

**Wildlife Habitat Assessment for
New York State or Federally Listed
Threatened or Endangered Species and
Species of Special Concerns**

Section 6

**Wildlife Habitat Assessment for
New York State or Federally Listed
Threatened or Endangered Species
And Species of Special Concern**

Trodale Project Location:

Town of Chester
Orange County, NY

Route 94
S/B/L 116-1-1.2

Prepared By:

ECOLOGICAL ANALYSIS, LLC
633 Route 211 East
Suite 4 Box 4
Middletown, New York 10941
(845) 495-0123

January 24, 2023



633 Route 211 East • Suite 4, Box 4 • Middletown, NY 10941 • Phone: 845-495-0123
• Fax: 866-688-0836 • www.4ecological.com

Introduction

As part of SEQRA requirements, Ecological Analysis, LLC (EA) completed a wildlife habitat assessment of the Trodale Project property, which included the characterization of its dominant ecological communities based on the current site conditions, any incidental observations made of wildlife on the property, as well as the potential for the site to support any of those species that are listed as "endangered", "threatened", or "species of special concern" by the New York State Department of Conservation (NYSDEC) or by the United States Fish and Wildlife Service (USFWS). This report presents the observations made by EA throughout the several site visits in relation to State or Federally protected species noted as potentially present within the area of the Project property.

The subject property is 37± acres in size and is located within the Village of Chester in central Orange County, New York. The parcel is included within the Chester Industrial Park section of the Town. The abutting properties to the north, south, and west, and the wider locale in general, are developed areas, including commercial, warehouse, and Department of Transportation (N.Y.S. highways 17 and 94) lands. The only adjacent property which is not presently developed is a small (4± acre) parcel to the east that is mapped by the NYSDEC as emergent wetland and which is dominated by dense fields of common reed and canary reed grass.

The property generally consists of an open, sparsely vegetated field on its western portion (comprised of 20.5± acres of upland habitat) and a thickly vegetated field on its eastern portion (comprised of 16.5± acres of wetland habitat). Between 2009 and 2011 the western half of this property had been cleared of its trees, regraded, and levelled by the spread of shale rubble. This portion of the site remains at present as a created shale barren which is sparsely vegetated by a variety of ruderal (weedy) forbs and grasses. The eastern portion of the parcel is densely vegetated with fields of common reed and reed canarygrass. This portion of the property is identified as both a NYSDEC wetland and an NWI wetland. Our site observations concur with the NWI classification of this wetland feature as an intermittently flooded feature transected by dug drainage ditches and partially bordered by a channelized perennial stream (Black Meadow Creek).

The site is dominated by two habitat/ecosystem types, each of which is evaluated in the reporting that follows:

1. Upland successional meadow;
2. Wetland meadow of persistent emergent reedgrasses.

Initially for conducting this assessment, the online resources of State and Federal wildlife agencies were queried for the purpose of obtaining each agency's assessment of the potential for impacts on any protected wildlife resources over which they have jurisdiction.

The NYSDEC and the NYS Natural Heritage Program (NHP) presently refer all inquiries regarding their jurisdiction over natural resources to the publicly accessible websites that they maintain to provide such information. The information presented in these websites provides either the potential for impacts to protected wildlife or wildlife habitat at a site, or the websites will provide a determination that the State has "no known records of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of your site." The websites also include the caveat

that the absence of a known occurrence of any protected resource does not mean that occurrences might not exist, even though not currently mapped by the State at any particular locale.

The website for generating NYS NHP Environmental Assessment Forms (EAFs)¹ was most recently accessed on 4 January, 2023, to obtain the current status of protected (endangered, or threatened, or rare) plant and animal species known in the vicinity of the project site, if any. The EAF generated for this site stated that the project site is within a part of the county where bog turtles (*Glyptemys muhlenbergii*)² and northern long-eared bats (*Myotis septentrionalis*) may be present. Up-to-date onsite investigations are typically requested by NYS in order to supplement or update the information presented by the state's EAF mapper. At this project site, EA's onsite investigations to comply with this caveat occurred on four site visits over the period from May through October, 2022.

