

Aerial Surveys of Murre and Eider Distributions in Inshore  
Newfoundland Waters.

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June 12th. 1989.

1. Introduction.
2. Methods.
3. Commentary.
4. References.

Appendices:

- M.1: Principal Murre colonies in Newfoundland.  
Monthly aerial surveys of Murres off Newfoundland.
- M.2: Print-outs of the data used in M.1.
- M.3: Quarterly aerial surveys of Murres off Atlantic Canada.
- M.4: Quarterly shipboard surveys of Murres off Atlantic Canada.  
Quarterly shipboard records of Common and Thick-billed  
Murres off Atlantic Canada.
- E.1: Monthly aerial surveys of Eiders off Newfoundland.
- E.2: Print-outs of the data used in E.1.

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### 1. Introduction:

The current status of Murres and Eiders in Newfoundland is a matter of some concern. Excessive numbers of wintering Thick-billed Murres are taken in the 'tunn' hunt. Large numbers of Eiders are shot, legally or illegally, in Labrador and northern Newfoundland. Both groups are also vulnerable to oil spills and net-drowning. At the CWS/AR meeting in St. John's in April, I agreed to produce a series of computer-maps of Murre and Eider distributions off Newfoundland, from the PIROP Aerial Atlas files. They are primarily to help Pierre Ryan in his surveys and management planning, but they may also be useful to other CWS seabird/seaduck people. I've added maps from the Shipboard and Aerial Atlases, and a short commentary.

### 2. Methods:

The aerial surveys were commissioned by the oil industry as part of the Environmental Impact Statements required for exploratory offshore drilling. The monthly surveys south of 48°N were made by MacLaren Plansearch Lavalin (1981), on behalf of Mobil Oil Canada Ltd., between March 1980 - March 1981. Those north of 49°N were flown by LGL Ltd./Memorial University of Newfoundland, for Petro-Canada Exploration Inc., at 2-week intervals between April-November 1981 (Kirkham et al. 1985 and unpublished).

Both sets of observations were made from DeHavilland Twin Otters, flying along standard tracks at 185 km/h (100 kts.), 30 m above the sea. Altitudes were measured with a radar altimeter; GNS-200 and GNS-500A navigation systems provided exact positions and ground-speeds. One observer sat in the co-pilot's seat, with a view to the right and ahead of the aircraft; the other, behind the pilot, had a more limited view to the left side. The survey covered a width of 200 m on either side of the flight-line. Bird observations, courses, ice, etc. were recorded on cassette. Each transect was divided into 2-minute segments, timed by a signal from an automatic timer. At the stated speeds and transect widths, a 2-minute 'watch' covers ca. 2.5 km<sup>2</sup>.

The maps given here are adaptations of those in the CWS Seabird Atlases (Brown 1986, and in prep.), using the 2-minute 'watch' as the unit of observation. The data are plotted as the average number of birds per kilometre, in each 10'N x 10'W 'block'. They are presented in detail in the print-outs in Appendices M.2 (Murres) and E.2 (Eiders). For the purposes of the maps they are rounded off to the nearest whole number, with averages between 0.1-0.5 birds/km being plotted as '+'. The print-outs give the number of 'watches' on which each average is based, in the 'Effort' column.

On the maps, averages based on >10 'watches' are underlined; those based only on 1-2 have an asterisk. The maps plot all data recorded between 46°-52°30'N, 57°-51°30'W. Note that, at this magnification of scale, the mapping programme plots the 1°N markers about 10'N too high. To help cross-reference between the maps and the print-outs, the Grid Locator map (M.1) has the 1°N x 1°W intersections correctly marked by 'X'. This map also shows the scale (1°N = 60 nautical miles = 111 km), and the positions of the principal Murre colonies. To fit the Newfoundland distributions into a wider perspective, I've also added (M.3, M.4) quarterly aerial and shipboard averages for Murres, based on 1°N x 1°W 'blocks' and plotted on the standard CWS Atlantic Atlas map (Brown 1986). The symbol keys are given on the shipboard maps (M.4).

The aerial surveys can't, of course, separate Common from Thick-billed Murres, or Murres from Razorbills. Quarterly Atlantic shipboard maps for the two Murres plot '+' in 'blocks' where the species in question was positively identified. In these maps, '-' indicates that murres were present, but the species was not identified; '0' means that no Murres were seen. The aerial Eider maps combine sightings of Common and King Eiders, unidentified Eider spp., and Eiders and/or Scoters.

In all these quantitative distribution maps, the absence of symbols means an absence of coverage - and NOT necessarily an absence of birds.

### 3. Commentary:

#### a. Murres.

January-March: the Aerial Atlantic map (M.3) suggests that murres are commonest south of ca. 50° off Newfoundland, down to the southern Grand Banks, with some local concentrations inshore. The Shipboard Atlantic maps (M.4) suggest that the birds are largely confined to the Grand Banks, but this reflects the scarcity of coverage off NE Newfoundland. Virtually all of these birds are Thick-bills (M.4). In finer detail, the Aerial Newfoundland maps (M.1) show that Murres are virtually absent from the Notre Dame Bay area during the whole of this period - presumably because of the pack-ice. How does this compare with the Turr Hunt data? There are scattered birds in the Strait of Belle Isle in January-February, with numbers increasing considerably in March. Apart from these, the virtual absence of murres north of 50°N in March shows that the return migration to the Arctic hasn't yet got under way. Note, however, the concentration of birds (breeding Commons? migrant Thick-bills?) that has begun to build up around the Funks. Birds also seem to be moving inshore towards the southern Avalon Peninsula.

April-June: both the Aerial and Shipboard Atlantic maps (M.3, M.4) show a concentration of murres around the Funks; the birds are also common from the northern Grand Banks to Belle Isle and SE Labrador, but scarce farther north (pack-ice?). The Shipboard map has a concentration inshore, off the eastern Avalon, as well. Thick-bills are still widespread but, as you'd expect, there are centres of Commons - presumably breeders - off the Avalon, the Funks and SE Labrador. The Aerial Newfoundland maps show the same picture, with very large local densities around the Funks, especially in April. However, many of the April birds are probably Thick-bills on the way north. In June, when virtually all the Funks birds must be the breeding Commons, this murre concentration seems to occupy an area/foraging range of about 30'N x 40'W around the colony - ca. 55 km<sup>2</sup>, or a radius of 25 km. But the map also suggests that they may be going farther - perhaps as far west as Fogo, and/or south to Cape Freels.

July-September: the Aerial and Shipboard Atlantic maps (M.3, M.4) show Murres occurring along the Continental Shelf from N Labrador to Cape Race, but not farther south, on the Grand Banks. The Shipboard maps show Thick-bills off Labrador, but Commons from SE Labrador to the northern Banks. This is presumably a mix of local birds, and Thick-bills migrating down from Hudson Strait. The Aerial Newfoundland maps (M.1) show a similar pattern. The birds evidently leave their Avalon colonies in August/September. There are small numbers of murres in the Strait of Belle Isle in all three months, but none in Notre Dame Bay.

October-December: the Aerial Atlantic map (M.3) shows a concentration of murres along the central coast of Labrador, and that the birds have also reached the southern Grand Banks. The Shipboard Atlantic data (M.3), collected mainly in October, show that the birds have only reached the northern Banks by then; they are also found as far east as Flemish Cap, ca. 45°W. Most of these birds are Thick-bills. The Aerial Newfoundland maps (M.1) suggest a southward wave of migration - presumably of Arctic Thick-bills - that reaches Cape Freels (and, to some extent, Notre Dame Bay) in October, and the northern Grand Banks in November. In December, there are murres off Belle Isle and SE Labrador, but there are none left in Notre Dame Bay, or on the outer Labrador Shelf.

#### b. Eiders.

I only have inshore, Aerial Newfoundland maps (E.1) for these birds: there are too few sightings offshore, Aerial or Shipboard, to be worth plotting.

In January-March, the birds are abundant off the southern Avalon in all three months. Eiders are locally common off Belle Isle and Cape Freels/Fogo in December-January, but not later in the winter. Presumably these are the birds that migrate down from Labrador to the Avalon - pushed on by the pack-ice?

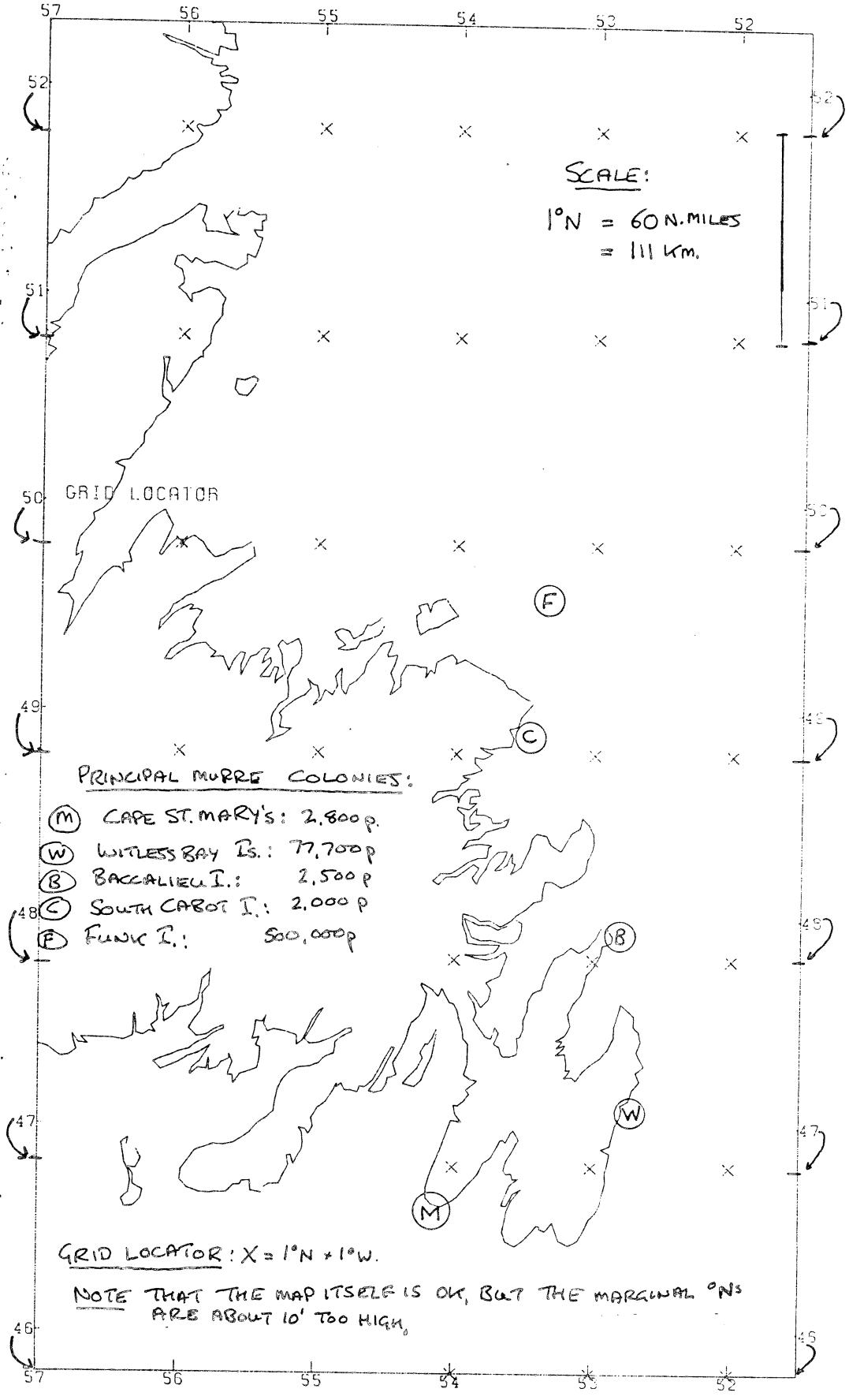
The Belle Isle and Cape Freels/Fogo concentrations re-form in March-April. Belle Isle persists into July, but the ones off Cape Freels/Fogo and the southern Avalon disperse in June. The offshore records south of Cape Race in April are presumably of migrants arriving from Nova Scotia. Eiders are virtually absent from the survey area in July-September, apart from a few ?breeders in SE Labrador.

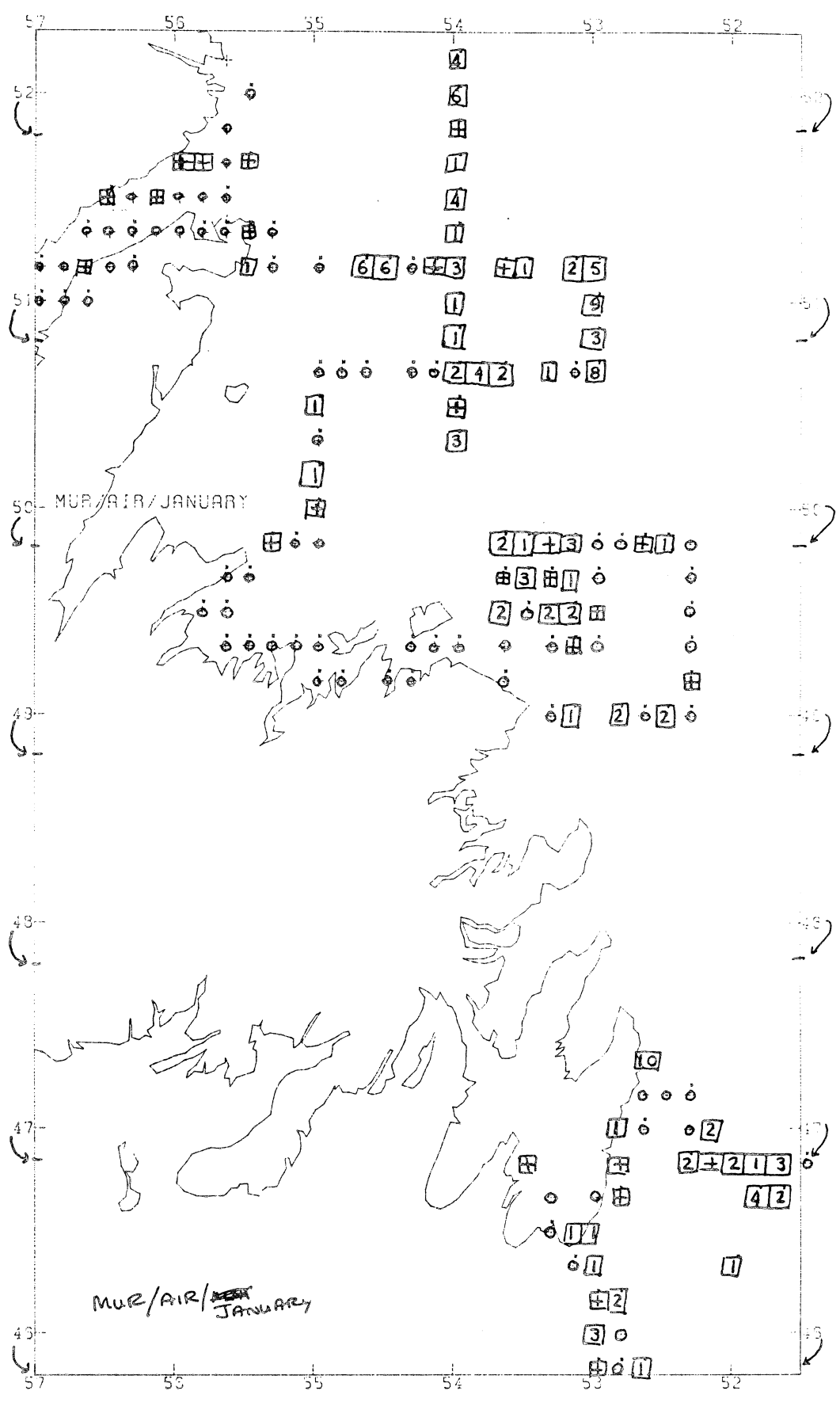
In October-December, the birds are virtually confined to Belle Isle at first. However, small numbers arrive off the southern Avalon in November, and a large concentration forms off Cape Freels/Fogo in December.

