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

1995 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 1

STAFF: S I Rogers (SIC) 6-9 January
G P Arnold (SIC) 9-21 January
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B H Holford
B F Riches
R P Flatt
A A Buckley

DURATION: Left Lowestoft 1330 h 6 January 1995
Arrived Lowestoft 2330 h 21 January 1995

LOCALITY: Southern North Sea

AIMS:

1. To release 50 plaice tagged with Data Storage Tags and 50 controls tagged with Petersen discs.

2. To estimate (for the Data Storage Tag programme) the survival of plaice caught by 4m beam trawl and the effects of tagging at sea with dummy DSTs.

3. To estimate the swimming speed and orientation of plaice moving by selective tidal stream transport using long-life transponding acoustic tags, sector scanning sonar and the ADCP.

NARRATIVE:

CORYSTES sailed on the afternoon tide of 6 January carrying 50 plaice tagged with data storage tags (DSTs) and 50 tagged with Petersen discs and proceeded to an area south of Smiths Knoll where the fish were released. Later that evening the ship began fishing for adult plaice in an area east of Smiths Knoll using a 4 m beam trawl. Fish in good condition were tagged with DSTs and Petersen discs and retained onboard with untagged, control fish. Trawling was completed by midnight on 8 January, and CORYSTES returned to Lowestoft the next afternoon to change scientific staff and to transfer 151 fish to the Laboratory for further monitoring.

CORYSTES sailed again on the same tide to carry out aim 3 of the programme but had to return almost immediately to Corton Roads to land a member of the crew, who needed medical treatment. With deteriorating weather, the ship then proceeded to Southwold, where she lay overnight prior to working up the sector scanning sonar and acoustic tags the following morning. The first fish was released near the coast at 1500 h 10 January and tracked until it was abandoned at 0500 h 12 January in very poor weather just north of Barley Picle. CORYSTES then steamed back to Southwold where she dodged before releasing the second fish at 1840 h on 12 January. This fish, which was released further offshore in better

weather conditions, was tracked continuously until it was abandoned at 1245 h on 15 January. The third plaice, which had been caught and tagged at sea on 8 January, was released close to the coast at 1550 h on 15 January. It was lost in poor weather at 0030 h on 16 January and not found again, despite a search lasting until 0900 h. CORYSTES then sought shelter from gale force winds off the North Norfolk Coast until 0715 h 18 January, after which she steamed back to a position approximately 52° 20' N 02° 30' E, where the fourth plaice was released at 1420 h. This fish was tracked for 24 h and then abandoned in very bad conditions produced by Force 10 south-easterly winds. After steaming back to the east in appalling conditions and dodging overnight, the last fish was released close inshore at 2050 h 20 January. This fish was followed until 1210 h 21 January when it, too, was lost as a result of a Force 10 southerly gale and very heavy seas. The cruise was then terminated and the ship returned to Lowestoft.

RESULTS:

1. Twenty-five plaice tagged with DSTs and 25 tagged with Petersen discs were released at each of two positions south of Smiths Knoll (52° 00' N 2° 20' E and 52° 10' N 2° 30' E).

2. One hundred and fifty one plaice caught during 15-minute tows with the 4 m beam trawl were tagged with dummy DSTs or Petersen discs, or retained as untagged controls (Table 1). Only plaice in good condition were used, and where possible the largest fish in the length range were selected. The majority of tagged and untagged fish were between 30-44 cm length, and this compared to a similar exercise undertaken during COR 14/94 (Table 1). Survival rates in each category were high but mortalities will continue to be monitored in the Laboratory.

3. Five plaice were tracked for periods ranging from 8 hours to 66 hours. The Acoustic Doppler Current Profiler was operated for as much of each track as possible, particularly when the fish were in midwater. Plaice 1 (Figures 1 and 2) moved north by tidal stream transport and a preliminary inspection of the ADCP data suggests that, when in midwater, this fish swam downtide at speeds of between of 0.3 and 1.2 body lengths per second. Its average swimming speed for the first two transporting tides was 0.6 lengths per second. Fish 3 and 5 also appeared to exhibit selective tidal stream transport, although in each case the track was terminated before the pattern of transport (north-going and south-going, respectively) could be confirmed. Plaice 2 (Figure 3) also swam downtide during the first north-going tide after release, during which its average speed through the water was 0.4 lengths per second. Thereafter its swimming speed decreased and over the last two tidal cycles it followed the pattern of the tidal stream ellipse and made no further progress to the north.

