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FRV *Scotia*

Cruise 1302S

REPORT

31 August - 19 September 2002

Personnel

A W Newton (In charge)
C Shand
K J Peach
T Blasdale
A Weetman
F Burns
C Miller
O Goudie
F Mackie (Visitor)

Objectives

1. To undertake a limited demersal survey on the Rockall Plateau.
2. To map the composition, distribution and abundance of shelf edge and slope species.
3. To investigate the occurrence of *Nephrops* on the upper shelf slope using a TV sledge and a drop frame.

Out-turn days per project: 18 days, M01Ta (time lost due to port calls in Ullapool for spares)

Narrative

Scotia sailed from Aberdeen at 1000 hours on Saturday 31 August and proceeded to make passage to the Rockall plateau. Progress was hampered by a south-westerly 8/9 gale and the vessel was not on station until mid-morning on the following Monday. The arrival of *Scotia* on station coincided with an abatement of the weather and for the next four days every effort was made to complete the survey whilst the good weather lasted. The reduced survey was completed at 1400 hours on Thursday 5 September and course set for Stornoway. On this stage of the voyage *Scotia* benefited from a westerly 9 and the vessel docked at 1200 hours on Friday. During the port call the Rockall survey gear was decommissioned and the deep-water trawl rigged; at the same time extensive efforts were made to complete the installation of the TV survey equipment. The following day *Scotia* proceeded down the Minch towards deep-water stations west of Barra Head. Whilst on passage further attempts were made to spool the TV cable onto the appropriate winch but with little success. The deep-water survey commenced at 0530 hours on Sunday 8 September. The weather was favourable and the first sector of the deep-water survey (Barra Head to Donegal Bay) was conducted on schedule. The second sector (Barra Head to Butt of Lewis) was about to commence on Friday 13 September when a fault developed in one of the propulsion motors and *Scotia* had to proceed to Ullapool to wait for

a shore based technician and for spare parts. The survey re-commenced on Sunday 15 September and continued until *Scotia* sailed for Aberdeen on Wednesday 18 September. *Scotia* docked at Aberdeen at 1000 hours on 19 September.

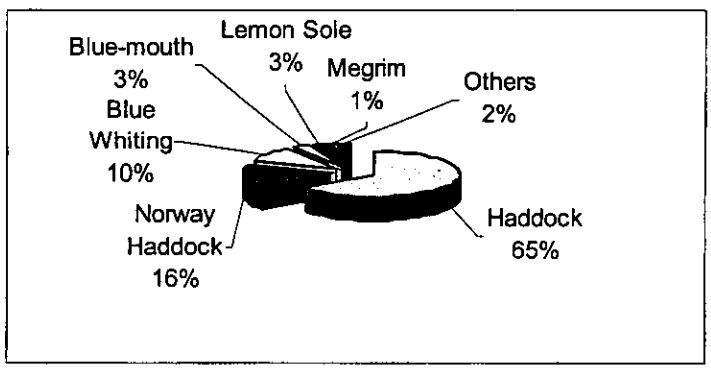
Results - Part 1 (Rockall Haddock Survey)

In recent years the regular annual survey to the Rockall Plateau has been restricted to a biennial survey (in odd years) alternating with a deepwater survey in the even dated years. Thus this year (2002) a Rockall survey was not on the original schedule but given the continuing importance of the Rockall fishery it was decided to undertake an additional survey, albeit on a more limited scale.

Following gear trials at Rockall in 1999 the standard survey gear was altered and during this survey 30 trawls of 30 minute duration were made on the plateau using the GOV trawl fitted with groundgear C and an internal liner of 20 mm. There was one foul haul. The normal Rockall survey consists of 44 stations but this was a limited survey and the decision was taken to exclude the 14 stations that lie south of 57°N; this included the 11 stations within the international conservation area.

In total 8.3 tonnes of fish were caught and as is to be expected haddock were the dominant species, providing 64% of the catch. The next most important species were *Sebastes viviparous* (16%) followed by *Micromesistius poutassou* (10%) and then by *Helicolenus dactylopterus* and *Microstomus kitt* (both at 3%). 28 different species were encountered but the only other significant species, each contributing approximately 0.5% each to the catch, were grey gurnard, monks and lesser argentine.