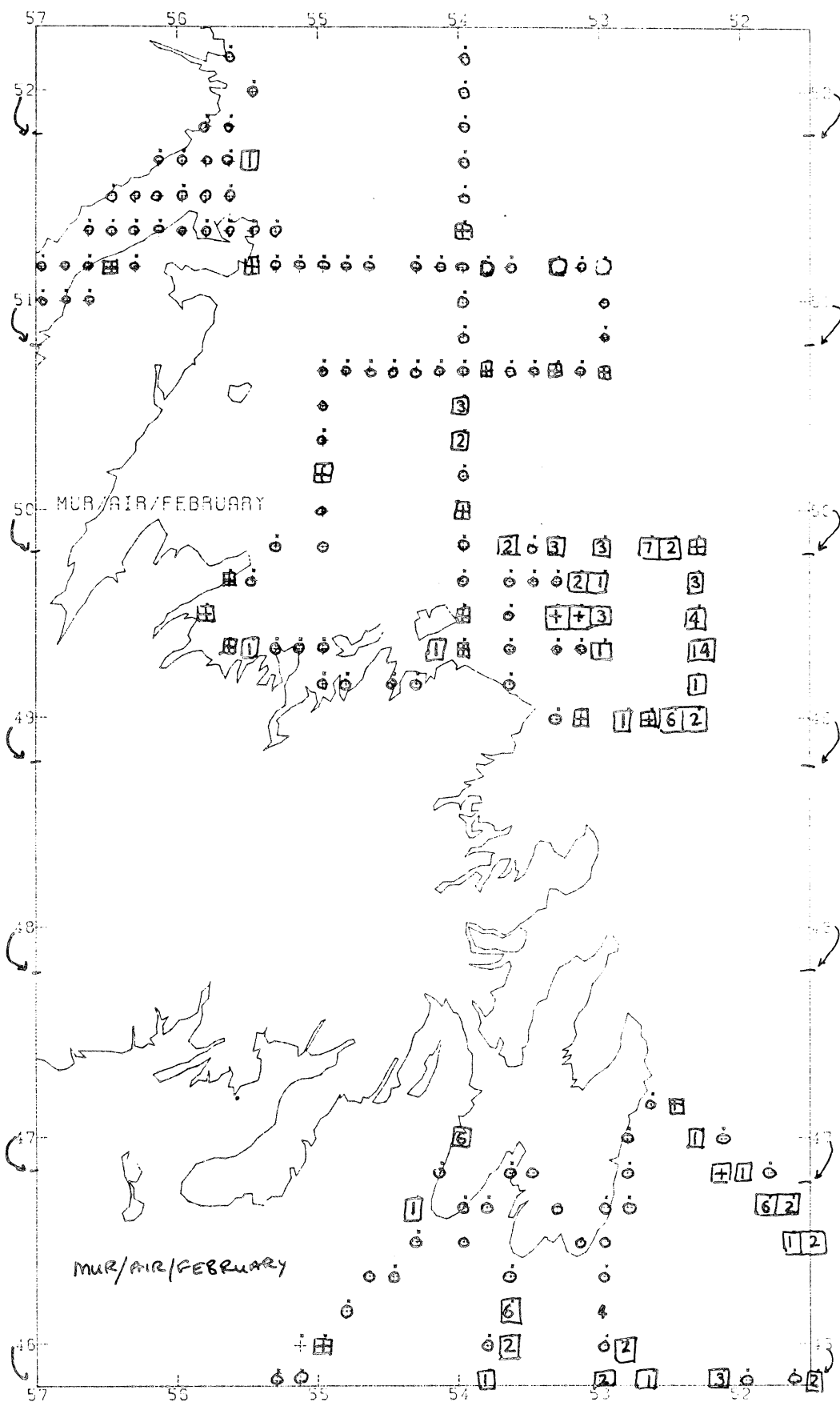
#### 4. References:

- Brown, R. G. B. 1986. Revised Atlas of Eastern Canadian Seabirds. I. Shipboard Surveys. Ottawa: Canadian Wildlife Service. 111 p.
- Brown, R. G. B., in prep. Revised Atlas of Eastern Canadian Seabirds. II. Aerial Surveys. Canadian Wildlife Service.
- Kirkham, I.R., McLaren, P.L. and Montevecchi, W.A. 1985. The food habits and distribution of Northern Gannets, Sula bassanus, off eastern Newfoundland and Labrador. Canadian Journal of Zoology 63 (1): 181-188.
- MacLaren Plansearch Lavalin 1981. Grand Banks Wildlife Study. Final Report for Mobil Oil Canada Limited. ?Montreal.

