

Supplementary Information for:

Distinct coral reef habitat communities characterised by environmental DNA metabarcoding

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Table S1. Sample information and metadata

Sample ID	Site Code	Site Name	Sampling Type	Habitat	Latitude	Longitude
CB11	CB	Coral Bay	Snorkel	Lagoon	-23.08261	113.73903
CB12	CB	Coral Bay	Snorkel	Lagoon	-23.08261	113.73903
CB13	CB	Coral Bay	Snorkel	Lagoon	-23.08261	113.73903
CB14	CB	Coral Bay	Snorkel	Lagoon	-23.08261	113.73903
CB15	CB	Coral Bay	Snorkel	Lagoon	-23.08261	113.73903
CB21	CB	Coral Bay	Snorkel	Lagoon	-23.08467	113.73843
CB22	CB	Coral Bay	Snorkel	Lagoon	-23.08467	113.73843
CB23	CB	Coral Bay	Snorkel	Lagoon	-23.08467	113.73843
CB24	CB	Coral Bay	Snorkel	Lagoon	-23.08467	113.73843
CB25	CB	Coral Bay	Snorkel	Lagoon	-23.08467	113.73843
CB31	CB	Coral Bay	Snorkel	Lagoon	-23.10149	113.74552
CB32	CB	Coral Bay	Snorkel	Lagoon	-23.10149	113.74552
CB33	CB	Coral Bay	Snorkel	Lagoon	-23.10149	113.74552
CB34	CB	Coral Bay	Snorkel	Lagoon	-23.10149	113.74552
CB35	CB	Coral Bay	Snorkel	Lagoon	-23.10149	113.74552
NB11	NB	Norwegian Bay	Snorkel	Lagoon	-22.62434	113.62922
NB12	NB	Norwegian Bay	Snorkel	Lagoon	-22.62434	113.62922
NB13	NB	Norwegian Bay	Snorkel	Lagoon	-22.62434	113.62922
NB14	NB	Norwegian Bay	Snorkel	Lagoon	-22.62434	113.62922
NB15	NB	Norwegian Bay	Snorkel	Lagoon	-22.62434	113.62922
NB21	NB	Norwegian Bay	Snorkel	Lagoon	-22.63178	113.62885
NB22	NB	Norwegian Bay	Snorkel	Lagoon	-22.63178	113.62885
NB23	NB	Norwegian Bay	Snorkel	Lagoon	-22.63178	113.62885
NB24	NB	Norwegian Bay	Snorkel	Lagoon	-22.63178	113.62885
NB25	NB	Norwegian Bay	Snorkel	Lagoon	-22.63178	113.62885
NB31	NB	Norwegian Bay	Snorkel	Lagoon	-22.64309	113.62749
NB32	NB	Norwegian Bay	Snorkel	Lagoon	-22.64309	113.62749
NB33	NB	Norwegian Bay	Snorkel	Lagoon	-22.64309	113.62749

