

STAFF:

W.J. Mc Curdy SSO (S.I.C.)

Dr. R.P. Briggs PSO 31/10/88 to 2/11/88

Dr. D.J. Agnew HSO 31/10/88 and 2/11/88 to 4/11/88

PURPOSE OF CRUISE.

The purpose of the Lough Foyle's maiden cruise was to identify the most suitable trawl net for juvenile gadoid research studies. In addition advanced sea trials were carried out on the vessel's fishing equipment and wet laboratory facilities.

CRUISE NARRATIVE.

The vessel left Belfast at 08:00 on Monday 31/11/88, and completed a total of 12 experimental tows with two trawl nets, before finally returning to Belfast at 19:00 on Friday 4/11/88. The vessel also returned to Belfast on Monday, Tuesday and Wednesday nights for operational reasons, but remained at sea overnight on Thursday. The layout of the ship's redesigned wet laboratory was found to ideally suited for the processing of fish samples.

On Wednesday morning, a production team of four staff from D.O.A. Press Office and Fast Forward Productions, joined the vessel to obtain video film footage of the Department's first Research Vessel. They left the ship later the same day, and appear to have obtained realistic footage of the vessels ability to carry out Fisheries Research at sea.

Although there was little or no wind on Monday or Tuesday, the winds during the latter half of the week were mainly southeasterly, reaching a maximum of force 6 to 7 on Thursday night. The headline of the Rockhopper trawl was damaged slightly on Tuesday, and repaired the same day. The mouth of the Sea Star trawl was badly damaged on Thursday, due to a delay in boarding the net in short seas, and repairs to this net continued until after dark causing the loss of two experimental tows. In both cases the damage could have been avoided if the vessel had been fitted with the proposed Net Drum.

On Tuesday evening the scientific staff and the Fishing Skipper met to discuss fishing gear requirements for proposed Fisheries Research during the next year. Precise specifications for these items will be produced in due course by W Mc Curdy and the Fishing Skipper, and quotations will be obtained by W Mc Curdy.

In addition, discussions between scientific staff and ship staff identified problems with dust and the shoreside electricity supply at the vessel's present berth. The need for large plastic bins to store fishing nets, and a turntable for the loading and unloading of wires was also identified. A problem with noxious odours emanating from the ship's sewage treatment plant existed

sporadically throughout the cruise. Information on all these findings was passed on to the ship's agent, Mr J C Walsh of G Heyn & Sons Ltd.

PRELIMINARY NET TRIALS FOR JUVENILE FISH RESEARCH.

Two 300hp trawl nets, a Rockhopper trawl from J. Cavanagh, Greencastle and a Sea Star trawl from Swan Nets Ltd, Killybegs, were used. On the advice of the Fishing Skipper, the third net, a three bridle Butterfly trawl from I.C. Nets Ltd, Howth, was not used. This net cannot be used safely or efficiently from the Lough Foyle until the proposed net drum has been installed.

Three sites with a muddy bottom were chosen and towed with the Rockhopper on 1/11/88, and again on 3/11/88 and 4/11/88 with the Sea Star. In terms of overall catch, the Rockhopper caught more cod, hake, haddock, poor cod, conger, horse mackerel and rays, while the Sea Star caught more whiting, plaice, lesser spotted dogfish, escallops, squid and edible crab. The differences in the overall catches of norway pout, angler, spurdog and nephrops are probably too small to be significantly different (figure 1 and table 1).

The rockhopper caught more "0" group whiting than the Sea Star at site 1, but less "0" group whiting than the Sea Star at site 3. The Sea Star caught more "0" group hake than the Rockhopper at all three comparison sites. The Sea Star also caught less "0" group haddock at site 3, the only site where these were caught (table 2).

In addition, the Rockhopper trawl was used on five hard ground tows (tows 1, 2, 3, 4 and 8), which could not be trawled with the Sea Star trawl. "0" group whiting were present in all five tows, with the highest catch rate of the cruise, 568 per hour being obtained during tow 2. "0" group hake were present in tows 2 and 3, with the highest catch rate of the cruise, 563 per hour, also being obtained from tow 2 (table 3).

