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MRV Scotia

Survey 1714S

PROGRAMME

28 October – 10 November 2014

Ports

Loading: Aberdeen, 23 October, 2014
Unloading: Aberdeen, 10 November 2014

In setting the survey programme and specific objectives, etc. the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the survey report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

Personnel

M Robertson	(SIC)
C Hall	
M Gubbins	
N Collie	
P Copland	
J O'Conner	(JNCC)
M Parry	(JNCC)
D Tobin	(JNCC)
G Duncan	(JNCC)
B Lowe	(JNCC)

Estimated days by project: 14 days – SP02Q0 (20113)

Gear

Sonardyne Scout Plus USBL
Sonardyne omni-directional transponder
TV drop frame with lasers, SEA LED lights and wiring harness
Kongsberg 14-408 digital camera system (X2)
Kongsberg 14-208 digital camera system
Kongsberg 14-366 TV camera system
SUBC 1-CAM Alpha HD camera system
Net-sonde cable

VMUX controller
450m polyurethane cable
Seabird 911 CTD with fluorescence and turbidity sensors
Hull mounted ADCP

Objectives

The aim of the survey is to gather seabed evidence to inform development of a national indicator of 'Good Environmental Status' as part of the UK's obligations under the Marine Strategy Framework Directive (MSFD). Solan Bank Reef is located approximately 50 km north of Cape Wrath on the Scottish mainland (see Figure 1). The majority of the site lies in water depths of 60-80 m, however, to the south east of the site an outcrop of bedrock reef rises to approximately 20 m below the sea surface. The objectives of the survey are (listed in order of priority):

1. To gather high resolution video and still images along transects and from quadrats throughout Solan Bank using a TV drop frame system (see Figures 2 and 3 and Appendices I and II).

2. To gather environmental data using a CTD (salinity, temperature, depth, fluorescence and turbidity) from the same area.

