



**ERM**

ANNEX J2

MONITORING RESULTS

**Table J2.1 Results for Horseshoe Crabs during Qualitative Walk-through Surveys in December 2023**

Sighting #	Species	Prosomal Width (cm)	Total Length (cm)
<b>Monitoring Date: 1 December 2023</b>			
<b>Monitoring Station: TCB3</b>			
1	<i>Tachypleus tridentatus</i>	0.9	1.2
2	Unidentified <sup>(a)</sup>	0.6	0.7
3	Unidentified <sup>(a)</sup>	0.5	0.5
4	Unidentified <sup>(a)</sup>	0.6	0.6
5	Unidentified <sup>(a)</sup>	0.6	0.6
6	Unidentified <sup>(a)</sup>	0.6	0.7
7	Unidentified <sup>(a)</sup>	0.7	0.8
8	<i>Tachypleus tridentatus</i>	0.8	0.9
9	Unidentified <sup>(a)</sup>	0.7	0.7
10	Unidentified <sup>(a)</sup>	0.7	0.7
11	Unidentified <sup>(a)</sup>	0.6	0.6
12	Unidentified <sup>(a)</sup>	0.7	0.7
13	<i>Tachypleus tridentatus</i>	0.9	1.2
14	<i>Tachypleus tridentatus</i>	0.9	1.2
15	Unidentified <sup>(a)</sup>	0.6	0.7
16	<i>Tachypleus tridentatus</i>	0.9	1.3
17	Unidentified <sup>(a)</sup>	0.7	0.8
18	<i>Tachypleus tridentatus</i>	0.9	1.3
	<b>Mean (Range)</b>	<b>0.7 (0.5 - 0.9)</b>	<b>0.8 (0.5 - 1.3)</b>
<b>Monitoring Date: 1 December 2023</b>			
<b>Monitoring Station: TCB2</b>			
1	<i>Tachypleus tridentatus</i>	0.9	1.2
2	Unidentified <sup>(a)</sup>	0.5	0.6
3	<i>Tachypleus tridentatus</i>	0.7	1.1
	<b>Mean (Range)</b>	<b>0.7 (0.5 - 0.9)</b>	<b>1.0 (0.6 - 1.2)</b>
<b>Monitoring Date: 18 December 2023</b>			
<b>Monitoring Station: THW</b>			
1	<i>Tachypleus tridentatus</i>	0.8	1.0
2	Unidentified <sup>(a)</sup>	0.6	0.7
	<b>Mean</b>	<b>0.7 (0.6 - 0.8)</b>	<b>0.9 (0.7 - 1.0)</b>

Note:

- a) 14 horseshoe crab individuals, twelve (12) at TCB3, one (1) at TCB2 and one (1) at THW were recorded with prosomal width of 0.5-0.7 cm and total length of 0.5-0.8 cm. These individuals were considered to be too small for species identification by the naked eye and were recorded as unidentified species.

**Table J2.2 Results for Seagrass during Qualitative Walk-through Surveys in December 2023**

<b>Sighting #</b>	<b>Species</b>	<b>Area (m<sup>2</sup>)</b>	<b>Area Coverage (%)</b>	<b>Seagrass Area (m<sup>2</sup>)</b>
<b>Monitoring Date: 1 December 2023</b>				
<b>Monitoring Station: TCB3</b>				
1	<i>Halophila ovalis</i>	285.0	70%	199.5
2	<i>Halophila ovalis</i>	52.5	70%	36.8

**Table J2.3 Results for Other Intertidal Soft Shore Communities during Qualitative Walk-through Surveys in December 2023**

Monitoring Station	Shore Height *	No. of Species
TCB1	H	18
	M	22
	L	10
	<b>Overall</b>	<b>28</b>
TCB2	H	23
	M	16
	L	14
	<b>Overall</b>	<b>24</b>
TCB3	H	18
	M	22
	L	23
	<b>Overall</b>	<b>31</b>
THW	H	13
	M	15
	L	13
	<b>Overall</b>	<b>23</b>

