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MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1986 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 3

(PROVISIONAL: NOT TO BE QUOTED WITHOUT PRIOR REFERENCE TO THE AUTHOR)

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P Pereda part-time, 10 Mar-26 Mar) Instituto Espanol de
F. Sanchez " " 27 Mar- 7 Apr) Oceanografia - Santander
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DURATION: 10 March-7 April

LOCALITY: English Channel, Irish Sea, Celtic Sea, Bay of Biscay

- AIMS:
1. To carry out a depth stratified trawl survey of the Western English Channel, Celtic Sea and Bay of Biscay.
 2. To sample juvenile fish.
 3. To sample pelagic fish shoals.
 4. To fish for cod in the Irish Sea over a complete 24 hour cycle to investigate feeding on Nephrops and digestion rates.

NARRATIVE:
CIROLANA sailed from Lowestoft at 2045 h, 10 March one tide later than planned, in order to clear immigration formalities and to facilitate victualling. A fast passage was made direct to the Irish Sea via the English Channel in fair but deteriorating conditions.

A first fishing position south-west of the Isle of Man was reached at 2200 h 12 March and work was begun immediately in pursuit of Aim 4. Two 24-hour cycles, each of 8 spaced one-hour hauls were completed in the period up to 0600 h 15 March, for the most part in marginal conditions. The first of these cycles was carried out south-west of the Isle of Man; the second to the west of the island.

After completing this work CIROLANA moved south to begin the main survey, diverting en route to the approaches to Holyhead to take aboard, via pilot boat, a new electronic balance. Work on the survey, using the Portuguese High Headline trawl and the 3 metre young fish beam trawl in defined depth bands along prescribed lines of latitude, was begun at

0615 h 16 March in the St Georges Channel. During the next ten days, 23 hauls were made with the Portuguese trawl and 17 with the beam trawl, mostly at the shelf edge between 51°00'N and 47°30'N, in depths from 140 to 250 metres. Throughout all this time conditions remained poor and several periods, of varying duration, were lost when the vessel was forced to dodge in gales or worse, culminating in a spectacular hurricane in central Biscay which was endured for most of 24 March. As conditions improved the following day, course was set for Santander, the ship arriving at 0700 h 26 March.

CIROLANA left Santander at 1300 h 27 March and re-commenced the survey immediately with a Portuguese trawl haul just north of the port, before returning overnight to central Biscay. During the following nine days 24 more Portuguese trawl hauls and 14 beam trawls were made working northward off the Brittany coast, thence to the central plateau of the Celtic Sea and finally into the Western English Channel. Bad weather again interrupted this progress and a further 1½ days were lost before March finally blew itself out. The last five working days of the cruise were carried out in fine weather and following a final haul off Eddystone, course was set for Lowestoft at 1930 h 5 April. After a good passage CIROLANA docked at Lowestoft at 0830 h 7 April.

RESULTS:

1. Forty six valid hauls, all except one of one hour duration, were made with the Portuguese High Headline trawl. These were distributed throughout the prescribed depth bands along the various sections as shown in Table 1 below. Time lost to bad weather prevented complete coverage of the survey area, particularly on the plateau of the Celtic Sea. Nevertheless, given the conditions that prevailed for much of the cruise this must be considered a very satisfactory outcome.

Table 1 Number of hauls by depth band and transect

Section	Depth band (m)						
	> 250	249-180	179-165	164-140	139-115	114-90	< 90
51°00'N	-	2	-	1	2	2	-
50 30	-	1	1	1	-	-	-
50 00	-	1	1	1	2	-	1
49 30	-	1	1	1	2	1	-
49 00	-	-	-	1	1	-	-
48 30	-	-	2	2	1	-	-
47 30	-	-	1	2	1	1	-
46 30	-	-	1	2	1	1	1
46 00	-	1	-	-	1	1	-
43 30	-	1	-	-	-	-	-

The usual procedures of sorting and weighing the total catch of each species and then sampling for length composition were followed at each station. Otoliths were taken and sex and maturity observations made where appropriate. All of the data so obtained were computer logged using the groundfish survey package.

