9.0 Little Passage (BMA 8)

The BMA of Little Passage (BMA 8) is located in the Bays West Area and includes four licensed sea farms: Strickland Cove, Blackfish Cove, Seal Nest Cove, and Deer Cove (Table 9.1; Figure 9.1). All sea farms are located in relatively close proximity and the closest community to these sea farms is Gaultois which is accessed by ferry. The Blackfish Cove and Seal Nest Cove sea farms have been previously stocked, but have remained fallow since 2009. The Strickland Cove and Deer Cove sea farms have never been in production.

Table 9.1. Little Passage (BMA 8) sea farm locations and construction status in 2024.

BMA Name	BMA No.	Sea Farm Site Name	AQ Licence No.	Site Coordinates		Construction Status
				Latitude (°N)	Longitude (°W)	
Little Passage	8	Strickland Cove	127	47.66000	-55.93880	TBD
		Blackfish Cove	673	47.66690	-55.93140	Existing
		Seal Nest Cove	781	47.65330	-55.92670	Existing
		Deer Cove	1090	47.67390	-55.92910	TBD

The Little Passage BMA is actively used by *Cold Ocean Salmon*. Due to biosecurity reasons, MCE has no plans to supply its four sea farms within the Little Passage BMA with smolt from the Hatchery. For reference, historical information provided to MCE from previous owners is included in this document, however it does not represent any future production or design plans. Prior to stocking these sea farms will be redesigned and the engineering third party certified.

The sea farms in the Little Passage BMA were originally designed in 1998, 1999, 2001 and 2012. Benthic habitat, bottom type, water quality, wind and wave data are not available.

The maximum number of fish per site ranges from 525,000–700,000 with a maximum stocking density of 15 kg/m^3, except for Strickland Cove which has a maximum number of 1500 fish. Water depth under sea cages is available for Blackfish Cove and Seal Neat Cove, ranging from 45–75 m and 16–62 m, respectively (Table 9.2).

Currents were reported for Deer Cove sea farm at near surface, upper, mid-water, and near bottom depths. The maximum water current speed was ~two to ~six times the mean speed (Table 9.2).

Figure 9.1. Locations of sea farms in the Little Passage BMA.

Table 9.2. Summary of historic site-specific sea farm characteristics in Little Passage (BMA 8).

Characteristic	Sea Farm			
	Strickland Cove	Blackfish Cove	Seal Nest Cove	Deer Cove
Lease area (ha)	5	11	19	11
Water depth under lease (m)	n/a	n/a	n/a	n/a
Water depth under sea cages (m)	n/a	45–75	16–62	n/a
Predominant Bottom Type	n/a	n/a	n/a	n/a
Water Temperature (Mean °C at 15 m)				
Winter [a]	n/a	n/a	n/a	n/a
Spring [a]	n/a	n/a	n/a	n/a
Summer [a]	n/a	n/a	n/a	n/a
Fall [a]	n/a	n/a	n/a	n/a
Dissolved Oxygen (Mean mg/L at 15 m)				
Winter [a]	n/a	n/a	n/a	n/a
Spring [a]	n/a	n/a	n/a	n/a
Summer [a]	n/a	n/a	n/a	n/a
Fall [a]	n/a	n/a	n/a	n/a
Currents (cm/s at 15 m) in Summer				
Mean	n/a	n/a	n/a	3.81
Maximum	n/a	n/a	n/a	16.15

Notes:

[a] Winter includes January, February and March; Spring includes April, May June; Summer includes July, August, September; and Fall includes October, November and December. Water depth values may vary by approximately ± 2 m depending on tidal influence.

9.1 Sea Farm Site Maps

The MCE sea farms in the Little Passage BMA (Strickland Cove, Blackfish Cove and Seal Nest Cove) were originally designed in 1998, 1999 and 2001 therefore data on sea cage array, net circumference and depth is not available. Since the Deer Cove sea farm original design is from 2012, sea farm parameters are available.

Currently, for biosecurity reasons, MCE has no plans to utilize the sea farms in the Little Passage BMA. Should these plans change, and a production schedule has been defined, a third-party certified sea cage layout will be developed [as per FFA policy (FFA 2019)].

9.1.1 Strickland Cove

Strickland Cove has never been in production. Prior to MCE acquisition of the Strickland Cove license, a sea farm design and sea cage layout were provided to regulators.

9.1.2 Blackfish Cove

Blackfish Cove was last in production in 2009. Prior to MCE acquisition of the Blackfish Cove license, a sea farm design and sea cage layout were provided to regulators.

9.1.3 Seal Nest Cove

Seal Nest Cove was last in production in 2009. Prior to MCE acquisition of the Seal Nest Cove license, a sea farm design and sea cage layout were provided to regulators.

9.1.4 Deer Cove

Deer Cove has never been in production. Prior to MCE acquisition of Deer Cove license, a sea farm design and sea cage layout were provided to regulators. The sea farm original design has a 2x7 sea cage array with a net circumference of 90–100 m and a depth of 15 m.

9.2 Benthic Surveys

No benthic surveys have been conducted on sea farms within the Little Passage BMA. MCE will collect baseline data as required prior to stocking farms.

9.3 Water Quality

No recent water quality analysis (since last production in 2009) have been conducted on sea farms within the Little Passage BMA. MCE will collect biophysical data as required prior to stocking sea farms.

9.4 Oceanographic and Meteorological Data

Bathymetric, wind and wave data are not available for any of the four sea farms in the Little Passage BMA. Current data is available for the Deer Cove sea farm.

9.4.1 Bathymetry

No recent bathymetry mapping has been conducted on sea farms within the Little Passage BMA. MCE will collect baseline data as required prior to stocking sea farms.

9.4.2 Currents

Current data were acquired at the Deer Cove sea farm in July–August 2024. Current data are not available for the other sea farms within the Little Passage BMA.

9.4.2.1 Deer Cove

During July–August 2024, current measurements were collected at six depths in the Deer Cove sea farm (Table 9.3). During this period, mean current speeds were relatively consistent across water depths ranging from 2.70 cm/s to 5.38 cm/s. Maximum current speeds were more variable

ranging from 10.27 cm/s (29 m depth) to 21.87 cm/s (10 m depth). The currents were aligned north-northeast to south-southwest, mostly north-northeast at 10, 29, and near-bottom (Figure 9.2). The vector average currents traveled 3.4 cm/s towards the east-northeast at 5 m depth, slowing to 0.1 cm/s easterly at 10–20 m depth. At mid-depth (29 m) the vector average current was 0.8 cm/s towards the northeast, increasing to 1.6 cm/s near-bottom.

Table 9.3. Current speeds (mean and maximum values) and vector-averages at the Deer Cove sea farm (July–August 2024).

Current Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5	5.38	13.31	3.4 @ 27 °
10	4.31	21.87	0.1 @ 100 °
15	3.81	16.15	0.1 @ 167 °
20	3.48	14.23	0.1 @ 89 °
29	2.70	10.27	0.8 @ 35 °
53 (5 m above bottom)	3.09	17.88	1.6 @ 36 °

Notes:
MWL = mean water level.

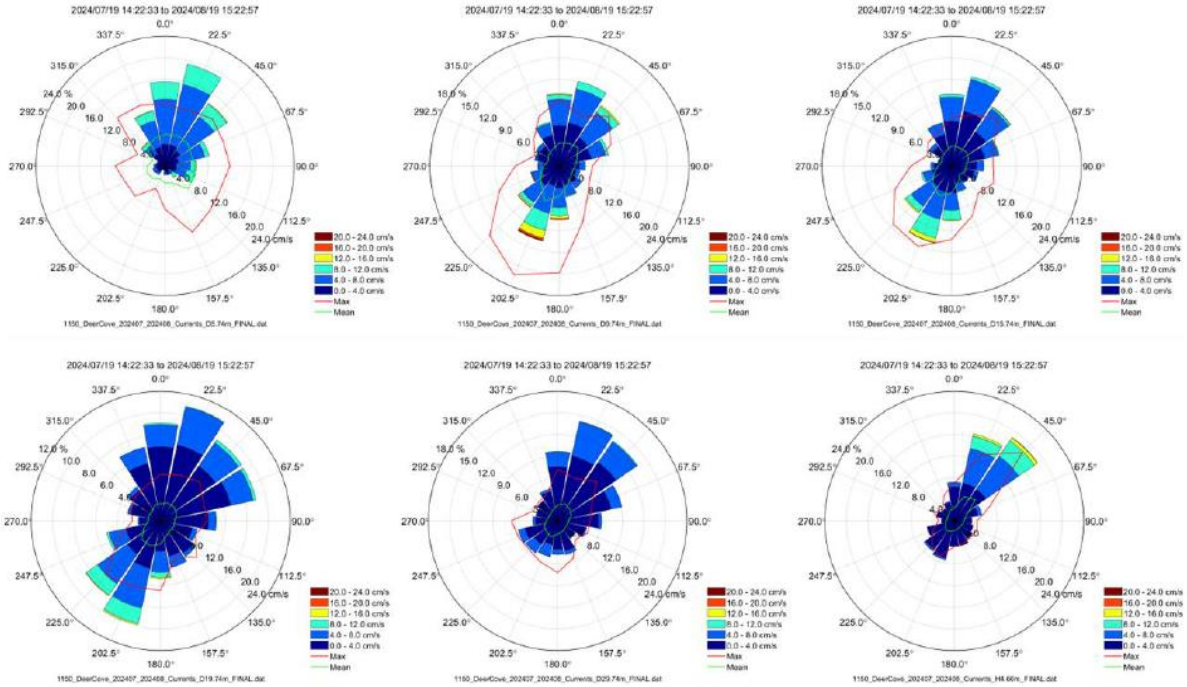

Figure 9.2. Compass rose plots of current speeds at the Deer Cove sea farm (July–August 2024). Current speeds and directions at 5 m, 10 m, 15 m, 20 m, 29 m (mid-depth), and near-bottom (5 m height) are shown from left to right, top to bottom in the figure.

9.4.3 Wind and Waves

No sea farm specific wave measurements or calculations have been conducted for the Little Passage BMA. In addition, no MSC50 grid points are located near the Little Passage BMA that could provide a representation of the wind and waves. MCE will collect baseline data as required prior to stocking sea farms.

9.5 Ice Conditions

Ice conditions for the Study Area including Little Passage (BMA 8) are detailed in Section 4.5.

9.6 Storms

Storm conditions for the Study Area including Little Passage (BMA 8) are detailed in Section 4.6.

9.7 Tides and Floods

Tide and flood conditions for the Study Area including Little Passage (BMA 8) are detailed in Section 4.7.

9.8 Performance of Sea Farms with a Previous Production Cycle

The Little Passage BMA has not been in production since 2009. Therefore, there is no monitoring, reporting and performance associated with sea farms within the Little Passage BMA for MCE sea farms during the period that public reporting has been a requirement (2016–present).

9.9 Exposure Zone Modelling

9.9.1 PEZ Modelling

DFO has not conducted PEZ modelling for BMA 8 sea farms.

9.9.2 Dispersion Modelling

Dispersion modelling by BMT was undertaken to model exposure zones of Azamethiphos (bath treatment) in a worst-case scenario approach (see Appendix B). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment at Deer Cove sea cages (4 May 2023 for spring tide; 16 June 2023 for neap tide) through final treatment at Seal Nest Cove sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 9.4).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Little Passage BMA predicted maximum areas of 3.07 km² and 4.22 km² during neap and spring tides, respectively, where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment duration. The maximum Azamethiphos concentration for the Little Passage BMA was 160 ng/L during the simulated neap tide and 190 ng/L during the spring tide. The peak concentration occurred during the treatments of the third sea farm, Strickland Cove, and decreased shortly after treatments were completed; concentration levels 72 hrs after final treatment were below 100 ng/L (Figures 9.3 and 9.4). The maximum area within BMA 8 where Azamethiphos concentrations were predicted to exceed 100 ng/L was larger during the spring tide scenario (4.22 km²) than during the neap tide scenario (3.07 km²).

Table 9.4. Treatment schedule (assumed dates) for sea farms in BMA 8 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
Deer Cove	1	04 May 23	-315	16 Jun 23	-315
	2	04 May 23	-312	16 Jun 23	-312
	3	05 May 23	-291	17 Jun 23	-291
	4	05 May 23	-288	17 Jun 23	-288
	5	06 May 23	-267	18 Jun 23	-267
	6	06 May 23	-264	18 Jun 23	-264
	7	07 May 23	-243	19 Jun 23	-243
Blackfish Cove	1	07 May 23	-240	19 Jun 23	-240
	2	08 May 23	-219	20 Jun 23	-219
	3	08 May 23	-216	20 Jun 23	-216
	4	09 May 23	-195	21 Jun 23	-195
	5	09 May 23	-192	21 Jun 23	-192
	6	10 May 23	-171	22 Jun 23	-171
	7	10 May 23	-168	22 Jun 23	-168
Strickland Cove	1	11 May 23	-147	23 Jun 23	-147
	2	11 May 23	-144	23 Jun 23	-144
	3	12 May 23	-123	24 Jun 23	-123
	4	12 May 23	-120	24 Jun 23	-120
	5	13 May 23	-99	25 Jun 23	-99
	6	13 May 23	-96	25 Jun 23	-96
	7	14 May 23	-75	26 Jun 23	-75
Seal Nest Cove	1	14 May 23	-72	26 Jun 23	-72
	2	15 May 23	-51	27 Jun 23	-51
	3	15 May 23	-48	27 Jun 23	-48
	4	16 May 23	-27	28 Jun 23	-27
	5	16 May 23	-24	28 Jun 23	-24
	6	17 May 23	-3	29 Jun 23	-3
	7	17 May 23	0	29 Jun 23	0

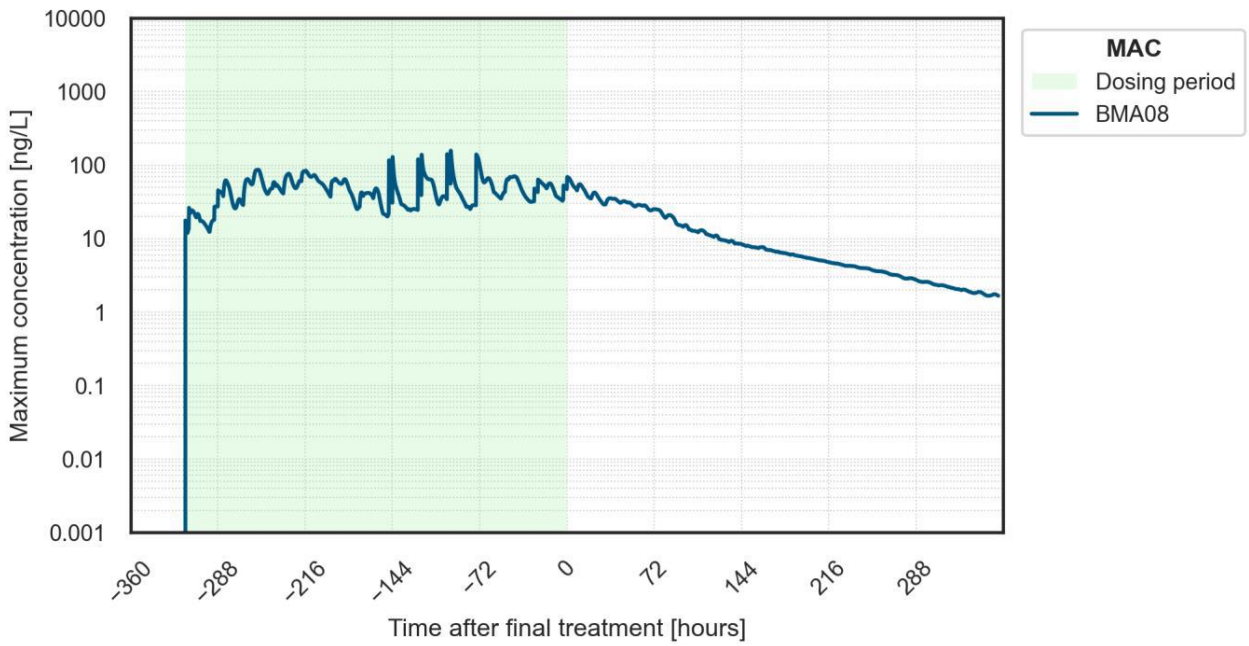

Figure 9.3. Maximum concentrations for Little Passage BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced at Deer Cove (assumed 16 June 2023) and final treatment was at Seal Nest Cove (time=0; assumed 29 June 2023).

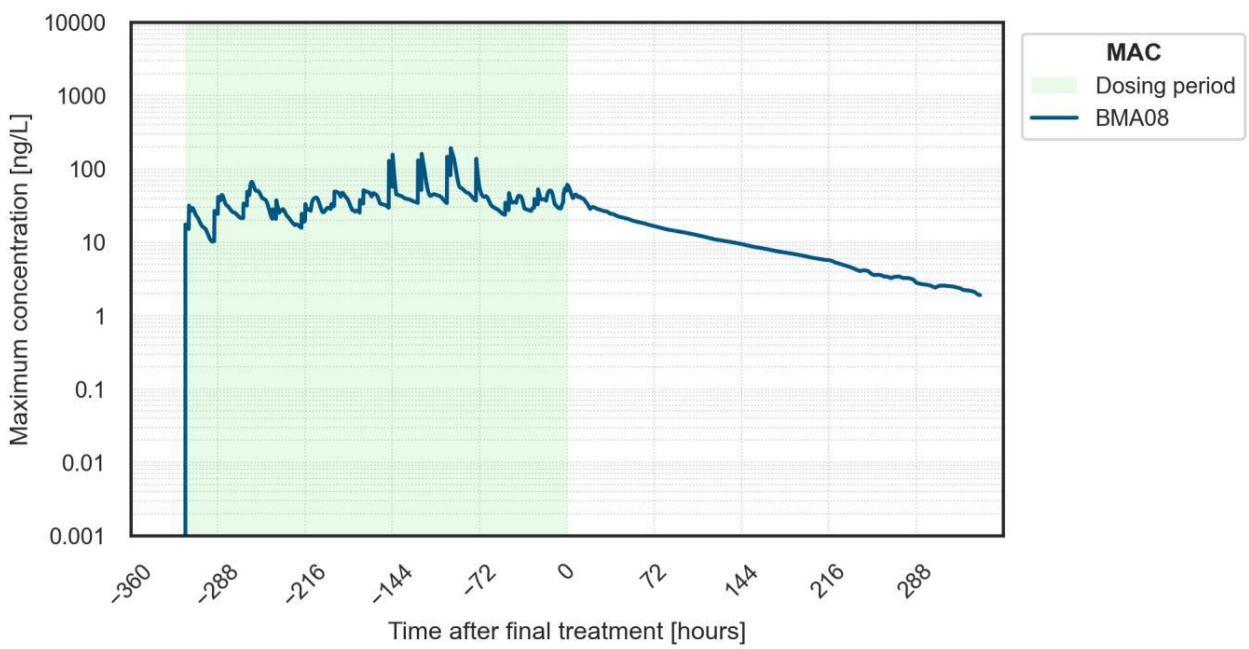

Figure 9.4. Maximum concentrations for Little Passage BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced at Deer Cove (assumed 4 May 2023) and final treatment was at Seal Nest Cove (time=0; assumed 17 May 2023)

10.0 Outer Bay d'Espoir (BMA 9)

The BMA of Outer Bay d'Espoir (BMA 9) is located in the Bays West Area and includes four licensed sea farms: Butter Cove, Jarvis Island, Pass My Can, and Goblin Bay (Table 10.1; Figure 10.1). The closest community to these sea farms is McCallum, which is accessible by ferry. The sea farms are in relatively close proximity to each other (Figure 10.1). The four sea farms in the Outer Bay d'Espoir BMA have not been in production since MCE acquired these licenses in 2017 and the history of production cycles with former owners is unknown.

Table 10.1. Outer Bay d'Espoir (BMA 9) sea farm locations and construction status in 2024.

BMA Name	BMA No.	Sea Farm Site Name	AQ Licence No.	Site Coordinates		Construction Status
				Latitude (ºN)	Longitude (ºW)	
Outer Bay d'Espoir	9	Butter Cove	1128	47.67650	-56.05680	TBD
		Jervis Island	1129	47.65570	-56.13630	TBD
		Pass My Can	1130	47.66820	-56.15170	TBD
		Goblin Bay	1132	47.70570	-56.11280	TBD

The Outer Bay d'Espoir BMA is actively used by *Cold Ocean Salmon*. Due to biosecurity reasons, in an effort to avoid interaction, MCE has no plans to supply its four sea farms within the Outer Bay d'Espoir BMA with smolt from the Hatchery. For reference, historical information provided to MCE from previous owners is included in this document, however it does not represent any future production or design plans. Prior to stocking these sea farms will be redesigned and the engineering third party certified.

The sea farms in the Outer Bay d'Espoir BMA were originally designed with a 2x5 sea cage array with a net circumference of 90 m and a depth of 25–35 m. Beyond 2025, sea cages systems will be updated to have cages that are either 140 m or 160 m in circumference with a minimum depth of 20 m. The maximum number of fish per site is 1,000,000 with a maximum stocking density of 15 kg/m^3.

The water depths below the leases ranges from 1–<500 m (Table 10.2). The shallowest sea farm is Pass My Can where depths range from 1–250 m. Sea farms have bottom sediments consisting of mixed substrates. All sites were classified with the majority having hard substrates with some mixed substrates including silt, sand or mud for an overall site classification of hard bottom.

Currents were reported at near surface, upper, mid-water, and near bottom depths. In summer, at 15 m water depth, the maximum water current speed at each site was ~four to five times the mean speed (Table 10.2). There is much vertical variation in the maximum current speed and this variation is larger than for the mean current speeds.

Benthic habitat surveys revealed that the predominate flora and fauna at sea farms are seaweed, anemone, coralline algae, scallops, and cunners. Several stations contained soft corals and several kelp beds were identified outside of the lease boundaries.

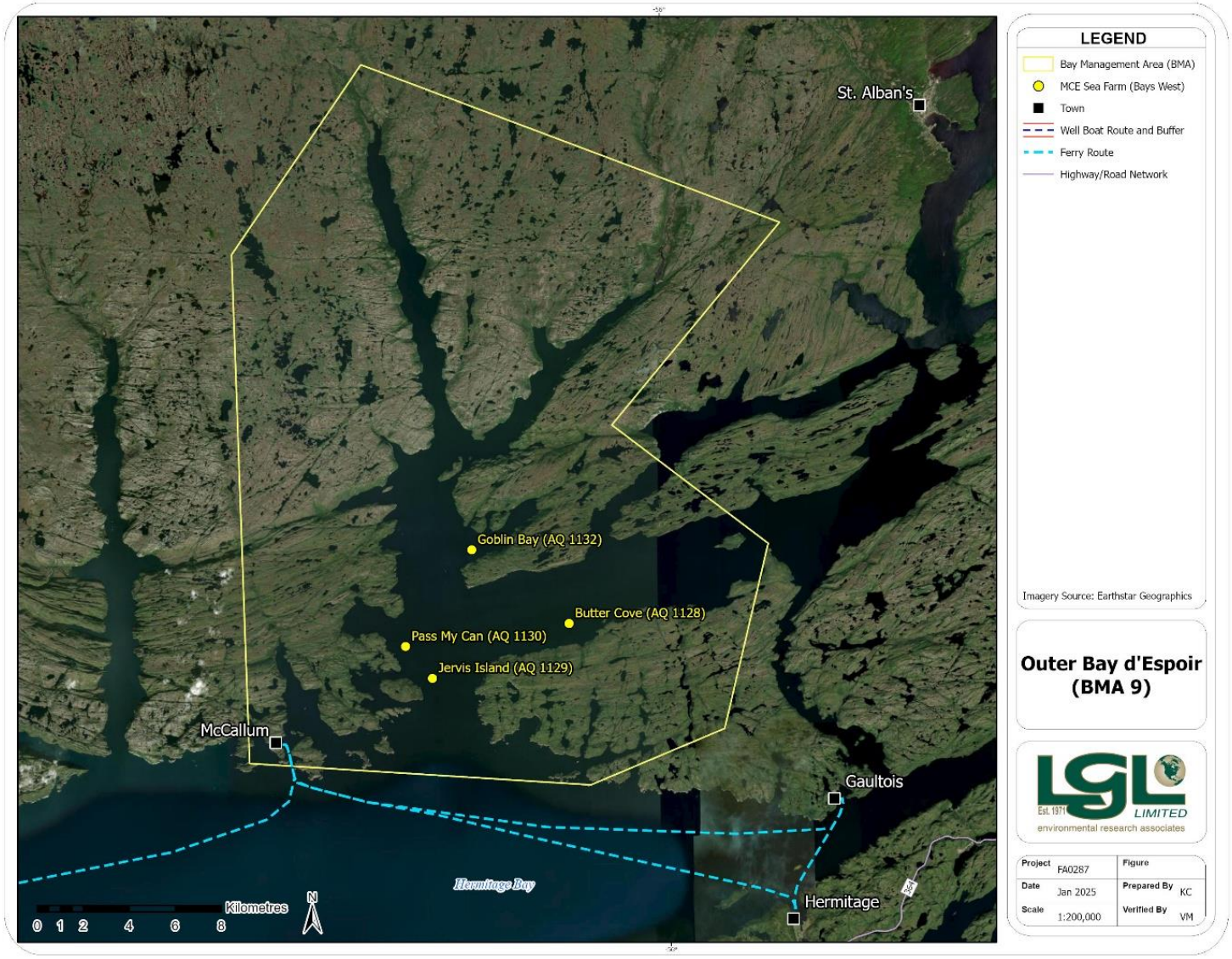

Figure 10.1. Locations of sea farms in the Outer Bay d'Espoir BMA.

Table 10.2. Summary of historic site-specific sea farm characteristics in Outer Bay d'Espoir (BMA 9).

Characteristic	Sea Farm			
	Butter Cove	Jervis Island	Pass My Can	Goblin Bay
Lease area (ha)	248	242	144	103
Water depth under lease (m)	1–>350	1–>500	1–250	1–>300
Water depth under sea cages (m)	55–120	60–180	70–150	6–160
Predominant Bottom Type	Hard Bottom	Hard Bottom	Hard Bottom	Hard Bottom
Water Temperature (Mean °C at 10 m)				
Winter [a]	1			
Spring [a]	2			
Summer [a]	4			
Fall [a]	4			
Dissolved Oxygen (Mean mg/L at 15 m)				
Winter [a]	n/a			
Spring [a]	n/a			
Summer [a]	n/a			
Fall [a]	n/a			
Currents (cm/s at ~15 m) in Summer				
Mean	7.59	12.46	6.89	5.57
Maximum	28.28	49.62	30.99	28.76

Notes:
[a] DFLR data collected in Outer Bay d'Espoir BMA ((undated) at multiple locations (not site specific).
Water depth values may vary by approximately ± 2 m depending on tidal influence.

Mean water temperatures at 10 m water depth ranged from 1 °C in winter to 4°C in summer and fall. Dissolved oxygen levels were not available for the Outer Bay d'Espoir BMA. Salinity was fairly consistent 2 m and below, with averages ranging from 25–30 ppt (see Table 10.2).

During 2009–2018, average monthly wind speeds ranged from 5.43 m/s in July to 10.88 m/s in January (Table 10.14). The maximum wind speed during this period was 21.67 m/s in February. Wind direction in the Outer Bay d'Espoir BMA was predominately westerly. Mean wave height from 2009–2018 ranged from 0.48 m in June to 1.39 m in January (Table 10.15). The maximum wave height was 3.46 m in February.

10.1 Sea Farm Site Maps

The MCE sea farms in the Outer Bay d'Espoir BMA were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 25–35 m. Currently, for biosecurity reasons, MCE has no plans to utilize the sea farms in the Outer Bay d'Espoir BMA. Should these plans change, and a production schedule has been defined, a third-party certified sea cage layout will be developed [as per FFA policy (FFA 2019)].

10.1.1 Butter Cove

The Butter Cove sea farm has a 2x5 sea cage array with a net circumference of 140 m and an original depth design of 25 m (Figure 10.2).

10.1.2 Jervis Island

The Jervis Island sea farm has a 2x5 sea cage array with a net circumference of 140 m and an original depth design of 25 m (Figure 10.3).

10.1.3 Pass My Can

The Pass My Can sea farm has a 2x5 sea cage array with a net circumference of 140 m and an original depth design of 25 m (Figure 10.4).

10.1.4 Goblin Bay

The Goblin Bay sea farm has a 2x5 sea cage array with a net circumference of 140 m and an original depth design of 35 m (Figure 10.5).

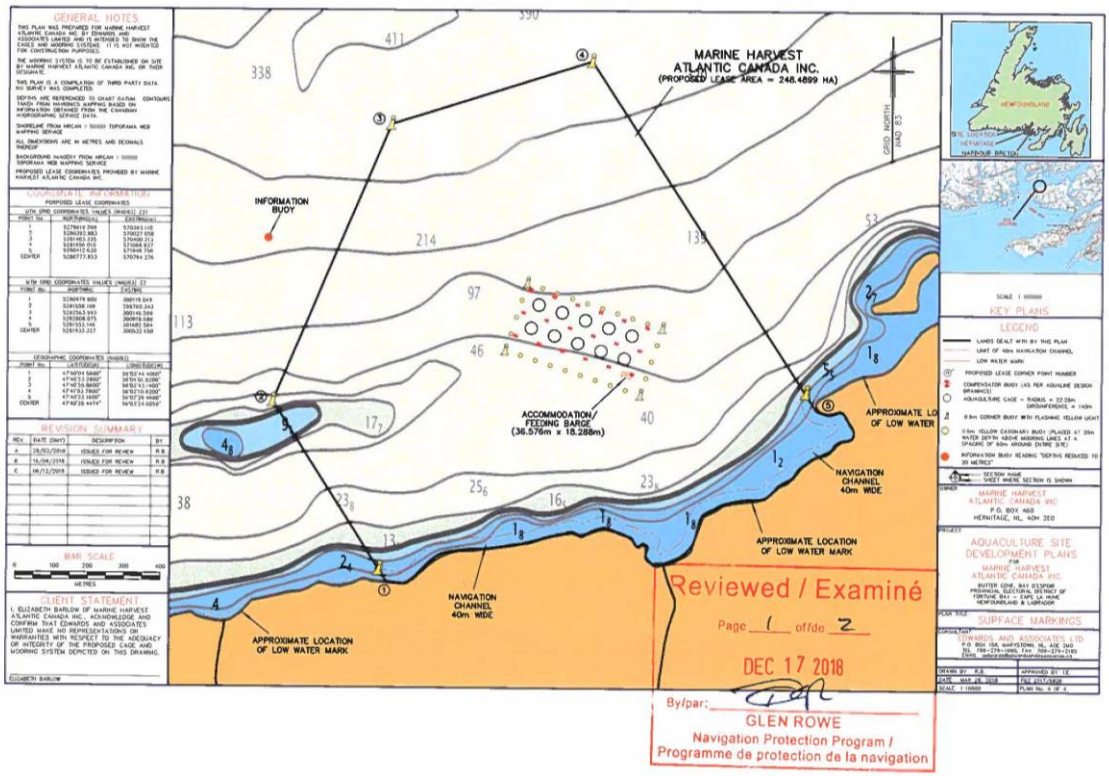

Figure 10.2. Butter Cove sea farm map and sea cage layout.

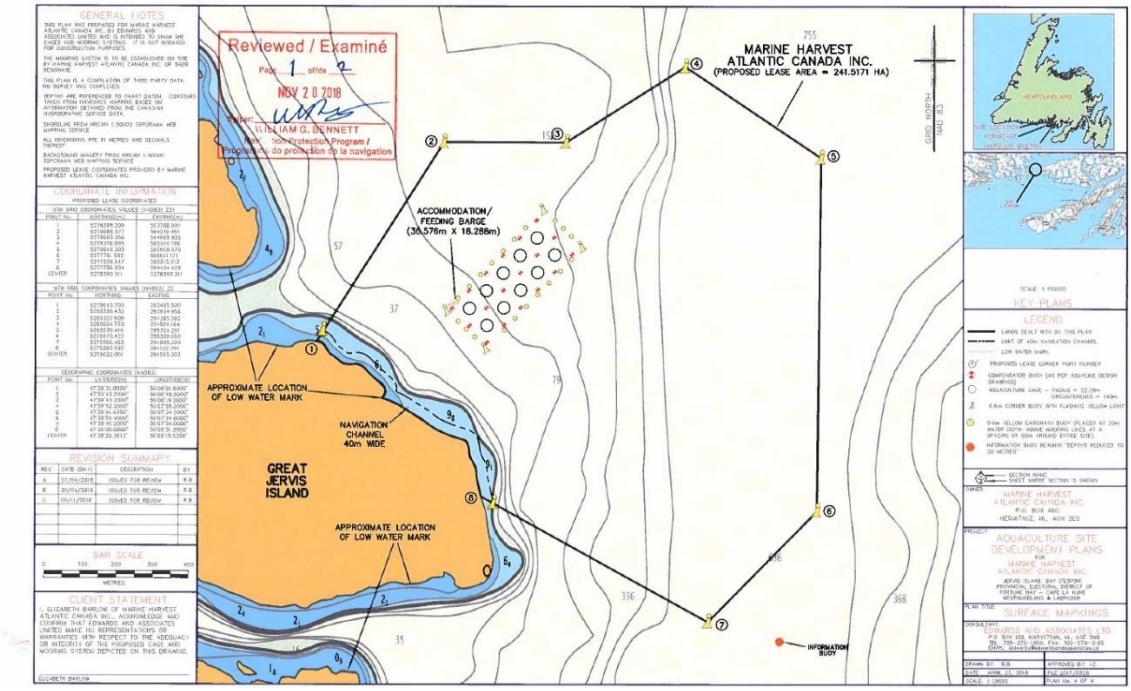

Figure 10.3. Jervis Island sea farm map and sea cage layout.

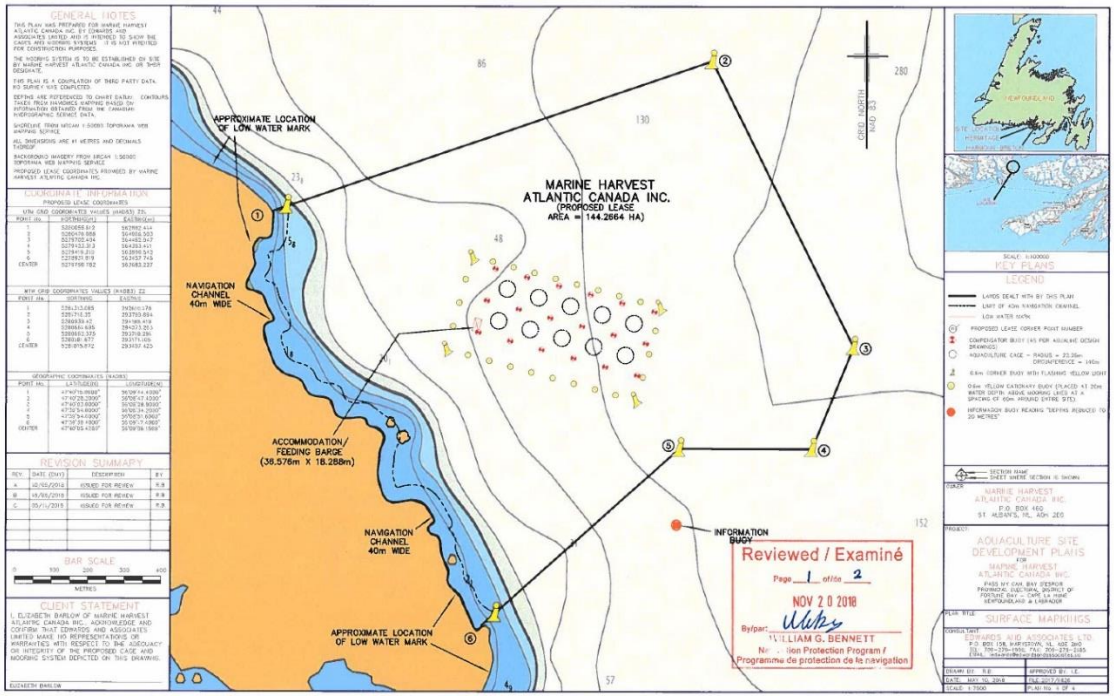

Figure 10.4. Pass My Can sea farm map and sea cage layout.

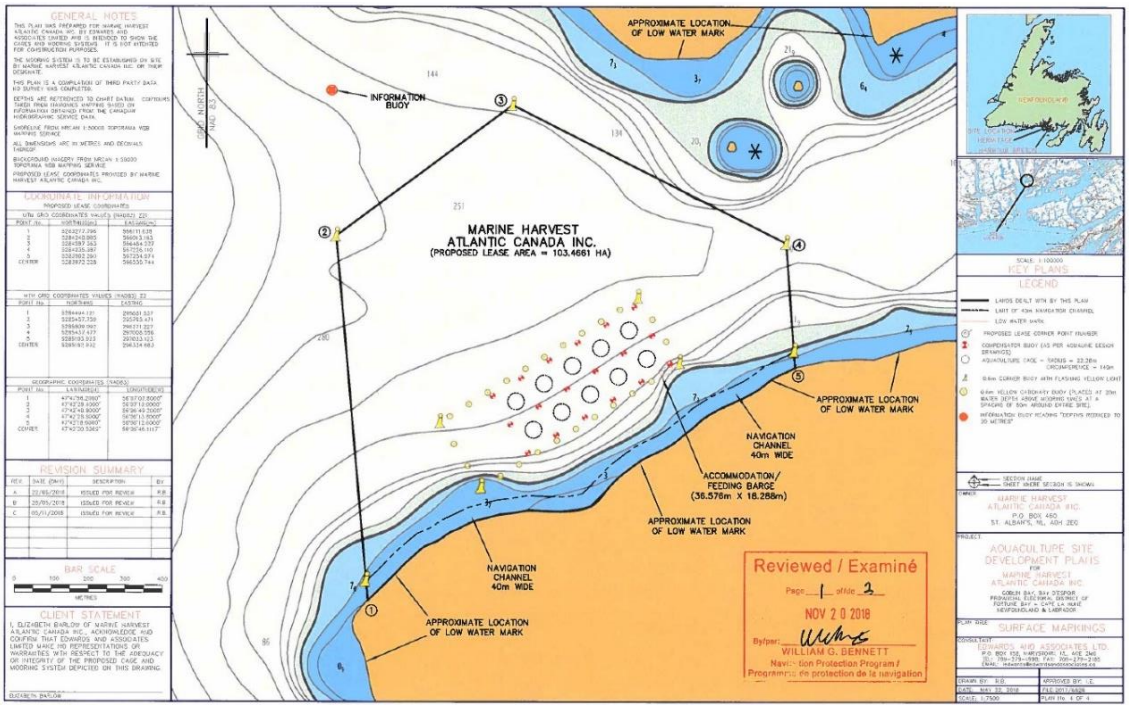

Figure 10.5. Goblin Bay sea farm map and sea cage layout.

10.2 Benthic Surveys

Benthic surveys at sea farms in the Outer Bay d'Espoir BMA were conducted in August–September 2017. Stations categorized as hard bottom appeared hard visually or did not produce acceptable grab samples.

10.2.1 Butter Cove

Based on surveys at 260 sampling stations, the composition of the seafloor in the Butter Cove sea farm is primarily bedrock sediment with a surface layer of mud or silt (Figure 10.6; Table 10.3). The majority of stations (180 of 260) were considered hard bottom. Species observed included anemones, algae, brittle stars, cunners and more. Sponge species, tunicates (sp. unknown), sea pens and soft corals were observed. Trace amounts of eel grass was observed at one station. Benthic indicators (*Beggiatoa*-like bacteria) were observed on three transects (4, 14 and 15).

10.2.2 Jervis Island

Based on surveys at 124 sampling stations across 15 transects, the composition of the seafloor in the Jervis Island sea farm is mixed substrates such as bedrock with a surface layer of mud or silt, sand, mud and gravel (Table 10.4; Figure 10.7). The majority of stations (107 of 124) were considered hard bottom. Species observed included anemones, algae, brittle stars, cunners and

more. One individual Atlantic wolffish (*Anarhichas lupus*), a species listed under Schedule one SARA as *Special Concern*, was observed at 300 m along transect 9, in 74 m depth of water. Soft corals and sea pens were also observed.

10.2.3 Pass My Can

Based on surveys at 169 sampling stations, the composition of the seafloor in the Pass My Can sea farm is primarily sand and mud covering bedrock. Though gravel, cobble and rubble were also observed (Figure 10.8; Table 10.5). The majority of stations (103 of 169) were considered hard bottom. Species observed included anemones, algae, brittle stars, cunners and more (Table 10.5). Kelp beds and sea pens were observed. Benthic indicators (*Beggiatoa*-like bacteria) were observed on three transects (3, 4, and 5).

10.2.4 Goblin Bay

Based on surveys at 116 sampling stations, the composition of the seafloor in the Goblin Bay sea farm is primarily bedrock with a surface layer of finer substrates such as mud or silt. Gravel, cobble and rubble were also observed (Figure 10.9; Table 10.6). The majority of stations (80 of 116) were considered hard bottom. Species observed included anemones, algae, brittle stars, cunners and more (Table 10.6). Kelp beds were observed near shore on the south-southeast ends of transects 1, 3, 4, 6, 12, and 13 in an area that sea cages will not be moored. Soft corals and sea pens were also observed. Benthic indicators (small patches and traces of *Beggiatoa*-like bacteria) were observed on four transects (9, 10, 12 and 14).

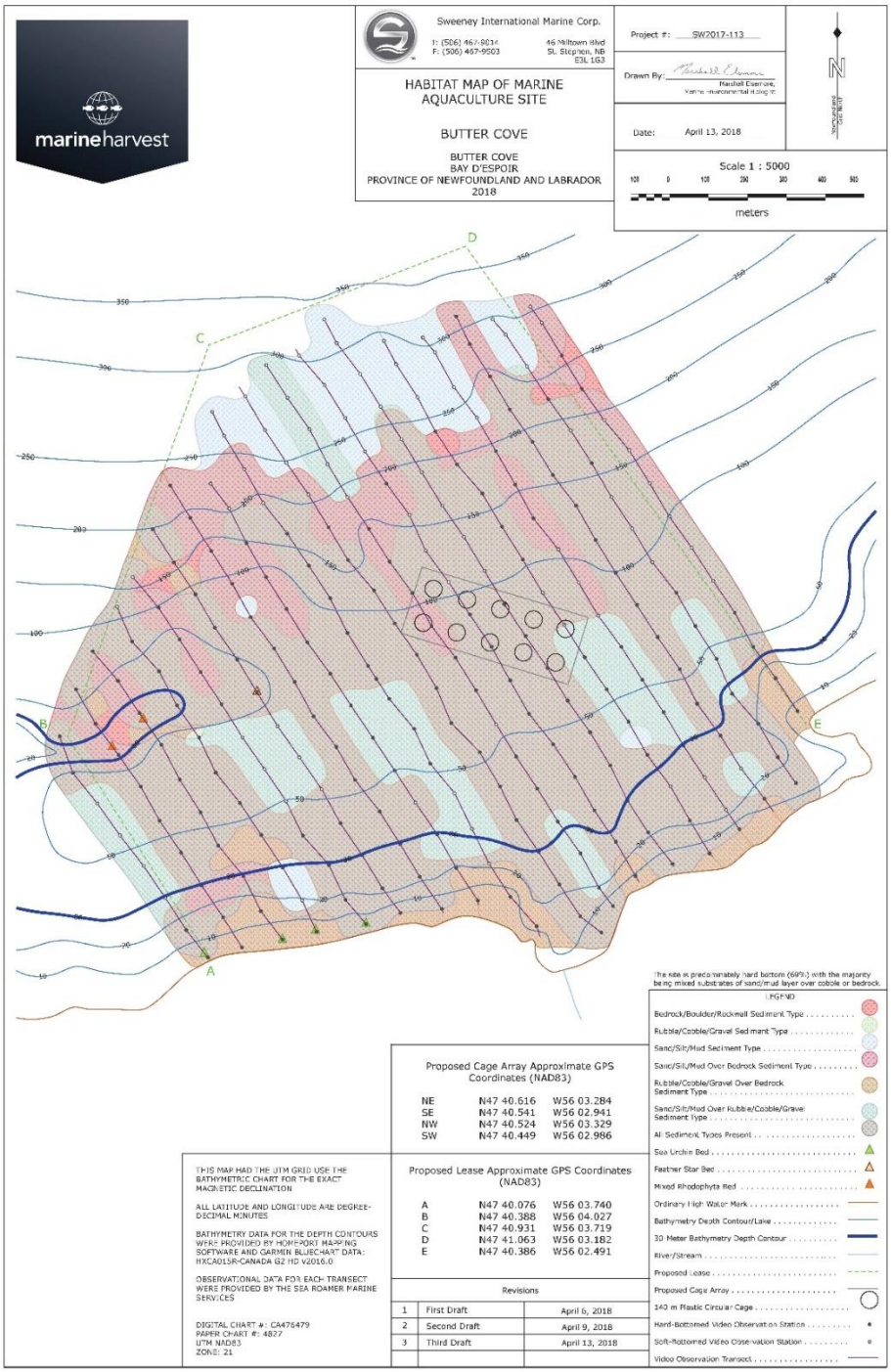

Figure 10.6. Habitat observations at sampling stations in the Butter Cove sea farm (August 2017).

Table 10.3. Summary of bottom type and observed flora and fauna at the Butter Cove sea farm (August 2017).

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 40.386	56 4.036	34	Hard		60%		5%	5%	5%	25%				Atlantic King Crab (1), Encrusting Sponge (<5%)
	100	47 40.335	56 4.010	50	Hard		70%			5%	15%	10%				*Stomphia* Anemone (18)
	200	47 40.292	56 3.960	58	Soft				10%	15%	5%	70%				*Stomphia* Anemone (>20)
	300	47 40.247	56 3.914	56	Soft						10%	90%				Worm Tubes (>20), *Stomphia* Anemone (>20)
	400	47 40.204	56 3.866	40	Soft					5%	5%	90%				Northern Sea star (2), Worm Tube (>20), Green Sea Urchin (1), *Stomphia* Anemone (2)
	500	47 40.159	56 3.822	30	Soft							100%				Sand Dollar (2)
	625	47 40.104	56 3.770	16	Hard		40%	10%	25%	10%	5%	10%				Northern Sea star (4), Green Sea Urchin (18), Cunner (6), Fan Worm (2)
	690	47 40.075	56 3.735	6	Hard			95%				5%				Green Sea Urchin (>20), Cunner (>20)
2	0	47 40.451	56 4.001	62	Hard		80%				10%	10%				Feather Star (>20), Unidentifiable Anemones (>20)
	100	47 40.403	56 3.962	36	Hard		95%					5%				*Hildenbrandia rubra* (10%), Encrusting Sponge (trace)
	200	47 40.359	56 3.915	28	Hard		90%					10%				*Hildenbrandia rubra* (5%), Encrusting Sponge (trace)
	300	47 40.315	56 3.870	60	Hard		70%		5%	10%	5%	10%				Spiny Sunstar (1), Worm Tube (>20), *Stomphia* Anemone (14), Northern Sea star (1)
	400	47 40.267	56 3.832	56	Hard					45%	5%		50%			*Stomphia* Anemone (11), Green Sea Urchin (2)
	500	47 40.222	56 3.788	42	Hard		55%		5%	25%	5%	10%				*Stomphia* Anemone (7), Feather Star (1), Brittle Star (1), Worm Tube (>20), *Hildenbrandia rubra* (trace)
	600	47 40.176	56 3.746	30	Hard							100%				Green Sea Urchin (2), Sand Dollar (4), Worm Tube (>20)
	700	47 40.131	56 3.703	16	Hard			50%	5%	10%		35%				Green Sea Urchin (>20), Northern Sea star (2), Cunner (8), Encrusting Sponge (5%)
	790	47 40.089	56 3.665	4	Hard		95%	5%								Green Sea Urchin (>20), Cunner (>20)
3	0	47 40.504	56 3.966	84	Hard					5%			95%			Feather Star (>20), *Stomphia* Anemone (1), Round Sponge (1), Unidentified Anemone (6)
	100	47 40.462	56 3.914	46	Hard		100%									*Stomphia* Anemone (>20), Feather Star (>20), Encrusting Sponge (trace)
	200	47 40.417	56 3.871	24	Hard		95%				5%					Brittle Star (3), Encrusting Algae (5%)
	300	47 40.373	56 3.826	52	Hard		70%		5%	10%	5%	10%				*Stomphia* Anemone (>20), Feather Star (1)
	400	47 40.324	56 3.789	56	Hard		70%			15%	5%	10%				*Stomphia* Anemone (>20)
	500	47 40.278	56 3.747	56	Hard		45%			35%	10%		10%			Round Sponge (1), Northern Sea star (2), *Serpula* (1), *Stomphia* Anemone (>20), Worm Tube (>20), Spiny Sea star (1) Small Fish (9)
	600	47 40.231	56 3.711	44	Hard				5%	10%		85%				*Stomphia* Anemone (>20), Northern Sea star (1), Leafy Bryozoan (1), Encrusting Sponge (<5%)

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	700	47 40.188	56 3.660	30	Hard							100%				*Stomphia* Anemone (>20), Sand Dollar (1), Worm Tube (>20)
	800	47 40.139	56 3.625	18	Hard		100%									Encrusting Algae (5%), Fan Worm (3), Green Sea Urchin (>20), Northern Sea star (3)
	890	47 40.099	56 3.581	2	Hard		55%	45%								Green Sea Urchin (>20), Northern Sea star (1), Cunner (>20)
4	0	47 40.566	56 3.914	118	Soft					5%	5%		90%			Feather Star (6), *Stomphia* Anemone (11), Jelly Fish (1)
	100	47 40.517	56 3.884	78	Hard				5%	5%			90%			Right-eyed Winter Flounder (1), Feather Star (>20), *Stomphia* Anemone (10), Encrusting Sponge (<5%), Unidentifiable Fish (1)
	200	47 40.475	56 3.829	46	Hard				10%	55%	5%	30%				Feather Star (>20), Northern Sea star (1), *Stomphia* Anemone (1), Encrusting Sponge (5%)
	300	47 40.427	56 3.793	28	Hard		90%						10%			*Hildenbrandia rubra* (10%), Stalked Jellyfish (1)
	400	47 40.382	56 3.748	52	Hard				5%	45%	5%		45%			Feather Star (7), Cunner (1), *Stomphia* Anemone (>20), Encrusting Sponge (<5)
	500	47 40.333	56 3.715	60	Hard		75%			10%	5%		10%			*Stomphia* Anemone (12)
	600	47 40.290	56 3.665	54	Hard		80%			5%	5%	10%				Worm Tube (>20), *Stomphia* Anemone (19)
	700	47 40.245	56 3.622	34	Hard		70%			20%			10%			*Hildenbrandia rubra* (5%), *Stomphia* Anemone (17), Acadian Redfish (1), Encrusting Sponge (<5%), Northern Sea star (1)
	800	47 40.199	56 3.578	30	Hard								100%			Sand Dollar (1), Worm Tube (>20)
	900	47 40.153	56 3.539	20	Soft							100%				Fan Worm (4)
	990	47 40.109	56 3.510	2	Hard		75%	25%								Green Sea Urchin (>20), Encrusting Algae (10%)
5	0	47 40.607	56 3.881	162	Soft			Trace		5%	5%		90%			*Stomphia* Anemone (2), Tube Worm (>20), Unidentifiable Anemone (2)
	100	47 40.564	56 3.829	100	Hard		5%						95%			Feather Star (7), Tube Worm (>20), Sponge (1), Sculpin (1), *Stomphia* Anemone (13), Unidentifiable Anemone (3), Encrusting Sponge (Trace)
	200	47 40.519	56 3.786	46	Hard		5%		10%		5%		80%			Feather Star (>20), *Stomphia* Anemone (14), Encrusting Sponge (trace), Unidentifiable Anemone (3), *Metridium* Anemone (1)
	300	47 40.473	56 3.743	44	Hard		100%									*Stomphia* Anemone (>20), Feather Star (>20), *Serpula* (10), White Branching Sponge (3), Unidentifiable Anemone (1) *Hildenbrandia rubra* (15%), Encrusting Sponge (20%)
	400	47 40.428	56 3.700	34	Hard			5%	5%	5%	5%		80%			*Stomphia* Anemone (13), Worm Tube (>20), Feather Star (1), Sponge (2), *Hildenbrandia rubra* (trace)

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	500	47 40.382	56 3.659	56	Soft					5%			95%			*Stomphia* Anemone (18), Unidentifiable Anemone (7), Worm Tube (>20)
	600	47 40.337	56 3.614	60	Soft				5%	10%	5%		80%			*Stomphia* Anemone (>20), Unidentifiable Anemone (>20), *Hormathia* Anemone (1), Worm Tube (>20), Tube Worm (>20), Encrusting Sponge (trace)
	700	47 40.292	56 3.570	50	Soft					5%	5%		90%			Worm Tube (>20), *Stomphia* Anemone (>20), Unidentifiable Anemone (12)
	800	47 40.243	56 3.536	38	Hard			5%	10%	15%	5%	65%				Green Sea Urchin (1), Encrusting Sponge (trace), *Hildenbrandia rubra* (trace), *Metridium* Anemone (1), *Stomphia* Anemone (1)
	900	47 40.202	56 3.483	30	Hard					5%		95%				Scallop (1), Worm Tube (2), Tube Worm (4), Jellyfish (1)
	1000	47 40.153	56 3.449	18	Hard		75%			10%	5%	10%				Green Sea Urchin (7), Northern Sea star (4)
	1080	47 40.119	56 3.408	2	Hard			95%				5%				Green Sea Urchin (>20), Cunner (>20), Encrusting Algae (80%)
6	0	47 40.673	56 3.838	200	Hard		5%						95%			Tube Worm (>20), Flounder (1), Acadian Redfish (1), Northern Sea star (1), Encrusting Sponge (trace)
	100	47 40.627	56 3.796	158	Hard	100%										Feather Star (4), White Branching Sponge (3), *Serpula* (>20), Unidentifiable Anemone (1), Encrusting Sponge (45%)
	200	47 40.582	56 3.752	92	Hard								100%			*Stomphia* Anemone (>20), Tube Worm (>20), Feather Star (>20)
	300	47 40.535	56 3.713	62	Hard						5%	95%				Feather Star (>20), *Stomphia* Anemone (>20), Unidentifiable Anemone (2), Worm Tube (>20), Soft Coral (2)
	400	47 40.490	56 3.667	50	Hard				10%	15%	10%		65%			Feather Star (>20), *Stomphia* Anemone (>20), Tunicate (4)
	500	47 40.444	56 3.627	48	Hard		55%				10%		35%			Feather Star (>20), *Hildenbrandia rubra* (trace), Tunicate (3), Sponge (2), Encrusting Sponge (trace), *Stomphia* Anemone (>20), White Branching Sponge (2)
	600	47 40.397	56 3.586	60	Soft					20%			80%			Unidentifiable Anemone (>20), *Stomphia* Anemone (>20), Soft Coral (2), Tunicate (1), Feather Star (1), Tube Worm (4), Worm Tube (3)
	700	47 40.353	56 3.541	60	Soft					10%			90%			White Branching Sponge (3), *Stomphia* Anemone (>20), Unidentifiable Anemone (12), Feather Star (1), Tube Worm (>20), Encrusting Sponge (trace)
	800	47 40.308	56 3.496	52	Soft					15%	5%	80%				Unidentifiable Anemone (8), Spiny Sun Star (1), *Stomphia* Anemone (>20), Green Sea

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Urchin (2), Sand Dollar (1), Worm Tube (>20), Tube Worm (1), Sponge (1)
	900	47 40.260	56 3.458	40	Hard					5%		95%				Worm Tube (>20), *Hormathia* Anemone (1), *Stomphia* Anemone (>20), Unidentifiable Anemone (14)
	1000	47 40.215	56 3.414	30	Hard					5%	5%	90%				Worm Tube (>20), Green Sea Urchin (2), Brittle Star (2), *Serpula* (1)
	1100	47 40.169	56 3.373	24	Hard			15%	5%	10%	70%					Northern Sea star (1), Green Sea Urchin (5), Scallop (1)
	1180	47 40.566	56 3.914	118	Hard		15%	80%				5%				Green Sea Urchin (>20), Cunner (>20)
7	0	47 40.734	56 3.801	238	Hard		10%						90%			Krill (10), Tube Worm (>20), Round Sponge (1), Nemertean-like worm (1), Unidentifiable Fish (1) , Sea pen (1)
	100	47 40.688	56 3.760	196	Hard			5%					95%			Tube Worm (>20), Right-eyed Winter Flounder (2), Krill (3), Unidentifiable Anemone (7), Encrusting Sponge (trace)
	200	47 40.642	56 3.718	138	Hard		95%						5%			Sponge (2), Encrusting Sponge (65%), *Serpula* (4), White Branching Sponge (3), Feather Star (15), Tube Worm (>20), Tun icate (1), Brachiopod (15)
	300	47 40.596	56 3.676	96	Hard								100%			*Serpula* (4), Feather Star (6), Unidentifiable Anemone (3), *Stomphia* Anemone (18), Tube Worm (16), Sponge (4), Tunicate (2)
	400	47 40.549	56 3.638	60	Hard		5%				5%	90%				Feather Star (>20), *Stomphia* Anemone (>20), Tube Worm (1), Encrusting Sponge (trace), Northern Sea star (2), Unidentifiable Anemone (>20), Soft Coral (1)
	500	47 40.505	56 3.591	60	Hard			5%		5%	5%	85%				Northern Sea star (1), Encrusting Sponge (trace), Spiny Sun Star (1), Feather Star (>20), Tube Worm (3), Unidentifiable Anemone (8), *Stomphia* Anemone (14)
	600	47 40.458	56 3.549	60	Hard		50%			5%	5%	40%				*Stomphia* Anemone (>20), Soft Coral (1), Feather Star (7), *Serpula* (2), Tube Worm (8), Encrusting Sponge (trace)
	700	47 40.410	56 3.511	60	Hard				5%	5%		90%				*Stomphia* Anemone (>20), Unidentifiable Anemone (7), Soft Coral (1), White Branching Sponge (2), Tube Worm (>20), Encrusting Sponge (trace)
	800	47 40.367	56 3.465	58	Hard					10%		90%				*Stomphia* Anemone (>20), Tube Worm (7), Unidentifiable Anemone (5), Green Sea Urchin (1)
	900	47 40.320	56 3.426	54	Hard					20%	5%	75%				Green Sea Urchin (1), *Stomphia* Anemone (>20), Scallop (1), Sea Spider (1), Unidentifiable

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Anemone (2)
	1000	47 40.276	56 3.377	40	Hard					10%		90%				*Stomphia* Anemone (14), Green Sea Urchin (2), Worm Tube (>20), Unidentifiable Anemone (6)
	1100	47 40.230	56 3.335	30	Hard					10%		90%				Green Sea Urchin (7), Spiny Sunstar (1), Worm Tube (>20), Encrusting Sponge (trace), Polychaete (1)
	1200	47 40.184	56 3.295	24	Hard		30%	50%				20%				Scallop (1), Northern Sea star (2), Green Sea Urchin (2), Acadian Redfish (1), Spiny Sunstar (1), Encrusting Sponge (5%), *Hildenbrandia rubra* (trace)
	1300	47 40.139	56 3.251	8	Hard		15%	80%				5%				Green Sea Urchin (>20), Cunner (9), Sand Dollar (1), Northern Sea star (2)
8	120	47 40.736	56 3.718	228	Soft								100%			Tube Worm (>20), Acadian Redfish (4), Krill (1), Sea pen (4)
	200	47 40.701	56 3.680	202	Soft								100%			Krill (12), Tube Worm (>20), Shrimp (1), Sponge (1)
	300	47 40.652	56 3.645	150	Hard		50%		5%				45%			White Branching Sponge (1), Feather Star (12), Unidentifiable Anemone (2), Encrusting Sponge (trace), Krill (4), Tube Worm (>20),
	400	47 40.605	56 3.606	95	Hard		40%					10%	50%			*Stomphia* Anemone (13), Feather Star (>20), Flounder (1), Tube Worm (>20), White Branching Sponge (2), Round Sponge (6), Unidentifiable Anemone (>20)
	500	47 40.560	56 3.564	76	Hard		50%						50%			Brittle Star (1), Krill (1), Feather Star (>20), *Stomphia* Anemone (16), Unidentifiable Anemone (>20), Sponge (4), White Branching Sponge (1), Tube Worm (>20)
	600	47 40.513	56 3.522	74	Hard					20%	5%	5%	70%			*Stomphia* Anemone (>20), White Branching Sponge (3), Unidentifiable Anemone (>20), Northern Sea star (1), Feather Star (2)
	700	47 40.469	56 3.476	60	Hard			20%		5%	5%	70%				Feather Star (>20), Sponge (2), Acadian Redfish (2), Tunicate (2), *Stomphia* Anemone (>20), Unidentifiable Anemone (3), Encrusting Sponge (trace)
	800	47 40.424	56 3.433	60	Hard				5%	5%			90%			*Stomphia* Anemone (>20), Unidentifiable Anemone (6), Soft Coral (2), Encrusting Sponge (trace), Green Sea Urchin (1)
	900	47 40.379	56 3.389	58	Hard					25%			75%			Unidentifiable Anemone (8), Soft Coral (1), Green Sea Urchin (3), *Stomphia* Anemone (>20), Tube Worm (5), Encrusting Sponge (trace)

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1000	47 40.333	56 3.345	50	Hard					35%	40%		25%			Green Sea Urchin (1), *Stomphia* Anemone (2), Sculpin (1), Encrusting Sponge (trace)
	1100	47 40.288	56 3.303	40	Soft					5%		95%				*Stomphia* Anemone (13), Worm Tube (>20)
	1200	47 40.243	56 3.258	30	Hard				15%	30%	5%	50%				Green Sea Urchin (1), *Hildenbrandia rubra* (trace), White Branching Sponge (2), Tube Worm (1), Worm Tube (>20), *Stomphia* Anemone (1), Encrusting Sponge (trace)
	1300	47 40.196	56 3.220	20	Hard			40%	35%	15%		10%				Green Sea Urchin (11), Encrusting Sponge (trace)
	1400	47 40.150	56 3.176	4	Hard		100%									Northern Sea star (4), Green Sea Urchin (>20), Cunner (14), Encrusting Algae (70%)
9	30	47 40.836	56 3.713	280	Soft								100%			Krill Swarm, Tube Worm (>20), Ocean Pout (1), Sea pen (14)
	100	47 40.802	56 3.689	262	Soft								100%			Krill Swarm, Tube Worm (>20) , Sea pen (2)
	200	47 40.756	56 3.648	232	Soft								100%			Krill Swarm, Tube Worm (>20), Hagfish (2), Sea pen (4)
	300	47 40.708	56 3.610	194	Soft						5%		95%			Krill (14), Hagfish (1), Cushion Star (2), Worm Tube (>20)
	400	47 40.665	56 3.561	162	Hard			5%		5%			90%			*Henricia* Sea star (1), *Serpula* (2), Sponge (5), Encrusting Sponge (trace), Round Sponge (1), Worm Tube (>20), Nemertean-like Worm (1)
	500	47 40.620	56 3.517	136	Hard	45%	5%						50%			Sponge (3), Encrusting Sponge (trace), *Stomphia* Anemone (>20), Unidentifiable Anemone (2), Tunicate (3), Tube Worm (4), Worm Tube (>20)
	600	47 40.574	56 3.474	110	Hard			15%		10%	5%		70%			Tube Worm (>20), Sponge (1), Feather Star (1), *Stomphia* Anemone (10), White Branching Sponge (2), Soft Coral (1), Unidentifiable Anemone (7), Green Sea Urchin (3), Encrusting Sponge (trace)
	700	47 40.525	56 3.439	78	Hard				15%	10%	5%		70%			*Stomphia* Anemone (>20), Feather Star (20), Worm Tube (>20), White Branching Sponge (3), Unidentifiable Anemone (17), Tube Worm (>20), Soft Coral (1)
	800	47 40.479	56 3.397	56	Hard			15%	15%	10%	10%	50%				Feather Star (>20), Acadian Redfish (1), White Branching Sponge (5), *Stomphia* Anemone (15), Sponge (13), Northern Sea star (1), Encrusting Sponge (10%)
	840	47 40.462	56 3.377	64	Hard	5%		5%	5%	45%	5%	35%				*Stomphia* Anemone (>20), Feather Star (7), Soft Coral (2), Sponge (2), Encrusting Sponge (5%)

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	900	47 40.433	56 3.354	60	Hard				5%	10%			85%			*Stomphia* Anemone (>20), Unidentifiable Anemone (4), Feather Star (1), Tube Worm (13)
	1000	47 40.391	56 3.304	56	Hard					15%	5%		80%			Green Sea Urchin (>20), Unidentifiable Anemone (2), *Stomphia* Anemone (>20)
	1100	47 40.342	56 3.271	52	Hard					20%	5%	75%				*Stomphia* Anemone (>20), Unidentifiable Anemone (4), Encrusting Sponge (trace), Northern Sea star (2)
	1200	47 40.300	56 3.221	42	Soft					5%		95%				Worm Tube (>20), *Stomphia* Anemone (>20), Unidentifiable Fish (1)
	1300	47 40.250	56 3.186	32	Soft					15%	5%	80%				Worm Tube (>20), Mussel (6)
	1400	47 40.201	56 3.152	24	Soft			20%	5%	15%	5%	55%				Northern Sea star (2), Scallop (1), Encrusting Sponge (10%), Green Sea Urchin (2)
	1500	47 40.155	56 3.109	8	Hard		100%									Northern Sea star (4), Unidentifiable Anemone (1), Cunner (6), Green Sea Urchin (>20)
	1600	47 40.113	56 3.055	18	Hard					40%	60%					Northern Sea star (9), Waved Whelk (1), Green Sea Urchin (2), Scallop (1)
10	100	47 40.856	56 3.644	280	Soft								100%			Krill Swarm, Ocean Pout (1), Tube Worm (>20), Sea pen (4)
	200	47 40.809	56 3.604	258	Soft								100%			Krill (>20), Tube Worm (>20), Snow Crab (1), Sea pen (2)
	300	47 40.764	56 3.561	250	Soft								100%			Krill (>20), Tube Worm (>20), Sea pen (1)
	400	47 40.719	56 3.516	212	Soft		5%			5%			90%			Tube Worm (>20), Encrusting Sponge (trace), Krill (2)
	500	47 40.673	56 3.475	174	Hard		15%					85%				Sponge (2), Unidentifiable Anemone (1), Tube Worm (4)
	600	47 40.627	56 3.436	156	Hard				5%	5%	5%	85%				White Sponge (10), White Branching Sponge (4), *Cerianthus* Anemone (1), Acadian Redfish (1), Sponge (5), Tube Worm (>20), Encrusting Sponge (5%)
	700	47 40.584	56 3.383	118	Hard		40%					60%				*Stomphia* Anemone (2), Encrusting Sponge (trace), *Serpula* (2), Sponge (6), Soft Coral (1), White Branching Sponge (4), Feather Star (5), Northern Sea star (1), *Cerianthus* Anemone (4), Tube Worm (>20)
	800	47 40.538	56 3.341	94	Hard					5%		95%				Encrusting Sponge (trace), Feather Star (10), Sponge (3), *Cerianthus* Anemone (2), Soft Coral (1), *Stomphia* Anemone (>20), Tube Worm (14), Fan Worm (1)
	900	47 40.494	56 3.296	54	Hard		75%		5%	10%		10%				Feather Star (>20), *Stomphia* Anemone (>20), White Branching Sponge (1), Sponge (3), Unidentifiable Anemone (7), Tube Worm (7)

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1000	47 40.447	56 3.256	56	Hard					5%	5%	90%				*Stomphia* Anemone (>20), Green Sea Urchin (2), Sponge (3), Soft Coral (1), Unidentifiable Anemone (12)
	1100	47 40.398	56 3.227	56	Hard					35%	5%	60%				*Stomphia* Anemone (>20), Green Sea Urchin (1), Encrusting Sponge (trace)
	1200	47 40.357	56 3.168	52	Hard					45%	5%	50%				*Stomphia* Anemone (>20), Scallop (1), Encrusting Sponge (trace)
	1300	47 40.309	56 3.128	42	Hard					35%	10%	55%				Scallop (1), Green Sea Urchin (1), Sponge (2), *Stomphia* Anemone (>20), Encrusting Sponge (trace), Tube Worm (8)
	1400	47 40.262	56 3.094	34	Hard					15%	5%	80%				Worm Tube (>20), Green Sea Urchin (1), *Stomphia* Anemone (8)
	1500	47 40.217	56 3.049	30	Hard					5%		95%				Worm Tube (>20), Green Sea Urchin (1), Northern Sea star (1)
	1600	47 40.171	56 3.007	24	Hard					Trace	5%	95%				Green Sea Urchin (1), Whelk (1), Spiny Sunstar (1)
	1700	47 40.126	56 2.965	14	Hard						5%	95%				Northern Sea Star (10), Sand Dollar (1)
	1760	47 40.103	56 2.922	4	Hard			70%	10%			20%				Green Sea Urchin (>20), Cunner (>20),
11	100	47 40.900	56 3.600	290	Soft								100%			Ocean Pout (1), Tube Worm (>20), Grenadier with Isopod Parasite (1), Sea Pen (13), Krill (>20)
	200	47 40.854	56 3.557	286	Soft								100%			Krill (>20), Tube Worm (>20), Sea Pen (7)
	300	47 40.810	56 3.512	266	Soft								100%			Tube Worm (>20), Sea Pen (2), Krill (>20)
	400	47 40.761	56 3.475	232	Soft					10%			90%			Tube Worm (>20), *Henricia* Sea star (1), Acadian Redfish (1), Sponge (3)
	500	47 40.715	56 3.435	190	Soft					5%	5%		90%			Tube Worm (>20)
	600	47 40.670	56 3.392	148	Hard		35%					65%				Sponge (12), Tube Worm (>20)
	700	47 40.624	56 3.350	132	Hard					5%		95%				Worm Tube (>20), Tube Worm (>20), Soft Coral (1), *Stomphia* Anemone (5), Sponge (3)
	800	47 40.580	56 3.303	112	Hard						10%	90%				Right-eyed Winter Flounder (1), Feather Star (2), *Stomphia* Anemone (>20), Unidentifiable Anemone (5), Tunicate (2), Tube Worm (>20), Sponge (2)
	900	47 40.533	56 3.264	72	Hard		85%					15%				Shrimp (1), Feather Star (>20), *Serpula* (8), Northern Sea star (2), Tube Worm (3), *Stomphia* Anemone (15), Encrusting Sponge (10%)
	1000	47 40.489	56 3.216	42	Hard		75%			5%	5%	15%				Feather Star (>20), *Stomphia* Anemone (>20), Soft Coral (1), *Hildenbrandia rubra* (5%), Sponge (9), Encrusting Sponge (5%), Unidentifiable Anemone (6)
	1100	47 40.443	56 3.175	56	Hard					45%	5%	50%				*Stomphia* Anemone (>20), Unidentifiable Anemone (4), Sculpin (1), Tube Worm (5),

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Encrusting Sponge (trace)
	1200	47 40.396	56 3.134	52	Soft					35%	10%	55%				Unidentifiable Anemone (3), Tube Worm (>20), Encrusting Sponge (trace), Worm Tube (3), Sponge (1)
	1300	47 40.350	56 3.093	46	Hard					30%	20%	50%				*Stomphia* Anemone (10), Encrusting Sponge (5%)
	1400	47 40.305	56 3.050	38	Hard					10%	10%	80%				Worm Tube (>20), Unidentifiable Flounder (1), Tube Worm (6), *Stomphia* Anemone (>20)
	1500	47 40.259	56 3.009	32	Hard					5%	5%	90%				Green Sea Urchin (3), Northern Sea star (1)
	1600	47 40.214	56 2.963	26	Hard					5%		95%				Northern Sea star (2), Whelk (1), Green Sea Urchin (3), Sand Dollar (5)
	1700	47 40.166	56 2.926	20	Hard					55%	10%	35%				Green Sea Urchin (9), Northern Sea star (1), *Hildenbrandia rubra* (15%), Encrusting Sponge (trace)
	1760	47 40.140	56 2.897	2	Hard			45%	30%	20%		5%				Cunner (>20), Green Sea Urchin (>20), Northern Sea star (1), Unidentifiable Anemone (5), Encrusting Algae (10%)
12	100	47 40.913	56 3.532	306	Soft								100%			Tube Worm (>20), Soft Coral (1), Sea Pen (3), Krill Swarm
	200	47 40.871	56 3.480	282	Soft								100%			Sea Pen (7), Krill Swarm, Tube Worm (>20)
	300	47 40.825	56 3.438	262	Soft								100%			Tube Worm (>20), Sea Pen (11), Acadian Redfish (1), Krill Swarm
	400	47 40.778	56 3.398	240	Soft								100%			Sea Pen (2), Tube Worm (>20), Krill Swarm
	500	47 40.733	56 3.354	194	Hard		20%						80%			Cushion Star (1), *Serpula* (6), Sponge (2), Tube Worm (>20), Encrusting Sponge (trace)
	600	47 40.689	56 3.308	160	Soft					5%			95%			Tube Worm (>20), Sponge (2), Encrusting Sponge (trace), White Branching Sponge (1)
	700	47 40.639	56 3.275	132	Soft			5%		5%		90%				Tube Worm (>20), White Branching Sponge (2), Sponge (8), Feather Star (2), *Stomphia* Anemone (13), *Cerianthus* Anemone (2), Cushion Star (1)
	800	47 40.595	56 3.229	116	Soft					5%		95%				*Stomphia* Anemone (15), Sponge (8), Feather Star (3), Tube Worm (>20), *Cerianthus* Anemone (6)
	900	47 40.549	56 3.186	78	Hard		25%					75%				Feather Star (11), Sponge (4), *Serpula* (4), White Branching Sponge (3), Tube Worm (>20), *Stomphia* Anemone (16), Encrusting Sponge (trace)
	1000	47 40.500	56 3.142	52	Hard		10%	10%	25%	30%	10%	15%				Feather Star (>20), Acadian Redfish (1), Sponge (9), *Stomphia* Anemone (3), Encrusting Sponge (25%)

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1100	47 40.456	56 3.104	58	Hard				10%	10%	5%		75%			*Stomphia* Anemone (>20), Tube Worm (>20), Sponge (1), Unidentifiable Anemone (3), Encrusting Sponge (trace)
	1200	47 40.410	56 3.066	54	Hard				5%	35%	15%	45%				*Stomphia* Anemone (12), Unidentifiable Anemone (6), Encrusting Sponge (5%)
	1300	47 40.367	56 3.016	48	Hard					30%	5%	65%				*Stomphia* Anemone (>20), Unidentifiable Anemone (5), Northern Sea star (1), Encrusting Sponge (trace), Scallop (1)
	1400	47 40.321	56 2.972	40	Hard					5%	95%					Worm Tube (>20), *Stomphia* Anemone (4), Scallop (1)
	1500	47 40.274	56 2.933	34	Hard					5%	95%					Worm Tube (>20), Green Sea Urchin (1)
	1600	47 40.229	56 2.889	28	Hard					5%	95%					Green Sea Urchin (1)
	1700	47 40.182	56 2.846	10	Hard		100%									Northern Sea star (6), Green Sea Urchin (>20), Cunner (7), Unidentifiable Anemone (2), Sand Dollar (3)
13	30	47 40.963	56 3.479	338	Soft								100%			Sea Pen (20), Flounder (1), Tube Worm (>20), Krill (>20)
	100	47 40.930	56 3.454	312	Soft								100%			Krill (>20), Sea Pen (13), Tube Worm (>20)
	200	47 40.886	56 3.406	282	Soft								100%			Tube Worm (>20), Sea Pen (9), Krill (>20)
	300	47 40.840	56 3.364	264	Soft								100%			Tube Worm (>20), Sea Pen (7)
	400	47 40.794	56 3.322	240	Soft					Trace			100%			Tube Worm (>20), Sea Pen (2), Encrusting Sponge (trace), *Serpula* (3), Hermit Crab (1), *Cerianthus* Anemone (1), Hagfish (1), Krill (9)
	500	47 40.748	56 3.281	192	Soft		Trace			Trace			100%			Tube Worm (>20), Encrusting Sponge (trace)
	600	47 40.701	56 3.240	166	Soft		Trace						100%			Tube Worm (>20), Hagfish (1)
	700	47 40.657	56 3.196	136	Soft								100%			Sponge (7), Tube Worm (>20), Snow Crab (1), Unidentifiable Anemone (2)
	800	47 40.610	56 3.154	112	Soft		5%			5%		90%				*Stomphia* Anemone (17), White Branching Sponge (1), Sponge (6), Tube Worm (>20), Feather Star (2), Cushion Star (1), *Cerianthus* Anemone (7), Unidentifiable Anemone (4), Soft Coral (1)
	900	47 40.563	56 3.127	74	Hard						5%	95%				Feather Star (13), *Stomphia* Anemone (>20), White Branching Sponge (2), Unidentifiable Anemone (6), Tube Worm (>20), *Cerianthus* Anemone (2)
	1000	47 40.518	56 3.071	56	Hard				5%	5%	5%	85%				Feather Star (17), *Stomphia* Anemone (>20), White Branching Sponge (1), Tube Worm (>20), Sponge (1), Unidentifiable Anemone (3)

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Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1100	47 40.473	56 3.026	58	Hard					5%	5%	90%				Worm Tube (>20), Feather Star (2), *Stomphia* Anemone (>20), Sponge (1), Unidentifiable Anemone (3)
	1200	47 40.427	56 2.986	54	Hard				10%	40%	15%		35%			*Cerianthus* Anemone (1), Encrusting Sponge (5%), Tube Worm (>20)
	1300	47 40.383	56 2.940	48	Hard					65%	15%		20%			*Cerianthus* Anemone (10), Tube Worm (7)
	1400	47 40.336	56 2.899	38	Hard		45%	35%		5%			15%			Northern Sea star (1), Encrusting Sponge (5%), Acadian Redfish (2)
	1500	47 40.287	56 2.864	30	Hard		15%	25%	20%	20%		20%				Encrusting Sponge (10%)
	1600	47 40.242	56 2.823	22	Hard			60%	15%	15%		10%				Northern Sea star (5), Green Sea Urchin (3), Encrusting Sponge (5%), Unidentifiable Fish (1)
	1700	47 40.198	56 2.773	6	Hard		10%	10%	35%	15%	5%	25%				Northern Sea star (4), Cunner (>20), Green Sea Urchin (>20)
14	130	47 40.932	56 3.356	292	Soft								100%			Tube Worm (>20), Sea Pen (20), Krill (>20)
	200	47 40.899	56 3.331	276	Soft								100%			Tube Worm (>20), Sea Pen (11), Krill (>20)
	300	47 40.853	56 3.288	264	Soft								100%			Tube Worm (>20), Sea Pen (11), Ocean Pout (1), Northern Sea star (1), Krill Swarm
	400	47 40.805	56 3.252	240	Hard	70%	30%									*Serpula* (>20), Encrusting Sponge (15%), Brittle Star (2), *Metridium* Anemone (1), White Branching Sponge (6), Sponge (7), Krill (8)
	500	47 40.759	56 3.208	196	Hard	35%	40%			5%			20%			*Bolocera tuediae* Anemone (1), Tube Worm (>20), Encrusting Sponge (trace), White Branching Sponge (1)
	600	47 40.718	56 3.157	170	Hard		50%			5%	5%	40%				Tube Worm (>20), Sponge (2), *Henricia* Sea star (1), Hagfish (1)
	700	47 40.671	56 3.117	140	Hard		5%			5%		90%				White Sponge (2), *Cerianthus* Anemone (1), Feather Star (1), White Branching Sponge (2), Sponge (1), Tube Worm (>20)
	800	47 40.625	56 3.075	104	Hard							100%				Right-eyed Winter Flounder (1), Tube Worm (>20), Feather Star (18), *Cerianthus* Anemone (9), *Stomphia* Anemone (17)
	900	47 40.578	56 3.035	72	Soft							100%				Feather Star (>20), Tube Worm (>20), *Cerianthus* Anemone (2), *Stomphia* Anemone (16)
	1000	47 40.533	56 2.991	62	Soft					20%	10%	70%				*Stomphia* Anemone (>20), Feather Star (14), Unidentifiable Anemone (6), Encrusting Sponge (trace), Sand Dollar (1)
	1100	47 40.487	56 2.949	60	Hard				5%	60%	5%		30%			*Cerianthus* Anemone (3), Unidentifiable Jellyfish (1), Tube Worm (>20), White Branching Sponge (1), Feather Star (2), Encrusting Sponge (trace), Sponge (1)

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Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1200	47 40.442	56 2.905	54	Hard					45%	5%		50%			*Stomphia* Anemone (1), *Cerianthus* Anemone (1), Encrusting Sponge (5%), Tube Worm (>20)
	1300	47 40.397	56 2.861	44	Hard					15%	40%	45%				
	1400	47 40.350	56 2.822	34	Hard				5%	5%	5%	85%				Green Sea Urchin (1), Tube Worm (4), Encrusting Sponge (trace)
	1500	47 40.306	56 2.775	26	Soft				5%	5%		90%				Northern Sea star (5), *Hildenbrandia rubra* (trace)
	1600	47 40.258	56 2.736	22	Hard					5%		95%				Northern Sea star (3), Sand Dollar (8), Green Sea Urchin (1)
	1700	47 40.212	56 2.689	4	Hard		100%									Cunner (4), Green Sea Urchin (>20), Encrusting Algae (75%)
15	150	47 40.936	56 3.275	314	Soft								100%			Sea Pen (14), Krill (>20), Tube Worm (>20), Red Hake (1)
	200	47 40.915	56 3.251	298	Soft								100%			Sea Pen (6), Krill Swarm, Tube Worm (>20)
	300	47 40.866	56 3.213	266	Soft								100%			Tube Worm (>20), Sea Pen (1), Krill Swarm
	400	47 40.823	56 3.166	232	Soft								100%			Sea Pen (2), Krill (>20), Tube Worm (>20), *Bolocera tuediae* Anemone (1)
	500	47 40.776	56 3.127	196	Hard		10%		5%			85%				Tube Worm (>20), Krill (>20), Acadian Redfish (1), *Stomphia* Anemone (1), White Sponge (2), Sponge (1)
	600	47 40.729	56 3.088	152	Hard							100%				Tube Worm (>20), Sponge (4), Encrusting Sponge (trace)
	700	47 40.682	56 3.051	138	Hard		100%									Right-eyed Winter Flounder (1), Tube Worm (>20), White Branching Sponge (3), White Sponge (2), Sponge (>20), *Cerianthus* Anemone (1), *Stomphia* Anemone (1), Acadian Redfish (1), Encrusting Sponge (5%), Feather Star (1)
	800	47 40.638	56 3.001	108	Soft					10%		90%				Tube Worm (>20), Feather Star (>20), *Cerianthus* Anemone (>20), *Serpula* (4), Sponge (8), Encrusting Sponge (5%)
	900	47 40.592	56 2.960	78	Soft		5%			5%	5%	85%				*Stomphia* Anemone (>20), Feather Star (>20), Soft Coral (1), Tube Worm (>20), White Branching Sponge (2), Sponge (12), Encrusting Sponge (trace)
	1000	47 40.545	56 2.920	68	Soft		5%			5%		90%				*Stomphia* Anemone (>20), Unidentifiable Anemone (4), Feather Star (6), Tube Worm (>20)
	1100	47 40.501	56 2.873	62	Hard				10%	40%		50%				Feather Star (13), *Cerianthus* Anemone (1), Worm Tube (>20), Tunicate (1), Northern Sea star (1), Tube Worm (2), Encrusting Sponge (trace), *Stomphia* Anemone (15)
	1200	47 40.455	56 2.831	52	Hard					65%		35%				*Stomphia* Anemone (16), *Cerianthus* Anemone (5), Unidentifiable Anemone (1), Green Sea

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Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Urchin (1), Encrusting Algae (10%)
	1300	47 40.410	56 2.788	42	Hard						5%	95%				*Cerianthus* Anemone (1)
	1400	47 40.363	56 2.748	30	Hard		5%	5%	5%	15%	10%	60%				Rock Crab (1), Green Sea Urchin (1), Northern Sea star (1), Encrusting Algae (trace)
	1500	47 40.318	56 2.705	26	Soft					5%	5%	90%				Sand Dollar (1), *Metridium* Anemone (1), Worm Tube (9), Tube Worm (5)
	1600	47 40.272	56 2.661	22	Soft					Trace		100%				Northern Sea star (3), Sand Dollar (2), Fan worm (2)
	1660	47 40.245	56 2.634	2	Hard			50%	45%			5%				Cunner (>20), Green Sea Urchin (>20), Encrusting Algae (70%)
16	120	47 40.965	56 3.206	312	Hard								100%			Sea Pen (18), Sea Spider (1), Tube Worm (>20), Krill (>20)
	200	47 40.926	56 3.179	272	Hard								100%			Krill Swarm, Tube Worm (>20), Sea Pen (6)
	300	47 40.880	56 3.137	244	Hard		5%						95%			Tube Worm (>20), Krill Swarm, Encrusting Sponge (trace), Sea Pen (6)
	400	47 40.834	56 3.097	218	Hard		5%		5%	5%		85%				Krill (>20), Sea Pen (13), Flounder (1), Tube Worm (>20), Unidentifiable Fish (2), Northern Sea star (2), Cushion Star (3)
	500	47 40.789	56 3.052	186	Hard		5%			5%			90%			Sponge (5), *Serpula* (2), Encrusting Sponge (trace), White Branching Sponge (2), Tube Worm (9)
	600	47 40.742	56 3.010	154	Hard					5%		95%				Sponge (4), White Sponge (7), Tube Worm (>20)
	700	47 40.699	56 2.963	140	Hard							100%				*Cerianthus* Anemone (1), *Stomphia* Anemone (4), White Branching Sponge (1), Cushion Star (1), Encrusting Sponge (trace), Tube Worm (>20)
	800	47 40.651	56 2.924	122	Hard							100%				Tube Worm (>20), *Stomphia* Anemone (4), *Cerianthus* Anemone (1), Sponge (1)
	900	47 40.605	56 2.883	100	Hard					5%	5%	90%				Feather Star (5), *Stomphia* Anemone (11), *Cerianthus* Anemone (5), Cushion Star (1), Tube Worm (>20), White Branching Sponge (2), Sponge (3)
	1000	47 40.559	56 2.840	80	Hard				5%	5%	5%	85%				Northern Sea star (1), *Stomphia* Anemone (15), *Cerianthus* Anemone (1), Soft Coral (1), Feather Star (>20), Encrusting Sponge (trace), Sponge (7), Unidentifiable Anemone (3)
	1100	47 40.514	56 2.798	64	Hard				10%	25%	15%	50%				*Stomphia* Anemone (>20), Tube Worm (7), Green Sea Urchin (1), Encrusting Sponge (5%)
	1200	47 40.469	56 2.753	52	Hard					65%	10%	25%				*Stomphia* Anemone (5), *Cerianthus* Anemone (1), Tube Worm (3), Encrusting Algae (10%)
	1300	47 40.421	56 2.718	38	Hard					5%	5%	90%				Northern Sea star (1)

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Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1400	47 40.376	56 2.671	28	Hard			5%		5%	5%	85%				Northern Sea star (2), Green Sea Urchin (6), Whelk (1), *Hildenbrandia rubra* (trace), Worm Tube (4)
	1500	47 40.330	56 2.629	26	Soft				5%	5%	5%	85%				Sand Dollar (4), Northern Sea star (2), Green Sea Urchin (10), *Hildenbrandia rubra* (trace), Encrusting Sponge (trace)
	1600	47 40.287	56 2.581	16	Hard		30%	10%	25%	25%	5%	5%				Northern Sea star (1), Green Sea Urchin (11)
17	150	47 40.960	56 3.131	300	Soft								100%			Sea Pen (4), Krill (>20), Tube Worm (>20)
	200	47 40.939	56 3.104	290	Soft								100%			Sea Pen (7), Unidentifiable Crab (1), Tube Worm (>20), Krill Swarm
	300	47 40.894	56 3.061	290	Soft					5%			95%			Sea Pen (7), Tube Worm (>20), Krill (>20)
	400	47 40.848	56 3.018	218	Hard		100%									*Bolocera tuediae* Anemone (4), Acadian Redfish (4), Encrusting Sponge (trace), Tunicate (1), Unidentifiable Fish (2), Unidentifiable Anemone (7), Krill (5), *Serpula* (7), Tube Worm (6)
	500	47 40.804	56 2.972	190	Soft						5%	95%				Soft Coral (5), Tube Worm (>20), Unidentifiable juvenile fish (6)
	600	47 40.758	56 2.930	156	Hard		10%					90%				Tube Worm (>20), Unidentifiable Anemone (3), White Sponge (2)
	700	47 40.711	56 2.890	134	Soft							100%				*Stomphia* Anemone (6), *Cerianthus* Anemone (6), Tube Worm (>20)
	800	47 40.666	56 2.848	114	Soft					5%	5%	90%				*Stomphia* Anemone (11), *Cerianthus* Anemone (5), Encrusting Sponge (trace), Round Sponge (2), Tube Worm (>20), Unidentifiable Anemone (6), White Branching Sponge (2)
	900	47 40.619	56 2.807	98	Soft						5%	95%				*Stomphia* Anemone (>20), *Cerianthus* Anemone (3), Feather Star (7), White Branching Sponge (1), Tube Worm (>20), Unidentifiable Anemone (2)
	1000	47 40.576	56 2.758	72	Hard					5%	5%	90%				*Stomphia* Anemone (>20), *Cerianthus* Anemone (4), Encrusting Sponge (trace), Sponge (3), Tube Worm (>20), Feather Star (2)
	1100	47 40.529	56 2.720	60	Hard				5%	50%	5%	40%				*Cerianthus* Anemone (3), Sand Dollar (1), *Stomphia* Anemone (>20), Encrusting Sponge (trace), Tube Worm (9)
	1200	47 40.483	56 2.677	46	Hard					5%	5%	90%				Worm Tube (>20), Unidentifiable Anemone (2), *Stomphia* Anemone (11)
	1300	47 40.434	56 2.646	28	Hard				15%	30%	5%	50%				Green Sea Urchin (5), Northern Sea star (1), Encrusting Sponge (5%), *Hildenbrandia rubra* (5%)

Butter Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1400	47 40.392	56 2.592	20	Hard		90%				5%	5%				Green Sea Urchin (5), Scallop (1), Spiny Sunstar (1), Northern Sea star (1), Encrusting Sponge (10%)
	1500	47 40.345	56 2.553	22	Hard					5%	5%	90%				Northern Sea star (7), Green Sea Urchin (4)
	1580	47 40.308	56 2.516	16	Hard					10%	5%	85%				Northern Sea star (18)
18	150	47 40.977	56 3.052	310	Soft								100%			Sea Pen (>20), Tube Worm (>20), Krill (2)
	200	47 40.955	56 3.030	288	Soft								100%			Tube Worm (>20), Sea Pen (8), Krill (>20), Toad Crab (1)
	300	47 40.908	56 2.989	256	Hard	100%										Unidentifiable Anemone (>20), *Serpula* (2), Acadian Redfish (1)
	400	47 40.862	56 2.948	234	Hard	100%										*Bolocera tuediae* Anemone (2), *Serpula* (2), Right-eyed Winter Flounder (1), Tube Worm (>20), Krill (>20), Unidentifiable Anemone (16)
	500	47 40.818	56 2.903	196	Soft					5%		95%				Tube Worm (>20), Sponge (6), White Branching Sponge (2), Encrusting Sponge (trace)
	600	47 40.775	56 2.852	156	Soft				5%	5%		90%				Acadian Redfish (1), Tube Worm (>20), White Sponge (1), Encrusting Sponge (trace), *Stomphia* Anemone (15), Sponge (1)
	700	47 40.729	56 2.811	124	Soft					5%		95%				Tube Worm (>20), *Stomphia* Anemone (10), *Cerianthus* Anemone (2), Round Sponge (1), Sponge (5), Unidentifiable Fish (2), Sculpin (1)
	800	47 40.682	56 2.771	100	Soft					5%		95%				*Stomphia* Anemone (19), *Cerianthus* Anemone (11), Feather Star (>20), Unidentifiable Anemone (>20), Encrusting Sponge (trace)
	900	47 40.638	56 2.725	86	Soft				5%	5%		90%				*Stomphia* Anemone (>20), *Cerianthus* Anemone (12), Feather Star (>20), Unidentifiable Anemone (2), Northern Sea star (1), Sponge (4), Encrusting Sponge (trace)
	1000	47 40.592	56 2.682	70	Soft			5%		10%	5%	80%				*Stomphia* Anemone (>20), *Cerianthus* Anemone (6), Unidentifiable Anemone (4), Feather Star (>20), Tube Worm (>20), Sponge (4), Encrusting Sponge (trace)
	1100	47 40.547	56 2.638	56	Hard				5%	30%	10%	55%				Northern Sea star (1), *Cerianthus* Anemone (3), *Stomphia* Anemone (>20), Whelk (1), Encrusting Sponge (trace)
	1200	47 40.499	56 2.601	48	Hard			10%	10%	45%	35%					*Stomphia* Anemone (>20), Northern Sea star (1), White Branching Sponge (1), Encrusting Sponge (10%)

Butter Cove																	
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition											Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc		
	1300	47 40.455	56 2.555	16	Hard		100%										Green Sea Urchin (>20), Northern Sea star (4), Cunner (1), Encrusting Algae (10%)
	1400	47 40.409	56 2.511	8	Hard		95%	5%									Green Sea Urchin (1), Cunner (>20), Encrusting Algae (15%)

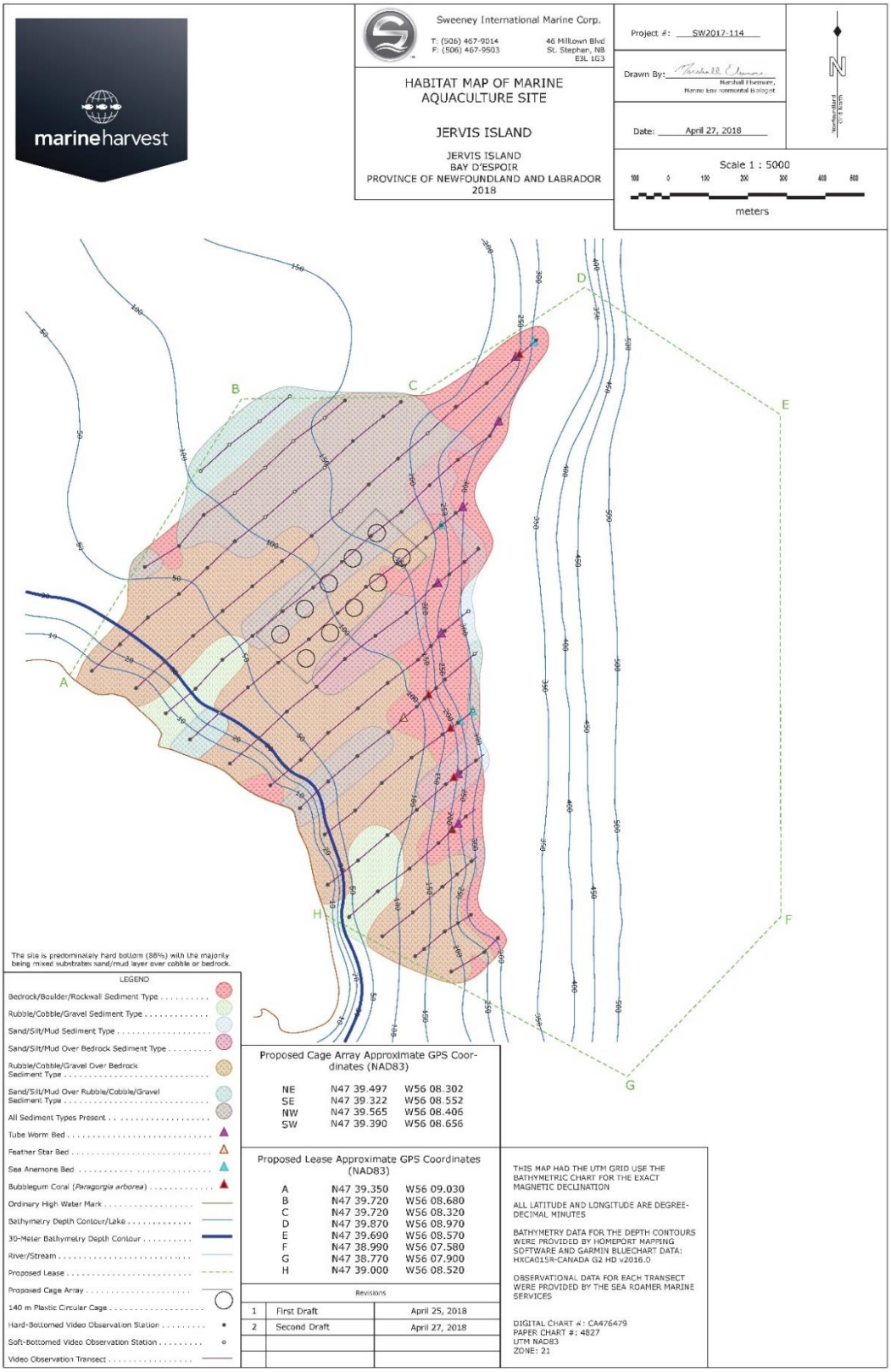


Figure 10.7. Habitat observations at sampling stations in the Jervis Island sea farm (August 2017).

Table 10.4. Summary of bottom type and observed flora and fauna at the Jervis Island sea farm (August 2017).

Jervis Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	300	47 39.723	56 8.581	140	Soft					10%		90%				Tube Worm (>20), Sponge (4), Krill (11), *Lucernia quadricornis* (1)
	200	47 39.688	56 8.643	130	Soft					15%		85%				Tube Worm (>20), *Stomphia* Anemone (5), Sponge (2), Unidentifiable Anemone (4), Cushion Star (1)
	100	47 39.656	56 8.707	118	Soft					10%		90%				Tube Worm (>20), *Stomphia* Anemone (>20), Northern Lamp Shell (9), Unidentifiable Anemone (3), Encrusting Sponge (trace), Feather Star (1)
	0	47 39.620	56 8.767	106	Soft				5%	10%		85%				*Stomphia* Anemone (13), Tube Worm (>20), *Cerianthus* Anemone (2), Feather Star (2), White Branching Sponge (12), Northern Lamp Shell (1), Sponge (11)
2	670	47 39.716	56 8.467	156	Hard		30%		10%	15%	5%	40%				Krill (>20), Unidentifiable Fish (2), Cushion Star (6), *Bolocera tuediae* Anemone (2), Acadian Redfish (1), White Sponge (>20), Tube Worm (>20)
	600	47 39.692	56 8.510	156	Soft				5%	15%	5%	75%				Sponge (9), Cushion Star (1), Northern Lamp Shell (1), Tube Worm (>20)
	500	47 39.660	56 8.575	144	Soft					10%		90%				*Stomphia* Anemone (2), Cushion Star (1), Unidentifiable Anemone (1), Tube Worm (>20)
	400	47 39.624	56 8.634	122	Soft				5%	25%	5%	65%				Feather Star (3), Northern Lamp Shell (7), Unidentifiable Anemone (1), Sponge (15), White Branching Sponge (2), Northern Seastar (2), *Cerianthus* Anemone (1), Tube Worm (>20), Encrusting Sponge (trace)
	300	47 39.589	56 8.696	114	Soft					5%		95%				*Stomphia* Anemone (19), Northern Seastar (1), *Cerianthus* Anemone (2), Sponge (8), Tube Worm (>20)
	200	47 39.559	56 8.761	90	Hard			10%	10%	30%	5%	45%				*Cerianthus* Anemone (5), Sponge (>20), *Stomphia* Anemone (10), Northern Lamp Shell (1), Feather Star (4), Northern Seastar (2), Tube Worm (>20), Soft Coral (1), Encrusting Sponge (trace)
	100	47 39.516	56 8.813	70	Hard		90%					10%				Feather Star (14), *Stomphia* Anemone (11), White Branching Sponge (2), Unidentifiable Anemone (4), Sponge (3), Encrusting Sponge (5%)
	0	47 39.487	56 8.884	56	Hard					20%	45%	35%				*Stomphia* Anemone (>20), *Cerianthus* Anemone (2), Sponge (6), Unidentifiable Anemone (2)
3	1060	47 39.713	56 8.351	178	Hard		5%		5%	10%	5%	75%				*Bolocera tuediae* Anemone (1), Tube Worm (>20), Flounder (1), White Sponge (1), Cushion Star (2), Unidentifiable Fish (1), Sponge (2), Encrusting Sponge (trace)
	1000	47 39.693	56 8.389	176	Hard				5%	10%	5%	80%				Cushion Star (1), Sponge (2), White Branching Sponge (1), Krill (7), Encrusting Sponge (5%), Tube Worm (19)
	900	47 39.659	56 8.451	166	Hard				10%	10%	5%	75%				Cushion Star (2), Hagfish (2), White Branching Sponge (4), Brittle Star (1), Krill (2), Tube Worm (>20), Sponge (1)
	800	47 39.623	56 8.511	148	Soft				5%	5%	25%	65%				Tube Worm (>20), Northern Seastar (1), Northern Lamp Shell (1)
	700	47 39.590	56 8.573	130	Soft					5%		95%				*Metridium* Anemone (1), Tube Worm (>20), *Stomphia* Anemone (6), Sponge (12), Feather Star (1), Northern Lamp Shell (1), White Branching Sponge (3), Encrusting Sponge (trace)
	600	47 39.555	56 8.634	118	Soft							100%				Tube Worm (>20), White Branching Sponge (4), *Stomphia* Anemone (>20), Sponge (3)
	500	47 39.522	56 8.697	94	Hard					45%	5%	50%				Tube Worm (>20), *Cerianthus* Anemone (5), Sponge (13), *Stomphia* Anemone (6), White Branching Sponge (3), Feather Star (8), Northern Lamp Shell (2)
	400	47 39.485	56 8.755	64	Hard	10%	80%					10%				Feather Star (>20), *Stomphia* Anemone (>20), Soft Coral (2), Unidentifiable Anemone (>20), Sponge (2), White Branching Sponge (6)
	300	47 39.449	56 8.814	44	Hard		40%		15%	35%		10%				*Stomphia* Anemone (6), Feather Star (13), Sponge (8), Tunicate (2), *Serpula* (8), White Branching Sponge (8), Encrusting Sponge (5%), Northern Seastar (1)

Jervis Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	200	47 39.417	56 8.879	38	Hard				5%	75%	5%	15%				Sponge (1), *Cerianthus* Anemone (1), *Stomphia* Anemone (10), White Branching Sponge (2), Unidentifiable Anemone (3), Scallop (1), *Hildenbrandia rubra* (trace)
	100	47 39.380	56 8.938	24	Hard					90%		10%				Encrusting Sponge (15%), *Hildenbrandia rubra* (5%), Scallop (2)
	0	47 39.343	56 8.996	6	Hard					90%	10%					Green Sea Urchin (>20), Northern Seastar (1), Encrusting Algae (10%)
4	1370	47 39.797	56 8.071	308	Hard	100%										Acadian Redfish (>20), Sponge (10), Krill (>20), *Stomphia* Anemone (6), *Metridium* Anemone (>20), White Branching Sponge (>20), Encrusting Sponge (20%)
	1300	47 39.773	56 8.114	232	Hard	100%										Northern Seastar (1), Cushion Star (2), Tube Worm (>20), Krill (>20), Sponge (>20), Encrusting Sponge (15%)
	1200	47 39.738	56 8.175	214	Hard	100%										*Stomphia* Anemone (1), Cushion Star (1), Unidentifiable Anemone (>20), *Bolocera tuediae* Anemone (1), *Hormathia* Anemone (1), Krill (2), Encrusting Sponge (trace)
	1100	47 39.705	56 8.238	206	Hard	100%										Right-eyed Winter Flounder (2), White Branching Sponge (4), *Serpula* (3), Tube Worm (>20), Sponge (5), Encrusting Sponge (5%), Krill (5)
	1000	47 39.669	56 8.298	210	Soft				5%	5%		90%				Tube Worm (18), Sponge (3), Encrusting Sponge (trace)
	900	47 39.634	56 8.359	194	Hard		95%		5%							Acadian Redfish (8), *Bolocera tuediae* Anemone (3), Tube Worm (6), *Serpula* (2)
	800	47 39.599	56 8.420	180	Hard					10%		90%				Right-eyed Winter Flounder (1), Cod (1), White Branching Sponge (4), Sponge (2), Tunicate (1), Encrusting Sponge (trace)
	700	47 39.562	56 8.478	162	Soft					5%	5%	90%				Hagfish (1), Unidentifiable Anemone (2), *Serpula* (2), Tube Worm (3)
	600	47 39.528	56 8.540	122	Hard	80%	20%									*Stomphia* Anemone (1), Encrusting Sponge (5%), Feather Star (>20), Tube Worm (>20), Sponge (11), *Cerianthus* Anemone (4), Northern Seastar (2), Cushion Star (1), Acadian Redfish (1), Fan Worm (1), Unidentifiable Anemone (4)
	500	47 39.493	56 8.601	92	Hard				10%	15%	5%	70%				Northern Lamp Shell (8), *Stomphia* Anemone (3), Sponge (8), Feather Star (>20), Tube Worm (>20), Encrusting Sponge (10%), Unidentifiable Anemone (4)
	400	47 39.459	56 8.662	72	Hard		10%			65%	10%	15%				Right-eyed Winter Flounder (1), Feather Star (1), Northern Lamp Shell (1), *Stomphia* Anemone (>20), Unidentifiable Anemone (3), Sponge (11), Encrusting Sponge (trace)
	300	47 39.425	56 8.724	54	Hard		10%			15%	40%	35%				Feather Star (7), *Stomphia* Anemone (12), Northern Seastar (1), Soft Coral (1), Northern Lamp Shell (1), Unidentifiable Anemone (3), Sponge (13), Encrusting Sponge (trace)
	200	47 39.391	56 8.786	40	Hard					70%	5%	25%				*Stomphia* Anemone (1), White Branching Sponge (2), Northern Seastar (2), Encrusting Sponge (trace)
	100	47 39.355	56 8.845	30	Hard					75%	5%	20%				Scallop (1), *Hildenbrandia rubra* (trace), Encrusting Sponge (trace)
	0	47 39.318	56 8.905	4	Hard		30%	20%	15%	30%	5%					Cunner (>20), Green Sea Urchin (8), Encrusting Algae (20%)
5	1150	47 39.687	56 8.148	300	Hard	100%										Bolocera tuediae Anemone (1), Tube Worm (>20), Unidentifiable Anemone (10), Sponge (2), Encrusting Sponge (5%), Krill Swarm, Acadian Redfish (1)
	1100	47 39.664	56 8.170	300	Hard	100%										Cushion Star (1), Acadian Redfish (1), *Stomphia* Anemone (8), *Metridium* Anemone (15), Krill (>20), Encrusting Sponge (trace), Tube Worm (>20)
	1000	47 39.632	56 8.235	284	Hard	100%										Cushion Star (1), *Stomphia* Anemone (2), *Metridium* Anemone (>20), Encrusting Sponge (5%), Krill (>20), Tube Worm (>20)
	900	47 39.597	56 8.295	234	Hard	75%	10%					15%				Tube Worm (>20), Krill (12), Waved Whelk (1), Bolocera tuediae Anemone (1), Unidentifiable Fish (1), Acadian Redfish (1)

Jervis Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	800	47 39.560	56 8.353	174	Hard		95%		5%							Krill (12), Encrusting Sponge (trace), White Branching Sponge (>20), Acadian Redfish (1), Northern Lamp Shell (3), *Serpula* (6), Sponge (2), Cushion Star (1), Unidentifiable Anemone (1), Northern Seastar (1), Tube Worm (10)
	700	47 39.527	56 8.417	154	Hard		5%		5%			90%				Acadian Redfish (1), Encrusting Sponge (trace), Tube Worm (>20)
	600	47 39.491	56 8.477	118	Hard					15%		85%				Tube Worm (>20), Northern Lamp Shell (2), Round Sponge (1), *Cerianthus* Anemone (7), White Branching Sponge (2), Sponge (>20)
	500	47 39.456	56 8.538	94	Hard					25%	5%	70%				Feather Star (>20), Tube Worm (>20), Sponge (>20), *Cerianthus* Anemone (1), Northern Lamp Shell (12), *Stomphia* Anemone (5), Northern Seastar (2)
	400	47 39.423	56 8.601	76	Hard			5%		5%	5%	85%				Feather Star (19), Sponge (8), *Stomphia* Anemone (10), Northern Lamp Shell (11), White Branching Sponge (2), Spiny Sun Star (1), Tube Worm (>20), Encrusting Sponge (trace)
	300	47 39.390	56 8.663	56	Hard		85%		5%	5%	5%					*Stomphia* Anemone (>20), Feather Star (>20), Encrusting Sponge (5%), Sponge (>20), Soft Coral (1), Tube Worm (>20)
	200	47 39.357	56 8.726	42	Hard					75%	10%	15%				*Stomphia* Anemone (10), Soft Coral (2), Round Sponge (1), Encrusting Algae (5%)
	100	47 39.317	56 8.782	32	Hard					65%	10%	25%				Encrusting Algae (5%), *Hildenbrandia rubra* (trace)
	0	47 39.283	56 8.844	8	Hard			20%	45%	30%	5%					Northern Seastar (3), Green Sea Urchin (>20), Cunner (2)
6	900	47 39.557	56 8.241	288	Hard		5%	10%					85%			Tube Worm (>20), *Metridium* Anemone (1), Krill Swarm, Sponge (8), Sea Pen (1), Encrusting Sponge (trace)
	850	47 39.537	56 8.269	240	Hard	90%	10%									*Metridium* Anemone (>20), Acadian Redfish (10), sponge (>20), Cushion Star (3), *Henricia* Seastar (2), *Serpula* (>20), *Hormathia* Anemone (1), Encrusting Sponge (5%)
	800	47 39.523	56 8.303	176	Hard		100%									White Sponge (1), Sponge (5), Cushion Star (1), Encrusting Sponge (trace), Feather Star (1), White Branching Sponge (4), *Serpula* (3), *Stomphia* Anemone (1), Northern Seastar (1), Sculpin (1), Acadian Redfish (2), Krill (>20)
	700	47 39.488	56 8.364	148	Hard		35%			15%		50%				Cushion Star (1), Northern Lamp Shell (2), Sponge (4), Unidentifiable Anemone (6), Northern Seastar (1), Tube Worm (>20), *Metridium* Anemone (9), Encrusting Sponge (trace)
	600	47 39.456	56 8.428	118	Hard	65%	35%									White Branching Sponge (4), Feather Star (18), *Serpula* (5), Northern Seastar (3), Round Sponge (2), Encrusting Sponge (20%), Sponge (8), Unidentifiable Anemone (4)
	500	47 39.420	56 8.488	102	Hard		5%					95%				Tube Worm (>20), *Stomphia* Anemone (>20), Feather Star (2), Northern Lamp Shell (1), Sponge (6)
	400	47 39.384	56 8.547	80	Hard		70%		10%	10%		10%				*Stomphia* Anemone (>20), Unidentifiable Anemone (>20), Feather Star (15), Northern Lamp Shell (4), Sponge (17), *Serpula* (3), White Branching Sponge (7), Encrusting Sponge (5%)
	300	47 39.352	56 8.611	76	Hard					20%	45%	35%				*Stomphia* Anemone (>20), Unidentifiable Anemone (3), Sponge (4), Unidentifiable Fish (1), Soft Coral (1), Feather Star (1), Encrusting Sponge (trace)
	200	47 39.318	56 8.673	46	Hard					15%	80%	5%				Worm Tube (>20), *Stomphia* Anemone (6), Sponge (3)
	100	47 39.283	56 8.734	30	Soft					5%		95%				Scallop (1), Sand Dollar (2), Fan Worm (1)
	0	47 39.246	56 8.794	6	Hard							100%				Cunner (>20)
7	850	47 39.507	56 8.195	332	Hard	25%	55%						20%			*Bolocera tuediae* Anemone (1), Acadian Redfish (2), *Stomphia* Anemone (>20), Tube Worm (>20), Sponge (7), *Serpula* (4), Krill (6), Encrusting Sponge (trace)
	800	47 39.489	56 8.225	312	Hard		95%						5%			Tube Worm (>20), Krill (>20), *Serpula* (8), Encrusting Sponge (5%), *Stomphia* Anemone (1), Cerianthid-like Anemone (>20), *Hormathia* Anemone (>20)

Jervis Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	750	47 39.476	56 8.259	250	Hard		95%			5%						Tube Worm (>20), Krill (>20), Encrusting Sponge (trace), Acadian Redfish (1), *Bolocera tuediae* Anemone (4), *Metridium* Anemone (1), *Hormathia* Anemone (>20)
	700	47 39.456	56 8.288	224	Hard	100%										Acadian Redfish (1), Krill (>20), *Henricia* Seastar (1), Cushion Star (3), *Serpula* (>20), *Metridium* Anemone (>20), *Stomphia* Anemone (>20), Unidentifiable Anemone (>20), Encrusting Sponge (10%)
	600	47 39.419	56 8.346	130	Hard		40%			5%		55%				Sponge (10), Tube Worm (>20), Feather Star (1), *Cerianthus* Anemone (1), Northern Seastar (1), Krill (8)
	500	47 39.388	56 8.410	110	Hard			45%	10%			45%				*Stomphia* Anemone (10), Feather Star (17), *Cerianthus* Anemone (2), Sponge (>20), Northern Lamp Shell (1)
	400	47 39.356	56 8.474	90	Hard		20%					80%				*Stomphia* Anemone (>20), Soft Coral (2), *Cerianthus* Anemone (15), Feather Star (3), Tube Worm (>20), Northern Lamp Shell (4), Encrusting Sponge (trace), Sponge (>20)
	300	47 39.318	56 8.532	72	Hard			10%		55%	5%	30%				Northern Lamp Shell (6), Northern Seastar (2), *Stomphia* Anemone (>20), Feather Star (9), Unidentifiable Jellyfish (1), *Cerianthus* Anemone (4), Sponge (>20), Unidentifiable Anemone (>20)
	200	47 39.284	56 8.595	52	Hard					40%	55%	5%				*Stomphia* Anemone (15), Northern Seastar (1), Soft Coral (1), Encrusting Algae (trace), Sponge (2)
	100	47 39.247	56 8.653	30	Hard					85%		15%				Sponge (2), Scallop (2), Encrusting Algae (5%)
	0	47 39.212	56 8.713	0	Hard				10%	80%	10%					Northern Lamp Shell (4), Northern Seastar (3), Green Sea Urchin (1), Cunner (12)
8	680	47 39.421	56 8.218	324	Soft								100%			Acadian Redfish (1), Flounder (1), Sea Pen (1), Krill (>20), Tube Worm (>20)
	600	47 39.394	56 8.267	288	Hard	65%	25%			5%			5%			Northern Seastar (1), Bolocera tuediae Anemone (1), Unidentifiable Anemone (3), Krill (>20)
	550	47 39.374	56 8.294	192	Hard	100%										*Serpula* (5), Northern Lamp Shell (1), Sponge (3), Brittle Star (1), Krill (>20), Unidentifiable Anemone (6), *Stomphia* Anemone (4), Encrusting Sponge (40%), White Branching Sponge (3)
	500	47 39.354	56 8.322	112	Hard	100%										Feather Star (>20), Sponge (9), *Serpula* (>20), Northern Seastar (2), White Branching Sponge (2), Encrusting Sponge (70%)
	400	47 39.322	56 8.386	96	Hard		25%			20%		55%				*Stomphia* Anemone (>20), Feather Star (1), Sponge (13), White Branching Sponge (2), Northern Lamp Shell (3), Unidentifiable Anemone (3), Tube Worm (>20), Encrusting Sponge (5%)
	300	47 39.287	56 8.448	80	Hard		20%		5%	65%	5%	5%				Feather Star (>20), Brittle Star (1), *Stomphia* Anemone (>20), Sponge (>20), *Serpula* (4), Unidentifiable Anemone (>20), Encrusting Sponge (15%)
	200	47 39.253	56 8.510	60	Hard				5%	70%	5%	20%				Feather Star (>20), *Serpula* (2), Sponge (5), Northern Seastar (3), Northern Lamp Shell (2), Unidentifiable Anemone (1), *Stomphia* Anemone (1), Encrusting Sponge (trace)
	100	47 39.216	56 8.567	44	Hard					60%	5%	35%				Scallop (3), *Stomphia* Anemone (1), Northern Seastar (1)
	0	47 39.181	56 8.630	8	Hard		100%									Cunner (>20)
9	600	47 39.361	56 8.206	308	Soft								100%			Right-eyed Winter Flounder (1), Sea Pen (1), Tube Worm (>20), Krill (>20)
	500	47 39.326	56 8.267	258	Hard	100%										Krill (>20), Acadian Redfish (1), *Serpula* (5), Sponge (5)
	470	47 39.316	56 8.286	200	Hard	10%	80%	5%		5%						Cushion Star (3), Acadian Redfish (>20), *Serpula* (5), Cod (1), *Bolocera tuediae* Anemone (2), Atlantic King Crab (1), Northern Seastar (1)
	430	47 39.301	56 8.309	140	Hard	85%	15%									Feather Star (16), White Sponge (3), Northern Seastar (1), *Serpula* (>20), Encrusting Sponge (45%)
	400	47 39.289	56 8.326	72	Hard		100%									Acadian Redfish (1), *Stomphia* Anemone (8), Feather Star (>20), Sponge (4)

Jervis Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
10	300	47 39.254	56 8.385	80	Hard		100%									Atlantic wolffish (1), White Branching Sponge (2), Sponge (>20), Encrusting Sponge (10%), *Stomphia* Anemone (1), Unidentifiable Fish (1), Tunicate (7)
	200	47 39.221	56 8.450	72	Hard					60%	5%	35%				*Stomphia* Anemone (>20), Feather Star (>20), Northern Seastar (1), *Cerianthus* Anemone (2), Unidentifiable Anemone (>20), Sponge (>20), Encrusting Sponge (trace), Sand Dollar (1)
	100	47 39.186	56 8.511	48	Hard		100%									Feather Star (>20), White Branching Sponge (7), Soft Coral (6), *Stomphia* Anemone (4), Northern Seastar (1), *Serpula* (10), Sponge (12), Encrusting Sponge (15%)
	0	47 39.149	56 8.570	2	Hard		15%	20%	20%	40%	5%					Cunner (>20), Green Sea Urchin (>20)
	500	47 39.282	56 8.210	302	Soft					5%			95%			Sea Pen (1), Grenadier with Isopod Parasite (1), Tube Worm (>20), Krill (>20)
	450	47 39.265	56 8.240	226	Hard	90%	5%			5%						Acadian Redfish (2), *Henricia* Seastar (1), *Stomphia* Anemone (6), Cushion Star (1), Cod (1), Sponge (3), Tube Worm (>20), Krill (>20), *Serpula* (6), Encrusting Sponge (10%), Unidentifiable Anemone (>20)
	400	47 39.249	56 8.273	148	Hard	90%	10%									*Serpula* (>20), Feather Star (8), White Branching Sponge (4), Krill (2), Sponge (>20), Encrusting Sponge (70%)
	300	47 39.218	56 8.338	84	Hard		100%									Feather Star (>20), Soft Coral (2), White Branching Sponge (9), *Stomphia* Anemone (>20), Sponge (>20), Encrusting Sponge (35%)
	200	47 39.183	56 8.400	86	Hard		25%			40%	5%	30%				*Serpula* (1), Northern Seastar (2), *Stomphia* Anemone (2), Northern Lamp Shell (1), Feather Star (>20), Encrusting Sponge (5%)
	100	47 39.145	56 8.456	64	Hard		100%									*Stomphia* Anemone (>20), Feather Star (>20), *Cerianthus* Anemone (1), Sponge (>20), White Branching Sponge (>20), Unidentifiable Anemone (2), Tube Worm (7), Encrusting Sponge (10%)
	0	47 39.112	56 8.519	26	Hard		70%				5%	25%				Northern Seastar (4), Cunner (2), White Branching Sponge (1), Encrusting Sponge (5%)
11	500	47 39.213	56 8.205	292	Hard	50%	30%						20%			Soft Coral (2), Hormathia Anemone (8), Encrusting Sponge (trace), Stomphia Anemone (4), Krill (4), Tube Worm (>20), Unidentifiable Anemone (6), Bolocera tuediae Anemone (1), Acadian Redfish (2), Serpula (2)
	450	47 39.198	56 8.238	242	Hard	100%										Cushion Star (7), Tube Worm (>20), Acadian Redfish (12), White Sponge (1), *Stomphia* Anemone (2), Unidentifiable Anemone (1), Krill (6), Sponge (>20)
	400	47 39.180	56 8.268	170	Hard	100%										White Branching Sponge (2), Brittle Star (1), Sponge (>20), Krill (>20), Northern Seastar (1), Northern Lamp Shell (2), Encrusting Sponge (10%)
	300	47 39.145	56 8.329	104	Hard						55%	45%				Feather Star (14), *Stomphia* Anemone (10), Northern Seastar (1), *Cerianthus* Anemone (1), Shrimp (2), Tube Worm (>20), Sponge (9), Northern Lamp Shell (2), Eel pout (1)
	200	47 39.110	56 8.390	88	Hard				10%	85%		5%				*Stomphia* Anemone (6), Feather Star (9), *Cerianthus* Anemone (3), Northern Lamp Shell (2), Sponge (14), Tube Worm (2), White Branching Sponge (3), Encrusting Sponge (10%)
	100	47 39.075	56 8.451	76	Hard					75%	5%	20%				*Stomphia* Anemone (13), Sponge (3), Sand Dollar (2), Northern Seastar (1), Encrusting Sponge (trace)
	0	47 39.042	56 8.513	4	Hard			35%	20%	45%						Cunner (>20)
12	400	47 39.135	56 8.227	278	Hard	95%						5%				Atlantic King Crab (1), Krill Swarm, Acadian Redfish (1), Unidentifiable Anemone (1)
	350	47 39.116	56 8.254	222	Hard	100%										Cushion Star (4), Tube Worm (>20), Acadian Redfish (2), White Sponge (1), Sponge (11), Krill (>20), Encrusting Sponge (10%), Bubble Gum Coral (1), *Metridium* Anemone (11)

Jervis Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	300	47 39.098	56 8.285	174	Hard	100%										Krill (>20), Northern Lamp Shell (2), White Branching Sponge (1), Northern Seastar (1), *Serpula* (4), Brittle Star (2), Shrimp (1), Encrusting Sponge (40%), Sponge (12)
	200	47 39.063	56 8.345	114	Hard		15%			20%		65%				*Stomphia* Anemone (18), *Cerianthus* Anemone (5), Tube Worm (>20), Sponge (17), White Branching Sponge (2), Feather Star (1), Northern Lamp Shell (3)
	100	47 39.032	56 8.410	74	Hard					5%	95%					Iceland Scallop (1), *Stomphia* Anemone (20), Worm Tube (>20)
	0	47 38.997	56 8.741	48	Hard			5%	5%	60%	30%					Feather Star (4), Acadian Redfish (1), Sponge (3), Encrusting Sponge (trace), Scallop (2)
13	300	47 39.072	56 8.217	266	Hard	30%							70%			Krill Swarm, Acadian Redfish (1), Tube Worm (>20), *Serpula* (6), *Hormathia* Anemone (7), *Bolocera tuediae* Anemone (1), Encrusting Sponge (5%)
	250	47 39.054	56 8.247	218	Hard	100%										Cushion Star (3), Acadian Redfish (1), Brittle Star (1), *Serpula* (>20), *Bolocera tuediae* Anemone (1), Sponge (>20), Encrusting Sponge (5%), White Branching Sponge (2), *Hormathia* Anemone (2), Krill (>20)
	200	47 39.037	56 8.278	178	Hard			10%		50%		40%				Krill (>20), Acadian Redfish (2), Tube Worm (>20), Atlantic King Crab (1), Cod (1), Feather Star (1), *Serpula* (4), Sponge (7), Encrusting Sponge (trace)
	100	47 39.002	56 8.339	114	Hard					70%	5%	25%				*Hormathia* Anemone (1), *Stomphia* Anemone (9), *Cerianthus* Anemone (2), Fan Worm (1), Feather Star (1), Sponge (12), Sculpin (1), Encrusting Sponge (5%)
	0	47 38.696	56 8.403	74	Hard		40%	5%	20%	25%	10%					Feather Star (>20), Acadian Redfish (2), Encrusting Sponge (5%), White Branching Sponge (2), *Stomphia* Anemone (14), Unidentifiable Anemone (1), Sponge (>20)
14	180	47 38.998	56 8.219	304	Hard	100%										Cushion Star (1), *Hormathia* Anemone (>20), *Stomphia* Anemone (11), *Serpula* (2), Acadian Redfish (1), Tube Worm (>20), Unidentifiable Anemone (6), Northern Seastar (1)
	140	47 38.986	56 8.245	256	Hard		50%		5%	45%						Acadian Redfish (7), Tube Worm (>20), Serpula (4), *Stomphia* Anemone (1), Krill (3), Encrusting Sponge (trace)
	100	47 38.975	56 8.274	186	Hard	50%	40%			10%						*Serpula* (1), Acadian Redfish (5), Krill (7), Sponge (5), *Bolocera tuediae* Anemone (1), Tube Worm (1)
	0	47 38.941	56 8.335	130	Hard		85%			15%						Fan Worm (1), *Stomphia* Anemone (9), Feather Star (>20), Sponge (14), *Serpula* (1), White Branching Sponge (8), White Sponge (1), Encrusting Sponge (5%)
15	150	47 38.965	56 8.164	306	Hard	25%	55%						20%			Acadian Redfish (2), Tube Worm (>20), *Hormathia* Anemone (>20), Cerianthid-like Anemone (>20), Sponge (2), Encrusting Sponge (10%), Unidentifiable Fish (1), *Serpula* (2)
	100	47 38.946	56 8.193	244	Hard		60%	15%		25%						Tube Worm (15), Krill (>20), *Hormathia* Anemone (2), Acadian Redfish (3), Unidentifiable Anemone (1), Unidentifiable Eel-like Fish (1), Sponge (3), Encrusting Sponge (10%), *Serpula* (1)
	0	47 38.919	56 8.261	182	Hard	5%	40%			10%	45%					Cod (2), Acadian Redfish (1), *Henricia* Seastar (1), Soft Coral (1), *Serpula* (1), Sponge (1), Encrusting Sponge (10%)

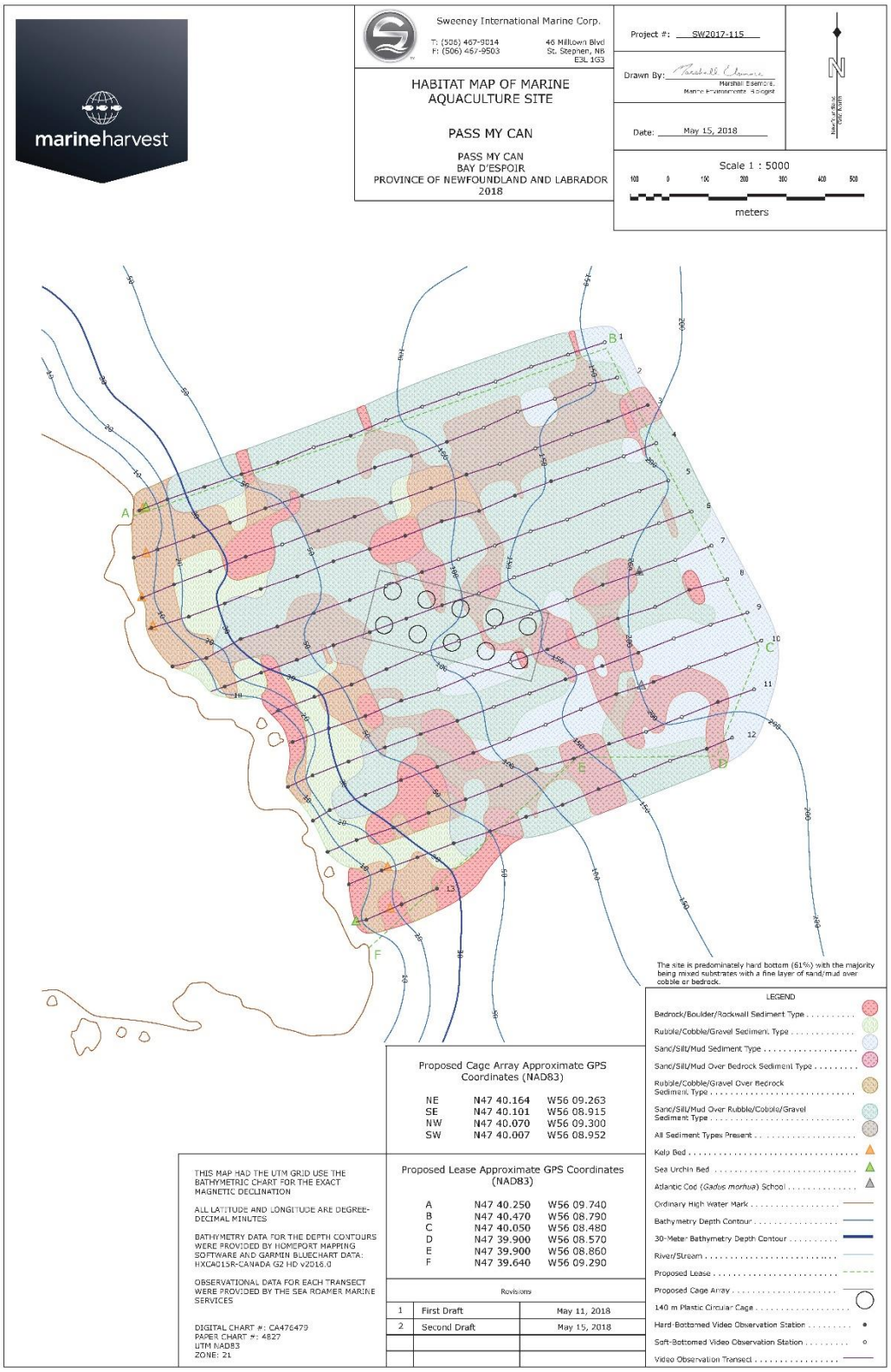


Figure 10.8. Habitat observations at sampling stations in the Pass My Can sea farm (August 2017).

Table 10.5. Summary of bottom type and observed flora and fauna at the Pass My Can sea farm (August 2017).

