

CRUISE REPORT: Isle of Man and Belfast Lough

15th Sept – 17th Sept 2008

RV Prince Madog Cruise

Cruise Number: 30/08

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ABSTRACT

This report details a scientific research cruise undertaken in the Isle of Man waters and Belfast Lough during September 2008. The principle aims of the cruise were to: 1) collect 300 live *A. islandica* from Belfast Lough which cover a range of size classes; and 2) collect *A. islandica* shells from the Isle of Man area. The Belfast Lough population is to be used in a Research into Ageing project, while the shells collected from the Isle of Man are to be used in clam sclerochronology studies to expand the growth series chronology for the Irish Sea.

All *A. islandica* were obtained with a custom made 'Arctica dredge' and quantitative sampling was undertaken using a Van veen Grab.

In total 4 stations were identified for the collection of *A. islandica*. These included 3 sites in Isle of Man waters (D11 & D14), one sight off the East coast of Northern Ireland (A) and one site in the mouth of Belfast Lough (C) (Figure 1). The numbers of live (undamaged and damaged) and dead *A. islandica* obtained from each tow and each station are provided in the report below.

PERSONNEL

All the scientific crew involved were from the School of Ocean Sciences, Bangor University.

1. Dr Iain Ridgway (PSO)
2. Paul Butler

SCHEDULE

- 15th September:** Cruise begins at Menai Bridge, SOS staff embark
13:00 Depart
Test gear in the Southern Irish Sea
Overnight transit to station D11, Isle of Man
- 16th September:** 07:00 Arrive at station D11, Isle of Man
08:57 – 11:15 Sampling station D11, 6 *Arctica* dredges.
Transit to Station D14
11:45 – 15:00 Sampling station D14, 4 *Arctica* dredges, 2 Van veen grabs
Transit to station A
16:00 – 18:30 Sampling station D11, 4 *Arctica* dredges.
Transit to Bangor, Northern Ireland, overnight in dock.
- 16th September:** 07:00 Arrive at station D11, Isle of Man
08:30 – 15:00 Sampling station C, 14 *Arctica* dredges, 3 Van veen grabs.
Transit to Bangor, Northern Ireland, end of cruise.

OBJECTIVES:

The cruise had 2 distinct objectives, which were to:

1. Collect 300 live *A. islandica* (L.) with the *Arctica* dredge covering a range of sizes/ages from the mouth of Belfast Lough (Station C) for later use in an ageing research project;
2. Collect *Arctica* shells at Stations D11 and D14 off the NW coast of the Isle of Man and A off the East coast of Northern Ireland using the *Arctica* dredge.

STATIONS

The dredge was deployed at 4 stations identified in the original cruise plan; stations D11, D14 and C.

Station	Location	Latitude		Longitude		No. of <i>A. islandica</i> collected					
						Live undamaged	Live damaged	Dead (single)	Dead paired		
D11	West of IOM	54°	24	N	5°	00	W	8	17	7	1
D14	West of IOM	54°	25	N	5°	35.25	W	-	-	-	-
A	West of IOM	54°	20	N	5°	20	W	-	-	-	-
C	Belfast Lough	54°	42.10	N	5°	35.25	W	145	117	8	269

Table 1: Station positions and number of specimens collected from each location.

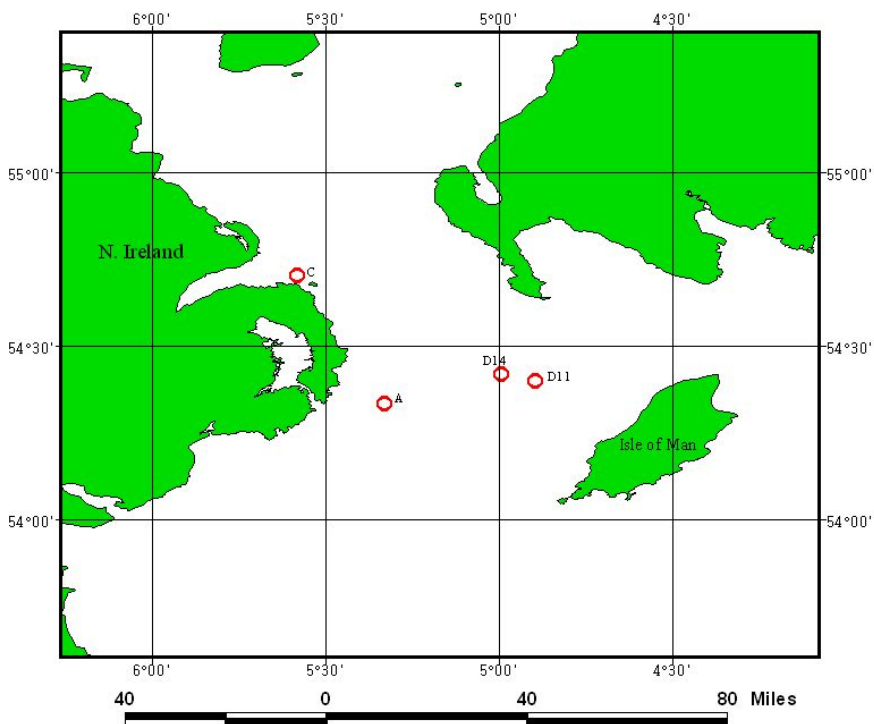


Figure 1: Chart of the Northern Irish Sea area showing the position of the stations visited during the cruise.

