

The following supplement accompanies the article

Macroalgal species richness and assemblage composition of the Great Barrier Reef seabed

Lucy P. Hurrey^{1,*}, C. Roland Pitcher², Catherine E. Lovelock³, Susanne Schmidt¹

¹School of Agriculture and Food Science, The University of Queensland, St Lucia, Queensland 4072 Australia

²CSIRO Marine and Atmospheric Research, EcoSciences Precinct, Dutton Park, Queensland 4102 Australia

³School of Biological Sciences, The University of Queensland, St Lucia, Queensland 4072 Australia

*Email: l.hurrey@uq.edu.au

Marine Ecology Progress Series: 492: 69–83 (2013)

SUPPLEMENT 1. ADDITIONAL FIGURES AND TABLES

Table S1. Hierarchical list of all taxa collected during the study and number of sites

Appendix A

PHYLUM: Chlorophyta Number of sites

SUBPHYLUM: Tetraphytina

CLASS: Siphonocladophyceae

ORDER: Siphonocladales

Siphonocladales sp. 2

FAMILY: Boodleaceae

Boodlea composita 5

Cladophora herpestica 21

Cladophoropsis fasciculata 7

Cladophoropsis sp. 23

Cladophoropsis sp. 1 3

Phyllodictyon anastomosans 22

Phyllodictyon sp. 1 74

Struvea elegans 37

Struvea plumosa 5

Struvea sp. 1 17

FAMILY: Siphonocladaceae

Boergesenia forbesii 10

Boergesenia sp. 1 1

Dictyosphaeria cavernosa 31

Dictyosphaeria versluysii 1

Siphonocladus tropicus 10

FAMILY: Valoniaceae

Valonia aegagropila 7

Valonia fastigiata 1

Valonia macrophysa 10

Valonia nutrix 3

Valonia ventricosa 61

Valonia sp. 4

Valoniopsis pachynema 1

Ventricaria sp. 1 21

CLASS: Ulvophyceae

ORDER: Cladophorales

FAMILY: Anadyomenaceae

Anadyomene wrightii 2

Microdictyon okamurae 18

Microdictyon umbilicatum 49

Microdictyon sp. 14

Microdictyon sp. 1 33

Microdictyon sp. 2 16

FAMILY: Cladophoraceae

Chaetomorpha antennina 1

Chaetomorpha gracilis 1

Chaetomorpha indica 1

Chaetomorpha solitaria cf 1

Chaetomorpha vieillardii 87

	<i>Chaetomorpha</i> sp.	6
	<i>Cladophora aokii</i>	1
	<i>Cladophora pseudostruveoides</i>	8
	<i>Cladophora</i> sp.	52
	<i>Cladophora</i> sp. 2	5
	<i>Rhizoclonium</i> sp.	1
ORDER:	Ulotrichales	
	FAMILY: Gayraliaceae	
	<i>Gayralia oxysperma</i>	20
ORDER:	Ulvales	
	FAMILY: Ulvaceae	
	Ulvaceae sp.	3
	<i>Ulva clathrata</i>	2
	<i>Ulva compressa</i>	1
	<i>Ulva lactuca</i>	25
	<i>Ulva reticulata</i>	27
	<i>Ulva</i> sp. 1	4
	<i>Ulva</i> sp. 2	3
PHYLUM:	Chlorophyta	
	CLASS: Bryopsidophyceae	
	ORDER: Bryopsidales	
	FAMILY: Bryopsidaceae	
	<i>Bryopsis</i> sp.	1
	FAMILY: Caulerpaceae	
	<i>Caulerpa biserrulata</i>	22
	<i>Caulerpa brachypus</i>	79
	<i>Caulerpa cactoides</i>	8
	<i>Caulerpa cupressoides</i>	52
	<i>Caulerpa cupressoides</i> f. <i>disticha</i>	13
	<i>Caulerpa cupressoides</i> f. <i>nuda</i>	1
	<i>Caulerpa cupressoides</i> var. <i>lycopodium</i>	3
	<i>Caulerpa cupressoides</i> var. <i>serrata</i>	1
	<i>Caulerpa cupressoides</i> var. <i>urvilleana</i>	3
	<i>Caulerpa lentillifera</i>	3
	<i>Caulerpa mexicana</i>	1
	<i>Caulerpa microphysa</i>	1
	<i>Caulerpa nummularia</i>	1
	<i>Caulerpa opposita</i>	2
	<i>Caulerpa peltata</i>	25
	<i>Caulerpa racemosa</i>	36
	<i>Caulerpa racemosa</i> var. <i>lamourouxii</i>	18
	<i>Caulerpa racemosa</i> var. small bubbles	3
	<i>Caulerpa racemosa</i> var. <i>turbinata</i>	7
	<i>Caulerpa sedoides</i> f. <i>geminata</i>	1
	<i>Caulerpa serrulata</i>	45
	<i>Caulerpa sertularioides</i>	60
	<i>Caulerpa taxifolia</i>	70

<i>Caulerpa webbiana</i>	1
<i>Caulerpa</i> sp.	4
<i>Caulerpa</i> sp. 1	14
<i>Caulerpa</i> sp. 2	145
<i>Caulerpa</i> sp. 3	1
<i>Caulerpa</i> sp. 4	3
<i>Caulerpa</i> sp. 5	1
<i>Caulerpa</i> sp. 6	4
<i>Caulerpa</i> sp. 7	1
FAMILY: Codiaceae	
<i>Codium australicum</i>	1
<i>Codium geppiorum</i>	26
<i>Codium mamillosum</i>	10
<i>Codium ovale</i>	11
<i>Codium platyclados</i>	23
<i>Codium spongiosum</i>	1
<i>Codium</i> sp. 1	24
<i>Codium</i> sp. 2	47
<i>Codium</i> sp. 3	4
FAMILY: Dichotomosiphonaceae	
<i>Avrainvillea calathina</i>	2
<i>Avrainvillea lacerata</i>	3
<i>Avrainvillea</i> sp. 1	33
<i>Avrainvillea</i> sp. 2	3
<i>Avrainvillea</i> sp. 3	1
FAMILY: Halimedaceae	
<i>Halimeda bikiniensis</i>	80
<i>Halimeda borneensis</i>	69
<i>Halimeda cuneata</i>	50
<i>Halimeda cylindracea</i>	17
<i>Halimeda discoidea</i>	28
<i>Halimeda gigas</i>	96
<i>Halimeda gracilis</i>	215
<i>Halimeda hederacea</i>	4
<i>Halimeda incrassata</i>	6
<i>Halimeda macroloba</i>	3
<i>Halimeda melanesica</i>	1
<i>Halimeda minima</i>	23
<i>Halimeda opuntia</i>	78
<i>Halimeda</i> sp. 2	57
<i>Halimeda</i> sp. 3	13
FAMILY: Udoteaceae	
<i>Chlorodesmis fastigiata</i>	2
<i>Chlorodesmis hildebrandtii</i>	5
<i>Penicillus nodulosus</i>	36
<i>Pseudocodium floridanum</i>	8
<i>Rhipidosiphon javensis</i>	5