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 40.478	56 8.793	162	Soft							100%				*Hormathia digitata* Anemone (9), Krill (>20), Sponge (1)
	100	47 40.462	56 8.869	136	Soft				15%			85%				Worm Tube (>20), Acadian Redfish (1), Encrusting Sponge (5%), Brachiopod (9), Brittle Star (1), Feather Star (3), Unidentified Tunicate (1)
	200	47 40.445	56 8.945	128	Soft					15%		85%				Worm Tube (>20), Unidentified Tunicate (2), *Hormathia digitata* Anemone (5), Brachiopod (8), Flounder (1), Unidentifiable Jellyfish (1), Feather Star (1)
	300	47 40.425	56 9.019	126	Soft				10%			90%				Worm Tube (>20), Brachiopod (14), *Hormathia digitata* Anemone (8), Sea Star (1), Sponge (2)
	400	47 40.409	56 9.096	118	Soft				15%			85%				Worm Tube (>20), Sea Star (1), *Hormathia digitata* Anemone (13), Unidentified Tunicate (11), Sponge (3), Feather Star (2), Brachiopod (11), Encrusting Sponge (5%), Arrow Worm (1)
	500	47 40.391	56 9.171	108	Soft							100%				Worm Tube (>20), *Hormathia digitata* Anemone (7), Unidentified Tunicate (4), Flounder (1), Sponge (4)
	600	47 40.373	56 9.246	98	Soft					15%		85%				Worm Tube (>20), *Hormathia digitata* Anemone (>20), Unidentified Tunicate (5), Sea Star (1), Sponge (2)
	700	47 40.352	56 9.320	82	Hard				5%	20%		75%				*Hormathia digitata* Anemone (>20), Worm Tube (18), Unidentified Tunicate (4), Sponge (2), Feather Star (4)
	800	47 40.336	56 9.396	68	Soft							100%				*Hormathia digitata* Anemone (>20), Worm Tube (6)
	900	47 40.316	56 9.471	60	Hard					30%		70%				*Hormathia digitata* Anemone (>20), Worm Tube (5)
	1000	47 40.300	56 9.546	54	Hard					40%	40%	20%				*Hormathia digitata* Anemone (>20), Worm Tube (>20)
	1100	47 40.238	56 9.623	42	Hard					50%	40%	10%				*Hormathia digitata* Anemone (9), Shrimp (1)
	1200	47 40.266	56 9.699	20	Hard			20%		30%	50%					
	1280	47 40.251	56 9.758	2	Hard		50%	50%								Cunner (>20), Green Sea Urchin (>20)
2	30	47 40.429	56 8.768	172	Soft				10%			90%				Worm Tube (>20), Acadian Redfish (1), *Hormathia digitata* Anemone (10), Unidentified Tunicate (2), Sea Star (2)
	100	47 40.420	56 8.823	148	Soft				10%			90%				Worm Tube (>20), *Hormathia digitata* Anemone (4), Brachiopod (7), Hydrozoa (3), Encrusting Sponge (5%), Unidentified Tunicate (7)
	200	47 40.400	56 8.897	148	Soft							100%				Worm Tube (>20), *Hormathia digitata* Anemone (8), Unidentified Tunicate (6), Sponge (3), Brachiopod (1), *Cerianthus borealis* Anemone (1)

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	300	47 40.383	56 8.973	134	Soft							100%				Worm Tube (>20), *Hormathia digitata* Anemone (>20), Unidentified Tunicate (>20), Brachiopod (2), Sea Star (1)
	400	47 40.361	56 9.045	126	Soft			15%				85%				Worm Tube (>20), *Hormathia digitata* Anemone (>20), Unidentified Tunicate (16), Sponge (1), Sea Star (7), Encrusting Sponge (5%), Brachiopod (4)
	500	47 40.342	56 9.120	104	Hard				5%		25%	70%				Worm Tube (>20), *Hormathia digitata* Anemone (18), Sponge (7), Flounder (1), Sea Star (1), Unidentified Tunicate (10)
	600	47 40.323	56 9.195	82	Hard	50%			10%			40%	50%			*Hormathia digitata* Anemone (14), Worm Tube (15), Feather Star (13), Brachiopod (>20), Unidentified Tunicate (10), Hydrozoa (1)
	700	47 40.307	56 9.271	78	Hard				10%	10%	60%	20%				Unidentified Tunicate (>20), Sea Star (1), Brachiopod (10), *Hormathia digitata* Anemone (15), Worm Tube (11)
	800	47 40.288	56 9.346	70	Hard				10%	30%	10%	50%				*Hormathia digitata* Anemone (>20), Feather Star (4), Soft Coral (1), Sponge (2), Encrusting Sponge (5%), Unidentified Tunicate (6), Brachiopod (3), Hydrozoa (1)
	900	47 40.269	56 9.421	60	Hard			25%			75%					*Hormathia digitata* Anemone (>20), Encrusting Sponge (5%), Green Sea Urchin (1), Sea Star (1)
	1000	47 40.252	56 9.497	42	Hard		100%									*Hormathia digitata* Anemone (>20), Sea Star (5), Sponge (1)
	1100	47 40.233	56 9.571	36	Hard				15%	25%	60%					Sea Star (1)
	1200	47 40.214	56 9.646	26	Hard					100%						
	1300	47 40.196	56 9.721	10	Hard	15%				40%	45%		15%			Green Sea Urchin (>20), Sea Star (8), Cunner (17)
	1365	47 40.185	56 9.770	2	Hard		100%									Green Sea Urchin (>20), Cunner (>20)
3	-10	47 40.390	56 8.705	186	Soft					10%		90%				Unidentified Tunicate (6), Worm Tube (>20), Brachiopod (4), Sponge (3), Hydrozoa (1), Sea Star (1)
	100	47 40.368	56 8.787	164	Hard			20%	30%			50%				Sponge (2), Worm Tube (>20), Acadian Redfish (10), *Cerianthus borealis* Anemone (6), Unidentified Tunicate (>20)
	200	47 40.350	56 8.863	164	Soft				5%			95%				Sponge (2), Worm Tube (>20), Flounder (1), Unidentified Tunicate (12), *Hormathia digitata* Anemone (6), Brachiopod (1)
	300	47 40.331	56 8.938	148	Soft				10%			90%				Worm Tube (>20), Unidentified Tunicate (6), *Hormathia digitata* Anemone (3)
	400	47 40.311	56 9.012	134	Soft							100%				Worm Tube (>20), Unidentified Tunicate (12), *Hormathia digitata* Anemone (6)
	500	47 40.296	56 9.081	112	Hard				20%		70%	10%				*Hormathia digitata* Anemone (>20), Unidentified Tunicate (11), Worm Tube (>20), Brachiopod (11), Sea Star (2), Sponge (2)
	600	47 40.277	56 9.155	82	Hard	100%										*Hormathia digitata* Anemone (17), Feather Star (>20), Sponge (5), Unidentified Tunicate (9), Brachiopod (8), Sea Star (1)

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	700	47 40.258	56 9.238	62	Hard				15%	30%	40%	15%				*Hormathia digitata* Anemone (15), Brachiopod (3), Encrusting Sponge (5%), Sponge (3)
	800	47 40.239	56 9.313	58	Hard			10%		10%	70%	10%				*Hormathia digitata* Anemone (14), Encrusting Sponge (5%)
	900	47 40.220	56 9.388	56	Hard					35%	50%	15%				*Hormathia digitata* Anemone (6), Sea Star (6)
	1000	47 40.201	56 9.463	44	Soft					40%		60%				*Hormathia digitata* Anemone (3)
	1100	47 40.185	56 9.539	32	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a			
	1200	47 40.165	56 9.613	28	Hard					15%	85%					Sea Star (2)
	1300	47 40.147	56 9.688	18	Hard		5%				95%					Green Sea Urchin (4), Sea Star (1)
	1390	47 40.129	56 9.754	2	Hard	100%										Cunner (>20), Green Sea Urchin (>20), Northern Sea Star (4)
4	10	47 40.337	56 8.689	216	Soft				10%			90%				Worm Tube (>20), Atlantic Cod (1), Krill (>20), Eelpout (1), Unidentified Tunicate (4)
	100	47 40.319	56 8.756	188	Soft				30%			70%				Worm Tube (>20), Encrusting Sponge (5%), Brachiopod (3)
	200	47 40.302	56 8.831	174	Soft							100%				Worm Tube (>20), *Hormathia digitata* Anemone (5), Flounder (1), Hagfish (1)
	300	47 40.285	56 8.907	152	Hard					10%	75%		15%			Worm Tube (14), Unidentified Tunicate (5), *Hormathia digitata* Anemone 5), Sponge (2)
	400	47 40.266	56 8.982	142	Hard					5%	45%	50%				Unidentified Tunicate (9), *Hormathia digitata* Anemone 7), Worm Tube (>20)
	500	47 40.245	56 9.056	120	Hard		10%				40%	50%				*Hormathia digitata* Anemone (14), Unidentified Tunicate (15), Worm Tube (11), Sponge (3), Feather Star (1), Soft Coral (1), Hydrozoa (2)
	600	47 40.231	56 9.133	86	Hard		40%	5%			15%	40%				Sponge (10), Unidentified Tunicate (>20), *Hormathia digitata* Anemone (>20), Soft Coral (1), Feather Star (2), Sea Star (1), Worm Tube (>20)
	700	47 40.212	56 9.209	56	Hard	100%										*Hormathia digitata* Anemone (>20), Sponge (3), Soft Coral (4), Feather Star (>20)
	800	47 40.194	56 9.283	56	Hard				15%	50%	35%					*Hormathia digitata* Anemone >20), Breadcrumb Sponge (<5%), Sponge (1)
	900	47 40.177	56 9.359	56	Hard					40%	20%	40%				
	1000	47 40.157	56 9.433	48	Hard				15%	25%		60%				Rock Crab (1), Sponge (1)
	1100	47 40.140	56 9.509	38	Hard				15%		85%					Sponge (1)
	1200	47 40.120	56 9.583	32	Hard					40%	35%	25%				Sea Star (1), Sponge (1), Unidentifiable Jellyfish (2)
	1300	47 40.102	56 9.658	24	Hard					60%	40%					Green Sea Urchin (3)
	1400	47 40.087	56 9.735	6	Hard				40%	40%	20%					Green Sea Urchin (>20), Sea Star (3), Cunner (7)
5	20	47 40.285	56 8.664	200	Soft					15%		85%				Krill (>20), Acadian Redfish (3), *Hormathia digitata* Anemone (1), Eelpout (2)
	100	47 40.271	56 8.724	196	Soft					5%		95%				Unidentified Tunicate (9), Krill (3), Worm Tube (>20), Flounder (1), Acadian Redfish (8), Hydrozoa (17)
	200	47 40.252	56 8.799	178	Soft					15%		85%				Krill (2), Shrimp (1), Worm Tube (>20), Sponge (4)
	300	47 40.232	56 8.874	170	Soft					5%		95%				*Hormathia digitata* Anemone (3), Unidentified Tunicate (5), Worm Tube (>20), Acadian Redfish (2), Shrimp (7), Brittle Star (1)

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	400	47 40.216	56 8.950	160	Soft							100%				Worm Tube (>20), *Hormathia digitata* Anemone (6), Hagfish (1), Sponge (2), Acadian Redfish (1), Shrimp (1)
	500	47 40.197	56 9.024	130	Soft					10%		90%				Worm Tube (>20), *Hormathia digitata* Anemone 6), *Cerianthus borealis* Anemone (1), Hagfish (1), Unidentified Tunicate (>20), Sponge (2), Soft Coral (1), Flounder (1), Acadian Redfish (1), Arrow Worm (3)
	600	47 40.178	56 9.100	108	Soft							100%				*Hormathia digitata* Anemone (>20), Worm Tube (>20), Unidentified Tunicate (15), Flounder (1)
	700	47 40.161	56 9.175	78	Hard	85%						15%				Breadcrumb Sponge (15%), *Hormathia digitata* Anemone (>20), Unidentified Tunicate (10), Northern Sea Star (1), Feather Star (>20)
	800	47 40.142	56 9.250	74	Soft					10%		90%				*Hormathia digitata* Anemone (>20), Breadcrumb Sponge (5%), Unidentified Tunicate (1), Sponge (2), Brachiopod (1), Feather Star (1)
	900	47 40.123	56 9.325	60	Hard					15%		85%				Northern Sea Star (2)
	1000	47 40.105	56 9.400	50	Hard			10%	15%	25%		50%				Breadcrumb Sponge (15%)
	1100	47 40.087	56 9.475	42	Hard			10%		50%		40%				Breadcrumb Sponge (15%), Flounder (1), Northern Sea Star (1)
	1200	47 40.070	56 9.551	34	Hard			5%		45%	50%					Sea Star (1), Shrimp (1)
	1300	47 40.044	56 9.622	12	Hard		60%				40%					Northern Sea Star (2)
	1390	47 40.033	56 9.693	10	Hard			20%	40%		40%					Green Sea Urchin (>20), Cunner (3)
6	10	47 40.241	56 8.617	204	Soft					20%		80%				Krill (>20), Worm Tube (>20), Acadian Redfish (5), Unidentified Anemone (1), Brittle Star (1), Atlantic Cod (1)
	100	47 40.225	56 8.684	202	Soft				10%	20%		70%				Krill (>20), Worm Tube (14), Flounder (1)
	200	47 40.207	56 8.760	212	Soft							100%				Worm Tube (>20), Unidentified Tunicate (8)
	300	47 40.187	56 8.834	202	Soft				10%			90%				Worm Tube (>20), Unidentified Tunicate (8), Eelpout (1), Hagfish (1), Brachiopod (1), Krill (7)
	400	47 40.169	56 8.909	176	Soft					5%		95%				Worm Tube (>20), Unidentified Tunicate (5), Hagfish (1), *Hormathia digitata* Anemone (1)
	500	47 40.152	56 8.985	154	Soft					5%		95%				Worm Tube (>20), Hagfish (1), Hydrozoa (1)
	600	47 40.130	56 9.058	116	Soft						10%	90%				Worm Tube (>20), Hagfish (1), *Hormathia digitata* Anemone (4), Unidentified Tunicate (11), Feather Star (7)
	700	47 40.114	56 9.135	86	Hard	70%			5%			25%				Breadcrumb Sponge (5%), Unidentified Tunicate (5), Feather Star (18), *Hormathia digitata* Anemone (>20), Sponge (>20)
	800	47 40.096	56 9.209	88	Hard					25%		75%				*Hormathia digitata* Anemone (>20), Sponge (3), Flounder (1)
	900	47 40.078	56 9.284	74	Hard			5%	10%	20%		65%				Breadcrumb Sponge (10%), *Hormathia digitata* Anemone (>20), Brachiopod (2)
	1000	47 40.060	56 9.360	56	Hard	40%				20%		40%				Encrusting Sponge (5%)
	1100	47 40.040	56 9.435	42	Hard			5%	30%	30%		35%				Hydrozoa (1), Breadcrumb Sponge (5%)
	1200	47 40.023	56 9.510	28	Hard					10%	90%					Blood Star (1)
	1300	47 40.004	56 9.585	16	Hard	100%										Sea Star (3), Mussel (2), Green Sea Urchin (6)

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
7	0	47 40.193	56 8.577	240	Soft								100%			Worm Tube (>20), Sea Star (2), Unidentified Tunicate (2)
	100	47 40.174	56 8.651	228	Soft					10%		90%				Krill (>20), Worm Tube (>20), Unidentified Tunicate (2), Sea Star (1)
	200	47 40.157	56 8.726	206	Hard				20%	20%		60%				Krill swarm (>20), Atlantic Cod (2), Unidentified Tunicate (11), Worm Tube (11)
	300	47 40.140	56 8.802	152	Hard				15%	25%		30%				Sponge (4), Hydrozoa (4), Encrusting Sponge (5%), Worm Tube (15)
	400	47 40.119	56 8.876	162	Soft							100%				Worm Tube (>20), Unidentified Tunicate (8), Sponge (1), Hydrozoa (1)
	500	47 40.101	56 8.951	142	Soft					5%		95%				Worm Tube (>20), Sponge (4), Unidentified Tunicate (4), *Hormathia digitata* Anemone (2), Hydrozoa (1)
	600	47 40.083	56 9.027	122	Soft				5%			95%				Breadcrumb Sponge (5%), *Hormathia digitata* Anemone (7), Unidentified Tunicate (10), Brachiopod (2), Worm Tube (>20), Feather Star (4)
	700	47 40.064	56 9.101	108	Soft							100%				Worm Tube (>20), Unidentifiable Worm (1), *Hormathia digitata* Anemone (4), Unidentified Tunicate (4)
	800	47 40.047	56 9.178	94	Soft				10%			90%				Worm Tube (>20), Flounder (1), *Hormathia digitata* Anemone (11), Encrusting Sponge (5%)
	900	47 40.026	56 9.251	72	Hard				20%	20%		60%				Breadcrumb Sponge (10%), Flounder (1), Unidentifiable Jellyfish (1), *Hormathia digitata* Anemone (>20), Sponge (1), Brachiopod (10)
	1000	47 40.005	56 9.324	52	Hard	100%										*Hormathia digitata* Anemone (>20), Northern Sea Star (8), Breadcrumb Sponge (5%)
	1100	47 39.988	56 9.400	28	Hard					40%	60%					
	1200	47 39.970	56 9.475	10	Hard		50%	50%								Cunner (12), Green Sea Urchin (>20)
8	0	47 40.146	56 8.545	246	Soft								100%			Unidentified Tunicate (1), Sea Pen (4), Worm Tube (>20), Acadian Redfish (2)
	100	47 40.132	56 8.623	240	Hard	90%							10%			*Bolocera tuediae* (4), Krill (2)
	200	47 40.108	56 8.695	212	Soft				5%			95%				Unidentified Tunicate (1), Worm Tube (>20), Hydrozoa (1), Krill (>20)
	300	47 40.097	56 8.772	194	Hard			15%		40%		45%				Warty Sponge (10%), Cushion Star (3), Eelpout (1), *Bolocera tuediae* Anemone (2), Unidentified Tunicate (2), Worm Tube (>20), Krill (>20)
	400	47 40.072	56 8.845	156	Soft					10%		90%				Unidentified Tunicate (7), Brachiopod (2), Encrusting Sponge (5%), Worm Tube (>20), Cushion Star (1)
	500	47 40.051	56 8.918	152	Hard			50%				50%				Breadcrumb Sponge (15%), *Hormathia digitata* Anemone (10), *Bolocera tuediae* Anemone (3), Unidentified Tunicate (1), Sponge (6), Brachiopod (2), Worm Tube (9), Unidentified Crab (1), Acadian Redfish (2), Hydrozoa (1), Shrimp (1)
	600	47 40.034	56 8.995	130	Soft							100%				Unidentified Tunicate (3), Worm Tube (>20), *Hormathia digitata* Anemone (6), Sponge (1), Cushion Star (1), Hydrozoa (2)
	700	47 40.017	56 9.070	108	Soft							100%				*Hormathia digitata* Anemone (15), Unidentified Tunicate (10), Sponge (2), Worm Tube (>20)

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	800	47 39.997	56 9.144	82	Soft					15%		85%				*Hormathia digitata* Anemone (15), Unidentified Tunicate (7), Sponge (5), Brachiopod (2), Sea Star (1)
	900	47 39.982	56 9.221	70	Hard			15%		25%		60%				Warty Sponge (15%), Breadcrumb Sponge (5%), *Hormathia digitata* Anemone (>20), Unidentified Tunicate (1), Brachiopod (3), Feather Star (1)
	1000	47 39.961	56 9.295	52	Hard	100%										Encrusting Sponge (5%), Hydrozoa (10), Sponge (1), *Hormathia digitata* Anemone (>20), Unidentified Tunicate (2)
	1100	47 39.944	56 9.371	30	Hard					65%	35%					Northern Sea Star (2), Green Sea Urchin (1)
	1200	47 39.926	56 9.446	6	Hard	100%										Cunner (>20), Green Sea Urchin (>20)
9	0	47 40.099	56 8.504	250	Soft								100%			Worm Tube (>20), Sea Pen (4), Unidentified Tunicate (2)
	100	47 40.084	56 8.581	222	Soft					5%		95%				Worm Tube (>20), Krill swarm (>20)
	200	47 40.064	56 8.656	216	Soft							100%				Worm Tube (>20), Unidentified Tunicate (>20), Krill (>20)
	300	47 40.045	56 8.730	212	Hard	90%						10%				Worm Tube (>20), Krill (>20), Chiton (2), Breadcrumb Sponge (10%), Hydrozoa (1), *Hormathia digitata* Anemone (3), *Bolocera tuediae* Anemone (1), Sponge (2)
	400	47 40.027	56 8.805	170	Hard		15%					85%				*Haliclona oculata* Sponge (1), *Hormathia digitata* Anemone (2), Unidentified Tunicate (>20), Acadian Redfish (2), Hydrozoa (1), Krill (2)
	500	47 40.009	56 8.881	144	Hard				5%	25%		70%				*Haliclona oculata* Sponge 4), Warty Sponge (10%), Worm Tube (>20), *Cerianthus borealis* Anemone (2), Unidentified Tunicate (1), Brachiopod (8), Feather Star (2), Hydrozoa (1)
	600	47 39.990	56 8.956	120	Soft					10%		90%				Breadcrumb Sponge (5%), *Cerianthus borealis* Anemone (8), Unidentified Tunicate (3), Sponge (2), Brachiopod (5), Worm Tube (>20), Feather Star (3)
	700	47 39.972	56 9.030	106	Soft					10%		90%				Encrusting Sponge (<5%), Worm Tube (>20), *Cerianthus borealis* Anemone (5), *Hormathia digitata* Anemone (3), Unidentified Tunicate (12), Brachiopod (14), Feather Star (3)
	800	47 39.953	56 9.106	78	Hard			20%		30%		50%				Breadcrumb Sponge (5%), *Hormathia digitata* Anemone (3), Sponge (2), Feather Star (2)
	900	47 39.935	56 9.181	54	Hard	60%			40%							Acadian Redfish (15), Breadcrumb Sponge (15%), *Hormathia digitata* Anemone (8), Sponge (1)
	1000	47 39.917	56 9.256	52	Hard				20%	40%		40%				Flounder (1), *Cerianthus borealis* Anemone (7), *Hormathia digitata* Anemone (7)
	1100	47 39.898	56 9.331	34	Hard					50%	50%					Unidentifiable Jellyfish (9)
	1200	47 39.879	56 9.406	22	Hard					70%	30%					Green Sea Urchin (4), Encrusting Sponge (25%), Sea Star (2)
	1270	47 39.863	56 9.457	0	Hard	100%										Cunner (>20), Green Sea Urchin (>20), Northern Sea Star (1)
10	0	47 40.060	56 8.475	244	Soft								100%			Worm Tube (>20), Sea Pen (4)

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	100	47 40.041	56 8.550	228	Soft								100%			Grenadier w/ Isopod Parasite (1), Worm Tube (>20), Unidentified Tunicate (1)
	200	47 40.024	56 8.625	216	Soft			10%					90%			Worm Tube (>20), Krill Swarm (>20), Flounder (1), *Bolocera tuediae* Anemone (1)
	300	4 40.004	56 8.700	218	Hard	50%						50%				Krill (>20), Sponge (2), Acadian Redfish (2), *Bolocera tuediae* Anemone (1), Worm Tube (>20)
	400	47 39.988	56 8.777	174	Hard	70%						30%				*Bolocera tuediae* Anemone (2), Unidentified Tunicate (2), Sponge (2), Cushion Star (1), Krill (>20)
	500	47 39.967	56 8.850	158	Soft							100%				Hagfish (2), Worm Tube (>20), Krill (4), Unidentified Tunicate (6)
	600	47 39.946	56 8.924	140	Soft							100%				Worm Tube (>20), Sponge (1), *Hormathia digitata* Anemone (7)
	700	47 39.927	56 8.998	122	Soft					5%		95%				*Hormathia digitata* Anemone (18), Unidentified Tunicate (2), Sponge (3), Worm Tube (>20), Sea Star (1), Cushion Star (1), Feather Star (2)
	800	47 39.908	56 9.073	82	Hard	100%										*Hormathia digitata* Anemone (>20), Sponge (7), Feather Star (>20), Brittle Star (1)
	900	47 39.889	56 9.148	62	Hard	80%						20%				*Hormathia digitata* Anemone (>20), Sponge (2), Soft Coral (1), Feather Star (8), Fan Worm (5), Shrimp (1)
	1000	47 39.871	56 9.223	42	Hard	85%						15%				Unidentified Tunicate (4), *Hormathia digitata* Anemone (14), Hydrozoa (4)
	1100	47 39.851	56 9.297	34	Hard					45%		55%				Sea Star (1)
	1200	47 39.830	56 9.371	22	Hard				60%	25%	15%					Sponge (3), Northern Sea Star (1), Sea Star (2), Cunner (4)
	1250	47 39.816	56 9.406	2	Hard			20%	30%	50%						Cunner (>20), Green Sea Urchin (>20)
11	0	47 39.992	56 8.492	222	Soft								100%			Worm Tube (>20), Acadian Redfish (1), Sponge (3), Eelpout (1)
	100	47 39.975	56 8.567	212	Hard	45%							55%			Eelpout (1), Hagfish (1), Grenadier (20), *Bolocera tuediae* Anemone (1), Unidentified Tunicate (2), Sponge (1), Worm Tube (17)
	200	47 39.955	56 8.642	210	Soft								100%			Worm Tube (>20), Sea Pen (1), Sea Star (1), Unidentified Tunicate (7)
	300	47 39.935	56 8.716	194	Soft							100%				Worm Tube (>20), Sponge (3), Unidentified Tunicate (10), Acadian Redfish (1)
	400	47 39.918	56 8.792	174	Hard					50%		50%				*Hormathia digitata* Anemone (1), Unidentified Tunicate (4), Sponge (1), Worm Tube (10), Hydrozoa (5), Breadcrumb Sponge (5%)
	500	47 39.899	56 8.866	140	Hard	90%							10%			Tube Worm (1), *Hormathia digitata* Anemone (8), Sponge (2), Breadcrumb Sponge (10%)
	600	47 39.884	56 8.943	112	Hard	50%							50%			*Hormathia digitata* Anemone (13), Unidentified Tunicate (4), Sponge (7), Brachiopod (3), Feather Star (10), Arrow Worm (1), Breadcrumb Sponge (35%)
	700	47 39.862	56 9.016	84	Hard	75%			5%				20%			Breadcrumb Sponge (5%), *Hormathia digitata* Anemone (19), Sponge (7), Soft Coral (1), Northern Sea Star (3), Unidentified Tunicate (1)

Pass My Can																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	800	47 39.843	56 9.091	56	Hard			15%		35%	10%	40%				Fan Worm (1), Feather Star (2), *Hormathia digitata* Anemone (>20), Breadcrumb Sponge (5%)
	900	47 39.825	56 9.167	46	Hard			40%	20%		40%					*Hormathia digitata* Anemone (>20), Acadian Redfish (1), Shrimp (1), Breadcrumb Sponge (10%)
	1000	47 39.805	56 9.240	30	Hard	70%				10%	20%					Sea Star (1), Green Sea Urchin (1)
	1100	47 39.788	56 9.316	16	Hard					80%	20%					Mussel (8), Sea Star (7), Green Sea Urchin (8)
	1180	47 39.772	56 9.376	2	Hard			15%		85%						Cunner (5)
12	30	47 39.925	56 8.539	184	Soft								100%			Worm Tube (>20), Unidentified Tunicate (1), Sea Star (1)
	100	47 39.910	56 8.591	174	Hard			15%		25%		60%				Fan Worm (1), Unidentified Tunicate (3), Sponge (7), Worm Tube (>20), Acadian Redfish (10)
	200	47 39.894	56 8.667	156	Soft					15%		85%				Unidentified Tunicate (4), *Haliclona oculata* Sponge (7), Worm Tube (>20), Brachiopod (3)
	300	47 39.874	56 8.741	164	Soft							100%				Worm Tube (>20), Hagfish (1), *Haliclona oculata* Sponge (1), Flounder (2), Shrimp (1)
	400	47 39.855	56 8.816	136	Hard	80%						20%				Worm Tube (>20), Sponge (3), Sea Star (1), *Hormathia digitata* Anemone (2)
	500	47 39.834	56 8.890	108	Hard					35%		65%				*Hormathia digitata* Anemone (>20), Unidentified Tunicate (13), Sponge (6), Feather Star (2)
	600	47 39.818	56 8.966	76	Hard		30%			20%		50%				*Hormathia digitata* Anemone (>20), Sponge (4), Brachiopod (6), Feather Star (3), Flounder (1), Breadcrumb Sponge (10%)
	700	47 39.798	56 9.040	50	Hard	100%										*Hormathia digitata* Anemone (>20), Sponge (2), Feather Star (4), Breadcrumb Sponge (<5%), Unidentified Tunicate (12)
	800	47 39.782	56 9.116	38	Hard					70%	20%	10%				Unidentifiable Jellyfish (5)
	900	47 39.763	56 9.191	28	Hard			15%		25%	60%					Sponge (3), Warty Sponge (<5%)
	1000	47 39.745	56 9.266	14	Hard				100%							
	1090	47 39.727	56 9.333	0	Hard	100%										Cunner (>20), Green Sea Urchin (>20)
13	0	47 39.719	56 9.151	24	Hard		100%									
	100	47 39.698	56 9.225	22	Hard	100%										
	200	47 39.677	56 9.298	12	Hard				15%	55%	30%					Green Sea Urchin (>20), Blood Star (1), Mussel (5), Cunner (4)

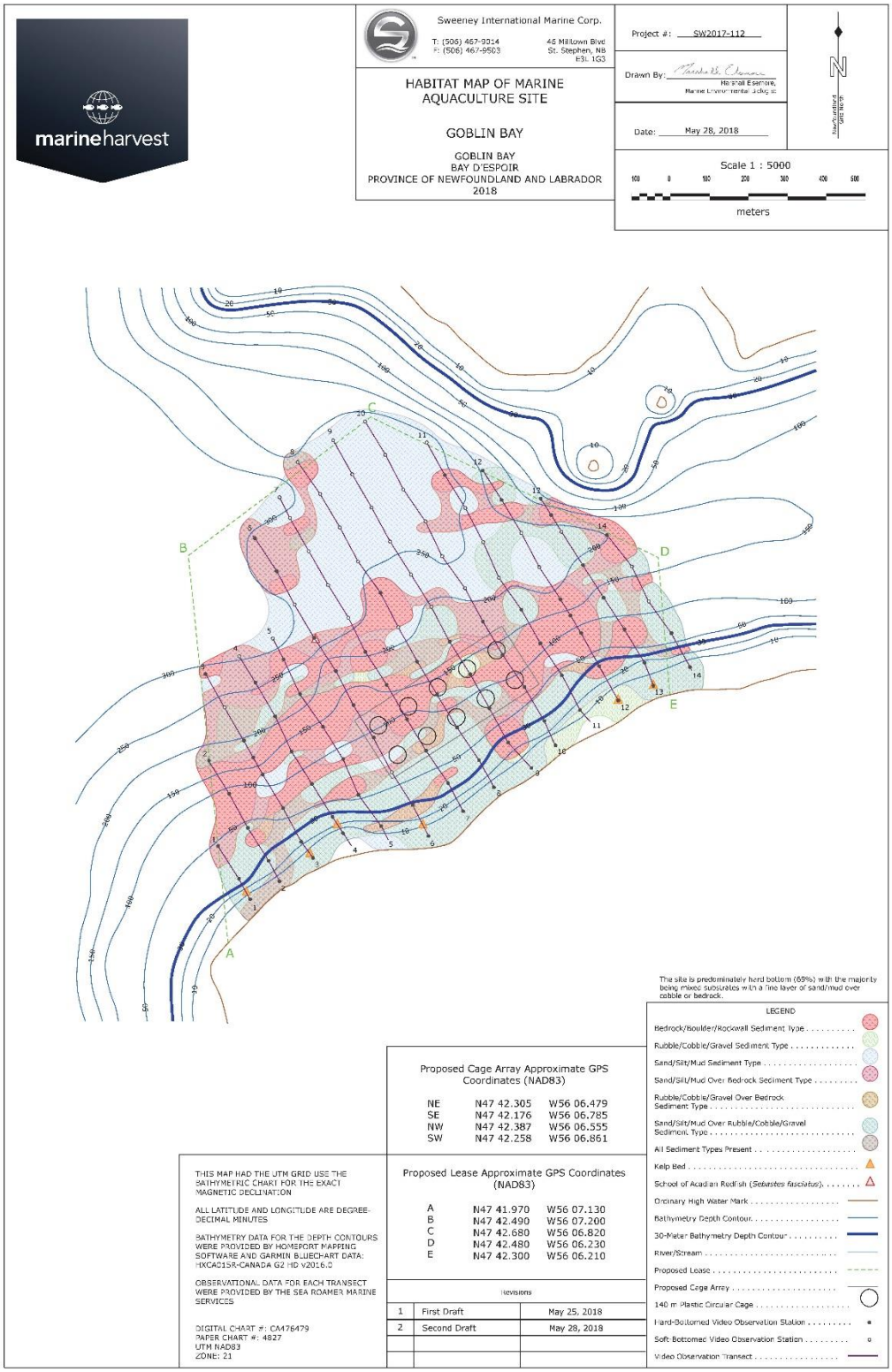


Figure 10.9. Habitat observations at sampling stations in the Goblin Bay sea farm (August–September 2017).

Table 10.6. Summary of bottom type and observed flora and fauna at the Goblin Bay sea farm (August–September 2017).

Goblin Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 42.085	56 07.146	48	Hard		50%	10%					40%			Feather Star (>20), *Stomphia coccinea* amenone (12)
	100	47 42.039	56 07.105	36	Hard					60%			40%			*Hormathia digitata* amenone (6)
	160	47 42.01	56 07.081	8	Hard			5%	85%				10%			Cunner (18), Green Sea Urchin (19), Lobster (1)
2	0	47 42.204	56 07.163	170	Hard	50%				25%			25%			Krill (>20), Cerianthid (1), Stalked Glass Sponge (2), *Serpula* (5), Worm Tube (4), Encrusting Sponge (15%)
	100	47 42.158	56 07.122	94	Hard	100%										Encrusting Sponge (50%), Cerianthid amenone (1), Blood Star (2), *Bolocera tuediae* amenone (2), *Serpula* (>20)
	200	47 42.11	56 07.784	40	Hard					40%			60%			*Hormathia digitata* amenone (>20), Blood Star (1), Feather Star (2)
	300	47 42.064	56 07.042	26	Hard					50%			50%			*Hormathia digitata* amenone (2), Scallop (1)
	360	47 42.035	56 07.02	0	Hard			25%	50%	15%			10%			Green Sea Urchin (12), Unidentified Anemones (2), Horse Mussel (1), Cunner (9)
3	0	47 42.325	56 07.168	286	Hard	100%										Krill (>20), Flounder (1)
	100	47 42.278	56 07.129	232	Soft					15%			85%			Krill (>20), Worm Tubes (11), *Serpula* (2)
	200	47 42.231	56 07.090	196	Hard					60%			40%			Krill (>20), Worm Tubes (15), *Serpula* (2), Sponge (2)
	250	47 42.207	56 07.074	162	Hard	80%							20%			*Serpula* (4), Sponge (2), Cushion Star (1), Stalked Glass Sponge (4), Acadian Redfish (2), Cerianthid (2)
	300	47 42.184	56 07.052	112	Hard					50%			50%			*Bolocera tuediae* amenone (>20), Stalked Glass Sponge (2), Sponge (3)
	400	47 42.137	56 07.011	60	Hard			5%		45%			50%			*Hormathia digitata* amenone (>20), Sponge (2)
	500	47 42.090	56 06.974	20	Hard					90%			10%			Krill (>20), *Stomphia coccinea* amenone (1)
	550	47 42.067	56 06.950	4	Hard					60%			40%			Cunner (13), Sea Star (1), Unidentified Tunicate (1)
4	220	47 42.349	56 07.098	302	Soft								100%			Sea Pen (1), Krill (>20), Grenadier (1), Worm Tube (7)
	300	47 42.312	56 07.065	252	Hard	50%							50%			Krill (>20), Flounder (1), Sponge (5), *Serpula* (2), Worm Tube (>20)
	400	47 42.265	56 07.025	210	Hard					40%			60%			Krill (9), Unidentified Worm (1), Worm Tube (>20)
	500	47 42.216	56 06.992	118	Hard			5%		60%			35%			*Hormathia digitata* amenone (>20), Stalked Glass Sponge (13), Sponge (6), Worm Tube (8)
	600	47 42.170	56 06.950	74	Hard					35%			65%			*Hormathia digitata* amenone (>20), Fan Worm (1), Stalked Glass Sponge (1)
	700	47 42.124	56 06.909	26	Hard					50%			50%			*Hormathia digitata* amenone (4), Fan Worm (1)
	750	47 42.100	56 06.888	0	Hard				75%	10%			15%			Cunner (18), Blood Star (1)
5	340	47 42.373	56 07.028	312	Soft								100%			Sea Pen (9), Krill (>20), Worm Tube (>20)
	400	47 42.344	56 07.006	270	Hard	100%										King Crab (1), *Stomphia coccinea* amenone (17), Krill (>20), Worm Tube (1), *Serpula* (>20), Fan Worm (1), Branching Coralline Algae (3)
	500	47 42.295	56 06.973	218	Hard	40%				20%			40%			Worm Tube (11), Acadian Redfish (1), Krill (>20), *Serpula* (2)
	600	47 42.250	56 06.927	140	Hard	100%										Stalked Glass Sponge (18), *Hormathia digitata* amenone (3), Encrusting Sponge (25%), Cushion Star (1), *Serpula* (>20), Fan

Goblin Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Worm (1), Blood Star (1), Worm Tube (4), Acadian Redfish (3), Unidentified Tunicate (5), Sponge (2), Branching Coralline Algae (3)
	700	47 42.204	56 06.886	88	Hard	100%										*Serpula* (>20), *Hormathia digitata* amenone (9), Encrusting Sponge (25%), Branching Coralline Algae (16), Blood Star (1), Sponge (3), Sea Lily (7), Acadian Redfish (1), Unidentified Tunicate (16), Feather Star (3)
	800	47 42.154	56 06.855	52	Hard					75%			25%			*Hormathia digitata* amenone (>20), Sea Star (1)
	900	47 42.110	56 06.808	16	Hard					100%						Cunner (1), Blood Star (1)
6	100	47 42.513	56 07.062	286	Hard		85%						15%			Worm Tube (>20), *Serpula* (4), Krill (>20), Sponge (2)
	200	47 42.467	56 07.018	276	Hard		50%						50%			Sea Pen (4), Krill (>20), Sponge (6), Unidentified Tunicate (2), Worm Tube (>20)
	300	47 42.420	56 06.982	298	Soft								100%			Toad Crab (1), Worm Tube (>20), Krill (>20), Sea Pen (10)
	400	47 42.373	56 06.942	272	Hard		75%						25%			Worm Tube (10), Krill (>20), *Serpula* (3), Cushion Star (1)
	500	47 42.327	56 06.898	180	Hard	90%							10%			Krill (>20), *Serpula* (8), *Hormathia digitata* amenone (1), *Stomphia coccinea* amenone (1), Encrusting Sponge (5%), Branching Coralline Algae (7), Sponge (2)
	600	47 42.279	56 06.863	126	Hard	100%										*Serpula* (4), Branching Coralline Algae (4), Encrusting Sponge (40%), Unidentified Jellyfish (1), Unidentified Tunicate (5), Acadian Redfish (1), Breadcrumb Sponge (1), Cerianthid (1)
	700	47 42.233	56 06.822	92	Hard		50%						50%			*Hormathia digitata* amenone(>20), Sponge (10), *Serpula* (4), Shrimp (1), Worm Tube (1)
	800	47 42.185	56 06.785	58	Soft					40%			60%			*Hormathia digitata* amenone (>20), Sponge (4), Soft Coral (2)
	900	47 42.139	56 06.743	28	Hard			10%		50%		40%				*Stomphia coccinea* amenone (1), *Hormathia digitata* amenone (5), *Serpula* (7), Fan Worm (1), Branching Coralline Algae (1)
	990	47 42.096	56 06.711	2	Hard					50%		50%				Cunner (18), Blood Star (4)
7	40	47 42.570	56 07.011	312	Soft								100%			Sea Pen (>20), Worm Tube (>20), Krill (2), Flounder (1)
	100	47 42.541	56 06.990	294	Soft								100%			Toad Crab (1), Krill (>20), Sea Pen (1), Worm Tube (15), Eelpout (1)
	200	47 42.494	56 06.951	276	Soft								100%			Sea Pen (14), Worm Tube (8), Krill (>20)
	300	47 42.447	56 06.912	268	Soft								100%			Sea Pen (10), Worm Tubes (>20), Krill (4), Flounder (1)
	400	47 42.401	56 06.871	264	Soft								100%			Sea Pen (5), Flounder (1), Krill (>20), Worm Tube (7), Unidentified Fish (1)
	500	47 42.353	56 06.837	202	Hard	100%										Krill (>20), Sponge (8), Atlantic Cod (2), Unidentified Fish (1), Acadian Redfish (1)
	600	47 42.307	56 06.794	152	Hard	100%										*Serpula* (5), Branching Coralline Algae (9), Sponge (5)
	700	47 42.259	56 06.753	92	Hard	100%										*Serpula* (>20), *Hormathia digitata* amenone (>20), *Bolocera tuediae* amenone (5), Sponge (4)
	800	47 42.214	56 06.714	68	Hard					40%			60%			*Hormathia digitata* amenone (>20), Sponge (1)

Goblin Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	900	47 42.169	56 06.669	34	Hard					80%			20%			*Hormathia digitata* amenone (5), *Serpula* (2), Blood Star (1)
	980	47 42.130	56 06.639	0	Hard					20%	60%		20%			Blood Star (2), Cunner (>20)
8	0	47 42.619	56 06.972	256	Soft	10%				10%			80%			Krill (>20), Worm Tube (13)
	100	47 42.574	56 06.927	284	Soft								100%			Worm Tube (>20), Sea Pen (>20), Krill (13)
	200	47 42.527	56 06.887	266	Soft								100%			Worm Tube (>20), Sea Pen (20), Krill (8), Eelpout (1), Acadian Redfish (1)
	300	47 42.479	56 06.850	256	Soft								100%			Sea Pen (11), Worm Tubes (>20), Krill (3)
	400	47 42.435	56 06.804	206	Hard	100%										*Serpula* (>20), Cushion Star (1), Encrusting Sponge (5%), Shrimp (1), Branching Coralline Algae (2)
	500	47 42.387	56 06.768	218	Soft	30%							70%			*Serpula* (4), Encrusting Sponge (10%), Worm Tube (>20), Krill (4)
	600	47 42.339	56 06.730	184	Hard	50%			5%	10%			35%			Krill (>20), Acadian Redfish (1), King Crab (1), Encrusting Sponge (5%), *Serpula* (>20)
	700	47 42.292	56 06.690	118	Hard	80%				20%						*Serpula* (>20), Encrusting Sponge (15%)
	800	47 42.246	56 06.649	80	Hard					50%			50%			*Hormathia digitata* anemone (>20), Bryozoans (>20)
	900	47 42.201	56 06.605	32	Hard					65%			35%			*Hormathia digitata* anemone (16), *Serpula* (1)
	980	47 42.163	56 06.575	0	Hard					45%	55%					Northern Sea Star (3), Cunner (10)
9	0	47 42.648	56 06.898	272	Soft								100%			Sea Pen (>20)
	100	47 42.601	56 06.860	276	Soft								100%			Sea Pen (>20), Worm Tube (>20), Grenadier (1), Acadian Redfish (1), Snailfish (1)
	200	47 42.554	56 06.821	272	Soft								100%			Worm Tube (>20), Sea Pen (16), Flounder (1), Krill (>20)
	300	47 42.506	56 06.783	266	Soft								100%			Sea Pen (5), Krill (18), Flounder (1), Branching Coralline Algae (2)
	400	47 42.460	56 06.741	232	Soft								100%			Worm Tube (>20), Stalked Glass Sponge (2), *Serpula* (7), Encrusting Sponge (5%)
	500	47 42.414	56 06.699	194	Soft					5%			95%			Worm Tube (10), Stalked Glass Sponge (2), *Serpula* (7), Unidentified Tunicate (3), Encrusting Sponge (<5%), Branching Coralline Algae (2), American Shad (1)
	600	47 42.366	56 06.663	174	Hard					50%			50%			Krill (>20)
	700	47 42.320	56 06.621	122	Hard	55%				45%						Shrimp (1), Encrusting Sponge (10%), *Serpula* (4), Unidentified Tunicate (7), Cerianthids (4)
	800	47 42.273	56 06.582	188	Hard	10%				50%			40%			Shrimp (1)
	850	47 42.250	56 06.561	40	Hard	70%	30%									Green Sea Urchin (5), *Hormathia digitata* anemone (>20), *Serpula* (13)
	900	47 42.225	56 06.545	24	Hard	100%										
	990	47 42.189	56 06.497	0	Hard					35%	65%					Crab (1)
10	0	47 42.674	56 06.832	268	Soft								100%			Sea Pen (>20), Worm Tube (1), Flounder (1), Grenadier (1)
	100	47 42.627	56 06.791	272	Soft								100%			Worm Tube (>20), Sea Pen (4), Krill (>20)
	200	47 42.579	56 06.755	272	Soft								100%			Sea Pen (17), Krill (>20), King Crab (10), Worm Tube (4)
	300	47 42.534	56 06.710	266	Soft			5%					95%			Worm Tube (6), Krill (>20)
	400	47 42.485	56 06.676	252	Soft								100%			Worm Tube (>20), Krill (7), Sea Pen (3), Stalked Glass Sponge (4)
	500	47 42.440	56 06.630	222	Soft								100%			Worm Tube (>20), Krill (10), Sponge (2), Unidentified Fish (1), *Bathypolypus arcticus* octopus (1)

Goblin Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	600	47 42.393	56 06.593	182	Hard			20%	40%				40%			*Cerianthus borealis* anemone (1), Worm Tube (>20), Krill (13), Branching Coralline Algae (2), Stalked Glass Sponge (6), *Serpula* (3)
	700	47 42.346	56 06.553	136	Hard		100%									Unidentified Tunicate (5)
	800	47 42.301	56 06.509	74	Hard	100%										*Hormathia digitata* anemone (15), *Serpula* (6), Blood Star (1), *Bolocera tuediae* anemone (1), *Stomphia coccinea* anemone (1)
	900	47 42.254	56 06.469	28	Hard				10%	50%		40%				Green Sea Urchin (2), Unidentified fish (1), Branching Coralline Algae (1)
	970	47 42.220	56 06.447	0	Hard					50%	50%					Cunner (19)
11	0	47 42.644	56 06.706	262	Soft								100%			Krill (>20), Sea Pen (17), Acadian Redfish (1), Grenadier (1)
	100	47 42.598	56 06.669	254	Hard	100%										Krill (>20), *Serpula* (3)
	200	47 42.552	56 06.627	248	Soft								100%			Worm Tube (11), Krill (>20), Hake (1)
	300	47 42.504	56 06.591	238	Soft					5%			95%			Worm Tube (14), Krill (>20), Stalked Glass Sponge (2)
	400	47 42.454	56 06.559	216	Soft					10%			90%			Worm Tube (>20), Krill (14), Stalked Glass Sponge (2), Sea Lily (1)
	500	47 42.409	56 06.514	176	Hard					70%			30%			Worm Tube (1), Acadian Redfish (1), Krill (>20), *Serpula* (1), Sponge (3), Branching Coralline Algae (1)
	600	47 42.362	56 06.475	108	Hard	100%										*Serpula* (11), Encrusting Sponge (20%), Unidentified Tunicate (6), Branching Coralline Algae (6), *Stomphia coccinea* anemone (9), Acadian Redfish (1), Worm Tube (2), Blood Star (2)
	700	47 42.317	56 06.431	40	Hard					50%			50%			*Hormathia digitata* anemone (>20), *Stomphia coccinea* anemone (1), Ctenophores (2)
	800	47 42.269	56 06.395	12	Hard						100%					
12	10	47 42.604	56 06.590	198	Hard					50%			50%			Krill (>20), *Serpula* (1), Sponge (1), Unidentified Fish (1)
	100	47 42.563	56 06.552	186	Hard					50%			50%			Krill (6), Unidentified Tunicate (1), Sponge (2), *Serpula* (1), Sea Lily (1)
	200	47 42.516	56 06.512	218	Soft					10%			90%			Worm Tube (>20), Stalked Glass Sponge (3), Krill (2), Sea Lily (1)
	300	47 42.468	56 06.476	214	Soft					10%			90%			Worm Tube (>20), Stalked Glass Sponge (8), Krill (10), Sea Lily (2)
	400	47 42.423	56 06.433	176	Hard	100%										Encrusting Sponge (10%), *Serpula* (9), Krill (>20), Acadian Redfish (1), Stalked Glass Sponge (2), Worm Tube (2)
	450	47 42.398	56 06.415	132	Hard	100%										*Stomphia coccinea* anemone (6), *Serpula* (4), Unidentified Jellyfish (11), Encrusting Sponge (10%), Branching Coralline Algae (1), Cushion Star (1), Worm Tube (11), Stalked Glass Sponge (1)
	500	47 42.376	56 06.391	72	Hard	100%										Sponge (11), *Serpula* (>20), *Stomphia coccinea* anemone (2), Encrusting Sponge (25%), Branching Coralline Algae (11), Feather Star (14)
	600	47 42.329	56 06.354	28	Hard		100%									*Stomphia coccinea* anemone (>20), Worm Tube (3), Blood Star (1), *Serpula* (10), Encrusting Sponge (10%)
	700	47 42.281	56 06.316	0	Hard			20%			80%					Blood Star (12), Scallop (6), Cunner (15)

Goblin Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
13	0	47 42.564	56 06.471	108	Hard					10%	60%		30%			*Hormathia digitata* anemone (3), Blood Star (2), Sponge (3), Soft Coral (3)
	50	47 42.540	56 06.449	190	Hard	100%										Worm Tube (3), Sponge (2), Encrusting Sponge (<5%)
	100	47 42.517	56 06.429	212	Soft					20%			80%			Worm Tube (>20), Stalked Glass Sponge (8)
	200	47 42.471	56 06.386	192	Hard	50%				25%			25%			Worm Tube (7), Sponge (3), Encrusting Sponge (10%), *Serpula* (8), Sea Lily (1), Krill (5)
	300	47 42.425	56 06.344	136	Hard					40%	30%		30%			Cerianthid (8), Krill (1), *Hormathia digitata* anemone (3)
	400	47 42.380	56 06.301	78	Hard	75%							25%			Sponge (3), *Serpula* (>20), *Stomphia coccinea* anemone (1), Branching Coralline Algae (7), Cerianthid (5), Brittle Star (3), Encrusting Sponge (10%)
	500	47 42.333	56 06.261	18	Hard	50%					50%					Scallop (9)
	560	47 42.301	56 06.243	2	Hard					60%	40%					Blood Star (3), Cunner (>20)
14	0	47 42.512	56 06.335	200	Hard	60%				30%			10%			Cushion Star (2), Krill (>20), *Serpula* (1), Branching Coralline Algae (3), Encrusting Sponge (15%)
	100	47 42.468	56 06.285	160	Soft					25%			75%			Stalked Glass Sponge (1), Unidentified Tunicate (4), Sponge (2), Krill (1), Worm Tube (11), Toad Crab (1)
	200	47 42.419	56 06.251	118	Soft					15%			85%			*Hormathia digitata* anemone (17), Stalked Glass Sponge (>20), Skate (1), Cerianthid (1), Soft Coral (1), Sea Lily (10), Sponges (10), *Polymastia boletiformis* sponge (2), Worm Tube (12)
	300	47 42.374	56 06.205	64	Hard					30%	30%		40%			*Hormathia digitata* anemone (14), Cerianthid (11), Scallop (1), Soft Coral (1), Fan Worm (2)
	400	47 42.327	56 06.167	6	Hard					65%	5%		30%			Blood Star (14), Scallop (7), Cunner (4)

10.3 Water Quality

No recent water quality analysis have been conducted on sea farms in the Outer Bay d'Espoir BMA. The amount and temporal coverage of water quality data available to MCE in the Outer Bay d'Espoir BMA includes data collected by FFA (formerly DFLR) and provided in documentation from the previous owners. Water quality measurements for temperature and salinity are summarized in Tables 10.7 and 10.8, respectively. There are no available data for dissolved oxygen.

10.3.1 Water Temperature

Historical water temperature data were collected by FFA (formerly DFLR) at the Outer Bay d'Espoir BMA (Table 10.7). There are no data specific to each sea farm, only the BMA as a whole. Temperature trends are typical of those observed by MCE in coastal Newfoundland waters. A thermocline develops in spring as surface waters warm. This thermocline becomes more pronounced and deeper in summer until it breaks down in the fall as air temperature decreases. During winter, temperatures throughout the water column tend to be more uniform until spring, when the seasonal water temperature pattern repeats. Average water temperatures at the surface ranged from 0 °C in the winter to 17 °C in the summer. Above 10 m depth, temperatures are the highest in summer and lowest in the winter. At 10 m depth, temperatures were only slightly higher in summer and fall (4°C) compared to winter and spring (2°C).

Table 10.7. Historical water temperature (°C) profiles for the Outer Bay d'Espoir BMA collected by DFLR (undated).

Water Depth	Sampling Period	Winter	Spring	Summer	Fall
		Temperature (°C)			
BMA 9					
0 m	n/a	0	5	17	10
1 m	n/a	0.1	4	14	10
2 m	n/a	0.2	3	13	11
3 m	n/a	1	2	13	11
4 m	n/a	1	2	12	12
5 m	n/a	1	2	12	12
10 m	n/a	1	2	4	4

Notes:
Months were not defined for each season.

10.3.2 Dissolved Oxygen

There were no available data for dissolved oxygen within the Outer Bay d'Espoir BMA.

10.3.3 Salinity

Available salinity is summarized (Table 10.8). Results indicate a notable freshwater influence near the surface in the winter, spring and summer that is characteristic of Bay d'Espoir and the impact of the hydroelectric generation at the head of the bay.

Table 10.8. Historical average salinity (‰) at the sea farms in the Outer Bay d'Espoir BMA (undated).

Water Depth	Sampling Period	Winter	Spring	Summer	Fall
		Salinity (‰)			
BMA 9					
0 m	n/a	n/a	15	15	30
1 m		n/a	17	17	30
2 m		25	20	20	30
3 m		30	28	28	30
4 m		30	30	30	30
5 m		30	30	30	30
10 m		30	30	30	30

Notes:
Months were not defined for each season.

10.4 Oceanographic and Meteorological Data

Bathymetric, current, wind and wave data are available for all four sea farms in the Outer Bay d'Espoir BMA.

10.4.1 Bathymetry

Water depths below the leases range from 1–>500 m (Table 10.9). The shallowest sea farm is Pass My Can where depths range from 1–250 m. Water depth profiles (2-D) acquired in 2010 are available for the four sea farms in Outer Bay d'Espoir BMA (Figures 10.10–10.13). Bathymetry data was taken from Canadian Hydrographic Service (CHS) chart data as no third-party bathymetry data has been collected for the Outer Bay d'Espoir BMA.

Table 10.9. Water depth range at sea farm in the Outer Bay d'Espoir BMA.

Site No.	Sea Farm	Lease Depth Range (m)	Sea Cage Array Depth Range (m)
AQ 1128	Butter Cove	1–>350	55–120
AQ 1129	Jervis Island	1–>500	60–180
AQ 1130	Pass My Can	1–250	70–150
AQ 1132	Goblin Bay	1–>300	60–160

10.4.1.1 Butter Cove

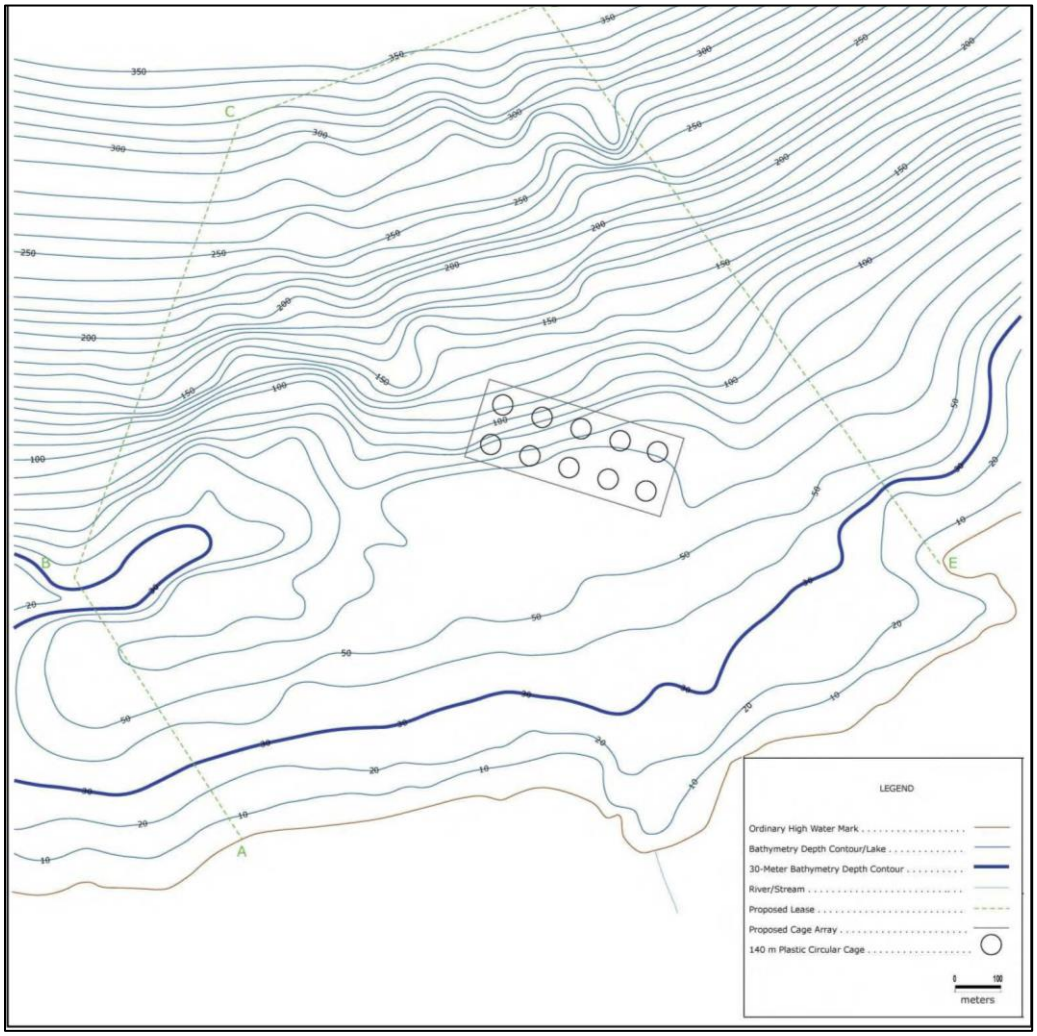


Figure 10.10. Interpolated 2-D bathymetric map for the Butter Cove sea farm (April 2018).

10.4.1.2 Jervis Island

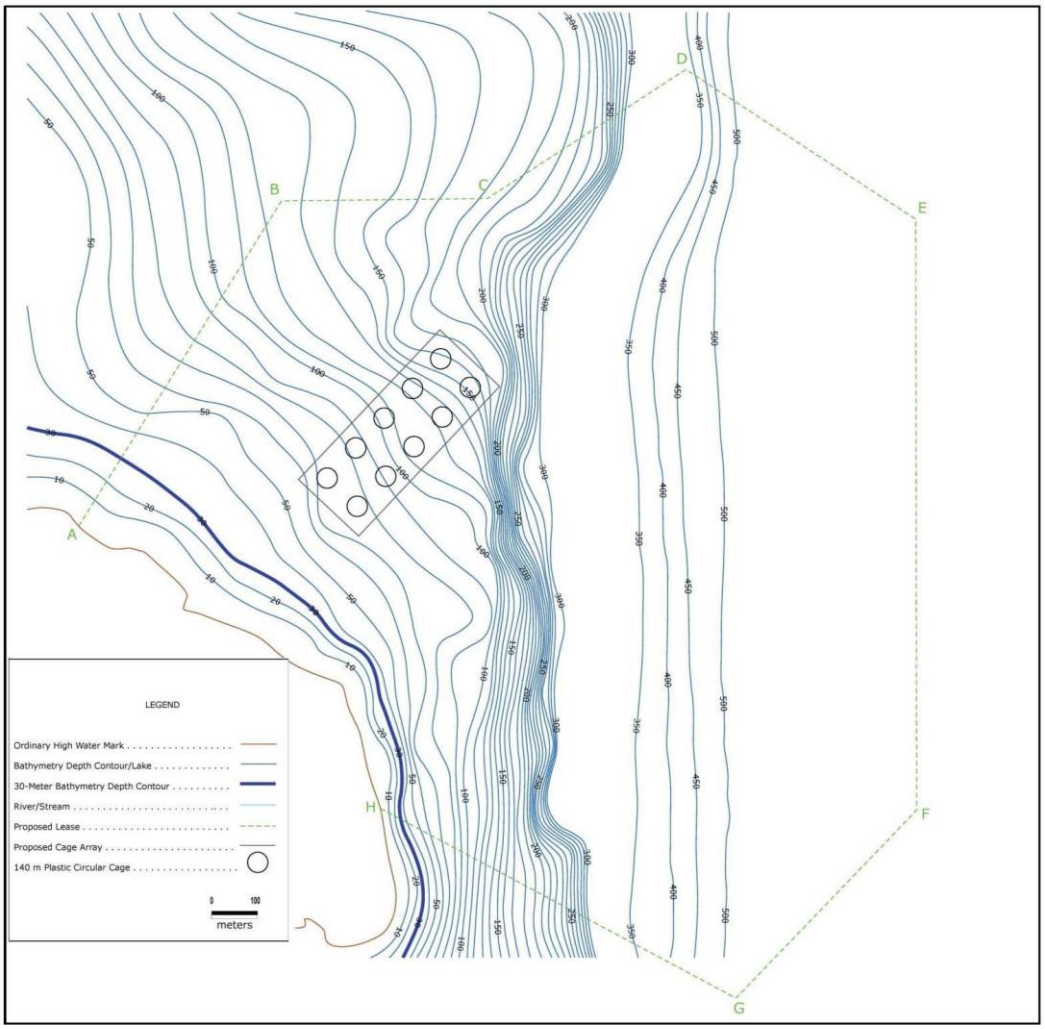


Figure 10.11. Interpolated 2-D bathymetric map for the Jervis Island sea farm (April 2018).

10.4.1.3 Pass My Can

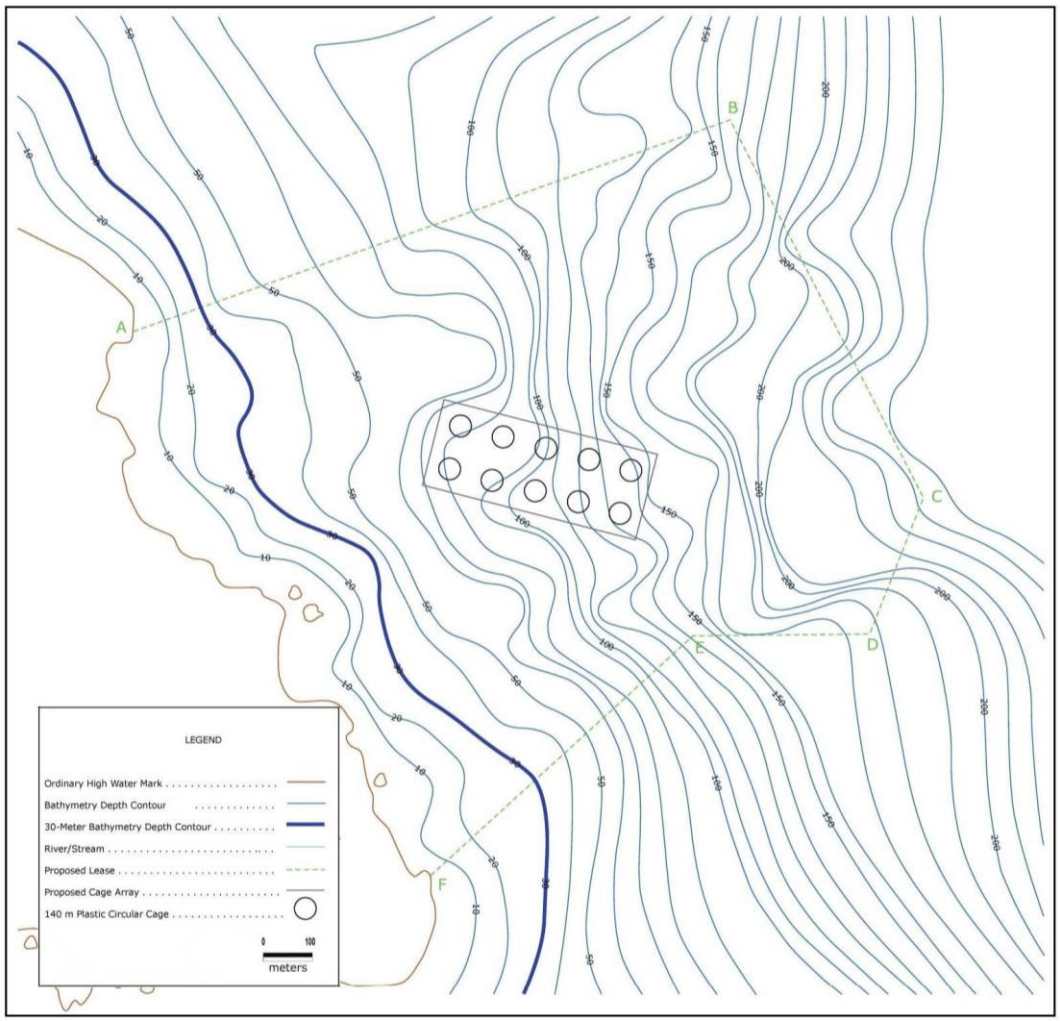


Figure 10.12. Interpolated 2-D bathymetric map for the Pass My Can sea farm (April 2018).

10.4.1.4 Goblin Bay

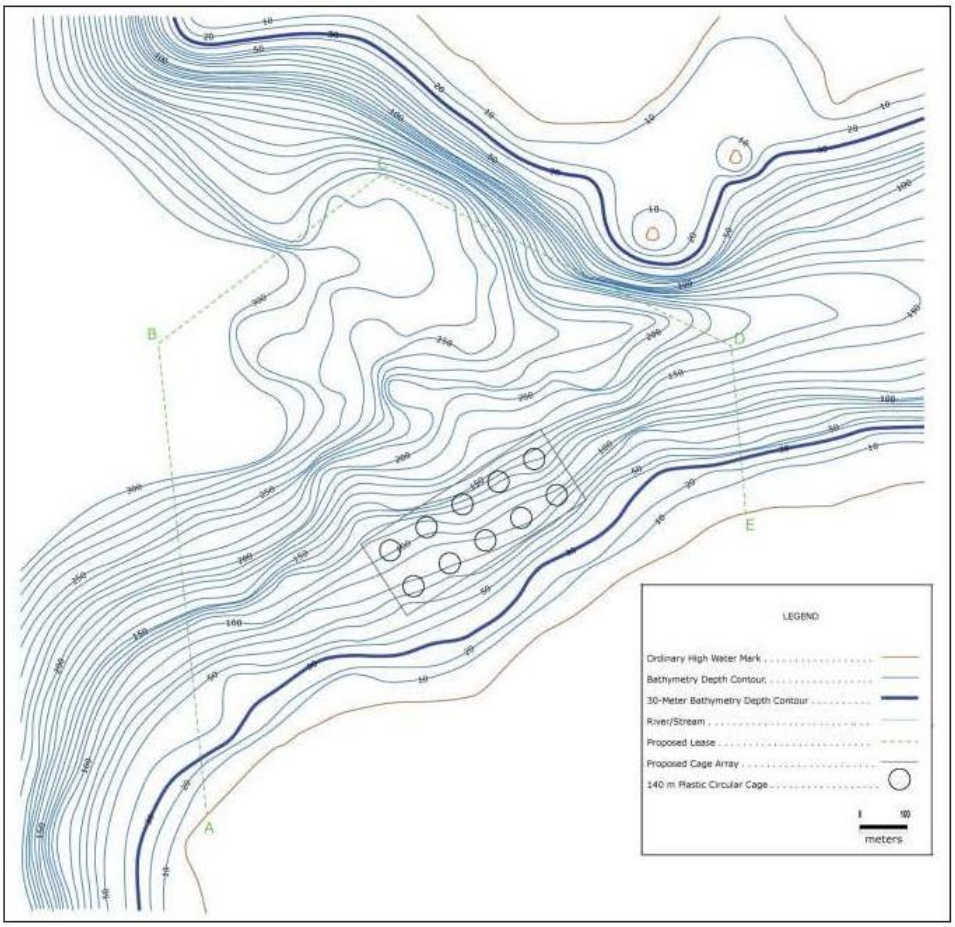


Figure 10.13. Interpolated 2-D bathymetric map for the Goblin Bay sea farm (April 2018).

10.4.2 Currents

10.4.2.1 Butter Cove

During August–September 2017, current measurements were collected at five water depths in the Butter Cove sea farm (Table 10.10). During this period, mean current speeds ranged from 3.12 cm/s near bottom to 9.59 cm/s near-surface. Maximum current speeds ranged from 18.70–28.28 cm/s below 15 m to 45.11–58.39 cm/s above 15 m. Currents were generally towards the south, southeast or southwest (Figure 10.14). The vector average currents ranged from 0.4–2.6 cm/s towards the south directions.

Table 10.10. Current speeds (mean and maximum values) and vector-averages at the Butter Cove sea farm (August–September 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.3	9.59	58.39	2.6 @ 182°
9.3	9.14	45.11	1.7 @ 172°
15.3	7.59	28.28	1.2 @ 154°
33.3	4.96	23.69	0.4 @ 241°
57.8	3.12	18.70	0.5 @ 238°

Notes:
MWL = mean water level.

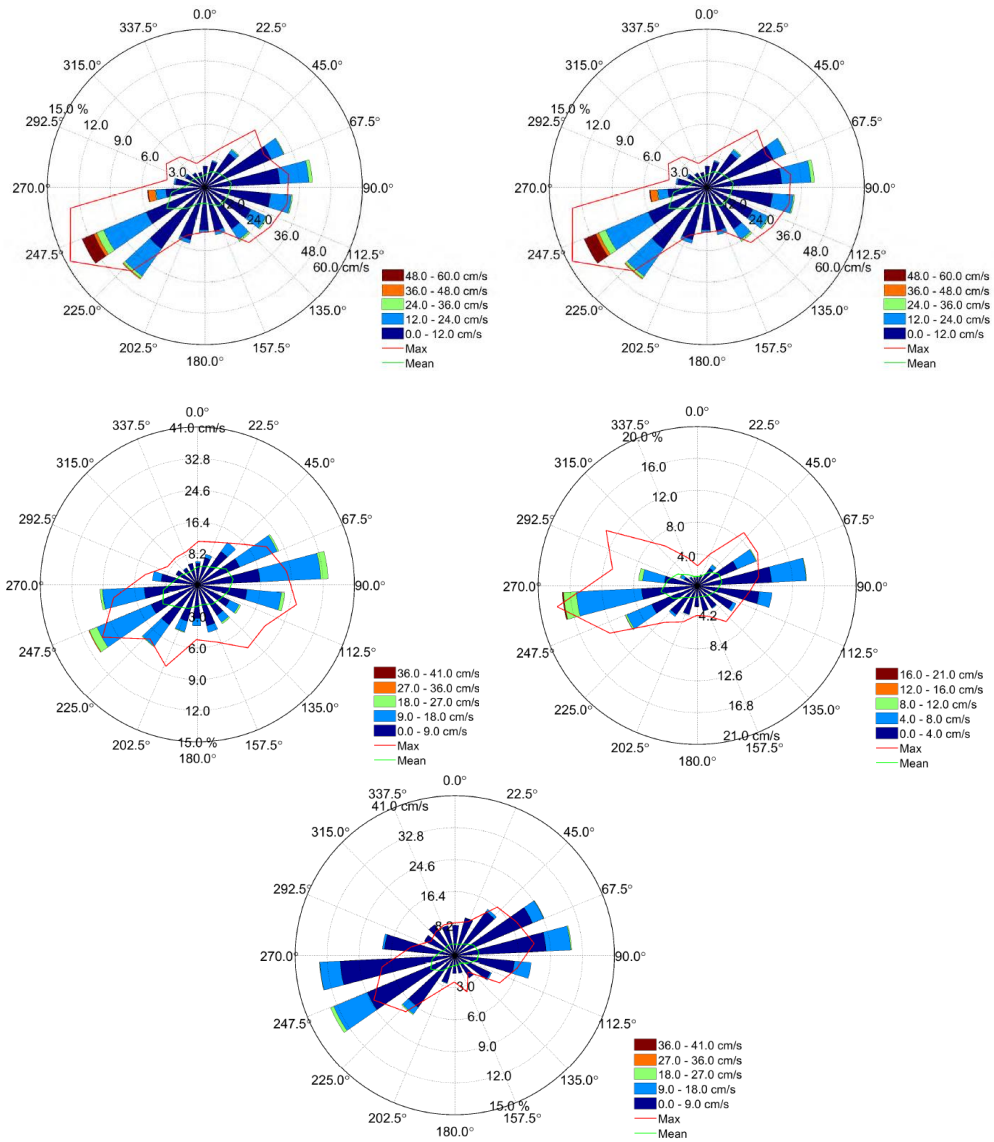


Figure 10.14. Compass rose plots of current speeds at the Butter Cove sea farm (August–September 2017). Current speeds and directions at 5.3 m, 9.3 m, 15.3 m, 33.3 m, and 57.8 m are shown from left to right, top to bottom in the figure.

10.4.2.2 Jervis Island

Ocean current speeds were measured at five depths, October–November 2017 at Jervis Island (Table 10.11). Average current speeds of 4.8 cm/s to 14.0 cm/s were recorded which is relatively low and common for Newfoundland waters. There current flows were most commonly directed toward the SE–SSE for the entire water column, from below the surface to near the seafloor (Figure 10.15). Lower speeds were more common near the seafloor, with an average speed of 4.76 cm/s at 65.4 m depth. Higher speeds were more common from the surface to mid-column, with the highest average speed of 14.04 cm/s at 5.5 m below the surface and the maximum current speed of 50.96 cm/s measured at mid-water column, 35.5 m below the surface.

10.4.2.3 Pass My Can

Ocean current speeds were analyzed October–November 2017 at five depths at Pass My Can (Table 10.12). Average current speeds of 3.8 cm/s to 7.8 cm/s were recorded which is relatively low and common for Newfoundland waters. Current flows were most commonly directed toward the SSE–S near the surface, SE–SSE near mid-column and NW - NNW near the seafloor (Figure 10.16). Lower speeds were more common near the seafloor, with an average speed of 3.80 cm/s at 43.7 m depth. Higher speeds were more common from the surface to mid-column, with the highest average speed of 7.83 cm/s and maximum current speed of 39.71 cm/s measured at 5.3 m below the surface.

10.4.2.4 Goblin Bay

Ocean current speeds were measured October–November 2017 at five depths at Goblin Bay (Table 10.13). Average current speeds of 1.54 cm/s to 6.68 cm/s were recorded which is relatively low and common for Newfoundland waters. Current flows were most commonly directed toward the SW–WSW from the surface to mid- column and WSW-W near the seafloor (Figure 10.17). Lower speeds were more common near the seafloor, with an average speed of 1.54 cm/s at 99 m depth. Higher speeds were more common from the surface to mid-column, with the highest average speed of 6.68 cm/s 4.5 m below the surface and the maximum current speed of 28.76 cm/s measured at 14.5 m below the surface.

Table 10.11. Current speeds (mean and maximum values) and vector-averages at the Jervis Island sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.5	14.04	48.33	11.1 @ 150°
9.5	13.49	50.19	10.0 @ 147°
15.5	12.46	49.62	9.0 @ 145°
35.5	10.23	50.96	6.6 @ 146°
65.4	4.76	21.32	3.2 @ 152°

Notes:
MWL = mean water level.

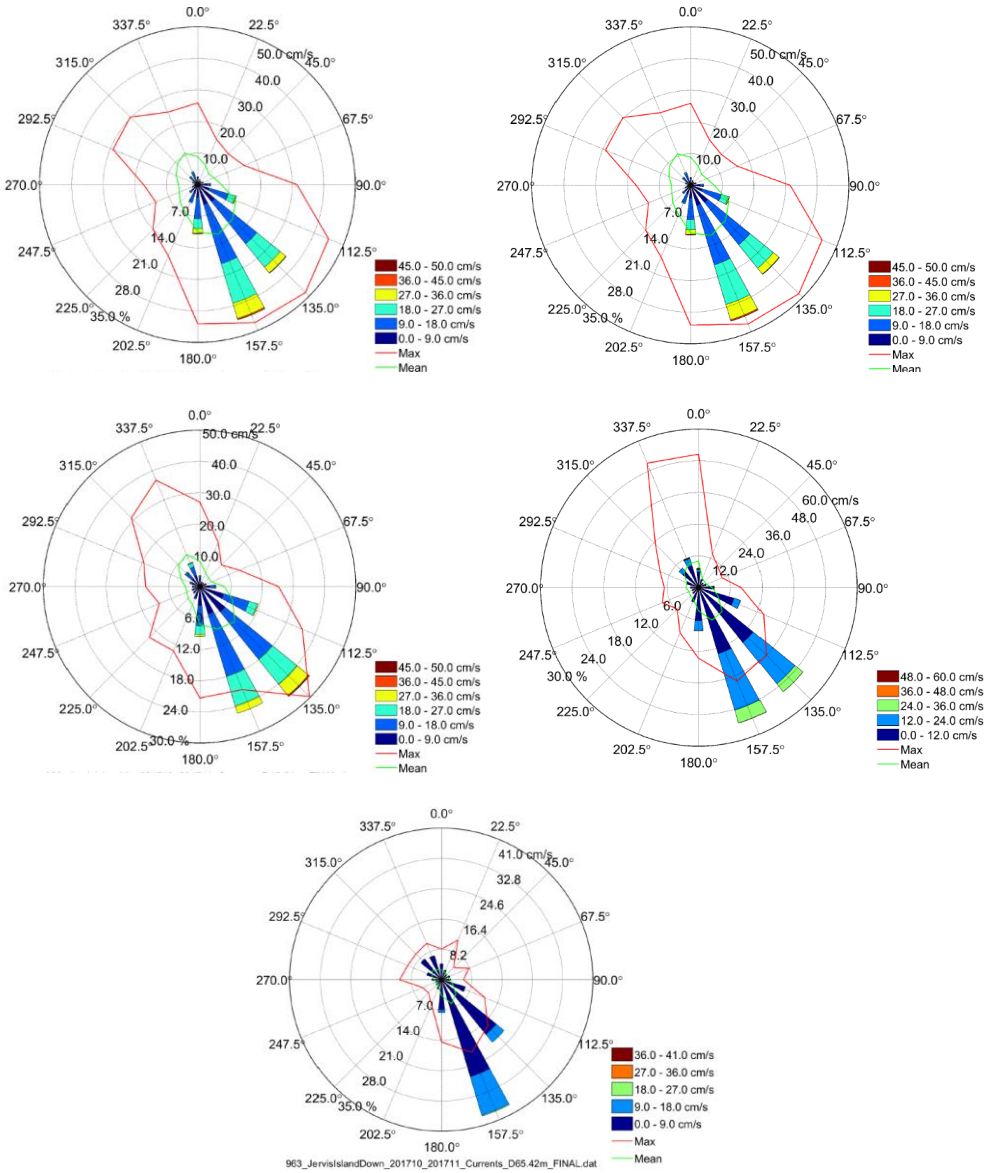


Figure 10.15. Compass rose plots of current speeds at the Jervis Island sea farm (October–November 2017). Current speeds and directions at 5.5 m, 9.5 m, 15.5 m, 35.5 m, and 65.4 m are shown from left to right, and top to bottom in the figure.

Table 10.12. Current speeds (mean and maximum values) and vector-averages at the Pass My Can sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.3	7.83	39.71	2.8 @ 197 °
9.3	7.54	32.16	2.0 @ 201°
15.3	6.89	30.99	1.2 @ 201 °
23.7	6.38	34.09	1.1 @ 198 °
43.7	3.80	26.34	0.3 @ 293 °

Notes:
MWL = mean water level.

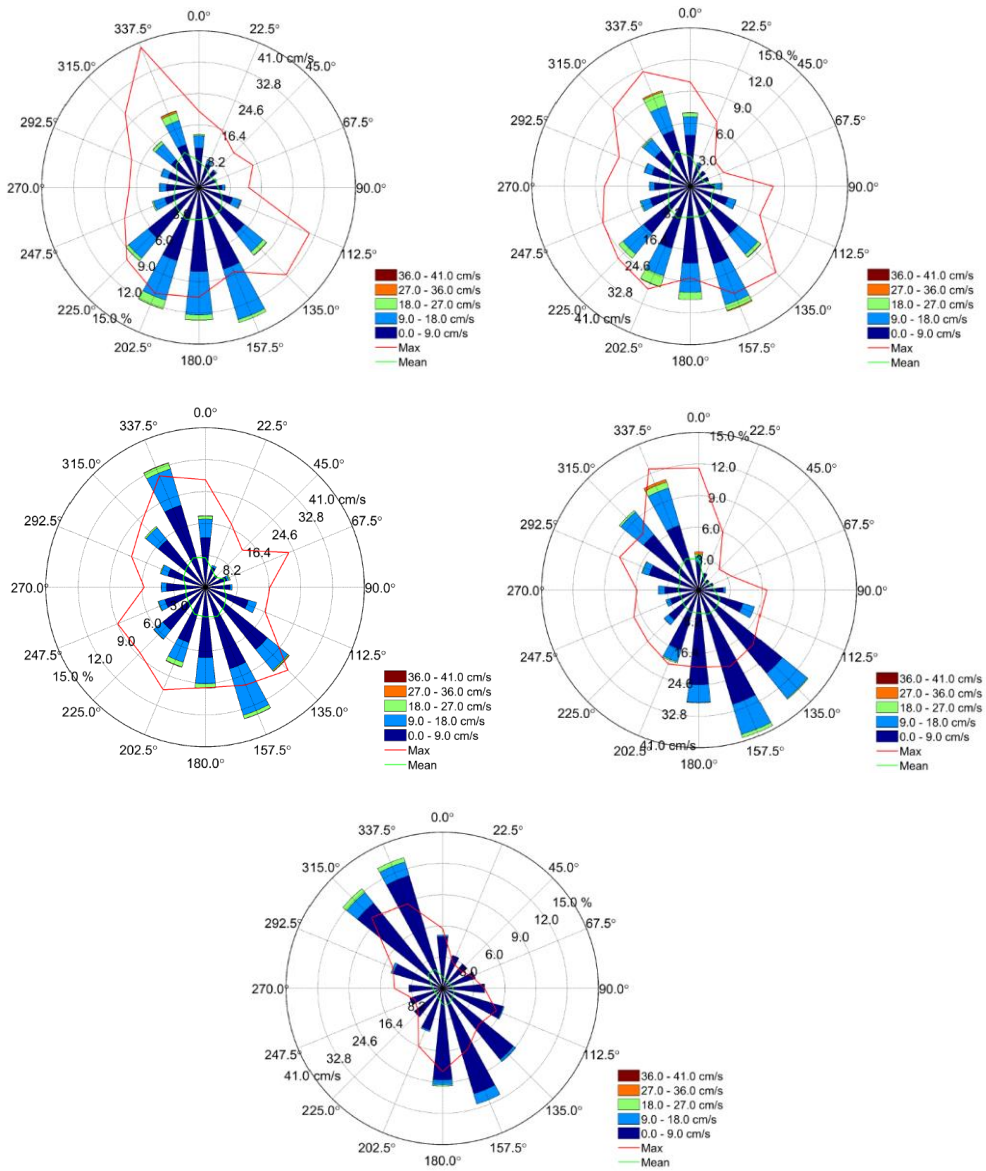


Figure 10.16. Compass rose plots of current speeds at the Pass My Can sea farm (October–November 2017). Current speeds and directions at 5.3, 9.3 m, 15.3 m, 23.7 m and 43.7 m are shown from left to right, top to bottom in the figure.

Table 10.13. Current speeds (mean and maximum values) and vector-averages at the Goblin Bay sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
4.5	6.68	27.87	1.6 @ 210°
10.5	5.89	26.14	2.5 @ 220°
14.5	5.57	28.76	2.6 @ 223°
52.6	3.43	16.41	0.4 @ 161°
99.0	1.54	7.80	0.2 @ 247°

Notes:
MWL = mean water level.

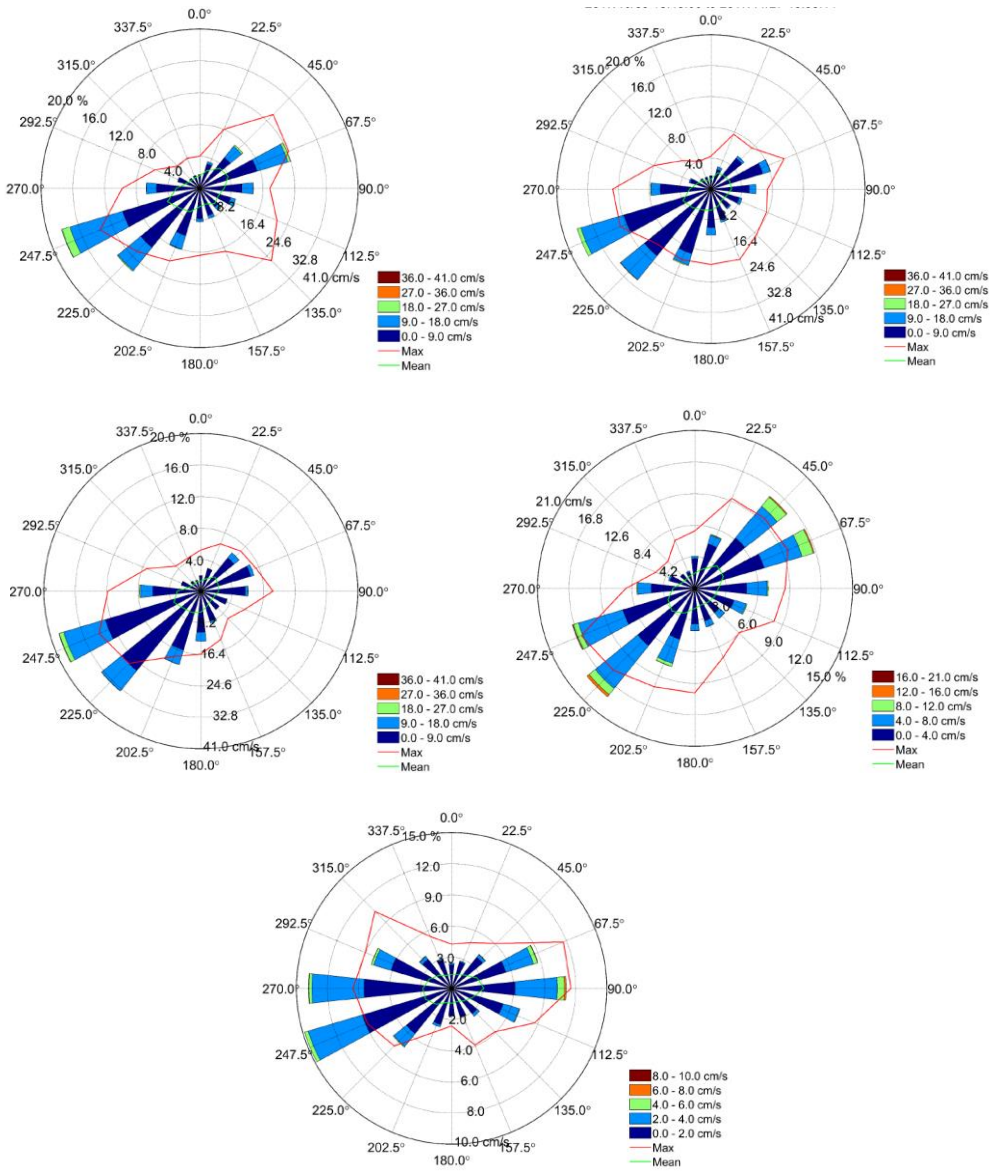


Figure 10.17. Compass rose plots of current speeds at the Goblin Bay sea farm (October–November 2017). Current speeds and directions at 4.5 m, 10.5 m, 14.5 m, 52.6 m and 99 m from left to right, top to bottom in the figure.

10.4.3 Wind and Waves

10.4.3.1 Modelling (MSC50 Hindcast Approach) for Atlantic Canada

Mean wind speeds and mean wave heights near the Outer Bay d'Espoir BMA were highest in November through March and lowest in June, July, and August based on 10 years of historical data (Tables 10.14 and 10.15). Maximum monthly wind speeds of ~20–21 m/s (~72–76 km/h) occurred in November, December, January, February, and March. Similarly, maximum monthly

wave heights of 2.73–3.46 m occurred during winter months (November–February). Wind directions were predominantly westerly (WSW) with wind speeds most frequently ranging from ~8–10 m/s (Figure 10.18).

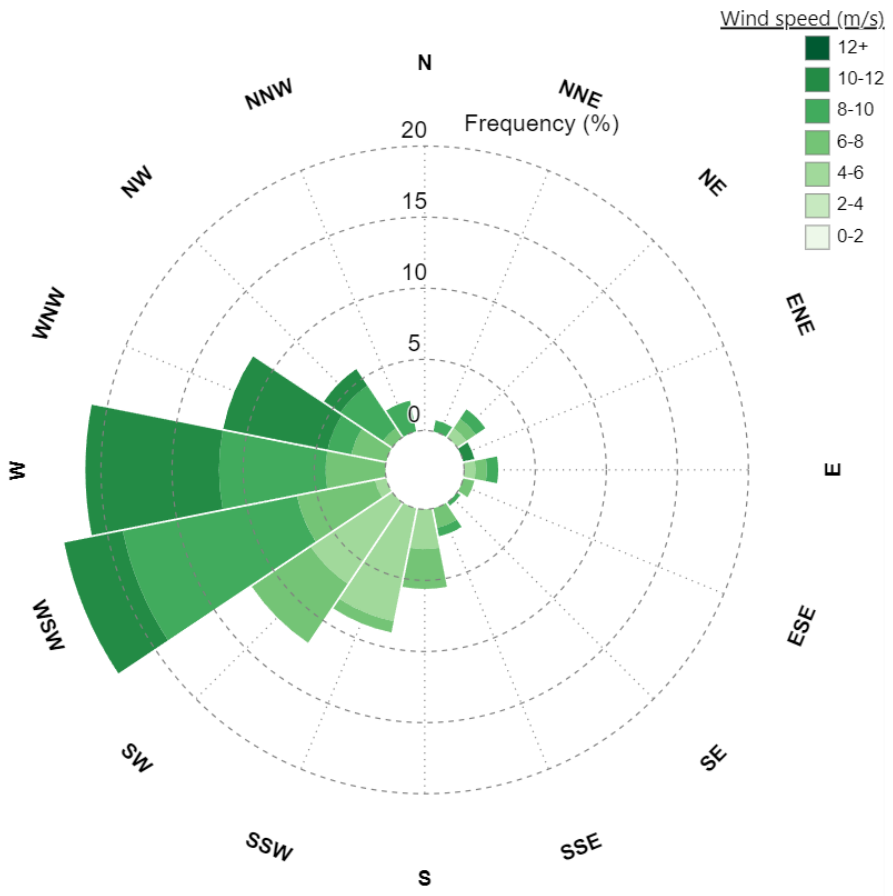
Table 10.14. Monthly wind speeds (mean and maximum) near the Outer Bay d'Espoir BMA (at MSC50 grid points M6012716, M6012717 and M6012718 during 2009–2018).

Month	M6012716		M6012717		M6012718	
	Wind Speed Mean (m/s)	Wind Speed Max (m/s)	Wind Speed Mean (m/s)	Wind Speed Max (m/s)	Wind Speed Mean (m/s)	Wind Speed Max (m/s)
January	10.88	20.79	10.86	20.68	10.85	20.56
February	10.41	21.67	10.41	21.62	10.40	21.61
March	9.48	20.58	9.48	20.56	9.48	20.55
April	7.92	18.34	7.92	18.25	7.92	18.22
May	6.46	14.19	6.47	14.10	6.47	14.02
June	5.76	13.35	5.77	13.21	5.77	13.10
July	5.44	12.06	5.44	11.94	5.43	11.89
August	5.97	13.76	5.96	13.64	5.96	13.67
September	7.72	16.57	7.71	16.56	7.71	16.57
October	8.88	18.43	8.87	18.34	8.86	18.31
November	9.72	19.57	9.71	19.50	9.70	19.43
December	10.57	20.24	10.57	21.01	10.57	20.24

Notes:
Grid point M6012717 and M6012718 is ~7 km from the Jervis Island sea farm.

Table 10.15. Monthly wave heights (m) (mean and maximum) recorded near the Outer Bay d'Espoir BMA (at MSC50 grid points M6012716, M6012717 and M6012718 during 2009–2018).

Month	M6012716		M6012717		M6012718	
	Wave Height Mean (m)	Wave Height Max (m)	Wave Height Mean (m)	Wave Height Max (m)	Wave Height Mean (m)	Wave Height Max (m)
January	1.18	2.97	1.17	2.76	1.39	3.26
February	1.09	3.04	1.02	2.66	1.20	3.46
March	0.92	2.49	0.91	2.06	1.03	2.36
April	0.79	2.24	0.73	2.09	0.90	2.58
May	0.61	1.63	0.57	1.55	0.71	2.00
June	0.54	1.47	0.48	1.38	0.64	1.88
July	0.56	1.44	0.50	1.35	0.67	1.75
August	0.58	1.57	0.53	1.48	0.68	1.95
September	0.76	2.00	0.73	1.89	0.88	2.45
October	0.88	2.39	0.86	2.36	1.02	2.94
November	1.01	2.84	0.99	2.73	1.17	3.41
December	1.11	2.91	1.08	2.81	1.24	3.34



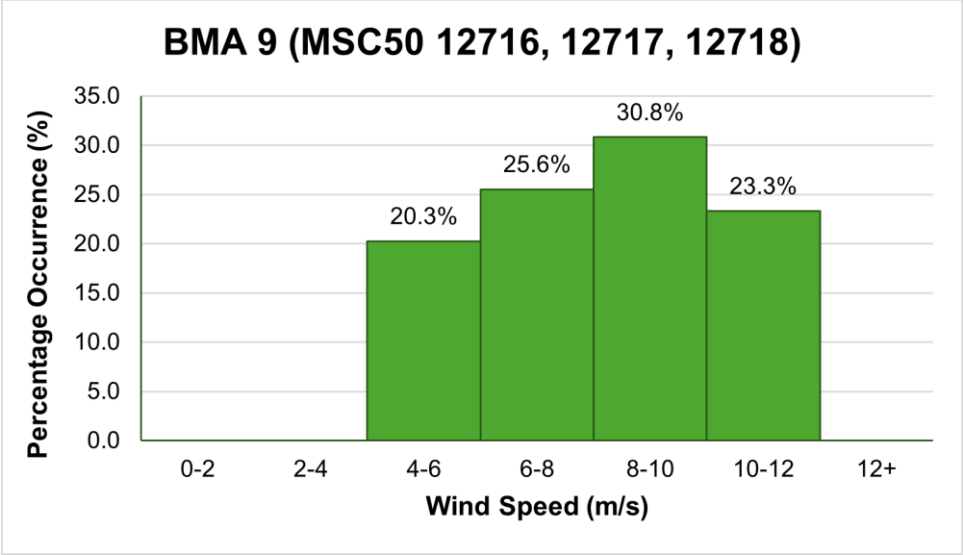


Figure 10.18. Wind rose and wind speed frequency histogram for MSC50 grid points 12716, 12717, and 12718 near the Outer Bay d'Espoir BMA (2009–2018).

10.5 Ice Conditions

Ice conditions for the Study Area including Outer Bay d'Espoir (BMA 9) are detailed in Section 4.5.

10.6 Storms

Storm conditions for the Study Area including Outer Bay d'Espoir (BMA 9) are detailed in Section 4.6.

10.7 Tides and Floods

Tide and flood conditions for the Study Area including Outer Bay d'Espoir (BMA 9) are detailed in Section 4.7.

10.8 Performance of Sea Farms with a Previous Production Cycle

MCE Outer Bay d'Espoir BMA farms have not been in production since MCE acquired these licenses in 2017. Therefore, there is no monitoring, reporting and performance associated with farms within Outer Bay d'Espoir BMA for MCE farms during the period that public reporting has been a requirement (2016–present). For Outer Bay d'Espoir BMA, modelling of total organic carbon (TOC) deposition (i.e., DEPOMOD) has been completed for all four sea farms in 2018. The results of this modelling can be found in Volume 3 of LGL 2025c.

10.9 Exposure Zone Modelling

DFO conducted PEZ modelling for BMA 9 sea farms to estimate areas exposed to discharges from bath pesticides and in-feed drugs (and feces) (Page et al 2023). BMT conducted dispersion modelling for a worst-case scenario use of a bath pesticide for the sea farms in BMA 9 (see Appendix B).

10.9.1 PEZ Modelling

Detailed predictions of PEZ modelling for BMA 9 (Outer Bay d'Espoir) are found in Page et al. (2023); a summary is provided here. DFO undertook this modelling to provide initial estimates of the size and location of the areas that may be exposed to releases of fish health treatment substances. As noted in Page et al. (2023), PEZ estimates are not zones of impact and are intended to serve as an initial screening tool in combination with biological and socio-economic aspects of an area to gauge potential risk and the potential need for more precise modelling estimates.

The model predicted that for all sea farms in BMA 9, tarp treatments for Azamethiphos and Hydrogen Peroxide had larger PEZ (km^2) relative to these same treatments in a well boat

(Table 10.16). The entrainment of the chemical associated with the jet dynamics in the well boat reduces the concentration at discharge and a ten-fold reduction was used for the model which produced smaller PEZ (km^2) for well boat treatments. Well boat discharges of Hydrogen Peroxide did not exceed threshold concentrations (i.e., 188 mg/L); therefore, predicted areas were zero.

The Jervis Island sea farm, the southernmost sea farm in the BMA, was predicted to have the largest PEZ areas for Azamethiphos tarp treatments (44.72 km^2 maximum and 3.82 km^2 mean; with concentrations ≥1 µg/L). The remaining three sea farms (Butter Cove, Goblin Bay and Pass My Can) had maximum PEZ areas of 15.76 km^2, 16.27 km^2, and 18.61 km^2, respectively. The PEZ model produces a circular area from the center of the sea cage array and encompassed land for maximum predicted areas for all sea farms in BMA 9 (see Figure 17 in Page et al. 2023)—which results in an overestimate of exposed areas.

In-feed pest control products along with feces were modelled with PEZ area (km^2; horizontal distance "travelled" by a sinking particle) estimates for mean and maximum current speeds (mid-depth); however, it is unlikely that maximum current speeds would be maintained throughout the duration of a treatment and therefore, distance estimates for maximum current speeds represents an upper boundary. The Jervis Island sea farm had the largest estimated PEZ area for feed (11.16 km^2) and feces (236.59 km^2) under maximum current speeds (Table 10.17). The smallest diameter was estimated for the Goblin Bay sea farm at 1.60 km^2 (feed) and 23.93 km^2 (feces).

Table 10.16. Estimates of the maximum and mean PEZ areas associated with Azamethiphos (assumes a 100 µg/L dose concentration) and Hydrogen Peroxide (assumes a 1800 mg/L dose concentration) using two different treatment methods: a tarp surrounding the net in-situ and a well boat hold for BMA 9 (from Page et al. 2023).

Sea Farm	Tarp Treatment				Well Boat Treatment[b]			
	Azamethiphos[c]		Hydrogen Peroxide[d]		Azamethiphos[c]		Hydrogen Peroxide[d]	
	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)
Butter Cove[a]	15.76	1.76	4.55	0.70	4.68	0.71	0	0
Jervis Island[a]	44.72	3.82	12.02	1.30	12.42	1.34	0	0
Pass My Can[a]	18.61	1.53	5.29	0.62	5.46	0.64	0	0
Goblin Bay[a]	16.27	1.15	4.68	0.50	4.82	0.51	0	0

Notes:

[a] Sea farms are located near land and PEZ areas (marine) are smaller than estimated—particularly maximum PEZ areas.

[b] Well boat treatments assume a ten-fold reduction in concentration at discharge as a result of entrainment associated with the jet dynamics in the well boat.

[c] PEZ model assumes a toxicity threshold of 1 µg/L of Azamethiphos. Other assumptions are provided in Page et al. (2023).

[d] PEZ model assumes a toxicity threshold of 188 mg/L of Hydrogen Peroxide. Other assumptions are provided in Page et al. (2023).

Table 10.17. Summary of PEZ area for pest control products in-feed and feces (km²) under mean and maximum current speeds for BMA 9.

Sea Farm	Area of PEZ (km²)			
	Mean Current Speed		Maximum Current Speed[a]	
	In-feed	Feces	In-feed	Feces
Butter Cove	0.17	0.32	3.13	55.73
Jervis Island	0.26	0.93	11.16	236.59
Pass My Can	0.21	0.55	3.54	62.44
Goblin Bay	0.17	0.32	1.60	23.93

Notes:

[a] Area represents an upper bound to the potential for exposure and is not expected to occur often since most releases do not experience maximum currents for the duration of treatment.

10.9.2 Dispersion Modelling

Dispersion modelling was undertaken to estimate exposure zones for the release of Azamethiphos (bath treatment) in a worst-case scenario (see Appendix B for details). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment at Goblin Bay sea cages (4 May 2023 for spring tide; 16 June 2023 for neap tide) through final treatment at Jervis Island sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 10.18).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Outer Bay d'Espoir BMA predicted maximum areas of 2.35 km² and 2.18 km² during neap and spring tides, respectively; where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment duration. The maximum Azamethiphos concentration for the Outer Bay d'Espoir BMA was 96 ng/L during the simulated neap tide and 110 ng/L during the spring tide. The peak concentration occurred during the treatment of the second sea farm, Butter Cove, and decreased shortly after treatments were completed with concentration levels 72 hrs after final treatment below 100 ng/L (Figures 10.19 and 10.20). The maximum area within BMA 9 where Azamethiphos concentrations exceeded 100 ng/L was slightly larger during the neap tide scenario (2.35 km²) than during the spring tide scenario (2.18 km²).

Table 10.18. Treatment schedule (assumed dates) for sea farms in BMA 9 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
Goblin Bay	1	04 May 23	-315	16 Jun 23	-315
	2	04 May 23	-312	16 Jun 23	-312
	3	05 May 23	-291	17 Jun 23	-291
	4	05 May 23	-288	17 Jun 23	-288
	5	06 May 23	-267	18 Jun 23	-267
	6	06 May 23	-264	18 Jun 23	-264
	7	07 May 23	-243	19 Jun 23	-243
Butter Cove	1	07 May 23	-240	19 Jun 23	-240
	2	08 May 23	-219	20 Jun 23	-219
	3	08 May 23	-216	20 Jun 23	-216
	4	09 May 23	-195	21 Jun 23	-195
	5	09 May 23	-192	21 Jun 23	-192

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
	6	10 May 23	-171	22 Jun 23	-171
	7	10 May 23	-168	22 Jun 23	-168
Pass My Can	1	11 May 23	-147	23 Jun 23	-147
	2	11 May 23	-144	23 Jun 23	-144
	3	12 May 23	-123	24 Jun 23	-123
	4	12 May 23	-120	24 Jun 23	-120
	5	13 May 23	-99	25 Jun 23	-99
	6	13 May 23	-96	25 Jun 23	-96
	7	14 May 23	-75	26 Jun 23	-75
Jervis Island	1	14 May 23	-72	26 Jun 23	-72
	2	15 May 23	-51	27 Jun 23	-51
	3	15 May 23	-48	27 Jun 23	-48
	4	16 May 23	-27	28 Jun 23	-27
	5	16 May 23	-24	28 Jun 23	-24
	6	17 May 23	-3	29 Jun 23	-3
	7	17 May 23	0	29 Jun 23	0

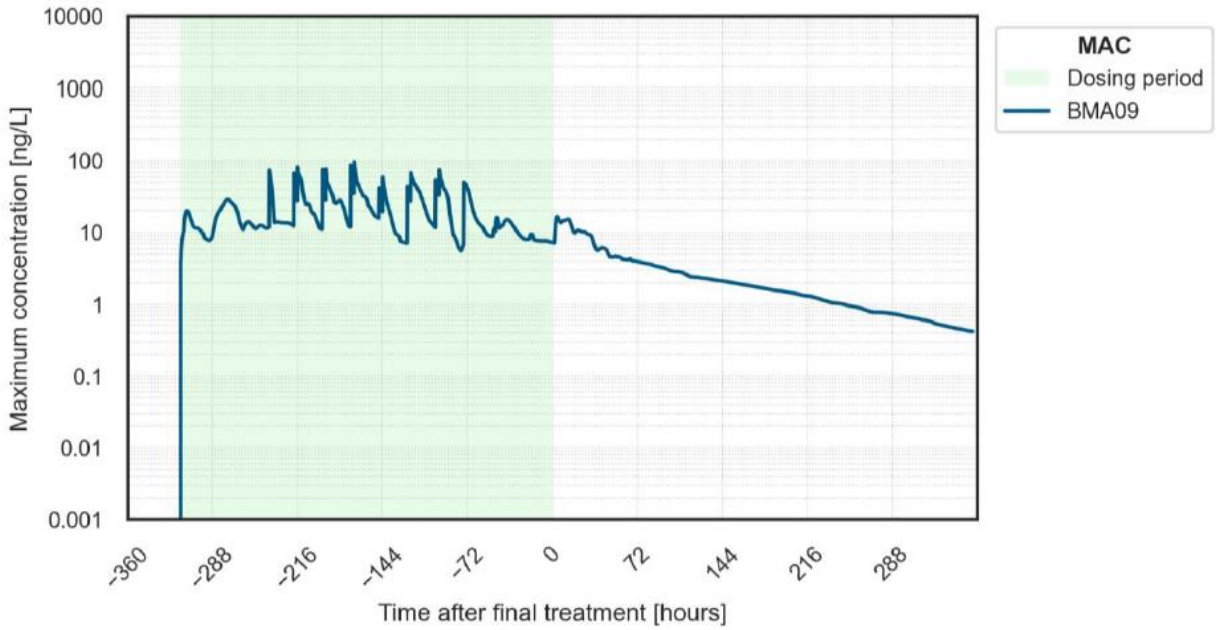


Figure 10.19. Maximum concentrations for Outer Bay d'Espoir BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced at Goblin Bay (assumed 16 June 2023) and final treatment was at Jervis Island (time=0; assumed 29 June 2023).

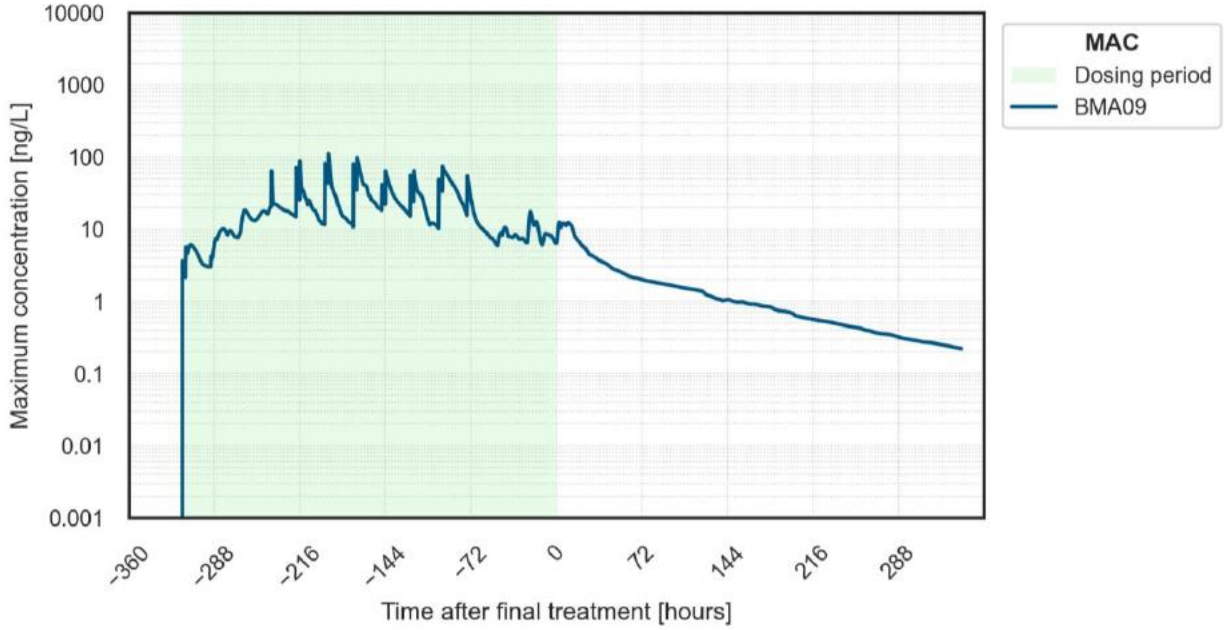


Figure 10.20. Maximum concentrations for Outer Bay d'Espoir BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced at Goblin Bay 4 May 2023. Final treatment (time=0) was last treatment at Jervis Island (17 May 2023).

11.0 Facheux Bay (BMA 10)

The BMA of Facheux Bay (BMA 10) is located in the Bays West Area and includes four licensed sea farms: Wallace Cove, Dennis Arm, Indian Tea Point, and Wild Cove (Table 11.1; Figure 11.1). Wallace Cove and Indian Tea Point sea farms were acquired from Grays Aqua Group in 2017 while Dennis Arm and Wild Cove were new license applications by MCE in 2018. The four sea farms are located in a fjord, Facheux Bay. The closest community to these sea farms is McCallum, which is accessible by ferry. The Wallace Cove sea farm is the only sea farm to have been in production since MCEs acquisition.

Table 11.1. Facheux Bay (BMA 10) sea farm locations and construction status in 2024.

BMA Name	BMA No.	Sea Farm Name	AQ Licence No.	Site Coordinates		Construction Status
				Latitude (N)	Longitude (W)	
Facheux Bay	10	Wallace Cove	1123	47.71561	-56.31889	Existing
		Dennis Arm	1131	47.68061	-56.31644	TBD
		Indian Tea Point	1126	47.73222	-56.32339	TBD
		Wild Cove	1127	47.64131	-56.31781	Scheduled 2025

The sea farms in Fortune Bay West were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 25. The maximum number of fish per site is 1,000,0000 with a maximum stocking density of 15 kg/m^3.

The water depths below the leases range from 1–380 m (Table 11.2). The shallowest sea farm is Dennis Arm where minimum sea cage array depth is 57 m. The sea farms have bottom sediments consisting of mixed substrates. All sea farms were considered hard bottom.

Currents were reported at near surface, upper, mid-water, and near bottom depths. At 15 m water depth, the maximum water current speed at each site was between ~five to ~nine times the mean speed (Table 11.2). There is much vertical variation in the maximum current speed and this variation is larger than the mean current speeds.

Benthic habitat surveys revealed that the predominate flora and fauna at sea farms are anemones, sea star spp., and encrusting sponges (Tables 11.3–11.6). Soft corals were observed at the Dennis Arm sea farm.

Seasonal water temperatures were only available for the Wallace Cove sea farm (Table 11.2). Mean water temperatures ranged from 1.56°C in winter to 16.93°C in the summer (0.5 m water depth). Minimum water temperature at the Wallace Cove sea farm was during winter at 0.5 m water depth (-0.8°C) and maximum water temperature was 22.6°C at 1 m water depth (Table 11.8). Dissolved oxygen levels were consistently lower in the summer and fall than winter and spring.

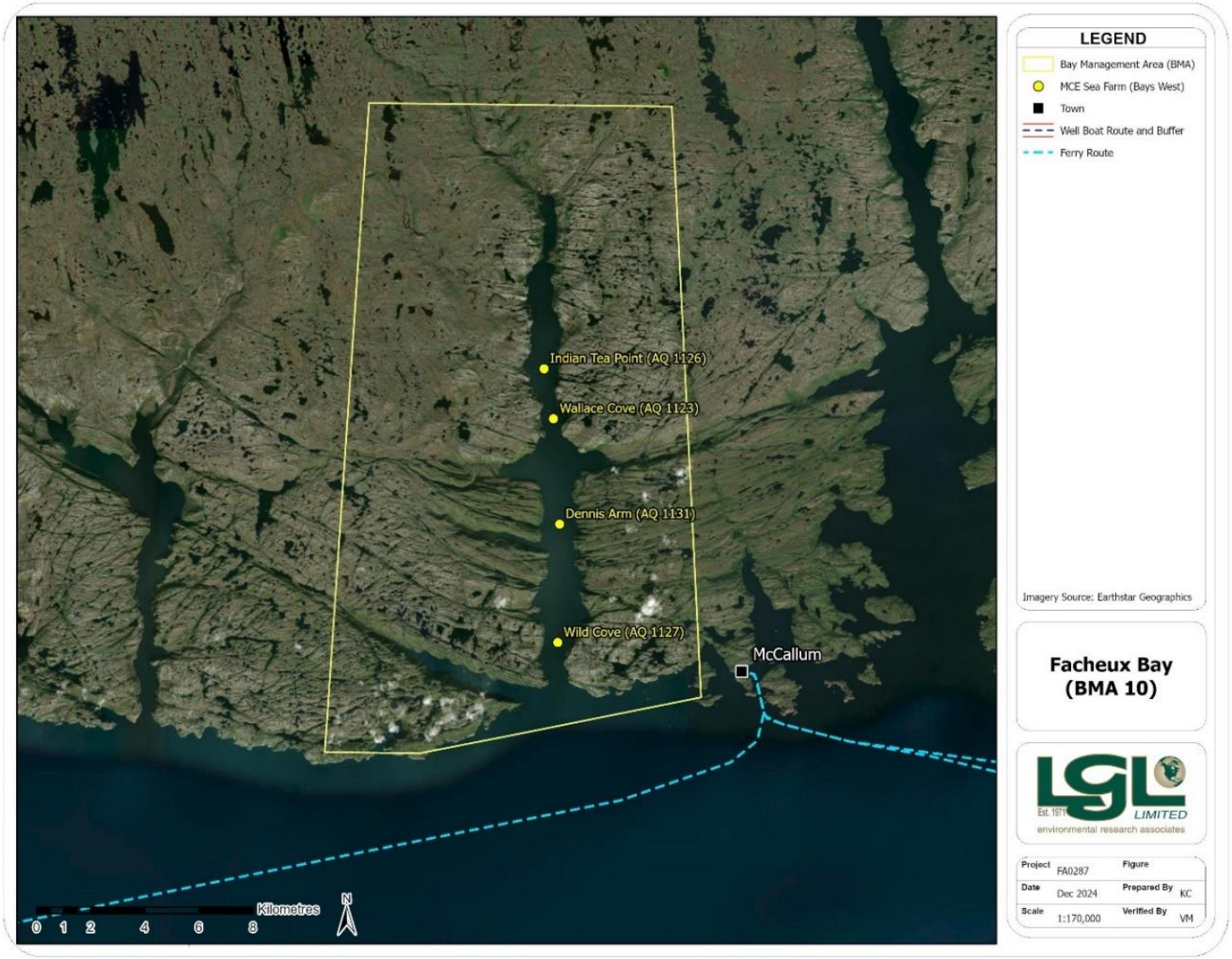


Figure 11.1. Locations of sea farms in the Facheux Bay BMA.

Table 11.2. Summary of historic site-specific sea farm characteristics in Facheux Bay (BMA 10).

Characteristic	Sea Farm			
	Wallace Cove	Dennis Arm	Indian Tea Point	Wild Cove
Lease area (ha)	85	282	161	292
Water depth under lease (m)	1–370	1–380	1–302	1–300
Minimum water depth under sea cages (m)	151	57	140	110
Predominant Bottom Type	Hard	Hard	Hard	Hard
Water Temperature (Mean °C at 15 m)				
Winter [a]	2.19	n/a	n/a	n/a
Spring [a]	3.15	n/a	n/a	n/a
Summer [a]	9.57	n/a	n/a	n/a
Fall [a]	7.56	n/a	n/a	n/a
Dissolved Oxygen (Mean mg/L at 15 m)				
Winter [a]	10.73	n/a	n/a	n/a
Spring [a]	11.21	n/a	n/a	n/a
Summer [a]	9.57	n/a	n/a	n/a
Fall [a]	9.32	n/a	n/a	n/a
Currents (cm/s at 15 m)				
Mean	7.56	6.64	4.46	7.98
Maximum	40.08	39.80	42.12	44.50

Notes:

[a] Winter includes January, February and March; Spring includes April, May June; Summer includes July, August, September; and Fall includes October, November and December.

Water depth values may vary by approximately ± 2 m depending on tidal influence.

During 2009–2018, average monthly wind speeds ranged from 5.45 m/s in July to 10.90 m/s in January (see Table 11.16). The maximum wind speed during this period was 20.91 m/s in January. Wind direction in the Facheux Bay BMA was predominately westerly (see Figure 11.20). Mean wave height from 2009–2018 ranged from 0.67 m in June to 1.28 m in January (see Table 11.17). The maximum wave height was 3.82 m in February.

11.1 Sea Farm Site Maps

The MCE sea farms in the Facheux Bay BMA were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 m. The sea farms in the Facheux Bay BMA are currently third -party certified or will be prior to future stocking [as per FFA policy (FFA 2019)].

11.1.1 Wallace Cove

As designed after acquisition by MCE, the Wallace Cove sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth design of 25 m (Figure 11.2).

11.1.2 Dennis Arm

As originally designed, the Dennis Arm sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth design of 25 m (Figure 11.3).

11.1.3 Indian Tea Point

As designed after acquisition by MCE, the Indian Tea Point sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth design of 25 m (Figure 11.4).

11.1.4 Wild Cove

As originally designed, the Wild Cove sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth design of 25 m (Figure 11.5).

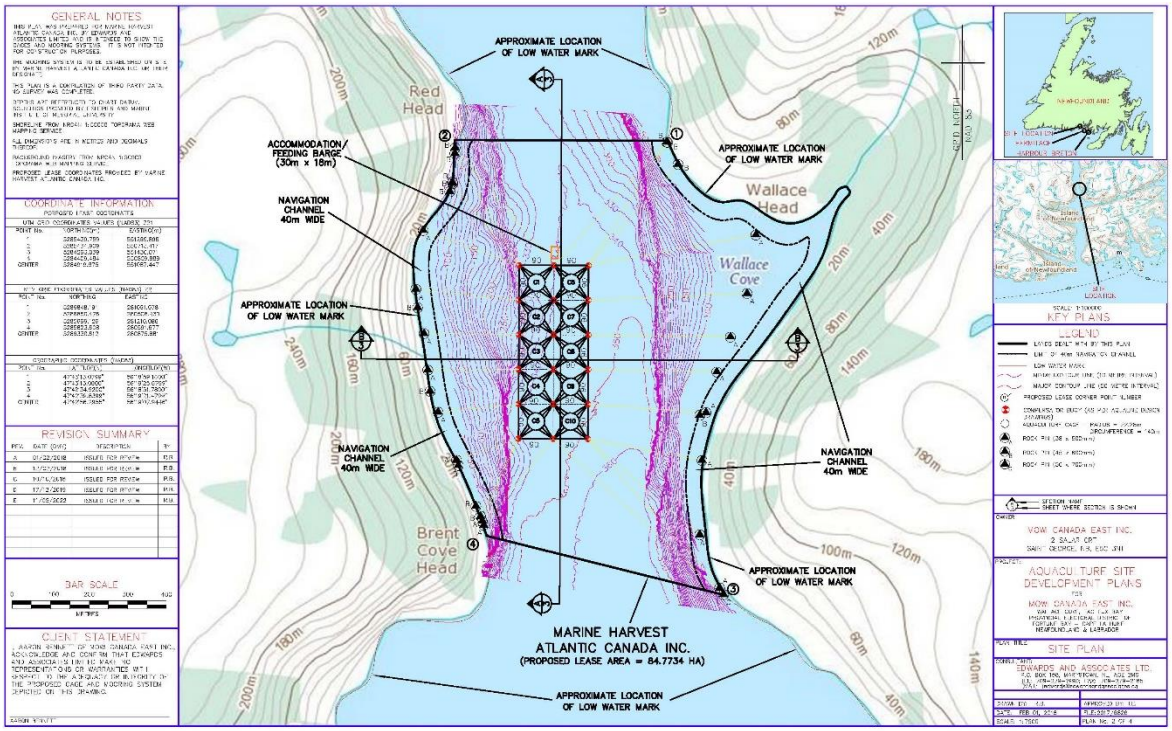


Figure 11.2. Wallace Cove sea farm map and sea cage layout.

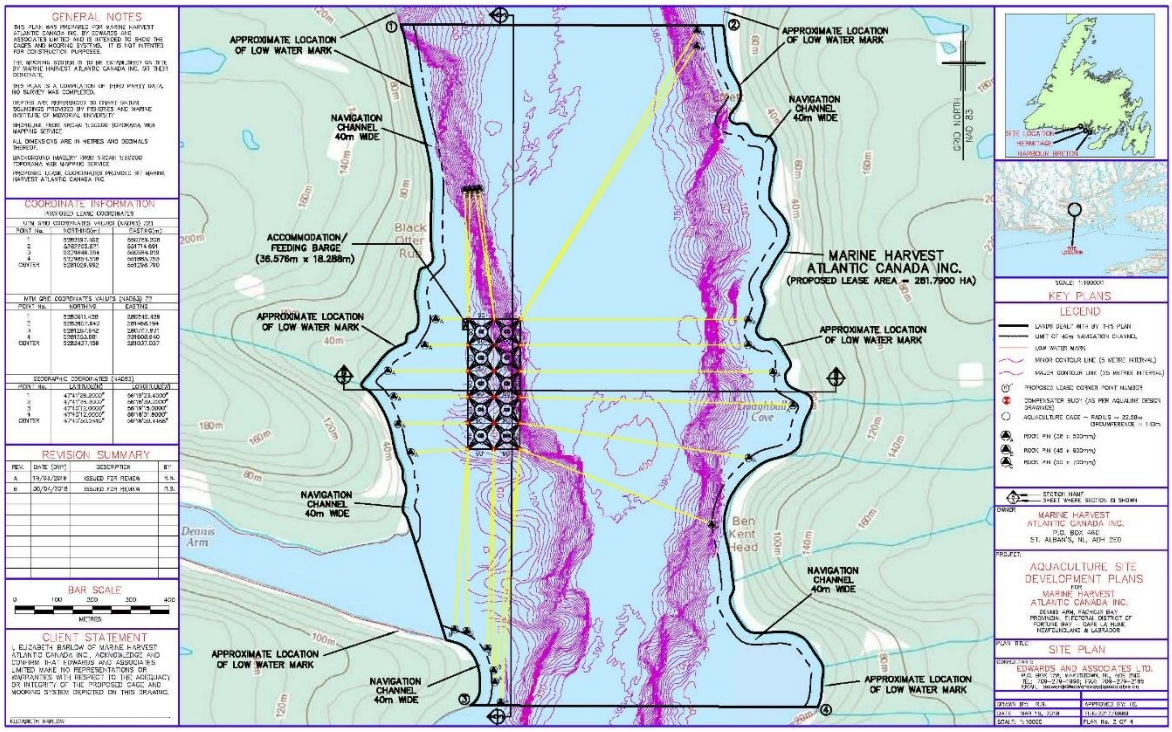


Figure 11.3. Dennis Arm sea farm map and sea cage layout.

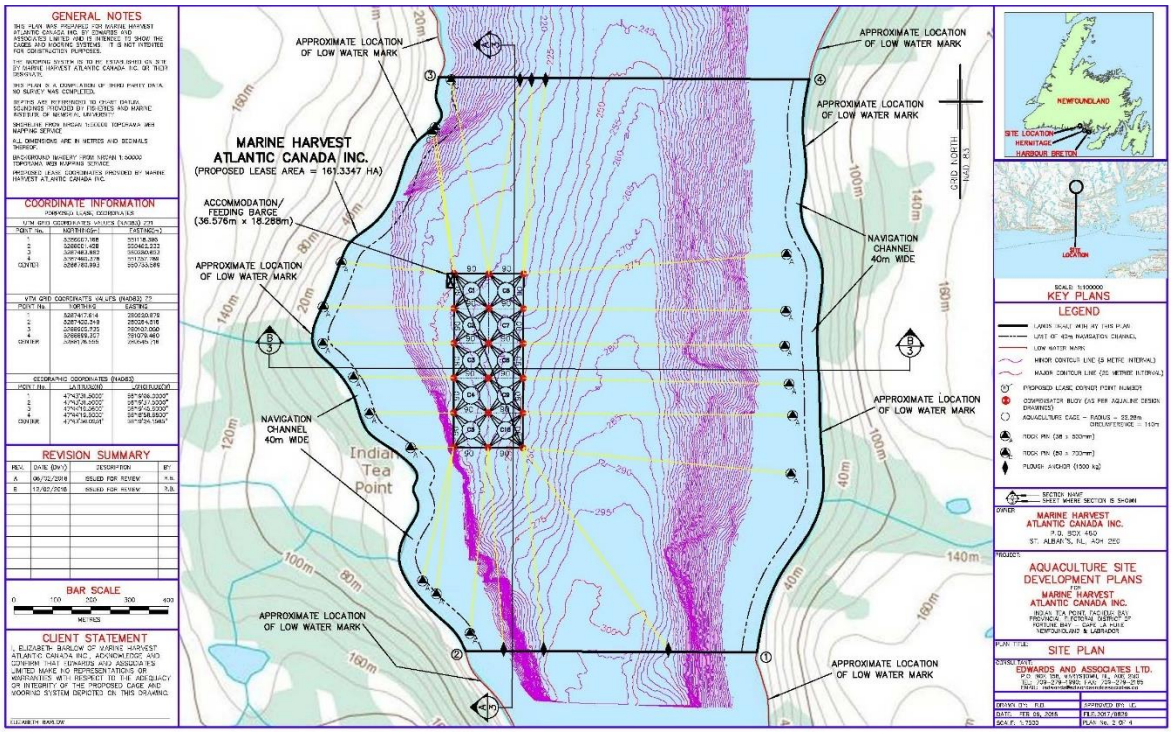


Figure 11.4. Indian Tea Point sea farm map and sea cage layout.

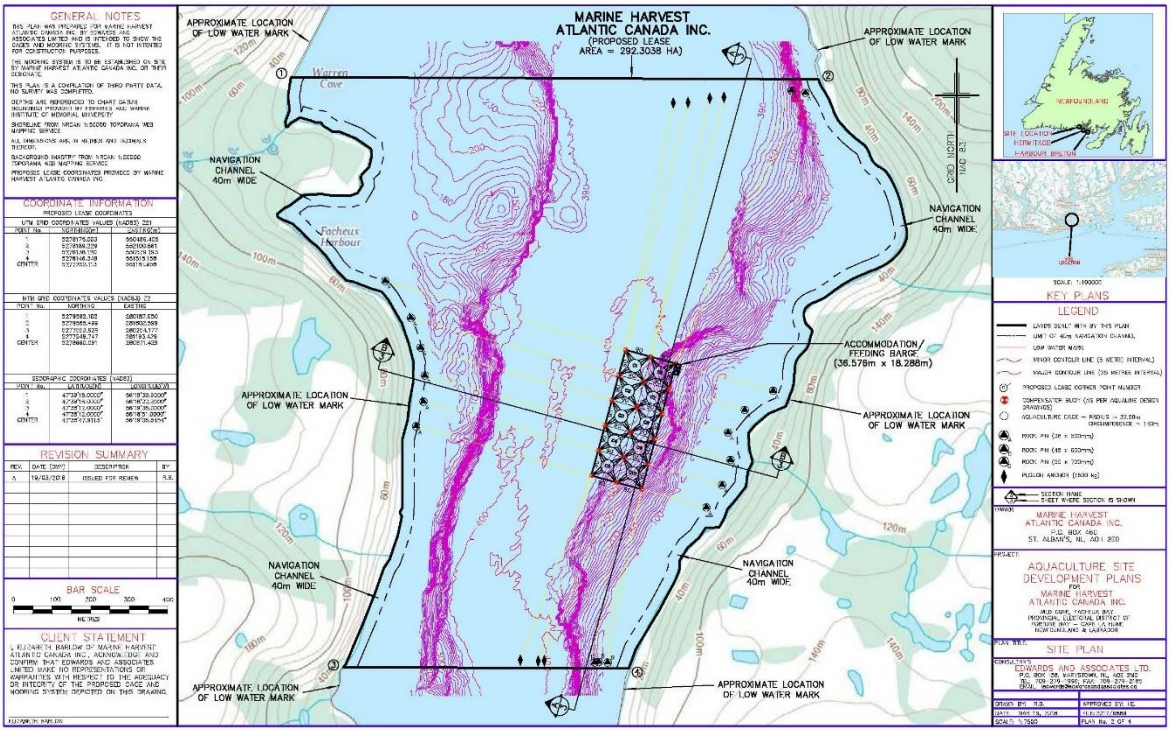


Figure 11.5. Wild Cove sea farm map and sea cage layout.

11.2 Benthic Surveys

Benthic surveys at sea farms in the Facheux Bay BMA were conduced between July–November 2017, and April 2018. Stations categorized as hard bottom appeared hard visually or did not produce acceptable grab samples.

11.2.1 Wallace Cove

Based on surveys at 102 sampling stations across 13 transects, the composition of the seafloor in the Wallace Cove sea farm is primarily bedrock (Figure 11.6; Table 11.3). The majority of stations (94 of 102) were considered hard bottom. The predominant species observed included anemones and sea stars. Some encrusting and stand-alone sponges were noted, however, not in quantities to be considered a complex.

11.2.2 Dennis Arm

Based on surveys at 85 sampling stations, the composition of the seafloor at the Dennis Arm sea farm is primarily bedrock, boulders and gravel (Table 11.4; Figure 11.7). The majority of stations (53 of 85) were considered hard bottom. The predominant species observed included anemones, encrusting sponge and pink rock crust. Soft corals were observed at four stations.

11.2.3 Indian Tea Point

Based on surveys at 214 sampling stations across 16 transects, the composition of the seafloor in the Indian Tea Point sea farm is primarily rockwall/bedrock, boulder and cobble (Figure 11.8; Table 11.5). The majority of stations (130 of 214) were considered hard bottom. The predominant species observed included anemones, sea star spp. and tube worms. Beggiatoa-like bacteria and opportunistic polychaete complexes (OPC) were observed on five transects (transects 7, 8, 9, 10 and 11), likely a result of deposition from the previously stocked farm at this location. Kelp beds were observed on the east and west ends of most transects near the shore. Some encrusting and stand-alone sponges were noted, however, not in quantities to be considered a complex.

11.2.4 Wild Cove

Based on surveys at 214 stations, the composition of the seafloor in the Wild Cove sea farm is primarily rockwall/bedrock, boulder and cobble along the perimeter of the lease, with predominantly finer substrates (such as mud and silt) in the deeper, flatter sections. The majority of stations (130 of 214) were considered hard bottom (Figure 11.9; Table 11.6). The predominant species observed included anemones, encrusting sponge and calcerous tube worms. Benthic indicators (*Beggiatoa*-like bacteria and opportunistic polychaete complexes [OPC]) were observed on five transects and are likely a natural occurrence as this site was not stocked previously.

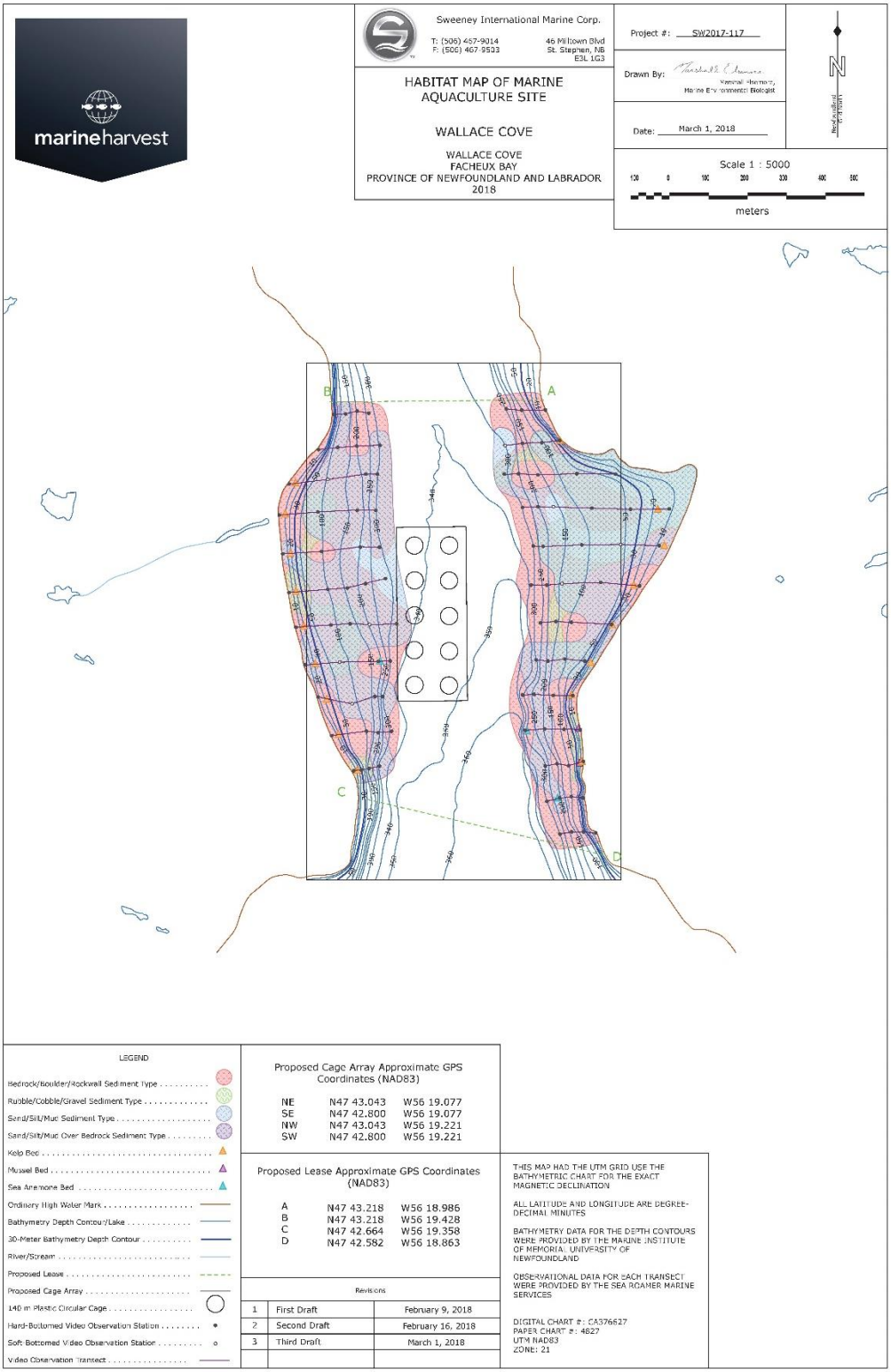


Figure 11.6. Habitat observations at sampling stations in the Wallace Cove sea farm (July–September 2017).

Table 11.3. Summary of bottom type and observed flora and fauna at the Wallace Cove sea farm (July–September 2017).

Wallace Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1W	90	47 43.202	56 19.348	280	Hard	100%										Anemone (>20), Krill (>20)
	60	47 43.205	56 19.372	210	Hard	25%	75%									Cunner (1), Anemone (>20)
	30	47 43.201	56 19.396	124	Hard	60%		20%				20%				Anemone (>20), Unidentifiable worm (1)
	0	47 43.201	56 19.420	0	Hard	100%										Green Sea Urchin (>20), Cunner (4), Anemone (2)
1E	100	47 43.206	56 19.064	244	Hard		100%									Anemone (>20), Acadian Redfish (4), Northern Seastar (1), Encrusting Sponge (<5%)
	60	47 43.204	56 19.032	104	Hard		100%									Anemone (11), Feather Star (4), *Serpula* (>20)
	0	47 43.204	56 18.984	0	Hard	100%										Northern Seastar (2), Cunner (>20), Green Sea Urchin (>20)
2W	160	47 43.157	56 19.325	302	Hard		90%						10%			Anemone (>20), Krill (>20)
	100	47 43.156	56 19.373	210	Hard		100%									Northern Seastar (1), Anemone (>20), Encrusting Sponge (20%), Sea Spider (1)
	50	47 43.154	56 19.412	124	Hard		20%	70%				10%				Acadian Redfish (1)
	0	47 43.152	56 19.452	0	Hard	100%										Anemone (>20), Cunner (>20), Green Sea Urchin (>20)
2E	150	47 43.155	56 19.067	300	Soft								100%			Worm Tubes (>20), Anemone (15), Krill (2)
	100	47 43.158	56 19.031	200	Hard		100%									Acadian Redfish (9), Anemone (>20)
	50	47 43.159	56 18.991	114	Hard		80%			5%			15%			Feather Star (8), Anemone (>20), Encrusting Sponge (5%)
	0	47 43.161	56 18.954	1	Hard	15%	5%	80%								Green Sea Urchin (2), Acadian Redfish (7)
3W	230	47 43.117	56 19.331	302	Hard	10%	80%						10%			Anemone (7), Brittle Star (>20), Krill (14)
	200	47 43.117	56 19.355	210	Hard		90%						10%			Anemone (20), Scale Worm (1), Brittle Star (4), Krill (2)
	100	47 43.110	56 19.434	104	Soft								100%			Anemone (3)
	0	47 43.104	56 19.514	1	Hard			100%								Cunner (>20)
3E	290	47 43.115	56 19.069	309	Hard		75%			10%	5%		10%			Anemone (>20)
	250	47 43.116	56 19.039	250	Hard		100%									Anemone (>20), Acadian Redfish (1)
	200	47 43.114	56 18.999	156	Hard		100%									Anemone (>20), Feather Star (1)
	100	47 43.115	56 18.919	52	Hard		65%			15%	10%	10%				Anemone (>20)
	0	47 43.113	56 18.831	24	Hard				10%	15%	25%	50%				Northern Seastar (1)
4W	250	47 43.067	56 19.334	306	Hard	30%	35%						35%			Anemone (>20), Brittle Star (8), Northern Seastar (1), Krill (2)
	200	47 43.067	56 19.374	166	Hard		65%	20%					15%			Cunner (1), *Serpula* (1), Northern Seastar (1), Brittle Star (1)
	100	47 43.065	56 19.454	92	Hard		65%			15%			20%			*Serpula* (12), Toad Crab (2), Brittle Star (1)
	0	47 43.061	56 19.534	0	Hard		100%									Cunner (>20)
4E	380	47 43.069	56 19.032	304	Hard		100%									Anemone (>20), Brittle Star (5)
	340	47 43.070	56 19.000	200	Hard		75%						25%			Acadian Redfish (3), Anemone (>20), Brittle Star (9), Northern Seastar (2),

Wallace Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Serpula (1), Encrusting Sponge (<5%)
	300	47 43.069	56 18.968	154	Soft								100%			Anemone (>20), Northern Seastar (1), Serpula (1)
	200	47 43.067	56 18.889	80	Hard	10%	50%			20%			20%			Feather Star (5), Anemone (>20), Serpula (>20), Brittle Star (3), Encrusting Sponge (20%)
	100	47 43.065	56 18.809	38	Hard			10%		40%	15%	35%				Green Sea Urchin (1), Encrusting Sponge (5%), Scallop (2)
	0	47 43.065	56 18.729	12	Hard						25%	75%				Northern Seastar (1), Green Sea Urchin (1)
5W	250	47 43.015	56 19.328	308	Hard		10%						90%			Brittle Star (>20), Anemone (>20), Northern Seastar (1)
	200	47 43.016	56 19.368	204	Hard							100%				Worm Tubes (>20)
	100	47 43.010	56 19.448	92	Hard			80%	20%							Feather Star (10), Acadian Redfish (1), *Serpula* (1)
	0	47 43.007	56 19.528	6	Hard		90%					10%				Cunner (>20)
5E	325	47 43.015	56 19.010	300	Hard		100%									Anemone (>20), Northern Seastar (1), Krill (1)
	300	47 43.014	56 18.990	214	Hard		50%			15%	5%		30%			Brittle Star (4), Krill (9)
	200	47 43.016	56 18.910	118	Hard					70%	20%		10%			Brittle Star (14), Anemone (6)
	100	47 43.016	56 18.830	56	Soft					20%	25%		55%			Anemone (15), Brittle Star (2)
	0	47 43.014	56 18.750	8	Hard			85%				15%				Cunner (>20)
6W	250	47 42.971	56 19.316	290	Hard								100%			Anemone (>20), Brittle Star (8), Krill (6)
	200	47 42.965	56 19.357	242	Hard		75%						25%			Krill (10), Anemone (8), Unidentifiable Tunicate (2)
	150	47 42.959	56 19.395	172	Hard		95%						5%			Acadian Redfish (1), Cod (1), Anemone (>20)
	100	47 42.957	56 19.436	100	Hard		75%						25%			Feather Star (>20), Anemone (1), Serpula (1), Northern Seastar (1)
	0	47 42.953	56 19.516	1	Hard			10%	70%	20%						Cunner (>20)
6E	280	47 42.961	56 19.016	310	Hard		100%									Spiny Sun Star (1), Krill (6), Anemone (>20)
	240	47 42.960	56 18.984	218	Hard		100%									Northern Seastar (3), Serpula (1), Anemone (15), Acadian Redfish (1), Brittle Star (2)
	200	47 42.962	56 18.952	140	Soft		20%			5%	20%		55%			Acadian Redfish (2), Anemone (11)
	100	47 42.963	56 18.872	72	Hard			80%					20%			Feather Star (12), Serpula (>20), Brittle Star (3), Anemone (1)
	0	47 42.958	56 18.792	1	Hard			100%								Cunner (>20)
7W	270	47 42.908	56 19.294	324	Hard	30%	60%						10%			Anemone (>20), Encrusting Sponge (<5%), Krill (>20)
	200	47 42.907	56 19.350	210	Soft		10%					90%				Anemone (>20), Brittle Star (3)
	150	47 42.909	56 19.390	146	Hard		25%	10%	10%	10%			45%			Acadian Redfish (2), Serpula (1), Anemone (>20), Encrusting Sponge (<5%)
	100	47 42.907	56 19.430	86	Hard		75%						25%			Feather Star (6), Serpula (>20), Green Sea Urchin (5), Brittle Star (6), Anemone (13)
	10	47 42.905	56 19.502	2	Hard		100%									Cunner (>20)
7E	180	47 42.908	56 18.997	282	Hard		100%									Worm Tubes (>20), Brittle Star (3), Anemone (>20), Flounder (1),

Wallace Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Encrusting Sponge (<5%)
	140	47 42.909	56 18.965	178	Hard		80%				20%					*Serpula* (4), Anemone (>20), Northern Seastar (3), Acadian Redfish (1), Encrusting Sponge (5%)
	100	47 42.908	56 18.933	92	Hard		100%									*Serpula* (>20), Feather Star (10), Brittle Star (1), Anemone (10), Encrusting Sponge (15%)
	0	47 42.905	56 18.850	2	Hard		80%					20%				Cunner (>20)
8W	230	47 42.856	56 19.308	304	Hard	35%	65%									Anemone (>20), Brittle Star (1), Krill (3), Encrusting Sponge (<5%)
	200	47 42.856	56 19.332	186	Hard		100%									Anemone (>20), Serpula (14), Acadian Redfish (1), Encrusting Sponge (10%)
	100	47 42.855	56 19.412	74	Soft					10%	10%	80%				Feather Star (5), Anemone (1), Serpula (3), Brittle Star (5), Encrusting Sponge (<5%)
	0	47 42.852	56 19.484	0	Hard		30%	60%				10%				Cunner (>20)
8E	125	47 42.856	56 19.007	312	Hard		90%						10%			Anemone (>20), Krill (>20), Encrusting Sponge (<5%)
	100	47 42.856	56 18.987	196	Hard		70%						30%			Anemone (>20), Serpula (3)
	50	47 42.857	56 18.947	104	Hard		70%				10%		20%			Anemone (9), Feather Star (>20), Serpula (>20), Brittle Star (4), Sponge (1), Encrusting Sponge (5%)
	0	47 42.854	56 18.907	36	Hard		30%	40%	20%			10%				Green Sea Urchin (3)
9W	180	47 42.807	56 19.324	312	Hard		30%						70%			Anemone (>20)
	160	47 42.807	56 19.340	164	Hard		90%						10%			Feather Star (1), Acadian Redfish (2), Anemone (>20)
	100	47 42.797	56 19.387	86	Soft		20%					80%				Feather Star (6), Brittle Star (6), Serpula (5), Anemone (14), Encrusting Sponge (<5%)
	10	47 42.807	56 19.458	0	Hard			100%								Cunner (>20)
9E	130	47 42.807	56 19.035	306	Hard		100%									Anemone (>20), Serpula (3), Krill (5), Brittle Star (1)
	100	47 42.808	56 19.011	232	Hard		55%						45%			Green Sea Urchin (1), Scale Worm (1), Anemone (10), Krill (2)
	50	47 42.806	56 18.971	130	Hard		100%									*Serpula* (>20), Brittle Star (1), Encrusting Sponge (30%), Anemone (>20), Acadian Redfish (1), Sponge (>20)
	0	47 42.806	56 18.931	0	Hard		100%									Cunner (>20)
10W	160	47 42.758	56 19.306	306	Hard		100%									Anemone (>20), Encrusting Sponge (5%)
	130	47 42.757	56 19.334	178	Hard		95%						5%			Anemone (>20), Brittle Star (1), Acadian Redfish (4), Serpula (5), Encrusting Sponge (5%)
	100	47 42.759	56 19.358	98	Hard		100%									Anemone (7), Serpula (>20), Encrusting Sponge (>5%), Feather Star (4), Green Sea Urchin (1)

Wallace Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	10	47 42.753	56 19.430	2	Hard		100%									Cunner (>20)
10E	150	47 42.758	56 19.030	308	Hard		100%									Anemone (>20), Krill (7), Encrusting Sponge (<5%)
	100	47 42.760	56 18.990	198	Hard		55%					45%				Northern Seastar (1), Krill (1), Brittle Star (5), Anemone (>20), Encrusting Sponge (<5%)
	50	47 42.759	56 18.950	66	Hard		100%									Feather Star (10), Northern Seastar (4), Serpula (>20), Anemone (>20), Encrusting Sponge (10%)
	0	47 42.759	56 18.913	0	Hard			95%			5%					Cunner (>20), Green Sea Urchin (>20), detritus
11W	75	47 42.710	56 19.332	310	Hard		95%						5%			Anemone (12), Krill (3), Encrusting Sponge (<5%)
	50	47 42.707	56 19.353	188	Hard		100%									Anemone (>20), Serpula (8), Encrusting Sponge (10%), Acadian Redfish (1)
	30	47 42.705	56 19.369	44	Hard	40%	45%	5%	5%	5%						Acadian Redfish (1), Anemone (>20), Green Sea Urchin (2)
	10	47 42.704	56 19.385	0	Hard	100%										Cunner (>20)
11E	105	47 42.708	56 18.989	300	Hard		85%						15%			Krill (6), Anemone (>20), Worm Tubes (>20)
	70	47 42.711	56 18.965	210	Hard		100%									Encrusting Sponge (<5%), Acadian Redfish (2), Serpula (1), Anemone (>20), Northern Seastar (1)
	40	47 42.708	56 18.941	108	Hard		100%									*Serpula* (>20), Feather Star (>20), Anemone (7), Northern Seastar (1), Encrusting Sponge (15%)
	0	47 42.714	56 18.911	1	Hard		50%	40%		10%						Cunner (>20)
12	95	47 42.659	56 18.988	304	Hard		100%									Brittle Star (2), Anemone (>20), Krill (6), Encrusting Sponge (<5%)
	60	47 42.663	56 18.960	212	Hard	65%	30%						5%			Anemone (>20), Brittle Star (1), Acadian Redfish (1), Unidentified tunicate (>20)
	30	47 42.665	56 18.936	108	Hard		100%									*Serpula* (>20), Anemone (13), Encrusting Sponge (25%), Green Sea Urchin (2)
	0	47 42.663	56 18.912	2	Hard		65%			35%						Cunner (>20), Anemone (1), Green Sea Urchin (>20)
13	90	47 42.613	56 18.960	300	Hard		100%									Worm Tubes (4), Anemone (>20), Krill (4), Encrusting Sponge (<5%)
	60	47 42.616	56 18.936	192	Hard	70%	30%									Anemone (>20), Serpula (11), Encrusting Sponge (15%), Acadian Redfish (1)
	30	47 42.616	56 18.912	76	Hard	30%	60%					10%				*Serpula* (>20), Encrusting Sponge (<5%), Feather Star (1), Anemone (>20)
	0	47 42.614	56 18.887	1	Hard		100%									Green Sea Urchin (>20), Cunner (>20), Northern Seastar (1)

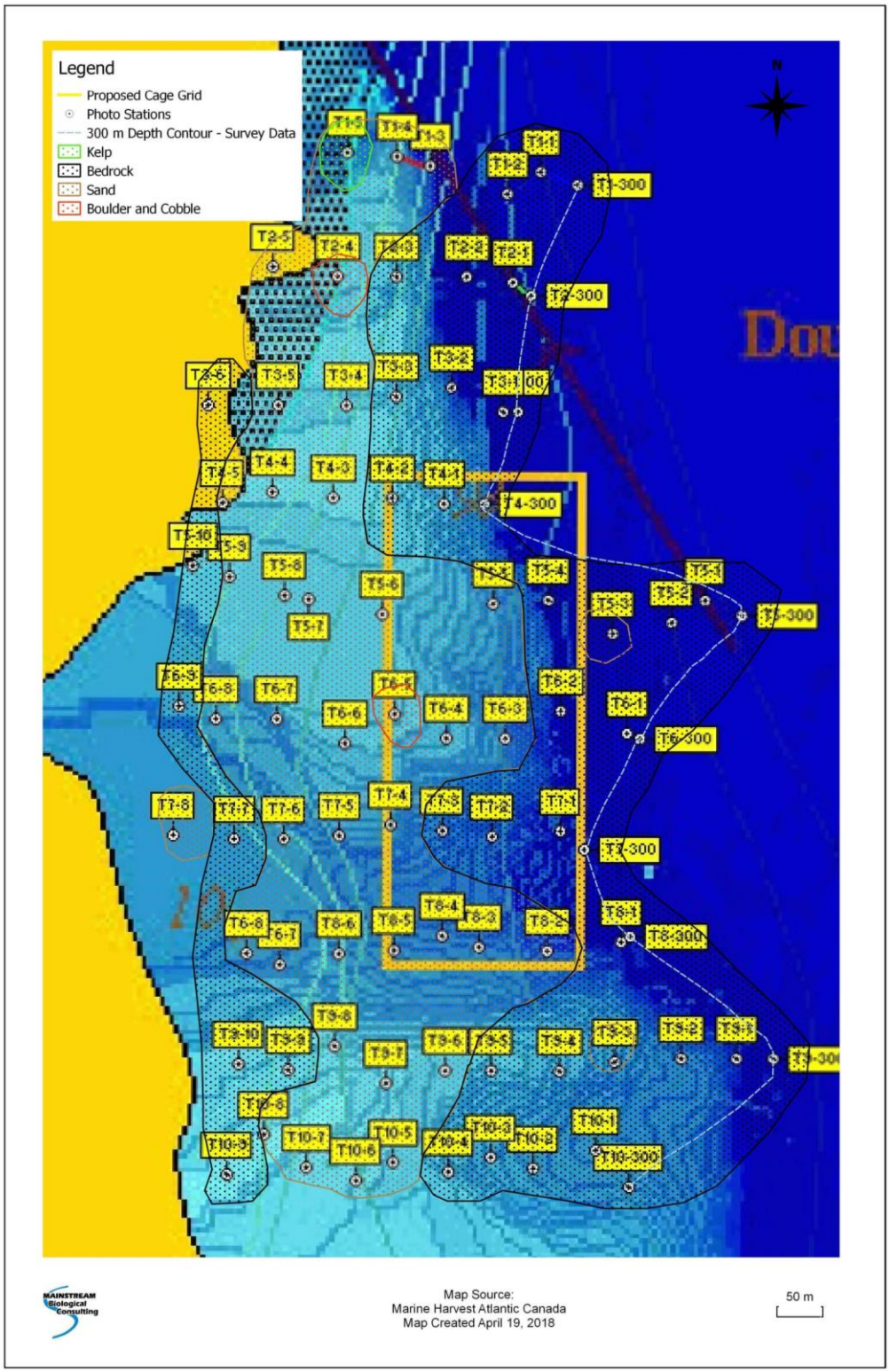


Figure 11.7. Habitat observations at sampling stations in the Dennis Arm sea farm (April 2018).

Table 11.4. Summary of bottom type and observed flora and fauna at the Dennis Arm sea farm (April 2018).

Dennis Arm																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1	47 41.058	56 19.199	-295.2	Hard		100%									Stomphia Anemone (1), Encrusting Sponge (1%)
	1	47 41.067	56 19.226	-235.3	Hard		100%									Stomphia Anemone (1)
	1	47 41.055	56 19.248	-141.2	Hard		100%									Calcareous Tube Worms (10%), Encrusting Sponge (3%)
	1	47 41.069	56 19.305	-29.6	Soft							100%				Scallop (1)
	1	47 41.074	56 19.328	-21.4	Soft					5%		95%				Kelp (2%)
	1	47 41.076	56 19.362	-6.1	Hard			50%				50%				Pink Rock Crust (5%), Kelp (70%)
	2	47 41.005	56 19.233	-296.7	Hard	100%										Encrusting Sponge (3%)
	2	47 41.013	56 19.246	-224.6	Hard		100%									Encrusting Sponge (5%)
	2	47 41.014	56 19.248	-90.8	Hard		100%									Stomphia Anemone (17), Scallop (1)
	2	47 41.016	56 19.328	-52.0	Hard		50%	15%				35%				Pink Rock Crust (20%)
	2	47 41.015	56 19.368	-42.5	Hard					75%		25%				Pink Rock Crust (15%)
	2	47 41.020	56 19.416	-29.5	Hard			25%		25%	10%	40%				Pink Rock Crust (22%), Scallop (4)
	3	47 40.948	56 19.243	-296.6	Hard	100%										Stomphia Anemone (2), Encrusting Sponge (2%)
	3	47 40.950	56 19.251	-269.5	Hard	100%										Unidentified Anemone (3), Calcareous Tube Worms (20%), Encrusting Sponge (5%)
	3	47 40.960	56 19.289	-133.9	Hard		100%									Unidentified Anemone (3), Unidentified Starfish (1), Calcareous Tube Worms (30%), Encrusting Sponge (20%)
	3	47 40.956	56 19.329	-88.9	Hard		100%									Stomphia Anemone (7), Brittle Star (1)
	3	47 40.953	56 19.368	-69.3	Soft			25%				75%				Stomphia Anemone (8)
	3	47 40.952	56 19.413	-61.9	Hard			20%		35%		45%				Unidentified Anemone (1), Pink Rock Crust (5%), Scallop (1), Encrusting Sponge (2%)
	3	47 40.954	56 19.460	-41.8	Hard		100%									Pink Rock Crust (15%)
	4	47 40.904	56 19.266	-297.0	Hard		100%									Encrusting Sponge (3%)
	4	47 40.904	56 19.293	-226.0	Hard		100%									Brittle Star (1)
	4	47 40.906	56 19.331	-111.5	Hard		80%	20%								Feather Star (1), Encrusting Sponge (8%)
	4	47 40.908	56 19.372	-96.9	Soft			10%		10%		80%				Encrusting Sponge (25), Brittle Star (1)
	4	47 40.909	56 19.414	-79.8	Soft					10%	5%	75%				Stomphia Anemone (1), Brittle Star (2)
	4	47 40.906	56 19.450	-67.2	Soft					10%	5%	75%				Stomphia Anemone (3), Encrusting Sponge (1%)
	5	47 40.849	56 19.080	-297.6	Hard		100%									
	5	47 40.856	56 19.110	-212.8	Hard		100%									Calcareous Tube Worms (10%), Encrusting Sponge (15%)
	5	47 40.844	56 19.132	-140.4	hard		50%			25%	25%					Stomphia Anemone (8), Encrusting Sponge (1%)
	5	47 40.840	56 19.173	-118.1	Soft					25%	5%	70%				Stomphia Anemone (10)
	5	47 40.855	56 19.219	-99.1	Hard		100%									Calcareous Tube Worms (1%), Encrusting Sponge (15%)
	5	47 40.854	56 19.259	-72.6	Soft			15%				85%				Stomphia Anemone (5), Feather Star (1)
	5	47 40.850	56 19.337	-79.9	Soft					5%	5%	90%				Stomphia Anemone (1)

Dennis Arm																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	5	47 40.856	56 19.389	-98.5	Soft					5%	5%	90%				Stomphia Anemone (2), Encrusting Sponge (2%)
	5	47 40.861	56 19.407	-110.7	Soft						50%	50%				Unidentified Anemone (1)
	5	47 40.869	56 19.446	-97.2	Hard					50%	20%	30%				Unidentified Anemone (2)
	5	47 40.873	56 19.471	-91.0	Hard				100%							
	6	47 40.787	56 19.153	-296.9	Hard		100%									Unidentified Anemone (5)
	6	47 40.789	56 19.164	-188.8	Hard		100%									Stomphia Anemone (1), Calcareous Tube Worm (1%), Encrusting Sponge (1%)
	6	47 40.802	56 19.209	-125.0	Hard		100%									Stomphia Anemone (5), Encrusting Sponge (1%)
	6	47 40.788	56 19.249	-149.1	Soft					15%						Stomphia Anemone (8)
	6	47 40.788	56 19.293	-146.6	Soft					20%	5%					Stomphia Anemone (7), Encrusting Sponge (1%)
	6	47 40.800	56 19.329	-136.1	Hard					60%	10%					Stomphia Anemone (3), Encrusting Sponge (1%)
	6	47 40.788	56 19.363	-145.8	Hard						50%					Stomphia Anemone (1)
	6	47 40.800	56 19.413	-126.4	Soft						20%					Stomphia Anemone (3), Soft Coral (1), Encrusting Sponge (1%)
	6	47 40.800	56 19.454	-100.7	Soft						20%					Stomphia Anemone (1)
	6	47 40.807	56 19.483	-65.7	Hard		100%									
	7	47 40.734	56 19.192	-298.0	Hard		100%									Stomphia Anemone (2), Encrusting Sponge (1%)
	7	47 40.743	56 19.210	-205.3	Hard		100%									Stomphia Anemone (1), Brittle Star (2)
	7	47 40.741	56 19.259	-187.2	Hard		50%			10%						Stomphia Anemone (9)
	7	47 40.743	56 19.293	-168.1	Hard		100%									Stomphia Anemone (1), Encrusting Sponge (1%)
	7	47 40.747	56 19.332	-157.4	Soft					15%						Stomphia Anemone (9), Unidentified Fish (1)
	7	47 40.741	56 19.365	-139.4	Soft					5%	10%					Stomphia Anemone (5)
	7	47 40.741	56 19.405	-124.9	Soft					5%	5%					Stomphia Anemone (5), Brittle Star (2), Soft Coral (1), Encrusting Sponge (1%)
	7	47 40.740	56 19.441	-84.6	Hard		100%									Calcareous Tube Worms (2%), Encrusting Sponge (1%)
	7	47 40.744	56 19.486	-55.4	Soft					10%						
	8	47 40.692	56 19.160	-297.9	Hard		100%									Calcareous Tube Worms (1%), Encrusting Sponge (1%)
	8	47 40.688	56 19.167	-216.0	Hard		100%									Encrusting Sponge (5%)
	8	47 40.684	56 19.218	-132.8	Soft					15%	15%					Stomphia Anemone (6), Encrusting Sponge (1%)
	8	47 40.688	56 19.269	-126.4	Soft					5%	5%					Stomphia Anemone (16), Soft Coral (1)
	8	47 40.691	56 19.293	-129.9	Soft						10%					Stomphia Anemone (4), Brittle Star (1)
	8	47 40.685	56 19.328	-123.9	Soft						10%					Encrusting Sponge (1)
	8	47 40.684	56 19.368	-110.5	Hard					40%	10%					Stomphia Anemone (1), Brittle Star (1), Encrusting Sponge (1%)
	8	47 40.680	56 19.409	-71.2	Hard						50%					
	8	47 40.685	56 19.431	-62.9	Soft					15%						Pink Rock Crust (15%)
	9	47 40.632	56 19.060	-297.6	Hard	100%										Encrusting Sponge (1%)
	9	47 40.630	56 19.086	-233.4	Hard		100%									Unidentified Anemone (10)

Dennis Arm																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	9	47 40.632	56 19.124	-179.8	Hard	100%										Unidentified Anemone (20), Stomphia Anemone (1)
	9	47 40.631	56 19.170	-141.9	Soft					15%	10%					Stomphia Anemone (5), Brittle Star (1), Soft Coral (1)
	9	47 40.625	56 19.210	-118.3	Hard		80%									Stomphia Anemone (2), Unidentified Fish (1), Feather Star (2), Calcareous Tube Worm (1%), Encrusting Sponge (30%)
	9	47 40.627	56 19.257	-82.7	Hard		100%									Stomphia Anemone (3), Feather Star (9), Calcareous Tube Worm (1%), Encrusting Sponge (20%)
	9	47 40.627	56 19.292	-78.8	Soft					25%	5%					Stomphia Anemone (4), Pink Rock Crust (1%), Encrusting Sponge (2%)
	9	47 40.620	56 19.333	-84.8	Soft					5%	5%					Stomphia Anemone (3)
	9	47 40.638	56 19.370	-73.6	Soft					15%	15%					
	9	47 40.627	56 19.402	-36.2	Hard		100%									Pink Rock Crust (30%)
	9	47 40.630	56 19.437	-27.6	Hard				100%							Pink Rock Crust (75%), Kelp (20%)
	10	47 40.568	56 19.159	-297.7	Hard		100%									Unidentified Anemone (2), Brittle Star (2)
	10	47 40.586	56 19.184	-276.8	Hard	100%										Unidentified Anemone (10), Encrusting Sponge (5%)
	10	47 40.579	56 19.228	-224.1	Hard		100%									
	10	47 40.584	56 19.259	-148.4	Soft					5%	5%					Stomphia Anemone (7)
	10	47 40.576	56 19.289	-126.6	Hard		80%									Stomphia Anemone (20)
	10	47 40.581	56 19.327	-65.1	Hard					50%	10%					Stomphia Anemone (1), Brittle Star (1), Unidentified Starfish (1), Pink Rock Crust (3%), Encrusting Sponge (1%)
	10	47 40.573	56 19.354	-58.7	Soft					25%	10%					Pink Rock Crust (1%)
	10	47 40.581	56 19.389	-53.1	Soft					5%						
	10	47 40.595	56 19.420	-46.6	Soft					5%						
	10	47 40.575	56 19.446	-40.3	Hard		90%									Pink Rock Crust (10%)

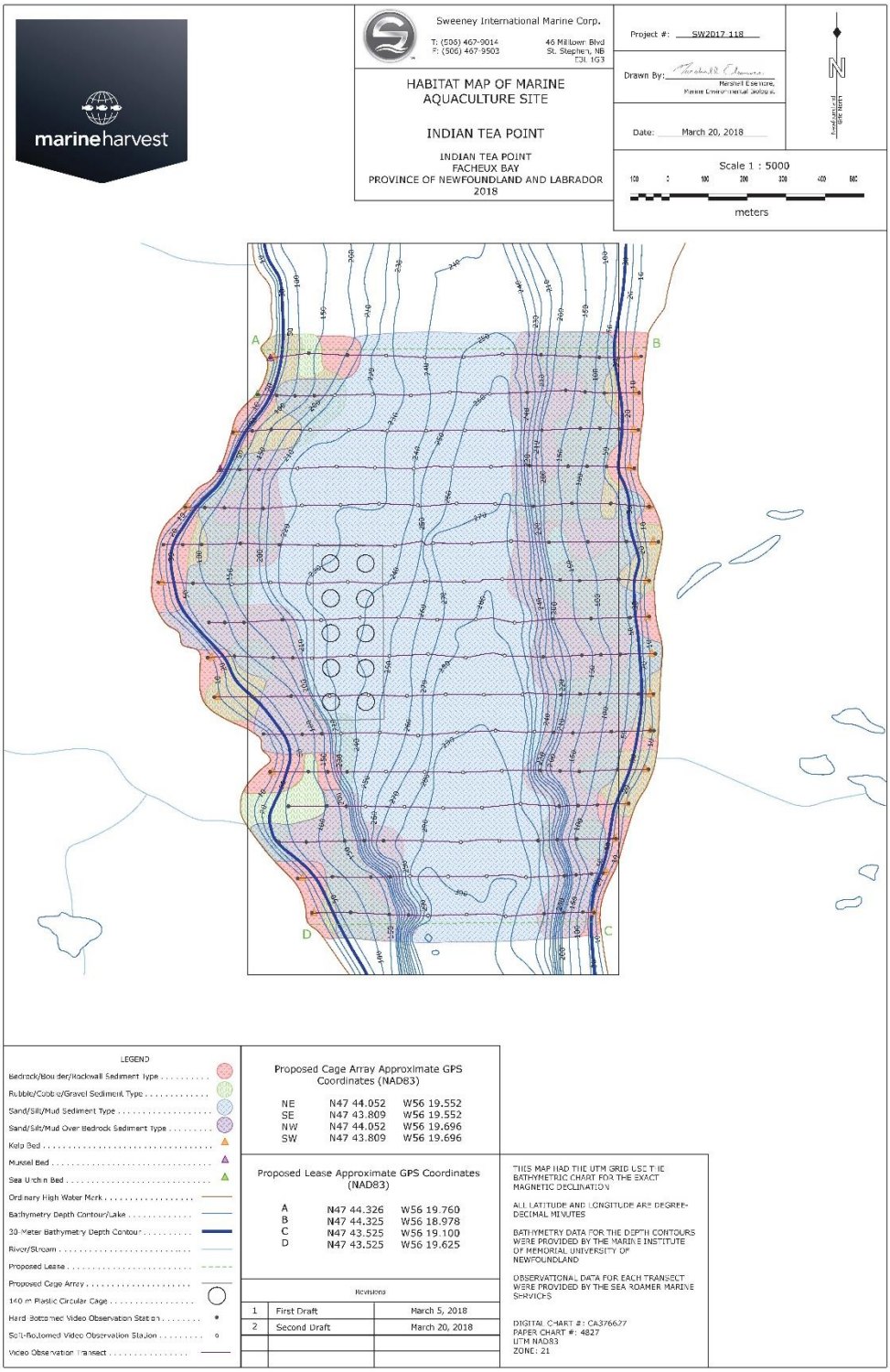


Figure 11.8. Habitat observations at sampling stations in the Indian Tea Point sea farm (September 2017).

