YORK COUNTY NATURAL AREAS INVENTORY

A COMPONENT OF THE YORK COUNTY COMPREHENSIVE PLAN

YORK COUNTY

NATURAL AREAS INVENTORY

York County Planning Commission
www.ycpc.org

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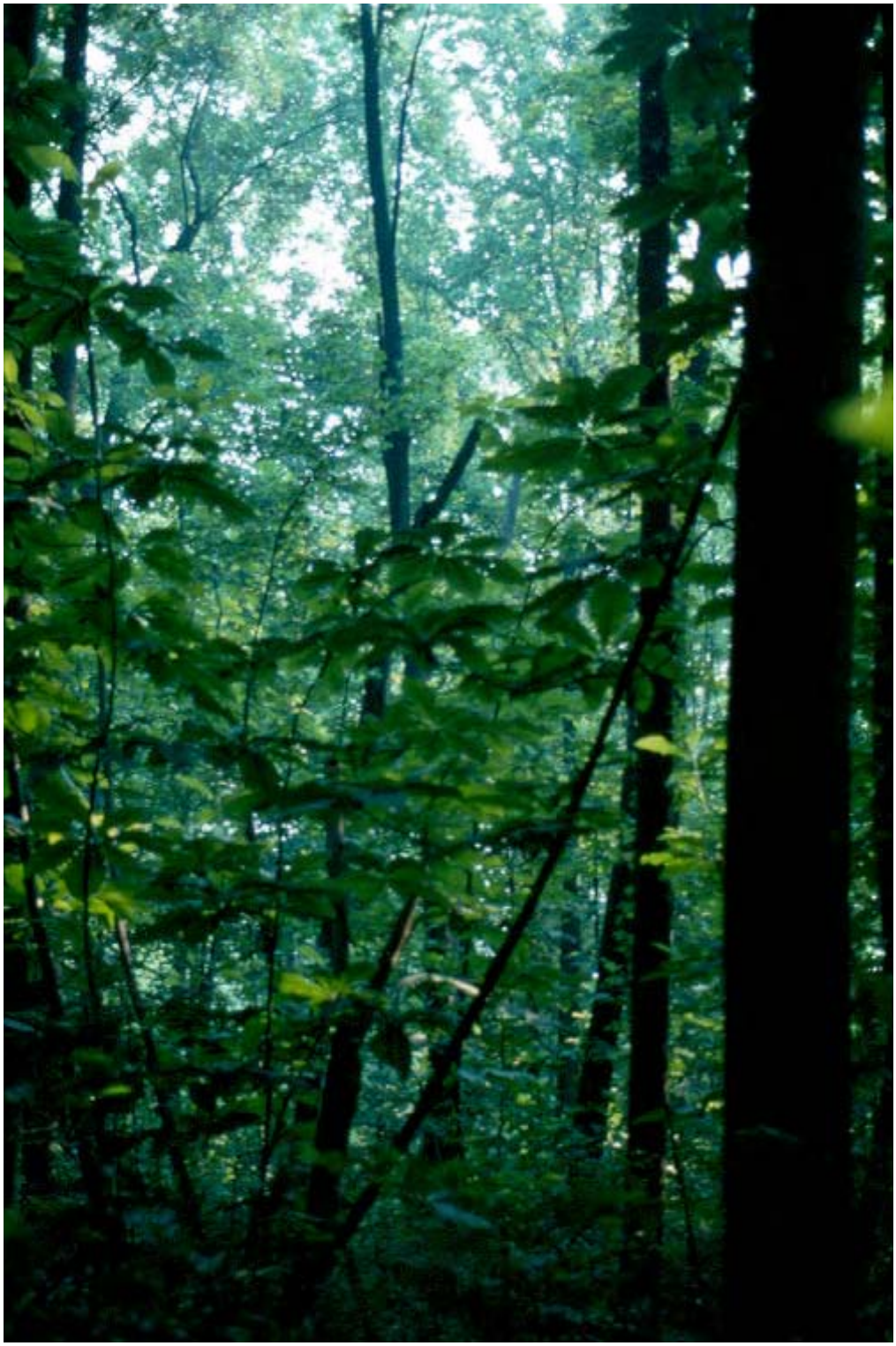
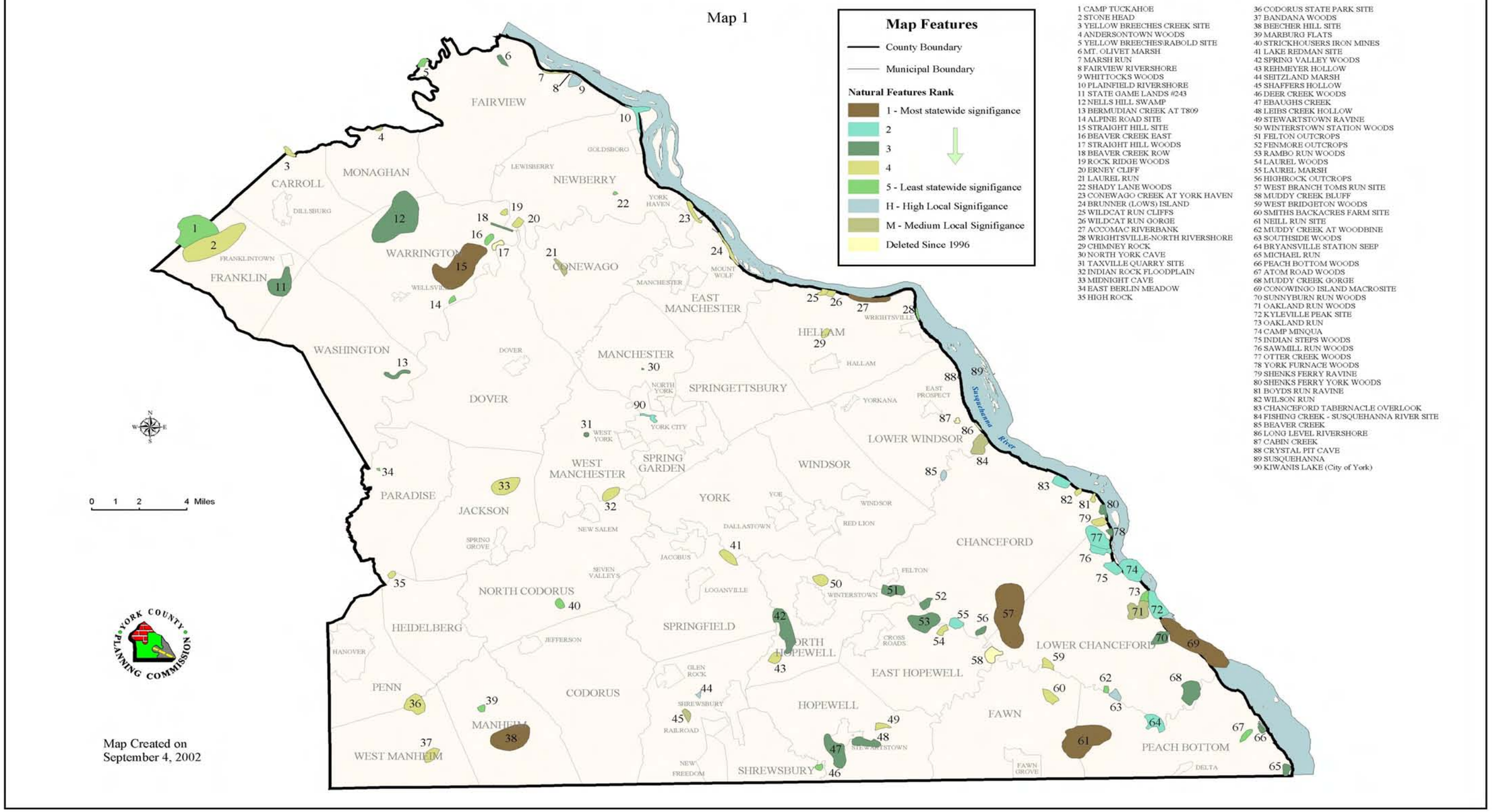


A Mesic Central Forest Natural Area in York County. Photo by PA Science Office of the Nature Conservancy.

Natural Areas of York County, Pennsylvania



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6 MT. OLIVET MARSH
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51 FELTON OUTCROPS
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53 RAMBO RUN WOODS
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57 WEST BRANCH TOMS RUN SITE
58 MUDDY CREEK BLUFF
59 WEST BRIDGETON WOODS
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69 CONOWINGO ISLAND MACROSITE
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Preface

The York County Natural Areas Inventory (NAI) is a document compiled and written by the Pennsylvania Science Office (PSO) of The Nature Conservancy. It contains information on the locations of rare, threatened, and endangered species and of the highest quality natural areas in the County (see Map 1 on the previous page); it is not an inventory of all open space. It is intended as a conservation tool and should in no way be treated or used as a field guide. Accompanying each site description are general management recommendations that would help to ensure the protection and continued existence of these rare plants, animals and natural communities. The recommendations are based on the biological needs of these elements (species and communities). The recommendations are strictly those of The Nature Conservancy and do not necessarily reflect the policies of the State or the policies of the County or townships for which the report was prepared.

Managed areas such as Federal, State, County and township lands, private preserves and conservation easements are also provided on the maps where that information was available to us. This information is useful in determining where gaps occur in the protection of land with rare species, natural communities and locally significant habitats. The mapped boundaries are approximate and our list of managed areas may be incomplete as new sites are always being added.

Implementation of the recommendations is up to the discretion of the landowners. However, cooperative efforts to protect the highest quality natural features through the development of site-specific management plans are greatly encouraged. Landowners working on management or site plans of specific areas described in this document are encouraged to contact the Pennsylvania Science Office of The Nature Conservancy for further information.

Although an attempt was made through advertising, public meetings, research, and informal communications to locate all sites important to the conservation of biodiversity within York County, it is possible that something was missed. Anyone with information on sites that may have been overlooked should contact the York County Planning Commission. The York County Natural Areas Inventory will be updated periodically and additional sites may be included at that time.

Showy Skullcap - This PA-Endangered member of the mint family was thought to be extirpated in PA. It was rediscovered in York County during surveys conducted for the Natural Areas Inventory. Photo: PA Science Office of The Nature Conservancy.

Chapter I
Introduction

York County is situated in southcentral Pennsylvania, an area rich in historical, scenic, and natural resources. The County's 911 square miles (Hersh 1963) are occupied by a mix of agriculture, forest, small towns, suburbs, and the City of York. In 2000 the County's overall population was recorded by the census to be 381,751, which represents a 12.4% increase over its population in 1990, and growth is expected to continue (U.S. Census and York Co. Planning Commission). Recent growth has been influenced by York County's desirability as a place to live and its close proximity to larger urban centers. Both Harrisburg and Baltimore are within commuting distance of the County. York County is also a popular tourist destination because of its rich history and recreational opportunities.

Tourists and residents alike are attracted to the extensive recreational opportunities provided by the County's many parks and its 56-mile shoreline along the Susquehanna River, as well as to the pastoral scenery that dominates much of the rest of the landscape; these natural qualities are important to both the economic and social well-being of County residents. The Susquehanna River and its tributaries, including Muddy Creek, Codorus Creek, Conewago Creek, and the Yellow Breeches, have a wide variety of scenic and recreational values. The river creates some of the most striking landscapes to be found in the County. It also offers extensive boating and fishing opportunities while the adjacent forested slopes offer opportunities for such activities as hiking, hunting, and bird watching. The rivershore and the major creek systems with their many forested slopes and ravines still harbor many of the County's best natural areas. Much of the remainder of the County is characterized by low rolling hills dominated by agriculture; approximately 38% of the County landscape is occupied by farms. In 1997, York County was ranked eighth (8^{th}) out of 67 counties in the State in terms of market value of agricultural products sold. However, the County's rural character, natural resources, and farmland are all threatened by the increase of suburban sprawl. From 1950 to 2002 there was a 37% decline in agricultural land within the County (U.S. Census of Agriculture). Changes in development patterns are evident across the County; particularly the trend towards low density development with increased lot size away from the traditional borough centers.

The scenic natural environment that attracts so many people to York County can be easily lost without careful planning of growth and development in the County. Wise planning can maintain open space, including natural environments and the plants and animals associated with them. A balance between growth and conservation of scenic and natural resources can be achieved by guiding development away from the most environmentally sensitive areas.

In order to plan development and ensure protection of critical natural areas, County and municipal governments, the public and developers must know the location and importance of these sites. This knowledge can help prevent conflicts over land use and direct protection efforts and limited conservation dollars to the most vulnerable areas. The Pennsylvania Science Office of The Nature Conservancy, under contract to the York County Planning Commission, has undertaken this project to provide a document and maps that will aid in the identification of these important areas.

The Natural Areas Inventory (NAI) report presents York County's known outstanding natural features-floral, faunal and geologic. The Inventory provides maps of the best natural communities (habitats) and all the known locations of animal and plant species of special concern (endangered, threatened, or rare) in the County. A written description and a summary table of the sites, including quality, degree of rarity, and last-observed date, accompany each map. Potential threats and some suggestions for protection of the rare plants or animals at the site are included in many of the individual site descriptions. Selected geologic features of Statewide significance are also noted. In addition, the inventory describes locations of areas that are significant on a County-wide scale but cannot be deemed exemplary natural communities because of past disturbances. These "locally significant" sites represent good examples of habitats that are relatively rare in the County, support an uncommon diversity of plant species and/or provide valuable wildlife habitat on a local level.

The information and maps presented in this report provide a useful guide for planning development and parks, for conserving natural areas, and for setting priorities for preservation of the most vulnerable natural areas. An overall summary of the highest quality sites in York County provides suggestions for maintaining these important sites as natural areas. All of the sites in this report, see Map 1on page i, were evaluated for their importance in protecting biological diversity on a state and local level, but many also have scenic value, provide water quality protection, and are potential sites for low-impact passive recreation, nature observation and/or environmental education.

Particular species names, common and scientific, are provided in coordination with the appropriate jurisdictional agency. Plants and terrestrial invertebrate animals are under the jurisdiction of the PA Department of Conservation and Natural Resources (DCNR). Mammals and birds are under the jurisdiction of the PA Game Commission (PGC). Aquatic animals are under the jurisdiction of the PA Fish and Boat Commission (PFBC), and are subject to unauthorized collection. They are therefore not identified in the text of this report in order to provide some measure of protection for the species.

The Natural Areas Inventory of York County (NAI), which is a component of the County Comprehensive Plan, will be provided to each municipality through the York County Planning Commission. The inventory is one (1) tool that will aid in the implementation of municipal comprehensive plans. The County, municipalities and land trusts can use the NAI to identify potential protection projects that may be eligible for funding through State or community grant programs. Landowners will also find this inventory useful in managing and planning for the use of their land; it gives them the opportunity to explore alternatives that will provide for their needs and still protect the species and habitats that occur on their land. In addition, land managers may wish to consult this report in an effort to avoid potential conflicts in areas with species of special concern and/or identify ways of enhancing or protecting this resource. Users of this document are encouraged to contact the Pennsylvania Science Office of The Nature Conservancy for additional information (717) 948-3962.

Questions regarding potential conflicts between proposed projects and species of concern mentioned in this report should be directed to the Environmental Review Specialist at the PNDI Office in Harrisburg (717) 772-0258.

Uses For The York County NAI

This document is intended to benefit a wide range of York County stakeholders. As plans and decisions are made throughout County municipalities, this document should be used to ensure the County's biodiversity and natural resources are protected. Efforts when it would be critical to incorporate the recommendations and information contained in this document are...

- Comprehensive Planning
- Zoning
- Project Review
- Sewage Facilities Planning
- Source Water Protection Planning
- Wellhead Protection Planning
- Stormwater Management Planning
- Open Space/Greenway Planning
- Watershed Planning
- Transportation Planning
- Subdivision and Land Development
- Conservation Easements
- Agricultural Preservation
- Recreational Planning
- Education/Public Awareness
- Forest Legacy Program
- Water Supply Planning
- Inventories

The Timber Rattlesnake is a species of concern found in York County. (Refer to Appendix VII for more information.) Photo by the PA Science Office of The Nature Conservancy.

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Chapter II
Natural History Overview of The County

The climate, geology, topography, and soils have been important in the development of the plant communities (forests, wetlands, etc.) as well as other natural features (e.g.,streams and geologic features) in the County. Both natural and human disturbances have played an important role in the development and alteration of those plant communities and have caused the extirpation of some species and the introduction of others. These combined factors provide the framework for locating and identifying exemplary natural communities and species of special concern within the County. A brief overview of the physiography, geology, soils, and vegetation of York County provides the background for the natural areas inventory methodology and findings presented in this report.

Physiography and Geology

Physiographic Provinces are classified by the characteristic landscapes and distinctive geologic formations that comprise each province. Physiography relates in part to a region's topography and climate, two (2) factors that significantly influence soil development, hydrology, and land use patterns of an area. Bedrock type also influences soil formation and hydrology. Therefore, both physiography and geology are important to the patterns of plant community distribution which is in turn important to animal distribution (see Vegetation section). Certain plant communities and species might be expected to occur within some provinces and not in others due to differences in climate, soils, and moisture regime. Physiographic and geologic information has come from a variety of sources including: Geyer and Bolles (1979 and 1987), Berg et al. (1981), *The Atlas of Pennsylvania* (Cuff et al. 1989), the *Geologic Map of Pennsylvania* (Socolow 1980) and *Physiographic Provinces of Pennsylvania* (Berg et al. 1989).

York County is almost entirely within the Piedmont Province which is divided into three (3) sub-sections. The Piedmont Upland Section covers the whole southern half of the County and is characterized by broad gently rolling hills and valleys underlain by schist, quartzite, and other metamorphic rock types. The Piedmont Lowland Section, which occupies a narrow band across the middle of the County running from east to west, is characterized by broad, moderately dissected valleys separated by broad low hills with common occurrences of karstic terrain. This section is underlain with carbonate rock types including limestone, dolomite, and marble. Rising out of this carbonate lowland are two (2) outlying topographic expressions of the Southeastern Uplands, the western Pigeon and eastern Hellam hill chains, which are composed variously of resistant quartzite, conglomerate and metavolcanic rocks. The Gettysburg-Newark Lowland Section occupies the northern third of the County and is characterized by rolling lowlands with isolated hills and highlands made up of red and gray shale, siltstone, sandstone, conglomerate, and diabase (Berg et al. 1989). Diabase, a hard intrusive igneous rock high in base minerals, occurs primarily in the townships north and west of Conewago Creek such as Warrington and Fairview. At several locations the diabase formation occurs as prominent hills characterized by large rock outcrops and boulder fields. Elsewhere in the County, thin diabase intrusions, or dikes, pass out of the Gettysburg-Newark Lowland to crosscut older rock formations. Where forested, these diabase areas are dominated primarily by oaks and the mineral-rich soils support a diverse herbaceous flora as exemplified at Gifford Pinchot State Park. Several rare plant species are closely associated with diabase-derived soils. A small portion of South

Mountain barely enters the northwest section of the County. This area is in the Blue Ridge Province which is characterized by steep slopes and narrow ridgetops and is underlain by erosion-resistant rocks such as quartzite, baked shale, and conglomerate. A very small area in the extreme northeastern part of York County lies within the Great Valley Section and is underlain by carbonate and shale rocks.

Soils

The distribution of soils in York County reflects both topography and bedrock geology. Twelve major soil associations are recognized in the County with several major soil types (series) and some minor soils as well. The types of soils in a given area have led to the distinctive patterns of use that are seen on the landscape today. Much of the York County landscape is in agriculture. Many of the woodlands occur along stream courses, steeper slopes, and other areas not as well suited for crops.

The following is a brief description of the soil units as provided within the Soil Survey of York County, Pennsylvania. For a more in depth description please refer to that document. Additional information on associated vegetation is provided based on field surveys conducted for this Natural Areas Inventory. Soil types are important in the inventory process as some natural communities and rare plant species are closely associated with specific soil types or characteristics.

UrbanLand-Duffield-Hagerstown - Urban land that is nearly level to strongly sloping with very deep and well drained soils that are formed from limestone found on ridges and in narrow valleys. Soils within this classification consist of urban land uses with some agricultural and woodland areas. This soil unit makes up about 3% of the County.

Chester - Glenelg- Land that is gently sloping to moderately steep with deep to very deep well drained soils formed from schist, phyllite, and saprolite which are found on ridge tops and hills. These soils are mostly used for agriculture with some areas of urban land uses and woodland intermingled. This soil unit makes up about 29% of the County.

Mt. Airy-Glenelg-Manor - Land that is gently sloping to moderately steep with moderately to very deep soils that are somewhat excessively drained to well drained and formed from schist and phyllite on ridges and hills. Land uses on these soils are predominately agricultural with some areas of urban or recreation development and a few areas of woodland. This soil unit makes up about 19% of the County.

Lewisberry-Steinsburg - Land that is gently sloping to moderately steep with very deep to moderately deep soils that are well drained and formed from sandstone and conglomerate on dissected ridges and low hills. Land uses found on these soils include mostly crop land and woodland with small towns scattered throughout. This soil unit makes up about 1% of the County.

Mt. Airy-Manor - Land that is gently sloping to very steep with moderately deep to very deep soils which are somewhat excessively drained and formed from schist and phyllite on dissected ridges and hills. Land uses within this soil unit consist mostly of woodland, with some ridge tops being used for crop land and orchards. This soil unit makes up 10% of the County.

Edgemont - Land that is gently sloping to very steep with very deep soils that are well drained and formed from quartzite and conglomerate on ridges and hills. Land uses on these soils are mainly woodland with some crop land, on ridge tops and foot slopes, and urban development along major roads. This soil unit makes up about 3% of the County.

Penn - Land that is gently sloping to very steep with moderately deep soils that are well drained and formed from sandstone, conglomerate, and siltstone on ridges and hills. These soils are mainly forested with some foot slopes used for crop land and orchards and urban development along major roads. This soil unit makes up 2% of the County.

Conestoga-Urban land-Clarksburg - Land that is nearly level to strongly sloping with very deep soils that are well drained to moderately well drained and formed in residuum from limestone and calcareous schist on nearly level to rolling uplands. These soils mainly support urban development with some crop land and recreation areas. This soil unit makes up about 4% of the County.

Penn-Landsdale-Readington - Land that is nearly level to strongly sloping with moderately deep and deep soils that are well drained and moderately well drained and formed from shale, siltstone, sandstone, and conglomerate on undulating to rolling uplands. These soils are mainly used for agricultural purposes with some urban development and woodlands. This soil unit makes up about 5% of the County.

Penn-Klinesville-Readington - Land that is nearly level to strongly sloping with deep to shallow soils that are somewhat excessively drained to moderately well drained and formed from shale, siltstone, and fine-grained sandstone on undulating to rolling hills and ridges. These soils are mainly used for crop land and woodland with some areas of urban development and idle land. This soil unit makes up about 14% of the County.

Neshaminy-Lehigh - Land that is nearly level to very steep with soils that are deep and very deep which are well drained to somewhat poorly drained and formed from diabase, and porcelanite on ridges, rounded hills, and adjacent lowlands. These soils are mainly used for crop land, orchards, woodland, and recreation with some areas of urban development. This soil unit makes up about 10% of the County.

Glenelg-Mt. Airy - Land that is gently sloping to moderately steep with moderately deep and deep soils which are well drained and somewhat excessively drained and formed from schist and phyllite on ridges and hills. These soils are mainly used for crop land, pasture, and woodland with some urban and recreation development. This soil unit makes up 2% of the County.

Vegetation

(See Appendix VIII for scientific names of species listed in text.)

The vegetation of York County reflects environmental conditions (geology, topography, soils, climate) and disturbance history, both natural and anthropogenic. York County is located in the area originally described as the Oak-Chestnut Forest Region, primarily in the Piedmont Section with a small part in the Northern Blue Ridge Section (Braun 1950). The American chestnut was once a dominant feature of the Oak-Chestnut forest, but was virtually eliminated with the introduction to America of the chestnut blight fungus in 1904. Today, the forest of this region is more aptly classified as Mixed Oak Forest (Monk et al. 1990), dominated by white, red, and black oaks often mixed with tulip poplar, red maple, and/or beech. Very little of the original forest cover of the Piedmont remains, having been cleared for agriculture and development, or repeatedly logged for lumber and fuel (Keever 1973). On the Piedmont, which includes most of York County, tulip poplar is currently a dominant species of many of the woodlands. After logging tulip poplar grows more quickly than other tree species and may be dominant to the exclusion of other tree species or may have associates such as white ash. As the forest matures however, shade-tolerant species become more prevalent because tulip poplar does not regenerate in the shade of a closed canopy (Tryon 1980). In older forests, oaks, hickories, maples, beech and eastern hemlock are common associates with tulip poplar. The composition of these forests varies with hydrology, slope position, aspect, and degree of disturbance. In addition, selective harvest of certain tree species such as red oak has altered the compositions of some forest stands. Many of the present forested lands of the piedmont portion of the County exist on areas such as rocky slopes and wetlands that were poorly suited to other uses.

One variant of the Mixed Oak Forest in the Piedmont Section is the Hemlock- rhododendron association that occurs on north facing slopes along streams. Black birch is a common associate in these forests. This community type is common in ravines descending to the Susquehanna River as well as on steep north facing slopes along major creeks including Muddy Creek, Codorus Creek, Conewago Creek, and the Yellow Breeches. Another distinct variant is the Mesic Central Forest community type which occurs on slopes and in ravines adjacent to the Susquehanna River. An example of this community type occurs at Indian Steps (Airville & Safe Harbor Quads.), just south of York Furnace. This broadly defined community type is characterized by some combination of the following species: sugar maple, American beech, white ash, eastern hemlock, tulip poplar, ironwood, maple-leaved viburnum, and witch hazel, and has many additional woody and herbaceous associates. In York County, pawpaw is a common dominant of the shrub layer in these forests and other mesic forest types.

Forests along the lower Susquehanna, especially those with the least disturbance, may be acting as refugia for plant species such as nodding trillium, squirrel corn, and blue cohosh which are generally not found in the adjacent Piedmont sections of southcentral Pennsylvania (Bratton et al. 1994). Populations of these species may be persisting at these sites because they have received less disturbance than sites removed from the river. The river corridor may have been a migration route for these species in the past.

In contrast to communities of the moist lower slopes along the river and other streams are xeric oak-dominated forests on well-drained upper slopes and ridges. These forests of extremely rocky and/or shallow nutrient poor soils are similar to those of drier situations on South Mountain. They are characterized by a dominance of chestnut oak and other oak species, with an understory of ericaceous shrubs including blueberries, huckleberries, and mountain laurel. These xeric oak dominated forests also occur on dry ridges and upper slopes at other high points on the York County landscape including such areas as Conewago Mountain and Pigeon Hills.

The Northern Blue Ridge Section, coinciding with the Blue Ridge physiographic province and South Mountain, is also dominated by Mixed Oak Forest. Notable variants here are similar to some of those found on the Piedmont landscape. Drier ridge tops with shallow nutrient poor soils, such as on the top of Stonehead Mountain, are characterized by a dominance of chestnut oak with black gum, red maple and other oaks as associates, and with an understory of ericaceous shrubs including blueberries, huckleberries, and mountain laurel. These dry forests have a poorly developed herbaceous layer. Stream corridors and adjacent northerly facing slopes of South Mountain are characterized by a dominance of eastern hemlock with a minor component of yellow birch and an understory of rhododendron and witch hazel. These forests also have a poorly developed herbaceous layer although several species of fern may be common.

Wetlands are an important category of vegetation types in the County, providing essential habitat for many plant and animal species. The type of wetland depends on soil type, disturbance, and length and duration of flooding. In York County many of the wetlands are associated with seeps, streams, or the Susquehanna River and include forested swamps, floodplain forests, shrub swamps, and marshes. Because wetlands are relatively rare in southcentral Pennsylvania, they are important refugia for plants. Many animals depend nearly exclusively on specific wetland habitats for some portion or all of their life cycles. Many bird species depend on wetlands during migration and for nesting.

Seep-derived swamps of gentle slopes such as Nells Hill Swamp (Wellsville Quad.) are dominated by red maple, with green ash and American elm as associates. The understory contains one (1) or more of the following: spicebush, arrow-wood, witch hazel, or winterberry. Floodplain forests occur along rivers and streams in low-lying areas. These locations are periodically inundated by flood waters of spring runoff or runoff from intense storm events. In York County, these forests are characterized by a canopy containing some combination of silver maple, sycamore, river birch, black willow, green ash, American elm, or box-elder. Shrubs and vines common to these forests include spicebush, ninebark, silky dogwood, Virginia creeper, and poison ivy. Floodplain forest communities, especially along the Susquehanna River, receive severe disturbances from flood waters including erosion and scouring by water, ice, and debris and/or deposition of massive quantities of sediments and debris. Only species with adaptations or tolerance for these kinds of conditions can survive here. Marshes are another type of wetland occurring within the County. They are characterized by some combination of sedges, grasses, rushes, cattail, or sensitive fern. A good example is Mt. Olivet Marsh (Fairview Township).

The Bog Turtle is a PA-endangered species found in York County. (Refer to Appendix VII for more information.) Photo by the PA Science Office of The Nature Conservancy.

The redbelly turtle is a species of concern found in York County. (Refer to Appendix VII for more information.) Photo by Jason Ambler.

Disturbance

The nature, scale and frequency of disturbance are influential in the evolution and appearance of natural communities and associated rare species. Disturbance can be beneficial or destructive to the development and persistence of natural communities.

Some examples of natural disturbances are flooding, fire, and deer browsing. While often regarded as a detrimental impact, both fire and small-scale flooding can be beneficial to certain communities or rare species. Floodplain forests benefit from the periodic scouring and deposition of sediments as streams overtop their banks. At the same time, streamside wetland communities hold excess water, thus reducing the scale of flooding downstream. In contrast, deer have been blamed for a number of negative impacts on Pennsylvania flora and fauna (Rhoads et al. 1992): a reduction in the amount of understory, poor regeneration of some species, decreased songbird diversity and direct loss of rare plants.

In many cases, human disturbance has been clearly destructive to natural habitats and species associated with them. Although necessary, farming, mining and development are disturbances that have completely eradicated some natural communities and habitats. For example, old-growth forests are virtually non-existent although occasional old trees may be encountered; many wetland habitats have been filled or altered resulting in the loss of some of the native plants and animals of these sites. Although some species, including several rare species, are aided by on-site disturbance (e.g. clearing or mowing), human disturbance is detrimental to most species. With wide-ranging human disturbance, some plant and animal species may be completely eradicated from an area because they cannot compete or survive under newly created conditions.

An increasing threat to these communities and natural habitats is the introduction and spread of exotic (i.e., non-native), invasive species across the landscape. These include, among others, the chestnut blight fungus that dramatically changed the composition of our forests; the grass carp that can disrupt native aquatic life; and a long list of plants that out-compete native species. Non-native plants such as Japanese honeysuckle, tree-of-heaven, Oriental bittersweet, and garlic mustard have become commonplace in disturbed woodlands, often to the point of excluding some of the native plants. In wetlands and along streams, purple loosestrife, Japanese knotweed, and mile-a-minute weed are aggressive, weedy species that follow in the wake of disturbance and crowd out native species.

Control of these problematic, non-native species is necessary for the long-term maintenance of high quality natural systems. Discouraging the use of these and other potentially weedy exotics in and around natural areas can help to prevent further encroachment. Some nurseries now carry a selection of tree, shrub and herbaceous species that are native to Pennsylvania, and these are recommended where plantings are necessary in, or adjacent to, natural areas. *The Vascular Flora of Pennsylvania* (1993) is a helpful reference for determining whether a plant species is native to the State or not.

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Chapter III
Pennsylvania Natural Diversity Inventory Data System

In order to conduct an inventory of significant flora, fauna, and natural communities in York County, scientists from The Nature Conservancy PA Science Office (PSO) first consulted the Pennsylvania Natural Diversity Inventory (PNDI) database. PNDI was established in 1982 as a joint venture of the PSO and the Western Pennsylvania Conservancy (WPC). In its 20 years of operation, the PNDI database has become Pennsylvania's chief storehouse of information on outstanding natural habitat types (natural communities), sensitive plants and animals (species of special concern). Several other noteworthy natural features are also mapped including the Pennsylvania Department of Environmental Protection (PA DEP) designated Exceptional Value Streams (Shertzer 1992) and outstanding geologic features (based on recommendations from Geyer and Bolles (1979 and 1987).

PNDI has collected existing data on occurrences of species and communities (elements) of special concern, drawing from publications, herbarium and museum specimens, and the knowledge of expert botanists, zoologists, ecologists, and naturalists. From this foundation, PNDI has focused its efforts on, and conducts systematic inventories for, the best occurrences of the priority species and natural communities.

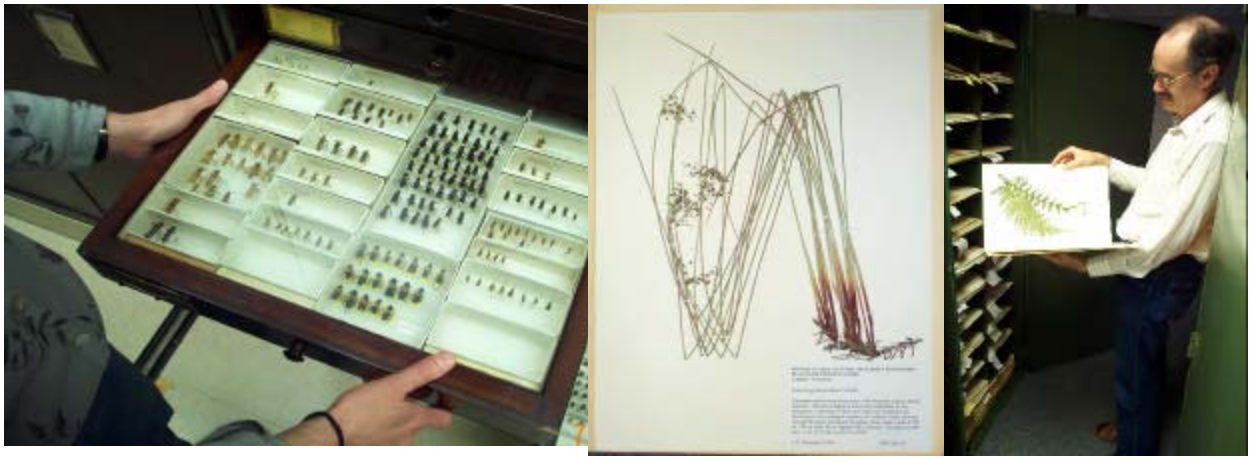


Photo by the PA Science Office of the Nature Conservancy.

PNDI has recorded over 15,000 detailed occurrences of species and communities of special concern, largely the result of field surveys. These are stored in computer and manual files and denoted on topographic maps. Additional data are stored in extensive manual and digital files set up for over 200 natural community types, 1,400 animals, and 3,500 plants. These files are organized by each of Pennsylvania's 881 7½' USGS topographic quadrangle maps using a geographic information system (GIS).

The PSO has used this systematic inventory approach to identify the areas of highest natural integrity in York County. The natural community and sensitive species data are the basis for judging the biological values of sites within the County. Protecting the sites with the best occurrences of the County's natural

communities and populations of sensitive plant and animal species can help to insure that a full range of biological diversity in York County is conserved for the future.

Natural Areas Inventory Methods

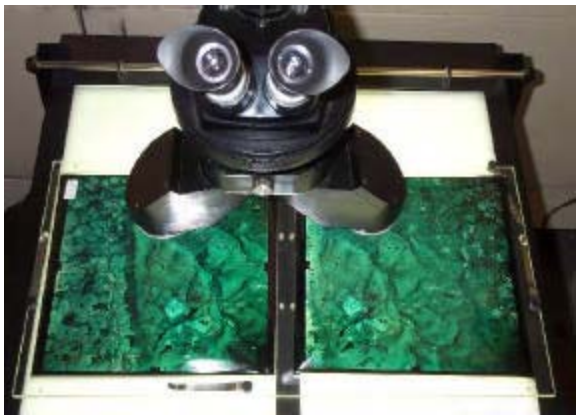
Methods used in the York County Natural Areas Inventory followed PNDI procedures, and those developed in Illinois (White 1978) and Indiana (Anonymous 1985). The inventory proceeds in three (3) stages: 1) information is gathered from the PNDI data-base files, local experts, and map and air photo interpretation; 2) ground survey and reconnaissance by aircraft is conducted; and 3) data are analyzed and mapped.

Information Gathering

A list of natural features found in York County was prepared from the PNDI data base and supplemented with information volunteered by local individuals and organizations familiar with the County. In the Spring of 1996 a public meeting was held in the County and recommended Natural Area Survey Forms (Appendix I) were distributed to facilitate public input. TNC staff solicited information about potential natural communities, plant species of special concern and important wildlife breeding areas from knowledgeable individuals and local conservation groups. A number of potential natural areas were identified.

Map and Air Photo Interpretation

PSO ecologists familiarized themselves with the air photo characteristics of high quality natural communities already documented (Appendix II). Additional data from vegetation maps, soil survey maps, field survey records and other sources were consulted to gain familiarity with York County's natural systems. This



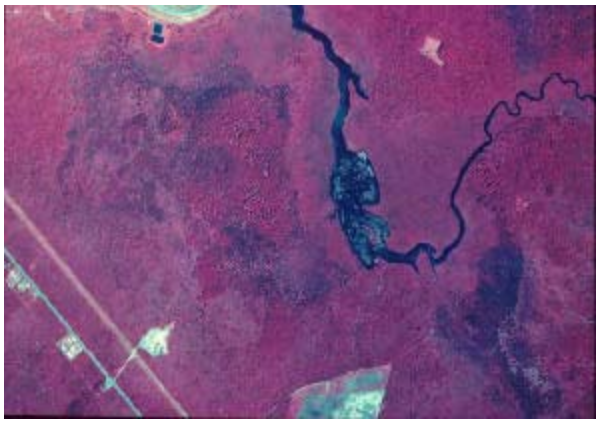


Photo by the PA Science Office of the Nature Conservancy.

information, along with references on physiography, geology, and soils, was used to interpret photos and designate probable vegetation types and potential locations for exemplary communities and rare species. In many instances, vegetation was classified at an ecosystem level, where an ecologist, or person with similar training, interpreted the maps and aerial photos.

Work progressed systematically within the area encompassed by each USGS topographic map. The natural area potential of all parcels of land was assessed using aerial photographs. Areas continuing into adjacent counties were examined in their entirety. Topographic maps used during field surveys were marked to indicate locations and types of potential natural areas based on characteristics observed on the photos. For example, an uneven canopy with tall canopy trees could indicate an older forest. A forest opening, combined with information from geology and soils maps, could indicate a seepage swamp community with potential for several rare plant species. Baseline information on sites appearing to have good quality communities or potential for rare species was compiled to help prioritize field work.

After an initial round of photo interpretation, field surveys were conducted to determine what was actually on the ground. Locations with minimally disturbed natural communities or with species of special concern were outlined on topographic quadrangle maps. The photo signatures (characteristic patterns, texture, tone of vegetation, and other features on the photos) of these sites were then used as a guide for continued photo interpretation and future field surveys. Photo signatures which led to poor quality sites enabled the elimination of further field work on other
sites with similar signatures.

Field Work

Experienced PSO biologists and contractors conducted numerous field surveys throughout the County from May to November, 1995, with some follow-up work from February to September, 1996. On May 13, 1996, a reconnaissance flight was taken over the County to provide a more accurate overview of the current condition and extent of known natural areas and to assess the potential of any additional areas. Additional fieldwork was conducted after completion of the original 1996 report. This resulted in the identification of new sites, as well as changes in the rankings of some of the original sites. The additional research resulted in the 2002 updated York County Natural Areas Inventory, which includes Appendix IV, containing species which have been delisted since the 1996 report and are no longer tracked as species of special concern.

Biologists evaluated the degree of naturalness of habitats (including assessment of percent of native vs. non-native plant species, degree of human disturbance, age of trees, etc.) and searched for plant and animal species of special concern. Workers categorized the vegetation of each potential natural area visited. An evaluation of quality was made for each potential natural community element, care being taken to give reasons for the quality rank. Boundaries of the community types were redrawn, if needed, based on new field information. Community information recorded included the dominant, common, and other species, as

well as disturbances to the community. Field forms were completed for all occurrences of sensitive plant and animal species, and natural communities. See Field Survey Form, Appendix III. The quality of each population or community was assessed, and locations were marked on USGS topographic quadrangle maps.

Data Analysis

To organize the natural features data and set conservation priorities, each natural community or species (element) is ranked using factors of rarity and threat on a State-wide (State element ranking) and range-wide (global element ranking) basis. See Appendix V. Each location of a species (an element occurrence) is ranked according to naturalness, its potential for future survival or recovery, its extent or population size, and any threats to it. An explanation of the five (5) element occurrence quality ranks is given in Appendix VI. The element-ranking and element occurrence-ranking systems help PSO personnel to simultaneously gauge the singular importance of each occurrence of, for example, a Pitch pine- Scrub oak barren community, rough- leaved aster, or giant swallowtail in York County, as well as the state-wide or world-wide importance of these natural features. Obviously, sites with a greater number of highly-ranked elements merit more immediate attention than sites with a smaller number of lower ranked elements (1 = highest, 5 = lowest).

Field data for natural communities of C-rank or better, and for all plant and animal species of concern found were combined with existing data and summarized on PNDI Element Occurrence Records for mapping and computerization. Mapped locations of natural features, including approximate watershed or subwatershed boundaries, were then created and added electronically to PNDI's Geographical Information System (GIS) layer.

Information on the needs of the rare species in this report has come from a variety of sources, including field guides and research publications. For reptiles and amphibians, the major source is DeGraaf and Rudis (1981); for birds, Brauning (1992); for moths, Covell (1984); for butterflies, Opler and Krizek (1984) and Opler and Malikul (1992); Schweitzer (1981) provided much of the information on moth and butterfly species rarity in Pennsylvania. A list of species of special concern currently known in York County is provided in Appendix VII.

Priorities for Protection

Table 1 presented in the Summary and Recommendations section prioritizes sites with natural communities and rare species in York County. This table ranks sites from the most important (rank = 1) and threatened to the least (rank = 5). Ranks are based on rarity, quality, and threats or management needs of the elements at the site. Table 1 lists the site name, municipality, and pertinent information about the site. A more detailed description for each of the sites is included in the text of the report.

"Locally Significant" sites are also indicated on the maps, and are briefly discussed in the text accompanying each map. These are sites in which no recent species of special concern, or high quality natural communities have been found, but may be important at the County level. Examples would include relatively intact forested areas, large wetlands, and other areas significant for maintaining local biodiversity. Future surveyors of these areas may discover species of concern unobserved by past inventory biologists. These secondary sites are arranged in Table 2 in the Summary and Recommendations. They have been given qualitative ranks (high, medium, or low) according to size, level of disturbance, proximity to other open-space lands, and potential for sustaining a diversity of plant and animal life. These secondary-site ranks must be viewed as very approximate.

Waterfalls on a tributary feeding the Susquehanna River, which is the Exceptional Natural Feature in York County. Photo by the PA Science Office of the Nature Conservancy.

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Chapter IV
Results

The natural areas for York County were evaluated by PA Science Office staff (e.g., botanists, wildlife biologists, and ecologists) and ranked in order of importance for conservation of biodiversity at the statewide level. The size and quality, condition, landscape context, and rarity of the species or natural community were factors used to assign ranks for each site.

The County Natural Areas Inventory recognizes sites at two (2) primary levels of significance for the protection of biological diversity: 1) sites of Statewide importance and 2) sites of local significance. Sites of Statewide importance presented in Table 1 support species of special concern or exemplary natural communities. Sites in this category that are ranked "1" or "2" contain some of the best natural areas in the State. Locally significant sites are presented in Table 2. These areas provide locally significant habitat and may be suitable for environmental education, parks or preserves; no species of special concern or exemplary communities have been identified at the sites listed in Table 2.

Seventy-five sites that have species of special concern, exemplary natural communities, or important geologic features were identified in York County (Table 1). A total of 22 animal species of concern, 33 plant species of concern, two (2) exemplary natural community types, and four (4) geologic features occur in the County (Appendix VII). Ten (10) sites with local significance were mapped during field surveys (Table 2).

Maps showing the natural areas are included for each municipality. In order to protect the resource, the exact locations for species of special concern are not provided. Instead, a buffer for the site has been drawn; usually at the subwatershed level. It is not the intention of this report to exclude all proposed development from within the site buffers. Rather, any proposed development within these buffers should be carefully considered and the PNDI environmental review process should be followed.

Exceptional Natural Feature

Susquehanna River

In considering the value of specific sites for the preservation of biological diversity, it is important to note that these sites are dependent on the integrity of larger scale systems such as the Susquehanna River and its tributary watersheds. The Susquehanna River and its adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania. This includes the habitat for resident species, habitat required for migrating birds on a biannual basis, habitat for resident and migratory aquatic animals, habitat needed for the long term survival of plant species, and more. Conserving the best sites as highlighted in this report must be considered as part of the effort to conserve the greater natural functional value of the river corridor. In reviewing the report, it is evident that many of the best natural sites within the County are along the river and its major tributaries. Along with these sites are many areas that were beyond the scope of this project to fully investigate. The development of a comprehensive conservation plan for the

portion of the County adjacent to the river and its major tributaries, conducted in conjunction with other counties in the lower Susquehanna River Basin, may be the best tool for conserving this important natural resource.

The Susquehanna River.

Top Priority Natural Areas in York County

All of the natural areas in the County are important to maintaining biodiversity in the region and the State. However, the following eight (8) sites from Table 1 are the most critical at present for maintaining York County's biological diversity into the future. See Map 2 for approximate locations of these sites. Detailed descriptions of all sites are included in the General Summary and Recommendations section which follows.

NEILL RUN SITE (Fawn & Peach Bottom Townships) - This site is a wetland floodplain system of Neill Run, a tributary to Muddy Creek. The site includes pasture area and creek banks. A **G3, S2 PA-Endangered animal species** was found at this site in 2000. Overgrazing and draining of the wetland are potential disturbances to this species. Additional surveys for this species and its habitat are recommended.

WEST BRANCH TOM'S RUN (Chanceford & Lower Chanceford Townships) - This site mainly consists of open grassy uplands with a large man-made pond, and some emergent/scrubby wet areas along the west branch of Tom's Run. One (1) specimen of a **G3, S2 PA-Endangered animal species** was found at this site. Most of the property is mowed or cultivated for hay. Modification of

the seepage areas and associated wetlands would be the greatest threat. Additional surveys for this species and its habitat are recommended.

BEECHER HILL (Manheim Township) - An undetermined quality population of a **G3, S2 PA-Endangered animal species** was reported from this site in 1997. Modification of the seepage areas and associated wetlands would be the greatest threat to this species. A more thorough survey for this species and its habitat is recommended.

ACCOMAC RIVERBANK (Hellam Township) - This site is a riverside meadow occurring on alluvial sand and gravel and is located at the point of confluence of a small unnamed stream and the Susquehanna River. It supports six (6) species of special concern. Rare species as well as common species, found here are dependent on seasonal water-level fluctuations for survival. The broad low flat topography of this site, along with the free flowing water of the adjacent river makes it ideal habitat for these species. In this meadow, plant species distribution occurs in zones which reflect the duration of inundation. Areas with slightly higher elevation are exposed earlier in the season than adjacent lower areas. At this site halberd-leaved rose-mallow (Hibiscus laevis), which is very tolerant of lengthy inundation, occurs with greatest frequency nearest to the river. Four (4) rare species, **carolina leaf-flower**, **tooth-cup**, **river bullrush**, and **scarlet ammannia**, and one (1) recently delisted species - fog-fruit, along with other common species such as boneset, lovegrass, and umbrella sedge occur with greatest frequency behind the halberd-leaved rose-mallow. Along with periodic inundation, the rare species at this site require full light. Habitat for these species has been much reduced along the lower Susquehanna due to the damming of the river. These species require habitat that is created by the scouring action of free flowing water. Threats to the site include further encroachment by the existing exotic species, purple loosestrife, or by the aggressive colonizer, reed-canary grass. An additional threat would be changes in the current seasonal water fluctuation regime. **Sida**, a G2, S1 species, is a robust herbaceous perennial which requires moist alluvial soil, and also occurs along the rivershore in the Accomac area. This species is unlike the other rare species found here because it is capable of surviving along sections of the rivershore thicket of shrubs, stunted trees, and robust floodplain herbs. This species is vulnerable to thicket clearing which is sometimes performed by homeowners to improve access to the river.

