

In Confidence - Not to be quoted without prior reference to the Laboratory

FRV "Clupea"

7CR81

Cruise 7/81

REPORT

18 May - 5 June 1981

Objectives

- 1 To perform an engineering study on the Marine Laboratory semi pelagic trawl PT 159 both in midwater and on the seabed.
- 2 To perform engineering and net design studies with the RCTV on two commercially used trawls.
- 3 To obtain video film of fish reactions to the trawls and other gears towed by commercial vessels if suitable opportunities arise during the cruise.

Narrative

Week 1 "Clupea" was loaded in Buckie on Monday 18 June and the trawl gear and instrumentation and fishing gear was set up ready for trawling with the 400-600 hp. Marine Laboratory Semi Pelagic Trawl PT 159 to commence on the Tuesday. "Clupea" sailed from Buckie at 2230 hours on Monday. Instrumented and RCTV tows with various rigs both on and off the bottom were carried out in the South Deep and Spey Bay areas of the Moray Firth for the remainder of the week. "Clupea" docked in Buckie at 0030 hours on Friday 21 May where the net was changed to an IC Multiflex.

Week 2 "Clupea" sailed to the South Deeps at 1500 hours on Monday 25 May. Instrumented, and RCTV tows both on and off the bottom were conducted for the rest of the week on an Iver Christensen Multiflex semi pelagic trawl. "Clupea" berthed in Buckie at 2000 hours on Thursday 28 May. The net was changed on Friday to an IC Star/Balloon trawl. Mr Hou, Enhuai, a visitor to the Laboratory from the Shandong Oceanography College, Dept. of Fisheries, Qindau, China was a guest on board for this week to observe semi pelagic trawling methods.

Week 3 "Clupea" sailed for the Bellans area of the Moray Firth at 1300 hours on Monday 1 June where instrumented and RCTV hauls were conducted for the remainder of the week on an Iver Christensen Star/Balloon trawl. Mr Leslie Innes, Manager, IC Trawls, Fraserburgh was a guest on board for this week. A towed speed log calibration was performed on the Buckie measured mile on Thursday evening and "Clupea" berthed in Buckie at 0010 hours on Friday 5 June.

Results

(1) 400-600 hp Marine Laboratory Semi Pelagic Trawl PT 159. This trawl was fully instrumented both in midwater and on the seabed. Interim midwater engineering results are as follows:-

Warp Length (m)	Speed (kts)	Net Drag (tons)	Headline Height (m)	Board Spread (m)
137	3.4	2.5	10	45
137	4.2	3.5	8.5	45

The video film indicated that the design was good with no obvious defects. The taper rate to mouth opening ratio was good giving a fine all round design. Of particular note was the almost perfect take off of the inside wing cuts from the headline, sidelines and fishing line, thus avoiding distortion in the mouth area. The instrument and TV data are being analysed in the Laboratory and a full engineering and design report will be published in the near future. An industrial demonstration video tape of this net has been made up and shown to interested fishermen and the net is now being used successfully commercially.

(2) Iver Christensen Multiflex Semi Pelagic Trawl. Major design problems were identified in this net especially in the extension/codend area. Subsequent improved designs of this net used commercially have shown marked improvements in catch with less damage. The net was fully instrumented for design purposes and the collected data are being analysed in the Laboratory.

Iver Christensen Star/Balloon Trawl. Some very useful rigging and design investigations were carried out on this trawl. The ballooning of top sheets of such trawls has always been an attractive design method and well worth studying. Areas of too steep netting were observed on this net as a consequence of the ballooning. Slack lower wing-gusset netting was a problem which has since been resolved. The solution to lack of ground contact, unidentifiable without the RCTV, was investigated with several rigs. Engineering data on this trawl and that of the Multiflex above will be published in due course. Edited video tapes have been prepared of the two commercial trawls in (2) and are now being used by IC Trawls for research and demonstration purposes.

(3) Some video film of dogfish, haddock and sandeels reacting in the mouth, extension and codends of the two IC trawls was collected. There were no opportunities to film gears towed by commercial vessels in the areas worked.

Seen in draft G Geddes

J H B Robertson

11 September 1981