Table 11.5. Summary of bottom type and observed flora and fauna at the Indian Tea Point sea farm (September 2017).

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 44.317	56 19.780	2	Hard	100%										Green Sea Urchin (>20), Mussels (>20), Cunner (>20)
	100	47 44.323	56 19.700	144	Hard						100%					*Hormathia digitata* Anemone (13), Sponge (3), Shrimp (2), Sea Cucumber (1)
	200	47 44.32	56 19.620	202	Hard	100%										*Bolocera tuediae* Anemone (8), Krill (>20), Breadcrumb Sponge (5%), Tunicate (5), Arrow Worm (2)
	300	47 44.319	56 19.540	228	Soft								100%			Worm Tubes (>20), Brittle Star (2), Shrimp (4)
	400	47 44.316	56 19.460	240	Soft								100%			Worm Tubes (>20), Flounder (1), Krill (1), Shrimp (3), Brittle Star (3), Arrow Worm (3)
	500	47 44.316	56 19.380	250	Soft								100%			Worm Tubes (>20), Flounder (1), Krill (3), Shrimp (6), Brittle Star (7)
	600	47 44.319	56 19.300	258	Soft								100%			Worm Tubes (>20), Shrimp (4), Brittle Star (1)
	700	47 44.318	56 19.220	214	Hard	15%					35%		50%			Brachiopod (>20), Worm Tubes (>20), Shrimp (3), Brittle Star (2), Arrow Worm (1)
	800	47 44.315	56 19.140	148	Hard	30%		40%					30%			Sponge (2), Acadian Redfish (1), Tunicate (2)
	850	47 44.315	56 19.100	90	Hard	50%							50%			*Hormathia digitata* Anemone (5), Tube Worms (6)
	900	47 44.313	56 19.060	26	Hard	100%										Sea Star (1), Breadcrumb Sponge (10%), Green Sea Urchin (5)
	960	47 44.315	56 19.012	2	Hard	100%										Cunner (>20)
2	0	47 44.268	56 19.409	0	Hard	100%										Green Sea Urchin (>20)
	50	47 44.264	56 19.769	60	Hard	90%							10%			*Hormathia digitata* Anemone (>20), Urchin (3), Sponge (2)
	100	47 44.264	56 19.729	104	Hard	90%							10%			*Hormathia digitata* Anemone (>20), Brachiopod (4), Soft Coral (1), Sea Star (1), Brittle Star (2), Breadcrumb Sponge (10%)
	150	47 44.265	56 19.689	164	Hard	95%							5%			*Hormathia digitata* Anemone (>20), Brachiopod (3)
	200	47 44.263	56 19.649	210	Soft						20%		80%			*Hormathia digitata* Anemone (2), Brachiopod (3), Worm Tube (>20), Krill (2), Shrimp (1), Brittle Star (3)
	300	47 44.265	56 19.569	218	Soft								100%			*Hormathia digitata* Anemone (8), *Bolocera tuediae* Anemone (1), Sponge (1), Brachiopod (2), Worm Tube (>20), Krill (4), Brittle Star (2), Arrow Worm (1)
	400	47 44.263	56 19.489	232	Soft								100%			Shrimp (1), Krill (12), Brittle Star (1), Arrow Worm (3), Worm Tubes (18)
	500	47 44.268	56 19.409	246	Soft								100%			Krill (>20), Worm Tubes (6), Flounder (1), Brittle Star (4), Shrimp (3)
	600	47 44.264	56 19.329	260	Soft								100%			Worm Tubes (>20), *Bolocera tuediae* Anemone (1), Krill (1), Shrimp (1),

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Brittle Star (4)
	700	47 44.266	56 19.249	242	Hard	25%		50%					25%			Worm Tubes (>20), Fan Worm (2)
	800	47 44.268	56 19.169	174	Hard	40%		40%					20%			Unidentified Anemone (1), *Bolocera tuediae* Anemone (1), Brachiopod (1), Acadian Redfish (1), Krill (1), Arrow Worm (1)
	850	47 44.265	56 19.129	246	Hard	40%		10%		20%			30%			*Hormathia digitata* Anemone (16), Atlantic Cod (2), *Bolocera tuediae* Anemone (3), Sponge (1)
	900	47 44.264	56 19.089	74	Hard	35%					35%		30%			Tube Worm (14), *Hormathia digitata* Anemone (15), Brittle Star (1), Tunicate (1)
	990	47 44.264	56 19.017	0	Hard	100%										Cunner (>20)
3	0	47 44.214	56 19.858	0	Hard	100%										
	50	47 44.215	56 19.819	96	Hard	100%										*Hormathia digitata* Anemone (>20), Tube Worms (17), Sponge (3), Encrusting Sponge (15%)
	100	47 44.217	56 19.779	150	Hard	30%				40%	30%					*Hormathia digitata* Anemone (2), Brittle Star (1)
	200	47 44.216	56 19.699	214	Soft						20%		80%			Worm Tubes (>20), *Hormathia digitata* Anemone (7), Krill (2), Shrimp (1), Brittle Star (8), Arrow Worm (1)
	300	47 44.215	56 19.619	220	Soft								100%			Worm Tube (13), Shrimp (5), Brittle Star (2), Krill (4)
	400	47 44.214	56 19.539	230	Soft								100%			Worm Tubes (>20), Flounder (1), Krill (5), Brittle Star (1), Red Sea Urchin (2)
	500	47 44.215	56 19.459	244	Soft								100%			Worm Tubes (>20), Krill (12), Shrimp (3), Brittle star (5)
	600	47 44.214	56 19.397	262	Soft								100%			Worm Tubes (>20), Brittle Star (6), Krill (6), Shrimp (1)
	700	47 44.213	56 19.299	262	Soft								100%			Worm Tubes (>20), Fan Worm (2), Krill (5), Brittle Star (4), Sponge (2)
	800	47 44.213	56 19.219	192	Hard	40%							60%			*Hormathia digitata* Anemone (11), Brachiopod (5), Soft Coral (1), Sea Star (1), Acadian Redfish (1), Tunicate (2), Arrow Worm (2)
	900	47 44.215	56 19.139	122	Hard	70%							30%			Tube Worm (7), *Hormathia digitata* Anemone (15), Brachiopod (1), Breadcrumb Sponge (15%), Tunicate (8)
	950	47 44.214	56 19.099	64	Hard	10%		40%		20%			30%			*Hormathia digitata* Anemone (>20), Sea Star (1)
	1000	47 44.214	56 19.059	32	Hard		85%			15%						*Hormathia digitata* Anemone (3), Acadian Redfish (1), Breadcrumb Sponge (5%)
	1050	47 44.212	56 19.019	0	Hard	100%										
4	0	47 44.162	56 19.885	0	Hard	100%										Mussel (>20), Green Sea Urchin (>20), Northern Sea Star (1)
	50	47 44.161	56 19.845	114	Hard	85%					15%					Sea Star (5), Tube Worm (4), *Hormathia digitata* Anemone (16)

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	100	47 44.162	56 19.805	162	Hard	80%							20%			Sea Star (2), *Hormathia digitata* Anemone (>20), Tube Worm (3)
	200	47 44.163	56 19.724	222	Soft								100%			Worm Tube (>20), Flounder (1), Shrimp (2), Brittle Star (6)
	300	47 44.165	56 19.645	226	Soft								100%			Worm Tubes (7), Brittle Star (4), Krill (4)
	400	47 44.163	56 19.565	228	Soft								100%			Worm Tubes (11), Krill (9), Brittle Star (4)
	500	47 44.161	56 19.485	240	Soft								100%			Worm Tubes (>20), Flounder (1), Krill (7), Shrimp (1), Brittle Star (5), Arrow Worm (1)
	600	47 44.163	56 19.405	260	Soft								100%			*Hormathia digitata* Anemone (1), Worm Tubes (>20), Krill (4), Shrimp (2), Brittle Star (9), *Careproctus* (1)
	700	47 44.163	56 19.325	266	Soft								100%			Worm Tubes (>20), Fan Worm (1), Krill (4), Shrimp (4), Brittle Star (3)
	800	47 44.164	56 19.246	224	Hard	90%							10%			Fan Worms (3), *Hormathia digitata* Anemone (5), Brachiopod (7), Acadian Redfish (1), Brittle Star (4), Breadcrumb Sponge (<5%), Tunicate (2), Arrow Worm (1)
	900	47 44.163	56 19.166	130	Hard	60%					20%		20%			Fan Worm (2), *Hormathia digitata* Anemone (14), Brachiopod (5), Krill (3)
	950	47 44.161	56 19.126	80	Hard	40%				20%	20%		20%			*Hormathia digitata* Anemone (>20), Feather Star (3), Sponge (3), Eelpout (1), Tube Worms (16)
	1000	47 44.162	56 19.086	46	Hard	90%							10%			*Hormathia digitata* Anemone (>20), Breadcrumb Sponge (5%)
	1070	47 44.159	56 19.029	0	Hard	100%										Green Sea Urchin (3), *Hormathia digitata* Anemone (10), Northern Sea Star (9)
5	0	47 44.110	56 19.958	0	Hard	100%										Cunner (>20), Sea Star (1)
	50	47 44.109	56 19.917	86	Hard	60%		10%		30%						*Hormathia digitata* Anemone (18), Atlantic Cod (1)
	100	47 44.109	56 19.877	126	Hard	80%							20%			Tube Worms (>20), Acadian Redfish (1), Brachiopod (>20)
	200	47 44.107	56 19.797	204	Hard	60%							40%			*Hormathia digitata* Anemone (7), Acadian Redfish (1), Shrimp (3), Brittle Star (6)
	300	47 44.111	56 19.717	222	Soft								100%			Worm Tubes (12), Krill (3), Shrimp (1), Brittle Star (3), Arrow Worm (1)
	400	47 44.111	56 19.637	228	Soft								100%			Worm Tubes (3), Cushion Star (3), Flounder (1), Krill (20), Shrimp (3), Brittle Star (2), Arrow Worm (2)
	500	47 44.113	56 19.557	228	Soft								100%			Worm Tubes (15), Flounder (2), Krill (>20), Shrimp (3)
	600	47 44.110	56 19.477	244	Soft								100%			Worm Tubes (>20), Krill (>20), Shrimp (1), Brittle Star (6)
	700	47 44.112	56 19.397	266	Soft								100%			Worm Tubes (>20), Flounder (1), *Bolocera tuediae* Anemone (1), Krill (1), Shrimp (1),

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Brittle Star (8)
	800	47 44.111	56 19.317	268	Soft								100%			*Bolocera tuediae* Anemone (5), Worm Tubes (>20), Shrimp (4), Brittle Star (3), Arrow Worm (2)
	900	47 44.107	56 19.238	184	Hard	50%							50%			*Hormathia digitata* Anemone (6), Worm Tubes (3), Shrimp (1), Breadcrumb Sponge (10%), Tunicate (>20)
	1000	47 44.111	56 19.158	108	Hard	90%							10%			*Hormathia digitata* Anemone (>20), Brachiopod (3), Shrimp (2), Brittle Star (1), Breadcrumb Sponge (5%)
	1100	47 44.110	56 19.078	66	Hard	25%				35%	40%					*Hormathia digitata* Anemone (>20), Northern Sea Star (1)
	1200	47 44.105	56 18.998	0	Hard	100%										Unidentified Urchin (1), Cunner (8)
	0	47 44.058	56 20.004	14	Hard	100%										Northern Sea Star (2)
	50	47 44.058	56 19.965	64	Hard	100%										*Hormathia digitata* Anemone (>20), Sponge (1), Sea Star (1), Green Sea Urchin (1)
	100	47 44.058	56 19.925	108	Hard	20%				30%	50%					Acadian Redfish (1), Northern Sea Star (1), Flounder (1), Green Sea Urchin (1)
	200	47 44.059	56 19.845	156	Hard	85%							15%			Tube Worms (7), *Hormathia digitata* Anemone (4), Acadian Redfish (1), Arrow Worm (1)
	300	47 44.057	56 19.765	218	Hard	25%				25%			50%			Spiny Sun Star (1), *Hormathia digitata* Anemone (8), Feather Star (1), Flounder (1), Brittle Star (11), Arrow Worm (1)
	400	47 44.056	56 19.685	226	Soft								100%			Worm Tubes (2), Flounder (1), Shrimp (1), Brittle Star (8), Arrow Worm (7)
6	500	47 44.055	56 19.605	232	Soft								100%			Worm Tubes (>20), Flounder (1), Krill (4), Shrimp (1), Brittle Star (8), Arrow Worm (2)
	600	47 44.054	56 19.525	236	Soft								100%			*Hormathia digitata* Anemone (2), Fan Worm (2), Worm Tubes (>20), Flounder (1), Krill (2), Brittle Star (4), Arrow Worm (2)
	700	47 44.057	56 19.446	272	Soft								100%			*Bolocera tuediae* Anemone (2), Worm Tubes (>20), Shrimp (2), Brittle Star (5), Arrow Worm (4)
	800	47 44.056	56 19.366	278	Soft								100%			Worm Tubes (>20), Acadian Redfish (1), Krill (1), Shrimp (4), Brittle Star (9)
	900	47 44.059	56 19.285	262	Soft								100%			Worm Tubes (>20), Shrimp (3), Brittle Star (3)
	1000	47 44.057	56 19.206	178	Hard					50%			50%			Tube Worms (1), *Hormathia digitata* Anemone (12), *Haliclona oculata* (4), Arrow Worm (1)
	1100	47 44.057	56 19.126	98	Hard	100%										*Hormathia digitata* Anemone (15),

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Brittle Star (7), Feather Star (1), Shrimp (1), Breadcrumb Sponge (25%), Tunicate (3)
	1200	47 44.057	56 19.046	48	Hard			10%		30%	60%					*Hormathia digitata* Anemone (>20), Unidentified Jellyfish (1)
	1280	47 44.056	56 18.980	0	Hard	100%										Cunner (>20)
7	10	47 44.006	56 20.015	8	Hard	100%										Cunner (2)
	100	47 44.004	56 19.943	74	Hard						100%					Northern sea star (2), Arrow worm (1)
	200	47 44.002	56 19.863	156	Soft				20%				80%			Northern Sea Star (1)
	300	47 44.004	56 19.783	204	Soft								100%			Arrow Worm (1)
	400	47 44.002	56 19.703	232	Soft								100%			Worm Tubes (2), Flounder (1), Brittle Star (2), Arrow Worm (1)
	500	47 44.004	56 19.623	238	Soft								100%			Krill (6), Brittle Star (3), Arrow Worm (3)
	600	47 44.001	56 19.543	240	Soft								100%			Iceland Scallop (1), Worm Tubes (>20), Feather Star (3), Hydrozoa (1), Krill (4), Brittle Star (8), Arrow Worm (2)
	700	47 44.004	56 19.463	254	Soft								100%			Krill (5), Brittle Star (8), Worm Tubes (>20)
	800	47 44.003	56 19.383	276	Soft								100%			*Bolocera tuediae* Anemone (3), Worm Tubes (>20), Flounder (1), Krill (>20), Shrimp (1), Brittle Star (4)
	900	47 44.006	56 19.304	278	Soft								100%			*Bolocera tuediae* Anemone (2), Worm Tube (>20), Krill (6), Shrimp (2), Brittle Star (1), Arrow Worm (1)
	1000	47 44.005	56 19.224	224	Hard			50%					50%			Sponge (2), Breadcrumb Sponge (25%), Krill (8), Tunicate (>20)
	1050	47 44.003	56 19.183	180	Hard	55%				15%			30%			*Hormathia digitata* Anemone (>20), Sponge (3), Brachiopod (3), Worm Tube (15), Sea Star (1), Shrimp (1)
	1100	47 44.003	56 19.144	134	Hard			70%		10%			20%			Acadian Redfish (1), *Hormathia digitata* Anemone (2), Tube Worm (15), Breadcrumb Sponge (15%), Arrow Worm (1), Tunicate (1)
	1200	47 44.004	56 19.063	64	Hard	80%							20%			*Hormathia digitata* Anemone (>20), Sponge (3)
	1280	47 44.002	56 19.000	2	Hard	100%										Cunner (>20)
8	110	47 43.949	56 19.911	66	Hard	100%										Green sea urchin (1), Northern sea star (1), Tube worm (6)
	150	47 43.949	56 19.879	88	Hard	80%							20%			Northern Sea Star (2)
	200	47 43.949	56 19.839	144	Hard	85%							15%			
	300	47 43.952	56 19.759	198	Hard	90%							10%			Unidentified Urchin (1)
	400	47 43.951	56 19.679	228	Soft								100%			Brittle Star (11), Flounder (1), Shrimp (2)
	500	47 43.954	56 19.599	238	Soft								100%			Brittle Star (4), Shrimp (1), Worm Tubes (4)
	600	47 43.954	56 19.519	250	Soft								100%			Brittle Star (5), Worm Tubes (>20), Feather Star (1), Krill (2), Shrimp (1),

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Arrow Worm (2)
	700	47 43.950	56 19.439	266	Soft								100%			Shrimp (6), Brittle Star (10), Worm Tubes (>20), Feather Star (1), Flounder (2)
	800	47 43.950	56 19.359	280	Soft								100%			Brittle Star (4), Worm Tubes (>20), *Bolocera tuediae* Anemone (3), Krill (7), Shrimp (1)
	900	47 43.945	56 19.279	274	Soft								100%			*Bolocera tuediae* Anemone (5), Worm Tube (>20), Hydrozoa (3), Shrimp (3), Brittle Star (4)
	1000	47 43.950	56 19.200	188	Hard	70%							30%			*Bolocera tuediae* Anemone (15), Worm Tube (>20), Unidentified Crab (1), Acadian Redfish (2), Tunicate (5)
	1100	47 43.950	56 19.120	106	Hard	70%					10%		20%			*Hormathia digitata* Anemone (15), Breadcrumb Sponge (5%), Unidentified Urchin (2)
	1200	47 43.951	56 19.040	44	Hard	80%					10%		10%			
	1250	47 43.952	56 19.000	4	Hard	100%										Acadian redfish (3), Cunner (2)
9	30	47 43.900	56 19.915	4	Hard	100%										Green sea urchin (7), Northern sea star (5)
	100	47 43.902	56 19.859	54	Hard					15%	50%		35%			
	200	47 43.899	56 19.779	130	Hard	60%					20%		20%			Acadian redfish (1)
	250	47 43.898	56 19.739	182	Hard	85%							15%			Worm tube (2), Sponge (2)
	300	47 43.898	56 19.699	228	Soft								100%			Flounder (2), Worm tubes (5), Shrimp (1), Brittle star (2)
	400	47 43.901	56 19.619	238	Soft								100%			Flounder (1), Worm tube (>20), Shrimp (3), Brittle star (18)
	500	47 43.900	56 19.539	250	Soft								100%			Worm tube (>20), Brachiopod (1), Hydrozoa (1), Shrimp (1), Brittle star (7)
	600	47 43.902	56 19.459	266	Soft								100%			*Careproctus* (1), *Bolocera tuediae* Anemone (4), Worm tube (>20), Shrimp (3), Brittle star (3)
	700	47 43.897	56 19.380	232	Soft								100%			*Bolocera tuediae* Anemone (5), Worm tube (>20), Flounder (1), Shrimp (6), Brittle star (11), Arrow worm (1)
	800	47 43.899	56 19.300	280	Soft								100%			Shrimp (2), Brittle star (1), Breadcrumb sponge (10%), Tunicate (>20), Worm tube (10)
	900	47 43.897	56 19.220	232	Hard	65%							35%			Sponge (1), Breadcrumb sponge (15%), Acadian redfish (2), Tunicate (5)
	1000	47 43.899	56 19.140	182	Hard	85%							15%			Breadcrumb sponge (5%), Tube worm (2), Brittle star (1), *Cerianthus borealis* Cerianthid (9), *Hormathia digitata* Anemone (10), Sponge (3), Shrimp (3), Tunicate (5)
	1050	47 43.900	56 19.100	136	Hard	90%							10%			*Hormathia digitata* Anemone (7), Breadcrumb sponge (10%), Sponge

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(2), Brittle star (1), Tube worm (14)
	1100	47 43.900	56 19.060	82	Hard	80%							20%			Cunner (>20)
	1190	47 43.900	56 18.988	4	Hard	100%										Cunner (15)
10	0	47 43.845	56 19.902	8	Hard	85%					15%					Sea star (1), Green sea urchin (8)
	100	47 43.845	56 19.823	30	Hard			75%			25%					Sponge (6), Tube worm (>20), Sea star (1), *Hormathia digitata* Anemone (1)
	200	47 43.845	56 19.743	90	Hard	90%							10%			Mussels (>20), Northern sea star (>20), *Metridium senile* Anemone (5)
	300	47 43.845	56 19.663	228	Soft								100%			Shrimp (4), Iceland scallop (6), Brittle star (3)
	400	47 43.846	56 19.583	242	Soft								100%			Worm tubes (>20), Northern sea star (1), Flounder (1), Brittle star (11), Arrow worm (5)
	500	47 43.844	56 19.503	258	Soft								100%			Nudibranch (1), Worm tube (>20), Shrimp (1), Brittle star (6)
	600	47 43.846	56 19.423	280	Soft								100%			*Bolocera tuediae* Anemone (10), Worm tube (>20), Flounder (1), Shrimp (3), Brittle star (8)
	700	47 43.845	56 19.343	284	Soft								100%			Worm tubes (>20), Shrimp (7), Brittle star (6), *Bolocera tuediae* Anemone (2)
	800	47 43.845	56 19.264	282	Soft								100%			Fan worm (3), *Hormathia digitata* Anemone (4), Worm tube (>20) Shrimp (2), Brittle star (>20), Tunicate (4)
	900	47 43.844	56 19.184	222	Hard	10%				40%			50%			*Hormathia digitata* Anemone (>20), Sea star (1), Sponge (2), Acadian redfish (4), Brittle star (3)
	950	47 43.844	56 19.144	162	Hard	40%				25%			35%			*Hormathia digitata* Anemone (>20), Hydrozoa (6), Sponge (7), Tunicate (5)
	1000	47 43.845	56 19.104	114	Hard	35%				15%			50%			*Hormathia digitata* Anemone (2), Green sea urchin (3), Breadcrumb sponge (10%)
	1100	47 43.844	56 19:024	40	Hard	80%					20%					
	1140	47 43.844	56 18.992	2	Hard	100%										Unidentified anemone (1), Northern sea star (3), Mussel (15)
11	0	47 43.793	56 19.800	4	Hard	100%										Tube worm (15), Breadcrumb sponge (15%)
	100	47 43.792	56 19.720	64	Hard	90%							10%			*Hormathia digitata* Anemone (15), *Bolocera tuediae* Anemone (18), Northern sea star (2), Acadian redfish (3), Tube worm (10), Sponge (1)
	150	47 43.792	56 19.680	140	Hard	90%							10%			Arrow worm (1), Flounder (1), Northern sea star (1)
	200	47 43.793	56 19.640	230	Soft						40%		60%			Iceland Scallop (1), Shrimp (5), Brittle star (1)
	300	47 43.794	56 19.560	250	Soft								100%			*Careproctus* (1), Worm tube (14), Brittle star (3)
	400	47 43.789	56 19.480	262	Soft								100%			*Bolocera tuediae* Anemone (5),

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Worm tube (>20), Flounder (1), Brittle star (6)
	500	47 43.793	56 19.400	286	Soft								100%			Worm tube (6), Flounder (1), Brittle star (4), Arrow worm (2)
	600	47 43.795	56 19.320	288	Soft								100%			Worm tube (>20), *Bolocera tuediae* Anemone (10), Shrimp (1), Brittle star (7)
	700	47 43.793	56 19.240	260	Soft								100%			*Hormathia digitata* Anemone (>20), Brachiopod (>20), Worm tube (16), Sponge (4), Shrimp (1)
	750	47 43.792	56 19.201	218	Hard	70%							30%			Fan worm (6), *Hormathia digitata* Anemone (3), Acadian redfish (1), Shrimp (1), Brittle star (1), Tunicate (7), Tube worm (2), Breadcrumb sponge (35%)
	800	47 43.791	56 19.161	164	Hard	85%							15%			*Hormathia digitata* Anemone (10), Sponge (10), Brachiopod (11), Breadcrumb sponge (10%), Tube worm (3)
	900	47 43.792	56 19.081	88	Hard	50%							50%			Sea star (1), Cunner (2)
	1000	47 43.793	56 19.001	12	Hard	20%		30%			50%					Cunner (10)
12	0	47 43.740	56 19.787	8	Hard	100%										*Hormathia digitata* Anemone (5), Northern sea star (5)
	100	47 43.740	56 19.708	94	Hard						100%					*Hormathia digitata* Anemone (9), Northern sea star (5), Acadian redfish (5), Green sea urchin (2), Tube worm (4)
	150	47 43.739	56 19.668	160	Hard	100%										Brittle star (>20), Flounder (4), Shrimp (1)
	200	47 43.739	56 19.628	236	Hard					70%			30%			*Bolocera tuediae* Anemone (2), Brittle star (8), Worm tube (3)
	300	47 43.739	56 19.548	258	Soft								100%			*Bolocera tuediae* Anemone (1), Worm tube (>20), Brittle star (>20), Shrimp (2)
	400	47 43.738	56 19.468	276	Soft								100%			*Bolocera tuediae* Anemone (9), Worm tube (>20), Krill (1), Shrimp (4), Brittle star (11)
	500	47 43.737	56 19.388	294	Soft								100%			*Bolocera tuediae* Anemone (8), Worm tube (>20), Flounder (1), Shrimp (7), Brittle star (6)
	600	47 43.739	56 19.308	292	Soft								100%			*Hormathia digitata* Anemone (7), Brachiopod (>20), Brittle star (8), Daisy brittle star (1), Tunicate (2)
	700	47 43.739	56 19.228	216	Hard	80%							20%			*Hormathia digitata* Anemone (18), Brachiopod (>20), Worm tube (>20), Acadian redfish (1), Brittle star (1), Tube worm (3)
	750	47 43.738	56 19.188	170	Hard	80%							20%			Fan worm (3), *Hormathia digitata* Anemone (12), Brachiopod (2), Shrimp (1)
	800	47 43.737	56 19.148	128	Hard					50%			50%			Tube worm (2), *Hormathia digitata* Anemone (10)

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	900	47 43.739	56 19.069	48	Hard	55%					30%		15%			Cunner (>20)
	980	47 43.739	56 19.005	4	Hard	75%			25%							*Hormathia digitata* Anemone (19), Northern sea star (2), Green sea urchin (4)
13	100	47 43.692	56 19.750	52	Hard				10%	30%	60%					*Hormathia digitata* Anemone (>20), Atlantic cod (1), Sponge (3), Northern sea star (1), Tube worm (9)
	200	47 43.692	56 19.670	104	Hard	90%							10%			Atlantic cod (1), *Hormathia digitata* Anemone (6), Northern sea star (1), Sea star (1), Acadian redfish (4), Tube worm (7)
	250	47 43.693	56 19.630	164	Hard	90%							10%			*Careproctus* (1), Sponge (1), Flounder (5), Shrimp (3), Brittle star (8)
	300	47 43.691	56 19.590	254	Soft						100%					*Bolocera tuediae* Anemone (4), Worm tube (1), Northern sea star (1), Shrimp (3), Brittle star (1), Arrow worm (4)
	400	47 43.690	56 19.510	276	Soft								100%			*Bolocera tuediae* Anemone (1), Worm tube (>20), Shrimp (4), Brittle star (4)
	500	47 43.688	56 19.430	292	Soft								100%			*Bolocera tuediae* Anemone (5), Worm tube (>20), Brittle star (6)
	600	47 43.688	56 19.350	296	Soft								100%			*Bolocera tuediae* Anemone (9), Worm tube (>20), Krill (1), Brittle star (4)
	700	47 43.693	56 19.270	280	Soft								100%			*Hormathia digitata* Anemone (7), Brachiopod (10), Shrimp (1)
	800	47 43.689	56 19.190	250	Hard	90%							10%			*Hormathia digitata* Anemone (17), Brachiopod (17), Soft coral (1), Acadian redfish (1)
	850	47 43.690	56 19.151	150	Hard	90%							10%			*Hormathia digitata* Anemone (8), Brachiopod (6), Feather star (3), Breadcrumb sponge (60%), Tunicate (8), Tube worm (>20)
	900	47 43.690	56 19.111	74	Hard	100%										Cunner (>20)
	980	47 43.692	56 19.046	4	Hard	100%										Green sea urchin (3), Acadian redfish (1)
14	30	47 43.642	56 19.770	34	Hard			80%			20%					Tube worm (9), Breadcrumb sponge (25%)
	100	47 43.642	56 19.714	78	Hard	80%							20%			Atlantic cod (1), Brittle star (1), Acadian redfish (1), Northern sea star (6)
	200	47 43.643	56 19.634	150	Hard	50%					40%		10%			*Bolocera tuediae* Anemone (>20), Tunicate (>20), Breadcrumb sponge (20%)
	250	47 43.641	56 19.594	194	Hard	100%										*Bolocera tuediae* Anemone (10), Sponge (1), Shrimp (1), Brittle star (3), Arrow worm (3)
	300	47 43.643	56 19.554	278	Hard	65%							35%			Worm tubes (>20), Flounder (1), *Bolocera tuediae* Anemone (2), Brittle star (2)

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	400	47 43.642	56 19.474	288	Soft								100%			*Bolocera tuediae* Anemone (4), Worm tubes (>20), Shrimp (1), Brittle star (6)
	500	47 43.640	56 19.394	298	Soft								100%			*Bolocera tuediae* Anemone (6), Worm tube (>20), Flounder (1), Shrimp (1), Brittle star (7), Arrow worm (2)
	600	47 43.641	56 19.314	296	Soft								100%			*Bolocera tuediae* Anemone (5), Worm tube (>20), Shrimp (1), Brittle star (5), Tunicate (5)
	700	47 43.641	56 19.235	282	Hard	40%			40%				20%			Atlantic cod (1), *Hormathia digitata* Anemone (5), Sponge (4), Brachiopod (>20), Acadian redfish (1)
	750	47 43.642	56 19.195	198	Hard	90%							10%			*Hormathia digitata* Anemone (4), Flounder (1), Tube worm (>20), Encrusting Sponge (20%)
	800	47 43.643	56 19.155	98	Hard			40%			40%		10%			
	900	47 43.643	56 19.074	18	Hard	100%										
15	10	47 43.592	56 19.732	2	Hard	100%										
	100	47 43.593	56 19.660	70	Hard	100%										*Hormathia digitata* Anemone (>20), Northern sea star (1), Brittle star (1), Tunicate (20), Tube worm (2)
	200	47 43.592	56 19.580	130	Hard	90%							10%			*Hormathia digitata* Anemone (>20), Brachiopod (>20), Soft coral (1), Green sea urchin (1), Tunicate (5), Tube worm (10)
	250	47 43.593	56 19.540	222	Hard	80%							20%			*Bolocera tuediae* Anemone (>20), Acadian redfish (1), Tunicate (15)
	300	47 43.593	56 19.500	290	Soft								100%			*Bolocera tuediae* Anemone (1), Worm tube (15), Flounder (1), Hydrozoa (1), Shrimp (1), Brittle star (2), Arrow worm (4)
	400	47 43.592	56 19.420	298	Soft								100%			*Bolocera tuediae* Anemone (3), Worm tube (5), Brittle star (2), Arrow worm (3)
	500	47 43.592	56 19.341	296	Soft								100%			*Bolocera tuediae* Anemone (9), Worm tube (>20), Brittle star (2), Arrow worm (2)
	600	47 43.590	56 19.260	298	Soft								100%			*Bolocera tuediae* Anemone (4), Worm tube (>20), Hydrozoa (2), Krill (2), Shrimp (3), Brittle star (6)
	700	47 43.592	56 19.180	254	Hard	90%							10%			*Bolocera tuediae* Anemone (>20), Sea spider (8), Tunicate (13), Encrusting Sponge (10%)
	730	47 43.593	56 19.157	174	Hard	85%							15%			*Hormathia digitata* Anemone (>20), Acadian redfish (6)
	770	47 43.595	56 19.124	96	Hard	90%							10%			Atlantic cod (2), *Hormathia digitata* Anemone (10), Sponge (2), Feather star (1),

Indian Tea Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Acadian redfish (2), Tube worm (7)
	800	47 43.595	56 19.101	20	Hard	100%										*Hormathia digitata* Anemone (7), Acadian redfish (3), Unidentified Urchin (5), Cunner (4)
16	0	47 43.543	56 19.703	4	Hard	100%										Cunner (>20)
	100	47 43.543	56 19.623	74	Hard	70%					10%		20%			Feather star (7), Acadian redfish (2), Shrimp (3), Tube worm (>20)
	200	47 43.540	56 19.543	148	Hard	80%							20%			Unidentified anemone (3), Brachiopod (10), Breadcrumb sponge (15%), Tunicate (1), Tube worm (2)
	250	47 43.540	56 19.503	240	Hard	90%							10%			*Bolocera tuediae* Anemone (>20), Tunicate (>20), Sponge (5)
	300	47 43.538	56 19.463	298	Soft			20%					80%			*Bolocera tuediae* Anemone (>20), Brittle star (11), Shrimp (1), Worm tube (4)
	400	47 43.539	56 19.383	302	Soft								100%			Worm tube (>20), Hydrozoa (1), *Bolocera tuediae* Anemone (5), Brittle star (5), Shrimp (2)
	500	47 43.536	56 19.303	298	Soft								100%			*Bolocera tuediae* Anemone (11), Worm tube (>20), Hydrozoa (1), Shrimp (1), Brittle star (7)
	600	47 43.539	56 19.223	280	Hard	80%							20%			*Bolocera tuediae* Anemone (10), *Hormathia digitata* Anemone (1), *Cerianthus borealis* Cerianthid (1), Sponge (3), Northern sea star (1), Shrimp (1), Tunicate (7)
	650	47 43.543	56 19.183	206	Hard	90%							10%			*Hormathia digitata* Anemone (>20), *Bolocera tuediae* Anemone (3), Sea star (1), Tunicate (>20)
	700	47 43.541	56 19.143	72	Hard	90%							10%			*Hormathia digitata* Anemone (5), Northern sea star (1), Feather star (11), Green sea urchin (4), Tube worm (4)
	730	47 43.540	56 19.120	10	Hard	100%										Green sea urchin (1), Cunner (16)

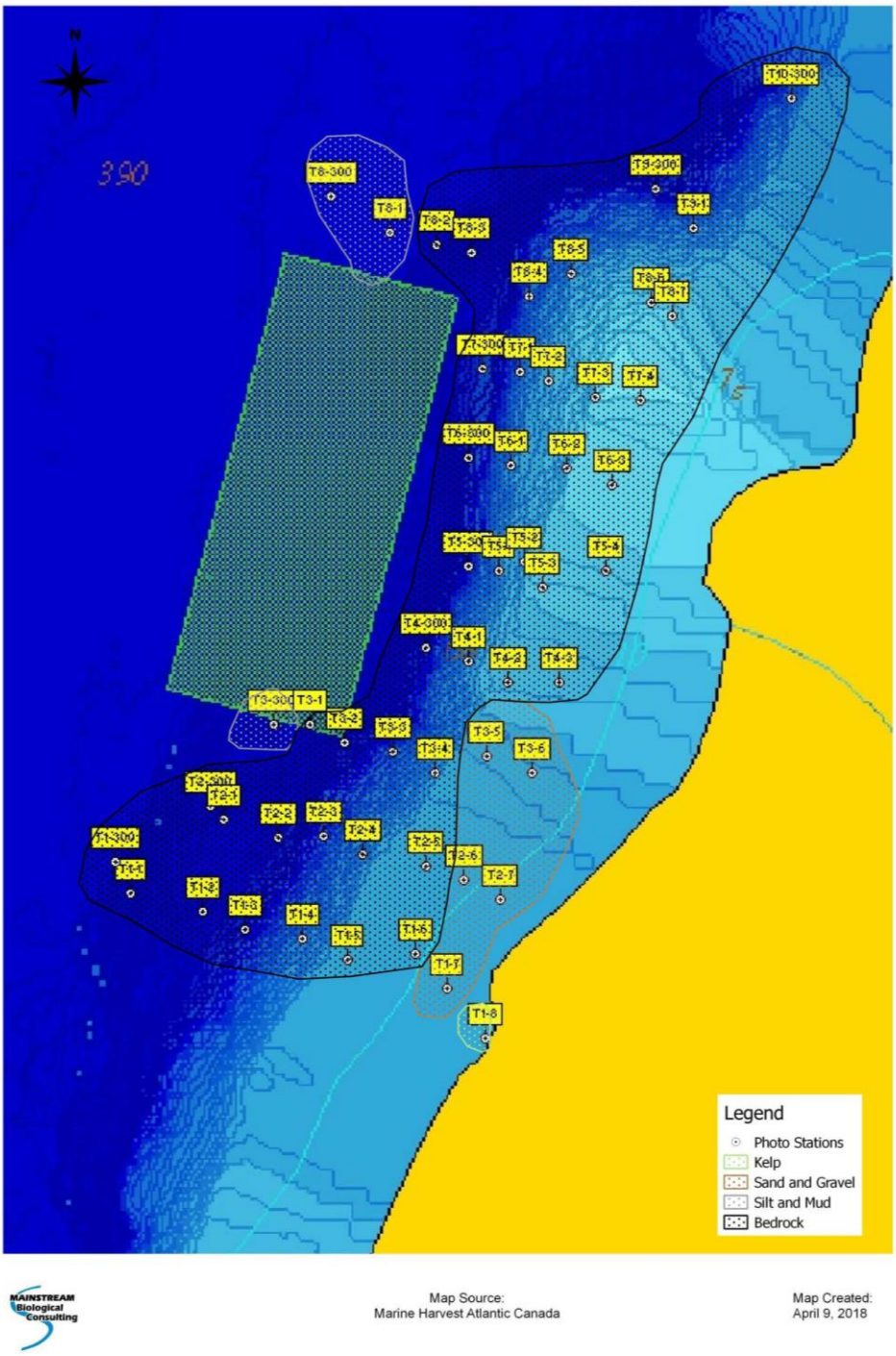


Figure 11.9. Habitat observations at sampling stations in the Wild Cove sea farm (November 2017).

Table 11.6. Summary of bottom type and observed flora and fauna at the Wild Cove sea farm (November 2017).

Wild Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1	47 38.466	56 19.006	-300.8	Hard		95%						5%			
	1	47 38.449	56 18.993	-257.7	Hard		100%									Unidentified Anemone (10)
	1	47 38.440	56 18.938	-229.5	Hard						10%	90%				
	1	47 38.429	56 18.903	-170.9	Hard	100%										Unidentified Anemone (3), Blood Star (1)
	1	47 38.426	56 18.858	-143.2	Hard	85%							15%			Unidentified Anemone (6), Calcareous Tube Worms (2), Encrusting Sponge (2%)
	1	47 38.415	56 18.823	-100.8	Hard		20%				5%	75%				
	1	47 38.418	56 18.768	-59.9	Hard		100%									Pink Rock Crust (45%), Encrusting Sponge (5%)
	1	47 38.400	56 18.743	-38.5	Soft						20%	80%				Scallop (2)
	1	47 38.372	56 18.713	-3.6	Hard		100%									Kelp (75%), Cord Weed (15%)
	2	47 38.496	56 18.930	-300.6	Hard	100%										Unidentified Anemone (8)
	2	47 38.489	56 18.920	-277.8	Hard		95%						5%			Unidentified Anemone (1)
	2	47 38.479	56 18.877	-261.8	Hard		100%									Sea Whip (20)
	2	47 38.481	56 18.842	-239.6	Hard		100%									Unidentified Anemone (1), Sea Whip (7)
	2	47 38.471	56 18.811	-200.5	Hard	100%										Unidentified Anemone (10)
	2	47 38.464	56 18.760	-181.5	Hard	100%										Unidentified Anemone (7), Calcareous Tube Worms (1)
	2	47 38.457	56 18.731	-164.2	Hard					30%	20%		50%			Unidentified Anemone (7), Unidentified Fish (1)
	2	47 38.448	56 18.700	-140.6	Hard	100%										Unidentified Anemone (5), Calcareous Tube Worms (3%)
	3	47 38.540	56 18.881	-301.6	Soft								100%			Sea Whip (11)
	3	47 38.540	56 18.851	-262.6	Hard	100%										Unidentified Anemone (3)
	3	47 38.531	56 18.824	-226.4	Hard								100%			
	3	47 38.526	56 18.787	-138.5	Hard		100%									Unidentified Anemone (5)
	3	47 38.516	56 18.754	-104.3	Hard		75%					25%				Unidentified Anemone (1)
	3	47 38.524	56 18.712	-82.6	Soft						10%	90%				Unidentified Anemone (1)
	3	47 38.516	56 18.677	-61.7	Soft						10%	90%				
	4	47 38.582	56 18.786	-300.3	Hard	100%										Unidentified Anemone (1)
	4	47 38.574	56 18.726	-284.0	Hard	100%										Unidentified Anemone (2), Encrusting Sponge (8%)
	4	47 38.564	56 18.695	-102.3	Hard	100%										Unidentified Anemone (7), Encrusting Sponge (2%)
	4	47 38.564	56 18.654	-57.9	Hard	100%										Pink Rock Crust (35%), Encrusting Sponge (8%)
	5	47 38.626	56 18.726	-299.7	Hard	100%										
	5	47 38.623	56 18.703	-268.4	Hard	100%										Unidentified Anemone (62), Encrusting Sponge (5%)
	5	47 38.629	56 18.681	-143.2	Hard	100%										Unidentified Anemone (1), Calcareous Tube Worms (10%), Encrusting Sponge (15%)
	5	47 38.615	56 18.667	-114.9	Hard	100%										Unidentified Anemone (2), Encrusting Sponge (10%)
	5	47 38.624	56 18.617	-116.1	Hard	100%										Unidentified Anemone (1), Encrusting Sponge (2%)
	6	47 38.684	56 18.726	-299.8	Hard	100%										Encrusting Sponge (2%)
	6	47 38.679	56 18.693	-181.0	Hard	100%										Unidentified Anemone (8), Calcareous Tube Worms (11), Encrusting Sponge (7%)

Wild Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	6	47 38.678	56 18.648	-92.0	Hard	100%										Unidentified Anemone (17)
	6	47 38.670	56 18.614	-47.1	Hard	100%										Pink Rock Crust (2%), Encrusting Sponge (8%)
	7	47 38.732	56 18.715	-299.7	Hard		100%									
	7	47 38.730	56 18.687	-220.2	Hard	100%										Unidentified Anemone (14), Encrusting Sponge (2%)
	7	47 38.725	56 18.663	-201.8	Hard		100%									Unidentified Anemone (1)
	7	47 38.717	56 18.626	-103.3	Hard		100%									Unidentified Anemone (4), Calcareous Tube Worms (2), Encrusting Sponge (1%)
	7	47 38.715	56 18.591	-52.9	Hard		100%									Pink Rock Crust (6), Encrusting Sponge (15%), Feather Star (3), Spiney Sunstar (1)
	8	47 38.823	56 18.834	-296.7	Soft								100%			Sea Whip (1)
	8	47 38.804	56 18.789	-232.1	Soft								100%			Sea Whip (1)
	8	47 38.797	56 18.751	-186.5	Hard		100%									Unidentified Anemone (50), Encrusting Sponge (3%)
	8	47 38.793	56 18.725	-152.5	Hard		100%									Unidentified Anemone (3), Encrusting Sponge (20%)
	8	47 38.771	56 18.679	-112.1	Hard		100%									Unidentified Anemone (3), Calcareous Tube Worms (5%), Encrusting Sponge (18%)
	8	47 38.782	56 18.645	-153.5	Hard		100%									Unidentified Anemone (20)
	8	47 38.767	56 18.582	-181.8	Hard		100%									Unidentified Anemone (1)
	8	47 38.761	56 18.564	-164.9	Hard				25%	10%			65%			Unidentified Anemone (5)
	9	47 38.829	56 18.577	-291.5	Hard	100%										Encrusting Sponge (3%)
	9	47 38.808	56 18.549	-265.4	Hard	100%										Unidentified Anemone (3)
	10	47 38.876	56 18.472	-300.7	Hard	100%										Unidentified Anemone (3), Calcareous Tube Worms (1)

11.3 Water Quality

In the Facheux Bay BMA, water quality measurements were only available for the Wallace Cove sea farm (Table 11.7). Seasonal water quality measurements for the Wallace Cove sea farm are summarized in Tables 11.8, 11.9, and 11.10, for water temperature, dissolved oxygen, and salinity, respectively.

Table 11.7. Available water quality data for the Facheux Bay BMA (2019–2024).

Available Data			
Year	**Measurement**	**Depth(s) (m)**	**Month(s)**
Wallace Cove			
2019	Temperature (°C)	0.5	14 Jun–31 Dec
		1	13 Sep–31 Dec
		5	14 Jun–31 Dec
		10	13 Sep–31 Dec
		15	14 Jun–31 Dec
		20	1 Sep–31 Dec
		30	2 Oct–31 Dec
	Dissolved Oxygen (mg/L)	0.5	24 Jun 2019–31 Dec
		1	13 Sep 2019–31 Dec
		5	24 Jun 2019–31 Dec
		10	13 Sep 2019–31 Dec
		15	24 Jun 2019–31 Dec
		20	1 Sep 2019–31 Dec
		30	2 Oct–31 Dec
	Salinity (‰)	0.5	4 Jul 2019–31 Jul, 11 Nov 2019–31 Dec
		1	11 Nov 2019–31 Dec
		5	21 Jun 2019–31 Dec
		10	11 Nov 2019–31 Dec
		15	4 Jul 2019–2 Aug, 11 Nov 2019–31 Dec
		20	11 Nov 2019–31 Dec
		30	11 Nov 2019–31 Dec
2020	Temperature (°C)	0.5 - 20	1 Jan–31 Dec
		30	1 Jan–4 Aug, 29 Oct–31 Dec
	Oxygen (mg/L)	0.5 - 20	1 Jan–31 Dec
		30	1 Jan–4 Aug, 29 Oct–31 Dec
	Salinity (‰)	all	1 Jan–4 Aug, 29 Oct–31 Dec
2021	Temperature (°C)	all	1 Jan–13 May
	Oxygen (mg/L)	all	1 Jan–13 May
	Salinity (‰)	all	1 Jan–13 May
2022	Temperature (°C)	all	13 Apr–31 Dec
	Oxygen (mg/L)	all	13 Apr–31 Dec
	Salinity (‰)	all	13 Apr–31 Dec
2023	Temperature (°C)	all	1 Jan–31 Dec
	Oxygen (mg/L)	all	1 Jan–31 Dec
	Salinity (‰)	all	1 Jan–31 Dec
2024	Temperature (°C)	all	1 Jan–27 Feb
	Oxygen (mg/L)	all	1 Jan–27 Feb
	Salinity (‰)	all	1 Jan–27 Feb

Notes:
"all" is inclusive of depths: 0.5,1,5,10,15,20 and 30 m.

11.3.1 Water Temperature

Mean water temperatures at the Wallace Cove sea farm ranged from 1.56°C in winter to 16.93°C in summer (0.5 m depth) (Table 11.8). Temperature trends are typical of those observed by MCE in coastal Newfoundland waters. A thermocline develops in spring as surface waters warm. This thermocline becomes more pronounced and deeper in summer until it breaks down in the fall as air temperature decreases. During winter, temperatures throughout the water column tend to be more uniform until spring, when the seasonal water temperature pattern repeats. Maximum water temperatures were recorded at 0.5 m in summer, reaching 22.90°C. Minimum temperatures occurred in winter at the same depth, measuring -0.80°C.

Table 11.8. Average, maximum, and minimum water temperatures (°C) at the sea farms in the Facheux Bay (2019–2024).

Water Depth	Sampling Period	Water Temperature Parameter	Winter (Jan, Feb, Mar)	Spring (Apr, May, Jun)	Summer (Jul, Aug, Sep)	Fall (Oct, Nov, Dec)
			Temperature (°C)			
Wallace Cove						
0.5 m	14 Jun 2019–27 Feb 2024	Average	1.56	6.69	16.93	7.42
		Maximum	4.20	17.75	22.90	16.40
		Minimum	-0.80	1.10	8.65	1.00
1 m	13 Sep 2019–27 Feb 2024	Average	1.59	6.32	16.87	7.49
		Maximum	7.85	17.10	22.55	15.65
		Minimum	-0.50	1.05	8.65	1.50
5 m	14 Jun 2019–27 Feb 2024	Average	1.83	5.22	14.76	7.76
		Maximum	4.25	14.50	19.05	15.00
		Minimum	0.10	1.00	5.80	2.20
10 m	13 Sep 2019–27 Feb 2024	Average	2.08	3.79	12.35	7.72
		Maximum	4.55	9.60	17.80	14.50
		Minimum	0.20	0.80	4.80	2.35
15 m	14 Jun 2019–27 Feb 2024	Average	2.19	3.15	9.57	7.56
		Maximum	4.60	8.65	16.65	13.80
		Minimum	0.20	0.65	0.80	3.05
20 m	1 Sep 2019–27 Feb 2024	Average	2.30	2.73	8.20	7.29
		Maximum	4.70	8.05	15.70	13.45
		Minimum	0.20	0.65	2.25	2.60
30 m	2 Oct 2019–4 Aug 2020, 29 Oct 2020–27 Feb 2024	Average	2.45	2.36	6.15	6.84
		Maximum	4.80	5.65	14.05	13.15
		Minimum	0.25	0.50	2.05	1.75

Historical water temperature data for the Wallace cove sea farm (Figure 11.10) are provided for measurements collected at a depth of 15 m. During 2019–2024, data collected showed a general water temperature increase from April–September, with average temperatures peaking in September and declining thereafter. Maximum temperatures plateaued in August (Figure 11.10).

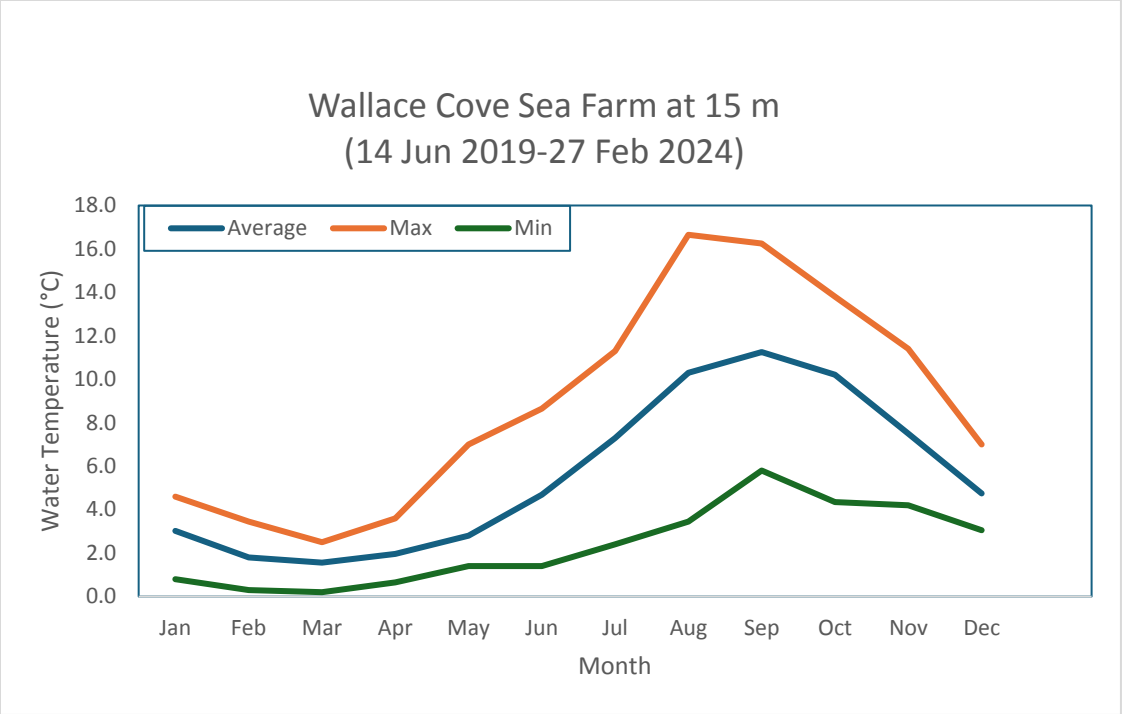


Figure 11.10. Historical water temperature (°C) data in the Wallace Cove sea farm for Facheux Bay BMA at 15 m depth.

11.3.2 Dissolved Oxygen

Dissolved oxygen levels at the Wallace Cove sea farm were consistently lower in summer and fall compared to winter and spring (Table 11.9). Mean dissolved oxygen ranged from 8.58 mg/L to 11.30 mg/L in winter (0.5–1.0 m water depth). Maximum dissolved oxygen was 14.15 mg/L in winter (0.5 m water depth) and minimum was 4.13 mg/L in fall (at 1 m).

Table 11.9. Average, maximum, and minimum dissolved oxygen (mg/L) in the Wallace Cove sea farms for Facheux Bay BMA (2020–2024).

Water Depth	Sampling Period	Dissolved Oxygen Parameter	Winter	Spring	Summer	Fall
			Dissolved Oxygen (mg/L)			
Wallace Cove						
0.5 m	24 Jun 2019–27 Feb 2024	Average	11.30	10.93	8.78	9.78
		Maximum	14.15	13.19	11.80	12.54
		Minimum	6.22	7.33	6.64	7.38
1 m	13 Sep 2019–27 Feb 2024	Average	11.26	10.96	8.58	9.68
		Maximum	13.88	13.15	11.30	12.00
		Minimum	8.94	7.57	6.45	4.13
5 m	24 Jun 2019–27 Feb 2024	Average	11.06	11.10	8.75	9.44
		Maximum	13.45	14.30	12.90	11.94
		Minimum	8.92	8.27	5.98	7.35
10 m	13 Sep 2019–27 Feb 2024	Average	10.87	11.18	8.65	9.36
		Maximum	13.16	12.86	11.55	11.91
		Minimum	8.61	9.50	6.24	7.43
15 m	24 Jun 2019–27 Feb 2024	Average	10.73	11.21	9.57	9.32

Water Depth	Sampling Period	Dissolved Oxygen Parameter	Winter	Spring	Summer	Fall
			Dissolved Oxygen (mg/L)			
		Maximum	13.11	14.30	13.50	11.74
		Minimum	8.32	9.68	6.50	7.38
20 m	1 Sep 2019–27 Feb 2024	Average	10.66	11.11	9.59	9.34
		Maximum	13.15	12.92	12.90	11.56
		Minimum	8.29	9.68	6.53	7.65
30 m	2 Oct 2019–4 Aug 2020, 29 Oct 2020–27 Feb 2024	Average	10.57	10.97	9.32	9.32
		Maximum	13.25	12.72	12.10	11.48
		Minimum	8.16	9.31	4.40	7.65

During 2019–2024, a general decline in dissolved oxygen levels was recorded from June–October, followed by an increase in winter and spring at the Wallace Cove sea farm (Figure 11.11). Average dissolved oxygen levels peaked in April, while the lowest levels were recorded in October. Maximum dissolved oxygen levels were highest in June while minimum dissolved oxygen levels were lowest in August (Figure 11.11).

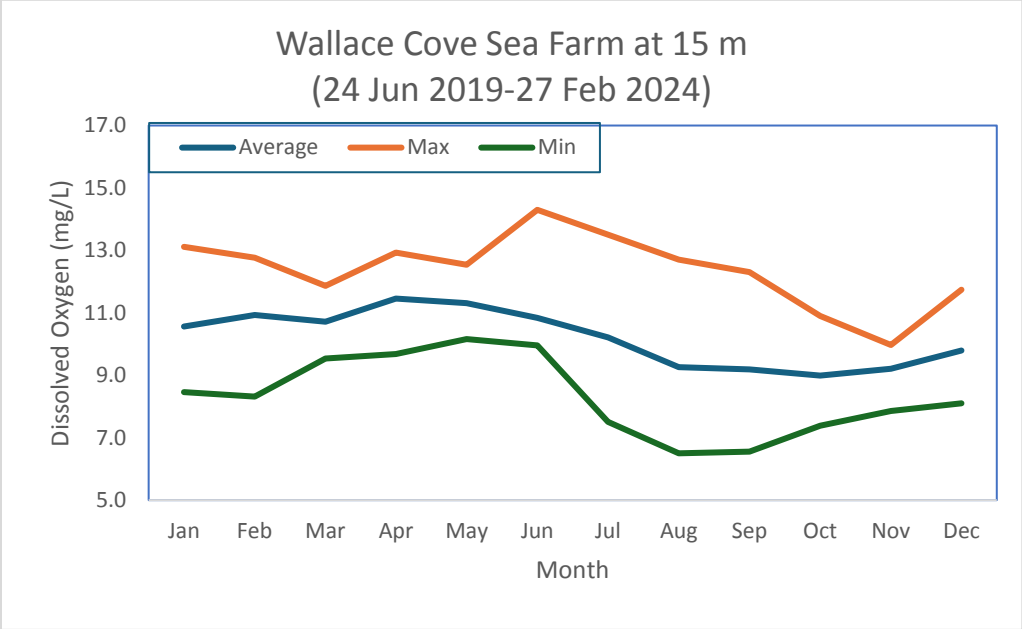


Figure 11.11. Historical dissolved oxygen (mg/L) data at the Wallace Cove sea farm in the Facheux Bay BMA at 15 m depth.

11.3.3 Salinity

Salinity at the Wallace Cove sea farm is summarized for each of the seasons at various depths, with averages ranging from 24.32 (0.5 m) to 31.01 ppt (30 m) (Table 11.10). A moderate freshwater influence is observed near the surface that is more pronounced in the spring, summer and fall.

Table 11.10. Average salinity (‰) at the sea farms in the Facheux Bay BMA (2019–2024).

Water Depth	Sampling Period	Winter	Spring	Summer	Fall
		Salinity (‰)			
Wallace Cove					
0.5 m	4 Jul 2019–27 Feb 2024	28.70	24.32	24.42	25.52
1 m	11 Nov 2019–27 Feb 2024	29.06	25.42	24.69	26.76
5 m	21 Jun 2019–27 Feb 2024	30.13	28.49	28.32	29.70
10 m	11 Nov 2019–27 Feb 2024	30.57	29.43	29.64	30.25
15 m	4 Jul 2019–27 Feb 2024	30.70	29.77	30.02	30.60
20 m	11 Nov 2019–27 Feb 2024	30.80	29.91	30.29	30.76
30 m	11 Nov 2019–27 Feb 2024	31.01	30.02	30.35	30.94

11.4 Oceanographic and Meteorological Data

Bathymetric, current, wind and wave data are available for all four sea farms in the Facheux Bay BMA.

11.4.1 Bathymetry

Water depths below the leases and minimum water depth under the sea cages range from 1–380 m and 57–151 m, respectively (Table 11.11). The shallowest sea farm is Dennis Arm where minimum depths are 57 m below the sea cage array. Bathymetric maps profiles acquired in 2017 are available for all leases (Figure 11.12–11.15).

Table 11.11. Water depth range at sea farm in the Facheux Bay BMA.

Site No.	Sea Farm	Lease Depth Range (m)	Minimum Water Depth Under Cage (m)
AQ 1123	Wallace Cove	1–370 m	151
AQ 1131	Dennis Arm	1–380 m	57
AQ 1126	Indian Tea Point	1–302 m	140
AQ 1127	Wild Cove	1–300 m	110

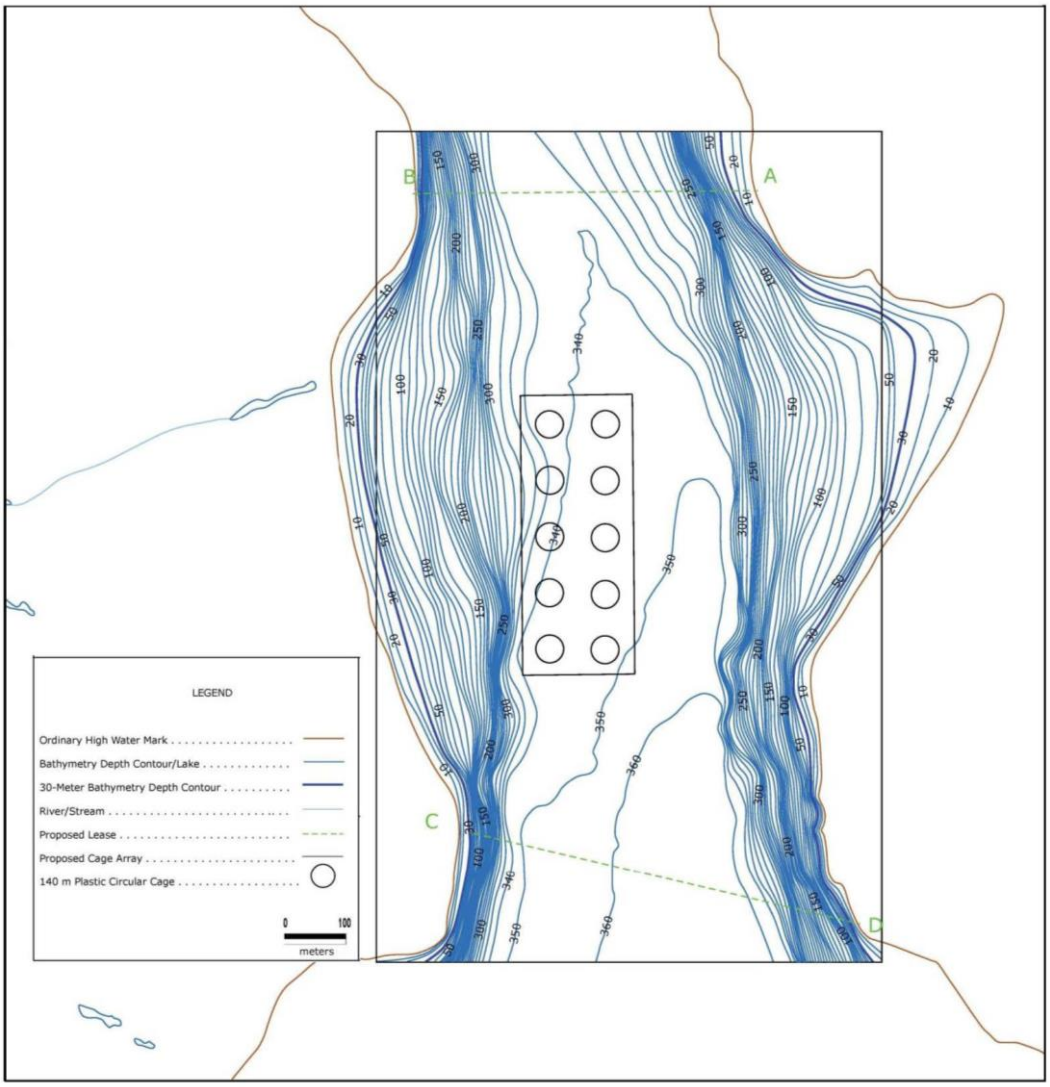


Figure 11.12. Bathymetric map for the Wallace Cove sea farm (July–September 2017).

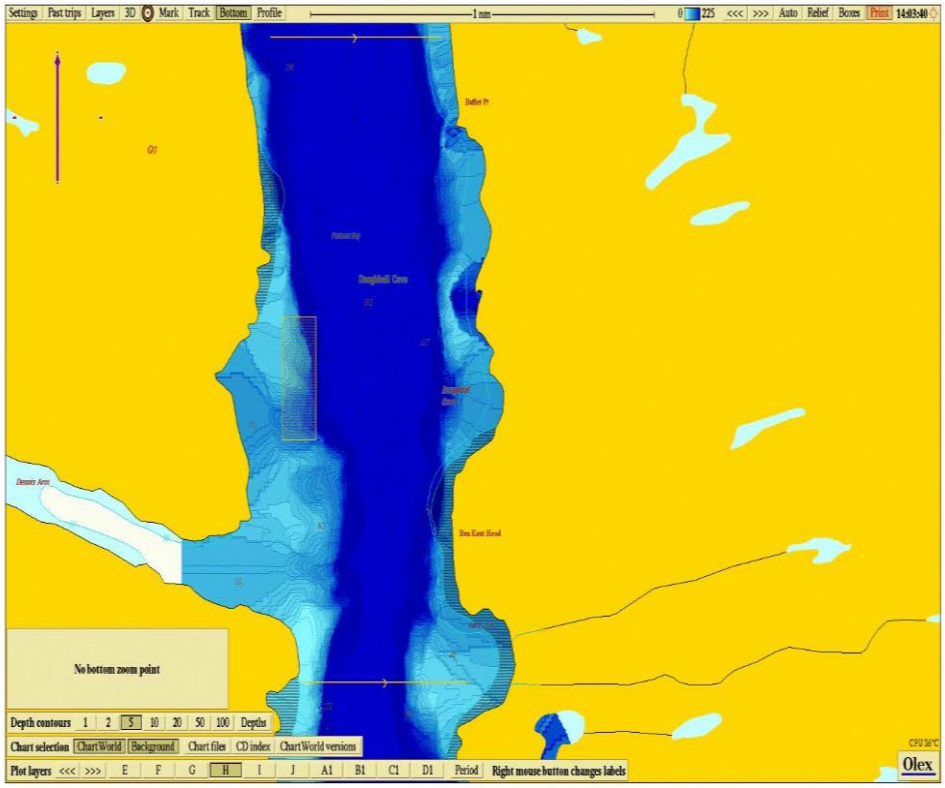


Figure 11.13. Bathymetric map for the Dennis Arm sea farm (October–November 2017).

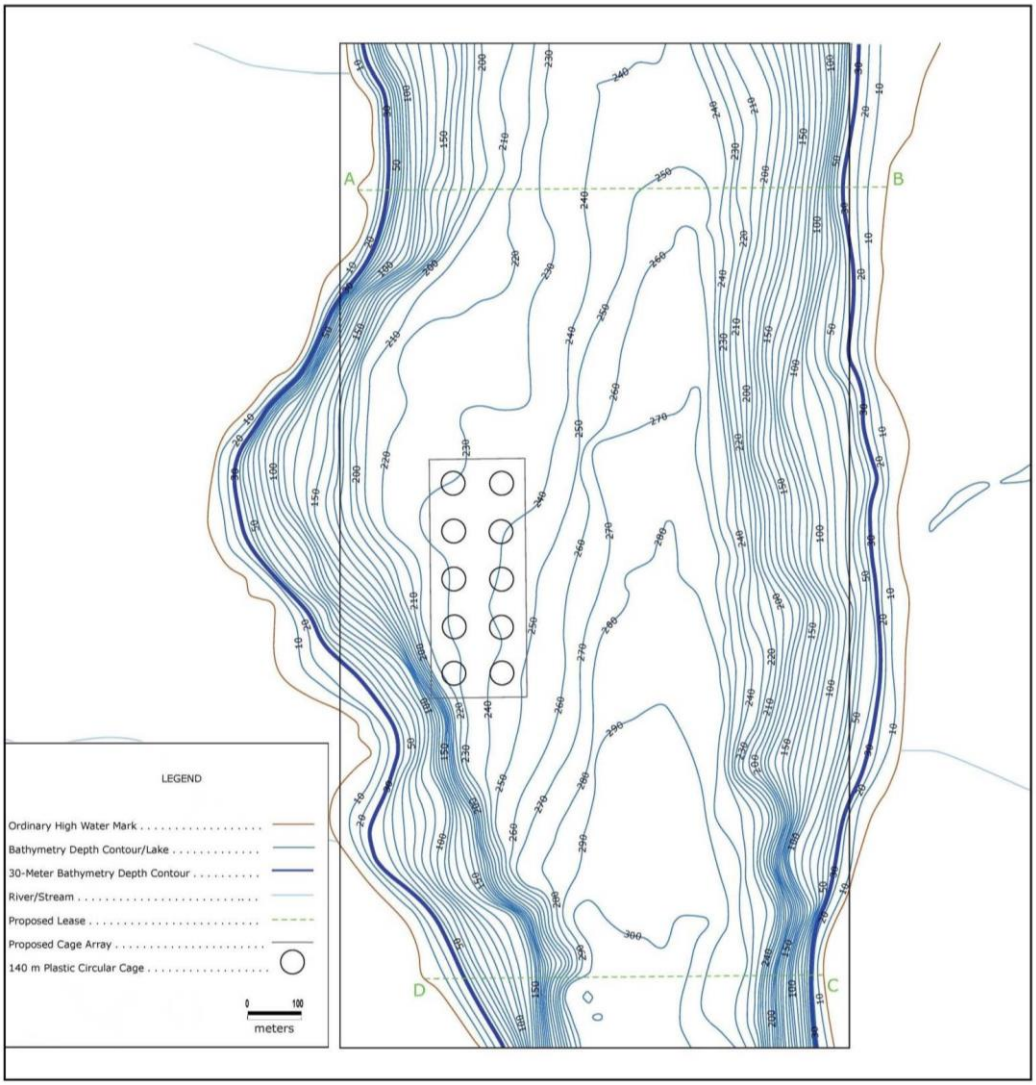


Figure 11.14. Bathymetric map for the Indian Tea Point sea farm (September 2017).

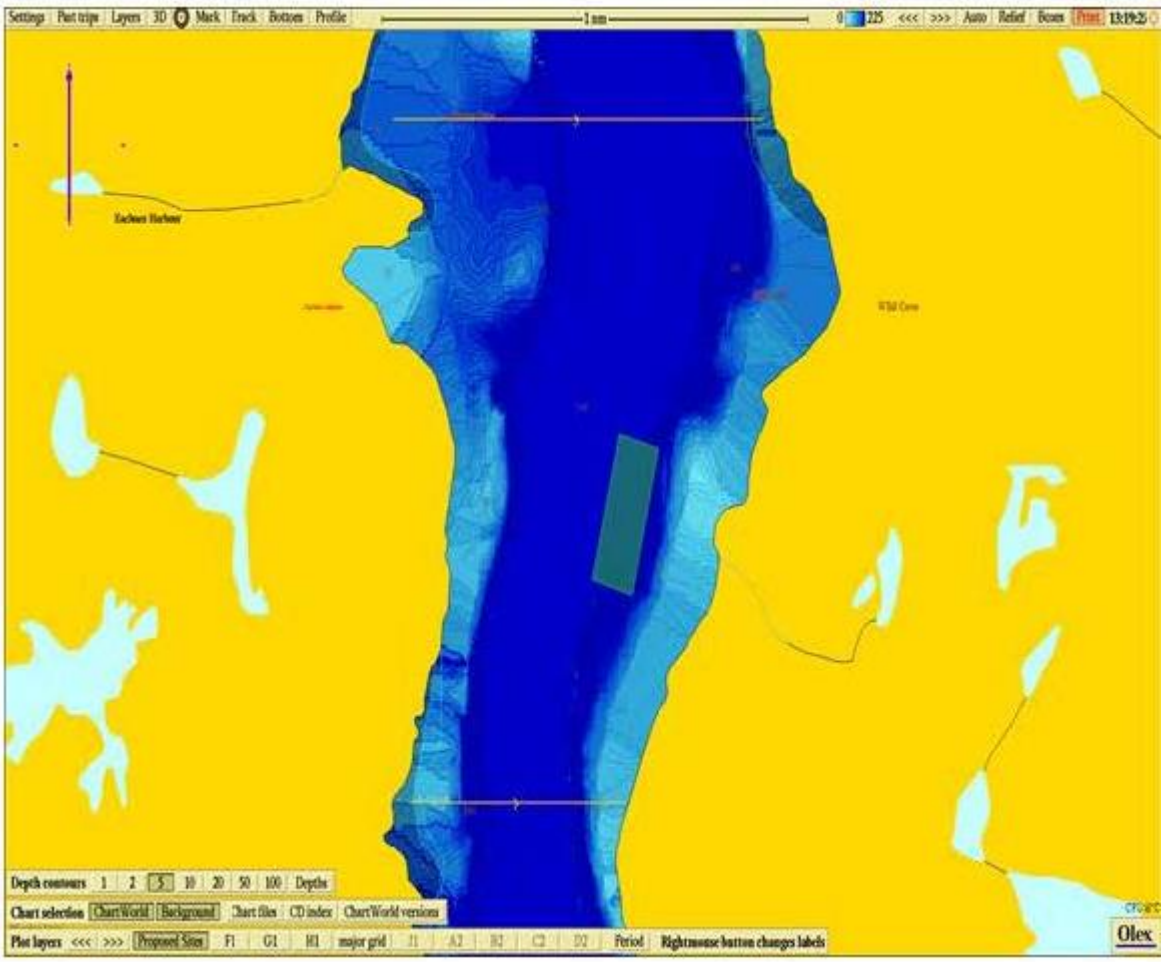


Figure 11.15. Bathymetric map for the Wild Cove sea farm (November 2017).

11.4.2 Currents

Current data for the Wallace Cove and Indian Tea Point sea farms were collected in August–September 2017, while data for the Dennis Arm and Wild Cove sea farms were acquired in October–November 2017.

11.4.2.1 Wallace Cove

During August–September 2017, current measurements were collected at four water depths in the Wallace Cove sea farm (Table 11.12). During this period, mean current speeds ranged from 3.3 cm/s to 9.6 cm/s. The maximum current speed recorded was 44.6 cm/s at 9.7 m below the surface. Currents were most commonly directed towards north-northwest to north and south-southeast to south near the seafloor (Figure 11.16).

11.4.2.2 Dennis Arm

During October–November 2017, current measurements were collected at five depths at the Dennis Arm sea farm (Table 11.13). During this period, mean current speeds ranged from 0.98 cm/s near the bottom at 375 m depth to 8.61 cm/s near the surface at 6.74 m depth. Maximum current speeds were variable, with the highest speed of 50.26 cm/s recorded at 6.74 m depth. Currents were most directed toward the south to south-southwest across all depths (Figure 11.17). Lower speeds were observed mid-water column and near the seafloor, with mean speeds of 2.03 cm/s at 189.3 m depth and 3.89 cm/s at 375 m depth. Higher speeds were more frequent closer to the surface, consistent with the overall current patterns at the site.

11.4.2.3 Indian Tea Point

During August–September 2017, current measurements were collected at four depths at the Indian Tea Point sea farm (Table 11.14). During this period, mean current speeds ranged from 3.2 cm/s near the seafloor at 243 m depth to 5.8 cm/s near the surface at 9.1 m depth. Maximum current speeds were variable, with the highest speed of 42.1 cm/s recorded at 15.1 m below the surface. Currents flowed toward the north-northwest to north near the surface and mid-water column but shifted to south-southeast to south near the seafloor (Figure 11.18). Lower current speeds were observed mid-water column and near the seafloor, with mean speeds of 3.7 cm/s at 124 m depth and 3.2 cm/s at 243 m depth. Higher speeds were more frequent closer to the surface, consistent with the overall current patterns at the sea farm.

11.4.2.4 Wild Cove

During October–November 2017, current measurements were collected at three depths at the Wild Cove sea farm (Table 11.15). During this period, mean current speeds were lowest at mid depth (194 m depth) and near bottom (385 m depth) at 1.74 cm/s. Mean current speeds were highest near the surface (13.3 m depth) at 7.98 cm/s. Maximum current speeds were variable, with the highest speed of 44.5 cm/s recorded at 13.3 m below the surface.

Currents were most commonly directed toward the north-northwest to north near the surface and mid-water column but shifted to south-southeast to south near the seafloor (Figure 11.19). Lower current speeds were observed mid-water column and near the seafloor, with mean speeds of 1.74 cm/s at 194 m depth and 2.0 cm/s at 385 m depth. Higher speeds were more frequent closer to the surface, consistent with the overall current patterns at the site.

Table 11.12. Current speeds (mean and maximum values) and vector-averages at the Wallace Cove sea farm (August–September 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.7	n/a	n/a	n/a
9.7	9.59	44.56	n/a
15.7	7.56	40.08	n/a
119	3.33	13.85	n/a
338	3.53	12.19	n/a

Notes:
MWL = mean water level.

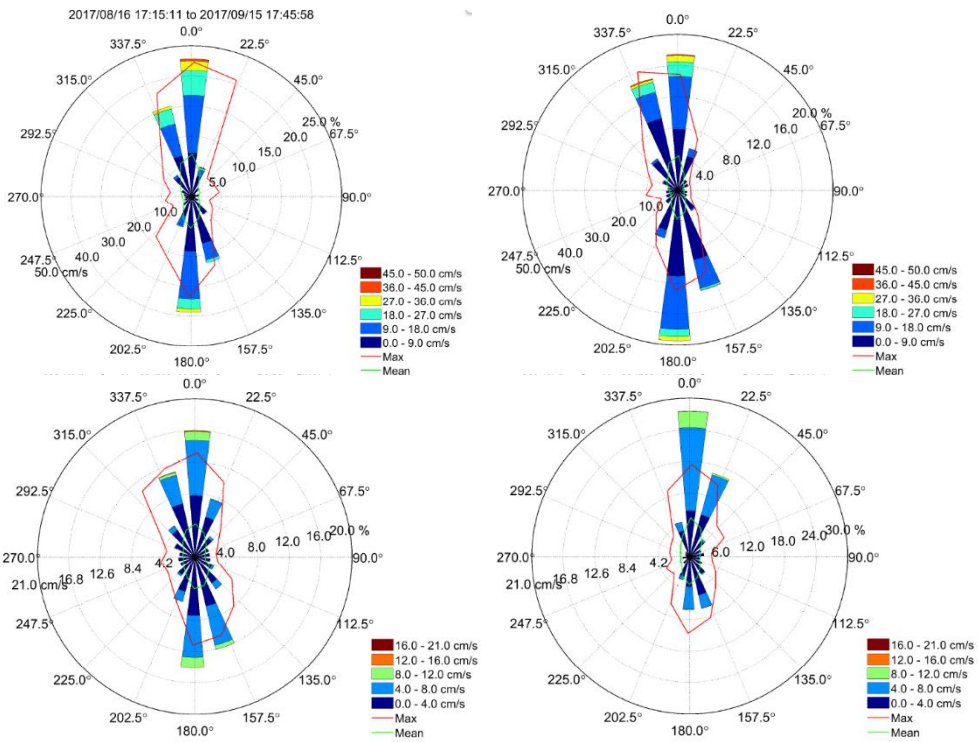


Figure 11.16. Compass rose plots of current speeds at the Wallace Cove sea farm (August–September 2017). Current speeds and directions at 5.7 m,9.7 m, 15.7 m, 119 m (mid-depth) and 338 m (near bottom) are shown from left to right, top to bottom in the figure.

Table 11.13. Current speeds (mean and maximum values) and vector-averages at the Dennis Arm sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
6.74	8.61	50.26	n/a
10.7	7.15	37.84	n/a
14.7	6.64	39.80	n/a
189.3	2.03	11.00	n/a
375.0	3.89	0.98	n/a

Notes:
MWL = mean water level.

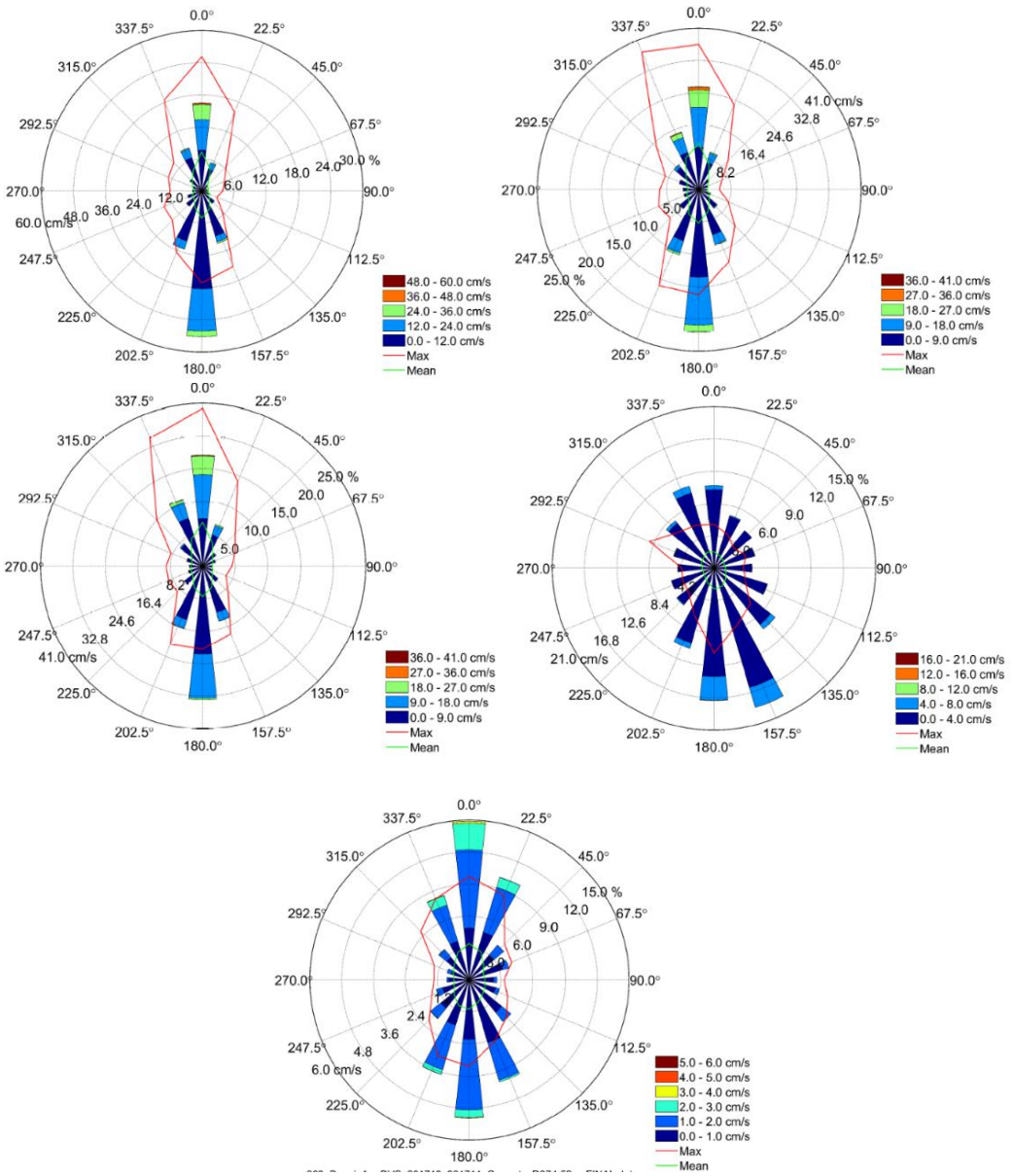


Figure 11.17. Compass rose plots of current speeds at the Dennis Arm sea farm (October–November 2017). Current speeds and directions at 6.74 m,10.7 m, 14.7 m, 189.3 m, and 375.0 m (near bottom) are shown from left to right, top to bottom in the figure.

Table 11.14. Current speeds (mean and maximum values) and vector-averages at the Indian Tea Point sea farm (August–September 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5	n/a	n/a	n/a
9.1	5.78	36.44	n/a
15.1	4.46	42.12	n/a
124.0	3.71	15.36	n/a
243.2	3.22	12.03	n/a

Notes:
MWL = mean water level.

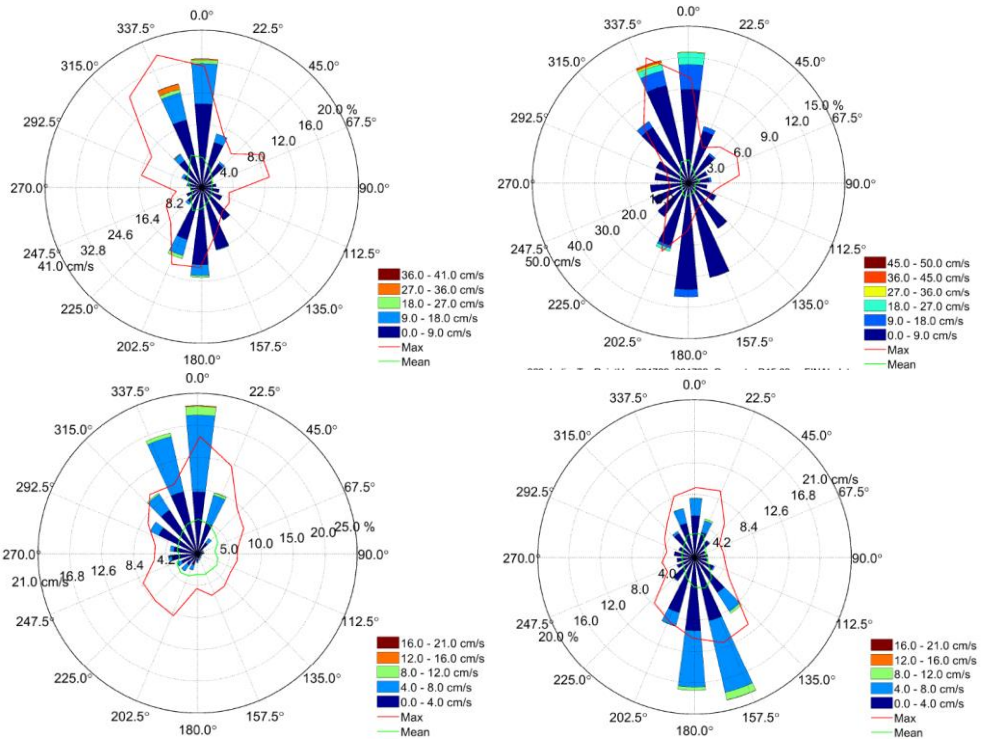


Figure 11.18. Compass rose plots of current speeds at the Indian Tea Point sea farm (August–September 2017). Current speeds and directions at 9.1 m, 15.1 m, 124.0 m, and 243.2 (near bottom) are shown from left to right, top to bottom in the figure.

Table 11.15. Current speeds (mean and maximum values) and vector-averages at the Wild Cove sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
13.3	7.98	44.50	n/a
194	1.74	11.46	n/a
385	2.00	5.60	n/a

Notes:
MWL = mean water level.

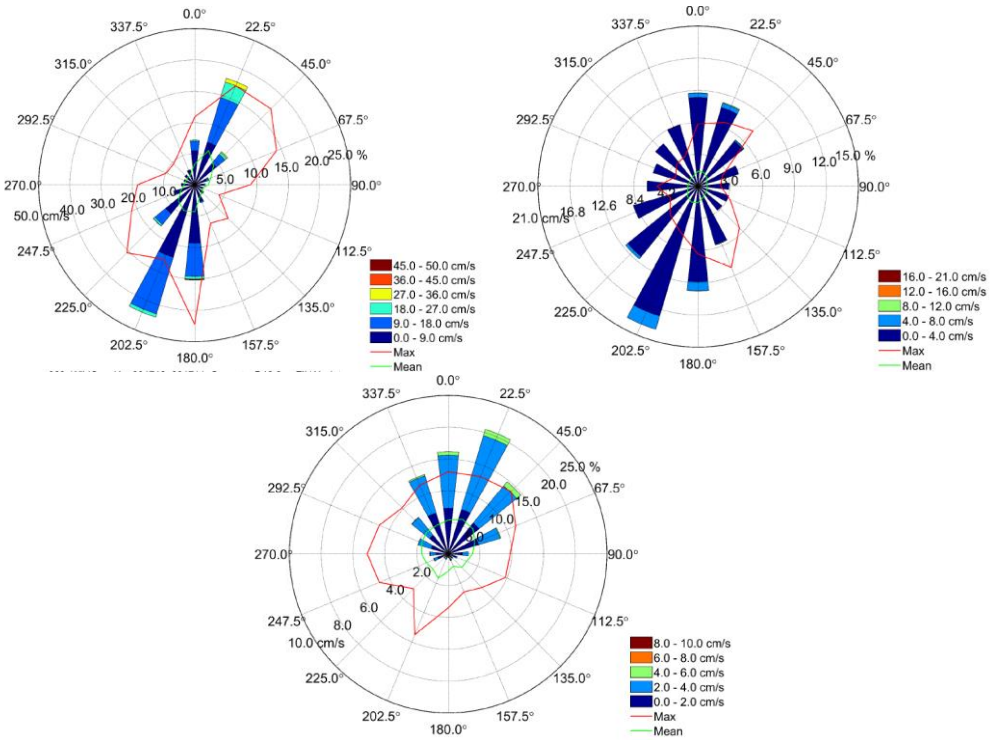


Figure 11.19. Compass rose plots of current speeds at the Wild Cove sea farm (October–November 2017). Current speeds and directions at 13.3 m, 194 m and 385 m (near bottom) are shown from left to right, top to bottom in the figure.

11.4.3 Wind and Waves

11.4.3.1 Modelling (MSC50 Hindcast Approach) for Atlantic Canada

Mean wind speeds and mean wave heights near the Facheux Bay BMA were highest in December, January, and February and lowest in June, July, and August based on 10 years of historical data (Tables 11.16 and 11.17). Maximum monthly wind speeds of ~20–21 m/s (~72–76 km/h) occurred in December, January, February, and March. Similarly, maximum monthly wave heights of 3.19–3.82 m occurred during winter months. Wind directions were predominantly westerly (with wind speeds most frequently ranging from ~8–10 m/s Figure 11.20).

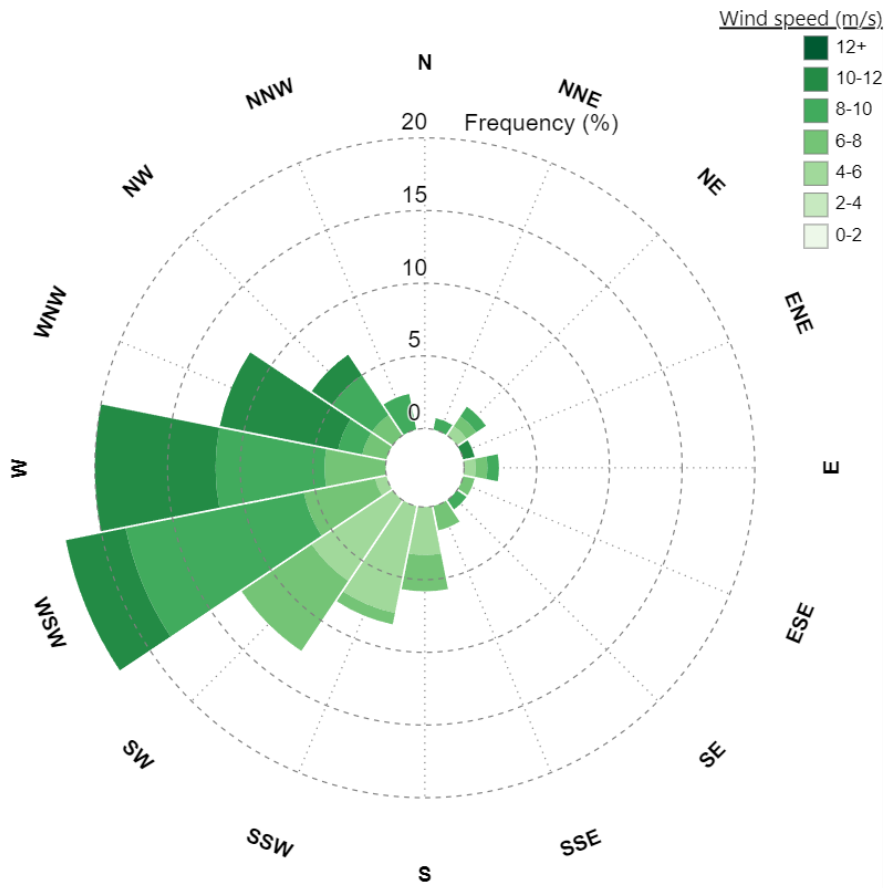
Table 11.16. Monthly wind speeds (mean and maximum) near the Facheux Bay BMA (at MSC50 grid point M6012715 during 2009–2018).

Month	M6012715	
	Wind Speed Mean (m/s)	Wind Speed Max (m/s)
January	10.90	20.91
February	10.42	21.72
March	9.48	20.59
April	7.91	18.47
May	6.47	14.30
June	5.75	13.49
July	5.45	12.27
August	5.97	13.88
September	7.73	16.59
October	8.90	18.55
November	9.73	19.65
December	10.57	20.25

Notes:
Grid point M6012720 is ~5 km from the Wild Cove sea farm.

Table 11.17. Monthly wave heights (m) (mean and maximum) recorded near the Facheux Bay BMA (at MSC50 grid point M6012715 during 2009–2018).

Month	M6012715	
	Wave Height Mean (m)	Wave Height Max (m)
January	1.28	3.29
February	1.22	3.82
March	1.04	2.94
April	0.93	3.19
May	0.73	1.94
June	0.67	1.81
July	0.69	1.72
August	0.70	1.90
September	0.86	2.30
October	0.98	2.68
November	1.12	3.26
December	1.21	3.19



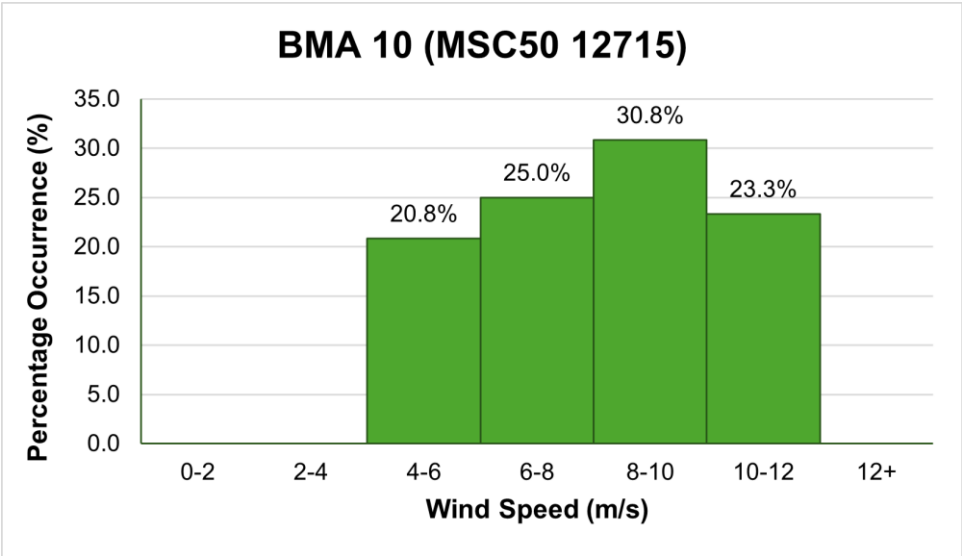


Figure 11.20. Wind rose and wind speed frequency histogram for MSC50 grid point M6012715 near the Facheux Bay BMA (2009–2018).

11.4.3.2 Sea Farm Specific Wave Measurements

In the Facheux Bay BMA, sea farm specific wave measurements were collected during February–May 2024 in the Wild Cove sea farm using a SOFAR Spotter wave buoy (see Section 3.4.3.3).

Wild Cove

During February–May 2024, a SOFAR Spotter wave buoy was deployed in the Wild Cove sea farm. During this period, the average significant wave height (Hs) was 0.22 m and wave period (Tp) was 6.1 s (Table 11.18). The waves predominantly originated from offshore, arriving from the southwest and often contained a swell component (Figure 11.21). Some locally generated wind waves arrived from the northwest. The largest wave event occurred on 24 March 2024, at 18:24 UTC. The winds at Sagona Island reached 14.4 m/s from the southwest and the waves at the study site reached 1.49 m Hs. Peak wave periods were 8.3 sec and the peak direction was 269 degrees true during this event.

Table 11.18. Statistical summary of significant wave height (Hs) and period (Tmean) from the Spotter wave buoy deployed at Wild Cove, February–May 2024.

	Min	1%	5%	25%	50%	mean	75%	95%	99%	std	max	No. valid	Total No.
Hs (m)	0.01	0.03	0.06	0.13	0.19	0.22	0.29	0.50	0.69	0.14	1.49	4175	4175
Tmean (s)	1.26	1.28	1.44	2.23	6.02	6.13	9.31	11.38	14.63	3.63	14.63	4175	4175

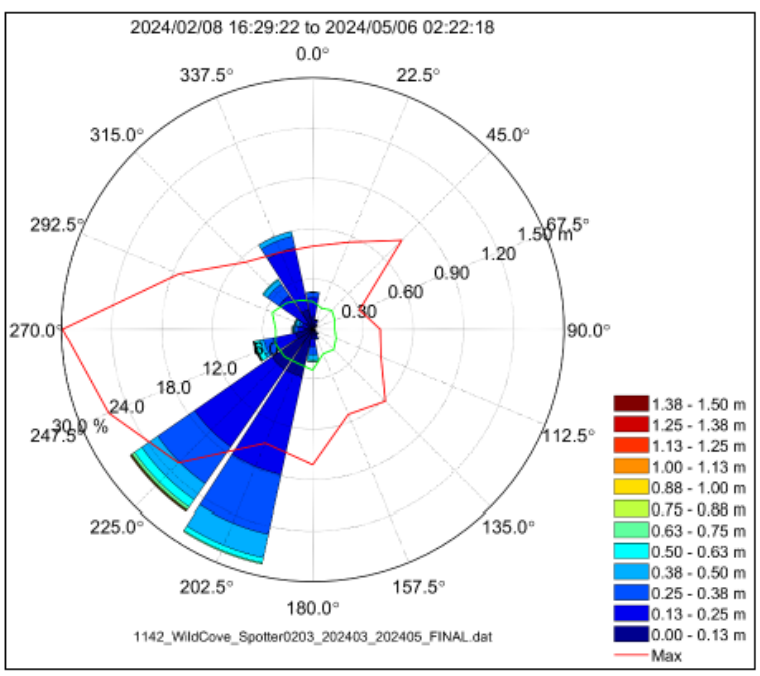


Figure 11.21. Compass rose plot of Hs and mean wave direction from the Spotter wave data collected in the Wild Cove sea farm (February–May 2024).

11.5 Ice Conditions

Ice conditions for the Study Area including Facheux Bay (BMA 10) are detailed in Section 4.5.

11.6 Storms

Storm conditions for the Study Area including Facheux Bay (BMA 10) are detailed in Section 4.6.

11.7 Tides and Floods

Tide and flood conditions for the Study Area including Facheux Bay (BMA 10) are detailed in Section 4.7.

11.8 Performance of Sea Farms with a Previous Production Cycle

The Wallace Cove and Indian Tea Point sea farms have been previously stocked by Gray Aqua Group before licenses for these sea farms were acquired by MCE. Only the Wallace Cove sea farm has been stocked by MCE since its acquisition in 2017. The summaries below detail the monitoring, reporting and performance associated with the Wallace Cove sea farm during the period that public reporting has been a requirement (2016–present).

11.8.1 Fallowing Periods

The Wallace Cove sea farm is currently fallow since October 2023 (Table 11.19).

Table 11.19. Summary of fallow schedule for Facheux Bay BMA sea farms since 2017. Green indicates production (month stocked), red indicates harvesting/depopulation (month sea cages were empty), and blue is fallow (not stocked).

Sea Farm	2017	2018	2019	2020	2021	2022	2023	2024
Wallace Cove			Jun		May	Jun	Oct	
Dennis Arm								
Indian Tea Point								
Wild Cove								

11.8.2 Benthic Monitoring

In 2017 MCE acquired two licenses (Wallace Cove and Indian Tea Point) from Gray Aqua Group and applied for two additional licenses (Dennis Arm and Wild Cove), that same year, modelling of TOC deposition (i.e., DEPOMOD) had been completed for all four sea farms. MCE wished to amend the licenses for Wallace Cove and Indian Tea Point and as per the AAR regulations that came into effect in 2015, new applications and expansion of existing farms require depositional modelling. The results of this modelling can be found in LGL (2025c, Volume 3).

As per the AAR, benthic monitoring of an active sea farm is required during a period of peak salmon feeding. Depending on bottom type (hard or soft), either video monitoring or bottom grabs are collected to determine the amount of BOD matter. During years with active farming, required benthic monitoring at sampling stations in the Facheux Bay BMA was conducted. All sea farms were within the allowable regulatory threshold based on the BOD indicators (Table 11.20).

Table 11.20. AAR benthic monitoring results for sea farms in the Facheux Bay BMA (2016–2023). [Green = within allowable regulatory threshold[a]]

AAR Monitoring Year	BOD Indicator	Sea Farm			
		Wallace Cove	Dennis Arm	Indian Tea Point	Wild Cove
2015	Date				
	%Stations				
2016	Date				
	%Stations				
2017	Date				
	%Stations				
2018	Date				
	%Stations				
2019	Date				
	%Stations				
2020	Date	2 Oct 20			
	%Stations	60 (3/5)			
2021	Date				
	%Stations				
2022	Date				
	%Stations				
2023	Date	31 Jul, 2 Aug 23			
	%Stations	0 (0/5)			

Source: MCE (2024).
Notes:
[a] If >70% of monitoring stations had the presence of *Beggiatoa* species or similar bacteria, marine worms, or barren substrate (as determined by visual monitoring) and/or if the mean concentration of free sulfide in surficial sediment was >3000 µM (as determined by sediment sampling) this is considered an exceedance (fail) of the allowable threshold.

11.8.3 Publicly Reported Performance

As detailed in Section 3.8.3, sea farm performance reports which include mass mortality, disease, escape and sea lice count data are available for recent years. Drugs and pesticide use information at sea farms are available for 2016–2022.

11.8.3.1 Mortality

No abnormal mortality events have been reported for MCE farms within Facheux Bay (BMA 10) for the years publicly reported on NAIA website and the Aquaculture Portal 2019–2024 (Table 11.21).

11.8.3.2 Disease

In 2020 and 2023, ISA was detected and confirmed using duplicate testing at the Wallace Cove sea farm. The sea farm was quarantined at the time of suspect detection followed by removal of all fish within the affected cages following the confirmation results (Table 11.21). Undersized fish were recovered for fishmeal and oil production, marketable fish were harvested.

11.8.3.3 Escapes

No fish escapes were reported at sea farms in the Facheux Bay BMA for the years publicly reported on NAIA website and the Aquaculture Portal 2019–2024 (Table 11.21).

Table 11.21. Summary of reportable incident events at sea farms in the Facheux Bay BMA.

Date	Sea Farm	Incident				No. Cages Impacted	No. Fish Affected	Cause	Response Measures
		Abnormal Mortality	Fish Health Suspect	Fish Health Confirmed	Escape				
2020-12-11[a]	Wallace Cove		ISAv			1	98,825	ISA Virus	Quarantine
2020-12-19[a]	Wallace Cove			ISAv					Quarantine & recovered/harvested
2023-07-28[b]	Wallace Cove		ISAv			5	290,000	ISA Virus	Quarantine & harvested

Source: [a]naia.ca (2024); [b]aquacultureportal.ca (2024).

11.8.3.4 Sea Lice

Sea lice are reported on the NAIA website as an average number per fish. These results are not reported for each sea farm or BMA but as an average for all active sea farms. Table 4.22 (see Section 4.8.3.4) summarizes the average sea lice/fish for all active sea farms for 2021–2024.

11.8.3.5 Deposits of Drugs and Pesticides

No sea farms in the Facheux Bay BMA have received deposits from pesticide (bath) or drugs (in-feed) between 2016–2022 as summarized on the National Aquaculture Public Reporting website[15] as per AAR regulations.

11.9 Exposure Zone Modelling

DFO conducted PEZ modelling for BMA 10 sea farms to estimate areas exposed to discharges from bath pesticides and in-feed drugs (and feces) (Page et al 2023). BMT conducted dispersion

[15] Source: National Aquaculture Public Reporting Data Website (2024).

modelling for a worst-case scenario use of a bath pesticide for the sea farms in BMA 10 (see Appendix B).

11.9.1 PEZ Modelling

Detailed predictions of PEZ modelling for BMA 10 (Facheux Bay) are found in Page et al. (2023); a summary is provided here. DFO undertook this modelling to provide initial estimates of the size and location of the areas that may be exposed to releases of fish health treatment substances. As noted in Page et al. (2023), PEZ estimates are not zones of impact and are intended to serve as an initial screening tool in combination with biological and socio-economic aspects of an area to gauge potential risk and the potential need for more precise modelling estimates.

The model predicted that for all sea farms in BMA 10, tarp treatments for Azamethiphos and Hydrogen Peroxide had larger PEZ (km^2) relative to these same treatments in a well boat (Table 11.22). The entrainment of the chemical associated with the jet dynamics in the well boat reduces the concentration at discharge and a ten-fold reduction was used for the model which produced smaller PEZ (km^2) for well boat treatments. Well boat discharges of Hydrogen Peroxide did not exceed threshold concentrations (i.e., 188 mg/L); therefore, predicted areas were zero.

The Wild Cove sea farm, the southernmost sea farm in the BMA, was predicted to have the largest PEZ areas for Azamethiphos tarp treatments (36.45 km^2 maximum and 1.90 km^2 mean; with concentrations ≥1 µg/L). The remaining three sea farms (Wallace Cove, Dennis Arm and Indian Tea Point) had maximum PEZ areas of 29.98 km^2, 29.57 km^2, and 32.84 km^2, respectively. The PEZ model produces a circular area from the center of the sea cage array and encompassed land for maximum predicted areas for all sea farms in BMA 10 (see Figure 17 in Page et al. 2023)—which results in an overestimate of exposed areas.

In-feed pest control products along with feces were modelled with PEZ area (km^2; horizontal distance "travelled" by a sinking particle) estimates for mean and maximum current speeds (mid-depth); however, it is unlikely that maximum current speeds would be maintained throughout the duration of a treatment and therefore, distance estimates for maximum current speeds represents an upper boundary. The Indian Tea Point sea farm had the largest estimated PEZ area for feed (1.39 km^2) and feces (20.11 km^2) under maximum current speeds (Table 11.23). The smallest area was estimated for the Dennis Arm sea farm at 0.89 km^2 (feed) and 10.62 km^2 (feces).

Table 11.22. Estimates of the maximum and mean PEZ areas associated with Azamethiphos (assumes a 100 µg/L dose concentration) and Hydrogen Peroxide (assumes a 1800 mg/L dose concentration) using two different treatment methods: a tarp surrounding the net in-situ and a well boat hold for BMA 10 (from Page et al. 2023).

Sea Farm	Tarp Treatment				Well Boat Treatment[b]			
	Azamethiphos[c]		Hydrogen Peroxide[d]		Azamethiphos[c]		Hydrogen Peroxide[d]	
	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)	Maximum PEZ Area (km^2)	Mean PEZ Area (km^2)
Wallace Cove[a]	29.98	1.76	8.24	0.70	8.51	0.71	0	0
Dennis Arm[a]	29.57	1.44	8.13	0.59	8.40	0.61	0	0
Indian Tea Point[a]	32.84	0.87	8.98	0.41	9.27	0.42	0	0
Wild Cove[a]	36.45	1.90	9.91	0.74	10.22	0.75	0	0

Notes:

[a] Sea farms are located near land and PEZ areas (marine) are smaller than estimated—particularly maximum PEZ areas.

[b] Well boat treatments assume a ten-fold reduction in concentration at discharge as a result of entrainment associated with the jet dynamics in the well boat.

[c] PEZ model assumes a toxicity threshold of 1 µg/L of Azamethiphos. Other assumptions are provided in Page et al. (2023).

[d] PEZ model assumes a toxicity threshold of 188 mg/L of Hydrogen Peroxide. Other assumptions are provided in Page et al. (2023).

Table 11.23. Summary of PEZ area for pest control products in-feed and feces (km^2) under mean and maximum current speeds for BMA 10.

Sea Farm	Area of PEZ (km^2)			
	Mean Current Speed		Maximum Current Speed[a]	
	In-feed	Feces	In-feed	Feces
Wallace Cove[a]	0.28	1.06	1.34	18.92
Dennis Arm[a]	0.15	0.23	0.89	10.62
Indian Tea Point[a]	0.24	0.81	1.39	20.11
Wild Cove[a]	0.16	0.26	0.94	11.75

Notes:

[a] Area represents an upper bound to the potential for exposure and is not expected to occur often since most releases do not experience maximum currents for the duration of treatment.

11.9.2 Dispersion Modelling

Dispersion modelling was undertaken to estimate exposure zones for the release of Azamethiphos (bath treatment) in a worst-case scenario (see Appendix B for details). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment at Indian Tea Point sea cages (28 April 2023 for spring tide; 10 June 2023 for neap tide) through final treatment at Wild Cove sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 11.24).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Facheux Bay BMA predicted maximum areas of 4.39 km^2 and 3.59 km^2 during neap and spring tides, respectively; where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment

duration. The maximum Azamethiphos concentration for the Facheux Bay BMA was 110 ng/L during the simulated neap tide and 95 ng/L during the spring tide. The peak concentration occurred during the treatment of the second sea farm, Wallace Cove, and decreased shortly after treatments were completed with concentration levels 72 hrs after final treatment below 100 ng/L (Figures 11.22 and 11.23). The maximum area within BMA 10 where Azamethiphos concentrations exceeded 100 ng/L was larger during the neap tide scenario (4.39 km^2) than during the spring tide scenario (3.59 km^2).

Table 11.24. Treatment schedule (assumed dates) for sea farms in BMA 10 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
Indian Tea Point	1	28 Apr 23	-459	10 Jun 23	-459
	2	28 Apr 23	-456	10 Jun 23	-456
	3	29 Apr 23	-435	11 Jun 23	-435
	4	29 Apr 23	-432	11 Jun 23	-432
	5	30 Apr 23	-411	12 Jun 23	-411
	6	30 Apr 23	-408	12 Jun 23	-408
	7	01 May 23	-387	13 Jun 23	-387
	8	01 May 23	-384	13 Jun 23	-384
	9	02 May 23	-363	14 Jun 23	-363
	10	02 May 23	-360	14 Jun 23	-360
Wallace Cove	1	03 May 23	-339	15 Jun 23	-339
	2	03 May 23	-336	15 Jun 23	-336
	3	04 May 23	-315	16 Jun 23	-315
	4	04 May 23	-312	16 Jun 23	-312
	5	05 May 23	-291	17 Jun 23	-291
	6	05 May 23	-288	17 Jun 23	-288
	7	06 May 23	-267	18 Jun 23	-267
	8	06 May 23	-264	18 Jun 23	-264
	9	07 May 23	-243	19 Jun 23	-243
	10	07 May 23	-240	19 Jun 23	-240
Dennis Arm	1	08 May 23	-219	20 Jun 23	-219
	2	08 May 23	-216	20 Jun 23	-216
	3	09 May 23	-195	21 Jun 23	-195
	4	09 May 23	-192	21 Jun 23	-192
	5	10 May 23	-171	22 Jun 23	-171
	6	10 May 23	-168	22 Jun 23	-168
	7	11 May 23	-147	23 Jun 23	-147
	8	11 May 23	-144	23 Jun 23	-144
	9	12 May 23	-123	24 Jun 23	-123
	10	12 May 23	-120	24 Jun 23	-120
Wild Cove	1	13 May 23	-99	25 Jun 23	-99
	2	13 May 23	-96	25 Jun 23	-96
	3	14 May 23	-75	26 Jun 23	-75
	4	14 May 23	-72	26 Jun 23	-72
	5	15 May 23	-51	27 Jun 23	-51
	6	15 May 23	-48	27 Jun 23	-48
	7	16 May 23	-27	28 Jun 23	-27
	8	16 May 23	-24	28 Jun 23	-24
	9	17 May 23	-3	29 Jun 23	-3
	10	17 May 23	0	29 Jun 23	0

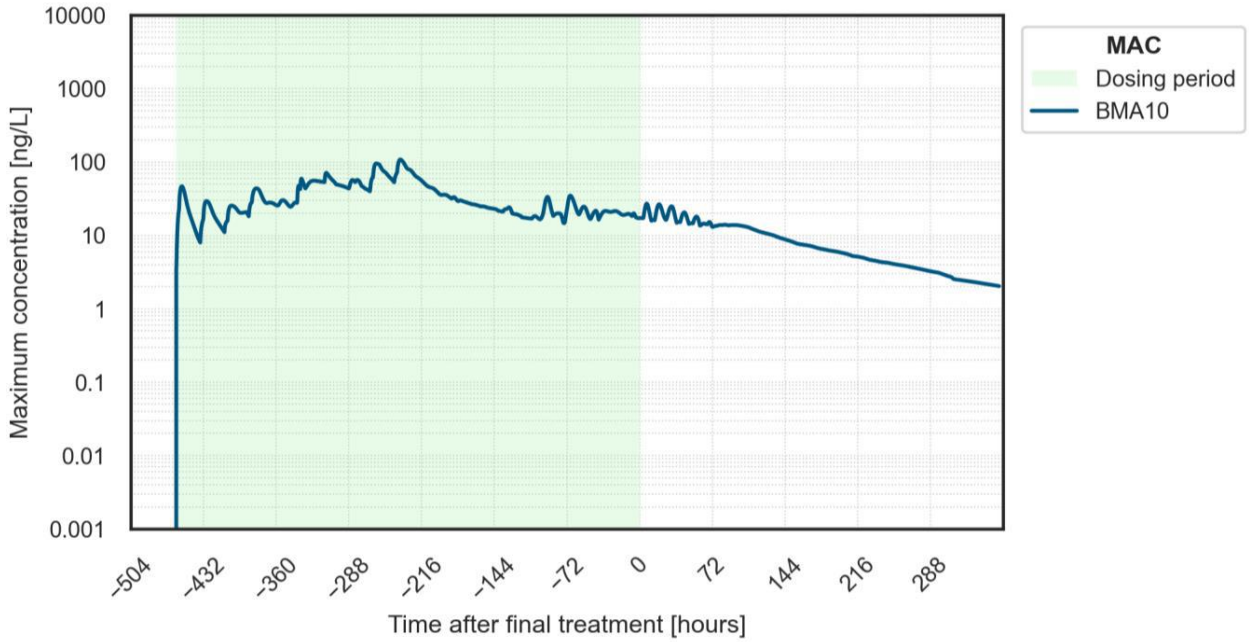


Figure 11.22. Maximum concentrations for Facheux Bay BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced at Indian Tea Point sea farm (assumed 10 June 2023) and final treatment was at Wild Cove sea farm (time=0; assumed 29 June 2023).

Figure 11.23. Maximum concentrations for Facheux Bay BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced at Indian Tea Point sea farm 28 April 2023. Final treatment (time=0) was last treatment at Wild Cove (17 May 2023).

12.0 Hare Bay (BMA 11)

The Hare Bay BMA (BMA 11) is located in the Bays West Area and includes two licensed sea farms: Mare Cove South and North Bob Locke Cove (Table 12.1; Figure 12.1). The Mare Cove South sea farm was acquired from Gray Aqua Group in 2017 and has remained fallow since its acquisition. The North Bob Locke Cove sea farm is a new MCE sea farm and is scheduled for production in 2025. The two sea farms are located in close proximity to each other and the closest community to these sea farms is Francois, which is accessible by ferry.

Table 12.1. Hare Bay (BMA 11) sea farm locations and construction status in 2024.

BMA Name	BMA No.	Sea Farm Name	AQ Licence No.	Site Coordinates		Construction Status
				Latitude (N)	Longitude (W)	
Hare Bay	11	Mare Cove South	1125	47.66189	-56.51969	TBD
		North Bob Locke Cove	1124	47.64431	-56.51889	Scheduled 2025

The sea farms in Hare Bay were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 m. The maximum number of fish per site is 1,000,0000 with a maximum stocking density of 15 kg/m^3.

The water depths below the leases range from 1–204 m (Table 12.2). The shallowest sea farm is North Bob Locke Cove where minimum sea cage array depth is 78 m. The sea farms have bottom sediments consisting of mixed substrates. The Mare Cove South sea farm is considered soft bottom while the North Bob Locke Cove sea farm is considered hard bottom.

Currents were reported at near surface, upper, mid-water, and near bottom depths. At 15 m water depth, the maximum water current speed at each site was between ~four to ~five times the mean speed (Table 12.2). There is much vertical variation in the maximum current speed and this variation is larger than the mean current speeds.

Benthic habitat surveys revealed that the predominate flora and fauna at sea farms are anemones, sea star spp., and encrusting sponges. Soft corals and kelp beds were observed in both Mare Cove South and North Bob Locke Cove sea farms (Tables 12.3 and 12.4).

Seasonal water temperature data were not available for the Hare Bay BMA (Table 12.2). There is also no site specific, wave calculation or representative MSC50 gridpoints to provide wind or wave data for the Hare Bay BMA.

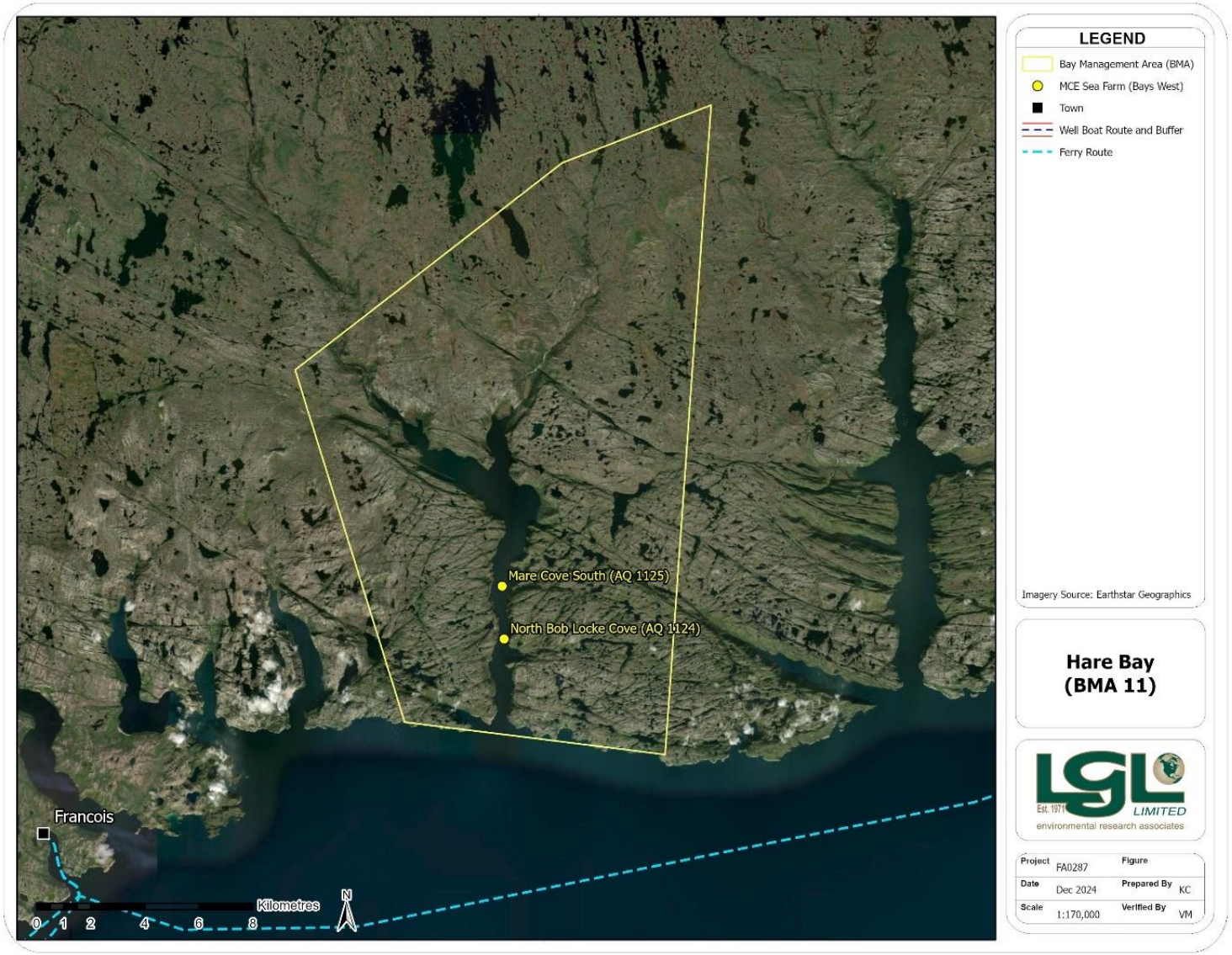


Figure 12.1. Locations of sea farms in the Hare Bay BMA.

Table 12.2. Summary of historic site-specific sea farm characteristics in Hare Bay (BMA 11).

Characteristic	Sea Farm	
	Mare Cove South	North Bob Locke Cove
Lease area (ha)	91	67
Water depth under lease (m)	1–204	1–188
Minimum water depth under sea cages (m)	117	78
Predominant Bottom Type	Soft	Hard
Water Temperature (Mean °C at 15 m)		
Winter [a]	n/a	n/a
Spring [a]	n/a	n/a
Summer [a]	n/a	n/a
Fall [a]	n/a	n/a
Dissolved Oxygen (Mean mg/L at 15 m)		
Winter [a]	n/a	n/a
Spring [a]	n/a	n/a
Summer [a]	n/a	n/a
Fall [a]	n/a	n/a
Currents (cm/s at 15 m) in Summer		
Mean	14.11	10.98
Maximum	48.92	55.50

Notes:

[a] Winter includes January, February and March; Spring includes April, May June; Summer includes July, August, September; and Fall includes October, November and December.

Water depth values may vary by approximately ± 2 m depending on tidal influence.

12.1 Sea Farm Site Maps

The MCE sea farms in the Hare Bay BMA were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 m. The sea farms in the Hare Bay BMA are currently third -party certified or will be prior to future stocking [as per FFA policy (FFA 2019)].

12.1.1 Mare Cove South

As designed after acquisition from Gray Aqua Group, the Mare Cove South sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 m (Figure 12.2).

12.1.2 North Bob Locke Cove

As originally designed, the North Bob Locke Cove sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 m (Figure 12.3).

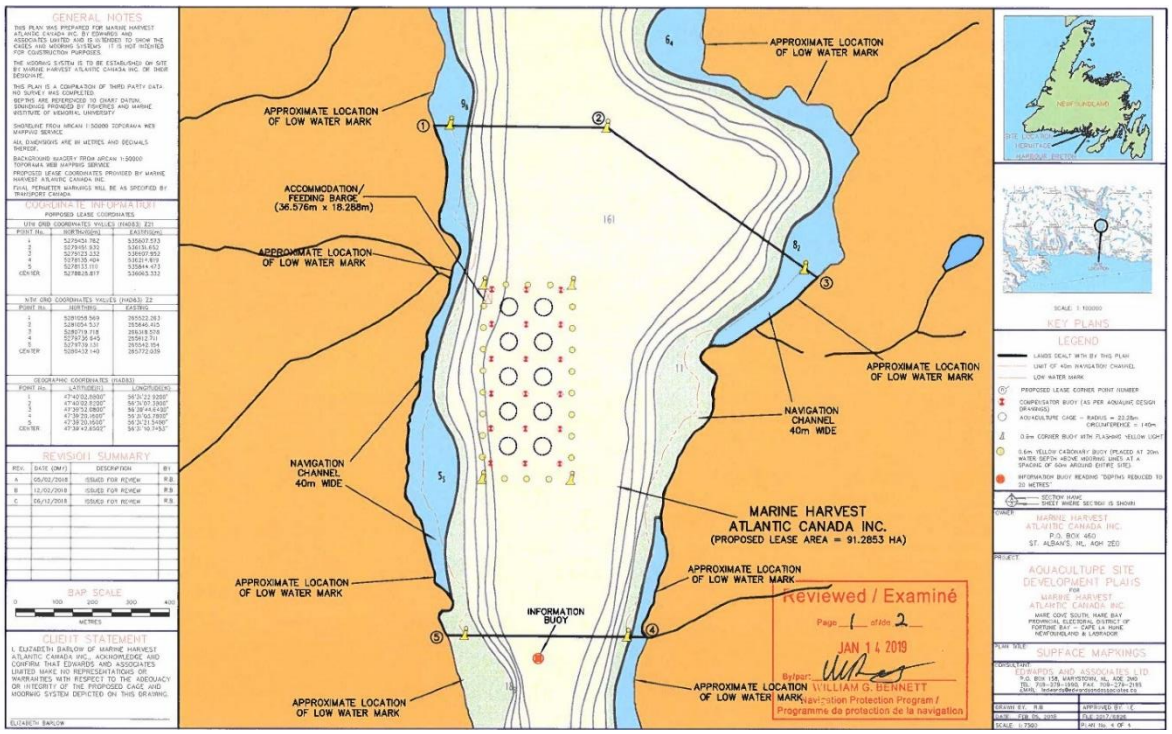


Figure 12.2. Mare Cove South sea farm map and sea cage layout.

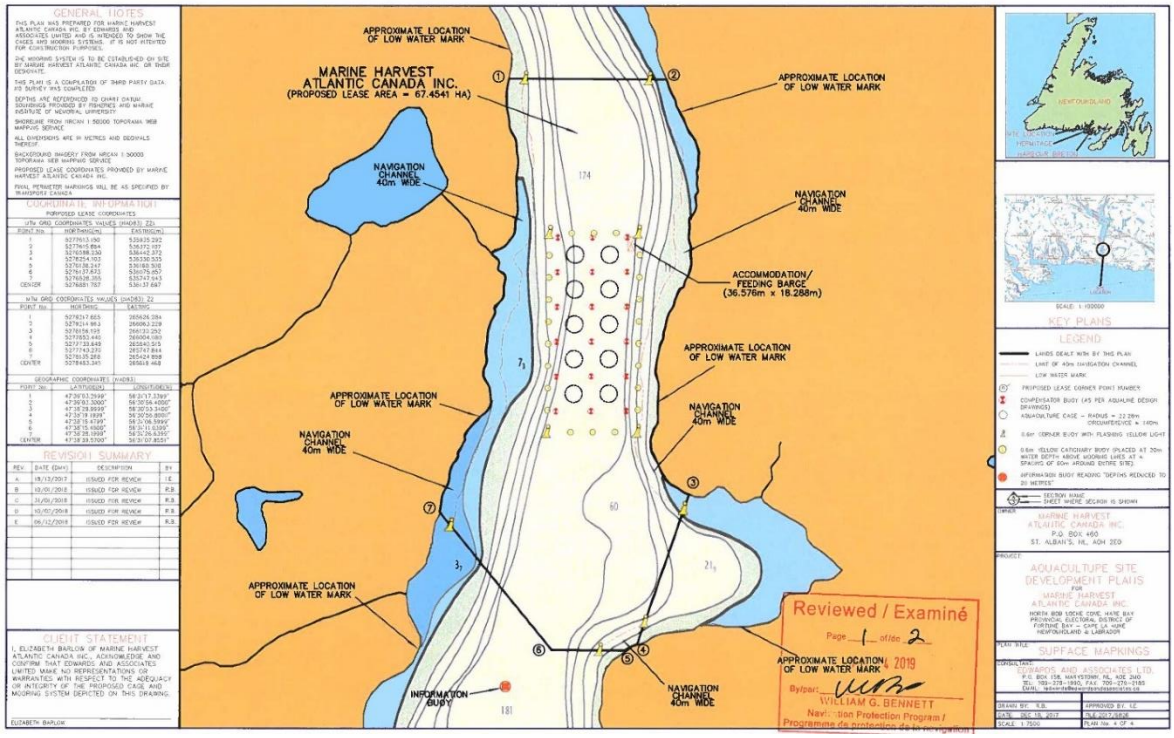


Figure 12.3. North Bob Locke Cove sea farm map and sea cage layout.

12.2 Benthic Surveys

Benthic surveys at sea farms in the Hare Bay BMA were conducted in July and September of 2017. Stations categorized as hard bottom appeared hard visually or did not produce acceptable grab samples.

12.2.1 Mare Cove South

Based on surveys at 118 sampling stations across 14 transects, the composition of the seafloor in the Mare Cove South sea farm is primarily sand, mud and bedrock (Figure 12.4; Table 12.3). Slightly more than half of stations, (60 of 118) were considered soft bottom. Species observed include anemones, brittle stars, feather stars and cunners (Table 12.3). Soft corals were observed as well as unidentified tunicate species. Organic material and benthic indicators (*Beggiatoa*-like bacteria and opportunistic polychaete complexes – OPC) were observed on three transects and are likely a result of deposition from the previously stocked farm at this location.

12.2.2 North Bob Locke Cove

Based on surveys at 114 sampling stations across 16 transects, the composition of the seafloor in the North Bob Locke Cove sea farm is primarily gravel, cobble, boulders and bedrock (Figure 12.5; Table 12.4). The majority of stations (82 of 114) were considered hard bottom. Species observed included anemones, feather stars, encrusting sponges and brittle stars (Table 12.4). Soft corals were observed at 10 sampling stations and kelp beds were observed at four. Tunicates were also observed but the species is unknown.

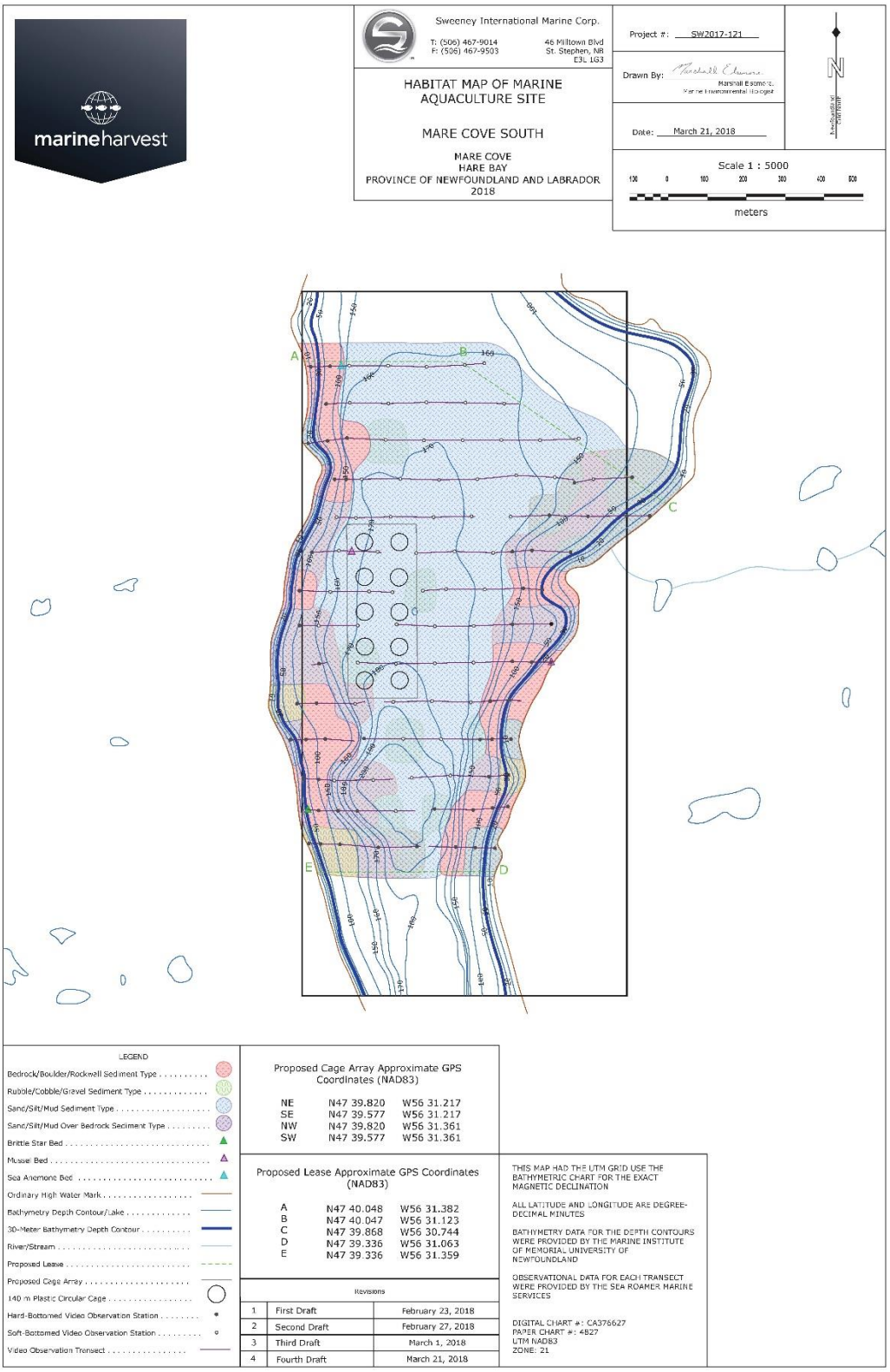


Figure 12.4. Habitat observations at sampling stations in the Mare Cove South sea farm (September 2017).

Table 12.3. Summary of bottom type and observed flora and fauna at the Mare Cove South sea farm (September 2017).