CONOWINGO ISLANDS MACROSITE (Lower Chanceford Township) - This site is a series of erosion resistant schist outcrops with tortuous topography which includes massive rock exposures. This natural community falls on the County line and the York County portion includes Peavine Island as well as several miles of rock-outcrop river shoreline. The description given here reflects that part of the community occurring within York County. Peavine Island is unique because the plant communities occurring there blend into one another forming a relatively small scale mosaic of habitat types with some unusual juxtapositions. Habitat types include floodplain thicket, floodplain forest, riverside outcrop cliff, vernal ponds, mesophytic and dry rocky forest, dry shrub heath, and littoral zone. The rocky shoreline which runs from just below the Holtwood Dam to below Peavine Island may be scoured by ice flows in late winter and/or flood waters in early spring, but by late summer the plants growing there may be subjected to extreme drought. Plants on the rocks are usually found growing in protected crevices and

hollows were soil accumulates, and may have adaptations that allow them to survive the extremely harsh conditions. Peavine Island and the rocky rivershore support 12 occurrences of species of special concern along with a host of other species which are relatively uncommon in this part of the State. The site, particularly Peavine Island receives disturbance from overly zealous recreators who most recently were the likely cause of a substantial fire on the south end of the island. Future vandalism on that scale could lead to the loss of some of the rare species at the site. Otherwise the site should be maintained in its current condition.

STRAIGHT HILL SITE (Warrington Township) - This site consists of a mosaic of plant cover types including bottomland and upland forests, early successional forests, and old fields. It supports populations of eight (8) species of special concern including five (5) plants and three (3) animals. Element occurrences at this site occur in various locations and although the site is primarily in **Gifford Pinchot State Park**, element occurrences and the habitat that sustains them may extend beyond park boundaries. The unique diabase geological formation that underlies this area helps create conditions favorable for the occurrence of some of these species. There is a limited amount of disturbance at this site from recreational uses. This site will be best protected by leaving it in its current condition.

KYLEVILLE PEAK (Lower Chanceford Township) - This area hosts a breeding pair of a **PA-Endangered animal species** observed at a site along the Susquehanna River in 2000. The species requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer and large trees along the river will encourage the long-term success of this species.

CAMP MINQUA SITE (Lower Chanceford Township) - A new occurrence of a breeding population of a **G4, S1, S2B PA-Endangered animal species** was observed from the banks of the Susquehanna River in 2000. This species requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer and large trees along the river will encourage the long-term success of this species.

Since there is only limited money and personnel time that can be devoted to the pursuit of land conservation, two (2) tables are presented to direct protection efforts towards the sites of greatest biological significance. Table 1 lists all the known sites where exemplary natural communities and species of special concern are located in approximate order of importance for the protection of biological diversity. The table also summarizes their significance, any potential threats, and some recommendations for protection of the elements listed. Table 2 is a list of secondary (Locally Significant) sites that are significant on a County-wide level but do not contain known rare species and do not have exemplary natural communities. These may be important as sites for local parks or for natural areas and passive recreation. Ideally, the sites in Table 1 that are not already protected should, in most cases, be given higher priority for protection than the sites in Table 2.

Natural Areas - Priority Preservation Sites

York County, Pennsylvania

Map 2

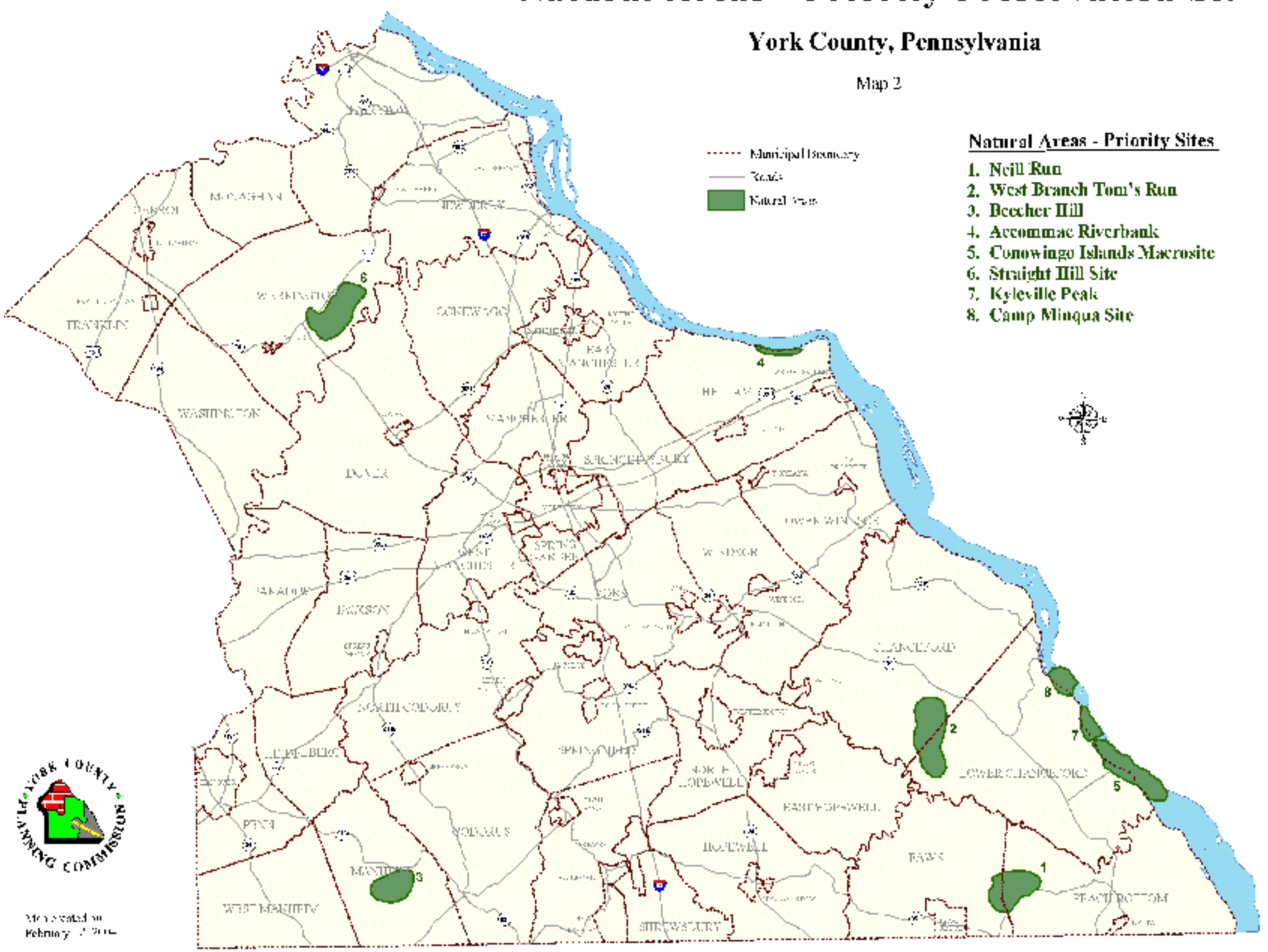

Figure 1. Location of the four priority sites for preservation of biological diversity in York County.

The Yellow lampmussel is a PA freshwater mussel species of concern found in York County. (See Appendix VII for more information.) Photo by the PA Science Office of the Nature Conservancy.

Chapter V
General Summary and Recommendations

York County has a number of groups pursuing protection of natural areas within the County. The following are general recommendations for the pursuit of protecting biological diversity within the County.

1. **All sites that are ranked 1 or 2 (Table 1) should be targeted immediately for protection and/or management of the site and the surrounding lands.** Privately-owned lands at these sites may be protected through a combination of conservation easements and acquisition to encourage current land use or make improvements in land use where needed.

2. **Management plans on public and private lands should address species of special concern and natural communities and assess the need for additional acres to complete protection.** Each element located within a given site will need to be addressed in new management plans for that area. Many of the already-protected sites are in need of additional land to complete protection and/or are in need of management to ensure the continued existence of the associated natural elements. Efforts are already underway to refine management plans for some of the high quality natural areas on public lands in the County.

3. **Conservation easements or other low cost protection can be pursued on lower ranked sites.** All sites of lower rank, but with good to excellent populations of species of special concern or good natural communities on private land (Table 1), should receive protection too; but a conservation easement or some type of tax incentive may be more appropriate. Conservation easements are designed to allow landowners the current use of their land while protecting the owner and the resource from outside development pressure. Management plans will be needed to ensure that these sites remain high quality natural areas. Where easements are not possible, any proposals for significant land use changes should be scrutinized carefully by County and municipal planners.

4. **Low quality sites (e.g., with marginal or poor populations of listed species in marginal areas) should be carefully assessed before pursuing protection or management efforts.** The rare elements may be important for the maintenance of biological diversity at the local level, but costs and efforts for protecting these sites need to weighed against other sites that will be left unprotected which truly have the potential for long-term viability of elements. (Note: these sites may have other qualities such as scenic or recreation value that make them worth protecting.)

5. **Locally Significant sites (Table 2) may be protected as Table 1 sites are completed or as new information emerges.** These are sites in the County that do not have exemplary natural communities or known occurrences of rare species, but that could be excellent sites for County or township parks or as natural areas within existing parks (sites within existing managed areas will need to be included in management plans). Those that can serve more than one (1) purpose - recreation, environmental education, wildlife habitat, flood and sediment control, water supply, etc. - are ideal. Species of special concern which may be found in some of these areas in future surveys can fit into County park or preserve plans.

6. **Protection of the reservoirs, wetlands, rivers, and creeks of York County is vital, especially those that protect biodiversity, supply drinking water, and are attractive recreational resources.** Many of the sites containing rare species, natural communities or locally significant habitats in York County are associated with water. Protection of these watersheds is the only way to ensure the viability of natural habitats and water quality. Cooperative efforts on land use among municipal, County, State, and Federal agencies, developers, and residents can lessen the impact of development on the watersheds and plant communities of the County. Protecting natural areas around municipal water supply watersheds provides an additional protective buffer around the water supply, habitat for wildlife, and may also provide low-impact recreation opportunities.

7. **Minimize encroachment on the parks and conservation lands throughout York County.** Existing parks and conservation lands provide habitat for a number of plant and animal species and may be important not only on a Countywide level, but also on a regional scale. For example, they may serve as nesting or wintering areas for birds or as stop-over areas during migration. Where appropriate, more land should be added or agreements worked out with abutting landowners to minimize encroachments that may threaten native flora and fauna.

8. **County and township officials can encourage landowners whose land includes waterways to maintain vegetated buffer zones along shorelines.** Vegetated buffers (preferably of PA- native plant species) help reduce erosion and sedimentation and help to shade and cool the water. This in turn benefits aquatic animal life, including the fisheries. These buffers also provide habitat for other wildlife species and help to create a diversity of habitats along the creek or stream.

9. **Scrutinize development proposals for their impact on entire watersheds not just the immediate impact area.** Certainly, new housing and commercial development can be given close scrutiny before it is allowed in the areas outlined in this report and careful review can be required within any watershed in the County. Townships can also require minimum setbacks from all water bodies to help protect water quality. Landowners within any particular watershed can act on their own to protect water by forming watershed associations to voluntarily monitor and screen proposals in their localities.

10. **Development plans should provide for creating natural buffers between the development and the core preserve area, be it a barrens community, wetland or water body.** Care should be taken to ensure that protected natural areas do not become "islands" surrounded by development. When a wetland or woodland is completely surrounded by development, even though there are no direct impacts, the site is effectively isolated and its value for wildlife is reduced. Cluster development could be used to allow the same amount of development on much less land in such areas; but most importantly, leave much of the land intact as corridors for wildlife and native plants.

11. **Grassroots organizations are needed.** These groups can assist with the identification of landowners who wish to protect their land, provide information about easements to landowners, perhaps acquire land, and provide management and stewardship once the land is protected. Much of the work that needs to be done to protect and manage natural areas in York County can be done by County and municipal governments, park managers, and groups like the Audubon Society. However, these organizations will need the assistance of grassroots organizations and volunteers.

12. **Encourage development in sites that have already seen past disturbances.** Careful planning can maintain open space, including natural environments and the plants and animals associated with them. A balance between growth and the conservation of scenic and natural resources can be achieved by guiding development away from the most environmentally sensitive areas. The reclamation of previously disturbed areas, or brownfields development, for commercial and industrial projects presents one (1) potential way to encourage economic growth while allowing ecologically sensitive areas to remain undisturbed.

    On the township maps in this report, the watersheds or subwatersheds where the natural communities and species of special concern occur have been outlined. This area should be viewed as the ideal buffer zone for the communities and species (smaller buffer areas have been designated for locally significant sites). The core areas where the communities and species occur need to be given the most attention and fee title acquisition may be appropriate. Ideally, all of the land within the areas outlined in this report should receive some form of protection. Land uses that do not impact these important sites should be encouraged for the buffer zones.

    It is emphasized that this Natural Areas Inventory is only a beginning, new sites with good natural communities and species of special concern wait to be discovered. Plant communities and plant and animal populations are dynamic, constantly changing with time and conditions. As this information is received and updated in the PNDI data base, so too will the York County Natural Areas Inventory. If there are any questions about the impact of the proposed development or other activity, it is suggested that the Pennsylvania Science Office of The Nature Conservancy be consulted. Questions regarding protection methods and tools for planning should be directed to the York County Planning Commission.

Forested buffers along waterways serve many purposes. They provide ground and surface water purification, provide shade for trout and other cold-water species, and help to control erosion. They are reservoirs of biological diversity and sanctuaries for common, sensitive and declining species. Enrollment in the Conservation Reserve Enhancement Program (CREP) can provide financial incentive to repair and protect streamside buffers. Photo by PA Science Office of the Nature Conservancy.

Table 1. The sites of Statewide significance for the protection of biological diversity in York County. Sites are listed in approximate order of priority from the most important (rank=1) to the least (rank=5). The revised table includes sites from the original NAI; sites updated since the NAI; and newly identified sites.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
1	**Neill Run**	Fawn & Peach Bottom Twps.	2000 - This site is a wetland floodplain system of Neill Run, a tributary to Muddy Creek. The site includes pasture area and creek banks. A **G3, S2 PA-Endangered animal species** was found at this site in 2000. Over grazing and draining of the wetland are potential disturbances to this species. Additional surveys for this species and its habitat are recommended.
1	**West Branch Toms Run**	Lower Chanceford & Chanceford Twps.	1996 - The site mostly consists of open grassy uplands with a large man-made pond, and some emergent/scrubby wet areas along the west branch of Tom's Run. One (1) specimen of a **G3, S2 PA-Endangered animal species** was found at this site. Most of the property is mowed or cultivated for hay. Modification of the seepage areas and associated wetlands would be the greatest threat. Additional surveys for this species and its habitat are recommended.
1	**Beecher Hill**	Manheim Twp.	1997 - An undetermined quality population of a **G3, S2 PA-Endangered animal species** was reported from this site in 1997. Modification of the seepage areas and associated wetlands would be the greatest threat to this species. A more thorough survey for this species and its habitat is recommended.
1	**Accomac Riverbank**	Hellam Twp.	1991, 1995 - This site consists of an exposed rivershore meadow, which is subject to the scouring influences of ice and high water. Six (6) plant species of special concern, **lance fog-fruit, carolina leaf-flower, tooth-cup, river bullrush, & scarlet ammannia**, including the G2, S2 PA-Endangered plant species **sida** , grow here and in several smaller exposed areas of rivershore nearby.1999 - A fair to poor quality population of the G2, S2 PA-Endangered plant species **sida** identified in the original NAI was again observed during a visit to this site in 1999. No change in the vigor of the population was noted. Habitat for these species has been much reduced along the lower Susquehanna due to the damming of the river. Observed disturbances to this site include invasive exotic plant species, the deposition of fill material, (junk piles, yard waste), and excessive mowing. Nearby residents should be discouraged from impacting this site with these activities. The other plant species

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
			of concern; **lance fog-fruit, carolina leaf-flower, tooth-cup, river bullrush , & scarlet**
			ammannia identified from this site on the original NAI were not monitored during the recent site survey. 2004 - **Lance fog-fruit** has been delisted and is no longer tracked by the PNDI data base as a plant of special concern.
1	**Conowingo Islands Macrosite**	Lower Chanceford Twp.& Lancaster Co.	1993, 1995, 1996 - This site is a high quality example of a **riverside outcrop community**. It supports 12 plant species of special concern including 3 S1 species, 3 S2 species, and 5 S3 species (**aster-like boltonia, slender golden-rod, sticky golden-rod, American holly, common hemicarpa, three-flowered melic-grass, common hemicarpa, lance fog-fruit, tooth-cup, sweet-scented Indian plantain, lance fog-fruit and riverweed**). It occurs along a 3 mile stretch of the Susquehanna River south of Holtwood Dam. 2000 – Two (2) new occurrences of breeding populations of animals of special concern were observed on the banks of the Susquehanna River in 2000. The **osprey** is a G5 PA-Threatened animal species, while a **G4 PA Endangered animal species** was also observed. Both of these species require habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer along the river will encourage the long-term success of this species. The other species of special concern **aster-like boltonia, slender golden-rod, sticky golden-rod , American holly, common hemicarpa, three-flowered melic-grass , common hemicarpa, lance fog-fruit, tooth-cup,** & **riverweed**, as well as the natural community (**riverside outcrop community**) were not surveyed during this site visit. 2004 - **Lance fog-fruit, sweet-scented Indian plantain** and **riverweed** have been delisted and are no longer tracked by the PNDI data base as plants of special concern.
1	**Straight Hill Site (Gifford Pinchot State Park)**	Warrington Twp.	1988, 1993, 1995, 1996 - This large site is a mosaic of forests and successional old fields, which occur on diabase derived soils. It supports eight (8) species of special concern including five (5) plant species and three (3) animal species (**cranefly orchid, hard-leaved goldenrod, horse-gentian, tooth-cup, showy skullcap, giant swallowtail, henry's elfin,**

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
			& a PA-Endangered animal species). Management of the individual rare species depends on the habitat type in which the individual rare species occurs. 1996, 1999, 2000, 2001 – On return visits to the site, five (5) new species of concern were observed, one (1) animal, and four (4) plants (**olive hairstreak, shumard's oak, cranefly orchid, horse-gentian, and eastern coneflower**). In 1996, a good quality population of a G5, S1 PA-Endangered plant species, the **shumard's oak**, was identified as growing throughout the park. **The olive hairstreak** is a G5, S3 animal species found at this site in 1999. A single specimen of a G5, G4, S3 PA-Rare plant species the **cranefly orchid** was seen during a visit in 2000. A good to marginal population of a G5, S1 ranked plant species **the horse-gentian**, and a very good quality population of a G5, S3 plant species of special concern **the eastern coneflower** were also found during a survey of the site in 2000. two (2) G5, S1 plant species of special concern reported from the original NAI, **hard-leaved goldenrod and horse-gentian,** were again located during surveys in 2000 & 2001. During successive visits to this site since the initial NAI report, the G5, S2 animal species of special concern the **giant swallowtail** was again observed in limited numbers. The other species of concern reported for this site in the original NAI (**cranefly orchid, tooth-cup, showy skullcap, henry's elfin and a PA-Endangered animal species**) were not observed during these return visits.
2	**Kyleville Peak**	Lower Chanceford Twp.	2000 - This area hosts a breeding pair of a G4, S1, S2B **PA-Endangered animal** species observed at a site along the Susquehanna River in 2000. The species requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer along the river will encourage the long-term success of this species.
2	**Camp Minqua Site**	Lower Chanceford Twp.	2000 – A new occurrence of a breeding population of a G4 S1, S2B **PA-Endangered animal species** was observed from the banks of the Susquehanna River in 2000. This species requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer along the river will encourage the long-term success of this species.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
2	**Bryansville Station Seep**	Peach Bottom & Lower Chanceford Twps.	1995,1996 - This site is comprised of several habitat types including upland forest, riparian areas, and seepage swamp. It supports three (3) species of special concern including a G3, S1 PA-Endangered plant species (**glade spurge, sweet-scented Indian plantain, lobed spleenwort**). 2001 - **Sweet-scented Indian plantain** is no longer tracked as a species of special concern. The other species from this site (**glade spurge & lobed spleenwort**) have not been revisited since the initial report.
2	**Indian Steps Woods**	Lower Chanceford Twp.	1995 - This site is a fair to good quality example of a **Mesic Central Forest natural community** and it supports two (2) species of special concern. It includes portions of **Ulmer-Root-Haines Memorial Park.**
2	**Otter Creek Woods**	Lower Chanceford & Chanceford Twps.	1992, 1993, 1995 - This site is a large fair quality example of a **Mesic Central Forest natural community** which supports two (2) plant species of special concern, **umbrella magnolia and cranefly orchid**. For conservation purposes, this site should be considered in conjunction with Sawmill Run Woods Mesic Central Forest natural community.
2	**Sawmill Run Woods**	Lower Chanceford Twp.	1995, 1996 - This site is a steeply sloped stream ravine and it supports a fair quality example of a **mesic central forest community**. The community includes a good quality population of the S3 PA-Threatened plant species **lobed spleenwort** and a fair to poor quality population of the G5, S2 plant species **umbrella magnolia**. This community has potential for additional species of special concern. For conservation purposes, this site should be considered in conjunction with Sawmill Run Woods Mesic Central Forest natural community.
2	**Chanceford Tabernacle Overlook**	Chanceford Twp.	1989, 1990, 1992, 1994, 1995 - A G3, S2 **PA-Endangered animal species** was last observed using this site in 1995. Formerly on the decline, this species' dwindling population is on the increase in PA, and the forested slope above the Susquehanna River where it occurs, provides the large forested buffer that it requires to avoid human disturbances. Further surveys are encouraged to determine the continued success of the species at this site. 1997, 1998, 1999, 2000 - During the years since the original NAI report was produced, this good quality population of a **PA-Endangered animal species** has been observed nesting at this site along the Susquehanna River with varying degrees of breeding success. It

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
			requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer along the river will encourage the long-term success of this species.
2	**Laurel Marsh**	East Hopewell & Chanceford Twps.	1996 - This wetland site supports a good quality population of G3, S2 **PA-Endangered animal species**. Further surveys are encouraged to assess the population at this site. This species requires undisturbed wetlands for survival.
2	**Kiwanis Lake**	York City	2004 - Kiwanis Lake provides important nesting habitat for three (3) bird species of concern in the City of York. The **great egret** and the **yellow-crowned night heron**, are G5, S1B PA-Endangered species. The **black-crowned night heron** is a G5, S2, S3B, PA-Candidate species.
3	**Plainfield Rivershore**	Newberry Twp.	1995: This site is a rocky riverbank and thicket; it supports two (2) plant species of special concern (**flat-stemmed spike-rush, lance fog-fruit**). No threats were observed to the plants at this time. 1997 & 2001: In 1997, the good to marginal population of the G4, S1 PA-Endangered plant species **flat-stemmed spike-rush** was found to be more extensive than the previous survey indicated. In 2001, two (2) new plant species of concern were identified at this site. A good quality population of the G5, S3 plant species of special concern **white trout- lily** is spread throughout the woodlot. A small, but globally significant, population of the G2, S2 PA-Endangered plant species **sida** is also found at this site. The site would be best served to be left as it is, with its forest canopy intact. Exotic and native weedy species may impact the plants in the future. The condition of the other plant species of concern to occupy this site (**lance fog-fruit**) has not been updated since the original report. 2004 - **Lance fog-fruit** has been delisted and is no longer tracked by the PNDI data base as a plant of special concern.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
3	**Rambo Run Woods**	East Hopewell Twp.	1997 – This site is a wooded, high quality stream corridor, with dry rock outcrops, which supports a very good quality population of the G5, S2 PA-Threatened plant species **umbrella magnolia**, and a marginal to poor quality occurrence of the G4, S3 plant species of special concern **lobed spleenwort**. There are no immediate threats to the site. A more thorough survey of this site for these and other species of concern is recommended. Rambo Run is designated as an Exceptional Value Stream by the PA Department of Environmental Protection.
3	**Nells Hill Swamp**	Warrington & Monaghan Twps.	1996 & 1997 – In the original NAI, this site was listed as Locally Significant. In 1996, an animal species of special concern, the **giant swallowtail**, and two (2) plant species of special concern, **shumard's oak** and **horse-gentian** were identified at this site. With these additions, the site is removed from Table 2, and added to Table 1. The **giant swallowtail** represents an unknown quality population of a G5, S2 animal species of concern that relies on prickly-ash as a food source during its development. In 1996, a marginal quality population of a G5, S1 PA-Endangered plant species (**shumard's oak**) was identified on this site. During a subsequent survey in 1997, a small population of a G5, S1 plant species of special concern (**horse-gentian**) was located. There are no obvious threats. Additional surveys are recommended to assess the extent and habitat of these species at this location. This site is partially within **State Game Lands #242.**
3	**High Rock Outcrops**	Chanceford & East Hopewell Twps	1995 - A small population of the plant species of special concern, **lobed spleenwort** occurs on a partially vegetated xeric rock outcrop at this site.
3	**Michael Run**	Peach Bottom Twp.	1993 - A rich forested slope at this site supports a fair to poor quality population of the PA-Rare plant species **cranefly orchid**.
3	**Spring Valley Woods**	North Hopewell & Springfield Twps.	1995 - This site includes a bottomland forest and adjacent slopes and supports a good quality population of the PA-Threatened plant species **umbrella magnolia**.
3	**Sunnyburn Run Woods**	Lower Chanceford Twp.	1995 – This site is a fair quality **Mesic Central Forest natural community** that occurs on the slopes along the lower reaches of a small tributary to the Susquehanna River.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
3	**Muddy Creek Gorge**	Lower Chanceford & Peach Bottom Twps.	1995 - This site is a deep forested gorge that winds its way sharply through the landscape. It supports the G4, S3 plant species of special concern **lobed spleenwort**.
3	**Peach Bottom Woods**	Peach Bottom Twp.	1993 – This site is a rich wooded slope that supports a good quality population of the G5, S2 PA-Threatened plant species **harbinger-of-spring**. 2000 - The G5, S2 PA-Threatened plant species of special concern **harbinger-of-spring** identified at this site on the original NAI report was again observed during a site visit. There has been no change in the population size, or in the immediate habitat of the species.
3	**Leibs Creek Hollow**	Hopewell Twp.	1993 – This site supports a good quality population of the G5, S2 PA-Threatened plant species **umbrella magnolia**. Maintenance of forest cover will help this population persist at this site.
3	**Ebaughs Creek**	Stewartstown Boro. & Hopewell Twp.	1995 - This good quality population of the G5, S2 PA-Threatened plant species **umbrella magnolia** occurs as several sub-populations along a mile plus stretch of Ebaughs Creek. Maintenance of a forested buffer along the creek will help this species persist at this site.
3	**York Furnace Woods**	Lower Chanceford Twp.	1991, 1993, 1995 - A good quality population of the G5, S2 PA-Threatened plant species **harbinger-of-spring** occurs on a rich forested slope adjacent to the Susquehanna River. 1999 – This good quality population of the G5, S2 PA-Threatened plant species **harbinger-of-spring** identified in the original NAI was observed again during a visit to the site in 1999, and reported to be in the same condition. There was little evidence of disturbance, though logging is a threat. Leaving the site in its current condition will best protect this occurrence.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
3	**Shenks Ferry York Woods**	Chanceford & Lower Chanceford Twps.	1995 – This site contains a good to fair quality population of the G5, S2 PA-Threatened plant species **umbrella magnolia** and a fair quality population of the G5, S3 plant species **lance fog-fruit**, which occur on a rich forested slope adjacent to the Susquehanna River. Part of this site includes the south end of **Shenks Ferry Natural Area**. 2004 - **Lance fog-fruit** has been delisted and is no longer tracked by the PNDI data base as a plant of special concern.
3	**Crystal Pit Cave**	Lower Windsor Twp.	1996 – This site is a limestone cave that supports a fair to poor quality population of the G3, G4, S2, S3 animal species **Price's cave isopod**.
3	**Mt. Olivet Marsh**	Fairview Twp.	1985 – This site is a mixed cattail-sedge marsh that has been modified by the roads that border it; it supports a population of the G5, S2, S3B animal species **marsh wren**. Further surveys are encouraged.
3	**Felton Outcrops**	North Hopewell, Chanceford Twps. & Felton Boro.	1995 – Dominating this site are schist outcrops with thicket-like vegetation that occur on very steep slopes. This site supports a good quality population of the G4, S3 species **lobed spleenwort**.
3	**Fenmore Outcrops**	East Hopewell & Chanceford Twps.	1995 - These schist outcrops support a community of stunted trees and sparsely distributed shrubs and herbs. This site supports a good quality population of the G4, S3 plant species **lobed spleenwort**.
3	**Taxville Quarry**	West Manchester Twp.	1993 – This site includes a limestone cave that supports a fair quality population of a G3, S2S3 **special animal species**.
3	**North York Cave**	Manchester Twp.	1993 - Two (2) invertebrate **species of special concern** have been found in this cave. These species have very specific habitat requirements, and ground water contamination is a threat.
3	**State Gamelands #243**	Franklin & Washington Twps.	1995 - Lower slopes of a successional forest at this site support a fair quality population of the G5, S3 plant species of concern **horse-gentian**. 2001 – Two (2) new plant species were found at this site during a field visit in 2001. A

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
			small population of **eastern coneflower** was found in a mowed field. Continuing the scheduled mowing in this area will help maintain this species. A small population of **shumard's oak**, a G5, S1 PA-Endangered tree species, was also found at this site. A more thorough survey for this species is encouraged. The plant species **horse-gentian** identified on the original NAI was not observed during the more recent survey. The site is mostly within **State Game Lands #243**.
4	**Bermudian Creek at T809**	Washington Twp.	1995: A small population of a G3, S2 **animal species of concern** and small population of a G3G4, S3S4 **animal species of concern** were found to inhabit the creek at this site in 1995. These species depend on clean, freely moving water for their continued existence. Threats include chemical and sediment runoff, and changes in the hydrology of the creek system. Maintaining a forested buffer along the creek banks will help these species persist at this site.
4	**Stone Head**	Franklin Twp.	1990's - A G4, S4S3 **PA-Candidate animal species** has been observed at this site on several occasions during the 1990's. Further surveys to determine the extent and viability of the population are recommended.
4	**Midnight Cave**	Jackson Twp.	1997 – This site was found to host an unknown quality population of a G4, S3 PA-Candidate-at-risk animal species **northern myotis** during a survey in 1997. The species could be impacted by disturbance from people entering the cave, or changes to the cave entrance. Additional surveys are encouraged to assess the population status and habitat of this species.
4	**Erney Cliff**	Conewago & Newberry Twps.	1991, 1995 – This site is a nearly vertical, dry, shale cliff rising approximately 100 feet above Conewago Creek. The highly exposed xeric plant community includes fair quality populations of the PA-Rare plant species **wild oat** and the plant species of special concern **small-flowered crowfoot.** 2001 – The plant species **small-flowered crowfoot** is no longer tracked as a species of special concern. The site has not been revisited to determine if there has been any change in the population of the G5, S2 plant species of concern **wild oat** reported on the original NAI. A major threat to this species is loss of habitat to the aggressive exotic species Japanese honeysuckle.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
4	**West Bridgeton Woods**	Lower Chanceford & Fawn Twps.	1995 - This site includes woods on dry rocky slopes and it supports the S1 animal species **hoary elfin**.
4	**Smiths Backacres Farms**	Fawn Twp.	1990 - This site supports a poor quality population of a **PA-Endangered animal**.
4	**Wildcat Run Cliffs**	Hellam Twp.	1996 - A forested stream ravine cuts into the steep slopes above the Susquehanna River and supports the G5, S3 plant species of concern **declined trillium**.
4	**Chimney Rock**	Hellam Twp.	1979 - This erosional rock outcrop of the Chickies formation, represents the oldest sedimentary rock in Pennsylvania. The weathered pinnacles stand 30 feet above the rest of the ridge.
4	**Wildcat Run Gorge**	Hellam Twp.	1979 - This site is an erosional landform that consists of a scenic gorge with waterfalls and rapids.
4	**Rock Ridge Woods**	Warrington Twp.	1993 - A small, fair to poor quality population of the PA-Rare plant **puttyroot** occurs on forested slopes at this site.
4	**Lake Redman**	Springfield & York Twps.	1986 - **Black-crowned night-heron**, an animal species of concern, is known to breed at this site. Further surveys will be needed to fully assess this occurrence for which there is limited field data.
4	**Rehmeyer Hollow**	North Hopewell Twp.	1996 – This streamside woods supports a fair quality occurrence of the PA-Threatened tree species **umbrella magnolia**.
4	**Codorus State Park**	West Manheim & Penn Twps.	1996 - The large reservoir at this State Park is providing habitat for a **PA-Threatened animal species.** Information on this population is scarce and further surveys are encouraged
4	**High Rock**	Paradise & Heidelberg Twps.	1979 - This geologic feature is an erosional remnant at the summit of Pigeon Hills. The outcrops at this site offer an extensive view of the countryside north of Pigeon Hills.
4	**Bandana Woods**	West Manheim Twp.	1995 - A fair to poor quality population of the G4, G5, S1 PA-Endangered plant species **dwarf azalea** was found in this mixed hardwood forest in 1995. The full extent of this population is unknown and further surveys are encouraged.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
4	**Yellow Breeches Creek**	Carroll Twp. & Cumberland Co.	1995 - A swift flowing portion of the Yellow Breeches Creek with G5, S2, S3 species **white-water crowfoot** and the G5, S3, S4 species **red-head pondweed**. These species require habitat with clean, swift flowing, relatively sediment free waters. 1997 – **Red-head pondweed** represents a fair to poor quality population of a G5, S3 PA-Threatened plant species. An additional sub-population of this plant species was located during a survey in 1997. The G5, S3, S4 plant species of special concern **white-water crowfoot** was not observed during the most recent site visit. Threats to these species include pollution, excessive sedimentation, and impoundment. These occurrences will be best protected by keeping the clean, clear water of the Yellow Breeches flowing through this area.
4	**Wilson Run**	Chanceford Twp.	1995 - This site includes the forested slopes and creek at the confluence of Wilson Run and the Susquehanna River. It supports a fair quality population of the G5, S2 PA-Rare plant species **river bullrush**. Erosion is a threat.
4	**Boyds Run Ravine**	Chanceford Twp.	1995 - A steep-sloped forest creek ravine adjacent to the Susquehanna River supports a good to fair quality population of the G5, S2 PA-Threatened plant species **umbrella magnolia**.
4	**Shenks Ferry Ravine**	Lower Chanceford & Chanceford Twps.	1995 - This is a mildly disturbed forested ravine that supports a fair quality population of the PA-Threatened tree species **umbrella magnolia**.
4	**Marsh Run**	Fairview Twp.	1991 - A fair quality population of the G5, S2 PA-Threatened species **ellisia** grows in a riverbank thicket on this site.
4	**Winterstown Station Woods**	North Hopewell Twp.	1995 - A good quality population of the G5, S2 PA-Threatened plant species **umbrella magnolia** occurs in a mixed hardwood forest at this site.
4	**Stewartstown Ravine**	Hopewell Twp.	1996 - The woods at this site support an unassessed population of the PA-Endangered plant species **dwarf azalea**. Additional surveys are encouraged to determine the extent of this population and its habitat.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
4	**Laurel Woods**	East Hopewell Twp.	1995 - A good quality population of the G5, S2 PA-Threatened plant species **umbrella magnolia** occurs in this successional forest. Maintenance of a forest buffer at this site should help this population persist.
4	**Indian Rock Floodplain**	North Codorus & West Manchester Twps.	1996 - This site includes a portion of the West Branch of Codorus Creek, a mature floodplain forest, a long floodplain slough, and a mature upland forest. It supports the G5, S3 plant species **puttyroot**.
4	**Brunners (Lows) Island**	East Manchester Twp.	1995 - This site includes rivershore along Brunners (Lows) Island as well as a strip of floodplain forest. It supports fair quality populations of the PA-Threatened species **tooth-cup** and the PA-Rare plant species **scarlet ammannia**. 1997 - The two (2) marginal quality populations of plant species **tooth-cup & scarlet ammannia** identified in the original NAI were again located during a subsequent survey of the site in 1997. The quality of the plant populations and their habitat were observed to be unchanged since the previous survey. Habitat for these species has been much reduced along the lower Susquehanna due to the damming of the river.
4	**Conewago Creek at York Haven**	East Manchester, Newberry Twps. York Haven Boro	1996 - The forested riparian area along the creek provides foraging and nesting habitat for two (2) bird species of special concern, the **yellow-crowned night-heron** and the **black-crowned night-heron**.
5	**Atom Road Woods**	Peach Bottom Twp.	1993 – The forested slopes along Atom Road near the Susquehanna river support a poor quality population of the PA-Threatened plant species **American holly**. Better populations of this species exist elsewhere in the County.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
			1999 – A new fair quality population of the G4, S3 plant species of concern **lobed spleenwort** was found growing among the rock outcrops. An additional population of the G5, S2 PA-Threatened plant species **American holly** identified in the original NAI report was also located. A more thorough survey of the site for these species and their habitat is recommended. Leaving the site in its current condition will best protect these occurrences.
5	**East Berlin Meadow**	Paradise Twp.	1993 - The PA-Endangered animal **least shrew** has been observed at this site. To determine the quality of this population, further surveys are encouraged.
5	**Muddy Creek at Woodbine**	Lower Chanceford & Peach Bottom Twps.	1995 - This site, which is partly associated with a powerline ROW, supports a poor quality population of the PA-Endangered plant species **downy lobelia**.
5	**Wrightsville North Rivershore**	Hellam Twp.	1995 - Several small patches of unmodified rivershore support populations of three (3) plant species of special concern **(lance fog-fruit, tooth-cup, scarlet ammannia)** at this site. A threat to these occurrences is modification of the rivershore by homeowners to improve river access. 2004 - **Lance fog-fruit** has been delisted and is no longer tracked by the PNDI data base as a plant of special concern.
5	**Camp Tuckahoe**	Franklin Twp. & Cumberland Co.	1995 - A small, poor quality population of the plant species of special concern **rough-leaved aster** occurs in a low wet area adjacent to a stream at the camp. Further fieldwork is necessary to fully assess this population. 1996, 1998 – Several additional patches and clumps of the G5, S2 plant species of special concern **rough-leaved aster** identified in the original NAI were located during visits to the site in 1996 and 1998. More searching of the upper reaches of Dogwood Run in both York and Cumberland Counties is recommended to establish the full extent of this occurrence.
5	**Beaver Creek East**	Warrington Twp.	1991, 1993 - A forested riparian corridor along Beaver Creek supports two (2) PA-Rare plant species, **tooth-cup and puttyroot**.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
5	**Beaver Creek ROW**	Warrington Twp.	1995 - A successional meadow-like site associated with the powerline ROW supports a fair population of the G5, S3 plant species of concern **hard-leaved goldenrod**. 1997 – The G5, S1 plant species **hard-leaved goldenrod** identified as occurring on this site in the original NAI report was again observed during a return visit to the site in 1997. Also during this visit, a previously unreported G5, S2 plant species of concern **grass-leaved rush** was seen. A more thorough search of the area is recommended. There were no apparent threats reported.
5	**Shady Lane Woods**	Newberry Twp.	1996 – This mixed forest and residential area supports an unassessed population of the G4, S2 animal species **a zale moth**. Additional surveys are recommended to evaluate the population and habitat of this species.
5	**Marburg Flats**	Manheim Twp.	1996 - This site supports an unassessed population of **red-banded hairstreak**, an animal species formerly listed only as an historical record for Pennsylvania. Additional surveys are recommended to evaluate the population and habitat of this species.
5	**Oakland Run**	Lower Chanceford Twp.	1993 - A non-reproducing population of the G5, S3 PA-Threatened species **American holly** occurs here. The site is a variously forested and disturbed area that includes part of **State Game Land #181**
5	**Yellow Breeches/ Rabold Site**	Fairview Twp. & Cumberland Co.	1995 - A poor quality population of the G5, S3 PR species **tooth-cup** occurs on the margin of an agricultural field on the floodplain of the Yellow Breeches Creek at this site.
5	**Deer Creek Woods**	Shrewsbury Twp.	1995 - A successional forest at this site supports a poor quality population of the G5, S2 PA-Threatened plant species, umbrella magnolia. Maintenance of the forest cover will help this population persist at this site.

County Rank [1]	Site Name	Municipality	TNC Global and State Ranks [2], Importance and Recommendations
5	**Strickhousers Iron Mines**	North Codorus Twp.	1994 - This site supports the animal species of special concern **northern myotis** and it includes part of an undeveloped York County park. 1996, 1997, 1999 – During the years since the initial NAI report, variously sized populations of **northern myotis**, a G4, S3B, S3N animal species of special concern have been observed at this location. This site includes part of **Raab County Park**. Monitoring of the site by park officials will likely diminish abuse of this habitat. Additional surveys are encouraged to assess the population status and habitat of this species.
5	**Alpine Road Site**	Warrington Twp.	1995 - A fair to poor quality population of the G5, S3 plant species of concern **hard-leaved goldenrod** occurs on the road shoulder and in the forest edge at this site.

Table 2. Areas of local significance in York County based on size, diversity of wildlife and plant life, water quality protection, and recreation potential. (These sites do not include high quality natural communities and no species of special concern have been documented at the sites although several of the areas have potential for rare species to occur).

County Rank [1]	Site Name	Municipality	Natural Feature and Importance
HIGH	**Susquehanna River**	Fairview, Newberry, East Manchester, Hellam, Lower Windsor, Chanceford, Lower Chanceford , and Peach Bottom Townships & Goldsboro, York Haven and Wrightsville Boroughs	The river is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river, Conowingo Dam and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.
HIGH	**Whittocks Woods**	Fairview Twp.	This site is a forested slope located above the Susquehanna River south of the PA Turnpike bridge. It supports a mature rich mesic woods which is dominated by sugar maple, ash, tulip poplar, hackberry, and beech. Pawpaw, spicebush, and bladdernut comprise the well developed shrub layer, and although there is a rich herbaceous flora, blue cohosh and large flowered trillium are the most common species. The site includes several seeps and a small creek. It is excellent habitat for both migrating and nesting bird species.
HIGH	**Southside Woods**	Lower Chanceford & Peach Bottom Twps.	This site encompasses an area on both sides of Muddy Creek including a ravine along a tributary of the creek. The forest is dominated by hemlock, tulip poplar, and yellow birch. Mixed ages of the trees, good regeneration, and the presence of substantial windfalls provide good structure for this locally significant community. Although portions of the site were logged in the past 60 years, it contains some outstanding hemlocks and tulip poplars. The largest hemlock at the site exceeds three (3) feet in diameter. This site has a good potential for rare species.

[1] Ranks are very approximate and are based primarily on the quality of the habitat. Sites with more intact natural communities (on a County-wide scale) are given highest priority. Other sites represent areas with locally significant woodlands or wetlands or sites that support a particularly rich or unusual flora or fauna. Areas that are already protected as park land or open space may be assigned lower rank to reflect lower urgency for protection action. Sites of similar rank are listed alphabetically by quadrangle.

County Rank [1]	Site Name	Municipality	Natural Feature and Importance
HIGH	**Seitzland Marsh**	Shrewsbury Twp.	This site is a graminoid marsh, which occurs on a gradually sloping seepy floodplain along Trout Run. It is dominated by tussock sedge and is good habitat for reptiles and amphibians. This site represents the largest sedge marsh in the County.
HIGH	**Beaver Creek**	Lower Windsor & Chanceford Twps.	This site is a rich mesic woods and is located along Beaver Creek south of Salem Church Road. The forest here supports a high diversity of trees, shrubs, wildflowers, and ferns. One (1) of the interesting features is the presence of striped maple, previously unreported in the County, but a common component of northern forests (e.g., from northern PA to New England). The site was evaluated from the roadside and further inventory would be desirable if possible.
MEDIUM	**Laurel Run**	Conewago Twp.	This site is a forested stream ravine and seepy successional woodland located at the head waters of Laurel Run, a tributary to Conewago Creek. The stream corridor here is dominated by eastern hemlock, and the seepy woodland by red maple. A wide diversity of herbs and shrubs are found within the woodland and the seeps create excellent habitat for amphibians. This site has a good potential for rare species.
MEDIUM	**Shaffers Hollow**	Shrewsbury Twp.	This site is a rich mesic forest and is located in a wide stream ravine along (Shrewsbury Twp.) a tributary of the South Branch of Codorus Creek. It supports a high diversity of plant and animal species. The canopy is dominated by tulip poplar, with white ash, red oak, and flowering dogwood. Spicebush and witch hazel dominate the well-developed shrub layer. The herb layer is exceptionally rich having many dozens of species including several species that are extremely uncommon within the County. It is excellent habitat for both migrating and nesting birds. Maintaining the forested condition of this site, which has received disturbance in the past, will help maintain the rich diversity found here.

[1] Ranks are very approximate and are based primarily on the quality of the habitat. Sites with more intact natural communities (on a County-wide scale) are given highest priority. Other sites represent areas with locally significant woodlands or wetlands or sites that support a particularly rich or unusual flora or fauna. Areas that are already protected as park land or open space may be assigned lower rank to reflect lower urgency for protection action. Sites of similar rank are listed alphabetically by quadrangle.

County Rank [1]	Site Name	Municipality	Natural Feature and Importance
MEDIUM	**Oakland Run Woods**	Lower Chanceford Twp.	This site is a relatively mature forest in a steep-sloped stream ravine (Lower Chanceford Twp.) directly adjacent to the Susquehanna River. The stream flows down a steep gradient through thickets of rhododendron and over moss covered rock formations. The forest is dominated by eastern hemlock and tulip poplar. The hemlock is declining due to damage from woolly adelgid. A recreational trail exists at this site making it accessible to the public.
MEDIUM	**Anderson-town Woods**	Monaghan Twp.	This site consists of a relatively mature forest and is located along the Yellow Breeches adjacent to an Upper Allen Township Park (Cumberland County). The site consists of mature woods with a diversity of tree species including eastern hemlock, chestnut oak, American beech, red oak, and many others. Smooth alder and witch hazel occur in the understory along with ferns and wildflowers. The forest is notable because of its maturity and the wide spreading crowns on the trees that can be seen from the Park across the creek.
MEDIUM	**Fishing Creek-Susquehanna River**	Lower Windsor & Chanceford Twps.	1995 - A good population of the G5, S3, S4 plant species **riverweed** occurs in the creek where it passes through a steep sloped forested ravine. 2001 - **Riverweed** is no longer tracked as a species of special concern, and has subsequently been removed from Table 1 and added to Table 2 as a site of Local Significance. This steep ravine supports good plant diversity on its south facing slopes. Additional surveys are recommended to determine if this plant diversity contains any species of special concern.

[1] Ranks are very approximate and are based primarily on the quality of the habitat. Sites with more intact natural communities (on a County-wide scale) are given highest priority. Other sites represent areas with locally significant woodlands or wetlands or sites that support a particularly rich or unusual flora or fauna. Areas that are already protected as park land or open space may be assigned lower rank to reflect lower urgency for protection action. Sites of similar rank are listed alphabetically by quadrangle.

Muddy Creek. Photo by PA Science Office of the Nature Conservancy.

