

**MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, PAKEFIELD, LOWESTOFT, SUFFOLK, NR33 0HT**

1993 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 7

(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF: P J Dare (SIC)
D Palmer
P Walker
P Millican (second half)
R Flatt
M Kaiser (first half)
B Holford

DURATION: 13-25 July

LOCALITY: English Channel (E&W)

AIMS:

1. To obtain stock indices of abundance for pre-recruit and fishable scallops on the standard Lizard-Eddystone survey grid, using dredges.
2. To carry out comparative fishing trials with commercial French and Newhaven dredges on the Eddystone grounds.
3. To collect biological samples for growth, age, spawning and meat yield studies from: (a) the Cornish fishery (extending south-west to Wolf Rock), (b) the eastern Channel fishery.
4. To conduct a benthos survey on the Fowey-Eddystone fishing grounds, using grabs and dredges in conjunction with RoxAnn and u/w cameras.
5. To collect scallop material, seawater samples and CTD profile data from stations between Wolf Rock and Little Sole Bank, for new collaborative isotope studies with UCNW Menai Bridge.
6. To collect mollusc specimens for the Conchological Society and English Heritage.
7. To collect live angler-fish for FSM2.

NARRATIVE

CORYSTES departed Lowestoft at 1506h GMT on 13 July and proceeded first to a site off Great Yarmouth (area 'A' on track chart) in order to check the RoxAnn seabed discrimination system on a known gravel ground before steaming south to the English Channel. On 14 July poor conditions (fog and rough sea) prevented the dredging for scallops

near the Greenwich buoy (Aim 3c), and CORYSTES steamed on west until the main Cornish survey area (B), inshore of the Eddystone, was reached at 0830h on 15 July.

During 15-18 July, the scallop stocks on our standard Fowey-Eddystone grid were assessed (aims 1 and 3a) and the benthos was sampled, both here and around the Eddystone fishing grounds, by means of an anchor-dredge in conjunction with Day grab and RoxAnn evaluations of the substrates (aim 4). On 19 July, the scallop and benthos surveys were extended to outer Falmouth Bay (C). During this period, the RoxAnn system was operated continuously whilst surveying, thus precluding the need for overnight systematic mapping - which would have presented problems due to net/gear hazards and at times poor visibility. In addition, two of the 5-mile long 1992 RoxAnn transects in Falmouth Bay were repeated, in order to obtain values for known bed-rock, and an area of soft mud near Mevagissey was also surveyed. Later on 19 July, the change-over of scientific staff was accomplished at Charlestown, St Austell Bay.

CORYSTES then steamed overnight on 19/20 July south-west towards the Wolf Rock and Celtic Sea deep-water scallop grounds (aim 5) but was obliged to turn back, when south of the Isles of Scilly, by a swell and wind which would have prevented safe (and efficient) dredging. Instead, CORYSTES returned to an important scallop ground south of Eddystone (D) where the comparative gear trials (aim 2) were then conducted on 20-21 July. The underwater cameras sledge was deployed successfully twice on this ground in order to observe and record substrate features. Next day, dredging work was resumed on the Fowey-Eddystone grid (B) so as to relocate and define an area of high density of young scallops which had been found during the 1990-92 surveys (part of aim 1). After accomplishing this task, CORYSTES then steamed overnight east to Lyme Bay where, on 23 July, a detailed dredge and RoxAnn survey of 'The Scruff' commercial grounds east of Brixham (E) was carried out; further biological samples were collected.

With all attainable targets successfully achieved, CORYSTES departed Lyme Bay late on 23 July, and docked at Lowestoft at 1410h on 25 July.