Similar to the state's process, the USFWS presently refers all inquiries regarding their jurisdiction over natural resources to their website for Information for Planning and Consultation (IPaC).³ Their website was most recently accessed on 23 January, 2023. The IPaC report for this project site indicated that there are no critical habitats located at the site but that there is the *potential* for the presence of one protected species of turtle (the federally threatened bog turtle) and two protected species of bats (the federally endangered Indiana bat and the federally endangered northern long-eared bat⁴) if suitable habitat is available on the site for those species.

The one cited turtle species, the bog turtle, would only be present if there were appropriate wetland habitat that the species would require to conduct its seasonal activities. This turtle inhabits peatmoss fens and/or calcareous wet meadows, and individuals tend to remain within these specific habitats. As a semi-aquatic species, bog turtles require areas of shallowly flooded wetlands and seeps that are open to insolation (i.e. relatively un-shaded wetlands with mostly low growing vegetation) and that can provide soft soils within which individuals can burrow to provide refuge from both summer and winter weather extremes.

The two cited bat species, the Indiana and the northern long-eared bat, would only be present in the general area of this site during the months from April-October when they are not within their winter hibernation period. Typically, in order to protect any bat species that might be present on a site, tree clearing would be conducted from November 1 through March 31, representing the winter hibernation period during which these bats are sheltered in caves at several known distant locations within the lower Hudson River Valley.

The NYSDEC further designates some animals as "species of special concern." As defined by the NYSDEC, species of special concern warrant attention and consideration during the development process, but the NYSDEC does not have enough knowledge of the present status of these species across the state in order to justify listing them as either endangered or threatened. This report will assess the likelihood that any of these species would be present at this site.

¹ <https://www.dec.ny.gov/permits/90201.html>

² Scientific name change to *Glyptemys muhlenbergii* from *Clemmys muhlenbergii* recognized by USFWS in Federal Register / Vol. 86, No. 197 / Friday, October 15, 2021.

³ <https://ipac.ecosphere.fws.gov>

⁴ On November 29, 2022, the United States Fish and Wildlife Service (USFWS) published a ruling reclassifying the northern long-eared bat from Threatened to Endangered under the federal Endangered Species Act. This rule will become effective on January 20, 2023. The change to Endangered in New York will take place at the same time as the Federal listing.

Generally, it would be expected that populations of most of the wildlife species that may presently be utilizing the property would not be affected by development of the proposed project, as the proposed creation of impervious areas, including driveways, parking lots, and buildings is expected to be confined to the previously cleared and graded western half. The mapped wetland on the eastern portion of the parcel is expected to remain in its present state.

Vegetation

EA identified 101 taxa of plants within the wood hedgerows, fields of shale, and reedy wetlands on the property. A list of these plants is attached as Appendix A of this report. Many of the listed plants are ruderal species that are characteristically non-native, invasive plants which often colonize areas that have been disturbed by land clearing activities. As mentioned earlier, the western portion of this property was altered a decade or more ago when it had been cleared of much of its earlier woodland habitat. Since at least 2011, aerial imagery shows that the westernmost half of the site had been cleared, leveled, and later reverted to a field of rubbly open upland.

Upland - Successional meadow

The greatest expanse of upland terrain is a successional meadow that has formed across a layer of crushed shale spread across the elevated, western portion of the site. Vegetation in this field is typically sparse and patchily present within larger areas of exposed shale rubble. A variety of grasses, sedges, and forbs are present, including orchard grass (*Dactylis glomerata*), green foxtail (*Setaria viridis*), soft rush (*Juncus effusus*), many-flowered aster (*Symphotrichum ericoides*), and lateflowering thoroughwort (*Eupatorium serotinum*). The only treed upland areas of the property consist of sparse "hedgerows" of trees that are present around the property boundaries - largely restricted to the hillside abutting Route 94 to the northwest and to the elevated banks of the channelized stream that forms the southeast borders of the property. The upland habitat comprises 55% (20.5± acres) of the property. Along Route 94, eastern red cedar, eastern white pine, tree-of-heaven, and red maple are present within a narrow band along the roadway corridor. Along the stream, hawthorns and eastern red cedar are the primary trees found in the narrow band of trees providing shade along the streambanks. Small areas of brushy thickets that are located sporadically across the site are formed of multiflora rose, Allegheny blackberry, and/or bush honeysuckles.

