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MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1984 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA CRUISE 10
(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF:

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P D Wallace
C N Humphreys
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DURATION

Left Grimsby 16.11h 22 November
Arrived Lowestoft 0630h 19 December
All times are Greenwich Mean Time

LOCALITY:

English Channel, Celtic Sea and Bay of Biscay

AIMS:

1. To carry out a depth stratified trawl survey of the Western Celtic Sea and Bay of Biscay.

2. To sample juvenile fish.

3. To sample pelagic fish shoals.

4. To carry out shipboard concentrations of plutonium and americium from sea water in the English Channel and Celtic Sea.

5. Collection and on board treatment of sea water for technetium 99 analysis in the vicinity of Cap de la Hague

NARRATIVE:

CIROLANA sailed from Grimsby at 1611h 22 November proceeding south about toward the English Channel in strong, and freshening, SW winds. These slowed the passage and the approaches to Dover Strait were reached at 0915h 23 November. Here the first water collection station for Aim 4 was worked in very poor conditions before shelter was sought first in Margate Roads and later in the day off Deal. A moderation next day at 1400h allowed passage through the English Channel toward Cap de la Hague, arriving there at 0830h 25 November. Further water collections were made during 25 November both close to the French coast and at 3°00W while on passage toward Brixham where it was necessary to land a cook. This operation was completed at 2000h 25 November.

26 November was spent working the Portuguese High Headline Trawl and the 1600 Engels mid-water trawl in the area south of Eddystone both for familiarisation in catch handling and sampling and as a survey of the "mackerel box" area where commercial catches were reportedly being made. An echo survey grid within the box between Eddystone and the Lizard and 49°30'N was begun and largely carried out during the night of 26/27 November before gales forced its abandonment at 0500h 27 November. The ship dodged in a S'ly gale for the next 24 hours after which a slight moderation and a shift westerly allowed

an approach to Falmouth where a replacement cook was picked up at 0900h 28 November. One further haul with the Engels trawl was made later that day south of the Dodman before work in the mackerel box was terminated and course set to south of the Scillies to begin the main survey of Aim 1. Two more water samples were obtained during this passage.

During the following 8 days - 29 November to 6 December-the trawl survey was carried out, at times in marginal conditions but mainly in moderate weather that improved as the ship worked further south. The survey was carried out using the Portuguese High Headline trawl as the main fishing gear. Hauls were also made with the 2 metre Young Fish Beam trawl at most main fishing stations when conditions - weather and bottom topography - were thought suitable. Only occasional hauls were made with the Boothbay net and the Neuston net; the former because hardly any scattering layer type trace was observed, the latter because sea and swell were often too much for this gear. Sections based on latitudes 51°00'N, 49°30'N, 48°30'N, 47°30'N and 45°30'N with hauls within prescribed depth bands were all partially completed during the first part of the cruise. After completion of work at 45°21N 03°01W at 1700h 6 December course was set for Santander arriving there at 1000h 7 December.

CIROLANA left Santander at 0700h 9 December and after a short search to find suitable ground began fishing at 0900h just off the town. A second haul was made later in the day some 40 miles further west before the ship returned overnight to the section at 45°30'N. In the event there were the only two hauls made with the Portuguese High Headline Trawl off the Spanish coast it being deemed uneconomical of time to go any further west. One surface water sample was obtained from a position immediately off from the shelf edge.

Three shallow stations at the inshore end of the 45°30'N section were worked on 10 December, the entire six of the 46°30'N section on 11 and 12 December and the shallow three of that at 47°30'N on 13 December, all in very good weather, However, this gave way to a NW gale which frustrated an attempt to achieve the westerly end of the 48°30'N section on 14 December. Instead the ship worked her way northward toward Scillies fishing at Parsons Bank and the Wolf en route to the Celtic Deep where the inshore end of the most northerly section was completed on 15 December in gale conditions. The following day was lost to weather but three further trawl stations were achieved on 17 December between the Lizard and Eddystone before course was set for Lowestoft. Five more surface water stations were completed during the passage and CIROLANA docked at Lowestoft at 0630h 19 December.

