

## V. BIOLOGICAL RESOURCES

### A. Terrestrial Wildlife

Before settlement and the logging industry boom, Pine Creek was home to many species including elk, timber wolves, cougars, bald eagles, osprey, otters, and black bears. The bobcat, a protected Pennsylvania species, is also a resident of the Pine Creek corridor. Many birds and mammals have experienced decreases in population within the watershed over the years; however, reestablishing natural habitat is bringing many species back to the area. According to the Pennsylvania Fish and Wildlife database, in 1996 there were ten birds and one mammal on the endangered/threatened species list breeding in the Pine Creek area. These species include the American bittern, least bittern, osprey, short-eared owl, king rail, upland sandpiper, black tern, sedge wren, and the small-footed myotis. Many species of birds, mammals, reptiles and amphibians call Pine Creek their own, and a list of these can be seen on Tables A-13, A-14 and A-15. There was found to be a total of 20 different amphibian species, 18 reptile species, about 50 species of mammals, and almost 200 bird species within the Pine Creek watershed.

There has been an increase in the bald eagle (*Haliaeetus leucocephalus*) population over the past 20 years within the Pine Creek watershed. In 1967, there were fewer than 500 nests in the country, which placed the bald eagle on the national endangered species list. It was upgraded to the threatened list in 1995 after the number of nesting pairs increased. The bald eagle has been on the Pennsylvania state endangered species list since 1978, but upgrading it to the threatened list is a possibility for the near future due to its recent increase in population. In 2004 and 2005, four nests were recorded in the Pine Creek watershed. These nests are located at Little Pine State Park, below Slate Run, Cedar Run, and above Blackwell. White pine seem to be the nesting tree of choice for the eagles due to their widely spread branches and protection from all weather types. Bald eagles are affected by human activity; however, this is not a significant problem in the Pine Creek watershed due to the rural area. Observations show an increase in the number of bald eagles and their offspring that tend to remain in the watershed each year.

River Otters (*Lutra canadensis*) once flourished in Pennsylvania (including the Pine Creek watershed), however they practically vanished from most of the state by the middle of the 20<sup>th</sup> century. In 1952, with otter populations remaining only in the Poconos, otters received protection by the state. In an attempt to increase otter populations, the Pennsylvania River Otter Reintroduction Project was organized in 1982, and Kettle Creek, Potter County, became the first release site. Other release areas included Loyalsock Creek, Tionesta Creek, Allegheny River, Susquehanna River, Juniata River, Laurel Hill Creek, and the Youghiogheny River. Between 1980 and 1983, 21 otters were released along Pine Creek and monitoring has shown that reproduction has been successful. Their typical habitats include the edges of lakes, rivers, and streams. To further protect the otter population, the Pennsylvania Game Commission has established trapping restrictions along Pine Creek from the Susquehanna River to Galeton. The restricted trapping zone makes it unlawful to set traps with a jaw spread larger than 4.5

inches, or within 25 feet of Pine Creek. A furtaker license is required to hunt, trap, or kill any furbearer.

Eastern elk (*Cervus elaphus*) once roamed throughout Pennsylvania, including the Pine Creek watershed. Settlement and human activity forced elk out of the area and completely eliminated them from Pennsylvania in 1867. The Pennsylvania Game Commission (PGC) introduced and released Rocky Mountain elk in nine counties in Pennsylvania from 1913 to 1926. The most successful releases were in Cameron and Elk counties, where the last native elk in Pennsylvania had previously made their stand. The elk habitat is mainly on public land where they graze on a variety of plants. The PGC, conservation groups, public landowners, and other organizations, are responsible for management of the elk population. With their cooperation, elk numbers have increased over the years. Although the Pine Creek watershed is not yet considered an elk viewing area, it is a serious possibility for the future due to expected expansions of high elk populations from nearby counties.

Fishers (*Martes pennanti*) also flourished throughout Pennsylvania, including the Pine Creek area, but disappeared from the state in the late 1800s and early 1900s as a result of deforestation and unregulated trapping. Between 1994 and 1998 there was an effort partnered by the Pennsylvania Game Commission, Frostburg State University and Pennsylvania State University to reintroduce fishers in Pennsylvania. Release sites included the Pine Creek watershed, Quehanna Wild Area, Allegheny National Forest and the Pocono Mountains. The fishers have made great progress expanding their range from release sites and can now be found around Pennsylvania, including the Pine Creek area.

