The Vegetation of Graessle Road Bluff (Batelle Darby Creek Metro Park)

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The study site is an undeveloped portion of Batelle Darby Creek Metro Park near its southern edge in Franklin County. Located at 39°50'55.692" N 83°12'35.214" W, it comprises approximately 25 hectares (ca. 62 acres) of a much larger tract, with no definite boundaries. The site was brought to my attention by an ecologist friend who mentioned that a rare fall-flowering blazing star (genus *Liatris* in the family Asteraceae) occurs there. The principal ecological feature is a very steep eroding bluff high above an intermittent tributary to Big Darby Creek. In the photo below, the eroding bluff is visible as a variegated vertically oriented bracket-shaped zone just east of the field alongside Graessle Road.

The Graessle Road Bluff and Woodland

PLANT COMMUNITIES

I. The Roadside

Connecting the roadside parking spot with the most convenient entry point to access the bluff through the woods, an approximately 600 meter stretch area along the southern side of London-Groveport Road is open, apparently mowed frequently, and has an irregular topography owing to a steep drainage ditch running parallel to the road. The habitat harbors an array of typical disturbed-site plants, mostly exotic herbaceous species, although a few native plants from larger population in the adjacent woodland manage (barely) to keep a foothold there. The dominant woody plant here is Amur honeysuckle

(*Lonicera maackii*). Herbaceous dicots include the very poisonous biennial poison hemlock (*Conium maculatum*), the colorful mustard dame's rocket (*Hesperis matronalis*), and a whimsically-named member of the aster family, "coltsfoot" (*Tussilago farfara*), the leaves of which indeed resemble horse hooves.

Dames rocket is abundant along the roadside

II. The Woodland

The wooded slope leading up to the bluff has a fairly dense canopy dominated by sugar maple (*Acer saccharum*) with scattered individual black cherry (*Prunus serotina*), buckeye (*Aesculus glabra*) trees and both blue ash and green ash (*Fraxinus quadrangulata* and *F. pennsylvanica*, respectively). The shrub layer consists of saplings of those trees, along with nannyberry (*Viburnum prunifolium*). The invasive multiflora rose (*Rosa multiflora*) is present, but not especially abundant. The ground layer is a very diverse mix of mostly native herbs. The robust umbrella-like mayapple (*Podophyllum peltatum*) forms extensive clones. Scattered but abundant in a few places are the strikingly similar although unrelated scapose delicate herbs bloodroot (*Sanguinaria* canadensis) and twinleaf (*Jefferonia* diphylla). The parsley family (Apiaceae) is especially well represented here, with clustered snakeroot (*Sanicula* gregaria) and, to a lesser extent, sweet-cicely (*Osmorhiza longistylis*) covering much of the ground. Overall it is a lovely undisturbed ecosystem worthy of protection.

A rich woodland dominated by sugar maple

III. The Bluff

This extraordinary ecosystem is a dry barrens with only sparse growth of woody plants. Along the woodland margin near the edge of the bluff, flowering dogwood (*Cornus florida*) and nannybeery (*Virburnum prunifolium*) are fairly common, overtopped by white oak (*Quercus alba*). Several open-site herbaceous species occur in the understory at the bluff margin, including two ispecies in the Apiaceae (parsley family): heart-leaved golden Alexanders (*Zizia aptera*) and yellow pimpernel (*Taenidia integerrima*). The first of Ohio's 13 species of milkweeds to flower, four-leaved milkweed (Asclepias quadrifolia) occurs here alongside two-flower cynthia (*Krigia biflora*) and common cinquefoil (*Potentilla simplex*).

On the sparsely vegetated bluff, low moisture and limited nutrient availability combine to create a unique environment occupied by stress-tolerant species. Small clumps of Canada bluets (Houstonia canadensis) are scattered along the bluff. Abundant but barely noticeable due to its small size and inconspicuous wind-pollinated flowers, the annual grass six-weeks fescue (Vulpia octoflora) flowers and fruits before the site becomes too dry in mid-summer. The most "conservative" flower at the site, i.e., having the highest coefficient of conservatism (a measure of the degree to which a species is restricted to high-quality natural ecosystems) is Seneca snakeroot (Polygala senegala) (CC=7). This is a small forb with spikes of white flowers with an unusual flower structure in which two of the sepals are enlarged and colored like petals.

