

## **ACIDIFICATION IN THE ADIRONDACKS: DEFINING THE BIOTA IN TROPHIC LEVELS OF 30 CHEMICALLY DIVERSE ACID-IMPACTED LAKES**

**Authors:** Nierzwicki-Bauer, Sandra A., Boylen, Charles W., Eichler, Lawrence W., Harrison, James P., Sutherland, James W., Shaw, William, Daniels, Robert A., Charles, Donald F., Acker, Frank W., Sullivan, Timothy J., Momen, Bahram, Momen, Bahram

**Source:** ENVIRONMENTAL SCIENCE & TECHNOLOGY August 2010: Volume: 44 Issue: 15 Pages: 5721-5727.

**Abstract:** The Adirondack Mountains in New York State have a varied surficial geology and chemically diverse surface waters that are among the most impacted by acid deposition in the U.S. No single Adirondack investigation has been comprehensive in defining the effects of acidification on species diversity, from bacteria through fish, essential for understanding the full impact of acidification on biota. Baseline midsummer chemistry and community composition are presented for a group of chemically diverse Adirondack lakes. Species richness of all trophic levels except bacteria is significantly correlated with lake acid-base chemistry. The loss of taxa observed per unit pH was similar: bacterial genera (2.50), bacterial classes (1.43), phytoplankton (3.97), rotifers (3.56), crustaceans (1.75), macrophytes (3.96), and fish (3.72). Specific pH criteria were applied to the communities to define and identify acid-tolerant (pH 5.0), acid-resistant (pH 5.0-5.6), and acid-sensitive (pH > 5.6) species which could serve as indicators. Acid-tolerant and acid-sensitive categories are at end-points along the pH scale, significantly different at  $P < 0.05$ ; the acid-resistant category is the range of pH between these end-points, where community changes continually occur as the ecosystem moves in one direction or another. The biota acid tolerance classification (batc) system described herein provides a clear distinction between the taxonomic groups identified in these subcategories and can be used to evaluate the impact of acid deposition on different trophic levels of biological communities.

**Full article can be found at:** <http://dx.doi.org/doi:10.1021/es1005626>