NB34	NB	Norwegian Bay	Snorkel	Lagoon	-22.64309	113.62749
NB35	NB	Norwegian Bay	Snorkel	Lagoon	-22.64309	113.62749
PC11	PC	Point Cloates	Snorkel	Lagoon	-22.77896	113.70918
PC12	PC	Point Cloates	Snorkel	Lagoon	-22.77896	113.70918
PC13	PC	Point Cloates	Snorkel	Lagoon	-22.77896	113.70918
PC14	PC	Point Cloates	Snorkel	Lagoon	-22.77896	113.70918
PC15	PC	Point Cloates	Snorkel	Lagoon	-22.77896	113.70918
PC21	PC	Point Cloates	Snorkel	Lagoon	-22.78329	113.71156
PC22	PC	Point Cloates	Snorkel	Lagoon	-22.78329	113.71156
PC23	PC	Point Cloates	Snorkel	Lagoon	-22.78329	113.71156
PC24	PC	Point Cloates	Snorkel	Lagoon	-22.78329	113.71156
PC25	PC	Point Cloates	Snorkel	Lagoon	-22.78329	113.71156
PC31	PC	Point Cloates	Snorkel	Lagoon	-22.78462	113.71414
PC32	PC	Point Cloates	Snorkel	Lagoon	-22.78462	113.71414
PC33	PC	Point Cloates	Snorkel	Lagoon	-22.78462	113.71414
PC34	PC	Point Cloates	Snorkel	Lagoon	-22.78462	113.71414
PC35	PC	Point Cloates	Snorkel	Lagoon	-22.78462	113.71414
SP11	SP	Stanley Pool	Snorkel	Lagoon	-22.9758	113.77563
SP12	SP	Stanley Pool	Snorkel	Lagoon	-22.9758	113.77563
SP13	SP	Stanley Pool	Snorkel	Lagoon	-22.9758	113.77563
SP14	SP	Stanley Pool	Snorkel	Lagoon	-22.9758	113.77563
SP15	SP	Stanley Pool	Snorkel	Lagoon	-22.9758	113.77563
SP21	SP	Stanley Pool	Snorkel	Lagoon	-22.98173	113.77446
SP22	SP	Stanley Pool	Snorkel	Lagoon	-22.98173	113.77446
SP23	SP	Stanley Pool	Snorkel	Lagoon	-22.98173	113.77446
SP24	SP	Stanley Pool	Snorkel	Lagoon	-22.98173	113.77446
SP25	SP	Stanley Pool	Snorkel	Lagoon	-22.98173	113.77446
SP31	SP	Stanley Pool	Snorkel	Lagoon	-22.984	113.77489
SP32	SP	Stanley Pool	Snorkel	Lagoon	-22.984	113.77489
SP33	SP	Stanley Pool	Snorkel	Lagoon	-22.984	113.77489
SP34	SP	Stanley Pool	Snorkel	Lagoon	-22.984	113.77489
SP35	SP	Stanley Pool	Snorkel	Lagoon	-22.984	113.77489
TAN11	TA	Tantabiddi	Snorkel	Lagoon	-21.9156	113.977
TAN12	TA	Tantabiddi	Snorkel	Lagoon	-21.9156	113.977
TAN13	TA	Tantabiddi	Snorkel	Lagoon	-21.9156	113.977
TAN14	TA	Tantabiddi	Snorkel	Lagoon	-21.9156	113.977
TAN15	TA	Tantabiddi	Snorkel	Lagoon	-21.9156	113.977
TAN21	TA	Tantabiddi	Snorkel	Lagoon	-21.9163	113.97
TAN22	TA	Tantabiddi	Snorkel	Lagoon	-21.9163	113.97
TAN23	TA	Tantabiddi	Snorkel	Lagoon	-21.9163	113.97
TAN24	TA	Tantabiddi	Snorkel	Lagoon	-21.9163	113.97
TAN25	TA	Tantabiddi	Snorkel	Lagoon	-21.9163	113.97
TAN31	TA	Tantabiddi	Snorkel	Lagoon	-21.8997	113.961

