March 2025

Species with complex nativity in Pennsylvania

The following taxa are not categorizable as entirely native or entirely introduced to Pennsylvania. Details about their history on the landscape as we understand them are presented here. Names follow Flora of the Southeastern United States (2023).

Native*

Yellow Buckeye (*Aesculus flava*)

This species has a global distribution focused on the Central Appalachian Mountains, extending into southwestern Pennsylvania. It is historically native to Greene, Washington, Allegheny, and Beaver Counties. It is sometimes planted as a landscape tree elsewhere in the state and may escape into natural environments from these plantings.

Ohio Buckeye (*Aesculus glabra* var. *glabra*)

Aesculus glabra var. glabra is largely native to midwestern United States and ranges east to the mountains of southwestern and central Pennsylvania where natural populations are uncommon. It is also a rare native in the northwestern and northeastern glaciated regions of the state. This species is widely planted in gardens and landscape settings resulting in escapes from cultivation. In eastern and southeastern Pennsylvania occurrences of this species were determined as escaped from cultivation as early as 1907 making this introduced in that region of the state.

Bushy Bluestem (*Andropogon glomeratus*)[+]

This grass of the southeastern United States reaches its northern limit in Pennsylvania, where it has historically occurred in moist, open habitats in Pennsylvania that are of conservation concern. However, it is expanding its range in Pennsylvania and is increasingly found in western portions of the state, often growing in disturbed areas, including on Rights-of-Way and mine spoil.

Elliot's Bluestem (*Andropogon gyrans*)[+]

This grass of the southeastern United States reaches its northern range extent in Pennsylvania. It has historically occurred in upland grasslands and other early-successional habitats of southeastern Pennsylvania. In our current landscape, the species can be found on Rights-of-Way, old fields, and edges. In recent years it has been documented newly spreading to western Pennsylvania, prompting questions about its nativity in these places.

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River Birch (*Betula nigra*)

This species of riverbanks and floodplains is native to the Susquehanna River watershed and eastward in Pennsylvania. The tree is not historically native to western Pennsylvania, but it has been planted in landscape and restoration settings, and it may escape and naturalize from these plantings. It is a distinctive and attractive tree, which has earned it a spot as a favorite among native gardeners.

Trumpet Creeper (*Campsis radicans*)

Campsis radicans was historically native to the southeastern and midwestern United States, but it has since expanded its range. It is noted to grow vigorously and become weedy in these newly colonized areas. In Pennsylvania, our northernmost occurrences are likely to be introduced.

River Oats (*Chasmanthium latifolium*)[+]

This showy grass species reaches its northern range extent in Pennsylvania, where it occurs primarily along large river systems. However, the species is widely available in the nursery trade and it can spread aggressively from garden plantings. As such, new occurrences may represent introductions.

Wild Basil (*Clinopodium vulgare*)

There are many specimens of this species collected in Pennsylvania during the 19th century. It has a circumpolar distribution. North American material may be called var. *neogaea*, but either due to ancient variability or hybridization and introgression, the varieties are often indistinguishable, so most floras just treat the species. In Plants of Pennsylvania, the authors mention the circumboreal distribution but suggest that those in Pennsylvania are probably native to Europe. Probably we have both genotypes, and it might not be possible to determine which is which.

Wild Bleeding Hearts (*Dicentra eximia*)[+]

This spring-blooming species of the Appalachian region grows in rocky woods and on ledges but is also widely planted in gardens and capable of escaping cultivation. It has shown capacity for proliferating near zinc mines. Ongoing research seeks to better understand the perplexing occurrences of this species in Pennsylvania.

Britton's Male Fern (*Dryopteris filix-mas* ssp. *brittonii*)

This fern is known from only one site in Pennsylvania, fairly far disjunct from its main range, but that often happens naturally with spore dispersed plants. The members of the Vascular

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Plant Technical Committee decided it is probably native here, but there is certainly some uncertainty.

Queen of the Prairie (*Filipendula rubra*)

This species has large, showy flowers and has had a minor role in horticultural cultivation for over a century. It also can naturalize from cultivated occurrences. Even in the center of its natural range, occupied habitats range from conservative natural sites like fens and moist prairies to ditches. Pennsylvania is within its natural range, but the species is fairly uncommon here, and there are populations that seem likely to be natural occurrences while others seem likely to have originated from cultivated plantings. However, in some cases it can be very hard to distinguish the origin, because the species is naturally somewhat mobile and can use disturbed habitats.

