



Vanishing Pine Barrens Communities of the Washington, D.C. Vicinity

Maryland Native Plant Society
2016 Annual Fall Conference

September 17, 2016
Rod Simmons

The Southern Megalopolis

The Washington-Baltimore region is probably the most geologically and floristically diverse area in the eastern United States.

Urban and suburban areas in and around these large old cities also typically contain the largest number and variety of old-age trees and remnant stands.

Also, in close proximity to the Megalopolis are a surprising number of extensive, high quality natural communities, i.e., Patuxent Research Refuge, Beltsville Agricultural Research Center, Greenbelt Park, Chapman State Park, Mattawoman Wildlands, etc.

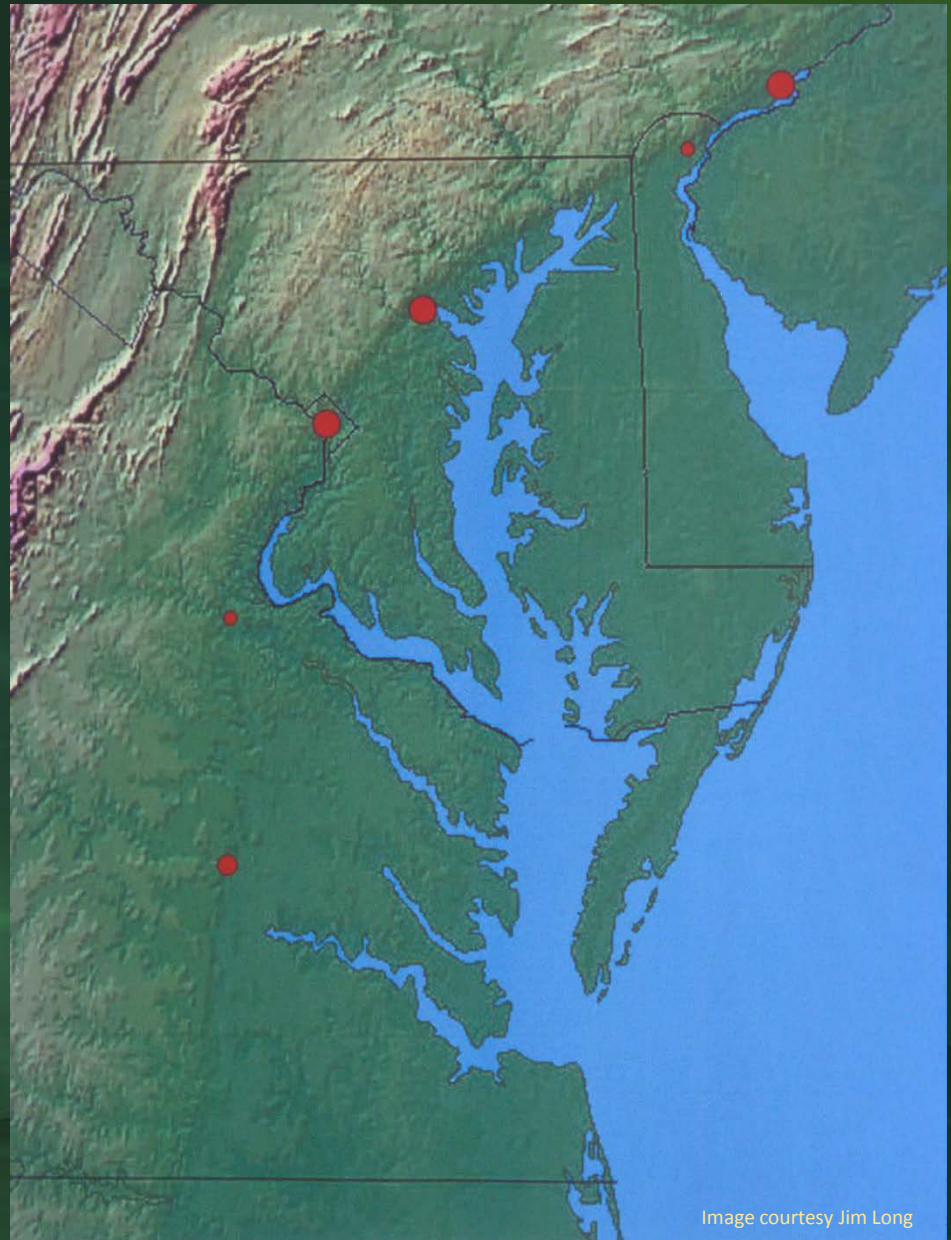


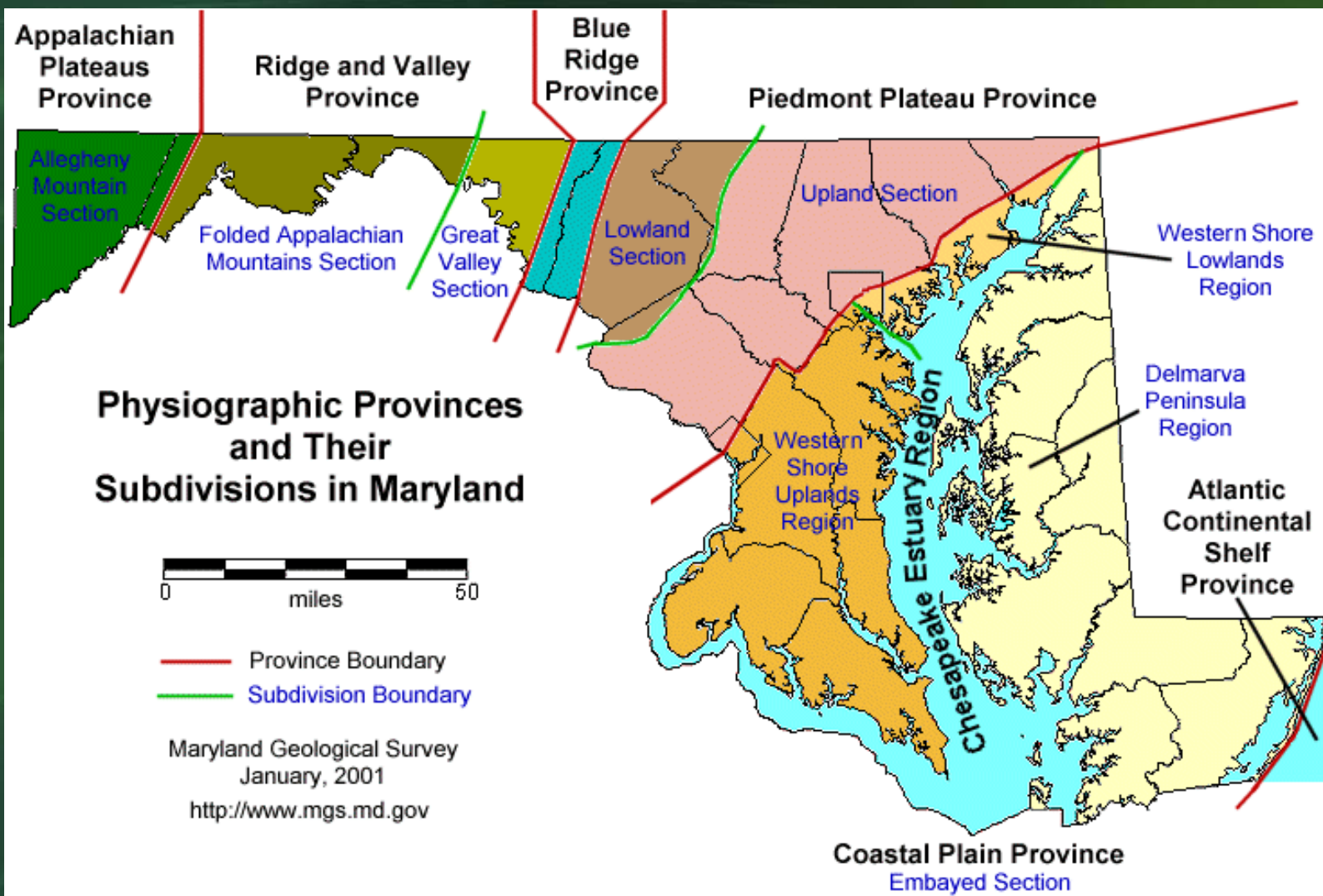
Image courtesy Jim Long


Fall Line Physiographic Province



The Fall Line, or “Fall Zone”, is a first order physiographic boundary between the Piedmont Plateau on the west and the Atlantic Coastal Plain to the east. This zone of transition, where the hard, crystalline bedrock of the Piedmont descends under the soft sediments of the Coastal Plain, is defined by deeply entrenched stream valleys that commonly form gorges, waterfalls, and rapids. It was also the farthest navigable limits upstream for oceangoing vessels, thus most of the old, large cities along the Atlantic seaboard are situated along it.

