Table S1 Summary of the locations, dates, durations, and depths for each of the baited remote underwater video (BRUV) deployments used in our analyses.

Location	Date (yyyy-mm-dd)	Latitude	Longitude	Duration (minutes)	Depth (metres)
Kangalaksiorvik	2017-10-5	59.416	-63.948	58	10
Kangalaksiorvik	2017-10-5	59.417	-63.94	59	10
Kangalaksiorvik	2017-10-5	59.416	-63.937	79	10
Kangalaksiorvik	2017-10-5	59.415	-63.934	78	10
Kangalaksiorvik	2017-10-5	59.415	-63.931	78	10
Kangalaksiorvik	2017-10-5	59.388	-64.046	62	10
Kangalaksiorvik	2017-10-5	59.388	-64.049	73	10
Kangalaksiorvik	2017-10-5	59.389	-64.051	65	10
Kangalaksiorvik	2017-10-5	59.39	-64.052	56	10
Kangalaksiorvik	2017-10-5	59.392	-64.056	58	10
Nachvak	2017-10-6	59.033	-63.547	111	10
Nachvak	2017-10-6	59.034	-63.549	126	10
Nachvak	2017-10-6	59.036	-63.552	128	10
Nachvak	2017-10-6	59.037	-63.554	106	10
Nachvak	2017-10-6	59.038	-63.558	88	10
Nachvak	2017-10-6	59.039	-63.562	98	10
Nachvak	2017-10-6	58.959	-63.878	66	10
Nachvak	2017-10-6	58.959	-63.876	65	10
Nachvak	2017-10-6	58.96	-63.872	62	10
Nachvak	2017-10-6	58.958	-63.88	60	10
Nachvak	2017-10-6	58.958	-63.883	61	10
Nachvak	2017-10-6	58.957	-63.885	57	10
Saglek	2017-10-7	58.463	-62.796	110	10
Saglek	2017-10-7	58.465	-62.797	150	10
Saglek	2017-10-7	58.468	-62.781	88	10
Saglek	2017-10-7	58.458	-62.786	118	10
Saglek	2017-10-8	58.511	-63.437	35	10
Saglek	2017-10-8	58.514	-63.439	188	10

Location	Date (yyyy-mm-dd)	Latitude	Longitude	Duration (minutes)	Depth (metres)
Saglek	2017-10-8	58.517	-63.442	105	10
Saglek	2017-10-8	58.5116	-63.445	96	10
Saglek	2017-10-8	58.519	-63.447	161	10
Saglek	2017-10-8	58.525	-63.453	107	10
Okak	2017-10-9	57.577	-61.955	67	10
Okak	2017-10-9	57.579	-61.953	66	10
Okak	2017-10-9	57.58	-61.948	64	10
Okak	2017-10-9	57.575	-61.955	63	10
Okak	2017-10-9	57.571	-61.958	61	10
Okak	2017-10-9	57.568	-61.962	60	10
Okak	2017-10-9	57.481	-62.061	67	10
Okak	2017-10-9	57.49	-62.061	71	10
Okak	2017-10-9	57.493	-62.057	68	10
Okak	2017-10-9	57.494	-62.051	68	10
Okak	2017-10-9	57.497	-62.065	70	10
Nain	2019-11-11	56.5156	-61.5657	90	9
Nain	2019-11-11	56.5284	-61.6	90	8
Nain	2019-11-15	56.5149	-61.5795	78	6.5
Nain	2019-11-15	56.5236	-61.5845	90	7
Nain	2019-11-15	56.5238	-61.6438	82	10.5
Nain	2019-11-15	56.5311	-61.6388	90	9
Nain	2019-11-18	56.521	-61.6116	71	7.5
Nain	2019-11-18	56.5334	-61.6451	90	7
Nain	2019-11-19	56.5239	-61.6002	33	8
Nain	2019-11-19	56.5296	-61.6396	90	7
Nain	2019-11-19	56.5318	-61.6421	90	10
Gilbert Bay	2021-08-1	52.5705	-55.7943	63	15
Gilbert Bay	2021-08-1	52.5932	-55.7672	90	15
Gilbert Bay	2021-08-2	52.5969	-55.869	90	20
Gilbert Bay	2021-08-3	52.5797	-56.0456	90	13
Gilbert Bay	2021-08-3	52.5994	-55.813	90	23