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

**Table J2.4 Results for Other Intertidal Soft Shore Communities during Quantitative Transect Surveys in December 2023**

Monitoring Station	Shore Height *	Top Three Dominant Species	Density (ind. / m <sup>2</sup> )
TCB1	H	1 <i>Cerithidea diadjariensis</i>	177.6
		2 <i>Batillaria zonalis</i>	41.6
		3 <i>Cerithidea cingulata</i>	32.8
	M	1 <i>Batillaria multiformis</i>	51.2
		2 <i>Monodonta labio</i>	43.2
		3 <i>Cerithidea diadjariensis</i>	24.0
	L	1 <i>Batillaria zonalis</i>	12.8
		2 <i>Anomalocardia squamosa</i> <b>and</b> <i>Batillaria multiformis</i>	2.4
		3 <i>Cellana grata</i>	1.6
TCB2	H	1 <i>Cerithidea diadjariensis</i>	51.2
		2 <i>Cerithidea cingulata</i>	28.8
		3 <i>Perisesarma bidens</i>	3.2
	M	1 <i>Geloina erosa</i> <b>and</b> <i>Hemigrapsus penicillatus</i> <b>and</b> <i>Perisesarma bidens</i> <b>and</b> <i>Sipunculus</i> sp.	88.0
		2 -	
		3 -	
	L	1 <i>Perisesarma bidens</i>	1.6
		2 <i>Cerithidea diadjariensis</i>	0.8
		3 -	
TCB3	H	1 <i>Batillaria multiformis</i>	1,117.6
		2 <i>Batillaria zonalis</i>	683.2
		3 <i>Nassarius festivus</i>	352.0
	M	1 <i>Batillaria zonalis</i>	87.2
		2 <i>Batillaria multiformis</i>	84.0
		3 <i>Cerithidea diadjariensis</i>	79.2
	L	1 <i>Batillaria zonalis</i>	64.8
		2 <i>Cerithidea diadjariensis</i>	35.2
		3 <i>Cerithidea cingulata</i>	25.6
THW	H	1 <i>Cerithidea diadjariensis</i>	27.2
		2 <i>Geloina erosa</i>	8.8
		3 <i>Cerithidea microptera</i>	3.2
	M	1 <i>Cerithidea cingulata</i>	379.2
		2 <i>Cerithidea diadjariensis</i>	200.0
		3 <i>Batillaria zonalis</i>	116.0
	L	1 <i>Nassarius festivus</i>	418.4
		2 <i>Cerithidea diadjariensis</i>	182.4
		3 <i>Cerithidea cingulata</i>	170.4

\* 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)
Barnacle	<i>Balanus amphitrite</i>	+		+	+	+		+	+	+		+	
Barnacle	<i>Chthamalus malayensis</i>											+	
Barnacle	<i>Microeuraphia withersi</i>								+			+	
Bivalve	<i>Anomalocardia squamosa</i>	+		+									
Bivalve	<i>Coecella chinensis</i>											+	+
Bivalve	<i>Cyclina sinensis</i>		+	+				+	+			+	+
Bivalve	<i>Geloina erosa</i>		+		+	+		+			++	+++	
Bivalve	<i>Saccostrea cucullata</i>	+	+	+	+++	++	+	+	++	++		+	+
Bivalve	<i>Septifer virgatus</i>		+	+	+				+	+			
Bivalve	<i>Ruditapes philippinarum</i>											+	+
Crab	<i>Hemigrapsus penicillatus</i>				+	+						+	
Crab	<i>Metapograpsus frontalis</i>	+	+					+	+	+		+	
Crab	<i>Metapograpsus quadridentatus</i>	+	+		+	+	+	+	+	+			
Crab	<i>Parasesarma pictum</i>				+	++	+					+	+
Crab	<i>Perisesarma bidens</i>	+			+	+	+					+	
Crab	<i>Uca borealis</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>Clithon spp.</i>	+	+		+	+	+						
Gastropod	<i>Echinolittorina radiata</i>		+										
Gastropod	<i>Echinolittorina vidua</i>	+	+								+		+
Gastropod	<i>Littoraria articulata</i>	+	++						+	+			
Gastropod	<i>Littoraria melanostoma</i>				+							+	
Gastropod	<i>Lunella coronata</i>				+	+	++		+	++			
Gastropod	<i>Monodonta labio</i>	+	++		+++	+++	+++	+	+	+			
Gastropod	<i>Nassarius festivus</i>				+			+++	+	++		++	+++
Gastropod	<i>Nerita albicilla</i>		+					+		+			
Gastropod	<i>Nerita costata</i>							+	+				
Gastropod	<i>Nerita polita</i>	+	+		+	++		+	+	+		+	+
Gastropod	<i>Terebralia sulcata</i>	+									+	+	
Gastropod	<i>Thais clavigera</i>	+							+	+		+	+
Hermit Crab	<i>Clibanarius sp.</i>		+	+							+		
Hermit Crab	<i>Diogenes sp.</i>		+	+	+	+	+				+		
Hermit Crab	<i>Pagrurus sp.</i>						+						
Horseshoe Crab	<i>Tachypleus tridentatus</i>					+			+	+		+	
Horseshoe Crab	<i>Unidentified sp.</i>					+			+	+		+	
Seagrass	<i>Halophila ovalis</i>											+	
Sea Slater	<i>Ligia oceanica</i>				+								
Worm	<i>Oligochaete sp.</i>								+				+
Worm	<i>Sipunculus sp.</i>		+		+	+			++	+			

