

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

1990 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 8b

STAFF: P J Dare  
D Key  
C Darby  
P Walker  
D Palmer  
R Flatt  
E Shreeve (3-5 July)  
B Riches (3-5 July)

DURATION: 3-19 July

LOCALITY: English Channel, west

AIMS:

1. To assess the distribution, abundance and population structure of scallop stocks off Cornwall, particularly in two areas S-SW of Plymouth and Wolf Rock.
2. To obtain photographic and video records of pre-recruit scallop abundance in these areas.
3. To carry out comparative dredging trials with a chartered scalloper.
4. To assess the recovery of scallop and benthos populations, and substrates, on a plot dredged intensively by DFR in 1989.
5. To collect scallop gonad material and hydroids for studies of spawning and spat settlement respectively.
6. To conduct trials with the sector scanner stabilisation platform (for RSG 2).
7. To collect plaice samples for AEP 1 monitoring studies.
8. To carry out transect counts of seabird abundance and distribution (NCC).

NARRATIVE:

CORYSTES departed Falmouth at 0810 h GMT on 3 July and proceeded to the Fowey-Eddystone ground (area 'A' on track chart) where the dredge survey was started, and work on the sector scanner (Aim 6) was completed. Messrs E Shreeve and B Riches were put ashore at Falmouth next morning while CORYSTES sheltered from a westerly gale off the Helford River. On 5 July dredging proved possible in Falmouth Bay (area 'B') during a strong to gale NW wind. By 6 July, winds had eased sufficiently to allow dredging to be resumed on area 'A'.

During 7-8 July, a 27 h comparative fishing operation (Aim 3) with the 80 ft scalloper NELLIE was carried out successfully on the Fowey-Eddystone area. This work entailed transferring two shifts of scientific staff to and from the charter vessel in Mevagissey Bay. The main dredge survey of this area was completed on 9 July, when two trial deployments of the cameras sledge using the new towing umbilical were conducted at slack water. CORYSTES then steamed overnight to the Wolf Rock summer scalloping ground (area 'C').

During 10-12 July, a dredge survey was made of a 20 x 17 nM region between 12 and 28 nM to S-SW of Wolf Rock where NELLIE and other scallopers have worked in 1990 and other summers. A diversion to Penzance was made in the evening of 11 July to collect extra blocks required for deploying the sledge. CORYSTES steamed overnight on 12 July to new areas approximately 50 nM S-SW of the Scilly Isles - in ICES subrectangle 27E2 - to where CIROLANA had taken scallops with a Portuguese high-headline trawl in 1989-90. On 13 July, two such unexploited areas ('D' and 'E'), including Haddock Bank, were dredged and two CTD stations were worked there. CORYSTES then returned overnight to the Wolf Rock survey area.

CORYSTES dodged for most of 14 July during a near-gale easterly wind and building swell before laying for part of the night in outer Mount's Bay. Fine weather on 15-16 July, however, enabled the Wolf Rock dredge survey to be completed (Aim 1) together with 6 successful deployments of the cameras sledge and a CTD station. CORYSTES headed north-east overnight to the Fowey-Eddystone ground. There, 6 further camera sledge tows, supplementary dredge work and two CTD stations were completed over 17-18 July. Three of the camera tows were on the plot that had been dredged intensively by DFR charter last year (Aim 4).

With all targets achieved, CORYSTES sailed to Falmouth where she docked at 1820 h on 18 July.

## RESULTS

### Aim 1 Scallop stock surveys

- a. Fowey-Eddystone ground - a total of 62 dredge tows (each 15 mins) was made inside our standard 12 x 5 nM survey area. Fishable stocks are very low (following heavy exploitation in 1988-89) but the numbers and densities of pre-recruits - particularly in the 40-70 mm size range - are by far the highest yet recorded in 7 years. An especially dense patch, approximately 1.5 x 0.5 nM, of mainly 2-4 year olds was located NW of Hand Deep.
- b. Falmouth Bay - 10 dredge stations in the central bay gave broadly similar results.
- c. Wolf Rock ground - scallops were present at 47 of 48 stations, with catch rates of fishable size scallops taken by French dredge exceeding the minimum commercial rate on about one-third of stations. Very few pre-recruits were found, however.
- d. ICES subrectangle 27E2 - scallops were caught at all 10 stations on, and SE of, Haddock Bank in approximately 130 m depth. Up to 27 per  $\frac{1}{2}$  h tow with a 2 m French dredge compares with a maximum of

5 per hour in CIROLANA trawls. This seems to be a 'relict' population of old scallops with poor meat content and virtually no pre-recruits taken by fine-mesh dredges.

Biometric data were collected from each area, and shell samples retained for age determination later.

#### Aim 2 Photographic/TV surveys

The towing umbilical worked most satisfactorily once a suitable deployment system had been evolved. Twelve tows with the sledge covered 14.8 nM of seabed - 6.8 nM on the Wolf Rock ground at approximately 100 m depth, and 8.0 nM on the Fowey-Eddystone ground in 50-55 m of water. A total of 22.5 h of good quality video was recorded, and some 1800 m<sup>2</sup> of seabed photographed (approximately 2400 exposures).

#### Aim 3 Comparative fishing trials

Both vessels used commercial Newhaven dredges over a grid of 28 stations of predetermined positions and tow lengths on the Fowey-Eddystone ground. Preliminary analysis of data suggests that CORYSTES' catch rates averaged only approximately 20% lower than those of FV NELLIE.

#### Aim 4 Assessment of intensively dredged plot

An area of 1.0 x 0.2 nM had been dredged repeatedly in August 1989 by a charter vessel using 18 dredges. Three tows (4.3 nM) with the cameras sledge were made across and off this plot, giving 5½ h of video and approximately 600 photographs to compare with 1989 material. This will enable us to assess the rate of recovery of the benthos on this very disturbed ground.

#### Aim 5 Spawning and settlement studies

Gonad samples were preserved from the 5 survey areas. Widespread spawning was clearly in progress or had occurred recently. Especially synchronised spawning was evident south of Wolf Rock, at 11°C seabed temperature. Seventy scallops were collected as brood stock for the CSG project on post-larval behaviour at Menai Bridge Laboratory (Dr A Beaumont). Hydroids were collected from area 'A' but were rare elsewhere.

#### Aim 6 Sector scanner trials

The RSG 2 trials were completed during the first 24 h at sea.

#### Aim 7 AEP samples

Two lots of 25 scallops were frozen for AEP 2 (A Franklin), but no plaice were obtained for AEP 1.

#### Aim 8 NCC seabird studies

The observer (B Best) withdrew from the cruise.

Other samples

1. Otoliths were taken from 20 Lophius; 115 fish of 13 commercial species were measured (FSM 2).
2. Size, sex and dredge damage were recorded for 150 Cancer pagurus taken by the dredges (FSM 3).
3. Clams - 140 live specimens from 7 species (some of potential commercial importance) were frozen for age determination studies (Dr Richardson, Menai Bridge Laboratory).

P J Dare  
18 July 1990

SEEN IN DRAFT: Master: RT  
Fishing Skipper: MR

INITIALLED: Section Head: GPA

DISTRIBUTION:

Basic list +

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D Key

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