Seventy one different species of finfish were caught by the Portuguese trawl. Scad, as usual, were the most abundant in terms of both weight and numbers. Catches greater than 20 baskets/hour of this species were made on ten occasions. The best single catch of scad was one of 48 baskets and on four other occasions catches exceeded 40 baskets. In contrast to the December '85 cruise, mackerel were comparatively abundant being the second most important species in both weight and numbers. Catches greater than 10 baskets/hour were made on nine occasions with a best haul of 46 baskets, and greater than 40 baskets on three other occasions. It was noticeable that neither scad nor mackerel were present along the northernmost boundary of the survey (51°00'N) until 180 metre depth was reached and then only in small quantity. Elsewhere a well defined threshold for both scad and mackerel was found to be at 135-140 metres with fish present only on the deeper side. The eight most abundant species in order of importance by weight and numbers is given below:

Table 2 The eight most important species caught by weight and numbers

	Species	Weight (kg)	%	Species	Numbers	%
1	Scad	14 830	48.06	Scad	217 764	62.38
2	Mackerel	9 904	32.09	Mackerel	46 377	13.28
3	Blue whiting	1 089	3.53	Blue whiting	24 756	7.09
4	Spurdog	634	2.06	Boarfish	23 082	6.61
5	Boarfish	627	2.03	Poor cod	15 863	4.54
6	Poor cod	578	1.87	Sprat	6 466	1.85
7	Hake	475	1.54	Hake	2 732	0.78
8	Megrim	453	1.47	Megrim	2 673	0.77

Notable single haul catches of species other than scad and mackerel were 12 baskets of blue whiting and 4½ of Boops boops (bogue) off the Spanish coast, 17 baskets of boarfish at Parsons Bank, 13 of spurdogs and 2½ of black sea bream south of the Lizard.

2. The 3 metre beam trawl was used to make 31 hauls usually of 15 minutes duration. Of these 27 were considered valid and 4 invalid. Working this gear from the main plankton winch was a great improvement over the method used on cruise 10/85 and the gear was fished successfully down to 230 metres. In the second half of the cruise a 'knock' developed in the winding on mechanism of the winch and it was decided to limit hauls to depths of 150 metres maximum.

The most commonly occurring fish caught by this gear were dragonets, scaldfish, gobies, thickback sole, megrim, small hake, poor cod, gadiculus and occasionally small monk. The same procedures of weighing and measuring all fish caught were followed at all beam trawl stations and the data obtained were also computer logged.

3. The echo sounder was run continuously throughout the period of the survey and observed frequently although constraints on working time did not allow for sustained echo sounder searches. No mid-water shoals of any size that would have been suitable for examination by the Engels trawl

were seen at any time, until the ship was on passage through the Eastern English Channel when a few small dense traces were seen about 25 metres off the bottom.

4. Sixteen hauls over two 24-hour cycles were made on Nephrops grounds off the Isle of Man, also using the Portuguese High Headline trawl. The stomachs of 106 cod were examined. Feeding was generally light but Nephrops featured prominently in the contents. The material obtained was preserved for further examination at the Laboratory. The data obtained will be analysed in more detail later.

GENERAL

(a) Otoliths were obtained from pelagic and demersal species according to stated objectives. Total numbers collected for each species are shown in the tables below.

Table 3 Demersal fish otoliths collected

Species	ICES area					
	107A	107E	107G	107H	107J	108
Cod	110	6	6	5	17	0
Whiting	47	23	21	21	34	1
Ling	27	3	11	7	0	22
Pollack	7	2	7	5	12	2
Hake	50	4	24	61	70	52
Plaice	13	3	13	0	4	0
*Megrin	3	0	40	61	63	64
*4 Spot megrim	0	0	0	0	69	6
Lemon sole	7	20	32	13	24	11
Sole	59	1	0	0	0	8
Witch	54	0	12	0	23	0
*Red mullet	0	23	0	2	0	24
*Red sea bream	0	0	0	1	0	4
*Monk (pisc)	42	1	9	16	18	32
*Monk (budeg)	0	0	14	8	34	9
Blue whiting	69	area not specified				

Note Those fish marked with an asterisk were frozen whole for further biological study at the laboratory.

