6 1988

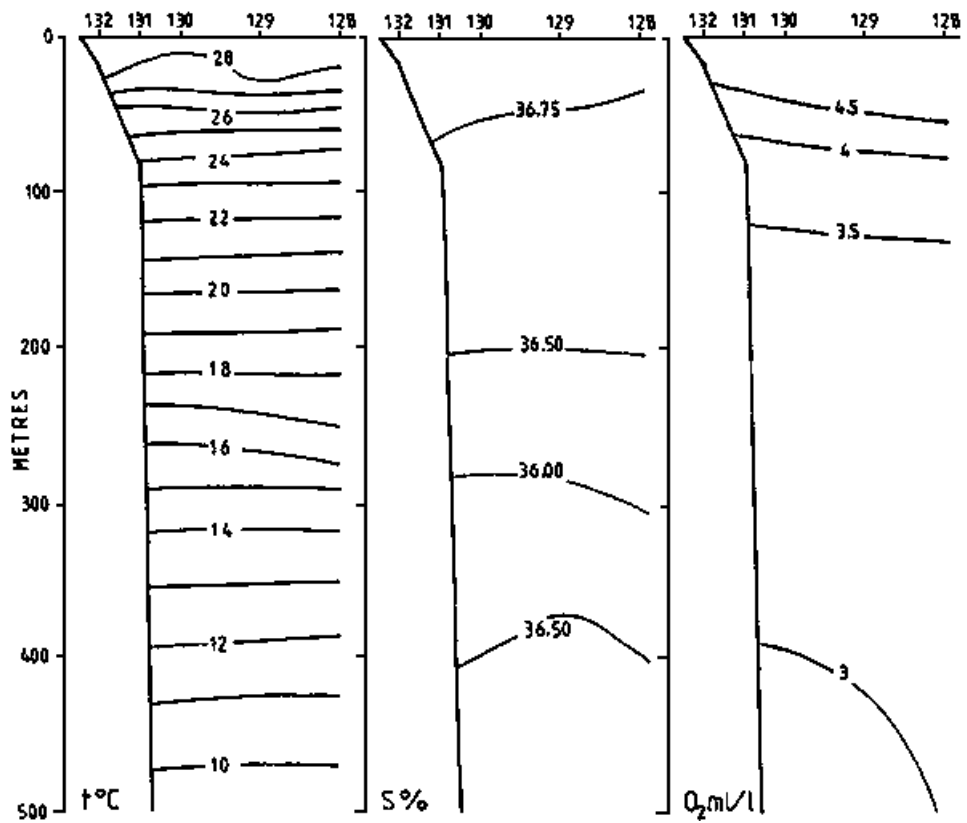
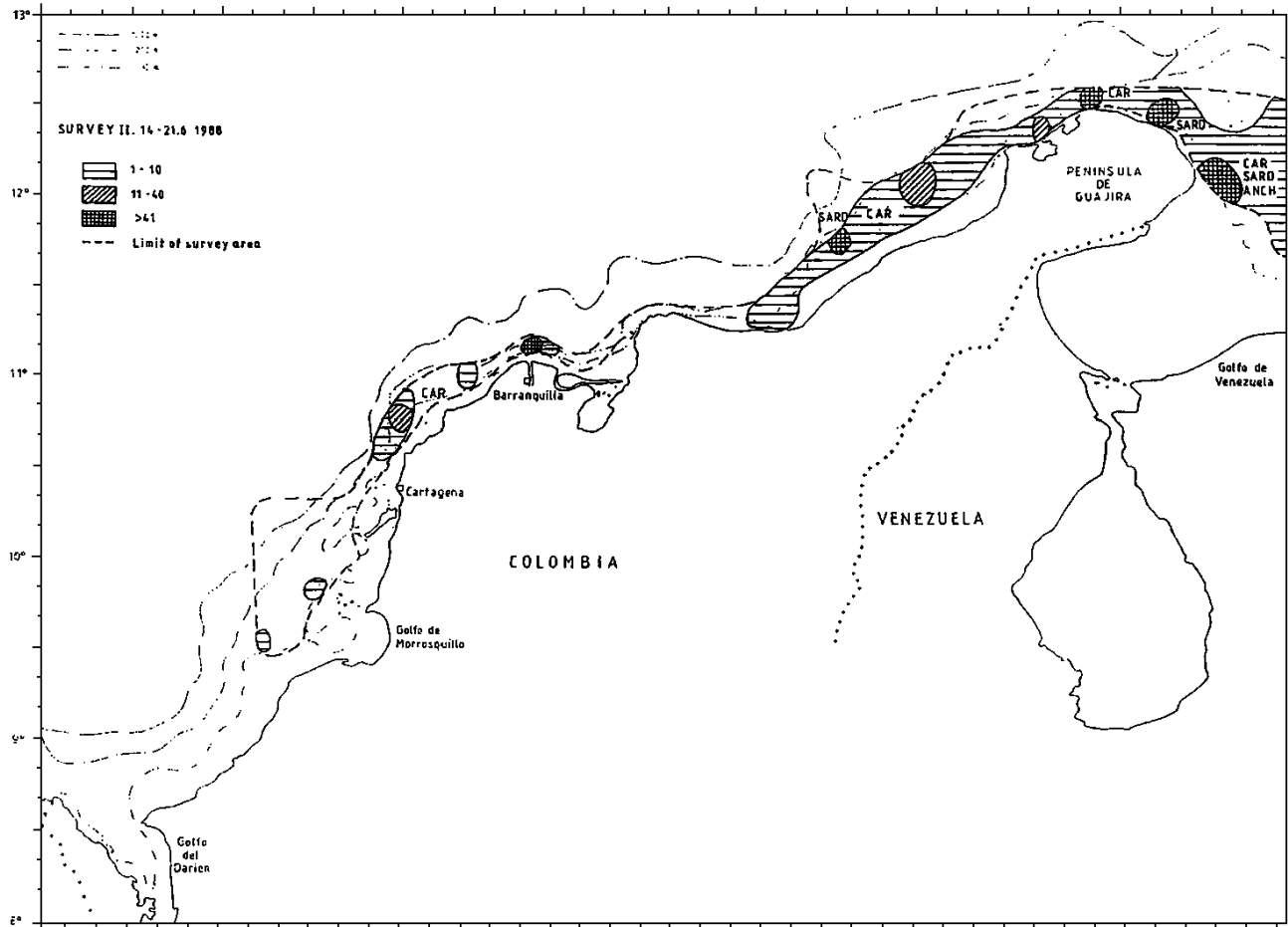
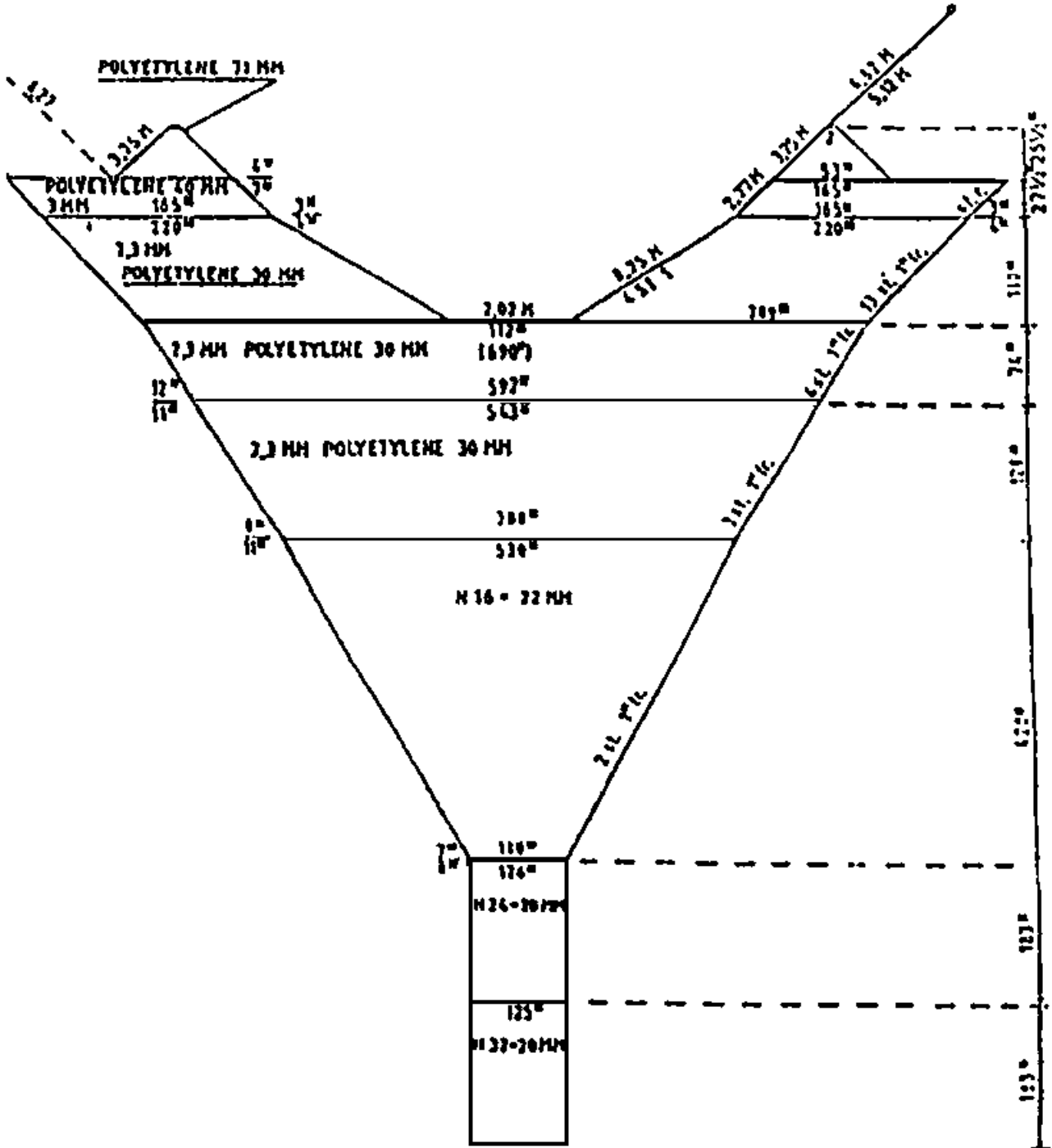


Figure 3. Distribution of pelagic fish from acoustic system.



