

**THE CENTRE FOR ENVIRONMENT, FISHERIES & AQUACULTURE SCIENCE,  
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT.**

**2009 RESEARCH VESSEL PROGRAMME  
REPORT: RV ENDEAVOUR: SURVEY 11/09**

**STAFF:**

R Ayers (SIC)  
S Songer (2IC)  
M Brown  
J De Silva  
A Little  
M Sherlock (CRP)  
J Walton  
P Dolder (Exeter student)

**DURATION:**

17<sup>th</sup> July – 31<sup>st</sup> July 2009

**LOCALITY:**

English Channel (VIId), North Sea (IVc).

**PRIMARY AIMS:**

1. To undertake a beam trawl survey in the southern North Sea and eastern Channel as part of an ICES co-ordinated research programme.
2. To obtain fisheries independent data on the distribution and abundance of commercial flatfish species.
3. To collect biological data, including maturity and weight at age, of commercial species, to satisfy the requirements of the EU data regulations.
4. To identify the epibenthos by-catch taken in the 4-metre beam trawl and to quantify 12 species as agreed at the Beam Trawl Working Group.

**SECONDARY AIMS:**

5. To record length/weight data for all fish species sampled, time permitting.

**NARRATIVE:**

The SIC, CRP and Nigel Lyman joined the Endeavour on the afternoon of 15 July to allow them to set up all scientific equipment on 16 July. The rest of the scientific team joined in the afternoon (1700) of 16 July. Safety inductions took place for those members of the scientific team that were in need of them and the remaining gear was unloaded.

The vessel sailed from Portland docks at 0800 17 July, and headed to the first survey station. En route the toolbox talk and a safety drill took place.

The survey commenced to the west of the Isle of Wight in proximity of Poole and Christchurch bay at prime station 42, (VIId inshore English side) at 1247. The wind was NW 6 to gale 8. On the first station 2 Niskin bottom salinity bottles were taken along with two surface salinity bottles before the beam trawl was shot at 1317.

This first tow was used as a shake down and no problems were encountered so after successfully completing this tow the Endeavour proceeded to the next survey station. During 17 July five prime beam trawl stations were completed. All were valid, although 2 were hauled early after 20 minutes to avoid static gear. Prime 47 was a full benthic sort. The last station was hauled at 1848. 2 Niskin bottom salinity bottles and two surface salinity bottles were taken at the last station of the day (Prime 47) after the haul was complete.

The procedure described above for Niskin and surface salinity sampling was followed on each of the remaining days of the survey. CTD data was also recorded throughout the course of each day and downloaded at the end of the last haul each evening.

On 18 July work commenced at prime station 50, west of Shoreham (VIId inshore English side) at 0600, with the trawl being shot for the first time at 0610. Wind was W 5-7. Nine prime beam trawl stations were completed. All were valid, and no gear damage was sustained. Prime 54 was a full benthic sort. Prime 49 was hauled early after 20 minutes to avoid the site of an historic wreck at the end of the tow and prime 55 was hauled early (20 minutes) to avoid static gear. The last station was hauled at 1939. The vessel then proceeded to steam west to hold position at prime station 25 in the South West approaches for work to begin here the following morning.

On 19 July work commenced at prime station 25, (VIId English side, south west approaches) at 0544, with the first trawl being shot at 0608. Wind was W or SW 5-7. Seven prime beam trawl stations were completed. At prime 23 a small tear in the liner was sustained but the catch was deemed to be valid. At prime 51 the codend was damaged, causing the tow to be deemed invalid. Once repairs had been completed and the net streamed to ensure no further remedial work was needed the station was towed successfully. Both incidences of gear damage were caused by large catches of rocks. All other stations were valid, with no further gear damage sustained. Prime 24 and prime 27 were full benthic sorts. The last station of the day was hauled at 2124. The vessel then proceeded back to the southwest approaches to hold position ready for the first station the following morning.

On 20 July work commenced at prime station 10, (VIId French side), off shore in the southwest approaches at 0543. The vessel then proceeded south into the Baie de Seine. Eight prime beam trawl stations were completed in this area. At prime station 9 the gear was hauled early to avoid static gear.

At prime station 6 tow time was reduced to 20 minutes and the warp shortened to 3:1 to avoid a large catch of shell and gravel, which is expected in this area. The first tow on this station was classed as invalid as both the Fishing Skipper and SIC were suspicious of the catch quantity (extremely small) and its composition. The station was repeated, again for 20 minutes at 3:1 and this time was valid.

On station 5 tow time was again reduced to 20 minutes with warp at 3:1, but despite this a heavy catch of mud and a tear in the codend resulted. After discussion with the fishing

skipper this haul was called invalid as the gear damage and large weight of mud in the net would have prevented it from fishing properly. The station was repeated for 10 minutes, and the net came up completely empty. After a thorough check of the gear no problems were found and the station was repeated again, this time towing for 20 minutes. Again a large catch of mud and broken shell resulted so the station was once more deemed invalid.

The decision was taken to abandon this station for the following reasons;

- risk of losing or seriously damaging the gear,
- the low likelihood of getting a scientifically valid sample
- Increased health and safety threat posed to the crew when dealing with such large weights in the trawl.

On station 4 the tow was again reduced to 20 minutes with warp at 3:1, this station was fished successfully as was prime station 2. The last station was hauled at 2022 and the scientific staff finished work in the fishroom at 2300. Station 7 was a full benthic sort.

During the course of the day there was a problem with the brake on the starboard winch; maintenance was carried out whilst steaming between stations and no time was lost.

The vessel held position in the Baie de Seine overnight, ready for work to commence again the following morning.

On 21 July work commenced at prime station 3, VIId French side, inshore, Baie de Seine at 0543. 6 prime beam trawl stations were completed, all of which were fished for 20 minutes with a warp ratio of 3:1

Despite these precautions, in excess of 10 tonnes of brittle stars and sand were caught at station 3, the station was declared invalid by the fishing skipper and the codend slipped away. The net was full to the back of the square and it was considered lucky not to lose the gear, in less clement conditions retrieving the gear would have been considerably more difficult. Further tows on this station were not undertaken for the same reasons as given at Station 5.

En route to the next station the gear was streamed to allow the belly to be checked and the codend was checked on deck. No damage was found. All other tows were valid, although still resulting in large catches of shell and gravel. Station 14 was a full benthic sort.

Problems with the starboard winch brake lead to the decision to change operations over to the winch on the port side. This resulted in 1.7hrs of downtime. By 1300 the port side winch was up and running and we were ready to proceed to the next station. The last station of the day was hauled at 1844 and the scientific staff finished work in the fishroom at 2230. The vessel then proceeded northwest to hold position at the outer edge of the Baie de Seine ready for work to begin in the morning.

On 22 July work commenced at prime station 12, VIId French side, in shore, Baie de Seine at 0452 before heading back in towards the French coast. The vessel then worked her way eastwards along the French coast for the rest of the day. 9 prime beam trawl stations were completed, all of which were fished for 30 minutes with a warp ratio of 3.5:1. Station 18 was a full benthic sort.

At station 41 several tonnes of sand were caught, the station was declared invalid by the fishing skipper and the codend slipped away. This station was repeated from the other end for

20 minutes at a warp ratio of 3:1 with the same result. For the same reasons as before, further tows on this station were not undertaken. The last station was hauled at 2006. The vessel then proceeded back to the English side of the grid to hold position west of Hastings, where work would commence the next morning

It is recommended that the Prime stations in this area be assessed for their contribution to the assessment weighed against the cost and risks involved. It may be appropriate to seek other tows in the same sampling strata that would give more consistent results.

When downloading data from the Mini CTD fitted to the Beam Trawl it was discovered that the unit had malfunctioned. It appeared to be logging when checked during the day but on download only 26 records were found on the instrument. The unit was swapped out for the backup.

On 23 July work commenced at prime station 67, (VIId English side), inshore, west of Hastings at 0546. 8 prime beam trawl stations were completed and 1 additional tow (200). All stations were fished for 30 minutes with warp at 3.5:1. All stations were valid and no gear damage was sustained. The last station was hauled at 1824 and station 62 was a full benthic sort. The backup CTD unit worked successfully.

On 24 July work commenced at prime station 74, (VIId English side), inshore, east of Hastings at 0536. Six prime beam trawl stations were completed and 3 additional tows. All stations were fished for 30 minutes with warp at 3.5:1. All stations were valid and no gear damage was sustained. Prime 74 was a full benthic sort. A safety drill took place at 1600.

Once fishing was complete for the day operations were swapped back over to the starboard winch.

On 25 July work commenced at prime station 29, (VIId French side), eastern channel, at 0547. 6 prime beam trawl stations were completed. All stations were fished for 30 minutes with warp at 3.5:1. All stations were valid and no gear damage was sustained. The last station was hauled at 1518 and contained a very large number of flat fish, taking until 2000 to process. Station 37 and 72 were full benthic sorts.

On 26 July work commenced at prime station 71, (VIId French side), eastern channel, inshore at 0627. 7 prime beam trawl stations were completed. Prime station 95 was invalid on the first attempt, as the net got hung up and there were several stones in the belly. The station was repeated for 20 minutes with the warp at 3:1 and this time was successful. All other stations were fished for 30 minutes with warp at 3.5:1 and were valid with no gear damage sustained. With all VIId stations now complete the vessel proceeded north to prime station 79, IVc, east of Dover to begin work on the North Sea stations the following morning.

On 27 July work commenced at prime station 79, IVc, east of Dover at 0542. 8 additional tows were completed. All stations were fished for 30 minutes with a warp ratio of 3.5:1. All were valid and no gear damage was sustained. Prime stations 78 and 82 were full benthic sorts. A fish identification quality assurance assessment was carried out with good results.

On 28 July work commenced at prime station 98, IVc, east of Orford at 0544. 8 additional tows were completed, all of which were fished for 30 minutes with a warp ratio of 3.5:1. All catches were valid and no gear damage was sustained. Station 100 was a full benthic sort.

This concluded the stations in IVc English sector. The vessel then proceeded overnight to the Belgian sector ready to work the following day.

On 29 July 7 additional tows were completed in the Belgian sector. All stations were fished for 30 minutes with a warp ratio of 3.5:1. All were valid and no gear damage was sustained. The vessel then proceeded west, to hold position off Orford once again, ready to begin work the following morning.

On 30 July 7 additional tows were carried out inshore off Orford and Aldeburgh. All stations were fished for 30 minutes at a warp ratio of 3.5:1 and all were valid. Once fishing was complete a thorough clean down of the labs was carried out.

The Endeavour docked in Lowestoft on the morning tide of 31/07/09 at the end of the survey.

## RESULTS:

### Primary aims.

#### Aim 1.

A total of 38 valid tows were completed on prime and additionally fished stations in the Eastern English Channel (VIId) English sector. In addition 1 invalid tow was carried out, this was successfully repeated (see table 1).

In the French sector 32 tows were successfully sampled. In addition 8 invalid tows were carried out, at 5 prime stations. 3 of these stations were eventually fished successfully, 2 were unsuccessfully repeated and eventually abandoned. In IVc 30 stations were fished successfully including 7 additional tows in the Belgian sector. No stations were invalid or shortened.

