

FA Quarterly Newsletter

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New York Flora Association

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Editor's Note: This issue has several items of interest. For those of you who know Mike Kudish, you will be glad to see an article with one of his classic hand-drawn maps. Mike was good enough to write about a plant that has been the subject of past NYFA field trips. And we have another article by Joe McMullen; not to be outdone by the author of certain popular bestselling books, he has provided us with a sequel to his (also popular) Shades of Green article. We also have reports from three field trips, a workshop, and the Annual Meeting; and would like to encourage others to send in reports on other NYFA events as well as any article of general interest.



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The Two OXes of Pakatakan Mountain: AdOXa and OXalis

by Michael Kudish, a Catskills forest historian.

For the last two springs, 2014 and 2015, the New York Flora Association organized field trips to see *Adoxa moschatellina*, Adoxaceae, on Pakatakan Mountain, Town of Middletown, Delaware County. *Adoxa* is considered a rare plant in New York State, although one wouldn't know that on Pakatakan Mountain.

When I was working on my dissertation, *Vegetation of the Catskill High Peaks*, in 1969-1970, I found a reference written in 1916 by Percy Wilson in the journal *Addisonia* 1: page 41, that described the collection of *Adoxa* by Miss Fanny A. Mulford in July 1903 and in June 1912. This reference assigned the site to nearby Arkville. Actually, the populations of *Adoxa* are much closer to the Village of Margaretville than they are to the hamlet of Arkville. Pakatakan Mountain bounds the Village of Margaretville on the southeast. It is actually the northwest spur of a much larger mountain, Dry Brook Ridge.

For about 45 years, I wondered exactly where the populations were, and finally thanks to NYFA members Molly Marquand and Paul Harwood, was shown two populations in 2014 (I had missed Rich Ring's 2014 field trip). Since then, I've been returning to comb the area, and in half a dozen field trips I have located twenty populations so far.

I think that I have come up with an explanation of why it is where it is – not its probable postglacial arrival as a boreal species – but more the ecological reasons for its persistent present distribution. I would greatly appreciate the thoughts of NYFA members on this explanation.

Adoxa is a very small plant and quite inconspicuous among herbaceous vegetation, barely one decimeter high. It is found on horizontal terraces (i.e. steps) on three sandstone ledges, each about one meter above the base of the ledge and therefore almost at eye level. The remaining seventeen populations, ranging from a few to over 50 stems, are atop large flat-topped boulders, most several meters across.

The surrounding forest is northern hardwoods - mainly sugar maple, white ash, basswood, and some northern red oak and black cherry. A few of the sandstone ledges have some carbonate pockets, but most do not. The boulders do not. A high calcium, high pH site does not seem to be a requirement for this plant. The station in Stony Clove Notch, 23 miles (37 km) to the east, hardly seems to be in a carbonate-rich area either.

Forest history on Pakatakan Mountain includes possible mid-19th century tanbark peeling, but not directly over *Adoxa* sites because this species does not grow under hemlock groves. The slope was subsequently logged for hardwoods at the end of the 19th century and into the early 20th. This minor human disturbance most likely had nil effect on the *Adoxa* populations. The area had never been cleared for agriculture and there is no evidence of fire (see *CFA News*, newsletter of the Catskill Forest Association, Arkville NY,

summer 2015, for an article on the forest history of Pakatakan Mountain).

All the *Adoxa* populations on Pakatakan Mountain have something in common. They are on a steep, northwest-facing slope that holds soil moisture longer than on many other slopes of Pakatakan Mountain and on adjacent Dry Brook Ridge.

Adoxa (except for one small plant) is not found directly on the forest floor. The annual litter fall would bury it, and the competing larger herbs, ferns, shrubs, and tree saplings would shade it out. In contrast, many species on the tops of boulders and ledges are also small, probably also because of the lack of competition from larger plants, and prove far less competitive to *Adoxa*. Examples are *Maianthemum canadense*, *Circaea alpina, Mitchella repens, Polypodium virginianum, Anemone quinquefolia, Hydrophyllum virginianum, Galium triflorum, Geranium robertianum*, and species of *Mnium* and *Dicranum* mosses.