## **B. Aquatic Wildlife**

An extensive fish study was performed by Edwin Cooper and Charles Wagner in 1971. The study was done at four locations: above Galeton, Blackwell, Cammal, and the Route 220 bridge near Jersey Shore. A diverse population of 14 to 23 species was found at each site with 12 common species found at all four locations. Pine Creek harbors at least 48 species of fish, including the rare sightings of banded killfish, swallowtail shiner, bowfin and yellow perch. From Ansonia to the mouth, the Commonwealth designated Pine Creek as a “high quality trout stream fishery.” Reproducing brown and brook trout populations are distributed widely throughout the watershed. The Pennsylvania Fish and Boat Commission (PFBC) continues to periodically survey different sections of the watershed.

A general analysis of fish species present, and their widespread abundance, indicates that Pine Creek is subjected to very little degradation from organic wastes, industrial effluents, or acid mine drainage. The only negative effect on Pine Creek is where Babb Creek enters the main stream at Blackwell. A compiled list of fish found in Pine Creek can be seen on Table A-16.

Over the last 30 years, various benthic macroinvertebrate surveys have occurred in the Pine Creek watershed by agency/organizations such as Department of Environmental Protection (DEP), Grand Canyon Ecological Services, Pine Creek Headwaters Protection Group and Lycoming College's Clean Water Institute. One of the most comprehensive benthic studies along the main stem of Pine Creek was completed by DEP in 1992 by Ronald Hughey (DEP). This study consisted of sampling and analysis from 21 sites on the main stem of Pine Creek ranging from stream mile 80 in Potter County to stream mile 1.5 in Lycoming County. Table A-17 is a compiled list of species from all 21 sites in Pine Creek. There was found to be a total of 57 different benthic species.

### C. Native Vegetation

It is estimated that approximately 68% of the Pine Creek watershed is woodland. Almost a century has passed since the intense logging of the virgin forests of the Pine Creek watershed. Before then, early settlers marveled at the white pine and hemlock forests which covered much of the area. A 40 acre stand of old growth hemlock still borders Four Mile Run on the west side of the canyon. Understory species include, but are not limited to, rhododendron, mountain laurel, azaleas, striped maple, dogwood, witch hazel, viburnum, sassafras, 13 species of ferns, and 137 species of wildflowers.

The five largest forest types in the Pine Creek corridor are: Northern Hardwood Forest at approximately 76,000 acres, Dry Oak - Heath Forest at approximately 62,000 acres, Dry Oak - Mixed Hardwood Forest at approximately 35,000 acres, Red Oak - Mixed Hardwood at approximately 24,000 acres, and Black Cherry - Northern Hardwood at approximately 17,000 acres.



Northern Hardwood dominant trees include American beech, red maple, sugar maple, and black cherry. Common shrubs to this type include rhododendron, witch hazel, striped maple, hobble bush, mountain holly and shadbush. The herbacious layer is generally sparse and reflects a northern affinity including Canada mayflower, starflower, Christmas fern, teaberry and wild sarsaparilla.

Dry Oak - Heath forest is a broadly defined type of forest found on moderately dry acidic sites, sandy soils and steep slopes. Trees found in this forest type include chestnut oak, black oak, scarlet oak, and white oak. Total cover by conifers is less than 25%. American chestnut stump sprouts are common, and the shrub layer is dominantly ericaceous. The herbacious layer is sparse due to the thick decay resistant leaf litter.

Dry Oak - Mixed Hardwood is similar to the above forest type, but occurs on less acidic and less dry sites, and does not have an overwhelming dominance of heaths in the shrub layer. Along with the dominant trees of Dry Oak – Heath type, sweet birch, various hickories, red maple, and northern red oak are also found.

Red Oak - Mixed Hardwood is another broadly defined forest type and includes much of Pennsylvania's hardwood-dominated forests. Northern red oak and red maple are the most commonly found, along with black oak, white oak, mockernut hickory, shagbark hickory, sweet birch, yellow birch, and white ash. The herbaceous layer is highly variable supporting a number of common species.

Black Cherry – Northern Hardwood is characterized by at least 40% black cherry along with other species such as red maple, sugar maple, sweet birch, yellow birch, American beech, and northern red oak.

A complete listing of all forest types and definitions can be seen in the attached Table A-18 and are shown in Map 9.

#### **D. Invasive Vegetation**

Exotic and invasive species typically interact with native vegetation and compete for resources through a process called interspecific competition. As the name implies, this process occurs when an exotic/invasive species interferes with a native species' access to a particular resource. Interference might include the consumption of a nutrient limited in availability, the modification of environmental conditions, a lack of natural enemies, the release of toxins, or the ability to reproduce rapidly enough to prevent the population increase of another species and cause it to become extinct or excluded from the area.