Table 4 Pelagic fish otoliths collected

Species	ICES area			
	107E	107H	107J	108
Mackerel	-	-	448	425
Pilchard	145	-	-	-
Scad	113	22	156	298

Note All the mackerel otoliths collected during the cruise were mounted in resin ready to be read.

(b) Additional mackerel sampling for fecundity and atresia studies was also carried out on fish caught in Areas 107J and 108, aimed at an improved estimate of spawning stock size in the 1986 mackerel egg survey. Ovaries were collected from 241 maturing fish caught in the central spawning area and covering a wide range of fish lengths. Associated with this work, 120 measurements were made on differential shrinkage of developing mackerel oocytes preserved in Gilson's fluid and formalin.

(c) The stomach contents of several hundred mackerel were examined for comparison with similar work done in 1979.

MISCELLANEOUS

1. Quantities of fish from 12 species were frozen for the laboratory fish identification course.
2. Spiral valves were collected and preserved for Dr Rachel Smith, National Museum of Wales from tope and an electric ray.
3. A number of Nephrops, including some berried, were kept alive on board for more than 3 weeks and were returned to the Laboratory in good condition.

B C Bedford

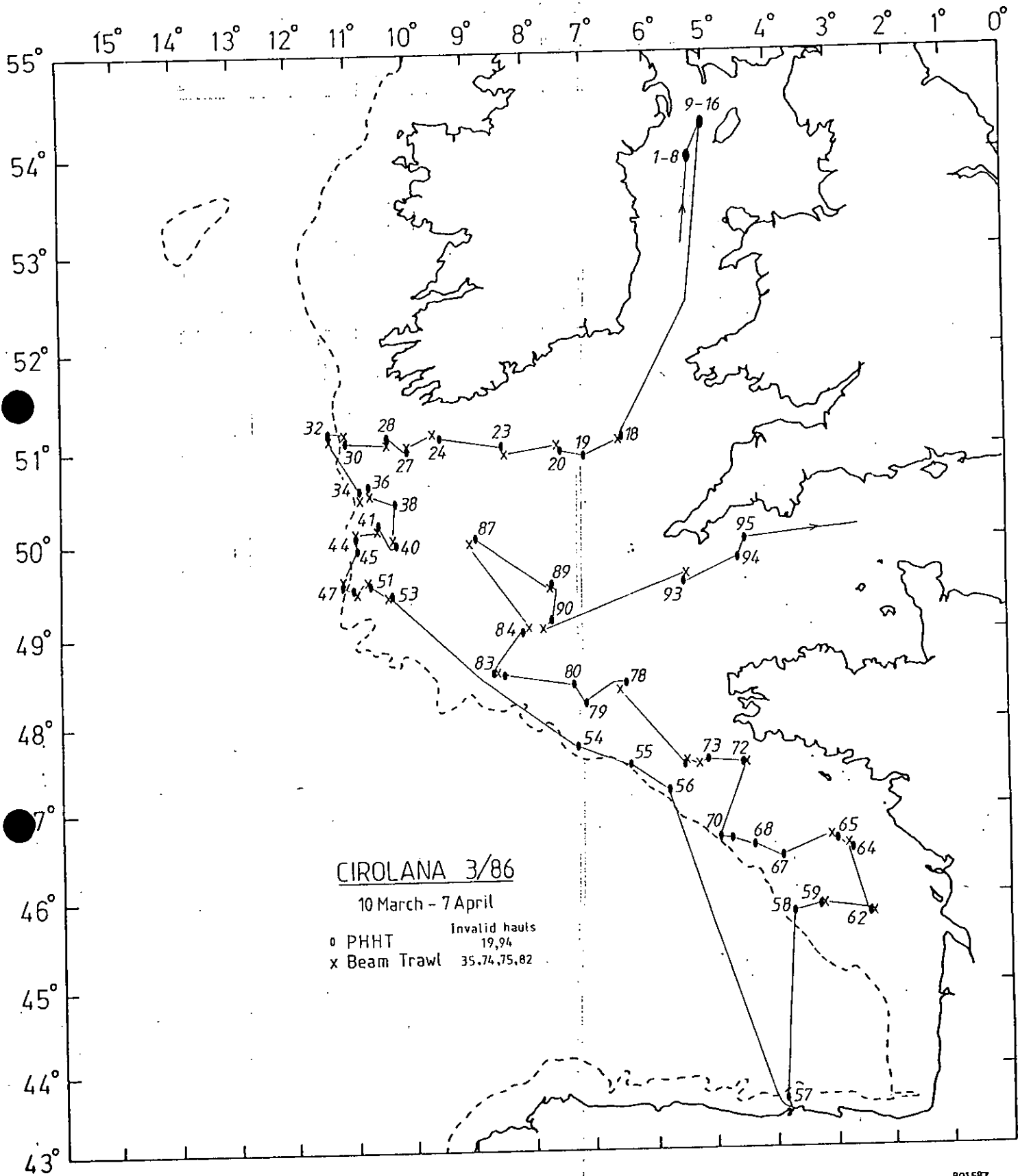
18 April 1986

Seen in draft: J R French (Captain)
E W Pearson (Fishing Master)