Too much interpretation should not be placed on minor differences in the fish catching ability of the two nets. These differences can be either enhanced or diminished by variation in light intensity (eg. time of day), tidal strength and direction, as well as wind speed and direction. These factors can affect both the shoaling behaviour of the fish and the height that they swim above the sea bed. Changes in tidal strength and direction can also affect the efficiency of demersal trawl nets. In ideal circumstances, a larger number of replicate tows would have been made using two vessels of similar displacement and power. Such detail is not necessary for these particular net trials, and the observed catches closely matched the expected results.

The Sea Star is more efficient at catching fish which are on or are very close to the sea bed, due to the type of footrope fitted to the net. The Rockhopper however, is more efficient at catching fish which are higher off the bottom, due to it's greater headline height. In addition the Rockhopper trawl can also catch fish on areas of hard bottom, due to the special design of the rubber disc

bobbin gear mounted on it's footrope. The Sea Star cannot be used at all in such areas as, it would very quickly become badly damaged.

As 65% of the sampling areas in the proposed juvenile cruise are hard bottom, and as the Rockhopper appears to be almost as efficient at catching "0" group Gadoids on areas of muddy bottom, which represent 28% of the proposed sampling areas, the Rockhopper trawl is obviously the more suitable net for juvenile Gadoid research. The remaining 7% of the proposed sampling area is sandy bottom.

A new Rockhopper trawl therefore be ordered as soon as is practicable. This trawl should be identical in size to the existing 300HP Rockhopper, but should be rigged on heavier combination wire and chain, and be constructed of heavier twine, as would be used in the manufacture of a 1200HP trawl. The existing Rockhopper should then be retained as the spare trawl net for this type of research. It is most important to carry at least one complete spare trawl net on a research cruise, as this can avoid the loss of a day's fishing should be badly damaged. This risk of such damage is high during experimental fishing. Although the crew can repair even major damage, the use of two nets means that one can be repaired while the other is in use. This reduces downtime due to gear damage to a minimum.

If a seperate study was required for "0" group flatfish, a similar comparison is recommended between the Sea Star and the three bridle Butterfly trawl nets.

