

Cruise Report Biological Sampling Survey 2005

Objectives

The survey is intended to address the requirements of the Data Collection Regulation 1639/2001. Information on growth, maturity and sex ratio (biological data) were collected for a range of commercially important species. Ovary samples were collected to validate visual maturity staging.

Personnel

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Skipper: Fergus O'Heir

Cruise narrative

Date	Comments
Sun 27-Feb	Mobilised, set off at 18:00h for most westerly stations. Good weather.
Mon 28-Feb	Start of survey. Good weather, Completed 5 stations.
Tue 1-Mar	Winds picked up during night. Cancelled 1st station, trawler in the way. Completed 5 stations in worsening weather
Wed 2-Mar	Weather worsening, catches low. Too rough to shoot in the afternoon. Headed inshore after 3 valid tows were completed
Thu 3-Mar	Weather ok, still large swell. Four stations completed. Roller worn out on port winch. Heading to Schull to pick up net and to fix roller.
Fri 4-Mar	Into Schull for 9:30 (after 1st tow) to pick up net and fix roller. Welder finished 11:30, set off at 12:00 under windy conditions, two stations completed. Headed further west. Weather unsettled.
Sat 5-Mar	Bad weather all day, not able to fish. Abandon plan to fish most south-westerly stations. Slowly making way up north to cover area VIIb. Very slow progress all day and night.
Sun 6-Mar	Weather cleared up in the morning, reached 1st station at 9am, completed 5 stations
Mon 7-Mar	Good weather, completed 4 stations, very large catch of mackerel in last station.
Tue 8-Mar	Good weather, completed 6 stations.
Wed 9-Mar	Good weather, completed 4 remaining stations. Into Galway for 17:00
Thu 10-Mar	Demob

Gear used

GOV net with footrope tied down to one chainlink. A tickler chain was added this year for the first time.

Problems encountered

No gear damage

On some occasions one of the trawl doors fell over and the gear had to be shot again
Roller on winch was worn out and needed to be repaired.

Preliminary results

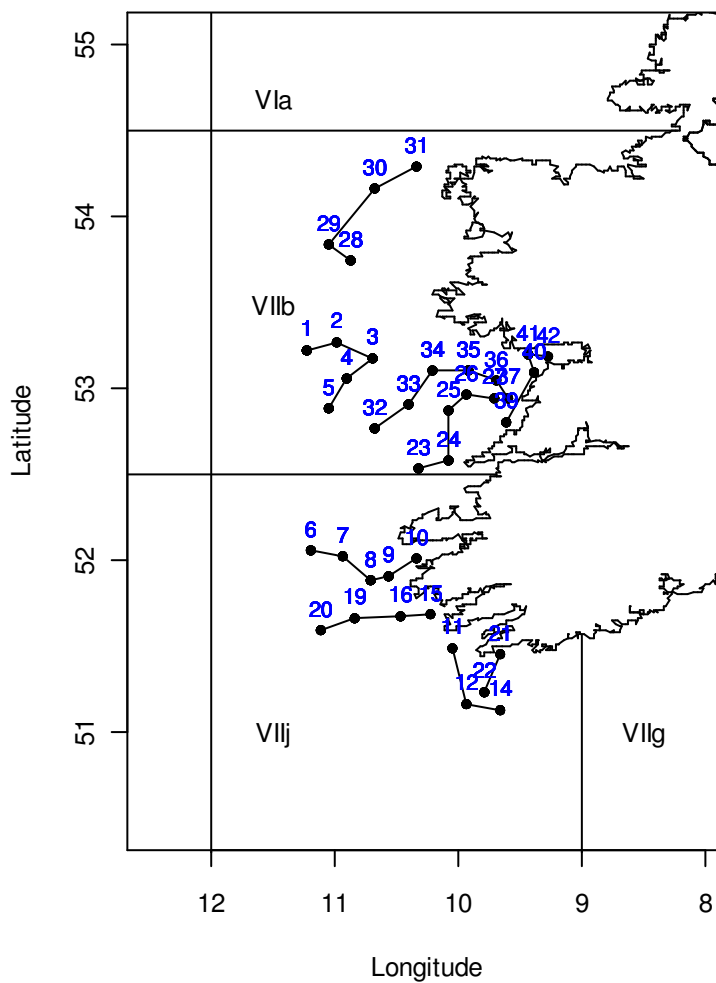
Stations completed

A total of 38 valid tows and four foul hauls were completed during the 10 days of the survey. The foul hauls were all due to one of the doors falling over. During two hauls the gear was not fishing optimally, however these stations were counted as valid as the survey is not designed to quantify abundance but to take biological samples over a wide area. Coverage in area VIIj was incomplete due to bad weather, with few stations from the most southerly area. Nearly all available stations in area VIIb were completed.

