

Table S1. Diversity indices of β -AOB *amoA*, AOA *amoA* and *nirS* genes based on 5% DNA cutoff. n: the number of sequences; OTU: operational taxonomic unit; C: coverage; H': Shannon-Wiener Index; 1/D: Simpson's diversity Index.

Clone library	β -AOB <i>amoA</i>						AOA <i>amoA</i>						<i>nirS</i>					
	n	No. of OTUs	C (%)	H'	1/D	Chao1	n	No. of OTUs	C (%)	H'	1/D	Chao1	n	No. of OTUs	C (%)	H'	1/D	Chao1
AprY1SF	37	6	94.6	1.38	3.43	7	-						-					
AprY1BF	40	3	100.0	0.81	1.91	3	-						-					
AprY2SF	38	3	100.0	0.70	1.65	3	-						-					
AprY2BF	38	5	94.7	1.02	2.15	6	-						62	28	69.4	2.80	10.62	57
AprY3SF	39	2	100.0	0.59	1.71	2	-						-					
AprY3BF	40	4	95.0	0.69	1.60	5	40	2	100.0	0.68	2.01	2	83	50	56.6	3.66	43.08	120
AprY4SF	-						-						-					
AprY4BF	40	2	100.0	0.61	1.76	2	31	4	93.5	0.89	2.15	5	94	58	57.4	3.87	64.28	136
AprY5SF	-						-						-					
AprY5BF	40	5	100.0	1.43	4.02	5	40	4	97.5	0.84	2.06	5	100	59	54.0	3.72	33.90	232
AugY0SP	34	9	91.1	1.93	6.76	11	40	3	97.5	0.78	2.13	3	N					
AugY0SF	35	4	97.1	0.69	1.55	4	39	3	97.4	0.71	1.83	3	N					
AugY0BP	38	6	94.7	1.38	3.40	7	39	3	100.0	0.82	1.99	3	N					
AugY0BF	36	9	88.9	1.76	4.67	15	40	4	95.0	0.83	1.99	5	N					
AugY3SP	36	9	91.7	1.82	5.48	10	-						N					
AugY3SF	36	3	100.0	0.43	1.27	3	-						N					
AugY3BP	32	6	96.9	1.60	5.01	6	40	4	95.0	0.75	1.76	5	N					
AugY3BF	37	3	97.3	0.33	1.19	3	-						N					
AugY5SP	15	2	100.0	0.64	1.91	2	-						N					
AugY5SF	-						-						N					
AugY5BP	37	3	97.3	0.70	1.80	3	39	4	94.9	0.88	2.21	5	N					
AugY5BF	37	5	100.0	1.51	4.50	5	39	7	94.9	1.48	3.74	7	N					

-, PCR reactions were not successful.

N, Samples were not detected using PCR and clone library.

Table S2. The biogeochemical variables for each sampling point. Apr: April; Aug: August.

Samples	Longitude (°E)	Latitude (°N)	Max depth (m)	Sampling depth (m)	Salinity	Temperature (°C)	DO (mg L ⁻¹)	Nitrate (μM)	Nitrite (μM)	Ammonium (μM)	Phosphate (μM)	Silicate (μM)	TSM (mg L ⁻¹)
AprY1	122.378	31.107	13.0	1.0	22.18	N	9.89	26.81	0.98	0.68	0.51	29.00	N
				11.0	29.30	N	9.30	76.43	0.31	0.16	1.15	14.71	N
AprY2	122.600	31.000	18.0	1.0	26.28	N	9.59	44.19	1.12	0.55	0.79	22.28	N
				16.0	30.75	N	9.13	22.22	0.64	0.37	0.56	13.80	N
AprY3	122.999	30.836	46.6	1.0	30.39	N	11.74	10.64	0.73	B	0.02	5.67	N
				44.0	33.70	N	8.34	8.87	0.19	B	0.34	7.43	N
AprY4	123.510	30.513	59.0	1.0	34.07	N	10.11	1.49	0.05	0.14	0.06	2.79	N
				55.0	34.14	N	8.50	6.76	0.29	B	0.40	7.64	N
AprY5	123.999	30.368	49.0	1.0	33.91	N	9.56	4.22	0.26	0.58	0.23	6.83	N
				45.0	33.91	N	8.86	5.72	0.29	0.10	0.35	7.84	N
AugY0*	121.731	31.322	10.0	3.0	0.20	29.21	6.15	132.94	0.45	B	2.03	126.57	170.86
				7.0	0.20	29.21	6.15	132.52	0.46	0.35	2.03	125.10	261.78
AugY1	122.328	31.015	12.0	3.0	21.22	25.83	5.81	53.63	0.30	0.75	1.24	52.50	216.03
				8.0	23.06	25.96	5.87	52.15	0.30	1.22	1.21	55.49	216.19
AugY2	122.599	30.984	20.0	3.0	29.00	24.30	4.68	29.45	0.41	0.22	0.91	30.63	13.29
				16.0	29.31	23.99	4.60	26.59	0.32	1.02	0.89	29.31	87.44
AugY3	122.826	30.839	23.0	3.0	27.46	26.14	4.73	26.05	1.33	0.63	0.66	25.05	4.56
				20.0	30.55	22.88	4.26	24.56	0.31	0.38	0.87	31.52	50.72
AugY4	123.498	30.508	56.0	3.0	28.33	26.03	7.44	10.55	0.55	1.27	B	9.73	3.39
				50.0	34.39	19.68	3.78	12.66	0.15	0.55	0.92	21.63	9.66
AugY5	124.005	30.351	51.0	3.0	30.41	27.37	7.96	3.87	0.36	1.06	B	5.37	10.51
				46.0	34.30	21.49	4.31	9.12	0.18	0.22	0.68	16.60	4.46

AugYE5	122.834	30.001	48.0	5.0	29.36	25.74	4.48	22.00	1.02	B	0.68	23.84	3.08
				43.0	33.38	21.00	3.35	16.29	0.80	0.06	0.95	24.93	27.20
AugYE4	122.833	30.496	42.0	5.0	28.69	25.09	6.46	24.86	1.19	0.07	0.74	30.68	2.54
				38.0	32.92	21.07	3.25	19.06	0.57	0.29	1.11	25.97	60.87
AugYE3	122.834	31.008	33.0	3.0	24.93	26.52	4.87	32.64	0.98	0.17	0.95	30.15	5.37
				29.0	32.70	21.77	2.80	20.88	0.24	0.19	0.65	24.47	13.53
AugYE2	122.836	31.337	47.0	3.0	27.83	25.53	7.02	14.45	0.90	1.68	0.26	20.10	2.49
				43.0	33.25	21.30	2.60	17.75	0.33	B	0.93	26.49	3.88
AugYE1	122.836	31.662	34.0	3.0	24.06	26.32	6.00	24.25	0.95	0.44	B	18.42	6.87
				30.0	31.90	22.69	3.90	17.18	0.35	B	0.57	20.44	6.79
AugYE0	122.827	32.006	36.0	3.0	29.83	23.76	5.87	11.53	0.93	0.85	0.14	15.36	8.26

B, below detection limit;

N, not detected due to lack of sample.