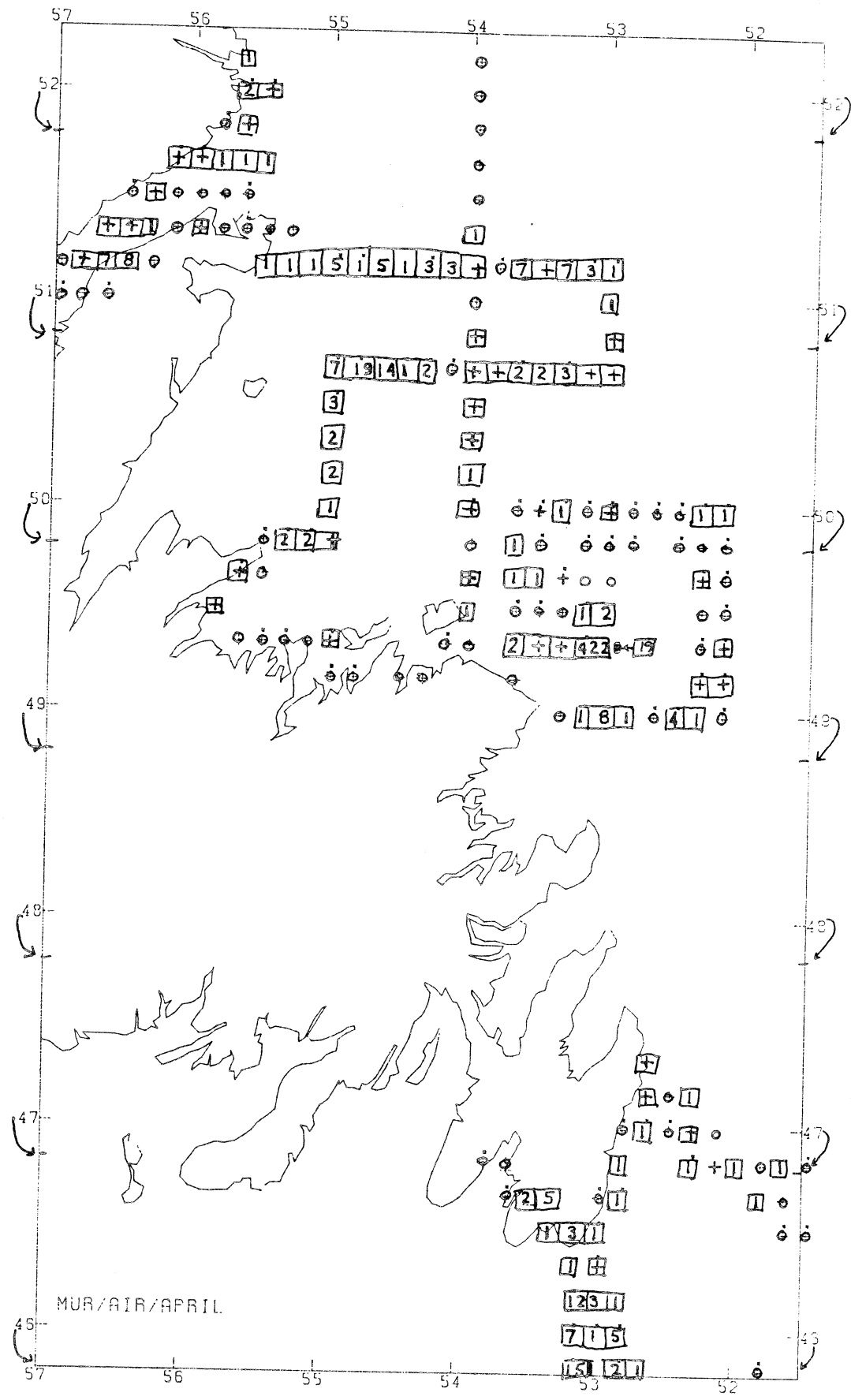


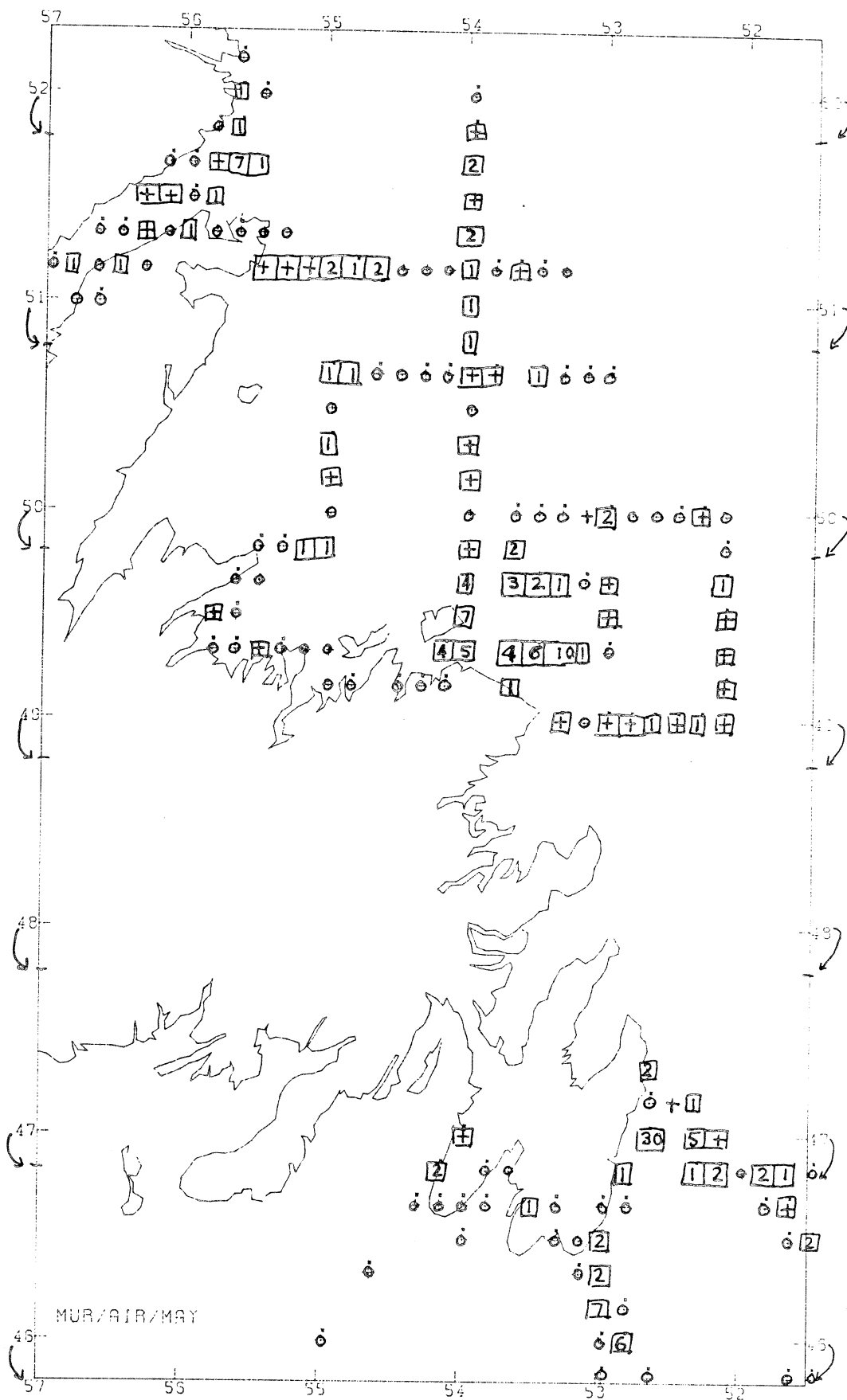




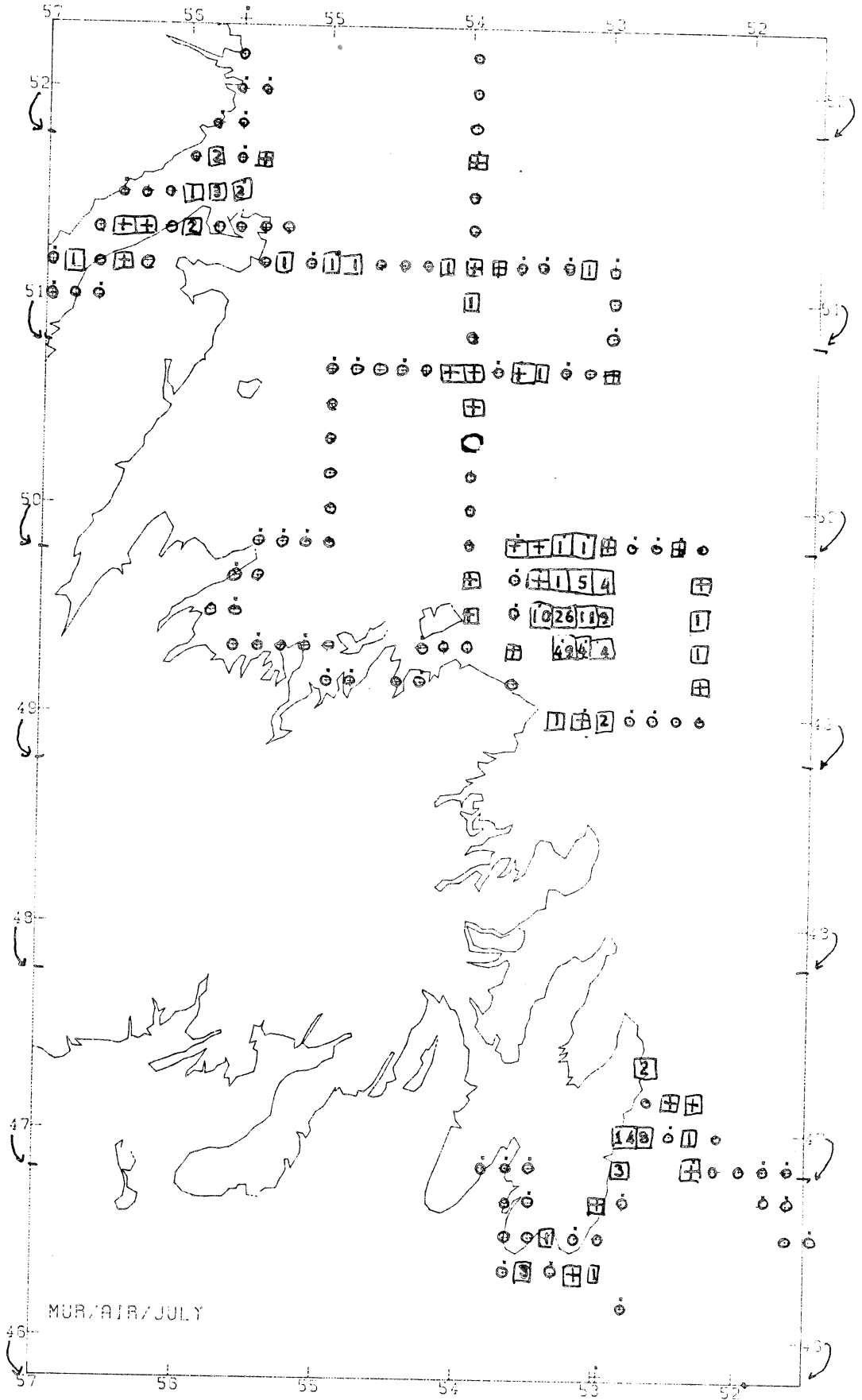










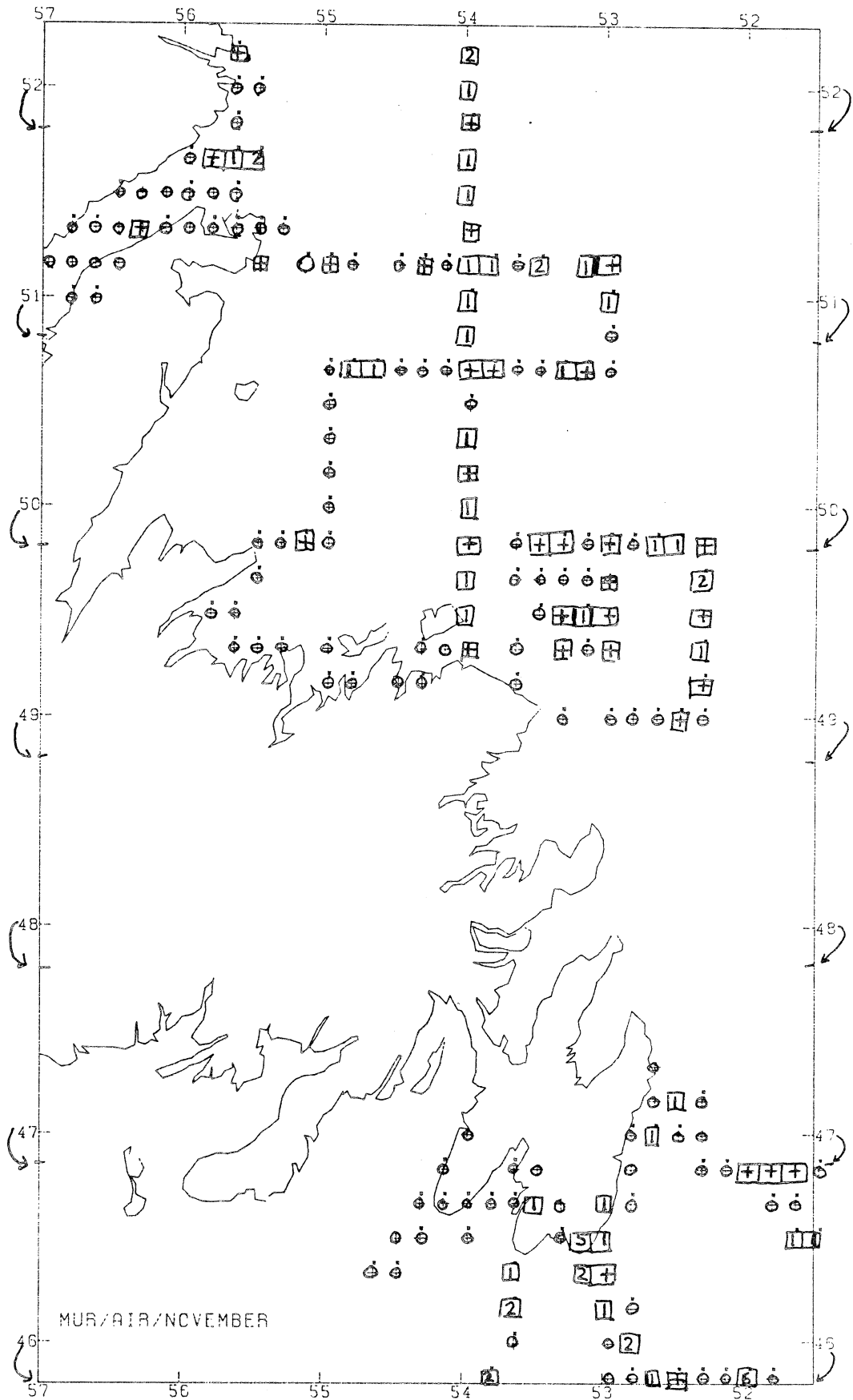


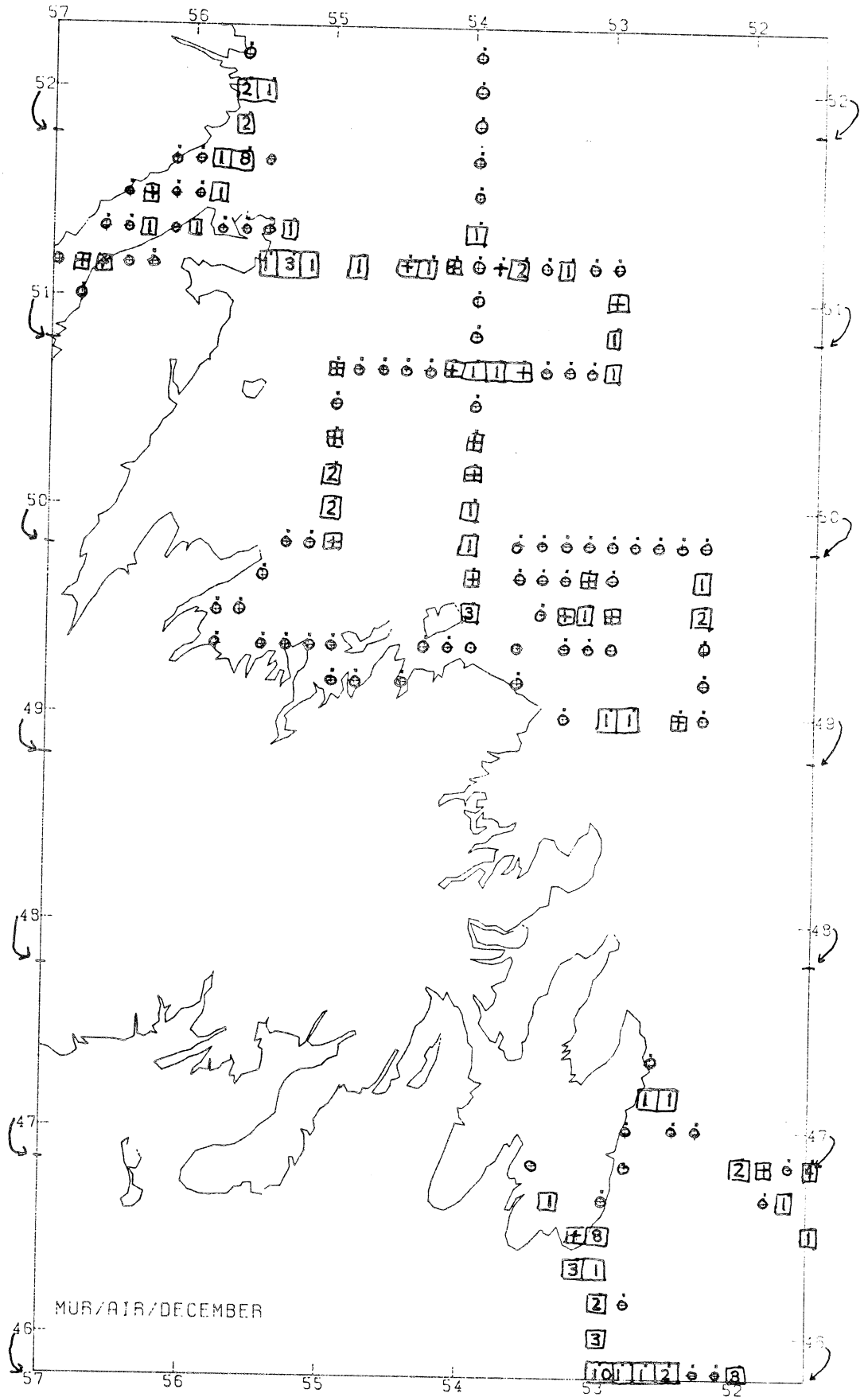
































MURRES	AIR	MAY	#3	AVERAGES	Min.
3000	1.00	1.00	1.00	1.00	1.00
3100	1.00	1.00	1.00	1.00	1.00
3200	1.00	1.00	1.00	1.00	1.00
3300	1.00	1.00	1.00	1.00	1.00
3400	1.00	1.00	1.00	1.00	1.00
3500	1.00	1.00	1.00	1.00	1.00
3600	1.00	1.00	1.00	1.00	1.00
3700	1.00	1.00	1.00	1.00	1.00
3800	1.00	1.00	1.00	1.00	1.00
3900	1.00	1.00	1.00	1.00	1.00
4000	1.00	1.00	1.00	1.00	1.00
4100	1.00	1.00	1.00	1.00	1.00
4200	1.00	1.00	1.00	1.00	1.00
4300	1.00	1.00	1.00	1.00	1.00
4400	1.00	1.00	1.00	1.00	1.00
4500	1.00	1.00	1.00	1.00	1.00
4600	1.00	1.00	1.00	1.00	1.00
4700	1.00	1.00	1.00	1.00	1.00
4800	1.00	1.00	1.00	1.00	1.00
4900	1.00	1.00	1.00	1.00	1.00
5000	1.00	1.00	1.00	1.00	1.00
5100	1.00	1.00	1.00	1.00	1.00
5200	1.00	1.00	1.00	1.00	1.00
5300	1.00	1.00	1.00	1.00	1.00
5400	1.00	1.00	1.00	1.00	1.00
5500	1.00	1.00	1.00	1.00	1.00
5600	1.00	1.00	1.00	1.00	1.00
5700	1.00	1.00	1.00	1.00	1.00
5800	1.00	1.00	1.00	1.00	1.00
5900	1.00	1.00	1.00	1.00	1.00
6000	1.00	1.00	1.00	1.00	1.00
6100	1.00	1.00	1.00	1.00	1.00
6200	1.00	1.00	1.00	1.00	1.00
6300	1.00	1.00	1.00	1.00	1.00
6400	1.00	1.00	1.00	1.00	1.00
6500	1.00	1.00	1.00	1.00	1.00
6600	1.00	1.00	1.00	1.00	1.00
6700	1.00	1.00	1.00	1.00	1.00
6800	1.00	1.00	1.00	1.00	1.00
6900	1.00	1.00	1.00	1.00	1.00
7000	1.00	1.00	1.00	1.00	1.00
7100	1.00	1.00	1.00	1.00	1.00
7200	1.00	1.00	1.00	1.00	1.00
7300	1.00	1.00	1.00	1.00	1.00
7400	1.00	1.00	1.00	1.00	1.00
7500	1.00	1.00	1.00	1.00	1.00
7600	1.00	1.00	1.00	1.00	1.00
7700	1.00	1.00	1.00	1.00	1.00
7800	1.00	1.00	1.00	1.00	1.00
7900	1.00	1.00	1.00	1.00	1.00
8000	1.00	1.00	1.00	1.00	1.00
8100	1.00	1.00	1.00	1.00	1.00
8200	1.00	1.00	1.00	1.00	1.00
8300	1.00	1.00	1.00	1.00	1.00
8400	1.00	1.00	1.00	1.00	1.00
8500	1.00	1.00	1.00	1.00	1.00
8600	1.00	1.00	1.00	1.00	1.00
8700	1.00	1.00	1.00	1.00	1.00
8800	1.00	1.00	1.00	1.00	1.00
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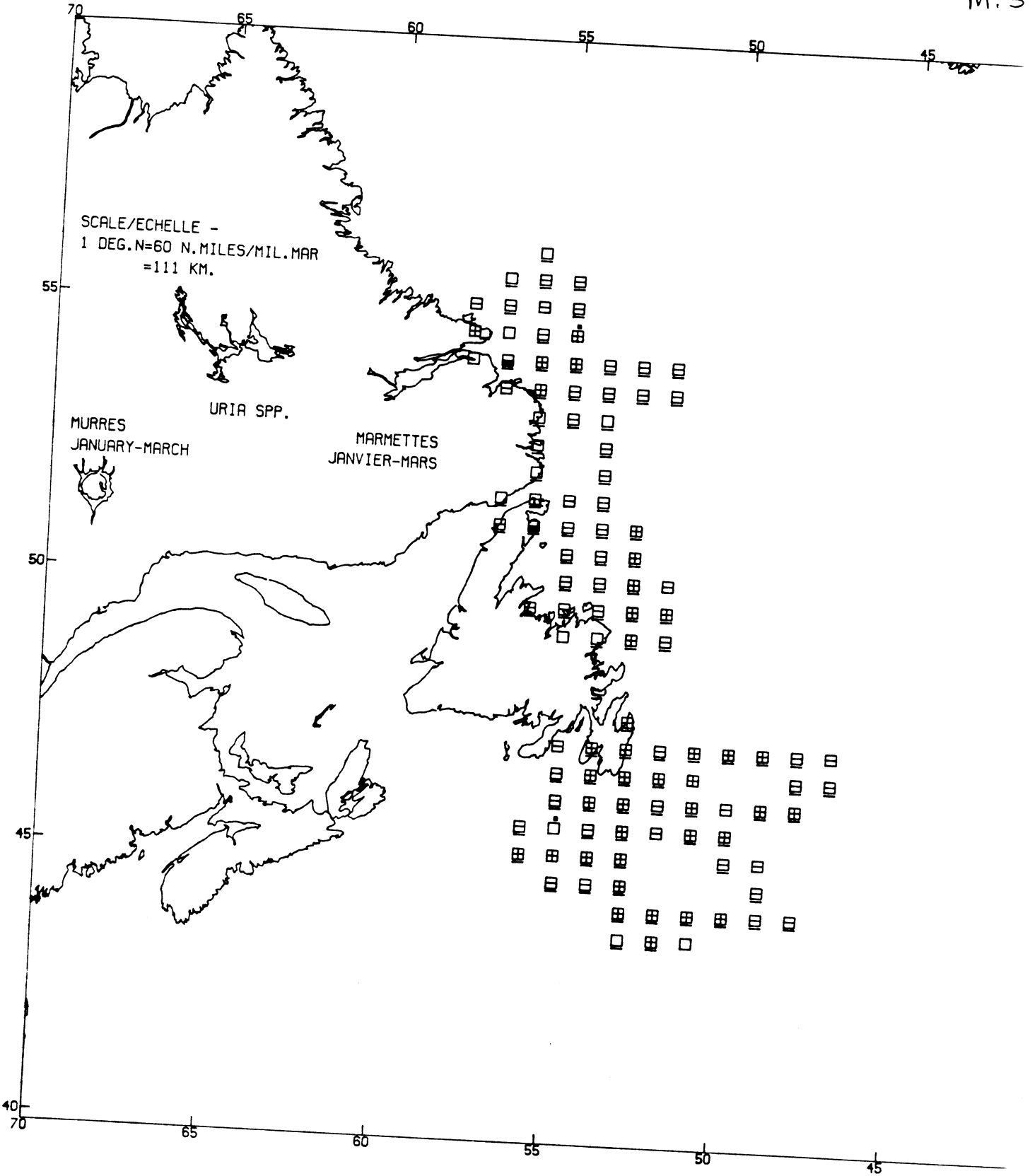




