

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1971 RESEARCH VESSEL PROGRAMME

REPORT: RV CORELLA: CRUISE 13

(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

L Birkett
I L Davies
C J Carrod
R Bennett (Student)
B T Smith (Birmingham University)

DURATION

Left Lowestoft 1130 hours 11 August

Arrived Lowestoft 1100 hours 25 August

All times are British Standard Time

LOCALITY

Southern North Sea

AIM

To determine the reaction of plaice to towed bodies, by attacking plaice, fitted with acoustic transponding tags, as directed by CLIONE.

NARRATIVE

CORELLA called into IJmuiden briefly in order to exchange plankton samples at the Rijksinstituut, on behalf of Mr Harding. She then made rendezvous with CLIONE in the Black Bank area on August 12. The period 13-23 was taken up in 'attacking' the plaice, tagged with Petersen discs carrying acoustic transponding tags, which CLIONE release singly and observed with her ARL sector scanner. The attacks were made with a Fleetwood Granton trawl (description on attached sheet).

CLIONE kept the tagged fish at 120-150 m on her starboard beam, and guided CORELLA towards it by relaying information from the sector scanner over the VHF radio. Recaptured plaice were returned to CLIONE.

Due to the generally favourable weather conditions, all scientific staff aboard CORELLA were able, at various times, to transfer to CLIONE and thus could observe the work there.

Mr Smith carried out various tests with the Birmingham University non-linear sonar with a towed body housing the array, at times when CORELLA was not required to be fishing.

On 23 August, CORELLA motored over to a position in the Shipwash-
Inner Gabbard area, and on 24 laid a Plessey current meter which was
kept on the sea bed for 14 hours. Mr Smith made further tests with his
equipment and the ship left for Lowestoft at 0300 hours 25 August,
arriving in Corton Roads at 0820 hours 25 August.

RESULTS

A total of 63 'attacks' on plaice were made with the trawl. A standard tar-
get of trawl floats (the 'caterpillar') was towed for about 1 hour and
observed by CLIONE.

The tagged plaice were recaptured 14 times; 9 close misses (the doors within
1-2 metres of the fish) were reported, with no apparant reaction from the fish.
On a further 14 attacks the fish escaped over or under the bridle. The
acoustic tag was three times knocked off, once taking the Petersen disc with
it, presumably having become enmeshed in the trawl. With the exception of
one fish which died after release, all the recaptured plaice were 'strong
alive' and some were re-employed later.

The bathythermograph and water bottle were used each morning. Sea-surface
temperatures were 16.1° to 17.4°C , bottom temperature being only 0.3° lower.
No evidence for an existing or incipient thermocline was found.

Samples of fish were deep-frozen in accordance with the Fish Food Units
standing instruction. Samples of cod heads were preserved for Mr Bye, and
of fish otoliths for Mr Blacker. Live plankton was collected for
Mrs Thompson.

Dense mist affected the working area on several days, but this only intefered
briefly with the work. During the night, 22/23, there was a remarkable
invasion by several species of land birds, mostly small insectivores; those
which survived left the ship when in the Harwich area, on 24; those which
died were deep-frozen and brought to Mr Jenner for identification. Large
numbers of flies also appeared and these phenomena may have been connected
with the misty conditions.

L Birkett
27 August 1971

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DISTRIBUTION

Basic list
L Birkett
I L Davies
C J Garrod
R Bennett
B V Smith (Birmingham University)

F R Harden Jones
M Greer Walker
G P Arnold
T Storeton West
W L Huggins
J Rous

CORELLA CRUISE 13/71 : SPECIFICATION OF FISHING GEAR USED

The trawl used on this cruise was a Fleetwood Granton trawl made of 154 yards/lb Drylene twine with a stretched mesh ranging from 140 mm in the wings and square to 80 mm in the codend. The 78 foot headline was rigged with 25 x 8" diameter aluminium deep sea floats, and the 120 foot ground rope was made up of a 20 foot bosom of 14 x 8" diameter wooden beads interspersed with 15 lancasters; a 15 foot bunt and 15 foot and 20 foot wing sections of 3 $\frac{1}{2}$ " diameter rubber discs on 2 $\frac{3}{4}$ " circumference wire hearts.

The 10 foot tow legs were of 1" diameter chain and the 100 foot headlegs of 2 $\frac{1}{4}$ " circumference wire. The dan lenos were 18" diameter, $\frac{1}{2}$ " round scuttles, complete with butterflies. Fearnought trawl doors 10' x 4' 2" each weighing 12 $\frac{1}{2}$ cwt were used with 24' x 2 $\frac{1}{4}$ " circumference wire backstrops. The pennants were 34' x 2" circumference wire. Only 2 x $\frac{5}{8}$ " diameter tickler chains were used, 45 feet across the bunt (50 feet) and 72 feet across the midwing (80 feet).

Five fms by two and a half inch circumference bridles were used on ST1, and 10 fms x 2 $\frac{1}{2}$ " circumference bridles on subsequent stations. Both painting and binding the bridles with strips of lasso tape confirmed that they were not on the bottom whilst fishing and they showed no wear or shine due to dragging along the sea bed by the end of the cruise. The fore-end of the bridle was secured to the gear about 2 feet above the ground at the end of the door backstrop and the aft end 9" off the ground at the dan leno spindle.

The gear was towed at about 4.0 kts which is higher than the normal plaice trawling speed, but this was necessary so that the ship could be manouvered to bring the trawl onto the tagged plaice. The best method of attack was for CLIONE to keep the tagged plaice on her starboard beam at a range of 130 to 160 metres and for CORELLA to pass along her starboard side fixing her position off CLIONE by radar. If the attack was unsuccessful, the gear was hauled till the doors were at the gallows and then the ship could more easily be brought round and lined up for the next attack.

The area worked, Black Bank to Brown Bank, was a fairly smooth bottom with depth ranging from 14 to 17 fms and was of fine sand. It was only towards the end of the cruise that there was a noticable shine on the dan leno scuttle; toe legs and tickler chains. This was after 60+ attacks, the trawl being on the bottom for 10 to 30 minutes each attack.

I L Davies