Deep down on a Caribbean reef: lower mesophotic depths harbor a specialized coral-endosymbiont community

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Electronic supplementary material (ESM)

Supplementary Table 1. List of *Agaricia* samples sequenced in this study, including species name, location, depth, available host sequences (mitochondrial "*nad5*" and/or "*cox1*-1-rRNA" region), *Symbiodinium* genotyping method (mitochondrial "*cox1*" sequencing and/or "ITS2" profiling using DGGE), and dominant *Symbiodinium* ITS2 profile (following Bongaerts et al. 2013 – BMC Evol Biol)

Sample#	Species	Location	Depth	Host	Symbiont	ITS2 Profile
DC3623	*Agaricia grahamae*	Seaquarium	88m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC3624	*Agaricia grahamae*	Seaquarium	88m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC3625	*Agaricia undata*	Seaquarium	88m	*nad5*	ITS2	"P4"
DC3644	*Agaricia undata*	Buoy 0/1	60m	*nad5*	ITS2	"P4"
DC3666	*Agaricia undata*	Buoy 0/1	60m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC3687	*Agaricia grahamae*	Buoy 0/1	60m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC3699	*Agaricia undata*	Buoy 0/1	60m	*nad5*	ITS2	"P4"
DC3709	*Agaricia undata*	Seaquarium	80m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC3710	*Agaricia grahamae*	Seaquarium	82m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC3711	*Agaricia grahamae*	Seaquarium	82m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC3712	*Agaricia grahamae*	Seaquarium	84m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC3716	*Agaricia grahamae*	Seaquarium	79m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC3717	*Agaricia grahamae*	Seaquarium	80m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC3718	*Agaricia grahamae*	Seaquarium	82m	*cox1*-1-rRNA	ITS2	"P4"
DC3719	*Agaricia undata*	Seaquarium	80m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC3720	*Agaricia grahamae*	Seaquarium	84m		ITS2	"P4"
DC4379	*Agaricia undata*	Seaquarium	80m		cox1, ITS2	"P4"
DC4474	*Agaricia grahamae*	Seaquarium	50m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4495	*Agaricia grahamae*	Seaquarium	78m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC4499	*Agaricia undata*	Seaquarium	77m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC4505	*Agaricia grahamae*	Seaquarium	79m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC4506	*Agaricia grahamae*	Seaquarium	79m		ITS2	"P4"
DC4507	*Agaricia grahamae*	Seaquarium	74m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4508	*Agaricia grahamae*	Seaquarium	74m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4511	*Agaricia grahamae*	Seaquarium	75m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4513	*Agaricia grahamae*	Seaquarium	74m	*nad5*	ITS2	"P4"
DC4517	*Agaricia grahamae*	Seaquarium	77m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4519	*Agaricia grahamae*	Seaquarium	78m	nad5, cox1-1-rRNA	ITS2	"P4"
DC4521	*Agaricia undata*	Seaquarium	75m	*cox1*-1-rRNA	ITS2	"P4"
DC4657	*Agaricia grahamae*	Seaquarium	50m		cox1, ITS2	"P4"
DC4662	*Agaricia grahamae*	Seaquarium	50m	*nad5*	cox1, ITS2	"P4"
DC4666	*Agaricia lamarcki*	Seaquarium	50m	*nad5*	cox1, ITS2	"P4"
DC4668	*Agaricia lamarcki*	Seaquarium	50m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC4672	*Agaricia lamarcki*	Seaquarium	50m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4716	*Agaricia grahamae*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4717	*Agaricia grahamae*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4739	*Agaricia lamarcki*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC4766	*Agaricia grahamae*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4767	*Agaricia grahamae*	Seaquarium	40m	*nad5*	cox1, ITS2	"P4"
DC4769	*Agaricia grahamae*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4804	*Agaricia grahamae*	Seaquarium	40m	*nad5*,	cox1, ITS2	"P4"
DC4827	*Agaricia grahamae*	Seaquarium	60m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4828	*Agaricia grahamae*	Seaquarium	60m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4829	*Agaricia grahamae*	Seaquarium	60m	*nad5*	cox1, ITS2	"P4"
DC4863	*Agaricia grahamae*	Seaquarium	40m	*nad5*	cox1, ITS2	"P4"
DC4868	*Agaricia grahamae*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4879	*Agaricia lamarcki*	Seaquarium	40m	*nad5*	cox1, ITS2	"P4"
DC4880	*Agaricia lamarcki*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4881	*Agaricia lamarcki*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4885	*Agaricia lamarcki*	Seaquarium	40m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC4888	*Agaricia lamarcki*	Seaquarium	40m	*cox1*-1-rRNA	ITS2	"P4"
DC5416	*Agaricia grahamae*	Buoy 0/1	50m	*cox1*-1-rRNA	ITS2	"P4"

