

Long-Term Impacts of Acidic Deposition on Brook Trout in Honnedaga Lake, New York

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Colleagues and Cooperators

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Kraft Lab Group – Peter Stevens, Graduate Students, and Technicians

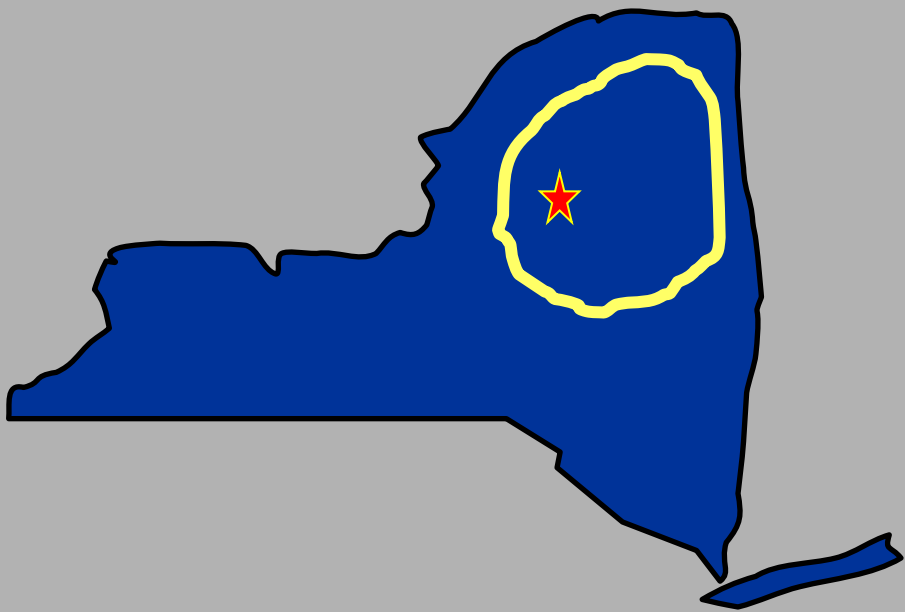
Adirondack League Club Volunteers

USGS

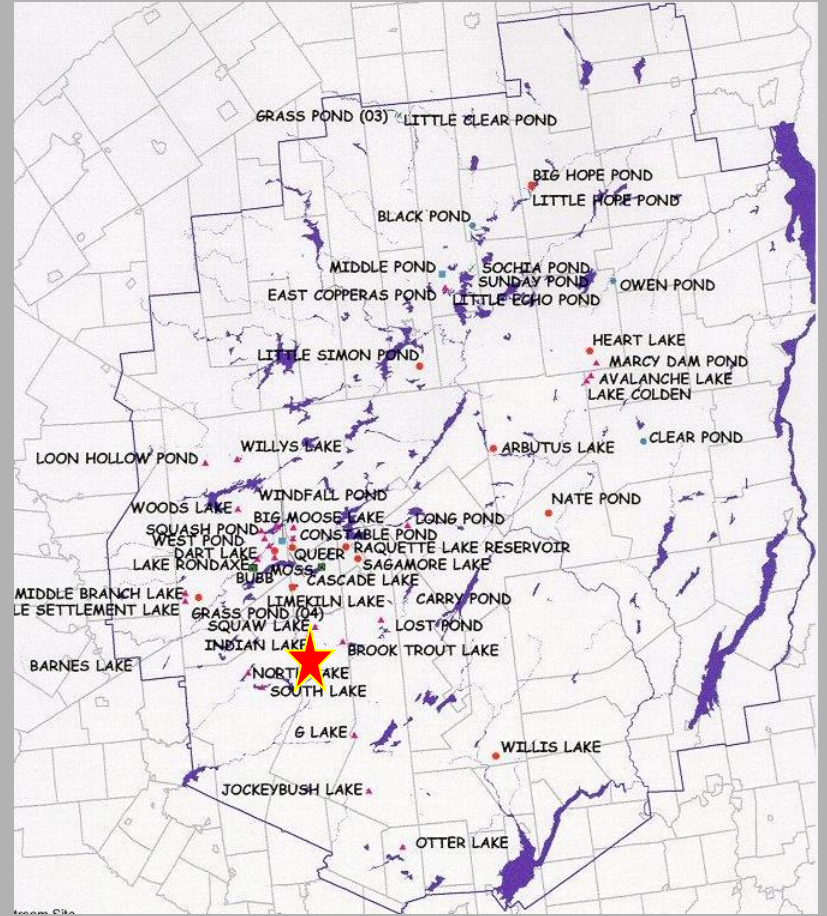
RPI – Keck Lab

NYS DEC

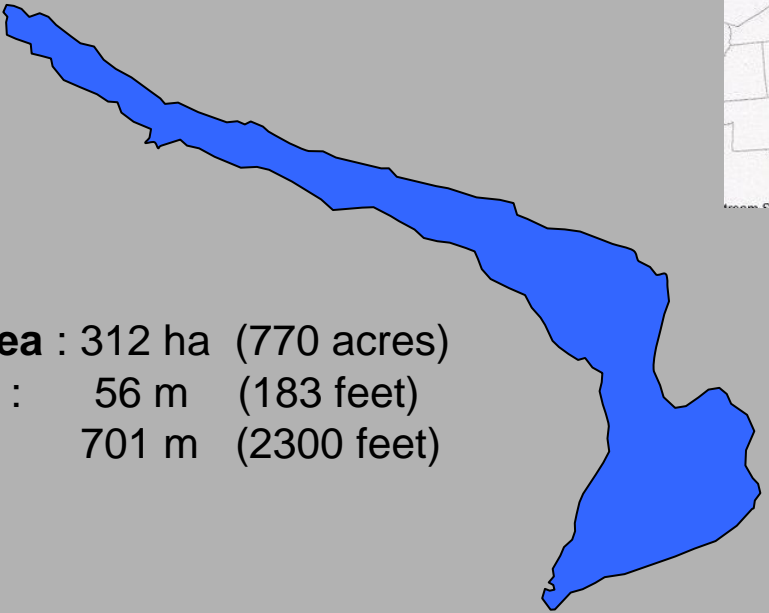




Honnedaga Lake



Surface Area : 312 ha (770 acres)
Max Depth : 56 m (183 feet)
Elevation : 701 m (2300 feet)



Historical Honnedaga Lake Fish Community Composition

Prior to 1890

Brook Trout

1890-1930

Brook Trout

Lake Trout (I)

Round Whitefish (I)

White Sucker (I)

Creek Chub (I)

1930 to 1955

Brook Trout

Lake Trout (I)