Mare Cove South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	450	47 40.044	56 31.074	166	Soft								100%			Shrimp (10), Krill (7), Flounder (1), Sea Cucumber (1)
	400	47 40.042	56 31.114	166	Soft								100%			Nemertean-like worm (6), Shrimp (7), Krill (3)
	300	47 40.040	56 31.193	166	Soft								100%			Shrimp (7), Nemertean-like worm (5)
	200	47 40.042	56 31.273	164	Soft								100%			Mussel (1), Nemertean-like worm (17), Shrimp (4), Krill (5)
	100	47 40.042	56 31.353	156	Soft								100%			Sea Cucumber (1), Green Sea Urchin (1), Krill (1), Nemertean-like worm (3), *Stomphia* Anemone (8), Shrimp (4), Brittle Star (1), Spiny Seastar (1)
	50	47 40.041	56 31.393	62	Hard		90%					10%				Soft Coral (7), Encrusting Sponge (10%), *Stomphia* Anemone (>20), Unidentifiable Anemones (>20), Sponge (4), *Serpula* (>20), Green Sea Urchin (4), White Branching Sponge (3)
	0	47 40.041	56 31.433	12	Hard		100%									Northern Seastar (9), *Hildenbrandia rubra* (trace)
2	500	47 39.988	56 31.034	160	Soft								100%			Shrimp (8), Krill (4), Nemertean-like worm (5)
	400	47 39.989	56 31.114	162	Soft								100%			Shrimp (5), Krill (5), Nemertean-like worm (2), Brittle Star (1)
	300	47 39.990	56 31.194	166	Soft								100%			Shrimp (3), Nemertean-like worm (9), Krill (6), *Stomphia* Anemone (1)
	200	47 39.989	56 31.273	166	Soft								100%			Shrimp (4), Nemertean-like worm (8), Burrowing Clam (1)
	100	47 39.990	56 31.353	162	Soft								100%			Krill (7), Nemertean-like worm (>20)
	40	47 39.989	56 31.401	68	Hard		25%	75%								Brittle Star (6), *Stomphia* Anemone (>20), *Serpula* (>20), Sponge (>20), Encrusting Sponge (10%), Leafy Bryozoan (5), Green Sea Urchin (1)
3	700	47 39.938	56 30.880	156	Soft								100%			Krill (>20), Shrimp (2), Brittle Star (2), Nemertean-like worm (1)
	600	47 39.936	56 30.960	156	Soft								100%			Nemertean-like worm (12), Krill (7), Shrimp (3)
	500	47 39.937	56 31.040	162	Soft								100%			Shrimp (7), Nemertean-like worm (2), Krill (9)
	400	47 39.937	56 31.120	166	Soft								100%			Nemertean-like worm (4), Shrimp (6), Krill (8)
	300	47 39.937	56 31.200	168	Soft								100%			Shrimp (3), Nemertean-like worm (15)
	200	47 39.938	56 31.279	166	Soft						5%		95%			Nemertean-like worm (3)
	100	47 39.941	56 31.359	166	Hard		95%					5%				*Serpula* (4), *Stomphia* Anemone (16), Brittle Star (5), Krill (3), Sponge (>20), Encrusting Sponge (15%), Northern Seastar (2), Tunicate (1)
	50	47 39.936	56 31.399	68	Hard		100%									Northern Seastar (5), *Serpula* (8), Brittle Star (1), Sponge (4), *Stomphia* Anemone (19), Green Sea Urchin (3), Cod (1), Encrusting Sponge (5%)
	0	47 39.934	56 31.439	10	Hard		85%				15%					Northern Seastar (3), Cunner (school, >20), Mussel (10), *Metridium* Anemone (7), Unidentifiable Anemone (12), Encrusting Sponge (10%)
4E	650	47 39.881	56 30.890	146	Hard						25%		75%			*Stomphia* Anemone (>20), Unidentifiable Anemone (12), Acadian Redfish (1), Soft coral (2)
	700	47 39.882	56 30.850	134	Soft								100%			*Stomphia* Anemone (>20), Round Sponge (1), Northern Seastar (1), Toad Crab (1), Soft

Mare Cove South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Coral (1), Coral (1), Hydroid (1)
	800	47 39.884	56 30.770	94	Hard		15%					85%				*Stomphia* Anemone (>20), Brittle Star (1), *Serpula* (4), Encrusting Sponge (5%), Sculpin (1)
4W	600	47 39.885	56 30.930	158	Soft								100%			Hydroid (1), Nemertean-like worm (3), Krill (7)
	500	47 39.888	56 31.010	162	Soft								100%			Krill (>20), Shrimp (1), Scallop (1)
	400	47 39.883	56 31.090	168	Soft								100%			Shrimp (2), Nemertean-like worm (2), Krill (17)
	300	47 39.882	56 31.169	174	Soft								100%			Shrimp (3), Krill (2)
	200	47 39.884	56 31.249	170	Soft								100%			Krill (6), Shrimp (2), Nemertean-like worm (>20)
	100	47 39.884	56 31.329	170	Soft								100%			Right-eyed Winter Flounder (2), Nemertean-like worm (3), Krill (4)
	60	47 39.885	56 31.361	154	Hard	5%	90%					5%				Green Sea Urchin (7), Unidentifiable Anemones (6), *Metridium* Anemone (1), *Serpula* (5), Acadian Redfish (2), *Stomphia* Anemone (>20), Encrusting Sponge (trace), Sponge (1)
	30	47 39.884	56 31.385	80	Hard		95%					5%				*Stomphia* Anemone (>20), *Serpula* (10), Green Sea Urchin (1), Northern Seastar (2), Feather Star (2), Brittle Star (>20), Soft Coral (3), Encrusting Sponge (40%)
5E	500	47 39.830	56 31.022	166	Soft								100%			Right-eyed Winter Flounder (1), Nemertean-like worm (7), Shrimp (6), Krill (7)
	600	47 39.832	56 30.942	152	Hard					10%	90%					Right-eyed Winter Flounder (1), *Stomphia* Anemone (16)
	700	47 39.830	56 30.862	80	Hard		75%						25%			Northern Seastar (1), Brittle Star (9), *Serpula* (2), *Stomphia* Anemone (>20), Unidentifiable Anemone (>20), Encrusting Sponge (5%)
	800	47 39.830	56 30.782	20	Hard		25%	50%			10%	15%				Cunner (8), Northern Seastar (3), Encrusting Sponge (5%)
	860	47 39.831	56 30.732	4	Hard	40%		20%			40%					Cunner (8), Unidentifiable Anemone (10), Northern Seastar (2), Encrusting Sponge (trace)
5W	400	47 39.831	56 31.102	168	Soft								100%			Krill (>20), Shrimp (4), Nemertean-like worm (1), Tube Worm (2)
	300	47 39.830	56 31.181	174	Soft								100%			Shrimp (1), Nemertean-like worm (5), Krill (>20)
	190	47 39.831	56 31.269	172	Soft								100%			Shrimp (2), Nemertean-like worm (>20), Feather Star (2), Krill (>20)
	100	47 39.830	56 31.341	168	Soft								100%			Nemertean-like worm (>20), Shrimp (2), Tube Worm (3)
	50	47 39.831	56 31.381	146	Soft							100%				Krill (8)
6E	300	47 39.780	56 31.217	176	Soft								100%			Tube Worm (1), Burrowing Clam (3), Right-eyed Winter Flounder (1), Shrimp (9), Krill (>20)
	400	47 39.782	56 31.138	170	Soft								100%			Nemertean-like worm (12), Shrimp (5), Krill (6), Tube Worm (3), Unidentifiable Anemone (1)
	500	47 39.780	56 31.058	166	Soft								100%			Shrimp (6), Nemertean-like worm (12), Krill (1), Tube Worm (2)
	550	47 39.781	56 31.018	156	Hard		90%						10%			*Serpula* (6), Brittle Star (3), Feather Star (1), Soft Coral (2), *Stomphia* Anemone (>20), Krill (1), Encrusting Sponge (trace), Sponge (1)
	600	47 39.783	56 30.978	78	Hard		65%					35%				*Stomphia* Anemone (>20), Brittle Star (>20), Unidentifiable Anemone (>20), Feather Star

Mare Cove South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(7), Green Sea Urchin (4), *Serpula* (3), Encrusting Sponge (5%), Sponge (4)
	700	47 39.780	56 30.898	42	Hard		45%		5%	5%	25%	20%				*Serpula* (1), Northern Seastar (8), Green Sea Urchin (4), Sponge (1), Tube Worm (2), *Stomphia* Anemone (12)
6W	200	47 39.782	56 31.297	174	Soft								100%			Shrimp (3), Right-eyed Winter Flounder (1), Ocean Pout (1)
	100	47 39.784	56 31.377	166	Soft								100%			Right-eyed Winter Flounder (2), Krill (3), Shrimp (5), Mussel (>20)
	30	47 39.782	56 31.433	126	Hard		55%	30%				15%				*Serpula* (9), *Stomphia* Anemone (>20), Acadian Redfish (1), Northern Seastar (1)
7E	340	47 39.728	56 31.204	178	Soft						5%		95%			Mussel Clusters (8), Shrimp (1)
	400	47 39.730	56 31.156	174	Soft								100%			Mussel Clusters (15), Nemertean-like worm (7), Metridium Anemone (1), Shrimp (2)
	500	47 39.729	56 31.076	168	Soft								100%			Nemertean-like worm (>20), Shrimp (2), Krill (>20)
	600	47 39.730	56 30.996	146	Hard		100%									*Serpula* (>20), *Stomphia* Anemone (3), Sponge (1), Encrusting Sponge (trace), Unidentifiable Anemones (>20)
	650	47 39.728	56 30.957	30	Hard		100%									Green Sea Urchins (11), Northern Seastar (7), *Hildenbrandia rubra* (trace)
7W	260	47 39.726	56 31.267	178	Soft							75%		25%		Krill (3)
	200	47 39.727	56 31.315	174	Soft									100%		
	100	47 39.727	56 31.395	156	Soft									100%		Krill (13)
	20	47 39.729	56 31.459	84	Hard		100%									*Serpula* (>20), *Stomphia* Anemone (13), Encrusting Sponge (10%), Unidentifiable Anemone (>20)
8E	300	47 39.681	56 31.259	178	Soft								100%			Shrimp (1), Right-eyed Winter Flounder (1), Krill (2), Mussels (>20), Mussel Cluster (10)
	400	47 39.678	56 31.180	178	Soft								100%			Unidentifiable Fish (1), Right-eyed Winter Flounder (2), Krill (1), Shrimp (1), *Stomphia* Anemone (1), Mussel Cluster (9), Mussel (>20)
	500	47 39.678	56 31.100	168	Soft								100%			Shrimp (3), Nemertean-like worm (>20), Mussel (1), Krill (6)
	600	47 39.680	56 31.020	150	Hard			80%					20%			Feather Star (1), *Stomphia* Anemone (1), Tube Worm (1), Encrusting Sponge
	700	47 39.680	56 30.939	82	Hard		50%					50%				Brittle Star (17), *Stomphia* Anemone (>20), Sponge (1), *Serpula* (1), Unidentifiable Anemone (>20), Northern Seastar (1)
8W	200	47 39.680	56 31.339	170	Soft								100%			Shrimp (1), Right-eyed Winter Flounder (1), Krill (6), Mussels (>20), Mussel Cluster (>20)
	100	47 39.680	56 31.419	154	Soft	5%	5%							90%		Krill (2)
	50	47 39.680	56 31.459	124	Hard	85%						15%				Acadian Redfish (2), *Stomphia* Anemone (2), Unidentifiable Fish (1), *Serpula* (>20), Encrusting Sponge (5%)
9E	200	47 39.628	56 31.339	176	Soft						5%		95%			Nemertean-like worm (5), Krill (9), Sand Lance (1), Mussels (>20)
	300	47 39.626	56 31.260	180	Soft									65%	35%	Krill (2)
	400	47 39.626	56 31.180	176	Soft								100%			Shrimp (1), Ocean Pout (1), Nemertean-like worm (14), Tube Worms (>20)
	500	47 39.627	56 31.100	168	Soft								100%			Iceland Scallop (1), Krill (3), Tunicate (3), Nemertean-like worm (7), Clam (1), Mussel (>20),

Mare Cove South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Tube Worm (>20)
	600	47 39.628	56 31.020	124	Hard		100%									Feather Star (2), *Stomphia* Anemone (12), *Serpula* (>20), Sponge (1), White Branching Sponge (1), Encrusting Sponge (30%)
	650	47 39.627	56 30.980	84	Hard	80%	20%									Feather Star (6), Northern Seastar (2), Brittle Star (4), Encrusting Sponge (15%) *Serpula* (>20), Sponge (3)
	700	47 39.627	56 30.940	2	Hard		100%									Green Sea Urchin (>20), Northern Seastar (8), Cunner (13), Encrusting Sponge (trace), Sponge (2), Mussel (>20)
9W	100	47 39.629	56 31.419	142	Hard		20%	65%					15%			Krill (17), Sponge (1), White Branching Sponge (7), Encrusting Sponge (10%)
10E	300	47 39.573	56 31.266	188	Soft								100%			Nemertean-like worm (>20), Mussel (9), Krill (14)
	400	47 39.574	56 31.186	176	Soft								100%			Scallop (1), Krill (>20), Shrimp (2), Brittle Star (1), Nemertean-like worm (14), Sponge (1)
	500	47 39.572	56 31.106	168	Soft								100%			Brittle Star (2), Scallop (1), Sponge (2), Nemertean-like worm (>20), Krill (8)
	550	47 39.573	56 31.066	148	Hard		100%									Brittle Star (7), *Stomphia* Anemone (>20), Northern Seastar (1), *Serpula* (7), White Branching Sponge (1), Unidentifiable Anemone (>20), Acadian Redfish (1), Encrusting
	600	47 39.575	56 31.026	16	Hard		100%									Green Sea Urchin (6), Brittle Star (4), Encrusting Sponge (trace), Sponge (5)
10W	200	47 39.571	56 31.345	174	Soft		40%						60%			*Stomphia* Anemone (4), Krill (8), Brittle Star (1), Shrimp (1), Sand Dollar (1), Nemertean-like worm (17), Tube Worm (11)
	100	47 39.572	56 31.425	126	Hard			100%								White Branching Sponge (2), Sponge (2), *Serpula* (4), *Stomphia* Anemone (3), Encrusting Sponge (trace), Unidentifiable Anemone (>20), Brittle Star (1), Shrimp (1)
	50	47 39.571	56 31.465	92	Hard		15%	60%	15%	10%						*Serpula* (>20), Worm Tube (3), Northern Seastar (3), Brittle Star (6), Feather Star (1), Encrusting Sponge (5%), Unidentifiable Anemone (>20)
11E	200	47 39.522	56 31.327	174	Hard	20%	65%						15%			Tube Worm (3), *Serpula* (3), *Stomphia* Anemone (3), White Branching Sponge (5), Brittle Star (10), Sponge (1), Encrusting Sponge (10%), Tunicate (1), Krill (6)
	300	47 39.522	56 31.247	194	Soft					5%			95%			Soft Coral (2), Shrimp (3), Brittle Star (2), Nemertean-like worm (>20)
	400	47 39.521	56 31.168	180	Soft								100%			Brittle Star (17), Nemertean-like worm (9), Shrimp (3)
	500	47 39.520	56 31.088	136	Hard						100%					*Stomphia* Anemone (8), Krill (3), Brittle Star (2)
	530	47 39.521	56 31.064	78	Hard		100%									Feather Star (>20), Brittle Star (>20), Encrusting Sponge (30%), *Serpula* (>20), Northern Seastar (7), *Stomphia* Anemone (7), Unidentifiable Anemone (>20)
	580	47 39.520	56 31.024	2	Hard		55%	5%		10%	10%	20%				Spiny Seastar (1), Cunner (>20), Northern Seastar (3), Unidentifiable Anemone (7),

Mare Cove South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Encrusting Sponge (trace)
11W	100	47 39.522	56 31.407	124	Hard		55%	25%	15%	5%						*Stomphia* Anemone (2), Krill (1), *Serpula* (6), White Branching Sponge (3), Encrusting Sponge (5%), Unidentifiable Anemone (>20)
	50	47 39.521	56 31.447	70	Hard		100%									*Serpula* (13), Feather Star (7), Sponge (1), Brittle Star (7), Northern Seastar (2), Encrusting Sponge (55%)
	10	47 39.521	56 31.479	14	Hard		25%	10%	15%	5%	10%	35%				Northern Seastar (3), Green Sea Urchin (1), Lobster (1), Cunner (>20), Encrusting Sponge (5%), Mussel (2), *Hildenbrandia rubra* (trace)
12E	300	47 39.467	56 31.229	202	Soft								100%			Nemertean-like worm (13), Soft Coral (2), Brittle Star (1), Krill (8), Unidentifiable Anemone (2), Tube Worm (3), Worm Tube (4)
	400	47 39.470	56 31.150	186	Soft								100%			Brittle Star (18), Shrimp (3), Krill (4)
	500	47 39.468	56 31.070	114	Hard		80%					20%				*Stomphia* Anemone (>20), *Serpula* (5), Acadian Redfish (1), Unidentifiable Anemone (>20), Encrusting Sponge (trace)
	550	47 39.470	56 31.030	28	Hard			85%	15%							Cunner (7), Encrusting Sponge (5%), *Hildenbrandia rubra* (trace), *Metridium* Anemone (6), Sponge (3)
12W	200	47 39.464	56 31.309	204	Soft								100%			Shrimp (4), Right-eyed Winter Flounder (1), Tube Worm (5), Nemertean-like worm (14), Krill (6)
	100	47 39.464	56 31.389	162	Soft								100%			Worm Tube (8), Brittle Star (1), Shrimp (1), Acadian Redfish (1), Encrusting Sponge (trace), *Stomphia* Anemone (1), White Branching Sponge (1)
	60	47 39.465	56 31.421	128	Hard		100%									Brittle Star (>20), Encrusting Sponge (10%), *Stomphia* Anemone (>20), Acadian Redfish (4), Sponge (2), Green Sea Urchin (2), Unidentifiable Anemone (>20)
	20	47 39.467	56 31.453	20	Hard		100%									Green Sea Urchin (8), *Hildenbrandia rubra* (5%), Northern Seastar (2), Encrusting Sponge (5%), Cunner (7)
13E	200	47 39.423	56 31.183	200	Hard						50%	50%				Shrimp (1), Krill (2), Ocean Pout (1)
	100	47 39.422	56 31.103	120	Hard	75%	25%						75%			Unidentifiable Anemone (>20), *Serpula* (9), *Stomphia* Anemone (19), Encrusting Sponge (5%), Green Sea Urchin (1), Brittle Star (2)
	50	47 39.425	56 31.063	55	Hard	80%	20%						80%			*Stomphia* Anemone (10), *Serpula* (9), Brittle Star (5), Encrusting Sponge (10%), Feather Star (2), White Branching Sponge (1)
	10	47 39.426	56 31.031	6	Hard		100%									Mussel Cluster (2), Cunner (>20), Green Sea Urchin (7), Northern Seastar (3), Unidentifiable Anemone (5), Encrusting Sponge (trace)
13W	300	47 39.421	56 31.263	202	Soft				5%							Brittle Star (6), Encrusting Sponge (trace), *Stomphia* Anemone (1), Shrimp (2), Tube Worm (2)
	400	47 39.421	56 31.342	190	Hard			80%								Brittle Star (5), *Serpula* (1), Encrusting Sponge (5%), Shrimp (5), Sponge (5), Krill (1),

Mare Cove South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																White Branching Sponge (1), Tube Worm (12)
	450	47 39.421	56 31.382	160	Hard		60%	20%								Brittle Star (3), Northern Seastar (1), Unidentifiable Anemone (>20), *Stomphia* Anemone (>20), Acadian Redfish (1), Shrimp (1), Encrusting Sponge (5%)
	500	47 39.422	56 31.422	68	Hard		100%									Northern Seastar (4), Encrusting Sponge (80%), Brittle Star (>20), Unidentifiable Anemone (>20), *Metridium* Anemone (1), Feather Star (4), *Stomphia* Anemone (9)
	100	47 39.370	56 31.139	166	Hard		100%									Krill (7), *Stomphia* Anemone (17), Brittle Star (3), Sponge (1), *Serpula* (9), Northern Seastar (2), Northern Red Anemone (1), Encrusting Sponge (25%)
14E	50	47 39.371	56 31.099	94	Hard		10%	15%	15%		60%					Acadian Redfish (2), *Stomphia* Anemone (>20), Feather Star (1), Unidentifiable Anemone (3), *Serpula* (7), Encrusting Sponge (trace)
	0	47 39.368	56 31.059	0	Hard	30%	20%	25%		5%	5%	15%	30%			Green Sea Urchin (>20), Cunner (12), Encrusting Sponge (5%), Northern Seastar (8), *Metridium* Anemone (3), Unidentifiable Anemone (>20), Mussel Cluster (3)
	200	47 39.371	56 31.219	200	Hard			5%		5%	90%					Brittle Star (>20), *Urticina* Anemone (1), Worm Tube (1), Unidentifiable Anemone (1), Sponge (2), *Hormathia* Anemone (1), Krill (>20)
	300	47 39.370	56 31.299	172	Hard		40%	45%								Brittle Star (15), Krill swarm (>20), Unidentifiable Anemone (>20), Tube Worm (5), Encrusting Sponge (trace)
14W	400	47 39.375	56 31.378	112	Hard		90%			5%	5%					Green Sea Urchin (1), *Stomphia* Anemone (5), Acadian Redfish (1), *Serpula* (1), Unidentifiable Anemone (>20)
	450	47 39.376	56 31.418	56	Hard	5%	85%				10%		5%			*Serpula* (>20), Cunner (1), Brittle Star (3), Feather Star (2), Green Sea Urchin (3), Northern Seastar (2), Sponge (1), *Stomphia* Anemone (6)
	480	47 39.376	56 31.422	0	Hard	85%				10%	5%		85%			Cunner (5), Northern Seastar (3), Green Sea Urchin (>20), Sponge (1), Unidentifiable Anemone (>20), Encrusting Sponge (10%)

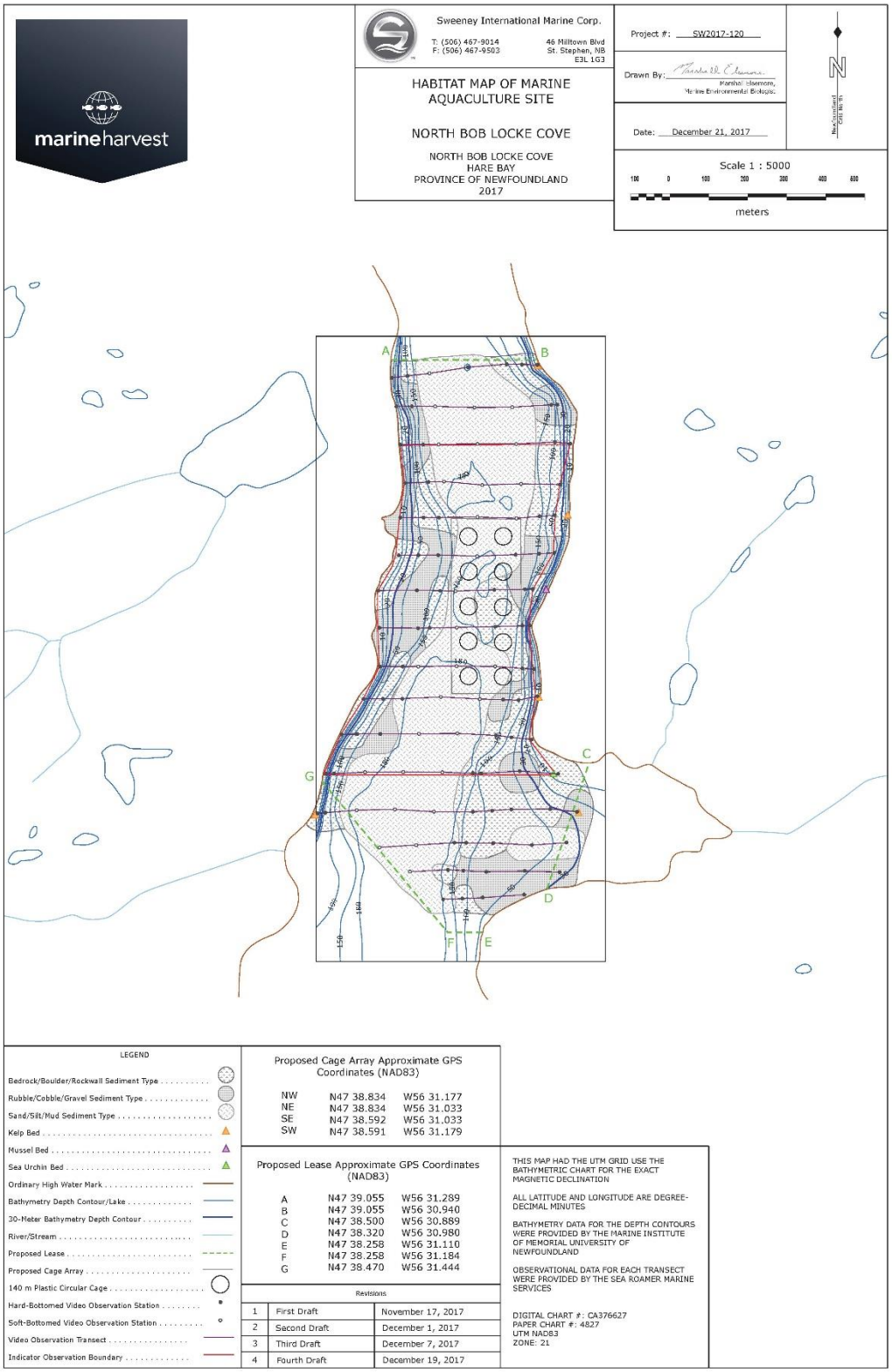


Figure 12.5. Habitat observations at sampling stations in the North Bob Locke Cove sea farm (July 2017).

Table 12.4. Summary of bottom type and observed flora and fauna at the North Bob Locke Cove sea farm (July 2017).

North Bob Locke Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 39.031	56 31.297	0	Hard	85%		10%		5%						Anemones (>20), Urchins (13), Cunner (1), Hydrozoans (10), Sea stars (2), Blood stars (2), Soft coral (13), Sponge (1), Sun star (1)
	40	47 39.042	56 31.268	100	Hard	100%										Brittle Stars (17), Anemones (7), Shrimp (7), Flounder (1)
	100	47 39.037	56 31.220	180	Soft							100%				Brittle Stars (13), Shrimp (1), Arrow worm (3), Amphipods (prevalent)
	200	47 39.045	56 31.140	182	Hard					>5%		100%				Brittle stars (9), Shrimp (3), Arrow worm (1)
	300	47 39.049	56 31.060	152	Hard		50%	50%								Brittle stars (10), Shrimp (2), Worm hole (1)
	340	47 39.049	56 31.028	88	Hard	95%		5%								Brittle Stars (12), Finger sponge (>20), Feather stars (3), Soft coral (1), Tube worms (13), Hydrozoan (1), Encr. Sponge (15%)
	380	47 39.048	56 30.997	0	Hard	85%	15%									Urchins (>20), Anemones (9), Fish
2	0	47 38.991	56 31.288	0	Hard	80%		20%								Anemones (>20), Urchins (>20), Sea stars (2), Mussel clusters (>20)
	40	47 38.992	56 31.256	142	Hard	90%		5%			5%					Red fish (6), Anemones (>20), Urchins (2), Brittle stars (1), Soft coral (1), Vase sponge (2), Feather star (1), Encr. Sponge (25%)
	100	47 38.991	56 31.208	178	Soft				15%			85%				Brittle stars (>20), Anemone (1), Shrimp (5), Flounder (1)
	200	47 38.989	56 31.128	182	Soft								100%			Brittle stars (>20)
	300	47 38.989	56 31.049	180	Soft								100%			Brittle stars (5), Shrimp (1), Anemone (1)
	400	47 38.992	56 30.969	144	Hard		40%		45%		5%		10%			Anemone (1), Feather star (1), Sponge (2), Encr. Sponge (15%)
	415	n/a	n/a	48	Hard	95%					5%		10%			Sea stars (3), Anemones (>20), Urchins (>20)
3	0	47 38.938	56 31.281	0	Hard	100%										Brittle stars (14), Urchin (1), Anemones (3), Feather stars (2), Soft coral (2), Tube worms (7), Sponge (>20), Sea star (1), Encr. Sp. (20%)
	60	47 38.936	56 31.233	170	Hard			5%		trace	95%					Encr. Sponge (25%), Brittle stars (6), Anemones (6), Sponges (2)
	100	47 38.938	56 31.202	178	Soft								100%			Brittle stars (13), Shrimp (3), Tube worms (6)
	200	47 38.938	56 31.122	182	Soft								100%			Brittle stars (5), Tube worms (3), snail (1), Anemones (2)
	300	47 38.938	56 31.042	182	Soft								100%			Anemones (12), Brittle stars (6), worm tubes (13), Sponge (1), Encr. Sponge (10%)
	400	47 38.940	56 30.962	100	Hard	100%										Sea stars (2), Anemones (3), Urchin (1), Sponge (1), Encr. Sponge (5%)
	440	47 38.938	56 30.930	2	Hard	100%										Anemones (>20), Mussel bed (>20)
4	0	47 38.884	56 31.271	0	Hard	75%		20%			5%					Urchins (3), Sponge (2), Encr. Sponge (15%), Anemones (2), Brittle stars (4), Feather stars (>20)

North Bob Locke Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	60	47 38.886	56 31.224	152	Hard	100%										Anemones (9), Sponges (2)
	100	47 38.886	56 31.191	182	Soft								100%			Brittle stars (15), Arrow worms (3), Shrimp (1), Sponge (1), Feather star (1), Soft coral (1)
	200	47 38.881	56 31.112	184	Soft							100%				Brittle stars (7), Shrimp (4), Soft coral (1)
	300	47 38.882	56 31.032	182	Soft							100%				Anemones (7), Brittle stars (6), Red fish (7), Urchins (2), Worm tubes (8), Feather star (1), Encr. Sponge (5%)
	400	47 38.881	56 30.952	62	Hard		40%	60%								Feather star (2), Anemones (4), Urchin (1), Worm tubes (5), Encr. Sponge (20%)
5	0	47 38.836	56 31.282	0	Hard		75%	10%			15%					Cunners (>20), Anemones (>20)
	60	47 38.836	56 31.234	78	Hard	100%										Scallop (1), Anemones (4)
	100	47 38.836	56 31.202	108	Hard	85%		15%								Anemones (>20), Brittle stars (>20), Sponge (2), Worm tubes (2), Encr. Sponge (25%)
	200	47 38.836	56 31.115	184	Soft							100%				Brittle stars (11), Worm tubes (4), Anemones (Northern red - 3), Sponge (2)
	300	47 38.834	56 31.042	184	Soft							100%				Brittle stars (>20), Sponge (1), Worm tubes (10), Anemones (1), Encr. Sponge (5%)
	360	47 38.837	56 30.995	158	Hard	100%										Anemones (5), Brittle stars (12), Feather stars (2), Sponges (8), Worm tubes (5)
	400	47 38.838	56 30.963	42	Hard		100%									Feather star (6), Soft coral (4), Anemones (2), Sea star (2), Brittle star (4), Basket star (1), Encr. Sponge (50%)
6	0	47 38.784	56 31.285	0	Hard		85%			15%						Cunner (>20), Anemones (>20), Mussel clusters (>20)
	50	47 38.787	56 31.244	48	Hard	100%										Sponge (>20), Anemones (4)
	100	47 38.784	56 31.204	76	Hard					15%	85%					Encr. Sponge (10%), Anemones (17), Brittle star (1), Sponge (>20)
	200	47 38.782	56 31.124	182	Soft			5%					95%			Brittle stars (9), Worm tubes (3)
	300	47 38.784	56 31.044	182	Hard						95%	5%				Brittle stars (>20), Anemones (5), Urchin (1), Hydroid (1), Nudibranch (1), Encr. Sponge (15%)
	360	47 38.786	56 30.997	142	Hard	50%		25%		10%	15%					Feather stars (>20), soft coral (3), Anemones (7), Encr. Sponge (75%)
	400	47 38.786	56 30.965	56	Hard	90%					10%					Urchins (>20), Anemones (>20), Mussel clusters (>20), Blood stars (6), Cunner (>20), Hydroids (3)
7	0	47 38.735	56 31.328	0	Hard			100%								Urchins (>20), Cunner (3), Sea star (1), Anemones (3), Mussel clusters (>20)
	100	47 38.735	56 31.248	70	Hard				25%	75%						Anemones (>20), Red fish (1), Worm tubes (10), Brittle stars (3), Sponge (10)
	160	47 38.733	56 31.200	144	Hard	100%										Brittle stars (>20), Anemones (6), shrimp (1), Hermit crab (1), Feather star (1), Urchin (1)

North Bob Locke Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	200	47 38.734	56 31.169	184	Soft					5%			95%			Brittle stars (8), Worm tubes (4), Shrimp (2), Amphipods (10)
	300	47 38.735	56 31.089	182	Hard		100%									Brittle stars (9), Soft coral (2), Anemones (3), Flounder (1), Sponge (1), Shrimp (1), Arrow worm (1)
	380	47 38.734	56 31.025	162	Hard	25%		65%			10%					Brittle stars (4), Urchins (3), Worm tubes (>20), Sea stars (2), Feather stars (7), Sponge (2), Encr. Sponge (10%)
	400	47 38.736	56 31.009	68	Hard	100%										Finger sponge (2), Encr. Sponge (25%), Urchins (11), Soft coral (2), Sea star (1)
8	0	47 38.683	56 31.326	0	Hard		25%	50%	25%							Urchins (>20), Sea stars (12), Sponge (5), Anemones (6), Soft coral (>20)
	100	47 38.682	56 31.247	74	Hard	50%					50%					Anemones (12), Urchins (2), Brittle stars (6), Sea star (1), Worm tubes (18), Sponge (>20), Encr. Sponge (10%)
	130	47 38.681	56 31.222	148	Hard	100%										Shrimp (15), Brittle stars (12), Arrow worms (5)
	200	47 38.683	56 31.167	184	Soft					5%		95%				Brittle stars (4), Shrimp (4)
	300	47 38.684	56 31.087	184	Hard		35%	65%								Brittle stars (7), Shrimp (1), Flounder (1), Vase sponge (1)
	370	47 38.684	56 31.031	106	Hard	100%										Brittle stars (10), Sponge (4), Worm tubes (2), Anemone (1), Encr. Sponge (10%)
	390	47 38.685	56 31.016	0	Hard	100%										Anemones (15), Finger sponge (>20), Brittle stars (12), Vase sponge (1), Tube worm (1), Encr. Sponge (5%)
9	0	47 38.629	56 31.326	0	Hard		65%	30%	5%							Soft coral (>20), Urchins (>20), Anemones (16), Cunners (3), Sea star (1)
	60	47 38.632	56 31.279	142	Hard	100%										Cunner (>20), Anemones (>20), Urchins (>20), Sea Stars (4), Encr. Sponge (5%)
	100	47 38.629	56 31.247	176	Soft					10%	15%		70%			Brittle stars (20), Sun star (1), Anemones (3), Feather stars (3), Sponge (>20), Urchin (1), Encr. Sponge (25%)
	200	47 38.629	56 31.168	184	Soft								100%			Brittle stars (>20), Anemone (1)
	300	47 38.628	56 31.088	180	Soft							100%				Shrimp (5), Brittle stars (10), Polychaetes (2)
	370	47 38.626	56 31.032	104	Hard		100%									Shrimp (2), Brittle stars (6)
	400	47 38.624	56 31.008	24	Hard	50%	25%	15%			10%					Brittle stars (14), Feather stars (3), Sponge (5), Anemones (5), Encr. Sponge (5%), Sea star (1)
10	0	47 38.584	56 31.360	0	Hard	100%										Brittle stars (13), Feather stars (13), Anemones (8), Urchin (1), Sponge (>20), Sea star (1), Encr. Sponge (15%)
	50	47 38.582	56 31.320	146	Hard	100%										Urchins (>20), Anemones (>20),

North Bob Locke Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Hydroid clusters (2), Cunners (>20)
	100	47 38.584	56 31.280	174	Hard					10%	40%		50%			Anemones (5), Mussels (>20), Urchins (>20), Sea stars (2)
	200	47 38.586	56 31.200	184	Soft								100%			Tube worms (11), Brittle stars (10), Encr. Sponge (10%)
	300	47 38.583	56 31.120	184	Soft							100%				Brittle stars (9), Shrimp (5)
	360	47 38.586	56 31.072	162	Hard		15%	65%			20%					Brittle stars (3), Shrimp (2)
	400	47 38.581	56 31.040	140	Hard	100%										Brittle stars (7), Shrimp (2), Arrow worms (1), Tube worms (4)
	450	47 38.586	56 31.001	16	Hard		80%	10%	10%							Blood star (1), Brittle stars (7), Anemones (12), Feather stars (3), Encr. Sponge (40%)
11	0	47 38.535	56 31.406	0	Hard	50%	50%									Anemone (1), Brittle stars (16), Feather stars (4), Soft coral (5), Sponge (>20), Encr. Sponge (75%), Basket star (1)
	40	47 38.535	56 31.374	92	Hard	100%										Encr. Sponge (5%), Sea star (2)
	100	47 38.535	56 31.326	170	Hard					50%	50%					Urchins (15), Anemones (>20), Sea stars (2), Cunner (1), Mussel (1)
	200	47 38.535	56 31.246	184	Soft								100%			
	300	47 38.535	56 31.167	186	Soft								100%			Shrimp (2), Brittle stars
	400	47 38.532	56 31.087	162	Hard		100%									Brittle stars (14), Feather stars (3), Sponge (5), Anemones (5), Encr. Sponge (5%), Sea star (1)
	440	47 38.532	56 31.055	90	Hard	100%										Brittle stars (13), Feather stars (13), Anemones (8), Urchin (1), Sponge (>20), Sea star (1), Encr. Sponge (15%)
	490	47 38.526	56 31.014	0	Hard		100%									Urchins (>20), Anemones (>20), Hydroid clusters (2), Cunners (>20)
12	0	47 38.480	56 31.438	0	Hard		85%		15%							Anemones (5), Mussels (>20), Urchins (>20), Sea stars (2)
	20	47 38.481	56 31.422	60	Hard	100%										Tube worms (11), Brittle stars (10), Encr. Sponge (10%)
	100	47 38.482	56 31.358	184	Soft							100%				Brittle stars (9), Shrimp (5)
	200	47 38.482	56 31.279	186	Soft								100%			Brittle stars (3), Shrimp (2)
	300	47 38.481	56 31.199	186	Soft								100%			Brittle stars (7), Shrimp (2), Arrow worms (1), Tube worms (4)
	380	47 38.482	56 31.135	158	Hard		100%									Blood star (1), Brittle stars (7), Anemones (12), Feather stars (3), Encr. Sponge (40%)
	400	47 38.479	56 31.119	92	Hard		100%									Anemone (1), Brittle stars (16), Feather stars (4), Soft coral (5), Sponge (>20), Encr. Sponge (75%), Basket star (1)
	500	47 38.482	56 31.039	38	Hard	95%					5%					Encr. Sponge (5%), Sea star (2)
	600	47 38.478	56 30.959	4	Hard		100%									Urchins (15), Anemones (>20), Sea stars (2), Cunner (1), Mussel (1)
13	0	47 38.425	56 31.456	1	Hard		100%									
	20	47 38.425	56 31.440	56	Hard	100%										
	100	47 38.429	56 31.376	184	Soft								100%			
	200	47 38.430	56 31.297	188	Soft								100%			
	300	47 38.426	56 31.217	188	Soft					trace			100%			
	400	47 38.426	56 31.136	128	Hard	100%										

North Bob Locke Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	450	47 38.429	56 31.096	86	Hard	50%	45%	5%								
	500	47 38.429	56 31.057	60	Hard		90%	10%								
	600	47 38.429	56 30.977	30	Hard		100%									
	670	47 38.425	56 30.921	26	Hard		25%	50%			25%					
14	0	47 38.377	56 31.330	188	Soft								100%			
	100	47 38.380	56 31.254	188	Soft								100%			
	200	47 38.383	56 31.175	182	Hard	25%				40%	5%		30%			
	230	47 38.380	56 31.151	142	Hard	100%										
	300	47 38.382	56 31.095	78	Hard		100%									
	400	47 38.379	56 31.015	66	Hard						50%	50%		trace		
	490	47 38.382	56 30.943	38	Hard					25%	40%	35%				
15	0	47 38.343	56 31.267	188	Soft								100%			
	100	47 38.345	56 31.189	166	Hard	100%										
	140	47 38.337	56 31.157	136	Hard	80%					20%					
	200	47 38.342	56 31.109	72	Hard					15%	85%					
	300	47 38.343	56 31.030	52	Hard					25%	75%					
	390	47 38.341	56 30.958	36	Hard				20%	20%	60%					
16	0	47 38.304	56 31.199	182	Hard						50%	50%				
	50	47 38.304	56 31.157	124	Hard	100%										
	100	47 38.306	56 31.117	66	Hard	10%		10%			80%					
	200	47 38.310	56 31.031	38	Hard					25%	75%					

12.3 Water Quality

There are no available water temperature (°C) or dissolved oxygen (mg/L) data for the Hare Bay BMA. Salinity data for the Hare Bay BMA was collected by FFA (formerly DFLR) from 1994–2003 (Table 12.5).

12.3.1 Water Temperature

There are no available data for water temperature (°C) in the Hare Bay BMA.

12.3.2 Dissolved Oxygen

There are no available data for dissolved oxygen (mg/L) in the Hare Bay BMA.

12.3.3 Salinity

Salinity data is summarized across seasons and at various depths with averages ranging from 25.8–31.7 ppt (Table 12.5) in the Hare Bay BMA between 1994 and 2003. The results indicate a moderate freshwater influence near the surface that is more pronounced in the spring.

Table 12.5. Historical salinity (‰) profiles within Hare Bay BMA collected by DFLR (1994/5–2003).

Water Depth	Sampling Period	Winter	Spring	Summer	Fall
		Salinity (‰)			
Hare Bay					
0 m	1994/5–2003				
1 m	1994/5–2003	28.8	25.8	29	n/a
2 m	1994/5–2003	29.1	26.1	29	n/a
3 m	1994/5–2003	30.5	30.1	30	27
4 m	1994/5–2003	31.2	31.2	30	30
5 m	1994/5–2003	31.3	31.5	31	31.5
9 m	1994/5–2003				
10 m	1994/5–2003	31.6	31.7	31	31.5

Notes:
Months were not defined for each season.

12.4 Oceanographic and Meteorological Data

Bathymetric and current data are available for both sea farms in the Hare Bay BMA. Wind and wave data are not available.

12.4.1 Bathymetry

Water depths below the leases range from 1–204 m. The shallowest sea farm is North Bob Locke Cove where depths range from 1–188 m in the lease (Table 12.6). Water depth profiles (2-D) acquired in 2018 are available for both sea farms in the Hare Bay BMA (Figures 12.6 and 12.7).

Table 12.6. Water depth range at sea farm in the Hare Bay BMA.

Site No.	Sea Farm	Lease Depth Range (m)	Minimum Sea Cage Array Depth (m)
AQ 1125	Mare Cove South	1–204	117
AQ 1124	North Bob Locke Cove	1–188	78

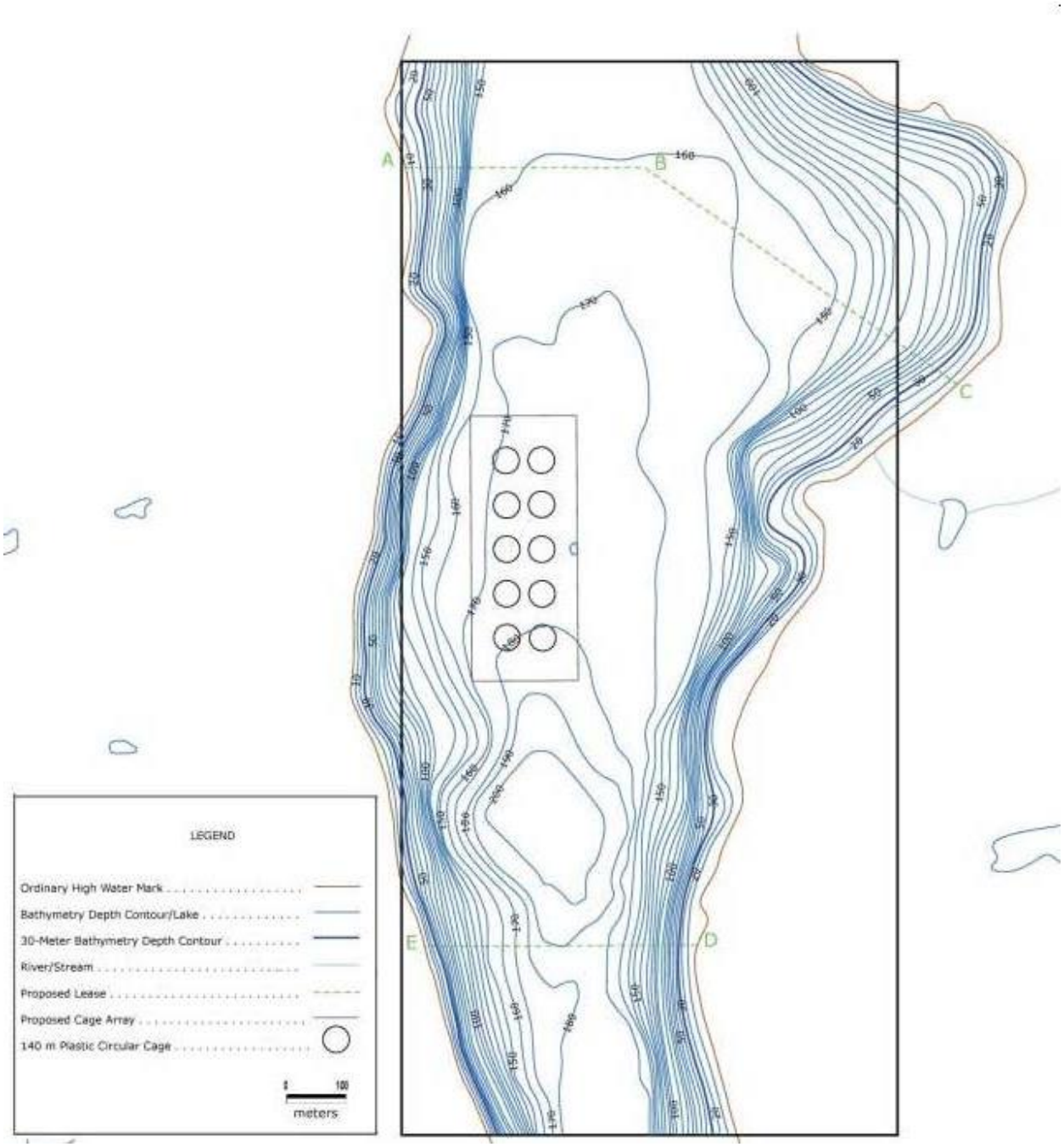


Figure 12.6. Interpolated (2-D) bathymetric map for the Mare Cove South sea farm (March 2018).

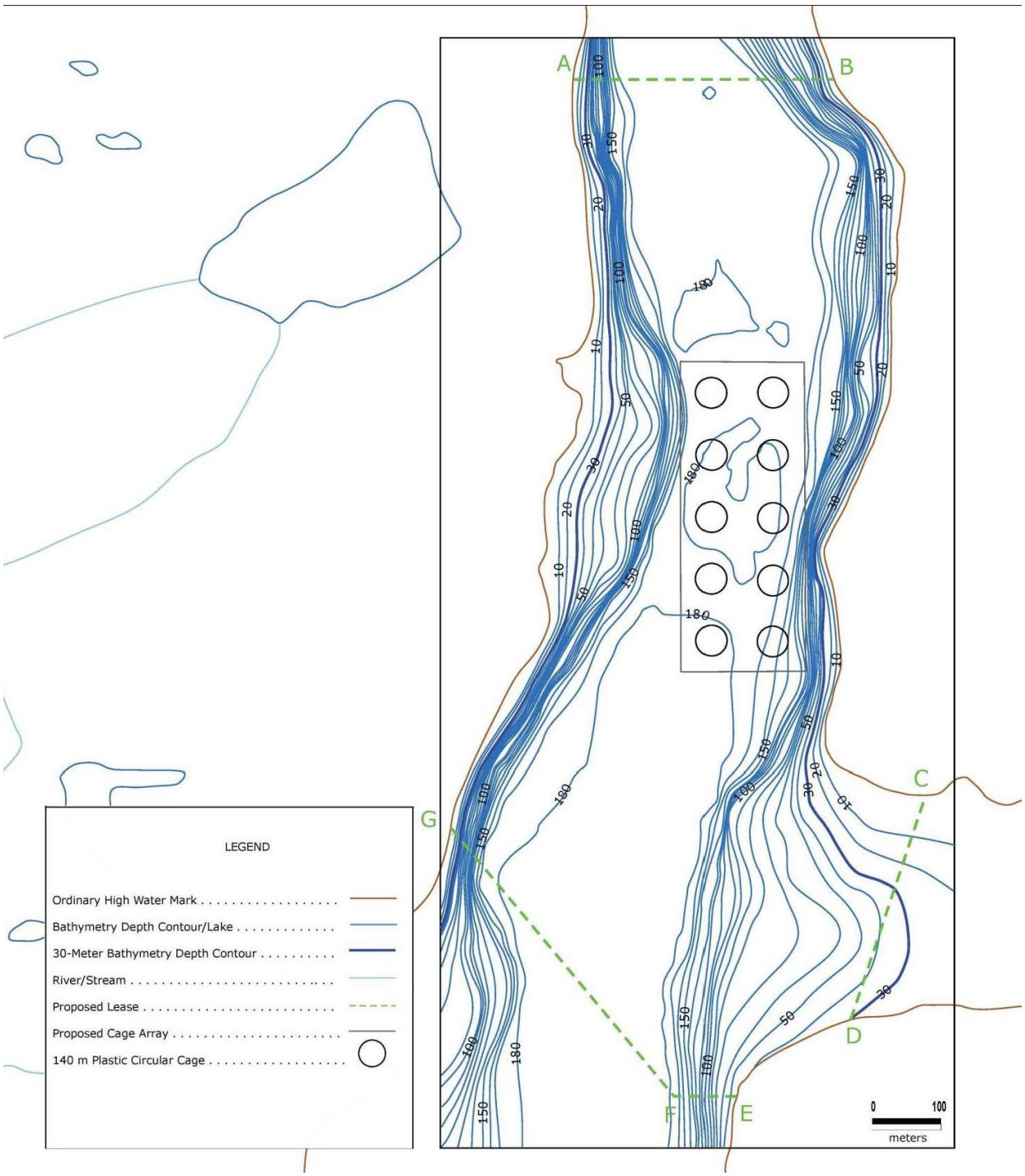


Figure 12.7. Interpolated (2-D) bathymetric map for the North Bob Locke Cove sea farm (February 2018).

12.4.2 Currents

Current data were acquired at the Mare Cove and North Bob Lock Cove sea farm in August–September 2017.

12.4.2.1 Mare Cove South

Current speeds were analyzed at four depths in Mare Cove South during August–September 2017 (Table 12.7). Average current speeds ranged from 4.0 cm/s to 13.6 cm/s. Near the surface, currents were most commonly directed toward the south to south-southwest and north-northwest to north. At mid-column, the direction shifted to the north to north-northeast and south to south-southwest, while near the seafloor, the flow was generally toward the southeast to south-southeast (Figure 12.8). Lower speeds were more common near the mid-water column and near the seafloor, with an average speed of 4.0 cm/s at 100 m depth and 5.7 cm/s at 165 m depth. Higher speeds were observed closer to the surface, with the highest average speed of 14.1 cm/s at 13.9 m below the surface and the maximum current speed recorded at 61.6 cm/s at 9.9 m depth.

12.4.2.2 North Bob Locke Cove

During August–September 2017, current measurements were collected at five depths in North Bob Locke Cove (Table 12.8). Average current speeds ranged from 5 cm/s at 172 m depth to 13.4 cm/s at 9 m below the surface, which is relatively low and typical for Newfoundland waters. Near the surface, current flows were mostly directed toward the north-northeast and south-southwest. Near the seafloor, the currents shifted direction, flowing toward the north-northwest and south-southeast (Figure 12.9). Lower current speeds were more frequent near the seafloor, while higher speeds were observed just below the surface. The maximum current speed recorded was 55 cm/s at 15 m below the surface.

Table 12.7. Current speeds (mean and maximum values) and vector-averages at the Mare Cove South sea farm (August–September 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.9	n/a	n/a	n/a
9.9	13.57	61.69	n/a
13.9	14.11	48.92	n/a
100	3.96	32.96	n/a
170.9	5.67	29.48	n/a

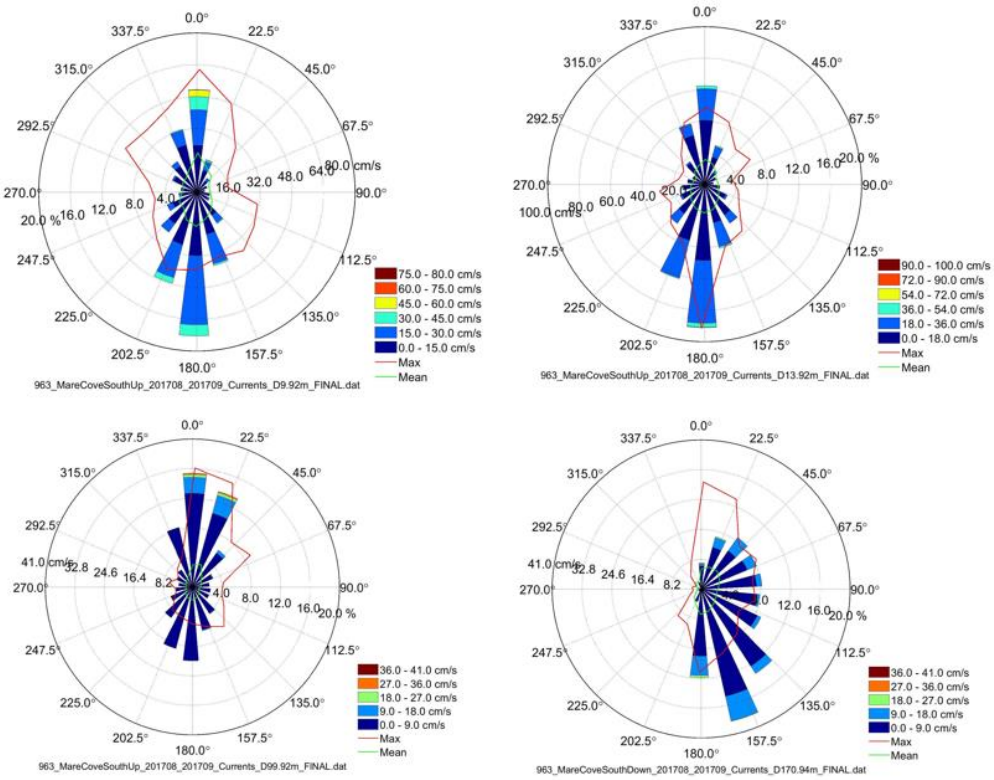


Figure 12.8. Compass rose plots of current speeds at the Mare Cove South sea farm (August–September 2017). Current speeds and directions at 9.9 m, 13.9 m, 99.9 m, and 170.9 m are shown from left to right, top to bottom in the figure.

Table 12.8. Current speeds (mean and maximum values) and vector-averages at the North Bob Locke Cove sea farm (August–September 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5	9.60	36.82	n/a
9	13.42	51.92	n/a
15	10.98	55.50	n/a
91	6.72	30.05	n/a
172	5.00	22.91	n/a

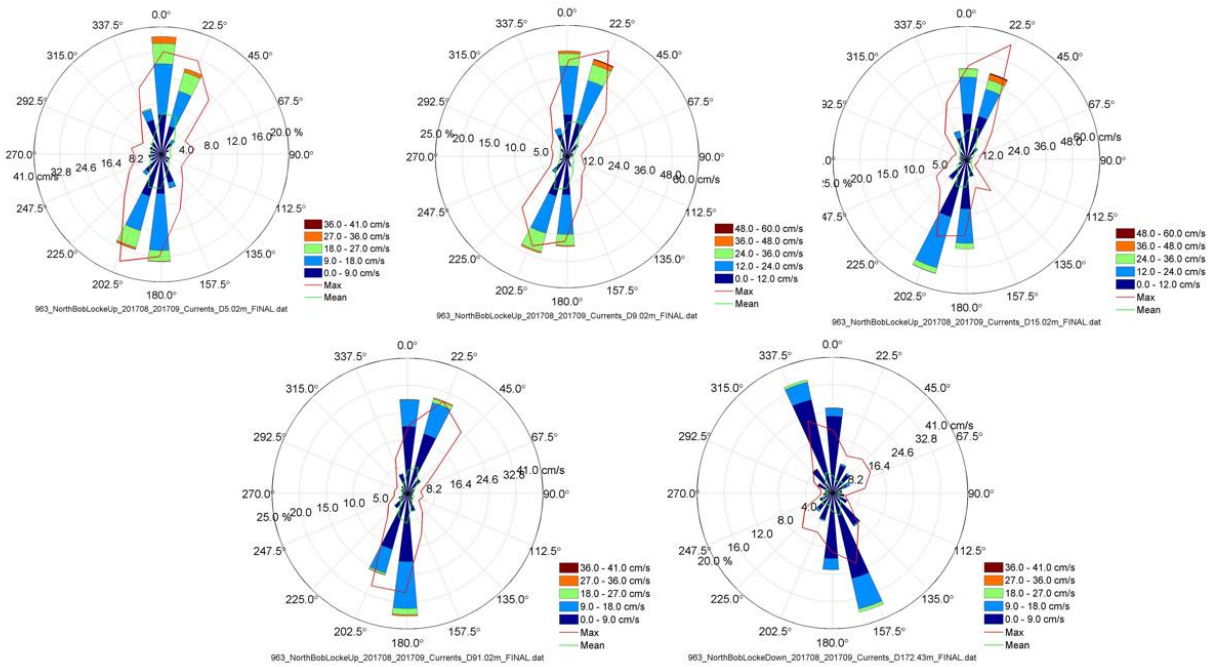


Figure 12.9. Compass rose plots of current speeds at the North Bob Locke Cove sea farm (August–September 2017). Current speeds and directions at 5 m, 9 m, 15 m, 91 m, and 172 m are shown from left to right, top to bottom in the figure.

12.4.3 Wind and Waves

No sea farm specific wave measurements or calculations have been conducted for the Hare Bay BMA. In addition, there are no MSC50 grid points that are located within the fjord near the Hare Bay BMA.

12.5 Ice Conditions

Ice conditions for the Study Area including Hare Bay (BMA 11) are detailed in Section 4.5.

12.6 Storms

Storm conditions for the Study Area including Hare Bay (BMA 11) are detailed in Section 4.6.

12.7 Tides and Floods

Tide and flood conditions for the Study Area including Hare Bay (BMA 11) are detailed in Section 4.7.

12.8 Performance of Sea Farms with a Previous Production Cycle

The Mare Cove South sea farm was acquired through purchase of assets from Gray Aqua Group. While it may have had a previous production cycle, no historical records for public reporting (2016–2018) are available. Since its acquisition in 2017, MCE has not utilized the Mare Cove South sea farm. The North Bob Locke Cove sea farm is a newly acquired license by MCE and at the time of this writing has not been stocked with fish.

12.9 Exposure Zone Modelling

DFO conducted PEZ modelling for BMA 11 sea farms to estimate areas exposed to discharges from bath pesticides and in-feed drugs (and feces) (Page et al 2023). BMT conducted dispersion modelling for a worst-case scenario use of a bath pesticide for the sea farms in BMA 9 (see Appendix B).

12.9.1 PEZ Modelling

Detailed predictions of PEZ modelling for BMA 11 (Hare Bay) are found in Page et al. (2023); a summary is provided here. DFO undertook this modelling to provide initial estimates of the size and location of the areas that may be exposed to releases of fish health treatment substances. As noted in Page et al. (2023), PEZ estimates are not zones of impact and are intended to serve as an initial screening tool in combination with biological and socio-economic aspects of an area to gauge potential risk and the potential need for more precise modelling estimates.

The model predicted that for all sea farms in BMA 11, tarp treatments for Azamethiphos and Hydrogen Peroxide had larger PEZ (km^2) relative to these same treatments in a well boat (Table 12.9). The entrainment of the chemical associated with the jet dynamics in the well boat reduces the concentration at discharge and a ten-fold reduction was used for the model which produced smaller PEZ (km^2) for well boat treatments. Well boat discharges of Hydrogen Peroxide did not exceed threshold concentrations (i.e., 188 mg/L); therefore, predicted areas were zero.

The North Bob Locke Cove sea farm, the southernmost sea farm in the BMA, was predicted to have the largest PEZ areas for Azamethiphos tarp treatments (55.36 km^2 maximum and 3.10 km^2 mean; with concentrations ≥1 µg/L). Mare Cove South had a maximum PEZ area of 43.54 km^2. The PEZ model produces a circular area from the center of the sea cage array and encompassed land for maximum predicted areas for both sea farms in BMA 11 (see Figure 17 in Page et al. 2023)—which results in an overestimate of exposed areas.

In-feed pest control products along with feces were modelled with PEZ area (km^2; horizontal distance "travelled" by a sinking particle) estimates for mean and maximum current speeds (mid-depth); however, it is unlikely that maximum current speeds would be maintained throughout the duration of a treatment and therefore, distance estimates for maximum current

speeds represents an upper boundary. The Mare Cove South sea farm had the largest estimated PEZ area for feed (2.41 km²) and feces (39.99 km²) under maximum current speeds (Table 12.10). The North Bob Locke Cove sea farm PEZ area was estimated at 1.82 km² (feed) and 28.98 km² (feces).

Table 12.9. Estimates of the maximum and mean PEZ areas associated with Azamethiphos (assumes a 100 µg/L dose concentration) and Hydrogen Peroxide (assumes an 1800 mg/L dose concentration) using two different treatment methods: a tarp surrounding the net in-situ and a well boat hold for BMA 11 (from Page et al. 2023).

Sea Farm	Tarp Treatment				Well Boat Treatment[b]			
	Azamethiphos[c]		Hydrogen Peroxide[d]		Azamethiphos[c]		Hydrogen Peroxide[d]	
	Maximum PEZ Area (km²)	Mean PEZ Area (km²)	Maximum PEZ Area (km²)	Mean PEZ Area (km²)	Maximum PEZ Area (km²)	Mean PEZ Area (km²)	Maximum PEZ Area (km²)	Mean PEZ Area (km²)
Mare Cove South[a]	43.54	4.65	11.71	1.54	12.09	1.58	0	0
North Bob Locke Cove[a]	55.36	3.10	14.73	1.10	15.21	1.12	0	0

Notes:
[a] Sea farms are located near land and PEZ areas (marine) are smaller than estimated—particularly maximum PEZ areas.
[b] Well boat treatments assume a ten-fold reduction in concentration at discharge as a result of entrainment associated with the jet dynamics in the well boat.
[c] PEZ model assumes a toxicity threshold of 1 µg/L of Azamethiphos. Other assumptions are provided in Page et al. (2023).
[d] PEZ model assumes a toxicity threshold of 188 mg/L of Hydrogen Peroxide. Other assumptions are provided in Page et al. (2023).

Table 12.10. Summary of PEZ area for pest control products in-feed and feces (km²) under mean and maximum current speeds for BMA 11.

Sea Farm	Area of PEZ (km²)			
	Mean Current Speed		Maximum Current Speed[a]	
	In-feed	Feces	In-feed	Feces
Mare Cove South[a]	0.21	0.60	2.41	39.99
North Bob Locke Cove[a]	0.29	1.18	1.82	28.98

Notes:
[a] Area represents an upper bound to the potential for exposure and is not expected to occur often since most releases do not experience maximum currents for the duration of treatment.

12.9.2 Dispersion Modelling

Dispersion modelling was undertaken to estimate exposure zones for the release of Azamethiphos (bath treatment) in a worst-case scenario (see Appendix B for details). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment at Mare Cove South sea cages (08 May 2023 for spring tide; 20 June 2023 for neap tide) through final treatment at North Bob Locke Cove sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 12.11).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Hare Bay BMA predicted maximum areas of 2.50 km² and 4.02 km² during neap and spring tides, respectively; where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment duration. The maximum Azamethiphos concentration for the Hare Bay BMA was 17 ng/L during the simulated neap tide and 18 ng/L during the spring tide. The peak concentration occurred during the treatment of the second sea farm, North Bob Locke Cove, and decreased shortly after treatments were completed with concentration levels 72 hrs after final treatment below 100 ng/L (Figures 12.10 and 12.11). The maximum area within BMA 11 where Azamethiphos concentrations exceeded 100 ng/L was larger during the spring tide scenario (4.02 km²) than during the neap tide scenario (2.50 km²).

Table 12.11. Treatment schedule (assumed dates) for sea farms in BMA 11 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
Mare Cove South	1	08 May 23	-219	20 Jun 23	-219
	2	08 May 23	-216	20 Jun 23	-216
	3	09 May 23	-195	21 Jun 23	-195
	4	09 May 23	-192	21 Jun 23	-192
	5	10 May 23	-171	22 Jun 23	-171
	6	10 May 23	-168	22 Jun 23	-168
	7	11 May 23	-147	23 Jun 23	-147
	8	11 May 23	-144	23 Jun 23	-144
	9	12 May 23	-123	24 Jun 23	-123
	10	12 May 23	-120	24 Jun 23	-120
North Bob Locke Cove	1	13 May 23	-99	25 Jun 23	-99
	2	13 May 23	-96	25 Jun 23	-96
	3	14 May 23	-75	26 Jun 23	-75
	4	14 May 23	-72	26 Jun 23	-72
	5	15 May 23	-51	27 Jun 23	-51
	6	15 May 23	-48	27 Jun 23	-48
	7	16 May 23	-27	28 Jun 23	-27
	8	16 May 23	-24	28 Jun 23	-24
	9	17 May 23	-3	29 Jun 23	-3
	10	17 May 23	0	29 Jun 23	0

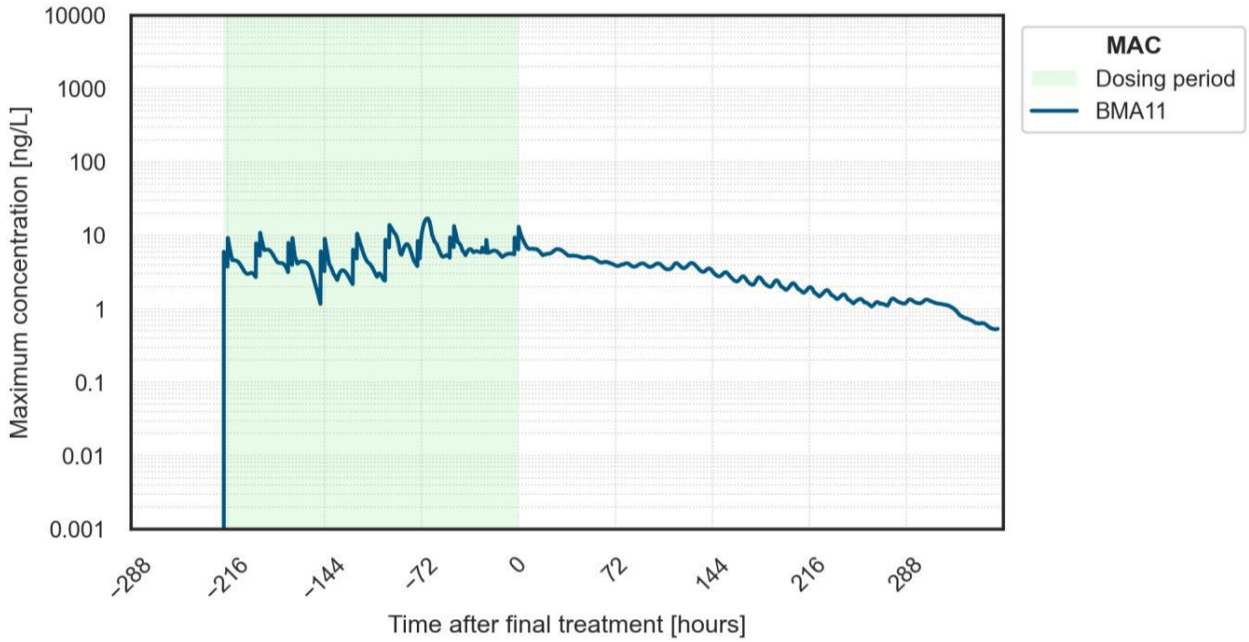


Figure 12.10. Maximum concentrations for Hare Bay BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced in Mare Cove South sea farm (assumed 20 June 2023) and final treatment was in North Bob Locke Cove sea farm (time=0; assumed 29 June 2023).

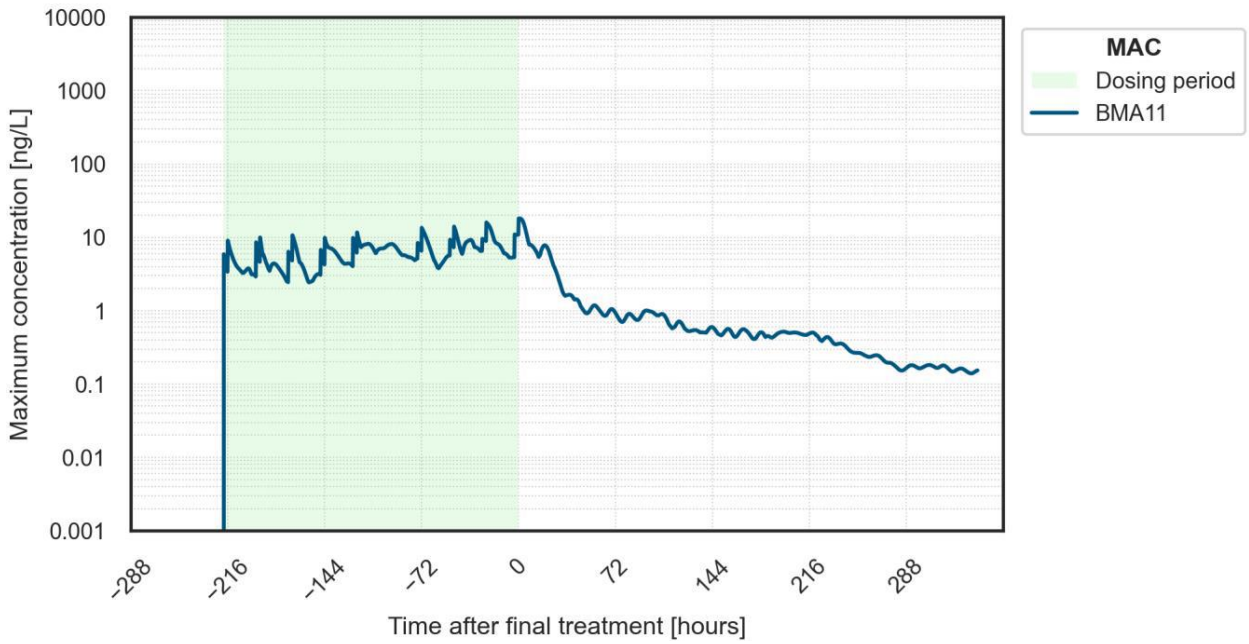


Figure 12.11. Maximum concentrations for Hare Bay BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced in Mare Cove South sea farm 08 May 2023. Final treatment (time=0) was last treatment in North Bob Locke Cove (17 May 2023).

13.0 Rencontre West (BMA12)

The Rencontre West BMA (BMA 12) is located in the Bays West Area and includes four licensed sea farms: Devil Bay, Little Bay, Rencontre Bay, and The Gorge (Table 13.1; Figure 13.1). The four sea farms are located in three fjords. The closest community to these sea farms is Francois, which is accessible by ferry. Three sea farms (Devil Bay, Little Bay and The Gorge) have had previous production cycles; the Rencontre Bay sea farm has never been stocked.

Table 13.1. Rencontre West (BMA 12) sea farm locations and construction status in 2024.

BMA Name	BMA No.	Sea Farm Name	AQ Licence No.	Site Coordinates		Construction Status
				Latitude (N)	Longitude (W)	
Rencontre West	12	Devil Bay	1133	47.63681	-56.61489	Existing
		Little Bay	1134	47.62950	-56.66600	Existing
		Rencontre Bay	1136	47.62311	-56.68239	TBD
		The Gorge	1135	47.63311	-56.70269	Existing

The sea farms in Rencontre West were originally designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 or 30 m. The maximum number of fish per site is 1,000,0000 with a maximum stocking density of 15 kg/m^3.

The water depths below the leases range from 1–250 m (Table 13.2). The shallowest sea farm is Devil Bay where minimum sea cage array depth is 34 m. The sea farms have bottom sediments consisting of mixed substrates. All four sea farms are considered hard bottom.

Currents were reported at near surface, upper, mid-water, and near bottom depths. At 15 m water depth, the maximum water current speed at each site was between ~five to ~six times the mean speed (Table 13.2). There is much vertical variation in the maximum current speed and this variation is larger than the mean current speeds.

Benthic habitat surveys showed many species including anemones, coralline algae, brittle stars, kelp, cunners and sea star species (Tables 13.3–13.6). Kelp beds, soft corals and vase tunicates were observed.

Seasonal water temperatures at 15 m water depth were similar across sea farms with available data, though the Devil Bay sea farm was slightly cooler in summer (Table 13.2). Mean water temperatures across all depths and sea farms ranged from 1.35°C in winter to 15.14°C in the summer. Dissolved oxygen levels were typically lower in the summer and fall than winter and spring. Salinity was fairly consistent across sea farms and seasons with averages ranging from 27.86–31.01 ppt (Tables 13.8–13.10).

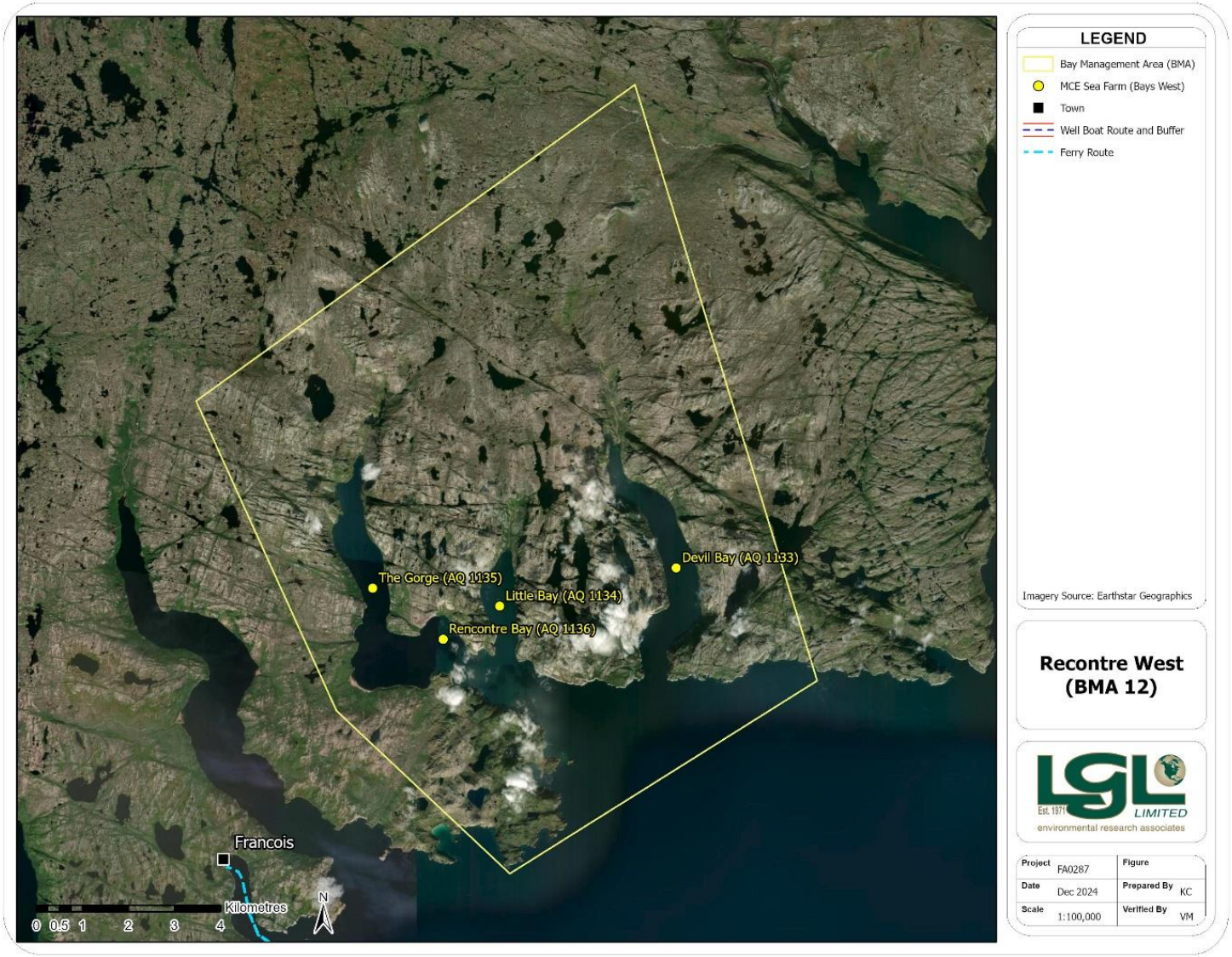


Figure 13.1. Locations of sea farms in the Rencontre West BMA.

Table 13.2. Summary of historic site-specific sea farm characteristics in Rencontre West (BMA 12).

Characteristic	Sea Farm			
	Devil Bay	Little Bay	Rencontre Bay	The Gorge
Lease area (ha)	95	89	65	87
Water depth under lease (m)	1–140	1–250	1–190	1–159
Minimum water depth under sea cages (m)	34	171	83	88
Predominant Bottom Type	Hard	Hard	Hard	Hard
Water Temperature (Mean °C at 15 m)				
Winter [a]	1.39	1.94	n/a	2.06
Spring [a]	3.94	4.14	n/a	3.84
Summer [a]	7.79	11.25	n/a	11.17
Fall [a]	7.51	8.08	n/a	8.00
Dissolved Oxygen (Mean mg/L at 15 m)				
Winter [a]	10.99	10.79	n/a	10.83
Spring [a]	11.23	11.02	n/a	11.14
Summer [a]	10.27	8.72	n/a	8.79
Fall [a]	9.55	9.16	n/a	9.30
Currents (cm/s at 15 m)				
Mean	3.65	5.31	3.96	4.46
Maximum	21.79	32.75	23.53	20.24

Notes:

[a] Winter includes January, February and March; Spring includes April, May June; Summer includes July, August, September; and Fall includes October, November and December. Water depth values may vary by approximately ± 2 m depending on tidal influence.

During 2009–2018, average monthly wind speeds ranged from 5.47 m/s in July to 10.97 m/s in January (see Table 13.16). The maximum wind speed during this period was 21.91 m/s in February. Wind direction in the Rencontre West BMA was predominately westerly (see Figure 13.20). Mean wave height from 2009–2018 ranged from 0.76 m in June to 1.37 in January. The maximum wave height was 4.42 m in February (see Table 13.17).

13.1 Sea Farm Site Maps

The MCE sea farms in the Rencontre West BMA were designed with 2x5 sea cage array with a net circumference of 140 m and a depth of 25–30 m. The sea farms in the Rencontre West BMA are currently third-party certified or will be prior to future stocking [as per FFA policy (FFA 2019)].

13.1.1 Devil Bay

As originally designed, the Devil Bay sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 m (Figure 13.2).

13.1.2 Little Bay

As originally designed, the Little Bay sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 13.3).

13.1.3 Rencontre Bay

As originally designed, the Rencontre Bay sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 25 m (Figure 13.4).

13.1.4 The Gorge

As originally designed, The Gorge sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 13.5).

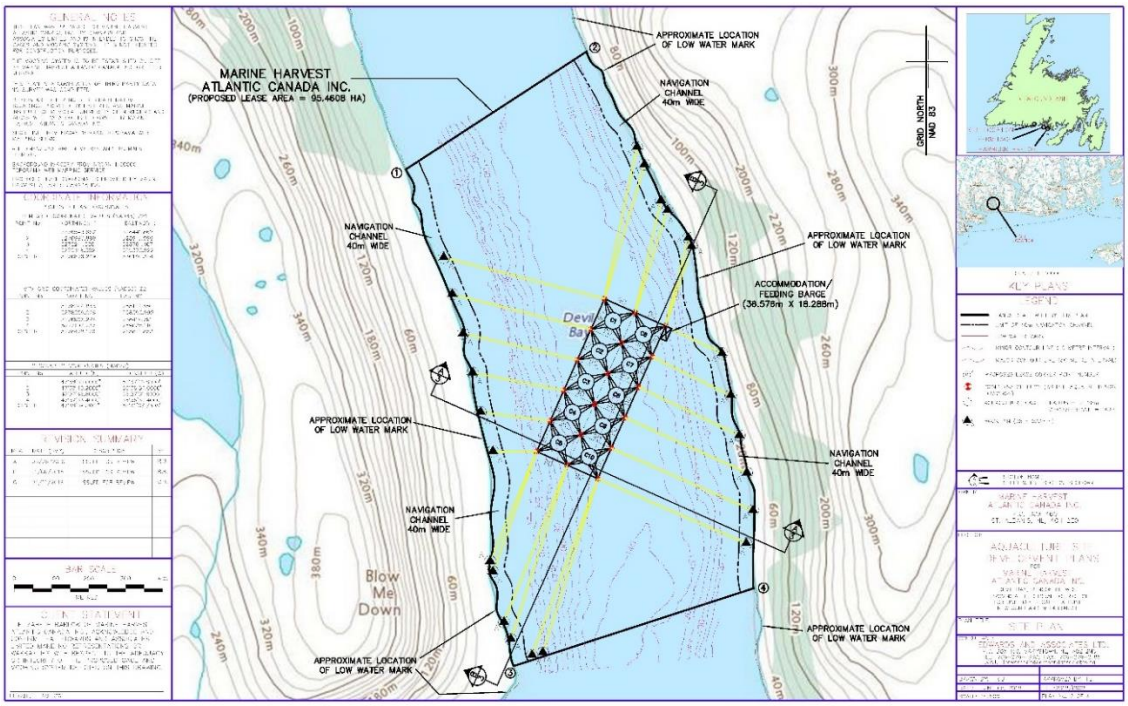


Figure 13.2. Devil Bay sea farm map and sea cage layout.

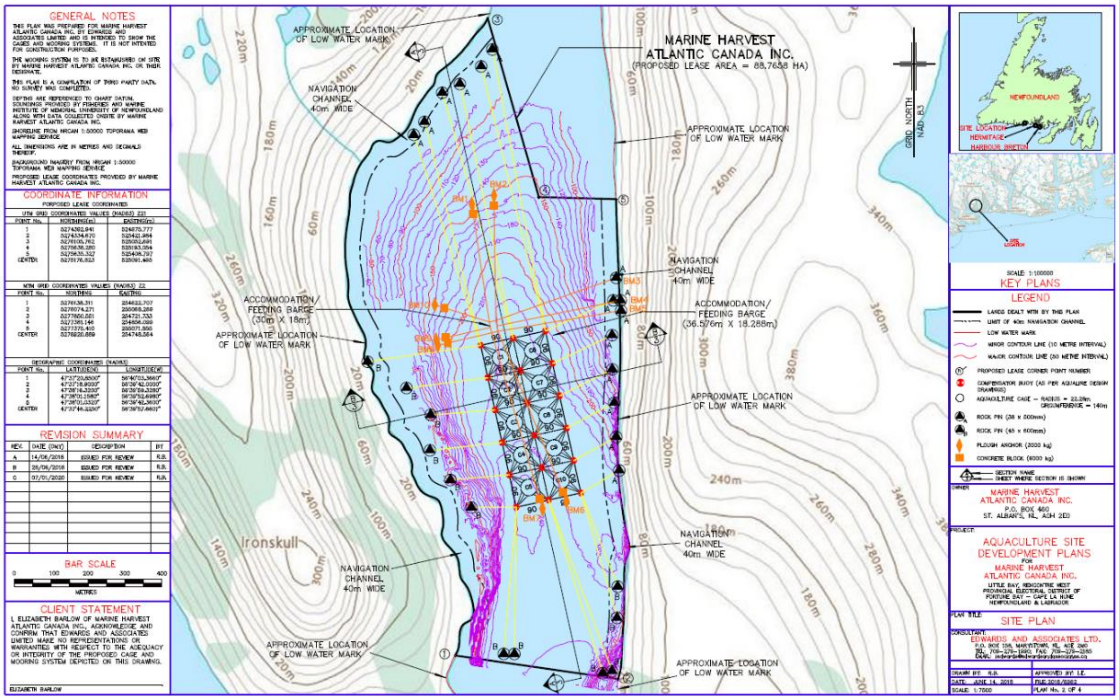


Figure 13.3. Little Bay sea farm map and sea cage layout.

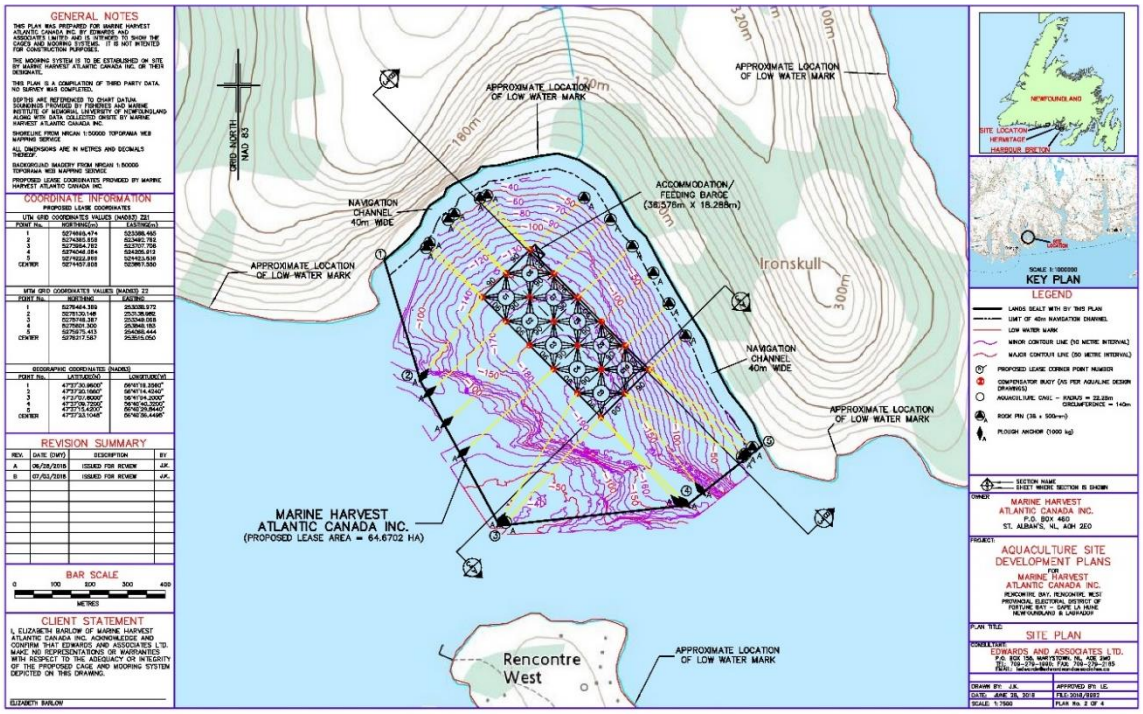


Figure 13.4. Rencontre Bay sea farm map and sea cage layout.

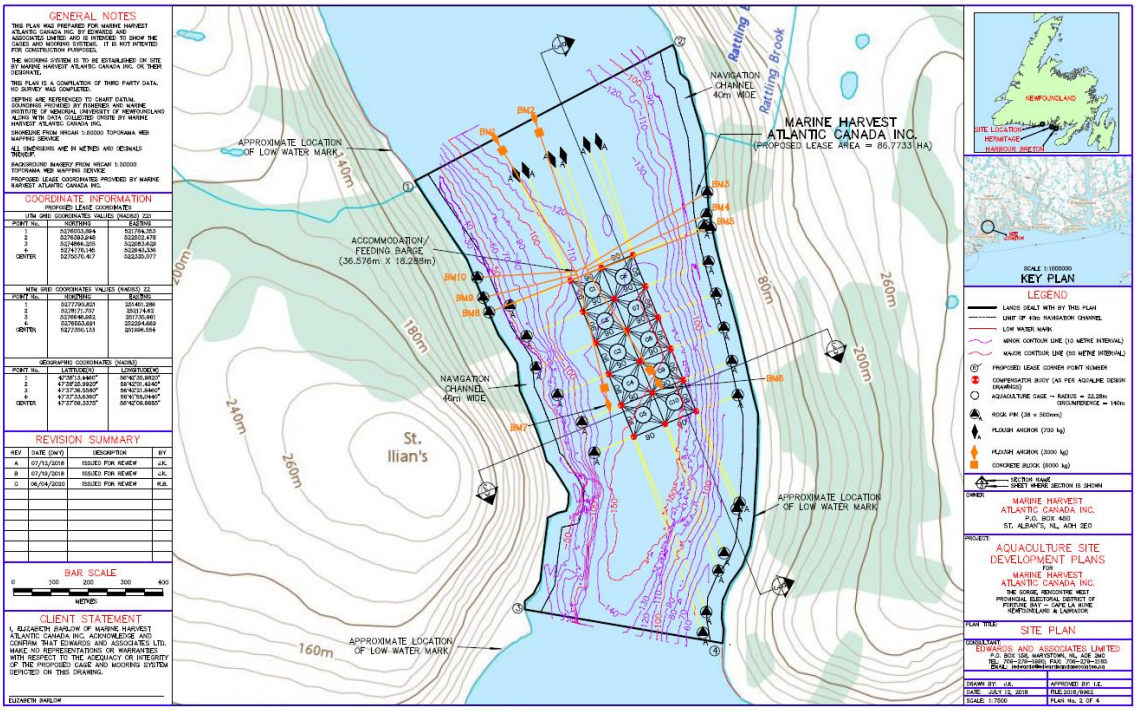


Figure 13.5. The Gorge sea farm map and sea cage layout.

13.2 Benthic Surveys

Benthic surveys at sea farms in the Rencontre West BMA were conducted in May and June 2018. Stations categorized as hard bottom appeared hard visually or did not produce acceptable grab samples.

13.2.1 Devil Bay

Based on surveys at 116 of the 117 sampling stations (<1% (n=1) were not visible due to macroalgae bed coverage), the composition of the seafloor in the Devil Bay sea farm was a combination of bedrock sediment, sand and mud, and a mixture of gravel, cobble and rubble (Figure 13.6; Table 13.3). Just over half of the stations (68 of 117 with data) were considered hard bottom. Species observed include anemones, brittle stars, cunners, kelp and more (Table 13.3). Kelp beds were observed near shore on the southwest and northeast ends of all transects. Some encrusting and standalone sponges were noted; however, not in quantities to be considered a complex. Soft coral was observed.

13.2.2 Little Bay

Based on surveys at 140 sampling stations, the composition of the seafloor in the Little Bay sea farm is primarily mixed substrates (Figure 13.7; Table 13.4). Slightly less than two thirds of the

area surveyed was characterized as a rockwall, bedrock or boulder sediment with some stations exhibiting a surface layer of finer substrates such as mud and silt. The majority of stations (101 of 140 with data) were considered hard bottom. Species observed include coralline algae, anemones, sea star spp., and more (Table 13.4). One kelp bed was observed near shore on the west end of transect 11. Some encrusting and standalone sponges were noted; however, not in quantities to be considered a complex. Soft coral and sea pens were observed.

13.2.3 Rencontre Bay

Based on surveys at 92 sampling stations, the composition of the seafloor in the Rencontre Bay sea farm is primarily mixed substrates (Figure 13.8; Table 13.5) including bedrock, sand, mud, cobble and gravel. The majority of stations (82 of 92) were considered hard bottom. Species observed include coralline algae, anemones, cunners, sea star spp., and more (Table 13.5). Five kelp beds were observed near shore on the northeast ends of transects 5, 7, 8, 11 and 12. Some encrusting and standalone sponges were noted; however, not in quantities to be considered a complex. Soft corals and an unidentified tunicate were observed.

13.2.4 The Gorge

Based on surveys at 114 sampling stations, the composition of The Gorge sea farm is primarily mixed substrates including bedrock, mud and silt (Figure 13.9; Table 13.6). The majority of stations (73 of 114) were considered hard bottom. Species observed include encrusting algae, anemones, sea star spp., and more (Table 13.6). Some encrusting and standalone sponges were noted, however, not in quantities to be considered a complex. Benthic indicators, present as minimal patches and traces of *Beggiatoa*-like bacteria, were observed on two (transects 7 and 8) of the ten transects analyzed within the 200 m boundary around the cage grid. Some soft corals were observed as well as the invasive Vase Tunicate.

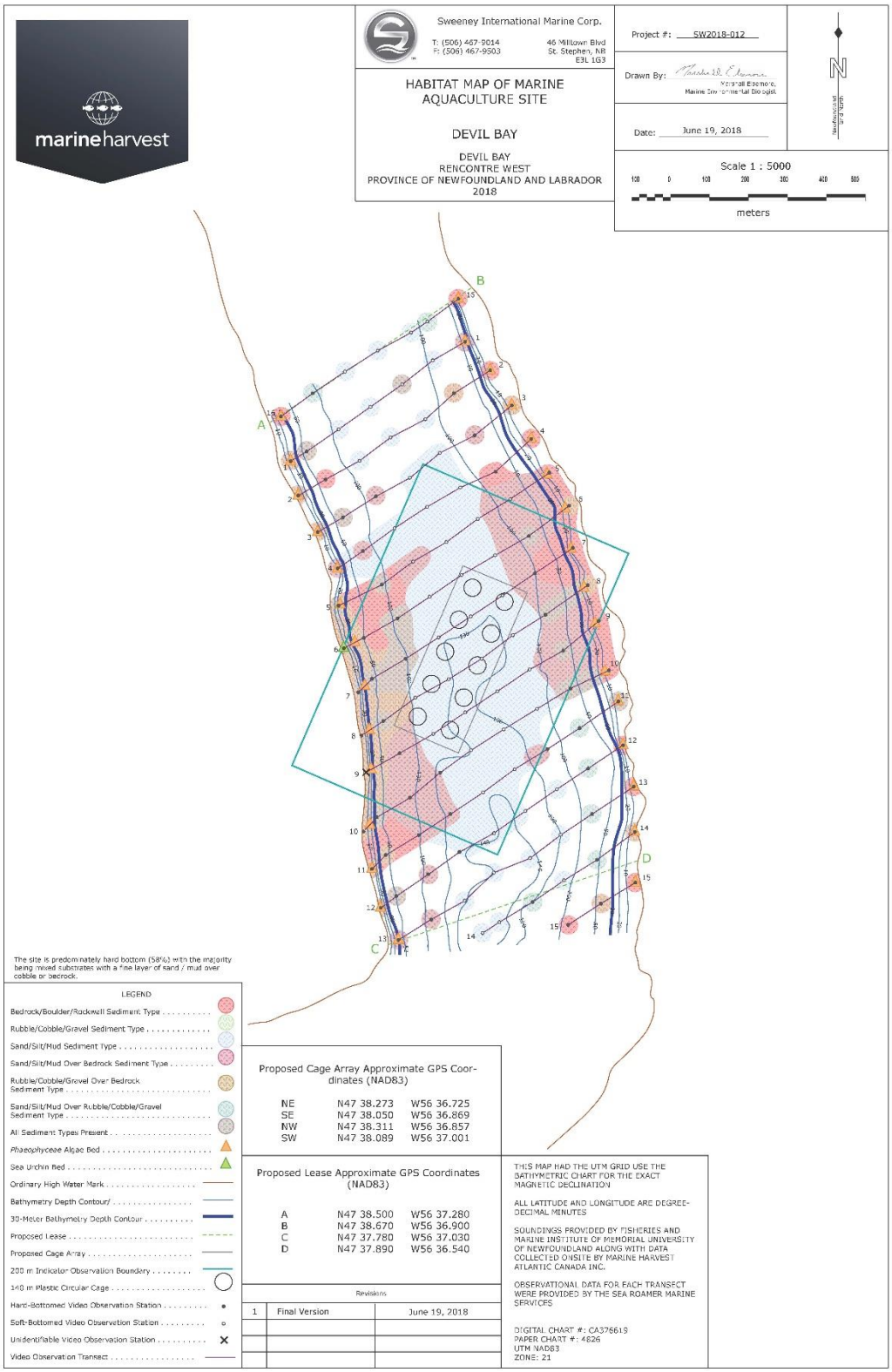


Figure 13.6. Habitat observations at sampling stations in the Devil Bay sea farm (May 2018).

Table 13.3. Summary of bottom type and observed flora and fauna at the Devil Bay sea farm (May 2018).

Devil Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	-25	47 38.633	56 36.829	0	Hard		80%						20%			Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	100	47 38.597	56 36.917	81	Soft							100%				
	200	47 38.564	56 36.981	119	Soft			30%		5%			65%			
	300	47 38.533	56 37.046	124	Soft							100%				
	400	47 38.502	56 37.112	117	Soft							100%				
	500	47 38.471	56 37.178	66	Hard			25%		25%	20%	30%				
	580	47 38.451	56 37.232	0	Hard		90%				10%					
2	-10	47 38.583	56 36.799	0	Hard	65%	35%									
	100	47 38.551	56 36.874	79	Hard	20%	60%	15%			5%					
	200	47 38.515	56 36.933	110	Soft							100%				
	300	47 38.490	56 37.005	127	Soft							100%				
	400	47 38.458	56 37.069	120	Soft							100%				
	500	47 38.432	56 37.140	79	Hard		100%									
	580	47 38.410	56 37.196	0	Hard		90%			10%						
3	-25	47 38.534	56 36.755	0	Hard	15%	80%			5%						
	100	47 38.492	56 36.832	77	Hard		75%					25%				
	200	47 38.468	56 36.904	114	Soft								100%			Tube Worm (>20), *Stomphia* Anemone (2)
	300	47 38.434	56 36.966	131	Soft							100%				Tube Worm (3)
	400	47 38.408	56 37.036	121	Hard			40%					60%			Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	500	47 38.379	56 37.104	77	Hard			50%		15%	10%		25%			
	580	47 38.359	56 37.156	0	Hard	20%	75%			5%						
4	-15	47 38.487	56 36.715	0	Hard		100%									
	100	47 38.442	56 36.789	78	Hard		45%	55%								Soft coral (1), *Stomphia* Anemone (>20), *Cerianthus* Anemone (2)
	200	47 38.420	56 36.862	122	Soft								100%			Tube Worm (>20)
	300	47 38.393	56 36.931	130	Soft								100%			Tube Worm (5), Krill (3)
	400	47 38.364	56 36.998	117	Soft							100%				Shrimp (1), Tube Worm (10)
	500	47 38.332	56 37.063	78	Hard	15%	35%	50%								*Stomphia* Anemone (>20), Encrusting Sponge (10%), *Serpula* (>20), *Cerianthus* Anemone (12)
	580	47 38.308	56 37.116	0	Hard	15%	85%									Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
5	-20	47 38.440	56 36.678	0	Hard		100%									
	100	47 38.404	56 36.758	85	Soft								100%			*Stomphia* Anemone (>20), Tube Worm (4)
	200	47 38.376	56 36.826	129	Soft							100%				Shrimp (2), Tube Worm (4)
	300	47 38.344	56 36.891	127	Soft							100%				Tube Worm (>20), White Branching Sponge (1), Shrimp (1)
	400	47 38.317	56 36.960	120	Soft							100%				Tube Worm (2), *Stomphia* Anemone (1), Shrimp (1)
	500	47 38.285	56 37.025	92	Hard		60%			5%		35%				*Cerianthus* Anemone (>20), *Stomphia* Anemone (>20)
	600	47 38.256	56 37.114	21	Hard			40%			60%					Cunner (2), Small Unidentifiable Crab (1)
6	-20	47 38.394	56 36.638	0	Hard		85%			15%						
	100	47 38.352	56 36.721	82	Hard					40%	15%		45%			*Serpula* (2), *Stomphia* Anemone (>20), *Cerianthus* Anemone (2), Tube Worm (1), Brittle Star (1)
	200	47 38.325	56 36.791	130	Soft								100%			Eelpout w/ Parasites (1), Shrimp (3), Tube Worm (5)
	300	47 38.298	56 36.860	125	Soft								100%			Unidentifiable Fish (1)

Devil Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	400	47 38.268	56 36.926	125	Soft								100%			Krill (>20), Tube Worm (9), Snow Crab (1), Shrimp (3)
	500	47 38.238	56 36.993	109	Hard			40%		20%			40%			*Serpula* (5), *Stomphia* Anemone (>20), White Branching Sponge (7), Brittle Star (1), Encrusting Sponge (trace), Snow Crab (1)
	600	47 38.211	56 37.062	50	Hard			55%	45%							Unidentifiable Fish (2), Unidentifiable Crab (2), Cod (1), *Metridium* Anemone (4), Green Sea Urchin (2)
	655	47 38.197	56 37.104	0	Hard		15%		65%	10%	5%	5%				Green Sea Urchin (>20)
7	-15	47 38.335	56 36.630	0	Hard		100%									
	100	47 38.300	56 36.709	101	Hard								100%			*Stomphia* Anemone (>20), *Cerianthus* Anemone (>20)
	200	47 38.269	56 36.776	125	Soft								100%			Shrimp (2), Tube Worm (4),
	300	47 38.240	56 36.842	127	Soft								100%			Eelpout (2), Tube Worm (7)
	400	47 38.211	56 36.908	128	Soft								100%			Tube Worm (5), Shrimp (9)
	500	47 38.182	56 36.976	99	Hard			80%					20%			*Stomphia* Anemone (9), Unidentifiable Anemone (7), *Serpula* (>20), White Branching Sponge (1), *Cerianthus* Anemone (1), Tube Worm (12)
	600	47 38.154	56 37.046	40	Hard		20%	65%				15%				*Stomphia* Anemone (1), Green Sea Urchin (1), Jellyfish (1), Acadian Redfish (>20)
	650	47 38.135	56 37.074	0	Hard		100%									
8	-30	47 38.283	56 36.600	0	Hard		85%			15%						
	100	47 38.242	56 36.688	87	Hard					5%			95%			*Stomphia* Anemone (>20), *Cerianthus* Anemone (9), Brittle Star (1)
	200	47 38.214	56 36.755	125	Soft								100%			Shrimp (1), Tube Worm (3), Brittle Star (1)
	300	47 38.181	56 36.820	133	Soft								100%			Shrimp (4), Unidentifiable Fish (1), Tube Worm (3), *Stomphia* Anemone (1)
	400	47 38.153	56 36.888	129	Soft								100%			Shrimp (3)
	500	47 38.127	56 36.957	119	Soft								100%			Right-eyed Winter Flounder (1), *Cerianthus* Anemone (2), Shrimp (1), Sculpin (1)
	600	47 38.095	56 37.023	61	Hard			65%				35%				*Stomphia* Anemone (14), *Cerianthus* Anemone (>20)
	670	47 38.075	56 37.068	0	Hard	5%	85%	10%								
9	-10	47 38.233	56 36.578	0	Hard		80%	20%								
	100	47 38.192	56 36.651	64	Hard						100%					*Cerianthus* Anemone (>20), Unidentifiable Anemone (1), *Metridium* Anemone (2)
	200	47 38.166	56 36.721	115	Soft								100%			*Stomphia* Anemone (12), *Cerianthus* Anemone (7), Tube Worm (3), Round Sponge (1)
	300	47 38.136	56 36.787	120	Soft								100%			Eelpout (1), Shrimp (3)
	400	47 38.107	56 36.854	132	Soft								100%			Right-eyed Winter Flounder (1), Shrimp (1)
	500	47 38.077	56 36.920	126	Soft								100%			Shrimp (5), Tube Worm (5), Right-eyed Winter Flounder (1)
	600	47 38.050	56 36.990	80	Hard		70%						30%			Brittle Star (4), *Cerianthus* Anemone

Devil Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(8), *Stomphia* Anemone (>20)
	700	47 38.024	56 37.059	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
10	0	47 38.164	56 36.557	0	Hard	45%	55%									
	100	47 38.139	56 36.637	65	Hard					5%	35%		60%			*Cerianthus* Anemone (4), Shrimp (1), *Stomphia* Anemone (1), Fan Worm (>20)
	200	47 38.111	56 36.706	118	Soft								100%			Brittle Star (4), *Cerianthus* Anemone (14), *Stomphia* Anemone (>20), Tube Worm (1), Sculpin (1)
	300	47 38.083	56 36.775	132	Soft								100%			Tube Worm (8), Shrimp (2)
	400	47 38.054	56 36.842	130	Soft								100%			Tube Worm (5), Shrimp (2)
	500	47 38.023	56 36.906	133	Hard		70%						30%			*Stomphia* Anemone (6), *Cerianthus* Anemone (4), Soft coral (1), Unidentifiable Fish (3), Tube Worm (>20), Brittle Star (1), Shrimp (3)
	600	47 37.988	56 36.969	95	Hard			55%					45%			*Cerianthus* Anemone (7), Brittle Star (7), *Stomphia* Anemone (6), Encrusting Sponge (<5%), *Serpula* (>20), White Branching Sponge (1)
	700	47 37.961	56 37.037	31	Hard			25%	10%	40%	25%					*Metridium* Anemone (1), Green Sea Urchin (>20), Jellyfish (1)
	750	47 37.941	56 37.065	0	Hard			20%	35%	35%	10%					
11	-15	47 38.121	56 36.538	0	Hard		40%	30%			10%	20%				Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	100	47 38.084	56 36.618	73	Hard					50%			50%			
	200	47 38.055	56 36.685	115	Hard		5%	25%					70%			*Stomphia* Anemone (>20), Soft coral (1), Brittle Star (5), Encrusting Sponge (trace), *Cerianthus* Anemone (4), Tube Worm (2)
	300	47 38.027	56 36.753	134	Soft								100%			Shrimp (4), Tube Worm (18)
	400	47 37.995	56 36.818	137	Soft								100%			Shrimp (6), Tube Worm (6), Krill (1)
	500	47 37.965	56 36.885	135	Hard			65%			35%					*Stomphia* Anemone (>20), Soft coral (1), Acadian Redfish (2), Leafy Bryozoan (3), White Branching Sponge (5), Brittle Star (3), Encrusting Sponge (5%)
	600	47 37.936	56 36.951	99	Hard		10%	65%					25%			*Cerianthus* Anemone (3), *Stomphia* Anemone (>20), Brittle Star (7), Leafy Bryozoan (1), Acadian Redfish (2), *Serpula* (>20), White Branching Sponge (2), Encrusting Sponge (5%)
	700	47 37.908	56 37.020	45	Hard		30%	55%	15%							Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	750	47 37.889	56 37.048	0	Hard		40%	10%	35%	15%						
12	0	47 38.060	56 36.529	0	Hard	90%	10%									
	100	47 38.029	56 36.599	70	Hard					15%		85%				
	200	47 37.999	56 36.666	118	Soft								100%			

Devil Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	300	47 37.969	56 36.731	132	Soft					5%			95%			Brittle Star (2), Shrimp (2), Sculpin (2), Tube Worm (7)
	400	47 37.938	56 36.796	137	Soft								100%			Eelpout (2), Right-eyed Winter Flounder (1), Shrimp (2), Krill (1)
	500	47 37.912	56 36.867	138	Hard		65%						35%			Soft coral (2), Brittle Star (13), *Stomphia* Anemone (>20), Shrimp (2)
	600	47 37.881	56 36.932	118	Hard			70%					30%			Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	700	47 37.851	56 36.998	50	Hard			65%			5%	30%				
	750	47 37.834	56 37.030	0	Hard		20%	15%	45%	20%						
13	-20	47 38.002	56 36.507	0	Hard		75%	25%								
	100	47 37.964	56 36.594	84	Hard					20%	5%	75%				
	200	47 37.935	56 36.659	130	Soft								100%			
	300	47 37.903	56 36.722	143	Soft								100%			
	400	47 37.883	56 36.796	140	Soft								100%			
	500	47 37.844	56 36.857	139	Soft								100%			
	600	47 37.818	56 36.926	113	Hard			50%					50%			
	700	47 37.790	56 36.994	29	Hard		95%					5%				
14	-20	47 37.939	56 36.505	0	Hard	55%		20%		15%	10%					
	100	47 37.900	56 36.584	54	Hard					65%	15%		20%			
	200	47 37.872	56 36.652	112	Soft								100%			
	300	47 37.842	56 36.717	130	Hard				5%	15%			80%			
	400	47 37.814	56 36.786	148	Soft							100%				
	450	47 37.799	56 36.820	146	Soft								100%			
15	0	47 37.868	56 36.505	0	Hard	60%		40%								
	100	47 37.839	56 36.576	42	Hard		85%		15%							
	200	47 37.810	56 36.644	82	Hard			100%								
16	-30	47 38.683	56 36.864	0	Hard	15%	85%									
	50	47 38.651	56 36.928	85	Soft					5%			95%			
	100	47 38.636	56 36.962	113	Soft								100%			
	200	47 38.611	56 37.031	125	Soft							100%				
	300	47 38.582	56 37.099	118	Soft							100%				
	400	47 38.552	56 37.165	95	Hard					50%			50%			
	500	47 38.520	56 37.231	29	Hard		55%	45%								

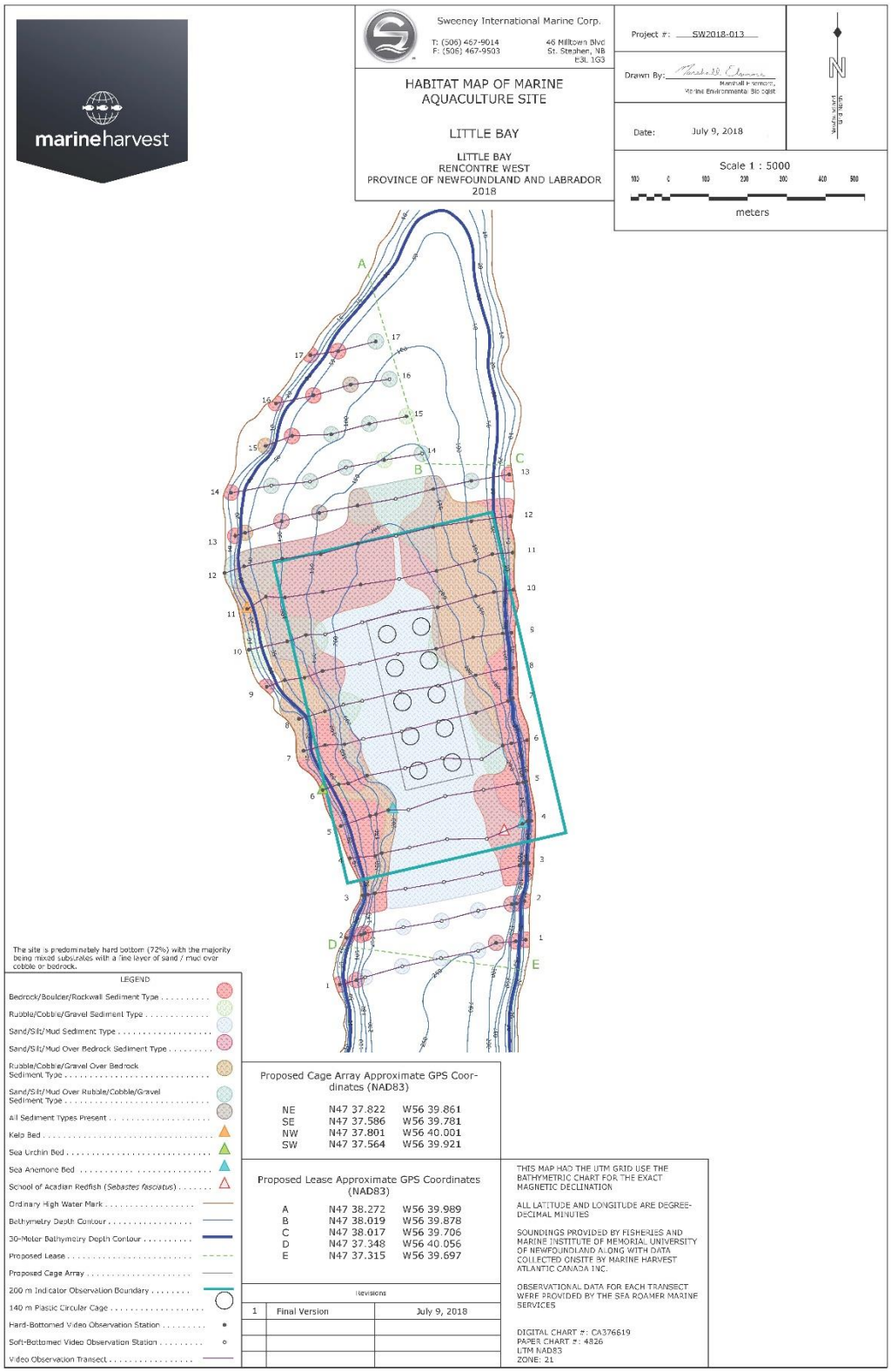


Figure 13.7. Habitat observations at sampling stations in the Little Bay sea farm (May and June 2018).

Table 13.4. Summary of bottom type and observed flora and fauna at the Little Bay sea farm (May and June 2018).

Little Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	-15	47 37.355	56 39.675	0	Hard	100%										Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	0	47 37.353	56 39.695	88	Hard	100%										
	50	47 37.351	56 39.736	240	Hard		10%						90%			
	100	47 37.340	56 39.773	244	Soft								100%			
	200	47 37.330	56 39.850	247	Soft								100%			
	300	47 37.319	56 39.929	240	Soft								100%			
	400	47 37.304	56 40.007	235	Soft								100%			
	420	47 37.300	56 40.024	149	Hard	100%										
	475	47 37.294	56 40.059	7	Hard			100%								
2	-20	47 37.409	56 39.677	0	Hard	100%										
	0	47 37.406	56 39.693	98	Hard	100%										
	10	47 37.405	56 39.703	228	Hard	60%							40%			
	100	47 37.396	56 39.772	236	Soft								100%			
	200	47 37.382	56 39.848	236	Soft								100%			
	300	47 37.373	56 39.927	238	Soft								100%			
	400	47 37.365	56 40.006	213	Hard	100%										
	410	47 37.363	56 40.014	120	Hard	100%										
	440	47 37.359	56 40.045	3	Hard			100%								
3	-20	47 37.462	56 39.668	0	Hard	100%										Frilled Anemone (15), Sea Urchin (5)
	-10	47 37.462	56 39.677	81	Hard	100%										Feather Star (18), Encrusting Sponge (20%), Vase Coral (3), *Serpula* (8), Unidentified Fish (3), Brittle Star (1), Breadcrumb Sponge (5), Unidentified Tunicate (>20)
	0	47 37.459	56 39.687	204	Hard	100%										*Serpula* (2), Encrusting Sponge (25%), Krill (>20), *Hormathia digitata* Anemone (8), Sea Urchin (1), Unidentified Tunicate (7)
	100	47 37.447	56 39.765	232	Soft								100%			Worm Tube (>20), Sea Pen (13), Krill (>20)
	200	47 37.436	56 39.843	235	Soft								100%			Worm Tube (>20), Sea Pen (17), Krill (>20)
	300	47 37.427	56 39.922	238	Soft								100%			Sea Pen (19), Ctenophore (1), Worm Tube (>20), Krill (>20), Grenadier (1), Unidentified Fish (1)
	380	47 37.421	56 39.986	200	Hard	90%					10%					*Hormathia digitata* Anemone (>20), *Serpula* (4), Acadian Redfish (3), Krill (2), Blood Star (1), Stalked Glass Sponge (1), Shrimp (1), Encrusting Sponge (20%)
	400	47 37.419	56 40.000	61	Hard	100%										Encrusting Sponge (30%), Feather Star (8), *Serpula* (3), Unidentified Tunicate (>20), Brittle Star (6), Sea Urchin (2), Unidentified Fish (2), Breadcrumb Sponge (1)
	420	47 37.418	56 40.010	1	Hard	90%			10%							Frilled Anemone (>20)
4	-20	47 37.521	56 39.662	0	Hard	100%										Ctenophore (2), Frilled Anemone (>20), Blood Star (1)
	-10	47 37.520	56 39.671	100	Hard	100%										Vase Coral (4), Feather Star (4), Encrusting Sponge (75%), *Serpula* (7), *Bolocera tudiae* Anemone (4), Breadcrumb Sponge (1), Unidentified Fish (6)
	0	47 37.517	56 39.680	200	Hard	90%							10%			*Stomphia* Anemone (>20), Encrusting Sponge (5%),

Little Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Unidentified Tunicate (4), *Hormathia digitata* Anemone (1)
	100	47 37.496	56 39.754	230	Soft								100%			Worm Tube (>20), Octopus (1), Sea Pen (8)
	200	47 37.496	56 39.836	232	Soft								100%			Worm Tube (>20), Sea Pen (>20), Krill (>20)
	300	47 37.484	56 39.914	239	Soft								100%			Worm Tube (>20), Sea Pen (12)
	375	47 37.477	56 39.971	203	Hard	90%					10%					Encrusting Sponge (50%), *Stomphia coccinea* Anemone (>20), Frilled Anemone (>20), Acadian Redfish (1)
	390	47 37.473	56 39.985	100	Hard	100%										Feather Star (16), Encrusting Sponge (50%), *Bolocera tudiae* Anemone (4), Blood Star (1)
	450	47 37.470	56 40.037	0	Hard	85%		15%								Frilled Anemone (>20), Unidentified flora or fauna (>20)
5	-10	47 37.576	56 39.672	0	Hard	100%										Frilled Anemone (>20)
	-5	47 37.575	56 39.678	118	Hard	100%										Unidentified Tunicate (>20), Unidentified Sponge (>20), *Serpula* (3), Unidentified Anemone (1), Unidentified Sea Star (1), Sea Urchin (1), Brittle Star (1)
	10	47 37.573	56 39.690	202	Hard	100%										Encrusting Sponge (50%), *Serpula* (7), *Stomphia coccinea* Anemone (>20), Sea Urchin (1), Acadian Redfish (1), Krill (>20)
	100	47 37.564	56 39.761	223	Soft								100%			Worm Tube (>20), Sea Pen (>20)
	200	47 37.556	56 39.840	233	Soft								100%			Worm Tube (>20), Sea Pen (10), Krill (3)
	300	47 37.537	56 39.916	248	Soft								100%			Worm Tube (>20), Krill (>20), Sea Pen (1)
	350	47 37.537	56 39.957	183	Hard	75%					25%					Encrusting Sponge (75%), *Serpula* (10), *Stomphia coccinea* Anemone (>20), Breadcrumb Sponge (4)
	380	47 37.531	56 39.983	150	Hard	100%										Encrusting Sponge (50%), *Serpula* (>20), *Hormathia digitata* Anemone (>20), Cod (1)
	400	47 37.529	56 39.995	100	Hard	100%										Feather Star (>20), *Serpula* (>20), Encrusting Sponge (50%), Brittle Star (3), *Hormathia digitata Anemone* (2), Unidentified Fish (1)
	480	47 37.515	56 40.056	2	Hard		75%	25%								
6	-15	47 37.633	56 39.671	0	Hard	100%										Frilled Anemone (>20), Unidentified Sponge (2)
	20	47 37.629	56 39.703	123	Hard	100%										Breadcrumb Sponge (1), *Serpula* (6), Blood Star (1), Unidentified Sponge (>20), Acadian Redfish (1), *Bolocera tudiae* Anemone (11), Encrusting Sponge (25%), Common Sea Star (1)
	40	47 37.626	56 39.720	200	Hard	85%			5%				10%			*Hormathia digitata* Anemone (20), *Serpula* (6), Acadian Redfish (7), Encrusting Sponge (40%), Cod (12), Unidentified Tunicates (3)
	100	47 37.607	56 39.764	228	Soft								100%			Sea Pen (11), Worm Tube (>20), Grenadier (1), Krill (5)

Little Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	200	47 37.609	56 39.845	231	Soft								100%			Krill (17), Sea Pen (>20), Worm Tube (>20), Winter Flounder (1)
	300	47 37.595	56 39.922	243	Soft								100%			Worm Tube (>20), Krill (>20), Sea Pen (1)
	400	47 37.585	56 40.001	210	Hard			40%		25%			35%			Acadian Redfish (7), *Bolocera tudiae* Anemone (3), Blood Star (1), Krill (6), Athenarian Burrowing Anemone (2), Unidentified Tunicate (2)
	450	47 37.574	56 40.039	100	Hard	100%										Feather Star (>20), *Stomphia coccinea* Anemone (3), Encrusting Sponge (20%), Tunicate (>20), Breadcrumb Sponge (1), *Serpula* (17)
	475	47 37.573	56 40.059	50	Hard		60%	20%			20%					*Bolocera tudiae* Anemone (1), Unidentified Tunicate (3), Brittle Star (3), Unidentified Sponge (2), Breadcrumb Sponge (5), Acadian Redfish (3), Cunners (3), *Serpula* (2)
	520	47 37.565	56 40.092	0	Hard		100%									Frilled Anemones (>20), Green Sea Urchins (>20)
7	0	47 37.692	56 39.699	0	Hard	100%										
	15	47 37.688	56 39.709	108	Hard	100%										Breadcrumb Sponge (2), Encrusting Sponge (20%), *Stomphia coccinea* Anemone (3), *Serpula* (>20), Cunner (3), Blood Star (1), Sponge (>20)
	100	47 37.672	56 39.775	219	Hard			80%					20%			*Bolocera tudiae* Anemone (7), Krill (2), Worm Tube (7), Acadian Redfish (1), Frilled Anemone (1)
	200	47 37.660	56 39.853	229	Soft								100%			Sea Pen (>20) Worm Tube (>20), Unidentified Fish (1)
	300	47 37.646	56 39.929	234	Soft								100%			Worm Tube (>20), Sea Pen (12), Krill (>20), Grenadier (1), Unidentified Fish (1)
	400	47 37.636	56 40.008	223	Soft								100%			Worm Tube (>20), *Hormathia digitata* Anemone (4), Krill (2), Sea Pen (1), Sponge (4)
	450	47 37.629	56 40.047	158	Hard		75%						25%			*Hormathia digitata* Anemone (>20), Encrusting Sponge (5%), Cunner (1), Breadcrumb Sponge (1), Unidentified Sponge (3)
	500	47 37.628	56 40.087	80	Hard	100%										Encrusting Sponge (50%), *Serpula* (11), Unidentified Tunicate (>20), Blood Star (1)
	560	47 37.620	56 40.132	3	Hard		40%	60%								Blood Star (1), Frilled Anemone (>20), Sea Urchin (4), Unidentified Tunicate (>20), Ctenophore (3), *Hormathia digitata* Anemone (8)
8	0	47 37.734	56 39.698	0	Hard	100%										Frilled Anemone (>20), Ctenophore (2)
	15	47 37.733	56 39.714	107	Hard	100%										Encrusting Sponge (50%), Feather Star (7), Blood Star (2), *Serpula* (11), Brittle Stars (4)
	100	47 37.724	56 39.776	198	Hard			50%			50%					*Bolocera tudiae* Anemone (4), Polychaete (2), Ctenophore (3),

Little Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Blood Star (1), Acadian Redfish (1), Unidentified Sponge (2)
	200	47 37.710	56 39.853	231	Soft								100%			Worm Tube (>20), Krill (4), Sea Pen (5), Unidentified Fish (1), Winter Flounder (1)
	300	47 37.702	56 39.932	226	Soft								100%			Worm Tube (>20), Sea Pen (9), Krill (11)
	400	47 37.689	56 40.010	222	Soft								100%			Worm Tube (>20), Krill (13), King Crab (1)
	450	47 37.684	56 40.049	207	Soft					10%	40%		50%			*Hormathia digitata* Anemone (>20), Worm Tube (>20), Unidentified Sponge (11), Winter Flounder (1), Acadian Redfish (2)
	500	47 37.675	56 40.087	89	Hard	90%					10%					*Serpula* (>20), Encrusting Sponge (70%), Unidentified Sponge (>20), Feather Star (2), Brittle Star (1), Unidentified Tunicate (2)
	570	47 37.664	56 40.141	0	Hard	60%		20%		20%						Ctenophore (2)
9	0	47 37.783	56 39.701	0	Hard	100%										Ctenophore (2)
	25	47 37.782	56 39.719	106	Hard	70%				15%	15%					Encrusting Sponge (30%), *Serpula* (7), Feather Star (1), Unidentified Sponge (6), Unidentified Fish (2)
	100	47 37.777	56 39.780	170	Hard			80%		10%	10%					Frilled Anemone (12), Unidentified Sponge (4), Acadian Redfish (1), Unidentified Anemone (1), *Hormathia digitata* Anemone (1)
	200	47 37.761	56 39.857	222	Hard			15%	25%				60%			Sea Pen (4), Worm Tube (>20), *Bolocera tudiae* Anemone (2), Unidentified Fish (1), Winter Flounder (1)
	300	47 37.754	56 39.936	228	Soft								100%			Worm Tube (>20), Unidentified Fish (2), Krill (1), Sea Pen (3)
	400	47 37.741	56 40.014	220	Soft								100%			Worm Tube (>20), Krill (7), Sea Pen (1)
	500	47 37.731	56 40.092	190	Hard	70%							30%			*Serpula* (>20), Acadian Redfish (2), Encrusting Sponge (60%), *Hormathia digitata* Anemone (>20), Unidentified Sponge (7)
	550	47 37.722	56 40.129	90	Hard			75%		10%	15%					*Hormathia digitata* Anemone (9), Sponge (>20), *Serpula* (12), Encrusting Sponge (40%), Blood Star (3), Brittle Star (1)
	600	47 37.718	56 40.170	49	Hard		80%			10%	10%					Common Sea Star (1)
	650	47 37.709	56 40.207	3	Hard			100%								Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
10	0	47 37.843	56 39.697	0	Hard	100%										Ctenophores (>20), Frilled Anemones (>20)
	50	47 37.840	56 39.737	106	Hard	70%		15%			15%					Encrusting Sponge (25%), *Serpula* (3)
	100	47 37.834	56 39.775	145	Hard			60%			40%					Breadcrumb Sponge (4), Brittle Star (1), Unidentified Anemone (2), *Cerianthus borealis* Anemone (3)
	200	47 37.819	56 39.853	210	Hard			45%					55%			Worm Tube (>20), *Bolocera tudiae*

Little Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Anemone (5), Krill (9), King Crab (1), Encrusting Sponge (5%), Unidentified Tunicate (4), Cunner (1)
	300	47 37.813	56 39.932	230	Soft								100%			Worm Tube (>20), Krill (>20), Grenadier (1), Winter Flounder (1), Unidentified Fish (1), Acadian Redfish (1)
	400	47 37.798	56 40.009	218	Soft								100%			Worm Tube (>20), Krill (12), Unidentified Fish (2)
	500	47 37.782	56 40.086	192	Soft				40%				60%			*Stomphia coccinea* Anemone (>20), *Serpula* (2)
	550	47 37.781	56 40.126	141	Hard		60%				20%		20%			Feather Star (6), Encrusting Sponge (35%), *Bolocera tudiae* Anemone (2), *Serpula* (9), Soft Coral (1)
	600	47 37.772	56 40.164	85	Hard	60%		20%			20%					Feather Star (6), Breadcrumb Sponge (10), Encrusting Sponge (30%), Unidentified Anemone (1), *Serpula* (7), Athenarian Burrowing Anemone (1)
	700	47 37.761	56 40.243	8	Hard				70%	30%						Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
11	0	47 37.895	56 39.699	0	Hard	80%				20%						Planktonic polychaete (1), Ctenophore (>20)
	50	47 37.893	56 39.740	65	Hard	15%	15%	50%		10%	10%					Feather Star (2)
	100	47 37.884	56 39.777	107	Hard	20%		40%		20%	20%					*Hormathia digitata* Anemone (2), *Serpula* (2)
	200	47 37.870	56 39.855	186	Hard			65%					35%			Acadian Redfish (2), *Bolocera tudiae* Anemone (1), *Serpula* (>20), Athenarian Burrowing Anemone (2), Frilled Anemone (5), Unidentified Anemone (2)
	300	47 37.859	56 39.933	223	Soft								100%			Worm Tube (>20), Hake (2), Unidentified Fish (2), Krill (13)
	400	47 37.851	56 40.012	211	Hard			75%					25%			Krill (17), Worm Tube (7), *Bolocera tudiae* Anemone (1), Unidentified Sponge (9), Acadian Redfish (2), Encrusting Sponge (20%), Unidentified Anemone (1)
	500	47 37.841	56 40.090	180	Hard			70%					30%			Unidentified Sponge (3), *Hormathia digitata* Anemone (5), Acadian Redfish (7), *Serpula* (6), Encrusting Sponge (5%)
	600	47 37.834	56 40.169	122	Hard			70%					30%			Acadian Redfish (1), Encrusting Sponge (50%), *Serpula* (>20), Breadcrumb Sponge (1), *Bolocera tudiae* Anemone (1)
	650	47 37.825	56 40.208	67	Hard		50%		30%	10%			10%			Unidentified Sponge (2)
	700	47 37.818	56 40.246	18	Hard			40%	40%	20%						Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
12	0	47 37.946	56 39.703	0	Hard	100%										Ctenophore (>20)
	100	47 37.939	56 39.783	91	Hard					15%	85%					Unidentified Sponge (4), *Hormathia*

Little Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																digitata Anemone (6), Breadcrumb Sponge (7), Acadian Redfish (2), *Serpula* (5), Sunstar (1), Stalked Glass Sponge (1), Encrusting Sponge (5%)
	200	47 37.931	56 39.862	160	Hard			60%			10%		30%			*Hormathia digitata* Anemone (1), *Serpula* (>20), Krill (>20), Burrowing Anemone (1), Feather Star (1), Sea Lily (2)
	300	47 37.919	56 39.939	206	Soft								100%			Worm Tube (>20), Acadian Redfish (1), Krill (8), Hake (1), Winter Flounder (1), Unidentified Flatfish (1)
	400	47 37.909	56 40.017	199	Hard			50%					50%			Acadian Redfish (4), Krill (2), *Hormathia digitata* Anemone (9), Hake (1), Unidentified Sponge (2), Encrusting Sponge (5%), Soft Coral (2), Worm Tube (3), Unidentified Tunicate (5)
	500	47 37.894	56 40.095	159	Hard			70%					30%			*Serpula* (>20), Encrusting Sponge (15%), Worm Tube (7), Unidentified Tunicate (1), Blood Star (2), Acadian Redfish (10)
	600	47 37.888	56 40.174	105	Hard			70%			15%		15%			Breadcrumb Sponge (6), Encrusting Sponge (15%), *Serpula* (1), Unidentified Tunicates (>20), Acadian Redfish (1), *Hormathia digitata* Anemone (4), Unidentified Sponge (6)
	700	47 37.877	56 40.252	40	Hard	60%				30%		10%				Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	750	47 37.868	56 40.293	0	Hard					80%			20%			
13	0	47 38.004	56 39.704	0	Hard	100%										
	100	47 37.995	56 39.783	88	Hard			90%			5%		5%			
	200	47 37.984	56 39.862	153	Hard			50%			20%		30%			*Stomphia coccinea Anemone (2), Unidentified Sponge (13), Athenarian Burrowing Anemone (4), Serpula (>20), Hormathia digitata Anemone (6), Unidentified Tunicate (1), Encrusting Sponge (20%), Acadian Redfish (1), Worm Tube (3)*
	300	47 37.971	56 39.939	185	Soft					10%			90%			*Hormathia digitata* Anemone (>20), Worm Tube (>20), Acadian Redfish (1), Winter Flounder (3)
	400	47 37.961	56 40.018	175	Hard			15%		40%	10%		35%			*Hormathia digitata* Anemone (>20), Acadian Redfish (2), Unidentified Sponge (3), Worm Tube (10)
	500	47 37.952	56 40.097	152	Hard			60%			10%		30%			Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	600	47 37.940	56 40.174	101	Hard			85%					15%			
	700	47 37.924	56 40.250	43	Hard		65%			30%	5%					
	730	47 37.920	56 40.270	16	Hard		85%					15%				
14	0	47 37.033	56 39.884	153	Soft				40%				60%			
	100	47 38.025	56 39.962	151	Hard					50%	50%					
	200	47 38.015	56 40.041	139	Soft						20%		80%			
	300	47 37.995	56 40.116	122	Soft						20%		80%			
	400	47 37.990	56 40.196	76	Soft					40%			60%			
	500	47 37.980	56 40.279	12	Hard		100%									

Little Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
15	0	47 38.085	56 39.916	130	Hard					40%	60%					
	100	47 38.075	56 39.993	124	Hard					40%	30%		30%			
	200	47 38.061	56 40.071	94	Hard					45%			55%			
	300	47 38.059	56 40.152	55	Hard			100%								
	375	47 38.045	56 40.207	0	Hard			50%	50%							
16	0	47 38.137	56 39.951	107	Soft						40%		60%			
	100	47 38.130	56 40.031	84	Hard			50%			10%		40%			
	200	47 38.115	56 40.108	51	Hard			100%								
	300	47 38.104	56 40.185	4	Hard		75%	25%								
17	0	47 38.190	56 39.979	77	Hard					80%	10%		10%			
	100	47 38.177	56 40.056	50	Hard	100%										
	175	47 38.171	56 40.114	3	Hard		100%									

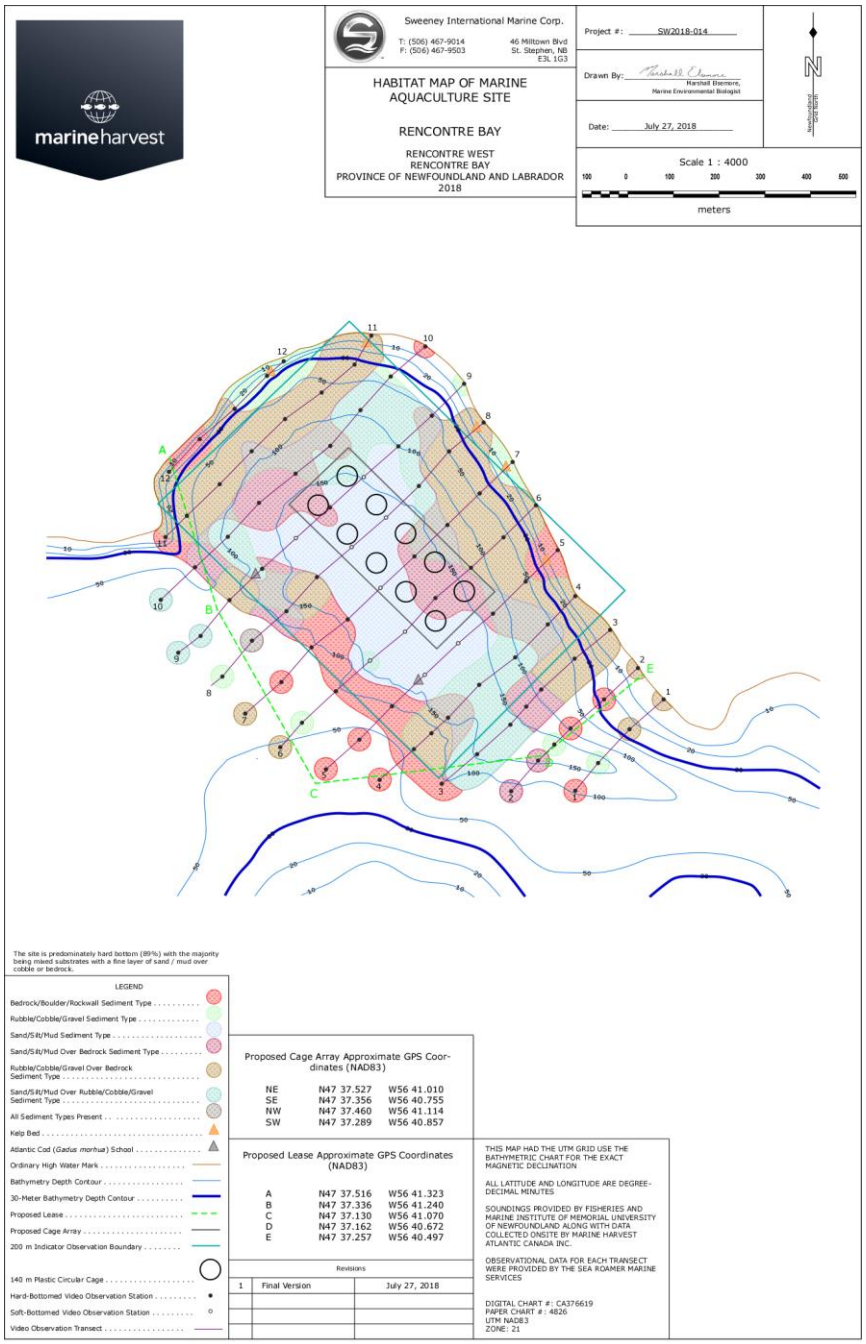


Figure 13.8. Habitat observations at sampling stations in the Rencontre Bay sea farm (May and June 2018).

Table 13.5. Summary of bottom type and observed flora and fauna at the Rencontre Bay sea farm (June 2024).

Rencontre Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 37.228	56 40.461	0	Hard			50%	30%	20%						Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	100	47 37.193	56 40.521	23	Hard		90%				10%					
	200	47 37.153	56 40.576	162	Hard					40%	60%					
	280	47 37.120	56 40.616	104	Hard		100%									
2	0	47 37.265	56 40.506	0	Hard			50%	40%		10%					
	100	47 37.228	56 40.565	23	Hard		80%	20%								
	200	47 37.194	56 40.624	94	Hard	100%										
	250	47 37.175	56 40.654	168	Hard					60%	40%					
	300	47 37.156	56 40.681	160	Hard	90%							10%			
	380	47 37.120	56 40.728	84	Hard		90%						10%			
3	0	47 37.310	56 40.554	0	Hard			40%	40%	10%	10%					Barnacle (>20)
	100	47 37.276	56 40.616	45	Hard			100%								Cunner (>20), Soft Coral (1), Sea Star (6)
	200	47 37.240	56 40.675	81	Hard	80%							20%			Feather Star (>20), Sea Star (2), Cunner (6), *Hormathia digitata* Anemone (4)
	250	47 37.222	56 40.705	125	Hard	100%										Breadcrumb Sponge (40%), Feather Star (>20), *Stomphia coccinea* Anemone (2), *Geodiidae* Sponge (10)
	300	47 37.199	56 40.729	168	Hard					40%	50%		10%			Winter Flounder (1), Athenarian Burrowing Anemone (5)
	400	47 37.164	56 40.788	154	Hard					45%	30%		25%			Winter Flounder (1), *Geodiidae* Sponge (2)
	500	47 37.129	56 40.849	95	Hard	100%										Breadcrumb Sponge (40%), Feather Star (>20), *Hormathia digitata* Anemone (1), *Geodiidae* Sponge (14), Tube Worm (6), Unidentified Tunicate (3), *Urticina felina* Anemone (3)
4	15	47 37.350	56 40.615	0	Hard			40%	40%	20%						
	100	47 37.317	56 40.663	57	Hard		70%	10%			10%	10%				Scallop (1), *Hormathia digitata* Anemone (6), Feather Star (10), *Geodiidae* Sponge (1)
	200	47 37.278	56 40.720	104	Hard					10%	50%		40%			*Hormathia digitata* Anemone (5), Brittle Star (1)
	300	47 37.246	56 40.783	175	Hard					40%	15%		45%			Eel Pout (1)
	400	47 37.207	56 40.838	174	Hard	60%				10%			30%			Atlantic Cod (2), Worm Tube (>20), Krill (>15), Acadian Redfish (2), *Geodiidae* Sponge (>20), Breadcrumb Sponge (20%), *Hormathia digitata* Anemone (1), Rock crab (1)
	450	47 37.187	56 40.866	83	Hard	20%				20%	50%	10%				
	500	47 37.170	56 40.898	55	Hard		10%	40%	10%	10%	30%					Feather Star (>20), Acadian Redfish (1), Breadcrumb Sponge (20%), *Hormathia digitata* Anemone (6)
	600	47 37.134	56 40.958	37	Hard		100%									Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
5	0	47 37.405	56 40.645	0	Hard		50%	50%								
	100	47 37.368	56 40.702	59	Hard		90%				10%					Feather Star (2), *Hormathia digitata*

Rencontre Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Anemone (2)
	200	47 37.330	56 40.759	121	Hard						100%					*Hormathia digitata* Anemone (18), Feather Star (2), Unidentified Fish (1), Unidentified Sponge (3)
	300	47 37.295	56 40.820	188	Soft								100%			Krill (9), Worm Tube (>20), Unidentified Fish (1), Winter Flounder (1)
	400	47 37.258	56 40.878	194	Soft								100%			Atlantic Halibut (1), Worm Tube (>20), *Hormathia digitata* Anemone (2), Atlantic Cod (2), Acadian Redfish (1)
	500	47 37.221	56 40.936	98	Hard	100%										*Geodiidae* sponge (10), Feather Star (>20), *Hormathia digitata* Anemone (3), Brittle Star (18), Soft Coral (1), Breadcrumb Sponge (20%)
	600	47 37.182	56 40.993	41	Hard		100%									Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	700	47 37.147	56 41.052	36	Hard		100%									
6	0	47 37.458	56 40.683	0	Hard			40%	50%	10%						
	100	47 37.420	56 40.740	56	Hard		70%				30%					*Hormathia digitata* Anemone (3), Spiny Sun Star (1), Feather Star (1)
	200	47 37.384	56 40.797	123	Hard		40%			30%	30%					*Hormathia digitata* Anemone (>20), *Geodiidae* Sponge (1), Feather Star (1), Acadian Redfish (1)
	300	47 37.349	56 40.859	183	Hard		20%						80%			Worm Tube (>20), *Hormathia digitata* Anemone (5), Shrimp (1), *Geodiidae* Sponge (5), *Bolocera tuediae* Anemone (2)
	400	47 37.309	56 40.912	191	Soft								100%			Atlantic Cod (4), Shrimp (1), Worm Tube (>20)
	500	47 37.275	56 40.974	173	Soft					10%	45%		45%			Worm Tube (8), *Hormathia digitata* Anemone (>20), Acadian Redfish (2)
	600	47 37.239	56 41.034	94	Hard	100%										Feather Star (>20), Acadian Redfish (1), Breadcrumb Sponge (25%), Brittle Star (11), Soft Coral (1), *Hormathia digitata* Anemone (7), *Geodiidae* sponge (>20)
	700	47 37.202	56 41.093	54	Hard					50%	50%					Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	775	47 37.173	56 41.131	41	Hard		40%		10%	30%	20%					
7	0	47 37.509	56 40.723	0	Hard				60%	40%						Ctenophore (15)
	100	47 37.472	56 40.781	46	Hard		40%		30%		30%					Rock Crab (1), Feather Star (5), *Hormathia digitata* Anemone (2)
	200	47 37.435	56 40.838	122	Hard			50%			25%		25%			Breadcrumb Sponge (50%), Feather Star (1), *Geodiidae* Sponge (>20), Tube Worm (4), *Hormathia digitata* Anemone (11)
	300	47 37.398	56 40.896	176	Hard			60%					40%			Acadian Redfish (6), Winter Flounder (1), Krill (>20), Breadcrumb Sponge (15%)
	400	47 37.361	56 40.955	188	Soft								100%			Acadian Redfish (3), Krill (12), Shrimp

Rencontre Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(6)
	500	47 37.324	56 41.013	181	Hard	80%							20%			Breadcrumb Sponge (40%), Acadian Redfish (3), Shrimp (2), Tube Worm (>20)
	600	47 37.291	56 41.076	92	Hard	100%										*Geodiidae* Sponge (>20), Feather Star (17), Unidentified Tunicate (1), Breadcrumb Sponge (45%)
	700	47 37.250	56 41.129	68	Hard		100%									Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	800	47 37.213	56 41.192	62	Hard		90%		10%							
8	0	47 37.556	56 40.773	0	Hard	40%			50%	10%						Ctenophore (10)
	100	47 37.522	56 40.834	49	Hard			40%			60%					*Cerianthus borealis* Anemone (1), Sea Star (1), Cunner (1)
	200	47 37.481	56 40.887	118	Hard					65%			35%			*Geodiidae* Sponge (>20), Feather Star (1), Soft Coral (1), Toad Crab (1), *Hormathia digitata* Anemone (5)
	300	47 37.444	56 40.945	168	Soft								100%			Shrimp (10), Acadian redfish (1)
	400	47 37.409	56 41.005	177	Soft								100%			Shrimp (8), Winter Flounder (1), Atlantic Cod (1)
	500	47 37.374	56 41.066	178	Soft								100%			Shrimp (>20), Worm Tube (11), Unidentified Fish (1), Acadian Redfish (2)
	600	47 37.334	56 41.120	144	Hard				30%	40%			30%			Cushion Star (1), *Geodiidae* Sponge (>20), Acadian Redfish (1), *Hormathia digitata* anemone (3), Breadcrumb Sponge (5%)
	700	47 37.299	56 41.180	64	Hard		70%		15%				15%			Feather Star (>20), *Geodiidae* Sponge (14), Acadian Redfish (1), Breadcrumb Sponge (15%)
	800	47 37.257	56 41.232	85	Hard					80%	20%					
9	0	47 37.602	56 40.807	0	Hard				60%	40%						
	100	47 37.564	56 40.864	59	Hard			50%	40%				10%			Soft Coral (1), Feather Star (>20), Acadian Redfish (1)
	200	47 37.528	56 40.923	100	Hard					20%	60%		20%			*Hormathia digitata* Anemone (18), Winter Flounder (1), *Cerianthus borealis* Anemone (1)
	300	47 37.492	56 40.984	143	Soft					5%	45%		50%			Worm Tube (>20), *Hormathia digitata* Anemone (>20), Soft Coral (1)
	400	47 37.456	56 41.043	166	Hard	65%							35%			Shrimp (12), Unidentified Sponge (>20), Worm Tube (4), Breadcrumb Sponge (25%), *Hormathia digitata* Anemone (17)
	500	47 37.420	56 41.102	168	Soft								100%			Snake Blenny (1), Winter Flounder (1), Worm Tube (>20), *Hormathia digitata* Anemone (3), Shrimp (16), Acadian Redfish (2)
	600	47 37.384	56 41.162	134	Hard					40%			60%			Unidentified Sponge (10), Soft Coral (1), *Hormathia digitata* Anemone (9), Feather Star (1)
	700	47 37.347	56 41.219	67	Hard	50%			25%	25%						Unidentified Sponge (9), Breadcrumb

Rencontre Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Sponge (30%), Feather Star (>20), *Hormathia digitata* Anemone (2), Acadian Redfish (1)
	800	47 37.305	56 41.270	82	Hard					40%	25%		35%			Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	860	47 37.285	56 41.309	93	Hard					40%	25%		35%			
10	0	47 37.646	56 40.875	0	Hard		100%									
	100	47 37.611	56 40.936	38	Hard				35%	25%	40%					
	200	47 37.571	56 40.989	92	Hard					20%	70%		10%			*Hormathia digitata* Anemone (>20)
	300	47 37.529	56 41.042	124	Hard			10%	40%	10%			40%			*Geodiidae* Sponge (>20), Worm Tube (>20), Breadcrumb Sponge (15%), *Hormathia digitata* Anemone (19), Acadian Redfish (4), Soft Coral (1)
	400	47 37.496	56 41.103	133	Hard						0%		90%			Winter Flounder (1), Atlantic Cod (2), *Hormathia digitata* anemone (>20), Unidentified Sponge (1)
	500	47 37.462	56 41.167	129	Hard			60%					40%			Breadcrumb Sponge (2), Tube Worm (2), Feather Star (3), Acadian Redfish (1), *Hormathia digitata* Anemone (3), *Geodiidae* Sponge (>20)
	600	47 37.422	56 41.221	114	Hard					50%	40%		10%			*Hormathia digitata* Anemone (3)
	700	47 37.386	56 41.279	44	Hard	100%										Feather Star (>20), Brittle Star (15), *Geodiidae* Sponge (13), Frilled Anemone (1)
	800	47 37.348	56 41.339	73	Hard				40%		10%		50%			
11	40	47 37.659	56 40.969	0	Hard			20%	30%	20%	30%					
	100	47 37.625	56 40.993	37	Hard			40%		20%	40%					
	200	47 37.592	56 41.057	63	Hard			40%		30%	30%					Feather Star (7), Acadian Redfish (1), Breadcrumb Sponge (10%)
	300	47 37.561	56 41.121	80	Hard	40%		40%	20%							Feather Star (6), Breadcrumb Sponge (10%), *Geodiidae* Sponge (>20)
	400	47 37.523	56 41.179	82	Hard			55%		10%	20%		15%			*Hormathia digitata* Anemone (16), Sea Star (3), *Geodiidae* Sponge (>20), Feather Star (6)
	500	47 37.484	56 41.235	80	Hard			40%		20%	40%					*Geodiidae* Sponge (>20), Acadian Redfish (4), *Hormathia digitata* anemone (7), Feather Star (3)
	600	47 37.447	56 41.293	42	Hard	20%		30%		10%	40%					Feather Star (5), Atlantic Cod (1), Soft Coral (1)
	670	47 37.422	56 41.331	8	Hard	100%										Frilled Anemone (>20), Mussel (>20), Ctenophore (>20)
12	75	47 37.629	56 41.123	7	Hard				30%	30%	40%					Ctenophore (2)
	100	47 37.612	56 41.152	26	Hard				50%	30%	20%					Acadian Redfish (5)
	200	47 37.573	56 41.209	28	Hard		30%	20%		20%	30%					Cunner (3), Unidentified Sponge (6), Breadcrumb Sponge (25%)
	300	47 37.538	56 41.270	13	Hard	100%										Ctenophore (>20), Feather Star (>20), Frilled Anemone (20), Green Sea Urchin (1)
	400	47 37.499	56 41.324	16	Hard			30%		30%	40%					Frilled Anemone (15), Green Sea Urchin (>20), *Bolocera tuedia* Anemone (1), Hydrozoa (1), Cunner (1), Ctenophore (2)

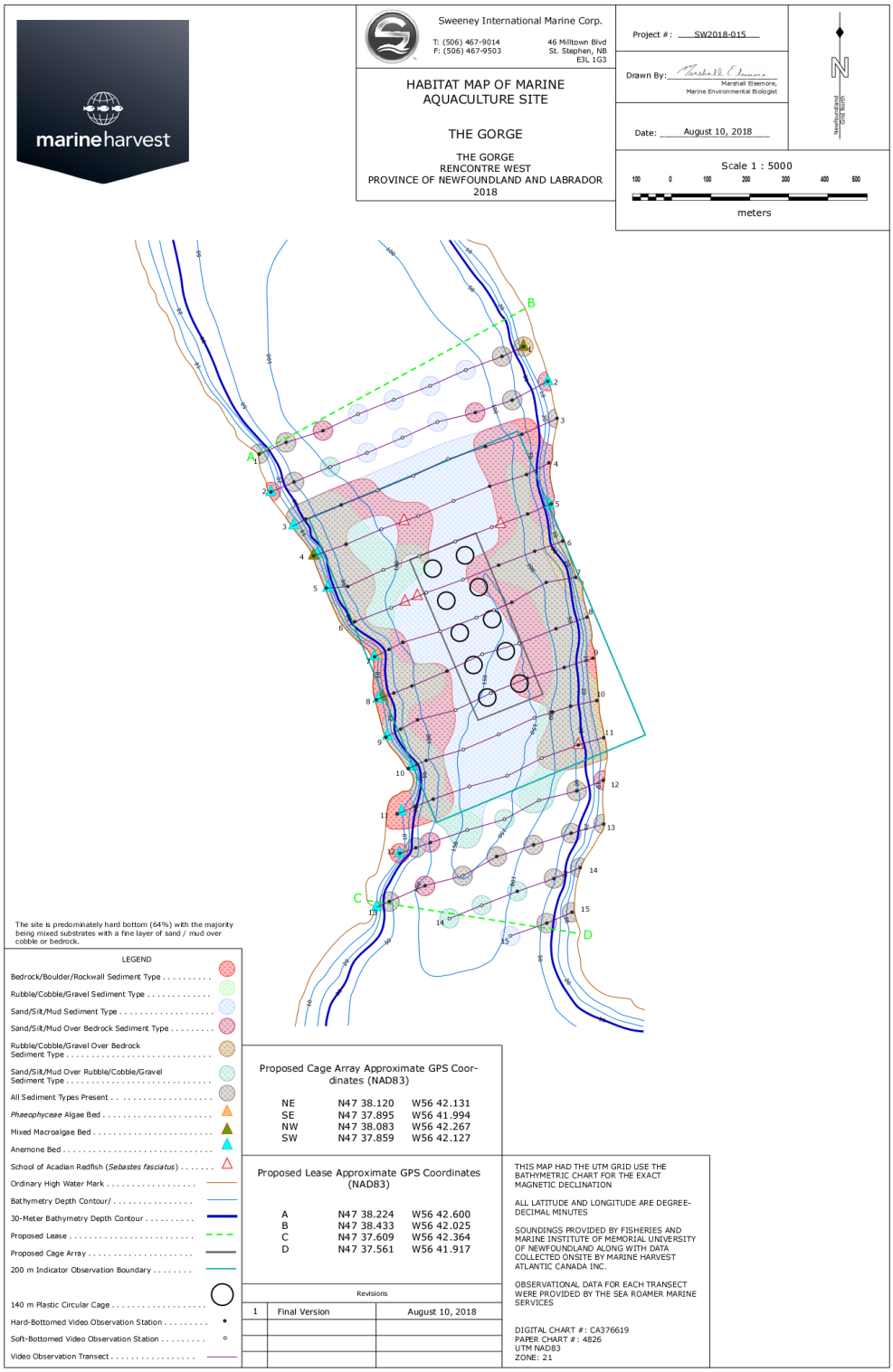


Figure 13.9. Habitat observations at sampling stations in The Gorge sea farm (May 2018).

Table 13.6. Summary of bottom type and observed flora and fauna at The Gorge sea farm (May 2018).

