

R1/6

Not to be cited without prior reference to the FRS Marine Laboratory, Aberdeen

FRV *Clupea*

Cruise 0501C

## REPORT

2-11 April 2001

### Ports

Loading: Fraserburgh, 2 April 2001

Unloading: Fraserburgh, 11 April 2001

### Personnel

P A Gillibrand	In charge	
S Hughes		
J Beaton		
W A Austin	St Andrews Univ	5-8 April
A Cage	St Andrews Univ	5-8 April
N Norgaard-Pedersen	St Andrews Univ	5-8 April

### Objectives

1. To deploy current meter and tide gauge moorings in Loch Torridon.
2. To conduct plankton tows for sea lice nauplii in Loch Torridon and Loch Duich.
3. To take sediment cores in Loch Sunart for paleoclimatological analysis.
4. To deploy a current meter mooring in Loch Sunart.
5. To collect surface nutrient and chlorophyll samples for monitoring purposes.

**Out-turn days per project:** 10 days AE1158

### Narrative

Equipment was loaded aboard *Clupea* and set up on 2 April. *Clupea* sailed at 1400 hours and made passage for Loch Torridon. Poor weather conditions and illness to a crew member forced *Clupea* to take shelter overnight in Thurso Bay. On the morning of 3 April the crew member was taken to hospital, and *Clupea* remained sheltering from the weather. On the morning of 4 April, *Clupea* made passage westward but was again forced to take shelter in Loch Eriboll due to poor weather. During these breaks, scientists prepared instrumentation for deployment. Early on 5 April, *Clupea* finally reached Loch Torridon where a current meter mooring was laid to the north of Rona. Plankton sampling in Loch Shieldaig then commenced until 1600 hours, when another mooring was laid in Loch Shieldaig. *Clupea* then made passage for Kyle of Lochalsh, arriving at 1915 hours, where scientists from St Andrews University joined the vessel. On the following morning, *Clupea* made passage to Loch Sunart, and began work with the CTD and water sampler, and taking grab and core sediment samples. This work continued the following day, and a light current meter mooring was laid.

On 8 April, coring work continued for an hour, before *Clupea* proceeded to Kyle of Lochalsh, arriving at about 1500 hours. Surface nutrient and chlorophyll samples were taken *en route*. After arrival, core processing was completed and scientists from St Andrews disembarked late in the afternoon.

*Clupea* left Kyle early on the morning of 9 April and proceeded to Rona where a tide gauge mooring was laid. Plankton sampling then commenced in Loch Shildaig until 1600 hours, when an ADCP mooring was deployed in outer Loch Torridon. Further plankton sampling was conducted in the evening, another tide gauge mooring laid, before *Clupea* began making passage for Fraserburgh at about 2000 hours. Nutrient samples and chlorophyll measurements were made continuously during the homeward journey. On arrival in Fraserburgh, equipment was packed away and laboratories cleaned.

## Results

1. Current meter moorings were successfully deployed at Hinds Shoal, to the west of Loch Torridon and in Loch Shildaig. An ADCP mooring was laid in the outer basin of Loch Torridon. Water level recorders were deployed in Loch a'Bhraige, Rona and at Longa Island outside Loch Gairloch. Due to the loss of time at the start of the cruise, a planned current meter mooring was not laid.
2. Plankton samples were collected at six locations within Loch Torridon. Water was pumped through a 50 m-long, 2" diameter hose and passed through a cod-end with a 68  $\mu$  mesh fastened within the hose. Samples were collected from three depths at each location (except one). More extensive sampling was prevented due to the loss of time (two days) at the start of the cruise. Seventeen plankton samples were collected in total, and the hose system was established as a practical sampling method.
3. Sediment cores and grab samples were collected along the length of Loch Sunart from the mouth to the Laudale Narrows. Water samples were also collected for salinity and oxygen isotope analysis. Five long sediment cores (approx. 1 m) were collected at various locations within the central basin. During the cruise, 19 hydrographic stations were completed.
4. A current meter mooring was deployed north-west of the Laudale Narrows. The mooring is designed to measure water velocity, temperature and salinity just above the seabed and should remain in place for up to a year.
5. Surface nutrient and chlorophyll measurements were made regularly (at intervals of approximately three nautical miles) on the northward journey from Loch Sunart and the entire homeward journey from Loch Torridon to Fraserburgh. In total, 80 nutrient samples were taken and will be analysed in Aberdeen. Fifty-one chlorophyll samples were taken to calibrate the fluorometer which recorded surface fluorescence every two minutes during the journey. Surface temperature and salinity were also recorded every two minutes.

P A Gillibrand  
20 April 2001

Seen in draft: A Nicol, OIC