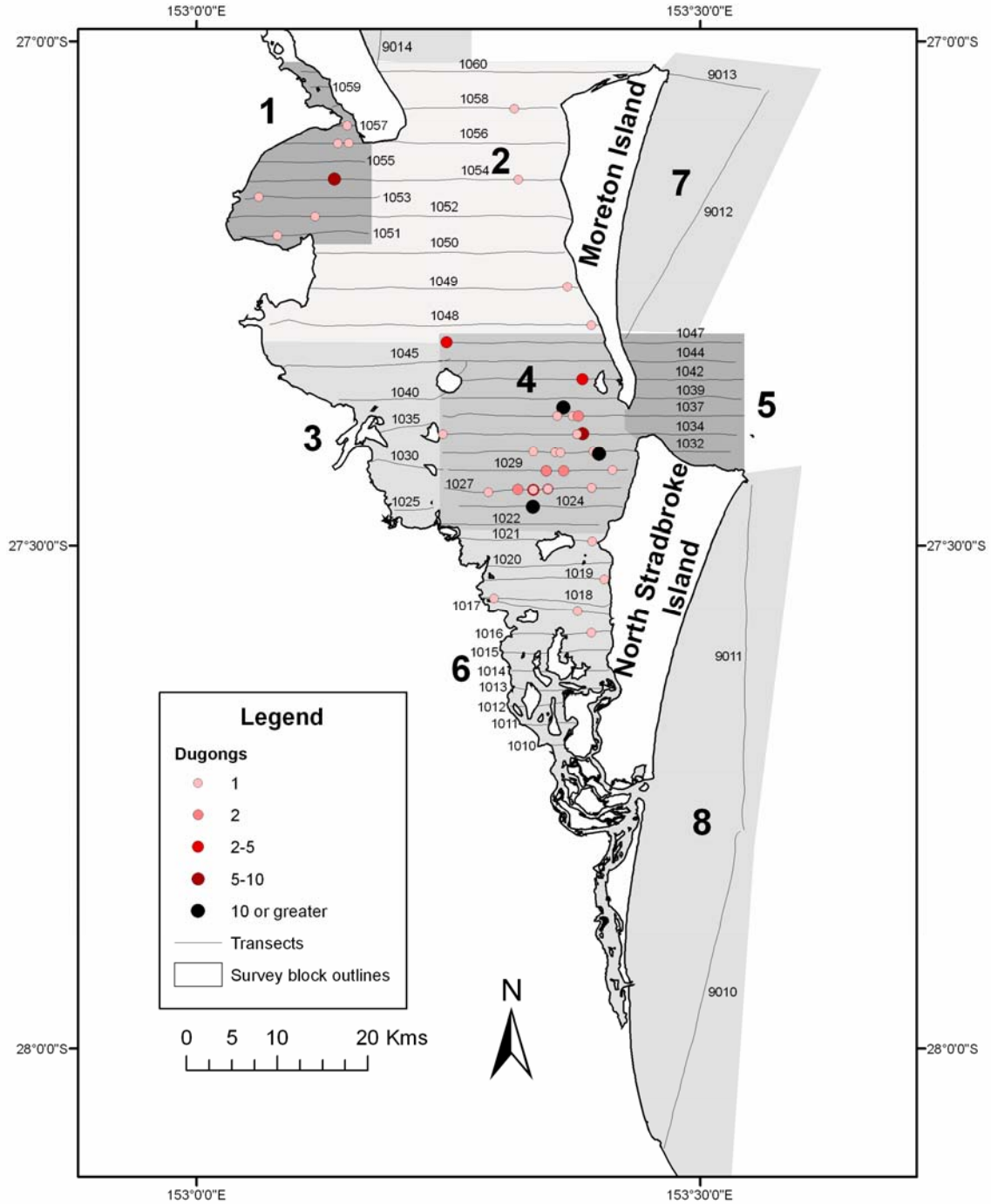
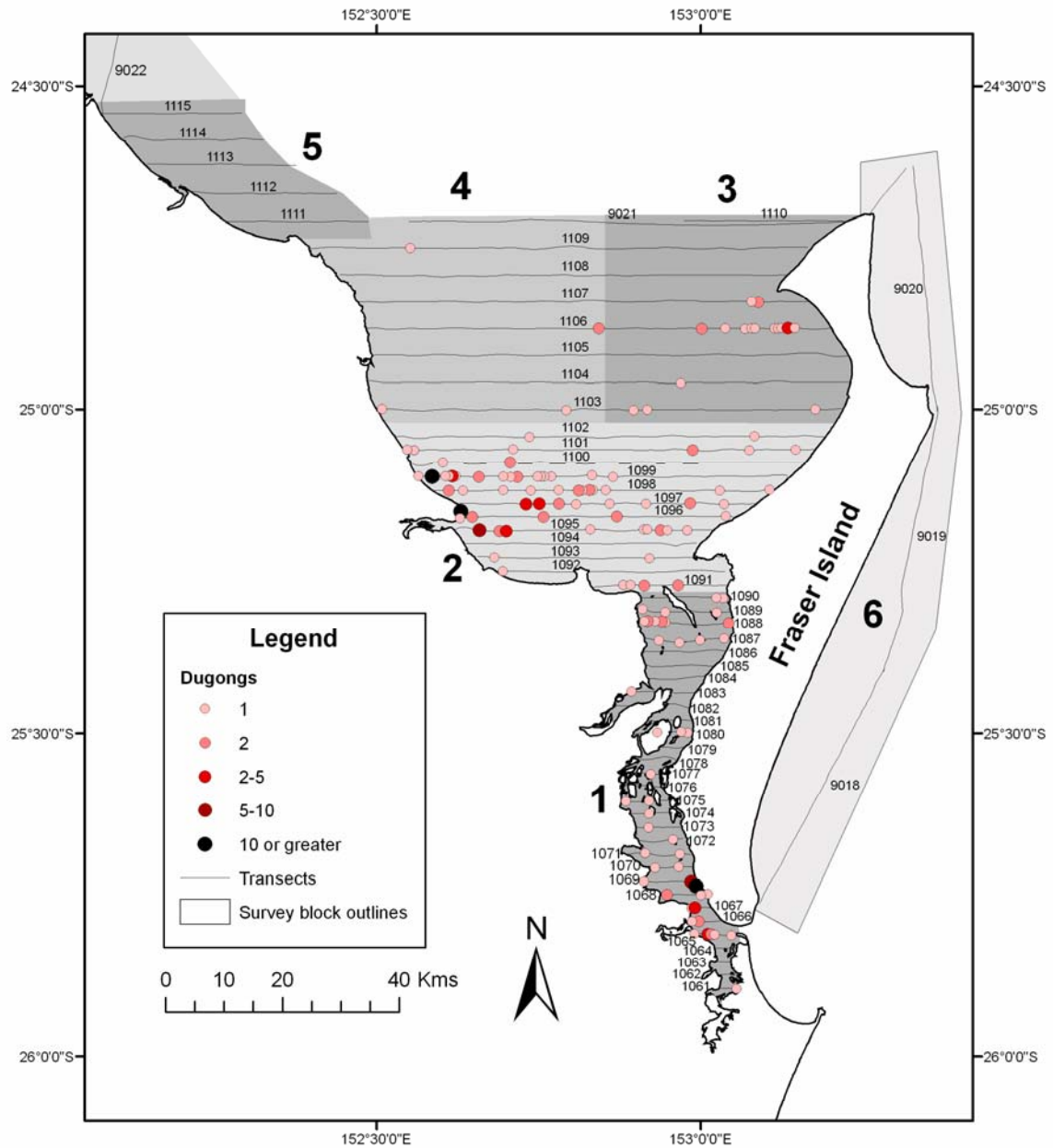