G P Arnold
S I Rogers
26 January 1994

SEEN IN DRAFT: M J Willcock (Master)

INITIALLED: JWH

DISTRIBUTION:

Basic list + G P Arnold, S I Rogers. P J Bromley, B H Holford, B F Riches, R P Flatt, A A Buckley, Eastern SFC.

TABLE 1

	COR 14/94			COR 1/95		
	Dummy DSTs	Petersen discs	Untagged	Dummy DSTs	Petersen discs	Untagged
Length group (cm)						
25-29		3	9		2	4
30-34		38	31		20	19
35-39	26	8	11	24	21	20
40-44	16	1		19	4	5
45-49	8		1	5	2	2
50-54				2	1	
55-59				1		
TOTAL	**50**	**50**	**52**	**51**	**50**	**50**

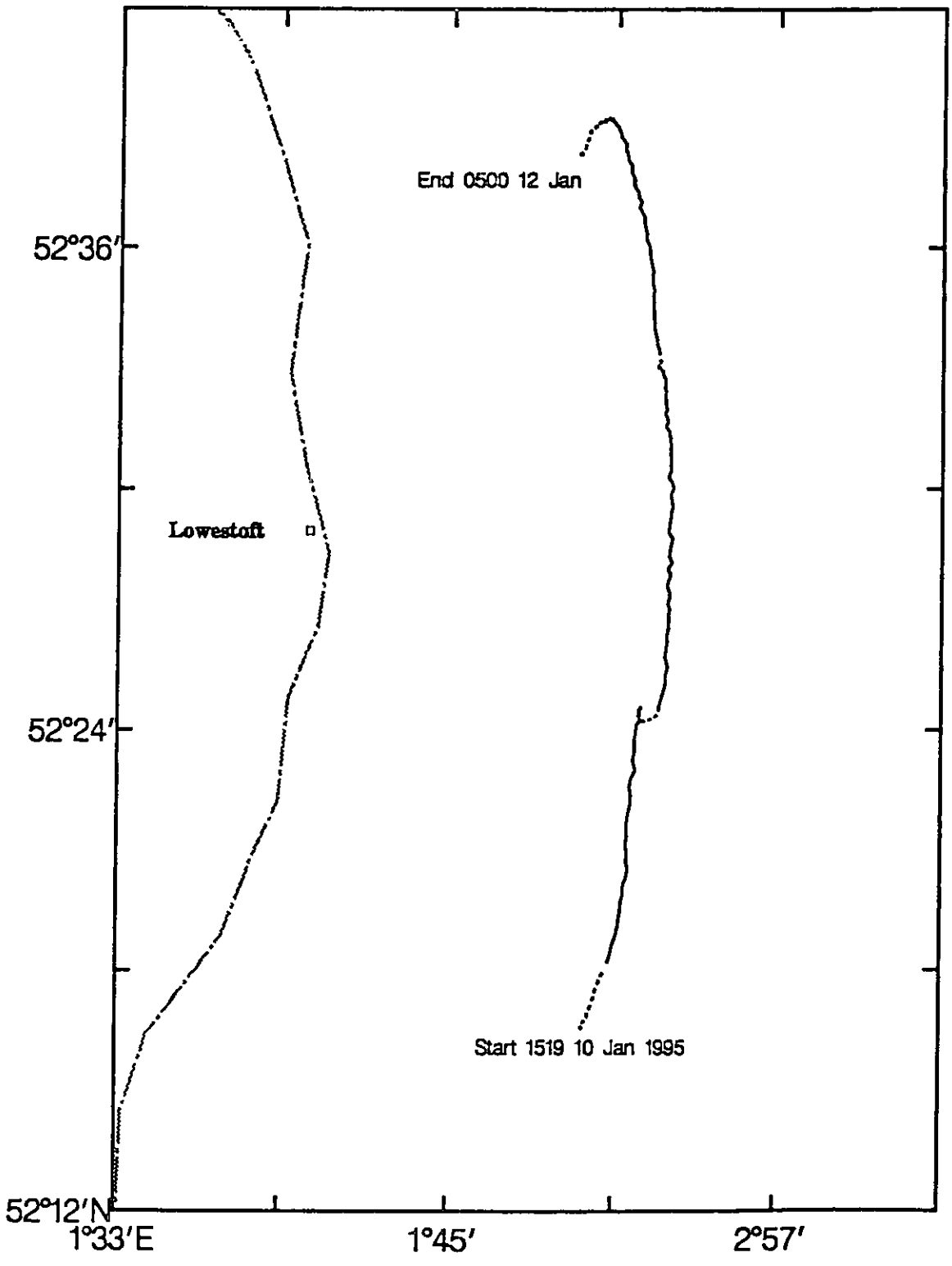

Figure 1. Ground track of fish 1 released at 1520 h 10 January and tracked for 37 hours. Dashed lines indicate periods when the tidal stream was flowing to the south.

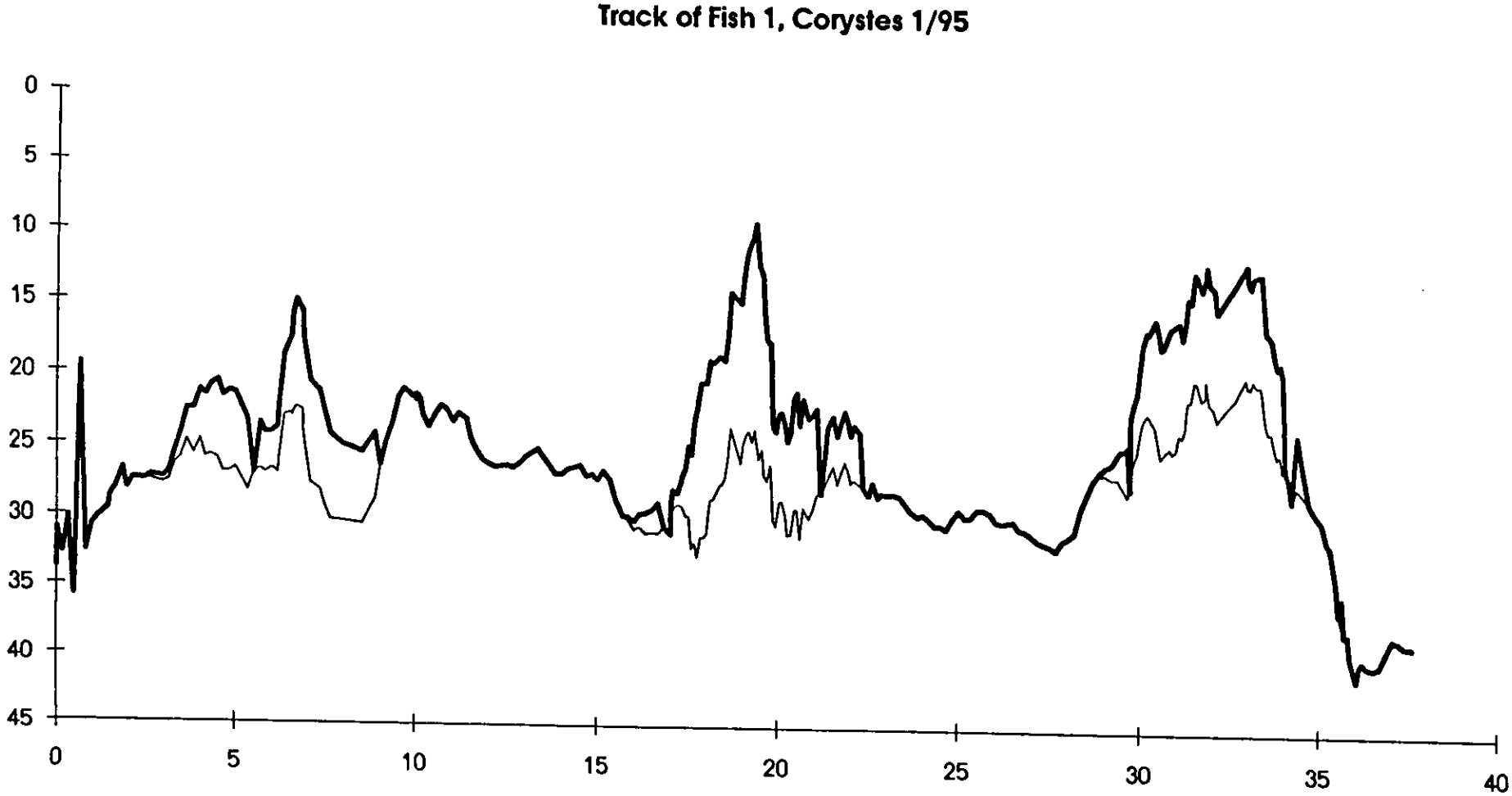

Figure 2. Vertical track of fish 1. The depth of the fish is indicated by the bold line.