Location	Date (yyyy-mm-dd)	Latitude	Longitude	Duration (minutes)	Depth (metres)
Gilbert Bay	2021-08-3	52.5994	-55.813	90	23
Gilbert Bay	2021-08-3	52.601	-55.7983	90	12
Gilbert Bay	2021-08-4	52.5982	-55.8142	90	20
Gilbert Bay	2021-08-4	52.6014	-55.8122	90	20
Gilbert Bay	2021-08-4	52.6014	-55.8122	90	20
Gilbert Bay	2021-08-5	52.5828	-55.8297	90	20
Gilbert Bay	2021-08-6	52.5933	-56.0167	90	11
Newman Sound	2016-11-15	48.563	-53.891	22	2
Newman Sound	2016-11-15	48.566	-53.889	16	20
Newman Sound	2016-11-16	48.571	-53.869	23	2
Newman Sound	2016-11-16	48.573	-53.866	19	20
Newman Sound	2016-11-16	48.584	-53.927	19	2
Newman Sound	2016-11-16	48.582	-53.925	31	20
Newman Sound	2016-11-17	48.571	-53.921	27	2
Newman Sound	2016-11-17	48.572	-53.922	19	20
Newman Sound	2016-11-17	48.564	-53.961	24	2
Newman Sound	2019-07-29	48.5832	-53.9114	30	7
Newman Sound	2019-07-29	48.5874	-53.9173	30	5
Newman Sound	2019-07-30	48.5843	-53.9119	30	8
Newman Sound	2019-07-30	48.5871	-53.9119	25	6
Newman Sound	2019-07-30	48.5871	-53.9172	30	7
Newman Sound	2019-07-30	48.5886	-53.9145	30	6
Newman Sound	2019-07-30	48.5898	-53.9142	30	5
Newman Sound	2019-08-13	48.5871	-53.9172	30	7
Newman Sound	2019-08-13	48.5886	-53.9145	30	6
Newman Sound	2019-08-14	48.5832	-53.9114	30	7
Newman Sound	2019-08-14	48.5843	-53.9119	30	8
Newman Sound	2019-08-14	48.5871	-53.9119	30	6
Newman Sound	2019-08-14	48.5872	-53.9176	30	5
Newman Sound	2019-08-14	48.5874	-53.9173	30	5
Newman Sound	2019-08-14	48.5898	-53.9142	30	5

Location	Date (yyyy-mm-dd)	Latitude	Longitude	Duration (minutes)	Depth (metres)
Newman Sound	2019-08-27	48.5832	-53.9114	30	7
Newman Sound	2019-08-27	48.5843	-53.9119	30	8
Newman Sound	2019-08-27	48.5871	-53.9119	30	6
Newman Sound	2019-08-27	48.5871	-53.9172	30	7
Newman Sound	2019-08-27	48.5872	-53.9176	30	5
Newman Sound	2019-08-27	48.5886	-53.9145	30	6
Newman Sound	2019-08-27	48.5898	-53.9142	30	5
Newman Sound	2019-08-28	48.5874	-53.9173	30	5
Newman Sound	2019-09-11	48.5832	-53.9114	30	7
Newman Sound	2019-09-11	48.5843	-53.9119	30	8
Newman Sound	2019-09-11	48.5871	-53.9119	30	6
Newman Sound	2019-09-11	48.5871	-53.9172	30	7
Newman Sound	2019-09-11	48.5886	-53.9145	30	6
Newman Sound	2019-09-12	48.5872	-53.9176	30	5
Newman Sound	2019-09-12	48.5898	-53.9142	30	5
Newman Sound	2019-09-13	48.5874	-53.9173	30	5
Newman Sound	2019-09-25	48.5832	-53.9114	30	7
Newman Sound	2019-09-25	48.5843	-53.9119	30	8
Newman Sound	2019-09-25	48.5871	-53.9119	30	6
Newman Sound	2019-09-25	48.5871	-53.9172	30	7
Newman Sound	2019-09-25	48.5874	-53.9173	30	5
Newman Sound	2019-09-25	48.5898	-53.9142	30	5
Newman Sound	2019-09-26	48.5872	-53.9176	30	5
Newman Sound	2019-09-26	48.5886	-53.9145	30	6
Newman Sound	2019-11-26	48.5843	-53.9119	30	8
Newman Sound	2019-11-26	48.5871	-53.9119	30	6
Newman Sound	2019-11-26	48.5871	-53.9172	30	7
Newman Sound	2019-11-26	48.5886	-53.9145	30	6
Newman Sound	2019-11-26	48.5898	-53.9142	30	5
Newman Sound	2019-11-27	48.5832	-53.9114	30	7
Newman Sound	2019-11-27	48.5872	-53.9176	30	5

Location	Date (yyyy-mm-dd)	Latitude	Longitude	Duration (minutes)	Depth (metres)
Newman Sound	2019-11-27	48.5874	-53.9173	30	5
Newman Sound	2019-12-3	48.5832	-53.9114	30	7
Newman Sound	2019-12-3	48.5843	-53.9119	30	8
Newman Sound	2019-12-3	48.5871	-53.9119	30	6
Newman Sound	2019-12-3	48.5871	-53.9172	30	7
Newman Sound	2019-12-3	48.5872	-53.9176	30	5
Newman Sound	2019-12-3	48.5874	-53.9173	30	5
Newman Sound	2019-12-3	48.5886	-53.9145	30	6
Newman Sound	2019-12-3	48.5898	-53.9142	30	5
Newman Sound	2019-12-11	48.5832	-53.9114	30	7
Newman Sound	2019-12-11	48.5843	-53.9119	30	8
Newman Sound	2019-12-11	48.5871	-53.9119	30	6
Newman Sound	2019-12-11	48.5871	-53.9172	30	7
Newman Sound	2019-12-11	48.5872	-53.9176	30	5
Newman Sound	2019-12-11	48.5874	-53.9173	30	5
Newman Sound	2019-12-11	48.5886	-53.9145	30	6
Newman Sound	2019-12-11	48.5898	-53.9142	30	5

Table S2. Analysis of Deviance (ANODEV) associated with the multivariate GLM for species relative abundances (MaxN) as a function of location and habitat composition as well as individual species differences compared across northern Labrador (Kangalaksiorvik, Nachvak, Saglek, Okak, and Nain). Deviance (D) from likelihood ratio tests and p-values (p, significant values in bold) are included for each variable.

