

Understanding Water Quality Data

In the next few issues of the newsletter, a detailed explanation of one aspect of our water quality statistics will be provided. Transparency is the topic for this issue.

Transparency, a measure of water clarity, is a quick, simple, and accurate method for estimating and tracking water quality. Transparency readings of Cold Stream are taken by volunteer monitors twice each month from May through September using a Secchi disk and a scope. Readings are taken over the deep holes in both the upper and lower sections of the lake. While looking through the scope, the monitor slowly lowers the Secchi disk until it totally disappears from view. The disk is then raised very slowly until it can be seen and then lowered again very, very slowly until it again disappears. The tape from which the disk hangs is marked in meters. The meters marked on the tape where it enters the water is recorded as the reading of how clear the water is on that day. For example, if the mark on the tape indicates 6 meters then the monitor was able to see 6 meters down into the water before losing sight of the Secchi disk.

Factors which reduce clarity are algae, water color and silt. Since algae are usually the most abundant item, measuring transparency is indirectly measuring the algal population. Algae are microscopic plants. All lakes have algae, but the amount varies lake to lake. Algal populations can have a growth explosion (algal bloom) which leads to water quality problems. These algal blooms are of concern for several reasons: 1) the lake turns green and has a very unpleasant smell; 2) the water picks up an unpleasant taste and odor; and 3) toad and salmon fishery may be eliminated.

Here are some things to remember when reviewing our data. Transparency values in Maine typically range from 3 meters to 7 meters with 5.6 as the average. Rarely, clarity may exceed 10 meters or diminish to less than 2 meters. A transparency of 2 meters or less indicates a water quality problem which has resulted in an algal bloom.

Secchi disk readings taken consistently over a number of years are valuable for determining water quality trends. If a lake with historical transparencies greater than 7 meters, suddenly has a reading of 4 meters or less, this indicates a substantial reduction in water quality most likely as a result of human activity. Of course, transparency naturally fluctuates throughout the year and between years. This fluctuation may be due to weather, location of readings, silt and algae populations. These natural fluctuations are the reason that several years of accumulated readings are needed before any water quality conclusions can be made.



Cold Stream Pond Transparency Readings

Month	(In meters)	
	1996	1997
Upper Lake		
May	5.4	5.6
June	5.6	5.9
July	4.6	6.6
Aug	6.0	7.3
Sep	7.5	7.9
Big Lake		
May	10.1	10.8
June	8.3	8.5
July	8.2	10.8
Aug	9.9	11.7
Sep	10.4	11.4

Using this data and the information provided in the article, it can be seen that the transparency in the Upper Lake is about equal to the state average while the transparency in the Big Lake is well above the state average. Based on these readings, Webb Pearsall of the Department of Environmental Protection has classed the Upper Lake as having moderate algal production and the Big Lake as having low algal production. His recommendation for 1997 and 1998 included continuing the twice monthly transparency readings to enable better analyses of data.