W Mc Curdy

W Mc Curdy S.I.C.
9/11/88

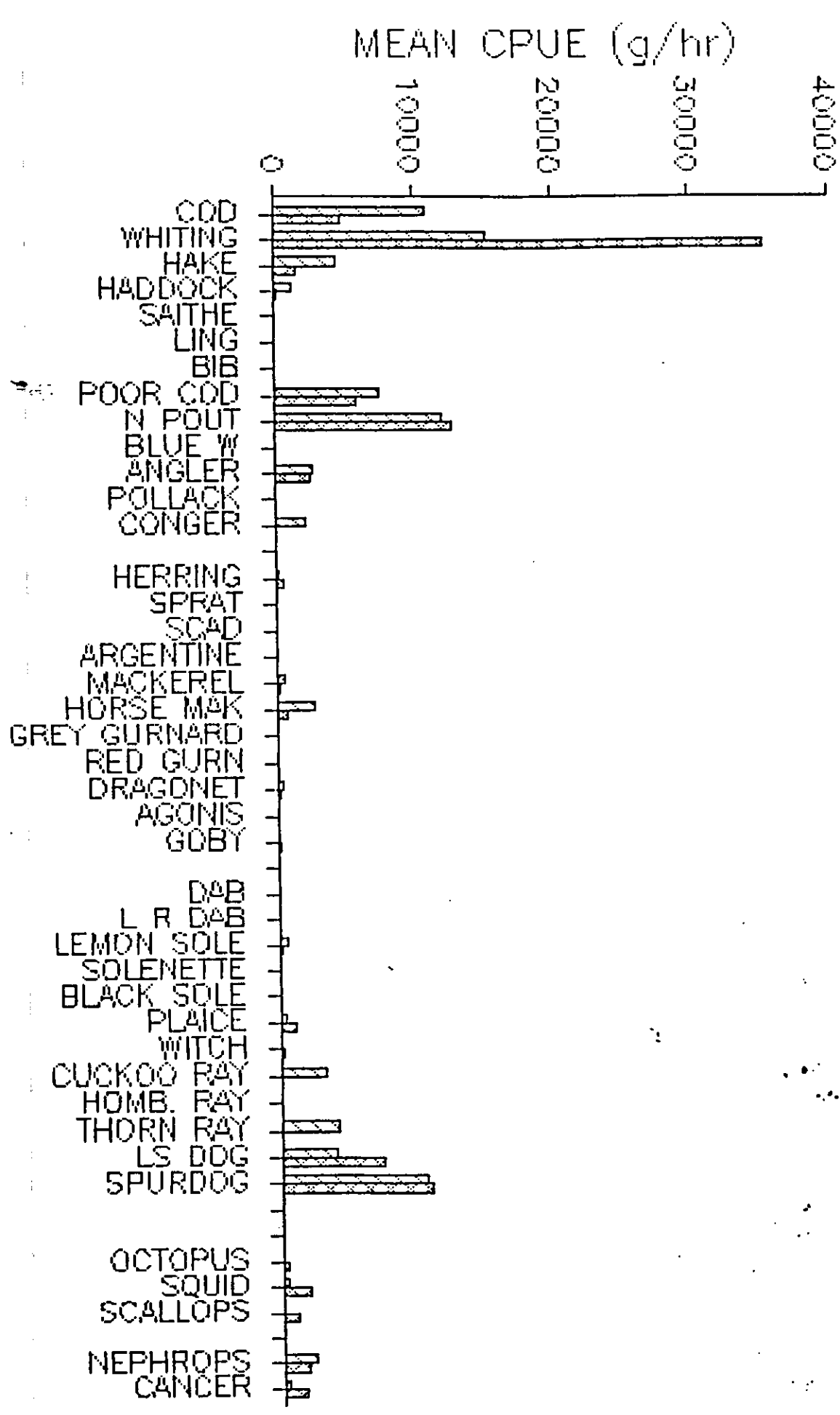
Seen in draft:

AWB

Master.

Fishing Skipper.

CPUE FOR A. ~~rockhopper~~ rockhopper B. star on mud
 (whiting/2)



SPECIES

DATE	1	2	3	4	5	6
NET	31/10/82	31/10/83	31/10/83	1/11/83	1/11/83	1/11/83
ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
STATION	12	14	14	8	14	14
SUBSTRATU	HARD	HARD	HARD	HARD	MUD	MUD
TOW	1	2	3	4	5	6
DEPTH (FA	37.5	60	70	75	55	47.5
TOW DURAT	90	78	64	55	64	65
species						
COD	11500		2340	21550	12970	10750
WHITING	10170	25080	297	7067.6	38304	37919
HAKE	480	1145	21	12755	6120	4920
HADDOCK				1858		
SAITHE				1535		
LING	20	15	1260	10		
BIB				1620		
POOR COD	305	2055	2475	6340.45	8630	10513
N POUT	3140	4135	5934	22613.05	24044	6661
BLUE W		85		293.2		
ANGLER		140	1285	3105	955	1305
POLLACK						
WASSER			9325	4070	5525	915
HERRING	5060			109.95		135
SPRAT	5			146.6		10
SEAD						
ARGENTINE						
MACKEREL	165		105			
HORSE MAK			420	480	2945	
GREY GURNARD						
RED GURN						
DRAGONET						78
AGONIS						26
GOBY		5				78
DAB				65		
L R DAB	355					
LEMON SOL	310					740
SOLENETTE						
SOLE						
PLAICE						
WITCH						
CUCKOO RAY				3820	3465	
HOMB. RAY				3320		
THORN RAY			1440	6305	4445	
LS DOG	8950	5	2545	930		
SPURDOG		43225	7625		5650	22015
OCTOPUS			175	145		
SQUID	915			525	249	315
SCALLOPS						
NEPHROPS	465	1235	415		3970	2992
CANCER			970	275	845	
total (Kg	41.84	77.125	36.632	98.93885	118.117	99.372

