

Annex H2

Monitoring Results for Soft Shore Ecology

Table H2.1 Results for Horseshoe Crabs during Qualitative Walk-through Surveys in March 2021

Sighting #	Species	Prosomal Width (cm)	Total Length (cm)
Monitoring Date: 15 March 2021			
Monitoring Station: TCB3			
1	<i>Tachypleus tridentatus</i>	3.6	7.8
2	<i>Tachypleus tridentatus</i>	5.7	10.4
3	<i>Tachypleus tridentatus</i>	5.5	7.2
4	<i>Tachypleus tridentatus</i>	3.7	5.8
5	<i>Tachypleus tridentatus</i>	1.2	1.9
	Mean (Range)	3.9 (1.2 - 5.7)	6.6 (1.9 - 10.4)
Monitoring Date: 16 March 2021			
Monitoring Station: THW			
1	<i>Tachypleus tridentatus</i>	3.0	6.2
2	<i>Tachypleus tridentatus</i>	2.3	4.5
3	<i>Tachypleus tridentatus</i>	1.8	3.6
4	<i>Tachypleus tridentatus</i>	3.2	6.3
5	<i>Tachypleus tridentatus</i>	2.2	4.3
6	<i>Tachypleus tridentatus</i>	2.3	4.4
7	<i>Tachypleus tridentatus</i>	2.2	4.4
8	<i>Tachypleus tridentatus</i>	3.0	6.2
9	<i>Tachypleus tridentatus</i>	2.1	4.5
10	<i>Tachypleus tridentatus</i>	2.2	4.4
11	<i>Tachypleus tridentatus</i>	2.6	5.0
12	<i>Tachypleus tridentatus</i>	1.2	3.7
13	<i>Tachypleus tridentatus</i>	1.6	3.3
14	<i>Tachypleus tridentatus</i>	2.6	3.8
15	<i>Tachypleus tridentatus</i>	1.4	2.3
16	<i>Tachypleus tridentatus</i>	2.8	5.5
17	<i>Tachypleus tridentatus</i>	2.8	5.5
18	<i>Tachypleus tridentatus</i>	2.5	5.2
19	<i>Tachypleus tridentatus</i>	2.9	5.4
20	<i>Tachypleus tridentatus</i>	2.3	4.5
	Mean (Range)	2.4 (1.2 - 3.2)	4.7 (2.3 - 6.3)

Table H2.2 Results for Seagrass during Qualitative Walk-through Surveys in March 2021

Sighting #	Species	Area (m2)	Area Coverage (%)	Seagrass Area (m2)
Monitoring Date: 15 March 2021 14:30-16:30				
Monitoring Station: TCB3				
1	<i>Halophila ovalis</i>	35	90%	31.5
2	<i>Halophila ovalis</i>	42	80%	33.6

Table H2.3 Results for Other Intertidal Soft Shore Communities during Qualitative Walk-through Surveys in March 2021

Monitoring Station	Shore Height *	No. of Species
TCB1	H	45
	M	40
	L	33
	Overall	51
TCB2	H	37
	M	31
	L	38
	Overall	52
TCB3	H	36
	M	35
	L	33
	Overall	45
THW	H	43
	M	38
	L	34
	Overall	52

* H: +2mCD; M: +1.5mCD; L: +1mCD

Table H2.4 Results for Other Intertidal Soft Shore Communities during Quantitative Transect Surveys in March 2021

