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In Confidence: Not to be quoted without prior reference to the Laboratory

FRV "GOLDSEEKER"

Cruises 5/81 and 6/81

REPORT

27 April-18 June 1981

5 and 6GR81

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Note

It is convenient to report on these two cruises together since there was considerable overlap in their objectives.

Objectives

- 1) To measure moult increments in growth of Nephrops in cages and to measure the duration of different phases of the moulting cycle.
- 2) To study distribution and density of Nephrops in the Sound of Jura and Clyde.
- 3) To make observations on the size composition of Nephrops stocks in relation to density.
- 4) To recapture tagged Nephrops released in the Sound of Jura and Clyde in June 1980.
- 5) To tag and release further batches of Nephrops in these two areas.
- 6) To measure selectivity of 70mm mesh Nephrops trawl.
- 7) To test new 22mm mesh trawl for sampling small Nephrops.

Narrative

"Goldseeker" left Inverness on 27 April and arrived at Crinan during the afternoon of 29 April where scientific staff joined the vessel. By 6 May, nine cages of pre-moult Nephrops were laid on the sea bed west of Gigha Island. On 7 May the TV and photographic camera sledge was made ready and this was used to survey Nephrops grounds NW of Gigha until 11 May. On 12 May "Goldseeker" passed through the Crinan Canal and further work with the TV sledge was carried out on grounds south of Little Cumbrae Island and West of Dunure until 15 May. During the remainder of the first cruise two cages of pre-moult Nephrops were laid on the sea bed near Little Cumbrae. The vessel was berthed at Troon for a long weekend break between cruises.

Scientific staff and crew rejoined the vessel on 26 May. Seven more cages of pre-moult Nephrops were laid off Little Cumbrae. Tagging of Nephrops in this area commenced on 1 June but only one days work was possible because of bad weather. "Goldseeker" proceeded through the Crinan Canal on 8 June and spent the remainder of the cruise tagging Nephrops on grounds off Gigha Island. Cages of Nephrops in this area were lifted on 11 and 12 June. Further work was prevented by bad weather and the cruise terminated at Crinan on 17 June. Scientific staff left the ship and the "Goldseeker" steamed to Corpach for the long weekend break. Altogether six days work was lost from the two cruises through bad weather.

Results

Growth of Nephrops in cages

Of 18 cages laid in the two areas only 12 were recovered. Three cages in each area were lost through the activities of fishing vessels. Several of the recovered cages were towed out of position and damaged and this probably contributed to the rather low survival of 46% (Table I). The cages were divided into 18 compartments, each housing one Nephrops. The size of Nephrops in these experiments ranged from 23-43mm CL in the Sound of Jura and from 22-66mm CL in the Clyde. The results, summarised in Table I, show that of 59 surviving males 15 moulted by the end of the experiment, increasing in carapace length by 2.84 ± 0.93 mm. Of 40 surviving females, 35 moulted in the cages, increasing in carapace length by 1.41 ± 0.59 mm. The fact that more females than males moulted in the same time interval suggests that females pass through the ~~pre-moult cycle more rapidly than males.~~

Television and photographic camera observations

The new version of the camera sledge handled and towed very well. Nine video tapes and 520 colour photographs were taken of Nephrops and the sea bed. These will be analysed in the Laboratory to give information on burrow density and Nephrops size composition. The density of burrows was particularly high in the Sound of Jura. Underwater visibility off Little Cumbrae and Dunure was generally poor due mainly to disturbance of the sea bed caused by commercial trawlers in the vicinity.

Tagging

One Nephrops, tagged a year previously, was recaptured off Little Cumbrae. This was a male which had grown from 42.1 to 46.8mm. A further 839 trawl-caught Nephrops were marked with streamer tags and released south of Little Cumbrae (89 individuals) and NW of Gigha Island (750 individuals).

Trawling

The small mesh sampling trawl was not ready in time for inclusion in this cruise and all fishing was carried out using a "70"mm mesh prawn trawl (BT 126). A summary of the catch compositions in two areas is given in Table II. Off Gigha Island, females accounted for 56% of the total catch; off Little Cumbrae 32% of the catch were females. The proportion of berried females was very small in both areas (about 1%).

Once the photographs and video tapes have been analysed it should be possible to compare the size composition and density of Nephrops with the catches to obtain a measure of the efficiency and selectivity of the trawl.

C J Chapman
8 September 1981

Seen in draft:- James A Calder - Relief O I C