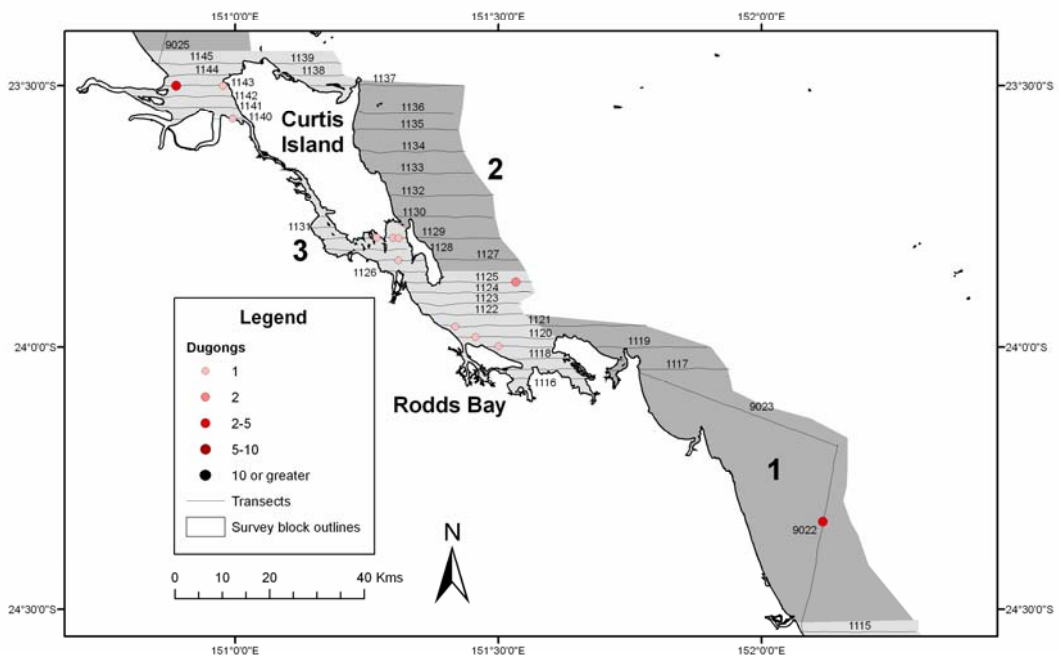
**Attachment 2:** Appendix figures showing the GPS tracks of transects flown in Blocks 1-8 in Moreton Bay during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers



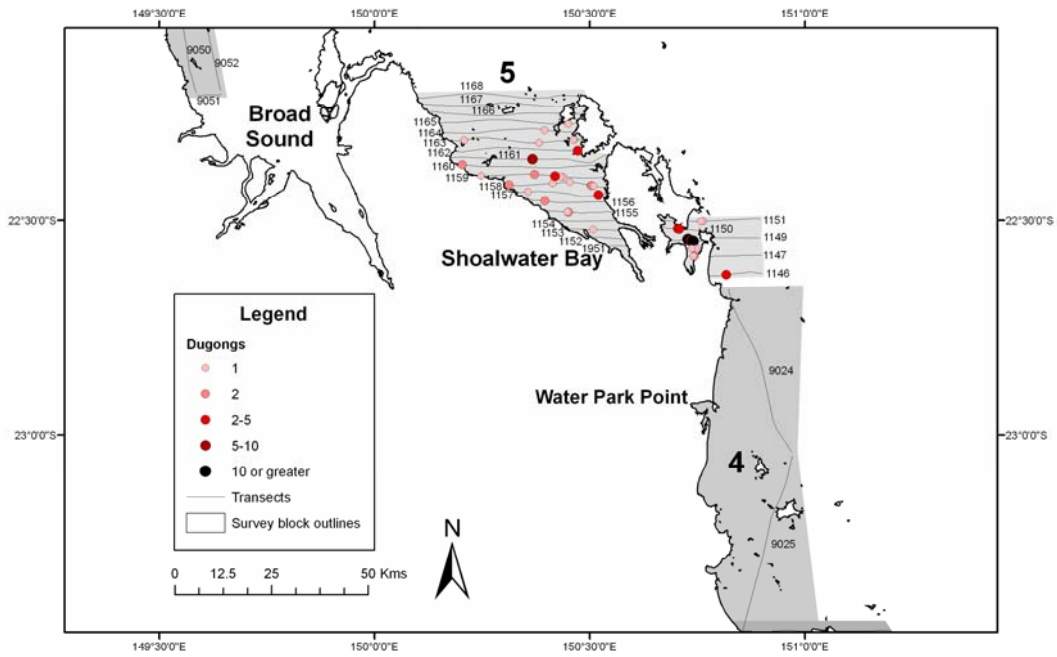
**Appendix Figure 1.** GPS tracks of transects flown in Blocks 1-8 in Moreton Bay during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.



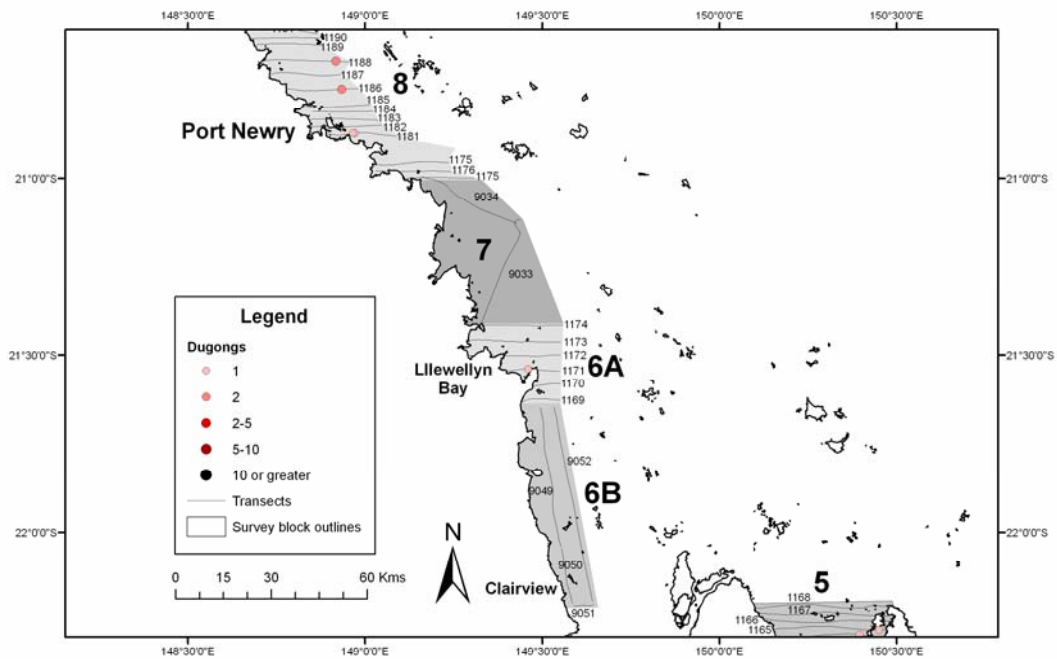
**Appendix Figure 2.** GPS tracks of transects flown in the Hervey Bay Blocks H1-H6 during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.



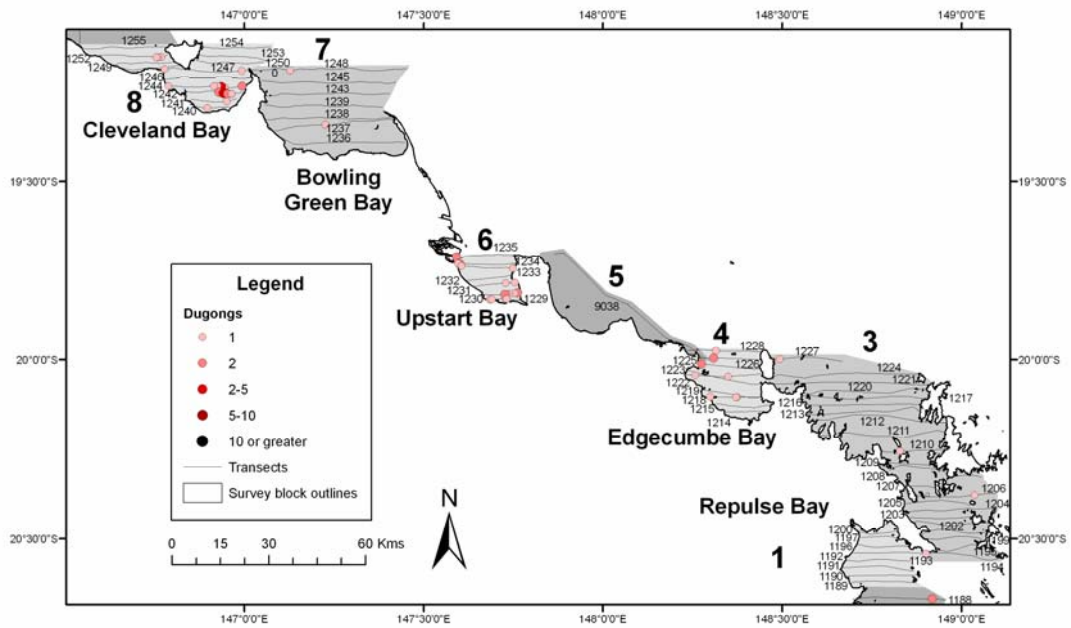
**Appendix Figure 3.** GPS tracks of transects flown in Blocks S1-3 in the Southern Section of the Great Barrier Reef Marine Park during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.