The *Adoxa* populations are only on horizontal surfaces where forest litter and humus can accumulate to a depth of only about five cm. This is just enough soil to support this species and other small herbs. On inclined surfaces, such as on tilted boulders and steeply-plunging ledges, rainwater runs off rapidly. Accumulating litter and humus is washed away, preventing herbaceous growth from colonizing altogether; only some semi-xerophytic mosses and lichens can grow on these tilted surfaces.

Adoxa populations occur in approximately equal numbers on both sides of the Pakatakan Mountain-Dry Brook Ridge Trail, extending laterally for up to 200 meters. This is because the trail, an old logging road, happens to run through the middle of the steep, northwest-facing slope, winding its way up the mountain between the ledges. *Adoxa* populations range in elevation from about 1630 feet (500m) to 2350 feet (715m).

What I find most interesting is why the populations do not extend farther off the trail to the east or to the west. I hypothesize a very different reason for each. To the east, as one bushwhacks toward Arkville, Pakatakan Mountain becomes less steep and rough, with fewer ledges and boulders. If *Adoxa* were here, it would have primarily a forest floor to grow on – an inhospitable place.

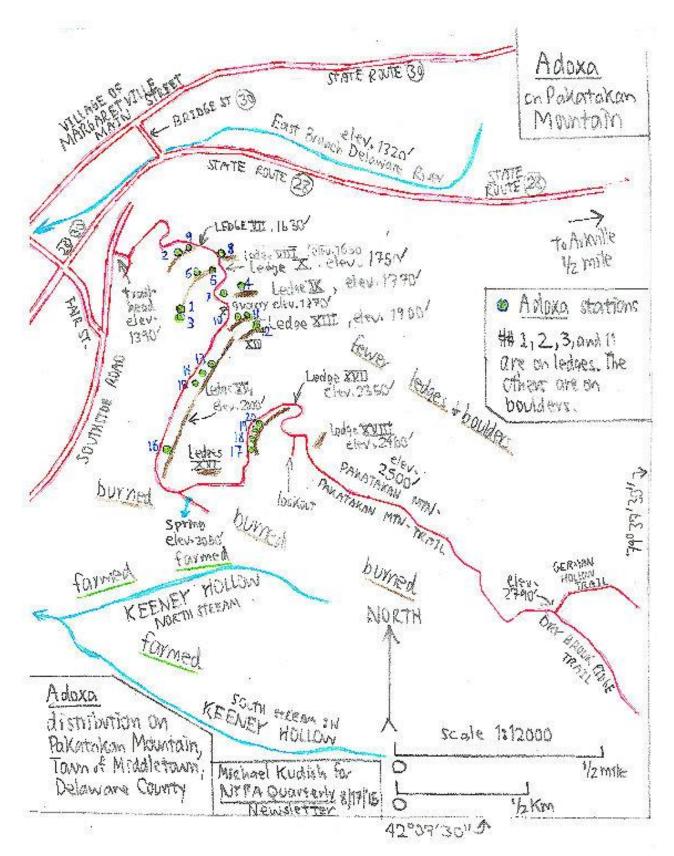
To the west, toward a small valley known as Keeney Hollow, forest history is very different. Northern red oak dominates on the drier and warmer southwest-facing slopes, along with some American chestnut, white oak, shagbark and bitternut hickories, maple-leaved viburnum, and blueberry - suggesting millennia of burning by Native American peoples (see *Kaatskill Life* magazine, summer 2012 for an article on nut trees in the East Branch Delaware Valley). Any *Adoxa* populations here could have been burned off thousands of years ago.



Why mention *Oxalis* in the title? There may be a historic connection. *Oxalis montana, Clintonia borealis, and Huperzia lucidula* occur often with and near A*doxa* at unusually low elevations for the Catskills. The other three boreal species are most abundant at much higher elevations, mainly above 2800 or 2900 feet (850 to 900 meters), in spruce-fir, fir, and northern hardwood stands. They grow chiefly on sites that have not been burned repeatedly or cleared for agriculture, i.e. on sites minimally disturbed by humans.

Because *Adoxa* is also mainly a boreal species, it is "at home" with *Oxalis, Clintonia*, and *Huperzia*. All of these plants probably migrated into the Catskills from the south about 14,000 to 13,000 years ago and were left behind as relict populations as the bulk of their cousins marched northward.





Map of Adoxa stations drawn by Mike Kudish.