TAN32	TA	Tantabiddi	Snorkel	Lagoon	-21.8997	113.961
TAN33	TA	Tantabiddi	Snorkel	Lagoon	-21.8997	113.961
TAN34	TA	Tantabiddi	Snorkel	Lagoon	-21.8997	113.961
TAN35	TA	Tantabiddi	Snorkel	Lagoon	-21.8997	113.961
TC1	S1	NW Cape	Niskin	Slope	-21.775132	113.15828
TC2	S1	NW Cape	Niskin	Slope	-21.775132	113.15828
TC3	S1	NW Cape	Niskin	Slope	-21.775132	113.15828
TC4	S1	NW Cape	Niskin	Slope	-21.775132	113.15828
TC5	S1	NW Cape	Niskin	Slope	-21.775132	113.15828
TD1	S2	Tantabiddi	Niskin	Slope	-21.850617	113.986637
TD2	S2	Tantabiddi	Niskin	Slope	-21.850617	113.986637
TD3	S2	Tantabiddi	Niskin	Slope	-21.850617	113.986637
TD4	S2	Tantabiddi	Niskin	Slope	-21.850617	113.986637
TD5	S2	Tantabiddi	Niskin	Slope	-21.850617	113.986637
TE1	S3	Milyering	Niskin	Slope	-22.019833	113.894
TE2	S3	Milyering	Niskin	Slope	-22.019833	113.894
TE3	S3	Milyering	Niskin	Slope	-22.019833	113.894
TE4	S3	Milyering	Niskin	Slope	-22.019833	113.894
TE5	S3	Milyering	Niskin	Slope	-22.019833	113.894
TF1	S4	Osprey	Niskin	Slope	-22.177145	113.844744
TF2	S4	Osprey	Niskin	Slope	-22.177145	113.844744
TF3	S4	Osprey	Niskin	Slope	-22.177145	113.844744
TF4	S4	Osprey	Niskin	Slope	-22.177145	113.844744
TF5	S4	Osprey	Niskin	Slope	-22.177145	113.844744
TG1	S5	Winderabandi	Niskin	Slope	-22.360167	113.749667
TG2	S5	Winderabandi	Niskin	Slope	-22.360167	113.749667
TG3	S5	Winderabandi	Niskin	Slope	-22.360167	113.749667
TG4	S5	Winderabandi	Niskin	Slope	-22.360167	113.749667
TG5	S5	Winderabandi	Niskin	Slope	-22.360167	113.749667
TH1	S6	Point Edgar	Niskin	Slope	-22.543833	113.649833
TH2	S6	Point Edgar	Niskin	Slope	-22.543833	113.649833
TH3	S6	Point Edgar	Niskin	Slope	-22.543833	113.649833
TH4	S6	Point Edgar	Niskin	Slope	-22.543833	113.649833
TH5	S6	Point Edgar	Niskin	Slope	-22.543833	113.649833
TI1	S7	Point Cloates	Niskin	Slope	-22.708918	113.644832
TI2	S7	Point Cloates	Niskin	Slope	-22.708918	113.644832
TI3	S7	Point Cloates	Niskin	Slope	-22.708918	113.644832
TI4	S7	Point Cloates	Niskin	Slope	-22.708918	113.644832
TI5	S7	Point Cloates	Niskin	Slope	-22.708918	113.644832
TJ1	S8	Bateman Bay	Niskin	Slope	-22.866151	113.741305
TJ2	S8	Bateman Bay	Niskin	Slope	-22.866151	113.741305
TJ3	S8	Bateman Bay	Niskin	Slope	-22.866151	113.741305
TJ4	S8	Bateman Bay	Niskin	Slope	-22.866151	113.741305

TJ5	S8	Bateman Bay	Niskin	Slope	-22.866151	113.741305
TK1	S9	Bruboodjoo	Niskin	Slope	-23.03941	113.770439
TK2	S9	Bruboodjoo	Niskin	Slope	-23.03941	113.770439
TK3	S9	Bruboodjoo	Niskin	Slope	-23.03941	113.770439
TK4	S9	Bruboodjoo	Niskin	Slope	-23.03941	113.770439
TK5	S9	Bruboodjoo	Niskin	Slope	-23.03941	113.770439

Table S2. Number of reads of the potential contaminants found in the field tap water controls (FC) originating from the ship's desalinated and UV-treated water which was used to rinse out the sampling bottles post bleach sterilisation. These metazoan hits were also found in several seawater samples, as such they were removed from the analyses.

Phylum	Class	Order	Family	Genus	Species	ASV #	FC 1	FC 2	FC 3	FC 4	FC 5
Chlorophyta	Chloropicophyceae	Chloropicales	Chloropicaceae	<i>Chloropicon</i>	<i>Chloropicon primus</i>	ASV_14	0	4416	17343	5369	10332
Chlorophyta	Mamiellophyceae	Mamiellales	Mamiellaceae	<i>Micromonas</i>		ASV_18	0	0	0	444	0
Arthropoda	Hexanauplia	Calanoida	Eucalanidae	<i>Subeucalanus</i>	<i>Subeucalanus pileatus</i>	ASV_38	0	0	0	637	0
Annelida	Polychaeta	Terebellida	Cirratulidae	<i>Tharyx</i>		ASV_51	0	0	0	539	0
Chlorophyta	Chloropicophyceae	Chloropicales	Chloropicaceae	<i>Chloropicon</i>	<i>Chloropicon primus</i>	ASV_165	0	8726	0	0	0
Annelida	Clitellata	Haplotaxida	Naididae			ASV_240	0	2749	0	0	0
Chlorophyta						ASV_318	0	0	1888	0	0
Chlorophyta	Trebouxiophyceae					ASV_335	0	0	0	124	0
Arthropoda	Diplopoda	Julida	Julidae			ASV_910	0	0	0	0	382
Mollusca	Gastropoda	Nudibranchia	Gymnodorididae	<i>Gymnodoris</i>	<i>Gymnodoris ceylonica</i>	ASV_1087	0	0	0	0	263
Rotifera	Eurotatoria	Ploima	Lecanidae	<i>Lecane</i>	<i>Lecane inermis</i>	ASV_2772	44	0	0	0	0
Platyhelminthes	Turbellaria	Catenulida	Stenostomidae	<i>Stenostomum</i>		ASV_4983	0	0	11	0	0