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Chapter VI
Natural Areas of York County, by Municipality

Carroll Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Yellow Breeches Creek	Plant: White-water crowfoot	G5T5	S3	TU	06/02/95	BC
	Plant: Red-head pondweed	G5	S3	PT	07/15/97	CD

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: State Game Lands #242

Carroll Township:

YELLOW BREECHES CREEK SITE (Carroll Twp. & Cumberland Co.) - Two (2) species of concern occur in the creek at this site. **Red-head pondweed** represents a fair to poor quality population of a G5, S3 PA-Threatened plant species. An additional sub-population of this plant species, larger than the one (1) originally recorded, was located during a survey in 1997 growing in a riffle and rooted in a gravel streambed. This species, which is capable of growing in both streams and ponds, likely occurs at this site because of the high quality water of the Yellow Breeches. The G5T5, S3 plant species of special concern **white-water crowfoot** was not surveyed during the most recent site visit, although thousands of stems of this species were observed at the site in 1995. Threats to these species include pollution, excessive sedimentation, and impoundment. These occurrences will be best protected by keeping the clean, clear water of the Yellow Breeches flowing through this area.

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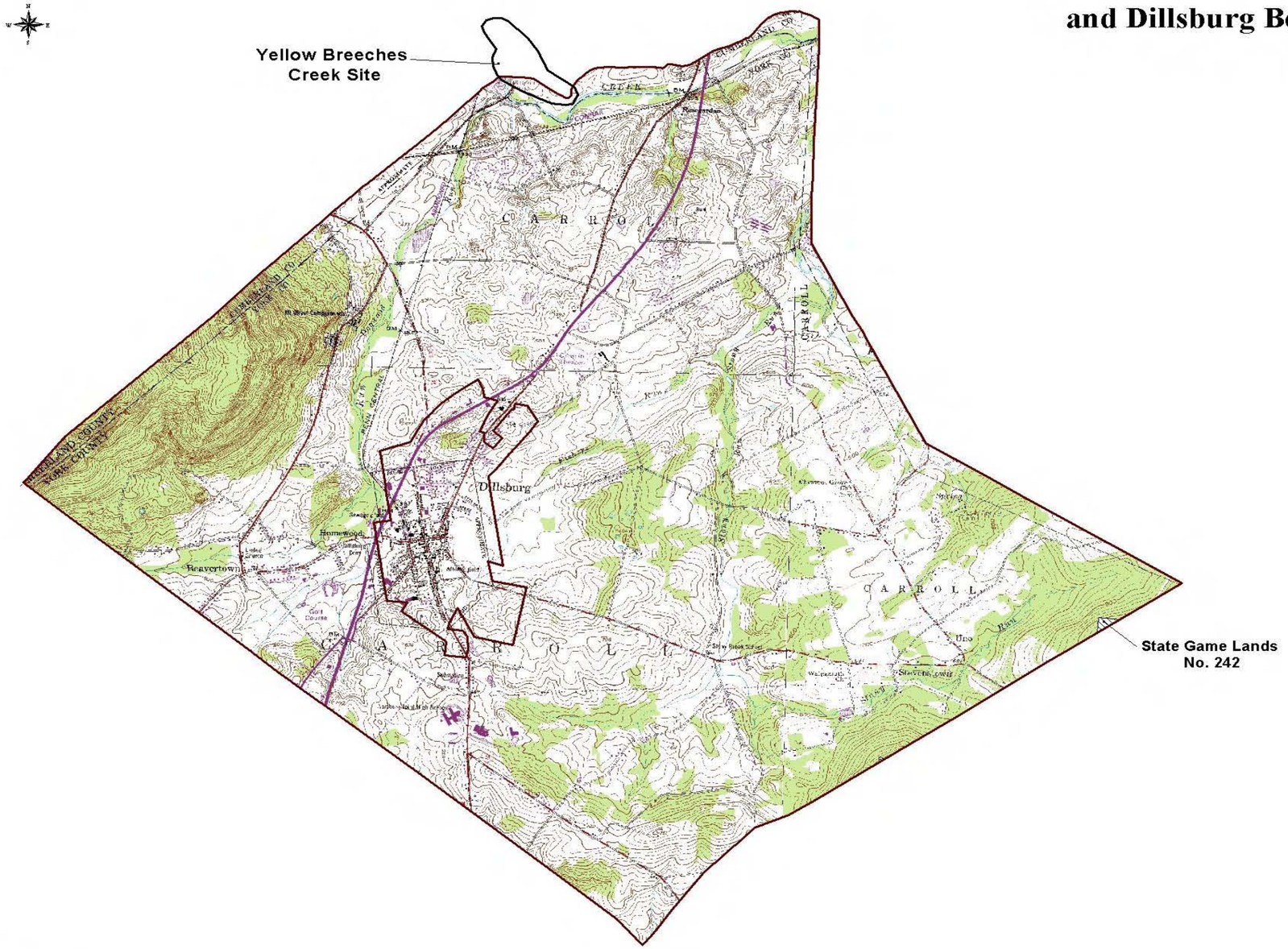
Carroll Township and Dillsburg Borough



Map 3

Carroll Township and Dillsburg Borough

York County
Natural Areas Inventory

Natural Areas:

Yellow Breeches Creek Site

Locally Significant Sites:

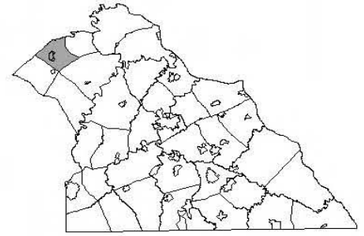
No features on map

Managed Areas:

State Game Lands No. 242

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Chanceford Township, Felton Borough

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Laurel Marsh	Animal	G3	S2	PE	06/13/96	B
Highrock Outcrops	Plant: Lobed spleenwort	G4	S3	N	04/13/95	D
Otter Creek Woods	Natural Community: Mesic Central Forest	G?	S2	N	05/15/96	C
	Plant: Umbrella magnolia	G5	S2	PT	07/28/95	B
	Plant: Cranefly orchid	G4G5	S3	PR	04/05/92	CD
Chanceford Tabernacle Overlook	Animal	G4	S2B	PE	2000	B
Shenks Ferry York Woods	Plant: Umbrella Magnolia	G5	S2	PT	08/10/95	BC
Wilson Run	Plant: River bullrush	G5	S3	PR	07/19/95	C
Boyds Run Ravine	Plant: Umbrella Magnolia	G5	S2	PT	07/31/95	BC
Shenks Ferry Ravine	Plant: Umbrella Magnolia	G5	S2	PT	08/10/95	C
Felton Outcrops	Plant: Lobed spleenwort	G4	S3	N	04/11/95	B
Fenmore Outcrops	Plant: Lobed spleenwort	G4	S3	N	04/11/95	B
Rambo Run Woods	Plant: Umbrella Magnolia	G5	S2	PT	08/13/97	AB
	Plant: Lobed spleenwort	G4	S3	N	08/13/97	CD
West Branch Toms Run	Animal	G3	S2	PE	09/12/96	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant: Susquehanna River
Fishing Creek-Susquehanna River Site
Beaver Creek

Managed Areas: State Game Lands #83
Apollo County Park
Otter Creek Natural Area
Safe Harbor Park & Watershed
Shenks Ferry Natural Area

Other: Otter Creek is a HQ-CWF throughout its basin from the upstream boundary of State Game Lands 83 (T616) to its mouth.

Chanceford Township/Felton Borough:

LAUREL MARSH (East Hopewell & Chanceford Twps.) - A **Pennsylvania endangered animal** has been observed in a wetland along Muddy Creek. It prefers slow shallow rivulets found in marshy areas, and is vulnerable to wetland alteration and destruction.

HIGHROCK OUTCROPS (Chanceford & East Hopewell Twps.) - **Lobed spleenwort**, a species of special concern, is found growing on rock outcrops in partial light on a xeric south facing slope. Tree species growing in the outcrop area include chestnut oak, red maple, and black gum, and shrubs include witch hazel and mountain laurel. Other associates include marginal shield fern, rock polypody, mosses, and lichens. This population will be best protected by leaving the slope in its current condition. The exotic species multiflora rose and Japanese honeysuckle are common down slope from this occurrence and may become a threat in the future.

OTTER CREEK WOODS (Chanceford & Lower Chanceford Twps.) - This site is a steep sloped, winding ravine with prominent rock outcrops. Otter Creek flows through the ravine creating scenic pools and small waterfalls. The woodland represents a fair example of a **Mesic Central Forest Natural Community** and is dominated by eastern hemlock and tulip poplar, with lesser amounts of sweet birch, white ash, and hickory. Some of the largest specimens of eastern hemlock known from the County are found in this forest. The herb layer varies depending on slope position and the amount of light reaching the forest floor. Common herbs include Christmas fern, wood fern, Indian cucumber, jack-in-the pulpit, and violets. The upper slopes are characterized by a drier forest with chestnut oak, red oak, sweet birch, and mountain laurel. Populations of two (2) species of special concern occur here, **umbrella magnolia** and **cranefly orchid**. A good population of PT **umbrella magnolia** grows on the lower slopes of the ravine. A fair to poor quality population of PR **cranefly orchid** is found on an east facing, mesic wooded slope adjacent to the creek. This site receives a considerable amount of disturbance from recreational hiking. The populations of both of these species will be best protected by leaving the ravine and the forest on the adjacent slopes in their current condition.

CHANCEFORD TABERNACLE OVERLOOK (Chanceford Twp.) - During the years since the original NAI report was produced, this good quality population of a **PA-Endangered animal species** has been observed nesting at this site along the Susquehanna River with varying degrees of breeding success. It requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human

disturbance, shooting, and pesticides. Protection of the forested buffer and large trees along the river will encourage the long-term success of this species.

SHENKS FERRY YORK WOODS (Chanceford & Lower Chanceford Twps.) - A fair to good quality population of a PT plant species, **umbrella magnolia**, occurs on the forested slopes running along the Susquehanna River in this area. It occurs primarily under a canopy of tulip poplar, but is also found in some sunnier forest gaps. Lance fog-fruit which occurs on the nearby rivershore is no longer tracked as a species of concern.

WILSON RUN (Chanceford Twp.) - River bullrush, a PA-Rare plant species which generally occurs on moist sandy shores, grows on the alluvial delta at the mouth of Wilson Run. The delta is a newly created geologic feature which has formed from sediment deposition after the construction of the Safe Harbor Dam. Prior to the dams construction, the elevation of the mouth of Wilson Run was approximately 40 to 50 feet lower than it is currently. Associated species at this site include lizard's tail, false-indigo, knotweed, and jewelweed. Adjacent slopes are dominated by eastern hemlock, red maple, and sweet birch. A threat to this site is erosion. The sediments comprising the delta could be washed away by high volume discharges from Wilson Run or by severe wave activity caused by high winds.

BOYDS RUN RAVINE (Chanceford Twp.) - This site is a steep sloped stream ravine dominated by hemlock and mixed hardwoods. A good to fair population of **umbrella magnolia**, a PT plant species, grows in the understory of this forest. There are no threats to this population at this time.

SHENKS FERRY RAVINE (Chanceford & Lower Chanceford Twps.) - This site is a forested stream ravine dominated by tulip poplar. A fair population of **umbrella magnolia** grows in the understory of this forest.

FELTON OUTCROPS (Chanceford, North Hopewell Twps., Felton Boro.) - A high quality population of **lobed spleenwort** is found growing on schist outcrops in partial light on very steep mesic-xeric slopes. Trees growing in the outcrop area are stunted with a scrubby appearance and include chestnut oak, red maple, and Virginia pine. Scattered amongst the trees is mountain laurel. Other associates on this sparsely vegetated site include Virginia creeper, rock polypody, poison ivy, and mosses. A powerline ROW is a disturbance at this site, but current management does not appear to be harming this species.

FENMORE OUTCROPS (East Hopewell & Chanceford Twps.) - A high quality population of **lobed spleenwort** is found growing on schist outcrops in open to filtered light on xeric north and south facing near vertical slopes. Associated woods are of the oak-heath type with chestnut oak and mountain laurel as dominant species. Other associates are marginal shield fern, rock polypody, poison ivy, and mountain spleenwort. Disturbances at this site include a railroad bed, nearby roads, and exotic species. None of the disturbances appear to be hindering the success of this species.

RAMBO RUN WOODS (East Hopewell & Chanceford Twps.) – This site is a wooded, Exceptional Value stream corridor, with dry rock outcrops, that supports a very good quality population of a G5, S2

PA-Threatened plant species **umbrella magnolia**, and a marginal to poor quality occurrence of a G4, S3 plant species of special concern **lobed spleenwort**. The dominant overstory vegetation is mostly mixed hardwoods, such as red oak, white oak, chestnut oak, tuliptree, blackgum, red maple, white pine, white ash, and pawpaw. There are no immediate threats to the site. A more thorough survey of this site for these and other species of concern is recommended.

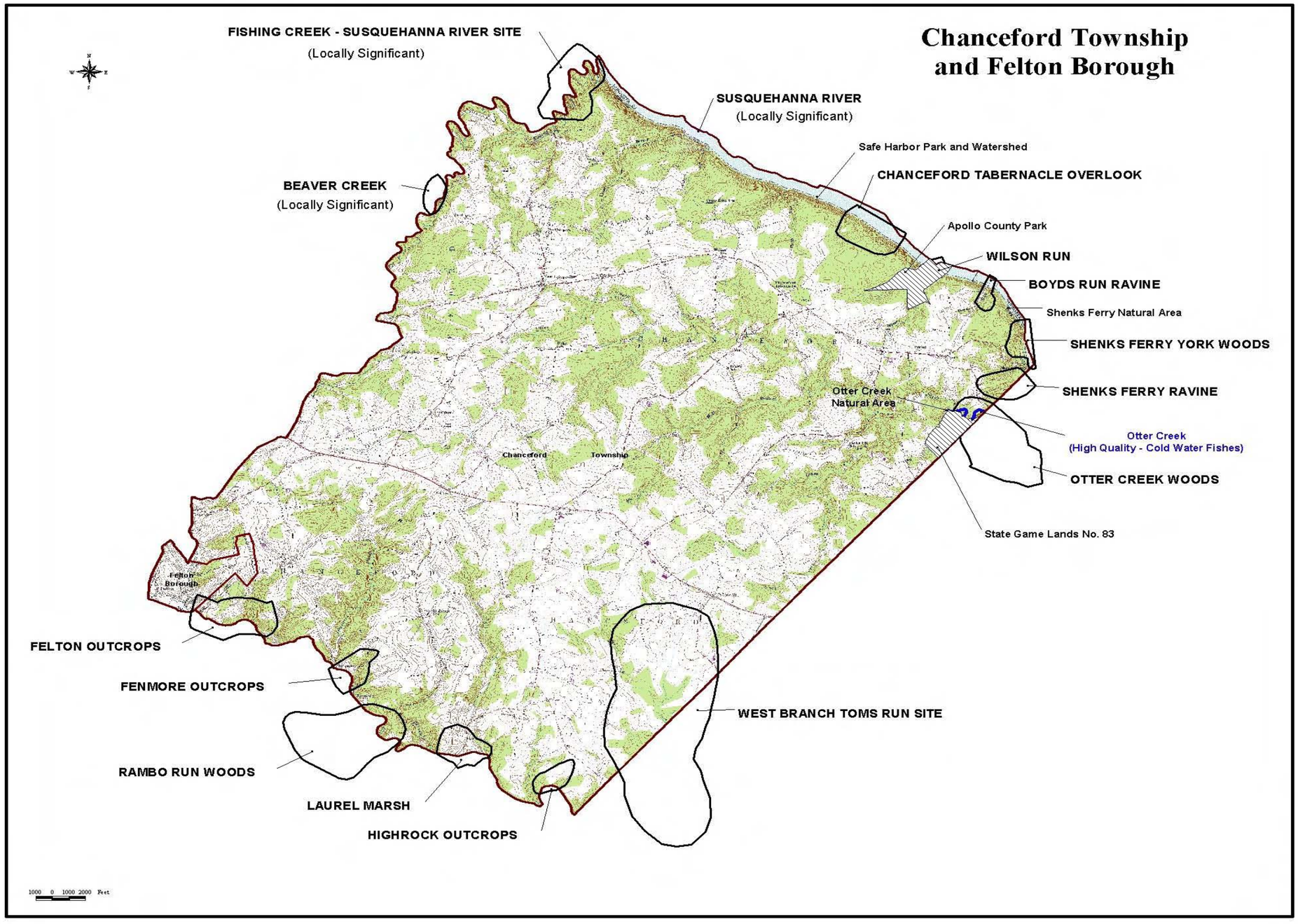
WEST BRANCH TOMS RUN (Lower Chanceford & Chanceford Twps.) - The site consists mostly of open grassy uplands with a large man-made pond, and some emergent/scrubby wet areas along the west branch of Tom's Run. One (1) specimen of a **PA-Endangered animal species** was found at this site in 1996. Most of the property is mowed or cultivated for hay. The south end of the property and the entire east bank of the creek are mowed and contain scrubby-natural vegetation. Modification of the seepage areas and associated wetlands would be the greatest threat to the animal species. A more thorough survey of the site for this species and its habitat is recommended.

Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.

FISHING CREEK-SUSQUEHANNA RIVER SITE (Chanceford & Lower Windsor Twps.) is a **Locally Significant site** where a moderate gradient stream flows through a steep sided forested ravine. The largely undisturbed forest is dominated by eastern hemlock, tulip poplar, and sweet birch, with lesser amounts of sugar maple, red maple, and red oak. The diversity of herbs and shrubs varies depending on topography and slope aspect. On cooler hemlock dominated north facing slopes, there are only a few species of fern, while on warmer south facing slopes with more diverse canopies, there are many species of shrubs and herbs. Riverweed occurs in the creek at this site but has been delisted since the original NAI report. This plant species is no longer tracked as a species of special concern. This steep sided, forested ravine supports good plant diversity on its south facing slopes. Additional surveys are recommended to determine if this plant diversity contains any species of special concern.

BEAVER CREEK (Lower Windsor & Chanceford Twps.) is a **Locally Significant site** located south of Salem Church Road which supports a rich mesic woods with a high diversity of trees, shrubs, wildflowers and ferns. One (1) of the interesting features is the presence of striped maple, previously unreported in the County, but a common component of northern forests (e.g. from northern PA to New England). The mesic rocky slopes support species such as Christmas fern, wood fern, meadow rue, wild yam, and black snakeroot. The tree canopy is dominated by hickory, ash, and tulip poplar with small amounts of elm and black walnut. Azalea, witch hazel, and sassafras comprise the well developed shrub layer. The site was evaluated from the roadside and further inventory would be desirable.



Map 4

Chanceford Township and Felton Borough

York County
Natural Areas Inventory

Natural Areas:

- Boyds Run Ravine
- Chanceford Tabernacle Overlook
- Felton Outcrops
- Fenmore Outcrops
- Highrock Outcrops
- Laurel Marsh
- Otter Creek Woods
- Rambo Run Woods
- Shenks Ferry Ravine
- Shenks Ferry York Woods
- West Branch Toms Run
- Wilson Run

Locally Significant Sites:

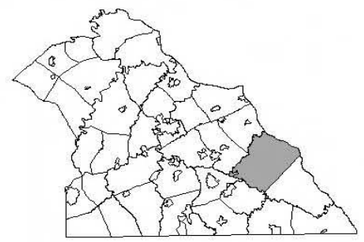
- Susquehanna River
- Fishing Creek - Susquehanna River Site
- Beaver Creek

Managed Areas:

- State Game Lands No. 83
- Apollo County Park
- Otter Creek Natural Area
- Safe Harbor Park and Watershed
- Shenks Ferry Natural Area

Other:

- Otter Creek
  - -High Quality - Cold Water Fishes



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Conewago Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Erney Cliff	Plant: Wild oat	G5	S1	TU	07/20/95	C

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant: Laurel Run

Conewago Township:

ERNEY CLIFF (Conewago & Newberry Twps.) is a sparsely vegetated south facing eroded red shale cliff. It occurs on the outside curve of a sharp bend of the Conewago Creek rising steeply from the stream to a more gradually sloping hillside above. Vegetation cover is greatest along the stream and on the summit of the cliff. The plant community at this site is comprised of species tolerant of extremes in heat and lack of moisture. Woody vegetation on the cliff includes red cedar and dwarf hackberry. Native herbs include foamflower, Canada bluegrass, hairy-lip fern, and poison ivy. Exotic herbs which are common include Japanese honeysuckle, soapwort, and stonecrop. In 1995, **wild oat** was a mediocre occurrence found on lower elevations at this site. When last observed in July of 1995, many hundreds of stems of this species were flowering vigorously. Since the original NAI report, the plant species small-flowered crowfoot has been delisted and is no longer tracked as a species of special concern. The site has not been revisited to determine if there has been any change in the population of the G5, S1 plant species of concern **wild oat** reported in the original NAI. A major threat to this species is loss of habitat to the aggressive exotic species Japanese honeysuckle.

Locally Significant Sites:

Laurel Run (Conewago Twp.) is a **Locally Significant site** located at the head waters of Laurel Run, a tributary to Conewago Creek. This site includes a stream corridor dominated by eastern hemlock and a seepy woodland dominated by red maple. A wide diversity of herbs and shrubs are found within the woodland and the seeps create excellent habitat for amphibians.

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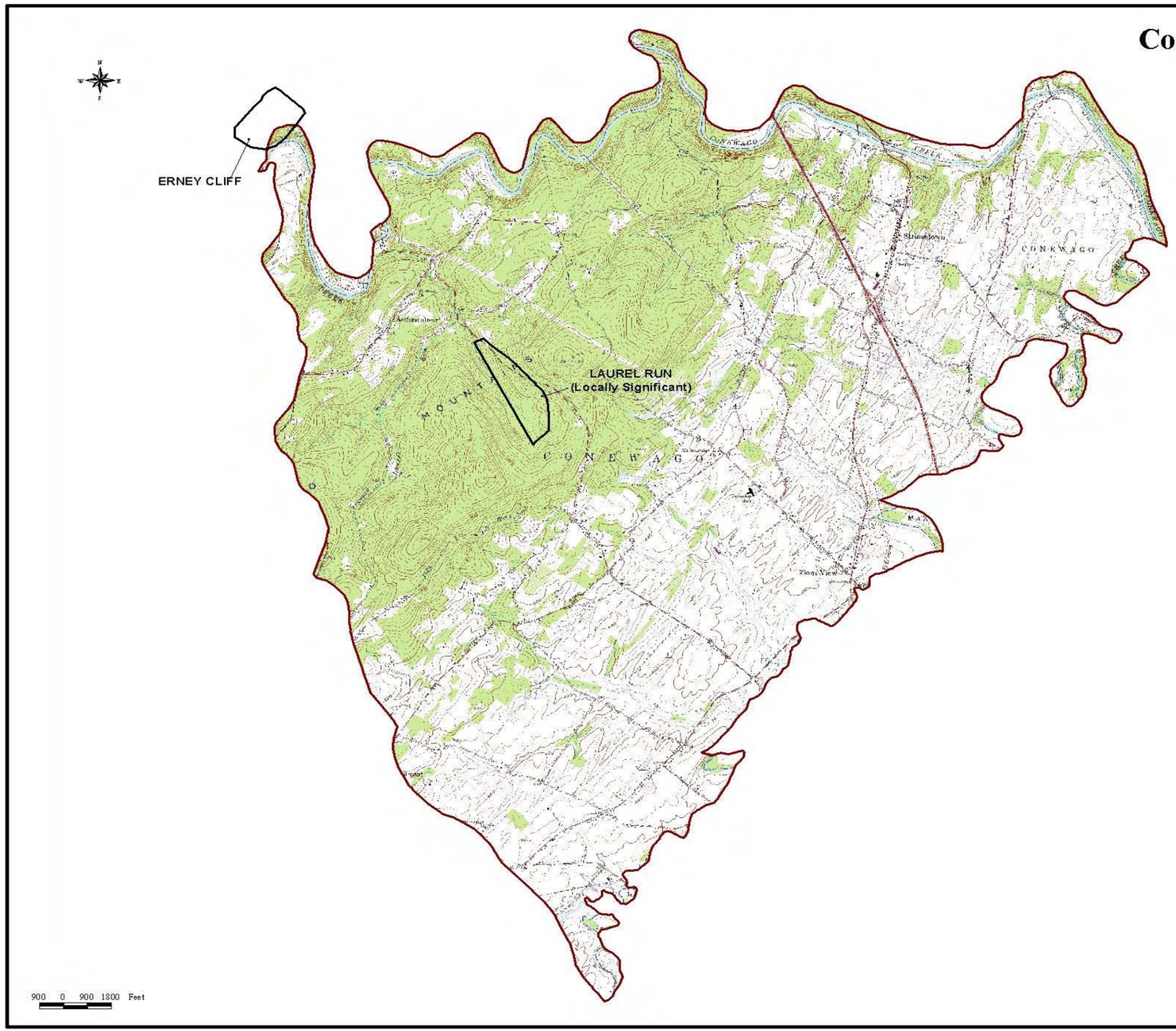


Map 5

Conewago Township

York County
Natural Areas Inventory

Natural Areas:

Erney Cliff

Locally Significant Sites:

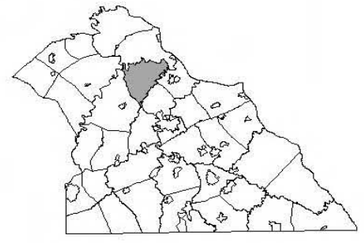
Laurel Run

Managed Areas:

No features on map

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Dover Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
None						

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Managed Areas: West Manchester Township Farmers & Sportsman's Association

Dover Township:

STRAIGHT HILL WOODS (Dover & Warrington Twps.) - Riverweed was found on a steep southerly facing rocky slope adjacent to Conewago creek at this site during the original NAI. The somewhat open forest cover is composed of mixed hardwoods. Despite the rock outcrops, the soil is rich and supports a number of both native and non-native herbs. Riverweed has subsequently been delisted and is no longer tracked as a species of special concern. This site has been removed from Table 1.

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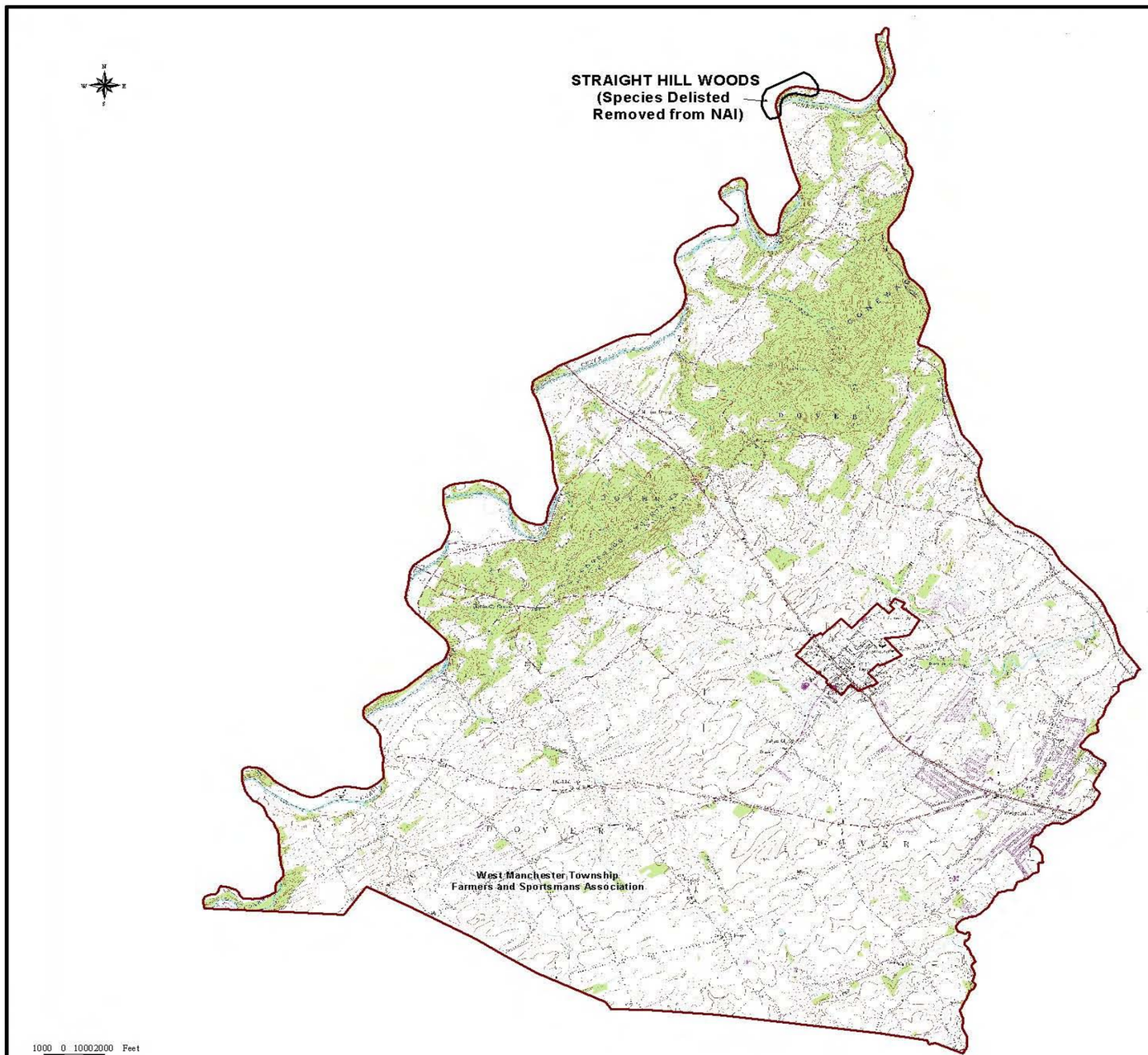


Dover Township and Dover Borough

Map 6

Dover Township and Dover Borough

York County
Natural Areas Inventory

Natural Areas:

No features on map

Locally Significant Sites:

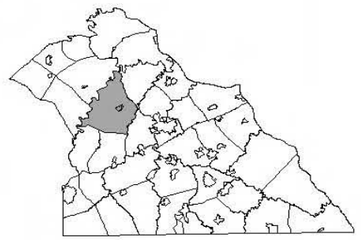
No features on map

Managed Areas:

West Manchester Township Farmers and Sportsmans Association

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

East Hopewell Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Highrock Outcrops	Plant: Lobed spleenwort	G4	S3	N	04/13/95	D
Fenmore Outcrops	Plant: Lobed spleenwort	G4	S3	N	04/11/95	B
Laurel Woods	Plant: Umbrella magnolia	G5	S2	PT	04/13/95	C
Laurel Marsh	Animal	G3	S2	PE	06/13/96	B
Rambo Run Woods	Plant: Umbrella magnolia	G5	S2	PT	08/13/97	AB
	Plant: Lobed spleenwort	G4	S3	N	08/13/97	CD

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Other: Rambo Run is an Exceptional Value stream throughout its basin.
South Branch Muddy Creek is a HQ-CWF throughout its basin.

East Hopewell Township:

RAMBO RUN WOODS (East Hopewell & Chanceford Twps.) - This site is a wooded, Exceptional Value stream corridor, with dry rock outcrops, that supports a very good quality population of a G5, S2 PA-Threatened plant species **umbrella magnolia**, and a marginal to poor quality occurrence of a G4, S3 plant species of special concern **lobed spleenwort**. The dominant overstory vegetation is mostly mixed hardwoods, such as red oak, white oak, chestnut oak, tuliptree, blackgum, red maple, white pine, white ash, and pawpaw, There are no immediate threats to the site. A more thorough survey of this site for these and other species of concern is recommended.

HIGHROCK OUTCROPS (Chanceford & East Hopewell Twps.) - A small population of **lobed spleenwort** is found growing on rock outcrops in partial light on a xeric south facing slope. Tree species growing in the outcrop area include chestnut oak, red maple, and black gum, while shrubs include witch hazel and mountain laurel. Other associates include marginal shield fern, rock polypody, mosses, and lichens. This population will be best protected by leaving the slope in its current condition. The exotic species multiflora rose and Japanese honeysuckle are common down slope from this occurrence and may become a threat in the future.

MUDDY CREEK BLUFF (Lower Chanceford, Fawn, & East Hopewell Twps.) - Thousands of stems of riverweed were observed at several sites along this stretch of Muddy Creek in 1995. As of 2002,

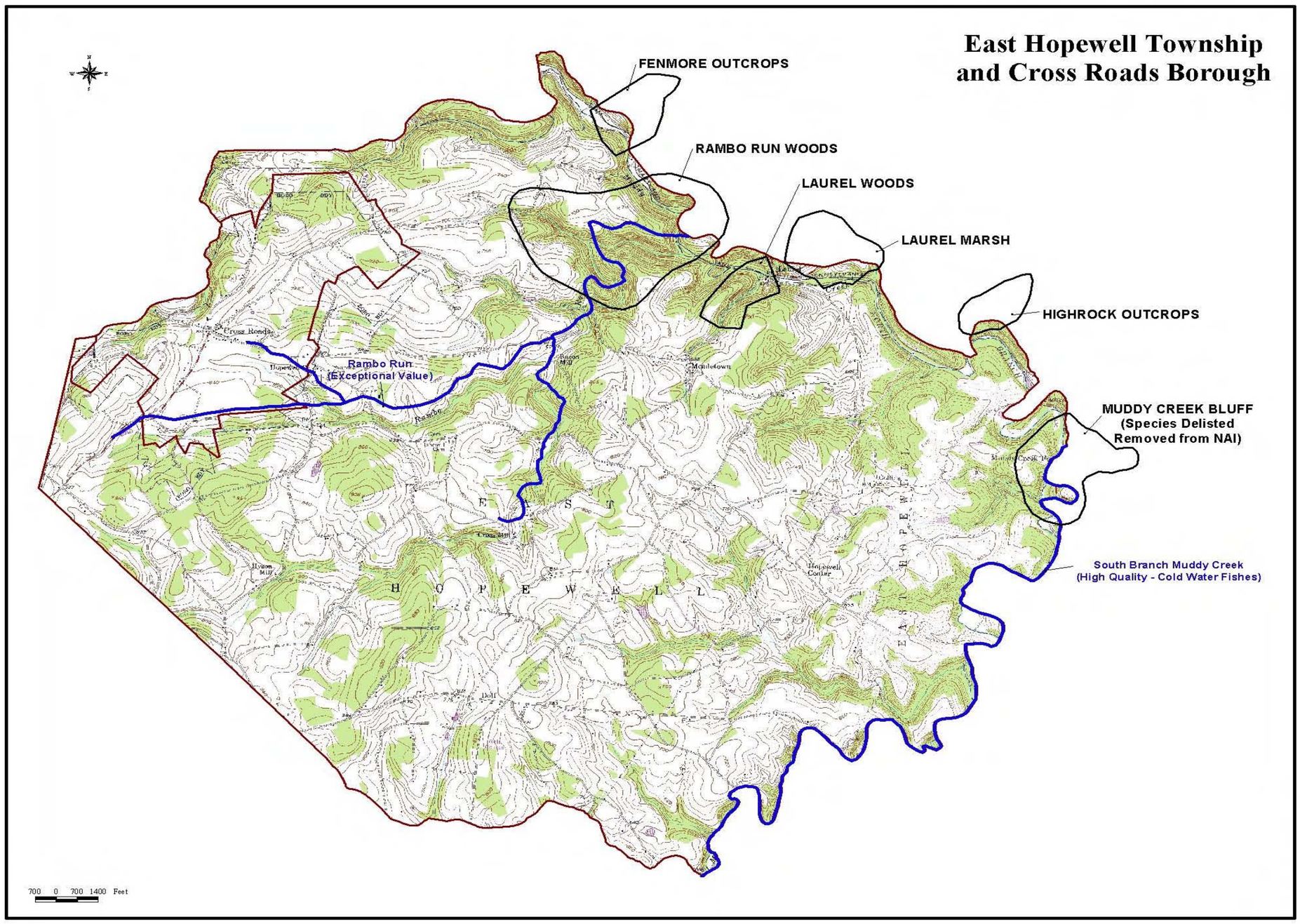
riverweed reported from this site in the original NAI is no longer tracked as a species of concern. This site has subsequently been removed from Table 1.

FENMORE OUTCROPS (East Hopewell & Chanceford Twps.) - A high quality population of **lobed spleenwort** is found growing on schist outcrops in open to filtered light on xeric north and south facing near vertical slopes. Associated woods are of the oak-heath type with chestnut oak and mountain laurel as dominant species. Other associates are marginal shield fern, rock polypody, poison ivy, and mountain spleenwort. Disturbances at this site include a railroad bed, nearby roads, and exotic species. None of the disturbances appear to be hindering the success of this species.

LAUREL WOODS (East Hopewell Twp.) - A large, good quality population of **umbrella magnolia** grows in filtered light in the sub-canopy of this mesic forest. The forest is characterized by tulip poplar, white ash, sweet birch, tree-of-heaven, and staghorn sumac.

LAUREL MARSH (East Hopewell & Chanceford Twps.) - A **Pennsylvania endangered animal** has been observed in a wetland along Muddy Creek. It prefers slow shallow rivulets found in marshy areas, and is vulnerable to wetland alteration and destruction.

Umbrella Magnolia (*Magnolia tripetala*). Photo by PA Science Office of the Nature Conservancy.



Map 7

East Hopewell Township and Cross Roads Borough

York County
Natural Areas Inventory

Natural Areas:

Fenmore Outcrops
Highrock Outcrops
Laurel Marsh
Laurel Woods
Rambo Run Woods

Locally Significant Sites:

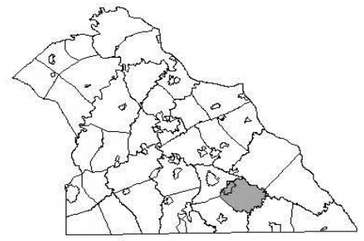
No features on map

Managed Areas:

No features on map

Other:

Rambo Run
-Exceptional Value
South Branch Muddy Creek
-High Quality - Cold Water Fishes



Map Features

Municipal Boundary
Natural Area or Locally Significant Site
Managed Area

East Manchester Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Conewago Creek at York Haven	Animal: Yellow-crowned night-heron	G5	S1B	PE	07/19/85	E
	Animal: Black-crowned night-heron	G5	S2S3B	N	05/30/96	D
Bruner (Lows) Island	Plant: Tooth-cup	G5	S3	PR	08/10/97	C
	Plant: Scarlet ammannia	G5	S2	PE	08/10/97	C

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Locally Significant: Susquehanna River

Managed Areas: John C. Rudy County Park

East Manchester Township:

BRUNNER (LOWS) ISLAND (East Manchester Twp.) - "Brunner (Lows) Island" has a long undeveloped though some what disturbed rivershore which supports a narrow band of floodplain forest. The floodplain forest community includes silver maple, sycamore, and box-elder as dominant species in the canopy, with spicebush, Virginia creeper, and poison ivy as dominant species in the understory. The herbaceous layer is moderately diverse including a variety of sedges, grasses, and wetland herbs. Exposed or unshaded portions of the shoreline are small and support plant species more common to exposed mudflats or sandbars. Plant species occurring on these narrow exposed shoreline fragments are dependent on seasonal water level fluctuations and full sunlight. The two (2) marginal quality populations of plant species identified in the original NAI were again located during a subsequent survey of the site in 1997. **Tooth-cup**, a G5, S3 PA-Rare plant species, and **scarlet ammannia,** a G5, S2 PA-Endangered plant species both require the same exposed, unshaded segments of the river shoreline. The quality of the plant populations and their habitat were observed to be unchanged since the previous survey. Plant species occurring on these narrow exposed shoreline fragments are dependent on seasonal water level fluctuations and full sunlight. Habitat for these species has been much reduced along the lower Susquehanna due to the damming of the river. These species may require habitat that is created by the scouring action of free flowing water.

CONEWAGO CREEK AT YORK HAVEN (East Manchester & Newberry Twps., & York Haven Boro.) - The **yellow-crowned night-heron** is an animal species of special concern which

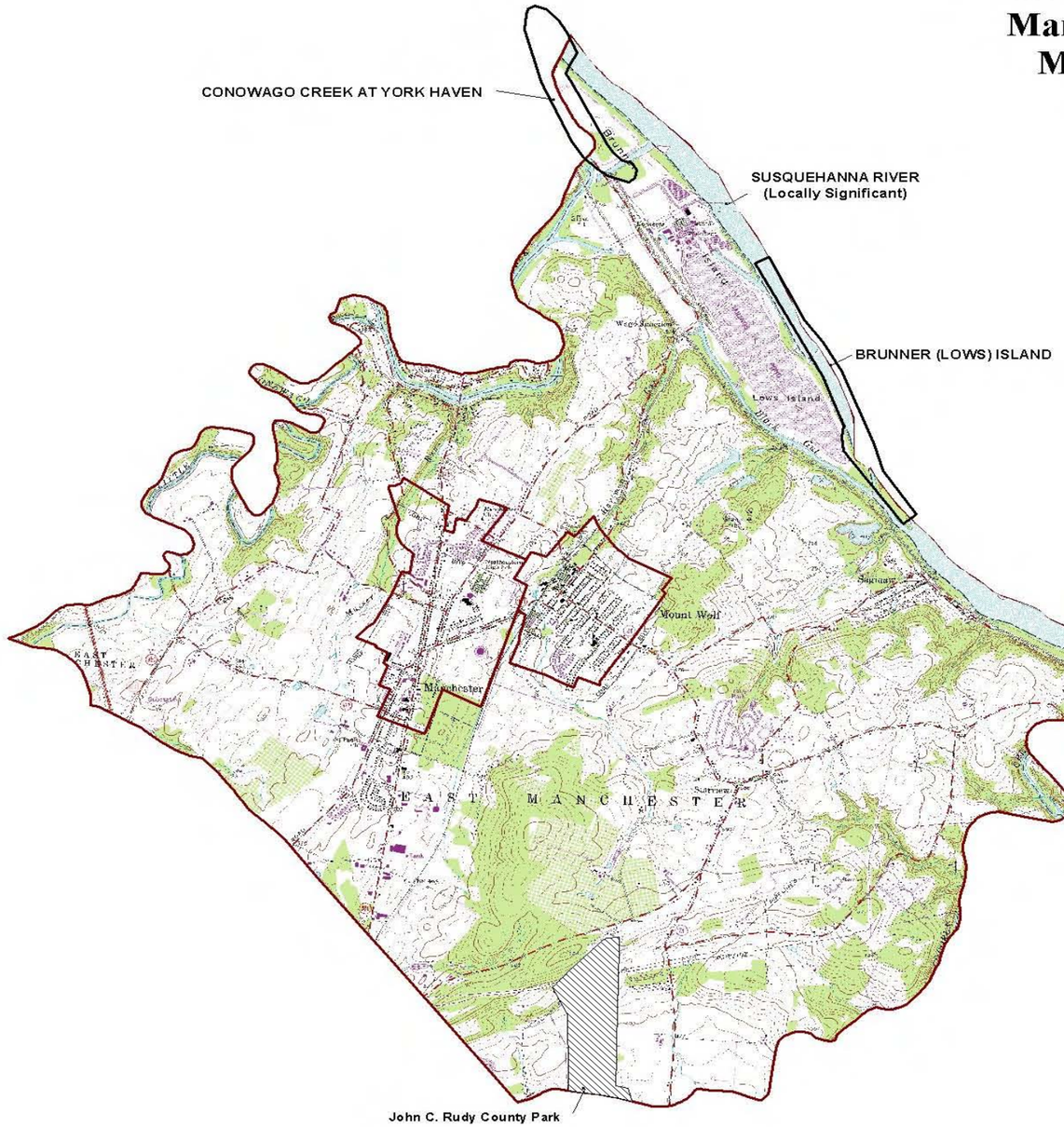
has been observed with young feeding along a stretch of the Conewago Creek near Brunners Island. The **black-crowned night-heron** has also been observed feeding along this stretch of the creek. Both of these species are crepuscular (active during twilight) and nocturnal, and require wetland habitat with shallow water, such as marshes, lake shores, ponds, or wooded streams. Loss of habitat is a major threat.

Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania. The Susquehanna River is locally significant.

Susquehanna River - Photo by PA Science Office of the Nature Conservancy.

East Manchester Township, Manchester Borough and Mount Wolf Borough



Map 8

East Manchester Township, Manchester Borough and Mount Wolf Borough

York County
Natural Areas Inventory

Natural Areas:

Conewago Creek at York Haven
Brunner (Lows) Island

Locally Significant Sites:

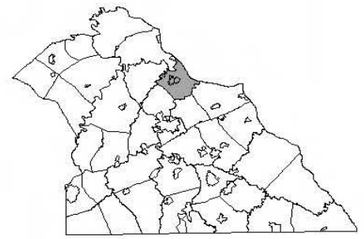
Susquehanna River

Managed Areas:

John C. Rudy County Park

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Fairview Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Yellow Breeches\Rabold Site	Plant: Tooth-cup	G5	S3	PR	08/29/95	D
Marsh Run	Plant: Ellisia	G5	S2	PT	05/23/91	C
Mt. Olivet Marsh	Animal: Marsh wren	G5	S2S3B	N	06/23/85	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant: Susquehanna River
Whittocks Woods

Fairview Township:

YELLOW BREECHES\RABOLD SITE (Fairview Twp. & Cumberland Co.) - A small poor quality population of **tooth-cup**, a PA-Rare species, falls on the margin of an agricultural field on the floodplain of the Yellow Breeches Creek. It occurs in an open wet depression with smooth panic-grass, lovegrass, spikerush, amaranth, and corn.

MARSH RUN (Fairview Twp.) - Marsh Run consists of a portion of floodplain and adjacent riverbank along the Susquehanna River. This area has been impacted by the construction of the rail line which runs along the riverbank. A low quality population of **ellisia**, a PA-Threatened plant species is found here in open areas on both the sloping riverbank and the adjoining flood plain. Associated species are herbs and grasses including Queen-Anne's-lace, geranium, dogbane, and knotweed.

FAIRVIEW RIVERSHORE (Fairview Twp.) - Fairview Rivershore is the riverbank located along the west shore of the Susquehanna River just south of the PA Turnpike bridge. This area of the rivershore has been disturbed by the construction of the rail line. Large ballast stone fill was placed here covering large areas of the original rivershore. Large sections of the ballast have been colonized by the exotic species mile-a-minute weed. A low quality population of lance fog-fruit occurred here on the gravel of a small alluvial fan formed by a small stream entering the river during the original NAI. This species has since been delisted and is no longer tracked as a species of concern. Associated species include halberd-leaved rose-mallow, water-willow, purple loosestrife, and umbrella sedge. This site has been removed from Table 1.

