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MRV *Actinia*

Survey 1218H

PROGRAMME

2-7 September 2018

Loading: Millport, 2 September 2018

Boarding: Millport, 3 September 2018

Unloading: Millport, 7 September 2018

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 (Lab 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

J Clarke	MSS (SIC)
J Mair	MSS

Project: 5 days, SP02R0 (20490)

Sampling Gear & Equipment

12 Fish traps (6 fleets of 2 traps)
2 Baited Remote Underwater Video Camera (SBRUV) frames
4 LED light assemblies in GPH housing
4 SJ6 Legend cameras and custom-built underwater housings

Survey 2118H will expand on the work undertaken in 1218H by providing additional fine-scale data on the habitat associations of inshore cod, haddock and whiting. Survey footage and trap-caught fish will further inform distribution models and provide paired samples for otolith-based growth and survivorship analysis.

Objectives

1. To deploy fish traps over various habitat types within and around the South Arran MPA.
2. To synchronously deploy baited remote underwater video camera frames fitted with twin cameras calibrated for post-survey photogrammetric analysis.

Operations

Scientists will board the vessel on the morning of 3 September. Weather permitting *Actinia* will depart immediately, heading for the South Arran MPA. The vessel will operate on a day basis between the hours of 0600 and 1800 UTC.

Fish Trap Survey

Traps will be deployed and recovered each day following a minimum soak time of six hours. The approximate positions of each end marker buoy (GPS latitude and longitude), depth (m), soak time, and bait type and quantity will be recorded. Captured fish will be released from each trap, placed inside individually labelled bags, and frozen. Otoliths from gadoid species (cod, haddock, whiting and saithe) will be extracted back at the lab.

In addition, a small hand-held drop frame will be used to deploy a GitUp Git 2 action camera and LED Electralume light in the immediate vicinity of the fish traps. Recorded footage will be used to verify the substrate types over which the traps are positioned.

Trap station positions are shown in Figure 1 and are derived from the midpoints of those sampled during the previous survey. Latitude and longitude coordinates and depth in metres are given in Table 1a.

Stations will be surveyed depending on the prevailing weather conditions i.e. if wind strengths or wave heights are adverse, a precautionary approach will be adopted and those with adequate shelter from the weather will be selected.

SBRUV Survey

Baited stereo-camera station positions are shown in Figure 1. Latitude and longitude coordinates and depth in metres are given in Table 1b. Each underwater camera frame will be deployed a distance sufficient to avoid any interaction with the fleet ground gear (minimum 500 m between deployments). Two cameras oriented approximately $\pm 6^\circ$ perpendicular to the frame base will record high definition video (1080p @ 60 fps) for a nominal period of 1.5 hours. Footage will be downloaded to external media at the end of each working day. Species identification, relative density (MaxN) and substrate type (assessed visually) will be classified post-survey.

Unloading will occur in Millport on the evening of 7 September.

Normal contact will be maintained with the Laboratory.

Submitted:
J Clarke
29 August 2018

Approved:
I. Gibb
31 August 2018

Figure 1: Positions of fish trap and SBRUV frame deployment stations. ABC = algal-boulder-cobble; AGP = algal-gravel-pebble.