The Bluff Seen from Woodland Edge Facing North

ANNOTATED SPECIES LIST

POLYPODOPHYTA (ferns)

Dryopteridaceae (woodfern family)

Cystopteris protrusa (Weath.) Blasdell. Lowland bladder fern. CC=5. Frequent in the lower portions of the woods, occurring as scattered individuals. This fern genus has a peculiar hood-shaped indusium.

PINOPHYTA (gymnosperms)

Cupresaceae (cypress family)

Juniperus virginiana L. eastern red cedar. Native tree. CC=3. Fairly common on the bluff edge. Redcedar is the alternate host to apple rust, visible as large ball-shaped galls on the twigs. The strong-scented wood is used for cedar chests, pencils and fence posts. The “fruits” (they are actually fleshy cones) are eaten by over 50 species of birds, including the cedar waxwing.

ANGIOSPERMOPHYTA (flowering plants)

Aceraceae (maple family)

Acer saccharum L. sugar maple. Native tree. CC=3. The dominant tree of the woods. This is the principal source of maple syrup.

Anacardiaceae (cashew family)

Rhus aromatica Aiton. Fragrant sumac. Native shrub. CC=3. A few individuals occur on the edge of the woods near the bluff. This species is an indicator of calcareous soil. The leaves resemble those of poison-ivy. In addition to the aromaticity of the foliage, the species differ in their fruits; those of this sumac are red and pubescent, while those of poison-ivy are white and glabrous.

Fragrant sumac is a trifoliate shrub related to poison-ivy.

Toxicodendron radicans (L.). Kuntze poison-ivy. Native vine. CC=1. Common and abundant in the woods. The name "*Toxicodendron*" is from the Greek, meaning "poison tree."

Anonaceae (custard-apple family)

Asimina trilobal (L.) Dunal. pawpaw. Native small tree. CC=6. One small clone of this small tree was seen mid-slope in the woods. Pawpaw is the northernmost representative of a principally southern plant family. The delicious fruits, sometimes called "custard apples," are difficult to find fully ripe as they are avidly consumed by wildlife, principally possums, racoons, and squirrels.

Apiaceae (parsley family)

Conium maculatum L. poison-hemlock. Alien forb. Abundant along the roadside. This very poisonous plant is the agent by which Socrates died and many criminals were executed n ancient Athens.

Osmorhiza longistylis (Torr.) DC. Smooth sweet cicely. Native forb. Abundant in the woods. Ant visit the inflorescences of this and many other members of the Apiaceae for nectar.

Pastinaca sativa L. wild parsley. Alien forb. A dominant roadside weed. The foliage of wild parsnip is toxic and irritating in the presence of sunlight, causing skin blisters.

Sanicula gregaria E.P. Bicknell. Clustered snakeroot. Native forb. CC=3. Abundant in the woods. Unlike most members of the Apiaceae, the sanicles are monoecious, bearing separate male and female flowers together in the same inflorescences. The fruits are adorned with hooked bristles and dispersed by animals.

Taenidia integerrima (L.) Drude. Yellow-pimpernal. Native forb. CC=6. Sparse on the woodland edges along the bluff. The leaflets of the twice-compound leaves of this species have an entire (untoothed) margin, an unusual trait for this family that aids identification.

Yellow-pimpernal bears especially diffuse compound umbels.

Zizia aptera (A. Gray) Fernald. Heart-leaved golden Alexanders. CC=7. Common along the woodland edge by the bluff. According to Wilhelm in *Plants of the Chicago Region* (2017), the anthers of this plant fluoresce strongly in UV light, contrasting strongly against the non-reactive corollas. I must try this!

Asclepiadaceae (milkweed family)

Asclepias quadrifolia Jacq. Four-leaved milkweed. Native forb. CC=6. Sparse along the woodland edge and the bluff. An especially early-flowering milkweed. Milkweeds distribute their pollen not as individual grains, but in saddlebag-like packets celled “pollinia” that can fertilize all of the ovules in receiving flower. The only other plants with this pollination syndrome are the orchids.