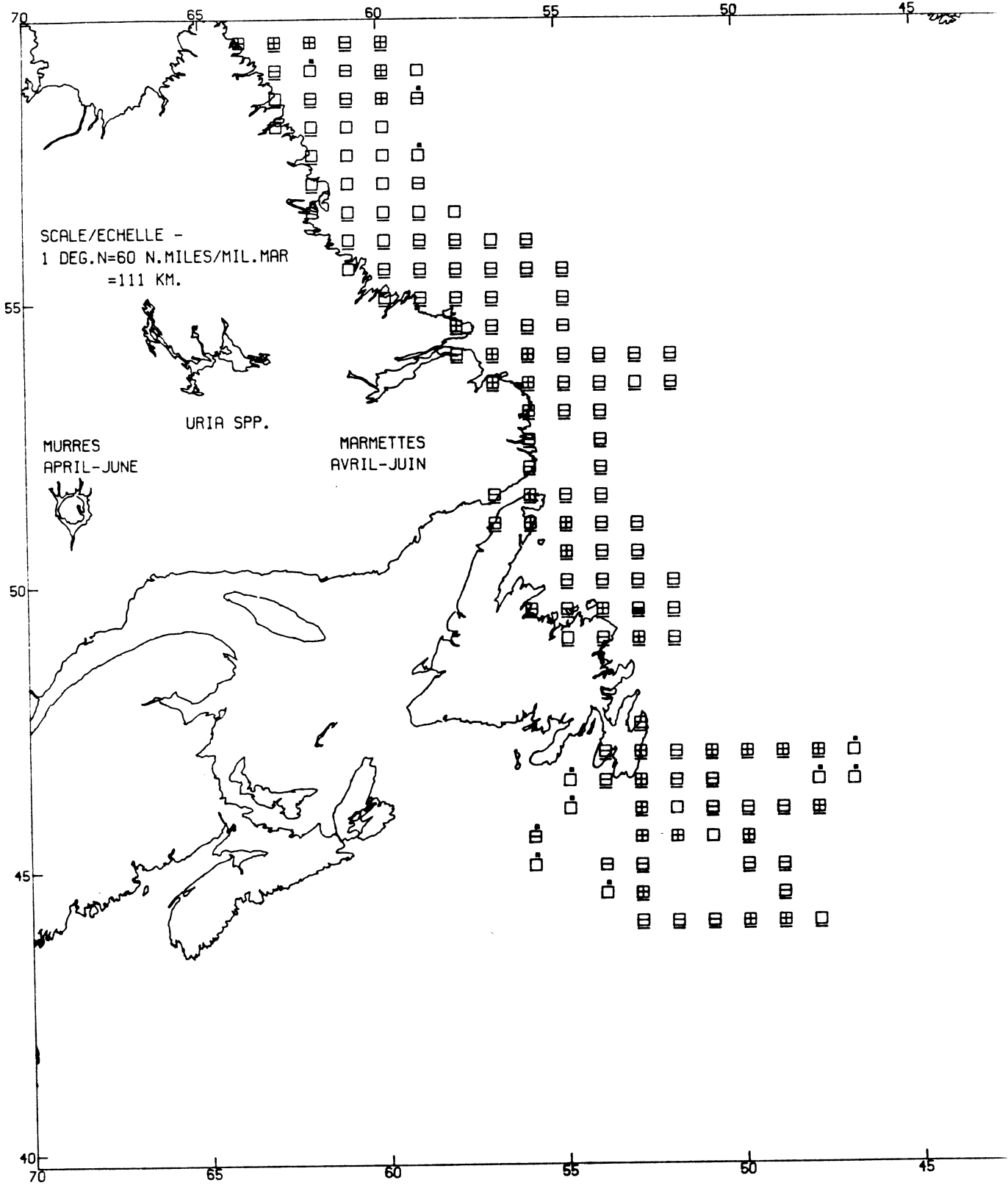




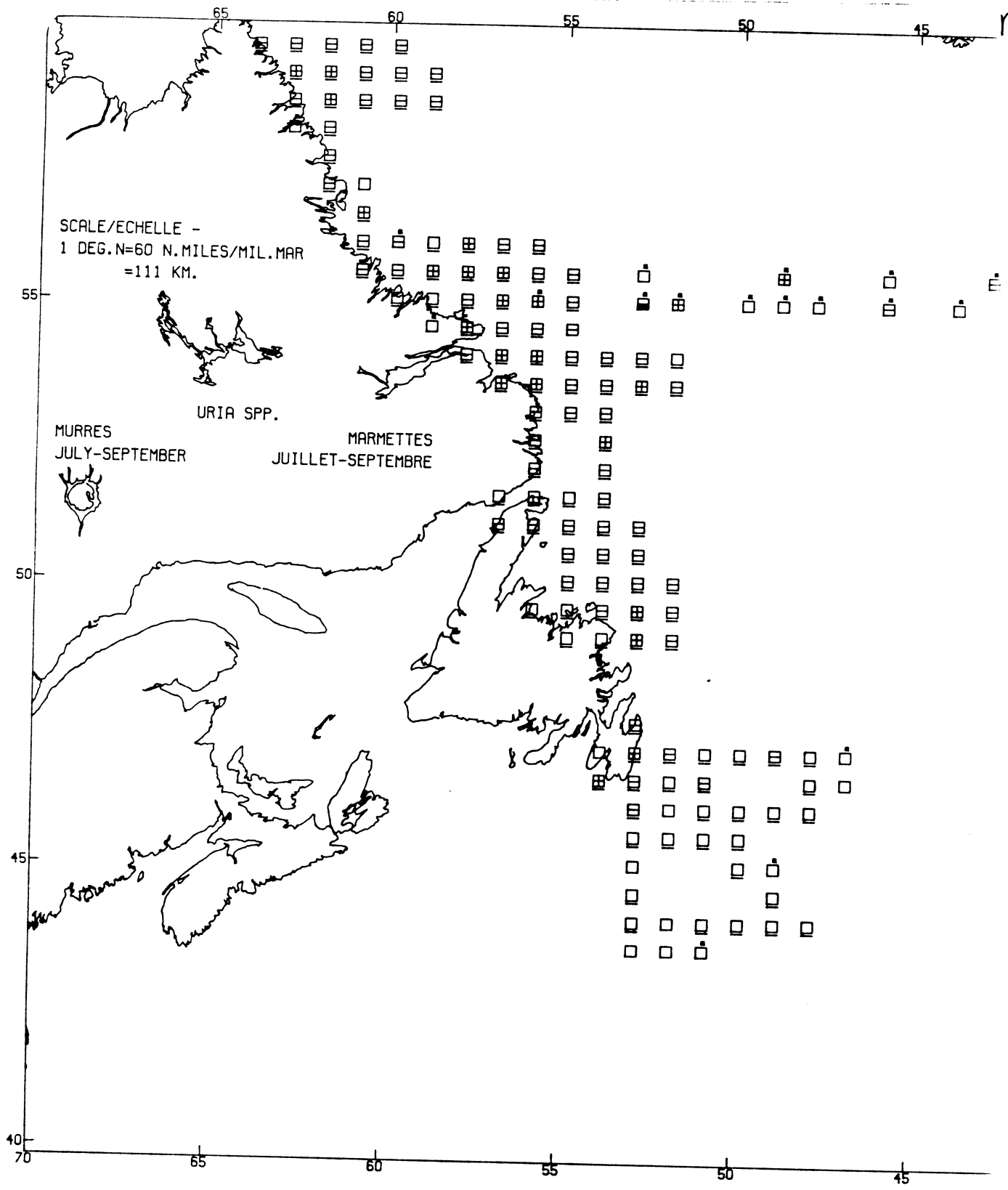




MURRES  
AERIAL

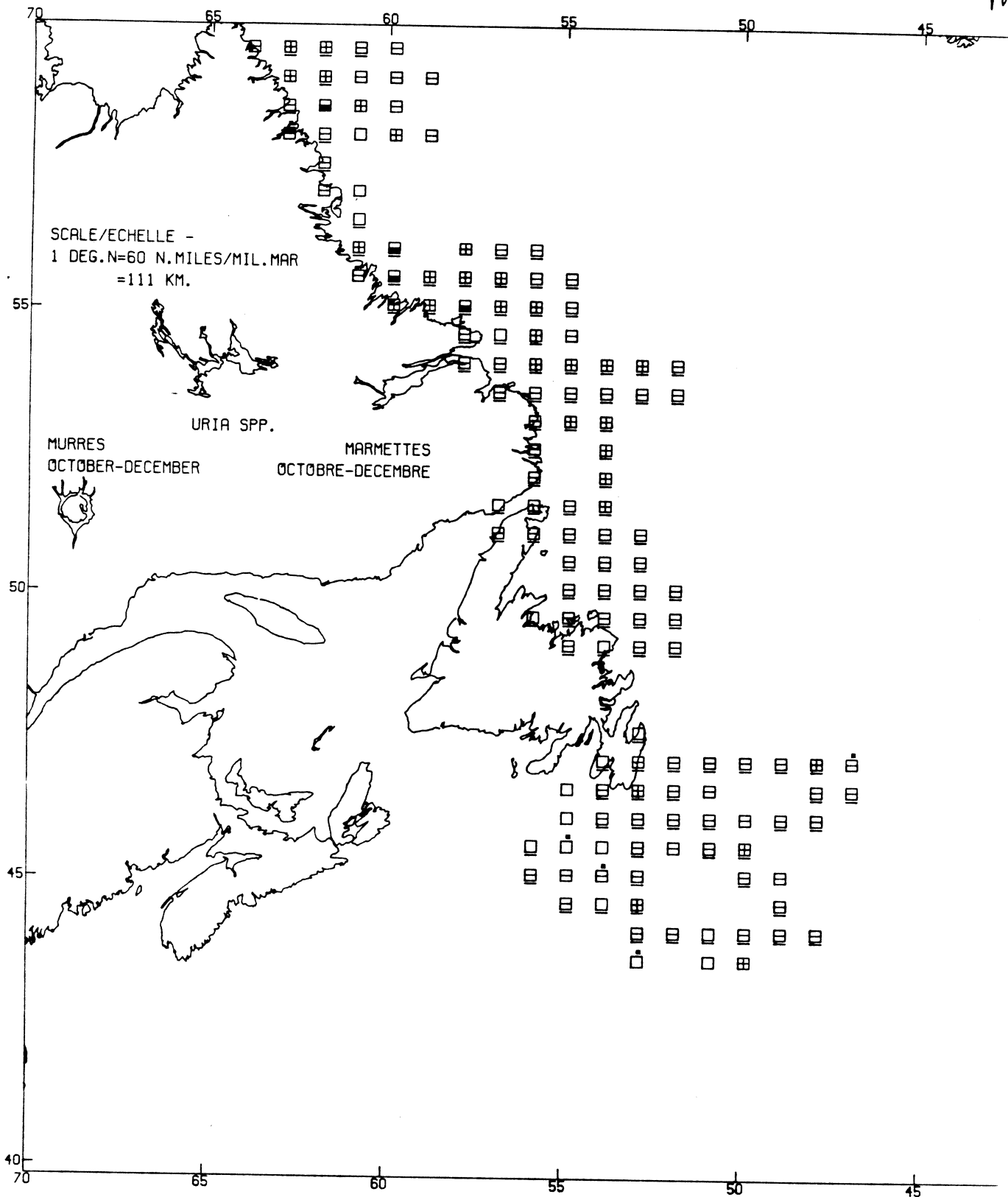


MURRES  
AERIAL



MURRES  
AERIAL





MURRES  
AERIAL

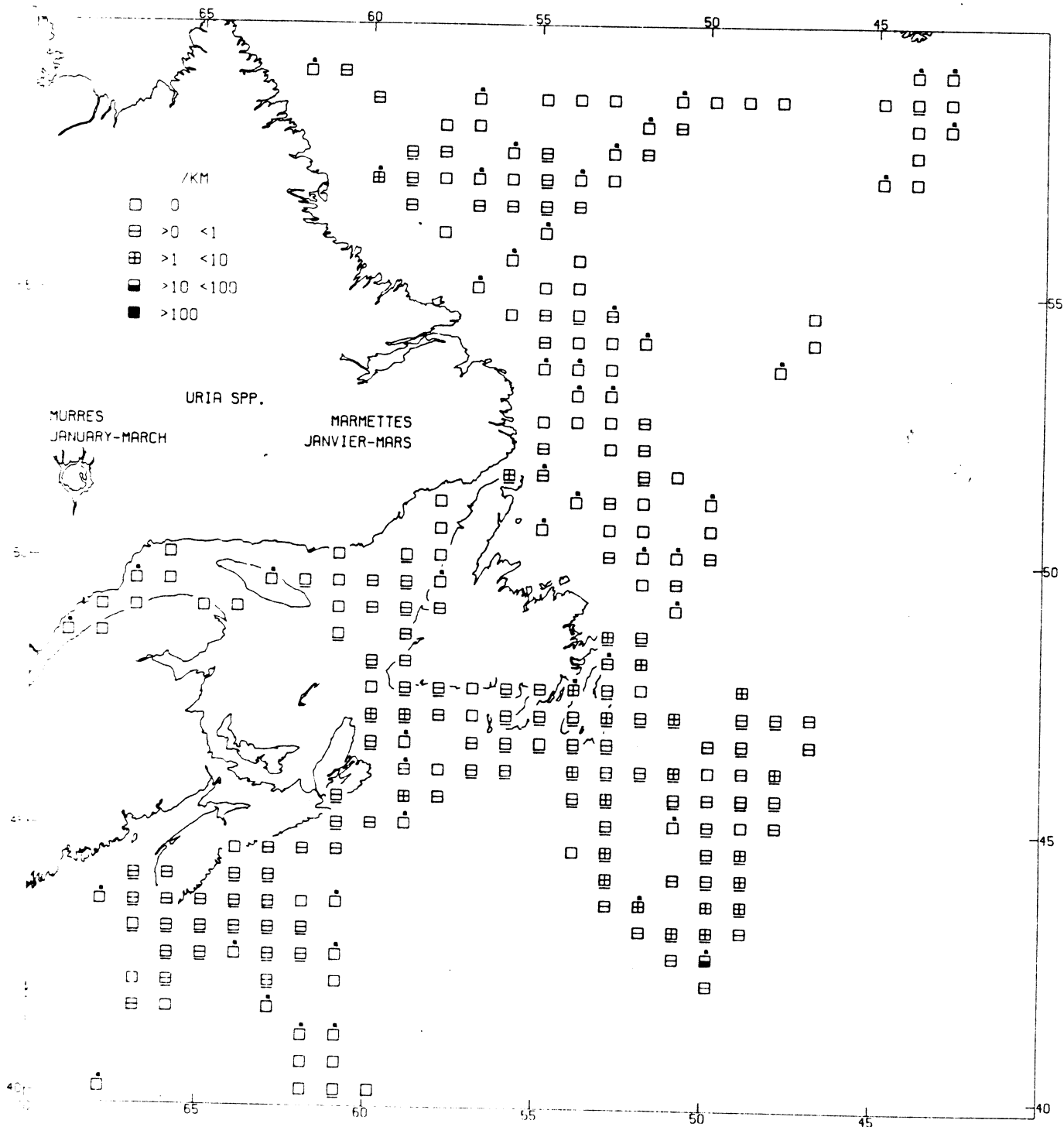
# Maps 14a-f

Murre distributions

M.4

MURRES  
SHIPBOARD

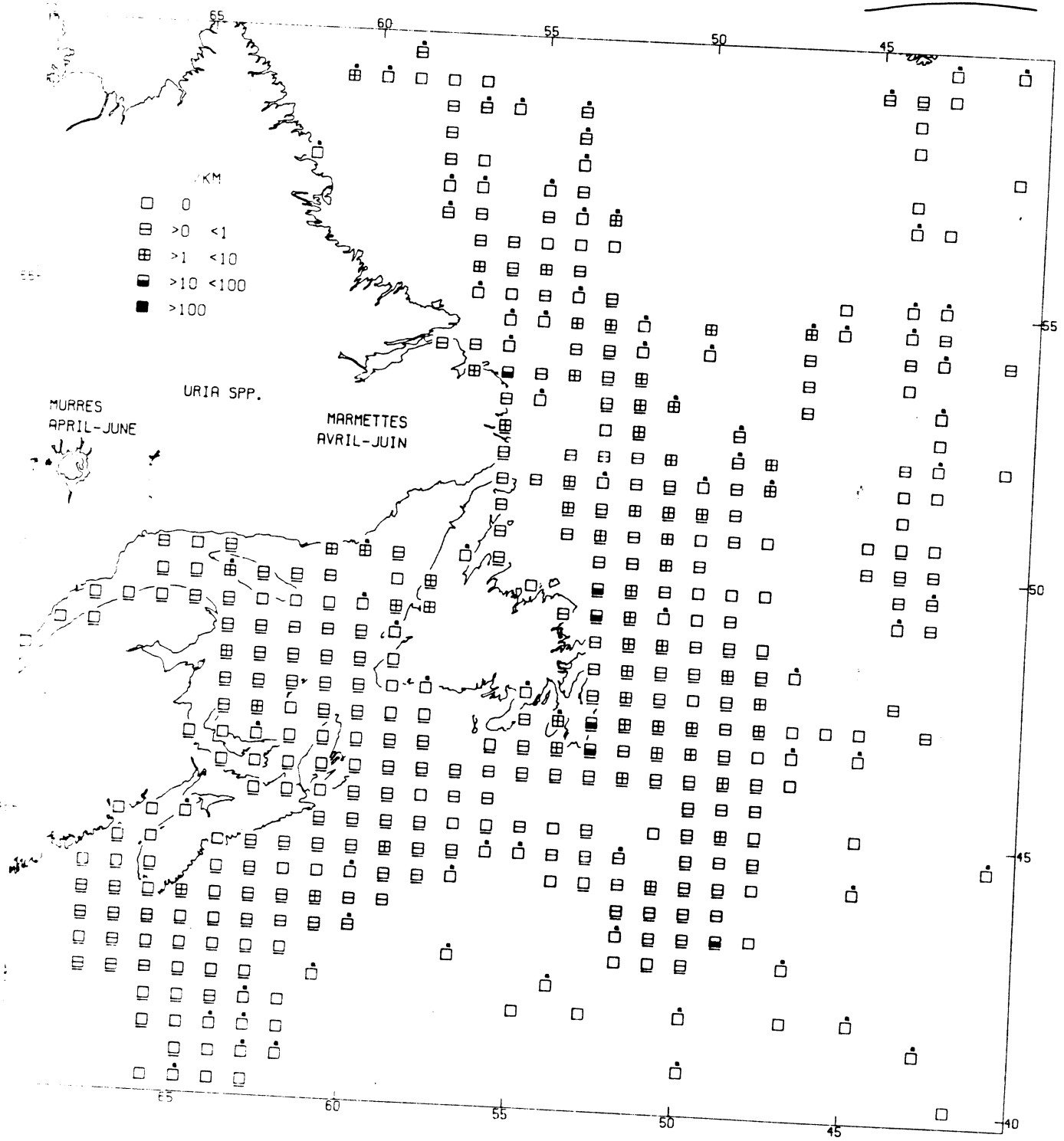
Map 14a  