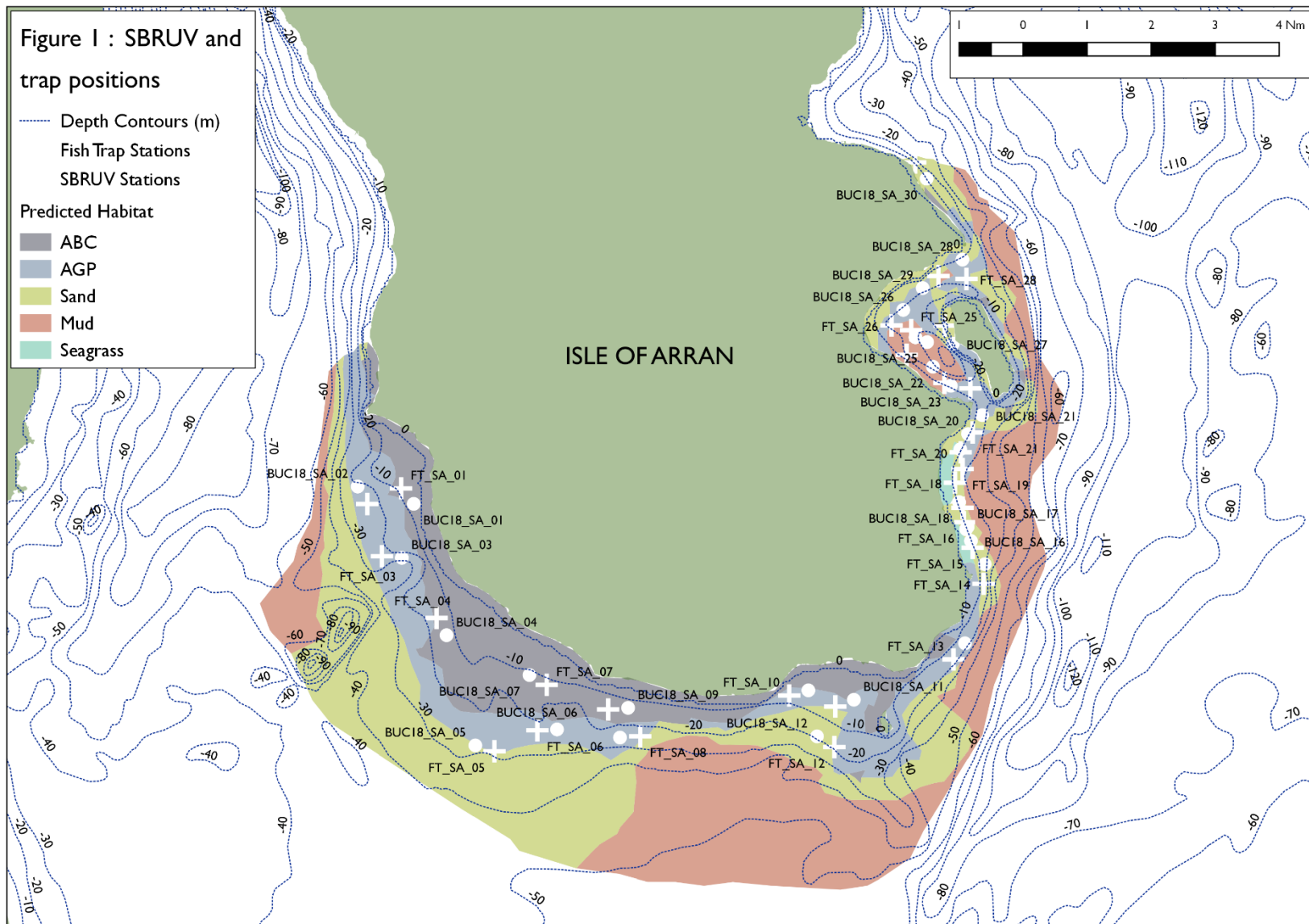


Table 1a: Latitude, longitude & depth of fish trap stations.

Station	Latitude (dd)	Longitude (dd)	Latitude (degree decimal minutes)	Longitude (degree decimal minutes)	Depth (m)
FT_SA_30	55.571834	-5.105522	055° 34.30980' N	005° 06.33120' W	8.1
FT_SA_28	55.541795	-5.0821525	055° 32.50800' N	005° 04.92900' W	16.4
FT_SA_29	55.5425765	-5.0949135	055° 32.55480' N	005° 05.69460' W	19.5
FT_SA_26	55.529817	-5.1163075	055° 31.78920' N	005° 06.97860' W	29.0
FT_SA_24	55.5222455	-5.109445	055° 31.33500' N	005° 06.56700' W	19.8
FT_SA_23	55.5135705	-5.0803365	055° 30.81420' N	005° 04.82040' W	24.6
FT_SA_02	55.483715	-5.355521	055° 29.02260' N	005° 21.33120' W	21.8
FT_SA_01	55.48774	-5.3400675	055° 29.26440' N	005° 20.40420' W	7.7
FT_SA_03	55.4702175	-5.348869	055° 28.21320' N	005° 20.93220' W	21.4
FT_SA_04	55.454247	-5.3239035	055° 27.25500' N	005° 19.43400' W	10.9
FT_SA_05	55.4197675	-5.2975295	055° 25.18620' N	005° 17.85180' W	26.6
FT_SA_06	55.4252095	-5.27796	055° 25.51260' N	005° 16.67760' W	23.9
FT_SA_07	55.436956	-5.273633	055° 26.21760' N	005° 16.41780' W	10.1
FT_SA_09	55.4305955	-5.2456235	055° 25.83600' N	005° 14.73720' W	11.7
FT_SA_08	55.4236585	-5.2309865	055° 25.41960' N	005° 13.85940' W	26.1
FT_SA_10	55.434217	-5.163025	055° 26.05320' N	005° 09.78180' W	12.2
FT_SA_11	55.431344	-5.1419955	055° 25.88040' N	005° 08.52000' W	16.7
FT_SA_12	55.42086	-5.1424225	055° 25.25160' N	005° 08.54520' W	19.1
FT_SA_22	55.514989	-5.0921875	055° 30.89940' N	005° 05.53140' W	33.0
FT_SA_21	55.5021825	-5.079309	055° 30.13080' N	005° 04.75860' W	9.0
FT_SA_19	55.492743	-5.0838765	055° 29.56440' N	005° 05.03280' W	15.5
FT_SA_17	55.4827305	-5.0838915	055° 28.96380' N	005° 05.03340' W	22.5
FT_SA_15	55.472405	-5.0793065	055° 28.34460' N	005° 04.75860' W	18.0
FT_SA_13	55.4435285	-5.088031	055° 26.61180' N	005° 05.28180' W	21.2
FT_SA_25	55.5285975	-5.107335	055° 31.71600' N	005° 06.43980' W	31.8
FT_SA_27	55.529768	-5.0920965	055° 31.78620' N	005° 05.52600' W	24.7
FT_SA_20	55.4970525	-5.0847825	055° 29.82300' N	005° 05.08680' W	6.9
FT_SA_18	55.4892025	-5.0873585	055° 29.35200' N	005° 05.24160' W	10.5
FT_SA_16	55.4790105	-5.083323	055° 28.74060' N	005° 04.99920' W	20.3
FT_SA_14	55.463094	-5.0743115	055° 27.78540' N	005° 04.45860' W	13.3