DC5418	*Agaricia grahamae*	Buoy 0/1	50m	*cox1*-1-rRNA	ITS2	"P4"
DC5456	*Agaricia grahamae*	Buoy 0/1	50m	*cox1*-1-rRNA	ITS2	"P4"
DC5458	*Agaricia grahamae*	Buoy 0/1	50m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC5460	*Agaricia grahamae*	Buoy 0/1	50m		cox1, ITS2	"P4"
DC5465	*Agaricia lamarcki*	Buoy 0/1	50m	*nad5*, *cox1*-1-rRNA	cox1, ITS2	"P4"
DC5467	*Agaricia lamarcki*	Buoy 0/1	50m	*cox1*-1-rRNA	ITS2	"P4"
DC5469	*Agaricia lamarcki*	Buoy 0/1	50m		cox1, ITS2	"P4"
DC5677	*Agaricia grahamae*	Buoy 0/1	40m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC5685	*Agaricia grahamae*	Buoy 0/1	40m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC5691	*Agaricia grahamae*	Buoy 0/1	40m	*nad5*	cox1, ITS2	"P4"
DC5694	*Agaricia grahamae*	Buoy 0/1	40m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"
DC5880	*Agaricia grahamae*	Buoy 0/1	60m	*cox1*-1-rRNA	ITS2	"P4"
DC5882	*Agaricia grahamae*	Buoy 0/1	60m	*cox1*-1-rRNA	ITS2	"P4"
DC5883	*Agaricia grahamae*	Buoy 0/1	60m	*cox1*-1-rRNA	ITS2	"P4"
DC5884	*Agaricia grahamae*	Buoy 0/1	60m	*cox1*-1-rRNA	ITS2	"P4"
DC5887	*Agaricia grahamae*	Buoy 0/1	60m	*cox1*-1-rRNA	cox1, ITS2	"P4"
DC5889	*Agaricia grahamae*	Buoy 0/1	60m	*nad5*	cox1, ITS2	"P4"
DC5893	*Agaricia grahamae*	Buoy 0/1	60m	*nad5*	cox1, ITS2	"P4"
Aa50m-10	*Agaricia agaricites*	Buoy 0/1	50m	*nad5*	ITS2	"P2"
Aa50m-02	*Agaricia agaricites*	Buoy 0/1	50m	*nad5*	ITS2	"P2"
Aa50m-07	*Agaricia agaricites*	Buoy 0/1	50m	*nad5*, *cox1*-1-rRNA	ITS2	"P2"
Aa05m-11	*Agaricia agaricites*	Buoy 0/1	5m	*nad5*, *cox1*-1-rRNA	ITS2	"P2"
Aa05m-12	*Agaricia agaricites*	Buoy 0/1	5m	*nad5*, *cox1*-1-rRNA	ITS2	"P2"
Aa05m-14	*Agaricia agaricites*	Buoy 0/1	5m	*nad5*, *cox1*-1-rRNA	ITS2	"P2"
Ag50m-01	*Agaricia grahamae*	Buoy 0/1	50m	*nad5*	ITS2	"P4"
Ag50m-03	*Agaricia grahamae*	Buoy 0/1	50m	*nad5*	ITS2	"P4"
Ag60m-06	*Agaricia grahamae*	Buoy 0/1	60m	*nad5*	ITS2	"P4"
Ag60m-07	*Agaricia grahamae*	Buoy 0/1	60m	*nad5*	ITS2	"P4"
Ah10m-01	*Agaricia humilis*	Buoy 0/1	10m	*nad5*, *cox1*-1-rRNA	ITS2	"P1"
Ah10m-02	*Agaricia humilis*	Buoy 0/1	10m	*nad5*	ITS2	"P1"
Ah2m-06	*Agaricia humilis*	Buoy 0/1	2m	*nad5*, *cox1*-1-rRNA	ITS2	"P1"
Ah2m-09	*Agaricia humilis*	Buoy 0/1	2m	*nad5*	ITS2	"P1"
Al10m-19	*Agaricia lamarcki*	Buoy 0/1	10m	*cox1*-1-rRNA	ITS2	"P4"
Al10m-22	*Agaricia lamarcki*	Buoy 0/1	10m	*cox1*-1-rRNA	ITS2	"P4"
Al50m-01	*Agaricia lamarcki*	Buoy 0/1	50m	*nad5*	ITS2	"P4"
Al50m-02	*Agaricia lamarcki*	Buoy 0/1	50m	*cox1*-1-rRNA	ITS2	"P4"
Al50m-03	*Agaricia lamarcki*	Buoy 0/1	50m	*nad5*, *cox1*-1-rRNA	ITS2	"P4"

