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

1990 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 12b/90

STAFF:

P J Bromley (SIC)
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D Brown

DURATION:

Left Lowestoft 17 30 GMT 13 November 1990
Arrived Lowestoft 06 39 GMT 30 November 1990

LOCATION:

North Sea

AIMS:

1. To investigate predation rates and prey selection in cod and whiting (and haddock where appropriate). This involves the following procedures:

   (a) Survey of the abundance of cod and whiting and their prey using a Portuguese High-headline trawl (Including 24 h sampling periods to investigate diurnal patterns), coupled with an analysis of the species composition and size distribution of the catch.

   (b) Sampling the stomach contents of cod and whiting, identification and staging of prey, and preservation of material for analysis in the laboratory.

   (c) Survey of the abundance of the macrobenthos prey organisms using a 3-metre beam trawl.

   (d) Temperature profiles and surface light measurements.

2. Trawling with and without liner/top cover to investigate the incidence of feeding in the trawl.

3. (a) Collection of live gurnards (N Ashcroft, Bristol).

   (b) Collection of live benthos and brittle stars, and cod worms frozen in liquid nitrogen (B Turner).

(c) Collection of frozen fish for pollution studies (A Franklin) and fish food (P J Bromley), along with any bass (D Eaton).

4. Develop and test the Scanmar and plankton logging programs for use on micros at sea (K Brander).

NARRATIVE:

The ship left Lowestoft and commenced two hours of engineering trials in the Roads. After landing the engineers by Sea Rider the ship sailed to Smith's Knoll to test out the Portuguese High Headline trawl and the 3 m beam trawl, along with the ancillary equipment, before sailing northwards to begin the fishing survey. The Scanmar readings showed that the headline height of the PHHT was excessive and the number of bottles was reduced in order to lower the headline to the specification height of 5-6 m off the bottom.

Trawl stations (see cruise track) provided good coverage of the UK sector of the North Sea, and only four stations were dropped due to bad weather, and one station on the approach to the Silver Pit could not be fished due to the presence of 1200 crab pots in the area. The catches were analysed and, when appropriate, stomach samples were frozen down for analysis in the laboratory.

On returning to Smith's Knoll a 24 h fishing cycle was attempted, but on the fifth tow the trawl came fast and, on freeing its self, the net became entangled round the propeller. Corystes steamed to Lowestoft using the bow thruster and was assisted into port by tug on 23 November. After two days intensive work by divers in conditions of almost zero visibility the net was cleared and the ship found to be free of damage. She sailed again at 0030 h on 26 November and, after a period spent dodging due to bad weather, commenced fishing on 27 November. Tows were undertaken at Southwold and Dunwich and a 24 h fishing cycle followed by a series of 6 beam trawls was successfully completed at the Knoll on 28-29 November.

On two occasions, adverse weather conditions necessitated taking the engine chokes out in order to generate sufficient power to shoot the PHHT trawl. A record was kept of power output of the engines during shooting and towing (attached).

RESULTS

1. (a & b) The distribution of cod, whiting and haddock and their fish prey was surveyed and a large number of stomachs were frozen for subsequent analysis in the laboratory. These will provide a comprehensive picture of the current state of feeding interactions in North Sea fish. Catch data was logged to both the GFS Database on the HP1000 and the new SAS version for the micro, which is at its developmental stage. Both systems worked perfectly. A major objective of the survey was to locate areas suitable for 24 h fishing for the larger fish predators, particularly cod. This should have yielded information on the relative rates of fish and benthos predation in the southern, mid- and northern-regions of the North Sea. Unfortunately, catches of cod were extremely low and no station

in the northern or central North Sea provided sufficient numbers to conduct adequate 24 h fishing. Numbers were also low in the south, but 24 h fishing was undertaken at Smith's Knoll to provide data for comparison with previous years.

(c) The benthos was also sampled at Smith's Knoll.

(d) Surface temperature and light levels were logged continuously during the trip and CTD profiles were undertaken at selected stations.

2. An assessment of the extent to which cod feed during trawling was not attempted due to lack of fish.

3. A few gurnards were brought back alive, along with live benthos and brittle stars. Samples of cod worm were collected at Smith's Knoll. Fish for pollution studies were collected at a number of sites, along with a large amount of frozen fish food. No bass were caught during the cruise.

4. The micro version for logging Scanmar data proved successful (see attached example) and good progress was made towards developing micro versions of the plankton logging program.

P J Bromley
(Scientist-in-Charge)
13 December 1990

SEEN IN DRAFT: MW, GR

INITIALLED: JGS

DISTRIBUTION:
Basic list +
P J Bromley (SIC)
L Woolner
T Watson
B Rackham
J Dann
K Winpenny
D Brown

Power, revs and speed details, shooting and towing the Portuguese high headline trawl (CORYSTES 12B/90)

Date	Shooting		Towing		Head	Wind	Spd	Sea Ht	Speed through water	
									Shoot	Tow
	kW	Revs	kW	Revs	Deg	Deg	kts	ft	kts	kts
19.11.90	900	150	600	130	187	260	22	7	6	4
19.11.90	1000	160	500	125	190	260	25	4	7	4
20.11.90	1050	170	600	140	358	260	15	3	6.5	4
20.11.90	600	140	325	110	171	270	15	3	6.25	3.5
20.11.90	600	140	525	130	105	280	15	3	6.5	4
*20.11.90	600	140	300	110	160	310	09	2	6.25	3.5
*20.11.90	600	140	400	115	160	Var	Lt	1	5.25	3.75
*21.11.90	625	140	375	115	218	Var	Lt	1	6	3.75
*21.11.90	605	140	440	118	016	029	04	1	5.75	3
*21.11.90	600	135	300	110	170	Var	Lt	1	5	3.5
*21.11.90	600	138	200	93	324	300	08	1	5.25	3.5
*22.11.90	550	135	350	115	180	030	13	3	5.5	4
*22.11.90	600	140	525	130	155	130	15	3	5	3.75
*22.11.90	600	135	400	115	320	130	10	2	5.25	4
*22.11.90	600	135	440	110	093	120	10	2	5.25	4
27.11.90	880	152	625	133	350	030	22	6	5.75	3.5
27.11.90	1005	170	470	128	170	030	18	6	6.25	3.75
27.11.90	1000	160	425	120	353	020	20	6	6.25	3.5
27.11.90	1000	160	400	115	355	020	18	6	6	3.5
27.11.90	1040	168	575	135	170	030	18	5	6.5	4
28.11.90	1000	160	550	130	357	040	12	3	6.5	3.75
*28.11.90	600	140	550	130	174	Var	Lt	3	5.25	3.5
*28.11.90	600	135	340	112	000	Var	Lt	3	5.5	4
*28.11.90	600	135	400	115	353	000	05	2	5.25	4
*28.11.90	610	142	375	118	173	000	08	2	6	4
*29.11.90	600	140	375	115	173	350	10	2	6	4
*29.11.90	600	135	360	115	348	350	20	3	5	4
*29.11.90	600	140	400	112	353	000	18	2	5.5	3.5

* Denotes tows made with chokes in. All tows made on two engines.

It should be noted that during shooting with chokes in the power used was not selected but determined by the Power Limit coming into operation. This was the case irrespective of weather conditions. It should also be noted that the optimum speed for shooting this trawl is between 6 and 7 knots and the optimum towing speed is 3.5 to 4 knots.

CORYSTES 12B/90 CRUISE TRACK