

R1/3

In Confidence: Not to be quoted without prior reference to the Laboratory

Report

Vessel MV "Aquila" LK319

20-25 May, 27-31 May, 3-7 June 1985

Personnel

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Objectives

1. To tag sandeels at Shetland.
2. To collect biological and environmental data on sandeels and on sandeel fishing grounds.
3. To study diurnal and tidal effects on the availability and distribution of sandeels.

Narrative

Scientific staff travelled to Shetland and joined "Aquila" at Lerwick on Sunday 19 May. Throughout the charter periods the vessel worked inshore fishing grounds around Shetland. The cruise finished at Lerwick on 7 June and scientific staff returned to Aberdeen the following day.

Results

1. Tagging

A total of 6254 Ammodytes marinus were tagged and released over 16 fishing grounds as shown on chart 1.

An estimate was made of the efficiency of recovery of tags from the major processing plant at Bressay where two batches of 50 tagged sandeels were seeded into raw fish storage hoppers. The number of tags recovered after a period of 10 days was 45 and 34 respectively.

The survival of tagged sandeels was investigated onboard "Aquila" when batches of 100 tagged and 100 untagged sandeels were held in a tank for 2 days. No deaths from either group of sandeels were observed during this time.

2. Biological and environmental investigations

a) Distribution of A. marinus

Catches of A. marinus were generally poor with only 5 grounds yielding more than the equivalent of 1 tonne per 30 minutes haul (ie all catches adjusted to a standard duration of 30 minutes, see chart 2). These catch rates were similar to those being made in the commercial fishery at that time.

b) The distribution of A. marinus by age was estimated from otoliths collected from each of the main fishing grounds. 0-group recruits were found to predominate on some grounds whilst 1- and 2- group were dominant on others (see chart 3). The West Fair Isle ground was exceptional in that no 1-group were caught.

c) Predation on A. marinus

For each haul the stomachs of up to 10 fish per 10cm length group for each fish species caught were examined and the numbers and state of digestion of all A. marinus present recorded in relation to time of day. A total of 26 species were caught, of these 21 were found to have been feeding on A. marinus and of these 13 had been feeding on 0-group recruits in the length range 3-5cm.

d) Feeding of A. marinus

To determine the diet of A. marinus whole stomachs were collected from 11 of the main fishing grounds and, to evaluate the availability of prey organisms, plankton samples were also collected from these grounds. Both sets of samples were preserved for later analysis in the Laboratory.

e) Environmental investigations

Sea surface and bottom water temperature and salinity measurements were collected from each sandeel ground and at various positions around Shetland.

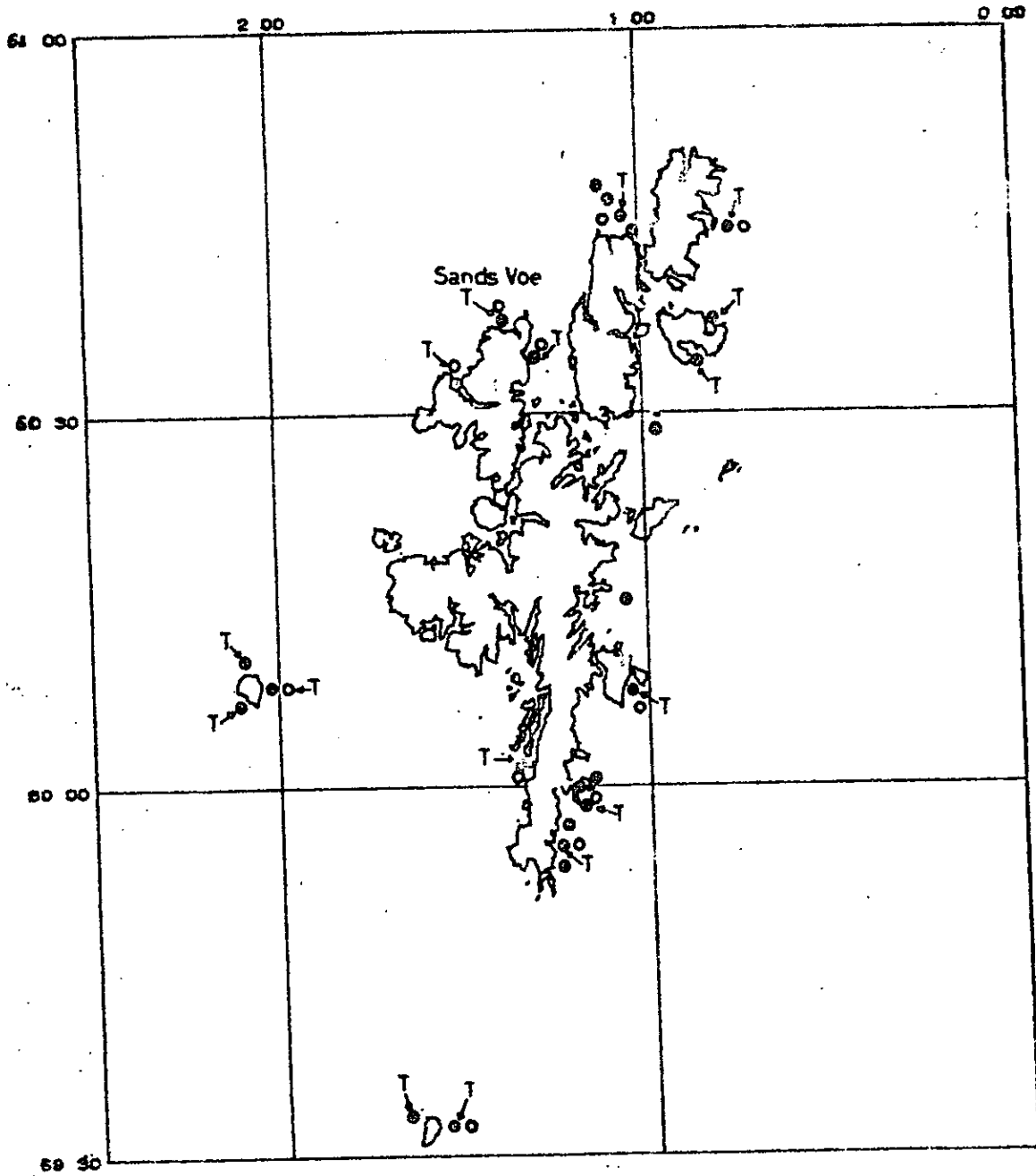
3. Distribution of A. marinus in relation to tide.