1955 to Present

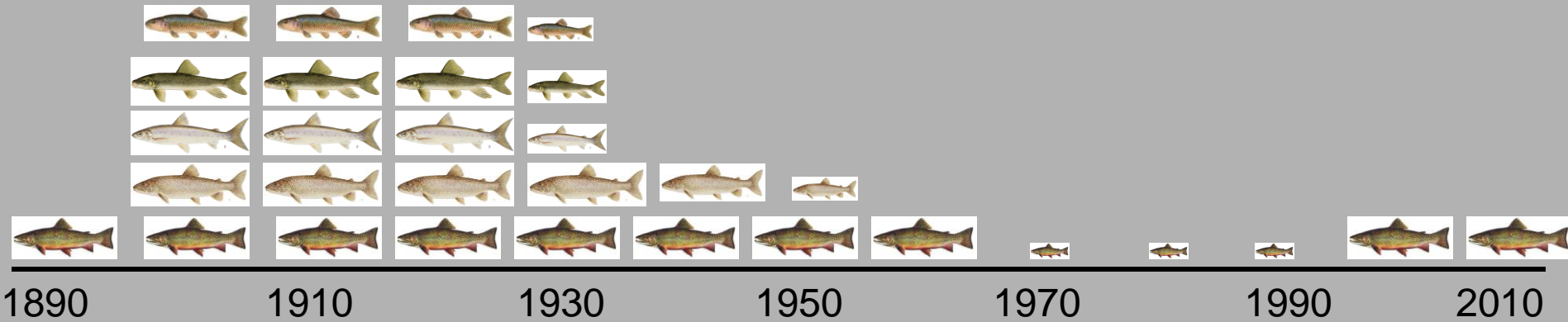
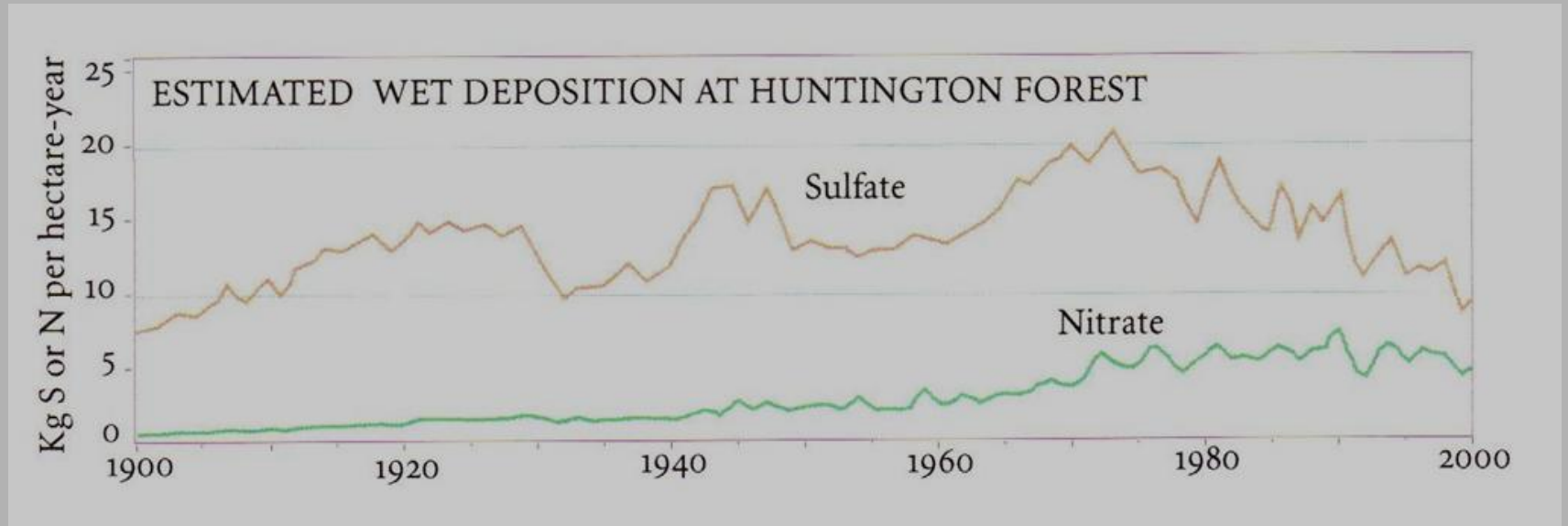
Brook Trout