3. To gather high resolution underwater video and stills data to update existing substrate maps of the site

4. To log ADCP data (current speed and direction) from throughout the area of interest.

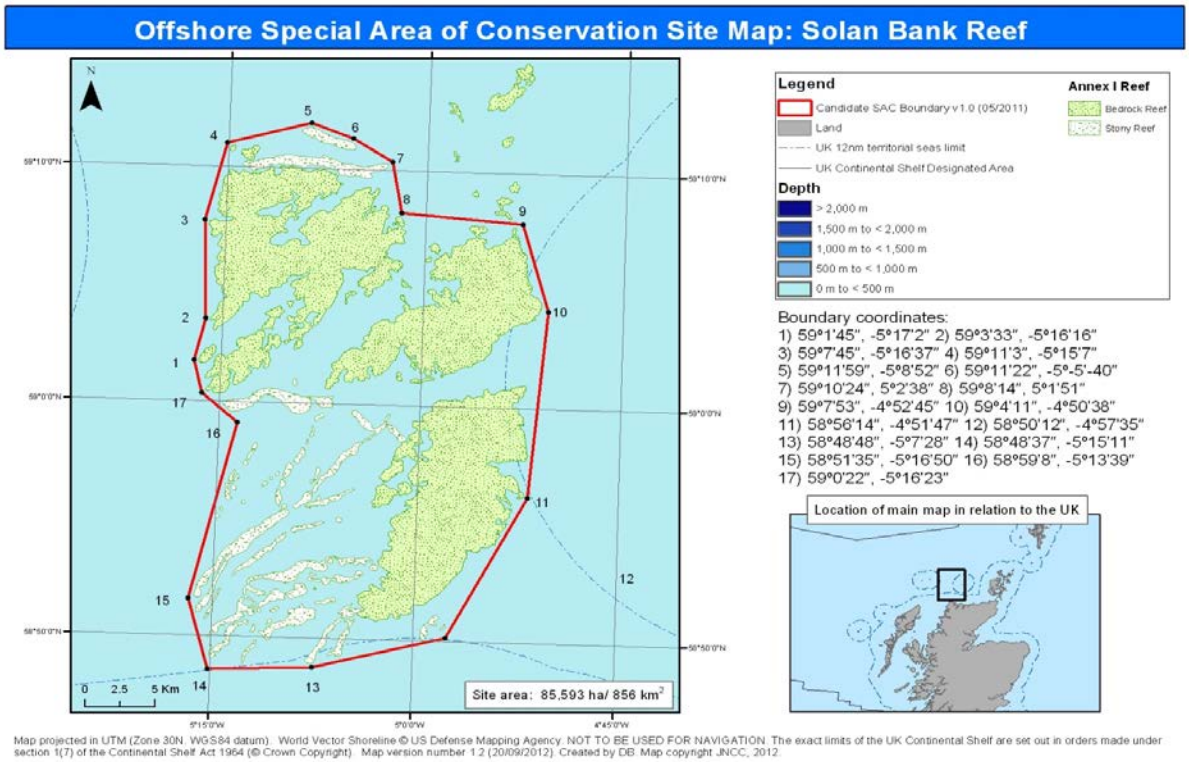

Figure 1: Solan Bank SAC

Procedure

All staff will join *Scotia* either on the afternoon or evening of 27 October, so allowing the vessel to depart Aberdeen Harbour as early as possible on 28 October. After completion of safety drills and exercises, *Scotia* will proceed northwards to the vicinity of the Southern Trench where gear testing will be undertaken. The vessel will then make passage to Solan Bank and commence sampling on the targeted sampling station grid (see Figure 2 and Appendix I) and on the stratified random sampling stations (Figure 3 and Appendix II). The TV drop-frame with attached CTD will be deployed at each station allowing simultaneous logging of imagery and environmental data (temperature, salinity, fluorometry and turbidity). Surface salinity samples will also be collected from the water sampling lab as required.

In the event of downtime because of weather or completion of the two primary objectives, further sampling will be carried out on the habitat mapping stations (see Figure 4 and Appendix III). ADCP data may be also be collected from positions within the survey boxes as illustrated in Figure 6, the actual latitude and longitude data for these stations will be provided while at sea. Depending on the severity of weather conditions and wind direction, further contingency sampling for SNH may be carried out as detailed in Figure 5 and Appendix IV.

A full and detailed survey plan will be provided at the pre-brief meeting, before the beginning of the survey.

The thermosalinograph will be run throughout the survey.

Normal contacts will be maintained with the Laboratory.

