# Cruise Report Biological Sampling Survey 2006
# Irish Sea 24 February to 5 March

*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 and to provide fecundity samples for the Irish Sea Egg Production Project in collaboration with CEFAS (Lowesoft) and DARDNI (Belfast). Samples of various squid species were collected for genetic analysis by ANFACO-CECOPESCA (Vigo, Spain)

*Gear used*

GOV net with a tickler chain and the footrope tied down to one chainlink.

*Staffing*

Marine Institute: Hans Gerritsen (SiC); Selene Hoey; Rob Bun; Sean O'Connor.
Students: Noireen Burke; Clare Murray; Linda Doran.
Crew: Dennis Rowan; Colin; John Barry; Liam; Steven; Declan Murphy; Paddy White; Derek; Ken.

*Cruise Narrative*

| | |
|---|---|
| Tue 21 Feb | Mobilisation in Galway |
| Fri 24 Feb | Scientists met the ship in Dublin at 15:00. Easterly winds too strong to go fishing or to cross to more sheltered areas. |
| Sat 25 Feb | Winds still strong, gale warnings for Irish Sea, remaining in Dublin. |
| Sun 26 Feb | Left Dublin at 12:00, fresh winds from north. Clutch on one of the winches seized but this was fixed after 1st station. Completed 2 stations west of Dublin. |
| Mon 27 Feb | Winds had eased during night but picked up again during afternoon. Paddy White injured his arm and was picked up by helicopter and brought to Douglas. Completed 4 valid stations in the eastern Irish Sea and one foul haul (door fell over after snagging). |
| Tue 28 Feb | Completed 3 stations to the northwest of the Isle of man, Winds freshened and we had to stop fishing. Headed into the Isle of Man for 17:00h to pick up Ken, who replaced Paddy. Left Douglas at 21:00 to steam across to the west. Gale warnings for the Irish Sea. |
| Wed 1 Mar | Completed 6 valid stations off the county Down coast and one foul haul (net dug into soft bottom). Winds eased during the afternoon. |
| Thu 2 Mar | Completed 5 valid stations in St. George's Channel and one foul haul (abandoned due to peaky ground). Good weather. |
| Fri 3 Mar | Good weather in the morning but freshening in the afternoon. Completed 5 stations. |
| Sat 4 Mar | Good weather, completed 6 stations. The second station of Feb 26 was fished again because of the good catch of cod there. Into Howth for 23:00 |
| Sun 5 Mar | Demob |

*Problems encountered*

Approximately two days were lost due to bad weather. Apart from two small tears there was no gear damage.

*Station coverage*

A total of 34 tows were completed, including 3 foul hauls. Two days were spent in the eastern Irish Sea, the rest of the available time was spent in the west. A reasonably good coverage was achieved. Figure 1 shows the station positions

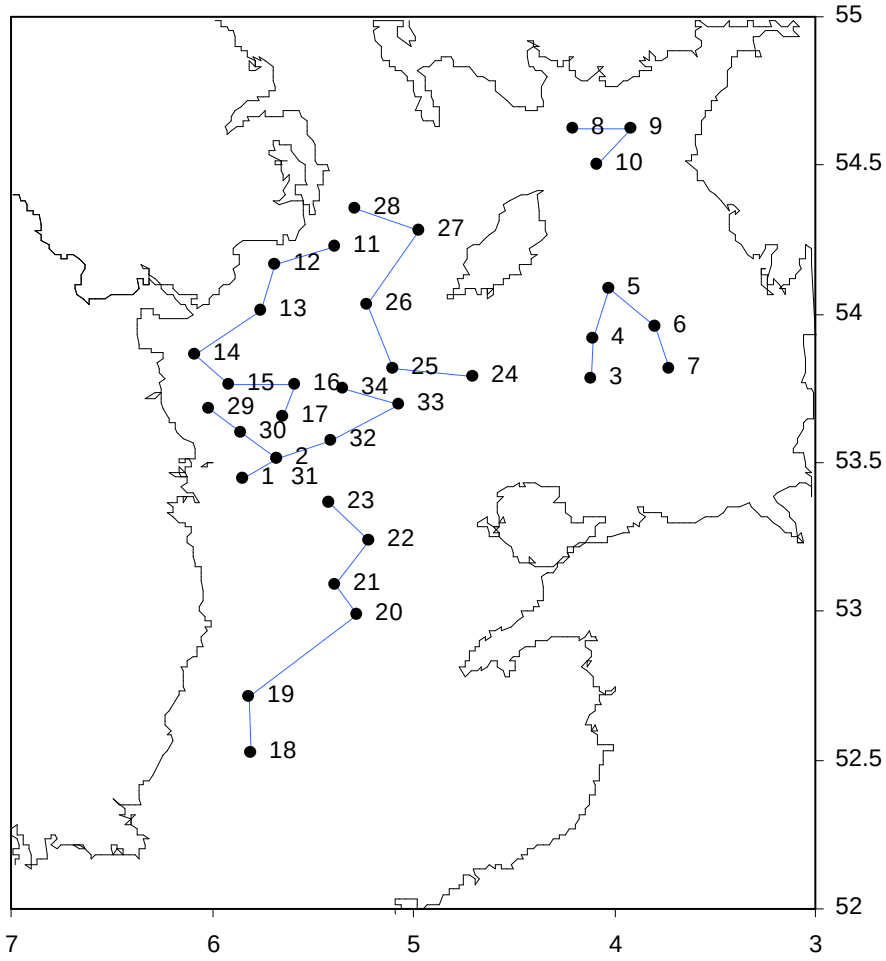


*Figure 1. Station positions. The numbers refer to the haul numbers, crosses indicate foul hauls.*