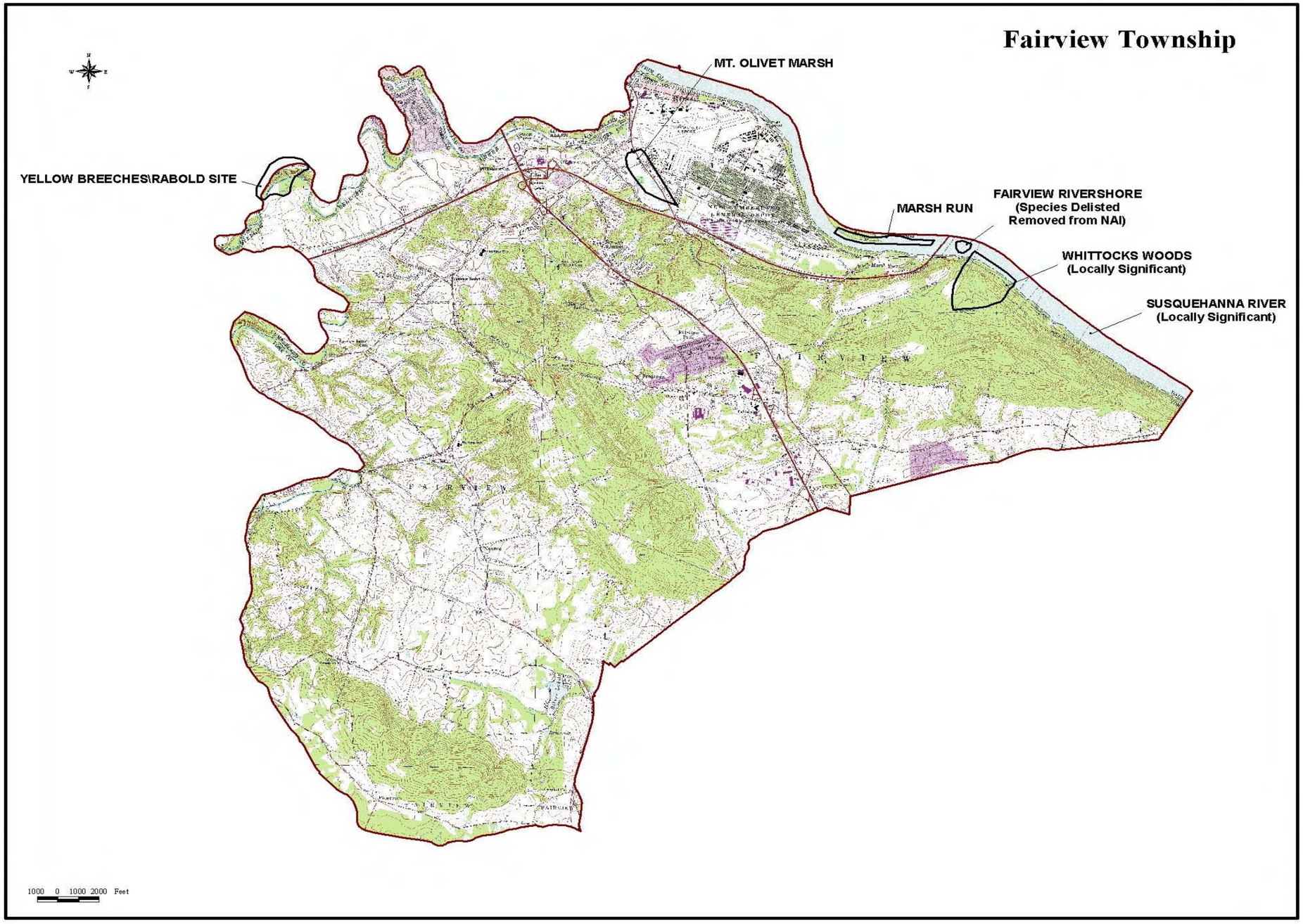
MT. OLIVET MARSH (Fairview Twp.) - The **marsh wren**, an animal species of special concern, was last observed at this site in 1985. It prefers marshes with deep water and dense vegetation, such as cattails,

bulrushes, or reeds. Its primary food is insects. Habitat still exists for this species at this site. This site also provides habitat for a diversity of bird species as well as reptiles and amphibians.

Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.

WHITTOCKS WOODS (Fairview Twp.) is a **Locally Significant site** located on slopes above the Susquehanna River south of the PA Turnpike bridge. The site supports a mature rich mesic woods and is dominated by sugar maple, ash, tulip poplar, hackberry, and beech. Pawpaw, spicebush, and bladdernut comprise the well developed shrub layer, and although there is a rich herbaceous flora, blue cohosh and large flowered trillium are the most common species. The site includes several seeps and a small creek. It is excellent habitat for both migrating and nesting bird species.



Map 9

Fairview Township

York County
Natural Areas Inventory

Natural Areas:

Marsh Run
Mt. Olivet Marsh
Yellow Breeches \ Rabold Site

Locally Significant Sites:

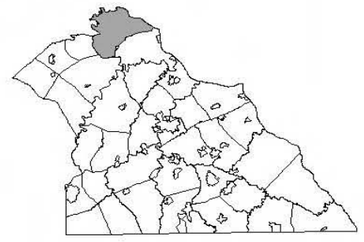
Susquehanna River
Whittocks Woods

Managed Areas:

No features on map

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Fawn Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Neill Run	Animal	G3	S2	PE	06/2000	E
West Bridgeton Woods	Animal: Hoary elfin	G5	S1	N	05/03/95	E
Smiths Backacres Farm Site	Animal	G3	S2	PE	06/14/90	D

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: State Game Land #327

Other: South Branch Muddy Creek is a HQ-CWF throughout its basin

Fawn Township:

NEILL RUN (Fawn & Peach Bottom Twps.) – This site is a wetland floodplain system of Neill Run, a tributary to Muddy Creek. The site includes pasture area and creek banks. A G3, S2 **PA-Endangered animal** species was found at this site in 2000. Over grazing and draining of the wetland are potential disturbances to this species. Additional surveys for this species and its habitat are recommended.

MUDDY CREEK BLUFF (Lower Chanceford, Chanceford, Fawn, & East Hopewell Twps.) - Thousands of stems of riverweed were observed at several sites along this stretch of Muddy Creek in 1995. As of 2002, riverweed reported from this site in the original NAI is no longer tracked as a species of concern. This site has subsequently been removed from Table 1.

WEST BRIDGETON WOODS (LowerChanceford & Fawn Twps.) - The **hoary elfin** is an animal species of special concern which has been observed at this site several times during the 1980's. Attempts to find it during the 1995 field season were unsuccessful although appropriate habitat still exists at the site. It prefers habitats with dry acidic soils, such as sand barrens, rocky slopes, or ridge tops. These kinds of sites support the host plant species for this animal.

SMITHS BACKACRES FARM SITE (Fawn Twp.) - A **Pennsylvania endangered animal** has been observed in a tributary to Bald Eagle Creek. It prefers marshy to boggy habitats with some moving water, and it is vulnerable to wetland alteration and destruction.

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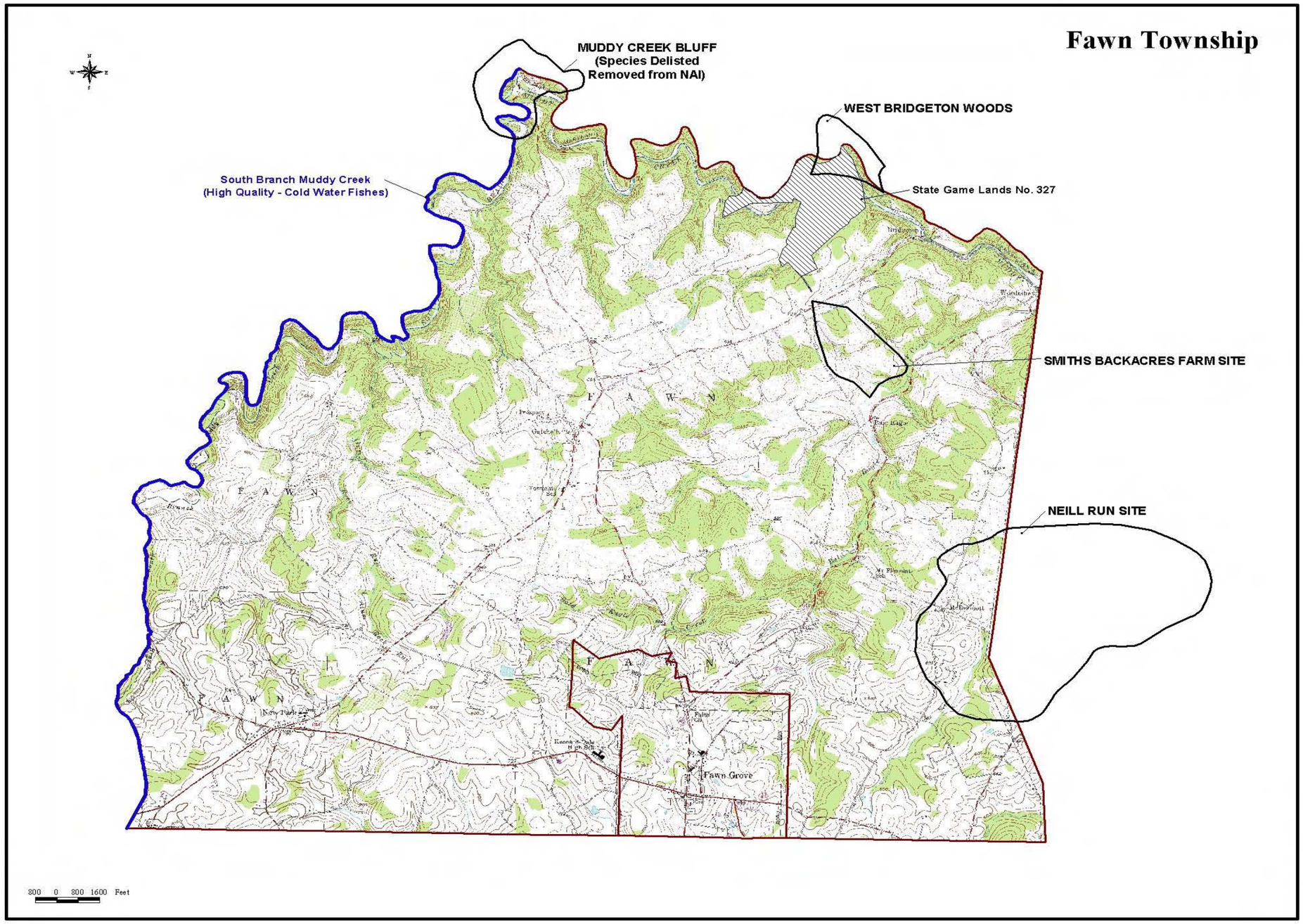


Map 10

Fawn Township

York County
Natural Areas Inventory

Natural Areas:

Neill Run
Smiths Backacres Farm Site
West Bridgeton Woods

Locally Significant Sites:

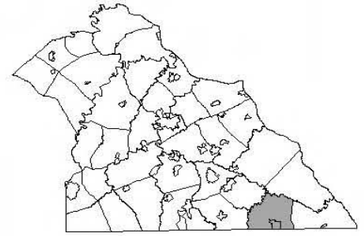
No features on map

Managed Areas:

State Game Lands No. 327

Other:

South Branch Muddy Creek
-High Quality - Cold Water Fishes



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Franklin Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
State Game Lands #243 Site	Plant: Horse-gentian	G5	S1	TU	08/29/95	CD
	Plant: Eastern coneflower	G5	S3	N	09/06/01	BC
	Plant: Shumard's oak	G5	S1	PE	09/06/01	B
Camp Tuckahoe	Plant: Rough-leaved aster	G5	S2	N	07/20/98	D
Stone Head Site	Animal	G4	S4S3	PC	1990's	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

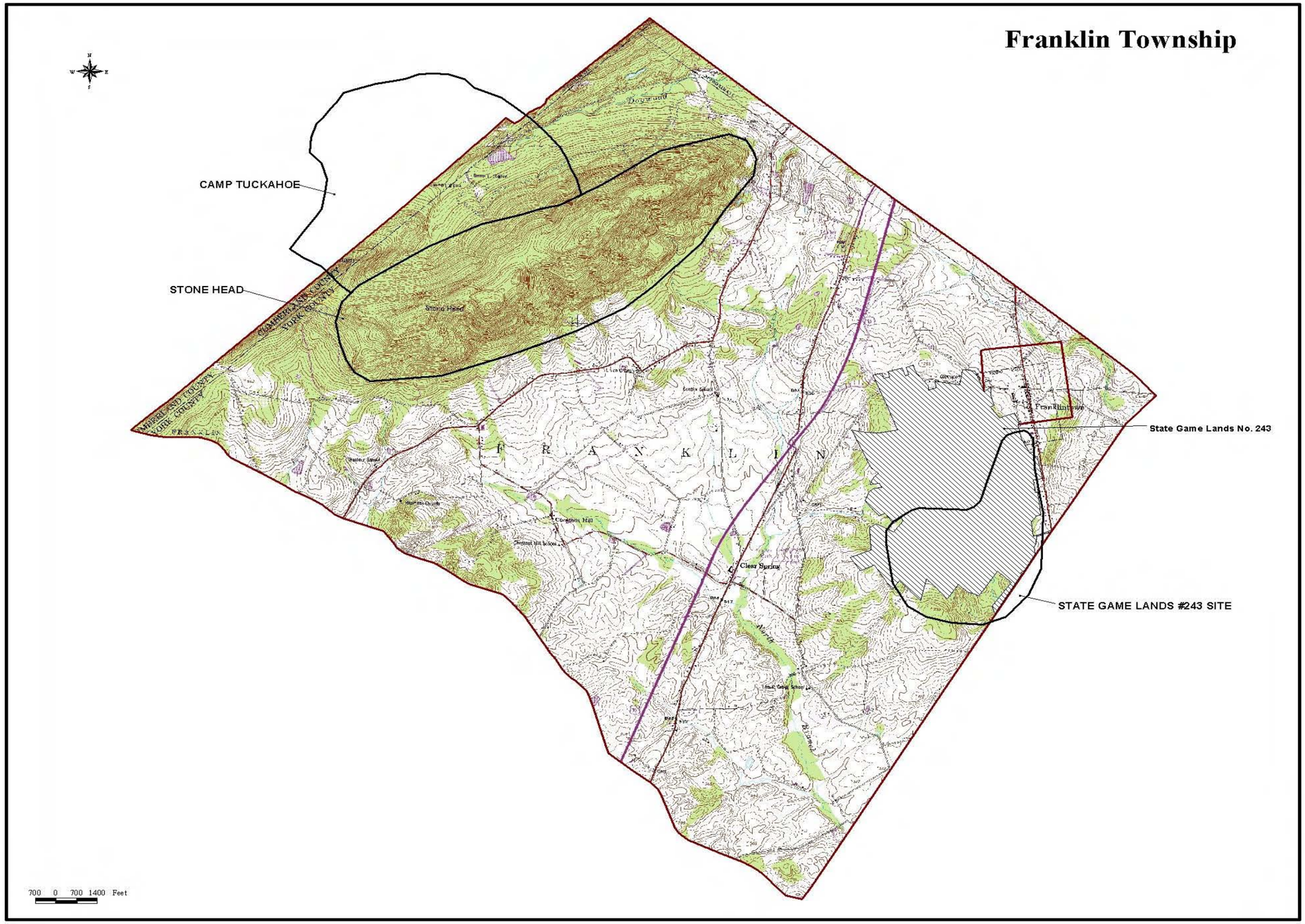
Managed Areas: State Game Lands #243

Franklin Township:

STATE GAME LANDS #243 SITE (Franklin & Washington Twps.) - Horse-gentian was found at **State Game Lands #243** (Franklin Twp.) in an early to mid-successional forest along a moderately sloping stream valley. Dominant canopy species included red oak, shagbark hickory, and sugar maple, and averaged approximately six (6) inches in diameter at breast height. The poorly developed shrub layer was composed mostly of tree saplings. The moderately diverse herb layer included a variety of herbs, ferns, sedges, and grasses, the most common of which were Christmas fern and horse balm. Less than a half dozen individuals of **horse-gentian** were observed at this site in the summer of 1995. There are no immediate threats to this occurrence, but more searching is needed to establish its full extent. Two (2) new plant species were found at this site during a field visit in 2001. The boundary of this site has been enlarged to accommodate these two (2) new species. A small population of the G5, S3 plant species of concern **eastern coneflower** was found in a mowed field with a moist diabase substrate dominated by perennial herbs including Indian hemp, bush clover, New York ironweed and boneset. The existence of exotic plant species in the habitat pose a potential threat, but continuing the scheduled mowing in this area will help maintain this species. A small but reproducing population of **shumard's oak**, a G5, S1 PA-Endangered tree species, was found at this site along forest edges and pipeline borders in conjunction with various oaks, American elm, shagbark hickory, red maple, spice bush and tree-of-heaven. This occurrence could be the northernmost known location in the range for this species. The current management practices employed at this site are suitable for the continued reproduction of this species. A more thorough survey for this species is encouraged. **Horse-gentian** identified in the original NAI was not assessed during the more recent survey. The site is mostly within **State Game Lands #243**.

CAMP TUCKAHOE (Franklin Twp. & Cumberland Co.) - In 1995, a very small population of **rough-leaved aster** was observed flowering in a small floodplain meadow along the upper reaches of Dogwood Run at Camp Tuckahoe. Moist soils, such as those found in swamps and bogs, are needed for the persistence of this species. Also the partial light provided by canopy gaps may be a necessity for this species to flower. Several additional patches and clumps of the G5, S2 plant species of special concern **rough-leaved aster** identified in the original NAI were located during visits to the site in 1996 and 1998. The boundary for this site was enlarged to reflect these new populations. The area has recently undergone extensive logging. More searching of the upper reaches of Dogwood Run in both York and Cumberland Counties is necessary to establish the full extent of this occurrence.

STONE HEAD SITE (Franklin Twp.) - A G4, S4, S3 **PA-Candidate animal species** has been observed at this site on several occasions during the 1990's. Further surveys to determine the extent and viability of the population are recommended.



Map 11

Franklin Township and Franklintown Borough

York County
Natural Areas Inventory

Natural Areas:

Camp Tuckahoe
State Game Lands #243 Site
Stone Head Site

Locally Significant Sites:

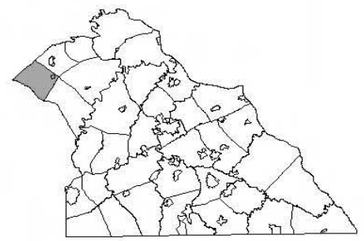
No Features on map

Managed Areas:

State Game Lands No. 243

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Heidelberg Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
High Rock	Geologic Feature	G?	S?	N	1979	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Managed Areas: Codorus State Park

Other: Codorus Creek Main Stem, W. Branch to Oil Creek is a HQ-CWF stream.

Heidelberg Township:

HIGH ROCK (Heidelberg & Paradise Twps.) - Occurring on the forested high ground of the Pigeon Hills, this **Geologic Feature** consists of outcrops of lower Cambrian Chickies quartzite (Geyer and Bolles 1979). This well used site occurs within a xeric forest of chestnut oak, Virginia pine, red maple, and mountain laurel. The outcrops offer limited views of the piedmont uplands to the north during the summer. The view is probably expanded greatly during winter months when the trees are without their leaves.

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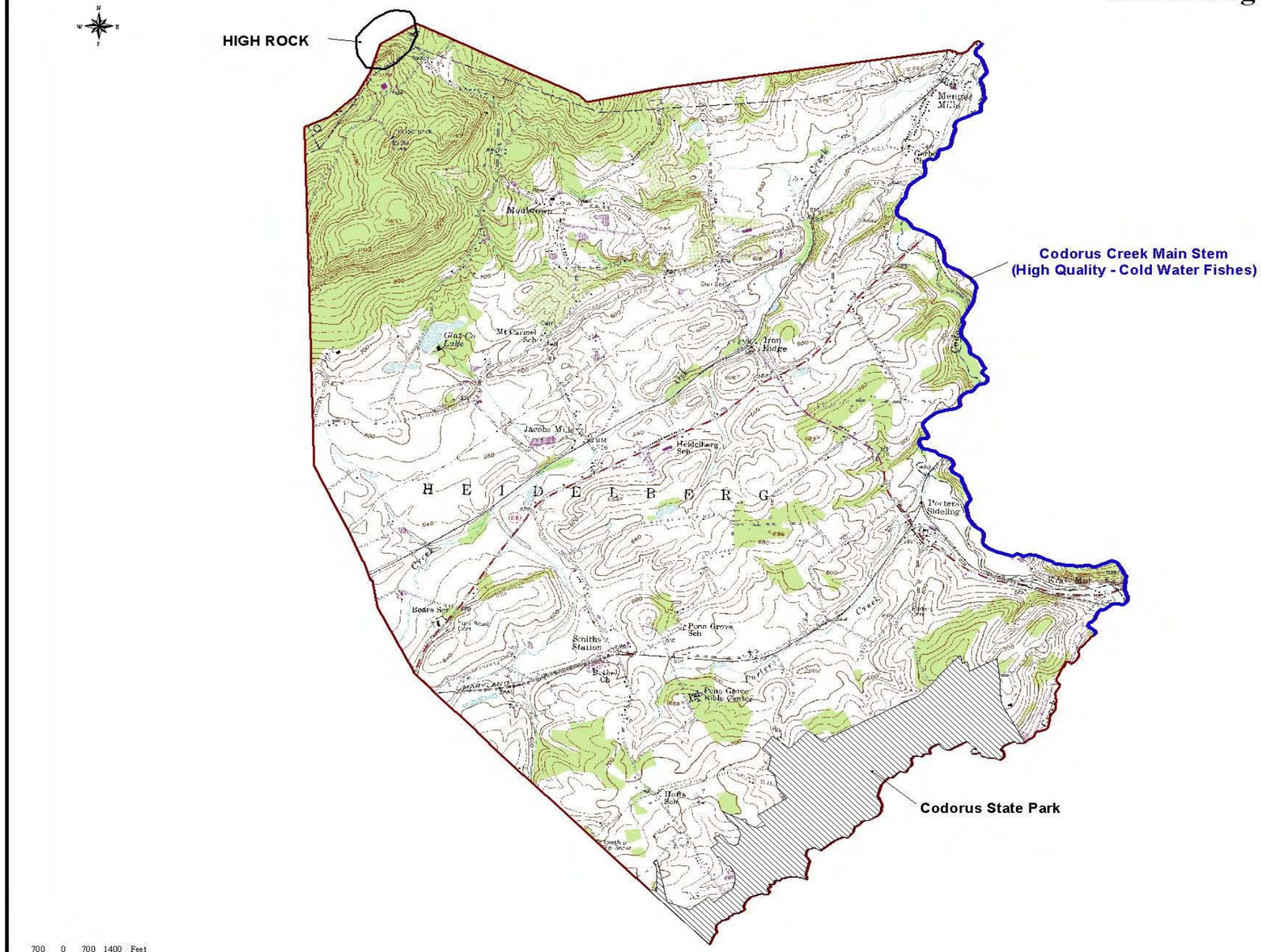
Heidelberg Township



Map 12
Heidelberg Township

York County
Natural Areas Inventory

Natural Areas:

High Rock

Locally Significant Sites:

No features on map

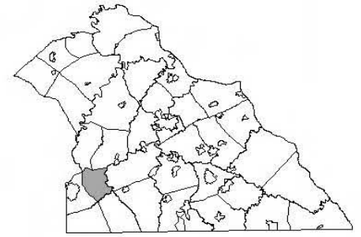
Managed Areas:

Codorus State Park

Other:

Codorus Creek Main Stem
(West Branch to Oil Creek)

-High Quality - Cold Water Fishes



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Hellam Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Accomac Riverbank	Plant: Sida	G2	S2	PE	10/28/99	CD
	Plant: Carolina leaf-flower	G5	S1	PE	08/08/95	BC
	Plant: Tooth-cup	G5	S3	PR	08/08/95	BC
	Plant: River bullrush	G5	S3	PR	08/08/95	C
	Plant: Scarlet ammannia	G5	S2	PE	08/08/95	C
Wrightsville-North Rivershore	Plant: Tooth-cup	G5	S3	PR	08/08/95	C
	Plant: Scarlet ammannia	G5	S2	PE	08/08/95	C
Wildcat Run Cliffs	Plant: Declined trillium	G5	S2	TU	05/01/96	C
Chimney Rock	Geologic Feature	G?	S?	N	1979	E
Wildcat Run Gorge	Geologic Feature	G?	S?	N	1979	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Locally Significant: Susquehanna River

Managed Areas: Safe Harbor Park & Watershed
Rocky Ridge County Park

Other: Trout Run is a HQ-CWF from its source to river mile 0.3.

Hellam Township:

ACCOMAC RIVERBANK (Hellam Twp.) is a narrow strip of land between a paved road and the Susquehanna River. Forest cover is absent from the site, but some young trees and shrubs are present. The site is a riverside meadow community on alluvial sand and gravel occurring at the point of confluence of a small unnamed stream and the Susquehanna River. Rare species, as well as common species, occurring at the site are dependent on seasonal water level fluctuations. The broad low flat topography of this site, along with the free flowing water of the adjacent river, make it ideal habitat for these species. In this meadow,

plant species distribution occurs in zones which reflect the duration of inundation. Areas with slightly higher elevation are exposed earlier in the season than adjacent lower areas. At this site, halberd-leaved rose-mallow, which is very tolerant of lengthy inundation, occurs with greatest frequency nearest to the river. At the time of the original NAI, five (5) rare species (lance fog-fruit**, carolina leaf-flower, tooth-cup, river bullrush, scarlet ammannia**), along with other common species, such as boneset, lovegrass, and umbrella sedge, occurred with greatest frequency behind the halberd-leaved rose-mallow. Lance fog-fruit has since been delisted and is no longer tracked as a species of concern. Along with periodic inundation, the rare species at this site require full light. Habitat for these species has been much reduced along the lower Susquehanna due to the damming of the river. These species require habitat that is created by the scouring action of free-flowing water. Threats to the site include further encroachment by the existing exotic species, purple loosestrife, or by the aggressive colonizer, reed-canary grass. Rare species, as well as common species, occurring at the site are dependent on seasonal water level fluctuations. **Sida**, a robust herbaceous perennial which requires moist alluvial soil, also occurs along the rivershore in the Accomac area (Hellam Twp.). This species is unlike **carolina leaf-flower, tooth-cup, river bullrush,** and **scarlet ammannia**, in its ability to grow with other thicket forming species such as shrubs, stunted trees, and other robust floodplain herbs. This species is vulnerable to thicket clearing which is sometimes performed by homeowners to improve access to the river. A fair to poor quality population of the G2, S2 PA-Endangered plant species **sida** identified in the original NAI was again observed during a visit to this site in 1999. No change in the vigor of the population was noted. Disturbance to the natural hydrology of the river is likely detrimental to these species. Observed disturbances to this site include invasive exotic plant species, especially purple loosestrife, the deposition of fill material, (junk piles, yard waste), and excessive mowing. Nearby residents should be discouraged from impacting this site with these activities. The other plant species of concern, **carolina leaf-flower, tooth-cup, river bullrush,** and **scarlet ammannia** identified from this site in the original NAI were not monitored during the recent site survey.

WRIGHTSVILLE-NORTH RIVERSHORE (Hellam Twp.) - This is a relatively disturbed rivershore adjacent to the U.S. Route 30 bridge. Fill from bridge construction has eliminated the majority of natural habitat along this portion of the river. However, north and south of the filled area there are patches of floodplain forest and small areas of seepy mudflat which harbor low quality occurrences of two (2) rare plant species, **tooth-cup** and **scarlet ammannia**. The rare plant species occurring on these flats are dependent on seasonal water level fluctuations and full sunlight. Habitat for these species has been much reduced along the lower Susquehanna due to the damming of the river. A threat to these occurrences is modification of the rivershore by home owners to improve river access. Lance fog-fruit was listed in the original NAI but has since been delisted and is no longer tracked as a species of concern.

WILDCAT RUN CLIFFS (Hellam Twp.) - This site is a narrow ravine cut by a small stream in the otherwise steep slopes adjacent to the Susquehanna River. It supports a fair population of **declined trillium**, a plant species of special concern. Vegetation cover consists of a relatively mature forest of tulip poplar, sugar maple, and sweet birch, with spicebush, witch hazel, and pawpaw being important in the shrub layer. Herbs common on the moist rocky slope adjacent to the creek include Christmas fern, spinulose wood fern, inpatients, and jack-in-the-pulpit. This species requires shade and mesic conditions for survival.

CHIMNEY ROCK (Hellam Twp.) - This erosional **Geologic Feature** of the Hellam Conglomerate Member of the Chickies Formation is representative of the oldest sedimentary rock in Pennsylvania. Spectacular pinnacles that stand more than 30 feet above the crest of the ridge mark the highest point along this formation (Geyer and Bolles 1979).

WILDCAT RUN GORGE (Hellam Twp.) - Wildcat Run is a **Geologic Feature** that plunges over a series of waterfalls in a scenic gorge on the north face of the Hellam Hills. Lining the gorge and the slopes at the mouth of the run are quartzite cliffs of up to 150 feet (Geyer and Bolles 1979).

Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.

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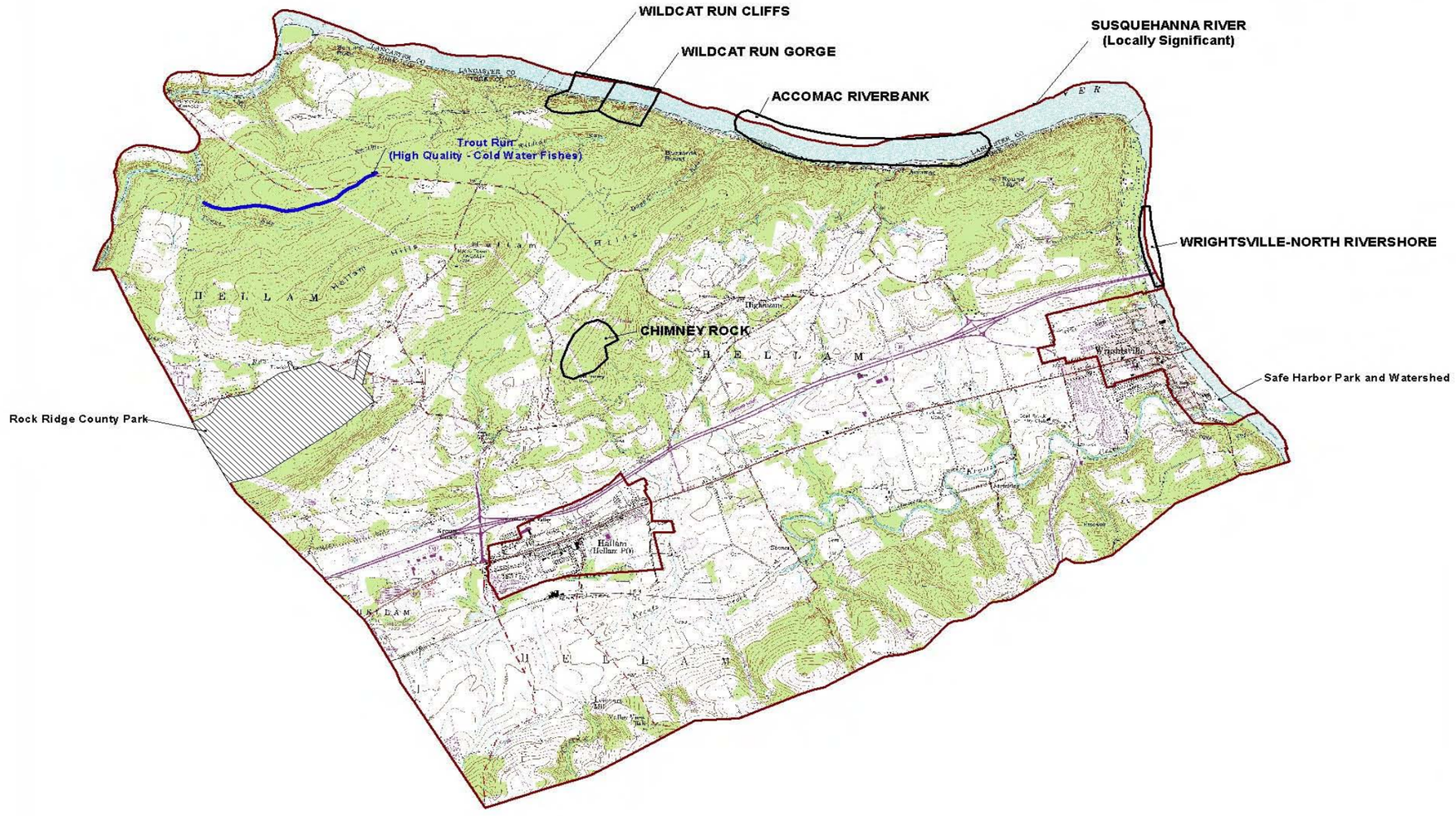
Hellam Township, Hallam Borough and Wrightsville Borough



Map 13

Hellam Township, Hallam Borough and Wrightsville Borough

York County
Natural Areas Inventory

Natural Areas:

Accomac Riverbank
Chimney Rock
Wildcat Run Cliffs
Wildcat Run Gorge
Wrightsville - North Rivershore

Locally Significant Sites:

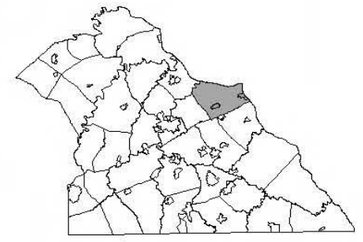
Susquehanna River

Managed Areas:

Rocky Ridge County Park
Safe Harbor Park and Watershed

Other:

Trout Run
-High Quality - Cold Water Fishes



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Hopewell Township, Stewartstown Borough

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Stewartstown Ravine	Plant: Dwarf azalea	G4G5	S1	PE	05/23/96	E
Leibs Creek Hollow	Plant: Umbrella magnolia	G5	S2	PT	05/09/93	B
Ebaughs Creek	Plant: Umbrella magnolia	G5	S2	PT	08/01/95	B

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Other: South Branch Muddy Creek is a HQ-CWF throughout its basin.

Hopewell Township/Stewartstown Borough:

LEIBS CREEK HOLLOW (Hopewell Twp.& Stewartstown Boro.) - Umbrella magnolia represents a large population of a PA-Threatened plant species. This occurrence of over 1,000 individuals is located in a moist forested ravine. An historical cut of some of the forest at this site has enabled the population of this gap loving species to expand greatly. The forest here is dominated by red maple, white oak, and black gum with cucumber tree as an associate. Maintenance of forest cover is required for the survival of this species.

EBAUGHS CREEK (Hopewell Twp. & Stewartstown Boro.) - There are a number of sub-populations of **umbrella magnolia**, a PA-Threatened plant species, spread over a large area of this partially forested stream valley. **Umbrella magnolia** occurs in the mixed hardwood forest found on slopes adjacent to Ebaughs Creek. The forest along the stream varies in composition based on cutting history and location on the landscape. Canopy dominants include tulip poplar, red maple, and various oaks. The shrub layer includes spicebush, witch-hazel, and viburnum. Maintenance of forest cover is required for the survival of this species.

STEWARTSTOWN RAVINE (Hopewell Twp.) - This site is a small wooded ravine drained by an intermittent stream. The forest cover is primarily oak-hickory with black gum, red maple, and flowering dogwood. A small population of **dwarf azalea**, a PE plant species, occurs at this site. Associated species include pinxter bush and maple-leaved viburnum.

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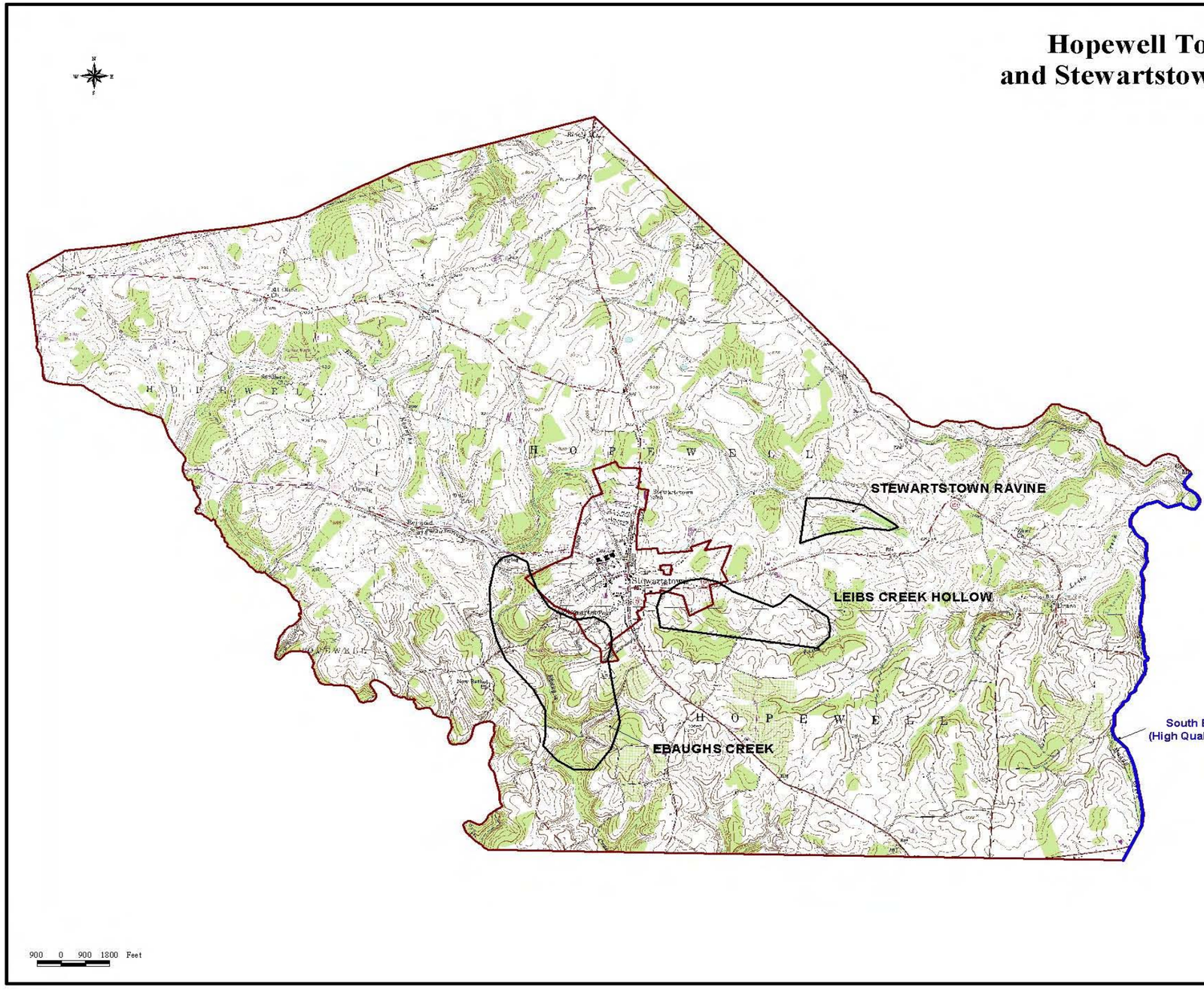


Map 14

Hopewell Township and Stewartstown Borough

York County
Natural Areas Inventory

Natural Areas:

Ebaughs Creek
Leibs Creek Hollow
Stewartstown Ravine

Locally Significant Sites:

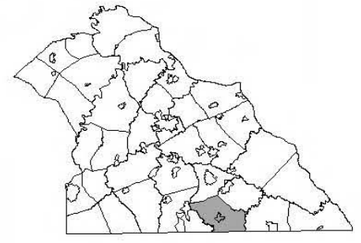
No features on map

Managed Areas:

No features on map

Other:

South Branch Muddy Creek
High Quality - Cold Water Fishes



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Jackson Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Midnight Cave	Animal: Northern myotis	G4	S3B,S3N	N	02/02/97	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Managed Areas: U.S. Army Corps of Engineers Indian Rock Dam Flood Reservoir Land

Jackson Township:

MIDNIGHT CAVE (Jackson Twp.) - This site was found to host an unknown quality population of the G4, S3B, S3N PA-Candidate-at-risk animal species **northern myotis** during a survey in 1997. The species could be impacted by disturbance from people entering the cave, or changes to the cave entrance. Additional surveys are encouraged to assess the population status and habitat of this species.

Northern Myotis is a PA mammal species of concern found in York County. (Refer to Appendix VII for more information.) Photo by Aura Stauffer.

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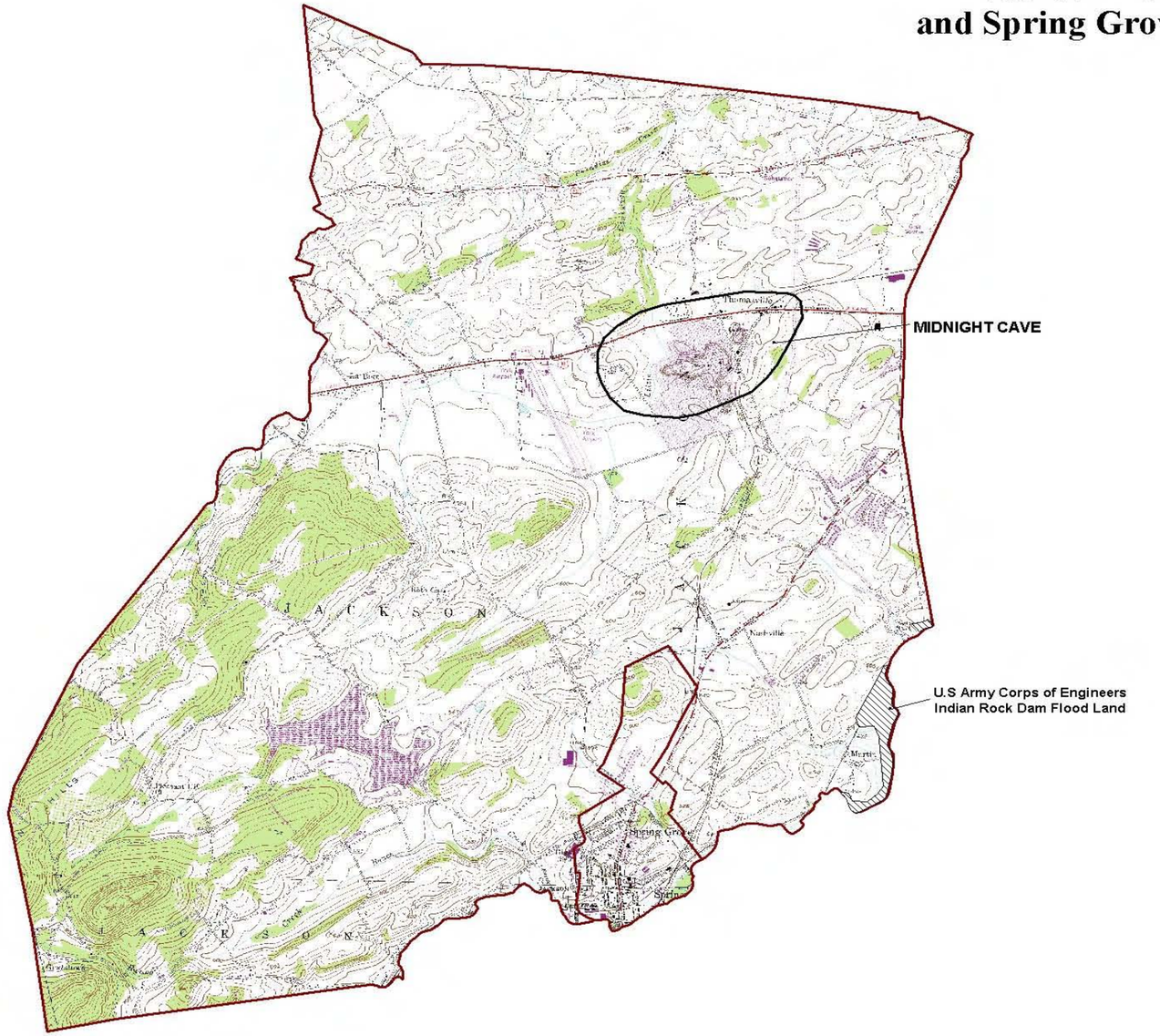
Jackson Township and Spring Grove Borough



Map 15

Jackson Township and Spring Grove Borough

York County
Natural Areas Inventory

Natural Areas:

Midnight Cave

Locally Significant Sites:

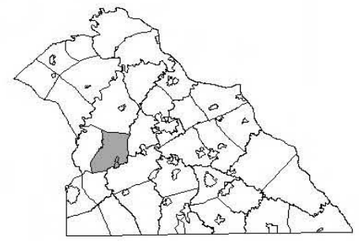
No features on map

Managed Areas:

U.S. Army Corps of Engineers
-Indian Rock Dam Flood Land

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Lower Chanceford Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Indian Steps Woods	Natural Community	G?	S2	N	06/22/95	BC
	Plant: Showy skullcap	G4G5	S1	PX	07/28/95	E
	Plant: Umbrella magnolia	G5	S2	PT	06/22/95	B
Sawmill Run Woods	Natural Community: Mesic Central Forest	G?	S2	N	06/23/95	C
	Plant: Umbrella magnolia	G5	S2	PT	05/23/95	B
	Plant: Lobed spleenwort	G4	S3	N	05/23/95	CD
Muddy Creek at Woodbine	Plant: Downy lobelia	G5	S1	PE	08/23/95	C
West Branch Toms Run	Animal	G3	S2	PE	09/12/96	E
Sunnyburn Run Woods	Natural Community: Mesic Central Forest	G?	S2	N	07/31/95	C
Bryansville Station Seep	Plant: Glade spurge	G3	S1	PE	06/26/96	C
	Plant: Lobed spleenwort	G4	S3	N	06/26/96	D
Oakland Run	Plant: American holly	G5	S2	PT	04/13/93	C
Muddy Creek Gorge	Plant: Lobed spleenwort	G4	S3	N	11/08/95	CD
Conowingo Islands Macrosite	Natural Community: Riverside Outcrop	G?	S1S2	N	07/03/96	A
	Plant: American holly	G5	S2	PT	06/06/95	A
	Plant: Slender golden-rod	G5	S1	PE	09/13/85	B
	Plant: Sticky golden-rod	G5T4?	S1	PE	08/08/95	B

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
	Plant: Aster-like boltonia	G5	S1	PE	08/08/95	A
	Plant: Common hemicarpa	G4	S1	PE	09/19/95	E
	Plant: Tooth-cup	G5	S3	PR	09/19/95	D
	Plant: Three-flowered melic-grass	G5	S2	PT	06/21/95	C
	Animal	G4	S1S2B	PE	2000	E
	Animal: Osprey	G5	S2B	PT	2000	E
	Animal	G4	S2B	PE	2000	E
	Geologic Feature: erosional remnant	G?	S?	N	1979	E
Kyleville Peak Site	Animal	G4	S1S2B	PE	2000	E
Camp Minqua Site	Animal	G4	S1S2B	PE	2000	E
Otter Creek Woods	Natural Community: Mesic Central Forest	G?	S2	N	05/15/96	C
	Plant: Umbrella magnolia	G5	S2	PT	07/28/95	B
	Plant: Cranefly orchid	G4G5	S3	PR	04/05/92	CD
York Furnace Woods	Plant: Harbinger-of-spring	G5	S2	PT	04/07/99	B
Shenks Ferry Ravine	Plant: Umbrella magnolia	G5	S2	PT	08/10/95	C
West Bridgeton Woods	Animal: Hoary elfin	G5	S1	N	05/03/95	E
Shenks Ferry York Woods	Plant: Umbrella Magnolia	G5	S2	PT	08/10/95	BC

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant: Susquehanna River
Southside Woods
Oakland Run Woods

Managed Areas: State Game Lands #83
State Game Lands #181
Counselman Run Natural Area
Oakland Run Natural Area
Otter Creek Natural Area

Other: Otter Creek is a HQ-CWF throughout its basin from the upstream boundary of State Game Lands 83 (T616) to its mouth.

Lower Chanceford Township:

INDIAN STEPS WOODS (Lower Chanceford Twp.) is a fair to good example of a Mesic Central Forest **Natural Community**. This site supports populations of two (2) plant species of concern, **showy skullcap** and **umbrella magnolia**.The canopy is dominated by sugar maple, white ash, and tulip poplar, with small amounts of beech, yellow birch, and basswood. Pawpaw forms a conspicuous sub-canopy. Most notable is the high diversity of ferns and wildflowers including Christmas fern, marginal shield fern, trillium, black snakeroot, blue cohosh, pale jewelweed, and many other species. Most of the area is maintained as a preserve and a nature trail originating across the road from the Indian Steps Museum, providing opportunities for the public to enjoy this area. Maintaining the forest as is and minimizing disturbance can help to prevent further encroachment of non-native plants such as garlic mustard and barberry. This site is partially included in the **Ulmer-Root-Hains Memorial Park**.