RESULTS

Aim 1. Forty two hauls, each of one hour duration, were made with the Portuguese High Headline trawl for this aim. Transects at latitudes 51°00N 49°30'N 47°30'N, 46°30'N and 45°30'N were all fished with hauls in prescribed depth bands ranging from 250 to less than 90m. Only that at 48°30'N was not fully completed (see Fig 2). Included in the total were two hauls off the Spanish coast where the narrowness of the shelf and the irregular bottom topography precludes any single depth stratified section.

At each station the total catch was sorted for species then weighed and measured for length composition either 'in toto' or sampled. Otoliths were taken and sex and maturity observations made where appropriate. All the data obtained were computer logged using the ground fish survey package and are available on request.

A detailed analysis of these data awaits further examination at the Laboratory but the following general observations are made now:

Scad were usually the most abundant species, the best catches of these (up to 35 baskets/hour) being at La Chapelle and Parsons Banks. Throughout the whole

survey area fish within the size range 16-21cm total length, probably a single year class, made up the bulk - 80% by numbers - of the catch. Scad were found in all depths but were most abundant between 140 and 200 metres.

Mackerel in the survey area were very sparse reflecting the absence of the 1983 and 82 year classes. Only 3 fish, all '0' group were taken in the hauls in the area north of 48°30'N and west of 06°30'W. South of 48°30'N mackerel were more abundant but the absence of fish in the 22-27cm length range was very marked. In a single haul at Parsons Bank however 12½ baskets of '0' group mackerel were taken giving a welcome indication that 1984 has contributed some recruitment.

Blue whiting were present in most hauls usually in small quantity and with the largest catches usually in depths greater than 150 metres. The best single haul of 12½ baskets was however taken in 125m.

Anchovy were caught on a number of occasions mostly on the shelf fronting the mouth of the Gironde where one haul of 9 baskets was made.

Groundfish generally were sparse throughout the survey area.

Aim 2. Thirty two hauls each of 15 minutes duration were made using the two metre beam trawl for young fish and background benthos. Seven of these were rendered invalid, in three cases by the beam being broken and with the net being torn in the remaining four. This gear again proved to be a useful sampling tool although the damage sustained underlines its vulnerability to weather and hard sea bed conditions. Altogether, 23 fish species, almost all juveniles, were caught. On five occasions appreciable numbers - up to 36 - of small nephrops were taken. Swimming crabs, hermits, shrimps, squat lobsters and starfish were present in varying quantity in most hauls.

The most commonly occurring fish species were dragonets, scaldfish, gobies and megrims. The three former were taken in more than half the valid hauls in depths ranging from 90 to 240 metres. Megrims, taken in 12 hauls were not found shallower than 110 metres. Poor cod (5 hauls) were in depths less than 130m while gadiculus (5 hauls) were in depths greater than 120 metres. Thickback soles were present over a wide range of depth although generally favouring the more shallow. In one 15 minute haul 27 of these fish were caught.

The Boothbay net was fished on only 4 occasions catching in one tow two 3cm boarfish at approx 115m and in another one silvery rockling near the surface. Although the echo sounder was run continuously hardly any trace was observed that would be termed typically scattering layer. The rig, telemetred off the plankton cable winch, worked well and allowed the depth of fishing to be controlled very precisely.

The Neuston net likewise was used only occasionally, catching a few silvery rockling and euphausiids.

Aim 3. The 1600 Engels mid-water trawl was used on only three occasions to sample pelagic shoals in the vicinity of Eddystone during the first two working days in the 'mackerel box'. Unfortunately the bellie was badly torn in the last of these while trying to fish traces observed some 10 metres off the bottom. This damage rendered the net unusable for the remainder of the cruise. In the event this proved not such an important loss as no truly mid-water shoals worth fishing, were seen during the survey proper. It did, however, frustrate the intention of using the net experimentally to look for 0'group mackerel in the surface layer.