Figure 1. Catch Composition at Rockall



The primary objective of the survey is to assess the state of the haddock stock on Rockall Plateau; normally this is done by comparing the strength of the respective year classes in the current year with those of previous years. Table 1 summarises these results. The initial impression is that currently there are very few commercial sized haddock on the Plateau. The fishery appears to be supported almost entirely by the 2000 year class. Whilst the 2001 year class gives considerable hope for the near future it should be noted that recruitment of this year's 0-group fish, i.e. the 2002 brood stock, is poor; it being the second lowest since 1985. Given the current state of the haddock stock in this area it is difficult to be optimistic about the future fishing potential in the medium or long term.

Table 1 Numbers of haddock per 10 hours – Rockall 1991 – 2002

Year	Age								
	0	1	2	3	4	5	6	7	8
1991	14458	16398	4431	683	315	228	37	64	3
1992	20336	44912	14631	3150	647	127	200	4	35
1993	15220	37959	15689	3716	1104	183	38	73	21
1994	23474	13287	11399	4314	969	203	30	12	4
1995	16923	16971	6648	5993	1935	483	200	16	
1996	33578	19420	5903	1940	1317	325	69	6	1
1997	28897	10693	2384	538	292	281	71	9	1
1998	No survey								
1999	10178	9969	2410	708	279	172	90	64	32
2000	No Survey								
2001	31813	7455	521	284	154	39	14	12	14
2002	11704	20925	2464	173	105	65	20	10	15

The GOV trawl was continuously monitored by Scanmar equipment in order to measure essential parameters of the net. Table 2 provides a summary of the measurements obtained and gives a comparison with the parameters obtained in 2001.

Table 2 GOV Parameters at Rockall

	Door Spread (metres)	Wing End Spread (metres)	Headline Height (metres)
Mean Values 2001	90.8	21.2	4.4
Mean Values 2002	88.4	20.3	4.3

Part II (Deep-water Survey)

For this survey Scotia used a Jackson deepwater net fitted with a 20 mm internal liner. The sampling protocol was to fish for two hours at each station and this was adhered to whether possible but for operational reasons six stations were limited to a one hour duration. Fish on the shelf edge are very depth dependent and thus *Scotia* operated at a number of discrete depths e.g. 500,.750, 1000 and 1500 metres. Despite the suspension of operations for engine repairs in Ullapool 32 valid hauls were made during this survey; this compares favourably with the 34 hauls made in 2000. The opportunity was also taken with the provision of new trawl warps to extend the survey by making two tows down to 1950 metres. The results of the latter were disappointing both in quantity and variety of species caught and future surveys should restrict themselves to a maximum depth of 1800 metres.

The purpose of the survey was to extend the Laboratory's knowledge of deepwater species occurring to the west of Scotland with regard to species assemblage and stock size of commercial species. Table 3 lists all the species caught (137 in total of which 14 had not been previously recorded by FRS) together with the total weight of each species for the survey. A total of 31 tonnes of fish were handled with the main species being Round nose grenadier (6.9 tonnes), Greater argentine (2.9), *Chimera monstrosa* (2.9), Blue mouth (2.5), Smoothheads (2.4) and Black scabbardfish (1.8). The one striking feature of the survey was the very close resemblance to the data acquired in 2000. Catch composition and quantity were very similar for both years and it was possible to predict with a degree of accuracy the catch composition at

each station (see Table 4). The data from a three year period would suggest that many deepwater species have been able to survive the onslaught of commercial fishing more readily than first feared. However, the survey did highlight the almost total disappearance of Orange roughy from the area surveyed.

