Adirondack Watershed Vegetation Survey Data

Background: In 1979, Stephen T. Jackson and Donald F. Charles, graduate students in Donald R. Whitehead's lab at Indiana University, designed and conducted vegetation surveys for watersheds of a number of small lakes distributed across the Adirondack Mountain region. These lakes were part of an NSF-funded study (PI: DR Whitehead; Co-PI: PM Vitousek) of watershed-lake interactions, including vegetational and limnological history. As part of his dissertation, Charles was conducting a broad-based limnological survey of Adirondack lakes, and wanted to obtain watershed vegetation information to compare with the limnological attributes of the lakes. Jackson was interested in pollen and macrofossil deposition in lake sediments, and how aquatic and watershed vegetation was represented in lake-sediment pollen and macrofossil assemblages.

In June/July/August 1979, Jackson and Charles, together with three undergraduate assistants (Miriam Bruning, Ron Wuestefeld, Mike Barkman), conducted vegetation surveys in 15 lake catchments. They completed surveys at six lakes in 1979. A seventh lake (Gull Pond) was completed in summer 1980 by Jackson and field assistants (Ruth Sherman, Cindy Myers, Doug Spencer). Surveys at the remaining eight lakes were not completed.

Methods: Sampling was done using rectangular plots laid out in a randomly oriented grid. We used an easily identifiable point at the shore of each lake as the initial point (often labeled INIT in field notes). This was at the lake outlet for all except endorheic lakes. For endorheic lakes, the initial point varied (e.g., the point at which the trail intersected the lake; a marked indentation in the shore visible in maps or air photos). The field notes and sketches provide further information for the respective lakes.

Before going into the field, we selected a random primary compass bearing and a random distance (0-50 m) to establish the grid. Thus, in the field, we would proceed along the compass bearing away from the initial point for the specified distance to establish the first plot. In some cases, to save time/distance or avoid barriers, we would triangulate an alternative path from one plot to another. Grid points are marked and labeled in the field sketches. Although our original plan was to sample at 50-m intervals, this was soon recognized as impractical, and we adopted a 100-m grid spacing.

At each sample point in the watershed, we established a 20 m X 20 m sample plot (400 m^2) centered on the point. At primary plots (denoted by numbers – e.g., 1, 2, 3…), we identified and tallied every tree (defined as stem $\geq$ 10 cm diameter), and measured its diameter at breast height (DBH) using a diameter-measuring tape. We also tallied all saplings in the plot, and used the Braun-Blanquet scale to quasi-quantitatively characterize abundance of understory species (herbs, shrubs, tree seedlings) in the plots. The primary quantitative plots were alternated with secondary presence/absence plots on the grid. For the secondary plots (denoted by letters – e.g., 1A, 1B, 2A, 3A…), we listed each tree species, each sapling species, and each understory species, and took brief notes.

At each point at which the sampling grid intersected the lake margin, we emplaced a Shoreline "Plot" (SP). Each shoreline plot comprised two 1 m X 1 m subplots (labeled A and B). Subplot

A bordered the water's edge, and Subplot B bordered Subplot A on the landward side. At each shoreline plot we made a quick description of the shoreline, including:

- Offshore (from the water edge outward into the lake):
    - Characteristics of the lake bottom (e.g., depth, slope, nature of sediments, occurrence of rocks or logs)
    - Aquatic plants visible/identifiable from the shore
    - Overhang by trees and shrubs (including species, extent of overhang, % coverage)
- Onshore (Landward of water edge)
    - Slope, aspect, exposure
    - Substrate
    - Tree and sapling overhang from outside plot.

Within each subplot, plant species were listed and assigned abundance scores using the Braun-Blanquet classification.

Data: The data comprise original copies of the field data sheets, with the exception of Lake Arnold. The original Lake Arnold field data sheets were deposited in files in the Whitehead lab, and the originals have apparently been lost. In the early 1980s, DF Charles made a xerox copy of the Lake Arnold data sheets, which are included here.

Information concerning the lakes is available in the papers cited below. The vegetation data were not used in any publications.

Completed Sites: (entire watershed surveyed):
Bear Pond
Bog Pond
East Copperas Pond
Gull Pond
Lake Arnold
Mountain Pond
Washbowl Pond

Incomplete Sites:
Cat Mountain Pond
Clear Pond
Crane Mountain Pond
Frank Pond
Nick's Pond
Parch Pond
Pine Pond
Rock Pond

References:

Charles, D.F. 1982. *Studies of Adirondack Mountain (N.Y.) lakes: limnological characteristics and sediment diatom – water chemistry relationships.* Ph.D. thesis, Indiana University, Bloomington, IN.

Charles, D.F. 1985. Relationships between surface sediment diatom assemblages and lakewater characteristics in Adirondack lakes. *Ecology* 66: 994-1011.

Jackson, S.T., and D.F. Charles. 1988. Aquatic macrophytes in Adirondack (N.Y.) lakes: patterns of species composition in relation to environment. *Canadian Journal of Botany* 66:1449-1460.

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