Department of Agriculture and Rural Development (Northern Ireland)
Agriculture and Environmental Science Division

Cruise Report: LF 2402
Vessel: RV *Lough Foyle*
Dates: 9th -12th June 2002
Area: Irish Sea (north); ICES div. VIIa
Survey Type: Juvenile Gadoid Survey

Personnel:	Mark Dickey-Collas	DARD	SIC/SSO
	Michael McAliskey	DARD	SO
	John Peel	DARD	ASO
	Peter McCorriston	DARD	ASO

Objectives:

i. To investigate the distribution and processes which determine the success of gadoid development through to settlement.

ii. To estimate the abundance of juveniles to determine the strength of the 2002 year-class of gadoids in the western Irish Sea for use in stock assessments.

iii. To obtain samples for otolith primary increment analysis.

Cruise Narrative

The vessel sailed at 21:00 on 9 June 2002 Belfast and proceeded to the first station off county Down (Figure 1b). Sampling started at 01:30 on 10 June. The survey was completed at 05:00 on 12 June.

Methods

Plankton and fish larvae were sampled with the Gulf VII high speed plankton sampler and young pelagic juvenile cod, haddock and whiting, with the 5m² MIK net. Both gears were deployed to within 3m of the seabed in a double oblique manner. MIK nets were deployed at night, whilst the majority of gulf deployments took place during the day.

Samples were sorted, identified, enumerated and weighed onboard within 20 minutes of capture. Gadoids were fixed in 99% ethanol.

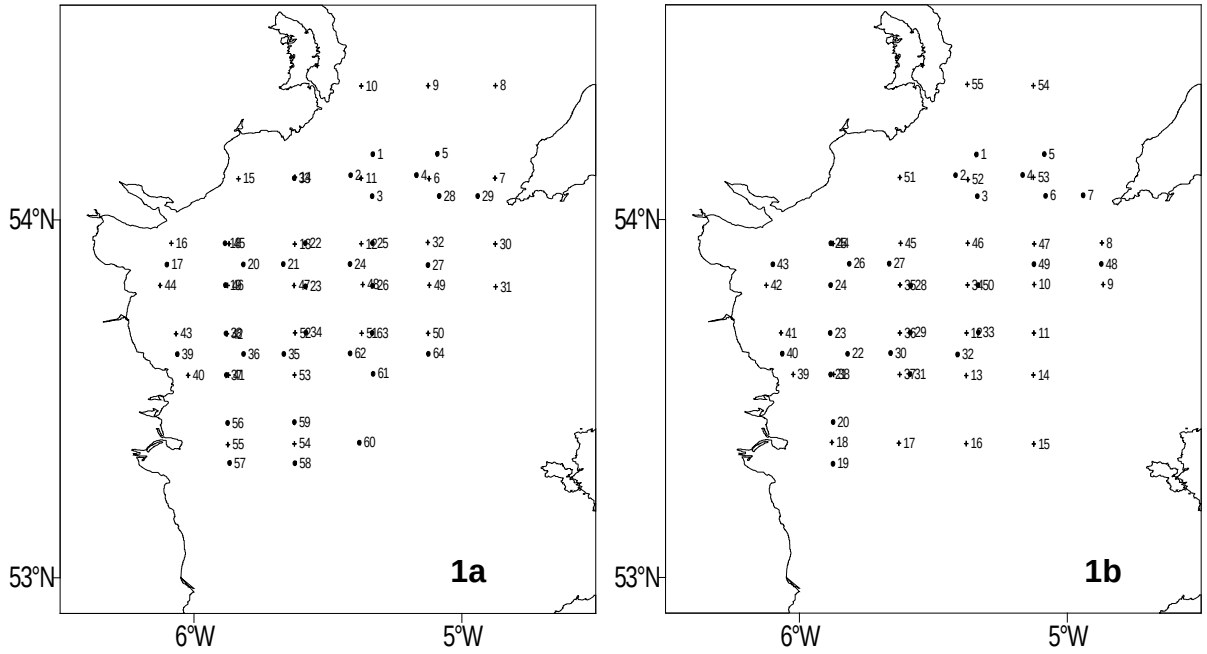


Figure 1. Sampling on cruises LF2202 (figure 1a) and LF2402 (figure 1b). Circles denote MIK net samples, crosses denote Gulf samples.