Northern Labrador – Kangalaksiorvik, Nachvak, Saglek, Okak, Nain

	Overall				Greenland cod		Greenland cod (juvenile)		Large cottids		Small cottids		Toad crab		Arctic shanny		Eelpout	
Parameter	df	Res. df	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p
Location	5	48	129	**0.001**	33.4	**0.001**	31.3	**0.001**	2.33	0.847	12.5	**0.041**	36.3	**0.001**	6.36	0.274	3.18	0.847
Soft sediments	4	44	68	**0.001**	6.01	0.519	8.42	0.259	2.53	0.651	31.3	**0.001**	12.2	0.112	4.05	0.613	1.58	0.697
Coarse substrates	4	40	26	0.337	1.14	0.958	2.91	0.871	3.35	0.871	9.26	0.327	5.45	0.683	1.39	0.958	1.83	0.92
Macroalgae	3	37	13.8	0.364	3.93	0.704	0	0.764	5.6	0.537	3.48	0.704	0.76	0.704	0	0.704	0	0.764
Rhodoliths	3	35	18.9	0.179	1.69	0.955	0	0.955	6.57	0.398	0.89	0.955	8.32	0.226	1.39	0.955	0	0.955

Northern Labrador – Kangalaksiorvik, Nachvak, Saglek, Okak, Nain (continued)

	Skate		Atlantic cod		Atlantic cod (juvenile)		Winter flounder		Cunner		White hake		Rock gunnel		Atlantic rock crab		American lobster	
Parameter	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p
Location	3.18	0.847	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
Soft sediments	0.9	0.697	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
Coarse substrates	0.67	0.958	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
Macroalgae	0	0.764	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
Rhodoliths	0	0.955	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

Table S3. Analysis of Deviance (ANODEV) associated with the multivariate GLM for species relative abundances (MaxN) as a function of deployment area and habitat composition as well as individual species differences in Gilbert Bay (southern Labrador). Deviance (D) from likelihood ratio tests and p-values (p, significant values in bold) are included for each variable.

Gilbert Bay – southern Labrador

	Overall				Greenland cod		Greenland cod (juvenile)		Large cottids		Small cottids		Toad crab		Arctic shanny		Eelpout	
Parameter	df	Res. df	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p
Area	2	9	57.6	**0.006**	19	**0.01**	3.58	0.549	4.52	0.386	4.62	0.386	11.2	0.051	2.55	0.549	0	1
Soft sediments	4	5	26.9	0.277	1.9	0.897	4.71	0.668	0.59	0.939	3.86	0.668	6.63	0.464	1.07	0.939	0	1
Coarse substrates	4	1	45.7	**0.001**	2.1	0.306	11.3	0.111	2.77	0.203	2.2	0.306	0.47	0.342	4.34	0.148	0	1
Macroalgae	2	2	7.35	0.135	0.96	0.686	0.71	0.75	0.44	0.75	2.2	0.467	0.05	0.75	2.2	0.435	0	1

Gilbert Bay – southern Labrador (continued)

	Skate		Atlantic cod		Atlantic cod (juvenile)		Winter flounder		Cunner		White hake		Rock gunnel		Atlantic rock crab		American lobster	
Parameter	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p
Area	0	1	6.92	0.231	2.43	0.549	2.77	0.549	0	1	0	1	0	1	0	1	0	1
Soft sediments	0	1	5.41	0.649	1.9	0.897	0.81	0.939	0	1	0	1	0	1	0	1	0	1
Coarse substrates	0	1	13.8	**0.048**	8.65	0.148	0	0.522	0	1	0	1	0	1	0	1	0	1
Macroalgae	0	1	0	1	0.81	0.75	0	0.756	0	1	0	1	0	1	0	1	0	1

Table S4. Analysis of Deviance (ANODEV) associated with the multivariate GLM for species relative abundances (MaxN) as a function of season and habitat composition as well as individual species differences in Newman Sound (Newfoundland). Deviance (D) from likelihood ratio tests and p-values (p, significant values in bold) are included for each variable.