Region	Valid 30 mins	Valid 20 mins	Invalid	Number of stations without valid result	Total tows
VIId (English)	33 (including 1 at 31 minutes and 2 at 32 minutes).	5 (including 1 at 23 minutes)	1	0	39
VIId (French)	22 (including 1 at 37 minutes)	10 (including 1 at 16 minutes and 1 at 21 minutes).	8	3	40
IVc	30 (including 1 at 29 minutes and 1 at 31 minutes)	0	0	0	30
Total	85	15	9	3	109

Table 1. The number of valid and invalid tows fished during the survey. \* IVc includes additional tows in the Belgian sector.

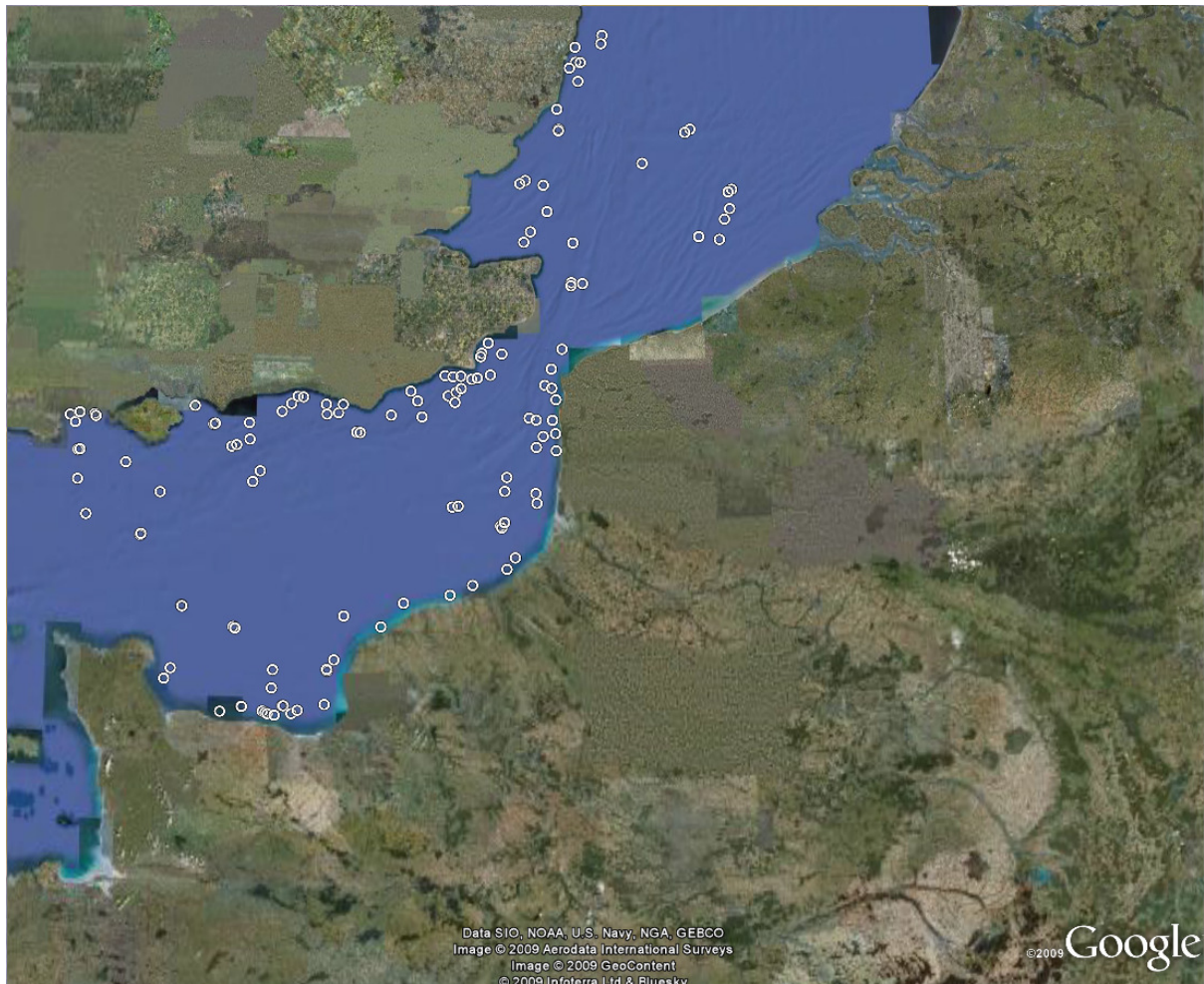


Figure 1 –Stations fished during survey.

### Aims 2 & 3

All otolithed fish were measured to the whole cm below, weighed individually, sexed and assigned a sexual maturity code based on a 4-stage key. Table 2 shows the otoliths collected for the main commercial fish species. All non-commercial finfish bycatch caught was identified to species level, weighed and measured. In addition the following shellfish and cephalopods were also weighed and measured, cuttlefish (*Sepia officinalis*), *Alloteuthis spp*, *Loligo spp*, edible crab (*Cancer pagurus*), lobster (*Homarus gammarus*), scallops (*Pecten maximus*), velvet swimming crab (*Necora puber*) and spider crab (*Maia squinado*), while queen scallops (*Aequipecten opercularis*) and oysters (*Ostrea edulis*) were weighed and counted only. The numbers of individual fish measured this year for the main commercial species can be seen in Table 3.

In total 186 different species were recorded (See Appendix 3). Bubble plots of catches can be seen in Appendix 1 and some length weight plots are shown in Appendix 2.

Region	Brill	Cod	Dab	Flounder	Lemon	Plaice	Sole	Bass	Turbot
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					sole				
VIIId English	9	1	137	72	62	363	262	2	4
VIIId French	4	1	135	35	54	598	297	6	11
North Sea (IVc)	0	1	61	16	25	75	349	0	0
Total	13	3	333	123	141	1036	908	8	15

Table 2. Otoliths collected from the main commercial species in each sampling region.

Species	Species code	VIIId English	VIIId French	IVc North Sea	Total
Brill	BLL	9	4	0	13
Cod	COD	1	1	1	3
Cuttlefish	CTC	121	244	4	369
Dab	DAB	654	1148	65	1867
Flounder	FLE	128	141	18	287
Lemon Sole	LEM	63	63	31	157
Plaice	PLE	444	1380	80	1904
Sole	SOL	491	759	1070	2320
Turbot	TUR	4	12	0	16
Whiting	WHG	234	82	79	395
Velvet swimming crab	MLP	42	827	354	1223

Table 3. Number of fish measured from the main commercial species, in each sampling region.

#### AIM 4:

On certain specified stations a full benthic sort was carried out to identify the numbers and weights of species encountered. In addition on all other stations benthos encountered was noted as an observation in the database at species or other taxonomic grouping. There were also 9 sentinel species that if encountered at any time on any tow, should be removed and quantified. We primarily encountered Ross Coral (*Pentapora foliacea*) and *Sabellaria spinulosa* of these species; although some sponge crabs and a mantis shrimp (*Meiosquilla desmaresti*) were also caught. All 13 planned full benthic stations in VIIId and 3 in 5 IVc were sampled successfully.

#### Secondary aims.

##### Aim 5:

Additional aims.

Unattended OLEX operation – The system failed to work from day 1, despite considerable effort by staff onboard we were unable to resolve the issues at sea. Although OLEX did not

function, we believe multi beam data was successfully logged and could be incorporated into OLEX database on return to Lowestoft.

Multi frequency logging – data was collected as requested and returned to J Van Der Kooij at Lowestoft.

Ray and nurse hound fin clips – 179 fin clips were taken from rays, no nurse hounds were caught.

Undulate ray tagging – four undulate rays were tagged and released.

Maturity photos were taken of 31 sole and 59 plaice. It should be noted that this aim required a considerable amount of staff time as the protocols require careful dissection of the fish prior to photographs being taken.

ID specimens and photos – a variety of fish and benthic species were photographed and samples were frozen.

Radiochemistry samples – samples collected from all four sites requested.

### **Other work**

Further development work was undertaken on the existing EDC system to integrate weight data from POLs marine scales into both Deckmaster and Measurement modules. Capture of length weight data for non-biologically sampled species was integrated into the Measurement module.

Initial trials were undertaken using high precision load cells to investigate the feasibility of developing an in-house motion compensating marine scale.

FSS was further enhanced to incorporate the additional length weight data and provide basic analysis functionality for this data (see appendix 2).

SCANMAR logging was modified to incorporate user requirements and new SCANMAR sensor arrays. SCANMAR viewer utility was modified to take into account the changes made to the logging software.

TRANSAS position conversion software was enhanced to incorporate route information.

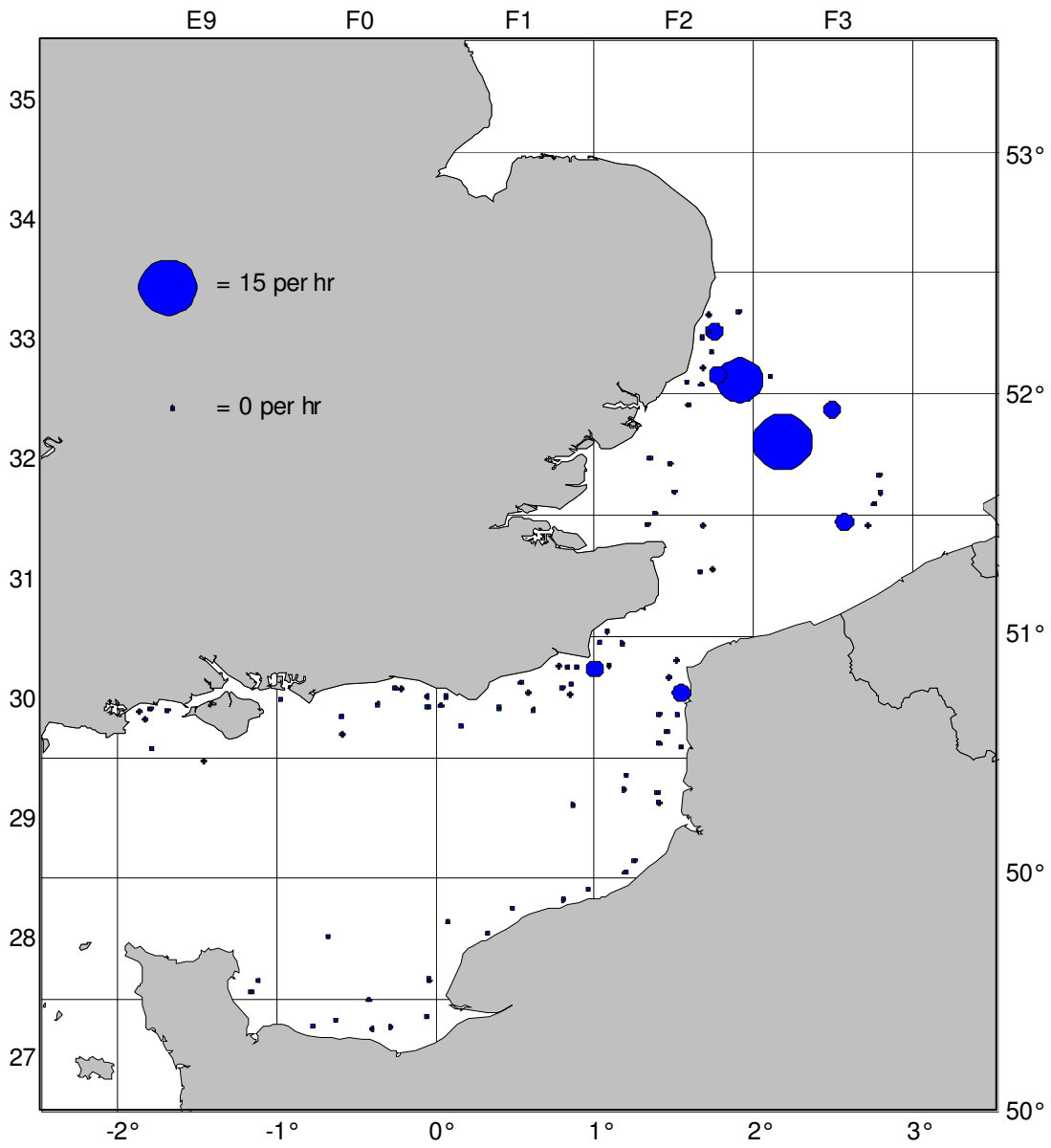
### Acknowledgements

Thanks to the officers and crew of the Cefas Endeavour for their support and expertise throughout the course of the survey.

