

Umatilla National Forest

2008 Monitoring Summary -- Water Temperature

Background

Water temperature is a critical indicator of water quality directly linked to aquatic and human health. In Eastern Oregon and Washington, high temperatures in summer months can be lethal to fish. Warm waters also promote algal growth, bacteria, and related water quality impairments.

Stream temperature monitoring on the Forest first began with single-point-in-time measurements using Max-Min thermometers in the late 1960s. Continuous measurement using paper chart recording devices started in the 1970s. In the 1990s advances in digital recorders and intense concern for declining fisheries led to expansion of water monitoring across the forest. The number of sites has dropped in recent years because: sufficient data are now available to establish baseline at many locations, fewer activities directly impact water temperature, and because of funding declines (Table 1).

FY2008 Accomplishments with NFVW and NFWF funds include:

- ◆ Deployed 52 sites (Map 1), 11 sites with Air monitoring
- ◆ Monitoring objectives include: baseline, watershed restoration, fire recovery, activity effects
- ◆ Data management and sharing –Data archived in Excel, distributed to Districts and Partners (include CTUIR, NOAA, ODFW, WDFW, Watershed Councils)

Summary and Recommendations

- ◆ Maximum water temperatures were lower at all but 4 sites (in Wall Creek) compared to 2007, related to general climate conditions, above-average snowpack, cool-wet spring, and late runoff
- ◆ Post fire recovery may be evident at sites affected by fires in prior years though more analysis needed
- ◆ Air temperature monitoring helps identify factors such as groundwater that influence seasonal water temperatures
- ◆ Evaluate distribution of long term monitoring sites, consider “rotating panel” to periodically activate discontinued sites, and consider climate change vulnerability



Photo 1. Cummings Creek on Pomeroy District, affected by School fire in 2005

Table 1. Number of Stream Temperature Monitoring Stations by Ranger District and Decade

District	1988	1998	2008
Heppner	0	41	16
Pomeroy	6	20	12
North Fork John Day	5	66	22
Walla Walla	1	23	12
TOTAL # of Sites	12	150	52



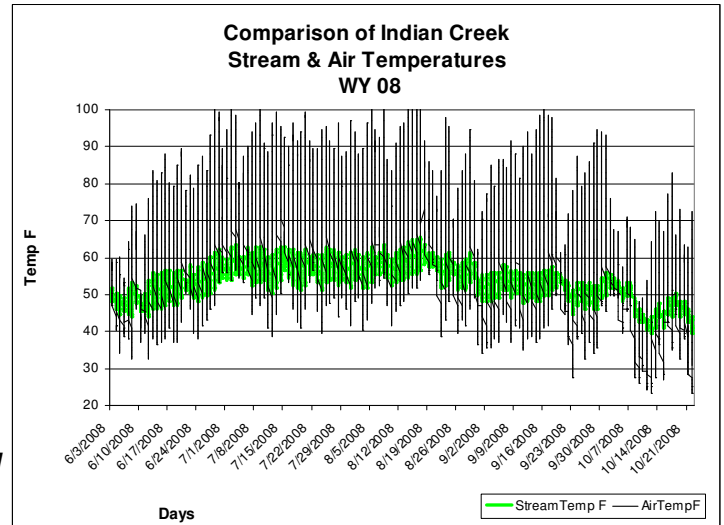
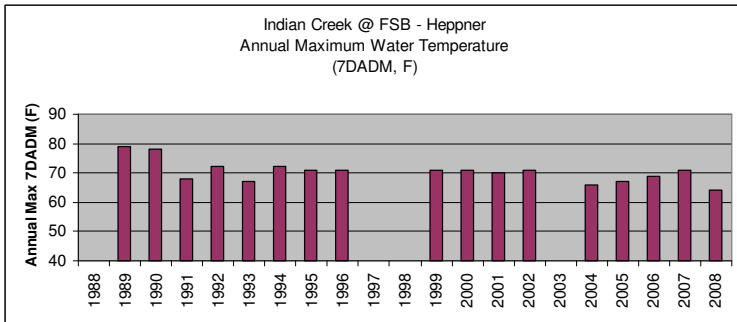
For more information contact:
Umatilla National Forest
2517 SW Hailey Ave
Pendleton, OR 97801
541-278-3716



