

Table S1: SIMPER analysis showing the contribution of each species that make up 90% of the dissimilarity between the species biomass ($\log(x+1)$) composition between 1996 and 2016 on high, medium, and low exposure reefs combined at Marmion Lagoon. Temperature affinity based on record of distribution¹ and known thermal preferences².

Species	Average	Std. dev.	Ratio	Mean 1996	Mean 2016	Individual	Cumulative sum	Affinity
<i>Ecklonia radiata</i>	0.086	0.096	0.889	4.45	3.97	0.157	0.157	Cool
<i>Sargassum</i> spp.	0.055	0.053	1.027	0.43	1.13	0.100	0.257	Warm
<i>Pterocladia lucida</i>	0.052	0.043	1.225	1.07	0.79	0.096	0.353	Cool
<i>Dyctyomenia sonderi</i>	0.039	0.050	0.788	0.34	0.71	0.072	0.425	Cool
<i>Halopeltis australis</i>	0.031	0.027	1.156	0.55	0.66	0.056	0.481	Cool
<i>Scytothalia dorycarpa</i>	0.025	0.059	0.427	0.07	0.53	0.047	0.528	Cool
<i>Heterodoxia denticulata</i>	0.023	0.030	0.763	0.17	0.42	0.042	0.570	Cool
<i>Curdia obesa</i>	0.020	0.035	0.573	0.11	0.34	0.037	0.607	Cool
<i>Amphiroa anceps</i>	0.015	0.024	0.645	0.13	0.26	0.028	0.635	Warm
<i>Lobophora variegata</i>	0.014	0.021	0.658	0.04	0.29	0.026	0.661	Warm
<i>Chauvinella coriifolia</i>	0.014	0.023	0.590	0.28	0.06	0.025	0.686	Cool
<i>Hennedya crispa</i>	0.014	0.024	0.576	0.02	0.26	0.025	0.711	Warm
<i>Zonaria turneriana</i>	0.013	0.032	0.396	0.01	0.30	0.023	0.735	Cool
<i>Euptilota articulata</i>	0.009	0.019	0.495	0.10	0.12	0.017	0.752	Cool
<i>Pollexfenia pedicellata</i>	0.009	0.023	0.411	0.22	0.00	0.017	0.769	Cool
<i>Gloiocladia</i> spp.	0.009	0.025	0.349	0.01	0.17	0.016	0.785	Cool
<i>Plocamium mertensii</i>	0.008	0.019	0.421	0.02	0.15	0.014	0.800	Cool
<i>Plocamium preissianum</i>	0.008	0.019	0.402	0.05	0.13	0.014	0.814	Cool
<i>Callophycus oppositifolius</i>	0.006	0.025	0.241	0.01	0.14	0.011	0.825	Cool
<i>Callophycus harveyanus</i>	0.005	0.016	0.318	0.00	0.12	0.010	0.835	Cool
<i>Tylopus obtusatus</i>	0.004	0.014	0.307	0.03	0.07	0.008	0.843	Cool
<i>Neurymenia fraxinifolia</i>	0.004	0.011	0.388	0.00	0.10	0.008	0.850	Warm
<i>Rhodopeltis australis</i>	0.004	0.010	0.383	0.00	0.08	0.007	0.857	Cool
<i>Haloplegma preissii</i>	0.004	0.008	0.491	0.04	0.06	0.007	0.864	Warm
<i>Gelidium australe</i>	0.004	0.013	0.287	0.00	0.08	0.007	0.871	Cool
<i>Cladostephus spongiosus</i>	0.003	0.011	0.302	0.01	0.06	0.006	0.877	Cool
<i>Laurencia</i> spp.	0.003	0.009	0.358	0.02	0.06	0.006	0.883	Warm
<i>Hypnea</i> spp.	0.003	0.009	0.376	0.00	0.07	0.006	0.889	Warm
<i>Betaphycus speciosus</i>	0.003	0.023	0.135	0.00	0.07	0.006	0.895	Warm
<i>Botryocladia sonderi</i>	0.003	0.013	0.218	0.00	0.06	0.005	0.900	Cool

¹ Huisman JM (2019) Marine plants of Australia. University of Western Australia Press in association with Australian Biological Resources Study, Nedlands, Australia.

² Western Australian Herbarium (1998–). Florabase—the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> (Accessed 6 June 2019).