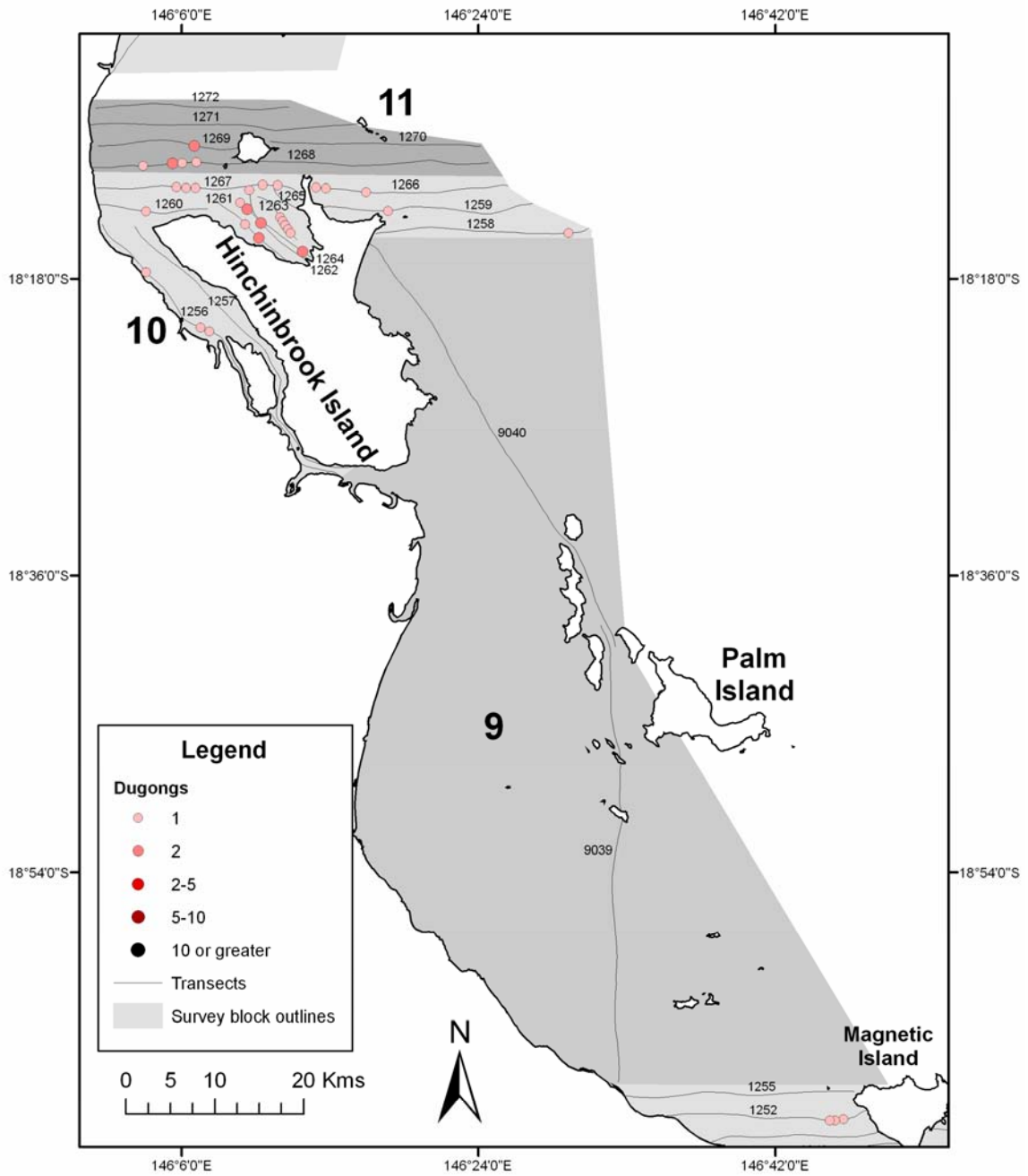
**Appendix Figure 4.** GPS tracks of transects flown in Blocks S4-S5 in the Southern Section of the Great Barrier Reef Marine Park during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.



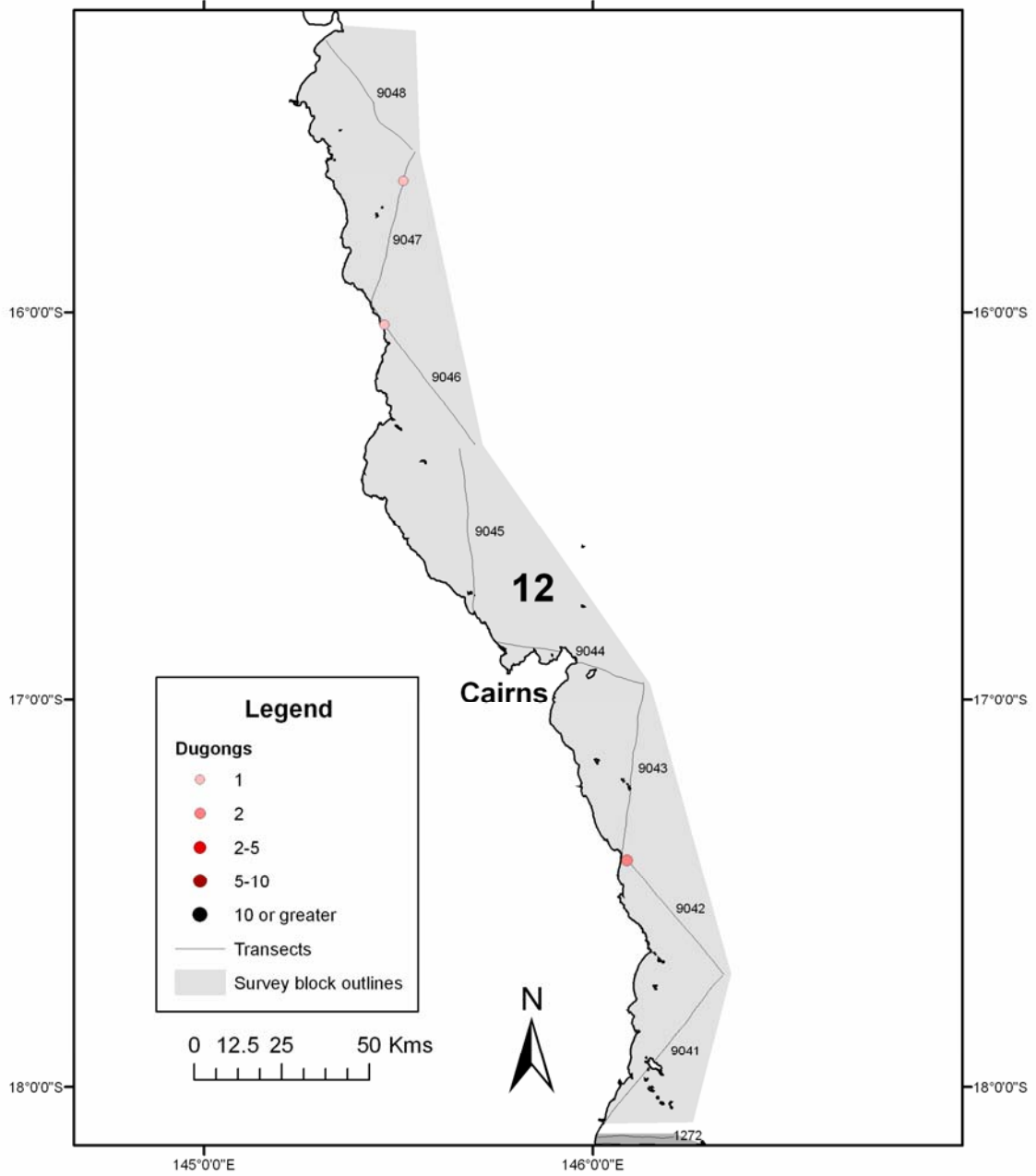
**Appendix Figure 5.** GPS tracks of transects flown in Blocks S6B-S8 in the southern Section of the Great Barrier Reef Marine Park during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.



**Appendix Figure 6.** GPS tracks of transects flown in Blocks C1-C8 in the Central Section of the Great Barrier Reef Marine Park during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.