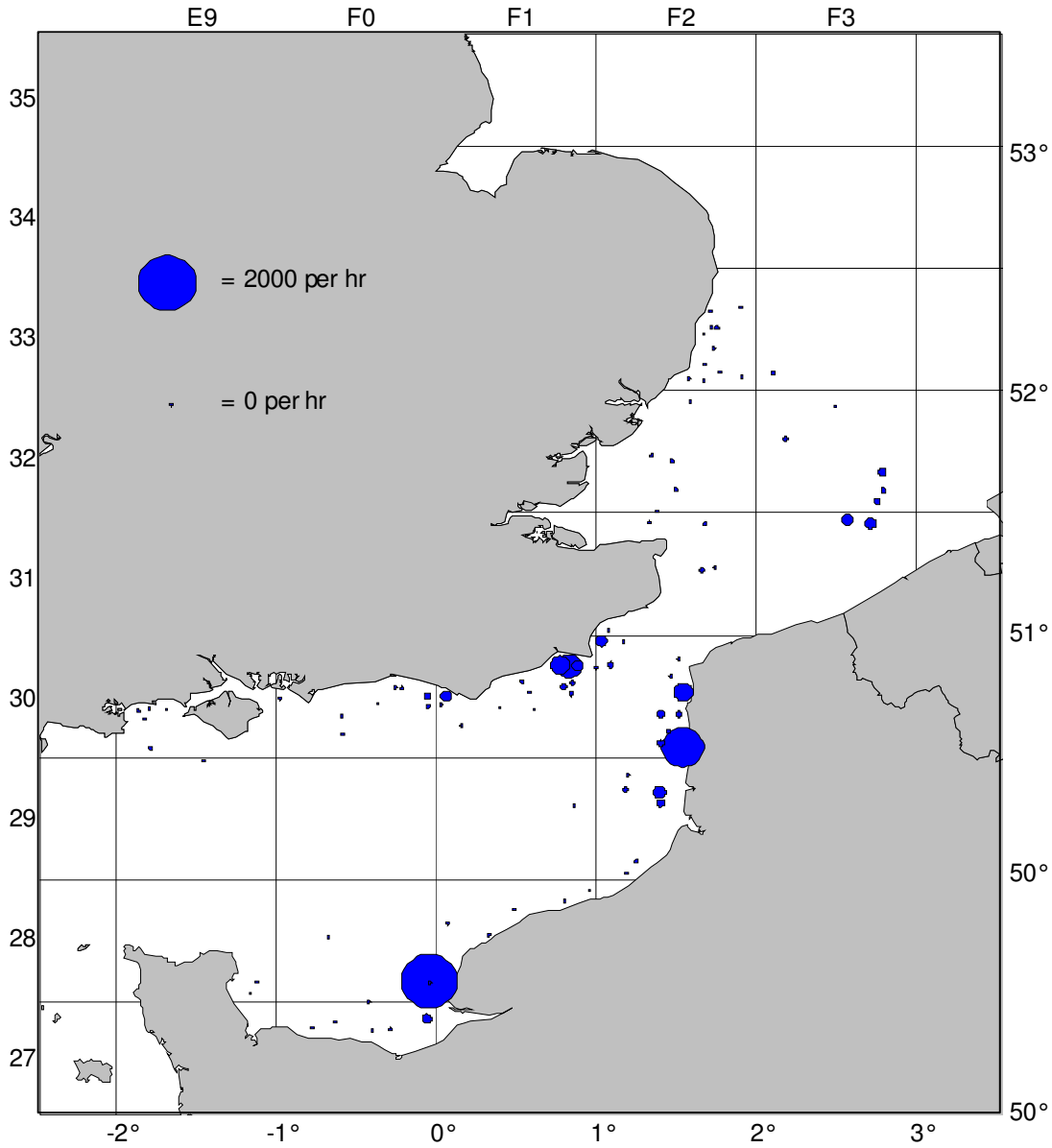


**Appendix 1 – bubble plots of catches of main commercial species.**

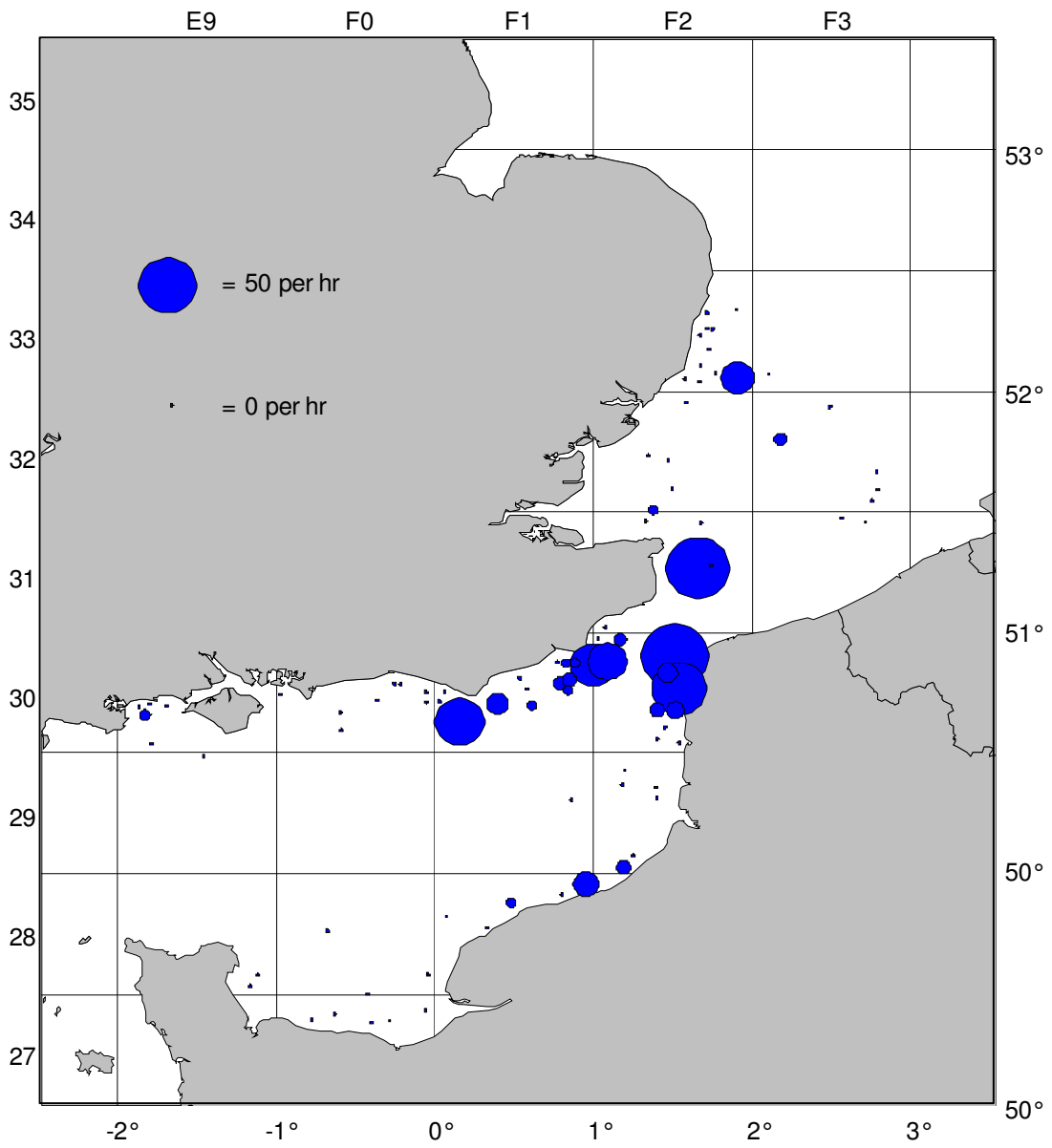
**Cend 11/09 - Cod**



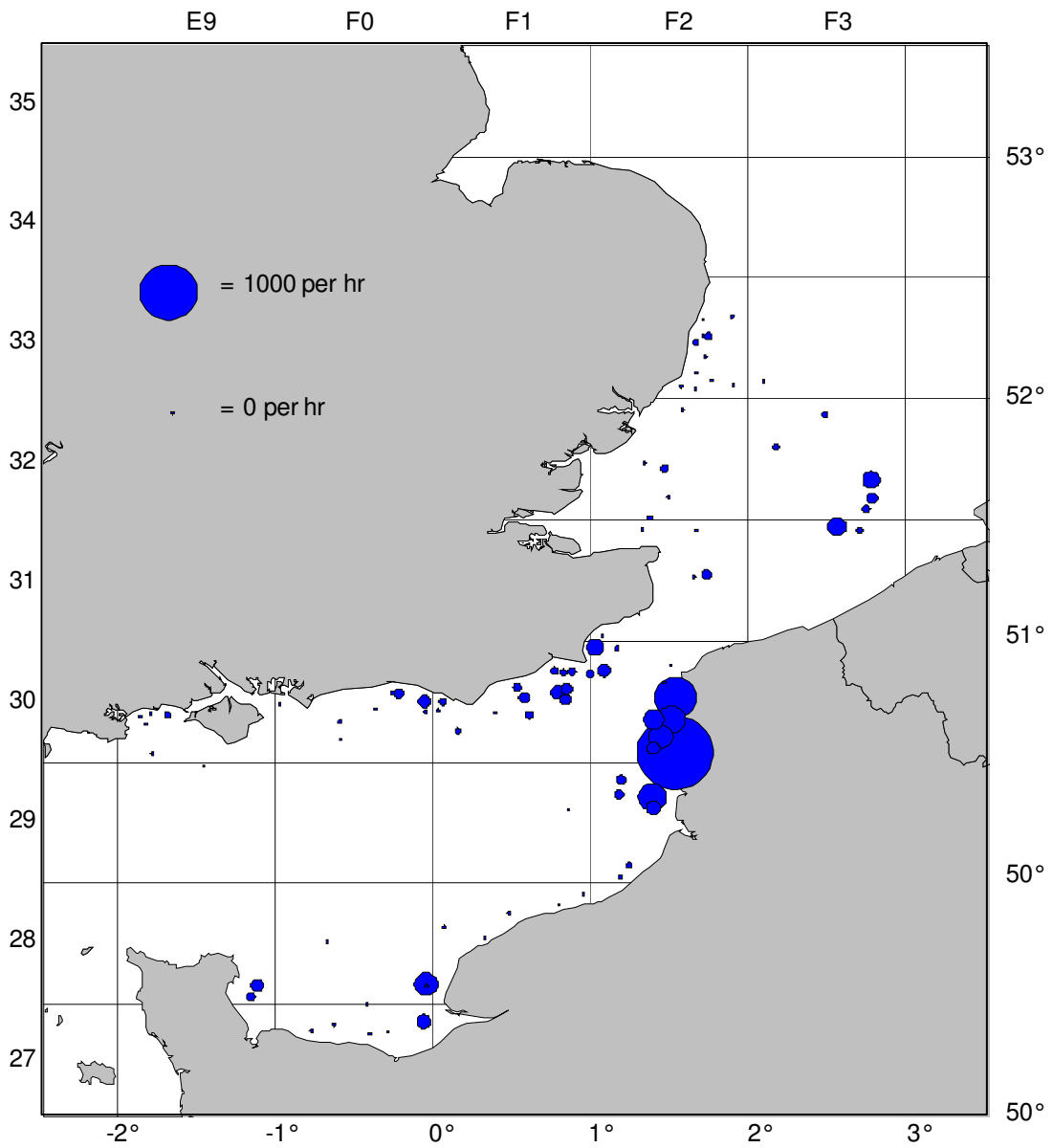