Supplementary Table 2. List of *Madracis* samples sequenced in this study, including species name, location, depth, available host sequences (mitochondrial "*atp8*" region), *Symbiodinium* genotyping method ("ITS2" profiling using DGGE), and dominant *Symbiodinium* ITS2 type.

Sample#	Species	Location	Depth	Host	Symbiont	ITS2 Type
DC3618	*Madracis pharensis*	Seaquarium	88m	*atp8*	ITS2	B15
DC3619	*Madracis pharensis*	Seaquarium	90m	*atp8*	ITS2	B15
DC3622	*Madracis pharensis*	Seaquarium	86m	*atp8*	ITS2	B15
DC3674	*Madracis pharensis*	Buoy 0/1	60m	*atp8*	ITS2	B15
DC3688	*Madracis pharensis*	Buoy 0/1	60m	*atp8*	ITS2	B15
DC3689	*Madracis pharensis*	Buoy 0/1	60m	*atp8*	ITS2	B15
DC4381	*Madracis pharensis*	Seaquarium	81m	*atp8*	ITS2	B15
DC4382	*Madracis pharensis*	Seaquarium	80m	*atp8*	ITS2	B15
DC4388	*Madracis pharensis*	Seaquarium	86m	*atp8*	ITS2	B15
DC4389	*Madracis pharensis*	Seaquarium	84m	*atp8*	ITS2	B15
DC4391	*Madracis pharensis*	Seaquarium	82m	*atp8*	ITS2	B15
DC4393	*Madracis pharensis*	Seaquarium	83m	*atp8*	ITS2	B15
DC4395	*Madracis pharensis*	Seaquarium	86m	*atp8*	ITS2	B15
DC4396	*Madracis pharensis*	Seaquarium	87m	*atp8*	ITS2	B15
DC4397	*Madracis pharensis*	Seaquarium	86m	*atp8*	ITS2	B15
DC4399	*Madracis pharensis*	Seaquarium	87m	*atp8*	ITS2	B15
DC4402	*Madracis pharensis*	Seaquarium	83m	*atp8*	ITS2	B15
DC4574	*Madracis pharensis*	Seaquarium	60m	*atp8*	ITS2	B15
DC4575	*Madracis pharensis*	Seaquarium	60m	*atp8*	ITS2	B15
DC4584	*Madracis pharensis*	Seaquarium	60m	*atp8*	ITS2	B15
DC4586	*Madracis pharensis*	Seaquarium	60m	*atp8*	ITS2	B15
DC4685	*Madracis pharensis*	Seaquarium	40m	*atp8*	ITS2	B15
DC4686	*Madracis pharensis*	Seaquarium	40m	*atp8*	ITS2	B15
DC4691	*Madracis pharensis*	Seaquarium	40m	*atp8*	ITS2	B15
DC4775	*Madracis pharensis*	Seaquarium	40m	*atp8*	ITS2	B15
DC4845	*Madracis pharensis*	Seaquarium	60m	*atp8*	ITS2	B15
DC4939	*Madracis pharensis*	Seaquarium	15m	*atp8*	ITS2	B15
DC4940	*Madracis pharensis*	Seaquarium	15m	*atp8*	ITS2	B7
DC4941	*Madracis pharensis*	Seaquarium	15m	*atp8*	ITS2	B7
DC4954	*Madracis pharensis*	Seaquarium	15m	*atp8*	ITS2	B7
DC5020	*Madracis pharensis*	Seaquarium	25m	*atp8*	ITS2	B15
DC5021	*Madracis pharensis*	Seaquarium	25m	*atp8*	ITS2	B15
DC5022	*Madracis pharensis*	Seaquarium	25m	*atp8*	ITS2	B15
DC5541	*Madracis pharensis*	Buoy 0/1	15m	*atp8*	ITS2	B15
DC5542	*Madracis pharensis*	Buoy 0/1	15m	*atp8*	ITS2	B7
DC5557	*Madracis pharensis*	Buoy 0/1	15m	*atp8*	ITS2	B7
DC5558	*Madracis pharensis*	Buoy 0/1	15m	*atp8*	ITS2	B15
DC5559	*Madracis pharensis*	Buoy 0/1	15m	*atp8*	ITS2	B7
DC5620	*Madracis pharensis*	Buoy 0/1	40m	*atp8*	ITS2	B15
DC5621	*Madracis pharensis*	Buoy 0/1	40m	*atp8*	ITS2	B15
DC5630	*Madracis pharensis*	Buoy 0/1	40m	*atp8*	ITS2	B15
DC5812	*Madracis pharensis*	Buoy 0/1	25m	*atp8*	ITS2	B15
DC5929	*Madracis pharensis*	Buoy 0/1	60m	*atp8*	ITS2	B15
DC5931	*Madracis pharensis*	Buoy 0/1	60m	*atp8*	ITS2	B15
DC5935	*Madracis pharensis*	Buoy 0/1	60m	*atp8*	ITS2	B15