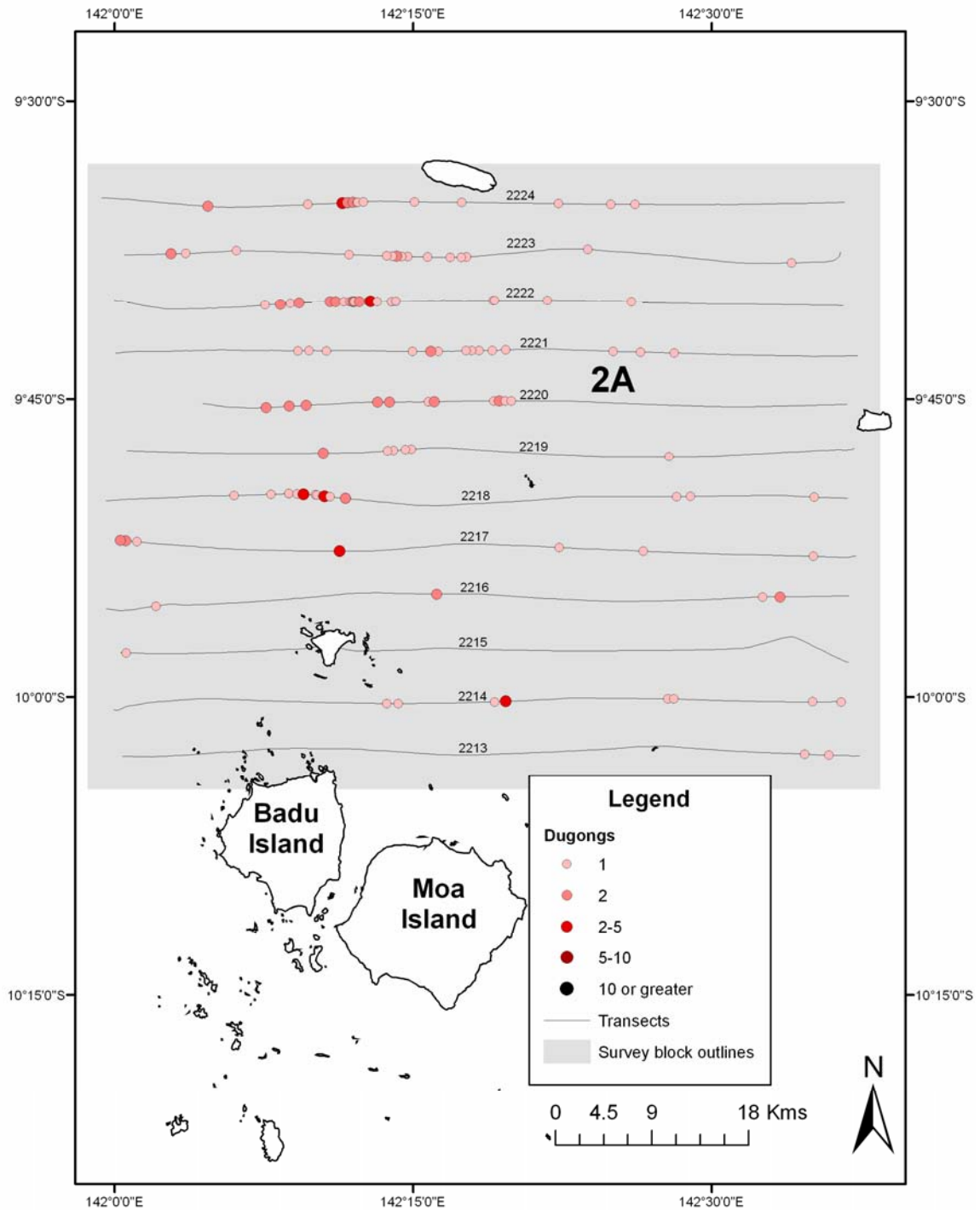


**Appendix Figure 7.** GPS tracks of transects flown in Blocks C9-C11 in the Central Section of the Great Barrier Reef Marine Park during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.



**Appendix Figure 8.** GPS tracks of transects flown between Rockingham Bay and Cooktown during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.





**Appendix Figure 9.** GPS tracks of transects flown in the Index Block 2A in Torres Strait during the aerial survey in November 2005 showing the positions and sizes of the dugong groups sighted and the transect numbers.

## APPENDIX TABLES

**Appendix Table 1.** Areas of survey blocks and sampling intensities for the aerial survey conducted in 2005. For locations of blocks see Figure 1.

Block	Area (km <sup>2</sup> )	Sampling Intensity (%)
<b>Morton Bay</b>		
M1	166	24.74
M2	691	13.45
M3	389	50.07
M4	155	24.97
M6	226	29.67
<b>Hervey Bay</b>		
H1	517	25.31
H2	1414	20.3
H3	1235	11.18
H4	1224	11.44
H5	546	10.86
<b>Southern Section of Great Barrier Reef Marine Park</b>		
S2	836	10.86
S3	1021	21.12
S5	1271	21.8
S8	796	17.92
<b>Central Section of Great Barrier Reef Marine Park</b>		
C1	371	18.23
C3	1733	14.61
C4	466	19.57
C6	244	23.35
C7	579	23.70
C8	620	32.64
C10	288	23.64
C11	351	18.06
<b>Torres Strait</b>		
2A	3808	10.75

**Appendix Table 2a.** Weather conditions encountered during the 2005 survey in comparison to the following previous surveys of the same areas. Historical data from Marsh and Saalfeld (1990); Marsh et al, (1996); Marsh and Lawler (2000).

	SGBR Northern Sector Blocks C1-C11		SGBR Whitsunday Sector Blocks S6-8		SGBR Shoalwater Bay Sector Block S 5		SGBR Southern Sector Blocks S1-4		Southern GBR All sectors			
	2005	1999	2005	1999	2005	1999	2005	1999	2005	1994	1992	1986-87
Year of survey	2005	1999	2005	1999	2005	1999	2005	1999	2005	1994	1992	1986-87
Wind speed (km.h <sup>-1</sup> )	<30	<10	<10	<10	<10	<10	<10	<10	<10	<15	<37	<37
Cloud cover (oktas)	0-7	0-3	0-3	0-6	1-5	0-6	0-6	0-6	0-5	0-5	0-5	0-4
Minimum cloud height	1500	3000	700	2500	2000	2000	150	1500	1000 - 4000	2000-5000	2500	300
Beaufort sea state (range)	1.67 (0-4)	1.45 (0-4)	1.59 (0-3)	1.55 (0-3)	0.83 (0-2)	1.87 (0-4)	1.66 (0-4)	1.95 (0-3)	1.48 (0-4)	1.87 (0-4)	1.0 (0-4)	1.0 (0-3)
Glare <sup>5</sup>												
North	1.29	0.67	1.07	1.10	0.87	0.53	2.63	1.76	1.5	1.44		
South	1.31	0.70	1	1.32	0.96	1.08	2.63	1.85	1.5	1.29		
Overall	1.3	0.69	1.33	1.21	0.92	0.80	2.63	1.80	1.5	1.36	2	2
Visibility (km)	>30	>20	>10	>20	>10	>20	>10	<10	>10	>15	N/A	>20

Appendix Table 2b. Weather conditions encountered during the 2005 surveys of Moreton Bay, Hervey Bay and Block 2A in Torres Strait in comparison to the prior surveys of the same areas: historical data from Marsh and Saalfeld 1990 unpublished; Marsh et al, 1996; Marsh and Lawler 2000, Marsh et al, 1997 and 2004.

	Moreton Bay			Hervey Bay					Torres Strait				
Year of survey	2005	1999	1988	2005	1999	1994	1993	1988	2005	2001	1996	1991	1987
Wind speed (km.h <sup>-1</sup> )	<10	<10	<10	<10	<10	<10	<20	<28	<10	<15	<10	<15	<15
Cloud cover (oktas)	0-6	0-3	0-8	1-7	0	1-3	1-4	1-6	0-3	0-7	0-7	0-5	1-8
Minimum cloud height	2000	3500	3500	2000	N/A	2000-5000	460-1800	610-2400	2500-4000	2000-5000	1000-5000	460-750	270-4000
Beaufort sea state (range)	1.8 (1-4)	0.87 (0-3)	2 (0-4)	2.2 (1-3)	1.67 (0-4)	1.94 (1-3)	1.2 (0-3)	2.1 (0-4)	0.92 (0-2.5)	1.4 (0-3)	1.1 (0-3)	1.9 (0-4)	1.3 (0-4)
Glare <sup>5</sup>													
North	1.76	1.42	0-3	1.44	1.92	0.92	1.4	0.9 (0-3)	0.79 (0-2)	0.9 (0-3)		1.7 (0-3)	1.4 (0-3)
South	1.23	1.23	0-3	1.27	1.86	1.08				1.3 (0-3)		2.3 (0-3)	0.75 (0-3)
Overall	1.49	1.32	0-3	1.35	1.89				1.59(0-3)				
Visibility (km)	>10	>20	N/A	>10	>30	>20	N/A	N/A	>10	>20	>10	>20	N/A

**Appendix Table 3.** Beaufort sea state and glare for each transect of the 2005 aerial survey for dugongs. See Appendix Figures 1-9 for transect locations.