	1/11/88	2/11/88	3:11:88	4:11:88	4:11:88	4:11:88	1/11/88
	ROCK	ROCK	star	star	star	star	
STRATU	13	4	13	14	14	30	
	MUD	L SHADY	MUD	MUD	MUD	SAND	
DEPTH	7	8	9	10	11	12	
DURAT	35	82.5	35	47.5	55	25	
	40	150	45	60	63	55	
ies							
ING	14089	22997.5	93500	50000	38834.1	26975	
	2006	22000	1730	2340	453.2	3775	
OCK	830	3370	445				
HE		3180					
		2000		10			65
			130				
COD	3088	16065.5	9740	950	4032	506	
UT	5154	1079.5	12660	4505	17808	355	
W					20		
ER	4145		4460	1535	90	6300	
ACK		8000					
ER	245	38000			110		
ING			850	145	180	100	
T	7			5	92.1	4955	
		1005					
NTINE			110				
EREL	395			230		85	
E MAK				550	925		
GURN	10		19	95			
GURN							
ONET	304		285	25		915	
IS							
RY				75	96		805
							340
DAR			15	120			110
N SOL	220	455	50		334.95		65
NETTE			35				
K SOLE							
CE	200		1560				49820
H	10		265	5			430
OD RAY		7485					
. RAY		34900	95				
N RAY		22000					12725
OG	5390	9000	16445	130			20433
DOG	3675	12000			11330		
PUS			415				145
D	425	240	4315	130			1310
LOPS			1590				
ROPS	353		870	2725	1308.1		1160
ER			2720	365	815		2185
l (Kg)	40.546	240.7775	156.149	68.115	82.05845		148.533

TABLE 2.

COMPARISON SITE	SPECIES	TOW	NUMBER OF "O" GROUP PER HOUR TOW	
			ROCKHOPPER	SEA STAR
1	WHITING	5	638	185
1	HAKE	5	197	210
1	HADDOCK	5	---	---
2	WHITING	6	415	457
2	HAKE	6	12	31
2	HADDOCK	6	---	---
3	WHITING	7	222	565
3	HAKE	7	24	9
3	HADDOCK	7	30	16

TABLE 3.

NUMBER OF "O" GROUP PER HOUR	TOW 1	TOW 2	TOW 3	TOW 4	TOW 8	TOW 12
WHITING	26	568	16	13	3	196
HAKE	---	563	13	---	---	7
HADDOCK	---	---	---	---	---	---

LOUGH FOYLE CRUISE 1/88, HAKE LENGTH FREQUENCIES.

DATE:	01/11/88	04/11/88	01/11/88	04/11/88
NET:	ROCKHOPPER	SEA STAR	ROCKHOPPER	SEA STAR
STATION:	1	1	2	2
TOW:	5	11	6	10

length (cm)

5				
6				1
7				
8				3
9		28.8		6
10	10	57.6	2	5
11	50	67.2	3	4
12	20	38.4	3	4
13	80	19.2	3	3
14	30	9.6	1	4
15	20		1	
16				1
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				2
29				3
30	1			3
31				1
32	1			
33				
34				1
35	1			
36	2			
37				
38				
39				
40				
41	1			
42				
43				
44				
TOTAL	217	220.8	13	41
MEAN	13.5	11.0	12.1	15.5

LOUGH FOYLE CRUISE 1/88, HAKE LENGTH FREQUENCIES.

DATE: 01:11:88 03/11/88
 NET: ROCKHOPPER SEA STAR
 STATION: 3 3
 TOW: 7 9

length (cm)

5		
6		
7		
8		
9		
10		
11		2
12	4	1
13	8	2
14		
15	4	
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		2
28		
29		
30	2	1
31	2	3
32		1
33	2	
34	2	
35		1
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
TOTAL	24	13
MEAN	19.5	23.4

LOUGH FOYLE CRUISE 1/88, WHITING LENGTH FREQUENCIES.