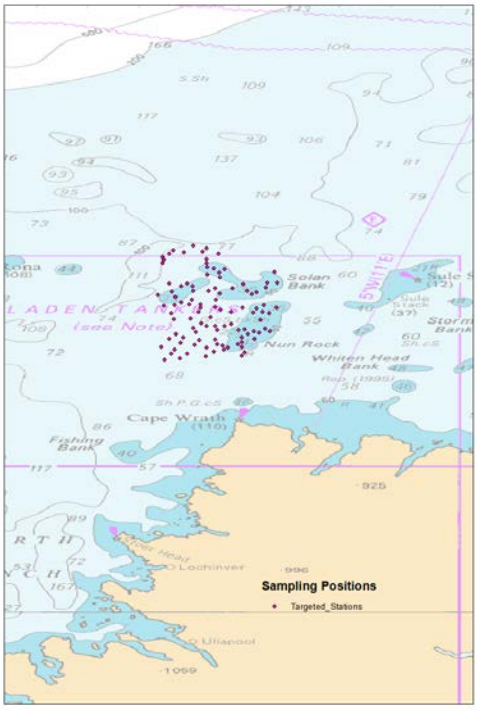

Figure 2: Targeted Stations

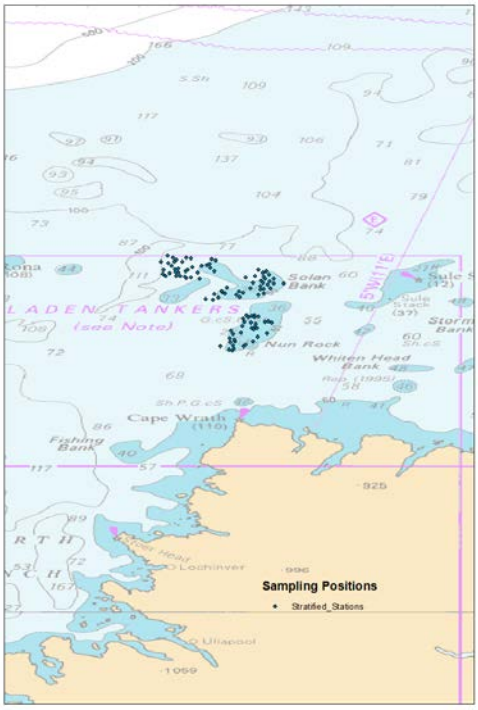

Figure 3: Stratified Stations

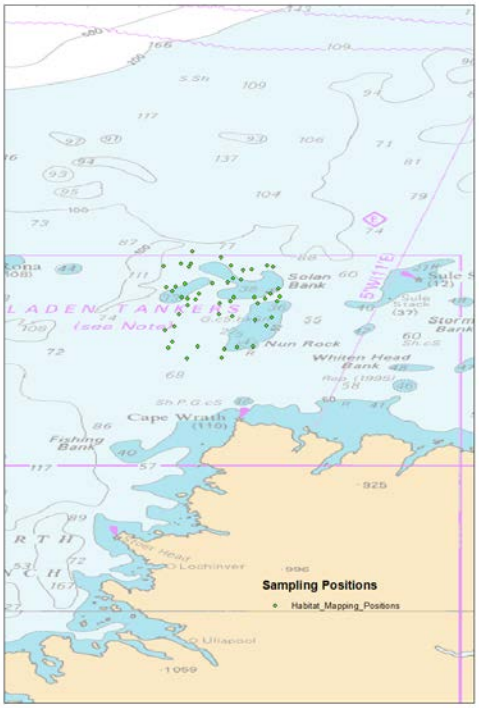

Figure 4: Contingency Habitat Mapping Stations

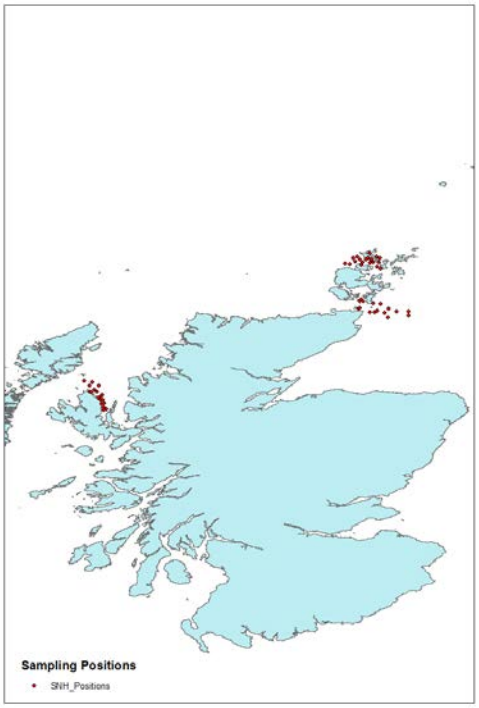

Figure 5: SNH Contingency Stations

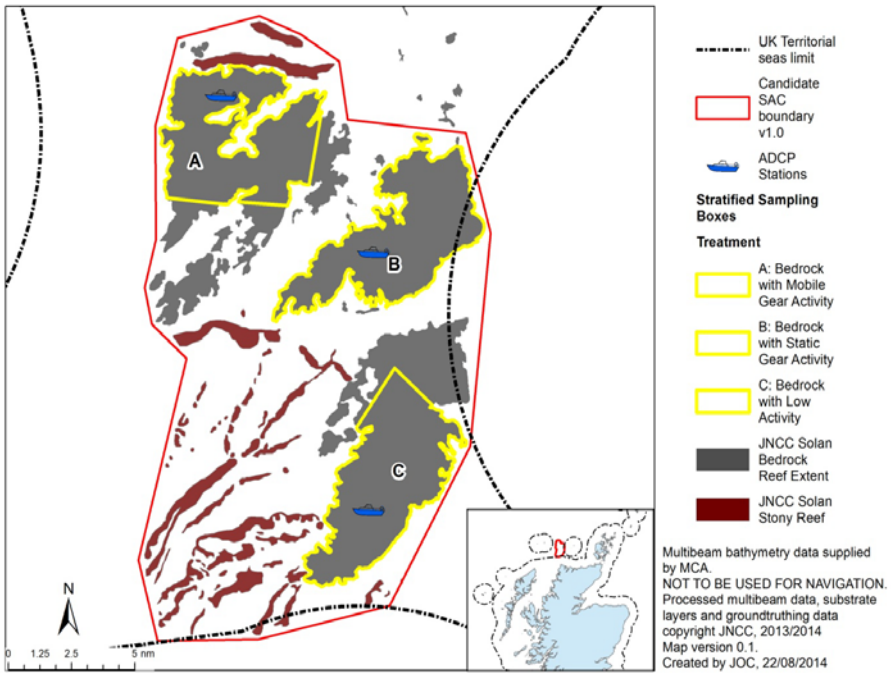

Figure 6: ADCP positions within fishing activity boxes.

Submitted:
M R Robertson
15 October 2014

Approved:
I Gibb
23 October 2014.

Appendices I-IV

Station Positions

Appendix I: Targeted Station Positions

1	58	52.3182	N	-6	51.2093	W	Stony
2	58	51.7535	N	-6	57.80955	W	Bedrock
3	58	51.8017	N	-5	0.650048	W	Bedrock
4	58	54.3997	N	-5	1.741453	W	Bedrock
5	58	52.7562	N	-5	0.538461	W	Bedrock
6	58	53.6606	N	-5	0.547282	W	Bedrock
7	58	53.3910	N	-5	3.077285	W	Bedrock
8	58	54.9124	N	-5	3.014796	W	Bedrock
9	58	54.8583	N	-5	6.18664	W	Bedrock
10	58	58.5448	N	-5	2.825767	W	Bedrock
11	59	2.2098	N	-5	2.595461	W	Bedrock
