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Charter Vessel MV "Aquila" LK319

REPORT

19-27 May, 29 May - 3 June 1986

Personnel

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Objectives

- 1) To tag sandeels (A. marinus) on inshore fishing grounds at Shetland
- 2) To determine the distribution of sandeels
- 3) To collect biological and environmental data on sandeels and sandeel fishing grounds.

Narrative

"Aquila" left Lerwick on the morning of 19 May and proceeded to the northern Shetland sandeel grounds. These grounds were worked from 19-27 May when the vessel returned to Lerwick for a mid-cruise break. From 29 May to 3 June "Aquila" worked the sandeel grounds to the south and east of Lerwick and at Fair Isle and Foula. The cruise finished at Lerwick on 3 June and scientific personnel returned to Aberdeen on 4 June.

Results

1) Tagging

To obtain estimates of fishing mortality, 5,488 A. marinus were tagged and released, spread over 11 of the recognised sandeel fishing grounds.

To determine movement from offshore to inshore grounds, 2 batches of tagged sandeels, 1,000 and 600 respectively, were released at positions 20 miles SW of Foula and 20 miles E of Mousa.

To determine the level of tag recovery from magnets on the processing lines in the fish reduction plant at Bressay, 3 batches of 50 tagged sandeels were seeded into the storage hoppers. By mid-June 144 tags (89%) had been recovered.

2) Distribution of A. marinus

The distribution of A. marinus was investigated using a sandeel trawl fitted with a small mesh cod-end. All trawl catches were adjusted to 30 minutes duration; the catch rates obtained and the respective age composition of catches are shown in Figures 1 and 2.

The distribution of A. marinus in daylight and dark was investigated by trawling and dredging. Trawl hauls were made on 4 grounds and dredge hauls on 3 grounds. Trawl catches were adjusted to numbers per 30 minute haul and dredge catches to numbers per 20 minute haul.

The numbers caught were:

| Ground | TRAWL | | DREDGE | |
|-----------------------|----------|------|----------|------|
| | Daylight | Dark | Daylight | Dark |
| Fethaland | 58,800 | 18 | - | - |
| Sands Voe | 85,700 | 0 | 42 | 142 |
| E Fair Isle | 30,000 | 350 | 674 | 803 |
| Ham o' Foula | 41,700 | 30 | 57 | 304 |
| Ratio (daylight:dark) | 543:1 | | 1:1.6 | |

The length distribution of A. marinus taken in trawl and dredge hauls in daylight and in dark were similar.

3) As part of a continuing investigation into predation on A. marinus, up to 10 stomachs per 10 cm size group for each species caught on each ground fished were examined and the stomach contents identified. Of the 20 fish species caught, 15 had been feeding on A. marinus to a greater or lesser extent. No sandeels were present in the stomachs of the other 5 species caught.

To determine the availability of food for A. marinus, samples of plankton were collected from each fishing ground; the samples were returned to the Laboratory for analysis.

Water temperature and salinity measurements were made at 3 depths on each ground worked. The ranges in temperature and salinity were:

| Depth | Temperature | Salinity |
|------------------|-------------|-------------|
| Surface | 7.8 - 8.8 | 35.1 - 35.2 |
| Mid-water | 7.7 - 8.4 | 35.1 - 35.2 |
| Bottom (to 70 m) | 7.6 - 8.4 | 35.1 - 35.2 |

During the survey a total of 17 samples of sandeels were obtained from commercial vessels. The samples were similar to those taken by "Aquila" and the data have been incorporated with data collected during the Laboratory's routine monitoring of the fishery.

J Gauld
23 September 1986

Catch (tonnes/30min)

A. marinus - distribution by age group.

