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

FRV *Clupea*

Cruise 1698C

## REPORT

28 September - 1 October 1998

### Personnel

A McIntosh B2 (HSO) (in charge)  
N Shepherd B2 (HSO)  
E Dalgarno A3 (ASO)  
D Richardson Visitor

### Fishing Gear

BT 116 Bottom trawl; 3 m Beam trawl; Agassiz trawl

### Objectives

1. To obtain demersal fish by trawling along gradients in the Firths of Forth and Tay.
2. To sample these fish for analyses including polycyclic aromatic hydrocarbons (PAH) metabolites in bile, PAHs in flesh and liver and hepatic mixed function oxidase determination.
3. To sample sediments in association with the trawl sites for PAH concentrations.

**Out-turn per project:** four days - AE10n

### Narrative

*Clupea* was loaded in Fraserburgh with all necessary sampling and scientific equipment and sailed at 1230 hours on 28 September, and then made passage to the Firth of Forth, anchoring at midnight in Largo Bay. *Clupea* sailed at 0700 hours on 29 September and passage made up river to Longannet where fishing by beam trawl was conducted between 1015 and 1415 hours. The six hauls taken at this site yielded only 11 male plaice. Sediments were sampled from the start, mid and end points of the trawl site. *Clupea* then moved to the Bo'ness sampling site where three trawls taken between 1500 hours and 1630 hours yielded 15 plaice. Sediments were collected from the trawl site. The Tancred site was fished between 1745 hours and 1730 hours yielding seven male plaice. *Clupea* anchored overnight at Blackness where fishing recommenced at 0715 hours on 30 September. The first haul produced no fish and on the second attempt, the beam trawl was irreparably damaged. The Blackness site was abandoned due to the number of potential obstructions along the fishing track. *Clupea* then moved to the Port Edgar site where trawling recommenced after the Agassiz trawl had been rigged. Two trawls were taken and yielded one male plaice. Sediment samples were taken before *Clupea* moved down river to the Kingston Hudds site where a 30 minute trawl was made at 1130 hours with the BT 116 bottom trawl. On completion of sampling at this site at 1315 hours, *Clupea*

made passage for Fraserburgh, where, due to the time taken because of adverse weather, docking was not possible until 0630 hours on 1 October.

All fishing, sampling, scientific equipment and samples were unloaded and returned to Aberdeen.

## Results

All fish samples were treated according to standard protocols and stored appropriately for subsequent analysis in Aberdeen, providing material from a total of 40 male plaice for biochemical measurements, including mixed function oxidase, polyaromatic hydrocarbons (PAH) in bile metabolites, PAH determinations from liver and flesh samples and organ-specific histopathological analyses. A total of 17 sediment samples were collected and stored according to standard protocols providing material for total hydrocarbon concentrations, polyaromatic hydrocarbon determination, total organic carbon and particle size analysis. These samples were stored frozen for subsequent analysis in Aberdeen. Results from these analyses will be made available in due course.

This programme was designed to target plaice as being the ubiquitous species in this area, based on previous experience. This sampling programme had been previously carried out in 1995 and on the evidence of both the total numbers of fish caught, and the higher ratio of females to males caught on this occasion, it would appear that the distribution of plaice has altered since the last sampling occasion. It was found that flounder were, apparently, relatively more abundant at sites west of the Bridges compared to the previous sampling occasion, but they were not sampled here as they were not the target species for the analytical programme and their ubiquity could not be guaranteed. The expectation was that plaice would be caught in sufficient numbers at all sites.

A D McIntosh  
7 October 1998

Seen in draft: Andy Simpson - OIC FRV *Clupea*