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

7
1988 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 15
(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF: G P Arnold
P Scholes
J D Metcalfe
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DURATION: Left Lowestoft 1930 h 2 December
Arrived Lowestoft 0830 h 22 December
All times are Greenwich Mean Time

LOCALITY: South Falls, Dover Strait

AIMS

1. To study the migration of plaice moving to and from their spawning grounds in the eastern English Channel in relation to maturity stage, day/night and tide.
2. To collect herring samples for fecundity and age/length determinations.
3. To collect cod gonads and blood samples for genetic analysis at Birmingham University.
4. To collect live plaice for experimental laboratory studies.

NARRATIVE:

CLIONE left Lowestoft in an easterly gale on the evening of 2 December, but was able to begin fishing at 1700 h the next day, and to continue working until 0600 h 11 December with the loss of only three hauls because of bad weather. CLIONE then steamed to Harwich to replenish fresh water before resuming fishing at 1600 h 12 December. From then until the end of the cruise she fished continuously with the loss of only one more of the scheduled hauls as a result of winch failure.

RESULTS:

Aim 1: Fifty five stations were worked during the cruise giving 53 valid 3 h midwater trawl hauls. Sixteen hauls were made by day and 37 by night and the total plaice catch was 1624 fish.

Up to and including station 33 on 15 December there was a clear difference between day and night catches (Table 1) and no difference between catches on north- and south-going tides by night (Table 2). From station 34 onwards there was a marked difference in catch rates between the two tides with a ratio of 3:1 in favour of the south-going tides (Table 1).

There were more males than females (ratio 1.5:1) in the catches (Table 3) and most of the males were maturing in Stage IV. Only 9% were running ripe (Table 4).

Among the females most (74%) were maturing. About 15% of the population was immature and, as is normal for the Southern Bight in winter, the sex ratios were reversed with mature males out-numbering immature females in the same ratio.

The results suggest that we were sampling a static population until 15 December and that fish migrating south from Smiths Knoll to spawn in the eastern English Channel began to traverse the working area from around that date. The very low catches of spent female plaice (7 fish, 6 on north-going tides) indicate that spawning had already commenced in the Channel, albeit at low intensity.

Aim 2: Two full herring and sprat samples were taken and some additional measurements made.

Aim 3: Maturing ovaries from 30 cod were frozen in liquid nitrogen and landed in Harwich together with blood samples from 107 fish for dispatch to Birmingham University for genetic analysis. Large catches of cod were made throughout the cruise and samples of otoliths were taken and length measurements made to describe the population.

Aim 4: 15 live plaice were landed for experimental studies.

G P Arnold
11 January 1988

SEEN IN DRAFT: JRF

INITIALLED: DJG

DISTRIBUTION:

Basic list+

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M Greer Walker

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Table 1 Total catches of plaice by day, night and tide

		Day		Night		Total
		(a) Stations 2-33		(b) Stations 34-55		
North-going tide:	catch	95	389	66	142	692
	hauls	4	11	6	7	28
	catch/haul	23.8	35.4	11.0	20.3	24.7
South-going tide:	catch	26	349	-	557	932
	hauls	6	10	No hauls	9	25
	catch/haul	4.3	34.9	-	61.9	37.3
Totals:	catch	121	738	66	699	1624
	hauls	10	21	6	16	53
	catch/haul	12.1	35.1	11.0	43.7	30.6

Table 2 Paired-haul catches of plaice by night

Stations	Total catch		Ratio	Mature males (stages IV-VI)		Ratio	Maturing females (stages III-IV)		Ratio
	S	N		S	N		S	N	
S/N			S/N			S/N			S/N
(a) Stations 2-33									
3/2	19	19		10	11		6	6	
5/6	30	28		12	16		10	9	
9/10	18	16		10	10		8	1	
11/12	32	25		18	16		13	4	
15/16	17	24		11	13		4	7	
18/19	29	39		15	24		10	11	
22/21	29	47		14	29		10	10	
25/24	53	54		35	25		12	18	
28/27	56	34		30	19		18	10	
31/30	66	55		35	33		20	15	
Totals	349	341	1.02	190	196	0.97	111	91	1.22
(b) Stations 34-55									
35/34	46	35		28	21		10	6	
38/37	38	23		21	10		14	11	
41/40	76	17		38	9		26	6	
43/44	109	17		59	4		35	8	
47/48	59	13		25	5		22	5	
51/52	57	19		33	13		15	3	
54/55	35	18		18	11		13	2	
Totals	420	142	3.0	222	73	3.0	135	41	3.3