Newman Sound – Newfoundland

	Overall				Greenland cod		Greenland cod (juvenile)		Large cottids		Small cottids		Toad crab		Arctic shanny		Eelpout	
Parameter	df	Res. df	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p
Season	1	61	135	**0.001**	0.74	0.826	1.49	0.826	1.3	0.826	0	1	0	1	0	1	0	1
Soft sediments	4	57	76.6	**0.004**	2.51	0.992	1.51	0.997	12.1	0.137	0	1	0	1	0	1	0	1
Coarse substrates	4	53	51.5	0.154	5.59	0.779	3.88	0.89	4	0.89	0	1	0	1	0	1	0	1
Macroalgae	4	49	70.6	**0.007**	11.5	0.234	8.66	0.422	3.3	0.902	0	1	0	1	0	1	0	1
Eelgrass	4	45	37.3	0.137	3.31	0.839	6.62	0.687	5.22	0.792	0	1	0	1	0	1	0	1

Newman Sound – Newfoundland (continued)

	Skate		Atlantic cod		Atlantic cod (juvenile)		Winter flounder		Cunner		White hake		Rock gunnel		Atlantic rock crab		American lobster	
Parameter	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p	D	p
Season	0	1	21.1	**0.001**	1.34	0.826	28.9	**0.001**	69.6	**0.001**	0.96	0.826	1.92	0.826	1.59	0.826	6.23	0.105
Soft sediments	0	1	5.09	0.877	15.2	0.056	11.4	0.137	9.45	0.25	2.93	0.989	1.82	0.997	12.7	0.124	1.85	0.997
Coarse substrates	0	1	6.83	0.766	1.37	0.981	3.8	0.89	6.38	0.779	0.81	0.981	0.71	0.981	12.2	0.184	5.92	0.779
Macroalgae	0	1	14.4	0.1	3.7	0.902	4.94	0.874	2.49	0.902	1.39	0.902	5.77	0.802	4.79	0.874	9.69	0.362
Eelgrass	0	1	4.13	0.839	6.22	0.729	1.72	0.839	4.24	0.839	0	0.839	0	0.839	4.43	0.839	1.43	0.839

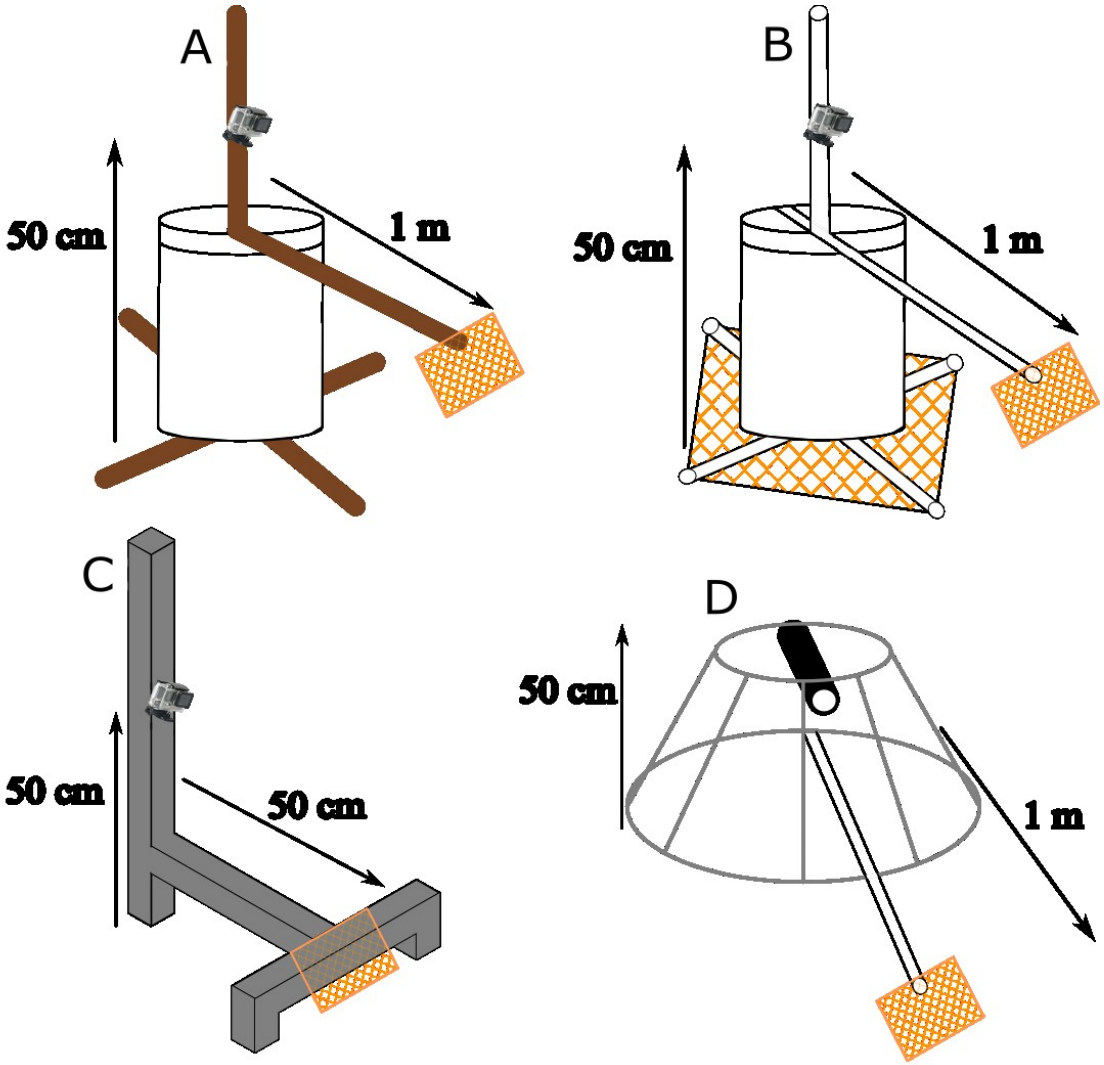

Fig. S1. Illustrations of the baited remote underwater video (BRUV) frame designs from deployments in Newman Sound 2016 (A), Kangalaksiorvik, Nachvak, Saglek, Okak 2017 (B), Newman Sound and Nain 2019 (C), and Gilbert Bay 2021 (D).