12	59	5.4093	N	-6	56.19272	W	Bedrock
13	59	7.0474	N	-6	57.18038	W	Bedrock
14	59	7.1911	N	-6	54.99006	W	Bedrock
15	59	10.0430	N	-6	56.00902	W	Stony
16	59	9.0180	N	-6	53.65158	W	Not Reef
17	59	8.2021	N	-6	53.63741	W	Bedrock
18	59	7.3958	N	-6	53.70418	W	Bedrock
19	59	5.9984	N	-6	53.73372	W	Bedrock
20	59	3.3546	N	-6	55.33592	W	Not Reef
21	59	2.8741	N	-6	54.01853	W	Not Reef
22	59	2.2590	N	-6	56.22178	W	Bedrock
23	59	1.1001	N	-6	55.48689	W	Bedrock
24	58	57.7098	N	-6	54.36328	W	Stony
25	58	58.4643	N	-6	46.59647	W	Not Reef
26	59	4.2860	N	-6	46.21688	W	Bedrock
27	59	11.0677	N	-6	53.59463	W	Stony
28	59	10.7762	N	-6	46.9411	W	Bedrock
29	59	9.3716	N	-6	44.87019	W	Bedrock
30	59	8.2010	N	-6	44.86717	W	Bedrock
31	59	8.8724	N	-6	45.10182	W	Bedrock
32	59	4.0655	N	-5	0.895599	W	Bedrock
33	59	3.3382	N	-6	58.70558	W	Bedrock
34	59	0.0951	N	-5	4.920648	W	Bedrock
35	58	59.4328	N	-5	3.54137	W	Bedrock
36	58	58.4423	N	-5	5.986053	W	Bedrock
37	58	56.3339	N	-6	58.42885	W	Bedrock

