

Table S1. Sampling time and locations correspondent to dinoflagellate HAB

Sample day	Station	Longitude	Latitude
May 9, 2016	1	121°05.037 ' E	27°29.419 ' N
	2	121°07.979 ' E	27°28.066 ' N
	3	121°06.102 ' E	27°30.001 ' N
	4	121°09.670 ' E	27°45.571 ' N
	5	121°12.035 ' E	27°46.806 ' N
May 10, 2016	1	121°05.170 ' E	27°31.030 ' N
	2	121°08.082 ' E	27°31.312 ' N
	3	121°07.346 ' E	27°33.046 ' N
	4	121°09.899 ' E	27°45.254 ' N
	5	121°12.112 ' E	27°46.549 ' N
	6	121°11.310 ' E	27°47.120 ' N
May 12, 2016	1	121°04.636 ' E	27°29.643 ' N
	2	121°07.079 ' E	27°28.966 ' N
	3	121°06.502 ' E	27°30.901 ' N
	4	121°10.101 ' E	27°44.927 ' N
	5	121°12.222 ' E	27°46.197 ' N
	6	121°11.136 ' E	27°48.086 ' N
May 13, 2016	1	121°07.749 ' E	27°42.286 ' N
	2	121°06.525 ' E	27°31.411 ' N
	3	121°09.671 ' E	27°45.332 ' N
	4	121°12.301 ' E	27°46.200 ' N
	5	121°11.500 ' E	27°47.300 ' N
May 14, 2016	1	121°07.749 ' E	27°42.286 ' N
	2	121°07.317 ' E	27°43.101 ' N
	3	121°09.233 ' E	27°43.255 ' N
	4	121°09.671 ' E	27°45.332 ' N
	5	121°12.301 ' E	27°46.200 ' N
	6	121°11.500 ' E	27°47.300 ' N
May 15, 2016	1	121°07.749 ' E	27°42.286 ' N
	2	121°07.317 ' E	27°43.101 ' N
	3	121°09.233 ' E	27°43.255 ' N
	4	121°09.671 ' E	27°45.332 ' N
	5	121°12.301 ' E	27°46.200 ' N
	6	121°11.500 ' E	27°47.300 ' N
May 17, 2016	1	121°07.978 ' E	27°42.457 ' N
	2	121°06.893 ' E	27°35.772 ' N
	3	121°06.176 ' E	27°33.968 ' N
May 18, 2016	1	121°07.661 ' E	27°40.200 ' N
	2	121°06.316 ' E	27°35.278 ' N
	3	121°06.170 ' E	27°31.370 ' N
	4	121°03.885 ' E	27°31.432 ' N

	5	121°09.808 ' E	27°45.561 ' N
	6	121°11.579 ' E	27°46.227 ' N
	7	121°11.896 ' E	27°47.461 ' N
May 19, 2016	1	121°05.889 ' E	27°34.695 ' N
	2	121°05.505 ' E	27°33.521 ' N
	3	121°04.721 ' E	27°31.221 ' N
	4	121°09.604 ' E	27°45.670 ' N
	5	121°11.554 ' E	27°46.413 ' N
	6	121°11.721 ' E	27°47.599 ' N
May 20, 2016	1	121°05.030 ' E	27°31.677 ' N
	2	121°06.346 ' E	27°33.162 ' N
	3	121°06.521 ' E	27°35.823 ' N
	4	121°09.838 ' E	27°45.482 ' N
	5	121°11.778 ' E	27°46.237 ' N
	6	121°11.186 ' E	27°47.568 ' N

Table S2. Average cell abundance (CA, cells·m⁻³) and dominance (γ) of the dominant phytoplankton species in the process of *P. donghaiense* bloom

Sample day	<i>P. donghaiense</i>	
	CA	γ
9 May	1.77×10 ⁷	0.539
10 May	5.21×10 ⁶	0.566
12 May	9.17×10 ⁵	0.085
13 May	6.06×10 ⁹	0.999
14 May	9.50×10 ⁶	0.946
15 May	2.26×10 ⁸	0.989
17 May	8.99×10 ⁸	0.993
18 May	4.26×10 ⁸	0.979
19 May	8.46×10 ⁶	0.693
20 May	5.67×10 ⁵	0.042
Average	6.59×10 ⁸	0.819

Table S3. Environmental variables of depth of sample (DS), Temperature (T), Ph, Salinity (S), Dissolved oxygen (DO), dissolved inorganic phosphorus (DIP), and dissolved inorganic nitrogen (DIN) at each sampling station

