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3CR87

FRV "Clupea"

LD

Cruise 3/87

Report

9-24 March 1987

Personnel Part I

D D Seaton	SSO (i/c)
J Dunn	HSO
C W Shand	SO
D S Beveridge	ASO
C Fox	Student

Part II

J C Gamble	PSO (i/c)
J A Morrison	SSO
D C Moore	HSO
J Dunn	HSO
C W Shand	SO

Objectives

- Part I. (1) To collect herring gonad material for Loch Ewe and specimen herring for the Royal Museum of Scotland.
- Part II. (2) To obtain meristic information on the spawning herring stock in the Clyde.
- (3) To survey herring spawn patches on Ballantrae Bank by means of grabs, underwater television and diving.
- (4) To collect bulk samples of Euphausiids.

Narrative. Part I

"Clupea" sailed from Buckie at 1600 hrs on 9 March and during passage to Campbeltown trawl gear was rigged and the TV sledge electrical systems tested. "Clupea" arrived in Campbeltown at 0700 hrs on 10 March and Seaton and Fox joined ship at 0800 hrs at which time "Clupea" left Campbeltown and proceeded to Ballantrae Bank to carry out a series of trawls. Herring were scarce on the bank and no substantial aggregations were observed. By increasing trawl duration to 3 hours on the morning of 13 March, at a position on the west side of the Bank, some 10 baskets of herring, including a substantial number of ripe and running males and females were obtained. Plating out and fertilisation of the herring eggs was done onboard "Clupea" after the ship docked in Campbeltown at 1515 hrs. Seaton and Fox disembarked at 0900 hrs on 14 March and proceeded by road to Loch Ewe.

"Clupea" left Campbeltown at 0930 hrs and returned to Ballantrae Bank to continue trawling, to test the underwater video system and to attempt to sample the euphausiids which could be seen on the Bank by means of the TV system. No substantial hauls of euphausiids were obtained and "Clupea" returned to Campbeltown.

On 15 March, "Clupea" again returned to Ballantrae Bank and completed six hydrographic stations before seeking shelter from bad weather towards Kilbrannan Sound where a succession of plankton hauls failed to yield any significant numbers of Euphausiids. Passage was then made to Troon where "Clupea" docked at 2200 hrs.

Part II

Gamble, Morrison and Moore joined "Clupea" on 16 March; Beveridge disembarked. Due to adverse weather conditions on 12 March work on Ballantrae Bank was impossible so it was decided to search Whiting Bay, SE Arran. Four south to north tows were made with the TV sledge within the Bay in an area where herring were reputed to have spawned. No spawn was seen. Four tows were made for euphausiids with limited success.

The remainder of the cruise, apart from the afternoon of 19 March, when shelter was again sought to the SE of Arran, was spent investigating the previously defined spawning areas on Ballantrae Bank. Four techniques were used; trawling for spawning herring and potential predators of eggs, traverses with the TV sledge, examination by diving and grab sampling.

Four trawl hauls were made (each for about 2 h) immediately to the west of the Bank, two made on 18 March and one on 20 and 22 March. Few, if any, adult herring were caught in the first three hauls while the final trawl produced three baskets. In this last haul 75% of the mature fish were spent. Samples of herring were taken for meristic purposes and gonads isolated for fecundity studies. The general impression confirmed earlier conclusions that no substantial aggregations of herring were to be seen on the Bank.

The stomachs of 10 species of demersal fish ranging from 10-70 cm in length were examined. None contained herring eggs.

The intensive search with the TV sled was focussed on two areas to the north of the Bank (both within 55°06'N and 55°08'N and 5°02'W and 5°04'W) where past evidence indicated heavy deposition of herring spawn; 23 tows were made ranging from 4 to 60 mins duration. Sled runs were limited by boulders and rock outcrops which occasionally caused lighting system failure. Effective observation could take place only when the ship was drifting so a regular grid survey was not possible.

The substrates of the bank ranged from clean sand with characteristic ripples to extensive boulder zones. The northern part of the Bank appeared to be ringed by rock outcrops particularly to the east and by a rocky/boulder slope to the west. Boulders seemed to define both north and south limits. Two intermediate facies dominated the supposed spawning area; uniform gravel in a finer sediment matrix parallel north/south ridges with gravel crests (50-100 cm apart) and stones and shells in the troughs.

The epifauna of the bank was dominated by ophiuroids in enormous densities both on the boulders and on the gravels although they were absent from the more mobile sediments. No masses of herring spawn were seen on any of the TV traverses.

Two dives were made by Gamble and Moore to confirm TV observations on the nature of the sediments and seven grab samples were made in a stoney area where the TV pictures were uncertain and the water cloudy. Metre plankton net tows were made on the Bank and off SE Arran for euphausiids.

"Clupea" left Ballantrae Bank at 1700 h on 22 March, Moore disembarked at 0400 h on 23 March at Lochaline while the remainder of the scientific staff and equipment left the ship at 1200 h at Kyle of Lochalsh. The vessel then proceeded to Stornoway.

DD Seaton (part I), J C Gamble (part II)

Seen in draft: G Calder