# Cend 11/09 - Dab



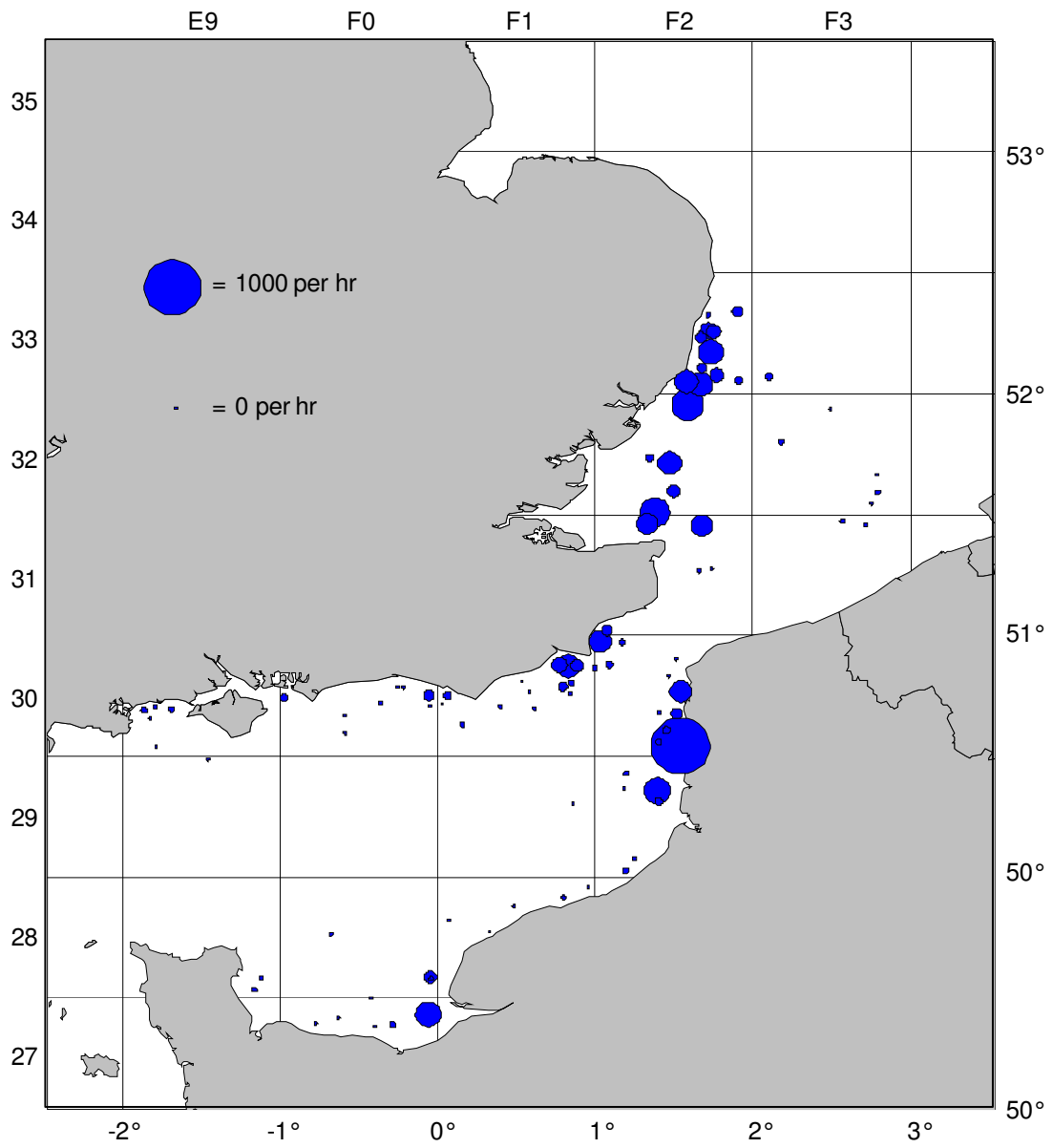
# Cend 11/09 - Lemon sole



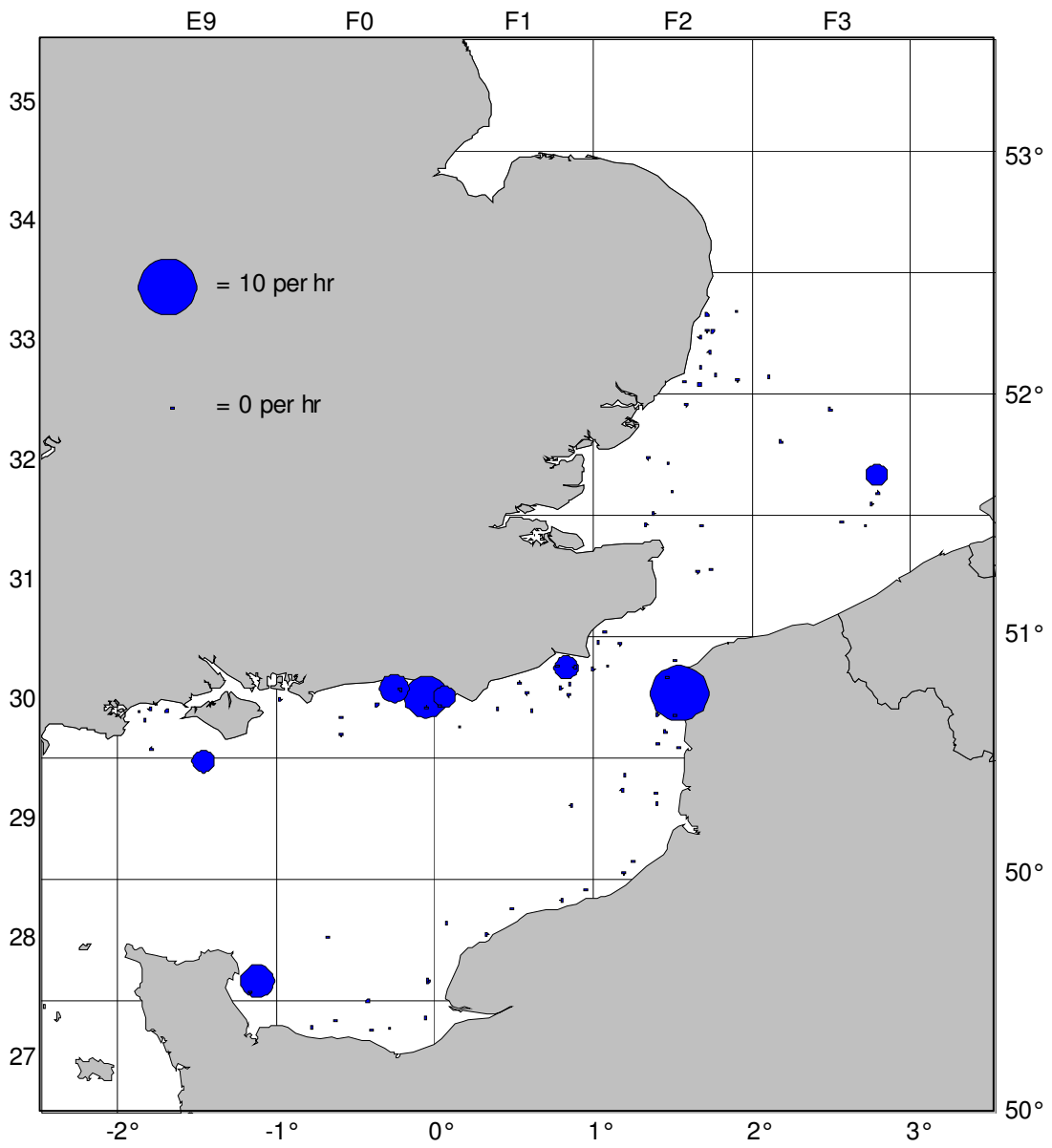
# Cend 11/09 - Plaice



