

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

1989 RESEARCH VESSEL PROGRAMME

DONE

REPORT: RV CIROLANA: CRUISE 10/89

STAFF: R B Mitson, SIC
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DURATION: 14-19 December

LOCALITY: North Sea

AIMS:

1. Collection of cod and whiting stomachs
2. Warp/depth ratios with GOV trawl
3. Check new Scanmar transducers
4. Measure performance of 34kHz transponder
5. Acoustic measurements on near-seabed fish
6. Ground discrimination by acoustics
7. Radar signal enhancement tests

NARRATIVE:

CIROLANA left Lowestoft at 1000h on 14 December and headed for Smith's Knoll. The GOV trawl was shot at 1400h but it had to be hauled prematurely when it snagged a sandridge. No damage was suffered but it was decided to move another tow. However, with over 40 knots of wind and the weather deteriorating rapidly, CIROLANA dodged.

Conditions were better on the morning of 15 December so the trawl was shot before breakfast as the first in the 24h series of 2h tows shot at 4h intervals. On hauling, the catch was mainly sprat, necessitating a move to another ground slightly to the westward in the search for cod. Fishing continued until the morning of 16 December, when, on the last haul, the trawl sustained some damage. During the 24h fishing period the Scanmar equipment was run and catch estimates made from acoustic survey instruments. With a bad weather forecast CIROLANA set course for the Wash in the hope of finding sufficient shelter for the transponder trials.

The anchor was dropped at 1630h but it was too dark to start trials using the Sea Rider. The acoustic transponder was attached below a dhan buoy and floated off the stern of CIROLANA. Next morning severe storm 10 conditions prevented the use of the Sea Rider. The dhan buoy was floated off in the very rough

conditions and, despite severe aeration, measurements were possible which enabled key parameters of the transponder to be adjusted. During the early evening a weather forecast of severe gale 9, decreasing, was received so CIROLANA weighed anchor at 2000h to return to the Smith's Knoll area.

On 18 December fishing started at 0900h with the only four members of the deck crew not suffering from influenza. The two hour tow produced a good mixture of cod and whiting. A series of seven beam trawl hauls was then undertaken to survey benthic prey organisms and was followed by a CTD profile of the full water column. CIROLANA then set course for Yarmouth Roads and anchored about 2100h.

The Sea Rider was prepared for sonar and radar trials on the morning of 19 December. During these trials reverberation measurements were made at 34kHz and range measurements to the transponder. Enhanced radar signals from the Sea Rider were observed on the ship's radars. When this work had been completed CIROLANA prepared to return to Lowestoft where she docked at 1400h.

RESULTS:

1. Cod and whiting stomachs were successfully sampled over a full 24h period, along with samples of fish and benthic prey organisms.
2. Delays arising from the bad weather and, ultimately, sickness of the deck crew, prevented the carrying out of warp-to-depth ratio tests with the GOV trawl.
3. The hull-mounted receiving transducers of the Scanmar worked well under all conditions encountered. At no time could the spread measurement be obtained with the sensors fitted to the trawl doors but when transferred to the wing ends consistent results were obtained. Adjustment to the angle of the fittings on the polyvalent doors is probably necessary.

Headline height measurements were intermittent. Good results were obtained for a time, then the measurements would become erratic, cease and resume later. This appears to be due to the alignment of the headline unit.

4. The 34kHz transponder trials were restricted at first to a range of 550m in extremely turbulent conditions. The sonar pulse was directed under the stern of the ship to interrogate the transponder which was suspended below a dhan buoy attached to a rope. Sufficient measurements were possible to enable fine adjustment of the initial sensitivity and the blanking period. The operating parameters of the sonar for detection of the transponder pulse were also confirmed.

When trials took place using the Sea Rider boat excellent signals were received out to 3km. At 3.7km, although not visible on the screen, the signals were audible.

5. Acoustic measurements of near-seabed fish took place over the 24h continuous fishing period from 15-16 December using the ES400 echo-sounder on a 5m bottom expansion. Histograms of echo numbers versus target strength were recorded for every nautical mile. Mr C Hood trained Dr C Javanaud in the use of the equipment.

6. Ground type discrimination by acoustic measurements was in the form of the variation of voltage squared seabed signals. Analysis will be made at the laboratory.

7. Strong signals from the radar enhancement device were received on the ship's radars when it was fitted to the Sea Rider which travelled out to a maximum of 3.7km range from CIROLANA. It was not possible to make a precise estimate of radar range due to the uncertainty of the start of the enhanced signal.

R B Mitson
11 January 1990

SEEN IN DRAFT: M J Willcock Captain
R Graham Snr Fishing Mate

INITIALLED: J G S

DISTRIBUTION: Basic list+
R B Mitson
D J Garrod
J G Pope
P J Bromley
C Javanaud
C R Hood
B F Riches
J M Last
J Dann
A D Graham
M Eagle