Table 3 - Weight (Kgs) of species caught on Deepwater survey

Agassiz's smooth-head	3.1
Aldrovandia phalacra	0.1
Angler (Monk)	213.9
Antimora	53.0
Arctic Skate	7.9
Argyropelicus gigas	0.1
Bathylagus euryops	0.4
Bathysaurus ferox	0.1
Bean's sawtoothed eel	2.1
Bentnose rabitfish	69.1
Big-eyed smooth-head	7.7
Black dogfish	34.4
Black Mouthed Dogfish	379.7
Black Scabbardfish	1832.8
Black-bellied Angler	4.3
Blackfish	21.4
Blue Ling	268.5
Blue ray	0.6
Blue Whiting	1489.3
Blue-mouth	2502.9
Bluntsnout Smooth-head	8.8
Bonaparte's Spiny Eel	67.0
Borostomias antarcticus	0.4
Bullseye	22.1
Cataetyx laticeps	295.4
Chemnitz's Spiny Eel	29.8
Cod	60.2
Common Dab	0.1
Conger Eel	144.9
Cut-throat Eel	157.4
Darkie Charlie	25.3
Deepwater Ray	16.0
Dragonet	0.1
Duckbill oceanic eel	0.3
Esmark's Eelpout	6.2
False Boarfish	5.6
False Catshark	8.2
Fangtooth	0.1
Four-spot Megrim	4.8
Fylla's Ray	2.7
Ghost Catshark	15.4
Gonostoma bathyphilum	0.1
Gonostoma elongatum	0.1
Greater Argentine	2970.7
Greater Forkbeard	408.5
Greater lantern shark	191.2
Grey Gurnard	0.1
Gunther's grenadier	106.6
Haddock	138.6
Hake	1044.5
Halargyreus johnsonii	95.2
Halibut	1.8
Halosauropsis macrochir	1.8
Hatchetfish	0.5
Hollowsnout Rat tail	304.3
Horse Mackerel (Scad)	9.5
Hydrolagus pallidus	100.9
Iceland Catshark	30.1
Jelly Cat	3.9
Johnson's Scabbardfish	6.4
Krefft's ray	0.1
Laemonena latifrons	0.1
Lampadena speculigera	0.2
Lantern fishes unidentified	1.1
Large-eyed Rabbitfish	45.6
Leafscale Gulper Shark	450.7
Legless searsid	0.1
Lemon Sole	43.0
Lepidion eques	374.7
Lesser Argentine	11.0
Lesser Spotted Dogfish	35.4
Ling	239.4
Long Rough Dab	0.9
Longnose lancetfish	2.6
Longnose velvet dogfish	498.5
Lycodes unidentified	0.2
Malacosteus niger	0.5
Mediterranean Grenadier	51.0
Megrim	74.4
Melamphaidae unidentified	0.1
Melanonus zugmayeri	0.1
Melanostigma atlanticum	0.5
Mora	1.5
Mouse catshark	11.0
Multipore searsid	1.0
Murray's Rat tail	449.6
Murray's smooth-head	2.6
Norway Haddock	0.4
Norway Lobster	22.9
Orange Roughy	24.5
Pale Catshark	22.9
Pallid sculpin	15.2
Paraliparis bathybius	0.6
Paraliparis unidentified	0.3
Pearlfish	0.4
Plaice	0.2
Portuguese Shark	536.5
Rabbit Ratfish	2880.5
Raja kukujevi	2.8
Redfish (mentella)	1.0
Risso's Spiny Eel	2.9
Rocklings unidentified	0.7
Round Nosed Grenadier	6924.8
Saithe	1556.6
Sandy Ray	1.1
Schnakenbeck's searsid	0.2
Scopelogadus beanii	0.6
Scopelosaurus lepidus	0.2
Short Finned Squid	65.4
Shovelnosed Shark	201.8
Silver roughy	0.1
Silvery Pout	260.1
Six Gilled Shark	29.0
Skate	26.1
Skates unidentified	0.1
Sloan's Viperfish	0.3
Smalleye rabbitfish	289.4
Smooth Rat tail	54.2
Smoothhead	2435.9
Smoothheads unidentified	0.3
Snake Pipefish	0.1
Snubnosed Eel	0.1
Softhead Rat tail	21.1
Softskin smooth-head	6.5
Spear-snouted grenadier	112.6
Spectrunculus grandis	4.1
Spiderfish	5.3
Spotted Dragonet	0.1
Spurdog	2.2
Stomias boa ferox	0.3
Straightnose rabbitfish	8.5
Torsk	68.4
Velvet Belly	39.2
Whiteheaded hagfish	1.0
Witch	58.3
Zugmayer's pearlfish	0.1
Total	31158.8