Wetland – reedgrass meadow

The wetlands on this property were flagged and surveyed in April of 2022. As noted above only a single, extensive wetland area was present on the property, as an expanse across the eastern half of the site where aggressive species of weedy reedgrasses dominate. It comprises 16.5± acres of the property, approximately 45% of the total property acreage. Several long-established and overgrown linear drainage ditches crisscross this portion of the property. The ground layer vegetation of grasses and forbs that were observed in the wetland area consisted primarily of common reed (*Phragmites australis*), reed canarygrass (*Phalaris arundinacea*), slender mountain mint (*Pycnanthemum tenuifolium*), flat-top goldenrod (*Euthamia graminifolia*), and woolgrass (*Scirpus cyperinus*). The former two reedgrass species are non-native grasses that are highly aggressive, invasive species that can overgrow and eventually replace many species of native wet meadow vegetation.

The majority of the wetland area was dominated by a continuous, dense stand of common reed (phragmites). Around the edges of this stand of phragmites are fields of reed canarygrass and various forbs. This wetland area is assigned a USFWS Cowardin classification⁵ of PEM1Ed. This wetland classification code indicates areas of palustrine emergent vegetation (PEM), that is persistently evident in all seasons (1), and have seasonally flooded or saturated soils (E) which have been partly drained or ditched (d). This descriptor is applicable to all areas within the surveyed NYSDEC wetland area on this property where, historically, extensive ditching and dewatering has occurred.

No vernal (i.e. seasonal) pools, or similar areas that may be considered to have the potential to support vernal pool species of animals, were observed on the property.

Wildlife Use of the Site

The congested commercially developed lands that surround this site act to further reduce the site's value for wildlife as there is little opportunity for terrestrial wildlife to transit through or off of the site onto undeveloped property. During the course of the fieldwork for this assessment only a few species of wildlife, or signs indicating their presence, were observed. The most obvious presence was that of whitetail deer that were observed on site during each visit, and with deer pellet deposits and deer beds that were commonly noted in the eastern portion of the property. Sightings were also made of woodchucks and their burrows, garter and milk snakes, and several regionally common avian species including killdeer, red-winged blackbirds, mourning doves, crows, and sparrows.

Potential for Use by Threatened or Endangered Species or "Species of Special Concern"

The NYSDEC EAF output for this parcel indicates that there may be occurrences of two endangered species on or near this property, bog turtle and northern long-eared bat. The NYSDEC clearly states that the information provided by an EAF assessment is not a substitute for on-site surveys, therefore on-site observations and assessments were conducted by EA in order to evaluate the habitat value of the site for any protected species of mammals, reptiles, or amphibians. As stated above, these on-site observations were made in three seasons during 2022.

The site was examined for potential use by all forms of regionally rare, endangered, or protected wildlife species, as listed by either the NYSDEC or the USFWS. Based on the habitat types present on the property, the potential for the presence of the following regional species, listed by the State or the federal government as endangered or threatened, was evaluated:

- Bog turtle – Federally Threatened; NYS Endangered
- Eastern mud turtle – Federally Unlisted; NYS Endangered
- Eastern tiger salamander – Federally Unlisted; NYS Endangered
- Northern cricket frog – Federally Unlisted; NYS Endangered
- Northern fence lizard – Federally Unlisted; NYS Threatened
- Timber rattlesnake – Federally Unlisted; NYS Threatened
- Indiana bat – Federally Endangered; NYS Endangered
- Northern long-eared bat – Federally Endangered; NYS Endangered.