Before the net was damaged some 15 baskets of mackerel were taken for 1½ hours, 10 miles WSW of Eddystone. Included with these were 48 fish - 2% by numbers - which were '0' group fish. Also included in this haul were 7 baskets of pilchards and a few sprat and scads. A few '0' group mackerel were retained in the cod-end when the damaged net was retrieved. These fish were very lively indeed suggesting they were taken late in the tow. Also gannets dived the net very heavily during hauling suggested considerable numbers escaping.

Aim 4. The shipboard concentration of Plutonium and Americium, from large volume seawater samples were carried at 8 locations. Comparative samples were run at each location to test different water collection systems.

Aim 5. Seawater samples from 6 locations were collected and processed to determine Technetium-99 concentrations in the vicinity of Cap de la Hague.

MISCELLANEOUS

a) Five uncontaminated large cod were deep frozen for Mr C Baker for low-level radio chemical determination.

b) The spiral valve was collected and fixed in formalin from 3 specimans of tope for Dr Mackenzie (Aberdeen).

c) One specimen of bogue (Boops boops), one Red sea bream and a sample of 100 mackerel < 30cm total length were frozen also for Dr Mackenzie.

d) Samples of '0' group mackerel and '0' group Spanish mackerel were frozen for Mrs Dawson. Also one sample of anchovy.

e) One sample of scad for confirmation of an board maturity and tagging plus some specimens of T. mediterraneus and T. picturatus were frozen for Mr Eaton.

f) Various species were frozen for the Fish Identification course.

g) Flesh, bone and gut samples of hake, poor cod and blue whiting were prepared on board for radiochemical determination associated with Aim 4.

h) Approximately 70 nephrops were kept alive for Dr R F Uglow (University of Hull).

j) Otoliths were collected from 22 species. Numbers by species and area are summarised in Table 1.

B C Bedford
8 January 1985

Seen in draft: Captain J.S
Skipper P.M

Initialled: DJG

Distribution

Basic +

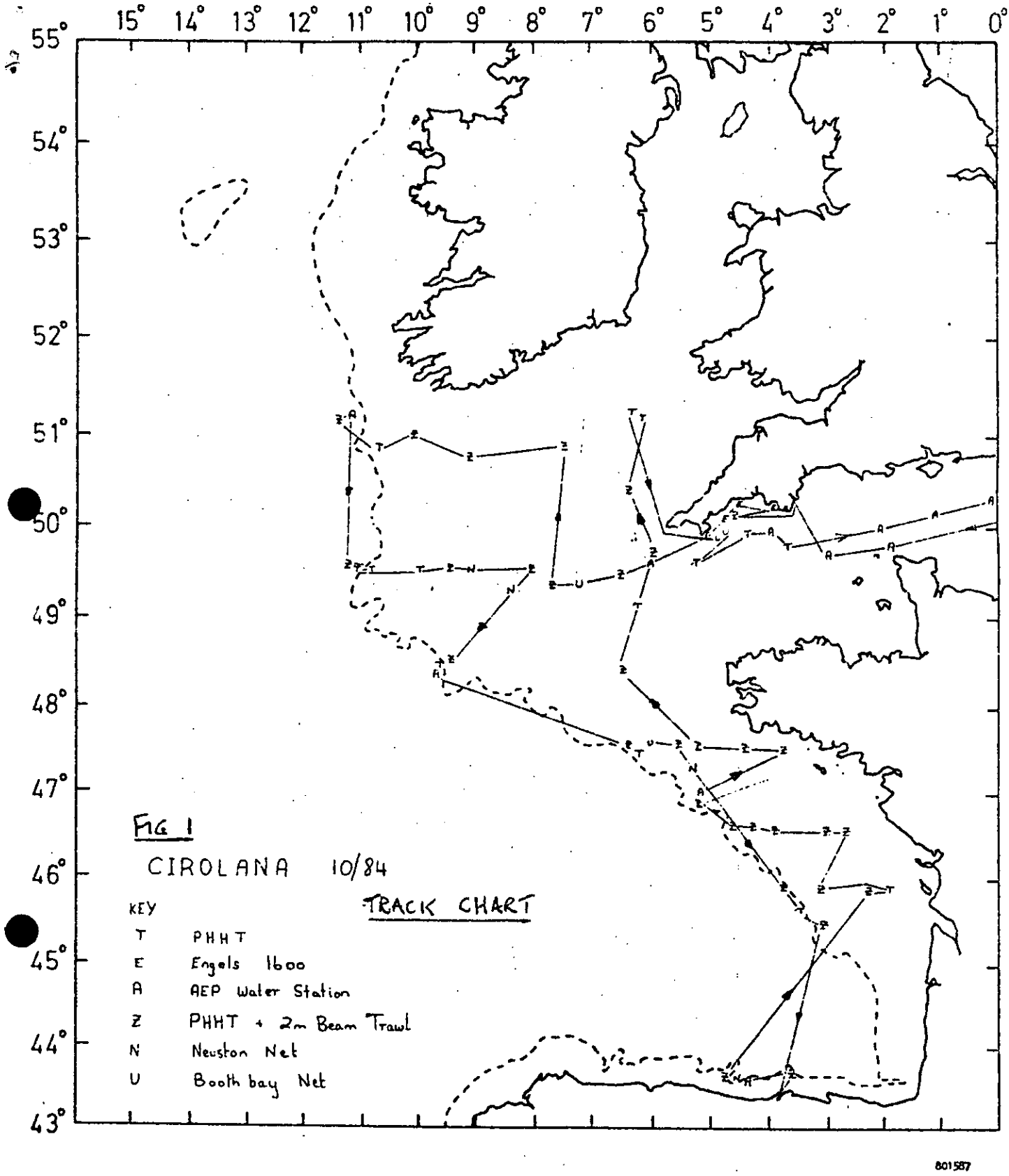
B C Bedford
P D Wallace
C N Humphreys
S J Gerrell
S M Stevens
S R Lovewell
J L Coleman
S Millward
E de Cardenas

