

Field Project Report - Joint DAFS (Shellfish Section)  
and MAFF (Burnham-on-Crouch)Oyster Investigations - Loch Ryan - FV LAURA BRUCE  
20-25 August 1979Objectives

1. Assessment of stock abundance of native oysters in Loch Ryan.
2. Assessment of recent spat-falls.
3. Trials with relaying clean shell cultch to try to determine whether settlement surfaces are a limiting factor in certain parts of the loch.

Methods

1 and 2. A grid survey of the inner loch was undertaken using a single Baird dredge with a blade approximately 1m wide towed from the 46ft (14m) oyster dredger LAURA BRUCE. Hauls were approximately 300m long as in the 1978 survey. Altogether 155 hauls were made in the inner loch, of which 104 were in the area which in 1978 was designated the "productive area" (Figure 1). No hauls were made in the outer loch, where a previous survey failed to reveal any oysters.

3. Bags containing separately shells of Mytilus edulis, Pecten maximus, Chlamys opercularis and Ostrea edulis which had been set out in June 1978 were examined for spat and then re-laid in the same places. Additional bags containing clean P. maximus shells were laid with them.

Results - Table I, Figure 2.1. Adult oysters (all oysters other than 1978 spat)

Only 63 oysters were taken in the 51 hauls outside the productive area, thus confirming the validity of the boundaries of this area. The largest number of adult oysters caught in one haul on the west side was 82, corresponding to a density of 1.1 per m<sup>2</sup>, and the largest number on the east side was 135, corresponding to a density of 1.8 per m<sup>2</sup>, assuming a dredge efficiency of 25%. These figures compare with densities of 3.4 and 2.6 per m<sup>2</sup> in the 1978 survey. The overall density in the productive area was 0.23 per m<sup>2</sup> and the estimated total of adult oysters within the area was 2.2 million. This suggests that the population approximately halved between June 1978 and August 1979. This decrease is accounted for by natural mortality and the removal by dredging of commercial sized oysters (75mm or larger). In this survey 49.6% of the adult oysters were of commercial size, >75mm, compared with only 30.7% in 1978. This reflects the fact that the good 1975 spat-fall is now making the major contribution to the stock. The actual number of commercial oysters present had, however, fallen from 1355000 to 1090000. The estimated number of large brood (50-74mm) in the productive area was 1076000 in August 1979 compared with 2347000 in June 1978, and the estimated number of adults smaller than 50mm (half brood) had fallen to 33000 from 537000 in the same period. These figures confirm the paucity of the 1976 and 1977 spat-falls.

2. 1978 Spat

Spat caught ranged in size from 25 to 64mm, the large size being accounted for by the lateness of sampling in 1979 (late August) compared with 1978 (early June). In all dredge hauls only sixty seven 1978 spat were caught, somewhat more than the number of 1977 spat taken in the 1978 survey, but the 1978 spat-fall, like that of 1977, must be classed as poor. After three successive years with poor spat-falls recruitment to the commercial stocks can be expected to be low during the next few years unless extensive relaying of seed is undertaken.

3. Cultch

No spat was found on the cultch laid in June 1978.

J MASON  
16 November 1979

TABLE I SIZE COMPOSITION OF OYSTERS TAKEN BY DREDGE IN THE "PRODUCTIVE AREA" OF LOCH RYAN IN AUGUST 1979

	Size (mm)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	≥ 100	Total
Number in catch	1978 spat	2	8	17	23	8	8		1									67
(104 hauls)	Adults				5	22	63	115	226	230	254	285	235	147	111	55	67	1815
Estimated totals	1978 spat	2.4	9.6	20.6	27.8	9.6	9.6		1.2									80.8
in "productive area"	Adults				6.0	26.6	76.3	139.3	273.8	278.6	307.7	345.3	284.7	178.1	134.5	66.6	81.2	2198.7
(thousands)																		
% of adults					0.2	1.2	3.5	6.3	12.5	12.7	14.0	15.7	12.9	8.1	6.1	3.0	3.7	100

Figure 1 - The grid survey for native oysters carried out in the inner part of Loch Ryan, August 1979. Numbers indicate adult oysters per 300m haul and numbers in brackets indicate spat. The so-called "productive area" is outlined.