Atlantic, January-March



M.4

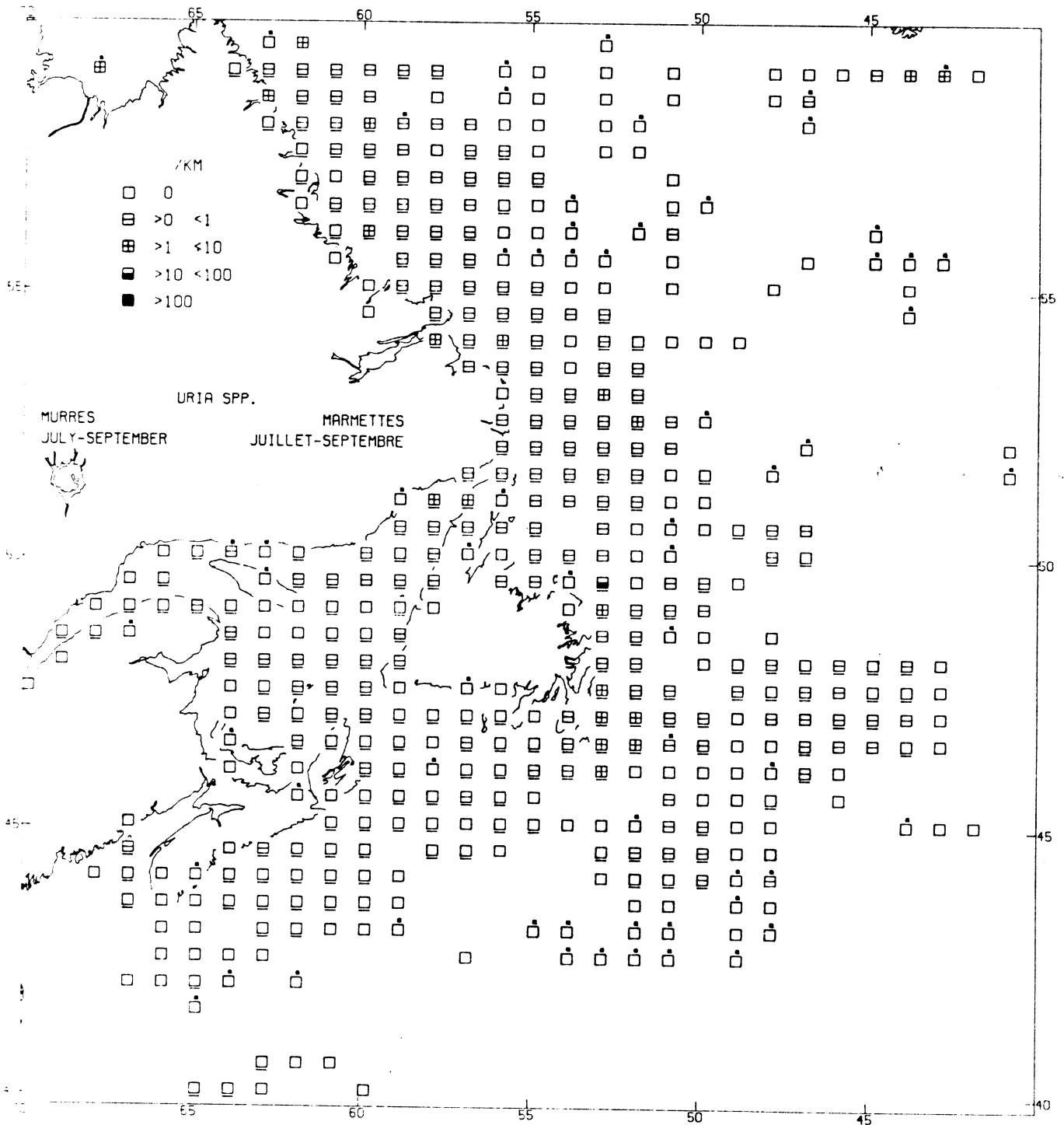
Map 14b  
Atlantic, April-June

MURRES  
SHIPBOARD



MURRES  
SHIPBOARD

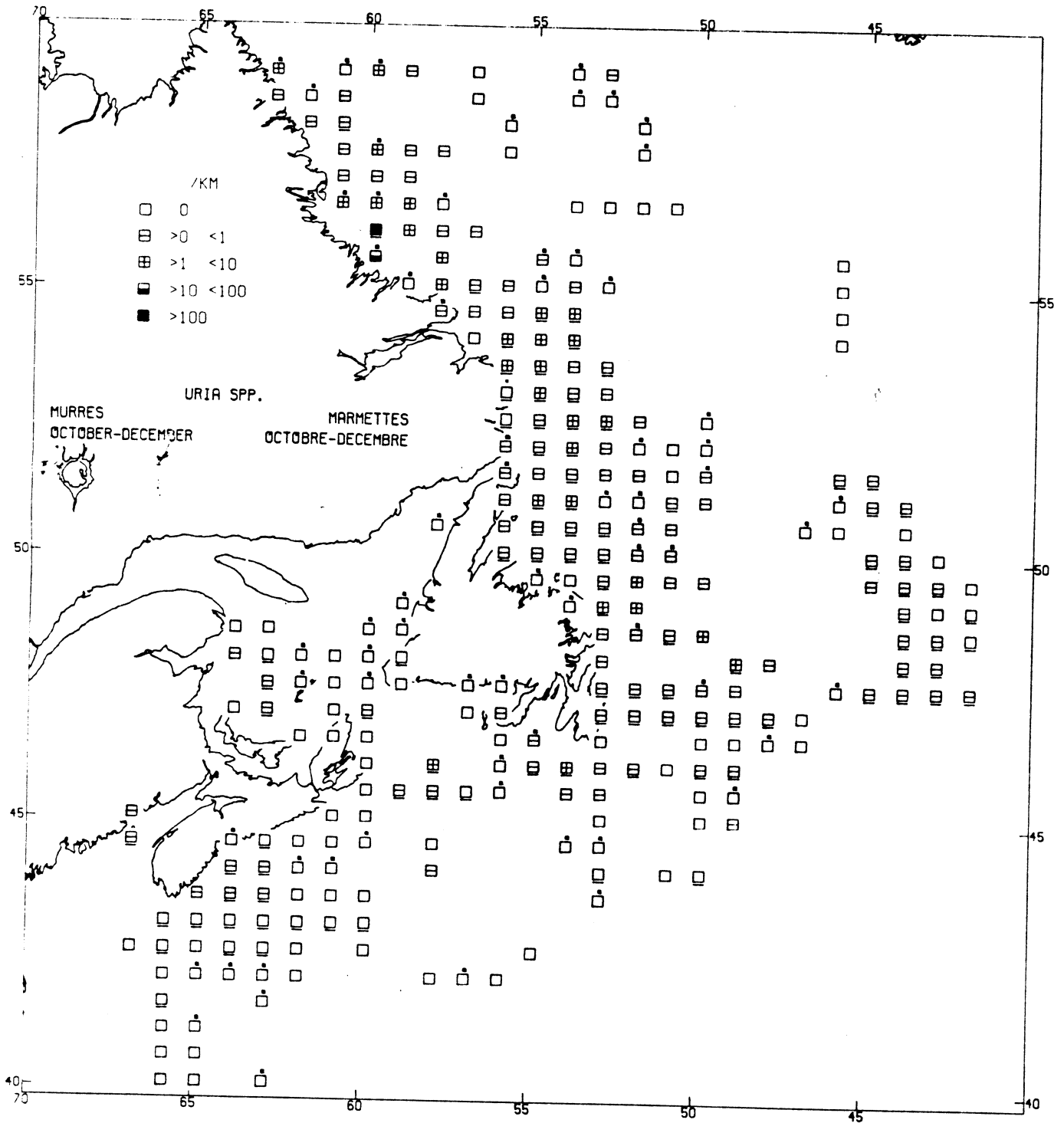
Map 14c  
Atlantic, July-September



M.4

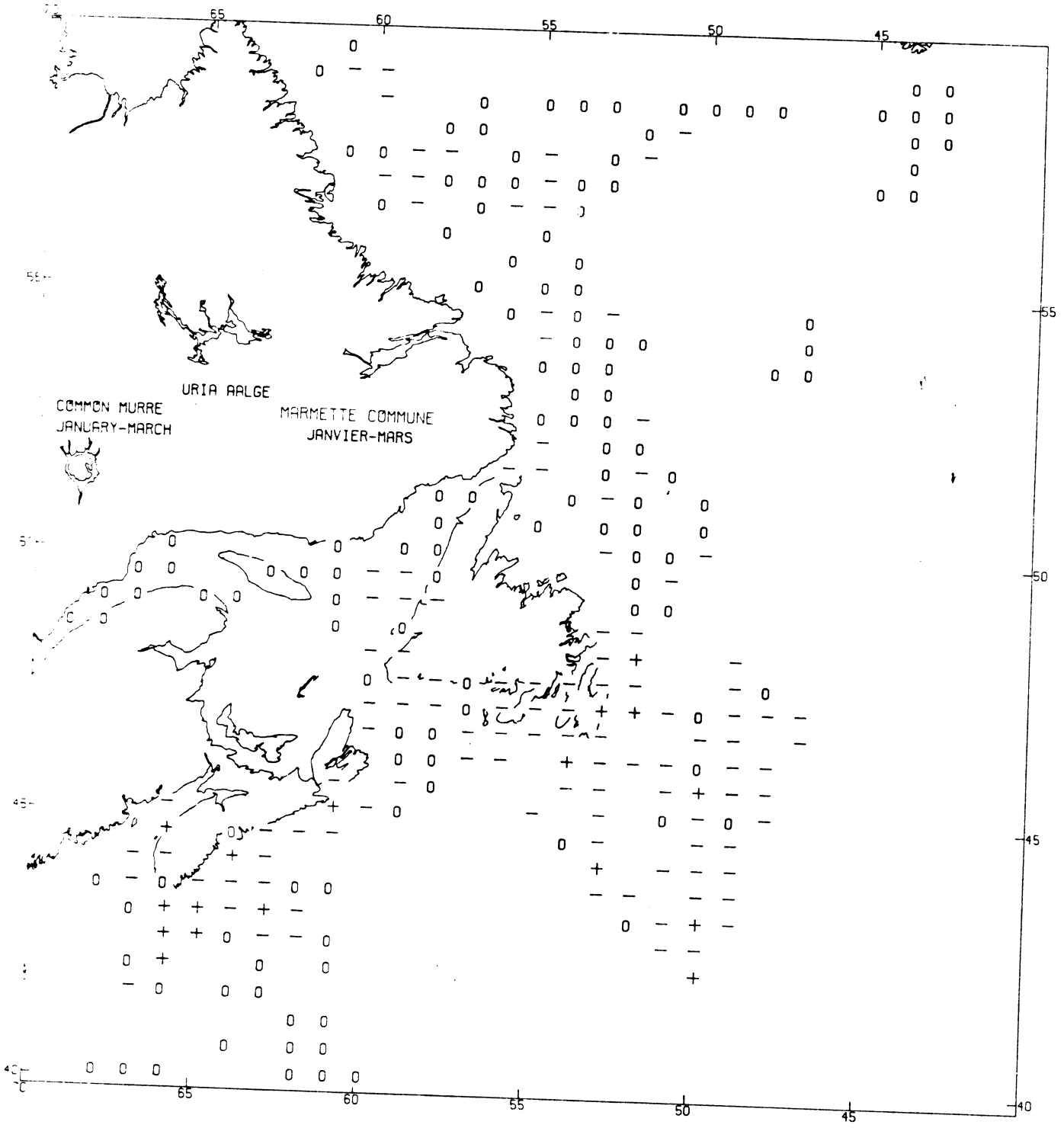
MURRES  
SHIPBOARD

Map 14d  
Atlantic, October-December



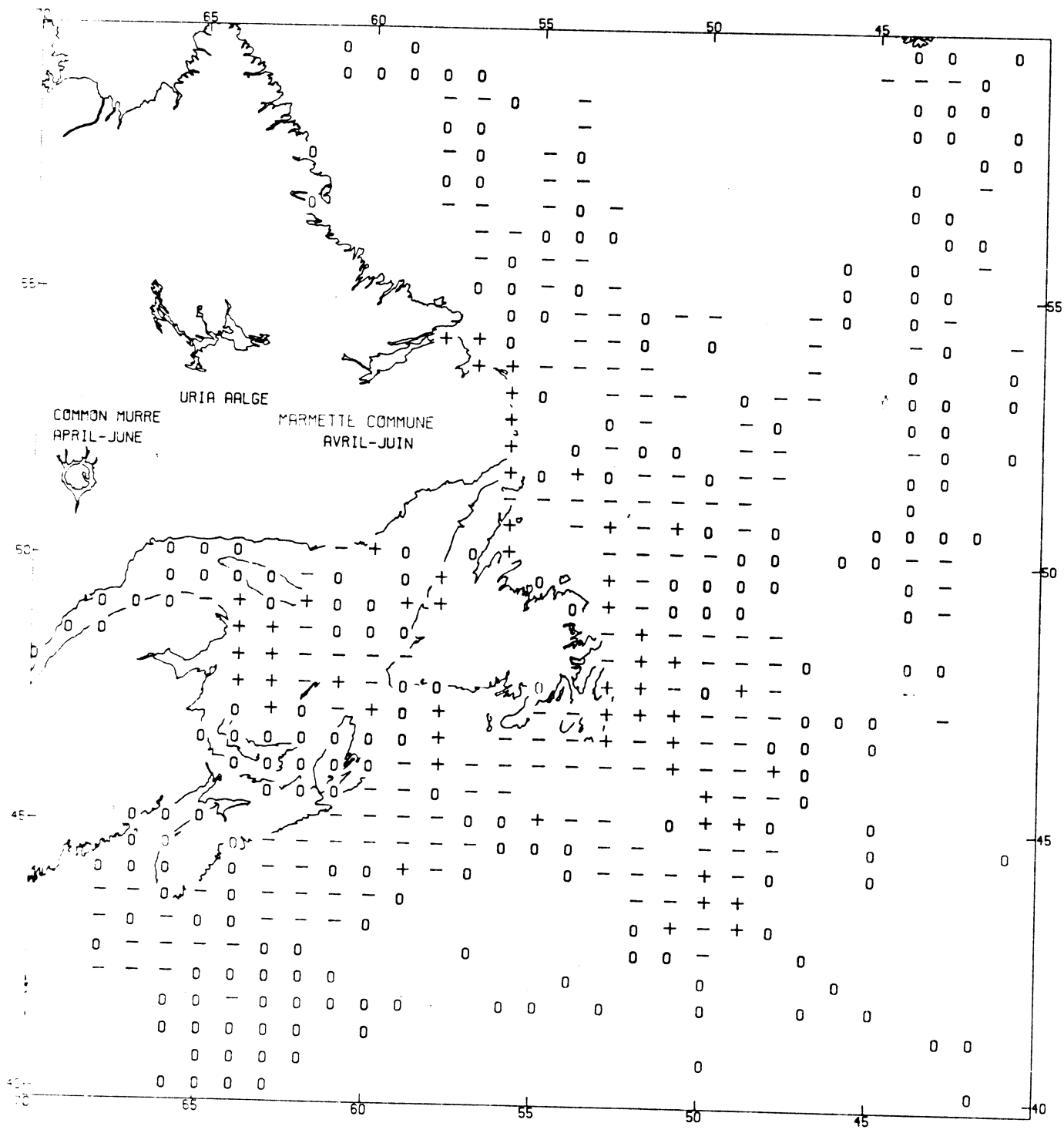