(I) - *Introduced*

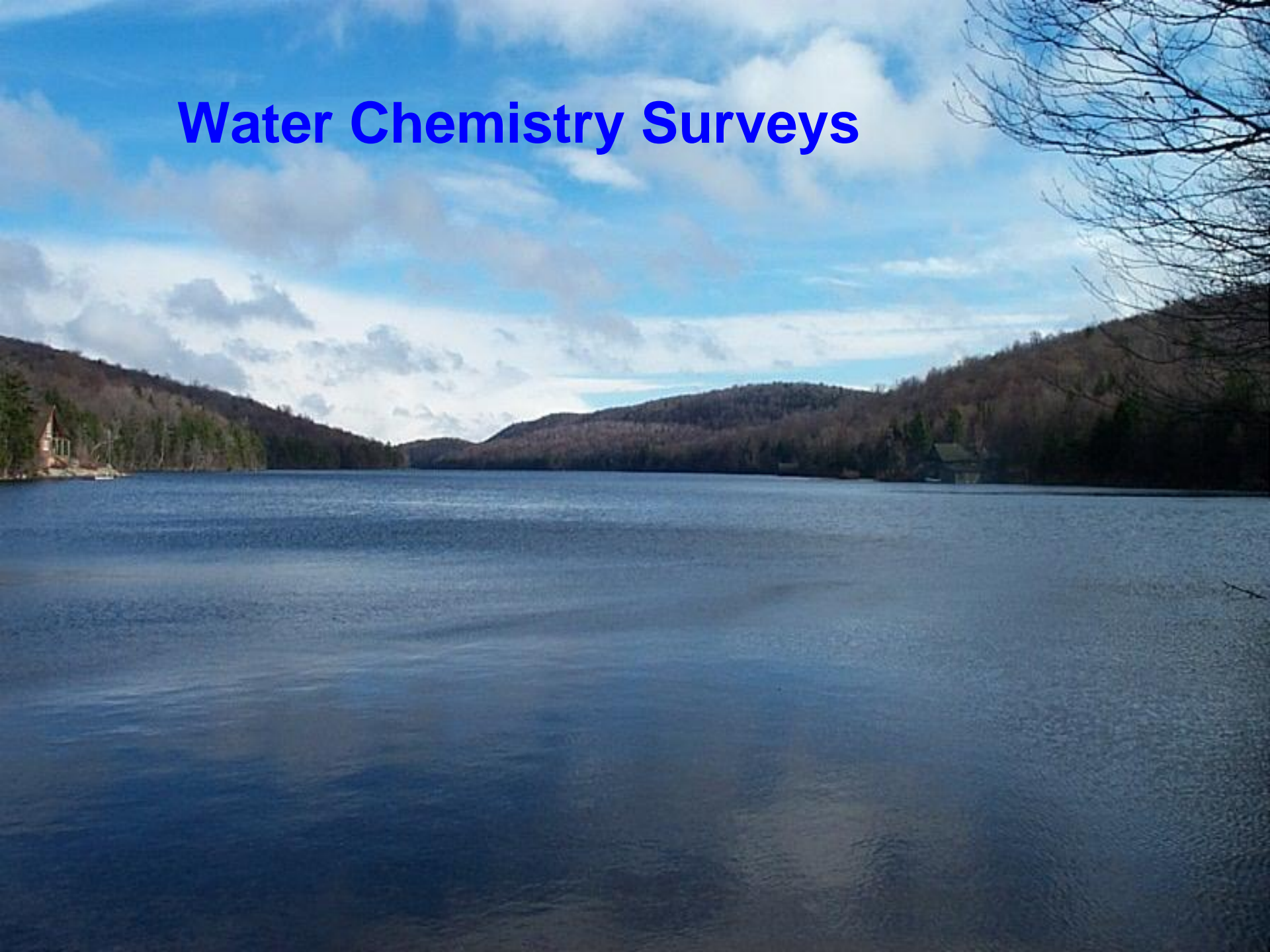
Source : Webster 1961



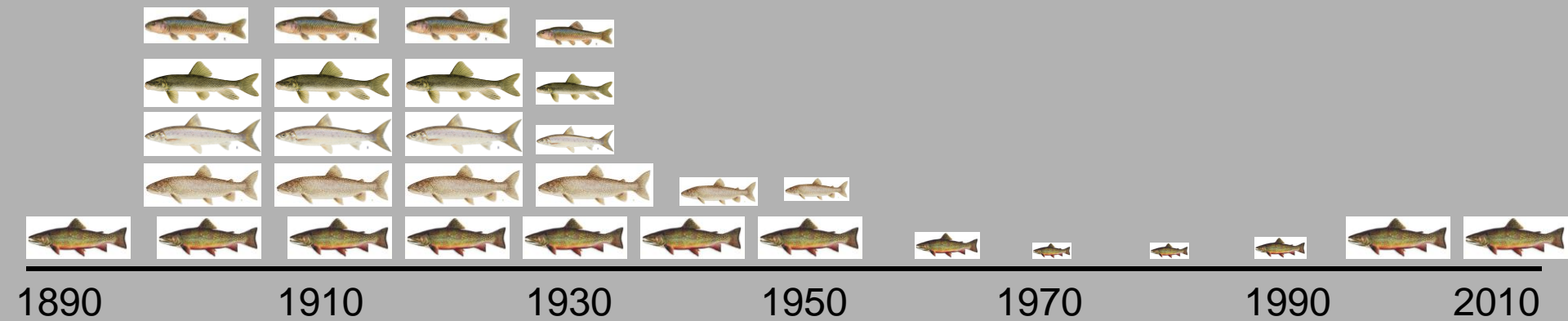
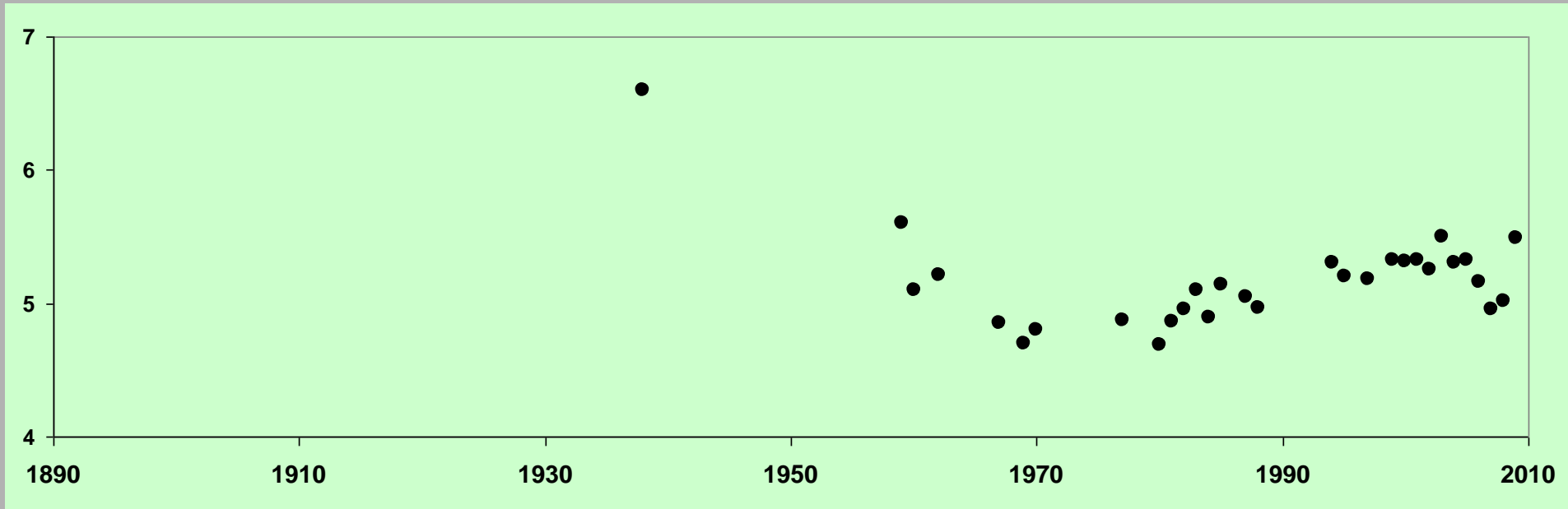
Historical Honnedaga Lake Fish Community & Acidic Deposition