American Holly (*Ilex opaca*)

This species is native and widespread in southeastern North America. In Pennsylvania, it is historically known from natural populations in a few locations in the southeastern and southwestern part of the state. However, in recent decades it has undergone a major expansion across the southern half of the state, which is most advanced in the southeast. It is widely cultivated, and holly experts report that the cultivated materials originate from native populations that have not undergone modification. However, some could be sourced from elsewhere in the range. The bright red berries are consumed by birds, which can result in long-distance dispersal of seeds. There may be a combination of factors involved in its expansion, including dispersal from horticultural plantings in urban and suburban areas; northern migration due to climate change; widespread fire suppression and over-browsing by white-tailed deer, as well as bird dispersion. This creates an ideal environment for this fire-sensitive, browse-resistant species to establish in forest understories. In research on climate-related native tree migration, it is one of the few eastern species where northern movement has been documented in a relatively short span of time.

Dutchman's Pipe (*Isotrema macrophyllum*)

This is a vine sometimes cultivated for its interesting flowers. It has a southern Appalachian distribution and is probably native to the southwestern counties of Pennsylvania, but it has likely escaped from cultivation where it is encountered elsewhere in the state.

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Sweet Gum (*Liquidambar styraciflua*)

This tree species is native and widespread in southeastern North America. Pennsylvania is near the northern extent of its range and was historically only known from the coastal plain region in the southeastern part of the state. However, it has been very widely used in landscape plantings, and it is now naturalizing in other regions of the state. Unlike American holly, this species was not found to be naturally migrating northwards in response to climate change.

Umbrella Magnolia (*Magnolia tripetala*) +

While this species is known to be historically native to parts of southern Pennsylvania, it has also become a favorite of gardeners with a noted capacity for escape. Emily Dickenson planted it in her garden in Massachusetts, hundreds of miles north of the species' native range. In recent decades the species has become broadly adventive in that state, where it continues to spread locally from plantings into a broad range of forest types[1]. These dynamics have also played out in some parts of Pennsylvania, where rapidly expanding populations have prompted questions about their status[2].

Midwestern Evening Primrose (*Oenothera pilosella*)

This species is often cultivated for its large flowers, and it sometimes escapes and naturalizes. Specimens from Pennsylvania date back to the 1880s, and it is probably native in part. The native range is mostly in the Mississippi valley, tending to be on the west side of the river, but also extending east in the Ohio River valley as well as into Michigan. It is considered to be introduced in New England. The eastern limit of the native range is not well understood but is probably somewhere in Pennsylvania and New York.

Common Wild Quinine (*Parthenium integrifolium* var. *integrifolium*) +

This native species is also widely cultivated and available in the nursery trade. It is historically native to the southern part of Pennsylvania and southward but is listed as introduced in NY and other northeastern states. Our northernmost occurrences are along roadsides and likely originated from recent introductions.

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[1] BELLEMARE, J. AND C. DEEG. 2015. Horticultural Escape and Naturalization of *Magnolia tripetala* in Western Massachusetts: Biogeographic Context and Possible Relationship to Recent Climate Change Rhodora 117:371–383.

[2] RHOADS, A. F. 1994. Magnolia tripetala in Pennsylvania Bartonia:75–77. Philadelphia Botanical Club.

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Willow-weed (*Persicaria lapathifolia*)

Plants of Pennsylvania marks this species as native to Europe. While that is definitely true, many botanists consider it to be also native in North America. There are dozens of Pennsylvania collections from southeastern Pennsylvania, but because Philadelphia was a busy port from early on, this test does not work as well in that area than it does further inland. It is usually encountered on cobble stream banks, with other disturbance adapted species, both native and introduced, so it is certainly possible that much of our material is from material native to Europe.

Willow Oak (*Quercus phellos*)

This species is historically native to the coastal plain of southeastern Pennsylvania, but it is also commonly planted as a street or shade tree within and beyond this region. Spontaneous seedlings and saplings occur frequently, probably due to scatter-hoarding by squirrels, and determining whether seedlings originate from native or planted trees would be difficult if not impossible.