*Sampling targets*

The distribution of the catches is indicated in Figure 2. Cod were caught in low numbers but were present at nearly all stations and catches appeared higher than in recent years. Haddock were nearly absent in the eastern Irish Sea. Whiting were caught in large numbers throughout. Plaice were caught in large numbers and showed strong spatial patterns in the sex ratio as well as the maturity stages. Herring were encountered in large numbers at some stations; other pelagics were rare in the catches.

The sampling strategy for biological samples (weight, sex, maturity and age) was changed from target numbers per length class by stratum, to targets of one fish per length class for each station (or all fish if catches were low). This was done to ensure a spatially more balanced sampling regime. The catch numbers, numbers measured and the biological sample numbers are given in Table 1. Overall, more than 40.000

fish of the target species were caught, over 13.000 were measured and biological samples were taken for more than 2.200 fish.
Table 2 shows a breakdown of the maturity stages in the biological samples. These samples were collected on a length-stratified basis and are therefore not random samples from the population, however they give a reasonable reflection of the maturity stages available at the time of sampling. Of the mature fish, most cod were ripe, while haddock were both at the maturing and ripe stages, whiting were mostly maturing and very few were spent. Plaice were mainly ripe and spent although some were still at the maturing stage.
Sampling targets for the collection of mature ovary samples for haddock plaice and cod for the Irish Sea Egg Production Project are given in table 3. Sampling for the western Irish Sea was reasonably complete for haddock and plaice. The eastern Irish Sea samples were intended to compliment other surveys in that area.

*Acknowledgements*
Thanks to the skipper and crew of the Celtic Voyager, the scientific staff and all others involved in this survey. It took many long hours of hard work to make this short survey happen but the atmosphere was great at all times, thanks!

*Table 1. Catch numbers, number of fish measured and numbers sampled for biological parameters (weight, sex, maturity and age; rays were not aged)*

| Species | Caught | Measured | Sampled |
|---|---|---|---|
| BLR | 27 | 27 | 25 |
| COD | 91 | 91 | 91 |
| CUR | 44 | 44 | 44 |
| HAD | 8143 | 3189 | 373 |
| HER | 11969 | 1808 | 327 |
| HKE | 23 | 23 | 15 |
| HOM | 69 | 69 | 20 |
| MAC | 23 | 23 | 16 |
| MON | 24 | 24 | 24 |
| PLE | 5186 | 2735 | 641 |
| SDR | 179 | 179 | 151 |
| SOL | 22 | 22 | 21 |
| THR | 30 | 30 | 29 |
| WHB | 5 | 5 | 5 |
| WHG | 15473 | 5074 | 464 |
| Total | 41308 | 13343 | 2246 |


*Figure 2. Catch numbers by station, represented by the area of the circles. Sex ratios are represented by pie charts for species of which the catch was sexed: the grey area represents the proportion of females, white for males.*