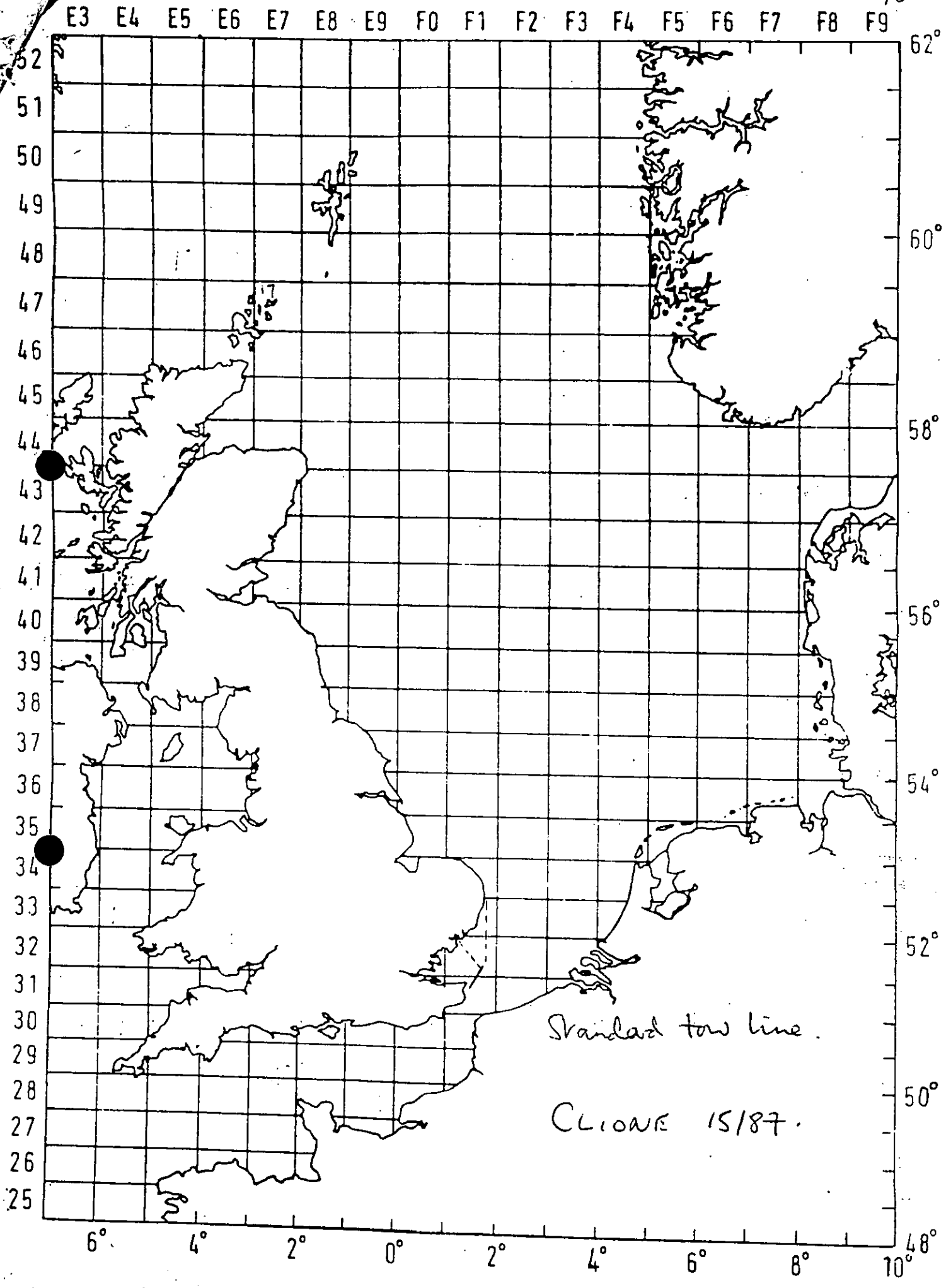
Table 3 Plaice sex ratios

Maturity	Numbers		Ratio F/M	Totals
	Males	Females		
Immature	89	159	1.79	248
Mature	886	490	0.55	1376
Ratio I/M	0.1	0.3	-	(0.18)
Totals	975	649	(0.66)	1624

Table 4 Plaice maturity stages by tide

		Males			Females				Totals
		I-III	IV	VI	I-II	III-V	VI	VII	
North-going tide	n	28	336	49	87	186	0	6	692
	%	6.8	81.4	11.9	31.2	66.7	0	2.1	42.6
South-going tide	n	61	440	61	72	297	0	1	932
	%	10.8	78.3	10.8	19.4	80.3	0	0.3	57.4
Totals	n	89	776	110	159	483	0	7	1624
	%	9.1	79.6	11.3	24.5	74.4	0	1.1	100

MUAS 3395



Standard tow line.
CLIONE 15/87.