Time-Station	DS (m)	T (°C)	pH	S	DO (mg·L ⁻¹)	DIP (µM)	DIN (µM)
5.9-1	22	20.8	8.32	31.8	9.42	0.32	48.57
5.9-2	22	20.6	8.40	31.0	11.57	0.65	18.50
5.9-3	22	20.7	8.34	30.3	10.46	0.10	34.14
5.9-4	11	19.7	8.10	28.7	8.94	0.10	17.07
5.9-5	11	19.5	8.11	26.8	8.99	0.10	3.57
5.10-1	22	19.6	8.18	29.6	9.51	0.10	39.00
5.10-2	21	20.2	8.22	27.3	9.92	0.61	18.79
5.10-3	21	20.5	8.28	27.1	9.83	0.16	30.50
5.10-4	11	19.0	8.12	27.2	9.21	0.32	23.50
5.10-5	11	19.3	8.13	26.3	9.38	0.10	14.79
5.10-6	11	19.3	8.12	26.3	9.26	0.06	17.50
5.12-1	22	21.5	8.19	31.1	9.41	0.13	60.64
5.12-2	22	21.7	8.2	31.6	9.27	0.10	25.43
5.12-3	21	21.4	8.12	30.9	9.15	0.10	23.64
5.12-4	12	20.9	8.00	29.5	8.55	0.45	33.71
5.12-5	11	19.4	8.00	29.3	9.14	0.10	31.79
5.12-6	11	20.1	8.01	29.2	8.75	0.65	18.50
5.13-1	11	21.1	8.67	29.4	13.35	0.10	5.21
5.13-2	22	21.4	8.26	30.9	9.46	0.13	5.79
5.13-3	11	21.7	8.22	27.1	11.81	1.84	8.64
5.13-4	11	21.7	8.11	26.1	9.67	0.13	14.86
5.13-5	11	22.3	8.14	25.8	10.05	0.26	6.93
5.14-1	14	19.7	8.02	25.3	9.32	0.16	20.07
5.14-2	14	19.7	8.11	25.2	9.53	0.26	7.57
5.14-3	14	19.6	8.12	25.3	9.52	0.32	6.93
5.14-4	11	20.4	8.12	24.5	9.25	0.35	3.43
5.14-5	11	20.2	8.12	24.8	9.29	1.42	9.43
5.14-6	11	20.2	8.13	24.7	9.31	0.06	5.43
5.15-1	14	20.6	8.11	27.3	9.46	0.23	5.29
5.15-2	14	20.6	8.11	27.6	9.36	0.06	6.93
5.15-3	14	20.6	8.11	27.2	9.53	0.26	8.57
5.15-4	11	21	8.04	26.8	9.35	0.03	14.50
5.15-5	11	21.3	8.08	23.8	9.41	1.42	11.71
5.15-6	11	21.1	8.11	24.1	9.68	0.03	23.29
5.17-1	22	19.6	8.24	29.0	9.45	2.35	31.64
5.17-2	22	20.1	8.30	30.6	9.42	1.26	32.64
5.17-3	22	20.2	8.32	30.7	9.64	0.94	11.64
5.18-1	14	19.9	8.63	28.1	10.08	0.97	26.07
5.18-2	17	19.2	8.67	28.4	10.46	0.55	35.00
5.18-3	22	19.4	8.68	28.2	10.30	0.26	17.71

5.18-4	17	19.6	8.69	27.9	10.87	0.13	5.79
5.18-5	12	19.8	8.52	25.8	9.68	0.10	8.07
5.18-6	11	19.4	8.51	25.5	9.74	0.65	6.64
5.18-7	11	19.8	8.5	25.5	9.49	0.06	43.50
5.19-1	22	20.1	8.29	30.5	9.38	0.13	40.29
5.19-2	17	19.7	8.33	30.5	9.76	1.87	14.36
5.19-3	16	19.5	8.36	30.5	10.40	0.35	15.50
5.19-4	11	20.2	8.14	25.1	9.33	0.10	32.07
5.19-5	11	20.1	8.17	25.4	9.37	2.19	6.57
5.19-6	11	20.5	8.17	25.5	9.28	0.29	7.43
5.20-1	18	20.1	8.27	31.1	8.87	0.19	18.21
5.20-2	16	20.2	8.27	31.0	9.01	1.39	12.14
5.20-3	16	20.9	8.22	28.6	9.03	1.65	9.00
5.20-4	11	20.3	8.11	25.3	9.25	0.26	36.00
5.20-5	11	20.1	8.15	25.5	9.37	1.52	13.29
5.20-6	11	20.1	8.17	25.7	9.29	2.97	20.07
Average	15	20.3	8.23	27.8	9.64	0.56	19.07

Table S4. Average abundance (A, ind. m⁻³), and occurrence ratio (OR, %) of in the different phases, and the different letters in the *M. atlantica*, *C. sinicus*, and *S. nagaee* indicate significant ($P < 0.05$) differences among the different phases.