SAWMILL RUN WOODS (Lower Chanceford Twp.) is a scenic steep-sided forested ravine that represents a fair to good example of a Mesic Central Forest **Natural Community**. The community is characterized by tulip poplar, sugar maple, hemlock, pawpaw and a lush understory of ferns and other herbs including Christmas fern, blue cohosh, black snakeroot, and violets. The upper slopes support a more xeric forest with chestnut oak, white pine, sweet birch, and hemlock in the canopy and mountain laurel in the shrub layer. Prominent outcrops line the slopes and Sawmill Run flows through the center of the site over several small waterfalls. A large reproducing population of **umbrella magnolia,** a PA-Threatened plant species, is found growing on the lower slopes. The upper slopes support a small population of **lobed spleenwort** whose State status is currently recommended for listing as PA-Endangered due to the scarcity of occurrences in the State. Erosion and off-trail use are potential threats to this plant. The natural community and rare species at this site can be best protected by leaving the forest intact. The site receives some disturbance from hiking and from visitors from the adjacent campground. A small section of the Mason-Dixon Trail passes through the ravine with a bridge that crosses over the stream; upkeep of the trail has helped to minimize potential off-trail impacts.

MUDDY CREEK AT WOODBINE (Lower Chanceford & Peach Bottom Twps.) - Downy lobelia is found on a powerline ROW on a steep southwest facing slope above Muddy Creek. A small population of this PA-Threatened plant occurs under a young stand of black cherry, shagbark hickory, and eastern hemlock. Associated herbs at this partially shaded site include sunflower, Virginia creeper, Japanese honeysuckle, stilt grass, and pale Indian plantain. A current disturbance at this site is management to keep the ROW free of tall trees. **Downy lobelia** is vulnerable to the herbicide applications and/or machinery that

will be used to eradicate the trees growing above it. This population may also be vulnerable to increasing coverage of exotic species such as Japanese honeysuckle and stilt grass. It is possible that there are other sub-populations growing nearby and more searching of this area is needed to establish the full extent of this occurrence and its overall vulnerability.

MUDDY CREEK BLUFF (Lower Chanceford, Fawn, & East Hopewell Twps.) - Thousands of stems of riverweed were observed at several sites along this stretch of Muddy Creek in 1995. As of 2002, riverweed reported from this site in the original NAI is no longer tracked as a species of concern. This site has subsequently been removed from Table 1.

WEST BRANCH TOMS RUN (Lower Chanceford & Chanceford Twps.) - The site consists mostly of open grassy uplands with a large man-made pond, and some emergent/scrubby wet areas along the west branch of Tom's Run. One (1) specimen of a **PE animal species** was found at this site in 1996. Most of the property is mowed or cultivated for hay. The south end of the property and the entire east bank of the creek are mowed and contain scrubby-natural vegetation. Modification of the seepage areas and associated wetlands would be the greatest threat to the animal species. A more thorough survey of the site for this species and its habitat is recommended.

SUNNYBURN RUN WOODS (Lower Chanceford Twp.) - A Mesic Central Forest **Natural Community** is found in this cool, scenic ravine along Sunnyburn Run. The steep, north facing slopes are dominated by hemlock, black birch and a dense thicket of Rhododendron. South facing slopes are characterized by mixed hardwoods dominated by tulip poplar, white ash, red maple and a sub-canopy/shrub layer of pawpaw and witch hazel. The creek tumbles down a series of waterfalls to the Susquehanna River. The area is currently ranked as a fair quality example of this community on a range-wide scale (more extensive examples occur in Virginia and south) but should continue to improve in quality if left unlogged.

BRYANSVILLE STATION SEEP (Peach Bottom & Lower Chanceford Twps.) - **Glade spurge** is found at the base of a northeast facing slope bordering a floodplain swamp and marsh. A small population of this PA-Endangered plant occurs in filtered light and moist soil at this site. Disturbances include thinning of the adjacent forest and ATV use on and around an abandoned rail line. Sweet-scented Indian plantain represents a population of a plant species whose State status was listed as Tentatively Undetermined on the original NAI but has since been delisted and is no longer tracked as a species of concern. A small poor quality population of **lobed spleenwort** occurs on rock outcrops under a canopy of hemlock. Retaining the forest cover at this site will benefit this population.

OAKLAND RUN (Lower Chanceford Twp.) - **American holly** occurs on several mesic to xeric areas within the Oakland Run watershed, all of them in or near **State Game Lands #181**. Observations indicate this is a non-reproducing population. Parts of the forest here have recently been logged, but the element has gone unaffected. Disturbances at this site include roads, trails, logging, and adelgid damage to the eastern hemlocks.

MUDDY CREEK GORGE (Lower Chanceford & Peach Bottom Twps.) - Lobed spleenwort is a plant species of special concern that occurs on the steep slopes that rise above Muddy Creek along this stretch. The slopes are primarily forested, with hemlock being somewhat dominant on north facing slopes and side ravines, and mixed oaks, red maple, and sweet birch sharing dominance on slopes with other aspects. The stream course here is highlighted by dramatic outcrops with small waterfalls which helps make this winding gorge an outstanding feature within the County.

CONOWINGO ISLANDS MACROSITE (Lower Chanceford Twp. & Lancaster Co.) - "*Peavine Island sub-site*" is a Riverside Outcrop **Natural Community**. "Peavine Island" like the other islands of this community is an outcrop of erosion resistant schist which forms a peninsula with tortuous topography including massive rock exposures and small ponds perched high above the river. Plant communities on the island blend into one (1) another forming a relatively small scale mosaic of habitat types with some unusual juxtapositions. Habitat types include floodplain thicket, floodplain forest, riverside outcrop cliff, vernal ponds, mesophytic and dry rocky forest, dry shrub heath, and littoral zone. This unique assemblage of communities is home to at least four (4) species of special concern. A high quality population of **American holly**, a PA-Threatened plant species, occurs scattered over the high ground of Peavine Island within the mesophytic and dry rocky forest. It also occurs on the adjacent forested slopes bordering the river to the west. This large reproducing population occurs under a canopy of tulip poplar, eastern hemlock, and oaks including red, white, and chestnut. Shrubs including pawpaw, rhododendron, and spicebush are associates. **Slender golden-rod** and **sticky golden-rod** occur in crevices of the exposed rock above the river, but not out of the influence of high water. These outcrops may be scoured by ice flows in late winter and/or flood waters in early spring; but, by late summer, the plants growing on them may be subjected to extreme drought. Plant species growing here are usually found growing in protected crevices and hollows where soil accumulates, and may have adaptations that allow them to survive the extremely harsh conditions. **Sticky golden-rod** is a large high quality population which grows here and elsewhere in the Conowingo Islands. (for additional information on **sticky golden-rod** see also *York Rivershore -Lock 12 North sub-site*). Big bluestem, little bluestem, poverty grass, and bush-clover are among the few species associated with **sticky golden-rod**. A high quality population of **aster-like boltonia** grows amongst the rocks at the water line all around Peavine Island. The Conowingo Islands may be the only surviving site for **aster-like boltonia** in Pennsylvania. Threats to this site are minimal because it is managed as a natural area. The only evidence of anthropogenic disturbance observed in 1995 was from recreation, unfortunately the scale and type of recreation has been degrading the island. The south third was burned in either 1993 or 1994 and evidence in the form of fire pits and garbage suggests that the fire was anthropogenic in origin. Although some species may be tolerant of fire, persistent abuse of this site by reckless people may lead to the decline of the elements found here and to the community as a whole. A low quality population of **three-flowered melic-grass**, a PA-Threatened plant species, occurs in a level area of a successional forest adjacent to Peavine Island. Dominant species include black locust, American elm, spicebush, arrowwood, Virginia creeper, and poison ivy. Threats to this species include logging and trail creation. The current network of trails in this area should be sufficient to meet future recreational needs. "*York Rivershore\Lock 12 North sub-site*" is a Riverside Outcrop **Natural Community**, interspersed with small pools and back water coves. The shape, structure, and elevation of the rock outcrops, along with their proximity to the flowing water of the river creates a variety of habitat situations. Although the vegetative cover of the outcrops is generally sparse, the diversity of habitats enables at least four (4) plant species of special concern to grow here. **Common**

hemicarpa & **tooth-cup** are found closest to the water line growing in the open on alluvial soil. A large good quality population of lance fog-fruit and associated species including halberd-leaved rose mallow, purple loosestrife, smartweed, and black willow were identified at this site on the original NAI. Lance fog-fruit has since been delisted and is no longer tracked as a species of concern. **Tooth-cup** is a small poor quality population with associates similar to lance fog-fruit. **Common hemicarpa** is currently known from only one (1) other site in the State (Presque Isle, Lake Erie). The population in the Conowingo Islands was discovered in 1995 and has not been fully assessed. Both of these species occur on narrow exposed shoreline fragments and may be dependent on seasonal water level fluctuations and full sunlight. Habitat for these species has been much reduced along the lower Susquehanna due to the damming of the river. Large high quality populations of **Sticky golden-rod** and **common hemicarpa** occur higher in the rocks, but not out of the influence of the river when waters are high. Big bluestem, poverty grass, aster, and purple loosestrife are among the few species associated with **sticky golden-rod** and **common hemicarpa**. A poor quality population of Sweet-scented Indian plantain occurs further up the bank within the managed area under one (1) of the powerline ROW's. Although this area is seldom subjected to flooding, this species requires habitat associated with rivershores and flood plains. Its associates on the ROW include blackberry (Rubus allegheniensis), tick trefoil, aster, stilt grass, and Japanese honeysuckle. Sweet-scented Indian plantain has been removed from the State list of species of special concern since the original NAI. "*Muddy Creek Fishing Access sub-site*" supported two (2) poor quality populations of plant species of special concern (lance fog-fruit & riverweed) during the original NAI, both of which have been delisted and are no longer tracked. Four (4) new occurrences of breeding populations of animals of special concern were observed on the banks of the Susquehanna River in 2000. The **osprey** is a G5 PA-Threatened animal species and represents two (2) of these occurrences. Two (2) **G4 PA-Endangered animal species** were also observed. The boundary for this site has been enlarged to accommodate these new species occurrences. Both of these species require habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer along the river will encourage the long-term success of this species. The Conowingo Islands represent an erosional remnant **geologic feature.** Most Susquehanna River islands were formed by alluvial processes, with the notable exception of this group of over 60 islands which were formed by erosion of schist and gneiss bedrock (Geyer and Bolles 1979). These islands which represent one (1) of the most scenic areas of the State are mostly in Lancaster County. York County includes Peavine Island which covers approximately 25 acres and over a mile of eroded bedrock shoreline which goes from Peavine Island to the Holtwood dam.

KYLEVILLE PEAK SITE (Lower Chanceford Twp.) - This area hosts a breeding pair of a **PA-Endangered animal species** observed at a site along the Susquehanna River in 2000. The species requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer and large trees along the river will encourage the long-term success of this species.

CAMP MINQUA SITE (Lower Chanceford Twp.) - A new occurrence of a breeding population of a G4 **PA-Endangered animal species** was observed from the banks of the Susquehanna River in 2000. This species requires habitat associated with seacoasts, rivers, and large lakes. Major threats include human disturbance, shooting, and pesticides. Protection of the forested buffer and large trees along the river will encourage the long-term success of this species.

OTTER CREEK WOODS (Chanceford & Lower Chanceford Twps.) - This site is a steep sloped, winding ravine with prominent rock outcrops. Otter Creek flows through the ravine creating scenic pools and small waterfalls. The woodland represents a fair example of a Mesic Central Forest **Natural Community** and is dominated by eastern hemlock and tulip poplar, with lesser amounts of sweet birch, white ash, and hickory. Some of the largest specimens of eastern hemlock known from the County are found in this forest. The herb layer varies depending on slope position and the amount of light reaching the forest floor. Common herbs include Christmas fern, wood fern, Indian cucumber, jack-in-the pulpit, and violets. The upper slopes are characterized by a drier forest with chestnut oak, red oak, sweet birch, and mountain laurel. Populations of two (2) species of special concern occur here, **umbrella magnolia** and **cranefly orchid**. A good population of PT **umbrella magnolia** grows on the lower slopes of the ravine. A fair to poor quality population of PR **cranefly orchid** is found on an east facing, mesic wooded slope adjacent to the creek. This site receives a considerable amount of disturbance from recreational hiking. The populations of both of these species will be best protected by leaving the ravine and the forest on the adjacent slopes in their current condition.

YORK FURNACE WOODS (Lower Chanceford Twp.) - A good quality population of a G5, S2 PA-Threatened plant species, **harbinger-of-spring**, identified in the original NAI was observed again during a visit to the site in 1999, and reported to be in the same condition. The site is an easterly-facing wooded slope with rich, moist soil along the Susquehanna River. The canopy is dominated by tuliptree, but also contains sycamore, basswood and black walnut. The associated understory and herbaceous plant species include pawpaw, spicebush, trout-lily, dutchman's-breeches, may-apple and Virginia bluebells. There was little evidence of disturbance, though logging is a threat. Leaving the site in its current condition will best protect this occurrence.

SHENKS FERRY RAVINE (Chanceford & Lower Chanceford Twps.) - This site is a forested stream ravine dominated by tulip poplar. A fair population of **umbrella magnolia** grows in the understory of this forest.

SHENKS FERRY YORK WOODS (Chanceford & Lower Chanceford Twps.) - A fair to good quality population of a PT plant species, **umbrella magnolia**, occurs on the forested slopes running along the Susquehanna River in this area. It occurs primarily under a canopy of tulip poplar, but is also found in some sunnier forest gaps. Lance fog-fruit which occurs on the nearby rivershore is no longer tracked as a species of concern.

WEST BRIDGETON WOODS (Lower Chanceford & Fawn Twps.) - The **hoary elfin** is an animal species of special concern which has been observed at this site several times during the 1980's. Attempts to find it during the 1995 field season were unsuccessful, although appropriate habitat still exists at the site. It prefers habitats with dry acidic soils, such as sand barrens, rocky slopes, or ridge tops. These kinds of sites support the host plant species for this animal.

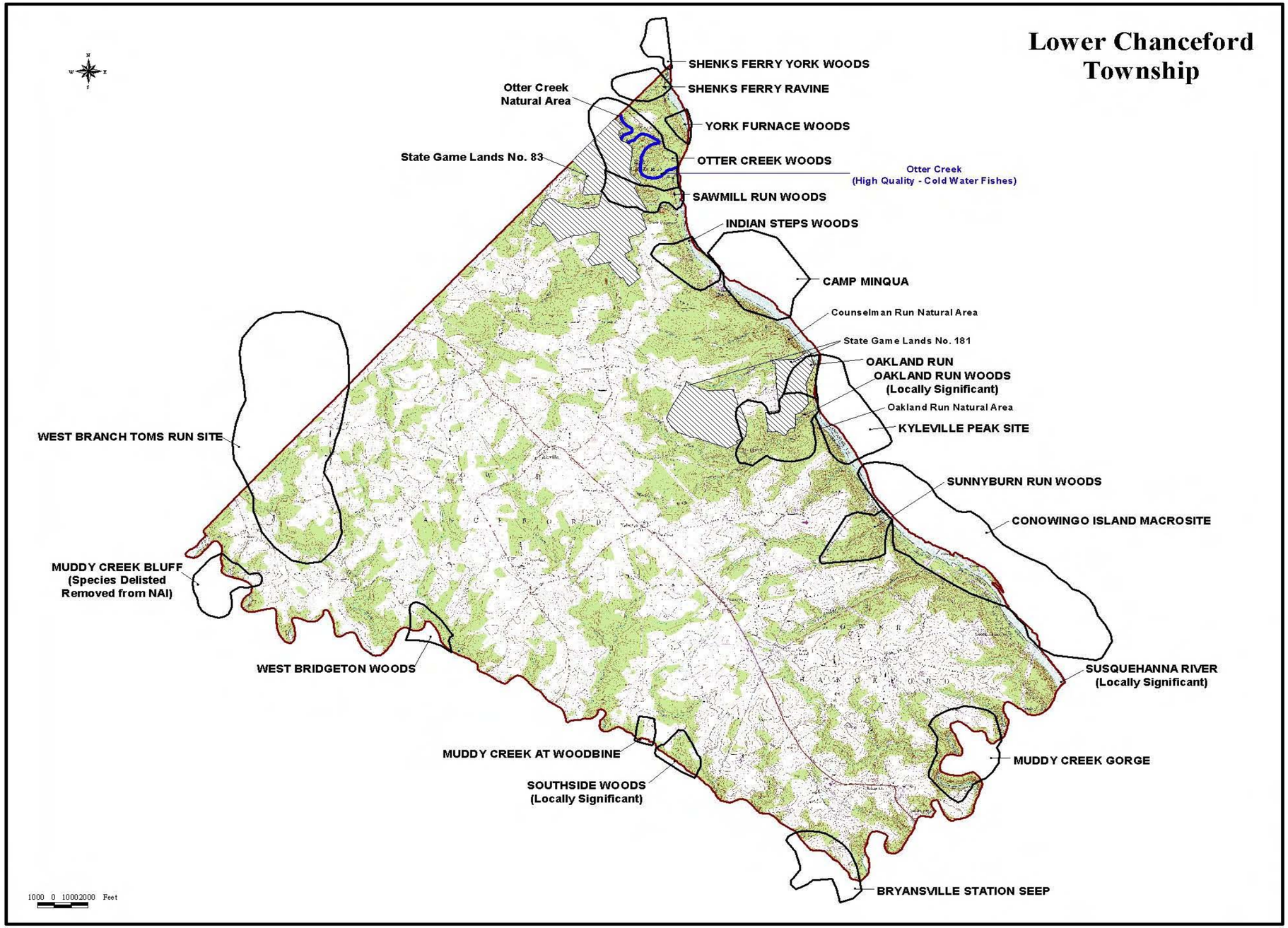
Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.

SOUTHSIDE WOODS (Lower Chanceford & Peach Bottom Twps.) is a **Locally Significant site** which encompasses an area on both sides of Muddy Creek including a ravine along a tributary of the creek. The ravine is dominated by hemlock, tulip poplar, and yellow birch. Mixed ages of the trees, good regeneration, and the presence of substantial windfalls provide good structure for this locally significant community. Although portions of the site were logged in the past 60 or so years, it contains some outstanding hemlocks and tulip poplars. The largest hemlock at the site exceeds three (3) feet in diameter.

OAKLAND RUN WOODS (Lower Chanceford Twp.) is a **Locally Significant site** located in a steep sloped stream ravine which empties directly into the Susquehanna River. The stream flows down a steep gradient through thickets of rhododendron and over moss covered rock formations. The forest is relatively mature and is dominated by eastern hemlock and tulip poplar with contributions from sweet birch and red maple. The hemlock at this site is declining due to damage from woolly adelgid. A little used recreational trail exists at this site making it accessible to the public.

Downy Lobelia is a state-endangered plant species that occurs in York County. Photo: PA Science Office of The Nature Conservancy.



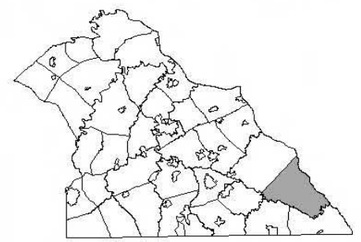
Map 16
Lower Chanceford Township
York County
Natural Areas Inventory

Natural Areas:
- Bryansville Station Seep
- Camp Minqua Site
- Conowingo Islands Macrosite
- Indian Steps Woods
- Kyleville Peak Site
- Muddy Creek Gorge
- Muddy Creek at Woodbine
- Oakland Run
- Otter Creek Woods
- Sawmill Run Woods
- Shenks Ferry York Woods
- Shenks Ferry Ravine
- Sunnyburn Run Woods
- West Branch Toms Run
- West Bridgeton Woods
- York Furnace Woods

Locally Significant Sites:
- Oakland Run Woods
- Southside Woods
- Susquehanna River

Managed Areas:
- Counselman Run Natural Area
- Oakland Run Natural Area
- Otter Creek Natural Area
- State Game Lands No. 83
- State Game Lands No. 181

Other:
- Otter Creek
  - -High Quality - Cold Water Fishes



Map Features
- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Lower Windsor Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Crystal Pit Cave	Animal: Price's cave isopod	G3G4	S2S3	N	03/08/96	CD

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant: Beaver Creek
Susquehanna River
Fishing Creek-Susquehanna River Site

Managed Areas: Beaver Creek Watershed
Samuel S. Lewis State Park
Safe Harbor Park & Watershed

Lower Windsor Township:

CABIN CREEK (Lower Windsor Twp.) - A low quality population of riverweed whose State status was listed as Tentatively Undetermined during the original NAI has since been delisted and is no longer tracked as a species of concern. Several hundred stems of this species were observed growing in a forest buffered section of Cabin Run growing without associates in 1995. This species requires clean swiftly moving water and an open canopy for survival. Threats to this occurrence include pollution, excessive sedimentation, and impoundment. This site has been removed from Table 1.

LONG LEVEL RIVERSHORE (Lower Windsor Twp.) - During the original NAI, lance fog-fruit grew on this site which typically received periodic inundation and scouring from flood waters. This species has since been delisted and is no longer tracked as a species of concern. This site has been removed from Table 1.

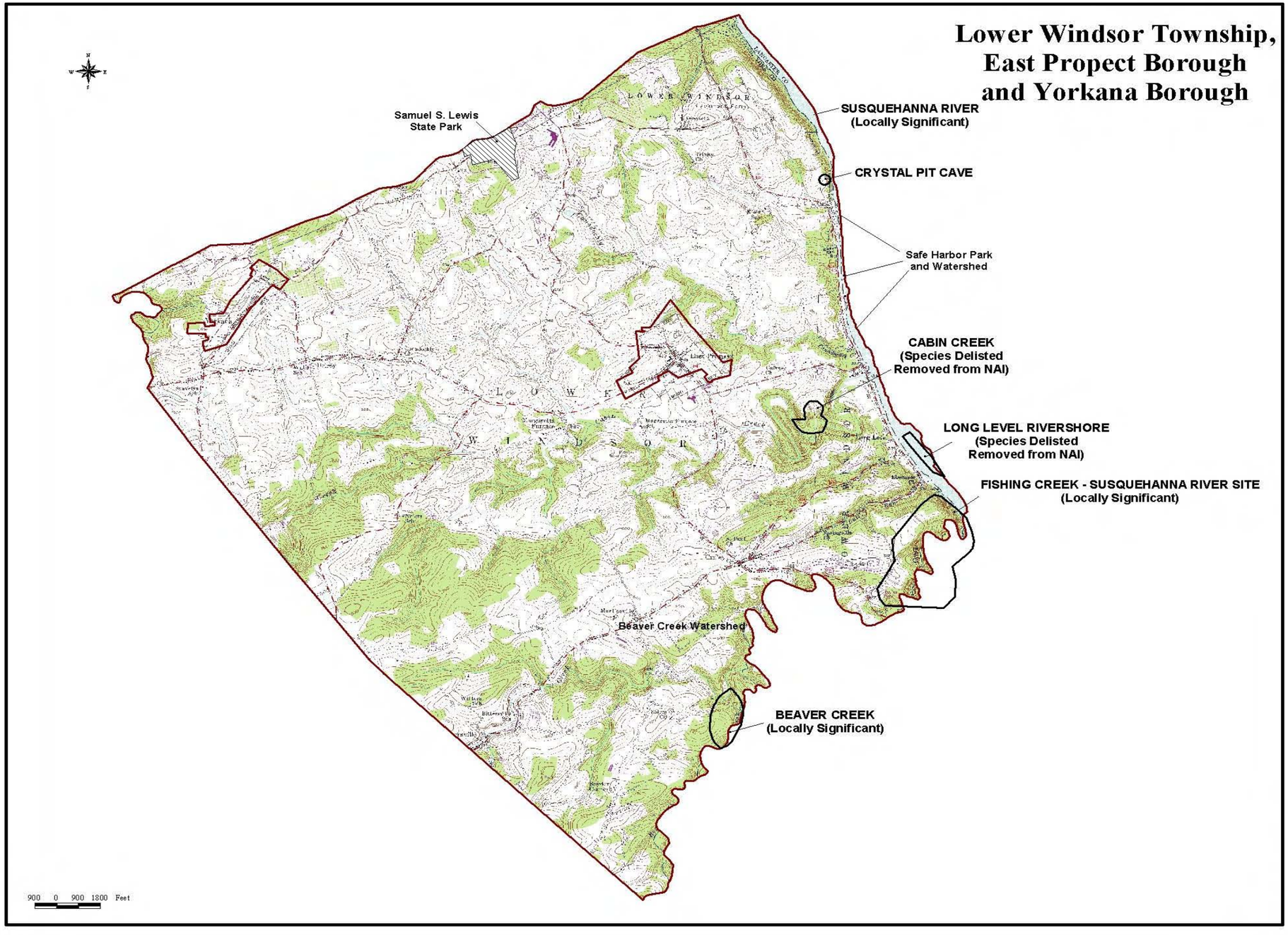
CRYSTAL PIT CAVE (Lower Windsor Twp.) - Price's cave isopod is an invertebrate which occurs in limestone caves in southcentral Pennsylvania. It has very specific habitat requirements and, like other species which have adapted to life in caves, it has no eyes or pigmentation. It was last observed at this site in 1996. Contamination of the ground water flowing through the cave is a threat to this species.

Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.

FISHING CREEK-SUSQUEHANNA RIVER SITE (Chanceford & Lower Windsor Twps.) - Since the original NAI, riverweed has been delisted and is no longer tracked as a species of special concern. This site has subsequently been removed from Table 1 and added to Table 2 as a site of **Local Significance**. This steep sided, forested ravine supports good plant diversity on its south facing slopes. Additional surveys are recommended to determine if this plant diversity contains any species of special concern.

BEAVER CREEK (Lower Windsor & Chanceford Twps.) is a **Locally Significant site** located south of Salem Church Road which supports a rich mesic woods with a high diversity of trees, shrubs, wildflowers and ferns. One (1) of the interesting features is the presence of striped maple, previously unreported in the County, but a common component of northern forests (e.g. from northern PA to New England). The mesic rocky slopes support species such as Christmas fern, wood fern, meadow rue, wild yam, and black snakeroot. The tree canopy is dominated by hickory, ash, and tulip poplar with small amounts of elm and black walnut. Azalea, witch hazel, and sassafras comprise the well developed shrub layer. The site was evaluated from the roadside and further inventory would be desirable.



Map 17

Lower Windsor Township, East Propect Borough and Yorkana Borough

York County
Natural Areas Inventory

Natural Areas:

Crystal Pit Cave

Locally Significant Sites:

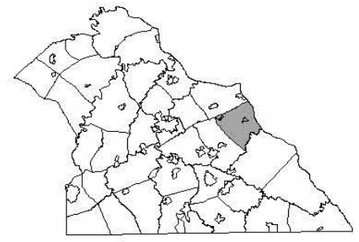
Beaver Creek
Fishing Creek - Susquehanna River Site
Susquehanna River

Managed Areas:

Beaver Creek Watershed
Safe Harbor Park and Watershed
Samuel S. Lewis State Park

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Manchester Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
North York Cave	Animal	G1G2	S1	N	01/28/93	BC
	Animal	G3	S2S3	N	01/28/93	BC

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Manchester Township:

NORTH YORK CAVE (Manchester Twp.) - Two (2) **animal species of special concern** have been found in this cave. The first **species of special concern** is a cave amphipod and is exceedingly rare in Pennsylvania with only two (2) known sites. This species, about which there is little information, occurs in cave pools at this site. The second **species of special concern** is a cave isopod and is restricted to caves in southcentral Pennsylvania. It has very specific habitat requirements and, like other species which have adapted to life in caves, it has no eyes or pigmentation. These species were last observed at this site in 1993. Contamination of the ground water flowing through the cave is a threat to both of these species.

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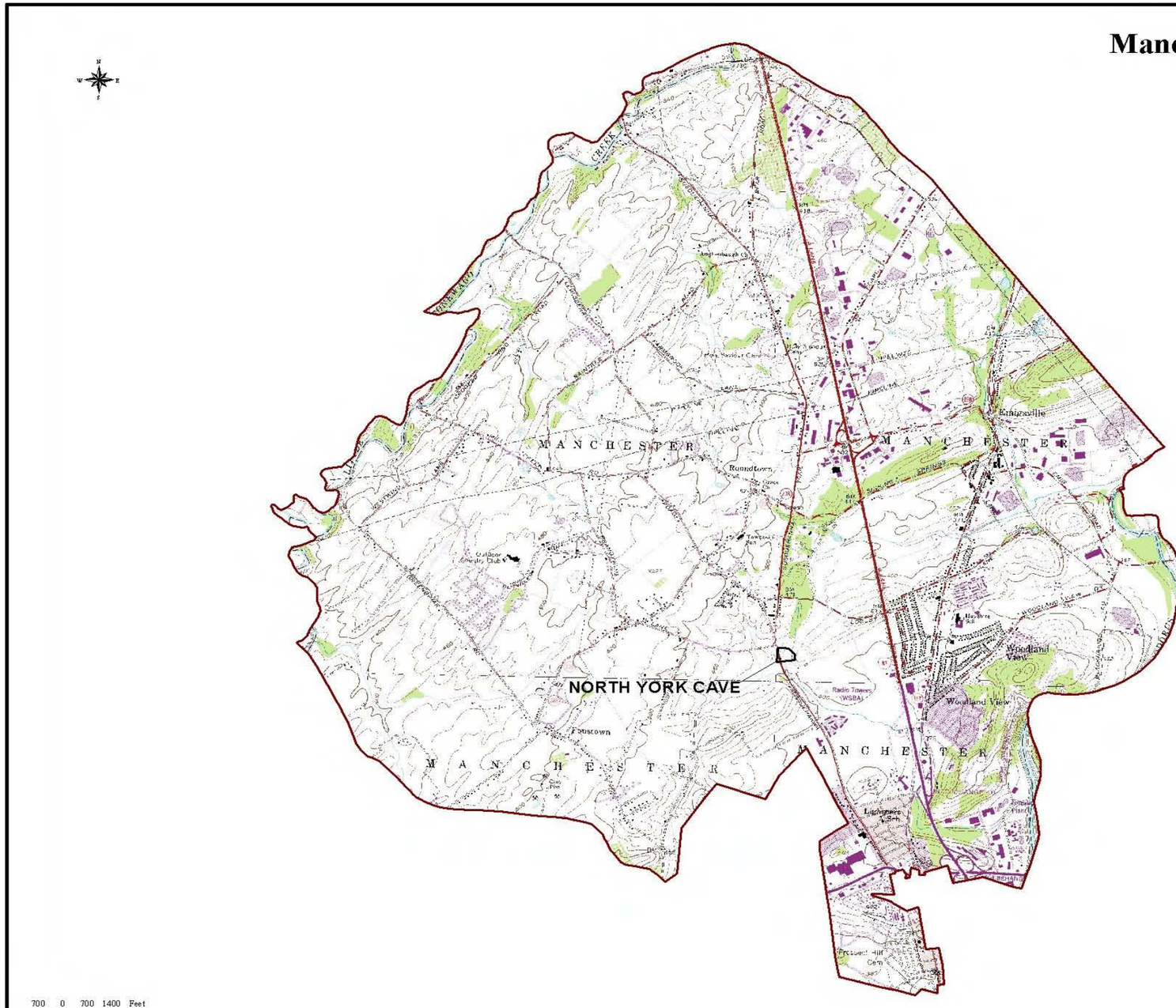


Map 18

Manchester Township

York County
Natural Areas Inventory

Natural Areas:

North York Cave

Locally Significant Sites:

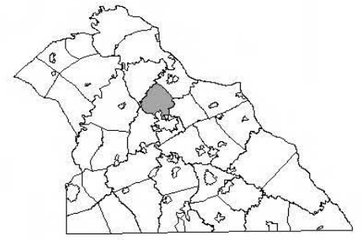
No features on map

Managed Areas:

No features on map

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Manheim Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Marburg Flats	Animal: Red-banded hairstreak	G5	S2S3	N	06/14/96	E
Beecher Hill Site	Animal	G3	S2	PE	06-1997	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: Codorus State Park

Manheim Township:

MARBURG FLATS (Manheim Twp.) - The **red-banded hairstreak**, an animal species of concern which was listed as extirpated from Pennsylvania, was observed along the roadside in the vicinity of **Codorus State Park**. Further surveys are encouraged to fully document this population.

BEECHER HILL SITE (Manheim Twp.) – An undetermined quality population of a G3, S2 **PA-Endangered animal species** was reported from this site in 1997. Modification of the seepage areas and associated wetlands would be the greatest threat to this species. A more thorough survey for this species and its habitat is recommended.

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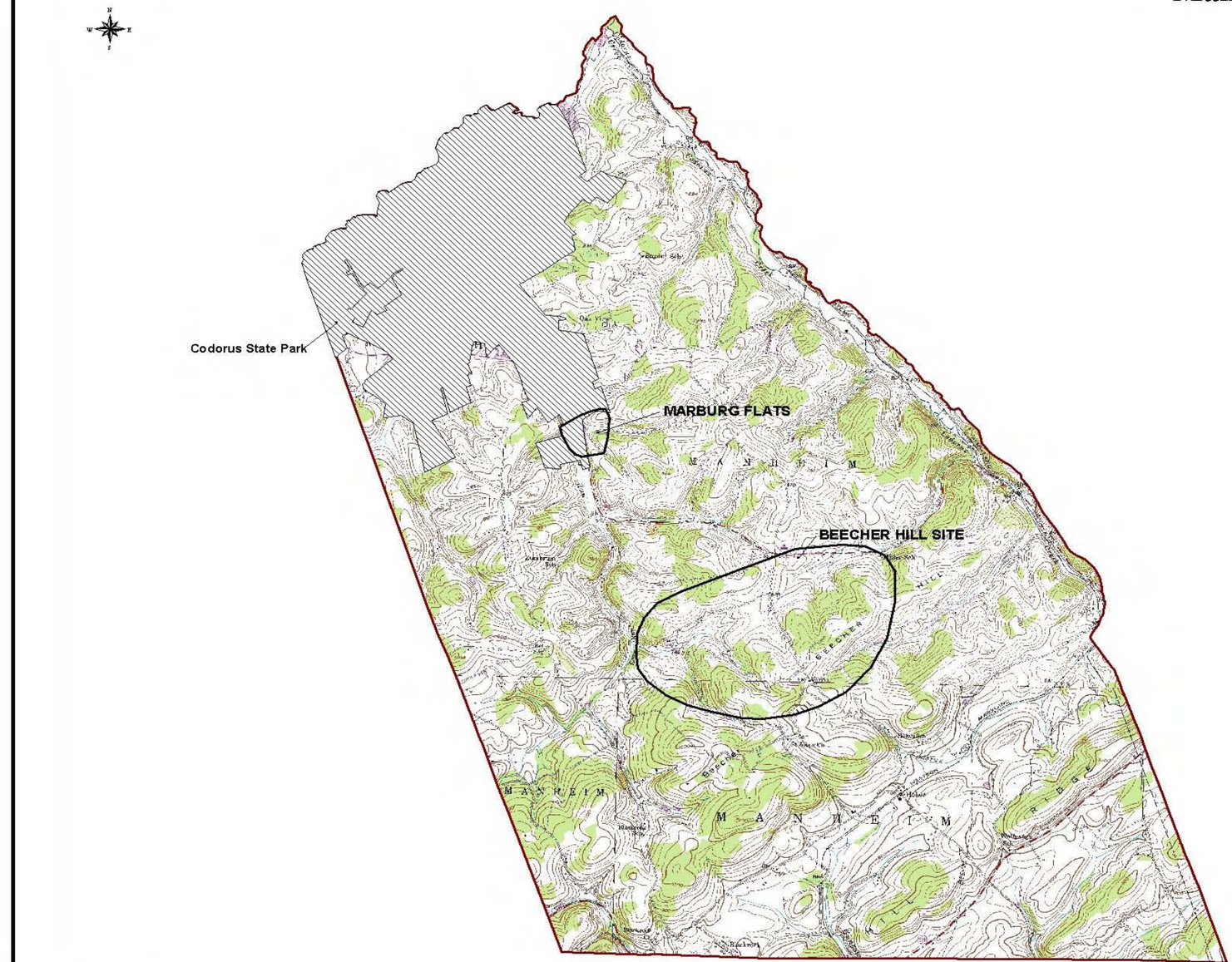
Manheim Township



Map 19
Manheim Township

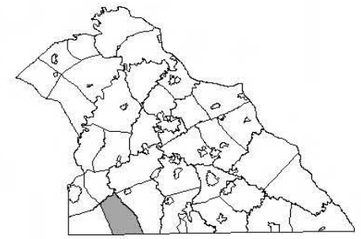
York County
Natural Areas Inventory

Natural Areas:
Beecher Hill Site
Marburg Flats

Locally Significant Sites:
No features on map

Managed Areas:
Codorus State Park

Other:
No features on map



Map Features
- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Monaghan Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Nells Hill Swamp	Animal: Giant swallowtail	G5	S2	N	10/10/96	E
	Plant: Shumard's oak	G5	S1	PE	10/11/96	C
	Plant: Horse-gentian	G5	S1	TU	05/23/97	D

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Locally Significant: Andersontown Woods

Monaghan Township:

NELLS HILL SWAMP SITE (Monaghan & Warrington Twp.) - In the original NAI, this site was listed as Locally Significant for its rich diversity of wetland flora and as a habitat type uncommon in the County. This area was surveyed during 1996 and was found to contain an animal species of special concern the **giant swallowtail**, and two (2) plant species of special concern **shumard's oak** and **horse-gentian**. With these additions, the site has been removed from Table 2, and added to Table 1, and the corresponding site boundary expanded to accommodate these populations. **Giant swallowtail** represents an unknown quality population of a G5, S2 animal species of concern that relies on prickly-ash as a food source during its development. The prickly-ash exists within a shrub thicket of a floodplain forest. In 1996, a marginal quality population of **shumard's oak**, a G5, S1 PA-Endangered plant species, was identified on this site. Though growing vigorously, the species exhibited very sparse reproduction. During a subsequent survey in 1997, a poor quality population of **horse-gentian**, a G5, S1 plant species of special concern, was located. The surrounding land is wooded, with State Game Lands to the north and east. Canopy species of the forest include white ash, white oak and shagbark hickory, with an understory of spicebush, redbud and black-haw. There are no obvious threats. Additional surveys are recommended to assess the extent and habitat of these species at this location. This site is partially within **State Game Lands #242.**

Locally Significant Sites:

ANDERSONTOWN WOODS (Monaghan Twp.) is a **Locally Significant site** located along the Yellow Breeches adjacent to **Upper Allen Township Park** (Cumberland County). The site consists of a mature woods with a diversity of tree species including eastern hemlock, chestnut oak, American beech, red oak, and many others. Speckled alder and witch hazel occur in the understory along with ferns and wildflowers. The forest is notable because of its maturity and the wide spreading crowns on the trees that can be seen from the Park across the creek.

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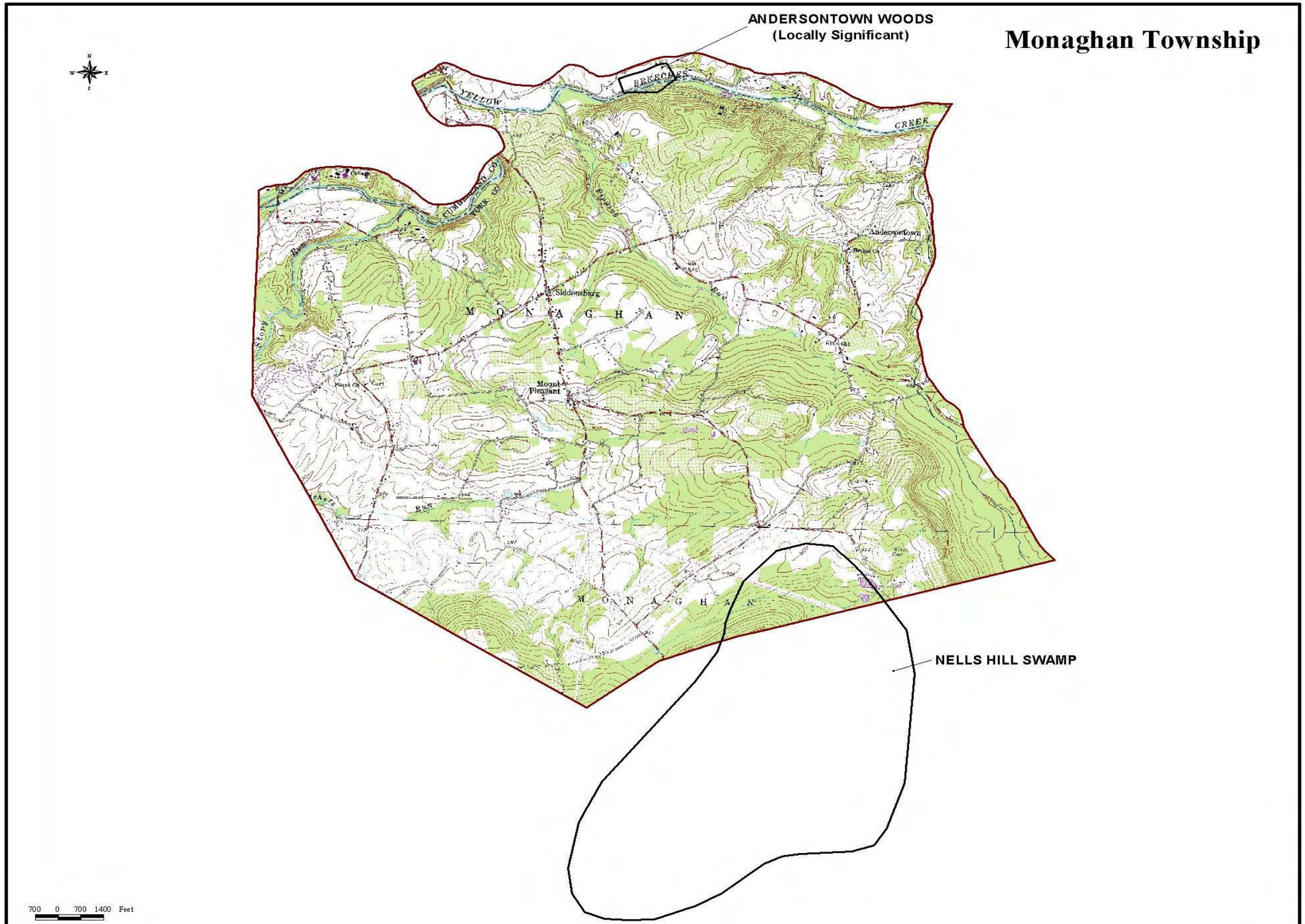


Map 20
Monaghan Township

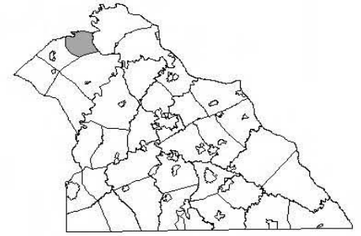
York County
Natural Areas Inventory

Natural Areas:
Nells Hill Swamp

Locally Significant Sites:
Andersontown Woods

Managed Areas:
No features on map

Other:
No features on map



Map Features
- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Newberry Township, Goldsboro Borough, York Haven Borough

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Erney Cliff	Plant: Wild oat	G5	S1	TU	07/20/95	C
Shady Lane Woods	Animal: A zale moth	G4	S2	N	04/04/96	E
Plainfield Rivershore	Plant: Flat-stemmed spike-rush	G4	S1	PE	10/18/97	BC
	Plant: White trout-lily	G5	S3	N	05/01/01	B
	Plant: Sida	G2	S2	PE	08/08/01	BC
Conewago Creek at York Haven	Animal: Yellow-crowned night-heron	G5	S1B	PE	1985	E
	Animal: Black-crowned night-heron	G5	S2S3B	N	05/30/96	D

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant: Susquehanna River

Newberry Township, Goldsboro Borough, York Haven Borough:

ERNEY CLIFF (Conewago & Newberry Twps.) is a sparsely vegetated south facing eroded red shale cliff. It occurs on the outside curve of a sharp bend of the Conewago Creek rising steeply from the stream to a more gradually sloping hillside above. Vegetation cover is greatest along the stream and on the summit of the cliff. The plant community at this site is comprised of species tolerant of extremes in heat and lack of moisture. Woody vegetation on the cliff includes red cedar and dwarf hackberry. Native herbs include foamflower, Canada bluegrass, hairy-lip fern, and poison ivy. Exotic herbs which are common include Japanese honeysuckle, soapwort, and orpine. **Wild oat** is a mediocre occurrence found on lower elevations at this site. When last observed in July of 1995, many hundreds of stems of this species were flowering vigorously. The site has not been revisited to determine if there has been any change in the population of **wild oat** reported in the original NAI. Small-flowered crowfoot occurred at higher elevations at this site during the original NAI but has since been delisted and is no longer tracked as a species of special concern. A major threat to **wild oat** is loss of habitat to the aggressive exotic species Japanese honeysuckle.

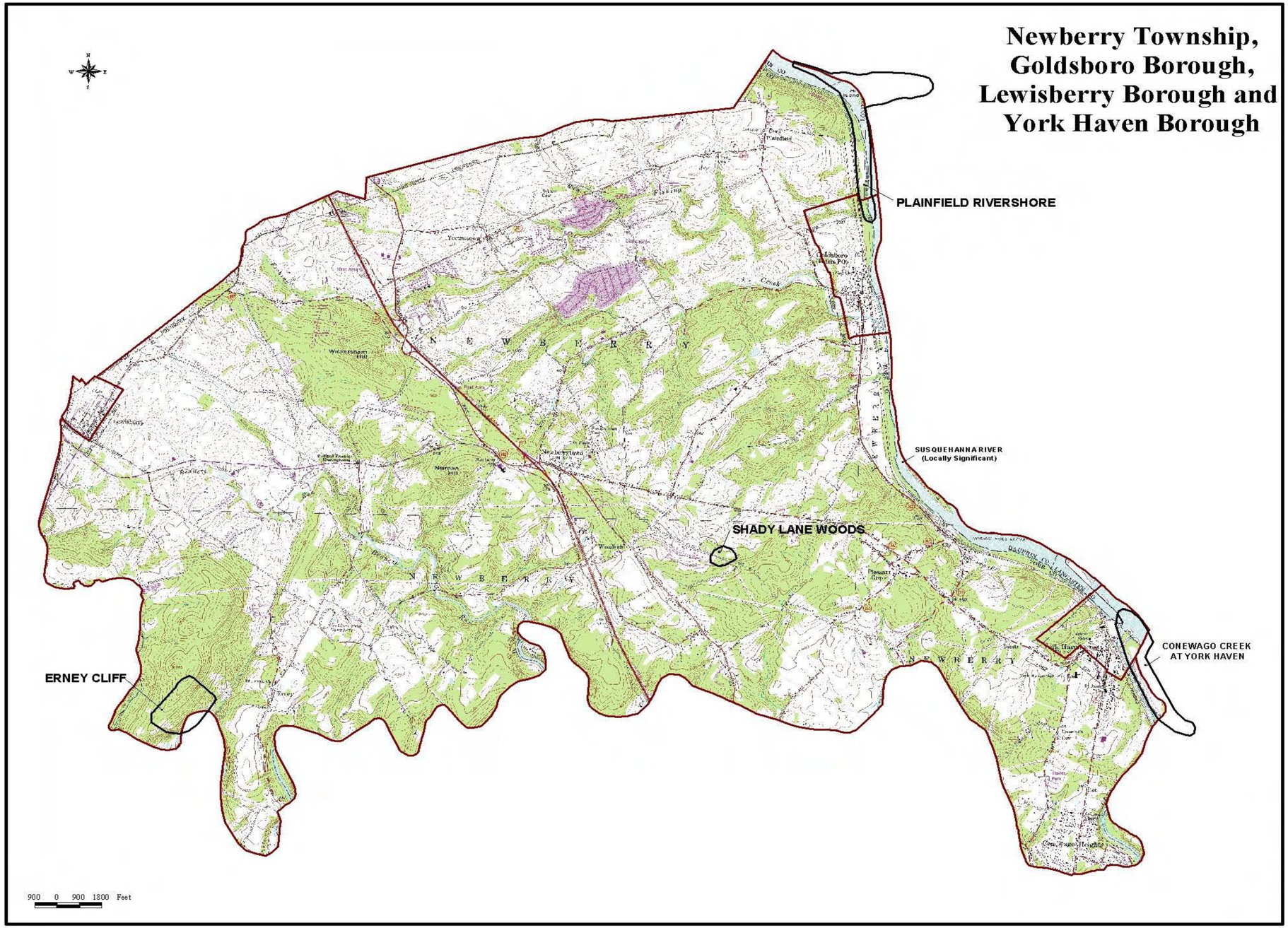
SHADY LANE WOODS (Newberry Twp.) - This site is located in a mostly forested residential/rural area. Further surveys are required to fully document the existence of **a zale moth** at this site and to determine its quality.