The southernmost extension of New Jersey Pine Barrens communities occur in the Western Shore Uplands Region of Maryland, as well as relatively smaller outliers in the inner Coastal Plain of the District of Columbia and northeastern Virginia.





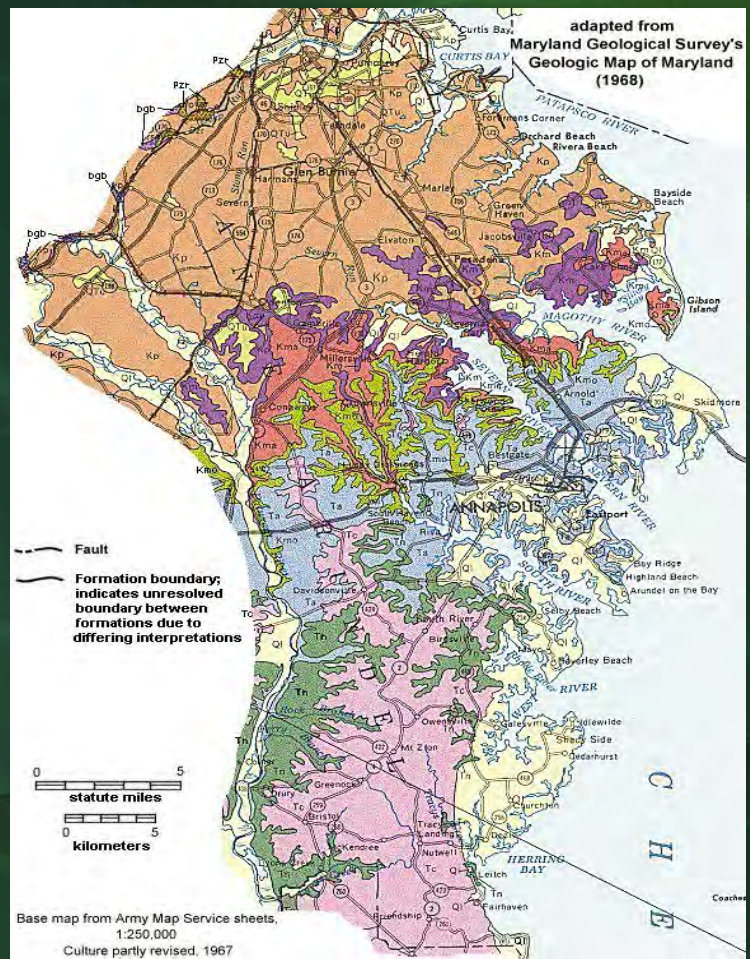
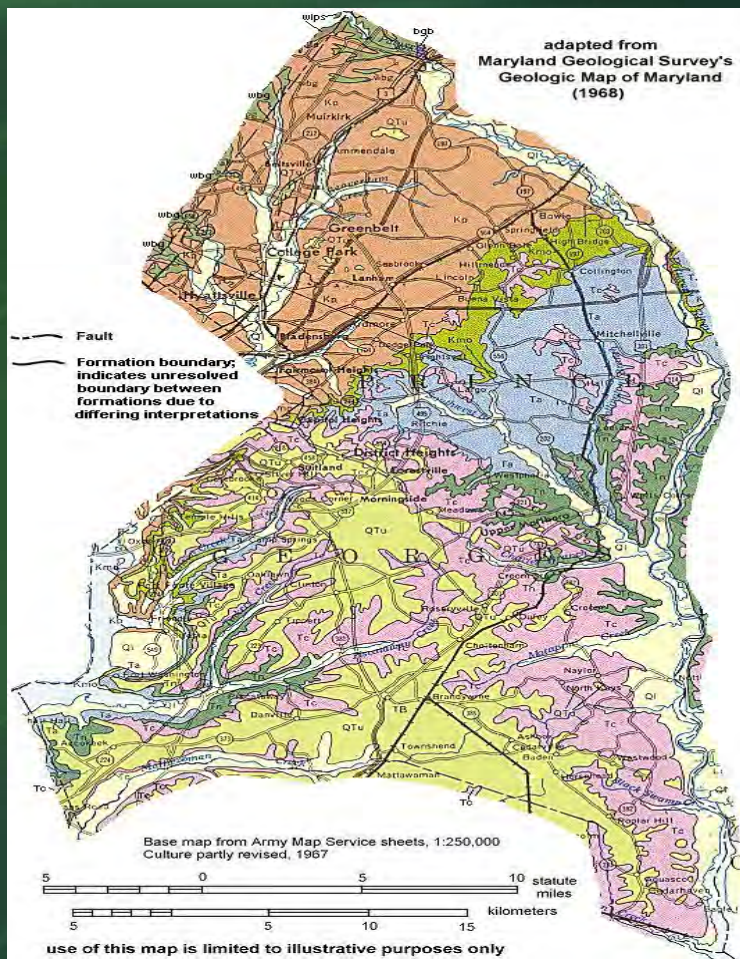
Pitch Pine (*Pinus rigida*) is the dominant and characteristic tree of the New Jersey Pine Barrens, where it occurs on sandy soils in dry to moist conditions.

Pitch Pine as a dominant community component is highly rare in the greater Washington, D.C. area, reaching its southern coastal extension in the eastern U.S. on the vast, deep Cretaceous sand deposits that extend from northeastern Prince George's County through Anne Arundel County.

All of the Pitch Pine communities in the region are allied with similar types in the New Jersey Pine Barrens and are globally rare¹.

¹Simmons, R.H., J.M. Parrish, M.D. Tice, and M.T. Strong. 2008. Conservation Priorities and Selected Natural Communities of the Upper Annapostia Watershed. *Marilandica* 12: pp. 1–22.

Lower Cretaceous Potomac Formation (Patuxent Formation): Interbedded bay quartzose gravels; protoquartzitic to orthoquartzitic argillaceous sands; and white, dark gray and multicolored silts and clays; thickness 0 to 800 feet. Represented as Kp on geologic maps. The southern extent of northern pine barrens communities occurs near Washington, D.C., mainly in northern Prince George's and Anne Arundel counties, Maryland.



Old sand pit east of Fort Totten Park, Washington, D.C.

