

**CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE  
SCIENCE LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK NR33  
OHT**

**1999 RESEARCH VESSEL PROGRAMME**

**REPORT: RV CORYSTES: CRUISE 9/99**

**STAFF:**

M R Vince	J Ellis
L E Woolner	M J Brown (Part 1)
I D Holmes	M T Smith (Part 2)
A J Holmes	A Emery (10-13 Sept.)
T Dinmore	

**DURATION :** Left Lowestoft 0830 h 10 September  
Arrived Lowestoft 0030 h 1 October  
(All times Greenwich Mean Time)

**LOCATION:** Irish Sea (VIIa), Bristol Channel and Celtic Sea (VII f & g)

**AIMS:**

1. To carry out a beam-trawl survey of groundfish in the Irish Sea, Bristol Channel and Celtic Sea.
2. To collect data on maturity and weight at age of sole, plaice and lemon sole.
3. To determine the distribution and relative abundance of juvenile and adult sole and plaice.
4. To quantify the seabed sediments and epibenthos using the QTC acoustic seabed discrimination system and trawl by-catch.
5. To collect fish and surface sea-water samples in support of other CEFAS projects and training courses.
6. To collect surface sea-water samples for processing on return to Lowestoft for the analysis of tritium and caesium. (AE001 ) (BD Smith EG 1)

**NARRATIVE:**

CORYSTES sailed from Lowestoft at 0830 h on 10 September and after a fair passage to the Bristol Channel commenced the beam trawl survey in Carmarthen Bay at 0740 h 12 September. Mr Emery who had succeeded in repairing the depth recorder on the continuous logging, was put ashore by sea-rider near the Mumbles on the morning of 13 September. The trawl survey continued within the hours of daylight, until the evening of 14 September, when the tritium water sampling stations were commenced to the east of 4° W in the mouth of the river Seven. Water sampling was

completed by 1100 h the next day and the trawl survey recommenced. Corystes made steady progress northwards from the Bristol Channel and by the evening of 18 September was positioned off Llandudno where Captain Chapman was embarked by the Sea-rider.

The survey continued uninterrupted until 1200 h on 21 September when Corystes docked at Douglas, Isle of Man for change of staff and to take on stores. The following day after completing the trawl station positioned to the south of Douglas, the survey continued in the north Irish Sea sector. By the evening of 24 September with all stations completed on the east side of the Irish Sea, Corystes started her journey south in order to fish all remaining stations in Irish Sea West and St. Georges Channel sectors. Steady progress was made southwards until after lunch on 28 September when Corystes carried out her last trawling station off the south-east corner of Ireland and with south-west gales imminent, commenced her passage back to the North Sea to grapple for Cirolana's lost anchor before returning to Lowestoft.

## RESULTS:

### Aims 1 and 2.

The trawl survey covering the Bristol Channel, Celtic Sea and Irish Sea is divided into 7 sectors, totalling 120 half-hour tows of which 101 were successfully completed (Chart 1). Fortunately no time was lost for bad weather due to the good forward planning by the ships officers. All 67 stations currently used for tuning data in the Northern and Southern shelf assessment working groups were fished successfully.

The survey gear was the standard 4m beam-trawl with chain mat, flip-up ropes and fitted with a 40mm cod-end liner. All fish and selected commercial crustaceans were identified to species, weighed and measured. Length stratified samples of otoliths were taken from selected species (Table 1). All otolithed sole, plaice, lemon sole, anglerfish and cod were weighed individually and assigned a maturity stage.

All station details, fish catch, length distributions and biological data were input to the Fishing Survey database and end of cruise outputs produced.

Surface temperature and salinity readings were logged at every station and a CTD profiler was used at the first and last trawl station on most days. A water sample was collected for salinity calibration purposes at each CTD station. The QTC seabed discrimination system was used on all trawl stations.

One notable catch was a 31 cm triggerfish (*Balistes carolinensis*) taken unusually well north in Dundrum Bay. This species was last recorded on this survey in 1993 when one of 34 cm was taken in Carmarthen Bay.

### Aim 3.

The highlight of this year's survey was the abnormally large numbers of pre-recruit sole taken on several of the tows in the Bristol Channel Inner sector. Last years report noted that the numbers were higher than in any previous survey in the 10 year series. This year the average number of sole per 30 minute tow was calculated to be 83 fish compared with an average of 26 for the years 1993 to 1998. No age determination has been carried out yet, but from the length distribution of the sole catch taken on the 32 hauls in the Bristol Channel it is estimated that 1 year old fish account for around 88% by number of this years total. The numbers of plaice caught in the Bristol Channel were only slightly above average and due in the main to pre-recruit fish between 12 and 14 cm in length.