ANNEX 1. DESCRIPTION OF TRAWL - APENDICE 1. DESCRIPCION DE RED DE ARRASTRE

Upper part



Headline 41 m
Sweep 40 m

PROJECT STATION: 560

DATE: 15/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1200
 start stop duration Long W 7053
 TIME : 06:07:00 06:37:00 30 (min) Purpose code: 3
 LOG : 4159.00 4160.50 1.50 Area code : 3
 FDEPTH: 53 55 GearCond.code:
 BDEPTH: 53 55 Validity code:
 Towing dir: 70° Wire out: 250 M Speed: 30 kn*10

Sorted: 32 Kg Total catch: 31.65 CATCH/HOUR: 63.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Scomberomorus cavalla</i>	36.00	78	56.87	529
<i>Trichiurus lepturus</i>	6.80	174	10.74	
<i>Rhizoprionodon lalandei</i>	3.00	2	6.00	
<i>Loligo plei.</i>	3.80	252	6.00	530
<i>Cynoscion leiarchus</i>	1.80	2	2.84	
<i>Engraulis eurystole</i>	1.60	244	2.53	
<i>Anchoa sp</i>	1.40	264	2.21	
<i>Synodus poeyi</i>	1.20	98	1.90	
<i>Opisthonema oglinus</i>	1.20	40	1.90	
<i>Lolligoncula brevis</i>	0.80	66	1.26	
<i>Sphyræna picudilla</i>	0.80	12	1.26	
<i>Chloroscombrus chrysurus</i>	0.80	6	1.26	
<i>Lagocephalus laevigatus</i>	0.70	2	1.11	
<i>Synodus foetens</i>	0.60	6	0.95	
<i>Trachurus lathami</i>	0.40	18	0.63	
<i>Pomadasys corvinaeforais</i>	0.30	4	0.47	
<i>Diapterus rhombus</i>	0.30	2	0.47	
<i>Priacanthus arenatus</i>	0.30	4	0.47	
<i>Eucinostomus argenteus</i>	0.20	2	0.32	
<i>Selene spixii</i>	0.20	6	0.32	
<i>Upeneus parvus</i>	0.20	6	0.32	
<i>Lycengraulis grossidens</i>	0.10	2	0.16	
<i>Penæus notialis</i>	0.00	2		
<i>Scomber japonicus</i>	0.00	2		
<i>Selar crumenophthalmus</i>	0.00	2		
Total	31.65		99.99	

PROJECT STATION: 564

DATE: 15/ 6/88 GEAR TYPE: BT No.1 POSITION: Lat N 1213
 start stop duration Long W 7054
 TIME : 15:03:00 15:25:00 22 (min) Purpose code: 3
 LOG : 4228.60 4229.70 1.10 Area code : 3
 FDEPTH: 53 51 GearCond.code:
 BDEPTH: 53 51 Validity code:
 Towing dir: 273° Wire out: 250 m Speed: 20 kn*10

Sorted: 27 kg Total catch: 293.90 CATCH/HOUR: 801.55

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscombrus chrysurus	349.09	7819	43.55	541
Lutjanus analis	70.91	19	0.85	
Rhomboplites aurorubens	65.65	281	8.17	540
Lutjanus synegris	60.00	112	7.49	539
Sphyræna picudilla	43.64	109	5.44	
Priacanthus arenatus	32.73	175	4.08	
Sardinella aurita	26.18	1942	3.27	542
Synodus poeyi	26.18	262	3.27	
Lutjanus purpureus	13.64	55	1.70	
Eucinostomus argenteus	10.91	327	1.36	
Haemulon steindachneri	10.91	98	1.36	
Upeneus parvus	10.91	1353	1.36	
Decapterus punctatus	10.91	720	1.36	
Decapterus macarellus	10.91	545	1.36	
Trachurus lathami	10.91	633	1.36	
Pagrus pagrus	8.73	22	1.09	
Opisthonema oglinus	8.73	65	1.09	
Scomberomorus cavalla	6.82	14	0.85	
Acanthostracion quadricornis	4.36	22	0.54	
Fistularia petimba	4.36	65	0.54	
Loligo paelei	4.36	371	0.54	
Pristipomoides macrophthalmus	3.27	349	0.41	
Scomber japonicus	3.27	44	0.41	
Diplectrus bivittatus	2.18	22	0.27	
Selar crumenophthalmus	2.18	65	0.27	
Total	801.54		99.99	

PROJECT STATION: 566

DATE: 15/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1217
 start stop duration Long W 7110
 TIME : 17:46:00 18:16:00 30 (min) Purpose code: 3
 LOG : 4245.60 4246.90 1.30 Area code : 3
 FDEPTH: 14 15 GearCond.code:
 BDEPTH: 14 15 Validity code:
 Towing dir: 298° Wire out: 100 m Speed: 30 kn*10

Sorted: 49 Kg Total catch: 125.20 CATCH/HOUR: 250.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Polydactylus oligodon	30.00	176	11.98	
Lutjanus analis	29.60	36	11.82	546
Trichiurus lepturus	25.00	116	9.98	
Diapterus rhombus	19.60	70	7.83	
Albula vulpes	19.60	70	7.83	
Anisotremus virginicus	15.00	36	5.99	
Selene spixii	14.60	250	5.83	
Conodon nobilis	12.00	36	4.79	
Haemulon plumieri	9.60	20	3.83	
Centropomus undecimalis	9.60	6	3.83	
Balistes vetula	9.60	10	3.83	
Elops saurus	9.60	16	3.83	
Harengula clupei	5.00	520	2.00	
Panulirus argus	4.80	4	1.92	
Scomberomorus brasiliensis	4.60	16	1.84	
Peprilus paru	4.60	36	1.84	
Micropogonias furnieri	3.00	36	1.20	
Eucinostomus argenteus	2.60	16	1.04	
Priacanthus arenatus	2.60	6	1.04	
Chirocentron bleekeri	2.00	860	0.80	
Rhizoprionodon lalandei	2.00	10	0.80	
Ocyurus chrysurus	2.00	6	0.80	
Opisthonema oglinum	2.00	20	0.80	
Selene vomer	2.00	6	0.80	
Sphyrna guachancho	2.00	6	0.80	
Calamus penna	2.00	10	0.80	
Loligo plei	1.00	40	0.40	
Ctenosciana gracilicirrus	1.00	96	0.40	
Pomadourus corvinaeformis	1.00	10	0.40	
Upeneus parvus	1.00	16	0.40	
Chloroscombrus chrysurus	0.80	6	0.32	
Cynoscion microlepidotus	0.60	6	0.24	
Colligancula sp	0.00	10		
Lycengraulis grossidens	0.00	6		
Pellona harroweri	0.00	16		
Total	250.40		100.01	

PROJECT STATION: 568

DATE: 16/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1234
 start stop duration Long W 7127
 TIME :00:23:00 01:23:00 60 (min) Purpose code: 3
 LOG :4302.90 4303.50 0.60 Area code : 5
 FDEPTH: 455 451 GearCond.code:
 BDEPTH: 455 451 Validity code:
 Towing dir: 258° Wire out: 1400 m Speed: 6 kn*10

Sorted: 22 Kg Total catch: 100.30 CATCH/HOUR: 100.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Synagrops bellus	30.80	502	30.71	
Nezumia cyrano	24.00	749	23.93	
CRANGONIDAE	12.80	3602	12.76	
Plesiopenseus edwardsianus	7.00	273	6.98	552
Solenocera sp	6.70	179	6.68	551
Benthodesmus tennius	6.00	152	5.98	
Coelorrhynchus caribbeus	2.80	80	2.79	
Miscellaneous fish	2.00		1.99	
GEMPYLIDAE	2.00	4	1.99	
ISOPODS	1.20	4	1.20	
Peristedion sp	1.20	20	1.20	
Cyttopsis roseus	1.20	12	1.20	
Rossia sp	0.80	4	0.80	
MYCTOPHIDAE	0.60	32	0.60	
SEPIOLIDAE	0.40	4	0.40	
Hoplunnis diomedianus	0.40	20	0.40	
Sternoptyx pseudobscura	0.40	24	0.40	
Total	100.30		100.01	

PROJECT STATION: 569

DATE: 16/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1233
 start stop duration Long W 7118
 TIME :05:55:00 06:25:00 30 (min) Purpose code: 3
 LOG :4331.40 4332.80 1.20 Area code : 5
 FDEPTH: 67 66 GearCond.code:
 BDEPTH: 67 66 Validity code:
 Towing dir: 169° Wire out: 350 m Speed: 30 kn*10

Sorted: 96 Kg Total catch: 96.40 CATCH/HOUR: 192.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Myxeroperca bonaci	44.00	2	22.82	
Lutjanus analis	26.00	6	13.49	
Lutjanus purpureus	22.00	12	11.41	
Lutjanus synagris	19.00	28	9.85	553
Priacanthus arenatus	18.00	68	9.34	554
Trachurus lathamii	16.00	1040	8.30	
Scomberomorus cavalla	13.80	2	7.16	
Rhomboplites aurorubens	9.80	76	5.08	
Pristigaster macrophthalmus	7.80	188	4.05	
Calanus penna	6.00	24	3.11	
Eucinostomus argenteus	4.00	86	2.07	
Lachnolaimus maximus	2.00	2	1.04	
Trichiurus lepturus	1.80	2	0.93	
Loligo plei	0.60	14	0.31	
Fistularia tabacaria	0.60	4	0.31	
Decapterus punctatus	0.40	34	0.21	
Upeneus parvus	0.40	34	0.21	
Exocoetus volitans	0.30	2	0.16	
Scomber japonicus	0.20	10	0.10	
Synodus foetens	0.10	2	0.05	
Total	192.80		100.00	

PROJECT STATION: 579

DATE: 17/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1228
 start stop duration Long W 7217
 TIME : 02:25:00 03:20:00 55 (min) Purpose code: 3
 LOG : 4449.50 4452.30 2.80 Area code : 5
 FDEPTH: 400 408 GearCond.code:
 BDEPTH: 400 408 Validity code:
 Towing dir: 243° Wire out: 1350 m Speed: 30 kn*10