The Gorge																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	40	47 38.379	56 42.031	0	Hard	30%										Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	100	47 38.366	56 42.075	61	Hard		10%				30%		60%			
	200	47 38.347	56 42.150	115	Soft								100%			
	300	47 38.325	56 42.223	129	Soft								100%			
	400	47 38.306	56 42.298	130	Soft								100%			
	500	47 38.286	56 42.372	129	Soft								100%			
	600	47 38.263	56 42.445	122	Hard		25%						75%			
	700	47 38.247	56 42.521	71	Hard		45%	10%			5%		40%			
	775	47 38.231	56 42.576	0	Hard	30%	40%	10%			5%	15%				
2	0	47 38.331	56 41.981	0	Hard	30%	45%	20%				5%				
	100	47 38.305	56 42.055	53	Hard		45%			trace	20%		35%			
	200	47 38.288	56 42.131	118	Hard			30%					70%			
	300	47 38.275	56 42.209	130	Soft								100%			
	400	47 38.253	56 42.281	130	Soft								100%			
	500	47 38.232	56 42.355	129	Soft								100%			
	600	47 38.213	56 42.430	104	Soft					5%			95%			
	700	47 38.192	56 42.504	51	Hard	35%	45%				5%	10%	5%			
	770	47 38.178	56 42.552	14	Hard	10%	15%	75%								
3	0	47 38.279	56 41.962	0	Hard	10%	30%	35%	20%			5%				
	100	47 38.257	56 42.035	57	Hard		55%					trace	45%			Feather Star (6), *Hormathia digitata* Anemone (>20), *Cerianthus borealis* Anemone (1), Brittle Star (6)
	200	47 38.240	56 42.110	119	Hard	30%	40%						30%			Acadian Redfish (1), Breadcrumb Sponge (1), Soft Coral (2), Feather Star (3), *Hormathia digitata* Anemone (7), Green Sea Urchin (1), Lampshell (>20), Brittle Star (14)
	300	47 38.223	56 42.187	133	Soft								100%			Brittle Star (4), Cushion Star (2), Hydrozoan (3), *Hormathia digitata* Anemone (1), Northern Shrimp (3)
	400	47 38.200	56 42.259	133	Soft								100%			Brittle Star (12), Cushion Star (1)
	500	47 38.180	56 42.333	118	Soft			5%					95%			Brittle Star (>20), *Hormathia digitata* Anemone (>20), Soft Coral (2), Acadian Redfish (1), Snake Blenny (1), Breadcrumb Sponge (3)
	600	47 38.160	56 42.408	95	Hard		35%			10%	5%		50%			Brittle Star (>20), *Hormathia digitata* Anemone (9), *Cerianthus borealis* Anemone (3), Feather Star (5), Soft Coral (1), Acadian Redfish (1), Green Sea Urchin (1), Lampshell (16), Bloody Henry Sea Star (1), *Serpula* (4)
	700	47 38.130	56 42.509	33	Hard	5%	40%	20%	5%		trace	30%				Brittle Star (7), Green Sea Urchin (2), Ctenophore (2), Acadian Redfish (2)
4	40	47 38.217	56 41.979	0	Hard	40%	20%	20%				20%				*Metridium senile* Anemone (>20), Ctenophore (>20), Unidentified Fish (4), Acadian Redfish (3)
	100	47 38.201	56 42.026	58	Hard		20%	20%			5%	10%	45%			Feather Star (9), *Cerianthus borealis* Anemone (7), Soft Coral (2)

The Gorge																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	200	47 38.185	56 42.102	133	Hard								100%			Acadian Redfish (3), *Hormathia digitata* Anemone (>20), Salpidae Tunicate (1), Arrow Worm (2), Northern Shrimp (3)
	300	47 38.165	56 42.176	137	Soft								100%			Brittle Star (14), Winter Flounder (2), Snake Blenny (1), Cushion Star (3), Acadian Redfish (1), Arrow Worm (2), Northern Shrimp (1)
	400	47 38.144	56 42.249	125	Soft			30%					70%			*Hormathia digitata* Anemone (>20), Brittle Star (>20), Acadian Redfish (>20), Spiny Sunstar (1), Breadcrumb Sponge (>20), *Geodiidae* Sponge (>20), Soft Coral (>20), Feather Star (4)
	500	47 38.126	56 42.325	104	Soft								100%			Brittle Star (>20), *Hormathia digitata* anemone (>20), Cushion Star (1), Breadcrumb Sponge (2), Hydrozoan (3), Salpidae Tunicate (1)
	600	47 38.105	56 42.398	70	Hard			5%		trace	70%		25%			*Hormathia digitata* Anemone (4), *Cerianthus borealis* Anemone (19), *Urticina felina* Anemone (1), Unidentified Jellyfish (11), Spiny Sunstar (1), Brittle Star (>20)
	680	47 38.089	56 42.465	0	Hard	50%	10%	20%	5%			15%				*Metridium senile* Anemone (>20), Ctenophore (>20), *Tomopteris* Polychaete (>20)
5	40	47 38.160	56 41.976	0	Hard	90%		5%			5%					*Metridium senile* Anemone (>20), Ctenophore (>20), Common Sea Star (1)
	100	47 38.146	56 42.024	80	Hard	20%		30%	20%				30%			Green Sea Urchin (3), Acadian Redfish (1), Brittle Star (6), *Hormathia digitata* Anemone (16), Stalked Jellyfish (1), Unidentified Jellyfish (8), Sea Spider (1), *Serpula* (2)
	200	47 38.128	56 42.098	137	Soft								100%			Acadian Redfish (1), Hydrozoan (3), Brittle Star (11), Northern Shrimp (2), Unidentified Jellyfish (1), Cushion Star (1), Soft Coral (1), *Hormathia digitata* Anemone (1)
	300	47 38.108	56 42.173	138	Soft								100%			Brittle Star (6), Northern Shrimp (3)
	400	47 38.088	56 42.248	123	Soft					5%			95%			Soft Coral (5), Brittle Star (>20), Breadcrumb Sponge (6), Vase Tunicate (3), *Hormathia digitata* Anemone (17)
	500	47 38.069	56 42.321	94	Soft					5%			95%			Vase Tunicate (2), Sea Spider (1), Bolocera tuediae Anemone (1), Brittle Star (>20), Hormathia digitata Anemone (10), Unidentified Jellyfish (2), Soft Coral (1), Breadcrumb Sponge (2)
	600	47 38.046	56 42.395	58	Hard	10%				50%	20%	20%				Sea Scallop (2), *Cerianthus borealis* Anemone (4), Green Sea Urchin (2), Brittle Star (3),

The Gorge																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Breadcrumb Sponge (2), Ctenophore (1)
	650	47 38.044	56 42.439	0	Hard	5%		45%	35%			15%				*Metridium senile* Anemone (>20), Ctenophore (>20)
6	25	47 38.108	56 41.952	0	Hard	30%		20%	50%							*Metridium senile* Anemone (>20), Ctenophore (>20)
	100	47 38.094	56 42.010	76	Hard	10%					10%		80%			Brittle Star (>20), *Cerianthus borealis* Anemone (3), *Hormathia digitata* Anemone (>20), Hydrozoan (1), Soft Coral (1), Feather Star (7), *Geodiidae* Sponge (>20)
	200	47 38.075	56 42.084	140	Hard		5%		5%				90%			Acadian Redfish (4), Soft Coral (4), *Hormathia digitata* Anemone (>20), Brittle Star (18), *Geodiidae* Sponge (>20), Breadcrumb Sponge (4)
	300	47 38.055	56 42.158	142	Soft								100%			Cushion Star (1), *Serpula* (>20), Northern Shrimp (6), Common Whelk (1), Brittle Star (1)
	400	47 38.037	56 42.234	136	Soft								100%			Brittle Star (12), Northern Shrimp (5), *Serpula* (>20), Cushion Star (1), Acadian Redfish (3)
	500	47 38.016	56 42.306	111	Soft						5%		95%			Brittle Star (>20), *Hormathia digitata* Anemone (>20), *Serpula* (1), Unidentified Jellyfish (3), Vase Sponge (1), Hydrozoan (>20), Sea Spider (1)
	600	47 37.991	56 42.394	35	Hard	100%										Common Sea Star (3), Brittle Star (>20), *Serpula* (1), *Hormathia digitata* Anemone (8), Ctenophore (1)
7	30	47 38.058	56 41.925	0	Hard	80%		10%	10%							Ctenophore (>20), Common Sea Star (1)
	100	47 38.051	56 41.986	95	Hard						15%		85%			Brittle Star (>20), Unidentified Jellyfish (13), *Hormathia digitata* Anemone (2), *Cerianthus borealis* Anemone (7), Soft Coral (1), *Serpula* (2), Hydrozoan (2), Sea Spider (2)
	200	47 38.023	56 42.057	138	Hard		35%						65%			Acadian Redfish (1), Brittle Star (>20), *Hormathia digitata* Anemone (6), Unidentified Jellyfish (2), *Serpula* (6), *Geodiidae* Sponge (9)
	250	47 38.015	56 42.096	140	Soft								100%			Brittle Star (5), Northern Shrimp (16), White Hake (1)
	300	47 38.002	56 42.130	147	Soft								100%			Brittle Star (3), Northern Shrimp (8), Arrow Worm (2)
	400	47 37.983	56 42.205	141	Soft								100%			Northern Shrimp (>20), Acadian Redfish (3)
	500	47 37.698	56 42.282	126	Hard	5%	60%						35%			*Hormathia digitata* Anemone (>20), *Geodiidae* Sponge (>20), Soft Coral (7), Brittle Star (14), Breadcrumb Sponge (2), *Serpula* (2), *Stomphia coccinea* Anemone (3)

The Gorge																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	540	47 37.959	56 42.311	40	Hard	80%		5%	10%			5%				*Hormathia digitata* Anemone (5), Feather Star (>20), Acadian Redfish (1), Ctenophore (2), *Metridium senile* Anemone (4), Green Sea Urchin (1)
	580	47 37.948	56 42.340	0	Hard	100%										Common Sea Star (1), *Metridium senile* Anemone (>20), Ctenophore (>20)
8	20	47 38.002	56 41.902	0	Hard	60%		15%			10%	15%				*Metridium senile* Anemone (5)
	100	47 37.986	56 41.966	84	Hard						5%	10%	85%			Unidentified Jellyfish (9), *Cerianthus borealis* Anemone (1), Brittle Star (7), *Hormathia digitata* Anemone (>20), Breadcrumb Sponge (2), Soft Coral (1)
	200	47 37.966	56 42.042	151	Soft								100%			*Hormathia digitata* Anemone (1), Northern Shrimp (2), *Cerianthus borealis* Anemone (1), Brittle Star (2), Arrow Worm (1)
	300	47 37.951	56 42.118	148	Soft								100%			Northern Shrimp (2), Cushion Star (1), *Cerianthus borealis* Anemone (1)
	400	47 37.928	56 42.191	143	Hard		5%	45%					50%			Brittle Star (6), Acadian Redfish (1), Unidentified Jellyfish (2), *Stomphia coccinea* Anemone (2), *Geodiidae* Sponge (7), Northern shrimp (1), *Hormathia digitata* Anemone (14), White Branching Sponge (>20), Soft Coral (1)
	500	47 37.907	56 42.264	99	Hard						20%		80%			Brittle Star (7), *Hormathia digitata* Anemone (6), *Cerianthus borealis* Anemone (18), Unidentified Jellyfish (14)
	550	47 37.898	56 42.303	37	Hard	5%	25%	30%			10%	10%	20%			Feather Star (>20), Soft Coral (1), Brittle Star (3)
	600	47 37.888	56 42.337	0	Hard	35%		65%								*Metridium senile* Anemone (>20), Common Periwinkle (>20)
9	25	47 37.945	56 41.891	0	Hard	100%			trace			trace				Ctenophore (>20)
	100	47 37.932	56 41.950	63	Hard	25%				5%	40%		30%			*Hormathia digitata* Anemone (6), Green Sea Urchin (1), Brittle Star (5)
	200	47 37.917	56 42.027	149	Hard			trace					100%			Soft Coral (4), Brittle Star (7), Arrow Worm (1), Hydrozoan (1), *Hormathia digitata* Anemone (19), White Branching Sponge (2), Grenadier (1), Northern Shrimp (1)
	300	47 37.897	56 42.101	153	Soft								100%			Cushion Star (2), Northern Shrimp (5), Brittle Star (3)
	400	47 37.873	56 42.147	147	Soft			5%					95%			Acadian Redfish (2), Cushion Star (1), Soft Coral (4), Arrow Worm (1), *Geodiidae* Sponge (6), *Hormathia digitata* Anemone (18), Stalked Jellyfish (1)
	500	47 37.860	56 42.252	97	Hard		65%	25%					10%			Serpula (7), Brittle Star (5), Breadcrumb Sponge (2), Hormathia digitata Anemone (1), Acadian Redfish (6), Feather Star

The Gorge																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(9), Geodiidae Sponge (>20), Atlantic Cod (1), Bloody Henry Sea Star (1)
	550	n/a	n/a	48	Hard	10%	55%				10%	5%	20%			Feather Star (5), *Hormathia digitata* Anemone (2), Green Sea Urchin (2)
	600	47 37.836	56 42.318	0	Hard	20%		45%	30%			5%				*Metridium senile* Anemone (>20), *Urticina felina* Anemone (1), Ctenophore (>20), Common Periwinkle (>20)
10	40	47 37.886	56 41.883	0	Hard	90%		5%	5%			trace				*Metridium senile Anemone* (>20), Ctenophore (>20)
	100	47 37.878	56 41.937	49	Hard		25%				5%		70%			Feather Star (16), *Hormathia digitata* Anemone (2), Green Sea Urchin (1), Brittle Star (7), Soft Coral (1)
	150	47 37.872	56 41.976	92	Hard						30%		70%			*Geodiidae* Sponge (>20), *Hormathia digitata* Anemone (>20), Soft Coral (1)
	200	47 37.862	56 42.012	153	Soft								100%			*Hormathia digitata* Anemone (2), Acadian Redfish (5), Atlantic Cod (1), Northern Shrimp (7), Brittle Star (5), Cushion Star (2)
	300	47 37.839	56 42.085	155	Soft				trace				100%			Northern Shrimp (12), Brittle Star (6), Cushion Star (3), *Hormathia digitata* Anemone (1), White Branching Sponge (1)
	400	47 37.818	56 42.158	154	Soft								100%			Northern Shrimp (8), Cushion Star (1), Soft Coral (1)
	500	47 37.803	56 42.235	100	Hard	60%							40%			*Hormathia digitata* Anemone (12), *Geodiidae* Sponge (>20), *Serpula* (3), Brittle Star (11), Soft Coral (1), White Branching Sponge (3), Toad Crab (1; dead), Atlantic Cod (1), Feather Star (1)
	525	47 37.798	56 42.253	21	Hard	55%	5%	10%				15%	15%			*Metridium senile* Anemone (>20), Common Periwinkle (>20), Ctenophore (>20)
	550	47 37.792	56 42.272	0	Hard	35%		30%	30%			5%				*Metridium senile* Anemone (>20), Common Periwinkle (>20), Ctenophore (>20)
11	40	47 37.834	56 41.869	0	Hard	60%		20%	20%							*Metridium senile* Anemone (>20), Ctenophore (>20)
	100	47 37.824	56 41.922	40	Hard	15%	60%	10%		5%		10%				Acadian Redfish (14), Brittle Star (>20), Hydrozoan (5), Green Sea Urchin (1), Feather Star (6)
	200	47 37.806	56 41.997	121	Soft					5%			95%			Brittle Star (>20), *Stomphia coccinea* Anemone (10), Soft Coral (7), Salpidae Tunicate (1), Breadcrumb Sponge (4), Unidentified Jellyfish (2), Hydrozoan (1)
	300	47 37.781	56 42.068	157	Soft								100%			Brittle Star (>20), Acadian Redfish (5), Northern Shrimp (8), Cushion Star (4)
	400	47 37.767	56 42.149	159	Soft								100%			*Hormathia digitata* Anemone (6),

The Gorge																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Northern Shrimp (4), White Branching Sponge (2), Cushion Star (2), Snow Crab (1)
	500	47 37.749	56 42.221	94	Hard		65%				10%		25%			Feather Star (12), *Hormathia digitata* Anemone (>20), Breadcrumb Sponge (2)
	550	47 37.742	56 42.260	29	Hard	70%				5%	20%	5%				*Metridium senile* Anemone (>20), Ctenophore (>20), Spiny Sunstar (1), Northern Sea Star (1), Common Periwinkle (>20)
	600	47 37.729	56 42.295	2	Hard	100%										Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
12	30	47 37.775	56 41.870	0	Hard	25%	45%	10%				20%				
	100	47 37.760	56 41.925	52	Hard		35%	5%			20%		40%			
	200	47 37.747	56 42.003	107	Soft						5%		95%			Brittle Star (>20), *Hormathia digitata* Anemone (>20), Hydrozoan (4), Salpidae Tunicate (1)
	300	47 37.721	56 42.074	154	Soft					5%	5%		90%			Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	400	47 37.706	56 42.151	157	Soft						5%		95%			Atlantic Cod (1), Northern Shrimp (2), *Hormathia digitata* Anemone (>20), Hydrozoan (4), Brittle Star (>20), Bloody Henry Sea Star (1)
	500	47 37.689	56 42.227	107	Hard	35%	60%						5%			Outside 200 m boundary and/or the 1 gC/m^2/day deposition contour. These sites only analyzed for substrate descriptors
	550	47 37.742	56 42.260	42	Hard		30%	5%			15%		40%			
	580	47 37.674	56 42.290	0	Hard	75%	15%	5%				5%				
13	20	47 37.714	56 41.870	0	Hard	5%	10%	20%			30%	35%				
	100	47 37.701	56 41.937	41	Hard		40%	15%			10%	30%	5%			
	200	47 37.685	56 42.014	82	Hard		35%	55%			5%		5%			
	300	47 37.669	56 42.090	145	Hard		40%				5%		55%			
	400	47 37.642	56 42.161	153	Soft			5%	5%	10%			80%			
	500	47 37.629	56 42.238	127	Hard	45%	20%				trace		35%			
	600	47 37.607	56 42.312	43	Hard	60%	30%				5%	5%				
14	30	47 37.653	56 41.919	0	Hard	85%		trace	5%			10%				
	100	47 37.638	56 41.973	51	Hard	80%					5%	5%	10%			
	200	47 37.620	56 42.048	92	Hard						10%		90%			
	300	47 37.601	56 42.122	131	Soft				5%	10%			85%			
	400	47 37.583	56 42.188	135	Soft				20%	5%	5%		70%			
15	30	47 37.591	56 41.936	0	Hard	35%	15%	30%	10%			10%				
	100	47 37.576	56 41.988	41	Hard		70%				5%	20%	5%			
	200	47 37.558	56 42.063	83	Soft					trace			100%			

13.3 Water Quality

The amount and temporal coverage of water quality data collected in the Rencontre West BMA is summarized (Table 13.7). Seasonal water quality measurements at sea farms in the Rencontre West BMA are summarized in Tables 13.8, 13.9, and 13.10 for water temperature, dissolved oxygen, and salinity, respectively. Water quality data were available for three of the sea farms in (Devil Bay, Little Bay, and The Gorge). There were no available data for the Rencontre Island sea farm.

Table 13.7. Available water quality data for the Rencontre West BMA (2019–2024).

Available Data			
Year	**Measurement**	**Depth(s) (m)**	**Month(s)**
Devil Bay			
2019–2022	Temperature (°C)	n/a	n/a
	Dissolved Oxygen (mg/L)	n/a	n/a
	Salinity (‰)	n/a	n/a
2023	Temperature (°C)	all	12 Oct–31 Dec
	Oxygen (mg/L)	all	12 Oct–31 Dec
	Salinity (‰)	all	12 Oct–31 Dec
2024	Temperature (°C)	all	1 Jan–8 Jul
	Oxygen (mg/L)	all	1 Jan–8 Jul
	Salinity (‰)	all	1 Jan–8 Jul
Little Bay			
2019	Temperature (°C)	n/a	n/a
	Oxygen (mg/L)	n/a	n/a
	Salinity (‰)	n/a	n/a
2020	Temperature (°C)	0.5–20	9 May–31 Dec
		30	10 May–31 Dec
	Oxygen (mg/L)	0.5–20	9 May–31 Dec
		30	10 May–31 Dec
	Salinity (‰)	0.5–1, 10–30	10 May–31 Dec
		5	9 May–31 Dec
2021	Temperature (°C)	all	1 Jan–31 Dec
	Oxygen (mg/L)	all	1 Jan–31 Dec
	Salinity (‰)	all	1 Jan–31 Dec
2022	Temperature (°C)	all	1 Jan–16 Feb
	Oxygen (mg/L)	all	1 Jan–16 Feb
	Salinity (‰)	all	1 Jan–16 Feb
2023	Temperature (°C)	all	9 Jul–31 Dec
	Oxygen (mg/L)	all	9 Jul–31 Dec
	Salinity (‰)	all	9 Jul–31 Dec
2024	Temperature (°C)	all	1 Jan–8 Jul
	Oxygen (mg/L)	all	1 Jan–8 Jul
	Salinity (‰)	all	1 Jan–8 Jul
The Gorge			
2019	Temperature (°C)	n/a	n/a
	Oxygen (mg/L)	n/a	n/a
	Salinity (‰)	n/a	n/a
2020	Temperature (°C)	all	28 Jun–31 Dec
	Oxygen (mg/L)	all	28 Jun–31 Dec
	Salinity (‰)	all	28 Jun–31 Dec
2021	Temperature (°C)	all	1 Jan–31 Dec
	Oxygen (mg/L)	all	1 Jan–31 Dec
	Salinity (‰)	all	1 Jan–31 Dec
2022	Temperature (°C)	all	1 Jan–31 Mar
	Oxygen (mg/L)	all	1 Jan–31 Mar
	Salinity (‰)	all	1 Jan–31 Mar
2023	Temperature (°C)	all	19 Jun–31 Dec

Available Data			
Year	Measurement	Depth(s) (m)	Month(s)
	Oxygen (mg/L)	all	19 Jun–31 Dec
	Salinity (‰)	all	19 Jun–31 Dec
2024	Temperature (°C)	all	1 Jan–29 May
	Oxygen (mg/L)	all	1 Jan–29 May
	Salinity (‰)	all	1 Jan–29 May

Notes:
"all" is inclusive of depths: 0.5,1,5,10,15,20 and 30 m.

13.3.1 Water Temperature

Seasonal water temperatures were generally consistent across sea farms with available data (Table 13.8). Temperature trends are typical of those observed by MCE in coastal Newfoundland waters. A thermocline develops in spring as surface waters warm. This thermocline becomes more pronounced and deeper in summer until it breaks down in the fall as air temperature decreases. During winter, temperatures throughout the water column tend to be more uniform until spring, when the seasonal water temperature pattern repeats. Mean water temperatures ranged from 1.35°C in winter at the Devil Bay sea farm (5 m depth) to 15.14°C in summer at The Gorge sea farm (0.5 m depth). Maximum water temperatures at the Devil Bay, Little Bay and The Gorge sea farms were recorded at a depth of 0.5 m in summer, reaching 16.50°C, 18.85°C, and 20.05°C, respectively. Minimum temperatures occurred in winter, measuring 0.20°C, 0.50°C and 0.40°C, respectively.

Historical water temperature data for the Rencontre West BMA (Figure 13.10) are provided for measurements collected at a depth of 15 m. During 2023–2024, data collected at the Devil Bay sea farm showed a general water temperature increase from April–July where the data ends. Average water temperature peaks in October when data continues, declining thereafter (Figure 13.10A). During 2020–2024, data collected at the Little Bay sea farm indicated an increase in average temperatures from April–September, while maximum temperatures increased from April–August (Figure 13.10B). Similarly, in The Gorge sea farm, average temperatures were highest in September, with steady increases from April–September, followed by decreasing water temperatures from October onwards (Figure 13.10C). Lowest water temperatures were observed in March in all sea farms.

Table 13.8. Average, maximum, and minimum water temperatures (°C) at the sea farms in the Rencontre West BMA (2020–2024).

Water Depth	Sampling Period	Water Temperature Parameter	Winter (Jan, Feb, Mar)	Spring (Apr, May, Jun)	Summer (Jul, Aug, Sep)	Fall (Oct, Nov, Dec)
			Temperature (°C)			
Devil Bay						
0.5 m	12 Oct 2023–8 Jul 2024	Average	1.38	6.18	13.67	7.37
		Maximum	3.40	13.05	16.50	13.65
		Minimum	0.20	1.00	11.10	3.10
1 m	12 Oct 2023–8 Jul 2024	Average	1.38	5.99	13.40	7.43
		Maximum	3.30	12.85	16.10	13.65
		Minimum	0.60	1.00	11.10	3.10

Water Depth	Sampling Period	Water Temperature Parameter	Winter (Jan, Feb, Mar)	Spring (Apr, May, Jun)	Summer (Jul, Aug, Sep)	Fall (Oct, Nov, Dec)
			Temperature (°C)			
5 m	12 Oct 2023–8 Jul 2024	Average	1.35	4.92	10.85	7.53
		Maximum	3.40	11.80	12.20	13.70
		Minimum	0.70	0.95	9.60	3.20
10 m	12 Oct 2023–8 Jul 2024	Average	1.37	4.38	9.41	7.56
		Maximum	3.40	10.50	11.20	13.80
		Minimum	0.70	0.85	8.20	3.20
15 m	12 Oct 2023–8 Jul 2024	Average	1.39	3.94	7.79	7.51
		Maximum	3.50	9.75	9.10	13.75
		Minimum	0.80	0.90	6.90	3.30
20 m	12 Oct 2023–8 Jul 2024	Average	1.43	3.50	6.84	7.47
		Maximum	3.50	8.95	8.30	13.70
		Minimum	0.80	0.90	5.70	3.50
30 m	12 Oct 2023–8 Jul 2024	Average	1.55	2.95	5.55	7.39
		Maximum	3.60	6.80	6.60	13.60
		Minimum	0.90	1.00	4.45	3.60
Little Bay						
0.5 m	9 May 2020–8 Jul 2024	Average	1.86	6.44	14.97	8.35
		Maximum	4.10	15.50	18.85	15.00
		Minimum	0.50	0.90	6.10	3.00
1 m	9 May 2020–8 Jul 2024	Average	1.86	6.31	14.77	8.35
		Maximum	4.10	16.45	18.80	15.10
		Minimum	0.50	1.00	5.85	3.00
5 m	9 May 2020–8 Jul 2024	Average	1.87	5.52	13.88	8.30
		Maximum	4.30	13.90	18.55	14.70
		Minimum	0.60	0.90	5.90	3.00
10 m	9 May 2020–8 Jul 2024	Average	1.91	4.79	12.59	8.21
		Maximum	4.40	13.10	18.05	14.60
		Minimum	0.70	0.00	5.50	2.60
15 m	9 May 2020–8 Jul 2024	Average	1.94	4.14	11.25	8.08
		Maximum	4.40	10.90	17.90	14.45
		Minimum	0.70	0.90	5.40	2.80
20 m	9 May 2020–8 Jul 2024	Average	1.96	3.63	9.81	7.96
		Maximum	4.50	8.80	17.55	14.20
		Minimum	0.70	0.85	4.35	2.75
30 m	9 May 2020–8 Jul 2024	Average	2.04	3.17	7.84	7.69
		Maximum	4.50	7.10	15.90	14.20
		Minimum	0.60	1.00	3.40	2.60
The Gorge						
0.5 m	28 Jun 2020–29 May 2024	Average	1.91	5.80	15.14	8.16
		Maximum	4.00	15.40	20.05	14.70
		Minimum	0.40	1.10	8.70	2.90
1 m	28 Jun 2020–29 May 2024	Average	1.91	5.67	14.97	8.18
		Maximum	4.00	15.15	19.65	14.70
		Minimum	0.40	1.05	8.20	2.90
5 m	28 Jun 2020–29 May 2024	Average	1.94	5.04	13.88	8.27
		Maximum	4.40	13.90	18.30	15.10
		Minimum	0.50	1.00	6.30	2.90
10 m	28 Jun 2020–29 May 2024	Average	2.01	4.41	12.56	8.12
		Maximum	4.50	11.30	17.85	14.40
		Minimum	0.60	0.90	4.70	3.00
15 m	28 Jun 2020–29 May 2024	Average	2.06	3.84	11.17	8.00
		Maximum	4.40	8.45	17.45	14.30
		Minimum	0.60	0.90	3.85	2.80
20 m	28 Jun 2020–29 May 2024	Average	2.11	3.41	9.58	7.85
		Maximum	4.50	8.05	16.75	14.30
		Minimum	0.70	0.90	3.15	2.85
30 m	28 Jun 2020–29 May 2024	Average	2.22	3.03	7.61	7.53
		Maximum	4.60	8.00	14.80	14.10
		Minimum	0.75	0.95	2.75	2.20

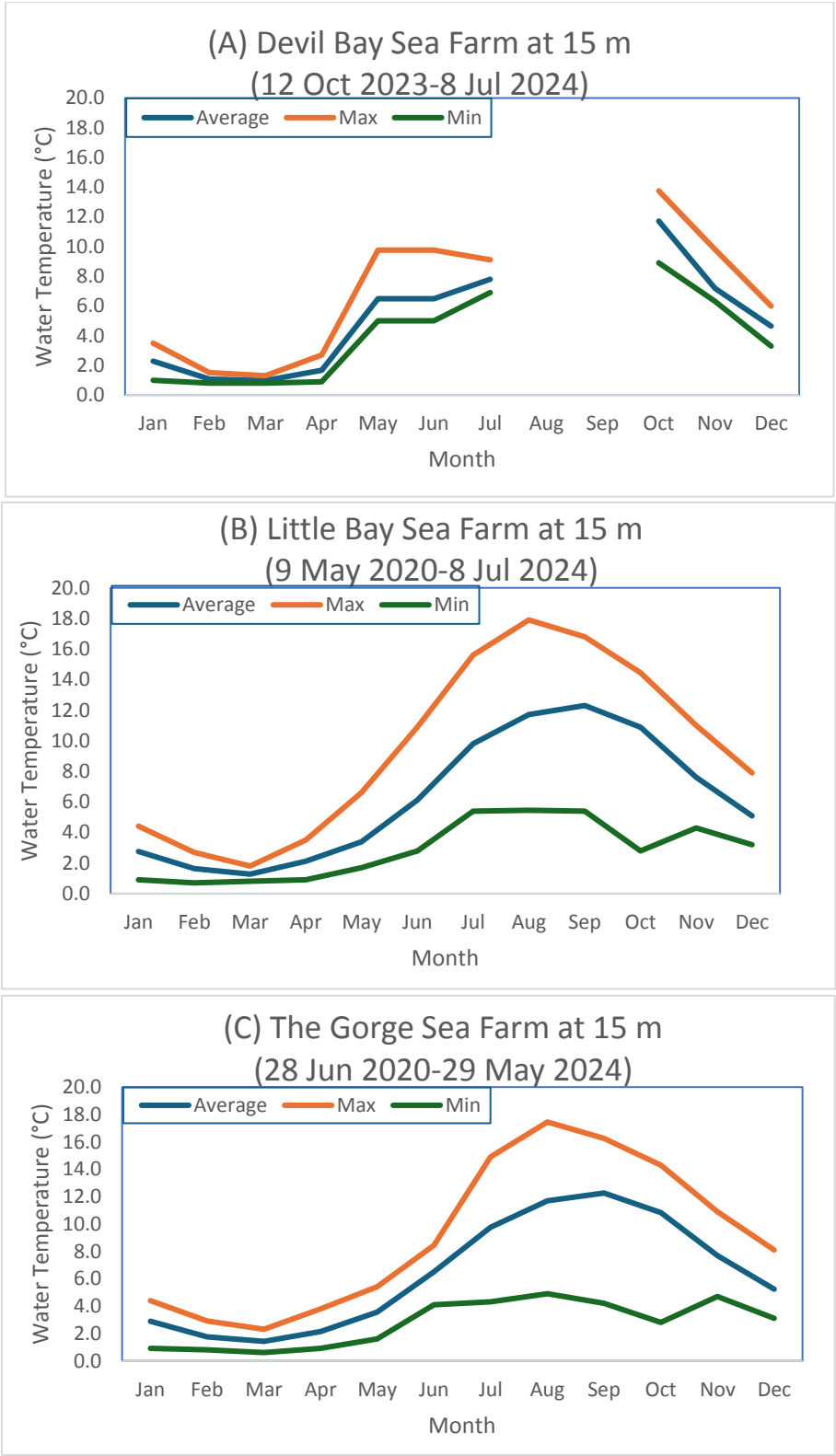


Figure 13.10. Historical water temperature (°C) data at 15 m depth at the (A) Devil Bay, (B) Little Bay and (C) The Gorge sea farms in the Rencontre West BMA.

13.3.2 Dissolved Oxygen

Dissolved oxygen levels (average) were consistently lower in summer and fall compared to winter and spring (Table 13.9). Mean dissolved oxygen ranged from 7.77 mg/L in summer (Little Bay sea farm) to 11.50 mg/L in winter (Devil Bay sea farm) at 0.5 m depth. Maximum observed dissolved oxygen was 14.96 mg/L, recorded at a depth of 0.5 m at the Little Bay sea farm in winter; minimum dissolved oxygen was 4.31 mg/L, measured at a water depth of 5 m in summer in the Little Bay sea farm.

Table 13.9. Average, maximum, and minimum dissolved oxygen (mg/L) at the sea farms in the Rencontre West BMA (2020–2024).

Water Depth	Sampling Period	Dissolved Oxygen Parameter	Winter	Spring	Summer	Fall
			Dissolved Oxygen (mg/L)			
Devil Bay						
0.5 m	12 Oct 2023–8 Jul 2024	Average	11.50	11.11	9.05	9.66
		Maximum	14.20	13.27	9.90	11.17
		Minimum	10.19	8.60	8.10	7.99
1 m	12 Oct 2023–8 Jul 2024	Average	11.34	11.07	9.11	9.62
		Maximum	14.07	12.88	10.00	11.00
		Minimum	10.15	9.10	8.30	7.98
5 m	12 Oct 2023–8 Jul 2024	Average	11.19	11.19	9.71	9.57
		Maximum	12.15	13.15	10.20	10.95
		Minimum	10.11	9.60	9.30	8.01
10 m	12 Oct 2023–8 Jul 2024	Average	11.10	11.23	10.05	9.56
		Maximum	12.05	12.88	10.60	10.92
		Minimum	9.69	9.90	9.70	8.09
15 m	12 Oct 2023–8 Jul 2024	Average	10.99	11.23	10.27	9.55
		Maximum	11.83	12.30	11.00	10.79
		Minimum	9.12	10.20	9.90	7.99
20 m	12 Oct 2023–8 Jul 2024	Average	10.94	11.20	10.50	9.53
		Maximum	11.68	12.40	11.20	10.78
		Minimum	9.36	10.30	10.15	7.82
30 m	12 Oct 2023–8 Jul 2024	Average	10.84	11.13	10.64	9.53
		Maximum	11.53	12.49	11.00	10.79
		Minimum	9.68	10.19	10.25	8.03
Little Bay						
0.5 m	9 May 2020–8 Jul 2024	Average	11.13	10.23	7.79	9.21
		Maximum	14.96	14.35	9.80	12.30
		Minimum	10.01	6.35	5.44	4.51
1 m	9 May 2020–8 Jul 2024	Average	11.02	10.23	7.77	9.17
		Maximum	13.19	12.90	10.87	11.13
		Minimum	10.01	6.90	4.80	4.38
5 m	9 May 2020–8 Jul 2024	Average	10.94	10.53	7.95	9.13
		Maximum	11.92	12.48	10.00	11.06
		Minimum	10.00	7.05	4.31	4.45
10 m	9 May 2020–8 Jul 2024	Average	10.86	10.80	8.34	9.16
		Maximum	11.90	12.41	10.35	11.12
		Minimum	9.74	8.15	5.80	6.10
15 m	9 May 2020–8 Jul 2024	Average	10.79	10.95	8.72	9.16
		Maximum	11.76	12.39	10.75	10.92
		Minimum	9.75	9.51	5.55	6.33
20 m	9 May 2020–8 Jul 2024	Average	10.75	11.00	9.04	9.16
		Maximum	11.96	12.50	10.85	10.81
		Minimum	9.75	9.76	5.21	4.26
30 m	9 May 2020–8 Jul 2024	Average	10.68	10.95	9.39	9.22
		Maximum	12.40	12.21	10.91	10.65
		Minimum	9.79	9.72	6.15	6.12

Water Depth	Sampling Period	Dissolved Oxygen Parameter	Winter	Spring	Summer	Fall
			Dissolved Oxygen (mg/L)			
The Gorge						
0.5 m	28 Jun 2020–29 May 2024	Average	11.14	10.67	8.34	9.47
		Maximum	13.90	13.10	9.81	12.45
		Minimum	10.00	5.85	6.65	7.40
1 m	28 Jun 2020–29 May 2024	Average	11.10	10.67	8.32	9.40
		Maximum	13.10	13.10	10.00	11.73
		Minimum	9.90	5.85	6.70	7.45
5 m	28 Jun 2020–29 May 2024	Average	11.02	10.84	8.40	9.32
		Maximum	12.50	12.90	10.17	11.18
		Minimum	9.35	6.80	6.20	7.45
10 m	28 Jun 2020–29 May 2024	Average	10.92	11.05	8.56	9.31
		Maximum	12.20	13.00	10.34	10.98
		Minimum	8.80	8.10	6.70	7.69
15 m	28 Jun 2020–29 May 2024	Average	10.83	11.14	8.79	9.30
		Maximum	12.16	13.00	10.51	10.89
		Minimum	8.10	9.30	6.41	7.60
20 m	28 Jun 2020–29 May 2024	Average	10.76	11.17	9.03	9.30
		Maximum	12.09	13.00	10.60	10.70
		Minimum	8.65	9.45	6.27	7.74
30 m	28 Jun 2020–29 May 2024	Average	10.70	11.08	9.28	9.32
		Maximum	14.00	13.00	10.75	10.90
		Minimum	8.85	9.65	6.29	7.75

During 2023–2024, oxygen levels increased from October–December 2023 and remained relatively stable from January–July 2024 (Figure 13.11A). Average oxygen levels peaked in May, while the lowest levels were recorded in September at the Little Bay sea farm (Figure 13.11B). At The Gorge sea farm, dissolved oxygen increased from October–May; peaking in May and declining thereafter (Figure 13.11C).

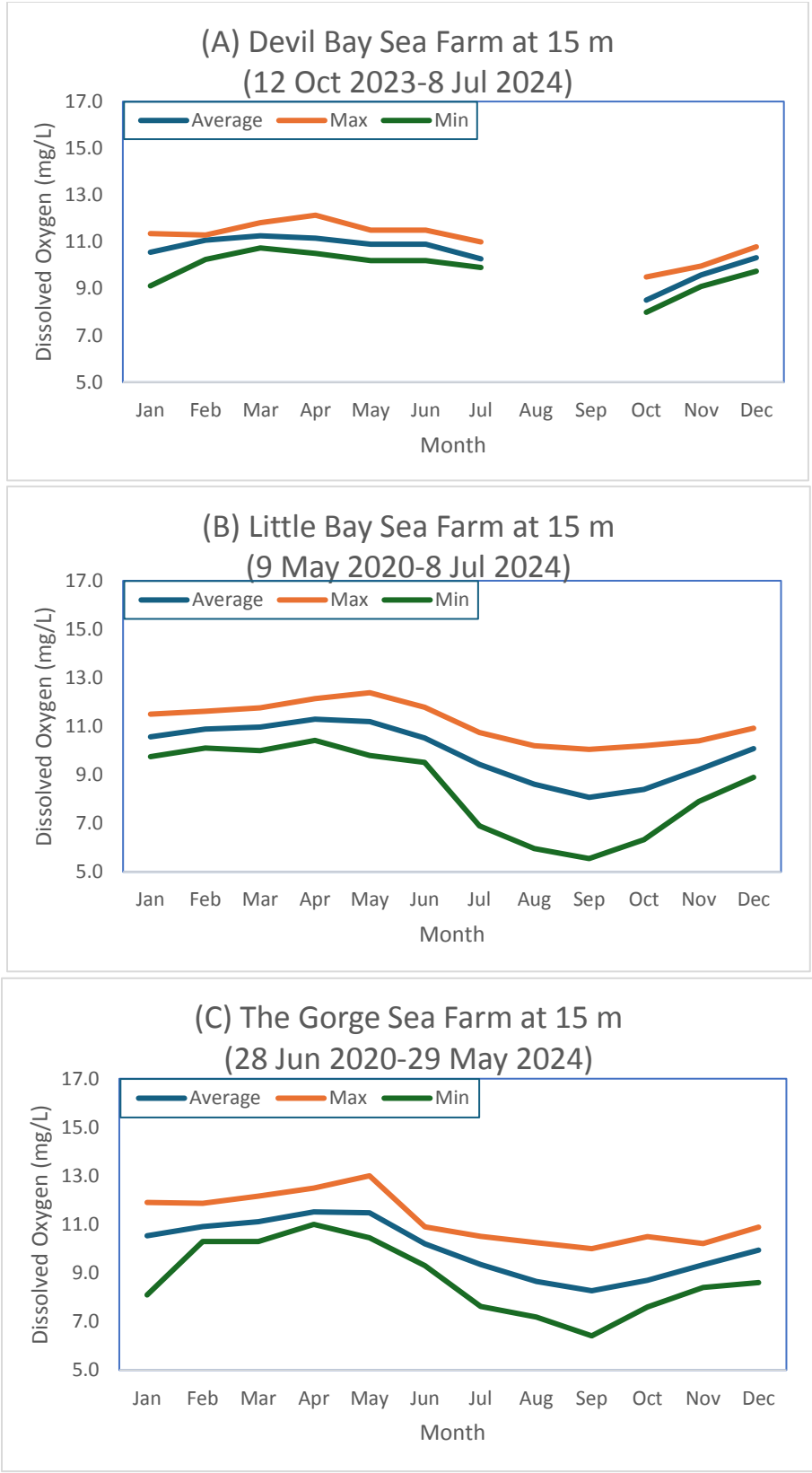


Figure 13.11. Historical dissolved oxygen (mg/L) data at the (A) Devil Bay, (B) Little Bay and (C) The Gorge sea farms in the Rencontre West BMA at 15 m depth.

13.3.3 Salinity

Salinity was fairly consistent across sea farms and seasons with averages ranging from 27.86–31.01 ppt (Table 13.10). Near surface salinity concentrations indicate a moderate freshwater influence.

Table 13.10. Average salinity (‰) at the sea farms in the Rencontre West BMA (2020–2024).

Water Depth	Sampling Period	Winter	Spring	Summer	Fall
		Salinity (‰)			
Devil Bay					
0.5 m	12 Oct 2023–8 Jul 2024	28.82	28.03	27.89	28.48
1 m	12 Oct 2023–8 Jul 2024	29.34	28.66	28.14	28.78
5 m	12 Oct 2023–8 Jul 2024	30.09	29.86	29.78	29.49
10 m	12 Oct 2023–8 Jul 2024	30.23	30.10	30.29	29.66
15 m	12 Oct 2023–8 Jul 2024	30.14	30.27	30.46	29.80
20 m	12 Oct 2023–8 Jul 2024	30.31	30.35	30.51	29.87
30 m	12 Oct 2023–8 Jul 2024	30.30	30.39	30.48	29.73
Little Bay					
0.5 m	9 May 2020–8 Jul 2024	29.39	28.66	28.91	28.83
1 m	9 May 2020–8 Jul 2024	29.57	29.18	29.16	29.00
5 m	9 May 2020–8 Jul 2024	29.93	29.89	29.86	29.48
10 m	9 May 2020–8 Jul 2024	30.04	30.26	30.35	29.79
15 m	9 May 2020–8 Jul 2024	30.10	30.37	30.62	29.91
20 m	9 May 2020–8 Jul 2024	30.03	30.50	30.80	29.99
30 m	9 May 2020–8 Jul 2024	30.15	30.68	30.89	30.01
The Gorge					
Surface	28 Jun 2020–29 May 2024	27.86	28.49	28.28	28.08
1 m	28 Jun 2020–29 May 2024	28.08	28.94	28.76	28.59
5 m	28 Jun 2020–29 May 2024	28.61	29.85	30.03	29.59
10 m	28 Jun 2020–29 May 2024	28.72	30.23	30.41	29.87
15 m	28 Jun 2020–29 May 2024	28.80	30.30	30.68	30.02
20 m	28 Jun 2020–29 May 2024	28.92	30.40	30.81	30.10
30 m	28 Jun 2020–29 May 2024	29.02	30.65	31.01	30.19

13.4 Oceanographic and Meteorological Data

Bathymetric, current, wind and wave data are available for all four sea farms in the Rencontre West BMA.

13.4.1 Bathymetry

Water depths below the lease and minimum water depth under the sea cages range from 1–250 m and 34–171 m, respectively (Table 13.11). The shallowest sea farm is Devil Bay where minimum depth is 34 m below the sea cage array. Water depth profiles were acquired from combined historical profiling data from a multi-beam sonar and Olex software via GPS and echosounder (Figures 13.12–13.15).

Table 13.11. Water depth range at sea farm in the Rencontre West BMA.

Site No.	Sea Farm	Lease Depth Range (m)	Minimum Water Depth Below Sea Cages (m)
AQ 1133	Devil Bay	1–140 m	34
AQ 1134	Little Bay	1–250 m	171
AQ 1136	Rencontre Bay	1–190 m	83
AQ 1135	The Gorge	1–159 m	88

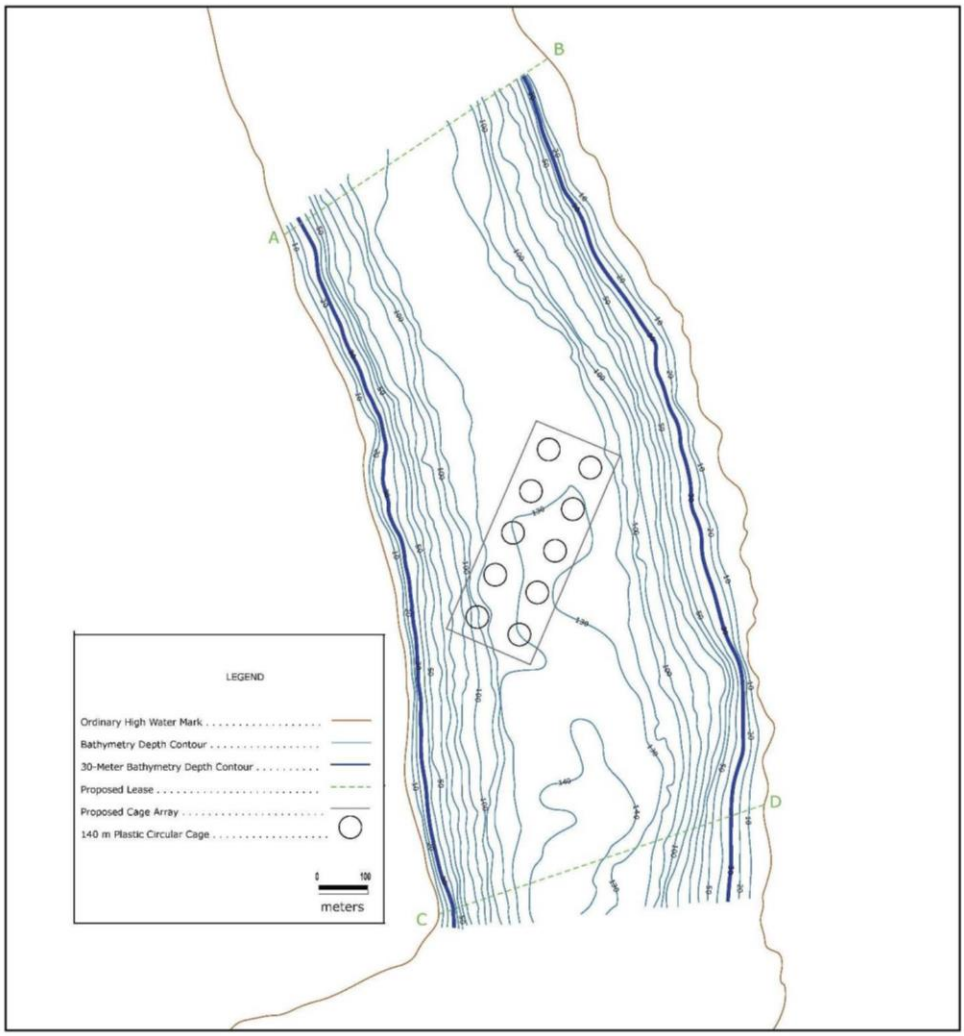


Figure 13.12. Bathymetric map for the Devil Bay sea farm lease area (acquired from combined historical profiling data from a multi-beam sonar and Olex software via GPS and echosounder).

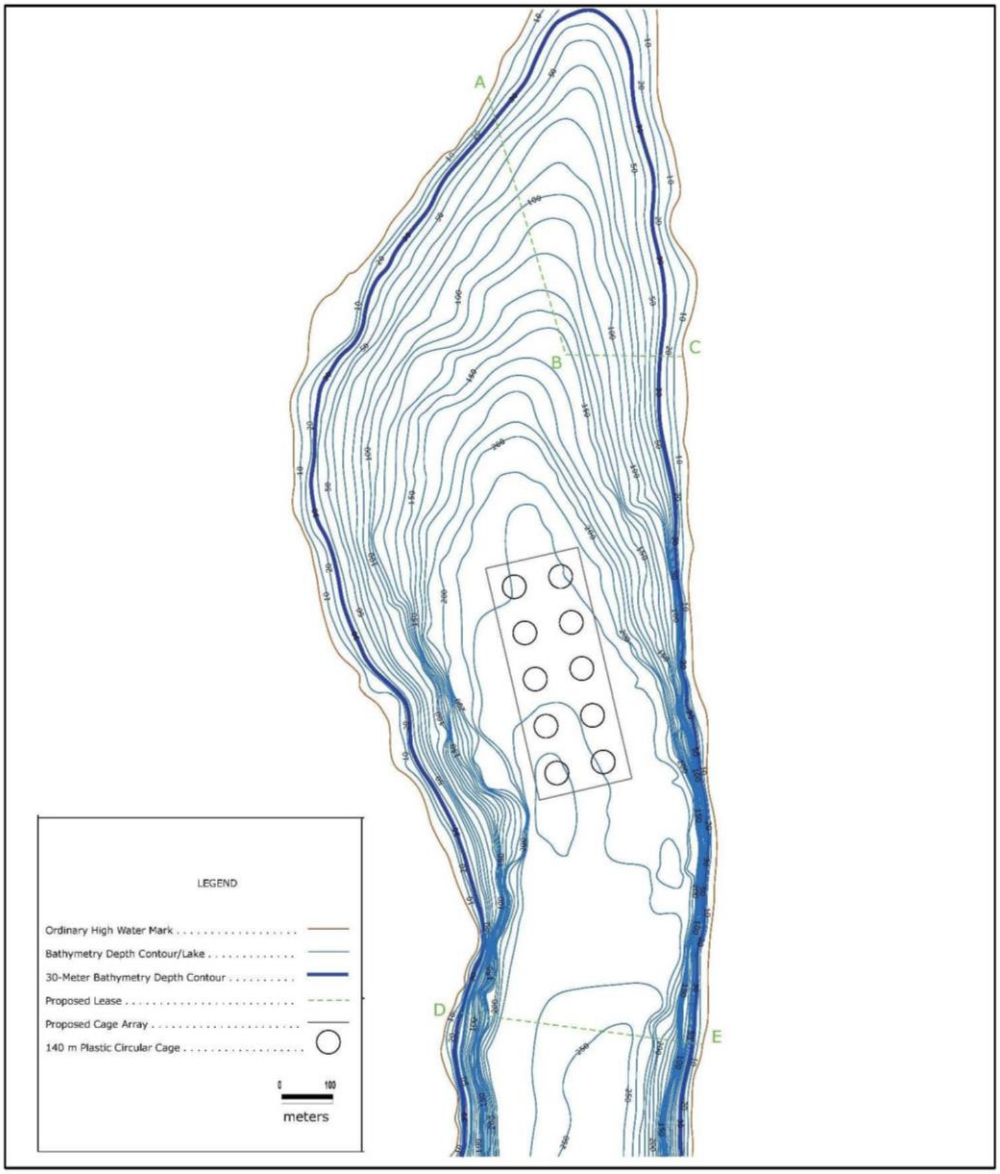


Figure 13.13. Bathymetric map for the Little Bay sea farm lease area (acquired from combined historical profiling data from a multi-beam sonar and Olex software via GPS and echosounder).

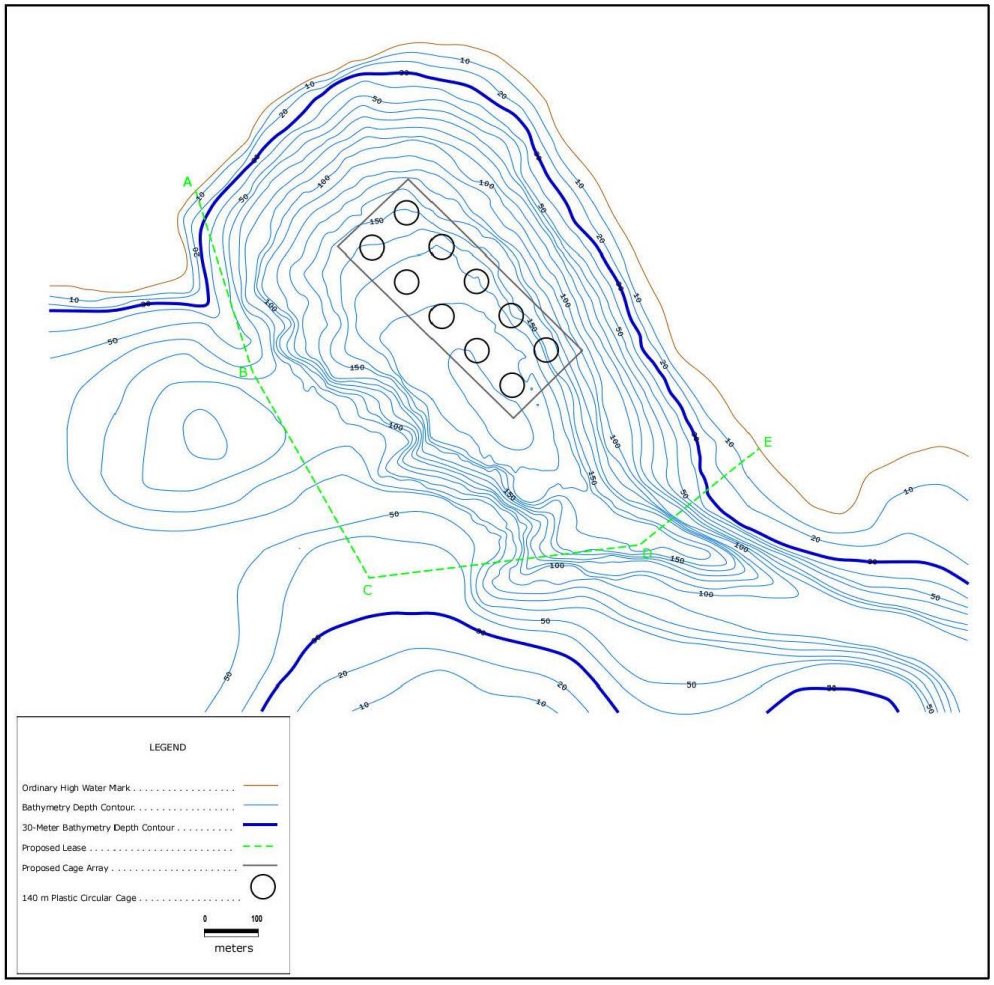


Figure 13.14. Bathymetric map for the Rencontre Bay sea farm lease area (acquired from combined historical profiling data from a multi-beam sonar and Olex software via GPS and echosounder).

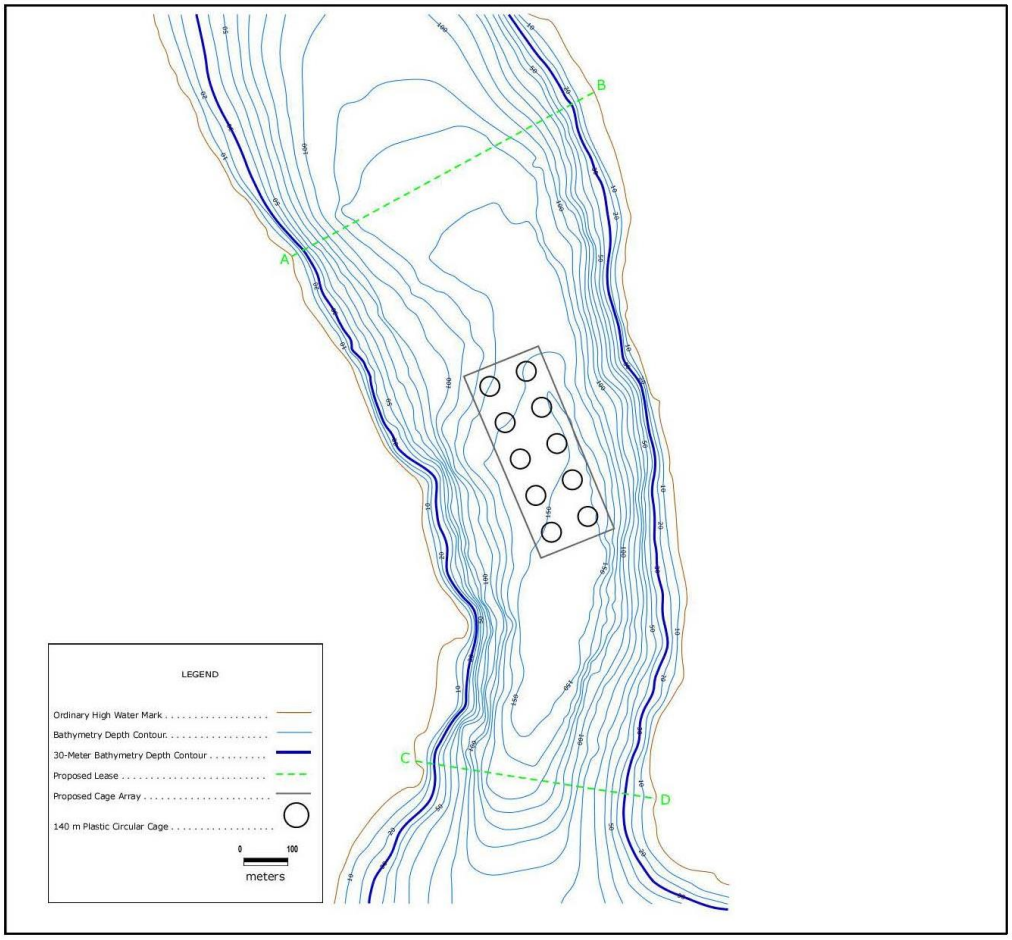


Figure 13.15. Bathymetric map for The Gorge sea farm lease area (acquired from combined historical profiling data from a multi-beam sonar and Olex software via GPS and echosounder).

13.4.2 Currents

Current data were acquired at the Devil Bay, Little Bay and Rencontre Bay sea farms in October and November 2017 whereas current data from May–June (2018) are available for The Gorge sea farm.

13.4.2.1 Devil Bay

During October–November 2017, current measurements were collected at five depths in the Devil Bay sea farm (Table 13.12). During this period, mean current speeds ranged from 2.62 cm/s (at 120 m water depth), to 5.06 cm/s (at 6.8 m water depth). Maximum current speeds were recorded within 15 m of the water surface. In the upper 15 m, the currents were directed toward the south--southeast to south. This direction changed at mid column (55 m) to north-northwest to north and back to south-southeast to south near the bottom (Figure 13.16).

Table 13.12. Current speeds (mean and maximum values) and vector-averages at the Devil Bay sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
6.8	5.06	25.28	n/a
10.8	4.18	24.70	n/a
14.8	3.65	21.79	n/a
54.8	2.92	13.56	n/a
120.4	2.62	10.10	n/a

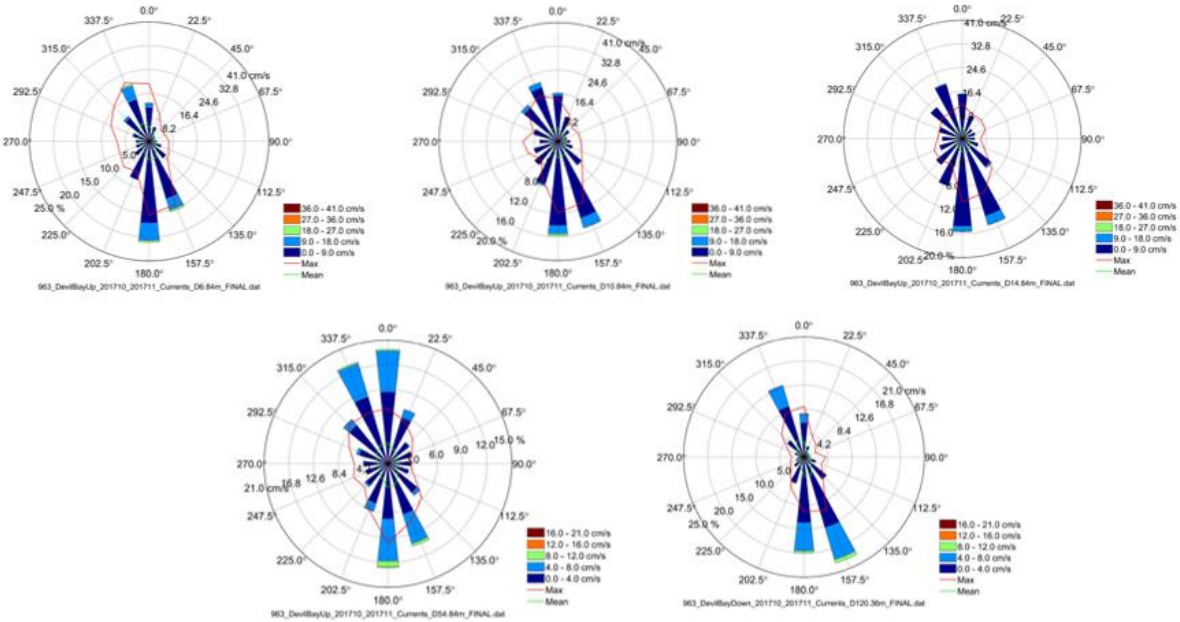


Figure 13.16. Compass rose plots of current speeds in the Devil Bay sea farm (October–November 2017). Current speeds and directions at 6.8 m, 10.8 m, 14.8 m, 54.8 m, and 120.4 m are shown from left to right, top to bottom in the figure.

13.4.2.2 Little Bay

During October–November 2017, current measurements were collected at five depths in the Little Bay sea farm (Table 13.13). During this period, mean current speeds ranged from 3.85 cm/s (at 219 m water depth) to 6.13 cm/s (at 7 m water depth). Maximum current speeds were recorded in the upper 15 m of the water column (32.75 cm/s-36.48 cm/s). Current directions were largely north-northwest to north throughout the water column (Figure 13.17).

Table 13.13. Current speeds (mean and maximum values) and vector-averages at the Little Bay sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
7	6.13	36.48	n/a
9	5.77	34.27	n/a
15	5.31	32.75	n/a
109	4.86	22.20	n/a
219	3.85	19.80	n/a

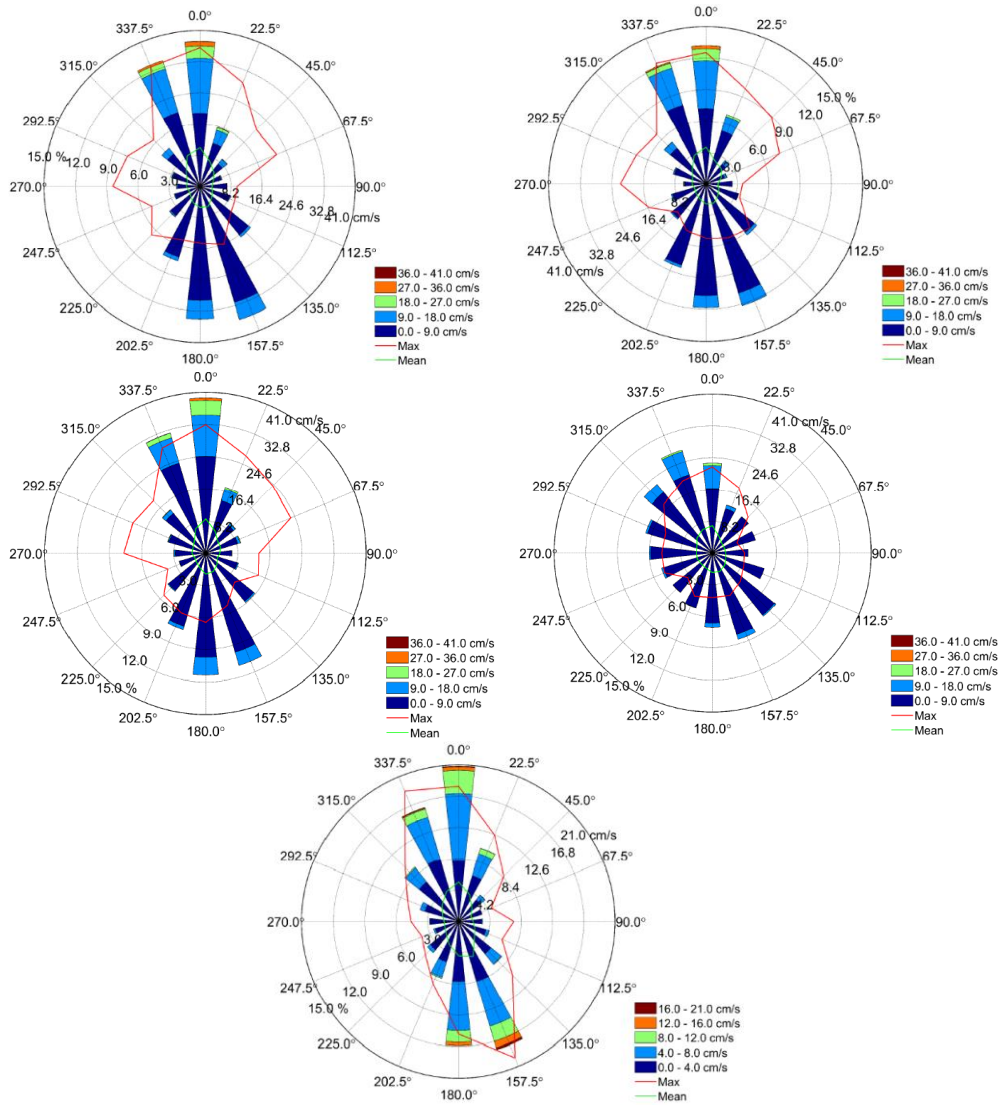


Figure 13.17. Compass rose plots of current speeds at the Little Bay sea farm (October–November 2017). Current speeds and directions at 7 m, 9 m, 15 m, 109 m, and 219 m are shown from left to right, top to bottom in the figure.

13.4.2.3 Rencontre Bay

During October–November 2017, current measurements were collected at four depths in the Rencontre Bay sea farm (Table 13.14). During this period, mean current speeds ranged from 1.81 cm/s near bottom to 4.18 cm/s at 10 m. Maximum current speeds were recorded at 10 m (26.21 cm/s) and 15 m (23.53 cm/s). Current directions in October–November 2017 were largely north to northwest to north-northwest in the upper 90 m of the water column. Current directions near bottom were omnidirectional with a tendency towards northwest to north-northwest (Figure 13.18).

Table 13.14. Current speeds (mean and maximum values) and vector-averages at the Rencontre Bay sea farm (October–November 2017).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
10.3	4.18	26.21	n/a
14.3	3.96	23.53	n/a
91.4	3.12	16.30	n/a
167.4	1.81	15.48	n/a

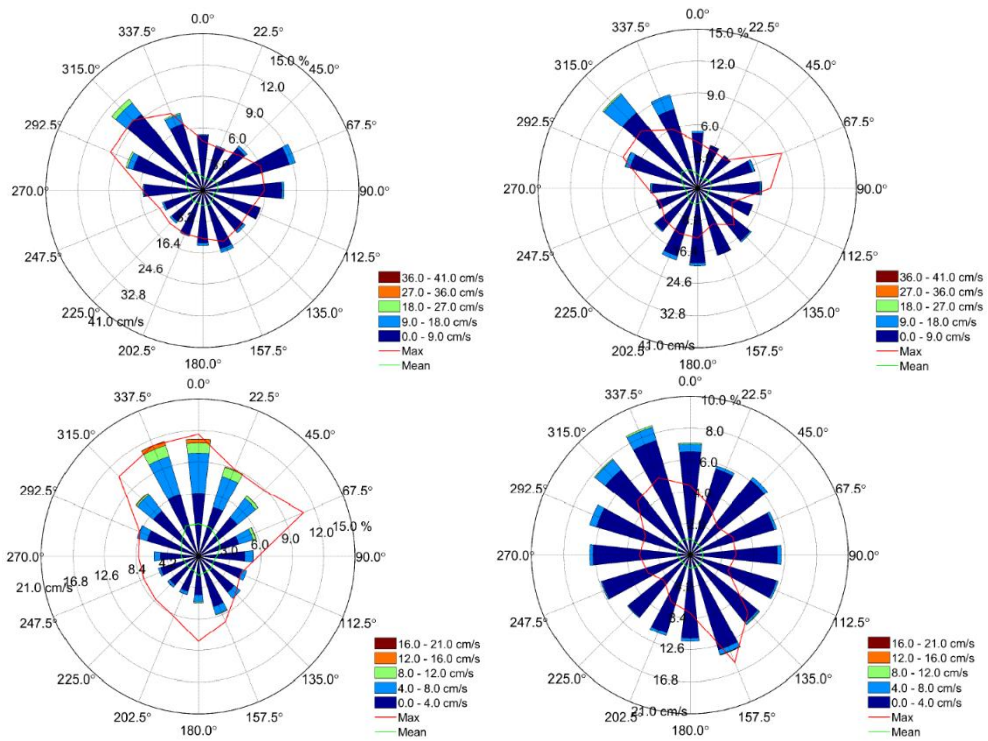


Figure 13.18. Compass rose plots of current speeds at the Rencontre Bay sea farm (October–November 2017) at 10.3 m, 14.3 m, 91.4 m, and 167.4 m are shown from left to right, top to bottom in the figure.

13.4.2.4 The Gorge

During May–June 2018, current measurements at five depths were collected in The Gorge sea farm (Table 13.15). During this period, mean current speeds ranged from 2.97 cm/s (at 141.4 m water depth) to 6.96 cm/s (at 4.7 m water depth). Maximum current speeds were recorded in the upper 16 m of the water column (20.24 cm/s) to 38.71 cm/s near surface (4.7 m). Current directions were largely south-southeast to south or north-northwest to north for mid depth (73.8 m) to surface (4.7 m). Near bottom current directions tended toward the south-southeast (Figure 13.19).

Table 13.15. Current speeds (mean and maximum values) and vector-averages at The Gorge sea farm (May–June 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
4.7	6.96	38.71	n/a
9.9	5.50	23.85	n/a
15.9	4.46	20.24	n/a
73.8	2.36	9.50	n/a
141.4 (4.6 m above bottom)	2.97	8.90	n/a

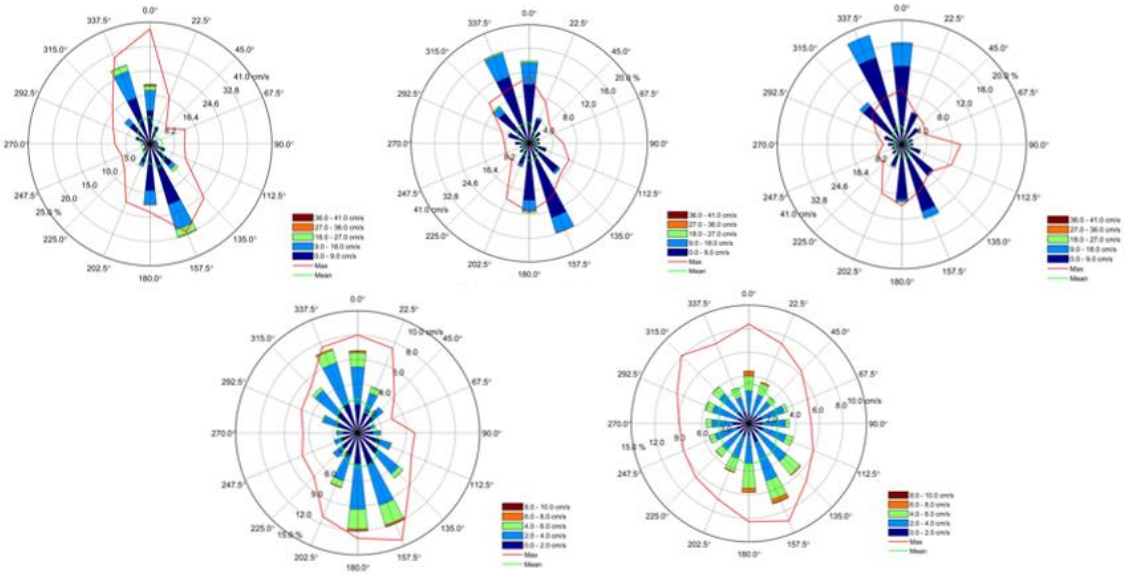


Figure 13.19. Compass rose plots of current speeds at The Gorge sea farm (May–June 2018). Current speeds and directions at 4.7 m, 9.9 m, 15.9 m, 73.8 m, and 141.8 m (or 4.6 m above bottom) are shown from left to right, top to bottom in the figure.

13.4.3 Wind and Waves

13.4.3.1 Modelling (MSC50 Hindcast Approach) for Atlantic Canada

Mean wind speeds and mean wave heights near the Rencontre West BMA were highest in December, January and February and lowest in May, June, July, and August based on 10 years of historical data (Tables 13.16 and 13.17). Maximum monthly wind speeds of ~20–21 m/s (~72–76 km/h) occurred in November–March. Similarly, maximum monthly wave heights of 3.32–4.42 m occurred in November–March. Wind directions were predominately from the west, southwest with wind speeds ranging from ~6–12 m/s (Figure 13.20).

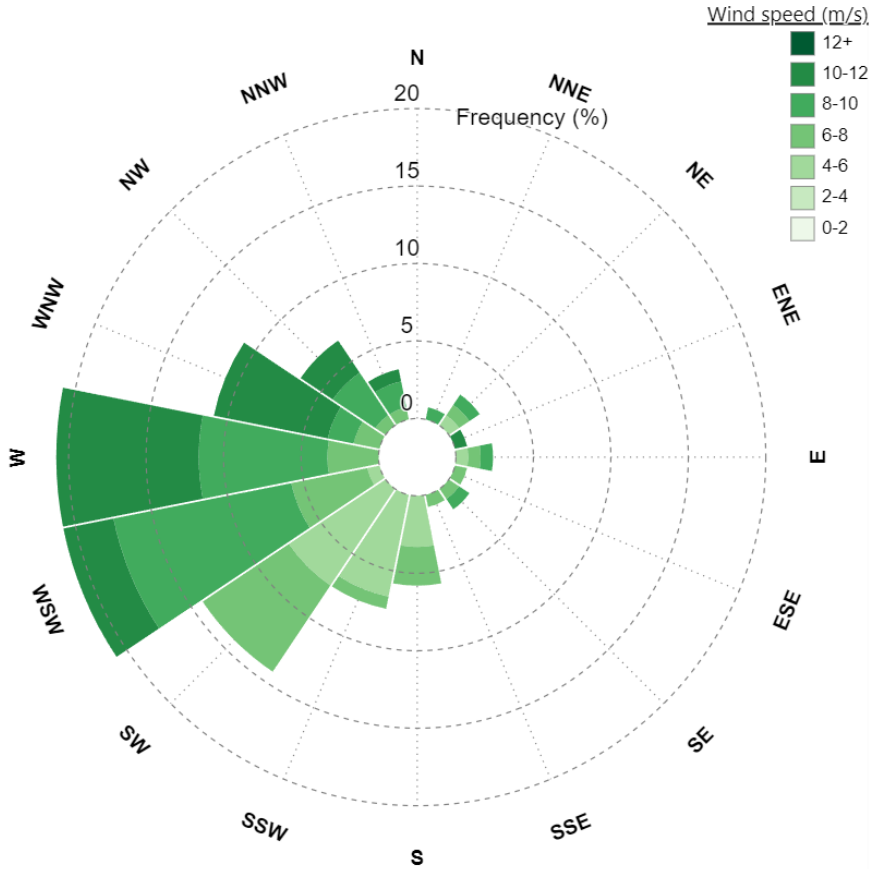
Table 13.16. Monthly wind speeds (mean and maximum) near the Rencontre West BMA (at MSC50 grid point M6012714 during 2009–2018).

Month	M6012714	
	Wind Speed Mean (m/s)	Wind Speed Max (m/s)
January	10.97	21.25
February	10.46	21.91
March	9.51	20.65
April	7.91	18.81
May	6.48	14.64
June	5.75	14.04
July	5.47	12.87
August	5.99	14.19
September	7.75	16.67
October	8.95	18.87
November	9.78	19.97
December	10.59	20.40

Notes:
Grid point M6012714 is ~5 km from the Devil Bay sea farm.

Table 13.17. Monthly wave heights (m) (mean and maximum) recorded near the Rencontre West BMA (at MSC50 grid point M6012714 during 2009–2018).

Month	M6012714	
	Wave Height Mean (m)	Wave Height Max (m)
January	1.37	3.68
February	1.33	4.42
March	1.12	3.32
April	1.02	2.84
May	0.81	2.18
June	0.76	1.99
July	0.80	1.89
August	0.79	2.09
September	0.94	2.52
October	1.06	2.96
November	1.19	3.69
December	1.28	3.51



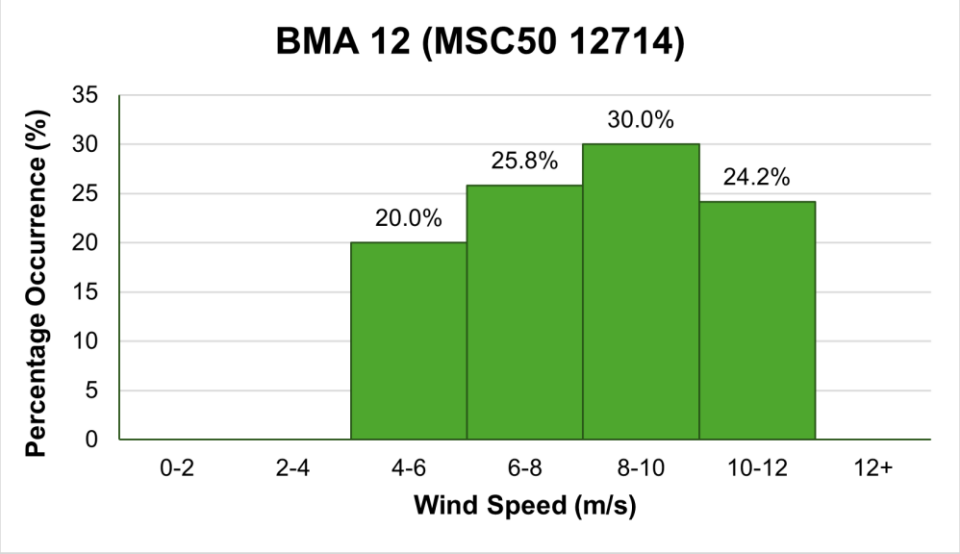


Figure 13.20. Wind rose and wind speed frequency histogram for MSC50 grid point M6012714 near the Rencontre West BMA (2009–2018).

13.5 Ice Conditions

Ice conditions for the Study Area including Rencontre West (BMA 12) are detailed in Section 4.5.

13.6 Storms

Storm conditions for the Study Area including Rencontre West (BMA 12) are detailed in Section 4.6.

13.7 Tides and Floods

Tide and flood conditions for the Study Area including Rencontre West (BMA 12) are detailed in Section 4.7.

13.8 Performance of Sea Farms with a Previous Production Cycle

Three of the four sea farms in the Rencontre West BMA (Devil Bay, Little Bay and The Gorge) have been previously stocked. The summaries below detail the monitoring, reporting, and performance of the three sea farms (Devil Bay, Little Bay, and The Gorge) in the Rencontre West BMA during the period that public reporting has been a requirement (2016–present).

13.8.1 Fallowing Periods

The fallow schedule for MCE sea farms in the Rencontre West BMA is summarized in Table 13.18. The Gorge sea farm has been fallow since June 2024. The Devil Bay and Little Bay sea farms will enter a fallow period after harvesting in 2024/2025. Rencontre Bay sea farm has not been stocked during the reporting period summarized in Table 13.18.

Table 13.18. Summary of fallow schedule for Rencontre West BMA sea farms since 2018. Green indicates production (month stocked), red indicates harvesting/depopulation (month sea cages were empty), and blue is fallow (not stocked).

Sea Farm	2018	2019	2020	2021	2022	2023	2024
Devil Bay						Oct	
Little Bay			Jul	Dec		Jul	
Rencontre Bay							
The Gorge			Jul	Nov		Jul	Jun

13.8.2 Benthic Monitoring

The four sea farms in the Rencontre West BMA (Devil Bay, Little Bay, Rencontre Bay and The Gorge) are new licenses acquired by MCE. Depositional modelling (i.e., DEPOMOD) has been completed for all four sea farms. See Volume 3 of LGL 2025c for details.

As per the AAR, benthic monitoring of an active sea farm is required during a period of peak salmon feeding. Depending on bottom type (hard or soft), either video monitoring or bottom grabs are collected to determine the amount of BOD matter. During years with active farming, required benthic monitoring at sampling stations in the Rencontre West BMA was conducted. Of the two farms monitored in 2021, The Gorge sea farm was within the allowable regulatory threshold based on BOD indicators. The Little Bay sea farm exceeded the allowable regulatory threshold of 70% (34/46 stations = 74%). The re-sampling of the Little Bay sea farm occurred in October 2022 and concentration levels were below regulatory threshold (3/46 stations = 6%) and was available to be restocked (Table 13.19). Three Rencontre West sea farms were stocked in 2023 and scheduled for harvest in 2024/2025.

Table 13.19. AAR benthic monitoring results for sea farms in the Rencontre West BMA (2020–2023). [Green = within allowable regulatory threshold[a], red = exceedance of regulatory threshold and resample required prior to restocking, yellow = not available (n/a)].

AAR Monitoring Year	BOD Indicator	Sea Farm			
		Devil Bay	Little Bay	Rencontre Bay	The Gorge
2020	Date				
	%Stations				
2021	Date		26,27 Oct 21		30 Oct 21
	%Stations		74 (34/46)		28 (12/43)
2022	Date		5,6 Oct 22		
	%Stations		6 (3/46)		
2023	Date				
	%Stations				

Source: MCE (2024).
Notes:
[a] If >70% of monitoring stations had the presence of *Beggiatoa* species or similar bacteria, marine worms, or barren substrate (as determined by visual monitoring) and/or if the mean concentration of free sulfide in surficial sediment was >3000 µM (as determined by sediment sampling) this is considered an exceedance (fail) of the allowable threshold.

13.8.3 Publicly Reported Performance

As detailed in Section 3.8.3, sea farm performance reports which include mass mortality, disease, and escape information and sea lice count data are available for recent years. Drugs and pesticide use information at sea farms are available for 2016–2022.

13.8.3.1 Mortality Events

In 2020, there was an abnormal mortality event aboard a transport vessel that was delivering lumpfish to the Little Bay sea farm in Rencontre West. This mortality event was a result of issues with the level of dissolved oxygen in the hold of the vessel during the transport. In 2021, there was also a mortality event of Atlantic salmon at two farms in Rencontre West. Both the Little Bay and The Gorge sea farms experienced abnormal mortality events in September (The Gorge) and October (Little Bay). Both events were a result of environmental challenges, dissolved oxygen and sea lice treatment pressure respectively. These mortalities were removed from the vessel

(~16,000 lumpfish) and sea cages (~700,000 Atlantic salmon) using approved procedures and recovered at a local rendering facility (Table 13.20).

13.8.3.2 Disease

In 2023, a detection of the non-pathogenic ISAv was detected in one fish sampled at The Gorge sea farm in Rencontre West BMA. The detected strain of ISAv does not cause disease and can be described as non-deleted highly polymorphic region (HPR) or HPR0. This non-pathogenic ISAv strain (HPR0) does not require regulatory action from FFA or CFIA and therefore the site was not quarantined (Table 13.20).

13.8.3.3 Escapes

The Gorge sea farm has experienced two Atlantic salmon escape events (n=5). In 2020, during a fish handling event, one fish escaped from a staff. Regulators were notified as per procedure, but no recapture directive was issued by DFO. In 2021, four fish were observed outside nets at The Gorge sea farm. One fish was retrieved by staff. An intense inspection of all cage structures and nets was conducted but no issues were detected with equipment nor were any other escapes observed. In both instances, notice was provided to regulators as per regulations and the public on the NAIA website and the Aquaculture Portal 2019–2024 (Table 13.20).

Table 13.20. Summary of reportable incident events at sea farms in the Rencontre West BMA.

Date	Sea Farm	Incident				No. Cages Impacted	No. Fish Affected	Cause	Response Measures
		Abnormal Mortality	Fish Health Suspect	Fish Health Confirmed	Escape				
2020-05-24[a]	Little Bay	Lumpfish				n/a	15,800	Oxygen level issues during transport	Waste recovery
2020-05-26[a]									
2021-10-23[a]	Little Bay	Atlantic Salmon					210,611	Post treatment (sea lice) handling mortality	Waste recovery
2021-11-04[a]									
2020-09-18[a]	The Gorge				Atlantic Salmon	1	1	One fish escaped during fish health handling event	No recapture direction issued by DFO
2021-09-11[a]	The Gorge	Atlantic Salmon					489,000	Environmental Challenges (dissolved oxygen levels)	Removed & waste recovery
2021-09-21[a]									
2021-10-12[a]									
2021-10-04[a]	The Gorge				Atlantic Salmon		4	Undetermined	1 fish retrieved
2023-10-26[b]	The Gorge		ISAv non-pathogenic			1		HPR0 Strain of ISAv	No action required

Source: [a]naia.ca (2024); [b]aquacultureportal.ca (2024).

13.8.3.4 Sea Lice

Sea lice are reported on the NAIA website as an average number per fish. These results are not reported by sea farm or each BMA but as an average for all active farms. Table 4.22 (see Section 4.8.3.4) summarizes the average sea lice/fish for all active sea farms for 2021–2024.

13.8.3.5 Deposits of Drugs and Pesticides

In 2021, fish at the Little Bay and The Gorge sea farms received treatment from drugs (in-feed) for sea lice. As per the AAR, the total amounts (kg) of this treatment was reported to DFO (Table 13.21).

Table 13.21. Summary of deposits of pesticides and drugs at sea farms in the Rencontre West BMA (2016–2022).

BMA	Sea Farm	Year	Bath Treatment		In-Feed Treatment		
			Azamethiphos (Salmosan) (kg)	Hydrogen Peroxide (kg)	Emamectin benzoate (Slice) (kg)	Florfenicol (Aquaflor) (kg)	Ivermectin (Ivomec)(kg)
12	Little Bay	2021			0.93		
12	The Gorge	2021			0.93		

Source: National Aquaculture Public Reporting Data Website (2024).
Notes:
At the time of writing 2023 and 2024 data not available.

13.9 Exposure Zone Modelling

DFO conducted PEZ modelling for BMA 12 sea farms to estimate areas exposed to discharges from bath pesticides and in-feed drugs (and feces) (Page et al 2023). BMT conducted dispersion modelling for a worst-case scenario use of a bath pesticide for the sea farms in BMA 12 (see Appendix B).

13.9.1 PEZ Modelling

Detailed predictions of PEZ modelling for BMA 12 (Rencontre West) are found in Page et al. (2023); a summary is provided here. DFO undertook this modelling to provide initial estimates of the size and location of the areas that may be exposed to releases of fish health treatment substances. As noted in Page et al. (2023), PEZ estimates are not zones of impact and are intended to serve as an initial screening tool in combination with biological and socio-economic aspects of an area to gauge potential risk and the potential need for more precise modelling estimates.

The model predicted that for all sea farms in BMA 12, tarp treatments for Azamethiphos and Hydrogen Peroxide had larger PEZ (km^2) relative to these same treatments in a well boat (Table 13.22). The entrainment of the chemical associated with the jet dynamics in the well boat reduces the concentration at discharge and a ten-fold reduction was used for the model which

produced smaller PEZ (km²) for well boat treatments. Well boat discharges of Hydrogen Peroxide did not exceed threshold concentrations (i.e., 188 mg/L); therefore, predicted areas were zero.

Table 13.22. Estimates of the maximum and mean PEZ areas associated with Azamethiphos (assumes a 100 µg/L dose concentration) and Hydrogen Peroxide (assumes a 1800 mg/L dose concentration) using two different treatment methods: a tarp surrounding the net in-situ and a well boat hold for BMA 12 (from Page et al. 2023).

Sea Farm	Tarp Treatment				Well Boat Treatment[b]			
	Azamethiphos[c]		Hydrogen Peroxide[d]		Azamethiphos[c]		Hydrogen Peroxide[d]	
	Maximum PEZ Area (km²)	Mean PEZ Area (km²)	Maximum PEZ Area (km²)	Mean PEZ Area (km²)	Maximum PEZ Area (km²)	Mean PEZ Area (km²)	Maximum PEZ Area (km²)	Mean PEZ Area (km²)
Devil Bay[a]	9.86	0.69	2.97	0.35	3.06	0.35	0	0
Little Bay[a]	20.65	1.07	5.83	0.48	6.01	0.49	0	0
Rencontre Bay[a]	11.27	0.75	3.35	0.37	3.45	0.38	0	0
The Gorge[a]	8.62	0.87	2.64	0.41	2.71	0.42	0	0

Notes:

[a] Sea farms are located near land and PEZ areas (marine) are smaller than estimated—particularly maximum PEZ areas.

[b] Well boat treatments assume a ten-fold reduction in concentration at discharge as a result of entrainment associated with the jet dynamics in the well boat.

[c] PEZ model assumes a toxicity threshold of 1 µg/L of Azamethiphos. Other assumptions are provided in Page et al. (2023).

[d] PEZ model assumes a toxicity threshold of 188 mg/L of Hydrogen Peroxide. Other assumptions are provided in Page et al. (2023).

The Little Bay sea farm was predicted to have the largest PEZ areas for Azamethiphos tarp treatments (20.65 km² maximum and 1.07 km² mean; with concentrations ≥1 µg/L). The remaining three sea farms (Rencontre Bay, Devil Bay, and The Gorge) had maximum PEZ areas of 11.27 km², 9.86 km², and 8.62 km², respectively. The PEZ model produces a circular area from the center of the sea cage array and encompassed land for maximum predicted areas for all sea farms in BMA 12 (see Figure 17 in Page et al. 2023)—which results in an overestimate of exposed areas.

In-feed pest control products along with feces were modelled with PEZ area (km²; horizontal distance "travelled" by a sinking particle) estimates for mean and maximum current speeds (mid-depth); however, it is unlikely that maximum current speeds would be maintained throughout the duration of a treatment and therefore, distance estimates for maximum current speeds represents an upper boundary. The Little Bay sea farm had the largest estimated PEZ area for feed (1.76 km²) and feces (27.51 km²) under maximum current speeds (Table 13.23). The smallest area was estimated for The Gorge sea farm at 0.40 km² (feed) and 2.90 km² (feces).

Table 13.23. Summary of PEZ area for pest control products in-feed and feces (km²) under mean and maximum current speeds for BMA 12.

Sea Farm	Area of PEZ (km²)			
	Mean Current Speed		Maximum Current Speed[a]	
	In-feed	Feces	In-feed	Feces
Devil Bay[a]	0.17	0.34	0.52	4.57
Little Bay[a]	0.27	1.01	1.76	27.51
Rencontre Bay[a]	0.19	0.46	0.83	10.02
The Gorge[a]	0.17	0.32	0.40	2.90

Notes:

[a] Area represents an upper bound to the potential for exposure and is not expected to occur often since most releases do not experience maximum currents for the duration of treatment.

13.9.2 Dispersion Modelling

Dispersion modelling was undertaken to estimate exposure zones for the release of Azamethiphos (bath treatment) in a worst-case scenario (see Appendix B for details). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment at The Gorge sea cages (28 April 2023 for spring tide; 10 June 2023 for neap tide) through final treatment at Devil Bay sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 13.24).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Rencontre West BMA predicted maximum areas of 2.33 km² during neap and spring tides; where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment duration. The maximum Azamethiphos concentration for the Rencontre West BMA was 97 ng/L during the simulated neap tide and 110 ng/L during the spring tide. The peak concentration occurred during the treatment of the second sea farm, Rencontre Bay, and decreased shortly after treatments were completed with concentration levels 72 hrs after final treatment below 100 ng/L (Figures 13.21 and 13.22). The maximum area within BMA 12 where Azamethiphos concentrations exceeded 100 ng/L was the same during both the neap and spring tide scenario (2.33 km²).

Table 13.24. Treatment schedule (assumed dates) for sea farms in BMA 12 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
The Gorge	1	28 Apr 23	-459	10 Jun 23	-459
	2	28 Apr 23	-456	10 Jun 23	-456
	3	29 Apr 23	-435	11 Jun 23	-435
	4	29 Apr 23	-432	11 Jun 23	-432
	5	30 Apr 23	-411	12 Jun 23	-411
	6	30 Apr 23	-408	12 Jun 23	-408
	7	01 May 23	-387	13 Jun 23	-387
	8	01 May 23	-384	13 Jun 23	-384
	9	02 May 23	-363	14 Jun 23	-363
	10	02 May 23	-360	14 Jun 23	-360
Rencontre Bay	1	03 May 23	-339	15 Jun 23	-339
	2	03 May 23	-336	15 Jun 23	-336
	3	04 May 23	-315	16 Jun 23	-315
	4	04 May 23	-312	16 Jun 23	-312

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
	5	05 May 23	-291	17 Jun 23	-291
	6	05 May 23	-288	17 Jun 23	-288
	7	06 May 23	-267	18 Jun 23	-267
	8	06 May 23	-264	18 Jun 23	-264
	9	07 May 23	-243	19 Jun 23	-243
	10	07 May 23	-240	19 Jun 23	-240
Little Bay	1	08 May 23	-219	20 Jun 23	-219
	2	08 May 23	-216	20 Jun 23	-216
	3	09 May 23	-195	21 Jun 23	-195
	4	09 May 23	-192	21 Jun 23	-192
	5	10 May 23	-171	22 Jun 23	-171
	6	10 May 23	-168	22 Jun 23	-168
	7	11 May 23	-147	23 Jun 23	-147
	8	11 May 23	-144	23 Jun 23	-144
	9	12 May 23	-123	24 Jun 23	-123
	10	12 May 23	-120	24 Jun 23	-120
Devil Bay	1	13 May 23	-99	25 Jun 23	-99
	2	13 May 23	-96	25 Jun 23	-96
	3	14 May 23	-75	26 Jun 23	-75
	4	14 May 23	-72	26 Jun 23	-72
	5	15 May 23	-51	27 Jun 23	-51
	6	15 May 23	-48	27 Jun 23	-48
	7	16 May 23	-27	28 Jun 23	-27
	8	16 May 23	-24	28 Jun 23	-24
	9	17 May 23	-3	29 Jun 23	-3
	10	17 May 23	0	29 Jun 23	0

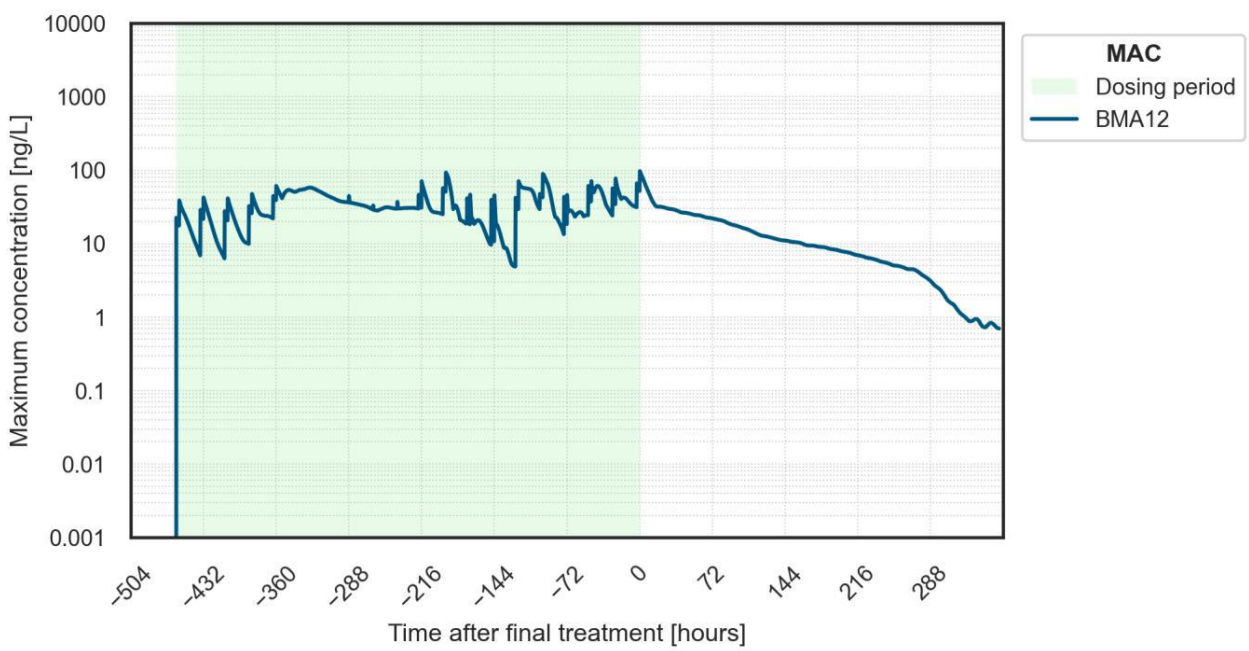


Figure 13.21. Maximum concentrations for Rencontre West BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced at The Gorge sea farm (assumed 10 June 2023) and final treatment was at Devil Bay sea farm (time=0; assumed 29 June 2023).

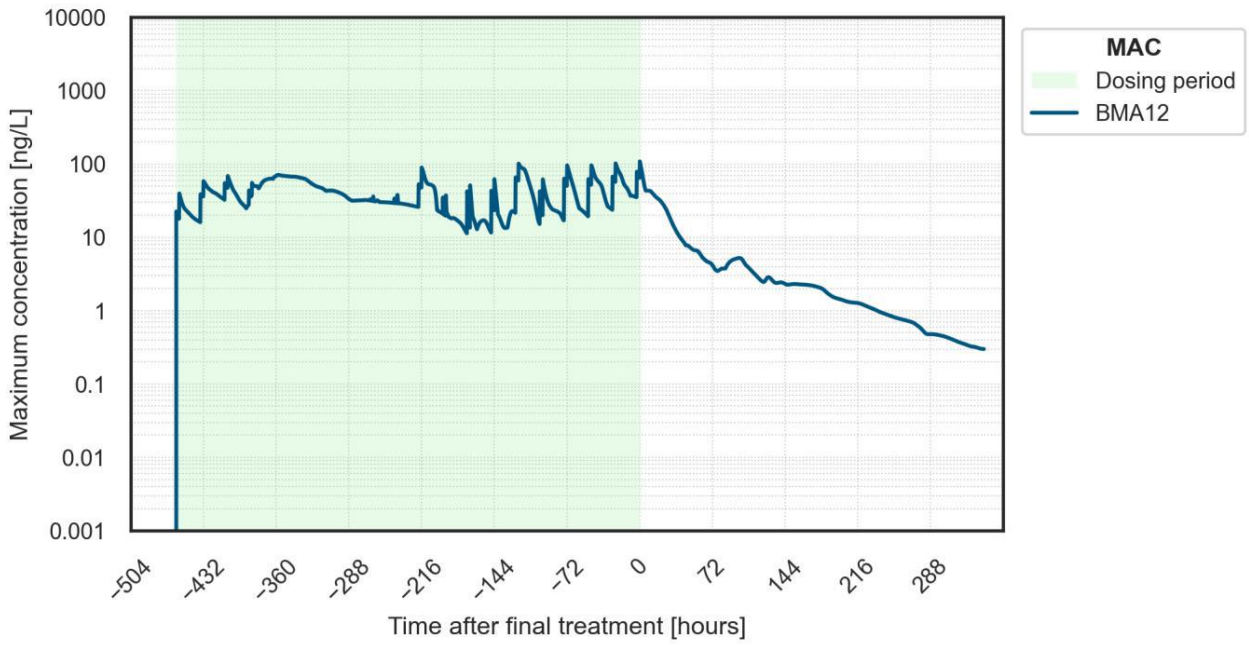


Figure 13.22. Maximum concentrations for Rencontre West BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced in The Gorge sea farm 28 April 2023. Final treatment (time=0) was last treatment in Devil Bay (17 May 2023).

14.0 Chaleur Bay (BMA 13)

The Chaleur Bay BMA (BMA 13) is located in the Bays West Area and includes three licensed sea farms: Chaleur Bay, Friar Cove, and Shooter Point (Table 14.1; Figure 14.1). The three sea farms are located in a fjord, Chaleur Bay. The closest community to these sea farms is Francois, which is accessible by ferry. Chaleur Bay and Friar Cove have both been in production while Shooter Point has not since MCE received these licenses.

Table 14.1. Chaleur Bay (BMA 13) sea farm locations and construction status 2024.

BMA Name	BMA #	Farm Site Name	AQ Licence #	Site Coordinates		Construction Status
				Latitude (N)	Longitude (W)	
Chaleur Bay	13	Chaleur Bay	1147	47.62211	-56.74839	Existing
		Friar Cove	1148	47.60000	-56.74669	Existing
		Shooter Point	1149	47.58610	-56.72356	TBD

The sea farms in Chaleur Bay were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m. The maximum number of fish per site is 1,000,0000 with a maximum stocking density of 15 kg/m^3.

The water depths below the leases range from 1–282 m (Table 14.2). The shallowest sea farm is Chaleur Bay where minimum sea cage array depth is 69 m. The sea farms have bottom sediments consisting of mixed substrates. All four sea farms are considered hard bottom.

Currents were reported at near surface, upper, mid-water, and near bottom depths. At 15 m water depth, the maximum water current speed at each site was between ~five to ~eight times the mean speed (Table 14.2). There is much vertical variation in the maximum current speed and this variation is larger than the mean current speeds.

Benthic habitat surveys revealed species of anemones, sea star spp., encrusting sponges and more (Tables 14.3–14.5). Kelp beds, soft coral, and Atlantic wolffish were observed.

Seasonal water temperatures at 15 m water depth were similar across sea farms with available data (Table 14.2). Mean water temperatures across all depths and sea farm sites ranged from 2.06°C in winter to 15.64°C in the summer. Dissolved oxygen levels were lower in the summer and fall than winter and spring (Tables 14.7–14.9).

During 2009–2018, average monthly wind speeds ranged from 5.37 m/s in July to 11.55 m/s in January (Table 14.14). The maximum wind speed during this period was 21.75 m/s in March. Wind direction in the Chaleur Bay BMA was predominately westerly. Mean wave height from 2009–2018 ranged from 0.26 m in July to 1.00 m in January. The maximum wave height was 2.20 m in January.

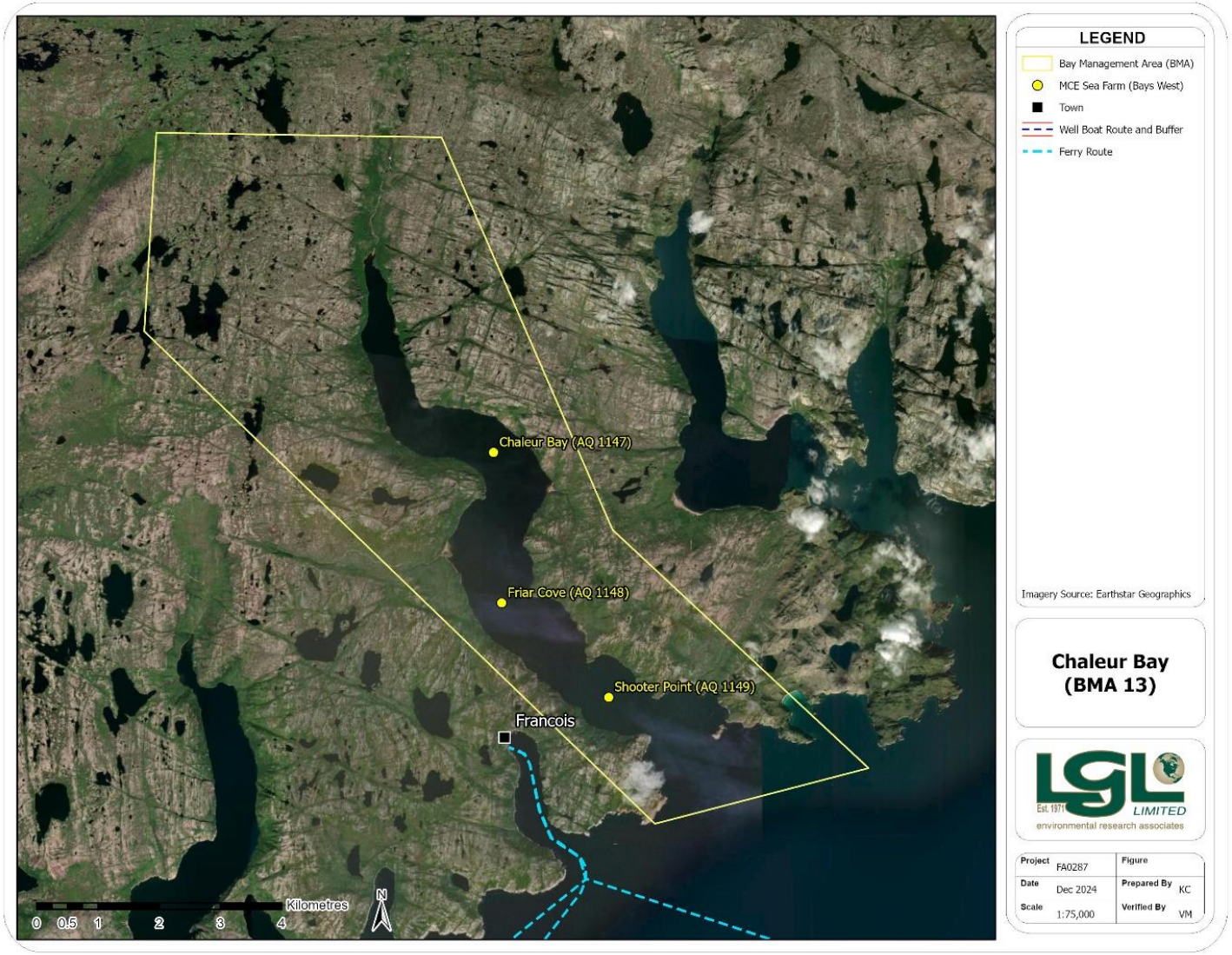


Figure 14.1. Locations of sea farms in the Chaleur Bay BMA.

Table 14.2. Summary of site-specific sea farm characteristics in Chaleur Bay (BMA 13).

Characteristic	Sea Farm		
	Chaleur Bay	Friar Cove	Shooter Point
Lease area (ha)	131	171	125
Water depth under lease (m)	1–144	1–266	1–282
Minimum water depth under sea cages (m)	69	133	83
Predominant Bottom Type	Hard	Hard	Hard
Water Temperature (Mean °C at 15 m)			
Winter [a]	2.91	2.74	n/a
Spring [a]	4.65	4.79	n/a
Summer [a]	10.45	10.34	n/a
Fall [a]	9.51	9.46	n/a
Dissolved Oxygen (Mean mg/L at 15 m)			
Winter [a]	9.70	9.98	n/a
Spring [a]	8.75	10.65	n/a
Summer [a]	10.61	9.13	n/a
Fall [a]	9.11	8.52	n/a
Currents (cm/s at 15 m)			
Mean	4.5	4.6	5.8
Maximum	23	28	44

Notes:

[a] Winter includes January, February and March; Spring includes April, May June; Summer includes July, August, September; and Fall includes October, November and December.

Water depth values may vary by approximately ± 2 m depending on tidal influence

14.1 Sea Farm Site Maps

The MCE sea farms in the Chaleur Bay BMA were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m. The sea farms in the Chaleur Bay BMA are currently third-party certified or will be prior to future stocking [as per FFA policy 9FFA 2019)].

14.1.1 Chaleur Bay

As originally designed, the Chaleur Bay sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 14.2).

14.1.2 Friar Cove

As originally designed, the Friar Cove sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 14.3).

14.1.3 Shooter Point

As originally designed, the Shooter Point sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 14.4).

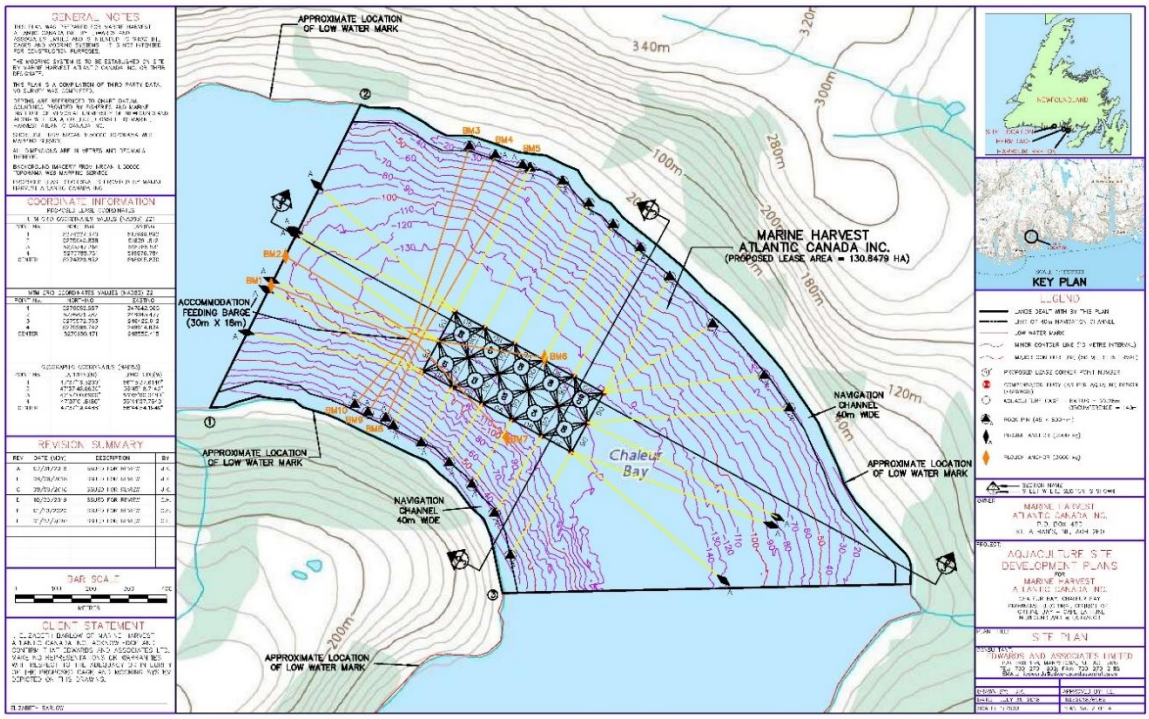


Figure 14.2. Chaleur Bay sea farm map and sea cage layout.

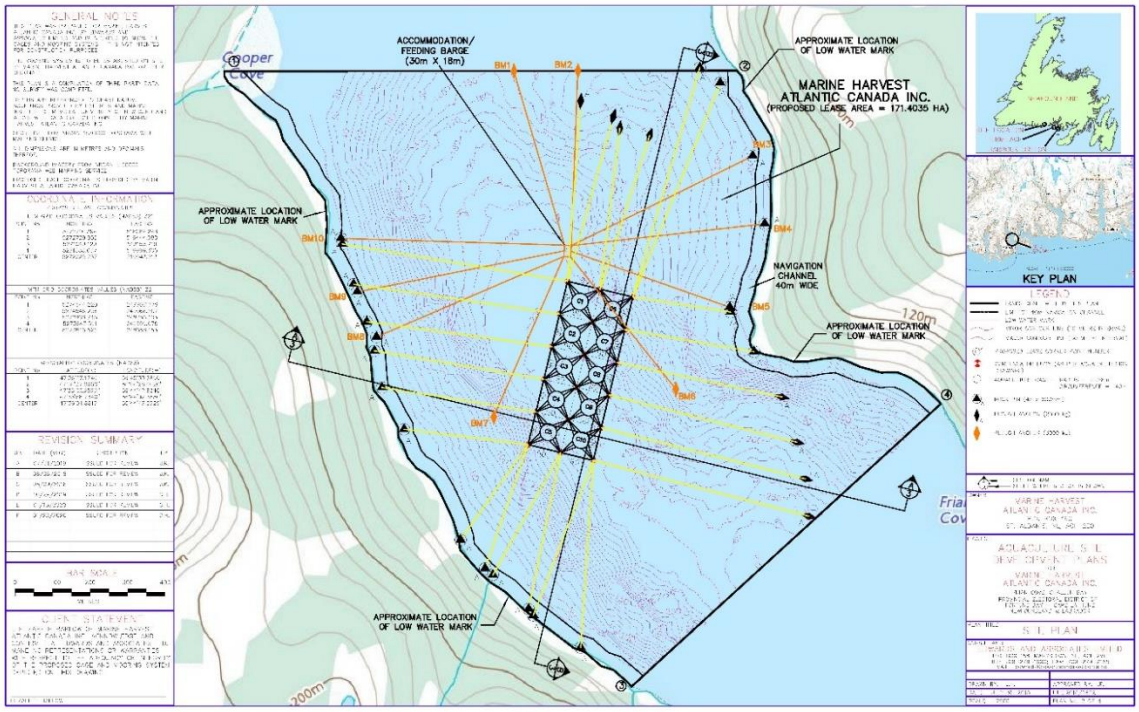


Figure 14.3. Friar Cove sea farm map and sea cage layout.

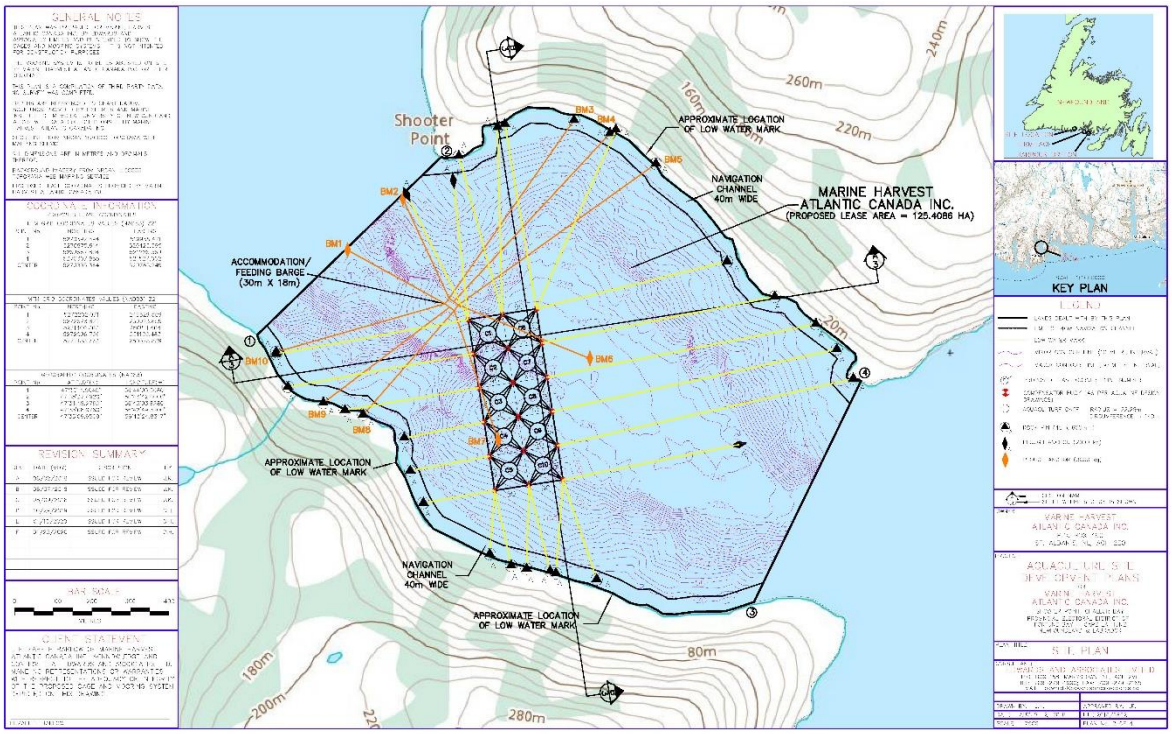


Figure 14.4. Shooter Point sea farm map and sea cage layout.

14.2 Benthic Surveys

Benthic surveys in the Chaleur Bay BMA were conducted in June 2018. Video observations were collected along transects (100 m intervals) and stations categorized as hard bottom appeared hard visually or did not produce acceptable grab samples.

14.2.1 Chaleur Bay

Based on surveys at 156 sampling stations across 19 transects, the composition of the seafloor in the Chaleur Bay sea farm is primarily mixed substrates with gravel, cobble, rubble, mud and sand (Figure 14.5; Table 14.3). The majority of stations (97 of 156) were considered hard bottom. Species observed include encrusting algae, brittle stars, feather stars, sea star spp., sponges and more (Table 14.3). Soft corals were also observed.

14.2.2 Friar Cove

Based on surveys at 199 sampling stations across 17 transects, the composition of the seafloor in the Friar Cove sea farm is primarily sand and mud covering bedrock (Figure 14.6; Table 14.4). The majority of stations (118 of 199) were considered hard bottom. Species observed include encrusting algae, anemones, feather stars and more (Table 14.4). Nine kelp beds were observed

near shore on the west ends of transects 6, 8, 9, 10, 11, 13, 15, 16, and 17. Soft coral and sponges were observed. In addition, one Atlantic wolffish (*Anarhichas lupus*), listed as *Special Concern* under SARA, was observed on the east end of transect 9 in 47 m depth. Patches of *Beggiatoa*-like bacteria were observed between 200 m and 300 m along transect 6, in approximately 240–250 m depth of water.

14.2.3 Shooter Point

Based on surveys at 164 sampling stations across 14 transects, the composition of the seafloor in the Shooter Point sea farm is primarily rockwall, bedrock and boulder sediment (Figure 14.7; Table 14.5). The majority of stations (118 of 164) were considered hard bottom. Species observed included coralline algae, anemones, brittle stars, sea star spp., sponges and more (Table 14.5). Soft coral was also observed. One kelp bed was observed near shore on the northeast end of transect 13, between 30 m and 50 m along the transect. Patches of *Beggiatoa*-like bacteria were observed on two transects, at 600 m along transect 2 and from 340 m to 385 m along transect 11, in approximately 200 m depth of water.

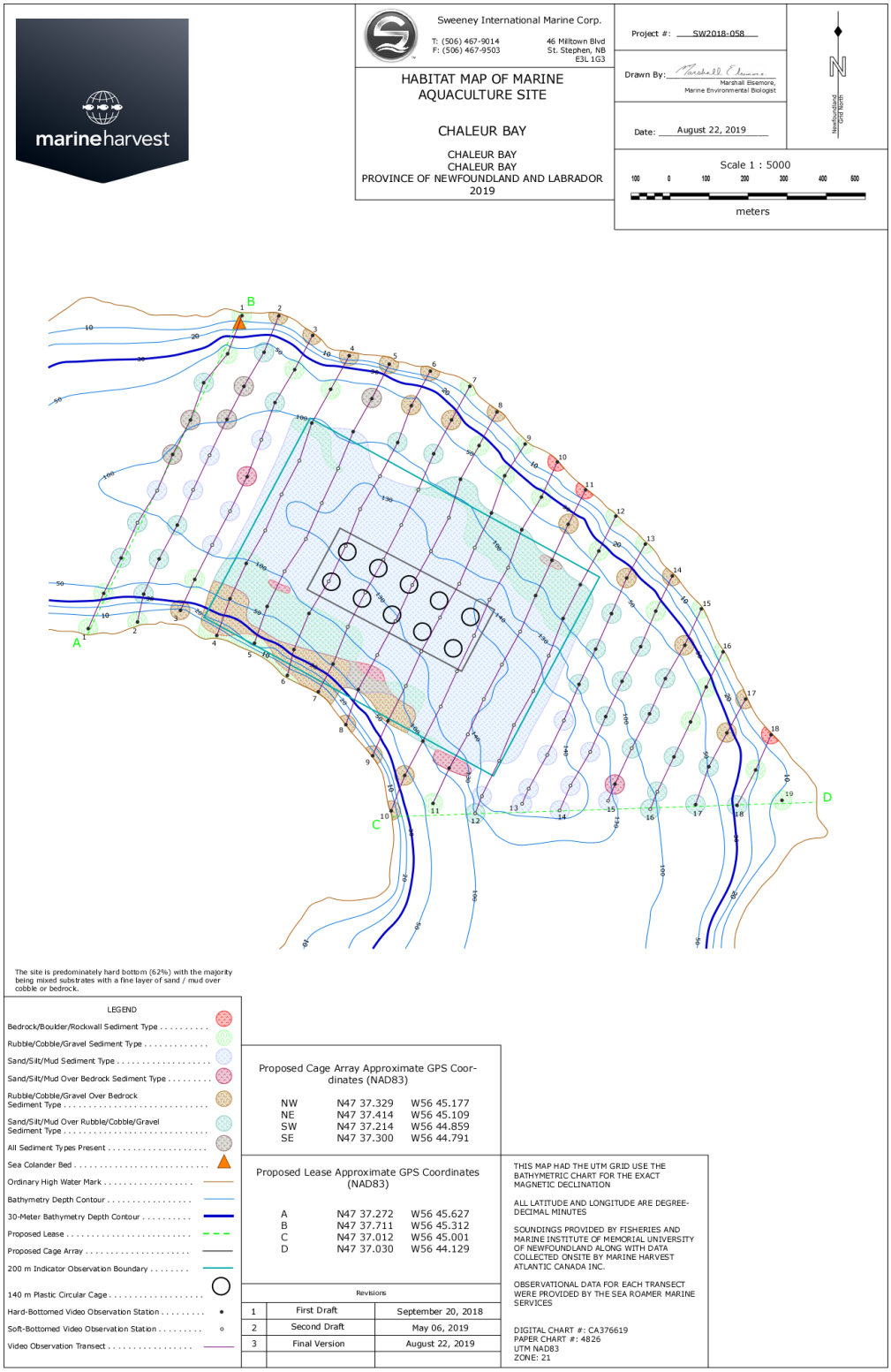


Figure 14.5. Habitat observations at sampling stations in the Chaleur Bay sea farm (June 2018).

Table 14.3. Summary of bottom type and observed flora and fauna at the Chaleur Bay sea farm (June 2018).

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	10	47 37.710	56 45.310	7	Hard				20%	50%	30%					
	100	47 37.657	56 45.340	60	Hard					50%	50%					*Hormathia* Anemone (7), *Cerianthus* Anemone (10), Snow Crab (1), Toad Crab (2)
	200	47 37.617	56 45.390	78	Hard					20%			80%			*Hormathia* Anemone (>20), *Plactopecten* Scallop (1), *Gersemia* Soft Coral (1), Warty Sponge (trace)
	300	47 37.565	56 45.417	96	Hard			45%	40%			15%				Stomphia Anemone (2), Hormathia Anemone (10), Brittle Star (>20), Henricia Seastar (1), Gersemia Soft Coral (14), Breadcrumb Sponge (<5%), Encrusting Ascidian (5%), Green Sea Urchin (2), Geodiidae Sponge (5)
	400	47 37.517	56 45.454	101	Hard			10%		25%			65%			Hormathia Anemone (>20), Stomphia Anemone (3), Gersemia Soft Coral (17), Brittle Star (2), Green Sea Urchin (2), Breadcrumb Sponge (5%), Warty Sponge (<5%), Geodiidae Sponge (9), Shrimp (1), Encrusting Ascidian (5%)
	500	47 37.467	56 45.486	111	Soft								100%			Gersemia Soft Coral (>20), Hormathia Anemone (>20), Red Hake (1), Warty Sponge (<5%), Unidentified Round Sponge (4)
	600	47 37.422	56 45.527	96	Soft					15%			85%			Breadcrumb Sponge (<5%), Hormathia Anemone (>20), Brittle Star (>20), Gersemia Soft Coral (>20), Shrimp (1)
	700	47 37.373	56 45.561	82	Hard					70%	10%		20%			Brittle Star (>20), *Hormathia* Anemone (7), Toad Crab (1), Snow Crab (1), Unidentified Round Sponge (1)
	800	47 37.324	56 45.597	46	Hard					25%	75%					*Plactopecten* Scallop (3), *Asterias* Seastar (1), Atlantic Jackknife Clam (2)
	900	47 37.275	56 45.629	2	Hard					40%	60%					
2	10	47 37.710	56 45.234	1	Hard			30%	30%	30%	10%					
	100	47 37.659	56 45.265	58	Hard					30%	60%		10%			*Plactopecten* Scallop (1), Brittle Star (>20), Hormathia Anemone (3)
	200	47 37.612	56 45.307	81	Hard			40%		40%			20%			Hormathia Anemone (>20), Green Sea Urchin (4), Acadian Redfish (7), Brittle Star (1), Geodiidae Sponge (>20), Breadcrumb Sponge (<5%)
	300	47 37.566	56 45.342	99	Hard	15%				25%			60%			Brittle Star (2), Hormathia Anemone (>20), Gersemia Soft Coral (7), Shrimp (1), Warty

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Sponge (1), Breadcrumb Sponge (trace), Acadian Redfish (1), Snow Crab (1), Geodiidae Sponge (>20), Unidentified Jellyfish (1)
	400	47 37.516	56 45.378	118	Soft								100%			Gersemia Soft Coral (5), Hormathia Anemone (>20), Toad Crap (1), Geodiidae Sponge (2), Worm Tube (>20)
	500	47 37.468	56 45.412	121	Soft								100%			*Gersemia* Soft Coral (>20), *Hormathia* Anemone (>20), Breadcrumb Sponge (trace), Shrimp (1), White Branching Sponge (2)
	600	47 37.419	56 45.445	108	Hard					60%	10%		30%			Gersemia Soft Coral (>20), Hormathia Anemone (>20), Breadcrumb Sponge (<5%), Unidentified Round Sponge (4), Stomphia Anemone (1), Geodiidae Sponge (3)
	700	47 37.372	56 45.483	79	Hard					30%	40%		30%			Hormathia Anemone (>20), Breadcrumb Sponge (<5%), Brittle Star (2), Sea Mouse (1), Cerianthus Anemone (3), Unidentified Worm (1), Unidentified Round Sponge (1)
	800	47 37.323	56 45.515	38	Hard					25%	70%		5%			*Chlamys* Scallop (5), *Asterias* Seastar (1), *Hormathia* Anemone (2)
	860	47 37.284	56 45.528	1	Hard					40%	60%					Cerianthus Anemone (>20), Green Sea Urchin (2)
3	0	47 37.682	56 45.165	4	Hard			30%	30%	30%	10%					*Metridrium* Anemone (>20)
	100	47 37.635	56 45.202	56	Hard					80%	20%					Unidentified Jellyfish (8), *Chlamys* Scallop (4)
	200	47 37.589	56 45.243	94	Hard					30%	30%		40%			Gersemia Soft Coral (4), Hormathia Anemone (>20), Brittle Star (3), Geodiidae Sponge (5), Warty Sponge (trace), Henricia Seastar (1), White Branching Sponge (1)
	300	47 37.537	56 45.271	114	Soft								100%			Warty Sponge (1), *Hormathia* Anemone (>20), *Gersemia* Soft Coral (12), Brittle Star (1),
	400	47 37.486	56 45.301	123	Hard	40%							60%			Gersemia Soft Coral (4), Geodiidae Sponge (8), Hormathia Anemone (12), Unidentified Fish (1), Warty Sponge (3), Shrimp (1)
	500	47 37.438	56 45.336	129	Soft								100%			Gersemia Soft Coral (6), Worm Tube (8), Snake Blenny (3), Winter Flounder (1), Hormathia Anemone (18)
	600	47 37.391	56 45.373	122	Soft								100%			Gersemia Soft Coral (9), Hormathia Anemone (>20), Acadian Redfish (1), Worm Tube (11), White Branching Sponge (3)

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	700	47 37.343	56 45.409	67	Hard					20%	80%					Cerianthus Anemone (6), Hormathia Anemone (8), Unidentified Round Sponge (1)
	790	47 37.300	56 45.439	8	Hard	60%		30%	10%							Green Sea Urchin (2), Metridium Anemone (15), Blue Mussel (>20), Encrusting Ascidian (20%), Henricia Seastar (1)
4	0	47 37.654	56 45.089	1	Hard		60%	20%	20%							*Metridium* Anemone (>20)
	100	47 37.607	56 45.128	56	Hard				20%	40%	40%					Encrusting Sponge (5%), Acadian Redfish (2), Toad Crab (2)
	200	47 37.560	56 45.167	105	Hard					30%			70%			*Hormathia* Anemone (>20)
	300	47 37.508	56 45.193	127	Soft								100%			Snake Blenny (3), *Gersemia* Soft Coral (1), Toad Crab (1)
	400	47 37.461	56 45.230	127	Soft								100%			Acadian Redfish (1), Unidentified Sponge (1), Worm Tube (6)
	500	47 37.411	56 45.264	127	Soft								100%			Worm Tube (5)
	600	47 37.365	56 45.303	91	Hard					20%	35%		45%			*Hormathia* Anemone (>20), Unidentified Sponge (8), *Gersemia* Soft Coral (2)
	700	47 37.316	56 45.337	51	Hard			10%	10%	40%	40%					Breadcrumb Sponge (10%), Green Sea Urchin (1)
	800	47 37.265	56 45.364	1	Hard				10%	40%	40%					Green Sea Urchin (>20), *Cerianthus* Anemone (>20)
5	0	47 37.642	56 45.007	4	Hard		30%	40%			30%					
	100	47 37.594	56 45.043	61	Hard		35%	20%		30%			15%			Green Sea Urchin (2), Breadcrumb Sponge (5%), Toad Crab (1)
	200	47 37.548	56 45.082	91	Hard								100%			Brittle Star (>20), *Hormathia* Anemone (>20), Unidentified Sponge (3), Winter Flounder (1)
	300	47 37.497	56 45.113	121	Soft				10%				90%			*Gersemia* Soft Coral (7), *Hormathia* Anemone (14), Unidentified Sea Star (1),Acadian Redfish (3)
	400	47 37.449	56 45.147	125	Soft								100%			Snake Blenny (4), Acadian Redfish (2), Soft Coral (1), Winter Flounder (2)
	500	47 37.399	56 45.180	127	Soft								100%			*Gersemia* Soft Coral (2)
	600	47 37.354	56 45.224	121	Soft								100%			*Gersemia* Soft Coral (8), *Hormathia* Anemone (>20), Toad Crab (1)
	700	47 37.305	56 45.260	74	Hard					40%	40%		20%			Toad Crab (2), Scallop (3), Green Sea Urchin (1)
	800	47 37.254	56 45.287	25	Hard				20%	30%	50%					
6	0	47 37.632	56 44.922	5	Hard			80%	20%							*Metridium* Anemone (5)
	100	47 37.584	56 44.962	55	Hard			40%		20%	40%					Toad Crab (1), Brittle Star (>20), Plactopecten Scallop (3), Encrusting Sponge (10%), Green Sea Urchin (1), Encrusting Ascidian (<5%), Cerianthus Anemone (>20), Stomphia Anemone (1), Unidentified Jellyfish (1)
	200	47 37.533	56 44.990	90	Hard					40%			60%			*Hormathia* Anemone (>20), *Geodiidae* Sponge (3), Worm Tube (5)
	300	47 37.486	56 45.027	121	Soft								100%			Snake Blenny (2), *Hormathia*

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																anemone (>20), Winter Flounder (1)
	400	47 37.440	56 45.068	133	Soft								100%			*Gersemia* Soft Coral (2), Acadian Redfish (1), Snake Blenny (1), Toad Crab (1)
	500	47 37.389	56 45.098	133	Soft								100%			Snake Blenny (1), *Gersemia* Soft Coral (2)
	600	47 37.340	56 45.133	125	Soft								100%			Worm Tube (2), Winter Flounder (1)
	700	47 37.295	56 45.174	98	Hard					10%	50%		40%			*Hormathia* Anemone (>20), Unidentified Sponge (3), Toad Crab (1)
	800	47 37.245	56 45.205	44	Hard	60%				10%	30%					Breadcrumb Sponge (30%), Acadian Redfish (1), Green Sea Urchin (1), Unidentified Sea Star (2)
	860	47 37.209	56 45.219	5	Hard				50%	50%						*Metridium* Anemone (8), Green Sea Urchin (>20)
7	0	47 37.611	56 44.841	2	Hard				100%							*Metridium* Anemone (>20), Cunner (1), *Asterias* Seastar (1)
	100	47 37.564	56 44.879	34	Hard			20%		30%	50%					*Asterias Seastar (3), Green Sea Urchin (2), Encrusting Sponge (<5%)*
	200	47 37.517	56 44.916	61	Hard					10%	50%		40%			Brittle Star (>20), *Cerianthus* Anemone (12), Green Sea Urchin (2), *Hormathia* Anemone (4), Warty Sponge (trace)
	300	47 37.467	56 44.948	108	Soft					15%			85%			*Hormathia* Anemone (>20), Winter Flounder (1), *Gersemia* Soft Coral (1), Blood Star (1), Unidentified Sponge (1), Unidentified Bryozoan (6)
	400	47 37.418	56 44.983	132	Soft								100%			Snake Blenny (1)
	500	47 37.370	56 45.020	132	Soft								100%			*Hormathia* Anemone (1), Snake Blenny (1), Acadian Redfish (2)
	600	47 37.324	56 45.058	128	Soft								100%			Acadian Redfish (1), Winter Flounder (2), Toad Crab (1), Shrimp (1), Snake Blenny (3)
	700	47 37.276	56 45.094	107	Soft					10%	10%		80%			*Hormathia* Anemone (>20)
	800	47 37.225	56 45.125	57	Hard			20%	20%	20%	40%					Acadian Redfish (1), Breadcrumb Sponge (30%), Serpula (3), Hormathia Anemone (12),Cerianthus Anemone (16)
	870	47 37.186	56 45.155	1	Hard		50%	20%		20%	10%					*Metridium* Anemone (>20)
8	0	47 37.575	56 44.785	1	Hard		40%	30%	30%							*Asterias* Seastar (2)
	100	47 37.528	56 44.822	34	Hard					50%	50%					*Asterias Seastar (2), Chlamys Scallop (1), Brittle star (>20), Ribbon Worm (1)*
	200	47 37.481	56 44.861	74	Hard					65%			35%			Brittle Star (>20), *Hormathia* Anemone (15), *Gersemia* Soft Coral (1)
	300	47 37.428	56 44.885	113	Soft								100%			*Hormathia* Anemone (>20), Unidentified Sponge (2)
	400	47 37.381	56 44.922	130	Soft								100%			Snake Blenny (1), *Gersemia* Soft Coral (1), Shrimp (1)
	500	47 37.334	56 44.961	129	Soft								100%			Shrimp (1), Snake Blenny (1),

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Unidentified Fish (1)
	600	47 37.284	56 44.996	129	Soft								100%			Shrimp (1), Acadian Redfish (2)
	700	47 37.237	56 45.034	109	Soft							100%				*Hormathia* Anemone (>20), Brittle Star (1)
	800	47 37.189	56 45.073	52	Hard		80%						20%			*Hormathia* Anemone (>20)
	900	47 37.140	56 45.099	1	Hard			40%	60%							Green Sea Urchin (>20), *Metridium* Anemone (>20)
9	0	47 37.530	56 44.727	1	Hard					50%	50%					*Cerianthus* Anemone (5), *Plactopecten* Scallop (1)
	100	47 37.486	56 44.770	42	Hard					70%	30%					*Plactopecten* Scallop (6), *Asterias* Seastar (2), Spiny Sun Star (1)
	200	47 37.434	56 44.797	80	Hard					35%	30%		35%			Brittle Star (>20), *Henrica* Seastar (2), *Hormathia* Anemone (18), Unidentified Crab (1)
	300	47 37.386	56 44.832	114	Soft					10%			90%			*Hormathia* Anemone (>20), *Gersemia* Soft Coral (1)
	400	47 37.336	56 44.864	135	Soft								100%			Acadian Redfish (1), Snake Blenny (2), *Gersemia* Soft Coral (1)
	500	47 37.289	56 44.904	135	Soft								100%			Snake Blenny (1)
	600	47 37.242	56 44.943	133	Soft								100%			Snake Blenny (3), Cushion Star (2), Acadian Redfish (1)
	700	47 37.194	56 44.975	104	Soft					10%			90%			Soft Coral (7), *Hormathia* Anemone (>20), Unidentified Sponge (1), Acadian Redfish (1), Snake Blenny (2)
	800	47 37.145	56 45.012	70	Hard					100%						*Hormathia* Anemone (1)
	900	47 37.097	56 45.044	1	Hard			50%		25%	25%					*Metridium Anemone (>20), Green Sea Urchin (>20)*
10	0	47 37.505	56 44.661	1	Hard		100%									Metridium Anemone (>20)
	100	47 37.456	56 44.694	32	Hard				10%	50%	40%					Encrusting Sponge (5%)
	200	47 37.411	56 44.735	65	Hard					50%	30%		20%			Brittle Star (>20), Toad Crab (1)
	300	47 37.358	56 44.763	103	Soft					15%			85%			*Hormathia* Anemone (>20)
	400	47 37.313	56 44.802	138	Soft								100%			Snake Blenny (1), Winter Flounder (1)
	500	47 37.263	56 44.834	137	Soft								100%			Snake Blenny (2), Acadian Redfish (2)
	600	47 37.214	56 44.869	136	Soft								100%			Acadian Redfish (1), Snake Blenny (8), Winter Flounder (2), Unidentified Sponge (1)
	700	47 37.165	56 44.903	134	Soft								100%			Shrimp (8), Winter Flounder (1), *Gersemia* Soft Coral (1), Acadian Redfish (2)
	800	47 37.117	56 44.940	100	Hard					45%	20%		35%			*Hormathia* Anemone (>20), Toad Crab (1)
	900	47 37.069	56 44.978	48	Hard		60%			10%	30%					*Stomphia* Anemone (4), Green Sea Urchin (7), Encrusting Sponge (20%)
	1000	47 37.020	56 45.006	1	Hard			60%		20%	20%					*Metridium* Anemone (>20), Green Sea Urchin (>20)
11	0	47 37.466	56 44.603	1	Hard		100%									Green Sea Urchin (3), *Plactopecten* Scallop (6)
	100	47 37.418	56 44.639	43	Hard		70%			15%	15%					
	200	47 37.368	56 44.673	72	Hard		50%			20%			30%			Brittle Star (>20), *Hormathia*

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Anemone (>20), Green Sea Urchin (1)
	300	47 37.319	56 44.707	109	Hard					30%			70%			Winter Flounder (1), *Hormathia* Anemone (>20), Ocean Eelpout (1)
	400	47 37.269	56 44.739	133	Soft								100%			*Gersemia* Soft Coral (8), *Hormathia* Anemone (>20), Worm Tube (11)
	500	47 37.223	56 44.777	138	Soft								100%			Worm Tube (3), Snake Blenny (2)
	600	47 37.175	56 44.814	136	Soft								100%			Acadian Redfish (1), Shrimp (2), Vase Sponge (1)
	700	47 37.126	56 44.847	137	Soft								100%			Shrimp (14), Snake Blenny (2), Worm Tube (4), Acadian Redfish (1)
	800	47 37.079	56 44.886	114	Hard		40%						60%			Hormathia Anemone (>20), Gersemia Soft Coral (8), Breadcrumb Sponge (15%), Shrimp (2)
	900	47 37.030	56 44.920	55	Hard				15%	40%	45%					Green Sea Urchin (1), *Cerianthus* Anemone (1), Encrusting Sponge (<5%)
12	0	47 37.429	56 44.541	1	Hard					50%	50%					
	100	47 37.381	56 44.576	32	Hard					50%	50%					*Plactopecten* Scallop (12)
	200	47 37.334	56 44.615	63	Hard					60%	20%		20%			*Cerianthus* Anemone (2), *Hormathia* Anemone (15), Unidentified Scallop (3)
	300	47 37.287	56 44.650	99	Hard					30%	30%		40%			Snake Blenny (1), *Hormathia* Anemone (>20)
	400	47 37.235	56 44.680	133	Soft								100%			Snake Blenny (5), *Hormathia* Anemone (3)
	500	47 37.186	56 44.712	140	Soft								100%			Shrimp (11), Snake Blenny (1), Winter Flounder (1), Worm Tube (7)
	600	47 37.139	56 44.752	139	Soft								100%			Snake Blenny (5), Shrimp (6)
	700	47 37.089	56 44.783	138	Soft								100%			Shrimp (7), Snake Blenny (1)
	800	47 37.040	56 44.819	142	Soft								100%			Acadian Redfish (1), Hormathia Anemone (>20), Gersemia Soft Coral (>20), Toad Crab (1), Unidentified Fish (1), Unidentified Flatfish (2), Unidentified Round Sponge
	850	47 37.016	56 44.833	130	Soft					20%			80%			*Hormathia* Anemone (12)
13	0	47 37.390	56 44.480	4	Hard					50%	50%					*Asterias* Seastar (2), *Plactopecten* Scallop (8)
	100	47 37.343	56 44.519	41	Hard			25%		35%	40%					*Plactopecten* Scallop (4), Green Sea Urchin (1), Encrusting Sponge (5%), *Asterias* Seastar (1), *Metridium* Anemone (3)
	200	47 37.294	56 44.550	64	Hard					30%	55%		15%			Brittle Star (>20), *Cerianthus* Anemone (3), *Plactopecten* Scallop (1), Smooth Sun Star (1)
	300	47 37.244	56 44.583	93	Hard					50%			50%			*Hormathia* Anemone (>20), Snow Crab (1), Brittle Star (>20), Worm Tube (>20), Warty Sponge (trace)
	400	47 37.195	56 44.618	118	Hard				10%	30%			60%			Hormathia Anemone (>20), Toad Crab (2), White Branching Sponge (1), Worm Tube (>20), Brittle Star (13), Asterias Seastar (1), Green Sea Urchin (2), Encrusting Sponge (<5%)

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	500	47 37.145	56 44.649	141	Soft								100%			Acadian Redfish (4), *Gersemia* Soft Coral (4), Snake Blenny (3), Worm Tube (>20)
	600	47 37.097	56 44.684	140	Soft								100%			Snake Blenny (5), Shrimp (1), Cushion Star (2)
	700	47 37.050	56 44.722	140	Soft								100%			Snake Blenny (5), Shrimp (2), Worm Tube (5), Acadian Redfish (3), Cushion Star
	750	47 37.029	56 44.736	144	Soft								100%			Worm Tube (3), Shrimp (2), Acadian Redfish (4)
14	0	47 37.346	56 44.425	5	Hard			20%		40%	40%					*Plactopecten* Scallop (10)
	100	47 37.297	56 44.459	33	Hard					50%	50%					*Asterias* Seastar (1), *Plactopecten* Scallop (3), Green Sea Urchin (1)
	200	47 37.247	56 44.491	65	Hard					30%	55%		15%			Brittle Star (>20), *Hormathia* Anemone (4), *Stomphia* Anemone (1), *Cerianthus* Anemone (2)
	300	47 37.199	56 44.529	84	Hard					55%			45%			Brittle Star (>20), Hormathia Anemone (>20), White Branching Sponge (1), Toad Crab (1)
	400	47 37.150	56 44.563	110	Hard					20%	20%		60%			Hormathia Anemone (>20), Cushion Star (1), Worm Tube (>20), Encrusting Ascidian (<5%), Gersemia Soft Coral (1)
	500	47 37.101	56 44.595	135	Soft								100%			*Gersemia* Soft Coral (7), *Hormathia* Anemone (4)
	600	47 37.054	56 44.636	141	Soft								100%			Snow Crab (1), Worm Tube (5), *Gersemia* Soft Coral (5), *Hormathia* Anemone (4), Shrimp (1)
	670	47 37.020	56 44.659	144	Soft								100%			Worm Tube (>20), Gersemia Soft Coral (1), Snake Blenny (1)
15	0	47 37.300	56 44.365	1	Hard					50%	50%					
	100	47 37.249	56 44.400	36	Hard			15%		30%	55%					Green Sea Urchin (2), Encrusting Sponge (5%), *Serpula* (1), *Asterias* Star (1)
	200	47 37.203	56 44.440	67	Hard					30%	55%		15%			Green Sea Urchin (2), Hormathia Anemone (>20), Toad Crab (1), Orange-Footed Sea Cucumber (1), Plactopecten Scallop (1)
	300	47 37.154	56 44.473	87	Hard					50%			50%			Shrimp (3), Snake Blenny (2), *Hormathia* Anemone (>20), Unidentified Round Sponge (3), Acadian Redfish (3), Toad Crab (2)
	400	47 37.106	56 44.510	103	Soft					40%			60%			*Hormathia* Anemone (>20), Encrusting Ascidian (<5%), White Branching Sponge (1)
	500	47 37.056	56 44.544	122	Hard		50%						50%			*Hormathia* Anemone (>20), Snow Crab (1), Encrusting Ascidian (<5%), Worm Tube (3), Breadcrumb Sponge (<5%)
	550	47 37.033	56 44.559	133	Soft								100%			*Hormathia* Anemone (3), *Gersemia*

Chaleur Bay																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Soft Coral (1)
16	0	47 37.240	56 44.321	3	Hard				20%	40%	40%					
	100	47 37.191	56 44.356	38	Hard					60%	40%					*Asterias* Seastar (5), *Plactopecten* Scallop (4)
	200	47 37.142	56 44.388	63	Hard					30%	70%					Brittle Star (>20), *Hormathia* Anemone (>20), *Chlamys* Scallop (1), Toad Crab (1), Green Sea Urchin (4), *Asterias* Seastar (2), Hermit Crab (1)
	300	47 37.094	56 44.423	77	Hard					35%	20%		45%			*Hormathia Anemone (>20), Worm Tube (5), Plactopecten Scallop (2), Toad Crab (1)*
	400	47 37.045	56 44.457	99	Soft					20%			80%			*Hormathia Anemone (>20), Worm Tube (>20), Toad Crab (1), White Branching Sponge (1)*
	450	47 37.021	56 44.472	104	Soft					20%			80%			Toad Crab (1), Brittle Star (1), Unidentified Flatfish (1), *Hormathia* Anemone (>20), Worm Tube (6), Unidentified Sponge (1)
17	0	47 37.174	56 44.275	2	Hard		40%	30%	30%							*Metridium* Anemone (10), Unidentified Larval Fish (>20)
	100	47 37.127	56 44.313	36	Hard		60%			15%	25%					Green Sea Urchin (6), *Asterias* Seastar (1), Encrusting Sponge (5%)
	200	47 37.080	56 44.351	49	Hard					60%	30%		10%			Toad Crab (1), *Plactopecten* Scallop (3)
	300	47 37.027	56 44.378	71	Hard					40%	40%		20%			*Plactopecten* Scallop (3), Brittle Star (12), *Hormathia* Anemone (7), *Cerianthus* Anemone (3), Toad Crab (1)
18	0	47 37.124	56 44.222	2	Hard		100%									*Asterias* Seastar (1)
	100	47 37.075	56 44.254	22	Hard					70%	30%					*Asterias* Seastar (1), Unidentified Fish (1)
	200	47 37.026	56 44.293	25	Hard				20%	60%			20%			Atlantic Rock Crab (1)
19	100	47 37.033	56 44.200	4	Hard					40%	60%					*Cerianthus* Anemone (>20), Sand Dollar (1)

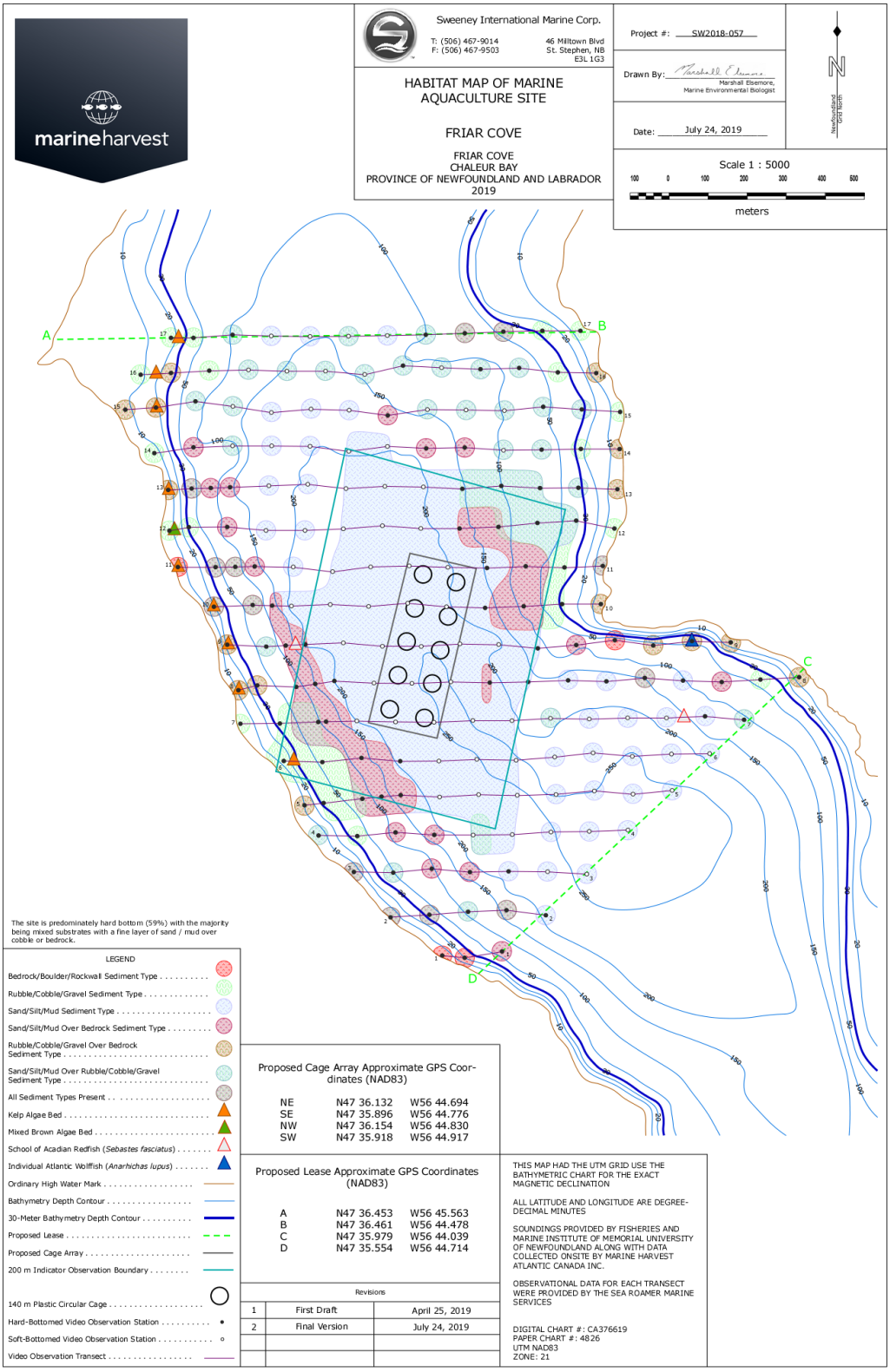


Figure 14.6. Habitat observations at sampling stations in the Friar Cove sea farm (June 2018).