Cursed Buttercup (*Ranunculus sceleratus* var. *sceleratus*)

This species is most often encountered in ditches, but also in natural situations like fluctuating ponds. Often collected in the late 19th century, but in The Vascular Flora of Pennsylvania: Annotated Checklist and Atlas, it was treated as an introduction, probably at least in part due to its usually disturbed habitats. Like some other circumboreal species of disturbed habitats, it is difficult to determine where it is native in Pennsylvania.

Grey-headed Coneflower (*Ratibida pinnata*)[+]

This species has a primarily midwestern distribution, and western Pennsylvania is at the extreme eastern edge of it is known native range. There is one location in Washington County where there have been several collections over the last 100 years and it is assumed to be native based on the age of the records. It is also sold in the native seed/plant trade and was collected at least once from a restored floodplain (also in Washington County) and attributed to seed mix origin. It is not known whether it will become widely adventive. In its native range its habitat is calcareous prairies, glades, and savannahs, but it can also occupy more disturbed habitats.

Ozark Rose (*Rosa setigera*)

This species is native to the midwestern United States, and its range may extend to western Pennsylvania. However, the species is also widely planted and available in the

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nursery trade. Some occurrences in the state appear to represent naturalized escapes from cultivation.

Northern Arrowhead (*Sagittaria cuneata*)[+]

This species has a very broad range from Nova Scotia to Alaska, south to Arizona, and throughout the central and midwestern US. In Pennsylvania there is one historic record from Cumberland County that appears to be a native occurrence, and one newer record from Lackawanna County that seems to be the result of a naturalized planting.

Cup-plant (*Silphium perfoliatum*)

This species is native to the midwestern United States, and its range may extend into Pennsylvania. However, the species is also widely planted, available in the nursery trade, and aggressive once established. Some occurrences in the state are naturalized escapes from cultivation.

Sand Dropseed (*Sporobolus cryptandrus*)

This species is native to northwest Pennsylvania along Lake Erie in the sand dunes and Presque Isle. There are specimens from 1925, but they are all associated with waste ground and railroad grades in eastern Pennsylvania suggesting the species was introduced, likely through railroad corridors.

Bog Stitchwort (*Stellaria alsine*)

Stellaria alsine is known from North America, Europe, and Asia. It is believed to occur natively in eastern North America, although plants from other parts of the world may also have been introduced here. In Pennsylvania it is known from pristine seepage habitats in the north-central part of the state but also from more generic and sometimes anthropogenic habitats in eastern Pennsylvania. Ecologically, this suggests the possibility of different origins for these populations, but no taxonomic research has yet been done on our populations. As it has a predominantly northern distribution, if there is material from multiple global regions present here, populations in cool, relatively undeveloped and uninvaded portions of the state are most likely to be of native origin. Taxonomic research is ongoing to determine if there are any significant differences in populations from different areas of the world; one paper divides the European and Asian material into different species (Sharples 2023). Plants of Pennsylvania classified this species as introduced in our state, but it appears to be an outlier in this assessment, as Flora of North America, Flora Novae Angliae, and Flora of the Southeastern United States all regard it as native in eastern

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North America. FSUS states that it may only be introduced in some parts of their region of geographic coverage, which is mainly south of the mapped native range.

Coralberry (*Symphoricarpos orbiculatus*)

Native, but also cultivated and sometimes escaped from cultivation. Pennsylvania is the northern-most state where it is considered native, with historical records mainly in the Ridge and Valley and Piedmont, with a few scattered in the western-most counties of the state.

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Introduced*

Sweet-shrub (*Calycanthus floridus*)

Flora of the Southeastern United States notes that “the outer edges of the natural original distribution are obscured by centuries of cultivation and naturalization,” which describes our situation well. Pennsylvania is at the far northern end of the range, and the record of its historic presence consists of a few specimens where not enough data is provided to conclusively determine native vs. cultivated origin. There are no known extant native populations.

Bluevine (*Cynanchum laeve)*

This species is native in the midwestern United States, south to the Florida panhandle, and east to the Ohio River Valley of western West Virginia. Flora of the Southeastern US considers it to be introduced east of the Appalachian Mountains. The earliest collections in 1906 of this species in PA were from a single location along the lower Susquehanna River. Considerable disturbance and development were already ongoing in the lower Susquehanna River valley by this time, and this record may represent an introduction. The native status in the mountains is somewhat up for debate, however, there are no historic collections from this region in PA. It is possible that the species is native in western Pennsylvania, but it is difficult to separate native occurrences from adventive ones.