Water Chemistry Surveys

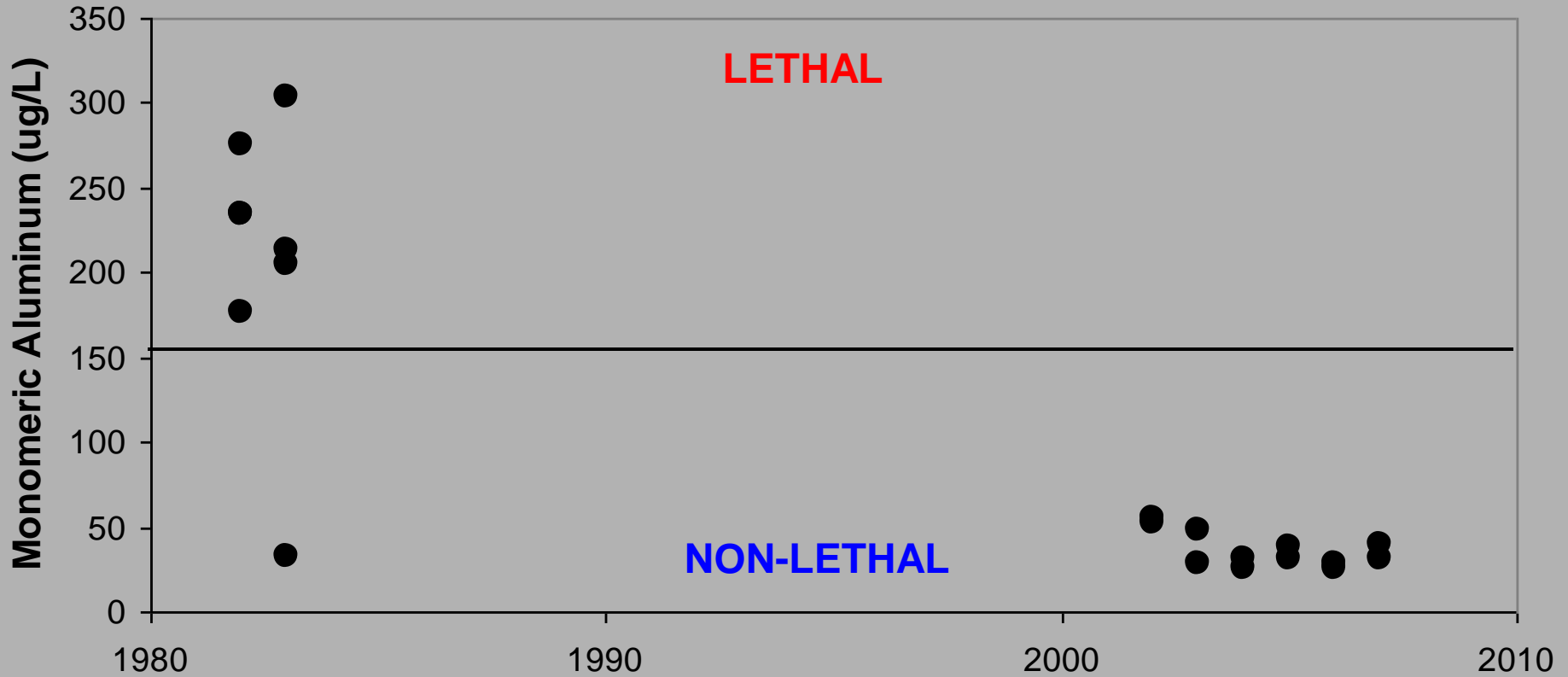


Historical Honnedaga Lake Fish Community & Lake Surface pH



Honnedaga Lake

Inorganic Monomeric Aluminum



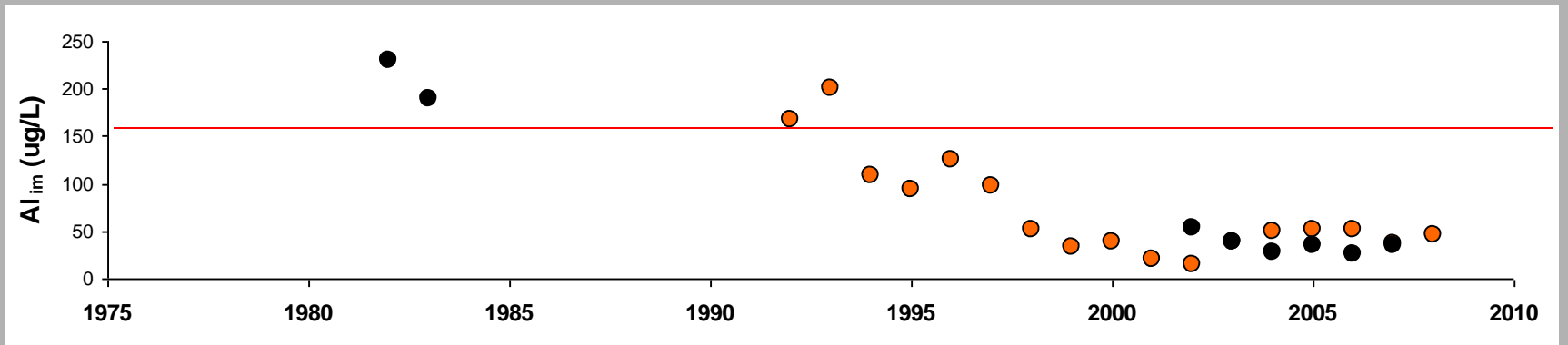
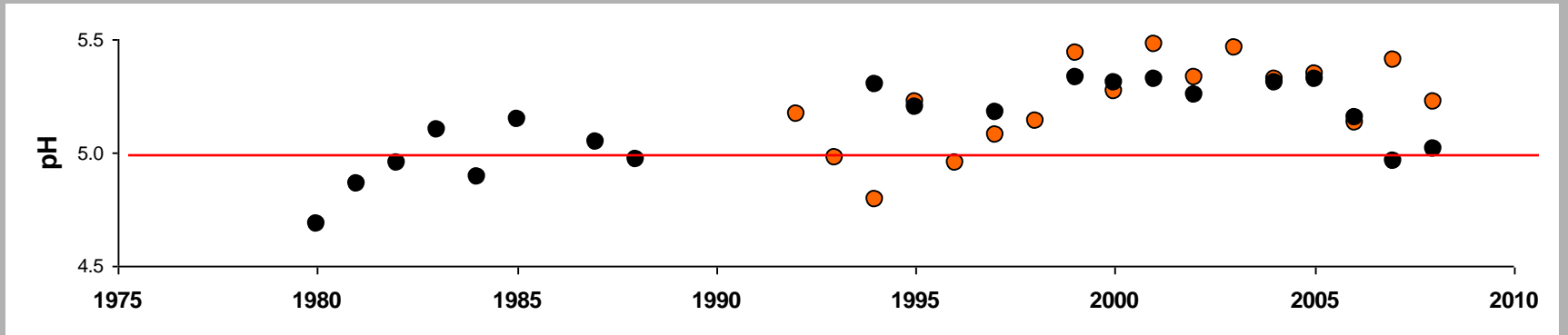
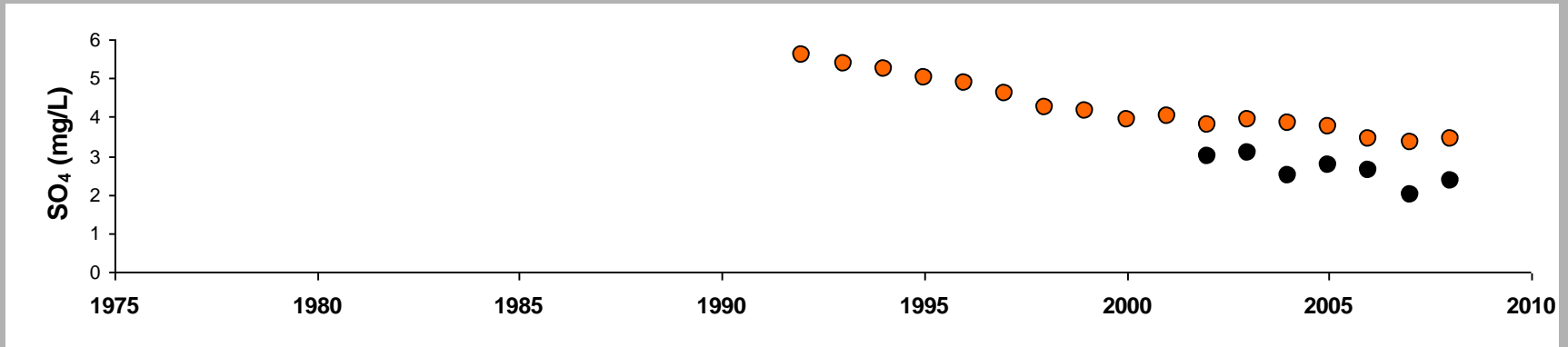
Honnedaga Lake