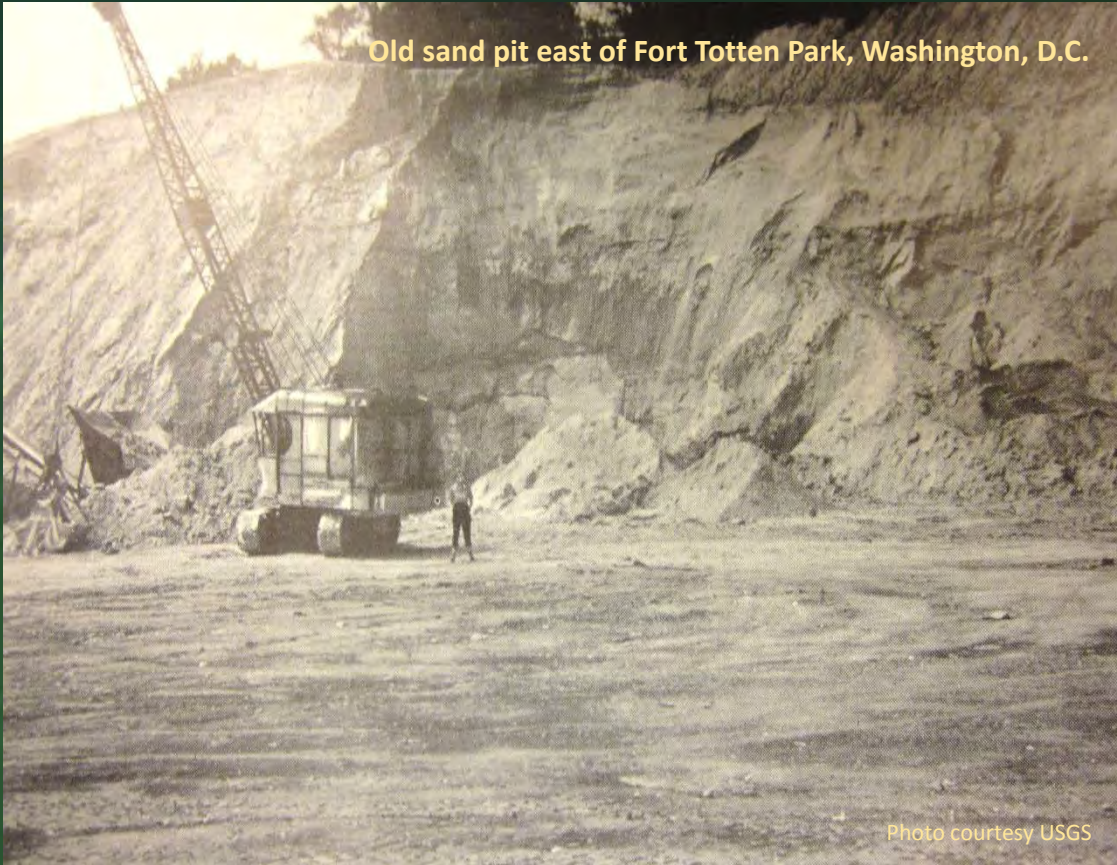


Photo courtesy USGS

Potomac Formation sand of Washington and Vicinity

Massive lenses of Potomac Formation sand are especially common in eastern D.C. and Anacostia; the Laurel, Beltsville, Suitland, and Silver Hill areas of Prince George's County and "sand belt" of northern Anne Arundel County in Maryland; and the Franconia area of Fairfax County, Virginia.



Photo by R.H. Simmons



Photo by R.H. Simmons

Excavation of steep hillside of Potomac Formation soils along the northeast side of the Suitland Parkway and Sheridan Road in Anacostia, Washington, D.C. A thick lens of white sand is prominent stretching across the middle of the slope, which overlies a massive lens of purplish, impermeable clay that overlies a lens of golden sand.



Abundant Potomac Formation gravels at Lincolnia, Fairfax County, Virginia. This area was characterized by an extensive mosaic of sand and gravel mines from the late 1800s through the early 20th century. Other areas of vast sand and gravel deposits along the Fall Line in the greater D.C. region are the Laurel area of Prince George's County, Maryland, eastern D.C., and the Franconia and Fredericksburg areas of northern Virginia.



Large “bog iron” or iron-cemented sandstone boulders at the abandoned Konterra sand and gravel mine complex near Laurel in Prince George’s County, Maryland (above). Bog iron is common in sand and gravel lenses of the Potomac Formation where iron-rich groundwater seepage through sand and gravel over millennia forms a natural conglomerate.



Photo by R. H. Simmons

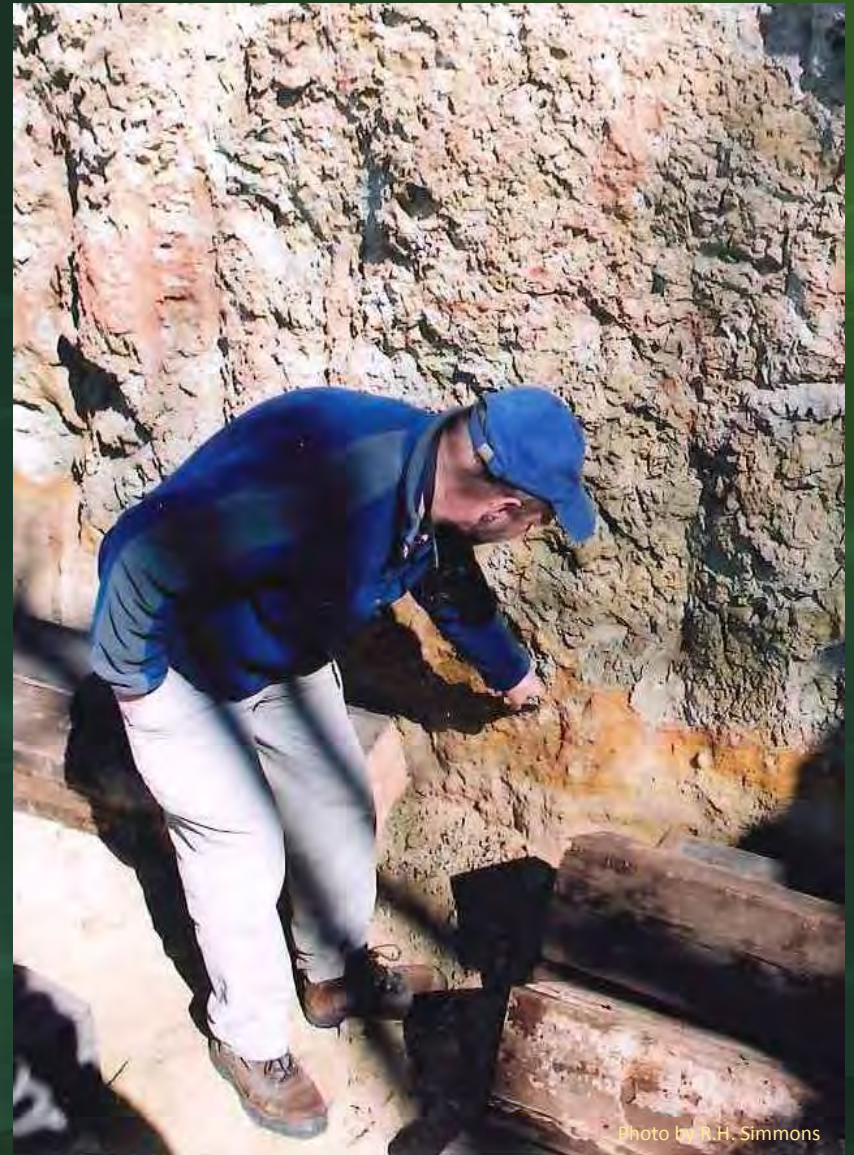


Photo by R. H. Simmons

Massive lens of impermeable Potomac Formation clay (sometimes called "marine clay") in excavation above a Magnolia seep in Franconia, Fairfax County, Virginia (left) and Tony Fleming at a massive, exposed lens of "Arell clay" (Fleming 2016) along Duke Street in the City of Alexandria, Virginia (right).

Early Exploration of Pine Barrens Habitats in the Washington-Baltimore Region

Drawn to the diversity and abundance of flora and pristine habitats throughout the region in the late 19th century, numerous botanists and collectors from the Smithsonian Institution, USDA, Galludet College, George Washington University, Catholic University, University of Maryland, National Arboretum, and other nearby institutions and locales began the first in-depth botanical exploration of the Washington-Baltimore region. Early significant collectors of this period include J.W. Chickering, Jr., F.M. Comstock, Frederick V. Coville, Dr. Edward Foreman, H.W. Henshaw, W. Hunter, T.H. Kearney, Jr., F.H. Knowlton, Charles Louis Pollard, Joseph Nelson Rose, John Donnell Smith, Edward S. Steele, G.B. Sudworth, David LeRoy Topping, George Vasey, Lester F. Ward, and C.E. Waters.



(Capt.) John Donnell Smith



George Vasey



Charles Louis Pollard

Early Exploration of Magnolia Bogs in Washington, D.C.



Photo courtesy ASA

Lester Frank Ward (1841-1913), primarily known as a famous sociologist, was also a prolific collector of local flora during his years in Washington, D.C. as a geologist and paleontologist with the U.S. Geological Survey from 1882 to 1905. In 1881, he published a flora of Washington, D.C. and vicinity¹, which included several of the oldest known Magnolia Bogs or Magnolia Swamps as they were called in those days:

"a little swampy spot a short distance to the south of the National Reform School [**Reform School Bog**], in which is located a beautiful spring...and stretching southward and eastward some distance...in the different portions of this region have been discovered [*Veratrum*] *virginicum*, *Carex bullata*, [*Platanthera*] *ciliaris*..."

The **Holmead Swamp** "occupies a ravine leading to Piney Branch from the east, at the point of the continuation of 14th St. crosses that stream. The road connecting the last named with the Rock Creek Church road, and which is called Spring St., follows this valley. The collecting grounds are on the south side of this road and in the springy meadow on the rill. The timber has long been cut off but the boggy character of the ground has thus far protected it from cultivation...here have been found *Drosera rotundifolia*, *Asclepias rubra*, *Xyris* [*torta*], *Fuirena squarrosa*, *Rhynchospora alba*...and the beautiful *Calopogon* [*tuberosus*], the most showy of our orchids."