	<i>Tydemanina expeditionis</i>	10
	<i>Udotea argentea</i>	103
	<i>Udotea argentea</i> var. <i>spumosa</i>	6
	<i>Udotea flabellum</i>	139
	<i>Udotea glaucescens</i>	26
	<i>Udotea orientalis</i>	204
	<i>Udotea</i> sp. 1	13
	<i>Udotea</i> sp. 2	9
CLASS:	Chlorophyceae	
	Chlorophyceae sp.	4
	Chlorophyceae sp. 2	2
CLASS:	Dasycladophyceae	
ORDER:	Dasycladales	
	Dasycladales sp.	1
FAMILY:	Dasyaceae	
	<i>Chlorocladus australasicus</i>	13
	<i>Chlorocladus floridanum</i> 'new sp'.	8
FAMILY:	Dasycladaceae	
	<i>Bornetella sphaerica</i>	37
FAMILY:	Polyphysaceae	
	<i>Acetabularia major</i>	3
	<i>Acetabularia</i> sp.	24
PHYLUM:	Ochrophyta	
SUBPHYLUM:	Phaeista	
CLASS:	Phaeophyceae	
	Phaeophyceae sp.	5
ORDER:	Dictyotales	
FAMILY:	Dictyotaceae	
	<i>Styopodium australasicum</i>	2
	<i>Styopodium</i> sp. 1	10
	Dictyotales sp.	52
TRIBE:	Dictyoteae	
	<i>Canistrocarpus cervicornis</i>	5
	<i>Dictyota bartayresiana</i>	14
	<i>Dictyota friabilis</i>	1
	<i>Dictyota</i> sp. 1	50
	<i>Dictyota</i> sp. 2	64
	<i>Dictyota</i> sp. 3	11
	<i>Dilophus</i> sp.	5
TRIBE:	Zonarieae	
	<i>Dictyopteris australis</i>	18
	<i>Dictyopteris crassinervia</i> cf	9
	<i>Dictyopteris delicatula</i>	11
	<i>Dictyopteris muelleri</i> cf	1
	<i>Dictyopteris plagiogramma</i>	2
	<i>Dictyopteris repens</i>	11
	<i>Dictyopteris</i> sp. 1	11

	<i>Dictyopteris</i> sp. 2	51
	<i>Distromium flabellatum</i>	103
	<i>Lobophora</i> sp.	42
	<i>Lobophora variegata</i>	136
	<i>Padina gymnospora</i>	1
	<i>Padina</i> sp.	60
	<i>Spatoglossum</i> sp.	6
	<i>Zonaria diesingiana</i> cf	2
ORDER:	Ectocarpales	
	FAMILY: Chordariaceae	
	<i>Cladosiphon</i> sp.	1
	FAMILY: Scytosiphonaceae	
	Scytosiphonaceae sp.	1
	<i>Hydroclathrus clathratus</i>	11
	<i>Rosenvingea intricata</i>	5
	<i>Rosenvingea</i> sp.	11
ORDER:	Fucales	
	FAMILY: Sargassaceae	
	<i>Hormophysa cuneiformis</i>	1
	<i>Sargassopsis decurrens</i>	2
	<i>Sargassum flavicans</i>	1
	<i>Sargassum polycystum</i>	12
	<i>Sargassum</i> sp.	64
	<i>Sargassum</i> sp. 1	18
	<i>Turbinaria decurrens</i>	1
ORDER:	Sporochnales	
	FAMILY: Sporochnaceae	
	<i>Bellotia eriophorum</i>	12
	<i>Sporochnus comosus</i>	34
	<i>Sporochnus moorei</i>	70
PHYLUM:	Rhodophyta	
	SUBPHYLUM: Eurhodophytina	
	CLASS: Bangiophyceae	
	SUBCLASS: Bangiophycidae	
	ORDER: Bangiales	
	FAMILY: Bangiaceae	
	<i>Porphyra</i> sp.	1
	<i>Pyropia denticulata</i>	1
	CLASS: Florideophyceae	
	Florideophyceae sp. 1	20
	Florideophyceae sp. 2	1
	Florideophyceae sp. 3	110
	Florideophyceae sp. 4	4
	Florideophyceae sp. 5	2
	Florideophyceae sp. 6	2
	Florideophyceae sp. 7	2
	Florideophyceae sp. 8	2

	Florideophyceae sp. 9	1
	Florideophyceae sp. 10	1
	Florideophyceae sp. 11	2
	Florideophyceae sp. 13	1
SUBCLASS:	Corallinophycidae	
ORDER:	Corallinales	
FAMILY:	Corallinaceae	
SUBFAMILY:	Lithophylloideae	
TRIBE:	Lithophylloideae	
	<i>Amphiroa anceps</i>	5
	<i>Amphiroa</i> sp.	3
	<i>Lithophyllum</i> sp. 1	72
	<i>Lithophyllum</i> sp. 2	5
FAMILY:	Hapalidiaceae	
SUBFAMILY:	Melobesioideae	
TRIBE:	Melobesioideae	
	<i>Mesophyllum</i> sp.	14
	<i>Lithothamnion proliferum</i>	3
SUBCLASS:	Nemaliophycidae	
ORDER:	Nemaliales	
FAMILY:	Galaxauraceae	
	<i>Actinotrichia fragilis</i>	4
	<i>Dichotomaria australis</i>	1
	<i>Dichotomaria obtusata</i>	6
	<i>Tricleocarpa fragilis</i>	3
ORDER:	Nemastomatales	
FAMILY:	Scinaiceae	
	<i>Scinaia</i> sp.	1
SUBCLASS:	Rhodymeniophycidae	
ORDER:	Acrosymphytales	
FAMILY:	Acrosymphytaceae	
	<i>Acrosymphyton</i> sp.	1
ORDER:	Bonnemaisoniales	
FAMILY:	Bonnemaisoniaceae	
	<i>Delisea pulchra</i>	7
ORDER:	Ceramiales	
	Ceramiales sp.	2
	Ceramiales sp. 1	1
FAMILY:	Callithamniaceae	
TRIBE:	Callithamnieae	
	<i>Euptilota articulata</i>	5
TRIBE:	Crouanieae	
	<i>Crouania attenuata</i>	1
	<i>Crouania</i> sp.	2
FAMILY:	Ceramiaceae	
SUBFAMILY:	Ceramioideae	
TRIBE:	Ceramioideae	

	<i>Ceramium puberulum</i>	2
	<i>Ceramium</i> sp. 3	
	<i>Gayliella flaccida</i>	3
FAMILY:	Dasyaceae	
SUBFAMILY:	Dasyoideae	
TRIBE:	Dasyoideae	
	<i>Dasya baillouviana</i>	1
	<i>Dasya</i> sp.	44
	<i>Dasya</i> sp. 1	67
	<i>Dasya</i> sp. 2	7
	<i>Dasya</i> sp. 3	8
SUBFAMILY:	Heterosiphonioideae	
TRIBE:	Heterosiphonioideae	
	<i>Dictyurus</i> sp.	2
	<i>Heterosiphonia crispella</i>	3
	<i>Heterosiphonia muelleri</i>	40
	<i>Heterosiphonia</i> sp.	14
	<i>Thuretia australasica</i>	13
FAMILY:	Delesseriaceae	
Delesseriaceae	sp.	3
	Delesseriaceae sp. 1	2
	Delesseriaceae sp. 3	7
SUBFAMILY:	Delesserioideae	
TRIBE:	Apoglosseae	
	<i>Apoglossum</i> sp.	2
TRIBE:	Claudeae	
	<i>Vanvoorstia spectabilis</i>	12
SUBFAMILY:	Nitophylloideae	
	Nitophylloideae sp. 1	2
TRIBE:	Martensieae	
	<i>Martensia australis</i>	4
	<i>Martensia elegans</i>	4
	<i>Martensia fragilis</i>	3
	<i>Martensia</i> sp.	2
	<i>Nitophyllum</i> sp.	1
TRIBE:	Cryptopleureae	
	<i>Acrosorium decumbens</i>	3
FAMILY:	Rhodomelaceae	
	Rhodomelaceae sp.	2
	Rhodomelaceae sp. 1	1
	Rhodomelaceae sp. 2	1
	Rhodomelaceae sp. 3	1
	<i>Lophocladia kuetzingii</i>	1
TRIBE:	Amansieae	
	<i>Amansia dietrichiana</i>	9
	<i>Amansia</i> sp.	3
	<i>Aneurianna lorentzii</i>	184