Purple loosestrife (*Lythrum salicaria*) is the most rapidly advancing invasive species in Pennsylvania. This flowering plant was introduced to the United States from Eurasia. Purple loosestrife prefers wet meadows and moist terrace floodplains where it can grow up to six feet tall. Purple loosestrife invades by rapid reproduction through seeding and adventitious roots, and is not easily controlled. Mechanical pulling is recommended for small populations. Chemical treatment with glyphosate is recommended around the edge of populations to prevent spreading. Three host-specific insect species have been approved and used in several spots across the United States and were found to be successful for control of purple loosestrife.

Although purple loosestrife is the most rapidly advancing invasive plant species in the state, Japanese knotweed (*Polygonum cuspidatum*) appears to be the most rapidly spreading in the Pine Creek watershed. Originating in Japan, this knotweed was introduced in America in the late 1800s. It is commonly found along river and creek banks, wetlands and along roads. Individual stems of knotweed reach a height of three to nine feet. While its extensive root system protects banks against erosion, the Japanese knotweed excludes other plant species, limiting biodiversity at the site of its invasion.

Mechanical cutting of the stems is recommended for controlling small populations of the species.

The reed canary grass (*Phalaris arundinacea*), a wetland grass, is especially abundant in the “Muck” along Marsh Creek. In the spring, it is one of the first grasses to appear and flourish. The reed canary grass can grow to a height of nine feet and spreads by elongation and fragmentation of rhizomes. Cutting and flooding of the species may work if done for multiple years.

The other invasive species listed by the Department of Conservation and Natural Resources (DCNR) as the most serious or worst offenders to native ecosystems in northcentral Pennsylvania include three thistles (musk, Canada and bull) (*Cirsium arvense/Cirsium vulgare*), Morrow’s honeysuckle (*Lonicera morrowii*), and multiflora rose (*Rosa multiflora*). A total of 17 different invasive species were found in the Pine Creek watershed. Of the 17, eight are serious threats, while the other nine are deserving of vigilance. The eight threatening invasive species are often referred to as Pennsylvania’s noxious weeds. A noxious weed is defined as a plant that causes injury to crops, agricultural land, livestock, public health, or other property, as determined by Pennsylvania law.

## **E. Threatened and Endangered Species – (PNDI)**

The Pennsylvania Natural Diversity Inventory (PNDI) is a comprehensive, site-specific database that describes significant natural resources occurring in Pennsylvania. The system includes information on threatened, endangered, and species of special concern, as well as unique ecological communities and habitats. The Department of Conservation and Natural Resources (DCNR) Bureau of Forestry is responsible for plant species, the Pennsylvania Fish and Boat Commission (PFBC) is in charge of tracking reptiles, amphibians, fish and aquatic macroinvertebrates, and the Pennsylvania Game Commission (PGC) tracks mammal and bird species. Table A-19 references the classifications of PNDI organisms.

According to the PNDI, threatened species are defined as flora and fauna that may become endangered within the foreseeable future throughout their region in Pennsylvania. Endangered species are those organisms in imminent danger of becoming extinct or extirpated (locally extinct) throughout their region in Pennsylvania. A compiled list of all PNDI species and habitats listed for Pine Creek is shown in Table A-20a. A total of 35 PNDI species were found with plants being the most numerous. The Tables A-20b-j list species and ecological communities tracked by PNDI for Pine Creek and its tributaries found throughout the watershed.

## **F. Important Habitat**

### **1. Important Bird Areas**

Two locations in the Pine Creek watershed have been designated by Audubon Pennsylvania as Important Bird Areas: Pine Creek Gorge Natural Area and the Marsh Creek Wetlands –“The Muck”. A few other popular birding places include: Little Pine State Park, Lyman Run State Park, and the Tiadaghton State Forest. The 62-mile Pine Creek Trail passes through one of the most extensively forested regions of the state, which supports significant populations of forest interior birds. The trail also passes through active and abandoned cropland, brushy areas, and wetlands offering opportunities to view birds found in those habitats. Almost 200 different species of birds have been found in the watershed. Of special interest are warblers, raven, owls, and bald eagle.



### **2. Important Mammal Areas**

The Northern Allegheny Plateau region, which includes part of the Pine Creek watershed, has been designated as an Important Mammal Area (IMA) by the Pennsylvania Wildlife Federation. Criteria for an area to be designated as an IMA is based on the mammal diversity, support of high density populations, support of endangered and threatened species listed by the Pennsylvania Biological Survey, and potential for important public education. The goal of the Pennsylvania Wildlife Federation is to ensure the future of important mammals and provide people with the opportunity to enjoy them in the mammals’ natural environments.