The **Terra Cotta [Bog]** "embraces some low grounds and undulating barrens near the terra cotta works at Terra Cotta Station, on the Metropolitan Branch of the Baltimore and Ohio Railroad, three miles from the city, and also a quarter of a mile beyond and to the eastward. Here...in the swamp occur *Woodwardia virginica*, *Asclepias rubra*, [*Sanguisorba*] *canadensis*, and numerous other plants rare or absent in other localities."

Ward also visited locales in Alexandria, including "Chinkapin Hollow" (Taylor Run ravine at Chinquapin Park), and the extensive sand and gravel pits in the Franconia region of Springfield, Virginia in the 1890s with William M. Fontaine and documented the exposed paleoflora of the Potomac Formation².

¹Ward, L.F. 1881. Guide to the Flora of Washington and Vicinity. Bulletin of the U.S. National Museum No. 22. Washington, D.C.

²Ward, L.F. 1895. The Potomac Formation. USGS Annual Report for 1893-94.

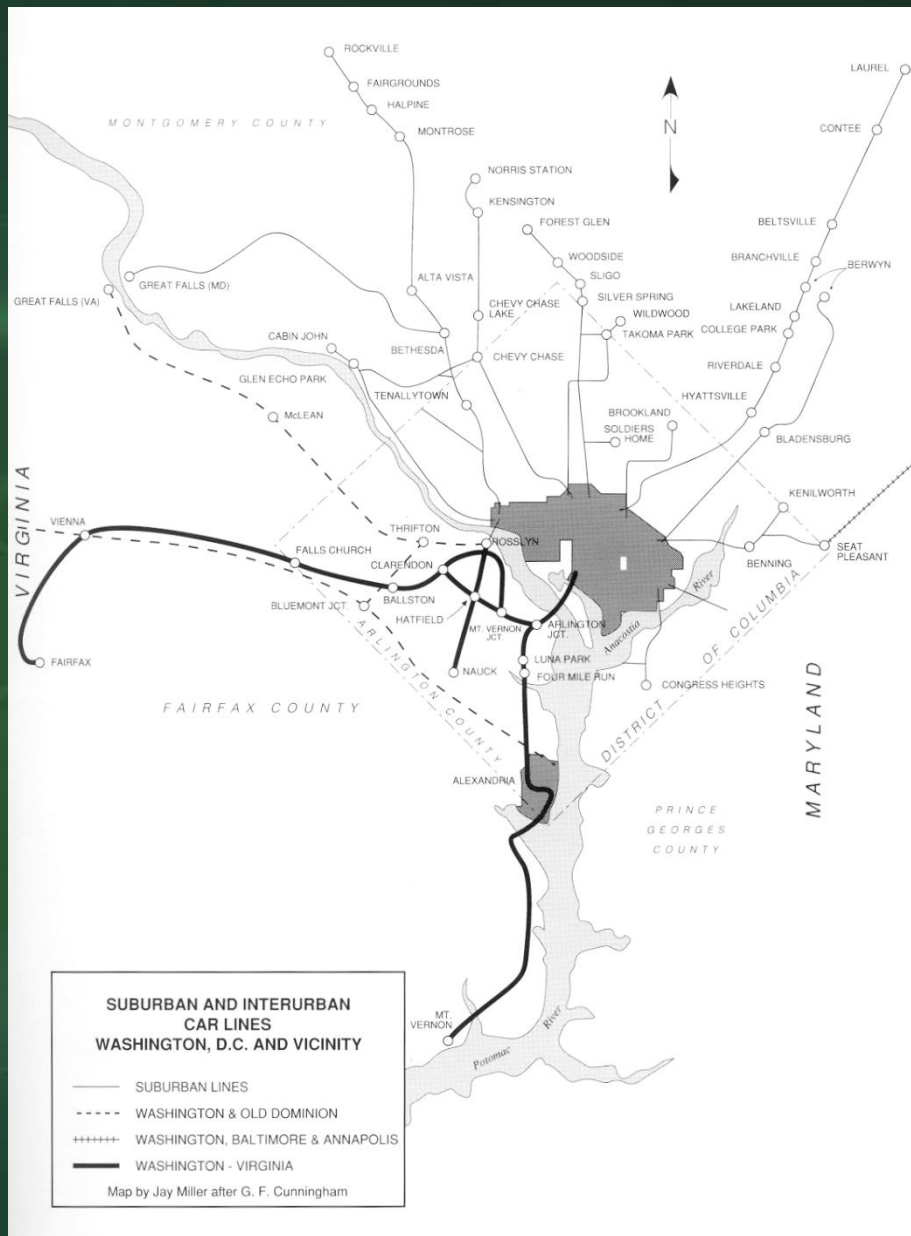
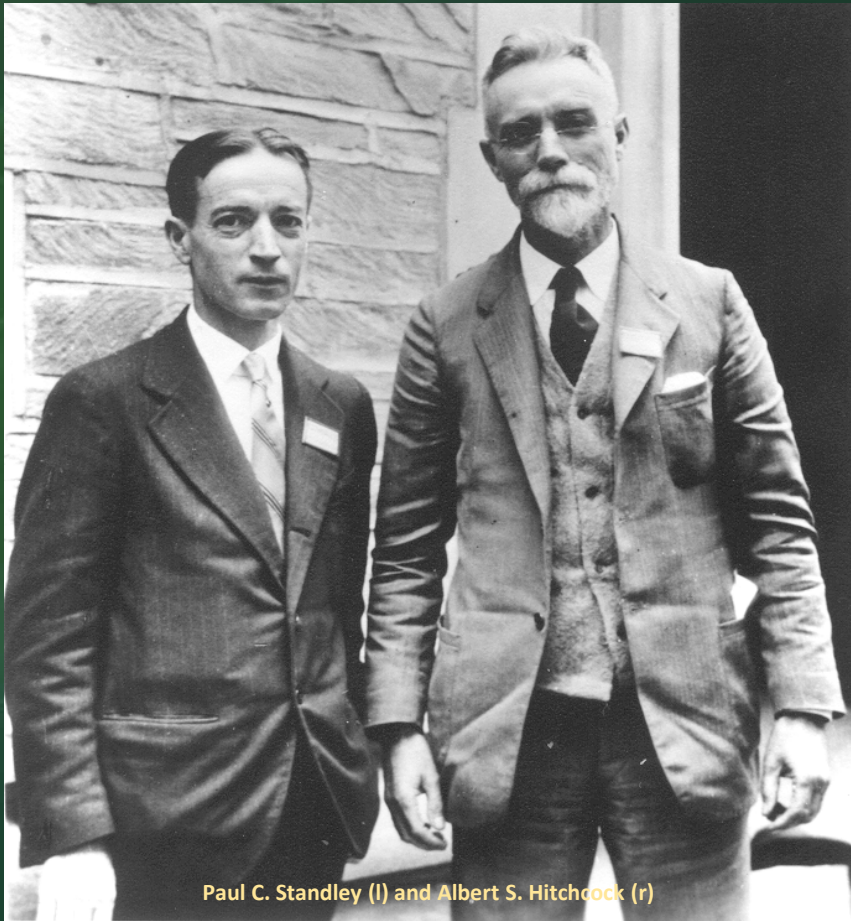


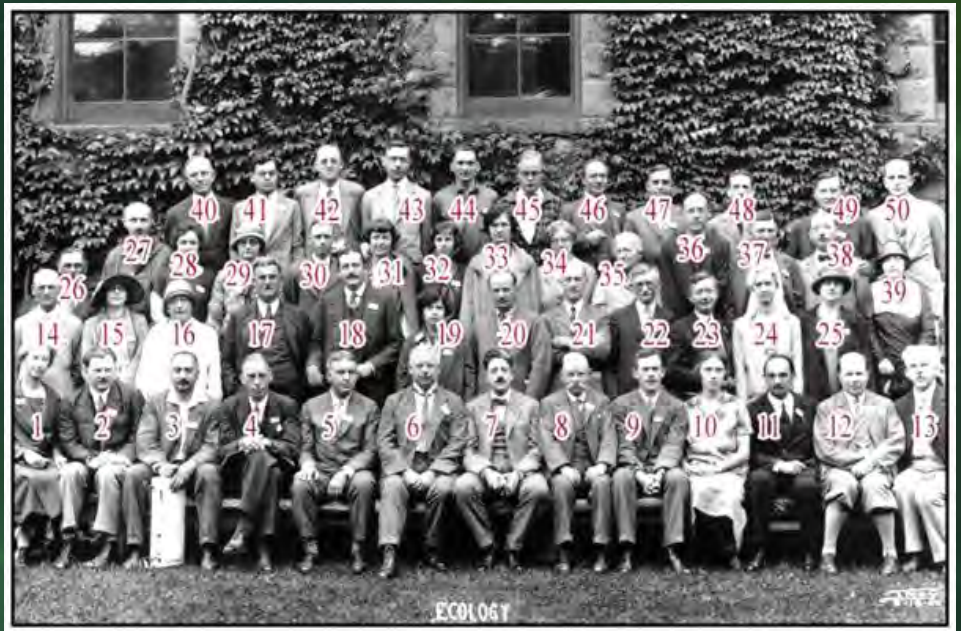
Photo of the W&OD Railroad Bluemont Junction by L.W. Rice

The early years of the 20th century through the 1920s ushered in a whole new group of collectors in the D.C. region, many of whom were successors at the aforementioned institutions. Of the previous generation, Edward S. Steele continued to collect occasionally, with Mrs. Steele. Aided by the newly expanded electric trolley routes and improved roads, mainly into the uplands, botanists were able to explore new areas (McAtee 1918).