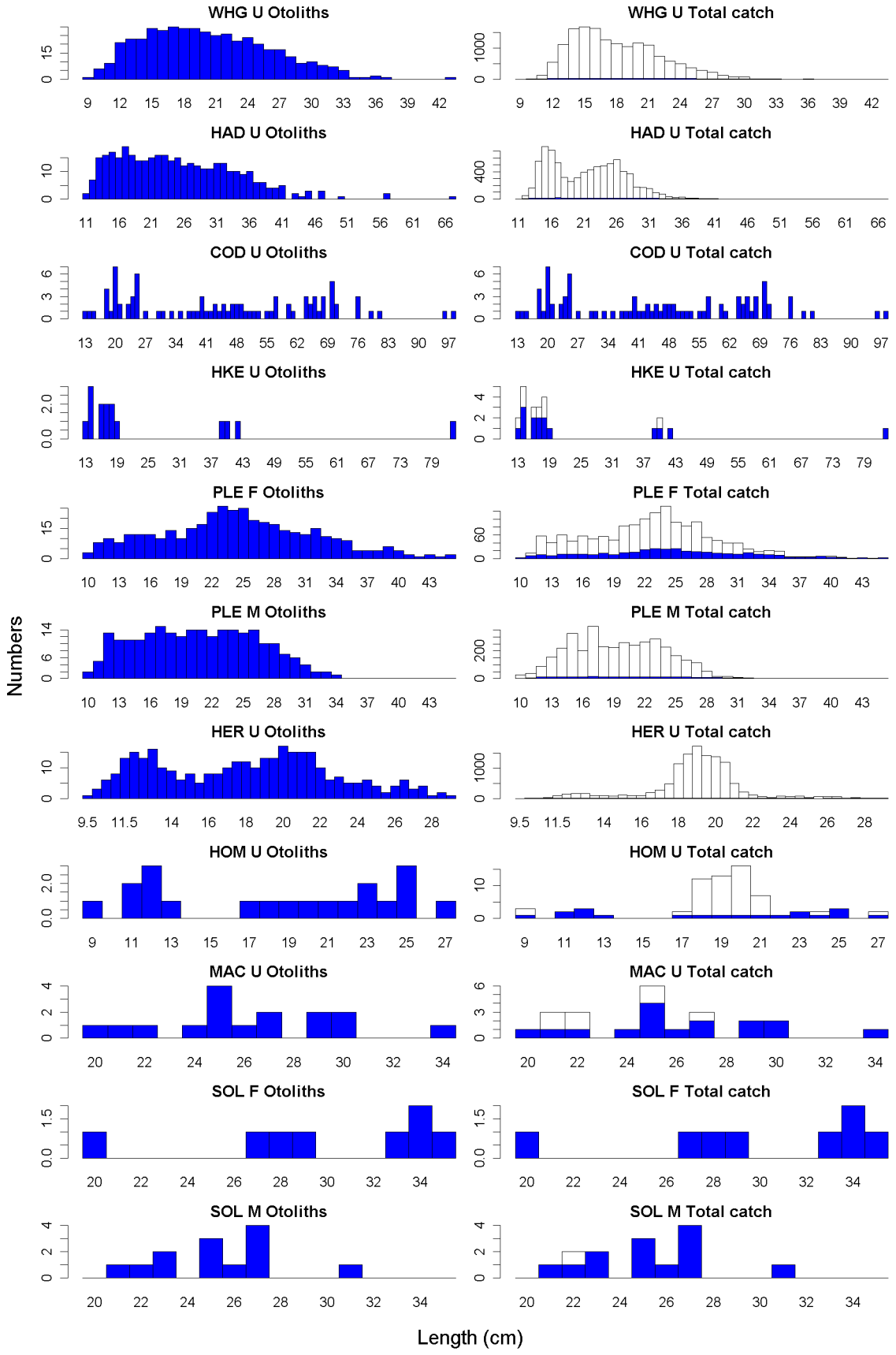


*Figure 3. Size frequency of biological samples taken (blue) and total catch (white). Note that the graphs on the left are scaled to the numbers of biological samples while the left-hand graphs are scaled to the total catch.*

*Table 2. Biological samples by sex and maturity stage, 'U' indicates that the sex could not be determined; 'All' indicates the sexes were combined.*

| Species | Sex | Immature | Maturing | Ripe | Spent | Total |
|---|---|---|---|---|---|---|
| BLR | F | 6 | 2 | 0 | 0 | 8 |
| | M | 6 | 9 | 0 | 0 | 15 |
| COD | F | 17 | 5 | 14 | 4 | 40 |
| | M | 19 | 3 | 20 | 6 | 48 |
| | U | 3 | 0 | 0 | 0 | 3 |
| CUR | F | 17 | 6 | 2 | 0 | 25 |
| | M | 14 | 4 | 0 | 0 | 18 |
| HAD | F | 98 | 50 | 51 | 4 | 203 |
| | M | 30 | 28 | 69 | 13 | 140 |
| | U | 30 | 0 | 0 | 0 | 30 |
| HER | F | 90 | 0 | 2 | 38 | 130 |
| | M | 75 | 3 | 4 | 47 | 129 |
| | U | 68 | 0 | 0 | 0 | 68 |
| HKE | All | 12 | 2 | 1 | 1 | 15 |
| HOM | All | 14 | 5 | 0 | 1 | 20 |
| MAC | All | 5 | 11 | 0 | 0 | 16 |
| MON | F | 12 | 0 | 0 | 0 | 12 |
| | M | 11 | 0 | 1 | 0 | 12 |
| PLE | F | 146 | 34 | 94 | 123 | 397 |
| | M | 97 | 35 | 90 | 21 | 243 |
| | U | 1 | 0 | 0 | 0 | 1 |
| SDR | F | 44 | 17 | 0 | 0 | 61 |
| | M | 52 | 31 | 0 | 0 | 83 |
| SOL | F | 2 | 5 | 1 | 0 | 8 |
| | M | 12 | 1 | 0 | 0 | 13 |
| THR | F | 10 | 2 | 0 | 0 | 12 |
| | M | 12 | 3 | 0 | 0 | 15 |
| WHG | F | 134 | 109 | 72 | 0 | 315 |
| | M | 62 | 43 | 28 | 3 | 136 |
| | U | 13 | 0 | 0 | 0 | 13 |
| WHB | All | 3 | 1 | 1 | 0 | 4 |

*Table 3. Sample numbers collected for the Irish Sea Egg Production Project. Sampling targets are for the western Irish Sea, samples from the eastern Irish Sea were taken to compliment other surveys in that area.*

| | West | East | Total | Target (W) |
|---|---|---|---|---|
| Haddock | 104 | 12 | 116 | 100 |
| Plaice | 54 | 34 | 88 | 75 |
| Cod | 17 | 2 | 19 | 150 |