Supplementary Table 3. Overview of transplanted *Agaricia* fragments, indicating species, location on transplantation rack (randomized allocation), health status at the end of the experiment, diameter increase in mm (based on surface area measurements at beginning and end of experiment) and extrapolated growth (linearly extrapolating from 46 to 52 weeks). Extrapolated growth rates of fully pigmented fragments ("alive") are indicated in bold.

Sample #	Species	Rack ID	Status (Feb-2014)	Diameter increase (mm)	Extrapolated growth (mm yr^{-1})
Fragments transplanted to 60 m (from 80 m)					
DC3709#1	*Agaricia grahamae*	B3	missing	NA	NA
DC3709#2	*Agaricia grahamae*	E3	alive	16.82	**19.06**
DC3710#1	*Agaricia grahamae*	E1	alive	5.69	**6.45**
DC3710#2	*Agaricia grahamae*	D4	partial mortality	5.77	6.54
DC3711#1	*Agaricia grahamae*	A1	missing	NA	NA
DC3711#2	*Agaricia grahamae*	B1	partial mortality	4.16	4.72
DC3712#1	*Agaricia grahamae*	B4	alive	16.39	**18.58**
DC3712#2	*Agaricia grahamae*	C2	alive	26.25	**29.76**
DC3716#1	*Agaricia grahamae*	B2	dead	2.13	NA
DC3716#2	*Agaricia grahamae*	D3	partial mortality	7.63	8.65
DC3717#1	*Agaricia grahamae*	D2	partial mortality	4.85	5.50
DC3717#2	*Agaricia grahamae*	E4	partial mortality	17.81	20.19
DC3718#1	*Agaricia grahamae*	C1	alive	24.39	**27.65**
DC3718#2	*Agaricia grahamae*	A4	alive	27.15	**30.78**
DC3719#1	*Agaricia undata*	A2	partial mortality	7.50	8.50
DC3719#2	*Agaricia undata*	E2	partial mortality	3.59	4.07
DC3720#1	*Agaricia grahamae*	A3	dead	3.74	NA
DC3720#2	*Agaricia grahamae*	D1	missing	NA	NA
Fragments transplanted to 80 m (from 80 m)					
DC3709#3	*Agaricia grahamae*	B1	dead	1.44	NA
DC3709#4	*Agaricia grahamae*	A3	dead	0.23	NA
DC3710#3	*Agaricia grahamae*	A1	dead	0.85	NA
DC3710#4	*Agaricia grahamae*	E4	dead	-7.07	NA
DC3711#3	*Agaricia grahamae*	A2	dead	2.11	NA
DC3711#4	*Agaricia grahamae*	B4	dead	0.32	NA
DC3712#3	*Agaricia grahamae*	B2	dead	1.12	NA
DC3712#4	*Agaricia grahamae*	B3	partial mortality	2.41	2.73
DC3716#3	*Agaricia grahamae*	E1	dead	3.60	NA
DC3716#4	*Agaricia grahamae*	D2	dead	2.51	NA
DC3717#3	*Agaricia grahamae*	D1	dead	1.84	NA