Scientific classification	Growth phase		Maintenance phase		Dissipation phase	
	A	OR	A	OR	A	OR
<i>Nemopsis bachei</i>	1.63	29.41	0.05	7.41	/	/
<i>Euphyseta bigelowi</i>	0.16	17.65	0.51	18.52	0.03	8.33
<i>Laodicea indica</i>	0.03	5.88	/	/	/	/
<i>Clytia</i> sp.	6.75	82.35	1.23	59.26	0.28	41.67
<i>Obelia dichotoma</i>	0.03	11.76	/	/	/	/
<i>Liriope tetraphylla</i>	0.20	29.41	0.15	11.11	0.03	8.33
<i>Aglaaura hemistoma</i>	0.10	5.88	/	/	0.03	8.33
<i>Aegina citrea</i>	0.16	17.65	0.03	7.41	/	/
<i>Aeginura grimaldii</i>	/	/	/	/	0.03	8.33
<i>Solmundella bitentaculata</i>	0.02	5.88	0.03	7.41	/	/
<i>Diphyes chamissonis</i>	0.01	5.88	/	/	/	/
<i>Muggiaea atlantica</i>	47.56 ^a	100.00	37.14 ^a	100.00	5.05 ^b	83.33
<i>Bassia bassensis</i>	0.01	5.88	/	/	/	/
<i>Pleurobrachia globosa</i>	2.02	47.06	1.20	48.15	0.72	33.33
Medusae	0.16	5.88	/	/	/	/
<i>Evadne tergestina</i>	0.02	5.88	0.11	3.70	/	/
<i>Calanus sinicus</i>	18.91 ^a	88.24	2.02 ^b	48.15	0.55 ^b	41.67
<i>Euchaeta concinna</i>	0.07	11.76	0.05	7.41	/	/
<i>Labidocera euchaeta</i>	/	/	0.02	3.70	/	/
<i>Gammarus</i> sp.	0.01	5.88	/	/	/	/
<i>Pseudeuphausia sinica</i>	0.21	11.76	/	/	/	/
<i>Euphausia pacifica</i>	0.07	5.88	/	/	/	/
<i>Lucifer intermedius</i>	0.01	5.88	/	/	/	/
Cumacea	0.03	5.88	0.04	3.70	/	/
<i>Synidotea laevidorsalis</i>	0.03	5.88	/	/	/	/
Polychaeta	0.02	5.88	/	/	/	/
<i>Sagitta enflata</i>	0.04	11.76	/	/	/	/
<i>Sagitta nagaee</i>	8.64 ^a	76.47	19.32 ^a	100.00	6.49 ^a	91.67
<i>Oikopleura dioica</i>	0.03	5.88	0.06	11.11	1.79	33.33
<i>Doliolum denticulatum</i>	12.13	41.18	2.13	25.93	0.05	8.33
<i>Dolioloides rarum</i>	0.34	29.41	/	/	/	/
Doliolidae	/	/	0.02	3.70	/	/
<i>Sagitta</i> larvae	10.29	64.71	/	/	/	/
Macrura larvae	1.49	70.59	0.55	40.74	0.16	25.00
Mysidacea larve	/	/	0.01	3.70	/	/
Polychaeta larvae	0.03	5.88	/	/	/	/
Echinoplateus larvae	0.03	5.88	/	/	/	/
<i>Alima</i> larvae	0.03	5.88	0.03	7.41	/	/
Brachyura megalopa	0.07	11.76	0.03	7.41	/	/

Brachyura zoea	1.42	70.59	1.03	48.15	0.27	41.67
Fish larvae	0.10	17.65	0.03	7.41	0.03	8.33
Copepoda larvae	0.12	17.65	0.26	18.52	28.73	66.67

Table S5. Results of Indices of Simplicity (C), diversity (H'), and evenness (J') at each sampling station

