

Table S1. Environmental characteristics of sampling sites in the lakeshore.

Sites	S1	S2	S3	S4	S5
TP	0.078	0.070	0.098	0.082	0.061
DTP	0.017	0.001	0.239	0.005	0.013
PO₄-P	0.003	0.003	0.005	0.004	0.001
TN	1.285	1.467	0.922	1.376	1.149
DTN	2.047	1.569	1.638	1.751	1.842
NO₃-N	0.125	0.272	0.106	0.170	0.160
NH₄-N	0.233	0.151	0.404	0.262	0.192
COD_{Mn}	4.560	4.000	4.240	4.480	4.080
Chl-a	16.164	15.274	14.852	13.494	14.658
WT	20.500	20.600	20.700	20.900	19.900
EC	43.400	41.300	33.800	33.400	46.900
DO	8.850	8.790	8.810	8.720	8.830
pH	8.350	8.620	8.400	8.020	8.160
SD	20.000	22.000	23.000	24.000	35.000
TDS	223.000	216.000	216.000	220.000	221.000
N/P	16.562	21.108	9.423	16.864	18.712
TSI	56.768	56.037	56.088	55.930	53.945

TP: total phosphorus; DTP: dissolved total phosphorus; PO₄-P: phosphate phosphorus; TN: total nitrogen; DTN: dissolved total nitrogen NO₃-N :nitrate nitrogen; NH₄-N: ammonium nitrogen; COD_{Mn}: chemical oxygen demand; Chl-a: Chlorophyll a; WT: water temperature; EC: electrical conductivity; DO: dissolved oxygen; SD: Secchi depth; TDS: total dissolve solid; N/P: TN/ TP; TSI: trophic state index.

Table S2. Global network properties of benthic microbial community co-occurrence and their random networks.

Taxa	Prokaryotic	Eukaryotic
Nodes	165	125
Edge	221	463
Positive	68.78%	69.80%
Negative	31.22%	30.20%
R square of power-law	0.881	0.774
Average degree	2.679	7.408
Average clustering coefficient (avgCC)	0.065	0.32
Modularity	0.763	0.362
Average path distance	7.202	3.478
100 Random Networks		
Modularity ± SD	0.642±0.001	0.269±0.007
Average clustering coefficient ± SD	0.015±0.007	0.184±0.017
Average path distance ± SD	4.686±0.135	2.691±0.038

Table S3. Global network properties of planktonic microbial community co-occurrence and their random networks.

Taxa	Prokaryotic	Eukaryotic
Nodes	438	422
Edge	871	939
Positive	57.02%	40.68%
Negative	42.98%	59.32%
R square of power-law	0.824	0.869
Average degree	3.977	4.45
Average clustering coefficient (avgCC)	0.275	0.301
Modularity	0.813	0.749
Average path distance	7.145	5.631
100 Random Networks		
Modularity \pm SD	0.509 \pm 0.006	0.460 \pm 0.006
Average clustering coefficient \pm SD	0.022 \pm 0.005	0.024 \pm 0.005
Average path distance \pm SD	4.127 \pm 0.043	3.859 \pm 0.043