Flowering Plants that Lack Green

by Joseph M. McMullen, joymcmullen2@msn.com

In the last issue of the NYFA Newsletter I authored an article entitled *Shades of Green*, which presented the various applications of the word green in everyday life, along with the diversity of its shades in the plant world. Some of our plants, however, lack any evidence of green. You might be surprised to learn that they are flowering plants and are quite common throughout New York.

The green in plants comes from the presence of chlorophyll, the matter used by plants to produce energy in the process of photosynthesis. Plants with chlorophyll produce their own energy and are considered autotrophic, which literally means "self nourishing".

Plants that are not green lack chlorophyll and, as a result, cannot photosynthesize. Perhaps these can be lumped into the heterotrophs ("different nutrition"), although the term is usually applied to animals and other consumers.

A few of our common flowering plants that lack chlorophyll are discussed in the following text. It is not surprising that several of these herbaceous plants occur in deep shade. Why not? Light is of no use to them.





Beechdrops (*Epifagus virginiana*) against backdrops of American beech (*Fagus grandifolia*) trunk and leaves. Note the characteristic smooth bark and long pointed buds of beech. Photos by Joe McMullen.

Beechdrops (*Epifagus virginiana*), a common flowering plant in our deciduous forests, is one of the better known, but easily overlooked members of this group. It has no chlorophyll, lacks any hint of green, and cannot produce its own energy. This annual survives by being parasitic on the roots of the tree American beech (*Fagus grandifolia*), and it is always found under beech trees. The genus *Epifagus* is very appropriate, since it literally means "upon beech".





Pine sap (*Hypopitys monotropa*, formerly *Monotropa hypopithys*) has a multiple flowered nodding stalk. Photo by Michael Hough.



Indian pipe (*Monotropa uniflora*) has a one flowered stem that is chalk white or pinkish. The flower is nodding at first, but turns upright. Photo by Andy Nelson.

There are a few other common flowering plants in our area that lack green. Two of them, pine sap (*Hypopitys monotropa*) and Indian pipe (*Monotropa uniflora*), are parasitic species in the heath family (Ericaceae). As you might know, the heath family includes many common acid-loving species (acidophiles), such as blueberries (*Vaccinium*), huckleberries (*Gaylasaccia*), azaleas (*Azalea*), rhododendron (*Rhododendron*), and laurel (*Kalmia*). Pine sap and Indian pipe are woodland species that are also usually found in shaded, acidic soil situations under hemlock (*Tsuga canadensis*) trees. They are actually parasitic on fungi mycorrhizae on tree roots.



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It should be noted that some of our species that lack green are considered saprophytes, while others are parasites. Although there seems to be some discrepancy as to whether species are saprophytic or parasitic, the difference is that saprophytes live on dead or decaying matter, while parasites are dependent on living matter. Just to confuse you, some green plants are considered epiphytes. Epiphytes grow "upon" other plants; they do not usually get any nutrients directly from their host, but use them as a habitat site. Spanish moss (*Tillandsia usneoides*), which is actually not a moss but a flowering plant in the pineapple family (Bromeliaceae), is a good example of an epiphyte.



One-flowered cancer root (Orobanche uniflora) has showy, tubular flowers. Photos by Andy Nelson.

Several of our parasitic/saprophytic plants that lack green are in the broomrape family (Orobanchaceae), including the aforementioned beechdrops. One other common member of this family is one-flowered cancer root (*Orobanche uniflora*). It is a parasitic species found in woodlands and open thickets. Interestingly, all of the plants in the genus *Orobanche* are parasitic/saprophytic species. Another one in the broomrape family is squawroot (*Conopholis americana*), which is parasitic on tree roots, especially oaks. It has a multiple flowered stalk that resembles a pine cone.



Squawroot (Conopholis americana) resembles a pine cone. Photo by Michael Hough.





Common dodder (*Cuscuta gronovii*) has striking yellow or orange colored stems that vine around its hosts. Photo by Michael Hough.

Lastly, we have a very common parasitic vine that lacks green. It is common dodder (*Cuscuta gronovii*), which is found in several different habitats, but often in wetlands or low, open ground. It is different than all the previously mentioned parasitic species because it has tiny suckers (haustoria) that absorb nutrients from the above-ground portions of the plants it vines around. The viney stems are a striking yellow or orange color, which contrast with the bright white flowers. It is a pest in some areas, especially in cranberry farms.