<i>Lenormandia latifolia</i>	24
<i>Lenormandia</i> sp. 1	3
<i>Melanamansia glomerata</i>	30
<i>Neurymenia fraxinifolia</i>	1
<i>Osmundaria fimbriata</i>	164
<i>Osmundaria</i> sp. 2	1
TRIBE: Chondrieae	
<i>Acanthophora dendroides</i>	2
<i>Acanthophora</i> sp.	1
<i>Acanthophora</i> sp. 1	1
<i>Chondria fusifolia</i>	1
<i>Chondria simpliciuscula</i>	2
<i>Chondria succulenta</i>	2
<i>Chondria viticulosa</i>	1
<i>Chondria</i> sp. 1	19
<i>Chondria</i> sp. 2	8
<i>Chondria</i> sp. 3	12
TRIBE: Laurencieae	
<i>Chondrophyucus succisus</i>	1
<i>Chondrophyucus</i> sp1	31
<i>Chondrophyucus</i> sp2	2
<i>Laurencia brongniartii</i>	16
<i>Laurencia intricata</i>	1
<i>Laurencia</i> sp. 1	113
<i>Laurencia</i> sp. 2	119
<i>Laurencia</i> sp. 3	38
<i>Laurencia</i> sp. 4	35
<i>Laurencia</i> sp. 5	10
<i>Palisada peforata</i>	2
TRIBE: Polysiphonieae	
<i>Polysiphonia</i> sp. 1	54
<i>Tolypiocladia</i> sp.	3
FAMILY: Rhodymeniaceae	
<i>Doxodasya bolbochaete</i> cf	24
<i>Doxodasya</i> sp.	24
<i>Exophyllum</i> sp.	1
TRIBE: Herposiphonieae	
<i>Dipterosiphonia</i> sp.	1
<i>Ditria expleta</i>	1
<i>Herposiphonia</i> sp.	4
TRIBE: Polyzonieae	
<i>Dasyclonium incisum</i>	1
FAMILY: Spyridiaceae	
TRIBE: Spyrideae	
<i>Spyridia filamentosa</i>	12
<i>Spyridia</i> sp. 1	1
FAMILY: Wrangeliaceae	

TRIBE: Compsothamnieae		
<i>Haloplegma duperreyi</i>	64	
TRIBE: Griffithsieae		
<i>Anotrichium tenue</i>	1	
<i>Griffithsia</i> sp.	30	
ORDER: Corallinales		
Corallinales sp. 1	5	
FAMILY: Corallinaceae		
Corallinaceae sp.	5	
Corallinaceae sp. 1	2	
SUBFAMILY: Hydrolithoideae		
<i>Hydrolithon reinboldii</i>	55	
<i>Hydrolithon</i> sp.	22	
<i>Hypnea pannosa</i>	1	
<i>Hypnea spinella</i>	17	
<i>Hypnea valentiae</i>	1	
<i>Hypnea</i> sp. 1	31	
TRIBE: Hypoglosseae		
<i>Hypoglossum anomalum</i>	3	
<i>Hypoglossum harveyanum</i> var <i>fimbriatum</i>	23	
<i>Hypoglossum heterocystideum</i>	4	
<i>Hypoglossum</i> sp. 1	43	
<i>Hypoglossum</i> sp. 2	5	
<i>Hypoglossum</i> sp. 3	15	
TRIBE: Janieae		
<i>Jania adhaerens</i>	2	
<i>Jania capillacea</i>	1	
<i>Jania spectabile</i>	1	
<i>Jania</i> sp.	10	
<i>Jania</i> sp. 1	3	
ORDER: Gigartinales		
Gigartinales sp.	2	
FAMILY: Kallymeniaceae		
<i>Kallymenia cribrosa</i>	17	
FAMILY: Phylloporaceae		
<i>Stenogramma interruptum</i>	1	
FAMILY: Solieriaceae		
<i>Eucheuma denticulatum</i>	7	
<i>Eucheuma</i> sp. 1	6	
<i>Meristotheca procumbens</i>	4	
<i>Sarconema</i> sp.	1	
<i>Solieria robusta</i>	4	
<i>Solieria</i> sp.	7	
ORDER: Gracilariales		
FAMILY: Gracilariaceae		
Gracilariaceae sp.	9	
<i>Gracilaria flagellifermis</i> cf	8	

	<i>Gracilaria mamillaris</i>	1
	<i>Gracilaria salicornia</i>	1
	<i>Gracilaria</i> sp. 1	125
	<i>Gracilaria</i> sp. 2	240
	<i>Gracilaria</i> sp. 3	6
	<i>Gracilaria</i> sp. 4	4
	<i>Hydropuntia multifurcata</i>	8
ORDER:	Halymeniales	
	FAMILY: Halymeniaceae	
	<i>Corynomorpha</i> sp.	4
	<i>Cryptonemia wilsonis</i> cf	2
	<i>Cryptonemia</i> sp.	39
	<i>Cryptonemia</i> sp. 1	3
	<i>Halymenia durvillei</i>	4
	<i>Halymenia floresii</i>	6
	<i>Halymenia</i> sp.	11
	<i>Halymenia</i> sp. 1	8
	<i>Prionitis</i> sp. 1	2
ORDER:	Nemastomatales	
	FAMILY: Nemastomataceae	
	<i>Predaea weldii</i>	1
	<i>Predaea</i> sp. 1	4
ORDER:	Peyssonneliales	
	FAMILY: Peyssonneliaceae	
	<i>Peyssonnelia inamoena</i>	48
	<i>Peyssonnelia rubra</i>	6
	<i>Peyssonnelia</i> sp. 1	82
ORDER:	Plocamiales	
	FAMILY: Plocamiaceae	
	<i>Plocamium hamatum</i>	4
	<i>Plocamium microcladioides</i>	1
	<i>Plocamium</i> sp.	17
	<i>Plocamium</i> sp. 2	2
ORDER:	Rhodymeniales	
	FAMILY: Champiaceae	
	<i>Champia compressa</i>	8
	<i>Champia parvula</i>	14
	FAMILY: Faucheaceae	
	<i>Gloiocladia rubrispora</i>	10
	<i>Leptofauchea</i> sp.	1
	FAMILY: Hymenocladaceae	
	<i>Asteromenia anastomosans</i>	4
	<i>Asteromenia peltata</i>	2
	FAMILY: Lomentariaceae	
	<i>Ceratodictyon intricatum</i>	1
	<i>Ceratodictyon spongiosum</i>	4
	<i>Ceratodictyon variabile</i>	1

