

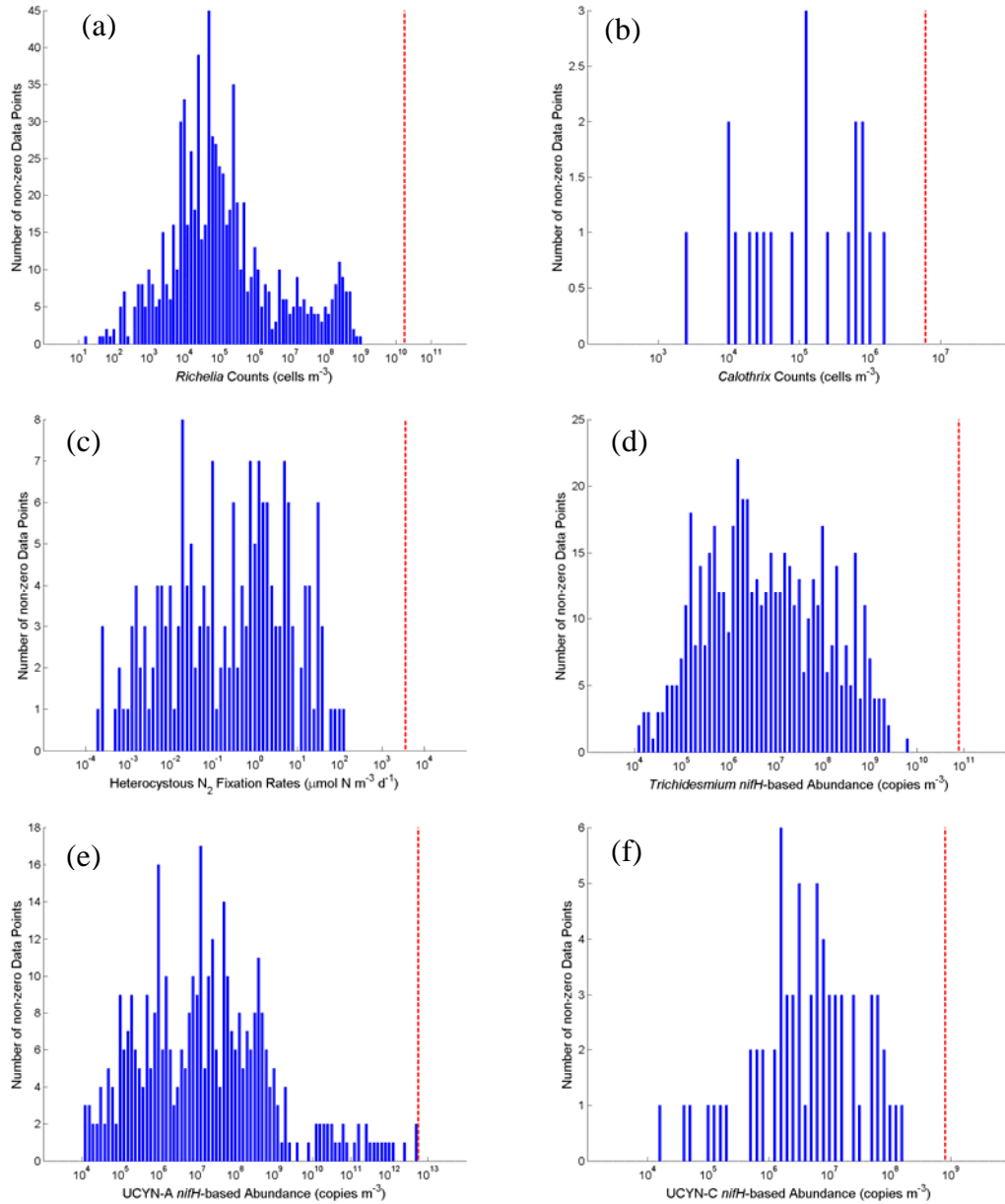
Supplementary Materials for

Database for Diazotrophs in Global Ocean: Abundances, Biomasses and Nitrogen Fixation Rates

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Figure S1. Histogram of data points on logarithmic scale (blue bars) and the critical values for quality control using the Chauvenet's criterion (dashed red lines). Values higher than the critical values are rejected. (a)-(b): cell counts for *Richelia* and *Calothrix*; (c): N₂ fixation rates for heterocystous cyanobacteria; (d)-(h): *nifH*-based abundances for *Trichodesmium*, UCYN-A, UCYN-C, *Richelia* and *Calothrix*. (i)-(k): depth-integrations for total cell-count-estimated biomass, total *nifH*-estimated biomass and total N₂ fixation rates.