If you have read *Shades of Green* and this article on the absence of green, you should now have an appreciation for the color green or lack thereof in plants, notwithstanding the words of a beloved icon: "It's not easy being green. It seems you blend in with so many ordinary things". Although, as our landscape is currently so brilliantly painted in colors, perhaps this is not the best time to ponder just green.

Massawepie Field Trip Report

by Anne Johnson

This field trip was advertised as a leisurely walk through various boreal habitats, and it was indeed just that. As we strolled through forest and along shoreline on well-kept trails, we took in more than just vascular plants - lichens, mushrooms, insects, dragonflies, moths, and butterflies were part of the multi-faceted expertise of our group. We found time, as well, while gathered around a slope above the lake filled with various plants, for a discussion of the many shades of green that Joe McMullen wrote about in the last issue of the newsletter.

The trail took us to a nice bridge over a branch of the South Grasse where we sat and ate lunch on this perfect sunny day, not too hot and not too cold. The trail at that point had just passed through a nice black spruce-tamarack forest with a picturesque mossy floor decorated with snowberry, bunchberry, and multi-colored Sphagnums. After we walked back to the starting point, we headed over to an observation platform on the edge of the very large, very open expanse of the mire proper. We were inspired by the immensity of the mire (about 900 acres of open peatland) and bemused by its contrasting very low species diversity. One guess was that there was only a total of 10 species (by me, I admit), but that was proven wrong -16 were counted, and 21 if we were to include the edge species; see list. Of course, if we had counted sphagnums, we would have had a longer list, but I suspect not by much.



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Thanks to the Boy Scouts Seneca Waterways Council for allowing us access during their summer season and to Don Faber-Langendoen for providing his field notes for this write-up.



Looking toward the esker from the open bog. Photo by Bernie Carr.

Plant List for open peatland at Massawepie Mire; plants noted on 7/26/2015.

In mat proper:

Aronia melanocarpa Chamaedaphne calyculata Carex billingsii Eriophorum vaginatum Eriophorum virginicum Kalmia angustifolia Kalmia polifolia Larix laricina Nemopanthus mucronata Picea mariana Pinus strobus Rhododendron groenlandicum Labrador Tea Sarracenia purpurea

Chokeberry, Black Leatherleaf Sedge, Billing's Cottongrass Cottongrass, Tawny Laurel, Sheep Laurel, Pale Tamarack; Larch Holly, Mountain Spruce, Black Pine, White Pitcher Plant

Vaccinium angustifolium Vaccinium oxycoccos Viburnum nudum

On edge of mat:

Carex magellanica Carex oligosperma Carex trisperma Maianthemum trifolium Osmunda cinnamomea

Blueberry, Lowbush Cranberry, Small Raisin, Wild

Sedge, Boreal Bog Sedge, Few-seeded Sedge, Three-seeded Solomon's seal, Three-leaved Fern. Cinnamon



Ferns and Clubmosses Field Trip in Chenango County, June 2015 by Joseph M. McMullen



Fern enthusiasts on a bridge over Cole Brook.

About fifteen individuals joined Joe McMullen on a field trip focusing on ferns and clubmosses in a rural portion of northern Chenango County on June 20, 2015. The trip started with a review of the important terms in fern identification and an introduction to where ferns fit in the plant kingdom. Ferns and their relatives (Pteridophytes) share reproduction by spores with mosses and liverworts (Bryophytes), but have traits like true stems, roots and leaves, and a developed vascular system similar to our more advanced flowering/seed plants (Spermatophytes).

The area for the field trip was primarily forested, with good examples of a mature hemlock bottomland forest and a rich deciduous forest. A small stream called Cole Brook crosses the property; it is a tributary to Conasawacta Creek, which joins the Chenango River in Norwich. Surprisingly, the area is within the upper Susquehanna drainage basin. Also, the area is within a designated Important Bird Area called Chenango Woods.

In the open areas and associated scrub-shrub wetlands near the stream, we found marsh fern (*Thelypteris palustris*), crested wood fern (*Dryopteris cristata*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmunda cinnamomea*), interrupted fern (*Osmunda claytoniana*), and patches of the large, plume-shaped fronds of the robust Ostrich fern (*Matteuccia struthiopteris*).