Western Beakgrain (*Diarrhena obovata*)

This grass was long known in Pennsylvania from only a single site in Bedford County, but has become relatively common in the Raystown Branch of the Juniata River, and has turned up in scattered sites in other counties. This expansion, and the suspicion of others (Lea 2012) about a similar expansion along the Potomac River in Virginia, has led us to wonder whether it is native to the state at all, as the first collection was not until 1961. FSUS takes the position that it is feasibly native, as "The floodplain of the Potomac River (in Fairfax County, VA) has a number of disjuncts of species with more midwestern affinities" [3]. It is primarily a species of the prairie states.

[3]FLEMING, G.P., AND J.C. LUDWIG. 1996. Noteworthy collections: Virginia. Castanea 61(1): 89-94.

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Eastern Purple Coneflower (*Echinacea purpurea*)

This is a prairie species where the heart of the range is centered in the midwest, but it also has scattered occurrences across the mountainous regions of the Southeast in open woodland habitats. It also has a long history of use as a cultivated plant. Flora of North America states: "It and cultivars derived from it are extensively grown ornamentals in gardens, wildflower roadside plantings, and prairie restoration sites. Because of its popularity as an herbal remedy, it is also grown commercially. As a result of such activities, naturalized and persisting populations may extend the natural range of *E. purpurea*. Selections used for such plantings may differ from native forms."

Several sources consider it as native at least in parts of Ohio, which has prairie and savannah habitats especially in the southwestern part of the state, but as adventive in West Virginia, Pennsylvania and the entire northeast (BONAP, FSUS, Flora of North America). Pennsylvania to Plants of Pennsylvania, which based its assessments on examination of the Pennsylvania specimen record, says that in our state, the species is not natively occurring, but is "cultivated and rarely escaped to fields and waste ground". It's not impossible there could have been a native population in an open woodland in the southwestern part of the state, but there is no known historical record, and no known extant naturally occurring populations.

Late Eupatorium (*Eupatorium serotinum)*

This species is native to the eastern US but weedy and apparently expanding in range. The earliest specimens from Pennsylvania originate from the Naval Yard in Philadelphia in the 1860's, where many weedy non-native species first made their appearance in our flora. It largely grows in disturbed areas and spreads along roadsides and other rights of way. Historically it may have been restricted to coastal areas. As such, there's a possibility that may be native to southeastern Pennsylvania.

Red Fescue (*Festuca rubra*)

The Digital Flora of Virginia account states that "Interpretations of American Festuca rubra in both older and recent literature are complex, confusing, and sometimes contradictory. It is a highly variable species, probably representing both native and introduced genotypes.... In Virginia, hundreds of cultivars of Eurasian material have been used as forage and lawn grasses, sometimes persisting and escaping into ruderal habitats. Yet, Festuca rubra sensu lato is also found in a remarkable assemblage of specialized, natural, and often remote habitats (see below) in both the Coastal Plain and mountains. It seems highly

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unlikely that F. rubra was introduced to these habitats (or some of them) from cultivated escapes." All of this is likely also true in Pennsylvania, but no one has researched it here.

Honey Locust (*Gleditsia triacanthos*)

This species has a long history of cultivation, which has obscured the natural extent of its range. It is commonly occurring as persistent from cultivation, and sometimes escaping cultivation, the latter mostly as seedlings; but it is not clear whether it does or did occur as a native element in Pennsylvania. There are a few older specimens, and some have the potential to be native settings. The most likely native settings are floodplains in southern counties.

Kentucky Coffee Tree (*Gymnocladus dioicus*)

This species has a long history of cultivation, which has obscured the natural extent of its range. It is occasionally found persisting from cultivation and sometimes escaping cultivation. but it is not clear whether it does or did occur as a native element in Pennsylvania. There are a few older specimens, and some have the potential to be native settings. The most likely native settings are mesic forests and bottomlands in southern counties.