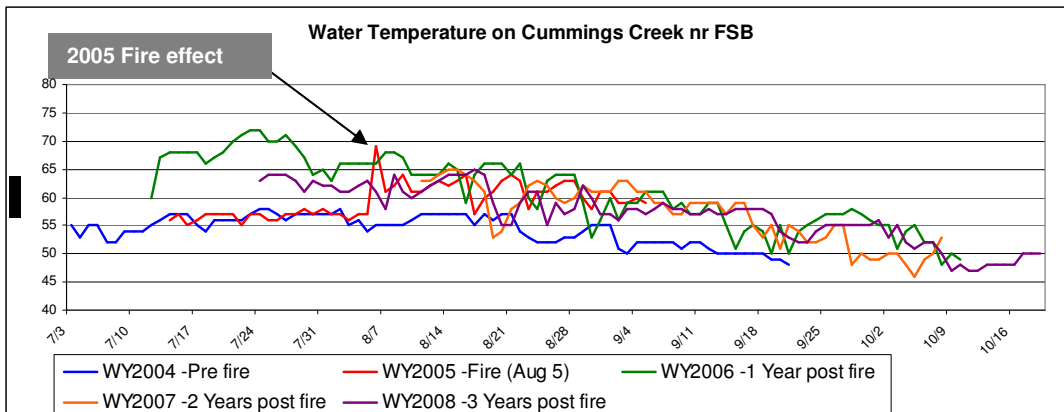
Figure 2. SF Umatilla River, long term monitoring site. Note: recreational “hobby dam” removed in the fall

Umatilla National Forest

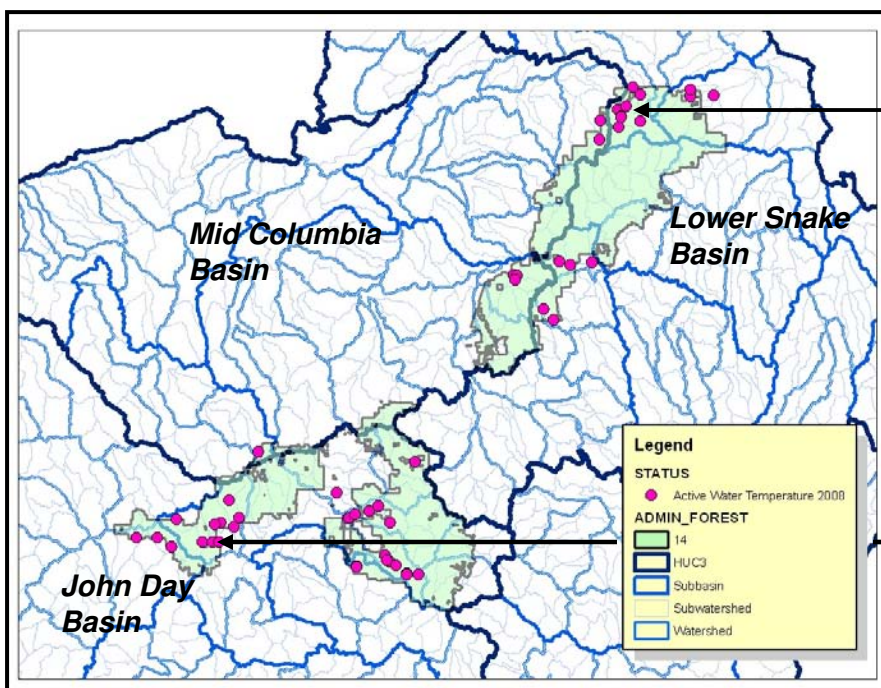
2008 Water temperature monitoring continued...



ABOVE: Plot of annual summary data (7-Day Annual Daily Maximum) on Indian Creek, a long term monitoring site on the Heppner district. Note 2008 lower than any previous year on record. **RIGHT:** seasonal progression of increasing Air and Water temperatures. Note differences in extremes of air compared to water, with multiple episodes of high temperatures.



The 2005 School fire burned >90% of Cummings Creek watershed (40% at mod-high severity). Direct effect on water temperature evident, and longer term impacts on riparian conditions, including shade and seasonal water temperatures. Shade recovery may be accelerated by planting native shrubs but may still take a decade or longer.



Cummings Creek site
Indian Creek site
Map 1. Umatilla National Forest 2008 Water Temperature Monitoring Stations, by Basin and Watershed