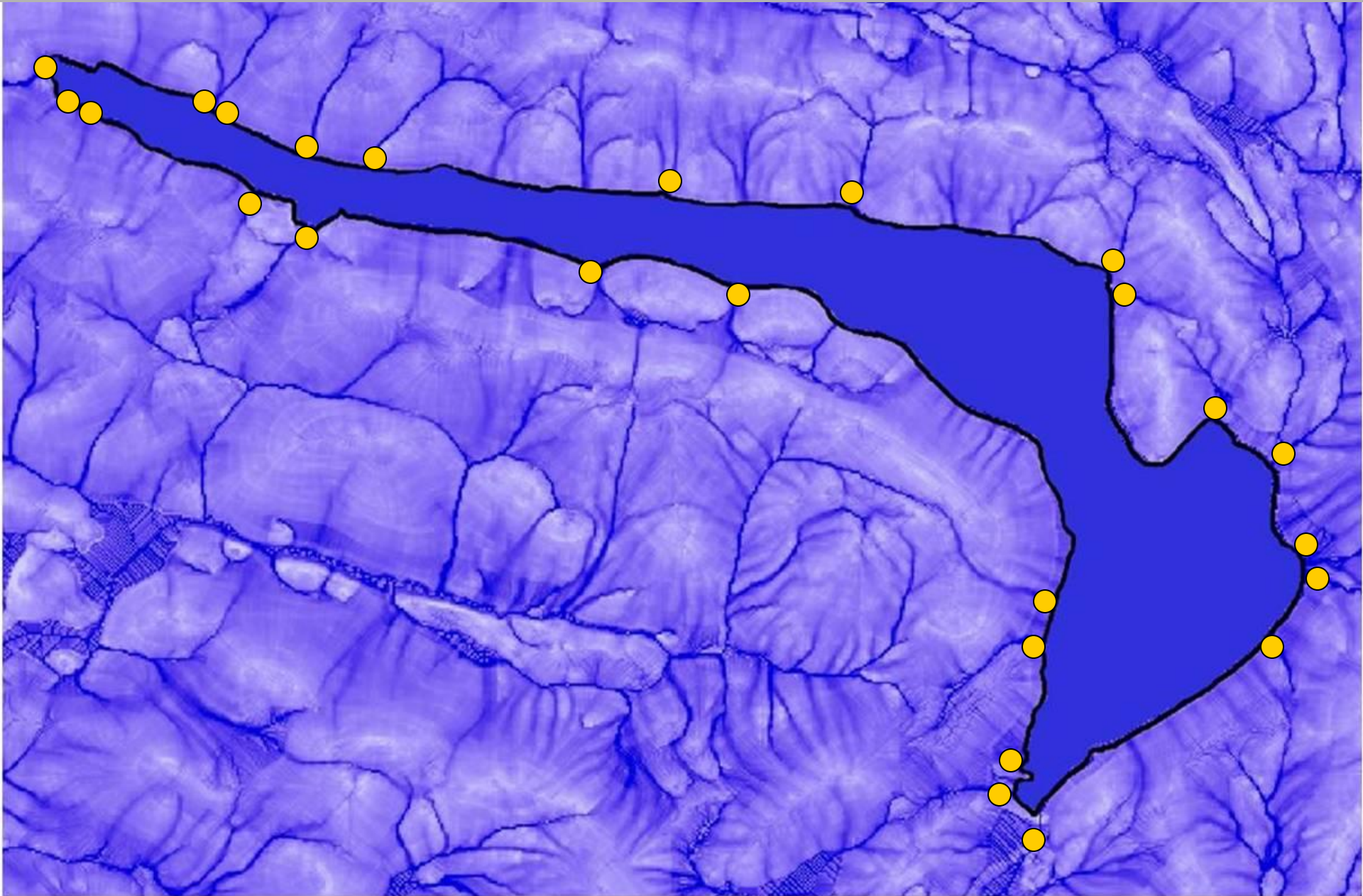
Brook Trout Lake



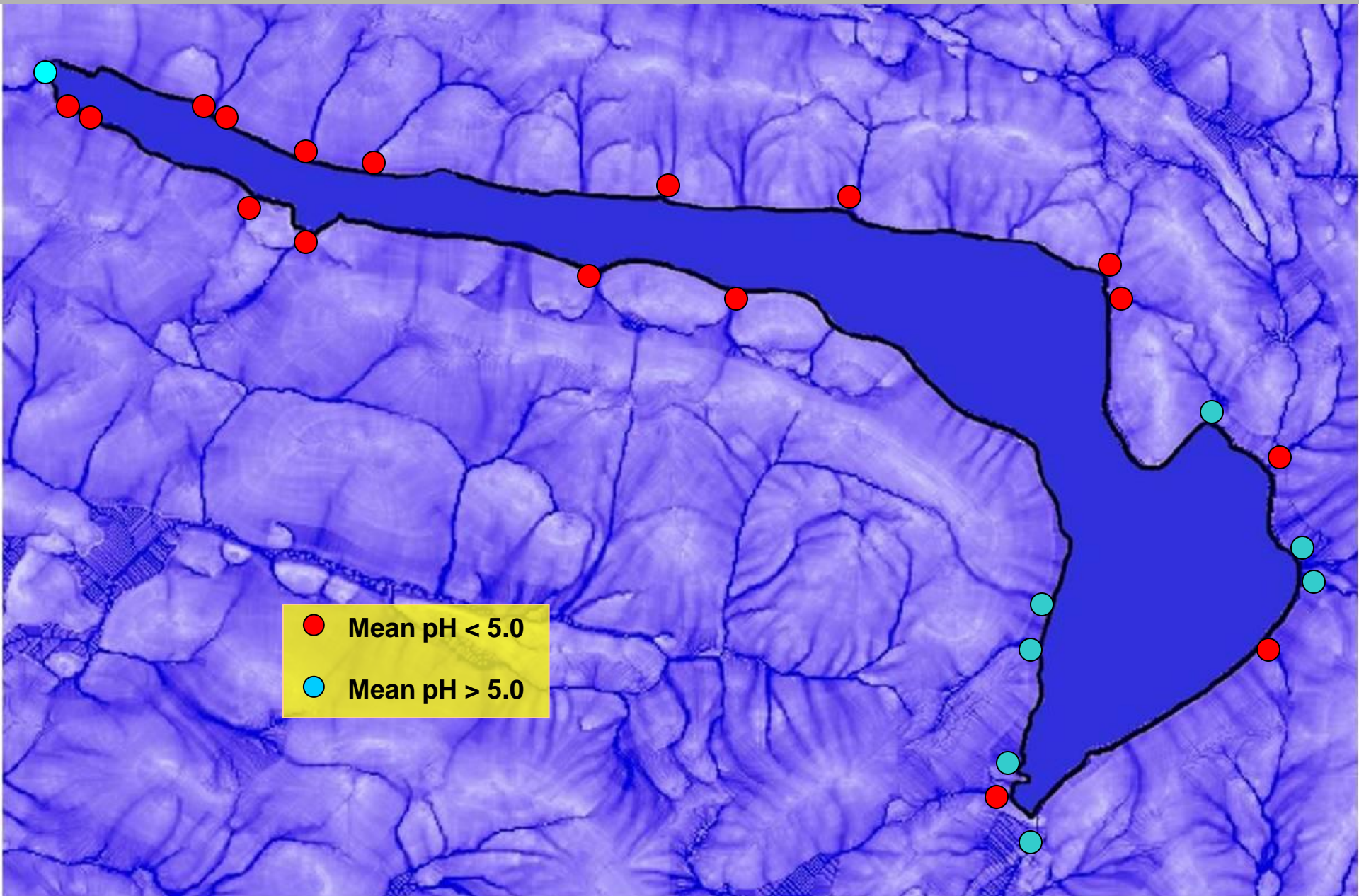
Surface Water Chemistry



Honnedaga Lake Tributaries



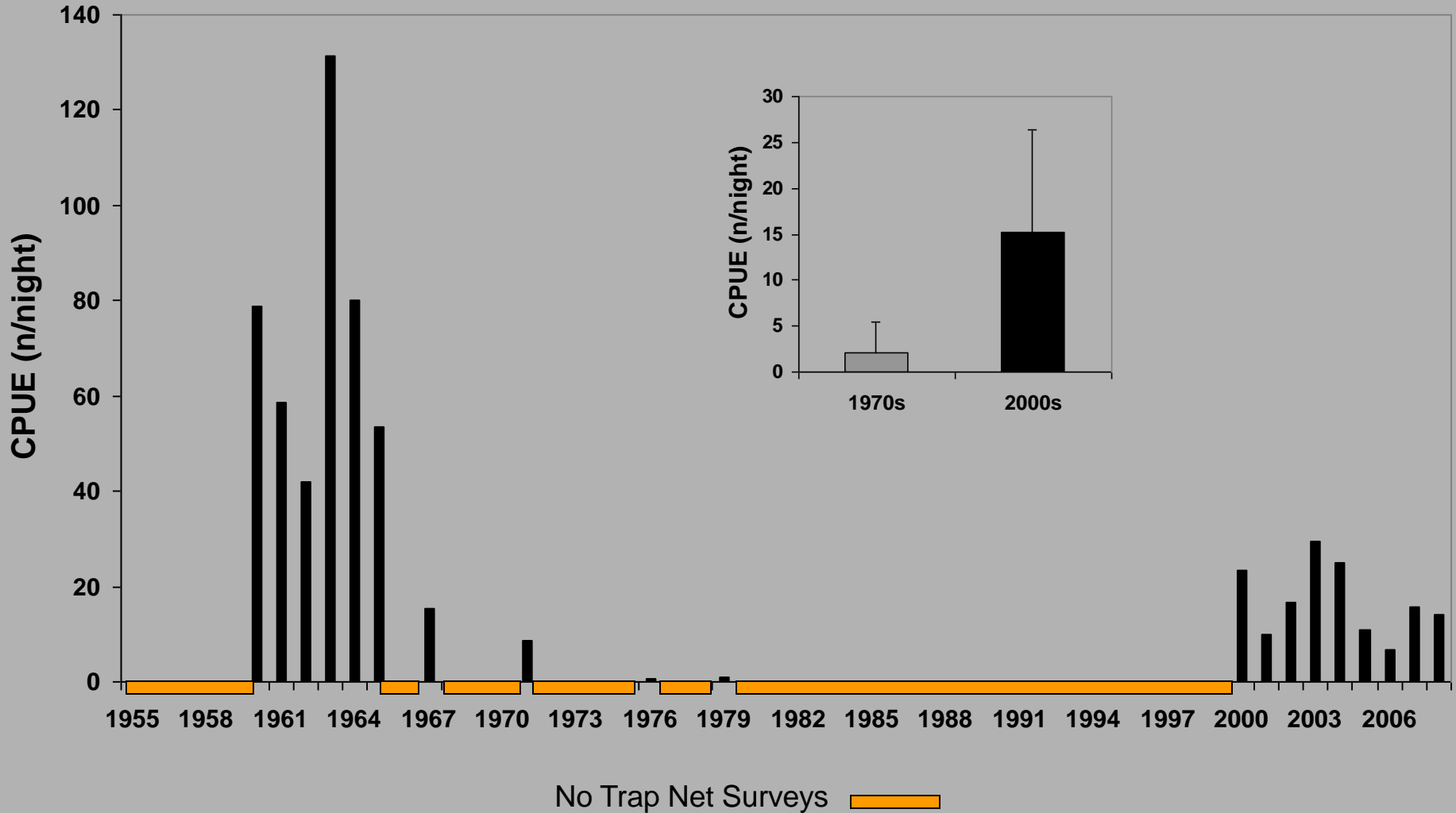
pH in Honnedaga Lake Tributaries – Summer (2009)