38	59	2.0340	N	-6	43.92781	W	Bedrock
39	58	55.9942	N	-6	57.18387	W	Bedrock
40	58	59.5015	N	-5	0.672979	W	Bedrock
41	59	6.4510	N	-5	7.114381	W	Bedrock
42	59	3.7539	N	-6	50.89211	W	Bedrock
43	59	6.3553	N	-6	56.09115	W	Bedrock
44	59	10.4377	N	-6	52.78022	W	Bedrock
45	58	55.1163	N	-6	59.8875	W	Bedrock
46	58	54.6595	N	-5	4.068317	W	Bedrock
47	59	1.5917	N	-6	47.41807	W	Bedrock
48	59	4.4178	N	-5	5.660591	W	Bedrock
49	59	2.5897	N	-5	3.548241	W	Bedrock
50	58	58.7085	N	-5	4.731331	W	Bedrock
51	58	59.5272	N	-5	7.424927	W	Bedrock
52	58	57.0881	N	-5	4.334335	W	Bedrock
53	58	55.4791	N	-5	5.192528	W	Bedrock
54	58	55.3103	N	-5	1.086763	W	Bedrock
55	58	52.3295	N	-6	59.78129	W	Bedrock
56	59	4.3977	N	-5	7.642838	W	Bedrock
57	59	3.5175	N	-5	5.276527	W	Bedrock
58	59	2.8378	N	-5	1.596107	W	Bedrock
59	59	10.3681	N	-6	49.12174	W	Stony
60	59	11.6529	N	-6	50.95772	W	Stony
61	58	59.9463	N	-6	45.18427	W	Stony
62	59	0.0619	N	-6	47.26811	W	Stony
63	59	0.5936	N	-6	48.61251	W	Stony
64	59	0.1783	N	-6	52.34662	W	Stony
65	58	57.2811	N	-6	47.16991	W	Stony
66	58	57.4476	N	-6	50.44987	W	Stony
67	59	0.1604	N	-6	50.18038	W	Stony
68	58	56.4592	N	-6	52.59004	W	Stony
69	58	55.5841	N	-6	50.89539	W	Stony
70	58	54.3848	N	-6	47.53699	W	Stony
71	58	53.4108	N	-6	46.19258	W	Stony
72	58	51.8328	N	-6	44.69133	W	Stony
73	59	1.0403	N	-6	50.64429	W	Stony
74	58	53.7448	N	-6	48.92621	W	Stony
75	58	54.7766	N	-6	51.5478	W	Stony
76	58	55.9793	N	-6	53.56441	W	Stony
77	58	55.0987	N	-6	55.67065	W	Stony
78	58	59.5410	N	-6	52.47095	W	Stony

79	58	53.3737	N	-6	55.28973	W	Stony
80	58	53.2229	N	-6	52.17519	W	Stony
81	58	52.6312	N	-6	48.45566	W	Stony
82	58	51.3546	N	-6	47.29051	W	Stony
83	58	50.5162	N	-6	46.5959	W	Stony
84	58	49.3123	N	-6	45.23126	W	Stony
85	59	3.7058	N	-6	48.56104	W	Stony
86	58	50.5627	N	-6	49.82248	W	Stony
87	58	49.5843	N	-6	48.26566	W	Stony
88	58	50.0400	N	-6	53.42997	W	Stony
89	58	50.9667	N	-6	55.09499	W	Stony
90	58	50.8182	N	-5	1.115493	W	Stony
91	58	52.4344	N	-6	55.71541	W	Stony
92	58	59.0559	N	-6	56.41007	W	Stony
93	59	4.2212	N	-6	49.82974	W	Stony
94	58	58.7667	N	-6	58.4939	W	Stony
95	58	59.6919	N	-6	55.31214	W	Stony
96	58	58.7436	N	-6	51.97353	W	Stony
97	59	2.8059	N	-6	50.94159	W	Stony
98	59	2.7182	N	-6	46.77082	W	Stony
99	58	51.2709	N	-6	56.97938	W	Stony
100	58	55.9214	N	-6	55.31214	W	Stony
101	59	10.0951	N	-6	46.21499	W	Stony
102	58	52.1800	N	-6	56.77648	W	Stony
103	58	51.6657	N	-6	53.542	W	Stony
104	58	50.1713	N	-5	0.566868	W	Stony