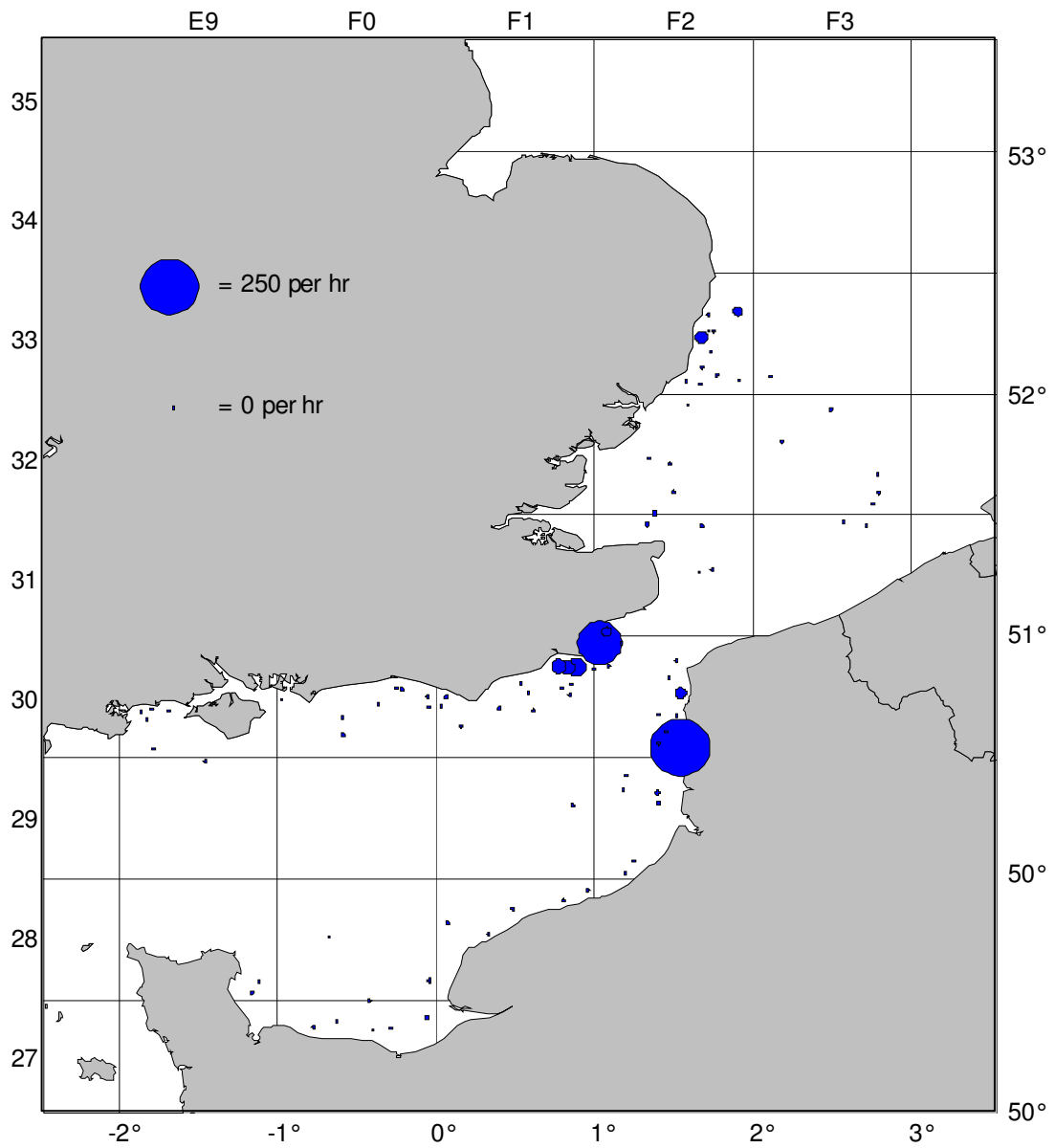
# Cend 11/09 - Sole



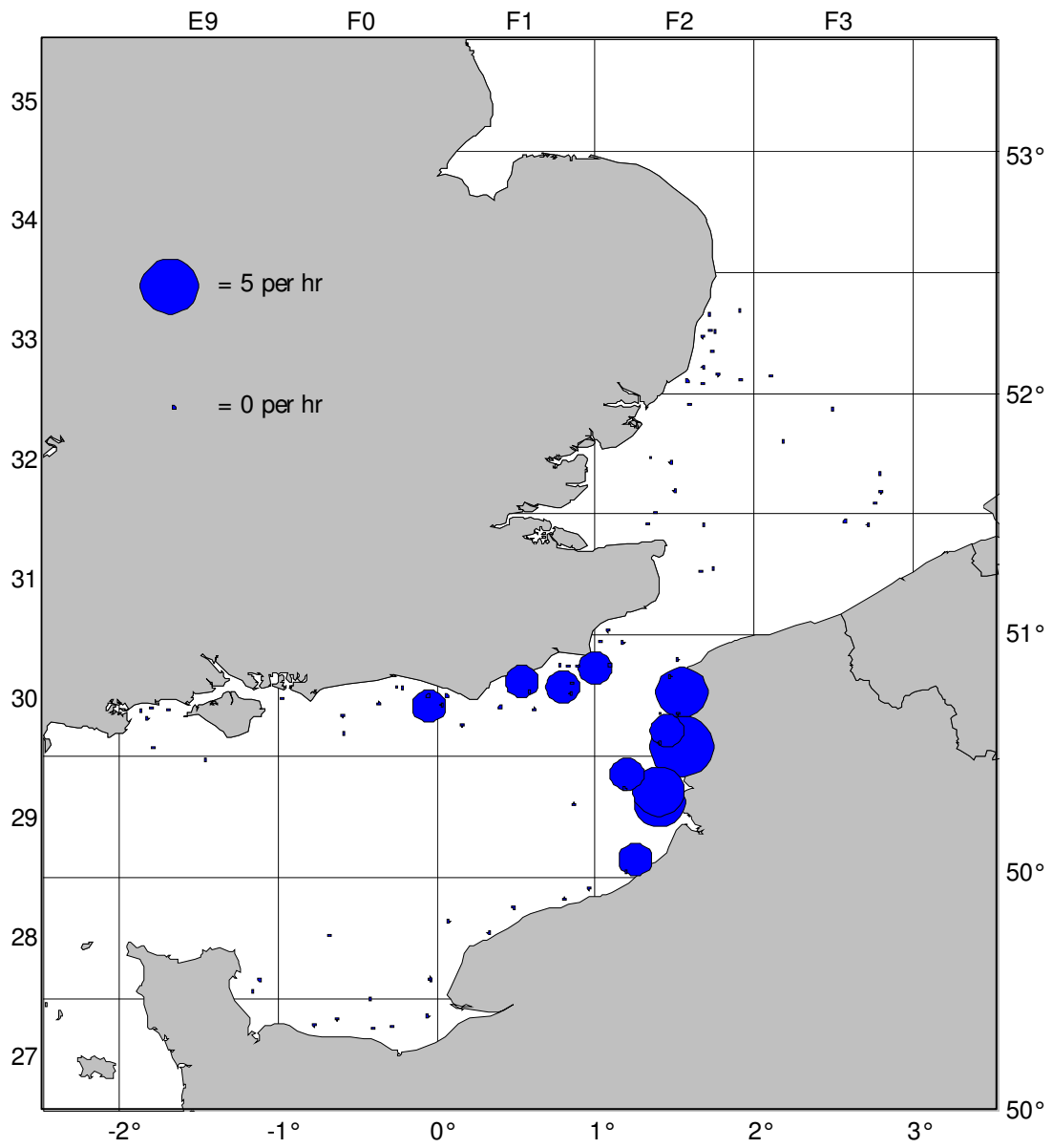
# Cend 11/09 - Bass



# Cend 11/09 - Flounder

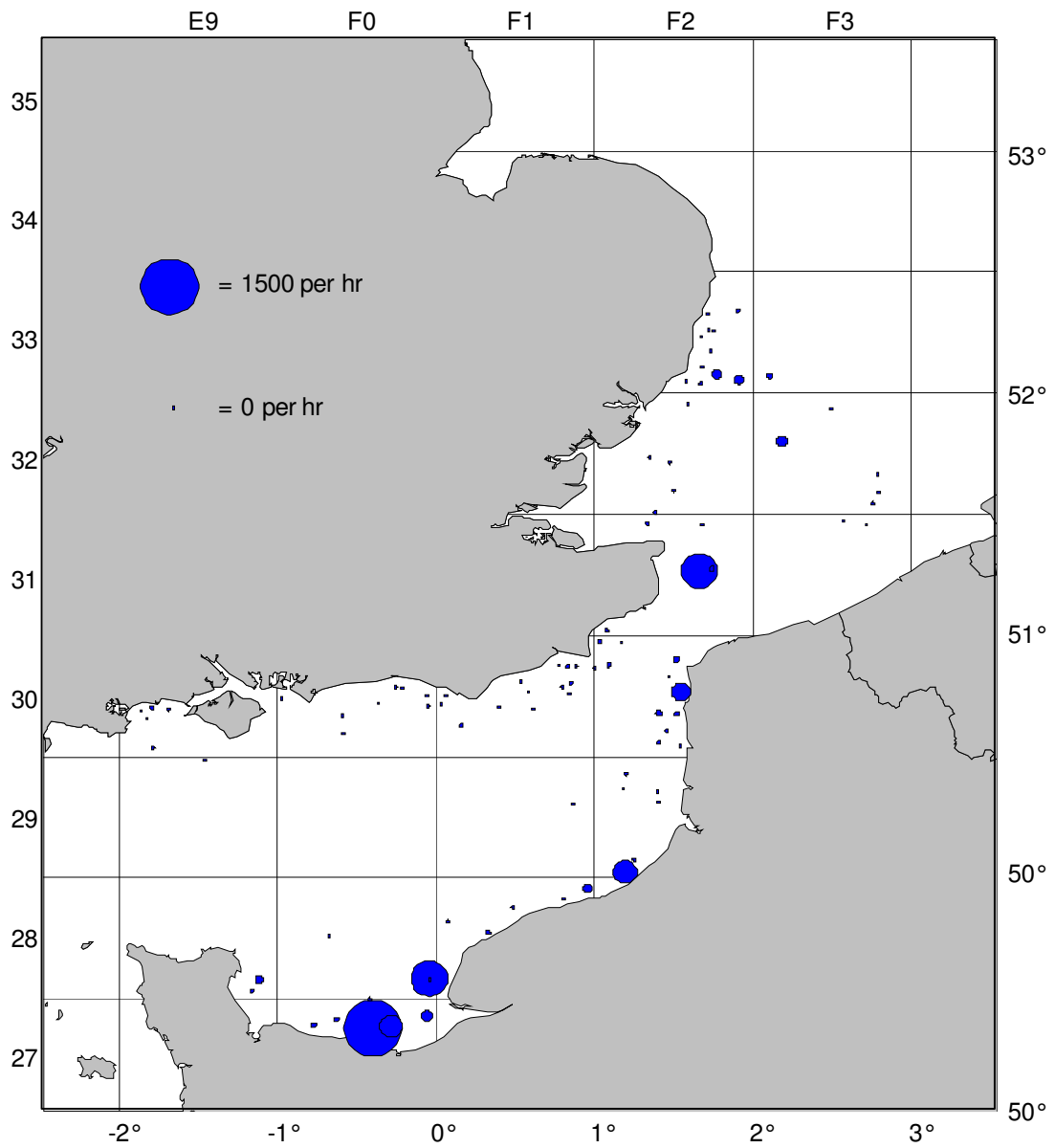