Remark: '+' denotes the species was relatively uncommon at the area;  
 '++' denotes the species was relatively common at the area;  
 '+++' denotes the species was relatively abundant at the area.

Group	Species	TCB1																	
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3	L4	L5	Density (ind. / m <sup>2</sup> or % cover)
Barnacle	<i>Balanus amphitrite</i>						0%						0%	<5%					<5%
Bivalve	<i>Anomalocardia squamosa</i>					1	0.8						0		1		2		2.4
Bivalve	<i>Coecella chinensis</i>						0						0						0
Bivalve	<i>Cyclina sinensis</i>						0	1			1		1.6				1		0.8
Bivalve	<i>Geloina erosa</i>						0	1					0.8						0
Bivalve	<i>Saccostrea cucullata</i>		<5%				<5%		10%	5%	<5%		3%	5%		5%			2%
Bivalve	<i>Septifer virgatus</i>						0			<5%			<5%	<5%					<5%
Bivalve	<i>Ruditapes philippinarum</i>						0						0						0
Crab	<i>Hemigrapsus penicillatus</i>						0						0						0
Crab	<i>Metapograpus frontalis</i>						0			1			0.8						0
Crab	<i>Parasesarma pictum</i>						0						0						0
Crab	<i>Perisesarma bidens</i>						0						0						0
Gastropod	<i>Batillaria multiformis</i>	3	2	16	20	14	44.0	14	24	10	12	4	51.2					3	2.4
Gastropod	<i>Batillaria zonalis</i>	30	16	2		4	41.6	11		4	6		16.8	8	2	4		2	12.8
Gastropod	<i>Cellana grata</i>						0			3			2.4				2		1.6
Gastropod	<i>Cerithidea cingulata</i>	11	16			14	32.8	8	4	6	4		17.6						0
Gastropod	<i>Cerithidea diadjarimensis</i>	144	50		2	26	177.6	12	4	6	8		24.0						0
Gastropod	<i>Cerithidea microptera</i>						0						0						0
Gastropod	<i>Clithon spp.</i>						0						0						0
Gastropod	<i>Echinolittorina radiata</i>						0		1				0.8						0
Gastropod	<i>Echinolittorina vidua</i>						0		2				1.6						0
Gastropod	<i>Littoraria articulata</i>						0		12	7			15.2						0
Gastropod	<i>Lunella coronata</i>						0						0						0
Gastropod	<i>Monodonta labio</i>		2			2	3.2		16	38			43.2						0
Gastropod	<i>Nassarius festivus</i>						0						0						0
Gastropod	<i>Nerita albicilla</i>						0						0						0
Gastropod	<i>Nerita costata</i>						0						0						0
Gastropod	<i>Nerita polita</i>						0			1			0.8						0
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Gastropod	<i>Thais clavigera</i>	1					0.8						0						0
Hermit Crab	<i>Clibanarius sp.</i>						0						0			1			0.8
Hermit Crab	<i>Diogenes sp.</i>						0						0		1				0.8
Worm	<i>Oligochaete sp.</i>						0						0						0.0
Worm	<i>Sipunculus sp.</i>						0			1			0.8						0