Number of valid tows completed

	VIIb			VIIj	
Stratum	shallow	medium	deep	medium	deep
Valid hauls	4	11	9	9	5

Cruise track



Cruise track and haul numbers

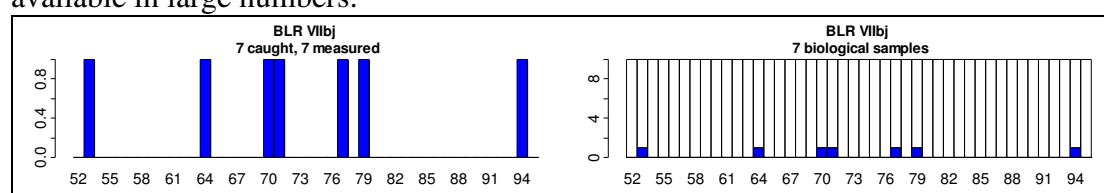
Sampling targets

Sampling targets for age and biological sampling (sex and maturity) were set on a length-stratified basis. For some species the targets were set by stratum, for others the targets were set for the whole survey area. The strata consisted of the ICES areas for herring and were further divided into three depth bands for haddock, whiting and flatfish. The depth bands were defined as follows: shallow <50m; medium: 50-120m and deep >120m. This division was based on observed differences in length frequencies by depth. No shallow stations were available for VIIj.

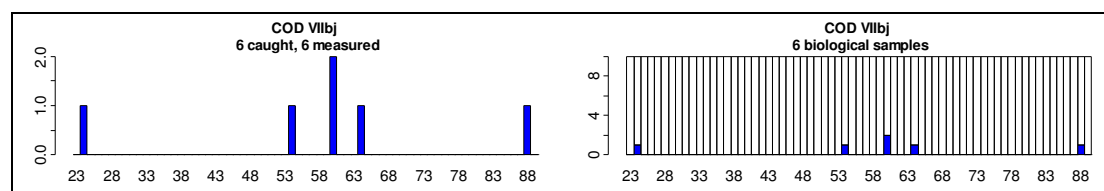
Sampling targets for age & biological sampling

Species - Sex	Targets	Strata
HAD, MEG; PLE-M; PLE-F; MEG-M; MEG-F	5 per cm	VIIb-Sh; VIIb-Md; VIIb-Dp; VIIj-Md; VIIj-Dp
HER	5 per ½ cm	VIIb; VIIj
BLR-M; BLR-F; COD, CUR-M; CUR-F; MAC; MON; POK; SDR-M; SDR-F, SOL-M; SOL F; THR-M; THR-F; WAF; WHB	10 per cm	West coast (VIIb+j)
HKE	<20cm 5pcm ≥20cm 15pcm	West coast
HOM	<17cm 5pcm 17-27cm 15pcm ≥28cm 5pcm	West coast

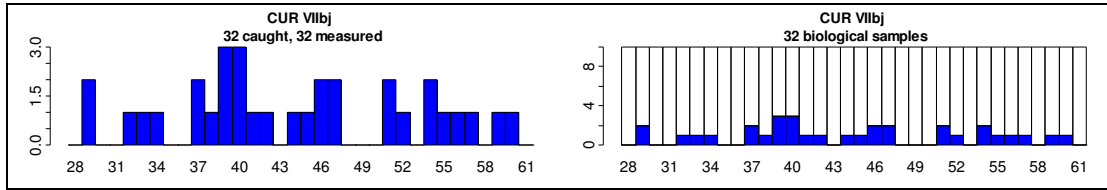
Sampling targets were met for a large number of length classes for the most common species like haddock, herring, mackerel, blue whiting and whiting. Hake targets were met up to around 25cm. Horse mackerel were available in very distinct size groups, for these groups, targets were met but not for rarer size classes. Sampling targets for megrim were largely met in the medium and deep strata of VIIb. Around 50% of the megrim targets were achieved in VIIj. Plaice were most common in the medium strata, where their targets were largely met. Rays, cod, anglerfishes and sole were not available in large numbers.



