Supplementary Materials

Table S1. Sampling information during the cruises in May and July 2019 in Taiwan Strait.

Station	Coordinates		Sampling time	
M01	119°59'4" E	26°20'9" N	03:27, 30, May, 2019	
M03	120°17'0" E	26°16'8" N	05:45, 30, May, 2019	
M05	120°33'9" E	26°12'3" N	07:52, 30, May, 2019	
M13	120°02'2" E	26°00'0" N	22:42, 29, May, 2019	18:22, 31, July, 2019
M15	120°20'0" E	25°55'2" N	11:05, 30, May, 2019	15:56, 31, July, 2019
P01	119°55'6" E	25°34'1" N	19:00, 29, May, 2019	
P03	120°07'6" E	25°30'3" N	16:31, 30, May, 2019	10:06, 31, July, 2019
P05	120°18'4" E	25°26'7" N	14:45, 30, May, 2019	12:12, 31, July, 2019
P11	119°24'6" E	25°11'0" N	01:36, 31, May, 2019	23:05, 30, July, 2019
P13	119°34'0" E	25°06'0" N		05:12, 31, July, 2019
P15	119°48'0" E	25°00'8" N	22:00, 30, May, 2019	
P17	119°57'9" E	24°57'0" N	20:30, 30, May, 2019	

Table S2. Results of correlation coefficient between cell density of dinoflagellate or diatom and environmental drivers during two cruises. Dino represents dinoflagellate, dia diatom, Temp temperature, Sal salinity, DO measured dissolved oxygen concentration, DIN dissolved inorganic nitrogen, DIP dissolved inorganic phosphorus. Asterisk indicates significant correlation ($p < 0.05$).

	Temp	**Sal**	**DO**	**pH**	**DIN**	**DIP**	**DIN:DIP**
Log (cell density of dino)	–0.866*	–0.802*	0.734*	0.894*	0.643*	0.342	0.348
Log (cell density of dia)	0.234	–0.040	–0.476*	–0.162	–0.217	–0.285	–0.034
Temp		0.599	–0.881	–0.854	–0.594	–0.314	–0.349
Sal			–0.499	–0.541	–0.437	–0.149	–0.253
DO				0.702	0.678	0.365	0.362
pH					0.644	0.272	0.405
DIN						0.143	0.684
DIP							–0.522

Table S3. Results of correlation coefficient between cell density of *Prorocentrum donghaiense* and environmental drivers during the cruise in May 2019. Asterisk indicates significant correlation ($p < 0.05$). Please see table S1 for detail information.

	Temp	**Sal**	**DO**	**pH**	**DIN**	**DIP**	**DIN:DIP**
Log (cell density of *P. donghaiense*)	–0.668*	–0.753*	0.351	0.733*	0.303	0.477	–0.056
Temp		0.516	–0.664	–0.627*	–0.180	–0.730	0.235
Sal			–0.297	–0.302	–0.300	–0.219	–0.044
DO				0.234	0.455	0.564	–0.028
pH					0.361	0.310	0.119
DIN						–0.014	0.664
DIP							–0.640

