# Vegetation Sampling Methods

Lovett et al. Catskill sampling

The data for this study were collected from 1997-2000 as part of several larger efforts to document the distribution of forest types within the Catskill Mountains of southeastern NY. Consequently, data reported here were collected by three similar methods used to determine relative basal areas of all canopy species.

Two methods consisted of the stratified random sampling of 10 watersheds dispersed throughout the Catskill Mountain Preserve ranging in size from 63-476 hectares. For both of these methods, stands were sampled along a series of transects perpendicular to the stream axis. Along each transect, one stand was sampled at a randomly chosen elevation within each 100 m elevation band. This was done so that sample distribution among elevation bands was proportional to the land area covered by that elevation band. The total number of sampled stands within each watershed was proportional to its area, and ranged from 1 stand/21.5 ha to 1 stand/26.7 ha for the nine largest watersheds, and was 1 stand/ 15.8 ha for the smallest. For both transect methods, each stand consisted of 5 plots, 6m x 30m each. In the first of these methods, used in five of the watersheds, the five plots were spaced 20 meters apart along the contour. For the second transect method, used in the other five watersheds, the five plots were laid out within a larger 58m x 90m rectangle, one plot in each corner and one in the center. In this second transect method the elevation for the stand was recorded as the elevation at the center plot. For both of these methods the DBH of all trees >10cm in the plots was recorded, and all stems<10cm and at least breast height (1.6 m) were tallied by species.

The third sampling method consisted of surveying three tracts of forest not necessarily comprising a watershed (334, 962, and 920 ha in area), and sampling stands occurring at randomly chosen latitude and longitude coordinates evenly distributed across elevation. At each stand, four prism survey plots (metric wedge prism, BAF 2) were established within a hectare, one in the center of each quadrant. Species and DBH of each tree included by the prism were recorded.

For all three sampling methods, organic horizon (Oe and Oa) soils were collected from each stand for C:N analysis. Soils were dried, ground, and %C and %N were measured on a LECO element analyzer.

 For data analysis purposes, the prism plot, stand, and tract-level data from the third sampling method were considered equivalent in spatial scale to the plot, stand, and watershed-level data from the two transect methods, respectively. In the data set we use “plot” to refer to one 6 m x 30 m (fixed area plots) or one ~50 m x ~50 m (prism plot) sampled area, “location” to refer to the clusters of plots within an area of ~1 ha, and “watershed” to refer to the clusters of stands in watersheds or tracts ranging from 63-920 ha in area.

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| **Species Codes: (all spp in this list may not be present in the actual data)** |
| **CODE** | COMMON NAME | GENUS | SPECIES |
| BAF | balsam fir | Abies | balsamea |
| BAS | American basswood | Tilia | americana |
| BEE | American beech | Fagus | grandifolia |
| BLB | black birch | Betula | lenta |
| BLC | black cherry | Prunus | serotina |
| BTA | big tooth aspen | Populus | grandidentata |
| CHO | chestnut oak | Quercus | prinus |
| COR | mountain paper birch | Betula | cordifolia |
| HEM | eastern hemlock | Tsuga | canadensis |
| HOP | eastern hophornbeam | Ostrya | virginiana |
| MTA | American mountain ash | Sorbus | americana |
| MTM | mountain maple | Acer | spicatum |
| REM | red maple | Acer | rubrum |
| REO | northern red oak | Quercus | rubra |
| RES | red spruce | Picea | rubens |
| SER | serviceberry | Amelanchier | laevis |
| STM | striped maple | Acer | pensylvanicum |
| SUM | sugar maple | Acer | saccharum |
| TUP | yellow poplar | Liriodendron | tulipifera |
| UNK | Unknown |  |  |
| WAS | white ash | Fraxinus | americana |
| WHB | white birch | Betula | papyrifera |
| WHP | eastern white pine | Pinus | strobus |
| YEB | yellow birch | Betula | alleghaniensis |

Watershed codes

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| WATERSHED CODE | STREAM NAME | STREAM # from Lovett et al 2000\* |
| BF | Buttermilk | 19 |
| BH | Becker | 44 |
| BL | Black | 37 |
| BW | BWS 6 | 30 |
| GK | Grog | 33 |
| HB | Halcott | 31 |
| KT | Kittle | 40 |
| MB | Myrtle | 43 |
| ML | Mill | 11 |
| TS | Tonshi | 32 |
| WA | Pecoy (Wase) | 24 |
| WR | Windham | 6 |
| WS | Winnisook | 15 |

\*Lovett, G. M., K. C. Weathers, and W. V. Sobczak. 2000. Nitrogen saturation and retention in forested watersheds of the Catskill Mountains, New York. Ecological Applications **10**:73-84.

Papers using these data:

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Driese, K. L., W. A. Reiners, G. M. Lovett, and S. M. Simkin. 2004. A vegetation map for the Catskill Park, NY, derived from multi-temporal landsat imagery and GIS data. Northeastern Naturalist **11**:421-442.

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