Results

The abundance of juvenile whiting was the lowest on record in both May and June (Figure 2) and these results were the lowest in the series for haddock. The abundance of cod juveniles was also low compared to the rest of the series. The abundance of juvenile gadoids in the water column depends on the initial number that reach metamorphosis, their growth rate and their mortality. If the growth rate is high (as in cod in 1999) the May survey will catch more juveniles than the June survey, as the larger juvenile fish would be settling to the seabed by mid June and not caught in the MIK net. This settling behaviour applies to both cod and haddock but not whiting, which remain pelagic for much longer. So the interaction of number produced, growth and mortality mean that the series of abundance used to show likely year-class strength is constructed from the maximum estimate from that year (either May or June) for cod and haddock (Table 1).

Table 1. Time series of pelagic juvenile abundance of cod, haddock and whiting from 1994 to 2002. The fish are aged approximately 2-3 months and are caught just prior to settlement.

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Cod	0.057	0.007	0.066	0.006	0.000	0.026	0.006	0.0106	0.003
Haddock	0.047	0.002	0.048	0.015	0.003	0.015	0.002	0.017	0.001
Whiting	0.778	0.225	0.397	0.205	0.098	0.179	0.082	0.167	0.026

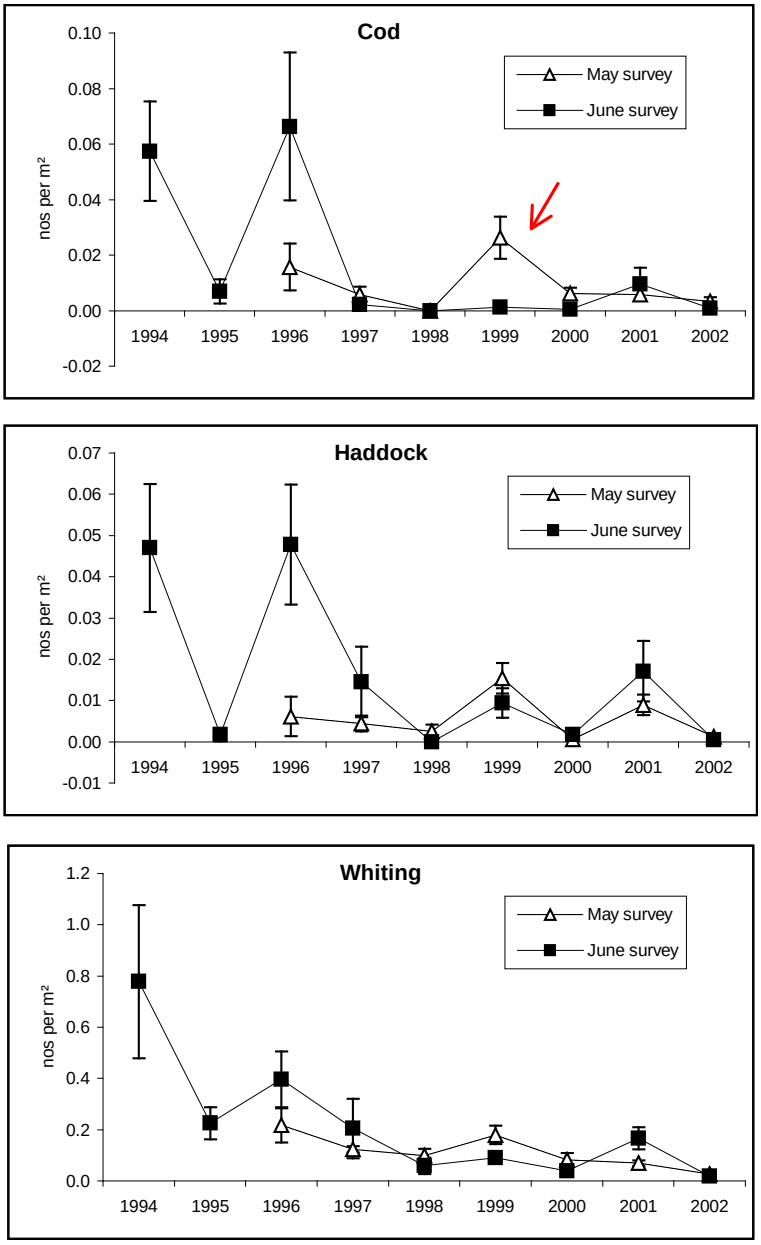
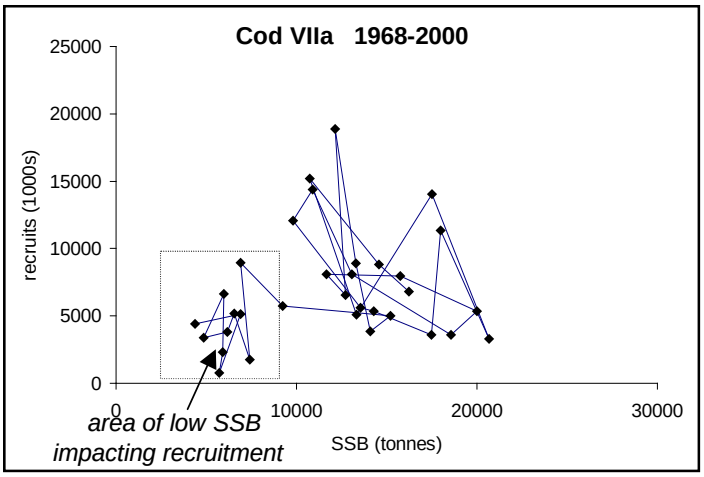