In a young woods across the stream there was an abundance of New York fern (*Thelypteris noveboracensis*), with its pinna that gradually taper in size to the base of the stipe. A clump of rock polypody (*Polypodium virginianum*) was found in an odd location in the fork of a maple tree, and we were tempted to label it tree polypody.



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The mature rich deciduous forest is dominated by sugar maple (Acer saccharum) and occurs on a moderate to steep slope. In early spring the forest floor is covered with the broad leaves of wild leeks (Allium tricoccum), but by late June the leaves have withered away and the only evidence of the leeks is their developing flower stalks. A number of fern species were observed here, including: maiden hair (Adiantum pedatum), silvery glade (Deparia acrostichoides), Goldie's (Dryopteris goldiana), rattlesnake (Botrychium virginianum), and glade (Diplazium pycnocarpon). These species are generally indicators of soils in the higher pH ranges.

As we moved along the slope and then down into the hemlock forest some distance upstream, we encountered plants like wild sarsaparilla (Aralia nudicaulis) and Clintonia (Clintonia borealis), which along with hemlock are indicative of more acidic soils. Here we found several clubmosses, including: shiny (Huperzia lucidula), bristly tree (Dendrolycopodium dendroideum), and flat branched tree (D. obscurum).

We had a good day seeing twenty fern species and six clubmosses. A complete list is included.



Joe explaining the characteristics of the frond and separate spore stalk of Ostrich fern (Matteuccia struthiopteris).

Ferns

Adiantum pedatum Athyrium angustum Athyrium angustum Botrychium virginianum Rattlesnake fern Dennstaedtia punctilobula Hay-scented fern Deparia acrostichoides Diplazium pycnocarpon Dryopteris cristata Dryopteris goldiana Dryopteris intermedia Gymnocarpium dryopteris Oak fern Matteuccia struthiopteris Ostrich fern Onoclea sensibilis Osmunda cinnamomea

Maidenhair fern Lady's fern (northern) Lady fern (forma purpureum) Silvery glade fern Glade fern Crested wood fern Goldie's fern Evergreen wood fern Sensitive fern Cinnamon fern

Osmunda claytoniana Polypodium virginianum Polystichum acrostichoides Pteridium aquilinum Thelypteris noveboracensis Thelypteris palustris

Clubmosses

Dendrolycopodium dendroideum Dendrolycopodium obscurum Diphasiastrum digitatum Huperzia lucidula Lycopodium clavatum Spinulum annotinum

Interrupted fern Rock polypody Christmas fern Bracken fern New York fern Marsh fern

Bristly tree clubmoss Flat-branch tree clubmoss Southern groundpine Shiny clubmoss Wolf claw clubmoss Bristly clubmoss



NYFA ANNUAL MEMBERSHIP MEETING 2015

by Anna Stalter

The 2015 NYFA Annual Meeting was held at Joralemon Park in Albany County on a gorgeous late summer day. Nearly 30 NYFA members and guests, from NY counties near (Schenectady) and far (Erie), were in attendance. Joralemon boasts a high diversity of ferns and other unusual species and a walk in the park was the first order of business. Ed Miller, honored guest, who was instrumental in protecting Joralemon in 1985, pointed out notable species, including *Hybanthus concolor* and *Hydrastis canadensis*. Joe McMullen, fresh from leading the Chenango County Ferns and Clubmosses NYFA outing in June, shared identification hints and anecdotes (did you know there are **three** different origin stories for the common name of *Polystichum acrostichoides*?).

After exploring the east side of the park, guests enjoyed a picnic lunch and proceeded to the business portion of the meeting. Connie Tedesco presented the slate of NYFA Board Members for consideration and members voted to approve it: all in favor, none opposed, no abstentions. President Steve Young thanked board member Michael Burgess for organizing the annual meeting, and spoke of other highlights of 2015. The NYFA Atlas continues to be in great demand by users, and the newsletter is highly regarded. Field trip and workshop organizers in attendance commented on the success of those efforts and Steve reported that both Twitter followers and Facebook "Likes" are increasing!

Ed Miller and Nancy Williams were then presented with the **2014 Plant Conservationist of the Year Award**. Working together, Ed and Nan have created and curated native plant and fern gardens at the Landis Arboretum in Esperance, NY, co-authored guides to the Trees and Ferns of the Capital District, and have shared their enthusiasm for native plants with many aspiring botanists and natural historians throughout the region. NYFA applauds the accomplishments of these two fine conservationists and wishes them well on their continuing projects at Landis and beyond!