The co-ordinates, depth, duration of each of the tow and the number and state of *A. islandica* collected is provided in Appendix A and B at the end of the document.

STATION D11

Site D11 is the northward continuation of a transect of sites where *A. islandica* has been previously found off the west coast of the Isle of Man. Cruise 23/05 (June 2005) found 20 live specimens at D7 and 1 at D3. Cruise 30/06 (September 2006) found 6 at D7.

In June 2008 Paul Butler sampled station D11 on the hypothesis that *A. islandica* populations might exist around the eastern edge of the western Irish Sea gyre at depth contours between 40m and 60m, cruise 19/08 (end of April 2007)..

In total 6 *Arctica* dredge tows were undertaken at D11 obtaining 24 live *A. islandica* and 9 sub-fossil shells. The location of each individual tow is provided in Figure 2.

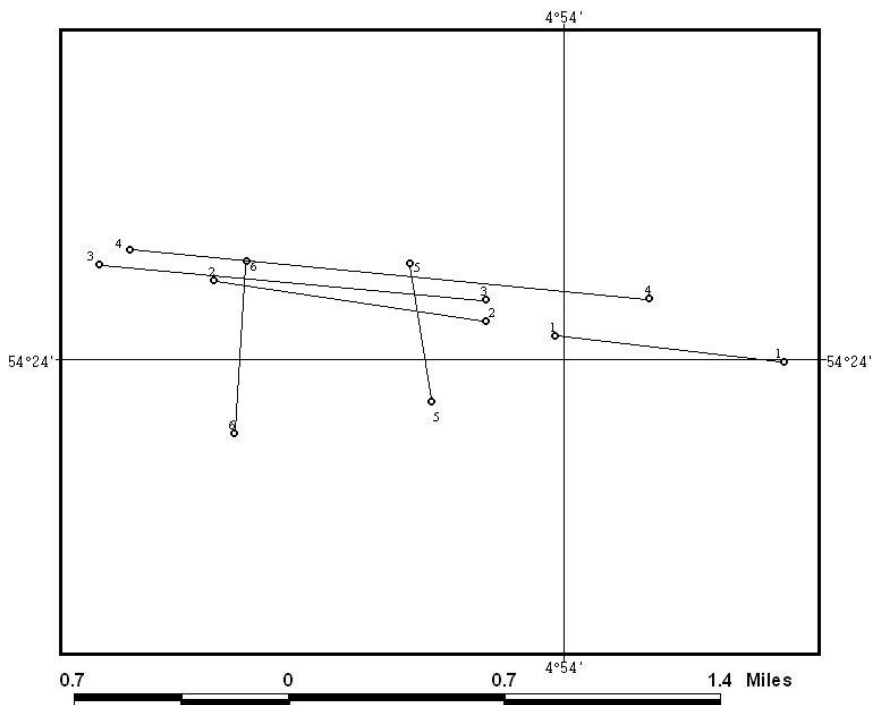


Figure 2: The locations of the 6 tows undertaken at station D11.

STATION D14

Site A was selected by Paul Butler as a possible location of an *A. islandica* population.

In total 4 *Arctica* dredge tows were undertaken at D14 obtaining no *A. islandica* shells. The dredge contained unidentified shells, stones and mud.

At station D14, 2 grab samples were undertaken. The details are included in appendix A. The contents of these grabs were analysed by Andy Mackie at the National Museum of Wales. No *Arctica* shells were collected in these grabs.

STATION A

Station A was selected by Paul Butler as a possible location of an *A. islandica* population.

In total 4 *Arctica* dredge tows were undertaken at A obtaining no *A. islandica* shells. The dredge contained shells (including 2 *Glossus* shells from tow 1), stones and mud. The location of each individual tow is provided in appendix A.

STATION C

The position of Station C was initially identified during Northern Ireland Scallop surveys and visits by the Madog in 2005 and 2008 (cruise 19/08). The site was of specific interest due to the high population density and a large size range previously obtained.

At station C there were 1 objective; to collect 300 live specimens and secondly to quantitatively assess the geographical limits of the population. This objective was not achieved despite 10 x 10 minute *Arctica* dredge tows.