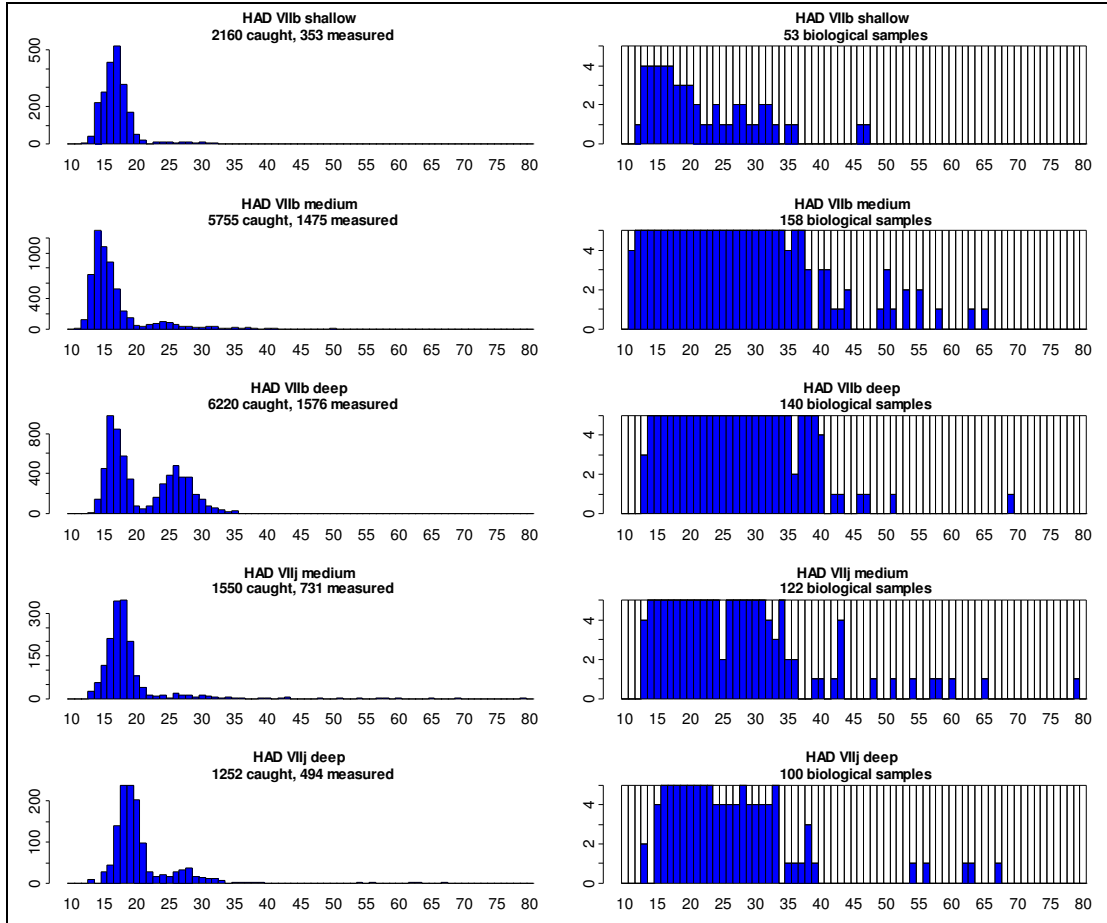
Length frequencies of the total catch (left) and biological samples (maturity and sex; right panel) of blonde rays. Maximum sampling targets are indicated by white bars (10 per cm).



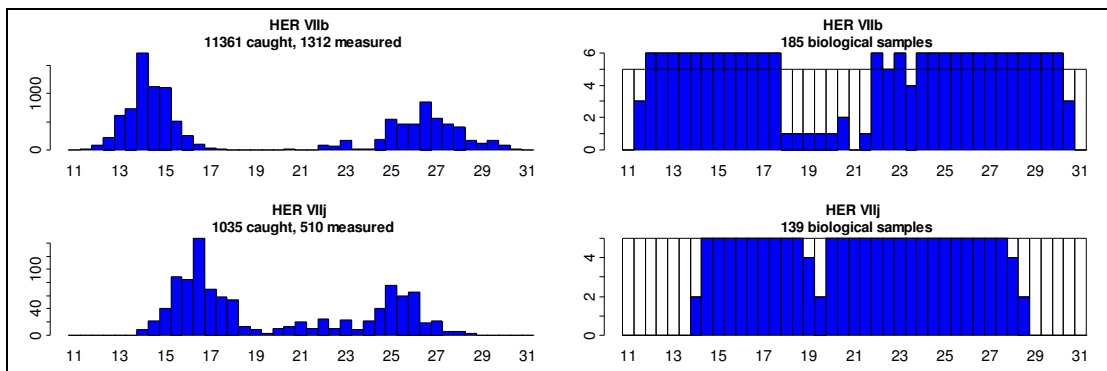
Length frequencies of the total catch and sample numbers of cod.



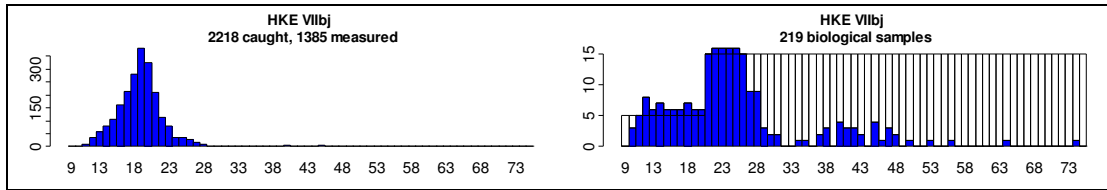
Length frequencies of the total catch and sample numbers of cuckoo rays.