Figure 2 - Length frequency of spat and adult native oysters taken in the "productive area" in the 1978 and 1979 surveys.

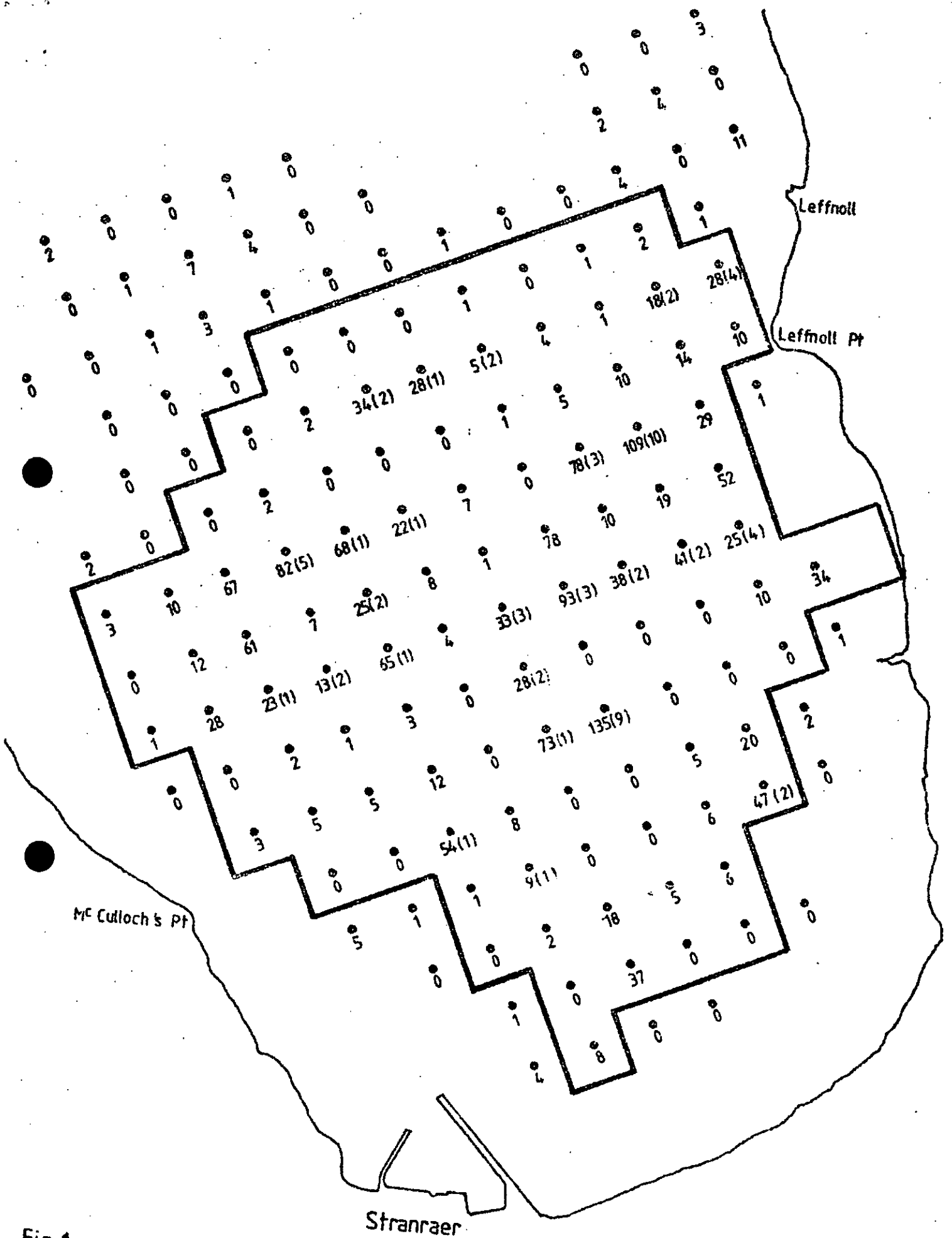


