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Charter Fishing Vessel MFV *Ocean Bounty*

Charter Cruise 1601H

REPORT

29 June - 13 July

Ports

Loading: Peterhead

Unloading: Peterhead

Personnel

E Jones	(In charge)
G Sangster	(29 June - 6 July)
P Barkel	
N Collie	(29 June - 6 July)
R Kynoch	(6-13 July)
B Mackie	(6-13 July)

Objectives

1. To assess the effect on fish escapes of creating high visible contrast between square mesh panel and cod-end, using the RCTV and cameras mounted on the net to make observations.
2. To measure the selectivities of high and low contrast panel/cod-end combinations.
3. To use light intensity depth profiles made before and after each haul to infer light levels during the tow.
4. To compare the performance of a photomultiplier and photodiode light intensity recorder (Alec Instruments MDS-MkV/L) against the Lab's own photomultiplier.

Out-turn costs per Project: 15 days MFO6qz

Narrative

Staff and equipment joined *Ocean Bounty* in Peterhead on Friday 29 June along with equipment transferred from the chartered fishing vessel *Aalskere*. The RCTV and fishing gear were rigged aboard the vessel in Peterhead harbour. The vessel sailed on the morning of Saturday 30 June to undertake instrumentation tests off Peterhead. The RCTV, light meters and ROS Navigator cameras were all tested before the vessel steamed for fishing grounds east of the Orkney Islands.

A series of observation tows were made over the first three days using the RCTV vehicle along with the ROS Navigator cameras where possible. Two test combinations were used. The first consisted of a 110 mm cod-end made with 5 mm double black twine and a 3 m square mesh panel of 90 mm white nylon knotless netting. The second consisted of a cod-end made from identical

green twine with a square mesh panel of the same 90 mm knotless nylon netting, but dyed black using material dye. Navigator cameras were positioned on the top panel of the cod-ends of each net to view fish escaping from each square mesh panel. Before and after each tow, a profile of light intensity through the water column was made using a photomultiplier light meter mounted on a frame. Changes in ambient light intensity at the surface were measured throughout the course of the tows using a second light meter (photodiode) mounted on top of the wheelhouse. This meter was also attached to the frame so that a calibration of the two instruments could be made. Foggy, overcast weather resulted in observation work being suspended and the vessel moved to grounds suitable for selectivity tows. A final tow using the Navigator cameras was obtained before heading for Scrabster on Thursday 5 July. On the evening of Friday 6 July, the vessel steamed to the Captain Field east of Orkney for further selectivity trials in deeper water. Observation tows were resumed for two days during fine weather east of the Pentland Firth and off Wick before moving south to fishing grounds off Peterhead. The cruise finished on Thursday 12 July due to bad weather, with *Ocean Bounty* returning to Peterhead that morning. The vessel was unloaded the following day (Friday 13 July) with staff disembarking and returning to Aberdeen.

Results

It is suggested that by creating a highly visible cod-end using black netting and minimising the visibility of the square mesh panel (white netting) fish would be more likely to attempt escape, perceiving a clear "escape" route through the panel. In contrast, where the square mesh netting is highly visible to the fish it is suggested that they may avoid the netting and therefore not attempt to escape. This hypothesis was tested using the two combinations of cod-end and panel already detailed. A total of 13 observation hauls were made utilising the RCTV, the ROS Navigator cameras or both. Some good RCTV footage of the square mesh panels was obtained and allowed modification of camera position to improve the performance. Some difficulty was encountered in preventing the cameras from distorting the geometry of the cod-ends, but useable video footage was obtained of both test combinations showing fish escaping from the panels. Haddock, whiting, flatfish and gurnards were identifiable on the videos. The footage will be analysed in full by a BSc Honours student from the Zoology Department, University of Aberdeen. The number and position of fish escapes from each panel will be estimated and compared to deduce if netting colour can affect escape of fish.

Light meter dips were undertaken at 20 stations between 57 and 81 m water depth. Typical values for light intensity at 60-70 m varied between 0.503 log lux in the early morning to 1.44 log lux at midday, which falls within the range of light intensity at which fish have been observed to react visually to nets. The miniature photodiode light meter (Alec MDS-MkV/L) was not found to be sufficiently sensitive to be used at depth on the trawl, but was used to record surface light intensity instead. This will allow the variation in light levels at depth during the tow to be predicted for each observation haul.

A total of 13 selectivity hauls were completed, although four of these were classed as void. Of the valid hauls, seven were made with the black cod-end/white panel combination as test case and three with the green cod-end and black panel combination. Length frequency data were collected for both haddock and whiting. Lengths ranged from 16-40 cm for haddock in the test cod-ends and 18-44 cm for whiting. Full selectivity analysis is being carried out in the Laboratory.

Emma Jones
2 October 2001