Monitoring Station	Shore Height *	Top Three Dominant Species	Density (ind. / m ²)
TCB1	H	1 <i>Batillaria multiformis</i>	208.8
		2 <i>Monodonta labio</i>	80.0
		3 <i>Cerithidea diadjariensis</i>	55.2
	M	1 <i>Monodonta labio</i>	89.6
		2 <i>Batillaria multiformis</i>	46.4
		3 <i>Cerithidea diadjariensis</i>	30.4
	L	1 <i>Batillaria zonalis</i>	48.0
		2 <i>Monodonta labio</i>	42.4
		3 <i>Cerithidea diadjariensis</i>	40.0
TCB2	H	1 <i>Cerithidea diadjariensis</i>	43.2
		2 <i>Oligochaete sp.</i>	4.0
		3 <i>Batillaria multiformis</i> and <i>Batillaria zonalis</i>	3.2
	M	1 <i>Cerithidea diadjariensis</i>	74.4
		2 <i>Batillaria zonalis</i>	9.6
		3 <i>Oligochaete sp.</i>	4.0
	L	1 <i>Cerithidea diadjariensis</i>	55.2
		2 <i>Batillaria zonalis</i>	52.8
		3 <i>Monodonta labio</i>	6.4
TCB3	H	1 <i>Batillaria multiformis</i>	550.4
		2 <i>Cerithidea diadjariensis</i>	284
		3 <i>Cerithidea cingulata</i>	47.2
	M	1 <i>Batillaria multiformis</i>	302.4
		2 <i>Cerithidea diadjariensis</i>	228.8
		3 <i>Batillaria zonalis</i>	41.6
	L	1 <i>Cerithidea diadjariensis</i>	128.8
		2 <i>Batillaria zonalis</i>	62.4
		3 <i>Batillaria multiformis</i>	41.4
THW	H	1 <i>Cerithidea diadjariensis</i>	166.4
		2 <i>Geloina erosa</i>	18.4
		3 <i>Cerithidea cingulata</i>	10.4
	M	1 <i>Cerithidea diadjariensis</i>	64.0
		2 <i>Terebralia sulcata</i>	19.2
		3 <i>Cerithidea cingulata</i>	8.0
	L	1 <i>Batillaria zonalis</i>	55.2
		2 <i>Cerithidea diadjariensis</i>	36.0
		3 <i>Anomalocardia squamosa</i> , <i>Cerithidea microptera</i> and <i>Clithon spp.</i>	3.2