Transect #	Beaufort			Glare <sup>1</sup>					
	minimum	maximum	mode	minimum	maximum	mode	minimum	maximum	mode
				North			South		
	Moreton Bay								
<b>Block MB1</b>									
1051	2	2	2	2	3	3	1	3	2
1052	1	1	1	1	2	1	1	2	1
1053	1	2	1	1	1	1	0	3	1
1054	1	1	1	1	4	1	1	2	2
1055	1	2	2	1	2	1	0	3	2
1056	1	1	1	1	1	1	0	2	0
1057	1	2	1	1	1	1	0	3	1
1058	1	1	1	1	1	1	1	1	1
1059	1	2	2	0	3	2	1	2	1
1060	1	1	1	1	1	1	0	0	0
<b>Block MB2</b>									
1048	1	2	1	1	3	1	0	2	2
1049	1	2	1	1	2	3	1	3	3
1050	2	2	2	1	3	2	1	4	1
1051	2	2	2	2	3	3	1	3	2
1052	1	1	1	1	2	1	1	2	1
1053	1	2	1	1	1	1	0	3	1
1054	1	1	1	1	4	1	1	2	2
1055	1	2	2	1	2	1	0	3	2
1056	1	1	1	1	1	1	0	2	0
1057	1	2	1	1	1	1	0	3	1
1058	1	1	1	1	1	1	1	1	1
1059	1	2	2	0	3	2	1	2	1
1060	1	1	1	1	1	1	0	0	0

Block MB4	1	2	2	0	1	1	0	3	0
1022	3	4	3	3	3	3	2	2	2
1023	3	4	3	1	3	3	2	2	2
1024	3	3	3	3	3	3	0	3	0
1025	3	3	3	3	3	3	0	3	3
1026				7	7	7			
1027	3	3	3	0	3	0	0	2	0
1028	3	3	3	0	3	3	2	2	2
1029	2	3	3	0	3	0	0	2	0
1030	2	3	3	3	3	3	0	2	2
1031	2	2	2	3	7	3	2	2	2
1032	1	3	2	0	3	0	0	2	0
1033	1	3	2	3	3	3	1	2	1
1034	1	3	2	0	3	0	0	10	0
1035	1	3	2	3	3	3	0	2	2
1036	2	2	2	3	7	3	2	2	2
1037	1	2	2	0	3	0	0	2	1
1038	1	2	2	0	3	2	1	2	1
1039	1	2	2	0	3	3	0	3	0
1040	1	2	2	0	3	3	0	3	1
1041	3	3	3	2	2	2	1	6	6
1042	1	2	2	0	11	0	1	1	1
1043	1	2	2	1	3	3	1	1	1
1044	1	2	1	0	3	3	0	2	0
1045	1	2	1	0	3	3	0	2	0
1046	3	3.5	3	3	6	3	1	1	1
1047	1	2	1	0	3	1	0	2	0
1048	1	2	1	1	3	1	0	2	2
1049	2	2	2	0	3	1	0	4	1
1050	2	2	2	0	3	1	1	3	2
1051	1	1	1	1	2	1	0	3	1

1052	1	2	1	0	1	1	0	3	1
1053	1	1	1	0	4	0	0	2	1
1054	1	2	2	0	2	1	0	3	0
1055	1	1	1	1	1	1	0	2	0
1056	1	2	1	0	1	1	0	8	1
1057	1	1	1	0	1	0	0	1	0
1058	1	2	2	0	5	1	0	2	1
1059	1	1	1	0	1	0	0	0	0
1060	1	2	2	0	1	1	0	6	1
<b>Block MB6</b>									
1010	2	2	2	3	3	3	2	7	2
1011	2	2	2	3	0	3	2	7	2
1012	2	2	2	2	7	2	1	1	1
1013	2	2	2	1	2	2	1	7	2
1014	2	2	2	2	7	3	1	1	1
1015	2	3	2	2	2	2	2	7	2
1016	2	2	2	2	2	2	2	7	2
1017	2	3	2	2	2	2	2	6	3
1018	2	3	2	2	7	3	2	3	3
1019	3	3	3	3	7	3	1	1	1
1020	2	3	3	2	7	2	2	2	2
1021	2	2	2	2	3	2	1	2	1

**Hervey Bay**

Transect #	minimum	maximum	mode	minimum	maximum	mode	minimum	maximum	mode
<b>Block HB1</b>									
1061	3	3	3	0	7	3	0	3	0
1062	2	3	2	2	3	2	0	6	3
1063	3	3	3	2	7	2	2	3	2
1064	2	2	2	3	3	3	3	6	3
1065	3	3	3	0	7	0	0	3	0
1066	2	3	2	0	3	0	1	6	3

1067	3	3	3	0	7	0	0	3	0
1068	3	3	3	0	3	0	0	8	0
1069	3	3	3	0	7	0	0	3	0
1070	3	3	3	0	3	3	0	5	2
1071	2	3	2	0	3	0	0	7	0
1072	2	3	3	0	7	0	0	3	0
1073	2	2	2	0	3	2	0	6	0
1074	2	2	2	0	7	0	0	2	0
1075	2	2	2	0	7	0	0	2	0
1076	2	2	2	3	3	3	0	6	1
1077	1	1	1	0	7	0	1	1	1
1078	1	1	1	3	3	3	0	6	0
1079	2	2	2	0	7	3	0	0	0
1080	2	2	2	0	2	0	0	6	0
1081	2	2	2	0	6	0	2	3	2
1082	2	2	2	3	3	3	0	6	3
1084	2	2	2	0	3	3	0	7	0
1085	2	2	2	0	7	0	2	3	2
1086	2	2	2	3	3	3	0	7	1
1087	2	2	2	0	6	0	0	6	0
1088	2	2	2	0	3	0	0	6	0
1089	1	1	1	0	6	0	0	2	0
1090	2	3	2	0	3	0	0	6	0
<b>Block HB2</b>									
1091	1	3	2	0	6	0	0	2	0
1092	1	2	2	0	3	3	0	7	0
1093	2	3	3	0	7	0	0	3	3
1094	2	3	2	3	3	3	0	7	0
1095	1	2	2	0	12	0	0	3	0
1096	1	2	2	0	3	3	0	7	0
1097	1	2	1	0	7	1	0	3	0



	1098	1	2	2	0	3	0	0	6	1
	1099	1	2	2	0	6	0	0	7	1
	1100	1	2	2	0	6	1	0	3	0
	1101	1	2	2	0	3	0	0	6	1
<b>Block HB3</b>										
	1103	1	2	2	0	3	0	0	21	1
	1104	1	3	1	0	7	1	0	3	3
	1105	1	3	3	2	3	3	2	3	3
	1106	2	3	3	3	5	3	3	3	3
	1107	3	3	3	3	3	3	3	3	3
	1108	2	3	3	3	3	3	3	3	3
	1109	2	3	2	3	3	3	3	3	3
	1110	2	3	2	3	3	3	3	3	3
<b>Block HB4</b>										
	1103	1	2	2	0	3	0	0	21	1
	1104	1	3	1	0	7	1	0	3	3
	1105	1	3	3	2	3	3	2	3	3
	1106	2	3	3	3	5	3	3	3	3
	1107	3	3	3	3	3	3	3	3	3
	1108	2	3	3	3	3	3	3	3	3
	1109	2	3	2	3	3	3	3	3	3

**Southern Section GBR**

Transect #	minimum	maximum	mode	minimum	maximum	mode	minimum	maximum	mode	
<b>Block S3</b>										
	1116	1	1	1	1	3	1	2	4	2
	1117	1	1	1	3	4	3	1	3	2
	1118				3	4	3	3	3	3
	1119	0	1	1	2	2	2	2	3	2
	1120	0	0	0	2	2	2	2	5	3
	1121	0	1	1	3	3	3	2	3	3
	1122	0	2	1	2	3	2	2	3	3