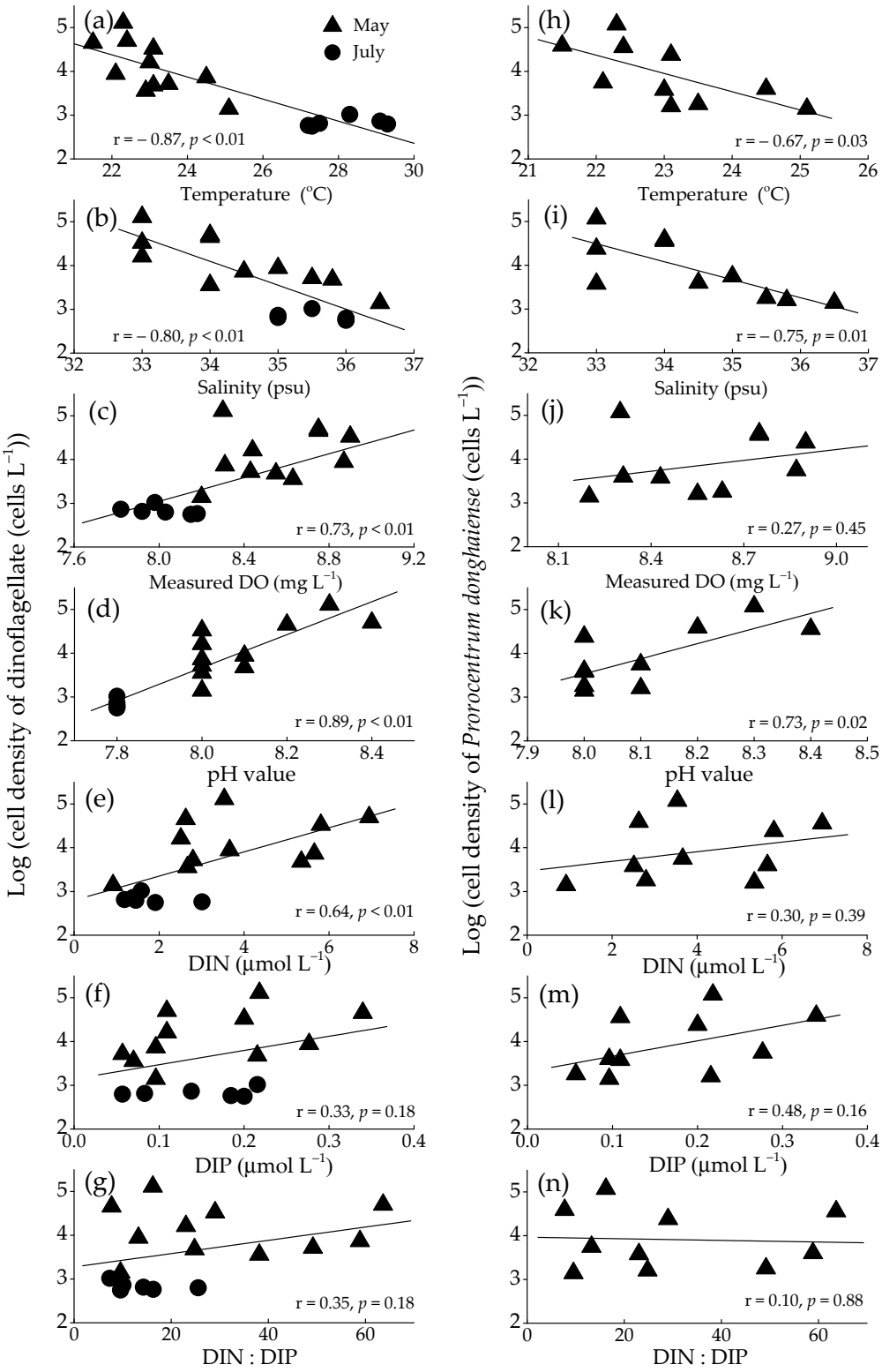

Figure S1. Correlations of cell density of dinoflagellates (left) or *Prorocentrum donghaiense* (right) with temperature (**a**, **h**), salinity (**b**, **i**), measured dissolved oxygen (DO) concentration (**c**, **j**), pH value (**d**, **k**), DIN concentration (**e**, **l**), DIP concentration (**f**, **m**), and DIN : DIP ratio (**g**, **n**) in the surface water of the Taiwan Strait during the cruises in May and July 2019.