PLAINFIELD RIVERSHORE (Newberry Twp.& Goldsboro Borough) - This site is a floodplain forest along the Susquehanna River with a mixed hardwood canopy dominated by silver maple, green ash, box elder, honey locust, and hackberry. During a survey in 2001, two (2) new plant species of concern were identified at this site and the site boundary was enlarged to accommodate these populations. A good quality population of the G5, S3 plant species of special concern **white trout-lily** was found spread throughout the woodlot in association with solomon's seal, spring beauty, false-mermaid, common blue violet and pawpaw. A small but globally significant population of the G2, S2 PA-Endangered plant species **sida** was also found at this site. This species was found growing in association with Indian hemp, virgin's-bower, frost grape, Indian strawberry and hog-peanut. To preserve the species found here, the forest canopy should remain intact. Exotic and native weedy plant species may impact the species of concern in the future. The large, good to marginal quality population of **flat-stemmed spike-rush**, a G4, S1 PA-Endangered plant species identified in the original NAI, was again observed in a rocky scour area on the shore of the Susquehanna River in 1997. The plants were observed during a drought episode in an area that is normally inundated with water. The associated plant species include water-smartweed, water-willow, showy hibiscus, purple loosestrife, freshwater cordgrass and switch grass, with a river bank canopy of persimmon, river birch and silver maple. Impoundment of the river would detrimentally impact the habitat of this species. Lance fog-fruit was observed during the original NAI but has since been delisted and is no longer tracked as a species of concern.

CONEWAGO CREEK AT YORK HAVEN (East Manchester & Newberry Twps., & York Haven Boro.) - The **yellow-crowned night-heron** is an animal species of special concern which has been observed with young feeding along a stretch of the Conewago Creek near Brunners Island. The **black-crowned night-heron** has also been observed feeding along this stretch of the creek. Both of these species are crepuscular (active during twilight) and nocturnal, and require wetland habitat with shallow water such as marshes, lake shores, ponds, or wooded streams. Loss of habitat is a major threat.

Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.



Map 21

Newberry Township, Goldsboro Borough, Lewisberry Borough and York Haven Borough

York County
Natural Areas Inventory

Natural Areas:

Conewago Creek at York Haven
Erney Cliff
Plainfield Rivershore
Shady Lane Woods

Locally Significant Sites:

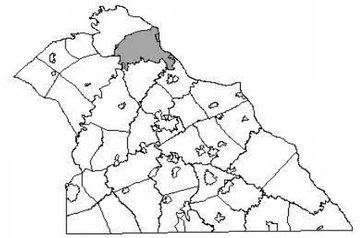
Susquehanna River

Managed Areas:

No features on map

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

North Codorus Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Strickhousers Iron Mines	Animal: Northern myotis	G4	S3B,S3N	N	02/18/99	E
Indian Rock Floodplain	Plant: Puttyroot	G5	S3	PR	04/02/96	C

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Managed Areas: P. Joseph Raab County Park
U.S. Army Corps of Engineers Indian Rock Dam Flood Reservoir Land

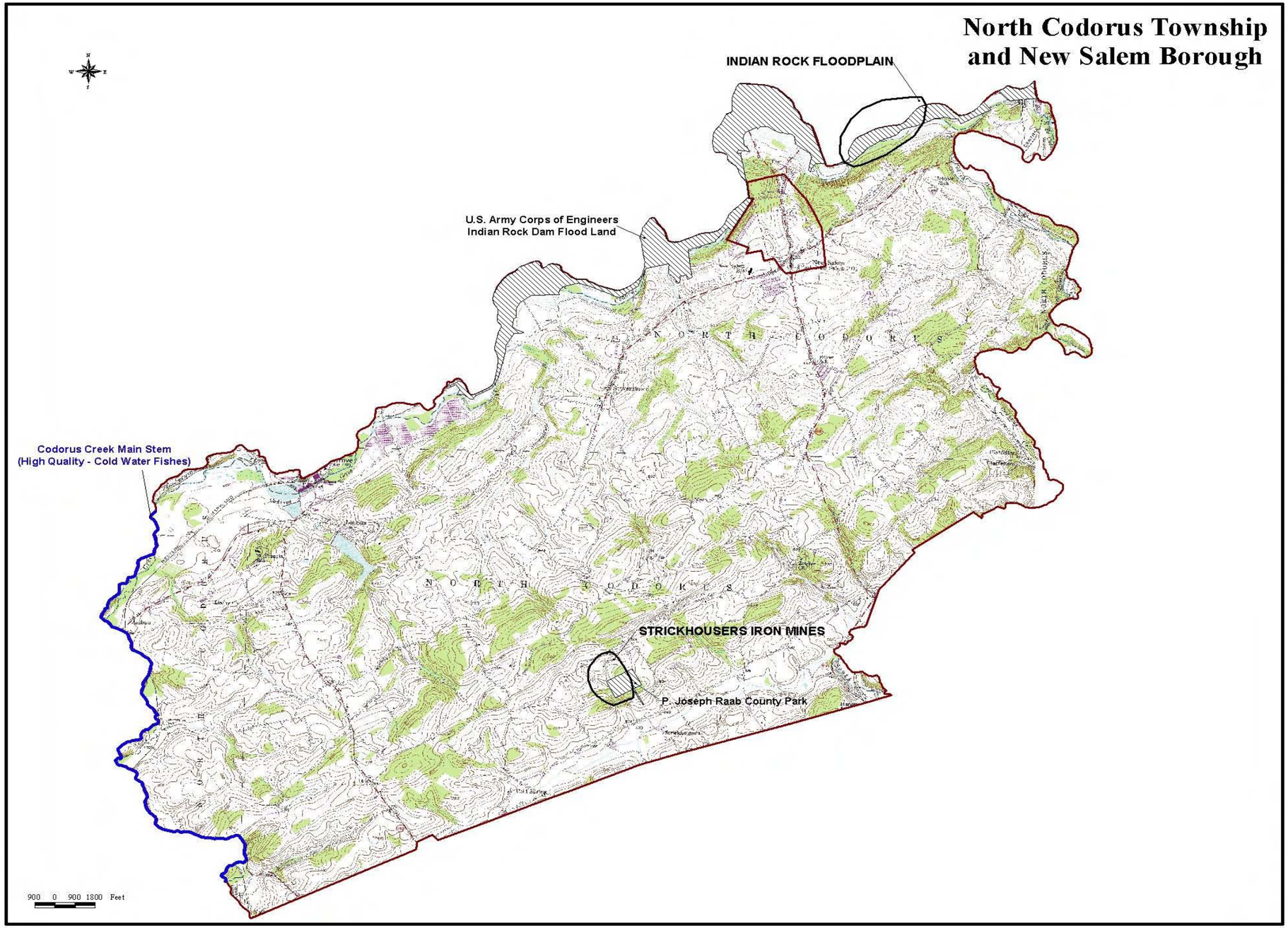
Other: Codorus Creek Main Stem, W. Branch to Oil Creek is a HQ-CWF stream.

North Codorus Township:

STRICKHOUSERS IRON MINES (North Codorus Twp.) - During the years since the initial NAI report, variously sized populations of the **northern myotis,** a G4, S3B, S3N animal species of special concern, have been observed at this location. This site includes a forested stream ravine and the adjacent hills with tuliptree, sycamore and red maple. The surrounding land is primarily agricultural with a large landfill to the east. Vandalism and trash are disturbances to the site. The species could be impacted by disturbance from people entering the mine, or changes to the mine entrance. This site includes part of **P. Joseph Raab County Park**. Monitoring of the site by Park officials will likely diminish abuse of this habitat. Additional surveys are encouraged to assess the population status and habitat of this species.

INDIAN ROCK FLOODPLAIN (North Codorus & West Manchester Twps.) - This site includes both upland and bottomland forests adjacent to the West Branch of Codorus Creek. Both forest types found here are relatively mature. Several sycamores on the floodplain measure more than five (5) feet in diameter. The floodplain at this site includes a linear slough which is excellent habitat for amphibians. **Puttyroot** is found growing in the herb layer of a mixed oak forest. Tree species include chestnut oak, red oak, white oak, tulip poplar, and bitternut hickory. Associated herbs include May-apple, spring-beauty, sedges, and trout lily. Maintaining the canopy in this forest is important to the persistence of this species.

An S3 plant species of concern, Puttyroot, occurs in mesic hardwood forests in York County. Photo by Mark Laroque.



Map 22

North Codorus Township and New Salem Borough

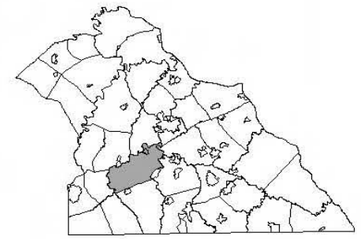
York County
Natural Areas Inventory

Natural Areas:
Indian Rock Floodplain
Strickhousers Iron Mines

Locally Significant Sites:
No features on map

Managed Areas:
P. Joseph Raab County Park
U.S. Army Corps of Engineers
-Indian Rock Dam Flood Land

Other:
Codorus Creek Main Stem
(West Branch to Oil Creek)
- High Quality - Cold Water Fishes



Map Features
Municipal Boundary
Natural Area or Locally Significant Site
Managed Area

North Hopewell Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Spring Valley Woods	Plant: Umbrella magnolia	G5	S2	PT	07/13/95	B
Rehmeyer Hollow	Plant: Umbrella magnolia	G5	S2	PT	05/06/96	C
Winterstown Station Woods	Plant: Umbrella magnolia	G5	S2	PT	07/13/95	B
Felton Outcrops	Plant: Lobed spleenwort	G4	S3	N	04/11/95	B

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: Spring Valley County Park

Other: East Branch Codorus Creek is a HQ-CWF throughout its basin from its source to Route 214.

North Hopewell Township:

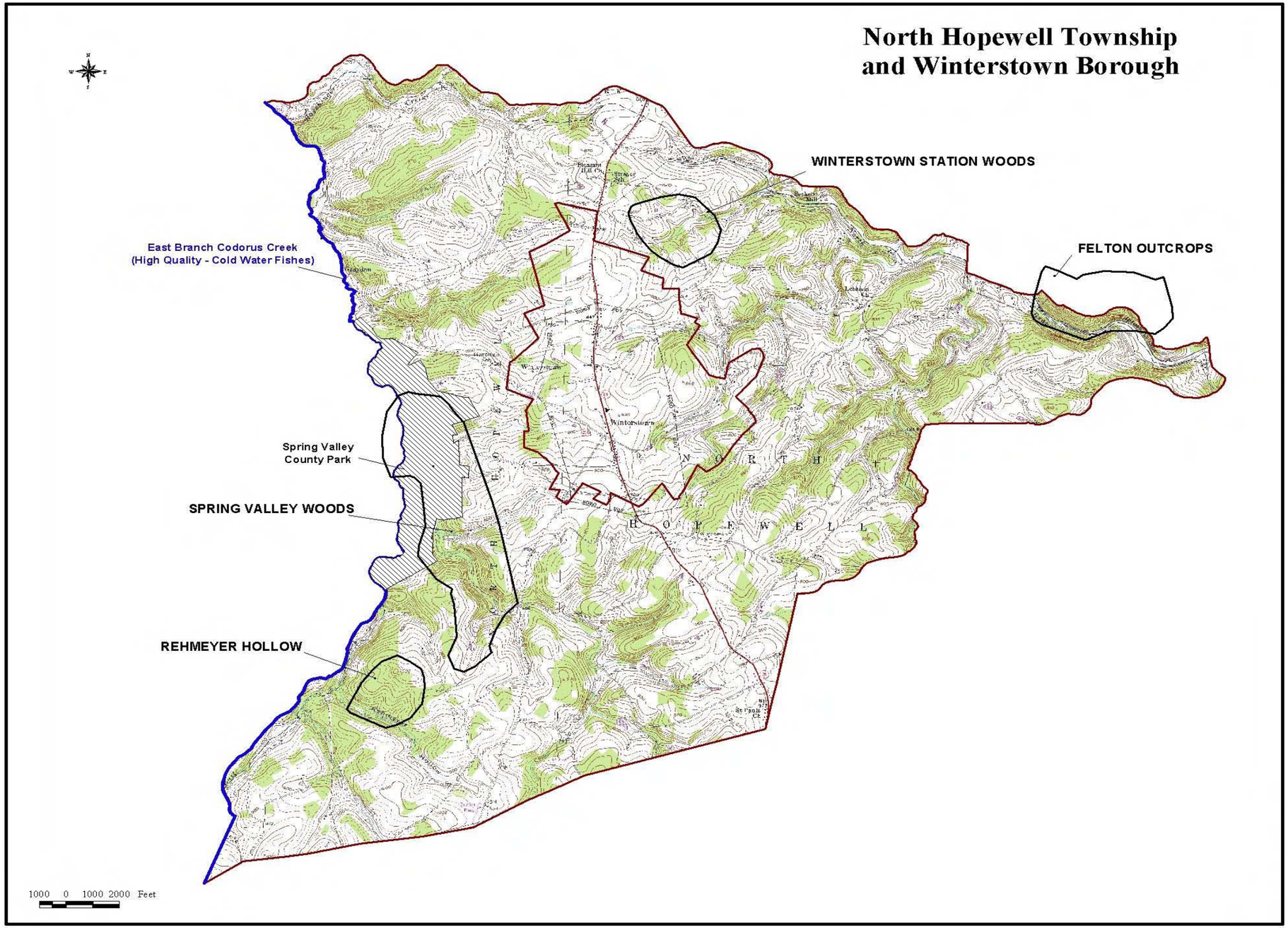
SPRING VALLEY WOODS (North Hopewell & Springfield Twps.) - A good occurrence of **umbrella magnolia**, a PA-Threatened plant species, occurs in a large area of this forested stream valley. An historical cut of some of the forest at this site has enabled the population of this gap loving species to expand greatly. The forest here is primarily tulip poplar and big-tooth aspen with chestnut oak, red maple, and witch-hazel on adjacent drier slopes. Spicebush, arrowwood, and a variety of herbaceous species are abundant in the moist soil on the floodplain of the stream. Maintenance of forest cover is required for the survival of this species.

REHMEYER HOLLOW (North Hopewell Twp.) - A fair occurrence of **umbrella magnolia**, a PA-Threatened plant species, occurs along a stream course within the hollow. The forest here is a mix of tulip poplar and red oak with witch-hazel, flowering dogwood, choke cherry, and multiflora rose in the understory. Multiflora rose and other exotics are common at this site, but are not a threat to the element of occurrance. Maintenance of forest cover is required for the survival of this species.

WINTERSTOWN STATION WOODS (North Hopewell Twp.) - A good quality reproducing population of **umbrella magnolia** occurs in the sub-canopy of a mid to late successional rich mesic forest. The forest, which occurs on a gentle north facing slope, is characterized by tulip poplar, red and white oaks, hickory, and red maple, with an understory of spicebush and arrowwood. **Umbrella magnolia** depends on the woodland habitat and should continue to thrive here if the woodland remains intact.

FELTON OUTCROPS (Chanceford, North Hopewell Twps., Felton Boro.) - A high quality population of **lobed spleenwort** is found growing on schist outcrops in partial light on very steep mesic-xeric slopes. Trees growing in the outcrop area are stunted with a scrubby appearance and include chestnut oak, red maple, and Virginia pine. Scattered amongst the trees is mountain laurel. Other associates on this sparsely vegetated site include Virginia creeper, rock polypody, poison ivy, and mosses. A powerline ROW is a disturbance at this site, but current management does not appear to be harming this species.

The Umbrella Magnolia is a PA-threatened plant species which may be found along streambanks and forests in York County. Photo by PA Science Office of the Nature Conservancy.



Map 23

North Hopewell Township and Winterstown Borough

York County
Natural Areas Inventory

Natural Areas:

Felton Outcrops
Rehmeyer Hollow
Spring Valley Woods
Winterstown Station Woods

Locally Significant Sites:

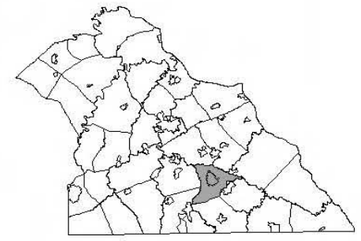
No features on map

Managed Areas:

Spring Valley County Park

Other:

East Branch Codorus Creek
- High Quality - Cold Water Fishes



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Paradise Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
East Berlin Meadow	Animal: Least shrew	G5	S1	PE	10/25/93	C
High Rock	Geologic Feature	G?	S?	N	1979	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Paradise Township:

EAST BERLIN MEADOW (Paradise Twp.) - The **least shrew**, a PA-Endangered animal, has been observed several times at this site. The most recent observations were in 1993. The site has no distinguishing features aside from its being a hay meadow. This species prefers open country with dense herbaceous vegetation, such as that of abandoned hay meadows, successional old fields, or marshes.

HIGH ROCK (Heidelberg & Paradise Twps.) - Occurring on the forested high ground of the Pigeon Hills, this **Geologic Feature** consists of outcrops of lower Cambrian Chickies quartzite (Geyer and Bolles 1979). This well used site occurs within a xeric forest of chestnut oak, Virginia pine, red maple, and mountain laurel. The outcrops offer limited views of the piedmont uplands to the north during the summer. The view is probably expanded greatly during winter months when the trees are without their leaves.

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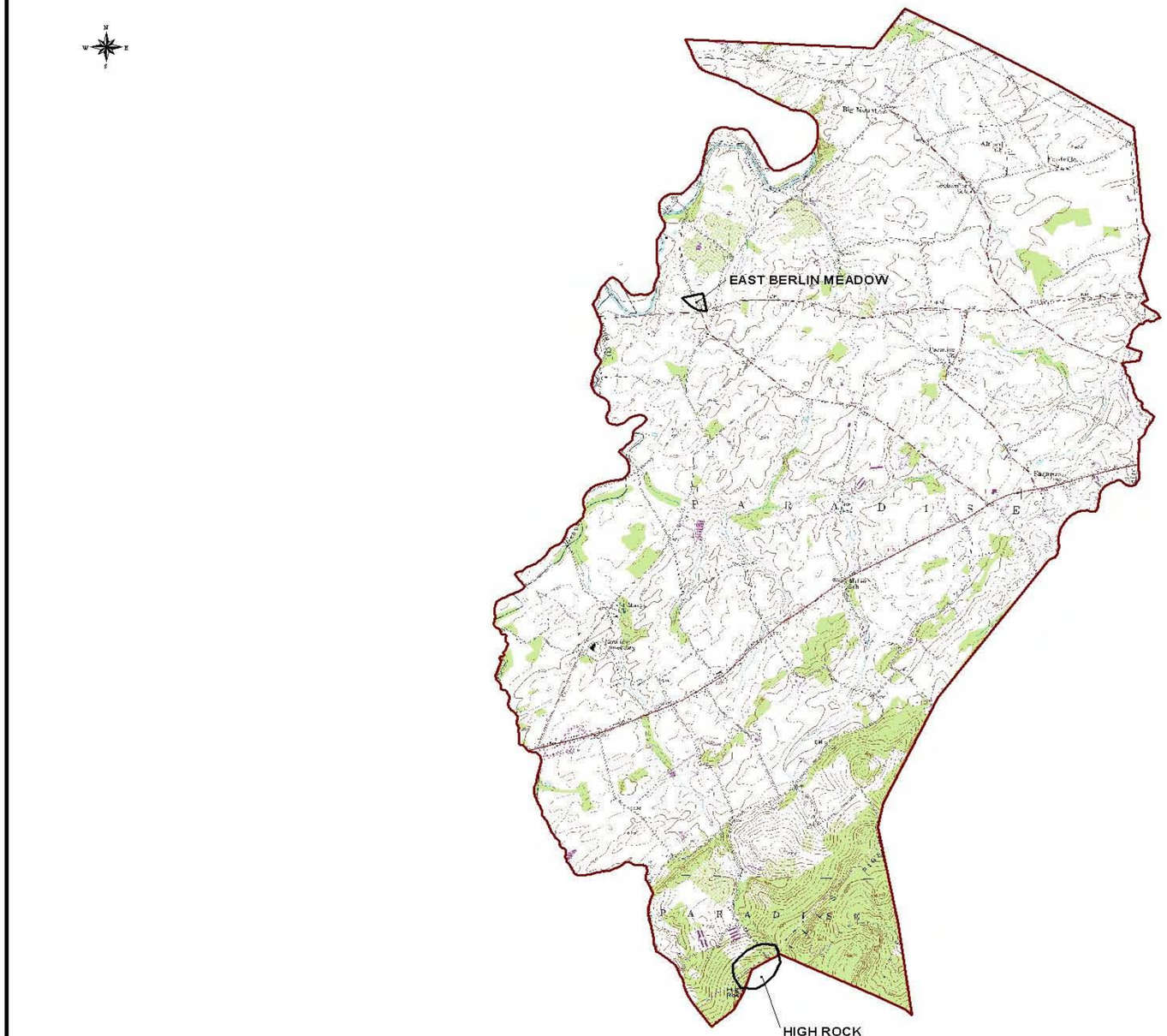
Paradise Township



Map 24

Paradise Township

York County
Natural Areas Inventory

Natural Areas:

East Berlin Meadow
High Rock

Locally Significant Sites:

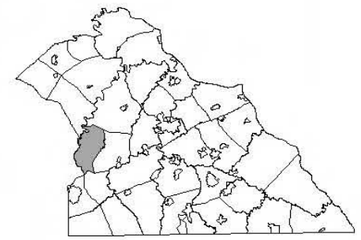
No features on map

Managed Areas:

No features on map

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Peach Bottom Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Muddy Creek at Woodbine	Plant: Downy lobelia	G5	S1	PE	08/23/95	C
Neill Run	Animal	G3	S2	PE	06/2000	E
Michael Run	Plant: Cranefly orchid	G4G5	S3	PR	04/08/93	CD
Atom Road Woods	Plant: American holly	G5	S2	PT	04/08/93	D
	Plant: Lobed spleenwort	G4	S3	N	04/07/99	D
Bryansville Station Seep	Plant: Glade spurge	G3	S1	PE	06/26/96	C
	Plant: Lobed spleenwort	G4	S3	N	06/26/96	D
Peach Bottom Woods	Plant: Harbinger-of-spring	G5	S2	PT	04/25/00	BC
Muddy Creek Gorge	Plant: Lobed spleenwort	G4	S3	N	11/08/95	CD

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Locally Significant: Susquehanna River
Southside Woods

Peach Bottom Township:

MUDDY CREEK AT WOODBINE (Lower Chanceford & Peach Bottom Twps.) - Downy lobelia is found on a powerline ROW on a steep southwest facing slope above Muddy Creek. A small population of this PA-Threatened plant occurs under a young stand of black cherry, shagbark hickory, and eastern hemlock. Associated herbs at this partially shaded site include sunflower, Virginia creeper, Japanese honeysuckle, stilt grass, and pale Indian plantain. A current disturbance at this site is management to keep the ROW free of tall trees. **Downy lobelia** is vulnerable to the herbicide applications and/or machinery that will be used to eradicate the trees growing above it. This population may also be vulnerable to increasing coverage of exotic species such as Japanese honeysuckle and stilt grass. It is possible that there are other sub-populations growing nearby and more searching of this area is needed to establish the full extent of this occurrence and its overall vulnerability.

MICHAEL RUN (Peach Bottom Twp.) - Cranefly orchid is found on a southeasterly facing, moist wooded slope along Michael Run. A small population of this PA-Rare plant occurs beneath a stand of tulip poplar, sweet birch, and black gum, with an understory of witch hazel and pawpaw. Associated herbs include trout lily, toothwort, and Christmas fern. A past disturbance at this site is logging. This occurrence will be best protected by leaving the site in its current condition.

NEILL RUN (Fawn & Peach Bottom Twps.) - This site is a wetland floodplain system of Neill Run, a tributary to Muddy Creek. The site includes pasture area and creek banks. A G3, S2 **PA-Endangered animal** species was found at this site in 2000. Over grazing and draining of the wetland are potential disturbances to this species. Additional surveys for this species and its habitat are recommended.

ATOM ROAD WOODS (Peach Bottom Twp.) - This site consists of forested slopes and stream banks with schist/quartzite rock outcrops, in a ravine along the lower reaches of an unnamed stream. Common species at this site include canopy trees of tulip poplar, American beech and sweet birch, with an understory dominated by common wood fern, Christmas fern and mountain laurel. **American holly** was found on the slopes above the unnamed creek which parallels Peach Bottom Road during the original NAI. The small population of this PA-Threatened tree occurred scattered beneath tulip poplar, American beech, and sweet birch. An associated shrub species is mountain laurel. A past disturbance at this site was logging. During a field visit in 1999, one (1) new fair quality population of the G4, S3 plant species of concern **lobed spleenwort** was found, and a new population of the G5, S2 plant species **American holly** identified in the original NAI report was found. **Lobed spleenwort** was found growing among the rock outcrops and one (1) additional sapling of **American holly** was found in good health further downstream from the main population of this species. A small population of this PA-Threatened tree occurs scattered on this site. Exotic plant species are present along the stream and road edges. The nearby powerplant drastically changed the terrain and vegetation. However, none of these are obvious threats to the population. A more thorough survey of the site for these species and their habitat is recommended. Leaving the site in its current condition will best protect these species of concern.

BRYANSVILLE STATION SEEP (Peach Bottom & Lower Chanceford Twps.) - Glade spurge is found at the base of a northeast facing slope bordering a floodplain swamp and marsh. A small population of this PA-Endangered plant occurs in filtered light and moist soil at this site. Disturbances include thinning of the adjacent forest and ATV use on and around an abandoned rail line. Sweet-scented Indian plantain represents a population of a plant species whose State status was listed as Tentatively Undetermined in the original NAI, but has since been delisted and is no longer tracked as a species of concern. A small poor quality population of **lobed spleenwort** occurs on rock outcrops under a canopy of hemlock. Retaining the forest cover at this site will benefit this population.

PEACH BOTTOM WOODS (Peach Bottom Twp.) - Harbinger-of-spring, a G5, S2 PA-Threatened plant species of special concern identified at this site on the original NAI report, was again observed during a visit in 2000. This species is found near the bottom of a rich wooded east facing slope. A small population of **harbinger-of-spring** occurs beneath a stand of tulip poplar, sweet birch, and ash. Associated herbs include Dutchman's-breeches, Virginia waterleaf, and toothwort. At last observation there were no

immediate threats to this population, but the presence of several aggressive exotic species including Japanese honeysuckle may lead to loss of habitat in the future.

MUDDY CREEK GORGE (Lower Chanceford & Peach Bottom Twps.) - Lobed spleenwort is a plant species of special concern that occurs on the steep slopes that rise above Muddy Creek along this stretch. The slopes are primarily forested, with hemlock being somewhat dominant on north facing slopes and side ravines, and mixed oaks, red maple, and sweet birch sharing dominance on slopes with other aspects. The stream course here is highlighted by dramatic outcrops with small waterfalls which helps make this winding gorge an outstanding feature within the County.

Locally Significant Sites:

SUSQUEHANNA RIVER is an excellent recreational and scenic resource; it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one (1) of the major corridors for the movement of biota in central Pennsylvania.

SOUTHSIDE WOODS (Lower Chanceford & Peach Bottom Twps.) is a **Locally Significant site** which encompasses an area on both sides of Muddy Creek including a ravine along a tributary of the creek. The ravine is dominated by hemlock, tulip poplar, and yellow birch. Mixed ages of the trees, good regeneration, and the presence of substantial windfalls provide good structure for this locally significant community. Although portions of the site were logged in the past 60 or so years, it contains some outstanding hemlocks and tulip poplars. The largest hemlock at the site exceeds three (3) feet in diameter.

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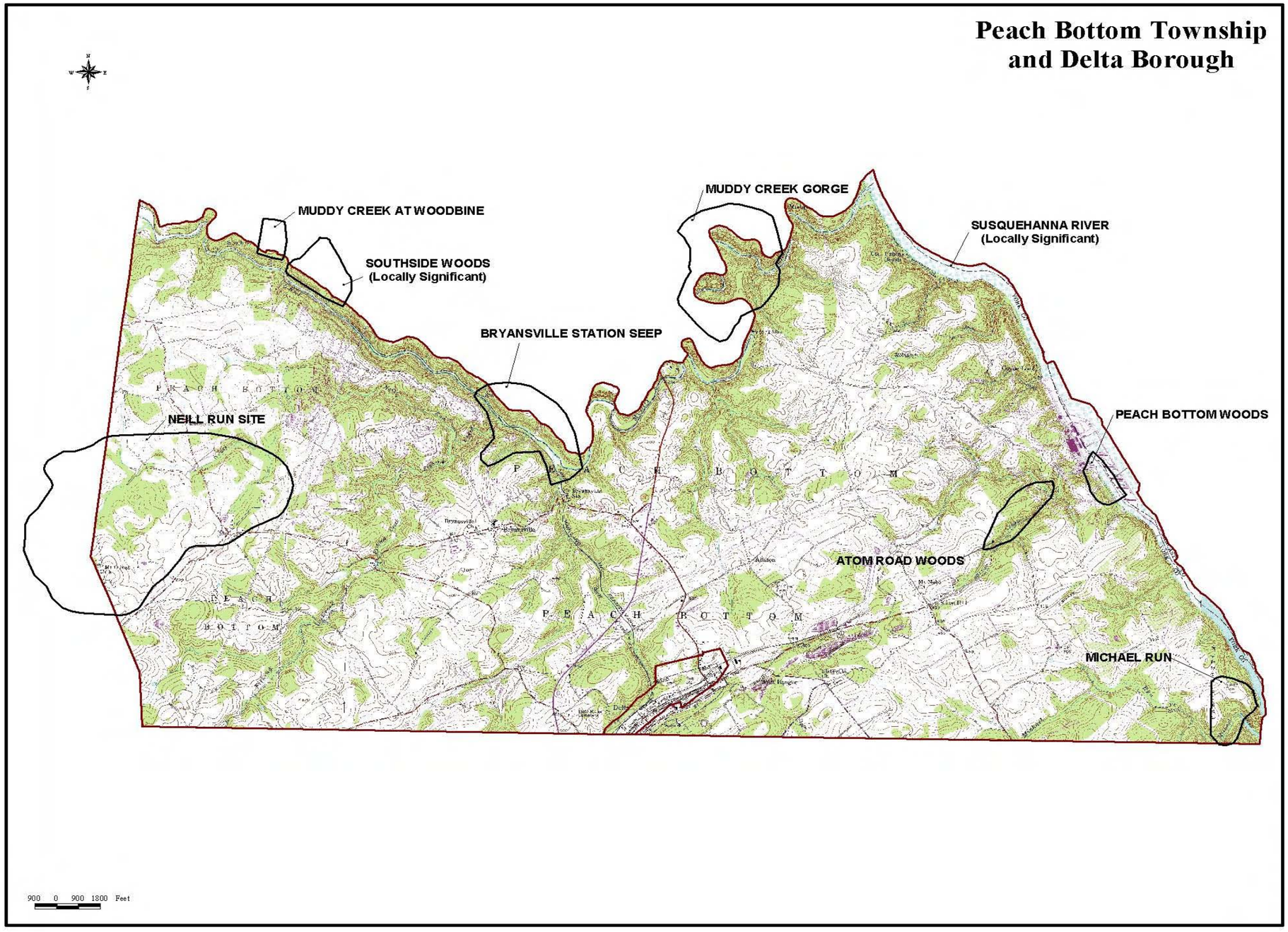


Map 25

Peach Bottom Township and Delta Borough

York County
Natural Areas Inventory

Natural Areas:

Atom Road Woods
Bryansville Station Seep
Michael Run
Muddy Creek Gorge
Muddy Creek at Woodbine
Neill Run
Peach Bottom Woods

Locally Significant Sites:

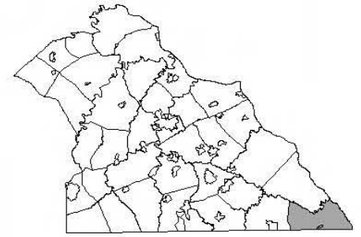
Southside Woods
Susquehanna River

Managed Areas:

No features on map

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Penn Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Codorus State Park Site	Animal	G5	S2	PT	09/10/96	C

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Managed Areas: Codorus State Park

Penn Township:

CODORUS STATE PARK SITE (West Manheim & Penn Twps.) - A **PA-Threatened animal species** has been observed in Lake Marburg at **Codorus State Park**. It requires large bodies of fresh water for survival. This species was once common in the Delaware River and its major tributaries, as well as in the lower Susquehanna River. Habitat destruction and pollution have almost eliminated it from those areas.

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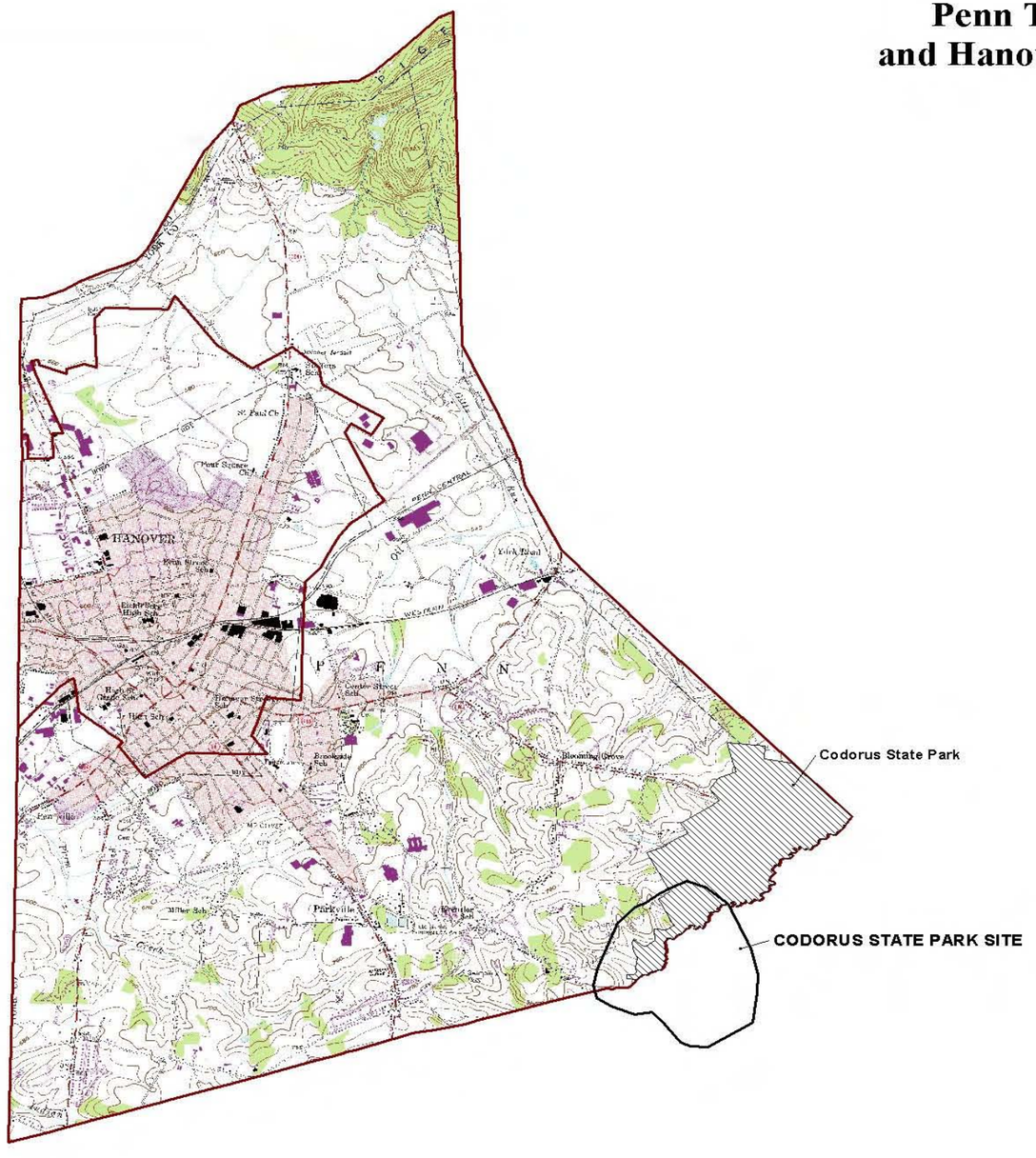
Penn Township and Hanover Borough



800 0 800 1600 Feet

Map 26

Penn Township and Hanover Borough

York County
Natural Areas Inventory

Natural Areas:

Codorus State Park Site

Locally Significant Sites:

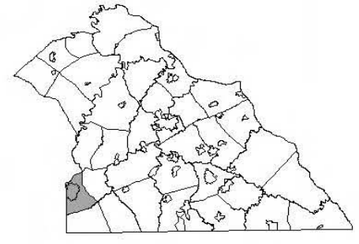
No features on map

Managed Areas:

Codorus State Park

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Shrewsbury Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Deer Creek Woods	Plant: Umbrella magnolia	G5	S2	PT	08/15/95	D

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant: Shaffers Hollow
Seitzland Marsh

Managed Areas: Spring Valley County Park

Other: East Branch Codorus Creek is a HQ-CWF throughout its basin from its source to Route 214.

Shrewsbury Township:

DEER CREEK WOODS (Shrewsbury Twp.) - A low quality occurrence of **umbrella magnolia** grows in the sub-canopy layer of a successional hardwood forest. The forest is on a north facing slope above Deer Creek. The canopy is dominated by big-tooth aspen and has lesser amounts of hickory and red maple. The shrub layer includes spicebush and maple-leaved viburnum. There are no immediate threats to this occurrence, but more searching is needed to establish its full extent.

Locally Significant Sites:

SHAFFERS HOLLOW (Shrewsbury Twp.) is a **Locally Significant site** located in a stream ravine along a tributary of the South Branch of Codorus Creek. The forest supports a high diversity of plant and animal species. The canopy is dominated by tulip poplar, with lesser amounts of white ash, red oak, and flowering dogwood. The well developed shrub layer is dominated by spicebush and witch hazel, with contributions from maple-leaved viburnum, arrowwood, and black-haw. The herb layer is exceptionally rich, having many dozens of species, including several species that are found at only one (1) or two (2) other sites within the County. The site is also excellent habitat for use by both migrating and nesting bird species. Maintaining the forested condition of this site, which has received some disturbance in the past, will help maintain the rich diversity found here.

SEITZLAND MARSH (Shrewsbury Twp.) is a **Locally Significant site** located along Trout Run. The site is a seepy floodplain on a very gradual slope. It is dominated by tussock sedge and is good habitat for reptiles and amphibians. This site represents the largest sedge marsh in the County.

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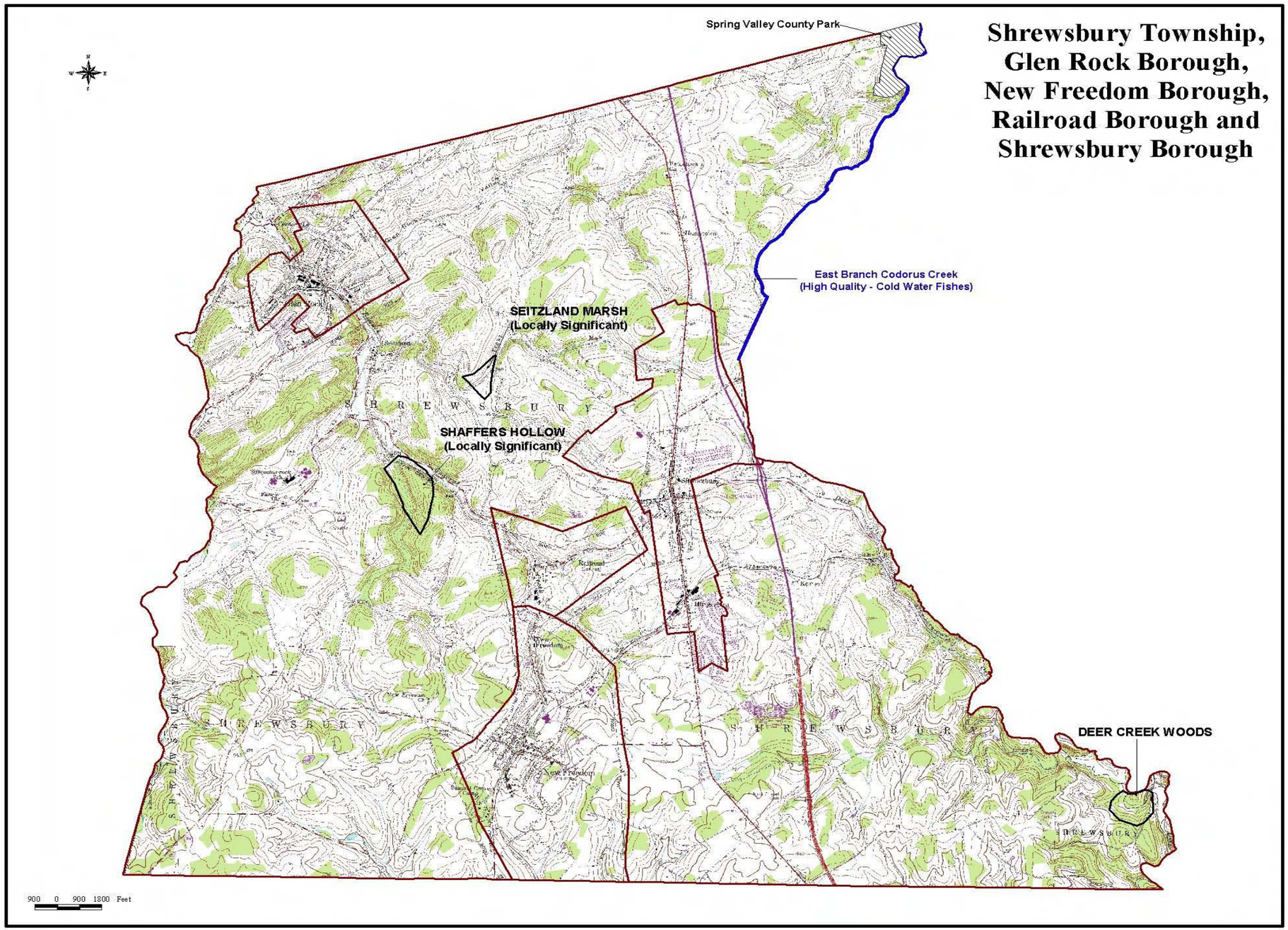


Shrewsbury Township, Glen Rock Borough, New Freedom Borough, Railroad Borough and Shrewsbury Borough

Map 27

Shrewsbury Township, Glen Rock Borough, New Freedom Borough, Railroad Borough and Shrewsbury Borough

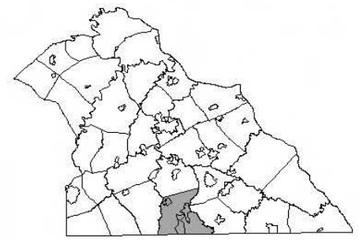
York County
Natural Areas Inventory

Natural Areas:
Deer Creek Woods

Locally Significant Sites:
Seitzland Marsh
Shaffers Hollow

Managed Areas:
Spring Valley County Park

Other:
East Branch Codorus Creek
- High Quality - Cold Water Fishes



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Springfield Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Spring Valley Woods	Plant: Umbrella magnolia	G5	S2	PT	07/13/95	B
Lake Redman Site	Animal: Black-crowned night-heron	G5	S3B,S3N	N	08-1986	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

Locally Significant:

Managed Areas: Spring Valley County Park
William H. Kain County Park
Richard M. Nixon County Park

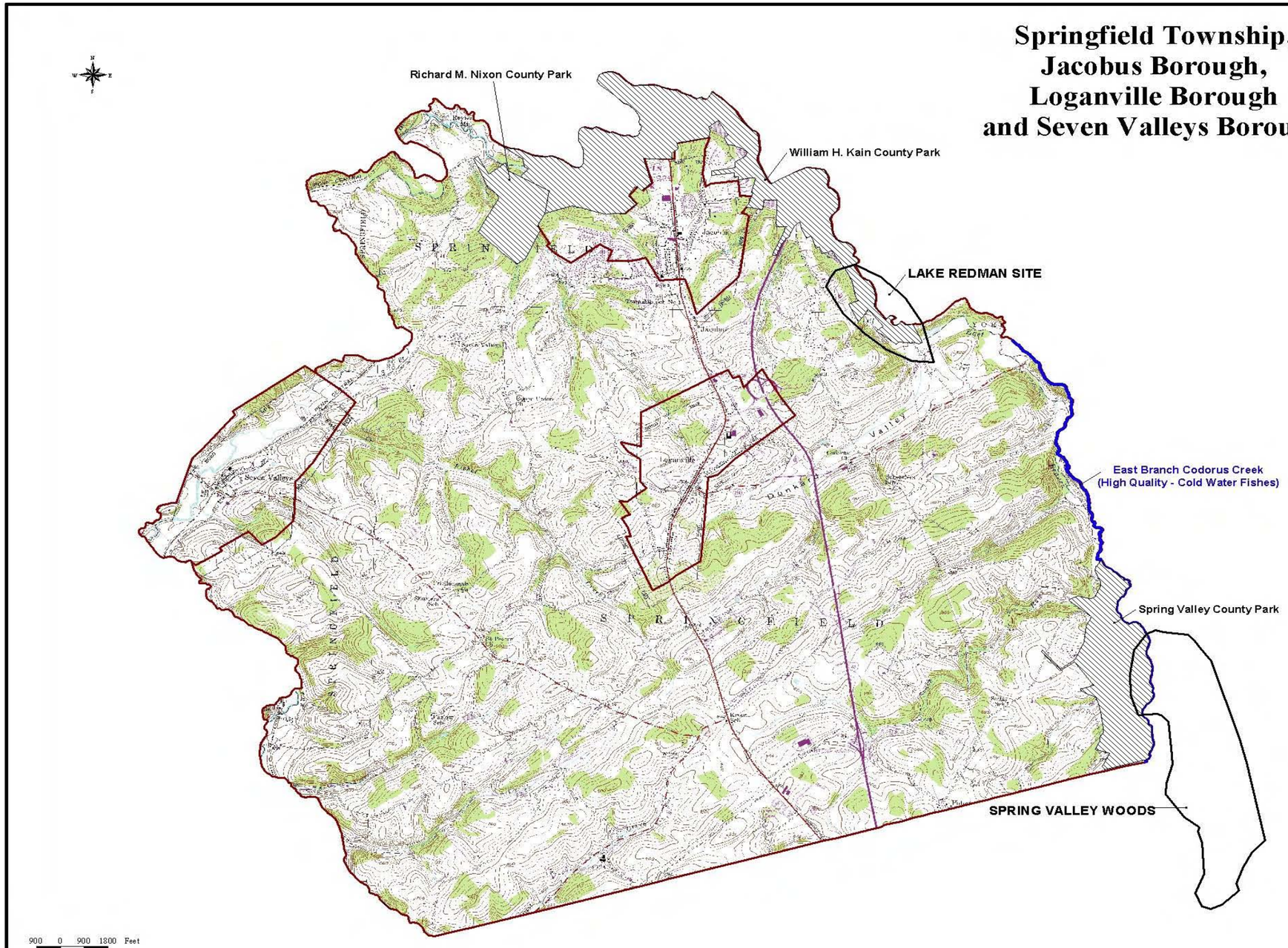
Other: East Branch Codorus Creek is a HQ-CWF throughout its basin from its source to Route 214.

