

MICROBIAL DIVERSITY ACROSS LANDSCAPE UNITS IN MCMURDO DRY VALLEYS, ANTARCTICA

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McMurdo Dry Valleys (MCM) represent a mosaic of permanently ice-covered lakes, ephemeral streams, exposed soils and glaciers. It is believed that most organic matter is mobilized throughout the region by strong katabatic winds. Therefore the fluvial and aeolian transport may be the primary dispersive agents of organisms there. However, very little is known about the nutrient and biological linkage among the environments in MCM.

More than one hundred samples of soils; stream and pond mats; lake ice, lake water; and glacier ice and glacier sediments and cryoconite holes in MCM Dry Valleys together with airborne material from aeolian traps that were installed throughout the Taylor Valley; were collected in 2005-06 season. Different group of photosynthetic microorganisms were detected in those samples by isolating pigments *in situ* and testing prompt fluorescence response by FluoroProbe. Cyanobacteria are the most abundant components and are present in all environments. Statistical evaluation using multiregression methods is showing similarity in photosynthetic microbe composition among glacier sediments, cryoconite holes, soils and airborne material suggesting their linkage through wind. Eukaryotic algae (green algae, diatoms and cryptophytes) are more common in aquatic environment such as glacier water or in stream mats.

Microbial diversity using denaturant gradient gel electrophoresis of 16S rDNA; and light and fluorescent microscopy; and cultivation techniques is presently evaluated on all samples together with analysis for particulate C:N:P stoichiometry. Similarity indices and cluster analysis will be used to compare the level of similarity of sequence data and elemental stoichiometry together with pigment composition *in situ* and *in vitro* that exist within MCM Dry Valley's habitats. Results will be also compared with known physical and chemical properties from each environment obtained during the Long Term Ecological Research project in MCM Dry Valleys.

Unique interdisciplinary approach was used for assessing the microbial and nutrient linkage among McMurdo Dry Valleys environments. Also for the very first time data from aeolian sediments will be presented.