

**Table S2** The top 10 ASVs in river and lake habitats and their taxonomic classification.

Rank	ASV_ID	Mean abundance (%)		Taxonomy			
		River	Lake	Phylum	Class	Family	Genus
1	ASV_13	2.484	0.001	<i>Verrucomicrobia</i>	<i>Verrucomicrobiae</i>	<i>Verrucomicrobiaceae</i>	Unassigned
2	ASV_5	2.269	0.245	<i>Verrucomicrobia</i>	<i>Verrucomicrobiae</i>	<i>Verrucomicrobiaceae</i>	Unassigned
3	ASV_12	1.650	0.346	<i>Planctomycetes</i>	<i>Planctomycetia</i>	<i>Planctomycetaceae</i>	<i>Zavarzinella</i>
4	ASV_18	1.610	0.002	<i>Proteobacteria</i>	<i>Alphaproteobacteria</i>	<i>Sphingomonadaceae</i>	<i>Sphingorhabdus</i>
5	ASV_17	1.433	0.100	<i>Planctomycetes</i>	<i>Planctomycetia</i>	<i>Planctomycetaceae</i>	Unassigned
6	ASV_22	1.412	0.111	<i>Proteobacteria</i>	<i>Gammaproteobacteria</i>	<i>Pseudomonadaceae</i>	<i>Pseudomonas</i>
7	ASV_7	1.282	0.004	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Comamonadaceae</i>	<i>Limnohabitans</i>
8	ASV_28	1.151	0.116	<i>Verrucomicrobia</i>	<i>Verrucomicrobiae</i>	<i>Verrucomicrobiaceae</i>	Unassigned
9	ASV_33	1.071	0.008	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Comamonadaceae</i>	<i>Polaromonas</i>
10	ASV_15	1.010	0.006	<i>Proteobacteria</i>	<i>Betaproteobacteria</i>	<i>Comamonadaceae</i>	<i>Limnohabitans</i>

  

Rank	ASV_ID	Lake	River	Phylum	Class	Family	Genus
1	ASV_1	11.685	0.000	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
2	ASV_2	10.780	0.010	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
3	ASV_3	5.723	0.004	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
4	ASV_4	4.841	0.000	<i>Proteobacteria</i>	<i>Alphaproteobacteria</i>	SAR11	Candidatus <i>Fonsibacter</i>
5	ASV_6	3.232	0.042	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
6	ASV_9	3.049	0.002	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
7	ASV_8	2.751	0.000	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
8	ASV_14	2.685	0.002	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
9	ASV_11	2.607	0.000	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis
10	ASV_10	2.595	0.000	<i>Verrucomicrobia</i>	<i>Spartobacteria</i>	Unassigned	<i>Spartobacteria</i> genera incertae sedis