1123	0	2	2	3	3	3	3	3	3
1124	0	3	2	3	3	3	1	3	2
1125	0	1	1	2	3	3	3	3	3
1126	1	3	2	1	3	1	3	3	3
1127	0	3	1	3	3	3	1	3	2
1128	1	3	2	3	3	3	1	3	2
1129	0	2	2	2	7	3	1	3	3
1130	0	0	0	5	5	5	5	5	5
1131	2	3	2	3	3	3	3	3	3
1132	0	0	0	1	2	1	0	7	2
1133	2	2	2	1	7	3	2	3	1
1134	2	3	3	3	3	3	3	5	2
1135	2	3	2	3	7	3	3	3	3
1136	3	3	3	3	3	3	3	5	3
1137	3	3	3	3	5	3	3	3	3
1138	1	2	2	3	4	3	3	3	3
1139	1	3	2	3	3	3	3	4	3
1140	0	1	1	2	5	3	1	2	2
1141	2	2	2	2	3	2	2	5	2
1142	1	2	2	1	4	1	1	3	3
1143	1	2	2	2	3	2	1	4	2
1144	2	2	2	3	3	3	3	4	3
1145	2	4	3	3	3	3	1	3	3
<b>Block S5</b>									
1146	0	1	1	1	1	1	1	1	1
1147	0	1	1	1	1	1	1	1	1
1148	0	0	0	0	0	0	1	1	1
1149	0	1	0	1	1	1	1	1	1
1150	0	0	0	1	1	1	0	0	0
1151	0	1	1	1	1	1	1	1	1
1152	0	1	0	1	1	1	1	1	1

1153	0	1	0	1	0	1	1	1	1
1154	0	1	1	0	0	0	1	1	1
1155	1	1	1	0	1	1	1	1	1
1156	1	1	1	1	1	1	1	1	1
1157	0	1	1	0	1	1	1	1	1
1158	1	1	1	0	1	1	1	1	1
1159	1	1	1	1	1	1	1	1	1
1160	1	1	1	1	1	1	1	1	1
1161	1	1.5	1	1	1	1	1	1	1
1162	1	2	1	1	1	1	1	1	1
1163	1	2	1	1	1	1	1	1	1
1164	1	1	1	1	1	1	1	1	1
1165	1	2	1	1	1	1	1	1	1
1166	1	2	1	1	1	1	1	1	1
1167	1	2	1	0	0	0	1	1	1
1168	1	2	2	1	1	1	1	1	1
<b>Block S8</b>									
1177	1	2	2	1	1	1	1	1	1
1178	1	2	2	1	2	1	1	1	1
1179	2	2	2	1	1	1	1	1	1
1180	2	2	2	2	2	2	1	1	1
1181	1	2	1	1	1	1	1	1	1
1182	0	1.5	1	1	1	1	1	1	1
1183	1	1	1	1	1	1	1	1	1
1184	1	1.5	1	1	1	1	1	1	1
1185	1.5	1.5	1.5	1	1	1	1	1	1
1186	1	2	1.5	1	1	1	1	1	1
1187	2	2	2	1	2	1	1	1	1
1188	2	3	3	1	2	1	1	1	1
1189	2	3	2.5	1	1	1	1	1	1
1190	2	3	3	1	1	1	1	1	1
1191	2	2.5	2.5	1	1	1	1	1	1

1192	1.5	2	2	1	1	1	1	1	1
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**Central Section GBR**

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Transect #	minimum	maximum	mode	minimum	maximum	mode	minimum	maximum	mode
<b>Block C4</b>									
1214	1	2	1	1	1	1	1	1	1
1215	1	2	1	1	1	1	1	1	1
1218	1	1	1	1	1	1	1	1	1
1219	0	1	1	1	1	1	1	1	1
1222	1	2	1	1	1	1	1	1	1
1223	1	2	1	1	1	1	1	1	1
1224	2	3	2	1	2	2	1	2	1
1225	1	1	1	1	1	1	1	1	1
1226	2	2	2	1	1	1	1	1	1
1227	1	1	1	1	1	1	1	1	1
1228	1	2	1	1	1	1	1	1	1
<b>Block C6</b>									
1229	2	2	2	1	1	1	1	1	1
1230	2	3	2	2	2	2	2	2	2
1231	2	3	2	1	1	1	1	1	1
1232	3	3	3	1	2	1	1	2	2
1233	2	3	3	1	1	1	1	2	1
1234	1	3	3				2	2	2
1235	3	3	3	1	2	1	1	1	1
<b>Block C8</b>									
1240				2	2	2	1	1	1
1241	1	1.5	1	1	1	1	1	1	1
1242	1	2	1	0	1	1	1	2	1
1243	1	2.5	2	1	3	2	1	2	2
1244	1	2	1	0	1	1	0	2	1
1245	1	2	1	2	3	2	1	2	2
1246	0	2	2	1	2	2	0	2	1

1247	1	2	2	1	2	1	1	2	1
1248	1.5	2	2	2	3	2	1	2	2
1249	1	2	2	0	1	0	1	2	1
1250	1	2	2	1	2	2	1	2	2
1251	2	2	2	1	2	2	2	2	2
1252	1	2.5	2	0	1	1	1	1	1
1253	1.5	2	2	1	2	2	2	3	2
1254	2	2	2	1	2	1	2	2	2
1255	2	2.5	2	1	3	1	2	2	2
<b>Block C10</b>									
1256	1	2	2	0	2	2	1	3	1
1257	1	2	1	1	3	2	0	2	2
1258	1	1	1	1	2	1	2	3	2
1259	1	1	1	1	3	2	1	2	1
1260	0.5	0.5	0.5	0	2	0	0	1	1
1261	0.5	1	1	1	1	1	0	0	0
1262	0.5	1	1	0	0	0	0	1	0
1263	1.5	4	2	1	2	1	1	1	1
1264	1	1	1	0	0	0	1	2	1
1265	1.5	1.5	1.5	3	3	3	1	1	1
1266	1	2	2	2	2	2	2	2	2
1267	0.5	2	0.5	1	1	1	0	1	1
<b>Block C11</b>									
1268	0.5	1.5	1.5	0	2	1	1	2	1
1269	0	1	1	0	1	1	0	1	0
1270	1	2.5	1.5	1	1	1	1	2	1
1271	0.5	1.5	1	0	2	1	0	2	2

Torres Strait									
Transect #	minimum	maximum	mode	minimum	maximum	mode	minimum	maximum	mode
Block 2A									
2213	1	2.5	2	1	1	1	0	3	1
2214	0.5	2	2	0	1	1	1	2	2
2215	1	2	1	0	2	1	0	3	2
2216	0.5	1.5	1	0	1	1	1	2	2
2217	0.5	1	1	1	1	1	0	2	2
2218	0.5	1	1	0	2	1	1	2	1
2219	0	0.5	0	0	1	0	1	1	1
2220	0	1	0	0	1	0	1	2	1
2221	0	1	0.5	0	2	0	0	2	0
2222	0.5	1	0.5	0	1	1	1	1	1
2223	0	1	0.5	0	1	0	1	1	1
2224	0.5	1	0.5	0	2	0	1	2	1

<sup>1</sup> Glare scale: 0 – no glare; 1 – 0#25%; 2 – 25#50%;3 - >50%

**Appendix Table 4:** Raw data for sightings of dugong groups for each transect in each block surveyed in 2005 as used to estimate population size.

Block, Transect #	Adjusted transect height	Transect length (sea section only)	Transect area (km <sup>2</sup> )	# groups port	# groups starboard
<b>Moreton Bay</b>					
<b>Block MB1</b>					
1052	425	14.1	6.8	1	
1054	450	12.2	6.2	1	
1056	420	9.0	4.3	1	1
1058	472	1.9	1.0		
1060	425	2.5	1.2		
1051	443	13.9	7.0	1	
1053	450	13.1	6.7	1	
1055	445	11.2	5.6		
1057	450	1.9	1.0		
1059	450	2.5	1.3		
<b>Block MB2</b>					
1048	424	33.8	16.3		
1049	440	26.9	13.4		1
1050	510	25.1	14.5		
1052	450	19.6	10.0		
1054	472	18.6	9.9		1
1056	443	19.3	9.7		
1058	445	15.9	8.0		1
1060	373	26.3	11.1		
<b>Block MB4</b>					
1022	450	16.6	8.5		
1023	450	18.1	9.2		
1024	470	18.3	9.8		
1026	450	18.5	9.4		
1027	458	18.8	9.8	4	5
1028	450	19.1	9.7		
1029	433	19.3	9.5	4	1
1031	450	19.5	9.9		
1032	469	19.3	10.3	3	1
1033	450	19.4	9.9		
1034	450	19.0	9.7	1	3
1036	450	18.3	9.3		
1037	450	18.3	9.3	3	
1038	450	18.4	9.4		
1039	458	17.5	9.1		
1041	450	17.9	9.1		
1042	458	17.8	9.3	1	
1043	450	17.5	8.9		

