Table S2. Bacteria present in Organic Lake water column from November 2008 sampling.

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| --- | --- | --- | --- | --- |
| Phylum (% domain) | Class (%phylum) | Genera (% class) | Key physiological feaures | References |
| Bacteroidetes (18.0) | Flavobacteria (89.0) | *Psychroflexus* (74.1)  unclassified Flavobacteriales (19.2)  *Brumimicrobium* (5.6)  *Owenweeksia* (0.7)  *Stenothermobacter* (0.2)  *Persicivirga* (0.1) | strict heterotrophic aerobes, ox+cat+, degrade algal ulvan  facultative anaerobe, fermentative metabolism |  |
| Sphingobacteria (4.5) | *Lewinella* (51.7)  E6ac02 (42.0)  Ns11-12\_marine\_gp (3.3)  Wchb1-69 (3.0) |  |  |
| Cytophagia (4.3) | Ml602j-37 (77.0)  unclassified Cytophagales (9.1)  *Cyclobacterium* (8.5)  *Marivirga* (5.4) |  |  |
| Vc2.1\_bac22 (0.8) | Vc2.1\_bac22 (100) |  |  |
| Sb-1 (0.7) | Sb-1 (100) |  |  |
| Proteobacteria (54.2) | Gammaproteobacteria (68.8) | *Marinobacter* (64.0)  unclassified Gammaproteobacteria (9.9)  unclassified Alteromonadales (9.5)  *Saccharospirillim* (7.0)  *Halomonas* (4.4)  *Psychromonas* (2.3)  *Glaciecola* (0.8)  *Pseudomonas* (0.3)  *Thiomicrospira* (0.3)  *Thermomonas* (0.2)  unclassified Enterobacteriales (0.1)  Bps-ck174 (0.1)  *Leucothrix* (0.1)  *Modicisalibacter* (0.1)  *Thiorhodovibrio* (0.1)  *Pseudospirillum* (0.1) | Nitrate or DMSO reducing, Can also oxidise iron. |  |
| Alphaproteobacteria (28.5) | *Roseovarius* (76.1)  unclassified Rhodobacterales (13.4)  *Loktanella* (5.7)  *Albimonas* (1.5)  TK34 (0.5)  *Phaeobacter* (0.5)  unclassified Alphaproteobacteria (0.3)  *Sphingomonas* (0.2)  *Octadecabacter* (0.2)  Db1-14 (0.2)  *Oceanicaulis* (0.2)  *Sulfitobacter* (0.2)  unclassified Rhodospirallales (0.2)  *Roseibaca* (0.2) | Heterotrophic but can produce bacteriochlorophyll A, autotroph? | (Labrenz 1999) |
| Epsilonproteobacteria (1.5) | *Sulfurimonas* (75.5)  *Sulfurospirillum* (8.1)  *Arcobacter* (7.0)  Br36 (6.4) |  |  |
| Deltaproteobacteria (1.1) | *Desulfotignum* (38.4)  *Desulfopila* (19.7)  unclassified Bdellovibrionales (12.6)  *Peredibacter* (8.5)  *Bacteriovorax* (8.5)  *Desulfosalsimonas* (4.4)  *Desulfobacterium* (3.9)  *Desulfuromonas* (3.9) |  |  |
| Cyanobacteria (12.8) |  |  |  |  |
| Actinobacteria (1.4) | Actinobacteria | unclassified Micrococcales  *Aquiluna*  *Demequina* |  |  |
| Firmicutes (0.8) | Clostridia | *Haloanaerobium*  unclassified Clostridiales  unclassified Halanaerobiales  *Fusibacter*  *Fastidiosipila* |  |  |
| Bacilli | unclassified Bacillales  *Paraliobacillus* |  |  |
| Lentisphaerae (0.1) | Lentisphaeria | Wchb1-41  unclassified Victivallales  R76-b128 |  |  |
| Spirochaetes (0.2) | Spirochaetes | *Spirochaeta*  unclassified spirochaetales |  |  |
| Verrucomicrobia (0.8) | Verrucomicrobiae | unclassified Verrucomicrobiales  Rubritalea |  |  |
| Opitutae | unclassified Puniceicoccales  marine Puniceicoccales |  |  |
| Chlamydiae (0.03) | Chlamydiae | unclassified chlamydiales |  |  |
| candidate divisions | RF3 (5.3) |  | Originally cloned from rumen fermenting sample |  |
| OD1 (3.0) |  | Obsidian pool derived |  |
| TM7 (0.2) |  |  |  |
| SR1 (0.07) |  |  |  |
| Bd1-5 (0.07) |  |  |  |
| Bhi80-139 (0.06) |  |  |  |