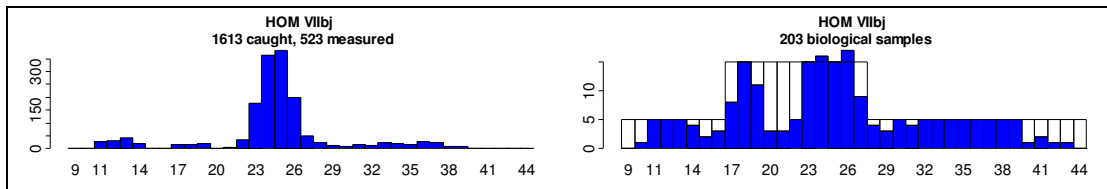
Length frequencies of the total catch and sample numbers of haddock.



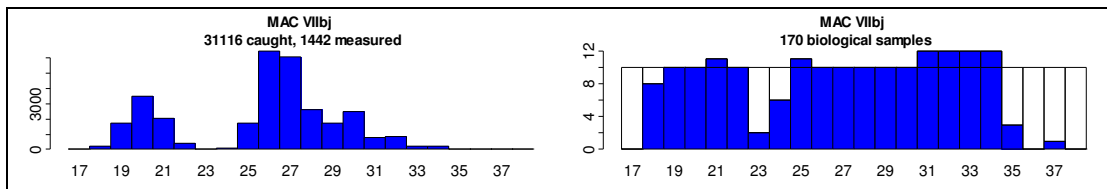
Length frequencies of the total catch and sample numbers of herring. Sampling targets were increased in area VIIb by 120% (6 per 1/2 cm) to account for a relatively large number of broken otoliths.



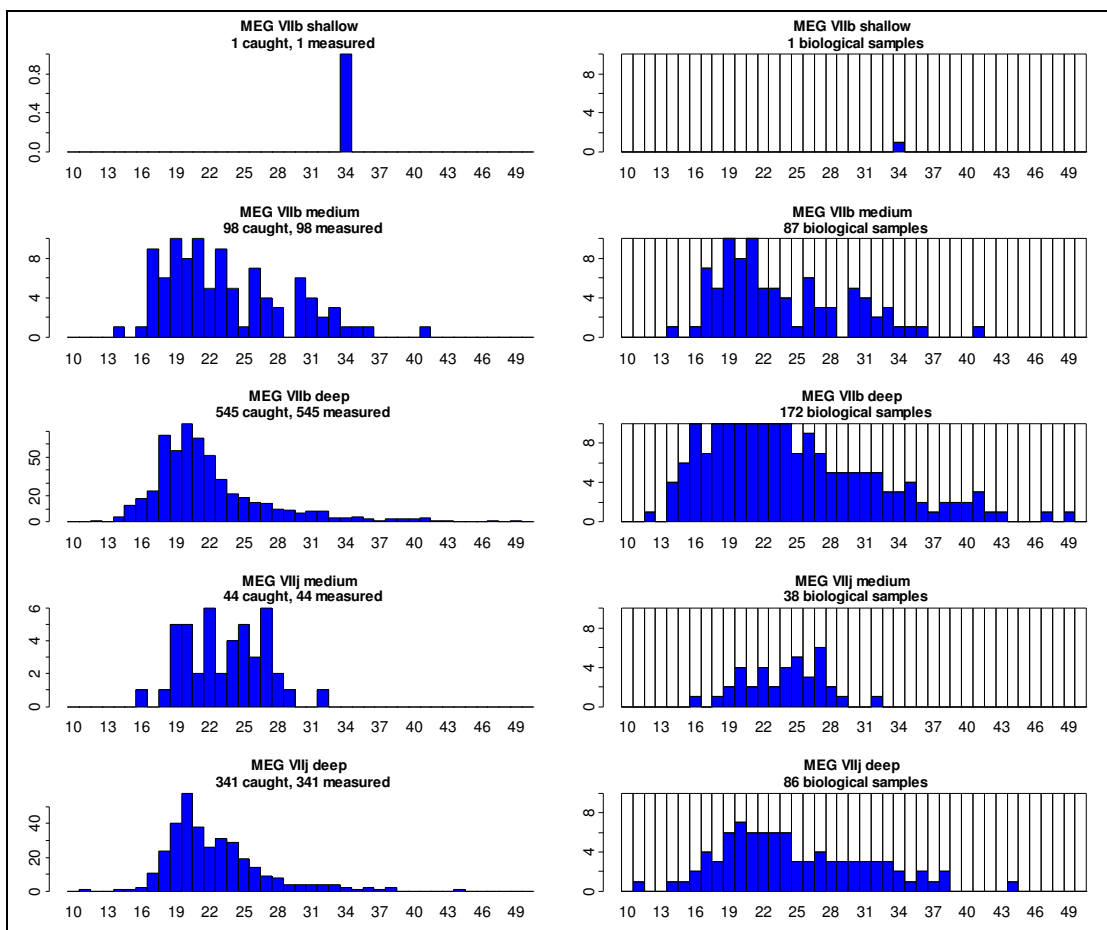
Length frequencies of the total catch and sample numbers of hake, sampling targets for the very abundant small age classes were set quite low as these fish were all expected to be immature.