# Cend 11/09 - Turbot

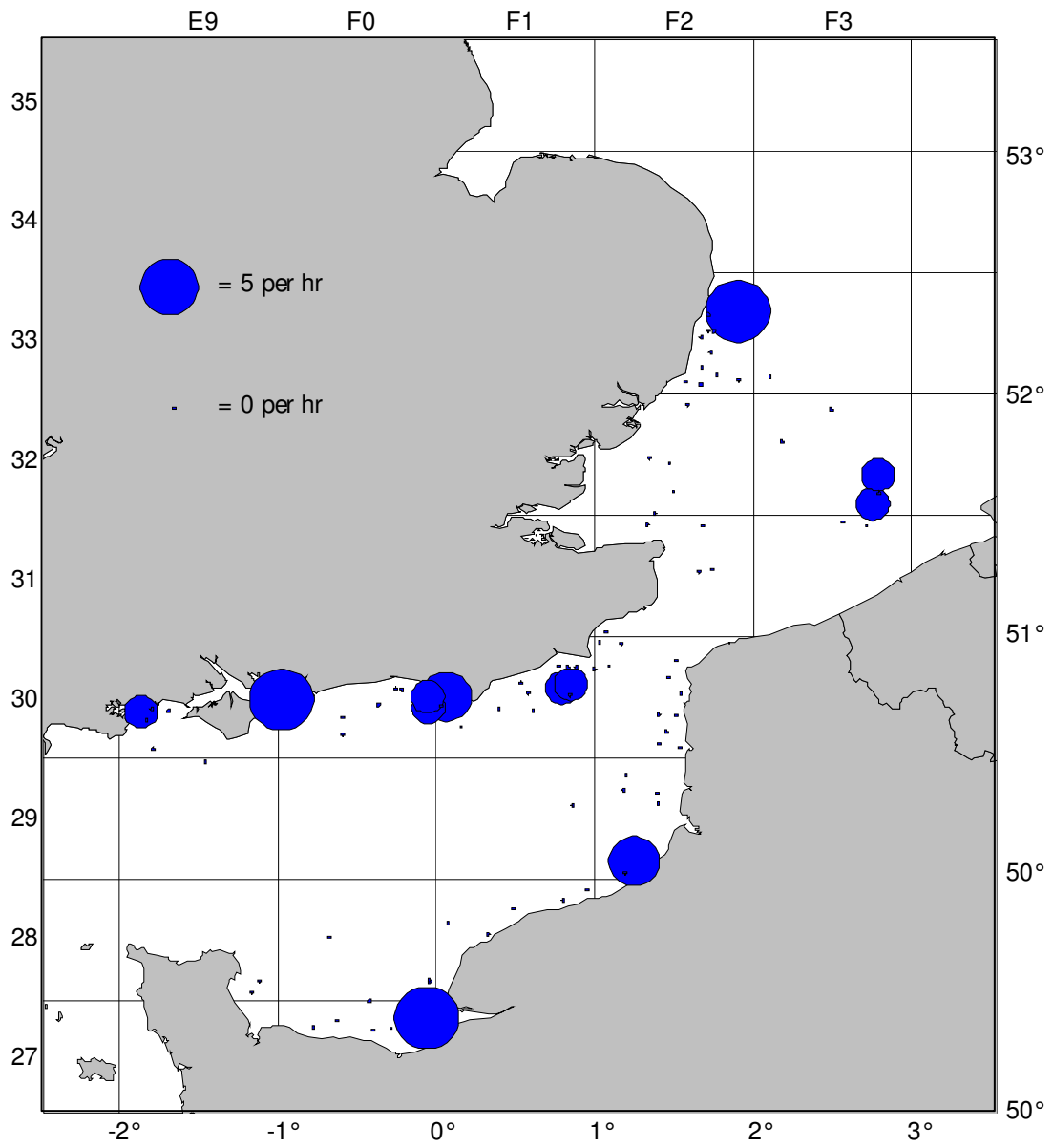




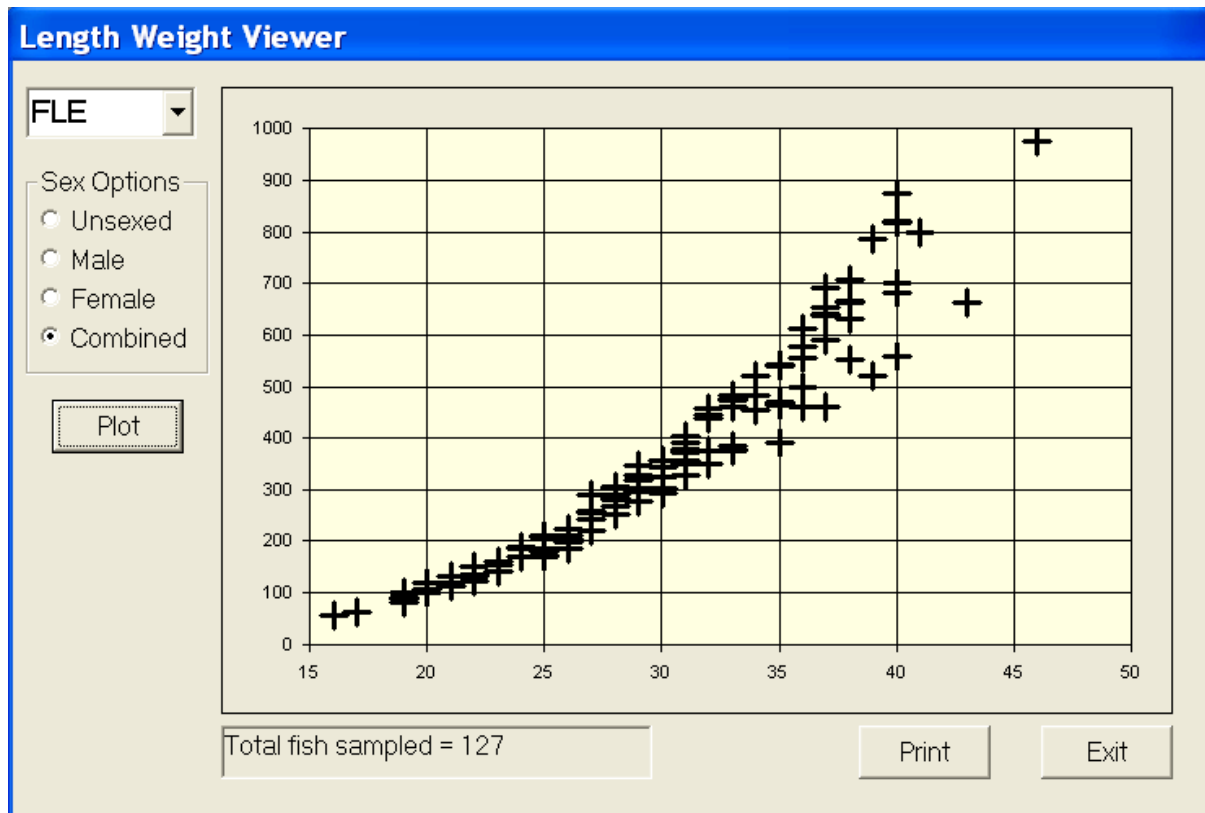
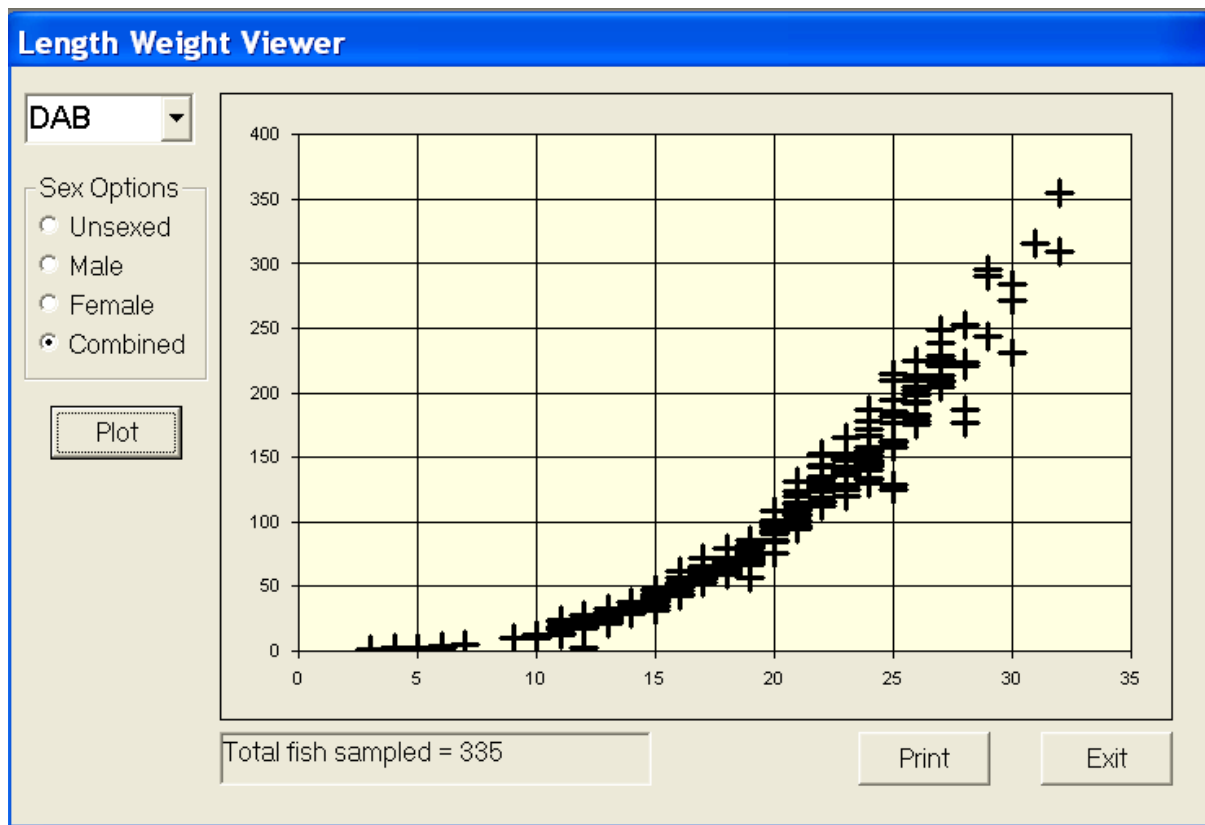
# Cend 11/09 - Velvet swimming crab