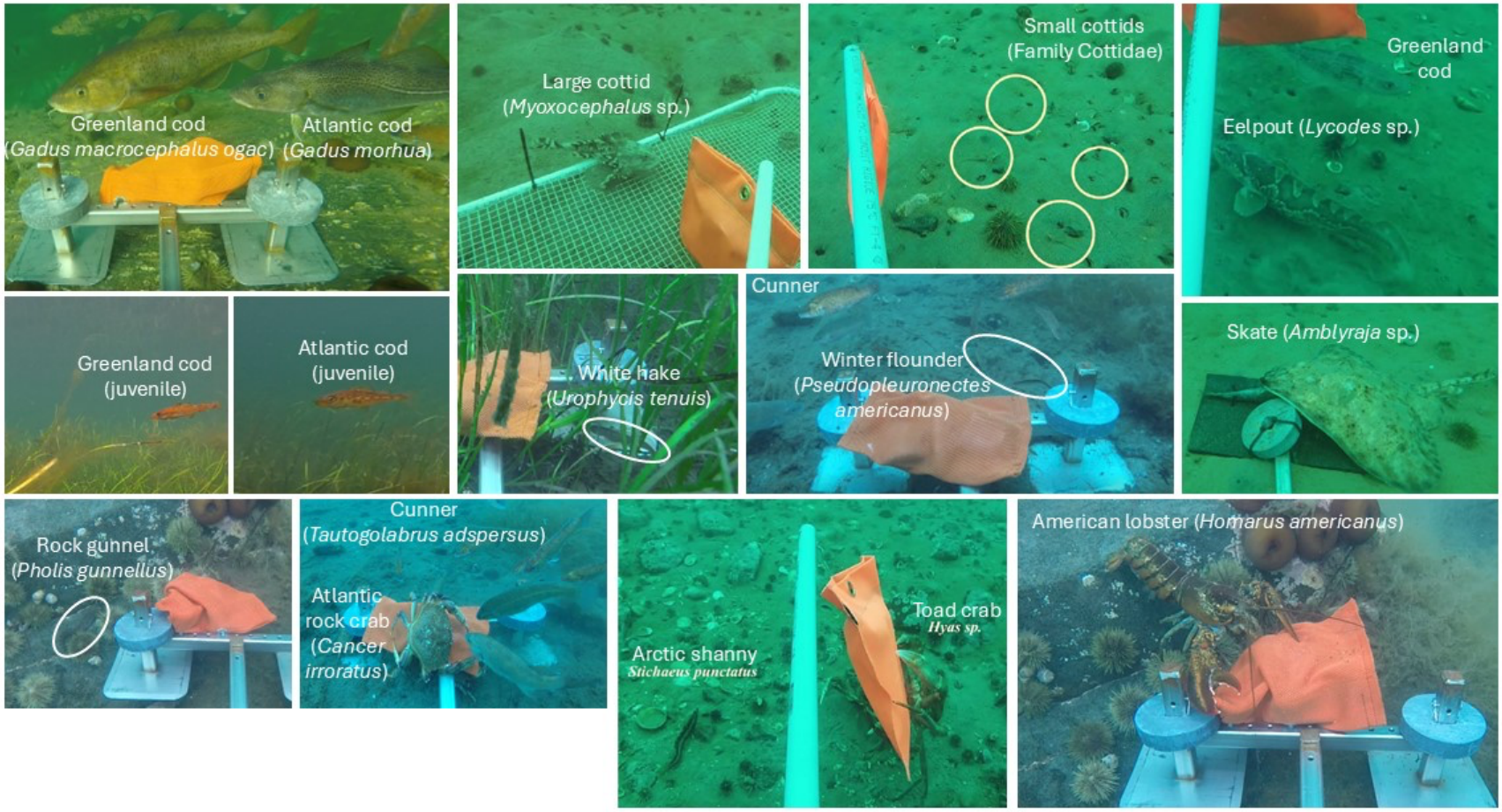

Fig. S2. Example images of fish and decapod crustacean species identified from BRUV deployments.