Table S3. Results of the ANCOM-BC analysis of the 20 ASVs differentially abundant between reef zones. A positive log-fold value indicates higher abundance in the slope environment, whereas a negative log-fold value indicates higher abundance in the lagoon.

ASV #	Phylum	Class	Order	Family	Genus	Logfold	pvalue
ASV_28	Annelida	Polychaeta	Terebellida	Terebellidae	<i>Lysilla</i>	-1.9888	7.71E-09
ASV_101	Arthropoda	Hexanauplia	Calanoida	Aetideidae	<i>Gaetanus</i>	2.1129	1.89E-07
ASV_825	Arthropoda	Malacostraca	Decapoda			-0.5234	0.0127
ASV_40	Chordata	Appendicularia	Copelata	Oikopleurida	<i>Oikopleura</i>	3.2948	1.67E-19
ASV_186	Chordata	Ascidiacea	Stolidobranchia	Styelidae		-1.7889	4.44E-14
ASV_296	Chordata	Appendicularia	Copelata	Oikopleurida	<i>Oikopleura</i>	1.6828	2.07E-10
ASV_469	Chordata	Appendicularia	Copelata	Fritillariidae	<i>Fritillaria</i>	1.6757	3.64E-08
ASV_32	Cnidaria	Anthozoa	Scleractinia	Acroporidae	<i>Acropora</i>	-1.0042	0.0135
ASV_734	Cnidaria	Anthozoa	Anthoathecata			-0.6960	4.91E-05
ASV_162	Mollusca	Bivalvia	Ostreida	Ostreidae		-1.8032	7.62E-12
ASV_543	Mollusca	Bivalvia	Mytiloida	Mytilidae		-0.6718	0.0438
ASV_123	Porifera	Demospongiae				-2.9169	5.78E-38
ASV_178	Porifera	Demospongiae				-2.0349	5.10E-17

ASV_227	Porifera	Demospongiae	Haplosclerida	Chalinidae	<i>Haliclona</i>	-1.2926	1.04E-06
ASV_278	Porifera	Demospongiae				-0.8811	0.0123
ASV_302	Porifera	Demospongiae	Haplosclerida			-1.0185	7.89E-05
ASV_438	Porifera	Demospongiae	Clionaida			1.3858	0.0003
ASV_517	Porifera	Demospongiae	Haplosclerida	Chalinidae	<i>Haliclona</i>	-0.5556	0.0477
ASV_586	Porifera	Demospongiae	Clionaida			1.5027	1.97E-06
ASV_649	Rhodophyta	Florideophyceae	Corallinales			-0.8016	0.0002

Table S4: Results of the iNEXT accumulative curves analysis.

	Sample coverage (%)	Species richness	Estimated richness	S.E.
Slope				
NW Cape	74.37	235	375	34
Tantabiddi	85.15	222	319	28
Milyering	83.15	256	372	30
Osprey	63.56	262	425	34
Widerabandi	87.07	293	385	23
Point Edgar	87.65	304	412	28
Point Cloates	85.08	225	293	19
Batemany Bay	85.08	357	504	34
Bruboodjoo	83.87	235	318	22
Lagoon				
Tantabiddi	82.10	443	885	83
Norwegian Bay	82.74	637	1146	78
Point Cloates	85.81	613	1215	99
Stanley Pool	91.49	641	1135	88
Coral Bay	82.10	599	1102	82

Table S5. Results of the 50 different subsampling simulations.

