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FRV *Clupea*

Cruise 1497C

REPORT

20 August - 5 September 1997

Personnel

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Objectives

- a) To obtain estimates of distribution and abundance of *Nephrops* in the Firth of Clyde and South Minch using underwater cameras. (If time permits stations in the North Minch will be sampled.)
- b) To collect sediment samples at each station.
- c) To use trawl caught samples of *Nephrops* to examine biological features at different sites throughout the survey areas and to collect samples for genetic analysis.
- d) The TV survey will also be used to collect data on other potential commercial species.

Out-time Days per Project: 17 days FAA1

Narrative

Clupea sailed from Fraserburgh at 1000 hours on Wednesday 20 August and steamed for the South Minch. Television survey work commenced at 1200 hours on the 21st starting at the most northerly stations in the South Minch and working south and west as the weather improved. On Monday 25th an attempt was made to reach the Stanton Bank stations but poor weather forced *Clupea* to seek more sheltered waters around Coll. A break in the co-axial wire in the television cable stopped operations, necessitating a change of cable. Due to the delay and the continued poor weather conditions in the South Minch *Clupea* steamed for the Firth of Clyde. Survey work recommenced at 0600 hours of Loch Ryan. After the first TV run, the replacement cable was found to have been damaged, causing a further delay. After repairs, work began again at 1200 hours. *Clupea* docked in Ardrossan at 1900 hours for the half landing. The original television cable was returned to Aberdeen for repair. Work recommenced at 0700 hours on Thursday 28th. *Clupea* returned briefly to Ardrossan on Friday 29th to pick up the repaired cable. On Saturday 30th the Clyde stations were completed and *Clupea* steamed overnight to the Tiree Passage commencing work at 0700 hours on the Sunday. Improved weather conditions enabled all the stations in the Tiree Passage, the Treshnish Islands and some of the more exposed stations in the South Minch to be completed on the same day. *Clupea* then steamed to an anchorage of the Island of Pabbay in the Outer Hebrides arriving at 2130 hours. At 0600 hours

Clupea left Pabbay and proceeded to Stanton Banks. All six stations were completed and *Clupea* steamed to Tiree arriving at 2130 hours. On Tuesday, gale force winds from the south prevented the six remaining stations in the South Minch from being surveyed. *Clupea* proceeded to the north of Coll and the north end of the Sound of Mull where two stations could be completed in more sheltered waters. With the strong to gale force southerly winds continuing, *Clupea* headed north, anchoring in Broadford Bay for the night. A lull in the weather permitted six additional stations to be worked in the North Minch, before an increase in the wind from the south west prevented any further work. *Clupea* left the area of the Summer Isles at 1700 hours on Wednesday 3 September, arriving in Fraserburgh at 1600 hours on the 4th.

Methods

Stations were selected randomly by computer within muddy substrate types as identified by BGS sediment data charts and known *Nephrops* grounds. A total of 91 television sledge runs of 10 minutes duration were made. Calculation of the area surveyed in each run was done by using a rangefinder to monitor the height of the camera from the sea bed, and distance travelled by the sledge was accurately measured using an electronically timed odometer wheel. (After the first cable failure the rangefinder facility was not available, however sufficient information has been gathered on previous surveys to enable camera height to be calculated with reasonable accuracy). Preliminary counts of burrow numbers were made during each station and the material recorded on video tape.

Sediment samples were taken for particle size analysis at each suitable station using a Day Grab. The samples will be analysed in the laboratory using laser particle size analysis.

Trawl hauls of 30 minutes duration (50 mm prawn trawl BT 149B) were conducted in the main sediment types encountered, *Nephrops* were measured, sexed and the reproductive stages of the females were noted. The information will be used in the stock biomass calculations. Samples were also taken for DNA analysis.

Summary of TV Data

Forty-seven television stations were completed in the South Minch, 38 in the Clyde and six in the North Minch. Five Trawls were also made, two in the South Minch and three in the Clyde. Preliminary estimates of mean *Nephrops* burrow density for each station are shown by substrate type in Table 1. More detailed analysis of the video tapes will be conducted in the laboratory.