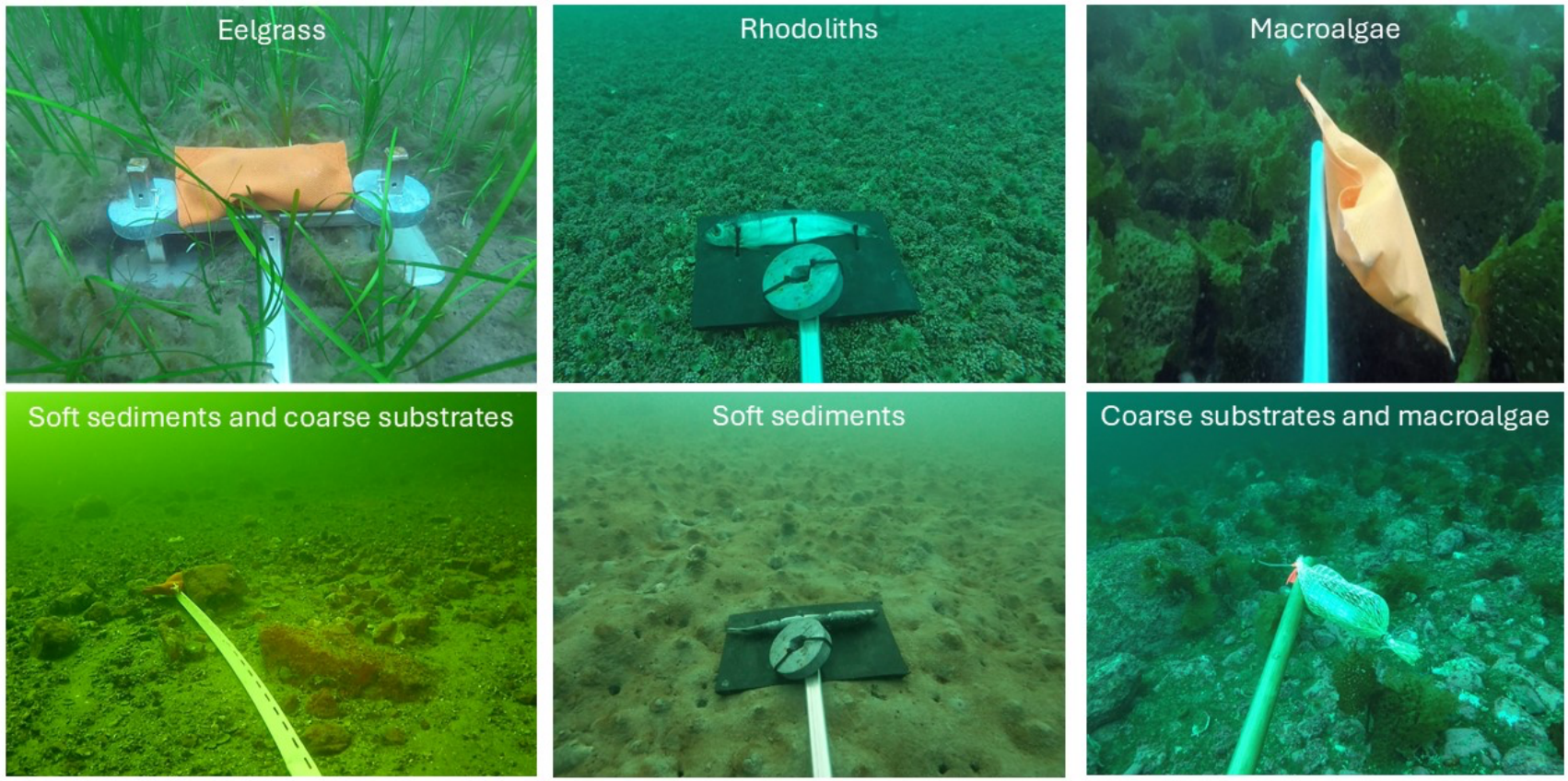

Fig. S3. Example images of habitats identified from BRUV deployments.