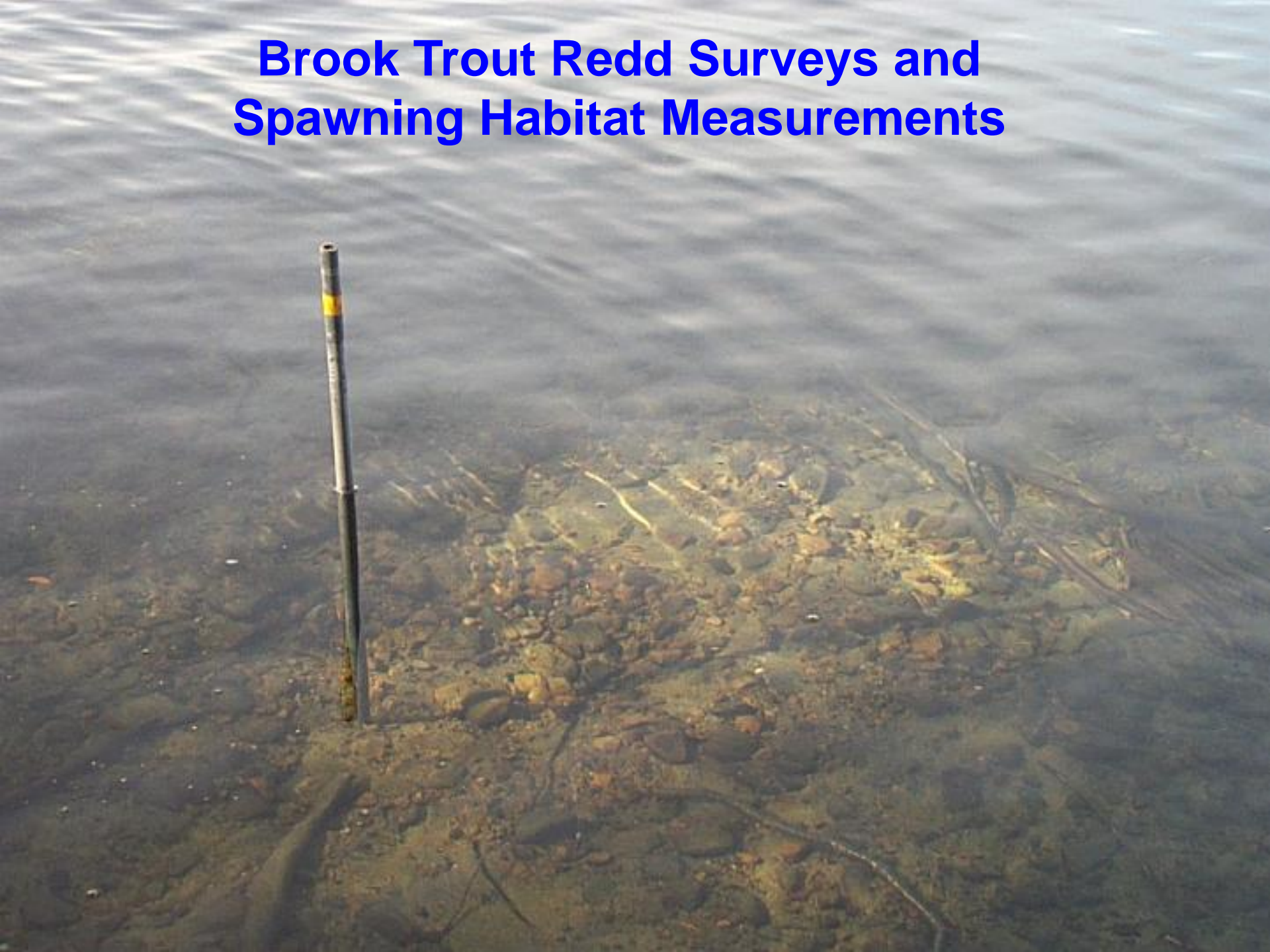
Fall Trapnet Surveys : Lake Assessments



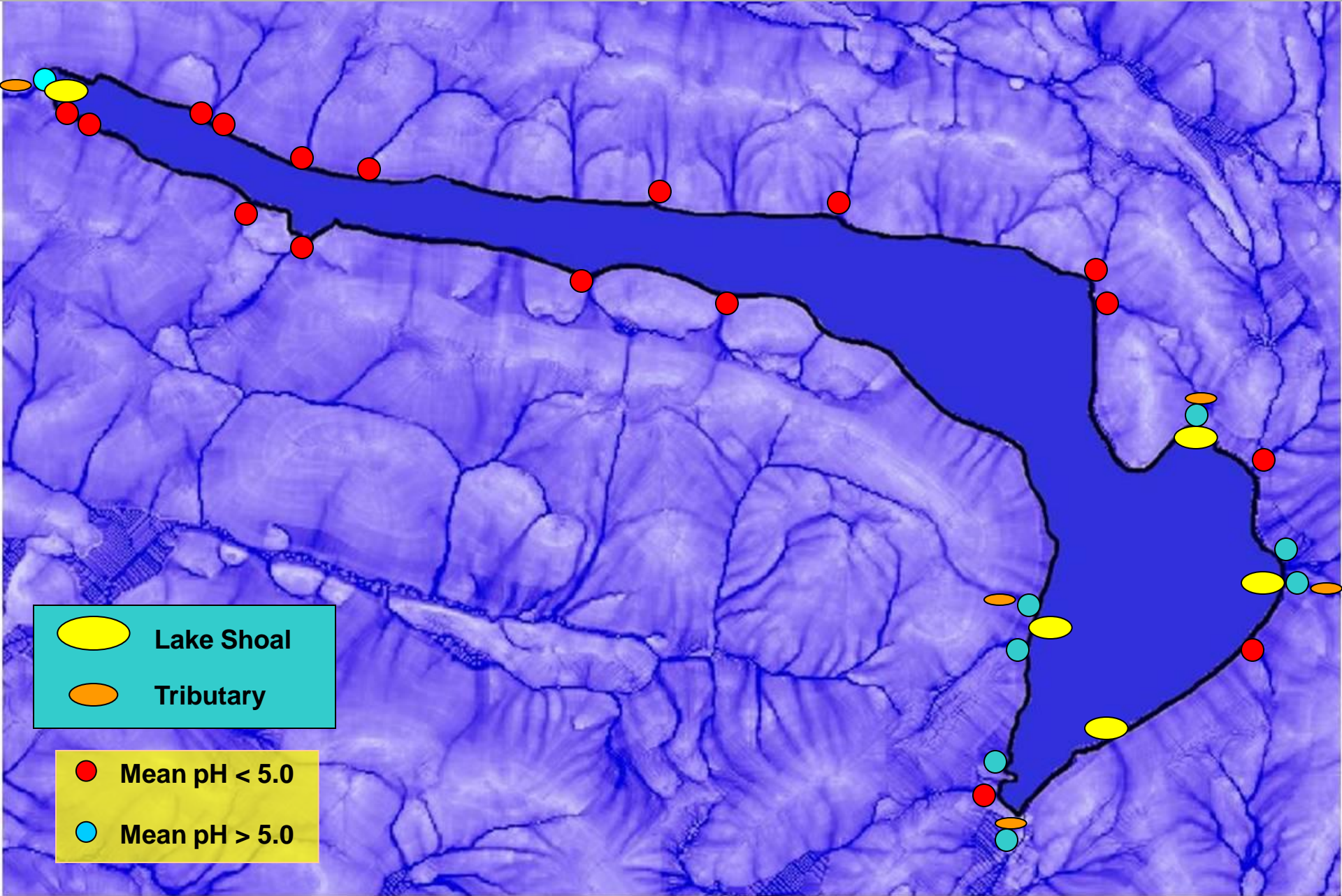
Fall Trapnet CPUE of Brook Trout