⁵ Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

In addition, EA evaluated the potential for utilizable habitat being present on the property for the following fifteen reptiles and amphibians that are listed as statewide "species of special concern" by the NYSDEC:

- Spotted turtle
- Wood turtle
- Eastern spiny softshell
- Northern diamond-backed terrapin
- Eastern box turtle
- Eastern hognose snake
- Worm snake
- Hellbender
- Mole salamanders
 - Marbled salamander
 - Jefferson salamander
 - Blue-spotted salamander
- Northern cricket frog
- Longtail salamander
- Eastern spadefoot frog
- Southern leopard frog

Many of the species listed above were summarily eliminated from further consideration due to the lack of known populations in the mid-Hudson area generally, and central Orange County in particular:

- Eastern mud turtle – the project site is north of the known range for this species, which is reported known from Staten Island and Long Island.
- Eastern tiger salamander – the project site is north of the known range for this species, which is reported confined to eastern Long Island.
- Northern fence lizard – the project site is north of the known range of this species, which has a nearest reported presence in the Hudson Highlands.
- Eastern spiny softshell turtle – the project site is east of the known range for this species, which is reported confined to western New York.
- Northern diamond-backed terrapin – excluded from consideration as this is a marine and estuarine turtle species.
- Worm snake – the project site is north of the known range of this species, which has a nearest reported presence in the Hudson Highlands.
- Hellbender – the project site is east of the known range for this species, which is reported confined to southern tier counties in central and western New York.
- Longtail salamander – the project site is outside of the known reported range for this species, which is confined to western areas of Orange County and southern tier counties in central and western New York.
- Eastern spadefoot toad – the project site is west of the reported primary range of this species, which has a nearest presence in the Hudson River valley.
- Southern leopard frog – the project site is north of the reported primary range of this species, which has a nearest presence in the Hudson Highlands.

Following the elimination process described above, based on the known ranges of species, the specific habitat conditions available on the site (hedgerow woods, shale barrens, and graminoid meadows) were then considered, and several species were further eliminated from consideration.

- Bog turtle – the wetland community on the Project property was assessed for the presence of habitat consistent with information provided in the Federal bog turtle recovery plan⁶ which includes preferred requirements for the species including: 1) soft, saturated organic and/or mineral soils; 2) a hydrologic regime based on perennial groundwater discharges; 3) a plant community with a predominance of low-growing, native flora, including sedges, rushes, grasses, forbs, mosses, and sometimes low shrubs; 4) a tree canopy that is less than 50% closed in order to allow adequate insolation at the ground layer of vegetation; and 5) calcicolous (lime indicator) plants. On this site, the dense closed canopy of the non-native, invasive reedgrass wetlands, the soils, and the altered hydrology of the site would not provide necessary basking, nesting, or hibernation opportunities to support bog turtles.
- Spotted turtle – the lack of a permanent open waterbody precludes the availability of required habitat for this species.
- Mole salamanders – blue-spotted salamander, Jefferson salamander, and marbled salamander. Populations of these salamanders require seasonal standing water wetlands or pools, and these conditions were not observed on the property.
- Timber rattlesnake – known from areas with rugged terrain, including open areas of rocky ledges for basking and rocky crevices for denning. No denning habitat is present on or in the vicinity of this site.
- Northern cricket frog – the lack of any permanent open waterbody on the property precludes the availability of required habitat for this species.

There are five species remaining from the two lists above that might have a resident, or transient, presence within the various habitats on the project site. These species targeted for further evaluation include:

- Indiana bat,
- Northern long-eared bat,
- Wood turtle,
- Eastern box turtle,
- Eastern hog-nosed snake.

The following table presents certain habitat requirements and behavioral characteristics of these five species that are useful for defining areas that would be suitable for supporting populations of each.

⁶ USFWS. 2001. Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan. Hadley, MA. 103 pp.

**Target Species
Potentially Occurring on Project Property**

Common Name	Scientific Name	Habitat Specifications
Indiana bat	<i>Myotis sodalis</i>	Mature woods for roosting. Upland woods, meadows, and wetland forests for foraging. Caves for winter hibernation.
Northern long-eared bat	<i>Myotis septentrionalis</i>	Mature woods for roosting. Upland woods, meadows, and wetland forests for foraging. Caves for winter hibernation.
Wood turtle	<i>Glyptemys insculpta</i>	Upland woods, wooded wetland corridors for foraging. Streams for winter hibernation.
Eastern box turtle	<i>Terrapene carolina</i>	Upland woods, wooded wetland corridors for foraging. Sandy/loamy upland soils for winter hibernation.
Eastern hognose snake	<i>Heterodon platyrhinos</i>	Wooded areas with stone walls, bedrock outcrops, or rock crevices for shelter and foraging. Sandy, loose gravel areas for nesting.