Springfield Township:

SPRING VALLEY WOODS (North Hopewell & Springfield Twps.) - A good occurrence of **umbrella magnolia**, a PA-Threatened plant species, occurs in a large area of this forested stream valley. An historical cut of some of the forest at this site has enabled the population of this gap loving species to expand greatly. The forest here is primarily tulip poplar and big-tooth aspen with chestnut oak, red maple, and witch-hazel on adjacent drier slopes. Spicebush, arrowwood, and a variety of herbaceous species are abundant in the moist soil on the floodplain of the stream. Maintenance of forest cover is required for the survival of this species.

LAKE REDMAN SITE (Springfield & York Twps.) - The **black-crowned night-heron** has been observed nesting on a forested floodplain adjacent to Lake Redman within **William H. Kain County Park**. It is crepuscular (active during twilight) and nocturnal, and requires wetland habitat with shallow water, such as marshes, lake shores, ponds, or wooded streams. Loss of habitat is a major threat.

Springfield Township, Jacobus Borough, Loganville Borough and Seven Valleys Borough



Map 28

Springfield Township, Jacobus Borough, Loganville Borough and Seven Valleys Borough

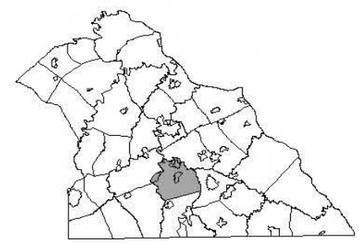
York County
Natural Areas Inventory

Natural Areas:
Lake Redman Site
Spring Valley Woods

Locally Significant Sites:
No features on map

Managed Areas:
Richard M. Nixon County Park
Spring Valley County Park
William H. Kain County Park

Other:
East Branch Codorus Creek
-High Quality - Cold Water Fishes



Map Features
- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Warrington Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Rock Ridge Woods	Plant: Puttyroot	G5	S3	PR	05/05/93	CD
Beaver Creek ROW	Plant: Hard-leaved goldenrod	G5	S1	TU	09/10/97	C
	Plant: Grass-leaved rush	G5	S2	TU	09/10/97	E
Beaver Creek East	Plant: Tooth-cup	G5	S3	PR	09/23/91	C
	Plant: Puttyroot	G5	S3	PR	04/25/93	BC
Straight Hill Site	Plant: Cranefly orchid	G4G5	S3	PR	07/27/00	BCD
	Plant: Hard-leaved goldenrod	G5	S1	TU	09/20/00	BC
	Plant: Horse-gentian	G5	S1	TU	10/04/01	BC
	Plant: Tooth-cup	G5	S3	PR	09/01/95	D
	Plant: Showy skullcap	G4G5	S1	PX	06/07/96	BC
	Plant: Shumard's oak	G5	S1	PE	09/19/96	B
	Plant: Eastern coneflower	G5	S3	N	09/20/00	AB
	Animal: Giant swallowtail	G5	S2	N	10/07/97	B
	Animal: Henry's elfin	G5	S2S3	N	04/28/96	E
	Animal	G3	S2	PE	04/06/88	D
	Animal: Olive hairstreak	G5	S3	N	05/06/99	E
Alpine Road Site	Plant: Hard-leaved goldenrod	G5	S1	TU	09/11/95	CD

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Nells Hill Swamp Site	Animal: Giant swallowtail	G5	S2	N	10/10/96	E
	Plant: Shumard's oak	G5	S1	PE	10/11/96	C
	Plant: Horse-gentian	G5	S1	TU	05/23/97	D

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: Gifford Pinchot State Park
State Game Lands #242

Warrington Township:

ROCK RIDGE WOODS (Warrington Twp.) - **Puttyroot** is found growing in the herb layer of a mixed hardwoods forest on a rocky south facing slope. Tree species include oaks, tulip poplar, basswood, ash, and hackberry. The exotic species wineberry and Japanese honeysuckle are common at this site and may eventually degrade the habitat needed by this PA-Rare plant.

STRAIGHT HILL WOODS (Dover & Warrington Twps.) - Riverweed was found on a steep southerly facing rocky slope adjacent to Conewago Creek at this site during the original NAI. The somewhat open forest cover is composed of mixed hardwoods. Despite the rock outcrops, the soil is rich and supports a number of both native and non-native herbs. Riverweed has subsequently been delisted and is no longer tracked as a species of special concern. This site has been removed from Table 1.

BEAVER CREEK ROW (Warrington Twp.) - During the original NAI, **hard-leaved goldenrod** was growing on a powerline ROW near the point where the ROW crosses Beaver Creek at the site. Periodic removal of tree species from the ROW artificially created the open meadow habitat that is required by this species. Rich soils derived from diabase bedrock are also important for the occurrence of **hard-leaved goldenrod** at this site. This population of over 100 stems was found growing in association with goldenrods, Indian grass, bush-clover, tick-trefoil, Japanese honeysuckle, and pine saplings. The **hard-leaved goldenrod** identified as occurring on this site in the original NAI report was again observed during a return visit to the site in 1997. Although succession was identified as a potential threat, there were no changes noted in the plant population's vitality. Also during this visit, **grass-leaved rush**, a previously unreported G5, S2 plant species of concern was seen. A more thorough search of the area is recommended. The surrounding land includes woods, scattered residences and agriculture. There were no apparent threats reported.

BEAVER CREEK EAST (Warrington Twp.) - A small but persistent population of **tooth-cup** occurs on alluvial deposits along Beaver Creek. These stream corridor areas are inundated at times of high water.

The element occurs in open to somewhat open areas along with a variety of native and exotic herbs. Tree species lining the stream corridor include American elm, sycamore, and black willow. **Puttyroot** is found in the woods not too far from the creek. This PA-Rare plant occurs in a gap along with a variety of other herbaceous species including May-apple, wild ginger, and spring-beauty. Shrubs in the gap include spicebush and bladdernut, while the surrounding forest is mainly a mix of tulip poplar and oak. Preserving these occurrences will be best facilitated by leaving them undisturbed.

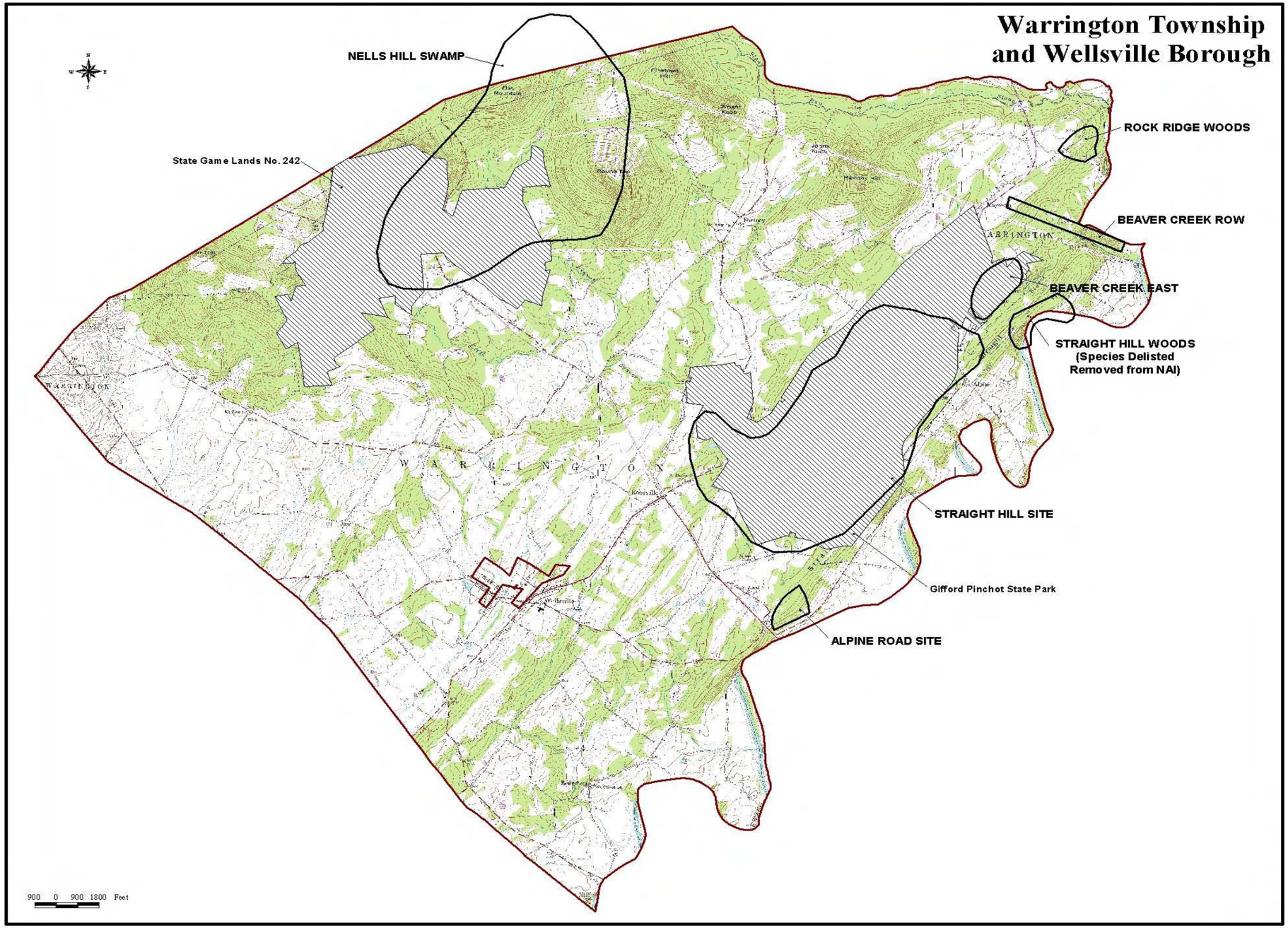
STRAIGHT HILL SITE (Warrington Twp.) - This site consists of a mosaic of plant cover types including bottomland and upland forests, early successional forests, and old fields. Element occurrences at this site occur in various locations within the site and, although the site is primarily in **Gifford Pinchot State Park**, element occurrences and the habitat that sustains them extend beyond Park boundaries. **Cranefly orchid** is a moderate to high quality population of a PA-Rare plant species and is found growing in well-drained humusy soil of a partially open mixed hardwoods forest. **Hard-leaved goldenrod** is a TU plant species that was first reported from the Park in 1967 and not found again until the County inventory in 1995. About 100 plants were found (many in flower) in open areas with red cedar, Indian grass, gray goldenrod and other herbaceous species. **Hard-leaved goldenrod** requires open areas; succession and subsequent shading is a potential threat. Some of the plants also occur close to the roadside so frequent mowing or spraying of herbicides are also potential threats to this rare plant. Potential habitat for **hard-leaved goldenrod**, is found in patches throughout the **STRAIGHT HILL SITE** and it is hoped that additional sub-populations and plants will be found in future surveys. **Hard-leaved goldenrod** has been suggested for PE status. **Horse-gentian and showy skullcap** occur near each other in a mid-successional forest at the toe of a gentle northwest facing slope. These elements occur in shade on mesic to slightly hydric soils. **Horse-gentian** represents a small population of a plant species whose State status is currently listed as Tentatively Undetermined but that has been recommended for listing as PA- Endangered due to the scarcity of occurrences in the State. **Showy skullcap** represents a moderate sized population of a newly rediscovered PA-Extirpated plant species. The forest is dominated by ash, hickory, and elm with an understory of tree seedlings, white snakeroot, and bedstraw. A poor quality population of **tooth-cup** occurs in a wet forest opening. A small depression in the opening is periodically inundated by run-off from upslope. Associated species include swamp milkweed, Panic-grass, rushes, and red maple. **Giant swallowtail**, which is dependent on prickly-ash as a food source, has been observed at **Gifford Pinchot State Park** on several occasions. The primary threat to this species is the loss of prickly-ash. **Henry's elfin** was first observed at this site in 1981 and since then has been observed repeatedly, including as recently as 1996. Little is known about this species aside from its preference for clearings and wood edges. A **PA-Endangered animal species** that has been sighted several times in the south end of the Park prefers slow shallow rivulets found in marshy settings and is vulnerable to wetland alteration and destruction. On return visits to the site in 1996, 1999 and 2000, five (5) new species of concern were observed, one (1) animal and four (4) plants. The site boundaries have been modified subsequent to the original NAI to accommodate these additions. **Olive hairstreak** is a G5, S3 animal species whose host plant is red cedar. The dry, open areas with these shrubs are necessary habitat for this species. Additional surveys are recommended to more thoroughly assess this species and its habitat. In 1996, a good quality population of **shumard's oak** was identified as growing throughout the Park. This plant species was typically found along streams and moist lower slopes in association with various oaks, hickories, American elm, red maple, hackberry and black walnut. Selective logging or thinning is probably beneficial to this species. A single

specimen of **cranefly orchid** was seen during a visit in 2000. A more thorough survey for this species is recommended to determine the extent of the population. A good to marginal population of **horse-gentian** and good to excellent quality population of **eastern coneflower** were also found during a survey of the site in 2000. These species occupy an area that had previously been pasture, and would benefit from annual mowing. The associated plant species include Indian grass, purple-top grass, gray goldenrod, rough-leaved sunflower and cinquefoil. The elements of **hard-leaved goldenrod** and **horse-gentian** reported from the original NAI were again located during surveys in 2000 and 2001, and additional populations of the species were discovered within the Park boundaries. During successive visits to this site since the initial NAI report, the **giant swallowtail** was again observed in limited numbers. Though not frequent, the population appears to have remained unchanged since the earlier report was filed. The **giant swallowtail** is dependent on prickly-ash as a food source, hence the primary threat to this species is the loss of prickly-ash. The other species of concern reported for this site from the original NAI were unobserved during these return visits. There is a limited amount of disturbance at the **STRAIGHT HILL SITE** from recreational uses. This site will be best protected by leaving it in its current condition.

ALPINE ROAD SITE (Warrington Twp.) - A moderate size but poor quality population of **hard-leaved goldenrod** grows partly on a road shoulder and partly in a successional field. It occurs on dry to mesic diabase derived soils in open light. Associates include New England aster, tall fescue, gray goldenrod, Japanese honeysuckle, and white sweet-clover. This element, which is currently listed as a TU species, has been recommended for PE status.

NELLS HILL SWAMP SITE (Monaghan & Warrington Twp.) - In the original NAI, this site was listed as Locally Significant for its rich diversity of wetland flora, and as a habitat type uncommon in the County. This site is located within and adjacent to the northern boundary of **State Game Lands #242**. **NELLS HILL SWAMP** is a successional red maple swamp which is cris-crossed by a serious of seeps. The canopy is dominated by red maple and American elm with contributions from black ash and pin oak. Spicebush and arrowwood are the most common shrub species, while sedges, ferns, and skunk cabbage are the most common fortes. The site supports a rich diversity of wetland plant species and is a habitat type that is otherwise uncommon in the County. This area was surveyed during 1996 and was found to contain an animal species of special concern (**giant swallowtail**), and two (2) plant species of special concern (**shumard's oak** and **horse-gentian**). With these additions, the site has been removed from Table 2 and added to Table 1 since the original NAI. The corresponding site boundary has also been expanded to accommodate these populations. An unknown quality population of the animal species **giant swallowtail** relies on prickly-ash as a food source during its development. The prickly–ash exists within a shrub thicket of a floodplain forest. In 1996, a marginal quality population of the plant species **shumard's oak** was identified on this site. Though growing vigorously, the species exhibited very sparse reproduction. During a subsequent survey in 1997, a poor quality population of the plant species **horse-gentian** was located. The surrounding land is wooded, with State Game Lands to the north and east. Canopy species of the forest include white ash, white oak and shagbark hickory, with an understory of spicebush, redbud and black-haw. There are no obvious threats. Additional surveys are recommended to assess the extent and habitat of these species at this location.

Showy Skullcap is a newly rediscovered plant species of concern that was thought to be extirpated until recently. Photo by the PA Science Office of The Nature Conservancy.



Map 29

Warrington Township and Wellsville Borough

York County
Natural Areas Inventory

Natural Areas:

Alpine Road Site
Beaver Creek East
Beaver Creek ROW
Nells Hill Swamp Site
Rock Ridge Woods
Straight Hill Site

Locally Significant Sites:

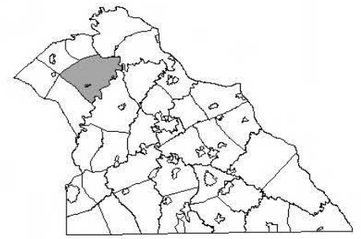
No features on map

Managed Areas:

Gifford Pinchot State Park
State Game Lands No. 242

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Washington Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
State Game Lands #243 Site	Plant: Horse-gentian	G5	S1	TU	08/29/95	CD
	Plant: Eastern coneflower	G5	S3	N	09/06/01	BC
	Plant: Shumard's oak	G5	S1	PE	09/06/01	B
Bermudian Creek at T809	Animal	G3	S2	N	10/01/95	D
	Animal	G3G4	S3S4	N	08/10/95	D

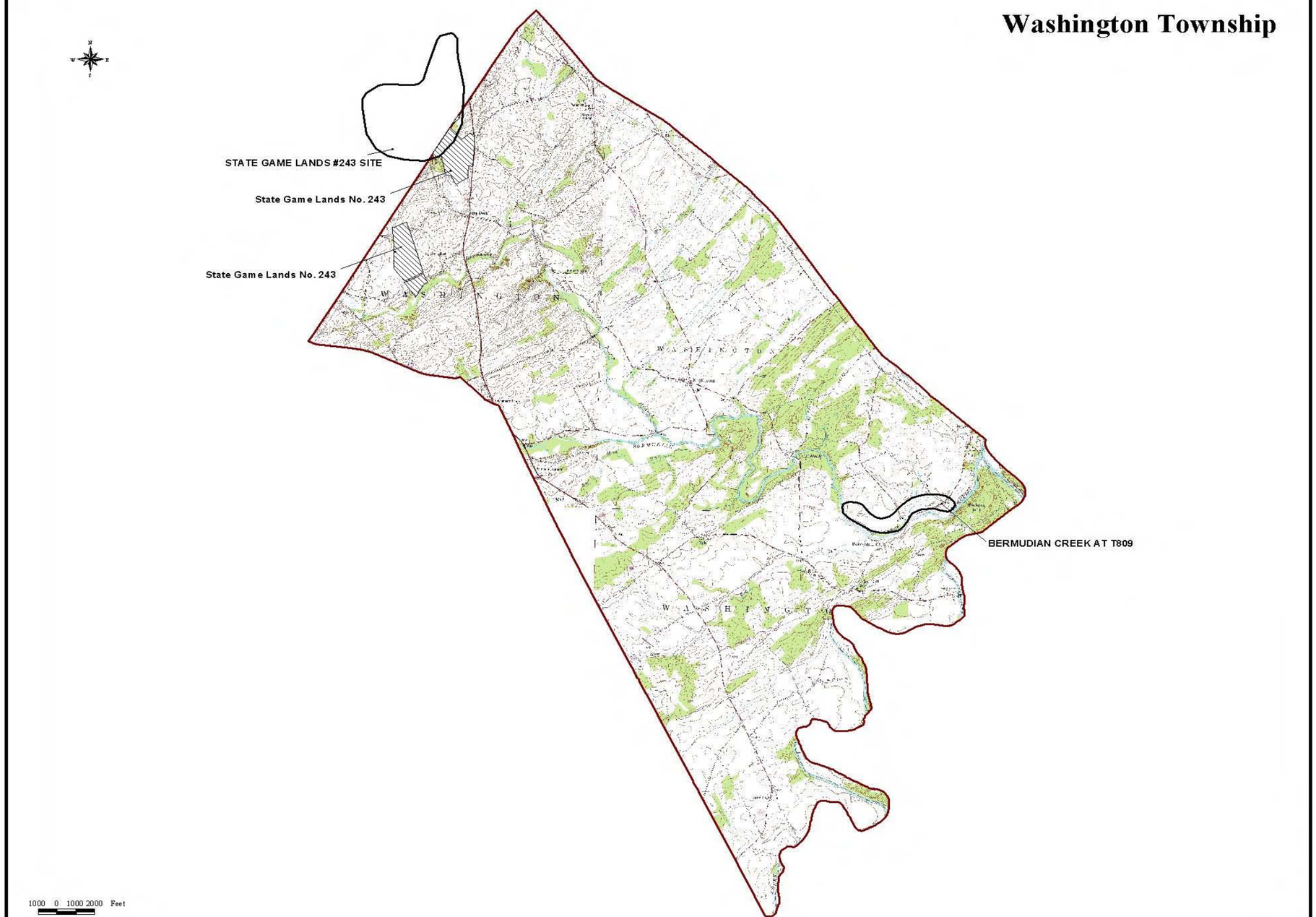
* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: State Game Lands #243

Washington Township:

STATE GAME LANDS #243 SITE (Franklin & Washington Twps.) - **Horse-gentian** was found at **State Game Lands #243** (Franklin Twp.) in an early to mid-successional forest along a moderately sloping stream valley. Dominant canopy species included red oak, shagbark hickory, and sugar maple, and averaged approximately six (6) inches in diameter at breast height. The poorly developed shrub layer was composed mostly of tree saplings. The moderately diverse herb layer included a variety of herbs, ferns, sedges, and grasses, the most common of which were Christmas fern and horse balm. Less than a half dozen individuals of **horse-gentian** were observed at this site in the summer of 1995. There are no immediate threats to this occurrence, but more searching is needed to establish its full extent. Two (2) new plant species were found at this site during a field visit in 2001. The boundary of this site has been enlarged to accommodate these two (2) new species. A small population of the G5, S3 plant species of concern **eastern coneflower** was found in a mowed field with a moist diabase substrate dominated by perennial herbs including Indian hemp, bush clover, New York ironweed and boneset. The existence of exotic plant species in the habitat pose a potential threat, but continuing the scheduled mowing in this area will help maintain this species. A small but reproducing population of **shumard's oak**, a G5, S1 PA-Endangered tree species, was found at this site along forest edges and pipeline borders in conjunction with various oaks, American elm, shagbark hickory, red maple, spice bush and tree-of-heaven. This occurrence could be the northernmost known location in the range for this species. The current management practices employed at this site are suitable for the continued reproduction of this species. A more thorough survey for this species is encouraged. **Horse-gentian** identified in the original NAI was not assessed during the more recent survey. The site is mostly within **State Game Lands #243**.

BERMUDIAN CREEK AT T809 (Washington Twp.) – Two (2) animal species of concern were found in this section of Bermudian Creek. A small population of a G3, S2 **animal species of concern** and a small population of a G3G4, S3S4 **animal species of concern** were found to inhabit the creek at this site in 1995. These species depend on clean, freely moving water for their continued existence. Threats to these animal species include chemical and sediment runoff, and changes in the hydrology of the creek system. Maintaining a forested buffer along the creek banks will help these species persist at this site. Additional surveys of the creek are needed to reassess and monitor this animal population.



Map 30

Washington Township

York County
Natural Areas Inventory

Natural Areas:

Bermudian Creek at T809
State Game Lands No. 243 Site

Locally Significant Sites:

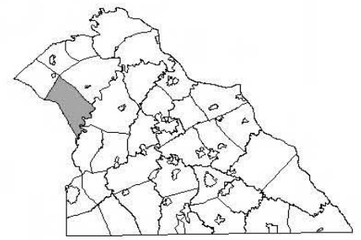
No features on map

Managed Areas:

State Game Lands No. 243

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

West Manchester Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Indian Rock Floodplain	Plant: Puttyroot	G5	S3	PR	04/02/96	C
Taxville Quarry Site	Animal	G3	S2S3	N	02/04/93	C

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: U.S. Army Corps of Engineers Indian Rock Dam Flood Reservoir Land

West Manchester Township:

INDIAN ROCK FLOODPLAIN (North Codorus & West Manchester Twps.) - This site includes both upland and bottomland forests adjacent to the West Branch of Codorus Creek. Both forest types found here are relatively mature. Several sycamores on the floodplain measure more than five (5) feet in diameter. The floodplain at this site includes a linear slough which is excellent habitat for amphibians. **Puttyroot** is found growing in the herb layer of a mixed oak forest. Tree species include chestnut oak, red oak, white oak, tulip poplar, and bitternut hickory. Associated herbs include May-apple, spring-beauty, sedges, and trout lily. Maintaining the canopy in this forest is important to the persistence of this species.

TAXVILLE QUARRY SITE (West Manchester Twp.) - This invertebrate **animal species of concern** occurs in limestone caves in southcentral Pennsylvania. It has very specific habitat requirements and, like other species which have adapted to life in caves, it has no eyes or pigmentation. It was last observed at this site in 1993. Contamination of the ground water flowing through the cave is a threat to this species.

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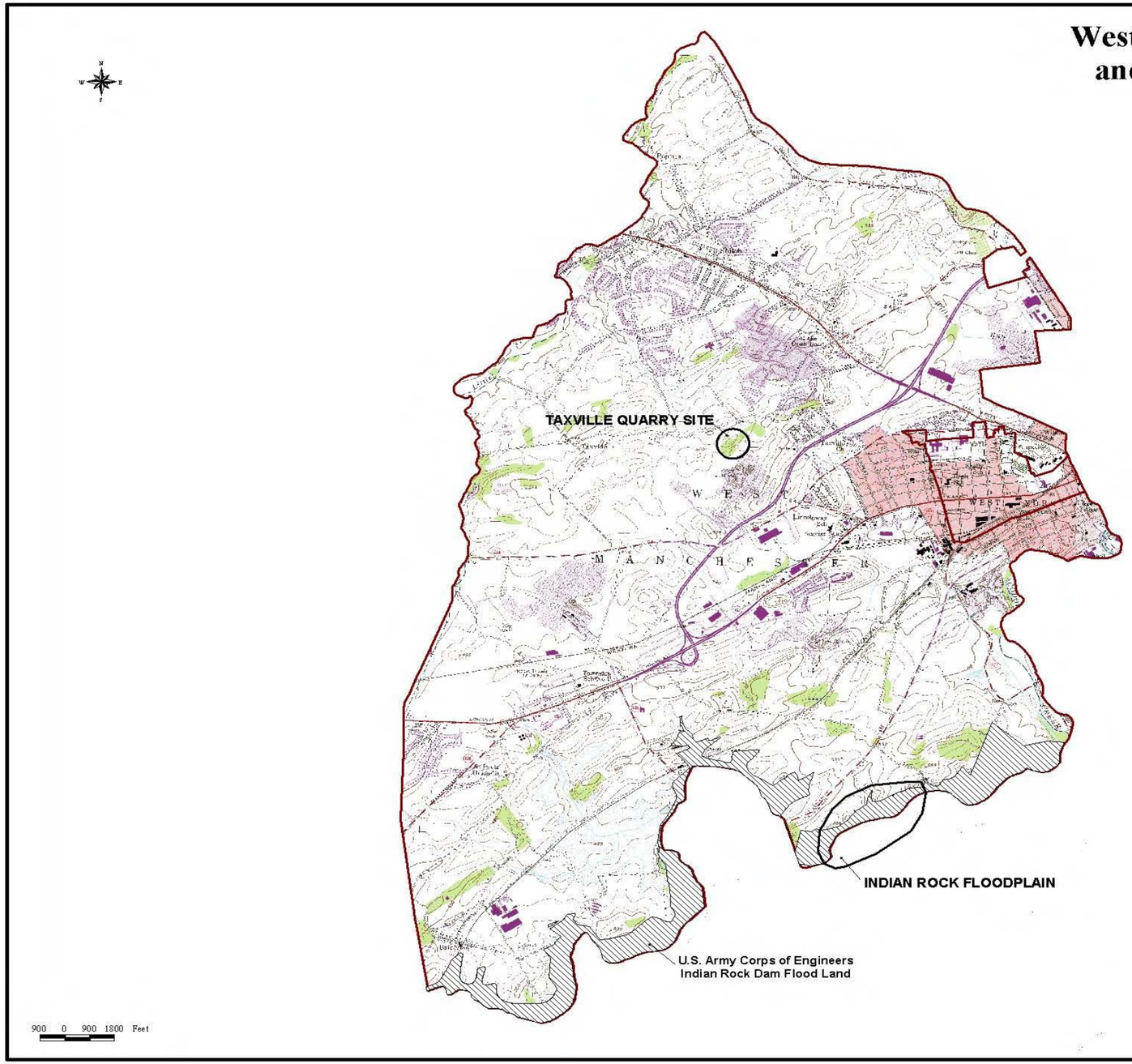


Map 31

West Manchester Township and West York Borough

York County
Natural Areas Inventory

Natural Areas:

Indian Rock Floodplain
Taxville Quarry Site

Locally Significant Sites:

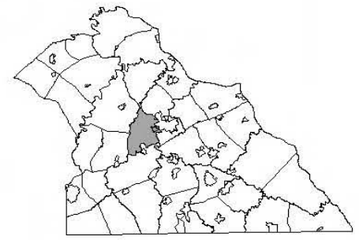
No features on map

Managed Areas:

U.S. Army Corps of Engineers
- Indian Rock Dam Flood Land

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

West Manheim Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Codorus State Park Site	Animal	G5	S2	PT	09/10/96	C
Bandana Woods	Plant: Dwarf azalea	G4G5	S1	PE	05/23/95	CD

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: Codorus State Park

West Manheim Township:

CODORUS STATE PARK SITE (West Manheim & Penn Twps.) - A **PA-Threatened animal species** has been observed in Lake Marburg at **Codorus State Park**. It requires large bodies of fresh water for survival. This species was once common in the Delaware River and its major tributaries, as well as in the lower Susquehanna River. Habitat destruction and pollution have almost eliminated it from those areas.

BANDANA WOODS (West Manheim Twp.) - A low quality occurrence of **dwarf azalea** is found growing in the understory layer of a mixed hardwood forest. The forest is on a gradual north facing slope. The canopy is dominated by chestnut oak, black gum, and hickory. The shrub layer includes pinxter-bush, black huckleberry, low bush blueberry, and maple-leaved viburnum. There are no immediate threats to this occurrence.

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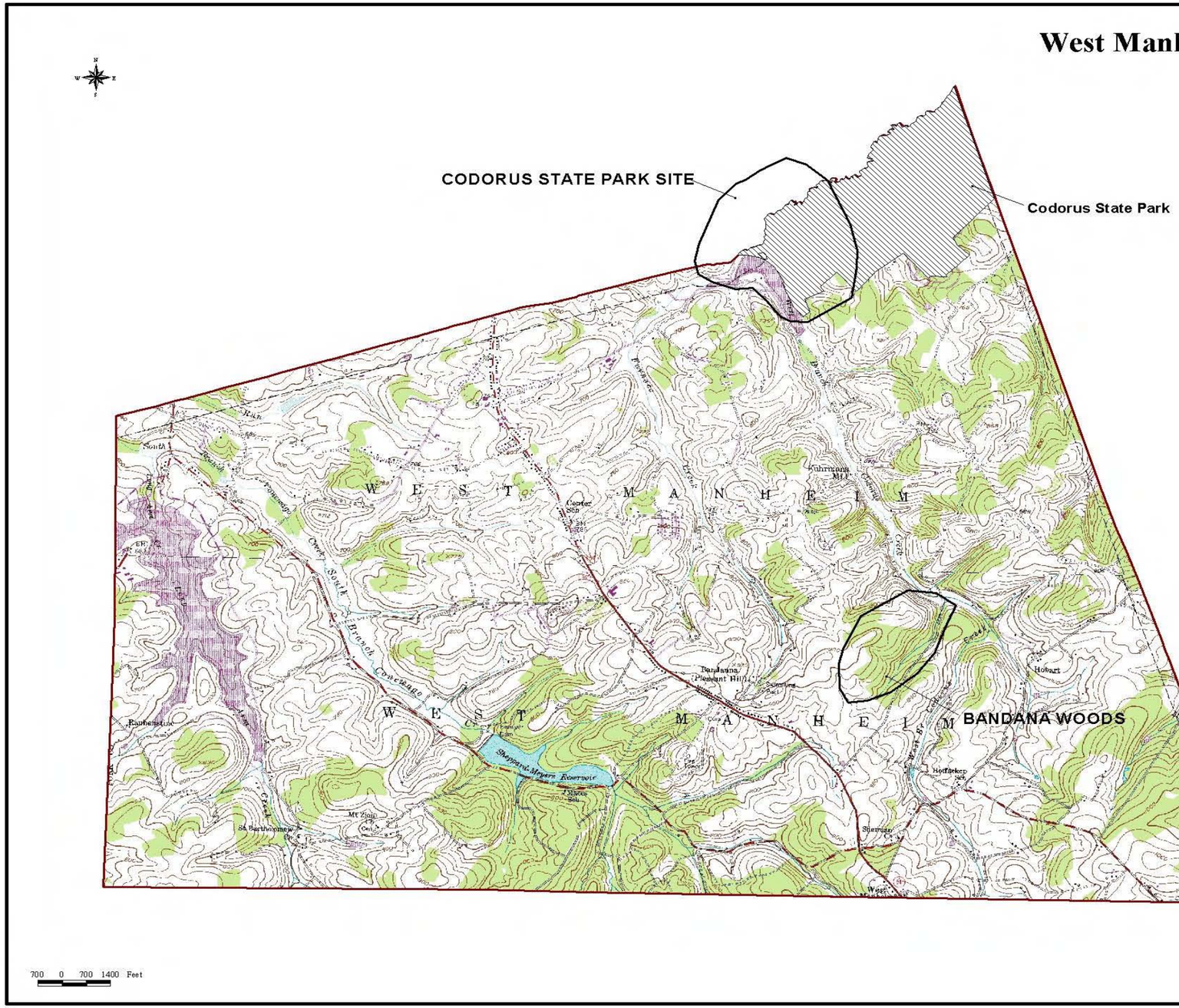


Map 32

West Manheim Township

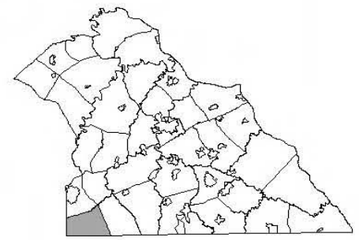
York County
Natural Areas Inventory

Natural Areas:
Bandana Woods
Codorus State Park Site

Locally Significant Sites:
No features on map

Managed Areas:
Codorus State Park

Other:
No features on map



Map Features
- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

York City

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Kiwanis Lake	Bird: Great Egret	G5	S1B	PE	Summer 2004	E
	Bird: Yellow-crowned Night Heron	G5	S1B	PE	Summer 2004	E
	Bird: Yellow-crowned Night Heron	G5	S2S3B	CA	Summer 2004	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.

** Please refer to Appendix VI for Quality ranks.

York City:

KIWANIS LAKE (York City)- Kiwanis Lake provides important breeding habitat for three bird species of concern in the city of York. **Great Egrets** and **Yellow-crowned Night Herons** are both Pennsylvania Endangered species that nest at Kiwanis Lake. **Black-crowned Night Herons** also nest here and are a Pennsylvania Candidate species. This site is unusual because of its close proximity to humans and as the only colony in Pennsylvania where all three species nest together. Yellow-crowned night herons and great egrets are especially susceptible to human disturbance. They often nest on remote islands or forests with a nearby water source.

Surveys during the summer of 2004 yielded counts of one yellow-crowned night heron nest, three great-egret nests and 40 black-crowned night heron nests. Biologists estimate that each year more than 100 young herons and egrets are raised in the park. Kiwanis Lake is an important site for these species in the state. The nesting colony provides a great opportunity for residents to learn more about these important species and the conservation efforts that help them to survive.

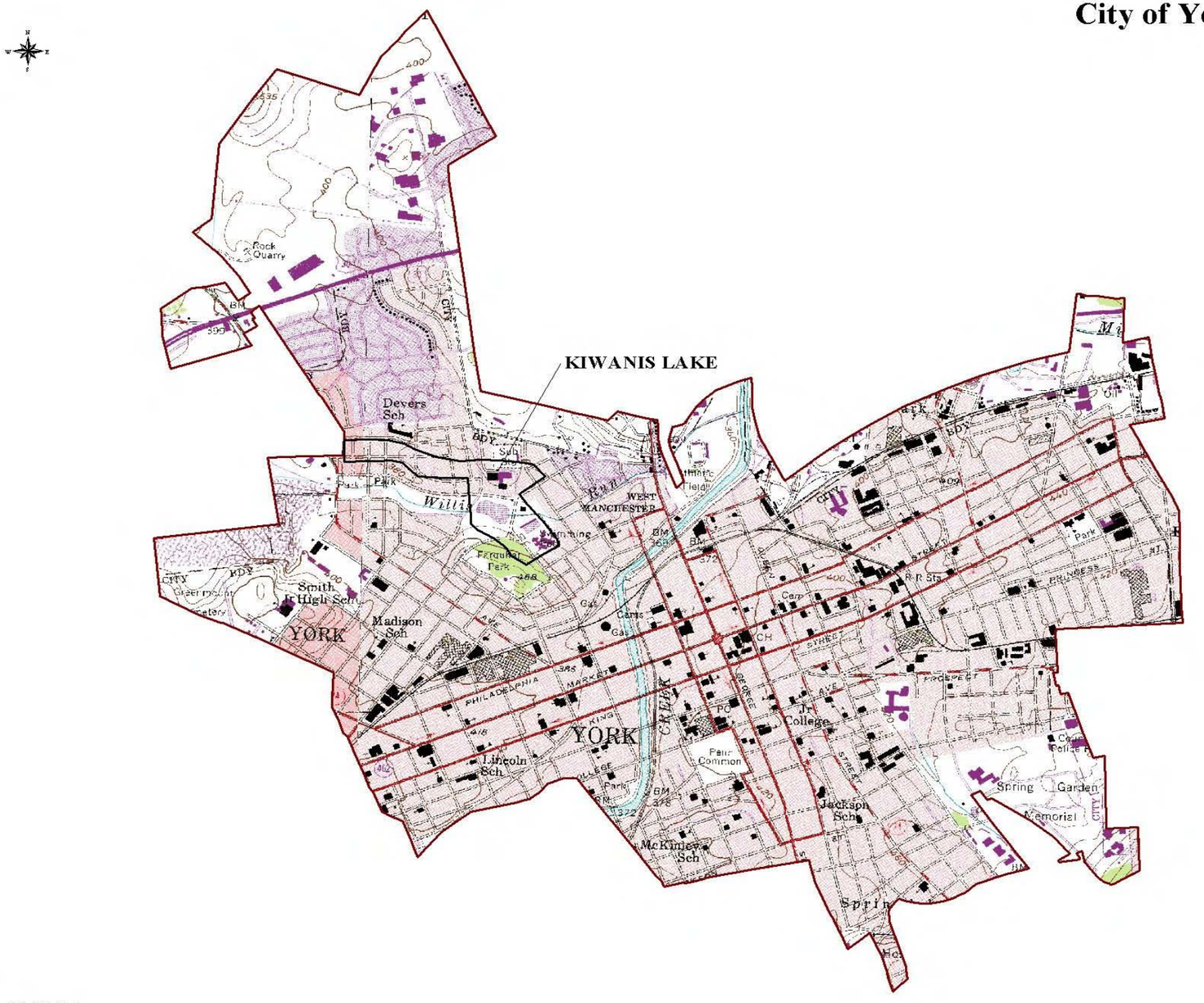
Black-crowned Night-Heron

Yellow-crowned Night-Heron

Great Egret

Kiwanis Lake provides nesting habitat for these three bird species of concern. Great Egrets, Yellow-crowned Night-Herons and Black-crowned Night-Herons depend on aquatic resources for food and often nest on islands. Protection of our water resources is vital to the survival of these species. Photos by PA DCNR, Bureau of Forestry.

City of York



Map 33

City of York

York County
Natural Areas Inventory

Natural Areas:

Kiwanis Lake

Locally Significant Sites:

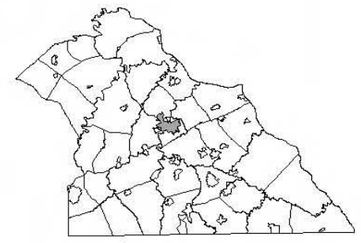
No features on map

Managed Areas:

No features on map

Other:

No features on map



Map Features

- Municipal Boundary
- Natural Area of Locally Significant Site
- Managed Area

York Township

Site Name	Special Species/ Community Type	TNC Ranks *		State Status	Last Seen	Quality **
		Global	State			
Lake Redman Site	Animal: Black-crowned night-heron	G5	S3B,S3N	N	08-1986	E

* Please refer to Appendix V for an explanation of Ranks and Legal Status.
** Please refer to Appendix VI for Quality ranks.

Managed Areas: William H. Kain County Park

York Township:

LAKE REDMAN SITE (Springfield & York Twps.) - The **black-crowned night-heron** has been observed nesting on a forested floodplain adjacent to Lake Redman within **William H. Kain County Park**. It is crepuscular (active during twilight) and nocturnal, and requires wetland habitat with shallow water, such as marshes, lake shores, ponds, or wooded streams. Loss of habitat is a major threat.

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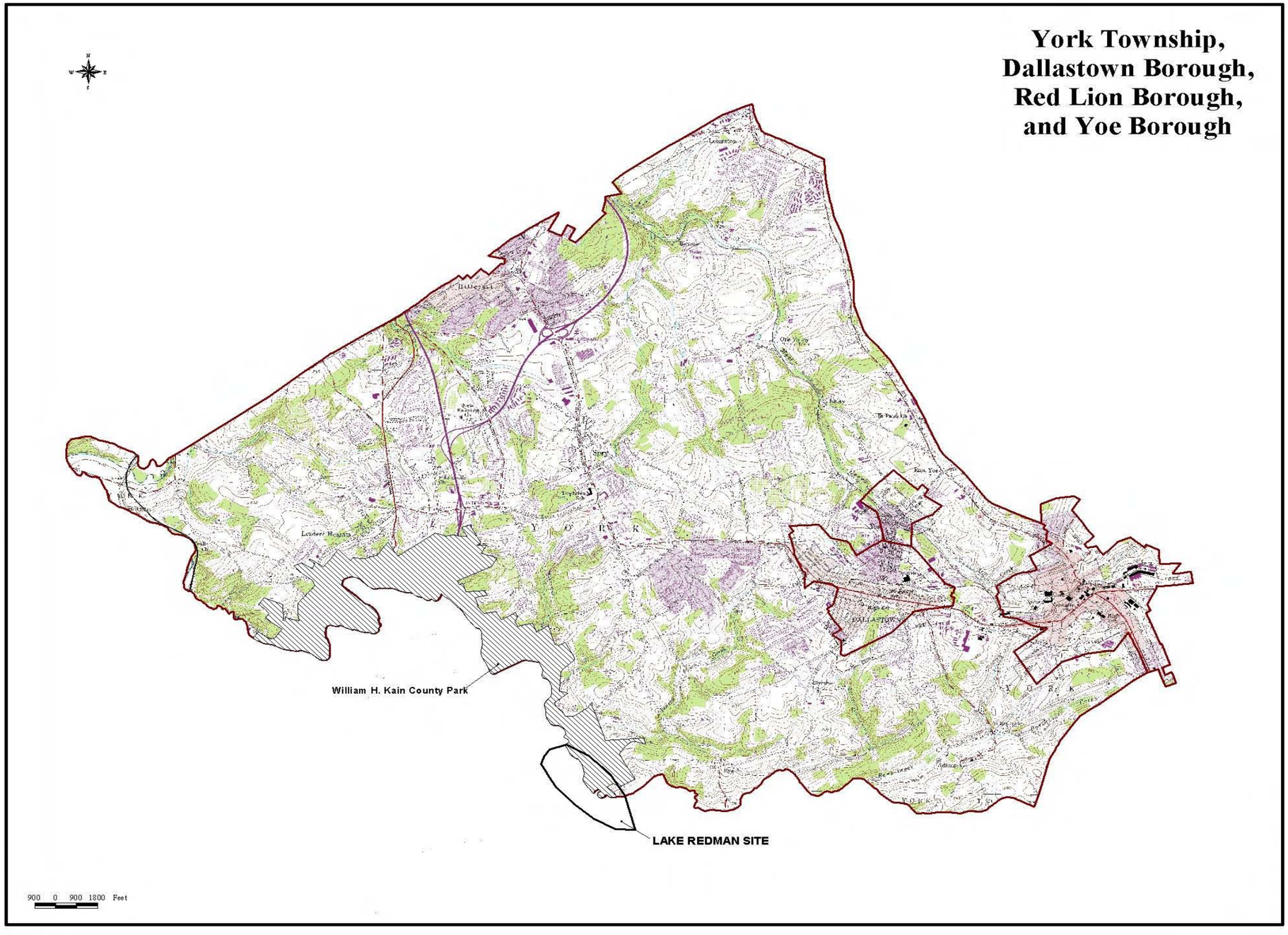


Map 34

York Township, Dallastown Borough, Red Lion Borough, and Yoe Borough

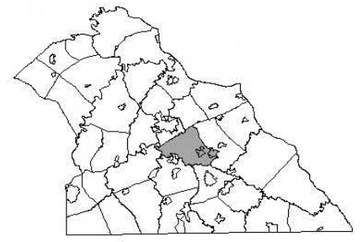
York County
Natural Areas Inventory

Natural Areas:
Lake Redman Site

Locally Significant Sites:
No features on map

Managed Areas:
William H. Kain County Park

Other:
No features on map



Map Features

- Municipal Boundary
- Natural Area or Locally Significant Site
- Managed Area

Glossary

Acid Mine Drainage (AMD) - drainage flowing from or caused by surface mining, deep mining, or coal refuse piles that are typically highly acidic with elevated levels of dissolved metals (DEP).

Acidophilic - a plant that requires or prefers acidic soil conditions.

Alluvium - material such as sand, silt, or clay that is deposited on land by streams.

Anthropogenic - human caused.

ATV - all-terrain-vehicle.

Bald - a rocky or stony area with little or no vegetation.

Barrens - areas that are naturally infertile as a consequence of nutrient-poor soils; often form on resistant rock such as quartz, sandstone or highly weathered and leached glacial material. Fire is a natural process on the ridgetop barrens.

Bt (*Bacillus thuringiensis*) - an insecticide, which is produced by the fermentation of a bacterium (Bt), used to control many caterpillar-type pests (e.g., gypsy moth).

Bog - a nutrient poor, acidic peatland that receives water primarily from direct rainfall with little or no input from groundwater or runoff; vegetation consists primarily of peatmoss and ericaceous shrubs.

Bryophyte - liverworts, hornworts and mosses.

Canopy - the layer formed by the tallest vegetation.

Chitin - the material that enables insects to form an exoskeleton.

Circumneutral - pH between 5.5 and 7.

Co-dominant - where several species together comprise the dominant layer (see "dominant" below).

Community - an assemblage of plant or animal populations sharing a common environment and interacting with each other and the physical environment.

Community complex - a set of community types that tend to occur together under a specific set of environmental circumstances.

DBH - The diameter of a tree at breast height.

DCNR - Pennsylvania Department of Conservation and Natural Resources.

DEP - Pennsylvania Department of Environmental Protection.

Diabase - a dark gray igneous rock. The chemical composition of diabase may support unusual plant communities.

Dimilin - a commercially produced, restricted-use insecticide containing diflubenzuron as the active ingredient. Diflubenzuron, which has been used as a method to control gypsy moth, interferes with chitin production during the early stages of certain insects (DCNR, Division of Pest Management).

Disturbance regime - a repeating pattern of natural disturbances such as fire, flooding, ice scouring, windthrows, erosion, etc.

Dominant - the species (usually plant) exerting the greatest influence on a given community either by numerical dominance or influence on microclimate, soils and other species.

Element - all-inclusive term for species of special concern and exemplary natural communities.

Emergent - upright, rooted vegetation that may be temporarily to permanently flooded at the base, while the upper portions of the plant grow erect above the water surface.

Ericaceous - members of the heath family including blueberries, huckleberries, rhododendrons, and azaleas; these plants are adapted to living in acidic soils.