The sole catches taken on the hauls in the sectors Irish Sea South and Irish Sea North were slightly down on the average for the survey data for the last 6 years. In contrast to sole, the plaice catches indicated a small increase but mainly in the northern sector. An encouraging aspect of this years survey in the Irish Sea was the regular occurrence of '0' group cod, with the main distributions concentrated near to the coast in the Irish North and Irish Sea West sectors.

#### Aim 4.

The macro-epibenthic invertebrate by-catch was quantified at all but three beam trawl stations, supplementing the data collected in 1997 and 1998. Inshore sites were typically dominated by starfish *Asterias rubens* and swimming crab *Liocarcinus holsatus*. Sites slightly further offshore were dominated by the hermit crab *Pagurus prideauxi* and its associated anemone *Adamsia carciniopados* and the deeper waters were dominated by the sun-star *Crossaster papposus* and the common sea urchin *Echinus esculentus*. Catches from the muddy sites off the coast of Cumbria and in the western Irish Sea were generally less diverse and inhabited primarily by burrowing crustaceans (e.g. *Nephrops norvegicus*, *Goneplax rhomboides*, thalassinoid shrimps) and heart urchins (e.g. *Brissopsis lyrifer*). Certain inshore sites were dominated by dead-man's fingers *Alcyonium digitatum* and these sites hosted a diverse community of epifaunal invertebrates. Stations in the Bristol Channel were, in terms of biomass, dominated by the common spider crab *Maja squinado*.

Data on the proportion of *Asterias rubens* with evidence of prior arm damage were collected at all stations where they were present and over 16,000 specimens were examined. The proportion with damaged arms ranged from 1-2% at certain sites in the St. George's Channel to 38% in parts of the eastern Irish Sea.

#### Aim 5.

Blood samples were taken from 50 individual plaice *Pleuronectes platessa* in each of the two following areas, Irish Sea and Bristol Channel / Celtic Sea for a EEC funded study of stock structure (Flatman).

Gill arches were taken from 10 individuals of haddock *Melanogrammus aeglefinus*, whiting *Merlangius merlangus*, and hake *Merluccius merluccius* to be used in a genetic diversity project (Fox).

Various species of fish and shellfish were collected and frozen from the two areas Bristol Channel / Celtic Sea and Cardigan Bay to be analysed for short lived radionuclides (Young).

Various fish and benthos were collected and frozen from the catch of a haul made off Sellafield and are to be used to assess trophic transfer of radionuclides within the marine food-chain (McCubbin).

All lesser weevers (*Echiichthys vipera*) caught on hauls made in the Irish Sea were frozen for R. Nash (Port Erin).

Length, wing width, weight and maturity of all rays caught were recorded (Vince).

The spiral valve and a sample of liver were taken from a small number of smooth hounds (*Mustelus spp*) (Ellis).

Specimens of 25 selected species of fish were frozen for fish identification courses (Watson).

Anglerfish (*Lophius piscatorious*) were sampled for otoliths and vertebrae for ageing studies (Watson).

Ten individual diseased plaice mostly infected with the virus Lymphocystis were frozen for S Feist at Weymouth.

Surface sea water samples of 25 litres were collected from 6 sites in the Irish Sea for the analysis of Technetium and Caesium radionuclides (McCubbin).

Aim 6.

Surface sea water samples of 50 litres and 1 litre were collected from 33 stations in the Irish Sea, in addition to 42 samples from stations in the Bristol Channel (Chart 2). These samples will be analysed ashore for Caesium and Tritium (Smith).

Our thanks go to all officers and crew on CORYSTES for their help and support in all aspects of the work.

M R Vince 1.10.99

INITIALED: R M.

SEEN IN DRAFT:

Master



Senior Fishing Mate.