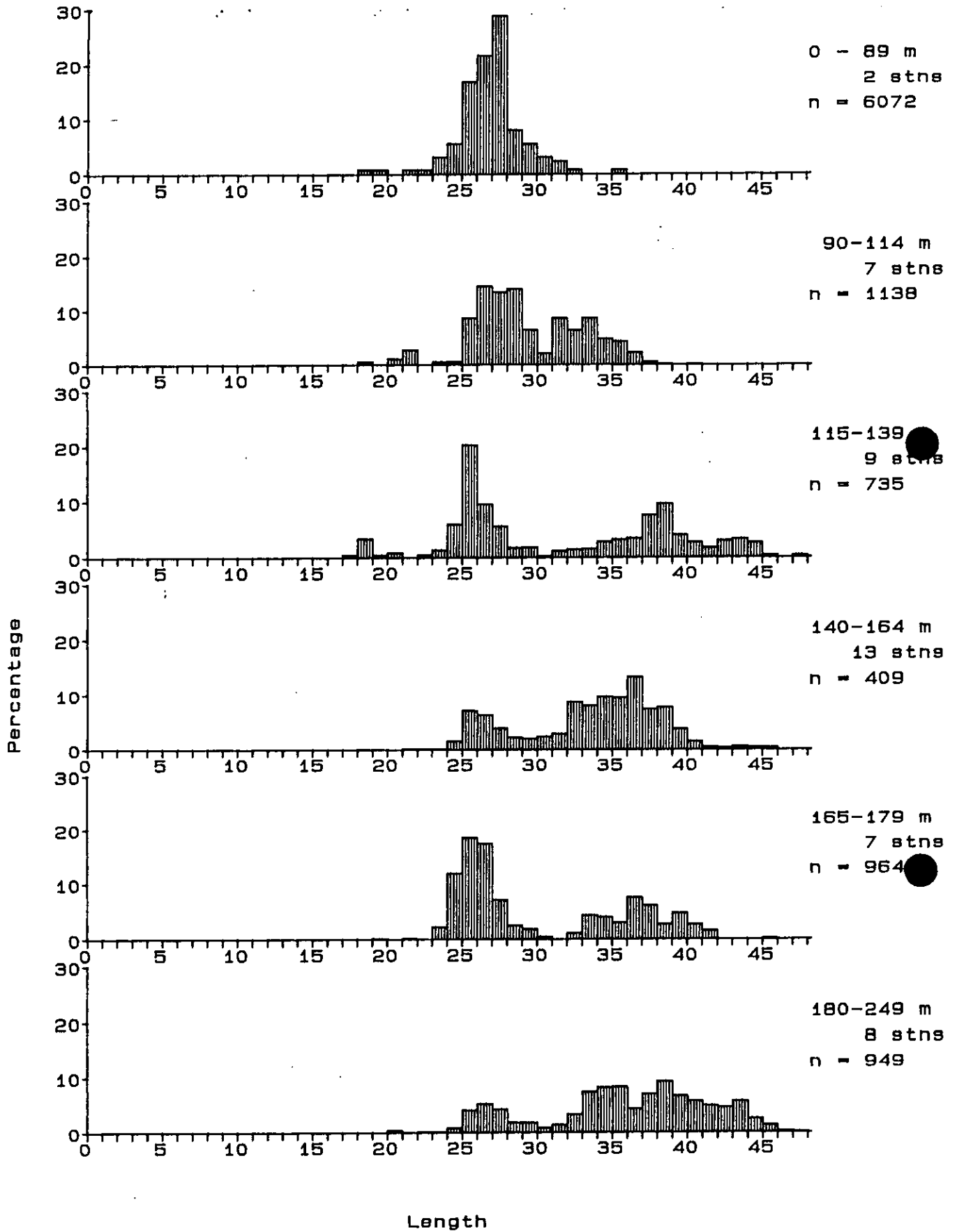
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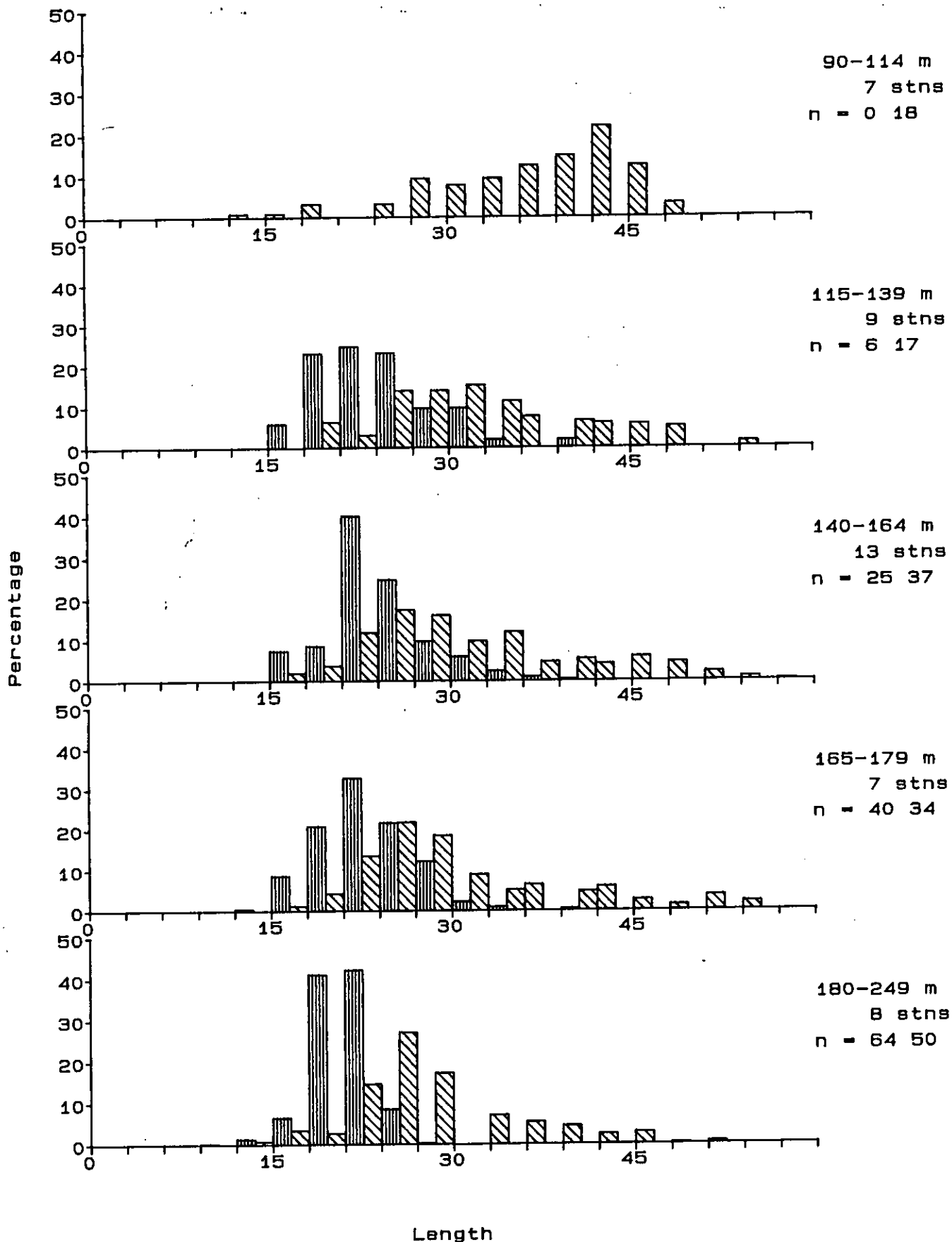