* H: +2mCD; M: +1.5mCD; L: +1mCD

Group	Species	TCB1			TCB2			TCB3			THW		
		H (Qual)	M (Qual)	L (Qual)	H (Qual)	M (Qual)	L (Qual)	H (Qual)	M (Qual)	L (Qual)	H (Qual)	M (Qual)	L (Qual)
Algae	<i>Enteromorpha</i> spp.	++	++	+	+++	++	+++	+++	+++	+++	+++	+++	++
Algae	<i>Ulva</i> sp.	+	+	+		+			+	+			
Anemone	<i>Haliplanella lineata</i>			+									
Barnacle	<i>Balanus amphitrite</i>	++	+	+	+	+	+	+	+	+	+	+	+
Bivalve	<i>Anomalocardia squamosa</i>			+			+			+			+
Bivalve	<i>Anomalocardia flexuosa</i>						+						
Bivalve	<i>Barbatia virescens</i>	+	+	+		+			+	+		+	
Bivalve	<i>Circe</i> sp.												+
Bivalve	<i>Coecella chinensis</i>				+							+	+
Bivalve	<i>Cyclina sinensis</i>							+	+	+	+	+	+
Bivalve	<i>Donax</i> sp.												+
Bivalve	<i>Geloina erosa</i>	+	+		+			+	+		++	++	+
Bivalve	<i>Glauconome chinensis</i>										+	+	+
Bivalve	<i>Laternula anatina</i>										+		
Bivalve	<i>Perna viridis</i>		+	+			+		+				
Bivalve	<i>Saccostrea cucullata</i>	++	++	++	+	+	+	+	+	++	++	+	+
Bivalve	<i>Septifer virgatus</i>	+	+	+		+	+	+	+	+		+	
Bivalve	<i>Ruditapes philippinarum</i>			+									
Crab	<i>Clistocoeloma</i> sp.				+							+	
Crab	<i>Hemigrapsus sanguineus</i>	++	++	+	+	+	+	+	+	+	++	+	+
Crab	<i>Macrophthalmus</i> sp.	+	+	+	+	+	+	+	+	+	+	+	+
Crab	<i>Metapalax longipes</i>											+	+
Crab	<i>Metapograpus frontalis</i>	+	+	+	+	+	+		+	+	+	+	+
Crab	<i>Metapograpus quadridemtatus</i>	+					+						+
Crab	<i>Parasesarma pictum</i>											+	+
Crab	<i>Perisesarma bidens</i>	+	+		+	+	+		+		+	+	+
Crab	<i>Scopimera globosa</i>	+	+		+	+	+						
Crab	<i>Thalamita crenata</i>											+	+
Crab	<i>Uca borealis</i>	++	+	+	+	+	+	+	+	+	+	+	+
Crab	<i>Uca lactea</i>	++	+		+	+	+	+	+	+	+	+	+
Crab	<i>Uca crassipes</i>	+	+									+	+
Crab	<i>Uca splendida</i>				+							+	+
Fish	<i>Mugilidae</i> sp.											+	
Fish	<i>Periophthalmus cantonensis</i>	+	+		+	+	+	+	+	+	+	+	+
Fish	<i>Scartelaos histophorus</i>	+						+					
Gastropod	<i>Batillaria multiformis</i>	+++	++	+	+	+	+	+++	+++	+	+	+	+
Gastropod	<i>Batillaria zonalis</i>	++	++	++	+	+	++	+	++	++	+	+	++
Gastropod	<i>Cellana grata</i>				+		+	+	+	+	+		+
Gastropod	<i>Cellana toreuma</i>						+						
Gastropod	<i>Cerithidea cingulata</i>	+	+	+	+	+	+	++	+	+	+	+	+
Gastropod	<i>Cerithidea diadjarimensis</i>	+++	++	++	++	++	++	+++	+++	++	++	++	++
Gastropod	<i>Cerithidea microptera</i>				+	+		+			+	+	+
Gastropod	<i>Cerithidea rhizophorarum</i>				+			+				+	+
Gastropod	<i>Chlorostoma argyrostoma</i>											+	
Gastropod	<i>Clithon</i> spp.	+	+	+	+	+	+	+	+	+	++	++	+
Gastropod	<i>Echinolittorina radiata</i>						+	+					
Gastropod	<i>Echinolittorina malaccana</i>										+		
Gastropod	<i>Littoraria articulata</i>	+	+	+	+	+	+	+	+	+	+		
Gastropod	<i>Littoraria melanostoma</i>				+	+	+	+	+	+	+		
Gastropod	<i>Lunella coronata</i>	+	+	++	+	+	+	+	+	+			
Gastropod	<i>Monodonta labio</i>	++	++	++	+	+	+	+	+	+	+	+	
Gastropod	<i>Monodonta neritoides</i>				+								
Gastropod	<i>Nassarius festivus</i>	+	+	+	+	+	+	+	+	+	+	+	+
Gastropod	<i>Natica</i> sp.	+					+				+		
Gastropod	<i>Nerita albicilla</i>	+				+	+				+	+	
Gastropod	<i>Nerita polita</i>	+	+	+			+	+	+	+	+	+	+
Gastropod	<i>Nipponacmea concinna</i>	+	+	+			+		+				
Gastropod	<i>Patelloida pygmaea</i>	+	+										
Gastropod	<i>Planaxis sulcatus</i>	+	+		+	+		+	+	+	+		
Gastropod	<i>Strombus</i> sp.						+						
Gastropod	<i>Terebralia palustris</i>				+							++	+
Gastropod	<i>Terebralia sulcata</i>	+	+	+	+			+	+	+	++	+	
Gastropod	<i>Thais clavigera</i>			+						+	+		
Hermit Crab	<i>Clibanarius</i> sp.	+	+	+	+	+	+	+	+	+	+	+	+
Hermit Crab	<i>Diogenes</i> sp.	+	+	+									
Hermit Crab	<i>Pagurus</i> sp.	+	+					+	+	+			
Horseshoe Crab	<i>Tachypleus tridentatus</i>							+	++	+	++	+	+
Seagrass	<i>Halophila ovalis</i>							+	+				
Sea Slater	<i>Ligia oceanica</i>	+			++	+					+		+
Seaslug	<i>Onchidium</i> sp.	+	+		+						+	+	
Worm	<i>Ampharetidae</i> sp.	+									+		+
Worm	<i>Ceratonereis</i> sp.						+						
Worm	<i>Harmothoe imbricata</i>			+									
Worm	<i>Ochetostoma erythrogrammon</i>	+	+					+					
Worm	<i>Oligochaete</i> sp.	+	+	+	+	+	+	+	+	+	+	+	+
Worm	<i>Siphonosoma</i> sp.	+	+					+	+				
Worm	<i>Sipunculus</i> sp.	+	+	+			+	+	+	+			
Worm	Ribbon Worm sp.	+	+	+	+	+	+				+	+	