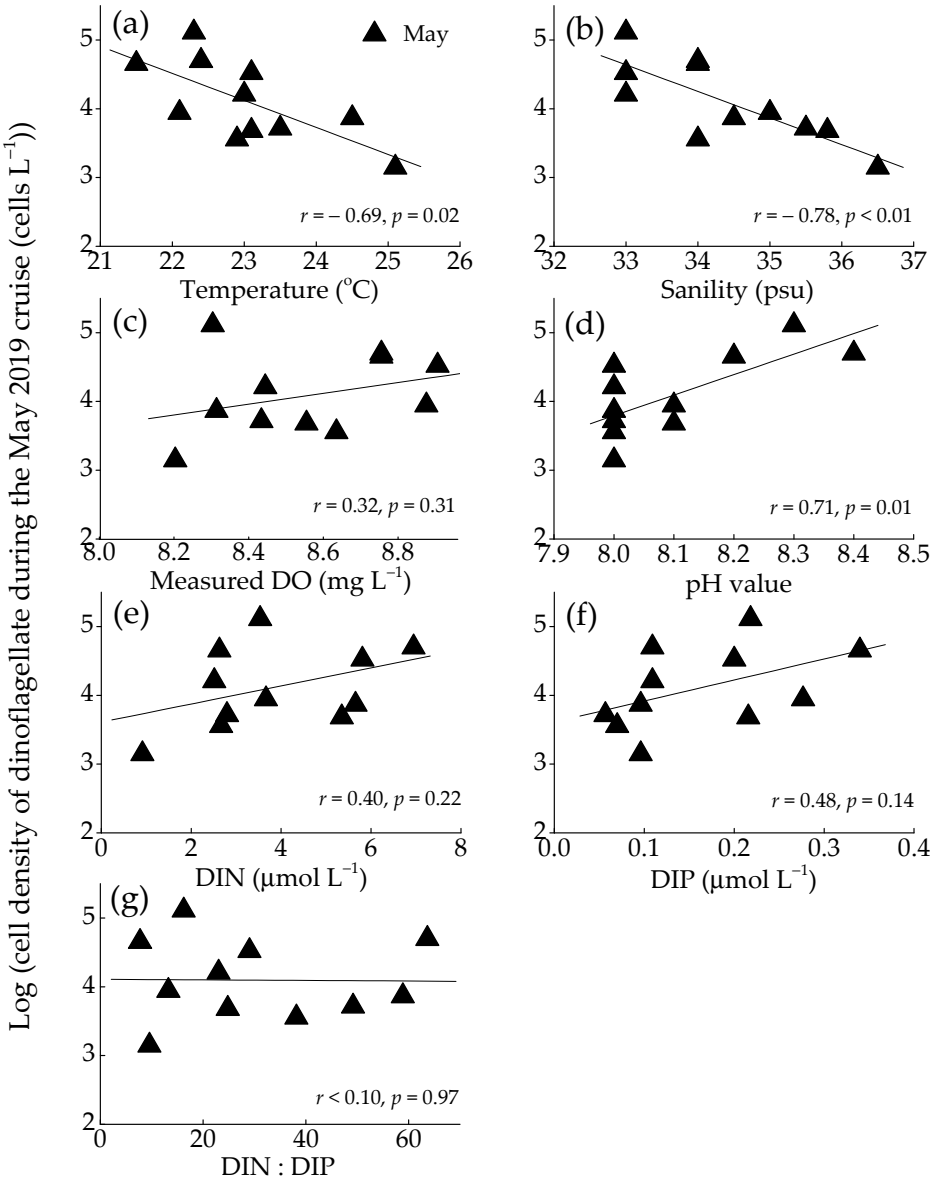

Figure S2. Correlations of cell density of dinoflagellates with temperature (**a**), salinity (**b**), measured dissolved oxygen (DO) concentration (**c**), pH value (**d**), DIN concentration (**e**), DIP concentration (**f**), and DIN : DIP ratio (**g**) in the surface water of the Taiwan Strait during the cruise in May 2019.

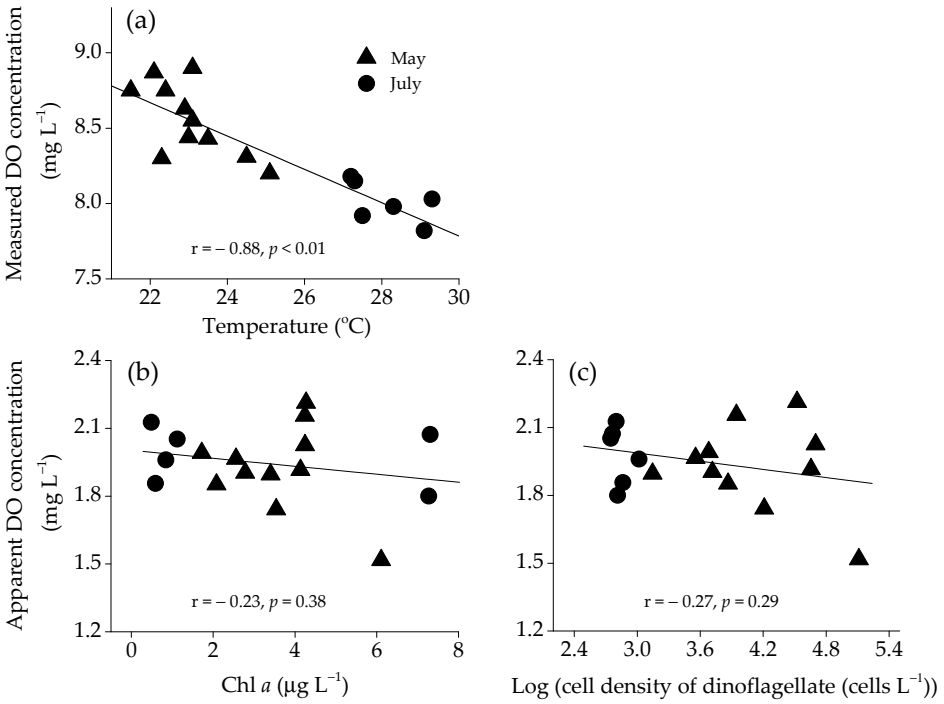

Figure S3. Correlation of measured dissolved oxygen (DO) concentration with temperature (**a**), and correlation of apparent DO concentration with chlorophyll *a* (Chl *a*) (**b**) or cell density (**c**) of dinoflagellate in the surface water of the Taiwan Strait during the cruises in May and July 2019. Apparent DO concentration was calculated as the difference between measured DO concentration and saturated DO concentration.