Sorted: 24 Kg Total catch: 252.90 CATCH/HOUR: 275.89

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Steindachneria argenta	130.91	1777	47.45	
Polymixia lowei	52.36	491	18.98	
Coelorrhynchus caribbeaus	24.00	698	8.70	
Lepidopus caudatus	21.82	480	7.91	
Solenocera sp	12.00	332	4.35	573
Bembrops sp	8.18	153	2.96	
Synagrops ballus	5.45	327	1.98	
Argentina sp.	5.45	196	1.98	
Peristedion miniatum	4.36	87	1.58	
Plesiopenaeus edwardsianus	3.71	122	1.34	574
URANOSCOPIDAE	3.27	11	1.19	
Cyttopsis roseus	2.18	22	0.79	
Lepophidium profundorum	1.09	22	0.40	
Xenolepidichthys daigleishi	1.09	33	0.40	
Etmopterus sp	0.00	22		
Melanostomias macrophothus	0.00	11		
Total	275.87		100.01	

PROJECT STATION: 580

DATE: 17/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1219
 start stop duration Long W 7218
 TIME : 05:35:00 06:10:00 35 (min) Purpose code: 3
 LOG : 4463.00 4464.70 1.70 Area code : 5
 FDEPTH: 70 69 GearCond.code:
 BDEPTH: 70 69 Validity code:
 Towing dir: 200° Wire out: 350 m Speed: 35 kn*10

Sorted: 21 Kg Total catch: 179.20 CATCH/HOUR: 307.20

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Rhomboplites aurorubens	61.71	782	20.09	575
Mycteroperca bonaci	56.57	3	18.41	
Haemulon aurolineatum	55.54	1152	18.08	
Selar crumenophthalmus	46.29	473	15.07	576
Sardinella aurita	19.54	617	6.36	
Lutjanus analis	13.71	5	4.46	
Decapterus macarellus	10.29	998	3.35	
Lachnolaimus maximus	7.20	5	2.34	
Lutjanus purpureus	5.66	2	1.84	
Pomacanthus paru	5.14	3	1.67	
Scomber japonicus	4.11	144	1.34	
Mulloidichthys martinicus	4.11	93	1.34	
Haemulon boschma	3.09	226	1.01	
Calamus pennatula	3.09	31	1.01	
Upeneus parvus	3.09	103	1.01	
Balistes vetula	2.57	2	0.84	
Mustelus canis	2.40	2	0.78	
Eucinostomus argenteus	2.06	62	0.67	
Trachurus lathamii	0.51	51	0.17	
Pseudupeneus maculatus	0.51	10	0.17	
Total	307.19		100.01	

PROJECT STATION: 581

DATE: 17/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1206
 start stop duration Long W 7219
 TIME : 07:40:00 08:10:00 30 (min) Purpose code: 3
 LOG : 4478.80 4480.40 1.60 Area code : 5
 FDEPTH: 41 48 GearCond.code:
 BDEPTH: 41 48 Validity code:
 Towing dir: 276° Wire out: 200 m Speed: 30 kn'10

Sorted: 62 Kg Total catch: 804.50 CATCH/HOUR: 1609.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Sardinella aurita	1282.60	95826	79.71	577
Decapterus macarellus	227.60	24700	14.15	578
Lutjanus analis	33.60	6	2.09	
Upeneus parvus	25.00	2600	1.55	
Eucinostomus argenteus	16.20	800	1.01	
Lutjanus synagris	14.00	30	0.87	579
Priacanthus arenatus	10.00	76	0.62	
Total	1609.00		100.00	

PROJECT STATION: 582

DATE: 17/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1207
 start stop duration Long W 7231
 TIME : 09:30:00 10:00:00 30 (min) Purpose code: 3
 LOG : 4492.00 4493.80 1.80 Area code : 5
 FDEPTH: 65 68 GearCond.code:
 BDEPTH: 65 68 Validity code:
 Towing dir: 276° Wire out: 350 m Speed: 35 kn'10

Sorted: 24 Kg Total catch: 244.70 CATCH/HOUR: 489.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Rhomboplites aurorubens	88.00	1820	17.98	580
Decapterus macarellus	88.00	11520	17.98	
Lutjanus synagris	78.00	160	15.94	581
Sardinella aurita	66.00	2480	13.49	
Lutjanus analis	48.00	10	9.81	
Calamus pennatula	28.00	200	5.72	
Myeteroperca cidi	24.20	4	4.94	
Epinephelus niveatus	19.20	2	3.92	
Decapterus punctatus	14.00	280	2.86	
Upeneus parvus	10.00	1160	2.04	
Haemulon aurolineatum	5.80	1400	1.19	
Panulirus argus	5.00	2	1.02	
Haemulon boschma	4.20	5480	0.86	
Scomber japonicus	4.00	40	0.82	
Pomacanthus paru	3.00	2	0.61	
Mulledichthys martinicus	2.00	100	0.41	
Pseudupeneus maculatus	2.00	40	0.41	
Eucinostomus argenteus	0.00	40		
Total	489.40		100.00	

PROJECT STATION: 583

DATE: 17/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1153
 start stop duration Long W 7237
 TIME : 12:16:00 12:46:00 30 (min) Purpose code: 3
 LOG : 4516.70 4518.00 1.30 Area code : 5
 FDEPTH: 27 45 GearCond.code:
 BDEPTH: 27 45 Validity code:
 Towing dir: 295° Wire out: 150' m Speed: 30 kn*10

Sorted: 29 Kg Total catch: 161.20 CATCH/HOUR: 322.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Sardinella aurita	156.00	7664	48.39	588
Decapterus punctatus	56.00	4696	17.37	582
Upeneus parvus	16.50	1280	5.12	583
Lutjanus griseus	13.00	2	4.03	
Loligo plei	10.00	90	3.10	
Pomacanthus paru	9.80	4	3.04	
Decapterus macarellus	9.00	1000	2.79	584
Eucinostomus argenteus	7.00	440	2.17	585
Lactophirys trigonus	6.00	10	1.86	
Scomber japonicus	6.00	170	1.86	
Selar crumenophthalmus	5.50	480	1.71	586
Balistes capriscus	5.00	10	1.55	
Rhomboplites aurorubens	4.50	420	1.40	587
Balistes vetula	4.40	2	1.36	
MONACANTHIDAE	4.00	10	1.24	
Calamus pennatula	3.50	30	1.09	
Ocyurus chrysurus	3.20	2	0.99	
Priacanthus arenatus	2.00	30	0.62	
Diplectrum bivittatum	1.00	10	0.31	
Total	322.40		100.00	

PROJECT STATION: 584

DATE: 17/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1159
 start stop duration Long W 7249
 TIME : 14:06:00 14:36:00 30 (min) Purpose code: 3
 LOG : 4529.80 4530.90 1.10 Area code : 5
 FDEPTH: 69 73 GearCond.code:
 BDEPTH: 69 73 Validity code:
 Towing dir: 295° Wire out: 350' m Speed: 15 kn*10

Sorted: 30 Kg Total catch: 275.42 CATCH/HOUR: 550.84

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Decapterus tatl	164.80	816	29.92	589
Sardinella aurita	88.00	5590	15.98	
Haemulon boschme	88.00	6180	15.98	
Rhomboplites aurorubens	40.64	1952	7.38	590
Decapterus macarellus	33.60	1886	6.10	
Calamus pennatula	27.20	96	4.94	
Lutjanus analis	24.00	6	4.36	
Lachnolaimus maximus	17.00	8	3.09	
Upeneus parvus	16.00	768	2.90	
Epinephelus sp	13.80	2	2.51	
Pomacanthus paru	9.00	4	1.63	
Haemulon aurolineatum	6.40	112	1.16	
Acanthostracion quadricornis	6.40	16	1.16	
Balistes vetula	6.40	2	1.16	
Eucinostomus argenteus	3.20	32	0.58	
Diplectrum bivittatum	2.40	48	0.44	
Serranus phoebe	2.40	48	0.44	
Fistularia petimba	1.60	16	0.29	
Total	550.84		100.02	

PROJECT STATION: 587

DATE: 18/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1142
 start stop duration Long W 7301
 TIME : 05:32:00 06:02:00 30 (min) Purpose code: 3
 LOG : 4626.30 4627.60 1.30 Area code : 5
 FDEPTH: 23 22 GearCond.code:
 BDEPTH: 23 22 Validity code:
 Towing dir: 248° Wire out: 100 m Speed: 30 kn*10

Sorted: 42 Kg Total catch: 95.70 CATCH/HOUR: 191.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Balistes capriscus	97.60	276	50.99	594
Aluterus monoceros	23.60	24	12.33	
Scomberomorus cavalla	16.00	8	8.36	
Lactophirys trigonus	11.60	20	6.06	
Sardinella aurita	11.60	176	6.06	595
Eucinostomus argenteus	9.60	84	5.02	
Calamus pennatula	5.60	84	2.93	
Caranx crysos	4.80	4	2.51	
OSTRACIIDAE	2.80	4	1.46	
Rachycentron canadus	2.80	2	1.46	
Acanthostracion quadricornis	1.60	2	0.84	
Echeneis naucrates	1.20	8	0.63	
Priacanthus arenatus	1.20	20	0.63	
Rhomboplites aurorubens	0.40	4	0.21	
Selar crumenophthalmus	0.40	4	0.21	
Diplectrum bivittatum	0.40	4	0.21	
Synodus foetens	0.20	4	0.10	
Total	191.40		100.01	

PROJECT STATION: 588

DATE: 18/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1138
 start stop duration Long W 7308
 TIME : 07:04:00 07:34:00 30 (min) Purpose code: 3
 LOG : 4635.90 4637.60 1.70 Area code : 5
 FDEPTH: 14 30 GearCond.code:
 BDEPTH: 14 30 Validity code:
 Towing dir: 257° Wire out: 125 m Speed: 32 kn*10