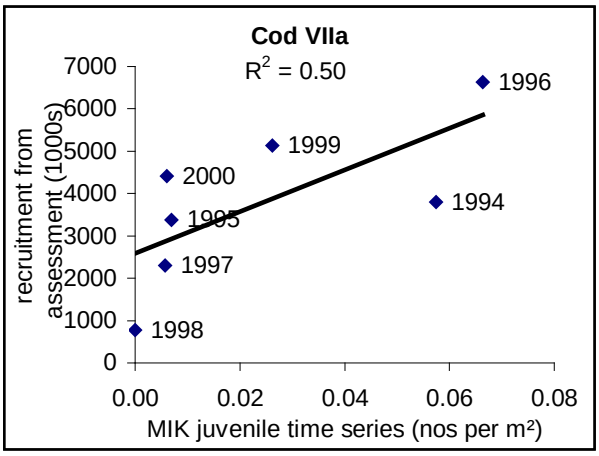
Figure 2. Time series of MIK net survey estimates of pelagic juvenile cod, haddock and whiting in the western Irish Sea from 1994 to 2002. Arrow in cod figure highlights year of high growth (1999) when May survey estimates were significantly higher than the June estimates as the fish had settled by mid June.

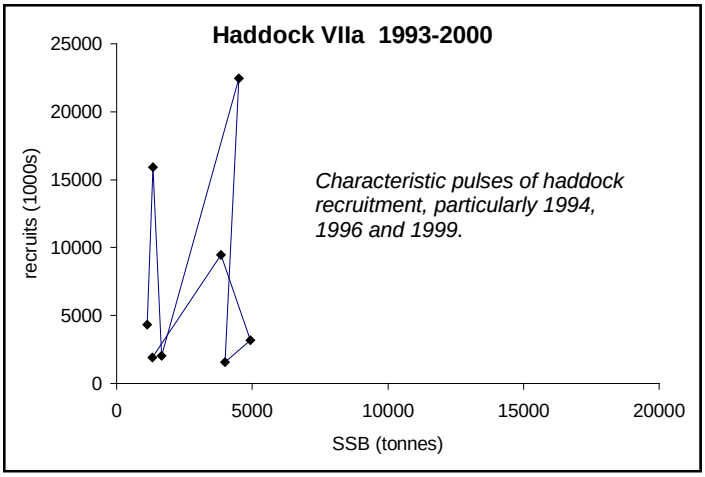
The abundance estimates of cod and haddock show a significant relationship to the year class strength determined by the ICES stock assessments (Figure 3) and strong correlations to the abundance of 0 and 1 year old fish in the DARD groundfish surveys. Considering this relationship and the low estimates from the 2002 surveys, it appears likely that the 2002 year-class of both cod and haddock will be very low. The continual decline in the numbers of juvenile whiting from 1994 to present should also be noted as a worrying characteristic of this time series (Figure 2).