Four-leaved milkweed is the first of Ohio's 13 *Asclepias* species to flower.

Asteraceae (aster family)

Ambrosia trifida L. giant ragweed. Native forb. CC=0 Common along the roadside. Giant ragweed may be allelopathic to many plants species, a feature that helps account for its occurrence in dense monospecific stands.

Erigeron annuus (L.) Pers. daisy fleabane. Common along the roadside and woods borders. Native forb. CC=0. Common on the roadside. Native but weedy, Wilhelm (2017) in *Plants of the Chicago* region calls this "one of the New World camp-following weeds."

Senecio glabellus Poir. butterweed. Alien herb. Common along the roadside. One of the few serious weeds pests that has its origin not from another continent, but from the southeastern United States.

Tussilago farfara L. Coltfoot. Alien herb. One large patch was seen along the roadside. Coltsfoot is an ingredient in herbal cough remedies.

Coltsfoot leaves bear a whimsical resemblance to colts' feet, don't they?

Berberidaceae (barberry family)

Jeffersonia diphylla (L.) Pers. twinleaf. Native forb. CC=6. Common in the woods. This genus was named for Thomas Jefferson, a patron of the natural sciences.

Podophyllum peltatum L. mayapple. Native forb. CC=4. Abundant in the woods, forming large clones. A slight misnomer, the "apple" is produced in summer, as the plant flowers in May. All parts of the plant are poisonous except the pulpy part of the fruits when ripe (seeds removed).

Betulaceae (birch family)

Ostrya virginiana L. hop-hornbeam. Native tree. CC=5. Fairly common in the woods. According to Jane Forsyth (1973) this trees is associated with high pH soils.

Brassicaceae (mustard family)

Alliaria petiolata (M. Boeb. Cavara & Grande. Garlic mustard. Alien forb. Scattered in the woodland and roadside. Listed as one of Ohio's top invasive plants, garlic mustard is a biennial; herb that produces large quantities of seeds that can remain viable in the soil for at least seven years.

Cardamine concatenata (Michx.) O. Schwartz. Cut-leaved toothwort. CC=3. Common in the woodland. Like several other mustards, the siliques of this common spring wildflower, when mature, burst open and fling the seeds in all directions.

Hesperis matronalis L. dame's rocket. Alien forb. Abundant along the roadside, Apparently this flower is especially fragrant in the evening, as the genus name, from the Greek, means "evening."

Caesalpinaceae (caesalpinia family)

Cercis canadensis L. redbud. Native small tree. CC=3.Common along the woodland border as an understory tree. Although widespread in Ohio, his tree is especially abundant on calcareous soil in the southwestern portion of the state. The pretty pink flowers, abundantly produced in early May, are edible, favored as a garnish in salads.

Caprifoliaceae (honeysuckle family)

Lonicera maackii (Rupr.) Maxim. Amur honeysuckle. Alien shrub. Common in the woods. Amur honeysuckle is an especially aggressive weed in calcareous woodland in Ohio.

Amur honeysuckle (boo, hiss!) has flowers in pairs, with ovaries fused at base.

Viburnum prunifoilium L. black-haw. Native shrub. CC=4.Common in the woodland. Viburnum fruits are drupes that are eaten by many wildlife species.

Commelinaceae (spiderwort family)

Tradescantia virginica L. Virginia spiderwort. Native forb. CC=5. Common along the woodland bluff border. The common name supposedly derives from the way in which the sap of broken leaves can be stretched out into spiderweb-like strands.

Virginia spiderwort is a showy monocot.

Cornaceae (dogwood family)

Cornus florida L. flowering dogwood. Native small tree. CC=5. Abundant along the woodland/bluff border. The powdered bark has been used as a toothpaste, black ink, and a quinine substitute.

Cyperaceae (sedge family)

Carex laxiflora Lam. Two-edge wood sedge. Native sedge. CC=3. Common in the woodlands. Sedges have triangular stems and closed leaf sheathes.