### **3. Riparian Buffer Zones**

Riparian buffers, as defined by the Chesapeake Bay Program’s website, are areas of land adjacent to a stream, river, marsh or shoreline which form the transition between land and water environments. The buffers improve water quality while providing habitat for wildlife and fish. They are the key to controlling non-point source pollution and also help reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients and other chemicals. The riparian buffers provide canopy and shade for the stream, slow and filter runoff from the adjacent land, and provide a diverse habitat for organisms.

The Chesapeake Bay Program has information on forested and non-forested streamside buffers. They present the information based on sub-areas within the watershed. According to their information there are only 1,340.1 stream miles with a forested riparian buffer at least 100 feet wide. The other 1,749.8 stream miles either have a non-

forested buffer or are forested, but less than 100 feet wide. Table A-21 provides a breakdown by Bay Program sub-area.

#### **4. Natural Heritage Inventory Areas**

Natural Heritage Inventories present information for residents about their heritage which can be used in planning the future of their area. Inventories assess the biological resources of an area, which are then considered during development and conservation efforts. Specific habitats and species, along with endangered resources, can be monitored closely by the use of the inventories. Information collected from inventories is used during planning and permitting processes. Almost half of the counties in Pennsylvania have been inventoried, and the goal is to inventory every county by 2006. Of the four counties that make up the Pine Creek watershed, Lycoming and Clinton counties have completed Natural Heritage Inventories. Potter County is committed to an inventory, which will soon be underway.

The Tioga County Commissioners have authorized the Science Office of The Nature Conservancy and the Pennsylvania Natural Heritage Program to inventory the natural areas in Tioga County. This study will take two years to complete and the data will not be available for this plan. The information on the natural areas in the Pine Creek watershed will be important information, however, and the documents and maps generated for the inventory should be an important step in any future planning and/or management decisions on the resources in the watershed. The Tioga County Planning Commission is one of the partners on this project and readers are advised to contact the Tioga County Planner for more information on the Natural Areas Inventory for the county and the Pine Creek watershed.

#### **5. DCNR Natural and Wild Areas**

DCNR has established natural and wild areas within the Pine Creek watershed.

A natural area is a place where there has been minimal human influence to the biotic communities and processes. In the Tiadaghton State Forest there are five natural areas. The Torbert Island Natural Area is an 18 acre island located in the lower part of Pine Creek, just above Jersey Shore. Miller Run Natural Area consists of 4,000 acres of both oak and northern hardwood forests. It contains four complete watersheds of tributaries to Pine Creek. Algerine Swamp Natural Area consists of 84 acres. The natural habitat of the Algerine Swamp is perfect for rarely found black spruce, balsam fir, and other northern species. In fact, the Algerine Swamp has been called an outstanding example of a Boreal Conifer Swamp in Pennsylvania. Another remarkable aspect of this wetland is the carpet of sphagnum moss and sedges, which include four Pennsylvania rare or threatened species. Bark Cabin Natural Area (73 acres) contains old growth hemlock, and Lebo Red Pine Natural Area (124 acres) consists of old growth red pine. In the Tioga State Forest there are three natural areas. The most scenic is the Pine Creek Gorge Natural Area (12,100+ acres) containing numerous waterfalls. Black Ash Swamp Natural Area (308 acres) is within the Asaph Wild Area and is an excellent example of

second growth cherry and maple. The Reynolds Spring Natural Area (1,302 acres) contains a variety of vegetative types including an open pine swamp and several oak and aspen stands.

Along with the abundance of natural areas on State Forest land there are also wild areas. A wild area is an extensive tract managed to protect the undeveloped character of the area and allow for public recreation. The wild areas in the watershed include Wolf Run Wild Area (6,900 acres), and Algerine Wild Area (3,700 acres) in the Tiadaghton State Forest and the Asaph Wild Area (2,070 acres) in the Tioga State Forest.

The 2,158 acre Little Pine State Park is virtually surrounded by the Tiadaghton State Forest. During established seasons, 1,700 acres of the Park are open to hunting, trapping, and training of dogs. The wildlife found in Little Pine State Park during the year include: bald eagle, osprey, waterfowl, deer, songbirds, herons, otter, raccoon, mink, fox, bear, and turkey.

Map 5 shows all state forests, state parks and State Game Lands located in the Pine Creek watershed.

