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6GR86

FRV "Goldseeker"

Cruise 6/86

Report

15-30 April 1986

Personnel

J Morrison	SSO
P Rankine	SO

Objectives

1. To carry out a series of larval surveys at Ballantrae Bank and in adjacent areas of the Clyde to obtain estimates of larval production.
2. To carry out a limited amount of hydrographic work with reversing bottles at Ballantrae Bank to establish the temperature/salinity profile over the period of the survey.
3. To carryout trawl hauls at Ballantrae to identify observed fish traces.
4. To obtain herring larvae for the Institute of Marine Biochemistry.
5. To carry out a grab survey over Ballantrae Bank to check for the presence or absence of herring spawn.

Narrative

Scientific staff and crew loaded "Goldseeker" on the afternoon of 15 April at Troon but work could not be commenced that evening or the following day because of northeasterly gales. On 17 April however, the weather moderated slightly and "Goldseeker" proceeded to Stranraer carrying out an initial metre net larval grid at Ballantrae on the way south. The pier at Stranraer proved to be unsuitable because of the strength and direction of the wind and consequently "Goldseeker" returned to Cairnryan for the night. As no larvae were found in the samples taken at Ballantrae and in view of the prevailing northerly air flow over the period immediately preceding the start of this cruise a finely spaced metre net grid was carried out westwards from the north of Loch Ryan and to the west and south of Corsewall Point on 18 April. Several very small larvae were observed in the most southerly stations, and this finding supported the thesis that there had been some larval production at Ballantrae prior to 17 April.

On 19 April "Goldseeker" carried out a grab survey with a "Day" grab over part of the shingle area of the bank where spawning had occurred in the past but no eggs were discovered. In addition a horizontal metre net tow was carried out in the same area before "Goldseeker" had to run to Troon in steadily deteriorating weather. On examination of this sample no herring larvae were found. "Goldseeker" was stormbound in Troon on 20 April due to westerly gales and to prevent further loss of time the half landing proposed for 22 April was shifted and "Goldseeker" took on fuel and stores on 21 April instead, leaving for Cairnryan in the afternoon.

On the way south another horizontal metre net tow was carried out in the same position as on 19 April and on later examination of this sample over 400 larvae, mainly in yolksac stage, were picked out. On 22 April a grid of 24 metre net stations was carried out over Ballantrae Bank as well as a further four horizontal metre net hauls in the former spawning area. Larvae were found in all the horizontal metre net hauls and in the oblique metre net hauls surrounding the area of gravel where spawning formerly took place suggesting that this was still the area of egg deposition. On 23 and 24 April a further grid of metre net stations was completed on Ballantrae Bank as well as 3 horizontal hauls over the spawning beds. Further grab sampling was carried out at this time although once again no eggs were found; in addition surface and bottom temperatures were taken at a station in the centre of the gravel beds.

Subsequently on 24 April, "Goldseeker" first made for Troon to change a crew member and then carried on to Ardrishaig entering the Crinan Canal on the morning of 25 April, on route for Buckie, reaching Fort Augustus on 26 April. The vessel left the Caledonian Canal on the evening of 28 April and docked at Buckie at 1600 on 29 April at the end of the cruise.

## Results

### Larval Surveys

Because of the restricted time available only 3 Ballantrae Bank metre net surveys were completed along with 9 horizontal metre net tows. In addition to this, however, 38 metre net stations were completed around Corsewall Point. The data derived from these surveys however suggest that hatching occurred at Ballantrae prior to 18 April and that a further cohort of larvae hatched between 19 and 21 April with larval numbers increasing rapidly between 22 and 23 April. At this time oblique metre net hauls in only 15 metres of water contained up to 400 larvae at the centre of the patch while 15 minute horizontal metre net tows carried out in the same area contained up to 2000 larvae net haul, with in both cases the majority of larvae being in yolksac stage.

During the period 21 to 24 April there was relatively little wind at Ballantrae and in this period the larval patch remained remarkably static, although it slowly extended in area. This suggests that wind induced currents may be very important in determining the ultimate fate of larvae from this very shallow spawning area. It is important to note that further larval production may have taken place after "Goldseeker" left the area and for this reason it is not possible to derive total production estimates from this stock with the available data.

### Hydrographic work

Mainly due to lack of time, little hydrographic work was carried out on this cruise, but surface and bottom temperatures were taken in the area of the larval patch on 23 April.

### Trawling

No trawling was carried out on this cruise as no suitable "marks" were observed.

### Larval collection

Herring larvae were collected and preserved for the Institute of Marine Biochemistry for subsequent lipid analysis.

### Grabbing survey

98 grab stations were carried out with a "Day" grab with a view both to delimiting the present area of gravel on Ballantrae Bank and also checking for herring spawn. However no herring spawn was discovered.

### Conclusions

Efforts have been made since 1983 to establish the timing of herring spawning and subsequent larval production at Ballantrae Bank. The available evidence to date points to the last week of March and the first week of April as the current spawning period there, and this has been reinforced by the discovery this year of larvae from 18 April onwards. If future research is carried out in this area, it is important that the complete larval production period is covered and future larval surveys should extend from mid-April to the first week in May to allow for this, (on the assumption that the timing does not change significantly in the short term).

J Morrison

27 May 1986

As seen in draft: A Cowie

# FRV GOLDSEEKER

CRUISE 6/86

FIRTH OF CLYDE