# Cend 11/09 - Brill



## Appendix 2– length weight plots



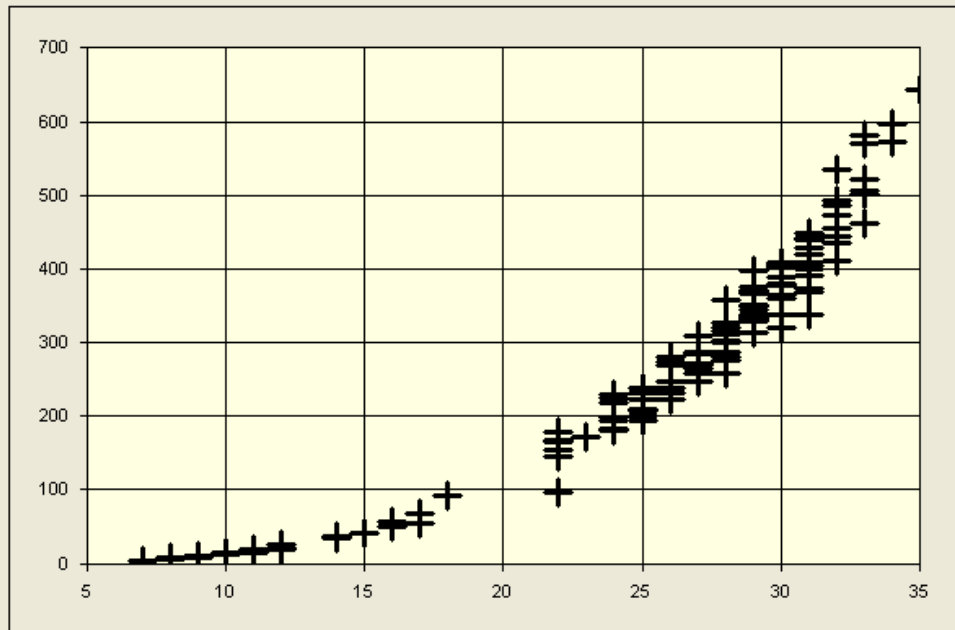
## Length Weight Viewer

LEM

Sex Options

- Unsexed  
 Male  
 Female  
 Combined

Plot



Total fish sampled = 141

Print

Exit

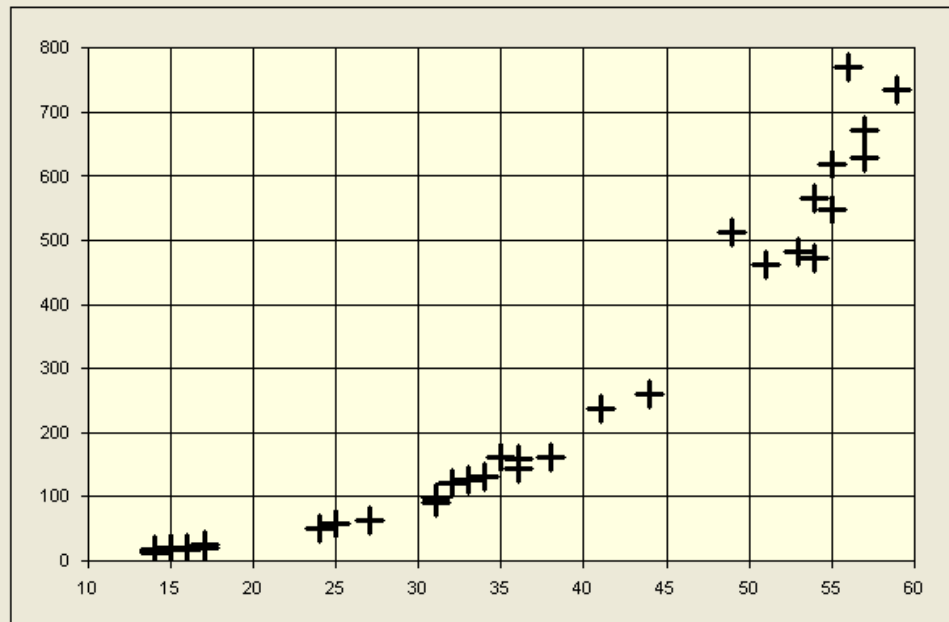
## Length Weight Viewer

LSD

Sex Options

- Unsexed  
 Male  
 Female  
 Combined

Plot



Total fish sampled = 35

Print

Exit

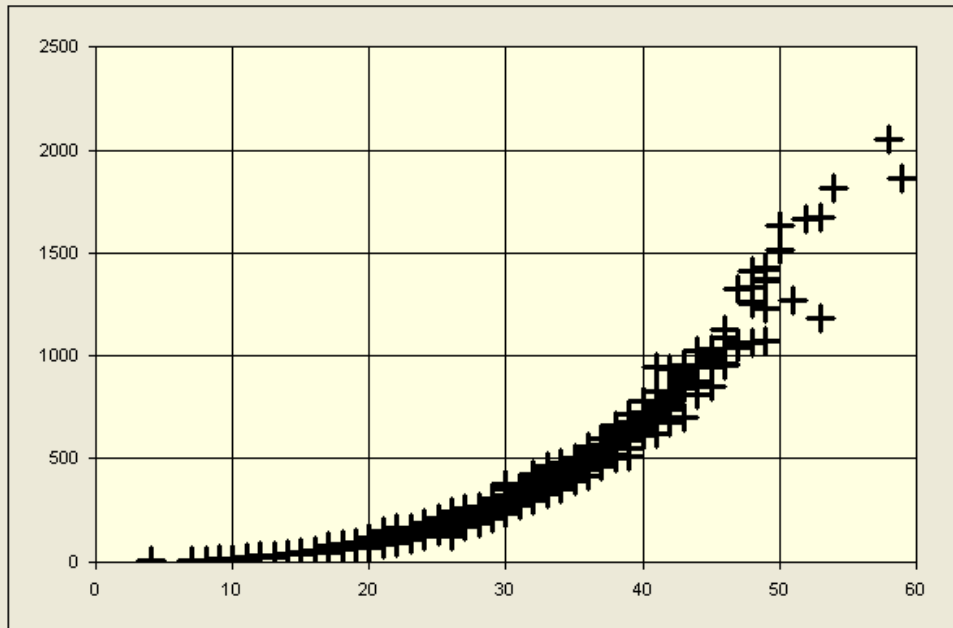
## Length Weight Viewer

PLE

Sex Options

- Unsexed
- Male
- Female
- Combined

Plot



Total fish sampled = 1093

Print

Exit

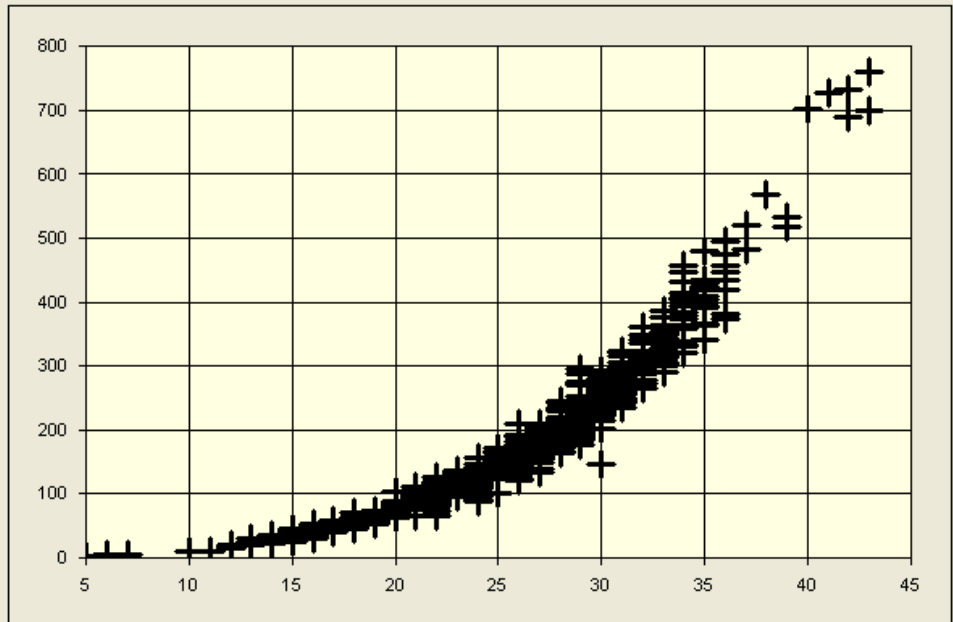
## Length Weight Viewer

SOL

Sex Options

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- Male
- Female
- Combined

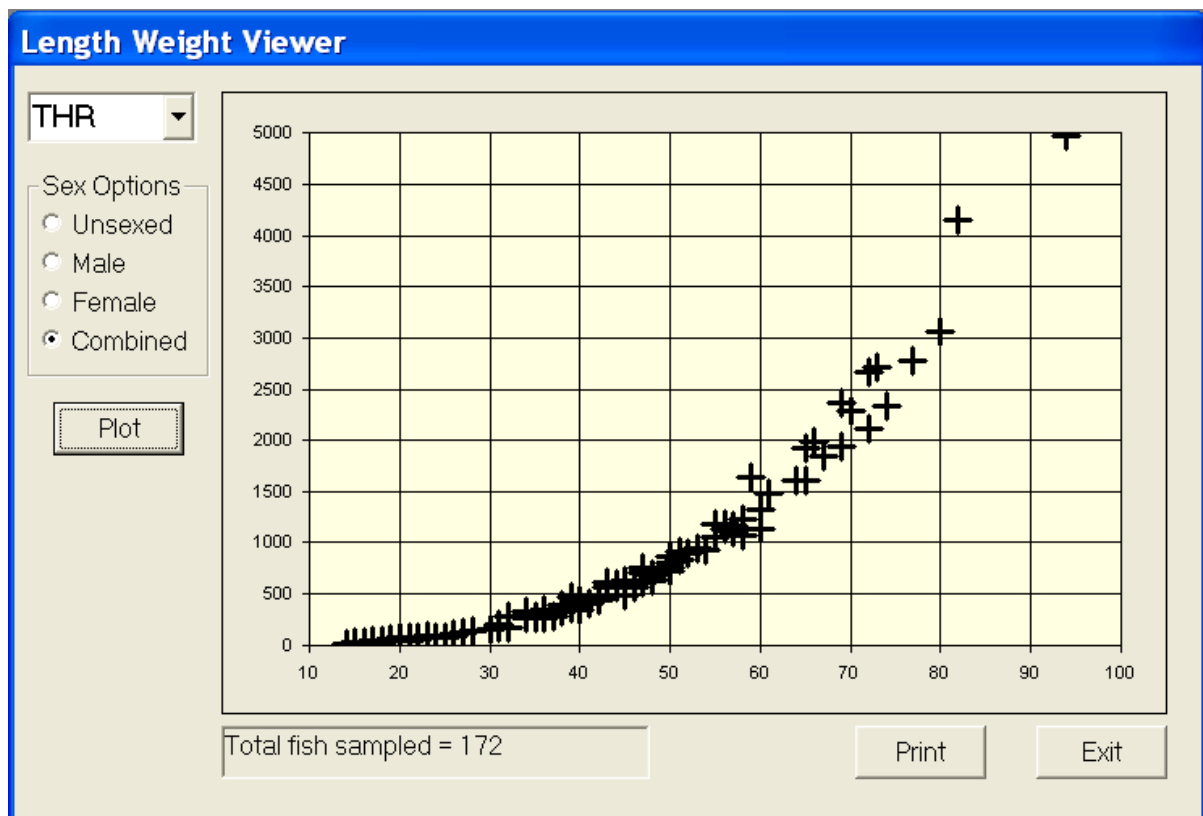
Plot



Total fish sampled = 932

Print

Exit



**Appendix 3 – list of all species caught during survey.**

CODE	Latin name	Common name
AAC	APHRODITE ACULEATA	SEA MOUSE
ADP	ARCHIDORIS PSEUDOARGUS	SEA LEMON
ALG	ALCYONIDIUM DIAPHANUM	CURLY WEED
ALM	ALPHEUS MACROCHELES	BROAD CLAWED BURROWING SHRIMP
ALR	ATELYCYCLUS ROTUNDATUS	CIRCULAR CRAB
AMU	ANEMONE UNIDENTIFIED	ANEMONE UNIDENTIFIED
ASL	CREPIDULA FORNICATA	AMERICAN SLIPPER LIMPET
ATS	LOLIGO (ALLOTEUTHIS) SUBULATA	
BBY	BLENNIUS OCELLARIS	BUTTERFLY BLENNY
BEN	EPIBENTHIC MIXTURE	EPIBENTHIC MIX UNIDENTIFIED
BIB	TRISOPTERUS LUSCUS	WHITING-POUT (BIB)
BKS	SPONDYLIOSOMA CANTHARUS	BLACK SEABREAM
BLG	GOBIUS NIGER	BLACK GOBY
BLL	SCOPHTHALMUS RHOMBUS	BRILL
BLR	RAJA BRACHYURA	BLONDE RAY
BLW	SYMPHODUS (CRENILABRUS) BALLONI	BAILLONS WRASSE
BNW	LABRUS BERGYLTA	BALLAN WRASSE
BRT	MYOXOCEPHALUS SCORPIUS	BULLROUT
BSY	OPHIUROIDEA	BRITTLE-STARS
BTF	PHOLIS GUNNELLUS	BUTTER FISH
CCV	CORYSTES CASSIVELAUNUS	MASKED CRAB
CDT	CALLIONYMUS LYRA	COMMON DRAGONET
CEG	CUTTLE EGGS	CUTTLE EGGS