Midwestern Hops (*Humulus pubescens*)

Western specimens of this are possibly native, while eastern specimens are likely introduced since they were collected in the 2010s. The earliest specimens from western Pennsylvania were originally identified as H. lupulus, later annotated to *H. lupulus* var. *americanus* (*H. americanus*) and none of them were placed into *H. lupulus* var. *pubescens* (*H. pubescens*). Pending a review of the western specimens, this species has questionable native status in Pennsylvania.

Red Goosefoot (*Oxybasis rubra* var. *rubra*)

This species was originally collected from waste and ballast areas in southeastern Pennsylvania. Recent specimen data lack detailed habitat information making it difficult to determine if other occurrences are native. Flora of the Southeast United States lists this as native and found in "salt and brackish marshes, disturbed areas". Other states in the northeast US list this species as native, but it's mostly historic in those parts of its range. It is widespread native in the western part of the range, but midwestern states list the species at introduced. With few collections from Pennsylvania, often associated with disturbed places, there is a slim chance this native in the far southeastern counties.

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Black Locust (*Robinia pseudoacacia*)

This species is native to parts of North America, including parts of western Pennsylvania, but it has become widely established outside of that range. Its original range is not fully understood due to the extent and early age of introductions. Black locust can fix nitrogen in the soil and grow rapidly in early successional conditions, which has made it a favorite for revegetation projects on sterile soils. It can reproduce vegetatively by roots and also sexually by seeds. Because of its ability to impact soil nitrogen and to grow rapidly, it can detrimentally impact the ecosystems it escapes into.

Willowleaf Dock (*Rumex triangulivalvis*)

Once considered part of a broader concept of *R. salicifolius* that included varieties triagnulivalvis and mexicanus, the Flora of North America treatment elevated those varieties to species with the *R. triangulivalvis* being the most common and widespread of the taxa and R. mexicanus being endemic to New Mexico. There are numerous specimens filed under R. mexicanus from Pennsylvania that need reviewed to determine their identity. Specimens identified as *R. triangulivalvis* are from waste areas, disturbed anthropogenic habitats, suggesting it may be introduced. However, pending review of the specimens, this species is considered possibly native to Pennsylvania.

Delta Arrowhead (*Sagittaria platyphylla*)

This is a species considered native to the Mississippi drainage that has a few occurrences in Pennsylvania that were collected in the 1980s and 90s from Allegheny County. Flora of the Southeastern United States that plants found east of the Appalachian Mountains may be introduced, complicating our understanding of nativity of the Pennsylvania plants.

Water speedwell (*Veronica anagallis-aquatica*)

This species is widespread and some or all occurrences in our area represent introductions of European material. However, the species is circumboreal and some experts think we may also have native occurrences in Pennsylvania. Distinguishing between native and non-native occurrences is not currently possible.

Western pursland speedwell (*Veronica peregrina* var. *xalapensis*)

This variety of a widespread Veronica species may have been introduced to Pennsylvania on ship ballast late in the 19th century, but experts express uncertainty about its native range. In Pennsylvania, it is currently only known from the southeastern portion of the state.

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Uncertain nativity

Woodland Cudweed (*Omalotheca sylvatica*)

This is a species of northern latitudes, circumboreal in distribution, but perhaps not native to North America (FNA 2006). If it is native to North America, its appearance in Pennsylvania still might not represent a natural occurrence. Other than a few scattered occurrences in New York, the single Pennsylvania specimen was collected far south of the rest of the known range of the species. The habitat is usually weedy, which does not help in determining nativity.

Western Germander (*Teucrium canadense* var. *occidentale*)

Two varieties of *Teucrium canadense* are known from Pennsylvania, which have morphological distinctions but seem to occupy similar habitats. *Teucrium canadense* var. *canadense* is distributed widely across eastern North America. It is native and common in Pennsylvania; almost all of what has been documented from Pennsylvania is this variety. *Teucrium canadense* var. *occidentale* is native to North American with a wider but less dense distribution, concentrated on the upper Midwest. In Pennsylvania there are fewer than 10 historic specimens which the Rhoads and Klein atlas regarded as introduced in "ballast, wharves, swamps, and cultivated ground". BONAP and FSUS list it as native in Ohio but adventive in Pennsylvania and all points further east. It's not impossible there could be a native occurrence in Western Pennsylvania, but none are known at this time.

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