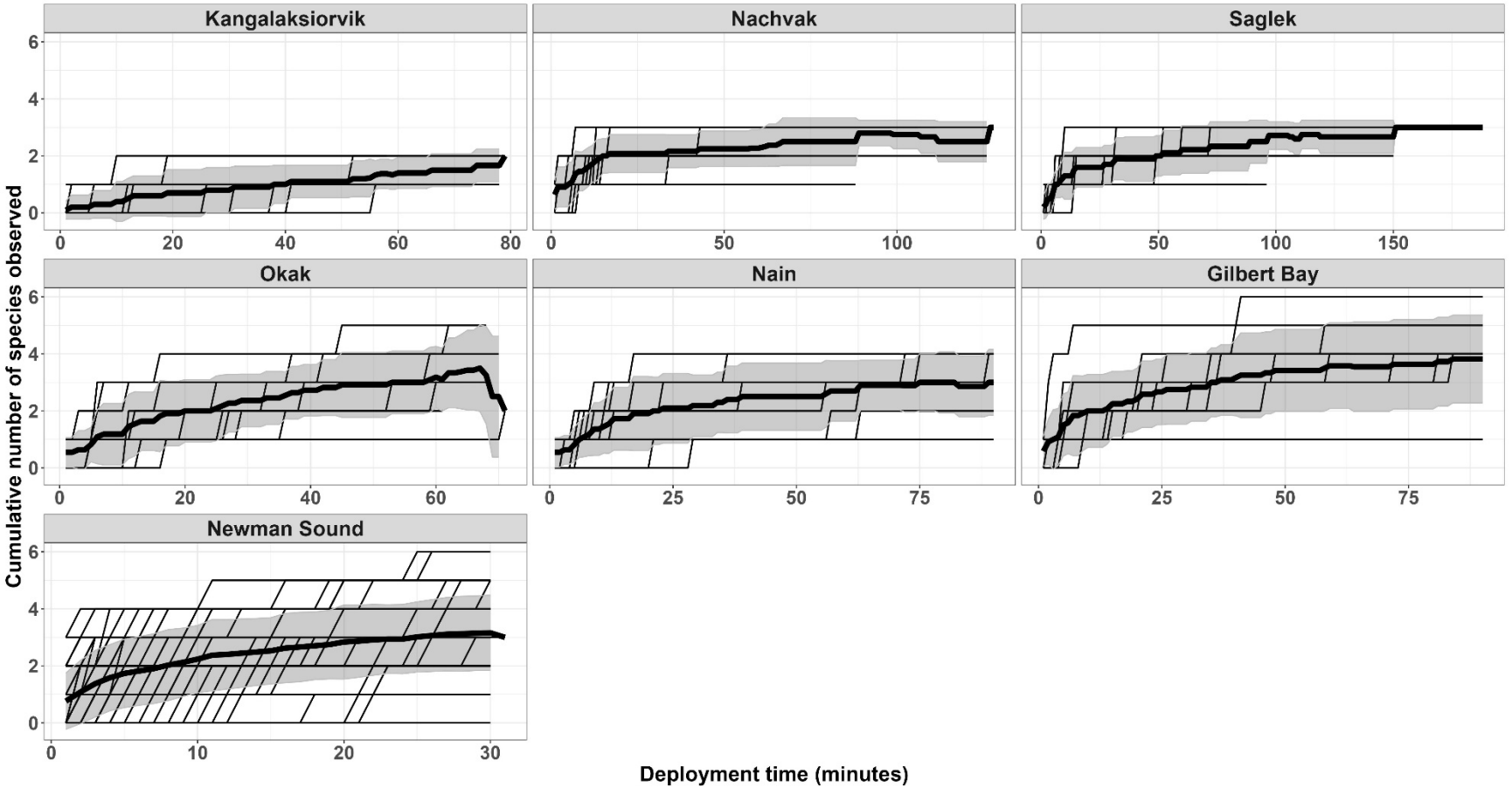

Fig. S4. Species accumulation curves as a function of deployment times in each location. Thin black lines represent species accumulation curves for each deployment and the thick black lines depicts the average species accumulation in each location with grey shading as ± 1 standard deviation.