Table 14.4. Summary of bottom type and observed flora and fauna at the Friar Cove sea farm (June 2018).

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 35.598	56 44.643	59	Hard		90%						10%			*Hormathia* Anemone (4), *Henricia* Sea Star (1), Acadian Redfish (2), *Serpula* (6)
	100	47 35.590	56 44.721	20	Hard	100%										*Metridium* Anemone (1), Warty Sponge (<5%), Cunner (3)
	160	47 35.593	56 44.767	1	Hard		40%	60%								*Metridium Anemone* (>20)
2	0	47 35.649	56 44.553	207	Hard								100%			*Hormathia* Anemone (11), Shrimp (1), Brittle Star (2), Sea Cucumber (1), Vase Sponge (1)
	100	47 35.656	56 44.634	166	Hard			5%			20%		75%			*Hormathia* Anemone (2), Shrimp (1), Brittle Star (6)
	200	47 35.654	56 44.713	107	Hard					40%	20%		40%			Unidentified Fish (1), Brittle Star (4), Toad Crab (1), *Hormathia* Anemone (1)
	300	47 35.650	56 44.793	33	Hard		20%	30%	20%	5%	15%		10%			Unidentified Fish (2), Sea Star (2), Toad Crab (1), *Stomphia* Anemone (1)
	400	47 35.647	56 44.873	0	Hard		40%		10%	20%	20%		10%			*Metridium* Anemone (6), Shrimp (1)
3	0	47 35.706	56 44.468	266	Soft								100%			Arrow Worm (>20), Worm Tube (1), Shrimp (>20), Brittle Star (1), Sea Star (1), Sea Cucumber (1)
	100	47 35.709	56 44.549	241	Soft								100%			Shrimp (10)
	200	47 35.710	56 44.629	222	Hard								100%			Toad Crab (1), Shrimp (3), Sea Spider (2), *Hormathia* Anemone (12), Brittle Star (2)
	300	47 35.709	56 44.709	181	Hard		50%						50%			*Hormathia* Anemone (9), Acadian Redfish (2), Shrimp (2), Breadcrumb Sponge (<5%), *Serpula* (17)
	400	47 35.714	56 44.788	98	Hard	40%							60%			*Hormathia Anemone* (>20), *Geodiidae* Sponge (>20), Warty Sponge (<5%)
	500	47 35.709	56 44.867	48	Hard					40%	50%		10%			*Placopecten* Scallop (4)
	600	47 35.710	56 44.948	6	Hard		10%			10%	70%		10%			
4	0	47 35.767	56 44.383	265	Soft								100%			Shrimp (18), Worm Tube (>20), Brittle Star (1)
	100	47 35.765	56 44.462	265	Soft								100%			Shrimp (12), Worm Tube (>20), Arrow Worm (12), Toad Crab (1)
	200	47 35.765	56 44.542	248	Soft								100%			Shrimp (>20), Worm Tube (2), Arrow Worm (2)
	300	47 35.761	56 44.622	239	Soft								100%			Shrimp (>20), Toad Crab (1), Worm Tube (11), Brittle Star (1)
	400	47 35.761	56 44.702	227	Soft				20%				80%			Eelpout (1), *Hormathia* Anemone (9), Arrow Worm (1), Shrimp (10), Unidentified Sponge (4)
	500	47 35.761	56 44.782	179	Hard	80%							20%			Brittle Star (10), *Hormathia* Anemone (8), Acadian Redfish (1), Breadcrumb Sponge (<5%), *Geodiidae* Sponge (>20), *Serpula* (18)
	600	47 35.765	56 44.862	118	Hard	80%							20%			Snow Crab (1), *Serpula* (>20),

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Hormathia Anemone, Brittle Star (1), *Geodiidae* Sponge (>20), Breadcrumb Sponge (<5%), Soft Coral (1), *Henricia* Sea Star (1)
	700	47 35.760	56 44.941	40	Hard					40%	60%					
	800	47 35.761	56 45.021	3	Hard					10%	50%	40%				*Asterias* Sea Star (1)
5	0	47 35.822	56 44.292	254	Soft								100%			Shrimp (>20), Worm Tubes (2), Arrow Worm (>20)
	100	47 35.817	56 44.372	260	Soft								100%			Shrimp (>20), Hagfish (1), Eelpout (1), Worm Tube (>20), *Hormathia* Anemone (2)
	200	47 35.822	56 44.452	250	Soft								100%			Shrimp (>20), *Hormathia* Anemone (1), Arrow Worm (>20)
	300	47 35.817	56 44.531	248	Soft								100%			Shrimp (>20), *Hormathia* Anemone (1), Arrow Worm (>20)
	400	47 35.816	56 44.611	246	Soft								100%			Shrimp (>20), Arrow Worm (2), Worm Tube (6)
	500	47 35.817	56 44.691	240	Soft								100%			Shrimp (>20), Arrow worm (2), Worm Tube (10)
	600	47 35.814	56 44.771	230	Soft								100%			Shrimp (>20), Brittle Star (3), Worm Tube (3)
	700	47 35.817	56 44.851	176	Hard	40%							60%			Breadcrumb Sponge (15%), *Hormathia* Anemone (17), Brittle Star (2)
	750	47 35.814	56 44.890	130	Hard	70%							30%			*Hormathia* Anemone (>20), Acadian Redfish (13), Breadcrumb Sponge (30%), Unidentified Sponge (3), Unidentified Sea Star (1)
	800	47 35.812	56 44.930	74	Hard	70%				10%			20%			*Hormathia* Anemone (>20), Breadcrumb Sponge (15%), Worm Tube (6)
	900	47 35.806	56 45.010	33	Hard					40%	60%					Scallop (3)
	950	47 35.803	56 45.049	10	Hard		80%			5%	15%					
6	0	47 35.873	56 44.214	192	Soft								100%			Shrimp (>20), *Hormathia* Anemone (1), Worm Tube (16)
	100	47 35.873	56 44.293	232	Soft								100%			Shrimp (>20), Arrow Worm (1), Witch Flounder (1), Unidentified Fish (1)
	200	47 35.870	56 44.374	251	Soft								100%			Shrimp (>20), Worm Tube (10), Toad Crab (1), Ocean Pout (1)
	300	47 35.875	56 44.454	237	Soft								100%			Shrimp (>20), Worm Tube (1), Brittle Star (2)
	400	47 35.869	56 44.533	230	Soft								100%			Shrimp (>20), Brittle Star (6), Worm Tube (2), *Hormathia* Anemone (11), Cushion Star (1), Krill (>20)
	500	47 35.865	56 44.613	251	Soft								100%			Unidentified Fish (1), Shrimp (>20), Brittle Star (1), Arrow Worm (2)
	600	47 35.866	56 44.694	248	Soft								100%			Arrow Worm (5), Shrimp (>20)
	700	47 35.864	56 44.772	241	Soft								100%			Shrimp (>20)
	800	47 35.864	56 44.852	215	Hard								100%			Shrimp (>20), *Hormathia* Anemone (>20)
	900	47 35.869	56 44.932	132	Hard	85%							15%			Breadcrumb Sponge (55%), Tube Worm (13), *Hormathia* Anemone (5)

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1000	47 35.863	56 45.012	60	Hard					50%	50%					
	1100	47 35.865	56 45.092	14	Hard				10%	20%	70%					Scallop (1), Ctenophore (2)
7	200	47 35.920	56 44.143	106	Hard					40%	20%		40%			*Placopecten* Scallop (2), Snow Crab (1), *Hormathia* Anemone (>20), Cunner (1), *Serpula* (2)
	300	47 35.925	56 44.223	126	Hard								100%			*Hormathia* Anemone (>20), Winter Flounder (1), *Henricia* Sea Star (1)
	400	47 35.923	56 44.303	188	Soft								100%			Shrimp (>20), Arrow Worm (3), Worm Tube (13), *Hormathia* Anemone (>20)
	500	47 35.923	56 44.383	216	Soft								100%			Shrimp (>20), Brittle Star (1), Arrow Worm (3), *Hormathia* Anemone (4), Soft Coral (1), *Stomphia* Anemone (1), Worm Tube (13), Krill (>20)
	600	47 35.922	56 44.462	220	Soft								100%			Ocean Pout (1), Shrimp (13), Worm Tube (5), Brittle Star (2)
	700	47 35.923	56 44.542	195	Soft					20%			80%			Toad Crab (1), Shrimp (15), Brittle Star (5), *Hormathia* Anemone (19), Winter Flounder (1), Soft Coral (1), Atlantic Sea Poacher (1), Breadcrumb Sponge (<5%)
	800	47 35.920	56 44.622	212	Soft								100%			Soft Coral (11), Shrimp (>20), Toad Crab (1), Unidentified Sponge (1), Arrow Worm (4), Acadian Redfish (1), *Hormathia* Anemone (2)
	900	47 35.920	56 44.702	244	Soft								100%			Shrimp (>20), Worm Tube (5), Arrow Worm (3)
	1000	47 35.918	56 44.782	244	Soft								100%			Shrimp (>20), Worm Tube (11)
	1100	47 35.919	56 44.861	235	Soft								100%			Shrimp (>20)
	1200	47 35.920	56 44.941	200	Soft								100%			*Hormathia* Anemone (8), Toad Crab (1), Shrimp (18), Sea Tadpole (1)
	1280	47 35.315	56 45.006	122	Hard	90%							10%			Breadcrumb Sponge (45%), Tube Worm (10), *Hormathia* Anemone (3)
	1300	47 35.919	56 45.021	99	Hard	50%				10%			40%			*Hormathia* Anemone (20), Tube Worm (11), Unidentified Sponge (3)
	1400	47 35.917	56 45.100	37	Hard				20%	45%	35%					
	1500	47 35.917	56 45.181	3	Hard					50%	50%					
8	0	47 35.979	56 44.029	7	Hard		80%				20%					
	100	47 35.976	56 44.109	42	Hard					70%	30%					*Plactopecten* Scallop (1)
	200	47 35.973	56 44.189	60	Hard	50%							50%			*Serpula* (4), Breadcrumb Sponge (<5%), Warty Sponge (<5%), *Hormathia* Anemone (>20), Soft Coral (1), White Branching Sponge (1)
	300	47 35.975	56 44.269	101	Hard								100%			*Hormathia* Anemone (>20), *Geodiidae* Sponge (>20), Soft Coral (1)
	400	47 35.979	56 44.348	150	Hard			35%		5%			60%			*Hormathia* Anemone (>20), Smooth Sun Star (1), *Serpula* (1), Toad Crab (1)
	500	47 35.974	56 44.427	166	Hard								100%			*Hormathia* Anemone (>20), Shrimp

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(6), Acadian Redfish (2), Warty Sponge (5%)
	600	47 35.976	56 44.506	176	Hard								100%			*Hormathia* Anemone (>20), Winter Flounder (1), Acadian Redfish (1), Shrimp (12), *Geodiidae* Sponge (1)
	700	47 35.974	56 44.588	162	Hard								100%			*Hormathia* Anemone (>20), Unidentified Sponge (15), Shrimp (>20), Brittle Star (1)
	800	47 35.973	56 44.667	229	Hard	70%							30%			*Hormathia* Anemone (>20), Shrimp (17), Soft Coral (2), Unidentified Sponge (>20)
	900	47 35.974	56 44.747	249	Soft								100%			Shrimp (>20), Arrow Worm (20), Unidentified Sponge (10)
	1000	47 35.972	56 44.827	244	Soft								100%			Arrow Worm (>20), Shrimp (>20), Toad Crab (1)
	1100	47 35.973	56 44.906	234	Soft								100%			Shrimp (>20), Arrow Worm (4), Worm Tube (7)
	1200	47 35.976	56 44.987	200	Hard								100%			Shrimp (4), *Hormathia* Anemone (12), Unidentified Sponge (6), Acadian Redfish (1)
	1250	47 35.972	56 45.026	152	Hard	90%							10%			Breadcrumb Sponge (40%), Tube Worm (8), Acadian Redfish (2)
	1300	47 35.968	56 45.066	85	Hard	85%							15%			*Hormathia* Anemone (5), Tube Worm (7), Breadcrumb Sponge (30%), Unidentified Sponge (15), Brittle Star (1)
	1400	47 35.970	56 45.146	33	Hard		65%			25%	10%					Sea Grape Tunicate (2)
	1450	47 35.964	56 45.185	11	Hard		55%			10%	35%					
9	0	47 36.028	56 44.170	2	Hard	10%	50%	25%	5%		10%					
	100	47 36.030	56 44.250	47	Hard		5%	15%	15%	20%	45%					*Plactopecten* Scallop (1), Breadcrumb Sponge (<5%), *Stomphia* Anemone (1), Atlantic Wolffish (1)
	200	47 36.024	56 44.330	51	Hard	50%			25%	25%						Feather Star (3), Sea Star (1), Breadcrumb Sponge (<5%), Acadian Redfish (9), *Stomphia* Anemone (1), *Serpula* (13), *Hymedesmia* Sponge (15%)
	300	47 36.032	56 44.409	59	Hard	100%										*Serpula* (>20), Acadian Redfish (2), Brittle Star (2), Toad Crab (1)
	400	47 36.025	56 44.489	82	Hard	70%							30%			*Hormathia* Anemone (>20), Soft Coral (1), *Serpula* (5), *Hymedesmia* Sponge (<5%), Breadcrumb Sponge (5%)
	500	47 36.021	56 44.568	134	Hard								100%			*Hormathia* Anemone (>20), Brittle Star (1), Worm Tube (10)
	600	47 36.026	56 44.648	207	Soft								100%			*Hormathia* Anemone (15), Shrimp (>20)
	700	47 36.027	56 44.728	234	Soft								100%			Shrimp (>20)
	800	47 36.024	56 44.808	244	Soft								100%			Shrimp (>20), Arrow Worm (15)
	900	47 36.024	56 44.888	231	Soft								100%			Shrimp (>20)
	1000	47 36.029	56 44.968	225	Soft								100%			Shrimp (>20), Arrow Worm (13), Toad Crab (1)
	1100	47 36.027	56 45.047	206	Hard	60%							40%			Shrimp (10), *Hormathia* Anemone

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(>20), Worm Tube (15), Eelpout (1), Unidentified Sponge (4), Acadian Redfish (1)
	1150	47 36.025	56 45.087	129	Hard	75%							25%			Breadcrumb sponge (30%), Hormathia anemone (15)
	1200	47 36.024	56 45.127	65	Hard					50%	30%		20%			*Hormathia* Anemone (1)
	1300	47 36.027	56 45.208	23	Hard			30%	30%	40%						Cunner (2)
10	0	47 36.082	56 44.437	1	Hard		60%				40%					
	100	47 36.082	56 44.517	29	Hard					40%	50%					
	200	47 36.079	56 44.596	85	Hard	75%							25%			*Hormathia* Anemone (>20), Unidentified Sponge (12), Shrimp (1)
	300	47 36.077	56 44.676	172	Hard								100%			*Hormathia* Anemone (14), Shrimp (9), Snake Blenny (1), Toad Crab (1)
	400	47 36.079	56 44.756	207	Soft								100%			Shrimp (>20), Worm Tube (6), Acadian Redfish (1), Unidentified Skate (1)
	500	47 36.084	56 44.836	227	Soft								100%			Shrimp (>20), Toad Crab (1)
	600	47 36.080	56 44.916	226	Soft								100%			Shrimp (>20), Worm Tube (5)
	700	47 36.083	56 44.995	222	Soft								100%			Shrimp (>20), Worm Tube (3)
	800	47 36.081	56 45.075	215	Soft								100%			Shrimp (>20)
	850	47 36.082	56 45.115	144	Hard	80%							20%			Breadcrumb Sponge (40%), Brittle Star (4), Unidentified Fish (1), Unidentified Sponge (8), *Hormathia* Anemone (3), Tube Worm (3)
	900	47 36.082	56 45.155	65	Hard		40%			5%	15%	40%				*Hormathia* Anemone (8), Cushion Star (1), *Hymedesmia* Sponge (<5%)
	1000	47 36.080	56 45.235	20	Hard		30%		5%	20%	35%		10%			*Asterias* Sea Star (3)
11	0	47 36.135	56 44.433	6	Hard		10%	20%	15%	5%	30%		20%			
	100	47 36.133	56 44.512	38	Hard					40%	60%					Scallop (2)
	200	47 36.135	56 44.592	71	Hard	70%							30%			*Hormathia* Anemone (8), Feather Star (5), Unidentified Sponge (>20)
	300	47 36.133	56 44.672	141	Hard								100%			*Hormathia* Anemone (>20)
	400	47 36.134	56 44.752	206	Soft								100%			*Hormathia* Anemone (7), Shrimp (>20), Acadian Redfish (1), Worm Tube (5)
	500	47 36.136	56 44.832	229	Soft								100%			Shrimp (>20), Arrow Worm (>20)
	600	47 36.135	56 44.912	228	Soft								100%			Shrimp (>20), Worm Tubes (3)
	700	47 36.128	56 44.990	225	Soft								100%			Shrimp (>20), Arrow Worm (3), Worm Tube (5)
	800	47 36.135	56 45.071	211	Soft								100%			*Hormathia* Anemone (1), Ocean Pout (1), Shrimp (>20), Arrow Worm (1)
	900	47 36.136	56 45.151	147	Hard	70%							30%			Acadian Redfish (2), *Stomphia* Anemone (>20), Unidentified Fish (4), *Hymedesmia* Sponge (<5%), *Serpula* (12), Colonial Ascidian (10%), Shrimp (1)
	950	47 36.137	56 45.191	92	Hard	40%					10%		50%			*Hymedesmia* Sponge (<5%), Breadcrumb Sponge (<5%), *Asterias* Sea Star (1), *Hormathia* Anemone (3)
	1000	47 36.135	56 45.231	46	Hard		40%			20%	20%		20%			*Hormathia* Anemone (2),

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Hymedesmia Sponge (5%)
	1100	47 36.135	56 45.309	5	Hard	100%										*Asterias* Sea Star (1)
12	0	47 36.187	56 44.409	1	Hard					50%	50%					
	100	47 36.198	56 44.488	36	Hard					60%	40%					Scallop (1), Unidentified Sea Star (1)
	200	47 36.195	56 44.568	74	Hard					30%	40%		30%			*Hormathia* Anemone (4)
	300	47 36.190	56 44.648	115	Hard	60%				10%			30%			*Hormathia* Anemone (18), Unidentified Sponge (2), Toad Crab (1)
	400	47 36.188	56 44.728	165	Hard								100%			*Hormathia* Anemone (>20), Shrimp (>20)
	500	47 36.188	56 44.808	212	Soft								100%			Shrimp (>20)
	600	47 36.192	56 44.887	226	Soft								100%			Shrimp (>20), Arrow Worm (6), Sea Cucumber (1)
	700	47 36.188	56 44.968	225	Soft								100%			Shrimp (>20), Acadian Redfish (1)
	800	47 36.186	56 45.047	212	Soft								100%			Shrimp (>20), Arrow Worm (1), Cushion Star (1)
	900	47 36.186	56 45.127	189	Soft								100%			*Hormathia* Anemone (>20), *Plactopecten* Scallop (7), Toad Crab (1), Unidentified Sponge (<5%)
	1000	47 36.191	56 45.207	119	Hard		60%						40%			*Hormathia* Anemone (>20), *Henricia* Sea Star (1), *Serpula* (>20), Encrusting Sponge (<5%), Warty Sponge (<5%), Cushion Star (1), Colonial Ascidian (5%), Toad Crab (1)
	1100	47 36.191	56 45.286	31	Hard				5%	45%	50%					
	1150	47 36.186	56 45.326	8	Hard					20%	80%					
13	0	47 36.242	56 44.403	1	Hard		50%		30%	20%						Unidentified Scallop (3), *Asterias* Sea Star (6), *Metridium* Anemone (1)
	100	47 36.244	56 44.483	31	Hard				5%	35%	50%		10%			*Chlamys* Scallop (1), *Urticina* Anemone (1), Green Sea Urchin (2), *Serpula* (4), *Asterias* Sea Star (2)
	200	47 36.244	56 44.562	73	Hard					55%	10%		35%			*Hormathia* Anemone (19)
	300	47 36.247	56 44.642	100	Hard					55%			45%			Toad Crab (1), *Hormathia* Anemone (>20), Brachiopod (3)
	400	47 36.243	56 44.722	154	Hard					15%			85%			Eelpout (2), *Hormathia* Anemone (>20), Unidentified Sponge (4), Acadian Redfish (1), Northern Hake (1)
	500	47 36.246	56 44.802	203	Soft								100%			Shrimp (>20), Arrow Worm (7)
	600	47 36.247	56 44.882	217	Soft								100%			Shrimp (>20), Arrow Worm (9)
	700	47 36.244	56 44.962	216	Soft								100%			Shrimp (>20), Arrow Worm (7), Toad Crab (1)
	800	47 36.250	56 45.041	207	Soft								100%			Shrimp (>20), Toad Crab (1)
	900	47 36.248	56 45.121	189	Soft								100%			Shrimp (>20), Acadian Redfish (1), *Hormathia* Anemone (1), Unidentified Sponge (<5%), Cushion Star (1), Snake Blenny (2)
	1000	47 36.246	56 45.201	148	Hard	80%							20%			*Hormathia* Anemone (1), *Serpula* (8), Encrusting Sponge (5%), *Geodiidae* Sponge

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(<5%)
	1050	47 36.241	56 45.240	89	Hard	85%							15%			*Serpula* (>20), Soft Coral (2), Encrusting Sponge (20%), *Asterias* Sea Star (1), Toad Crab (2), Unidentified Fish (1), Colonial Ascidian (10%), *Geodiidae* Sponge (>20)
	1100	47 36.245	56 45.280	40	Hard		10%		15%	25%	30%		20%			*Plactopecten* Scallop (1), *Henricia* Sea Star (1)
	1160	47 36.243	56 45.328	3	Hard		80%				20%					
14	0	47 36.298	56 44.398	1	Hard		50%			10%	40%					*Metridium* Anemone (>20)
	100	47 36.298	56 44.478	21	Hard				40%	20%	40%					Warty Sponge (<5%), Green Sea Urchin (2), *Metridium* Anemone (2)
	200	47 36.297	56 44.558	68	Hard					20%	40%		40%			Toad Crab (1), *Hormathia* Anemone (11), *Cerianthus* Anemone (3), Worm Tube (>20)
	300	47 36.297	56 44.637	94	Soft						30%		70%			*Hormathia* Anemone (>20), Worm Tube (>20), Brittle Star (2)
	400	47 36.301	56 44.717	133	Hard	50%							50%			*Hormathia* Anemone (>20), Acadian Redfish (2), *Geodiidae* Sponge (>20), Brittle Star (1)
	500	47 36.300	56 44.796	182	Hard	80%							20%			*Hormathia* Anemone (4), *Geodiidae* Sponge (>20), Atlantic Cod (1), *Serpula* (5), Breadcrumb Sponge (<5%)
	600	47 36.303	56 44.876	196	Soft								100%			Shrimp (>20), Eelpout (1), Snake Blenny (3)
	700	47 36.296	56 44.956	193	Soft								100%			Shrimp (>20), Snake Blenny (1)
	800	47 36.303	56 45.036	196	Soft								100%			*Cerianthus* Anemone (1), Winter Flounder (1), Shrimp (17), Cushion Star (1)
	900	47 36.304	56 45.115	183	Soft								100%			Acadian Redfish (1), Snow Crab (1), Shrimp (10), Snake Blenny (2)
	1000	47 36.304	56 45.195	162	Soft				5%	10%			85%			*Hormathia* Anemone (>20), *Chlamys* Scallop (1), Hermit Crab (1), *Geodiidae* Sponge (12), Brittle Star (1), Acadian Redfish (1), Shrimp (1)
	1100	47 36.302	56 45.276	95	Hard	80%							20%			Acadian Redfish (3), Encrusting Sponge (15%), *Serpula* (>20), Green Sea Urchin (1), Colonial Ascidian (10%), *Geodiidae* Sponge (>20)
	1200	47 36.294	56 45.357	6	Hard					50%	50%					*Asterias* Sea Star (1), *Chlamys* Scallop (1)
15	0	47 36.350	56 44.396	1	Hard				25%	30%	45%					*Metridium* Anemone (18)
	100	47 36.353	56 44.475	31	Hard					40%	40%		10%			*Plactopecten* Scallop (4)
	200	47 36.357	56 44.555	56	Hard					20%	50%		30%			*Plactopecten* Scallop (5), Toad Crab (1), Green Sea Urchin (1), Shrimp (1), *Cerianthus* Anemone (2), *Hormathia* Anemone (1)
	300	47 36.352	56 44.635	96	Soft						40%		60%			*Hormathia* Anemone (>20), Toad Crab (1), Worm Tube (>20)

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	400	47 36.353	56 44.714	129	Soft				5%				95%			*Hormathia* Anemone (>20), Toad Crab (1), Worm Tube (>20), Acadian Redfish (2), Breadcrumb Sponge (<5%), Warty Sponge (<5%)
	500	47 36.354	56 44.794	142	Soft				5%	trace			95%			*Hormathia* Anemone (>20), Worm Tube (>20), Breadcrumb Sponge (<5%), Acadian Redfish (3), Shrimp (1)
	600	47 36.346	56 44.875	170	Hard	60%			trace				40%			*Hormathia* Anemone (9), Encrusting Sponge (15%), *Serpula* (>20), Shrimp (2), Acadian Redfish (1)
	700	47 36.353	56 44.955	176	Soft								100%			Shrimp (17)
	800	47 36.355	56 45.033	185	Soft								100%			*Hormathia* Anemone (1), Shrimp (12), Thorny Skate (1), Acadian Redfish (1), Unidentified Flatfish (2), *Geodiidae* Sponge (1)
	900	47 36.350	56 45.115	173	Soft								100%			Acadian Redfish (1), Shrimp (1)
	1000	47 36.359	56 45.194	144	Soft					10%			90%			*Hormathia* Anemone (>20), Acadian Redfish (1), Brittle Star (1)
	1100	47 36.366	56 45.272	90	Hard					20%	40%		40%			*Hormathia* Anemone (>20), Shrimp (1)
	1200	47 36.358	56 45.353	18	Hard			40%		20%	40%					
	1280	47 36.355	56 45.416	1	Hard		90%			trace	10%					
16	0	47 36.404	56 44.445	3	Hard		10%	10%	40%	30%	10%					
	100	47 36.405	56 44.525	36	Hard					40%	60%					*Plactopecten* Scallop (7)
	200	47 36.411	56 44.604	69	Hard					40%	40%		20%			*Plactopecten* Scallop (3), Cushion Star (1)
	300	47 36.410	56 44.684	111	Hard					25%	25%		50%			*Hormathia* Anemone (>20), Brittle Star (2)
	400	47 36.412	56 44.764	104	Soft				10%	10%			80%			*Hormathia* Anemone (>20), Soft Coral (1), *Serpula* (5), Brittle Star (2), Shrimp (1), Breadcrumb Sponge (<5%)
	500	47 36.415	56 44.844	104	Hard				25%	40%			35%			Toad Crab (1), Encrusting Sponge (5%), *Hormathia* Anemone (3)
	600	47 36.403	56 44.923	146	Soft					5%			95%			*Hormathia* Anemone (>20), Warty Sponge (5%), Soft Coral (1), Unidentified Fish (1)
	700	47 36.408	56 45.003	166	Soft					5%			95%			*Hormathia* Anemone (>20), Soft Coral (1), Warty Sponge (<5%), Acadian Redfish (3), Vase Sponge (1), Shrimp (2), Brittle Star (1), Worm Tube (>20), Snake Blenny (2)
	800	47 36.408	56 45.083	155	Soft					10%			90%			*Hormathia* Anemone (>20), Soft Coral (6), Warty Sponge (<5%), Snake Blenny (3), Shrimp (1), Brittle Star (1)
	900	47 36.410	56 45.162	128	Soft					10%			90%			*Hormathia* Anemone (>20), *Henricia* Sea Star (1), Breadcrumb Sponge (<5%), Brittle Star (1)

Friar Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1000	47 36.409	56 45.243	80	Hard					40%	60%					*Hormathia* Anemone (>20), Toad Crab (1)
	1100	47 36.406	56 45.322	25	Hard		30%	20%	10%	20%	20%					Cunner (1)
	1180	47 36.404	56 45.384	9	Hard					80%	20%					Sea Star (1), Sea Gooseberry (15)
17	0	47 36.463	56 44.478	1	Hard					30%	70%					*Plactopecten* Scallop (5)
	100	47 36.463	56 44.556	27	Hard					40%	60%					*Plactopecten* Scallop (8), Sea Gooseberry (2), *Henricia* Sea Star (1)
	200	47 36.462	56 44.637	46	Hard	10%	45%	15%	10%				20%			Soft Coral (2), *Hormathia* Anemone (>20)
	300	47 36.460	56 44.716	83	Hard		15%			20%	35%		30%			Brittle Star (>20), *Hormathia* Anemone (>20), Breadcrumb Sponge (5%), Soft Coral (1), Cushion Star (1)
	400	47 36.458	56 44.796	100	Hard				trace	20%	40%		40%			*Hormathia* Anemone (>20), Soft Coral (2), Breadcrumb Sponge (<5%), Brittle Star (2), Warty Sponge (<5%), Atlantic Cod (1)
	500	47 36.457	56 44.876	121	Soft								100%			*Hormathia* Anemone (>20), *Henricia* Sea Star (1), Warty Sponge (<5%)
	600	47 36.456	56 44.956	140	Soft					5%			95%			*Hormathia* Anemone (>20), Soft Coral (7), Acadian Redfish (2), Breadcrumb Sponge (<5%)
	700	47 36.456	56 45.035	148	Soft								100%			*Hormathia* Anemone (18), Soft Coral (12), Breadcrumb Sponge (<5%)
	800	47 36.457	56 45.115	134	Soft								100%			Soft Coral (>20), *Hormathia* Anemone (>20), Breadcrumb Sponge (<5%)
	900	47 36.459	56 45.195	105	Hard					30%	30%		40%			*Hormathia* Anemone (>20), Snake Blenny (2)
	1000	47 36.455	56 45.275	34	Hard				10%	40%	50%					*Asterias* Sea Star (1)
	1060	47 36.455	56 45.322	14	Hard				30%	40%	30%					

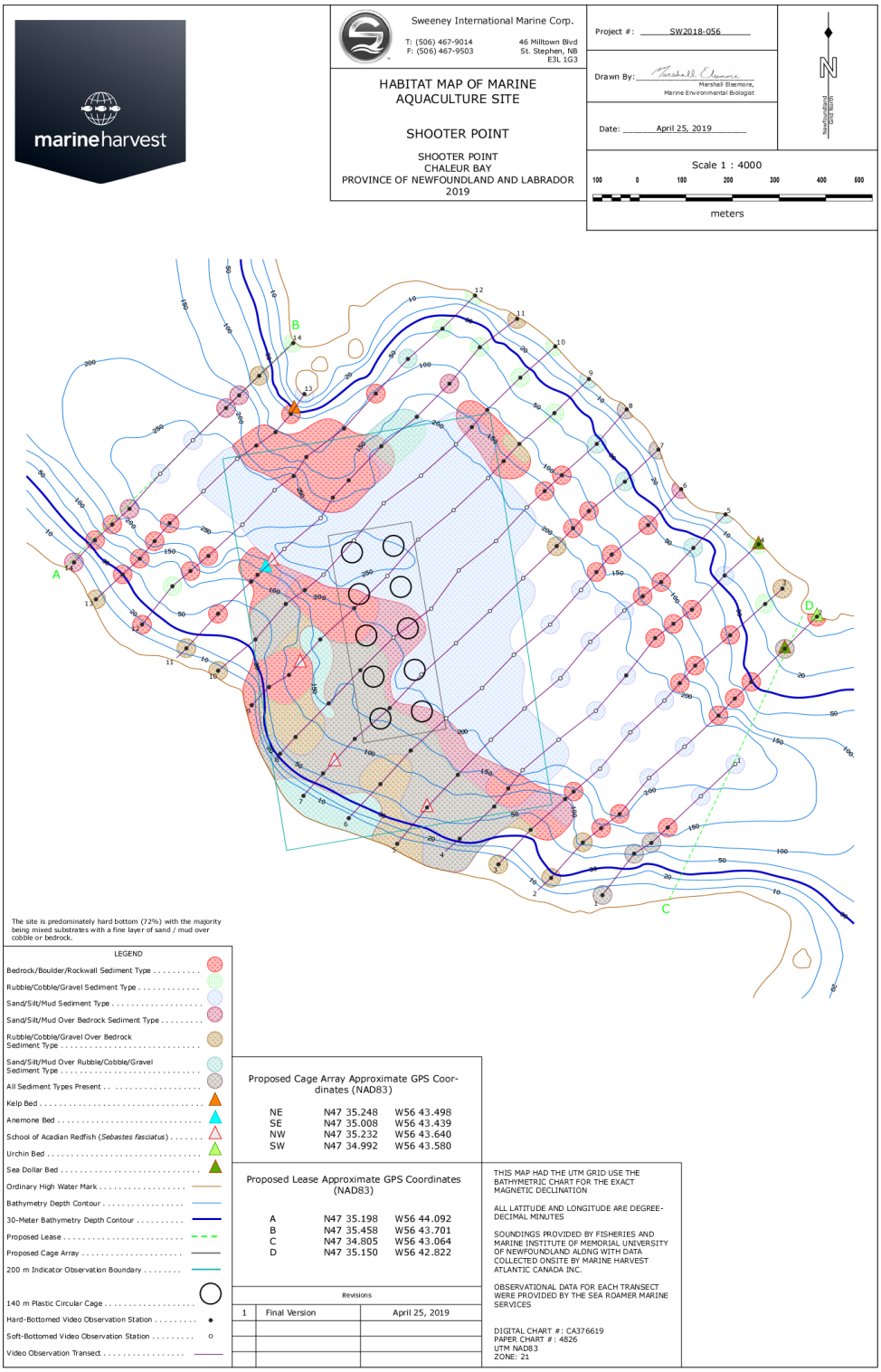


Figure 14.7. Habitat observations at sampling stations in the Shooter Point sea farm (June 2018).

Table 14.5. Summary of bottom type and observed flora and fauna at the Shooter Point sea farm (June 2018).

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 34.968	56 42.946	222	Soft								100%			Krill (>20), Brittle Star (1), Sand Shrimp (5), Arrow Worm (4)
	100	47 34.931	56 43.005	177	Soft								100%			Sand Shrimp (6), Toad Crab (1), Arrow Worm (3), *Hormathia* Anemone (3), Acadian Redfish (1), Snake Blenny (1), Brittle Star (1)
	200	47 34.895	56 43.062	177	Hard		100%									Round Sponge (2), Warty Sponge (2), *Serpula* (5), *Hormathia* Anemone (2), White Branching Sponge (2), Finger Sponge (1), *Geodiidae* Sponge (>20), White Encrusting Sponge (<5%), Feather Star (1)
	250	47 34.877	56 43.090	127	Hard	40%	45%			5%			10%			Breadcrumb Sponge (20%), Round Sponge (1), White Encrusting Sponge (10%), *Serpula* (4), *Geodiidae* Sponge (>20)
	300	47 34.855	56 43.120	53	Hard		45%				35%	20%				Unidentified Fish Fry (1), *Serpula* (>20), Breadcrumb Sponge (10%), Brittle Star (2), White Encrusting Sponge (10%), Northern Sea Star (1)
	400	47 34.817	56 43.174	2	Hard			20%	25%	40%	5%	10%				*Metridium* Anemone (9), Pelagic Polychaete (2), Ctenophore (3), Green Sea Urchin (13)
2	0	47 35.138	56 42.805	0	Hard		100%									Green Sea Urchin (>20), *Metridium* Anemone (>20)
	100	47 35.101	56 42.861	15	Hard		25%				55%	20%				Green Sea Urchin (>20), White Encrusting Sponge (<5%), *Urticina* Anemone (2), Sand Dollar (>20), Scallop (1)
	200	47 35.063	56 42.918	30	Hard		90%	10%								Brittle Star (>20), Green Sea Urchin (1), *Serpula* (>20), Sculpin (1), Scallop (2)
	250	47 35.040	56 42.941	65	Hard		100%									Brittle Star (>20), *Hormathia* Anemone (3), Green Sea Urchin (5), Unidentified Sea Star (1)
	300	47 35.024	56 42.974	150	Hard	100%										Cunner (1), Green Sea Urchin (1), *Hormathia* Anemone (9), White Encrusting Sponge (15%), *Geodiidae* Sponge (>20), *Serpula* (7), Warty Sponge (3), Hydroids (>20), Round Sponge (1)
	400	47 34.988	56 43.033	231	Soft								100%			Arrow Worm (14), Krill (13), Sand Shrimp (5), Worm Tubes (>20), Sand Dollar (6)
	500	47 34.952	56 43.094	233	Soft								100%			Brittle Star (19), Sand Shrimp (7), Krill (12), Arrow Worm (4)
	600	47 34.911	56 43.144	202	Hard	40%	60%									Sand Shrimp (6), Feather Star (4), Atlantic Rock Crab (1), Acadian Redfish (1), Green Sea Urchin

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(>20), Sand Dollar (1), *Hormathia* Anemone (>20), *Stomphia* Anemone (2), Blood Star (1)
	650	47 34.890	56 43.171	145	Hard	100%										Warty Sponge (2), *Serpula* (5), White Encrusting Sponge (15%), *Hormathia* Anemone (2), Brittle Star (10), Round Sponge (1), Toad Crab (1)
	700	47 34.878	56 43.207	102	Hard			35%	40%		25%					White Encrusting Sponge (5%), *Hormathia* Anemone (5), *Serpula* (>20), Acadian Redfish (11), Brittle Star (3), Warty Sponge (1), *Geodiidae* Sponge (2)
	800	47 34.837	56 43.262	28	Hard		15%	45%	25%		15%					Cunner (8), Breadcrumb Sponge (10%), White Encrusting Sponge (10%), Bowerbanks Sponge (5%), *Cerianthid* Anemone (1), Northern Sea Star (1)
3	50	47 35.171	56 42.864	3	Hard		65%		10%	25%						Pelagic Polychaete (1), Green Sea Urchin (>20), Cunner (1), *Metridium* Anemone (>20)
	100	47 35.153	56 42.894	14	Hard				10%		90%					Ctenophore (13), Green Sea Urchin (8), Lug Worm Casting (1)
	200	47 35.117	56 42.954	44	Hard		100%									Brittle Star (>20), Green Sea Urchin (10), Northern Sea Star (1), Scallop (1)
	300	47 35.082	56 43.014	124	Hard	100%										*Geodiidae* Sponge (>20), White Encrusting Sponge (5%), *Hormathia* Anemone (>20), Green Sea Urchin (1), Acadian Redfish (1)
	350	47 35.057	56 43.034	178	Hard	100%										*Geodiidae* Sponge (>20), Breadcrumb Sponge (5%), White Encrusting Sponge (10%), Krill (1), Northern Sea Star (3), Warty Sponge (1), Acadian Redfish (1), Chalice Sponge (1), Green Sea Urchin (4)
	400	47 35.042	56 43.067	236	Soft								100%			Sand Shrimp (12), Acadian Redfish (1), Arrow Worm (>20), White Hake (1), Krill (>20)
	500	47 35.005	56 43.125	238	Soft								100%			Arrow Worm (4), Sand Shrimp (12), Krill (11), Brittle Star (3), Feather Star (2)
	600	47 34.963	56 43.177	235	Soft								100%			Sand Shrimp (10), Brittle Star (>20), Krill (>20), Arrow Worm (6), Sea Spider (1)
	675	47 34.938	56 43.222	141	Hard	100%										White Encrusting Sponge (25%), *Serpula* (>20), *Geodiidae* Sponge (>20), *Hormathia* Anemone (2)
	700	47 34.928	56 43.237	90	Hard		80%						20%			Breadcrumb Sponge (20%), Feather Star (11), Round Sponge (1), Northern Sea Star (1), *Hormathia* Anemone (>20), Green Sea Urchin (1)
	800	47 34.893	56 43.297	38	Hard		90%			10%						Green Sea Urchin (1), *Stomphia* Anemone (1), Unidentified Sea Star

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(1)
	900	47 34.853	56 43.352	1	Hard			20%	40%	40%						Green Sea Urchin (>20), Ctenophore (11), *Metridium* Anemone (10)
4	0	47 35.222	56 42.905	2	Hard				25%	55%	20%					Ctenophore (6), Sand Dollar (>20)
	100	47 35.186	56 42.963	20	Hard							100%				Sand Dollar (>20), Ctenophore (3)
	200	47 35.147	56 43.019	88	Hard		100%									*Hormathia* Anemone (>20), Bowerbanks Sponge (5%), White Encrusting Sponge (10%), Worm Tubes (13)
	250	47 35.130	56 43.047	126	Hard	100%										*Geodiidae* Sponge (>20), Round Sponge (2), Blood Star (1), Chalice Sponge (1), *Hormathia* Anemone (12), Warty Sponge (1), Spiny Sunstar (1)
	300	47 35.114	56 43.082	183	Hard		100%									*Hormathia* Anemone (4), Warty Sponge (1), Round Sponge (2), *Geodiidae* Sponge (>20), *Stomphia* Anemone (1), White Encrusting Sponge (5%), Sand Shrimp (1), *Serpula* (1), Green Sea Urchin (3), Bowerbanks Sponge (<5%)
	400	47 35.071	56 43.132	228	Hard								100%			Worm Tubes (15), Arrow Worm (12), Krill (>20), Sand Shrimp (3), Brittle Star (6), Unidentified Anemone (1)
	500	47 35.030	56 43.184	236	Soft								100%			Krill (>20), Brittle Star (12), Worm Tubes (7), Arrow Worm (10), Sand Shrimp (3), Toad Crab (1)
	600	47 34.997	56 43.248	236	Soft								100%			*Pendalus* Shrimp (2), Arrow Worm (7), Krill (9), Brittle Star (3), Unidentified Fish (1)
	700	47 34.962	56 43.310	221	Soft								100%			*Hormathia* Anemone (8), *Stomphia* Anemone (2), Unidentified Sponge (1), Brittle Star (2), Feather Star (1)
	750	47 34.942	56 43.335	143	Hard	60%	40%									*Hormathia* Anemone (11), Breadcrumb Sponge (10%), White Branching Sponge (2), *Geodiidae* Sponge (16), Round Sponge (1), Sand Shrimp (1), Brittle Star (2), *Serpula* (>20)
	800	47 34.920	56 43.359	85	Hard		55%	10%			30%	5%				Breadcrumb Sponge (5%), *Serpula* (>20), Feather Star (1), *Hormathia* Anemone (17), White Branching Sponge (1)
	900	47 34.883	56 43.418	38	Hard			50%	40%			10%				Cunner (3), Breadcrumb Sponge (10%), Chalice Sponge (5%), Encrusting Sponge (10%), Northern Sea Star (1), Round Sponge (1), Spiny Sunstar (1)
5	0	47 35.257	56 42.961	1	Hard				10%	50%	20%	20%				Ctenophore (4), Unidentified Fish Fry (3), Sand Dollar (>20), Scallop (1), Green Sea Urchin (7), *Metridium* Anemone (2)
	100	47 35.218	56 43.016	34	Hard						40%	60%				Northern Sea Star (1), Green Sea

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Urchin (>20), Lug Worm Casting (1), Scallop (1)
	200	47 35.179	56 43.072	96	Hard	100%										*Hormathia* Anemone (7), Green Sea Urchin (3), *Geodiidae* Sponge (>20), *Serpula* (5), White Encrusting Sponge (15%), Breadcrumb Sponge (<5%)
	250	47 35.164	56 43.104	144	Hard	100%										*Geodiidae* Sponge (>20), Acadian Redfish (3), *Serpula* (3), *Stomphia* Anemone (1), White Encrusting Sponge (10%), Breadcrumb Sponge (<5%), *Hormathia* Anemone (1)
	300	47 35.146	56 43.135	204	Soft								100%			Sand Shrimp (8), Toad Crab (2), Winter Flounder (1), Acadian Redfish (1), Snake Blenny (1), Winter Skate (1), *Hormathia* Anemone (2)
	400	47 35.110	56 43.193	220	Soft								100%			Krill (>20), Sand Shrimp (8), Brittle Star (1), Arrow Worm (2)
	500	47 35.068	56 43.245	236	Soft								100%			Worm Tube (10), Brittle Star (6), Sand Shrimp (2), Krill (>20), Arrow Worm (>20)
	600	47 35.033	56 43.306	233	Soft								100%			Brittle Star (1), Sand Shrimp (8), Cushion Star (1), Northern Seastar (1), Arrow Worm (12), Krill (>20)
	700	47 34.997	56 43.364	214	Soft								100%			Sand Shrimp (2), Toad Crab (1), Green Sea Urchin (2), Scallop (1), *Stomphia* Anemone (2), Sea Spider (1)
	800	47 34.957	56 43.421	146	Hard	50%					25%	25%				*Hormathia* Anemone (1), Brittle Star (9), Breadcrumb Sponge (10%), *Stomphia* Anemone (1), Warty Sponge (1)
	900	47 34.919	56 43.474	78	Hard			45%			35%	20%				*Hormathia* Anemone (8), *Geodiidae* Sponge (7), Breadcrumb Sponge (5%), Warty Sponge (1), White Branching Sponge (2), Acadian Redfish (1), Feather Star (1), Brittle Star (3), *Serpula* (1)
	1000	47 34.877	56 43.525	1	Hard			70%	20%		10%					*Metridium* Anemone (>20), Green Sea Urchin (>20), Ctenophore (1)
6	0	47 35.286	56 43.037	1	Hard			30%				70%				*Metridium* Anemone (>20), Green Sea Urchin (>20), Sand Dollar (>20), Ctenophore (3)
	100	47 35.245	56 43.094	60	Hard		100%									Toad Crab (1), Barnacles (9)
	200	47 35.211	56 43.156	125	Hard	100%										Cunner (7), *Geodiidae* Sponge (>20), *Hormathia* Anemone (>20), Bowerbanks Sponge (<5%), White Encrusting Sponge (<5%), Breadcrumb Sponge (<5%), Green Sea Urchin (1)
	250	47 35.191	56 43.182	180	Hard	100%										*Geodiidae* Sponge (>20), *Serpula* (3), Krill (1), White Encrusting Sponge (10%), Breadcrumb Sponge (<5%)
	300	47 35.170	56 43.209	225	Soft								100%			Sand Shrimp (16), Brittle Star (2), *Stomphia* Anemone (7), Green Sea

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Urchin (1), Toad Crab (1)
	400	47 35.130	56 43.262	233	Soft								100%			Ocean Pout (1), Krill (>20), Arrow Worm (6), Sand Shrimp (2), Mud Star (1), Worm Tube (8)
	500	47 35.095	56 43.324	237	Soft								100%			Snow Crab (1), Sea Spider (1), Sand Shrimp (1), Brittle Star (9), Arrow Worm (2), Krill (>20)
	600	47 35.057	56 43.379	231	Soft								100%			Grenadier (1), Feather Star (1), Sea Spider (1), Brittle Star (2), Arrow Worm (1), *Hormathia* Anemone (1)
	700	47 35.022	56 43.440	200	Soft			20%					80%			*Hormathia* Anemone (13), Brittle Star (7), *Stomphia* Anemone (3), Sea Spider (1), Sand Shrimp (1)
	800	47 34.985	56 43.501	140	Hard			20%		40%			40%			*Serpula* (2), Brittle Star (5), Sea Spider (1), *Hormathia* Anemone (8), Northern Sea Star (1), Sand Shrimp (1), Warty Sponge (1)
	900	47 34.946	56 43.553	65	Hard			60%	30%	10%						Feather Star (5), Acadian Redfish (7) , *Hormathia* Anemone (4), Breadcrumb Sponge (10%), *Urticina* Anemone (1), *Serpula* (2)
	1000	47 34.907	56 43.608	6	Hard				40%		45%	15%				Ctenophore (1)
	0	47 35.332	56 43.076	1	Hard		15%				20%	65%				Ctenophore (14)
	100	47 35.295	56 43.133	37	Hard					85%	10%	5%				Green Sea Urchin (7), Sand Dollar (6)
	200	47 35.261	56 43.195	111	Hard	100%										Soft Coral (3), *Hormathia* Anemone (>20), Breadcrumb Sponge (5%), *Geodiidae* Sponge (>20), *Serpula* (3), White Encrusting Sponge (5%), Round Sponge (1)
	250	47 35.242	56 43.226	151	Hard	100%										Warty Sponge (1), *Geodiidae* Sponge (>20), *Hormathia* Anemone (4), Arrow Worm (1), Round Sponge (2), White Encrusting Sponge (5%), Breadcrumb Sponge (<5%), *Serpula* (3)
7	300	47 35.221	56 43.250	213	Hard		70%			10%	20%					*Hormathia* Anemone (1), Krill (14), Brittle Star (2), Sand Shrimp (7), Toad Crab (1), Green Sea Urchin (2)
	400	47 35.184	56 43.308	235	Soft								100%			Winter Flounder (1), Krill (>20)
	500	47 35.146	56 43.365	242	Soft								100%			Arrow Worm (12), Sand Shrimp (2), Unidentified Sea Star (1), Krill (5)
	600	47 35.109	56 43.423	234	Soft								100%			Sand Shrimp (9), Krill (>20), Arrow Worm (6)
	700	47 35.073	56 43.482	219	Soft								100%			Brittle Star (1), Sand Shrimp (9), *Stomphia* Anemone (1)
	800	47 35.034	56 43.537	180	Hard			25%		25%			50%			*Hormathia* Anemone (8), *Stomphia* Anemone (2), Sand Shrimp (5), Brittle Star (2) Breadcrumb Sponge (5%), Acadian Redfish (1), Unidentified Sponge (1), Brittle Star (1)
	900	47 34.999	56 43.597	125	Hard	30%	20%			10%	30%		10%			*Hormathia* Anemone (15), *Stomphia*

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Anemone (7), White Encrusting Sponge (10%), Round Sponge (3), Breadcrumb Sponge (20%), Acadian Redfish (2), *Serpula* (>20), *Geodiidae* Sponge (6)
	1000	47 34.959	56 43.651	54	Hard		60%		10%	10%		20%				
	1060	47 34.933	56 43.685	4	Hard					40%	45%	15%				
8	0	47 35.379	56 43.130	1	Hard		50%			35%		15%				Ctenophore (>20)
	100	47 35.339	56 43.181	35	Hard					5%	60%	35%				Scallop (6), Green Sea Urchin (2), Snake Blenny (1), Ctenophore (3)
	200	47 35.303	56 43.241	104	Hard	100%										Breadcrumb Sponge (5%), White Encrusting Sponge (15%), *Geodiidae* Sponge (>20), *Serpula* (>20), White Branching Sponge (2), Brittle Star (1), *Hormathia* Anemone (1), Cunner (14)
	250	47 35.284	56 43.271	160	Hard	100%										*Hormathia* Anemone (6), Cunner (1), Acadian Redfish (1), *Geodiidae* Sponge (6)
	300	47 35.266	56 43.301	196	Soft								100%			Sand Shrimp (>20), Arrow Worm (4)
	400	47 35.227	56 43.354	236	Soft								100%			Sand Shrimp (7), Arrow Worm (6), Krill (>20), Toad Crab (1), *Stomphia* Anemone (5), *Hormathia* Anemone (2), Feather Star (1), Round Sponge (6)
	500	47 35.193	56 43.418	243	Soft								100%			Toad Crab (1), Krill (>20), Sand Shrimp (2), *Hormathia* Anemone (2), Brittle Star (1)
	600	47 35.149	56 43.465	241	Soft								100%			Sand Shrimp (18), Cushion Star (1), *Stomphia* Anemone (5), Feather Star (3), Brittle Star (6)
	700	47 35.116	56 43.530	200	Soft								100%			Sand Shrimp (5), Green Sea Urchin (1), Brittle Star (1)
	800	47 35.078	56 43.587	154	Hard			20%	10%	15%	15%	40%				*Hormathia* Anemone (4), *Stomphia* Anemone (2), Breadcrumb Sponge (15%), Brittle Star (2), Unidentified Sea Star (1), Sand Shrimp (3)
	900	47 35.040	56 43.641	151	Hard				20%	50%	20%	10%				Unidentified Fish (1)
	1000	47 35.001	56 43.698	75	Hard		65%	5%		20%	10%					Breadcrumb Sponge (5%), White Encrusting Sponge (5%), *Serpula* (1), *Hormathia* Anemone (1)
	1050	47 34.982	56 43.725	49	Hard			50%	20%	10%		20%				
9	0	47 35.414	56 43.194	1	Hard					10%	30%	60%				Ctenophore (>20)
	100	47 35.375	56 43.253	43	Hard					15%	85%					Ctenophore (2), Green Sea Urchin (1)
	200	47 35.339	56 43.313	119	Hard	50%				50%						Feather Star (2), *Hormathia* Anemone (7), Unidentified Fish (8), *Geodiidae* Sponge (7), Cunner (1), Northern Sea Star (1)
	250	47 35.318	56 43.338	159	Hard	100%										*Geodiidae* Sponge (>20)
	300	47 35.300	56 43.367	208	Soft								100%			Sand Shrimp (>20), Arrow Worm (1), Krill (1), *Cerianthid* Anemone (5), Round Sponge (1)

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	400	47 35.263	56 43.426	232	Soft								100%			Sand Shrimp (9), Krill (5)
	500	47 35.229	56 43.487	244	Soft								100%			Sand Shrimp (1), Krill (>20), Toad Crab (1)
	600	47 35.187	56 43.540	246	Soft								100%			Brittle Star (4), Winter Flounder (1), *Stomphia* Anemone (1), Arrow Worm (1), Krill (>20), Sand Shrimp (7)
	700	47 35.150	56 43.597	208	Hard	100%										*Geodiidae* Sponge (12), *Hormathia* Anemone (>20), Brittle Star (>20), Snailfish (1), White Encrusting Sponge (5%), Soft Coral (1), Green Sea Urchin (3), Breadcrumb Sponge (10%), *Serpula* (>20)
	800	47 35.114	56 43.655	168	Hard					50%	30%		20%			*Hormathia* Anemone (6), Brittle Star (12), Sand Shrimp (1)
	900	47 35.073	56 43.709	121	Hard	100%										Round Sponge (4), *Hormathia* Anemone (4), Breadcrumb Sponge (15%), White Encrusting Sponge (5%), Warty Sponge (6), *Geodiidae* Sponge (>20), *Serpula* (>20), Brittle Star (2)
	950	47 35.059	56 43.743	66	Hard		100%									White Encrusting Sponge (5%), Round Sponge (4), Green Sea Urchin (2), *Geodiidae* Sponge (>20)
	1000	47 35.038	56 43.773	2	Hard		100%									Ctenophore (1), *Metridium* Anemone (>20), Green Sea Urchin (>20), Northern Sea Star (1)
10	0	47 35.452	56 43.251	1	Hard					80%	20%					Ctenophore (>20), Scallop (1)
	100	47 35.416	56 43.311	39	Hard					100%						Scallop (14)
	200	47 35.379	56 43.368	103	Hard	30%	70%									*Hormathia* Anemone (5)
	250	47 35.359	56 43.395	166	Hard	80%							20%			*Hormathia* Anemone (>20), *Geodiidae* Sponge (>20), Toad Crab (2), Atlantic Rock Crab (1), Brittle Star (2), Sand Shrimp (7)
	300	47 35.339	56 43.422	198	Soft								100%			Sand Shrimp (>20), Brittle Star (5)
	400	47 35.303	56 43.482	222	Soft								100%			Feather Star (2), Brittle Star (3), Krill (17), Sand Shrimp (1), Arrow Worm (1)
	500	47 35.271	56 43.546	229	Soft								100%			Krill (>20), Sand Shrimp (7), Toad Crab (1), Arrow Worm (1), Feather Star (1), Brittle Star (1)
	600	47 35.228	56 43.597	255	Soft								100%			Krill (>20), Arrow Worm (3), Sand Shrimp (4)
	700	47 35.189	56 43.649	248	Soft								100%			Sand Shrimp (>20), Brittle Star (4), *Stomphia* Anemone (1)
	750	47 35.171	56 43.681	208	Hard	100%										*Serpula* (>20), Breadcrumb Sponge (10%), *Hormathia* Anemone (>20), Finger Sponge (2), Acadian Redfish (7), White Encrusting Sponge (20%), Brittle Star (1), Northern Sea Star (1), *Geodiidae* Sponge (>20), Warty Sponge (1)
	800	47 35.155	56 43.714	72	Hard	70%				10%			20%			Feather Star (>20), White Encrusting Sponge (15%), Breadcrumb Sponge

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(30%), *Hormathia* Anemone (4), Round Sponge (4)
	900	47 35.114	56 43.766	36	Hard		10%	10%		10%	70%					Encrusting White Sponge (10%), *Serpula* (1), Round Sponge (1), Branching White Sponge (1), Northern Sea Star (1)
	1000	47 35.078	56 43.830	1	Hard			70%	20%	10%						Green Sea Urchin (>20), *Metridium* Anemone (19)
11	0	47 35.484	56 43.317	1	Hard			25%	50%	25%						Ctenophore (1), *Metridium* Anemone (6), Green Sea Urchin (>20)
	100	47 35.451	56 43.381	50	Hard					20%	80%					Atlantic Rock Crab (1), Green Sea Urchin (1)
	200	47 35.409	56 43.433	136	Hard	70%							30%			*Geodiidae* Sponge (>20), White Encrusting Sponge (<5%), *Hormathia* Anemone (5), Atlantic Rock Crab (1), Brittle Star (1)
	300	47 35.371	56 43.489	196	Hard					80%			20%			*Hormathia* Anemone (>20), Arrow Worm (2), Krill (>20)
	400	47 35.337	56 43.550	201	Hard	75%				10%	15%					*Hormathia* Anemone (5), Sand Shrimp (4), Arrow Worm (3), Krill (3)
	500	47 35.298	56 43.606	164	Hard	100%										*Hormathia* Anemone (12), Green Sea Urchin (3), *Geodiidae* Sponge (>20), Acadian Redfish (3), Breadcrumb Sponge (10%), White Encrusting Sponge (30%), *Serpula* (1), Arrow Worm (1), Warty Sponge (2), Feather Star (1), Brittle Star (>20), Round Sponge (1), Soft Coral (1)
	550	47 35.278	56 43.633	193	Hard	100%										*Geodiidae* Sponge (>20), *Serpula* (1), *Hormathia* Anemone (8), Breadcrumb Sponge (5%), White Encrusting Sponge (10%), Soft Coral (1)
	600	47 35.254	56 43.654	260	Soft								100%			Acadian Redfish (1), Ocean Pout (3), Sand Shrimp (10), Krill (>20), Arrow Worm (3)
	700	47 35.219	56 43.716	267	Soft								100%			*Hormathia* Anemone (>20), Breadcrumb Sponge (5%), Brittle Star (6), Sand Shrimp (1)
	780	47 35.189	56 43.762	122	Hard	100%										White Encrusting Sponge (20%), Breadcrumb Sponge (5%), *Hormathia* Anemone (3), Warty Sponge (4), *Serpula* (3), Branching Sponge (3), *Geodiidae* Sponge (3), Fan Sponge (1), Brittle Star (1), Feather Star (3)
	800	47 35.181	56 43.773	96	Hard	100%										Feather Star (>20), White Encrusted Sponge (15%), Branching Sponge (1), Warty Sponge (1), Soft Coral (2), *Hormathia* Anemone (>20), Brittle Star (3)
	900	47 35.144	56 43.830	40	Hard		75%					25%				*Geodiidae* Sponge (>20), *Serpula* (3), Orange Encrusting Sponge

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(<5%)
	1000	47 35.104	56 43.884	14	Hard		40%			15%		45%				Northern Sea Star (1), Breadcrumb Sponge (<5%), White Encrusting Sponge (<5%), Cunner (2), Round Sponge (1)
12	0	47 35.511	56 43.388	1	Hard					20%	80%					Unidentified Fish Fry (>20), Ctenophore (16)
	100	47 35.473	56 43.444	49	Hard						100%					Green Sea Urchin (2), Brittle Star (1), Scallop (1)
	200	47 35.438	56 43.504	89	Hard					45%	15%		40%			*Hormathia* Anemone (4), Scallop (6), Green Sea Urchin (2)
	300	47 35.398	56 43.559	111	Hard	20%	80%									*Hormathia* Anemone (>20), Scallop (5), Krill (2), Brittle Star (2)
	400	47 35.358	56 43.613	102	Hard	100%										Blood Star (1), White Encrusting Sponge (30%), Breadcrumb Sponge (5%), Round Sponge (2), *Geodiidae* Sponge (>20), *Serpula* (13), Warty Sponge (1), *Stomphia* Anemone (4), Fan Sponge (1), White Branching Sponge (1)
	500	47 35.325	56 43.678	122	Hard	40%	60%									*Hormathia* Anemone (>20), Feather Star (6), Round Sponge (2), Green Sea Urchin (3), Breadcrumb Sponge (5%), Cunner (1), Brittle Star (1), *Geodiidae* Sponge (2), Soft Coral (1)
	550	47 35.303	56 43.700	259	Hard	100%										Arrow Worm (10), *Stomphia* Anemone (1)
	600	47 35.287	56 43.733	282	Soft								100%			*Hormathia* Anemone (4), Sand Shrimp (15), Brittle Star (9), Arrow Worm (1), Krill (10)
	700	47 35.247	56 43.788	280	Soft								100%			*Pendalus* Shrimp (9), *Stomphia* Anemone (2), Brittle Star (5), Arrow Worm (4), Krill (10)
	800	47 35.211	56 43.846	238	Hard	100%										*Serpula* (16), *Geodiidae* Sponge (>20), Brittle Star (4), *Hormathia* Anemone (12), Green Sea Urchin (1), Arrow Worm (1)
	850	47 35.192	56 43.875	130	Hard	100%										*Serpula* (>20), White Encrusting Sponge (15%), *Hormathia* Anemone (8), Atlantic Rock Crab (1), *Geodiidae* Sponge (>20), Unidentified Sea Star (1)
	900	47 35.176	56 43.908	66	Hard					80%			20%			*Hormathia* Anemone (5), Brittle Star (1), Toad Crab (1)
	1000	47 35.132	56 43.960	19	Hard			40%				60%				Ctenophore (10), Green Sea Urchin (2), *Serpula* (4), White Encrusting Sponge (10%), Northern Sea Star (2), Blue Mussel (5), Cunner (1)
13	0	47 35.398	56 43.681	7	Hard							100%				Ctenophore (>20)
	50	47 35.375	56 43.704	51	Hard		100%									Feather Star (>20), Round Sponge (4), *Hormathia* Anemone (2)
	100	47 35.354	56 43.731	108	Hard	100%										Warty Sponge (6), White Branching Sponge (1), Feather Star (1), Geodiidae Sponge (>20),

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Breadcrumb Sponge (5%), Stomphia Anemone (1), Hormathia Anemone (10), Round Sponge (2), Encrusting White Sponge (20%), Brittle Star (1)
	150	47 35.339	56 43.763	178	Hard	100%										White Encrusting Sponge (20%), Breadcrumb Sponge (5%), Serpula (1), Geodiidae Sponge (6), Warty Sponge (1), Stomphia Anemone (1), Brittle Star (1), Stomphia Anemone (3), White Branching Sponge (2)
	200	47 35.323	56 43.796	276	Soft								100%			Brittle Star (17), Sand Shrimp (3), *Pendalus* Shrimp (5), Arrow Worm (1), Krill (10), *Cerianthus* Anemone (1)
	300	47 35.286	56 43.854	279	Soft								100%			*Cerianthid* Anemone (1), Arrow Worm (3), Sand Shrimp (2), Krill (5)
	400	47 35.249	56 43.912	267	Hard		100%									Sand Shrimp (7), *Hormathia* Anemone (8), Arrow Worm (1), Krill (12)
	450	47 35.228	56 43.936	211	Hard	100%										Toad Crab (1), White Encrusting Sponge (15%), *Geodiidae* Sponge (>20), Krill (3), *Serpula* (12), White Branching Sponge (1), Brittle Star (2), Sand Shrimp (1), Warty Sponge (1), *Hormathia* Anemone (2)
	500	47 35.208	56 43.964	100	Hard	100%										*Geodiidae* Sponge (>20), White Encrusting Sponge (30%), *Serpula* (>20), Warty Sponge (3), Brittle Star (6), White Branching Sponge (1), *Hormathia* Anemone (2), Acadian Redfish (1), Breadcrumb Sponge (5%), Round Sponge (1), Orange Encrusting Sponge (<5%)
	550	47 35.188	56 43.991	30	Hard	100%										*Geodiidae* Sponge (>20), *Urticina* Anemone (1), White Encrusting Sponge (20%), Northern Sea Star (1)
	630	47 35.161	56 44.039	2	Hard			30%			70%					Ctenophore (3), Green Sea Urchin (>20), Northern Sea Star (1), Brittle Star (4), Barnacle (5), Encrusting Bryozoan (<5%)
14	0	47 35.457	56 43.700	2	Hard						100%					Ctenophore (>20)
	100	47 35.419	56 43.758	66	Hard		45%			5%	50%					*Hormathia* Anemone (1), Sea Spider (1)
	160	47 35.396	56 43.787	170	Hard	90%							10%			White Encrusting Sponge (20%), *Serpula* (>20), *Geodiidae* Sponge (>20), Northern Sea Star (1), Breadcrumb Sponge (5%), White Branching Sponge (3), *Hormathia* Anemone (4)
	200	47 35.382	56 43.815	229	Hard	90%							10%			*Hormathia* Anemone (4), Sand Shrimp (2), Acadian Redfish (5), Warty Sponge (1), *Geodiidae* Sponge (>20), Round Sponge (1), Brittle Star (1), White Encrusting Sponge

Shooter Point																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(10%), Hydroid (>20)
	300	47 35.345	56 43.872	277	Soft								100%			Arrow Worm (8), Sand Shrimp (>20), Brittle Star (7), Ocean Pout (1), *Stomphia* Anemone (1), Feather Star (1)
	400	47 35.306	56 43.928	274	Soft								100%			Arrow Worm (4), Sand Shrimp (10), Hormathia Anemone (2), Worm tube (7), Krill (>20), Ocean Pout (1)
	500	47 35.266	56 43.981	227	Hard		80%						20%			Toad Crab (1), White Encrusting Sponge (20%), Brittle Star (4), *Geodiidae* Sponge (>20), Krill (3), *Serpula* (11), *Hormathia* Anemone (18), Warty Sponge (2), Unidentified Sponge (4)
	550	47 35.251	56 44.016	161	Hard	75%	25%									*Geodiidae* Sponge (>20), White Encrusting Sponge (20%), *Serpula* (>20), *Hormathia* Anemone (6), Acadian Redfish (1), Breadcrumb Sponge (10%)
	600	47 35.230	56 44.040	60	Hard		100%									White Encrusting Sponge (15%), Breadcrumb Sponge (5%), Warty Sponge (1), *Geodiidae* Sponge (>20), *Serpula* (>20), Unidentified Sponge (5)
	670	47 35.204	56 44.076	1	Hard	90%						10%				Ctenophore (>20), *Metridium* Anemone (>20), Pelagic Polychaete (2)

14.3 Water Quality

The amount and temporal coverage of water quality data collected at the Chaleur Bay BMA are summarized (Table 14.6). Seasonal water quality measurements at sea farms in Chaleur Bay BMA are provided in Tables 14.7, 14.8, and 14.9 for water temperature, dissolved oxygen, and salinity, respectively. No data are available for the Shooter Point sea farm.

Table 14.6. Available water quality data for the Chaleur Bay BMA (2019–2024).

Available Data			
Year	**Measurement**	**Depth(s) (m)**	**Month(s)**
Friar Cove			
2019–2020	Temperature (°C)	n/a	n/a
	Dissolved Oxygen (mg/L)	n/a	n/a
	Salinity (‰)	n/a	n/a
2021	Temperature (°C)	all	6 Jul–31 Dec
	Oxygen (mg/L)	all	6 Jul–31 Dec
	Salinity (‰)	all	6 Jul–31 Dec
2022	Temperature (°C)	all	1 Jan–2 Aug
	Oxygen (mg/L)	all	1 Jan–2 Aug
	Salinity (‰)	all	1 Jan–2 Aug
2023	Temperature (°C)	n/a	n/a
	Dissolved Oxygen (mg/L)	n/a	n/a
	Salinity (‰)	n/a	n/a
2024	Temperature (°C)	all	4 Jun–7 Jul
	Oxygen (mg/L)	all	4 Jun–7 Jul
	Salinity (‰)	all	4 Jun–7 Jul
Chaleur Bay			
2019–2020	Temperature (°C)	n/a	n/a
	Oxygen (mg/L)	n/a	n/a
	Salinity (‰)	n/a	n/a
2021	Temperature (°C)	all	10 Jun–31 Dec
	Oxygen (mg/L)	all	10 Jun–31 Dec
	Salinity (‰)	all	10 Jun–31 Dec
2022	Temperature (°C)	all	1 Jan–7 Sep
	Oxygen (mg/L)	all	1 Jan–7 Sep
	Salinity (‰)	all	1 Jan–7 Sep
2023–2024	Temperature (°C)	n/a	n/a
	Oxygen (mg/L)	n/a	n/a
	Salinity (‰)	n/a	n/a

14.3.1 Water Temperature

Seasonal water temperatures were generally consistent between Friar Cove and Chaleur Bay, with Chaleur Bay exhibiting slightly higher water temperatures compared to Friar Cove (Table 14.7). Temperature trends are typical of those observed by MCE in coastal Newfoundland waters. A thermocline develops in spring as surface waters warm. This thermocline becomes more pronounced and deeper in summer until it breaks down in the fall as air temperature decreases. During winter, temperatures throughout the water column tend to be more uniform until spring, when the seasonal water temperature pattern repeats. For the available data, mean water temperatures ranged from 2.06°C in winter at Chaleur Bay (0.5 m depth) to 15.64°C in summer at the same site and depth. Maximum water temperatures at both Friar Cove and

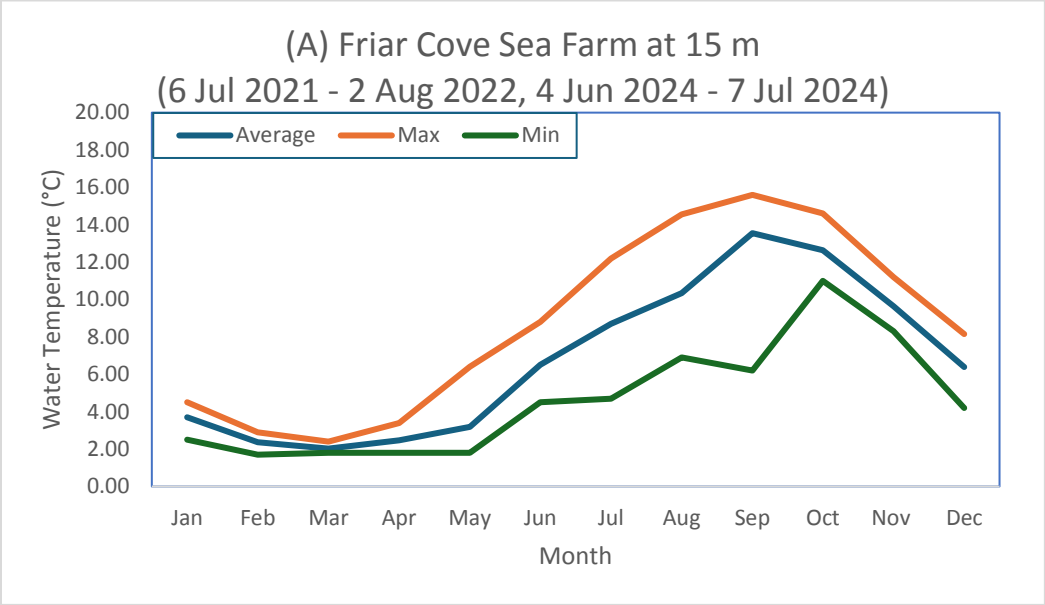
Chaleur Bay were recorded at a depth of 0.5 m in summer, reaching 19.60°C and 21.60°C, respectively. Minimum temperatures occurred in winter at similar depths, measuring 0.8°C in Friar Cove and 0.4°C in Chaleur Bay.

Table 14.7. Average, maximum, and minimum water temperatures (°C) at the sea farms in the Chaleur Bay (2021–2024).

Water Depth	Sampling Period	Water Temperature Parameter	Winter	Spring	Summer	Fall
			Temperature (°C)			
Friar Cove						
0.5 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	2.11	7.96	15.03	9.17
		Maximum	4.30	15.55	19.60	15.20
		Minimum	0.80	1.90	8.90	3.90
1 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	2.18	7.70	14.73	9.22
		Maximum	4.30	14.75	19.15	14.75
		Minimum	0.90	1.90	8.30	3.90
5 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	2.54	6.19	13.07	9.47
		Maximum	4.30	11.50	16.95	14.50
		Minimum	1.40	1.90	6.00	3.90
10 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	2.66	5.33	11.60	9.49
		Maximum	4.50	9.70	16.50	14.70
		Minimum	1.38	1.80	5.10	4.00
15 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	2.74	4.79	10.34	9.46
		Maximum	4.50	8.80	15.60	14.60
		Minimum	1.70	1.80	4.70	4.20
20 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	2.83	4.34	8.99	9.45
		Maximum	4.60	8.40	15.05	14.40
		Minimum	1.70	1.80	4.30	4.40
30 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	2.99	3.85	7.15	9.36
		Maximum	4.90	9.55	13.85	14.10
		Minimum	1.80	1.80	3.10	4.30
Chaleur Bay						
0.5 m	10 Jun 2021–7 Sept 2022	Average	2.06	7.98	15.64	9.06
		Maximum	4.00	15.75	21.60	14.70
		Minimum	0.40	1.30	10.60	3.60
1 m	10 Jun 2021–7 Sept 2022	Average	2.17	7.66	15.35	9.21
		Maximum	4.00	14.55	19.70	14.70
		Minimum	0.70	1.90	9.10	3.60
5 m	10 Jun 2021–7 Sept 2022	Average	2.59	6.20	13.69	9.48
		Maximum	4.20	12.00	18.20	14.40
		Minimum	1.40	2.00	6.35	3.70
10 m	10 Jun 2021–7 Sept 2022	Average	2.77	5.29	12.06	9.51
		Maximum	4.40	10.50	17.80	14.50
		Minimum	1.70	2.00	3.70	4.00
15 m	10 Jun 2021–7 Sept 2022	Average	2.91	4.65	10.45	9.51
		Maximum	4.50	8.49	17.00	14.60
		Minimum	1.80	2.00	4.10	4.10
20 m	10 Jun 2021–7 Sept 2022	Average	3.01	4.18	8.82	9.49
		Maximum	4.60	7.65	15.10	14.30
		Minimum	1.90	1.90	3.90	4.30
30 m	10 Jun 2021–7 Sept 2022	Average	3.29	3.73	7.06	9.45
		Maximum	4.80	6.70	13.40	14.40
		Minimum	1.90	1.90	3.80	4.20

Historical water temperature data for the Chaleur Bay BMA (Figure 14.8) are provided for measurements collected at a depth of 15 m. During 2021–2022 and 2024, data collected at the Friar Cove sea farm showed a general water temperature increase from April–September, with average

temperatures peaking in September and declining thereafter (Figure 14.8A). During 2021–2022, data collected at the Chaleur Bay sea farm indicated an increase in average and maximum temperatures from April–September, while minimum temperatures increased from May–October (Figure 14.8B). Water temperatures were the lowest in February at both sea farms.



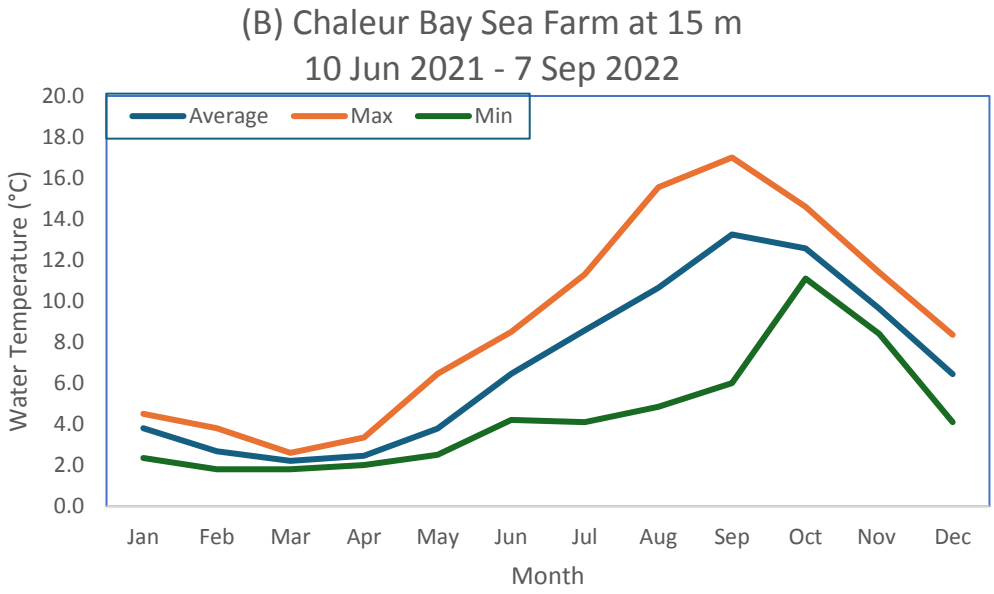


Figure 14.8. Historical water temperature (°C) data at the (A) Friar Cove and (B) Chaleur Bay sea farms in the Chaleur Bay BMA at 15 m depth.

14.3.2 Dissolved Oxygen

Dissolved oxygen levels were consistently lower in summer and fall compared to winter and spring (Table 14.8; Figure 14.9). Mean dissolved oxygen concentrations ranged from 8.57 mg/L in summer to 10.95 mg/L in winter (at 0.5 m depth at Chaleur Bay).

Based on the available data, maximum observed dissolved oxygen was 13.54 mg/L, recorded at 0.5 m depth at Chaleur Bay in spring, while the minimum dissolved oxygen was 6.36 mg/L, measured at 1 m depth at Chaleur Bay in spring. Dissolved oxygen levels across all depths showed a seasonal trend, with higher values in winter and spring, decreasing in summer and fall.

During 2021–2022 and 2024, a general decline in dissolved oxygen levels was recorded from June–October, followed by an increase in winter and early spring at the Friar Cove sea farm. Average oxygen levels peaked in May, while the lowest levels were recorded in October (Figure 14.9A). At the Chaleur Bay sea farm, dissolved oxygen increased from November–April; both average and maximum oxygen levels peaked in April whereas the lowest oxygen levels were observed in October (Figure 14.9B).

Table 14.8. Average, maximum, and minimum dissolved oxygen (mg/L) at the sea farms in the Chaleur Bay (2021–2024).

Water Depth	Sampling Period	Dissolved Oxygen Parameter	Winter	Spring	Summer	Fall
			Dissolved Oxygen (mg/L)			
Friar Cove						
0.5 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	10.56	10.31	8.65	8.92
		Maximum	12.63	12.42	10.27	10.25
		Minimum	9.30	6.74	7.78	7.56
1 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	10.44	10.35	8.70	8.85
		Maximum	11.75	12.40	10.38	10.24
		Minimum	9.47	6.90	7.64	7.56
5 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	10.20	10.56	8.86	8.67
		Maximum	11.18	12.65	10.37	10.19
		Minimum	9.13	8.34	7.21	7.69
10 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	10.08	10.65	9.02	8.59
		Maximum	11.65	12.22	10.44	10.10
		Minimum	9.21	8.90	7.51	7.57
15 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	9.98	10.65	9.13	8.52
		Maximum	10.97	12.16	10.65	10.05
		Minimum	9.12	8.80	7.54	7.48
20 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	9.90	10.63	9.21	8.45
		Maximum	11.41	12.09	11.09	10.03
		Minimum	9.00	8.70	7.44	7.49
30 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	Average	9.77	10.51	9.28	8.39
		Maximum	11.24	11.84	11.33	10.05
		Minimum	8.79	8.70	7.08	7.50
Chaleur Bay						
0.5 m	10 Jun 2021–7 Sept 2022	Average	10.95	10.36	8.57	9.16
		Maximum	13.28	13.54	9.65	11.14
		Minimum	9.90	6.82	7.03	7.04
1 m	10 Jun 2021–7 Sept 2022	Average	10.82	10.35	8.59	9.03
		Maximum	12.37	12.75	9.80	10.59
		Minimum	9.88	6.36	7.26	6.61

Water Depth	Sampling Period	Dissolved Oxygen Parameter	Winter	Spring	Summer	Fall
			Dissolved Oxygen (mg/L)			
5 m	10 Jun 2021–7 Sept 2022	Average	10.49	10.62	8.68	8.82
		Maximum	11.71	12.73	9.89	10.46
		Minimum	9.78	7.72	6.52	7.13
10 m	10 Jun 2021–7 Sept 2022	Average	10.34	10.76	8.94	8.76
		Maximum	11.66	12.46	9.97	10.42
		Minimum	9.60	9.13	7.30	7.48
15 m	10 Jun 2021–7 Sept 2022	Average	10.25	10.75	9.15	8.76
		Maximum	11.59	12.14	10.32	10.40
		Minimum	9.34	8.79	7.52	7.49
20 m	10 Jun 2021–7 Sept 2022	Average	10.20	10.72	9.33	8.75
		Maximum	11.51	11.95	10.34	10.39
		Minimum	9.10	9.28	7.86	7.41
30 m	10 Jun 2021–7 Sept 2022	Average	10.08	10.60	9.43	8.79
		Maximum	11.40	11.67	10.33	10.37
		Minimum	8.79	9.37	6.20	7.23

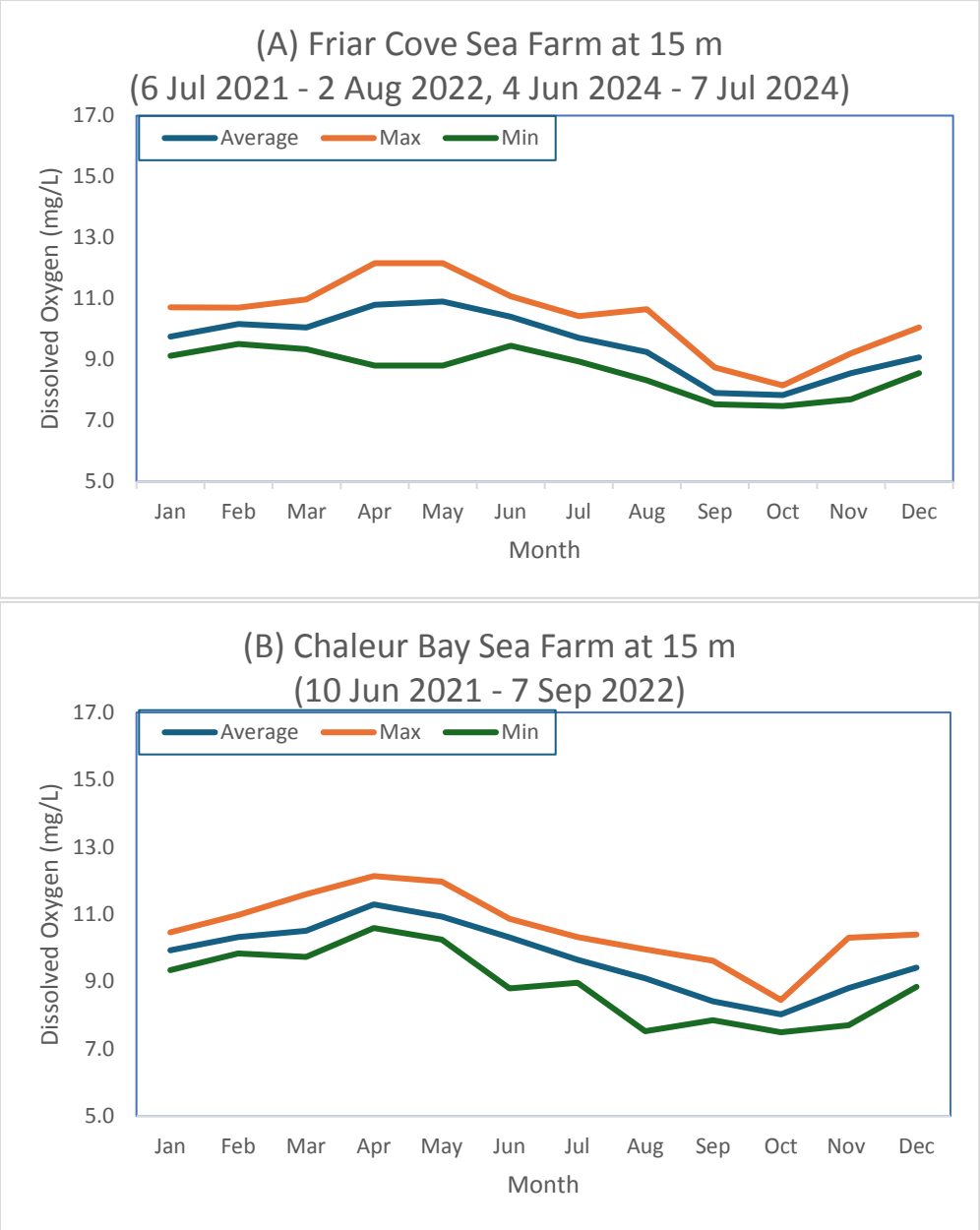


Figure 14.9. Historical dissolved oxygen (mg/L) data at the (A) Friar Cove and (B) Chaleur Bay sea farms in the Chaleur Bay BMA at 15 m depth.

14.3.3 Salinity

In Chaleur Bay salinity concentrations indicated a moderate freshwater influence near the surface throughout the year that is more pronounced in the spring, summer and fall. In Frair Cove, salinity concentrations indicated a moderate freshwater influence near the surface in the spring. (Table 14.9).

Table 14.9. Average salinity (‰) at the sea farms in the Chaleur BMA (2021–2024).

Water Depth	Sampling Period	Winter	Spring	Summer	Fall
		Salinity (‰)			
Friar Cove					
0.5 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	31.60	27.11	30.23	31.64
1 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	32.33	28.03	30.71	32.25
5 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	33.56	29.81	31.91	33.61
10 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	33.75	30.19	32.21	33.75
15 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	33.86	30.36	32.36	33.83
20 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	33.92	30.43	32.47	33.92
30 m	6 Jul 2021–2 Aug 2022, 4 Jun 2024–7 Jul 2024	34.01	30.51	32.55	33.96
Chaleur Bay					
0.5 m	10 Jun 2021–7 Sep 2022	29.88	27.06	27.01	25.98
1 m	10 Jun 2021–7 Sep 2022	30.37	28.29	28.15	27.06
5 m	10 Jun 2021–7 Sep 2022	31.21	30.13	29.86	29.76
10 m	10 Jun 2021–7 Sep 2022	31.52	30.41	29.96	30.36
15 m	10 Jun 2021–7 Sep 2022	31.67	30.52	30.22	30.65
20 m	10 Jun 2021–7 Sep 2022	31.78	30.58	30.33	30.65
30 m	10 Jun 2021–7 Sep 2022	31.76	30.81	30.48	30.77

14.4 Oceanographic and Meteorological Data

Bathymetric, current, wind and wave data are available for all three sea farms in the Chaleur Bay BMA.

14.4.1 Bathymetry

Water depths below the leases ranged from 1–144 m (Chaleur Bay) to 1–282 m (Shooter Point). Minimum water depth below the sea cages were 69 m in Chaleur Bay and 133 m in Friar Cove (Table 14.10). Water depth profiles are available for the three leases (Figures 14.10–14.12).

Table 14.10. Water depth range at sea farm in the Chaleur Bay BMA.

Site No.	Sea Farm	Lease Depth Range (m)	Minimum Water Depth Under Sea Cage (m)
AQ 1147	Chaleur Bay	1–144 m	69
AQ 1148	Friar Cove	1–266 m	133
AQ 1149	Shooter Point	1–282 m	83

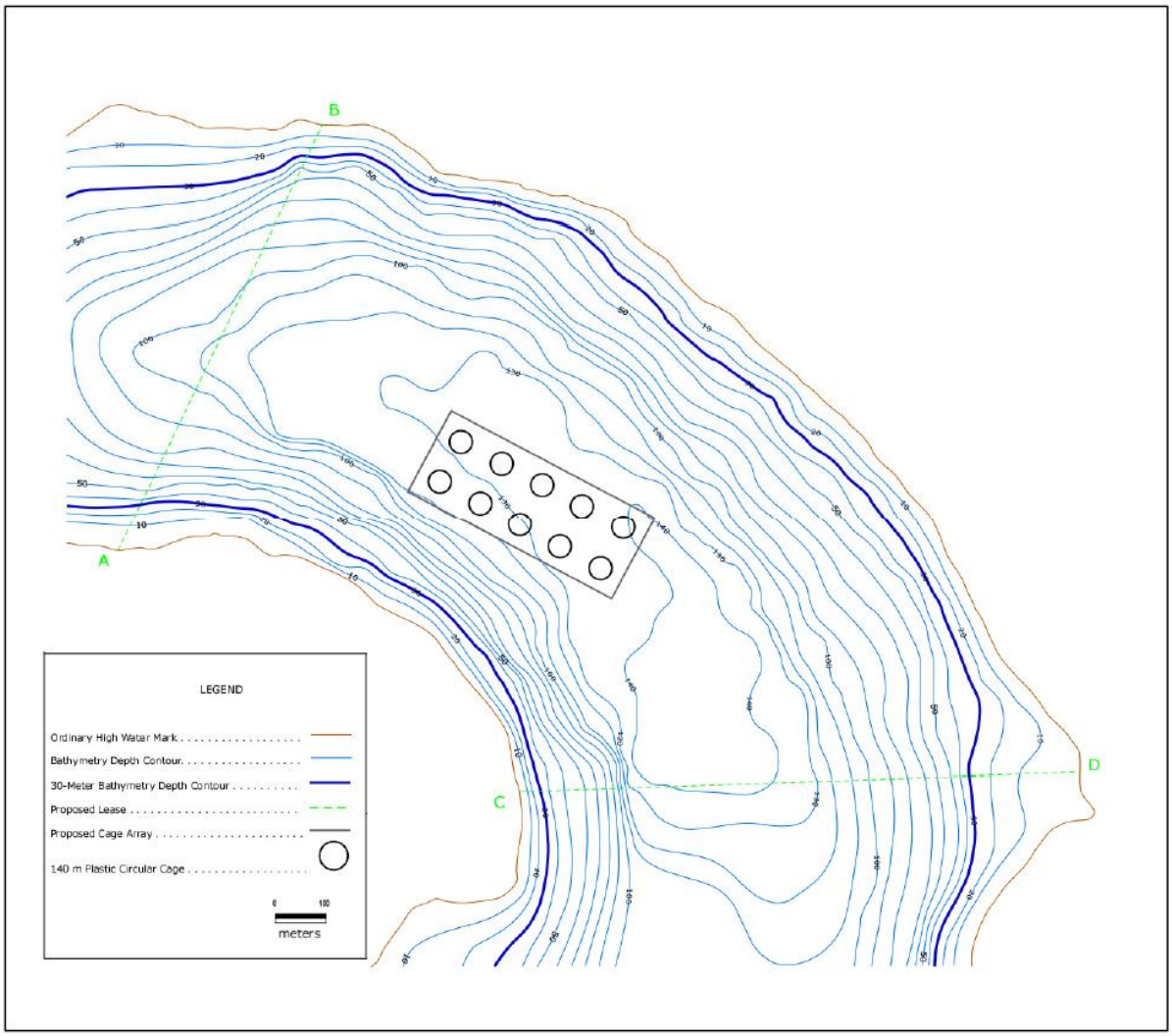


Figure 14.10. Bathymetric map for the Chaleur Bay sea farm.

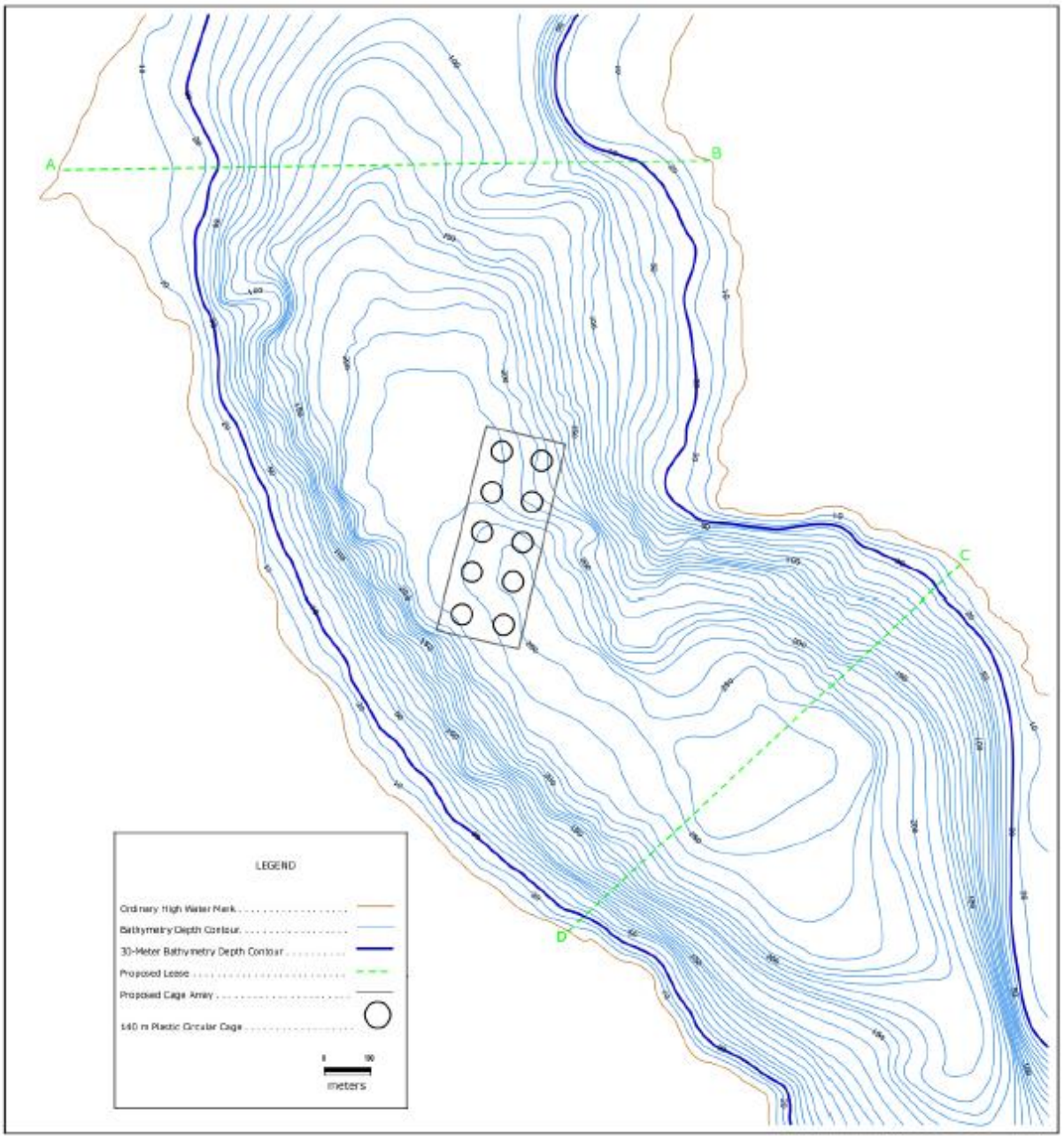


Figure 14.11. Bathymetric map for the Friar Cove sea farm.

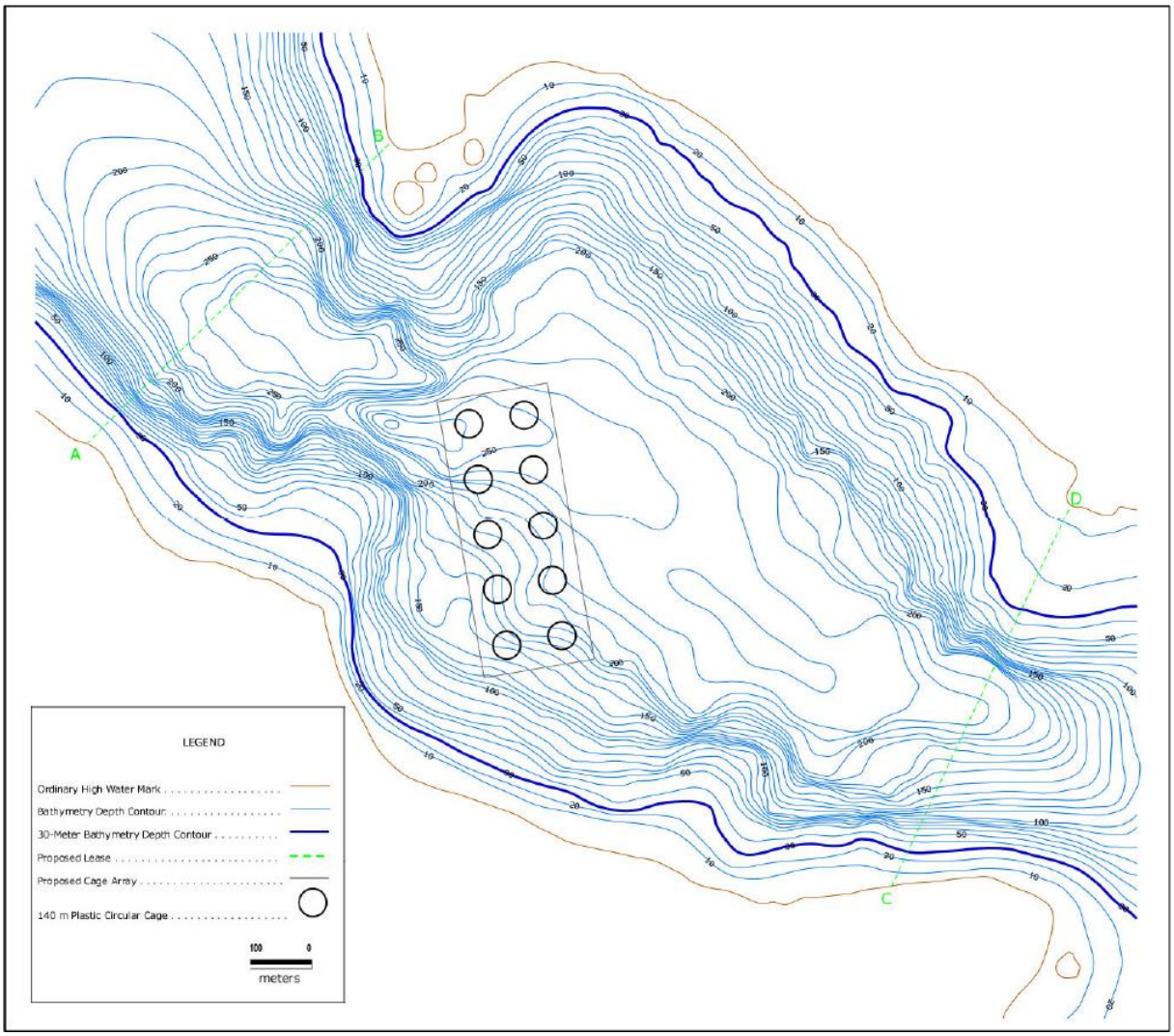


Figure 14.12. Bathymetric map for the Shooter Point sea farm.

14.4.2 Currents

Current data were acquired at the Chaleur Bay, Friar Cove and Shooter Point sea farms in May and June 2018.

14.4.2.1 Chaleur Bay

During May–June 2018, current measurements were collected at five depths in the Chaleur Bay sea farm (Table 14.11). During this period, mean current ranged from 2.7 cm/s (at 65.6 m water depth), to 5.8 cm/s (at 4.8 m water depth). Maximum current speeds were recorded within 15 m of the water surface. In the upper 15 m, the currents were directed toward the west-northwest to

northwest. This direction changed near the bottom (126 m) to northwest to north-northwest (Figure 14.13).

Table 14.11. Current speeds (mean and maximum values) and vector-averages in the Chaleur Bay sea farm (May–June 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
4.8	5.8	27	1.31 @ 332.4°
9.7	5.2	20	1.73 @ 323.8°
15.7	4.5	23	1.36 @ 329.5°
65.6	2.7	19	0.07 @ 230.8°
126.4 (5 m above bottom)	2.8	11	0.76 @ 316.0°

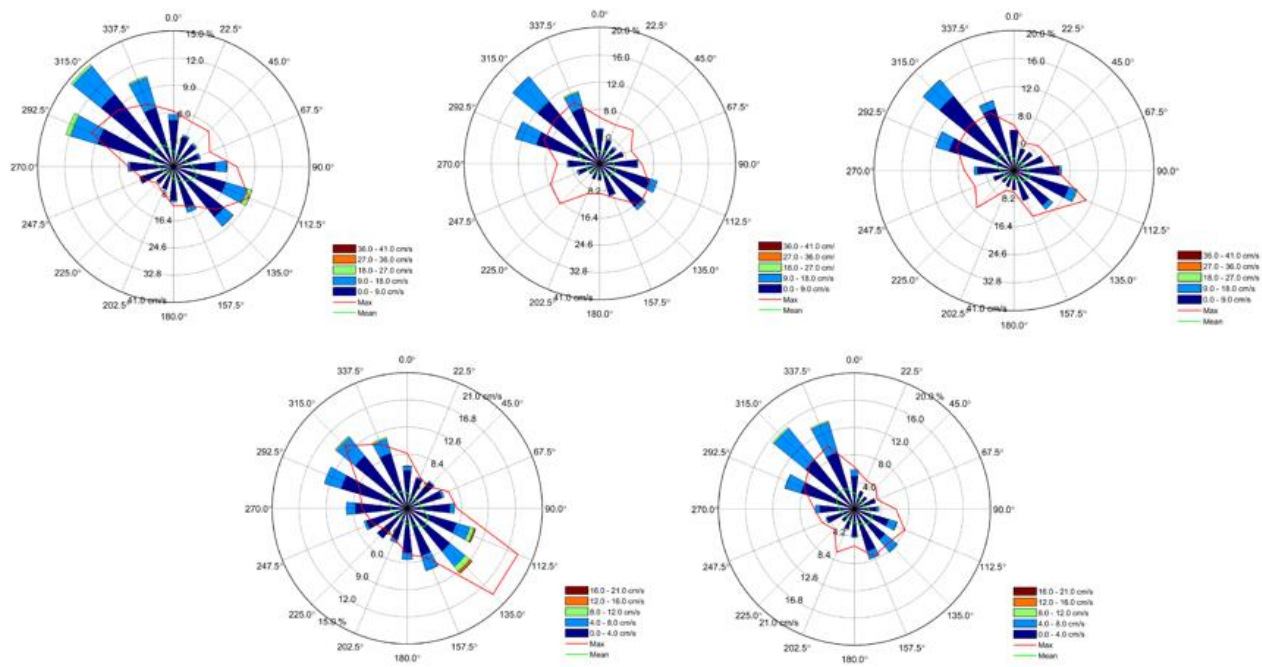


Figure 14.13. Compass rose plots of current speeds at the Chaleur Bay sea farm (May–June 2018). Current speeds and directions at 5 m, 9.7 m, 15.7 m, 65.6 m, and 126.4 m (near bottom at 5 m height) are shown from left to right, top to bottom in the figure.

14.4.2.2 Friar Cove

During May–June 2018, current measurements were collected at five depths in the Friar Cove sea farm (Table 14.12). During this period, mean current ranged from 2.1 cm/s (at 240.4 m water depth) to 7.7 cm/s (at 4.8 m water depth). Maximum current speeds were recorded within 10 m of the water surface. In the upper 100 m, the water currents were bi-directional northwest to southeast. Near bottom, the currents were north to north-northeast (Figure 14.14).

Table 14.12. Current speeds (mean and maximum values) and vector-averages in the Friar Cove sea farm (May–June 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
4.8	7.7	52	1.42 @ 274.3 °
9.7	6.2	40	1.19 @ 270.3 °
15.7	4.6	28	0.95 @ 242.8 °
106.7	2.4	14	0.11 @ 326.1 °
240.4	2.1	9	0.97 @ 50.4 °

Notes:
MWL = mean water level.

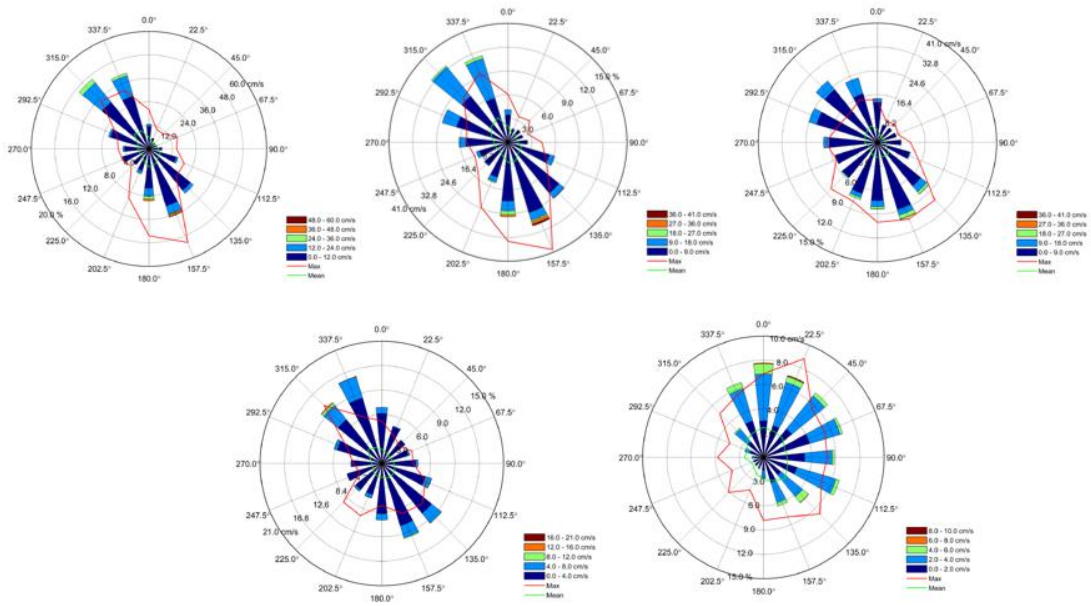


Figure 14.14. Compass rose plots of current speeds in the Friar Cove sea farm (May–June 2018). Current speeds and directions at 5 m, 9.7 m, 15.7 m, 106.7 m, and 240.4 m (near bottom at 4.6 m height) are shown from left to right, top to bottom in the figure.

14.4.2.3 Shooter Point

During May-June 2018, current measurements were collected at five water depths in the Shooter Point sea farm (Table 14.13). During this period, mean current speeds ranged from 2.7 cm/s (at 201.4 m depth) to 9.2 cm/s (at 4.8 m depth). Maximum current speeds were quite variable ranging from 13 cm/s near bottom to 62 cm/s at 4.8 m. Currents were generally east-southeast to southeast in the top 15 m of the water column. Near the bottom, current flows were directed to the east-northeast to east (Figure 14.15).

Table 14.13. Current speeds (mean and maximum values) and vector-averages in the Shooter Point sea farm (June–July 2024).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
4.8	9.2	62	2.61 @ 127.1 °
10.1	7.3	57	2.10 @ 123.7 °
14.1	5.8	44	1.57 @ 121.6 °
103.6	2.8	14	0.19 @ 118.8 °
201.4	2.7	13	1.48 @ 86.7 °

Notes:
MWL = mean water level.

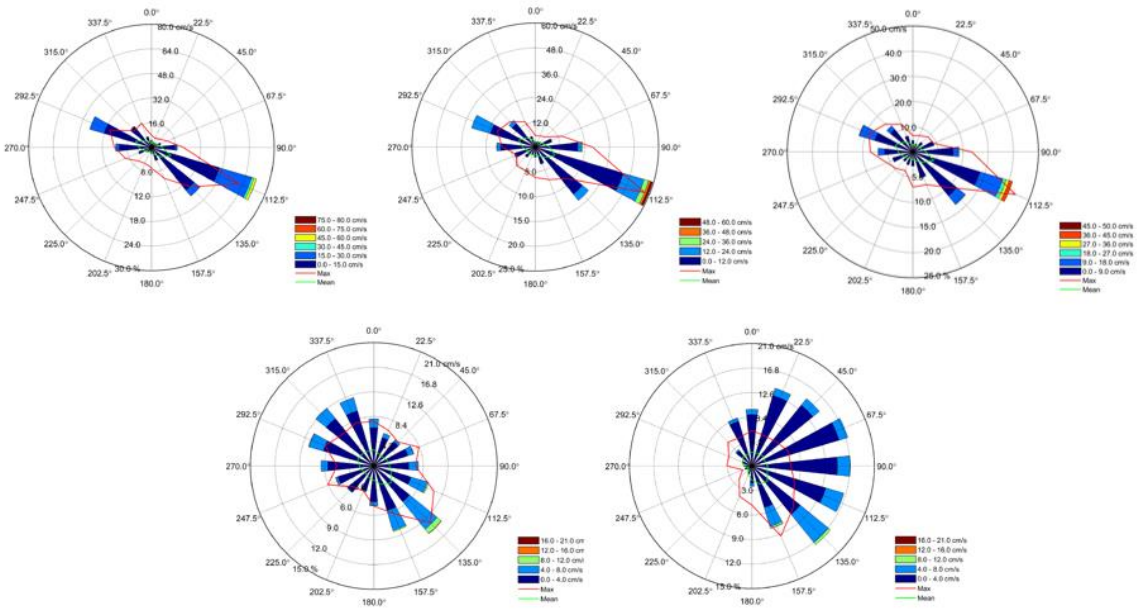


Figure 14.15. Compass rose plots of current speeds in the Shooter Point sea farm (May–June 2018). Current speeds and directions at 5 m, 10.1 m, 14.1 m, 103.6 m, and 201.4 m (near bottom at 4.6 m height) are shown from left to right, top to bottom in the figure.

14.4.3 Wind and Waves

14.4.3.1 Modelling (MSC50 Hindcast Approach) for Atlantic Canada

Mean wind speeds and mean wave heights near the Chaleur Bay BMA were highest in December, January and February and lowest in May, June, and July based on 10 years of historical data (Tables 14.14 and 14.15). Maximum monthly wind speeds of ~21–22 m/s (~76–79 km/h) occurred in December-March. Similarly, maximum monthly wave heights of 2.01–2.2 m occurred in December-January. Wind directions were predominately from the west, southwest with wind speeds ranging from ~6–12 m/s (Figure 14.16).

Table 14.14. Monthly wind speeds (mean and maximum) near the Chaleur Bay BMA (at MSC50 grid point M6012538 during 2009–2018).

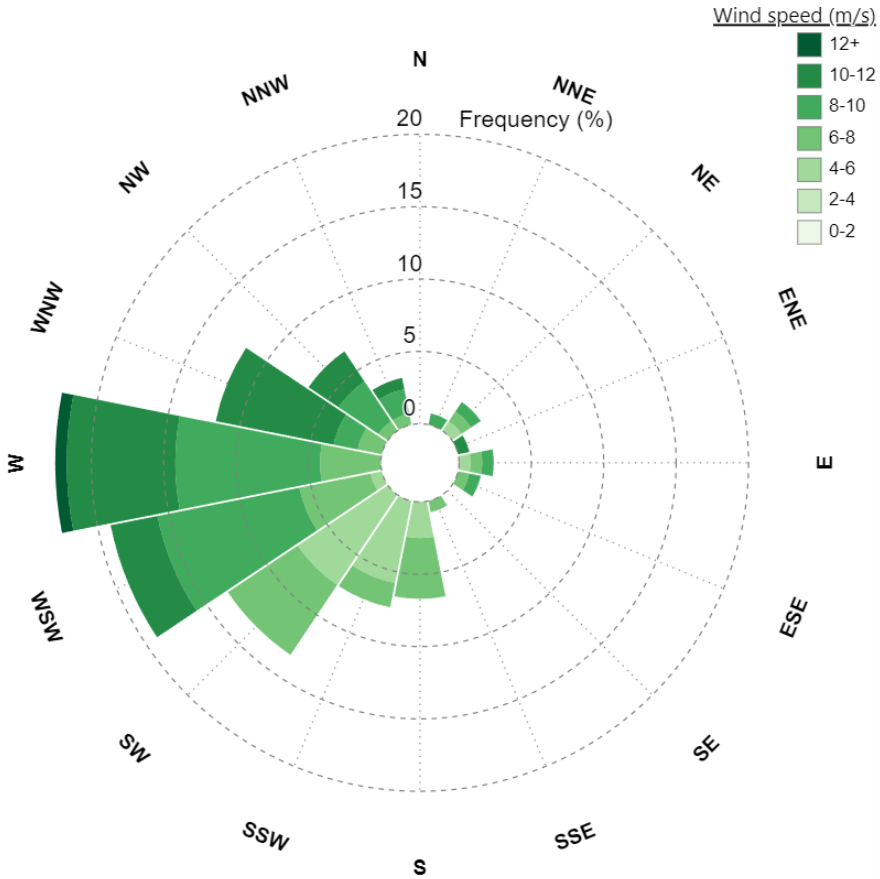
Month	M6012538	
	Wind Speed Mean (m/s)	Wind Speed Max (m/s)
January	11.55	21.53
February	11.38	21.20
March	9.33	21.75
April	8.10	18.23
May	6.58	14.65
June	6.10	11.99
July	5.37	11.75
August	6.94	13.18
September	7.79	14.00
October	8.60	18.57
November	9.73	18.37
December	11.07	21.28

Notes:
Grid point M6012538 is ~10 km from Shooter Point sea farm.

Table 14.15. Monthly wave heights (m) (mean and maximum) recorded near the Chaleur Bay BMA (at MSC50 grid point M6012538 during 2009–2018).

Month	M6012538	
	Wave Height Mean (m)	Wave Height Max (m)
January	1.00	2.20
February	0.90	1.88
March	0.71	1.53
April	0.55	1.68
May	0.36	0.95
June	0.33	0.96
July	0.26	0.92
August	0.43	1.20
September	0.52	1.24
October	0.67	1.87
November	0.75	1.68
December	0.89	2.01

Notes:
Grid point M6012538 is ~10 km from Shooter Point sea farm.



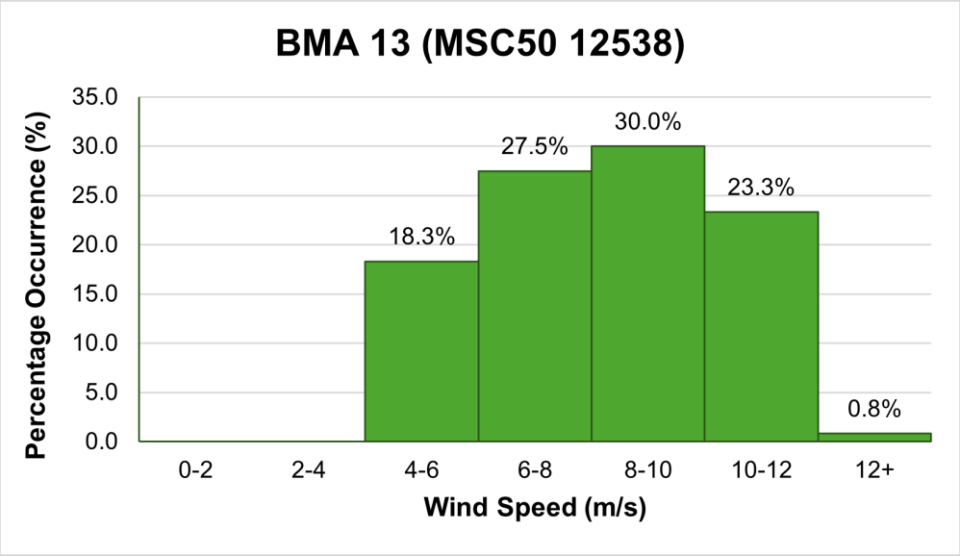


Figure 14.16. Wind rose and wind speed frequency histogram for MSC50 grid point M6012538 near the Chaleur Bay BMA.

14.5 Ice Conditions

Ice conditions for the Study Area including Chaleur Bay (BMA 13) are detailed in Section 4.5.

14.6 Storms

Storm conditions for the Study Area including Chaleur Bay (BMA 13) are detailed in Section 4.6.

14.7 Tides and Floods

Tide and flood conditions for the Study Area including Chaleur Bay (BMA 13) are detailed in Section 4.7.

14.8 Performance of Sea Farms with a Previous Production Cycle

The Chaleur Bay and Friar Cove sea farms in the Chaleur Bay BMA have been previously stocked. The Shooter Point sea farm has never been in production and construction date has not yet been determined.

14.8.1 Fallowing Periods

MCE sea farms that are constructed in the Chaleur Bay BMA have followed a coordinated fallow schedule (Table 14.16). The Chaleur Bay and Friar Cove sea farms were stocked in August and June 2024 (respectively) following a fallow period that commenced in 2022.

Table 14.16. Summary of fallow schedule for Chaleur Bay BMA sea farms since 2020. Green indicates production (month stocked), red indicates harvesting (month sea cages were empty), and blue is fallow (not stocked).

Sea Farm	2020	2021	2022	2023	2024
Chaleur Bay		Jun	Sep		Aug
Friar Cove		Jul	Aug		Jun
Shooter Point					

14.8.2 Benthic Monitoring

The three sea farms in the Chaleur Bay BMA (Chaleur Bay, Friar Cove and Shooter Point) are new licenses acquired by MCE. Depositional modelling (i.e., DEPOMOD) has been completed for all three sea farms (see Volume 3 of LGL 2025c for details).

As per the AAR, benthic monitoring of an active sea farm is required during a period of peak salmon feeding. Depending on bottom type (hard or soft), either video monitoring or bottom grabs are collected to determine the amount of BOD matter. During years with active farming, required benthic monitoring at sampling stations in the Chaleur Bay BMA was conducted. All

sea farms were within the allowable regulatory threshold based on the BOD indicators (Table 14.17).

Table 14.17. AAR benthic monitoring results for sea farms in the Chaleur Bay BMA (2016–2023). [Green = within allowable regulatory threshold[a]]

AAR Monitoring Year	BOD Indicator	Sea Farm		
		Chaleur Bay	Friar Cove	Shooter Point
2020	Date			
	%Stations			
2021	Date			
	%Stations			
2022	Date	4,5 Oct 22	1,2 Oct 22	
	%Stations	9 (4/43)	13 (6/45)	
2023	Date			
	%Stations			

Source: MCE (2024).
Notes:
[a] If >70% of monitoring stations had the presence of *Beggiatoa* species or similar bacteria, marine worms, or barren substrate (as determined by visual monitoring) and/or if the mean concentration of free sulfide in surficial sediment was >3000 µM (as determined by sediment sampling) this is considered an exceedance (fail) of the allowable threshold.

14.8.3 Publicly Reported Performance

As detailed in Section 3.8.3, sea farm performance reports which include mass mortality, disease, and escape information and sea lice count data are available for recent years. Drugs and pesticide use information at sea farms are available for 2016–2022.

14.8.3.1 Mortality Events

In fall 2021, following a handling event for sea lice treatment, an abnormal mortality event was observed at the Chaleur Bay and Friar Cove sea farms. These fish mortalities (~252,000) were removed from the sea cages using approved procedures (Appendix G in LGL 2025a) and were sent to a local rendering facility (Table 14.18).

14.8.3.2 Disease

In 2022 during routine passive screening of fish at Chaleur Bay BMA, a Federally Reportable Disease, ISAv was detected and confirmed in Friar Cove (January) and in Chaleur Bay sea farms (April). During this time, the affected sea farms were placed in quarantine pending a confirmation of the results. Upon confirmation that ISAv was present, the fish were removed from the sea cages using approved procedures and harvested (Table 14.18).

14.8.3.3 Escapes

Friar Cove sea farm experienced an escape event in 2022. During a fish handling event, one fish escaped from a staff as a result of human error. Regulators were notified as per procedure.

Recapture efforts were initiated, and one fish was retrieved by staff. Notice was provided to regulators and the public on the NAIA website and the Aquaculture Portal 2019–2024 (Table 14.18).

Table 14.18. Summary of reportable incident events at sea farms in the Chaleur Bay BMA.

Date	Sea Farm	Incident				No. Cages Impacted	No. Fish Affected	Cause	Response Measures
		Abnormal Mortality	Fish Health Suspect	Fish Health Confirmed	Escape				
2021-10-23	Chaleur Bay	Atlantic Salmon					123,323	Post treatment (sea lice) handling mortality	Waste recovery
2022-11-26									
2022-04-21	Chaleur Bay		ISAv			2	188,000	ISA virus	Quarantine
2022-05-04				ISAv					Quarantine and Harvested
2021-10-23	Friar Cove	Atlantic Salmon					129,590	Post treatment (sea lice) handling mortality	Waste recovery
2021-11-26									
2022-01-27	Friar Cove		ISAv			2	165,000	ISA virus	Quarantine and Harvested
2022-05-30	Friar Cove				Atlantic Salmon	1	1	Human error during handling event	Fish retrieved

Source: NAIA website (naia.ca).

14.8.3.4 Sea Lice

Sea lice are reported on the NAIA website as an average number per fish. These results are not reported for each sea farm or each BMA but as an average for all active farms. Table 4.22 (see Section 4.8.3.4) summarizes the average sea lice/fish for all active farms for reporting years 2021–2024.

14.8.3.5 Deposits of Drugs and Pesticides

During 2021–2022, fish at the Chaleur Bay and Friar Cove sea farms received treatment from pesticide (bath) and drugs (in-feed) for sea lice. As per the AAR, the total amounts (kg) of each treatment were reported to DFO (Table 14.19).

Table 14.19. Summary of deposits of pesticides and drugs at sea farms in the Chaleur Bay BMA (2016–2022).

BMA	Sea Farm	Year	Bath Treatment		In-Feed Treatment		
			Azamethiphos (Salmosan) (kg)	Hydrogen Peroxide (kg)	Emamectin benzoate (Slice) (kg)	Florfenicol (Aquaflor) (kg)	Ivermectin (Ivomec)(kg)
13	Chaleur Bay	2021			0.58		
13	Chaleur Bay	2022	42.5		0.71		
13	Friar Cove	2021	0.04	1880	0.48		
13	Friar Cove	2022	17.5		0.65		

Source: National Aquaculture Public Reporting Data Website (2024).
Notes:
2023 and 2024 data not available.

14.9 Exposure Zone Modelling

DFO conducted PEZ modelling for BMA 13 sea farms to estimate areas exposed to discharges from bath pesticides and in-feed drugs (and feces) (DFO 2022). BMT conducted dispersion modelling for a worst-case scenario use of a bath pesticide for the sea farms in BMA 13 (see Appendix B).

14.9.1 PEZ Modelling

Detailed predictions of PEZ modelling for BMA 13 (Chaleur Bay) are found in DFO (2022); a summary is provided here. DFO undertook this modelling to provide initial estimates of the size and location of the benthic areas in Chaleur Bay that may be impacted by the deposit of waste feed and feces associated with the release of in-feed drugs and pelagic PEZs for bath pesticide products. As noted in Page et al. (2023), PEZ estimates are not zones of impact and are intended to serve as an initial screening tool in combination with biological and socio-economic aspects of an area to gauge potential risk and the potential need for more precise modelling estimates. These PEZs are intentionally conservative overestimates to determine areas of concern that may warrant further assessment of spatial extent, intensity and/or duration of anticipated interactions with the benthic and pelagic environments. A precautionary approach for the model included assumptions; slow sinking velocities, fast water currents and deep bottom topography for a maximum possible exposure zone for in-feed and maximum current speed in the surface layer for a bath (tarp) treatment using Azamethiphos. The duration of the maximum Azamethiphos target treatment concentration of 100 µg/L to dilute to the HCPMRA environmental effect threshold (1 µg/L) was used as the decay and dilution time (~3 hours for tarp treatment).

The model predicted that for all sea farms in BMA 13, bath pesticide treatment (Table 14.20; Figure 14.17) had larger pelagic-PEZ (km^2) relative to in-feed treatments (feed particles km^2) for benthic-PEZ (Table 14.20; Figure 14.18). The PEZ model used feed particle type (which has the fastest sinking rate) as indicator of PEZ as the feed-based PEZ best reflects the zone in which the greatest intensity of impact is anticipated. The Shooter Point sea farm had the largest predicted

PEZ area (km²) for in-feed treatments [feed (13.85 km²) and feces (3,524 km²)] and for bath treatments (149.5 km²).

Table 14.20. Summary of benthic-PEZ area for pest control products in-feed and feces (km²) and pelagic-PEZ area for bath treatments associated with Azamethiphos (assumes a 100 µg/L dose concentration) for BMA 13 (from DFO 2022).

Sea Farm	Area of PEZ (km²)		
	Benthic[b]		Pelagic[b]
	In-feed	Feces	Azamethiphos[c]
Chaleur Bay[a]	2.01	307.8	26.41
Friar Cove[a]	10.17	2,426.7	78.5
Shooter Point[a]	13.85	3,523.9	149.5

Notes:

[a] Sea farms are located near land and PEZ areas (marine) are smaller than estimated—particularly maximum PEZ areas.

[b] Area represents an upper bound to the potential for exposure and is not expected to occur often since most releases do not experience maximum currents for the duration of treatment.

[c] PEZ model assumptions are provided in DFO (2022).

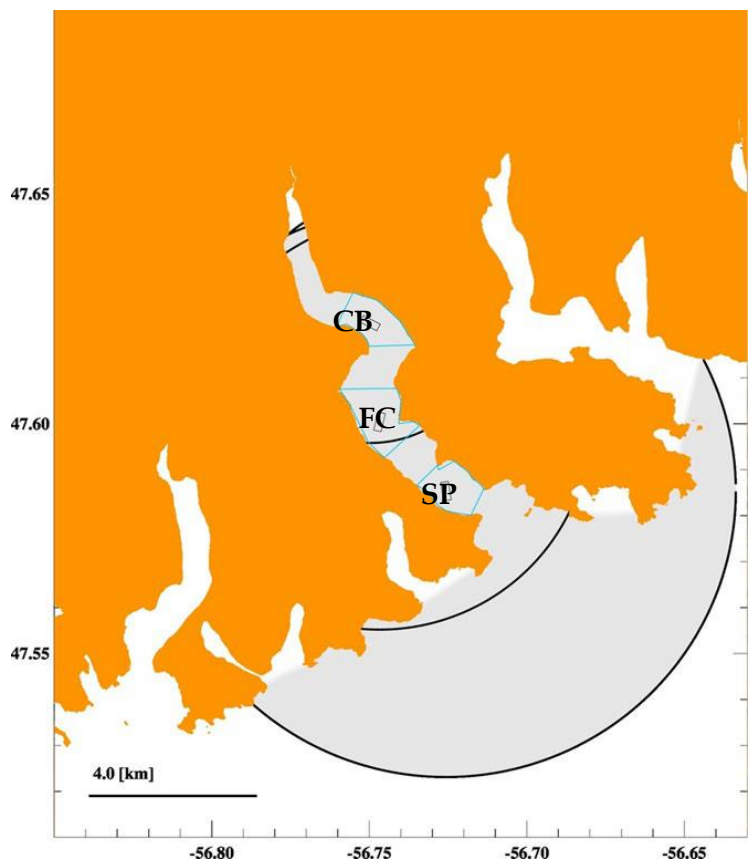


Figure 14.17. Pelagic-PEZ associated with bath pesticide treatments under maximum current speed in the Chaleur Bay BMA for each sea farm. Small black rectangles delimit the cage areas and light blue polygons the lease area for each sea farm (CB=Chaleur Bay, FC=Friar Cove, SP=Shooter Point).

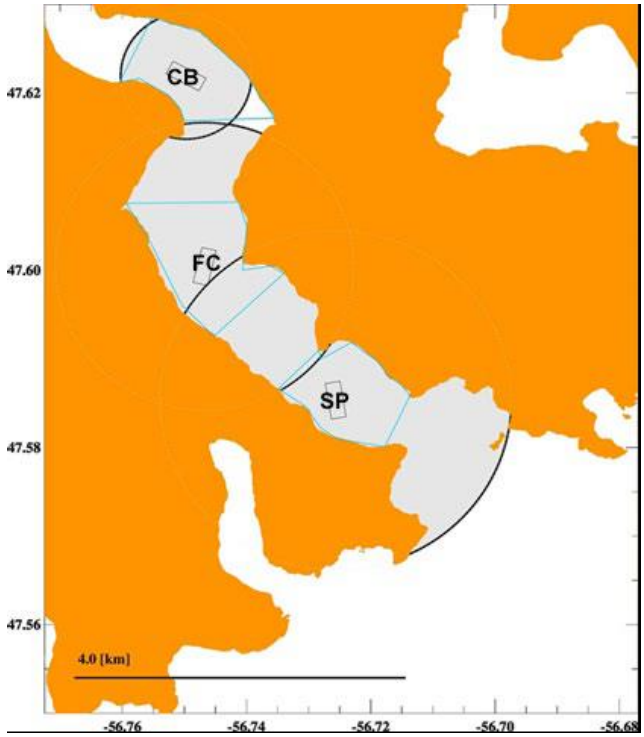


Figure 14.18. Benthic-PEZ associated with feed particles (in-feed treatments) under maximum current speed in the Chaleur Bay BMA for each sea farm. Small black rectangles delimit the cage areas and light blue polygons the lease area for each sea farm (CB=Chaleur Bay, FC=Friar Cove, SP=Shooter Point).

14.9.2 Dispersion Modelling

Dispersion modelling was undertaken to estimate exposure zones for the release of Azamethiphos (bath treatment) in a worst-case scenario (see Appendix B for details). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment in Chaleur Bay sea cages (03 May 2023 for spring tide; 15 June 2023 for neap tide) through final treatment at Shooter Point sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 14.21).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Chaleur Bay BMA predicted maximum areas of 3.97 km^2 and 3.42 km^2 during neap and spring tides, respectively; where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment duration. The maximum Azamethiphos concentration for the Chaleur Bay BMA was 75 ng/L during the simulated neap tide and 97 ng/L during the spring tide. The peak concentration occurred during the treatment of the second sea farm, Friar Cove, and decreased shortly after treatments were completed with concentration levels 72 hrs after final treatment below 100 ng/L (Figures 14.19 and 14.20). The maximum area within BMA 13 where Azamethiphos concentrations exceeded 100 ng/L was larger during the neap tide scenario (3.97 km^2) than during the spring tide scenario (3.42 km^2).

Table 14.21. Treatment schedule (assumed dates) for sea farms in BMA 13 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
Chaleur Bay	1	03 May 23	-339	15 Jun 23	-339
	2	03 May 23	-336	15 Jun 23	-336
	3	04 May 23	-315	16 Jun 23	-315
	4	04 May 23	-312	16 Jun 23	-312
	5	05 May 23	-291	17 Jun 23	-291
	6	05 May 23	-288	17 Jun 23	-288
	7	06 May 23	-267	18 Jun 23	-267
	8	06 May 23	-264	18 Jun 23	-264
	9	07 May 23	-243	19 Jun 23	-243
	10	07 May 23	-240	19 Jun 23	-240
Friar Cove	1	08 May 23	-219	20 Jun 23	-219
	2	08 May 23	-216	20 Jun 23	-216
	3	09 May 23	-195	21 Jun 23	-195
	4	09 May 23	-192	21 Jun 23	-192
	5	10 May 23	-171	22 Jun 23	-171
	6	10 May 23	-168	22 Jun 23	-168
	7	11 May 23	-147	23 Jun 23	-147
	8	11 May 23	-144	23 Jun 23	-144
	9	12 May 23	-123	24 Jun 23	-123
	10	12 May 23	-120	24 Jun 23	-120
Shooter Point	1	13 May 23	-99	25 Jun 23	-99
	2	13 May 23	-96	25 Jun 23	-96
	3	14 May 23	-75	26 Jun 23	-75
	4	14 May 23	-72	26 Jun 23	-72
	5	15 May 23	-51	27 Jun 23	-51
	6	15 May 23	-48	27 Jun 23	-48
	7	16 May 23	-27	28 Jun 23	-27
	8	16 May 23	-24	28 Jun 23	-24
	9	17 May 23	-3	29 Jun 23	-3
	10	17 May 23	0	29 Jun 23	0

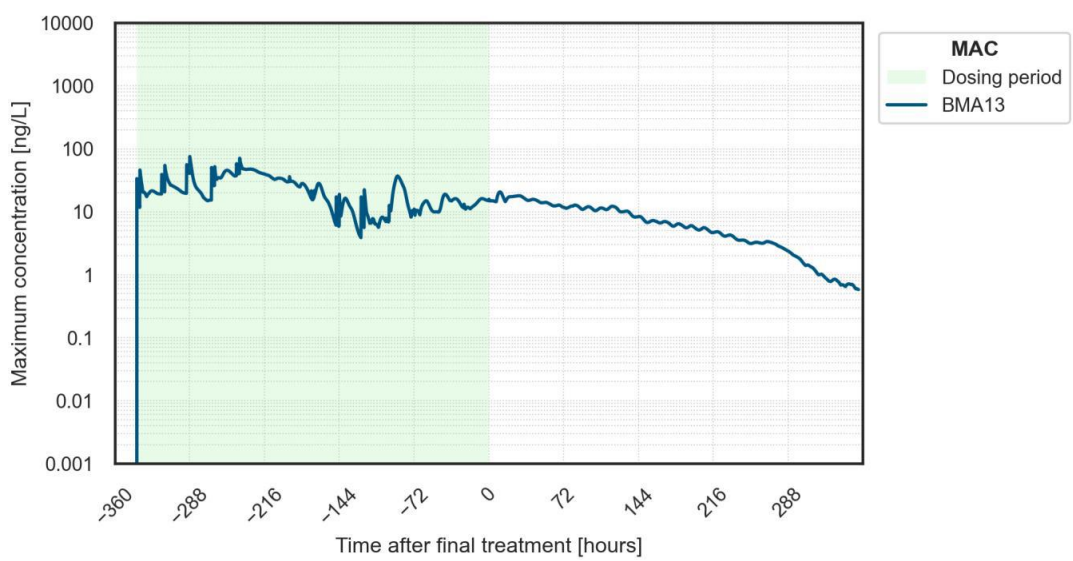


Figure 14.19. Maximum concentrations for Chaleur Bay BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced in Chaleur Bay sea farm (assumed 15 June 2023) and final treatment was in Shooter Point sea farm (time=0; assumed 29 June 2023).

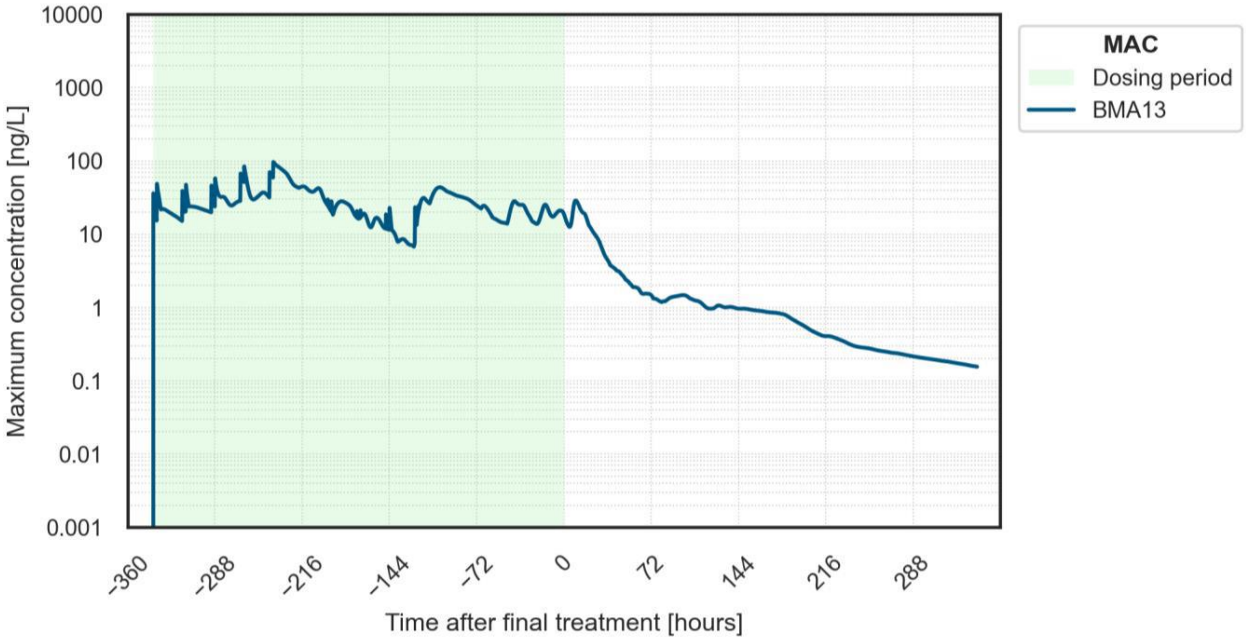


Figure 14.20. Maximum concentrations for Chaleur Bay BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced in Chaleur Bay sea farm 03 May 2023. Final treatment (time=0) was last treatment in Shooter Point sea farm (17 May 2023).

15.0 Aviron Bay and La Hune Bay (BMA 14)

The Aviron Bay and La Hune Bay BMA (BMA 14) is located in the Bays West Area and includes three licensed sea farms: Aviron North, Aviron South, and Foots Cove (Table 15.1; Figure 15.1). The three sea farms are located in two fjords: Aviron Bay (Aviron North and Aviron South) and La Hune Bay (Foots Cove). The closest community to these sea farms is Francois, which is accessible by ferry. The Aviron South sea farm is scheduled for construction in 2025; the Aviron North and Foots Cove sea farm construction dates are yet to be determined.

Table 15.1. Aviron Bay and La Hune Bay (BMA 14) sea farm locations and construction status in 2024.

BMA Name	BMA #	Farm Site Name	AQ Licence #	Site Coordinates		Construction Status
				Latitude (N)	Longitude (W)	
Aviron Bay and La Hune Bay	14	Aviron North	1165	47.57469	-56.80539	TBD
	14	Aviron South	1170	47.55756	-56.81553	Scheduled 2025
	14	Foots Cove	1169	47.54269	-56.86864	TBD

The sea farms in Aviron Bay and La Hune Bay BMA were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m. The maximum number of fish per site is 1,000,0000 with a maximum stocking density of 15 kg/m^3.

The water depths below the leases range from 1–177 m (Table 15.2). The shallowest sea farm is Aviron South where minimum sea cage array depth is 64 m. The sea farms have bottom sediments consisting of mixed substrates that were primarily sand and mud covering bedrock. All three sea farms are considered hard bottom.

Currents were reported at near surface, upper, mid-water, and near bottom depths. At 15 m water depth, the maximum water current speed at each site was between ~five to ~seven times the mean speed (Table 15.2). There is much vertical variation in the maximum current speed and this variation is larger than the mean current speeds.

Benthic habitat surveys revealed flora and fauna at sea farms include anemones, sea star spp., sponge spp., and more (Tables 15.3–15.5). Soft coral were observed in Aviron North and Aviron South surveys.

Seasonal water temperatures at 15 m water depth were only available for the Aviron Bay and La Hune Bay BMA combined (Table 15.2). Mean water temperatures ranged from 3.0 °C (10 m water depth) in spring to 12.5 °C (0 m water depth) in summer.

During 2009–2018, average monthly wind speeds ranged from 5.37 m/s in July to 11.55 m/s in January (Table 15.12). The maximum wind speed during this period was 22.18 m/s in February. Wind direction in the Aviron Bay and La Hune Bay BMA was predominately westerly (Figure 15.15). From 2009–2018, mean wave height ranged from 0.26 m in July to 2.23 m in January Table 15.13). The maximum wave height was 5.85 m in January.

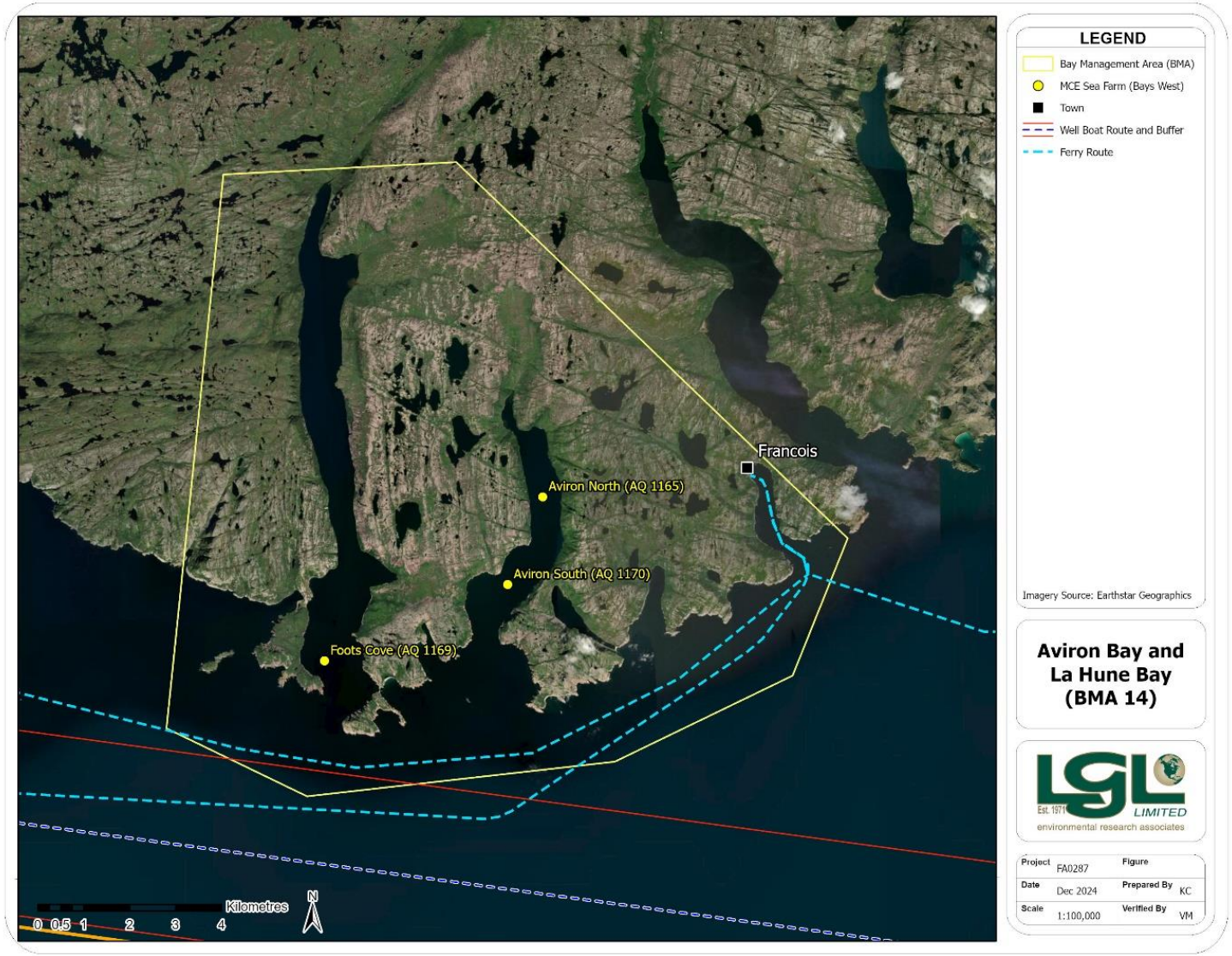


Figure 15.1. Locations of sea farms in the Aviron Bay and La Hune Bay BMA.