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Figure S1 Continued

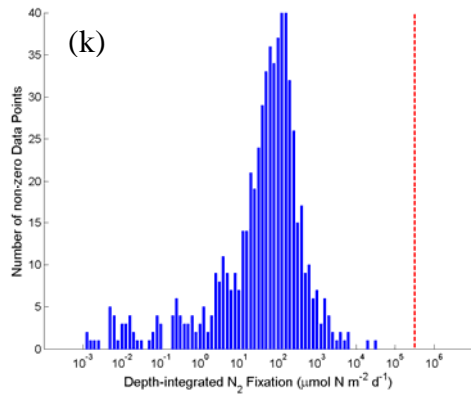
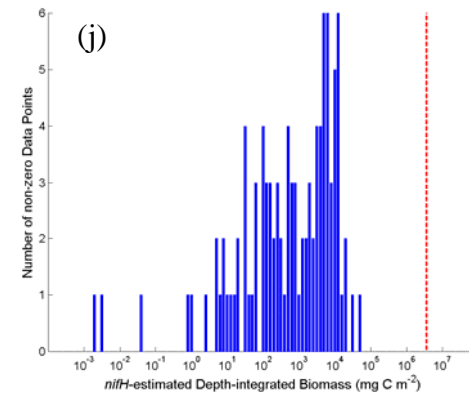
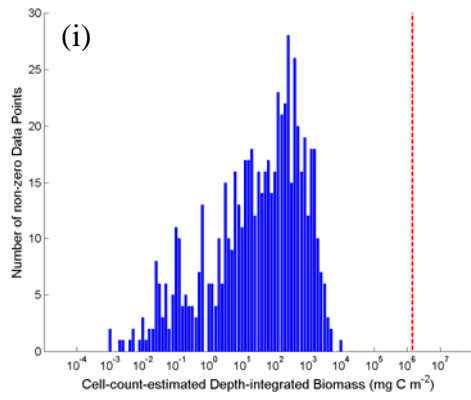
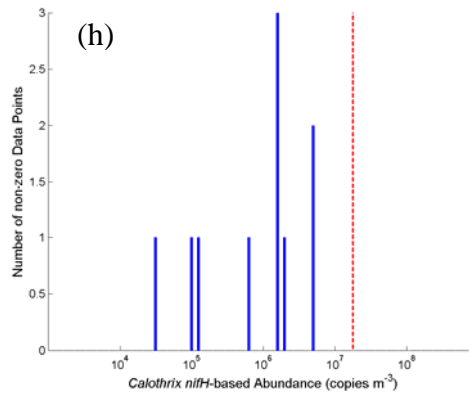
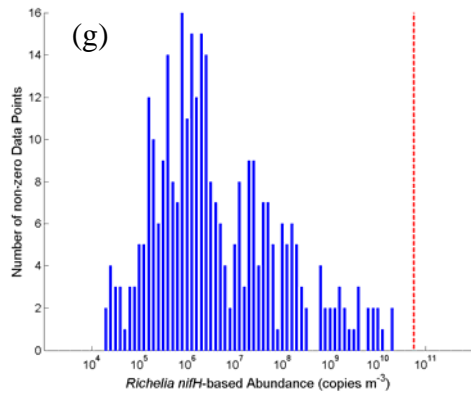


Table S1. Size measurements of cultured Woods Hole *Trichodesmium* species and strains (Hynes et al., 2012), and estimated carbon biomass from cell volumes using the model of Verity et al. (1992).

