




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

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



Lower Hillside GERMS Portfolio – Shawn Coreson, July 2007

SITE DATA AND IMAGES

| | |
|---|---|
| <p>Lower Hillside</p> |  A wide-angle photograph showing a large, flat, rocky surface covered with a complex microbial mat system. The mat exhibits various colors, including bright yellow, orange, and red, interspersed with grey and blue patches. The surrounding area is grassy. |
| <p>Thick filamentous mat, mat pH 9.0, mat temp 46.4C Water pH 7.7, water temp 55.9C</p> |  A close-up photograph of a thick, filamentous microbial mat. The mat is primarily orange-brown with some yellow-green areas. It has a textured, almost fibrous appearance. |
| <p>Orange/red on top 3/8-1/2", followed by distinct green layer of about 1/4" followed by very solid red layer with debris at bottom. Total length approximately 1 3/4"</p> |  A photograph showing a person's hands holding a clear petri dish. Inside the dish is a small, cylindrical sample of the microbial mat. The sample shows distinct layers: a top layer of orange/red, a middle layer of green, and a bottom layer of red with some debris. |

Water visually clear,
pH 7.7
Temp 55.9C



ACTIVITY IMAGES

pH was measured using pH paper placed
inside core sample hole and read
immediately upon withdrawal.
pH most closely matched 9 on the key.



Temperature was measured by supplied
temp meter, with probe placed directly
beside core sample hole.
Temp was 46.
4C in the mat, at a depth of approximately
1"



Dissection was done on site with sterile
tools in clean Petri dishes. Debris in mat
was removed as carefully as possible and
mat was sorted into clean red and clean
green parts and places in separate small
plastic centrifuge containers.



Water was sampled from area close to mat sample, was scooped out by sterile funnel and poured by hose into 1 liter clear plastic bottle. Chemical tests were performed immediately on site.



Cybil dissecting the mat from the lower hillside with help from Dr Boomer and Nona.



Good picture of water pH taken at lower hillside. pH was 7.7



WATER CHEMISTRY

| | Data (what are units?) |
|------------|------------------------|
| Bromine | 0.95 mg/L |
| Chlorine | 0.45 mg/L |
| Chromium | 0.0 |
| Molybdenum | 0.40 mg/L |
| Nitrate | 1.10 mg/L |
| Nitrite | N/A |
| Sulfate | 11.00 mg/L |
| Sulfide | Not done on site. 0.00 |
| Copper | 0.0 |
| Iron | 0.0 |
| Manganese | 0.60 mg/L |