

R1/10

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

76
1979
AR

FRV Goldseeker
Cruise 7/79
REPORT
5-29 June 1979

C. J. C.

Objectives:

- 1) To recapture Nephrops tagged in 1978 in the Moray Firth in order to measure annual growth increments.
- 2) To release a further batch of tagged Nephrops in the same area.
- 3) To investigate the effect of dead Nephrops on the efficiency of baited creels. (This objective was postponed to a later cruise).
- 4) To set up cages of Nephrops in and around the cryolite dumping ground.

Narrative:

After loading some of the gear on board, GOLDSEEKER left Buckie at 1230 on 5 June. The remainder of the gear was taken by road to Invergordon and loaded on board when required. Storage at Invergordon was again generously provided by The RN Oil Fuel Depot. The vessel was based at Invergordon during the working week and returned to Buckie at weekends.

The work was carried out about 3nm off Balintore (57°43'N, 03°51'W). No time was lost through bad weather. Some time was lost when, on two occasions, trawlers towed through some fleets of creels and about 70 creels were lost or damaged in this way. The second of these incidents occurred on 28 June so terminating the cruise a day earlier than intended.

Results:

Creel catches

Up to 10 fleets of 25 creels were fished for periods of 1-12 days using salt mackerel bait. Good catches were obtained; combining all hauls the average catch was 4.3 Nephrops/creel. The relationship between catch rate and the immersion time of the creels is shown in Table I. This shows that the largest proportion of the catch is taken in the first 24 hours but that the creels continue to accumulate Nephrops up to 3-4 days. Thereafter, there is a gradual decline in catch rate as some animals escape. The size and sex composition of the catches is given in Table II. Females accounted for 38% of the catch and 21% of them were berried.

Table I Catch of Nephrops per creel for different immersion times

Immersion time (days)	Number of creels	Catch No. of <u>Nephrops</u>	Catch/creel
1	225	716	3.18
2	150	686	4.57
3	25*	128	5.12
4	200	992	4.96
5	75	352	4.69
6	150	713	4.75
7	100	414	4.14
8	25*	111	4.44
12	25*	104	4.16

* small samples

Table II Length and sex composition of creel catches

Carapace length (mm)	20/24	25/29	30/34	35/39	40/44	45/49	50/54	55/59	60/64	
Males	1	18	236	695	671	337	290	141	78	
Females	0	22	168	485	507	290	69	13	1	
Carapace length (mm)	65/69	70/74	Total							
Males	5	1	2522							
Females	0	0	1556							

Tagging:

Only 7 Nephrops tagged in 1978 were recaptured by creels and a further 7 animals were caught by commercial trawlers during the same period. Of these 14 Nephrops, 7 had moulted increasing in carapace length by 3.6-5.2mm (in 4 males) and 0.8-1.9mm (in 3 females). The average time between tagging in 1978 and recapture in June 1979 for these animals was 372 days.

A further batch of 1510 creel-caught Nephrops (852 males, 658 females) were tagged using plastic streamer tags and released in a small area of roughly 0.34km². This gives a density of tagged Nephrops about 3 times the density in 1978 and should improve the chances of recapturing tagged Nephrops in 1980.

Cryolite dumping ground:

On 14 June two cages containing creel-caught Nephrops were lowered onto the sea bed, one at the centre of the dump (Cage B) and the other outside the dump (Cage A). The cages were visited by divers on 21 June; sediment cores and fauna samples were collected near the cages. The cages were eventually hauled up on 26 June. Between 14 and 26 June five full loads of cryolite sludge were deposited directly over cage B. Cage B initially contained 53 Nephrops and at the end of the experiment 31 were still alive. The control cage A initially contained 51 Nephrops and 45 of these survived.

Three fleets of creels were fished across the dump to provide fauna samples for laboratory analysis. The catches and the diving observations show that there is a substantial invertebrate fauna on the dump, consisting mainly of Buccinum, Asteris, Portunus hermit crabs and a few Nephrops. This, together with the fact that 58% of Nephrops in cage B survived five full loads of sludge deposited over them, suggests some degree of tolerance to Cryolite by the benthic macro-fauna.

Seen in draft: W B Reid Officer in charge 'GOLDBENKER'

C J Chapman
6 November 1979