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FRV CLUPEA

8CR81

CRUISE 8/81

REPORT

8 June - 2 July 1981

OBJECTIVES

- 1 To tag sandeels (*Ammodytes marinus*) in areas around Shetland, especially those important to the commercial fishery.
- 2 To study the fishing performance of sandeel nets (D. Galbraith).

NARRATIVE

FRV 'Clupea' left Buckie at 1640 on 8 June 1981 and arrived at Lerwick at 1130 the next day. The ship stayed in harbour on 9 June due to bad weather. On 10 June sandeels were caught off Helliness Holm near Mousa and a cage containing tagged and untagged fish was marked with a buoy and positioned in Sandwick Bay. During the remainder of the first week fishing and tagging were carried out at Mousa. Dr Blake left the ship on 13 June. During the period 15-19 June tagged sandeels were released at Mousa, Balta, Fetlar and between Fetlar and Bressay. D. Galbraith left the ship on 20 June. After prior consultation with the manager of the Bressay fish meal plant, magnetic tag recovery tests were conducted by B. Edelsten on 22 June. Further fish were tagged and released on 22 June at Mousa, on 23 June to the east and west of Fair Isle, and on 24 June at Fethaland. On 25 June a brief echosounder survey of the East Fair Isle sandeel grounds was completed, and two hauls were taken in the same area. On 26 June three exploratory hauls were completed in the area of the Scalloway Deep and South of Vaila Isle, but no sandeels were caught. The experimental sea cage was recovered on the morning of 29 June, after which 'Clupea' steamed south to fish to the west of Fair Isle. The night was spent in Kirkwall Harbour.

The next day three hauls were completed to the east of Orkney and the ship steamed to Dunbeath Bay and anchored for the night. Following 3 exploratory hauls at Smith Bank on 31 June 'Clupea' put into Buckie at 1330.

The weekends of 13-14, 20-21 and 27-28 June were spent at Lerwick.

Dr B. Blake (NCC) took part in the cruise for the period 8 and 12 June to make counts of sea birds while the vessel was steaming.

TAGGING

35 hauls were completed. Sandeels marked with internal (7 x 2.5 x 0.4mm) stainless steel tags were released in each of 13 areas around Shetland (Fig. 1), in most cases close to the position where they were caught. Of the total number of fish tagged (5232), 1944 (= 37.2%) were released in the Mousa-Helliness Holm area.

Tagging mortality experiment

A fine mesh cage measuring (6 x 4 x 3) ft., with 6" high solid walls at the base and partitioned into six equal compartments containing different numbers of tagged and untagged sandeels was set on a sandy bottom in five fathoms of water in Sandwick Bay. Although the solid base of the cage had been filled with sand at the start of the experiment, when the cage was removed after a period of 19 days the volume remaining in the various compartments was low, ranging from almost nothing to about one-third the original amount. Of the total number of 230 fish introduced, only 22 were recovered alive, the sand in the cage displaying signs of anaerobism. The numbers of untagged and tagged sandeels surviving were respectively $1/60$ (= 1.7%) and $21/170$ (= 12.4%) (see Table 1). The mean condition factor (W/L³) for fish in the various compartments ranged from 0.28×10^{-4} to 0.35×10^{-4} , there being no obvious relation between condition and either stocking density or the presence of a tag. Any effect due to tagging was almost certainly obscured by the severely perturbed environmental conditions within the cage.

Tag recovery efficiency

On 22 June 1981 tagged sandeels were introduced into the hoppers of the Bressay fish meal plant. 5 $\frac{1}{2}$ -6 hours later 66/180 (=41.3%) of the tags were recovered from the magnetic screens.

Tag returns

Two tags recovered at the Bressay factory on 18 June 1981 and one more on 22 June 1981. All three were from sandeels originally released north of Mousa Island on 15 June 1981.

Performance of sandeel nets

The sandeel wing trawls, originally designed for use on 'Mara' were fished with both rubber disc and bobbin footropes. Adequate quantities of sandeels were taken with both rigs but as expected the bobbin footrope offered better protection against ground damage and did not appear to have any adverse effect on catch rates.

