Otsego Lake Water Quality Data

February 23, March 18, and April 5, 2010

FEBRUARY 23, 2010

Data were collected using a HydroLab Scout II Multi-probe.

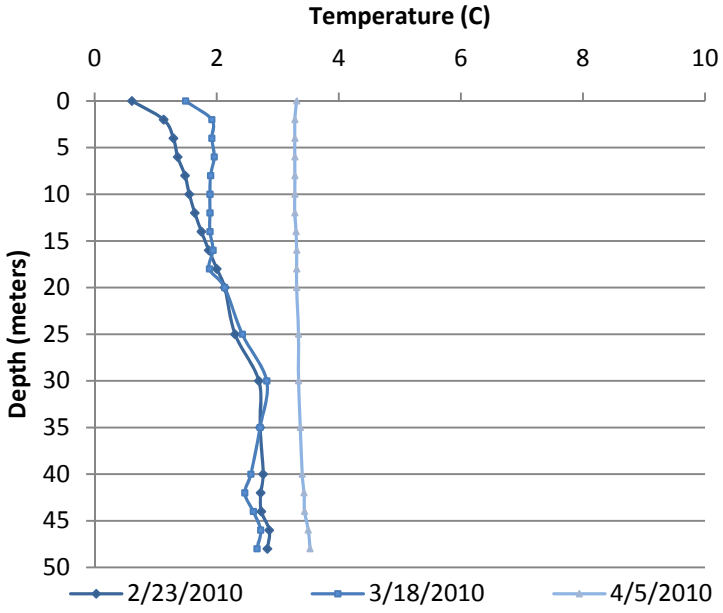
TEMPERATURE & DISSOLVED OXYGEN PROFILES

Depth m	Depth ft	Temp °C	Temp °F	Dissolved Oxygen mg/L
0	0	0.61	33.1	16.44
2	6.5	1.13	34.0	13.58
4	13.1	1.29	34.3	12.85
6	19.7	1.36	34.4	12.51
8	26.2	1.48	34.7	12.22
10	32.8	1.55	34.8	12.08
12	39.4	1.64	35.0	11.95
14	45.9	1.75	35.2	11.78
16	52.5	1.87	35.4	11.60
18	59.0	2.00	35.6	11.44
20	65.6	2.13	35.8	11.22
25	82.0	2.30	36.1	10.48
30	98.4	2.69	36.8	10.66
35	114.8	2.71	36.9	10.32
40	131.2	2.76	37.0	9.86
42	137.8	2.72	36.9	9.77
44	144.4	2.73	36.9	9.65
46	150.9	2.86	37.1	8.92
48	157.5	2.83	37.1	8.78

Inverse Stratification

- Coldest water floats above warmer water
- Opposite of Summer thermal stratification

Temperature profiles over the course of the year show transitions between seasonal thermal stratification regimes. In the profile observed April 5th, the lake is approaching spring turnover – from this point forward, as over-night air temperatures rise and daylight periods increase, the surface waters will begin to warm. Layers develop through the spring and summer as the surface waters are warmed and mixed by sun and wind, while the water below remains cold and therefore is more dense. These layers provide different habitat conditions in the open water (off-shore) areas of the lake.



Dissolved oxygen: the concentration of oxygen dissolved in water. Colder water can dissolve a greater amount of oxygen than warm water.

Dissolved oxygen concentrations also follow a predictable progression throughout the year. During spring and fall turnover, when temperatures are constant from the surface to bottom, oxygen is distributed throughout the water column. Once thermal stratification is in place, oxygen in the bottom waters cannot be replenished via atmospheric interactions. In late summer and through fall, as temperatures begin to drop in the epilimnion, oxygen concentrations in this layer increase because water can "hold" more oxygen at colder temperatures.

As the seasons progress, deep-water oxygen is consumed primarily by bacterial decomposition of dead algal cells and to a small degree by organisms living in the bottom waters. When algal production is excessive, usually due to high phosphorus levels , oxygen can fall to levels approaching those needed by sensitive, cold water fish such as lake trout and salmon.

The lake is currently approaching turn-over. Dissolved oxygen concentrations are high throughout water column as a result of a cool temperatures and wind-driven mixing. Turn-over can occur when the temperature (and density) are even throughout the water column and will end when temperatures at the surface reach above 4°C.