EV (Exceptional Value Waters) - DEP designation for a stream or watershed which constitutes an outstanding national, state, regional or local resource, such as waters of national, state or county parks or forests; or waters which are used as a source of unfiltered potable water supply, or waters of wildlife refuges or State Game Lands, and other waters of substantial recreational or ecological significance. For more detailed information about EV stream designations, the reader is referred to the Special Protection Waters Implementation Handbook (Shertzer 1992).

Exotic - non-native; used to describe plant or animal species that were introduced by humans; examples include Japanese honeysuckle, purple loosestrife and grass carp; exotics present a problem because they may out-compete native species.

Extant - currently in existence.

Floodplain - low-lying land generally along streams or rivers that receives periodic flooding.

Forb - non-grass herbaceous plant such as goldenrod.

Graminoid - grass or grass-like plant such as a sedge or a rush.

Ground cover - low shrubs, herbs and mosses that are found at or close to the ground surface.

Hibernacula - A location where animals hibernate.

Hibernation - the period of winter inactivity during which time normal physiological processes are reduced and a significant decrease in body temperature occurs. In Pennsylvania, true hibernation is shown by woodchucks, jumping mice, and bats.

HQ-CWF (High-Quality Coldwater Fisheries - DEP designation (PA Code, Chapter 93) for a stream or watershed that has excellent quality waters and environmental or other features that require special water quality protection.

Hydrology - water system of an area including both surface water and ground water.

Lepidoptera - moths and butterflies.

Listed species - species that is monitored and considered to be of concern by PNDI.

Littoral - the area where water meets land, the shoreline.

Mesic - moist, not saturated.

Minerotrophic - groundwater fed; influenced by water that has been in contact with bedrock or soil, and is richer in mineral content than rainwater.

Native - describes species that occurred in Pennsylvania or in the area in which they are found prior to European settlement; not introduced by human activities.

Natural area - as used in this study, a site with either an exemplary natural community or species of special concern; not to be confused with the State Forest Natural Areas which are specific management units designated by DCNR Bureau of Forestry.

Non-point - refers to diffuse sources of pollution such as storm water runoff contaminated with oil or pesticides.

Oligotrophic - poor to extremely poor in nutrients; typically describes dilute waters with low base metal ion concentrations.

Palustrine - areas intermediate between aquatic and terrestrial habitats, where conditions are at least periodically wet enough during the growing season to produce anaerobic soil conditions and thereby influence plant growth.

Peat - partially decomposed remains of plant material in which at least some of the plant parts are still distinguishable.

POSCIP - Plant of Special Concern in Pennsylvania.

Potential Natural Area - used by The Nature Conservancy to denote an area that may have desirable environmental characteristics to support rare species or exemplary natural communities, but which needs a field survey to confirm; a preliminary category given to sites prior to field survey (see METHODS section).

Prescribed burning - burning under controlled conditions; needed to maintain communities such as limestone glades and pitch pine barrens.

Riparian - streamside.

ROW - strip of land occupied or intended to be occupied by a street, crosswalk, railroad, electric transmission line, oil or gas pipeline, water main, sanitary or storm sewer line, or other special use.

Seeps - where water flows from the ground in a diffuse pattern and saturates the soil; lush herbaceous vegetation often grows in these wet areas.

Soil association - a group of soils that are geographically associated in a characteristic repeating pattern and defined and delineated as a single unit.

Soil series - groups of soils that have vertical profiles that are almost the same, that is, with horizons (layers) that are similar in composition, thickness, and arrangement.

Succession - natural process of vegetation change through time; over time, the plant species of a site will change in composition and structure as light and soil conditions change (e.g., a field that is left alone may, over time, be taken over by shrubs, then small trees and eventually a woodland).

Talus - slope formed of loose rock and gravel that accumulates at the base of mountains or cliffs.

Understory - layer of shrubs and small trees between the herbaceous layer and the canopy.

Vernal - occurring in the spring.

Xeric - extremely dry or droughty.

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Site Index

APPENDIX I
NATURAL AREA SURVEY FORM

Surveyor: _____

Address & Phone: _____

Date of Observation _____ Site Name: _____

Quadrangle Name _____

Exact Location of Site (please be specific & include a map or sketch) _____
_____
_____

Owner: _____

Owners Attitude Toward Conservation: _____
_____

Site Elevation: _____ Size of Site (acres): _____

Source of Lead: _____

Current Land Use: _____
_____

Type of Area: _____ Old Growth Forest; _____ Marsh; _____ Shrub Swamp; _____

_____ Forested Swamp; _____ Bog; _____ Natural Pond _____

Written Description: Try to convey a mental image of the site features (including vegetation, significant animals & plants, aquatic features, land forms, geologic substrata, scenic qualities, etc.):
_____
_____
_____

Evidence of Disturbance: _____

Site Condition Compared to Your Last Visit: _____

Please attach any additional information, species list, etc.
Please send completed report forms to Pennsylvania Science Office of The Nature Conservancy, 208 Airport Drive, Middletown, PA 17057, (717) 948-3962. Additional forms may be obtained from this office. Thank you for your contribution.

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APPENDIX II
COMMUNITY CLASSIFICATION
CLASSIFICATION OF NATURAL COMMUNITIES IN PENNSYLVANIA
(1995 DRAFT)

COMMUNITY NAME	MAP CODE	GLOBAL RANK*	STATE RANK*
ESTUARINE COMMUNITIES			
DEEPWATER SUBTIDAL COMMUNITY	EAA	G?	S1
SHALLOW-WATER SUBTIDAL COMMUNITY	EAB	G?	S1
FRESHWATER INTERTIDAL MUDFLAT	EBA	G3G4	S1
FRESHWATER INTERTIDAL MARSH	ECA	G3G4	S1
RIVERINE COMMUNITIES			
LOW-GRADIENT EPHEMERAL/INTERMITTENT CREEK	RAA	G?	S5
LOW-GRADIENT CLEARWATER CREEK	RAB	G?	S3S4
LOW-GRADIENT CLEARWATER RIVER	RAC	G?	S2S3
LOW-GRADIENT BROWNWATER CREEK	RAD	G?	S2S3
MEDIUM-GRADIENT EPHEMERAL/INTERMITTENT CREEK	RBA	G?	S5
MEDIUM-GRADIENT CLEARWATER CREEK	RBB	G?	S3
MEDIUM-GRADIENT CLEARWATER RIVER	RBC	G?	S?
MEDIUM-GRADIENT BROWNWATER CREEK	RBD	G?	S3
HIGH-GRADIENT EPHEMERAL/INTERMITTENT CREEK	RCA	G?	S5
HIGH-GRADIENT CLEARWATER CREEK	RCB	G?	S3
HIGH-GRADIENT CLEARWATER RIVER	RCC	G?	S?
HIGH-GRADIENT BROWNWATER CREEK	RCD	G?	S?
WATERFALL AND PLUNGEPOOL	RDA	G?	S3S4
SPRING COMMUNITY	REA	G?	S1S2
SPRING RUN COMMUNITY	REB	G?	S1S2
LACUSTRINE			
ACIDIC GLACIAL LAKE	LAAA	G?	S2S3
CALCAREOUS GLACIAL LAKE	LAAB	G?	S1
NONGLACIAL LAKE	LAB	G?	S2
ARTIFICIAL LAKE	LAC	*	*
NATURAL POND	LBA	G?	S2S3
ARTIFICIAL POND	LBB	*	*
STABLE NATURAL POOL	LCA	G?	S?
EPHEMERAL/FLUCTUATING NATURAL POOL	LCB	G?	S2
ARTIFICIAL POOL	LCC	*	*
EPHEMERAL/FLUCTUATING LIMESTONE SINKHOLE	LCD	G?	S1

PALUSTRINE COMMUNITIES

ACIDIC BROADLEAF SWAMP	PAA	G5	S2S3
CIRCUMNEUTRAL BROADLEAF SWAMP	PAB	G?	S2S3
BOREAL CONIFER SWAMP	PAC	G?	S3
NORTHERN CONIFER SWAMP	PAD	G?	S3S4
BROADLEAF-CONIFER SWAMP	PAE	G?	S3S4
FLOODPLAIN SWAMP	PAF	G?	S1
EASTERN CALCAREOUS SEEPAGE SWAMP	PAG	G?	S1
ACIDIC SHRUB SWAMP	PAH	G5	S3
CIRCUMNEUTRAL SHRUB SWAMP	PAJ	G?	S3
GRAMINOID MARSH	PBA	G?	S3
ROBUST EMERGENT MARSH	PBB	G?	S2
MIXED GRAMINOID-ROBUST EMERGENT MARSH	PBC	G?	S2S3
CALCAREOUS MARSH	PBD	G?	S1
OLIGOTROPHIC GLACIAL KETTLEHOLE BOG	PCAA	G?	S3
WEAKLY MINEROTROPHIC LAKESIDE BOG	PCAB	G?	S2
NONGLACIAL BOG	PCB	G?	S3
RECONSTITUTED BOG	PCC	*	*
POOR (GRAMINOID) FEN	PCD	G?	S1
SHRUB (CALCAREOUS) FEN	PDA	G2G3	S1
BASIN GRAMINOID-FORB (CALCAREOUS) FEN	PDB	G?	S1
HILLSIDE GRAMINOID-FORB (CALCAREOUS) FEN	PDC	G?	S1
NORTHERN APPALACHIAN CIRCUMNEUTRAL SEEP PEA		G?	S3?
NORTHERN APPALACHIAN CALCAREOUS SEEP	PEB	G?	S1
NORTHERN APPALACHIAN ACIDIC SEEP	PEC	G?	S3?
RIVERSIDE SEEP	PED	G?	S2?

TERRESTRIAL COMMUNITIES

NORTHERN CONIFER FOREST	TBA	G5	S3S4
NORTHERN HARDWOOD (DECIDUOUS) FOREST	TBB	G?	S3S4
NORTHERN HARDWOOD-CONIFER FOREST	TBC	G?	S3
XERIC CENTRAL HARDWOOD (DECIDUOUS) FOREST	TCA	G?	S5
XERIC CENTRAL CONIFER FOREST	TCB	G?	S3S4
XERIC CENTRAL HARDWOOD-CONIFER FOREST	TCC	G?	S3
RIDGETOP DWARF-TREE FOREST	TCD	G4	S2S3
DRY-MESIC ACIDIC CENTRAL FOREST	TCE	G?	S5
DRY-MESIC CALCAREOUS CENTRAL FOREST	TCF	G?	S2S3
MESIC CENTRAL FOREST	TCG	G?	S2
TALUS SLOPE FOREST	TCH	G?	S2?
COASTAL PLAIN FOREST	TEA	G?	S1
FLOODPLAIN FOREST	TFA	G?	S2
RIVER GRAVEL COMMUNITY	TGA	G?	S4S5
MESIC SCRUB OAK-HEATH-PITCH PINE BARRENS	TCDA	G1	S1
EASTERN SERPENTINE BARRENS	THA	G2	S1

CENTRAL APPALACHIAN SHALE BARREN	THBA	G?	S1
NORTHERN APPALACHIAN SHALE BARREN	THBB	G?	S2
NORTHERN APPALACHIAN SAND BARREN	THC	G?	S?
NORTHERN APPALACHIAN BOULDER FIELD	THD	G?	S5
NORTHERN APPALACHIAN CALCAREOUS CLIFF	THE	G?	S2
NORTHERN APPALACHIAN ACIDIC CLIFF	THF	G?	S5
NORTHERN APPALACHIAN SHALE CLIFF	THG	G?	S2
RIVERSIDE OUTCROP/CLIFF	THJ	G?	S1S2
NORTHERN APPALACHIAN TALUS WOODLAND	TCHA	G?	S?
NORTHERN APPALACHIAN ACIDIC ROCKY SUMMIT	THK	G?	S2
NORTHERN APPALACHIAN CALCAREOUS ROCKY SUMMIT	THM	G?	S1
CALCAREOUS ROCKY SLOPE	TFG	G?	S?
CALCAREOUS RIVERSIDE OUTCROP	THH	G?	S1
LAKE SEDIMENT SLUMP	TGB	G?	S1
EASTERN GREAT LAKES BEACH COMMUNITY	TJA	G?	S?
EASTERN GREAT LAKES DUNE COMMUNITY TJB	G?	S?	
EASTERN GREAT LAKES SAND PLAINS COMMUNITY	TJC	G?	S?
EASTERN GREAT LAKES BLUFF/CLIFF COMMUNITY TJD	G?	S?	

<u>SUBTERRANEAN COMMUNITIES</u>

SOLUTION CAVE TERRESTRIAL COMMUNITY	SAA	G?	S3
SOLUTION CAVE AQUATIC COMMUNITY	SAB	G?	S3
TECTONIC CAVE COMMUNITY	SAC	G?	S3S4
TALUS CAVE COMMUNITY	SAD	G?	S2S4

<u>DISTURBED COMMUNITIES</u>

BARE SOIL	DAA	--	--
MEADOW/PASTURELAND	DAB	--	--
CULTIVATED LAND	DAC	--	--
SUCCESSIONAL FIELD	DAD	--	--
YOUNG MISCELLANEOUS FOREST	DAE	--	--
CONIFER PLANTATION	DAF	--	--

* Not all natural communities have been assigned a global or state rank; disturbed or artificial communities are not assigned ranks.

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APPENDIX III
FIELD SURVEY FORM

PENNSYLVANIA NATURAL HERITAGE PROGRAM:
SPECIES OF SPECIAL CONCERN FIELD REPORT

SNAME: EOCODE:
SURVEYDATE:

SITENAME:
SOURCECODE:
SURVEYOR:

SURVEYSITE:

SPECIMEN REPOSITORY:

Locational Information QUADCODE DOTNUM TEN,TEN
COUNTYCODE TOWNSHIP
LAT:
LONG:
DIRECTIONS:

Global EORANK PA EORANK:
COMMENTS:

DATA:

HABITAT DESCRIPTION:

MISCELLANEOUS:

DATA SENSITIVITY: OWNER CODE:
REASON FOR DATA SENSITIVITY: OWNER

HABITAT SKETCH:

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APPENDIX IV
SPECIES DELISTED SINCE ORIGINAL NATURAL AREAS INVENTORY

SITE NAME	MUNICIPALITY	USGS QUAD	SPECIES
Muddy Creek Bluff	Chanceford, Lower Chanceford, Fawn & East Hopewell Twps.	Airville, Safe Harbor	Riverweed (*Podostemum ceratophyllum*)
Accomac Riverbank	Hellam Twp.	Columbia West	Lance fog-fruit (*Phyla lanceolata*)
Wrightsville-North Rivershore	Hellam Twp.	Columbia West	Lance fog-fruit (*Phyla lanceolata*)
Shenks Ferry York Woods	Chanceford Twp.	Safe Harbor	Lance fog-fruit (*Phyla lanceolata*)
Bryansville Sation Seep	Peach Bottom & Lower Chanceford Twps.	Holtwood	Sweet scented indian plantain (*Cacalia suaveolens*)
Conowingo Islands Macrosite	Lower Chanceford Twp.	Holtwood	Lance fog-fruit (*Phyla lanceolata*)
Conowingo Islands Macrosite	Lower Chanceford Twp.	Holtwood	Riverweed (*Podostemum ceratophyllum*)
Conowingo Islands Macrosite	Lower Chanceford Twp.	Holtwood	Sweet scented indian plantain (*Cacalia suaveolens*)
Erney Cliff	Conewago & Newberry Twps.	Dover	Small-flowered crowfoot (*Ranunculus micranthus*)
Fairview Rivershore	Fairview Twp.	Steelton	Lance fog-fruit (*Phyla lanceolata*)
Fishing Creek-Susquehanna River Site	Chanceford & Lower Windsor Twps.	Safe Harbor	Riverweed (*Podostemum ceratophyllum*)
Long Level Rivershore	Lower Windsor Twp.	Safe Harbor	Lance fog-fruit (*Phyla lanceolata*)
Straight Hill Woods	Dover & Warrington Twps.	Dover	Riverweed (*Podostemum ceratophyllum*)
Cabin Creek	Lower Windsor Twp.	Red Lion	Riverweed (*Podostemum ceratophyllum*)

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APPENDIX V
FEDERAL AND STATE STATUS, AND THE
NATURE CONSERVANCY (TNC) RANKS

FEDERAL STATUS
U.S. FISH AND WILDLIFE SERVICE CATEGORIES OF ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following definitions are extracted from the September 27, 1985 U.S. Fish and Wildlife Service notice in the Federal Register:

LE - Listed Endangered - Taxa in danger of extinction throughout all or a significant portion of their ranges.

LT - Listed Threatened - Taxa that are likely to become endangered within the foreseeable future through all or a significant portion of their ranges.

PE - Proposed Endangered - Taxa proposed to be formally listed as endangered.

PT - Proposed Threatened - Taxa proposed to be formally listed as threatened.

C1 - Taxa for which the Service currently has on file substantial information on biological vulnerability and threat(s) to support the appropriateness of proposing to list them as endangered or threatened species.

C2 - Taxa for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules.

C3 - Taxa that are no longer being considered for listing as threatened or endangered species. Such taxa are further coded to indicate three categories, depending on the reason(s) for removal from consideration.

3A--Taxa for which the Service has persuasive evidence of extinction.

3B--Names that, on the basis of current taxonomic understanding, usually as represented in published revisions and monographs, do not represent taxa meeting the Act's definition of "species".

3C--Taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

N - Taxa not currently listed by the U.S. Fish and Wildlife Service

STATE STATUS-NATIVE PLANT SPECIES

Legislative Authority: Title 25, Chapter 82, Conservation of Native Wild Plants, amended June 18, 1993, Pennsylvania Department of Environmental Resources.

PE - Pennsylvania Endangered - Plant species which are in danger of extinction throughout most or all of their natural range within this Commonwealth, if critical habitat is not maintained or if the species is greatly exploited by man. This classification shall also include any populations of plant species that have been classified as Pennsylvania Extirpated, but which subsequently are found to exist in this Commonwealth.

PT - Pennsylvania Threatened - Plant species which may become endangered throughout most or all of their natural range within this Commonwealth, if critical habitat is not maintained to prevent further decline in this Commonwealth, or if the species is greatly exploited by man.

PR - Pennsylvania Rare - Plant species which are uncommon within this Commonwealth. All species of native wild plants classified as Disjunct, Endemic, Limit of Range and Restricted are included within the Pennsylvania Rare classification.

PX - Pennsylvania Extirpated - Plant species believed by the Department to be extinct within this Commonwealth. These plant species may or may not be in existence outside this Commonwealth. If plant species classified as Pennsylvania Extirpated are found to exist, the species automatically will be considered to be classified as Pennsylvania Endangered.

PV - Pennsylvania Vulnerable - Plant species which are in danger of population decline within Pennsylvania because of their beauty, economic value, use as a cultivar, or other factors which indicate that persons may seek to remove these species from their native habitats.

TU - Tentatively Undetermined - Plant species which are believed to be in danger of population decline, but which cannot presently be included within another classification due to taxonomic uncertainties, limited evidence within historical records, or insufficient data.

N - None - Plant species which are believed to be endangered, rare, or threatened, but which are being considered by the required regulatory review processes for future listing.

STATE STATUS-ANIMALS

The following state statuses are used by the Pennsylvania Game Commission for (1990, Title 34, Chapter 133 pertaining to wild birds and mammals) and by the Pennsylvania Fish and Boat Commission (1991, Title 30, Chapter 75 pertaining to fish, amphibians, reptiles and aquatic organisms):

PE - Pennsylvania Endangered

Game Commission - Species in imminent danger of extinction or extirpation throughout their range in Pennsylvania if the deleterious factors affecting them continue to operate. These are: 1) species whose numbers have already been reduced to a critically low level or whose habitat has been so drastically reduced or degraded that immediate action is required to prevent their extirpation from the Commonwealth; or 2) species whose extreme rarity or peripherality places them in potential danger of precipitous declines or sudden extirpation throughout their range in Pennsylvania; or 3) species that have been classified as "Pennsylvania Extirpated", but which are subsequently found to exist in Pennsylvania as long as the above conditions 1 or 2 are met; or 4) species determined to be "Endangered" pursuant to the Endangered Species Act of 1973, Public law 93-205 (87 Stat. 884), as amended.

Fish and Boat Commission - Endangered Species are all species and subspecies: (1) declared by the Secretary of the United States Department of the Interior to be threatened with extinction and appear on the Endangered Species List or the Native Endangered Species list published in the Federal Register; or, (2) declared by the Executive Director (PaFC) to be threatened with extinction and appear on the Pennsylvania Endangered Species List published in the Pennsylvania Bulletin.

PT - Pennsylvania Threatened

Game Commission - Species that may become endangered within the foreseeable future throughout their range in Pennsylvania unless the causal factors affecting the organism are abated. These are: 1) species whose populations within the Commonwealth are decreasing or have been heavily depleted by adverse factors and while not actually endangered, are still in critical condition; or 2) species whose populations may be relatively abundant in the Commonwealth but are under severe threat from serious adverse factors that have been identified and documented; or 3) species whose populations are rare or peripheral and in possible danger of severe decline throughout their range in Pennsylvania; or 4) species determined to be "Threatened" pursuant to the Endangered Species Act of 1973, Public law 93-205 (87-Stat. 884), as amended, that are not listed as "Pennsylvania Endangered".

Fish and Boat Commission - Threatened Species are all species and subspecies: (1) declared by the Secretary of the United States Department of the Interior to be in such small numbers throughout their range that they may become endangered if their environment worsens and appear on a Threatened Species List published in the Federal Register; or, (2) have been declared by the

Executive Director (PaFC) to be in such small numbers throughout their range that they may become endangered if their environment worsens and appear on the Pennsylvania Threatened Species List published in the Pennsylvania Bulletin.

TNC GLOBAL ELEMENT RANKS

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2 = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range or because of other factors making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GH = Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g., Bachman's Warbler).

GU = Possibly in peril range wide but status uncertain; need more information.

GX = Believed to be extinct throughout its range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered.

TNC STATE ELEMENT RANKS

S1 = Critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from the state.

S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.

S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences).

S4 = Apparently secure in state, with many occurrences.

S5 = Demonstrably secure in state and essentially ineradicable under present conditions.

SA = Accidental in state, including species which only sporadically breed in the state.

SE = An exotic established in state; may be native elsewhere in North America (e.g., house finch).

SH = Of historical occurrence in the state with the expectation that it may be rediscovered.

SN = Regularly occurring, usually migratory and typically nonbreeding species for which no significant or effective habitat conservation measures can be taken in the state.

SR = Reported from the state, but without persuasive documentation which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report.

SRF= Reported falsely (in error) from the state but this error persisting in the literature.

SU = Possibly in peril in state but status uncertain; need more information.

SX = Apparently extirpated from the state.

Note: A "T" appearing in either the G Rank or S Rank, indicates that the infraspecific taxa is being ranked differently than the species. A "Q" in the rank indicates that there is taxonomic uncertainty about a taxa being ranked (i.e., taxa is being accepted as a full species or natural community in this list but may be treated as a variety or form by others). A "?" after a "G" or "S" indicates that the rank is uncertain at this time.

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APPENDIX VI
PENNSYLVANIA NATURAL DIVERSITY
ELEMENT OCCURRENCE QUALITY RANKS

Quality Rank*	Explanation
A	Excellent occurrence: all A-rank occurrences of an element merit quick, strong protection. An A-rank community is nearly undisturbed by humans, or has nearly recovered from early human disturbance; further distinguished by being an extensive, well-buffered occurrence. An A-rank population of a sensitive species is large in area and number of individuals, stable, if not growing, shows good reproduction, and exists in natural habitat.
B	Good occurrence: protection of the occurrence is important to the survival of the element in Pennsylvania, especially if very few or no A-rank occurrences exist. A B-rank community is still recovering from early disturbance or recent light disturbance, or is nearly undisturbed but is less than A-rank because of significantly smaller size, poorer buffer, etc. A B-rank population of a sensitive species is at least stable, in a minimally disturbed habitat, and of moderate size and number.
C	Fair occurrence: protection of the occurrence helps conserve the diversity of a region's or County's biota and is important to state-wide conservation if no higher-ranked occurrences exist. A C-rank community is in an early stage of recovery from disturbance, or its structure and composition have been altered such that the original vegetation of the site will never rejuvenate, yet with management and time partial restoration of the community is possible. A C-rank population of a sensitive species is in a clearly disturbed habitat, small in size and/or number, and possibly declining.
D	Poor occurrence: protection of the occurrence may be worthwhile for historical reasons or only if no higher ranked occurrences exist. A D-rank community is severely disturbed, its structure and composition been greatly altered, and recovery to original conditions, despite management and time, essentially will not take place. A D-rank population of a sensitive species is very small with a high likelihood of dying out or being destroyed, and exists in a highly disturbed and vulnerable habitat.
E	Verified as extant, but has not been given a rank; additional information needed to evaluate quality.

* Intermediate ranks may also be assigned.

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APPENDIX VII
SPECIAL PLANTS AND ANIMALS OF YORK COUNTY

Animals of Special Concern	
Scientific Name	**State Common Name**
Alasmidonta varicosa	Brook Floater
Caecidotea pricei	Price's Cave Isopod
Callophrys henrici	Henry's Elfin
Callophyrs polia	Hoary Elfin
Calycopis cecrops	Red-Banded Hairstreak
Casmerodius albus	Great Egret
Cistothorus palustris	Marsh Wren
Clemmys muhlenbergii	Bog Turtle
Crotalus horridus	Timber Rattlesnake
Cryptotis parva	Least Shrew
Haliaeetus leucocephalus	Bald Eagle
Lampsilis cariosa	Yellow Lampmussel
Mitoura grynea	Olive Hairstreak
Myotis septentrionalis	Northern Myotis
Nyctanassa violacea	Yellow-Crowned Night-Heron
Nycticorax nycticorax	Black-Crowned Night-Heron
Pandion haliaetus	Osprey
Papilio cresphontes	Giant Swallowtail
Pseudemys rubriventris	Redbelly Turtle
Pyganodon cataracta	Eastern Floater
Rallus limicola	Virginia Rail
Zale submediana	A Zale Moth

Plants of Special Concern	
Scientific Name	**State Common Name**
Ammannia coccinea	Scarlet ammannia
Aplectrum hyemale	Puttyroot
Asplenium pinnatifidum	Lobed spleenwort
Aster radula	Rough-leaved aster
Boltonia asteroides	Aster-like boltonia
Chasmanthium latifolium	Wild oat
Eleocharis compressa	Flat-stemmed spike-rush
Ellisia nyctelea	Ellisia
Erigenia bulbosa	Harbinger-of-spring

Plants of Special Concern	
Scientific Name	**State Common Name**
Erythronium albidum	White trout-lily
Euphorbia purpurea	Glade spurge
Ilex opaca	American holly
Juncus biflorus	Grass-leaved rush
Lipocarpha micrantha	Common hemicarpa
Lobelia puberula	Downy lobelia
Magnolia tripetala	Umbrella magnolia
Melica nitens	Three-flowered melic-grass
Phyllanthus caroliniensis	Carolina leaf-flower
Potamogeton richardsonii	Red-head pondweed
Quercus shumardii	Shumard's oak
Ranunculus aquaticus var diffusus	White-water crowfoot
Rhododendron atlanticum	Dwarf azalea
Rotala ramosior	Tooth-cup
Rudbeckia fuldiga	Eastern coneflower
Scirpus fluviatilis	River bullrush
Scutellaria serrata	Showy skullcap
Sida hermaphrodite	Sida
Solidago spathulata var. racemosa	Sticky goldenrod
Solidago erecta	Slender goldenrod
Solidago rigida	Hard-leaved goldenrod
Tipularia discolor	Cranefly orchid
Trillium flexipes	Declined trillium
Triosteum angustifolium	Horse-gentian

Natural Communities of Special Concern
Natural Community Name
Mesic Central Forest
Riverside Outcrop

Bog Turtle
Clemmys muhlenbergii

Pennsylvania Endangered Species
State Rank: S2 Global Rank: G3

Identification
The bog turtle (*Clemmys muhlenbergii*) is one of Pennsylvania's smallest turtles, growing only 3 to 4.5 inches in length. Its most distinguishing feature is the large orange blotches on each side of the head. The shell and body are a dark brown with no distinctive markings. The bog turtle can be confused with the spotted turtles (*Clemmys guttata*). Spotted turtles have small yellow spots on the carapace, or shell and small orange spots on the head and body. Sometimes, few spots are present and initially the two species may appear very similar. The presence of large orange patches on the bog

Photo: PA Science Office of the Nature Conservancy

Habitat
This turtle has very specific habitat requirements, which is a major factor in its rarity throughout the United States. Bog turtles occur in wet meadows and bogs where tussock sedge and grasses dominate the wetlands. They require open conditions associated with early-successional wetland habitats. The substrate must consist of deep mucky soils fed by groundwater, generally with some open water or seepy areas. If any of these conditions change, the population can decline and may eventually disappear from the area.

Status
The bog turtle occurs in very low numbers in southeastern Pennsylvania and is imperiled or critically imperiled throughout its entire range in North America. The species is classified as Federally threatened on the U.S. Fish and Wildlife Service Endangered Species List. Habitat loss, habitat fragmentation and succession are major factors in the decline of this species. In the past, natural wetland succession would occur causing populations to relocate nearby as appropriate habitat became available. With the extreme habitat fragmentation in southeastern Pennsylvania, remaining habitat has been isolated and wetland succession can lead to localized extinctions.

Additionally, this species is threatened by decreased water quality and roadway mortality. Another major threat to the bog turtle is collection. Reptile collectors consider this turtle a valuable prize, as it is the most rare of all North American turtles. In Pennsylvania, fines for illegal collection and possession range from $250 to $5000 with the possibility of jail time and additional charges from the U.S. Fish and Wildlife Service. State and federal protection for this species have helped conservation efforts so far, but more resources are needed to continue species recovery efforts in the eastern United States.

Pennsylvania Natural Heritage Program

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

References

Hulse, A.C., C.J. McCoy and E.J. Censky. 2001. Amphibians and Reptiles of Pennsylvania and the Northeast. Cornell University Press, New York. 419 pp.

NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6. Arlington, Virginia. Website: www.natureserve.org/explorer.

PA Department of Conservation and Natural Resources Website. Wild Resource Conservation Fund, Endangered and Threatened Species in Pennsylvania. Bog Turtle: www.dcnr.state.pa.us/wrcf/bogt.htm.

Northern Myotis
Myotis septentrionalis

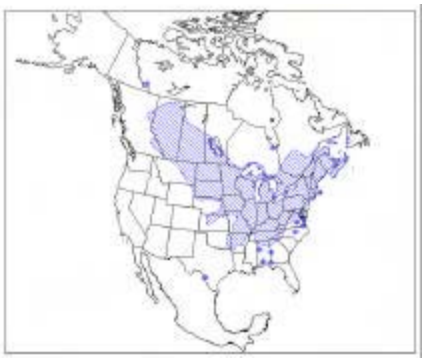
Pennsylvania Mammal Species of Concern
State Rank: S3B, S3N Global Rank: G4

Identification
The northern myotis (*Myotis septentrionalis*) is also known as the northern longed-eared myotis for it's long-rounded ears that when folded forward, extend beyond the tip of the nose. Also, the shape of the tragus, the flap of skin inside the ear area, is long and dagger shaped compared to the little brown bats curved and blunted tragus. This species has a longer tail and larger wing area than other similar sized bats in this genus. The fur is dull yellow/brown above and a pale gray on the belly. Another characteristic of this species is that the calcar, a spur extending from the foot, lacks a keel. These bats weigh only 6 to 8 grams and have a wingspan of 9 to 10 inches.

Photo: Aura Stauffer

Habitat/Behavior
In the more northern parts of their range the northern long-eared bat is associated with boreal forests. In Pennsylvania, this bat is found in forests around the state. Northern myotis hunt at night over small ponds, in forest clearings, at tree top level and along forest edges. They eat a variety of night-flying insects including caddisflies, moths, beetles, flies, and leafhoppers. This species uses caves and underground mines for hibernation and individuals may travel up to 56 kilometers from their summer habitat for hibernation. Maternity roosts are located in tree cavities, under exfoliating tree bark and in buildings.

Status
The status of the northern myotis in Pennsylvania is uncertain. The state status of this species currently is candidate rare (CR). More information is needed before adequate management decisions can be made. It occurs throughout Pennsylvania, but has been found in relatively low numbers. Traditionally, bats have been unpopular with the public because of a misunderstanding of their ecology and due to their presence as pests in homes and barns. However, bats play a very important role in the environment by eating large amounts of insects. For example, a single little brown bat (*Myotis lucifugus*) can eat up to 1,200 mosquito-sized insects in just one hour!



More than 50% of American bat species are rapidly declining or already listed as endangered. The loss of bat species in Pennsylvania could greatly affect our ability to protect our plants from pests and enjoy the outdoors. For more information on bats and bat houses visit the Bat Conservation International website at http://www.batcon.org/.

Pennsylvania Natural Heritage Program

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

References

Bat Conservation International, Inc. 2002. "Bat Species: U.S. Bats: Myotis septentrionalis" Website: www.batcon.org/discover/species/mystep.html.

Ollendorff, J. 2002. "Myotis septentrionalis" (On-line), Animal Diversity Web. Accessed Februray 25, 2004 at Http://animaldiversity.ummz.umich.edu/site/accounts/information/Myotis_septentrionalis.htm.

Redbelly Turtle
Pseudemys rubriventris

Pennsylvania Threatened Species
State Rank: S2 Global Rank: G5

Identification

The redbelly turtle (*Pseudemys rubriventris*) is one of Pennsylvania's largest turtles. The carapace, or shell is brown to black with reddish bars on some scutes. The plastron, or belly is pink to red and the head, neck and legs are covered with bright yellow lines in younger individuals. Markings may become less obvious with age and some older turtles are almost completely black above with few distinguishing characteristics. Confusing species are painted turtles (*Chrysemys picta*) and the introduced red-eared slider (*Trachemys scripta*). Painted turtles can be distinguished by the light borders along the carapace seams and smaller size in adults. Red-eared sliders are similar in size and coloration, however the presence of a red "ear patch" can sometimes be used to identify this species. Like *Pseudemys*, as these individuals age they can become melanistic and difficult to identify.

Photo: Jason Ambler

Habitat

This aquatic species is primarily found in large water bodies including lakes, ponds, marshes, slow-moving rivers and creeks. Red-bellied turtles prefer deeper water with sandy or muddy substrate and require aquatic vegetation. This species also depends on abundant basking sites and spend a great deal of time perched on logs and downed trees. Nesting sites are in upland habitat and usually within 100 meters of the water, though they have been known to nest up to 250m from water. Eggs are laid in sandy or loamy soil, in clutches of 10 to 12.

Status

Pseudemys rubriventris ranges from New York to North Carolina and has been introduced into some areas around the United States. Red-bellied turtles are listed as a threatened species in our state. Though we are on the edge of it's range, many factors contribute to the threatened status this species in Pennsylvania. In the late 1800's, this species was captured and sold as a food item in large metropolitan markets. The population in the east was significantly reduced through collection. Currently, threats to this species include loss of habitat through development and reductions in site and water quality, and threats from exotic species. The range of red-eared sliders is expanding and this species may compete with the exotic slider in some areas. Road mortality is an issue for females traveling away from water to lay eggs. Also, nest predators such as raccoon and fox increase with forest fragmentation and can significantly decrease nesting success of this species. More information is needed on the life history of this species and factors affecting populations in the state.

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References

Hulse, A.C., C.J. McCoy and E.J. Censky. 2001. Amphibians and Reptiles of Pennsylvania and the Northeast. Cornell University Press, New York. 419 pp.

NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6. Arlington, Virginia. Website: www.natureserve.org/explorer.

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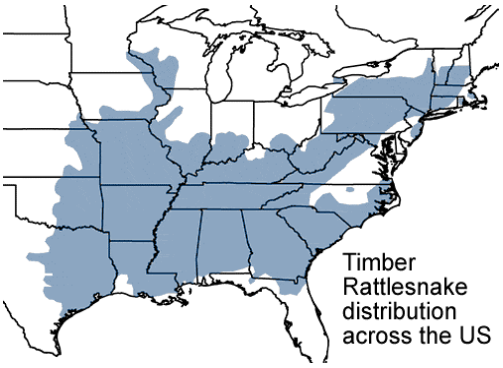
Timber Rattlesnake
Crotalus horridus

Pennsylvania Reptile Species of Concern
State Rank: S3 S4 Global Rank: G4

Identification
Timber rattlesnakes (*Crotalus horridus*) are easily distinguished from other snakes in Pennsylvania. Timber rattlesnakes are stout-bodied, large snakes reaching lengths of up to 5 feet. Color is extremely variable but usually consists of brown or black bands on bright yellow to black coloration. The head is triangular in shape and a black rattle is present at the end of the tail. This species may be confused with the less common eastern massasauga (*Sistrurus catenatus catenatus*) only present in the western portion of the state. The timber rattlesnake can be distinguished from the massasauga by the lack of white facial lines, completely black tail and scale-covered head.

Habitat/Behavior
Crotalus horridus is associated with deciduous forests and rocky outcrops. Hibernacula are usually found on south-facing rocky slopes with adequate crevices to provide shelter during the winter months. Males may travel far from the den site in the summer, moving into valleys and low-lying areas. Gravid females are far less mobile and tend to stay within a short distance of the den. Timber rattlesnakes are venomous, however are generally mild-mannered and not likely to strike.

Status
Timber rattlesnake numbers have decreased significantly from historic records. This species was once widespread across the state. The remaining populations are usually found in remote, isolated areas. Collection and destruction of habitat are likely the main reasons for reductions in population size. Den sites have been targets for collection and should be the focus of conservation efforts for this species.



The state status of the timber rattlesnake is candidate at risk (CA). Though this species is still relatively abundant across the state, it remains vulnerable to exploitation.

Permits are now required to collect rattlesnakes and only one snake can be taken each year. Snake hunts still occur in the state but after capture, snakes must be marked and release and the site of capture. Biologists are gathering information from collectors and individual studies to determine the current status of this species in the state.

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The Center for Reptile and Amphibian Conservation and Management. Species Accounts: Timber Rattlesnake. Website: http://herpcenter.ipfw.edu/outreach/accounts/

Yellow Lampmussel
Lampsilis cariosa

Freshwater Mussel Species of Concern

State Rank: S3S4 Global Rank: G3G4

Photo: PA Science Office of the Nature Conservancy

Identification

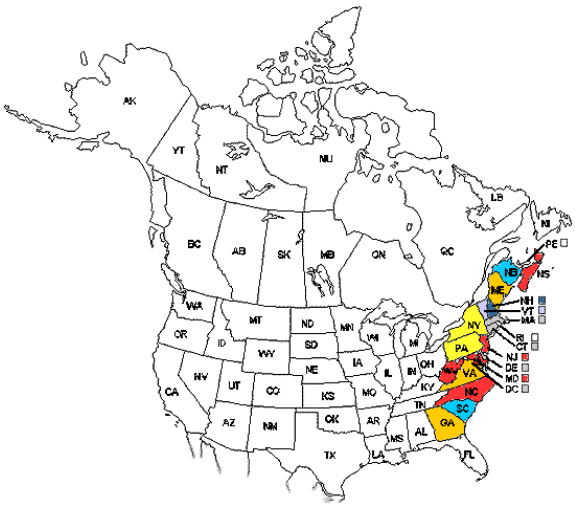
The yellow lampmussel (*Lampsilis cariosa*) is a bright yellow, medium-sized freshwater mussel that can reach lengths of up to five inches. The mussel has an ovate to elliptical shell and the valves appear inflated in cross section. The shell is thick and strong. The bright yellow coloration makes it fairly easy to distinguish from other freshwater mussels in Pennsylvania but it may be confused with the eastern lampmussel (*Lampsilis radiata*). The presence of abundant rays on the outer shell of the eastern lampmussel is usually a key to distinguishing these two species. The yellow lampmussel is also more ovate and is more inflated in cross section.

Habitat

The yellow lampmussel inhabits medium to large rivers throughout most of its range, but is known from lakes and ponds in the north. In Pennsylvania, the yellow lampmussel is found within the Susquehanna and Delaware River drainages. This species occurs in a variety of substrate types including sand, silt, cobble and gravel.

Status

Lampsilis cariosa ranges from Nova Scotia to Georgia and west to West Virginia. Little is known about the status of freshwater mussels in Pennsylvania and the United States. The state status of the yellow lampmussel is condition undetermined (CU) due to lack of information for this species. Though it appears to be relatively abundant in the Susquehanna River, thus far it is not present or less common in other river systems in the state. More surveys are required to determine the status of this species and other freshwater mussels in Pennsylvania.



Freshwater mussels have the highest current and future rate of extinction of any animal group in North America. In Pennsylvania, 75% of the mussel fauna is of conservation concern. One of the biggest threats to freshwater mussel populations throughout North America is a reduction in water quality. The protection Pennsylvania's aquatic habitat is critical to the survival of this species and the many other aquatic and terrestrial species that depend on these systems.

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APPENDIX VIII
NAMES OF COMMON PLANT SPECIES REFERENCED IN TEXT

COMMON NAME/NATIVE PLANTS	SCIENTIFIC NAME
amaranth	*Amaranthus spp.*
American beech	*Fagus grandifolia*
American chestnut	*Castanea dentata*
arrow-wood	*Viburnum spp.*
ashes:	*Fraxinus spp.*
black	*Fraxinus nigra*
green	*Fraxinus pennsylvanica*
white	*Fraxinus americana*
asters	*Aster spp.*
New England aster	*Aster novae-anqliae*
azalea	*Rhododendron spp.*
basswood	*Tilia americana*
bedstraw	*Galium spp.*
big bluestem	*Andropoqon gerardii*
big-tooth aspen	*Populus qradidentata*
birches:	*Betula spp.*
black/sweet	*Betula lenta*
river	*Betula nigra*
yellow	*Betula alleghaniensis*
blackberry	*Rubus spp.*
black cherry	*Prunus serotina*
black gum	*Nyssa sylvatica*
black-haw	*Viburnum prunifolium*
black huckleberry	*Gaylussacia baccata*
black locust	*Robinia pseudoacacia*
black snakeroot	*Cimicifuqa racemosa*
black walnut	*Juglans nigra*
black willow	*Salix nigra*
bladdernut	*Staphylea trifolia*
bluebell	*Mertensia virginica*
blueberry	*Vaccinium spp.*
low bush blueberry	*Vaccinium angustifolium*
blue cohosh	*Caulophyllum thalictroides*
boneset	*Eupatorium perfoliatum*
box-elder	*Acer negundo*
bush-clover	*Lespedeza spp.*
Canada bluegrass	*Poa compressa*
cattail	*Typha latifolia*
choke cherry	*Prunus virginiana*
corn	*Zea mays*
cucumber tree	*Magnolia acuminate*
doghane	*Apocynum spp.*
Dutchman's-breeches	*Dicentra cucullaria*
dwarf hackberry	*Celtis tenuifolia*
eastern hemlock (=hemlock)	*Tsuga canadensis*

elms:	*Ulmus spp.*
American elm	*Ulmus americana*
false indigo	*Amorpha fruticosa*
ferns:	
Christmas	*Polystichum acrostichoides*
hairy lip	*Cheilanthes lanosa*
marginal shield	*Dryopteris marginalis*
mountain spleenwort	*Asplenium montanum*
New York	*Thelypteris noveboracensis*
sensitive	*Onoclea sensibilis*
spinulose wood fern	*Dryopteris carthusiana*
wood	*Dryotheris spp.*
fescue	*Festuca elatior*
foamflower	*Tiarella cordifolia*
flowering dogwood	*Cornus florida*
freshwater cordgrass	*Spartina pectinata*
geranium	*Geranium spp.*
goldenrods	*Solidago spp.*
gray goldenrod	*Solidago nemoralis*
hackberry	*Celtis occidentalis*
halberd-leaved rose-mallow	*Hibiscus laevis*
hickories:	
bitternut	*Carya cordiformis*
shagbark	*Carya ovate*
horse balm	*Collinsonia canadensis*
huckleberry	*Gaylussacia spp.*
Indian cucumber-root	*Medeola virginiana*
Indian grass	*Sorghastrum nutans*
ironwood	*Carpinus caroliniana*
jack-in-the-pulpit	*Arisaema triphyllum*
jewelweed	*Inpatients ssp.*
little bluestem	*Schizachyrium scoparium*
lizards tail	*Saururus cernuus*
lovegrass	*Eragrostis spp.*
maple-leaved viburnum	*Viburnum acerifolium*
maples:	
red	*Acer rubrum*
silver	*Acer saccharinum*
striped	*Acer pensylvanicum*
sugar	*Acer saccharum*
may-apple	*Podophyllum peltatum*
meadow grass	*Glyceria spp.*
meadow rue	*Thalictrum spp.*
mountain laurel	*Kalmia latifolia*
ninebark	*Phvsocarous opulifolius*
oaks:	
black	*Ouercus velutina*
chestnut	*Ouercus montana (=O. prinus)*
pin	*Ouercus nalustris*
red	*Ouercus rubra*
white	*Ouercus alba*
pale Indian-plantain	*Cacalia atriplicifolia*

pale jewelweed	*Impatiens pallida*
panic-grass	*Panicum agrostoides*
pawpaw	*Asimina triloba*
prickly-ash	*Zanthoxylum americanum*
pines	*Pinus spp.*
pinxter-bush	*Rhododendron periclymenoides*
poison ivy	*Toxicodendron radicans*
Queen-Anne's-lace	*Daucus carota*
red-cedar	*Juniperus virginiana*
reed-canary grass	*Phalaris arundinacea*
rhododendron	*Rhododendron maximum*
rock polypody	*Polypodium virginianum*
rushes	*Scirpus spp.*
sassafras	*Sassafras albidum*
sedges	*Carex spp.*
silky dogwood	*Cornus amomum*
skunk cabbage	*Symplocarpus foetidus*
smartweed	*Polygonum spp.*
smooth panic grass	*Panicum dichotomiflorum*
speckled alder	*Alnus incana*
sphagnum (mosses)	*Sphagnum spp.*
spicebush	*Lindera benzoin*
spikerush	*Eleocharis spp.*
spring-beauty	*Claytonia virginica*
squirrel corn	*Dicentra canadensis*
staghorn sumac	*Rhus typhina*
sunflower	*Helianthus spp.*
swamp milkweed	*Asclepias incarnate*
sweet cicely	*Osmorhiza claytonii*
switch grass	*Panicum virgatum*
sycamore	*Platanus occidentalis*
tick-trefoil	*Desmodium spp.*
toothwort	*Dentaria spp.*
trillium	*Trillium erectum*
trout lily	*Erythronium americanum*
tulip poplar	*Liriodendron tulipifera*
tussock sedge	*Carex stricta*
umbrella sedge	*Cyperus spp.*
violets	*Viola spp.*
Virginia creeper	*Parthenocissus quinquefolia*
Virginia pine	*Pinus virginiana*
Virginia waterleaf	*Hydrophyllum virginianum*
water smartweed	*Polygonum amphibium*
water-willow	*Justicia americana*
white pine	*Pinus strobus*
white snakeroot	*Eupatorium rugosum*
white sweet-clover	*Melilotus alba*
wild ginger	*Asarum canadense*
wild yam	*Dioscorea quaternata*
winterberry	*Ilex verticillata*
witch hazel	*Hamamelis virginiana*

COMMON NAME/NON-NATIVE PLANTS

barberry	*Berberis spp.*
garlic mustard	*Alliaria officinalis*
Japanese honeysuckle	*Lonicera japonica*
Japanese knotweed	*Polygonum cuspidatum*
Oriental bittersweet	*Celastrus orbiculatus*
orpine	*Sedum spp.*
mile-a-minute weed	*Polygonum perfoliatum*
multiflora rose	*Rosa multiflora*
purple loosestrife	*Lythrum salicaria*
soapwort	*Saponaria officinalis*
stilt grass	*Microstegium vimineum*
tree-of-heaven	*Ailanthus altissima*
wineberry	*Rubus ohoenicolasius*