In total 262 live animals and 269 fossil shells were collected in the 14 dredge tows at Station C.

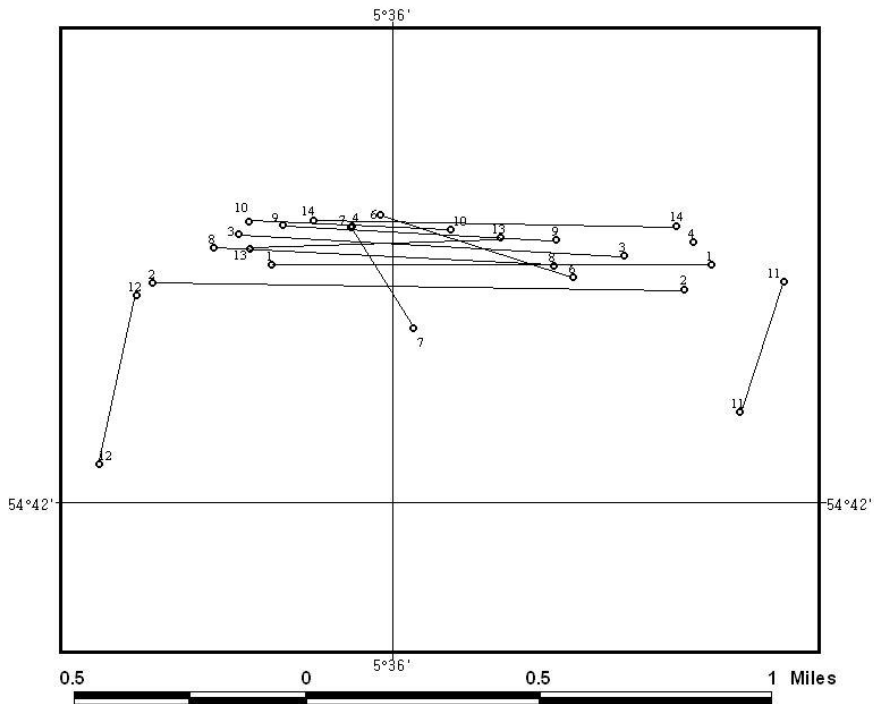


Figure 3: Location of the 14 dredge tows at station C.

The quantitative assessment of the *A. islandica* populations at the 6 other sub-stations throughout station C (cruise 19/08) demonstrated that the population appeared to be restricted to the one location originally sampled. The sampling undertaken here suggests the population does not extend outside the co-ordinates of the area sampled already.

The co-ordinates, depth, duration of each of the tows and the number and state of *A. islandica* collected are provided in Appendix A and B at the end of the document. At station C, 3 grab samples were undertaken. The details are included in the appendix. The contents of these grabs were analysed by Andy Mackie at the National Museum of Wales. No *Arctica* shells were collected in these grabs.

Appendix A – Position time and Depth of tows and grabs

Two rows are shown for each tow, representing the start and finish of dredging or trawling, from the end of the deployment process to the start of the recovery process.

Station D11: *Arctica* Dredges

Date	Tow	Time	Depth (m)	Latitude			Longitude		
16/09/2008	1	08:57	62.2	54	23.992	N	4	53.385	W
16/09/2008	1	09:07		54	24.063	N	4	54.03	W
16/09/2008	2	09:13	74	54	24.106	N	4	54.224	W
16/09/2008	2	09:27		54	24.22	N	4	54.99	W
16/09/2008	3	09:38	86.7	54	24.266	N	4	55.311	W
16/09/2008	3	09:52		54	24.166	N	4	54.225	W
16/09/2008	4	10:05	68	54	24.17	N	4	53.762	W
16/09/2008	4	10:28	88	54	24.307	N	4	55.226	W
16/09/2008	5	10:42	79	54	24.269	N	4	54.436	W
16/09/2008	5	10:52	80	54	23.879	N	4	54.377	W
16/09/2008	6	11:04	81	54	23.79	N	4	54.934	W
16/09/2008	6	11:15	82	54	24.274	N	4	54.896	W

Station D14: *Arctica* Dredges

Date	Tow	Time	Depth (m)	Latitude			Longitude		
16/09/2008	1	11:35	121	54	24.645	N	4	58.208	W
16/09/2008	1	11:45	136	54	24.706	N	4	59.014	W
16/09/2008	2	12:23	123	54	26.471	N	4	58.904	W
16/09/2008	2	12:43		54	26.147	N	4	58.924	W
16/09/2008	3	13:15	132	54	26.726	N	5	2.813	W
16/09/2008	3	13:32		54	26.457	N	5	2.274	W
16/09/2008	4	14:17	120	54	25.63	N	5	7.729	W
16/09/2008	4	14:31		54	25.579	N	5	7.437	W