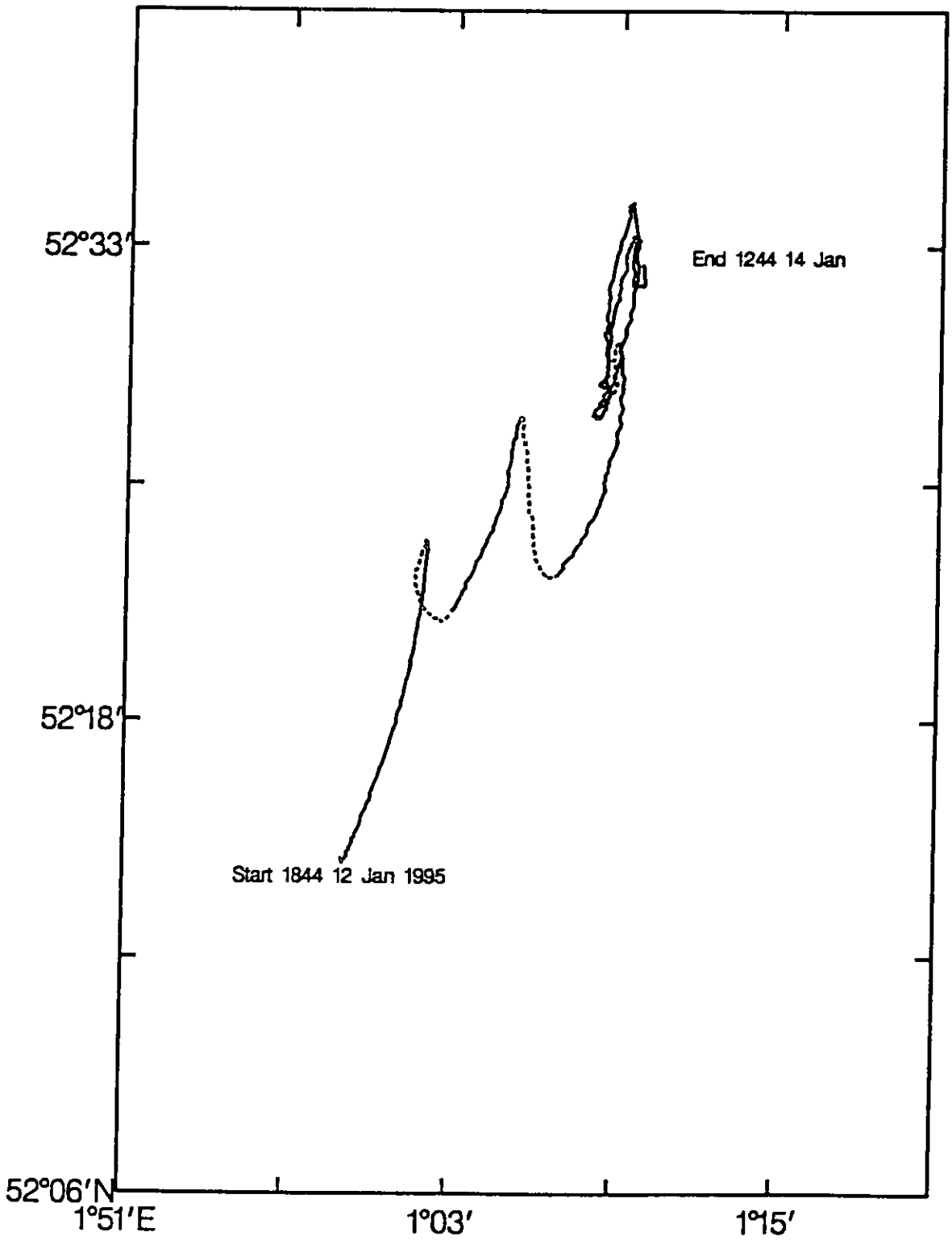

Figure 3. Ground track of fish 2 released at 1840 h 12 January 1995 and tracked for 66 hours. Dashed lines indicate when the tidal stream was flowing to the south.