Group	Species	TCB1																	
		H1	H2	H3	H4	H5	Density (ind. / m ² or % cover)	M1	M2	M3	M4	M5	Density (ind. / m ² or % cover)	L1	L2	L3	L4	L5	Density (ind. / m ² or % cover)
Algae	<i>Enteromorpha</i> spp.	<5%	15%	<5%	<5%	<5%	3%	<5%	60%	40%	15%	15%	26%	<5%	<5%	<5%			<5%
Barnacle	<i>Balanus amphitrite</i>						0						0				<5%		<5%
Bivalve	<i>Anomalocardia squamosa</i>						0						0		1				0.8
Bivalve	<i>Barbatia virescens</i>						0	<5%			<5%	<5%	<5%					<5%	<5%
Bivalve	<i>Coecella chinensis</i>						0						0						0
Bivalve	<i>Cyclina sinensis</i>						0						0						0
Bivalve	<i>Geloina erosa</i>						0						0						0
Bivalve	<i>Perna viridis</i>						0						0					<5%	<5%
Bivalve	<i>Saccostrea cucullata</i>	<5%	<5%	<5%	5%	15%	4%	40%	30%	10%	15%	5%	20%	20%	5%	5%	10%	25%	13%
Bivalve	<i>Ruditapes philippinarum</i>						0						0				1		0.8
Crab	<i>Metapograpus frontalis</i>						0						0						0
Crab	<i>Metapograpus quadridentatus</i>						0						0						0
Crab	<i>Uca borealis</i>						0						0						0
Gastropod	<i>Batillaria multiformis</i>	70	26	66	7	92	208.8	4		20	9	25	46.4	1	2	4		4	8.8
Gastropod	<i>Batillaria zonalis</i>	1		3			3.2	6	1				5.6	3	25	30	1	1	48
Gastropod	<i>Cerithidea cingulata</i>	2				2	3.2						0			10	6		12.8
Gastropod	<i>Cerithidea diadjarjensis</i>	13	2	41		13	55.2	1	2	31		4	30.4	10		18	15	7	40
Gastropod	<i>Cerithidea microptera</i>						0						0						0
Gastropod	<i>Clitthon</i> spp.						0						0						0
Gastropod	<i>Littoraria articulata</i>				4		3.2				3		2.4						0
Gastropod	<i>Lunella coronata</i>				3		2.4	5	3	1	5	4	14.4	1	1	17	15	10	35.2
Gastropod	<i>Monodonta labio</i>	4	25	14	40	17	80	12	32	11	37	20	89.6	2		5	10	36	42.4
Gastropod	<i>Nassarius festivus</i>						0						0	1	1	3			4
Gastropod	<i>Nerita polita</i>						0			1	3	1	4			1	2	3	4.8
Gastropod	<i>Nipponacmea concinna</i>				1		0.8	1					0.8				3	8	8.8
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Seaslug	<i>Onchidium</i> sp.						0						0						0
Worm	<i>Oligochaete</i> sp.						0						0						0
Worm	<i>Siphonoma</i> sp.	7					5.6						0						0
Worm	<i>Sipunculus</i> sp.	7		5		2	11.2	2		1		2	4	1		3			3.2
Worm	Ribbon Worm sp.						0						0						0