Prominent collectors and explorers in the greater D.C. region from 1900 to 1930 were Brother Gerfroy Arsène, Harley Harris Bartlett, J.E. Benedict, Jr., Sydney F. Blake, Agnes Chase, M.A. Chrysler, L.P. Ditman, Philip Dowell, Mr. and Mrs. Oliver M. Freeman, Albert Spear Hitchcock, Homer D. House, Brother F. Hyacinth, Ellsworth P. Killip, F.N. Layton, Emery C. Leonard, William Ralph Maxon, Gerrit S. Miller, Jr., Waldo Lee McAtee, William R. Maxon, John Bitting Smith Norton, Joseph H. Painter, William Palmer, Francis W. Pennell, Charles Christian Plitt, W.H. Seaman, Forrest Shreve, George H. Shull, Paul C. Standley, Ivar Tidestrom, Titus Ulke, G.P. Van Eseltine, Egbert H. Walker, and Edgar Theodore Wherry. Nellie C. Knappen, who apparently did not collect locally, visited numerous important sites throughout the region and made invaluable contributions by documenting flora.



Paul C. Standley (l) and Albert S. Hitchcock (r)

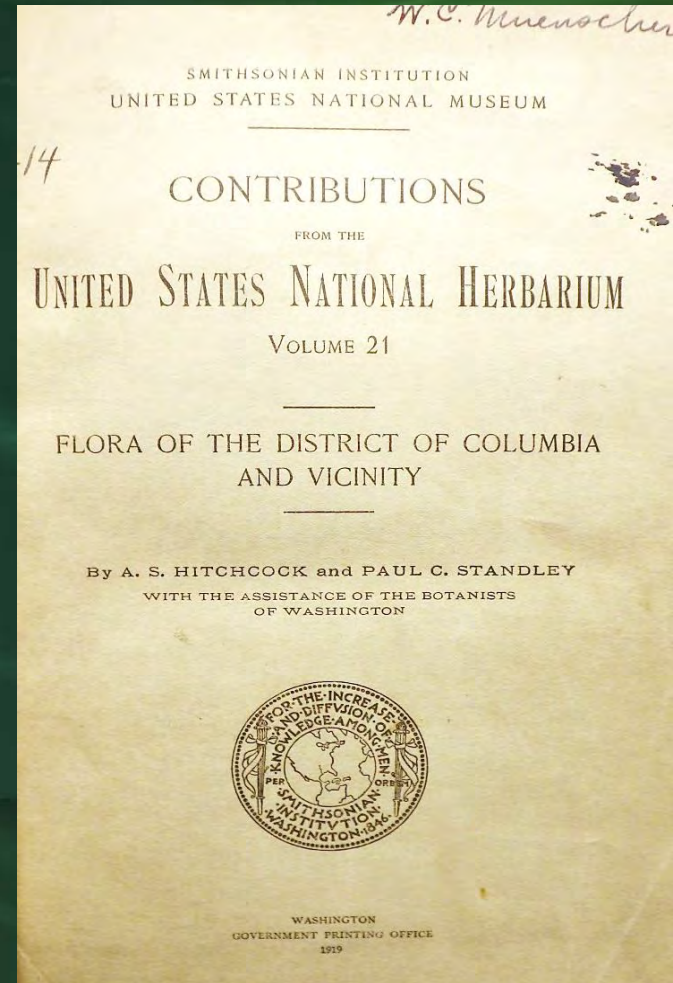


Nellie C. Knappen (George Washington University) - #35 - and Edgar Theodore Wherry (USDA) - #36 - at the IV International Botanical Congress at Cornell University, August 18, 1926.

Much of the greater Washington, D.C. region was still largely rural, inaccessible, and virtually unexplored in the 19th and early 20th centuries



Photo courtesy Library of Congress



Bulletin of the Biological Society of Washington
No. 1

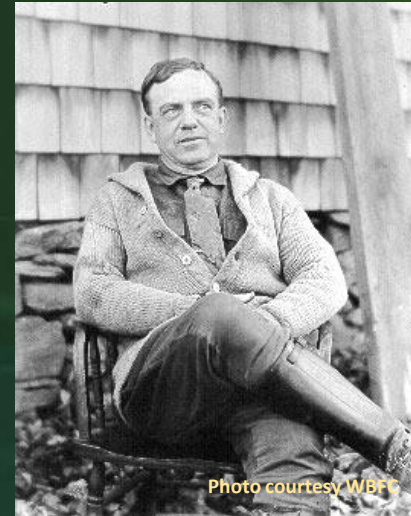
A SKETCH
OF THE
NATURAL HISTORY OF THE
DISTRICT OF COLUMBIA

TOGETHER WITH

AN INDEXED EDITION
OF THE
U. S. GEOLOGICAL SURVEY'S 1917 MAP
OF WASHINGTON AND VICINITY

BY
W. L. McATEE

WASHINGTON, D. C.
MAY, 1918



In *A Sketch of the Natural History of the District of Columbia* (1918)¹, USDA and Fish and Wildlife Service biologist Waldo Lee McAtee (1883-1962) published the first, comprehensive description of “white sand and gravel bogs” of the Washington, D.C. area and coined the name “Magnolia Bog” for the characteristic Sweetbay Magnolia (*Magnolia virginiana*) that commonly occurred in them.

Aided by the newly expanded electric trolley routes and improved roads along the Fall Line into northern Prince George’s County, Maryland and westward into parts of Arlington, Alexandria, and Fairfax, McAtee and a host of other local botanists were able to explore new areas and discover additional bog sites. McAtee included a list of all the known Magnolia Bogs, historical and extant, in his Bulletin, along with an indexed map and gazetteer of their locations.

¹McAtee, W.L. 1918. A Sketch of the Natural History of the District of Columbia. Bulletin of the Biological Society of Washington, No. 1. Washington, D.C.



Photo by W.L. McAtee; courtesy Chris Frye from R.B. McAtee

Rare old photograph of W.L. McAtee at Powder Mill Bog #3 c. 1909. This bog occupies a large, colluvial gravel seepage fan on the north side of Paint Branch in northern Prince George's County near the Montgomery County line. A small portion of the bog remains on the grounds of the White Oak Federal Research Center.



Photo by W.L. McAtee; courtesy Chris Frye from R.B. McAtee

Priceless photograph of Powder Mill Bog #2 c. 1909. This site, located 2 miles west of Ulles Crossing on the northeast side of Paint Branch near the intersection of Sellman Road and Cherry Hill Road, was also known as the “Beltsville Bog” and “Cold Spring Bog” and was probably the most floristically diverse of all the known bogs. It was destroyed for construction of the southbound lanes of I-95 near Cherry Hill Road.



Photo by W.L. McAtee; courtesy Chris Frye from R.B. McAtee

Open section of Powder Mill Bog #2 with spring-flushed, white sand and gravel and Coastal Plain Bog Asphodel (*Triantha racemosa*) and other highly rare plants commonly associated with the New Jersey Pine Barrens.