	<i>Gelidiopsis</i> sp. 1	1
	<i>Gelidium</i> sp.	1
	<i>Gibsmithia</i> sp.	4
	<i>Glaphyrymenia pustulosa</i>	1
FAMILY:	Rhodomelaceae	
	<i>Chrysymenia kaernbachii</i>	1
	<i>Chrysymenia</i> sp.	4
	<i>Rhodymenia corallina</i>	1
	<i>Rhodymenia</i> sp.	22
FAMILY:	Rhodymeniaceae	
	<i>Botryocladia leptopoda</i>	23
	<i>Botryocladia skottsbergii</i>	1
	<i>Botryocladia spinulifera</i> cf	7
	<i>Botryocladia</i> sp.	13
	<i>Botryocladia</i> sp. 1	18
	<i>Botryocladia</i> sp. 2	1
	<i>Chamaebotrys boergesenii</i>	8
	<i>Coelarthrum cliftonii</i>	6
	<i>Coelarthrum</i> sp. 1	41
	<i>Coelarthrum</i> sp. 2	6
	<i>Halichrysis irregularis</i>	3
	<i>Irvinea boergesenii</i>	2
CLASS:	Rhodophyta incertae sedis	
ORDER:	Rhodophyta incertae sedis	
FAMILY:	Rhodophyta incertae sedis	
	<i>Callophycus serratus</i>	1
	<i>Callophycus</i> sp. 1	2

Table S2. Key to abbreviations for all environmental variables

Abbreviation	Definition and units
GBR_BATHY	Bathymetry
GBR_SLOPE	Slope (deg)
M_BSTRESS	Bottom stress – seabed shear stress; a function of the current speed and the friction due to the seabed rugosity
GA_CRBNT	% Carbonate fraction of the total sediment
GA_GRAVEL	% Gravel (>2 mm) grainsize fraction of the total sediment
GA_SAND	% Sand (63 μm – 2 mm) grainsize fraction of the total sediment
GA_MUD	% Mud (<63 μm) grainsize fraction of the total sediment
CRS_NO3_AV	Nitrate – μM , mean
CRS_NO3_SD	Nitrate – μM , standard deviation
CRS_O2_AV	Oxygen – ml l^{-1} , mean
CRS_O2_SD	Oxygen – ml l^{-1} , standard deviation
CRS_PO4_AV	Phosphate – μM , mean
CRS_PO4_SD	Phosphate – μM , standard deviation
CRS_SI_AV	Silicate – μM , mean
CRS_SI_SD	Silicate – μM , standard deviation
CRS_S_AV	Salinity – psu, mean
CRS_S_SD	Salinity – psu, standard deviation
CRS_T_AV	Temperature – $^{\circ}\text{C}$, mean
CRS_T_SD	Temperature – $^{\circ}\text{C}$, standard deviation
SW_CHLA_AV	Chlorophyll <i>a</i> (mg m^{-3}) concentration, mean
SW_CHLA_SD	Chlorophyll <i>a</i> (mg m^{-3}) concentration, standard deviation
SW_K490_AV	K490 – diffuse attenuation coefficient at wavelength 490 nm, m^{-1} , mean
SW_K490_SD	K490 – diffuse attenuation coefficient at wavelength 490 nm, m^{-1} , standard deviation
SW_K_B_IRR	Relative benthic irradiance calculated by SBP, based on K490, latitude, depth
TRWL_EFF_I	Trawl effort index – (boat days) for 1995–1997 – averaged for SBP

Table S3. Numerical summary of the means (SD) of environmental variables for all sites grouped into species richness ranges, in order of overall predictor importance

Environmental variable	Species richness range – mean (SD)				
	No algae present	1–10 species	11–20 species	21–30 species	≥31 species
GA_MUD	30.30 (25.10)	20.26 (21.71)	9.93 (12.8)	7.07 (8.21)	7.38 (11.1)
SW_K_B_IRR	0.08 (0.08)	0.09 (0.08)	0.11 (0.07)	0.11 (0.05)	0.11 (0.05)
GA_GRAVEL	13.33 (15.92)	14.60 (17.78)	14.16 (18.71)	14.66 (16.25)	16.05 (17.93)
GA_CRBNT	63.13 (25.93)	61.99 (28.8)	65.42 (29.98)	67.96 (26.23)	66.98 (26.4)
CRS_S_AV	35.21 (0.21)	35.2 (0.17)	35.25 (0.17)	35.3 (0.17)	35.32 (0.17)
GA_SAND	56.37 (21.88)	65.14 (22.07)	75.91 (20.59)	78.28 (18.13)	76.57 (20.7)
M_BSTRESS	0.29 (0.48)	0.23 (0.32)	0.16 (0.21)	0.17 (0.2)	0.22 (0.38)
CRS_S_SD	0.27 (0.11)	0.27 (0.11)	0.24 (0.10)	0.21 (0.05)	0.21 (0.05)
CRS_NO3_AV	1.20 (2.35)	0.62 (1.50)	0.88 (1.7)	0.85 (1.21)	0.96 (1.41)
CRS_T_SD	1.49 (0.46)	1.53 (0.47)	1.45 (0.42)	1.45 (0.42)	1.6 (0.37)
CRS_PO4_AV	0.20 (0.14)	0.17 (0.10)	0.19 (0.11)	0.19 (0.08)	0.2 (0.09)
CRS_SI_AV	2.30 (2.67)	1.79 (1.54)	1.81 (2)	1.56 (0.93)	1.71 (1.09)
SW_K490_AV	0.10 (0.10)	0.09 (0.04)	0.07 (0.03)	0.06 (0.02)	0.07 (0.03)
CRS_SI_SD	0.99 (0.98)	0.76 (0.76)	0.72 (0.71)	0.63 (0.48)	0.61 (0.36)
CRS_NO3_SD	0.64 (0.72)	0.36 (0.35)	0.43 (0.37)	0.44 (0.4)	0.53 (0.51)
CRS_O2_SD	0.25 (0.08)	0.23 (0.07)	0.24 (0.07)	0.25 (0.09)	0.28 (0.09)
SW_CHLA_AV	0.95 (1.09)	0.79 (0.62)	0.58 (0.42)	0.44 (0.3)	0.56 (0.49)
CRS_O2_AV	4.54 (0.20)	4.61 (0.16)	4.6 (0.19)	4.6 (0.19)	4.65 (0.22)
GBR_BATHY	42.13 (23.09)	39.47 (19.85)	39.90 (17.14)	40.16 (11.62)	36.96 (12.32)
CRS_PO4_SD	0.07 (0.03)	0.06 (0.02)	0.06 (0.02)	0.06 (0.02)	0.07 (0.02)
CRS_T_AV	24.78 (1.91)	25.05 (1.48)	24.66 (1.52)	24.37 (1.18)	24.05 (1.37)
SW_K490_SD	0.04 (0.07)	0.03 (0.02)	0.02 (0.02)	0.02 (0.01)	0.02 (0.01)
SW_CHLA_SD	0.6 (0.92)	0.55 (0.55)	0.4 (0.36)	0.29 (0.35)	0.33 (0.25)