Station D14: Grab Samples

Date	Grab #	Time	Depth (m)	Latitude			Longitude		
16/09/2008	1	14:48	118	54	25.476	N	5	7.586	N
16/09/2008	2	14:56	119	54	25.479	N	5	7.98	M

Station A: Arctica Dredges

Date	Tow #	Time	Depth (m)	Latitude			Longitude		
16/09/2008	1	16:04	62.3	54	19.918	N	5	18.034	W
16/09/2008	1	16:11		54	20.063	N	5	18.154	W
16/09/2008	2	16:18	70.5	54	20.253	N	5	18.241	W
16/09/2008	2	16:28		54	20.428	N	5	18.35	W
16/09/2008	3	17:32	84.1	54	30.035	N	5	20.641	W
16/09/2008	3	17:46		54	30.35	N	5	20.748	W
16/09/2008	4	18:14	125	54	29.844	N	5	19.335	W
17/09/2008	4	18:25	129	54	30.266	N	5	19.225	W

Station C: Arctica Dredges

Date	Tow #	Time	Depth (m)	Latitude			Longitude		
17/09/2008	1	08:34	22	54	42.441	N	5	36.227	W
17/09/2008	1	08:44		54	42.441	N	5	35.407	W
17/09/2008	2	08:57	25	54	42.396	N	5	35.457	W
17/09/2008	2	09:08		54	42.407	N	5	36.448	W
17/09/2008	3	09:20	22	54	42.498	N	5	36.288	W
17/09/2008	3	09:30		54	42.459	N	5	35.57	W
17/09/2008	4	09:40	26	54	42.483	N	5	35.441	W
17/09/2008	4	09:53		54	42.513	N	5	36.077	W
17/09/2008	5	10:03	23	54	42.545	N	5	36.272	W
17/09/2008	6	10:22	23	54	42.418	N	5	35.664	W
17/09/2008	6	10:32		54	42.534	N	5	36.025	W
17/09/2008	7	10:44	24	54	42.512	N	5	36.08	W
17/09/2008	7	10:54		54	42.324	N	5	35.962	W
17/09/2008	8	11:07	25	54	42.439	N	5	35.701	W
17/09/2008	8	11:17		54	42.474	N	5	36.335	W
17/09/2008	9	11:26	24	54	42.516	N	5	36.205	W
17/09/2008	9	11:36		54	42.488	N	5	35.696	W
17/09/2008	10	12:24	24.4	54	42.521	N	5	36.27	W
17/09/2008	10	12:36		54	42.506	N	5	35.894	W
17/09/2008	11	12:54	22.9	54	42.166	N	5	35.355	W
17/09/2008	11	13:05		54	42.409	N	5	35.273	W
17/09/2008	12	13:20	20.5	54	42.07	N	5	36.547	W
17/09/2008	12	13:30		54	42.385	N	5	36.479	W
17/09/2008	13	13:40	24.3	54	42.47	N	5	36.267	W
17/09/2008	13	13:40		54	42.493	N	5	35.801	W
17/09/2008	14	14:03	24.3	54	42.524	N	5	36.148	W

Station C: Grab Samples

Date	Grab	Time	Depth (m)	Latitude			Longitude		
17/09/2008	1	14:29	24.3	54	42.799	N	5	36.121	W
17/09/2008	2	14:32	24.3	54	42.865	N	5	36.182	W
17/09/2008	3	14:35	24.1	54	42.943	N	5	36.25	W

Appendix B – Numbers of *A. islandica* recovered in each dredge.

Station D11

Station	Tow #	Method	<i>A. islandica</i>			
			Live		Dead	
			Damaged	Undamaged	Paired	Single valves
D11	1	Arctica Dredge	0	0	0	0
D11	2	Arctica Dredge	0	0	0	0
D11	3	Arctica Dredge	7	6	1	2
D11	4	Arctica Dredge	7	1	0	4
D11	5	Arctica Dredge	2	1	0	0
D11	6	Arctica Dredge	1	0	0	1
		Total	17	8	1	8

Station C

Station	Tow #	Method	<i>A. islandica</i>		
			Live		Fossil
			Damaged	Undamaged	
C	1	Arctica Dredge	11	9	14
C	2	Arctica Dredge	15	6	34
C	3	Arctica Dredge	11	16	18
C	4	Arctica Dredge	11	10	13
C	5	Arctica Dredge	11	4	16
C	6	Arctica Dredge	6	17	17
C	7	Arctica Dredge	7	8	17
C	8	Arctica Dredge	11	11	32
C	9	Arctica Dredge	9	16	9
C	10	Arctica Dredge	8	15	25
C	11	Arctica Dredge	0	3	4
C	12	Arctica Dredge	4	5	16
C	13	Arctica Dredge	5	11	23
C	14	Arctica Dredge	8	14	31
		Total	117	145	269