DATE:	01/11/88	04/11/88	01/11/88	04/11/88
NET:	ROCKHOPPER	SEA STAR	ROCKHOPPER	SEA STAR
STATION:	1	1	2	2
TOW:	5	11	6	10

length (cm)

5				
6				
7				
8				
9	30		36	12.06
10	90		47	12.06
11	130	9.6	52	24.12
12	110	48.0	78	18.09
13	60	19.2	69	66.33
14	60	38.4	68	84.42
15	80	28.8	31	30.15
16	50	28.8	26	66.33
17	50	9.6	26	66.33
18	10		12	18.09
19	10		2	18.09
20		9.6	2	12.06
21			4	18.09
22	12	2.03	4	6.03
23	3	8.12	7	42.21
24	4	14.21	14	12.06
25	9	12.18	21	24.12
26	8	12.18	39	36.18
27	13	4.06	32	54.27
28	7	16.24	11	24.12
29	6	6.09	5	6.03
30	6	2.03	7	6.03
31	6	6.09	11	6.03
32	6		2	
33	4	4.06	7	6.03
34	4	2.03		1
35	3	2.03		
36	3			
37	1	4.06		
38	1	4.06		
39				
40	1			
41		2.03		
42	2			
43	1			
44				
TOTAL	780	293.5	613	669.33
MEAN	14.9	19.0	16.5	18.7

LOUGH FOYLE CRUISE 1/88, WHITING LENGTH FREQUENCIES.

DATE: 01:11:88 03/11/88
 NET: ROCKHOPPER SEA STAR
 STATION: 3 3
 TOW: 7 9

length (cm)

5		
6		
7		
8		
9		
10	11	6.62
11	7	26.50
12	7	39.74
13	7	39.7
14	7	39.74
15	8	93.02
16	39	39.74
17	24	39.7
18	24	39.7
19	12	19.87
20	2	19.87
21		13.25
22	1	6.62
23	6	39.74
24	13	26.50
25	7	79.49
26	12	99.36
27	6	72.86
28	6	79.49
29	1	19.87
30		19.87
31	3	
32	1	6.62
33		6.62
34		6.62
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
TOTAL	204	881.12
MEAN	18.9	21.2

LOUGH FOYLE, CRUISE 1/88, TOW DATA.

DATE	TOW		TIME	LATITUDE	LONGITUDE
31/10/88	1	SHOT	12:18	54 15.00 N	04 54.00 W
		HAULED	13:48	54 13.80 N	04 54.70 W
31/10/88	2	SHOT	14:27	54 13.00 N	04 58.00 W
		HAULED	15:45	54 16.70 N	05 00.20 W
31/10/88	3	SHOT	16:26	54 18.13 N	05 01.67 W
		HAULED	17:30	54 21.00 N	05 05.75 W
01/11/88	4	SHOT	08:35		
		HAULED	09:30		
01/11/88	5	SHOT	11:51		
		HAULED	12:55		
01/11/88	6	SHOT	13:45		
		HAULED	14:50		
01/11/88	7	SHOT	15:25		
		HAULED	16:05		
02/11/88	8	SHOT	12:30		
		HAULED	15:00		
03/11/88	9	SHOT	12:25		
		HAULED	13:10		
04/11/88	10	SHOT	07:35		
		HAULED	08:35		
04/11/88	11	SHOT	09:25		
		HAULED	10:28		
04/11/88	12	SHOT	13:05		
		HAULED	14:00		

*Data on 5th tow is from Reading
and will be converted to lat/long
by Fishing Sheriff next week*

*Wmcc
14/11/88*

LOUGH FOYLE CRUISE 1/88
 APPROXIMATE TRACK OF VESSEL

- 31/10/88
- 1/11/88
- 2/11/88
- 3/11/88 to 4/11/88