Basic list +
B C Bedford
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F Sanchez
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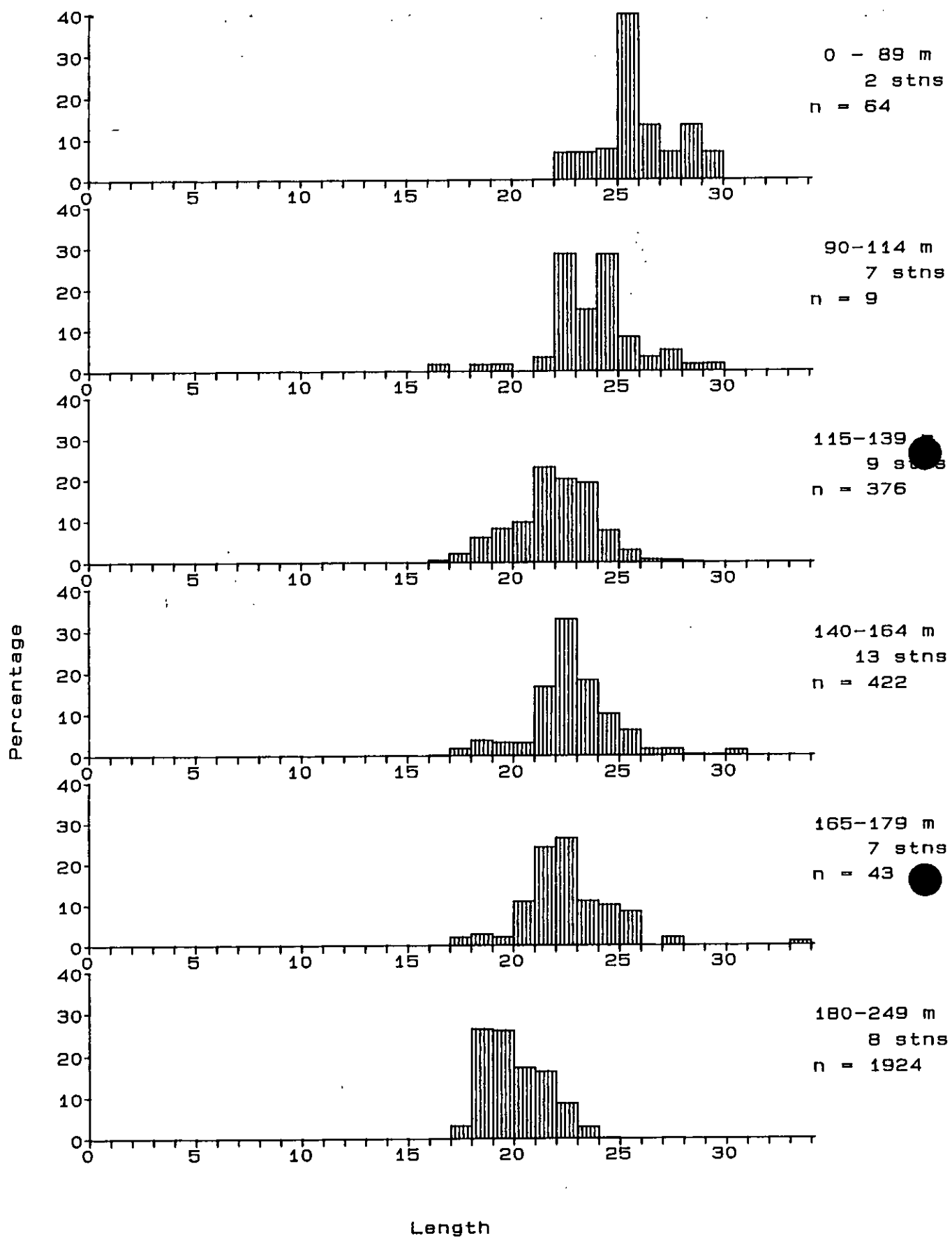
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