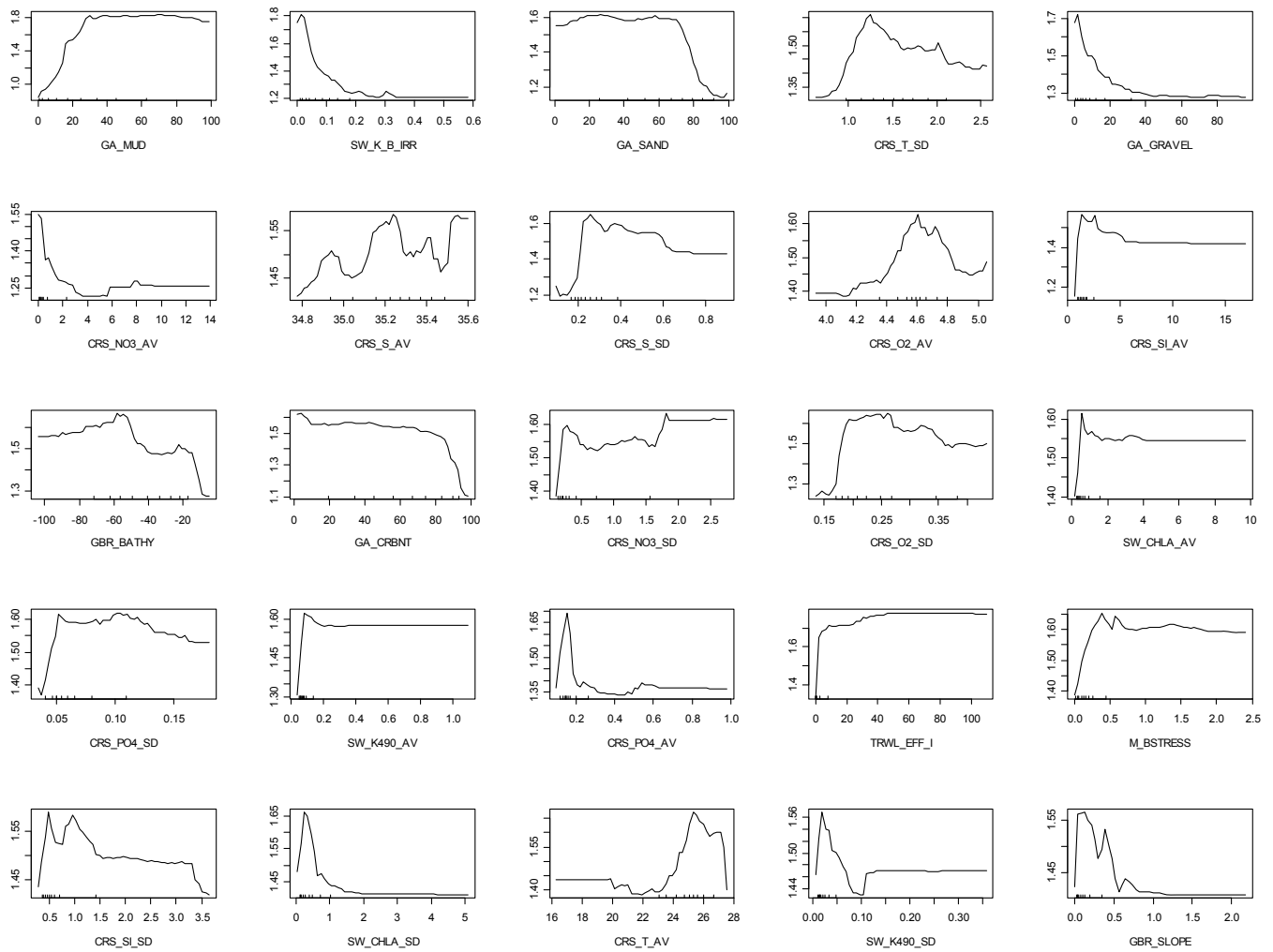


Fig. S1. Partial response plots for sites where no algae occurred along gradients of the top 25 most important environmental variables. The plots reflect how the probability of this class-type (logit y-axis scale) changes along each predictor gradient, averaged over all values of all other variables in the data set

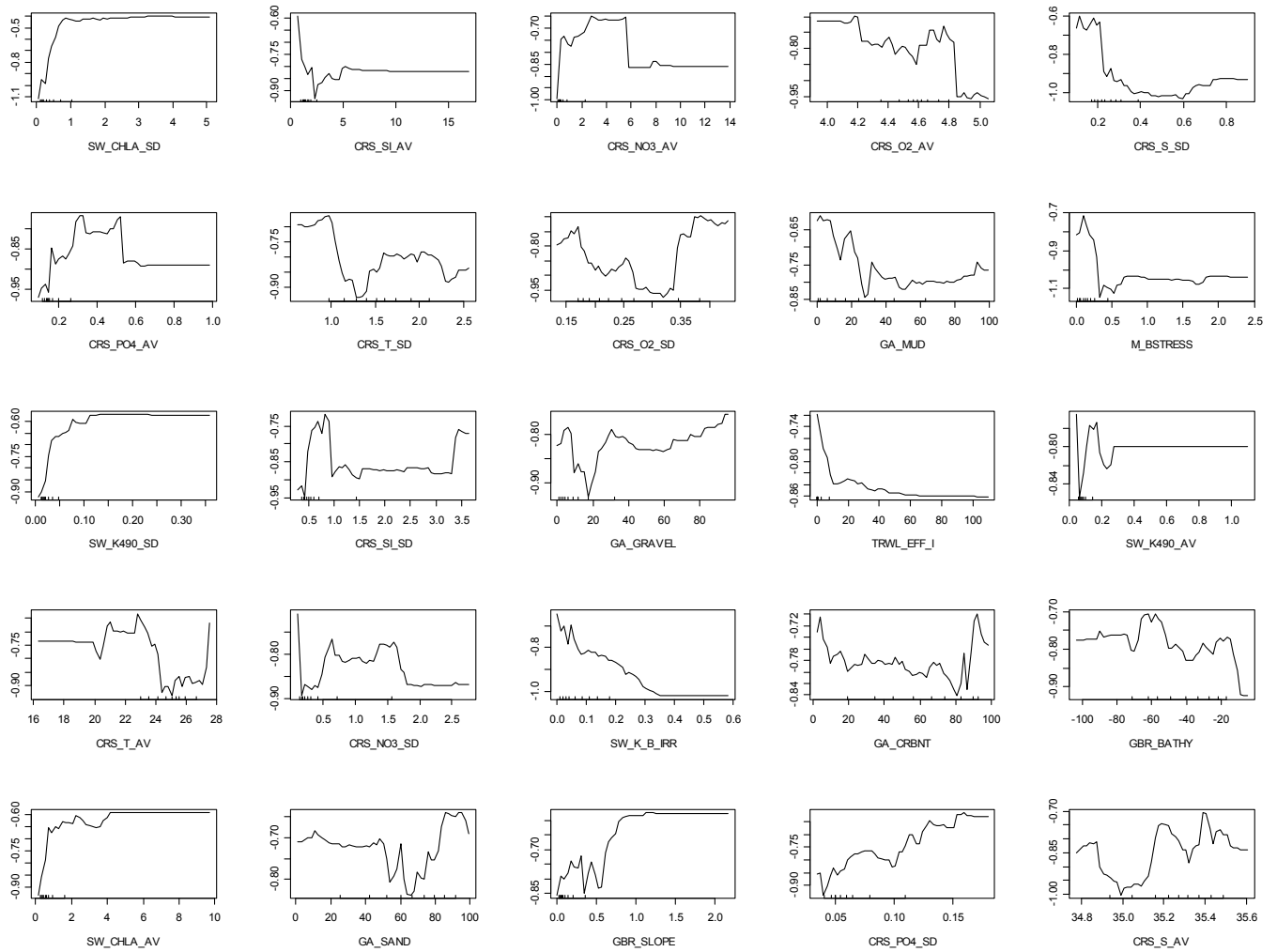


Fig. S2. Partial response plots for the '*Halimeda gracilis* assemblage' along gradients of the top 25 most important environmental variables. The plots reflect how the probability of this class-type (logit scale) changes along each predictor gradient, averaged over all values of all other variables in the data set