Group	Species	TCB2																	
		H1	H2	H3	H4	H5	Density (ind. / m ² or % cover)	M1	M2	M3	M4	M5	Density (ind. / m ² or % cover)	L1	L2	L3	L4	L5	Density (ind. / m ² or % cover)
Algae	<i>Enteromorpha</i> spp.	5%	10%	25%	15%	35%	18%						29%	65%	80%	80%	45%	95%	73%
Barnacle	<i>Balanus amphitrite</i>						0						0						0
Bivalve	<i>Anomalocardia squamosa</i>						0						0						0
Bivalve	<i>Barbatia virescens</i>						0						0						0
Bivalve	<i>Coecella chinensis</i>	1					0.8						0						0
Bivalve	<i>Cyclina sinensis</i>						0						0						0
Bivalve	<i>Geloina erosa</i>						0						0						0
Bivalve	<i>Perna viridis</i>						0						0		<5%				<5%
Bivalve	<i>Saccostrea cucullata</i>	<5%			<5%		<5%		5%				<5%	10%	10%				4%
Bivalve	<i>Ruditapes philippinarum</i>						0						0						0
Crab	<i>Metapograpus frontalis</i>						0						0	3	1		1		4
Crab	<i>Metapograpus quadridentatus</i>						0						0	1					0.8
Crab	<i>Uca borealis</i>						0			1			0.8						0
Gastropod	<i>Batillaria multiformis</i>			3	1		3.2		1	1			1.6		1			2	2.4
Gastropod	<i>Batillaria zonalis</i>					4	3.2	2	7	1	2		9.6	1	30		3	32	52.8
Gastropod	<i>Cerithidea cingulata</i>						0			1			0.8		5	1		1	5.6
Gastropod	<i>Cerithidea diadjarimensis</i>	1	2	3	16	32	43.2	5	24	14	48	2	74.4	4	31	5	22	7	55.2
Gastropod	<i>Cerithidea microptera</i>	1					0.8						0						0
Gastropod	<i>Litthon</i> spp.						0						0						0
Gastropod	<i>Littoraria articulata</i>						0						0						0
Gastropod	<i>Lunella coronata</i>						0						0	2	5				5.6
Gastropod	<i>Monodonta labio</i>				1		0.8						0	2	6				6.4
Gastropod	<i>Nassarius festivus</i>						0		1				0.8	1	2				2.4
Gastropod	<i>Nerita polita</i>						0						0						0
Gastropod	<i>Nipponacmea concinna</i>						0						0		1				0.8
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Seaslug	<i>Onchidium</i> sp.						0						0						0
Worm	<i>Oligochaete</i> sp.				5		4	5					4					1	0.8
Worm	<i>Siphonoma</i> sp.						0						0						0
Worm	<i>Sipunculus</i> sp.						0						0	1					0.8
Worm	Ribbon Worm sp.						0						0					1	0.8

Group	Species	TCB3																	
		H1	H2	H3	H4	H5	Density (ind. / m ² or % cover)	M1	M2	M3	M4	M5	Density (ind. / m ² or % cover)	L1	L2	L3	L4	L5	Density (ind. / m ² or % cover)
Algae	<i>Enteromorpha</i> spp.		10%	10%	<5%		4%						8%						12%
Barnacle	<i>Balanus amphitrite</i>						0						0						0
Bivalve	<i>Anomalocardia squamosa</i>						0										2	2	3.2
Bivalve	<i>Barbatia virescens</i>						0						0						0
Bivalve	<i>Coecella chinensis</i>						0						0						0
Bivalve	<i>Cyclina sinensis</i>		1	2			2.4			1			0.8				1		0.8
Bivalve	<i>Geloina erosa</i>	2		1			2.4					2	1.6						0
Bivalve	<i>Perna viridis</i>	<5%					<5%						0						0
Bivalve	<i>Saccostrea cucullata</i>	<5%	<5%		<5%		<5%	<5%	10%	10%	5%		5%	5%	<5%	15%	5%	10%	7%
Bivalve	<i>Ruditapes philippinarum</i>						0						0						0
Crab	<i>Metapograpus frontalis</i>						0						0						0
Crab	<i>Metapograpus quadridentatus</i>						0						0						0
Crab	<i>Uca borealis</i>						0						0						0
Gastropod	<i>Batillaria multiformis</i>	126	232	19	149	162	550.4	176	133	33	16	20	302.4	3	28	5	10	6	41.6
Gastropod	<i>Batillaria zonalis</i>			2			1.6	1		33		18	41.6	4	9	12	31	22	62.4
Gastropod	<i>Cerithidea cingulata</i>	6	18	5	10	20	47.2		16	10	2		22.4	1	1	2			3.2
Gastropod	<i>Cerithidea diadjarimensis</i>	68	50	40	90	107	284	32	106	36	47	65	228.8	66	72	22	1		128.8
Gastropod	<i>Cerithidea microptera</i>						0						0						0
Gastropod	<i>Littorina</i> spp.			1			0.8		3	1		1	4			2		1	2.4
Gastropod	<i>Littoraria articulata</i>						0						0						0
Gastropod	<i>Lunella coronata</i>				1		0.8				1	3	3.2	2		2	2	4	8
Gastropod	<i>Monodonta labio</i>						0	1	1			1	2.4	1		1	3	2	5.6
Gastropod	<i>Nassarius festivus</i>						0				1		0.8		1		2		2.4
Gastropod	<i>Nerita polita</i>			1			0.8		3				2.4						0
Gastropod	<i>Nipponacmea concinna</i>						0						0						0
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Seaslug	<i>Onchidium</i> sp.						0						0						0
Worm	<i>Oligochaete</i> sp.						0						0						0
Worm	<i>Siphanosoma</i> sp.						0						0						0
Worm	<i>Sipunculus</i> sp.						0		1		1		1.6			1			0.8
Worm	Ribbon Worm sp.						0						0						0