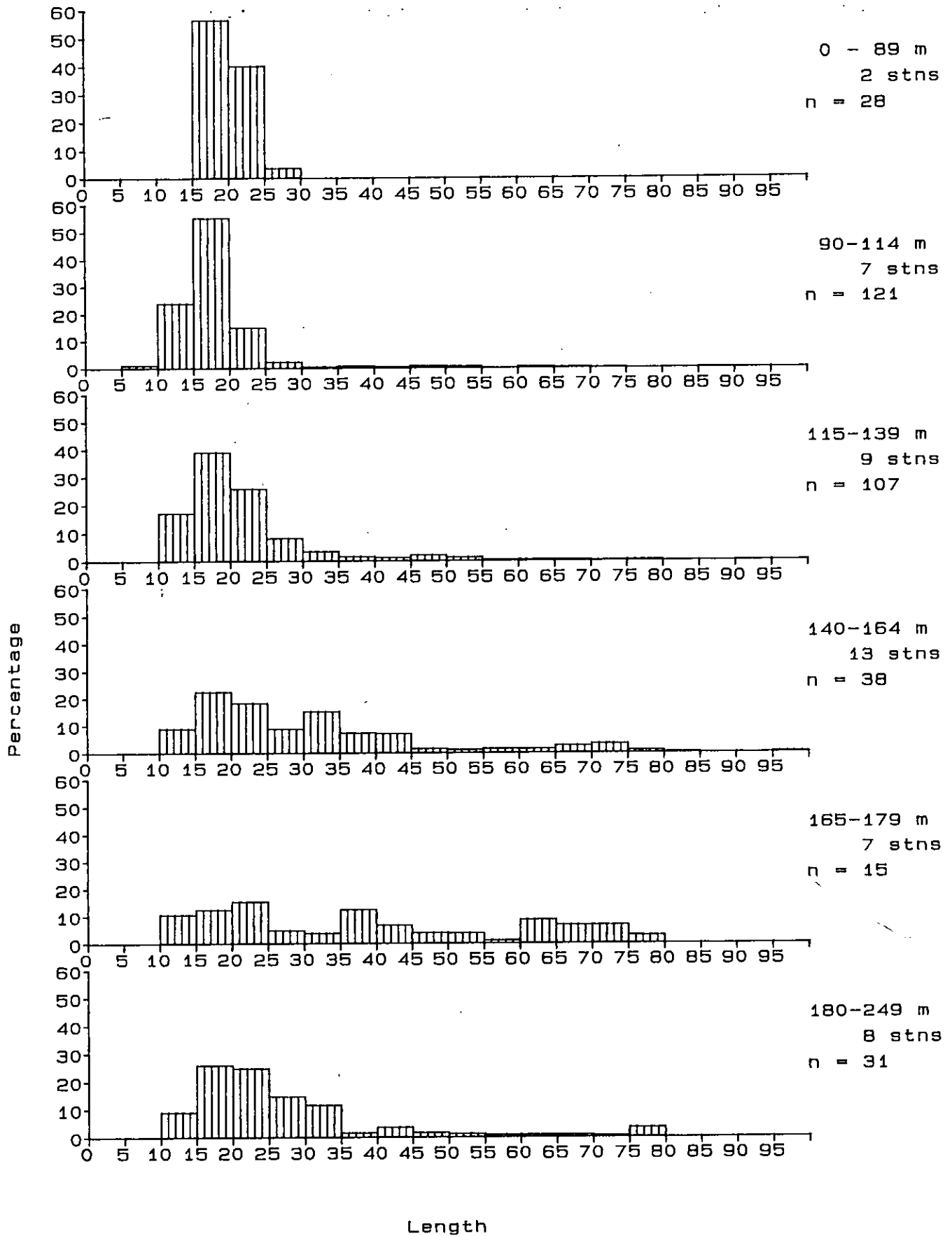
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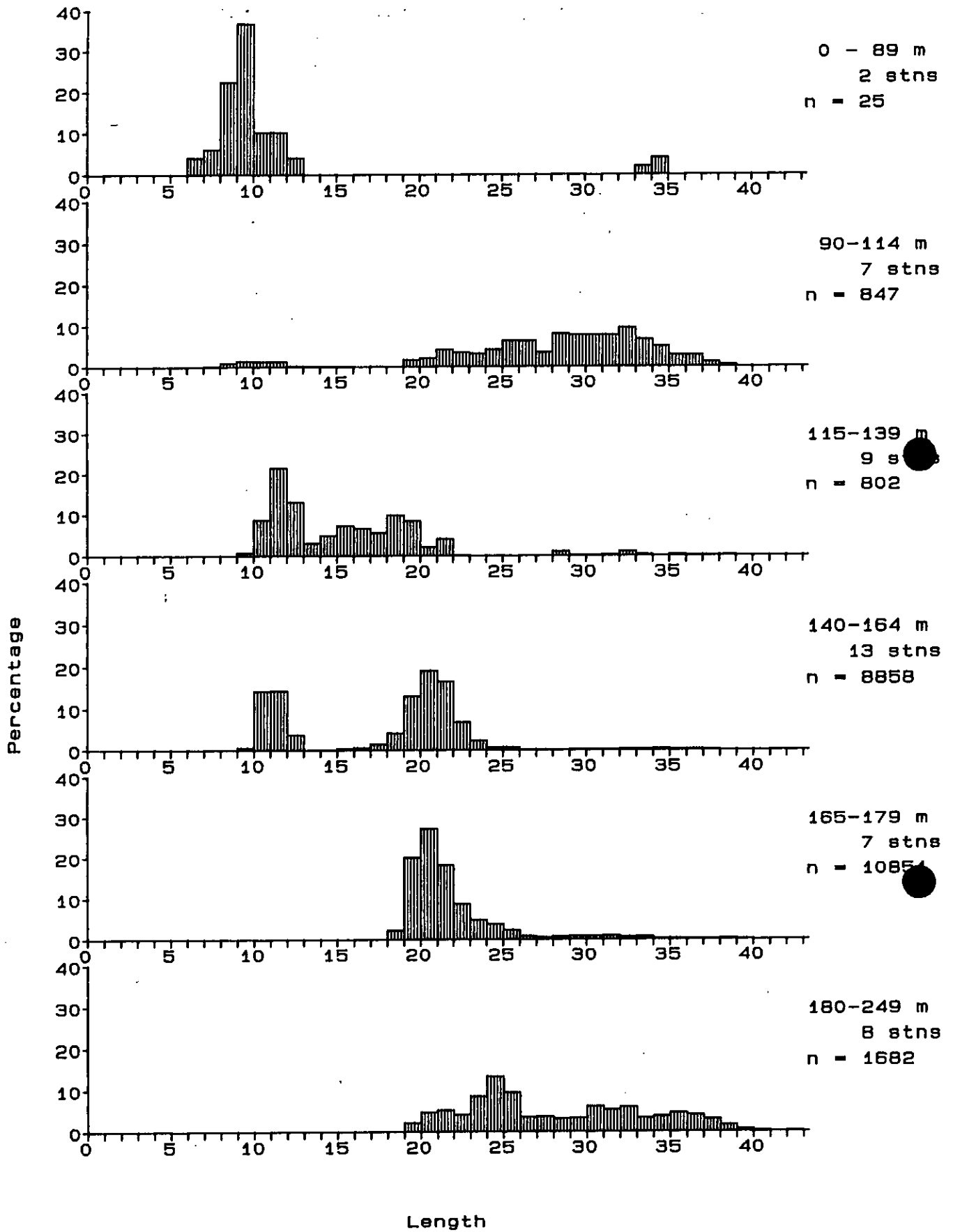
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Cir 3/86 M. merluccius



Cir 3/86 T. trachurus



Cir 3/86 T. minutus

