Mr Bate

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

1974 RESEARCH VESSEL PROGRAMME

REPORT: R V CIROLANA CRUISE 2
(PROVISIONAL: Not to be quoted without prior reference to the author)

PART A

STAFF

C T Macer
W G Parnell
Mrs B M Thompson
G J Howlett
T W Boon
Miss W A Porter
P Bryan (Grimsby)

DURATION

Left Grimsby 0800 h 12 February
Arrived Great Yarmouth 2245 h 21 February
All times are Greenwich Mean Time

LOCALITY

North Sea

AIM

To participate in the ICES Young Herring Survey. One haul with the Dutch Herring Trawl to be made in each of the 22 rectangles allocated to the UK Hauls to be made in daylight only.

NARRATIVE

Sailing was delayed for 24 h due to storm force southerly winds. Work started at 1300 h 12 February on the first of 6 rectangles along the north-east coast of England. These were completed by 15 February, although rectangle C8 was abandoned due to severe gear damage. An overnight steam was then made to the Tail End, and the next 6 days were spent working south, trawling in rectangles covering the following grounds: The Scruffs, Hospital, Cleaver Bank, Markham's Hole, Leman, Black Bank, Smith's Knoll, Brown Bank, the survey being completed with hauls off the Suffolk coast. Work was completed at 1900 h 21 February and the vessel steamed for Great Yarmouth, where she berthed at 2245 h 21 February.

RESULTS

1. Catches of herring were generally small, ranging from nil to 475 per hour, with the highest numbers occurring in rectangles: C9, H3, G6 and K9. Valid hauls were made in 21 of the 22 rectangles allocated.

2. Otoliths of cod, haddock and whiting were collected and samples of sprat and mackerel were measured.

3. Surface and bottom temperature and salinity observations were made using Nansen bottles at each station.

PART B

STAFF

C T Macer
P O Johnson
S J Lockwood
M G Pawson
P Bryan
E G Shreeve (from 27 February)

H R Stewardson
W L Huggins
C R Hood
N D Pearson
D W Mummery

(to 27 February)

DURATION

Left Great Yarmouth 1715 h 22 February
Arrived Grimsby 0600 h 8 March
All times are Greenwich Mean Time

LOCAITY

Western English Channel

AIMS

1. Calibration of acoustic equipment

2. Survey of pelagic fish shoals using acoustic equipment and underwater camera.

NARRATIVE

On leaving Great Yarmouth the ship steamed to Torbay where she anchored at 1700 h 23 February, noise tests on the 30 kHz towed body having been made en route. The ship remained at anchor until 0230 h 26 February while calibration of the acoustic equipment and other tests were carried out. An overnight steam to a position west of the Eddystone was then made, where in company with a fleet of mackerel featherers, mackerel were caught on feathers and transferred to deck tanks in readiness for target strength trials. Sufficient fish having been captured, CIROLANA made for Plymouth Sound, where she anchored at 1430 h the same day (26 February). The test rig was then prepared and target strength measurements were made the following day (27 February), before the ship docked at Millbay Dock at 1530 h. Messrs Stewardson, Huggins, Hood, Pearson, Mummery and Lockwood left the ship together with some of the acoustic equipment and Mr Shreeve joined.

Sailing at 2000h the same day, an echo survey between Plymouth and Falmouth was worked and this was completed at 1700 h 28 February, before the ship made for Plymouth to re-embark Dr Lockwood. Weather conditions precluded a pick-up by pilot boat, so the ship berthed with some difficulty in Millbay Docks at 1900 h. In view of the weather conditions and the necessity of repairing the underwater camera which had been found to be faulty, the vessel remained in dock overnight and the following morning the camera was taken for examination to RAF Mountbatten, the CO having generously agreed to help on request from Captain Finn. This resulted in the camera being made operational and the ship sailed at 1300 h 1 March to anchor in the Sound while work was completed on rigging the camera.

The anchorage was left at 1900 h the same day and an echo survey off Falmouth was commenced at 2100 h. The echo survey, together with tows with

the underwater camera and Engels midwater trawl continued in an easterly direction, and was completed at 1400 h 6 March off Plymouth, when the ship left for Grimsby.

RESULTS

AIM 1 Acoustic conditions in Torbay were good, and accurate and repeatable experimental results obtained. Impedence circle diagrams of the hull and towed body transducers were plotted. The source level and sensitivity as a receiver of the towed body transducer were measured. Echo levels were measured using spheres as targets, and sufficient additional information obtained to enable a comparison to be made between experimental and estimated levels. Measurements of acoustic intensity variation with angle to the transducer face were obtained using a hydrophane attached to a swinging arm. Noise measurements on the ship and towed body transducers were carried out through a speed range up to 12 knots. Thresh hold levels were checked and the electronic survey equipment set up. Measurements were also made of the intensity pattern of the acoustic release transducer with the object of determining the best angle and phasing required to produce a good null point in the pattern. An attempt was made to obtain echoes from live mackerel under controlled conditions by feeding the fish along layflat plastic tubing into a large cylindrical net slung underneath the towed body. A TV camera was also rigged underneath the net to observe the fish behaviour. A total of 40 fish were fed into the net.

The acoustic conditions were far from ideal, the main problem being that the net had too small a diameter. Sufficient recorded evidence was obtained however to indicate that very useful calibration data for the acoustic survey equipment could be obtained by this method.

AIM 2 Acoustic Survey

2.1 A detailed acoustic survey covering the area between Falmouth and Plymouth out to 50°N was completed, using the 30 kHz Humber gear with hull-mounted transducer, linked to the cycle counting and voltage integration recorders. Each night a sector covering 10n miles of longitude (ie 6.5n miles width) was surveyed with grid lines 2 n miles apart, and the same survey was repeated during daylight. The towed midwater camera and Engels trawl were shot on suitable shoals. Pelagic trace was generally widespread over the whole area but tended to thin out in the southerly regions of the grid. The heaviest traces were found within a band between the latitude of the Eddystone and 5 n miles to the south. Shots with the Engels trawl, supplemented by information received from fishing vessels, indicated that most of the trace in the band was associated with pilchard, with mackerel increasing in abundance towards the west of the grid.

2.2 Results with the towed underwater camera were disappointing. Only 3 frames were obtained in which fish appeared (singly), even though the camera was towed through several dense shoals (probably all pilchard). It appears that the fish were able to avoid the gear, perhaps aided on some occasions by bright moonlight and calm sea conditions.

2.3 Samples of pichard, sprat, herring and mackerel were deep frozen.

C T MACER
22.3.1974

SEEN IN DRAFT T H Finn (Master)
G W Argumont (Fishing Skipper)

INITIALLED A J L

DISTRIBUTION
Basic List

C T Macer
W G Parnell
Mrs B M Thompson
G J Howlett
T W Boon
Miss W A Porter
P Bryan (Grimsby)

P O Johnson
S J Lockwood
M G Pawson
E G Shreeve

H R Stewardson
W L Huggins
C R Hood
N D Pearson
D W Mummery