Table 15.2. Summary of site-specific sea farm characteristics in Aviron Bay and La Hune Bay BMA (BMA 14).

Characteristic	Sea Farm		
	Aviron North	Aviron South	Foots Cove
Lease area (ha)	81	83	159
Water depth under lease (m)	0–135	0–144	1–177
Minimum water depth under sea cages (m)	74	64	82
Predominant Bottom Type	Hard	Hard	Hard
Water Temperature (Mean °C at 15 m)			
Winter	3.3		
Spring	2.8		
Summer	9.0		
Fall	11.0		
Dissolved Oxygen (Mean mg/L at 15 m)			
Winter	n/a		
Spring	n/a		
Summer	n/a		
Fall	n/a		
Currents (cm/s at 15 m)			
Mean	3.2	3.6	4.3
Maximum	15	20	30

Notes:
Water depth values may vary by approximately ± 2 m depending on tidal influence.

15.1 Sea Farm Site Maps

The MCE sea farms in the Aviron Bay and La Hune Bay BMA have been designed in a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 15.2–15.4). The sea farms in the Aviron Bay and La Hune BMA will be third-party certified prior to stocking [as per FFA Policy 9; FFA 2019)].

15.1.1 Aviron North

The Aviron North sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 15.2).

15.1.2 Aviron South

The Aviron South sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 15.3).

15.1.3 Foots Cove

The Foots Cove sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 15.4).

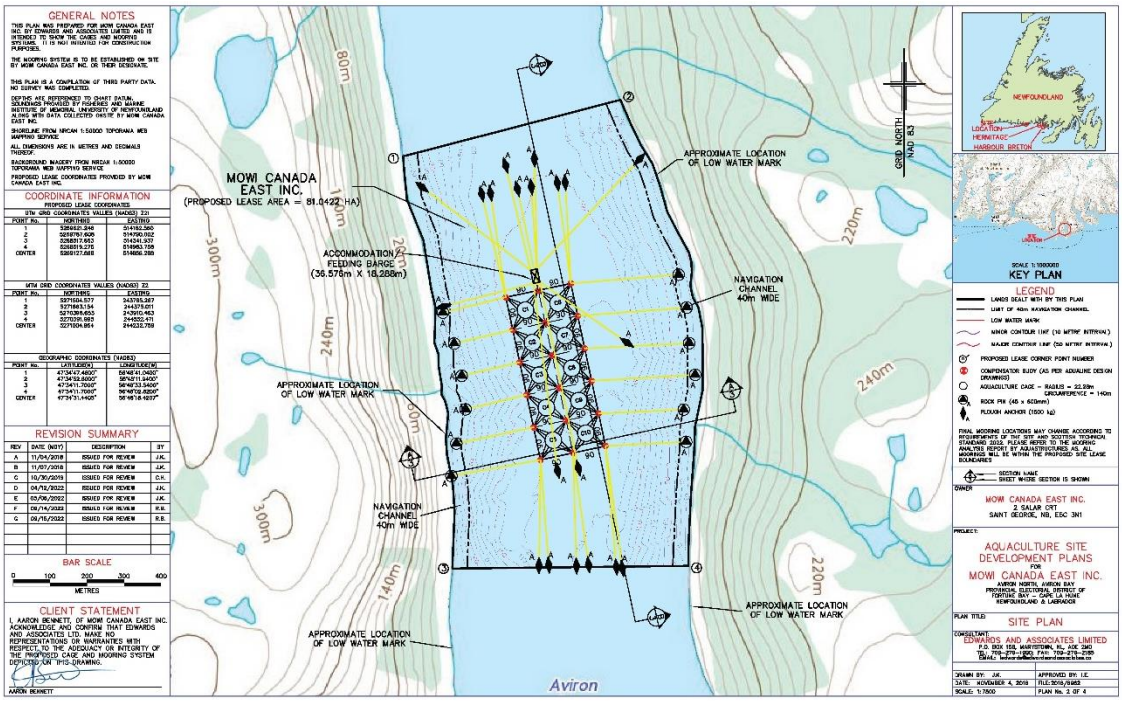


Figure 15.2. Aviron North sea farm map and sea cage layout.

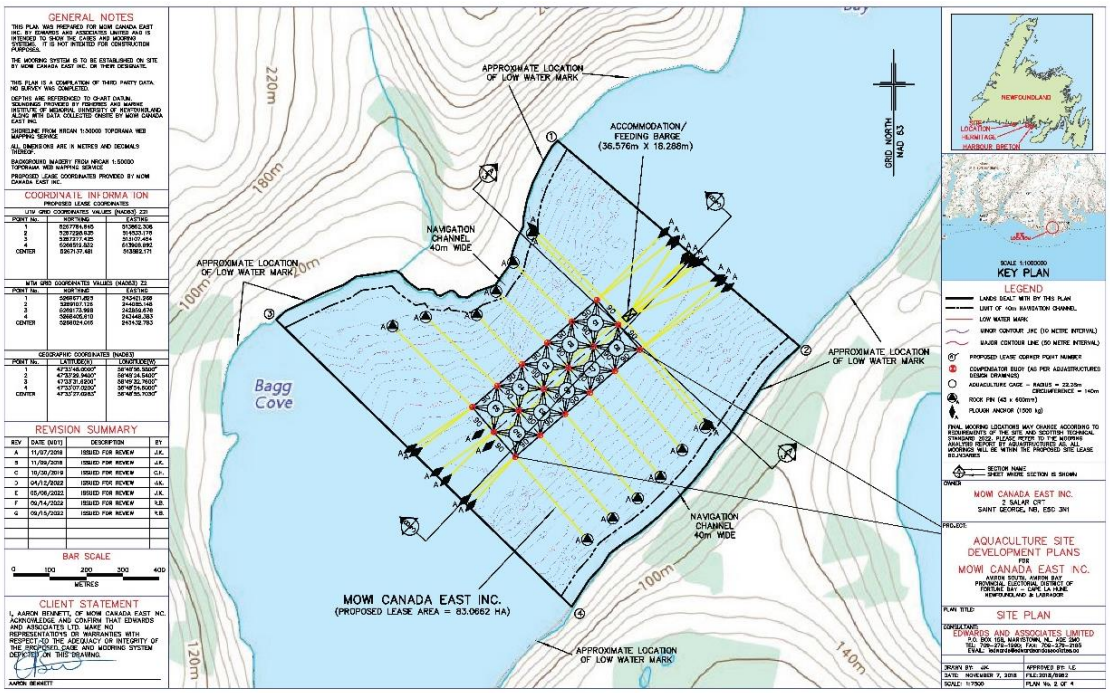


Figure 15.3. Aviron South sea farm map and sea cage layout.

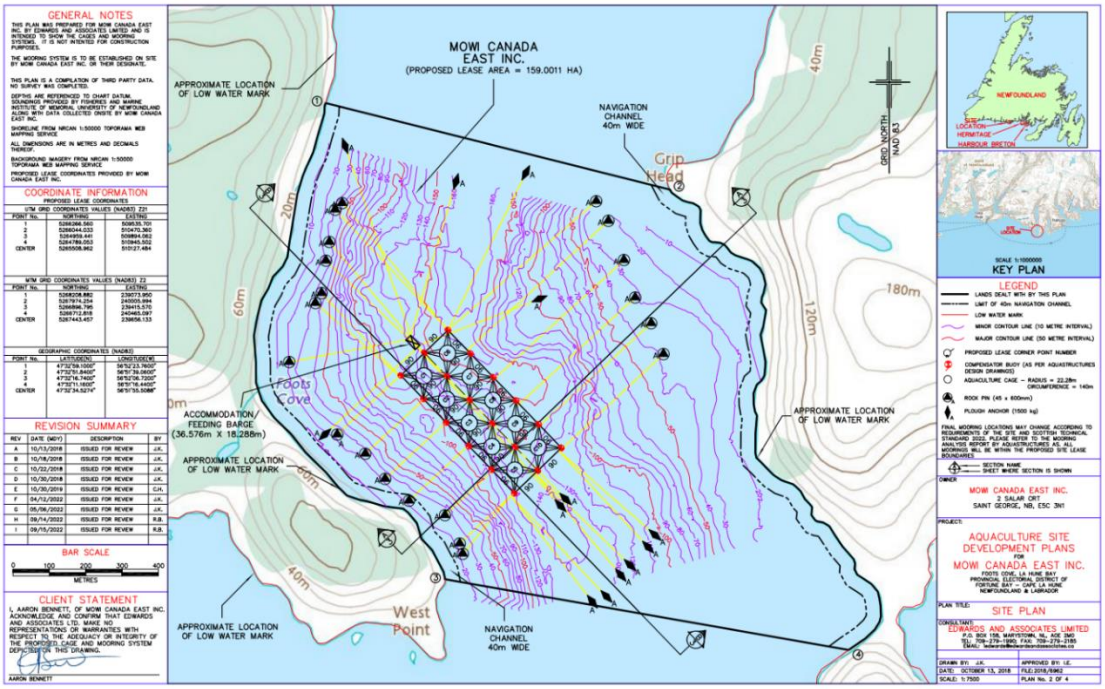


Figure 15.4. Foots Cove sea farm map and sea cage layout.

15.2 Benthic Surveys

Benthic surveys in the Aviron Bay and La Hune Bay BMA were conducted in July 2018. Video observations were collected along transects (100 m intervals) and stations categorized as hard bottom appeared hard visually or did not produce acceptable grab samples.

15.2.1 Aviron North

Based on surveys at 99 sampling stations across 13 transects, the composition of the seafloor in the Aviron North sea farm is primarily mud and silt covering bedrock or cobble (Figure 15.5; Table 15.3). The majority of stations (55 of 99) were considered hard bottom. Species observed include algae spp., anemones, sea star spp., brittle stars, sponges and more. Soft coral, sea pens and an unidentified tunicate were observed. Kelp beds were observed near shore on the east and west ends of most transects. Benthic indicators, present as a small patch of *Beggiatoa*-like bacteria, were observed on one transect (transect 5) in approximately 95 m water depth.

15.2.2 Aviron South

Based on surveys at 101 stations across 10 transects, the composition of the seafloor in the Aviron South sea farm is primarily sand and mud covering bedrock or boulder (Figure 15.6; Table 15.4). More than half of stations (59 of 101) were considered hard bottom. Species observed included

algae, anemones, sea star spp., sponge spp., and more (Table 15.4). Soft Coral was observed. Benthic indicators, present as patches of *Beggiatoa*-like bacteria, were observed on three transects (transects 1, 8 and 10) from approximately 117 to 141 m water depth. The bacteria observed was typically covering unattached algae present on the seafloor.

15.2.3 Foots Cove

Based on surveys at 183 sampling stations across 13 transects, the composition of the seafloor in the Foots Cove sea farm is primarily sand and mud that covered bedrock and rockwall (Figure 15.7; Table 15.5). The majority of stations (111 of 183) were considered hard bottom. Species observed include algae, sea star spp., sponge spp., arrow worms, feather stars and more (Table 15.5). Moon snail (*Naticidae*) sand collars, which are the snail's egg masses, were observed on transects 3, 11, 12 and 13, between 7 m and 18 m depths, on sand substrate. The presence of these egg masses may potentially indicate moon snail nursery or juvenile habitat. Some encrusting and standalone sponges were noted; however, not in quantities to be considered a complex. Benthic indicators, present as a very small patches of *Beggiatoa*-like bacteria, were observed on two transects, at 600 m along transect 7 in approximately 145 m depth and at 720 m along transect 9 in 120 m depth on algae debris.

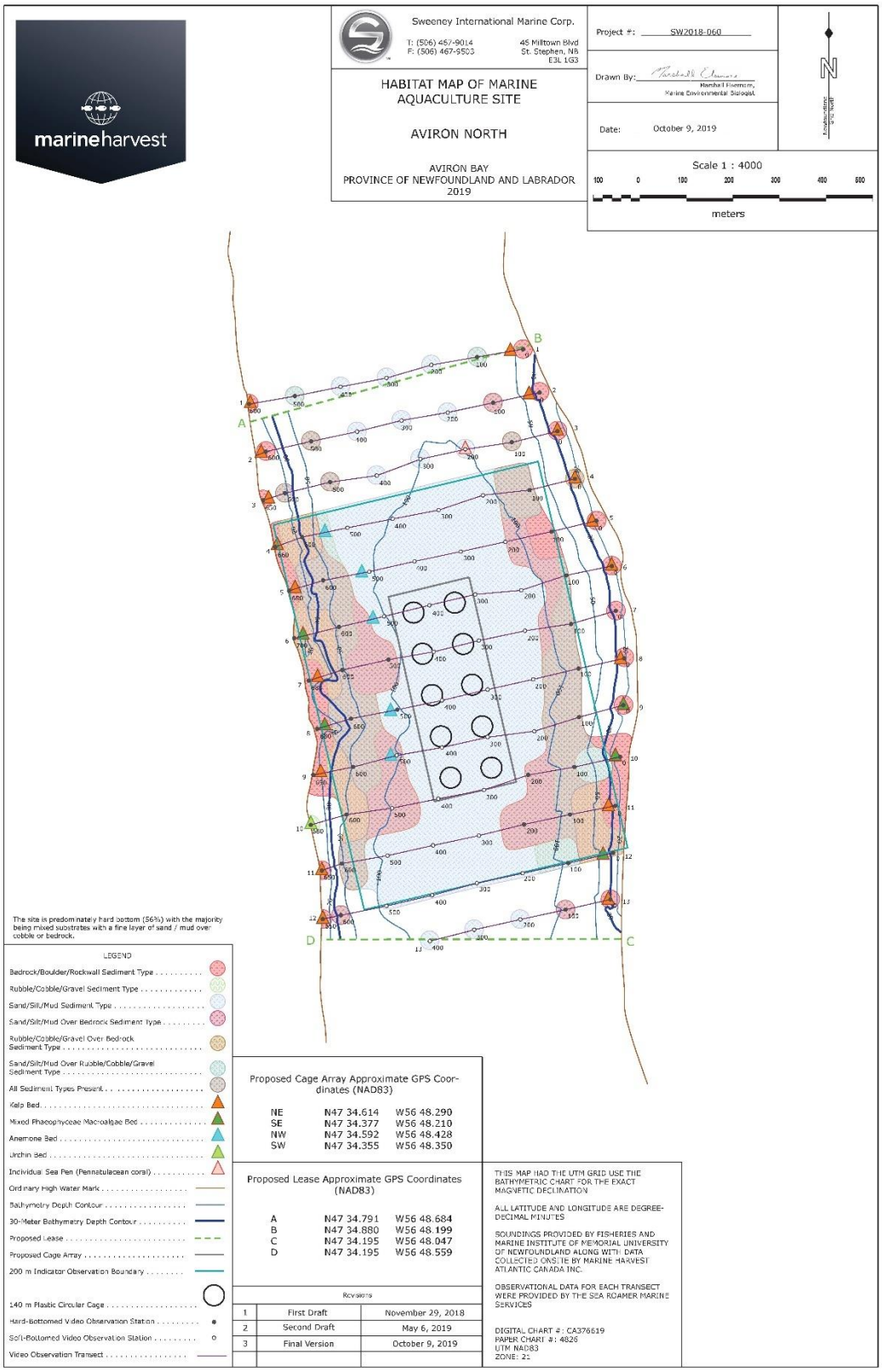


Figure 15.5. Habitat observations at sampling stations in the Aviron North sea farm (July 2018).

Table 15.3. Summary of bottom type and observed flora and fauna at the Aviron North sea farm (July 2018).

Aviron North																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 34.878	56 48.196	3	Hard	90%	10%									
	100	47 34.869	56 48.275	63	Hard					70%			30%			*Hormathia* Anemone (6), Worm Tube (13)
	200	47 34.860	56 48.353	92	Soft								100%			Shrimp (19), Snake Blenny (1), Worm Tube (>20)
	300	47 34.845	56 48.430	95	Soft								100%			Shrimp (9), Cushion Star (1), Snake Blenny (2), Worm Tube (17)
	400	47 34.835	56 48.509	83	Soft								100%			*Stomphia* Anemone (>20), Shrimp (3)
	500	47 34.824	56 48.587	59	Hard				60%	5%			35%			*Hormathia* Anemone (15), Warty Sponge (5%)
	600	47 34.815	56 48.665	2	Hard	60%	40%									
2	0	47 34.828	56 48.168	4	Hard		100%									Cunner (3)
	100	47 34.816	56 48.247	75	Hard								100%			*Hormathia* Anemone (>20), Worm Tube (>20), Acadian Redfish (1), Brittle Star (3)
	200	47 34.805	56 48.325	95	Soft								100%			Shrimp (6), Eelpout (1), Snake Blenny (2), Worm Tube (7)
	300	47 34.796	56 48.404	97	Soft								100%			Krill (2), Shrimp (2), Worm Tube (>20)
	400	47 34.783	56 48.480	95	Soft								100%			Krill (1), Shrimp (5), Worm Tube (8)
	500	47 34.772	56 48.559	78	Hard			15%	25%	10%			50%			*Hormathia* Anemone (>20), White Branching Sponge (1), *Serpula* (5), Acadian Redfish (1), *Asterias* Sea Star (1)
	600	47 34.760	56 48.637	15	Hard	55%	45%									Cunner (1)
3	0	47 34.783	56 48.137	5	Hard		100%									
	100	47 34.770	56 48.215	73	Hard					60%			40%			*Hormathia* Anemone (17), Snow Crab (1), Warty Sponge (<5%)
	200	47 34.762	56 48.295	98	Soft								100%			Sea Pen (1), Shrimp (4)
	300	47 34.751	56 48.372	99	Soft								100%			Worm Tube (14)
	400	47 34.732	56 48.447	98	Soft								100%			Shrimp (16), Snake Blenny (1), Worm Tube (>20)
	500	47 34.725	56 48.527	88	Hard			35%		5%			60%			Toad Crab (1), *Hormathia* Anemone (>20), Warty Sponge (5%)
	600	47 34.712	56 48.604	37	Hard		35%		5%	15%		45%				
	650	47 34.704	56 48.642	3	Hard		100%									
4	0	47 34.728	56 48.108	3	Hard		90%			10%						Cunner (4)
	100	47 34.715	56 48.185	75	Hard		15%	15%	5%	25%		40%				Brittle Star (1), Encrusting Sponge (trace), Worm Tube (>20), Unidentifiable Anemone (3), *Stomphia* Anemone (3), Shrimp (1)
	200	47 34.709	56 48.265	103	Soft								100%			Hagfish (1), Krill (1), Unidentifiable Anemone (1), Worm Tube (4)
	300	47 34.692	56 48.341	102	Soft								100%			Shrimp (2), Worm Tube (5)
	400	47 34.682	56 48.420	100	Soft								100%			Snake Blenny (2), Worm Tube (5)
	500	47 34.672	56 48.497	95	Soft								100%			Worm Tube (>20), Snake Blenny (1), Unidentifiable Jellyfish (1), *Stomphia* Anemone (1), Krill (1)
	600	47 34.661	56 48.575	49	Hard		40%	50%		10%						
	660	47 34.650	56 48.621	3	Hard		100%									
5	0	47 34.679	56 48.071	1	Hard		100%									
	100	47 34.667	56 48.148	69	Hard		100%									Green Sea Urchin (1), Unidentifiable

Aviron North																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Crab (1), *Cerianthus* Anemone (7), Spiny Sunstar (1), *Stomphia* Anemone (6), Worm Tube (>20)
	200	47 34.655	56 48.227	104	Soft								100%			Worm Tube (>20), Bryozoan (1), Shrimp (1)
	300	47 34.644	56 48.304	105	Soft								100%			Shrimp (2), Worm Tube (5)
	400	47 34.633	56 48.383	103	Soft								100%			Shrimp (1), Snake Blenny (1), Worm Tube (>20)
	500	47 34.621	56 48.460	95	Soft								100%			Worm Tube (>20), *Stomphia* Anemone (>20)
	600	47 34.611	56 48.539	54	Hard		25%	60%	5%	10%						Unidentifiable crab (2), Acadian Redfish (1)
	680	47 34.599	56 48.597	1	Hard		100%									
6	0	47 34.627	56 48.045	11	Hard		80%	20%								
	100	47 34.616	56 48.123	63	Hard					60%			40%			*Stomphia* Anemone (>20), Worm Tube (>20), Unidentifiable Fish (1)
	200	47 34.599	56 48.200	107	Soft								100%			Snake Blenny (1), Shrimp (3), Worm Tube (4)
	300	47 34.594	56 48.279	107	Soft								100%			Shrimp (1), Toad Crab (1), Worm Tube (11), Snake Blenny (1)
	400	47 34.582	56 48.357	106	Soft								100%			Shrimp (3), Worm Tube (6)
	500	47 34.569	56 48.435	103	Soft								100%			Shrimp (5), Worm Tube (>20), Krill (1)
	600	47 34.557	56 48.512	69	Hard			10%	5%			85%				*Stomphia* Anemone (1), *Cerianthus* Anemone (12), Worm Tube (>20)
	700	47 34.544	56 48.589	2	Hard		90%			10%						Cunner (2)
7	0	47 34.575	56 48.038	1	Hard		100%									Green Sea Urchin (>20), *Metridium* Anemone (1)
	100	47 34.560	56 48.115	69	Hard					60%			40%			*Stomphia* Anemone (>20)
	200	47 34.552	56 48.194	112	Soft								100%			Brittle Star (2), Worm Tube (>20)
	300	47 34.541	56 48.273	110	Soft								100%			Worm Tube (6)
	400	47 34.528	56 48.350	107	Soft								100%			Worm Tube (4), Shrimp (1)
	500	47 34.519	56 48.428	102	Hard			35%					65%			*Stomphia* Anemone (>20), White Branching Sponge (6), Encrusting Sponge (5%), Soft Coral (2), Unidentifiable Fish (1), Tunicate (1), Unidentifiable Anemone (1), Unidentifiable Sponge (1)
	600	47 34.507	56 48.507	60	Hard					70%	15%		15%			*Stomphia* Anemone (4), *Cerianthus* Anemone (8)
	680	47 34.495	56 48.564	1	Hard		100%									Cunner (2)
8	0	47 34.520	56 48.024	3	Hard		100%									Cunner (5)
	100	47 34.508	56 48.102	78	Hard					60%			40%			Toad Crab (1), Spiny Sunstar (1), *Stomphia* Anemone (>20)
	200	47 34.496	56 48.180	113	Soft								100%			Shrimp (2), Unidentifiable Fish (1), Unidentifiable Anemone (2)
	300	47 34.484	56 48.258	112	Soft								100%			Worm Tube (13), Shrimp (1)
	400	47 34.472	56 48.336	111	Soft								100%			Shrimp (1)
	500	47 34.461	56 48.413	102	Hard								100%			Shrimp (10), *Stomphia* Anemone (>20), Worm Tube (>20)
	600	47 34.451	56 48.492	48	Hard			20%		15%	65%					Acadian Redfish (1)
	680	47 34.439	56 48.550	1	Hard	30%	70%									Unidentifiable Jellyfish (1), Cunner (1), Unidentifiable Fish (1), *Metridium* anemone (2)
9	0	47 34.466	56 48.026	1	Hard	40%	60%									Cunner (1)

Aviron North																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	100	47 34.452	56 48.102	72	Hard					10%		90%				*Stomphia* Anemone (3), Worm Tube (>20), American Lobster (1)
	200	47 34.436	56 48.178	129	Soft								100%			Brittle Star (2), Worm Tube (4)
	300	47 34.429	56 48.258	118	Soft								100%			Worm Tube (6), Shrimp (2), Krill (1)
	400	47 34.417	56 48.336	118	Soft								100%			Unidentifiable Sea Star (1), Shrimp (3), Worm Tube (4)
	500	47 34.408	56 48.414	103	Soft								100%			Shrimp (3), *Stomphia* Anemone (>20), Soft Coral (2), Worm Tube (6)
	600	47 34.395	56 48.489	57	Hard		65%	10%			15%		10%			Acadian Redfish (3), *Stomphia* Anemone (6), *Cerianthus* Anemone (14), Toad Crab (2), Encrusting Sponge (trace)
	690	47 34.386	56 48.557	3	Hard		100%									
10	0	47 34.406	56 48.032	1	Hard		100%									Cunner (>20)
	100	47 34.394	56 48.110	90	Hard					55%			45%			*Hormathia* Anemone (2), *Stomphia* Anemone (>20), Worm Tube (>20), Toad Crab (1)
	200	47 34.385	56 48.189	125	Hard								100%			Worm Tube (12)
	300	47 34.368	56 48.265	124	Soft								100%			Shrimp (5), Brittle Star (2), Worm Tube (3)
	400	47 34.358	56 48.343	120	Soft								100%			Shrimp (2), Brittle Star (1), Worm Tube (3)
	500	47 34.347	56 48.422	105	Soft			5%					95%			*Stomphia* Anemone (13), Worm Tube (>20), Soft Coral (1)
	600	47 34.340	56 48.500	37	Hard		20%	5%		15%	60%					
	680	47 34.328	56 48.561	2	Hard		25%	60%		15%						Green Sea Urchin (>20)
11	0	47 34.349	56 48.040	5	Hard		100%									Cunner (4)
	100	47 34.339	56 48.118	92	Hard					20%			80%			Worm Tube (>20), *Stomphia* Anemone (13)
	200	47 34.328	56 48.196	126	Hard								100%			Shrimp (2), Brittle Star (1), Unidentifiable Fish (1)
	300	47 34.315	56 48.274	124	Soft								100%			Shrimp (6), Snake Blenny (3), Worm Tube (>20)
	400	47 34.304	56 48.352	120	Soft								100%			Snake Blenny (2), Worm Tube (>20)
	500	47 34.292	56 48.430	114	Soft								100%			Shrimp (3), *Stomphia* Anemone (2), Worm Tube (10)
	600	47 34.283	56 48.508	68	Hard		55%	15%	5%	5%			20%			*Cerianthus* Anemone (>20), *Stomphia* Anemone (4), *Serpula* (>20), Encrusting Sponge (5%)
	650	47 34.275	56 48.543	5	Hard		100%									Cunner (2)
12	0	47 34.295	56 48.044	2	Hard		80%		5%	10%	5%					Unidentifiable Fish (13)
	100	47 34.283	56 48.121	92	Hard				5%	20%			75%			*Stomphia* Anemone (17), Sculpin (1)
	200	47 34.271	56 48.199	130	Soft								100%			Shrimp (3), Brittle Star (1), Worm Tube (>20)
	300	47 34.260	56 48.277	125	Soft								100%			Shrimp (2), Worm Tube (14)
	400	47 34.246	56 48.354	125	Soft								100%			Unidentifiable Fish (1), Shrimp (1), Worm Tube (>20)
	500	47 34.234	56 48.432	116	Soft								100%			Worm Tube (>20), Shrimp (3), Brittle Star (1), *Stomphia* Anemone (2), Snow Crab (1)
	600	47 34.223	56 48.510	47	Hard			80%				20%				*Asterias* Sea Star (1), *Hormathia* Anemone (4), Acadian Redfish (1)
	650	47 34.219	56 48.541	3	Hard	100%										
13	0	47 34.241	56 48.049	14	Hard		100%									Cunner (1)
	100	47 34.229	56 48.126	99	Hard								100%			*Hormathia* Anemone (>20), Worm

Aviron North																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Tube (>20), Shrimp (1)
	200	47 34.218	56 48.203	135	Soft								100%			Brittle Star (3), Shrimp (3), Worm Tube (2), Cunner (2)
	300	47 34.206	56 48.282	129	Soft								100%			Shrimp (5)
	400	47 34.193	56 48.358	125	Soft								100%			Shrimp (3), Snake Blenny (1), Worm Tube (>20)

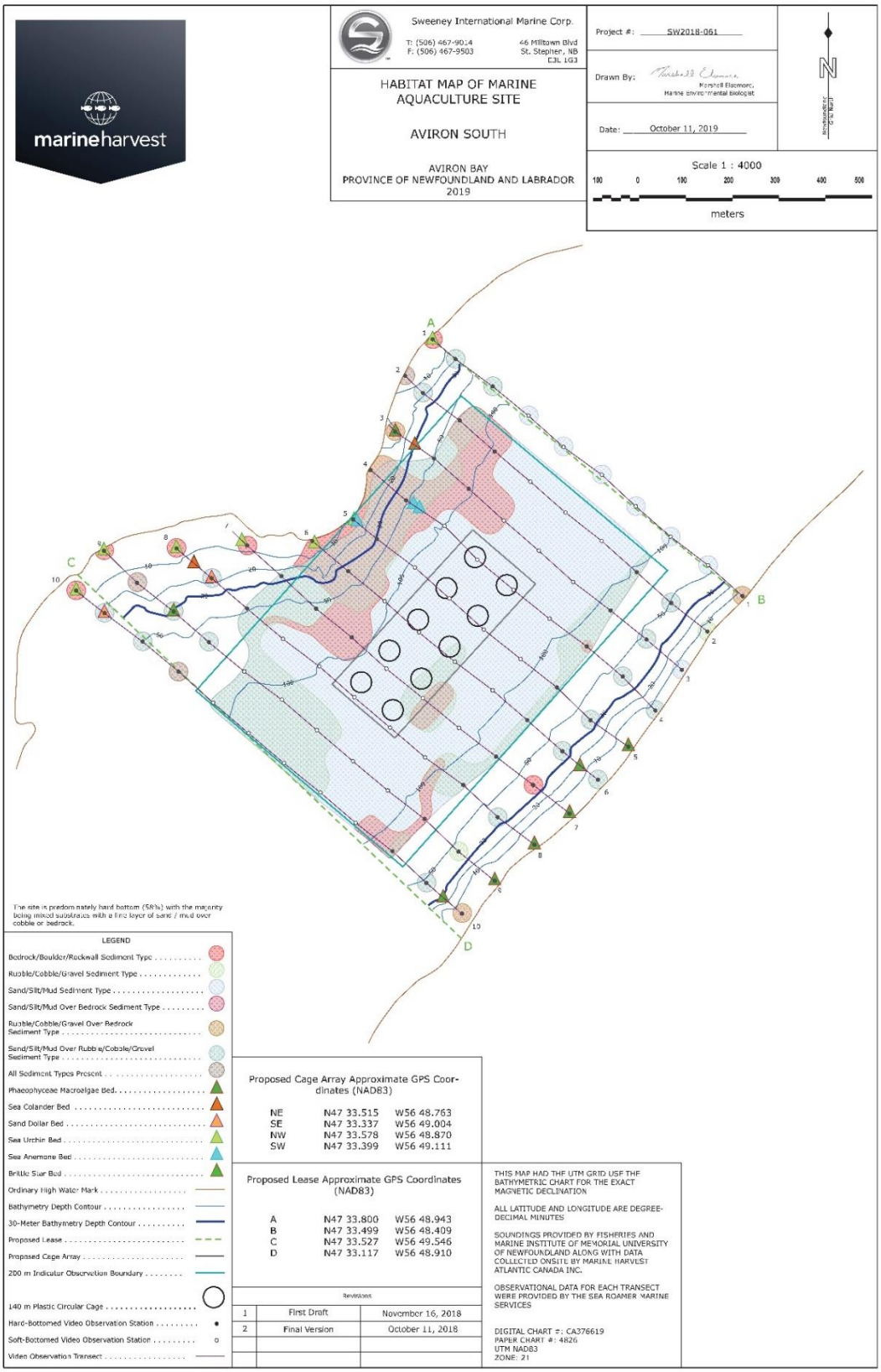


Figure 15.6. Habitat observations at sampling stations in the Aviron South sea farm (July 2018).

Table 15.4. Summary of bottom type and observed flora and fauna at the Aviron South sea farm (July 2018).

Aviron South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 33.500	56 48.408	1	Hard			25%	5%	10%	60%					Cunner (1), Atlantic Lobster (1)
	100	47 33.536	56 48.467	56	Soft							100%				Atlantic Scallop (6), Spiny Sunstar (1), *Hormathia* Anemone (8)
	200	47 33.569	56 48.531	90	Soft								100%			Sand Shrimp (8), Worm Tube (>20), Brittle Star (3), *Hormathia* Anemone (>20), Cunner (1)
	300	47 33.604	56 48.591	123	Soft								100%			Sand Shrimp (13), Brittle Star (3), Worm Tube (1)
	400	47 33.641	56 48.649	129	Soft								100%			Sand Shrimp (11), Brittle Star (1), Worm Tube (>20)
	500	47 33.673	56 48.714	129	Soft								100%			Sand Shrimp (6), Brittle Star (7), Worm Tube (>20), Mud Star (1)
	600	47 33.709	56 48.774	124	Soft								100%			Worm Tube (>20), Mud Star (1), Brittle Star (9), Sand Shrimp (5), Snake Blenny (1)
	700	47 33.743	56 48.835	88	Hard					70%			30%			*Hormathia* Anemone (>20), Toad Crab (5), Green Sea Urchin (1), Brittle Star (7)
	800	47 33.775	56 48.899	8	Hard						100%					Ctenophore (4)
	870	47 33.798	56 48.938	2	Hard		100%									Cunner (>20), Green Sea Urchin (>20), Ctenophore (5), *Metridium* Anemone (>20)
2	0	47 33.459	56 48.468	2	Hard						100%					Ctenophore (1)
	100	47 33.492	56 48.530	38	Hard				10%	70%	20%					Atlantic Scallop (2), Green Sea Urchin (3), Brittle Star (1), Toad Crab (1)
	200	47 33.528	56 48.589	96	Hard					5%			95%			*Hormathia* Anemone (>20), Soft Coral (2), Brittle Star (5), Sand Shrimp (3)
	300	47 33.564	56 48.649	130	Soft								100%			Brittle Star (3), Sand Shrimp (6)
	400	47 33.597	56 48.711	132	Soft								100%			Sand Shrimp (4), Brittle Star (5)
	500	47 33.633	56 48.771	129	Soft								100%			Sand Shrimp (5), Unidentified Crab (1), Worm Tube (>20)
	600	47 33.668	56 48.832	122	Hard		100%									*Hormathia* Anemone (>20), Brittle Star (19), *Serpula* (1), Breadcrumb Sponge (5%), Round Sponge (1), Ctenophore (1), White Encrusting Sponge (5%)
	700	47 33.704	56 48.892	68	Hard					70%			30%			*Hormathia* Anemone (>20), Brittle Star (>20)
	800	47 33.736	56 48.955	15	Hard					25%	75%					Atlantic Scallop (7), Blue Mussel (1), Brittle Star (2), Ctenophore (2)
	860	47 33.756	56 48.985	2	Hard			70%	10%		20%					Cunner (8), Ctenophore (2), Green Sea Urchin (>20)
3	0	47 33.415	56 48.512	2	Hard							100%				Sand Dollar (>20), Ctenophore (4)
	100	47 33.450	56 48.573	48	Hard					40%	30%	30%				Blue Mussel (2), *Hormathia* Anemone (6)
	200	47 33.484	56 48.634	82	Hard					25%			75%			*Hormathia* Anemone (>20), Brittle Star (9), Unidentified Sponge (2), Sand Shrimp (1)
	300	47 33.517	56 48.698	127	Soft								100%			*Hormathia* Anemone (1), Brittle Star (13), Worm Tube (>20), Sand

Aviron South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Shrimp (5)
	400	47 33.553	56 48.757	133	Soft								100%			Brittle Star (4), Sand Shrimp (7), Cushion Star (1)
	500	47 33.588	56 48.816	130	Soft			5%					95%			Brittle Star (6), Sand Shrimp (5)
	600	47 33.625	56 48.877	102	Hard	65%							35%			Brittle Star (8), *Hormathia* Anemone (6), White Encrusting Sponge (25%), Breadcrumb Sponge (5%), *Serpula* (14), Sand Shrimp (1), *Geodiidae* Sponge (1), White Branching Sponge (8), Unidentified Sponge (1)
	700	47 33.660	56 48.936	58	Hard					10%	45%	45%				*Cerianthus* Anemone (>20), Toad Crab (1)
	800	47 33.691	56 49.002	11	Hard		20%	40%			40%					Cunner (13), Ctenophore (1), Green Sea Urchin (>20)
4	0	47 33.368	56 48.558	2	Hard					5%	95%					Cunner (5), *Metridium* Anemone (12)
	100	47 33.407	56 48.614	42	Hard					15%	65%	20%				Brittle Star (5), Ctenophore (1)
	200	47 33.442	56 48.675	78	Hard			5%			5%					*Hormathia* Anemone (>20), Brittle Star (6), Worm Tube (18)
	300	47 33.474	56 48.739	114	Soft											Sand Shrimp (15), *Hormathia* Anemone (6), Worm Tube (>20), Snake Blenny (1)
	400	47 33.508	56 48.800	134	Soft											Brittle Star (5), Sand Shrimp (6), Krill (2), Worm Tube (>20), Warty Sponge (1)
	500	47 33.543	56 48.862	130	Soft											Brittle Star (1), Worm Tube (>20), Unidentified Sponge (1), Sand Shrimp (1), Toad Crab (1)
	600	47 33.582	56 48.918	117	Soft											Sand Shrimp (3), Worm Tube (18), Brittle Star (5), Snake Blenny (1), *Hormathia* Anemone (1), Cushion Star (1)
	700	47 33.612	56 48.984	44	Hard		90%					10%				Brittle Star (>20), Green Sea Urchin (3), Northern Sea Star (3)
	800	47 33.647	56 49.044	6	Hard		100%									Green Sea Urchin (>20)
5	0	47 33.326	56 48.604	2	Hard					100%						Cunner (1), Ctenophore (1)
	100	47 33.357	56 48.669	37	Hard					65%		35%				Brittle Star (1), Green Sea Urchin (3), Ctenophore (2)
	200	47 33.395	56 48.726	68	Hard											*Hormathia* Anemone (>20), Brittle Star (4), Worm Tube (>20)
	300	47 33.428	56 48.788	106	Soft											Unidentified Fish (1), Snake Blenny (1), Brittle Star (18), Sand Shrimp (15), Worm Tube (>20)
	400	47 33.462	56 48.851	136	Soft											Brittle Star (5), *Stomphia* Anemone (2), Sand Shrimp (13), Worm Tube (>20)
	500	47 33.498	56 48.910	135	Soft					Trace						Brittle Star (6), Worm Tube (14), Sand Shrimp (13)
	600	47 33.534	56 48.969	124	Soft											Worm Tube (>20), Sand Shrimp (12), Brittle Star (>20)
	700	47 33.567	56 49.033	57	Hard					Trace	5%					*Cerianthus* Anemone (>20)
	770	47 33.590	56 49.074	4	Hard		100%									Cunner (1), Green Sea Urchin (>20)
6	0	47 33.288	56 48.656	2	Hard						20%	80%				Sand Dollar (>20)
	100	47 33.321	56 48.717	29	Hard					50%	10%	40%				Ctenophore (1), Cunner (3)
	200	47 33.357	56 48.777	70	Hard											*Hormathia* Anemone (>20), Brittle

Aviron South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Star (>20), Worm Tube (>20)
	300	47 33.392	56 48.836	105	Soft											Snake Blenny (1), Sand Shrimp (12), Brittle Star (16), Worm Tube (12), Arrow Worm (1)
	400	47 33.425	56 48.901	134	Soft				Trace	30%						*Hormathia* Anemone (6), Toad Crab (1), Sand Shrimp (6), Arrow Worm (1), Brittle Star (4), Worm Tube (10), Snake Blenny (2)
	500	47 33.459	56 48.962	136	Soft											Sand Shrimp (11), Brittle Star (4), Snake Blenny (1)
	600	47 33.495	56 49.021	122	Soft											Sand Shrimp (6), Brittle Star (7), *Hormathia* Anemone (17), *Stomphia* Anemone (1), White Encrusting Sponge (5%), Breadcrumb Sponge (5%), *Serpula* (>20), Acadian Redfish (1)
	700	47 33.530	56 49.083	44	Hard	100%							100%			Toad Crab (1), Brittle Star (>20), Northern Sea Star (1), White Encrusting Sponge (5%), *Serpula* (>20), Breadcrumb Sponge (5%)
	800	47 33.565	56 49.144	2	Hard		100%									Northern Sea Star (17), Green Sea Urchin (>20), Cunner (6)
7	0	47 33.249	56 48.705	1	Hard	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Cunner (7)
	100	47 33.282	56 48.767	39	Hard		100%									
	200	47 33.315	56 48.831	71	Hard					Trace			100%			*Hormathia* Anemone (>20), Brittle Star (4)
	300	47 33.348	56 48.894	118	Soft								100%			*Hormathia* Anemone (11), Sand Shrimp (4), Brittle Star (1), Snake Blenny (1)
	400	47 33.383	56 48.956	133	Soft					Trace			100%			Snake Blenny (2), Sand Shrimp (4), Brittle Star (1), Green Sea Urchin (4), Unidentified Anemone (1)
	500	47 33.417	56 49.018	140	Soft								100%			*Hormathia* Anemone (2), Sand Shrimp (>20), Brittle Star (11), Toad Crab (1), Smooth Sun Star (1), Unidentified Sea Star (1), Snake Blenny (2), Krill (2)
	600	47 33.453	56 49.077	91	Hard								100%			*Hormathia* Anemone (>20), Worm Tube (7), Brittle Star (3), Snake Blenny (1), White Encrusting Sponge (5%), Breadcrumb Sponge (5%), Northern Sea Star (2)
	700	47 33.487	56 49.138	61	Hard					15%	85%					*Hormathia* Anemone (17), Brittle Star (1), *Cerianthus* Anemone (>20), Spiny Sun Star (1), Toad Crab (1)
	800	47 33.524	56 49.197	30	Hard					15%	30%	55%				Ctenophore (4), Green Sea Urchin (11)
	900	47 33.560	56 49.256	9	Hard		100%									Green Sea Urchin (>20), Northern Sea Star (3)
8	0	47 33.213	56 48.765	2	Hard	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Cunner (1)
	100	47 33.245	56 48.828	35	Hard					10%	40%	50%				Green Sea Urchin (11), Unidentified Fish (1)
	200	47 33.282	56 48.887	71	Hard						40%		60%			*Hormathia* Anemone (>20), Brittle

Aviron South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Star (10), Worm Tube (11), Warty Sponge (1), Toad Crab (1)
	300	47 33.314	56 48.952	121	Soft								100%			*Hormathia* Anemone (5), Sand Shrimp (9), Arrow Worm (1), Brittle Star (2), Worm Tube (18)
	400	47 33.349	56 49.012	136	Soft								100%			Green Sea Urchin (2), Sand Shrimp (2), *Hormathia* Anemone (5), Round Sponge (1)
	500	47 33.384	56 49.073	137	Soft								100%			Turbellarian (1), Sand Shrimp (11), Brittle Star (10), *Hormathia* Anemone (1)
	600	47 33.420	56 49.133	106	Soft								100%			Brittle Star (5), Sand Shrimp (2), Toad Crab (1)
	700	47 33.452	56 49.195	77	Soft								100%			*Hormathia* Anemone (>20), Sand Shrimp (2)
	800	47 33.487	56 49.256	51	Hard					5%	95%					Brittle Star (>20), Atlantic Rock Crab (1), Green Sea Urchin (2)
	900	47 33.522	56 49.317	18	Hard						100%					Ctenophore (4), Sand Dollar (>20)
	1000	47 33.557	56 49.377	5	Hard		100%									Green Sea Urchin (>20), Northern Sea Star (1), Cunner (1)
9	0	47 33.171	56 48.833	1	Hard	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Cunner (>20)
	100	47 33.205	56 48.895	41	Hard					25%	75%					
	200	47 33.243	56 48.953	70	Hard		20%					80%				*Hormathia* Anemone (>20), Green Sea Urchin (2)
	300	47 33.276	56 49.016	121	Soft								100%			*Hormathia* Anemone (2), Sand Shrimp (>20)
	400	47 33.310	56 49.076	138	Soft								100%			Sand Shrimp (>20), Worm Tube (>20), Brittle Star (4), *Hormathia* Anemone (2), Green Sea Urchin (1), Snake Blenny (1)
	500	47 33.346	56 49.137	133	Soft								100%			Snake Blenny (2), Sand Shrimp (13), Brittle Star (3)
	600	47 33.381	56 49.197	114	Soft								100%			Sand Shrimp (8), Brittle Star (7), Worm Tube (5)
	700	47 33.414	56 49.261	100	Soft								100%			Sand Shrimp (10), Brittle Star (5), Snake Blenny (1)
	800	47 33.448	56 49.322	79	Hard						30%	70%				*Hormathia* Anemone (>20), Cunner (1), Atlantic Scallop (5), Green Sea Urchin (10)
	900	47 33.484	56 49.382	35	Hard					10%	90%					Brittle Star (>20), Atlantic Scallop (2), Ctenophore (2), Green Sea Urchin (3)
	1000	47 33.517	56 49.444	13	Hard		65%			10%	25%					Green Sea Urchin (>20)
	1100	47 33.554	56 49.501	2	Hard		100%									Green Sea Urchin (>20), Cunner (13)
10	0	47 33.133	56 48.890	1	Hard			30%	60%	10%						Cunner (5), Green Sea Urchin (>20)
	100	47 33.169	56 48.950	30	Hard					5%	20%	75%				Hermit Crab (1), Worm Tube (2), Smooth Sunstar (1)
	200	47 33.206	56 49.008	66	Hard						5%		95%			*Hormathia* Anemone (5), Worm Tube (>20), *Cerianthus* Anemone (3),

Aviron South																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Brittle Star (3)
	300	47 33.239	56 49.071	124	Soft								100%			Brittle Star (17), Sand Shrimp (8), Worm Tube (10)
	400	47 33.274	56 49.132	144	Soft								100%			Brittle Star (2), Sand Shrimp (1), Worm Tube (>20)
	500	47 33.308	56 49.194	140	Soft								100%			Green Sea Urchin (6), *Hormathia* Anemone (1), Brittle Star (6), Winter Flounder (1), Sand Shrimp (2)
	600	47 33.343	56 49.254	127	Soft								100%			Worm Tube (7), Unidentified Worm (2), Sand Shrimp (8), Snake Blenny (1), Unidentified Sea Star (1), Hormathia Anemone (1)
	700	47 33.378	56 49.315	117	Soft								100%			-Sand Shrimp (3), Sculpin (1), Brittle Star (4), Snake Blenny (1), Worm Tube (>20)
	800	47 33.414	56 49.374	75	Hard		50%				50%					*Cerianthus* Anemone (8), Unidentified Sea Star (1), *Hormathia* Anemone (7), Atlantic Scallop (1), Brittle Star (1), Acadian Redfish (3), *Serpula* (3), Green Sea Urchin (1), White Encrusting Sponge (5%)
	900	47 33.449	56 49.435	30	Hard					5%	95%					Brittle Star (>20), Green Sea Urchin (3), Atlantic Scallop (1)
	1000	47 33.482	56 49.500	14	Hard						100%					Sand Dollar (>20), Ctenophore (2)
	1080	47 33.508	56 49.549	2	Hard		50%	50%								Green Sea Urchin (>20), Cunner (17), Unidentified Bryozoan (2)

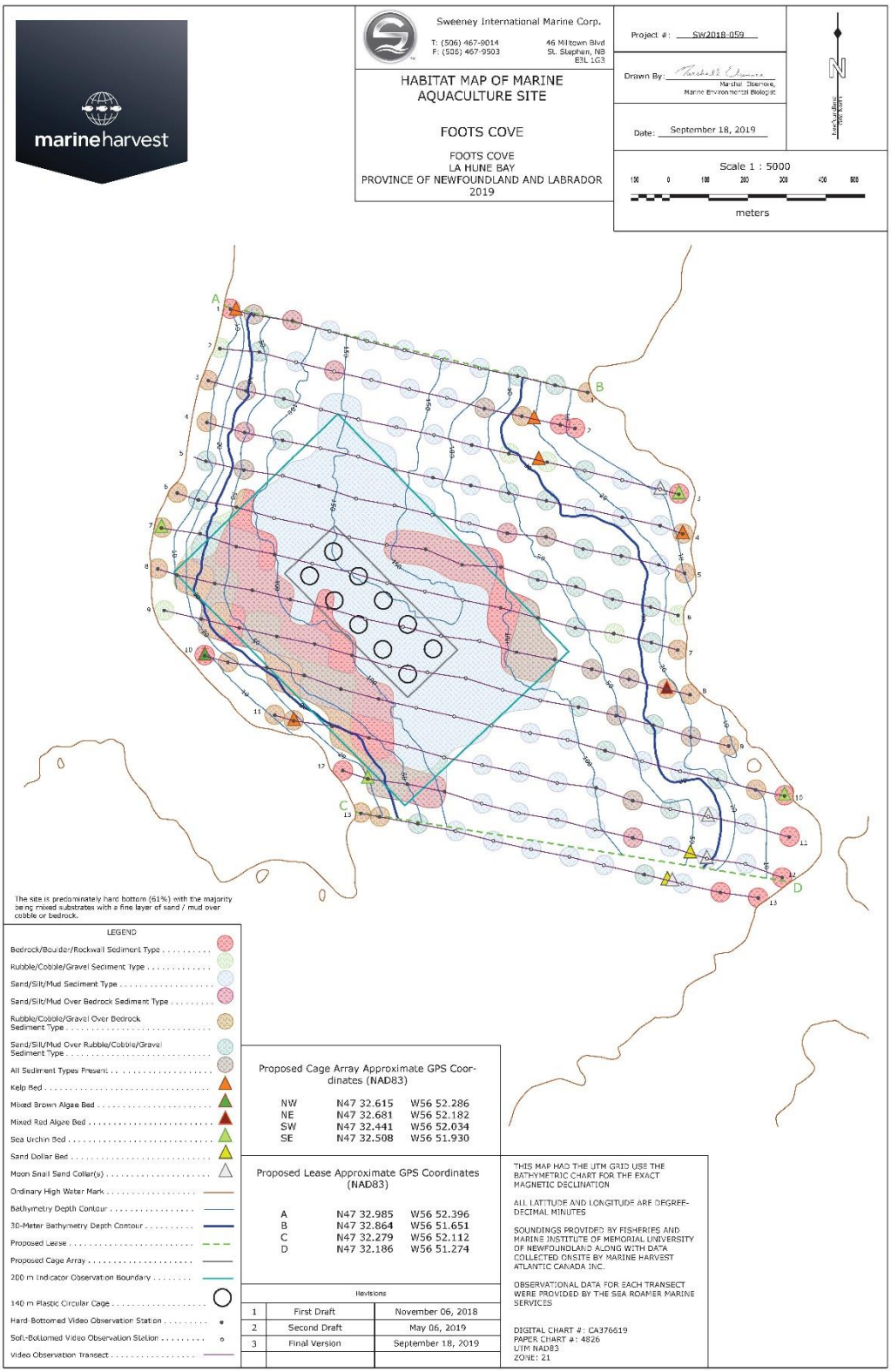


Figure 15.7. Habitat observations at sampling stations in the Foots Cove sea farm (July 2018).

Table 15.5. Summary of bottom type and observed flora and fauna at the Foots Cove sea farm (July 2018).

Foots Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	10	47 32.866	56 51.662	1	Hard			5%	5%	90%						Green Sea Urchin (>20)
	100	47 32.876	56 51.729	11	Hard					75%	10%	15%				Green Sea Urchin (4), Hermit Crab (1)
	200	47 32.889	56 51.806	39	Hard					85%		15%				Jonah Crab (1), Sculpin (1), Unidentifiable Sponge (1)
	300	47 32.900	56 51.884	90	Soft								100%			Shrimp (17), *Hormathia* Anemone (18), Winter Flounder (1)
	400	47 32.912	56 51.962	141	Soft								100%			Worm Tube (>20), Shrimp (>20), *Hormathia* Anemone (2), Winter Flounder (1), Snake Blenny (1)
	500	47 32.925	56 52.039	158	Soft								100%			Cushion Star (4), Shrimp (15), Worm Tube (>20), Acadian Redfish (1), Brittle Star (1)
	600	47 32.938	56 52.116	153	Soft								100%			Shrimp (13), Worm Tube (>20), Cushion Star (6)
	700	47 32.952	56 52.193	139	Soft								100%			Acadian Redfish (2), Brittle Star (2), Worm Tube (>20), Cushion Star (4), Shrimp (7), Snow Crab (2)
	800	47 32.967	56 52.270	99	Hard		90%						10%			Breadcrumb Sponge (10%), *Hormathia* Anemone (>20), Encrusting Ascidian (5%), *Serpula* (>20), *Geodiidae* Sponge (9)
	900	47 32.975	56 52.349	24	Hard			10%	10%	65%	15%					Acadian Redfish (1), Breadcrumb Sponge (<5%)
	960	47 32.983	56 52.397	1	Hard		100%									Cunner (>20), Periwinkle (>20), Green Sea Urchin (>20)
2	160	47 32.816	56 51.688	2	Hard	10%	90%									Periwinkle (>20), Green Sea Urchin (>20)
	200	47 32.821	56 51.718	12	Hard		100%									
	300	47 32.833	56 51.797	20	Hard		50%			50%						
	400	47 32.844	56 51.875	60	Hard		75%		5%	10%			10%			*Hormathia* Anemone (>20), Brittle Star (2), *Cerianthus* Anemone (1), Unidentifiable Fish (1)
	500	47 32.859	56 51.951	134	Soft								100%			Shrimp (16), Worm Tube (>20), *Hormathia* Anemone (3)
	600	47 32.871	56 52.029	156	Soft								100%			Shrimp (4), Cushion Star (3), Worm Tube (11)
	700	47 32.884	56 52.107	165	Soft								100%			Snake Blenny (1), Worm Tube (>20), Brittle Star (2)
	800	47 32.896	56 52.184	146	Soft			5%					95%			Worm Tube (>20), Shrimp (>20), *Hormathia* Anemone (2), Cushion Star (1), Eelpout (1), Acadian Redfish (2)
	900	47 32.909	56 52.262	112	Soft								100%			*Hormathia* Anemone (>20), Snake Blenny (1), Shrimp (4), Green Urchin Sea (1)
	1000	47 32.923	56 52.338	44	Hard					80%		20%				*Asterias* Sea Star (1), *Placopecten* Scallop (1)
	1100	47 32.928	56 52.419	1	Hard				10%	85%	5%					Periwinkle (5), Green Sea Urchin (4)
3	50	47 32.724	56 51.475	2	Hard		80%	20%								Green Sea Urchin (>20), Cunner (9)
	100	47 32.731	56 51.513	7	Soft							100%				Sand Dollar (8)
	200	47 32.744	56 51.591	9	Soft							100%				
	300	47 32.757	56 51.668	14	Soft					15%		85%				Green Sea Urchin (6)

Foots Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	400	47 32.769	56 51.746	21	Hard					100%						Green Sea Urchin (2), Cunner (2)
	500	47 32.781	56 51.824	25	Hard					60%	40%					
	600	47 32.793	56 51.901	74	Hard								100%			*Hormathia* Anemone (>20)
	700	47 32.807	56 51.978	142	Soft								100%			Shrimp (18), Worm Tube (15)
	800	47 32.818	56 52.056	158	Soft								100%			Cushion Star (1), Worm Tube (11), Arrow Worm (1)
	900	47 32.829	56 52.134	163	Soft								100%			Worm Tube (>20), Shrimp (6), Cushion Star (4)
	1000	47 32.843	56 52.211	128	Soft								100%			Worm Tube (>20), Shrimp (12), Toad Crab (1), Unidentifiable Sea Star (1)
	1100	47 32.858	56 52.288	93	Hard					20%			80%			*Hormathia* Anemone (>20), Unidentifiable Fish (1)
	1200	47 32.869	56 52.366	30	Hard		20%			45%	35%					*Chlamys* Scallop (1), *Asterias* Sea Star (2), Green Sea Urchin (3)
	1300	47 32.883	56 52.443	2	Hard			50%	15%	30%	5%					Green Sea Urchin (>20), Cunner (5), Blue Mussel (4)
4	40	47 32.669	56 51.467	2	Hard		25%	60%	15%							Cunner (11), Green Sea Urchin (>20)
	100	47 32.680	56 51.513	8	Hard							100%				Sand Dollar (>20)
	200	47 32.692	56 51.591	16	Hard							100%				Sand Dollar (>20), Green Sea Urchin (3), Sculpin (1)
	300	47 32.704	56 51.669	25	Soft							100%				*Placopecten* Scallop (2), Green Sea Urchin (9)
	400	47 32.715	56 51.747	31	Hard					95%		5%				Green Sea Urchin (3)
	500	47 32.726	56 51.825	46	Hard					55%		45%				Green Sea Urchin (2)
	600	47 32.737	56 51.903	81	Hard								100%			*Hormathia* Anemone (7), Worm Tube (>20)
	700	47 32.748	56 51.981	113	Hard								100%			Shrimp (19), Worm Tube (>20), *Hormathia* Anemone (1), Grenadier (1)
	800	47 32.759	56 52.059	162	Soft								100%			Shrimp (3), Krill (4), Worm Tube (6), Brittle Star (3)
	900	47 32.777	56 52.135	167	Soft								100%			Shrimp (7), Brittle Star (1), Krill (3), Spiny Sun Star (1), Cushion Star (1)
	1000	47 32.789	56 52.212	130	Soft								100%			Shrimp (16), Worm Tube (>20)
	1100	47 32.800	56 52.290	111	Hard					15%			85%			*Hormathia* Anemone (9), Shrimp (13), Worm Tube (12), Brittle Star (1)
	1200	47 32.811	56 52.368	50	Hard	15%	75%					10%				*Hormathia* Anemone (19), Breadcrumb Sponge (<5%), Acadian Redfish (3), Feather Star (1), Green Sea Urchin (1)
	1300	47 32.825	56 52.446	2	Hard			30%	10%	45%	15%					Green Sea Urchin (>20), Cunner (1)
5	30	47 32.614	56 51.463	6	Hard		10%	80%	10%							Cunner (15), Green Sea Urchin (1)
	100	47 32.626	56 51.516	22	Hard							100%				Green Sea Urchin (8), Jonah Crab (1), Krill (2), Winter Flounder (1)
	200	47 32.638	56 51.594	38	Hard					85%	5%		10%			Green Sea Urchin (3), Moon Snail (1)
	300	47 32.648	56 51.672	37	Hard					80%	5%		15%			
	400	47 32.665	56 51.748	38	Hard		60%	10%	15%			15%				Green Sea Urchin (1), Breadcrumb Sponge (5%), Rock Gunnel (1), *Asterias* Sea Star (1)
	500	47 32.670	56 51.828	69	Hard	35%	40%					25%				*Hormathia* Anemone (>20), Feather Star (1), Warty Sponge (<5%), *Asterias* Sea Star (1), Brittle Star (1), Green Sea Urchin (1)

Foots Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	600	47 32.684	56 51.905	94	Soft							100%				Snake Blenny (2), Shrimp (13), *Hormathia* Anemone (10), Brittle Star (1), Shielded Bryozoan (1)
	700	47 32.696	56 51.983	114	Soft							100%				*Hormathia* Anemone (9), Round Sponge (1), Snake Blenny (2) Unidentifiable Fish (2), Worm Tube (>20), Shrimp (10)
	800	47 32.709	56 52.060	159	Soft							100%				Brittle Star (9), Shrimp (9), Krill (1), Toad Crab (1)
	900	47 32.719	56 52.139	177	Soft							100%				Brittle Star (5), Shrimp (5), Worm Tube (>20), *Hormathia* Anemone (1)
	1000	47 32.736	56 52.215	137	Hard							100%				Brittle Star (1), Shrimp (12), Worm Tube (>20)
	1100	47 32.751	56 52.290	130	Soft							100%				Unidentifiable Fish (2), Shrimp (>20), Brittle Star (2), Worm Tube (>20)
	1200	47 32.759	56 52.370	61	Hard			20%	10%	35%	35%					*Cerianthus* Anemone (5), *Hormathia* Anemone (8), *Serpula* (6), Acadian Redfish (2), Warty Sponge (<5%), Breadcrumb Sponge (<5%)
	1300	47 32.771	56 52.448	10	Hard				5%	85%	5%	5%				Green Sea Urchin (13), Blue Mussel (1), Cunner (1)
	30	47 32.555	56 51.477	2	Hard			10%	35%	55%						Green Sea Urchin (>20), Unidentifiable Fish (1)
	100	47 32.567	56 51.533	21	Hard					45%	15%	40%				Green Sea Urchin (5)
	200	47 32.578	56 51.611	40	Hard					90%		10%				
	300	47 32.595	56 51.687	45	Hard					5%	95%					Toad Crab (1), Green Sea Urchin (3)
	400	47 32.605	56 51.765	60	Hard					65%		35%				*Hormathia* Anemone (16), Warty Sponge (<5%), Brittle Star (1)
	500	47 32.623	56 51.841	95	Hard	85%	15%									*Stomphia* Anemone (9), White Branching Sponge (1), *Hormathia* Anemone (3), Brittle Star (2),*Cerianthus* Anemone (6), Worm Tube (>20), Unidentifiable Anemone (3), Encrusting Sponge (<5%)
6	600	47 32.626	56 51.921	126	Hard								100%			Worm Tube (>20), Shrimp (14), Brittle Star (2), *Hormathia* Anemone (1), Unidentifiable Fish (1)
	700	47 32.648	56 51.996	112	Hard		65%						35%			Brittle Star (4), *Hormathia* Anemone (>20), Shrimp (3), Worm Tube (>20)
	800	47 32.654	56 52.076	161	Soft								100%			Brittle Star (4), Shrimp (12)
	900	47 32.665	56 52.153	165	Soft								100%			Brittle Star (3), Shrimp (5), Snake Blenny (1), Worm Tube (>20)
	1000	47 32.681	56 52.231	130	Soft								100%			Shrimp (>20), Worm Tube (>20), Snake Blenny (1), Grenadier (1)
	1100	47 32.692	56 52.308	125	Soft								100%			Shrimp (>20), Brittle Star (7), Unidentifiable Fish (1)
	1200	47 32.707	56 52.385	70	Hard		90%			10%						*Serpula* (>20), *Stomphia* Anemone (>20), Green Sea Urchin (1), Acadian Redfish (1), Encrusting Sponge (5%)
	1300	47 32.717	56 52.463	18	Hard					95%			5%			Green Sea Urchin (3)
	1360	47 32.727	56 52.507	2	Hard		60%	20%	20%							Green Sea Urchin (>20)
7	30	47 32.507	56 51.478	3	Hard			5%		95%						

Foots Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	100	47 32.517	56 51.532	25	Hard					45%	55%					Green Sea Urchin (1)
	200	47 32.530	56 51.609	43	Hard					85%	15%					Green Sea Urchin (3)
	300	47 32.538	56 51.688	54	Hard					5%	5%	90%				*Hormathia* Anemone (14)
	400	47 32.552	56 51.765	70	Hard								100%			Worm Tube (>20), *Stomphia* Anemone (>20)
	500	47 32.566	56 51.842	116	Hard	100%										*Stomphia* Anemone (>20), Shrimp (3), Encrusting Sponge (trace)
	600	47 32.577	56 51.920	135	Soft								100%			*Cerianthus* Anemone (4), Snake Blenny (2), Brittle Star (9), Shrimp (>20)
	700	47 32.589	56 51.998	155	Soft								100%			Snake Blenny (3), Worm Tube (>20), *Hormathia* Anemone (2), Brittle Star (2), Krill (5), Shrimp (>20)
	800	47 32.601	56 52.075	160	Soft								100%			Shrimp (16), Brittle Star (3), Worm Tube (8)
	900	47 32.616	56 52.152	154	Soft								100%			Brittle Star (5), Shrimp (>20), Worm Tube (>20), Krill (>20)
	1000	47 32.628	56 52.230	128	Soft								100%			Brittle Star (4), Worm Tube (>20), Shrimp (16)
	1100	47 32.641	56 52.307	106	Hard	50%	50%									Green Sea Urchin (1), *Henricia* Sea Star (1), *Stomphia* Anemone (>20), *Cerianthus* Anemone (4), Encrusting Sponge (5%), White Branching Sponge (1), Unidentifiable Fish (1)
	1200	47 32.652	56 52.386	72	Hard	95%						5%				*Serpula* (>20), Unidentifiable Fish (8), Unidentifiable Anemone (1), Encrusting Sponge (10%)
	1300	47 32.670	56 52.460	32	Hard					95%		5%				Green Sea Urchin (4), Sculpin (1), Rock Crab (1)
	1400	47 32.678	56 52.540	2	Hard			10%	25%	65%						Green Sea Urchin (>20), Cunner (1)
8	40	47 32.444	56 51.452	3	Hard		15%	35%	15%	35%						Cunner (1), *Asterias* Sea Star (1)
	100	47 32.452	56 51.500	19	Hard		10%	35%		55%						Cunner (1), Green Sea Urchin (1)
	200	47 32.466	56 51.578	38	Hard		20%	15%	10%	30%	10%	15%				
	300	47 32.480	56 51.655	51	Hard			5%		40%		55%				Green Sea Urchin (2), Brittle Star (1)
	400	47 32.494	56 51.731	66	Hard							100%				*Stomphia* Anemone (>20), Brittle Star (1)
	500	47 32.504	56 51.809	99	Hard							100%				*Stomphia* Anemone (>20), Worm Tube (>20), Brittle Star (3)
	600	47 32.520	56 51.886	124	Soft							100%				Brittle Star (6), Shrimp (6)
	700	47 32.527	56 51.965	148	Soft							100%				Brittle Star (9), Shrimp (6), Unidentifiable Fish (1)
	800	47 32.540	56 52.043	135	Soft							100%				Brittle Star (12), *Stomphia* Anemone (6), Shrimp (4), Worm Tube (>20)
	900	47 32.551	56 52.121	133	Soft							100%				Worm Tube (>20), *Stomphia* Anemone (1), Brittle Star (2), Shrimp (8)
	1000	47 32.566	56 52.197	115	Hard	80%	20%									Round Sponge (2), White Branching Sponge (2), Brittle Star (3), Unidentifiable Fish (6), Worm Tube (>20), Encrusting Sponge (<5%)
	1100	47 32.578	56 52.275	113	Hard							100%				Worm Tube (>20), Shrimp (2), Brittle Star (4)
	1200	47 32.591	56 52.353	85	Hard							100%				Sculpin (1), Snake Blenny (1), Unidentifiable Jellyfish (2)

Foots Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	1300	47 32.601	56 52.430	46	Hard			10%		50%		40%				*Stomphia* Anemone (3), Green Sea Urchin (1)
	1400	47 32.613	56 52.508	20	Hard			15%		50%	35%					Green Sea Urchin (5)
	1450	47 32.621	56 52.547	2	Hard			55%	25%	20%						Green Sea Urchin (>20)
9	100	47 32.373	56 52.373	2	Hard			45%	55%							Cunner (>20), Green Sea Urchin (>20)
	200	47 32.386	56 51.451	17	Hard		10%	5%		45%	35%	5%				Green Sea Urchin (4)
	300	47 32.402	56 51.528	22	Hard						100%					Green Sea Urchin (3)
	400	47 32.416	56 51.605	53	Hard	50%				10%	40%					*Urticina* Anemone (1)
	500	47 32.428	56 51.682	89	Hard					55%		45%				Toad Crab (1), *Hormathia* Anemone (>20)
	600	47 32.437	56 51.761	103	Soft							100%				*Stomphia* Anemone (4), Brittle Star (5), Unidentifiable Anemone (1), Worm Tube (3)
	700	47 32.452	56 51.838	118	Soft							100%				Brittle Star (3), Snake Blenny (1), Worm Tube (>20), Shrimp (4)
	800	47 32.468	56 51.914	121	Soft							100%				Brittle Star (4), *Stomphia* Anemone (1), Snake Blenny (1), Worm Tube (>20), Shrimp (2)
	900	47 32.476	56 51.993	147	Soft							100%				Brittle Star (8), Cushion Star (1), Worm Tube (>20), Sculpin (1), Shrimp (7)
	1000	47 32.485	56 52.071	129	Soft							100%				Shrimp (11), Brittle Star (10), Worm Tube (>20)
	1100	47 32.500	56 52.148	100	Hard	20%	80%									*Stomphia* Anemone (>20), *Cerianthus* Anemone (1), Unidentifiable Sponge (9), White Branching Sponge (1)
	1200	47 32.516	56 52.225	93	Hard							100%				Worm Tube (>20), Brittle Star (9), Unidentifiable Sponge (2), Unidentifiable Fish (1), Shrimp (2), *Stomphia* Anemone (17)
	1300	47 32.527	56 52.303	78	Hard					30%		70%				Worm Tube (>20), *Stomphia* Anemone (>20), White Branching Sponge (1)
	1400	47 32.539	56 52.380	58	Hard	100%										Brittle Star (2), Green Sea Urchin (4), *Serpula* (1), White Branching Sponge (1), *Stomphia* Anemone (12)
	1500	47 32.551	56 52.458	25	Hard					85%		15%				
	1600	47 32.563	56 52.535	3	Hard				5%	95%						Green Sea Urchin (18)
10	20	47 32.303	56 51.258	2	Hard			100%								Cunner (>20), Green Sea Urchin (>20)
	100	47 32.312	56 51.318	9	Hard			45%	10%	45%						Green Sea Urchin (>20), Breadcrumb Sponge (5%)
	200	47 32.326	56 51.396	15	Hard					55%		45%				Sculpin (1), Green Sea Urchin (8)
	300	47 32.338	56 51.473	17	Soft							100%				
	400	47 32.352	56 51.551	42	Soft							100%				Sand Dollar (14)
	500	47 32.367	56 51.627	77	Hard						100%					*Chlamys* Scallop (2), *Hormathia* Anemone (11), *Cerianthus* Anemone (1)
	600	47 32.382	56 51.704	109	Soft							100%				Grenadier (1), Brittle Star (2), Worm Tube (>20), *Hormathia* Anemone (3)
	700	47 32.392	56 51.782	113	Soft							100%				Worm Tube (9), Cushion Star (1), Snake Blenny (1), Brittle Star (1), Shrimp (1), Green Sea

Foots Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Urchin (2)
	800	47 32.402	56 51.861	135	Soft							100%				Worm Tube (>20), Unidentifiable Fish (1), Green Sea Urchin (9), Brittle Star (2), Shrimp (10)
	900	47 32.415	56 51.938	136	Soft							100%				Brittle Star (4), Green Sea Urchin (3), *Stomphia* Anemone (1), Shrimp (13), Cushion Star (3), Unidentifiable Fish (5), Unidentifiable Crab (1)
	1000	47 32.427	56 52.016	133	Soft							100%				*Stomphia* Anemone (8), Shrimp (>20), Brittle Star (4), Snake Blenny (1), Green Sea Urchin (4), Unidentifiable Fish (2)
	1100	47 32.439	56 52.093	94	Hard		70%					30%				*Stomphia* Anemone (>20), Brittle Star (14), *Henricia* Sea Star (1), Unidentifiable Sponge (2), Flounder (1), Unidentifiable Fish (7)
	1200	47 32.453	56 52.171	79	Hard		25%			45%	30%					Brittle Star (9), *Stomphia* Anemone (>20)
	1300	47 32.472	56 52.246	62	Hard					80%		20%				*Stomphia* Anemone (>20)
	1400	47 32.483	56 52.323	32	Hard					85%	15%					
	1500	47 32.491	56 52.403	15	Hard		50%			40%	10%					Green Sea Urchin (2), *Placopecten* Scallop (1)
	1570	47 32.500	56 52.451	4	Hard			100%								
11	80	47 32.246	56 51.249	2	Hard		85%	15%								Green Sea Urchin (>20)
	200	47 32.263	56 51.337	10	Soft							100%				Sand Dollar (>20)
	300	47 32.274	56 51.415	11	Soft							100%				Sand Dollar (>20), Moon Snail (3)
	400	47 32.285	56 51.493	15	Soft						20%	80%				Green Sea Urchin (1)
	500	47 32.297	56 51.571	66	Hard		90%			5%		5%				*Urticina* Anemone (2), *Hormathia* Anemone (8), Feather Star (6), Sculpin (1), Brittle Star (1), Warty Sponge (<5%), Green Sea Urchin (2)
	600	47 32.315	56 51.646	99	Hard							100%				Brittle Star (5), *Hormathia* Anemone (5), Worm Tube (9)
	700	47 32.322	56 81.726	115	Soft							100%				Shrimp (18), *Hormathia* Anemone (6), Green Sea Urchin (2)
	800	47 32.336	56 51.803	133	Soft							100%				Sculpin (1), *Asterias* Sea Star (1), Green Sea Urchin (>20), *Henricia* Sea Star (2), *Hormathia* Anemone (1), Shrimp (3), Worm Tube (8)
	900	47 32.347	56 51.881	142	Soft							100%				Shrimp (2), Green Sea Urchin (1), Brittle Star (2), Snake Blenny (1), Worm Tube (6)
	1000	47 32.358	56 51.959	130	Soft						10%	90%				Shrimp (3), *Stomphia* Anemone (1), Green Sea Urchin (1)
	1100	47 32.373	56 52.035	105	Soft							100%				*Stomphia* Anemone (6), Green Sea Urchin (9), Unidentifiable Fish (1), Shrimp (1)
	1200	47 32.385	56 52.113	48	Hard	80%	20%									Brittle Star (13), Feather Star (>20), Green Sea Urchin (1), Encrusting Sponge (5%), *Serpula* (4)
	1300	47 32.402	56 52.189	29	Hard	10%	50%	5%		35%						Encrusting Sponge (trace)
	1400	47 32.409	56 52.268	12	Hard			100%								Cunner (1), Green Sea Urchin (2), Breadcrumb Sponge (<5%)
	1500	47 32.417	56 52.307	9	Hard		50%	5%	5%	40%						Green Sea Urchin (>20)

Foots Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
12	0	47 32.189	56 51.263	2	Hard		90%	10%								Cunner (4), Green Sea Urchin (>20)
	100	47 32.208	56 51.339	14	Soft							100%				Sand Dollar (>20)
	200	47 32.216	56 51.418	16	Soft							100%				Sand Dollar (>20), Moon Snail (1)
	300	47 32.232	56 51.494	29	Soft							100%				Sand Dollar (>20), *Placopecten* Scallop (1)
	400	47 32.245	56 51.571	60	Hard		20%					80%				*Hormathia* Anemone (5), Green Sea Urchin (2)
	500	47 32.257	56 51.649	111	Soft							100%				Worm Tube (>20), Shrimp (8), Green Sea Urchin (1), Brittle Star (2), Snake Blenny (1), Atlantic Sea Poacher (1), *Hormathia* Anemone (3)
	600	47 32.271	56 51.726	119	Soft							100%				Snake Blenny (1), Shrimp (5), *Hormathia* Anemone (6), Brittle Star (2), Worm Tube (3), Green Sea Urchin (1)
	700	47 32.280	56 51.805	135	Soft							100%				Green Sea Urchin (5), Brittle Star (4), Snake Blenny (1), Shrimp (1)
	800	47 32.293	56 51.882	139	Soft							100%				*Asterias* Sea Star (1), Brittle Star (2), Green Sea Urchin (>20), Rock Gunnel (1), Shrimp (7)
	900	47 32.310	56 51.958	120	Hard							100%				Green Sea Urchin (>20), Shrimp (8), Hagfish (1)
	1000	47 32.321	56 52.035	64	Hard		20%			20%	15%	45%				Green Sea Urchin (14)
	1100	47 32.328	56 52.116	23	Hard					55%		45%				Green Sea Urchin (>20)
	1170	47 32.340	56 52.168	6	Hard		60%	40%								Green Sea Urchin (>20)
13	0	47 32.161	56 51.313	3	Hard		80%	20%								Cunner (>20), Green Sea Urchin (>20)
	100	47 32.169	56 51.391	11	Hard		90%	10%								Cunner (1), Green Sea Urchin (19)
	200	47 32.181	56 51.469	18	Soft							100%				Sand Dollar (>20), Green Sea Urchin (2)
	300	47 32.194	56 51.547	55	Hard					20%		80%				Green Sea Urchin (1)
	400	47 32.207	56 51.631	102	Soft							100%				*Hormathia* Anemone (14), Brittle Star (4), Shrimp (16), Worm Tube (9)
	500	47 32.219	56 51.702	119	Soft							100%				Shrimp (3), Snake Blenny (2), Brittle Star (4), Green Sea Urchin (1), Worm Tube (3)
	600	47 32.229	56 51.780	130	Soft							100%				Shrimp (3), Green Sea Urchin (7), Snake Blenny (1), Brittle Star (1)
	700	47 32.241	56 51.858	137	Soft							100%				Green Sea Urchin (10), Shrimp (16), *Hormathia* Anemone (2), Worm Tube (14)
	800	47 32.255	56 51.935	116	Soft							100%				Green Sea Urchin (5), *Hormathia* Anemone (3), *Placopecten* Scallop (1), Shrimp (5), Worm Tube (1), Snake Blenny (1)
	900	47 32.265	56 52.013	50	Hard					55%		45%				Brittle Star (2), Sculpin (1), Green Sea Urchin (9)
	1000	47 32.275	56 52.091	15	Hard			5%	10%	85%						Green Sea Urchin (>20), *Urticina* Anemone (1)
	1050	47 32.280	56 52.130	5	Hard			65%	20%	15%						Green Sea Urchin (>20)

15.3 Water Quality

The available water quality data for Aviron Bay and La Hune Bay BMA is a composite of information from several sources including historical collections by DFLR (1994–1995; 2003–2004), a review of publications for the area, and data collected during production at nearby sea farms (L. Hiemstra, Mel Mor Science pers. comm., 5 Dec 2024).

15.3.1 Water Temperature

Based on available data, seasonal average water temperatures were generally consistent across depths in winter and spring (Table 15.6). Temperature trends are typical of those observed by MCE in coastal Newfoundland waters. A thermocline develops in spring as surface waters warm. This thermocline becomes more pronounced and deeper in summer until it breaks down in the fall as air temperature decreases. During winter, temperatures throughout the water column tend to be more uniform until spring, when the seasonal water temperature pattern repeats. Depths 10 m and below are typically cooler than surface depths in the summer and fall. Mean water temperatures ranged from 3.0 °C (10 m water depth) in spring to 12.5 °C (0 m water depth) in summer. The available data is less comprehensive than for neighbouring BMAs that have been in production. The summer temperatures presented are more typical of early summer conditions. Neighbouring BMAs such as BMA 13 provide insight into water temperature later in the season.

The FFA (formerly DFLR) collected data on water temperature in Aviron Bay (2003–2004) (Figure 15.8). Surface (3 m) temperatures peaked in August while water temperatures at 9–18 m depth were highest near the end of September. All water temperatures declined in October, increasing again in April.

Table 15.6. Seasonal temperature for Aviron Bay and La Hune Bay (BMA 14) based on a composite of data sources including FFA, literature, and MCE.

Water Depth	Sampling Period	Winter (Dec, Jan, Feb)	Spring (Mar, Apr, May)	Summer (Jun, Jul, Aug)	Fall (Sep, Oct, Nov)
		Temperature (°C)			
Aviron Bay and La Hune Bay					
0 m	n/a	3.2	3.5	12.5	11.3
1 m	n/a	3.2	3.5	12.4	11.3
5 m	n/a	3.2	3.2	12.0	11.2
10 m	n/a	3.3	3.0	11.0	11.0
15 m	n/a	3.3	2.8	9.0	11.0
30 m	n/a	3.3	2.5	7.8	9.7

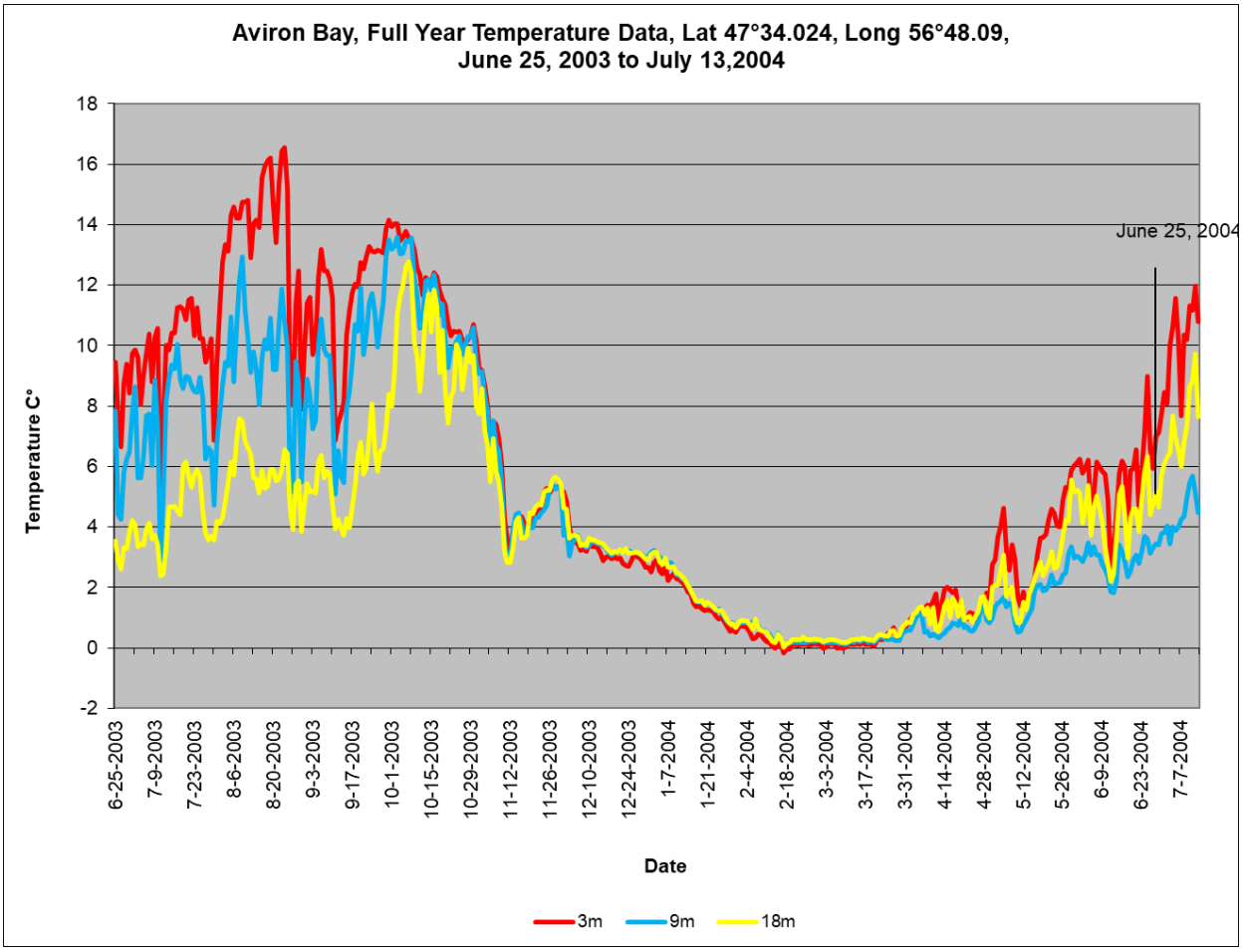


Figure 15.8. Historical water temperature (°C) data at 3, 9, and 18 m depths in Aviron Bay and La Hune Bay (June 2003–July 2004), collected by DFLR.

15.3.2 Dissolved Oxygen

There are no available dissolved oxygen data for the Aviron Bay and La Hune Bay BMA. See Sections 13.3.2, BMA 12 (Little Bay) and 14.3.2, BMA 13 (Friar Cove) for data from nearby sea farms that represent the Aviron Bay and La Hune Bay BMA.

15.3.3 Salinity

As discussed, salinity data is a composite from several sources. Based on available data, salinity was fairly consistent across sea farms and seasons with averages ranging from 30–32 ppt (Table 15.7).

Table 15.7. Seasonal salinity for Aviron Bay and La Hune Bay (BMA 14) based on a composite of data sources including DFLR, literature, and MCE.

Water Depth	Sampling Period	Winter	Spring	Summer	Fall
		Salinity (‰)			
Aviron Bay and La Hune Bay Area					
0 m	n/a	30	30	30	30
1 m	n/a	30	30	30	30
5 m	n/a	30	31	30	30
10 m	n/a	30	31	31	30
15 m	n/a	30	32	31	30
30 m	n/a	31	32	31	30

15.4 Oceanographic and Meteorological Data

Bathymetric, current, wind and wave data are available for all three sea farms in the Aviron Bay and La Hune Bay BMA.

15.4.1 Bathymetry

Water depths below the leases range from 0–177 m. Minimum water depth below the sea cages ranged from 64 m in Aviron South to 82 m in Foots Cove (Table 15.8). Bathymetric maps are available for the three sea farms (Figure 15.9–15.11).

Table 15.8. Water depth range at sea farm in the Aviron Bay and La Hune Bay BMA.

Site No.	Sea Farm	Lease Depth Range (m)	Sea Cage Array Depth Range (m)
AQ 1080	Aviron North	0–135	74
AQ 1081	Aviron South	0–144	64
AQ 1082	Foots Cove	1–177	82

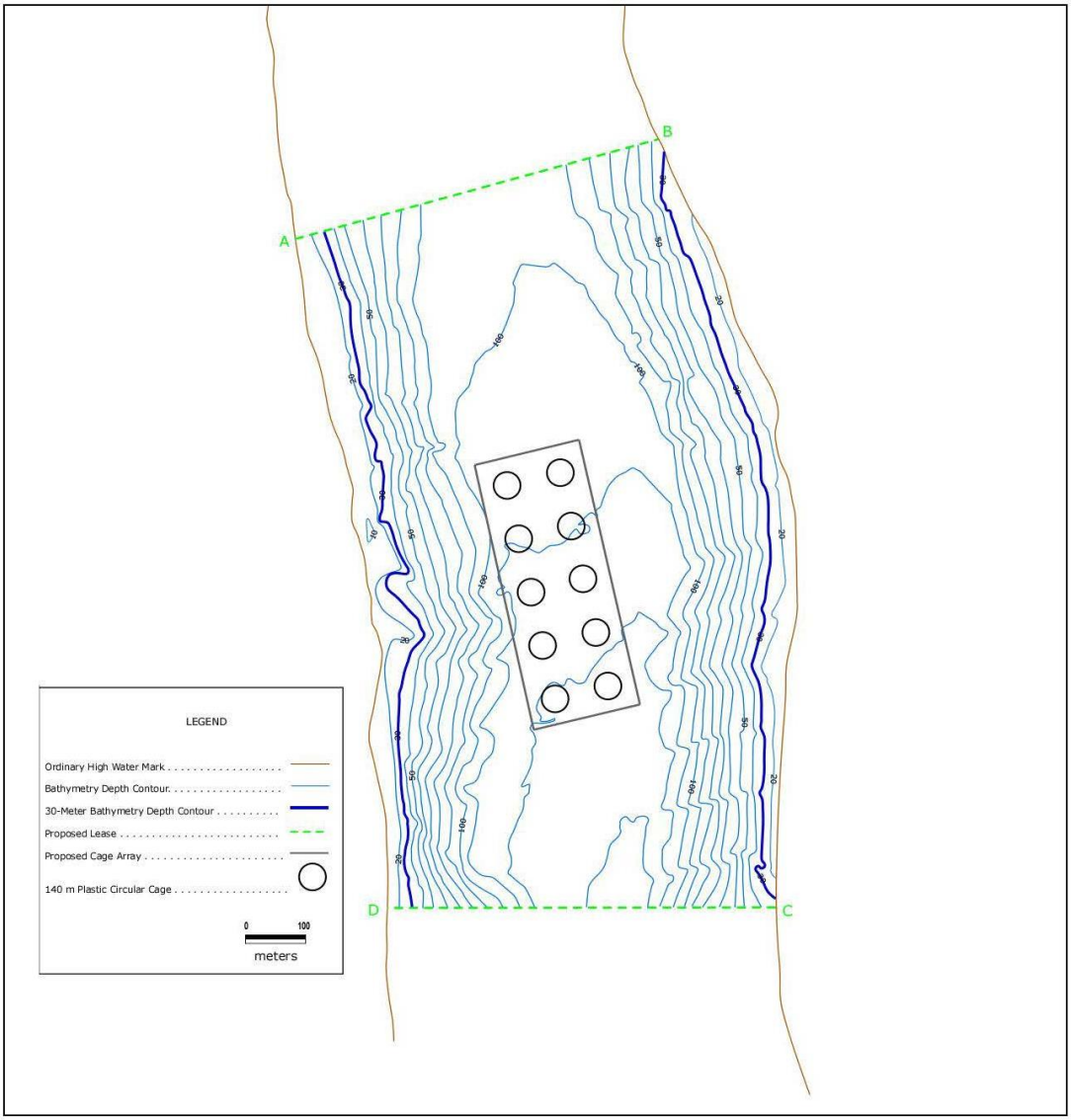


Figure 15.9. Bathymetric map for the Aviron North sea farm.

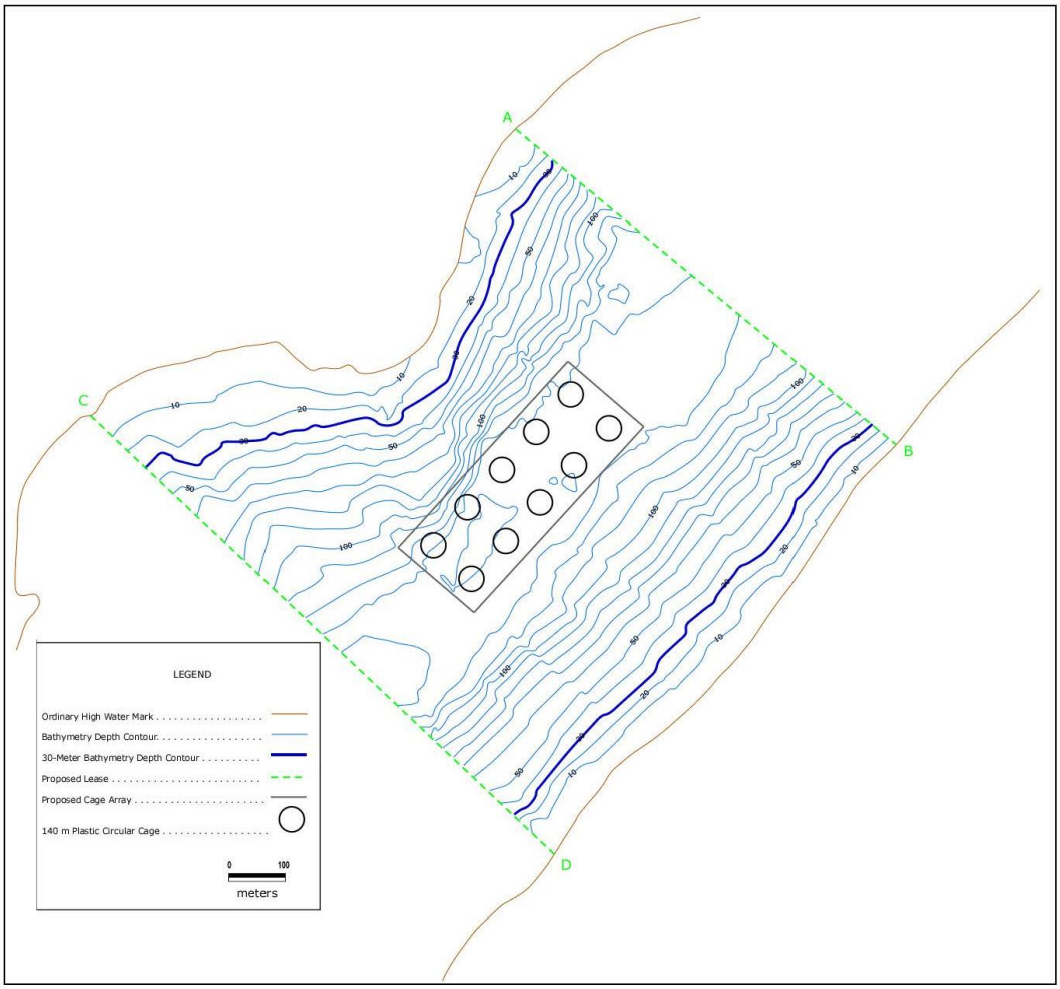


Figure 15.10. Bathymetric map for the Aviron South sea farm.

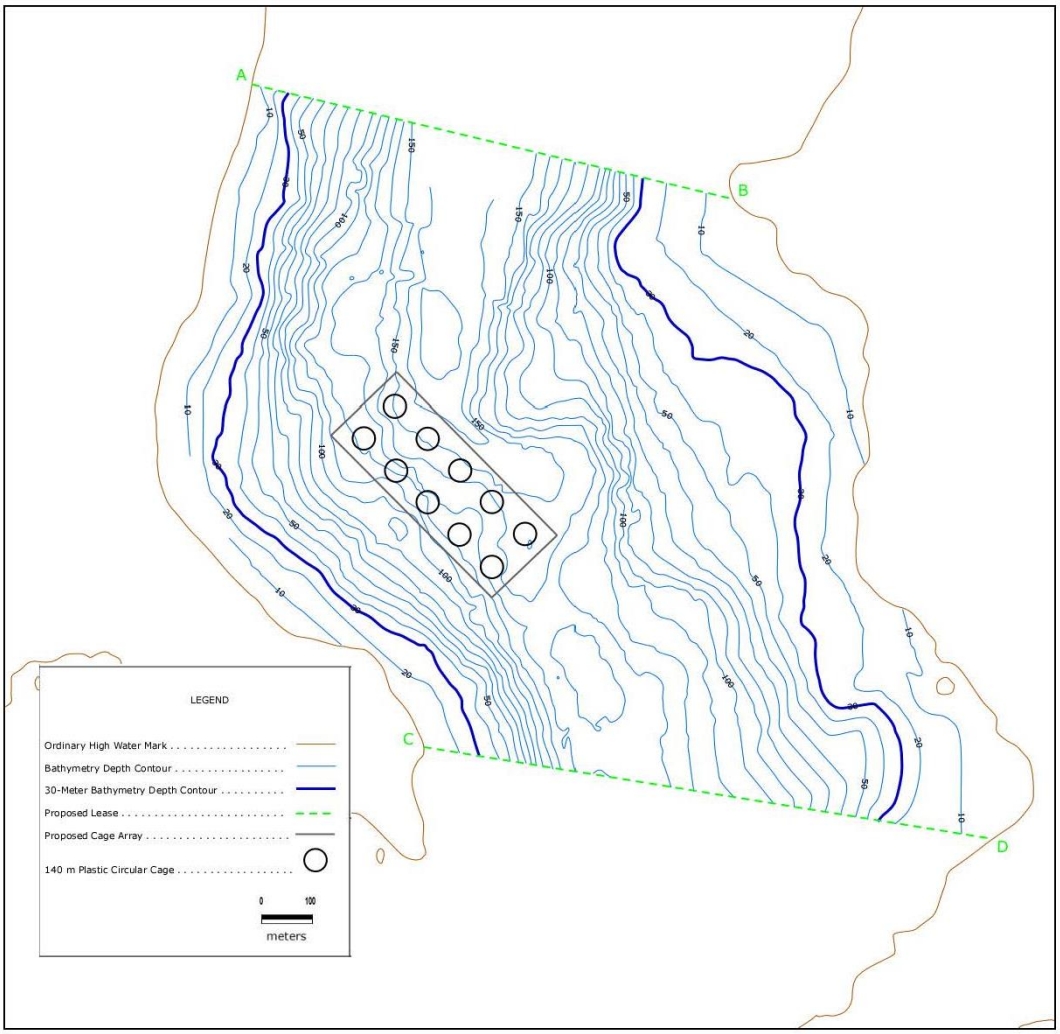


Figure 15.11. Bathymetric map for the Foots Cove sea farm.

15.4.2 Currents

Current data were acquired at the Aviron North, Aviron South, and Foots Cove sea farms in May and June 2018.

15.4.2.1 Aviron North

During May–June 2018, current measurements were collected at five depths in the Aviron North sea farm (Table 15.9). During this period, mean current speeds ranged from 2.5 cm/s (at 54 m water depth) to 4.5 cm/s (at 4.8 m water depth). Maximum current speeds were recorded near-surface, at 5 m water depth. Current flows were most commonly directed toward the south-southeast to south near surface, switching to north-northwest to north from 10 m below

the surface to the seafloor (Figure 15.12). The maximum current speed of 29 cm/s was measured at 4.8 m below the surface.

Table 15.9. Current speeds (mean and maximum values) and vector-averages at the Aviron North sea farm (May–June 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
4.8	4.5	29	0.44 @ 35.8°
10.0	3.7	17	0.83 @ 11.9°
16.0	3.2	15	0.35 @ 357.0°
54.2	2.5	12	0.14 @ 22.9°
105.0 (5 m above bottom)	2.8	13	0.07 @ 200.0°

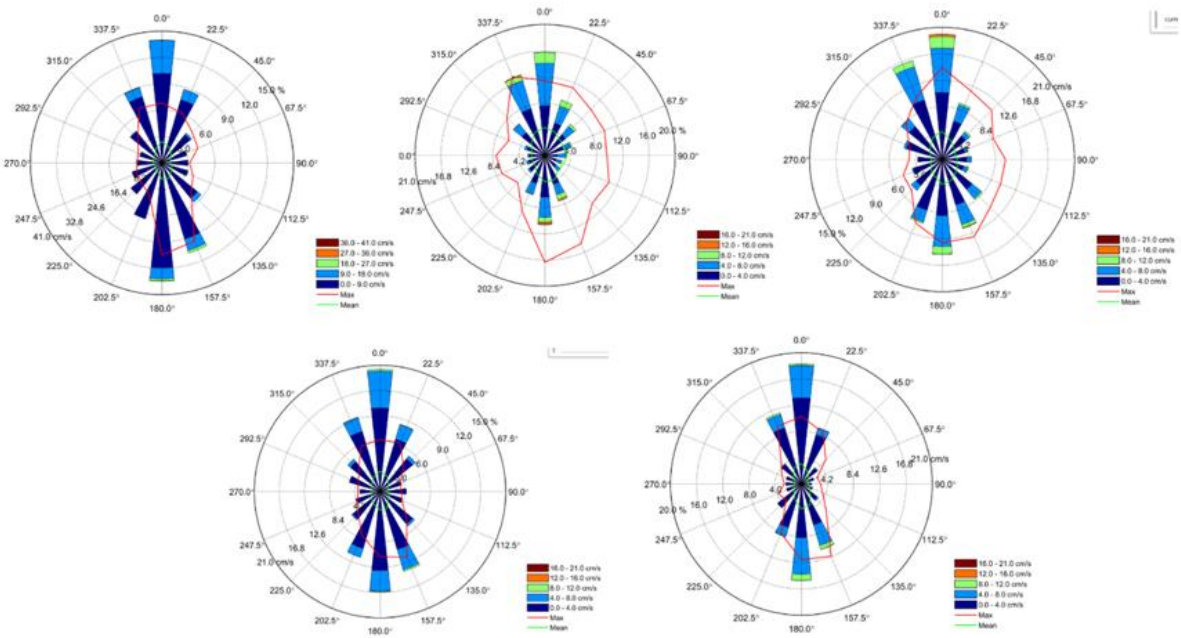


Figure 15.12. Compass rose plots of current speeds at the Aviron North sea farm (May–June 2018). Current speeds and directions at 5 m, 10 m, 16 m, 54 m (mid-depth) and 105 m (5 m height), are shown from left to right, top to bottom in the figure.

15.4.2.2 Aviron South

During May–June 2018, current measurements were collected at five depths in the Aviron South sea farm (Table 15.10). During this period, mean current speeds ranged from 3.3 cm/s (69 m water depth) to 6.1 cm/s (5 m water depth). Maximum current speeds were recorded within 15 m of the water surface. The maximum current speed of 35 cm/s was measured at 5.1 m below the surface. Lower speeds were more common near mid-column and the seafloor. Current flows were

most directed toward the northeast to east-northeast near surface to mid-column, switching to south to south-southwest near the seafloor (Figure 15.13).

Table 15.10. Current speeds (mean and maximum values) and vector-averages at the Aviron South sea farm (May–June 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.1	6.1	35	0.98 @ 64.2°
11	4.5	20	0.91 @ 52.4°
15	3.6	20	0.32 @ 53.4°
68.9	3.3	14	0.27 @ 118.4°
130.4 (5 m above bottom)	3.4	12	1.47 @ 167.7°

Notes:
MWL = mean water level.

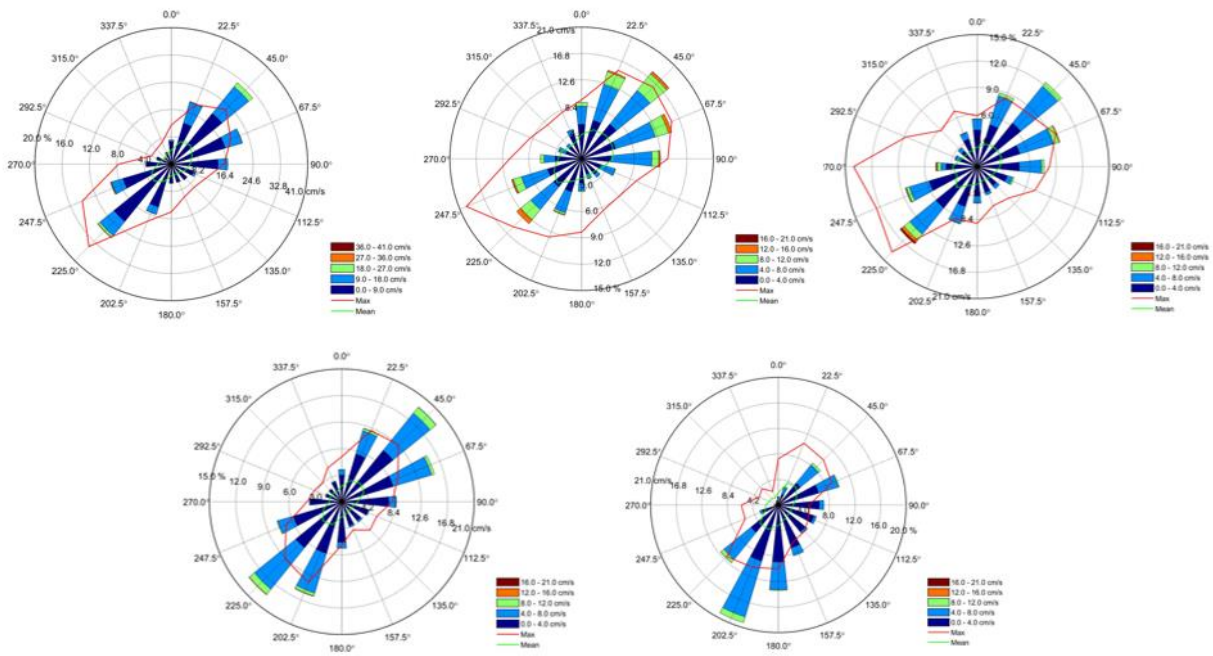


Figure 15.13. Compass rose plots of current speeds at the Aviron South sea farm (May–June 2018). Current speeds and directions at 5 m, 11 m, 15 m, 69 m (mid-depth), and 130.4 m (5 m height) are shown from left to right, top to bottom in the figure.

15.4.2.3 Foots Cove

During May–June 2018, current measurements were collected at five depths in the Foots Cove sea farm (Table 15.11). During this period, mean current speeds ranged from 2.2 cm/s (124 m water depth to 5.9 cm/s (5 m water depth). Maximum current speeds were recorded within 15 m of the water surface. The maximum current speed of 45 cm/s was measured at 5.1 m below the surface.

Current flows were most commonly directed toward the south-southeast to south near surface, switching more towards the southeast from mid-column to the seafloor (Figure 15.14).

Table 15.11. Current speeds (mean and maximum values) and vector-averages at the Foots Cove sea farm (May–June 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.1	5.9	45	3.51 @ 173.9°
10.5	4.8	40	2.76 @ 169.7°
14.5	4.3	30	2.33 @ 174.1°
63.4	2.3	11	0.51 @ 140.7°
124 (5 m above bottom)	2.2	15	0.28 @ 165.4°

Notes:
MWL = mean water level.

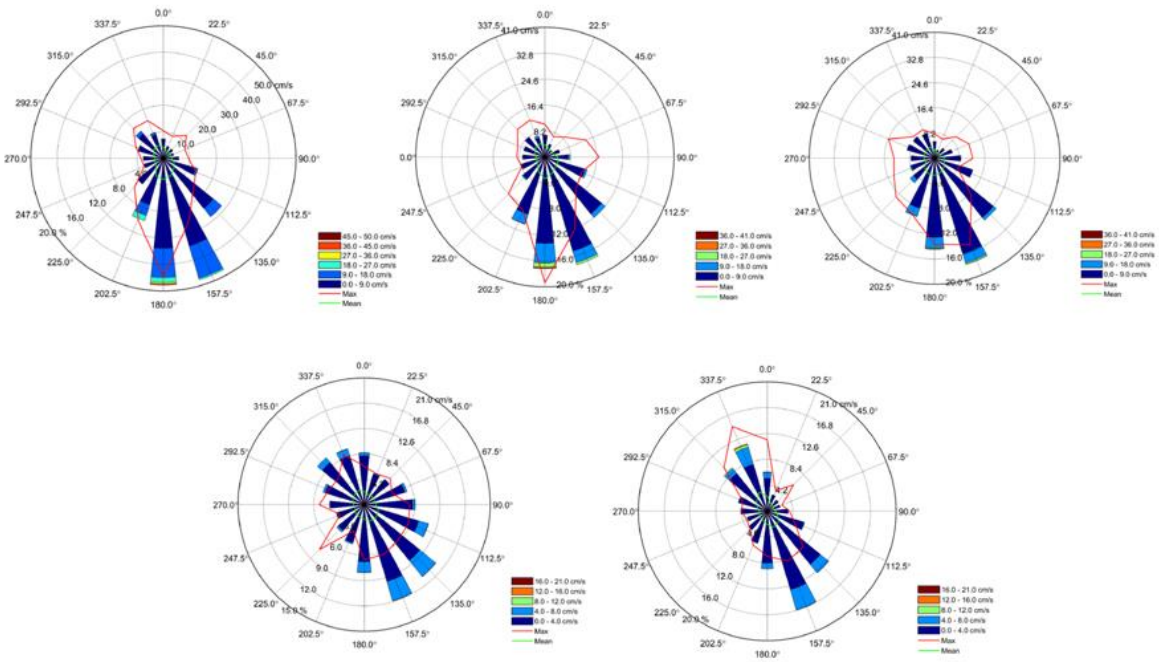


Figure 15.14. Compass rose plots of current speeds at the Foots Cove sea farm (May–June 2018). Current speeds and directions at 5 m, 10.5 m 14.5 m, 63.4 m, (mid-depth) and 124 m (5 m off bottom), are shown from left to right, top to bottom in the figure.

15.4.3 Wind and Waves

15.4.3.1 Modelling (MSC50 Hindcast Approach) for Atlantic Canada

Mean wind speeds and mean wave heights near the Aviron Bay and La Hune Bay BMA were highest in December through February and lowest in May through August based on 10 years of

historical data (Table 15.12–15.13). Maximum monthly wind speeds of ~20–22 m/s (~72–79 km/h) occurred in December, January, February, and March. Similarly, maximum monthly wave heights of 5.6 m - 6.3 m occurred during winter months at the MSC50 grid points M6012536 and M6012357. Much lower wave heights were experienced at MSC50 grid point M6012538 ranging from 1.9 m - 2.2 m (Table 15.13). Wind directions were predominantly from the west and west-southwest with wind speeds most frequently ranging from ~6–10 m/s (Figure 15.15).

Table 15.12. Monthly wind speeds (mean and maximum) near the Aviron North and La Hune Bay BMA (at grid points M6012536, M6012537, and M6012538 during 2009–2018).

Month	M6012536		M6012537		M6012538	
	Wind Speed Mean (m/s)	Wind Speed Max (m/s)	Wind Speed Mean (m/s)	Wind Speed Max (m/s)	Wind Speed Mean (m/s)	Wind Speed Max (m/s)
January	11.07	21.47	11.04	21.39	11.55	21.53
February	10.56	22.18	10.54	22.13	11.38	21.20
March	9.57	21.12	9.82	20.54	9.33	21.75
April	7.94	19.05	7.93	19.02	8.10	18.23
May	6.52	15.24	6.51	15.08	6.58	14.65
June	5.76	15.06	5.76	14.81	6.10	11.99
July	5.52	13.34	5.50	13.19	5.37	11.75
August	6.04	14.86	6.03	14.76	6.94	13.18
September	7.78	16.84	7.77	16.79	7.79	14.00
October	9.02	19.24	9.00	19.13	8.60	18.57
November	9.84	20.52	9.82	20.37	9.73	18.37
December	10.63	20.86	10.62	20.77	11.07	21.28

Notes:
Grid point M6012536 is ~6 km from Foots Cove sea farm and M6012537 is ~6.5 km from Aviron South sea farm.

Table 15.13. Monthly wave heights (m) (mean and maximum) recorded near the Aviron North and La Hune Bay BMA (at MSC50 grid points M6012536, M6012537, and M6012538 during 2009–2018).

Month	M6012536		M6012537		M6012538	
	Wave Height Mean (m/s)	Wave Height Max (m/s)	Wave Height Mean (m/s)	Wave Height Max (m/s)	Wave Height Mean (m/s)	Wave Height Max (m/s)
January	2.18	5.75	2.23	5.85	1.00	2.20
February	2.06	6.31	2.09	6.32	0.90	1.88
March	1.72	4.84	1.85	3.61	0.71	1.53
April	1.56	4.37	1.57	4.43	0.55	1.68
May	1.23	3.33	1.24	3.35	0.36	0.95
June	1.15	2.99	1.15	2.99	0.33	0.96
July	1.20	2.87	1.21	2.89	0.26	0.92
August	1.18	3.13	1.19	3.14	0.43	1.20
September	1.43	3.90	1.45	3.97	0.52	1.24
October	1.63	4.56	1.65	4.64	0.67	1.87
November	1.87	5.61	1.90	5.65	0.75	1.68
December	2.00	5.49	2.03	5.57	0.89	2.01

Notes:
Grid point M6012536 is ~6 km from Foots Cove sea farm and M6012537 is ~6.5 km from Aviron South sea farm.

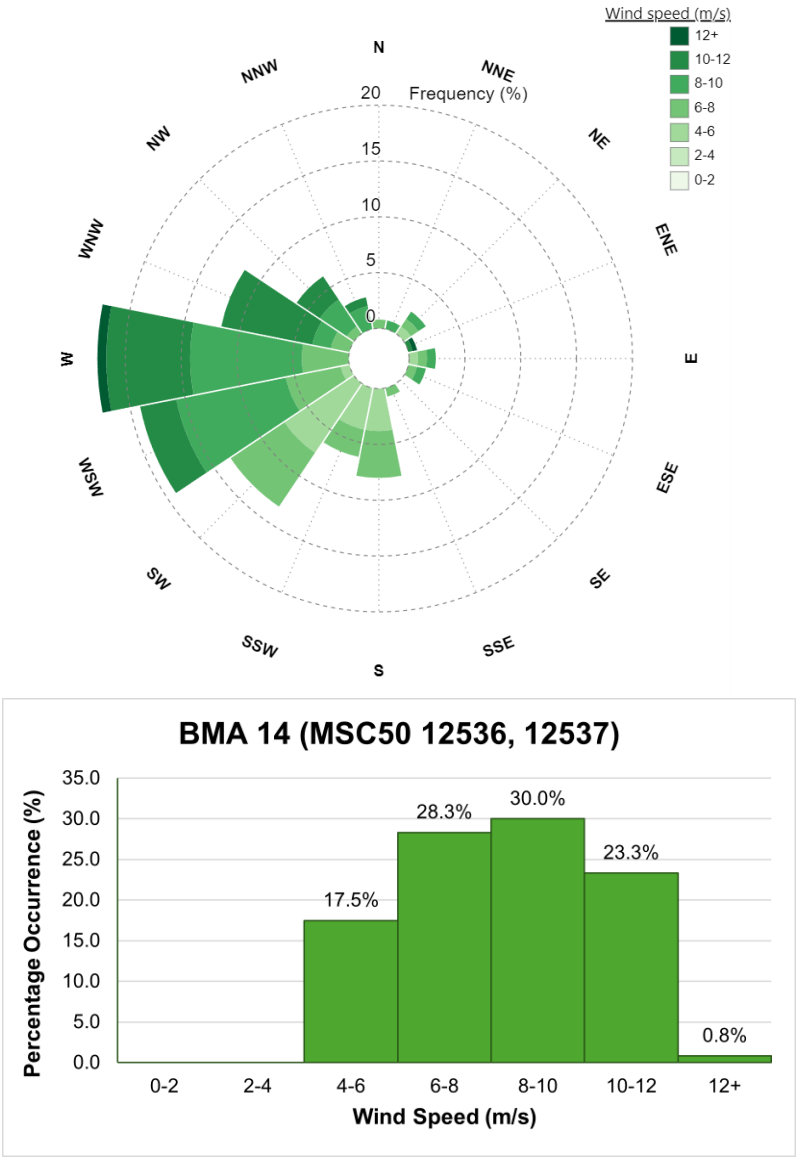


Figure 15.15. Wind rose and wind speed frequency histogram for MSC50 grid points M6012536 and M6012537 near the Aviron North and La Hune Bay BMA.

15.4.3.2 Sea Farm Specific Wave Calculation

In the Aviron Bay and La Hune Bay BMA, wave data for the sea farms Aviron North, Aviron South and Foots Cove were derived following the Scottish standard SWAN model (see Section 3.4.3.2).

Aviron North

In the Aviron North sea farm, maximum wind speeds of 29.7 m/s (10 yr) and 33.8 m/s (50 yr) from various directions were predicted. Maximum wave heights (wind generated for the sea cage mooring system) of 1.7 m (10 yr) and 1.9 m (50 yr) were predicted for waves originating from the southwest (Table 15.14). Using a combined wave, wind and swell for the mooring grid in the Aviron North sea farm, a significant wave height of 2.8 m and 3.1 m from the southwest was predicted for 10- and 50- years respectively.

Table 15.14. Wind and wave predictions for 10-year and 50-year return periods in the Aviron North sea farm for wind generated waves using the SWAN model for the sea cage mooring frame.

Return Period	From	Sector	N	NE	E	SE	S	SW	W	NW
10 years	Wind	Wind speed (m/s)	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	0.8	0.7	0.5	0.7	1.5	1.7	0.8	0.8
		Tp (s)	2.9	2.6	2.0	2.8	6.8	7.3	2.2	2.9
		Direction (°)	348	13	104	168	200	202	242	337
50 years	Wind	Wind speed (m/s)	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	0.9	0.7	0.6	0.8	1.7	1.9	0.9	0.9
		Tp (s)	3.1	2.8	2.1	3.0	7.1	7.5	2.3	3.1
		Direction (°)	348	12	103	169	200	202	241	337

Notes:
Hs = significant wave height, Tp = wave peak period.

Aviron South

In the Aviron South sea farm, maximum wind speeds of 29.7 m/s (10 yr) and 33.8 m/s (50 yr) from various directions were predicted. Maximum wave heights (wind generated for the sea cage mooring system) of 2.4 m (10 yr) and 2.7 m (50 yr) were predicted for waves originating from the south-southwest (Table 15.15). Using a combined wave, wind and swell for the mooring grid in the Aviron South sea farm, a significant wave height of 5.6 m and 6.1 m from the southwest was predicted for 10- and 50- years respectively.

Table 15.15. Wind and wave predictions for 10-year and 50-year return periods in the Aviron South sea farm for wind generated waves using the SWAN model for the sea cage mooring frame.

Return Period	From	Secotr	N	NE	E	SE	S	SW	W	NW
10 years	Wind	Wind speed (m/s)	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	0.9	0.9	0.7	0.8	2.4	2.4	0.9	0.7
		Tp (s)	3.3	3.1	2.8	3.2	6.9	7.2	2.7	2.3
		Direction (°)	23	39	62	169	195	204	235	333
50 years	Wind	Wind speed (m/s)	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
		Direction (°)	0	45	135	135	180	245	270	315

Return Period	From	Secotr	N	NE	E	SE	S	SW	W	NW
	Wind generated wave condition	Hs (m)	1.0	1.0	0.8	0.9	2.7	2.7	1.0	0.8
		Tp (s)	3.5	3.3	3.0	3.3	7.2	7.5	2.9	2.5
		Direction (°)	23	38	61	168	195	204	235	333

Notes:
Hs = significant wave height, Tp = wave peak period.

Foots Cove

In the Foots Cove sea farm, maximum wind speeds of 29.7 m/s (10 yr) and 33.8 m/s (50 yr) from various directions were predicted. Maximum wave heights (wind generated for the sea cage mooring system) of 2.3 m (10 yr) and 2.6 m (50 yr) were predicted for waves originating from the south (Table 15.16). Using a combined wave, wind and swell for the mooring grid in the Foots Cove sea farm, a significant wave height of 6.2 m and 6.9 m from the south was predicted for 10- and 50- years respectively.

Table 15.16. Wind and wave predictions for 10-year and 50-year return periods in the Foots Cove sea farm for wind generated waves using the SWAN model for the sea cage mooring frame.

Return Period	From	Sector	N	NE	E	SE	S	SW	W	NW
10 years	Wind	Wind speed (m/s)	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.2	0.6	0.6	0.8	2.3	0.5	0.6	0.6
		Tp (s)	3.0	2.0	2.0	2.4	6.6	1.8	1.9	2.0
		Direction (°)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
50 years	Wind	Wind speed (m/s)	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.4	0.7	0.8	1.0	2.6	0.6	0.7	0.7
		Tp (s)	3.2	2.1	2.1	2.5	7.0	1.9	2.0	2.1
		Direction (°)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:
Hs = significant wave height, Tp = wave peak period.

15.5 Ice Conditions

Ice conditions for the Study Area including Aviron Bay and La Hune Bay (BMA 14) are detailed in Section 4.5.

15.6 Storms

Storm conditions for the Study Area including Aviron Bay and La Hune Bay (BMA 14) are detailed in Section 4.6.

15.7 Tides and Floods

Tide and flood conditions for the Study Area including Aviron Bay and La Hune Bay (BMA 14) are detailed in Section 4.7.

15.8 Performance of Sea Farms with a Previous Production Cycle

All sea farms in Aviron Bay and La Hune Bay BMA are new licenses (acquired in 2024) and have not had a previous production cycle. There are no previous performance data to report.

15.9 Exposure Zone Modelling

DFO conducted PEZ modelling for BMA 14 sea farms to estimate areas exposed to discharges from bath pesticides and in-feed drugs (and feces) (DFO 2024b). BMT conducted dispersion modelling for a worst-case scenario use of a bath pesticide for the sea farms in BMA 14 (see Appendix B).

15.9.1 PEZ Modelling

Detailed predictions of PEZ modelling for BMA 14 (Aviron Bay and La Hune Bay) are found in DFO (2024b); a summary is provided here. DFO undertook this modelling to provide initial estimates of the size and location of the benthic areas in Aviron Bay and La Hune that may be impacted by the deposit of waste feed and feces associated with the release of in-feed drugs and pelagic PEZs for bath pesticide products. As noted in Page et al. (2023), PEZ estimates are not zones of impact and are intended to serve as an initial screening tool in combination with biological and socio-economic aspects of an area to gauge potential risk and the potential need for more precise modelling estimates. These PEZs are intentionally conservative overestimates to determine areas of concern that may warrant further assessment of spatial extent, intensity and/or duration of anticipated interactions with the benthic and pelagic environments. A precautionary approach for the model included assumptions; slow sinking velocities, fast water currents and deep bottom topography for a maximum possible exposure zone for in-feed and maximum current speed in the surface layer for a bath (tarp) treatment using Azamethiphos and Hydrogen Peroxide. Treatment concentrations of 100ug/L for Azamethiphos and 1.5g/L for Hydrogen Peroxide were used to calculate pelagic PEZs. It should be noted for both benthic and pelagic PEZ results, the results provide an order of magnitude based on the available data input, particularly the current information at one location near the respective site locations.

The model predicted that for all sea farms in BMA 14, bath pesticide treatment (Table 15.17) had larger pelagic-PEZ (km^2) relative to in-feed treatments (feed particles km^2) for benthic-PEZ (Table 15.17). The Foots Cove and Aviron South sea farms had the largest predicted benthic-PEZ area (km^2) for in-feed treatments [feed (1.13 km^2)]. The Aviron South sea farm had the largest predicted benthic-PEZ for feces (38.47 km^2)]. For pelagic-PEZ, the Foots Cove sea farm had the

largest predicted PEZ area (km²) for Azamethiphos (141 km²) and Hydrogen Peroxide (289 km²) bath treatments in the Aviron Bay and La Hune Bay BMA.

Table 15.17. Summary of benthic-PEZ area for pest control products in-feed and feces (km²) and pelagic-PEZ area for bath treatments associated with Azamethiphos (assumes a 100 µg/L dose concentration) and Hydrogen Peroxide (assumes a 1.5 g/L dose concentration) for BMA 14 (from DFO 2024b).

Sea Farm	Area of PEZ (km²)			
	Benthic[b]		Pelagic[b]	
	In-feed	Feces	Azamethiphos[c]	Hydrogen Peroxide[c]
Aviron North[a]	0.79	15.20	91.56	171.95
Aviron South[a]	1.13	38.47	124.63	265.77
Foots Cove[a]	1.13	21.23	140.95	289.38

Notes:

[a] Sea farms are located near land and PEZ areas (marine) are smaller than estimated—particularly maximum PEZ areas.

[b] Area represents an upper bound to the potential for exposure and is not expected to occur often since most releases do not experience maximum currents for the duration of treatment.

[c] PEZ model assumes a dilution time for Azamethiphos =15.5h and Hydrogen Peroxide = 39.5. Other assumptions are provided in DFO (2024b).

15.9.2 Dispersion Modelling

Dispersion modelling was undertaken to estimate exposure zones for the release of Azamethiphos (bath treatment) in a worst-case scenario (see Appendix B for details). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment in Aviron North sea cages (03 May 2023 for spring tide; 15 June 2023 for neap tide) through final treatment at Foots Cove sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 15.18).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Aviron Bay and La Hune Bay BMA predicted maximum areas of 3.97 km² and 2.12 km² during neap and spring tides, respectively; where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment duration. The maximum Azamethiphos concentration for the Aviron Bay and La Hune Bay BMA was 110 ng/L during the simulated neap tide and spring tide. The peak concentration occurred during the treatment of the second sea farm, Aviron South, and decreased shortly after treatments were completed with concentration levels 72 hrs after final treatment below 100 ng/L (Figures 15.16 and 15.17). The maximum area within BMA 14 where Azamethiphos concentrations exceeded 100 ng/L was larger during the neap tide scenario (3.97 km²) than during the spring tide scenario (2.12 km²).

Table 15.18. Treatment schedule (assumed dates) for sea farms in BMA 14 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
Aviron North	1	03 May 23	-339	15 Jun 23	-339
	2	03 May 23	-336	15 Jun 23	-336
	3	04 May 23	-315	16 Jun 23	-315

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours from Final Treatment	Treatment Date (Assumed)	Hours from Final Treatment
	4	04 May 23	-312	16 Jun 23	-312
	5	05 May 23	-291	17 Jun 23	-291
	6	05 May 23	-288	17 Jun 23	-288
	7	06 May 23	-267	18 Jun 23	-267
	8	06 May 23	-264	18 Jun 23	-264
	9	07 May 23	-243	19 Jun 23	-243
	10	07 May 23	-240	19 Jun 23	-240
Aviron South	1	08 May 23	-219	20 Jun 23	-219
	2	08 May 23	-216	20 Jun 23	-216
	3	09 May 23	-195	21 Jun 23	-195
	4	09 May 23	-192	21 Jun 23	-192
	5	10 May 23	-171	22 Jun 23	-171
	6	10 May 23	-168	22 Jun 23	-168
	7	11 May 23	-147	23 Jun 23	-147
	8	11 May 23	-144	23 Jun 23	-144
	9	12 May 23	-123	24 Jun 23	-123
	10	12 May 23	-120	24 Jun 23	-120
Foots Cove	1	13 May 23	-99	25 Jun 23	-99
	2	13 May 23	-96	25 Jun 23	-96
	3	14 May 23	-75	26 Jun 23	-75
	4	14 May 23	-72	26 Jun 23	-72
	5	15 May 23	-51	27 Jun 23	-51
	6	15 May 23	-48	27 Jun 23	-48
	7	16 May 23	-27	28 Jun 23	-27
	8	16 May 23	-24	28 Jun 23	-24
	9	17 May 23	-3	29 Jun 23	-3
	10	17 May 23	0	29 Jun 23	0

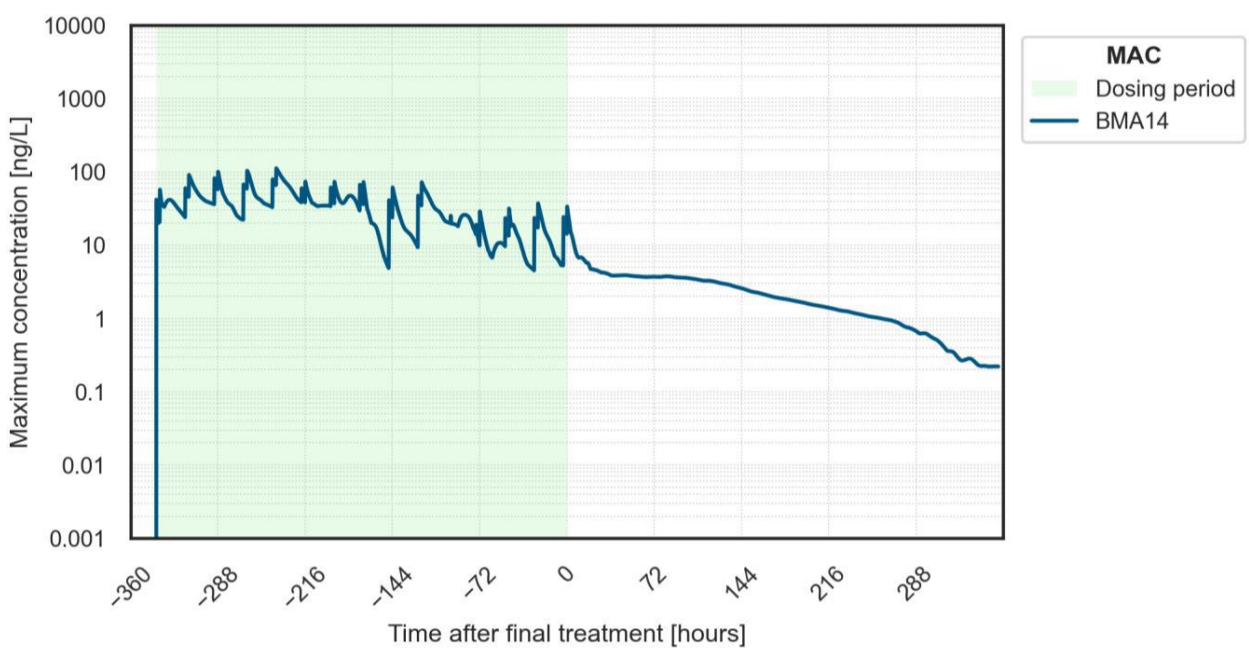


Figure 15.16. Maximum concentrations for Aviron Bay and La Hune Bay BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced in Aviron North sea farm (assumed 15 June 2023) and final treatment was in Foots Cove sea farm (time=0; assumed 29 June 2023).

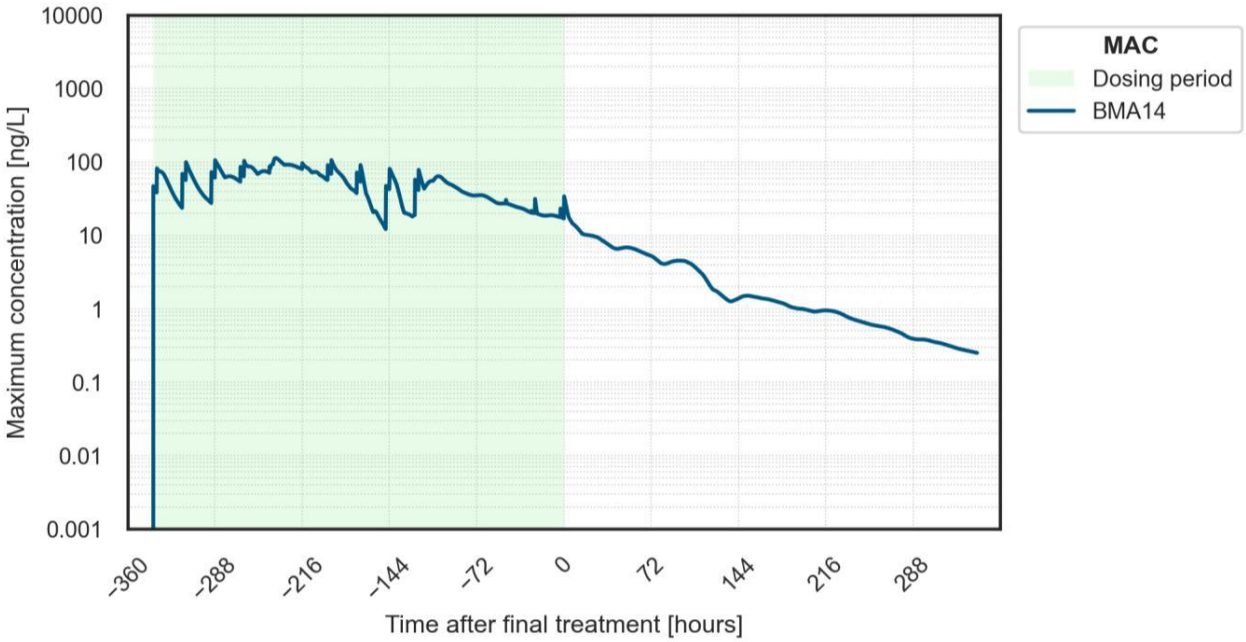


Figure 15.17. Maximum concentrations for Aviron Bay and La Hune Bay BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced in Aviron North sea farm 03 May 2023. Final treatment (time=0) was last treatment in Foots Cove sea farm (17 May 2023).

16.0 Bay de Vieux (BMA 15)

The Bay de Vieux BMA (BMA 15) is located in the Bays West Area and includes three licensed sea farms: Denny Island, Gnat Island, and Shoal Cove (Table 16.1; Figure 16.1). The three sea farms are located in close proximity to each other in a fjord. The closest community to the sea farms is Grey River which is accessible by ferry. Construction dates for the sea farms in the Bay de Vieux BMA are not confirmed.

Table 16.1. Bay de Vieux (BMA 15) sea farm locations and construction status in 2024.

BMA Name	BMA #	Farm Site Name	AQ Licence #	Site Coordinates		Construction Status
				Latitude (N)	Longitude (W)	
Bay de Vieux	15	Denny Island	1166	47.60419	-57.16281	TBD
	15	Gnat Island	1167	47.63181	-57.17361	TBD
	15	Shoal Cove	1168	47.65503	-57.17856	TBD

The sea farms in the Bay de Vieux BMA were designed with a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m. The maximum number of fish per site is 1,000,0000 with a maximum stocking density of 15 kg/m^3.

The water depths below the leases range from 0–370 m (Table 16.2). The shallowest sea farm is Denny Island where the water depth range for the lease is 0–173 m. The sea farms have bottom sediments consisting of mixed substrates. All three sea farms are considered hard bottom.

Currents were reported at near surface, upper, mid-water, and near bottom depths. At 15 m water depth, the maximum water current speed at each site was ~six times the mean speed (Table 16.2). There is much vertical variation in the maximum current speed and this variation is larger than the mean current speeds.

Benthic habitat surveys revealed that the predominate flora and fauna at sea farms are anemones, sea star spp., sponges and more (Tables 16.3–16.5). Kelp beds, Sea Pens, unidentified tunicates and Soft Coral were observed.

Seasonal water temperatures at 15 m water depth were only available for the Bay de Vieux BMA as a whole (Table 16.2). Mean water temperatures ranged from 3.0 °C (10 m water depth) in spring to 12.5 °C (0 m water depth) in summer.

During 2009–2018, average monthly wind speeds ranged from 5.54 m/s in July to 11.13 m/s in January (Table 16.10). The maximum wind speed during this period was 22.32 m/s in February. Wind direction in the Bay de Vieux BMA was predominately westerly. Mean wave height from 2009–2018 ranged from 0.96 m in July and August to 2.03 m in January. The maximum wave height was 6.18 m in February.

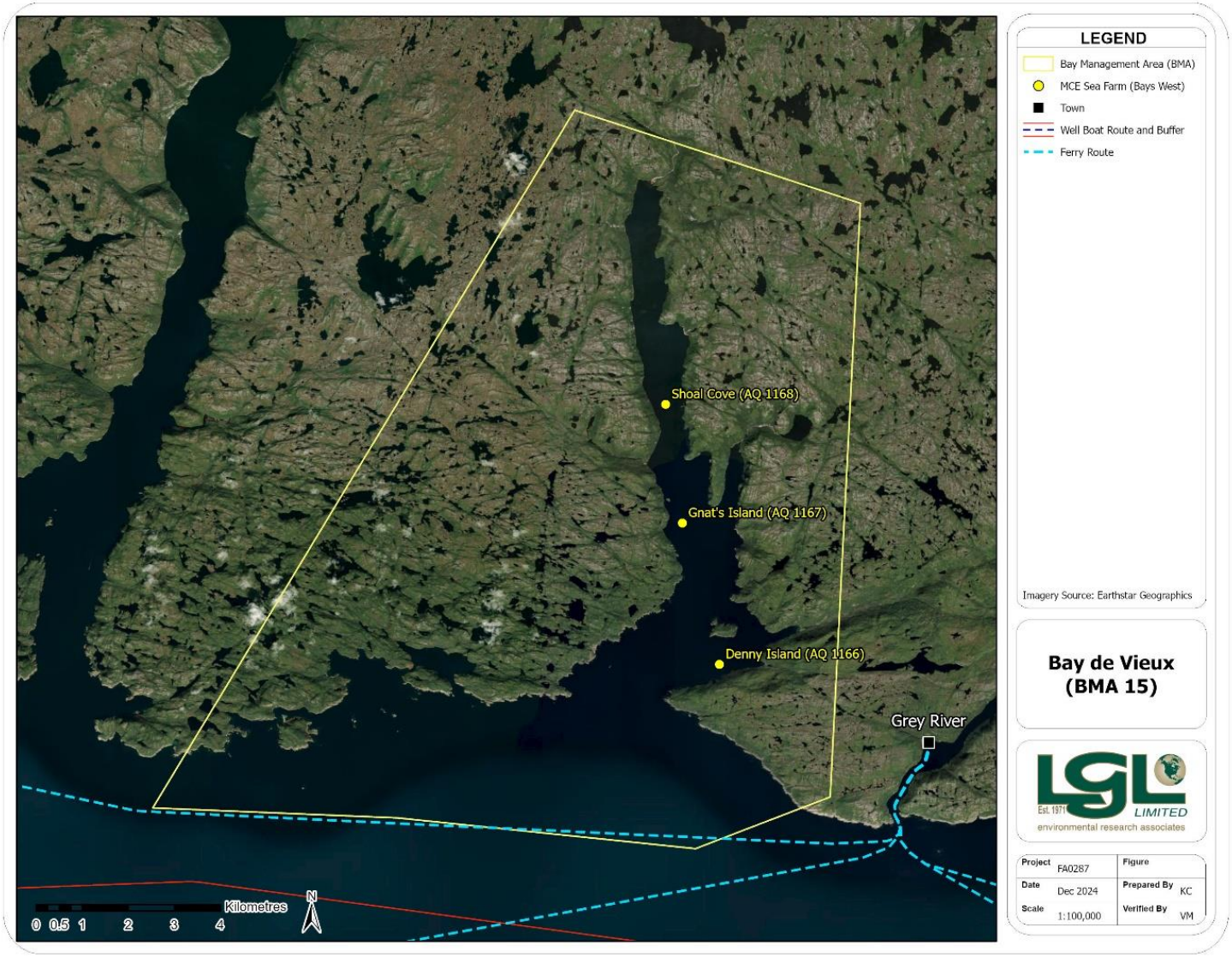


Figure 16.1. Locations of sea farms in the Bay de Vieux BMA.

Table 16.2. Summary of site-specific sea farm characteristics in Bay de Vieux BMA (BMA 15).

Characteristic	Sea Farm		
	Shoal Cove	Gnat Island	Denny Island
Lease area (ha)	132	130	69
Water depth under lease (m)	0–234	0–370	0–173
Minimum water depth under sea cages (m)	116	71	10
Predominant Bottom Type	Hard	Hard	Hard
Water Temperature (Mean °C at 15 m)			
Winter	3.3		
Spring	2.8		
Summer	9.0		
Fall	11.0		
Dissolved Oxygen (Mean mg/L at 15 m)			
Winter	n/a		
Spring	n/a		
Summer	n/a		
Fall	n/a		
Currents (cm/s at 15 m)			
Mean	4.1	4.4	6.4
Maximum	24	25	36

Notes:
Water depth values may vary by approximately ± 2 m depending on tidal influence.

16.1 Sea Farm Site Maps

The MCE sea farms in the Bay de Vieux BMA have been designed in a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 16.2–16.4). The sea farms in the Bay de Vieux BMA will be third-party certified prior to stocking [as per FFA policy (FFA 2019)].

16.1.1 Denny Island

As originally designed, the Denny Island sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 16.2).

16.1.2 Gnat Island

As originally designed, the Gnat Island sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 16.3).

16.1.3 Shoal Cove

As originally designed, the Shoal Cove sea farm has a 2x5 sea cage array with a net circumference of 140 m and a depth of 30 m (Figure 16.4).

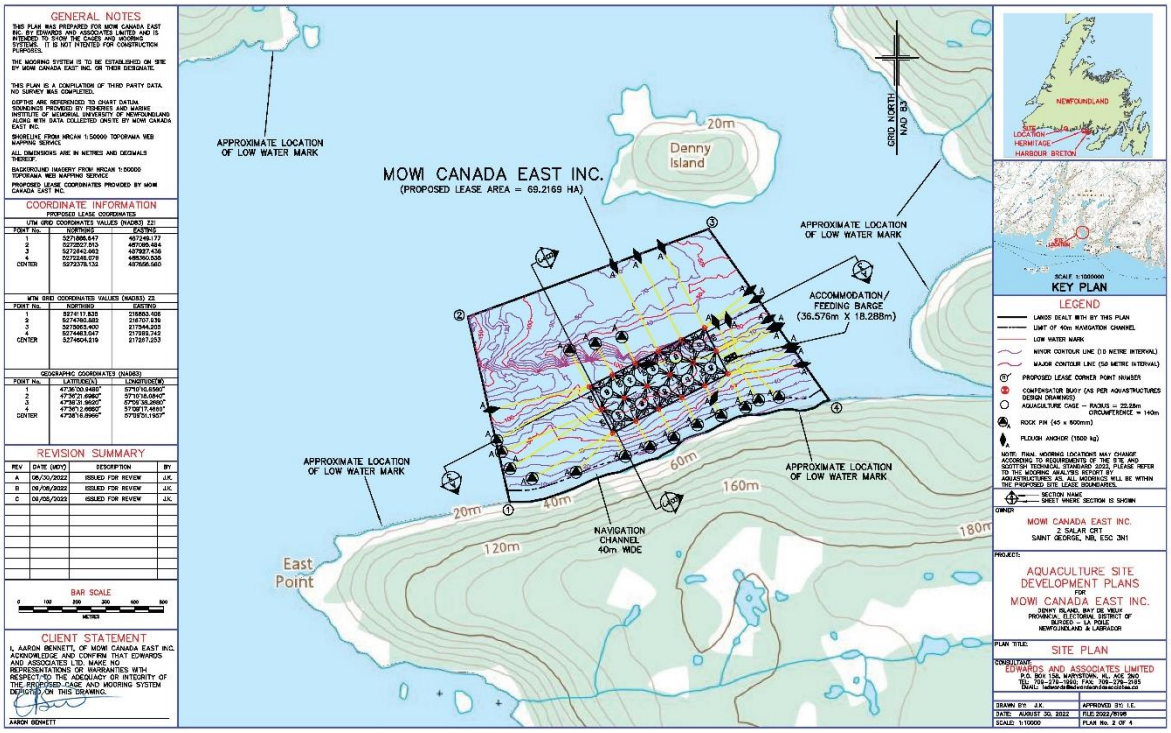


Figure 16.2. Denny Island sea farm map and sea cage layout.

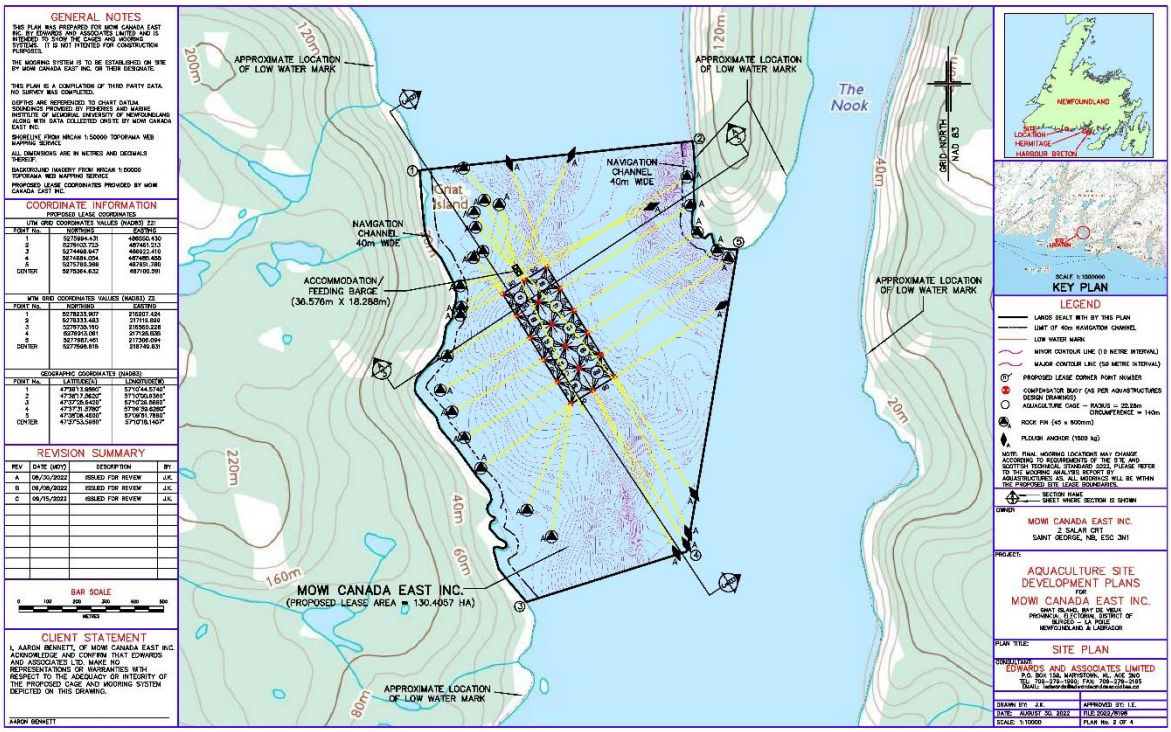


Figure 16.3. Gnat Island sea farm map and sea cage layout.

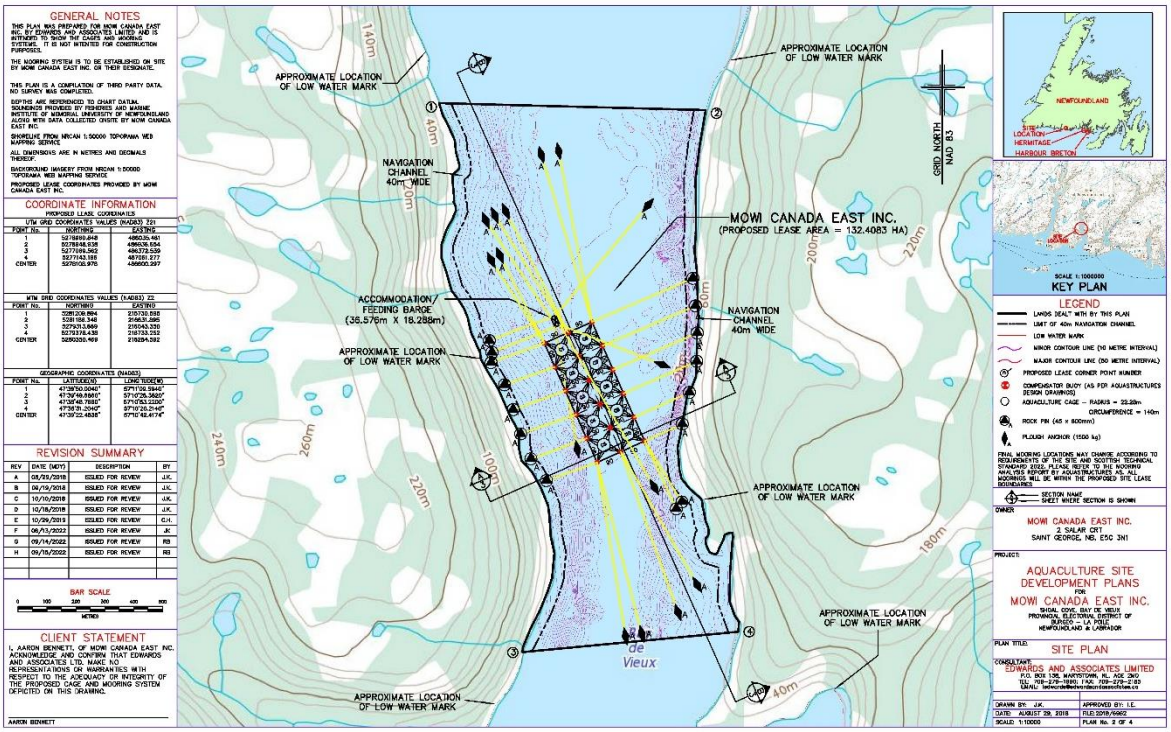


Figure 16.4. Shoal Cove sea farm map and sea cage layout.