1044	428	17.1	8.3		
1046	450	16.6	8.4		
1047	436	16.2	8.0		
1048	424	33.8	16.3		
1049	440	26.9	13.4		1
1050	510	25.1	14.5		
1052	450	19.6	10.0		
1054	472	18.6	9.9		1
1056	443	19.3	9.7		
1058	445	15.9	8.0		1
1060	373	26.3	11.1		
<b>Block MB6</b>					
1010	450	5.7	2.9		
1011	450	7.7	3.9		
1012	467	9.8	5.2		
1013	450	10.5	5.3		
1014	450	10.0	5.1		
1015	425	10.8	5.2		
1016	475	9.9	5.3		1
1017	450	10.1	5.1	1	
1018	475	12.9	6.9	1	
1019	467	12.5	6.6		1
1020	488	15.0	8.3		
1021	463	13.6	7.2	1	
<b>Hervey Bay</b>					
<b>Block HB1</b>					
1061	438	3.2	1.6		1
1062	413	3.2	1.5		
1063	450	2.9	1.5		
1064	450	3.4	1.7		
1065	450	5.5	2.8	1	4
1066	450	5.1	2.6	2	
1067	450	3.4	1.7	2	1
1068	450	6.9	3.5	1	2
1069	475	8.5	4.6	1	2
1070	500	7.6	4.3		2
1071	450	10.5	5.4	1	3
1072	450	7.3	3.7		
1073	450	7.1	3.6	1	
1074	450	8.2	4.2	1	
1075	463	8.2	4.3		2
1076	450	6.3	3.2		
1077	450	7.7	3.9		1
1078	450	6.2	3.2		
1079	450	7.6	3.9		
1080	500	9.5	5.4	1	2



1081	463	12.7	6.7		
1082	450	11.7	6.0		
1083	450	10.2	5.2		
1084	435	9.0	4.4	1	
1085	450	11.0	5.6		
1086	483	13.2	7.3		
1087	463	13.5	7.1	2	2
1088	425	14.7	7.1	2	4
1089	450	14.8	7.6	1	2
1090	450	14.5	7.4	1	1
<b>Block HB2</b>					
1091	433	21.7	10.7	2	3
1092	443	36.1	18.1	1	
1093	458	39.0	20.3		2
1094	450	37.0	18.8		
1095	438	41.0	20.3	2	8
1096	465	43.3	22.8	1	4
1097	450	46.8	23.9	8	
1098	390	53.7	23.8	7	6
1099	447	58.1	29.4	11	5
1100	439	61.8	30.7	1	1
1101	465	64.7	34.1	3	5
1101	446	67.5	34.2	1	1
<b>Block HB3</b>					
1103	463	37.5	19.6	2	3
1104	452	38.5	19.7	1	
1105	467	38.5	20.4		
1106	450	35.4	18.1	4	6
1107	450	31.8	16.2	2	
1108	450	28.9	14.7		
1109	450	32.5	16.6		
1110	450	25.1	12.8		
<b>Block HB4</b>					
1103	450	35.7	18.2	1	1
1104	450	37.3	19.0		
1105	450	36.7	18.7		
1106	450	37.4	19.1		1
1107	450	38.9	19.9		
1108	450	42.2	21.5		
1109	450	46.3	23.6	1	
<b>Southern Section GBR</b>					
<b>Block S3</b>					
1116	463	10.2	5.3		
1117	455	18.5	9.5		
1118	450	14.8	7.5		
1119	471	17	9.1		1

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1120	450	13.7	7		1
1121	450	21.5	11	1	
1122	475	22.2	12		
1123	458	20.4	10.6		
1124	463	21.7	11.4		
1125	463	26.7	14	1	
1126	500	27.2	15.4		
1127	450	9.9	5	1	
1128	450	9.3	4.7		
1129	450	18.5	9.4		3
1130	442	16.7	8.4		
1131	500	5	2.8		
1132	450	1.9	1		
1133	450	1.3	0.7		
1137	463	8	4.2		
1138	463	14.4	7.5		
1139	317	14.8	5.3		
1140	467	15.9	8.4	1	
1141	450	18.3	9.3		
1142	450	22.1	11.3		
1143	450	14.5	7.4	1	1
1144	463	14.1	7.4		
1145	475	18.5	10		
<b>S5</b>					
1146	437	0.6	0.3		1
1147	446	2.3	1.1	1	1
1148	440	4.4	2.2	1	
1149	458	8.1	4.2		1
1150	450	10.9	5.6	2	
1151	470	3.6	1.9	2	
1152	440	8.2	4.1		
1153	470	18.1	9.6		1
1154	473	15.3	8.2		
1155	460	17.7	9.2	2	
1156	450	19.3	9.8		1
1157	453	23.8	12.2	1	1
1158	465	26.7	14.1	2	4
1159	450	31.6	16.1	3	1
1160	443	35	17.6	1	
1161	460	40.6	21.2	1	
1162	458	32.8	17	1	
1163	452	35.7	18.3	2	2
1164	468	34.9	18.5	1	
1165	460	36.1	18.8	1	
1166	460	39.5	20.6		
1167	473	41.2	22.1		

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	1168	476	39	19.9		
<b>S8</b>	<b>Block</b>					
	1177	463	23.3	0.0		
	1178	450	23.5	0.0		
	1179	455	23.0	0.0		
	1180	475	17.7	0.0		
	1181	444	27.7	0.7	1	1
	1182	450	21.1	0.0		
	1183	480	22.1	0.0		
	1184	485	23.3	0.0		
	1185	510	20.2	0.0		
	1186	463	22.9	0.2		1
	1187	467	23.0	0.0		
	1188	470	22.0	0.2	1	
	1189	490				
	1190	450		0.0		
	1191	477		0.0		
	1192	299		0.0		

**Central Section GBR**

<b>Block C4</b>						
	1214	455	13.0	6.7		
	1215	485	18.5	10.2		
	1218	440	17.5	8.7	1	2
	1219	453	18.4	9.4		
	1222	410	21.0	9.8		
	1223	485	24.7	13.6		2
	1225	425	21.4	10.3	1	
	1226	466	20.1	10.6		1
	1228	450	23.4	11.9	1	
<b>Block C6</b>						
	1229	430	10.4	5.1	4	1
	1230	425	11.9	5.7	2	4
	1231	500	14.7	8.3	1	1
	1232	483	15.1	8.3		
	1233	513	17.1	9.9	3	2
	1234	410	19.0	8.8		1
	1235	437	21.8	10.8	1	
<b>Block C8</b>						
	1240	450	11.2	5.7	1	
	1241	460	17.1	8.9	1	
	1242	450	21.0	10.7	2	3
	1244	460	25.1	13.1	2	5
	1246	450	27.5	14.0		
	1247	458	27.6	14.3	1	1
	1249	445	20.0	10.1		

	1250	463	23.8	12.5		
	1251	2625	21.2	63.1		
	1252	473	25.5	13.7	1	2
	1253	440	22.2	11.1		
	1254	460	22.2	11.6		
	1255	457	26.4	13.7		
<b>Block C10</b>						
	1257	384	38.6	16.8		
	1256	451	39.6	20.3	3	
	1260	443	12.1	6.1		1
	1261	460	9.7	5.1		2
	1262	450	10.6	5.4	1	2
	1263	450	9.1	4.6		5
	1264	248	6.2	1.7		2
	1265	510	3.2	1.8		
	1267	455	12.1	6.2	1	4
<b>Block C11</b>						
	1268	454	45.1	23.2	1	3
	1269	450	15.8	8.1		1
	1270	392	30.8	13.7		
	1271	375	22.2	9.4		
<b>Torres Strait</b>						
<b>Block 2A</b>						
	2214	465	67.6	35.7	3	4
	2215	418	65.2	30.9	1	
	2216	453	67.5	34.6	4	1
	2217	450	67.5	34.4	1	5
	2218	452	67.4	34.5	8	10
	2219	450	67.4	34.4	3	3
	2220	461	67.4	35.2	3	8
	2221	457	67.3	34.9	9	5
	2222	459	67.3	35.0	11	16
	2223	455	67.2	34.7	8	5
	2224	399	67.2	30.4	12	2

**Appendix Table 5.** Details of group size estimates and correction factors used in the population estimates for dugongs in the 2005 survey of Moreton Bay, Hervey Bay, the southern Great Barrier Reef Region and Torres Strait Block 2A using the Method of Marsh and Sinclair (1989).