Appendix II: Stratified Station Positions

1	59	8.8274	N	-6	47.4898	W	A
2	59	6.9165	N	-6	44.9897	W	A
3	59	9.2932	N	-6	46.8982	W	A
4	59	6.5883	N	-6	49.4213	W	A
5	59	7.1266	N	-6	47.8736	W	A
6	59	6.3540	N	-6	47.9499	W	A
7	59	8.1190	N	-6	54.1066	W	A
8	59	9.0775	N	-6	54.5568	W	A
9	59	6.1121	N	-6	44.8646	W	A
10	59	9.2776	N	-6	49.4434	W	A
11	59	5.7669	N	-6	47.4639	W	A
12	59	6.3147	N	-6	51.8039	W	A
13	59	5.4677	N	-6	50.4149	W	A
14	59	8.4984	N	-6	44.5451	W	A
15	59	7.6844	N	-6	46.6649	W	A
16	59	7.7772	N	-6	53.6268	W	A
17	59	9.6173	N	-6	45.8377	W	A
18	59	5.1658	N	-6	52.0885	W	A
19	59	5.3448	N	-6	49.4439	W	A
20	59	6.5295	N	-6	47.4318	W	A
21	59	9.1025	N	-6	50.3938	W	A
22	59	5.7049	N	-6	45.3559	W	A
23	59	8.7238	N	-6	55.3438	W	A
24	59	6.5995	N	-6	55.0249	W	A
25	59	7.2712	N	-6	54.1977	W	A
26	59	5.7549	N	-6	48.2702	W	A
27	59	7.4912	N	-6	50.6914	W	A
28	59	8.4475	N	-6	47.1341	W	A
29	59	6.8839	N	-6	49.7183	W	A
30	59	8.1865	N	-6	45.9148	W	A
31	59	8.5369	N	-6	48.7562	W	A
32	59	6.2229	N	-6	46.2238	W	A
33	59	7.7159	N	-6	52.5910	W	A
34	59	7.0126	N	-6	47.2098	W	A
35	59	5.6440	N	-6	49.2712	W	A
36	59	2.0651	N	-6	59.3376	W	B
37	59	3.3834	N	-5	2.1265	W	B
38	59	1.4525	N	-6	55.8204	W	B
39	59	5.6025	N	-5	4.7675	W	B
40	59	3.4957	N	-6	57.6146	W	B

41	59	6.3542	N	-5	4.6828	W	B
42	59	3.2779	N	-5	6.0776	W	B
43	59	3.0231	N	-5	4.1219	W	B
44	59	4.4573	N	-5	4.6157	W	B
45	59	2.3517	N	-5	0.6708	W	B
46	59	2.2018	N	-6	55.0248	W	B
47	59	5.2312	N	-5	5.1188	W	B
48	59	4.2125	N	-5	6.8376	W	B
49	59	2.3109	N	-5	4.8146	W	B
50	59	2.4968	N	-6	56.6620	W	B
51	59	2.0055	N	-5	3.7943	W	B
52	59	4.8505	N	-5	4.2557	W	B
53	59	4.4344	N	-5	2.7616	W	B
54	59	6.6425	N	-5	5.3821	W	B
55	59	6.0431	N	-5	5.8686	W	B
56	59	3.7192	N	-5	4.1390	W	B
57	59	2.2605	N	-6	57.0950	W	B
58	59	1.0541	N	-6	54.8341	W	B
59	59	6.9598	N	-5	3.8101	W	B
60	59	5.7643	N	-5	3.1410	W	B
61	59	4.6973	N	-5	6.0558	W	B
62	59	3.2027	N	-5	4.8764	W	B
63	59	5.1858	N	-5	6.7681	W	B
64	59	1.6148	N	-5	0.1027	W	B
65	59	2.7775	N	-6	56.5354	W	B
66	59	4.0035	N	-5	5.5999	W	B
67	59	2.6642	N	-6	59.9375	W	B
68	59	4.2115	N	-5	8.7291	W	B
69	59	1.2535	N	-6	53.2945	W	B
70	59	5.5005	N	-5	1.2810	W	B
71	58	58.0708	N	-5	2.9916	W	C
72	58	53.7845	N	-5	3.6334	W	C
73	58	55.5523	N	-5	2.3883	W	C
74	58	57.3771	N	-5	0.6579	W	C
75	58	52.9127	N	-6	59.1414	W	C
76	58	55.3249	N	-5	2.8944	W	C
77	58	52.0454	N	-5	0.8318	W	C
78	58	55.8779	N	-5	3.1012	W	C
79	58	52.2155	N	-5	1.2444	W	C
80	58	53.3205	N	-6	59.0340	W	C
81	58	53.5598	N	-6	58.0878	W	C