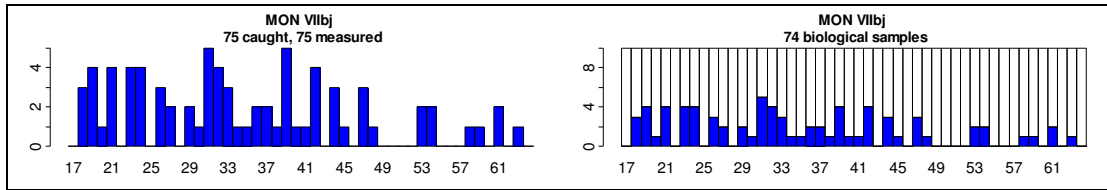
Length frequencies of the total catch and sample numbers of horse mackerel. Sampling targets were highest in the size range where horse mackerel mature.



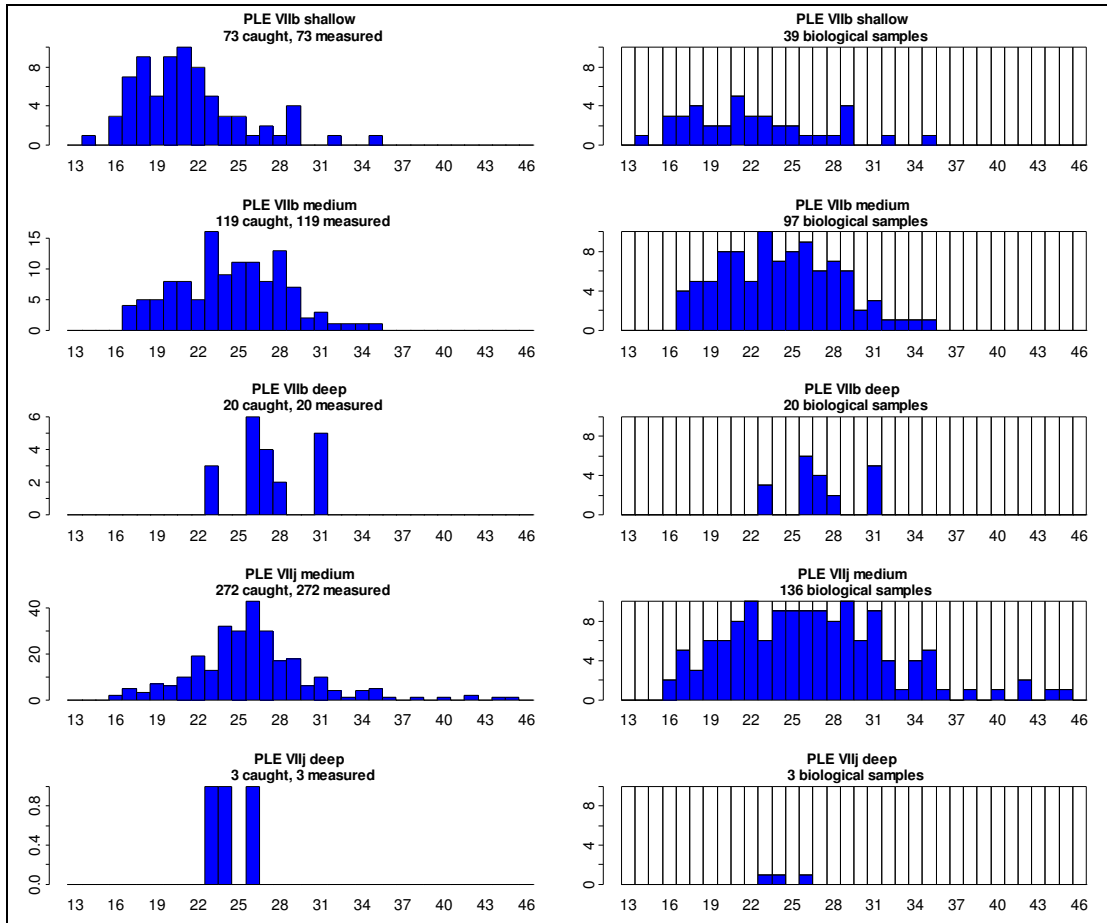
Length frequencies of the total catch and sample numbers of mackerel.