Table 1 CIROLANA Cruise 10/84 Summary of fish sampling programme

	ICES DIVISION						
	107e	107f&g	107h	107j	108	All divisions	Total
Demersal Species Otolith Collection							
Cod	2	4	3	4			13
Whiting	25	10	4	1			40
Pollack	4	6		1			11
Ling	2	7			1		10
Hake	16	12	4	40	83		155
Plaice	1						1
Sole					2		2
Lemon Sole	4	8	2	4	1		19
Witch				9			9
Megrim	6	12	20	109	17		164
[redacted] spot megrim				26			26
Red sea bream				1			1
Red mullet	1		1				2
Haddock	1	2	8	2			13
Saithe				3			3
Cutlass fish					4		4
Blue whiting						88	88
Monk (Deep frozen)							
L.piscatorus		1	2	17	1		21
L.budegassa				13	3		16
Spurdog spines	4	31	26	11			62
[redacted] Bass (Scales collected)	2						2

Pelagic Species Otolith Collection

	Sampling area			
	SW Celtic Sea		N Biscay	S Biscay
Scad	125	244	150	150
Mackerel	158		119	72
Pilchard	205			88


15° 14° 13° 12° 11° 10° 9° 8° 7° 6° 5° 4° 3° 2° 1° 0°
55° 54° 53° 52° 51° 50° 49° 48° 47° 46° 45° 44° 43°
FIG 1
CIROLANA 10/84
TRACK CHART
KEY
T PHHT
E Engels 1600
A AEP Water Station
Z PHHT + 2m Beam Trawl
N Neuston Net
U Booth bay Net

