

Annals of the City of Alexandria Herbarium: Small Stream Forests of the Fall Line and Coastal Plain

By Rod Simmons, July 2011

[A regular series featuring field botany updates, notable collections, and scientific contributions largely from the City of Alexandria, Arlington County, and Fairfax County, Virginia, but occasionally including other locales in the Washington, D.C. area as well]

The vegetation of alluvial floodplains along the upper reaches of many small to medium-sized streams in Alexandria and surrounding areas of the fall line and inner coastal plain throughout the Washington, D.C. region is largely classified as **Coastal Plain / Piedmont Small Stream Forest: *Liquidambar styraciflua* - *Liriodendron tulipifera* / *Lindera benzoin* / *Arisaema triphyllum* Forest (CEGL004418).**

Unlike the rich floodplains of large streams and rivers, these perennially-damp forest communities are flooded very rarely by stream overflows and are mainly fed by a mosaic of seeps and springs that emanate from the porous sandy-gravelly soils of slopes along the stream valleys. They occur at the lowest landscape position in the stream valley along banks and flat alluvial benches just above the streams on acidic, sandy-clayey loams, often over underlying clay. They are included within the Palustrine System in the vegetation classification hierarchy (Fleming et al. 2010, Harrison 2004), but are not swamps or bogs.

Vegetation varies somewhat with stream size, soil and moisture conditions, and geography, but Tulip Tree (*Liriodendron tulipifera*), Sweetgum (*Liquidambar styraciflua*), and Red Maple (*Acer rubrum*) are the dominant canopy trees of this community type. Tulip Tree is characteristic of well-drained sites along small order streams of the fall line and adjoining coastal plain of our area, with Red Maple to a lesser extent. Sweetgum can also occur as a canopy co-dominant, but becomes increasingly important on poorer-drained soils and on the coastal plain. Occasionally, oak species - typically White Oak (*Quercus alba*) near the fall line and Southern Red Oak (*Quercus falcata*) on the coastal plain - and American Beech (*Fagus grandifolia*) are also co-dominant. Many of the canopy trees are old-age and reach great size.

The understory and shrub layers are usually sparse, with Spicebush (*Lindera benzoin*) the characteristic shrub. The herbaceous layer is diverse, though large expanses of the forest floor are typically carpeted in lush colonies of New York Fern (*Thelypteris noveboracensis*) (Figs. 1,2), intermixed to a lesser extent with Southern Lady Fern (*Athyrium filix-femina* var. *asplenioides*). Jack-in-the-Pulpit (*Arisaema triphyllum*) is frequent in areas not dominated by fern colonies, along with Sessile-leaved Bellwort (*Uvularia sessilifolia*), Patridgeberry (*Mitchella repens*), numerous carices (*Carex* spp.), and other herbaceous plants. Colonies of Dwarf Ginseng (*Panax trifolius*) and Wood Anemone (*Anemone quinquefolia*) are fairly common in spring.

Good examples of this community type occur along the east branch of Turkeycock Run in Lincolnia, near the western edge of the City of Alexandria in Fairfax County; in Alexandria along the tributary through Rynex Nature Area, Taylor Run at Chinquapin Park, and Timber Branch; and along the headwaters of Powhatan Springs at Upton Hill Regional Park in Arlington County. Some of the region's best remaining examples occur along Still Creek and North Branch Still Creek at Greenbelt Park in Prince George's County, Maryland.



Fig. 1. Extensive colonies of New York Fern (*Thelypteris noveboracensis*) along Still Creek at Greenbelt Park, Prince George's County, Maryland. Photo by R.H. Simmons.

As recently as two decades ago, many of these interior stream valleys were largely free of significant populations of invasive exotic plants. However, Japanese Stilt Grass (*Microstegium vimineum*) has since become established and represents a serious threat to the future sustainability of forest communities because of its rampant growth rate, pervasive seed bank, negative effects on soil microorganisms, and ability to thrive in areas of soil disturbance, such as along trails and areas frequented by White-tailed Deer (Brewer 2010).

A survey of the east branch of Turkeycock Run for possible occurrences of Spinulose Wood Fern (*Dryopteris carthusiana*) and Evergreen Wood Fern (*Dryopteris intermedia*) was conducted in May of this year with Dianne Simmons and Carl and Jerry Taylor. This watershed has a long history of botanical exploration, beginning in the late 19th century. William Palmer collected various plants, including Evergreen Wood Fern, from the Lincolnia area in 1899; Nellie C. Knappen reported flora from Lincolnia in the early 1920s; E.H. Walker collected Magnolia Bog flora, including Long's Rush (*Juncus longii*), from the old sand and gravel mine complex and bog adjoining Turkeycock Run in 1945; H.G. Deignan collected similar flora from this site in 1945; F.R. Fosberg, also in 1945, collected from woodland seeps and a Magnolia Bog along the slope above Turkeycock Run (probably the same site as Walker's); and the author extensively surveyed the uplands and stream valley flora of the watershed in the early 1990s, noting many of the previously documented plants and habitats.



Fig. 2. Large New York Fern (*Thelypteris noveboracensis*) glade in Coastal Plain / Piedmont Small Stream Forest along the east branch of Turkeycock Run, Fairfax County, Virginia. Photo by R.H. Simmons.

We did not locate any *Dryopteris* species along the east branch of Turkeycock Run, but did rediscover one of William Palmer's historical collections - Canada Mayflower (*Maianthemum canadense*) - growing amidst a small colony of Ground Pine (*Dendrolycopodium obscurum*) at the edge of a large woodland seep. This primarily northern and montane species is associated with Magnolia Bog habitats in our region and was collected at Lincolnia by Palmer in 1899 (Simmons 2008). This species is fairly rare in the Washington, D.C. area and was last noted on the coastal plain of northern Virginia in similar habitat at the Franconia Bog by Mark Strong and the author in 1999.

Fosberg's Magnolia Bog remains, but is almost irreparably degraded – the result of channelized stormwater runoff from the adjacent Arbor Park Apartments (formerly Orleans Village Apartments) and subsequent tree blowdowns, soil disturbance, and infestations of invasive exotic plants. However, the stream valley becomes much less disturbed northward towards Lincolnia Road and a small, mostly pristine Magnolia Bog and Acidic Seepage Swamp complex was discovered upstream. (The Magnolia Bogs and woodland seeps typically occur along the toe-slopes of hillsides where springs emerge from the sand and gravels and thick impermeable clays of the Potomac Formation.)

Although most Coastal Plain / Piedmont Small Stream Forest communities and forested stream valleys of our area are designated Resource Protection Areas (RPAs), many remain high conservation priorities because of the degradation resulting from increasing urbanization of watersheds; subsequent hydrologic

disturbances; placement and maintenance of sewer easements; an influx of invasive exotic plants; and destructive and often unnecessary streambank restoration projects, including riparian buffer plantings.

Literature Cited

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