Sorted: 31 Kg Total catch: 482.50 CATCH/HOUR: 965.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Sardinella aurita	720.00	36768	74.61	596
Lutjanus analis	70.00	23	7.25	597
Lachnolaimus maximus	56.00	36	5.80	
Balistes capriscus	41.40	60	4.29	
Pomacanthus arcuatus	26.00	16	2.69	
Balistes vetula	15.60	8	1.62	
Calamus penna	9.60	144	0.99	
Lactophirys trigonus	7.20	24	0.75	
Aluterus monoceros	7.20	24	0.75	
Rhizoprionodon lalandei	6.40	2	0.66	
Scomberomorus cavalla	2.80	2	0.29	
Pomacanthus paru	2.80	2	0.29	
Total	965.00		99.99	

PROJECT STATION: 589

DATE: 18/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1128
 start stop duration Long W 7321
 TIME : 09:45:00 10:15:00 30 (min) Purpose code: 3
 LOG : 4659.30 4660.90 1.60 Area code : 5
 FDEPTH: 67 70 GearCond.code:
 BDEPTH: 67 70 Validity code:
 Towing dir: 230° Wire out: 350 m Speed: 30 kn*10

Sorted: 23 Kg Total catch: 200.70 CATCH/HOUR: 401.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Haemulon aurolineatum	171.20	3824	42.65	598
Rhomboplites aurorubens	128.00	2272	31.89	599
Balistes capriscus	22.40	32	5.58	
Eucinostomus argenteus	14.40	304	3.59	
Lutjanus analis	13.60	8	3.39	600
Lutjanus purpureus	12.20	10	3.04	601
Calamus pennatula	11.20	80	2.79	
Seriola rivolana	8.80	4	2.19	
Haemulon striatum	5.60	112	1.40	
Synodus foetens	4.80	32	1.20	
Haemulon boschmae	3.20	208	0.80	
Pristipomoides macrophthalmus	2.40	16	0.60	
Loligo paelei	1.80	18	0.45	
Lutjanus synagris	1.00	2	0.25	
Upeneus parvus	0.80	16	0.20	
Total	401.40		100.02	

PROJECT STATION: 590

DATE: 18/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1120
 start stop duration Long W 7331
 TIME : 12:00:00 12:30:00 30 (min) Purpose code: 3
 LOG : 4676.70 4678.00 1.30 Area code : 5
 FDEPTH: 61 61 GearCond.code:
 BDEPTH: 61 61 Validity code:
 Towing dir: 250° Wire out: 300 m Speed: 28 kn*10

Sorted: 25 Kg Total catch: 126.00 CATCH/HOUR: 252.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Chloroscombrus chrysurus	110.00	3300	43.65	602
Selene spixii	23.00	988	9.13	603
Opisthonema oglinum	21.00	260	8.33	604
Eucinostomus argenteus	21.00	520	8.33	
Priacanthus arenatus	15.00	50	5.95	
Rhomboplites aurorubens	12.00	130	4.76	
Selar crumenophthalmus	10.00	60	3.97	
Lutjanus purpureus	10.00	30	3.97	
Lutjanus synagris	7.00	40	2.78	
Scomberomorus cavalla	6.50	30	2.58	
Caranx hippos	5.50	10	2.18	
Sphyraena guachancho	5.00	40	1.98	
Sphyraena picudilla	4.00	30	1.59	
Pristipomoides macrophthalmus	2.00	20	0.79	
Total	252.00		99.99	

PROJECT STATION: 591

DATE: 18/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1120
 start stop duration Long W 7352
 TIME : 14:47:00 15:10:00 23 (min) Purpose code: 3
 LOG : 4696.80 4697.80 1.00 Area code : 5
 FDEPTH: 87 132 GearCond.code:
 BDEPTH: 87 132 Validity code:
 Towing dir: 258° Wire out: 400 m Speed: 25 kn*10

Sorted: 27 Kg Total catch: 27.15 CATCH/HOUR: 70.83

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Rhomboplites aurorubens	17.22	73	24.31	605
Lutjanus analis	11.48	10	16.21	
Lutjanus synagris	11.48	29	16.21	606
Eucinostomus argenteus	10.96	222	15.47	607
Pristipomoides macrophthalmus	5.22	65	7.37	608
Calamus pennatula	3.91	16	5.52	
Trichiurus lepturus	2.61	10	3.68	
Lutjanus purpureus	2.61	3	3.68	
Balistes capricornis	1.83	3	2.58	
Synodus poeyi	1.30	26	1.84	
Holocentrus ascensionis	0.91	3	1.28	
Fistularia petimba	0.65	8	0.92	
Upeneus parvus	0.65	10	0.92	
Total	70.83		99.99	

PROJECT STATION: 592

DATE: 18/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1122
 start stop duration Long W 7410
 TIME : 17:10:00 17:40:00 30 (min) Purpose code: 3
 LOG : 4716.90 4718.60 1.70 Area code : 5
 FDEPTH: 112 87 GearCond.code:
 BDEPTH: 112 87 Validity code:
 Towing dir: 250° Wire out: 550 m Speed: 35 kn*10

Sorted: 29 Kg Total catch: 29.25 CATCH/HOUR: 58.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Upeneus parvus	14.80	288	25.30	609
Lutjanus vivanus	13.00	88	22.22	610
Pristipomoides macrophthalmus	9.80	94	16.75	611
Rhomboplites aurorubens	5.80	88	9.91	
Lutjanus analis	4.80	2	8.21	
Fistularia petimba	4.00	20	6.84	
Loligo plei	2.40	900	4.10	
Priacanthus arenatus	1.80	24	3.08	
Synodus foetens	0.60	6	1.03	
Pristigenys atlas	0.50	2	0.85	
Holocentrus ascensionis	0.40	4	0.66	
Balistes vetula	0.30	2	0.51	
Trachurus lathami	0.20	2	0.34	
Haemulon suolineatum	0.10	2	0.17	
Serranus phoebe	0.00	2		
Synodus poeyi	0.00	2		
Peneus notialis	0.00	2		
Loligo pailoi	0.00	2		
Total	58.50		99.99	

PROJECT STATION: 597

DATE: 19/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1053
 start stop duration Long W 7518
 TIME : 10:25:00 10:55:00 30 (min) Purpose code: 3
 LOG : 4848.90 4850.40 1.50 Area code : 5
 FDEPTH: 29 31 GearCond.code:
 BDEPTH: 29 31 Validity code:
 Towing dir: 240° Wire out: 100 m Speed: 30 kn*10

Sorted: 3 Kg Total catch: 2.90 CATCH/HOUR: 5.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Narcine brasiliensis	3.00	2	51.72	
Eucinostomus argenteus	1.60	36	27.59	
Synodus foetens	0.30	6	5.17	
Syacium micrurum	0.20	2	3.45	
Loligo plei	0.20	20	3.45	
Rhomboplites aurorubens	0.20	2	3.45	
Upeneus parvus	0.20	4	3.45	
Lutjanus purpureus	0.10	2	1.72	
Halieutichthys acuelatus	0.00	6		
Frionotus punctatus	0.00	2		
Trichopsetta ventralis	0.00	6		
Lutjanus synagris	0.00	4		
Total	5.80		100.00	

PROJECT STATION: 598

DATE: 19/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1057
 start stop duration Long W 7526
 TIME : 12:00:00 12:30:00 30 (min) Purpose code: 3
 LOG : 4860.00 4861.70 1.70 Area code : 5
 FDEPTH: 47 45 GearCond.code:
 BDEPTH: 47 45 Validity code:
 Towing dir: 217° Wire out: 250 m Speed: 35 kn*10

Sorted: 37 Kg Total catch: 36.65 CATCH/HOUR: 73.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lutjanus analis	15.60	8	21.28	
Seriola rivolana	12.00	6	16.37	
Haemulon aurolineatum	12.00	356	16.37	
Lutjanus purpureus	11.00	6	15.01	
Lutjanus griseus	9.00	2	12.28	
Rhomboplites aurorubens	5.30	84	7.23	
Rhizoprionodon porosus	3.00	2	4.09	
Mullus suratus	2.20	36	3.00	
Lutjanus buccanella	1.20	14	1.64	
Eucinostomus argenteus	1.00	6	1.36	
Lutjanus vivanus	0.80	6	1.09	
Upeneus parvus	0.20	4	0.27	
Total	73.30		99.99	

PROJECT STATION: 599

DATE: 19/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1046
 start stop duration Long W 7529
 TIME :14:12:00 14:42:00 30 (min) Purpose code: 3
 LOG :4875.00 4876.80 1.80 Area code : 5
 FDEPTH: 36 34 GearCond.code:
 BDEPTH: 36 34 Validity code:
 Towing dir: 205° Wire out: 200 m Speed: 35 kn*10

Sorted: 44 Kg Total catch: 44.25 CATCH/HOUR: 88.50

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Lutjanus analis	30.60	22	34.58	617
Lutjanus synagris	17.00	60	19.21	618
Epinephelus morio	13.00	2	14.69	
Priacanthus arenatus	10.00	32	11.30	
Haemulon aurolineatum	6.00	118	6.78	
Rhomboplites aurorubens	5.00	60	5.65	619
Eucinostomus argenteus	2.60	60	2.94	
Acanthostracion sp	1.00	2	1.13	
Balistes capriscus	1.00	2	1.13	
Synodus poeyi	1.00	4	1.13	
Seriola rivolana	1.00	8	1.13	
Loligo plei	0.20	70	0.23	
Diplectrum bivittatum	0.10	4	0.11	
Penaeus notialis	0.00	2		
Total	88.50		100.01	

PROJECT STATION: 600

DATE: 19/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1037
 start stop duration Long W 7534
 TIME :15:55:00 16:25:00 30 (min) Purpose code: 3
 LOG :4887.30 4888.90 1.60 Area code : 5
 FDEPTH: 53 49 GearCond.code:
 BDEPTH: 53 49 Validity code:
 Towing dir: 210° Wire out: 250 m Speed: 32 kn*10