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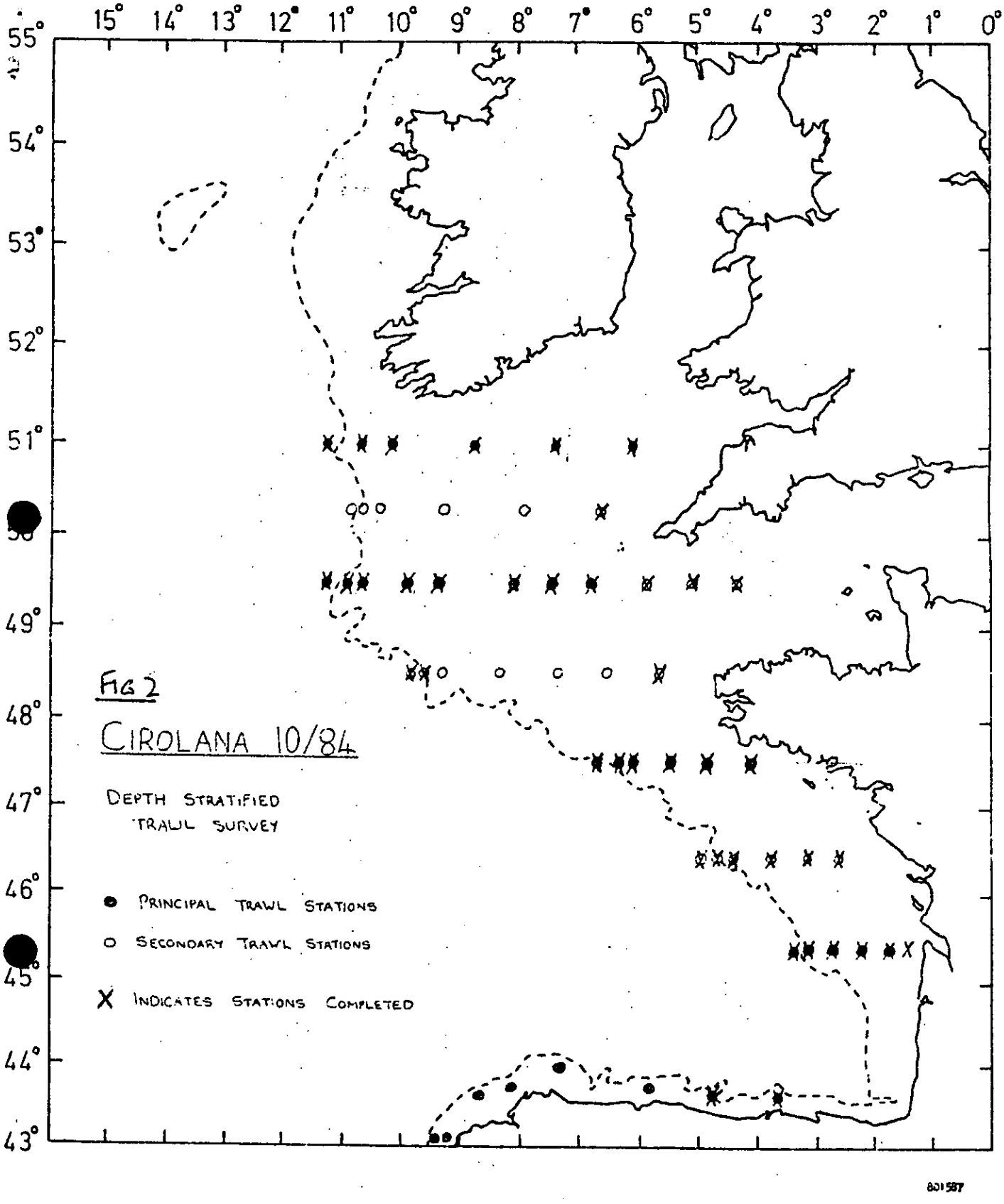
15° 14° 13° 12° 11° 10° 9° 8° 7° 6° 5° 4° 3° 2° 1° 0°
55° 54° 53° 52° 51° 49° 48° 47° 46° 45° 44° 43°
FIG 2
CIROLANA 10/84
DEPTH STRATIFIED
TRAWL SURVEY
PRINCIPAL TRAWL STATIONS
SECONDARY TRAWL STATIONS
X INDICATES STATIONS COMPLETED
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