Dipsacaceae (teasel family)

Dipsacus laciniatus L. cut-leaved teasel. Alien forb.Common along the roadside. Teasel is an threat to prairie restorations in Ohio, but can be controlled by hand pulling. The seeds don't remain viable for as long as those of many other weeds, so control efforts are often successful.

Elaegnaceae (autumn-olive family)

Elaeagnus umbellate L. Thunb. autumn olive. Alien shrub. Sparse along the woodland/bluff border and abundant at the roadside. This is an especially dreaded shrub in prairie areas. Control involves cutting, and immediately painting the stumps with concentrated weed killer.

Autumn-olive is an invasive shrub with brown scaly twigs.

Fabaceae (legume family)

Melilotus officinalis (L.) Pall. Yellow sweet-clover. Alien forb. Common along the roadside. Sweet-clovers bear their flowers in racemes. Two species are common in Ohio; yellow sweet clover and white sweet clover. The yellow species flowers about 3 weeks earlier than the white one.

Trifolium pratense L. red clover. Alien forb. Common along the roadside. True clovers (genus *Trifolium*) produce flowers in tight almost capitulum-like umbels. Except for two rare Federally threatened species found in southwestern Ohio, all our clovers are aliens.

Trifolium repens L. white clover. Alien forb.Common along the roadside. The specific epithet means "creeping," an attribute that partly accounts for its success as a lawn weed.

Fagaceae (beech family)

Quercus alba L. white oak. Native tree. CC=6. Common in the woodland/bluff border. Native Americans made a staple food of oak flower by grinding the seeds from acorns and pouring hot water through them to leach ut the bitter tannins. White oaks have much less tannins than do the red oaks.

Quercus muehlenbergii Engelm. Chinquapin oak. Native tree. CC=7 Sparse along the bluff edge. This is one of the limestone indictors featured by Forsyth in her "Geobotany" article (1973). Similar to the acid loving chestnut oak (*Quercus mintana*), chinquapin oak has more sharp lobes.

Geraniaceae (Geranium family)

Geranium maculatum L. wild geranium. Native forb. CC=4. Very abundant in the woodlands. Geranium flowers exhibit "protandry," wherein stamens mature before the pistils, to reduce self-pollination.

Hippocastanaceae (horsechestnut family)

Aesculus glabra Willd. Ohio buckeye. Native tree. CC=6. Crushed fruits and twigs were once used to kill fish for food, but this is now illegal.

Hydrophyllaceae (waterleaf family)

Hydrophyllum appendiculatum Nutt. Appendaged waterleaf. Native forb. CC=5 Abundant in the woods. The inflorescence of members of this family is a scorpioid cyme.

Hydrophyllum macrophyllum Nutt. Large-laved waterleaf. Native forb. CC=6 Common in the woods. The genus name and common name both refer to light spots looking like water drops on the young leaves of this and several other species.

Lamiaceae (mint family)

Prunella vulgaris L. self-heal. Native forb. CC=0 Common on the bluff edge. This is one of a few plants that are wide-ranging worldwide, and in Ohio includes both native and alien genotypes. The native one, distinguished by is wedge-shaped leaf bases, occurs on the bluff.

Liliaceae (mint family)

Hypoxis hirsuta (L.) Coville. Yellow star-grass. Native forb. CC=6. Common on the bluff. Yellow star-grass has a lily-like flower, with 3 sepals and 3 petals that look very alike, and so are termed “tepals.”

Yellow star-grass is a small but showy monocot.

Trillium flexipes Raf. Drooping trillium. Native forb. CC=6. Sparse in the woodland. Among lily-like plants, *Trillium* is unusual by having green, not petal-like, sepals.

Uvularia grandiflora Sm. Large-flowered bellwort. Native forb. CC=5. Sparse in the woods. Bellworts have an unusual type of leaf attachment, a perfoliate one, wherein the base of the blade wraps completely around the petiole so that it appears the leafstalk is growing through the leaf blade.

Oleaceae (olive family)

Fraxinis pennsylvanica Marshall. Green ash. Native tree. CC=3. Abundant in the woods. Green ash is a widely distributed tree of damp mid-elevation woodlands. The very similar white ash (*F. Americana*) is prevalent on higher, drier sites.

