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

1988 RESEARCH VESSEL PROGRAMME

REPORT RV CORYSTES CRUISE 9

(Provisional not to be quoted without prior reference to the author)

STAFF

Part A) M Greer Walker  
G P Arnold  
J Metcalfe  
E Shreeve  
B Riches  
A Emery

Part B) M Greer Walker  
J Metcalfe  
B Thompson  
R Turner  
L Emerson  
T Noble (Univ Birmingham)

DURATION

Part A) 11-12 November  
B) 12-28 November

LOCALITY

Part A) East Anglian coast  
B) South Falls : Dover Strait

AIMS

- Part A) Sector scanner trials : to evaluate the new scan converter  
Part B) 1. To study the migration of plaice moving towards their spawning grounds in the eastern channel.  
2. To collect blood and tissues from cod for DNA analysis.  
3. To collect sole ovaries for fecundity analysis.

NARRATIVE

CORYSTES left Lowestoft at 0930h 11 November and steamed to a position 3 miles east of Pakefield. Scanner trials were completed by 0100 12 November and CORYSTES returned to Lowestoft to exchange personnel at 0930h. Mid water trawling began on sequential northerly and southerly tides in the Dover Strait early that evening and continued until 0500 28 November. There were three interruptions to the work. Two hauls were lost on the night of 19/20 November due to bad weather, two were lost on the night of 23/24 November when a crew member was landed at Lowestoft and on the third occasion (20 November) damaged gear resulted in the loss of a single haul.

RESULTS

Part A) Scanner Trials

Following the severe difficulties encountered with the display of acoustic tag signals during CORYSTES 1/88, further trials were carried out with the sector scanner on the first day of the cruise. Adjustments had been made to the analogue-to-digital converter so that the full range of video input signals was digitised before processing by the scan converter. Previously only a small fraction of the available dynamic range appears to have been in use. As a result of the adjustments the quality of the sonar displays was greatly improved and excellent echoes were obtained from two wrecks and a standard transponding tag, attached to a large female plaice. (Report by G P Arnold.)

Part B) Plaice migration (Tables 1 & 2)

Peak spawning occurs towards the end of January in the eastern channel and plaice migrating to and from this area pass through the Dover Strait. Previous cruises have covered the months December to March. Between 11 and 28 November 46 midwater trawl hauls were made each of three hours duration. Twenty eight hauls were made during the night and 18 during the day; 22 on southerly tides and 24 on northerly tides. A total of 661 plaice were caught. Few immature fish of either sex were caught and the male fish consisted of maturing (Stage IV) and running (Stage VI) fish. The female fish were predominantly maturing fish (Stage III and IV), none were spawning or spent. Length measurements suggested that both sexes were larger than those recorded from cruises closer to peak spawning.

A comparison of maturing fish caught on northerly and southerly tides by day and by night shows that there were significantly more fish caught on southerly tides by night rather than by day and on southerly rather than northerly tides at night. A comparison of day and night catches (unpaired 't' test) irrespective of tide gave weak correlation (P.O.074) in favour of night time catches.

2. Blood samples, ovaries and livers were collected from 125 cod for DNA analysis (A Birley Birmingham University).

3. Maturing sole ovaries were collected for fecundity analysis (P Witthames).

Blood samples were collected from several female plaice for hormone analysis (A P Scott).

4. Measured samples of sprat and herring (P O Johnson) and one hundred cod stomachs (P Bromley) were returned frozen to the laboratory. Live dab and plaice were collected for experimental studies (R Turner).

M Greer Walker

SEEN IN DRAFT : D J G

INITIALLED : J R F M G C R

DISTRIBUTION :

Basic list+

M Greer Walker

G P Arnold

J Metcalfe

E Shreeve

B Riches

A Emery

B Thompson

R Turner

L Emerson

T Noble (Univ. Birmingham)

P Johnson

P Bromley

P Witthames

A Birley (Birmingham Univ)