Sorted: 32 Kg Total catch: 117.76 CATCH/HOUR: 235.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Selar crumenophthalmus	135.10	942	57.36	622
Eucinostomus argenteus	21.00	490	8.92	620
Rhomboplites aurorubens	17.50	260	7.43	621
Lutjanus synagris	14.00	70	5.94	
Upeneus parvus	12.60	224	5.35	623
Lutjanus analis	10.00	2	4.25	
Synodus poeyi	7.00	84	2.97	
Synodus foetens	5.60	56	2.38	
Pristipomoides macrophthalmus	3.50	8	1.49	
Acanthostracion quadricornis	2.80	8	1.19	
Loligo plei	2.10	372	0.89	
Seriola rivolana	1.74	14	0.74	
Prionotus punctatus	1.40	14	0.59	
Lactophirys trigonus	0.70	8	0.30	
Penaeus notialis	0.48	14	0.20	
Syacium sp.	0.00	8		
Lutjanus vivanus	0.00	8		
Total	235.52		100.00	

PROJECT STATION: 601

DATE: 19/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 1029
 start stop duration Long W 7539
 TIME : 18:10:00 18:27:00 17 (min) Purpose code: 3
 LOG : 4903.50 4904.30 0.80 Area code : 5
 FDEPTH: 166 174 GearCond.code:
 BDEPTH: 166 174 Validity code:
 Towing dir: 20° Wire out: 750 m Speed: 25 kn*10

Sorted: 16 Kg Total catch: 15.85 CATCH/HOUR: 55.94

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
<i>Pristipomoides macrophthalmus</i>	21.18	258	37.86	624
<i>Loligo paelei</i>	6.00	1782	10.73	
<i>Saurida normani</i>	6.00	28	10.73	
<i>Raja cyclophora</i>	4.59	4	8.21	
<i>Hemanthias leptus</i>	3.53	4	6.31	
<i>Lepidopus caudatus</i>	2.47	28	4.42	
<i>Mustelus canis</i>	2.47	4	4.42	
<i>Lutjanus synagris</i>	2.47	4	4.42	
<i>Rhomboplites aurorubens</i>	2.47	21	4.42	
<i>Umbrina</i> sp	1.76	14	3.15	
HOLOCENTRIDAE	1.06	11	1.89	
<i>Ancylopsetta</i> sp.	0.71	11	1.27	
<i>Selar crumenophthalmus</i>	0.71	7	1.27	
<i>Pleuonika</i> sp	0.35	25	0.63	
<i>Synagrops bellus</i>	0.18	25	0.32	
PENAEIDAE	0.00	14		
MYCTOPHIDAE	0.00	815		
<i>Bembrops</i> sp	0.00	7		
<i>Sphoeroides</i> sp	0.00	4		
PARALEPIDIDAE	0.00	7		
<i>Argentina</i> sp.	0.00	14		
<i>Synodus foetens</i>	0.00	25		
<i>Paralichthys</i> sp	0.00	11		
<i>Haemulon striatum</i>	0.00	4		
<i>Etrumeus teres</i>	0.00	4		
Total	55.95		100.05	

PROJECT STATION: 603

DATE: 20/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 932
 start stop duration Long W 7605
 TIME : 09:35:00 09:40:00 5 (min) Purpose code: 3
 LOG : 5029.70 5029.90 0.20 Area code : 5
 FDEPTH: 38 39 GearCond.code: 9
 BDEPTH: 38 39 Validity code:
 Towing dir: 350° Wire out: 200 m Speed: 24 kn*10

Sorted: 1 Kg Total catch: 1.20 CATCH/HOUR: 14.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Upeneus parvus	3.00	156	20.83	
Chloroscombrus chrysurus	3.00	84	20.83	
Penaeus notialis	2.40	132	16.67	
Loligo paelei	1.20	60	8.33	
Acanthostracion quadricornis	1.20	12	8.33	
Synodus foetens	1.20	12	8.33	
Lepophidium profundorum	0.60	12	4.17	
Porichthys pauciradiatus	0.60	156	4.17	
Priacanthus arenatus	0.60	12	4.17	
Rhomboplites aurorubens	0.60	12	4.17	
Loligo plei	0.00	12		
Squilla sp	0.00	12		
Selar crumenophthalmus	0.00	12		
Symphurus sp	0.00	36		
Diplectrus bivittatus	0.00	48		
Synodus poeyi	0.00	48		
Selene spixii	0.00	12		
Total	14.40		100.00	

PROJECT STATION: 604

DATE: 20/ 6/88 GEAR TYPE: BT No:1 POSITION: Lat N 943
 start stop duration Long W 7606
 TIME : 11:05:00 11:35:00 30 (min) Purpose code: 3
 LOG : 5042.10 5043.10 1.00 Area code : 5
 FDEPTH: 71 71 GearCond.code:
 BDEPTH: 71 71 Validity code:
 Towing dir: 53° Wire out: 350 m Speed: 20 kn*10

Sorted: 23 Kg Total catch: 22.55 CATCH/HOUR: 45.10

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP.NO.
	weight	numbers		
Rhizoprionodon lalandei	15.20	16	33.70	
Eucinostomus argenteus	11.40	360	25.28	528
Loligo plei	4.40	420	9.76	
Rhomboplites aurorubens	3.40	62	7.54	
Trichiurus lepturus	3.40	38	7.54	
Chloroscombrus chrysurus	2.40	48	5.32	
Opisthonema oglinum	1.40	22	3.10	
Lutjanus synagris	0.80	4	1.77	
Scomberomorus brasiliensis	0.60	2	1.33	
Sphyræna guachancho	0.50	2	1.11	
Diplectrus radiale	0.40	20	0.89	
Balistes capriscus	0.40	4	0.89	
Upeneus parvus	0.40	24	0.89	
Pristipomoides macrophthalmus	0.10	10	0.22	
Synodus poeyi	0.10	2	0.22	
Penaeus notialis	0.10	6	0.22	
Selene spixii	0.10	2	0.22	
Anchoa lyolepis	0.00	2		
Total	45.10		100.00	

PROJECT STATION: 606

DATE: 20/ 6/88 GEAR TYPE: BT No.1 POSITION: Lat N 1003
 start stop duration Long W 7545
 TIME : 17:28:00 17:58:00 30 (min) Purpose code: 3
 LOG : 5074.30 5076.10 1.80 Area code : 5
 FDEPTH: 78 81 GearCond.code:
 BDEPTH: 78 81 Validity code:
 Towing dir: 255° Wire out: 400 m Speed: 32 kn*10

Sorted: 19 Kg Total catch: 19.00 CATCH/HOUR: 38.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Rhomboplites aurorubens	13.40	376	35.26	627
Eucinostomus argenteus	9.40	304	24.74	628
Loligo plei	3.20	260	8.42	
Loligo paelei	2.40	322	6.32	
Trichiurus lepturus	2.40	8	6.32	
Rhizoprionodon islandei	1.40	2	3.68	
Lutjanus synagris	1.40	6	3.68	
Balistes capriscus	0.80	4	2.11	
Pomoxis notialis	0.80	32	2.11	
Diplectrum bivittatum	0.60	28	1.58	
Priacanthus arenatus	0.60	6	1.58	
Sphyræna guachancho	0.40	2	1.05	
Decapterus punctatus	0.40	24	1.05	
Chloroscombrus chrysurus	0.30	4	0.79	
Upeneus parvus	0.20	8	0.53	
Fistularia petimba	0.20	2	0.53	
Pristipomoides macrophthalmus	0.10	8	0.26	
Haemulon striatum	0.00	2		
Selar crumenophthalmus	0.00	2		
Total	38.00		100.01	

PROJECT STATION: 607

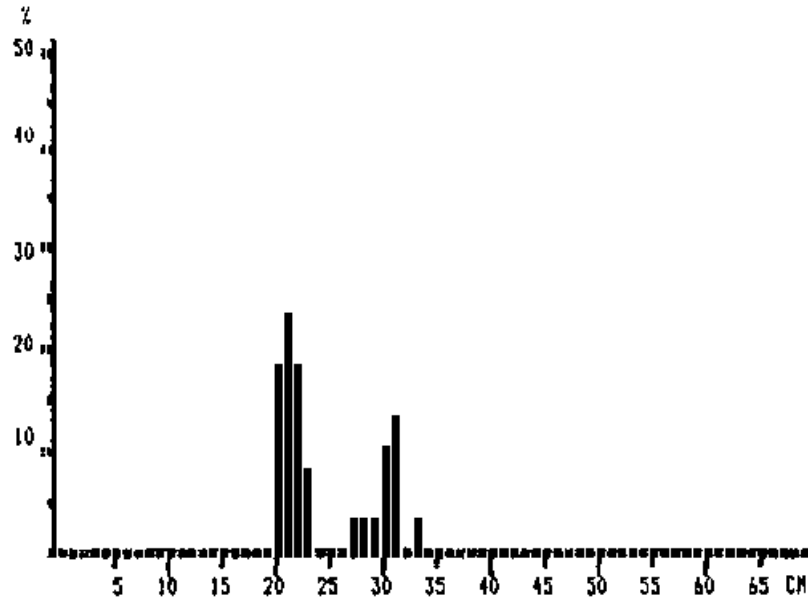
DATE: 21/ 6/88 GEAR TYPE: BT No.1 POSITION: Lat N 1107
 start stop duration Long W 7441
 TIME : 06:04:00 06:34:00 30 (min) Purpose code: 3
 LOG : 5180.40 5181.80 1.40 Area code : 5
 FDEPTH: 22 34 GearCond.code:
 BDEPTH: 22 34 Validity code:
 Towing dir: 104° Wire out: 100 m Speed: 30 kn*10

Sorted: 22 Kg Total catch: 21.90 CATCH/HOUR: 43.80

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP. NO.
	weight	numbers		
Balistes capriscus	17.40	62	39.73	
Lutjanus synagris	4.40	20	10.05	629
Elops saurus	4.20	6	9.59	
Scomberomorus brasiliensis	3.00	6	6.85	
Alectis ciliaris	2.40	4	5.48	
Selene spixii	2.40	14	5.48	
Chaetodipterus faber	2.00	4	4.57	
Lutjanus purpureus	1.40	2	3.20	
Rhomboplites aurorubens	1.40	6	3.20	
Eucinostomus argenteus	1.40	32	3.20	
Sphyræna guachancho	1.40	4	3.20	
Diapterus rhoasus	1.00	2	2.28	
Caranx crysos	1.00	2	2.28	
Chloroscombrus chrysurus	0.40	4	0.91	
Total	43.80		100.02	