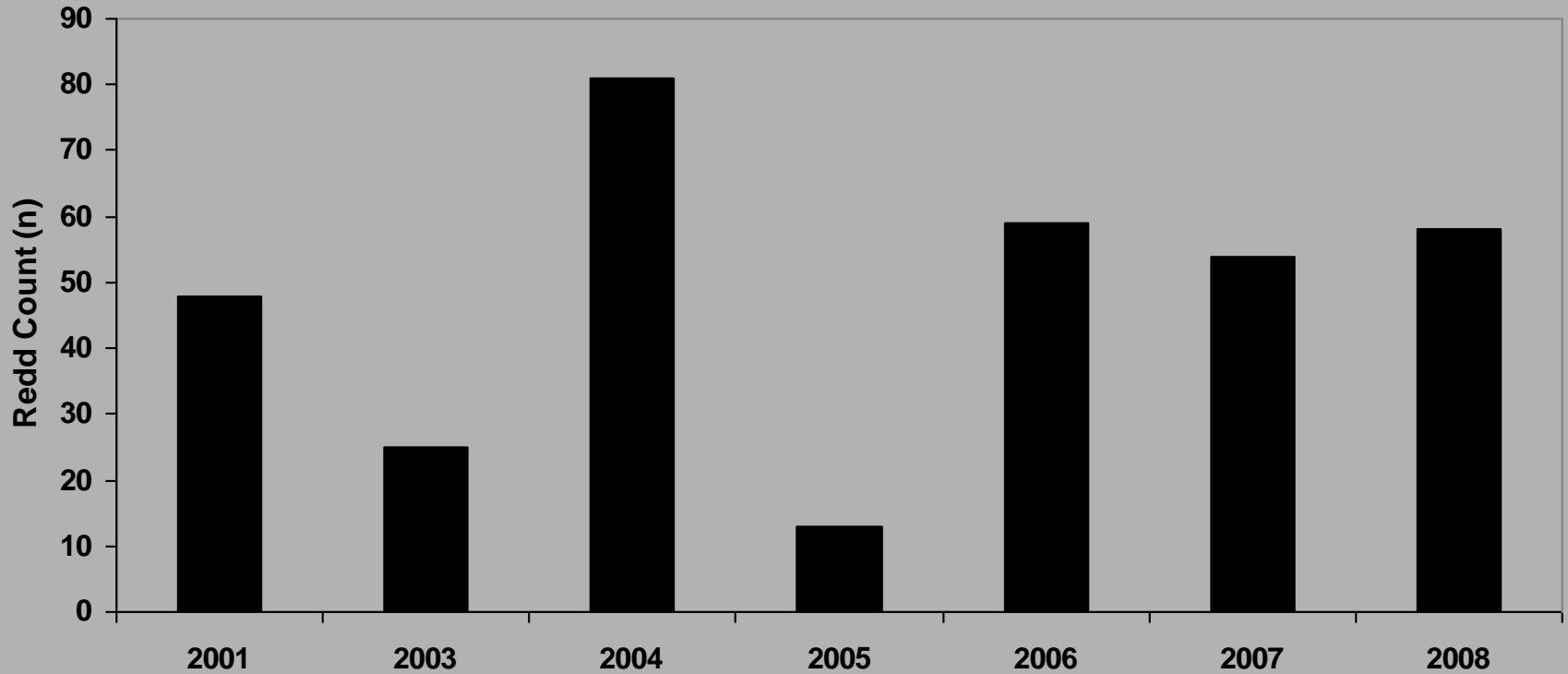
Brook Trout Redd Surveys and Spawning Habitat Measurements



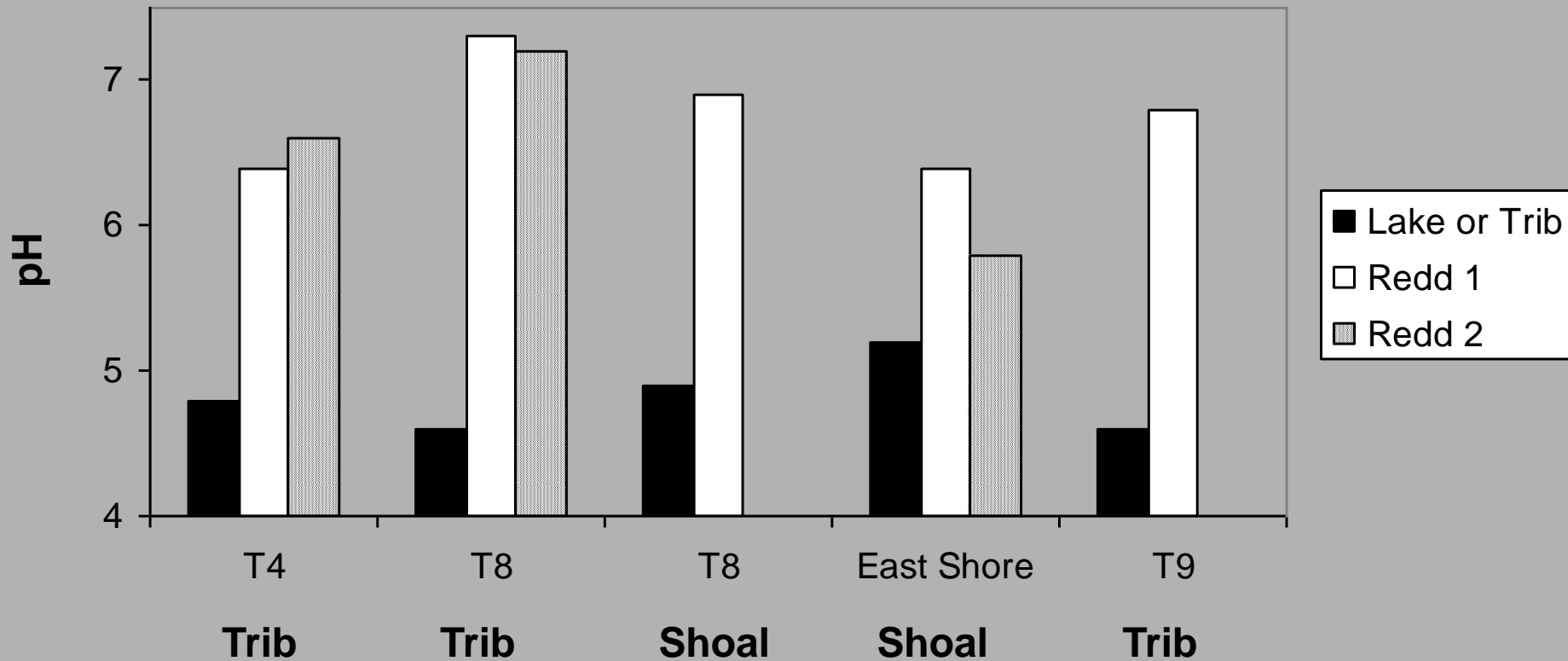
Documented Brook Trout Spawning Sites (since 2000)