Group	Species	TCB2																	
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3	L4	L5	Density (ind. / m <sup>2</sup> or % cover)
Barnacle	<i>Balanus amphitrite</i>						0%						0%						0%
Bivalve	<i>Anomalocardia squamosa</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>		1	1			1.6				1		0.8						0
Bivalve	<i>Saccostrea cucullata</i>	<5%	<5%	5%	<5%	<5%	1%	<5%	<5%	<5%	<5%		<5%						0%
Bivalve	<i>Septifer virgatus</i>	<5%					<5%						0						0
Bivalve	<i>Ruditapes philippinarum</i>						0						0						0
Crab	<i>Hemigrapsus penicillatus</i>			1	2		2.4	1					0.8						0
Crab	<i>Metapograpus frontalis</i>						0						0						0
Crab	<i>Parasesarma pictum</i>		2				1.6						0.0						0
Crab	<i>Perisesarma bidens</i>	1	2			1	3.2	1					0.8			1	1	1.6	
Gastropod	<i>Batillaria multiformis</i>						0						0						0
Gastropod	<i>Batillaria zonalis</i>						0						0						0.0
Gastropod	<i>Cellana grata</i>						0						0						0
Gastropod	<i>Cerithidea cingulata</i>	20	7	4	5		28.8						0						0
Gastropod	<i>Cerithidea diadjarimensis</i>	31	15	11	6	1	51.2						0	1					0.8
Gastropod	<i>Cerithidea microptera</i>						0						0						0
Gastropod	<i>Clithon spp.</i>						0						0						0
Gastropod	<i>Echinolittorina radiata</i>						0						0						0
Gastropod	<i>Echinolittorina vidua</i>						0						0						0
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>					1	0.8						0						0
Gastropod	<i>Nerita albicilla</i>						0						0						0
Gastropod	<i>Nerita costata</i>						0						0						0
Gastropod	<i>Nerita polita</i>						0						0						0
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Gastropod	<i>Thais clavigera</i>						0						0						0
Hermit Crab	<i>Clibanarius sp.</i>						0						0						0
Hermit Crab	<i>Diogenes sp.</i>			1			0.8						0						0
Worm	<i>Oligochaete sp.</i>						0						0						0
Worm	<i>Sipunculus sp.</i>			1			0.8	1					0.8						0



Group	Species	TCB3																	
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3	L4	L5	Density (ind. / m <sup>2</sup> or % cover)
Barnacle	<i>Balanus amphitrite</i>						0%						0%				5%		1%
Bivalve	<i>Anomalocardia squamosa</i>						0						0						0
Bivalve	<i>Coecella chinensis</i>						0						0						0
Bivalve	<i>Cyclina sinensis</i>			2		1	2.4		1			1	1.6						0
Bivalve	<i>Geloina erosa</i>	3					2.4						0						0
Bivalve	<i>Saccostrea cucullata</i>	<5%					<5%	10%	35%	20%	10%	20%	19%	10%	25%		15%	5%	11%
Bivalve	<i>Septifer virgatus</i>						0						0	<5%					<5%
Bivalve	<i>Ruditapes philippinarum</i>						0						0						0
Crab	<i>Hemigrapsus penicillatus</i>						0						0						0
Crab	<i>Metapograpus frontalis</i>						0						0	2					1.6
Crab	<i>Parasesarma pictum</i>						0						0						0
Crab	<i>Perisesarma bidens</i>						0						0						0
Gastropod	<i>Batillaria multiformis</i>	414	310	198	174	301	1117.6	8	63	25	1	8	84	4	4	2		2	9.6
Gastropod	<i>Batillaria zonalis</i>	76	272	260	122	124	683.2	19	38	20	8	24	87.2	26	18	16	9	12	64.8
Gastropod	<i>Cellana grata</i>						0				1	3	3.2					1	0.8
Gastropod	<i>Cerithidea cingulata</i>	50	18	20	8	22	94.4	2	44	26	8	8	70.4	18	6	2	6		25.6
Gastropod	<i>Cerithidea diadjarimensis</i>	46	54	54	18	40	169.6	18	6	22	44	9	79.2	22	8	12	2		35.2
Gastropod	<i>Cerithidea microptera</i>						0						0						0
Gastropod	<i>Clithon spp.</i>		1	3	2		4.8						0						0
Gastropod	<i>Echinolittorina radiata</i>						0						0						0
Gastropod	<i>Echinolittorina vidua</i>						0						0						0
Gastropod	<i>Littoraria articulata</i>						0					6	4.8						0
Gastropod	<i>Lunella coronata</i>						0			1			0.8	2	5	2			7.2
Gastropod	<i>Monodonta labio</i>						0	4	3			4	8.8				1		0.8
Gastropod	<i>Nassarius festivus</i>		188	140	12	100	352.0		3				2.4	8				6	11.2
Gastropod	<i>Nerita albicilla</i>						0						0		2				1.6
Gastropod	<i>Nerita costata</i>						0				1		0.8						0
Gastropod	<i>Nerita polita</i>						0				1	2	2.4						0
Gastropod	<i>Terebralia sulcata</i>						0						0						0
Gastropod	<i>Thais clavigera</i>						0				1		0.8						0
Hermit Crab	<i>Clibanarius sp.</i>						0						0		1				0.8
Hermit Crab	<i>Diogenes sp.</i>						0						0			1			0.8
Worm	<i>Oligochaete sp.</i>						0	2					1.6						0
Worm	<i>Sipunculus sp.</i>						0		17			1	2	16		6			4.8