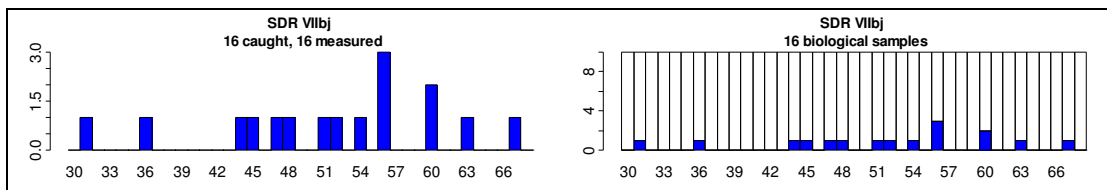
Length frequencies of the total catch and sample numbers of megrim.



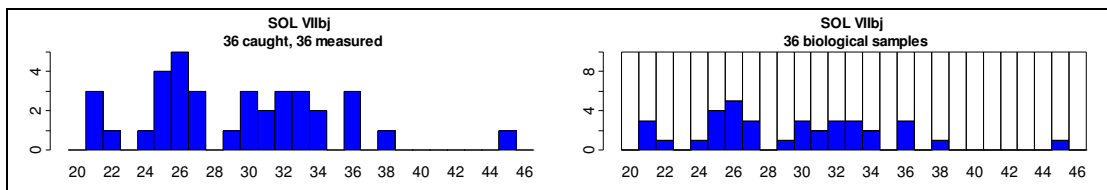
Length frequencies of the total catch and sample numbers of monkfish.



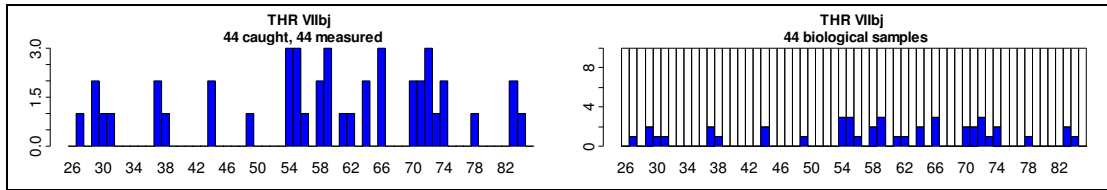
Length frequencies of the total catch and sample numbers of plaice.



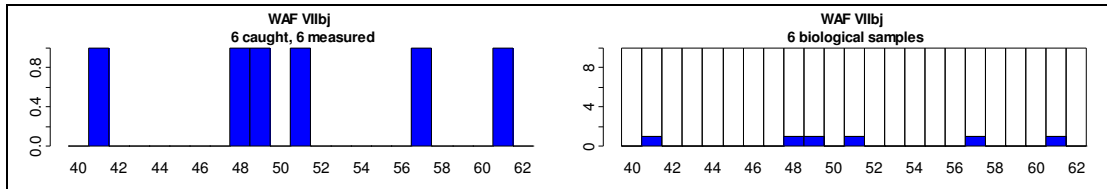
Length frequencies of the total catch and sample numbers of spotted rays.



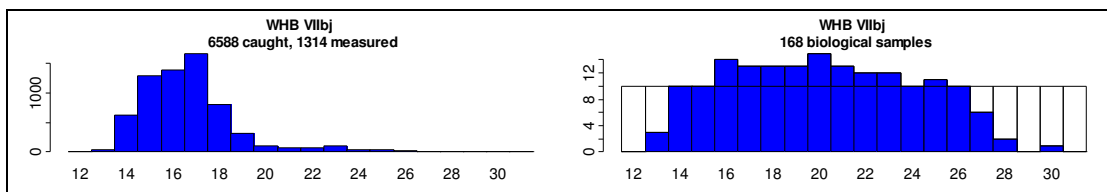
Length frequencies of the total catch and sample numbers of black sole.