CHZ	CHLOROPHYCEAE	GREEN SEAWEEDS
CLG	CRYSTALLOGOBIUS LINEARIS	CRYSTAL GOBY
COD	GADUS MORHUA	ATLANTIC COD
CPR	PALAEMON SERRATUS	COMMON PRAWN
CPY	ACANTHOCARDIA ECHINATA	PRICKLY COCKLE
CRE	CANCER PAGURUS	EDIBLE CRAB UNSEXED
CRG	CARCINUS MAENAS	GREEN SHORE CRAB
CRN	CRANGONIDAE	CRANGONID (BROWN) SHRIMPS
CSH	CRANGON CRANGON	COMMON(BROWN)SHRIMP
CTC	SEPIA OFFICINALIS	COMMON CUTTLEFISH
CTP	CROSSASTER PAPPOSUS	COMMON SUNSTAR
CTS	VENERUPIS PULLASTRA	PULLET CARPET-SHELL
DAB	LIMANDA LIMANDA	DAB
DEG	DOGFISH EGG CASES	DOGFISH EGG CASE
DMF	ALCYONIUM DIGITATUM	DEAD-MENS FINGERS
DRP	DROMIA PERSONATA	SPONGE CRAB
ECC	ECHINOCARDIUM CORDATUM	SEA POTATO
ECH	ECHINODERMATA	STARFISH/SEA URCHNS
EDC	ELEDONE CIRRHOSA	CURLED OCTOPUS
EKT	ZEUGOPTERUS (PHRYNORHOMBUS) REGIUS	EKSTROMS TOPKNOT
ELE	ANGUILLA ANGUILLA	EUROPEAN EEL
ESB	DICENTRARCHUS LABRAX	EUROPEAN SEABASS
ETS	SPISULA ELLIPTICA	ELLIPTICAL TROUGH SHELL
FAF	FLUSTRA FOLIACEA	HORNWRACK
FLE	PLATICHTHYS FLESUS	FLOUNDER (EUROPEAN)
FRR	ENCHELYOPUS CIMBRIUS	FOUR-BEARDED ROCKLING
FVR	CILIATA MUSTELA	FIVE-BEARDED ROCKLING
GDY	CTENOLABRUS RUPESTRIS	GOLDSINNY
GLG	GLYCYMERIS GLYCYMERIS	DOG COCKLE
GLX	GALATHEA SPP	SQUAT LOBSTERS
GMG	POMATOSCHISTUS MICROPS	COMMON GOBY
GOR	GONEPLAX RHOMBOIDES	ANGULAR CRAB
GPF	SYNGNATHUS ACUS	GREAT PIPEFISH
GSE	HYPEROPLUS LANCEOLATUS	GREAT SANDEEL
GSV	GOBIUS GASTEVENI	STEVEN'S GOBY
GTC	GIBBULA CINERARIA	GREY TOP SHELL
GTX	GIBBULA SPP (MONODONTA SPP)	
GUG	EUTRIGLA (CHELIDONICHTHYS) GURNARDUS	GREY GURNARD
GUR	ASPITRIGLA (CHELIDONICHTHYS) CUCULUS	RED GURNARD
GUS	TRIGLOPORUS (CHELIDONICHTHYS) LASTOVIZA	STREAKED GURNARD
HEO	HENRICIA OCULATA	
HIA	EUPAGURUS / PAGURUS IN ADAMSIA	HERMIT IN ADAMSIA
HIS	EUPAGURUS / PAGURUS IN SUBERITES	HERMIT IN SUBERITES
HIW	EUPAGURUS / PAGURUS IN BUCCINUM	HERMIT IN WHELK
HML	MODIOLUS MODIOLUS	HORSE MUSSEL
HNS	HENRICIA SANGUINOLENTA	NULL
HOM	TRACHURUS TRACHURUS	HORSE-MACKEREL (SCAD)
HPP	HIPPASTERIA PHRYGIANA	
HTZ	HOLOTHUROIDEA	SEA CUCUMBERS
HYA	HYAS ARANEUS	GREAT SPIDER CRAB
HYC	HYAS COARCTATUS	CONTRACTED CRAB

HYD	HYDROIDA (order)	HYDROIDS
IND	INACHUS DORSETTENSIS	SCORPION SPIDER CRAB
JOD	ZEUS FABER	JOHN DORY
KEL	PHAEOPHYCEAE-LAMINARIALES	KELPS-TANGLES-OARWEEDS
LBE	HOMARUS GAMMARUS	EUROPEAN LOBSTER
LCC	LAEVICARDIUM CRASSUM	NORWAY COCKLE
LEM	MICROSTOMUS KITT	LEMON SOLE
LMD	LIOCARCINUS DEPURATOR	SWIMMING CRAB
LMH	POLYBIUS (LIOCARCINUS) HOLSATUS	COMMON SWIMMING CRAB
LMM	LIOCARCINUS MARMOREUS	MARBLED SWIMMING CRAB
LSD	SCYLIORHINUS CANICULA	LESSER SPOTTED DOGFISH
LUL	LUTRARIA LUTRARIA	COMMON OTTER SHELL
LUZ	LEUCOSIIDAE	NUT CRABS
MCR	MACROPODIA ROSTRATA	LONG-LEG SPIDER CRAB
MCT	MACROPODIA TENUIROSTRIS	SLENDER SPIDER CRAB
MLP	NECORA PUBER	VELVET SWIMMING CRAB
MON	LOPHIUS PISCATORIUS	ANGLERFISH (MONK)
MSE	AMMODYTES MARINUS	SANDEEL
MSX	MYTYLIDAE (MOLLUSCA)	MUSSELS (NEI)
MUR	MULLUS SURMULETUS	RED MULLET
MUS	MYTILUS EDULIS	EDIBLE MUSSEL
NAI	HINIA (NASSARIUS) INCRASSATUS	THICK-LIPPED DOGWHELK
NBX	NUDIBRANCHIA	SEA SLUGS
NEM	NEMERTESIA SPP	HYDROID
NNR	CILIATA SEPTENTRIONALIS	NORTHERN ROCKLING
OHA	OPHIURA ALBIDA	
OHT	OPHIURA OPHIURA	
OPF	OPHIOTHRIX FRAGILIS	COMMON BRITTLE STAR
OPH	OPHIURIDA (ORDER)	
OPN	OPHIOCOMINA NIGRA	
OTS	LUTRARIA MAGNA	OTTER SHELL
OYF	OSTREA EDULIS	EUROPEAN FLAT OYSTER
PAA	PISA ARMATA	GIBBS SEA SPIDER
PAN	PANDALUS SPP	PINK SHRIMPS (NEI)
PCL	PORCELLANA SPP	
PEB	PAGURUS BERNHARDUS	HERMIT CRAB
PEP	PAGURUS PUBESCENS	HERMIT CRAB
PET	PENTAPORA FOLIACEA	BRYOZOAN
PFZ	PORIFERA	SPONGES
PHP	PHILINE APERTA	
PLE	PLEURONECTES PLATESSA	EUROPEAN PLAICE
PLM	ANSEROPODA PLACENTA	GOOSE-FOOT STAR
PMM	PSAMMECHINUS MILIARIS	
PNC	EUSPIRA (POLINICES) CATENA	NECKLACE SHELL
PNH	PILUMNUS HIRTELLUS	HAIRY CRAB
POD	TRISOPTERUS MINUTUS	POOR COD
POG	AGONUS CATAPHRACTUS	POGGE (ARMED BULLHEAD)
POM	POMATOSCHISTUS SPP	GOBIES
PTR	RAJA MICROOCELLATA	SMALLEYED (PAINTED) RAY
QSC	AEQUIPECTEN OPERCULARIS	QUEEN SCALLOP
RAY	SOLENIIDAE	RAZOR CLAMS



RCL	SABELLARIA SPINULOSA	ROSS WORM (COLONIES)
RES	RAJA EGG CASES	RAY EGG CASES
RKG	GOBIUS PAGANELLUS	ROCK GOBY
ROL	GAIDROPSARUS SPP	ROCKLINGS
ROM	ROSSIA MACROSOMA	
RWK	NEPTUNEA ANTIQUA	RED WHELK
SCE	PECTEN MAXIMUS	GREAT SCALLOP
SCR	MAJA SQUINADO	SPINY SPIDER CRAB
SDF	ARNOGLOSSUS LATERNA	SCALD FISH
SDG	POMATOSCHISTUS MINUTUS	SAND GOBY
SDR	RAJA MONTAGUI	SPOTTED RAY
SDS	MUSTELUS ASTERIAS	STARRY SMOOTH HOUND
SHR	LEUCORAJA FULLONICA	SHAGREEN RAY
SMH	MUSTELUS MUSTELUS	SMOOTH HOUND
SMS	GYMNAMMODYTES SEMISQUAMATUS	SMOOTH SANDEEL
SNH	HIPPOCAMPUS HIPPOCAMPUS	SEA HORSE (SHORT SNOUTED)
SOL	SOLEA SOLEA	SOLE (DOVER SOLE)
SOS	PEGUSA (SOLEA) LASCARIS	SAND SOLE
SOT	BUGLOSSIDIUM LUTEUM	SOLENETTE
SPA	SEPIOLA ATLANTICA	LITTLE CUTTLEFISH
SPC	ACANTHOCARDIA ACULEATA	SPINY COCKLE
SPG	SPATANGUS PURPUREUS	PURPLE HEART URCHIN
SPY	SEPIOLIDAE	
SSL	LIPARIS LIPARIS	SEA SNAIL
SSN	TAURULUS BUBALIS	SEA SCORPION
SSX	ASCIDIACEA	SEA SQUIRTS
STH	ASTERIAS RUBENS	COMMON STARFISH
SUB	SUBERITES SPP	SPONGE
SWB	PHAEOPHYCEAE	BROWN SEAWEEDS (NEI)
SWR	RHODOPHYCEAE	RED SEAWEEDS (NEI)
TAA	TETHYA AURANTIA	
TAX	TELLINA SPP	
TBR	GAIDROPSARUS VULGARIS	THREE-BEARDED ROCKLING
TBS	MICROCHIRUS VARIEGATUS	THICKBACK SOLE
TBX	TUBEWORMS	TUBEWORMS
TBY	PARABLENNIUS GATTORUGINE	TOMPOT BLENNY
THH	THYONE FUSUS	
THR	RAJA CLAVATA	THORNBACK RAY (ROKER)
TKT	ZEUGOPTERUS PUNCTATUS	TOPKNOT
TNT	ANGULUS TENUIS	THIN TELLIN
TSC	DIPLECOGASTER BIMACULATA	TWP SPOTTED CLINGFISH
TSE	AMMODYTES TOBIANUS	SANDEEL
TSX	TROCHIDAE	TOP SHELLS
TTS	SPISULA SOLIDA	THICK TROUGH SHELL
TUB	TRIGLA (CHELIDONICHTHYS) LUCERNA	TUB GURNARD
TUC	TURRITELLA COMMUNIS	AUGER SHELL
TUR	SCOPHTHALMUS MAXIMUS (PSETTA MAXIMA)	TURBOT
TUX	TURRIDAE	
TVR	PAPHIA RHOMBOIDES	BANDED CARPET-SHELL
UNR	RAJA UNDULATA	UNDULATE RAY
URA	ECHINUS ACUTUS	

UXC	UROSALPINX CINEREA	OYSTER DRILL
WEG	TRACHINUS DRACO	GREATER WEEVER FISH
WEL	ECHIICHTHYS (TRACHINUS) VIPERA	LESSER WEEVER FISH
WES	WHELK EGGS	WHELK EGGS
WHB	MICROMESISTIUS POUTASSOU	BLUE WHITING
WHE	BUCCINUM UNDATUM	COMMON WHELK
WHG	MERLANGIUS MERLANGUS	WHITING
WRB	FUCUS VESICULOSUS	BLADDER WRACK
XAP	XANTHO PILIPES	RISSOS CRAB
YBY	CHIROLOPHIS ASCANII	YARREL'S BLENNY

S Songer  
30/07/09

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