Forests and surface waters of Sandy Lake & Environs (Bedford, Nova Scotia)
A Natural History Perspective

Limnological Profiles

Profiles of temperature, oxygen, and electrical conductivity were obtained for 3 sites in Sandy Lake on Oct 3, 2017, as shown below.
The depths for sites 1, 2 and 3 were 17.5, 10 and 5.5 m.

Profiles at Sites 1 and 2 were similar with a distinct surface layer in the top 7 m, and then continuous declines in temperature and oxygen, and increases in conductivity to the bottom. It's likely that in the summer when surface water temperature want up to 25 degrees C or higher, there were distinct surface and deep layers (epilimnion and hypolimnion) with a thermal gradient between them (the metalimnion), and that on Oct 3, that 2 -layer systems was in the process of breaking down.

Two features to note:

(i) there is a distinct gradient in conductivity (a measure of dissolved ions) in deeper layers;

(ii) for the deepest profile (Site 1), the oxygen content of the deeper layers is below guidelines for both warm water and cold water aquatic life.

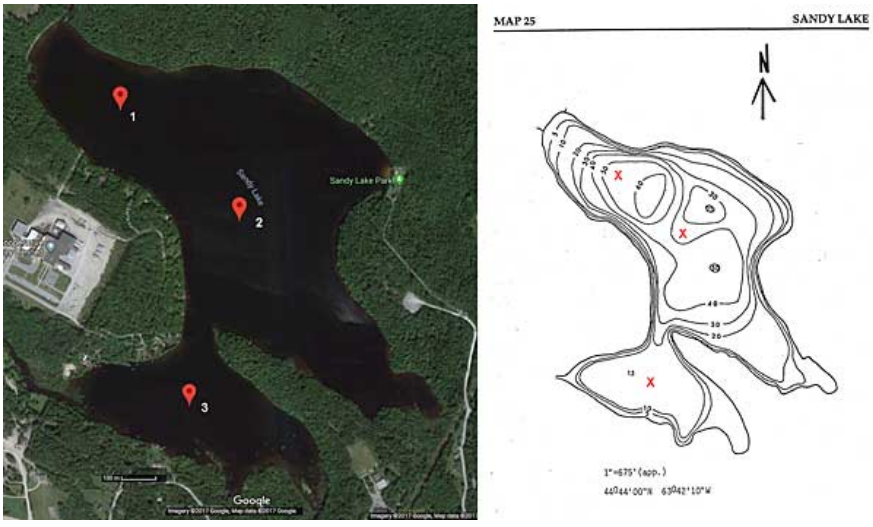
Table 1. Water quality guidelines for dissolved oxygen in freshwater for the protection of aquatic life (based on CCREM 1987, AEP 1997, and Truelson 1997).

Ecosystem	Guideline value ($mg \cdot L^{-1}$)* Early life stages	Other life stages
Warm water	6	5.5
Cold water	9.5	6.5

* Lowest acceptable dissolved oxygen concentration.

From Canadian Water Quality Guidelines for the protection of aquatic life: Dissolved Oxygen. Canadian Council of Ministers of the Environment 1999