Blocks: Transects	Groups size (C.V)	Number of observers		Perception correction factor estimate (C.V)		Availability correction factor estimate (C.V)
		Port	Starboard	Port	Starboard	
<b>Moreton Bay</b>						
1:1052-1059, 2:1048-1060, 4:1022-104, 6:1010-1021	1.610 (0.092)	2	2	1.120 (0.023)	1.058 (0.012)	2.006 (0.129)
<b>Hervey Bay</b>						
1:1061-1090, 2: 1091-1102 , 3:1103-1110 , 4: 1111-1115	1.610 (0.092)	2	2	1.120 (0.023)	1.058 (0.012)	2.006 (0.129)
<b>Southern Section</b>						
3: 1116-1145, 5: 1146-1951, 8: 1177-1192	1.56338 (0.082)	2	2	1.26 (0.073)	1.216 (0.069)	2.973 (0.140)
<b>Central Section</b>						
4: 1214-1228, 6: 1229-1235,	1.56338 (0.082)	2	2	1.26 (0.073)	1.216 (0.069)	2.973 (0.140)
8: 1240-1255, 10:1257-1267, 11: 1268-1272	1.349 (0.037)	2	2	1.042 (0.010)	1.066 (0.014)	2.593 (0.126)
<b>Torres Strait</b>	1.349 (0.037)	2	2	1.042 (0.010)	1.066 (0.014)	2.593 (0.126)
<b>2A</b>						

**Appendix Table 6a.** Estimates of dugong numbers for each survey block in the Southern and Central Sections of the Great Barrier Reef Marine Park for various surveys conducted between 1986-2005 inclusive. All surveys were in November-December unless otherwise indicated. The block locations are in Appendix Figures 3-7.

Block	Population (s.e.)				Population (s.e.)	
	<i>Marsh and Sinclair (1989)</i>				<i>Pollock et al (2006)</i>	
Southern Section GBR	1986	1992	1994	1999	2005	2005
S1						
S2	tfe <sup>1</sup>	122 (71)	0	0	zzt	zzt
S3	0	94 (50)	0	0	tfe	tfe
S4	301 (95)	91 (60)	104 (56)	55 (37)	183 (66)	116 (64)
S5	51 (48)	tfe	67 (44)	0	zzt	zzt
S6	765 (161)	566 (185)	406 (78)	628 (162)	1033 (101)	898 (295)
S6A	542 (293)	tfe	82 (60)	dd	dd	dd
S6B	dd <sup>2</sup>	dd	dd	0	tfe	tfe
S6C	dd	dd	dd	0	zzt	zzt
S7	dd	dd	dd	tfe	ns	ns
S8	0	0	0	0	zzt	zzt
	240 (104)	Tfe	38 (37)	69 (63)	tfe	tfe

Central Section	1987	1992	1994	1999	2005	2005
<b>GBR</b>						
C1	31 (35)	70(59)	0	90 (57)	tfe	tfe
C2	65 (69)	0	0	n/s	ns	ns
C3	0	35 (27)	tfe	353 (211)	tfe	tfe
C4	173 (77)	40 (24)	tfe	445 (236)	234 (79)	145 (86)
C5	312 (122)	0	tfe	203 (90)	ns	ns <sup>3</sup>
C6	171 (87)	91 (46)	tfe	tfe	494 (175)	331 (190)
C7	136 (120)	58 (50)	54 (38)	270 (96)	tfe	tfe
C8	360 (92)	106 (56)	183 (29)	361 (157)	211 (84)	216 (129)
C9	0	257 (105)	157 (77)	424 (159)	zzt	zzt
C10	184 (110)	141 (89)	377 (154)	748 (432)	322 (118)	280 (130)
C11	100 (71)	86 (72)	107(71)	213 (118)	103 (34)	73 (50)
C12	tfe	tfe	tfe	tfe	zzt	zzt
<b>Southern and Central Sections GBR</b>						
Totals all blocks	3440 (456)	1757 (286)	1575 (233)	3911 (637)		
Totals 2005 blocks only	2461 (317)	1284 (252)	1269 (204)	3232 (608)	2580 (271)	2059 (413)
% 2005 Blocks /Total	71.5	73.1	80.6	82.6		

<sup>1</sup> too few to estimate: <5 dugongs sighted – data from prior publications modified to reflect this; <sup>2</sup> not surveyed: slightly different design; <sup>3</sup> not surveyed

**Appendix Table 6b.** Estimates of dugong numbers for each survey block in Moreton Bay and Hervey Bay and the Index Block In Torres Strait for various surveys conducted between 1986-2005 inclusive. All surveys were in November-December unless otherwise indicated. The block locations are in Appendix Figures 1, 2 and 9. Historical data from Marsh and Saalfeld (1990 unpublished); Marsh et al, (1996 unpublished); Marsh and Lawler (2000), Marsh et al, (1997) and (2004).

Block	Population (s.e.)					Population (s.e)	
	<i>Marsh and Sinclair (1989)</i>					<i>Pollock et al (2006)</i>	
<b>Moreton Bay</b>	<b>1988 (Aug)</b>			<b>1995<sup>4</sup></b>		<b>2005</b>	<b>2005</b>
M1	tfe			25 (16)		97 (18)	95 (37)
M2	0			tfe		tfe	tfe
M3	0			tfe		298 (28)	301 (43)
M4	442 (69)			921 (35)		60 (24)	26 (21)
M5	tfe			0		0	0
M6	tfe			22 (21)		tfe	tfe
M7	0			ns		zzt	zzt
M8	0			ns		zzt	zzt
<b>Totals</b>	<b>442 (69)</b>			<b>968 (44)</b>		<b>454 (41)</b>	<b>421 (60)</b>
<b>Hervey Bay</b>	<b>1988 (Aug)</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1999</b>	<b>2005</b>	<b>2005</b>
H1	269 (147)	943 (377)	193 (52)	287 (79)	373 (96)	649 (110)	389 (130)
H2	1753 (388)	71 (40)	257 (85)	408 (115)	875 (196)	1331 (261)	1143 (353)
H3	153 (59)	tfe	tfe	tfe	113 (71)	566 (296)	545 (392)
H4	tfe	74 (50)	74 (74)	tfe	112 (76)	0	0
H5	ns	ns	ns	tfe	180 (53)	0	0



H6	ns	ns	ns	ns	0	0	zzt
Totals	2175 (419)	1088 (382)	524 (124)	695 (140)	1653 (248)	2547 (410)	2077 (543)
Torres Strait	1987	1991		1996	2001	2005	2005
Block 2A	6424 (1679)	9313 (1798)		10869 (1600)	3504 (403)	4251 (819)	4042 (671)

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<sup>1</sup> too few to estimate: <5 dugongs sighted – data from prior publications modified to reflect this; <sup>2</sup> not surveyed: slightly different design; <sup>3</sup> not surveyed; <sup>4</sup> mean estimate is between 499 and 549 see Preen and Marsh (1995); <sup>5</sup> from Lanyon (2003) minus data from zones where < 5 dugongs sighted; note Lanyon's estimates in other months of 1995 range from 503 (64) to 1019 (166)

**Appendix Table 6c.** Estimates of dugong numbers for each survey block in Hervey Bay and Moreton Bay for various surveys conducted by Lawler (2001 unpublished ) in 2000-2001. The block locations are as in Appendix Figures 1 and 2.

<b>Block</b>	<b>Dec 2000</b>	<b>Apr 2001</b>	<b>Nov 2001</b>
	Population (s.e.)	Population (s.e.)	Population (s.e.)
<b>Moreton Bay</b>			
1	tfe <sup>1</sup>	tfe	Tfe
2	tfe	tfe	Tfe
3	tfe	tfe	Tfe
4	344 (88)	366 (41)	493 (45)
5	tfe	tfe	Tfe
6	tfe	tfe	Tfe
<b>Total</b>	<b>344 (88)</b>	<b>366 (41)</b>	<b>493 (45)</b>
<b>Hervey Bay</b>			
1	ns <sup>2</sup>	416 (68)	446 (112)
2	ns	348 (110)	1263 (375)
3	ns	155 (68)	Tfe
4	ns	tfe	Tfe
5	ns	ns	Tfe
<b>Total</b>		<b>919 (146)</b>	<b>1708 (392)</b>

<sup>1</sup> too few to estimate: <5 dugongs sighted – data from prior publications modified to reflect this; <sup>2</sup> not surveyed.