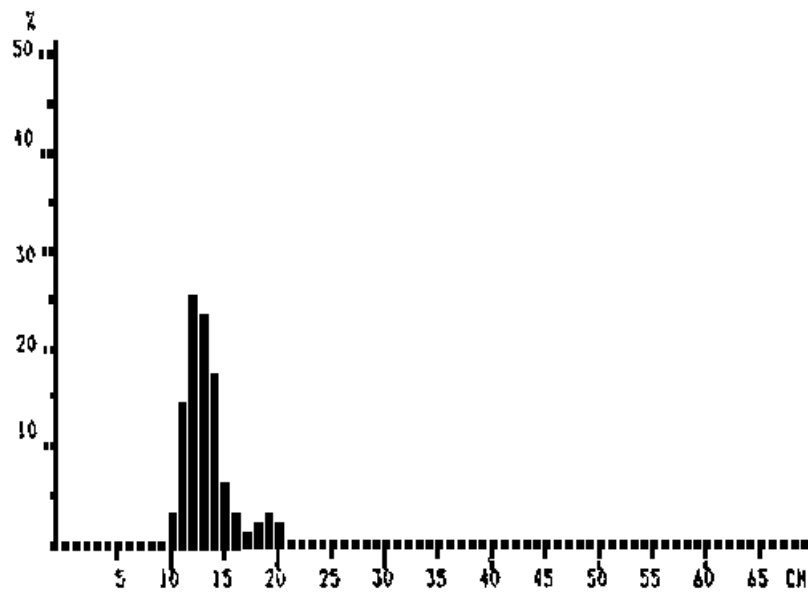
ANNEX 3. POOLED LENGTH DISTRIBUTIONS OF MAIN SPECIES CAUGHT, COLOMBIA

Opisthonema oglinum - Colombia



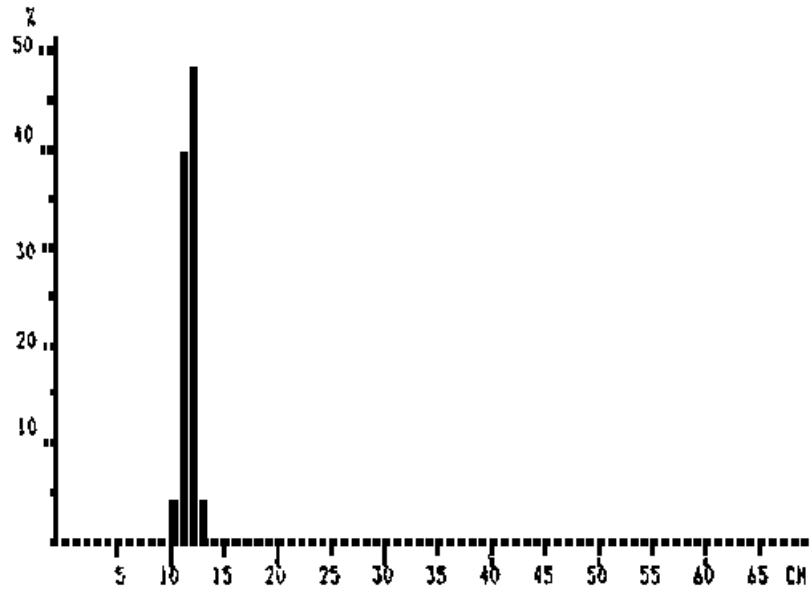
Pooled sample (simple adding)
 MEAN LENGTH = 24.21cm N= 39
 NUMBER OF SUBSAMPLES: 2
 SAMPLES FOUND BETWEEN ST. NO. 570 AND 590.
 SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Sardinella aurita - Colombia



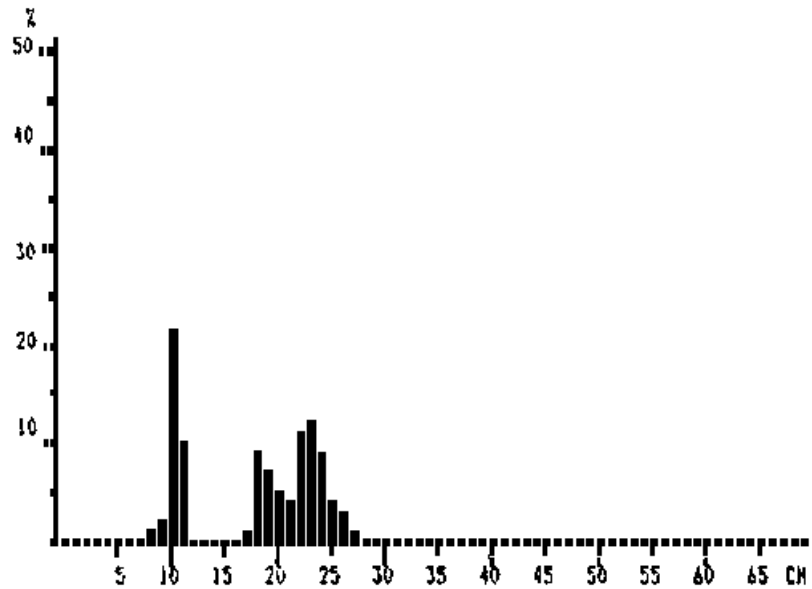
Pooled sample (simple adding)
 MEAN LENGTH = 13.25cm N= 588
 NUMBER OF SUBSAMPLES: 6
 SAMPLES FOUND BETWEEN ST. NO. 564 AND 588.
 SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Trachurus lathami - Colombia



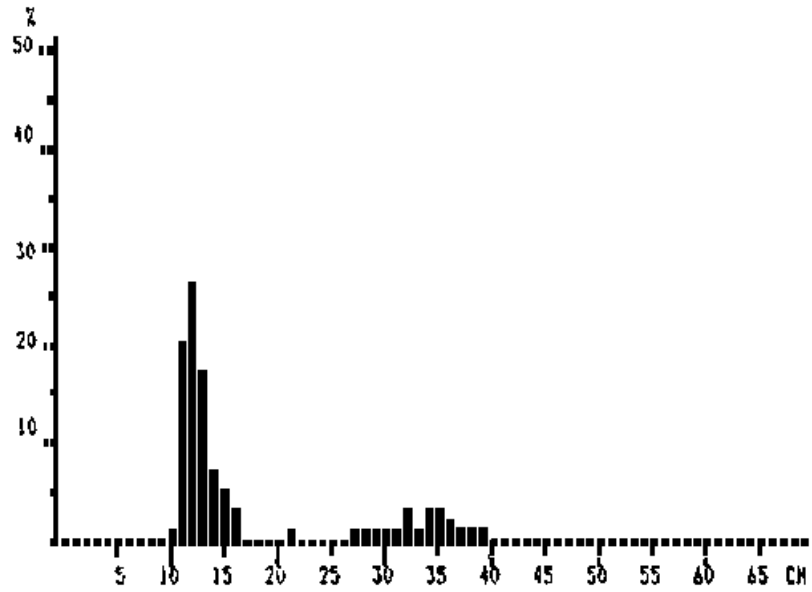
Pooled sample (simple adding)
MEAN LENGTH = 11.53cm N= 241
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 571 AND 572.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Selar crumenophthalmus - Colombia



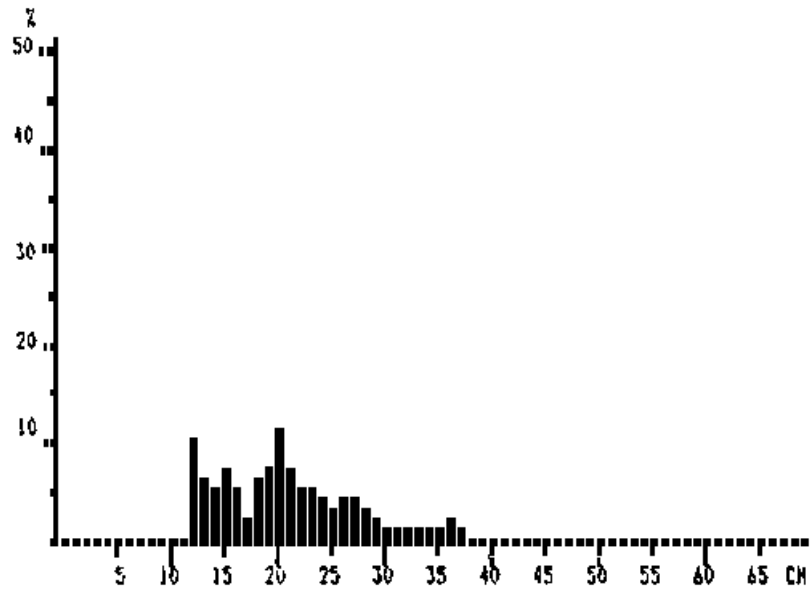
Pooled sample (simple adding)
MEAN LENGTH = 17.78cm N = 140
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 580 AND 600.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Selene spixii - Colombia



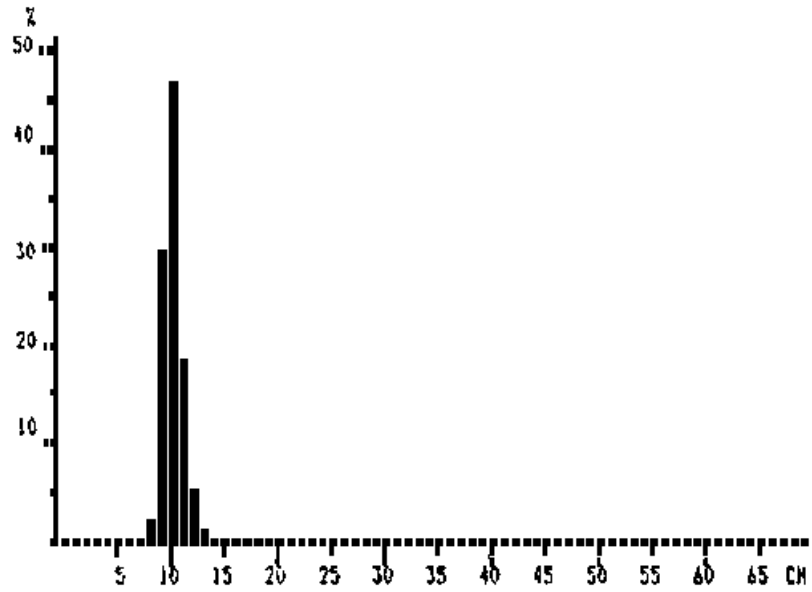
Pooled sample (simple adding)
MEAN LENGTH = 16.76cm N= 149
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 570 AND 590.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Chloroscombrus chrysurus - Colombia