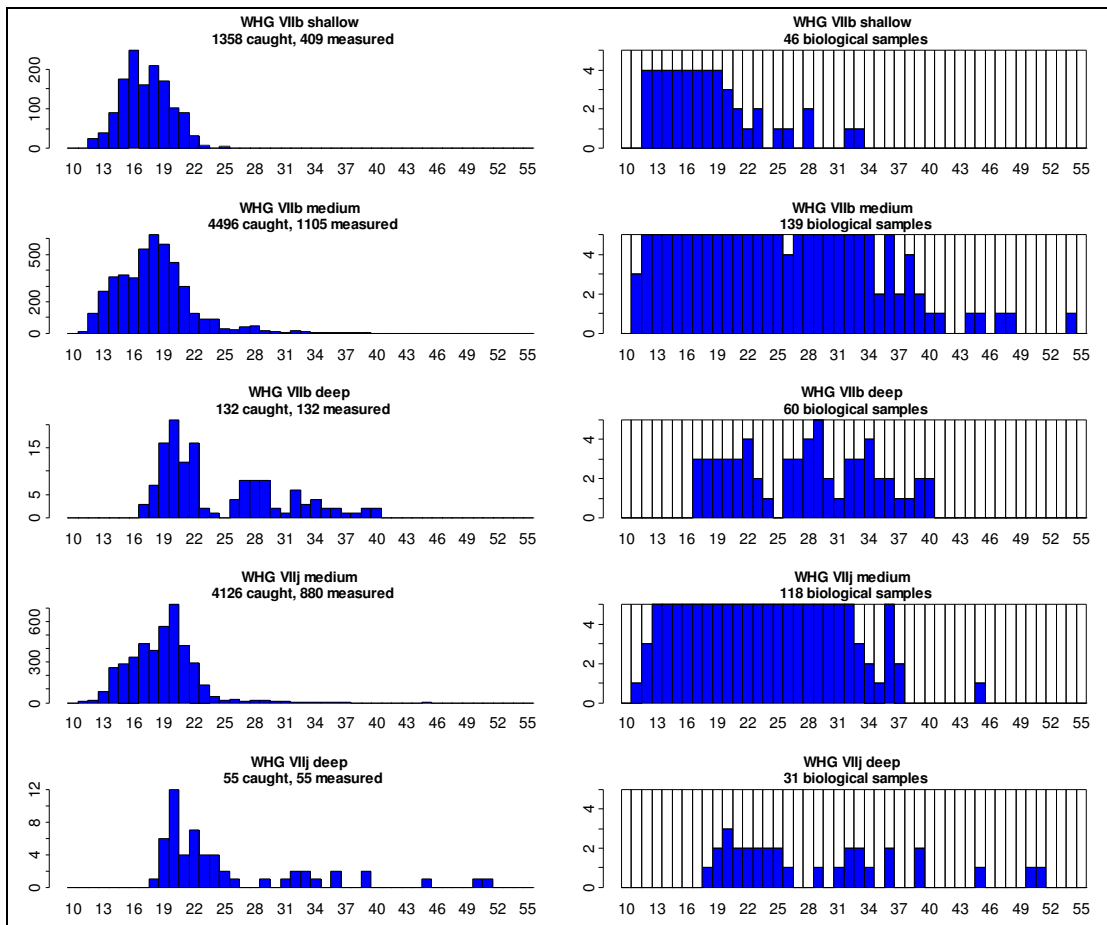
Length frequencies of the total catch and sample numbers of thornback rays.



Length frequencies of the total catch and sample numbers of black-bellied anglerfish.



Length frequencies of the total catch and sample numbers of blue whiting. Sampling targets were somewhat overshoot due to a mistake with uploading the EDC workstations.



Length frequencies of the total catch and sample numbers of whiting.

Maturity stages

To confirm the assignment of maturity stages using visual (macroscopic) maturity keys, histological samples were taken for a number of species over the entire available range of maturity stages. The sample numbers are given in the table below

