

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

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1971 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 2 PARTS (a) AND (c)

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

STAFF

R B Mitson  
C R Hood  
R R Dickson (a) only  
B K Clarke (a) only  
M G Walker (c) only  
A J Burridge (c) only  
T J Storeton West 15 to 22 February  
N D Pearson 15 to 22 February  
H O Berkday 13 to 15 February - Birmingham University

DURATION (a)

Left Lowestoft 1400 hours 1 February

Arrived Dover 1530 hours 3 February

All times are British Standard Time

LOCALITY

English Channel

DURATION (c)

Left Plymouth 1100 hours 13 February

Arrived Lowestoft 0800 hours 22 February

All times are British Standard Time

LOCALITY

South Coast, English Channel, North Sea

AIMS (a)

1. Check performance of scanner system.
2. Survey a gravel area.
3. Acoustic tag tests.

AIMS (c)

1. Fish tracking with acoustic tag.
2. Measure seabed noise
3. Test acoustic release system.

## NARRATIVE

The ship sailed at 1400 hours on 1 February. At 2400 hours after anchoring in Dover Harbour the scanner dome was fitted. Equipment tests were completed by 0700 hours and the ship left Dover at 0730 hours on 2 February. A survey in the Shingle Bank area was carried out between 1230 hours and 1830 hours. On 3 February acoustic fish tag tests were conducted from an anchorage near Dover. At 1100 hours the ship proceeded to Dover for removal of the dome and exchange of staff.

On 13 February staff changed in Plymouth. CLIONE sailed at 1100 hours to a point off Lyme Bay where at 1858 a fish with an acoustic tag attached was released. It was tracked by the ARL Scanner until 2000 hours on 14 February when in wind force 8-10 shelter was sought off Brixham, the ship anchored at 2340 hours. Dr Berkday was put ashore on 15 February at Brixham. The ship moved to a point near Torquay and measurements were made on an acoustic tag carried by the small boat. At 1500 hours Messrs Pearson and Storeton West joined, their additional equipment was immediately fitted up and tested.

The wind had moderated by 0600 hours on 16 February so CLIONE went back to the point of release of the first fish and released a further tagged fish at 0745 hours. This was tracked until 1200 hours when the signal disappeared. It was thought that the fish might have buried itself in one of the small sand waves which were in evidence. With steadily increasing wind from the NW a search continued until 1530 hours when wind force 9 was reached. CLIONE anchored inshore near Mackerel Cove for the night. During the evening tests were carried out on the interrogation system of the acoustic release using a transducer mounted through the Electronics Laboratory instrument tube.

Weather conditions were still poor on the morning of 17 February and with a bad forecast it was decided to carry out a limited survey over an area near the release point of the tagged fish. This proved unsuccessful so CLIONE proceeded towards the English Channel. By midday on 18 February it was clear that the weather would be unsuitable for work in the Sandettie area so the ship docked in Boulogne at 1600 hours. The dome was taken off and minor repairs made to its cover. Weather conditions had improved on the morning of the 19 February and at 1225 hours the ship was anchored off the Sandettie Buoy for seabed noise measurements. These were concluded at 2110 hours when CLIONE moved off up the channel reaching a point near the Shipwash lightship at 0530 hours on 20 February. At 0638 hours another fish fitted with an acoustic tag was released and tracking commenced. This track was terminated at 1158 hours when after erratic operation the signal ceased. At 1417 hours the fourth fish was tagged and released, tracking was carried out until 1545 hours on 21 February when it was abandoned. After long range tests on the acoustic release system the ship set course for Harwich at 1740 hours to remove the scanner dome. CLIONE cast off at 2315 hours proceeding to Lowestoft where she docked at 0805 hours on 22 February.

## RESULTS

### Part (a)

1. The performance of the scanner was thoroughly checked following its reinstallation after a major overhaul. It was run during rough sea conditions and found to be free of electrical interference. In all respects the performance specification was met.

2. Detailed survey of a gravel area was carried out.
3. Sensitivity tests were made at ranges up to 300 yards on the new acoustic tags. These were satisfactory.

#### Part (c)

1. A 42 cm female, spawning plaice Pleuronectes platessa L. was tagged and released off Lyme Bay. After release it travelled in a southerly direction for 5 miles then turned and moved steadily eastwards for 11 miles before the track had to be abandoned because of bad weather. Plots of vertical distribution show that the fish spent about 75% of the time off the bottom and from 0200 hours to 1450 hours on the 14 February was at the surface.

The second and third fishes released carried acoustic tags fitted into an experimental type of casing and it is now thought that this may have resulted in premature failure.

On 20 February the fourth fish, a 45 cm female plaice was tagged and released at 1420 hours. The original design of casing was used for this acoustic tag. This fish went down to the bottom, circled round for a short time, then moved off in a NE direction against the tide. When the tide turned it went up into midwater and was carried at a greater rate in the same general direction. It followed this pattern of movement for the 26 hours that it was tracked. The track had to be abandoned because of lack of time. Whilst the fish was on or near the bottom, its detailed movements could be observed in relation to the sand ridges in the area.

This form of fish tracking was greatly facilitated by the use of an Alpha Numeric display of the Decca Navigator co-ordinates. The range at which the tag signal could be clearly identified was extended to 500 yards by using the scanner transmitter on alternate range scans. It was possible for one person to carry out the tracking by giving range and bearing of the signal to the bridge at regular intervals. The ship handling was extremely good, there was no difficulty in following the fish for long periods.

2. Measurement of seabed noise generated at the large sand waves in the Sandettie area was carried out using two calibrated hydrophones. The signals were fed to a spectrum analyser whose output was recorded. No analysis of the recordings has yet been made.

3. Range tests were carried out on the acoustic release interrogation system. Start and stop operations were satisfactorily carried out at 1 mile. Measurement of the received signals showed that ranges of  $3\frac{1}{2}$  miles should be normally obtained.

#### GENERAL RESULTS

The canvas dome cover has now completed 1,814 miles in use. Minor repairs were made during the cruise but the general condition is good.

During Cruise 2 the Sector Scanner equipment ran for a period of 209 hours with no faults.

R B Mitson  
5 March 1971

SEEN IN DRAFT MRS

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#### DISTRIBUTION

Basic list	R R Dickson	A J Burrige	
R B Mitson	B K Clarke	T J Storeton West	H O Berktag
C R Hood	M G Walker	N D Pearson	