

R1/6

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

FRV *Clupea*

Cruise 1802C

## REPORT

11–22 November 2002

**Loading:** Fraserburgh

**Unloading:** Fraserburgh

### Personnel

A McIntosh	(In charge)
G Packer	
S O'Neill	from 15–22 November
W Macdonald	from 11–12 November
L Phillips	from 11–12 November

**Fishing gear:** BT 158; light beam trawl

### Objectives

1. To sample flounder from St Andrew's Bay for biomarker, disease indicators and histopathology, and for hepatic biomarkers and plasma at a site in the Clyde in support of the DMECS programme.
2. To undertake fish and sediment sampling in the Clyde and Minch areas in support of the temporal trend and biomarker monitoring studies.
3. To sample fish species from dumping grounds in the Clyde, on behalf of the Environmental Protection Group, for biological effects studies.

**Out-turn days per project:** 12 days AE11p

### Narrative

All scientific gear and personnel joined *Clupea* on 11 November. *Clupea* sailed at 1200 hours on 11 November and made passage for St Andrew's Bay. Three bottom trawls provided the number of flounder samples required from this site and passage then made north to Aberdeen where W Macdonald and L Phillips disembarked by pilot launch. Passage was then continued to the Clyde arriving in Stravanan Bay and anchoring overnight on 14 November. *Clupea* sailed at 0730 hours on 15 November and rendezvoused with the SEPA West RV *Endrick*. Flounder that had been caught in the upper Clyde, around Bowling, were transferred to *Clupea* where they were processed for biomarker and organic chemical analyses. Fish sampling was carried out at Cloch Point and Rothesay Bay before berthing in Rothesay overnight and where S O'Neill joined the vessel. Over the next two days fishing was carried out at a number of locations within the Clyde. On 18 November fishing was carried out in the vicinity of Ailsa Craig. This was at a location to replace the Pladda site that had proved unproductive over the last two years. A one hour tow returned only one plaice. A further attempt was made to the west of this location but only two plaice

were caught. With rapidly freshening south-easterly weather, passage was made north to Colonsay, anchoring overnight in Loch Tarbert. Fishing was carried out at Colonsay on 19 November before heading north in strengthening south-easterly gale force winds. After anchoring overnight in Loch Houran, passage was made north and due to gales forecast for the area, it was decided to abandon any attempt to reach Broad Bay where fishing was unlikely to be completed successfully. Fishing was carried out in the Gairloch area after which passage was made north in worsening weather. Due to severe weather, *Clupea* sought shelter in Dunnet Bay during early morning of 21 November. Scientific staff and biological samples were transferred to Aberdeen on 22 November. As the gales abated, passage was then made for Fraserburgh where docking was completed on 25 November.

## Results

Objective 1. A total of 3 trawls were taken in St Andrew's Bay and 1 trawl at Hunterston. The fish caught at these sites provided the samples indicated in Table 1.

Table 1

Samples	St Andrew's Bay		Hunterston
	Male Flounder	Female Flounder	Male Flounder
Biomarkers:			
Hepatic EROD	12	13	10
Hepatic DNA adducts	12	13	10
Hepatic RNA	10	-	10
Hepatic Metallothionein	12	13	10
Bile metabolites	12	13	10
Plasma vitellogenin	4 <sup>1</sup> (from 12)	8 <sup>1</sup> (from 13)	10
Histopathology of tissues: Liver, spleen, kidney, gill, gonad, skin and muscle	27	23	-
External disease	82	68	-
Fin clip for Microsatellite markers	12	13	10

<sup>1</sup>the remainder of the plasma samples were lost due to inclement weather precluding use of centrifuge

The above samples will be distributed to various laboratories for analyses and the results will be made available in January 2003.

Objectives 2 and 3. A total of 18 trawls were taken in the areas, Clyde, Colonsay and Gairloch. The fish caught provided the samples given in Table 2.

Site	Date	Trawl	Trend Monitoring <sup>1</sup>		Samples for Environmental Protection				
			Plaice	Flounder	Plaice	<i>Limanda</i>	LRD <sup>2</sup>	Flounder	Other
			No of fish sampled		No of fish sampled				
Upper Clyde-Bowling	15/11/2002			25 <sup>3</sup>					
Cloch Point/Clyde	15/11/2002	248/9	20		20				
Rothesay Bay	16/11/2002	250/1/2			4	10		1	6 <i>Buccinum</i>
Skelmorlie	16/11/2002	253	20						
Hunterston	16/11/2002	254	20	10♂ <sup>4</sup>	20	15	3	10	
Garroch Head	17/11/2002	255/6/7	20		20		10	1	9 witch
Birch Point/Brodick	17/11/2002	258			No fish; many large stones and empty shells, 1 detonator and much more				
Irvine Bay	17/11/2002	259/60	19		19	10	10		
Ailsa Craig/Pladda	18/11/2002	261/2	1 + 2						
Colonsay	19/11/2002	263/4	20						
Gairloch	20/11/2002	265	20						

<sup>1</sup>Measurements and samples taken from 10♂, 10♀

Length, weight, sex, liver weight, gonad weight

Liver for EROD; PAH and CB chemistry

Bile for PAH metabolite analysis

Muscle tissue for PAH and CB analysis

Blood plasma for Vtg analysis (male fish only)

<sup>2</sup>Long Rough dab

<sup>3</sup>fish collected by SEPA west

<sup>4</sup>these fish also sampled for the DMECS programme

Analyses of these samples will be carried out at the FRS ML and the results made available in due course.

A McIntosh  
27 November 2002

Seen in draft: A Simpson (OIC *Clupea*)