RESULTS

Aim 1. Scallop Stock Surveys

- (a) Fowey-Eddystone ground: 32 dredge tows (using commercial and fine-mesh Newhaven dredges) were made inside our 12 x 5nM survey area. Although fishable stocks remain very low, there were encouragingly high numbers in places of scallops just below minimum legal size - following the good settlements of recent years. The high density area of 1990-92 was relocated and defined by 13 extra tows. Here our highest ever catch in commercial dredges was achieved - 304 scallops in 4 dredges in 15 minutes - though most were below MLS. Catches of 1-2 year olds in fine-mesh dredges were lower than in recent years, suggesting that settlements might be declining to pre-1989 levels.
- (b) Lyme Bay: 24 dredge stations were worked over a 12 x 6nM area on and around 'The Scruff' ground, east of Brixham. Good numbers of large scallops were taken by our paired French dredges, but the fine-mesh Newhavens caught very few of any size on

this sandy/shelly bottom. At least 7 beamers were seen working this ground, at least one using French dredges.

Aim 2. Comparative Fishing Trial

This was conducted just S. of Eddystone on an extensive ground worked routinely by two beamers using French dredges. The bottom was fine shelly sand (from Day grab and underwater cameras information). Over a grid of 25 stations, using 2 French and 4 commercial Newhaven dredges simultaneously; the trial showed that French CPUE was ~12 times greater than Newhaven CPUE when both gears were towed at 2.5 knots ground speed. Small bycatches of sole and plaice were taken in both gears.

Aim 3. Biological Sampling

Scallops shells were collected, for age and growth determination, from all grounds. Tissue samples and whole animals were preserved for Conwy studies on DNA, fecundity, gonad assessments, condition index and nutrition. Scallops from Lyme Bay and Fowey-Eddystone were frozen for DNA (stock identity) research at UCNW, Menai Bridge. Hydroid samples were preserved from the Cornish grounds to check for spat settlement; a 3 mm *Pecten* spat was visible in one sample.

Aim 4. Benthos Survey

From 22 anchor-dredge stations in the Fowey-Eddystone area, the material was sieved, catalogued and preserved using standard techniques; about 80 species of macrobenthos were recorded. Substrate samples also were preserved for particle analysis (AEP2). Benthos bycatch in scallop dredges was recorded at most stations of the cruise.

Aim 5. Deep-water Scallops

Adverse conditions foiled the attempt to collect material and hydrographic data for the DFR-UCNW Menai Bridge collaborative study.

RoxAnn System

This was checked over a wide range of bottom types - from soft mud to bedrock - during the cruise, and ground-truthed at >25 stations (18-70m depth) by means of Day grab samples, underwater video and fine-mesh dredge samples. Further checks were also carried out over known hard rock and soft mud areas (from 1992 survey). Many E1 and E2 values were recorded by hand which, together with ground-truth data, will enable adjustment and fine-tuning of the box file in use (COR 593).

Good, consistent returns were obtained throughout (with the exception below) allowing a good degree of confidence when working over 'non-truthed' grounds.

Checks made over the calibration site off Norfolk on 13 July did not agree with previous findings. However, as subsequent results were good, this may have been due to the initial set-up of the box files.

Other Sampling:

- (i) Conchological Society - a small collection of specimens was preserved (aim 6).
- (ii) FSM2 - no live angler-fish were obtained from the dredges (aim 7).
- (iii) AEP2 - 25 large scallops were taken from the Fowey-Eddystone ground for contaminants analysis.
- (iv) Crabs - 68 *Cancer pagurus* and 8 *Maia squinado* were caught and measured, the latter species from Lyme Bay only. A high proportion suffered dredge damage.
- (v) Fish bycatch - 42 sole, 29 plaice, 10 angler-fish (monk), 10 dab, 5 lemon sole, 3 rays, 2 turbot, 1 witch, plus miscellaneous species. Overall, a 4m spread of French dredges caught a similar number of sole and plaice to 3m of Newhaven dredges, when fished side-by-side.

