

R V LOUGH FOYLE

Report on the Herring Acoustic Survey in the North Irish Sea

20-28 August 1990

Personnel:

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Objectives

The survey was designed to provide:

1. Biomass estimates based on ICES statistical squares and other strata.
2. Maximum coverage of the area in the allocated time while taking account of the known distribution pattern of herring in VIIa and their movement around the South of the IOM prior to spawning time.
3. Samples of herring and other species for age, maturation and length weight analysis.

Narrative

The Lough Foyle sailed from Belfast at 1200 hours on 20 August with DANI personnel and J Molloy, Department of Marine, Dublin on board. The vessel proceeded direct to Douglas, IOM, to pick up PEML staff and their equipment. The Lough Foyle docked at Douglas at 2030 hours on 20 August and after R Nash and P Edwards boarded, the vessel left at 2140 hours the same evening. After leaving Douglas, the Lough Foyle made for Lambay Island at the South West corner of the acoustic grid, beginning calibration work at 0800 hours on 21 August.

Unfortunately, PEML's calibration rig did not provide a good 'fit' to ASRD's towed body. The difficulty with the calibration rig together with a fairly strong tide meant that the calibration exercise was only partly successful.

The echo integration grid began at 1715 hours on 21 August to the west of the Rockabill. The Douglas Bank and the area east of the IOM up to Red Bay was covered from 21-27 August. A detour into Ramsey Bay was made on the afternoon of 27 for a second and more successful calibration of the echosounder equipment. The remainder of the time available was spent surveying the area to the west of the Isle of Man where the Lough Foyle docked at 0700 hours on 28 August. After PEML staff disembarked and their gear unloaded at Douglas, the Lough Foyle steamed for Belfast, docking at 1700 hours on 28 August.

Results

1. During the survey the Simrad EY 200 sounder operating at 38 kHz and computer integration was run continuously. All data were digitised and subject to echosquare integration and back-up raw data stored on 3 hour video tapes. Midwater traces were largely absent south east of the IOM frontal system and were generally sparse over most of the remaining area. The heaviest concentrations of herring were located approximately 10 miles SW of the chickens.

2. A total of 15 midwater trawl hauls were made of which all contained fish and 14 herring (Table 1). With the exception of Haul No 3, which contained 21,800 herring, catch rates were low. In most areas herring of modal length 26.5 predominated in the catches, however, in the North of the survey area large concentrations of

juvenile herring were found. A total of 265 otoliths were taken and in addition, about 450 herring were weighted for the calculation of length-weight relationships. Vertebral counts were made on selected samples from stock identification.

Beside herring, the main species caught were whiting, sprat and mackerel.

Gear Performance

The trawling gear and acoustic equipment functioned successfully throughout the cruise. There are, however, a number of problems that need attention.

1. Fishing Operations

Biological sampling is the cornerstone to providing absolute estimates of stock biomass from acoustic data. Fast efficient trawling operations are, therefore, an essential part of any acoustic survey. On the Lough Foyle, however, midwater trawling operations are somewhat hampered by the length of time taken to shoot and haul the net. This problem arises because of the large commercial net used and the slow speed of the net drum. The problem of large net size can easily be overcome if we replace the existing trawl with a smaller net, rigged with appropriate size doors eg 12 x 8 fathom fitted with 7' trawldoors. The net drum is more problematic. Although fully operational, it lacks the facility to freewheel while shooting the net and its speed of hauling is about half that of drums used by commercial vessels. Without replacing the complete net drum there is probably very little we can do about this. It may, however, be worth seeking advice from an outside gear specialist.

Allied to the above is the lack of an operational sonar. Without sonar it was impossible to relocate shoals or specific scattering bands. Accordingly, there was some dubiety surrounding the identity of several shoals. The purchase of an appropriate sonar is now being considered and hopefully, a suitable sonar will be installed on the Lough Foyle by early next year.

Acoustic Equipment

A fundamental requirement of acoustic surveying is calibration of the echo sounding equipment. Ideally, this should be carried out two or three times during each survey. On this cruise the calibration rig was on loan from PEML, but as stated earlier it was not entirely suitable. Lack of a suitable calibration rig was to some extent inhibiting to the calibration exercise. In order to combat this a calibration rig will be constructed before the start of the next acoustic survey in October.

To facilitate the continuous logging of integrated data across survey transects, some on-board data analysis and the most efficient use of available ships time it is necessary to interface 4 IBM compatible PC's and 2 x 60 megabyte cartridge tape units (one serving as a back-up) to the acoustic equipment. On this occasion the additional computer equipment was supplied by PEML. If, however, we wish the Lough Foyle to have an independent acoustic capability it will be necessary to purchase additional PC's and cartridge tape drives.

David P F King

DATE	POSITION		SPECIES COMPOSITION OF TRAWL HAULS NUMBERS CAUGHT (APPROXIMATE)					REMARKS
	LAT	LONG	HERRING	SPRAT	MACKEREL	WHITING	OTHERS	
3/90	53 32.341N	005 56.143W	126	827	7	154	45	
3/90	54 7.970N	004 27.370W	1828		3			DOUGLAS BANK
RS 3/90	54 2.335N	004 56.311W	21796					DOUGLAS BANK
RS 3/90	54 1.821N	005 49.821W	11		98	2		
RS 3/90	54 2.015N	005 40.254W	377				17	
3/90	54 10.000N	004 48.100W	7	302	10	176	56	
3/90	54 14.875N	005 25.378W	6	1133	2		2	5 miles off Ardglass
3/90	54 19.480N	004 38.800W	6150					
3/90	54 20.660N	005 21.640W	10	172		41	3	
3/90	54 49.535N	005 41.037W	704	388				
3/90	54 59.615N	005 29.480W			52??	383	2373	Incl. Horse Mackerel Ghost Shrimp, Sepia, Poor Cod & N. Pout
3/90	54 8.160N	004 56.210W	189	463		76	55	
3/90	54 3.611N	005 5.040W	17		1	93	43	
3/90	54 2.865N	005 5.189W	1384			448	216	OTHERS = N. Pout
3/90	54 12.835N	004 51.829W	1001	1504		8	20	

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