DISTRIBUTION:

Basic List +

M R Vince

L E Woolner

I D Holmes

A J Holmes

T Dinmore

J Ellis

M J Brown

M T Smith

A Emery

B Smith

D McCubbin

A Young

M J Armstrong (DANI, Belfast)

P Connolly (DOM, Dublin)

FCO (for Republic of Ireland)

Sea Fisheries Committees:

Cumbria

North Western and North Wales

South Wales

Devon

Cornwall

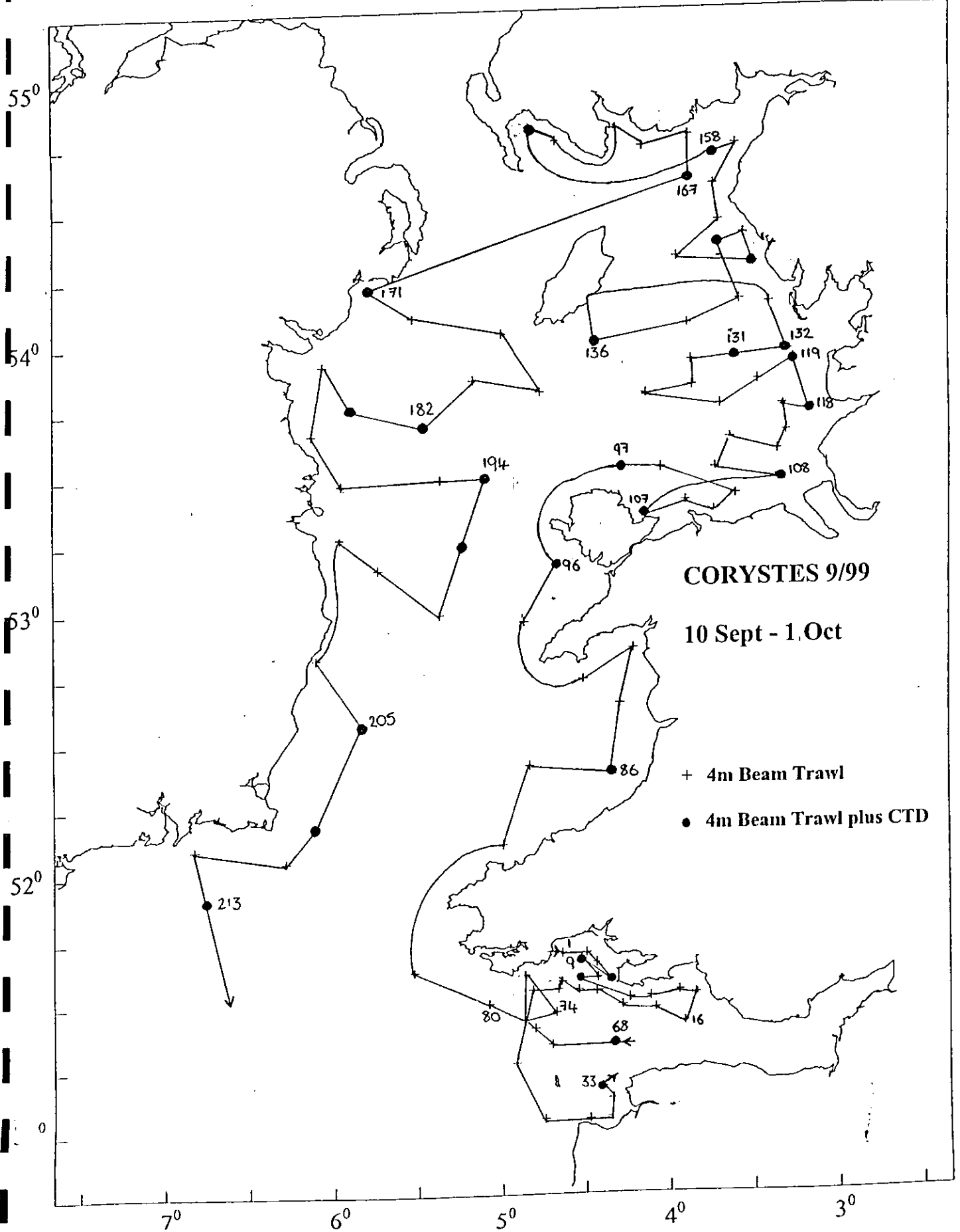


CHART 2.