Indiana bat

This bat species would not be present at this site during the period when it is swarming prior to hibernating or when it is overwintering, as both of these activities occur at or near cave hibernacula that, in New York State, are distant from the Project property. Those activities occur in a period that extends approximately from late summer through late spring. Outside of that period however, this bat species may conduct aerial foraging on or near this site. Indiana bats feed on the wing, preying on flying insects over various terrains, including woods, fields, wetlands, or lakes and ponds.

Northern long-eared bat

This species has similar patterns of hibernation to the Indiana bat. Outside of the hibernation period however, the northern long-eared bat is more likely than the preceding species to utilize upland forests for summer foraging. They also are primarily aerial feeders, preying on flying insects over various terrains, including woods, fields, wetlands, or lakes and ponds, but they also may prey on insects that are stationary on vegetation (predation by gleaning).

Wood turtle

This generally terrestrial species is listed by New York State as a "species of special concern." Wood turtles are often found in association with small rivers or streams, and, in winter, they occupy streambank

excavations when in hibernation. Given the large home ranges typical for this turtle, there is the possibility that the stream habitat on site could be a part of the range of wood turtles that, if present on or around the remaining limited undeveloped portions of the industrial park, would seasonally utilize the stream banks and adjoining wetland meadows for foraging on this and nearby similar properties. The major threat to wood turtles appears to be pesticide poisoning and collection as pets. Collection of this species is prohibited in New York State. The wood turtle would potentially be present within any of the meadow areas on the property.

Eastern box turtle

This largely terrestrial, though wetland-dependent, species is also listed by New York State as a "species of special concern." Any of the wetland meadow habitat observed on this site could support the eastern box turtle which, if present on or around the remaining limited undeveloped portions of the industrial park, would utilize the meadows for foraging activities from spring through fall, and for hibernating in low-lying wet burrows during the winter. Nesting and egg laying occurs in sunny open areas of sandy/loamy soils. While primarily terrestrial, this species may seek and enter stream beds or shallow ponds which would act as thermal refugia during periods of hotter weather. The major threat to box turtles appears to be pesticide poisoning and collection as pets. Collection of this species is prohibited in New York State. The box turtle would potentially be present within any of the meadow areas on the property.

Eastern hognose snake

This is an upland, terrestrial species that is also listed by New York State as a "species of special concern." It is a burrowing snake that requires gravelly or sandy-loamy well-drained soils for providing daily summertime shelters, for nesting and egg laying activities, as well as for creating burrows for overwintering dens. Areas with upland fallow meadow fields or woodlots provide suitable habitat for this species. There is the possibility that habitat on site could support the eastern hognose snake. It is a secretive species that, on this site, may utilize any of the upland areas for cover and feeding.

Potential Impacts to the Five Identified Target Species

Indiana and northern long-eared bats

The Indiana bat and the northern long-eared bat would be afforded direct protection from adverse impacts during the development and future use of this site through the project's adherence to the seasonal tree clearing and removal protocols that are enforceable by the NYSDEC. These protocols aim to avoid or reduce the potential for direct adverse impacts to the foraging and/or roosting habitats of the Indiana bat and the northern long-eared bat. The protocols direct that all tree clearing for proposed projects should be conducted during the November 1 to March 31 overwinter hibernation period of these bats, to avoid the felling of any potentially occupied roost tree and to avoid the potential for any direct mortalities of the bats during this activity. The utilization of potential summer foraging habitat on or near to the property for the two bat species may be affected by the indirect impacts of increased motor vehicle traffic and increased noise levels on and near the project development, and by the effects of nighttime lighting of the building exterior or vehicle access and parking areas. By preserving as much of the undeveloped portions of the parcel as practicable, such indirect impacts would be reduced and both species of bats could be expected to continue to utilize the project site in the future.

Wood and Eastern Box Turtles

The wood turtle and the eastern box turtle are both highly mobile species and might be present within any portion of this property and some of the adjacent industrial park properties as part of any individual turtle's established home range. Because these two turtles, and all of the other thirteen species of reptiles and amphibians which are NYS "species of special concern," are not listed as threatened or endangered by the state, mortality to individuals or impacts on populations of these species does not require "incidental take" permits or any further consideration from the NYSDEC. Long term impacts to populations of these species are not expected to occur unless the rate of traffic related mortality increases or the collection of turtles from the site occurs. In New York State it is illegal to conduct the latter activity. No turtles were observed on site during the current investigation.