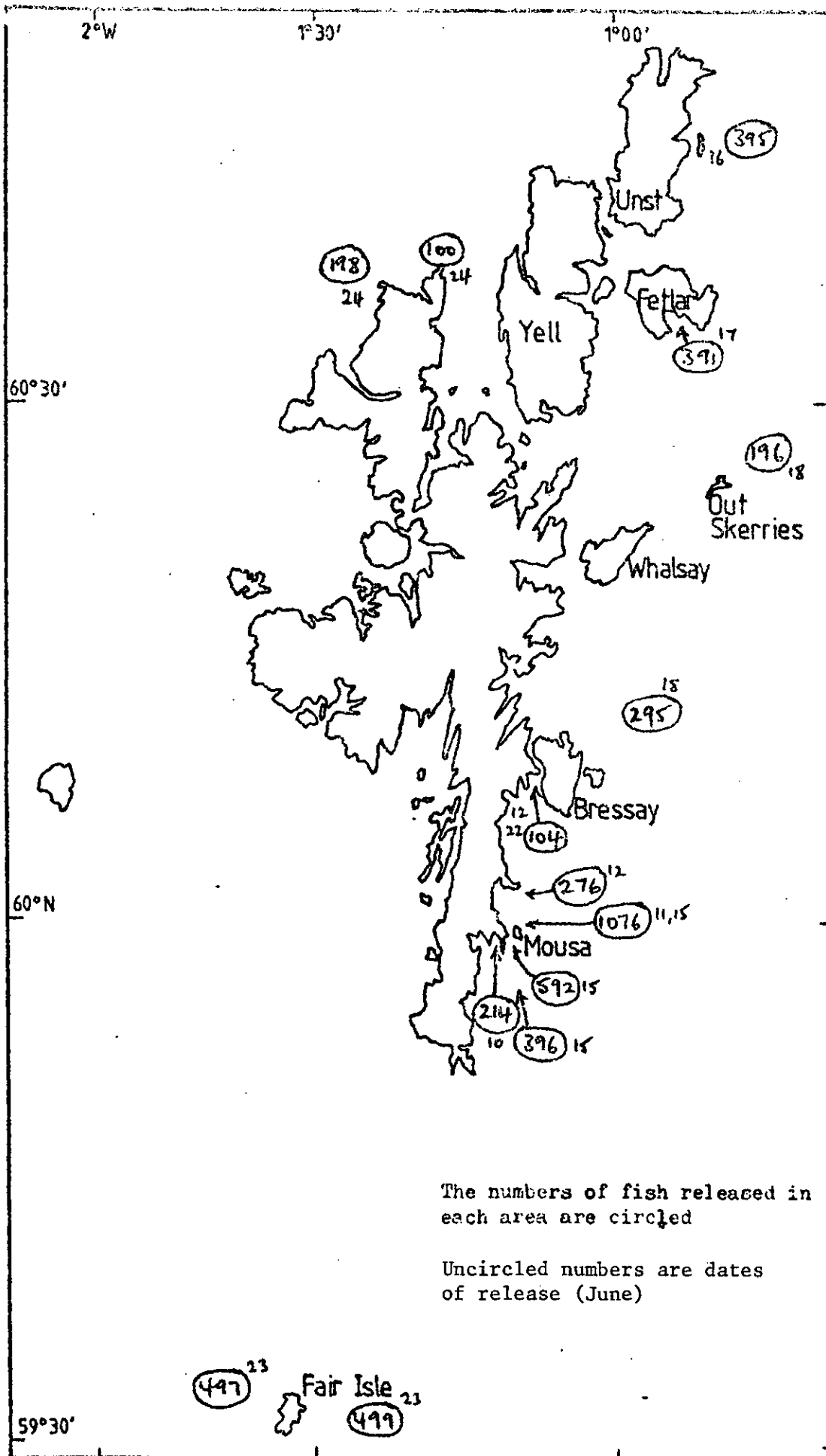
These nets however are not robust enough to be used by 'Clupea' on anything other than fine ground and a new sandeel bobbin trawl based on the Laboratory four panel design will be used on future cruises.