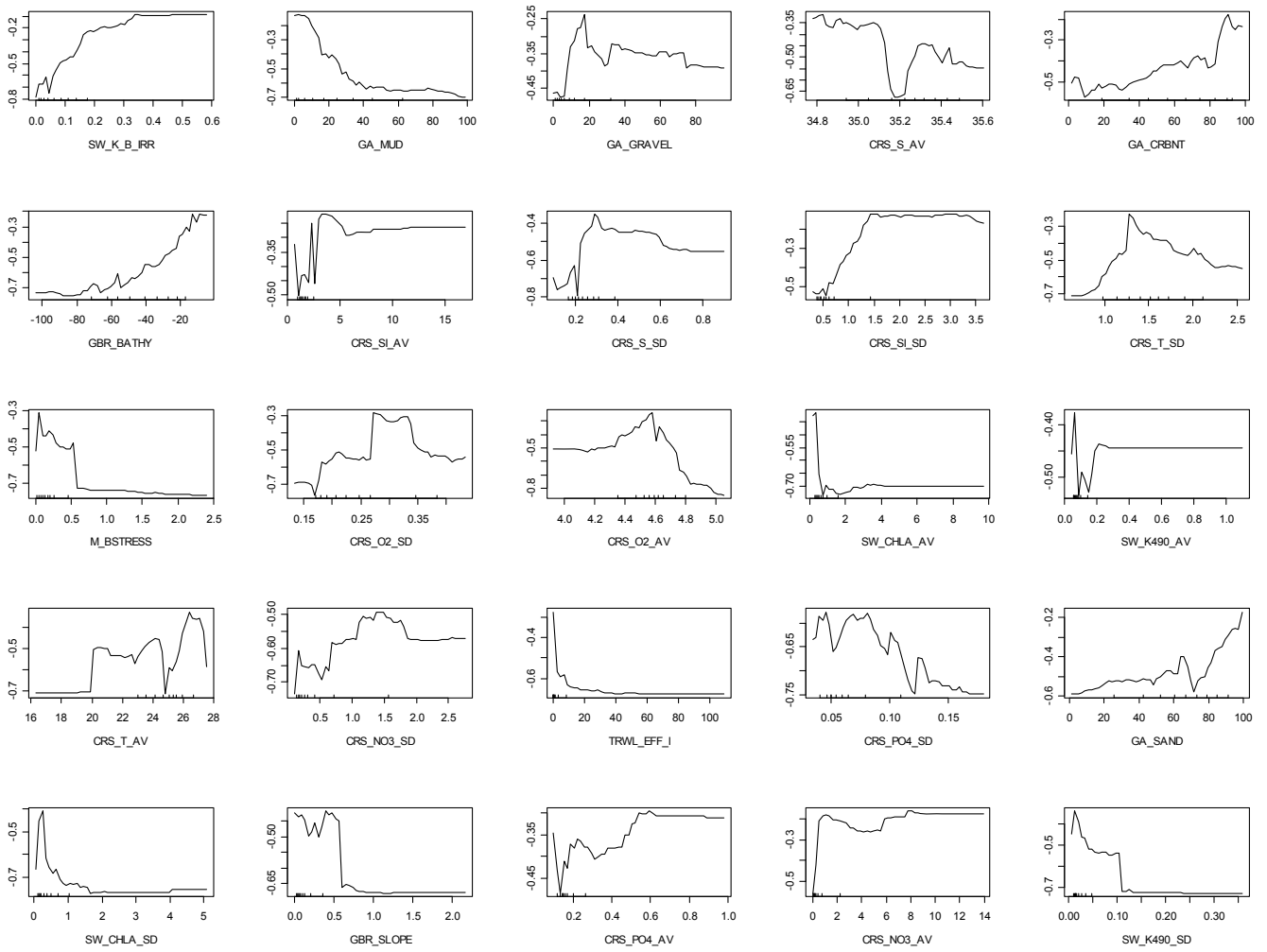


Fig. S3. Partial response plots for the ‘Bryopsidales assemblage’ along gradients of the top 25 most important environmental variables. The plots reflect how the probability of this class-type (logit scale) changes along each predictor gradient, averaged over all values of all other variables in the data set

