Geochemistry & Ecology of Red Mat Systems (GERMS)
Summer Research Program

Red Layer Microbial Observatory (RLMO)
National Science Foundation
Western Oregon University
Yellowstone National Park

Upper Hillside GERMS Portfolio – Cibyl Eckley, July 2007

SITE DATA AND IMAGES

Upper Hillside This geyser was above another geyser on a hill side. The water flowed into a downward stream that we were able to sample from. The above right photo is a shot from the source end. The below right photo is a shot showing the water flowing from the source. This geyser was among a wooded area in a grassy clearing.	
Mat Close-up The mat appears orange on the outer layer. Layers of green and red can be seen where the two cores were removed. Mat Temperature: 44.2 C Mat pH: 9-10	
Core Close-up The inner layers of the mat can be seen in this core, showing greens and red layers.	

Water collection Water was collected using a funnel and hose to drive water into 1 L collection container. Water Temperature: 82.6 C Water pH: 7.9	

ACTIVITY IMAGES

The pH was found using pH paper dipped directly into core hollow and water. The change in coloration was compared to the chart of standards.	
Temperature was taken by placing the probe directly into water and mat. The probe was held still until a steady measurement could be read.	
The cores were dissected using sanitized forceps and sterile scalpel. Layers of the core were dissected into red and green layers that were quartered and saved in labeled tubes then frozen. Erin and Shawn performed the dissection with Nana's assistance.	

Chemistry tests were performed using AccuVac system and Chemical Mix system. For each test, a sample of the water was drawn into the appropriate AccuVac for the corresponding chemical. Sample cell was zeroed, and the sample was read using the appropriate program per protocol. Values were given in mg/L. Nelson and Lisa performed the water chemistry tests with the assistance of Katie.	
Dissected green and red layer in finalized portions ready to save.	
Nikki checks pH with her equipment, AccuMet model AP63. She obtained the following values, which differ slightly from my values. Source: pH 6.8 Water: pH 7.2 Mat: pH 8.5	

WATER CHEMISTRY

Site = (Upper Hillside)	Data
Bromine	0.30 mg/L
Chlorine	0.21 mg/L
Chromium	0 mg/l
Molybdenum	0 mg/L
Nitrate	3.5 mg/L
Nitrite	0.037 mg/L
Sulfate	10 mg/L
Sulfide	0 mg/L
Copper	0.02 mg/L
Iron	0.05 mg/L
Manganese	0.4 mg/L