Kevin Warburton
5 August 1981

Seen in draft: G. Geddes

TABLE 1 RESULTS OF CAGE EXPERIMENT

Compt. No.	Treatment	Sand remaining in compartment relative to original amount	No. sandeels		% survival
			Introduced	Recovered alive	
2	Handled only with transfer net	$\frac{1}{3}$	30	0	0
3	Given incision but not tag	$\frac{1}{4}$	30	1	3.3
●	Handled and tagged	Very little	10	2	20.0
4	"	Almost none	30	7	23.3
1	"	$\frac{1}{3}$	30	9	30.0
5	"	$\frac{1}{4}$	100	3	3.0



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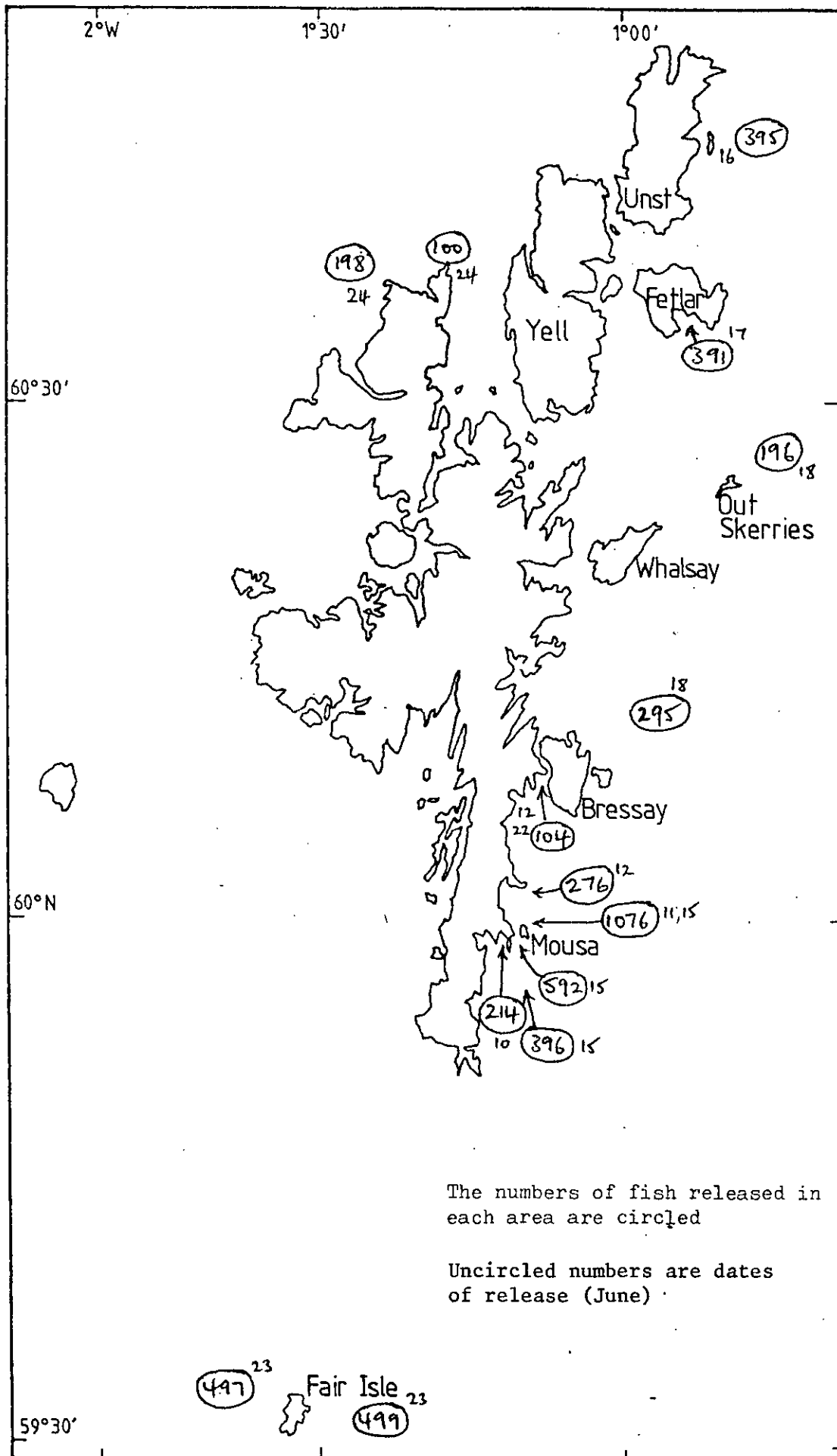
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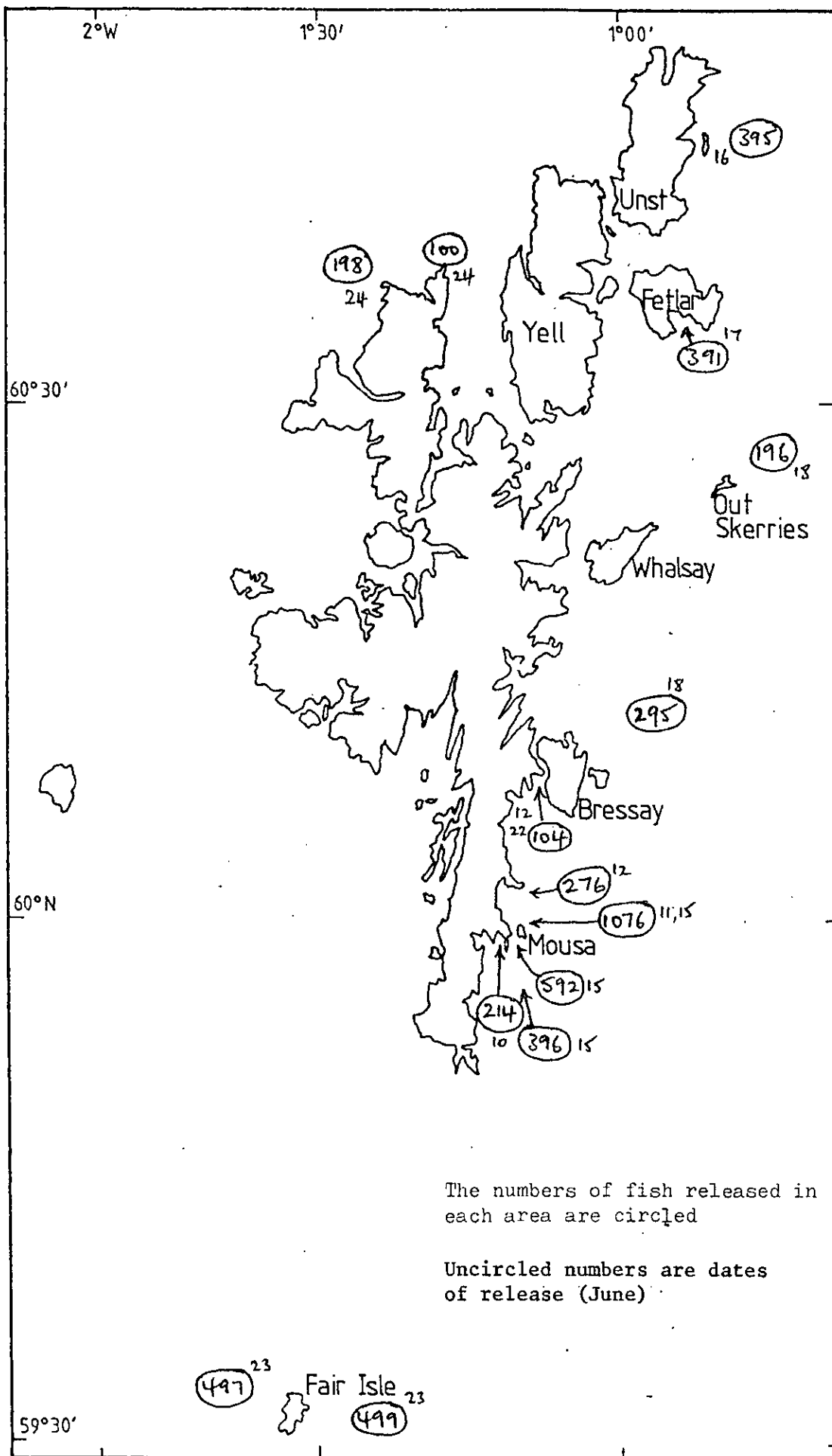
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