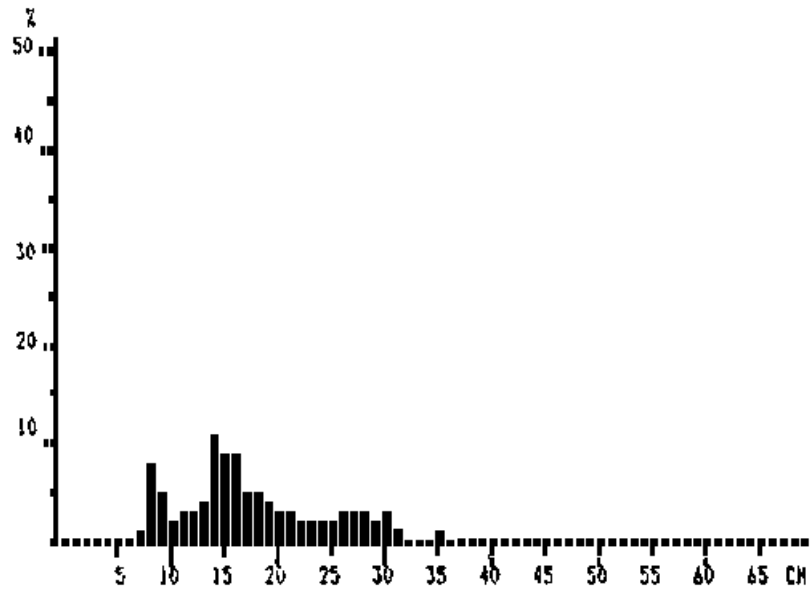
Pooled sample (simple adding)
MEAN LENGTH = 19.88cm N= 189
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 564 AND 590.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Decapterus macarellus - Colombia



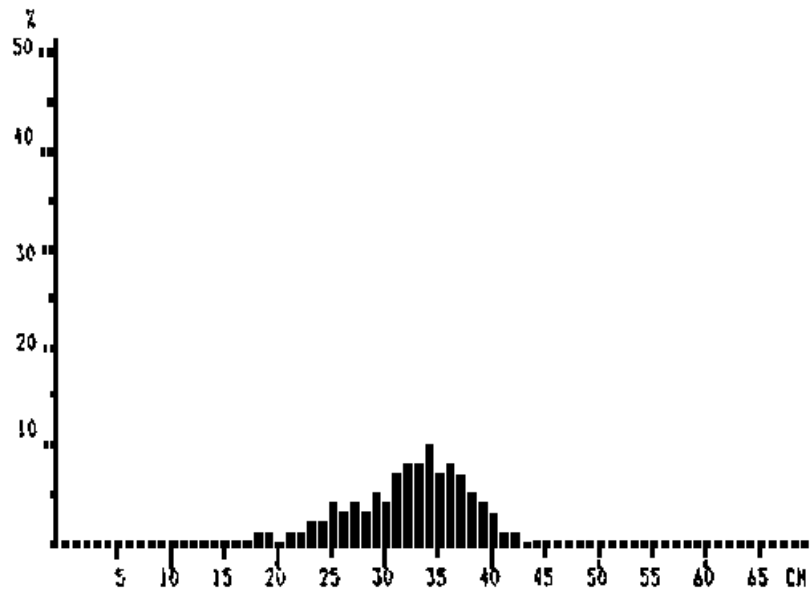
Pooled sample (simple adding)
MEAN LENGTH = 9.98cm N= 357
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 581 AND 586.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Rhomboplites aurorubens - Colombia



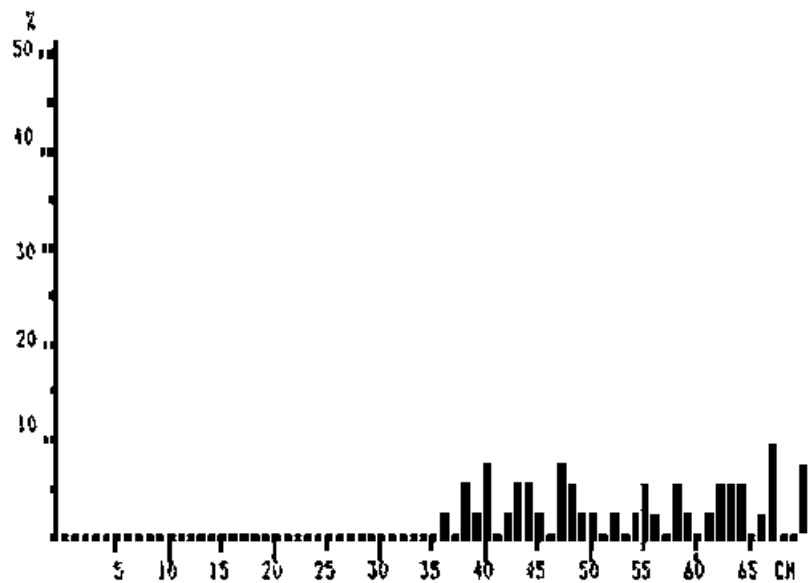
Pooled sample (simple adding)
MEAN LENGTH = 17.01cm N= 918
NUMBER OF SUBSAMPLES: 13
SAMPLES FOUND BETWEEN ST. NO. 564 AND 606.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Lutjanus synagris - Colombia



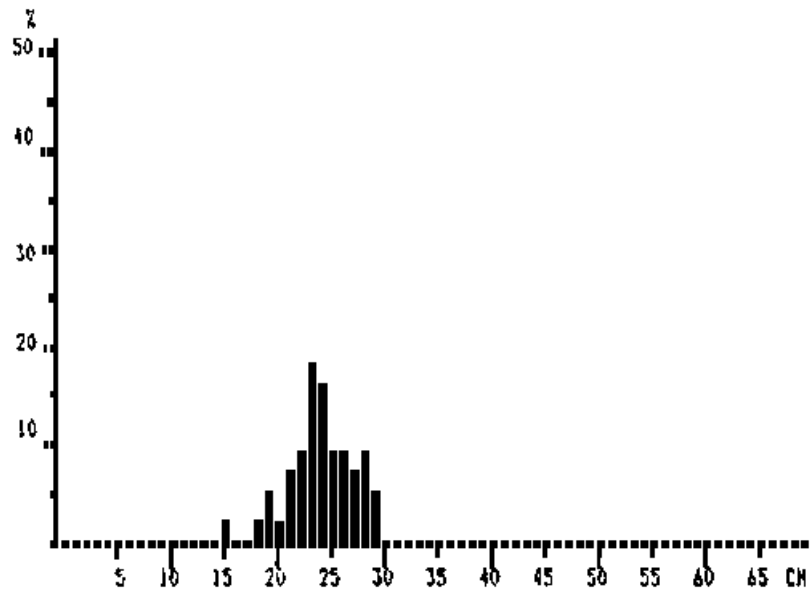
Pooled sample (simple adding)
MEAN LENGTH = 32.30cm N= 353
NUMBER OF SUBSAMPLES: 12
SAMPLES FOUND BETWEEN ST. NO. 564 AND 602.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Lutjanus analis - Colombia



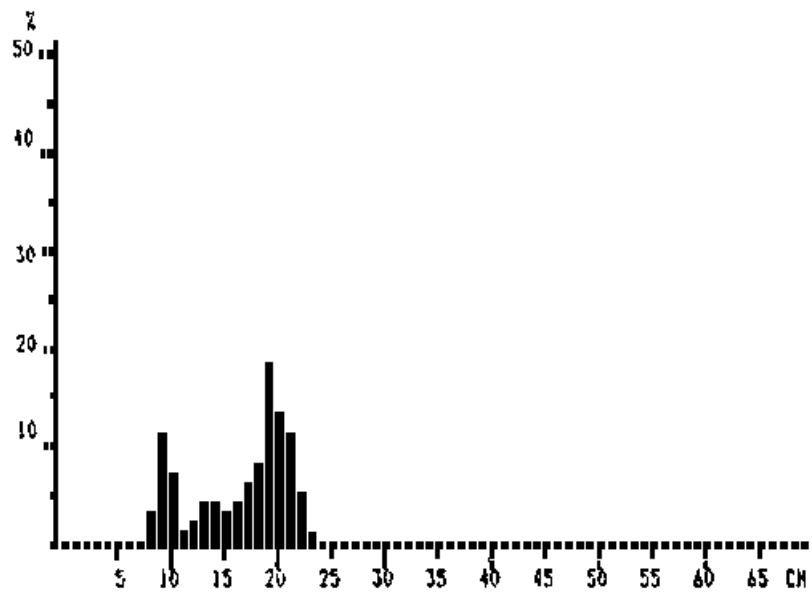
Pooled sample (simple adding)
MEAN LENGTH = 53.44cm N= 43
NUMBER OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 566 AND 599.
SAMPLES SEARCH BETWEEN ST. NO. 564 AND 606.