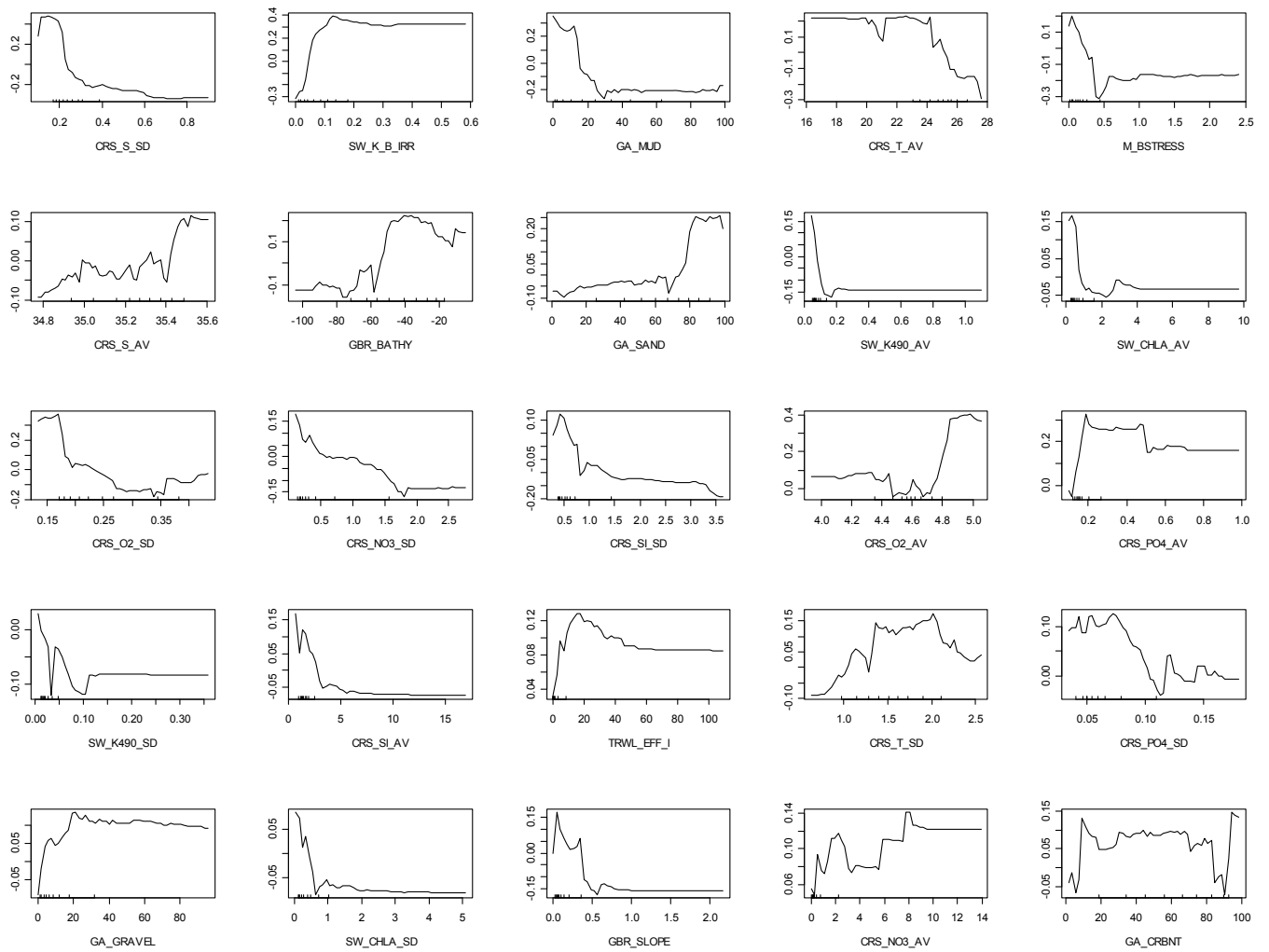


Fig. S4. Partial response plots for the ‘*Lobophora*-turf assemblage’ along gradients of the top 25 most important environmental variables. The plots reflect how the probability of this class-type (logit scale) changes along each predictor gradient, averaged over all values of all other variables in the data set

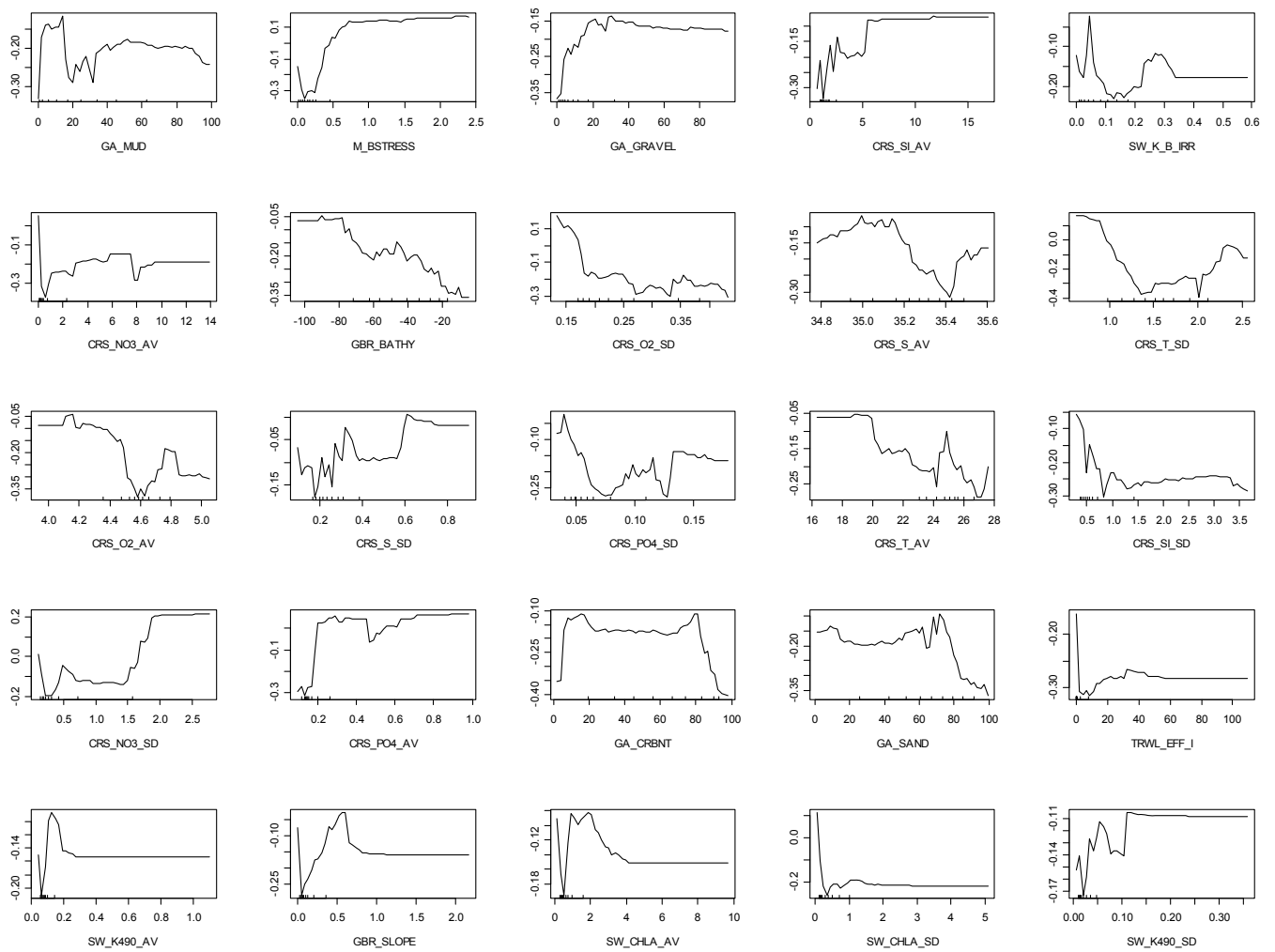


Fig. S5. Partial response plots for the 'red foliose assemblage' along gradients of the top 25 most important environmental variables. The plots reflect how the probability of this class-type (logit scale) changes along each predictor gradient, averaged over all values of all other variables in the data set