TABLE 1

DATE	STNS NO	TIME SHOT	HAULED	NORTH/ SOUTH TIDE	DAY/ NIGHT	MALE MATURITY STAGES					FEMALE MATURITY STAGES							ALL FISH TOTAL	SOLES
						I-II	IV	VI	VII	TOTAL	I	III	IV	V	VI	VII	TOTAL		
12 Nov	4	1937	2237	S	N	0	3	2	0	5	2	1	2	0	0	0	5	10	6
13 Nov	5	0135	0435	N	N	0	1	4	0	5	0	1	0	0	0	0	1	6	9
13 Nov	6	0746	1046	S	D	0	1	1	0	2	0	0	0	0	0	0	0	2	1
13 Nov	7	1322	1622	N	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 Nov	8	2016	2316	S	N	1	1	9	0	11	2	2	3	0	0	0	7	18	15
14 Nov	9	0216	0516	N	N	0	3	5	0	8	0	4	0	0	0	0	4	12	8
14 Nov	10	0830	1130	S	D	0	0	0	0	0	0	1	0	0	0	0	1	1	1
14 Nov	11	2056	2356	S	N	0	0	5	0	5	0	0	2	0	0	0	2	7	12
15 Nov	12	0255	0555	N	N	0	0	6	0	6	1	0	1	0	0	0	2	8	5
15 Nov	13	0918	1218	S	D	0	0	1	0	1	0	0	1	0	0	0	1	2	0
15 Nov	14	2210	0110	S	N	0	0	5	0	5	1	1	2	0	0	0	4	9	2
16 Nov	15	0358	0658	N	N	0	1	3	0	4	2	0	0	0	0	0	2	6	2
16 Nov	16	1029	1329	S	D	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16 Nov	17	1639	1939	N	N	0	0	2	0	2	0	2	0	0	0	0	2	4	19
17 Nov	18	2310	0210	S	N	0	1	10	0	11	0	1	5	0	0	0	6	17	7
17 Nov	19	1152	1452	S	D	1	0	0	0	1	0	1	0	0	0	0	1	2	0
17 Nov	20	1758	2058	N	N	0	0	3	0	3	0	3	0	0	0	0	3	6	26
18 Nov	21	0021	0321	S	N	1	0	9	0	10	3	5	3	0	0	0	11	21	33
18 Nov	22	0729	1029	N	D	0	4	6	0	10	1	2	8	0	0	0	11	21	4
18 Nov	23	1255	1555	S	D	0	5	1	0	6	1	0	5	0	0	0	6	12	6
18 Nov	24	1924	2224	N	N	0	10	1	0	11	0	1	0	0	0	0	1	12	6
19 Nov	25	0143	0443	S	N	0	9	3	0	12	6	8	4	0	0	0	18	30	25
19 Nov	26	0800	1100	N	D	0	2	9	0	11	4	3	0	0	0	0	7	18	19
19 Nov	27	2029	2329	N	N	2	1	4	0	7	3	3	1	0	0	0	7	14	34
20 Nov	28	0249	0549	S	N	0	1	8	0	9	2	5	5	0	0	0	12	21	39
21 Nov	30	0924	1224	N	D	0	4	1	0	5	2	5	0	0	0	0	7	12	6
21 Nov	31	2204	0104	N	N	0	5	1	0	6	1	3	1	0	0	0	5	11	27
22 Nov	32	0404	0704	S	N	0	11	3	0	14	1	4	3	0	0	0	8	22	27
22 Nov	33	1019	1319	N	D	0	1	7	0	8	1	3	1	0	0	0	5	13	27
22 Nov	34	1655	1955	S	N	1	1	25	0	27	1	2	3	0	0	0	6	33	15
23 Nov	35	2339	0239	N	N	0	1	7	0	8	1	0	4	0	0	0	5	13	47
23 Nov	36	1106	1406	N	D	0	2	5	0	7	2	2	0	0	0	0	4	11	16
24 Nov	37	1146	1446	N	D	0	1	7	0	8	2	2	2	0	0	0	6	14	20
24 Nov	38	1824	2124	S	N	0	6	18	0	24	2	3	7	0	0	0	12	36	23
25 Nov	39	0022	0322	N	N	0	5	8	0	13	4	4	1	0	0	0	9	22	13
25 Nov	40	1235	1535	N	D	0	0	3	0	3	1	3	0	0	0	0	4	7	11
25 Nov	41	1906	2206	S	N	1	0	21	0	22	4	7	5	0	0	0	16	38	15

TABLE 1 Contd.

DATE	STNS NO	TIME SHOT	HAULED	NORTH/ SOUTH TIDE	DAY/ NIGHT	MALE MATURITY STAGES					FEMALE MATURITY STAGES							ALL FISH	
						I-II	IV	VI	VII	TOTAL	I	III	IV	V	VI	VII	TOTAL	TOTAL	SOLES
26 Nov	42	0109	0409	N	N	0	1	3	0	4	3	3	1	0	0	0	7	11	9
26 Nov	43	0731	1031	S	D	0	5	15	0	20	6	2	8	0	0	0	16	36	17
26 Nov	44	1217	1517	N	D	0	1	6	0	7	2	2	3	0	0	0	7	14	4
26 Nov	45	1949	2249	S	N	0	3	11	0	14	1	2	8	0	0	0	11	25	12
27 Nov	46	0157	0457	N	N	0	2	7	0	9	0	0	3	0	0	0	3	12	19
27 Nov	47	0802	1102	S	D	0	0	11	0	11	4	0	0	0	0	0	4	15	6
27 Nov	48	1251	1551	N	D	0	1	11	0	12	2	3	0	0	0	0	5	17	7
27 Nov	49	2022	2322	S	N	2	1	7	0	10	0	10	1	0	0	0	11	21	7
28 Nov	50	0126	0426	N	N	0	0	8	0	8	0	10	1	0	0	0	11	19	6

A comparison using paired 't' tests of the plaice catch by maturity stage on northerly and southerly tides by day and by night

TABLE 2

	NORTHERLY TIDE		SOUTHERLY TIDE		NIGHT		DAY		Probability
	DAY	NIGHT	DAY	NIGHT	N'LY TIDE	S'LY TIDE	N'LY TIDE	S'LY TIDE	
<u>MALE</u>									
Immature	NS		NS		NS		NS		
Maturing	NS		X		XXX		NS		NS - Not significant
Total	NS		XX		XXX		NS		X - < 0.025
<u>FEMALE</u>									
Immature	NS		NS		NS		NS		XX - < 0.01
Maturing	NS		XX		XXXX		NS		XXX - < 0.005
Total	NS		XX		XXX		NS		XXXX - < 0.001
All fish	NS		XXX		XXXX		NS		