Map 12b  
Atlantic, January-March

CM  
SHIPBOARD



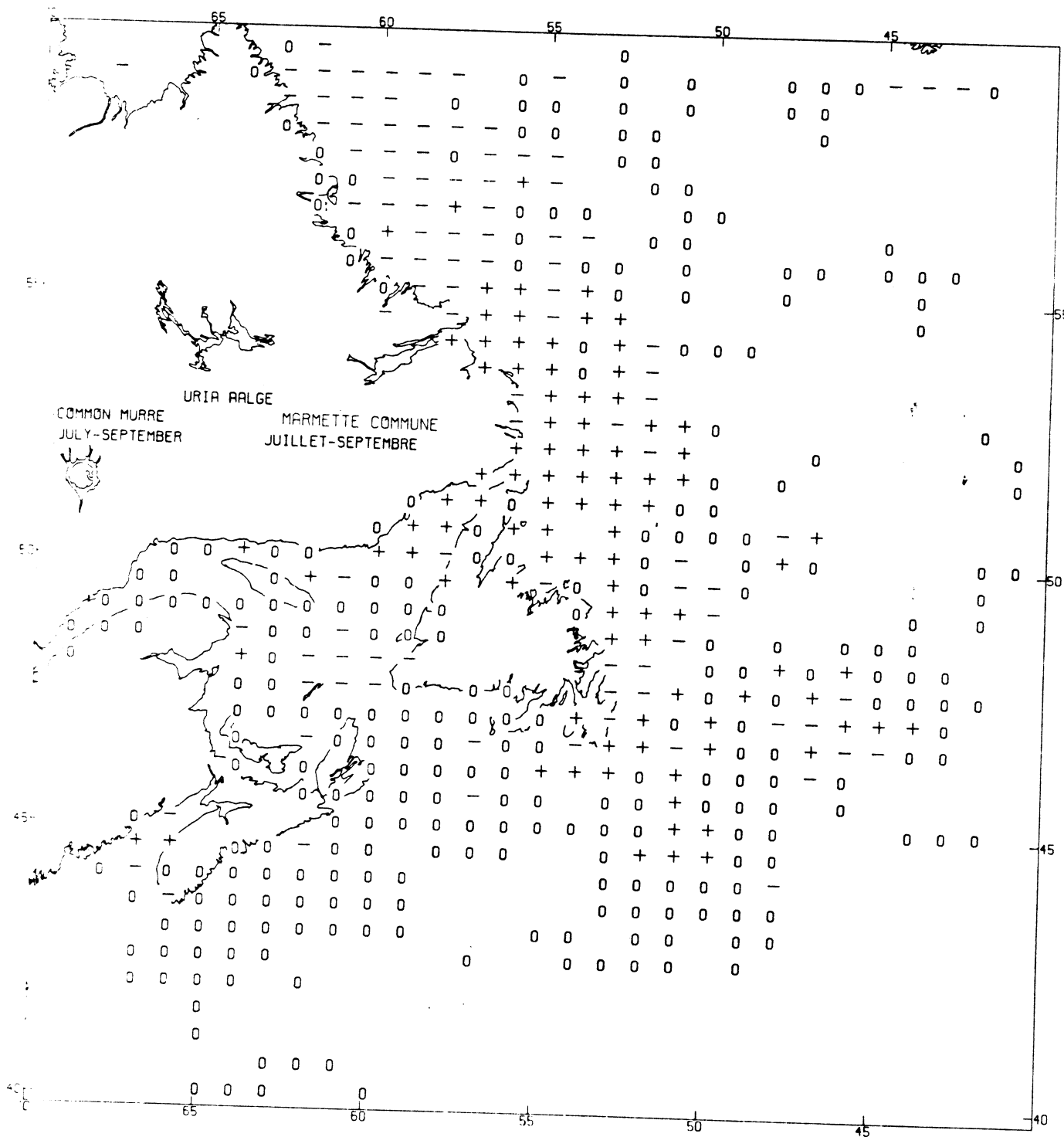
CM  
SHIPBOARD

Map 12c  
Atlantic, April-June



CM  
SHIPBOARD

Map 12d  
Atlantic, July-September

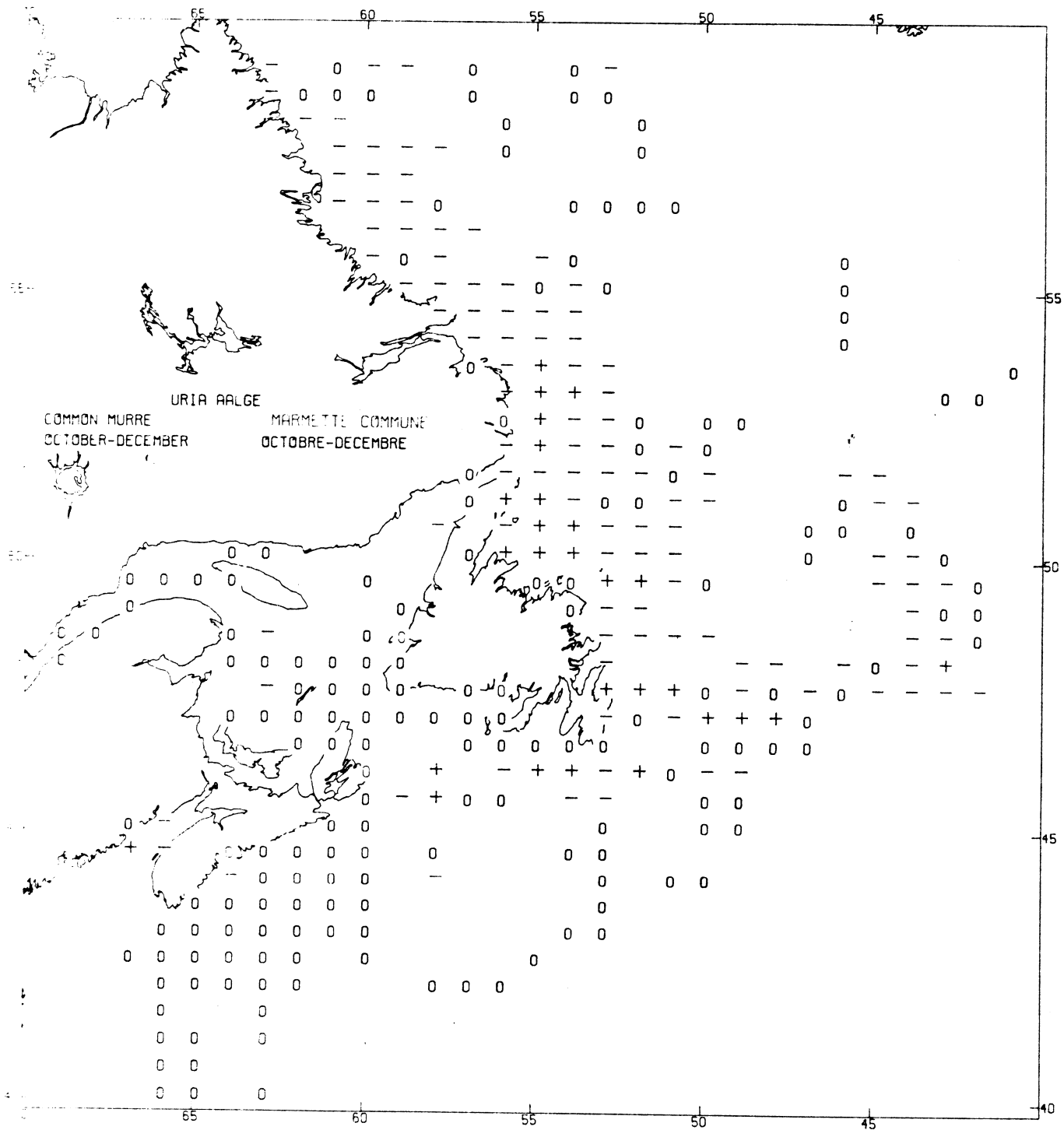




M.4

CM  
SHIPBOARD

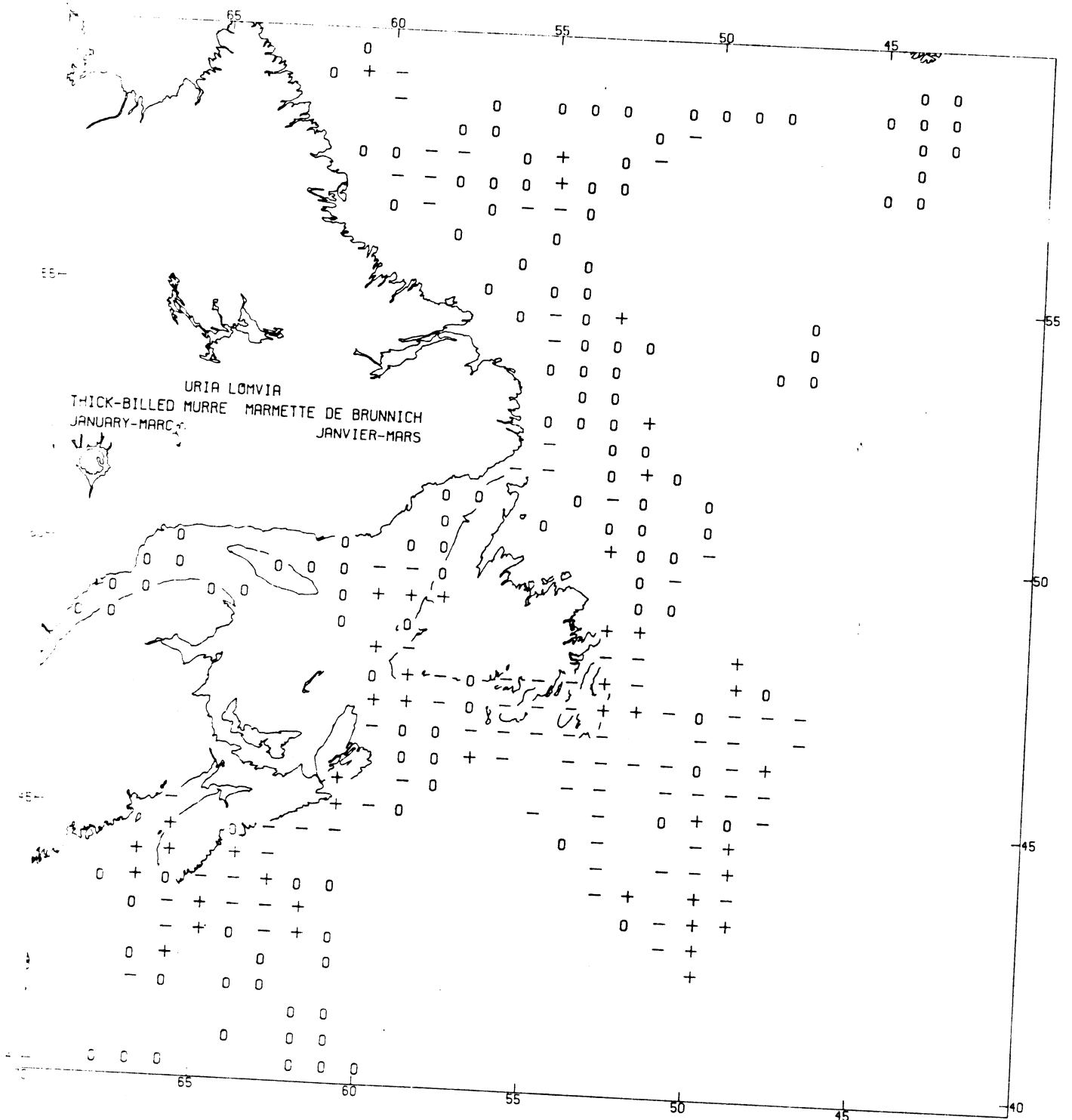
Map 12e  
Atlantic, October-December