Ed Miller and Nancy Williams with their awards. Photo by Michael Burgess.



Throughout the event, attendees were encouraged to cast a vote for the **2016 Wildflower of the Year**. Of the six candidates nominated by NYFA board members, the species that garnered the most votes was the bright and delicate *Polygala paucifolia*, also known as gaywings milkwort. A complete profile of the winning species and a list of sites where it can be found in New York State will soon be posted on the NYFA webpage!



Gaywings (Polygala paucifolia), 2016 Wildflower of the Year.

The last activity before a walk around the west side of Joralemon was the annual plant quiz, in which teams of three or four strove mightily to correctly answer questions botanical, both esoteric and mundane. Calvin Cycle? NY State Botanist? Largest herbarium?

Brilliant red fruits of *Aralia spinosa* and *Zanthoxylum americanum* and a veritable parade of walking fern (*Asplenium rhizophyllum*) were among the highlights on the ensuing hike. As attendees reluctantly bid each other farewell, it was certain some would revisit Joralemon, and all look forward to the 2016 NYFA annual meeting!





Annual Meeting Attendees after a walk around Joralemon Park. Photo by Michael Burgess.

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Introduction to Grasses Workshop by Kevin Bliss

Steven Daniel and Anne Johnson led an introductory grass workshop based out of and co-sponsored by SUNY Potsdam on July 10–12, 2015. Attendees included Kevin Bliss, Carol Gates, Chris Graham, John Hallock, Amanda Post, Alex Petzke, and Thomas Wirickx.

Many people, including those who enjoy learning about wild plants, find grass identification daunting. Perhaps this is because many grasses can look superficially similar to each other, or even akin to some sedges and rushes. Yet the grass family comprises some 10% of the plants in New York and covers an estimated one quarter of the earth's land surface. As such, an understanding of their identification is critical.

This workshop was intended for those individuals without significant experience or knowledge of the grasses, though admittedly that rule may have been broken. The workshop was split between laboratory time, wherein the instructors discussed key grass identification features in general and assisted with specific identification with the aid of dissecting microscopes, and field time, where quick recognition of common species was practiced. An accumulation of the skills to identify unknowns was a goal and accomplishment of the workshop.

In addition to the stated benefits, participants were treated to spectacular hikes, including lunch at the very scenic Grass River at Lampson Falls. And although we saw some warm season grasses and very cool cool season grasses, an unexpected highlight of the trip was our encounter with the Mulberry Wing butterfly.

Kudos to Anne and Steve for their time leading this very well planned and fun experience!



A handful of the Intro to Grasses attendees (others had wandered off to enjoy the scenery at Lampson Falls).



Petal Pedal Along the Warren County Bikeway

by Steve Young

On September 20 nine excited bikers took part in the first Petal Pedal sponsored by the NY Flora Association and the Adirondack Botanical Society. We started at Round Pond north of Glens Falls where the Warren County bikeway goes south to Lake George. The trail runs through a variety of habitats including forests, wetlands, fields, and rights-of-way, with acidic to calcareous soils. Many aster and goldenrods were in bloom and we had a great time stopping along the way to identify them. A list of those we saw is below. There were some pretty steep hills and some long low ones but everyone made it back! We will try another pedal next season on a different bike trail but if you have the chance, the Warren County bike trail is worth the visit.



Botanists getting ready to bicycle.

Asters and Goldenrods seen along bikeway:

Doellingeria umbellata – flat-topped aster Eurybia divaricata – white wood aster Solidago bicolor - silverrod Solidago caesia – blue-stemmed goldenrod Solidago canadensis – Canada goldenrod Solidago nemoralis – gray goldenrod Solidago rugosa – rough-stemmed goldenrod Symphyotrichum undulatum – wavy-leaved aster Symphyotrichum cordifolium – heart-leaved aster Symphyotrichum lanceolatum – white panicle aster Symphyotrichum lateriflorum – calico aster Symphyotrichum leave – smooth blue aster Symphyotrichum puniceum – purple-stemmed aster



Flat-topped aster (Doellingeria umbellata)





Bicyclists stopping to botanize.

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