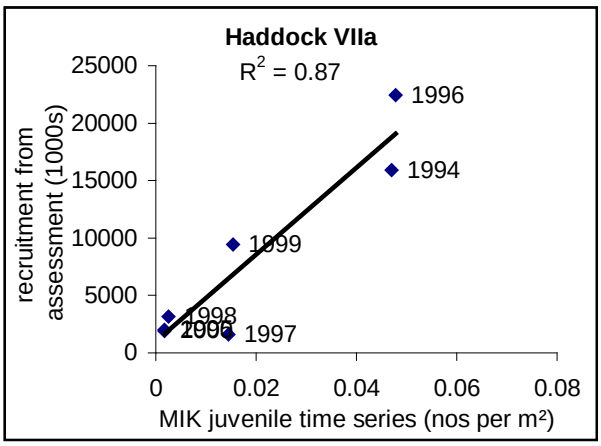
STOCK/RECRUIT CURVES

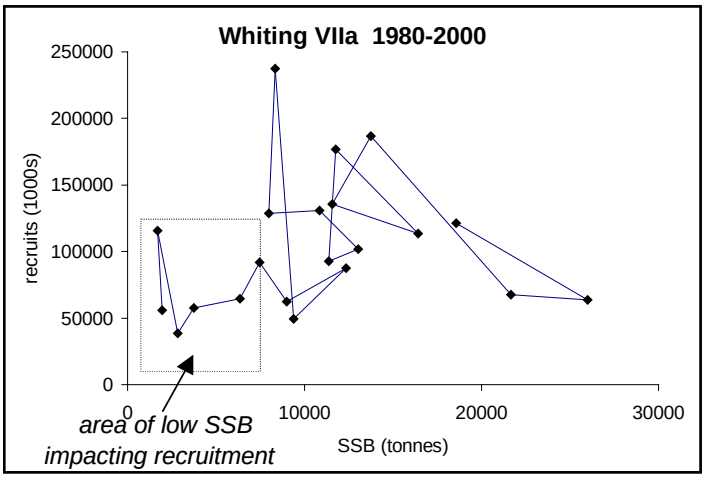
Relationship between juveniles and recruitment from assessment











No relationship to whiting recruitment between 1994-2002, but recruitment relatively flat in the late 1990s.

Figure 3. Historic stock/recruit relationships from ICES assessments of cod, haddock and whiting in the Irish Sea (area VIIa) and correlations between estimates of abundance from MIK net surveys and recruitment derived from ICES assessments.

Three *Vellela vellela* (an oceanic floating colonial hydroid) commonly called "By-the-wind-sailors" were caught during LF2402, off the Isle of Man. These organisms are

rare in the Irish Sea, but large numbers of catches and strandings have been reported this spring. It appears that there were only 3 reported mass invasions of *Vellela* into the Irish Sea in the twentieth century.

Acknowledgments

The scientists, officers and crew should be thanked for working effectively in a generally good humored and ardent manner.

Signed

SIC:	Master:	Aquatics:
		
Date: 13 June 2002	Date:	Date:

Problems

1. There is not enough freezer space on the *Lough Foyle* at present. Food is being stored in the scientific freezers in the wet laboratories.

2. Black particulate material appeared to be coming from the air vents in some of the scientists' cabins.

3. There are still problems with hot water supply to the three forward scientists' cabins.

4. The only television in full working order that is available to the scientists is in the smoking room. This situation, particularly through the football world cup, is not acceptable for health and safety reasons.