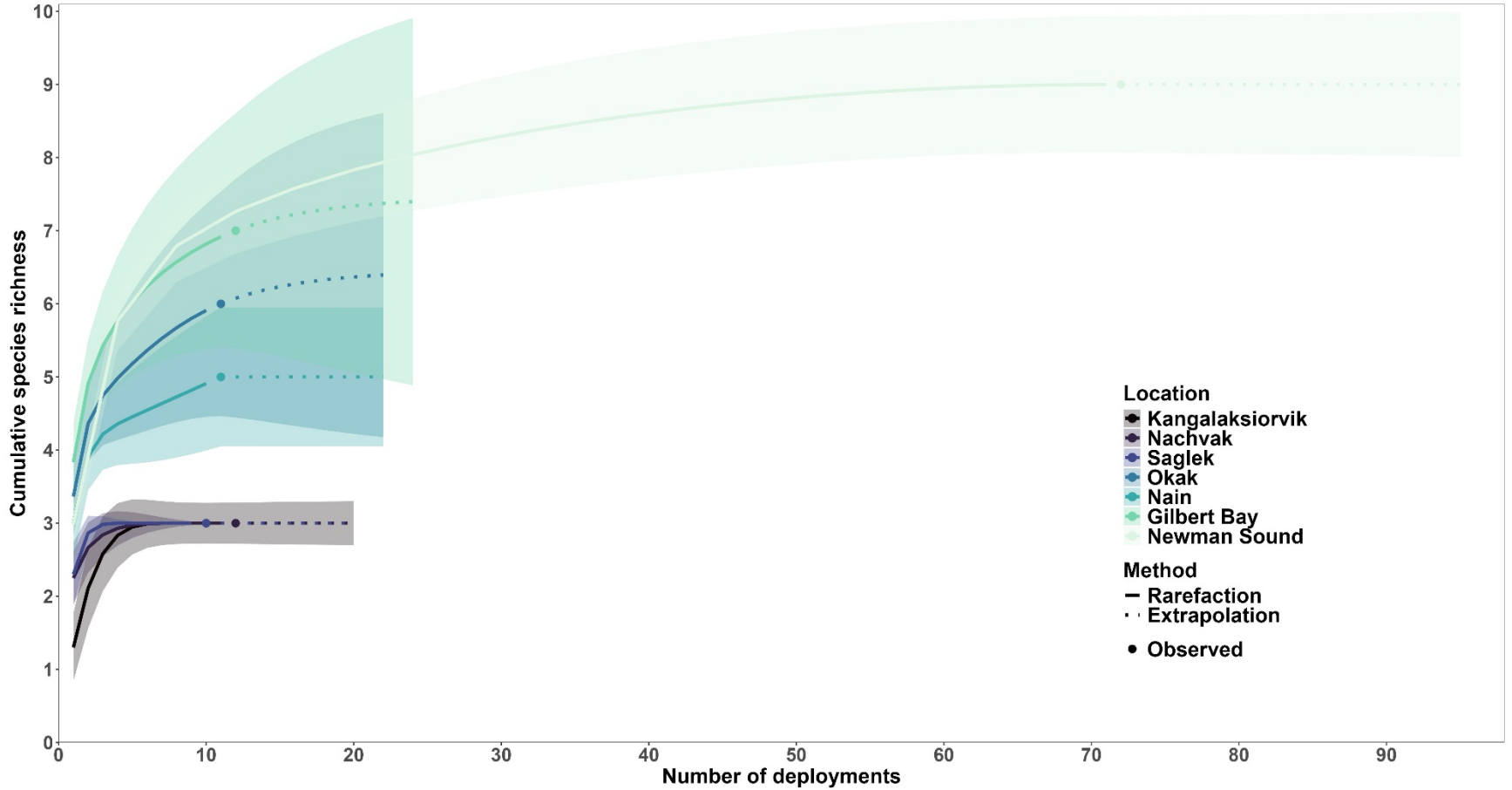

Fig. S5. Species accumulation curves as a function of the number of deployments in each location. Solid lines represent rarefaction curves for species richness, dotted lines represent extrapolated species richness, and shaded regions indicate 95% confidence intervals.

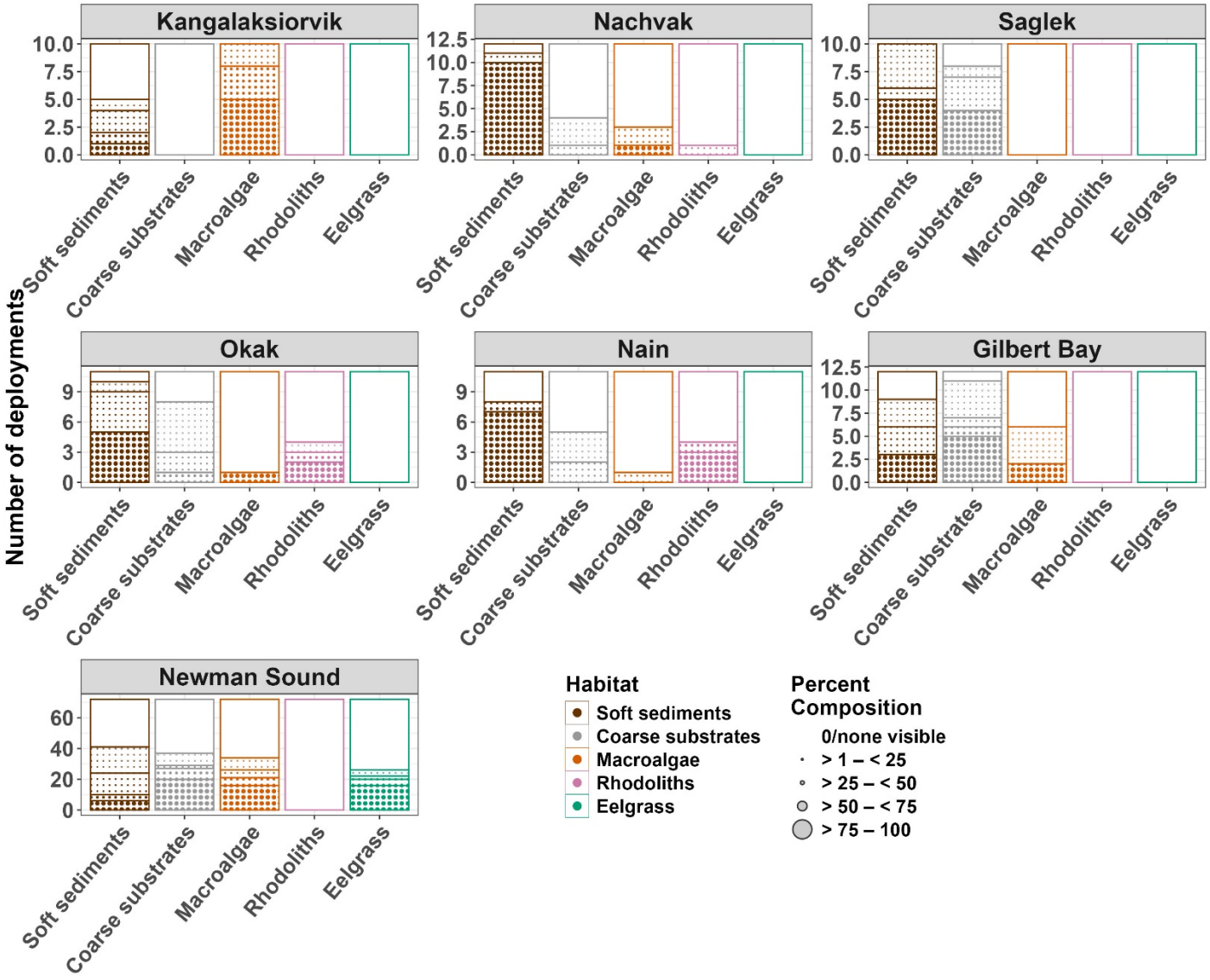

Fig. S6. Percent composition of habitats observed from BRUV deployments across study locations.