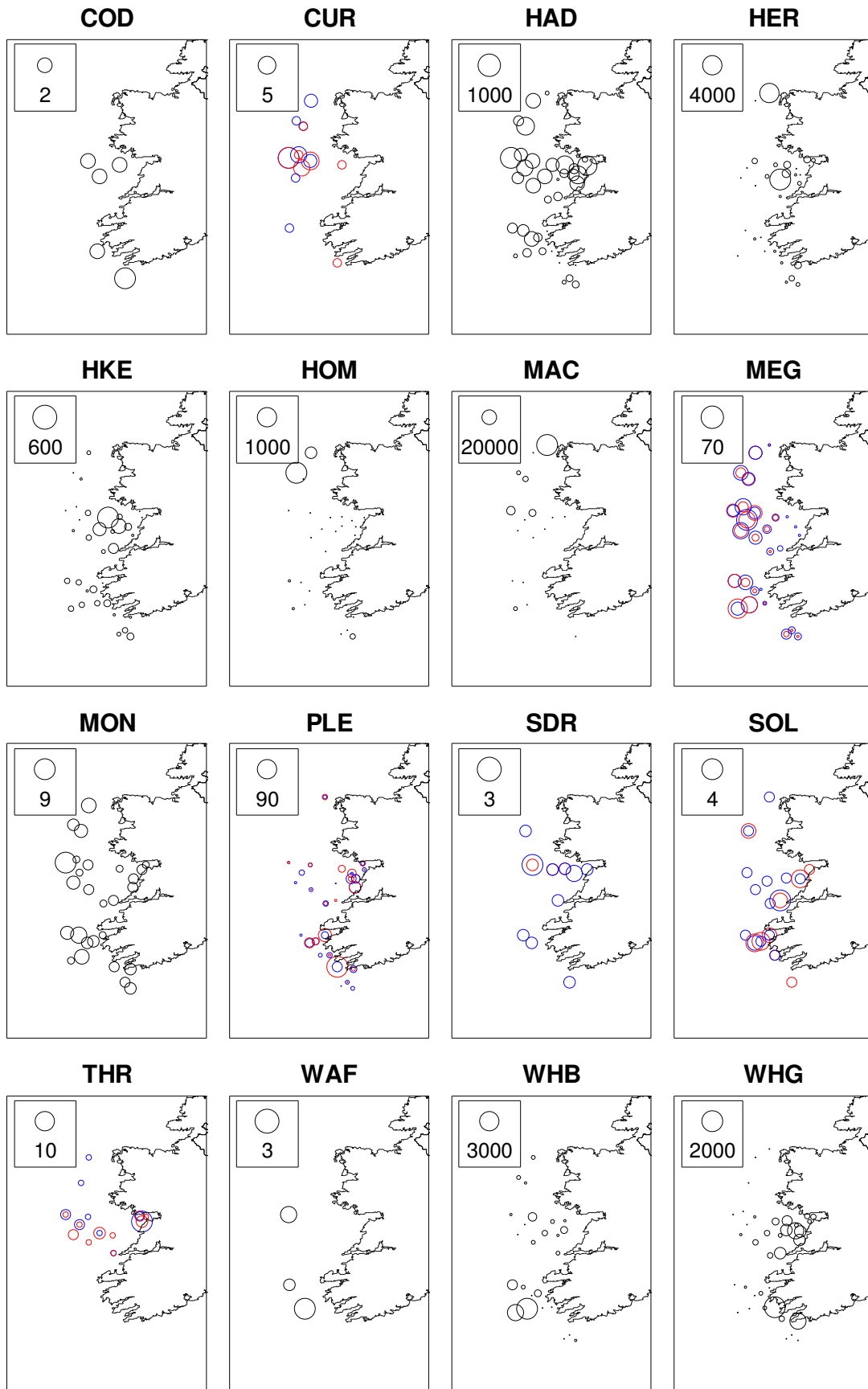
Number of histology samples taken. Where targets were not met this was due to either scarcity of fish in the samples or absence of certain maturity stages at the time of sampling. Sole samples include samples taken from the ports.

Maturity stage Species	Immature		Ripening		Spawning		Spent
	1	2	3	4	5	6	7
Target	5	10	10	5	5	5	10
COD	0	0	0	0	0	0	1
HAD	5	2	3	5	5	5	10
HKE	5	2	0	2	1	0	0
MEG	5	10	0	5	5	5	10
PLE	3	10	0	3	5	5	10
SOL	5	10	3	5	5	2	7
WHG	5	10	10	5	5	5	0

Most anglerfish and rays in the catches were immature. Haddock were found in large numbers in all maturity stages. The fish that were spent were easily distinguished from immature fish as they all had remaining eggs/sperm. Herring in VIIb were mostly recovered spent or immature, in VIIj most were more recently spent. Hake were overwhelmingly immature as the catches were dominated by the strong cohort of young fish (probably 2004 year class). Mature horse mackerel and mackerel were mostly ripening. Megrim and plaice were still found to be spawning although many were spent. In some areas it was impossible to distinguish spent-recovering plaice from immature fish. Blue whiting and whiting were mostly ripening, although some were spawning, none were spent.

Number of fish in the samples by maturity stage. Samples are length stratified so they can be biased, but the numbers give a good indication of the maturity stages that dominated at the time of sampling.

Maturity stage Species	Immature		Ripening		Spawning		Spent	
	1	2	3	4	5	6	7	8
MON	57	15	2					
BLR	1	3	1	2				
COD	1				2	2	1	
CUR	27	3	2					
HAD	146	26	36	131	117	63	54	
HER	112	45			2	3	63	99
HKE	174	7	4	14	9	11		
HOM	40	31	62	46	15	7	1	
MAC	49	27	74	20				
MEG	87	98		29	54	60	56	
PLE	49	122		27	36	14	47	
SDR	10	2	2	2				
SOL	5	17		1	8	2	3	
THR	20	11	7	6				
WAF	1	3	1			1		
WHB	30	30	23	30	31	24		
WHG	63	51	43	66	108	54	9	



Abundance in numbers per haul. Most catches were dominated by haddock, especially in area VIIb. In VIIj whiting and blue whiting were also very common. For species for which the whole catch were sexed, blue circles represent males and red circles, females.