Table 4 - Weight (Kg) of Selected Species by Depth Range

	Depth Range (metres)							
	< 500		500-999		1000-1400		> 1400	
Year	2000	2002	2000	2002	2000	2002	2000	2002
Species								
Angler (Monk)	6	117	152	75	6	22		
Antimora			1		4	1	12	52
Bentnose rabbitfish					21	13	69	57
Black dogfish			4		23	11	31	24
Black Mouthed Dogfish	138	309	57	72				
Black Scabbardfish		8	978	669	832	1113	18	49
Blue Ling	1	6	84	83	72	89		111
Blue Whiting	1262	1048	207	441	5			
Blue-mouth	897	2056	220	447	1			
Bluntsnout Smooth-head			23	4	44	8		
Bonaparte's Spiny Eel			14	5	17	54	14	8
Bullseye		1	13	16	2	3		
Cataetyx laticeps					44	13	250	283
Chemnitz's Spiny Eel			3		11	10	33	20
Cod	60	80						
Conger Eel	254	127	22	16				
Cut-throat Eel			2	1	8	39	86	117
False Catshark					25	8		
Greater Argentine	141	822	2199	2346	2	3		
Greater Forkbeard	238	160	282	245	19	4		
Greater lantern shark			12		181	46	37	145
Greenland Halibut							11	
Gunther's grenadier			1		11	7	47	89
Haddock	134	139						
Hake	259	772	660	273				
Halargyreus johnsonii			56	73	34	21	7	1
Hollowsnout Rat tail	50	158	55	146				
Iceland Catshark			8		20	22	19	8
Jelly Cat					13	4		
Large-eyed Rabbitfish			39	25	16	21		
Leafscale Gulper Shark		27	280	276	141	134	29	13
Lemon Sole	20	43						
Lepidion eques		4	299	185	137	175		41
Lesser Argentine	26	11						
Lesser Spotted Dogfish	92	35	9	1				
Ling	157	216	76	23				
Longnose velvet dogfish			285	245	489	226	6	26
Madeiran smooth-head					334		3	
Mediterranean Grenadier					5	1	47	59
Megrim	29	70	7	4				
Mora			13		8	1		
Murray's Rat tail			8		76	212	157	238
Norway Lobster	34	22	5	1				
Orange Roughy					15	7		17
Pale Catshark					1	7	16	16
Pallid sculpin					4	8	6	7
Portuguese Shark			134	34	415	133	306	389
Rabbit Ratfish	1478	2101	650	529	80	58	49	92
Redfish (marinus)	1		9	1				
Risso's Spiny Eel					2	1	10	2
Round Nosed Grenadier		1	1516	75	2722	2152	3509	4888
Saithe	87	1557	5					
Short Finned Squid	8	13	52	38	10	7	7	7
Shovelnosed Shark		6	204	155	173	33	3	3
Silvery Pout	220	245	15	15				
Skate	41	19		7				
Smalleye rabbitfish					66	41	84	260
Smooth Rat tail			58	29	8	26		
Smoothhead			395	22	4463	1383	858	1032
Softhead Rat tail	34	15	20	6				
Spear-snouted grenadier			1		11	38	25	75
Straightnose rabbitfish					29		27	9
Torsk	25	14	37	42	8	12		
Velvet Belly	4	18	119	21				
Witch	9	19	52	33	9	6		

Part III (Nephrops TV Survey)

Due to a technical problem involving the spooling gear on the winch, it was not possible to use the 1200 m cable, and therefore a 430 m replacement was used instead, with the drop frame system. These changes to the plan had a limiting effect on the depth and sea conditions in which TV work could be carried out.

Despite these difficulties, TV work was carried out over eight nights during the second part of the cruise, and a total of 21 stations were examined. Video recordings from the trip to establish burrow densities and *Nephrops* occurrence have still to be reviewed on return to the Laboratory. The table attached shows the date, shooting and hauling positions, depths reached and distance covered over the ground.