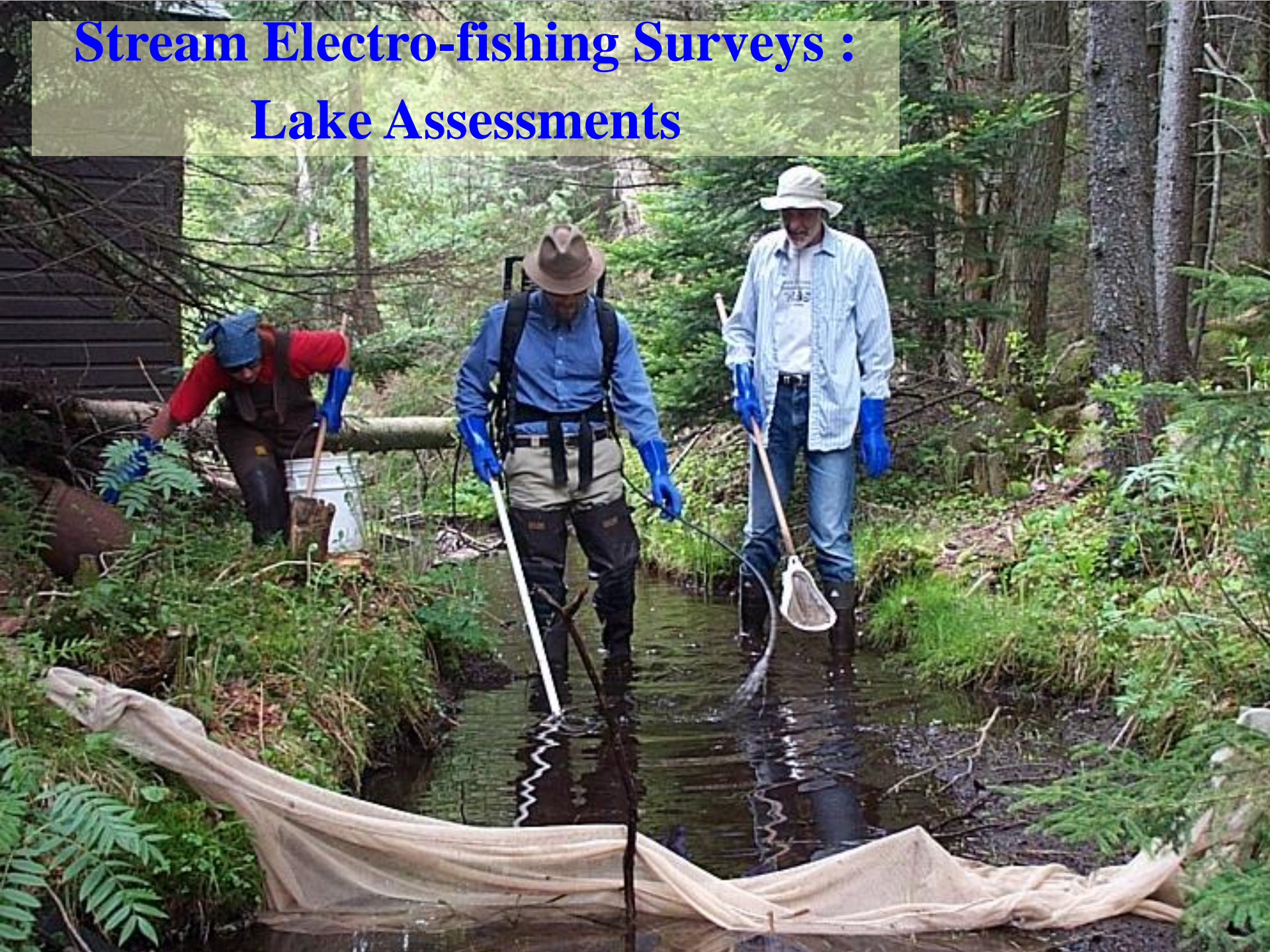
Annual Brook Trout Redd Counts



pH Measurements within Redds and Adjacent Lake & Tributaries



Stream Electro-fishing Surveys : Lake Assessments

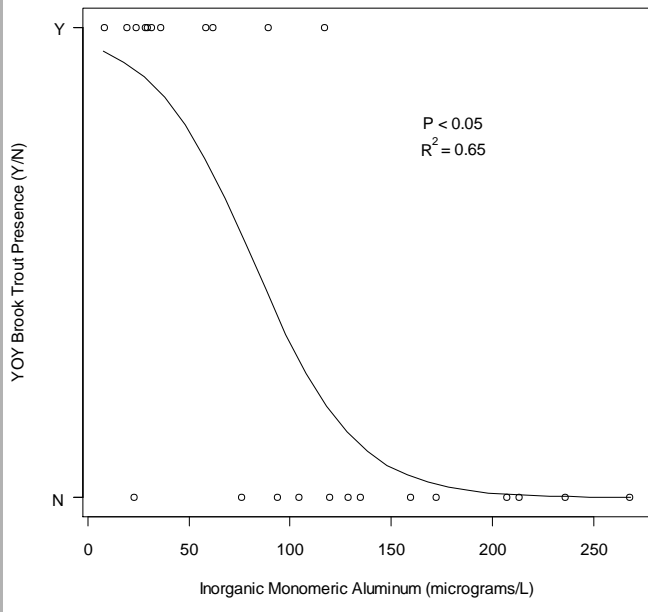


Honnedaga Lake Tributaries

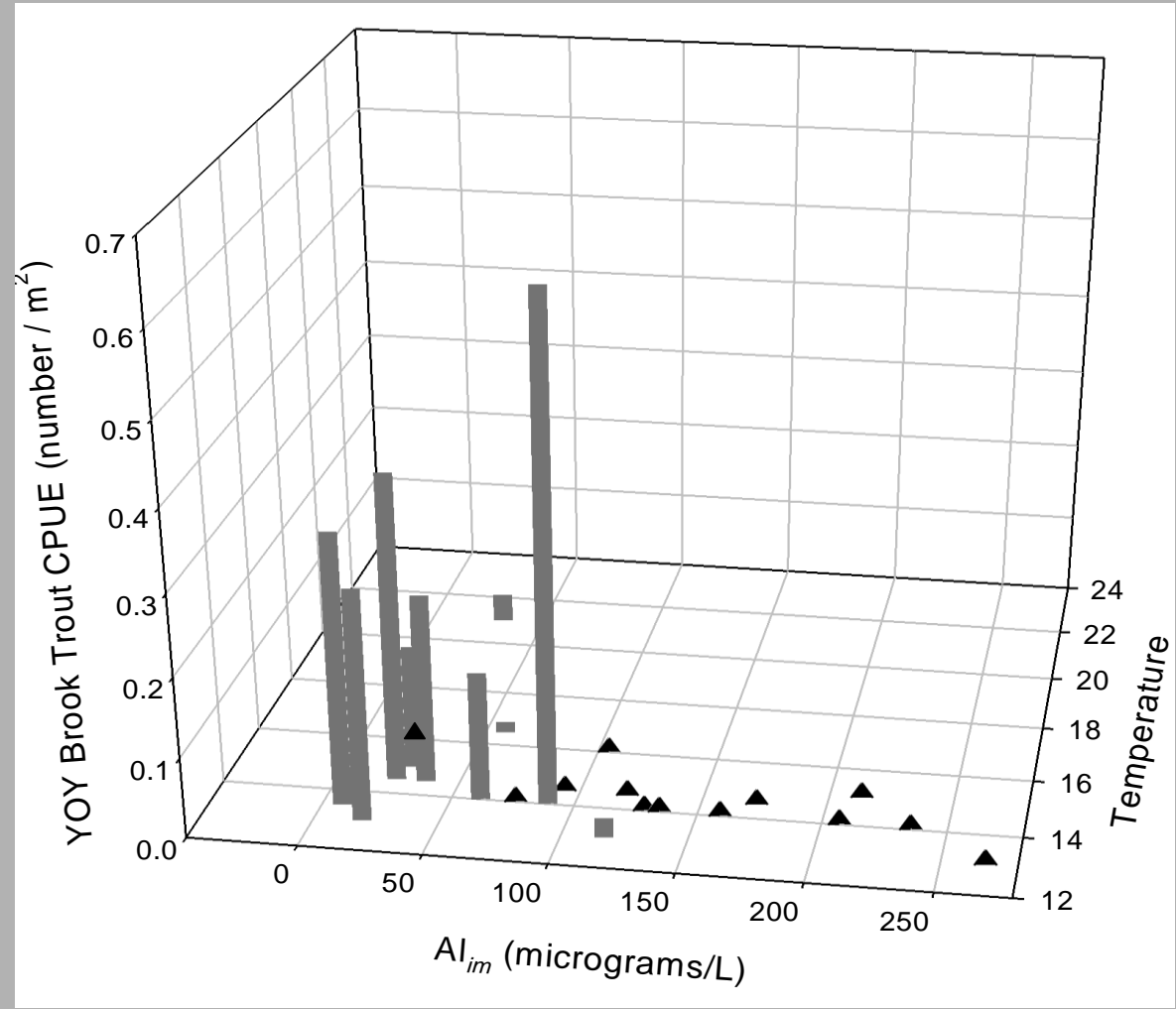


Young-of-Year Brook Trout and Al_{im} in Tributaries

Presence / Absence



Density



Summary

Since 1990 Amendments to the Clean Air Act

A modest chemical and brook trout population recovery within Honnedaga Lake

Continued chronic acidification of numerous groundwater influenced tributaries within the watershed

The acid impaired state of tributaries likely limits young-of-year and consequently adult brook trout abundance