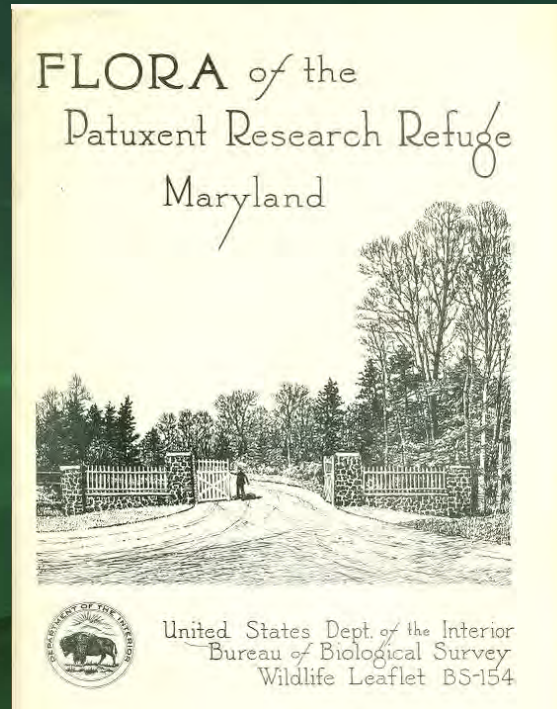
Photo by W.L. McAtee; courtesy Chris Frye from R.B. McAtee

Open, colluvial fan section of Powder Mill Bog #3 with large cobbles and extensive colonies of Ten-angled Pipewort (*Eriocaulon decangulare*).

After the second wave of collecting subsided, botanical exploration picked up again in the late 1930s and continued through the 1950s. Carleton R. Ball, Eduards Baltars, C.E. Chambliss, Herbert G. Deignan, C.O. Erlanson, Neil Hotchkiss, Francis R. Fosberg, Robert D. Rappleye, Clyde F. Reed, Lyman B. Smith, Francis M. Uhler, and Egbert H. Walker were prominent figures of this time. A decades-long hiatus followed this period until Stan Shetler, Brother Michael T. Stieber, and L.K. Thomas, Jr. explored boggy habitats in the 1960s, including Thomas' discovery of the Oxon Run Gravel Bogs in the District of Columbia.



Fran Uhler



Neil Hotchkiss

Northern Pine Barrens Natural Community Types of the Western Shore of Maryland

Coastal Plain Pine-Oak Woodland

Pine Barrens Pine-Oak Woodland: *Pinus rigida* – *Quercus coccinea* – *Quercus falcata* / (*Quercus marilandica*) / *Gaylussacia frondosa* Woodland (USNVC: CEGLO06329). Global/State Ranks: G2G3/S3. Beltsville Agricultural Research Center (BARC) in northern Prince George's County.

Lowland Pine Barrens with extensive, co-dominant colonies of Dangleberry (*Gaylussacia frondosa*). Global/State Ranks: G2G3/S3.

Acidic Seepage Bog/Fen

Fall Line Magnolia Bog community: *Nyssa sylvatica* - *Magnolia virginiana* - (*Pinus rigida*) / *Rhododendron viscosum* - *Toxicodendron vernix* / *Smilax pseudochina* Woodland (USNVC: CEGLO06219). Global/State Ranks: G1/S1.

Coastal Plain Acidic Seepage Swale: *Alnus serrulata* - *Magnolia virginiana* / *Andropogon glomeratus* - *Eupatorium pilosum* - *Rhynchospora gracilentata* - *Xyris torta* Shrubland (USNVC: CEGLO06499). Global/State Ranks: G1/S2?.

Coastal Plain Dwarf-Shrub Peatland: *Chamaedaphne calyculata* - *Vaccinium macrocarpon* / *Rhynchospora alba* / *Sphagnum* spp. Dwarf Shrubland (USNVC: CEGLO06852) [PROVISIONAL]. Global/State Ranks: GNR/S1.

Acidic Seepage Swamp

Coastal Plain / Outer Piedmont Acidic Seepage Swamp: *Acer rubrum* – *Nyssa sylvatica* – *Magnolia virginiana* / *Viburnum nudum* / *Osmundastrum cinnamomeum* – *Woodwardia areolata* Forest (USNVC: CEGLO06238). Global/State Ranks: G3?/S3.

Pine Barrens Lowland Forest: *Pinus rigida* – *Nyssa sylvatica* / *Clethra alnifolia* – *Eubotrys racemosus* Forest (USNVC: CEGLO06926). Global/State Ranks: G2G3/S2?.

Atlantic White Cedar Swamp

Coastal Plain Atlantic White-cedar – Red Maple Swamp: *Chamaecyparis thyoides* - *Acer rubrum* - *Magnolia virginiana* Forest (USNVC: CEGLO06078). Global/State Ranks: GNR/S3.




Photo by R. H. Simmons

Southern New Jersey Mesic Pine Barrens: *Pinus (rigida, echinata)* – *Quercus coccinea* / *Ilex opaca* Woodland (USNVC: CEGLO06115) along Rt. 347 near the intersection with Rt. 550 near Belleplain State Forest, with nearly continuous colonies of Black Huckleberry (*Gaylussacia baccata*).



Photo by R.H. Simmons

Extensive Pine Barrens Pine-Oak Woodland of the Western Shore: *Pinus rigida* – *Quercus coccinea* – *Quercus falcata* / (*Quercus marilandica*) / *Gaylussacia frondosa* Woodland (USNVC: C EGL006329) at the “Central Farm” of the Beltsville Agricultural Research Center (BARC) in northern Prince George’s County. Global/State Ranks: G2G3/S3.



Dwarf Chinquapin Oak (*Quercus prinoides*), right, and
Sassafras (*Sassafras albidum*) co-occur in semi-open glades
in Pine Barrens Pine-Oak Woodland



Massive, old-age Pitch Pine (*Pinus rigida*) at the “Central Farm” and “East Farm” of the Beltsville Agricultural Research Center (BARC) in northern Prince George’s County.



The National Champion **Dwarf Chinquapin Oak (*Quercus prinoides*)**, above left, and the nearby State Champion **Sand Hickory (*Carya pallida*)**, above right, in sandy *Pinus rigida* – *Quercus coccinea* – *Quercus falcata* / (*Quercus marilandica*) / *Gaylussacia frondosa* Woodland (USNVC: CEGLO06329) at the “East Farm” of the Beltsville Agricultural Research Center (BARC) in northern Prince George’s County.



Photo by Gary P. Fleming

Photo by R.H. Simmons

Sandy woodland edges and openings at the Beltsville Agricultural Research Center (BARC) and adjacent Patuxent Research Refuge South Tract support numerous disjunct rarities, such as Grass-leaved Golden-aster (*Pityopsis graminifolia* var. *latifolia*) above.



Photo by R.H. Simmons

Lowland pine barrens of the Western Shore at the “Central Farm” of the Beltsville Agricultural Research Center (BARC) in northern Prince George’s County with extensive, co-dominant colonies of Dangleberry (*Gaylussacia frondosa*).



Sphagnous seepage swales in Pitch Pine barrens at the “Central Farm” of the Beltsville Agricultural Research Center (BARC) support the state threatened Small White Fringed Orchid (*Platanthera blephariglottis*) among other rarities.



Photo by R.H. Simmons

The historic **“Airport Bog”** or **“Beltsville Airport Bog”** between Springfield Road and Powder Mill Road on the **“East Farm”** of the Beltsville Agricultural Research Center (BARC) in northern Prince George’s County. This large, exceptional community is a mosaic of Acidic Seepage Swamp, Pine Barrens Lowland Forest, and bogs, and once harbored rare relicts of flora typical of the outer Coastal Plain, such as Northern Bayberry (*Morella pensylvanica*), Orange Milkwort (*Polygala lutea*), and others, that were characteristic long ago of many of the bogs in and around Washington, D.C.



Photo by R.H. Simmons

Pristine, sandy Oak-Pine-Heath Forest on knoll at Sawmill Creek Park above Sawmill Creek near the eastern end of Dorsey Road in Glen Burnie, Anne Arundel County. Dangleberry (*Gaylussacia frondosa*) is co-dominant here with a diversity of ericads, including Highbush Blueberry (*Vaccinium corymbosum*), Sheep Laurel (*Kalmia angustifolia*), Eastern Teaberry (*Gaultheria procumbens*), Trailing Arbutus (*Epigaea repens*), and others.



Bear Oak (*Quercus ilicifolia*)

Sheep Laurel (*Kalmia angustifolia*)



Inkberry (*Ilex glabra*)

Wild Raisin (*Viburnum cassinoides*)



Historic Glen Burnie Bog Site?

Fly-poison (*Amianthium muscitoxicum*), bottom right, was rediscovered at the site in the spring of 2008 after a 100-year absence



Photo by R.H. Simmons



Photo courtesy MNPS from an October 1999 field trip

Bill Sipple (left) and Sam Jones with naturally occurring colony of Switch Cane (*Arundinaria tecta*) at the southwest edge of Angel's Bog at Fresh Pond, one of several ice age relict, sphagnous seepage ponds in Anne Arundel County, Maryland.