16.2 Benthic Surveys

Benthic surveys in the Bay de Vieux BMA were conducted in June 2018. Stations categorized as hard bottom appeared hard visually or did not produce acceptable grab samples.

16.2.1 Denny Island

Based on surveys at 88 sampling stations collected across 12 transects, the composition of the seafloor in the Denny Island sea farm is primarily mixed substrates including rockwall, gravel, cobble, sand and mud (Figure 16.5; Table 16.3). The majority of stations (76 of 88) were considered hard bottom. Species observed include algae spp., anemones, sea star spp., sponges and more. Four kelp beds were observed near shore on the south ends of transects 3, 7, 9, and 10. Soft corals were observed. Some encrusting and standalone sponges were noted; however, not in quantities to be considered a complex. An unidentified tunicate was observed.

16.2.2 Gnat Island

Based on surveys at 163 sampling stations across 16 transects, the composition of the seafloor in the Gnat Island sea farm is primarily rockwall, bedrock or boulder covered in a surface layer of mud and silt (Figure 16.6; Table 16.4). The majority of stations (124 of 163) were considered hard

bottom. Species observed include algae spp., anemones, feather stars, sponges, sea pens and more. Nine brown algae (Phaeophyta) beds were observed near shore. In addition, an individual Atlantic wolfish (*Anarhichas lupus*), which is considered a *SAR* species, was observed on the east end of transect 6 in 140 m depth. Sea pens, or Pennatulacean corals, which have been considered to have the potential to act as nurseries for redfish (*Sebastes* sp.), were observed on transects 1 to 10, between 190 and 308 m depths, on mud substrate. Some encrusting and standalone sponges were noted; however, not in quantities to be considered a complex. Benthic indicators, present as a patch of *Beggiatoa*-like bacteria, was observed on one transect (transect 15) at 390–400 m in approximately 72–81 m depth of water and was likely a result of natural deposition at this location. An unidentified tunicate was observed.

16.2.3 Shoal Cove

Based on surveys at 217 sampling stations across 20 transects, the composition of the seafloor in the Shoal Cove sea farm is primarily rockwall, bedrock or boulder with a surface layer of finer substrates (Figure 16.7; Table 16.5). The majority of stations (147 of 217) were considered hard bottom. Species observed include algae spp., anemones, sea star spp., sponges and more. Three kelp beds were observed near shore on the east and west ends of transect 19, and the west end of transect 20. Some encrusting and standalone sponges were noted; however, not in quantities to be considered a complex. Soft corals were observed. An unidentified tunicate was also observed.

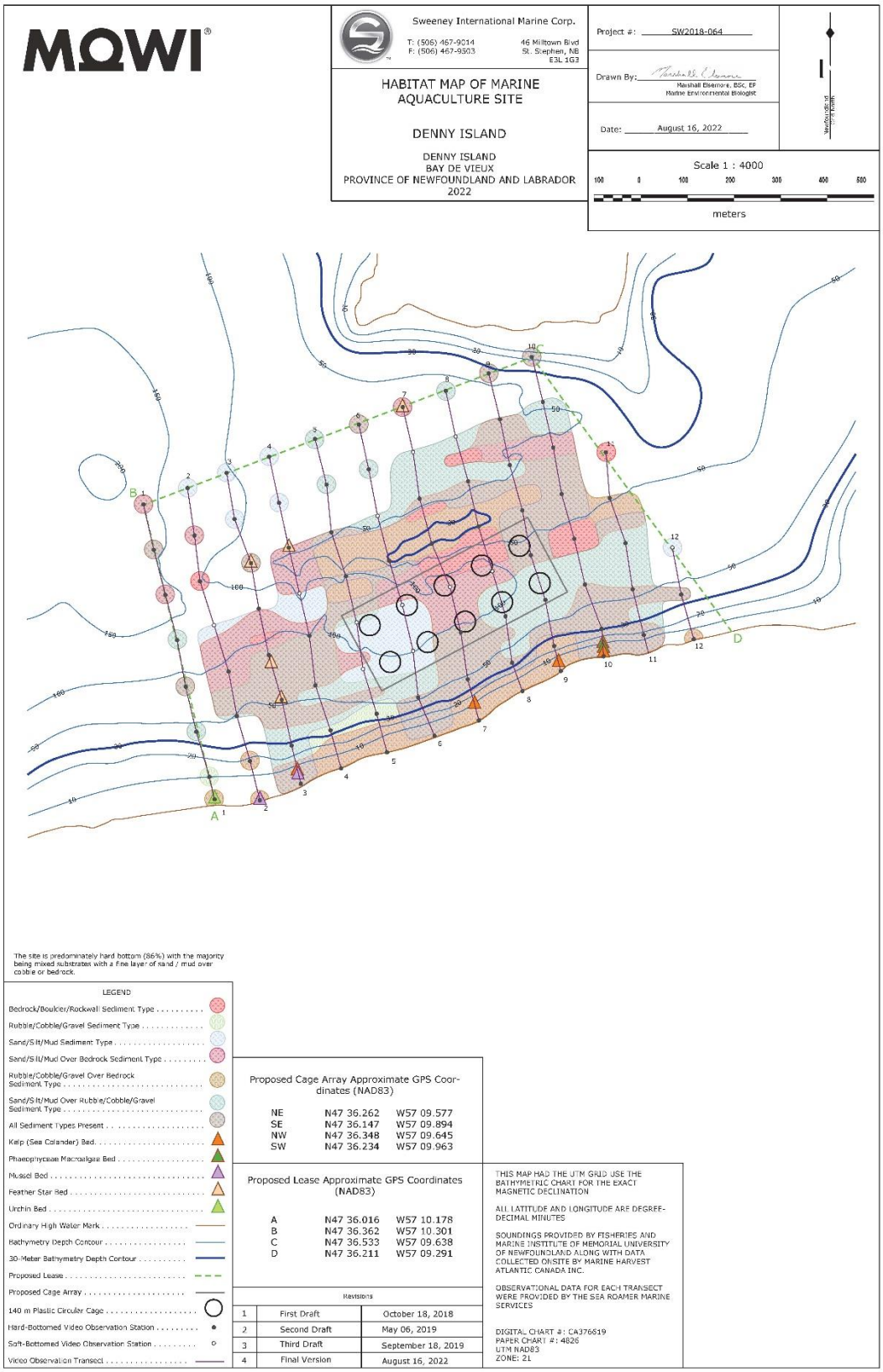


Figure 16.5. Habitat observations at sampling stations in the Denny Island sea farm (June 2018).

Table 16.3. Summary of bottom type at the Denny Island sea farm (June 2018).

Denny Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	0	47 36.362	57 10.302	173	Hard		30%					70%				Acadian Redfish (2), Breadcrumb Sponge (<5%), *Geodiidae* Sponge (>20), *Serpula (8)*
	100	47 36.309	57 10.284	160	Hard		50%				5%	45%				Acadian Redfish (2), Geodiidae Sponge (>20), Serpula (18), Breadcrumb Sponge (10%)
	200	47 36.257	57 10.264	173	Hard		5%					95%				Acadian Redfish (14), Worm Tube (>20), Warty Sponge (<5%), *Geodiidae* Sponge (>20)
	300	47 36.205	57 10.244	133	Hard						15%	85%				Worm Tube (5), *Hormathia* Anemone (9)
	400	47 36.151	57 10.229	88	Hard		25%				15%	60%				Breadcrumb Sponge (5%), *Serpula* (4), Feather Star (16), *Geodiidae* Sponge (1)
	500	47 36.099	57 10.211	43	Hard					50%	30%	20%				Green Sea Urchin (2), Unidentified Fish (1)
	600	47 36.047	57 10.188	10	Hard				10%	40%	50%					Green Sea Urchin (>20)
	650	47 36.021	57 10.179	3	Hard			80%	5%	15%						Green Sea Urchin (>20)
2	0	47 36.381	57 10.227	117	Hard						100%					*Hormathia* Anemone (12), *Cerianthus* Anemone (1), Soft Coral (1), Snow Crab (1), Worm Tube (5), White Branching Sponge (1), Warty Sponge (<5%), Feather Star (1)
	100	47 36.326	57 10.215	131	Hard		5%					95%				*Hormathia* Anemone (6), Breadcrumb Sponge (<5%)
	200	47 36.273	57 10.205	120	Hard	100%										Warty Sponge (5%), Breadcrumb Sponge (10%), *Serpula* (4), Cushion Star (2), *Geodiidae* Sponge (>20)
	300	47 36.222	57 10.181	139	Soft							100%				Soft Coral (4), *Hormathia* Anemone (15), Feather Star (1)
	400	47 36.169	57 10.156	95	Hard							100%				*Hormathia* Anemone (5)
	500	47 36.117	57 10.141	48	Hard					90%		10%				Green Sea Urchin (2), Unidentified Sea Anemone (1), Orange-footed Sea Cucumber(1), Cunner (1)
	600	47 36.065	57 10.119	19	Hard		90%				10%					Breadcrumb Sponge (10%), Green Sea Urchin (2), *Metridium* Anemone (12)
	680	47 36.020	57 10.102	5	Hard			70%	10%		20%					Blue Mussel (>20), *Metridium* Anemone (>20), Breadcrumb Sponge (10%)
3	0	47 36.398	57 10.160	103	Hard								100%			*Hormathia* Anemone (>20), Green Sea Urchin (1), Feather Star (1), White Branching Sponge (1)
	100	47 36.345	57 10.146	110	Hard								100%			*Hormathia* Anemone (14), Winter Flounder (1)
	200	47 36.294	57 10.118	72	Hard		70%			10%	20%					Feather Star (>20), Acadian Redfish (1), Warty Sponge (<5%), Breadcrumb Sponge (<5%), *Serpula* (>20)
	300	47 36.241	57 10.104	133	Hard							100%				*Hormathia* Anemone (2)
	400	47 36.188	57 10.087	86	Hard		55%		5%	10%		30%				Feather Star (>20), Warty Sponge (>20), Breadcrumb Sponge (5%), Brittle Star (1), Round Sponge (1), *Serpula* (>20), White Branching Sponge (5)

Denny Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	500	47 36.136	57 10.065	55	Hard		60%		5%	5%		30%				White Branching Sponge (1), Feather Star (>20), Warty Sponge (4), Breadcrumb Sponge (5%), Round Sponge (12), Cunner (2)
	600	47 36.083	57 10.048	26	Hard					30%	30%	40%				Brittle Star (>20), Green Sea Urchin (3), Scallop (1)
	680	47 36.039	57 10.032	3	Hard			70%	20%	10%						Green Sea Urchin (12), Serpula (1)
4	0	47 36.417	57 10.087	86	Hard							100%				Worm Tube (>20), *Hormathia* Anemone (>20), Breadcrumb Sponge (<5%), Feather Star (1), Soft Coral (1)
	100	47 36.364	57 10.070	91	Hard							100%				*Hormathia* Anemone (>20), White Branching Sponge (1), Soft Coral (1), Breadcrumb Sponge (<5%), Feather Star (1)
	200	47 36.312	57 10.053	70	Hard		70%					30%				Feather Star (>20), Brittle Star (1), Northern Sea Star (2), Round Sponge (1), Breadcrumb Sponge (5%), White Encrusting Sponge (5%), *Serpula* (7), *Geodiidae Sponge (>20)*
	300	47 36.259	57 10.035	118	Soft							100%				*Hormathia* Anemone (18)
	400	47 36.206	57 10.018	100	Hard		10%	40%				50%				Feather Star (>20), White Encrusting Sponge (5%), Northern Sea Star (2), Round Sponge (5), *Serpula* (19), *Stomphia* Anemone (1), *Geodiidae* Sponge (>20), Cunner (1)
	500	47 36.153	57 10.007	58	Hard		30%			30%	10%	30%				*Hormathia* Anemone (1), Feather Star (3), Cunner (1)
	600	47 36.101	57 9.982	35	Hard					60%	40%					Warty Sponge (2)
	670	47 36.057	57 9.963	2	Hard			50%	35%	10%	5%					Green Sea Urchin (>20)
5	0	47 36.438	57 10.009	75	Hard				5%		95%					*Hormathia* Anemone (10), Feather Star (>20), Cushion Star (1), *Cerianthus* Anemone (1)
	100	47 36.385	57 9.989	85	Hard					10%	90%					*Hormathia* Anemone (>20), Feather Star (9), Breadcrumb Sponge (<5%), Northern Sea Star (1)
	200	47 36.330	57 9.981	63	Hard	10%	5%	5%		5%		75%				Breadcrumb Sponge (10%), Feather Star (11), Cunner (1), Round Sponge (2), Warty Sponge (1), Hormathia Anemone (9), Northern Sea Star (2), White Encrusting Sponge (5%)
	300	47 36.279	57 9.956	112	Hard	25%	10%			15%			50%			*Hormathia* Anemone (16), Round Sponge (2), White Encrusting Sponge (10%), *Serpula* (6), *Stomphia* Anemone (1), Pollock (3)
	400	47 36.226	57 9.937	117	Soft							100%				*Hormathia* Anemone (6)
	500	47 36.172	57 9.926	86	Soft							100%				Feather Star (4), *Hormathia* Anemone (1), Warty Sponge (1)
	600	47 36.120	57 9.903	40	Hard					100%						Green Sea Urchin (>20), Brittle Star (4)
	680	47 36.076	57 9.885	2	Hard			60%	30%	10%						Green Sea Urchin (17), *Metridium* Anemone (1)

Denny Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
6	0	47 36.455	57 9.934	62	Hard		45%		10%	5%		40%				Feather Star (>20), Breadcrumb Sponge (trace), Northern Sea Star (1), *Hormathia* Anemone (9)
	100	47 36.403	57 9.917	75	Hard				5%	80%		15%				Brittle Star (1), Toad Crab (1), Feather Star (5), *Hormathia* Anemone (3), Breadcrumb Sponge (trace)
	200	47 36.349	57 9.902	68	Soft					5%		95%				Brittle Star (1), Feather Star (3), *Hormathia* Anemone (2)
	300	47 36.297	57 9.882	30	Hard		100%									Round Sponge (3), Green Sea Urchin (3), Blood Star (1), Warty Sponge (1), Brittle Star (2)
	400	47 36.246	57 9.859	113	Soft							100%				*Hormathia* Anemone (1)
	500	47 36.193	57 9.841	103	Soft							100%				Brittle Star (>20), Jellyfish (1)
	600	47 36.139	57 9.832	54	Hard		70%			20%		10%				Feather Star (9), Breadcrumb Sponge (15%), *Serpula* (9), Northern Sea Star (2), *Geodiidae* Sponge (2), Round Sponge (1), White Encrusting Sponge (5%)
	680	47 36.095	57 9.804	2	Hard		20%	40%	40%							Green Sea Urchin (>20), *Metridium* Anemone (1)
7	0	47 36.475	57 9.859	67	Hard		50%					50%				*Hormathia* Anemone (9), *Serpula* (5), Feather Star (>20), Breadcrumb Sponge (5%)
	100	47 36.423	57 9.841	75	Soft						15%	85%				*Hormathia* Anemone (6), Soft Coral (1), Feather Star (4), Cunner (1)
	200	47 36.369	57 9.830	67	Hard	15%						85%				*Hormathia* Anemone (5), Feather Star (>20), White Encrusting Sponge (5%)
	300	47 36.317	57 9.809	30	Hard		100%									Green Sea Urchin (8)
	400	47 36.267	57 9.778	113	Soft							100%				Brittle Star (4), White Branching Sponge (1), Round Sponge (1), Unidentified Flounder (1), Worm Tubes (>20)
	500	47 36.215	57 9.759	90	Hard		30%				20%	50%				Feather Star (>20), Soft Coral (1), Brittle Star (4), *Geodiidae* Sponge (8), Breadcrumb Sponge (5%), White Encrusting Sponge (10%)
	600	47 36.160	57 9.747	48	Hard			5%		5%	90%					Feather Star (4), Round Sponge (2), Warty Sponge (1), Breadcrumb Sponge (5%), White Encrusting Sponge (5%)
	680	47 36.113	57 9.728	1	Hard			75%	10%	10%	5%					*Metridium* Anemone (>20)
8	0	47 36.494	57 9.786	67	Hard					50%		50%				*Hormathia* Anemone (4), Green Sea Urchin (1)
	100	47 36.441	57 9.769	75	Soft					15%		85%				Feather Star (2), Green Sea Urchin (1), Unidentified Tunicate (1), Brittle Star (2)
	200	47 36.389	57 9.747	62	Hard	35%				5%		60%				*Hormathia* Anemone (1), Unidentified Fish (1)
	300	47 36.337	57 9.729	30	Hard		50%			50%						Green Sea Urchin (6), Spiny Sunstar (1), Breadcrumb Sponge (5%), Brittle Star (5), Round Sponge (3), Warty Sponge (1)

Denny Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	400	47 36.285	57 9.705	103	Soft											*Hormathia* Anemone (5)
	500	47 36.233	57 9.683	95	Hard					60%						Feather Star (5), Brittle Star (>20), *Serpula* (2)
	600	47 36.179	57 9.671	38	Hard		80%				10%	10%				Green Sea Urchin (1), Breadcrumb Sponge (5%), White Encrusting Sponge (5%), Brittle Star (>20)
	660	47 36.147	57 9.654	2	Hard			60%	20%	10%	10%					
9	0	47 36.514	57 9.712	32	Hard		85%			5%	5%	5%				*Phakellia* Sponge (2), Green Sea Urchin (1)
	100	47 36.461	57 9.693	63	Hard		50%	20%	10%			20%				Feather Star (>20), Round Sponge (4), *Hormathia* Anemone (2)
	200	47 36.408	57 9.676	54	Hard					70%		30%				Feather Star (13), Round Sponge (1), *Geodiidae* Sponge (>20)
	300	47 36.356	57 9.654	33	Hard					45%	50%	5%				Green Sea Urchin (3)
	400	47 36.304	57 9.640	80	Hard			45%	5%			50%				Breadcrumb Sponge (5%), White Encrusting Sponge (5%), *Serpula* (>20), Blood Star (1), Feather Star (>20), Round Sponge (2), Atlantic Rock Crab (1), Geodiidae Sponge (5), *Hormathia* Anemone (1)
	500	47 36.252	57 9.615	77	Hard					60%			40%			Feather Star (15), Toad Crab (1), Brittle Star (6), *Hormathia* Anemone (1), Unidentified Sea Star (2), Green Sea Urchin (1)
	600	47 36.199	57 9.600	22	Hard			40%	20%	10%	30%					Green Sea Urchin (5), White Encrusting Sponge (5%), *Serpula* (3)
	655	47 36.170	57 9.588	2	Hard			65%	20%	10%	5%					Green Sea Urchin (>20), Northern Sea Star (2), Ctenophore (12)
10	0	47 36.533	57 9.639	23	Hard		60%				5%	35%				Green Sea Urchin (3)
	100	47 36.481	57 9.620	43	Hard					80%		20%				Green Sea Urchin (2), Warty Sponge (1)
	200	47 36.428	57 9.602	40	Hard		90%					10%				Feather Star (>20), Geodiidae Sponge (4), Brittle Star (>20)
	300	47 36.375	57 9.587	33	Hard		10%	5%		55%	25%	5%				Brittle Star (7), *Serpula* (>20), Scallop (1), Round Sponge (1), *Geodiidae* Sponge (>20), Breadcrumb Sponge (5%), White Encrusting Sponge (5%), Ctenophore (1)
	400	47 36.323	57 9.566	66	Hard	100%										White Encrusting Sponge (20%), Breadcrumb Sponge (10%), *Serpula* (>20), Feather Star (3), Cup Sponge (1), *Stomphia* Anemone (1)
	500	47 36.270	57 9.547	74	Hard		10%			40%		50%				Brittle Star (3)
	600	47 36.219	57 9.518	31	Hard		20%		40%	10%	30%					Breadcrumb Sponge (5%), White Encrusting Sponge (5%), *Serpula* (>20), Round Sponge (1)
	660	47 36.187	57 9.515	2	Hard		90%					10%				Blue Mussel (>20), Green Sea Urchin (18), Round Sponge (1), *Serpula* (>20), Northern Sea Star (1), Ctenophore (1), Unidentified Fish (1), *Metridium* Anemone (7)
11	0	47 36.423	57 9.512	36	Hard		100%									Brittle Star (4), Warty Sponge (5%),

Denny Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Green Sea Urchin (1)
	100	47 36.370	57 9.505	41	Hard		90%				10%					Breadcrumb Sponge (5%), , White Encrusting Sponge (10%), Serpula (>20), Feather Star (>20)
	200	47 36.318	57 9.478	79	Hard					45%	10%		45%			Northern Sea Star (1), Stomphia Anemone (1), Brittle Star (16), Breadcrumb Sponge (5%), Planaria (1)
	300	47 36.265	57 9.466	61	Hard		25%			25%	5%	45%				Green Sea Urchin (1), Brittle Star (2), Breadcrumb Sponge (5%), White Encrusting Sponge (10%)
	400	47 36.212	57 9.446	18	Hard			40%	25%		5%	30%				Green Sea Urchin (1), Serpula (>20), Cunner (2), Round Sponge (1), Encrusting Algae (30%)
12	0	47 36.313	57 9.398	81	Soft								100%			Brittle Star (1), *Hormathia* Anemone (16), Breadcrumb Sponge (<5%)
	100	47 36.259	57 9.383	37	Hard	30%	15%	10%		5%		40%				Breadcrumb Sponge (15%), White Encrusting Sponge (5%), Stalked Jellyfish (1), *Serpula* (>20), Worm Tubes (>20)
	200	47 36.207	57 9.361	2	Hard	25%			35%	40%						Green Sea Urchin (>20)

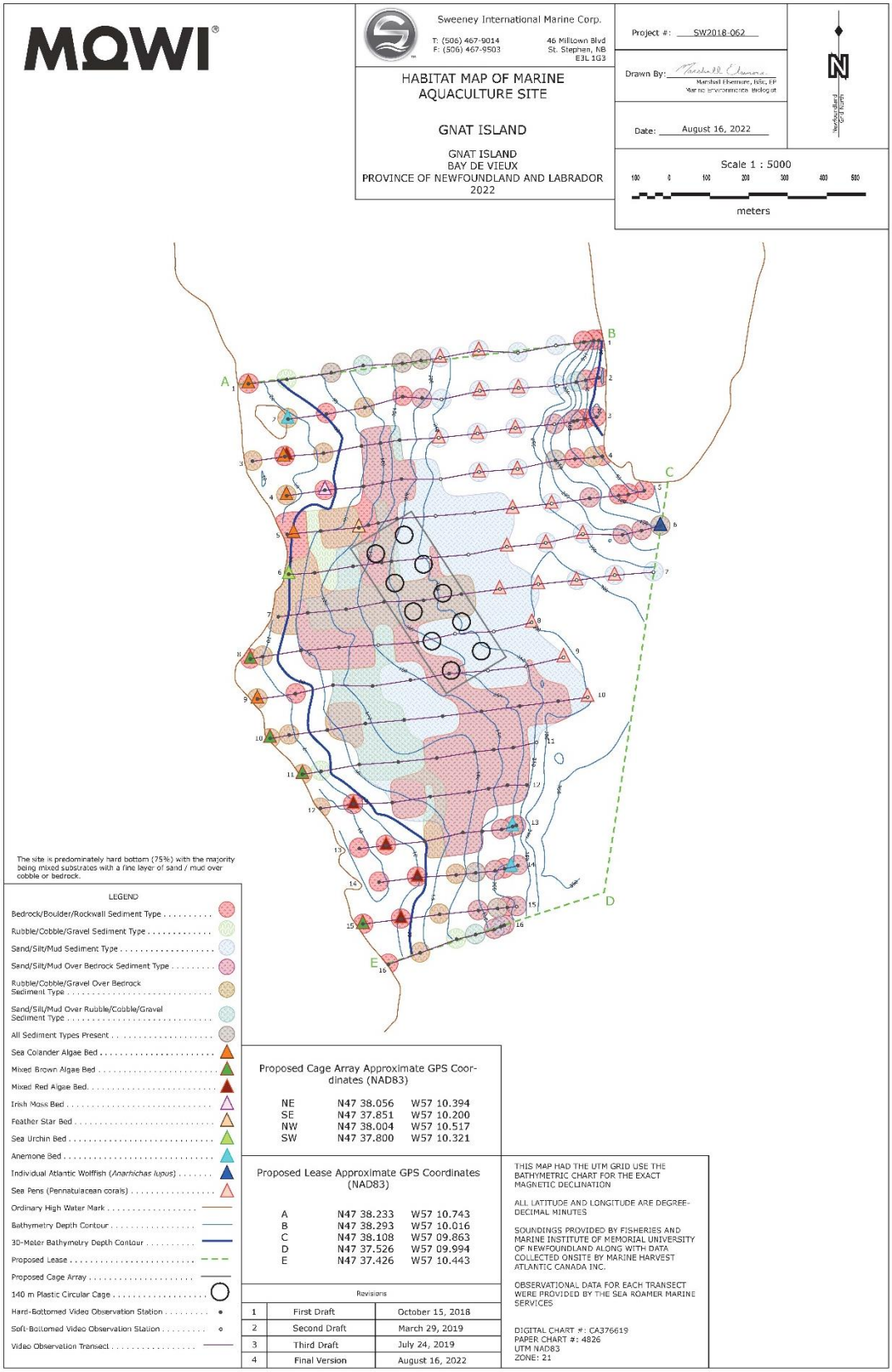


Figure 16.6. Habitat observations at sampling stations in the Gnat Island sea farm (June 2018).

Table 16.4. Summary of bottom type at the Gnat Island sea farm (June 2018).

Gnat Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	-10	47 38.294	57 10.007	1	Hard	100%										*Metridium* Anemone (>20)
	0	47 38.293	57 10.018	116	Hard	100%										Breadcrumb Sponge (5%), *Serpula* (2)
	25	47 38.292	57 10.034	174	Hard	100%										*Serpula* (>20), Breadcrumb Sponge (10%), *Stomphia* Anemone (14)
	100	47 38.287	57 10.096	271	Soft								100%			Shrimp (>20), Arrow Worm (1), *Bolocera* Anemone (1)
	200	47 38.277	57 10.174	272	Soft								100%			Shrimp (>20), Worm Tube (3)
	300	47 38.280	57 10.255	263	Soft								100%			Shrimp (18), Sea Pen (7), Worm Tube (>20)
	400	47 38.269	57 10.333	253	Soft								100%			Shrimp (>20), Sea Pen (2), Acadian Redfish (3), *Bolocera* Anemone (1)
	450	47 38.268	57 10.374	235	Hard	50%		15%	10%	5%			20%			Stomphia Anemone (1), Bolocera Anemone (6), Geodiidae Sponge (1), Snow Crab (1), Breadcrumb Sponge (<5%), Cushion Star (1), Acadian Redfish (3)
	500	47 38.262	57 10.412	162	Hard	50%				20%	15%		15%			*Stomphia* Anemone (3), *Henricia* Sea Star (2), Breadcrumb Sponge (15%), Cushion Star (2), *Serpula* (2)
	600	47 38.258	57 10.493	120	Hard				10%	50%	10%		30%			Feather Star (>20), Cushion Star (2), Breadcrumb Sponge (<5%)
	680	47 38.248	57 10.558	44	Hard		70%		20%				10%			Feather Star (8), Acadian Redfish (3), Breadcrumb Sponge (<5%)
	800	47 38.238	57 10.650	33	Hard					40%	60%					*Chlamys* Scallop (1)
	900	47 38.233	57 10.729	6	Hard		80%	20%								Green Sea Urchin (2)
2	-10	47 38.242	57 10.007	1	Hard	100%										*Metridium* Anemone (>20), *Stomphia* Anemone (1)
	25	47 38.239	57 10.033	100	Hard	100%										*Stomphia* Anemone (>20), Breadcrumb Sponge (5%), Vase Sponge (>20), Unidentifiable Fish (2)
	50	47 38.237	57 10.054	255	Hard					55%	10%		35%			Shrimp (15), Sea Spider (1)
	100	47 38.231	57 10.093	280	Soft								100%			Shrimp (>20), Worm Tube (4)
	200	47 38.227	57 10.172	277	Soft								100%			Shrimp (>20), Sea Pen (1), Worm Tube (9)
	300	47 38.223	57 10.252	266	Soft								100%			Acadian Redfish (2), Sea Pen (11), Shrimp (10), Worm Tube (>20)
	400	47 38.212	57 10.331	247	Soft								100%			Shrimp (14), Acadian Redfish (1), Worm Tube (>20)
	450	47 38.208	57 10.370	210	Hard	90%							10%			Shrimp (1), White Branching Sponge (1), *Geodiidae* Sponge (7), Acadian Redfish (1), *Bolocera* Anemone (19), Breadcrumb Sponge (5%)
	500	47 38.215	57 10.411	143	Hard	100%										*Bolocera* Anemone (14), *Geodiidae* Sponge (>20), *Henricia* Sea Star (2), Breadcrumb Sponge (15%)
	600	47 38.200	57 10.489	94	Hard	60%				10%	30%					Feather Star (>20), *Geodiidae* Sponge (11), Acadian Redfish (4), Breadcrumb Sponge (15%), *Henricia* Sea Star (1), *Serpula* (6), *Hormathia* Anemone

Gnat Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(2), Round Sponge (1)
	700	47 38.191	57 10.568	29	Hard	100%										Green Sea Urchin (2), Breadcrumb Sponge (20%)
	800	47 38.184	57 10.647	1	Hard			10%	60%	30%						*Metridium* Anemone (>20)
3	-10	47 38.187	57 10.012	1	Hard	80%	20%									
	20	47 38.185	57 10.036	93	Hard	100%										*Bolocera* Anemone (5), Breadcrumb Sponge (5%), *Serpula* (2)
	40	47 38.184	57 10.051	160	Hard	100%										*Bolocera* Anemone (4), *Serpula* (>20), Cushion Star (1), Cod (6)
	50	47 38.180	57 10.058	226	Hard	90%							10%			*Stomphia* Anemone (4), *Bolocera* Anemone (>20), Cushion Star (1), *Geodiidae* Sponge (>20), Acadian Redfish (4), Stalked Tunicate (1)
	100	47 38.177	57 10.099	285	Soft			5%					95%			*Geodiidae* Sponge (1), Feather Star (1), Shrimp (>20), Acadian Redfish (1), Winter Flounder (1), Worm Tube (8)
	200	47 38.172	57 10.178	281	Soft								100%			Shrimp (12), Sea Pen (9), Worm Tube (6)
	300	47 38.164	57 10.257	271	Soft								100%			Shrimp (15), Sea Pen (8), Worm Tube (10)
	400	47 38.158	57 10.336	260	Soft								100%			Shrimp (11), Sea Pen (5), *Mysid* Shrimp (14), Unidentifiable Fish (1), Worm Tube (17)
	500	47 38.155	57 10.417	229	Hard					40%	30%		30%			Acadian Redfish (1), Shrimp (2), *Bolocera* Anemone (1), Toad Crab (1)
	550	47 38.149	57 10.456	168	Hard	85%	15%									*Serpula* (>20), Cushion Star (1), *Henricia* Sea Star (2), Breadcrumb Sponge (20%), *Bolocera* Anemone (>20), Unidentifiable Fish (1), Unidentifiable Sea Star (1)
	600	47 38.146	57 10.495	86	Hard	90%							10%			Breadcrumb Sponge (35%), Feather Star (3), Worm Tube (17), *Hormathia* Anemone (4)
	700	47 38.136	57 10.574	22	Hard		20%		15%	25%	40%					
	800	47 38.132	57 10.653	11	Hard		100%									
	880	47 38.125	57 10.720	7	Hard		30%		10%	10%	50%					
4	-20	47 38.133	57 9.999	1	Hard	100%										*Metridium* Anemone (3)
	0	47 38.131	57 10.016	54	Hard	85%					15%					Feather Star (>20)
	50	47 38.127	57 10.056	92	Hard	100%										Feather Star (1)
	100	47 38.127	57 10.096	273	Hard	50%				10%			40%			Cushion Star (2), *Bolocera* Anemone (1), Shrimp (18), *Mysid* Shrimp (5)
	200	47 38.115	57 10.174	288	Soft								100%			*Mysid* Shrimp (>20), Sea Pen (17), Shrimp (8), Acadian Redfish (1), Worm Tube (>20)
	300	47 38.110	57 10.254	282	Soft								100%			Shrimp (11), Sea Pen (3), *Mysid* Shrimp (4), Worm Tube (14)
	400	47 38.101	57 10.333	285	Soft								100%			Shrimp (>20), Worm Tube (4)
	500	47 38.101	57 10.413	210	Hard	70%							30%			Shrimp (2), *Bolocera* Anemone (8), Acadian Redfish (4), Breadcrumb Sponge (30%)
	550	47 38.094	57 10.452	133	Hard	90%							10%			*Hormathia* Anemone (3), Breadcrumb Sponge (60%), *Serpula* (>20)

Gnat Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	600	47 38.090	57 10.491	42	Hard	100%										Feather Star (7), *Hormathia* Anemone (1)
	700	47 38.085	57 10.571	21	Hard		100%									
	800	47 38.077	57 10.650	10	Hard		40%	50%	10%							
5	60	47 38.085	57 9.913	1	Hard	100%										
	100	47 38.080	57 9.946	80	Hard	100%										*Stomphia* Anemone (3), Breadcrumb Sponge (5%), Unidentifiable Fish (3)
	125	47 38.079	57 9.963	140	Hard	25%	75%									*Stomphia* Anemone (2), *Henricia* Sea Star (1), Breadcrumb Sponge (10%), *Geodiidae* Sponge (6)
	200	47 38.074	57 10.025	207	Hard	90%							10%			Cushion Star (2), *Bolocera* Anemone (1), Breadcrumb Sponge (<5%), *Henricia* Sea Star (1), *Serpula* (4), Toad Crab (1), Acadian Redfish (1), White Branching Sponge (3)
	300	47 38.067	57 10.104	190	Soft								100%			Sea Pen (>20), Shrimp (16), Worm Tube (>20)
	400	47 38.061	57 10.183	285	Soft								100%			Worm Tube (>20), Sea Pen (15), Shrimp (11)
	500	47 38.054	57 10.263	285	Soft								100%			Flounder (1), Worm tube (>20), Shrimp (10)
	600	47 38.049	57 10.343	284	Soft								100%			Worm Tube (>20), Shrimp (11)
	700	47 38.046	57 10.423	230	Hard	80%				10%			10%			Acadian Redfish (4), Shrimp (2), *Hormathia* Anemone (2), Cushion Star (1)
	750	47 38.042	57 10.462	154	Hard	100%										Breadcrumb Sponge (65%), *Serpula* (>20), Cushion Star (3)
	775	47 38.039	57 10.481	90	Hard	100%										Breadcrumb Sponge (70%), Feather Star (>20), *Hormathia* Anemone (1)
	800	47 38.033	57 10.500	57	Hard		65%			15%	20%					*Hormathia* Anemone (4), Feather Star (>20)
	900	47 38.028	57 10.580	44	Hard				25%	40%	35%					Acadian Redfish (8), *Hormathia* Anemone (2)
	980	47 38.024	57 10.649	7	Hard	100%										
6	0	47 38.036	57 9.879	140	Hard	30%				10%	30%		30%			Atlantic Wolffish (1), Breadcrumb Sponge (5%), *Henricia* Sea Star (1)
	50	47 38.024	57 9.917	230	Hard	90%							10%			Bolocera Anemone (9), Stomphia Anemone (3), Geodiidae Sponge (>20), Colonial Branching Hydrozoan (1), Unidentifiable Sea Star (1)
	100	47 38.024	57 9.958	214	Hard	90%							10%			Bolocera Anemone (5), Stomphia Anemone (1), Geodiidae Sponge (>20), Mysid Shrimp (2), Serpula (2)
	200	47 38.024	57 10.039	285	Soft								100%			*Mysid* Shrimp (6), Shrimp (19), Sea Pen (2), *Geodiidae* Sponge (2), Worm Tube (>20)
	300	47 38.012	57 10.116	293	Soft								100%			Sea Pen (>20), Shrimp (18), *Mysid* Shrimp (2), Worm Tube (>20)
	400	47 38.007	57 10.196	290	Soft								100%			Sea Pen (>20), Shrimp (7), Worm Tube (>20)
	500	47 37.996	57 10.274	291	Soft								100%			Shrimp (19), Worm Tube (>20)
	600	47 37.991	57 10.353	260	Soft								100%			Shrimp (15), Worm Tube (17)
	700	47 37.986	57 10.433	212	Hard				15%	40%			45%			Acadian Redfish (3), Shrimp (4), Breadcrumb Sponge (15%), Winter Flounder (1)

Gnat Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	725	47 37.984	57 10.449	180	Hard	90%							10%			*Bolocera* Anemone (>20), Unidentified Sea Star (3), Cushion Star (5), *Hormathia* Anemone (12), Breadcrumb Sponge (10%), *Serpula* (>20)
	800	47 37.979	57 10.513	137	Hard					30%	10%		60%			Stalked Tunicate (4), Worm Tube (>20)
	900	47 37.970	57 10.591	79	Hard	40%					60%					Feather Star (>20), Acadian Redfish (2), *Hormathia* Anemone (3)
	970	47 37.968	57 10.645	1	Hard	100%										Ctenophore (4), Green Sea Urchin (>20)
7	0	47 37.972	57 9.893	280	Soft								100%			Shrimp (13), Acadian Redfish (1), Worm Tube (5)
	100	47 37.968	57 9.973	298	Soft								100%			Sea Pen (>20), Shrimp (17), Worm Tube (>20)
	200	47 37.960	57 10.051	300	Soft								100%			Sea Pen (>20), Shrimp (6), *Mysid* Shrimp (2), Worm Tube (>20)
	300	47 37.955	57 10.130	300	Soft								100%			Sea Pen (>20), Worm Tube (>20), Shrimp (8), Toad Crab (1)
	400	47 37.948	57 10.210	291	Soft								100%			Worm Tube (>20), Shrimp (13), Sea Pen (8)
	500	47 37.941	57 10.289	281	Hard			50%	15%				35%			*Bolocera* Anemone (3), Cushion Star (1), Acadian Redfish (1), Toad Crab (1)
	600	47 37.932	57 10.368	238	Hard			70%					30%			*Bolocera* Anemone (6), Unidentifiable Sponge (7)
	700	47 37.929	57 10.448	181	Hard			40%	30%		10%		20%			*Serpula* (>20), Acadian Redfish (7), Fan Bryozoan (>20)
	800	47 37.919	57 10.527	131	Hard			50%	20%				30%			Acadian Redfish (4), Breadcrumb Sponge (10%), *Serpula* (>20), *Hormathia* Anemone (4)
	900	47 37.914	57 10.606	77	Hard	60%							40%			Feather Star (8), Acadian Redfish (13), Breadcrumb Sponge (20%), Brachiopod (4), *Hormathia* Anemone (2)
	980	47 37.909	57 10.666	6	Hard			20%	30%	40%	10%					*Metridium* Anemone (4), Unidentifiable Sponge (3)
8	300	47 37.901	57 10.144	303	Soft								100%			Shrimp (10), Worm Tube (>20), Sea Pen (>20)
	400	47 37.889	57 10.222	285	Soft								100%			Shrimp (7), Worm Tube (>20)
	500	47 37.885	57 10.302	251	Soft								100%			Worm Tube (>20), Shrimp (7), Acadian Redfish (1), Unidentifiable Fish (1)
	600	47 37.874	57 10.380	200	Hard	70%							30%			Tube Worm (18), Acadian Redfish (1)
	700	47 37.869	57 10.460	162	Soft					10%	30%		60%			Acadian Redfish (>20)
	800	47 37.866	57 10.541	84	Hard	100%										Tube Worm (>20), Breadcrumb Sponge (60%), Funnel Sponge (1), Feather Star (>20)
	900	47 37.862	57 10.620	49	Hard	90%							10%			Feather Star (10), *Hormathia* Anemone (1)
	1000	47 37.853	57 10.698	15	Hard			70%	30%							Acadian Redfish (2)
	1040	47 37.849	57 10.724	3	Hard	100%										Green Sea Urchin (2)
9	200	47 37.853	57 10.078	297	Soft								100%			Sea Pen (>20), Worm Tube (>20), Shrimp (7)
	300	47 37.840	57 10.156	262	Soft								100%			*Bolocera* Anemone (4), Shrimp (4), Worm Tube (10)
	400	47 37.834	57 10.234	238	Soft								100%			Shrimp (8), Worm Tube (8)

Gnat Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	500	47 37.830	57 10.314	149	Hard	80%							20%			Acadian Redfish (10), Cushion Star (2), *Bolocera* Anemone (1)
	600	47 37.821	57 10.394	149	Hard								100%			Worm tube (>20), Unidentifiable Sponge (4)
	700	47 37.812	57 10.472	123	Hard								100%			Shrimp (8), Worm Tube (8)
	800	47 37.814	57 10.553	86	Hard					40%	30%		30%			Feather Star (1)
	900	47 37.801	57 10.631	21	Hard		100%									
	1000	47 37.794	57 10.709	6	Hard		80%	15%	5%							
10	125	47 37.797	57 10.029	308												Sea Pen (>20), Worm Tube (>20), Shrimp (6), Snake Blenny (1)
	200	47 37.792	57 10.089	275	Hard											*Bolocera* Anemone (11), Acadian Redfish (1)
	300	47 37.785	57 10.168	251	Hard											*Hormathia* Anemone (3), Breadcrumb Sponge (40%), Acadian Redfish (1), *Bolocera* Anemone (1), Shrimp (12)
	400	47 37.778	57 10.247	196	Hard	Soft										Acadian Redfish (2), *Serpula* (11), Breadcrumb Sponge (15%)
	500	47 37.771	57 10.327	142	Hard								100%			Worm Tube (>20), Acadian Redfish (1), Stalked Tunicate (6)
	600	47 37.765	57 10.406	126	Hard	80%							20%			*Hormathia* Anemone (1), Stalked Tunicate (5), Worm Tube (>20), Unidentifiable Sponge (1), Acadian Redfish (1)
	700	47 37.760	57 10.486	99	Hard	70%							30%			Acadian Redfish (3), *Hormathia* Anemone (3), Breadcrumb Sponge (20%), *Serpula* (15), *Bolocera* Anemone (1), Feather Star (1)
	800	47 37.751	57 10.565	42	Hard	90%							10%			
	900	47 37.744	57 10.643	20	Hard								100%			*Placopecten* Scallop (2)
	950	47 37.740	57 10.682	3	Hard					15%			85%			
11	240	47 37.734	57 10.133	315	Soft				60%	20%			20%			*Mysid* Shrimp (>20)
	300	47 37.727	57 10.181	244	Hard					50%	50%					*Hormathia* Anemone (>20), Breadcrumb Sponge (40%), *Serpula* (10), Acadian Redfish (1)
	350	47 37.725	57 10.221	166	Hard		5%			35%	60%					Breadcrumb Sponge (45%), *Serpula* (>20), *Hormathia* Anemone (2)
	400	47 37.721	57 10.261	108	Hard	10%	35%	40%	10%		5%					Feather Star (>20), Acadian Redfish (1), Unidentifiable Sponge (9), Breadcrumb Sponge (45%), *Hormathia* Anemone (1)
	500	47 37.713	57 10.339	83	Hard								100%			Feather Star (>20), Acadian Redfish (5), Unidentifiable Sponge (4)
	600	47 37.707	57 10.418	95	Hard	100%										
	700	47 37.703	57 10.499	53	Hard	90%							10%			*Hormathia* Anemone (2)
	800	47 37.694	57 10.577	22	Hard	80%							20%			Green Sea Urchin (3), Breadcrumb Sponge (<5%), *Henricia* Sea Star (2)
	850	47 37.690	57 10.616	1	Hard	70%							30%			Green Sea Urchin (2)
12	250	47 37.676	57 10.154	313	Hard					60%	10%		30%			Shrimp (15), *Bolocera* Anemone (2)
	300	47 37.675	57 10.194	250	Hard					40%	45%		15%			*Hormathia* Anemone (>20), Breadcrumb Sponge (35%), *Serpula* (15), *Bolocera* Anemone (>20)
	350	47 37.671	57 10.234	139	Hard			40%		30%	30%					*Henricia* Sea Star (3), *Stomphia* Anemone (2), Unidentifiable Sea Star (1), Cod (1),

Gnat Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Feather Star (1), Breadcrumb Sponge (30%), *Serpula* (>20)
	400	47 37.665	57 10.273	95	Hard	20%		5%	40%	35%						Acadian Redfish (1), Breadcrumb Sponge (60%), *Serpula* (>20)
	500	47 37.659	57 10.352	67	Hard	55%							45%			*Hormathia* Anemone (2), Acadian Redfish (>20), Unidentifiable Tunicate (1), Feather Star (>20), *Serpula* (10), Breadcrumb Sponge (30%)
	600	47 37.651	57 10.431	43	Hard	90%							10%			Cunner (7), Feather Star (>20)
	700	47 37.648	57 10.511	17	Hard	90%							10%			Snow Crab (1)
	780	47 37.642	57 10.579	2	Hard	85%							15%			*Metridium* Anemone (8)
13	270	47 37.619	57 10.175	317	Hard	80%							20%			*Bolocera* Anemone (4), *Stomphia* Anemone (>20), Breadcrumb Sponge (10%), *Serpula* (12)
	280	47 37.618	57 10.182	252	Hard	100%										Breadcrumb Sponge (25%), *Serpula* (>20), *Geodiidae* Sponge (8), Cushion Star (2), *Stomphia* Anemone (>20), *Bolocera* Anemone (3)
	300	47 37.613	57 10.205	206	Hard	75%							25%			Shrimp (1), Breadcrumb Sponge (5%), *Serpula* (13), Acadian Redfish (2), *Bolocera* Anemone (1), Unidentifiable Stalked Anemone (1)
	350	47 37.610	57 10.245	156	Hard	80%							20%			Breadcrumb Sponge (55%), *Serpula* (>20), Acadian Redfish (4), Unidentified Sea Star (2)
	400	47 37.609	57 10.286	115	Hard	90%							10%			*Serpula* (>20), *Hormathia* Anemone (5), Unidentified Tunicate (1), Unidentified Sponge (7), Breadcrumb Sponge (25%)
	500	47 37.597	57 10.363	26	Hard		50%			20%	30%					
	600	47 37.591	57 10.443	18	Hard		100%									Breadcrumb Sponge (<5%), Green Sea Urchin (3), *Asterias* Sea Star (1)
	670	47 37.586	57 10.498	2	Hard	80%	20%									Green Sea Urchin (>20)
14	240	47 37.563	57 10.172	318	Hard	40%		40%					20%			Shrimp (3), *Stomphia* Anemone (15), *Bolocera* Anemone (5), *Serpula* (9), Cushion Star (4)
	275	47 37.552	57 10.198	220	Hard	100%										*Serpula* (>20), *Bolocera* Anemone (2), Breadcrumb Sponge (15%), Cushion Star (1), *Henricia* Sea Star (1), White Branching Sponge (2)
	300	47 37.556	57 10.219	198	Hard	70%							30%			*Serpula* (4), *Bolocera* Anemone (2), Breadcrumb Sponge (5%), Acadian Redfish (4), Unidentifiable Stalked Anemone (1)
	350	47 37.556	57 10.259	156	Hard	75%			10%				15%			*Serpula* (>20), Breadcrumb Sponge (10%), Acadian Redfish (1), Cushion Star (1)
	400	47 37.550	57 10.298	94	Hard	60%					40%					Breadcrumb Sponge (15%), *Serpula* (16), *Hormathia* Anemone (7), Unidentifiable Fish (1)
	500	47 37.547	57 10.378	18	Hard	100%										Acadian Redfish (5), Breadcrumb Sponge (<5%), *Asterias* Sea Star (2)

Gnat Island																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	600	47 37.540	57 10.457	3	Hard	60%	40%									Breadcrumb Sponge (15%)
15	200	47 37.506	57 10.174	306	Soft	20%							80%			*Mysid* Shrimp (>20), *Stomphia* Anemone (>20), *Serpula* (>20), Cushion Star (4), Shrimp (1), Breadcrumb Sponge (<5%)
	225	47 37.505	57 10.192	260	Hard	100%										Henricia Sea Star (1), Stomphia Anemone (>20), Bolocera Anemone (6), Breadcrumb Sponge (15%), Serpula (>20), White Branching Sponge (3)
	250	47 37.503	57 10.214	220	Hard	50%			20%				30%			Acadian Redfish (17), Bolocera Anemone (2), Stomphia Anemone (5), Serpula (>20), Breadcrumb Sponge (5%)
	300	47 37.501	57 10.253	145	Hard		70%						30%			Cushion Star (2), Geodiidae Sponge (>20), Acadian Redfish (1), White Branching Sponge (3), Henricia Sea Star (1)
	400	47 37.495	57 10.333	77	Hard	80%					20%					*Serpula* (>20), *Stomphia* Anemone (1), Breadcrumb Sponge (<5%)
	500	47 37.488	57 10.412	18	Hard		100%									
	600	47 37.481	57 10.491	6	Hard		100%									Green Sea Urchin (5)
16	270	47 37.480	57 10.199	311	Hard	85%							15%			*Serpula* (>20), *Stomphia* Anemone (>20), Breadcrumb Sponge (30%), *Geodiidae* Sponge (6), *Bolocera* Anemone (1), *Henricia* Sea Star (1), White Branching Sponge (1), Vase Sponge (1)
	280	47 37.479	57 10.205	250	Hard	90%							10%			*Bolocera* Anemone (2), *Stomphia* Anemone (>20), *Henricia* Sea Star (1), Shrimp (2), *Serpula* (>20), *Geodiidae* Sponge (8), Acadian Redfish (2), Breadcrumb Sponge (20%)
	300	47 37.474	57 10.220	233	Hard	80%							20%			Geodiidae Sponge (>20), Serpula (>20), Acadian Redfish (2), Henricia Sea Star (1), Cushion Star (1), Breadcrumb Sponge (25%)
	350	47 37.468	57 10.260	132	Hard					40%	40%		20%			Snow Crab (1)
	400	47 37.461	57 10.298	106	Hard					50%	50%					*Hormathia* Anemone (1), Cushion Star (1)
	500	47 37.442	57 10.373	43	Hard			40%		20%	40%					Feather Star (2), Green Sea Urchin (2), Breadcrumb Sponge (<5%)
	580	47 37.425	57 10.438	1	Hard	50%	50%									Green Sea Urchin (6), Bolocera Anemone (1), Metridium Anemone (7), Henricia Sea Star (1), Breadcrumb Sponge (35%)

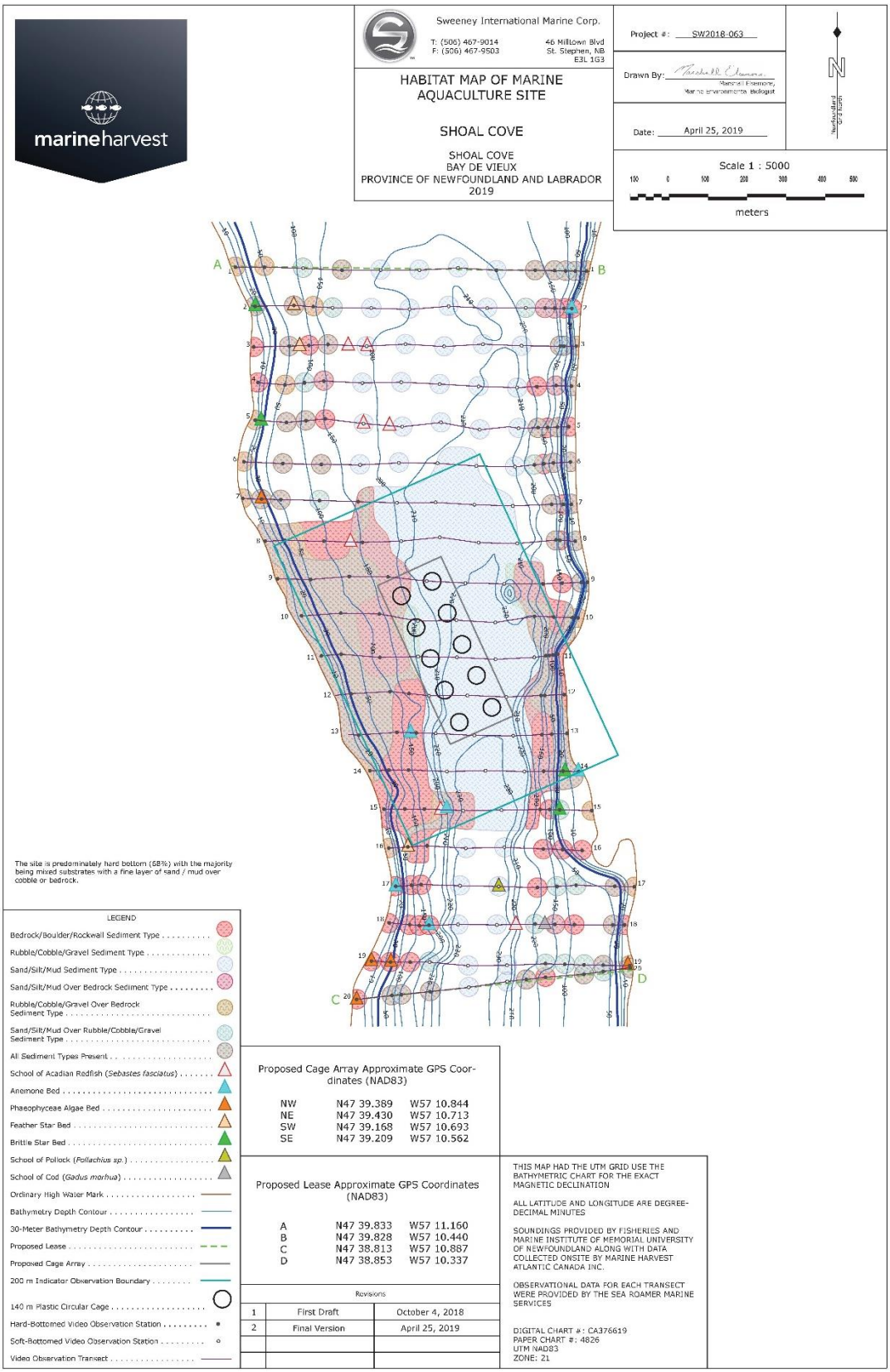


Figure 16.7. Habitat observations at sampling stations in the Shoal Cove sea farm (June 2018).

Table 16.5. Summary of bottom type at the Shoal Cove sea farm (June 2018).

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
1	-30	47 39.829	57 10.414	1	Hard		30%		40%	10%	20%					Ctenophore (14), Unidentified Fish Fry (5), Northern Sea Star (1)
	0	47 39.829	57 10.440	55	Hard		80%				20%					Cunner (4), Feather Star (>20), Unidentified Sea Star (2), Brittle Star (3), Hormathia Anemone (1)
	25	47 39.827	57 10.460	118	Hard			50%		5%	45%					Serpula (>20), Geodiidae Sponge (>20), Warty Sponge (1), Round Sponge (1), Unidentified Sea Star (1)
	50	47 39.829	57 10.480	140	Hard			55%	40%				5%			White Encrusting Sponge (15%), Geodiidae Sponge (>20), Cunner (1), Acadian Redfish (2)
	100	47 39.830	57 10.520	170	Hard			35%	30%			35%				Geodiidae Sponge (17), Acadian Redfish (2), Branching Sponge (2), Serpula (2), Round Sponge (1), Cushion Star (1)
	200	47 39.830	57 10.600	200	Soft								100%			Worm Tubes (3), Unidentified Sponge (1), Sand Shrimp (9), Unidentified Fish (1)
	300	47 39.833	57 10.679	204	Soft								100%			Sand Shrimp (>20), Worm Tube (10), Acadian Redfish (9)
	400	47 39.830	57 10.759	204	Soft								100%			Sand Shrimp (12), Worm Tube (7), Krill (>20)
	500	47 39.830	57 10.839	200	Soft								100%			Sand Shrimp (>20), Worm Tube (5), Bolocera Anemone (1), Acadian Redfish (1)
	600	47 39.829	57 10.919	188	Hard			15%	30%	10%			45%			Sand Shrimp (10), Arrow Worm (3), Krill (5), Worm Tube (7), Branching Sponge (2), Acadian Redfish (3)
	700	47 39.832	57 10.999	114	Soft						40%		60%			Round Sponge (7), Warty Sponge (1), Feather Star (2), Geodiidae Sponge (>20)
	800	47 39.834	57 11.079	52	Hard			30%	50%	20%						Feather Star (19), White Encrusting Sponge (20%), Geodiidae Sponge (>20), Breadcrumb Sponge (<5%), Serpula (13), Brittle Star (2), White Branching Sponge (1), Hormathia Anemone (1), Unidentified Fish Fry (1), Bowerbanks Sponge (10%)
	870	47 39.834	57 11.139	1	Hard			80%	20%							Metridium Anemone (>20), Unidentified Fish Fry (1), Urticina Anemone (17), Ctenophore (11), Green Sea Urchin (>20)
2	-20	47 39.777	57 10.444	2	Hard	100%										Metridium Anemone (>20), Urticina Anemone (2), Ctenophore (8)
	0	47 39.776	57 10.459	78	Hard	60%	30%	10%								Cunner (12), Hormathia Anemone (1), Geodiidae Sponge (>20), Serpula (14), Warty Sponge (2), Feather Star (2), White Encrusting Sponge (10%), Brittle Star (3)
	25	47 39.777	57 10.478	161	Hard		20%	50%				30%				Acadian Redfish (3), Geodiidae Sponge (>20), Cunner (3), Serpula (>20), Breadcrumb Sponge (5%), White Encrusting Sponge (10%)
	50	47 39.778	57 10.499	188	Hard		40%						60%			Geodiidae Sponge (>20), Warty Sponge (1), Acadian Redfish (1), Worm Tube (5), Cunner (2)

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	100	47 39.778	57 10.539	194	Hard					20%	25%		55%			Sand Shrimp (9), Snake Blenny (1), White Branching Sponge (1), Unidentified Sponge (1), Cunner (1), Tube Worm (10), Geodiidae Sponge (1)
	200	47 39.777	57 10.619	207	Soft								100%			Sand Shrimp (>20), Cunner (2)
	300	47 39.780	57 10.699	206	Soft								100%			Sand Shrimp (>20), Krill (4), Acadian Redfish (2)
	400	47 39.775	57 10.779	200	Soft								100%			Sand Shrimp (>20), Krill (18), Cunner (2)
	500	47 39.777	57 10.858	196	Soft								100%			Sand Shrimp (>20), Cunner (2)
	600	47 39.777	57 10.938	182	Soft					10%	20%		70%			Round Sponge (1), Sand Shrimp (1), Toad Crab (1), Hake (1)
	650	47 39.777	57 10.978	145	Hard	90%					10%					Serpula (>20), Geodiidae Sponge (>20), White Encrusting Sponge (20%), Cunner (1), Hormathia Anemone (1), Round Sponge (1)
	700	47 39.780	57 11.018	76	Hard			30%	30%		10%		30%			Feather Star (>20), Serpula (>20), White Encrusting Sponge (25%), Geodiidae Sponge (>20), Brittle Star (5), White Branching Sponge (3), Hormathia Anemone (1), Acadian Redfish (1), Round Sponge (4)
	800	47 39.779	57 11.098	9	Hard			30%	60%				10%			Brittle Star (>20), Green Sea Urchin (9), Cunner (>20), Ctenophore (4)
3	-40	47 39.724	57 10.435	1	Hard			60%	35%	5%						Ctenophore (>20), Metridium Anemone (11), Urticina Anemone (1), Brittle Star (4)
	-10	47 39.725	57 10.461	79	Hard	50%		15%	5%	10%	20%					Cunner (>20), Feather Star (1), Breadcrumb Sponge (5%), Acadian Redfish (1), Serpula (9), Brittle Star (1), White Encrusting Sponge (10%)
	0	47 39.725	57 10.468	152	Hard	20%	10%		15%	5%	50%					White Encrusting Sponge (20%), Geodiidae Sponge (>20), Serpula (18), Acadian Redfish (7), Breadcrumb Sponge (10%)
	100	47 39.725	57 10.548	206	Soft								100%			Sand Shrimp (>20)
	200	47 39.727	57 10.628	206	Soft								100%			Krill (>20), Sand Shrimp (>20), Cunner (1)
	300	47 39.724	57 10.708	204	Soft								100%			Sand Shrimp (>20), Unidentified Fish (1), Krill (8), Snake Blenny (1)
	400	47 39.726	57 10.788	203	Soft								100%			Sand Shrimp (>20), Worm Tube (3), Cunner (3), Bolocera Anemone (1)
	500	47 39.724	57 10.867	199	Soft								100%			Sand Shrimp (>20), Unidentified Crab (1), Worm Tube (1), Acadian Redfish (5)
	600	47 39.726	57 10.947	168	Hard			15%	20%	30%			35%			Serpula (>20), Acadian Redfish (4), White Encrusting Sponge (10%), Geodiidae Sponge (>20), Cunner (2), Northern Sea Star (1), Blood Star (1)
	650	47 39.724	57 10.987	96	Hard	100%										Feather Star (18), White Encrusting Sponge (30%), Serpula (>20), Geodiidae Sponge (>20), White Branching Sponge (3), Breadcrumb Sponge (10%), Warty Sponge (1), Cunner (1)

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	700	47 39.723	57 11.027	50	Hard			15%	20%	10%	55%					Feather Star (>20), Geodiidae Sponge (>20), White Encrusting Sponge (10%), Serpula (8), Acadian Redfish (3), Breadcrumb Sponge (5%), White Branching Sponge (1), Bowerbanks Sponge (10%), Urticina Anemone (1)
	790	47 39.723	57 11.101	3	Hard	15%	15%	70%								Cunner (9), Ctenophore (>20), Urticina Anemone (>20), Green Sea Urchin (>20), Metridium Anemone (>20), Northern Sea Star (1), Breadcrumb Sponge (10%)
4	-40	47 39.669	57 10.445	1	Hard			30%	40%	20%	10%					Ctenophore (>20), Unidentified Fish Fry (>20)
	0	47 39.670	57 10.477	84	Hard	40%	40%					20%				Geodiidae Sponge (>20), Serpula (>20), Brittle Star (12), Northern Sea Star (1), Breadcrumb Sponge (5%), White Encrusting Sponge (10%), Warty Sponge (2)
	50	47 39.668	57 10.517	181	Hard			100%								White Encrusting Sponge (10%), Acadian Redfish (4), Geodiidae Sponge (>20), White Branching Sponge (2), Serpula (11)
	100	47 39.667	57 10.557	209	Soft								100%			Pollock (1), Sand Shrimp (>20), Krill (1)
	200	47 39.668	57 10.637	206	Soft								100%			Sand Shrimp (>20), Cunner (4)
	300	47 39.671	57 10.716	203	Soft								100%			Sand Shrimp (>20), Cunner (12), Krill (1), Acadian Redfish (1), Atlantic Cod (1)
	400	47 39.674	57 10.796	202	Soft								100%			Acadian Redfish (2), Sand Shrimp (>20), Cunner (10)
	500	47 39.672	57 10.876	196	Soft								100%			Sand Shrimp (>20), Cunner (5), Acadian Redfish (10)
	600	47 39.675	57 10.956	144	Hard	85%							15%			Warty Sponge (4), White Encrusting Sponge (30%), Serpula (>20), Breadcrumb Sponge (10%), Geodiidae Sponge (>20), Unidentified Fish (1)
	650	47 39.669	57 10.996	106	Hard						30%		70%			Geodiidae Sponge (>20), Warty Sponge (2), Serpula (13), White Branching Sponge (1), Worm Tube (12), Feather Star (8)
	700	47 39.670	57 11.036	50	Hard	15%	20%	20%	40%	5%						Feather Star (>20), Geodiidae Sponge (15), Unidentified Anemone (1), Acadian Redfish (1), White Encrusting Sponge (10%), Serpula (9), King Crab (1)
	770	47 39.673	57 11.092	4	Hard			100%								Brittle Star (>20), Green Sea Urchin (3), Ctenophore (>20), Metridium Anemone (12)
5	-30	47 39.612	57 10.450	1	Hard	20%	80%									Ctenophore (>20), Urticina Anemone (6), Metridium Anemone (>20), Green Sea Urchin (3)
	0	47 39.612	57 10.474	50	Hard	80%				10%	10%					Feather Star (4), Geodiidae Sponge (>20), Brittle Star (1), Northern Sea Star (3), Serpula (12), Cunner (>20), Unidentified Sea Star (1)
	25	47 39.613	57 10.493	115	Hard	100%										Warty Sponge (2), White Encrusting Sponge (30%), Serpula (>20),

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Geodiidae Sponge (>20), Breadcrumb Sponge (5%), White Branching Sponge (1), Unidentified Fish (1), Cup Sponge (1)
	50	47 39.612	57 10.514	194	Hard		20%			35%	45%					Pollock (1), Sand Shrimp (1), Acadian Redfish (3)
	100	47 39.610	57 10.554	211	Soft								100%			Sand Shrimp (>20), Acadian Redfish (3), Krill (13), Worm Tube (1)
	200	47 39.608	57 10.634	208	Soft								100%			Sand Shrimp (>20), Snake Blenny (3)
	300	47 39.618	57 10.714	202	Soft								100%			Sand Shrimp (>20), Cunner (2), Krill (1)
	400	47 39.611	57 10.793	203	Soft								100%			Sand Shrimp (>20), Acadian Redfish (5)
	500	47 39.616	57 10.873	198	Soft								100%			Sand Shrimp (>20), Acadian Redfish (>20), Atlantic Cod (1)
	600	47 39.622	57 10.953	156	Hard		100%									White Encrusting Sponge (30%), Geodiidae Sponge (>20), Bowerbanks Sponge (10%), Orange Encrusting Sponge (<5%), Breadcrumb Sponge (<5%), Serpula (>20), Warty Sponge (1), Blood Star (4)
	650	47 39.623	57 10.992	111	Hard	50%					10%		40%			Geodiidae Sponge (>20), White Encrusting Sponge (10%), Serpula (3), Worm Tubes (12), Northern Sea Star (1), Warty Sponge (2)
	700	47 39.617	57 11.033	69	Hard		70%				5%		25%			Feather Star (>20), Unidentified Sponge (1), Northern Sea Star (3), Serpula (7), Brittle Star (3), Worm Tube (13), Jellyfish (2)
	780	47 39.621	57 11.097	2	Hard		70%	25%	5%							Brittle Star (>20), Metridium Anemone (1), Green Sea Urchin (2), Ctenophore (1)
6	-40	47 39.563	57 10.447	6	Hard		70%		20%	5%	5%					Ctenophore (11), Northern Sea Star (1), Brittle Star (>20), Urticina Anemone (1), Cunner (10)
	0	47 39.562	57 10.482	75	Hard		60%				40%					Unidentified Sponge (3), Bowerbanks Sponge (5%), Geodiidae Sponge (>20), Orange Encrusting Sponge (5%), White Branching Sponge (1), Cunner (2)
	25	47 39.563	57 10.501	142	Hard	100%										White Encrusting Sponge (25%), Serpula (>20), Breadcrumb Sponge (10%), Geodiidae Sponge (>20), Atlantic Cod (5), Orange Encrusting Sponge (5%), Northern Sea Star (2), Unidentified Tunicate (7)
	50	47 39.560	57 10.521	196	Hard			Trace		25%	45%		30%			Sand Shrimp (11), Cunner (1)
	100	47 39.556	57 10.561	210	Soft								100%			Sand Shrimp (>20), Acadian Redfish (2), Krill (10)
	200	47 39.558	57 10.641	208	Soft								100%			Sand Shrimp (> 20), Krill (11)
	300	47 39.561	57 10.721	205	Soft								100%			Bolocera Anemone (1), Sand Shrimp (16), Krill (> 20), Cunner (3)
	400	47 39.562	57 10.801	203	Soft								100%			Sand Shrimp (>20), Acadian Redfish (18), Unidentified Crab (1)
	500	47 39.559	57 10.880	198	Soft			10%	30%	Trace			60%			Sand Shrimp (>20), Acadian Redfish (9), Geodiidae Sponge (>20), Brittle Star (>20), White Encrusting Sponge

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																(<5%), Bolocera Anemone (1), White Branching Sponge (1)
	600	47 39.559	57 10.960	118	Hard			20%	50%				30%			Geodiidae Sponge (>20), Serpula (>20), Breadcrumb Sponge (15%), White Branching Sponge (3), White Encrusting Sponge (5%), Warty Sponge (4), Cerianthid Anemone (3), Unidentified Sponge (5), Worm Tube (>20)
	700	47 39.560	57 11.040	81	Hard			60%	10%				30%			White Encrusting Sponge (35%), Geodiidae Sponge (>20), Unidentified Fish (1), Serpula (>20), Acadian Redfish (5), Feather Star (4), Round Sponge (1)
	800	47 39.562	57 11.120	3	Hard		20%	30%	45%	5%						Urticina Anemone (11), Metridium Anemone (>20), Ctenophore (>20), Green Sea Urchin (>20), Brittle Star (8)
7	-50	47 39.504	57 10.445	1	Hard			45%	45%		10%					Urticina Anemone (9), Green Sea Urchin (>20), Ctenophore (>20), Cunner (2), Metridium Anemone (16)
	-30	47 39.504	57 10.460	94	Hard	100%										Serpula (>20), Blue Mussel (1), Hormathia Anemone (1), Geodiidae Sponge (>20), Breadcrumb Sponge (20%), Cunner (1)
	0	47 39.504	57 10.485	180	Hard	35%		25%	20%		20%					Serpula (>20), White Branching Sponge (2), Geodiidae Sponge (13), White Encrusting Sponge (20%), Hormathia Anemone (1), Breadcrumb Sponge (10%), Warty Sponge (1), Cunner (2)
	100	47 39.502	57 10.565	211	Soft								100%			Sand Shrimp (> 20), Krill (7), Pollock (2), Atlantic Cod (1), Acadian Redfish (1)
	200	47 39.504	57 10.645	210	Soft								100%			Cunner (1), Sand Shrimp (> 20), Krill (11)
	300	47 39.507	57 10.725	207	Soft								100%			Sand Shrimp (> 20), Krill (7), Acadian Redfish (1), Cunner (1)
	400	47 39.506	57 10.805	204	Soft								100%			Sand Shrimp (> 20), Cunner (2)
	500	47 39.507	57 10.884	169	Hard		70%						30%			Stomphia Anemone (1), Round Sponge (1), Geodiidae Sponge (7), Serpula (5), Cunner (3), White Encrusting Sponge (5%), Breadcrumb Sponge (5%)
	600	47 39.509	57 10.964	106	Hard					80%			20%			Atlantic Cod (3), Round Sponge (4), Worm Tube (8), Brittle Star (1), Warty Sponge (1), Unidentified Sponge (4), Geodiidae Sponge (>20)
	700	47 39.511	57 11.044	54	Hard			20%	15%	10%	55%					Feather Star (19), Breadcrumb Sponge (20%), White Encrusting Sponge (5%), Cunner (1), Bowerbanks Sponge (10%), Geodiidae Sponge (>20), Round Sponge (1), Serpula (2), Hormathia Anemone (1), Blue Mussel (1)
	750	47 39.512	57 11.122	20	Hard		30%	40%	25%		5%					Ctenophore (5)
	800	47 39.512	57 11.122	4	Hard			60%	40%							Metridium Anemone (4)

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
8	-50	47 39.453	57 10.436	2	Hard		90%					10%				Urticina Anemone (11), Northern Sea Star (1), Metridium Anemone (1), Brittle Star (>20), Stomphia Anemone (2), Ctenophore (3), Green Sea Urchin (3)
	-10	47 39.454	57 10.468	75	Hard	100%										White Encrusting Sponge (40%), Serpula (>20), Geodiidae Sponge (>20)
	0	47 39.454	57 10.476	164	Hard		55%			5%	40%					Trumpet Worm (14)
	100	47 39.450	57 10.556	214	Soft								100%			Sand Shrimp (> 20), Krill (> 20)
	200	47 39.450	57 10.636	212	Soft								100%			Sand Shrimp (> 20), Krill (> 20), Cunner (2)
	300	47 39.458	57 10.715	209	Soft								100%			Sand Shrimp (> 20), Krill (6), Cunner (1)
	400	47 39.452	57 10.796	206	Soft								100%			Sand Shrimp (> 20), Cunner (> 20), Krill (2)
	500	47 39.451	57 10.875	155	Hard								100%			Serpula (9), Winter Flounder (1), Stylocordyla Sponge (3)
	600	47 39.452	57 10.955	97	Hard			100%								Cunner (2), Geodiidae sponge (> 20), Serpula (> 20), Northern Sea Star (1), Breadcrumb Sponge (10%), White Encrusting Sponge (15%), Branching White Sponge (1), Warty Sponge (4), Feather Star (1), Stomphia Anemone (1), Round Sponge (17), Acadian Redfish (10)
	700	47 39.453	57 11.035	37	Hard			30%	20%	30%	20%					White Encrusting Sponge (20%), Feather Star (18), Acadian Redfish (1), Breadcrumb Sponge (10%), Branching White Sponge (6), Unidentified Sponge (10), Warty Sponge (1)
	750	47 39.452	57 11.076	2	Hard			30%	30%	20%	20%					Green Sea Urchin (5), Metridium Anemone (3), Brittle Star (> 20), Ctenophore (1)
9	-120	47 39.396	57 10.411	2	Hard			10%	15%	65%	10%					Green Sea Urchin (>20), Metridium Anemone (>20), Ctenophore (5)
	-100	47 39.398	57 10.423	59	Hard		70%				30%					Serpula (>20), Toad Crab (1), White Branching Sponge (4), Brittle Star (3), Northern Sea Star (2), Cunner (6), Breadcrumb Sponge (<5%), Geodiidae Sponge (>20)
	-50	47 39.395	57 10.463	143	Hard	100%										Serpula (>20), Geodiidae Sponge (>20), White Encrusting Sponge (25%), White Branching Sponge (1), Breadcrumb Sponge (<5%), Cunner (1), Bowerbanks Sponge (5%)
	0	47 39.393	57 10.503	192	Hard			75%					25%			Cunner (2), Acadian Redfish (2), White Encrusting Sponge (5%), Cushion Star (3), Toad Crab (1)
	100	47 39.394	57 10.583	219	Soft								100%			Sand Shrimp (> 20), Krill (> 20), Cunner (2)
	200	47 39.395	57 10.662	216	Soft								100%			Sand Shrimp (> 20), Krill (18), Cunner (2), Acadian Redfish (2)
	300	47 39.397	57 10.742	210	Soft								100%			Sand Shrimp (> 20), Cunner (> 20), Krill (6)
	400	47 39.403	57 10.822	179	Hard	70%							30%			Unidentified Sea Star (1), Serpula (> 20), Unidentified Fish (1), Geodiidae

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Sponge (> 20), White Encrusting Sponge (10%)
	500	47 39.403	57 10.902	129	Hard			40%	10%		50%					Breadcrumb Sponge (30%), White Encrusting Sponge (30%), Serpula (2), Warty Sponge (2), Stomphia Anemone (1), Hormathia Anemone (1), Round Sponge (2), Geodiidae Sponge (6), Cerianthid Anemone (1), Branching White Sponge (1)
	600	47 39.399	57 10.982	56	Hard			80%			20%					Breadcrumb Sponge (15%), White Encrusting Sponge (15%), Feather Star (> 20), Hormathia Anemone (1), Northern Sea Star (1), Serpula (8), Metridium Anemone (>20)
	680	47 39.400	57 11.050	1	Hard		20%	20%	60%							Metridium Anemone (> 20), Urticina Anemone (9)
	-120	47 39.346	57 10.430	1	Hard	95%				5%						Metridium Anemone (9), Urticina Anemone (2), Ctenophore (2), Green Sea Urchin (8)
	-100	47 39.345	57 10.441	62	Hard	70%					30%					White Encrusting Sponge (5%), Breadcrumb Sponge (5%), Serpula (6), Northern Sea Star (1), Geodiidae Sponge (6), Feather Star (5), Brittle Star (1)
	-50	47 39.349	57 10.481	160	Hard	100%										White Encrusting Sponge (5%), Acadian Redfish (14), Geodiidae Sponge (10), Breadcrumb Sponge (10%)
10	0	47 39.348	57 10.520	222	Hard			40%	10%		10%		40%			White Encrusting Sponge (5%), Krill (> 20), Unidentified Bryozoan (5), Branching Sponge (> 20)
	100	47 39.339	57 10.601	219	Soft								100%			Sand Shrimp (> 20), Cunner (2), Krill (1)
	200	47 39.343	57 10.681	218	Soft								100%			Sand Shrimp (> 20), Krill (13), Cunner (4)
	300	47 39.341	57 10.761	209	Soft						5%		95%			Cunner (3), Sand Shrimp (6)
	400	47 39.351	57 10.840	140	Hard		80%						20%			White Encrusting Sponge (5%), Serpula (4), Breadcrumb Sponge (5%), Soft Coral (4), Geodiidae Sponge (> 20)
	500	47 39.352	57 10.920	80	Hard		10%			5%	80%	5%				Hormathia Anemone (1), Feather Star (15)
	600	47 39.348	57 11.000	18	Hard			90%			10%					Northern Sea Star (2), Metridium Anemone (3), Ctenophore (1)
	-60	47 39.295	57 10.472	1	Hard		100%									Ctenophore (2), Metridium Anemone (> 20), Stomphia Anemone (1)
	-50	47 39.294	57 10.480	64	Hard	100%										Serpula (3), White Encrusting Sponge (5%), Breadcrumb Sponge (5%), Metridium Anemone (1)
11	-40	47 39.293	57 10.488	136	Hard	100%										White Encrusting Sponge (30%), Serpula (> 20), Brittle Star (3), Breadcrumb Sponge (5%)
	-30	47 39.293	57 10.496	194	Hard	30%	20%				50%					Breadcrumb Sponge (20%), Stomphia Anemone (3), Hormathia Anemone (1), White Encrusting Sponge (20%), Warty Sponge (1), Serpula (4)
	0	47 39.291	57 10.520	226	Soft								100%			Sand Shrimp (> 20), Krill (18)

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Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	100	47 39.288	57 10.600	222	Soft								100%			Sand Shrimp (> 20), Cunner (6)
	200	47 39.291	57 10.680	220	Soft								100%			Cunner (2), Sand Shrimp (> 20), Krill (3)
	300	47 39.291	57 10.760	209	Soft						20%		80%			Cunner (1), Cushion Star (1)
	400	47 39.291	57 10.839	122	Hard	100%										Serpula (> 20), White Encrusting Sponge (30%), Geodiidae Sponge (> 20), Northern Sea Star (4), Feather Star (1), Round Sponge (1), Breadcrumb Sponge (5%)
	500	47 39.295	57 10.919	40	Hard			20%	40%		40%					Feather Star (> 20), Acadian Redfish (1), Breadcrumb Sponge (10%), White Encrusting Sponge (5%)
	550	47 39.292	57 10.960	3	Hard			50%	35%	10%	5%					
12	-50	47 39.239	57 10.458	2	Hard			100%								Ctenophore (2), Metridium Anemone (> 20), Stomphia Anemone (1)
	0	47 39.238	57 10.498	90	Hard	90%					10%					White Encrusting Sponge (20%), Breadcrumb Sponge (5%), Geodiidae Sponge (4), Acadian Redfish (3), Brittle Star (> 20), Serpula (3)
	10	47 39.238	57 10.507	151	Hard	100%										Stomphia Anemone (> 20), Breadcrumb Sponge (5%), White Encrusting Sponge (40%), Serpula (3)
	100	47 39.236	57 10.578	224	Soft			Trace					100%			Cunner (4), Sand Shrimp (> 20), Krill (4), Unidentified Bryozoan (4)
	200	47 39.238	57 10.658	222	Soft								100%			Sand Shrimp (> 20), Cunner (2)
	300	47 39.237	57 10.737	214	Soft								100%			Pollock (1), Sand Shrimp (4), Acadian Redfish (1), Cunner (3)
	350	47 39.241	57 10.778	160	Hard	100%										White Encrusting Sponge (> 20), Serpula (> 20), Breadcrumb Sponge (15%), Unidentified Tunicate (7), Round Sponge (1), Stomphia Anemone (1), Unidentified Sea Star (3), Finger Sponge (1)
	400	47 39.243	57 10.818	97	Hard		50%	5%		5%	40%					Acadian Redfish (2), Feather Star (16), White Encrusting Sponge (20%), Round Sponge (2), Cunner (1), Stomphia Anemone (1), Hormathia Anemone (1), Brittle Star (2), Serpula (> 20), Branching White Sponge (4), Breadcrumb Sponge (10%)
	500	47 39.239	57 10.898	32	Hard			70%	10%		20%					Feather Star (11), Breadcrumb Sponge (10%), White Encrusting Sponge (5%)
13	-40	47 39.185	57 10.452	1	Hard			50%	40%		10%					Metridium Anemone (> 20), Stomphia Anemone (1), Ctenophore (1)
	0	47 39.184	57 10.484	66	Hard	100%										White Encrusting Sponge (10%), Serpula (> 20), Northern Sea Star (1), Brittle Star (9), Breadcrumb Sponge (5%), Branching White Sponge (2), Hormathia Anemone (2), Geodiidae Sponge (> 20)
	25	47 39.183	57 10.504	155	Hard	100%										Serpula (> 20), Geodiidae Sponge (> 20), Stomphia Anemone (7), White Encrusting Sponge (10%)
	100	47 39.182	57 10.564	225	Soft								100%			Krill (8), Sand Shrimp (15)
	200	47 39.182	57 10.644	225	Soft				Trace				100%			Unidentified Bryozoan (4), Sand Shrimp (> 20), Unidentified Flounder (1)

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	300	47 39.185	57 10.723	218	Soft								100%			Cunner (2), Sand Shrimp (> 20), Bolocera Anemone (1)
	350	47 39.185	57 10.763	193	Hard	100%										Blood Star (2), White Encrusting Sponge (25%), Serpula (> 20), Breadcrumb Sponge (5%), Hormathia Anemone (5), Stomphia Anemone (15), Round Sponge (1)
	400	47 39.185	57 10.803	80	Hard	100%										Feather Star (> 20), Serpula (> 20), Brittle Star (> 20), White Encrusting Sponge (25%), Northern Sea Star (1), Round Sponge (1)
	500	47 39.182	57 10.883	24	Hard			45%	20%	5%	30%					Breadcrumb Sponge (5%), White Encrusting Sponge (20%), Round Sponge (3), Feather Star (4), Soft Coral (1), Stomphia Anemone (1)
14	-40	47 39.132	57 10.428	2	Hard			90%			10%					Ctenophore (2), Metridium Anemone (> 20), Pelagic Polychaete (6)
	0	47 39.133	57 10.460	15	Hard			30%	10%	10%	50%					Brittle Star (> 20), Sun Star (1)
	50	47 39.136	57 10.500	129	Hard	100%										White Encrusting Sponge (30%), Stomphia Anemone (> 20), Breadcrumb Sponge (10%), Cup Sponge (6), Geodiidae Sponge (> 20), Northern Sea Star (2), Unidentified Sea Star (1)
	100	47 39.132	57 10.540	228	Soft								100%			Sand Shrimp (> 20), Krill (> 20), Unidentified Flounder (1)
	200	47 39.133	57 10.620	227	Soft								100%			Pollock (1), Krill (> 20), Sand Shrimp (> 20), Winter Flounder (1), Unidentified Eel-like Fish (1), Cunner (4)
	300	47 39.132	57 10.700	226	Soft								100%			Sand Shrimp (> 20), Winter Flounder (1)
	400	47 39.134	57 10.779	142	Hard	100%										Warty Sponge (2), Serpula (>20), White Encrusting Sponge (10%), Geodiidae Sponge (>20), Unidentified Sea Star (1), Breadcrumb Sponge (5%)
	450	47 39.134	57 10.819	34	Hard	100%										Northern Sea Star (1), Serpula (>20), White Encrusting Sponge (5%), Soft Coral (8), Feather Star (5), Brittle Star (1), Breadcrumb Sponge (5%
	500	47 39.133	57 10.859	1	Hard			90%	10%							Metridium Anemone (> 20), Urticina Anemone (5)
15	-30	47 39.078	57 10.401	1	Hard			80%	20%							Green Sea Urchin (>20), Metridium Anemone (>20)
	50	47 39.079	57 10.467	14	Hard						100%					Brittle Star (>20), Sand Dollar (2), Atlantic Scallop (1), Green Sea Urchin
	75	47 39.079	57 10.489	120	Hard	100%										White Encrusting Sponge (30%), Serpula (>20), Breadcrumb Sponge (5%), Northern Sea Star (1), Geodiidae Sponge (>20), Toad Crab (1), Hormathia Anemone (2)
	100	47 39.079	57 10.507	195	Hard	20%	80%									Bolocera Anemone (3), Geodiidae Sponge (> 20), Acadian Redfish (2), Stomphia Anemone (6), White Encrusting Sponge (10%), Serpula (>

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																20), Breadcrumb Sponge (5%), Hormathia Anemone (1)
	200	47 39.078	57 10.587	229	Soft								100%			Sand Shrimp (> 20), Krill (> 20), Cunner (4), Unidentified Flounder (1), Bolocera Anemone (1)
	300	47 39.078	57 10.667	232	Soft		10%						90%			Krill (> 20), Sand Shrimp (> 20), Bolocera Anemone (2)
	400	47 39.080	57 10.747	171	Hard	100%										Serpula (> 20), White Encrusting Sponge (15%), Breadcrumb Sponge (5%), Geodiidae Sponge (> 20), Stomphia Anemone (2), Unidentified Fish (1)
	450	47 39.081	57 10.786	86	Hard	100%										Feather Star (> 20), Serpula (> 20), Hormathia Anemone (1), White Encrusting Sponge (20%), Geodiidae Sponge (> 20), Brittle Star (4), Breadcrumb Sponge (10%)
	500	47 39.079	57 10.830	1	Hard	100%										Metridium Anemone (> 20), Brittle Star (> 20)
16	0	47 39.022	57 10.421	1	Hard		100%									Metridium Anemone (>20), Green Sea Urchin (>20), Ctenophore (>20), Urticina Anemone (3)
	50	47 39.025	57 10.461	31	Hard		100%									Cunner (5), Green Sea Urchin (1), Geodiidae Sponge (1), Northern Sea Star (1), Feather Star (1)
	100	47 39.024	57 10.501	172	Hard	100%										Serpula (>20), King Crab (1), Geodiidae Sponge (>20), White Encrusting Sponge (20%)
	200	47 39.026	57 10.581	229	Soft								100%			Sand Shrimp (>20), Krill (>20), Acadian Redfish (3), Atlantic Cod (1)
	300	47 39.025	57 10.660	232	Soft								100%			Sand Shrimp (>20), Worm Tube (3), Cunner (1), Krill (2)
	400	47 39.028	57 10.741	165	Hard	100%										Stomphia Anemone (> 20), White Encrusting Sponge (30%), Serpula (> 20), Brittle Star (2), Breadcrumb Sponge (5%), Geodiidae Sponge (> 20), Warty Sponge (3), Unidentified Tunicate (6), Acadian Redfish (1), Branching White Sponge (4), Hormathia Anemone (1)
	450	47 39.027	57 10.780	62	Hard		50%	20%			30%					Feather Star (> 20), Serpula (> 20), Breadcrumb Sponge (5%), Hormathia Anemone (1), Stomphia Anemone (1), White Encrusting Sponge (10%)
	500	47 39.025	57 10.820	1	Hard	15%	75%		10%							Metridium Anemone (>20), Green Sea Urchin (>20), Urticina Anemone (>20), Blue Mussel (4)
17	-50	47 38.972	57 10.313	1	Hard			40%	40%	20%						Ctenophore (4), Green Sea Urchin (2)
	0	47 38.973	57 10.353	40	Hard		30%			30%	40%					Feather Star (11), Brittle Star (3), Northern Sea Star (1), Stomphia Anemone (1)
	100	47 38.974	57 10.433	66	Hard				15%	10%	75%					Feather Star (>20), Stomphia Anemone (1), Brittle Star (1), Geodiidae Sponge (8), Breadcrumb Sponge (5%), Soft Coral (1), Cunner (15)

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	150	47 38.970	57 10.473	147	Hard					20%	80%					Soft Coral (1), Unidentified Sponge (1), Hormathia Anemone (3)
	200	47 38.970	57 10.513	213	Hard	100%										Bolocera Anemone (1), Serpula (2), Geodiidae Sponge (>20), Hormathia Anemone (2), Toad Crab (1)
	300	47 38.972	57 10.593	232	Soft								100%			Sand Shrimp (>20), Krill (1), Pollock (16), Cunner (1)
	400	47 38.973	57 10.672	230	Soft								100%			Sand Shrimp (>20), Pollock (2), Krill (2)
	500	47 38.974	57 10.752	182	Hard	100%										White Encrusting Sponge (30%), Geodiidae Sponge (>20), Serpula (>20), Bowerbanks Sponge (10%), Warty Sponge (1), Stomphia Anemone (2), Krill (1), Cushion Star (2), Hormathia Anemone (7)
	525	47 38.972	57 10.771	95	Hard	100%										Serpula (>20), Geodiidae Sponge (>20), White Encrusting Sponge (30%), Breadcrumb Sponge (5%), Cushion Star (1), Northern Sea Star (1), Round Sponge (1)
	565	47 38.972	57 10.805	1	Hard	100%										Stomphia Anemone (>20), Ctenophore (2), Metridium Anemone (>20)
18	-30	47 38.919	57 10.333	1	Hard	100%										Ctenophore (5), Metridium Anemone (>20), Green Sea Urchin (6), Urticina Anemone (12), Blue Mussel (17)
	0	47 38.919	57 10.357	56	Hard		35%			5%	30%		30%			Feather Star (>20), Stomphia Anemone (1), Brittle Star (1), Hormathia Anemone (2), White Branching Sponge (2), Soft Coral (1)
	100	47 38.918	57 10.437	96	Hard	100%										Feather Star (>20), Geodiidae Sponge (>20), Serpula (9), Brittle Star (2), White Branching Sponge (17), Breadcrumb Sponge (<5%)
	150	47 38.918	57 10.477	146	Hard	70%						30%				Serpula (>20), Geodiidae Sponge (>20), Fan Sponge (1), Breadcrumb Sponge (15%), White Encrusting Sponge (10%), Warty Sponge (1), Round Sponge (1)
	200	47 38.920	57 10.517	192	Hard						100%					Bolocera Anemone (1)
	300	47 38.919	57 10.596	229	Soft								100%			Sand Shrimp (>20), Krill (7), Unidentified Bryozoan (1)
	400	47 38.919	57 10.676	230	Soft								100%			Worm Tube (5), Sand Shrimp (>20), Brittle Star (1), Krill (1), Atlantic Cod (1), Bolocera Anemone (4)
	475	47 38.920	57 10.735	170	Hard	100%										Stomphia Anemone (>20), White Encrusting Sponge (30%), Breadcrumb Sponge (5%), Geodiidae Sponge (>20), Serpula (>20), Pollock (1), Hormathia Anemone (8), Cushion Star (1), Bowerbanks Sponge (10%), Northern Sea Star (1)
	500	47 38.917	57 10.756	124	Hard	100%										Stomphia Anemone (6), Breadcrumb Sponge (15%), White Encrusting Sponge (35%), Serpula (>20), Hormathia Anemone (2), Geodiidae Sponge (>20)

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
	525	47 38.919	57 10.775	60	Hard	100%										Feather Star (14), White Encrusting Sponge (20%), Serpula (>20), Breadcrumb Sponge (5%), Hormathia Anemone (1), Cunner (1), Geodiidae Sponge (>20)
	580	47 38.921	57 10.819	1	Hard		90%	10%								Metridium Anemone (>20), Green Sea Urchin (>20), Ctenophore (6), Urticina Anemone (9)
19	-20	47 38.862	57 10.322	2	Hard		90%				10%					Ctenophore (8), Metridium Anemone (13), Urticina Anemone (2), Green Sea Urchin (10)
	50	47 38.862	57 10.376	59	Hard			30%			70%					Feather Star (>20), Hormathia Anemone (3), Geodiidae Sponge (6), Toad Crab (1), Cunner (>20)
	100	47 38.863	57 10.416	85	Hard					10%	60%		30%			Feather Star (5), Worm Tube (9), Cerianthid Anemone (1), Soft Coral (1)
	150	47 38.863	57 10.456	106	Hard					15%	60%		25%			Feather Star (8)
	200	47 38.864	57 10.496	191	Hard						20%		80%			Worm Tube (>20), Cunner (1), Sand Shrimp (3), Cerianthid Anemone (1)
	300	47 38.862	57 10.576	229	Soft								100%			Worm Tube (>20), Atlantic Cod (1), Sand Shrimp (>20), Krill (2), Cunner (1)
	400	47 38.862	57 10.655	232	Soft								100%			Cunner (3), Sand Shrimp (>20), Bolocera Anemone (1)
	500	47 38.866	57 10.735	225	Soft	Trace					10%		90%			Krill (2), Cunner (1), Atlantic Cod (1), Bolocera Anemone (1)
	550	47 38.866	57 10.775	135	Hard	100%										Serpula (>20), White Encrusting Sponge (45%), Geodiidae Sponge (>20), Breadcrumb Sponge (5%)
	600	47 38.866	57 10.815	25	Hard		100%									Cunner (1), Northern Sea Star (1)
	650	47 38.868	57 10.855	1	Hard		100%									Metridium Anemone (4)
20	-20	47 38.859	57 10.321	1	Hard		90%				10%					Unidentified Fish Fry (2), Green Sea Urchin (>20), Metridium Anemone (11), Ctenophore (3), Stomphia Anemone (6)
	50	47 38.855	57 10.377	59	Hard						100%					Feather Star (8), Soft Coral (1), Brittle Star (1)
	100	47 38.850	57 10.416	72	Hard		20%		Trace		80%					Feather Star (>20), Snow Crab (1), Cunner (2), Geodiidae Sponge (>20), Unidentified Sponge (1)
	200	47 38.846	57 10.496	122	Hard	100%										White Encrusting Sponge (20%), Geodiidae Sponge (>20), Serpula (>20), Pandalus Shrimp (1), Orange Encrusting Sponge (10%), Breadcrumb Sponge (5%), Hormathia Anemone (1), Cunner (1), Northern Sea Star (1), Round Sponge (1)
	250	47 38.843	57 10.535	191	Hard		45%			20%			35%			Bolocera Anemone (5), Sand Shrimp (9), Geodiidae Sponge (>20), White Encrusting Sponge (<5%)
	300	47 38.840	57 10.575	226	Soft								100%			Sand Shrimp (>20), Worm Tube (1), Krill (2), Cunner (1), Acadian Redfish (1)
	400	47 38.831	57 10.654	232	Soft								100%			Sand Shrimp (>20), Worm Tube (4), Acadian Redfish (1)
	500	47 38.825	57 10.733	234	Hard			70%			30%					Geodiidae Sponge (>20), Cushion Star (2), Acadian Redfish (7), Serpula (11),

Shoal Cove																
Station		Coordinates (NAD83)		Depth (m)	Bottom Type	Bottom Type and Condition										Description, Comments and Observations [a]
		Latitude	Longitude			Rockwall	Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Silt/Mud	Organic	Floc	
																Bolocera Anemone (1), Unidentified Sponge (1), Sand Shrimp (1), Unidentified Bryozoan (>20)
	575	47 38.822	57 10.793	160	Hard		65%				35%					Geodiidae Sponge (>20), Cunner (2), Northern Sea Star (1), Hormathia Anemone (3), Serpula (>20), White Encrusting Sponge (25%), Stomphia Anemone (3), Acadian Redfish (2), Breadcrumb Sponge (<5%)
	600	47 38.820	57 10.813	85	Hard	90%					10%					Feather Star (3), White Encrusting Sponge (10%), Orange Encrusting Sponge (15%), Serpula (>20), Breadcrumb Sponge (<5%), Cunner (2), Geodiidae Sponge (>20), Hormathia Anemone (1), Brittle Star (3), Bowerbanks Sponge (20%
	690	47 38.814	57 10.885	1	Hard		100%									Pelagic Polychaete (4), Ctenophore (2), Green Sea Urchin (>20), Urticina Anemone (18), Metridium Anemone (>20)

16.3 Water Quality

The available water quality data for the Bay de Vieux BMA is a composite of information from several sources including historical collections by DFLR (1994–1995; 2003–2004), a review of publications for the area, and data collected during production at nearby sea farms (L. Hiemstra, pers. comm., 5 Dec 2024).

16.3.1 Water Temperature

Water temperature data that represent the Bay de Vieux BMA is a composite from sources including DFLR, literature, and MCE (see Table 16.6).

Average temperature data at 3-m depth were collected for one year (1994-1995) by DFLR (Figure 16.8). Water temperatures peaked in September and steadily declined thereafter until late May, when temperatures began to increase again. The available data is less comprehensive than for neighboring BMAs that have been in production. It is anticipated that peak summer temperatures will be warmer, as observed in neighboring BMAs such as BMA 13.

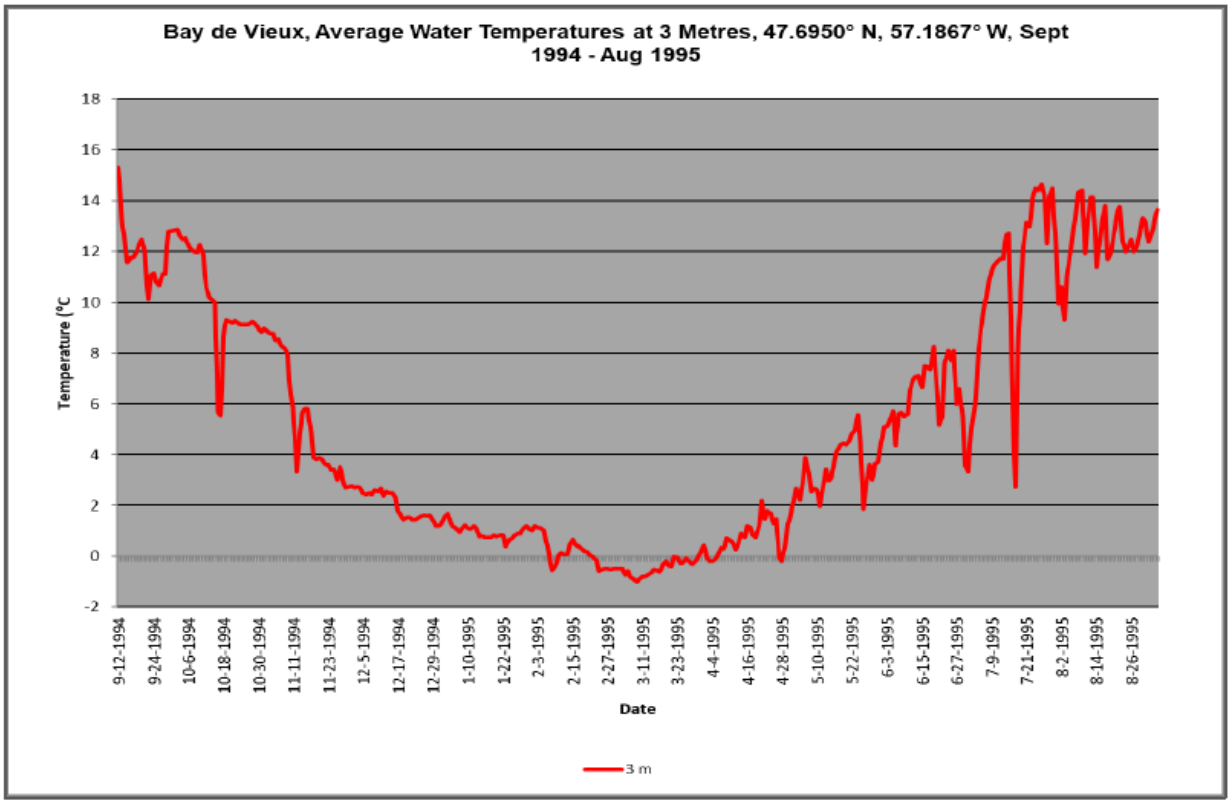

Figure 16.8. Historical water temperature (°C) data at 3 m depths in Bay de Vieux, September 1994–August 1995. Data collected by DFLR.

16.3.2 Dissolved Oxygen

There are no available dissolved oxygen data for the Bay de Vieux BMA. See Sections 13.3.2 (BMA 12 ([Little Bay]) and 14.3.2 (BMA 13 ([Friar Cove]) for dissolved oxygen data from nearby sea farms that are considered representative of the Bay de Vieux BMA.

16.3.3 Salinity

Salinity data that represent the Bay de Vieux BMA are a composite from sources including DFLR, available literature, and MCE (see Table 15.7).

16.4 Oceanographic and Meteorological Data

Bathymetric, current, wind and wave data are available for all three sea farms in the Bay de Vieux BMA.

16.4.1 Bathymetry

Water depths below the leases range from 0–370 m. Minimum water depth below the sea cages ranged from 10 m in Denny Island to 116 m in Shoal Cove (Table 16.6). The shallowest sea farm is Denny Island where depths range from 0–173 below the lease. Bathymetric maps are available for the three leases (Figures 16.9–16.11).

Table 16.6. Water depth range at sea farms in the Bay de Vieux BMA.

Site No.	Sea Farm	Lease Depth Range (m)	Sea Cage Array Depth Range (m)
AQ 1168	Shoal Cove	0–234	116
AQ 1167	Gnat Island	0–370	71
AQ 1166	Denny Island	0–173	10

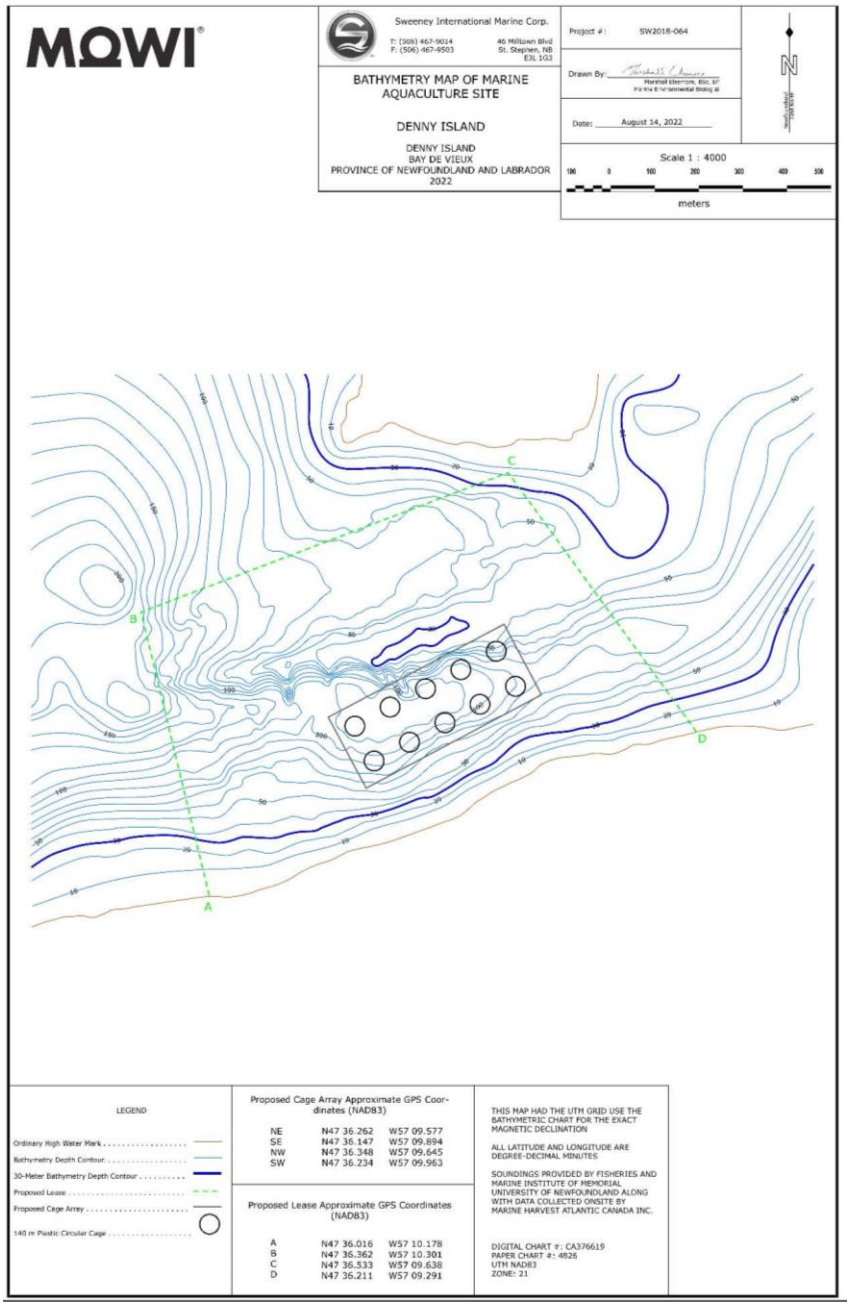

Figure 16.9. Bathymetric map for the Denny Island sea farm.

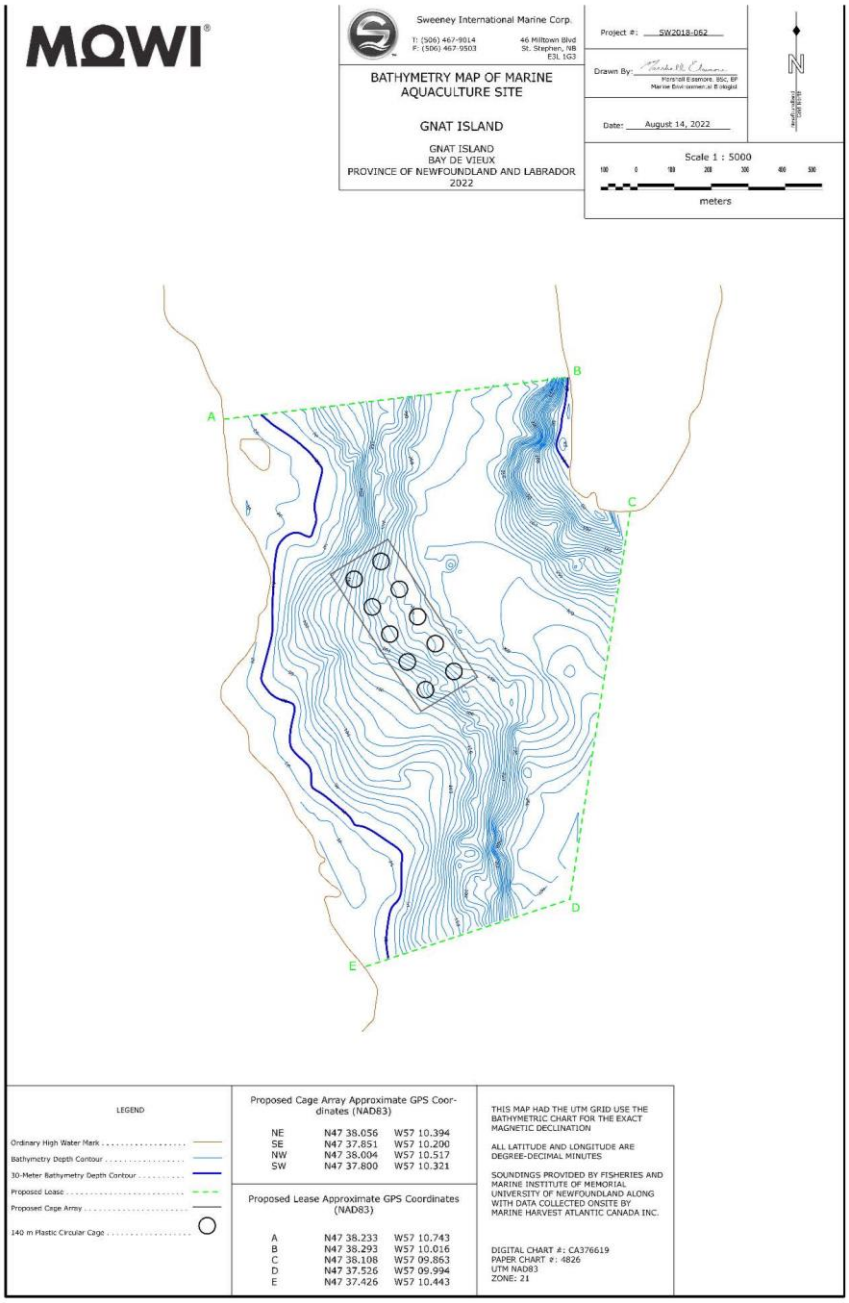

Figure 16.10. Bathymetric map for the Gnat Island sea farm.

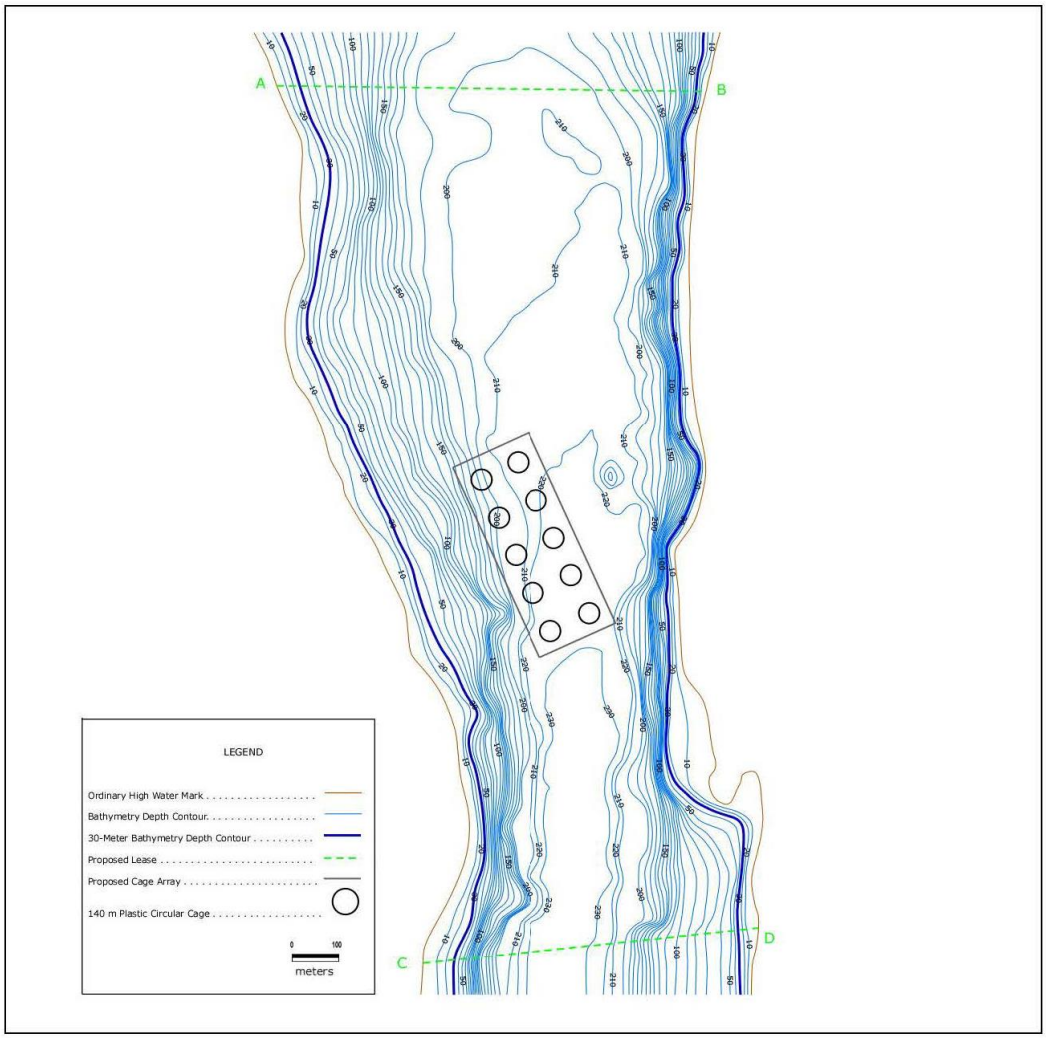

Figure 16.11. Bathymetric map for the Shoal Cove sea farm.

16.4.2 Currents

Current data were acquired at the Denny Island, Gnat Island, and Shoal Cove sea farms in June and July 2018.

16.4.2.1 Denny Island

During June-July 2018, current measurements were collected at five water depths in the Denny Island sea farm (Table 16.7). During this period, mean current speeds ranged from 2.9 cm/s (at 56 m water depth) to 5.4 cm/s (at 5 m water depth). Maximum current speeds were recorded within 15 m of the water surface. Current flows were most commonly directed toward the west-southwest–west near surface, switching to east north-east–east from mid-water column to the seafloor (Figure 16.12).

Table 16.7. Current speeds (mean and maximum values) and vector-averages at the Denny Island sea farm (June–July 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.1	5.4	22	1.54 @ 220.5°
10.7	4.5	20	0.60 @ 196.1°
14.7	4.1	24	0.50 @ 146.3°
55.6	2.9	17	0.21 @ 91.7°
104.9	3.1	16	1.33 @ 101.4°

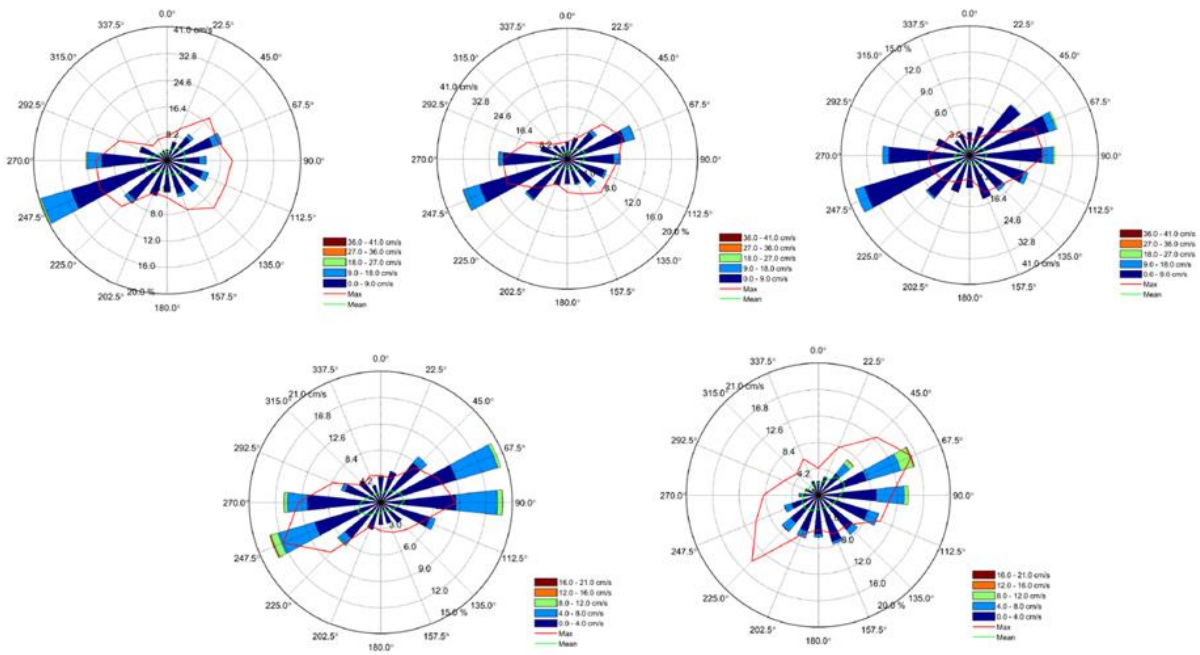

Figure 16.12. Compass rose plots of current speeds at the Denny Island sea farm (June–July 2018) Current speeds and directions at 5 m, 10.7 m, 14.7 m, 55.6 m, and 104.9 m (5 m height) are shown from left to right, top to bottom in the figure.

16.4.2.2 Gnat Island

During June–July 2018, current measurements were collected at five depths at Gnat Island (Table 16.8). During this period, mean current speeds ranged from 2.1 cm/s (210 m water depth) to 6.6 cm/s (5 m water depth). Maximum current speeds were in the upper 15 m of the water column. Current flows were most commonly directed toward the south to south-southeast near the surface, northwest to north-northwest 15.7 m below the surface, then to south to south-southwest near mid-column and north-northwest to north near the seafloor (Figure 16.13).

Table 16.8. Current speeds (mean and maximum values) and vector-averages at the Gnat Island sea farm (June–July 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
4.9	6.6	38	1.50 @ 203.1°
9.7	5.5	29	1.03 @ 229.8°
15.7	4.4	25	0.87 @ 269.5°
106.4	3.3	17	1.04 @ 229.8°
209.9	2.1	9	0.65 @ 309.1°

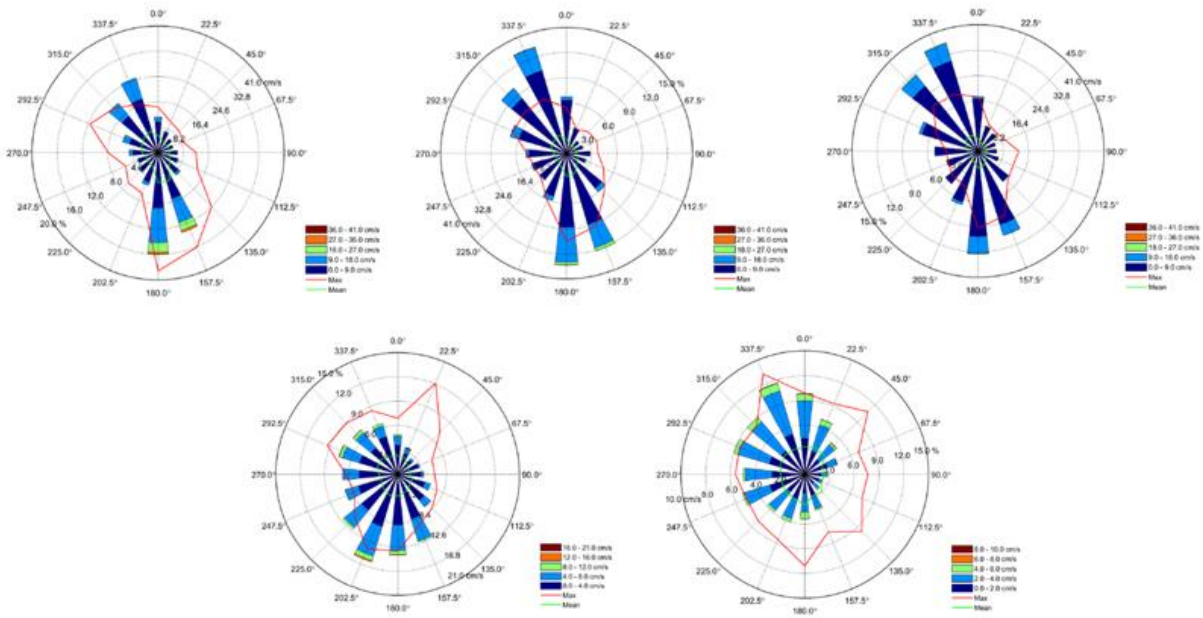

Figure 16.13. Compass rose plots of current speeds at the Gnat Island sea farm (June–July 2018). Current speeds and directions at 5 m, 9.7 m, 15.7 m, 106.4 m, and 209.9 m (5.1 m height) are shown from left to right, top to bottom in the figure.

16.4.2.3 Shoal Cove

During June-July 2018, current measurements at five depths were collected in the Shoal Cove sea farm (Table 16.9). During this period, mean current speeds ranged from 3.8 cm/s (198 m water depth) to 8.1 cm/s (5 m water depth). Maximum current speeds were variable ranging from 15 cm/s at 198 m to 36 cm/s at 15 m water depth. Current flows were most commonly directed toward the north-northwest to north near the surface, switched to south-southeast to south near mid-column and to north to north-northeast near the seafloor (Figure 16.14).

Table 16.9. Current speeds (mean and maximum values) and vector-averages at the Shoal Cove sea farm (June–July 2018).

Speed (cm/s)			
Depth (below MWL) (m)	Mean	Maximum	Vector-Average
5.1	8.1	34	1.17 @ 340.4°
9.2	7.6	35	1.92 @ 348.9°
15.2	6.4	36	1.91 @ 351.6°
101.2	4.7	25	0.18 @ 49.6°
197.9	3.8	15	1.10 @ 81.5°

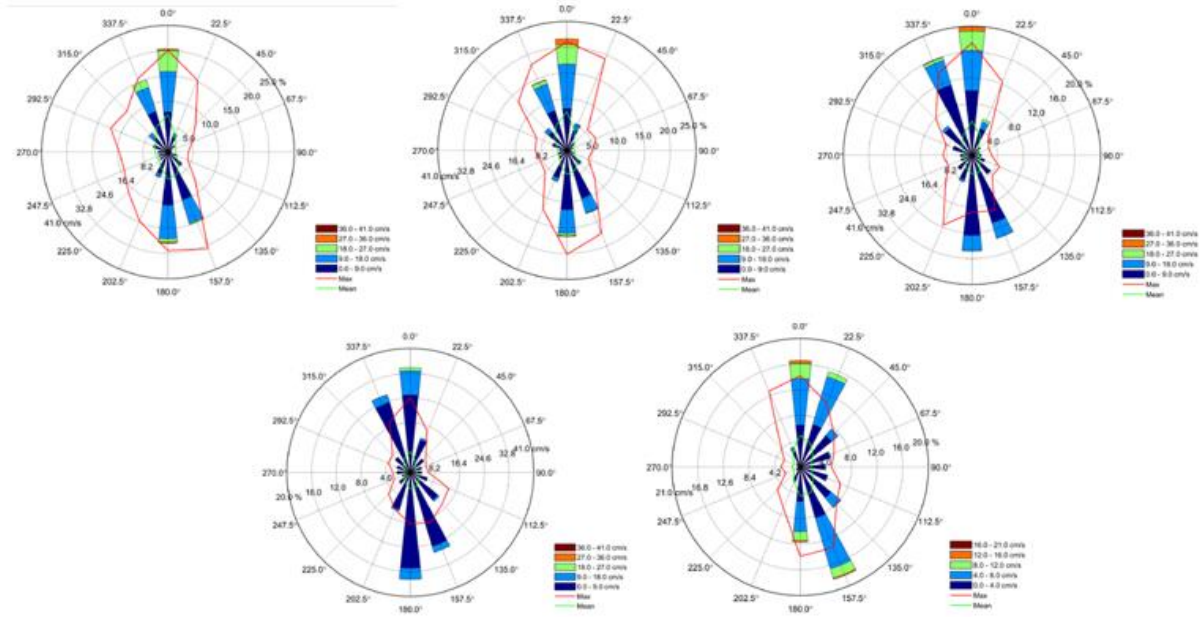

Figure 16.14. Compass rose plots of current speeds at the Shoal Cove sea farm (June–July 2018). Current speeds and directions at 5 m, 9.2 m, 15.2 m, 101.2 m, and 197.9 m (5 m height) are shown from left to right, top to bottom in the figure.

16.4.3 Wind and Waves

16.4.3.1 Modelling (MSC50 Hindcast Approach) for Atlantic Canada

Mean wind speeds and mean wave heights near the Bay de Vieux BMA were highest in December, January and February, and lowest in June, July and August based on 10 years of historical data (Table 16.10, 16.11). Maximum monthly wind speeds of ~20–22 m/s (~72–79 km/h) occurred in December, January, February, and March. Similarly, maximum monthly wave heights of 4.50- 6.18 m occurred during winter months (Table 16.10). Wind directions were predominantly from the west and west-southwest with wind speeds most frequently ranging from ~8–10 m/s (Figure 16.15).

Table 16.10. Monthly wind speeds (mean and maximum) near the Bay de Vieux BMA (at MSC50 grid points M6012532, M6012533, and M6012534 during 2009–2018).

Month	M6012532		M6012533		M6012534	
	Wind Speed Mean (m/s)	Wind Speed Max (m/s)	Wind Speed Mean (m/s)	Wind Speed Max (m/s)	Wind Speed Mean (m/s)	Wind Speed Max (m/s)
January	11.13	21.71	11.12	21.69	11.11	21.62
February	10.57	22.32	10.58	22.31	10.57	22.27
March	9.59	21.19	9.59	21.22	9.58	21.21
April	7.93	18.87	7.93	18.95	7.93	19.01
May	6.54	15.69	6.54	15.62	6.53	15.51
June	5.77	15.34	5.77	15.37	5.77	15.34
July	5.56	13.65	5.55	13.61	5.54	13.55
August	6.07	14.88	6.06	14.91	6.06	14.93
September	7.81	16.93	7.81	16.92	7.80	16.92
October	9.06	19.53	9.05	19.51	9.05	19.45
November	9.89	20.67	9.88	20.69	9.87	20.67
December	10.66	21.02	10.66	21.02	10.65	20.99

Notes:
Grid point M6012533 is ~13 km from Denny Island sea farm.

Table 16.11. Monthly wave heights (m) (mean and maximum) near the Bay de Vieux BMA (at MSC50 grid points M6012532, M6012533, and M6012534 during 2009–2018).

Month	M6012532		M6012533		M6012534	
	Wave Height Mean (m/s)	Wave Height Max (m/s)	Wave Height Mean (m/s)	Wave Height Max (m/s)	Wave Height Mean (m/s)	Wave Height Max (m/s)
January	1.62	4.67	1.88	5.02	2.03	5.29
February	1.61	5.44	1.83	5.96	1.95	6.18
March	1.41	4.42	1.57	4.66	1.65	4.72
April	1.28	3.43	1.43	3.81	1.51	4.08
May	1.03	2.72	1.14	3.03	1.20	3.19
June	0.98	2.55	1.08	2.77	1.13	2.91
July	0.96	2.35	1.09	2.62	1.15	2.76
August	0.96	2.58	1.09	2.85	1.14	3.00
September	1.13	3.07	1.29	3.39	1.36	3.64
October	1.29	3.64	1.46	4.03	1.55	4.26
November	1.45	4.48	1.65	5.05	1.76	5.37
December	1.59	4.50	1.80	4.89	1.91	5.15

Notes:
Grid point M6012533 is ~13 km from Denny Island sea farm.

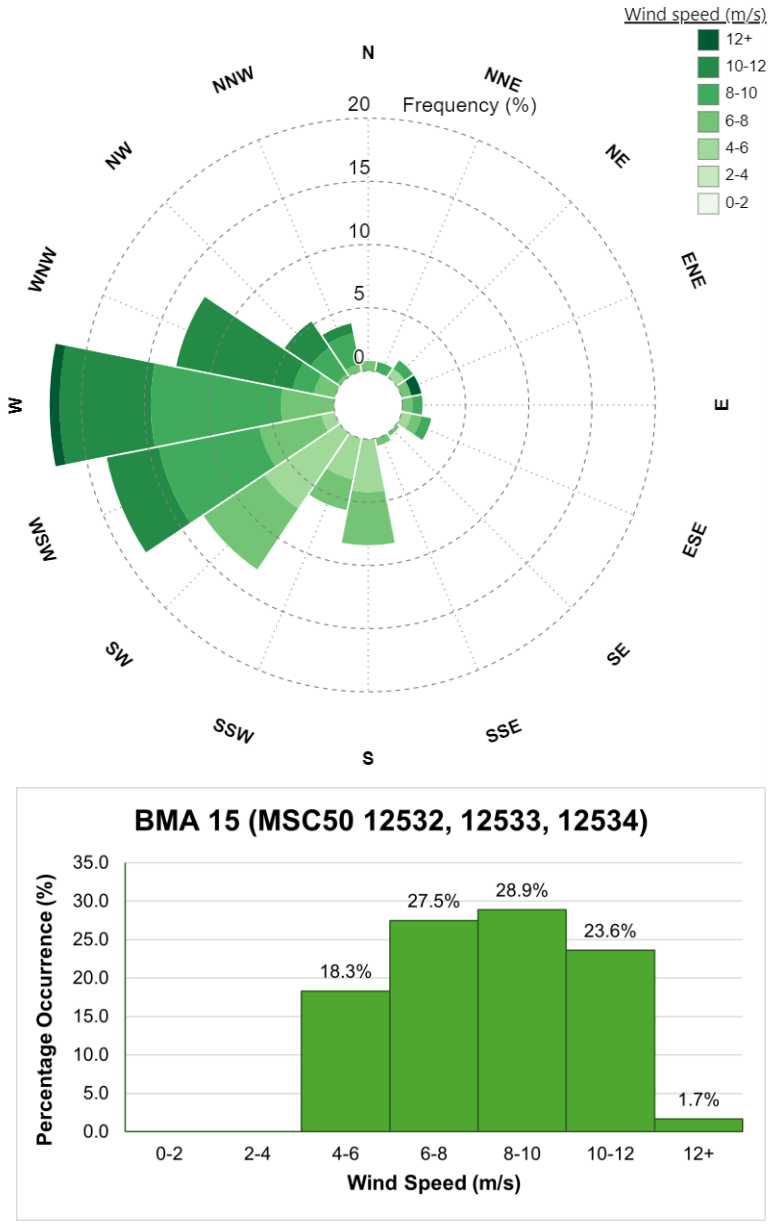

Figure 16.15. Wind rose and wind speed frequency histogram for MSC50 grid points M6012532, M6012533, and M6012534 near the Bay de Vieux BMA.

16.4.3.2 Sea Farm Specific Wave Calculation

In the Bay de Vieux BMA, wave data for the sea farms (Denny Island, Gnat Island and Shoal Cove) were derived following the Scottish standard SWAN model (see Section 3.4.3.2).

Denny Island

In the Denny Island sea farm, maximum wind speeds of 29.7 m/s (10 yr) and 33.8 m/s (50 yr) from various directions were predicted. Maximum wave heights (wind generated for the sea cage mooring system) of 1.9 m (10 yr) and 2.1 m (50 yr) were predicted for waves originating from the west (Table 16.12). Using a combined wave, wind and swell for the mooring grid in the Denny Island sea farm, a significant wave height of 2.4 m and 2.6 m from the southwest was predicted for 10- and 50- years respectively.

Table 16.12. Wind and wave predictions for 10-year and 50-year return periods in the Denny Island sea farm using the SWAN model for the sea cage mooring frame.

Return Period	From	Sector	N	NE	E	SE	S	SW	W	NW
10 years	Wind	Wind speed (m/s)	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.1	0.9	0.7	0.5	1.1	1.8	1.9	1.1
		Tp (s)	3.8	2.8	2.8	2.2	7.5	8.0	7.9	3.2
		Direction (°)	350	28	70	107	235	250	252	308
50 years	Wind	Wind speed (m/s)	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.2	1.0	0.8	0.6	1.3	2.0	2.1	1.2
		Tp (s)	4.0	2.9	2.9	2.3	8.4	8.5	8.4	3.4
		Direction (°)	349	27	69	106	235	251	252	307

Notes:
Hs = significant wave height, Tp = wave peak period.

Gnat Island

In the Gnat Island sea farm, maximum wind speeds of 29.7 m/s (10 yr) and 33.8 m/s (50 yr) from various directions were predicted. Maximum wave heights (wind generated for the sea cage mooring system) of 1.2 m (10 yr) and 1.3 m (50 yr) were predicted for waves originating from the south (Table 16.13). Using a combined wave, wind and swell for the mooring grid in the Gnat Island sea farm, a significant wave height of 1.3 m and 1.5 m from the south was predicted for 10- and 50- years respectively.

Table 16.13. Wind and wave predictions for 10-year and 50-year return periods in the Gnat Island sea farm using the SWAN model for the sea cage mooring frame.

Return Period	From	Sector	N	NE	E	SE	S	SW	W	NW
10 years	Wind	Wind speed (m/s)	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.1	0.9	0.8	1.0	1.2	1.0	0.9	0.9
		Tp (s)	3.5	2.7	2.7	3.3	3.5	3.1	2.3	3.2
		Direction (°)	353	24	111	156	175	193	215	339
50 years	Wind	Wind speed (m/s)	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8

Return Period	From	Sector	N	NE	E	SE	S	SW	W	NW
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.2	1.0	0.9	1.1	1.3	1.1	1.0	1.0
		Tp (s)	3.7	2.9	2.8	3.5	3.7	3.2	2.4	3.4
		Direction (°)	353	23	111	156	175	193	215	339

Notes:
Hs = significant wave height, Tp = wave peak period.

Shoal Cove

In the Shoal Cove sea farm, maximum wind speeds of 29.7 m/s (10 yr) and 33.8 m/s (50 yr) from various directions were predicted. Maximum wave heights (wind generated for the sea cage mooring system) of 1.1 m (10 yr) and 1.2 m (50 yr) were predicted for waves originating from the south (Table 16.14). Using a combined wave, wind and swell for the mooring grid in the Shoal Cove sea farm, a significant wave height of 1.1 m and 1.2 m from the south was predicted for 10- and 50-years respectively.

Table 16.14. Wind and wave predictions for 10-year and 50-year return periods in the Shoal Cove sea farm using the SWAN model for the sea cage mooring frame.

Return Period	From	Sector	N	NE	E	SE	S	SW	W	NW
10 years	Wind	Wind speed (m/s)	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.0	0.8	0.6	0.9	1.1	0.7	0.6	0.9
		Tp (s)	3.4	2.8	2.3	3.5	3.7	2.9	2.4	3.2
		Direction (°)	350	10	102	166	170	182	231	341
50 years	Wind	Wind speed (m/s)	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
		Direction (°)	0	45	135	135	180	245	270	315
	Wind generated wave condition	Hs (m)	1.1	0.9	0.7	1.0	1.2	0.8	0.7	1.0
		Tp (s)	3.6	3.0	2.2	3.7	3.9	3.1	2.5	3.4
		Direction (°)	349	9	101	166	170	182	231	341

Notes:
Hs = significant wave height, Tp = wave peak period.

16.5 Ice Conditions

Ice conditions for the Study Area including Bay de Vieux (BMA 15) are detailed in Section 4.5.

16.6 Storms

Storm conditions for the Study Area including Bay de Vieux (BMA 15) are detailed in Section 4.6.

16.7 Tides and Floods

Tide and flood conditions for the Study Area including Bay de Vieux (BMA 15) are detailed in Section 4.7.

16.8 Performance of Sea Farms with a Previous Production Cycle

All sea farms in the Bay de Vieux BMA are new licenses (acquired in 2024) and have not had a previous production cycle. There are no previous performance data to report.

16.9 Exposure Zone Modelling

DFO conducted PEZ modelling for BMA 15 sea farms to estimate areas exposed to discharges from bath pesticides and in-feed drugs (and feces) (DFO 2024b). BMT conducted dispersion modelling for a worst-case scenario use of a bath pesticide for the sea farms in BMA 15 (see Appendix B).

16.9.1 PEZ Modelling

Detailed predictions of PEZ modelling for BMA 15 (Bay de Vieux) are found in DFO (2024b); a summary is provided here. DFO undertook this modelling to provide initial estimates of the size and location of the benthic areas in Bay de Vieux that may be impacted by the deposit of waste feed and feces associated with the release of in-feed drugs and pelagic PEZs for bath pesticide products. As noted in Page et al. (2023), PEZ estimates are not zones of impact and are intended to serve as an initial screening tool in combination with biological and socio-economic aspects of an area to gauge potential risk and the potential need for more precise modelling estimates. These PEZs are intentionally conservative overestimates to determine areas of concern that may warrant further assessment of spatial extent, intensity and/or duration of anticipated interactions with the benthic and pelagic environments. A precautionary approach for the model included assumptions; slow sinking velocities, fast water currents and deep bottom topography for a maximum possible exposure zone for in-feed and maximum current speed in the surface layer for a bath (tarp) treatment using Azamethiphos and Hydrogen Peroxide. Treatment concentrations of 100ug/L for Azamethiphos and 1.5g/L for Hydrogen Peroxide were used to calculate pelagic PEZs. It should be noted for both benthic and pelagic PEZ results, the results provide an order of magnitude based on the available data input, particularly the current information at one location near the respective site locations.

The model predicted that for all sea farms in BMA 15, bath pesticide treatment (Table 16.15) had larger pelagic-PEZ (km^2) relative to in-feed treatments (feed particles km^2) for benthic-PEZ (Table 16.15). The Shoal Cove sea farm had the largest predicted benthic-PEZ area (km^2) for in-feed treatments [feed (3.80 km^2) and feces (109.3 km^2)]. The Shoal Cove sea farm also had the

largest predicted pelagic-PEZ area (km²) for Azamethiphos (514 km²) and Hydrogen Peroxide (834 km²) bath treatments in the Bay de Vieux BMA.

Table 16.15. Summary of benthic-PEZ area for pest control products in-feed and feces (km²) and pelagic-PEZ area for bath treatments associated with Azamethiphos (assumes a 100 µg/L dose concentration) and Hydrogen Peroxide (assumes a 1.5g/L dose concentration) for BMA 15 (from DFO 2024b).

Sea Farm	Area of PEZ (km²)			
	Benthic[b]		Pelagic[b]	
	In-feed	Feces	Azamethiphos[c]	Hydrogen Peroxide[c]
Denny Island[a]	1.54	28.26	78.5	171.95
Gnat Island[a]	3.14	63.59	132.67	265.77
Shoal Cove[a]	3.80	109.3	514.46	834.27

Notes:

[a] Sea farms are located near land and PEZ areas (marine) are smaller than estimated—particularly maximum PEZ areas.

[b] Area represents an upper bound to the potential for exposure and is not expected to occur often since most releases do not experience maximum currents for the duration of treatment.

[c] PEZ model assumes a dilution time for Azamethiphos =15.5h and Hydrogen Peroxide = 39.5. Other assumptions are provided in DFO (2024b).

16.9.2 Dispersion Modelling

Dispersion modelling was undertaken to estimate exposure zones for the release of Azamethiphos (bath treatment) in a worst-case scenario (see Appendix B for details). The modelling study estimated an exposure profile for the entire BMA assuming sea farms were treated in sequence and concentrations were modelled from the first treatment in Shoal Cove sea cages (03 May 2023 for spring tide; 15 June 2023 for neap tide) through final treatment at Denny Island sea cages (17 May 2023 for spring tide; 29 June 2023 for neap tide) (Table 16.16).

Exposure zone modelling of a worst-case scenario for Azamethiphos use in the Bay de Vieux BMA predicted maximum areas of 6.82 km² and 3.15 km² during neap and spring tides, respectively; where Azamethiphos concentrations exceeded 100 ng/L (0.1 µg/L) during the treatment duration. The maximum Azamethiphos concentration for the Bay de Vieux BMA was 100 ng/L during the simulated neap tide and spring tide. The peak concentration occurred during the treatment of the second sea farm, Gnat Island, and decreased shortly after treatments were completed with concentration levels 72 hrs after final treatment below 100 ng/L (Figures 16.16 and 16.17). The maximum area within BMA 15 where Azamethiphos concentrations exceeded 100 ng/L was larger during the neap tide scenario (6.82 km²) than during the spring tide scenario (3.15 km²).

Table 16.16. Treatment schedule (assumed dates) for sea farms in BMA 15 during a simulated spring and neap tide event.

Sea Farm	Sea Cage No.	Spring Tide		Neap Tide	
		Treatment Date (Assumed)	Hours From Final Treatment	Treatment Date (Assumed)	Hours From Final Treatment
Shoal Cove	1	03 May 23	-339	15 Jun 23	-339
	2	03 May 23	-336	15 Jun 23	-336
	3	04 May 23	-315	16 Jun 23	-315
	4	04 May 23	-312	16 Jun 23	-312
	5	05 May 23	-291	17 Jun 23	-291
	6	05 May 23	-288	17 Jun 23	-288
	7	06 May 23	-267	18 Jun 23	-267
	8	06 May 23	-264	18 Jun 23	-264
	9	07 May 23	-243	19 Jun 23	-243
	10	07 May 23	-240	19 Jun 23	-240
Gnat Island	1	08 May 23	-219	20 Jun 23	-219
	2	08 May 23	-216	20 Jun 23	-216
	3	09 May 23	-195	21 Jun 23	-195
	4	09 May 23	-192	21 Jun 23	-192
	5	10 May 23	-171	22 Jun 23	-171
	6	10 May 23	-168	22 Jun 23	-168
	7	11 May 23	-147	23 Jun 23	-147
	8	11 May 23	-144	23 Jun 23	-144
	9	12 May 23	-123	24 Jun 23	-123
	10	12 May 23	-120	24 Jun 23	-120
Denny Island	1	13 May 23	-99	25 Jun 23	-99
	2	13 May 23	-96	25 Jun 23	-96
	3	14 May 23	-75	26 Jun 23	-75
	4	14 May 23	-72	26 Jun 23	-72
	5	15 May 23	-51	27 Jun 23	-51
	6	15 May 23	-48	27 Jun 23	-48
	7	16 May 23	-27	28 Jun 23	-27
	8	16 May 23	-24	28 Jun 23	-24
	9	17 May 23	-3	29 Jun 23	-3
	10	17 May 23	0	29 Jun 23	0

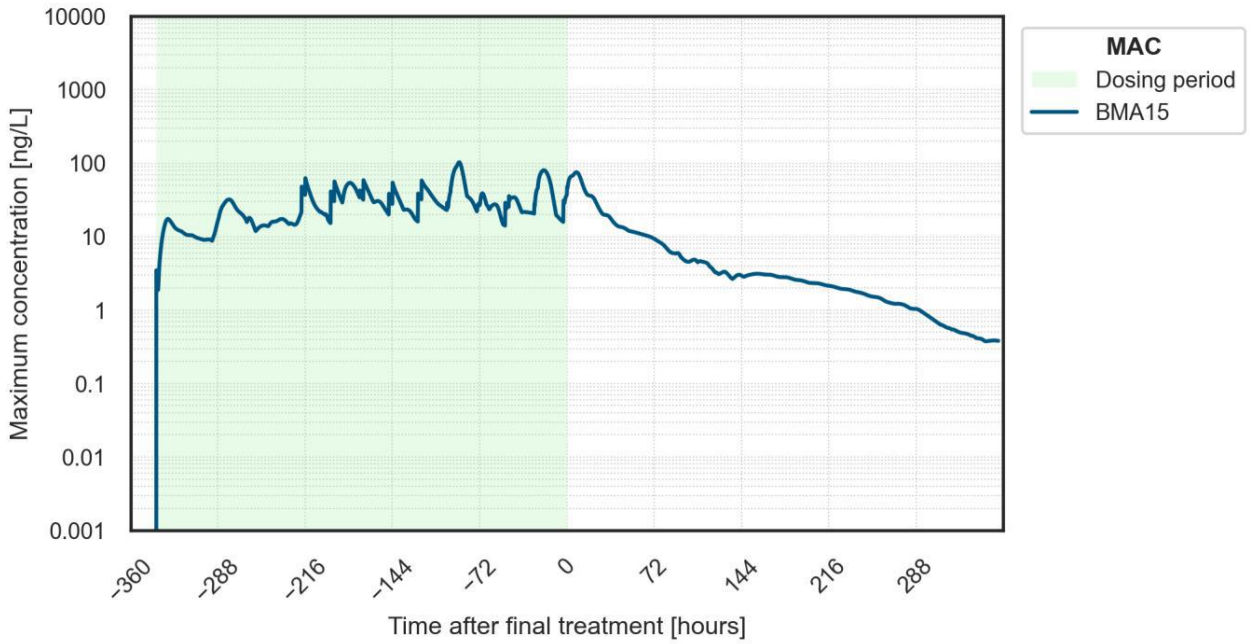

Figure 16.16. Maximum concentrations for Bay de Vieux BMA during a bath Azamethiphos treatment in a simulated neap tide. First treatment commenced in Shoal Cove sea farm (assumed 15 June 2023) and final treatment was in Denny Island sea farm (time=0; assumed 29 June 2023).

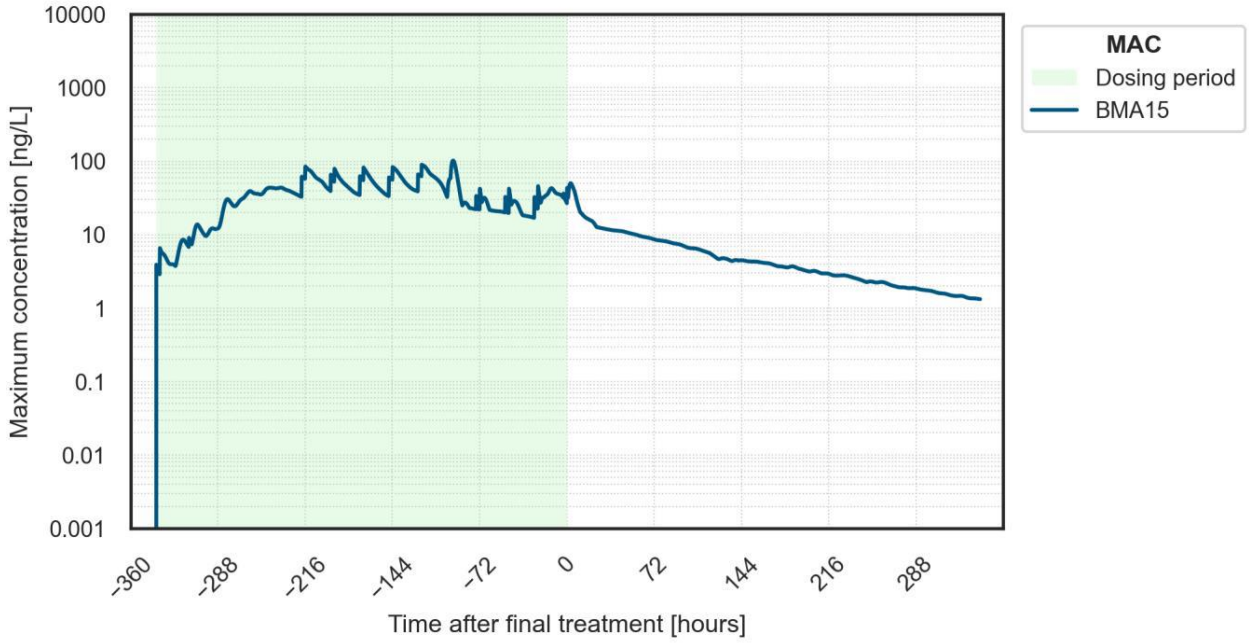

Figure 16.17. Maximum concentrations for Bay de Vieux BMA during a bath Azamethiphos treatment in a simulated spring tide. First treatment commenced in Shoal Cove sea farm 03 May 2023. Final treatment (time=0) was last treatment in Denny Island sea farm (17 May 2023).

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List of Appendices