M.4

Map 13b  
Atlantic, January-March

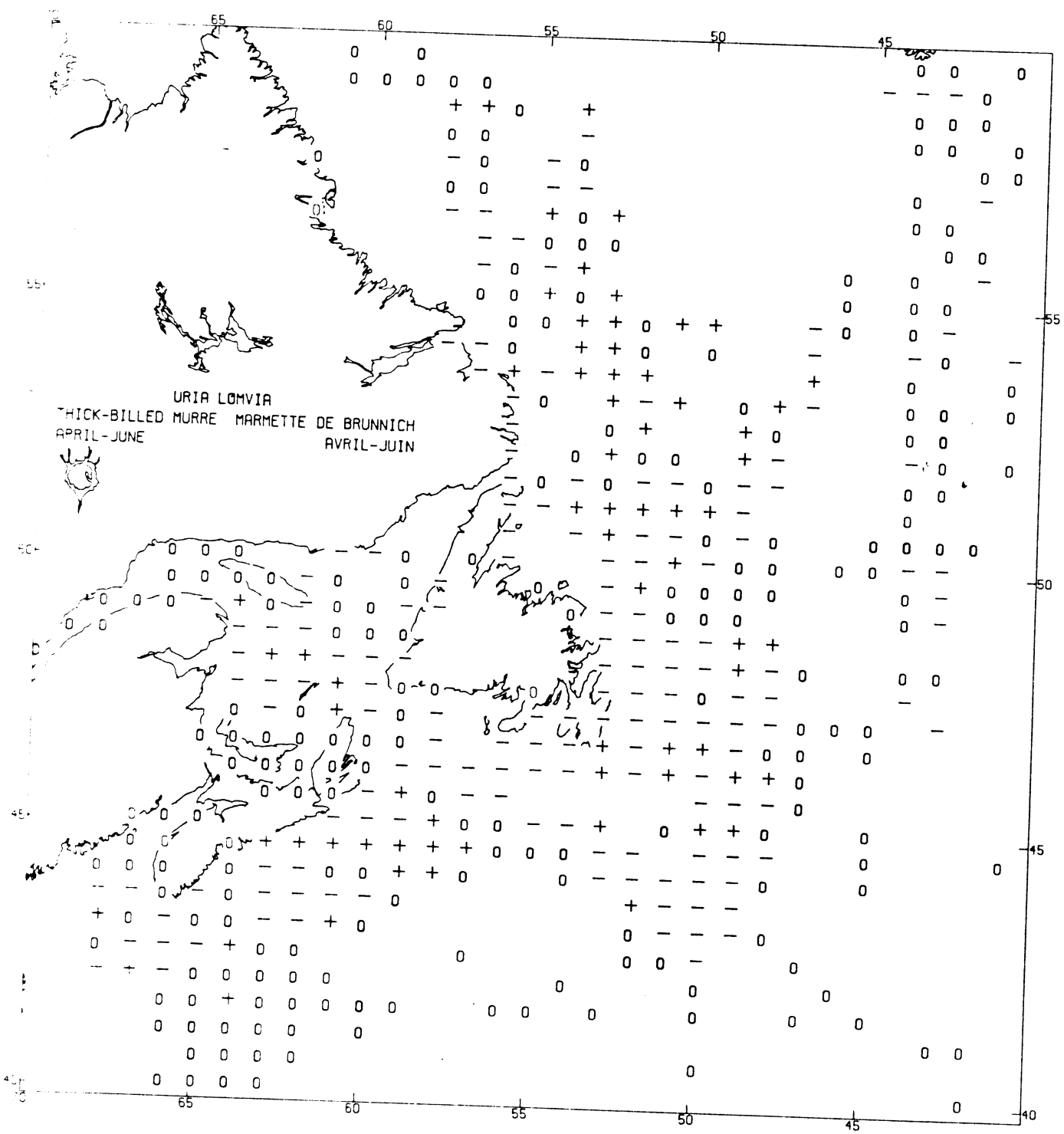
TBM  
SHIPBOARD



M.4

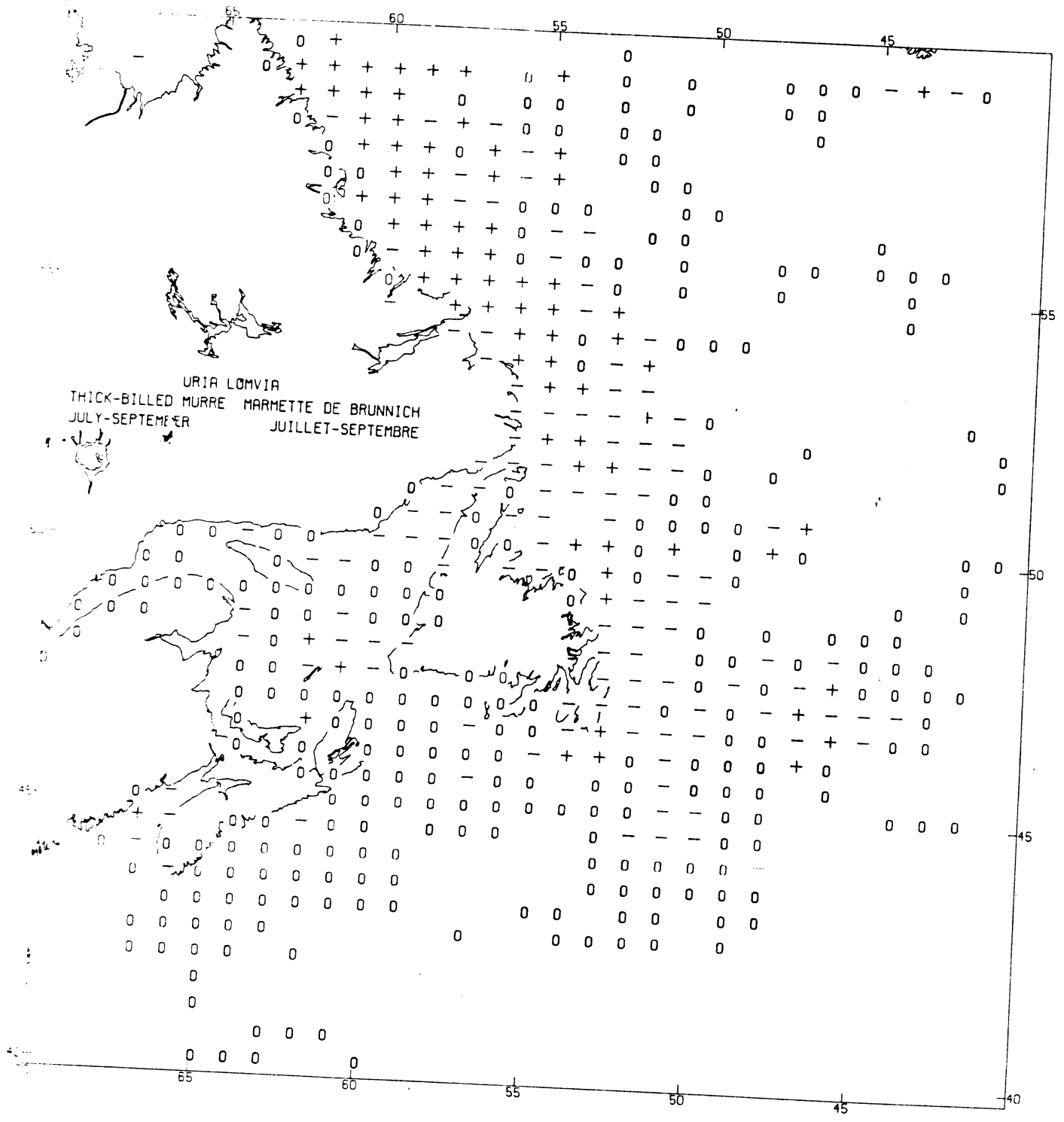
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Map 13c  
Atlantic, April-June



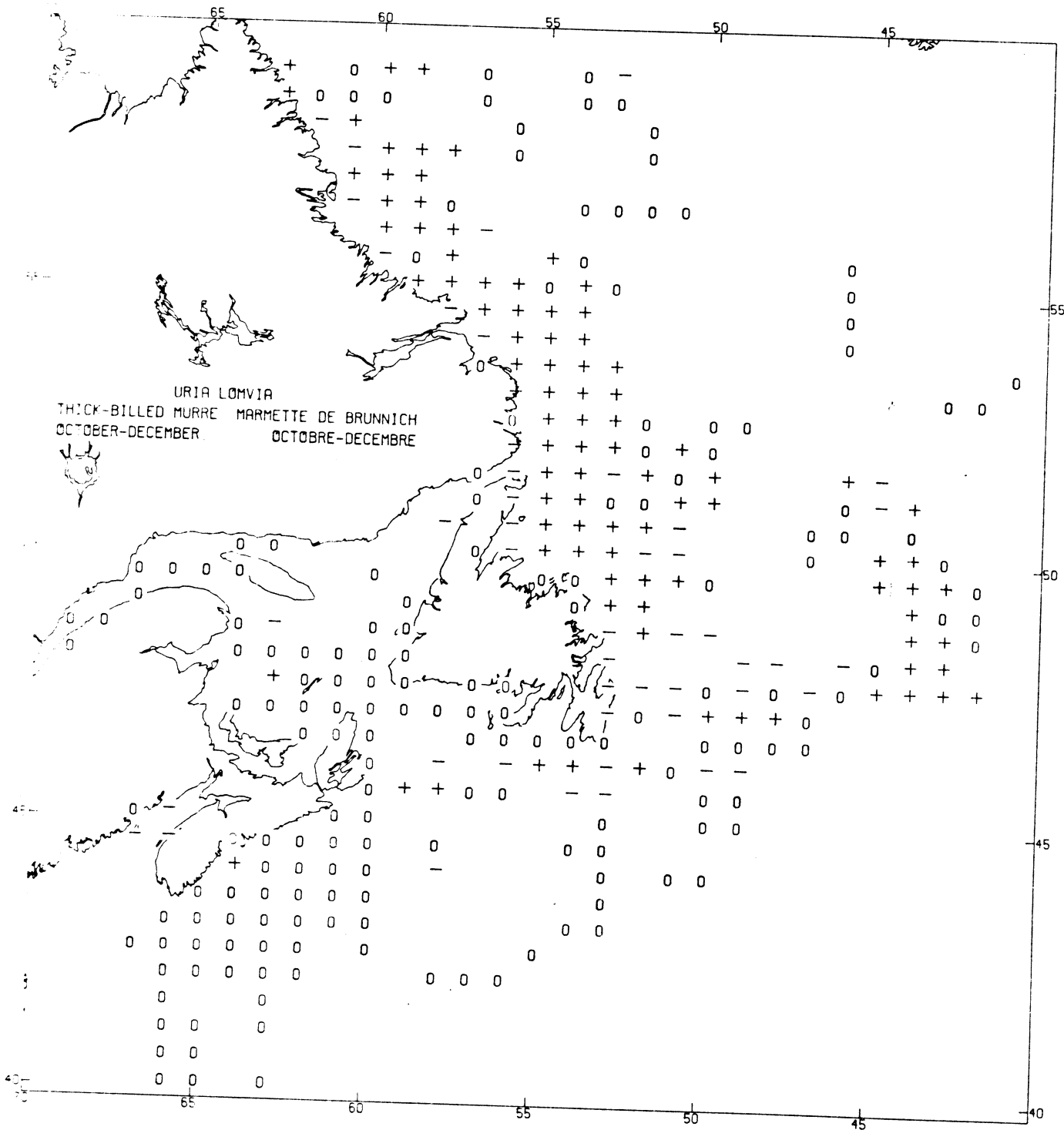
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Atlantic, July-September