To investigate the availability of A. marinus in relation to the state of tide and time of day a specific trawl tow at Sands Voe was worked at 90 minute intervals throughout the tidal cycle on 2 occasions - once when high water occurred at noon, once when low water occurred at noon. Catch rates and age compositions are currently being evaluated along with similar data from other cruises to determine if relationships exists between catch rates and tide and time of day.

J A Gauld

19 September 1985

1. POSITIONS of TAG RELEASE (T), WATER (o) and PLANKTON (o) SAMPLING

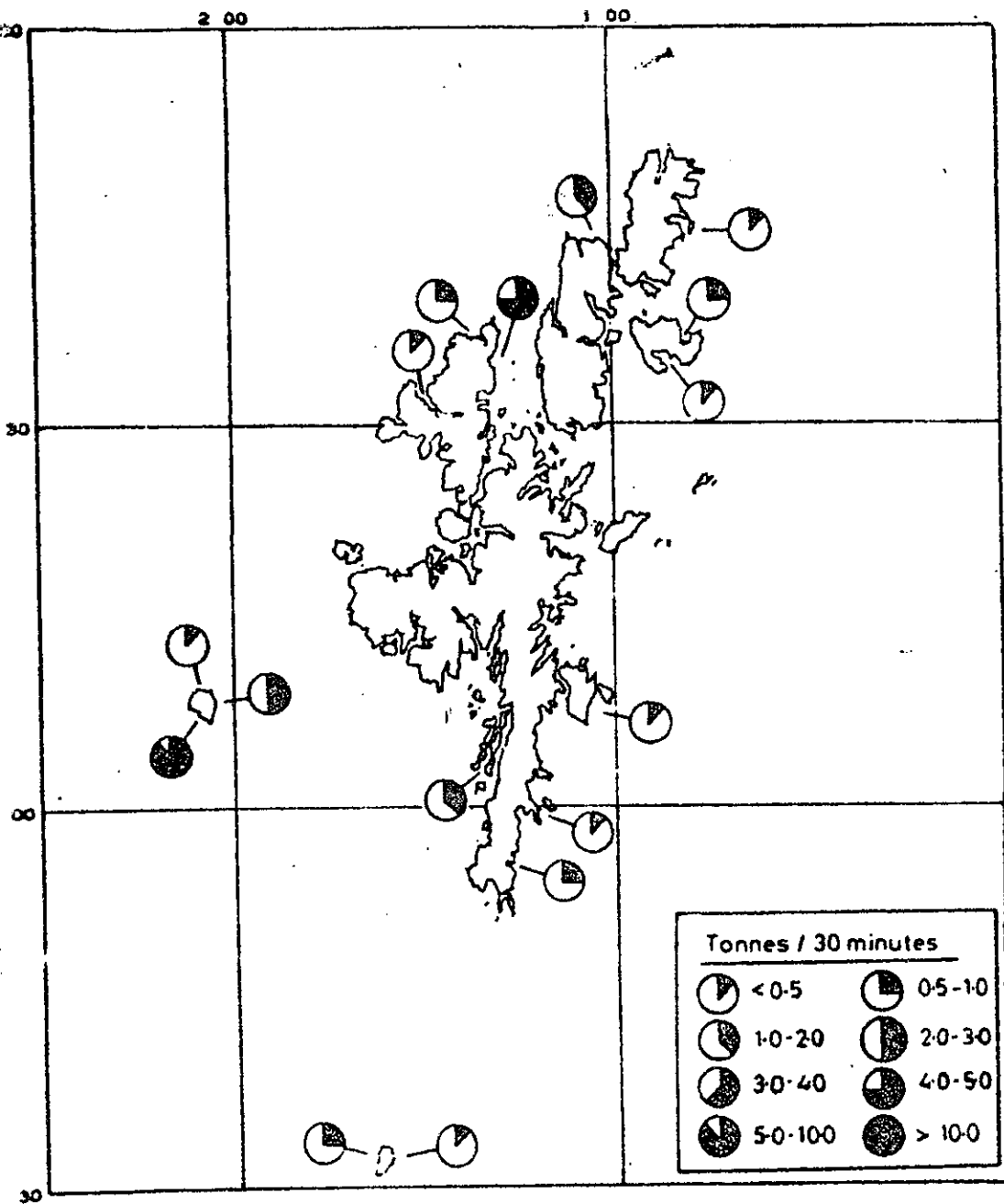


mv AQUILA

2015-7/6/85

A. marinus

Catch per Fishing Ground



A. marinus Distribution by Age (%)

mv 'AQUILA'

20/5-7/6/85

