State of the Lake 2002

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During the last two drought years, the lake stayed very clear and warm. As I predicted the winter was foggy and overcast much of the time around the lake because the lake was steaming, giving up its high summer heat load. This year we have above average snow pack and a wet, cold spring with an extended runoff from the rivers. So far we have had three peaks in the runoff, a phenomenon not previously observed. So, a lot of turbid water has come into the lake from the river. The turbid water has spread over the surface lake-wide and is starting to gradually sink to the bottom. This is the usual pattern on wet years as the Flathead River system is naturally erosive and retention of fine sediments in the lake has always occurred. Of course some sediment is being pulled out the outlet, as the spill gates at Kerr Dam have been wide open for some time. The lake will be colder this summer (on June 19 it was 15 degrees C (58 degrees F) at the surface), owing to the cold spring and extended inflow of snowmelt.

Primary productivity, one of the key measures of water quality, continues to increase in the lake (see figure). Data for 2001 are just being calculated and the preliminary estimate is 95 g C m-2, which is below the long-term trend line for the first time in several years. Primary productivity has increased 1/3 since the FLBS began keeping continuous records in 1977. The increase would be greater if controls on pollution had not been accepted for the sewage treatment improvements in the early 1990s. However, non-point sources of nutrients, the main pollutants of concern, continue to be a problem in spite of the efforts by the Flathead Basin Commission and EPA to reduce them.

We need greater emphasis on installing high quality household sewage treatment systems in rural and ex-urban areas of the Kalispell Valley, treating street and parking lot runoff in constructed or natural wetlands and maintaining wide riparian forests along our rivers and streams and the lake shoreline. A recent report by the Lakers properly designated flood plains and alluvial aquifers along the Flathead and other valley rivers are critical lands that require care and protection. Constant vigilance by all citizens is required to accomplish non-point nutrient controls, especially since our area is a focal point for developments that too often increase non-point pollution.

We have not observed any significant blooms of pollution algae in the lake during the last year.

The Mysis (opossum shrimp) population in the lake was stable as in 1999-00 at about 35 per m^2 in our fall 2001 census. Lake trout and lake whitefish populations remains robust based on net sets done State and Tribal biologists, a phenomenon we have long associated with the establishment of Mysis in the lake. Station graduate student, Craig Stafford, who completed his Ph.D. work this spring, showed through analysis of ear

bones that growth of young fish in years 1 to 3 were similar before and after Mysis established in the Lake. But growth declined in ages 4 to 10 post Mysis. These results suggest that increased growth was not the mechanism by which lake trout populations expanded post Mysis. However, the Mysis foraging behavior tends to shuttle surface productivity to the lake bottom which likely has increased the opportunities for small lake trout and lake whitefish to forage in deep waters, thereby reducing predation risk and increasing the survival rate of young fish.

Stafford also found that fish growth rate was much less important than fish diet in determining mercury levels in lake trout and lake whitefish and contamination increased with the foraging depth of the fish. These findings strongly suggest that individual fish have long term preferences in foraging depth, and that individual differences in dietary mercury intake explains variation in contamination levels.

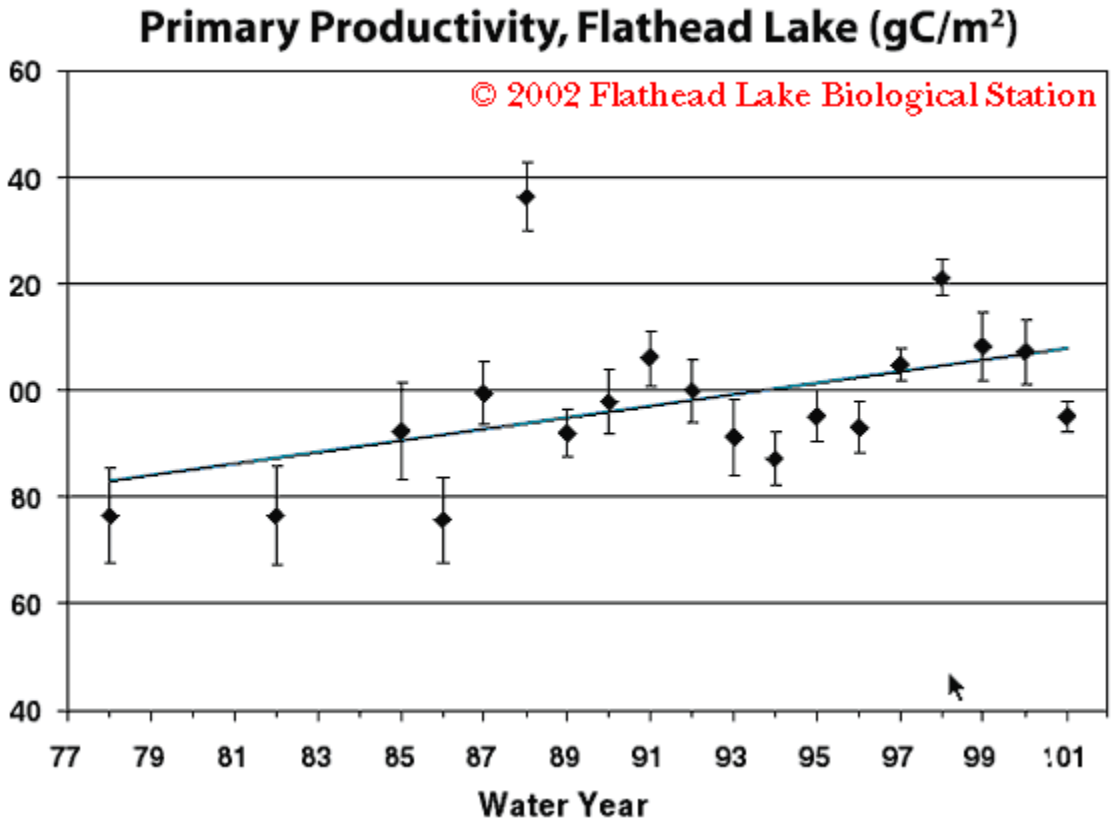
We do not know the source of mercury and other carcinogenic pollutants that have been identified in Flathead Lake fishes. Certainly, oil spills, contaminated soils eroded by the river or dust from within and outside the basin and two cycle engines on some jet skis and boats are likely sources. We monitored the pollution from the construction barge that sank multiple times during the last year and verified a long list of organic pollutants over large areas. Enforcement of water quality laws and agency response preparedness to spills needs your support. But, in comparison to other big, developed lakes around the world, the contamination in Flathead Lake fish is not high enough to be of great concern. Indeed, Flathead Lake is one of the cleanest lakes in the world and fishers should not hesitate to eat some of their catches.

Biological Station scientists will continue to conduct research on the lake and describe it in context with water problems locally, nationally and internationally. However, we need your help to continue the detailed monitoring program. Bob Keenan, Stan Fischer, John Brueggeman and other Flathead legislators and the Montana DEQ have worked hard to fund the FLBS water quality monitoring program. But, this year for the first time in two decades, I had to cut back the monitoring program due to insufficient funding. Therefore, FLBS has established an endowment fund for lake monitoring and research. I urge all those interested in maintaining a clean lake to contribute to this fund. Any amount helps. Contact Erika Binger or me at the Station (982-3301) if you are interested in this important effort.

Check the FLBS website for updates on this report and other activities of your Biological Station.

Primary productivity (g C m-2 yr-1) at the mid-lake deep site off Yellow Bay monitored continuously since 1978 by FLBS. Water quality declines as primary productivity increases.

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


Primary Productivity, Flathead Lake (gC/m²)
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Water Year