State of the Lake 2000

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The summer of 2000 will be remembered for the fires. But, recall that the summer of 1988 was similar. The sky over Flathead Lake was smoky and the ash fertilized the lake just as it is doing today.

In 1980 Mount St Helen's blew and fertilized the lake. In winter of 1996-97 we had the largest lowland snowpack and runoff in history. It's always something.

That's Mother Nature for you, I guess. But, certainly our own activities play a large role too. Perhaps the fires would not be so bad if we had never embraced Smoky the Bear and not controlled fires to the extent that massive fuel buildup occurred in our forests.

The answer is that good stewardship requires a clear understanding of and commitment by government to public goals (healthy forest, clean lake) and proactive management to reach those goals, keeping in mind that management of natural resources must be based upon sound ecological science. The entire process must be framed in public dialog.

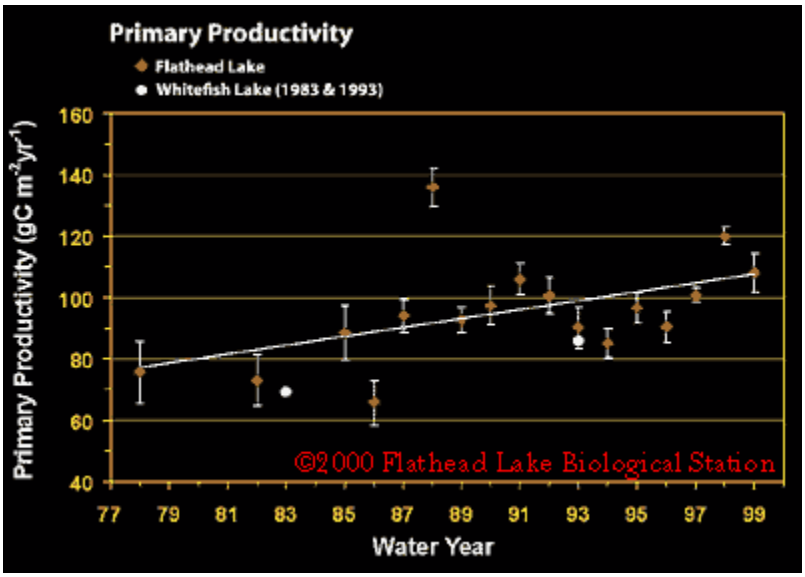
At the Flathead Lake Biological Station we continue our role as Sentinel of the Lake by monitoring water quality conditions in the lake, participating in local discussions about the lake fishery and doing our usual professional work publishing our data and observations.

This year the lake has been astonishingly clear, owing to the drought. The lake did not receive the normally turbid and nutrient-laden runoff from the Flathead River system and therefore algae blooms have been limited. Of course, we are rapidly making up for reduced nutrient loading in the runoff by the huge inputs from smoke, ash and dust associated with the fires and dry rural roads. Moreover, the water column is warmer than ever recorded, reaching 70 degrees in the upper 15 feet of the lake! You may have heard me on the radio talking about how the warm water sloshes in the lake when the wind blows because the warm slides easily over the cold water below it. Don't be surprised if you see the lake level fluctuate abnormally, it is just the entire lake sloshing!

Owing to the warm water and atmospheric deposition of nutrients we may well see the algae wake up and take off in September or if the weather cools down and the clouds come in, the influences of the summer nutrient loading may be delayed. One thing is for sure: the lake will be steaming like crazy this winter as it transmits the massive heat stored during the summer. That means Flathead Lakers should be prepared for a foggy, dank winter. I will not predict whether it will snow however!

Our long-term record of primary production (the ability of the lake to grow algae) continues to show increasing productivity (see graph below); 1999 numbers were right

on the trend line. And we have observed depressed oxygen levels in the water column, a chronic, bad sign of increasing enrichment and decreasing water quality.



Primary productivity of Flathead Lake.

