



Ecophysiology of a Mono Lake picocyanobacterium

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ABSTRACT: We isolated an unusual picocyanobacterium (strain MLCB) from alkaline, hypersaline Mono Lake, California. The organism blooms ($\sim 5.0 \times 10^7$ cells L^{-1}) in late summer. It has very low population densities in the photic zone through spring and summer ($< 10^5$ cells L^{-1}) but maintains a significant population (10^7 - 10^8 cells L^{-1}) in anoxic, sulfidic waters below 25 m year-round during meromictic periods. Complete turnover of the lake resulted in a significant ($> 90\%$) loss of the deep-water population that could not be attributed to simple dilution. The deep-water population returned to its previous concentration by the following autumn. The organism is phycoerythrin rich, does not contain phycourobilin, and is not capable of complementary chromatic adaptation. Phylogenetically, our isolate groups with marine *Synechococcus*, *Prochlorococcus*, and *Cyanobium* genera. Salinity tolerance of our strain was compared to select members of the *Cyanobium* and showed that strain MLCB was the most halotolerant, capable of growing at 10% salinity, compared to limits of 0-6% for the other strains tested.

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