Time-Station	C	H'	J'
5.9-1	0.38	2.01	0.54
5.9-2	0.39	1.91	0.48
5.9-3	0.21	2.71	0.73
5.9-4	0.26	2.36	0.68
5.9-5	0.21	2.69	0.78
5.10-1	0.48	1.51	0.44
5.10-2	0.76	0.59	0.59
5.10-3	0.85	0.52	0.17
5.10-4	0.85	0.60	0.19
5.10-5	0.64	1.13	0.44
5.10-6	0.66	0.93	0.40
5.12-1	0.30	2.17	0.63
5.12-2	0.27	2.33	0.67
5.12-3	0.34	1.96	0.65
5.12-4	0.38	2.23	0.60
5.12-5	0.28	2.32	0.77
5.12-6	0.31	2.09	0.74
5.13-1	0.42	1.59	0.57
5.13-2	0.72	0.90	0.28
5.13-3	0.51	1.22	0.77
5.13-4	0.34	1.75	0.88
5.13-5	0.45	1.56	0.60
5.14-1	0.57	1.34	0.39
5.14-2	0.33	2.13	0.59
5.14-3	0.41	1.87	0.62
5.14-4	0.39	1.87	0.67
5.14-5	0.31	1.91	0.68
5.14-6	0.36	1.90	0.74
5.15-1	0.42	1.70	0.73
5.15-2	0.80	0.65	0.28
5.15-3	0.71	0.85	0.30
5.15-4	0.34	1.73	0.86
5.15-5	0.54	1.46	0.56
5.15-6	0.34	1.82	0.79
5.17-1	0.35	1.76	0.76
5.17-2	0.30	1.87	0.67
5.17-3	0.57	1.29	0.46
5.18-1	0.38	1.66	0.71
5.18-2	0.36	1.85	0.72
5.18-3	0.54	1.18	0.59
5.18-4	0.33	2.07	0.74

5.18-5	0.46	1.26	0.80
5.18-6	0.37	1.51	0.95
5.18-7	0.52	1.16	0.73
5.19-1	0.54	1.16	0.73
5.19-2	0.30	1.85	0.92
5.19-3	0.57	1.19	0.51
5.19-4	0.29	2.04	0.88
5.19-5	0.21	2.41	0.93
5.19-6	0.64	1.08	0.47
5.20-1	0.43	1.69	0.60
5.20-2	0.46	1.34	0.67
5.20-3	0.43	1.75	0.62
5.20-4	0.73	0.74	0.47
5.20-5	0.31	2.10	0.81
5.20-6	0.26	2.12	0.91
Average	0.44	1.63	0.63

Table S6. Correlation between abundance of zooplankton and environmental factors

		DS	T	S	pH	DO	DIP-	DIN	PD
Growth phase (n=17)	TA	r	0.151	-0.155	0.259	-0.076	0.213	0.106	0.029
		P	0.562	0.554	0.315	0.772	0.411	0.685	0.911
	MA	r	-0.035	-0.330	0.172	-0.359	0.201	-0.149	0.070
		P	0.893	0.196	0.509	0.157	0.439	0.568	0.670
	CS	r	0.008	0.180	-0.271	0.228	-0.368	0.131	0.085
		P	0.976	0.488	0.293	0.378	0.146	0.616	0.746
Maintenance phase (n=27)	SA	r	-0.340	-0.587*	-0.204	-0.593*	-0.096	-0.410	-0.149
		P	0.182	0.013	0.433	0.012	0.713	0.102	0.567
	TA	r	0.136	0.153	-0.337	-0.057	-0.406*	-0.054	-0.340
		P	0.498	0.447	0.085	0.778	0.036	0.789	0.083
	MA	r	0.362	0.082	-0.118	0.303	-0.230	-0.230	-0.288
		P	0.063	0.684	0.557	0.125	0.248	0.248	0.145
Dissipation phase (n=12)	CS	r	0.264	-0.037	-0.161	-0.011	-0.319	0.296	-0.087
		P	0.184	0.856	0.423	0.958	0.105	0.133	0.664
	SA	r	-0.029	0.189	-0.236	-0.178	-0.312	0.139	-0.275
		P	0.884	0.345	0.236	0.374	0.113	0.488	0.166
	TA	r	-0.224	0.231	-0.114	0.023	-0.337	-0.183	-0.289
		P	0.484	0.470	0.725	0.943	0.283	0.568	0.362
	MA	r	0.196	-0.007	0.347	0.356	-0.172	-0.305	-0.386
		P	0.541	0.982	0.269	0.256	0.592	0.335	0.215
	CS	r	-0.292	-0.139	-0.266	-0.099	-0.134	0.574	-0.299

									0.322
	P	0.357	0.667	0.404	0.759	0.678	0.051	0.345	
	r	-0.011	0.317	0.152	0.299	-0.440	0.084	-0.434	-0.175
SA									
	P	0.972	0.316	0.637	0.346	0.152	0.795	0.158	0.586

*indicated significant ($P<0.05$) negative or positive correlation between zooplankton abundances and environmental variables, TA: the total of zooplankton abundance, MA: *Muggiaea atlantica*, CS: *Calanus sinicus*, SA: *Sagitta nagae*, PD: *Prorocentrum donghaiense*.