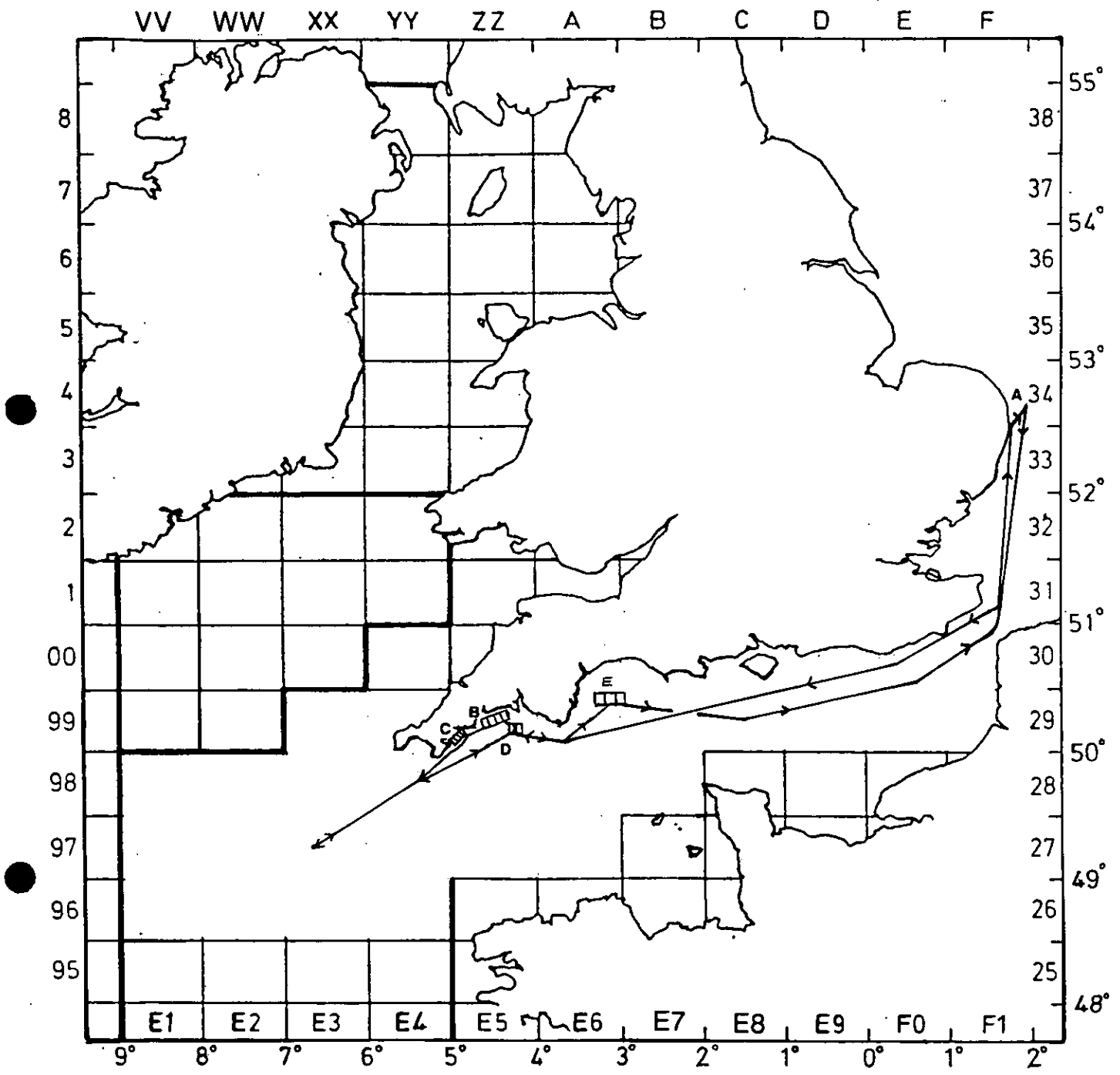
P J Dare
2 August 1993

SEEN IN DRAFT: Master - R Taylor
Fishing Skipper - R Graham

INITIALLED: GPA

DISTRIBUTION:

Basic List +
P J Dare (SIC)
D Palmer
P Walker
P Millican
R Flatt
M Kaiser
B Holford



Corystes 7/93 Track chart