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R.V. ERNEST HOLT

Report of Cruise 6/67

Staff:

H. A. Cole
G. C. Bolster
D. J. Ellett
A. M. Watson
D. F. Simpson
D. J. Smith) Part time
B. K. Clarke)

Duration:

30th June-27th July

Aims:

1. To survey abundance of fish suitable for industrial purposes in deep water at the edge of the Continental Shelf; Muckle Flugga to Brest ($60^{\circ}30'$ - $48^{\circ}20'$N.).
2. To collect hake for racial studies.
3. To survey mixing of blue whiting and hake S.W. of Ireland.
4. To make further underwater television studies.
5. To undertake a supplementary survey of distribution of pilchard larvae in the Western Channel.

Narrative:

The ship sailed from Grimsby at 1014 hours on 30th June. Approximately 24 hours were spent lining for mackerel with feathers off the coast of Orkney; all fish in good condition were tagged.

Trawling began on 3rd July, north-east of the Wyville Thomson Ridge in approximately 280 fathoms. Some trouble was experienced due to rough ground and abundance of 'duff'. On 4th July a move was made to grounds to the south-west of the Wyville Thomson Ridge where trawling was continued in depths between 240 and 380 fathoms. One haul in 260-280 fathoms contained a great deal of coral.

On 5th July trawling was continued on the shelf edge west of the Butt of Lewis but during the third haul the winch winding-on gear was damaged and this necessitated putting into Stornoway for repairs. These were completed within 6 hours but because of strong winds the next two days were spent on underwater television work in a sheltered sea loch. Winds were still around gale force when the ship returned to the shelf edge off the Flannan Isles on 8th July and trawling could not be resumed until early on 10th July - a delay of approximately 35 hours. Fishing was stopped again by bad weather later in the day and it was decided to return to Stornoway making a couple of trawl hauls for hake in the northern Minch en route.

The ship sailed from Stornoway at mid-day on 12th July, after a change-over in the electronics staff, and trawling was started again at the shelf edge off Eagle Island during the afternoon of 13th July. This proved to be a difficult ground to work because of the steepness of the edge, so a move was made to an area south-east of the Porcupine Bank in a bight between the shelf edge and the area known as the 'Farm'. This is a clear ground with a soft bottom and hauls were made down to 370 fathoms.

Early on Sunday 16th July Dr. Cole was landed at Cobh, being picked up again on Tuesday 18th July. During the interim 12 trawling stations were completed on the shelf in depths between 40 and 80 fathoms. Deep water trawling at the shelf edge was resumed on 19th July and continued during the next 2 days reaching as far south as latitude $48^{\circ}27'$N.

The ship arrived at the starting point of the high speed sampler grid during the afternoon of 22nd July but, due to a sudden blow accompanied by torrential rain, the grid could not be begun until early on 23rd July. Thereafter work proceeded without incident, except for the loss of the anallary water sampler, until the grid was completed off the Isle of Wight during the evening of 25th July. The ship docked at Grimsby at 0830 hours on 27th July.

Results:

Deep Water Trawling (Aim 1)

Catches were generally light and, on the Southern deep water grounds, very light. The largest catch was 64 baskets, taken in 2 hours in 260-280 fathoms south-west of the Wyville Thomson Ridge. There was much coral in this haul. On the northern grounds catches were usually between 10 and 25 baskets per hour but on the southern grounds they were substantially less.

The principal components of the catch varied with the latitude and (presumably) with the bottom temperature. Ratfish, (Chimaera), the redfish Helicolenus dactylopterus and Greater Silver Smelts (Argentina silus) occurred on all deep water grounds fished, 17 baskets per hour of ratfish being taken south-west of the Wyville Thomson Ridge. On the Southern grounds ratfish were, however, scarce. To the north of the Ridge, Helicolenus was accompanied by some Sebastes spp. including a few Sebastes mentella. The best catch of redfish (predominally Helicolenus) was one of 10 baskets per hour taken south-west of the Ridge. The largest catch of Argentina silus was 3 baskets per hour. $2\frac{1}{2}$ baskets per hour of Greenland Halibot were taken in 330-340 fathoms north-east of the Ridge.

On the southern grounds Hoplostethus mediterraneus and macrurids of several species were the most abundant fish in deep water. Four and a half baskets per hour of Hoplostethus were taken in 330-360 fathoms on the Southern Hake Ground. Macrurids were slightly less abundant but heavier catches have been taken on similar deep water grounds during an earlier cruise.

Other fish occurring commonly in deep water hauls were the dogfish Etmopterus spinax and Pristiurus melanostomus, Epigonus telescopus, mock hake (Phycis blennoides and related species), blue, common and Spanish lings, tusk, monk and sharks of six species. Squids also occurred regularly in small numbers while Nephrops was taken on several of the muddy southern grounds in depths down to 275 fathoms.