Species	Strain	Size measurements			Biomass (pg C cell ⁻¹)	
		Width (µm)	Length (µm)	Volume (µm ³)	Strain	Species*
<i>T. thiebautii</i>						120±57
	II-3	8.1	7.2	370	71	
	VI-1	9.4	8.9	610	110	
	St.3-4	9.2	8.1	530	98	
	H9-4	7.4	6.3	280	55	
	St.1-2	9.8	15.5	1200	190	
	St.5-1	10.3	13.0	1100	180	
<i>T. tenue</i>						110
	Z-1	7.0	15.9	610	110	
<i>T. pelagicum</i>						190±18
	ZK	15.5	5.5	1000	170	
	20-71	14.6	7.3	1200	200	
<i>T. hildebrandtii</i>						250±9
	#11	15.5	9.0	1700	250	
	II-4	16.0	7.5	1500	240	
<i>T. erythraeum</i>						65±32
	IMS101	6.3	6.1	190	41	
	Z-5	8.5	8.0	450	85	
	Z-9	8.5	5.5	310	62	
	21-75	9.2	5.7	380	72	
	K-02_#2	6.7	5.4	190	40	
	K-04_#20	7.6	5.9	270	54	
	GBRTRLI101	7.5	5.1	230	47	
	GBRTRLIN201	7.7	5.3	240	50	
	St.6-1	7.7	7.1	330	65	
	St.6-5	8.3	6.4	350	68	
	K1-1#131	7.7	4.3	200	42	
	XIII-13	11.8	8.4	920	160	
<i>T. contortum</i>						210±7.1
	20-70	24.5	2.7	1300	210	
	21-74	25.3	2.7	1400	220	

*: mean ± standard deviation

Table S2. Biovolume measurements of heterocystous *Richelia* and *Calothrix* including heterocyst and vegetative cells from Foster et al. (2011). The total biovolume for trichomes are calculated by assuming each trichome is comprised of one heterocyst and five vegetative cells. The biomass for trichomes is calculated using the Verity et al. (1992) model.

Diatom Symbiont	Heterocyst (μm^3)	Vegetative (μm^3)	Trichome (μm^3)	Biomass (pg C trichome ⁻¹)
<i>Richelia-Hemiaulus</i>	164	8.72	207.6	43.3
<i>Richelia-Hemiaulus</i>	37.4	16.4	119.4	26.8
<i>Richelia-Hemiaulus</i>	102	8.32	143.6	31.5
<i>Richelia-Hemiaulus</i>	85.1	15.5	162.6	35.0
<i>Richelia-Hemiaulus</i>	34.3	8.62	77.4	18.5
<i>Richelia-Hemiaulus</i>	50	6	80	19.0
<i>Richelia-Hemiaulus</i>	45.6		45.6	11.7
<i>Richelia-Hemiaulus</i>	72.3	29.6	220.3	45.6
<i>Richelia-Hemiaulus</i>	44.9		44.9	11.5
<i>Richelia-Hemiaulus</i>	41.1	11.7	99.6	23.0
<i>Richelia-Hemiaulus</i>	55	13.4	122	27.4
<i>Richelia-Hemiaulus</i>	13.1		13.1	4.0
<i>Richelia-Hemiaulus</i>	10.4	5.77	39.25	10.3
<i>Richelia-Hemiaulus</i>	910	317	2495	370.0
<i>Richelia-Hemiaulus</i>	684		684	121.1
<i>Richelia-Hemiaulus</i>	437	234	1607	253.1
<i>Richelia-Hemiaulus</i>	75.3	18.9	169.8	36.4
<i>Richelia-Hemiaulus</i>	71	27.4	208	43.3
<i>Richelia-Hemiaulus</i>	38.7	7.37	75.55	18.1
<i>Richelia-Hemiaulus</i>	48.6	28.8	192.6	40.6
<i>Richelia-Hemiaulus</i>	39.1	41.6	247.1	50.3
<i>Richelia-Hemiaulus</i>	35.8		35.8	9.5
<i>Richelia-Hemiaulus</i>	41.9	23.4	158.9	34.4
<i>Richelia-Hemiaulus</i>	12.1	16.6	95.1	22.1
<i>Richelia-Hemiaulus</i>	74	14	144	31.6
<i>Richelia-Hemiaulus</i>	68.9	33.2	234.9	48.1
<i>Richelia-Hemiaulus</i>	94.8	41.6	302.8	59.9
Free Living <i>Richelia</i>	44.5	45.1	270	54.3
Total <i>Richelia</i>				54±78
<i>Calothrix-Chaetoceros</i>	11.9	29.6	159.9	34.5
<i>Calothrix-Chaetoceros</i>	15.6	44	235.6	48.3
<i>Calothrix-Chaetoceros</i>	91.3	67	426.3	80.5
<i>Calothrix-Chaetoceros</i>	70.9	66.7	404.4	76.9
Free Living <i>Calothrix</i>	35.8	28.5	178.3	38.0
Total <i>Calothrix</i>				56±22

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