

Supplementary materials

Table S1. Topological properties of bacterial and fungal community co-occurrence networks in water samples from three representative regions of Dianchi Lake: *hPollut*, *HABs*, and *SubmP*.

Samples	Nodes	Edges	Avg. degree	Modularity	Positive correlation ratio	Negative correlation ratio
<i>hPollut</i>	135	936	10.636	0.317	54.27%	45.73%
<i>HABs</i>	167	2279	23.617	0.272	55.2%	44.8%
<i>SubmP</i>	142	1445	15.622	0.231	53.77%	46.23%

Table S2. Indicator species of bacterial and fungal OTUs in water samples from the three representative regions of Dianchi Lake: *hPollut*, *HABs*, and *SubmP*.

Samples	Indicator species (Top10)			
	ID	Genus	Indicator	P value
Bacteria				
<i>hPollut</i> (126)	OTU9740	unclassified_o__Cytophagales	1	0.001
	OTU29142	<i>Elstera</i>	0.997992	0.001
	OTU24892	norank_f__NS9_marine_group	0.991304	0.001
	OTU4267	unclassified_c__Alphaproteobacteria	0.988787	0.001
	OTU8495	<i>Legionella</i>	0.988327	0.001
	OTU6406	<i>Flavobacterium</i>	0.985222	0.001
	OTU8506	unclassified_p__Pseudomonadota	0.980892	0.001
	OTU24975	<i>Ferruginibacter</i>	0.978208	0.001
	OTU733	<i>Gemmatimonas</i>	0.969325	0.001
	OTU4272	norank_o__SM1A07	0.966543	0.001
<i>HABs</i>	OTU12349	<i>Luteimonas</i>	0.706679	0.002
	OTU23732	<i>Acinetobacter</i>	0.896354	0.001
	OTU23993	<i>Acinetobacter</i>	0.874064	0.002
<i>SubmP</i>	OTU3506	<i>FukuN57</i>	0.757143	0.001
	OTU2051	norank_f__37-13	0.720721	0.001
	OTU3239	<i>Ephemeroptericola</i>	0.703704	0.001
	OTU23783	hgcl_clade	0.700071	0.003
Fungi				
<i>hPollut</i> (47)	OTU334	unclassified_k__Fungi	1	0.001
	OTU946	unclassified_k__Fungi	1	0.001
	OTU1027	unclassified_p__Chytridiomycota	1	0.001
	OTU1043	unclassified_k__Fungi	1	0.001
	OTU403	unclassified_k__Fungi	0.99815	0.001
	OTU311	unclassified_k__Fungi	0.997489	0.001
	OTU1018	unclassified_p__Chytridiomycota	0.992758	0.001
	OTU13306	unclassified_p__Chytridiomycota	0.992715	0.001
	OTU362	unclassified_p__Chytridiomycota	0.992346	0.001
	OTU17819	unclassified_k__Fungi	0.980711	0.001
<i>HABs</i>	/	/	/	/
<i>SubmP</i>	OTU13301	<i>Metschnikowia</i>	0.753706	0.038