Fig 1

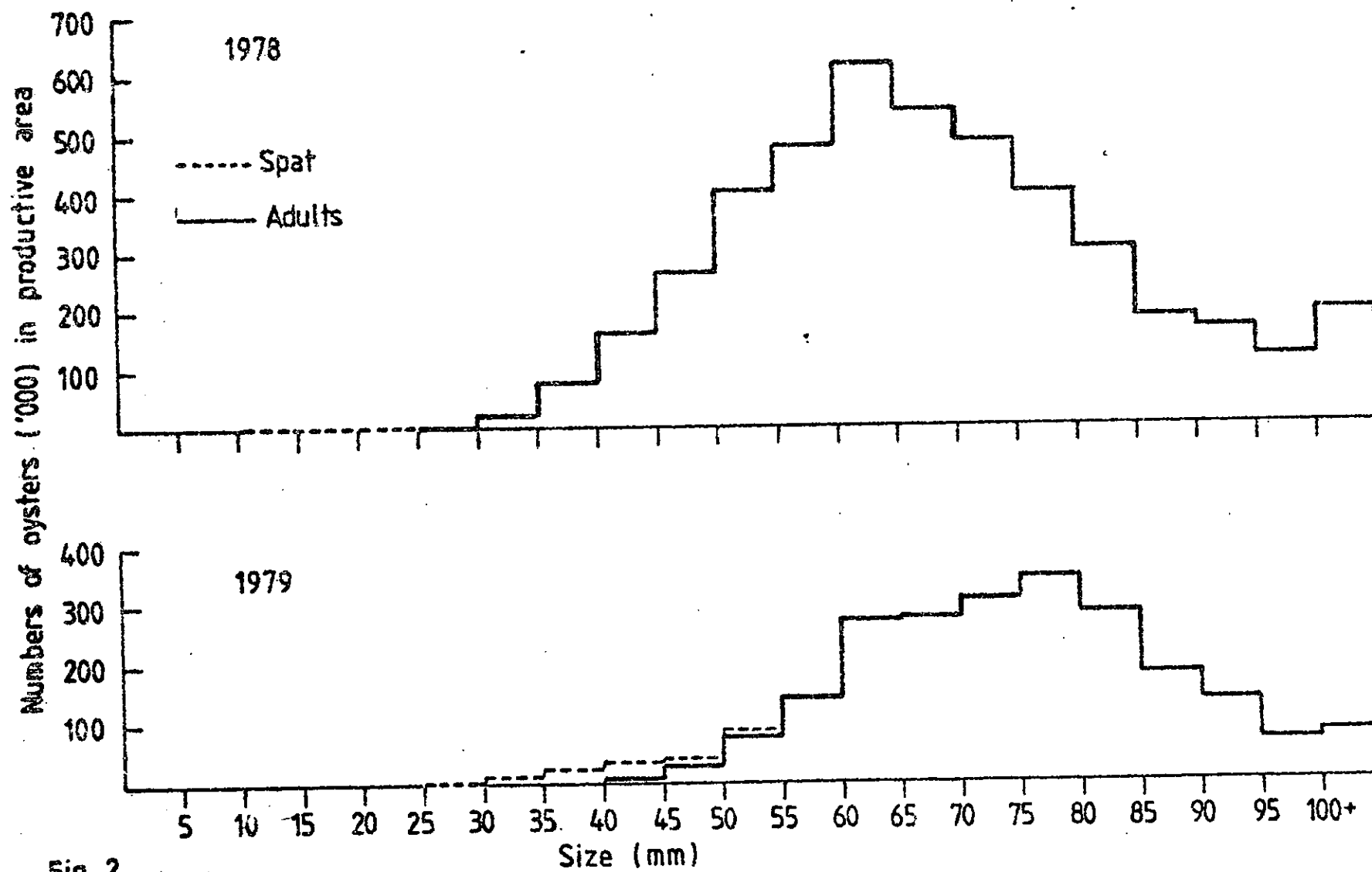


Fig 2





