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MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
CEFAS, LOWESTOFT LABORATORY

1997 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 12

STAFF: G P Arnold (SIC)
C M O'Brien
B H Holford
B F Riches
A A Buckley
T G Locke

DURATION: Left Lowestoft: 1400 h 21 November
Arrived Lowestoft: 0420 h 10 December
All times are GMT

LOCALITY:

Southern North Sea

AIMS:

1. To enable a BBC team to film tag deployment and fish tracking for "Tomorrow's World".

2. To estimate swimming speed and orientation of migrating plaice by simultaneous use of the sector scanning sonar and ADCP.

3. To assess the precision of geographical location using data storage tags in conjunction with the POL tidal model.

NARRATIVE:

Corystes sailed on the midday tide on 21 November and proceeded to the first station about 8 miles east of Smiths Knoll. Tag trials were carried out on arrival and the first fish released at 2045 h. This fish was tracked until 2210 h, 22 November, but there were intermittent problems with the underwater section of the sonar transmitter cable, which caused repeated loss of the display in vertical mode. The track was abandoned at midnight, about two hours after the tag signal was finally lost. Cable repairs were effected during the following morning and the second fish was released at 1248 h, 23 November. This fish was tracked until 0416 h, 25 November, when it was lost in midwater on a south-going tide, probably as a result of tag failure. The third fish was released at 1130 h the same morning and followed until 0900 h, 28 November, when it was abandoned because of lack of movement. The fourth fish was released at 1100 h the same day and tracked until 0942 h, 30 November, when it was abandoned in deteriorating weather. The fifth fish, which was tagged with a data storage tag as well as an acoustic tag, was released at 1000 h, 1

December after the weather had improved again. This fish was followed until 1000 h, 5 December, after which repeated attempts were made to recapture it using a 4 m beam trawl. Despite several close encounters, the fish was not caught and the attempt was abandoned at 2050 h. 'Corystes' steamed in to the coast to seek shelter for the night and a member of the crew was put ashore at Gorleston early the following morning. The sixth fish was released east of the Cross Sand light buoy at 1020 h, 6 December and immediately began to move to the south. This fish was tracked until 0330 h, 9 December, when the signal was lost in sea surface noise at long range. The search for the tag was abandoned at 1100 h near the Outer Gabbard light buoy towards the end of the next north-going tide. 'Corystes' then steamed to 52° 15' N 2° 00' E and deployed a current meter and a data storage tag in a frame on the sea bed. This rig was recovered at 0300 h, 10 December, after which 'Corystes' returned to Lowestoft.

RESULTS:

1. Filming for "Tomorrow's World"

   The visit of the BBC team was postponed at short notice and this aim was not attempted.

2. Plaice tracking

   The first two fish were lost before a clear pattern of tidal stream transport was established but in each case the fish was in midwater when the track was curtailed. The third and fourth fish remained on the sea bed and showed no significant movement. The fifth fish moved in a south-easterly direction as far as the southern tip of the Brown Ridge before moving a short distance back to the west. It then followed an elliptical track, swimming in midwater for two tides, before movement ceased. Initially this fish swam close to the bottom, moving up into midwater over each slackwater period. The sixth fish, which was released during the early part of a south-going tidal stream, unusually remained close to the surface for several hours after release and adopted a pattern of tidal stream transport before going to the sea bed. It moved south on each of six consecutive south-going tides (Fig. 1), for the most part swimming well up in the water column and often close to the surface. The fish, which was only 38 cm in length, went to the bottom for most of the five intervening north-going tides but only held position for one of these tides. During the other four north-going tides it moved slowly northwards with the tide, possibly unable to hold station against the tidal current on a hard bottom. Whilst in midwater during south-going tides, this last fish swam steadily downstream and its ground speed was significantly faster than that of the tidal stream. Continuous ADCP records should allow the through-water speed of this fish to be calculated directly for each midwater period.

3. Precision of geographical location

   The current meter rig was deployed for the requisite 13 h and should provide the data required for the data storage tag programme at this location.

4. Recapture of tagged fish

   Despite the high precision navigation made possible by the Sercel system and Transas systems, fish 5 was always able to avoid the 4m beam trawl by swimming out of the path of

the gear at the last moment. These movements were short, however, suggesting that it should be relatively straightforward to catch a tagged fish with a larger net. It is suggested that the next attempt should be made with a.Granton trawl without bridles to minimise the chance of escape.

G P Arnold
10 December 1997

SEEN IN DRAFT: D R McDarren(Master)
R F Graham (Senior Fishing Mate)

INITIALLED: GPA

DISTRIBUTION:

Basic list
G P Arnold
C M O'Brien
B H Holford
B F Riches
A A Buckley
T G Locke
Clerk to Eastern SFC
FCO.

Figure 1. Ground track of plaice 6 released at 1020 h, 5 December and tracked until 0330 h, 9 December.