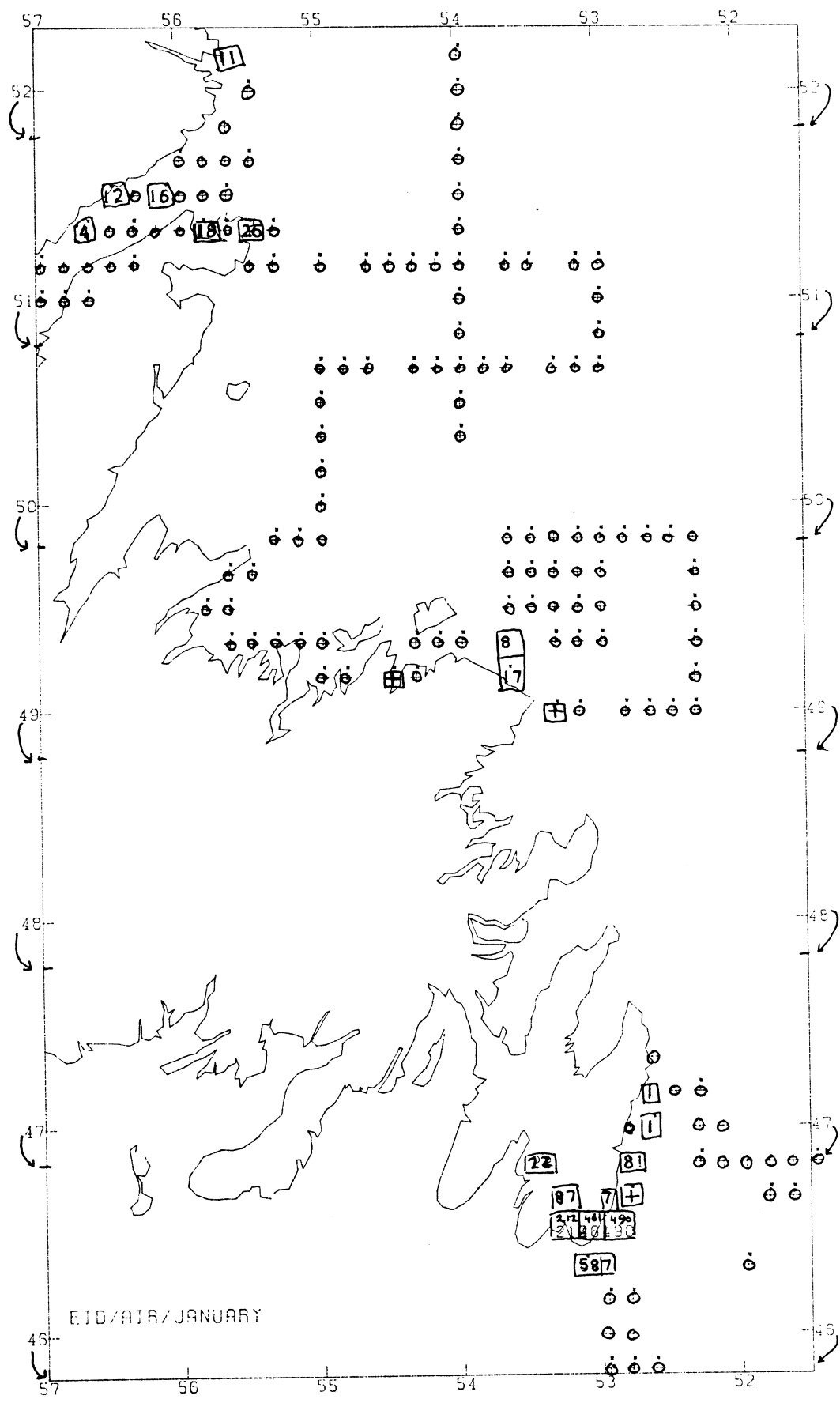
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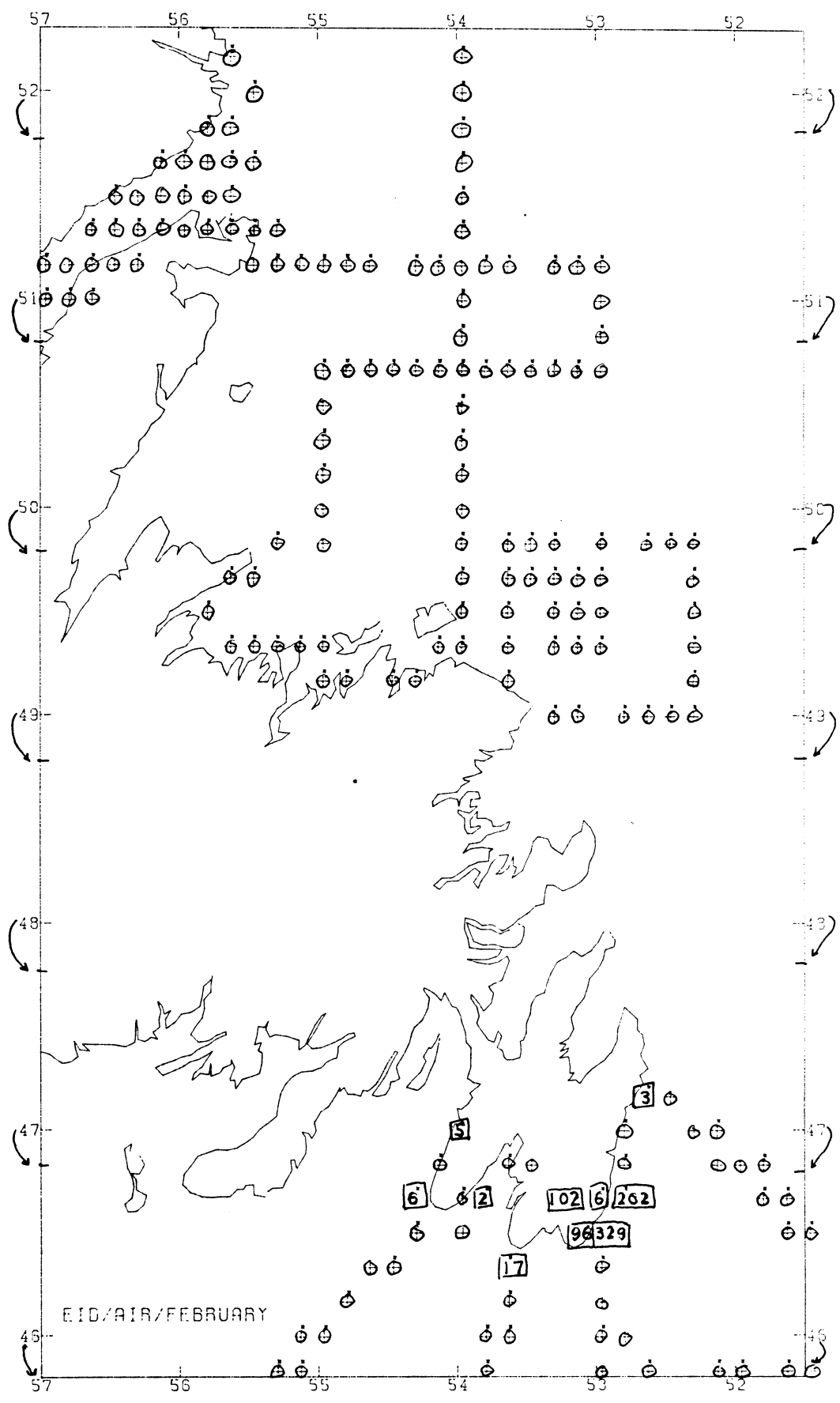


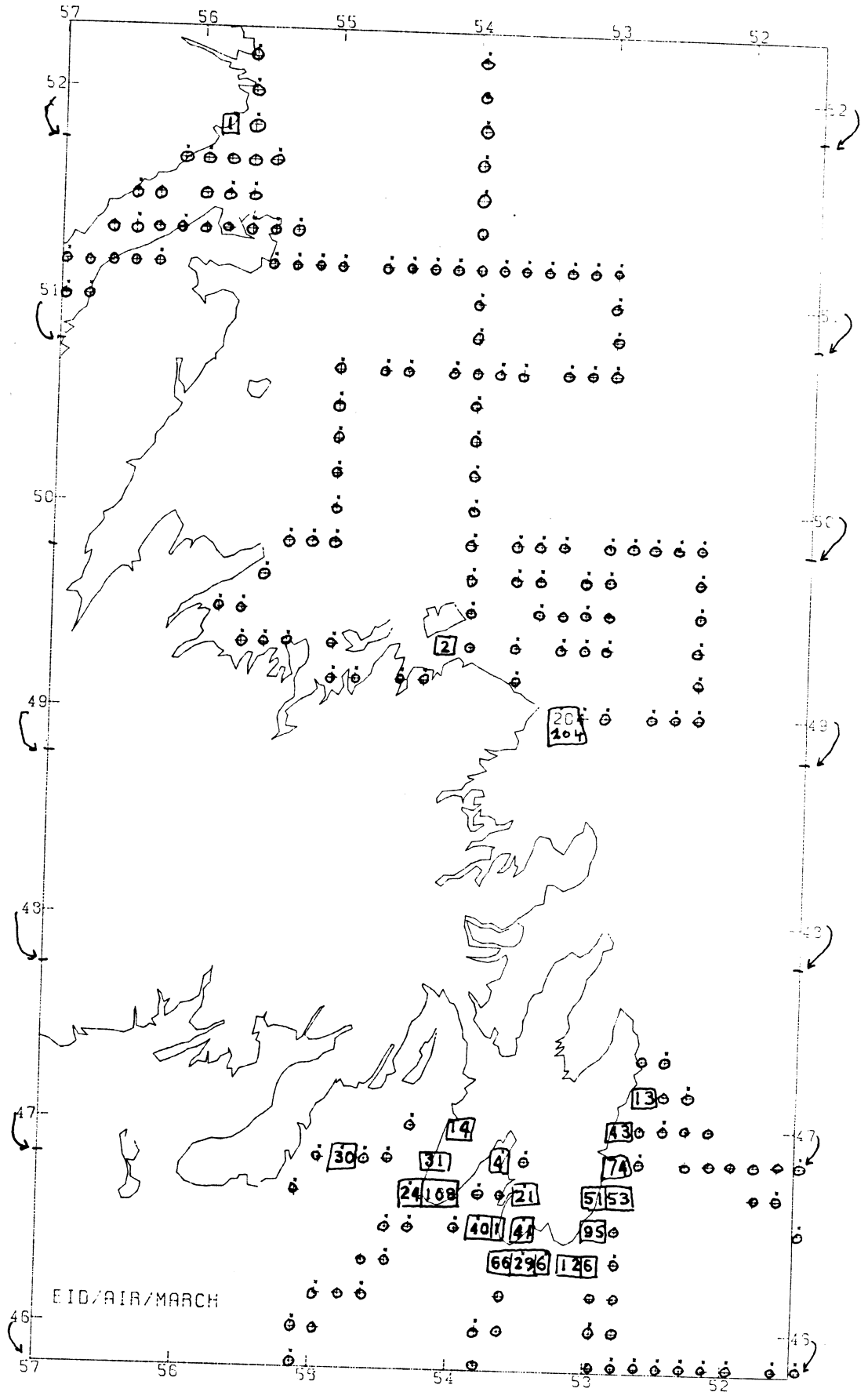
TBM  
SHIPBOARD

Map 13e  
Atlantic, October-December

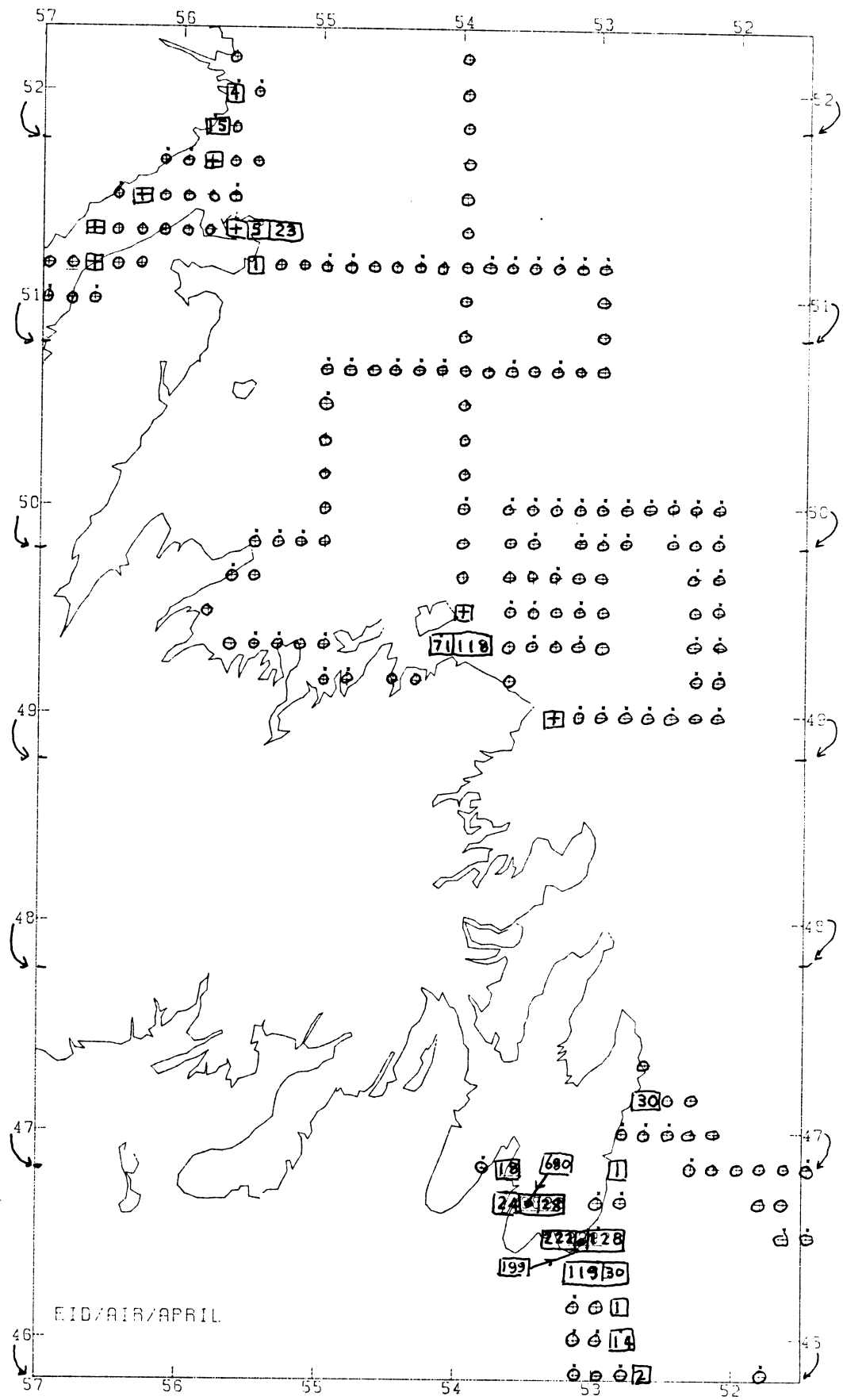












EID/AIB/APRIL