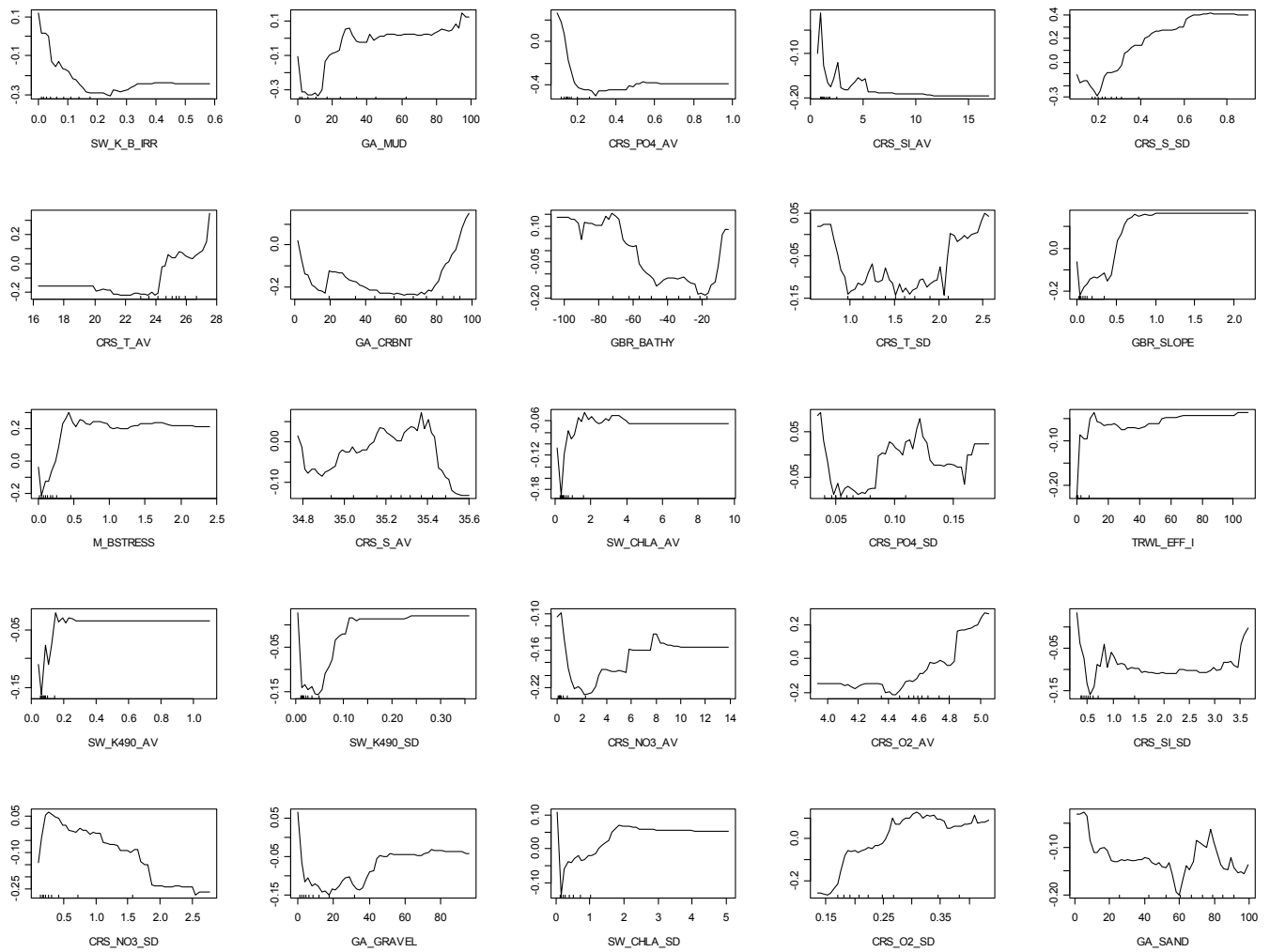


Fig. S6. Partial response plots for the ‘marginal assemblage’ along gradients of the top 25 most important environmental variables. The plots reflect how the probability of this class-type (logit scale) changes along each predictor gradient, averaged over all values of all other variables in the data set

Table S4. Numerical summary of the means and SDs of environmental variables for all sites grouped into assemblages, in order of overall predictor importance for classification. The top four most important predictors for each assemblage are in bold

Environmental variable	No algae	<i>Halimeda gracilis</i> assemblage	Bryopsidales assemblage	<i>Lobophora</i> -turf assemblage	Red foliose assemblage	Marginal assemblage
GA_MUD	35.25 (26.47)	16.8 (19.35)	12.13 (14.41)	10.35 (14.77)	19.53 (21)	22.53 (23.46)
SW_K_B_IRR	0.06 (0.07)	0.08 (0.06)	0.14 (0.08)	0.11 (0.06)	0.08 (0.06)	0.08 (0.09)
CRS_S_SD	0.27 (0.09)	0.25 (0.12)	0.28 (0.08)	0.21 (0.08)	0.26 (0.09)	0.29 (0.12)
CRS_SI_AV	1.66 (0.88)	1.74 (1.22)	2.28 (2.47)	1.44 (0.78)	1.97 (2.06)	1.65 (1.04)
M_BSTRESS	0.21 (0.28)	0.17 (0.27)	0.12 (0.12)	0.16 (0.24)	0.35 (0.42)	0.24 (0.28)
GBR_BATHY	47.18 (24.31)	43.35 (18.16)	33.17 (16.09)	39.67 (14.49)	39.21 (18.7)	42.48 (22.41)
CRS_S_AV	35.25 (0.22)	35.25 (0.18)	35.14 (0.19)	35.31 (0.15)	35.21 (0.16)	35.22 (0.17)
CRS_T_AV	24.85 (1.49)	24.75 (1.78)	25.46 (1.41)	24.32 (1.3)	24.7 (1.61)	25.24 (1.21)
GA_GRAVEL	9.81 (14.65)	14.96 (20.75)	17.02 (21.6)	10.94 (12.19)	17.83 (18.46)	14.34 (18.33)
CRS_T_SD	1.57 (0.4)	1.46 (0.41)	1.38 (0.3)	1.52 (0.39)	1.6 (0.6)	1.55 (0.47)
CRS_O2_SD	0.26 (0.08)	0.24 (0.08)	0.22 (0.05)	0.26 (0.09)	0.22 (0.06)	0.24 (0.06)
GA_CRBNT	58.23 (25.55)	68.18 (28.06)	71.16 (27.63)	59.45 (29.72)	62.25 (23.96)	63.18 (31.45)
CRS_O2_AV	4.55 (0.2)	4.57 (0.18)	4.58 (0.12)	4.64 (0.21)	4.61 (0.17)	4.61 (0.15)
CRS_PO4_AV	0.18 (0.08)	0.19 (0.12)	0.18 (0.11)	0.18 (0.08)	0.19 (0.13)	0.15 (0.05)
CRS_SI_SD	0.77 (0.73)	0.77 (0.8)	1.09 (0.99)	0.52 (0.33)	0.69 (0.61)	0.77 (0.79)
CRS_NO3_AV	0.79 (1.3)	0.95 (1.67)	0.92 (1.8)	0.66 (1.13)	0.85 (2.14)	0.41 (0.71)
SW_K490_AV	0.1 (0.1)	0.08 (0.04)	0.08 (0.03)	0.07 (0.03)	0.09 (0.04)	0.09 (0.04)
CRS_NO3_SD	0.7 (0.81)	0.47 (0.4)	0.4 (0.33)	0.4 (0.37)	0.37 (0.4)	0.37 (0.36)
SW_CHLA_AV	0.87 (0.99)	0.71 (0.61)	0.65 (0.45)	0.53 (0.44)	0.81 (0.59)	0.85 (0.66)
GA_SAND	54.94 (23.89)	68.24 (23.02)	70.86 (23.51)	78.71 (17.96)	62.65 (19.78)	63.13 (23)
CRS_PO4_SD	0.07 (0.04)	0.06 (0.02)	0.06 (0.01)	0.06 (0.02)	0.06 (0.02)	0.06 (0.02)
SW_CHLA_SD	0.48 (0.61)	0.69 (0.76)	0.46 (0.5)	0.33 (0.34)	0.5 (0.4)	0.58 (0.53)
SW_K490_SD	0.03 (0.04)	0.03 (0.02)	0.023 (0.02)	0.019 (0.01)	0.03 (0.02)	0.03 (0.03)