Eastern Hog-nosed Snake

The hognose snake is known to be adaptable to developed areas. Since this species is adaptable to new fields, pastures, and suburban areas, the proposed development should not result in a significant adverse impact to hognose snake populations, if in fact any are present on this site. Long term impacts that might occur to any of this species' population on this property would be associated with habitat reduction, incidental vehicular mortalities, or the collection or killing of snakes on the developed property. No hognose snakes were observed on the site during the current investigation.

Conclusions

Unavoidably, there would be a temporary displacement of wildlife species on the property that would occur during site development activities. While temporary disturbances associated with site development could potentially directly impact individuals in the development area, the activities are unlikely to impact populations as a whole provided that remaining local refugia habitat remains undeveloped, including the onsite delineated wetland area.

Overall, it is our professional opinion that no Federally- or State protected wildlife species would be significantly impacted by site developments that occur within the upland portions of this property while concurrently avoiding, and thus maintaining the existing integrity of, the delineated site wetland. Areas of existing upland vegetation that are bordering the wetland can be preserved so as to buffer the wetland from any changes in surrounding land use that could contribute unwanted runoff nutrients or sediments into the wetland. The preservation of natural buffer vegetation around the wetland would maintain existing wetland habitat for any wetland-dependent wildlife that might be still be locally present within this otherwise highly developed industrial park.

Appendix A

**List of Vegetation Observed on the
Trodale Site**

**List of Vegetation Observed
on the Tredale Site**

COMMON NAME	SCIENTIFIC NAME
Velvetleaf	<i>Abutilon theophrasti</i>
Ashleaf maple	<i>Acer negundo</i>
Red maple	<i>Acer rubrum</i>
Yarrow	<i>Achillea millefolium</i>
Tall hairy agrimony	<i>Agrimonia gryposepala</i>
Tree-of-heaven	<i>Ailanthus altissima</i>
Water plantain	<i>Allisma triviale</i>
Annual ragweed	<i>Ambrosia artemisiifolia</i>
Spreading dogbane	<i>Apocynum androsaemifolium</i>
Greater burdock	<i>Arctium lappa</i>
Common wormwood	<i>Artemisia vulgaris</i>
Common milkweed	<i>Asclepias syriaca</i>
Japanese barberry	<i>Berberis thunbergii</i>
Devil's beggarticks	<i>Bidens frondosa</i>
Sallow sedge	<i>Carex lurida</i>
Broom sedge	<i>Carex scoparia</i>
Fox sedge	<i>Carex vulpinoidea</i>
Pignut hickory	<i>Carya glabra</i>
Oriental bittersweet	<i>Celastrus orbiculatus</i>
Spotted knapweed	<i>Centaurea stoebe</i>
Canada thistle	<i>Cirsium arvense</i>
Bull thistle	<i>Cirsium vulgare</i>
Horseweed	<i>Conyza canadensis</i>
Hawthorn	<i>Crataegus spp.</i>
Orchard grass	<i>Dactylis glomerata</i>
Jimsonweed	<i>Datura stramonium</i>
Queen Anne's lace	<i>Daucus carota</i>
Deptford pink	<i>Dianthus armeria</i>
Deer-tongue grass	<i>Dichanthellum clandestinum</i>
Fuller's teasel	<i>Dipsacus fullonum</i>
Barnyard grass	<i>Echinochloa crus-galli</i>
Autumn olive	<i>Elaeagnus umbellata</i>
Stinkgrass	<i>Eragrostis cillanensis</i>
Pilewort	<i>Erechtites hieracifolia</i>
Eastern daisy fleabane	<i>Erigeron annuus</i>