82	58	56.5711	N	-5	6.4308	W	C
83	58	57.6517	N	-5	2.9524	W	C
84	58	54.9912	N	-6	58.4118	W	C
85	58	51.2460	N	-6	58.5485	W	C
86	58	54.3544	N	-6	58.7921	W	C
87	58	58.0474	N	-5	1.3677	W	C
88	58	56.6404	N	-5	2.3280	W	C
89	58	57.7317	N	-5	1.8308	W	C
90	58	54.4821	N	-5	5.4955	W	C
91	58	51.4729	N	-6	58.8414	W	C
92	58	56.7641	N	-5	0.9954	W	C
93	58	56.3367	N	-5	3.1899	W	C
94	58	52.8871	N	-5	2.6719	W	C
95	58	52.1884	N	-6	58.7032	W	C
96	58	56.6856	N	-5	5.0529	W	C
97	58	55.9812	N	-5	0.5756	W	C
98	58	51.9810	N	-6	56.2837	W	C
99	58	54.6819	N	-5	0.2821	W	C
100	58	55.5545	N	-5	3.4733	W	C
101	58	51.3199	N	-6	57.9776	W	C
102	58	57.9005	N	-5	2.4464	W	C
103	58	56.9069	N	-5	5.7262	W	C
104	58	57.7806	N	-5	3.7340	W	C
105	58	52.7585	N	-6	58.2119	W	C

Appendix III: Contingency Habitat Mapping Positions

1	59	2.194758	N	-6	51.99943	W		41	58	57.79621	N	-6	58.63405	W
2	59	6.789464	N	-5	0.691887	W		42	59	1.532685	N	-6	48.62499	W
3	59	1.549441	N	-6	58.85229	W		43	59	7.525973	N	-6	45.04995	W
4	59	1.510516	N	-5	3.014581	W		44	59	5.210799	N	-6	58.70402	W
5	59	0.34473	N	-5	3.63341	W		45	59	7.685078	N	-6	58.29296	W
6	59	0.296636	N	-6	56.09495	W		46	59	7.420347	N	-5	6.68159	W
7	59	7.384995	N	-6	50.00963	W		47	59	7.721783	N	-5	5.475077	W
8	59	3.153629	N	-5	7.669384	W		48	59	4.937943	N	-5	0.274705	W
9	59	1.617345	N	-5	7.943167	W		49	59	1.225274	N	-6	49.83722	W
10	59	3.486137	N	-6	45.49299	W		50	58	51.71811	N	-6	59.47542	W
11	58	58.16132	N	-6	55.97972	W								
12	58	55.96669	N	-5	5.357709	W								
13	58	51.87149	N	-6	51.76824	W								
14	58	51.27085	N	-6	56.97938	W								
15	58	51.85338	N	-5	2.655275	W								
16	59	2.718243	N	-6	46.77082	W								
17	59	4.140318	N	-6	49.1841	W								
18	59	10.52812	N	-6	50.67345	W								
19	59	8.088336	N	-6	48.41121	W								
20	58	55.08072	N	-6	45.27291	W								
21	58	55.81793	N	-6	47.12273	W								
22	58	58.25987	N	-6	48.02338	W								
23	59	3.621689	N	-6	47.35866	W								
24	59	8.13838	N	-6	50.462	W								
25	59	4.449876	N	-6	57.70425	W								
26	59	6.889748	N	-5	2.416396	W								
27	59	2.165015	N	-5	6.099644	W								
28	59	0.724139	N	-5	7.400333	W								
29	58	49.44087	N	-6	49.63387	W								
30	58	49.58639	N	-6	56.54216	W								
31	58	52.7653	N	-6	46.68644	W								
32	58	51.59751	N	-6	45.98632	W								
33	58	59.91899	N	-6	49.82089	W								
34	59	4.201882	N	-6	54.61288	W								
35	59	9.24964	N	-6	56.3636	W								
36	59	1.189985	N	-5	5.124336	W								
37	59	0.636302	N	-6	58.1601	W								
38	59	1.155961	N	-6	51.36266	W								
39	58	56.97166	N	-5	3.077598	W								
40	58	57.53498	N	-5	6.402553	W								