DC3717#4	*Agaricia grahamae*	E2	dead	-2.96	NA
DC3718#3	*Agaricia grahamae*	A4	alive	2.06	**2.34**
DC3718#4	*Agaricia grahamae*	D4	alive	1.78	**2.02**
DC3719#3	*Agaricia undata*	D3	dead	1.43	NA
DC3719#4	*Agaricia undata*	E3	dead	1.55	NA
DC3720#3	*Agaricia grahamae*	C1	dead	2.31	NA
DC3720#4	*Agaricia grahamae*	C2	dead	0.89	NA
Fragments transplanted to 100 m (from 80 m)					
DC3709#5	*Agaricia grahamae*	B1	missing	NA	NA

DC3709#6	*Agaricia grahamae*	E2	bleached/partial mortality	2.81	3.19
DC3710#5	*Agaricia grahamae*	A2	alive	3.58	**4.06**
DC3710#6	*Agaricia grahamae*	A4	dead	2.11	NA
DC3711#5	*Agaricia grahamae*	A3	alive	2.57	**2.91**
DC3711#6	*Agaricia grahamae*	C2	partial mortality	0.96	1.09
DC3712#5	*Agaricia grahamae*	E1	bleached/partial mortality	1.50	1.70
DC3712#6	*Agaricia grahamae*	D4	bleached/partial mortality	0.01	0.01
DC3716#5	*Agaricia grahamae*	B2	dead	3.90	NA
DC3716#6	*Agaricia grahamae*	B4	partial mortality	2.85	3.23
DC3717#5	*Agaricia grahamae*	A1	bleached/partial mortality	-0.23	-0.26
DC3717#6	*Agaricia grahamae*	E3	bleached/partial mortality	1.32	1.49
DC3718#5	*Agaricia grahamae*	B3	bleached/partial mortality	2.84	3.22
DC3718#6	*Agaricia grahamae*	D3	partial mortality	1.40	1.58
DC3719#5	*Agaricia undata*	C1	dead	1.10	NA
DC3719#6	*Agaricia undata*	D2	partial mortality	1.14	1.29
DC3720#5	*Agaricia grahamae*	D1	partial mortality	1.43	1.62
DC3720#6	*Agaricia grahamae*	E4	partial mortality	3.70	4.19

Supplementary Table 4. Average extrapolated linear growth rates of *Agaricia* fragments transplanted (from 80 m) to 60, 80 and 100 m depth. Averages are given for fully pigmented fragments ("alive") and for all fragments (excluding dead and missing fragments) with number of fragments indicated, as well as the standard error, minimum and maximum values.

Depth	**Category**	**Average extrapolated growth (mm yr^{-1})**				
		n	**average**	**sterr**	**min**	**max**
60m	"alive" only	6	22.0	3.8	6.4	30.8
60m	all fragments	13	14.6	2.8	4.1	30.8
80m	"alive" only	2	2.2	0.2	2.0	2.3
80m	all fragments	3	2.4	0.2	2.0	2.7
100m	"alive" only	2	3.5	0.6	2.9	4.1
100m	all fragments	14	2.1	0.4	-0.3	4.2