Bill Sipple (far left) and MNPS field trip participants amidst extensive **Leatherleaf** (*Chamaedaphne calyculata*) colony at Fresh Ponds, Anne Arundel County in October 1999. Leatherleaf is a low, colony-forming shrub of peatlands, ranging from subarctic and boreal Alaska and Canada, Nfld., and Labr. south to Georgia (does not occur in Virginia and West Virginia). Boreal, relict peatland ponds in northern Anne Arundel County are the only stations in Maryland for Leatherleaf. It is highly rare in Maryland (G5,S1).



Photo by M.T. First

Stands of mature **Pitch Pine (*Pinus rigida*)** along the south shore of the upper Magothy River in northeastern Anne Arundel County. The Box Huckleberry station was located on a wooded slope a short distance from the back of the house in the photo.



Photo by Will Cook, carolinanature.com

Maryland's last known station for **Box Huckleberry (*Gaylussacia brachycera*)** (Michx.) Gray was a small, dwindling population on a north-facing, sandy hillside in Oak-Pine-Heath Forest along the headwaters of the Magothy River near Lake Waterford Park in Anne Arundel County (G3,SH?).

Box huckleberry is a dwarf, evergreen shrub that forms extensive, self-sterile colonies. Its natural range is essentially the mid-Atlantic region, occurring in Pennsylvania, Delaware, Maryland, West Virginia, Virginia (S1), Kentucky, North Carolina, and Tennessee. It occurs in all physiographic provinces throughout its range, though is known only from the coastal plain of Delaware and Maryland (see ¹Pooler et al. 2006).

¹Pooler, M.R., R.L. Dix, and R.J. Griesbach. 2006. Genetic diversity among accessions of the endangered box huckleberry (*Gaylussacia brachycera*) based on AFLP markers. *Journal of the Torrey Botanical Society* 133(3), pp. 439-448.



Photo by R.H. Simmons

Unconsolidated (mixed size), large and small gravels (cobbles) at the surface of old-age Central Appalachian / Inner Piedmont Low-Elevation Chestnut Oak Forest: *Quercus montana* - (*Quercus coccinea*, *Quercus rubra*) / *Kalmia latifolia* / *Vaccinium pallidum* Forest (USNVC: CEGLO06299) on a gravel terrace above Pulpit Rock at Rock Creek Park, Washington, D.C.



Photo by R.H. Simmons

Old-age Pitch Pine (*Pinus rigida*) and tangle of graminoids (grass-like plants) and shrubs at the exceptionally pristine **Aitcheson Bog** on the west side of I-95 in northern Prince George's County, Maryland - one of the finest and last remaining examples of the globally rare **Fall Line Magnolia Bog community**: *Nyssa sylvatica* - *Magnolia virginiana* - (*Pinus rigida*) / *Rhododendron viscosum* - *Toxicodendron vernix* / *Smilax pseudochina* Woodland (USNVC: CEGL006219). Global/State Ranks: G1/S1.



Photo by R. H. Simmons

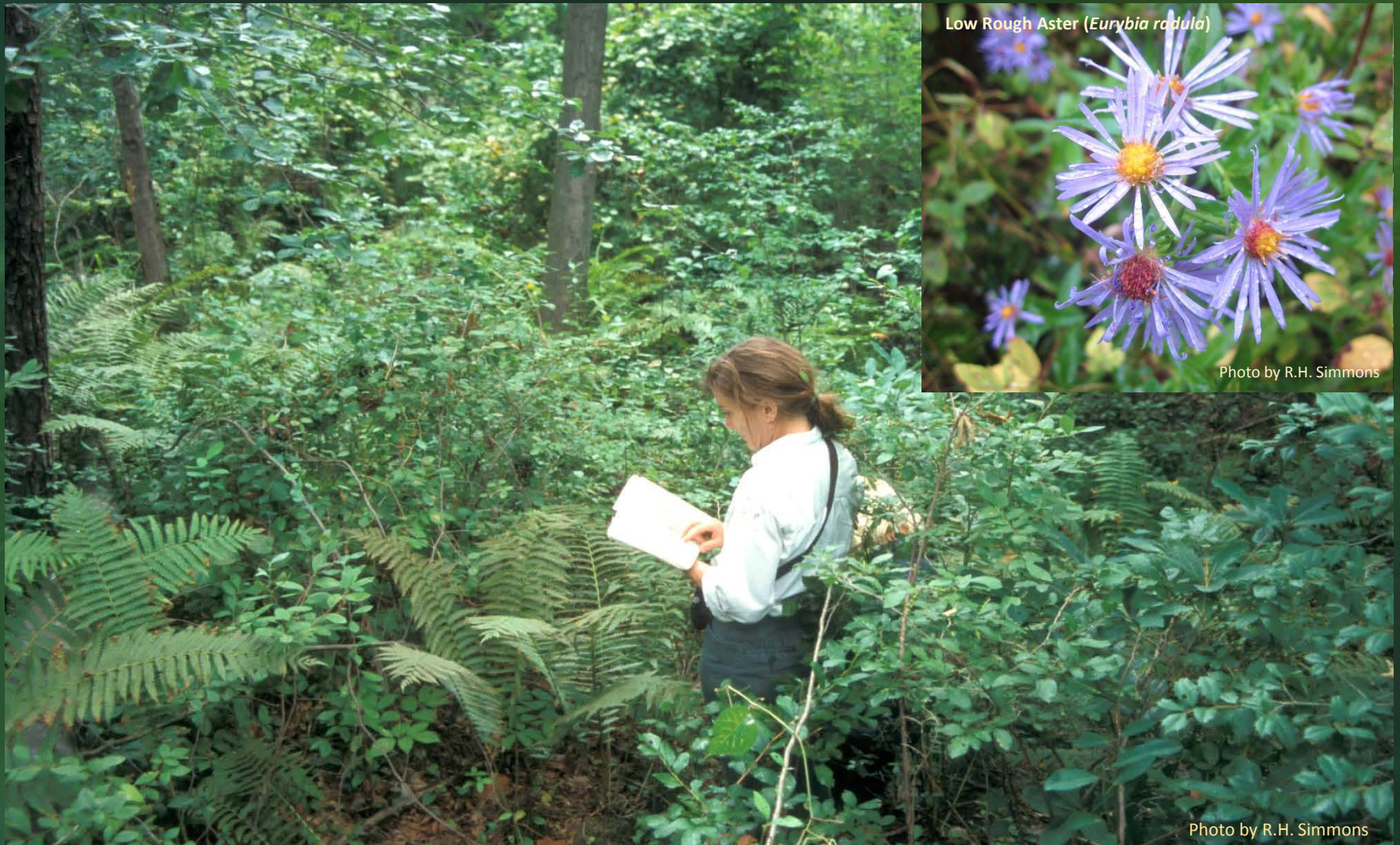
Konterra Bog #1 in upper Prince George's County, Maryland is another of the finest and last remaining examples of the globally rare Fall Line Magnolia Bog community. It and the nearby Aitcheson Bog forced the northward realignment of the Intercounty Connector (ICC).



The diverse **Bear Branch Bog**
near Laurel, Maryland.



Osmunda x ruggii is an extremely rare, naturally occurring hybrid between *Osmunda claytoniana* and *O. spectabilis* and is the only interspecific hybrid known in the Osmundaceae. This small colony along Bear Branch, a small seepage stream, is the only known station for this taxon in Maryland.



Maryland Native Plant Society members Jane Osborn and Lou Aronica surveying a floristically diverse, dense shrub glade at the **Ammendale Bog** on the south side of Indian Creek near U.S. Rt. 1 in Prince George's County, Maryland. Brother F. Hyacinth collected Threelobed Goldthread (*Coptis trifolia*) here in 1919, yet another montane, northern element that occurs in the Fall Line Magnolia Bog community. Many rarities still occur at this site, including Low Rough Aster (*Eurybia radula*), Rough-leaved Goldenrod (*Solidago patula*), and others.



Dense colony of Button Sedge (*Carex bullata*), Cinnamon Fern (*Osmundastrum cinnamomeum*), Netted Chain Fern (*Woodwardia areolata*), Northern Long Sedge (*Carex folliculata*), and many others at the **Greenbelt Bog** at Greenbelt Park in Prince George's County, Maryland. This site and two others nearby within the park and the Oxon Run Bogs in Anacostia, Washington, D.C. are the only known Fall Line Magnolia Bogs in the National Park Service system.