**List of Vegetation Observed
on the Trodale Site**

COMMON NAME	SCIENTIFIC NAME
Lateflowering thoroughwort	<i>Eupatorium serotinum</i>
Leafy spurge	<i>Euphorbia esula</i>
Flat-top goldenrod	<i>Euthamia graminifolia</i>
Great hedge bedstraw	<i>Gallium mollugo</i>
Common St-John's wort	<i>Hypericum perforatum</i>
Canada rush	<i>Juncus canadensis</i>
Soft rush	<i>Juncus effusus</i>
Eastern red cedar	<i>Juniperus virginiana</i>
European stickseed	<i>Lappula squarrosa</i>
Motherwort	<i>Leonurus cardiaca</i>
Virginia pepperweed	<i>Lepidium virginicum</i>
Ox-eye daisy	<i>Leucanthemum vulgare</i>
Butter-and-eggs	<i>Linaria vulgaris</i>
Bush honeysuckle	<i>Lonicera spp.</i>
Marsh seedbox	<i>Ludwigia palustris</i>
Musk mallow	<i>Malva moschata</i>
Allegheny monkey flower	<i>Mimulus ringens</i>
Tall yellow sweetclover	<i>Mellilotus altissimus</i>
Catnip	<i>Nepeta cataria</i>
Fall panicgrass	<i>Panicum dichotomiflorum</i>
Beardtongue spp.	<i>Penstemon spp.</i>
Reed canarygrass	<i>Phalaris arundinacea</i>
Common reed	<i>Phragmites australis</i>
Pokeweed	<i>Phytolacca americana</i>
Red spruce	<i>Picea rubens</i>
Eastern white pine	<i>Pinus strobus</i>
Marshpepper knotweed	<i>Polygonum hydropiper</i>
Curlytop knotweed	<i>Polygonum lapathifolium</i>
Pennsylvania smartweed	<i>Polygonum pensylvanicum</i>
Arrowleaf tearthumb	<i>Polygonum sagittatum</i>
Smartweed	<i>Polygonum spp.</i>
Rough cinquefoil	<i>Potentilla norvegica</i>
Sweet cherry	<i>Prunus avium</i>
Black cherry	<i>Prunus serotina</i>
Rabbit-tobacco	<i>Pseudognaphallum obtusifolium</i>
Slender mountain mint	<i>Pycnanthemum tenuifolium</i>

**List of Vegetation Observed
on the Trodale Site**

COMMON NAME	SCIENTIFIC NAME
Bradford pear	<i>Pyrus calleryana</i>
Pin oak	<i>Quercus palustris</i>
Common buckthorn	<i>Rhamnus cathartica</i>
Fragrant sumac	<i>Rhus aromatica</i>
Multiflora rose	<i>Rosa multiflora</i>
Allegheny blackberry	<i>Rubus allegheniensis</i>
Black raspberry	<i>Rubus occidentalis</i>
Curly dock	<i>Rumex crispus</i>
Green bulrush	<i>Scirpus atrovirens</i>
Woolgrass	<i>Scirpus cyperinus</i>
Green foxtail	<i>Setaria viridis</i>
Horsenettle	<i>Solanum carolinense</i>
Late goldenrod	<i>Solidago altissima</i>
Canada goldenrod	<i>Solidago canadensis</i>
Gray goldenrod	<i>Solidago nemoralis</i>
Wrinkleleaf goldenrod	<i>Solidago rugosa</i>
Many-flowered aster	<i>Symphyotrichum ericoides</i>
White panicle aster	<i>Symphyotrichum lanceolatum</i>
American basswood	<i>Tilia americana</i>
Eastern poison ivy	<i>Toxicodendron radicans</i>
Virginia marsh St. John's wort	<i>Triadenum virginicum</i>
Rabbit foot clover	<i>Trifolium arvense</i>
Hop clover	<i>Trifolium aureum</i>
Broadleaf cattail	<i>Typha latifolia</i>
Stinging nettle	<i>Urtica dioica</i>
Moth mullein	<i>Verbascum blattaria</i>
Common mullein	<i>Verbascum thapsus</i>
Swamp verbena	<i>Verbena hastata</i>
White vervain	<i>Verbena urticifolia</i>
Nannyberry	<i>Viburnum lentago</i>

NOTES:

- This list represents the plant taxa that were observed during seasonal field surveys from May through October, 2022. This is not reported as an exhaustive list of all of those species that are present on the property.
- Scientific and common names of plants taken from USDA PLANTS online database:
<https://plants.sc.egov.usda.gov/home>