Click on image above for the source document

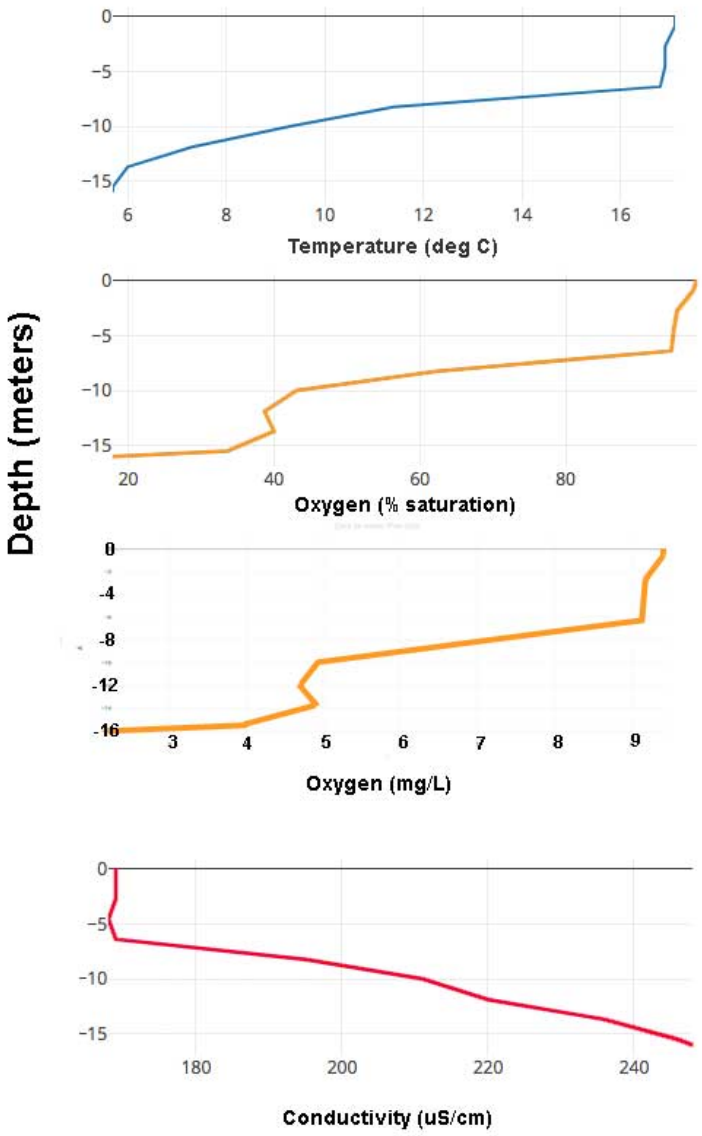


Location of three sites at which limnological profiles were obtained on Sandy Lake; bathymetric map at right
. (Bathymetric map from P. Mandell, 1994. *The effects of land use changes on water quality of urban lakes in the Halifax/Dartmouth region*. MSc thesis, Dalhousie University.
Click on image for larger version

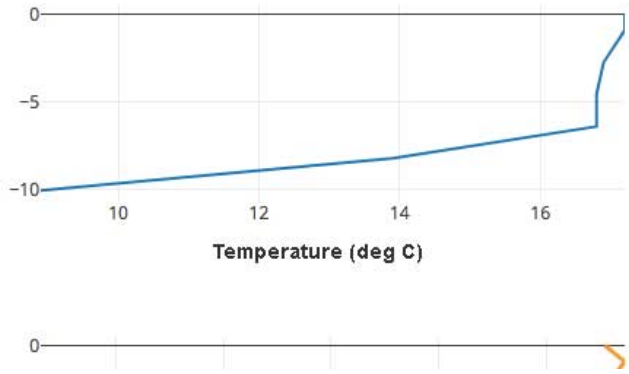
Sandy Lake (Bedford, Nova Scotia)

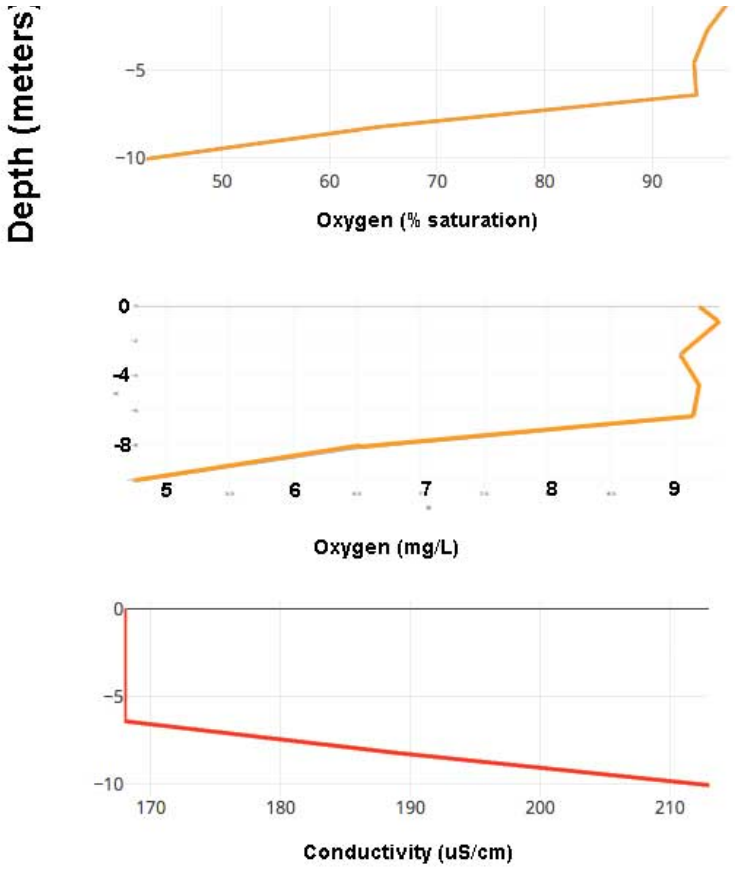
Limnological Profiles, Oct 3, 2017

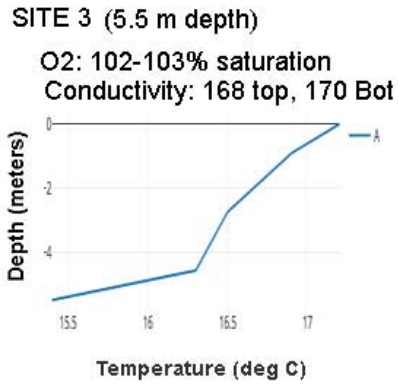
SITE 1 (17.5 m depth)



SITE 2 (10 m depth)







View profile data in text tables

For some background info about stratification of temperate lakes, see Density Stratification at www.lakeaccess.org/