Photo by R.H. Simmons

Suitland Bog in Prince George's County

Bog Huckleberry (*Gaylussacia bigeloviana*) (Fern.) Sorrie & Weakley G?,S1



Photo by Eleanor Saulys

Bog Huckleberry is a low shrub that superficially resembles Black Huckleberry (*Gaylussacia baccata*) and is known only in Maryland and vicinity from sphagnum edges of Western Shore seepage bogs in D.C., Prince George's County, and Anne Arundel County, with the only known extant station at Suitland Bog. Its primarily northeastern range extends from Quebec, Nfld., Labr., and Nova Scotia south to the inner Coastal Plain of D.C. and Maryland, and disjunct to North and South Carolina. (It is likely present in Virginia, but has not been unanimously confirmed.)

The larger corolla size (averaging 7 mm) and usually whitish-pink colored flowers of *G. bigeloviana* vs. smaller corolla size of *G. baccata* (4-5 mm) and orange-red flowers are fairly reliable distinguishing characteristics.



Southern Bog Clubmoss
(*Lycopodiella appressa*)

Photo by Kenneth Lawless



Photo by R.H. Simmons

Sharon Geil, Mark Strong, Stan Shetler, and Brent Steury in spring-flushed, gravelly open glade with abundant bog iron at the **Oxon Run Bogs** in southeast Anacostia, Washington, D.C. near the Prince George's County line. Bog Fern (*Parathelypteris simulata*), Southern Bog Clubmoss (*Lycopodiella appressa*), and Bog Yellow-eyed Grass (*Xyris difformis*), among others, are some of the highly rare plants that occur here.



Photo by R.H. Simmons

Southern Wild Raisin (*Viburnum nudum*), Weak Stellate Sedge (*Carex seorsa*), Bent Sedge (*Carex styloflexa*), and other bog flora at the rediscovered **Barcroft Bogs** on the south side of Four Mile Run at Barcroft Park in Arlington County, Virginia. This site and a small section of the famous **Nauck Bog** nearby are surviving remnants of McAtee's "Four Mile Run Valley bogs." In 1919, Agnes Chase documented similar flora at a now extirpated Magnolia Bog near Vinson Station (Lyon Park area) and F.R. Fosberg collected bog flora in the late 1930s from a "weedy, partially drained bog" near Virginia Highlands in South Arlington.

Historic Bogs of Alexandria

From similar, now historic sites in Alexandria, G.S. Miller, Jr. in 1902 collected Virginia Bunchflower (*Veratrum virginicum*), Red Milkweed (*Asclepias rubra*), and Downy Lobelia (*Lobelia puberula*) from a “small swamp 3 miles west of Alexandria”; J.H. Painter in 1905 collected Nodding Ladies’ Tresses (*Spiranthes cernua*) “in swamp” at Hunting Creek; Paul C. Standley in 1918 collected Nodding Ladies’ Tresses from a “bog near St. Elmo” and Nellie C. Knappen c. 1922 reported White Fringed Orchid (*Platanthera blephariglottis*) from a “spring near Alexandria” (both locations are probably historic Hume Spring in the lower Four Mile Run Valley); Nellie C. Knappen also reported a “bog” at “Alexandria Reservoir”, as well as Nodding Ladies’-tresses at “Lincolnia” and “Alexandria Reservoir” in 1921 (Alexandria Reservoir is also the name on the 1917 USGS map for Lake Barcroft, which was built in 1915 as a water supply for Alexandria and is situated along Holmes Run near the western boundary of the City in Fairfax County); J.E. Benedict, Jr. collected Nodding Ladies’-tresses from a “swamp near Alexandria, Virginia” in 1923; W.L. McAtee (1930) collected Swamp Sunflower (*Helianthus angustifolius*) “in the bog adjoining cemetery in Alexandria”; and E.H. Walker, H.G. Deignan, and F.R. Fosberg in 1945 collected Long’s Rush (*Juncus longii*) and other bog flora from the old sand and gravel mine complex and bog adjoining Turkeycock Run very near today’s boundary with Fairfax County. The term “swamp” was often analogous to “bog” in common usage in the early 20th century.

Photo by Gary P. Fleming

Swamp Sunflower (*Helianthus angustifolius*)



Hume Spring c. 1900 Photo courtesy Alexandria Library, Special Collections



Old-age Pitch Pine (*Pinus rigida*) at the sandy, open, ponded section of the **Franconia Bog** complex at the headwaters of Long Branch within the extensive, abandoned Franconia sand and gravel mine operation in Franconia, Fairfax County, Virginia. Numerous county records and locally rare species were discovered here, including Button Sedge (*Carex bullata*), Twisted Spikerush (*Eleocharis tortilis*), Cone-cup Spikerush (*Eleocharis tuberculosa*), Slender Beaksedge (*Rhynchospora gracilentata*), Halberd-leaved Greenbrier (*Smilax pseudochina*), Yellow Fringed Orchid (*Platanthera ciliaris*), and many others. Numerous Magnolia Bogs and Acidic Seepage Swamps once extended throughout this area.



Photo by R.H. Simmons

Coastal Plain / Outer Piedmont Acidic Seepage Swamp: *Acer rubrum* – *Nyssa sylvatica* – *Magnolia virginiana* / *Viburnum nudum* / *Osmundastrum cinnamomeum* – *Woodwardia areolata* Forest (USNVC: CEGLO06238) typically arise at the outflow of bogs and form relatively large, braided, acidic swamps, which in turn form small seepage streams. Global/State Ranks: G3?/S3.



Photo by R.H. Simmons

Extensive Coastal Plain / Outer Piedmont Acidic Seepage Swamp complex along Long Branch in Franconia, Fairfax County, Virginia.



Photo by R.H. Simmons

Pine Barrens Lowland Forest: *Pinus rigida* – *Nyssa sylvatica* / *Clethra alnifolia* – *Eubotrys racemosus* Forest (USNVC: CEGLO06926) in lowland pine barrens of the Western Shore at the “East Farm” of the Beltsville Agricultural Research Center (BARC) in northern Prince George’s County. Global/State Ranks: G2G3/S2?.

Resources:

City of Alexandria Flora and Natural Communities
webpage at: <http://alexandriava.gov/22560>

Geologic Atlas of the City of Alexandria and Vicinity
at: <https://www.alexandriava.gov/89974>

www.mdflora.org



Acknowledgements:

PowerPoint presentation by R.H. Simmons.

City of Alexandria Department Recreation, Parks, and Cultural Activities, Natural Resources Division.

Mark Strong, Jim Long, Tony Fleming, Bill Harms, Jorge Montero, Claudette Joyner and Beltsville Agricultural Research Center, Maryland Native Plant Society, Botanical Society of Washington.

Jason Harrison, Chris Frye, and Wes Knapp of the Maryland Department of Natural Resources, Wildlife and Heritage Service; Andy Windisch, Kathleen Walz, Bob Cartica, Darin Oliver, and David Snyder with the New Jersey Office of Natural Lands Management; Gary Fleming, Robert Wright, Tom Wieboldt, John Townsend, and the Virginia Botanical Associates.

Department of Botany, National Museum of Natural History, Smithsonian Institution; Robin Everly, Botany and Horticulture Librarian, Smithsonian Libraries.

Photos: R.H. Simmons, Gary P. Fleming, USGS, Jim Long, Maryland Geological Survey, American Sociological Association, L.W. Rice, Ecological Society of America, Library of Congress, Washington Biologists Field Club, W.L. McAtee, Randy Emmitt, MNPS, M.T. First, Will Cook, Eleanor Saulys, Kenneth Lawless, Alexandria Library, and Philip Kauth.

Harrison, Jason W. 2016. The Natural Communities of Maryland: 2016 Natural Community Classification Framework. Maryland Department of Natural Resources, Wildlife and Heritage Service, Natural Heritage Program, Annapolis, Maryland. Unpublished report.

Maryland Natural Heritage Program. 2016. Rare, Threatened and Endangered Plants of Maryland, C. Frye Ed., Maryland Department of Natural Resources, 580 Taylor Avenue, Annapolis, MD 21401. Publication 03 Wildlife & Heritage Service—4182016-813.

Simmons, R.H., J.M. Parrish, M.D. Tice, and M.T. Strong. 2008. Conservation Priorities and Selected Natural Communities of the Upper Anacostia Watershed. *Marilandica* 12: pp. 1–22.