J Kinnear
3 October 1997

Seen in draft: A Simpson, OIC

Table 1. Preliminary results by substrate for the 1997 Clupea TV surveys in the South Minch, Clyde, and North Minch

South Minch					Clyde				
St. No.	Longitude	Latitude	No burrows m-2	Substrate	St. No.	Longitude	Latitude	No burrows m-2	Substrate
301	-5.7450	57.1340	0.41	m	401	-5.3223	55.0615	0	ms
302	-6.0450	56.9858	0.25	sm	402	-5.2967	55.0959	1.65	ms
303	-5.9768	56.9019	0.48	sm	403	-5.2425	55.1427	1.30	sm
304	-2.9761	28.4445	0.00	ms	404	-5.1878	55.1585	1.18	sm
305	-5.9811	56.8373	0.24	sm	405	-5.3036	55.1971	0.46	ms
306	0.0000	0.0000	0.00		406	-5.2231	55.2496	1.12	ms
307	-6.1943	57.0139	0.07	ms	407	-5.2005	55.2742	0.71	sm
308	-6.1933	57.0852	0.37	m	408	-4.9275	55.5269	0.34	m
309	-6.0834	57.0962	0.61	m	409	-4.9073	55.4628	0.53	m
310	-6.3165	57.1091	0.57	sm	410	-5.0293	55.4258	0.38	ms
311	-6.5308	56.9901	0.62	sm	411	-5.1481	55.3239	0.69	m
312	-6.6333	56.8828	0.15	m	412	-5.1209	55.2860	0.90	m
313	-3.1743	28.4340	na		413	-5.0347	55.2447	0.03	sm
314	-3.1075	28.4717	na		414	-5.0120	55.2274	0.40	ms
315	-6.6243	57.1935	0.41	ms	415	-4.9701	55.3286	0.60	m
316	-6.6504	57.2770	0.39	ms	416	-4.9396	55.3415	0.69	m
317	-6.9071	57.1529	0.66	sm	417	-4.9175	55.4053	0.46	m
318	-6.8660	57.1217	0.69	sm	418	-4.7851	55.4948	0.51	m
319	-6.8606	57.0946	0.54	m	419	-4.8631	55.5627	0.42	m
320	-6.9178	57.0402	0.44	sm	420	-4.8152	55.5562	0.50	sm
321	-6.9907	57.1135	0.45	ms	421	-4.7818	55.6105	0.01	ms
322	-7.0524	57.1280	0.67	ms	422	-5.0109	55.5543	0.46	sm
323	-7.1695	57.0538	0.48	ms	423	-4.9117	55.6081	0.60	sm
324	-6.9683	56.9873	0.38	ms	424	-4.9107	55.6600	0.31	m
325	-7.0203	56.9584	0.31	ms	425	-2.4964	27.8135	na	m
326	-6.8841	56.9138	0.30	sm	426	-2.5461	27.8097	0.00	sm
327	-7.0038	56.9105	0.42	ms	427	-5.0668	55.6524	0.61	m
328	-7.1716	56.9119	0.61	sm	428	-5.1651	55.7084	0.16	sm
329	-7.2188	56.8424	0.67	sm	429	-5.1619	55.7407	0.75	m
330	-7.3143	56.9241	0.37	sm	430	-5.2950	55.7715	0.00	ms
331	-6.4279	56.4542	0.59	sm	431	-5.2703	55.7246	0.02	ms
332	-6.2639	56.3781	0.58	ms	432	-5.4012	55.7116	0.65	ms
333	-6.4563	56.4068	0.74	sm	433	-5.4006	55.5175	0.54	m
334	-6.7097	56.3983	0.72	ms	434	-5.4108	55.4781	0.30	m
335	-6.8748	56.3416	0.33	ms	435	-5.4848	55.4048	0.24	ms
336	-7.3455	56.6089	0.18	ms	436	-5.3357	55.3636	1.00	sm
337	-7.4365	56.6253	0.14	ms	437	-5.2899	55.3185	0.99	sm
338	-7.5825	56.5767	0.16	ms	438	-5.2352	55.3887	0.92	sm
339	-8.1228	56.5314	0.28	sm					
340	-8.3488	56.5535	0.14	ms	North Minch				
341	-8.2093	56.4534	0.16	ms	St. No.				
342	-8.0407	56.4108	0.41	ms	503	-5.7913	57.3085	0.71	m
343	-8.2293	56.3371	0.00	sm	504	-5.9417	57.3789	0.27	ms
344	-8.0999	56.2863	0.22	ms	505	-5.9943	57.6222	0.31	m
345	-6.4578	56.7312	1.07	ms	506	-6.0602	57.6911	0.31	m
346	-6.0074	56.6644	0.56	sm	507	-5.8788	57.7133	0.41	m
347	-3.0070	28.3281	0.00	s	508	-5.7259	57.9786	0.87	ms

Substrate types as shown on BGS charts.

Positions in decimal degrees. m mud s sand
 Negative degrees = west sm sandy mud ms muddy sand