Group	Species	THW																	
		H1	H2	H3	H4	H5	Density (ind. / m ² or % cover)	M1	M2	M3	M4	M5	Density (ind. / m ² or % cover)	L1	L2	L3	L4	L5	Density (ind. / m ² or % cover)
Algae	<i>Enteromorpha</i> spp.	20%	50%	50%			24%	50%	85%	75%	85%	90%	77%						0%
Barnacle	<i>Balanus amphitrite</i>						0						0				5%		4%
Bivalve	<i>Anomalocardia squamosa</i>						0						0		1	1	1	1	3.2
Bivalve	<i>Barbatia virescens</i>						0						0						0
Bivalve	<i>Coecella chinensis</i>						0						0						0
Bivalve	<i>Cyclina sinensis</i>						0						0						0
Bivalve	<i>Geloina erosa</i>	6	2	5	8	2	18.4	2				4	4.8						0
Bivalve	<i>Perna viridis</i>						0						0						0
Bivalve	<i>Saccostrea cucullata</i>	1%				2%	1%	2%					<5%			10%			2%
Bivalve	<i>Ruditapes philippinarum</i>						0						0						0
Crab	<i>Metapograpus frontalis</i>						0						0						0
Crab	<i>Metapograpus quadridentatus</i>						0						0						0
Crab	<i>Uca borealis</i>						0						0						0
Gastropod	<i>Batillaria multiformis</i>						0						0			1			0.8
Gastropod	<i>Batillaria zonalis</i>						0						0	21	14	13	8	13	55.2
Gastropod	<i>Cerithidea cingulata</i>	8	2		1	2	10.4	8		1	1		8				2		1.6
Gastropod	<i>Cerithidea diadjarjensis</i>	36	44	14	57	57	166.4	17	14	32	4	13	64	8	2	16	17	2	36
Gastropod	<i>Cerithidea microptera</i>						0						0			4			3.2
Gastropod	<i>Cliton</i> spp.						0						0			4			3.2
Gastropod	<i>Littoraria articulata</i>						0						0						0
Gastropod	<i>Lunella coronata</i>						0						0						0
Gastropod	<i>Monodonta labio</i>						0						0						0
Gastropod	<i>Nassarius festivus</i>						0						0						0
Gastropod	<i>Nerita polita</i>						0						0						0
Gastropod	<i>Nipponacmea concinna</i>						0						0						0
Gastropod	<i>Terebralia sulcata</i>		2	8		1	8.8	1	8	3	11	1	19.2						0
Seaslug	<i>Onchidium</i> sp.			1	1		1.6		3				2.4						0
Worm	<i>Oligochaete</i> sp.						0						0						0
Worm	<i>Siphonoma</i> sp.						0						0						0
Worm	<i>Sipunculus</i> sp.						0						0						0
Worm	Ribbon Worm sp.						0						0						0