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PB

FRV Clupea
Cruise 12/86

REPORT

1-21 October 1986

Personnel:

C J Chapman PSO
F G Howard HSO (1-11 October, 14-21 October)
P W Rankine SO
K A Ballantyne SO (1-19 October)
M McCormick Visitor (Glasgow University, 17-20 October)

Objectives

- 1 To determine Nephrops trawl catch rates, size and sex composition, growth and maturity of Nephrops on grounds in the Moray Firth, North and South Minches, Sound of Jura and the Clyde.
- 2 To make observations on Nephrops catch variability in relation to depth and time of day/night.
- 3 To study Nephrops distribution and population parameters in relation to sediment characteristics.
- 4 To obtain samples of mud sediment for particle size, organic carbon and faunal analysis.
- 5 To collect Nephrops gut contents for comparison with benthic fauna.

Narrative

Scientific staff joined "Clupea" at Buckie on the morning of 1 October and after loading equipment on board, the vessel left at 1415 hrs. On the following 2 days trawling was conducted at different times of the day/night on the "Hummel" ground (57°54.0'N, 03°34.5'W) and additional hauls were made off Forres and Nairn. On the evening of 3 October "Clupea" set course for the West Coast. Six trawl stations in the North Minch were sampled before the first half-landing was taken in Stornoway on 7 October. On the "soft" mud found in some parts of the North Minch the small mesh trawl retained large quantities of sediment causing considerable gear handling problems and resulting in the loss of part of one net on the "Homer" ground off Loch Gairloch. During the half-landing the heavy 20 mm diam wire sweeps were relaced by lighter combination ropes.

"Clupea" left Stornoway on 8 October. Two hauls were made on the "Homer" and "Burma" grounds but with storm-force southerly winds forecast it was decided to work in Rāasay Sound. Nine hauls at different times of the day were made in this area (57°31'N, 06°04.8'W) to assess catch variability before "Clupea" docked at Kyle at 1630 hrs on 10 October. A spare trawl, sent by Fail, was collected and Mr Howard disembarked to return to Aberdeen. On the following morning "Clupea" set sail for the South Minch. Six hauls were made in this area, north and southeast of Eigg, Loch Linne, Lynn of Morvern and Lynn of Lorne before the second half-landing was taken at Oban on 14 October. Mr Howard rejoined the vessel at Oban.

"Clupea" left Oban on 15 October to make passage to the Clyde. Hauls were made enroute in the Firth of Lorne, north of Colonsay and in the Sound of Jura before the vessel docked at Campbeltown on 16 October at 1700 hrs. On the following day after one haul off Campbeltown, "Clupea" called at Keppel pier, Millport to pick up Mr McCormick. During the remainder of the cruise trawling and grab sampling was carried out on Nephrops grounds north of Arran, in Kilbrannan Sound, off Ayr, in Skelmorlie Channel, Loch Striven and the Cumbrae-Bute channel. On 19 October Mr Ballantyne left the vessel at Largs and on 20 October Mr McCormick disembarked at Millport. "Clupea" finally docked at Greenock at 1330 hrs on 20 October and the remaining personnel returned to Aberdeen on 21 October. By shifting the working area according to weather conditions no time was lost during the cruise.

Results

a) Trawling. Fortyfour hauls with the small mesh trawl were made during the cruise of which 16 were on the "Hummel" and Ramsay Sound grounds to assess diel catch variations in shallow and deep water. At 56 m depth in the former area peak catches were obtained around sunrise and sunset. At these times the mean size of Nephrops in the catches was smallest. At 140 m depth in Ramsay Sound the catches were very small but there were indications of peaks around 3 hours after sunrise and 3 hours before sunset. Variations in the mean size of Nephrops did not follow any obvious trend. Details of the catches in each main area are given in Table 1. Catch rates varied from 21 kg/hr in the Moray Firth to over 120 kg/hr in the Sound of Jura. Samples of the catches from each ground were analysed to determine ovary maturity and pre-moult frequency.

A feature of this cruise was the tendency for the trawl to fill with mud in some areas. This was rarely a problem on previous cruises. The change of sweeps, the fitting of a "lazy-deckie", adoption of a slightly faster towing speed and restriction of the tow to 30 mins duration alleviated the problem to some extent.

- b) Grab sampling. Two grab samples were taken along the track of the trawl in most areas and in addition some samples were obtained to fill in gaps from previous cruises. Sub-samples of the sediments were posted to a commercial firm for particle size and organic carbon analysis and preserved for faunal analysis.
- c) Nephrops gut content analysis. Stomachs from 120 Nephrops were collected from 3 trawl hauls in the Clyde. These were preserved and will be analysed by Mr McCormick at Glasgow University. Sediment samples were collected for a comparison between diet and benthic fauna.