Fraxinus quadrangulate Michx. Blue ash. Native tree. CC=7. Common in the woodlands. Blue ash is a strict calciphile.

Papaveraceae (poppy family)

Sanguinaria canadensis L. bloodroot. Native forb. CC=5. Bloodroot is used commercially as a plaque-inhibiting agent in toothpastes and other oral medicines.

Plantaginaceae (plantain family)

Plantago lanceolate L. English plantain. Alien forb.The leaves of plantains, if collected early in spring before they become too stringy to eat, can be chopped and added to salads.

Poaceae (grass family)

Dactylis glomerate L. orchard grass. Alien graminoid. Common along the roadside. Grasses have round stems, and, usually, open leaf sheathes.

Festuca eliator L. tall fescue. Alien graminoid.Abundant along the roadside. Grasses are wind-pollinated and produce very tiny flowers in a specialized inflorescence termed a “spikelet.”

Phalaris arundinacea L. reed canary grass. Native graminoid. CC=0. Abundant on the roadside, in the ditch. Reed-canary grass is a serious weed in wetland and prairies.

Vulpia octoflora. (Walter) Rydb. Native graminoid. Six-weeks fescue. CC=4. Abundant on the bluff edge. This species is an annual with an affinity to dry, especially sandy, soil. The genus means “eight-flowered,” a fairly accurate description of the spikelets.

Polygalaceae (milkwort family)

Polygala senegala Seneca snakeroot. Native forb. CC=7. The root of this plant has been used to relieve pain and rheumatism, more often in Japan and Germany than the U.S.

Seneca snakeroot has 2 petal-like sepals.

Rosaceae (rose family)

Amelanchier arborea (F. Michx.) Fernald. downy serviceberry. Native small tree. CC=5. The fruit is an edible drupe that can be used much like blueberries.

Potentilla simplex Michx. old field cinquefoil. Native forb. CC=1. Abundant on the woodland edge of the bluff. American Indians used the powdered root of a closely related species (*P. simplex*) to treat diarrhea, and it is considered an astringent (an agent that causes tissues to contract).

Prunus serotina Ehrh. black cherry. Native tree. CC=3. One large specimen was seen in the woods. Although the fruits of most cherries are edible, the leaves contain hydrocyanic acid, which imparts a characteristic almond smell to the cut twigs. The foliage has been fatal to livestock that have eaten it.

Rosa carolina L. pasture rose. Native shrub. CC=4. An excellent jam can be made with rose hips and sluiced apples.

Rosa multiflora Thunb. Ex Murray. multiflora rose. Alien shrub. Common in the woodland and roadside. Multiflora rose is easily distinguished by its fimbriate (feathery) stipules.

Rubiaceae (madder family)

Galium circaezans Michx. wild licorice. Native forb. CC=4. Sparse in the woods. Wilhelm (2017) explains that, of the paired fruits, only one matures and the other aborts and remains attached as a spiny remnant that serves as an ant-attracting eliasome.

Galium concinnum Torr. & A. Gray. shining bedstraw. Native forb. CC=5. Sparse in the woods. Bedstraws have whorled leaves.

Hedyotis canadensis (Willd. Ex Roem & Schult.) Fosberg. Canada bluets. Native forb. CC=6. Abundant on the bluff. Bluets are heterostylous, with each plant producing either long-styled flowers or short-styled ones. Pollination is only effective between plants with different style types.

Canada bluets is a heterostylous wildflower.

Urticaceae (nettle family)

Laportea canadensis (L.) Wedd. wood-nettle. Native forb. CC=5. Abundant in the woods. Edibility-wise, considred to be the best of the nettles; they can be simmered for 10-15 minutes and served as greens.

Vitaceae (grape family)

Parthenocissus quinquefoliaI (L.) Planch. Virginia creeper. Native vine. CC=2. Common climbing trees in the woods. Often confused with poison-ivy, the fruits are nonetheless toxic and the leaves in autumn are reported to cause dermatitis in especially sensitive people.

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