



Vegetation Community Associations - North District

- Legend**
- Central Appalachian Pine - Oak / Heath Woodland
 - Chestnut Oak - Black Birch Wooded Talus Slope
 - Central Appalachian / Northern Piedmont Low-Elevation Chestnut Oak Forest
 - Mixed Oak / Heath Forest (Piedmont / Central Appalachian Low-Elevation Type)
 - Central Appalachian Dry-Mesic Chestnut Oak - Northern Red Oak Forest
 - Mid-Atlantic Mesic Mixed Hardwood Forest
 - Central Appalachian Northern Hardwood Forest (Yellow Birch - Northern Red Oak Type)
 - Hemlock - Northern Hardwood Forest
 - Northern Red Oak Forest (Pennsylvania Sedge - Wavy Hairgrass Type)
 - Southern Appalachian Cove Forest (Typic Montane Type)
 - Northern Blue Ridge Montane Alluvial Forest
 - Central Appalachian Acidic Cove Forest (White Pine - Mixed Hardwoods Type)
 - Successional Tuliptree Forest (Circumneutral Type)
 - Central Appalachian Basic Boulderfield Forest (Montane Basswood - White Ash Type)
 - Central Appalachian Rich Cove Forest
 - Central Appalachian Montane Oak - Hickory Forest (Basic Type)
 - Central Appalachian Montane Oak - Hickory Forest (Acidic Type)
 - Central Appalachian Acidic Oak - Hickory Forest
 - Central Appalachian Basic Oak - Hickory Forest (Submontane / Foothills Type)
 - Northern Hardpan Basic Oak - Hickory Forest
 - Black Locust Successional Forest
 - High-Elevation Greenstone Barren
 - High-Elevation Acidic Heath Barren / Pavement
 - High-Elevation Outcrop Barren (Black Chokeberry Igneous / Metamorphic Type)
 - Central Appalachian High-Elevation Boulderfield Forest
 - Central Appalachian Basic Woodland
 - Central Appalachian Circumneutral Barren
 - Central Appalachian Mafic Barren (Ninebark / Pennsylvania Sedge Type)
 - Northern Blue Ridge Mafic Fen
 - Central Appalachian Acidic Seepage Swamp
 - Central Appalachian Woodland Seep
 - Central Appalachian Basic Seepage Swamp
 - High-Elevation Hemlock - Yellow Birch Seepage Swamp
 - Shenandoah Valley Sinkhole Pond (Typic Type)
 - Limited Access Highway
 - Highway
 - Major Road
 - Local Road
 - Minor Road
 - Other Road
 - Perennial Stream
 - Intermittent Stream
 - Park Boundary

AVIRIS Classified Vegetation Communities (v.1.1 - validated)

This map shows one result of a 4 year research project to assess and map vegetation communities of Shenandoah National Park. The project was a collaborative effort between Shenandoah National Park, the US Geological Survey - Leetown Science Center, University of Wisconsin Dept. of Forest Ecology, the Virginia Department of Conservation and Recreation-Division of Natural Heritage, and NatureServe. While set up as a research project rather than strictly a mapping effort, the result of the project is a new map of vegetation distribution in Shenandoah National Park based on U.S. National Vegetation Classification System standards. We classified 34 vegetation communities at the association-level of the National Vegetation Classification System within Shenandoah National Park. Three community types were newly classified and described. We mapped vegetation communities to the association level using 224-band AVIRIS hyperspectral imagery. Because the path of the AVIRIS flight did not completely image the extreme north, south, and west of the park, we filled in missing areas with Landsat TM imagery.

To classify this imagery, we first extracted image spectra at locations of 305 field plots used for vegetation community classification. We used Canonical Linear Discriminant Analysis to determine image and topographic predictors of vegetation communities and to assign image pixels to their closest matching class. The result was a probability image for each vegetation community class predicting class membership. The final map presented here is a result of combining these separate probability images and assigning to each pixel the class with the highest probability. The output pixel size for this map is 17x17 meters, and the minimum mapping unit is 0.5 hectares.

Two dates of AVIRIS hyperspectral imagery (May 2000, July 2001), and five dates of Landsat TM imagery (April 1984, September 1984, May 2000, May 2002, and September 2002) were used in the analysis as well as surficial geology and DEM-derived topographic gradients of elevation, aspect, slope, slope shape, moisture, and incident light.

