**Browning-related oxygen depletion in an oligotrophic lake**

**Supplementary Material**

Methods

In June 2014 and June 2015, a HOBO Dissolved Oxygen Logger (U26 – 001, Onset, Bourne, Massachusetts) was deployed in the deep-waters of the clearer lake in order to identify the onset of oxygen depletion. The logger recorded dissolved oxygen and temperature data every 10 minutes from June 20 – August 18, 2014 and from June 3 – November 17, 2015. We also collected deep-water samples (~ 2 m above the bottom in the deepest part of the lake) in the clearer lake in 2014 (June – August, bi-monthly) and 2015 (May – November, bi-monthly) that were analyzed for total phosphorus and soluble reactive phosphorus concentrations to detect whether oxygen depletion may stimulate sediment phosphorus release in this lake. Soluble reactive phosphorus samples were filtered through pre-combusted, pre-weighed A/E filters. Both soluble reactive phosphorus and total phosphorus samples were preserved with concentrated sulfuric acid to a pH of < 2 and stored at 4°C. All phosphorus samples were analyzed on a Lachat QC 8000 FIA autoanalyzer using the molybdenum blue technique (Stainton et al. 1977).

**Figure S1**. Minimum daily deep-water dissolved oxygen concentration (grey) and deep-water phosphorus concentrations (black) in 2014 (a & c) and 2015 (b & d) in the clearer lake. Total phosphorus (TP) concentrations are shown in upper panels (a & b) and soluble reactive phosphorus (SRP) concentrations are shown in the lower panels (c & d). Note abrupt increases in phosphorus concentrations with the onset of oxygen depletion and higher phosphorus concentrations in 2015 vs. 2014 with correspondingly differing scales.



**References**

Stainton MP, Capel MJ, Armstrong FAJ. 1977. The Chemical Analysis of Fresh Water. Freshwater Institute, Winnipeg.