Group	Species	THW															Density (ind. / m <sup>2</sup> or % cover)							
		H1	H2	H3	H4	H5	Density (ind. / m <sup>2</sup> or % cover)	M1	M2	M3	M4	M5	Density (ind. / m <sup>2</sup> or % cover)	L1	L2	L3		L4	L5	Density (ind. / m <sup>2</sup> or % cover)				
Barnacle	<i>Balanus amphitrite</i>						0%			<5%						<5%								0%
Bivalve	<i>Anomalocardia squamosa</i>						0									0								0
Bivalve	<i>Coecella chinensis</i>						0	1								0.8	1							0.8
Bivalve	<i>Cyclina sinensis</i>						0					1				0.8					1			0.8
Bivalve	<i>Geloina erosa</i>			1	1	3	6	8.8	7	6	1	9	13			28.8								0
Bivalve	<i>Saccostrea cucullata</i>						0%	5%	<5%							1%						25%		5%
Bivalve	<i>Septifer virgatus</i>						0									0								0
Bivalve	<i>Ruditapes philippinarum</i>	1			1		1.6	2			1					2.4							1	0.8
Crab	<i>Hemigrapsus penicillatus</i>						0									0								0
Crab	<i>Metapograpus frontalis</i>			1			0.8									0								0
Crab	<i>Parasesarma pictum</i>					1	0.8									0				1				0.8
Crab	<i>Perisesarma bidens</i>		1			1	2.4									0						2.4		0
Gastropod	<i>Batillaria multififormis</i>						0	9	6	4						15.2								0
Gastropod	<i>Batillaria zonalis</i>						0	20	45	40	16	24				116.0	24	6	12	30	18			72.0
Gastropod	<i>Cellana grata</i>						0									0								0
Gastropod	<i>Cerithidea cingulata</i>				8	2	8.0		158	130	162	24				379.2	50	62	14	51	36			170.4
Gastropod	<i>Cerithidea diadjarimensis</i>	2			6	12	14	27.2	48	12	60	56	74			200.0	16	72	8	46	86			182.4
Gastropod	<i>Cerithidea microptera</i>					4	3.2									0								0
Gastropod	<i>Clithon spp.</i>						0									0								0
Gastropod	<i>Echinolittorina radiata</i>						0									0								0
Gastropod	<i>Echinolittorina vidua</i>						0									0						2		1.6
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	64	44	6	4	6				99.2	134	42	79	264	4			418.4
Gastropod	<i>Nerita albicilla</i>						0									0								0
Gastropod	<i>Nerita costata</i>						0									0								0
Gastropod	<i>Nerita polita</i>						0									0						1		0.8
Gastropod	<i>Terebralia sulcata</i>						0	2			1					2.4								0
Gastropod	<i>Thais clavigera</i>						0									0	1	2						2.4
Hermit Crab	<i>Clibanarius sp.</i>						0									0								0
Hermit Crab	<i>Diogenes sp.</i>						0									0								0
Worm	<i>Oligochaete sp.</i>						0									0		1						0.8
Worm	<i>Sipunculus sp.</i>						0									0								0