Table 1b: Latitude, longitude & depth of SBRUV stations.

Station	Latitude (dd)	Longitude (dd)	Latitude (degree decimal minutes)	Longitude (degree decimal minutes)	Depth (m)
BUC_SA_30	55.5676598	-5.100325216	055° 34.05960' N	005° 06.01980' W	16.6
BUC_SA_28	55.54679263	-5.083958865	055° 32.80740' N	005° 05.03760' W	2.8
BUC_SA_29	55.5394409	-5.10212543	055° 32.36640' N	005° 06.12780' W	22.0
BUC_SA_26	55.5338162	-5.1109673	055° 32.02920' N	005° 06.65820' W	23.7
BUC_SA_24	55.52674338	-5.105425626	055° 31.60440' N	005° 06.32580' W	34.1
BUC_SA_23	55.51423771	-5.089287447	055° 30.85440' N	005° 05.35740' W	32.0
BUC_SA_02	55.48821573	-5.359906381	055° 29.29320' N	005° 21.59460' W	21.4
BUC_SA_01	55.48375268	-5.334356111	055° 29.02500' N	005° 20.06160' W	8.1
BUC_SA_03	55.46981638	-5.339776718	055° 28.18920' N	005° 20.38680' W	13.5
BUC_SA_04	55.44979116	-5.31936525	055° 26.98740' N	005° 19.16220' W	10.3
BUC_SA_05	55.421297	-5.306236871	055° 25.27800' N	005° 18.37440' W	26.3
BUC_SA_06	55.42543066	-5.268942092	055° 25.52580' N	005° 16.13640' W	22.9
BUC_SA_07	55.439767	-5.28142077	055° 26.38620' N	005° 16.88520' W	12.1
BUC_SA_09	55.4309735	-5.236362028	055° 25.85820' N	005° 14.18160' W	10.2
BUC_SA_08	55.4233318	-5.240229625	055° 25.39980' N	005° 14.41380' W	26.0
BUC_SA_10	55.43553868	-5.154262826	055° 26.13240' N	005° 09.25560' W	14.0
BUC_SA_11	55.43348835	-5.134189614	055° 26.00940' N	005° 08.05140' W	13.5
BUC_SA_12	55.42364421	-5.150338448	055° 25.41840' N	005° 09.02040' W	25.2
BUC_SA_22	55.51915725	-5.097426641	055° 31.14960' N	005° 05.84580' W	37.7
BUC_SA_21	55.50663853	-5.074958452	055° 30.39840' N	005° 04.49760' W	32.1
BUC_SA_19	55.49788391	-5.083097538	055° 29.87280' N	005° 04.98600' W	8.8
BUC_SA_17	55.47780046	-5.081592656	055° 28.66800' N	005° 04.89540' W	22.2
BUC_SA_15	55.47719321	-5.082298715	055° 28.63140' N	005° 04.93800' W	18.3
BUC_SA_13	55.44770986	-5.082806917	055° 26.86260' N	005° 04.96860' W	27.8
BUC_SA_25	55.52551086	-5.100111373	055° 31.53060' N	005° 06.00660' W	36.0
BUC_SA_27	55.52511996	-5.088283019	055° 31.50720' N	005° 05.29680' W	34.2
BUC_SA_20	55.50177737	-5.081379485	055° 30.10680' N	005° 04.88280' W	4.3
BUC_SA_18	55.49423209	-5.086251656	055° 29.65380' N	005° 05.17500' W	7.8
BUC_SA_16	55.47418512	-5.080096623	055° 28.45140' N	005° 04.80600' W	19.3
BUC_SA_14	55.46815219	-5.073800924	055° 28.08900' N	005° 04.42800' W	24.8