	Number of taxa in total	Number of taxa in lagoon	Number of taxa in slope	Number shared	% shared	Beta diversity (Jaccard)	Turnover rate	Nestedness rate
Simulation1	261	210	91	40	15.3	0.8467	0.7183	0.1284
Simulation2	276	228	95	47	17	0.8297	0.6713	0.1584
Simulation3	266	225	85	44	16.5	0.8346	0.6508	0.1838
Simulation4	252	208	85	41	16.3	0.8373	0.6821	0.1551
Simulation5	268	230	67	29	10.8	0.8918	0.7238	0.168
Simulation6	246	208	63	25	10.2	0.8984	0.7525	0.1459
Simulation7	254	208	90	44	17.3	0.8268	0.6765	0.1503
Simulation8	270	224	89	43	15.9	0.8407	0.6815	0.1593
Simulation9	270	221	93	44	16.3	0.837	0.6901	0.1469
Simulation10	278	238	70	30	10.8	0.8921	0.7273	0.1648
Simulation11	285	239	85	39	13.7	0.8632	0.7023	0.1609

Simulation12	250	204	85	39	15.6	0.844	0.7023	0.1417
Simulation13	272	234	79	41	15.1	0.8493	0.6496	0.1997
Simulation14	258	204	95	41	15.9	0.8411	0.7248	0.1162
Simulation15	275	227	89	41	14.9	0.8509	0.7007	0.1502
Simulation16	292	242	96	46	15.7	0.8425	0.6849	0.1575
Simulation17	257	216	69	28	10.9	0.891	0.7454	0.1456
Simulation18	279	239	88	48	17.2	0.828	0.625	0.203
Simulation19	248	204	73	29	11.7	0.8831	0.7521	0.1309
Simulation20	263	220	70	27	10.3	0.8973	0.7611	0.1363
Simulation21	268	230	59	21	7.8	0.9216	0.7835	0.1381
Simulation22	276	228	76	28	10.1	0.8985	0.7742	0.1244
Simulation23	270	224	94	48	17.8	0.8222	0.6571	0.1651
Simulation24	277	231	91	45	16.2	0.8375	0.6715	0.166
Simulation25	277	222	94	39	14.1	0.8592	0.7382	0.1209
Simulation26	256	224	59	27	10.5	0.8945	0.7033	0.1912
Simulation27	267	221	74	28	10.5	0.8951	0.7667	0.1285
Simulation28	259	220	59	20	7.70	0.9228	0.7959	0.1269
Simulation29	279	233	76	30	10.7	0.8925	0.7541	0.1234
Simulation30	282	235	93	46	16.3	0.8369	0.6714	0.1654
Simulation31	288	247	88	47	16.3	0.8368	0.6357	0.2011
Simulation32	256	222	57	23	9	0.9102	0.7472	0.1629
Simulation33	267	224	89	46	17.2	0.8277	0.6515	0.1762
Simulation34	262	221	68	27	10.3	0.8969	0.7523	0.1446
Simulation35	264	220	70	26	9.8	0.9015	0.7719	0.1296
Simulation36	280	231	98	49	17.5	0.825	0.6667	0.1583
Simulation37	280	232	91	43	15.4	0.8464	0.6906	0.1558
Simulation38	258	216	68	26	10.1	0.8992	0.7636	0.1356
Simulation39	251	204	71	24	9.6	0.9044	0.7966	0.1078
Simulation40	254	207	89	42	16.5	0.8347	0.6912	0.1435
Simulation41	258	210	72	24	9.3	0.907	0.8	0.107
Simulation42	279	239	71	31	11.1	0.8889	0.7207	0.1682
Simulation43	268	211	94	37	13.8	0.8619	0.755	0.107
Simulation44	265	215	90	40	15.1	0.8491	0.7143	0.1348
Simulation45	281	228	96	43	15.3	0.847	0.7115	0.1356
Simulation46	274	230	76	32	11.7	0.8832	0.7333	0.1499
Simulation47	252	212	66	26	10.3	0.8968	0.7547	0.1421
Simulation48	266	223	71	28	10.5	0.8947	0.7544	0.1403
Simulation49	281	239	73	31	11	0.8897	0.7304	0.1592
Simulation50	256	216	68	28	10.9	0.8906	0.7407	0.1499