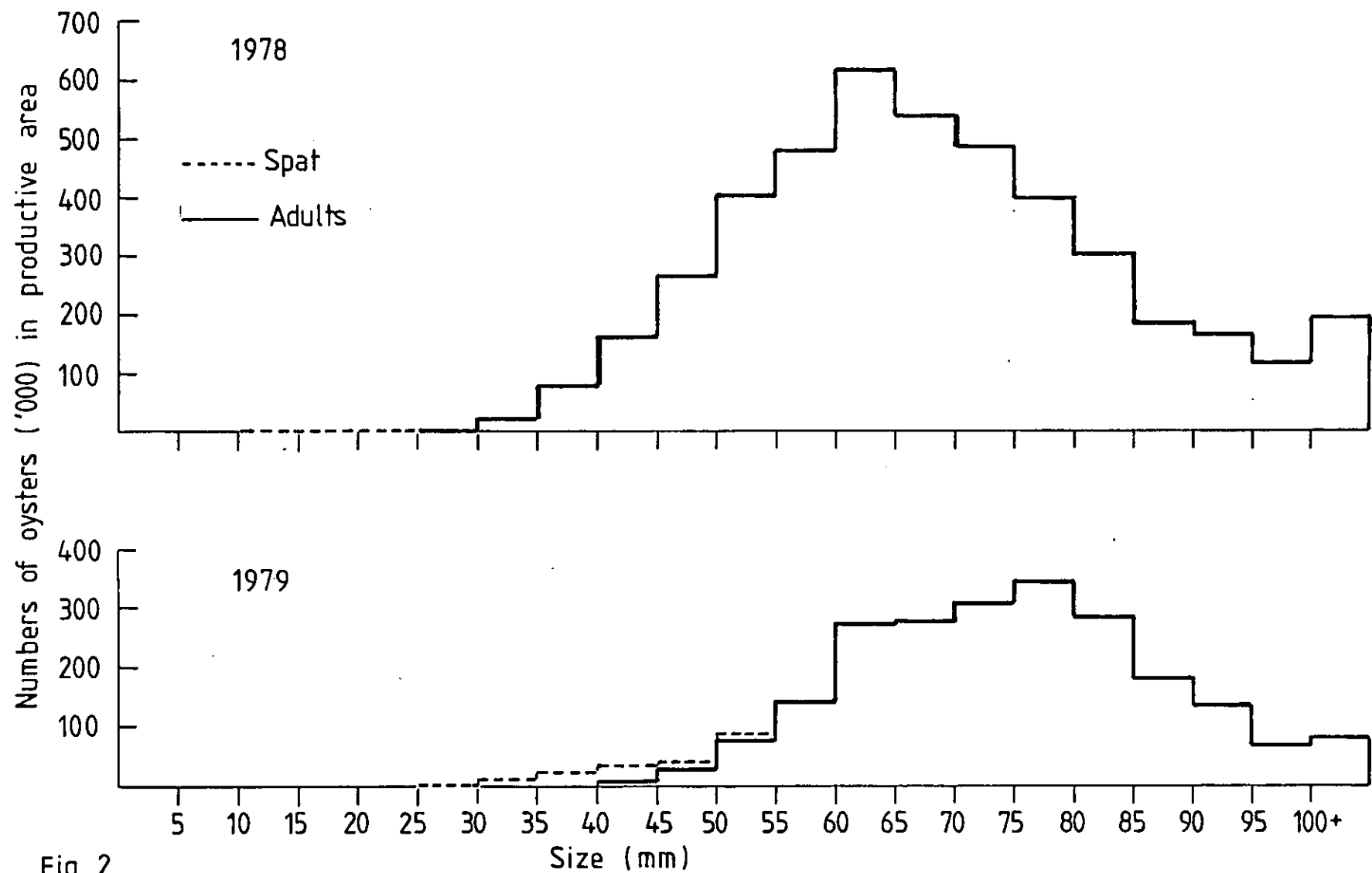


Fig 2



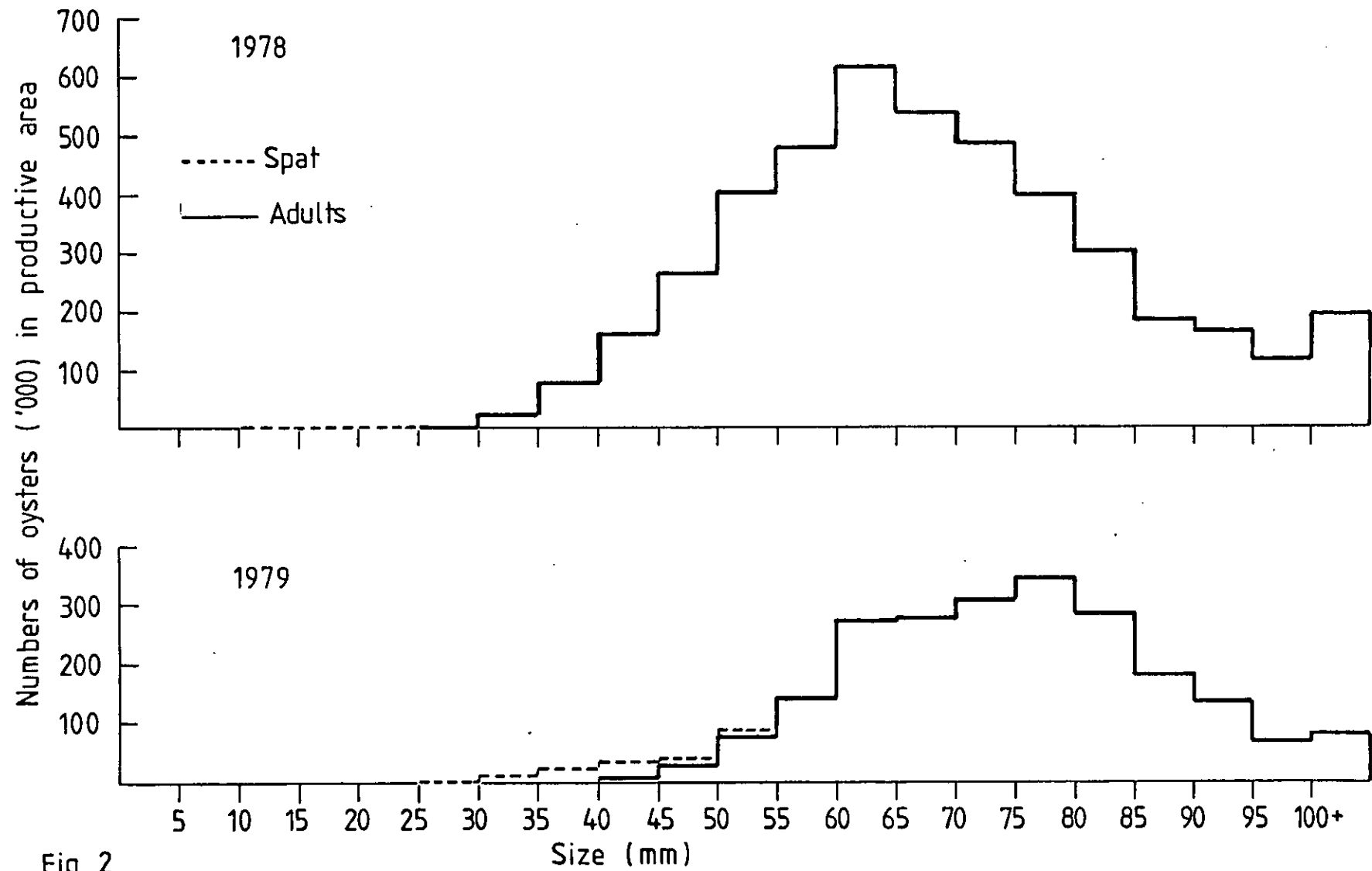


Fig 2