C J Chapman
24 November 1986

Seen in draft: W Smith

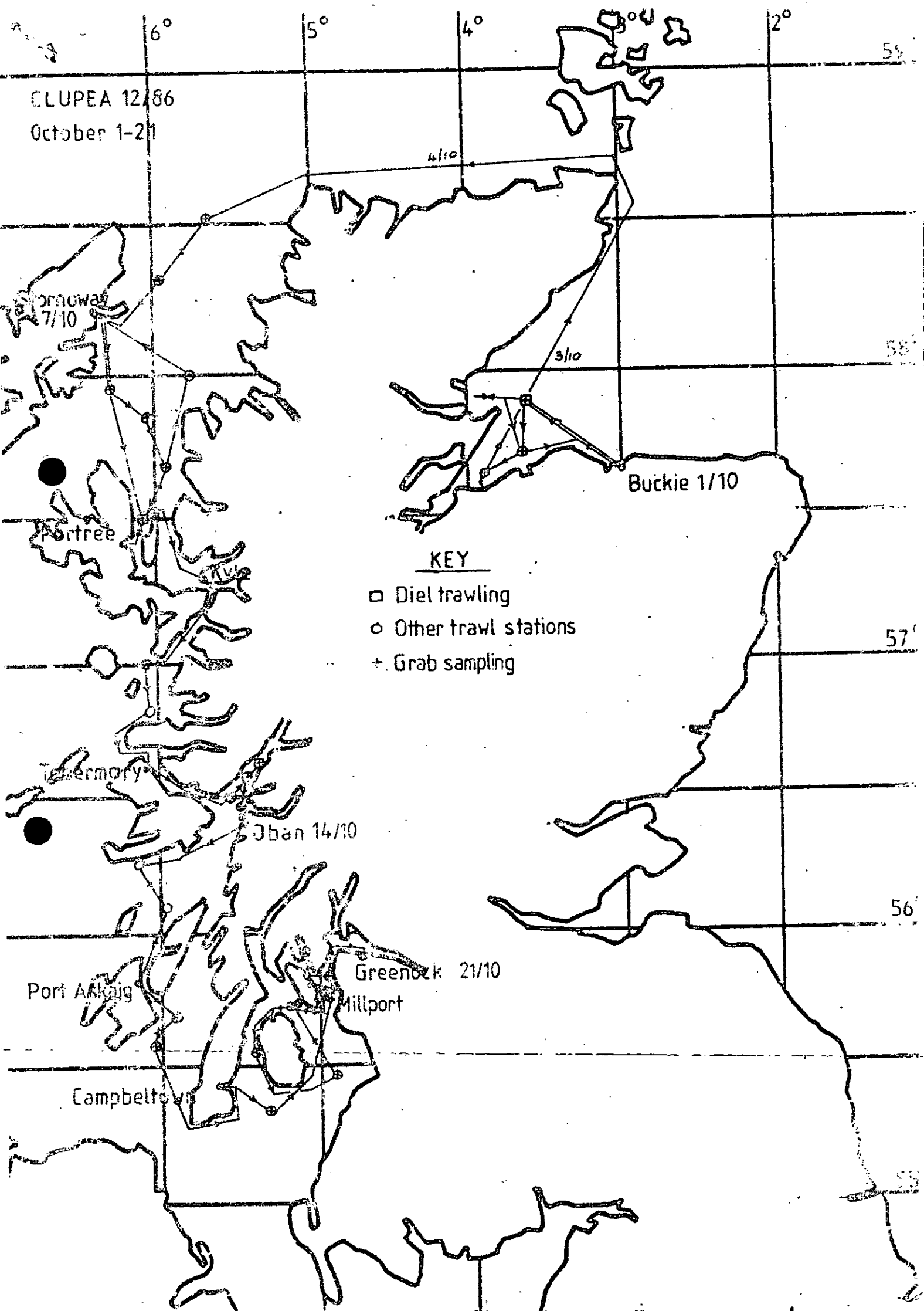
Table 1

Carapace length and sex composition of Nephrops catches using a small mesh trawl (BT118A). T = hours fishing, W = average weight of Nephrops per hour fishing (kg/hr)

Numbers in 5 mm Carapace length groups

	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	>60	Total
<u>Moray Firth (T = 5.5, W = 21.4)</u>												
Male	26	294	1889	1747	503	133	19	2				4613
Female	88	570	2515	1667	948	214	48	0				6050
<u>North Minch (T = 10.5, W = 26.7)</u>												
Male	11	232	2514	4586	2024	772	267	124	77	22	4	10633
Female	13	242	2780	4549	973	216	48	13	2			8836
<u>South Minch (T = 4.0, W = 100.3)</u>												
Male	499	3357	4084	4797	2657	928	491	71	8			16892
Female	959	5992	5428	4903	2520	529	141	16				20488
<u>Sound of Jura (T = 1.0, W = 120.7)</u>												
Male	87	809	2259	1160	498	192	94	0	21			5120
Female	183	1304	3221	2811	252	56	4					7831
<u>Clyde (T = 3.83, W = 29.8)</u>												
Male		65	731	1412	903	213	81	38	11	5	1	3460
Female		87	1157	1341	656	275	84	27	8	33	13	3681

ELUPEA 12/86
October 1-21



KEY

- Diel trawling
- Other trawl stations
- + Grab sampling