Appendix IV: SNH Contingency Positions

1	59	15.980496	N	-4	51.2998887	W		41	57	37.429055	N	-7	49.4878487	W
2	59	16.835344	N	-4	54.2491155	W		42	57	35.900895	N	-7	51.7351437	W
3	59	11.535285	N	-4	49.2055103	W		43	57	39.047108	N	-7	52.3194404	W
4	59	11.877224	N	-4	45.7006321	W		44	57	46.058668	N	-7	43.510044	W
5	59	15.082905	N	-4	56.1725243	W		45	57	49.025097	N	-7	39.8694261	W
6	59	11.193345	N	-4	57.4547968	W		46	57	45.788993	N	-7	49.9822536	W
7	59	15.766784	N	-3	1.85726575	W		47	57	35.766057	N	-7	53.2183584	W
8	59	13.544178	N	-4	53.0523278	W		48	57	33.698546	N	-7	54.0273846	W
9	59	12.945784	N	-4	58.2241603	W		49	57	33.024357	N	-7	52.049765	W
10	59	14.826451	N	-3	0.7459629	W		50	57	30.822008	N	-7	53.3082502	W
11	59	12.432875	N	-3	3.35325034	W		51	57	28.979226	N	-7	55.4207075	W
12	59	12.988527	N	-3	5.83231054	W		52	57	28.889334	N	-7	53.2633043	W
13	59	13.159497	N	-3	9.46541599	W		53	57	48.171125	N	-7	45.5326095	W
14	59	15.040163	N	-3	4.46455319	W								
15	59	9.6546183	N	-3	8.56782523	W								
16	59	19.271662	N	-3	3.26776551	W								
17	59	8.4578307	N	-3	11.2178551	W								
18	59	15.852269	N	-3	10.6622037	W								
19	59	16.792602	N	-3	8.14040106	W								
20	58	40.237357	N	-4	55.1597865	W								
21	58	40.698409	N	-4	56.404627	W								
22	58	46.000507	N	-4	55.8513646	W								
23	58	46.599875	N	-4	57.2345206	W								
24	58	45.308929	N	-4	58.8943079	W								
25	58	37.747676	N	-3	3.50482809	W								
26	58	37.60936	N	-3	6.68608703	W								
27	58	38.854201	N	-3	8.48418991	W								
28	58	43.37251	N	-3	10.9277656	W								
29	58	43.925773	N	-3	5.994509	W								
30	58	37.424939	N	-3	13.7401829	W								
31	58	40.375672	N	-3	16.9675471	W								
32	58	34.05926	N	-3	16.3220743	W								
33	58	38.300938	N	-3	22.3157505	W								
34	58	38.208728	N	-3	31.1679493	W								
35	58	35.165785	N	-3	30.8452129	W								
36	57	41.384294	N	-7	43.5999358	W								
37	57	41.339349	N	-7	45.1280964	W								
38	57	42.777617	N	-7	46.9708783	W								
39	57	41.42924	N	-7	48.7687143	W								
40	57	37.788622	N	-7	50.9261175	W								