Lutjanus vivanus - Colombia



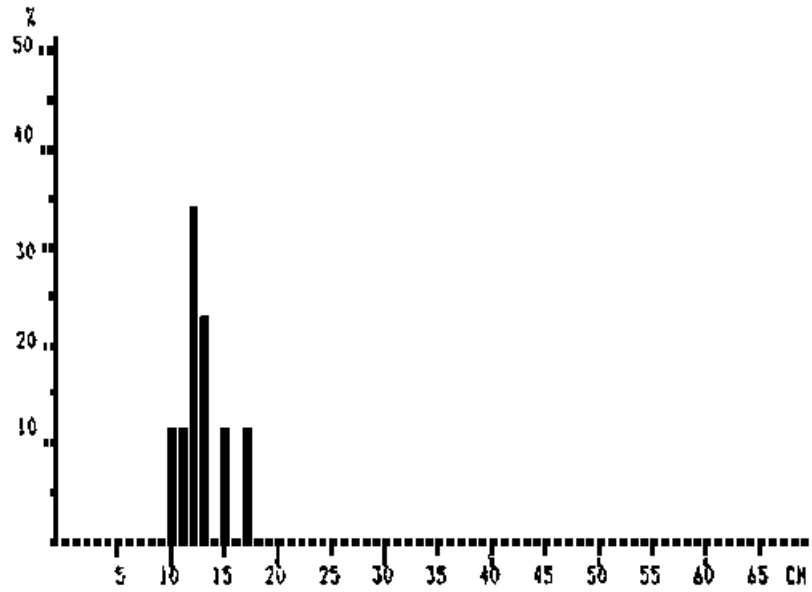
Pooled sample (simple adding)
MEAN LENGTH = 23.84cm N= 44
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 592 AND 592.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Pristipomoides macrophthalmus - Colombia



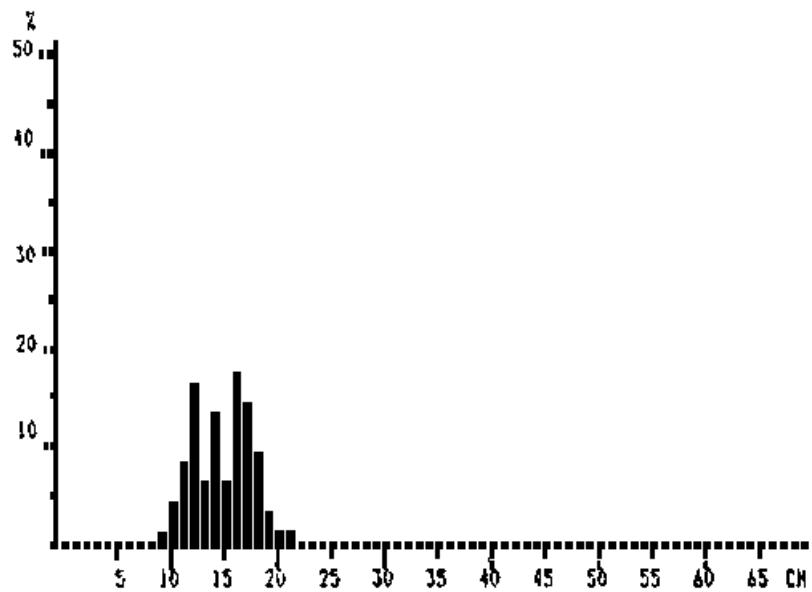
Pooled sample (simple adding)
MEAN LENGTH = 16.54cm N= 275
NUMBER OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 567 AND 601.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Penaeus brasiliensis - Colombia



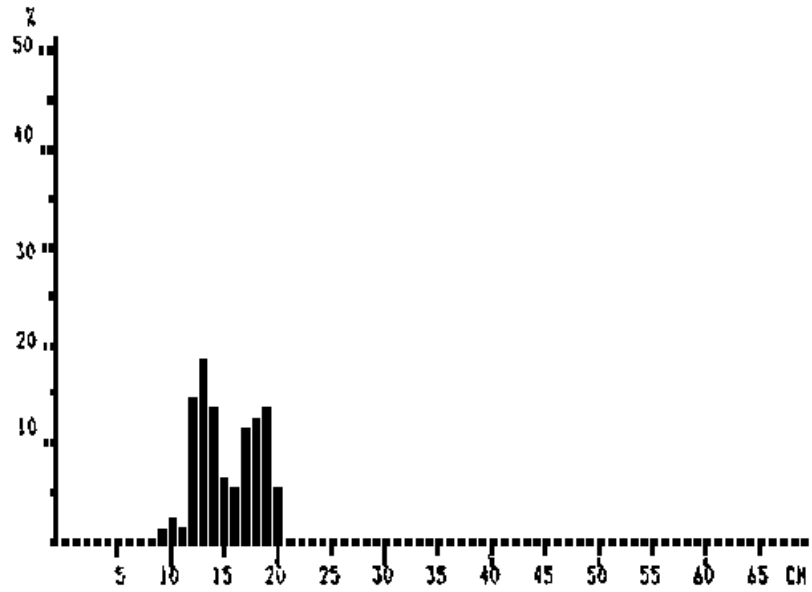
Pooled sample (simple adding)
MEAN LENGTH = 12.78cm N= 9
NUMBER OF SUBSAMPLES: 1
SAMPLES FOUND BETWEEN ST. NO. 567 AND 567.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Penaeus notialis - Colombia



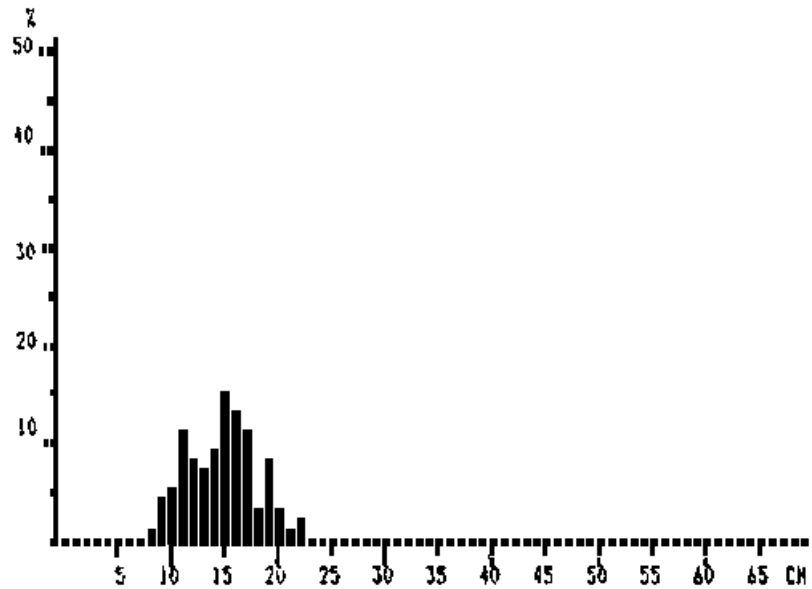
Pooled sample (simple adding)
MEAN LENGTH = 14.67cm N= 139
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 567 AND 595.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Plesiopenaeus edwardsianus - Colombia



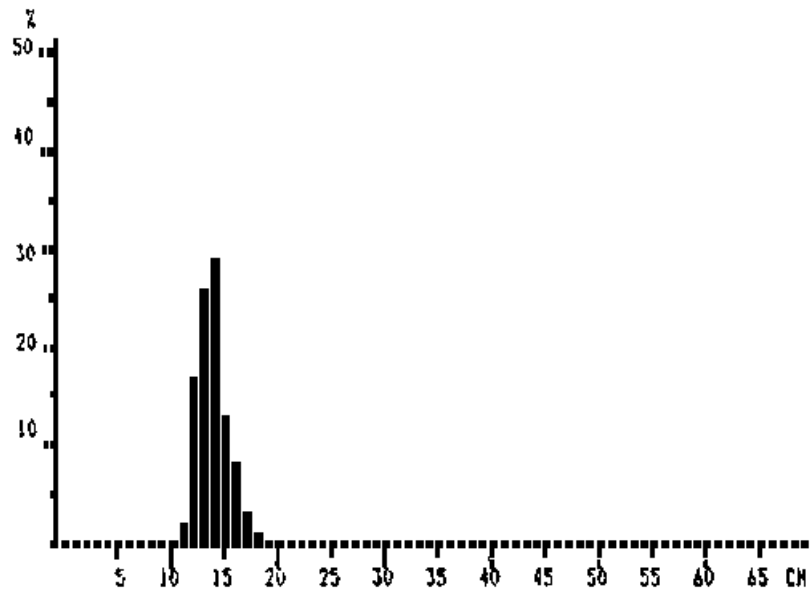
Pooled sample (simple adding)
MEAN LENGTH = 15.22cm N= 85
NUMBER OF SUBSAMPLES: 2
SAMPLES FOUND BETWEEN ST. NO. 568 AND 579.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Solenocera sp - Colombia



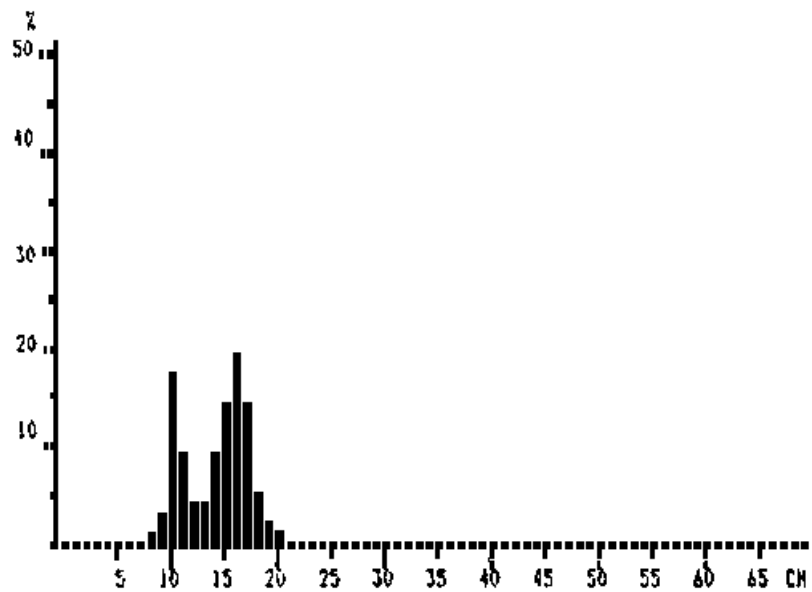
Pooled sample (simple adding)
MEAN LENGTH = 14.58cm N= 151
NUMBER OF SUBSAMPLES: 3
SAMPLES FOUND BETWEEN ST. NO. 568 AND 579.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Eucinostomus argenteus - Colombia



Pooled sample (simple adding)
MEAN LENGTH = 13.78cm N= 549
NUMBER OF SUBSAMPLES: 7
SAMPLES FOUND BETWEEN ST. NO. 565 AND 606.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.

Upeneus parvus - Colombia



Pooled sample (simple adding)
MEAN LENGTH = 14.11cm N= 411
NUMBER OF SUBSAMPLES: 5
SAMPLES FOUND BETWEEN ST. NO. 565 AND 600.
SAMPLES SEARCHED BETWEEN ST. NO. 564 AND 606.