Bottom temperatures to the north-east of the Wyville-Thomson Ridge fell rapidly from 9.5° to 2.4°C between depths of 430 m (235 f.) and 570 m (310 f.). Observations along the Atlantic continental slope showed little decrease of temperature in this depth range but a general rise from 9.4° to 10.3° occurred as the ship moved southwards from $59\frac{1}{2}$°N to 51°N. Surface temperatures over the shelf edge rose from 11.0° to the N.W. of Orkney to 14.0° to the west of Eagle Island and to 17.0° in the vicinity of Little Sole Bank.

Hake Racial Studies (Aim 2)

While a few hake were taken in practically every trawl haul, catches were always very light - never exceeding $1\frac{1}{2}$ baskets per hour. 160 blood samples were taken and 225 pairs of otoliths were preserved. Eyes were deep frozen from 80 fish. In addition about two dozen hake were deep frozen whole for dispatch to Dr. Edwards of Woods Hole. The stations from which material was collected were spaced along approximately 750 miles of the Continental Shelf.

Mixing of Hake and Blue Whiting (Aim 3)

Insufficient trawl hauls were made to provide much information on the mixing of blue whiting and hake in the south western corner of Region II of the North-East Atlantic Fisheries Commission. Hake catches were very light indeed in the parts of this area which were fished; blue whiting were also rather scarce except on grounds at 100-120 fathoms between the Great and Little Sole Banks. Horse mackerel were abundant on these grounds and also in shallower water.

Underwater Television (Aim 4)

A record was obtained of the habitat, movements and behaviour of Nephrops in 17-20 fathoms in a sheltered sea loch in the Minch, either by filming the television screen or by the use of a video tape recorder. Some troubles were experienced with the focussing system of the camera and from the entry of water into the lights. Illumination was, however, excellent and some good pictures were obtained. The new electric winch for fine regulation of the depth of the television camera proved unserviceable.

Pilchard Egg and Larvae Survey

Forty stations in the Western Channel were worked with the high speed sampler. An echo sounder was operated during the whole 700 miles of the grid. Pelagic traces were abundant at times, particularly off the Cornish and Devon coasts. While working a station the ancillary water sampler became detached and was lost, although the clips provided were fully tightened and had recently been re-packed.

Pelagic Fish Sampling and Tagging

Mackerel

Approximately 4½ baskets of mackerel were caught by hand lines and feathers in Hoy Sound, Orkney, along with 2 baskets of coalfish and a few cod. 183 mackerel were tagged and the remainder provided a biological sample and 50 blood samples. Additional samples of mackerel were obtained from the trawl hauls.

Horse Mackerel

Substantial quantities of horse mackerel were taken in the trawl hauls made in 40-120 fathoms in the Celtic Sea. The normal procedure of biological sampling was followed.

Greater Silver Smelts

Biological samples of greater silver smelts were taken from three areas - West of Scotland, West of Ireland and South of Coral Bank. In addition ripe gonads were preserved for fecundity estimations and samples of stomachs were deep frozen for Dr. Halliday (Canada).

H. A. Cole
1st August, 1967

Seen in draft: E. A. Binnington
G. W. Argumont

Distribution

Dr. Cole
Mr. Lee
Captain Aldiss
Dr. Cushing
Mr. Burd
Mr. Bolster
Mr. Cattley
Mr. Corlett
Mr. Garrod
Dr. Harden Jones
Mr. Iles
Dr. Jamieson
Mr. Margetts
Mr. Trout
Mr. Holden
Dr. Purdon
Mr. Bridger
Mr. Mitson
Mr. Tungate
Mr. Williams
Mr. Wood
Mr. Adams
Mr. Mills
Mr. Kay
Miss Conolly
General Lab.
Lab. Registry
Library (2)
Mr. Whiting
ERNEST HOLT file (N.I.C. next cruise)
Mr. Simpson
Dr. Reynolds
Chief Inspector
All District Inspectors
Fisheries Registry
Captain Binnington
Skipper Argumont
Mr. Burgess
Mr. W. Baird, D.A.F.S.
Prin. Inf. Officer, DAFS
Mr. Glover
Dr. Grant
Hydrographic Department
Dr. Lovern
Dr. Lucas
Director, N.I.O.
Dr. Peachey
Mr. Shelbourne
Mr. Steele
W.F.A.
Director, Bergen
Mr. Joensen
Director, Reykjavik
Mr. Ellett
Mr. Watson
Mr. D. F. Simpson
Mr. Smith) Part time
Mr. Clarke)