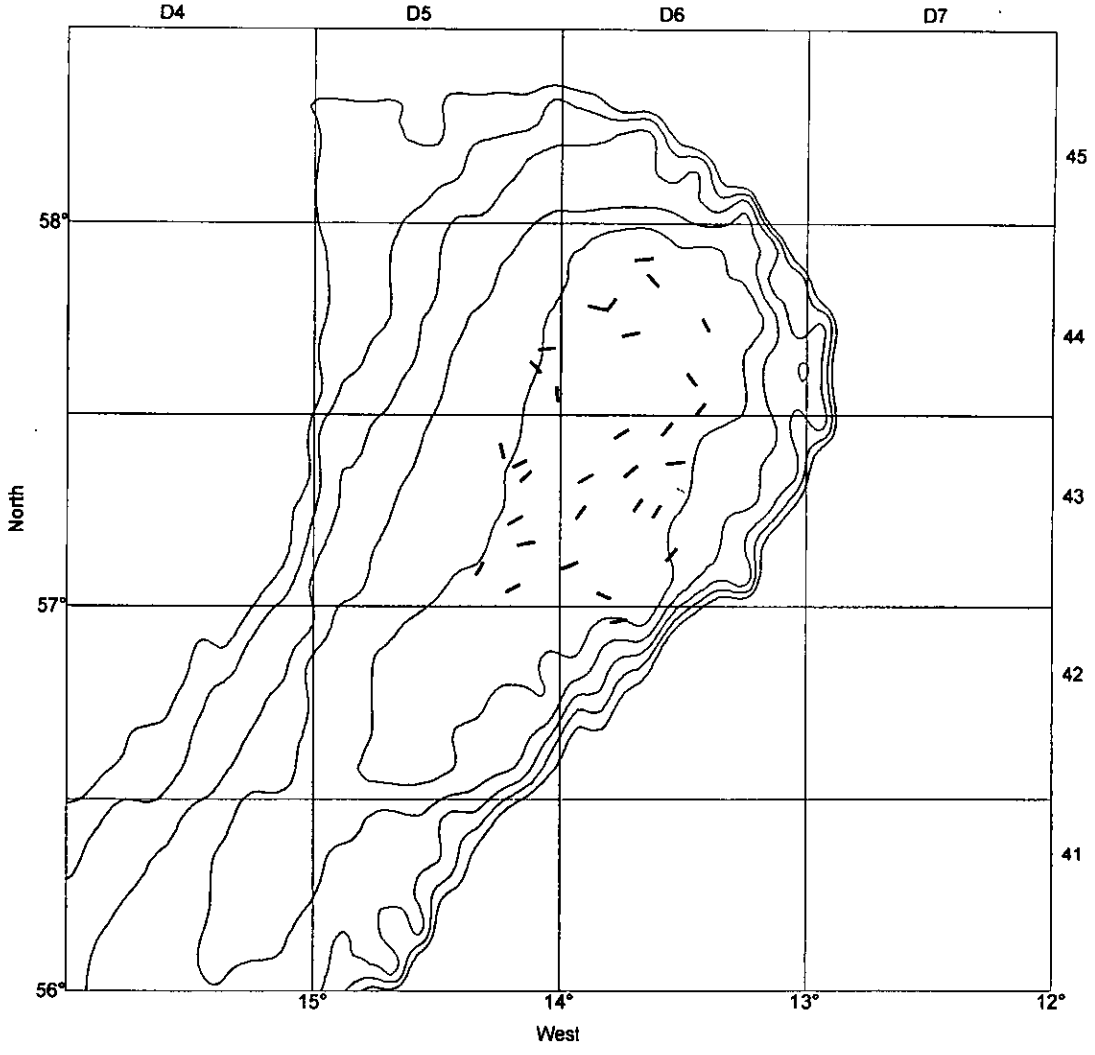
Table 5 - Positions of TV Camera Work

Tow No	Date	Latitude (N)		Longitude (W)		Depth (m)	Distance (m)
1	09/09/2002	56	52.254	9	17.388	330	N/A
2	09/09/2002	55	52.380	9	15.633	214	1132
3	09/09/2002	55	51.387	9	16.381	256	448
4	10/09/2002	55	03.156	9	12.547	355	111
5	10/09/2002	55	09.390	10	08.300	251	358
6	11/09/2002	56	25.580	9	04.354	240	241
7	11/09/2002	56	36.088	9	01.710	291	247
8	12/09/2002	56	40.537	8	59.105	322	127
9	12/09/2002	56	41.002	8	59.094	271	496
10	12/09/2002	56	44.516	9	00.766	288	706
11	13/09/2002	56	48.433	9	02.474	272	211
12	13/09/2002	56	52.018	9	03.075	256	166
13	16/09/2002	57	37.720	8	48.685	166	143
14	16/09/2002	57	34.094	8	44.944	161	156
15	16/09/2002	57	35.174	8	36.022	160	105
16	17/09/2002	57	37.142	8	37.882	160	93
17	17/09/02	58	37.503	8	1.645	303	276
18	18/09/02	58	37.983	7	59.239	290	250
19	18/09/02	58	38.604	7	56.867	283	281
20	18/09/02	58	39.281	7	55.357	286	274
21	18/09/02	58	40.347	7	53.396	294	274

A W Newton
23 October 2002

Seen in Draft: Captain P Barrett

Scotia Rockall 2002 Haddock Survey Trawl Tracks



Scotia Deepwater Survey 2002 - Trawl Tracks