

06

In confidence - not to be quoted without reference to the Laboratory.

REPORT

16/7/84

mv Aquila (on charter to DAFS)

21-25 May, 28 May-6 June 1984

Objectives

- 1 To tag sandeels, A. marinus, in waters around Shetland and westwards to 4 West.
- 2 To collect samples of bottom sediments.
- 3 To collect data on the biological characteristics of A. marinus.

Narrative

Scientific personnel joined 'Aquila' at Lerwick on the morning of 21 May. Over 21-25 May sandeels were tagged and released on fishing grounds to the east and north of Lerwick. 'Aquila' put into Lerwick on 25 May for a mid-cruise break. Scientific staff rejoined 'Aquila' on 28 May and work continued to the east of Shetland, at Fair Isle, Foula and westwards.

'Aquila' put into Bressay on 3 occasions when recovered tags were uplifted from the reduction factory, 2 tag seedings experiments were carried out and samples of sandeels from commercial vessels were obtained. On 31 May 'Aquila' put into Lerwick where a reporting team from Grampian Television boarded the vessel to record footage on the tagging of sandeels.

The cruise finished at Lerwick on the evening of 6 June.

RESULTS

Tagging

A total of 7000 sandeels were tagged and released on recognised fishing grounds around Shetland, Foula and Fair Isle. Echo surveying over the area shown on the attached chart identified few other areas of bottom suitable for fishing for sandeel. In the two hauls made to the west of Shetland no sandeels were taken. However, to test the potential for movement, 3000 sandeels caught at Fair Isle and Foula were held in storage and later tagged and released at the positions shown on the chart.

A total of 30 trawl hauls were made. To obtain sandeels for tagging hauls of 4-5 minutes were found to be adequate. When fishing on unknown grounds hauls were extended to 15-30 minutes. Two exploratory hauls to the east of Fetlar in deep water (40 and 80 fms) yielded no sandeels.

To estimate tagging/capture mortality three batches of 100 tagged and 100 non-tagged sandeels were held in deck tanks for up to 5 days. Deaths over days 1-3 were higher in the tagged fish and increased thereafter. Many of the deaths resulted from abrasion of the sandeel epidermis, probably caused by the rubbing against the sides and bottom of the tank whilst the vessel was underway. On two occasions batches of 100 tagged sandeels were introduced into the fish storage hoppers at the reduction factory at Bressay. Preliminary returns of tags indicate that the new magnets installed during 1984 are in excess of 70% efficient.

#### Bottom Sampling

Samples of bottom sediment were obtained using a Van Veen grab for each of the fishing grounds worked. The samples will be analysed in the laboratory.

#### Biological Characters

For each haul samples of 200-250 sandeels were measured and otoliths collected for age determination. The dominant species taken was A. marinus but one haul in Ronasvoe contained large numbers of H. lanceolatus whilst at Mousa an unusually large number of G. semisquamatus were caught. O-group A. marinus were present on several different fishing grounds and one haul of ca 1/2 ton at Fethaland, in 30 fms, contained only O-group. The next haul, in 35 fms and 1 mile distant, contained 1/4 ton of 1+ group sandeels and older and no O-group.

The stomachs of all fish species caught were examined for the presence of sandeels. Of a total of 32 species examined 17 had been feeding on sandeels. Individuals of 8 species were found to have been feeding on O-group A. marinus.

#### Commercial Samples

To augment the Laboratory's Port Sampling Scheme a total of 38 commercial samples were obtained and worked up. Samples from several grounds contained specimens of O-group A. marinus, the first instance being at South Sands on 18 May.

J A Gauld  
26 June 1984