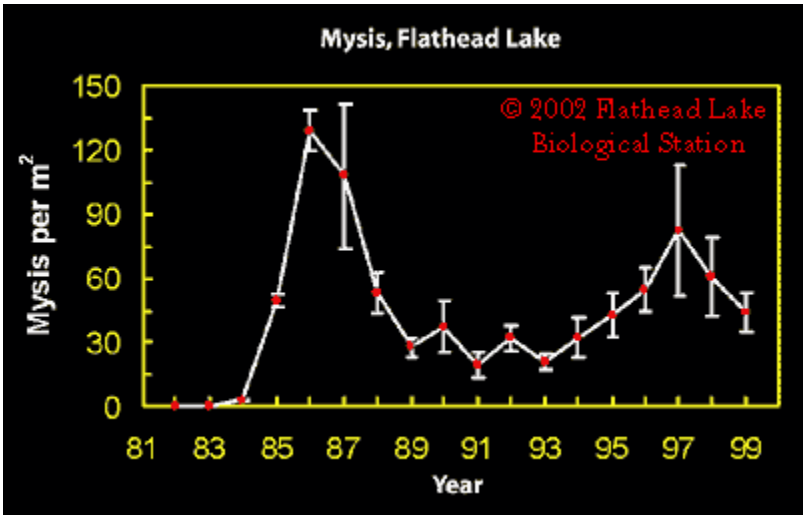
The Flathead Basin Commission has produced a draft plan (the so-called TMDL) to reduce nutrient inputs to Flathead Lake. However, no explicit actions to reduce pollution are provided by land use category in the plan and I question whether the plan goes far enough to be explicitly responsive to the TMDL section of the Clean Water Act. But, I do credit the FBC for hard work and a firm commitment to public involvement in the TMDL process. And the FBC clearly has embraced the science we have given them. Everyone seems to realize that we have to prevent pollution of Flathead waters by keeping nutrients on the land where they will be taken up by crops and other vegetation.

The Flathead Lakers have embarked on a program to identify critical lands for reduction of diffuse sources of pollution. I have committed FLBS facilities and staff time to this important effort.

Fisheries concerns also heated up this year. The Tribes and the State, with FLBS input, sought and got public discussion of management options for Flathead Lake fisheries management in the face of declining numbers of bull and cutthroat trout. We know that populations of lake trout and whitefish have exploded in the last decade owing to proliferation of exotic non-native mysid shrimps, which provide abundant food for those species. Bull and cutthroat are thought to be declining in relation to the development of this dramatic food web shift in the lake over the last two decades. The native trouts are indicators of high quality water and bull trout restoration is mandated by the Endangered Species Act. Options range from usual management of fishing pressure to proactive removal of lake trout and whitefish by netting. I think the most prudent option is to stay with the status quo, but invest in new research to much better understand the ramifications of the food web change and then proceed adaptively. This would reduce the chance of a management mistake such as occurred when the mysids were introduced

into the basin. The downside of the status quo option is that Flathead Lake bull trout could be in serious enough trouble to disappear from the lake. However, bull trout apparently are doing fine in the Hungry Horse and the South Fork and Swan Lake, which perhaps reduces the concern somewhat.

At any rate, our monitoring program shows that the mysid population has continued to decline this last year from a high point in 1997 (see graph below). I predicted years ago that the mysid population would oscillate in relation to wax and wane of the predator population and the monitoring program bears this out.



Flathead Lake Primary Production Flathead Lake mysid counts.

All of this underscores the continuing need to maintain the FLBS monitoring program. We cannot have a healthy lake if we do not fully understand how the enormously complex food web works and the dynamics of nutrient controls on productivity and water clarity. Mother Nature is as complex as she is fickle and, coupled with the myriad of human influences on the lakeshore and upper basin, she makes this a difficult task indeed. But, we are up to it.

With a lead gift from the Flathead Protection Association we have established a research and monitoring endowment fund to ensure that the lake is properly monitored in perpetuity. I urge people that can contribute to this effort to contact me. We need your help to continue as the Sentinel of the Lake.

For more information see the BioStation web site at www.umt.edu/biology/flbs. Or visit us!!