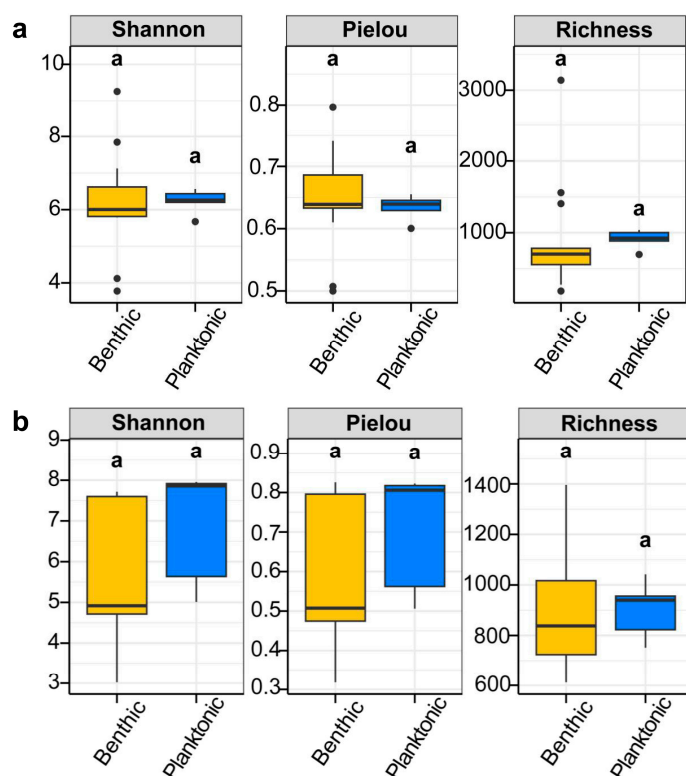


Figure S1. Shannon-Wiener index, Pielou's evenness and richness among the prokaryotic (a) and eukaryotic (b) in the two habitats.

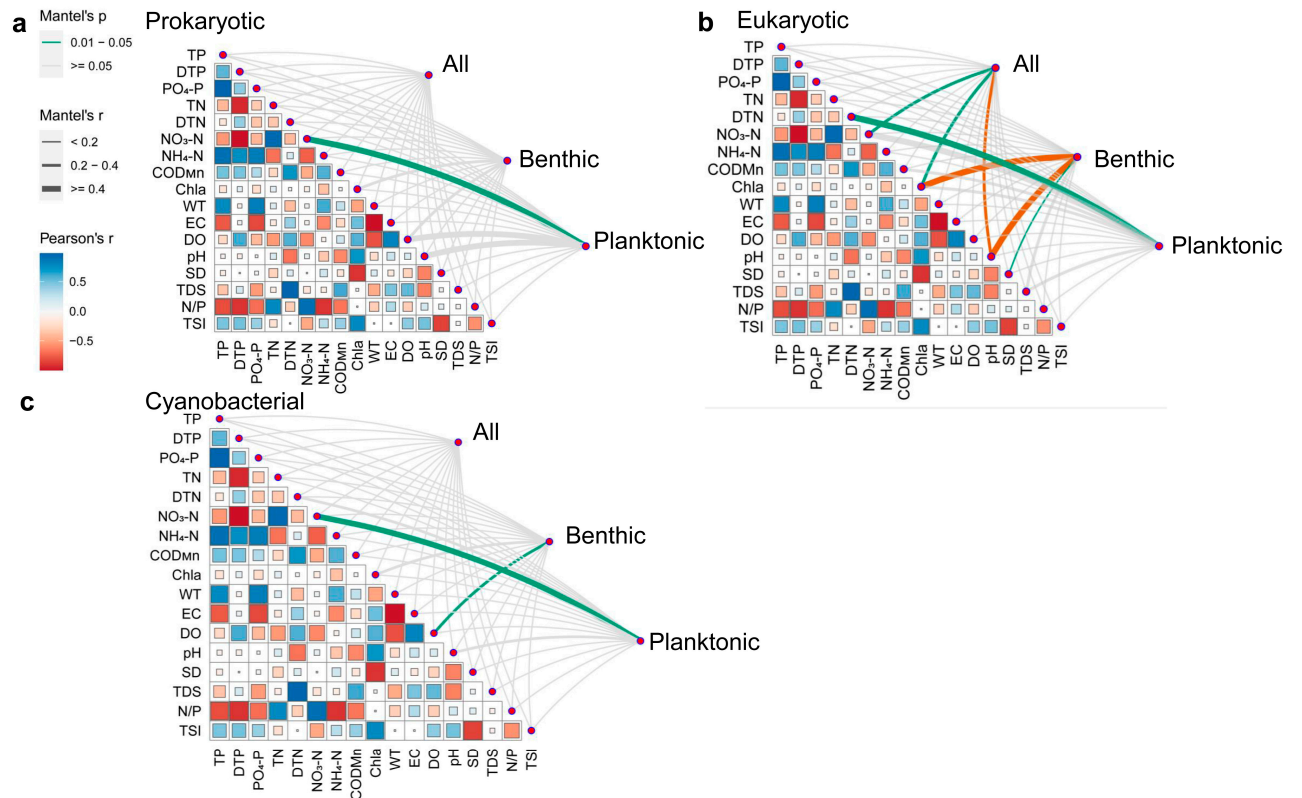


Figure S2. The impacts of environmental factors on microbial structure based on Mantel's test among the three taxa.