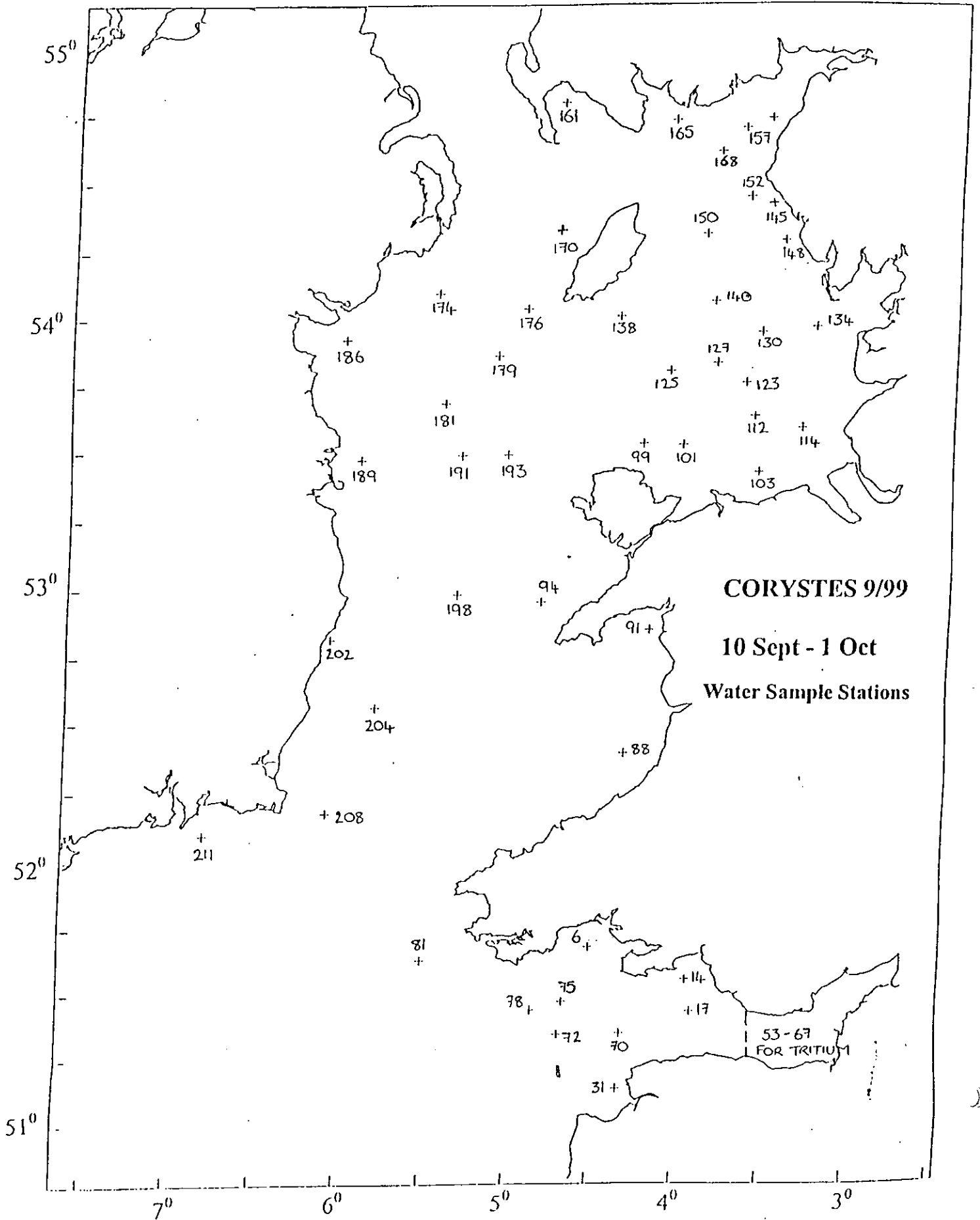


Table 1

## Corystes 9/99 Otolith tally

		ISN (7a)	ISW (7a)	ISS (7a)	SGC (7a)	BCI (7f+7g)	BCO (7f+7g)	SEI (7a+7g)	107a total	107f total	107g total	total nos
Plaice	m	211	193	165	192	138	0	14	766	137	10	
	f	255	199	249	302	184	1	22	1019	182	11	
	total	466	392	414	494	322	1	36	1785	319	21	2125
Sole	m	84	12	169	67	291	9	2	333	286	12	
	f	70	14	196	101	303	19	4	382	301	28	
	total	154	26	365	168	594	28	6	715	587	40	1341
Whiting		40	36	19	40	73	15	7	135	70	25	230
Cod		-	-	-	-	-	-	-	6	1	0	7
Lemon Sole		-	-	-	-	-	-	-	84	42	3	129
Anglerfish (L pisc)		-	-	-	-	-	-	-	27	15	6	48
Bass		-	-	-	-	-	-	-	0	25	0	25
Turbot		-	-	-	-	-	-	-	3	36	0	39
Brill		-	-	-	-	-	-	-	18	11	0	29
											3973	